Appendix A

Soil Boring/Core Logs

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ARCADIS

Sample/Core Log

Boring/Well GMPZA-1 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/27/05 Drilling Completed 4/27/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Land-Surface Elev. 1049.18 feet [X] Surveyed [ ] Estimated Sampling Interval continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	2.12-28.52/	0-1.0' Sandy Silt: Dark yellowish brown (10 YR 3/4), little gravel subangular to
			7430-428000	subround up to 3", trace rootlets/organics, trace clay, silt is smooth, some sand
				very fine, well sorted, loose, damp, odor.
				1.01.3' Silt: Dark brown (10 YR 3/3), trace gravel fine up to 5" subangular to
				subround, abundant roots/organics, loose, damp, odor.
				1.3-1.9' Silt: Dark yellowish brown (10 YR 4/4), trace rootlets/organics, trace very
				fine sand, smooth to grainy, damp, odor.
				1.9-2.5' Silt: As above in 1.0-1.3'.
				2.5-4.0' Silty Sand: Dark yellowish brown (10 YR 3/6), little gravel subangular to
				subround up to 3", sand predominately very fine, little fine to coarse, poorly sorted,
				very silty, loose, damp, odor.
5	10	1.0	1.51-2.58/	0-1.0' Clayey Silt: Reddish brown (5 YR 4/3), could be slough, or squeezed past
			7074-42300	rock into core barrel, sticky, distorted, saturated, odor.
10	15	0		No recovery. Pushing rock.
15	20	3	1.14-2.05/	0-3.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is reddish brown (5 YR 4/3),
			1290-2240	predominately silt (smooth), many clay layers, predominately varves and very fine
				laminations/interbeds, a few thicker clay beds up to 1.5", trace very fine sand
				interbedding, well sorted very fine sand interbeds <1 mm thick, sandier 2.8-3.0',
				trace gravel throughout, saturated, trace black staining, vesicles, odor.
20	25	0		No recovery.
25	30	5	1.55-1.92/	0-2.0' Sand: Dark brown (7.5 YR 3/3), little gravel subangular to subround up to 4",
			8280-25300	coarse, some fine to medium, poorly sorted, clean, saturated, odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace medium to coarse, well sorted,
				clean, saturated, odor.
30	35	5	1.94-3.34/	0-2.3' Sand: As above, with black staining.
			3560-20100	2.3-2.8' Sand: Color as above, fine to medium grain, trace coarse, trace fine gravel,
				well sorted, loose, saturated, odor.

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Sample/Core Log (continued)

Boring/Well GMPZA-1

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.8-3.3' Sand: As above in 0-2.3'.
				3.3-5.0' Silt: Brown (7.5 YR 4/4), few clay interbeds approximately 1/2" thick,
				clay yellowish red (5 YR 4/6), plastic, appears platy when broken, medium stiff to
				soft, trace clay in matrix, saturated, odor.
				EOB @ 35'.

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Sample/Core Log

Boring/Well GMPZA-2 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/27/05 Drilling Completed 4/27/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.06 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4	12.64-48.10/	0-0.8' Fill: Slate pieces.
			291-3570	0.8-2.0' Silt: Dark yellowish brown (10 YR 3/4), topsoil, sticks, roots, organics, trace
				very fine sand, organic odor, damp.
				2.0-4.0' Silt: As above, but without all the organic material.
5	10	5	1.51-2.72/	0-3.0' Sand and Gravel: Brown (7.5 YR 4/4), little silt, sand very fine to coarse,
			125-12300	predominately fine, very poorly sorted, gravel predominately fine, up to 2",
				subangular to subround, loose, damp to 1.5 then saturated, no odor.
				3.0-5.0' Silt: Dark yellowish brown (10 YR 4/4), little clay in matrix, smooth, trace
				very fine to medium sand at 5.0, cohesive, saturated, no odor.
10	15	5	1.21-2.80/	0-5.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish red (5 YR 4/4),
			780-1870	predominately silt, clay content increases downward, clay layers range from 0.5-
				2" thick, more clay below 3.0', clay is somewhat stiff, plastic, appears platy on
				broken surfaces, cohesive, saturated, no odor.
15	20	5	1.02-1.46/	0-3.0' Silt/Clay Interbeds: As above, somewhat less clay, layers are approximately
			1440-2930	1" thick or less.
				3.0-5.0' Silt: Brown (7.5 YR 4/3), trace clay, trace very fine to fine sand seam <1/2"
				thick at 2.4', silt varies in grain size and is laminated due to minor grain size
				variations, saturated, somewhat cohesive, no odor.
20	25	5	1.25-2.97/	0-1.0' Silt: As above.
			3340-31900	1.0-2.0' Sand: Reddish brown (5 YR 4/4), little gravel up to 1.5" subangular to
				subround, predominately medium to coarse, some fine, poorly sorted, loose,
				saturated, slight odor.
				2.0-5.0' Sand: Reddish brown (5 YR 5/4), trace fine gravel, fine grain, trace very fine,
				little medium to coarse, moderately sorted, loose, saturated, odor.
25	30	5	1.73-3.04/	0-5.0' Sand: Brown (7.5 YR 4/3), some gravel subangular to subround up to 3",
			4340-11700	predominately coarse, some fine to medium, poorly sorted, loose, saturated, odor.

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Sample/Core Log (continued)

Boring/Well GMPZA-2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
30	35	5	1.70-2.45/ 9670-139100	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace medium to coarse, moderately sorted, loose, clean, saturated, odor.
				EOB @ 35'.

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Sample/Core Log

Boring/Well GMPZA-3 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/28/05 Drilling Completed 4/28/05

Total Depth Drilled 45 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Land-Surface Elev. 1049.07 feet [X] Surveyed [ ] Estimated Sampling Interval continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	3	1.78-5.70/	0-0.5' Fill: Slate.
			16-72	0.5-1.5' Silt: Dark brown (7.5 YR 3/3), abundant organics, rootlets, topsoil, damp,
				organic odor.
				1.5-3.0' Silt: As above, with color change to dark yellowish brown (10 YR 3/4),
				damp, no odor.
5	10	5	1.93-2.18/	0-2.0' Sandy Silt: Strong brown (7.5 YR 5/6), trace fine gravel, sand with very fine
			1250-8210	to fine sand, loose, damp, no odor, grades over approximately 1' into unit
				below.
				2.0-5.0' Silty Sand and Gravel: Dark brown (7.5 YR 3/2), gravel fine up to 2"
				subangular to subround, sand all sizes, predominately fine to medium, very
				poorly sorted, loose, saturated, no odor.
10	15	0.0		No recovery.
15	20	5	1.62-2.22/	0-4.5' Silt with some Clay Interbedding: Silt is brown (7.5 YR 4/4), clay is yellowish
			155-8730	red (5 YR 4/6), trace fine gravel, extremely distorted sample, clay layering barely
				discernable, appears to be fine interbedding, possibly up to 1/2" thick, predominately
				silt, sticky, somewhat cohesive, saturated, no odor.
				4.5-5.0' Sand: Brown (7.5 YR 4/3), little silt, little gravel subangular to subround
				up to 2", fine to coarse, predominately fine, poorly sorted, loose, saturated, odor.
20	25	0		No recovery.
25	30	5	1.46-1.90/	0-5.0' Sand: Brown (7.5 YR 4/4), trace fine gravel up to 1" subangular to subround,
			2035-6460	fine to medium grain, little coarse, somewhat sorted, loose, saturated, odor.
30	35	5	2.65-3.83/	0-0.5' Sand: As above.
			2530-23100	0.5-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace very fine, well sorted, uniform,
				loose, saturated, odor.
35	40	5	1.90-3.63/	0-0.5' Sand: Brown (7.5 YR 5/3), few cobbles up to 4" subangular to rounded,
			2820-5833	fine to medium grain, well sorted, loose, saturated, odor.
				0.5-3.5' Sand: Brown (7.5 YR 5/4), fine grain, trace medium, to coarse, well sorted,

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Sample/Core Log (continued)

Boring/Well GMPZA-3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				loose, saturated, odor.
				3.5-5.0' Silt: Brown (7.5 YR 4/3), trace coarse sand, very granular, uniform,
				approaching size of very fine sand, loose, saturated, strong odor.
40	45	5	5.35-6.50/	0.0-3.0' Silt: As above.
			3730-28100	3.0-5.0' Silt: As above, color changes to strong brown (7.5 YR 4/6) but slightly finer,
				strong odor.
				EOB @ 45'.

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Sample/Core Log

Boring/Well GMPZA-4 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/29/05 Drilling Completed 4/29/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Land-Surface Elev. 1049.19 feet [X] Surveyed [ ] Estimated Sampling Interval continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	3	1.24-14.22/	0-0.7' Fill: Slate.
			9-53	0.7-1.7' Silt: Dark brown (7.5 YR 3/4), topsoil, some organics, rootlets, trace very
				fine sand, loose, damp, organic odor.
				1.7-3.0' Sandy Silt: Dark yellowish brown (10 YR 4/4), some gravel mostly fine up
				to 0.5" angular to subangular, sand is predominately very fine, some fine, trace
				medium to coarse, crumbly, loose, silt compressed into nodules in places, dry,
				no odor.
5	10	3.5	1.69-2.21/	0-0.5' Sandy Silt: As above.
			9-13	0.5-3.5' Silty Sand: Color as above, unit is as above, but with much more sand,
				sand predominately fine, little medium to coarse, poorly sorted, less silt than above,
				loose, damp, no odor.
10	15	4.0	5.38-9.33/	0-0.4' Sand: Light reddish brown (5 YR 6/4), little gravel and cobbles angular to
			175-242	subangular up to 4", very fine to fine grain, trace medium to coarse, well sorted,
				appears arkosic, damp, loose, no odor.
				0.4-3.0' Sand and Silt: Yellowish brown (10 YR 5/4), some gravel, predominately
				fine up to 3" angular to subangular, sand all sizes, predominately very fine to fine,
				very poorly sorted, very silty, color variation throughout, loose, damp, no odor.
				3.0-4.0' Sandy Silt: Dark brown (10 YR 3/3), sand all sizes, predominately very fine
				to fine, some gravel predominately fine up to 2" angular to subangular, very
				similar to unit above, but somewhat siltier and wet, loose, no odor.
15	20	5	1.12-1.25/	0-2.5' Silt with Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish red
			2910-8430	(5 YR 4/6), silt is predominately smooth, predominately silt, trace very fine sand,
				clay layers varved up to 1", soft, plastic, cohesive, platy appearance on broken
				surfaces, saturated, slight odor.
				2.5-4.5' Silt: Brown (7.5 YR 4/4), some very fine sand in matrix, disturbed from
				drilling, black staining, vesicles, bubbles, sheen, saturated, odor.
				4.5-5.0' Silty Sand: Brown (7.5 YR 4/4), little gravel angular to subangular up to

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Sample/Core Log (continued)

Boring/Well: GMPZA-4

Prepared by: Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2", sand predominately fine, some medium to coarse, very poorly sorted, silty,
				saturated, odor.
20	25	0		No recovery.
25	30	5	0.71-2.30/	0-4.5' Sand: Dark brown (7.5 YR 3/2), some fine gravel, gravel up to 2" subangular
			3000-27000	to subround, sand medium to coarse, some fine, poorly sorted, loose, saturated,
				odor.
				4.5-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium to coarse, moderately
				sorted, loose, saturated, odor.
30	35	5	1.25-1.71/	0-2.0' Sand: As above, fine grain with some medium to coarse, grades into unit
			5000-27200	below.
				2.0-4.8' Sand: Brown (7.5 YR 4/2), trace fine gravel, medium grain, some coarse,
				little fine, very medium well sorted, loose, saturated, odor.
				4.8-5.0' Silt: Reddish brown (5 YR 4/4), very granular, loose, uniform, saturated,
				odor.
				EOB @35'.

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Sample/Core Log

Boring/Well GMPZA-5 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/29/05 Drilling Completed 4/29/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.53 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	6.2-13.6/	0-1.0' Fill: Crushed slate/road base.
			16-39	1.0-4.0' Silt: Dark yellowish brown (10 YR 3/6), silt with organic matter, roots/twigs,
				top soil, damp, loose.
				4.0-5.0' Silty Sand: Dark yellowish brown (10 YR 4/6), very fine to fine sand,
				little medium to coarse sand, little gravel angular to subangular, predominately
				fine gravel, but up to 2-1/2", poorly sorted, loose, dry to slightly damp, no odor.
5	10	5	2.7-11.3/	0-1.0' As above, silty sand.
			29-49	1.0-2.5' Sand: Dark yellowish brown (10 YR 4/6), fine sand, little medium to coarse
				sand, some gravel - mostly fine up to 1-1/2" angular to subrounded, loose, no odor,
				trace silt, damp, poorly sorted.
				2.5-3.0' Sand: Brown (7.5 YR 5/4), very fine to fine sand, well sorted, damp, trace
				fine gravel, loose.
				3.0-4.0' Silty Sand: Strong brown (7.5 YR 4/6), very fine to fine sand, little medium
				to coarse, little fine gravel up to 1-1/2" diameter angular to subrounded, loose,
				damp, no odor, poorly sorted.
				4.0-5.0' Silt: Light brown (7.5 YR 6/3), little sand fine to coarse, dry (powdery),
				trace fine gravel subangular to subrounded, gravel up to 1/2", loose.
10	15	1	2.7-2.9/	0-0.25' Silty Sand: As above, in 8.0-9.0, strong brown (7.5 YR 5/8).
			58-82	0.25-1.0' Silt: Strong brown (7.5 YR 4/6), trace clay varved layers, slightly cohesive
				to crumbly, trace gravel, subrounded, trace coarse sand, no odor, damp.
15	20	3.5	1-1.21/	0-3.0' Silt: Grainy, coarse silt, slight trace fine to coarse sand, slight odor, wet,
			1205-3854	loose to slight cohesion, trace black staining.
				3.0-3.5' Sand: Fine sand, trace medium to coarse sand, saturated, slight odor,
				moderately well sorted, loose.
20	22	5	1.9-2.8/	0-1.5' Silty Sand/Gravel: Reddish brown (5 YR 4/3), fine to coarse sand,
			14900-28700	predominately fine, gravel predominantly fine, ranges up to 2-1/2" angular to
				subrounded, poorly sorted, loose, saturated.

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Sample/Core Log (continued)

Boring/Well GMPZA-5

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				1.5-3.5' Sand: Color as above, fine sand, predominately fine, some medium to
				coarse, trace very fine, poorly sorted, trace gravel, subangular to subrounded up
				to 2" diameter, loose, saturated, odor.
				3.5-4" Sand: Dark brown (7.5 YR 3/3), fine to coarse sand, trace fine gravel
				subangular to subrounded, poorly sorted, saturated, loose, odor, saturated.
25	30	5	1.4-3.7/	0-2.0' Sand: Dark brown (7.5 YR 3/3), little silt, fine to medium sand, predominately
			5624-20100	fine, some medium to coarse sand, poorly sorted, trace fine gravel, up to 1/2",
				angular to subround, saturated, loose, odor.
				2.0-3.0' Sand: Reddish brown (5 YR 5/4), trace silt, slight trace fine gravel, fine
				sand, little medium to coarse sand, saturated, loose, odor, moderately sorted.
				3.0-5.0' Sand: Fine sand, some medium to coarse sand, little silt, some gravel, mostly
				1/2"-1-1/2", angular to subrounded, saturated, odor, loose, poorly sorted.
30	35	5		0-3.0' Sand: Brown (7.5 YR 4/3), sand fine to medium, trace coarse sand, trace
				gravel, mostly fine, up to 2-1/2", most under 1/2", subangular to subrounded,
				saturated, loose, odor, poorly sorted.
				3.0-5.0' Silt: Reddish brown (5 YR 4/4), granular silt, sharp contact at 2.5', uniform,
				saturated, loose, strong odor.
				EOB @ 35'.

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Sample/Core Log

Boring/Well GMPZA-6 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/29/05 Drilling Completed 4/29/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.5 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2	8.7-26.5/	0-1.5' Silt: Dark yellowish brown (10 YR 3/4), silt with organic matter, roots/twigs,
			154-632	top soil, damp, loose.
				1.5-2.0' Silty Sand: Brown (7.5 YR 4/3), sand very fine to fine, trace medium to
				coarse, little fine gravel up to 1/2" diameter angular to subrounded, loose, damp,
				poorly sorted.
5	10	5	7.5-49/	0-1.0' As above, silty sand.
			437-2731	1.0-3.5' Sand: Dark yellowish brown (10 YR 4/4), some gravel up to 2" diameter
				subangular to subrounded, trace silt, fine sand, trace medium to coarse sand, loose,
				damp, no odor, poorly sorted.
				3.5-4.5' Sand: Reddish brown (5 YR 4/4), very fine to fine sand, trace medium to
				coarse, trace fine gravel up to 1/2" subangular to subrounded, some silt.
				4.5-5.0' Silt/Clay: Multicolored, cemented silt/clay/gravel matrix, solid, firm, crumbly,
				gravel fine, glacial till-probable, dry.
10	15	5	9-52/	0-5.0' Silt with Clay: Interbeds, silt brown (7.5 YR 5/4), clay yellowish red (5 YR 4/6),
			91-2324	silt and clay interbeds varved to 1" thickness, silt is fine/smooth, trace very fine sand
				interbedding, black staining, clay appears platy on broken surfaces, soft, plastic,
				cohesive, silt slightly cohesive to loose, wet.
15	20	3	75.-11.9/	0-1.0' As above, silt with clay interbeds.
			4200-26300	1.0-3.0' Silt: Brown (7.5 YR 5/3), silt with very fine sand interbedding, sticky,
				saturated, trace clay beds.
20	25	5	6.9-9.6/	0-0.5' Sand: Brown (7.5 YR 4/3), fine sand, slight trace medium to coarse sand,
			9355-16200	well sorted, saturated, loose, odor.
				0.5-0.8' Silty Sand/Gravel: Yellowish red (5 YR 4/6), fine sand, trace medium to
				coarse sand, some gravel, mostly fine up to 2" diameter subangular to subrounded,
				loose, saturated, odor, poorly sorted.
				0.8-2.0' Sand: Brown (7.5 YR 5/4), fine sand, little medium to coarse sand, trace
				fine gravel, poorly sorted, grades into lower unit, saturated, loose, odor.

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Sample/Core Log (continued)

Boring/Well GMPZA-6

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.0-5.0' Sand: Brown (7.5 YR 4/3), fine to coarse sand, predominately medium,
				little gravel subangular to subrounded up to 2", saturated, loose, poorly sorted,
				odor.
25	30	5	5.8-10.6/	0-4.5' Sand: As above, slight fining with depth, more gravel at very bottom up to
			16200-68000	2-1/2".
				4.5-5.0' Silt: Reddish brown (5 YR 5/4), uniform, saturated to wet, black staining,
				strong odor, granular/coarse, loose.
30	35	5	8.0-16.0/	0-5.0' Silt: As above.
			68000-578000	
				EOB @ 35'

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Sample/Core Log

Boring/Well GMPZA-7 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/29/05 Drilling Completed 4/29/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.17 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4	3.55-9.53/	0-1.0' Silt: Dark brown (10 YR 3/3), topsoil, rootlets/organics, loose, damp,
			15-46	no odor.
				1.0-4.0' Sand and Silt: Dark yellowish brown (10 YR 4/4), little fine gravel subangular
				to subround, up to 1", very fine to fine grained predominately, little medium to
				coarse, loose, poorly sorted, very silty, damp, no odor.
5	10	5	9.27-40.46/	0-1.0' Sand and Silt: As above, brown (10 YR 4/3), with addition of cobbles up to
			84-239	6" that are angular/fractured, damp, no odor.
				1.0-4.0' Silty Sand: Dark yellowish brown (10 YR 4/4), little gravel subangular to
				subround up to 3", very silty, sand all sizes, predominately very fine to fine,
				poorly sorted, loose, damp, no odor,
				4.0-5.0' Silt and Clay: Strong brown (7.5 YR 4/4), some gravel subangular to
				rounded up to 2" suspended in matrix, trace sand all sizes, hard, brittle/crumbly,
				looks like till, damp, no odor.
10	15	5	2.09-7.91/	0-5.0' Silty Sand: As above in 6.0-9.0'.
			33-54	
15	20	5	3.20-9.67/	0-3.0' Silt with Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish red
			83-638	(5 YR 4/6), clay layers varved up to 1", soft, plastic, cohesive, silt is fine/smooth,
				trace very fine to fine sand, probably layers, sample liquifed/distored from
				drilling, saturated, slight odor.
				3.0-5.0' Silt: Brown (7.5 YR 4/3), little clay in matrix, little very fine sand,
				probably interbedded, distorted/liquefied as above, sticky, saturated, black staining,
				slight odor.
20	25	5	2.51-5.93/	0-2.5' Sand: Brown (7.5 YR 5/3), fine grain, trace medium to coarse, well sorted,
			10900-39000	uniform, loose, saturated, odor.
				2.5-4.0' Sand: Color as above, some gravel up to 3"subangular to subround,
				predominately very fine to fine sand, some medium to coarse, poorly sorted, loose,
				saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-7

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.0-5.0' Sand: Brown (7.5 YR 4/4), trace fine gravel, fine to medium grain, little
				coarse, poorly sorted, loose, saturated, odor.
25	30	5	1.97-3.67/	0-2.0' Sand: Brown (7.5 YR 5/4), fine grain, little very fine, little medium to coarse,
			3640-15700	trace fine gravel, somewhat sorted, loose, saturated, odor.
				2.0-5.0' Sand: Dark brown (7.5 YR 3/3), little gravel predominately fine up to 1"
				subangular to subround, medium to coarse sand, little fine, somewhat sorted,
				loose, saturated, odor.
30	35	5	3.31-7.07/	0-5.0' Silt: Reddish brown (5 YR 5/4), very coarse/granular, uniform, vesicles,
			16200-82000	black staining, saturated, loose, strong odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-8 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 4/30/05 Drilling Completed 4/30/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4	1-2/	0-1.5' Silt: Dark yellowish brown (7.5 YR 3/4), topsoil, roots, organics, trace very
			12-29	fine sand, uniform, damp to moist, humic odor.
				1.5-4.0' Sandy Silt: Brown (7.5 YR 5/3), little fine gravel, sand is predominately
				very fine, little fine, poorly sorted, predominately silt, damp and loose down to
				2.0, then powdery and dry, no odor.
5	10	4	1-3/	0-2.2' Sandy Silt: As above, dry, powdery, less sand content.
			12-16	2.2-4.0' Sand: Brown (7.5 YR 5/4), very fine grain, trace fine, well sorted, uniform,
				loose, dry, powdery, no odor.
10	15	5	1-10/	0-5.0' Silty Sand: Yellowish brown (10 YR 5/4), little gravel predominately fine up
			22-305	to 1.5" subangular to subround, sand predominately very fine, some fine, trace
				medium to coarse, poorly sorted, very silty, mostly dry and powdery, damp in
				places, loose, no odor.
15	20	5	1-3/	0-3.0' Silt: Brown (7.5 YR 5/4), trace very fine sand, trace clay, interbedding, clay
			2140-50600	is grayish brown, silt very coarse, black staining, vesicles, loose, saturated, odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), fine grain, trace medium to coarse, well
				sorted, clean, uniform, loose, saturated, odor.
20	25	5	1-5/	0-5.0' Sand: As above.
			25910-34600	
25	30	5	3-4/	0-1.5' Sand: As above.
			10400-42400	1.5-5.0' Sand: Dark brown (7.5 YR 3/2), little gravel subangular to subround up to
				2", medium to coarse grain, some fine, poorly sorted, clean, loose, saturated, odor.
30	35	5	2-8/	0-5.0' Sand: Brown (7.5 YR 5/4), near silt size, very fine grain, very well sorted, trace
			6986-51100	black staining, loose, uniform, saturated, strong odor.
				EOB 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-9 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/30/05 Drilling Completed 4/30/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.1 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	3.5	23-46/	0-0.8' Fill: Slate.
			12-20	0.8-2.3' Silt: Dark yellowish brown (10 YR 4/4), trace very fine sand, little rootlets/
				organics, topsoil, loose, damp, organic odor, grades into unit below.
				2.3-3.5' Silt and Clay: Brown (7.5 YR 4/4), overall, but multi-colored, little gravel,
				angular to subround up to 2", little sand all sizes, predominately very fine to fine,
				poorly sorted, cemented, hard, brittle, hardpan, glacial till appearance, dry, no
				odor.
5	10	5	18-53/	0-3.0' Sand: Yellowish brown (10 YR 4/6), silty in places, little gravel, gravel is
			29-44	predominately fine, ranges up to approximately 1.5" subangular to subround,
				sand is predominately very fine to fine, trace medium to coarse, poorly sorted,
				loose, damp, no odor.
				3.0-5.0' Silt: Brown (7.5 YR 5/1), trace clay interbedding, trace very fine sand,
				trace coarse sand in matrix, clay is yellowish red (5 YR 4/6), soft, plastic,
				cohesive, silt is very fine/smooth, somewhat cohesive, saturated, trace black
				staining, no odor.
10	15	5	19-78/	0-5.0' Silt with Clay Interbeds: Silt is brown (7.5 YR 5/3), clay yellowish red (5 YR
			10-20	4/6), predominately silt, many clay layers ranging from varves up to 1.5" in
				thickness, clay is plastic, cohesive, somewhat stiff, little very fine sand interbedding
				3.0-5.0', layers not discernable, silt is fine to coarse throughout, overall saturated,
				somewhat cohesive, no odor.
15	20	5	10-51/	0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, well sorted, uniform, clean, loose,
			6230-22200	saturated, odor.
20	25	5	4-8/	0-0.5' Sand and Gravel: Brown (7.5 YR 5/4), trace silt, sand predominately fine to
			5116-17500	medium, some coarse, poorly sorted, gravel up to 2" subangular to subround,
				loose, saturated, odor.
				0.5-2.5' Sand: Brown (7.5 YR 4/4), trace fine gravel, fine to coarse, predominately
				medium, somewhat sorted, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-9 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.5-5.0' Sand: Brown (7.5 YR 5/2), trace fine gravel, predominately fine grain,
				trace medium to coarse, well sorted, loose, saturated, odor.
25	30	5	NA	0-4.0' Sand: Brown (7.5 YR 5/4), trace fine gravel, predominately medium grain,
				some fine, some coarse, poorly sorted, loose, saturated, odor.
				4.0-5.0' Sand/Silt: Reddish brown (5 YR 5/4), very fine grain, borderline silt/very
				fine sand, granular, trace black staining, loose, saturated, uniform, strong odor.
30	35	5	NA	0-5.0' Sand/Silt: As above.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-10 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/30/05 Drilling Completed 4/30/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	2-6/	0-1.0' Fill: Yellowish brown (10 YR 5/6), sand and gravel, slate pieces, very fine to
			2628-19100	fine sand, gravel up to 2" angular to subangular, loose, damp, no odor.
				1.0-3.0' Silt: Dark yellowish brown (10 YR 3/4), little clay in matrix, trace organics/
				rootlets, trace fine gravel subangular to rounded, topsoil, vesicles, somewhat
				cohesive, damp, no odor.
				3.0-5.0' Sand: Brown (7.5 YR 5/3), little gravel predominately fine, up to 3"
				subangular to rounded, sand very fine to fine grain, little medium to coarse,
				somewhat sorted, loose, dry, no odor.
5	10	5	2-16/	0-2.8' Sand: As above.
			8515-78000	2.8-3.1' Sand and Gravel: Dark yellowish brown (10 YR 3/6), trace silt, sand all
				sizes, predominately fine, very poorly sorted, gravel subangular to subround up to
				3", loose, moist, no odor.
				3.1-3.8' Sand: Light brown (7.5 YR 6/4), very fine grain, trace fine to medium,
				well sorted, looks arkosic, loose, damp, no odor.
				3.8-5.0' Silty Sand and Gravel: Strong brown (7.5 YR 4/6), very silty, sand
				predominately very fine to fine, little medium to coarse, poorly sorted, loose,
				damp, no odor.
15	20	5	3-8/	0-3.0' Silt: Brown (7.5 YR 5/4), little clay in matrix and also trace clay layering, clay
			381-7606	as above, some very fine sand, probably interbedded, but not discernable, sample
				highly disturbed from drilling, black staining, predominately silt, sticky, saturated,
				odor.
				3.0-4.0' Sand: Brown (7.5 YR 5/4), little silt, very fine grain, trace fine, well sorted,
				black staining, loose, saturated, odor.
				4.0-5.0' Sand: Dark gray (7.5 YR 3/1), fine grain, trace medium to coarse, well
				sorted, stained, uniform, loose, saturated, odor.
20	25	3	3-8/	0-3.0' Sand: As above, but color lightens to brown (7.5 YR 5/3).
			1736-32800	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-10

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
25	30	5	2-9/	0-5.0' Sand: As above.
			3511-10800	
30	35	5	4-12/	0-5.0' Sand: As above.
			18600-24900	
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-11 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/30/05 Drilling Completed 4/30/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.42 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	3.8	2-52/	0-3.8' Silt: Dark yellowish brown (10 YR 3/4), trace clay in matrix, trace very fine
			10-125	sand, rootlets, organic material, topsoil, loose, damp, no odor, 6" stump stuck
				in bit.
5	10	5	9-43/	0-2.2' Silty Sand: Yellowish brown (10 YR 5/6), little gravel, predominately fine
			2247-12600	gravel, up to 2.5" subangular to rounded, sand predominately very fine to fine,
				little medium to coarse, poorly sorted, very silty, loose, damp, no odor.
				2.2-4.0' Sand: Light brown (7.5 YR 6/4), trace fine gravel, fine grain, some very
				fine, well sorted, loose, damp, no odor.
				4.0-5.0' Silty Sand: Brown (7.5 YR 4/4), trace clay, little fine gravel, very silty,
				sand, very fine to fine, little medium to coarse, poorly sorted, somewhat cohesive,
				saturated, no odor.
10	15	5.0	4-13/	0-5.0' Silt with few Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish
			579-3372	red (5 YR 4/6), silt is fine/smooth, somewhat cohesive, contains trace clay in
				matrix, clay is plastic, cohesive, soft, occurs in layers varved up to approximately 1"
				thick, slightly more clay content below 3.0, trace black staining, saturated, no
				odor.
15	20	5	6-11/	0-5.0' Sand: Brown (7.5 YR 5/4), trace fine gravel subangular to subround <1",
			6910-21400	predominately fine to medium grain, trace coarse, slightly coarser in places,
				moderately sorted, loose, saturated, odor.
20	25	2	0-41/	0-2.0' Sand: As above.
			2267-18600	
25	30	5	3-17/	0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium, trace fine gravel,
			3550-6667	well sorted, uniform, loose, saturated, odor.
30	35	5	4-13/	0-2.0' Sand: As above.
			4336-31100	2.0-3.5' Sand: Color as above, little gravel subround to rounded up to 3",
				predominately fine grain, some very fine, somewhat coarse, poorly sorted, loose,
				saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-11 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.5-5.0' Sand: Color as above, very fine to fine grain, very well sorted, clean,
				uniform, saturated, odor.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-12 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/1/05 Drilling Completed 5/1/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.33 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	3.0	2-3/	0-1.0' Fill: Slate pieces.
			0-7	1.0-2.0' Silt: Dark yellowish brown (10 YR 3/4), trace very fine sand, abundant
				roots, organics, trace fine gravel subround, topsoil, smooth/fine, loose, moist,
				organic odor.
				2.0-3.0' Sandy Silt: Yellowish brown (10 YR 5/4), trace clay, some gravel
				predominately fine, up to 3" angular to subangular, sand predominately very
				fine, little fine to coarse, poorly sorted, loose, dry, powdery, no odor.
5	10	5	4-5/	0-1.5' Silty Sand: Dark yellowish brown (10 YR 4/6), little gravel subangular to
			4-52	subround up to approximately 1", sand predominately very fine to fine, little
				medium to coarse, poorly sorted, loose, damp, no odor.
				1.5-3.5' Silty Sand and Gravel: Dark yellowish brown (10 YR 4/4), gravel angular
				to subround up to 4", sand all sizes, predominately fine, very poorly sorted, very
				silty, loose, wet, no odor, grades into unit below.
				3.5-4.5' Sand: Brown (7.5 YR 5/4), fine grain, trace silt, trace very fine, trace
				medium to coarse, moderately sorted, loose, saturated, no odor.
				4.5-5.0' Sand: Strong brown (7.5 YR 4/6), little silt, very fine to fine grain, trace
				medium to coarse, moderately sorted, loose, saturated, no odor.
10	15	5	0-2/	0-1.0' Silty Sand and Gravel: Dark yellowish brown (10 YR 4/4), possibly slough,
			4-110	very silty, some clay in matrix, sand fine to coarse, gravel up to 3" subangular to
				subround, very poorly sorted, loose, saturated, no odor.
				1.0-5.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish red (5 YR 4/6),
				little sand interbedding, sand is very fine to medium grain, poorly sorted, few layers
				up to approximately 1/2" thick, predominately silt, many clay layers varved up to
				approximately 1.5", clay is plastic, cohesive, platy appearance when broken, trace
				black staining, trace coarse sand in matrix, overall saturated, slight odor.
15	20	5	0-1/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace medium to coarse, well sorted,
			2720-12700	clean, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-12

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	0		No recovery.
25	30	5	0-0.5/	0-3.0' Sand: Fine grain, as above.
			1237-11200	
30	35	5	3-6/	0-0.7' Sand: As above.
			6671-40200	0.7-1.5' Sand: Color as above, trace fine gravel subangular to subround, fine to
				medium grain, little coarse, poorly sorted, loose, saturated, strong odor.
				1.5-5.0' Sand: As above in 0-0.7'.
				EOB @ 35'

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Sample/Core Log

Boring/Well GMPZA-13 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/9/05 Drilling Completed 5/9/05

Total Depth Drilled 45 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1046.79 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.4	3.81-3353/	0-0.5' Fill: Slate.
			20.4-25.8	0.5-2.0' Silt: Dark reddish brown (5 YR 3/4), trace very fine sand, some rootlets
				and organic material, topsoil, loose, moist, organic, odor.
				2.0-2.4' Sandy Silt: Dark yellowish brown (10 YR 4/4), predominately silt, some
				sand very fine to very coarse, predominately very fine, poorly sorted, some gravel
				subangular to subround up to 3", loose, dry, powdery, no odor.
5	10	5	3.87-42.24/	0-3.0' Sandy Silt: As above.
			35.3-47.4	
10	15	5	2.17-6.02/	0-0.5' Silty Sand and Gravel: Brown (7.5 YR 5/6), some gravel subangular to
			197-1430	subround up to 3", some clay in matrix, very silty, sand very fine to very coarse,
				very poorly sorted, loose, slightly cohesive, saturated, no odor.
				0.5-3.0' Silt: Brown (7.5 YR 4/4), trace to little clay interbedding, clay is yellowish
				red (5 YR 4/6), silt is smooth/fine, clay layers <1/4" thick, plastic, cohesive,
				appears platy on broken surfaces, silt is somewhat cohesive, overall saturated,
				trace black staining, no odor.
				3.0-5.0' Silt with Clay Interbeds: Description as above, but silt color changes to
				brown (7.5 YR 4/3) and there is much more clay content with many clay layers up
				to approximately 1" thick, also trace sand interbedding, very fine to coarse <1 mm
				thick at approximately 4.7, overall saturated, no odor.
15	20	5	0.87-1.63/	0-3.5' Silt with Clay: Interbeds as above, clay layers approximately 1/2" thick or
			1170-6100	less.
				3.5-5.0' Silt: Brown (7.5 YR 4/4), trace clay in matrix, grainy to smooth, slightly
				cohesive, saturated, no odor.
20	25	4	0.97-1.36/	0-4.0' Sand: Brown (7.5 YR 5/3), fine grain, trace medium to coarse in places, well
			1310-5030	sorted, loose, saturated, slight odor.
25	30	5	0.34-1.36/	0-5.0' Sand: Color as above, trace fine gravel, predominately fine grain, trace to
			7600-28300	little medium to coarse in places, moderately to well sorted, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-13

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
30	35	5	1.20-1.40/	0-4.0' Sand: As above.
			12400-98100	4.0-5.0' Sand: Brown (7.5 YR 3/3), trace fine gravel, predominately fine grain,
				some medium to coarse, poorly sorted, loose, saturated, odor.
35	40	5	0-0.79/	0-1.0' Sand: As above.
			29300-97800	1.0-1.2' Sand: Dark brown (7.5 YR 3/3), little fine gravel, fine to very coarse,
				predominately medium to coarse, very poorly sorted lens, loose, saturated, odor.
				1.2-2.5' Sand: Brown (7.5 YR 4/3), some gravel subangular to subround up to 2",
				sand very fine to very coarse, predominately fine, very poorly sorted, loose,
				saturated, strong odor.
				2.5-5.0' Sand: Brown (7.5 YR 5/4), fine grain, very well sorted, uniform, loose,
				saturated, strong odor.
40	45	2	0.08-0.32/	0-2.0' Sand: As above.
			13700-370000	
				EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-14 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/9/05 Drilling Completed 5/9/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel -

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1044.88 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.5	1.02-1.20/	0-0.5' Fill.
			8.63-11.8	0.5-2.0' Silt/Topsoil: Dark yellowish brown (10 YR 3/4), silt with organic matter,
				roots/twigs, loose, damp, no odor, bottom 0.3' no organic matter.
				2.0-2.5' Silty Sand: Yellowish brown (10 YR 5/6), very fine sand, some silt, little fine
				to medium sand, trace coarse sand, loose, dry to damp, little gravel up to 1.5",
				angular to subround, most under 1" diameter, no odor, slightly cemented in
				places, very poorly sorted.
5	10	4	0.61-2.96/	0-4.0' Silt: With Clay interbeds, silt strong brown (7.5 YR 5/6), clay yellowish red
			6.3-50.4	(5 YR 4/6), silt is somewhat cohesive, fine/smooth up to 5" thick, clay very soft,
				plastic, cohesive, 1/4" to 1" thick, platy on broken surfaces, at 2.5' there is a 0.3'
				sand seam with some clay/silt, very fine to fine sand, trace medium to coase, trace
				fine gravel up to 1/2" subround, trace black staining, saturated.
10	15	5	1.9-5.8/	0-5.0' Silt with Clay Interbedding: Silt, brown (7.5 YR 4/4), slight color change
			49-5254	2.5-5, clay thickness up to 1/2", saturated.
15	20	5	0.93-1.4/	0-1.0' Silt with Clay: Interbeds as above, bottom 0.3' slightly gradational, wet.
			5661-25400	1.0-5.0' Sand: Brown (7.5 YR 5/4), trace fine gravel up to 1/2" subangular to
				subround, fine sand, little medium to coarse, poorly sorted, clean, loose, wet, odor,
				subround.
20	25	5	1.8-5.0/	0-1.0' Sand: (7.5 YR 5/4), fine sand, trace medium to coarse, clean, moderately
			14100-54400	well sorted, slight trace fine gravel under 1/4", subround loose, saturated, odor.
				1.0-5.0' Sand: Brown (7.5 YR 5/3), first 1' grades, very fine to fine sand, well
				sorted, clean, slight trace medium sand, loose, saturated, odor.
25	30	5	1.07-4.07/	0-2.0' Sand: Brown (7.5 YR 5/4), very fine to fine sand, trace medium to coarse
			4553-101200	sand, moderate well sorted, slight trace subangular to subround gravel <1/4"
				diameter, loose, saturated, odor.
				2.0-3.0' Sand: Color as above, fine sand, little medium to coarse sand, trace fine

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-14 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				gravel up to 1" diameter, gravel angular to subround, poorly sorted, loose,
				saturated, odor.
				3.0-5.0' Sand: Color as above, very fine to fine sand, trace medium to coarse
				sand, trace fine gravel, subround <1/4" diameter, moderately sorted, loose,
				saturated, odor.
30	35	5	0.9-3.87/	0-2.5' Sand: Fine sand, trace very fine sand, little medium to coarse sand, trace
			14000-210400	gravel up to 1/2" diameter, subangular to subround, poorly sorted, loose,
				saturated, odor.
				2.5-3.5' Sand: Color as above, fine to medium sand, trace coarse sand, trace
				fine gravel up to 1/2" diameter, subround to subangular, very poorly sorted, loose,
				saturated, strong odor.
				3.5-5.0' Sand: Color as above, very fine to fine sand, trace medium to coarse
				sand, trace fine gravel up to 1/4" subangular to subround, loose, saturated,
				strong odor, moderately sorted.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-15 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/9/05 Drilling Completed 5/10/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1044.43 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.0	26.16-27.04/	0-0.8' Fill: Slate.
			97-109	0.8-2.0' Silt: Dark brown (7.5 YR 3/4), trace very fine sand, organic material,
				rootlets, topsoil, loose, moist, organic, odor.
5	10	5	1.44-7.35/	0-0.4' Silt: Brown (7.5 YR 4/4), little sand very fine, trace medium to coarse, little
			15.3-454	gravel subangular to subround up to approximately 2" poorly sorted, loose, damp,
				no odor.
				0.4-1.3' Sand: Color as above, silty, some silt, little gravel subangular to subround
				up to 1.5", predominately fine grain, little medium to coarse, poorly sorted, loose,
				saturated, no odor.
				1.3-5.0' Silt with few Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish
				red (5 YR 4/6), trace clay in silt matrix, silt is predominately smooth/fine, somewhat,
				cohesive, few clay layers <1" thick, clay is plastic, cohesive, soft, platy appearance,
				overall saturated, no odor.
10	15	5	0.80-4.68/	0-5.0' Silt with Clay Interbeds: Silt and clay descriptions as above, but much more
			43.6-1840	clay content, many clay layers up to approximately 1.5" thick, minor color
				variations and laminations within silt due to minor grain size variations, trace black
				staining, trace very fine to fine sand layers below 4.0, <1/4" thick, well sorted,
				overall saturated, no odor.
15	20	5	0.14-1.00/	0-4.7' Sand: Brown (7.5 YR 5/4), trace gravel subangular to subround up to
			1035-18500	approximately 2", fine to medium grain, trace coarse, moderately sorted, loose,
				saturated, slight odor.
				4.7-5.0' Sand: Brown (7.5 YR 5/3), fine grain, well sorted, clean, uniform,
				saturated, odor.
20	25	5	0.32-1.79/	0-3.5' Sand: As above, fine grain.
			6720-50100	3.5-4.7' Sand: Brown (7.5 YR 5/3), predominately fine grain, little medium to
				coarse, moderately sorted, loose, saturated, odor.
				4.7-5.0' Sand: As above in 0-3.5.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-15

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
25	30	5	0.36-1.91/	0-2.5' Sand: Brown (7.5 YR 4/4), predominately fine grain, trace medium to
			7225-62500	coarse, trace fine gravel, well sorted, loose, saturated, odor.
				2.5-5.0' Sand: Brown (7.5 YR 4/3), fine to medium grain, some coarse, moderately
				sorted, loose, saturated, odor.
30	35	3	1.20-2.75/	0-3.0' Sand: Brown (7.5 YR 4/4), fine grain, well sorted, one seam of fine to
			1036-62100	coarse poorly sorted sand approximately 2" thick at 2.5, otherwise uniform, loose,
				saturated, odor.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-16 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/10/05 Drilling Completed 5/10/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1043.18 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Helper Royce/Scott

Prepared By Jill Flater

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.5	31.3-86.2/	0-1.0' Fill: Rock fill, slate.
			175-483	1.0-2.5' Silt: Dark yellowish brown (10 YR 3/6), silt/topsoil, trace roots, loose to
				somewhat cohesive, damp, no odor.
5	10	5	98-267/	0-0.5' Silty Clay: Dark greenish gray (2 Gley 10G 4/1), clay with silt, very soft, trace
			348-2553	fine sand, cohesive, plastic.
				0.5-2.5' Sand: Greenish gray (1 Gley 10 Y 5/1), fine sand, trace medium to coarse,
				trace silt, trace gravel up to 2.5" subangular to subround, sticky but loose, may be
				from drilling, trace clay, saturated, no odor, poorly sorted.
				2.5-3.5' Silt/Clay Interbeds: Silt brown (7.5 YR 5/2), clay yellowish red (5 YR 4/6), silt
				fine/smooth, 1-3" thick, somewhat cohesive, clay 1-2" thick, soft, platey on broken
				surfaces, cohesive, plastic.
				3.5-5.0' Silt/Clay Interbeds: As above, color change silt brown (7.5 YR 5/3), clay
				reddish brown (5 YR 4/3), silt/clay 50/50, silt 1-3" thick, clay 1/2"-4" thick.
10	15	5	20.74-22.3/	0-1.0' Silt/Clay Interbeds: As above.
			3488-8062	1.0-3.0' Silt: With clay interbeds, fine/smooth silt, loose to somewhat cohesive,
				laminations of variable color in places, varved to 1/2" clay layers, very softs plastic,
				cohesive, platey on broken surfaces, trace black staining, trace fine sand seams in
				bottom 0.4', well sorted, wet, no odor.
				3.5-4.5' Silt: Reddish brown (5 YR 4/3), interbedded fine and coarse silt, black
				staining, variable colored laminations in smooth/fine portions, wet, loose to
				sticky, no odor.
				4.5-5.0' Sand: Brown (7.5 YR 5/4), trace silt, fine sand, little medium to coarse sand,
				trace gravel, poorly sorted, loose, wet, slight odor.
15	20	5	6.44-7.2/	0-5.0' Sand: Brown (7.5 YR 4/4), fine sand, trace medium to coarse sand, trace
			4199-23700	fine gravel most under 1/2" but up to 1", subangular to subround, poorly sorted,
				clean, loose, odor, wet.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-16

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	6.0-8.3/	0-1.8' Sand: As above.
			16600-59400	1.8-4.0' Sand: Fine sand, trace medium to coarse sand, well sorted, loose, wet,
				odor.
				4.0-5.0' Sand: Color as above, fine sand, some medium to coarse sand, trace fine
				gravel up to 1/4" subround, poorly sorted, wet, loose, odor.
25	30	3	7.6-8.4/	0-0.5' Sand: As above.
			3630-23500	0.5-2.0' Sand: As above 1.8-4 of 20-25.
				2.0-3.0' Sand: Color as above, fine sand, trace medium to coarse sand, slight
				trace fine gravel, subangular to subround <1/4" diameter, loose, moderately
				well sorted, strong odor, saturated.
30	35	NR		No recovery.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-17 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/10/05 Drilling Completed 5/10/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1041.49 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	0.01-2.48/	0-0.5' Fill: Slate.
			80.3-2970	0.5-2.0' Silt: Dark brown (7.5 YR 3/3), organic material, roots, smooth, trace clay
				loose, moist, topsoil, organic odor.
				2.0-4.0' Clayey Silt: Dark yellowish brown (10 YR 3/4), silt, as above, with some
				clay in matrix, somewhat cohesive, saturated, (drilling fluid), no odor.
				4.0-4.4' Silty Clay: Greenish black (1 Gley 10 GY 2.5/1) trace very fine to fine
				sand, soft, pasty texture, sticky, cohesive, no odor.
				4.4-5.0' Silty Sand: Olive brown (2.5 Y 4/3), some clay in matrix, predominately sand
				very fine to fine, trace medium to coarse, somewhat cohesive, saturated, no odor.
5	10	5	-0.36-0.54/	0-2.5' Sand and Gravel: Very dark gray (10 YR 3/1), fine to coarse sand,
			33900-102900	predominately coarse, poorly sorted, gravel is predominately fine pea gravel up to
				5" subround to rounded, loose, saturated, no odor.
				2.5-5.0' Silt, Sand and Gravel: Reddish brown (5 YR 4/4), unit is comprised of
				units above and below, gradational area between two units, sand fine to coarse,
				predominately coarse, gravel subangular to subround up to approximately 3", some
				clay, silt/clay matrix, sticky, saturated, no odor.
10	15	5	0.12-0.80/	0-3.0' Clayey Silt: Brown (7.5 YR 4/4), completely disturbed sample, little gravel
			53100-76200	subangular to subround up to approximately 2", was interbedded silt and clay,
				but sample disturbed by overlying layer, sticky, cohesive, saturated, no odor.
				3.0-5.0' Sand: Brown (7.5 YR 5/4), trace fine gravel, fine to medium grain, trace
				coarse, somewhat sorted, loose, saturated, slight odor.
15	20	5	-0.38-0.21/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace medium, well sorted, loose,
			2461-193200	saturated, odor.
20	25	3	6.36-0.54/	0-1.2' Sand: Brown (7.5 YR 5/4), predominately fine grain, little medium to coarse,
			8030-63200	poorly sorted, loose, saturated, odor.
				1.2-2.0' Sand: Brown (7.5 YR 4/4), trace fine gravel, predominately fine grain,
				some medium to coarse, very poorly sorted, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-17 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.0-3.0' Sand: As above in 0-1.2'.
25	30	5	6.33-0.78/	0-5.0' Sand: Brown (7.5 YR 4/4), trace fine gravel in places, fine grain, trace medium
			14700-24600	to coarse, well sorted, loose, saturated, odor.
30	35	5	0.55-1.06/	0-2.0' Sand: As above.
			24600-132200	2.0-4.0' Sand: Brown (7.5 YR 5/4), fine grain, trace fine gravel, little medium to
				coarse in places, loose, moderately sorted, saturated, odor.
				4.0-5.0' Sand: As above in 0-2.0'.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-18 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/10/05 Drilling Completed 5/10/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1040.53 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	0-0.20/	0-1.0' Fill: Fill slate rocks, loose.
			125-11500	1.0-1.5' Sandy Silt: Brown (10 YR 4/3), some very fine sand, trace roots, loose,
				wet, trace gravel angular to subround, up to 1" diameter, no odor.
				1.5-2.5' Clay: Dark greenish gray (1 Gley 10Y 3/1), clay with some silt mixed in,
				cohesive, very soft, plastic, silt and clay interbedded in bottom 0.5', clay varved to
				1/4" thick, silt up to 1/2 thick, wet, no odor.
				2.5-3.8' Clay: Dark greenish gray (1 Gley 10 Y 3/1), clay with trace silt mixed in,
				uniform, very soft, saturated, plastic, very cohesive, no odor.
				3.8-4.6' Silty Sand: Dark gray (7.5 YR 4/1), very fine sand, trace fine to medium,
				little silt, saturated, loose, slight odor, poorly sorted.
				4.6-5.0' Sand: Very dark gray (7.5 YR 3/1), fine sand, little medium to coarse,
				some fine gravel up to 1", angular to subround, little silt, very poorly sorted,
				loose, saturated, odor.
5	10	5	0/	0-1.0' Sand: Very dark gray (7.5 YR 3/1), coarse to very coarse sand, some fine
			4778-7800	gravel, trace silt, very poorly sorted, trace fine to medium sand, gravel up to
				1" diameter, angular to subround, slight odor, loose, saturated.
				1.0-3.0' Sand/Gravel: Trace silt, medium to very coarse sand, trace fine sand, gravel
				up to 3" diameter, angular to subround, very poorly sorted, odor, loose, saturated,
				trace fine sand.
				3.0-4.5' Sand: Brown (7.5 YR 5/2), medium sand, little coarse to very coarse,
				some gravel up to 2" diameter angular to subround, very poorly sorted, loose,
				odor, saturated.
				4.5-5.0' Silt/Clay: Silt brown (7.5 YR 5/3), clay yellowish red (5 YR 4/6), silt/clay
				50/50, fine/smooth silt, layers up to 1" thick, clay very soft, platey on broken
				surfaces, cohesive, plastic when worked, layers up to 2" thick, wet, odor.
10	15	5	0-.12/	0-3.0' Silt with clay interbeds: (silt color as above), smooth/fine silt with clay
			2342-220000	interbeds, silt has clay within, laminations with variable colors in places, trace

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-18

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				black staining, trace clay layers varved to 1/4", plastic, very soft, cohesive,
				platy on broken surface, saturated, sticky, odor.
				3.0-3.3' Silt: Brown (7.5 YR 5/4), granular silt, uniform, black staining, odor,
				loose, saturated.
				3.3-5.0' Sand: Brown (7.5 YR 5/4), fine sand, trace medium to coarse, slight trace
				fine gravel, subround, <1/4", moderate clay to well sorted, loose, saturated, odor.
15	20	5	0/	0-2.5' Sand: Brown (7.5 YR 5/4), very fine to fine sand, trace medium to coarse
			14400-18100	sand, moderately well sorted, loose, wet, odor strong.
				2.5-3.5' Sand: Brown (7.5 YR 5/2), trace gravel up to 1" diameter, subround, fine
				sand, trace very fine sand, trace medium to coarse sand, poorly sorted, loose,
				saturated, strong odor.
				3.5-5.0' Sand: Brown (7.5 YR 5/4), fine sand, trace medium to coarse, moderately
				well sorted, loose, strong odor, saturated.
20	25	5	0/	0-2.0' Sand: Brown (7.5 YR 5/2), fine to medium sand, little coarse, poorly sorted,
			3685-8591	little fine gravel up to 1/4", subangular to subround, loose, wet, odor strong.
				2.0-4.0' Sand: Brown (7.5 YR 4/2), fine sand, trace medium to coarse, moderately
				well sorted, loose, saturated, strong odor.
				4.0-5.0' Sand: As above in 20.0 - 22.0.
25	30	5	0.04-.61/	0-0.5' Sand: As above.
			5521-10800	0.5-4.0' Sand: Color as above, first 0.3' grades into fine sand, well sorted, black
				staining, loose, saturated, strong odor.
				4.0-5.0' Sand: Color as above, fine sand, trace medium to coarse sand, trace
				gravel up to 1" diameter, subangular to subround, black staining constant
				throughout, saturated, loose, strong odor.
30	35	5	.02-.06/	0-5.0' Sand: Color as above, fine sand, trace very fine, trace medium to coarse,
			14100-17500	trace gravel up to 1/2" diameter, subangular to subround, poorly sorted loose
				saturated, strong odor.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-19 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/11/05 Drilling Completed 5/11/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1041.94 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	0.0		No recovery.
5	10	5	0.68-0.87/	0-2.5' Silt/Clay Interbeds: Silt is brown (7.5 YR 3/4), clay is yellowish red (5 YR 4/6),
			275-1035	fairly uniform interbedding with clay layers approximately 1" thick occurring
				every 3-4", clay is plastic, cohesive, medium stiff, appears platy on broken
				surfaces, silt is predominately smooth/fine with trace clay in matrix, overall
				saturated, no odor.
				2.5-5.0' Silt/Clay: Interbeds as above, but colors change, silt is brown (7.5 YR 4/3),
				clay is strong brown (7.5 YR 4/6), also less clay content and somewhat less
				uniform interbedding with clay layers approximately 1/4"-1" thick, saturated,
				no odor.
10	15	5	0.90-1.37/	0-1.8' Silt/Clay: Interbeds as above.
			878-2598	1.8-4.0' Silt: Brown (2.5 YR 4/4), trace to little clay interbedding undistinguished
				due to drilling, silt is very granular, loose to somewhat cohesive, little black
				staining, saturated, odor.
				4.0-5.0' Sand: Brown (7.5 YR 4/4), fine grain, trace coarse, well sorted, loose,
				saturated odor.
15	20	5	0.03-0.20/	0-2.5' Sand: Brown (7.5 YR 5/4), fine grain, very well sorted, loose, saturated, odor.
			10700-14500	2.5-3.1' Sand: Brown (7.5 YR 4/4), trace fine gravel, predominately fine grain,
				little medium to coarse, poorly sorted, loose, saturated, odor.
				3.1-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium to coarse, moderately
				sorted, loose, saturated, odor.
20	25	5	0.15-0.28/	0-1.3' Sand: Brown (7.5 YR 4/3), fine grain, trace medium to coarse, moderately
			2440-15300	sorted, black staining as above, loose, saturated, odor.
				1.3-5.0' Sand: Brown (7.5 YR 4/4), fine grain, well sorted, trace black staining,
				loose, saturated, odor.
25	30	5	0.08-0.36/	0-1.0' Sand: Brown (7.5 YR 4/4), little gravel subangular to round up to 1",
			3200-34100	predominately fine grain, little medium to coarse, somewhat sorted, loose,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-19 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				saturated, odor.
				1.0-2.2' Sand: Brown (7.5 YR 5/4), very fine to fine grain, well sorted, loose,
				saturated, odor.
				2.2-5.0' Sand: Brown (7.5 YR 4/4), trace gravel subangular to subround up to
				approximately 1", predominately fine grain, trace to little medium to coarse,
				moderately sorted, loose, saturated, odor.
30	35	5	0.45-0.75/	0-5.0' Sand: As above.
			10800-47300	
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-20 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/11/05 Drilling Completed 5/11/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1042.52 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	.57-.75/	0-2.0' Silty Sand: Dark yellowish brown (10 YR 4/4), very fine to fine sand, some silt,
			833-20300	trace medium to coarse sand, little gravel up to 3" diameter, most <1" diameter
				angular to subround, loose, very poorly sorted, damp, no odor.
				2.0-2.4' Silty Sand: Black (7.5 YR 2.5/1), very fine to fine sand, trace medium to
				coarse, some silt, loose, wet, trace fine gravel up to 1/4" diameter subround.
				2.4-3.0' Sand: Silty, as above 0-2, saturated.
				3.0-5.0' Silty Sand and Gravel: Brown (7.5 YR 5/2), medium to very coarse sand,
				trace fine sand, some silt, gravel up to 4" diameter, angular to subround, very
				poorly sorted, loose, saturated, no odor.
5	10	5	0.43-0.93/	0-5.0' Silt with Clay Interbeds: Silt brown (7.5 YR 5/3), clay yellowish red (5 YR 4/4),
			1867-4677	silt fine/smooth, layers varved with variable colors to 2" thick, clay has platey
				appearance on broken surfaces, plastic, cohesive, varved to 1-1/2" thick, wet to
				damp, no odor, clay soft to somewhat stiff, hp = 1.0.
10	15	5	0.99-1.45/	0-0.5' Silt: Reddish brown (5 YR 5/3), granular to smooth silt, interbedded with single
			8459-14200	1/4" fine sand seam well sorted, trace clay in smooth/fine silt, slight odor, wet.
				0.5-3.5' Silt: Reddish brown (5 YR 5/3), granular/coarse silt, saturated, little black
				staining throughout, uniform, loose, odor.
15	20	5	0.14-0.68/	0-0.5' Gravel: Variable color, gravel up to 2", angular to subround, no matrix, loose,
			1009-24900	wet, predominately 1/2" diameter.
				0.5-5.0' Sand: Brown (7.5 YR 5/4), very fine to fine sand, trace medium to
				coarse, moderately sorted, saturated, loose, strong odor.
20	25	5	0.83-2.12/	0-2.5' Sand: As above, with trace fine gravel up to 1/2" diameter, subangular to
			27200-101800	subround.
				2.5-3.5' Sand: Color as above, very fine to fine sand, trace medium to coarse sand,
				trace silt, little gravel up to 2" diameter subangular to subround, loose, saturated,
				odor, poorly sorted.
				3.5-4.3' Sand: Brown (7.5 YR 5/4), fine sand, little medium to coarse, moderately

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-20 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				to poorly sorted, little silt, loose, saturated, odor.
				4.3-5.0' Sand: Color as above, very fine to fine sand, little medium to coarse, trace
				fine gravel up to 1/2" subangular to subround, loose, poorly sorted, saturated,
				odor.
25	30	5	0.81-1.61/	0-1.0' Sand: Brown (7.5 YR 4/4), fine sand, trace very fine, some medium to
			19100-20700	coarse, trace gravel up to 1/2" subangular to subround, loose, very poorly sorted,
				wet, strong odor.
				1.0-2.5' Silt: Brown (7.5 YR 4/4) silt smooth/fine and granular, interbedded trace
				clay layers, varved, soft, silt somewhat cohesive, trace clay in silt, wet, strong odor.
				2.5-5.0' Silt: Reddish brown (5 YR 5/4), granular silt, uniform, black staining, strong
				odor, saturated, loose.
30	35	5	0.83-1.28/	0-1.0' Silt: As above.
			6468-16800	1.0-3.5' Silt: Color as above, smooth/fine silt, loose to slightly cohesive, graded
				from above, wet, strong odor, trace soft clay layers, disturbed from drilling, clay
				layers unrecognizable.
				3.5-4.0' Silt: As above in 27.5 - 30.0.
				4.0-5.0' Sand: Color as above, very fine sand, uniform, loose, wet, strong odor,
				well sorted, graded coarser from above.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-21 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/11/05 Drilling Completed 5/11/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1043.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4.5	0.42-0.69/	0-0.5' Sand: Yellowish brown (10 YR 4/6), trace gravel, very fine to fine, trace
			754-4495	medium to coarse, fill, loose, damp, no odor.
				0.5-3.0' Silt: Dark yellowish brown (10 YR 3/6), trace very fine sand, smooth,
				organics, rootlets, topsoil, spongy, moist, organic odor.
				3.0-4.5' Silty Sand: Strong brown (7.5 YR 4/6), very fine grain, some silt in matrix,
				well sorted, uniform, trace organic material, topsoil, loose, moist, organic odor.
5	10	0		No recovery, pushing rock?
10	15	0		No recovery.
15	20	5	0.61-1.92/	0-1.5' Sand: Brown (7.5 YR 5/3), trace gravel subround up to approximately 4",
			1348-14400	fine grain, slight trace coarse, well sorted, loose, saturated, odor.
				1.5-3.3' Sand: As above, no gravel.
				3.3-5.0' Sand: Brown (7.5 YR 4/3), trace silt, little fine gravel, trace cobbles
				up to 4" subangular, sand predominately fine, little very fine, some medium to
				coarse, very poorly sorted, loose, saturated, odor.
20	25	5	0.20-2.08/	0-2.0' Sand: Brown (7.5 YR 4/2), little gravel subangular to subround up to
			4945-39200	approximately 1", fine to coarse grain, predominately medium, poorly sorted,
				loose, saturated, odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/4), trace gravel subround up to approximately 2",
				predominately fine grain, some medium, trace coarse, poorly sorted, loose,
				saturated, odor.
25	30	5	0.84-2.11/	0-1.5' Sand: Color as above, fine grain, trace medium to coarse, well sorted,
			14500-121500	loose, saturated, odor.
				1.5-2.0' Sand: Brown (7.5 YR 4/4), trace fine gravel, little to some medium to
				coarse, poorly sorted, loose, saturated, strong odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine grain, very well sorted,
				uniform, loose, saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-21

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
30	35	5	0.41-1.08/	0-0.3' Sand: As above.
			2911-12600	0.3-5.0' Silt: Reddish brown (5 YR 5/4), granular, uniform, trace black staining
				vesicles, loose, saturated, strong odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-22 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/2/05 Drilling Completed 5/2/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1042.51 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5		3.6-20.5/	0-1.0' Sandy Silt: Dark yellowish brown (10 YR 4/4), sandy silt with clay mixed in,
			2570-5410	trace fine gravel, some organic matter, roots, cohesive, damp, sand very fine to
				fine, gravel.
				1.0-2.0' Silty Sand: Dark yellowish brown (10 YR 4/4), very fine sand, trace fine to
				medium sand, trace fine gravel up to 1" diameter subrounded, damp, loose.
				2.0-2.5' Clay: Black (7.5 YR 2.5/1), soft clay, somewhat plastic when worked, trace
				silt giving it a slight crumble, damp.
				2.5-3.0' Silt/Clay/Sand: Olive brown (2.5 Y 4/4), trace fine gravel, sticky, fine sand,
				trace medium to coarse sand, somewhat cohesive, wet.
				3.0-5.0' Silty Sand/Gravel: Dark greenish gray (1 Gley 10 Y 4/1), fine to medium sand,
				some coarse, some fine gravel angular to subround up to 3" diameter, saturated,
				loose/sticky, no odor, very poorly sorted.
5	10	5	11.3-17.6/	0-0.5' Silty Sand/Gravel: As above.
			1840-3115	0.5-1.0' Cobbles: With silt/sand clay matrix, brown (7.5 YR 4/3), subangular to
				subround cobbles in matrix of fine to coarse sand, clay and silt, cobbles 1"-3-1/2".
				1.0-1.5' Sand/Gravel: Very dark gray (7.5 YR 3/1), medium to coarse sand, fine
				gravel up to 1/2" angular to subround, some silt, very poorly sorted, loose,
				saturated.
				1.5-3.0' Gravel: Brown (7.5 YR 4/3), silty, gravel fine to 4" angular to
				subrounded, some sand, matrix fine to coarse, some silt.
				3.0-5.0' Silt: Brown (7.5 YR 5/3), silt granular with trace interbedded clay 1/2" thick
				and trace very fine sand layers trace black staining, no odor, saturated, sticky.
10	15	5	7.1-32.2/	0-1.5' Sand: Brown (7.5 YR 4/4), little silt, very fine sand, well sorted, loose,
			11100-39000	saturated, slight odor, 2" layer at approximately 1' of fine silt laminations with varved
				clay.
				1.5-5.0' Sand: Brown (7.5 YR 5/4), fine sand, trace medium, well sorted, slight
				odor, saturated, loose.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-22

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
15	20	5	1.8-9.3/	0-1.0' Sand: Brown (7.5 YR 5/4), trace subangular gravel up to 1/2" diameter, fine
			2260-18900	sand, trace medium to coarse sand, moderately well sorted, saturated, odor, loose.
				1.0-2.5' Sand: Color as above, fine sand, well sorted, saturated, odor, loose,
				slight trace medium to coarse.
				2.5-3.0' Sand/Gravel: Dark brown (7.5 YR 4/2), trace silt, matrix medium to coarse
				sand, fine gravel angular to subangular, up to 3", predominately coarse, very poorly
				sorted, saturated, loose, odor.
				3.0-5.0' Sand: Color as above, medium to coarse sand, some fine, poorly sorted,
				saturated little fine gravel up to 1/2" subangular to subround, loose, odor.
20	25	5	7.3-23.5/	0-1.5' Sand: As above.
			4444-27800	1.5-3.0' Sand: Brown (7.5 YR 5/3), fine sand, little medium to coarse, some very
				fine sand, trace fine gravel up to 1/2", poorly sorted loose, saturated, strong odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), medium to coarse sand, predominately medium,
				little fine, trce very fine, little gravel up to 2-1/2" in diameter subangular to
				subrounded, loose, strong odor, very poorly sorted, most, gravel under 1".
25	30	5	8.0-22.9/	0-1.0' Sand: Brown (7.5 YR 5/4), fine sand, little medium to coarse, poorly sorted,
			22000-	saturated, loose, strong odor, trace fine gravel <1/4" subrounded.
			>440000	1.0-2.0' Sand: Color as above, fine sand, trace medium to coarse sand, moderately
				sorted, loose, saturated, odor.
				2.0-3.5' Sand: Color as above, very fine to fine sand, well sorted, loose, saturated,
				odor.
				3.5-4.5' Sand: Color as above, fine sand, moderately well sorted, trace medium to
				coarse, loose, saturated, odor.
				4.5-5.0' Silt: Reddish brown (5 YR 5/4), slightly granular silt, uniform, saturated,
				trace very fine sand throughout, black staining, strong odor, crumbly.
30	35	5	9.2-15.7/	0-5.0' Silt: As above.
			3951-5130	
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-23 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/28/05 Drilling Completed 4/28/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.39 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	3.5	0.79-7.47/	0-1.0' Silt: Dark brown (7.5 YR 3/2), topsoil, abundant organics, rootlets, trace
			740-7350	very fine sand, damp, loose, humic odor.
				1.0-3.0' Silt: As above, but without all the organic material, color changes to
				strong brown (7.5 YR 5/6), damp, no odor.
				3.0-3.5' Sand and Gravel: Brown (7.5 YR 4/2), some silt, gravel angular to subround
				up to 3", sand all sizes, predominately very fine to fine, very poorly sorted, loose,
				damp, no odor.
5	10	5	6.79-1.67/	0-1.5' Sand and Gravel: As above, with addition of more medium to coarse sand,
			150-470	also saturated, water table at approximately 5'.
				1.5-2.5' Clayey Silt: Brown (7.5 YR 4/3), trace fine interbedding, a lot of clay in
				matrix, sticky, cohesive, saturated, no odor.
				2.5-5.0' Silt: Brown (7.5 YR 4/4), smooth, uniform, somewhat cohesive, saturated,
				no odor.
10	15	5	0.81-3.34/	0-1.5' Silt: As above, but with little black staining.
			190-3090	1.5-5.0' Silt/Clay: Interbeds, silt as above, clay yellowish red (5 YR 4/6), pre-
				dominately silt with a lot of clay interbeds ranging in thickness from varves up to
				1.5", plastic, cohesive, appears platy on broken surfaces, stiff, saturated, no odor.
15	20	4.5	0.73-1.37/	0-2.0' Sand: Brown (7.5 YR 4/2) little to some gravel, gravel is predominately fine
			17000-67000	up to 1.5" subangular to subround, sand is fine to coarse, predominately medium,
				poorly sorted, loose, saturated, slight odor.
				2.0-4.5' Sand: Color as above, trace fine gravel, sand is fine grain, trace medium
				to coarse, some medium to coarse 2.3-2.5 and 4.2-4.5, moderately sorted,
				loose, saturated, slight odor.
20	25	0		No recovery.
25	30	5	1.72-2.89/	0-2.5' Sand: Brown (7.5 YR 4/3), little gravel subangular to subround up to 2.5",
			3900-31000	fine to coarse, predominately medium to coarse, very poorly sorted, loose,
				saturated, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-23 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.5-5.0' Sand: Brown (7.5 YR 5/3), fine to medium grain trace coarse, well sorted,
				loose, saturated, odor.
30	35	5	1.72-2.89/	0-0.3' Sand: Brown (7.5 YR 5/3), fine to medium grain, some coarse, poorly sorted,
			3900-31100	loose, saturated, odor.
				0.3-1.5' Sand: Brown (7.5 YR 4/3), trace fine gravel subangular to subround, very
				fine to fine grain, well sorted, loose, saturated, strong odor.
				1.5-4.2' Sand: Brown (7.5 YR 4/3), medium grain, little coarse, moderately to
				sorted, loose, saturated, odor.
				4.2-5.0' Sand: As above in 0.3-1.5'.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-24 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/28/05 Drilling Completed 4/28/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.02 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4.0	3.5-27.9/	0-0.5' Silt: Very dark brown (7.5 YR 2.5/2), silt with organic matter, twigs, roots,
			3-1503	topsoil, loose, damp.
				0.5-1.0' Silt: As above, strong brown (7.5 YR 4/6), organic matter, loose,
				damp.
				1.0-4.0' Sand: Sand with some silt, very fine to medium, predominately very fine,
				some gravel up to 2" diameter subangular to rounded, loose, moist (1-3.5), wet
				(3.5-4), no odor.
5	10	5	3.4-10.6/	0-1.0' Silty Sand and Gravel: Color as above, as above but more silt, more gravel
			897-2304	up
				1.0-5.0' Silt: Brown (7.5 YR 4/4), smooth silt, trace clay <1/4" layer, trace clay in
				matrix, sticky in places, somewhat cohesive, trace black staining, no odor.
10	15	5.0	3.3-3.73/	0-5.0' Silt/Clay Interbeds: Silt as above, clay yellowish red (5 YR 4/6) smooth silt
			487-1839	interbedded with clay layers 1/4-1-2/2" thick, clay more prevalent in 3-5', clay has
				platey appearance broken surfaces soft, plastic when worked, cohesive silt,
				somewhat cohesive.
15	20	4	2.3-8.1/	0-0.5' Sand: Brown (7.5 YR 5/4), fine sand, trace medium to coarse sand,
			1804-23200	moderately well sorted, saturated, loose, slight odor.
				0.5-2.0' Silty Sand: reddish brown (5 YR 5/4), silty very fine to fine sand, trace
				medium to coarse sand, little gravel, poorly to somewhat sorted, up to 2" diameter
				subangular to subrounded, predominately very fine sand, saturated.
				2.0-4.0' Sand: Brown (7.5 YR 4/3) fine to coarse sand, poorly sorted,
				predominately medium sand, loose, slight odor, trace fine gravel up to 2"diameter.
20	25	5	NR	No recovery.
25	30	5	3.5-8.2/	0-2.5' Sand: Brown (7.5 YR 4/4), fine to coarse sand, poorly sorted, little silt may be
			742-10200	washed in from drilling, trace fine gravel, subangular to subrounded up to 1-1/2",
				saturated, loose, slight odor.
				2.5-5.0' Sand: Fine to medium sand, predominately medium, trace coarse sand,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-24 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				trace fine gravel up to 1/2" subangular to subrounded, moderately to somewhat
				sorted, odor.
30	35	5	5.5-17.2/	0-2.5' Sand: Brown (7.5 YR 4/4), fine sand, little medium sand, trace coarse sand,
			28300-74280	moderately to somewhat sorted trace fine gravel up to 1/2" diameter, subangular
				to subrounded, odor, loose, saturated.
				2.5-3.0' Sand: Dark gray (7.5 YR 4/1), medium to coarse sand, trace gravel little
				to some fine sand, trace subangular to subrounded gravel up to 1" diameter,
				loose, poorly sorted, odor.
				3.0-5.0' Sand: Dark gray (7.5 YR 4/1), fine sand, well sorted, loose saturated,
				trace medium to coarse sand, odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-25 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/2/05 Drilling Completed 5/2/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4.0	1.27-4.33/	0-1.5' Silt: Dark brown (7.5 YR 3/2), trace very fine sand, organics/rootlets,
			0-10.9	topsoil, loose, damp, organic odor.
				1.5-2.5' Silt: Strong brown (7.5 YR 5/8), trace very fine sand, trace organics/roots,
				topsoil, as above, loose, damp, no odor.
				2.5-4.0' Silt and Clay: Dark yellowish brown (10 YR 4/4), overall, but mutli-colored,
				some sand, little to some gravel, gravel is predominately fine, subangular to
				subround up to 3.5", sand is predominately very fine to fine, little medium to
				coarse, poorly sorted, silt and clay cemented like till or hand pan, brittle, crumbly,
				dry to damp, no odor.
5	10	2	3.73-8.99/	0-2.0' Sandy Silt: Dark yellowish brown as above, little gravel angular to rounded
			2.9-15.2	up to 2", sand predominately very fine, little fine to coarse, poorly sorted, loose,
				damp, very silty, no odor.
10	15	0		No recovery.
15	20	5	1.82-5.58/	0-1.8' Silt: Brown (7.5 YR 4/4), uniform silt, smooth to somewhat granular in
			320-3170	places, sticky, black staining, bubbles/vesicles, slightly cohesive, saturated, odor.
				1.8-2.5' Silt: As above, but somewhat coarser, very grainy and saturated, loose,
				odor.
				2.5-3.6' Silty Sand and Gravel: Reddish brown (5 YR 4/3), very silty, seems to be
				gradational contact between units above and below, sand very fine to very
				coarse, predominately fine to medium, very poorly sorted, gravel subangular to
				subround up to 4", loose, saturated, odor.
				3.6-5.0' Sand: Brown (7.5 YR 4/4), trace to little gravel subangular to subround
				up to 3", predominately medium to coarse and some fine, poorly sorted, loose,
				saturated, odor.
20	25	5	3.72-15.88/	0-2.5' Sand: As above, grading into unit below.
			3971-17900	2.5-3.5' Sand: Brown (7.5 YR 5/4), fine grain, trace very fine, trace medium to
				coarse, moderately well sorted, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-25 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.5-5.0' Sand: Color as above, trace fine gravel, predominately fine grain, some
				medium to coarse, poorly sorted, loose, saturated, odor.
25	30	5	1.06-5.62/	0-5.0' Sand: Brown (7.5 YR 4/2), little gravel subangular to subround up to 2.5",
			1068-8140	predominately fine to medium grain, some coarse, very poorly sorted, loose,
				saturated, strong odor.
30	35	5	1.93-5.29/	0-2.5' Sand: Brown (7.5 YR 5/4), predominately fine grain, trace to little medium to
			3070-13800	coarse, moderately sorted, loose, saturated, odor.
				2.5-5.0' Brown (7.5 YR 5/3), trace little gravel up to 1.5" subangular to
				subround, predominately fine grain little medium, trace coarse to very
				coarse, poorly sorted, loose, saturated, odor.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-26 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/3/05 Drilling Completed 5/3/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	4.6-9.6/	0-1.0' Silt: Dark brown (10 YR 3/3), silt with some organic matter, roots, loose,
			19-21	damp, trace very fine sand.
				1.0-2.5' Silt: Strong brown (7.5 YR 4/6), silt with trace organic roots, loose to
				damp.
				2.5-3.5' Sand: Dark yellowish brown (10 YR 4/4), very fine to fine sand, trace medium
				to coarse, some fine gravel, subangular to subround up to 4" diameter, most
				under 1", little silt, loose, sample.
				3.5-5.0' Sand: As above yellowish brown (10 YR 5/4), dry, different color.
5	10	5	2.2-3.7/	0-1.0' Sand: As above.
			14-111	1.0-2.0' Sand: Light yellowish brown (10 YR 6/4), fine sand, little medium to
				coarse, loose, damp, little gravel 1/4-4" diameter subangular to subround, clean,
				poorly sorted.
				2.0-2.7' Sand: Dark yellowish brown (10 YR 4/4), very fine to medium sand with
				some silt, predominately fine, little gravel, little coarse gravel subangular to subround,
				most under 1" diameter, but up to 4", very poorly sorted.
				2.7-3.0' Gravel/Silt/Clay/Sand: Dark yellowish brown (10 YR 3/4) cement mix of
				gravel suspended in clay/silt/sand matrix, till like, gravel up to 2" subround,
				predominately silt/clay.
				3.0-4.5' Silt: Brown (7.5 YR 5/4), silt with some sand fine to coarse, little fine
				gravel angular to subround, up to 3" diameter, loose, dry, no odor.
				4.5-5.0' Gravel/Silt/Clay/Sand: As above, made up of mostly
				matrix, variable color throughout, color similar to above silt, very solid.
10	15	5	10.5-36.2/	0-1.0' Gravel/Silt/Clay/Sand: As above, breaks easily when handed, damp.
			114-9063	1.0-2.5' Silt: As above, damp.
				2.5-3.0' Sand: Silty, Strong brown (7.5 YR 5/6) very fine to medium sand,
				predominately fine, trace coarse, little fine gravel most 1" and less, but up to 3"
				diameter subangular to subround, some silt, loose, no odor, damp, very poorly

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-26 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				sorted.
				3.0-3.7' Silty Sand: Color as above, sand with some silt, predominately fine to
				medium, little coarse, little medium, gravel 1/2-2", trace clay, loose to somewhat
				cohesive, wet.
				3.7-5.0' Silt/Clay/Gravel/Sand: Brown (7.5 YR 4/3), very poorly sorted, sand and
				gravel suspended in clay/silt matrix, crumbly to somewhat cohesive, gravel up to
				3" diameter, subround, sand very fine to very coarse predominately silt and clay,
				till like, saturated, no odor.
15	20	5	0.4-0.53/	0-1.0' Clayey Silt: Brown (7.5 YR 4/4), highly disturbed, may be disturbed/slough
			2800-19200	from drilling, clayey silt with trace gravel up to 2" suspended.
				1.0-3.0' Silt: Brown (7.5 YR 4/4), granular silt, trace medium to coarse sand,
				trace black staining, saturated, slight odor.
				3.0-4.0' Sand: Brown (7.5 YR 4/4) very fine sand, some silt, little fine to coarse
				sand, loose, saturated, slight odor, moderately sorted.
				4.0-4.5' Sand: Fine sand, trace medium to coarse sand, little silt, trace fine gravel
				up to 2", subangular to subround, saturated, loose, slight odor, poorly sorted.
				4.5-5.0' Sand: Fine to medium sand, little coarse trace to little gravel up to 1-1/2"
				diameter, angular to subround, very poorly sorted, some silt, saturated, loose.
20	25	5	1.6-2.1/	0-0.5' Sand: Brown (7.5 YR 4/3), fine sand, trace medium to coarse, poorly sorted,
			50200-162900	trace silt, loose, saturated, odor, trace very fine gravel.
				0.5-2.0' Sand: Fine to very coarse sand, little gravel up to 2" diameter, subround,
				loose, saturated, odor, very poorly sorted, predominately medium sand.
				2.0-3.5' Sand: Brown (7.5 YR 5/2) Fine sand, trace medium to coarse, trace
				gravel subangular to subround, up to 1" saturated, loose, trace very fine,
				moderate sorted, odor.
				3.5-5.0' Sand: As above (0.5-2 of 20-25).
25	30	5	1.2-2.1/	0-3.7' Sand: As above.
			17100-40000	3.7-4.1' Sand: Brown (7.5 YR 4/2), very fine to fine, trace medium to coarse,
				moderately sorted, loose, saturated, odor.
				4.1-5.0' Sand: As above (0-3.7 of 25-30), becomes slightly finer with depth.
30	35	5	1.9-9.8/	0-1.0' Sand: Fine to medium sand, little coarse, little fine gravel up to 1"
			18500-66000	diameter subangular to subround, saturated, loose, odor, very poorly sorted.
				1.0-5.0' Silt: Redish brown (5 YR 4/4), granular silt, uniform, saturated, strong odor,
				loose to somewhat cohesive.
				EOB @ 35

ARCADIS

Sample/Core Log

Boring/Well GMPZA-27 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/3/05 Drilling Completed 5/3/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.53 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	4.4-6.3/	0-1.5' Silt: Dark yellowish brown (10 YR 3/4), trace organics/rootlets, uniform
			6-9	topsoil, trace very fine sand, loose, damp, no odor.
				1.5-5.0' Sand: Dark yellowish brown (10 YR 4/4), some gravel, angular to subround
				up to 3", some silt, very silty in places, sand predominately very fine to fine, little
				medium to coarse, poorly sorted, loose, damp, no odor.
5	10	5	2.4-245/	0-2.5' Sand: As above.
			3-46	2.5-4.5' Silt: Dark yellowish brown (10 YR 4/4), some gravel angular to subangular
				up to 2.5", some sand predominately very fine, little medium to coarse, poorly
				sorted, loose, dry to damp, no odor.
				4.5-5.0' Silt and Clay: Multi-colored, little to some gravel angular to subangular up
				to approximately 1", little sand fine to coarse, sand and gravel is suspended in
				silt/clay matrix, cemented, till-like, hard pan, brittle, crumbly, hard, dry, no odor.
10	15	4	11.6-33.4/	0-3.3' Silt: As above, in 7.5-9.5'.
			39-497	3.3-5.0' Sand: Dark yellowish brown (10 YR 3/4), fine to coarse, predominately fine
				to medium, poorly sorted, some silt, some gravel subangular to round up to 2.5",
				loose, iron staining, saturated, no odor.
15	20	5	6.85-6.34/	0-2.0' Clayey Silt: Silt brown (7.5 YR 4/4) predominately silt with trace to little clay
			2930-7420	in matrix, also little clay layering, clay layers are <1/4" thick, clay is soft,
				plastic, cohesive, silt smooth/fine, overall somewhat cohesive, saturated, strong odor.
				2.0-2.8' Sand: Brown (7.5 YR 5/3), fine grain, trace medium to coarse, well sorted,
				trace fine gravel, discolored/stained, loose, saturated, odor.
				2.8-4.0' Silt/Clay/Sand/Gravel: Reddish brown (5 YR 4/4) sand all sizes, predomin-
				ately very fine to fine, very silty, some clay in matrix, was probably interbedded,
				gravel subangular to round up to approximately 1.5", very poorly sorted, loose,
				saturated, strong odor.
				4.0-5.0' Sand: Dark brown (7.5 YR 3/4), trace fine gravel, medium to coarse grain,
				some fine, poorly sorted, loose, saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-27 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	2	2	0-0.8' Sand: As above.
				0.8-2.0' Sand: Brown (7.5 YR 5/4), trace gravel subangular to subround up to
				approximately 2", predominately fine grain, trace medium well sorted, loose,
				saturated, odor.
25	30	5	2.88-20.46/	0-5.0' Sand: Dark brown (7.5 YR 3/3), trace gravel subangular to round up to
			4620-18800	approximately 2", medium fine grain, little fine, poorly sorted, loose, saturated,
				odor.
30	35	5	3.14-11.98/	0-3.0' Silt: Reddish brown (5 YR 4/3), granular, uniform, trace black staining,
			2040-4970	loose, saturated, strong odor.
				3.0-5.0' Silt: As above, but finer, smooth, somewhat cohesive, strong odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-28 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/3/05 Drilling Completed 5/3/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.02 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	2.7-16.5/	0-1.0' Silt/Topsoil: Dark brown (10 YR 3/3), silt with organic material, loose,
			0-24	contains roots, damp, no odor.
				1.0-2.0' Dark yellowish brown (10 YR 4/4) silt, no organic material, loose, damp,
				no odor. 2.0-3.0' Silty Sand: Dark yellowish brown (10 YR 4/6), very fine sand, trace
				medium to coarse, trace gravel up to 4" diameter, subangular to subround, poorly
				sorted, some silt, loose, damp, no odor.
				3.0-4.0' Sand: Color as above, fine sand, trace medium to coarse, trace fine gravel
				under 1/2" diameter subangular to subround, loose, no odor, damp to wet,
				trace to little silt.
				4.0-5.0' Sand: Yellowish brown (10 YR 4/4), fine sand, trace medium to coarse,
				trace gravel up to 1" diameter, subround, loose, clean sand, damp, no odor,
				moderately well sorted, most gravel over 1/2".
5	10	5	2.5-6.2/	0-2.0' Sand: Yellowish brown (10 YR 4/4), very fine to fine sand, some medium to
			12-23	coarse sand, little gravel up to 2.5" diameter, subangular to subround, very poorly
				sorted, little silt, loose, saturated, no odor, silt content declines with depth, no
				silt at 2'.
				2.0-3.0' Sand: Color as above, very fine to fine sand, predominately fine, trace
				medium to coarse, trace gravel up to 1" diameter, subround, poorly sorted, trace
				silt near bottom, loose, wet, no odor.
				3.0-5.0' Silt: Strong brown (7.5 YR 4/6), silt, trace clay interbedding
				varved, varies from smooth/fine to granular silt in places, trace clay in matrix
				cohesive when worked, soft.
10	15	5	6.3-10.3/	0-5.0' Silt With Clay Interbeds: Silt color as above, clay yellowish red (5 YR 4/6), clay
			15-29	interbedded with fine sand granular silt, smooth/fine silt more prominent, layering
				silt thickens up to 1", clay varved to 1", fine/granular silt varies throughout,
				greater quantity silt, clay soft, and plastic when worked, platey on broken surfaces.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-28 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
15	20	5	3.4-6.1/	0-0.3' Silt: Color as above, silt granular, trace fine to coarse sand, loose, slight
			18900-20600	odor, wet.
				0.3-2.5' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace very fine, trace
				coarse, predominately medium, slight trace fine gravel, poorly sorted, loose,
				odor, wet.
				2.5-4.5' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium to coarse, little
				gravel up to 2" subangular to subround, loose, wet, odor, little silt.
				4.5-5.0' Sand: Brown (7.5 YR 4/2) medium to very coarse sand, trace very fine to
				fine, some fine gravel, most under 1/2", but up to 1" diameter, subangular to
				subround, loose, very poorly sorted, wet, odor.
20	25	NR		No recovery.
25	30	5	1.9-5.2/	0-1.0' Sand: As above.
			20200-40300	1.0-2.5' Sand: Brown (7.5 YR 5/3), very fine to fine sand, some medium to coarse
				sand, poorly sorted, loose, strong odor, saturated, trace gravel up to 3/4" diameter,
				subround.
				2.5-3.0' Sand: As above (4.5-5 of 15-20') with little very fine to fine sand, strong
				odor.
				3.0-5.0' Silt: Brown (7.5 YR 3/4), granular silt, uniform, loose to somewhat
				cohesive, strong odor, saturated, trace very fine sand.
30	35	5	1.1-5.2/	0-5.0' Silt: As above.
			404-19500	
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-29 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/3/05 Drilling Completed 5/3/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.23 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	4.8-6.9/	0-0.5' Silt: Strong brown (7.5 YR 4/6), silt/topsoil, organic material, damp, loose, no odor.
			6-14	0.5-1.5' Silt: Trace fine sand, loose, sample, no odor, no organic material, bottom 0.1'
				gravel layer same silt matrix but gravel up to 3" diameter, angular to subround.
				1.5-2.5' Silty Sand: Strong brown (7.5 YR 5/8), very fine to fine sand, trace medium
				to coarse sand, little gravel subangular to subround up to 2" diameter, some silt,
				loose, damp, no odor poorly sorted.
				2.5-3.5' Sand: Color as above, very fine to fine sand, trace silt, trace medium to
				coarse sand, little gravel up to 2.5" diameter, angular to subround, loose, damp,
				no odor, poorly sorted.
				3.0-5.0' Sand: Light yellowish brown (10 YR 6/4), fine sand, some very fine, little
				medium to coarse sand, trace fine gravel, most under 1/2" up to 1" diameter,
				subangular to subround, loose, damp, no odor, poorly sorted.
5	10	5	2.6-9.9./	0-1.7' Sand: As above, trace silt, bottom 0.7' wet.
			14-22	1.7-2.5' Silt: Brown (7.5 YR 5/4), silt with trace clay in matrix creating cohesion,
				suspending gravel and sand, some gravel 1/2"-2" angular to subround, trace sand
				very fine to coarse, wet, no odor, somewhat crumbly/loose to cohesive.
				2.5-5.0' Silt with Clay: Silt strong brown (7.5 YR 5/6), yellowish red
				(5 YR 5/4), silt with clay interbeds, silt fine/smooth, laminations, display variable color,
				black staining, clay varved to 1/2" thick, plastic when worked, very soft, cohesive,
				silt layers up to 3", wet, slight odor.
10	15	5	0.25-8.0/	0-4.7' Silt: As above, clay layers up to 2" thick, well sorted fine sand seams
			4-41	to 1/4" thick.
				4.7-5.0' Silt: Brown (7.5 YR 5/4), granular silt, uniform, slight odor, wet, loose,
				black staining.
15	20	5	1.6-1.96/	0-3.0' Silt: As above, 6" at bottom grades into lower unit.
			2200-6499	3.0-5.0' Sand: Brown (7.5 YR 5/2), fine sand, trace medium to coarse, moderate
				well sorted, loose, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-29 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	1	1.9-2.4/	0-0.5' Sand: Fine sand, little silt, trace medium to coarse sand, little gravel angular
			6601-8012	to subround up to 2", loose, odor, wet, poorly sorted.
				0.5-1.0' Sand: Brown (7.5 YR 4/4), medium to very coarse sand, little gravel 1/2" to
				2.6" subangular to subround, loose, very poorly sorted, wet, odor, little fine sand.
25	30	5	1.30-6.2/	0-3.5' Sand: As above, fines slightly at bottom.
			35500-46500	3.5-5.0' Silt: Reddish Brown (5 YR 5/4) granular silt, loose, wet, strong odor,
				uniform.
30	35	5	5.4-10.2/	0-5.0' Silt: As above, reddish brown (5 YR 5/4).
			8540-29500	
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-30 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/4/05 Drilling Completed 5/4/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.74 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.0	1.88-5.30/	0-1' Silt/Topsoil: Dark yellowish brown (10 YR 3/6), silt with organic material,
			4-16	roots/twigs, loose, damp, no odor.
				1.0-1.5' Silt: Brown (7.5 YR 4/4) silt with no organic material, fine silt, loose to
				somewhat cohesive, no odor, damp.
				1.5-2.0' Sandy Silt: Pale brown (10 YR 6/3), silt with some fine to coarse
				sand, some gravel up to 2" diameter, angular to subangular, most under 1/2",
				dry, no odor, loose.
5	10	5	72-1.1/	0-1.5' Sandy Silt: As above.
			3-12	1.5-3.5' Sand: Yellowish brown (10 YR 5/4), fine sand, little very fine, trace medium
				to coarse sand, little gravel upto 2.5", angular to subround, poorly sorted, loose,
				damp, no odor.
				3.5-4.5' Sand: As above, trace gravel, angular to subround, up to 1" diameter.
				4.5-5.0' Sand: Yellowish brown (10 YR 5/4), very fine to fine sand, predominately
				fine, trace medium to coarse, little subangular to subround gravel up to 1"
				diameter, little silt, most gravel under 1/2", loose, very poorly sorted, damp,
				no odor.
10	15	5	.53-.87/	0-0.5' Sand: As above trace clay in last 0.2', slightly cohesive.
			274-1999	0.5-4.0' Silt with Clay Interbeds: Silt brown (10 YR 4/1), clay redish brown
				5 YR 4/4), fine silt, layers up to 3" thick, somewhat cohesive, trace clay in matrix,
				laminations of variable colors in places, clay is plastic, soft, platey on broken surfaces,
				varved to 1-1/2" thick, wet, no odor, overall unit somewhat cohesive to cohesive
				(clay), trace sand seams, fine sand with trace medium to coarse, moderately well
				sorted, up to 1/4 thick.
				4.0-5.0' Silt: Brown (7.5 YR 5/4), granular silt, loose, wet, no odor.
15	20	4	0.53-1.66/	0-1.0' Silt: As above, trace fine to medium sand, trace clay seams up to 1/4" thick,
			7800-9965	plastic, cohesive.
				1.0-3.5' Sand: Light brown (7.5 YR 6/4) fine sand, trace very fine sand, well sorted,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-30 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				loose, saturated, slight odor.
				3.5-4.0' Sand: Brown (7.5 YR 5/4), fine sand, trace medium to coarse sand, little
				angular to subround gravel, up to 3" diameter, trace silt, loose, wet, odor.
20	25	0		No recovery.
25	30	5	1.75-3.52/	0-4.0' Sand: Brown (7.5 YR 4/3) fine to coarse sand, little fine gravel subangular
			15000-27500	to subround, up to 1-1/2", loose, very poorly sorted, trace very fine sand,
				saturated, odor.
				4.0-5.0' Sand: Brown (7.5 YR 5/4), very fine to fine sand, trace medium to coarse
				sand, moderately well sorted, one rock 4" diameter, subround, loose,
				saturated, odor.
30	35	5	2.53-3.68/	0-3.7' Sand: As above.
			6566-66100	3.7-4.4' Sand: Brown (7.5 YR 5/4) fine sand, little medium to coarse, slight trace
				gravel up to 3/4", moderately sorted matrix, loose, saturated, odor.
				4.4-5.0' Sand: Redish brown (5 YR 5/4), very fine sand, slight trace fine to medium,
				trace silt, well sorted, loose, saturated, strong odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-31 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/4/05 Drilling Completed 5/4/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.59 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	31.30-40.41/	0-0.7' Silt: Dark brown (7.5 YR 3/4), trace very fine sand, organics/rootlets, topsoil,
			0.93-22	loose, damp, organic odor.
				0.7-2.5' Silt: Strong brown (7.5 YR 4/6), as above, except color changes, less
				organic material, loose, damp, slight organic odor, grades into unit below.
				2.5-5.0' Sand: Dark yellowish brown (10 YR 3/4), little to some gravel subangular
				to subround up to approximately 3.5", trace silt, sand predominately fine, trace to
				little medium to coarse, moderately sorted, loose, damp, no odor.
5	10	5	10.33-22.81/	0-2.3' Sand: As above, grading into silter unit with more gravel below.
			0-7	2.3-4.5' Silty Sand: Dark grayish brown (2.5 Y 4/2), some gravel subangular to
				subround up to approximately 3.5", sand predominately very fine to fine, very
				silty in places, poorly sorted, damp to moist, loose, no odor.
				4.5-5.0' Silt and Clay: Brown (10 YR 4/3) overall, but variable, some gravel angular
				to subangular predominately fine up to approximately 1.5", some sand predominately
				very fine to fine, some medium to coarse, very poorly sorted, sand and gravel is
				suspended in silt/clay matrix, like glacial till, hard pan, brittle, crumbly, dry,
				no odor.
10	15	4	16.84-27.08/	0-4.0' Silt with Clay Interbeds: Silt is brown (7.5 YR 5/4), clay is yellowish red
			0-11	(5 YR 4/6), silt predominately smooth/fine, predominately silt, clay layers range from
				varves up to approximately 1/2" in thickness, clay is plastic, cohesive, appears platy
				when broken, silt somewhat cohesive, saturated, no odor.
15	20	5	13.54-31.98/	0-2.0' Silt: Brown (7.5 YR 4/4), trace clay layering, clay is brown, plastic, cohesive,
			13800-39900	<1/2" thick, silt is grainy, saturated, slight odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/4), trace fine gravel, predominately fine grain,
				trace medium to coarse, moderately well sorted, loose, saturated, odor.
20	25	0		No recovery.
25	30	5	20.25-23.95/	0-1.0' Sand: As above in 17-20 grading into next unit.
			1900-33100	1.0-5.0' Sand: Brown (7.5 YR 5/4), little gravel subangular to subround up to

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-31 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				approximately 3", sand is predominately fine to medium grain, little coarse, poorly
				sorted, loose, saturated, odor.
30	35	5	23.14-29.74/	0-5.0' Sand: Brown (7.5 YR 5/4), trace to little fine gravel subangular to subround
			2430-4670	up to 3", sand predominately fine grain, little medium to coarse, moderately
				sorted, loose, saturated, odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-32 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/10/05 Drilling Completed 5/10/05

Total Depth Drilled 45 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.59 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	4.7-15.9/	0-1.0' Silt/Topsoil: Dark yellowish brown (10 YR 3/4), silt with organic material,
			22-80	roots, grass, twigs, loose, damp, earthy odor.
				1.0-2.0' Silt: Dark yellowish brown (10 YR 4/6), silt with trace organic material at
				top, loose, damp fine to somewhat granular silt, no odor.
				2.0-4.0' Silt: Dark yellowish brown (10 YR 3/6), silt with trace to little organic
				material, loose to somewhat cohesive, damp, no odor.
				4.0-5.0' Silty Sand: Yellowish brown (10 YR 5/4), very fine to fine sand, some silt, little
				medium sand, trace coarse sand, little fine gravel, angular to subangular up to 3"
				diameter, portions cemented together, crumbly when broken, loose, very poorly
				sorted, dry, no odor.
5	10	4.5	4.8-5.4/	0-1.7' Silty Sand: As above, fine sand predominate.
			30-55	1.7-3.7' Sand: Yellowish brown (10 YR 5/6), fine to medium sand, some very fine,
				trace coarse, some gravel up to 2" diameter angular to subround, trace silt, loose,
				very poorly sorted, no odor, damp.
				3.7-4.5' Silty Sand: Yellowish brown 01 (YR 5/4), fine sand, some silt, trace medium
				to coarse, trace to little gravel up to 1" diameter, angular to subround, loose, dry
				to damp, no odor, portions cemented, crumbly when broken, very poorly sorted,
10	15	5	8.8-16.7/	0-1.5' Silty sand: As above, little medium to coarse.
			218-602	1.5-2.3' Silty Sand: Brown (7.5 YR 4/3), fine sand, trace medium to coarse sand,
				trace gravel up to 1" diameter, subangular to subround, some silt, trace clay,
				somewhat cohesive in places, wet, loose otherwise poorly sorted, no odor.
				2.3-5.0' Silt with Clay Interbeds: Silt, brown (7.5 YR 5/4), clay yellowish red (5 YR 4/4),
				fine/smooth silt layers up to 6" thick, laminations with variable colors in places,
				clay very soft, varved to 1/2" thick, platy appearance on broken surfaces, plastic,
				cohesive, wet, trace black staining, slight odor.
15	20	4.5	.69-.75/	0-1.5' Silt: Brown (7.5 YR 4/4), interbedded granular and smooth/fine silt, granular
			2067-15900	silt dominantly, saturated, laminations with variable colors in places,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-32

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				slightly cohesive, slight odor, black staining, sticky, trace clay.
				1.5-3.5' Silt: Granular silt, uniform, loose, wet, odor, trace black staining.
				3.5-4.5' Sand: Brown (7.5 YR 5/3), fine sand, clean, well sorted, slight trace medium
				to coarse, odor, loose, wet, black staining.
20	25	5	0.88-1.22/	0-4.0' Sand: As above, fines slightly with depth, slight trace fine gravel, under
			16500-200500	1/4", subround, strong odor.
				4.0-5.0' Sand: Reddish brown (5 YR 5/4), fine sand, some medium to coarse sand, gravel
				up to 1-1/2", angular to subround, trace silt, very poorly sorted, saturated, loose,
				strong odor, most gravel under 1/2".
25	30	5	0.74-1.83/	0-2.5' Sand: As above gravel up to 3".
			25400-29600	2.5-5.0' Sand: Reddish brown (5 YR 5/4), very fine sand, trace fine sand, well sorted,
				strong odor, loose, wet.
30	35	NR		No recovery.
35	40	5	0.33-0.87/	0-2.0' Silt: Reddish brown (5 YR 5/4) coarse granular silt, uniform, strong odor, wet,
			4067-24000	loose.
				2.0-5.0' Sand: Reddish brown (5 YR 5/4), very fine sand, some silt, uniform, loose, wet,
				strong odor, slightly coarser than granular silt.
40	45	2	1.34-1.36/	0-2.0' Sand: As above, color as above.
			111200-	
			133000	
				EOB @ 45'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-33 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/10/05 Drilling Completed 5/10/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.06 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4.0	2.0-4.39/	0-.1.0' Silt: Dark brown (10 YR 3/3), trace very fine sand, organics, rootlets, loose,
			13.4-27.9	moist, organic odor.
				1.0-1.6' Silt: As above, but with color change to dark yellowish brown
				(10 YR 3/4).
				1.6-3.0' Silt: As above in 0-1.0', less organic material.
				3.0-4.0' Sandy Silt: Yellowish brown (10 YR 5/4), little gravel angular to subangular
				up to approximately 3", sand all sizes, little clay in matrix, poorly sorted, some
				parts are cemented together with sand and gravel in silt/clay matrix, hard, brittle, dry,
				powdery, loose, no odor.
5	10	5	0.24-0.51/	0-2.0' Silt: Yellowish brown (10 YR 5/4) some gravel angular to round up to
			8.5-27.3	approximately 2.5", little sand, all sizes, predominately silt, loose, dry, powdery,
				no odor.
				2.0-4.5' Sand: Light yellowish brown (10 YR 6/4), little to some gravel angular to
				subround up to approximately 3", sand predominately fine grain, little very fine,
				little medium to coarse, poorly sorted, loose, damp, no odor.
				4.5-5.0' Silt: As above in 0-2.0', but damp.
10	15	5	0/	0-5.0' Silt with Clay Interbeds: Silt is brown (7.5 YR 5/4), clay is yellowish red
			6.3-77.2	(5 YR 4/6), predominately silt, several clay layers approximately 1/2" thick or less,
				fairly regular clay layers occur approximately every 6", clay is plastic, cohesive,
				platy appearance, somewhat stiff, silt predominately smooth, trace black staining and
				vesicles, more clay content below 4.0, overall saturated, slight odor.
15	20	5	0.29-0.11/	0-2.0' Silt/Clay Interbeds: As above.
			102-19300	2.0-2.5' Silt: Reddish brown (5 YR 5/3), grainy, no clay content, loose, trace black
				staining, saturated, slight odor.
				2.5-5.0' Sand: Brown (2.5 YR 4/4), fine grain, trace medium to coarse, trace fine
				gravel, moderately to well sorted, loose, saturated, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-33 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	-0.86- -0.03/	0-2.5' Sand: Brown (7.5 YR 5/4), fine grain, well sorted, clean, loose, uniform,
			8770-67700	saturated, odor.
				2.5-5.0' Sand: Brown (7.5 YR 5/4), trace to little gravel subangular to subround up
				to approximately 1.5", fine grain, trace medium to coarse, moderately sorted,
				loose, saturated, odor.
25	30	5	-0.87- -0.11/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace medium to coarse, well sorted,
			5750-18300	uniform, loose, saturated, odor.
30	35	2.5	0.37-0.72/	0-2.5' Sand: Color as above, trace fine gravel, fine grain, trace medium to coarse,
			4750-16500	well sorted, loose, saturated, odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-34 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/30/05 Drilling Completed 4/30/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.76 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	0-15/	0-3.0' Silt: Dark yellowish brown (10 YR 3/4), trace very fine sand, roots, grass,
			21-54	organics, topsoil, loose, damp, organic, odor.
				3.0-5.0' Silty Sand: Dark yellowish brown (10 YR 4/4), some gravel, gravel is
				subangular to subround up to 1", subround rock 6" in diameter at 3.0, very
				silty, very fine to fine sand, little medium to coarse, poorly sorted, loose,
				saturated, no odor.
5	10	5	1-2/	0-1.5' Silt and Sand: As above, silt grading out toward 1.5'.
			12-2044	1.5-3.0' Sand: Strong brown (7.5 YR 5/6), trace gravel predominately fine up to
				1" subround to rounded, sand fine grain, some very fine, trace medium to coarse
				poorly sorted, loose, damp, no odor.
				3.0-4.3' Silt: Brown (7.5 YR 4/4), trace clay, little black staining, trace very fine sand,
				silt is fine/smooth, somewhat cohesive, saturated, no odor.
				4.3-5.0' Silty Sand: Gray (7.5 YR 5/1), trace fine gravel, fine grain, trace very fine,
				trace medium to coarse, poorly sorted, silty, saturated, no odor.
10	15	5	0-1/	0-5.0' Silt with Clay Interbeds: Silt is brown (7.5 YR 4/4) clay is yellowish red
			115-2064	(5 YR 4/6), one very fine sand layer approximately 3/4" thick at 3.2, silt
				predominately fine/smooth, predominately silt, clay contact in creases 4.0-5.0',
				clay layers plastic, cohesive, somewhat stiff, appear platy when broken, range from
				approximately 1/8" to 1.2" in thickness, overall saturated, no odor.
15	20	5	2-4/	0-5.0' Sand: Brown (7.5 YR 4/4), fine to medium grain, trace coarse, well sorted,
			12500-17600	uniform, saturated, no odor.
20	25	5	0-1/	0-3.0' Sand: Color as above, fine to medium grain, little coarse, trace fine gravel,
			1622-1948	moderately sorted, loose, saturated, slight odor.
25	30	5	0-1/	0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium to coarse, trace fine
			2019-3334	gravel, loose, well sorted, saturated, odor.
30	35	5	1-2/	0-2.0' Sand: Color as above, predominately fine grain, little, medium to coarse,
			2138-2227	trace fine gravel, moderately sorted, loose, saturated, odor.

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Sample/Core Log (continued)

Boring/Well GMPZA-34

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.0-3.5' Sand: Brown (7.5 YR 4/3), trace gravel subangular to subround up to
				2", very fine to coarse, predominately fine to medium, poorly sorted, loose,
				saturated, odor.
				3.5-5.0' Sand: Brown (7.5 YR 5/4), fine grain, little medium to coarse, poorly sorted,
				loose, saturated, odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-35 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/1/05 Drilling Completed 5/1/05

Total Depth Drilled 45 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1046.68 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	5-10/	0-3.5' Silt: Dark yellowish brown (10 YR 3/4) ,trace very fine sand, trace fine gravel,
			3-10	roots/organics, topsoil, loose, moist, organic odor.
				3.5-5.0' Silty Sand: Brown (10 YR 5/3), some gravel predominately fine up to 3"
				angular to subangular, sand is predominately very fine, some fine to coarse,
				poorly sorted, loose, dry, powdery, no odor.
5	10	5	9-24/	0-0.5' Silty Sand: As above.
			3710-7760	0.5-5.0' Sand: Yellowish brown (10 YR 5/6), trace to little silt, little gravel
				subangular to subround up to 2.5", sand predominately fine to medium grain,
				some coarse, little very fine, poorly sorted, loose, wet, no odor.
10	15	5	0-8/	0-0.8' Sand: Brown (2.5 YR 4/2), very silty, fine grain, trace fine gravel
			717-3746	angular to subround, trace medium to coarse, well sorted, loose, saturated,
				no odor.
				0.8-5.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish red (5 YR 4/6),
				predominately silt, few clay layers approximately 0.8-2.0, then clay content increases
				significantly below 3.0, all clay is plastic, cohesive, appears platy on broken surfaces,
				layers range from approximately 1/4" up to approximately 2" in thickness, somewhat
				stiff, overall trace black staining vesicles, saturated, slight odor.
15	20	5	0-21/	0-3.0' Silt/Clay Interbeds: As above.
			14000-19200	3.0-5.0' Sand: Brown (7.5 YR 4/4), trace fine gravel up to approximately 1"
				subangular to subround, predominately fine grain, little medium to coarse, poorly
				sorted, loose, saturated, slight odor.
20	25	3	2-15/	0-3.0' Sand: Color as above, trace fine gravel as above, fine grain, trace medium
			1135-41800	to coarse, well sorted, loose, saturated, odor.
25	30	5	0-1/	0-5.0' Sand: Brown (7.5 YR 5/4), slight trace fine gravel in places, fine grain, trace
			18400-36500	medium to coarse, well sorted, uniform, clean, loose, saturated, odor.
30	35	5	0-21/	0-2.5' Sand: As above.
			29900-39900	2.5-5.0' Sand: Brown (7.5 YR 5/4), little gravel fine up to approximately 1"

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Sample/Core Log (continued)

Boring/Well GMPZA-35 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				subangular to subround, fine to medium grain, little coarse, poorly sorted, loose,
				saturated, odor.
35	40	5	0-1/	0-5.0' Sand: Color as above, fine grain, trace fine gravel in places, some medium
			49000-63300	to coarse, moderately sorted, loose, saturated, odor.
40	45	5	0-2/	0-4.0' Sand: As above.
			40100-50300	4.0-5.0' Sand: Brown (7.5 YR 4/4), trace silt, very fine to fine grain, well sorted,
				loose, saturated, odor.
				EOB @ 45'

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Sample/Core Log

Boring/Well GMPZA-36 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/1/05 Drilling Completed 5/1/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1045.56 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.0	0-2/0-1	0-2.0' Silt: Dark yellowish brown (10 YR 3/6) trace very fine sand, topsoil, organics/
				rootlets, loose, moist, no odor.
5.0	10	5	0-4/26-40	0-1.5' Silt: As above, but sandy with very fine sand, also saturated.
				1.5-2.3' Silty Sand: Dark yellowish brown (10 YR 3/5), little gravel angular to
				subround up to approximately 2", silty, sand predominately fine, some very fine,
				some medium to coarse, very poorly sorted, trace clay in matrix, loose, saturated,
				no odor.
				2.3-5.0' Silt with few clay Interbeds: Silt is dark yellowish brown (10 YR 4/4), clay
				is yellowish red (5 YR 4/6), trace sand very fine to medium, predominately fine,
				sand occurs in thin layers <1/4" thick, clay beds also thin, <1/2" thick, clay is
				soft, plastic, cohesive, trace coarse sand in silt matrix, trace black staining
				throughout, saturated, slight odor.
10	15	5	1-10/36-691	0-2.8' Silt/Clay Interbeds: As above.
				2.8-5.0' Silt/Clay Interbeds: As above, sand content not present as above, much
				more clay, with clay layers up to 2" thick, clay is somewhat more stiff/firm than
				above, little black staining, saturated, slight odor.
15	20	5	0-6/	0-2.0' Silt/Clay Interbeds: As above in 10.0-12.8, much less clay.
			15400-16800	2.0-3.0' Silt and Sand: Brown (7.5 YR 5/4), interbedded, uniform interbedding
				with alternating silt and sand layers approximately 1/2" thick sand is very fine grain,
				well sorted, trace black staining, loose, saturated, slight odor.
				3.0-5.0' Sand: Brown (7.5 YR 5/3), fine to medium grain, some coarse, poorly
				sorted, loose, saturated, slight odor.
20	25	5	4-8/	0-3.0' Sand: Brown (7.5 YR 4/4), fine grain, little medium to coarse, moderately
			4362-22600	well sorted, loose, saturated, odor.
				3.0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium to coarse, well sorted,
				uniform, clean, loose, odor.

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Sample/Core Log (continued)

Boring/Well GMPZA-36 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
25	30	5	1-3/	0-5.0' Sand: Brown (7.5 YR 5/3), trace fine gravel (<1") subangular to subround,
			6859-8400	fine grain, little medium to coarse, moderately sorted, loose, saturated, odor.
30	35	5	1-9/	0-2.0' Sand: As above.
			3852-39900	2.0-3.0' Sand: Color as above, trace fine gravel as above, fine to medium grain,
				little coarse, poorly sorted, loose, saturated, odor.
				3.0-5.0' Sand: As above in 0-2.0'.
				EOB @ 35

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Sample/Core Log

Boring/Well GMPZA-37 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/1/05 Drilling Completed 5/1/05

Total Depth Drilled 45 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1045.83 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	3.0	46-51/	0-1.0' Silt: Dark brown (7.5 YR 3/4), roots and organic material, trace very fine
			7-18	sand, granular, loose, moist, topsoil, organic odor.
				1.0-3.0' Silt: As above, except color changes to strong brown (7.5 YR 4/6).
5	10	5	40-45/	0-4.5' Silt: As above.
			16-38	4.5-5.0' Sand: Dark gray (7.5 YR 4/1), some silt, little fine gravel, very fine to fine
				grain, little fine gravel, very fine to fine grain, little medium to coarse, poorly sorted,
				weathered rock material ?, loose, saturated, no odor.
10	15	0		No recovery.
15	20	5	13-45/	0-2.0' Silt: Brown (7.5 YR 4/4), little very fine to medium sand in matrix, trace
			9900-24350	gravel subangular to round up to 1", trace clay in matrix, sticky, highly disturbed,
				somewhat cohesive, saturated, odor.
20	25	2.5		0-2.5' Sand: Brown (7.5 YR 5/4) fine grain, very well sorted, clean, uniform, loose,
				saturated, odor. .
			35-41/	2.0-5.0 sand: Brown (2.5 YR 5/3), the gravel SR-R up to 3", fine to medium grain,
			2400-92600	trace croarse, saturated, odor
25	30	5	3-6/	0-5.0' Sand: Brown (7.5 YR 5/4), trace gravel subangular to round up to 1.5",
			5199-20800	fine grain, some medium, trace coarse, moderately sorted, loose, saturated, odor.
30	35	5	48800-83500	0-2.0' Sand: As above, grading into unit below.
				2.0-5.0' Sand: Brown (7.5 YR 4/3), fine to medium grain, little coarse, trace fine
				gravel, moderately sorted, loose, saturated, odor.
35	40	5	2600-52800	0-1.0' Sand: Brown (7.5 YR 5/3), trace gravel subangular to subround up to 1.5",
				fine grain, trace medium to coarse, moderately sorted, loose, saturated, odor.
				1.0-2.5' Sand: Brown (7.5 YR 4/3), little gravel subangular to subround up to 2",
				predominately fine grain, some medium to coarse, poorly sorted, loose, saturated,
				odor.
				2.5-4.0' Sand: As above in 0-1.0'.
				4.0-5.0' Silt: Reddish brown (5 YR 5/4), grainy to smooth, minor grain size

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-37

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				variation throughout, black staining, fairly uniform, no other constituents, slightly
				cohesive, loose, saturated, odor.
40	45	5	14,300-30000	0-5.0' Silt: As above, predominately grainy.
				EOB @ 45'.

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Sample/Core Log

Boring/Well GMPZA-38 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/2/05 Drilling Completed 5/2/05

Total Depth Drilled 38.5 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1044.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.0	.45-2.9/	0-1.0' Silt: Dark brown (10 YR 3/3), silt with organic matter, roots, twigs, loose,
			0-9	damp, topsoil, trace very fine sand, no odor.
				1.0-2.0' Silt: Dark yellowish brown (10 YR 4/4) as above, trace clay, slightly cohesive
				when worked, otherwise loose, no organic matter, damp, no odor.
5	10	5	0.5-1.3/	0-2.0' Silt: As above, dark yellowish brown (10 YR 4/4).
			62-513	2.0-2.5' Silty Sand: Dark gray (2.5 Y 4/1), very fine sand with silt, trace clay, sand well
				sorted.
				2.5-3.0' Silty Sand: Very fine sand, some silt, little fine to coarse sand, little gravel
				mostly fine, diameter up to 4", most under 1/2" subangular to subrounded,
				poorly sorted, trace clay, slight cohesion, wet.
				3.0-5.0' Silt/Clay: Interbeds, silt brown (7.5 YR 4/4), silt/clay interbeds, silt granular
				to smooth, 50/50 silt/clay, silt layers 1/2-2" thick, somewhat cohesive, trace clay in
				silt, clay slightly stiff, soft when worked, platy on broken surfaces, plastic, layers
				up to 3" thick.
10	15	5	1.4-2.3/	0-1.5' Silt/Clay: Interbeds as above, interbeds.
			66-403	1.5-5.0' Silt/Clay: Interbeds, much less clay, grain size of silt varies slightly
				throughout creating laminations, little clay layering up to 1/2" thick, clay soft,
				platey on broken surfaces, plastic when worked, silt smooth-granular, trace very
				fine sand interbeds, well sorted, with silt/clay matrix.
15	20	5	0.1-1.2/	0-1.0' Sand: Brown (7.5 YR 5/3), fine sand, trace medium to coarse, well sorted,
			108-5497	loose, wet, slight odor.
				1.0-2.0' Sand: Brown (7.5 YR 4/4), fine sand, little medium to coarse sand, trace
				fine gravel, subangular to subrounded, poorly sorted, trace silt, loose, slight odor,
				wet.
				2.0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine sand, trace medium sand, well
				sorted, slight odor, wet, loose.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-38

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	1.5-2/	0-1.5' Sand: Brown (7.5 YR 4/3), fine sand, trace medium to coarse sand, moderately
			1064-15700	well sorted, loose, slight odor, wet, trace gravel subangular to subrounded, up to
				1" diameter.
				1.5-2.0' Sand: Brown (7.5 YR 5/3), as above in 15-20' (2-5').
				2.0-.50' Sand: Brown (7.5 YR 5/4), medium sand, little to some fine, some coarse,
				very poorly sorted, saturated, loose, trace fine gravel <1/2" diameter, subangular to
				subrounded, odor.
25	30	5	1.8-2.8/	0-2.5' Sand: As above, minor grain size variation throughout sample,
			2400-5287	more gravel in places, up to 1" angular to subrounded, grades into lower unit.
				lower unit.
				2.5-5.0' Sand: Light brown (7.5 YR 6/4) fine sand, trace medium to coarse sand,
				well sorted, wet, loose, trace fine gravel, odor.
30	35	5	3-3.8/	0-0.5' Sand: Brown (7.5 YR 4/2), fine to coarse sand, trace very fine,very poorly
			5465-102700	sorted, wet, loose, odor, trace subrounded gravel less than 1/2".
				0.5-2.0' Sand: Brown (7.5 YR 5/3) very fine to fine sand, trace medium sand, well
				sorted, loose, wet, odor.
				2.0-3.5' Sand: Brown (7.5 YR 5/3) fine sand, trace medium to coarse, trace fine
				gravel, moderately well sorted, loose, wet, odor.
				3.5-4.0' Sand: Very dark brown (7.5 YR 3/1), fine to medium sand, trace coarse
				sand, trace fine gravel mostly fine up to 1" diameter, subangular to subround,
				poorly sorted, wet, loose, odor.
				4.0-5.0' Sand: Brown (7.5 YR 5/3) trace fine gravel, fine to medium sand, trace
				coarse sand, well sorted, wet, loose, odor.
35	38.5	3.5		0-2.0' Sand: Brown (7.5 YR 5/2), medium sand, trace coarse sand, little to some
				fine sand, trace fine gravel, moderately sorted, loose, wet, odor.
				2.0-3.5' Silty/Clayey Sand: Greenish gray (1 Gley 10 Y 6/1), cohesive, fine to medium
				sand, trace coarse sand, saturated, trace fine gravel, plastic when worked,
				weathered bedrock.
				EOB @ 38.5'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-39 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/2/05 Drilling Completed 5/2/05

Total Depth Drilled 45 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1042.61 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	2.7-6.3/	0-1.5' Silt: Dark brown (7.5 YR 2.5/2), silt with organic matter, top soil, roots/twigs,
			0-1	loose, damp.
				1.5-5.0' Silt: Strong brown (7.5 YR 4/6), silt with trace clay, cohesive when worked,
				no organic matter, trace very fine sand in places loose, damp, no odor.
5	10	5	1.3-3.3/	0-1.0' Silt: As above, saturated, sticky.
			156-755	1.0-3.0' Sand: Silty/clayey, dark greenish gray (1 Gley 10 GY 4/1), silty sand, fine sand,
				well sorted, cohesive, saturated, odor, slight color variation at bottom.
				3.0-3.3' Clay: Grayish green (1 Gley 5G 4/2), medium stiff clay, trace fine sand,
				plastic when worked.
				3.3-4.0' Silty/Clayey Sand: As above, 1-3', more clay, color variable throughout,
				odor.
				4.0-4.3' Silty Sand: Pinkish gray (7.5 YR 6/2), fine sand, trace medium to coarse
				sand, little gravel fine up to 1" subangular to subround, saturated, slight odor,
				trace clay.
				4.3-5.0' Silt: With clay interbeds silt brown (7.5 YR 4/4), clay yellowish red (5 YR 4/6),
				silt fine/smooth, cohesive, silt contains clay, clay interbeds varved up to 1" thick
				soft, platey on broken surfaces, plastic, trace laminations within Silt.
10	15	5	0/1-835	0-2: Silt/Clay Interbeds: As above, 50/50 silt/clay, clay layers up to 4" thick,
				trace black staining, much thicker layering.
				2.0-4.5' Silt with Clay: Clay thickness decreases, layers 1" and less, silt laminations,
				with variable colors, fine/smooth silt, trace interbedded very fine to fine sand,
				silty/clayey, clay very soft, plastic, sand seams up to 1/2", wet, silt slightly cohesive.
				4.5-5.0' Sand/Silt/Clay Interbeds: Brown (7.5 YR 5/4), fine sand, well sorted, silty,
				1/2" beds, mixed, sticky mess.
15	20	5	-5.05-4.18/	0-1.0' Sand: Brown (7.5 YR 4/4), medium sand, little fine sand, little coarse sand,
			861-1680	trace fine gravel subrounded, <1/2" diameter, saturated, trace silt, poorly sorted,
				loose, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-39

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				1.0-5.0' Sand: Brown (&.5 YR 5/3) fine sand, trace medium to coarse sand, trace
				fine gravel <1/4" diameter wet, loose, slight odor, well sorted.
20	25	3	0-3	Sand: As above, trace gravel up to 1" diameter subrounded.
25	30	5	-9- -8.12/	0-2.0' Sand: Brown (7.5 YR 5/4), fine sand, little medium to coarse, trace fine
			2489-2960	gravel, poorly sorted gravel up to 1" subrounded, loose, saturated, odor.
				2.0-4.0' Sand: Brown (7.5 YR 5/2) fine sand, trace medium to coarse sand,
				moderately sorted, loose, saturated, slight odor, trace fine gravel subangular to
				subrounded, up to 1/2".
				4.0-5.0' Sand: As above, (0-2').
30	35	5	-9.2- -7.6/	0-5.0' Sand: Fine sand, trace to little medium to coarse sand, trace gravel in places,
			762-13000	moderately sorted, loose, saturated, odor, gravel up to 1/2" subangular to subrounded,
				coarsens at bottom, grades into next sample.
35	40	5	-9.3- -8.1/	0-2.0' Sand: Dark gray (7.5 YR 4/1), medium to coarse sand, little fine sand, little
			1257-3818	fine gravel, very poorly sorted, loose, saturated, odor, gravel up to 1" angular to
				subrounded.
				2.0-3.5' Sand: Redish brown (7.5 YR 5/3), very fine sand, little fine sand, well sorted,
				saturated, 1" sand seam of medium to coarse sand, odor, loose.
				3.5-5.0' Sand: Dark gray (7.5 YR 4/1), as above (0-2), predominately medium sand,
				some fine sand.
				EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMPZA-40 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/12/05 Drilling Completed 5/13/05

Total Depth Drilled 30 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device 2' splitspoon

Length and Diameter of Coring Device 2' x 2' Sampling Interval continuous feet

Land-Surface Elev. 1041.42 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Paul

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blow Counts per 6 inches/ PID/FID (ppm)	Sample/Core Description
0	2	0.0	NR	0-2.0' No recovery.
2.0	4	2	1 1 1 1	0-1.7' Clayey Silt: Dark brown (7.5 YR 3/4), silt with some clay, cohesive, loose in
			1.94-3	places, soft, plastic, sticky, trace very fine sand, trace organic material, damp to wet, no odor.
				1.7-2.0' Clay: Dark greenish gray (1 Gley 10 GY 3/1) clay, very soft, plastic, cohesive,
				no odor, wet, sticky, pasty.
4	6	0.4	1 1 3 5/	0-0.3' Clay: As above.
			7.86/938	0.3-0.4' Sand: Brown (7.5 YR 5/2), very fine to fine sand, trace silt, trace medium to
				coarse, trace gravel, angular to subround, up to 1/2" diameter, poorly sorted
				saturated, loose, slight odor.
6	8	0.3	2 3 4 5/	0-0.3' Sand: As above, little gravel up to 1" diameter, most under 1/2" angular to
			32.86/207	subround.
8	10	0	5 6 6 8	No recovery , 0.7' slough.
10	12	0.8	3 5 7 9/	0-0.8' Silt/Clay Interbeds: Silt brown (7.5 YR 4/3), clay redish brown (5 YR 4/3),
			13.78/1787	regular interbedding 1" thick layers of silt and clay, silt fine/smooth, soft, loose,
				clay is soft, plastic, cohesive, platey on broken surface, wet, odor.
12	14	0.9	1 1 1 1/	0-0.9' Silt with Clay: Interbeds silt with trace clay interbedding, appears varved to
			2.94/1750	1/4" thick, distorted/intermixed in lower 0.4', some clay in matrix, cohesive, acts
				plastic with working, soft, wet, odor.
14	16	1.3	2 3 5 5/	0-1.0' Sand: Redish brown (5 YR 5/3) fine sand, little medium to coarse, trace slight
			125/2870	gravel up to 1/2", mostly very fine gravel, subangular to subround, moderately sorted
				matrix, loose, saturated, odor.
				1.0-1.3' Sand: Fine sand, trace medium to coarse, well sorted, odor, loose, saturated.
16	18	1.3	2 5 7 8/	0-0.2' Sand: As above.
			22.85/2730	0.2-0.8' Sand: Brown (7.5 YR 4/2), fine sand, little medium to coarse, moderately
				sorted, loose, saturated, odor.
				0.8-1.3' Sand: Dark brown (7.5 YR 3/2), fine sand, trace medium to coarse, well

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-40 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				sorted, loose, saturated, odor.
18	20	1.6	4 4 6 7/	0-0.3' Sand: As above.
			183/25701	0.3-0.6' Sand: Brown (7.5 YR 5/4), fine sand, well sorted, loose, saturated, odor.
				0.6-1.6' Sand: Fine sand, little medium to coarse, somewhat to poorly sorted,
				loose, saturated, odor, slight trace very fine gravel.
20	22	2	5 6 5 6/	0-2.0' Sand: Brown (7.5 YR 4/4), fine sand, trace medium to coarse, loose, strong
			171/3955	odor, saturated, well sorted.
22	24	1.9	3 5 7 7/	0-0.5' Sand: Brown (7.5 YR 4/3), fine sand, trace medium to coarse, saturated, odor,
			135/1924	loose, moderately sorted.
				0.5-1.5' Sand: Color as above, fine sand, trace medium, moderately well sorted,
				saturated, odor, loose.
				1.5-1.7' Sand: Color as above, fine sand, little medium to coarse sand, somewhat
				sorted, loose, saturated, odor.
				1.7-1.9' Sand: Brown (7.5 YR 4/4), fine sand, trace very fine sand, loose, saturated,
				odor, well sorted.
24	26	1.7	4 6 8 7/	0-1.7' Sand: Brown (7.5 YR 4/4), predominately fine sand, trace medium to coarse
			19.36/3240	sand, moderately well sorted, loose, saturated, odor.
26	28	1.7	5 4 4 6/	0-1.7' Sand: As above.
			117/6163	
20	30	1.9	3 5 6 6/	0-0.3' Sand: As above.
			216/3117	0.3-0.6' Sand: Brown (7.5 YR 4/4), well sorted, fine sand, loose, odor, saturated.
				0.6-1.9' Sand: As above 0-1.7 of 24-26'.
				EOB @ 30'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-41 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/12/05 Drilling Completed 5/12/05

Total Depth Drilled 30 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1039.36 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Paul

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blow Counts per 6 inches/ PID/FID (ppm)	Sample/Core Description
0	2	0.0		No recovery.
2	4	1.3	1 1 1 1/	0-0.4' Silty Clay: Dark brown (7.5 YR 3/4), trace organic material/rootlets, somewhat
			0.52/1042	cohesive, pasty texture, plastic sticky, soft, saturated, organic odor.
				0.4-1.3' Clay: Dark greenish gray (1 Gley 5 GY 3/1), trace silt, soft, plastic, cohesive,
				pasty texture, saturated, no odor.
4	6	1.6	1 1 1 1/	0-1.3' Clay: As above, with some olive green mottling.
			3.01/3044	1.3-1.6' Silty Sand: Very dark brown (10 YR 2/2), trace clay, very fine grain, very
				well sorted, silty, variable color throughout, loose, saturated, slight odor.
6	8	1	1 1 1 2/	0-0.5' Clay: As above in 4-5.3'.
			0.97/1735	0.5-0.7' Silty Sand: As above in 5.3-5.6'.
				0.7-0.8' Sand: Very dark grayish brown (10 YR 3/2) trace silt, fine grain, trace
				medium to coarse, well sorted, loose, saturated, slight odor.
				0.8-1.0' Silty Sand: Dark brown (10 YR 3/2), trace fine gravel, very silty,
				predominately very fine to fine grain, little medium to coarse, poorly sorted, loose,
				saturated, slight odor.
8	10	2	1 1 2 2/	0-0.9' Sand: Dark grayish brown (2.5 YR 4/2), predominately fine grain, some
			2.56/3522	very fine, moderately to well sorted, loose, saturated, odor.
				0.9-1.4' Sand: Very dark grayish brown (10 YR 3/2), little fine gravel, predominately
				medium to coarse grain, some fine, little very fine, very poorly sorted, loose,
				saturated, odor.
				1.4-2.0' Sand: Strong brown (7.5 YR 4/6), trace gravel subangular to subround up
				to approximately 1/2", predominately fine grain, trace medium to coarse, some
				very fine, moderately to sorted, loose, saturated, odor.
10	12	2	2 2 2 3/	0-0.7' Sand: Dark grayish brown (10 YR 4/2), trace silt, very fine to fine grain,
			1.82/3370	trace medium to coarse, probably slough, moderately sorted, loose, saturated, odor.
				0.7-1.4' Sand: Dark gray (7.5 YR 4/1), little fine "pea" gravel, coarse to very
				coarse, trace very fine to medium sand, probably washed in, clean, somewhat

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-41 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				sorted, loose, saturated, odor.
				1.4-1.7' Sand: Brown (7.5 YR 4/3), predominately fine grain, trace medium to
				coarse, moderately sorted, loose, saturated, odor.
12	14	1.8	2 3 2 2/	0-0.8' Sand: As above.
			2.65/3282	0.8-1.8' Silt: Brown (7.5 YR 4/4), trace clay, trace very fine to fine sand, grainy to
				smooth, predominately grainy, slightly cohesive, sticky, saturated/liquified, odor.
14	16	1.5	1 2 2 2/	0-1.5' Sand: Brown (7.5 YR 5/4), trace gravel subangular up to approximately 1/2",
			2.86/9213	predominately fine grain, trace medium to coarse, moderately sorted, loose, saturated,
				odor.
16	18	1	1 1 1 2/	0-0.6' Sand: As above.
			2.38/6825	
18	20	2	2 3 5 6/	0-1.3' Sand: As above.
			1.88/8376	1.3-2.0' Sand: Brown (10 YR 4/3), trace fine gravel, predominately fine grain
				matrix, little medium to coarse, poorly sorted, loose, saturated, odor.
20	22	1.9	3 5 5 7/	0-1.1' Sand: Brown (7.5 YR 5/4), predominately fine grain, trace medium,
			3.52/7629	moderately well sorted, loose saturated, odor.
				1.1-1.2' Sand: Brown (7.5 YR 4/3), predominately fine to medium grain, little
				coarse, trace very fine, poorly sorted, loose, saturated, odor.
				1.2-1.5' Sand: Brown (7.5 YR 4/3), trace gravel subangular to subround up to
				approximately 1", predominately fine grain, some medium to coarse, poorly sorted,
				loose, saturated, odor.
				1.5-1.9' Sand: Brown (2.5 YR 4/4), fine grain, trace very fine, trace medium, well
				sorted, loose, saturated, odor.
22	24	2	2 4 6 6/	0-1.8' Sand: As above.
			2.29/5402	1.8-2.0' Sand: Brown (10 YR 4/3), trace gravel angular to subround up to
				approximately 1/2", little medium to coarse, poorly sorted, loose, saturated,
				odor.
24	26	1.4	4 5 7 8/	0-1.4' Sand: Color as above, predominately fine grain, trace very fine, trace medium
			2.29/5429	to coarse, moderately sorted, loose, saturated, odor.
26	28	6	3 5 6 7	No recovery.
28	30	1.5	NR/	0-1.5' Sand: As above.
			1.68/4020	
				EOB @30'

ARCADIS

Sample/Core Log

Boring/Well GMPZA-42 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/2/05 Drilling Completed 5/2/05

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1042.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jan Helper Scott, Royce

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	2-14.5/	0-2.5' Silty Sand: Dark yellowish brown (10 YR 3/6), very fine to fine sand, some
			1-3	gravel, loose to slightly cohesive in places, color changes after 1 ft, trace medium
				to coarse sand, gravel up to 2" diameter, angular to subrounded, damp, trace
				organic matter, lots of organics first 6", poorly sorted.
				2.5-5.0' Silt/Clay Interbeds: Silt brown (7.5 YR 5/4), clay yellowish red (5 YR 4/6), silt
				fine/smooth, beds 1/2-1" thick, 70/30 silt/clay, clay layers upto 3/4", soft clay,
				plastic when worked, trace fine sand interbeds up to 1/4" thick, well sorted, crumbly
				to low cohesion silt, clay platey on broken surfaces, wet, no odor.
5	10	5	3.8-20.1/	0-0.5' Silt/Clay: Interbeds, as above.
			294-1119	0.5-2.5' Silt/Clay: Interbeds, silt brown (7.5 YR 4/4) clay redish brown (5 YR 4/4),
				color change at 0.5', clay 1-2" thick, platey on broken surfaces, soft to somewhat stiff,
				plastic when worked, silt fine/smooth, crumbly to slight cohesion clay/silt 50/50
				silt layers 1-2" thick.
				2.5-5.0' Silt/Clay: Interbeds, silt with clay beds, silt/clay 80/20, clay layers platey on
				broken surfaces, soft to somewhat stiff, plastic when worked, beds varved to
				1/2", silt fine/smooth, laminations with variable color/grain sizes, interbeds <1/2",
				trace very fine sand/grainy silt to greater in abundance at bottom.
10	15	5	3.5-11.3/	0-2.0' Silt: Brown (7.5 YR 5/3), granular silt, trace very fine sand, uniform, black
			4430-29500	staining, saturated, no odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/4), fine sand, trace medium to coarse sand, well
				sorted, saturated, loose, uniform, clean.
15	20	5	3.4-12.3/	0-2.0' Sand: As above.
			22400-43000	2.0-3.0' Sand: Brown (7.5 YR 4/2), fine sand, little medium to coarse sand, trace
				fine gravel up to 2-1/2", mostly fine, subangular to subrounded, poorly sorted,
				saturated, loose, slight odor.
				3.0-5.0' Sand: Fine to medium sand, some coarse, poorly sorted, saturated,
				loose, trace fine gravel subangular to subrounded.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZA-42 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	2	NA	0-1.5' Sand: Dark gray (7.5 YR 4/1), medium to coarse sand, some fine, some
				fine gravel, very poorly sorted, gravel up to 1" subrounded, loose, saturated,
				odor.
				1.5-2.0' Sand: Fine sand, little medium to coarse sand, moderately sorted, loose,
				odor, saturated.
25	30	5	4.7-18.2/	0-2.0' Sand: Brown (7.5 YR 4/3), medium to coarse sand, some fine sand, very
			37000-101400	poorly sorted, trace fine gravel up to 1/2" diameter subangular to subrounded,
				loose, odor, saturated, entire 5' section grades finer with depth.
				2.0-4.0' Sand: Light brown (7.5 YR 6/4) fine sand, trace medium to coarse,
				moderately well sorted at 2' to well sorted at 4', loose, saturated, odor strong, trace
				fine gravel upper 6".
				4.0-4.2' Sand: As above, with gravel, (same color as above), gravel up to 1/2"
				diameter, subrounded, odor, gravel layer with sand matrix, saturated, loose.
				4.2-4.6' Silt: Redish brown (5 YR 5/4), fine silt, somewhat cohesive to
				crumbly.
				4.6-5.0' Silt: Same as above, color, granular silt, uniform, soft, loose, black
				staining, strong odor, crumbly, saturated.
30	35	5	8.4-26.8/	0-4.0' Silt: As above.
			10200-16000	4.0-5.0' Sand: Color same as above, very fine sand, well sorted, clean, loose,
				saturated, strong odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMPZB-1 Project/No. Ford/Kingsford WI001095.0023 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 5/11/05 Drilling Completed 5/11/05

Total Depth Drilled 115 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1054.47 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Scott, Royce

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5		1.48-1.54/	0-1.0' Silt: Dark brown (10 YR 3/3), silt/topsoil, some organic matter roots/grass/
			12/16	twigs, loose, trace very fine sand, damp, earthy odor.
				1.0-2.0' Silt: Brown (7.5 YR 4/4), silt with trace roots, loose to slightly cohesive,
				trace clay in portions, trace gravel up to 4" diameter surbround.
				2.0-4.0' Silt: Clayey, brown (7.5 YR 5/4), silt fine/smooth, some clay, little fine to
				medium sand and gravel suspended in somewhat cohesive matrix, gravel up to
				2" diameter, angular to subround, loose to somewhat cohesive, damp, no odor,
				trace organic material, gradation, section above and below may be mixed from drilling.
				4.0-5.0' Silt: Clayey: As above, trace fine to medium sand and gravel, no organic
				matter.
5	10	5	.27-.89/	0-1.0' Silt: Brown (10 YR 4/3) silt with trace clay in matrix, trace very fine sand, trace
			105-2069	fine to coarse sand, trace gravel up to 1", most under 1/4", gravel and sand
				suspended in loose to slightly cohesive matrix, damp, no odor.
				1.0-1.5' Sand: Dark brown (10 YR 3/3), medium to very coarse sand, trace very
				fine to fine, some silt, trace clay, trace fine gravel up to 1" diameter, angular to
				subround, wet, loose, no odor, very poorly sorted.
				1.5-3.5' Silt/Clay/Sand: Reddish brown (5 YR 5/4), cohesive, pasty, conglomeration of
				fine to medium sand, little coarse sand, trace gravel up to 4" diameter, angular to
				subround, in matrix of silt and clay, wet, no odor.
				3.5-4.0' Silt: With clay interbeds, fine/smooth clay, clay layers look to be
				varved to approximately 1/4" thick, very soft, trace clay in silt creating slight
				cohesion, wet, no odor.
				4.0-5.0' Silt: Brown (7.5 YR 4/4), fine/smooth silt, loose to somewhat cohesive,
				trace clay in matrix, wet, no odor.
				4.0-5.0' Silt: Brown (7.5 YR 4/4), fine to smooth silt, loose to somewhat cohesive,
				trace clay in matrix, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZB-1

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
10	15	5	2.24-3.63/	0-1.5' Silt: As above, blotchy color, representative of clay (gradational section
			981-1969	between above and below).
				1.5-5.0' Silt with Clay Interbeds: Silt, brown (7.5 YR 4/3) clay yellowish red (5 YR 4/4)
				fine to smooth silt, laminations of variable color in places, clay layers varved to 1/2",
				(down to 3 feet), plate, on broken surfaces, 2-5' more clay content 1/2" to 1-1/2"
				thick, soft, plastic when worked.
15	20	5	.25-2.8/	0-1.0' Sand: Brown (7.5 YR 4/3), medium to coarse sand, trace fine sand, trace
			1808-26400	gravel up to 2" angular to subround, very poorly sorted, trace silt (may be from
				above), loose, wet, slight odor.
				1.0-1.7' Sand: Color as above, medium to very coarse sand, trace silt, some gravel
				up to 2" diameter, angular to subround, loose, slight odor, wet, poorly sorted.
				1.7-2.5' Sand: Color as above, medium to coarse sand, little very coarse, trace fine
				gravel up to 1" diameter most under 1/4", angular to subround very poorly sorted,
				wet loose, slight odor.
				2.5-5.0' Sand: Brown (7.5 YR 4/2), medium sand, some coarse sand, little very
				coarse, trace to little gravel up to 1" diameter, subangular to subround, loose,
				wet, odor, poorly sorted.
20	25	NR		No recovery.
25	30	5	0.46-1.02/	0-2.0' Sand: As above, trace silt from 1-2'.
			1435-13300	2.0-4.0' Sand: Dark brown (7.5 YR 3/2), fine to medium sand, trace very fine sand,
				little coarse, trace fine gravel up to 1" diameter, most <1/4" subangular to subround,
				saturated, very poorly sorted, loose, odor.
				4.0-5.0' Sand: Fine sand, trace very fine, some medium to coarse, trace very fine
				gravel, single piece up to 3" diameter, subround, loose, saturated, poorly sorted,
				odor.
30	35	5	1.06-1.12/	0-2.5' Sand: As above.
			1400-11500	2.5-3.5' Sand: Brown (7.5 YR 5/4), fine sand, trace medium to coarse, moderately
				well sorted, loose, odor, saturated.
				3.5-4.0' Sand: Brown (7.5 YR 4/2), medium to very coarse sand, trace fine, trace
				gravel up to 2" diameter, subangular to subround, loose, poorly sorted, odor, wet.
				4.0-5.0' Silt: With clay interbeds, silt brown (7.5 YR 4/4), clay yellowish red (5 YR 4/6),
				fine/smooth silt with clay layers 1" thick, plastic, very soft, cohesive, platey on
				broken planes, clay predominate in first 6", wet, odor.
35	40	5	0-32/	0-5' Silt: Reddish brown (5 YR 5/4), granular/coarse silt, uniform, saturated, loose,
			870-2817	odor strong, vesicles, trace coarse sand.
40	45	5	0.21-1.93/	0-5.0' Silt: As above, coarsening with depth, approaching very fine sand, black
			4311-120300	staining, strong odor, color lightens with depth, reddish brown (5 YR 5/3), vesicles.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZB-1 Page 3 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
45	50	5	1.67-8.41/	0-5.0' Silt: Color as above, predominately granular, 4-5 begins to get firmer,
			11700-82500	smooth silt in places, saturated, loose, strong odor, black staining.
50	55	5	5.67-8.03/	0-5.0' Silt: Color as above, granular silt, uniform, very strong odor trace black
			19000-81400	staining, loose, wet.
55	60	5	16-4.21/	0-5.0' Silt: As above, no staining.
			2244-39400	
60	65	5	2.41-9.38/	0-4.0' Silt: As above, section of slightly finer to smooth silt at 2', grades to below.
			10300-48400	4.0-5.0' Silt: Fine/smooth silt, uniform, black staining, saturated, loose vesicles.
65	70	6	2.63-5.14/	0-5.0' Silt: Redish brown (5 YR 5/4), predominately fine/smooth silt, varying grain
			5354-27300	size throughout, slightly cohesive, trace clay in places, probably interbedded silts,
				saturated vesicles, strong odor, trace black staining.
70	75	5	3.84-7.55/	0-1.0' Silt: Color, as above, smooth/fine silt, uniform, lots of vesicles, loose,
			12100-120000	saturated, strong odor.
				1.0-5.0' Silt: Color as above, granular silt, uniform, loose, strong odor, wet.
75	80	5	1.21-5.17/	0-5.0' Silt: As above, trace black staining.
			1723-29500	
80	85	NR		Lost on rig deck appeared to be similar to above.
90	93	NR		Lost on rig deck appeared to be similar to above.
93	95	2	4.53-9.17/	0-2.0' Silt: Color as above, smooth/fine silt, uniform, loose, wet.
			28400-59600	
95	100		0.43-0.64/	0-1.0' Silt: Brown (7.5 YR 5/4) granular silt approaching very fine sand, grades into
			19200-200000	lower portion, uniform, loose, wet, strong odor.
				1.0-4.0' Sand: Color as above, very fine sand, trace fine sand, uniform, loose,
				damp, strong odor, well sorted.
				4.0-4.5' Sand: Light brown (7.5 YR 6/4), very fine to fine sand, moderately well
				sorted, loose, damp, strong odor.
				4.5-5.0' Silt: Redish Brown (5 YR 5/4), granular silt, trace clay, damp, loose to some
				what cohesive, strong odor.
100	105	5	1.07-2.23/	0-1.5' Silt: Brown (7.5 YR 5/4), granular silt, some very fine sand, loose, damp, strong
			97700-	odor, vesicles.
			>440000	1.5-3.5' Silt/Sand: Interbeds, color as above, interbedded granular silt and very fine
				sand, mixed up due to drilling probable, loose, damp, strong odor, vesicles.
				3.5-5.0' Silt: Color as above, fine/smooth silt, uniform, loose, strong odor, damp
				to wet, trace clay, trace black staining.
105	110	5	90-2.34/	0-2.0' Silt: Fine/smooth silt, trace clay, loose to somewhat cohesive in places, wet,
			5599-51300	strong odor.
				2.0-2.7' Silt: Granular and fine silt interbedded giving mixed appearance (may be

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZB-1

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				due to drilling), wet, strong odor loose to sticky, vesicles.
				2.7-4.0' Silt/Sand: Brown (4/4 7.5 YR) silt, granular, interbedded with very fine
				sand, grades from upper unit to lower, saturated, sticky, strong odor.
				4.0-5.0' Sand: Brown (7.5 YR 4/4), very fine sand, trace fine sand, well sorted,
				loose, wet, strong odor.
110	115	5	1.50-6.53/	0-2.0' Sand: As above fines into lower unit at bottom.
			10000-320400	2.0-3.0' Silt: Brown (7.5 YR 4/4), granular silt interbedded with fine/smooth silt,
				appearance mixed, loose, damp, strong odor.
				3.0-3.8' Silt: Color as above smooth/fine silt, uniform, loose, damp, strong odor.
				3.8-5.0' Sand: Brown (7.5 YR 4/3), very fine sand, trace fine sand, well sorted,
				damp, loose, strong odor.
				EOB @ 115'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-1 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 3/15/05 Drilling Completed 3/16/05

Total Depth Drilled 125 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1045.49 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4.0	0.42-1.05/	0-1.5' Silt: Very dark brown (10 YR 2/2), little wood, roots, organics, trace very fine
			-3.18 - -1.56	sand, uniform, frozen, topsoil, moist, no odor.
				1.5-4.0' Silt: As above, dark brown (10 YR 3/3), but not frozen.
				4.0-5.0' No recovery.
5	10	5	2.09-2.90/	0-3.0' Slough.
			10.20-133	3.0-5.0' Totally disturbed sample, had no recovery 5-15, went back down and
				brought up a mixture of everything, mainly silt, brown (10 YR 4/3), little clay in
				matrix, little to some sand very fine to very coarse, little gravel fine to 4", subround,
				loose, saturated, no odor.
10	15	5	0.29-0.52/	0-5.0' Disturbed mix, as above.
			2.97-18.11	
15	20	5	1.43-1.89/	0-3.0' Silty Sand: Color as above, little gravel fine up to 2.5", angular to subround,
			393-2833	very silty, sand very fine to very coarse, predominately very fine to fine, loose,
				poorly sorted, saturated, no odor.
				3.0-3.5' Sand: Black (7.5 YR 2.5/1), trace fine angular to subangular gravel,
				medium to coarse, little very fine to fine, poorly sorted, loose, saturated, no odor.
				3.5-5.0' Silty Sand: As above, but soupy and disturbed from drilling fluid.
20	25	5	1.04-2.55/	0-3.0' Silty Sand with Gravel: Gravel up to 4", otherwise as above. Grades into
			301-14000	unit below.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), trace fine subangular to subround gravel,
				trace silt 3.0-3.5, fine grain, trace medium, well sorted, loose, saturated, odor.
25	30	5	1.51-2.54/	0-1.5' Sand: As above, but slightly finer, predominately very fine, color as above,
			1852-18400	well sorted, loose, saturated, odor.
				1.5-5.0' Sand: As above, brown as above, fine grain, very well sorted, loose,
				saturated, upper fine, approaching medium, odor.
30	35	5	0.97-1.70/	0-4.0' Sand: As above.
			648-6753	4.0-5.0' Sand: Brown (7.5 YR 4/2) fine to medium grain, trace fine gravel,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-1 Page 2 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				angular to subangular, loose, saturated, odor.
35	40	5	0.94-2.25/	0-4.0' Sand: Brown (7.5 YR 4/3) trace fine gravel subangular to subround, well
			54.07-1541	sorted, interbedded, loose, very fine to fine grain, saturated, odor.
				4.0-5.0' Silt: Reddish brown (5 YR 4/3), little clay, silt is grainy to smooth, clay is
				yellowish red (5 YR 4/6), plastic, cohesive, platy appearance on broken surfaces,
				clay occurs in layers varved to 1.5" thick, clay is stiff, silt is somewhat cohesive,
				saturated, odor.
40	45	5	0.42-4.49/	0-5.0' Silt: With clay interbeds as above, silt is slightly coarser, saturated, odor.
			1.64-4302	
45	50	5	1.08-1.56/	0-5.0' Silt: As above with a few clay interbeds, but clay is grading out.
			6.73-15.81	
50	55	5	1.42-4.41/	0-5.0' Silt: As above, no clay.
			2.83-952	
55	60	5	1.31-1.97/	0-5.0' Silt: Reddish brown (5 YR 4/3) predominately smooth, somewhat cohesive,
			1.87-8.10	very uniform, saturated, slight odor.
60	65	5	1.23-1.13/	0-5.0' Silt: As above.
			1.10-4.52	
65	70	5	6.99-3.39/	0-5.0' Silt: As Above, very slightly coarser in places, trace clay, saturated,
			0.56-8.16	slight odor.
70	75	5	1.51-5.16/	0-0.5' Silt: As above.
			2.93-47	0.5-3.5' Sand: Reddish gray (5 YR 5/2), very fine grain, trace to little silt in places,
				probably a few silt interbeds <1" thick, well sorted, loose, saturated, no odor.
				3.5-5.0' Sandy Silt: Color as above, predominately silt, some very fine sand well
				sorted, little clay layering, clay is yellowish red, plastic, cohesive, stiff, layers varved
				up to 0.5", saturated, no odor.
75	80	5	0.94-1.14/	0-3.0' Silt: Reddish brown (5 YR 4/3), some sand very fine to coarse, predominately
			0.20-2.59	very fine, little gravel subangular to subround up to 1", trace clay, poorly sorted
				mixture, loose, saturated, no odor.
				3.0-5.0' Sand and Gravel: Very dark gray (7.5 YR 3/1), little silt, sand very fine to
				very coarse, predominately coarse, gravel fine up to 2" subangular to subround,
				poorly sorted, loose, saturated, no odor.
80	85	5	1.05-2.75/	0-2.0' Silty Sand: Brown (7.5 YR 4/3), little gravel subangular to subround up to
			0.51-6.41	2", trace clay, sand very fine to fine, some medium to coarse, poorly sorted, loose,
				saturated, no odor.
				2.0-3.0' Silt/Sand/Gravel: Color as above, gravel fine up to 3" subangular to
				subround, sand all sizes, poorly sorted, loose, saturated, no odor.
				3.0-5.0' Silty Sand: As above.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-1

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
85	90	5	1.20-5.18/	0-5.0' Silty Sand and Gravel: Reddish gray (5 YR 5/2), sand all sizes, a lot of fine
			9.04-36.84	gravel, and some gravel up to 2" subangular to subround, very poorly sorted sand
				and gravel mix, silty in places, loose, saturated, no odor.
90	95	5	1.84-2.38/	0-5.0' Silty Sand and Gravel: As above.
			12.57-18	
95	100	5	1.33-3.00/	0-5.0' Sand: Dark reddish gray (5 YR 4/2), little gravel angular to subround up to
			3.10-14.36	2", some silt in places, sand fine to coarse, predominately fine, poorly sorted, loose,
				saturated, no odor.
100	105	5	1.50-3.17/	0-2.0' Sand: Color as above, very fine grain, trace silt, uniform, well sorted,
			1.99-7.02	saturated, loose, no odor.
				2.0-5.0' Sand: Dark gray (5 YR 4/1), fine grain, trace to little medium to coarse,
				moderately sorted, loose, saturated, no odor.
105	110	5	1.27-3.20/	0-5.0' Sand: Color as above, trace fine gravel subangular to subround, very fine to
			4.12-17.52	coarse grain, predominately fine to medium, poorly sorted, loose, saturated, no odor.
110	115	5	1.94-2.21/	0-5.0' Sand: As above, but predominately fine, saturated, no odor.
			14-46	
115	120	5	0.36-1.96/	0-5.0' Sand: Dark gray (5 YR 4/1), trace fine gravel, fine to coarse, predominately
			252-22000	fine, moderately sorted, loose, saturated, strong odor.
120	125	5	1.25-2.73/	0-2.5' Sand: As above, but with more fine gravel, strong odor.
			4860-22400	2.5-5.0' Sand: Dark reddish gray (5 YR 4/2), trace fine gravel, very fine to fine
				grain, predominately very fine, well sorted, loose, saturated, strong odor.
				EOB @125'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-2 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 3/16/05 Drilling Completed 3/16/05

Total Depth Drilled 155 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1043.68 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	NA	0-5.0' Silt: Dark brown, trace very fine sand, rootlets, organics, topsoil, top
				approximately 1' is frozen, otherwise loose, moist, no odor.
5.0	10	0	NA	0-5.0' No recovery.
10	15	0	NA	0-3.0' Silty Sand and Gravel: Strong brown, very silty, predominately gravel
				angular to subround up to 4", sand all sizes, very poorly sorted, loose, saturated,
				no odor.
				3.0-5.0' Sand: Reddish gray, little gravel subangular to subround fine up to 1.5",
				sand very fine to coarse, predominately fine to medium, loose, poorly sorted,
				saturated, no odor.
15	20	5	NA	0-2.0' Sand: Reddish brown (5 YR 4/3), little silt, predominately fine grain, some
				very fine, well sorted, loose, saturated, no odor.
				2.0-5.0' Silt with Clay Interbeds: Silt reddish brown, clay yellowish red (5 YR 4/6),
				trace to little coarse sand in matrix, trace gravel subangular to subround up to 1"
				in matrix, somewhat cohesive, clay is plastic, appears fissile when broken, cohesive,
				stiff, clay layers varved up to approximately 0.25", saturated, no odor.
25	30	5	NA	0-5.0' Silt with Clay Interbeds: As above with 3 sand seams very fine to fine at
				approximately 2.0, 3.0, 4.0, seams are approximately 2" thick, moderately sorted,
				loose, saturated, no odor.
30	35	5	NA	0-5.0' Silt/Sand/Clay: Silt/Clay interbeds as above, but with a lot of sand content
				0-3.0', probably interbedded sand/silt layers 1-2" thick, but disturbed from
				drilling, trace fine gravel, sand very fine to fine, loose, moderately sorted, saturated,
				no odor, sand grades out below 3.0.
35	40	5	0.14-0.93/	0-5.0' Sand: Brown (7.5 YR 4/4), trace fine gravel, predominately fine to medium
			661-7100	grain, trace coarse, slightly coarser at 1.5-2.5', moderately sorted, loose, saturated,
				no odor.
40	45	5	0.21-0.30/	0-5.0' Sand: Strong brown (7.5 YR 4/6), fine grain, uniform, very well sorted,
			1500-2852	loose, saturated, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-2 Page 2 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
45	50	5	0.40-1.26/	0-1.0' Sand: As above.
			14-4066	1.0-2.0' Sand and Gravel: Reddish brown (5 YR 4/4), sand all sizes, predominately
				medium, gravel subangular to subround up to 3", poorly sorted, loose, saturated,
				no odor.
				3.0-5.0' Silt: Yellowish red (5 YR 4/6), trace coarse sand, very grainy, somewhat
				cohesive to loose, uniform, saturated, no odor.
50	55	5	0.61-4.57/	0-5.0' Silt: As above, slight grain size variation within silt, saturated, no odor.
			15-100	
55	60	5	0.17-1.41/	0-5.0' Silt: Reddish brown (5 YR 5/4) trace sand very fine to coarse, silt is very
			64-762	grainy, uniform, loose, somewhat cohesive, saturated, no odor.
60	65	5	1.44-2.58/	0-5.0' Silt: As above.
			1.52-2.87	
65	70	5	6.42-2.44/	0-5.0' Sand: Reddish brown (5 YR 5/3) very fine grain, almost as fine as silt,
			45-65	very well sorted, uniform, loose, saturated, odor.
70	75	0		No recovery.
75	80	5	0.07-1.11/	0-5.0' Silt: As above in 60-65, color as above, saturated, slight odor.
			47-202	
80	85	5	0.22-0.96/	0-5.0' Silt: As above with trace very fine sand layers <1 mm thick, slight color
			14.79-65	change associated with minor grain size variations, saturated, slight odor.
85	90	5	0.19-6.75/	0-5.0' Silt: As above, slightly coarser, approaching very fine sand 1.0-2.0.
			20-86	
90	95	0		No recovery.
95	100	5	0.31-1.69/	0-5.0' Silt: Dark reddish brown (5 YR 3/4), as above, slight grain size variation
			18.4-4900	throughout, very grainy in many places approaching very fine sand, grainy material
				occurs typically in thin layers, somewhat cohesive, loose, color change associated
				with grain size variation, saturated, odor.
100	105	5	0.74-0.96/	0-5.0' Silt: As above.
			614-3580	
105	110	5	0.44-0.51/	0-5.0' Silt: As above, noticeably coarser 3.5-4.0, approaching very fine sand, little
			671-1811	very fine sand 3.5-5.0, trace black staining, strong odor.
110	115	5	0.93-2.97/	0-5.0' Silt: As above.
			72-4300	
115	120	5	0.60-0.96/	0-5.0' Silt: As above, predominately smooth, methane vesicules.
			211-339	
120	125	5	0.85-2.48/	0-5.0' Silt: As above.
			209-2000	
125	130	5	1.28-3.47/	0-1.0' Silt: Reddish gray (5 YR 5/2), little very fine sand, interbedded silts and

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-2 Page 3 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			1.34-3600	very fine sand, similar to silt units above, but coarsening slightly, slight color
				changes associated with grain size variations, predominately silt, somewhat
				cohesive to loose, saturated, odor.
				1.0-5.0' Silt: As above, with the addition of little coarse sand and fine gravel
				subangular to subround in matrix.
130	135	5	0.40-0.59/	0-2.5' Silt: As above in 126-130, with approximately 0.5' thick silty sand seam
			2500-7700	1.0-1.5, very fine sand, well sorted, loose, saturated, odor.
				2.5-4.0' Sand: Reddish brown (5 YR 5/3), silty in places, silt could be from sides of
				core barrel, predominately very fine, some fine, trace medium, poorly sorted,
				loose, saturated, strong odor, grades into unit below.
				4.0-5.0' Sand: Very dark gray (5 YR 3/1), trace to little silt?, again, silt could be
				from drilling, little gravel subangular to subround up to 3", sand is fine to very
				coarse, predominately coarse, poorly sorted, loose, saturated, no odor.
135	140	5.0	0.34-0.44/	0-1.5' Sand: As above.
			12000-49000	1.5-5.0' Sand: Reddish gray (5 YR 5/2), very fine to fine grain, well sorted, trace
				medium, loose, uniform, saturated, odor.
140	145	5	0.74-110/	0-5.0' Silt: Dark reddish gray (5 YR 4/2), trace clay in matrix, also one 0.3" thick
			16800-34400	clay layer at 0.5', clay is plastic, yellowish red, cohesive, as above, overall somewhat
				cohesive, saturated, vesicules, strong odor.
145	150	5	0.89-1.93/	0-2.5' Sand: Gray (5 YR 5/1) very fine grain, well sorted, uniform, loose, saturated,
			14100-39000	strong odor, grades onto unit below.
				2.5-5.0' Silt: As above, but no clay, vesicules, smooth, trace very fine sand,
				somewhat cohesive, saturated, strong odor.
150	155	5	6.70-2.05/	0-5.0' Silt and Sand: Color as above, sand very fine , probably interbedded silt
			10800-148900	and sand layers, layers unrecognizable, approximately 50 percent sand, 50
				percent silt, loose, saturated, strong odor.
				EOB @ 155'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-3 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 3/17/05 Drilling Completed 3/17/05

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1046.6 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	0.0-0.07/	0-5.0' Sand: Strong brown (7.5 YR 5/6), trace gravel up to 3" subround to
			4.26-4.73	subangular, trace coarse to medium, little silt, fine to very fine grained sand,
				loose, saturated, no odor, progressively finer down section.
5	10	5	-0.17-0.03/	0-5.0' Sandy Silt: Color as above, trace coarse to medium, some fine to very fine,
			3.90-5.95	silt grainy, somewhat cohesive, saturated, no odor, gravel up to 5" subround,
				sandier, some gravel down section.
10	15	5	-0.37- -0.03/	0-2.0' Sandy/Silt: As above.
			1.84-5.48	2.0-5.0' Silt: Brown (7.5 YR 4/4), trace to little clay lenses, fissile in appearance, silt
				is smooth, slight color change with variation in grain size, no odor, clay is
				yellowish red (5 YR 4/6), firm.
15	20	5	-.97-0.32/	0-5.0' Silt with Clay Interbeds: As above, much more clay than above, still
			12.66-30.01	predominately silt, clay layers up to 2" thick, clay is plastic, cohesive, fissile in
				appearance, additional color of clay brown (7.5 YR 4/2).
20	25	5	-0.89- -0.63/	0-1.0' Silt with Clay Interbeds: As above.
			20.06-63.13	1.0-1.5' Sand: Yellowish red (5 YR 5/6), trace gravel up to 1/4" subround to
				subangular, trace to little silt, trace coarse to medium, predominately fine to very
				fine, loose, saturated, no odor.
				1.5-4.5' Sand: Brown (7.5 YR 4/4), trace to little gravel subround to subangular
				up to 3", trace to some fine to very fine, trace silt, predominately coarse to
				medium, poorly sorted, loose, saturated, no odor.
				4.5-5.0' Sand: As above but predominately fine and more silt.
25	30	5	-0.83- -0.28/	0-5.0' Sand: Brown (7.5 YR 5/4), coarser 0-0.5', trace medium to coarse and
			192-3983	very fine, predominately fine, trace cobbles, saturated, loose, no odor, moderately
				to well sorted.
30	35	5	-0.21-3.01/	0-5.0' Silt: Reddish brown (5 YR 4/4), uniform, very grainy, trace black staining, low
			5.70-2620	cohesion, loose, saturated, slight odor.
35	40	5	-1.05-1.89/	0-4.5' Silt: As above except more odor, vesicles.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-3 Page 2 of 3

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			78-1563	4.5-5.0' Silt with Clay Interbeds, as above in 15.0-20.0.
40	45	5	-1.03-0.20/	0-1.0' Silt with clay: As above in 39.5-40.0.
			1029-4167	1.0-5.0' Silt: As above in 30.0-35.0, odor, approaching very fine sand down section.
45	50	5	0.69-3.69/	0-5' Silt: As above, odor, saturated, uniform, approaching very fine sand, very
			3680-10410	grainy.
50	55	5	.89- -.19/	0-2' Silt: As above.
			1719-4118	2-4' Silt: Reddish brown (5 YR 4/4), similar to above, trace clay in matrix, smooth,
				finer than silt above, somewhat cohesive, saturated, odor.
				4-5' Silt: As above in 0-2.0, very grainy, trace black staining.
55	60	5	-.86- -1.05/	0-1.5' Silt: Brown (7.5 YR 4/4), little clay in matrix, trace clay nodules, vary hard,
			2543-5910	fissile in appearance, saturated, smooth, odor, vesicles (bubbles).
				1.5-5.0' Silt: Brown (7.5 YR 5/4), uniform, very grainy, approaching very fine sand,
				saturated, odor (bubbles).
60	65	5	-0.65-0.29/	0-5.0' Silt: As above except more bubbles, black staining, more odor, finer,
			6884-59300	becomes smooth down section.
65	70	5	-0.89- -0.31/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth, uniform, trace black staining, odor,
			4464-12500	saturated, some vesicles, cohesive, trace clay in matrix (sticky).
70	75	5	-0.92-0.85/	0-5' Silt: As above, slightly more grainy, more staining.
			2266-11800	
75	80	5	-.28-0.63/	0-4.5' Silt: Brown (7.5 YR 4/4), uniform, very grainy approaching very fine sand,
			14600-37000	traces of smooth silt, trace black staining, trace gravel subangular up to 1/4",
				saturated, odor, vesicles.
				4.5-5.0' As above, but much finer, smoother.
80	85	5	-.65- -.10/	0-5.0' Silt: As above in 79.5-80.0.
			7066-14100	
85	90	5	-0.78 - 1.12/	0-5.0' Silt: As above.
			8424-38000	
90	95	5	0.10-1.87/	0-2.0' Silt: As above.
			13300	2.0-3.0' Silt: As above, but grainy.
				3.0-4.5' Silt: As above in 0-2.0.
				4.5-5.0' Silt: With varying grain size and fine laminations, crumbly.
95	100	5	-0.55-2.62/	0-3.5' Silt: As above, but last 0.5' grading into grainy silt to sandy silt.
			6145-11500	3.5-5.0' Sandy Silt: Brown (7.5 YR 5/3), some to much very fine sand, trace fine,
				loose, saturated, odor, slight trace vesicles.
100	105	5	-0.84-2.14/	0-5' Sandy Silt: Interbedded with very fine sand, trace fine, also trace clay bedding,
			6391-26800	sand layers vary up to 5" thick, sand is well sorted and silty in places, loose,
				saturated, odor, clay yellowish red (5 YR 4/6).

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-3 Page 3 of 3

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
105	110	5	-0.23-1.47/	0-2.5' Sand: Brown (7.5 YR 5/3) very fine to fine grain, trace silt, trace clay,
			8384-10800	saturated, odor.
				2.5-4.0' Silt and Clay Interbeds: Silt color as above sand, clay color as above,
				predominately silt with trace very fine sand layers <1" thick, clay layering up to
				1/2", saturated, odor.
				4.0-5.0' Sandy Silt: Brown (7.5 YR 5/3), very fine sand, not cohesive, grainy,
				saturated, odor.
110	115	5	0.33-1.46/	0-1.5' Sandy Silt: As above.
			78900-88900	1.5-2.0' Silty Sand and Gravel: Dark brown (7.5 YR 3/2), little silt, gravel up to
				3.5" round to subangular, sand very fine to very coarse, predominately fine to
				medium, loose, saturated, odor.
				2.0-3.0' Sandy Silt: As above (0-1.5).
				3.0-5.0' Sand: Brown (7.5 YR 5/2), fine sand, trace coarse to medium, some very
				fine, trace gravel subround to subangular up to 1.4", very poorly sorted to
				moderately sorted, loose, saturated, odor.
115	120	5	-0.42-0.27/	0-4.0' Sand: As above, except more medium to coarse.
			8509-14600	4.0-5.0' Sand: Brown (7.5 YR 5/4), clean, well sorted very fine to fine, loose,
				trace black staining, saturated odor.
120	125	5	0.14-3.00/	0-3.0' Sand: As above.
			3984-9794	3.0-5.0' Sand: Color as above, trace medium to coarse, predominately fine to
				medium, somewhat sorted to moderately sorted, loose, saturated, odor.
125	130	5	0.11-2.17/	0-5.0' Sand: Color as above, fine to very fine sand, well sorted, loose, black
			10500-30400	staining, finer down section, saturated, odor, vesicles.
130	135	5	-0.95- -0.13/	0-5.0' Sand: Color as above, very fine to fine sand, well sorted, loose, trace black
			2864-59400	staining, wet, odor.
				EOB @ 135'

ARCADIS

Sample/Core Log

Boring/Well GMPZC-4 (GMPZ-9) Project/No. Ford/Kingsford WI001025.0033 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 10/14/03 Drilling Completed 10/14/03

Total Depth Drilled 180 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 4 inches Sampling Interval Continuous feet

Land-Surface Elev. 1048.31 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Chris Helper Oiden Jayson

Prepared By Bruce Evans and Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	2	2.4-9.12/	0-1.3' Silt/Sand: Dark brown (7.5 YR 3/4), sand very fine to fine, some to trace
			4-4.67	medium to coarse, trace gravel subround to subangular, fine to coarse, trace
				cobbles up to 4 inches, subangular, trace clay, organics (roots and stems),
				loose, moist, no odor.
				1.3-2.0' Sand: Strong brown (7.5 YR 5/6), fine grain, some medium to coarse,
				some gravel fine to coarse, subangular to subrounded, trace cobbles up to 2
				inches, subround to subangular, trace organics (roots), loose, no odor.
5	10	5	0.4-1.7/	0-0.2' Sand: As above.
			1.7-4.2	0.2-2.5' Silty Clay: Brown (7.5 YR 5/4), interbedded areas of clay up to 1 inch
				thick, yellowish red (5 YR 4/6), silty clay is plastic, sticky, wet, interbedded clay
				is friable in appearance and very plastic when worked between fingers.
				2.5-5.0' Silt: Reddish brown (5 YR 5/3), slightly firm to crumbly, interbedded
				clay up to 1.5 inch thick, as above, wet to saturated, no odor.
10	15	5	1.0-3.5/	0-5.0' Silt/Clay: Interbedded, as above, clay interbedds thinner up to 1/4 inch, from
			-8.9 - -0.20	3-5 feet silt becomes slightly less clayey and slightly grainy/gritty.
15	20	5	0-475	0-2.2' Silt/Clay: As above, very soupy and possibly destroyed from drilling, trace
			-2.2 - -0.9	gravel.
				2.2-3.0' Sand/Gravel: Brown (7.5 YR 5/3), medium to coarse grained, poorly
				sorted, very silty, some gravel, subrounded to subangular, trace cobbles up to
				1.5 inches, subrounded, wet, loose, no odor.
				3.0-5.0' Sand: Color as above, fine to medium grained, some to trace coarse, silty,
				loose, wet, no odor.
20	25		45-60/	0-4.0' Sand: Color as above, medium to coarse grain, some fine gravel
			-2.7 -2.5	subrounded, moderately sorted, silty, loose, wet, no odor.
				4.0-4.5' Sand/Gravel: Color as above, sand as above with fine grains, increasing
				coarse grains, gravel fine to coarse, subrounded to subangular, trace cobbles up
				to 1inch, subrounded, silty, poorly sorted, loose, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-4 (GMPZ-9)

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				4.5-5.0' Sand: Color as above, fine to very coarse grain, some gravel, subrounded
				to subangular, fine to coarse, many black slate flakes, some silt, loose, wet,
				no odor.
25	30	5	10-67/	0-5.0' Sand: Brown (7.5 YR 4/3) predominately medium grain with fine to coarse
			-4.8 - -4.6	grain, gravel fine to coarse, subrounded to subangular, some cobbles up to 4
				inches subrounded to round, poorly sorted, loose, wet, no odor.
30	35	5	99-405/	0-1.0' Sand: As above.
			-4.55 - -4.2	1.0-3.0' Sand: Light brown (7.5 YR 6/3) fine to medium grain, well sorted,
				predominately fine grain, loose, wet, no odor.
				3-3.4' Sand: As above, with fine to coarse gravel angular, much of it is black slate
				flakes, loose, wet, no odor.
				3.4-4.6' Sand: Color as above, fine to medium grained, well sorted, after 4.0-
				4.6 feet, unit becomes less well sorted and coarser grained, loose, wet, no odor.
				4.6-5.0' Sand: Reddish brown (5 YR 5/4) very fine grain, well sorted, loose,
				wet, no odor.
35	40	5	45-1,070/	0-1.0' Sand: Reddish brown (5 YR 4/4), very fine to fine grain, well sorted, silty,
			-5.2 - -4.3	loose, wet, no odor.
				1.0-5.0' Sand: As above, but only very fine grain.
40	45	5	622 -	0-3.0' Sand/Silt: Reddish brown (5 YR 4/4), sand very fine grain, silt "grainy",
			1,028/	well sorted, loose, wet, trace to some odor.
			-4.3 - -4.25	3.0-5.0' Silt: Color as above, silt is "grainy" somewhat loose, wet, odor.
45	50	5	110-	0-3.0' Silt: As above, trace black staining.
			2,050/	3.0-5.0' Silt: As above, interbedded with clayey silt, 1 to 2 inch thick, reddish gray
			-4.4 - -4.3	(5 YR 5/2), sticky, slightly plastic, wet, odor.
50	55	5	2,120-	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, sandy, very fine, well sorted, some
			7,750/	what firm, some to trace black staining, wet, odor.
			-3.1 - -2.35	
55	60	5	480-	0-1.0' Silt: As above.
			1,330/	1.0-2.0' Silt: Reddish brown (5 YR 5/4), clayey, somewhat to slightly plastic, wet,
			-7.6 - -7.2	somewhat firm, no odor.
				2.0-5.0' Silt: Reddish brown (5 YR 4/4) grainy, somewhat loose, no clay, wet,
				no odor.
60	65	5	950-	0-2.0' Silt: As above, grainy.
			3,450/	2.0-4.0' Silt: As above, interbedded to varved with clayey silt, reddish brown
			-6.9 - -6.7	(5 YR 5/3), somewhat plastic, soft, somewhat firm HP = 1.25.
				4.0-5.0' Silt: As above, grainy, no clay.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-4 (GMPZ-9) Page 3 of 5

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
65	70	5	2,600 -	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, sometimes some very fine sand,
			11,100/	somewhat loose, wet, odor.
			-4.8 - -1.6	
70	75	5	5,400-	0-3.5' Silt: As above, grainy, some very fine sand.
			16,700/	3.5-5.0' Silt: Reddish brown (5 YR 5/4) less grainy, no very fine sand, black
			-4.8 - -1.6	staining, somewhat firm, wet, strong, odor.
75	80	5	2,000-	0-1.0' Silt: As above.
			3,400/	1.0-5.0' Silt: As above (interbedded to varved with clayey silt), vesicles.
			-8 - -7.02	
80	85	5	3,580-	0-1.0' Sand: Reddish brown (5 YR 5/3) very fine grain, silty, somewhat loose,
			3,900/	wet, odor.
			-6.6 - 5.7	1.0-5.0' Silt: Reddish brown (5 YR 4/4) somewhat grainy, nonplastic, somewhat
				loose, wet, strong odor, many vesicles.
85	90	5	3,000 -	0-5.0' Silt: Color as above, silt as above but less grainy and very slightly clayey,
			18,500/	not plastic, many vesicles, wet, strong odor.
			-6.6 - -5.9	
90	95	5	650-6,020/	0-5.0' Silt: As above, more clayey, slightly plastic, strong odor, many
			-7.05 -6.15	vesicles.
95	100	5	940-2,700/	0-4.5' Silt: As above, in places less clayey.
			-7.9 - -7.8	4.5-5.0' Sand: Brown (7.5 YR 4/3), fine grain, well sorted, silty, loose to slightly
				sticky, odor.
100	105	5	2,300-	0-3.0' Sand: As above, less silty, some very fine grain.
			19,000/	3.0-3.4' Silt: Reddish brown (5 YR 4/4), clayey, slightly to somewhat plastic,
			-7.4 - -7.1	somewhat firm, wet, odor.
				3.4-3.8' Silt: Brown (7.5 YR 4/3), grainy, trace very fine sand, somewhat loose,
				wet, odor.
				3.8-4.0' Silt/Clay: Silt is reddish brown (5 YR 5/3), clay is yellowish red (5 YR 4/6)
				interbedded to varved, silt is grainy to nongrainy, clay interbed at 4.0' fissile
				looking, plastic, moderate reaction with HCl.
				4.0-5.0' Silt/Silt: Reddish brown (5 YR 5/3), clayey, sticky to somewhat plastic,
				interbedded with silt, gray (7.5 YR 6/1), loose, slightly grainy.
105	110	5	3,730 -	0-0.5' Silt/Silt: As above.
			31,400/	0.5-4.0' Silt/Sand: Brown (7.5 YR 5/3), very fine silty sand grading to sandy silt
			-8.2 - -7.3	(grainy), somewhat loose, wet, odor.
				4.0-5.0' Silt: Color as above, trace of yellowish red clay at 4.0 feet, trace
				coarse sand, trace fine gravel, somewhat loose, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-4 (GMPZ-9) Page 4 of 5

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
110	115	5	11,700-	0-1.0' Silt: As above.
			23,000/	1.0-4.0' Silt: Brown (7.5 YR 4/3), trace clay, somewhat firm, moist, somewhat
			-7.2 - -5.8	friable, odor.
				4.0-5.0' Silt: As above, trace fine gravel and cobble to 3 inches, subrounded.
115	120	5	440-3,100/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, well sorted, trace very fine, loose,
			-10 - -9	wet, moderate odor.
120	125	5	5,300-	0-1.5' Sand: As above, very fine to fine, not as well sorted (silty).
			12,600/	1.5-4.0' Silt: Brown, (7.5 YR 4/3) somewhat clayey, somewhat plastic,
			-9 - -8.2	trace coarse sand to coarse gravel, subrounded, wet, odor.
				4.0-5.0' Silt Sand and Gravel: dark brown (7.5 YR 3/4), sand fine to coarse, gravel
				fine to coarse, angular to subrounded, cobbles to 2 inches, subrounded to
				subangular, all in silt matrix, very poorly sorted, wet, somewhat loose but sticky,
				odor, trace of yellowish red clay at 4.0 feet.
125	130	5	8,600-	0-3.5' Sand/Gravel: Color as above, sand fine to very coarse, gravel fine to
			25,000/	coarse angular to subrounded, some cobbles, subrounded up to 3 inches,
			-8.2 - -7.9	abundant black slate flake, some silt, poorly sorted, loose wet, odor.
				3.5-5.0' Silt: Brown (7.5 YR 5/3), grainy , some to trace very fine sand, trace
				medium to coarse sand.
130	135	5	14,500-	0-5.0' Sand/Gravel: As above, possibly more coarse sand fraction.
			25,300/	
			-8.4 - -8.2	
135	140	5		0-4.5' Gravel: Gravel fine to very coarse, angular to subrounded, some cobbles to
				3 inches subrounded to subangular, some fine to very coarse sand, poorly sorted,
				trace silt, loose, wet, odor.
				4.5-5.0' Sand: Brown (7.5 YR 4/3) fine to very fine grain, some gravel, moderately
				well sorted, loose, wet, odor.
140	145	4		0-1.3' Sand: Brown (7.5 YR 4/3) as above, gravel fine to coarse, angular to
				subrounded, layer at 0.4 feet, wet, loose, odor.
				1.3-2.0' Silt: Reddish brown (5 YR 4/3) grainy, soft, slightly plastic.
				2.0-3.0' Sand: Brown (7.5 YR 4/3), very fine to fine, well sorted, loose, wet,
				odor.
				3.0-3.5' Sand: Color as above, very fine sand, with grainy silt, loose, wet, odor.
				3.5-4.0' Sand: Color as above, fine to very fine, well sorted, loose, wet, odor.
145	150	5	5,200-	0-1.0' Sand/Silt: Brown (7.5 YR 5/3), sand very fine, well sorted,
			39,800/	loose, wet, odor.
			-9.3 - -8.7	1.0-5.0' Sand: Color as above, very fine grain, silty, loose, wet, odor, layer at

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-4 (GMPZ-9) Page 5 of 5

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				1.2 to 1.3 feet of finer silt with some to trace medium gravel.
150	155	5	14,200-	0-5.0' Sand: Color as above, fine to very fine grain, well sorted, loose, wet, odor.
			28,500/	
			-8.2 - -7.9	
155	160	5	34,000-	0-5.0' Sand: Brown (7.5 YR 5/2) fine to very fine grain, some silt, well sorted,
			57,000/	loose, wet, odor.
			-8.14 - -8.0	
160	165	5	15,000-	0-5.0' Sand: Color as above, fine grain, well sorted, loose, wet, odor, at 4.5 feet
			29,500/	there is small clay nodule (approximately 1 inch).
			-8.1 - -8.0	
165	170	5	1,100-	0-5.0' Sand: Brown (7.5 YR 5/2), fine grain, some very fine grain, trace medium
			>76,700/	grain, moderately well sorted, loose, wet, odor.
			-7.1 - 5.2	
170	175	5	13,600-	0-3.0' Sand: As above.
			48,400/	3.0-5.0' Sand: Color as above, very fine grain, well sorted, some silt and fine grain
			-5.6 - -5.1	sand, loose, wet, odor.
175	180	5	2,400-	0-1.0' Sand: Color as above, very fine grain, very silty, some gravel fine to
			42,400/	coarse, cobbles up to 3 inches, subrounded, loose, wet, odor.
			-5 - -4.7	1.0-1.5' Sand: Color as above, very fine grain, well sorted, loose, some fine grain,
				wet, odor.
				1.5-2.2' Silt/Gravel/Sand: Gravel fine to very coarse, angular to subrounded, sand
				fine grain, cobbles up to 1.5 inches all in silt matrix, somewhat firm, wet, odor.
				2.2-3.8' Sand: Brown (7.5 YR 5/2), fine to very fine grain well sorted, loose,
				wet, odor.
				3.8-4.4' Silt/Gravel/Sand: As above.
				4.4-5.0' Weathered Bedrock: Light greenish gray (Gley 7/1) clayey powdery
				talc like matrix with broken pieces of bedrock, angular, friable slate, foliation,
				chalky, moist, odor.
				EOB 180 feet.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-5 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 3/18/05 Drilling Completed 3/18/05

Total Depth Drilled 175 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1051.09 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Helper Royce/Oiden

Prepared By Lori Schmidt

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	-0.09-0.25/	0-3.0' Silty Sand: Yellowish red (5 YR 5/5), sand is very fine to fine, gravel angular
			1.09-5.54	to subround up to 3", trace coarse, loose, somewhat sorted, saturated, no odor.
				3.0-5.0' Silt: Interbedded with clay, brown (7.5 YR 5/4) silt, silt is uniform, smooth
				to grainy, clay is yellowish red (5 YR 4/6), clay is plastic and cohesive, saturated,
				no odor, trace black staining, clay interbeds are up to 1/4" thick.
5	10	5	-0.11-0.05/	0-5.0' Silt: Brown (7.5 YR 5/4), trace fine gravel, trace clay but more clay content
			1.28-2.81	2.5-5.0', uniform, slight grayish discoloration in last 1', saturated, no odor.
10	15	5	0.05-0.38/	0-1.0' Silt/Clay: Interbeds, colors as above, silt is smooth, uniform, clay is plastic/
			3.14-6.91	cohesive, platy in appearance on broken surfaces, somewhat soft, clay layers up to
				1/2" thick, saturated, no odor.
				1.0-4.5' Silt: As above in 7.5-10.0.
				4.5-5.0' Silt/Clay: As above in 0-1.0.
15	20	5	-0.14-0.0/	0-3.0' Slough.
			2-284	3.0-5.0' Silt/Clay: Interbeds as above in 10.0-11.0, except clay beds more prevalent
				and up to 1" thick.
20	25	5	0.0-0.70/	0-5.0' Silt/Clay: Interbeds, reddish brown (5 YR 4/4) clay, predominately clay for
			1205-5722	first 1.5', brown (2.5 YR 4/4) layers up to 2", thick and very firm, silt is
				somewhat smooth, uniform, becoming predominant and slightly more grainy
				down section, clay layers up to 1/2" thick, clay cohesive/plastic.
25	30	5	0.15-0.34/	0-0.5' Silt: As above, but clay beds no longer present, grades into next unit.
			6605-11800	
				0.5-2.0' Silt/Sand/Gravel: Brown (7.5 YR 4/4) poorly sorted, sand very fine to
				coarse, gravel sub angular to subround up to 3", trace clay, last 1/2' grading into
				next section, less/smaller gravel, saturated, no odor.
				2.0-4.5' Sand: Brown (7.5 YR 5/3), some gravel subangular to subround up to 3"
				to 3.5' then trace gravel subangular to subangular up to 2" to 4.5', sand is very
				fine to coarse, predominately fine, poorly sorted, loose, saturated, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-5 Page 2 of 4

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.5-5.0' Sand: Dark brown (7.5 YR 3/2), predominately fine, fine trace very little
				medium to coarse, somewhat sorted, loose, saturated, slight odor.
30	35	0		No recovery.
35	40	5	1.19-3.73/	0-5.0' Silt/Sand: Reddish brown (5 YR 4/4), silt is very grainy approaching very fine
			5820-32800	sand, trace fine to coarse, trace gravel up to 3", methane bubbles on surface,
				uniform, loose, saturated, odor, trace vesicles.
40	45	5	0.30-4.87/	0-5.0' Silt: As above, except no sand or gravel, trace black staining.
			3502-38000	
45	50	5	0.91-0.94/	0-5.0' Silt: As above, except two clay layers approximately 3" in thickness at top
			4818-7447	at approximately 0.0 and 2.5, clay is cohesive/plastic when worked, crumbly and
				fissile when first broken.
50	55	5.0	1.08-1.25/	0-5.0' Silt: As above, uniform, loose, very grainy approaching very fine, saturated,
			1570-140000	odor, vesicles.
55	60	5	0.60-1.19/	0-5.0' Silt: As above, except finer in last foot.
			15400-28000	
60	65	6	0.17-0.38/	0-5.0' Silt: As above except finer/smoother in places especially 2-3', finer has trace
			8650-9456	clay, trace black staining.
65	70	5	0.06-4.04/	0-5.0' Silt: Reddish brown (5 YR 4/4), uniform, grainy approaching very fine,
			6940-35200	vesicles from 1.5-2.0, silt becomes finer/smoother, somewhat cohesive,
				discolored, banded, saturated, loose, odor.
70	75	5	1.70-1.96/	0-5.0' Silt: As above, except more black staining and no finer silt layers.
			16000-47800	
75	80	5	0.18-2.85/	0-5.0' Silt: As above, except no finer silt layers, slightly finer, 4" sand layer at 2',
			2627-8778	fine, trace medium to coarse, poorly sorted.
80	85	5	1.41-2.34/	0-5.0' Silt: As above, except finer silt layers at 1.5-2.0 and at 3-3.5.
			10200-15200	
85	90	5	1.67-4.87/	0-5.0' Silt: As above, except finer silt layers at 0-4" and 3-4'.
			10200-33100	
90	95	5	1.60-3.42/	0-5.0' Silt: Reddish brown (5 YR 4/4), fine/smooth, some discoloration banding,
			13500-55000	uniform, loose, saturated, odor, vesicles, trace black staining.
95	100	5	0.93-2.02/	0-5.0' Silt: Brown (7.5 YR 4/4), uniform, smooth to slightly grainy, much vesicles,
			19100-30400	some black staining, loose, saturated, odor.
100	105	5	1.58-1.93/	0-5.0' Silt: As above, except black staining appears in 2 mm bands at
			38000-	top of section. Clay unit reddish brown (5 YR 5/4) at approximately 3.5' cohesive/
			>430000	plastic, fissile in appearance, 1.5" thick.
105	110	5	1.30-1.37/	0-2.0' Silt: As above.
			41000-	2.0-5.0' Sand: Brown (7.5 YR 5/4), some silt, very fine, well sorted, loose,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-5 Page 3 of 4

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			>430000	saturated, odor, more silt from 4.5-5.0.
110	115	5	0.86-1.53/	0-2.0' Sand: As above.
			36900-160100	2.0-3.0' Silt: Reddish brown (5 YR 5/4), fine to very fine sand layer at 2.5' well
				sorted and loose, silt is gritty and uniform, saturated, odor.
				3.0-4.0' Sand and Silt: Color as above, silt as above, sand is very fine to coarse,
				predominately fine, poorly sorted and loose, trace gravel angular to round up to
				1/2", saturated, odor.
				4.0-5.0' Sand: As above, brown (7.5 YR 4/2).
115	120	5	0.65-1.84/	0-1.0' Sand: As above 113.0-114.0.
			6918-13600	1.0-5.0' Silt: Brown (7.5 YR 5/4), trace to little very fine to fine sand, trace coarse
				to medium, little gravel subround to subangular up to 4", silt is gritty, it is liquefied
				from drilling, saturated, odor.
120	125	5	1.16-2.30/	0-5.0' Sand: Brown (7.5 YR 5/4), trace coarse to medium, trace gravel subround
			31400-34600	up to 1.5", predominately very fine with some fine, moderately sorted, loose,
				saturated, odor, bubbles.
125	130	5	0.21-0.84/	0-5.0' Sand: As above, no bubbles, no gravel.
			1584-52900	
130	135	5	1.41-1.51/	0-4.5' Sand: As above, except predominately fine to very fine.
			59000-	4.5-5.0' Silt/Clay/Gravel/Sand: Color as above and clay is yellowish red (5 YR 4/6),
			>430000	clay is somewhat cohesive, plastic, sand very fine to coarse and poorly sorted,
				gravel up to 3" subround to subangular, saturated, odor.
135	140	5	1.57-2.37/	0-0.5' Silt/Clay/Gravel/Sand: As above.
			5962-30300	0.5-4.5' Silt: Brown (7.5 YR 4/4), trace to little gravel subangular to subround up
				to 4", clay lenses yellowish red (5 YR 4/6) <1/4" in thickness, silt is grainy, to smooth
				in places, loose, saturated, odor.
				4.5-5.0' Sand: Reddish brown (5 YR 4/4), trace fine gravel, trace silt, trace clay, trace
				coarse, little medium, some very fine, predominately fine, loose, poorly sorted,
				saturated, odor.
140	145	5	1.51-3.01/	0-1.0' Sand: Reddish brown (5 YR 5/4), silty little clay, trace to little fine to coarse,
			27500-	predominately very fine, poorly sorted, loose, odor.
			108800	1.0-2.5' Silt: Color as above, trace clay, silt is smooth, somewhat cohesive, loose,
				vesicles, saturated, odor.
				2.5-4.7' Sand: As above in 0-1.0'.
				4.7-5.5' Clay: Yellowish red (5 YR 4/6), fissile in appearance on broken surfaces,
				plastic, cohesive when worked, slight odor.
145	150	5	1.50-3.57/	0-1.0' Sand: Brown (7.5 YR 5/4), some silt, clay, grading into lower/next unit,
			25600-	very fine to coarse, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-5 Page 4 of 4

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			200500	1.0-5.0' Sand: Dark brown (7.5 YR 3/2), trace fine gravel, trace silt, predominately
				fine, some medium to coarse, loose, somewhat sorted, saturated, odor.
150	155	5	1.20-1.60/	0-4.0' Sand: As above, getting slightly finer down section.
			160800-	4.0-4.4 Clay: As above 144.7-145.
			>430000	4.4-5.0' Silt: Brown (7.5 YR 5/3), very grainy approaching very fine, uniform, loose,
				saturated, odor.
155	160	5	0.93-1.06/	0-1.5' Sand: Brown (7.5 YR 5/4), very fine to coarse, predominately fine, poorly
			42400-	sorted, loose, saturated, odor.
			>430000	1.5-2.0' Sand/Silt: Silt approaching very fine, sand very fine, loose, trace medium,
				trace fine, saturated, odor.
				2.0-5.0' Sand and Gravel: Very dark brown (7.5 YR 2.5/2), silty, trace very fine to
				very coarse, predominately very coarse, gravel is subround to subangular up to 1",
				loose, very poorly sorted, saturated, odor.
160	165	5	1.18-2.96/	0-3.5' Sand and Gravel: As above, but color changes to greenish gray (2 Gley 6/1).
			NA	3.5-5.0' Sand and Gravel: With clay matrix, gravel up to 1.5" angular to
				subround, very hard, sand is very coarse, saturated odor.
165	170	5	3.34-6.6/	0-5.0' Sand/Gravel: With silt/clay matrix, very hard, brittle to crumbly, very
			NA	poorly sorted, gravel angular to subround up to 2", multi color, glacial till ?,
				slight odor.
170	175	0		No recovery.
				EOB @175'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-6 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 3/21/05 Drilling Completed 3/21/05

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1048.52 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	20.96-84.00/	0-1' Sand: Frozen, gravelly angular to subround to 1", humic odor.
			18800-	1.0-4.0' Silt: Frozen, solid, wood debris, some gravel subround up to 1/2".
			57800	4.0-5.0' Silty Gravel: Gravel up to 3" angular to subround, silt loose, very grainy,
				dry, humic odor.
5	10	5	2.06-31.36/	0-3' Sand and Gravel: Strong brown (7.5 YR 4/6), sand very fine to fine,
			9478-34800	predominately fine to very fine, silty in places, gravel subround to subangular up to
				3", saturated, loose, humic odor.
				3.0-5.0' Clayey Silt: Brown (7.5 YR 4/4), clay in matrix sections and in trace layers,
				silt is slightly dry and soft, smooth, very cohesive and plastic, saturated, no odor.
10	15	5	-0.01-0.95/	0-2.5' Clayey Silt: As above.
			0-38	2.5-5.0' Silt: With clay interbedding, clay is yellowish red (5 YR 4/6), cohesive,
				plastic, fissile in appearance, soft, layering distorted, up to 1/4", perhaps varved,
				silt is brown (7.5 YR 4/4), somewhat smooth, trace black staining, saturated,
				no odor.
15	20	5	-0.25-0.0/	0.0-0.5' Silt and Clay: Interbeds as above, grading into unit below.
			4774-11500	0.5-5.0' Sand: Dark brown (7.5 YR 3/3), little medium to coarse and very fine,
				little gravel subround to subangular up to 1.5" predominately fine, poorly sorted,
				loose, saturated, very slight odor.
20	35	0		No recovery.
35	40	5	-0.11-2.02/	0-0.5' Slough: Sand from above.
			3419-29900	0.5-5' Silt: Reddish brown (5 YR 4/4), trace very fine, silt is grainy, uniform, loose,
				saturated, slight odor.
40	45	5	1.32-5.44/	0-5.0' Silt: As above, with trace vesicles, odor.
			1000-95600	
45	50	5	4.06-6.33/	0-5.0' Silt: Reddish brown (5 YR 5/4), mostly grainy but smooth in places, some
			19500-30800	vesicles, cohesive in smooth places, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well: GMPZC-6 Page 2 of 2

Prepared by: Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
50	55	5	3.17-3.90/	0-5.0' Silt: As above, except more staining and vesicles.
			19000-22000	
55	60	5	1.4-3.46/	0-5.0' Silt: As above, except some clay 0-0.5.
			10200-24500	
60	65	5	2.50-4.03/	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, uniform, vesicles, bubbly, black
			24700-32900	staining, loose, sand, odor.
65	70	5	1.16-4.35/	0-5.0' Silt: Brown (7.5 YR 4/4), interbedded smooth and grainy silts, somewhat
			7458-56600	cohesive, loose, saturated, odor, only grainy at bottom 0.5' of section.
70	75	5	3.53-5.29/	0-5.0' Silt: As above, less black staining.
			12100-59800	
75	80	5	0.75-3.03/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, uniform, some black staining,
			9810-145000	vesicles, bubbles, loose, saturated, odor.
80	85	5	2.40-2.60/	0-5.0' Silt: As above, except smooth 2-3', more staining and bubbles.
			25100-47200	
85	90	5	1.22-3.65/	0-5.0' Silt: As above, except smooth in places, many vesicles, trace very fine sand
			8955-35000	0-0.5', strong odor.
90	95	0		No recovery, sample fell, some on deck. Appeared silty.
95	115	0		Drillers lost sample. Picked up sample off rig deck. Appeared to be mostly silt as
				above. Bottom 5' appeared to contain some very fine sand.
115	120	5	-0.11-1.94/	0-5.0' Sand: Brown (7.5 YR 4/4), little silt, trace medium to coarse, predominately
			1805-27700	very fine to fine, moderately sorted, loose, saturated, odor, bubbly, vesicles.
120	125	5	1.32-2.91/	0-5.0' Sand: As above.
			4800-78500	
125	130	5	2.0-3.67/	0-2.0' Sand: As above, getting progressively finer.
			38700	2.0-5.0' Silt and Sand: Color as above, silt is very grainy approaching very fine,
			142900	loose, bubbles, vesicles, reddish clayey silt at approximately 4', saturated, odor.
130	135	5	2.05-3.90/	0-4.0' Silt/Sand: As above, with clay layer at approximately 2 feet approximately
			81900-	1/2" thick. Silt is smooth in some places.
			>430000	4.0-5.0' Silt: Brown (7.5 YR 4/3), somewhat grainy to somewhat smooth, trace
				coarse sand, trace gravel subangular to subround up to 1/2", vesicles, loose,
				saturated, odor.
				EOB @ 135'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-7 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 3/21/05 Drilling Completed 3/21/05

Total Depth Drilled 155 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.47 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	-0.22-3.27/	0-2.0' Fill: Crushed slate.
			267-23.01	2.0-5.0' Silt: Dark reddish brown (5 YR 3/4), trace very fine sand, organics, rootlets,
				crumbly, topsoil, loose, damp, frozen to 3.0, no odor.
5	10	3	-0.08-46/	0-3.0' Silt: Yellowish brown (10 YR 4/4), some sand fine to coarse, little gravel
			8.29-38.57	angular to subround up to 2", dry, crumbly, loose, no odor.
10	15	0		No recovery.
15	20	0		No recovery. Pushing 4" rock stuck in drill bit. Sample lost.
20	25	0		No recovery. Pushing 4" rock stuck in drill bit. Sample lost.
25	30	0		No recovery. Pushing 4" rock stuck in drill bit. Sample lost.
30	35	0		No recovery. Pushing 4" rock stuck in drill bit. Sample lost.
35	40	5	1.15-3.23/	0-5.0' Silt: With few clay interbeds, silt is brown (7.5 YR 4/4), clay is yellowish red
			4494-56000	(5 YR 4/6), clay is plastic, cohesive, appears platy when broken, clay layers 1/2"
				thick or less, silt smooth, uniform, trace black staining, saturated, odor.
40	45	5	2.74-5.84/	0-5.0' Silt: Reddish brown (5 YR 4/4), very granular, uniform, little black staining,
			1500-17000	uniform, vesicles, methane bubbles, saturated, odor.
45	50	5	2.78-4.76/	0-5.0' Silt: As above, more vesicles and black staining.
			7500-19000	
50	55	5	3.16-5.82/	0-5.0' Silt: As above, 0-1.0 contains some fine laminations of a finer silt with
			8700-11600	color brown (7.5 YR 5/3), 0-1.0 is interbedded silts with slight variation in
				grain size, otherwise as above.
55	60	5	0.91-1.76/	0-5.0' Silt: As above, strong brown (7.5 YR 4/6), very granular, near very fine
			2500-6195	sand size in places, black staining, many vesicles, bubbles, sheen, saturated, strong
				odor.
60	65	5	1.55-3.52/	0-5.0' Silt: As above, somewhat finer (smooth) 3.0-4.0', black staining, sheen,
			818-14800	strong odor.
65	70	5	0.58-2.50/	0-5.0' Silt: As above, predominately granular with some smooth interbeds
			8410-72400	0-2.0'.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-7 Page 2 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
70	75	5	2.14-4.84/	0-5.0' Silt: As above, granular.
			8005-44400	
75	80	2	0.56-1.65/	0-2.0' Silt: As above, black staining, strong odor.
			2200-9700	
80	85	5	1.15-1.22/	0-5.0' Silt: As above, predominately granular, uniform, black staining, many
			4700-6200	vesicles/bubbles, saturated, sheen, strong odor.
85	90	5	1.33-2.29/	0-2.0' Silt: As above, grading into finer silt downward.
			15100-23200	2.0-5.0' Silt: As above, finer, smooth, trace clay in matrix, saturated, strong odor.
90	95	5	1.71-1.95/	0-5.0' Silt: As above, grainy to smooth, many vesicles, trace clay, strong odor,
			15700-47500	black staining.
95	100	0		No recovery.
100	105	5	0.64-1.08/	0-5.0' Silt: As above, brown (7.5 YR 4/4), grainy to smooth, with some very fine
			3365-14200	sand interbeds, very fine sand is brown (7.5 YR 4/3), well sorted, very fine sand
				layers approximately 1" thick, loose, trace black staining, vesicles, saturated, odor.
105	110	5	0.18-1.11/	0-2.0' Silt: As above, sharp contact with sand below.
			4400-18100	2.0-5.0' Sand: Light brown (2.5 YR 6/3), very fine grain, well sorted, uniform,
				trace black staining, saturated, odor.
110	115	5	0.83-1.56/	0-2.0' Sand: As above, grading into unit below.
			11400-	2.0-4.0' Silt: Brown (7.5 YR 5/3), very granular, near very fine sand size, trace black
			137,000	staining, uniform, loose, saturated, odor.
				4.0-5.0' Sand: As above, in 0-2.0.
115	120	5	1.16-2.25/	0-5.0' Silt and Sand: Brown (7.5 YR 5/4), borderline very granular silt/very fine
			19600-71000	sand, uniform, well sorted, little black staining, loose, saturated, strong odor.
120	125	5	2.38-2.61/	0-5.0' Sand/Silt: As above.
			24000-	
			152000	
125	130	5	1.67-2.64/	0-1.5' Silt: Brown (7.5 YR 5/3), uniform, loose, granular, vesicles, trace black
			65800-	staining, loose, saturated, odor.
			190000	1.5-5.0' Sand/Silt: As above in 120-125'.
130	135	5	1.73-1.94/	0-4.0' Sand: Brown (7.5 YR 5/4), very fine grain, well sorted, uniform, loose,
			70100-	saturated, black staining, vesicles, strong odor.
			400000	4.0-5.0' Sand/Silt: As above.
135	140	5	0.46-0.90/	0-4.0' Sand: Brown (7.5 YR 5/3), little silt, very fine grain, trace fine to medium,
			6900-35000	well sorted, loose, uniform, saturated, odor.
				4.0-5.0' Sandy Silt: Brown (7.5 YR 4/3), predominately silt, little clay in matrix,
				sand very fine to coarse, predominately fine, very poorly sorted, somewhat
				cohesive, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-7 Page 3 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
140	145	5	0.92-1.13/	0-0.5' Sand/Silt: As above.
			38900-72000	0.5-5.0' Sand: Brown (7.5 YR 4/4), trace clay, little silt below 3.0, very fine to
				fine grain, trace medium to coarse, poorly sorted, loose, saturated, odor.
145	150	5	0.84-1.12/	0-4.5' Silt/Sand/Gravel: Brown (7.5 YR 4/3), some clay, very poorly sorted mixture,
			10800-	cobbles up to 4" angular to subround, predominately fine gravel angular to
			39200	subangular, cobbles are bedrock pieces (somewhat rounded), sand all sizes,
				predominately coarse, loose, saturated, odor.
				4.5-5.0' Silt/Clay: Interbeds, silt brown (7.5 YR 4/2), clay: yellowish red (5 YR 4/6),
				some sand very fine to coarse, predominately fine, little gravel angular to subround
				up to 2", poorly sorted, clay beds up to approximately 1" thick, plastic, cohesive,
				stiff, saturated, odor.
150	155	5	6.47-0.73/	0-3.0' Silt/Clay: Interbeds, with sand and gravel as above.
			2700-15800	3.0-5.0' Sand: Brown (7.5 YR 5/2), little silt 4.0-5.0, very fine to fine grain,
				trace medium, some medium to coarse 4.0-5.0, trace gravel subangular to
				subround up to 1.5", poorly sorted, loose, saturated, odor.
				EOB 155'.

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Sample/Core Log

Boring/Well GMPZC-8 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 3/22/05 Drilling Completed 3/22/05

Total Depth Drilled 145 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.3 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	-0.11-5.62/	0-1.0' Fill: Gravel, silt, and sand.
			0-31	1.0-4.5' Silt: Dark brown (7.5 YR 3/4), little organics (rootlets), somewhat
				grainy, 1-2.5' frozen solid, loose, damp, organic odor.
				4.5-5.0' Silt/Sand: Brown (7.5 YR 5/4), some gravel up to 1.5" subround to
				subangular, sand is very fine to coarse, predominately very fine, loose, dry,
				organic odor.
5	10	5	0.67-1.60/	0-0.5' Silt/Sand: As above.
			113-339	0.5-1.0' Sand: Brown (7.5 YR 4/4), trace coarse, little silt, predominately fine to
				very fine, trace gravel subround to subangular up to 1.5", loose, damp, somewhat
				sorted, organic odor.
				1.0-5.0' Sand: Brown (7.5 YR 4/4), little medium, trace coarse, some very fine,
				predominately fine, little gravel angular to subround up to 3", poorly sorted, damp,
				loose, no odor.
10	15	2	0.79-0.81/	0-2.0' Sand: As above, except color change brown (7.5 YR 5/4).
			172-290	
15	20	2	0.30-1.90/	0-3.0' Lost sample on deck.
			2608-43200	3.0-4.5' Silt and Clay: Silt brown (7.5 YR 4/3), clay yellowish red (5 YR 4/6),
				cohesive, plastic, somewhat sticky, fissile on broken surfaces, silt is somewhat
				grainy. Clay layers up to 1/2" thick, saturated, slight odor.
20	25	5	0.83-1.15/	0-5.0' Sand: Brown (7.5 YR 5/4), trace very fine, medium, coarse, fine gravel,
			23200-30600	predominately fine, moderately well sorted, loose, saturated, slight odor in
				places.
25	30	2	0.45-1.05/	Bag broke: Appeared as follows (approximately 2 feet remained in bag).
			9068-22000	0-3.0' No recovery.
				3.0-5.0' Sand: As above (20-25), except no gravel, odor is stronger.
30	35	0		No recovery.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-8 Page 2 of 3

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
35	40	5	0.06-2.08/	0-5.0' Sand: Brown (7.5 YR 4/3), trace medium to coarse, some very fine,
			39300-79700	predominately fine, loose, clean, moderately to well sorted, saturated, odor.
40	45	5	1.31-3.10/	0-5.0' Sand: As above.
			93000-162500	
45	50	5	0.85-2.06/	0-5.0' Sand: As above.
			9000->430000	
50	55	5	0.57-2.78/	0-5.0' Sand: As above.
			1200->780000	
55	60	5	0.11-0.93/	0-5.0' Sand: As above.
			6385-32500	
60	65	5	0.16-1.51/	0-1.5' Sand: As above.
			6185-17900	1.5-5.0' Silt: Brown (7.5 YR 4/4), fine to very fine sand seam (sand as above)
				from 1.8-2.5, silt is smooth, trace clay, uniform, bubbly (methane), somewhat
				sticky and cohesive, saturated odor.
65	70	5	0.19-3.54/	0-1.0' Silt: Brown (7.5 YR 4/4), grainy, uniform, trace bubbles/vesicles, loose,
			2785-117000	saturated, odor.
				1.0-2.0' Sand: Brown (7.5 YR 5/4), clean, very fine sand, well sorted, trace fine,
				loose, saturated, odor.
				2.0-4.0' Silt: As above (0-1.0).
				4.0-4.5' Sand: As above (1.0-2.0).
				4.5-5.0' Silt: As above except less grainy.
70	75	5	0.23-2.26/	0-1.0' Sand: As above 66.0-67.0.
			355-2195	1.0-5.0' Silt: Brown (7.5 YR 4/4), 1.3-1.6 is sand as above, silt is laminated
				silts of slightly different grain sizes, coarser at bottom of section, smooth and
				cohesive overall, saturated, odor.
75	80	5	0.45-1.45/	0-3.5' Sandy Silt: Brown (7.5 YR 4/4); grainy silt with some to much very fine
			12700-	sand, trace fine to coarse, saturated, bubbles, odor.
			20800	3.5-5.0' Sand: Brown (7.5 YR 5/4), some silt throughout interbedded with
				sand, sand is very fine with trace fine, well sorted, loose, saturated, odor.
80	85	5	0.33-2.81/	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, more grainy down section, somewhat
			5502-54500	loose, trace black staining, bubbles, vesicles, saturated, odor.
85	90	5	-0.05-0.32/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy in places, overall smooth, thin laminations of
			957-15600	slighty different sized silts, cohesive, grading into very fine sand 4.5-.50, satuarted,
				odor.
90	95	5	0.78-1.72/	0-5.0' Silt: As above, except trace very fine sand layers up to 1" thick at top and
			11800-16500	bottom of section.
95	100	5	0.2-0.55/	0-5.0' Silt: Brown (7.5 YR 4/4), little clay, laminae 1/4" thick, yellowish red (5 YR 4/6),

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Sample/Core Log (continued)

Boring/Well GMPZC-8 Page 3 of 3

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			8876-12700	cohesive, plastic, fissile when broken, trace very fine sand layers up to 1" thick
				often found around clay layers, silt is somewhat grainy, saturated, odor.
100	105	5	0.52-2.44/	0-4.5' Sand: Brown (7.5 YR 5/2), very fine, clean , well sorted, saturated, slight
			41800-110000	odor.
				4.5-5.0' Silt: As above (95-100), sharp contact with above unit, smoother, trace
				clay, no sand.
105	110	--	--	No recovery.
110	115	--	--	No recovery.
115	120	5	0.76-2.18/	0-5.0' Sand: Brown (7.5 YR 4/4), trace fine, very fine sand, well sorted, clean,
			23800-51700	saturated, no odor.
120	125	5	0.31-1.21/	0-5.0' Sand: As above.
			7459-94300	
125	130	5	1.32-1.85/	0-5.0' Sand: As above, except little to some fine.
			110800-	
			180,600	
130	135	5	1.02-1.18/	0-5.0' Sand: As above, grading into fine sand.
			56500-107200	
135	140	5	0.28-1.60/	0-5.0' Sand: Brown (7.5 YR 4/4) trace coarse and very fine, some medium,
			4500-116200	predominately fine, loose, somewhat sorted, saturated, odor.
140	145	5	1.15-2.10/	0-5.0' Sand: As above.
			84800-276400	
				EOB @ 145'.

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Sample/Core Log

Boring/Well GMPZC-9 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 3/20/05 Drilling Completed 3/20/05

Total Depth Drilled 125 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	0.9-.30/	0-1.0' Frozen Soil/Sediment.
			1969-2338	1.0-3.5' Silt, Sand, Gravel: Fill.
				3.5-4.5' Silt: Strong brown (7.5 YR 5/6), grainy, banded with black layers,
				uniform, saturated, humic odor.
				4.5-5.0' Silty Sand: Sand is fine to very fine, trace rootlets, trace cobbles up to
				4", saturated, no odor.
5	10	5	-0.19- -0.05/	0-2.0' Clayey Silt: Yellowish red (5 YR 4/6), trace very fine, trace gravel subangular
			62-204	to round up to 3", silt is gritty, cohesive and somewhat plastic, saturated, odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/3), trace clay interbedding, uniform, smooth,
				saturated, no odor.
10	15	5	-0.15-0.05/	0-5.0' Silt and Clay: Interbeds, silt is smooth, color as above, clay is fissile in
			40-2049	appearance on broken surfaces, cohesive, plastic, layers up to 2" thick, saturated,
				no odor.
15	20	2	-0.21- -0.19/	0-2.0' Silt and Clay: As above, but distorted due to drilling.
			0-622	
20	25	5	0.25-1.26/	0-1.0' Silt and Clay: As above, except significantly less clay, clay layers
			6938-72800	up to 2 mm in thickness.
				1.0-2.0' Sand: Brown (7.5 YR 5/4), trace fine to medium, trace gravel subround up
				to 2", trace silt (?) predominately very fine, poorly sorted, loose, gradational
				contact with unit below, saturated, very slight odor.
				2.0-3.0' Silty Sand and Gravel: Reddish brown (5 YR 5/4), sand of all sizes, very
				poorly sorted, gravel subround to subangular up to 1.5", loose, saturated, no
				odor.
				3.0-4.0' Sand and Gravel: Brown (7.5 YR 4/3), sand very fine to coarse,
				predominately medium, gravel up to 2.5" subround to subangular, saturated,
				no odor.
				4.0-5.0' Sand: Brown (7.5 YR 4/4), sand is fine, trace medium, little very fine,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-9 Page 2 of 3

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				somewhat sorted, trace fine gravel, loose, saturated, no odor.
25	30	5	0.05-1.47/	0-0.5' Sand: As above.
			23100-73500	0.5-2.0' Sand; Very dark brown (7.5 YR 2.5/3), little gravel subround to
				subangular up to 3", sand fine to coarse, predominately medium, little very fine,
				loose, poorly sorted, coarser at top of unit, saturated, slight odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/4), little medium to coarse, trace very fine,
				predominately fine, slightly coarser at approximately 4.0', somewhat sorted, loose,
				saturated, slight odor.
30	35	5	0.61-0.94/	0-1.3' Sand: Color as above, trace medium, fine to very fine, well sorted, loose,
			22500-91400	saturated, slight odor.
				1.3-2.0' Sand: Brown (7.5 YR 4/3), little medium to coarse, trace fine gravel, fine
				to very fine predominately fine, poorly sorted, loose, saturated, slight odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/4), trace medium to coarse, predominately fine,
				moderately sorted, coarser at bottom 0.5', saturated, odor.
35	40	4	0.89-1.54/	0-5.0' Silt: Reddish brown (5 YR 5/4), trace clay (approximately 1/4" thick at 0.5'),
			2208-38700	grainy, uniform, trace black staining, trace vesicles, loose, saturated, odor.
40	45	5	0-0.60/	0-5.0' Silt: As above, except approaching very fine sand and little vesicles,
			8822-90300	no clay.
45	50	5	0.75-2.8/	0-2.5' Silt: As above, no clay.
			10900-59600	2.5-3.5' Silt: Brown (7.5 YR 4/4), sharp contact with above unit, trace clay in matrix,
				smooth silt, uniform, saturated, odor, trace black staining, banding with very slight
				color change due to very slight change in grain size.
				3.5-5.0' Silt: Reddish brown (5 YR 4/4), grainy approaching very fine sand, uniform,
				saturated, odor.
50	55	5	1.44-2.40/	0-2.0' Silt: Reddish brown (5 YR 4/4), smooth, trace clay, cohesive, uniform,
			9556-36500	saturated, odor, trace black staining, trace vesicles.
				2.0-5.0' Silt: Color as above, grainy, loose, trace black staining, trace vesicles,
				uniform, saturated, odor.
55	60	5	0.20-0.68/	0-1.0' Silt: Brown (7.5 YR 4/3), and reddish brown (5 YR 4/4), trace clay in matrix,
			5404-12000	smooth interbedded silts, slight discoloration between bands, cohesive and
				somewhat plastic, saturated, slight odor.
				1.0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, uniform, loose, trace vesicles,
				saturated, odor.
60	65	5	0.27-1.81/	0-5.0' Silt: Color as above, very grainy approaching very fine sand, silty clay layer
			750-67800	2-2.5', very hard and platy in appearance, black staining, vesicles, loose
				uniform, saturated, odor.

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Sample/Core Log (continued)

Boring/Well GMPZC-9

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
65	70	5	1.20-1.80/	0-2.5' Silt: As above, except finer, still grainy.
			13900-23800	2.5-4.5' Clayey Silt: Brown (7.5 YR 4/4), smooth silt, some to much clay, banded
				with slight discoloration between bands, cohesive, plastic in places, saturated,
				odor.
				4.5-5.0' Silt: As above, 0-2.5.
70	75	5	1.80-2.90/	0-2.0' Silt: Brown (7.5 YR 4/4), some to much clay in places, smooth, banded with
			17200-109600	slight color variation, saturated, slight odor, black staining, vesicles.
				2.0-3.0' Silt: Reddish brown (5 YR 5/4), grainy approaching very fine sand, loose,
				uniform, somewhat saturated, slight odor.
				3.0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, loose, uniform, saturated, slight
				odor, trace vesicles.
75	80	5	0.70-0.80/	0-5.0' Silt: Reddish brown (5 YR 4/4), as above, except much methane bubbling,
			4200-29600	vesicles, odor.
80	85	5	1.22-2.50/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy and smooth, slight changes in grain size,
			18200-24800	trace mica bits, cohesive and plastic in places, trace clay in matrix, trace black
				staining, trace vesicles, saturated, odor.
85	90	5	1.30-5.15/	0-5.0: Silt: Reddish brown (5 YR 5/4), grainy, getting more coarse bottom half of
			12400-110200	section, trace mica bits, uniform, loose, trace black staining, saturated, odor.
90	95	5	3.76-6.77/	0-1.0' Silt: As above.
			68300-150000	1.0-5.0' Silt: Color as above, somewhat grainy, trace black staining,
				vesicles, saturated, odor, loose, uniform.
95	115	0		No recovery, appeared to be silt as above, tip of core barrel was sand very fine to
				fine, little medium to coarse, silty, brown (7.5 YR 4/4).
115	120	5	0.18-3.87/	0-2.0' Sand: Dark brown (7.5 YR 3/2), trace silt, trace very fine and medium,
			9500-108000	predominately fine, moderately sorted, loose, saturated, odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/3), trace medium, silt, predominately very fine to
				fine, sorted, loose, saturated, odor.
120	125	5	1.97-4.00/	0-2.0' Silt and Clay: Interbeds, silt brown (7.5 YR 4/4), smooth, clay yellowish red
			83700-91100	(5 YR 4/6), cohesive, plastic, fissile appearance, 2" layers, saturated, odor.
				2.0-3.0' Silt: Color as above, somewhat grainy, trace clay, uniform, loose saturated,
				odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/3), very fine, trace clayey silt at bottom, trace fine
				and medium, vesicles, saturated, odor.
				EOB @ 125'.

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Sample/Core Log

Boring/Well GMPZC-10 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 3/19/05 Drilling Completed 3/19/05

Total Depth Drilled 175 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.29 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Oiden

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.0	-0.25- -0.24/	0-2.0' Fill: Crushed Slate.
			2500-4000	
5.0	10	5	-0.3-.16/	0-2.0' Silt/Sand/Gravel: Brown (7.5 YR 4/4), predominately silt, sand all sizes, some
			138-1132	gravel fine up to 2.5" subangular to subround, very poorly sorted, loose to
				somewhat cohesive, saturated from drilling, no odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/4), little clay layering, one 4" thick clay layer at 2.5,
				silt is smooth, uniform, clay is dark reddish brown (5 YR 3/4), plastic, stiff, cohesive,
				overall saturated, somewhat cohesive, no odor.
10	15	5	-0.40-0.20/	0-2.0' Silt: As above, no clay.
			711-35	2.0-5.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish red (5 YR 4/6),
				approximately 50 percent clay and 50 percent silt, silt description as above, clay
				description as above, clay layers 0.25-2", fairly uniform layering, well defined,
				cohesive, saturated, no odor.
15	20	2	NA	0-2.0' Silt/Clay: As above.
				2.0-5.0' No recovery.
20	25	5	NA	0-1.0' Sand: Reddish brown (5 YR 4/4), very fine to coarse, predominately fine,
				poorly sorted, loose, saturated, no odor.
				1.0-2.5' Sand: Reddish brown (5 YR 4/3), trace gravel subangular to subround
				up to 1.5", fine to very coarse, predominately medium, loose, poorly sorted,
				no odor.
				2.5-5.0' Sand: As above in 0-1.0.
25	30	5	NA	0-5.0' Sand: Brown (7.5 YR 4/3), fine grain, little very fine, trace medium to
				coarse, poorly sorted, loose, saturated, strong odor.
30	35	0	NA	0-5.0' No recovery.
35	40	5	NA	0-3.5' Silt: Brown (7.5 YR 4/4), trace clay bedding, clay layers are varved up to 1/4",
				clay is yellowish red, plastic, as above, silt smooth, uniform, somewhat cohesive,
				saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-10 Page 2 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.5-5.0' Silt: Reddish brown (5 YR 5/4), very granular silt, approaching size of
				very fine sand, very well sorted, loose, saturated, trace black staining, strong odor.
40	45	5	NA	0-5.0' Silt: As above.
45	50	0		0-5.0' No recovery.
50	55	0		0-5.0' No recovery.
55	60	5	1.73-1.87/	0-5.0' Silt: Reddish brown (5 YR 4/4), trace clay in matrix (probably varves), grainy to
			2731-7000	predominately smooth, somewhat cohesive, methane bubbles, vesicles, trace
				gray to black staining, saturated, strong odor.
60	65	5	1.95-2.06/	0-5.0' Silt: As above, but no clay, predominately grainy silt.
			479-2800	
65	70	5	1.94-2.60/	0-5.0' Silt: As above, more black staining, grainy to smooth, very grainy 1-3,
			579-2871	saturated, strong odor.
70	75	5	2.42-2.90/	0-5.0' Silt: As above, minor grain size variations, some laminations associated with
			1271-2454	minor changes in grain size, grainy to smooth, no staining, slightly cohesive to
				loose, saturated, odor.
75	80	5	2.03-2.72/	0-5.0' Silt: As above, redescribed, reddish brown (5 YR 4/4), grainy to smooth,
			718-3100	predominately grainy, uniform, bubbles/vesicles, trace staining, saturated, loose,
				slightly cohesive, strong odor.
80	85	5	2.03-3.28/	0-5.0' Silt: As above.
			1697-1500	
85	90	5	2.63-3.40/	0-2.0' Silt: As above.
			3700-12100	2.0-3.0' Silt: As above, with addition of some interbedded very fine sand, well
				sorted, some very fine sand in matrix with layers up to approximately 2", is
				predominately silt, loose, saturated, strong odor.
90	95	5	3.13-3.76/	0-5.0' Silt: As above, with little very fine sand.
			10000-34100	
95	100	5	2.69-2.93/	0-5.0' Silt: Reddish brown (5 YR 4/3), predominately smooth, uniform, slightly
			1250-2913	cohesive, saturated, few vesicles, odor.
100	105	5	2.99-2.43/	0-5.0' Silt: As above, but some grain size variation, trace clay (?) odor.
			7900-16900	
105	110	5	3.44-3.79/	0-5.0' Silt: As above, with some very fine sand layers 1-3 up to approximately 3"
			19600-43400	thick, silt laminations due to minor grain size variation, somewhat cohesive, some
				vesicles, saturated, odor.
110	115	5	3.12-3.90/	0-2.0' Sandy Silt: Brown (7.5 YR 4/4), silt as above, with some very fine sand in
			1200-80000	matrix, was probably interbedded, sand well sorted, loose, saturated, odor.
				2.0-4.0' Sand: Brown (7.5 YR 5/2), some silt, very fine grain, well sorted, loose,
				saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-10 Page 3 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.0-5.0' Sandy Silt: As above in 0-2.0.
115	120	5	2.15-2.67/	0-5.0' Sand: Dark brown (7.5 YR 3/4) little silt, predominately fine, little medium
			4700-11800	to coarse, poorly sorted, loose, saturated, odor.
120	125	5	2.32-3.09/	0-0.5' Sand: As above.
			1500-88000	0.5-4.5' Silt: Brown (7.5 YR 5/3), few thin clay interbeds 1/4" thick or less, clay is
				yellowish red (5 YR 4/6), plastic, appears fissile, silt predominately smooth, vesicles,
				little black staining, saturated, strong odor.
				4.5-5.0' Sandy Silt: Dark brown (7.5 YR 3/4), little gravel fine up to 3", little clay,
				predominately silt, very poorly sorted deposit, sand all sizes, predominately
				coarse, poorly sorted, somewhat cohesive, saturated, strong odor.
125	130	5	2.52-3.64/	0-1.5' Silt: Reddish brown (5 YR 5/4), trace gravel subangular to subround up to
			2500-140000	0.5", little sand predominately very fine in matrix, trace medium to coarse,
				poorly sorted, somewhat cohesive, saturated, odor.
				1.5-5.0' Sand: Brown (7.5 YR 4/3), very fine grain, trace silt, trace fine to medium,
				well sorted, loose, saturated, odor.
130	135	5	3.55-3.59/	0-5.0' Sand: As above, contains some medium to coarse 3.0-3.5', and gets finer
			20500-43000	down section approaching silt size at 5.0'.
135	140	5	2.00-2.48/	0-5.0' Sandy Silt: Brown (7.5 YR 4/3), predominately silt, some very fine sand,
			4100-31000	trace medium to coarse, some black staining, vesicles, saturated, odor, totally
				disturbed from drilling, lost 135-155' sample, went back down and recovered
				approximately 5 feet of sample, may not be in place.
140	145	0		No recovery.
145	150	0		No recovery.
150	155	0		No recovery.
155	160	5	2.20-2.99/	0-0.5' Silt: Brown (5 YR 5/3), smooth, laminated, slightly cohesive, one clay layer
			3000-39900	at 0.5' approximately 1 inch thick, clay is yellowish red (5 YR 4/6), plastic, cohesive,
				saturated, odor.
				0.5-5.0' Sand: Brown (7.5 YR 4/3), trace silt, sand predominately fine, little
				medium to coarse, little very fine, poorly sorted, loose, saturated, odor.
160	165	5	2.68-2.98/	0-5.0' Sand: As above, with trace fine gravel.
			14800-17000	
165	170	5	3.12-3.24/	0-1.5' Sand: As above, getting silty, grading down into next unit.
			8300-130000	1.5-5.0' Silt: Brown (7.5 YR 5/2), little very fine sand, uniform, very grainy,
				vesicles, saturated, loose, odor.
170	175	5	3.36-3.74/	0-5.0' Silt: As above, slightly finer, odor.
			2500-69900	
				EOB @ 175'

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Sample/Core Log

Boring/Well GMPZC-11 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 3/31/05 Drilling Completed 3/31/05

Total Depth Drilled 155 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1046.17 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-1.6- -1.44/	0-4.5' Silt: Brown (7.5 YR 5/3) ,some organic matter, rootlets, trace very fine sand,
			3.2-8.4	predominately smooth, slightly cohesive, saturated, wet, humic/organic, odor.
				4.5-5.0' Silt: As above, with some very fine sand.
5	10			No recovery.
10	15			No recovery.
15	20	5	-5.8- -5.7/	0-0.7' Gravel: Brown (7.5 YR 4/4), some sand very fine to very coarse, gravel is
			0-45.3	subround to subangular up to 3", very poorly sorted, loose, some silt, probably
				washed in, saturated, odor.
				0.7-3.0' Silt: Strong brown (7.5 YR 4/6), some very fine sand, little fine to coarse
				sand 1.5-1.8, little coarse sand/fine gravel suspended in silt matrix, little clay in
				?? Some cohesion, saturated, no odor.
				3.0-5.0' Silt: As above, with no sand or gravel, but addition of clay layering
				varved up to 0.2", fine clay interbedding, clay is yellowish red (5 YR 4/6), plastic, silt
				grainy, somewhat cohesive, saturated, no odor.
20	25	5	-0.11-0/	0-3.5' Silt: With fine clay interbedding as above, also trace very fine to fine silty
			9-124	sand interbedding 1-2, <1" thick, no odor, saturated.
				3.5-5.0' Silty Sand: Brown (7.5 YR 4/3), fine grain, some very fine, very silty, trace
				medium to coarse, poorly sorted, loose, saturated, no odor.
25	30	5	-0.16-0.59/	0-5.0' Sand: Color as above, fine grain, trace silt, trace very fine sand, well sorted,
			490-3734	loose, saturated, no odor.
30	35	5	-0.21-0.86/	0-3.5' Sand: As above, slightly coarser 2.5-3.5' with trace medium to coarse,
			420-3790	no odor.
				3.5-3.7' Silty Sand and Gravel: Color as above, sand very fine to coarse, very
				poorly sorted, gravel subangular to subround up to 2.5", loose, saturated, no
				odor.
				3.7-5.0' Silt: Reddish brown (5 YR 4/3), very granular, trace black staining, loose,
				uniform, saturated, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-11 Page 2 of 4

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.3-2.7' Sand: Strong brown (7.5 YR 5/6), little silt, very fine to fine grain, trace
				medium, moderately sorted, loose, saturated, slight odor.
				2.7-5.0' Silty Sand and Gravel: As above.
30	35	5	0.2-0.47/	0-5.0' Sand: Strong brown (7.5 YR 4/6), very fine to fine grain, trace medium,
			2400-3850	well sorted, uniform, loose, saturated, no odor.
35	40	5	-0.3 - -0.14/	0-5.0' Silt: Yellowish red (5 YR 4/6), very fine to fine sand layer with trace fine
			22.3-2200	gravel approximately 1.5" thick at 1.5', well sorted, trace clay in matrix, silt
				grainy to smooth, uniform, saturated, loose, no odor.
40	45	5	0.09-0.42/	0-5.0' Silt: As above, grainy to smooth, very grainy 2.0-3.0, trace black staining,
			8-38	saturated, slight odor.
45	50	5	-0.10-0.42/	0-5.0' Silt: Reddish brown (5 YR 5/3), predominately smooth, trace clay in
			5-24	matrix, slightly cohesive, uniform, saturated, trace black staining, slight odor.
50	55	5	0.12-0.35/	0-5.0' Silt: As above, but predominately grainy, no clay.
			0-20	
55	60	5	-0.14-0/	0-5.0' Silt: Brown (7.5 YR 4/4), predominately smooth, uniform, saturated,
			4-12	slightly cohesive, no odor.
60	65	5	0.36-0.94/	0-5.0' Silt: As above.
			39-73	
65	70	5	0-1.63/	0-5.0' Sand: Brown (7.5 YR 5/2), little silt, very fine grain, well sorted, very fine,
			10-40	approaching silt size, loose, contains several silt layers throughout, silt is brown
				(7.5 YR 4/3), silt layers range from varves to approximately 1/2" thick, also two
				silty clay layers yellowish red (5 YR 4/6), cohesive, silty clay layers are 2-3" thick
				and occur at 2.0 and 2.7, overall saturated, no odor.
70	75	5	0.45-2.61/	0-1.8' Sand: Brown (7.5 YR 5/3), trace silt, very fine to fine grain, trace medium to
			9-70	coarse, poorly sorted, trace fine gravel subangular to subround, loose, saturated,
				no odor.
				1.8-3.0' Sand: Brown (7.5 YR 5/2), some silt layering up to 1.5" thick, sand slightly
				finer than above, predominately very fine, trace to medium, one clay layer
				approximately 1/4" thick at 2.8, saturated, no odor.
				3.0-3.2' Sand: Brown (7.5 YR 4/4), silty, very fine to coarse, predominately fine
				to medium, trace fine gravel, poorly sorted, loose, saturated, no odor.
				3.2-5.0' Silt: With few clay interbeds, silt, brown (7.5 YR 4/3), clay strong brown
				(7.5 YR 4/6), predominately interbedded silts grainy and smooth, with few thin
				clay layers 3.2-3.5, clay is plastic, cohesive, appears platy when broken,
				somewhat stiff, overall saturated, slight odor.
75	80	5	0.67-1.09/	0-5.0' Silt: With some clay interbeds, silt brown (7.5 YR 5/3), clay yellowish red
			11-17	(5 YR 4/6), also little very fine sand interbedding, silt predominately grainy, contains

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-11 Page 3 of 4

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				trace coarse sand and trace gravel in matrix, slightly cohesive, clay layers varved
				up to 1.5", plastic, cohesive, soft, few sand layers 1-2" thick, well sorted,
				loose, overall saturated, no odor.
80	85	5	0.26-4.11/	0-5.0' Silt: Brown (10 YR 5/3), trace to little sand fine to coarse in matrix, trace
			1.5-34	clay in matrix, trace gravel subangular to subround up to 1.5" suspended in
				matrix, overall somewhat cohesive, poorly sorted sand, saturated, no odor.
85	90	5	0.48-4.44/	0-0.7' Silty Sand and Gravel: Brown (7.5 YR 4/3), trace clay, very silty, sand very fine
			2-38	to very coarse, predominately fine, very poorly sorted, gravel angular to subround
				up to 1.5", loose, saturated, no odor.
				0.7-5.0' Silt and Sand: Silt strong brown (7.5 YR 4/6), sand brown (10 YR 5/3),
				interbedded silt and very fine sand, predominately very fine sand, well sorted,
				loose, sand layers up to 8" thick, silt is smooth, contains some clay in matrix,
				slightly cohesive, saturated, no odor.
90	95	5	1.75-5.84/	0-1.0' Sand: Pale brown (10 YR 6/3), very fine grain, extremely fine, approaching
			16-51	grainy silt in size, very well sorted, uniform, loose, saturated, no odor.
				1.0-1.4' Silt: Brown (10 YR 5/3), smooth, uniform, saturated, no odor.
				1.4-4.0' Sand: As above, grading into unit below.
				4.0-5.0' Sandy Silt: Color as above, very fine sand and very grainy silt, probably
				interbedded, somewhat loose, saturated, no odor.
95	100	5	1.33-6.86/	0-5.0' Sand: Brown (10 YR 5/3), some silt, could be washed in from drilling, very
			3-101	fine to fine grain, some medium to coarse, trace fine gravel subangular to subround,
				predominately coarse with a lot of fine gravel 3.5-4.0, poorly sorted, loose,
				saturated, no odor.
100	105	5	3.61-4.40/	0-5.0' Sand: As above, predominately very fine to fine, some medium to coarse,
			4.5-9.6	trace gravel subangular to subround up to 2.5", somewhat coarser 2.0-2.5 and
				3.2-3.6, poorly sorted, loose, saturated, no odor.
105	110	5	5.32-6.26/	0-5.0' Sand: Brown (10 YR 5/3), very fine to fine grain, well sorted, clean loose,
			14-18.7	saturated, no odor.
110	115	5	6.18-8.05/	0-5.0' Sand: Brown (10 YR 4/3), predominately fine, some medium, moderately
			109-270	sorted, loose, saturated, odor.
115	120	5	6.80-7.09/	0-5.0' Sand: As above, odor.
			13400-23300	
120	125	5	6.11-7.42/	0-5.0' Sand: As above.
			4200-29600	
125	130	5	5.54-9.02/	0-3.5' Sand: Brown (7.5 YR 5/3), very fine to fine grain, trace medium, moderately
			3000-33400	sorted, grades into very fine downward, loose, saturated, odor.
				3.5-5.0' Silt: Brown (10 YR 4/3), trace medium to coarse sand in matrix,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-11 Page 4 of 4

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				especially 4.7-5.0, trace clay yellowish red, as above, varving/layering, silt smooth,
				somewhat cohesive, saturated, odor.
130	135	5	6.90-8.10/	0-1.5' Silt: As above.
			13800-22700	1.5-5.0' Sand and Gravel: Dark grayish brown (10 YR 4/2), little silt, sand fine to
				very coarse, predominately coarse, very poorly sorted, gravel subangular to
				subround up to 2", loose, saturated, odor, finer 4.5-5.0, predominately fine.
				EOB @ 135'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-12 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 3/31/05 Drilling Completed 3/31/05

Total Depth Drilled 155 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1043.03 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-1.6- -1.44/	0-4.5' Silt: Brown (7.5 YR 5/3), some organic matter, rootlets, trace very fine sand,
			3.2-8.4	predominately smooth, slightly cohesive, saturated, wet, humic/organic, odor.
				4.5-5.0' Silt: As above, with some very fine sand.
5	10			No recovery.
10	15			No recovery.
15	20	5	-5.8- -5.7/	0-0.7' Gravel: Brown (7.5 YR 4/4), some sand very fine to very coarse, gravel is
			0-45.3	subround to subangular up to 3", very poorly sorted, loose, some silt, probably
				washed in, saturated, odor.
				0.7-3.0' Silt: Strong brown (7.5 YR 4/6), some very fine sand, little fine to coarse
				sand 1.5-1.8, little coarse sand/fine gravel suspended in silt matrix, little clay in
				matrix, some cohesion, saturated, no odor.
				3.0-5.0' Silt: As above, with no sand or gravel, but addition of clay layering
				varved up to 0.2", fine clay interbedding, clay is yellowish red (5 YR 4/6), plastic, silt
				grainy, somewhat cohesive, saturated, no odor.
20	25	5	-0.11-0/	0-3.5' Silt: With fine clay interbedding as above, also trace very fine to fine silty
			9-124	sand interbedding 1-2, <1" thick, no odor, saturated.
				3.5-5.0' Silty Sand: Brown (7.5 YR 4/3), fine grain, some very fine, very silty, trace
				medium to coarse, poorly sorted, loose, saturated, no odor.
25	30	5	-0.16-0.59/	0-5.0' Sand: Color as above, fine grain, trace silt, trace very fine sand, well sorted,
			490-3734	loose, saturated, no odor.
30	35	5	-0.21-0.86/	0-3.5' Sand: As above, slightly coarser 2.5-3.5' with trace medium to coarse,
			420-3790	no odor.
				3.5-3.7' Silty Sand and Gravel: Color as above, sand very fine to coarse, very
				poorly sorted, gravel subangular to subround up to 2.5", loose, saturated, no
				odor.
				3.7-5.0' Silt: Reddish brown (5 YR 4/3), very granular, trace black staining, loose,
				uniform, saturated, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-12 Page 2 of 4

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
35	40	5	-3.77- -3.51/	0-5.0' Silt: Reddish brown (5 YR 4/3), trace coarse sand and gravel up to 1"
			25-37	in matrix, very granular, approaching very fine sand in size, uniform, few vesicles/
				bubbles, loose, saturated, no odor.
40	45	5	-3.51-2.92/	0-5.0' Silt: As above.
			33-53	
45	50	5	-3.82- -2.87/	0-4.0' Silt: as above.
			39-104	4.0-5.0' Sand: Reddish brown (5 YR 5/3), very fine grain, well sorted, uniform,
				loose, saturated, no odor.
50	55	5	3.27- -1.74/	0-1.5' Sand: As above, slight fining downward into grainy silt at 1.5, saturated, no
				odor.
			30-257	1.5-5.0' Silt: With few clay interbeds, silt brown (7.5 YR 4/2), clay yellowish red
				(5 YR 6/4), predominately silt (smooth), some silt laminations, few clay layers <1"
				thick, clay plastic, cohesive, soft, platy appearance on broken surfaces, saturated,
				no odor.
55	60	5	-3.20- -3.10/	0-5.0' Silt: Reddish brown (5 YR 4/3), very grainy, very uniform, trace vesicles,
			14-83	loose, saturated, no odor.
60	65	5	-3.66 - -2.55/	0-5.0' Silt: Brown (7.5 YR 4/3), smooth, some lamination/interbedding of smooth
			137-50	silts, somewhat cohesive, saturated, slight odor.
65	70	5	-3.29- -2.63/	0-2.5' Silt: Reddish brown (5 YR 5/3), grainy, uniform, loose, saturated, slight odor.
			375-3000	2.5-5.0' Silt: Dark reddish gray (5 YR 4/2), smooth, interbedded silts, laminations
				due to very minor grain size variations, slightly cohesive, saturated, trace black
				staining, slight odor.
70	75	5	-3.17-2.09/	0-5.0' Silt: As above, but some grainy 0-2.0, odor.
			415-3781	
75	80	5	3.04- -2.80/	0-5.0' Silt: Reddish brown (7 YR 5/3), smooth, uniform, trace black staining, trace
			72-180	vesicles, slightly cohesive, saturated, slight odor.
80	85	5	-2.59- -2.22/	0-5.0' Silt: As above, with some grainy silt 2-5.
			150-356	
85	90	5	2.71-2.05/	0-5.0' Silt: Reddish gray (5 YR 4/2), some interbedding of well sorted very fine sand
			150-520	(few layers <1" thick), few clay interbeds <1" thick, clay description as above,
				predominately grainy silt, somewhat cohesive, saturated, slight odor.
90	95	5	-2.81- -0.56/	0-5.0' Sand: Reddish gray (5 YR 2/2), very fine grain, well sorted, little silt,
			2510-7180	2.5-4.0, loose, saturated, odor.
95	100	5	-2.81- -2.71/	0-5.0' Sand: Reddish brown (5 YR 5/3), very fine grain, clean, very well sorted,
			1600-2310	loose, saturated, odor.
100	105	5	-3.13 - -2.54/	0-1.5' Sand: As above.
			600-4310	1.5-1.8' Silt: Dark reddish gray (5 YR 4/2), few clay interbeds reddish brown

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-12 Page 3 of 4

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				(5 YR 4/3), clay layers approximately 1/4" thick, trace fine to coarse sand, cohesive,
				saturated, odor.
				1.8-5.0' Sandy Silt: Dark reddish gray (5 YR 4/2), predominately very fine sand,
				little medium to coarse, trace gavel subangular to subround up to 1.5" loose,
				poorly sorted, saturated, odor.
105	110	5	-3.07- -2.50/	0-5.0' Sand: Brown (7.5 YR 4/2), fine grain, clean, very well sorted, loose,
			2150-8140	saturated, odor.
110	115	5	-3.11- -2.42/	0-1.0' Sand: Color as above, fine grain, little medium to coarse, poorly sorted,
			2872-6401	loose, saturated, odor.
				1.0-2.0' Silt: Brown (7.5 YR 4/3), smooth, uniform, somewhat loose, saturated,
				odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/2), predominately fine to medium, little very fine,
				little coarse, trace fine gravel, very poorly sorted, clean, saturated, odor.
115	120	5	-1.24 - 11/	0-2.5' Sand: Dark gray (7.5 YR 4/1), predominately fine, some medium to
			4100-6580	coarse, some very fine, some fine gravel subangular to subround, very poorly
				sorted, loose, saturated, odor.
				2.5-4.0' Sand and Gravel: Very dark gray (7.5 YR 3/1), gravel fine up to 1/2"
				angular to subangular, sand all sizes, predominately coarse, very poorly sorted,
				loose, saturated, odor.
				4.0-5.0' Sand: As above in 0-2.5'.
120	125	5	-0.80-0.20/	0-5.0' Sand: Brown (7.5 YR 5/2), trace gravel up to 1" subround in places, very
			2520-6400	fine grain, well sorted, 1.5" thick layer fine grain at 4.8, otherwise uniform, loose,
				saturated, odor.
125	130	5	0.49-1.17/	0-5.0' Sand: Brown (7.5 YR 4/2), very fine sand approaching silt size, well sorted,
			3730-13400	uniform, extremely fine, saturated, odor.
130	135	5	-0.4-0.22/	0-1.0' Sand: Brown (7.5 YR 5/2), very fine to fine grain, trace medium to coarse,
			6196-9020	trace fine gravel, well sorted, loose, saturated, odor, grades into unit below.
				1.0-2.5' Sand and Gravel: Dark gray (7.5 YR 4/1), predominately coarse, some fine,
				some medium, very poorly sorted, gravel mostly fine, subangular, loose, saturated,
				odor.
				2.5-2.7' Sand: Brown (7.5 YR 5/2), predominately fine, some medium coarse,
				poorly sorted loose, saturated, odor.
				2.7-2.9' Gravel: Brown (7.5 YR 4/2), some sand medium to coarse, poorly sorted,
				trace silt, gravel is fine up to 1", angular to subangular, loose, saturated, odor.
				2.9-3.1' Silt: Brown (7.5 YR 4/2), some medium to coarse sand and fine gravel,
				somewhat cohesive, saturated, odor.
				3.1-5.0' Sand and Gravel: Brown (7.5 YR 4/2), sand very fine to very coarse, gravel
				up to 1.5", very poorly sorted, little silt, trace clay, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-12 Page 4 of 4

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
135	140		-1.03- -0.43/	0-2.0' Silt: Brown (7.5 YR 4/2), trace clay interbedding, grainy to smooth,
			200-5028	saturated, slightly cohesive, odor.
				2.0-5.0' Sand and Gravel: Dark gray (7.5 YR 4/1), little silt, gravel up to 2",
				angular to subround, sand fine to coarse, predominately medium to coarse, poorly
				sorted, saturated, loose, odor.
140	145	5	-1.06- -0.53/	0-5.0' Sand and Gravel: Color as above, trace cobbles, gravel predominately
			1270-7370	fine up to 4", angular to subrounded, sand predominately coarse to very coarse,
				some fine to medium, very poorly sorted, loose, saturated, odor.
145	150	5	-0.39-2.14/	0-5.0' Silt: Brown (7.5 YR 5/2), grainy, trace black staining, trace vesicles,
			2300-32600	uniform, loose, saturated, strong odor.
150	155	5	0.31-0.68/	0-5.0' Silt: As above.
			7630-26700	
				EOB @ 155'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-13 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 4/01/05 Drilling Completed 4/01/05

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1042.92 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Royce/Scott

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	-0.03-0/	0-5.0' Silt: Very dark grayish brown (10 YR 3/2), trace clay in matrix, trace very fine
			0-0	sand, rootlets, organics, uniform, topsoil, loose, saturated, organic odor.
5.0	10	5	-0.04- -0.03/	0-2.0' Silty Sand: Dark yellowish brown (10 YR 4/6), little clay in matrix, very silty,
			0-0	sand very fine to very coarse, predominately fine, very poorly sorted, little gravel
				fine up to approximately 1/2" subangular to subround, somewhat cohesive,
				saturated, no odor.
				2.0-3.5' Silty Sand and Gravel: Dark yellowish brown (7.5 YR 3/4), little clay in
				matrix, very silty, sand is very fine to very coarse, very poorly sorted, gravel
				angular to subround up to 4", slightly cohesive, saturated, no odor.
				3.5-5.0' Silt: Reddish brown (5 YR 4/4), grainy to smooth, predominately smooth,
				trace clay, some sand interbedding, sand beds are fine to coarse and silty, poorly
				sorted sand layers typically 1" thick or less, more sand 4.5-5.0' with trace gravel,
				subangular to subround.
10	15	5	-0.05-0/	0-0.8' Silt: As above, with one 5" cobble.
			0-0	0.8-5.0' Silt/Clay Interbeds. Silt, brown (7.5 YR 5/4), clay yellowish red (5 YR 4/6),
				alternating fairly uniform interbedding with clay and silt layers ranging from 1/4-1"
				thick, silt is smooth, crumbly, clay is plastic, cohesive, medium stiff, interbedding,
				saturated, no odor.
15	20	5	-0.44 - -0.21/	0-2.5' Sand: Dark brown (7.5 YR 3/4), some gravel angular to subround up to 4",
			848-8060	sand predominately coarse to very coarse, some fine to medium, poorly sorted,
				loose, saturated, no odor.
				2.5-3.5' Sand: Brown (7.5 YR 4/4), trace fine gravel, sand is predominately fine,
				little very fine, little medium, poorly sorted, loose, saturated, no odor.
				3.5-4.5' Sand: As above on 0-2.5'.
				4.5-5.0' Sand: As above on 2.5-3.5'.
20	25	5	-0.49- -0.48/	0-2.8' Sand: Brown (7.5 YR 5/4), trace fine gravel, fine grain predominately,
			560-7002	trace medium to coarse, well sorted, loose, saturated, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-13

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.8-4.8' Sand: Brown (7.5 YR 5/3), trace gravel subangular to subround up to 2",
				trace silt, predominately fine grain, some medium to coarse, poorly sorted, loose,
				saturated, no odor.
				4.8-5.0' Silt: Reddish brown (5 YR 5/4), grainy, uniform, loose, saturated, slight
				odor.
25	30	5	-0.31-0.11/	0-5.0' Silt: As above.
			2005-11500	
30	35	5	-0.18- -0.11/	0-5.0' Silt: As above with trace black staining in places.
			2690-7011	
35	40	0		No recovery.
40	45	3		0-3.0' Silt: As above, but some is smooth, sample fell onto rig deck, picked up and
				put in bag.
45	50	5	-0.74- -0.62/	0-5.0' Silt: As above, reddish brown (5 YR 4/3), grainy, uniform, trace black
			4118-17600	staining, vesicles, loose, saturated, odor.
50	55	5	-6.75- -0.61/	0-5.0' Silt: As above, smooth 4.5-5.0.
			2326-20000	
55	60	5	-0.69- -0.65/	0-5.0' Silt: As above, reddish brown (5 YR 4/3), grainy to smooth, predominately
			3770-25400	smooth, trace black staining, uniform, vesicles, saturated, odor.
60	65	5	-0.64-0.08/	0-5.0' Silt: As above.
			13400-23800	
65	70	5	-0.67- -0.28/	0-5.0' Silt: As above.
			5230-13500	
70	75	5	-0.96 - -0.58/	0-5.0' Silt: As above, all very grainy.
			8865-19700	
75	80	5	-0.67- -0.47/	0-5.0' Silt: As above, but smooth, brown (10.5 YR 4/3), uniform, trace black
			4224 -15300	staining, vesicles, saturated, odor.
80	85	5	-0.54- -0.46/	0-5.0' Silt: As above.
			8430-31000	
85	90	5	-0.65- -0.1/	0-5.0' Silt: As above.
			7630-18500	
90	95	5	-0.34- -0.06/	0-5.0' Silt: With some interbedded sand layers, silt, brown (7.5 YR 4/3), sand,
			7000-16300	brown (7.5 YR 5/3), predominately silt, some very fine sand layers up to 2" thick
				interbedded, well sorted, trace clay layering varved up to 1/4" thick, clay
				yellowish red as above, silt predominately smooth, saturated, odor.
95	100	5	-0.51- -0.47/	0-5.0' Silty Sand: Brown (7.5 YR 4/3), very fine grain, well sorted, very silty,
			7403-26900	uniform, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-13 Page 3 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
100	105	5	-0.69-0.28/	0-0.3' Silty Sand: As above.
			8791-58200	0.3-0.5' Sand: Brown (7.5 YR 4/3), little silt, fine to coarse, predominately fine,
				poorly sorted, loose, saturated, odor.
				0.5-5.0' Silt and Sand: Reddish brown (5 YR 4/3), interbedded silts and sand,
				predominately silt 0.5-3.5', predominately sand 3.5-5.0, trace gravel up to 1"
				subangular to subround, sand very fine to coarse, predominately very fine, poorly
				sorted, saturated, odor.
105	110	5	-0.18- -0.12/	0-5.0' Sand: Brown (7.5 YR 4/3), some silt in places ?, little gravel subangular to
			740-192700	rounded up to 3.5", sand predominately very fine to fine, some medium to
				coarse, very poorly sorted, loose, saturated, odor.
110	115	5	-0.24- -0.22/	0-3.5' Sand: Brown (7.5 YR 5/4), trace fine gravel, sand predominately fine, little
			30600-76100	medium to coarse, moderately sorted, loose, saturated, odor.
				3.5-4.5' Sand and Gravel: Brown (7.5 YR 4/2), gravel is predominately fine, sand
				is very fine to very coarse, predominately very coarse, pea gravel layer, very poorly
				sorted, loose, saturated, odor.
115	120	5	-0.64- -0.32/	0-5.0' Sand: Brown (7.5 YR 5/4), one clay layer approximately 1/4" thick at
			4370-26300	approximately 2.5, very fine grained, well sorted, uniform, saturated, odor.
120	125	5	-0.25- 0.21/	0-5.0' Sand: As above, very fine to 2.0, then grading into very fine to fine below
			12100-59300	2.0, well sorted, uniform, loose, saturated, odor.
125	130	5	-0.37- -0.05/	0-5.0' Sand: Brown (7.5 YR 5/4), some silt, very fine grain, approaching silt size,
			25500-35200	well sorted, loose, saturated, no odor.
130	135	5	-0.41- -0.37/	0-1.0' Silty Sand: Brown (7.5 YR 5/5), very silty, very fine grain, well sorted, loose,
			1200-117900	uniform, saturated, odor.
				1.0-1.5' Sand: Brown (7.5 YR 4/2), fine to medium grain, trace coarse, poorly
				sorted, loose, saturated, odor.
				1.5-2.5' Sand: Brown (7.5 YR 4/2), fine grain, trace to little medium, poorly sorted,
				loose, saturated, odor.
				2.5-3.0' Sand: Very dark gray (7.5 YR 3/1), fine to medium grain, some coarse,
				poorly sorted, loose, saturated, odor.
				3.0-5.0' Sand: Color as above, fine grain, little medium to coarse, moderately
				sorted, uniform, loose, saturated, odor.
				EOB @ 135'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-14 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 4/2/05 Drilling Completed 4/2/05

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.85 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Scott/Royce

Prepared By Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	-1.72- -1.68/	0-1.5' Silt: Brown (7.5 YR 4/4), interbedded with dark brown (7.5 YR 3/3), brown
			0-9	is grainy and somewhat cohesive, dark brown has much roots and organics,
				crumbly in appearance, last 3" frost, damp, humic odor.
				1.5-2.0' Sandy Silt: Brown (7.5 YR 4/4), sand very fine to coarse, silt is gritty
				and sticky, some gravel subround to subangular up to 1.5", saturated, humic
				odor.
				2.0-5.0' Silt: Strong brown (7.5 YR 4/4), trace clay in matrix, somewhat grainy,
				somewhat firm, uniform, somewhat cohesive, saturated, no odor.
5	10	5	1.74- -1.70/	0-5.0' Silt: With clay interbeds brown (7.5 YR 5/4) clay is trace 0-3, some 3-5,
			7-25	yellowish red (5 YR 4/6) cohesive, plastic, up to 1/2" thick, somewhat soft and
				sift is uniform, somewhat smooth, saturated, odor.
10	15	5.0	1.77- -1.76/	0-5.0' Silt: With clay interbeds, as above, except many clay layers up to 1.5"
			21-28	
15	20	5	-1.71 - -1.30/	0-2.5' Silt: As above, except less clay, trace very fine sand layering and
			2016-5090	trace black staining.
				2.5-5.0' Sand: Dark brown (7.5 YR 3/2), some gravel round to subangular up to
				2.5", sand is predominately medium with some fine to coarse poorly sorted, loose,
				saturated, no odor.
20	25	5	-1.69- -1.50/	0-4.5' Sand: Dark brown (7.5 YR 3/3), trace gravel round to subangular up to 4",
			12300-25600	sand is predominately medium to fine, little coarse, trace very fine, loose, poorly
				sorted, saturated, faint odor.
				4.5-5.0' Sand: Brown (7.5 YR 4/4), trace very fine to coarse, predominately fine,
				somewhat poorly sorted, loose, saturated, slight odor.
25	30	5	-1.35- -0.98/	0-5.0' Sand: As above, except little to some medium from 3.5-4.5.
			5002-15600	
30	35	5	-0.94 - 0.42/	0-5.0' Sand: As above, except trace fine gravel.
			9770-14100	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-14 Page 2 of 3

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
35	40	4	-1.89 - -1.77/	0-1.0' Silt: With clay interbeds, brown (7.5 YR 5/3), clay is fissile in appearance
			503-1308	when broken, cohesive, plastic, yellowish red, up to 1/4" in thick, silt is smooth,
				saturated, odor.
				1.0-4.0' Silt: Reddish brown (5 YR 5/3), somewhat grainy, smooth with trace
				clay in places, very grainy, approaching very fine sand size last 5" loose, saturated,
				no odor, trace black staining, trace vesicles.
40	45	5	-1.71 - -1.50/	0-5.0' Silt: Reddish brown (5 YR 5/4), silt is very grainy approaching very fine
			15200-35500	sand, uniform, trace vesicles, trace black staining, loose, saturated, no odor.
45	50	5	-1.20- -1.09/	0-4.0' Silt: As above, except odor.
			6229-20200	4.0-4.8' Silt: Brown (7.5 YR 4/3), somewhat smooth and cohesive, trace black
				staining, saturated, odor.
				4.8-5.0' Silt: As above, 0-4.
50	55	5	0-0.91/	0-1.0' Silt: As above.
			11800-15400	1.0-2.5' Silt: As above 45-50 (4-4.8).
				2.5-5.0' Silt: As above.
55	60	5	1.66-1.39/	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy to smooth, bubbles, vesicles, trace
			707-4120	black staining, saturated, odor.
60	65	5	1.21 - -0.40/	0-5.0' Silt: Color as above, grainy, uniform, loose, trace clay smooth in places,
			3830-16900	trace vesicles and bubbles, saturated, odor.
65	70	5	-0.94 - -0.31/	0-5.0' Silt: As above, except more vesicles and bubbles.
			5860-10200	
70	75	5	-0.74-0.66/	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, uniform, loose, saturated, odor.
			76100-162700	
75	80	5	-0.94-0.70/	0-5.0' Silt: As above, except bubbles and black staining.
			4997-16500	
80	85	5	-0.83-1.70/	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy and smooth, sometimes in distinct
			1510-22000	layers, saturated, odor.
85	90	5	0.86-1.97/	0-2.0' Silt: As above.
			8900-38500	2.0-5.0' Silt: Reddish brown (5 YR 5/4), grainy silt, trace very fine sand, uniform,
				loose, trace black staining, saturated, odor.
90	95	5	1.20-3.10/	0-5.0' Silt: As above, except less grainy, no sand.
			25300-76800	
95	100	5	-0.55-0.10/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth, trace clay in matrix, cohesive, somewhat,
			700-17900	uniform, vesicles, saturated, odor.
100	105	5	1.56-2.87/	0-5.0' Silt: Brown (7.5 YR 5/4), smooth, somewhat cohesive, very fine sand
			31700-100400	laminae (trace) at 2', saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-14 Page 3 of 3

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
105	110	5	0.15-1.21/	0-2.5' Silty Sand: Brown (7.5 YR 5/2), some silt in matrix, sand is predominately
			18300-51500	very fine to fine, trace medium, somewhat sorted, saturated, loose, odor.
				2.5-5.0' Silt: Brown (7.5 YR 4/3), transition from above to grainy and smooth silt,
				trace clay where smooth, trace vesicles, bubbles, somewhat cohesive in places,
				saturated, odor.
110	115	5	0.44-1.24/	0-1.0' Sand: Brown (7.5 YR 5/4), very fine sand, trace fine, well sorted, clean, loose,
			111000-	saturated, odor.
			135600	1.0-5.0' Sand: Brown (7.5 YR 5/3) trace medium and very fine, predominately fine,
				somewhat sorted, trace silt layers at 4.5, loose, saturated, odor.
115	120	5	1.50- -1.26/	0-1.0' Sand: Dark brown (7.5 YR 3/2), fine to medium, mostly fine sand, trace
			3508-22600	coarse and very fine, poorly sorted, loose, saturated, odor, bubbles.
				1.0-3.0' Sand and Silt: Brown (7.5 YR 4/4), silt beds up to 4" thick, silt is sitcky,
				trace clay in matrix, and cohesive and smooth, sand is silty and very fine with
				trace fine gravel, fine to coarse, loose, bubbles, saturated, odor.
120	125	5	-1.33- -0.94/	0-2.5' Silty Sand: Brown (7.5 YR 5/3), very much silt, trace coarse and medium,
			15000-56800	trace gravel subangular to subround up to 1.5", predominately very fine to fine,
				saturated, loose, very poorly sorted, odor.
				2.5-5.0' Sand: Brown (7.5 YR 5/3), very fine sand, clean, well sorted, saturated,
				loose, odor.
125	130	5	-0.53-0.19/	0-1.5' Silt: Brown (7.5 YR 5/3), grainy silt, uniform, loose, saturated, odor, grades
			21000-56800	into next unit.
				1.5-5.0' Sand: Brown (7.5 YR 5/3), trace coarse, very fine sand to very fine to
				fine sand last 1', loose, well sorted, saturated, odor.
130	135	5	0.50-0.95/	0-5.0' Sand: Brown (7.5 YR 5/2), very fine sand with trace fine, well sorted, loose,
			17000-27900	saturated, odor.
				EOB @ 135'

ARCADIS

Sample/Core Log

Boring/Well GMPZC-15 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 4/3/05 Drilling Completed 4/3/05

Total Depth Drilled 145 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.4 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Scott/Royce

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	1.1-13.85/	0-1.0' Silt: Dark brown (7.5 YR 3/3), trace very fine sand, organics, grass, rootlets,
			1490-7200	topsoil, loose, damp, organic odor.
				1.0-5.0' Silt: As above, but strong brown (7.5 YR 4/6).
5	10	0		No recovery.
10	15	0		No recovery.
15	20	2		Slough, appears to contain silt with some clay.
20	25	5	0.55-0.63/	0-3.0' Sand: Brown (7.5 YR 5/4), very fine to fine grain, little medium to coarse,
			6.00-5200	trace gravel subround up to 4", poorly sorted, loose, saturated, odor.
				3.0-5.0' Sand: Color as above, trace gravel fine to 3" subangular to subround,
				medium grain, some fine, some coarse, poorly sorted, loose, saturated, odor.
25	30	5	-0.15-0.43/	0-3.0' Sand: As above.
			3900-9400	3.0-5.0' Sand: Color as above, fine grain, some medium, trace coarse, poorly
				sorted, trace gravel fine up to 1" subangular to subround, loose, saturated, odor.
30	35	5	0.43-3.55/	0-3.0' Sand: Brown (10 YR 5/3), predominately fine grain, some very fine, trace
			2100-46700	medium to coarse, trace gravel subround up to 1.5", moderately sorted, loose,
				saturated, odor.
				3.0-4.0' Sand: Color as above, predominately fine, little medium to coarse, trace
				gravel subround up to 1", poorly sorted, loose, saturated, odor.
				4.0-5.0' Sand: As above in 0-3.0'.
35	40	5	-0.43-1.77/	0-5.0' Silt: Brown (7.5 YR 5/4), very granular, trace black staining, trace vesicles,
			580-6500	uniform, loose, saturated, odor.
40	45	5	0.37-4.91/	0-1.0' Silt: As above.
			621-32000	1.0-3.0' Silt: Brown (7.5 YR 4/4), smooth, trace black staining, vesicles, uniform,
				slightly cohesive, saturated, odor.
				3.0-5.0' Silt: As above in 0-1.0'.
45	50	5	1.99-3.55/	0-1.5' Silt: As above.
			3100-51000	1.5-5.0' Silt: As above, reddish brown (7.5 YR 5/4), very granular, some black

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-15

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				staining, vesicles, loose, saturated, odor.
50	55	5	3.24-3.44/	0-4.7' Silt: As above.
			11210-66000	4.7-5.0' Silt: Brown (7.5 YR 5/4), trace clay in matrix, smooth, firm somewhat
				cohesive, saturated, odor.
55	60	5	0.74-3.47/	0-5.0' Silt: Brown (7.5 YR 4/4), predominately granular, methane bubbles,
			600-1160	vesicles, trace black staining, uniform, loose, saturated, odor.
60	65	5	2.19-5.55/	0-5.0' Silt: As above.
			3200-4300	
65	70	5	1.93-3.41/	0-5.0' Silt: As above.
			19100-25000	
70	75	5	2.87-5.46/	0-5.0' Silt: As above.
			1600-14300	
75	80	5	1.71-5.50/	0-5.0' Silt: Strong brown (7.5 YR 4/6), grainy to smooth, bubbles/vesicles, black
			304-1520	staining, slightly cohesive, sticky, uniform, saturated, strong odor.
80	85	5	4.06-12.1/	0-5.0' Silt: As above.
			14100-50600	
85	90	5	7.16-7.63/	0-5.0' Silt: Brown (7.5 YR 5/4), with some interbedded very fine sand, sand layers
			15300-33000	vary in thickness from approximately 1/4" up to approximately 2", well sorted,
				silt is grainy, strong brown as above, loose, vesicles, black staining, strong odor.
90	95	5	7.71-8.12/	0-5.0' Silt: Brown (7.5 YR 5/4), predominately smooth, some grainy, vesicles/
			22000-68000	bubbles, trace black staining, slightly cohesive, saturated, strong odor.
95	100	5	3.15-5.76/	0.5.0' Silt: As above.
			1580-6300	
100	105	5	4.14-6.13/	0-5.0' Silt: Brown (7.5 YR 5/4), trace very fine sand interbedding <1/2" thick well
			1400-13100	sorted, interbedded silts, predominately smooth, bubbles/vesicles, trace black
				staining, loose to slightly cohesive, saturated, strong odor.
105	110	5	4.05-7.09/	0-1.0' Silt: As above.
			1990-42100	1.0-2.0' Sand: Grayish brown (10 YR 5/2), fine grain, trace medium to coarse,
				moderately sorted, loose, saturated, strong odor.
				2.0-5.0' Sand: Brown (10 YR 4/3), some interbedded silt layers 1/2" thick, very
				silty in places, disturbed silt layers, very fine to fine grain vesicles, loose, saturated,
				strong odor.
110	115	5	2.82-4.91/	0-1.8' Sand: As above.
			3600-41400	1.8-5.0' Sand: Brown (10 YR 5/3), few silt interbeds approximately 1/4" thick,
				very fine grain, well sorted, loose, saturated, strong odor.
115	120	5	0.16-1.42/	0-5.0' Silty Sand: Brown (10 YR 4/3), very fine to fine grain, very silty in places,
			416-4200	was probably interbedded silts and sand, vesicles, well sorted, loose, saturated,
				strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-15 Page 3 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
120	125	5	-0.32-2.49/	0-2.0' Silty Sand: As above.
			1980-5100	2.0-5.0' Silt: Brown (10 YR 4/3), little very fine sand interbedding, trace gravel
				subangular to subround up to 1", predominately smooth silt matrix, somewhat
				cohesive, vesicles, saturated, trace black staining, strong odor.
125	130	5	0.77-3.98/	0-5.0' Silt and Sand: Brown (10 YR 5/3), interbedded grainy silt and very fine sand
			10500-90300	well sorted, layers totally disturbed, very silty, trace black staining and vesicles,
				loose, saturated, strong odor.
130	135	5	1.84-2.35/	0-1.5' Sand: Brown (10 YR 4/3), very fine to fine grain, well sorted, uniform, loose,
			48200-92000	saturated, strong odor.
				1.5-5.0' Sand: Color as above, predominately very fine grain, trace fine to coarse,
				trace gravel subangular to subround up to 4", loose, saturated, odor.
135	140	4	3.15-9.24/	0-5.0' Sand: Yellowish brown (10 YR 5/4), one silt layer 4" thick at 3.7, otherwise
			270-29600	well sorted, very fine to fine grain, trace silt, loose, saturated, trace black
				staining, odor.
140	145	5	6.80-9.35/	0-1.5' Sand: As above.
			5800-39100	1.5-5.0' Silt: Dark grayish brown (7.5 YR 4/2), little clay, little very fine sand
				interbedding, a few clay layers approximately 1/4 to 1/2", thick, clay is yellowish
				red (5 YR 4/6), plastic, cohesive, vesicles, laminated/interbedded silts, slightly
				cohesive, saturated, odor.
				EOB 145'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-16 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 4/4/05 Drilling Completed 4/4/05

Total Depth Drilled 155 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.4 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Scott/Royce

Prepared By Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	1.27-9.03/	0-0.5' Topsoil: Very dark brown (7.5 YR 2.5/3), rootlets and roots, firm, silt.
			11-45	0.5-4.0' Silt: Strong brown (7.5 YR 4/6), trace to little roots, trace gravel at end
				of section subangular to subround up to 1.5", grainy, uniform, damp, humic odor.
				4.0-5.0' Silt/Sand/Gravel: Dark yellowish brown (10 YR 4/4), sand is
				predominately fine to very fine, trace coarse to medium, gravel round to subangular
				up to 1.5", loose, dry, no odor.
5	10	5	0.10-1.56/	0-0.5' Silt/Sand/Gravel: As above.
			33-146	0.5-2.5' Sand: Light yellowish brown (10 YR 6/4), trace to little medium to coarse,
				predominately fine, little gravel angular to round up to 3.5", loose, poorly sorted,
				damp, no odor.
				2.5-3.5' Sand: Dark brown (10 YR 3/3), trace silt, predominately very fine to fine,
				little coarse, trace medium, little gravel subangular to subround up to 1", loose,
				poorly sorted, damp, no odor.
				3.5-5.0' Silt: Brown (10 YR 4/3), trace fine to coarse, trace gravel subround to
				subangular up to 2", loose, dry, no odor.
10	15	5	0.35-1.21/	0-2.5' As above, except more fine gravel.
			1103-3550	2.5-4.0' Sand and Gravel: Brown (7.5 YR 4/2), trace silt, sand is predominately
				fine, trace coarse to medium, gravel subangular to subround up to 2", poorly
				sorted, loose, damp, no odor.
				4.0-5.0' Gravelly Silt: Dark brown (7.5 YR 3/4), trace to little very fine sand, silt is
				somewhat cohesive, some gravel round to subangular up to 1", loose, damp,
				no odor.
15	20	5	1.27-1.81/	0-2.5' Silt: With clay interbeds brown (7.5 YR 4/3), from approximately 0.2-0.4
			1527-6483	grainy silt layer greenish black (1 Gley 10 GY 2.5/1), fine gravel, trace clay layers,
				silt is smooth, cohesive and sticky, saturated, trace odor.
				2.5-4.0' Sandy Silt: Brown (7.5 YR 4/3), trace coarse to medium, little very fine,
				silt is grainy, saturated, loose, trace odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-16 Page 2 of 4

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	2.27-6.30/	0-1.0' Sand: As above.
			6710-13200	1.0-2.0' Sand: Brown (7.5 YR 5/4), trace medium to coarse, predominately fine
				to very fine, somewhat sorted, loose, saturated, trace order.
				2.0-3.0' Sand: As above 0-1.0'.
				3.0-5.0' Silt: Reddish brown (5 YR 4/4), trace fine sand, uniform, somewhat
				grainy, loose, saturated, faint odor.
25	30			No recovery.
30	35			No recovery.
35	40	5	2.34-11.90/	0-4.5' Silt: Brown (7.5 YR 5/4), grainy, approaching very fine sand, trace gravel
			24200-37000	subround to subangular up to 3.5", bubbles, vesicles, uniform, loose, saturated,
				odor.
40	45	5	6.72-10.30/	0-4.5' Silt: Brown (7.5 YR 5/4), grainy, loose, trace black staining, trace bubbles
			1585-18500	and vesicles, saturated, uniform, loose, odor.
				4.5-5.0' Silt: Color as above, smooth, somewhat cohesive, uniform,
				saturated, odor.
45	50	5	6.29-8.78/	0-5.0' Silt: As above 40-45 (0-4.5).
			4455-35600	
50	55	5	7.28-9.15/	0-1.5' Silt: As above.
			7177-180300	1.5-2.5' Silt: Brown (10 YR 4/3), laminated, smooth, somewhat cohesive, saturated,
				odor.
				2.5-5.0' Silt: Light reddish brown (5 YR 6/4), very grainy silt approaching very fine
				sand, loose, uniform, saturated, odor.
55	60	5	4.03-5.26/	0-5.0' Silt: As above, with bubbles and vesicles.
			1570-5822	
60	65	5	4.88-5.94/	0-5.0' Silt: As above.
			3590-4545	
65	70	5	3.35-5.13/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy, uniform, little bubbles, vesicles, becoming
			1509-5583	smooth at end of section, loose, saturated, slight odor.
70	75	5	2.95-5.92/	0-5.0' Silt: As above.
			1648-34600	
75	80	5	3.21-5.09/	0-5.0' Silt: Reddish brown (5 YR 5/3), grainy, uniform, clean, loose, saturated, odor.
			1742-16100	
80	85	5	1.31-3.03/	0-2.5' Silt: As above.
			1908-4055	2.5-5.0' Silt: Color as above, smooth, lamination with very slight color variation,
				somewhat cohesive, saturated, odor.
85	90	5	1.70-2.61/	0-5.0' Silt: As above, except trace black staining.
			1189-10100	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-16

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
90	95	5	2.59-3.75/	0-5.0' Silt: As above.
			3456-7400	
95	100	5	-0.43 - -0.65/	0-5.0' Silt: Brown (7.5 YR 5/4), interbedding, grainy and smooth layers up to 4"
			794-1308	thick, cohesive when smooth, loose when grainy, saturated, odor.
100	105	5	-0.73-0.13/	0-1.0' Silt: As above, except layers up to 3" thick.
			1108-5799	1.0-5.0' Silt: Brown (7.5 YR 5/4), somewhat firm, grainy silt layer approximately
				1/2" thick light brown (7.5 YR 6/4) at top of section, silt is grainy, loose,
				saturated, odor.
105	110	5	0.51-0.95/	0-2.0' Silt: Brown (7.5 YR 5/3) grainy, loose, saturated, odor, grading into
			19500-27700	unit below.
				2.0-5.0' Sand: Brown (7.5 YR 5/3), very fine sand, well sorted, loose, saturated,
				odor.
110	115	5	-0.16-4.83/	0-2.0' Sand: As above.
			17100-108900	2.0-3.0' Silt: Brown (7.5 YR 4/3) somewhat grainy, laminated due to slight grain
				size variation, loose, saturated, odor.
				3.0-5.0' Sand: As above 105-110 (2-5) except trace fine.
115	120	5	2.09-2.39/	0-2.0' Silty Sand: Brown (7.5 YR 5/3), very fine sand, much silt, saturated, loose,
			917-5140	odor.
				2.0-5.0' Sand: Light brown (7.5 YR 6/3), very fine sand, loose, well sorted,
				saturated, odor.
120	125	5	6.80-10.19/	0-5.0' Sand: As above.
			16100-34800	
125	130	5	5.45-13.72/	0-4.0' Sand: As above, except with trace clay nodules.
			13600-47900	4.0-5.0' Silt: Brown (7.5 YR 4/3), somewhat smooth, somewhat cohesive,
				saturated, odor.
130	135	5	7.00-9.02/	0-1.0' Silt: As above.
			10300-61900	1.0-5.0' Sand: Brown (7.5 YR 5/3), trace fine to medium, predominately very fine,
				loose, well sorted, trace black staining, saturated odor.
135	140	4		0-0.5' Sand: Brown (7.5 YR 5/4), trace silt, very fine sand, well sorted, loose,
				saturated slight odor.
				0.5-1.5' Silt: Brown (7.5 YR 4/3), trace clay layers, trace very fine to fine, grainy,
				loose, saturated, odor.
				1.5-2.0' Sand: Brown (7.5 YR 5/3), trace gravel subangular to subround up to 1.5",
				trace fine, predominately, very fine, loose, somewhat sorted, saturated, odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/3), trace clay in matrix, trace medium to coarse,
				somewhat grainy, firm, little to some gravel subround to subangular up to 1",
				saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-16 Page 4 of 4

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
140	145	5		0-4.0' Silt: As above, except with 3" clay layer dark reddish brown (5 YR 3/3).
				4.0-5.0' Silt: Brown (7.5 YR 5/4), very grainy silt approaching very fine sand,
				uniform, loose, saturated, odor.
145	150	5		0-5.0' Silt: Reddish brown (7.5 YR 5/4), mottled, trace to little clay in matrix,
				trace very fine, some gravel subround to subangular up to 4", firm in places,
				saturated, no odor.
150	155	5		0-5.0' Silt: Brown (7.5 YR 5/2), grainy, loose, saturated, no odor.
				EOB @ 155'.

ARCADIS

Sample/Core Log

Boring/Well GMPZC-17 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 3/29/05 Drilling Completed 3/29/05

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.41 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Helper Scott/Royce

Prepared By Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	0.97-11.64/	0-0.2' Frozen Solid: Probably same as next unit.
			7-23	0.2-2.5' Silt: Dark brown (7.5 YR 3/4), trace very fine, little roots and rootlets,
				somewhat grainy to somewhat smooth, damp, humic odor.
				2.5-3.5' Silt: Strong brown (7.5 YR 4/6), very grainy, approaching very fine sand,
				loose, damp, humic odor.
				3.5-5.0' Silty Sand: Strong brown (7.5 YR 5/8), grading from above, trace to little
				gravel subangular to subrounded up to 1", some to much silt, more up section,
				trace medium to coarse, predominately very fine to fine, dry to damp, loose, no
				odor.
5	10	5	-0.29-1.63/	0-5.0' Silty Sand: As above, except gravel up to 4".
			10-87	
10	15	5.0	-0.70-0.4/	0-1.0' Silty Sand: As above 0-5 (3.5-5.0).
			876-1177	1.0-5.0' Silt: With clay interbeds, brown (7.5 YR 5/2), clay is yellowish red (5 YR 4/6),
				up to 1/4", little amount of clay, silt is somewhat smooth, somewhat cohesive,
				saturated, no odor.
15	20	2.5	-0.79- -0.99/	0-1.5' Silt with Clay: Interbeds as above, except less clay.
			1429-11700	1.5-2.5' Sand: Brown (7.5 YR 5/3), some very fine, trace coarse to medium,
				predominately fine, loose, poorly sorted, saturated, faint odor.
20	25	5	-0.79- -0.20/	0-5.0' Sand: Brown (7.5 YR 5/3), as above, except trace fine gravel and coarser
			5337-10800	section from 2-2.5.
25	30	5	-0.34- -0.24/	0-3.0' Sand: Color as above, trace coarse, very fine, predominately well sorted
			20600-26900	fine grain sand, saturated, faint odor.
				3.0-5.0' Sand: As above 20-25.
30	35	5	-0.20- -0.09/	0-3.5' Sand: As above, with trace gravel subangular to subround up to 1.5".
			19300-33900	3.5-5.0' Sand: Brown (7.5 YR 4/4), some coarse, little very fine, predominately fine
				to medium, very poorly sorted, trace fine gravel, saturated, loose, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-17

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
35	40	5	-0.33-0.38/	0-2.5' Sand: Brown (7.5 YR 5/3), little very fine, predominately fine, well sorted,
			21600-37200	saturated, loose, odor.
				2.5-5.0' Sand: Brown (7.5 YR 4/3), trace gravel angular to round up to 1", little
				coarse to medium, predominately fine, poorly sorted, saturated, loose, odor.
40	45	5	-0.21-0.45/	0-2.5' Sand: As above, except some gravel subangular to subround up to 2.5".
			13800-61800	
				2.5-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine, well sorted, saturated, loose,
				odor.
45	50	5	0.06-0.87/	0-5.0' Sand: As above..
			30100-190800	
50	55	5	0.38-1.50/	0-5.0' Sand: As above, except with trace medium.
			67800-89900	
55	60	5	0.06-1.24/	0-5.0' Sand: As above.
			5309-27700	
60	65	5	-0.49-1.25/	0-3.5' Sand: Brown (7.5 YR 5/4), trace medium to coarse some medium to coarse
			5650-24200	at end of section, predominately fine to very fine, trace fine gravel, trace silt, poorly
				sorted, loose, saturated, odor.
				3.5-5.0' Silt: Strong brown (7.5 YR 4/6), cohesive, mostly smooth, 3" grainy silt layer
				from 4.3-4.6, saturated, slight odor.
65	70	5	-0.12-0.31/	0-1.0' Sand: Brown (7.5 YR 5/3), trace fine, very fine, well sorted, loose, saturated,
			18600-34200	no odor, grading into next unit.
				1.0-5.0' Silt: Strong brown (7.5 YR 5/6), grainy silt, loose, uniform, saturated,
				faint odor.
70	75	5	-0.71- -0.28/	0-1.0' Silt: As above , with last 1" being layer of very fine sand.
			2798-16600	1.0-5.0' Silt: Brown (7.5 YR 4/4), somewhat grainy to smooth, interbedded thin
				laminae of silts of slightly different grain size, somewhat cohesive, saturated,
				no odor.
75	80	5	-0.39- -0.22/	0-5.0' Silt: Strong brown (7.5 YR 4/6), grainy, uniform, loose, saturated, faint
			10000-12700	odor.
80	85	5	-0.89-1.52/	0-5.0' Silt: As above, except smooth in places.
			8.32-4412	
85	90	5	-0.69-0.85/	0-2.5' Silt: As above.
			6169-49600	2.5-5.0' Sand and Silt: Interbeds, sand strong brown (7.5 YR 4/6), very fine, layers
				up to 5" thick, silt is brown (7.5 YR 4/4), smooth, trace black staining, laminae,
				trace clay layer at end of section, saturated, no odor.
90	95	0		No recovery.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZC-17

Prepared by Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
95	100	5	-0.79- -0.55/	0-2.5' Silt: Reddish brown (5 YR 5/4), grainy silt, trace clay layering, uniform, loose,
			156-12000	saturated, no odor.
				2.5-5.0' Silt: Brown (7.5 YR 4/4), grainy approaching very fine in places, methane
				bubbling, loose, saturated, no odor.
100	105	5	-0.64-0.77/	0-5.0' Silt: Reddish brown (5 YR 5/3), little very fine layering up to 2", trace clay
			372-14100	layering, silt is mostly grainy with some smooth cohesive layers up to 3" thick,
				saturated, trace bubbling, no odor.
105	110	5	-0.52-0.20/	0-2.5' Sand: Brown (7.5 YR 5/4), well sorted, very fine sand, loose, saturated, no
			278-6243	odor, sharp contact with unit below.
				2.5-5.0' Silt: Brown (7.5 YR 4/4), predominately smooth but approaching very
				fine sand at bottom of section, trace clay in matrix, somewhat cohesive, laminae,
				saturated, no odor.
110	115	5	-0.72- -0.57/	0-2.0' Silt: As above.
			21-114	2.0-5.0' Silt: With clay interbeds, silt brown (7.5 YR 4/4) clay is yellowish red
				(5 YR 4/6), fissile when broken on surface, cohesive, plastic, very firm, up to 3"
				thick, silt is somewhat grainy to smooth, loose, saturated, no odor.
115	120	5	-0.76-0.03/	0-2.5' Silt: Reddish brown (5 YR 4/3), mostly smooth though somewhat grainy
			65-70	in places, cohesive, trace clay in matrix, very firm in places, mostly soft, saturated,
				no odor.
				2.5-4.0' Silt: Brown (7.5 YR 4/3), grades into very fine to fine sand, grainy
				approaching very fine sand, uniform, loose, saturated, no odor.
				4.0-5.0' Sand: Color as above, well sorted, very fine to fine sand,
				saturated, no odor.
120	125	5	0.52-0.75/	0-5.0' Sand: As above.
			16-48	
125	130	5	-0.14-1.40/	0-5.0' Sand: As above.
			13-45	
130	135	5	0.27-0.71/	0-5.0' Sand: As above, except predominately fine grained.
			241-10100	
				EOB @ 135.

ARCADIS

Sample/Core Log

Boring/Well: GMPZ-1 Project/No.: Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 15:15 8/27/01 Drilling Completed: 17:00 8/27/01

Total Depth Drilled: 36 Feet Hole Diameter: 8.25 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" Sampling Interval: 2 continuous feet

Land-Surface Elev.: 1050.11 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: Water Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Todd Helper: Ben

Prepared By: John Keller Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	2	1,2,2,2	0-0.8": Silt. Very dark greyish brown (10 YR 3/8), organic-rich layer upper 4"
				(abundant grass clippings, rootlets, small twigs), some very fine to fine sand,
				trace to some clay, some black mottling throughout, crumbly, dry.
				0.8-2": Silt. Brown (7.5 YR 4/4), very sandy (very fine, trace fine), trace to
				some clay, cohesive, dry.
2	4	2	1,3,2,2	0-1.3': Silt. Very sandy, as above.
				1.3-2': Silt. Dark yellowish brown (10 YR 4/4), trace to some very fine sand,
				trace clay, moderately dense (H.P. = 1.75 - 2), cohesive, dry (sand content
				increases as you go down section).
4	6	2		0-2': Silt. As above but very sandy silt has from approximately 4-8", dry.
6	8	2		0-2': Silt. Reddish brown (5 YR 4/3), with clay lenses within, (clay, reddish brown
				(2.5 YR 4/4), clay is moderately dense, nonplastic), sandy to very sandy (very
				fine) (encountered saturated conditions at approximately 0.7'), cohesive, some
				clay.
8	10	1.75		0-1.75': Silt. Saturated sandy, as above with clay lenses.
10	12	1.75		0-1.25': Sandy Silt. With clay lenses as above.
				1.25-1.75': Silt. Brown (7.5 YR 4/2), with 5-10 mm thick clay layers (clay is
				reddish brown (5 YR 4/4) nonplastic, moderately dense), stiff becomes sandy
				lower 2-3" of interval, sand is very fine to fine, well rounded and sorted, damp
				to wet.
12	14	2		0-2': Silt. With clay as above, no sand content. (Silt is moderately dense to
				dense, tight)
14	16	1.25		0-1.25': Silt. Dark reddish brown (5 YR 3/3), sandy (very fine, some fine), some
				clay to clayey, moderately dense, saturated.

ARCADIS
Sample/Core Log

Boring/Well GMPZ-1

Prepared By John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	1.5		0-1.5': Silt. As above.
18	20	2		0-2': Silt. Brown (7.5 YR 4/3), very sandy (very fine, some fine), some clay,
				(borderline of sandy silt/silty sand), cohesive, saturated.
20	22	2		0-1.55': Silt. Sandy as above.
				1.55-2': Sand and Gravel. Reddish brown (5 Yr 4/4), sand is fine to very
				coarse, trace to some very fine silt, trace to some clay, gravel (2 mm to 2" in
				diameter), subrounded to subangular, very poorly sorted, saturated, rock
				fragment layer from 1.8-1.9' (rock fragments, greenish black (1 Gley 10Y 2.5/1),
				possible phyllite?) wet to saturated.
22	24	0.75		0-0.75': Sand and Gravel. As above.
24	26	1		0-1': Sand and Gravel. Very dark grayish brown (10 YR 3/2), sand is medium
				to very coarse, trace very fine to fine, gravel (2 mm to 35 mm), subrounded to
				subangular, some rock fragments present (phyllite?), predominately moist
				(approximately 75%) of sand is coarse to very coarse, saturated.
26	28	1.1		0-1.1': Sand and Gravel. As above.
28	30	1.25		0-1.25': Sand and Gravel. Brown (7.5 YR 4/3) medium to coarse, some very
				coarse, some fine, trace silt/clay, gravel (2 mm to 15 mm), subrounded to
				subangular, very poorly sorted, saturated.
30	32	1.1		0-1.1': Sand and Gravel. Very dark grayish brown (10 YR 3/2), fine to very coarse,
				some to trace very fine, fine gravel (2 mm - 10 mm), subrounded to subangular,
				poorly sorted, saturated.
32	34	1.25		0-0.75': Sand and Gravel. As above.
				0.75-1.25': Silt. Dark reddish grey (5 YR 4/2) to reddish brown (5 YR 4/3), sandy
				(very fine, trace fine), some clay, very soft (HP = 0.5), saturated.
34	36	1		0-1': Silt as above.
				EOB @ 36'.
				Screen set 22-32 ft bls.

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Sample/Core Log

Boring/Well GMPZ-2 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 8/28/01 Drilling Completed 8/28/01

Total Depth Drilled 38 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval 16-38' feet

Land-Surface Elev. 1050.68 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Todd Helper Ben

Prepared By John Keller Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	16			Blind Drill.
16	18	2	2,1,4,5	0-0.5': Silty Sand/Sandy Silt. Brown (7.5 YR 4/4) sand (very fine), well rounded and sorted, trace clay, moist.
				0.5-2': Silt, dark brown (7.5 YR 3/3), same sand (very fine), trace to some clay, very sandy seams at 7-10.5" and 16-18" from top of silt, wet to saturated.
18	20	1.05	1,1,2,4	0-1.05': Silty Sand/Sandy Silt. Dark brown *7.5 YR 3/3), sand (very fine), trace clay, saturated.
20	22	2	1,3,4,8	0-2': Silt. Dark reddish brown (5 YR 3/3) with sand lenses throughout sand (reddish brown 5 YR 5/3), (very fine), sand content increases as you go down section, lower 0.5' is very silty very fine sand) some clay, sand is very well sorted and rounded, saturated.
22	24	2	3,4,5,15	0-1.75': Silt. Dark reddish brown (5 YR 3/4), very sandy (very fine), some clay, very soft, saturated.
				1.75-2': Sand and Gravel. Brown (7.5 YR 5/2), medium to very coarse, some fine, trace very fine silt, trace clay, gravel (2 mm - 1" in diameter), subrounded to subangular, very poorly sorted, rock fragments present at base and in tip of spoon (possible phyllite?) sand is cohesive, wet to saturated.
24	26	0.95	4,5,10,10	0-0.95': Sand and Gravel. As above, rock fragments scattered throughout (greenish-gray in color-phyllite?).
26	28	1.2	4,4,6,8	0-1.2': Sand and Gravel. Grayish-brown, medium to very coarse, some to abundant fine sand, some very fine, trace clay, very poorly sorted, moderately to well rounded, gravel (2 mm - 25 mm), subrounded to subangular, loose

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Sample/Core Log

Boring/Well GMPZ-2

Prepared By John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				to slightly cohesive, saturated.
28	30	1.1	3,4,5,5	0-1.1': Sand and Gravel. Grayish brown, medium to very coarse, trace fine,
				well rounded and very poorly sorted, gravel (2 mm - 1" in diameter), subrounded
				to subangular, slightly cohesive, wet and saturated.
30	32	1	3,4,8,12	0-1': Sand and Gravel. As above.
32	34	1.3	4,4,4,4	0-1.3': Sand and Gravel. As above, sand fine as you go down section (fine to
				coarse sand lower 0.75').
34	36	1.3	5,6,6,8	0-1.3': Sand and Gravel. As above.
36	38	1.45	4,4,8,12	0-1.45': Silt. Reddish brown (5 YR 4/3), some sand to sandy (very fine) in places,
				some clay, soft (HP = 0.5-1), saturated.
				EOB @ 38'.
				Set Screen 24-34 ft bls.

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Sample/Core Log

Boring/Well: GMPZ-3 Project/No.: Ford/Kingsford WI000860.0001 Page: 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 11:45 8/27/01 Drilling Completed: 13:10 8/27/01

Total Depth Drilled: 26 Feet Hole Diameter: 8.25 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" Sampling Interval: Continuous feet

Land-Surface Elev.: 1041.50 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Todd Helper: Ben

Prepared By: John Keller Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1	8,11,15,17	0-0.6': Silt. Very dark brown (10 YR 2/2), some sand to sandy (very fine, some
				fine), trace to some clay, organic-rich layer upper 3" (abundant bark pieces,
				rootlets, twigs) some reddish layers from 4-4.5", crumbly, dry.
				0.6-1': Silt. Yellowish brown (10 YR 5/6), some clay, some to abundant very
				fine to fine sand, some coarse gravel (10 mm - 1" in diameter), surrounded
				to subangular, (gravel is in lower 3" of interval), very poorly sorted, dry.
2	4	0.7	12,15,18,	0-0.7': Sand. Dark brown (7.5 YR 3/3), very fine, some fine, silty to very
			21	silty, some gravel (5 mm - 40 mm), surrounded to subangular (sand coarsens
				downward so last 4" is fine to medium sand, trace very fine), poorly sorted,
				moist to damp, rock fragments, greenish black (1 Gley 2.5/10 Y) from 2-2.5"
				(possible phyllite?).
4	6	0		No recovery.
6	8	1.0	1,2,2,2	0-1': Sand and Gravel. Dark brown (7.5 YR 3/3), sand is fine to very coarse,
				some silt, very fine, trace clay, gravel (2 mm - 1"), surrounded to subangular
				very poorly sorted, saturated.
8	10	1.3	4,3,6,6	0-1.3': Sand and Gravel. As above.
10	12	1.3	2,2,3,4	0-1.3': Gravel. Greenish blue to red. (2 mm - 1.5' in diameter), surrounded
				to subangular, some sand (very fine to very coarse), trace to some silt, very
				poorly sorted, saturated.
12	14	1.15	50/4	0-1.15': Sand and Gravel. As above.
14	16	0.85	6 52/2	0-0.85': Sand and Gravel. As above.
16	18	1.75	6, 52/2	0-0.75': Sand and Gravel. As above.
18	20	1.2	4,5,5,5	0-1.2': Sand and Gravel. Dark brown (7.5 YR 3/2), fine to very coarse, trace
				silt, very fine, trace clay, gravel (2 mm - 25 mm), surrounded to subangular,
				very poorly sorted, well rounded, saturated.
20	22	0.75	2,3,3,5	0-0.75': Sand and Gravel. As above.

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Sample/Core Log

Boring/Well GMPZ-3

Prepared By John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
22	24	1.5	2,4,7,10	Sand and Gravel. Dark reddish brown (5 YR 3/3), fine to very coarse, some
				very fine/silt, trace to some clay, gravel (2 mm - 15 mm), surrounded to
				subangular, poorly sorted, saturated.
				0.7-1.5': Silt. Reddish brown (5 YR 4/3), clayey, trace to some very fine
				sand, very soft (HP <0.5), damp.
24	26	1.1		0-1.1': Silt. As above.
				EOB @ 26 ft bls
				Screen set @ 12-22 ft bls.

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Sample/Core Log

Boring/Well GMPZ-4 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 9/6/01 Drilling Completed 9/7/01

Total Depth Drilled 141 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 4 inches Sampling Interval continuous 58 feet

Land-Surface Elev. 1058.17 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller John Weeks Helper Royce Leon

Prepared By Alec MacAdam Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	95			Blind drilling.
95	100	3	NA	0-2.0': No recovery.
				2.0-5.0' Sand: Reddish brown (5 YR 4/4), fine to very fine, silty, wet, odor.
100	105	5	NA	0-4.0' Sand: As above.
				4.0-4.5' Sand: Brown (7.5 YR 4/3), medium to fine some very fine, trace silt,
				wet, odor.
				4.5-5.0' Silt: Reddish brown (5 YR 4/4), trace to some very fine sand, wet, odor.
105	110	5	NA	0-2.0' Silt: As above.
				2.0-3.0' Silt: Reddish brown (5 YR 4/4), clayey, trace very fine sand, wet, odor.
110	115	5	NA	0-3.0' Silt: As above.
				3.0-3.5' Sand: brown (7.5 YR 4/3), fine to very fine, silty, wet, odor.
				3.5-4.0' Silt: Reddish brown (5 YR 4/4).
				4.0-5.0' Silt: Reddish brown (5 YR 4/4) with very fine sand.
115	120	5	NA	0-5.0' Sand: Brown (7.5 YR 4/2), medium to fine, trace silt, wet, odor.
120	125	5	NA	0-2.0' Sand: As above.
				2.0-3.5' Silt: Reddish brown (5 YR 4/3), clayey with clay inclusions, yellowish
				red (5 YR 4/6), wet, odor.
125	130		NA	0-5.0' Sand: As above.
130	135		NA	0-5.0' Sand: As above.
135	140		NA	0-5.0' Sand: As above.
				EOB at 140 feet.

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Sample/Core Log

Boring/Well GMPZ-5 Project/No. Ford/Kingsford WI000950.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 6/10/02 Drilling Completed 6/10/02

Total Depth Drilled 56 Feet Hole Diameter 8 inches

Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2' x 2"

Sampling Interval Continuous feet

Land-Surface Elev. 1065.78 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Shawn Helper Jay

Prepared By Pat Bartnik

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA ppm	Sample/Core Description
0	2			No sample.
2	4	16	--	0-16": Sand, strong brown (2.5 YR 4/6), silty, compact, well sorted.
4	6	6	0.5+	0-6': Sand, strong brown (7.5 YR 4/6), coarse to fine, very poorly sorted, gravelly (2 mm -
				25 mm), subrounded, dry.
6	8	2	0.5	0-2": Sand as above.
8	10	2	-0.4	Rock in tip of spoon. 0-2": Sand, strong brown (7.5 YR 4/6), medium to fine, some very
				fine, trace silt, damp.
10	12	8	-0.13	0-7": Sand, strong brown (7.5 YR 4/6) as above.
				7-8": Sand, strong brown (7.5 YR 4/6), coarse to fine, gravelly (2 mm - 10 mm),
				subrounded, damp.
12	14	18	-0.15	0-2": Sand as above.
				2-9": Clay, strong brown (7.5 YR 4/6), sandy, plastic, moist.
				9-10": Gravel, strong brown (7.5 YR 4/6), 2 mm - 5 mm, subrounded, wet.
				10-18": Silt, strong brown (7.5 YR 4/6), clayey, slightly plastic, damp.
14	16	22	-0.06	0-22": Silt, strong brown (7.5 YR 4/6) clayey, laminations of clay (red 2.5 YR 4/8) at 5",
				10", 14", 16", and 21" plastic, effervescent with HCl.
16	18	0	--	No recovery.
18	20	22	-0.01	0-22": Silt as above with clay lamiantions at 9" to 10", and 17", very slightly
				effervescent.
20	22	22	0.9	0-22": Silt as above, very thin clay laminations at 11", between 12" and 15", sand strong
				brown, very fine, silty, saturated.
22	24	17	0.01	0-17": Silt as above, clay laminations at 11", 13", 16", strong effervescent.

ARCADIS

Sample/Core Log (Cont.d)

Boring/Well GMPZ-5

Page 2 of 3

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
24	26	22	0.01	0-8": Clay, brown (7.5 YR 4/4), silty, moderately plastic, trace gravel (very fine)
				9-22": Silt, brown (7.5 YR 4/3), clayey, dense, moist.
26	28	24	0.02	0-24": Silt as above with red clay laminations at 9", 12", 14", 18" and 22".
28	30	20	0.23	0-20": Silt as above but with abundant red clay laminations (approximately an inche)
				Silt is compact (HP = 1.25), moist at top and dry at bottom of spoon. Clay is dense
				(HP = 2.5) and strongly effervescent.
30	32	22	10.6	0-22": Silt as above.
32	34	24	~3,300	0-15": Silt as above.
				15-18": Sand, brown (7.5 YR 5/4), very fine, silty.
				18-19": Silt as above.
				19-24": Sand as above, wet.
34	36	24	3,378	0-2": Sand as above.
				2-9": Silt, reddish brown (5 YR 4/4) with red clay laminations.
				9-15": Sand, brown (7.5 YR 4/3), very fine, silty, saturated.
				15-24": Sand, brown (7.5 YR 4/3), medium to very fine, trace silt, vesicular upon opening
				spoon.
36	38	24	2,400	0-11": Sand, as above.
				11-13": Clay, brown (7.5 YR 4/3), very plastic, dense.
				13-17": Interbedded very fine sand and silt.
				17-24": Sand, brown (7.5 YR 4/3) fine to very fine silty.
38	40	24	2,780	0-12": Silt, brown (7.5 YR 4/3) with red clay laminations.
				12-24": Sand, brown (7.5 YR 4/3), medium to fine, some very fine, trace coarse, loose.
40	42	24	5,300	0-24": Sand, brown (7.5 YR 4/4), coarse to medium, trace to some fine and very fine,
				loose.
42	44	24	1,580	0-19": Sand, brown (7.5 YR 4/4), medium to fine, some very fine, trace coarse between
				10" and 12", silty and clayey.
				19-24": Sand, dark brown (7.5 YR 3/2), very coarse to very fine, gravelly, silty, clayey, very
				poorly sorted.
44	46	24	2,900	0-6": Sand, brown (7.5 YR 4/3), very coarse to very fine, some silt, gravelly (2 mm - 4 mm),
				subrounded, very poorly sorted.
				6-16": Gravel, dark brown (7.5 YR 3/4), sandy (very coarse to very fine), some silt, trace clay,
				very poorly sorted, gravel (2 mm - 50 mm), subangular to surrounded.

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Sample/Core Log (Cont.d)

Boring/Well GMPZ-5

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				16-24": Sand, brown (7.5 YR 4/4), coarse to medium, gravelly, some fine, trace very fine,
				poorly sorted. This section fines downward to sand, coarse to medium, some fine.
46	48	24	2,750	0-10": Sand, brown (7.5 YR 4/4), coarse to medium, some fine and very fine, trace silt/
				clay.
				10-24": Sand, brown (7.5 YR 4/4) as above but gravelly (2 mm - 4 mm), gravel coarsens
				downward to 20 mm, subrounded.
48	50	24	1,530	0-24": Sand, brown (7.5 YR 4/4), medium to very fine, silty, trace coarse sand to fine gravel
				at 15-17" and again at 20-23".
50	52	24	826	0-24": Sand, brown (7.5 YR 4/4), medium to fine, some very fine, some coarse, trace
				gravel at 12".
52	54	24	1,350	0-24": Sand, brown (7.5 YR 4/4), fine to very fine, silty, trace medium to coarse, trace very
				fine gravel.
54	56	24		0-24": Sand, brown (7.5 YR 4/4), fine to very fine, silty.
				EOB @ 56 feet.

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Sample/Core Log

Boring/Well GMPZ-6 Project/No. Ford/Kingsford WI000950.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/11/02 Drilling Completed 6/11/02

Total Depth Drilled 49 Feet Hole Diameter 8 inches

Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2' x 2"

Sampling Interval continuous after 20 feet

Land-Surface Elev. 1060.44 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Shawn Helper Jay

Prepared By Pat Bartnik

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA ppm	Sample/Core Description
0	5			No sample.
5	7	18	0.47	0-18": Silt, strong brown (7.5 YR 4/6), clayey, compact (HP = 1.75), slightly plastic,
				interbedded clay red (2.5 YR 4/8) at 4", 8", 11" and 15", no effervescence.
10	12	0	--	No recovery.
15	17	24	0.59	0-24": Silt, brown (7.5 YR 4/3), clayey, non-plastic, compact (HP = 1.25), dry.
20	22	22	0.30	0-22": Silt as above but with red clay lens between 12" and 13" and 14" and 16", clay
				is mildly effervescent with HCl.
25	27	24	24.9	0-20": Silt, as above.
				20-24": Interbedded red clay, clayey silt, and very fine silty sand. Six cycles of this
				bedded arrangment. Clay is dark red (2.5 YR 3/6), dense, and strongly effervescent;
				silt is dense (HP = 3.5); sand is pink (7.5 YR 7/4), very fine and silty.
27	29	0	--	No recovery.
29	31	12	581	0-10": Silt as above.
				10-12": Clay, brown (7.5 YR 4/3), trace sand, plastic, slightly effervescent, moist.
31	33	24	1,400+	0-19": Silt, brown (7.5 YR 4/3), clayey with interbedded clay, red (2.5 YR 4/8), dense,
				strongly effervescent.
				19-24": Sand, brown (7.5 YR 4/2), very coarse to very fine, gravelly (2 mm - 15 mm),
				subrounded to subangular, silty, very poorly sorted, wet.
33	35	12		0-6": Slough.
			1,280	6-12": Sand as above.

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Sample/Core Log (Cont.d)

Boring/Well GMPZ-6

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
35	37	6		0-6": Sand, as above but without coarse gravel.
37	39	12	1,600+	0-2": Slough.
				2-12": Sand, as above but with gravel from 2 mm - 30 mm, subangular to subrounded.
39	41	12	2,400+	0-5": Sand, as above.
				5-12": Sand, strong brown (7.5 YR 5/6), medium to fine, some coarse, some very fine.
41	43	12	2,800+	0-12": Sand, as above.
43	45	12	1,200+	0-12": Sand, as above, but with gravel (2 mm - 10 mm), subrounded.
45	47	19	4,100+	0-7": Sand, as above.
				7-19": Sand, brown (7.5 YR 5/4), fine to very fine, silty.
47	49	22	1,500+	0-22": Sand as above.
				EOB @ 49 feet.

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Sample/Core Log

Boring/Well GMPZ-8 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 10/8/03 Drilling Completed 10/8/03

Total Depth Drilled 190 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 4 inches Sampling Interval Continuous feet

Land-Surface Elev. 1044.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Oiden Helper Jayson Chris

Prepared By Bruce Evans and Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	5	1.9-22/	0-2' Silt: Very dark brown (7.5 YR 2.5/3), lots of organics rootlets, trace gravel,
			9.41-18.43	subrounded to subangular up to 1.5 inches, loose.
				2-5' Silt: Strong brown (7.5 YR 5/6), trace fine to coarse gravel, subrounded to
				subangular, loose, dry.
5	10	5	3.4-34/	0-1' Silt: Strong brown (7.5 YR 4/6) lots of very fine sand, trace to some gravel
			5.77/8.99	fine to coarse, subangular to subrounded, loose, moist, no odor.
				1-2' Sand/Gravel: Color as above, sand mostly fine grained gravel, fine to coarse,
				angular to subrounded up to 2", some silt, moderate sorting, moist, loose,
				no odor.
				2-5' Silt/Clay: Silt is brown (7.5YR 5/1), clay is yellowish red (5 YR 5/6), silt is very
				clayey firm and somewhat plastic, clay is plastic but fissile looking on broken surface,
				slight reaction to HCl (silt and clay), interbedding is approximately 1/8 to 1"
				thick of silty/clay, moist, no odor.
10	15	5	128-	0-3.8' Silt: Reddish brown (5 YR 5/3), some to lots of very fine sand, soft, somewhat
			11,000/	loose, clay laminations at 3 feet, clay as above, wet.
			6.55-7.35	3.8-5.0' Sand: Light brown (7.5 YR 6/3) sand fine to medium with some coarse,
				loose, saturated, odor.
15	20	5	780-	0-1' Sand: Brown (7.5 YR 5/1) sand fine to medium, some coarse, silty (in
			3,400/	nodules) silt is slightly clayey, trace fine to coarse gravel subrounded to
			6.22-6.73	subangular, up to 1.5", loose, wet, slight odor.
				1-2.5' Sand: Pinkish gray (7.5 YR 6/2), sand medium with some to lots of coarse,
				trace gravel, fine to coarse, subrounded to subangular, up to 2 inches, loose, wet.
				2.5-5.0' Sand/Gravel: Brown (7.5 YR 5/3) sand is medium to coarse, gravel is fine
				to very coarse, subrounded to angular, trace cobbles to 2 inches, very poorly
				sorted, loose, wet, odor.
20	25	3	1,310-	0-0.5' Sand: Pinkish gray (7.5 YR 6/2) fine to medium, well sorted, wet, loose,
			6,300/	odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-8

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
			7.11/8.5	0.5-1.0' Sand/Gravel: Brown (7.5 YR 4/2), sand medium to very coarse,
				gravel mostly fine, angular to subrounded, cobbles to 3 inches, poorly sorted,
				wet, loose, odor.
				1.0-2.0' Sand: Pinkish gray (7.5 YR 6/2) medium to coarse, wet, loose, strong
				odor.
				2.0-3.0' Sand/Gravel: Color as above, sand coarse to very coarse, gravel fine
				to coarse, angular to subrounded, cobbles up to 2 inches, very silty very
				poorly sorted.
25	30	5	1,100-	0-1' Sand/Gravel: As above.
			7,900/	1-4' Clayey Silt: Reddish brown (5 YR 5/4) slightly cohesive and plastic, slightly
			10.06-15.6	firm to firm. HP = 2.0 trace clay (laminations up to 1/2 inch thick), clay, light
				reddish brown (5 YR 6/4), fissile appearance but plastic, wet, clay laminae may
				be at contact with below.
				4-5' Sand/Silt: Reddish brown (5 YR 5/4) very fine grain sand to sandy silt, moist,
				somewhat loose, odor.
30	35	5	2,610-	0-1' Sand/Silt: As above.
			13,200/	1-1.7' Silt: Reddish brown (5 YR 5/4) clay (like clayey silt as above), slightly plastic,
			15.91-	wet, odor.
			18.94	1.7-5.0' Silt: Light reddish brown (5 YR 6/3) "grainy," no clay, moist, slight odor.
35	40	5	3,400-	0-1.5' Silty Clay: Reddish brown (5 YR 5/3) clay sticky and smooth, plastic, wet,
			11,600/	odor, at 1.5' thin hard clay layer approximately 1" thick, fissile in
			8.66-9.06	appearance but plastic.
				1.5-5.0' Silt: Color as above, no clay, "grainy appearance" somewhat firm to
				loose, wet, odor.
40	45	3	9,400-	0-2' Silt: As above.
			13,400/	2-3' Silt: As above, grading into increasing amounts of very fine sand.
			12.33-	
			14.5	
45	50	5	2,190-	0-1' Sand: Light reddish brown (5 YR 6/3), very fine grain, well sorted, trace silt,
			8,330/	loose, wet, odor.
			8.51-9.45	1-3' Sand: Color as above, fine grain, well sorted, trace silt, loose, wet, odor.
				3-5' Sand: Color as above, very fine to fine, trace silt, well sorted, loose, wet,
				odor.
50	55	5	6,620-	0-2' Sand: Color as above, very fine, well sorted, some silt, trace fine sand, wet,
			13,800/	loose, odor, grading into below.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-8

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
			10.16-	2-4' Silt: Color as above, loose, very sandy with very fine grain sand, wet, odor,
			10.93	grading into below.
				4-5' Silt: Reddish brown (5 YR 4/3), somewhat grainy, no clay, slightly firm to
				somewhat firm, loose, wet, some vesicles.
55	60	5	3,670-	0-5' Silt: Reddish brown (5 YR 5/3), grainy, soft, somewhat loose, wet, odor, at
			8,524/	approximately 4.9' becomes less grainy, finer silt size.
			-1.3/-1.6	
60	65	5	2,120-	0-1' Silt: As above.
			10,800/	2-3' Silty: As above becoming more "clay rich" and clayey silt, sticky, slightly
			0.1/1.2	plastic.
				3-4' Silt: color as above, very sandy, sand very fine grain, soft, somewhat loose.
				4-5' Clayey Silt to Silty Clay: Color as above, trace black sand, slightly plastic and
				soft.
65	70		3,125-	0-0.5' Silt/Clay: As above.
			>76,900/	0.5-3.0' Silt: Color as a above, some clay, slightly sticky, slightly plastic, somewhat
			-2.7 - -3.3	firm, wet, odor.
				3-4' Silt: Color as above, no clay (grainy appearance as above).
				4-5' Sand: Reddish brown (5 YR 5/3) very fine grain, some silt, well sorted, wet,
				odor.
70	75	5	7,400-	0-0.5' Sand: As above.
			15,900/	0.5-3.5' Silt: Color as above, "grainy", no clay, trace black staining, wet, odor.
			-1.3-1.2	3.5-4.0' Sand: As above, very fine grain.
				4-5' Silt: Reddish brown (5 YR 5/4) grainy, no clay, wet, odor.
75	80	5	900-	0-5' Silt: Color as above, "grainy", slightly sandy (very fine grain) in places,
			6,400/	wet, odor, vesicles.
			-3.8 - -4.4	
80	85	5	1,624-	0-3.5' Silt: As above, trace black staining.
			7,600/	3.5-4' Sand: Reddish brown (5 YR 5/4) fine to very fine sand, well sorted,
			-3.65 -	trace silt.
			-3.4	4-5' Silt: As above, some areas of "grainy silt" mixed with some of smooth silt,
				vesicles.
85	90	5	1,650-	0-5' Silt: color as above, "grainy" to smooth silt, traces of thin interbeds (laminae
			5,800/	of very fine to fine sand with trace medium), wet, odor (many of medium flakes are
			-7.7 - -6	black slate flakes), many vesicles.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-8

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
90	95	5	1,629 -	0-5' Silt: As above, trace fine to very fine sand, at 3.0 feet trace black staining, trace
			5,800/	to some vesicles, lone stone at 4.5 feet - 2 inches long x <1/4 inch wide (flat).
			-6.6 - -6.3	
95	100	5	1,300-	0-3' Silt: As above with traces of very fine to fine sand (thin seams). At 3 feet
			3,420/	clay seam approximately 1-inch thick, yellowish red (5 YR 5/6), fissile in appearance
			-10 - -9	but plastic, slightly hard, extremely effervescent with HCl, slightly sticky, below clay
				is approximately 1 inch sand very fine to fine, fairly moderately sorted.
				3-5' Silt: Reddish brown (5 YR 4/4) no clay, not grainy, slightly plastic, wet,
				odor, possible varving/laminations.
100	105	5	3,200-	0-5' Silt/Sand: color silt as above, color sand reddish brown (5 YR 5/3)
			9,600/	predominately silt with sand interbedded approximately 0.5-2.5 inch thick,
			-9 - -8	sand is fine grain, some medium grained, and some very fine grain, poorly sorted,
				individial interbeds are different grain sizes (one is fine to some medium/one is very
				fine to fine grain).
105	110	5	410-950/	0-0.5' Sand: Brown (7.5 YR 4/3) fine to very fine grain, well sorted, very silty,
			-12 - -11	wet, odor.
				0.5-1.5' Clay: Yellowish red (5 YR 4/6) sticky, plastic, interbedded with silt, but
				interbeds destroyed from drilling.
				1.5-4.0' Sand: Brown (7.5 YR 4/3) fine to very fine grain, some silt, loose, wet,
				odor.
				4-5' Silt: Brown (7.5 YR 5/4), some clay, slightly sticky, wet, odor.
110	115	5	380-4,320/	0-4' Silt/Clay: silt reddish brown (5 YR 5/3), clay yellowish red (5 YR 4/6), silt
			-11 - -10	interbedded <1.8" to 1.5 inches, silt is clayey, slightly plastic, soft, slighty
				effervescent in HCl, clay is fissile in appearance and brittle looking, but plastic
				when worked at, effervesses in HCl readily.
				4-5' Sand: Brown (7.5 YR 5/2), fine grained sand, some very fine, well sorted.
115	120	5	52-570/	0-0.5' Silt/Clay: Interbedded as above.
			-13	0.5-1.5' Sand: Fine grain, as above.
				1.5-2.0' Silt/Clay: Interbedded, as above.
				2.0-4.0' Silt: Interbedded clayey silt and grainy silt, clayey silt is dark reddish gray
				(5 YR 4/2) silt (grainy) is brown (7.5 YR 5/2) silt and clayey silt is interbeded/varved up
				to 1 inch thick, soft to sticky, clayey silt is plastic, silt is slightly plastic, wet, no odor.
				4.0-5.0' Sand: Brown (7.5 YR 5/3), very fine sand, well sorted, silty, somewhat
				loose.
120	125	5	2,700-	0-2.7' Sand: Color as above, very fine grain, well sorted, some fine, loose, wet.
			9,100/	2 inch silt seam at 1.2 feet. 1 inch silt seam at 2.5'.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-8

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
			-12 - -11	2.7-3.0' Silt: Interbedded, grainy and clayey as above.
				3.0-3.5' Sand: pinkish gray (7.5 YR 6/2) very fine grain, well sorted, some silt,
				wet, odor.
				3.5-5.0' Sand: Light brown (7.5 YR 6/3) fine grain, well sorted, wet, odor.
125	130	5	7,100-	0-5' Sand: Color as above, fine to medium grained, loose, wet, odor, from
			48,000/	O down section more medium sand faction (coarsen downwards).
			-6.8 - -7.2	
130	135	5	4,200-	0-3' Sand: Color as above, medium grained, well sorted, some fine grain, loose,
			26,500/	wet, odor.
			7.45 - -8.1	3-5' Sand: Color as above, medium to coarse grain, moderately sorted, loose,
				wet, odor.
135	140	5	1,560-	0-5' Sand: Brown (7.5 YR 4/3), medium grain, moderately well sorted, some
			20,500/	fine and coarse grain, wet, loose, odor.
			-5.08 -	
			-3.16	
140	145	5	4,200-	0-5' Sand: color as above, medium to coarse grain, moderately sorted, some
			19,800/	fine grain, from 3 to 5' more coarse grain and fine gravel (flaky black slate
			7.35	fragments) wet, loose, odor.
			-6.7	
145	150	5	5,030 -	0-2' Sand: Medium to coarse as above, layer of predominately coarse sand at
			18,500/	1.8 feet.
			-6.4 - -5.9	2-3' Sand: Color as above, fine grain, well sorted, loose, wet, odor.
				3-4' Sand: color as above, very fine grain, some silt, loose, wet, odor.
				4-5' Sand: Light reddish brown (5 YR 6/4), fine grain, some very fine grain,
				loose, wet, odor.
150	155	5	3,700-	0-1' Sand: As above.
			23,700/	1-1.5' Sand: Reddish gray (5 YR 5/2) very fine sand and silty, trace clay "nodules",
			-3.8 - -2.5	loose, wet, odor.
				1.5-5' Sand: Brown (7.5 YR 5/5) fine grain, some very fine grain, trace to some
				medium grain, trace clay nodules, well sorted, loose, wet, odor.
155	160	5	4,350-	0-2' Sand: Brown (7.5 YR 5/3) fine sand, well sorted, some very fine some silt,
			16,200/	trace medium to coarse, loose, wet, odor.
			-6.7 - -6.5	2-5' Sand: Color as above, fine to very fine, well sorted, trace medium sand and
				silt, loose, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-8

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
160	165	3	22,500-	0-5' Sand: Light brown (7.5 YR 6/4), fine to very fine grain, well sorted, some
			28,900/	silt, loose, wet, odor.
			-7.6 - -5.3	
165	170	5	2,420-	0-2' Sand: As above, fine to very fine.
			52,800/	2-5' Sand: Brown (7.5 YR 5/3) fine grain, some medium and very fine, loose,
			-10 - -9	moderately sorted, at 4.5 feet seam of clay yellowish red (5 YR 5/6) slightly soft
				and sticky, plastic, seam is <1 inch thick.
170	175	5	3,300-	0-2.5' Silt/Clay: Silt is gray (5 YR 6/1) clay is yellowish red (5 YR 5/6), silt is "grainy"
			58,000/	and somewhat loose, to plastic dependant on grain size, clay is as above but less
			-11 - -10	plastic and slightly crumbly, overall soft and wet, odor.
				2.5-3.5' Sand: Brown (7.5 YR 5/2), very fine grain, fairly well sorted, very silty, soft,
				somewhat loose, wet, odor.
				3.5-5.0' Silt: Color as above, silt is soft, slightly plastic, somewhat clayey,
				vesicles, at bottom 4 inches there is varve like laminae of silt/clay as above.
175	180	5	13-46.25/	0-5' Clayey Silt/Gravel/Sand: Dark gray (7.5 YR 4/1) firm to slightly firm, plastic,
			-12 - -11	gravel fine to very coarse, sand medium to very coarse, cobbles up to 3.5"
				subrounded to subangular (till?).
180	185	5	1.4-3.0/	0-5' Clayey Silt/Gravel/Sand: As above, no odor (till?).
			-12 - -11	
185	190	5	15.2-35.0/	0-2.5' Clayey Silt/Gravel/Sand: As above.
			-8 - -3.3	2.5-5.0': As above, becoming extremely dense and brittle down section (till?).
				EOB 190 feet.

ARCADIS

Sample/Core Log

Boring/Well GMPZ-9 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 10/14/03 Drilling Completed 10/14/03

Total Depth Drilled 180 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 4 inches Sampling Interval Continuous feet

Land-Surface Elev. 1048.31 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Chris Helper Oiden Jayson

Prepared By Bruce Evans and Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	2	2.4-9.12/	0-1.3' Silt/Sand: Dark brown (7.5 YR 3/4), sand very fine to fine, some to trace
			4-4.67	medium to coarse, trace gravel subround to subangular, fine to coarse, trace
				cobbles up to 4 inches, subangular, trace clay, organics (roots and stems),
				loose, moist, no odor.
				1.3-2.0' Sand: Strong brown (7.5 YR 5/6), fine grain, some medium to coarse,
				some gravel fine to coarse, subangular to subrounded, trace cobbles up to 2 inches,
				subround to subangular, trace organics (roots), loose, no odor.
5	10	5	0.4-1.7/	0-0.2' Sand: As above.
			1.7-4.2	0.2-2.5' Silty Clay: Brown (7.5 YR 5/4), interbedded areas of clay up to 1 inch
				thick, yellowish red (5 YR 4/6), silty clay is plastic, sticky, wet, interbedded clay
				is friable in appearance and very plastic when worked between fingers.
				2.5-5.0' Silt: Reddish brown (5 YR 5/3), slightly firm to crumbly, interbedded
				clay up to 1.5 inch thick, as above, wet to saturated, no odor.
10	15	5	1.0-3.5/	0-5.0' Silt/Clay: Interbedded, as above, clay interbedds thinner up to 1/4 inch, from
			-8.9 - -0.20	3-5 feet silt becomes slightly less clayey and slightly grainy/gritty.
15	20	5	0-475	0-2.2' Silt/Clay: As above, very soupy and possibly destroyed from drilling, trace
			-2.2 - -0.9	gravel.
				2.2-3.0' Sand/Gravel: Brown (7.5 YR 5/3), medium to coarse grained, poorly
				sorted, very silty, some gravel, subrounded to subangular, trace cobbles up to
				1.5 inches, subrounded, wet, loose, no odor.
				3.0-5.0' Sand: Color as above, fine to medium grained, some to trace coarse, silty,
				loose, wet, no odor.
20	25		45-60/	0-4.0' Sand: Color as above, medium to coarse grain, some fine gravel subrounded,
			-2.7 -2.5	moderately sorted, silty, loose, wet, no odor.
				4.0-4.5' Sand/Gravel: Color as above, sand as above with fine grains, increasing
				coarse grains, gravel fine to coarse, subrounded to subangular, trace cobbles up to
				1inch, subrounded, silty, poorly sorted, loose, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-9 Page 2 of 5

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				4.5-5.0' Sand: Color as above, fine to very coarse grain, some gravel, subrounded
				to subangular, fine to coarse, many black slate flakes, some silt, loose, wet,
				no odor.
25	30	5	10-67/	0-5.0' Sand: Brown (7.5 YR 4/3) predominately medium grain with fine to coarse
			-4.8 - -4.6	grain, gravel fine to coarse, subrounded to subangular, some cobbles up to 4 inches
				subrounded to round, poorly sorted, loose, wet, no odor.
30	35	5	99-405/	0-1.0' Sand: As above.
			-4.55 - -4.2	1.0-3.0' Sand: Light brown (7.5 YR 6/3) fine to medium grain, well sorted,
				predominately fine grain, loose, wet, no odor.
				3-3.4' Sand: As above, with fine to coarse gravel angular, much of it is black slate
				flakes, loose, wet, no odor.
				3.4-4.6' Sand: Color as above, fine to medium grained, well sorted, after 4.0-
				4.6 feet, unit becomes less well sorted and coarser grained, loose, wet, no odor.
				4.6-5.0' Sand: Reddish brown (5 YR 5/4) very fine grain, well sorted, loose,
				wet, no odor.
35	40	5	45-1,070/	0-1.0' Sand: Reddish brown (5 YR 4/4), very fine to fine grain, well sorted, silty,
			-5.2 - -4.3	loose, wet, no odor.
				1.0-5.0' Sand: As above, but only very fine grain.
40	45	5	622 -	0-3.0' Sand/Silt: Reddish brown (5 YR 4/4), sand very fine grain, silt "grainy",
			1,028/	well sorted, loose, wet, trace to some odor.
			-4.3 - -4.25	3.0-5.0' Silt: Color as above, silt is "grainy" somewhat loose, wet, odor.
45	50	5	110-	0-3.0' Silt: As above, trace black staining.
			2,050/	3.0-5.0' Silt: As above, interbedded with clayey silt, 1 to 2 inch thick, reddish gray
			-4.4 - -4.3	(5 YR 5/2), sticky, slightly plastic, wet, odor.
50	55	5	2,120-	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, sandy, very fine, well sorted, some
			7,750/	what firm, some to trace black staining, wet, odor.
			-3.1 - -2.35	
55	60	5	480-	0-1.0' Silt: As above.
			1,330/	1.0-2.0' Silt: Reddish brown (5 YR 5/4), clayey, somewhat to slightly plastic, wet,
			-7.6 - -7.2	somewhat firm, no odor.
				2.0-5.0' Silt: Reddish brown (5 YR 4/4) grainy, somewhat loose, no clay, wet,
				no odor.
60	65	5	950-	0-2.0' Silt: As above, grainy.
			3,450/	2.0-4.0' Silt: As above, interbedded to varved with clayey silt, reddish brown
			-6.9 - -6.7	(5 YR 5/3), somewhat plastic, soft, somewhat firm HP = 1.25.
				4.0-5.0' Silt: As above, grainy, no clay.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-9

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
65	70	5	2,600 -	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, sometimes some very fine sand,
			11,100/	somewhat loose, wet, odor.
			-4.8 - -1.6	
70	75	5	5,400-	0-3.5' Silt: As above, grainy, some very fine sand.
			16,700/	3.5-5.0' Silt: Reddish brown (5 YR 5/4) less grainy, no very fine sand, black
			-4.8 - -1.6	staining, somewhat firm, wet, strong, odor.
75	80	5	2,000-	0-1.0' Silt: As above.
			3,400/	1.0-5.0' Silt: As above (interbedded to varved with clayey silt), vesicles.
			-8 - -7.02	
80	85	5	3,580-	0-1.0' Sand: Reddish brown (5 YR 5/3) very fine grain, silty, somewhat loose,
			3,900/	wet, odor.
			-6.6 - 5.7	1.0-5.0' Silt: Reddish brown (5 YR 4/4) somewhat grainy, nonplastic, somewhat
				loose, wet, strong odor, many vesicles.
85	90	5	3,000 -	0-5.0' Silt: Color as above, silt as above but less grainy and very slightly clayey,
			18,500/	not plastic, many vesicles, wet, strong odor.
			-6.6 - -5.9	
90	95	5	650-6,020/	0-5.0' Silt: As above, more clayey, slightly plastic, strong odor, many
			-7.05 -6.15	vesicles.
95	100	5	940-2,700/	0-4.5' Silt: As above, in places less clayey.
			-7.9 - -7.8	4.5-5.0' Sand: Brown (7.5 YR 4/3), fine grain, well sorted, silty, loose to slightly
				sticky, odor.
100	105	5	2,300-	0-3.0' Sand: As above, less silty, some very fine grain.
			19,000/	3.0-3.4' Silt: Reddish brown (5 YR 4/4), clayey, slightly to somewhat plastic,
			-7.4 - -7.1	somewhat firm, wet, odor.
				3.4-3.8' Silt: Brown (7.5 YR 4/3), grainy, trace very fine sand, somewhat loose, wet,
				odor.
				3.8-4.0' Silt/Clay: Silt is reddish brown (5 YR 5/3), clay is yellowish red (5 YR 4/6)
				interbedded to varved, silt is grainy to nongrainy, clay interbed at 4.0' fissile looking,
				plastic, moderate reaction with HCl.
				4.0-5.0' Silt/Silt: Reddish brown (5 YR 5/3), clayey, sticky to somewhat plastic,
				interbedded with silt, gray (7.5 YR 6/1), loose, slightly grainy.
105	110	5	3,730 -	0-0.5' Silt/Silt: As above.
			31,400/	0.5-4.0' Silt/Sand: Brown (7.5 YR 5/3), very fine silty sand grading to sandy silt
			-8.2 - -7.3	(grainy), somewhat loose, wet, odor.
				4.0-5.0' Silt: Color as above, trace of yellowish red clay at 4.0 feet, trace
				coarse sand, trace fine gravel, somewhat loose, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-9 Page 4 of 5

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
110	115	5	11,700-	0-1.0' Silt: As above.
			23,000/	1.0-4.0' Silt: Brown (7.5 YR 4/3), trace clay, somewhat firm, moist, somewhat
			-7.2 - -5.8	friable, odor.
				4.0-5.0' Silt: As above, trace fine gravel and cobble to 3 inches, subrounded.
115	120	5	440-3,100/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, well sorted, trace very fine, loose,
			-10 - -9	wet, moderate odor.
120	125	5	5,300-	0-1.5' Sand: As above, very fine to fine, not as well sorted (silty).
			12,600/	1.5-4.0' Silt: Brown, (7.5 YR 4/3) somewhat clayey, somewhat plastic,
			-9 - -8.2	trace coarse sand to coarse gravel, subrounded, wet, odor.
				4.0-5.0' Silt Sand and Gravel: dark brown (7.5 YR 3/4), sand fine to coarse, gravel
				fine to coarse, angular to subrounded, cobbles to 2 inches, subrounded to
				subangular, all in silt matrix, very poorly sorted, wet, somewhat loose but sticky,
				odor, trace of yellowish red clay at 4.0 feet.
125	130	5	8,600-	0-3.5' Sand/Gravel: Color as above, sand fine to very coarse, gravel fine to
			25,000/	coarse angular to subrounded, some cobbles, subrounded up to 3 inches,
			-8.2 - -7.9	abundant black slate flake, some silt, poorly sorted, loose wet, odor.
				3.5-5.0' Silt: Brown (7.5 YR 5/3), grainy , some to trace very fine sand, trace
				medium to coarse sand.
130	135	5	14,500-	0-5.0' Sand/Gravel: As above, possibly more coarse sand fraction.
			25,300/	
			-8.4 - -8.2	
135	140	5		0-4.5' Gravel: Gravel fine to very coarse, angular to subrounded, some cobbles to
				3 inches subrounded to subangular, some fine to very coarse sand, poorly sorted,
				trace silt, loose, wet, odor.
				4.5-5.0' Sand: Brown (7.5 YR 4/3) fine to very fine grain, some gravel, moderately
				well sorted, loose, wet, odor.
140	145	4		0-1.3' Sand: Brown (7.5 YR 4/3) as above, gravel fine to coarse, angular to
				subrounded, layer at 0.4 feet, wet, loose, odor.
				1.3-2.0' Silt: Reddish brown (5 YR 4/3) grainy, soft, slightly plastic.
				2.0-3.0' Sand: Brown (7.5 YR 4/3), very fine to fine, well sorted, loose, wet,
				odor.
				3.0-3.5' Sand: Color as above, very fine sand, with grainy silt, loose, wet, odor.
				3.5-4.0' Sand: Color as above, fine to very fine, well sorted, loose, wet, odor.
145	150	5	5,200-	0-1.0' Sand/Silt: Brown (7.5 YR 5/3), sand very fine, well sorted,
			39,800/	loose, wet, odor.
			-9.3 - -8.7	1.0-5.0' Sand: Color as above, very fine grain, silty, loose, wet, odor, layer at

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-9

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				1.2 to 1.3 feet of finer silt with some to trace medium gravel.
150	155	5	14,200-	0-5.0' Sand: Color as above, fine to very fine grain, well sorted, loose, wet, odor.
			28,500/	
			-8.2 - -7.9	
155	160	5	34,000-	0-5.0' Sand: Brown (7.5 YR 5/2) fine to very fine grain, some silt, well sorted,
			57,000/	loose, wet, odor.
			-8.14 - -8.0	
160	165	5	15,000-	0-5.0' Sand: Color as above, fine grain, well sorted, loose, wet, odor, at 4.5 feet
			29,500/	there is small clay nodule (approximately 1 inch).
			-8.1 - -8.0	
165	170	5	1,100-	0-5.0' Sand: Brown (7.5 YR 5/2), fine grain, some very fine grain, trace medium
			>76,700/	grain, moderately well sorted, loose, wet, odor.
			-7.1 - 5.2	
170	175	5	13,600-	0-3.0' Sand: As above.
			48,400/	3.0-5.0' Sand: Color as above, very fine grain, well sorted, some silt and fine grain
			-5.6 - -5.1	sand, loose, wet, odor.
175	180	5	2,400-	0-1.0' Sand: Color as above, very fine grain, very silty, some gravel fine to coarse,
			42,400/	cobbles up to 3 inches, subrounded, loose, wet, odor.
			-5 - -4.7	1.0-1.5' Sand: Color as above, very fine grain, well sorted, loose, some fine grain,
				wet, odor.
				1.5-2.2' Silt/Gravel/Sand: Gravel fine to very coarse, angular to subrounded, sand
				fine grain, cobbles up to 1.5 inches all in silt matrix, somewhat firm, wet, odor.
				2.2-3.8' Sand: Brown (7.5 YR 5/2), fine to very fine grain well sorted, loose,
				wet, odor.
				3.8-4.4' Silt/Gravel/Sand: As above.
				4.4-5.0' Weathered Bedrock: Light greenish gray (Gley 7/1) clayey powdery
				talc like matrix with broken pieces of bedrock, angular, friable slate, foliation,
				chalky, moist, odor.
				EOB 180 feet.

ARCADIS

Sample/Core Log

Boring/Well GMPZ-10 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 10/6/03 Drilling Completed 10/7/03

Total Depth Drilled 210 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 4 inches Sampling Interval Continuous feet

Land-Surface Elev. 1064.50 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Oiden Helper Jayson Chris

Prepared By Bruce Evans and Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	5	1.4-1.6/	0-1.0' Silt/Sand: Dark brown (7.5 YR 3/4), loose, with fine to coarse gravel,
			0.09-.1	subangular to subround, also angular fragments, much organics, and wood/
				rootlet material, no odor, moist.
				1.0-4.0' Silt: Strong brown (7.5 YR 4/6), with fine to coarse gravel angular to
				subround, somewhat firm (HP = 1.2), some clay, slightly plastic, very moist to wet,
				no odor.
				4.0-5.0' Silt: Strong brown (7.5 YR 4/6) with clay, red (2.5 YR 4/6), clay interbedded
				and varved in mm layers, plastic, silt somewhat firm, slightly plastic, trace fine
				gravel, very moist to wet, no odor.
5	10	5	2.6-2.8/	0-3.5' Silt/Clay: Silt strong brown (7.5 YR 4/6) clay red (2.5 YR 4/6) interbedded and
			0.6-0.9	varved, silt soft (HP = 0.75) slight plastic, clay plastic (HP = 1.25) but fissile looking
				on broken surfaces, silt/clay very slight effervescent, trace fine gravel 2-3 inch thick
				clay layers at 2.5' and 3.5'.
				3.5-5.0' Silt: Reddish brown (5 YR 4/4), trace red clay, also interbedded with clay
				dark reddish brown (2.5 YR 2/2), interbedded and varved, silt is soft and slightly
				plastic, clay is plastic, wet, no odor.
10	15	5	3.4-3.3/	0-5.0' Silt/Clay: Silt, reddish brown (5 YR 4/3), clay, reddish brown (2.5 YR 4/4)
			0.6-0.7	interbedded, some varving, some layers 1 to 2 inch thick, silt is slightly firm to
				slightly plastic (HP = 1.0), clay is plastic (HP = 1.5 to 2.0), fissile looking on broken
				surfaces, reddish clay very effervescent with HCl, silt very slight effervescent,
				wet, no odor.
15	20	5	3.7-4.3/	0-5.0' Silt: Brown (7.5 YR 3/2) as above, (HP = 1.5) slight plastic, slight clayey, some
			0.4-0.5	reddish clay as above, varved, very little clay from 3-5', wet, no odor.
20	25	5	3.6-3.8/	0-5.0' Silt: As above, slightly less clayey somewhat loose in places, trace fine to
			0.4-0.6	medium sand seam 0.2 inch thick at 3.5 feet, wet, no odor.
25	30	5	2.9-4.8/	0-1.0' Silt/Clay: As above, some fine to coarse gravel subangular to subrounded,
			0.2-0.3	wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-10

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				1.0-5.0' Silt: Brown (7.5 YR 4/3) slightly firm to very slight plastic, trace clay in
				matrix, no clay layers/varves.
30	35	5	3.8-5.4/	0-5.0' Silt/Clay: As above, interbedded silt with clay, reddish yellow (5 Y 4/6), wet,
			0.2-0.3	no odor.
35	40	5	3.9-117/	0-4.5' Clay/Silt: Clay, yellowish red (5 YR 4/6), silt, brown (7.5 YR 4/3), interbedded
			0.1-0.3	thickness ranging from varved size to 4 inches, silt slight firm and slight plastic, clay
				firm and fissile looking on broken surfaces but plastic, HP = 1.75 also
				becoming dense HP >4.0 from 1-3'.
				4.5' Silt/Sand/Gravel: Reddish brown (5 YR 4/3) very heterogeneous mixture of silt/
				sand matrix with fine to coarse gravel, angular to subrounded, trace cobbles up to
				2 inch diameter, sand fine to medium, trace coarse, very poorly sorted, somewhat
				loose to sticky, some clay, wet, no odor.
40	45	--	--	No recovery.
45	50	5	24.5-565/	0-2.0' Sand: Brown (7.5 YR 4/3) medium to coarse grain, some fine grain,
			1.8-2.8	moderately sorted, some very coarse sand as black angular flakes of slate, trace
				fine to coarse gravel subangular to subrounded, loose, wet, odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/3) fine to medium grain, well sorted, trace
				gravel, fine to coarse, subangular to subrounded, loose, wet, odor, cobbles up to
				2 inch diameter and very coarse gravel at 4.8-5.0 feet.
50	55	5	530-880/	0-3.0' Sand: Reddish brown (5 YR 4/3) very fine grain, silty, well sorted, loose,
			0.14-3.2	wet, odor.
				3.0-5.0' Silt: Reddish brown (5 YR 5/4) slight firm to slight loose, no clay in
				matrix interbedded at clayey silt, reddish gray (5 YR 5/3) from 4.0-4.5 feet,
				wet, odor
				Change TVA, new background OVM - 7.1, OVA = 1.0.
55	60	5	2,550-	0-3.0' Silt/Sand: Reddish brown (5 YR 5/3) extremely fine grain sand to silt very
			12,500/	homogeneous, loose, wet, odor.
			-1 - -3.5	3.0-5.0' Silt: Reddish brown (5 YR 5/3), clayey, slight plastic to slight firm, wet,
				odor.
60	65	5	19,800-	0-3.0' Silt: As above.
			55,700/	3.0-5.0' Sand: Reddish brown (5 YR 5/4), very fine grain, well sorted, very silty
			-4.5-6.4	loose, wet, odor.
65	70	5	2,950-	Silt: Reddish brown (5 YR 4/4) soft, somewhat loose, many vescules on broken
			3,420/	surfaces, very homogeneous, wet, very strong odor.
			-3.3-7.0	
70	75	5	1,050-	0-4.0' Silt: As above, but interbedded/varved with very clayey silt, dark reddish
			2,340/	brown (5 YR 4/2), somewhat plastic, wet, odor, vescules.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-10 Page 3 of 6

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
			-4.4-6.3	4.0-5.0' Silt: Reddish brown (5 YR 4/3), no clay, very sandy with very fine grain
				sand, somewhat loose, wet, strong odor.
75	80	5	1,820-	Silt: Reddish brown (5 YR 4/4) somewhat loose, soft (HP = 0.5) trace clay to no
			15,300/	clay in matrix, interbedded reddish gray clay, as above 2 to 2.5 feet, wet, very
			-9.6/3.5	strong odor, many vesicules.
80	85	5	18,700-	0-3.0' Silt: As above, no clay, trace very fine grain sand 1 to 2 feet.
			25,200/	3.0-5.0' Silt/Clayey Silt: Silt reddish brown (5 YR 4/4) varved with reddish gray
			-6.3-+1.9	clayey silt (5 YR 3/2) becoming somewhat firm, crumbly (HP = 1.25) clayey silt,
				very effervescent with HCl, wet to very moist, very strong odor vesicules where
				softer.
85	90	5	17,600-	0-5.0' Silt: Reddish brown (5 YR 4/4) somewhat loose to soft, no clay in matrix, many
			19,200/	vesicules, trace clay interbedded 3 to 3.2 feet, slightly sandy with very fine sand
			-8 - -4.8	4 to 5 feet, wet, very strong odor.
90	95	5	13,400-	0-0.5' Silt: As above, sandy from 0.8 to 1 feet, clayey from 2 to 4 feet, wet, very
			-17,700/	strong odor.
			-7.6 - -5.5	
95	100	5	19,100-	0-3.0' Silt: as above, wet very strong odor, vesicules.
			40,300/	3.0-4.0' Silt: Very sandy with very fine sand, wet, very strong odor.
			-8 - -6.2	4.0-5.0' Silt: Clayey, interbedded with reddish gray clayey silt, as above, wet,
				very strong odor.
100	105	5	42,500-	0-1.0' Silt/Clay: Interbedded as above, very dense brittle at 0.8 to 1.0 feet.
			76,900/	1.0-5.0' Silt: Reddish brown (5 YR 4/3) somewhat loose to soft, very sandy with
			-8.0	very fine grain sand 3.5 to 5 feet, wet to very moist, very strong odor.
105	110	5	8,240-	0-3.0' Silt: As above.
			9,340/	3.0-5.0' Silt/Clay: Varved as above, reddish brown and reddish gray, overall soft
			-9 - -7.5	to slightly plastic, wet, very strong odor, many vesicules.
110	115	5	16,000-	0-5.0' Silt/Clay: Apparently varved as above, but destroyed by drilling, very clayey,
			20,700/	very abundant vesicules.
			-9 - -7.4	
115	120	5	4,910-	0-4.0' Silt: Reddish brown (5 YR 4/3) soft, somewhat loose, some very fine grain
			6,940/	sand, wet, odor.
			-11 - -9	4.0-5.0' Silt: Clayey, somewhat plastic wet, odor, bescules traces varving with
				clayey yellowish red at 5.0 feet.
120	125	5	17,100-	0-1.0' Silt: Clayey as above.
			46,300/	1.0-5.0' Sand: Brown (10 YR 4/3) fine grain, some very fine, well sorted loose,
			-9 - -5.5	1 inch silt seam at 2.0 feet, silt seam at 3.8 to 4.0 feet, reddish brown (5 YR 4/3)

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-10

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				slightly firm, wet, odor.
125	130	5	3,440-	0-1.0' Silt: Reddish brown (5 YR 4/3) soft, slight plastic, clayey and sandy with
			3,600/	very fine sand, wet, vesicules, odor.
			-10 - -8	1.0-1.5' Sand: Dark grayish brown (10 YR 4/2) fine grain, well sorted, loose, wet,
				odor.
				1.5-2.0' Silt: Reddish brown (5 YR 4/3) very sandy with fine to very fine grain
				sand, some clay, loose but sticky, wet, odor.
				2.0-3.0' Sand: Dark grayish brown (10 YR 4/2) fine grain, some medium grain,
				well sorted, loose, wet, odor.
				3.0-4.0' Silt: Reddish brown (5 YR 4/4) soft, slightly clayey, 1 inch clay seam at
				4 feet, yellowish red (5 YR 4/6) plastic but fissile looking on broken surfaces,
				vesicules, wet, odor.
				4.0-5.0' Silt: Reddish brown (5 YR 4/3) clayey, slightly plastic, wet, odor.
130	135	5	23,700-	0-0.2' Silt: As above.
			33,100/	0.2-0.5' Sand: Dark grayish brown (10 YR 4/2), fine grain, well sorted, trace medium
			-8.0 - 9.4	to coarse grain, 0.5 inch thick silt at 0.5 feet, loose, wet, odor.
				0.5-1.0' Sand: Dark grayish brown (10 YR 4/2) fine to very coarse grain, poorly
				sorted, trace fine to coarse gravel, loose, wet, odor.
				1.0-1.5' Silt: Reddish brown as above, somewhat firm, no clay.
				1.5-2.0' Sand: Dark grayish brown (10 YR 4/2) medium to coarse, some fine,
				moderately poor sorting, trace fine to coarse gravel, angular to subrounded,
				many black slate flakes, loose, wet, odor.
				2.0-2.5' Sand: Brown (7.5 YR 4/3) fine grain, well sorted, trace coarse black
				slate flakes, loose, wet, odor.
				2.5-5.0' Sand: Dark grayish brown (10 YR 4/2) fine to coarse grain, some
				very coarse, trace fine gravel, mostly angular black slate flakes, poorly sorted,
				loose, wet, odor.
135	140	5	4,510-	Sand: Brown (7.5 YR 4/3) fine grain, well sorted, some medium grain, loose, wet,
			4,551/	odor.
			-10 - -9	
140	145	5	6,220-	0-2.0' Sand: As above, fine to medium grain.
			10,200/	2.0-3.5' Sand: Brown (7.5 YR 4/3) fine grain, well sorted, loose, wet, odor.
			-10 - -8.6	3.5-5.0' Sand: Dark grayish brown (10 YR 4/2) fine to medium grain, some coarse
				grain, coarser from 4 to 5 feet, trace silt, moderately sorted loose, 1 inch silt seam
				at 3.5 feet, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-10

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
145	150	5	546-	0-2.0' Sand: Medium to coarse brown (7.5 YR 4/2) farily well sorted, some fine grain,
			16,200/	trace very coarse, mostly black slate flakes, loose, odor, wet.
			4,100-	2.0-3.5' Sand: Fine to coarse, brown (7.5 YR 4/3) very poorly sorted, very silty,
			14,000	loose, somewhat sticky, wet, grades over 2 to 3.5 feet into.
				3.5-5.0' Sand: Fine, color as above, very silty, well sorted, some medium-coarse sand,
				slightly sticky to loose, wet, odor, 1.5 inch silt seam at 3.8 feet, may be
				some clay.
150	155	5	16,500-	0-4.0' Sand: Fine, color as above, some very fine, well sorted, loose, wet, odor,
			28,000/	some seams of lighter sand and black staining at 2.5 to 3.0 feet and is silty
			672-992	sand and very fine to fine sand, color as above, from 0 to 1 feet very silty as above.
				4.0-5.0' Sand: Fine to very fine grain, brown (7.5 YR 5/3), well sorted, trace
				silt, wet, loose, no odor.
155	160	5	5,200-	0-3.0' Sand: Fine to very fine, as above.
			46,000/	3.0-3.5' Silt: Brown (7.5 YR 5/3) slightly firm to soft, wet, odor, clay layer interbedded
			14.5-17.5	at 3.2 feet 1 inch thick, yellowish red (5 YR 4/6), fissile looking on broken surfaces
				but plastic, strong reaction to HCl, sharp contact with below.
				3.5-4.0' Gravel/Sand: Gravel is fine to very coarse, sand is fine to coarse, brown
				(7.5 YR 4/2), silty to very silty, poorly sorted, gravel angular to subrounded, loose,
				wet, odor grades into.
				4.0-5.0' Sand/Gravel: Both fine to very coarse grain, dark gray (7.5 YR 4/1) poorly
				sorted, silty, gravel angular to subrounded, abundant black slate flakes, trace
				cobbles, wet, odor, poorly sorted.
160	165	5	15,400-	0-3.5' Silt: Reddish brown (5 YR 5/3) clayey 1/2 inch interbeds/varves at contact and
			33,700/	intermixedd in matrix, HP = 0.5 to 1.0, very slightly plastic to not plastic
			38.86-	many vesicules, wet to very moist, odor, traces of interbedded yellowish red clay
			41.96	as above up to mm or less in thickness.
				3,5-5.0' Silt: Light reddish brown (5 YR 6/4), loose, some to trace interbeds of
				(< mm thickness) clay as above, from 4.5-5.0 feet.
165	170	5	670-8,200/	0-5.0' Sand: Very fine, light reddish brown (5 YR 6/3), well sorted, trace fine sand,
			-4.3	trace silt, slightly firm, wet, odor.
			6.67	
170	175	5	820-	0-5.0' Sand: Very fine as above, slightly more fine sand fraction below 174 feet,
			38,900/	wet, odor, trace silt.
			-1.42 -	
			-1.15	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMPZ-10 Page 6 of 6

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
175	180	5	1,690-	0-1.5' Sand: Fine grain, brown (7.5 YR 5/3) well sorted, some very fine, loose, wet.
			16,500/	1.5-4.0' Sand: Fine to very fine, at 1.5 feet silt seam interbedded, slightly firm
			-4.3-3.75	to firm, color as above, silty, well sorted, wet, loose, odor.
				4.0-5.0' Sand: Fine to medium mostly fine, color as above, some very fine sand,
				some silt, wet, loose.
180	185	5	18,500-	0-0.5' Sand: Fine to medium as above.
			27,700/	0.5-1.0' Sand: Fine color as above, well sorted, some silt, loose, wet, odor.
			-6.9- -4.5	1.0-2.0' Silt: Brown (7.5 YR 5/3) soft, possible fine sand interbedded (<1/2
				inch layers), wet, odor.
				2.0-5.0' Sand: Fine color as above, some medium, some very fine, some silt,
				loose, wet, odor more fines and silter at 4 to 5 feet.
185	190	5	3,590-	0-2.0' Sand: Fine to very fine, color as above, well sorted, some silt, loose, wet,
			58,200/	odor.
			-7.32 -	2.0-3.5' Sand: Very fine, color as above, well sorted, some silt, loose, wet, odor.
			-6.82	3.5-4.0' Silt: Reddish brown (5 YR 5/3), some very fine sand, soft, wet, odor.
				4.0-5.0' Sand: Fine, brown (7.5 YR 5/2), well sorted, some very fine and medium,
				loose, wet, odor.
190	195	5	17,300-	0-1.0' Sand: Fine as above, increasing medium sand content, at 190.5 feet silt
			45,200/	stringer brown (7.5 YR 4/3) slightly firm to firm approximately 1.5-2 inches thick.
			-5.91 -	1.0-2.0' Sand: Fine to medium, color as above, loose, wet, odor.
			-5.79	2.0-4.5' Sand: Fine, brown (7.5 YR 5/3), well sorted, some very fine sand, loose,
				wet.
				4.5-5.0' Silt: Reddish brown (5 YR 5/3), could be varved traces with clayey silt,
				reddish gray (5 YR 5/2) clayey silt, slightly plastic to plastic, varves were likley
				destroyed by drlling.
195	200			No recovery.
200	205			No recovery.
205	210			No recovery.
				EOB 210

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMEW-1 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/16/00 Drilling Completed 6/16/00

Total Depth Drilled 30 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval None feet

Land-Surface Elev. 1039.49 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Helper Ryan, Jerry

Prepared By John Keller Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	30			Blind Drill (see sample/core log for GMSB-49 for core description).

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMEW-2 | Project/No.: Ford/Kingsford WI000804.0001 | Page 1 of 1

Site Location: Kingsford, Michigan | Drilling Started: 6/17/00 | Drilling Completed: 6/17/00

Total Depth Drilled: 36 Feet | Hole Diameter: 6 inches | Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" | Sampling Interval: None feet

Land-Surface Elev.: 1049.53 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: Water | Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear | Driller: Mike | Helper: Ryan, Jerry

Prepared By: John Keller | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	36			Blind Drill (see sample/core log for GMSB-50 for core description).

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMEW-3 | Project/No.: Ford/Kingsford Wi000804.0001 | Page: 1 of 2

Site Location: Kingsford, Michigan | Drilling Started: 06/19/00 | Drilling Completed: 06/20/00

Total Depth Drilled: 165 Feet | Hole Diameter: 6 inches | Type of Sample/Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" | Continuous from Sampling Interval: 85 feet

Land-Surface Elev.: 1065.40 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: Water | Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear | Driller: Mike | Helper: Ryan, Jerry

Prepared By: John Keller and James Harte | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVM	Sample/Core Description
0	85			Blind drill.
85	90	5	0.7-2.5	0-5': Silt. Dark reddish brown (5 YR 3/3), some sand (very fine to fine), trace to
				some clay, moderately compacted, wet.
90	95	5	2.2-3.5	0-4.5': Sand. Dark reddish brown (5 YR 3/3), very fine to fine, trace medium, some
				silt to silty, trace clay, well sorted, loose, wet.
				4.5-5': Silt. Dark reddish brown (5 YR 3/3), trace sand (very fine to fine), trace
				clay to some clay, moderately compacted, wet.
95	100	5	NA	0-5': Silt. Dark reddish brown (5 YR 3/3), sandy to very sandy (very fine to fine),
				some clay, moderately compacted, wet.
100	105	5	NA	0-5': Silt. As above.
105	110	5	NA	0-5': Silt. As above.
110	115	5	NA	0-5': Clay. Dark reddish brown (5 YR 3/3), some silt, trace sand (very fine to fine),
				soft (HP = 0.2), moist small silt layers/laminations throughout.
115	120	5	NA	0-4': Clay. As above.
				4-5': Silt. Dark reddish brown (5 YR 3/3), sandy to very sandy (very fine to fine),
				some clay, moderately compacted, wet.
120	125	5	NA	0-2': Silt. As above.
				2-5': Sand. Dark reddish gray (10 R 3/1), medium to coarse, trace to some very
				fine to fine, some clay (may be slough from above?), trace silt, moderately to
				poorly sorted, loose, wet.
125	130	5	NA	0-5': Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Prepared by J. Keller/J. Harte

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVM	Sample/Core Description
130	135	5	NA	0-1.5': Sand. As above.
				1.5-3.5': Clay. Dusky red (2.5 YR 3/2) to dark reddish gray (10 R 3/1), silty (small
				silt laminations throughout, dark reddish gray (10 R 3/1), some sand (very fine to
				fine), soft, plastic, moist to wet.
				3.5-5': Sand. Dark reddish gray (10 R 3/1), medium to very coarse, trace to some
				very fine to fine, trace silt, some clay (may be slough from above - on outside of
				the core), gravelly (<10 mm), fine gravel is subrounded to subangular, very poorly
				sorted, loose, wet.
135	140	5	NA	0-5': Sand and fine gravel as above.
140	145	5	NA	0-5': Sand and fine gravel as above.
145	150	5	NA	0-5': Sand. Dark reddish gray (10 R 3/2), medium to coarse, trace very coarse,
				trace very fine to fine, trace silt, poorly sorted.
150	155	5	NA	0-0.5': Sand. As above.
155	160	5	NA	0.5-3': Silt. Dark reddish brown (2.5 YR 3/3), sandy (very fine to fine), clayey with
				clay layers/laminations present, clay is dark red (10 R 3/4).
				3-4': Sand. Very dusky red (2.5 YR 2.5/2), coarse to very coarse, very gravelly
				(2 mm to 50 mm), subrounded, some medium, trace to some very fine to fine,
				trace silt, very poorly sorted, loose, wet.
				4-5': Silt. Very dusky red (2.5 YR 2.5/2), sandy, (very fine to fine), trace gravel
				(2 mm to 20 mm), subangular moderately compacted, damp.
160	165	5	NA	0-0.5': Sandy Silt. As above.
				0.5-5': Sand. Brown (7.5 YR 4/3), very fine to fine, silty, trace of gravel at top,
				moderately to well sorted, moist.
				EOB @ 165 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEW-4 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 1/7/02 Drilling Completed 1/10/02

Total Depth Drilled 125 Feet Hole Diameter 10 inches

Type of Sample/ Coring Device Splitspoon/Mud Cutting

Length and Diameter of Coring Device 2-foot by 2-inches

Sampling Interval perodic feet

Land-Surface Elev. 1047.77 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Mud

Drilling Method Mud Rotary

Drilling Contractor Boart Longyear

Driller Shawn Helper Wes

Prepared By John Keller

Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
	~2			Organic material (rootlets, twig material) with fine to medium sand.
	~5			Sand: Light brown to brown, fine to medium, trace silt.
	~10-12			Sand: Fine to medium, some very fine silt, trace clay (may be mud?).
	~15			Sand: As above.
	~20			Sand: Fine, some to abundant medium, some to abundant very fine/silt,
				(sand is showing fining trend as you go downhole).
	~22-23			Sand: Medium to very coarse, trace to some fine gravel (~2 mm), trace clay/
				silt content.
	~24-27			Sand: Medium to coarse, trace to some very coarse, some fine gravel (~2 mm),
				(sand appears to fine downward matrix is mainly medium sand-gravel content
				decreasing).
	~31-32			Sand: Medium, some very fine to fine, some coarse, trace gravel.
	~35			Sand: Medium to coarse, some finer constituents (very fine sand/silt).
	~36-37			Sand: Very fine to medium, some silt.
	~40			Sand: Very fine to medium, much less recovery so increase silt/clay content.
	~41			Sand: Very fine to fine, still some medium to coarse content but finer grained,
				with increased silt content.
	~44			Sand: Very fine to medium, trace coarse, some silt to abundant silt.
	~48			Sand: As above (perhaps slightly coarser).
	~50			Sand: Very fine to coarse, with some gravel (probably not in-situ, mixed with
				drilling muds).
	~52			Silt/Clay: (numerous cohesive balls in sample), some to abundant sand (fine to
				medium, some coarse, some very fine).
	~54			Silt: With sand, as above.
	~55			Sand: Very fine to fine, with silt/clay (medium to coarse sand still present from
				above sections).

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEW-4 Page 2 of 2

Prepared by John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
	~56-57			Silt/clay: (balls present), some sand (very fine to fine, some medium), coarser
				sand that is present is from above.
	~59-60			Sand/silt: Very fine, trace to some clay, trace fine sand (coarse sand is no longer
				present in drilling mud).
	~61			Silt/clay: (numerous fine-grained balls present) with some very fine sand.
	~63-64			Silt/sand: Very fine, some fine sand, trace medium sand.
	~66			Silt/clay intermixed with very fine to fine sand.
	~69-70			Silt/clay: As above.
	~74			Sand: Silty (very fine, trace to some fine) with clay.
	~77			Sand: As above.
	~82			Silt: With some very fine to fine sand intermixed (some coarse sand also present
				but probably from higher up in section).
	~88			Silt/sand: Very fine.
92	94	0	8,8,10,11	No recovery, lower 1/2' on outside of spoon appeared to be silt/clay composition.
	~95-96			Silt: Some very fine to fine sand, trace to some clay present.
97	99	1	8,9,10,13	0-1': Silt: Reddish brown, some clay, some to abundant sand (very fine) (sand
				content increases down section), moderately dense to dense, "tight" silt,
				wet to saturated, moderately hard, odor.
102	104	1	9,8,9,11	0-1': Sand: Dark grayish brown, fine to medium, some very fine, perhaps trace
				coarse, some silt, trace clay, trace rock fragments (slate?), moderately to well
				sorted, cohesive, wet, well rounded.
107	109	1.4	9,11,13,15	0-1': Sand: Grayish brown, medium to coarse, trace to some very fine to fine,
				trace very coarse, trace silt/clay content, moderately sorted, well rounded, wet
				to saturated.
				1-1.4': Sand: Reddish gray, very fine, trace fine, abundant silt, trace clay, very
				well sorted and rounded, slightly cohesive, wet.
112	114	1	7,13,13,15	0-1': Sand: Reddish gray, fine to medium, some coarse (at top of interval) sand
				seems to fine down section, trace very coarse (also near top of interval), trace to
				some clay, some silt to silty (silt content increases down section) poorly to
				moderately sorted, well rounded, slightly cohesive, saturated.

ARCADIS

Sample/Core Log

Boring/Well GMEW-4R Project/No. Ford/Kingsford WI000975.0002 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/16/02 Drilling Completed 7/18/02

Total Depth Drilled 125 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2-foot by 2-inch Sampling Interval 85-125 feet

Land-Surface Elev. 1047.5 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Mud Drilling Method Mud Rotary

Drilling Contractor Boart Longyear Driller Randy Helper Corey, Dylan

Prepared By John Keller Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) TVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	85			Blind Drill, no samples.
85	89	3	25-29-31-40	0-3': Sand: Dark reddish gray (5 YR 4/2), fine to medium grain, some coarse,
		1427	37-47-43-46	some to abundant very fine sand/silt content, strong odor, very well sorted and
				rounded, cohesive, wet to saturated.
89	91	0.75	18-36-47-47	0-0.75': Silt: Reddish brown, some clay, moderately soft (HP = 0.5 -1), crumbly
		819		to slightly cohesive, some very fine sand, saturated.
91	93	2	46-41-42-51	0-2': Silt: As above.
		1710		
93	95	0.5	14-16-27-29	0-0.5': Silt: As above.
		2588		
95	97	2	24-26-26-22	0-2': Silt: As above, contains areas where increase sand content (abundant
		1831		very fine sand), saturated.
97	99	1	16-15-16-19	0-1': Silt: dark reddish gray (5 YR 4/2), some very fine sand, trace to some clay,
		1230		moderately soft (HP = 0.5 - 1), cohesive, saturated.
99	101	2	25-37-46-45	0-1.25': Silt: As above (lower becomes sandy silt).
		3105		1.25-2': Sand: Reddish gray (5 YR 5/2), medium, some to abundant coarse,
				trace very fine to fine, some silt (lower 5-6" of internal), very well rounded,
				well sorted, cohesive, saturated.
101	103	0.5	12-14-26-28	0-0.5': Sand: Reddish gray (5 Yr 5/2), medium, abundant coarse, trace very fine to
		547		fine, moderately to well sorted, saturated.
103	105	2	31-48-72-65	0-0.33': Sand: As above.
		627		0.33-1.8': Silt: Dark reddish gray (4 Yr 4/2), sandy (very fine), some clay (clay
				present in form of reddish-colored nodules within silt), crumbly, soft (HP = 0.5-
				1) saturated.
				1.8-2': Sand: Reddish gray (5 YR 5/2), fine to medium, trace to some very fine,
				trace coarse, sand is interlayered with reddish brown silt (layering is
				approximately 0.5-1 mm thick), cohesive, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEW-4R

Prepared by John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) TVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
105	107	0.75	12-13-14-18	0-0.75': Sand: Reddish gray (5 YR 5/2) medium to very coarse, trace to some very
		581		fine to fine, small silt layer (at 0.5' only 1-2 mm thick), gravelly (2 mm - 5 mm),
				subrounded to subangular, poorly sorted, cohesive, saturated.
107	109	2	22-28-24-22	0-0.55': Sand: Reddish gray (5 YR 5/2), medium to very coarse, trace very fine,
		1679		some fine, moderately to poorly sorted, cohesive, saturated.
				0.55-1.05': Sand: Reddish gray brown, very fine to fine, very silty, perhaps
				trace medium to coarse sand, trace clay, well sorted and rounded, cohesive,
				saturated.
				1.05-2': Sand: Reddish gray (5 YR 5/2), medium to coarse, trace very coarse, trace
				to some very fine to fine, trace silt/clay, moderately sorted, cohesive, saturated.
109	111	1.5	12-14-20-22	0-1.5': Sand: As above.
		2882		
111	113	2	27-23-17-20	0-1.75': Sand: As above.
		2916		1.75-2': Sand: Reddish brown, very fine, some to abundant fine, abundant
				silt, trace clay, very well sorted and rounded cohesive, wet.
113	115	1	--	0-0.6': Sand: Dark reddish gray (5 Yr 4/2), fine to medium, some very fine, trace
		3405		to some silt, perhaps trace coarse, moderately to well sorted, well rounded,
				cohesive, damp to wet.
				0.6-1': Silt: Dark reddish gray (5 YR 4/2), very sandy (very fine), some clay, very
				soft, cohesive, saturated.
115	117	2	--	0-0.8': Silt: As above.
		4760		0.8-1.05': Clay: Dusky red (10 R 3/3), trace silt, moderately soft (HP = 1.5),
				moderately plastic, moist.
				1.05-1.6': Silt: As above.
				1.6-2': Sand: Reddish brown (5 YR 4/3) , medium, some very fine to fine,
				perhaps trace coarse, well rounded and sorted, cohesive, wet.
117	119	1	--	0-1': Sand: Reddish brown (5 YR 4/3), medium, trace to some coarse, some
		5374		very fine to fine, trace to some silt, moderately sorted, cohesive, wet to
				saturated, strong odor.
119	121	2	--	0-1.75': Sand: As above.
		5370		1.75-2': Sand: Reddish brown (5 YR 4/3), medium to coarse, trace very coarse, trace
				very fine to fine (coarser interval from above sand), poorly sorted, cohesive, wet.
121	123	1	--	0-1': Sand: As above (medium sand from 117-119').
		4870		
123	125	2	--	0-2': Sand: As above, perhaps slightly coarser (medium sand, some coarse).
		4750		

ARCADIS

Sample/Core Log

Boring/Well GMEW-5 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/24/02 Drilling Completed 6/28/02

Total Depth Drilled 53.5 Feet Hole Diameter 16.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2-foot by 2-inch Sampling Interval continuous from 20 feet

Land-Surface Elev. 1066.13 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Shawn Helper Wes

Prepared By Andrew Fiskness Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	TVA (ppm)	Sample/Core Description
0	20			No sample.
20	22	16	0.21	0-16": Silt: Strong brown (7.5 YR 4/6), with clayey lamination 11in to 14 in,
				plastic, vesicular upon opening, slight effervescent.
22	24	12	0.34	0-12": Silt: As above, with very thin laminations of clay, red (2.5 YR 4/8) at 5 in,
				8 in, 11 in, saturated, very slight effervescent.
24	26	13	0.75	0-13": Clayey silt: Brown (7.5 YR 4/3), moderately plastic, 9-13 in laminations
				of silty very fine sand, wet to moist, effervescent.
26	28	--	--	No recovery.
28	30	22	1.89	0-22": Silt: Strong brown (7.5 YR 4/4) with red (2.5 YR 4/6) clay lamination, 1/4 in.
				to 1/2 thick, clay strongly effervescent (HP = 2.0), moist 14-22 in, dry, 0-14 in.
30	32	23	12.4	0-23": Silt: As above, with thin laminations of clay as above at 13 in, 15 in,
				16 in, dry.
32	34	19	4650	0-9": Silt: As above, dry.
				9-19": Sand: Brown (7.5 YR 5/4), very fine, silty, dry to moist.
34	36	23	3756	0-6": Sand: As above, wet.
				6-13": Silt: As above, moist.
				13-23": Sand: As above, wet.
36	38	17	1977	0-19": Sand: As above, with trace medium sand, wet.
38	40	18	4026	0-14": Sand: As above.
				14-18": Sand: Brown (7.5 YR 4/3), coarse to medium sand, some fine sand,
				loose, wet.
40	42	11	5261	0-2": Sand: As above.
				2-11": Sand: Brown (7.5 YR 4/4), very fine to coarse sand, with gravel up to
				50 mm, subangular to subrounded, some silt, very poorly sorted, wet.
42	44	19	1095	0-19": Sand: As above, with silt between 2-6 in brown (7.5 YR 4/3) clayey,
				moderately plastic, some very fine to fine sand, wet, strong effervescent.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEW-5

Prepared by Andew Fiskness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	TVA (ppm)	Sample/Core Description
44	46	21	905	0-6": Sand: Brown (7.5 YR 4/3), very fine to very coarse sand, some silt, gravel up to 10 mm, subrounded to subangular, very poorly sorted. 6-9": Silt: Brown (7.2 YR 4/4), with very fine to fine sand, slightly plastic, effervescent. 9-21": Sand: Brown (7.5 YR 4/4), very fine to coarse sand, with gravel up to 10 mm, subangular to subrounded, some silt, very poorly sorted, thin lamination of silt as above at 15 in, difficult drilling.
46	48	24	--	0-6": Sand: Brown (7.5 YR 4/3), medium to coarse sand, some very fine to fine, trace gravel up to 5 mm, subrounded. 6-24": Sand: As above, with gravel up to 45 mm, subrounded, coarser downward, some silt very poorly sorted, difficult drilling.
48	53.5	--	--	No sample.

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Sample/Core Log

Boring/Well GMEW-6 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 6/25/02 Drilling Completed 6/27/02

Total Depth Drilled 52 Feet Hole Diameter 16.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2-foot by 2-inchs

Sampling Interval continuous from 20 feet

Land-Surface Elev. 1060.43 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Shawn Helper Wes

Prepared By Andrew Fiskness Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	TVA (ppm)	Sample/Core Description
0	20			No sample.
20	22	16	44.1	0-16": Silt: Brown (7.5 YR 4/3) clayey, nonplastic, very fine sand,
				effervescent, (HP=2.0), dry.
22	24	18	48.3	0-18": Silt, As above, wet.
24	26	16	24.6	0-16": Silt: As above, with laminations of clay at 3 in, 5in, 11in red (2.5 YR 4/6),
				slightly plastic, dense (HP=1.75) strong effervescent, wet.
26	28	19	275	0-19": Clay: Silt, very fine silty sand: Interbedded each layer approximately 1 m
				thick, clay red (2.5 YR 4/6), dense (HP=3.5), effervescent, silt brown (7.5 YR 4/4)
				dense (HP=3.0) effervescent, sand brown (7.5 YR 4/3) very fine, silty, strongly
				effervescent, dry.
28	30	20	300	0-20": Clay/Silt/Sand: Interbedded as above, except sand very fine to medium, dry.
30	32	9	506	0-9": Sand: Brown (7.5 YR 4/3), very fine to coarse sand, gravelly up to 45 mm,
				subrounded to subangular, some silt, very poorly sorted, wet.
32	34	--	--	No recovery.
34	36	10	307	0-10": Sand: As above, except gravel up to 30 mm, wet.
36	38	12	126	0-12": Sand: As above, wet.
38	40	11	814	0-1": Sand: As above, except with some clay.
				1-11": Sand: Dark brown (7.5 YR 3/2), medium to coarse sand with gravel up to
				25 mm, subrounded, some very fine to fine sand and silt, wet.
40	42	10	1680	0-10": Sand: Brown (7.5 YR 4/3), medium to coarse, some fine to very fine, trace
				gravel subrounded up to 25 mm, wet.
42	44	12	905	0-12": Sand: As above, wet.

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Sample/Core Log

Boring/Well GMEW-7 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 10/9/03 Drilling Completed 10/9/03

Total Depth Drilled 205 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 6 inches

Sampling Interval Continuous feet

Land-Surface Elev. 1065.85 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Mud/Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Oiden Jayson Helper Chris

Prepared By Bruce Evans and Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	155	--	--	Blind drill: See core log for GMPZ-10 for description.
155	160	5	610-6,000/	0-2.5' Sand: Brown (7.5 YR 5/3) fine to coarse grain, predominately medium
			1.74-2.35	grain, loose, moderate sorting, trace fine gravel subround to subangular up to
				1/2", wet, odor, grading over 1/4 to 1/2 inch into
				2.5-3.0' Sand: Color as above, fine to very fine sand, loose, wet.
				3.0-4.0' Silt/Sand: Color as above, silt is crumbly to soft, sand very fine grain and
				occurs as interbeds <1/2 inch thick, moist, odor.
				4.0-5.0' Sand/Gravel: Brown (7.5 YR 4/2), sand fine to coarse, predominately
				medium grain, gravel fine to very coarse, cobbles up to 2.5 inch, subround to
				subangular, some to much silt, loose, wet, odor, very poorly sorted, much of
				gravel is subangular black slate flakes. Cobble layer at approximately 5.0 feet
				2-inch thick.
160	165	5	690-8,200/	0-1.0' Sand/Gravel: As above.
			1.62-2.39	1.0-2.0' Gravel: Color as above, gravel fine to very coarse, some cobbles up to
				1.5 inch subround to subangular, very silty, wet, loose, poorly sorted, odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/4), silt is somewhat clayey, somewhat plasticy, soft
				to slighlty firm clay interbedds, yellowish red (5 YR 4/6), clay is platy/friable in
				appearance, but plastic when worked between fingers, interbeds up to
				1 foot thick, moist, odor.
165	170	5	2,100-	0-1.3' Sand: Brown (7.5 YR 5/2), silty, very fine grain, slightly firm to loose,
			11,800/	moist, odor, trace gravel fine to medium subangular to subround from
			2.39-2.59	1 to 1.3 feet.
				1.3-3.5' Silt/Sand: Brown (7.5 YR 5/3) somewhat firm to crumbly at upper 1.3-1.6
				feet, somewhat grainy silt and 1.6 to 3.0 feet is not, from 3.0 to 3.5 feet somewhat
				sandier with fine sand to grainy silt, moist, odor.
				3.5-5.0' Sand: Brown (7.4 YR 5/3), very fine grain, some silt, well sorted,
				loose, moist, odor.

Sample/Core Log (continued)

Boring/Well GMEW-7

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
170	175	5	6,800-	0-3.0' Sand: Color as above, very fine to fine grained, mostly very fine grain,
			17,800/	loose, moist, odor.
			2.52-2.98	3.0-5.0' Sand: Brown (7.5 YR 4/3), fine grain well sorted, some very fine sand,
				loose, moist, odor.
175	180	5	300-9,450/	0-4.0' Sand: Brown (7.5 YR 4/4) fine to medium grain well sorted, loose, wet,
			1.84-3.66	odor, trace silty clayey nodules at 3.5 feet.
				4.0-4.5' Silt: Brown (7.5 YR 4/3) clayey, platey, friable in appearance, trace
				medium to very coarse sand, crumbly, moist.
				4.5-5.0' Sand: Color as above, fine to medium grain, fairly well sorted, some clayey
				silt nodules as above at 3.5 feet, some dark gray in color with medium to coarse
				sand in nodules, loose, wet, odor.
180	185	5	4,800-	0-1.0' Sand: Color as above, fine to medium grain fairly well sorted, loose, wet,
			12,500/	odor, may have silt nodules brown (7.5 YR 4/3) but maybe from above and
			2.94-3.88	pushed by sample drive.
				1.0-2.5' Sand: Color as above, fine to medium, loose, moderately sorted, some
				silt, abundant clay nodules as above, some slight firm to slightly soft.
				Possibly interbedded clay layers, wet.
				2.5-3.5' Silt/Silt: Three different interbeds, grainy silt gray (7.5 YR 5/1)
				nongrainy silt = reddish brown (5 YR 4/3); interbedded over 1/4 to 1/2", highly
				effervescent with HCL, trace coarse sand and fine gravel to 1/2 inch within silts,
				curmbly to fairly firm.
				3.5-4.5' Sand: Brown (7.5 YR 4/3), very fine to coarse grain some silt, poorly
				sorted, some fine to coarse gravel, cobbles up to 1.5 inch, subround to
				subangular, loose, wet, odor.
				4.5-5.0' Silt/Gravel: Color as above, like interbedded silt as above, fine to
				coarse gravel interbedded in silt matrix, some cobbles up to 1.5 inch round to
				angular, poorly sorted, wet, odor.
185	190	5	1,500-	0-5.0' Sand: Brown (7.5 YR 4/3) medium to fine grain, well sorted, loose, wet,
			16,500/	odor.
			2.54-3.2	
190	195	5	2,300-	0-0.5' Sand: As above.
			22,800-	0.5-2.7' Sand: Pinkish gray (7.5 YR 6/2), fine to very fine, well sorted, some to
			2.49-3.03	trace silt, loose, wet, odor. Bottom 0.5 feet grades into mostly very fine
				grain, some to more silt.
				2.7-3.4' Sand: Color as above, very fine, well sorted, silty, loose, wet, odor.
				3.4-3.7' Silt: Reddish brown (5 YR 5/3), somewhat firm to crumbly, moist, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEW-7

Prepared by Bruce Evans and Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				3.7-5.0' Sand: Pinkish gray (7.5 YR 6/2) fine to very fine grain well sorted, silty,
				loose, wet, odor.
195	200	5	1,310-	0-5.0' Sand: Pinkish gray (7.5 YR 6/2) fine grain, some very fine and medium, silty
			11,000/	nodules or mixed up silt layers from drilling, silt is reddish brown (5 YR 5/3).
			3.00-4.15	
200	205	5	9,100-	0-0.2' Silt: Brown (7.5 YR 5/2), crumbly, trace medium to coarse sand and trace
			33.100/	fine to coarse gravel, subround to angular, up to 1.5 inch diameter, moist,
			1.65-2.10	somewhat soft, odor, grades into.
				0.2-0.5' Silt: Dark gray (7.5 YR 4/1) with some pistachio to olive green tint; silt
				as above with increasing sand, medium to coarse, gravel and cobbles up to
				3.5 inch subround to subangular, hard and crumbly, moist, odor.
				0.5-1.2' Silt/Sand: Brown (7.5 YR 5/2) silt is grainy, sand is very fine, well sorted,
				loose, wet, odor.
				1.2-3.5' Silt: Brown (7.5 YR 5/3), slightly soft to grainy in places, but overall
				smooth nongrainy silt, moist to wet, odor.
				3.5-4.5' Silt/Clay: Two colors of silt as above, brown (7.5 YR 5/3 to 7.5 YR 5/2),
				clay is yellowish red (5 YR 4/6), clay is friable and platy in appearance,
				but plastic, some cobbles up to 3 inch, round to subangular.
				4.5-5.0' Silt: Very dark gray (7.5 YR 3/1), hard, crumbly, some to much gravel, fine
				to very coarse, cobbles up to 5 inches round to angular, moist, odor.
				EOB 205

ARCADIS

Sample/Core Log

Boring/Well GMEW-8 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/20/03 Drilling Completed 10/20/03

Total Depth Drilled 185 Feet Hole Diameter 8 / 12 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 6 inches Sampling Interval Continuous feet

Land-Surface Elev. 1044.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Oiden Jayson Helper Chris

Prepared By Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	115			Blind drill, see GMPZ-8
115	120	5	1,445/	0-5.0' Sand: Brown (7.5 YR 5/3) fine grain well sorted, loose, trace clayey silt
			1,555/	nodules, reddish brown (5 YR 4/3), somewhat firm, slightly plastic, wet,
			-18 - -17	slight odor.
120	125	5	1,118-	0-0.5' Sand: As above, increasing amount of clayey silt nodules.
			4,294/	0.5-2.5' Silt: Reddish brown (5 YR 4/3) clayey to slightly clayey, slightly plastic
			17	to nonplastic dependant on clay content, soupy to wet.
				2.5-3.5' Silt: Brown (7.5 YR 5/4), grainy some zones or clumps of nongrainy,
				smoother silt (little harder), loose, wet, slight odor.
				3.5-5.0' Sand/Silt: Color as above, sand very fine, loose, well sorted, wet,
				slight odor.
125	130	5	2,645-	0-1.5' Sand/Silt: As above, trace to some fine sand.
			11,300	1.5-5.0' Sand: Brown (7.5 YR 5/3), fine grain, well sorted, loose, wet, some odor.
			17 - -16	
130	135	5	15,300-	0-0.5' Sand: As above, trace to some medium grain.
			16,700/	0.5-5.0' Sand: Color as above, medium grain, well sorted, some fine grain,
			-16 - -15	loose, wet, odor.
135	140	5	4,326 -	0-5.0' Sand: Brown (7.5 YR 5/2), medium grain fairly well sorted, some coarse
			4,390/	grain, coarse mainly black slate flakes, trace fine grain, loose, wet, strong odor.
			-15 - -14	
140	145	5	21,100-	0-5.0' Sand: Color as above, medium to coarse grain, coarse mainly flat, platy
			3,500/	black slate flakes, moderate well sorted, loose, few hard clay nodules,
			14 - -13	yellowish red (5 YR 5/6) wet, strong odor.
145	150	5	10,300-	0-3.25' Sand: As above.
			38,900/	3.25-5.0' Sand: Brown (7.5 YR 5/3), fine grain, some very fine, well sorted,
			-14 - -13	loose, wet, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEW-8

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
150	155	5	39,300-	0-2.0' Sand: Color as above, fine to very fine grain, well sorted, loose, wet,
			76,900/	odor.
			-14 - -13	2.0-5.0' Sand: Color as above, fine grain, well sorted, loose, wet, layer of
				silt, brown (7.5 YR 4/2) from 3.2-3.3' odor.
155	160	5	3,297 -	0-5.0' Sand: Brown (7.5 YR 5/3), fine to very fine, well sorted, trace medium
			5,438-	grain, loose, wet, odor.
			-14 - -13	
160	165	5	20,100-	0-5.0' Sand: As above.
			24,900/	
			-11 - -9	
165	170	5	19,500-	0-1.0' Sand: As above.
			76,900/	1.0-5.0' Sand: Color as above, fine grain, trace to some very fine, well sorted
			-6.6 - -4.4	loose, odor.
170	175	2	17,100-	0-2.0' Sand: Fine grain, as above.
			12,800/	
			-9 - -8	
175	180	5	3.80 - 3.9/	0-5.0' Clayey Silt: Dark brown (7.5 YR 3/2) slightly plastic to slightly firm
			-14 - -13	(HP = 1.5), gravel and sand, sand fine to coarse mostly fine grain, gravel fine to
				coarse round to angular, cobbles to 5 inch subround to angular, dense, wet,
				slight odor.
180	185	5	7.80-35.62/	0-2.0': As above, more fine to medium sand.
			-13 - -9	2.0-5.0' Sand and Gravel: Brown (7.5 YR 4/3), sand fine to coarse mostly fine,
				gravel fine to coarse, round to angular with cobbles up to 4 inches,
				subround to subangular, silty to clayey in parts, somewhat loose, wet, no odor.
				EOB 185.

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Sample/Core Log

Boring/Well GMEWA-1 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/2/04 Drilling Completed 6/2/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1054.15 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen Hammer Weight -- Hammer Drop -- ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	5.00	.2-2.3/	0-5.0' Sand: 0-1' reddish brown (5 YR 5/4), 1-5' strong brown (7.5 YR 4/6),
			.5-.8	some fine to coarse subangular to rounded gravel, siliter with depth, moderately
				to poorly sorted, one rounded weathered rock (broke by hand), 0-2' moist,
				2-5' saturated.
5	10	2	9.4/0.6-3.0	0-1.5' Slough.
				1.5-2.0' Silt: Brown (7.5 YR 5/4), trace angular gravel, rounded quartz cobble at
				base, slightly plastic, sticky, very soft, saturated.
10	15	2	2.2/0-0.6	0-1.5' Slough.
				1.5-2.0' Silt: Dark reddish brown (5 YR 4/2), trace angular gravel, likely
				interbedded clay, slightly plastic, sticky, very soft, nearly liquified, saturated.
15	20	5.0	0.1-680/	0-5.0' Silt/Clay: Dark reddish gray silt (5 YR 4/2), reddish brown clay (5 YR 4/4),
			0.2-1.0	interbedded, trace angular gravel, stiff to medium stiff, high plasticity, fissile clay,
				1-2 inch to 1 mm thick clay.
20	25	5	238-5500/	0-1.0' Same as above.
			0-0.9	1.0-5.0' Silt/Sand: Very fine to fine sand, black sand, interbedded 1-inch silt layer,
				well sorted, saturated.
25	30	5	1150-5200/	0-1.0' Slough.
			0.8-0.9	1.0-5.0' Sand: Brown (7.5 YR 4/2), fine to medium sand, predominately medium
				grain, trace fine subangular gravel, silt layer 1.25' thick, well sorted, loose,
				uniform, saturated, trace black staining.
30	35	5	1100-14000/	0-1.0' Same as above.
			0.1-0.9	1.0-4.0' Sand: Reddish brown (5 YR 5/4), fine to medium sand, well sorted, loose,
				no staining, saturated.
				4.0-5.0' Sand/Gravel: Brown (7.5 YR 5/4), coarse to very coarse sand, angular to
				rounded gravel, subangular to subround, 2" cobble layer at 4 feet, moderately
				sorted, loose, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-1

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
35	40	5	51-4500/	0-2.0' Sand: Reddish brown (5 YR 5/4), fine to coarse sand, little subangular to
			0.4-1.0	round gravel, trace rounded cobbles, little silt, poorly sorted, loose, saturated.
				2.0-3.0' Silt/Clay: Reddish brown (5 YR 4/3), yellowish red (5 YR 5/6),
				interbedded, 0.5-1 inch layers.
				3.0-5.0' Sand: Reddish brown (5 YR 4/4), little to some silt, very fine sand, silt
				layer at 4.5-5 feet, well sorted, loose, slight odor, methane vesicles, saturated.
40	45	5	650-3800/	0-5.0' Silt/Clay: Reddish brown (5 YR 4/3), trace fine sand layers, interbedded silt
			0-0.8	and clay, varve to 2-inch thick layers, phenol odor.
				EOB @ 45'.

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Sample/Core Log

Boring/Well GMEWA-2 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/3/04 Drilling Completed 6/3/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' x 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1053.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water from Kingsford Department Public Works Building Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	3	0/1-1.8	0-3.0' Sand: Brown (7.5 YR 4/7), very fine to coarse sand, trace angular to
				subrounded gravel, silter with depth, well sorted, loose, well sorted, loose, low
				cohesiveness at 3 feet,1-3 inch gravel, moist to saturated.
5	10	5	--	0-1.0' Same as above.
				1.0-5.0' Silt/Clay: Silt dark yellowish brown (10 YR 4/4), clay yellowish red (5 YR 4/6),
				interbedded, trace fine sand, sticky, plastic, very soft, varve to 0.25 inches clay.
10	15	4	--	0-4.0' Silt/Clay: Silt dark yellowish brown (10 YR 4/4), clay yellowish red (5 YR 4/6),
				trace fine sand, interbedded, alternating silt (2-2.5 inches) and clay (5 mm to 0.5
				inch), sticky, soft, fissile, plastic, saturated.
15	20	5	48-665/	0-4.0' Silt/Clay: Silt brown (7.5 YR 4/4), clay to yellowish red (5 YR 4/6), trace
			0.4-0.8	coarse sand, interbedded, varve to 2.25 inch clay, plastic, sticky, saturated.
				4.0-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, trace silt, well sorted,
				loose, saturated.
20	25	5	1150-4800/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine sand, trace silt, well sorted, loose,
			0.4-0.9	black 2mm layers stained black stained layer 24.5 to 24.75 feet.
25	30	5	55-1600/	0-5.0' Sand: Brown (7.5 YR 4/3), very fine to medium sand, trace coarse sand,
			0.4-2.5	predominantly medium sand, trace <5 percent silt, well sorted, loose, saturated.
30	35	5	1200-1600/	0-2.0' Same as above.
			4.5-13.75	2.0-2.5' Gravel: Subangular to rounded gravel, 0.25-3", loose, saturated.
				2.5-5.0' Sand: Brown (7.5 YR 4/3), medium to coarse sand, trace silt, trace
				subrounded gravel, well sorted, loose, saturated.
35	40	5	1400-9500/	0-2.0' Sand: Brown (7.5 YR 4/3), fine to coarse sand, predominately medium sand,
			17-25.75	some angular to subrounded gravel, poorly sorted, loose, saturated.
				2.0-5.0' Sand/Silt: Strong brown (7.5 YR 4/6), very fine sand, predominately
				very fine silt, well sorted, loose, methane vesicles, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-2 Page 2 of 2

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
40	45	5	1100-43000/	0-0.5' Silt: Brown (7.5 YR 4/4), trace very fine sand, soft, moderate cohesiveness,
			30-76	saturated, 0.10 inch thick clay seam.
				0.5-2.0' Silt: Very fine, strong brown (7.5 YR 4/6), with very fine sand, grading to
				a very fine sandy silt, low cohesiveness, well sorted, loose, saturated.
				2.0-2.5' Silt/Clay: Brown (7.5 YR 4/3), stiff, saturated, interbedded.
				2.5-5.0' Silt: Strong brown (7.5 YR 4/6), very fine, with very fine sand, well sorted,
				loose, saturated.
				EOB @ 45'.

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Sample/Core Log

Boring/Well GMEWA-3 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/3/04 Drilling Completed 6/3/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' x 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1053.41 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water from Kingsford Department Public Works Building Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	2	0.4-1.7/	0-2.0' Sand: Strong brown (7.5 YR 4/6), very fine to coarse sand, trace silt, trace
			0-2.5	subrounded gravel, moderately sorted, loose, moist to saturated.
5	10	5	1.2-3.0/	0-0.5' Silt: Strong brown (7.5 YR 4/6), trace very fine sand, very soft, crumbly,
			0-1.3	saturated.
				0.5-1.5' Sand: Brown (7.5 YR 4/4), fine to coarse sand, trace silt, trace fine to
				coarse gravel, subrounded, well sorted, loose saturated.
				1.5-2.0' Clay: Reddish brown (5 YR 4/4), trace subrounded gravel, plastic, soft,
				saturated.
				2.0-2.5': Same as 0.5-1.5' but strong brown (7.5 YR 5/6).
				2.5-5.0' Silt/Clay: Silt brown (7.5 YR 5/4),clay yellowish red (5 YR 4/6), interbedded,
				varve to 0.25 inch clay, 3-4 inch silt layers, plastic, sticky, very soft, saturated.
10	15	4	0-0.5/	0-4.0' Silt/Clay: Brown (7.5 YR 5/4), clay yellowish red (5 YR 5/6), silt brown
			1-1.4	(7.5 YR 5/4), interbedded, varve to 1-inch clay, 1-3 inch silt layer, fissily, soft,
				plastic, crumbly, saturated, coarse sand seam 2 mm thick.
15	20	4	200-6700/	0-4.0' Silt/Clay: Silt brown (7.5 YR 5/4),clay yellowish red (5 YR 5/6), interbedded,
			1.2-1.5	0.5-1 inch clay layers, 0.5-1 inch silt layers, 2-4' less layers (thicker), mostly silt, stiff,
				crumbly to low plasticity, fissily, saturated.
20	25	4	920-1200/	0-1.5' Sand/Silt: Brown (7.5 YR 4/4), very fine sandy silt, very soft, well sorted,
			0-1.5	moderate cohesiveness, saturated.
				1.5-4.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, trace silt, well sorted,
				loose, black staining in layers 1 mm to 3 inch (3-inch at 25 feet), phenol odor,
				varve clay layers random between 3-4 feet.
25	30	0		No recovery.
30	35	4	7300-43000/	0-1.5' Sand: Brown (7.5 YR 4/4), fine to medium sand, trace coarse sand, trace silt,
			0.6-1.6	loose, predominately medium grain, well sorted, saturated.
				1.5-2.0' Gravel: 1-3' subangular to subrounded, loose, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-3

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				2.0-4.0' Sand: Brown (7.5 YR 4/3), medium to coarse sand, trace subrounded
				gravel, loose, gravel, loose, poorly sorted, saturated.
35	40	5	3000-10000/	0-1.0' Same as above.
			0-2.2	1.0-5.0' Silt: Very fine, reddish brown (5 YR 4/4), with very fine sand, uniform,
				very soft, phenol odor, saturated.
40	45	5	2000-14000/	0-2.0' Same as above.
			0-4.5	2.0-3.0' Silt: Strong brown (7.5 YR 4/6), low cohesiveness, loose to crumbly,
				saturated.
				3.0-5.0' Silt: Very fine, reddish brown (5 YR 4/4), with very fine sand, well sorted/
				uniform, loose, phenol odor, saturated.
				EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-4 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/3/04 Drilling Completed 6/3/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device 4" Core barrel

Length and Diameter of Coring Device 10' x 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1049.23 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM (ppm)	Sample/Core Description
0	5	3	0/0.8-1.5	0-0.5' Organic rich.
				0.5-2.5' Sand: Strong brown (7.5 YR 4/6), very fine to fine sand with little silt,
				sand seam of fine to coarse sand, predominately medium approximately 1 inch
				thick, loose, saturated, well sorted.
				2.5-3.0' Silt/Clay: Silt brown (7.5 YR 4/4), clay yellowish red (5 YR 4/6), interbedded
				clay and silt, clay layers varved, silt layer 0.5-1.5" thick, saturated, very soft, plastic.
5	10	4	0-1/13.5-15	0-3.0' Same as above, silt/clay clay thickness varve - 1.5", silt thickness 2-6"; silt
				fissiling, stiff to medium stiff.
				3.0-4.0' Same as above, clay thickness 0.5-1.25" silt thickness 0.75 to 1.25", silt
				fissiling, stiff.
10	15	4	100-7800/	0-0.5' Silt/Clay, interbedded silt/clay, trace cobbles, affected by drilling fluid.
			15.8-16.6	0.5-3.0' Silt/Clay: Clay yellowish red (5 YR 4/6), silt brown (7.5 YR 5/4), interbedded,
				stiff, clay varved 1.5", silt 0.25-1", fissiling, saturated, cohesive easily worked.
15	20	2	1.5-3.04/0	Same as above, strong brown (7.5 YR 4/6), liquified, sticky, varved clay in silt,
				plastic, saturated, trace gravel rounded.
				3.0-4.0' Sand: Very fine to fine sand, well sorted, loose, saturated, clay lense 0.1",
				trace silt.
20	25	5	--	0-1.5' Sand: Black, very fine to fine sand, little silt, loose, saturated, well sorted,
				black staining throughout.
				1.5-3.5' Sand: Brown (7.5 YR 5/2), fine to medium sand, well sorted, loose,
				saturated, black staining 1.5 to 2.0.
				3.5-4.0' Gravel: Fine to coarse with cobbles, subangular to rounded 0.5-3"
				diameter, poorly sorted, saturated, loose,
				4.0-5.0' Sand: Brown (7.5 YR 5/4), fine to coarse sand, predominantly medium,
				well sorted loose, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-4 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM (ppm)	Sample/Core Description
25	30	4	2000-	0-5.0' Sand: Brown (7.5 YR 5/4), fine to coarse sand, predominantly medium, trace
			60000/0.5-	cobbles, little gravel (0-1) subrounded 0.5-1.5" diameter, loose, saturated, (1-2.5)
			3.30	well sorted, loose, saturated, predominately medium (2.5-3) fine to medium sand,
				loose, saturated, predominately medium (3-4) same as 0-1, loose, saturated,
				predominately medium well sorted, moderately to well sorted overall.
30	35	4	200-6800/	0-1.0' Silt: Strong brown (7.5 YR 4/6), saturated, very soft, grainy to very
			16.3-17.1	very fine sand trace, slight cohesive.
				1.0-3.0' Silt: Brown (7.5 YR 4/4), medium stiff to stiff, cohesive, saturated.
				3.0-4' Silt: brown (7.5 YR 4/4), soft, cohesive, saturated (same as 0-1), grainy.
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMEWA-5 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/4/04 Drilling Completed 6/4/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device 4" Core barrel

Length and Diameter of Coring Device 10' x 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1042.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	0.5	75/7.7	0-0.5' Sand/Silt: Dark yellowish brown (10 YR 4/6), predominately fine sand, trace
				coarse, trace gravel 0.25-2" diameter angular to subrounded, loose, moist
				poorly sorted.
5	10	4	500-1200/	0-1.0' Sand: Black (10 YR 2/1), fine to coarse sand, trace silt, some gravel up to
			0.7-2.2	coarse, poorly sorted, saturated, slight odor, angular to subrounded.
				1.0-2.3' Silt/Clay: Clay strong brown (7.5 YR 4/6), silt brown (7.5 YR 4/4),
				interbedded silt/clay, medium stiff to stiff, silt fissile, clay layers varves to 1.5", silt
				layers 3/4 - 1.75", low cohesiveness for silt, saturated.
				2.3-3.6' Sand/Silt: Very fine sand with silt, well sorted more silt than sand,
				saturated, sticky, slight cohesive, some black staining.
				3.6-4.0' Sand: Fine sand, trace silt, loose, saturated black staining, well sorted.
				4.0-5.0' Silt/Sand: Same as 2-3, very fine sand with silt, more silt than sand.
10	15	5	2-480/	0-1.0' Sand/Silt: Brown (7.5 YR 4/4), very fine sand with silt, well sorted saturated,
			12-24.2	loose, liquified.
				1.0-5.0' Sand: Brown (7.5 YR 4/4), fine to medium sand, predominately medium,
				well sorted, trace silt, saturated, loose.
15	20	4.5	3000-	0-0.8' Same as above.
			27000/0-2.8	0.8-1.5' Sand: Medium to coarse sand predominately medium, with some
				gravel, subrounded to rounded 0.25-2" diameter, poorly sorted.
				1.5-3.5' Sand: Brown (7.5 YR 4/4), medium coarse sand, strong odor, well sorted
				trace fine gravel, subangular to rounded fine to 2" diameter, loose, saturated,
				strong odor.
				3.5-4.5' Same as 0.8-1.51 subrounded gravel.
20	25	5	74-514/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine to medium sand, predominately
			0-0	medium, trace coarse, loose, saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-5 Page 2 of 2

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
25	30	4	200-17000/	0-2.0' Same as above.
			0-14	2.0-3.5' Sand: Red brown (5 YR 4/4), very fine to fine sand, well sorted, trace
				coarse and fine gravel in last inch, saturated, loose.
				3.5-4.0' Grainy Silt: Brown (7.5 YR 4/4), silt with very very fine sand, low cohesive,
				saturated, very soft, gas vesicles, out gas, strong odor phenols.
30	35	5	300-23000/	0-1.0' Silt/Clay: Silt brown (7.5 YR 4/4), clay unrecoverable (liquified), very soft to
			0-0.3	stiff, silt with interbedded clay, clay layers 0.25" thick, silt layers approximately 1"
				thick, silt fissile, plastic, sticky.
				1.0-4.35' Silt: Grainy silt with trace very fine sand, soft to crumbly (4-4.5), strong
				odor, trace black staining, saturated.
				4.5-5.0' Sand: Brown (7.5 YR 5/4), very fine to fine, predominately fine, trace silt,
				well sorted, loose, saturated.

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Sample/Core Log

Boring/Well GMEWA-6 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 8/3/04 Drilling Completed 8/3/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1043.88 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Royce Brown Scott Schultz

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4	30.53-67.55/	0-2.0' Silt: Dark reddish brown (5 YR 3/4), topsoil, abundant organics and rootlets,
			104-410	trace very fine sand, silt smooth to somewhat grainy, somewhat cohesive,
				somewhat loose, wet, organic odor.
				2.0-4.0' Sand: Strong brown (7.5 YR 5/6), trace silt, very fine to fine grain, well
				sorted, loose, damp, no odor.
5	10	5	10.14-12.48/	0-3.5' Silt/Clay Interbeds: Silt is brown (7.5 YR 5/2), clay is yellowish red (5 YR 4/6),
			13-814	predominately smooth silt matrix, with many clay interbeds, approximately 0.25 to
				1.5" thick, a few thin very fine sand seams with trace medium to coarse (mm
				thick), clay is plastic with fissile appearance on broken surface and firm, overall
				cohesive, moist to wet, no odor.
				3.5-4.0' Sand and Gravel: Greenish black (1 Gley 2.5/10 Y), little silt, sand very fine
				to very coarse, predominately coarse, gravel subangular to subround up to 2",
				poorly sorted, loose, wet to saturated, organic odor.
				4.0-5.0' Silt/Clay Interbed: As above.
10	15	5	5.44-13.20/	0-3.0' Sand: Reddish brown (5 YR 4/4), fine to medium grain, trace very fine, well
			1425-15100	sorted, top 0.5' contains silt and clay, but probably from drilling, loose, grades
				down into predominately medium, saturated, odor.
				3.0-3.5' Silty Sand and Gravel: Greenish black as above, sand very fine to very
				coarse, silty, gravel angular to subround to 1.5", poorly sorted mixture, loose,
				saturated, slight odor.
				3.5-5.0' Sandy Silt: Some clay in mixture was probably layers, silt smooth, sand
				very fine, was probably interbedded, but liquefied/distorted from drilling,
				sandier 4.0-5.0' with predominately very fine, but still silty, trace black staining,
				somewhat cohesive, saturated, methane bubbles, strong odor.
15	20	5	1.88-2.92/	0-1.0' Sand: Reddish brown (5 YR 4/3), fine grain, trace medium to coarse, well
			1400-12000	sorted, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-6 Page 2 of 2

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				1.0-4.5' Sand: Reddish brown (5 YR 4/4), little gravel subangular to subround up
				to 2", sand fine to very coarse, predominately medium to coarse, moderately
				sorted, loose, saturated, odor.
				4.5-5.0' Sand: As above in 15.0-16.0, but little medium to coarse.
20	25	5	3.97-5.71/	0-5.0' Sand: As above, interbedded sands with fine grain sand and medium to
			43000-64000	coarse grain sands as above interbedded every 0.5'-1.0', 0'-1.5' medium to coarse
				grain as above, 1.5'-2.5' fine grain as above, 2.5'-3.5' medium to coarse as above,
				3.5'-5.0' fine grain as above, 4.0-5.0' medium to coarse grain as above, contacts
				appear gradational, slight grain size variations, loose, saturated, odor.
25	30	5	3.24-6.0/	0-3.5' Interbedded Sand: As above, with predominately fine, trace very fine to
			3000-50000	medium grain 0-1.0', predominately fine to medium trace coarse sand 1.0-2.5',
				predominate fine to trace very fine 2.5-3.5, saturated, odor.
				3.5-5.0' Sand/Silt/Gravel: Brown (7.5 YR 5/4), sand very fine to very coarse,
				predominately very fine, silty, gravel subangular to subround fine to 3", poorly
				sorted, low cohesion, loose, saturated, odor.
30	35	5	1.24-4.61/	0-4.0' Silt: Reddish brown (5 YR 4/4), smooth to grainy, some clay layers at 3.7
			100-10000	approximately 0.5" thick with fissle appearance, plastic, otherwise fairly uniform,
				vesicles, somewhat cohesive, strong odor, saturated.
				4.0-5.0' Sand: Reddish brown (5 YR 5/4), grading from above, little silt in places,
				very fine grain, well sorted, somewhat loose, wet to saturated, odor.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-7 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/20/04 Drilling Completed 7/20/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1042.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-2.13- -1.30/	0-3.0' Sand and Gravel: Strong brown (7.5 YR 5/6) from 0-2.0 and brown
			3.88-586	(7.5 YR 5/6) from 2.0-3.0, fill material, sand very fine to very coarse, predominately
				very fine to fine, gravel subangular to subround up to 3", poorly sorted, loose,
				no odor.
				3.0-3.3' Sand and Gravel: As above, but black, no odor.
				3.3-5.0' Sand and Gravel: Strong brown (7.5 YR 4/6), some silt, gravel angular to
				subrounded to 1", sand very fine to very coarse, poorly sorted, loose, no odor.
5	10	5	0.07/2.98	0-2.0' Sand and Gravel: Dark brown (7.5 YR 3/3), little silt, mostly gravel subround
			1186-4800	to 4", sand very fine to very coarse, predominately coarse, poorly sorted, loose,
				saturated, no odor.
				2.0-5.0' Silt/Clay Interbeds: Silt is reddish brown (5 YR 5/3) clay is yellowish red
				(5 YR 4/6), very uniform interbedded 2.0-3.5' with 1" thick clay layers and 1.5-2"
				silt layers, silt is smooth, clay is plastic, but platy appearance on broken surface, HP
				= 2.5 clay content decreases below, clay layers are varved to approxiamtely 0.2"
				thick 3.5-5.0, overall form, cohesive, moist to wet, trace black staining, odor.
10	15	5	-1.27-3.26/	0-1.5' Silt/Clay: Interbeds as above, with clay layers ranging from varved to 1.5"
			1150-7000	thick, trace black staining, cross lamination visible in silt layers, trace very fine sand
				in places, unit grades into silt layer below.
				1.5-3.0' Silt/Clay: Interbeds with some sand, unit is distorted from drilling but was
				probably finely interbedded with very fine sand lense, mostly silt layers, a few clay
				as above, layers, black staining, staturated/liquified from drilling, sticky, mushy,
				odor, grades into section below.
				3.0-5.0' Sand: Brown (7.5 YR 5/3) fine grain, trace medium to coarse, trace silt?
				possibly washed in from above, well sorted, loose, saturated, odor.
15	20	5	-0.90-1.81/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace very fine in places, very well
			3173-25700	sorted, trace fine subangular gravel in places, loose, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-7 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	-0.52-.35/	0-5.0' Sand: As above, but 3"rock at 24.5', strong odor, fine grain.
			2750-55200	
25	30	5	-0.18-4.7/	0-1.5' Sand: As above, but trace to little medium to very coarse 1.0-1.5', some
			13000-14800	gravel subangular to subround to 1.5" 1.3-1.5, strong odor.
				1.5-5.0' Silt: Reddish brown (5 YR 4/3), grainy to smooth in places, trace gravel
				subround to 2", little black staining, trace very fine sand, lightly cohesive to
				loose, wet to saturated, strong odor.
30	35	5	-1.41-3.45/	0-5.0' Silt: As above, grainy to smooth in some places, trace clay in matrix 3.0-4.0,
			2980-15600	2" thick clay lens at 4.0 reddish brown (5 YR 4/4) clay appears platy/fissile, but
				somewhat plastic, somewhat cohesive, somewhat crumbly when worked, HP = 2.5,
				silt is coarser, very grainy 4.5-5.0, overall loose to slightly cohesive, wet to
				saturated, odor.
				EOB @ 35'.

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Sample/Core Log

Boring/Well GMEWA-8 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/20/04 Drilling Completed 7/20/04

Total Depth Drilled 55 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1041.58 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	1.64-3.05/	0-1.5' Fill: Crushed slate, road material.
			4.32-6.52	1.5-5.0' Silt and Sand: Dark yellowish brown (10 YR 4/6), trace gravel subround
				to 1.5", organics, rootlets, topsoil, very fine sand and grainy silt, well sorted,
				uniform, loose, moist, organic odor.
5	10	5	1.64-82/	0-1.5' Sand/Silt/Clay/Gravel: Dark greenish red (1 Gley 3/1), sand predominately very
			12.67-101	fine to fine, trace medium to coarse, gravel subangular to subround to 1.5", silt
				grainy to smooth, clayey, sticky, poorly sorted mixture, somewhat cohesive, wet,
				odor.
				1.5-5.0' Silt/Clay: Interbeds silt is brown (7.5 YR 3/3), clay is yellowish red (5 YR 4/2),
				1.5-2.2 is silt dominated with about 5 clay layers 0.2" thick, 2.2-5.0 is clay
				dominated with uniform layers approximately 1.2" thick sepected by approximately
				0.5-1" silt layers, silt is smooth, possibly clayey, clay has fissle appearance on broken
				surface, but plastic, cohesive, HP = 1.5, nice interbedding, overall firm and
				cohesive, moist, slight odor.
10	15	5	1.03-1.44/	0-1.5' Silt/Clay: Interbeds as above, but less clay content with clay layers varved to
			45.6-720	0.5".
				1.5-3.0' Sand/Silt/Clay: Interbedded brown (7.5 YR 4/4), predominately very fine to
				fine sand with silt in matrix, but a few distinguishable smooth silt layers 0.5" thick,
				1mm thick clay layer at 2.8 (clay appears as above), slight coarsening of sand 1.5-3.0
				grading into unit below, trace clay in matrix, trace black staining and vesicles,
				distorted from drilling, but probably interbedded, loose to slightly cohesive
				overall, saturated, odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/3), predominately fine grain, trace silt, moderately
				to well sorted, trace to little very fine, trace coarse, trace fine subround gravel,
				loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-8 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
15	20	5	1.25-1.36/	0-2.0' Slough.
			402-17400	2.0-5.0' Sand: Brown (7.5 YR 4/3), trace fine subangular to subround gravel, very
				fine to fine grain, well sorted, loose, saturated, odor.
20	25	5	2.95-3.55/	0-5.0' Sand: As above, predominately very fine to fine, but some coarser areas,
			14700-84300	coarser 1.5-2.5 with predominately medium, some coarse, trace fine gravel, some
				very fine to fine, poorly sorted, also some coarser 4.0-4.5', saturated, odor.
25	30	5	2.44-4.12/	0-5.0' Sand: Brown (7.5 YR 4/3) fine grain, trace fine subround gravel 0-0.5, well
			12800-84300	sorted, uniform sand, loose, strong odor, wet to saturated.
30	35	5	1.60-324/	0-5.0' Sand: As above, but grades into silty below 3.0, silt nodules and silt in matrix
			5420-60400	below 3.0, also trace medium to coarse 3.0-5.0, more silt toward 5.0, loose,
				saturated, strong odor.
35	40	5.0	1.39-2.3/	0-1.5' Slough.
			14-354	1.5-5.0' Sand: Brown (7.5 YR 4/3), very fine grain, very well sorted, uniform, loose,
				wet to saturated, grades down section into very very fine sand, borderline very
				grainy silt size, no odor.
40	45	5	1.61-2.02/	0-5.0' Sand/Silt: Brown (7.5 YR 4/3), as above, borderline very very fine sand to
			4.77-5.93	very grainy silt, very well sorted, uniform, loose, wet, no odor.
45	50	5	0.92-1.94/	0-5.0' Silt: As above in 40-45', reddish brown (5 YR 4/4), but slightly finer, very
			2.71-6.89	grainy silt, slightly cohesiveness, uniform, saturated, no odor.
50	55	5	1.72-4.24/	0-5.0' Silt: As above, continual fining down section, silt is smooth at 5.0, becomes
			6.88-15.25	slightly cohesive, but still loose and crumbly when broken, moist, no odor.

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Sample/Core Log

Boring/Well GMEWA-9 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/19/04 Drilling Completed 7/19/04

Total Depth Drilled 75 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1040.5 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Helper Royce Brown Scott Schultz

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	109.7-5253	0-1.5' Fill: Crushed slate.
				1.5-4.0' Silt: Very dark grayish brown (10 YR 5/2), with some yellowish brown
				mottling, topsoil with organics, rootlets, trace very fine sand, smooth, soft,
				cohesive, wet, no odor.
				4.0-5.0' Sand: Gray (10 YR 5/1), some silt, little fine gravel, sand predominately
				very fine, little fine to coarse, moderately sorted, dark greenish gray staining 4.0-
				4.2, loose to slightly cohesive, wet, odor.
5	10	5	2953-	0-1.0' Sand: As above, with fine gravel, very fine grading into coarser sand unit
			50600	below.
				1.0-5.0' Sand and Gravel: Brown (7.5 YR 4/2), silty, but possibly washed in from
				above, sand very fine to very coarse, gravel subround to approximately 1.5", poorly
				sorted mixture, less gravel 4.5-5.0', loose, saturated, odor.
10	15	5	5799-	0-2.5' Sandy Silt and Clay: Silt/sand matrix is brown (7.5 YR 5/3), clay interbeds are
			120,300	yellowish red (5 YR 5/6), silt grainy to smooth, clay layers distorted from drilling
				but appears vared 1" thickness, sand very fine to medium, trace coarse to
				very coarse and fine gravel, possible from above, clay appears fissle/platy yet
				plastic, somewhat cohesive, sticky, saturated, odor, grades into sand unit below.
				2.5-5.0' Sand: Reddish gray (5 YR 5/2), silty 2.5-3.0, then pretty clean below,
				predominately fine to medium grain, trace to little very fine and coarse,
				predominately coarse 3.5-4.0, moderately well sorted, loose, saturated, odor.
15	20	5	8.6-9.2/	0-1.0' Sand: Brown (7.5 YR 4/4) trace silt, little subround gravel to 1" especially
			1110-25000	1.5-2.0', sand predominately fine, some medium in places, trace very fine,
				moderately well sorted, loose, saturated from drilling fluid, slight odor
				1.0-5.0' Sand: Brown as above very fine to fine grain, trace medium to coarse, well
				sorted, loose, saturated, uniform, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-9 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	5.88-7.34/	0-5.0' Sand: Brown (7.5 YR 5/3), trace subround gravel to 1", predominately fine,
			23700-42300	but little medium in places, trace very fine to coarse, slightly coarser 1.0-1.5 and 3.0-
				5.0 with predominately fine to medium, predominately medium grain 4.5-5.0,
				overall uniform sample with some grain, size variation in places, loose, wet, odor.
25	30	5	8.66-10/	0-1.5' Sand: Brown (7.5 YR 4/4), fine to very coarse, predominately medium, poorly
			8200-24000	sorted, little fine gravel subround, loose, wet, odor.
				1.5-4.0' Sand: Brown (7.5 YR 5/3), trace to fine gravel, predominately fine, trace
				very fine, trace coarse, moderately to well sorted, loose, wet, odor.
				4.0-5.0' Sand: As above in 0-1.5.
30	35	5	7.88-11.98/	0-5.0' Sand: Brown (7.5 YR 5/3), predominately fine to medium grain, trace very
			8400-21000	fine, trace coarse, trace fine gravel subround to approximately 0.5", predominately
				coarse 0-0.3 and coarse seam 1" thick and 4.0, moderately well sorted, loose, odor.
35	40	5	1.94-7.40/	0-1.5' Sand: Brown (7.5 YR 4/2), predominately medium to coarse, little to some
			1180-10100	fine, trace very coarse, trace gravel angular to subround up to 1", coarse gravelly
				layer 1.3-1.5 with subround to round gravel up to 2.0, moderately well sorted,
				loose, wet, odor, grades into unit below.
				1.5-5.0' Sand: Brown (7.5 YR 5/3), very very fine sand, approaches grainy silt,
				medium size, trace very fine sand in places, uniform, well sorted, loose, wet, odor.
40	45	5	1.56-1.97/	0-4.5' Sand: As above trace black staining.
			2.47-458	4.5-5.0' Silt: Reddish brown (5 YR 4/4), very grainy, uniform, loose, wet, slight
				odor.
45	50	5	1.25-3.27/	0-5.0 Silt: As above, very grainy, uniform, saturated drilling fluid, slight odor.
			3.27-6.41	
50	55	5	1.64-8.67/	0-5.0' Silt: As above, reddish brown (5 YR 4/3), but grading into finer/smoother silt
			2.16-16.67	trace, also trace clay in matrix below 2.0, silt breaks fissily, loose to somewhat
				cohesive, some vesicles, saturated, trace black staining, odor, trace very fine sand
				3.0-4.5, crumbly and dry 3.0-4.5.
55	60	5	1.09-11.99/	0-5.0' Sand/Silt: Reddish brown (5 YR 4/4) very grainy silt, very very fine sand,
			2.45-20.16	borderline, uniform, saturated from drilling fluid, vesicles, slightly cohesive to
				loose, no odor, slight coarsening toward very fine sand 4.0-5.0.
60	65	5	0-1.08/	0-5.0' Sand/Silt: Brown (7.5 YR 4/4) as above, but somewhat coarser, much of it
			2.07-4.77	is very fine sand, but still close to grainy silt size, wet, no odor.
65	70	5	1.35-3.05/	0-5.0' Sand/Silt: As above, but grades down section into predominately very fine
			3.19-7.19	sand at 5.0, well sorted, loose, silty, same material as above, but slight coarsing
				down section, wet, odor.
70	75	5	2.20-13.4/	0-5.0' Sand/Silt: As above, slightly finer overall then 65-70, moist, loose to crumbly,
			4.76-23.66	trace black staining, no odor.
				EOB @ 75 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-10 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/13/04 Drilling Completed 7/14/04

Total Depth Drilled 56 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1041.42 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	PID/FID (ppm)	Sample/Core Description
0	5	2	0.82-3.05/	0-2.0' Silt: Dark brown (7.5YR 3/3), smooth, very soft, organic, rootlets, uniform,
			47-149	moist.
5	10	5	18.89-98.65/	0-1.0' Silt: As above.
			5/61	1.0-1.5' Silt: Dark greenish gray (1 Gley 4/1), trace fine sand, trace clay, very soft,
				sticky, black speckles uniformly spaced approximately 0.02 feet average size, heavy
				organic odor, saturated.
				1.5-3.25' Sand/Silt: Dark greenish gray (1 Gley 3/1), very fine sand, trace fine gravel,
				very soft to loose, iron staining, heavy organic odor, saturated.
				3.25-3.5' Sand/Gravel: Brown (7.5 YR 4/2), fine to coarse sand, subrounded
				gravel up to 0.5 inches, little silt, poorly sorted, loose, strong odor, saturated.
				3.5-5.0' Silt/Sand: Brown (5 YR 5/3), very fine sand, trace white shells, well sorted,
				loose, strong odor, saturated.
10	15	5	961-39500/	0-0.5' Sand/Gravel: Same as 8.25-8.50.
			0-8	0.5-1.5' Sand: Brown (5 YR 5/3), very fine to medium sand, mostly medium, trace
				silt, well sorted, loose, strong odor, saturated.
				1.5-2.0' Silt/Sand: Brown (7.5 YR 5/3), very fine sand, trace subrounded gravel up
				to 3 inches, very soft, liquified spots, strong odor, saturated.
				2.0-3.0' Silt/Clay: Brown (5 YR 4/3), likely interbedded, smooth to grainy, sticky,
				plastic, uniform, strong odor, saturated.
				3.0-5.0' Sand: Brown (5 YR 5/3), fine to coarse sand, mostly fine, well sorted, loose,
				strong odor, methane bubbles, saturated.
15	20	5	760-12100/	0-3.0' Sand/Gravel: Dark brown (7.5 YR 3/4), fine to coarse sand, mostly coarse,
			0-1.0	subrounded gravel up to 2 inches, grades to silt/fine sand/gravel from 1.5-3 feet,
				poorly sorted, loose, slight odor, saturated.
				3.0-5.0' Sand: Brown (7.5 YR 4/3), very fine to medium sand, mostly fine sand,
				well sorted, loose, uniform, strong odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-10 Page 2 of 2

Prepared by Toni Schoen/Paul Leanker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	PID/FID (ppm)	Sample/Core Description
20	25	5	9950-18500/	0-3.0' Sand: As above.
			0-1.47	3.0-5.0' Sand: Brown (7.5 YR 4/3), very fine to medium sand, mostly fine sand,
				trace fine to medium gravel, moderately sorted, loose, strong odor, saturated.
25	30	5	2640-15000/	0-0.5' Sand: As above.
			0-2.11	0.5-5.0' Sand: Brown (7.5 YR 4/3), very fine to medium sand, mostly fine sand
				from 0.5 to 2 feet, mostly fine/medium from 2-5 feet, well sorted, loose, strong
				odor, saturated.
30	35	5	3802-24500/	0-2.5' Sand: Dark brown (7.5 YR 3/3), very fine to coarse sand, mostly medium
			2.01-3.78	sand, well sorted, loose, strong odor, saturated.
				2.5-5.0' Sand: Dark brown (7.5 YR 3/3), very fine to medium sand, mostly fine
				sand, trace coarse sand, well sorted, loose, strong odor, saturated.
35	40	5	40.01-15500/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine to coarse sand, mostly medium sand,
			0.22-0.78	trace subrounded gravel, moderately sorted, loose, saturated.
40	45	5	7307-36500/	0-2.0' Sand: As above.
			0-1.27	2.0-4.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, mostly fine sand, well
				sorted, lose, strong odor, saturated.
				4.0-4.5' Sand/Gravel: Dark brown (7.5 YR 3/4), very fine to coarse sand, mostly fine
				sand, subrounded fine to medium gravel, poorly sorted, loose, strong odor,
				saturated.
				4.5-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, well sorted, loose, strong
				odor, saturated.
45	50	5	355-6677/	0-1.0' Sand: As above, but grades to little to some coarse sand and gravel.
			0-0.22	1.0-3.0' Sand: Brown (7.5 YR 4/3), very fine sand, well sorted, loose, strong odor,
				saturated.
				3.0-5.0' Silt: Reddish brown (5 YR 4/4), smooth to grainy, grainy from 3-4 feet,
				smooth from 4-5 feet, soft to crumbly, somewhat firm, uniform, saturated.
50	55	5	9-96.8/	0-4.0' Silt: Reddish brown (5 YR 4/4), smooth, soft to crumbly, somewhat firm,
			0-0.48	slight odor, uniform, saturated.
				4.0-5.0' Silt: Dark reddish brown (5 YR 3/2), little to some subangular to
				subrounded gravel up to 1 inch, hard, crumbles when worked much, poorly
				sorted, till, saturated.
55	56	1	--	0-0.5' Silt - Till: As above.
				0.5-1.0' Bedrock: Phyllite.
				EOB @ 56'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-11 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/13/04 Drilling Completed 7/13/04

Total Depth Drilled 42 Feet Hole Diameter 12 inches

Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20'

Sampling Interval continuous feet

Land-Surface Elev. 1043.25 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Paul Lenaker

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	3	0.38-3.03/	0-0.25' Fill: Silt, Michgamma slate.
			0.62-1.52	0.25-1.0' Silt: Dark brown (7.5 YR 3/3), smooth, rootlets, wire, soft to crumbly,
				organic, moist.
				1.0-1.5' Silt/Sand: Dark brown (7.5 YR 3/4), very fine sand, loose, uniform, moist.
				1.5-2.5' Silt: Same as 0.25-1.
				2.5-3.0' Silt/Sand: Strong brown (7.5 YR 5/6), very fine sand, loose, uniform, moist.
5	10	5	5.02-104/	0-1.0' Silt: Dark brown (7.5 YR 3/3), little clay, trace roots, very soft, uniform,
			0-0.57	plastic, no odor, saturated.
				1.0-2.0' Silt: Strong brown (7.5 YR 5/6), trace very fine sand, trace clay, calico mix
				of yellow and brown, very soft, slightly sticky, no odor, saturated.
				2.0-3.0' Silt: Dark greenish gray (2 Gley 3/1)- 2-2.75 feet, dark greenish gray
				(1 Gley 4/1)- 2.75-3 feet, trace to little very fine sand, trace subrounded gravel,
				grades to very fine sand with silt from 2.75-3.0 feet, breaks into fine crumbs, very
				soft, sticky, strong organic odor, saturated.
				3.0-5.0' Silt/Clay: Yellowish red (5 YR 4/6)-clay, brown (7.5 YR 4/3)-silt, interbedded,
				soft to stiff, fissily, crumbly when worked, platy clay, plastic clay, clay-varve to 1 inch,
				silt-1-2.5 inches, closer together from 4-5 feet, saturated.
10	15	5	680-1050/	0-2.0' Silt/Clay: As above, clay- 1 to 2 inches, silt-0.5 to 1 inch, uniformly layered,
			0-5.01	clay layers predominate.
				2.0-3.0' Silt: Brown (7.5 YR 4/4), little to some clay, clay melded in from drilling,
				slightly fissily, stiff to crumbly, strong organic odor, saturated.
				3.0-5.0' Silt: Brown (7.5 YR 4/4), trace clay, smooth to grainy silt, somewhat
				plastic, sticky in areas, fairly uniform, jumbled from drilling possible-don't see clay
				layers, soft, liquified where more grainy, trace black staining, organic odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-11 Page 2 of 2

Prepared by Toni Schoen/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
15	20	5	1800-11000/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine to medium sand, mostly fine sand, trace
			0-0.24	subrounded coarse sand and gravel from 4-4.5 feet, well sorted, loose, strong odor,
				saturated.
20	25	5	1685-20100/	0-4.0' Sand: Brown (7.5 YR 4/3), very fine to meidum sand, mostly fine sand,
			0-1.10	little coarse sand from 3.5-5 feet, well sorted, loose, strong odor, saturated.
				4.0-5.0' Sand: Brown (7.5 YR 4/3), fine to coarse sand, mostly medium, little
				coarse sand, moderately sorted, loose, strong odor, saturated.
30	35	5	4071-10100/	0-5.0' Sand: As above.
			0-1.51	
35	40	5	1050-27800/	0-2.0' Sand: As above, dark brown (7.5 YR 3/4).
			0.48-1.05	2.0-4.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, mostly fine sand, well
				sorted, loose, strong odor, saturated.
				4.0-4.5' Sand: Dark brown (7.5 YR 3/4), very fine to coarse sand, mostly medium
				sand, little subrounded gravel up to 2 inches, poorly sorted, loose, strong odor,
				saturated.
				4.5-5.0' Sand/Silt: Brown (7.5 YR 4/4), very fine to coarse sand, mostly fine sand,
				poorly sorted, loose, strong odor, saturated.
40	42	2	1545-5210/	0-1.0' Weathered Bedrock: Greenish gray (2 Gley 5/1), silty, crumbly, cracked rock,
			0.47-1.01	angular from drilling, slightly plastic, soft, strong odor, saturated.
				1.0-2.0' Bedrock: Phyllite.
				EOB @ 42'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-12 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/12/04 Drilling Completed 7/12/04

Total Depth Drilled 67 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1044.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John W. Helper Scott/Royce

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4.5	1.87-4.50/	0-1.0' Fill: Slate pieces/silt/sand.
			5.7-16.8	1.0-2.0' Silt: Dark reddish brown (5 YR 4/4) topsoil, organic rich silt, grainy, rootlets,
				etc., loose, crumbly, moist, no odor.
				2.0-4.0' Silt: Topsoil as above, but wet and darker in color, very dusky red
				(2.5 YR 2.5/2)
				4.0-4.5' Sand: Yellowish brown (10 YR 5/8) very fine, trace fine, well sorted,
				loose, trace subround fine gravel, no odor, moist.
5	10	5	82-1.92/	0-2.0' Silty Sand: Dark reddish brown (5 YR 3/4), grainy silt, some gravel subround
			2.5-7.8	to 3.5", sand predominately very fine, but little fine to very coarse, poorly sorted,
				slightly cohesive, loose, wet, no odor.
				2.0-5.0' Silt: With some clay. Silt dark yellowish brown (10 YR 4/6), trace very fine
				to fine sand throughout, much clay layering approximately 2" thick 2.0-3.0, clay
				varves throughout, little clay in matrix, silt is predominately smooth, soft, clay is
				yellowish red (5 YR 4/6) plastic, trace fine gravel, subround throughout, especially
				2.0-2.5', 6" thick sand seam 4.0-4.5 with silty sand as in 0-2.0 above, cohesive
				overall, soft, mushy, wet to saturated, no odor.
10	15	5	0.48-1.84/	0-1.0' Silty Sand: As above, with some fine subround gravel, soft, grading into siltier
			2-5.5	at 1.0, grades into unit below.
				1.0-5.0' Silt/Clay Interbeds: Silt dark reddish brown (10 YR 4/4), clay is yellowish
				red (5 YR 4/6), trace very fine sand, clay layers vaved to 1" but distorted from
				drilling, silt is majority of matrix with approximately 1-4" between clay layers, silt
				grainy to smooth, breaks, fissile, overall somewhat cohesive, sticky, clay plastic, but
				fissile appearance, somewhat crumbly in places, fairly uniform layering, wet, no odor.
15	20	5	1.54-4.09/	0-5.0' Sand: Reddish brown (5 YR 4/4), fining from predominately fine to medium
			4914-10200	at 0.0 to very fine to fine at 5.0, gradual fining down section, trace subround
				gravel to 1" 0-3.0, trace medium throughout, moderate to well sorted, loose,
				saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-12 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	2.44-6.71/	0-5.0' Sand: Reddish brown (5 YR 4/4), predominately fine, slight coursing down
			2045-12000	section, trace subround gravel up to 0.5", trace medium to very coarse, some
				medium 3.5-5.0', loose, wet, odor.
25	30	3	2.22-4.78/	0-5.0' Sand: As above, predominately fine, trace gravel as above, some medium,
			10000-54000	trace very fine and coarse, coarser layer at 4.0', 4" thick, loose, saturated, odor.
30	35	5	2.77-5.0/	0-5.0' Sand: As above, predominately fine, but coarser in a few places where
			9000-40000	predominately medium, moderately well sorted, loose, odor.
35	40	5	-8.5-1.3/	0-3.0' Sand: As above, fine to medium, trace very fine, trace coarse to very coarse,
			512-1845	trace subangular to subround gravel to 0.5", moderately sorted, loose, saturated
				from drilling fluid, odor.
				3.0-5.0' Silt: Reddish brown (5 YR 4/4), trace coarse sand, distorted from drilling
				and saturated/liquefied from drilling fluid, mushy, grainy to smooth, slick, looks
				uniform, odor.
40	45	5	.92-1.57/	0-5.0' Silt/Sand: Reddish brown (5 YR 5/4) borderline very grainy silt/very fine
			1428-10200	sand, trace to little very fine sand, uniform sample, except wet to saturated
				0-3.5', and damp to moist 3.5-5.0', also very slight to cohesive 0-3.5' and more
				loose to crumbly 3.5-5.0', could have been fine interbedding of very fine sand
				and silt, vesicles 0-3.5', odor.
45	47	2	-8.6-2.04/	0-1.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/3), clay is yellowish red, as above,
			31-102	layers are disturbed from drilling, but appear to be varved to approximately 0.5"
				in thickness, clay is plastic, somewhat cohesive, moist, slight odor.
				1.0-2.0' Pulivesed rock, greenish gray glay (5 GY 5/1) some large pieces up to 3",
				subangular, phyllite, bedrock pieces, hard drilling, white veins, vertical foliation,
				dense, dry, no odor.
47	52	5		0-5.0' Bedrock core. Solid core of phyllite with many white veins and vertical
				folation, dense, hard, greenish gray fracture along folation lines.
52	67	15		0-15.0' Bedrock: As above.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-13 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/22/04 Drilling Completed 7/22/04

Total Depth Drilled 95 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continued feet

Land-Surface Elev. 1045.04 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.5	-0.56 - 7.20/	0-0.2 Crushed Slate (fill).
			121-5.11	0.2-2.0' Silt: Dark brown (7.5 YR 3/4), grainy to smooth, somewhat crumbly to
				somewhat cohesive, trace to little organics (roots), moist to dry, no odor.
				2.0-2.5' Sandy Silt: Strong brown (7.5 YR 5/6), silt is grainy to smooth, sand very
				fine to medium, predominantly fine grain, loose, moist, trace gravel up to 3/4"
				angular to subround, no odor.
5	10	2.5	-0.74-0.15/	0-2.0' Slough. Includes 0.2-2 and 2-2.5 above but destroyed by drilling.
			5.67-15.78	2.0-2.5' Silt/Clay: Interbeds, silt is brown (2.5 YR 5/4), clay yellowish red (5 YR 4/6),
				silt is smooth to somewhat grainy, somewhat crumbly to somewhat cohesive,
				clay is platy and fissile in appearance but somewhat plasty and cohesive when
				worked, interbeds up to 3/4" thick with clay contacts, moist, no odor.
10	15	5	-0.97 -0.03/	0-1.0' Silt: Brown (7.5 YR 5/3), grainy to somewhat smooth, somewhat crumbly
			90.78-1226	to somewhat cohesive, some clay in places (likely clay interbeds) where clay,
				silt somewhat sticky, moist to wet, no odor.
				1.0-2.0' Silt/Clay: Interbeds, as above, but mostly clay.
				2.0-5.0' Silt/Clay: Interbeds as above but predominately silt interbeds, fine to
				medium 4-4.3 very fine sand interbed, (silty sand), sticky, somewhat cohesive, wet,
				color is same as silt, trace odor.
15	20	5	-1.27 -1.88./	0-2.5' Silt/Clay: Interbeds, as above, includes fine gravel and very fine sand,
			324-2184	predominately silt.
				2.5-3.5' Sand: Brown (7.5 YR 5/3) fine to medium grain, sorted, loose wet, odor.
				3.5-5.0' Sand: As above, trace coarse sand, trace gravel up to 3/4" subround to
				subangular.
20	25	5	-0.05-0.54/	0-1.0' Sand: As above grading from 0-.5' into below section.
			4005-15500	1.0-5.0' Sand: Brown (7.5 YR 5/3) fine grain, trace to little fine, well sorted, loose,
				wet, strong odor at 4.5-5, trace medium to very coarse sand and gravel up 1/2"
				subround to subangular.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-13

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
25	30	5	-0.17- -0.51/	0-1.0' Sand: As above.
			5745-26700	1.0-2.5' Sand: Brown (7.5 YR 5/3), fine to medium grain, somewhat saturated,
				trace very fine to coarse, trace gravel to 1/2" subround to subangular, loose, wet,
				strong odor.
				2.5-5.0' Sand: Color as above, fine grain, trace medium grain, well sorted, loose,
				wet, slight odor.
30	35	5	-1.07- -0.82/	0-0.5' Sand: Fine grain, as above, trace to little medium grain also with trace
			18900-	coarse sand and trace gravel to 1/2" subround to subangular.
			>151600	
35	40	5	-1.06- -0.06/	0-1.0' Sand: As above, predominately ???
			347-3452	1.0-2.0' Silt/Sand/Gravel: reddish brown (5 YR 4/3), soft to grainy, sand is very fine
				to very coarse, gravel up to 3" round to subangular, poorly sorted, loose to
				somewhat cohesive, odor, possibly destroyed by drilling.
				2.0-5.0' Silt: Reddish brown (5 YR 4/4), grainy to somewhat smooth, somewhat
				cohesive to somewhat sticky, slightly bulky, saturated/liquefied from drilling fluid,
				strong odor.
40	45	5	1.06- 4.24/	0-2.0' Silt: As above, clay layer reddish brown (5 YR 5/4), approximately 1" thick
			5455-12300	platy to fissile to in appearance, crumbly at first but plastic to cohesive when
				worked.
				2.0-5.0' Silt: Color as above, grainy, uniform, somewhat crumbly to somewhat
				loose, wet, strong odor.
45	50	5	1.10-9.24/	0-2.0' Silt: As above.
			5455-14700	2.0-5.0' Silt/Sand: Color as above, grainy silt/very fine sand borderline
				possibly interbeded with areas of grainy silt (finer as above), trace black staining
				moist to wet, strong odor.
50	55	5	0.36-2.56/	0-5.0' Silt/Sand: As above, at 4.5 smooth silt nodules/layer approximately 1"
			9003-21700	thick, staining more abundant then below.
55	60	5	-2.24- -1.05/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy, smooth in places, somewhat crumbly to
			157-754	somewhat sticky to somewhat cohesive, vesicles, uniform, probably interbedded
				grainy/smooth, wet, strong odor.
60	65	6	-2.06- -1.64/	0-5.0' Silt: As above.
			1878-3978	
65	70	5	-120- -0.07/	0-5.0' Silt: As above approaches very fine sand borderline in places (65-66' to 68-
			7157-27400	69').
70	75	5	-1.39-2.78/	0-5.0' Silt: As above approaches very fine and at 71-71.5 and 73-74'.
			1003-41900	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-13 Page 3 of 3

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
75	80	5	-2.25- -224/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth, cohesive and somewhat plastic, trace
			2.43-3.33	clay, vesicular, wet, somewhat sticky odor.
80	85	5	2.25- -1.98/	0-5.0' Silt: As above at 1.5' thin clay layer yellowish red (5 YR 4/6), platy/fissile in
			4.13-8.91	appearance, cohesive to somewhat plastic when worked followed by very fine
				sand layer approximately 3" thick, distorted by drilling and somewhat loose, wet,
				no odor, after sand is silt as above.
85	90	5	-1.51- -1.19/	0-2.0' Silt: As above.
			160-1009	2.0-5.0' Silt/Sand: Interbeds, silt as above sand brown (7.5 YR 5/3) very fine grain,
				well sorted, loose, interbeds up to 1 to 6" thick, but likley distorted by drilling.
90	95	5	-0.77-0.77/	0-5.0' Silt/Sand: Interbeds, as above with a clay yellowish red (5 YR 4/6), as above,
			169-1672	interbeded at 92' (a 1/2" thick).
				EOB @ 95'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-14 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/27/04 Drilling Completed 8/2/04

Total Depth Drilled 65 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1047.01 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Jill Flater/Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.5	-1.01-4.8/	0-0.5' Slate Flakes (fill).
			2.49-14.49	0.5-2.5' Silt: Very dark brown (7.5 YR 2.5/3), grainy to smooth silt, organic rich,
				roots, organic, slate flakes, trace gravel 4" gravel at bottom of bag, somewhat
				loose, moist.
5	10	5	-0.66-0.15/	0-1.0' Silt: Dark brown (7.5 YR 3/4), organic rich, trace to some sand (fine to
			2.52-7.58	coarse), trace gravel up to 1" subangular to subround, loose, moist to dry, no
				odor, grades into below.
				1.0-5.0' Sand: Brown (10 YR 4/3), fine to very coarse sand, predominately fine,
				little gravel up to 2" subround to subangular, some silt, loose, moist to dry, no
				odor (at 10' predominately silty very fine to fine sand, dry).
10	15	0	--	No recovery.
15	20	3	-2.54- -1.55/	0-1.0' Slough.
			12.5-6570	1.0-2.0' Silt: Brown (7.5 4/3), sticky, cohesion, smooth, uniform clay layers <25"
				thick, yellow red (5 YR 4/6), cohesive, somewhat plastic, saturated, slight odor.
				2.0-3.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, trace medium, trace
				coarse, saturated, some silt, sorted, somewhat loose, slight odor.
20	25	5	270- -2.38/	0-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, predominately fine, trace
			120-6800	to little medium to coarse, trace gravel up to 3", piece 1-3" gravel at bottom of bag
				subangular to subround, saturated, somewhat loose, slight odor.
				Sample either fell out of core barrel or pushed into formation, this description
				is the second run of core barrel and represents 15'; second run, catcher was used.
35	40	5	-2.52- -2.38/	0-1.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, predominately fine,
			6000-	well sorted, trace gravel up to 1.5" subround to subangular, saturated, loose,
			>151600	mild odor.
				1.0-3.5' Sand: Brown (7.5 YR 4/3), very fine to medium sand, predominately fine
				to medium, trace coarse, sorted, loose, silty in places, saturated mild odor,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-14 Page 2 of 2

Prepared by Jill Flater/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				grading to coarser.
				3.5-4.5' Sand: Dark brown (7.5 YR 3/2), fine to very coarse, predominately medium
				to coarse, little to some gravel up to 2.5" subround to subangular, loose,
				saturated.
				4.5-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, well sorted, somewhat
				loose, saturated, trace to little silt, strong odor.
40	45	5	-2.3- -2.15/	0-5.0' Sand: As above, very fine to fine sand, slightly fines down section.
			17500-	
			>88900	
45	50	5	-2.6 - -2.2/	0-5.0' Sand: As above, very fine to fine sand, trace medium to coarse sand, strong
			21100-	odor.
			>151600	
50	55	3	-2.2- -2.1/	0-1.0' Sand: As above, very fine to fine sand, sharp contact with below.
			36500-67300	1.0-3.0' Silt: Red brown (5 YR 4/3), grainy silt, uniform, soft, saturated somewhat
				loose, very well sorted, approaching very fine sand, strong odor.
55	60	5	-3.1- - 2.6/	0-5.0' Silt: As above, grainy, few layers/lenses of smooth to clayey silt, same color
			2715-44000	as main silt.
60	65	5	-2.8-3.0/	0-3.0' Silt: Red brown (5 YR 4/3), smooth to somewhat grainy, likely interbedded,
			1126-34000	slightly sticky to crumbly.
				3.0-4.0' Sand: Brown (7.5 YR 5/4), very fine to fine sand, well sorted, loose, wet
				strong odor, grading over 0.5' to below.
				4.0-5.0' Silt: Red brown (5 YR 5/4), grainy silt approaching very fine sand,
				somewhat loose, uniform, wet, strong odor.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-15 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/21/04 Drilling Completed 7/21/04

Total Depth Drilled 75 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4	9.59-34.17/	0-1.0' Crushed slate, fill.
			21.44-113	1.0-3.0' Silt: Dark brown (7.5 YR 3/4), topsoil, grainy to smooth, rootlets, organics,
				loose, crumbly, moist, organic odor.
				3.0-5.0' Sand: Strong brown (7.5 YR 4/6), some to much gravel subangular to
				subround to 1.0", sand very fine to very coarse, predominately fine, moderately to
				well sorted, loose, moist, no odor.
5	10	4	1.48-4.60/	0-0.5' Sand: As above grades into unit below.
			7.6-32.2	0.5-2.0' Sand: Light brown (7.5 YR 6/4), very fine to fine, predominately fine, trace
				subround gravel to 1", well sorted, loose, damp, no odor.
				2.0-4.0' Sand and Gravel: Dark brown (7.5 YR 3/4), silty, sand very fine to very
				coarse, gravel angular to subround to 2", poorly sorted mixture, loose, moist, no
				odor.
10	15	5	0-5.79/	0-2.5' Sand and Gravel: As above grading into unit below.
			6.21-56	2.5-5.0' Silt/Clay interbed: Strong brown (7.5 YR 4/6), sample destroyed by drilling,
				pushed 4" rock in core barrel tip, but appears to have been silt/clay interbeds color
				overall as above, clay is yellowish red (5 YR 5/6), plastic, platy appearance, silt grainy
				few clay layers visible vared to 0.5", saturated, liquifed and distorted from drilling,
				to smooth, mostly silt, but a also contains slough from unit above, no odor.
15	20	5	-0.06-1.76/	0-5.0' Sand: brown (7.5 YR 4/3), fine to medium grain, predominately fine, trace
			2206-7574	coarse, grace fine gravel subround, well sorted, loose, wet to saturated, odor.
20	25	5	0-1.61/	0-5.0' Sand: Color as above, fine grain, very well sorted, uniform, clean, loose,
			2800-17000	saturated, odor.
25	30	5	0.85-3.35/	0-5.0' Sand: Color as a above, fine grain, trace medium to very coarse, trace fine
			721-12400	gravel subangular to subround to 0.5", well sorted, loose, saturated, odor.
30	35	5	12-3.29/	0-1.0' Sand: As above, coarsening into unit below.
			31000-48000	1.0-3.5' Sand: Brown (7.5 YR 4/3), medium grain, some fine, some coarse, trace
				fine gravel subround, moderately sorted, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-15 Page 2 of 2

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.5-5.0' Sand: Brown (7.5 YR 5/3), predominately very fine to fine little medium
				grain, some silt, trace gravel angular to subround to 1", 1-2" rods at 5.0,
				somewhat sorted, loose to very slightly cohesive, saturated, odor.
35	40	5	1.51-1.67/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine grain, some fine grain in places, well
			4000-22900	sorted, uniform, loose, saturated, odor.
40	45	5	0-2.4/	0-5.0' Sand: As above.
			4998-18800	
45	50	5	1.94-2.64/	0-5.0' Sand: As above, but slightly coarse with little fine grain throughout, still
			24300-	predominately very fine, trace medium to coarse, loose, saturated, well sorted, odor.
			>151600	
50	55	5	0.83-1.71/	0-5.0' Sand: As above in 45-50, slightly fine 3.5-5.0 with all very fine sand,
			17800-	saturated, odor.
			>151600	
55	60	5	0.8-1.2/	0-5.0' Sand: As above, very fine grain, well sorted, trace fine, loose, saturated
			891-20700	odor.
60	65	5	-1.4-5.05/	0-1.0' Sand: As above, with some silt nodules, smooth silt, otherwise as above,
			151-5941	very fine grain.
				1.0-5.0' Silt: Brown (7.5 YR 4/4), smooth 1.0-3.0, grainy 3.0-5.0, trace black
				staining, vesicles, grain is with trace very fine sand below 3.0, liquefied/distorted
				from drilling, sticky, somewhat cohesive, saturated, odor.
65	70	5	-0.5-4.24/	0-5.0' Silt: Brown as above, very grainy, trace black staining coarsens 3.0-5.0
			1633-13200	approaching very fine sand, trace very fine sand 3.0-5.0, loose, possibly interbedded,
				wet, odor.
70	75	5	-1.21-2.45/	0-5.0' Silt: As above, smooth to grainy 0-2.5, then very grainy 2.5-5.0 approaching
			8810-44100	very fine sand, vesides, black staining, loose to slightly cohesive 0-2.5, otherwise
				loose, wet, odor.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-16 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/21/04 Drilling Completed 7/21/04

Total Depth Drilled 75 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.52 feet ☐ Surveyed ☐ Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	6.02-9.72/	0-2.0' Silt: Dark reddish brown (5 YR 3/4), topsoil, trace very fine to very coarse sand,
			143-230	trace subangular to subround gravel to 1", organics, rootlets, soft, loose, crumbly,
				moist, organic odor.
				2.0-5.0' Sand and Gravel: Brown (7.5 YR 4/4), sand predominately fine, trace very
				fine, medium, coarse, gravel angular to subround to 2", moderately to well
				sorted sand, loose, moist, no odor.
5	10	5	4.63-5.30/	0-2.0' Sand: Brown (7.5 YR 5/4), trace subangular to subround gravel, especially
			830-2227	1.5-2.0, sand fine, trace medium to coarse, well sorted sand, loose, moist, no odor.
				2.0-2.5' Sand and Gravel: Very dark gray (7.5 YR 3/1), little silt, sand very fine to
				very coarse, gravel angular to subround to 1", poorly sorted mixture, loose, moist
				to wet, no odor.
				2.5-5.0' Sand: As above in 5.0-7.0.
10	15	5	4.84-9.51/	0-2.0' Silt: With some clay, silt is brown (7.5 YR 4/4) clay is yellowish red (5 YR 4/6)
			11.50-1560	predominately silt matrix, silt is smooth to grainy, mostly smooth, some clay
				interbedding/varving up to 0.2" thick, trace black staining, somewhat cohesive,
				soft, uniform, wet, odor.
				2.0-5.0' Silt/Clay Interbeds: As above, but much more clay content, clay appears
				platy/fissile yet plastic as above, clay layering varved to 1.5" thick, much is
				distorted from drilling, uniform interbedding 3.0-4.5 with thickest clay layers, less
				clay 4.5-5.0, overall somewhat cohesive, somewhat crumbly, moist, odor.
15	20	5	1.34-1.87/	0-1.5' Silt/Clay: As above in 10-12, but more black staining, silt brown (7.5 YR 4/4),
			113-2533	silt is grainier, approaching very fine sand, some very fine sand, clay varving, layers
				destroyed by drilling, saturated, liquified from drilling fluid, odor, grades over
				approximately 0.5' into unit below.
				1.5-5.0' Sand: Brown (7.5 YR 4/3) sand is fine, but approaching medium grain
				in size, trace medium grain, very well sorted, uniform, clean sand, loose, saturated,
				odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-16 Page 2 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	3.72-4.14/	0-5.0' Sand: As above, trace subround gravel to 0.5", slightly finer in places but
			10700-11300	still fine grain, well sorted, odor.
25	30	5	2.6-4.12/	0-2.0' Sand: As above, trace fine gravel, fine grain, grades into coarser
			3440-42400	at 2.0.
				2.0-3.0' Sand: Brown (7.5 YR 4/3), fine to coarse grain, predominately medium,
				little subangular to subround gravel to 1.5", moderately sorted, loose, saturated,
				odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine grain, very well sorted,
				uniform, clean sand, loose, saturated, odor.
30	35	5	3.77-4.65/	0-5.0' Sand: As above in 28-20', very fine to fine grain, predominately fine 1.5-2.5,
			11700-20000	well sorted, uniform, clean, saturated, odor.
35	40	5	3.45-4.45/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, but approaching very fine grain in
			7200-	size, very well sorted, uniform, clean, loose, saturated, odor.
			>150000	
40	45	5	3.29-4.01/	0-5.0' Sand: As above in 35.0-40.0
			13200-131500	
45	50	5	2.82-4.60/	0-5.0' Sand: Very fine grain, very close to as above, but slightly finer, very well sorted,
			4400->151000	uniform, clean, loose, saturated, odor.
50	55	5	5.47-7.12/	0-5.0' Sand: As above, but slightly coarser 4.0-4.5, predominately fine 4.0-4.5,
			19000-	trace medium 4.0-4.5', then very fine 4.5-5.0, otherwise as above, odor.
			>151000	
55	60	5	5.07-6.10/	0-5.0' Silt/Sand: Reddish brown (5 YR 4/3), very very fine sand approaching very
			22400-140500	grainy silt size, borderline, well sorted, loose, uniform, saturated, odor.
60	65	5	4.18-11.45/	0-3.0' Silt/Sand: As above, but grading into slightly coarser with predominately
			7019-20000	very fine at 3.0, also trace fine to medium grain 2.0-3.0.
				3.0-5.0' Silt: Reddish brown (5 YR 4/3), grainy silt, little very fine sand, probably
				from a very fine sand layer 1-2" thick at approximately 3.5, trace black staining,
				vesicles, slightly cohesive to loose/crumbly, saturated, odor.
65	70	5	3.89-7.67/	0-5.0' Silt/Sand: Reddish brown (75 YR 4/3), probably interbedded grainy silt/very
			1172-27200	fine sand, but distorted from drilling, well sorted, very fine sand, loose to slightly
				cohesive, saturated, odor.
70	75	5	3.09-4.64/	0-1.0' Silt/Sand: As above.
			1100-23200	1.0-4.0' Silt with clay: Reddish brown (5 YR 5/3), was finely interbedded with
				varved clay layers yellowish red, but distorted from drilling, silt is brown (7.5 YR 4/3),
				sticky, somewhat cohesive, hard to distinguish layering, saturated, odor.
				4.0-4.7' Interbedded Silt: two different silts, one is brown (7.5 YR 4/2) and clayey,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-16 Page 3 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				other is reddish brown (7.5 YR 5/3), fine interbedded (mm's to 0.3"), also a
				few visible micro clay layers with clay yellowish red, crumbly, loose, distracted from
				drilling, damp.
				4.7-5.0' Silt/Sand: As above in 70-71, wet to saturated, odor.
				EOB @ 75'.

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Sample/Core Log

Boring/Well GMEWA-17 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/11/04 Drilling Completed 7/11/04

Total Depth Drilled 75 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.92 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe/Rick

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	0.59-2.05/	0-2.0' Silt: Dark brown (7.5 YR 3/4) grainy, somewhat cohesive to somewhat
			294/1430	crumbly, trace gravel to 2" subround to subangular, some organics (roots), trace
				coarse sand, moist, no odor.
				2.0-5.0' Sand: Strong brown (7.5 YR 4/6), fine grain, sorted little gravel to 3.5"
				subround to subangular, also 10" boulder at 4', loose, moist, no odor.
5	10	5	1.48-1.77/	0-1.0' Sand: As above, grading over 0.5' into below.
			631-4100	1.0-2.0' Sand: Dark brown (7.5 YR 3/3) very fine to coarse predominately fine
				grain, silty, trace to little gravel up to 1" subround to subangular, somewhat
				loose, moist to wet, odd odor.
				2.0-4.0' Sand: As above (0-1) at 3.7-4.0 gravel seam of very fine sand to grainy
				silt with trace fine to coarse, gravel up to 1" round to subround, somewhat
				loose, wet, odor.
				4.0-5.0' Silt: Brown (7.5 YR 4/3) smooth to grainy, trace to little silt in matrix,
				cohesive and sticky, wet, slight odor.
10	15	5	0.94-1.22/	0-1.0' Silt: As above, becoming somewhat grainy.
			492-1061	1.0-5.0' Silt: Color as above, smooth to grainy, crumbly to somewhat cohesive,
				trace gravel in places up to 1" subround to subangular, clay in layers up to 1/2"
				thick, clay is yellowish red (5 YR 4/6), fissile to platy in appearance but
				cohesive and plastic when worked, moist to wet, no odor.
15	20	5	0.48-0.60/	0-2.5' Silt: As above with clay layers, grading over 1' from 2.5-3.5' into.
			157-2456	3.5-5.0' Sand: Dark brown (7.5 YR 3/3) fine to medium grain, well sorted, trace
				silt, somewhat loose, wet, odor.
20	25	5	.61-1.18/	0-5.0' Sand: As above, less silt, trace no silt, trace very fine sand, well sorted, trace
			2805-17200	gravel to 1" subround to subangular.
25	30	5	1.68-4.81/	0-2.5' Sand: As above, fine grain.
			30700-66500	2.5-3.0' Sand: As above, with some gravel up to 2" subround to subangular and
				trace medium to coarse sand, poorly sorted.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-17 Page 2 of 2

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.0-5.0' Sand: Brown (7.5 YR 4/4) medium grain, trace coarse, trace very fine to
				fine grain, trace gravel up to 1" subround to subangular, loose, sorted, wet, odor.
30	35	5	1.18-1.27/	0-1.0' Sand: Brown (7.5 YR 5/4) very fine to fine grain, well sorted, somewhat
			18900-	loose, wet, odor.
			7150000	1.0-2.0' Sand: Dark brown (7.5 YR 3/4) very fine to coarse, predominately fine to
				medium, poorly sorted little to some gravel up to 2" subround to subangular,
				loose, wet, odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/3) very fine to fine predominately very fine, very
				well sorted somewhat loose, wet, strong odor.
35	40	5	.49-3.70/	0-5.0' Sand: Color as above, very fine grain, very well sorted, somewhat loose,
			420-16000	slight odor.
40	45	5	1.98-2.71/	0-5.0' Sand: As above.
			13800-31100	
45	50	5	2.38-2.43/	0-3.0' Sand: As above.
			845-24000	3.0-5.0' Silt/Sand: Color as above, grainy silt to very fine sand boarder, very well
				sorted somewhat loose, holds together more than above, wet, strong odor.
50	55	5	7.33-3.03/	0-5.0' Silt/Sand: As above.
			12000-54000	
55	60	5	0.58-2.22/	0-1.0' Silt/Sand: As above.
			2947-29000	1.0-5.0' Sand: Strong brown (7.5 YR 5/6) very fine grain trace to little silt very
				well sorted, somewhat loose, wet, strong odor.
60	65	5	3.01-4.89/	0-5.0' Sand: As above, very fine grain.
			11000-22000	
65	70	5	4.04-4.54/	0-2.0' Sand: Color as above, very fine to fine grain, predominately very fine, very
			10000-23000	well sorted somewhat loose, strong odor.
				2.0-4.0' Sand: As above, with trace to little coarse sand, flat black flakes mainly),
				well sorted, trace silt nodules (smooth) wet, strong odor.
				4.0-5.0' Silt: Brown (7.5 YR 4/4) grainy to smooth, somewhat cohesive to
				somewhat loose, wet, strong odor.
70	75	5	1.7-2.78/	0-3.0' Silt: As above, at 2' brown (7.5 YR 4/4) in matrix, trace to little black
			10000-150000	staining, some vesicles, slight cohesive, wet, strong odor.
				3.0-5.0' Silt: Brown (7.5 YR 5/4) grainy, somewhat loose to somewhat crumbly
				very well sorted, wet, strong odor.
				EOB @ 75'

ARCADIS

Sample/Core Log

Boring/Well GMEWA-18 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/10/04 Drilling Completed 7/10/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.0 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe/Rick

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	2.39-5.52/	0-2.5' Silt: Dark reddish brown (2.5 YR 3/3) grainy, little to some organics, roots,
			1.43-18	somewhat loose to somewhat cohesive, moist.
				2.5-3.0' Sand: Strong brown (7.5 YR 5/6) very fine grain, somewhat loose,
				trace gravel to 3/4" subround to subangular, trace silt, well sorted, moist, no odor.
				3.0-5.0' Sand: Color as above, very fine to medium predominately fine grain, trace
				coarse, trace gravel to 2.5" round to subangular, trace silt, loose, moist, no odor.
5	10	5	1.64-3.86/	0-3.0' Sand: As above.
			2.51-6.97	3.0-5.0' Silt: Brown (7.5 YR 4/4) smooth to grainy trace clay in matrix, somewhat
				cohesive to somewhat crumbly, moist, no odor, trace black staining grading over
				1' interval.
10	15	2.0	1.35-2.27/	0-1.0' Silt: As above, clay in lamiae/bedded up to 1/2" thick, plastic/platy in
			7.8-11.2	appearance.
				1.0-2.0' Silty: As above with clay layers.
15	20	5	0.15-0.82/	0-1.0' Silt: As above, with clay layers.
			599-9701	1.0-2.0' Sand/Silt: Brown (7.5 YR 4/4) very fine to fine grain, silt grainy, somewhat
				cohesive, trace clay in lenses, wet, odor.
				2.0-5.0' Sand: Color as above, fine grain, well sorted, trace coarse sand, loose,
				wet, odor.
20	25	5	0.63-1.20/	0-2.0' Sand: Reddish brown (5 YR 4/4), very fine to coarse predominately medium
			6900-13000	clay trace to little silt from 0-1 trace to little gravel up to 2.5" subround to
				subangular, poorly sorted, loose, wet, odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/4) very fine to coarse, predominately medium,
				trace to no silt, trace gravel to 1", subround to subangular, slightly poorly sorted,
				loose, wet, odor.
25	30	5	1.09-22.6/	0-2.0' Sand: As above.
			9800-14000	2.0-4.0' Sand and Gravel: Color as above, sand fine to medium grain, some very
				fine to coarse, gravel up to 4" subround to subangular, trace silt, loose, poorly

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-18 Page 2 of 2

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				sorted, wet, odor.
				4.0-5.0' Silt/Sand: Brown (7.5 YR 5/4) very fine grain to grainy silt, somewhat loose
				to somewhat cohesive, very well sorted, wet, odor.
30	35	5	1.28-3.03/	0-5.0' Silt/Sand: As above.
			48000-52000	
35	40	5	0.40-4.30/	0-5.0' Silt/Sand: As above, grainy silt to very fine sand, reddish brown (5 YR 4/4)
			440-879	very well sorted, somewhat loose to somewhat cohesive, wet, strong odor.
40	45	5	3.85-4.67/	0-5.0' Silt/Sand: As above.
			8300-13400	
				EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-19 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/10/04 Drilling Completed 7/10/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1048.79 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe/Rick

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	3.26-32.86/	0-2.5' Silt: Dark reddish brown (5 YR 3/4) grainy, somewhat sticky, some organics
			40-938	(roots) somewhat cohesive, wet from drilling, no odor.
				2.5-5.0' Sand: Dark yellowish red (5 YR 3/6) very fine to coarse, predominately
				very fine grain, much silt, little to some gravel up to 2" subround to subangular,
				loose, dry to moist, no odor.
5	10	5	3.0-5.62/	0-2.5' Sand: As above, predominately fine grain and in places some to much
			267-1438	gravel or trace gravel with well sorted sand.
				2.5-5.0' Silt: Dark brown (7.5 YR 3/3) grainy to smooth, fairly cohesive, somewhat
				sticky, trace to little clay in matrix, trace black staining, trace gravel round to
				subround up to 1/2" in top 5".
10	15	5.0	.90-9.55/	0-2.0' Silt: As above, clay is apparent in thin layers <1/4" thick.
			48-487	2.0-5.0' Silt/Clay: Silt is brown (5 YR 4/3) clay is yellow red (5 YR 4/6) silt grainy to
				smooth, clay fissle to plastic in appearance, plastic and cohesive when worked
				together, cohesive and somewhat plastic, clay in layers up to 1/4-1/2" thick, wet,
				no odor.
15	20	5	.47-3.76/	0-1.0' Silt/Clay: As above grading over .5' into section below.
			700-15700	1.0-3.0' Sand: Brown (7.5 YR 4/4), very fine to fine grain sand, loose, trace to little
				silt, trace medium sand, sorted, wet, odor.
				3.0-5.0' Sand: Color as above, fine grain, well sorted, trace to little very fine, loose,
				wet, odor.
20	25	5	4.14-4.90/	0-3.5' Sand: As above with trace gravel up to 3/4" round to subangular.
			6000-30100	3.5-5.0' Sand: Color as above, medium grain, some very fine to coarse, sorted,
				trace gravel up to 3" round to subangular, loose, wet, odor.
25	30	5	4.17-5.52/	0-0.75' Sand: As above grading into section below.
			10000-72000	0.75-4.0' Sand: Dark brown (7.5 YR 3/3) very fine to coarse predominately coarse,
				some to much gravel up to 3.5" subround to subangular, loose, wet, strong odor
				from 3.0-4.0 grades into sand as above, (predominately medium grain) with much

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-19 Page 2 of 2

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				gravel at contact with section below.
				4.0-5.0' Silt/Sand: Brown (7.5 YR 4/4) grainy to very fine sand borderline, very
				well sorted, sand loose, somewhat cohesive, trace black staining, very strong odor,
				wet.
30	35	5	4.58-7.76/	0-5.0' Silt/Sand: As above.
			5900-50000	

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Sample/Core Log

Boring/Well GMEWA-20 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/10/04 Drilling Completed 7/10/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.2 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe/Rick

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	21.5-224/	0-2.5' Silt: Dark reddish brown (5 YR 3/4) grainy, loose, trace to little organics,
			10-49	(roots) trace gravel to 1.5" subround to subangular, trace medium sand, moist, no
				odor.
				2.5-2.8' Silt: As above, no organics and color changes to dark yellowish red
				(10 YR 4/6).
				2.8-5.0' Sand: Dark yellowish red (10 YR 3/6) very fine to coarse, predominately very
				fine to fine grain, trace to little gravel to 4" subround to subangular, somewhat
				sorted, loose, moist, no odor.
5	10	5	82-119/	0-4.0' Sand: As above, becoming predominately fine at 3' with less gravel.
			40-227	4.0-5.0' Silt: Yellowish red (5 YR 4/6) smooth, trace to little coarse sand and gravel
				to 1" subround to subangular, trace clay in matrix, somewhat crumbly, somewhat
				cohesive, moist to wet, no odor.
10	15	5	31-69/	0-1.0' Silt: As above.
			16-24	1.0-2.5' Silt: Color as above, approaching very fine sand in places, grainy, trace to
				little gravel up to 1" subround to subangular, somewhat loose to somewhat
				cohesive/crumbly, moist to wet, no odor.
				2.5-4.0' Silt: Brown (7.5 YR 4/4) smooth to somewhat grainy, clay laminae <1/4"
				thick, yellowish red (5 YR 4/6), cohesive and plastic, moist to wet, no odor, trace
				black staining.
				4.0-5.0' Silt: As above, with little to some gravel up to 2.5" subround to subangular.
15	20	5	-2.08- -0.75/	0-1.0' Silt: As above, with gravel.
			125-31000	1.0-3.0' Silty Clay/Clayey Silt: Reddish brown (5 YR 4/3) smooth to grainy with
				some to little clay in matrix but clay also in laminae approximately 1/2" thick,
				yellowish red (5 YR 4/6), sticky, somewhat cohesive, somewhat plastic, wet, no odor,
				grades over 0.5' into section below.
				3.0-4.0' Sand/Silt: Brown (7.5 YR 4/4), very fine grain boarders grainy silt, somewhat
				loose, well sorted, wet, some odor, (organicy?).

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-20 Page 2 of 2

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.0-5.0' Sand: Brown (7.5 YR 4/4) very fine to medium grain, trace coarse,
				predominately fine to medium grain, sorted, loose, wet, slight odor.
20	25	5	-2.07- -0.75/	0-2.0' Sand: As above.
			6100-20100	2.0-3.0' Sand: Color as above, very fine to fine grain, trace to some gravel, poorly
				sorted up to 2.5" subround to subangular, somewhat loose, wet, odor.
				3.0-5.0' Sand: Color as above, fine to coarse, predominately fine to medium, trace
				gravel to 1.25" subround to subangular, somewhat sorted, somewhat loose, grades
				into somewhat coarser down section.
25	30	5	0.81-1.22/	0-2.5' Sand: As above, trace silt, gravel seam at 2-2.5'.
			30000-60700	2.5-3.5' Sand: Fine to medium grain, predominately medium grain, trace gravel to
				1"subround to subangular, loose, well sorted, odor, wet.
				3.5-5.0' Silt/Sand: Brown (7.5 YR 5/4) sand very fine grain boarders grainy silt, very
				well sorted, somewhat loose, trace fine to medium sand, wet, strong odor.
30	35	5	-0.79-1.26/	0-5.0' Sand/Silt: As above, borderline very fine sand/grainy silt.
			12000-32000	
				EOB @ 35'.

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Sample/Core Log

Boring/Well GMEWA-21 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/9/04 Drilling Completed 7/9/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.47 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe/Rick

Prepared By Paul Lenaker/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	7.75-48.6/	0-4.5' Silt: Brown (7.5 YR 4/4) grainy, loose, trace gravel to 3" round to subangular,
			151-27600	roots/organics to 3.5', moist, no odor.
				4.5-5.0' Silt: Dark olive gray (5 Y 3/2) grainy to smooth, trace sand very fine to
				coarse, trace gravel to 3" subround to subangular, loose, dry, no odor changes
				color at 4.7' into brown (10 YR 4/3) but same unit.
5	10	5.0	21.98-56/	0-0.5' Silty Sand: Brown (10 YR 4/3) sand predominately fine grain but also very
			1292-38400	fine to coarse, trace to little gravel up to 1" subround to subangular, somewhat
				loose to somewhat sticky, wet, some odor (organic?).
				0.5-3.0' Sand: Light brown (7.5 YR 4/4) fine grain, trace medium to coarse, trace
				to little gravel up to 2" subround to subangular, loose, somewhat sorted, moist to
				wet, slight odor.
				3.0-3.5' Sand: Dark greenish gray (1 gley 4/1) sand fine grain with some coarse,
				trace gravel, trace silt, loose, moist to wet, slight odor.
				3.5-4.5' Sand: As above (0.5-3.0').
				4.5-5.0' Silt: Brown (7.5 YR 5/3) smooth to grainy, crumbly, trace clay in matrix,
				moist, slight to no odor.
10	15	NR		No recovery.
15	20	5	2.37-7.83/	0-3.0' Silt: Brown (7.5 YR 5/4) grainy to smooth, somewhat loose to somewhat
			147-4433	crumbly, slight cohesive, trace clay, at 2.0-3.0' clay layers up to 3/4" thick
				yellowish red (5 YR 5/6) clay is fissle in appearance but cohesive and plastic, wet,
				odor, grade over .5' into section below
				3.0-5.0' Silt: Brown (7.5 YR 5/3) smooth, sticky, soft, somewhat cohesive, wet to
				saturated, odor.
20	25	5	3.57-4.20/	0-0.5' Silt: As above, grades over 0.5' into section below.
			2016-7169	0.5-3.5' Sand: Brown (7.5 YR 4/3) very fine to fine gravel, predominately fine
				grain, silty in places, sorted, somewhat loose, trace medium sand, wet, ordor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-21

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.5-5.0' Sand: Dark brown (7.5 YR 3/2) very fine to coarse, predominately
				medium to coarse, little to some gravel up to 1.5" subround to subangular,
				trace silt, loose, poorly sorted, odor, wet.
25	30	5	2.95-9.64/	0-1.0' Sand: Brown (7.5 YR 5/3) very fine to fine grain with trace to little medium
			4224-56800	to coarse, sorted, loose, wet, strong odor.
				1.0-3.5' Sand: Dark brown (7.5 YR 3/2) very fine to coarse, predominately coarse
				from 1-2' grading into predominately medium from 2 to 3.5', trace gravel up
				to 1" round to subangular, somewhat sorted, possibly trace silt, somewhat
				loose, wet, strong odor.
				3.5-5.0' Sand/Silt: Reddish brown (5 YR 5/4), sand very fine to grainy silt, borderline
				between very fine sand and silt, somewhat loose to somewhat crumbly, wet, very
				strong odor, trace black staining.
30	35	5	6.28-6.77/	0-5.0' Sand/Silt: As above, from 0-1, two distinct bands of silt, somewhat clayey,
			6867-190200	brown (7.5 YR 5/3), smooth up to 2" thick, somewhat cohesive and somewhat
				plastic.

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Sample/Core Log

Boring/Well GMEWA-22 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/9/04 Drilling Completed 7/9/04

Total Depth Drilled 35 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.44 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe/Rick

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	7.75-11.12/	0-0.5' Fill: Crushed slate.
			0-5.04	0.5-2.0' Silt: Dark brown (7.5 YR 3/3) grainy, somewhat loose, little to some roots/
				organics, moist, no odor.
				2.0-5.0' Sand: Strong brown (7.5 YR 4/6), very fine to fine grain, trace to little
				medium to coarse, trace gravel up to 2.5" subround to subangular, trace
				organics (roots), loose, moist, no odor.
5	10	5	10.8-121.8/	0-3.0' Sand: As above, interval from 7.2 to 7.7 is fine sand, strong brown
			0.07-24.47	(7.5 YR 5/6) well sorted, loose, trace medium, moist, no odor.
				3.0-4.0' Sand: Dark brown (7.5 YR 3/2), very fine to coarse, predominately medium
				grain, some to much silt, little gravel to 2" subround to subangular, poorly sorted,
				somewhat loose, wet, no odor.
				4.0-4.5' Sand: Strong brown (7.5 YR 5/6), fine to medium grain, trace coarse,
				trace gravel to 1.5" subround to subangular, loose, sorted in lenses, some black/
				orange staining, wet, no odor.
				4.5-5.0' Silt: Brown (7.5 YR 4/4), smooth to grainy, trace gravel to 2" subangular
				to subround, crumbly, clay lenses, yellowish red (5 YR 4/6), lenses <1/4" thick,
				clay is platy/fissle in appearance but plastic/cohesive when worked, moist to wet,
				some odor.
10	15	5	8.4-13.6/	0-3.0' Silt: As above, no gravel, clay lenses up to 1/2" thick and increasing in
			3.03-15.7	frequency.
				3.0-5.0' Clayey Silt: Yellowish red (5 YR 4/6), smooth to grainy, clay lenses/layers
				as above, but more frequent and less layered (looks more like mixed in
				matrix), trace grainy silt/very fine sand boarder in matrix from 3-4', overall
				somewhat cohesive and somewhat plastic, moist to wet, some odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-22 Page 2 of 2

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
15	20	5	0.27-1.21/	0-3.0' Silt: Brown (7.5 YR 4/4), smooth many thin (mm) clay lenses (discontinuous),
			12-512	clay as above, trace gravel up to 2" subround to subangular, crumbly to somewhat
				cohesive, moist to wet, sticky in places, odor.
				3.0-5.0' Silt: Brown (7.5 YR 4/3) grainy, trace medium sand, approaches very
				fine sand in places, somewhat loose, wet, odor.
20	25	5	2.08-3.58/	0-3.5' Silt: As above, (0-2 with black staining, trace to little clay and somewhat
			5210-15100	stickier), 2-3.5 more grainy and approached very fine sand, homogenous, moist,
				strong odor.
				3.5-4.5' Sand: Brown (7.5 YR 4/4), very fine to coarse, predominately fine grain,
				somewhat sorted, trace gravel to 1.5" subround to subangular, loose, wet, odor.
				4.5-5.0' Sand: Color as above, very fine to coarse, predominately medium grain,
				little to some gravel up to 2" subround to subangular, trace to little silt, poorly
				sorted, loose, wet, odor.
25	30	5	1.15-4.89/	0-4.5' Sand: As above, at2.5' less gravel, trace to none.
			3512-12300	4.5-5.0' Sand: Red brown (5 YR 4/4), very fine grain, approaching grainy, silt,
				trace medium grained sand, somewhat loose, some clay nodules up to 2" and
				flat and hard and brittle, well sorted, wet, strong odor.
30	35	5	0.53-5.58/	0-1.0' Sand: As above, very fine grain.
			1610-11500	1.0-5.0' Silt: Red brown (5 YR 4/4) grainy, approaches very fine sand, black
				staining, homogenous, soft, somewhat loose to somewhat crumbly, strong odor,
				wet.
				EOB @ 35'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-23 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/8/04 Drilling Completed 7/8/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.29 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe/Rick

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	6.8-40/	0-1.0' Crushed rock fragments (fill).
			148-416	1.0-3.0' Silt: Dark brown (7.5 YR 3/4), grainy, little to some organics (roots), slightly
				cohesive to crumbly, moist, no odor.
				3.0-4.0' Silt: As above, with some gravel to 2" subround to subangular.
				4.0-5.0' Sand: Strong brown (7.5 YR 4/6), very fine to fine grain, trace medium to
				coarse grain, some gravel up to 2" subround to angular, trace silt, loose, poorly
				sorted, moist, no odor.
5	10	5	6.8-40/	0-5.0' Sand: As above, becomes predominately fine grain at 3', moist, no odor.
			69-470	
10	15	5	7.7-14.3/	0-2.0' Silty Sand and Gravel: Dark brown (7.5 YR 3/4), sand very fine to coarse,
			497-7411	predominately very fine to fine grain, gravel up to 2.5" round to subangular, silt
				is in matrix and smooth to grainy, poorly sorted, wet, no odor.
				2.0-4.0' Silty Gravel: Brown (7.5 YR 4/3) silt is smooth to grainy, gravel up to 2.5"
				round to subangular, some to much sand very fine to coarse, somewhat sticky
				to somewhat cohesive, wet, no odor.
				4.0-5.0' Silt: Brown (7.5 YR 4/4) smooth, little to some clay mainly in thin (<1/2")
				layers but in matrix as well, yellowish red (5 YR 4/6), trace to little sand very fine to
				little sand very fine to coarse and gravel up to 1.5" subround to subangular,
				somewhat cohesive to somewhat crumbly, wet, odor.
15	20	5	-1.05-0.40/	0-2.0' Sandy Gravel: Brown (7.5 YR 4/4) sand very fine to coarse, mainly very fine,
			4200-42400	medium, and coarse, gravel up to 2.5" round to subangular, much silt, trace
				clay, poorly sorted, somewhat crumbly, moist to wet, odor.
				2.0-2.5' Clay: Yellowish red (5 YR 4/6) some silt, trace gravel up to 1.5" round to
				subangular, sticky, cohesive and plastic, moist, wet, odor.
				2.5-5.0' Silt: Reddish brown (5 YR 4/3) grainy, approaches very fine sand in places,
				somewhat cohesive, slightly sticky, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-23 Page 2 of 2

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	-6.58-0.65/	0-2.5' Silt: As above, at 0.5' also include clay nodules to hard/dense, sticky.
			7720-54800	2.5-5.0' Sand: Reddish brown (5 YR 5/4) predominately fine grain with trace
				medium to coarse sand, trace gravel up to 3" subround to subangular, trace silt,
				somewhat loose, wet, odor.
25	30	5	-1.52-0.70/	0-1.5' Sand: Brown (7.5 YR 4/4) fine to medium grain, some to trace coarse, trace
			39500-68900	gravel to 2" subround to subangular, trace silt, somewhat poorly sorted, loose,
				wet, odor.
				1.5-3.0' Sand: Dark brown (7.5 YR 3/2) medium grain, some to much coarse
				sand, trace gravel up to 1.5" subround to subangular, somewhat poorly sorted,
				loose, wet, strong odor.
				3.0-4.0' Sand: Brown (7.5 YR 4/4) fine to very fine, trace medium to coarse,
				somewhat loose, trace gravel to 1/2" subround to subangular, wet, odor.
				4.0-5.0' Sand: As above (1.5-3').
30	35	5	-0.94-0.23/	0-1.5' Sand: As above.
			17100-63000	1.5-5.0' Sand: Brown (7.5 YR 4/4) fine grain, some medium, trace coarse, sorted,
				at 3' sand grades down section into predominately medium grain with some
				coarse by 5.0'.
35	40	5	-0.52-2.41/	0-2.5' Silt: Brown (7.5 YR 4/2) smooth to grainy in places, slight cohesive trace to
			3740-40000	little clay in matrix as well as thin <1/4" layers in places, clay is yellowish red
				(5 YR 4/6), somewhat plastic, wet, very strong odor.
				2.5-5.0' Silt: Reddish brown (5 YR 4/4), grainy, trace clay, somewhat crumbly to
				somewhat sticky, homogenous, wet, strong odor, trace black staining.
40	45	5	2.1-3.1/	0-5.0' Sand: Very fine/grainy silt, reddish brown (5 YR 4/4), somewhat loose, to
			70900-108200	somewhat crumbly, wet, very strong odor.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-24 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/7/04 Drilling Completed 7/7/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.02 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Joe

Prepared By Paul Lenaker/Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-7.06- -3.41/	0-1.0' Topsoil: Very dark brown (10 YR 2/2) silt and very fine sand, some clay,
			13100-26300	many rootlets somewhat loose, moist, no odor.
				1.0-4.0' Silt: Dark brown (7.5 YR 3/3), grainy, somewhat cohesive, trace roots,
				trace gravel up to 1/2" subround to subangular, and trace very coarse sand,
				moist, no odor.
				4.0-5.0' Sand: Strong brown (7.5 YR 5/6), very fine grain, approaching grainy silt,
				some fine grain, some coarse sand and gravel up to 2" round to subangular,
				trace silt, loose, moist, no odor.
5	10	5	1.02-7.22/	0-5.0' Sand: As above, becoming somewhat coarser down section to mainly fine
			1680-54800	sand at 5', layer of sand fine grain with some medium grain and trace coarse
				grain from 3.8-4.3, reddish yellow (7.5 YR 6/6).
10	15	0		No recovery.
15	20	5	-0.11 - 2.8/	0-3.5' Silty Clay/Clayey Silt: Red brown (5 YR 4/4), cohesive and plastic, somewhat
			48-5210	sticky, trace gravel up to 4" subangular to subround (only to 2'), trace coarse
				sand throughout, zones of clay, somewhat hard, brittle at first but plastic when
				worked, wet, slight odor.
				3.5-5.0' Sandy Silt: Color as above, sand fine grain to fine to medium grain, some
				to much clay, some areas of silty clay/clayey silt as above, cohesive and plastic to
				somewhat loose in places, moist, slight odor.
20	25	5	.77-1.23/	0-0.5' Sandy Silt: As above, with gravel up to 3" subround to subangular.
			3420-4220	0.5-1.5' Sand: Reddish brown (5 YR 5/4) trace to little silt, sand predominately fine
				to medium grain with some medium grain and trace coarse grain, trace gravel up
				2" round to subangular, wet, odor.
				1.5-3.0' Sand: Brown (7.5 YR 4/4), medium to coarse grain, predominately medium
				grain, trace to little gravel to 1" subround to subangular, poorly sorted, loose, wet,
				odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-24 Page 2 of 2

Prepared by Paul Lenaker/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.0-5.0' Sand: As above, with somewhat less coarse sand and less gravel than
				above.
25	30	5	0.67-3.22/	0-3.5' Sand: Brown (7.5 YR 5/3), medium to coarse grain, loose, well sorted, wet,
			2540-31700	from 2.5-3.5' sand fine down section into section below.
				3.5-5.0' Sand: Light reddish brown (5 YR 6/4) fine to medium grain, predominately
				fine grain, well sorted, loose, wet, odor.
30	35	5	1.03-2.54/	0-5.0' Sand: As above.
			3400-18500	
35	40	4	1.02-7.84/	0-2.5' Sand: As above.
			1140-10700	2.5-3.0' Sand: Color as above, fine to medium grain, loose, wet, odor.
				3.0-5.0' Sand: Reddish brown (5 YR 4/3) very fine grain, possible some grainy
				silt, well sorted, somewhat loose, wet, odor.
40	45	5	4.74-7.67/	0-3.0' Sand: As above, trace back staining.
			9370-24800	3.0-5.0' Silt: Color as above, smooth to grainy yellowish red (5 YR 4/6) grainy from
				4 to 5, somewhat cohesive to crumbly, wet, odor.
				EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-25 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/30/04 Drilling Completed 7/1/04

Total Depth Drilled 55 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' and 20' x 4" Core barrel Sampling Interval continuous feet

Land-Surface Elev. 1049.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	1.5	8.51-11.98/	0-1.5' Silt: Dark red brown (5 YR 4/4), organic rich, single cobble-subrounded
			4.0-11.1	5" diameter, soft to crumbly, moist,
5	10	2.9	9-9.50/	0-0.5' Slough.
			0.8-8.1	0.5-1.9' Sand/Gravel: Strong brown (7.5 YR 5/6), very fine to coarse sand, fine to
				coarse angular to subrounded gravel up to 2 inches, trace silt, loose, poorly sorted,
				moist.
				1.9-2.9' Sand/Gravel: As above, but brown (10 YR 4/3).
10	15	5	854-4300/	0-0.8' Slough.
			0	0.8-5.0' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6),
				interbedded, horizontal layering, 2.5-3 feet vertical layering, fissily, soft to crumbly,
				plastic clay, black staining, clay-0.25 to 1 inch thick, silt-1-4 inches thick, saturated.
15	20	5	11.89-13900/	0-4.0' Sand/Silt: Dark brown (7.5 YR 3/3), very fine to medium sand, trace to little
			0.9-3.6	coarse sand, mostly fine sand, some subrounded gravel up to 3 inches, loose to
				crumbly, low cohesive, poorly sorted, saturated.
				4.0-5.0' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6),
				interbedded, soft to crumbly, clay-varved, silt-up to 2 inches thick, saturated.
20	25	5	3100-7900/	0-1.5' Silt/Clay: As above.
			0	1.5-2.0' Silt: Red brown (5 YR 4/3), grainy, uniform, black staining, soft to crumbly,
				strong odor, saturated.
				2.0-2.75' Sand: Red brown (5 YR 4/4), very fine to coarse sand, mostly medium
				sand, little to some subangular to subrounded gravel up to 3 inches, loose, poorly
				sorted, saturated.
				2.75-5.0' Sand: Red brown (5 YR 4/3), medium to coarse sand, mostly medium
				sand, trace subangular to subrounded gravel up to 3 inches, loose, moderately
				sorted, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-25 Page 2 of 2

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
25	30	5	7800-16400/	0-1.25' Sand: As above.
			0	1.25-5.0' Sand: Brown (7.5 YR 5/4), very fine to fine sand, mostly fine sand, trace
				silt, uniform, loose, well sorted, strong odor, saturated.
30	35	5	4000-22300/	0-2.0' Sand: As above.
			0	2.0-5.0' Sand: Brown (7.5 YR 4/4), fine to medium sand, trace coarse sand, trace
				silt, coarsens with depth to trace gravel, loose, well sorted, strong odor, saturated.
35	40	5	4700-23000/	0-1.0' Sand: As above.
			1.6-8.3	1.0-5.0' Silt: Red brown (5 YR 4/4), grainy, soft to crumbly, uniform, trace black
				staining, strong odor, saturated.
40	45	5	1900-31000/	0-5.0' Silt: As above.
			0	
45	50	5	5000-17000/	0-1.0' Silt: As above.
			1.8-6.9	1.0-2.0' Silt/Clay: Reddish brown (5 YR 4/3), silt likely interbedded with clay, soft to
				crumbly, uniform, strong odor, saturated.
				2.0-5.0' Silt: As above.
50	55	5	1300-10000/	0-5.0' Silt: Same as 36-46 feet.
			0.9-39	
				EOB 55'

ARCADIS

Sample/Core Log

Boring/Well GMEWA-26 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/24/04 Drilling Completed 7/24/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.22 feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	0.33-4.53/	0-1.0' Silt: Very dark grayish brown (10 YR 3/2), grainy to smooth, organics
			41.33-5172	(roots), somewhat cohesive (topsoil), moist, no odor, grading into section below.
				1.0-2.5' Silt: Strong brown (7.5 YR 5/6) rainy to smooth, somewhat loose to
				somewhat crumbly, trace gravel for 1" subround to subangular, moist, no odor.
				2.5-5.0' Sandy Silt: Yellowish brown (10 YR 5/6), silt smooth to grainy, sand very
				fine to coarse, predominately fine to medium, little to some gravel up to 2.5"
				subround to subangular, loose, moist, no odor.
5	10	3	1.02-3.63/	0-1.0' Slough.
			458-3760	1.0-2.5' Sandy Silt: As above (large 4" rock in sample bag).
				2.5-3.0' Silt/Sand: Dark yellowish brown (10 YR 4/4), silt grainy, sandy very fine
				borderline sand/silt, somewhat sticky, somewhat loose to somewhat cohesive,
				wet, no odor.
10	15	2	0.74-1.72/	0-1.5' Slough.
			35.70-179	1.5-2.0' Interlaminated Silt/Clay: Silt is brown (7.5 YR 5/4), smooth, crumbly, moist,
				clay is reddish brown(5 YR 5/3), somewhat cohesive/plastic, fissile and platy in
				appearance, moist, no odor.
15	20	2	-0.65-2.23/	0-2.0' Silt: Brown (7.5 YR 5/3), smooth cohesive to somewhat crumbly, slight
			71.1-12500	plastic, moist to wet, no odor.
				2.0-3.0' Silt/Clay: Interlamanine/interbed silt color as above, turning slightly grainy,
				clay-brown (7.5 YR 4/4), interlaminated up to 1/4" thick, clay cohesive and some-
				what plastic, moist to wet, no odor.
				3.0-4.0' Silt/Sand: Silt color as above, sand light reddish brown (5 YR 6/4), silt
				grainy, sand very fine grainy bedded up to 1/2" to 3/4" thick, sand well sorted,
				loose, moist overall, no odor.
				4.0-4.5' Silt/Sand/Gravel: Reddish brown, poorly sorted sand very fine to coarse,
				silt smooth to grainy, gravel up to 3" subround to subangular, trace to little
				clay, somewhat sticky to crumbly.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-26 Page 2 of 2

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.5-5.0' Sand: Reddish brown (5 YR 5/4), fine grain, trace medium to coarse, well
				sorted, loose, wet, no odor.
20	25	5	0.09-0.15/	0-0.5' Sand: As above, sharp content with section below.
			5560-8040	0.5-2.5' Sand: Light reddish brown (5 YR 6/4), very fine to coarse, predominately
				fine to medium grain, loose, somewhat sorted, little gravel up to 1.5" subround to
				subangular, wet, slight odor, grades over 1' into section below.
				2.5-5.0' Sand: Brown (7.5 YR 5/3), fine to very coarse, predominately medium to
				coarse, loose, poorly sorted little gravel up to 3.5", subround to subangular, wet,
				slight odor.
25	30	5	-0.83-30.23/	0-3.5' Sand: Brown (7.5 YR 4/3), medium to coarse, sorted, loose, wet, slight odor
			134-4697	at 2.8 becomes little silty grades over 1' into section below.
				3.5-5.0' Sand: Reddish brown (5 YR 5/3), very fine to medium, predominately
				fine sorted, trace coarse, wet, somewhat loose, odor.
30	35	5	-0.10-1.08/	0-2.0' Sand: As above.
			4490-19100	2.0-3.0' Sand: Brown (7.5 YR 4/3), fine to very coarse, predominately medium,
				loose, poorly sorted, gravel up to 2" round to subangular, wet, odor.
				3.0-4.0' Silt: Brown (7.5 YR 4/3), smooth, crumbly, some clay interbeds up to 3/4"
				thick, clay yellowish red (5 YR 4/6), platy/fissile in appearance, cohesive/plastic when
				worked, wet, odor.
				4.0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, somewhat crumbly to somewhat
				loose, wet, odor.
35	40	5	-1.22-2.45/	0-5.0' Silt: Reddish brown (5 YR 5/4) as above, approaches very fine sand in places,
			6678-40700	somewhat coarser than above.
40	45	5	3.31-6.84/	0-5.0' Sand/Silt: Brown (7.5 YR 5/3), silt grainy/sand very fine grain, borderline
			9.76-11700	brown silt/sand very fine, somewhat loose to somewhat crumbly, wet, odor.
				EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-27 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/28/04 Drilling Completed 6/28/04

Total Depth Drilled 55 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' and 10' x 4" Core barrel Sampling Interval continuous feet

Land-Surface Elev. 1048.96 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	1	49/3.02	0-1.0' Silt: Strong brown (7.5 YR 4/6), some coarse sand and subrounded gravel
				up to 3 inches, low cohesiveness, soft, poorly sorted, saturated.
5	10	5	10.9-13.6/	0-3.0' Silt: Brown (7.5 YR 4/4), soft of curmbly, fissily, saturated.
			5.12	3.0-5.0' Silt: Brown (7.5 YR 4/4), trace clay varving, fissily, slightly sticky, iron staining
				at 2 feet (0.5 inch thick), uniform, saturated.
10	15	5	15-84/0	0-1.0' Silt: As above.
				1.0-4.0' Silt/Clay: Silt-brown (7.5 YR 4/4), clay-reddish brown (5 YR 4/3),
				interbedded, soft to crumbly to stiff, fissily silt, plastic clay, silt-0.25 to 3 inches,
				clay-varved to 1.25 inches, saturated.
15	20	5	310-3100/	0-4' Silt/Clay: As above.
			8.5-9	4.0-5.0' Sand/Silt: Brown (7.5 YR 4/4), very fine to fine sand, low cohesiveness,
				soft, saturated.
20	25	5	2200-17000/	0-1.0' Sand/Gravel: Strong brown (7.5 YR 4/6), fine to coarse sand, angular to
			8.5-9.06	subrounded gravel up to 3 inches, mostly medium sand, loose, poorly sorted,
				saturated.
				1.0-2.5' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand,
				trace gravel, loose, well sorted, saturated.
				2.5-4.0' Sand: Dark brown (7.5 YR 3/2), fine to coarse sand, mostly coarse sand,
				some subangular to subrounded gravel, loose, poorly sorted, saturated.
				4.0-5.0' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand,
				trace gravel, loose, well sorted, saturated.
25	30	5	1070-12800/	0-2.0' Sand: As above.
			8.75-9.43	2.0-5.0' Sand: Brown (7.5 YR 5/4), very fine to medium sand, mostly fine to medium
				sand, trace silt, strong odor, loose, well sorted, saturated.
30	35	5	2080-11200/	0-1.0' Sand: As above.
			8.75-9.06	1.0-3.0' Sand: Brown (7.5 YR 5/4), very fine to coarse sand, mostly fine sand,
				coarsens with depth, subrounded gravel up to 3 inches from 2.75 to 3 feet,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-27

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				strong odor, loose, well sorted, saturated.
				3.0-5.0' Silt/Clay: Silt-brown (7.5 YR 4/3), clay-yellowish red (5 YR 4/6), soft to
				medium stiff to crumbly, interbedded, fissily silt, plastic clay, clay up to 0.5 inches,
				silt up to 2 inches, strong odor, saturated.
35	40	5	2000-11000/	0-0.5' Gravel: Subangular to subrounded, loose, poorly sorted, saturated.
			1.12-1.6	0.5-5.0' Silt/Clay: Silt-brown (7.5 YR 4/4), clay-yellowish red (5 YR 4/6), interbedded,
				soft to stiff, fissily silt, sticky from 1-5 feet, strong odor, saturated.
40	45	5	480-32000/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, trace clay layers, soft, uniform,
			3.2-6.1	strong odor, saturated.
45	50	5	130-25000/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, soft, uniform, strong odor, saturated.
			0.51-3.01	
50	55	5	198-12500/	0-1.5' Silt: As above.
			0.27-5.12	1.5-3.5' Silt/Clay: Silt-brown (7.5 YR 5/3),clay-strong brown (7.5 YR 4/6),
				interbedded, soft to crumbly, fissily silt, clay-varve to 0.5 inches, silt-1 to 3 inches,
				strong odor, saturated.
				3.5-5.0' Silt: Reddish brown (5 YR 4/4), grainy, soft to crumbly, uniform, black
				staining, strong odor, saturated.
				EOB @55'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-28 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/1/04 Drilling Completed 7/1/04

Total Depth Drilled 45 Feet Hole Diameter 10 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval 10-20 feet

Land-Surface Elev. 1049.19 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Jessie/Jo

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-2.56- -1.19/	0-2.0' Silt/Sand/Gravel: Brown (10 YR 3/6) some clay, some might be fill, gravel
			-.44-2149	subangular to subround to 4", sand very fine to very coarse, silt grainy to smooth,
				very poorly sorted mixture, loose, saturated, thin (<0.5") sandy layer at 2.0 with
				sand very fine to fine and color very dark grayish brown (2.5 Y 3/2), well sorted,
				loose, no odor.
				2.0-3.5' Silt/Gravel: Color as above, gravel subround to 4", some clay, silt smooth,
				poorly sorted mixture, soft, mushy, no odor.
				3.5-5.0' Silty Sand and Gravel: Yellowish brown (10 YR 5/6) gravel subangular to
				subround to approximately 1.5", sand very fine to very coarse, little to some
				clay, silt smooth, very poorly sorted mixture, predominately sand and gravel, loose,
				saturated, no odor.
5	10	5	-2.28 - 1.87/	0-5.0' Silt: Brown (10 Yr 4/2) trace fine gravel subround, silt predominately
			4.3-50.5	grainy, some smooth, a few clay nodules, reddish brown (5 YR 4/4), maybe a
				few thin (mm's) clay layers but distorted from drilling, approximately 1" thick
				clay layer at 4.5, clay is platy/fissle in appearance, but plastic when worked, some-
				what cohesive overall, wet to saturated (drilling fluid?), no odor.
10	15	5	-2.64-1.62/	0-5.0' Silt/Clay: Interbeds colors as above with silt brown, clay reddish brown, very
			4.2-88.3	uniform interbeds with clay layers approximately 1-2" thick and silt layers
				approximately 2-3" thick, silt is grainy overall, approaching very fine sand in
				places, trace very fine sand, clay is fissle in appearance on broken surfaces, but
				smooth and plastic when worked, clay HP = 1.5, cohesive overall, silt is wet to
				saturated, clay is moist, no odor.
15	20	5	-3.27 - -2.68/	0-5.0' Silt/Clay: Interbeds as above, but clay layers thinning somewhat and less
			10.3-479	clay layers towards 5.0, clay layers average 0.5".
20	25	5	-2.56 - -2.12/	0-0.5' Silt/Clay: Interbeds as above, but mostly silt.
			181-7974	0.5-4.0' Silt/Sand/Gravel: Brown (7.5 YR 4/3), trace clay in matrix, silt mostly
				grainy, sand very fine to very coarse, gravel subangular to subround to 2", very

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Sample/Core Log (continued)

Boring/Well GMEWA-28 Page 2 of 2

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				poorly sorted mixture, very silty, loose, wet, no odor.
				4.0-5.8' Sand: Brown (7.5 YR 5/2) trace silt, fine to medium grain, trace coarse to
				very coarse, well sorted, loose, wet, no odor.
25	30	5	-3.26- -2.43/	0-1.5' Sand: Brown (7.5 YR 4/3) trace silt, some gravel subangular to subround to
			535-13500	2", sand very fine to very coarse, predominately medium, poorly sorted, loose,
				wet, no odor.
				1.5-5.0' Sand: Brown (7.5 YR 5/4), grading into finer over 1.0-2.0 from above,
				predominately very fine to fine, trace medium, trace silt, loose, wet, odor.
30	35	5	-3.05 - -0.68/	0-1.0' Sand: As above.
			780-21300	1.0-5.0' Sand: Brown (7.5 YR 5/2) trace gravel subangular to subround to 0.5",
				and fine to medium, trace coarse, trace very fine, well sorted, loose, wet, odor.
35	40	5	-3.43 - -1.09/	0-1.0' Sand: As above.
			-0.78-8796	1.0-5.0' Sandy Silt: Reddish brown (5 YR 4/3) trace gravel subround to 0.5", silt is
				very grainy, approaching very fine sand, sand is very fine to medium, predominately
				very fine, some areas are sandier, predominately silt, some vesicles, loose,
				saturated, slightly cohesive, strong odor @ 4.7', 1.0" thick clay layers with clay
				yellowish red, platy/fissle appearance, plastic.
40	45	5	-3.17 - 0.01/	0-5.0' Silt: Reddish brown as above, similar to above, but somewhat finer, silt
			33.26-14700	smooth in places, but mostly grainy, especially 2.0-5.0 where silt is borderline
				very fine sand, trace clay, some clay 0.0-2.0, trace black staining, saturated 0-2,
				trace black staining, saturated 0-2, moist 2-5, somewhat cohesive overall,
				homogenous 2-5, odor.
				EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-28A Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/6/04 Drilling Completed 7/6/04

Total Depth Drilled 45 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.74 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Rick

Prepared By Andy Mumpy/Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	2.49-3.16/	0-0.7' Slough.
			4.5-22	0.7-4.0' Silt: With some clay layers, silt is strong brown, clay is yellowish red,
				(5 YR 4/6) clay layers 0.1-1", little sand very fine to very coarse mixed in, little gravel
				subround to 1", some organics, rootlets, clay in nodules as well, could be distorted
				layers, sandier 2.0-3.0 with very fine to medium sand, silt is grainy, clay is plastic, HP
				= 3.0, platy appearance on broken surfaces, wet, no odor.
				4.0-5.0': As above, but much sandier with sand very fine to medium.
5	10	5	2.74-4.94/	0-0.5' Silt: As above, with much sand and some gravel.
			30.5-33	0.5-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth, trace sand very fine to very
				coarse, trace gravel subround to 0.5", homogenous, somewhat cohesive, wet,
				no odor.
10	15	5	3.05-4.63/	0-3.0' Silt: As above.
			10.3-28	3.0-5.0' Silt: As above, but with many (approximately 10) clay layers 0.5-2" thick,
				interbedded clay is reddish brown (5 YR 5/4), cohesive, platy appearance on broken
				surfaces, yet plastic, cohesive, wet overall, no odor.
15	20	5	-0.24-1.2/	0-3.5' Silt: With some clay, brown (7.5 YR 4/3), trace to little very fine to medium
			60-1931	sand, little gravel angular to subrounded to 3", some clay in matrix, but a few
				clay layers; yellowish red (5 YR 4/6), clay is plastic, but appears platy/fissile on
				broken surfaces, layers are about 0.5" thick, not as many as above, cohesive
				overall, wet, no odor, gradational contact with section below.
				3.5-5.0' Sand and Gravel: Reddish brown (5 YR 4/4), sand very fine to very coarse,
				very coarse, silty, gravel subangular to subround to 4", some clay, very poorly
				sorted mixture, loose, wet, odor.
20	25	5	-0.94- -.47/	0-2.5' Sand: Reddish brown(5 YR 4/4), trace silt, trace to little gravel subround to
			512-3716	1", sand very fine to medium, moderately well sorted, loose, odor.

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Sample/Core Log (continued)

Boring/Well GMEWA-28A

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.5-5.0' Sand and Gravel: Dark reddish gray (5 YR 4/2) trace silt, gravel
				subangular to subround to 3" but predominately fine, sand very fine to very
				coarse, but predominately medium to coarse, poorly sorted, loose, odor.
25	30	5	-0.94- -0.77/	0-0.5' Sand and Gravel: As above.
			2716-9119	0.5-5.0' Sand: Reddish brown (5 YR 5/3) trace silt, trace gravel subangular to
				subround to 1", sand is predominately fine, trace very fine to coarse, slightly
				coarser from 1.0-2.0 approaching medium predominately, well sorted sand, loose,
30	35	0		odor. No recovery.
35	40	5	-0.6 - 0.22/	0-1.5' Sand: Reddish brown (5 YR 4/3), some silt, little gravel subround to 1",
			264-8900	sand very fine to fine predominately, some medium to coarse, loose, poorly sorted,
				saturated, odor.
				1.5-5.0' Silt: Reddish brown (5 YR 5/3), silt is very grainy, approaching very fine
				sand, trace to little very fine sand, homogenous/uniform sample, somewhat
				cohesive, saturated, soft to crumbly, strong odor.
40	45	5	-0.45-0.9/	0-3.0' Silt: As above.
			213-4490	3.0-5.0' Silt: Brown (7.5 YR 4/4) and reddish brown (5 YR 5/3), some clay in
				matrix, also 2 clay layers approximately 2" thick at 3.5 and 4.5, clay is yellowish
				red (5 YR 4/6), clay/fissile in appearance, but plastic when worked, cohesive and
				firm overall, wet to saturated, strong odor.
				EOB @ 45 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEWA-29 Project/No. Ford/Kingsford WI001095.0027 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/4/06 Drilling Completed 4/4/06

Total Depth Drilled 35 Feet Hole Diameter 8-12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' X 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.07 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Robert Korhonen

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	5	1.5	5.79-7.42/	0-0.5' Sand/Silt: Brown (7.5 YR 4/4) smooth silt and very fine to fine grain sand,
			5.54-6.09	trace medium, moderate well sorted, trace fine to coarse gravel up to 1" diameter,
				subangular to subround, somewhat loose, organics, (roots/grass) moist, no odor.
				0.5-1.0' Silt: Strong brown (7.5 YR 4/6) smooth silt, soft, somewhat loose, moist,
				no odor.
				1.0-1.5' Sand: Brown (7.5 YR 4/4) very fine to coarse grain, silty, very poorly
				sorted, some fine to coarse gravel up to 2" diameter, angular to subangular,
				loose, moist, no odor.
5	10	2.5	-2.08--.63/	0-0.7' Sand: As above.
			-.99--.48	0.7-1.1' Sand: Brown (7.5 YR 4/4) fine grain, trace medium, well sorted, no silt,
				loose, moist, no odor.
				1.1-1.5' Sand: As above (1.0-1.5 of 0-5') one cobble 4" diameter
				1.5-4.0' No recovery.
				4.0-5.0' Sand: As above (1.0-1.5 of 0-5').
10	15	5	-1.05--3.48/	0-5.0' Silt/Clay: Silt brown (7.5 YR 4/3) clay yellow red (5 YR 4/6) intebedded
			-1.05--1.26	smooth silt and clay, silt is soft, very clayey and plastic, clay is very soft, plastic,
				layers varved 1/2" thick; fine to coarse from 0-0.2, up to 2" diameter angular to
				subround, little sand fine to coarse grain from 4.0-5.0' overall, moist to wet at
				bottom, no odor.
15	20	5	330-1110/	0-2.0' Silt/Clay: as above, little fine to coarse grain sand.
			-1.32--1.39	2.0-3.5' Silt/Sand: Brown (7.5 YR 5/3) interbedded smooth silt, grainy silt, and
				very fine silty sand, bedding is jumbled, can't discern thicknesses, smooth is
				clayey/plastic, grainy is somewhat loose, and very fine silty sand is well sorted
				and somewhat loose; overall wet, slight odor.
				3.5-4.0' Silt: Brown (7.5 YR 5/3) grainy, somewhat loose, wet, odor.
				4.0-5.0' Sand: Light brown (7.5 YR 6/3) fine grain, well sorted, no silt, loose,
				strong odor, wet.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-29

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	3	13200-	0-0.7' Sand: As above.
			14200/	0.7-1.5' Sand/Gravel: Red brown (5 YR 5/3) fine grain sand and fine to coarse
			-0.10-0.00	gravel, sand is fine grain with little medium to coarse, some silt, poorly sorted;
				gravel is fine to coarse up to 2" diameter angular to subround, larger range of
				sizes, overall: somewhat loose, odor.
				1.5-3.0' Sand/Gravel: Brown (7.5 YR 4/3) fine to very coarse grain sand and fine
				gravel; sand is very poorly sorted, trace silt; fine gravel up to 3/4" subangular to
				subround, overall: loose, wet, strong odor; 1.5-2.0 has some silt; (1) cobble 4" at
				top contact approximately 1.5.
25	30	5	4460-	0-0.5' Gravel: Variable colors, coarse gravel, up to 3", angular to
			4.23%/	subangular, loose, wet, odor from area, variable rock types
			-1.35-0.66	0.5-1.0' Sand/Gravel: As above, some silt.
				1.0-1.5' Sand: Brown (7.5 YR 5/3) very fine to fine grain, trace medium to coarse,
				trace to little silt, loose, wet, strong odor, moderately well sorted.
				1.5-2.0' Sand: Brown (7.5 YR 4/3) fine to very coarse grain, very poorly sorted,
				trace silt, wet, strong odor, loose.
				2.0-4.0' Silt/Sand: Red brown (5 YR 5/4) very fine silty sand and grainy silt,
				somewhat loose, wet, well sorted, strong odor, coarsens slightly with depth.
				4.0-5.0' Sand: Color as above, very fine grain sand, very silty, well sorted,
				somewhat loose to loose, wet, strong odor, homogeneous.
30	35	3.5	16300-	0-3.5' Sand: As above.
			29000/	
			0.35-0.65	
				EOB @ 35'

ARCADIS

Sample/Core Log

Boring/Well GMEWA-30 Project/No. Ford/Kingsford WI001095.0027 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/4/06 Drilling Completed 4/4/06

Total Depth Drilled 35 Feet Hole Diameter 12 inches

Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' X 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.26 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Weeks Helper Royce Brown Robert Korhonen

Prepared By Jill Flater

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	15	NR	--	Blind drilled, no recovery (for sample descriptions see the core log for GMSB-
15	20	5	412-7505/	140).
			-0.34--0.92	0-0.5' Gravel: Color varies, fine to coarse gravel, up to 2" diameter angular to
				subangular, variety of rock types, wet.
				0.5-1.0' Silt: Brown (7.5 YR 4/3) smooth, clayey, somewhat plastic, sticky
				wet, slight odor.
				1.0-3.0' Silt: Brown (7.5 YR 5/3) grainy, somewhat loose, trace smooth silt 1/4"
				layers, wet, odor.
				3.0-3.6' Sand: Light brown (7.5 YR 6/4) fine grain, trace medium to coarse, well
				sorted, no silt, wet, loose, strong odor.
				3.6-4.0' Sand: Brown (7.5 YR 4/6) as above, silty, little coarse gravel up to 1.5"
				diameter subangular to subround.
				4.0-5.0' Sand/Gravel: Brown (7.5 YR 4/4) fine to very coarse grain and fine to
				coarse gravel, very poorly sorted, gravel up to 2" most ≤ 1/2", loose, wet, strong
				odor, trace silt.
20	25	0	--	No recovery.
25	30	5	500-911/	0-1.0' Sand: Brown (7.5 YR 5/3) fine to very coarse, very poorly sorted, trace fine
			-0.97--0.71	gravel ≤1/2" diameter subangular to subround, wet, loose, no silt, odor.
				1.0-2.0' Sand/Gravel: Dark brown (7.5 YR 3/4) fine to very coarse grain sand
				and fine gravel, very poorly sorted, gravel angular to subround ≤1/4", trace silt,
				wet, loose, odor.
				2.0-4.5' Sand/Gravel: Dark brown (7.5 YR 3/4) medium to very coarse grain sand
				and fine to coarse gravel, very poorly sorted, gravel up to 1" diameter most ≤1/2",
				little silt, loose, wet, odor.
				4.5-5.0' Sand: Brown (7.5 YR 5/3) fine to medium grain, little coarse to very
				coarse, poorly sorted, trace silt, silt at 4.5-4.7; trace fine to coarse gravel

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWA-30

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				up to 1" most <1/2" angular to subround, wet, loose, strong odor.
30	35	5	1015-7445/	0-0.7' Sand: As above.
			0.60-2.61	0.7-5.0' Silt/Sand: Reddish brown (5 YR 5/4) grainy silt and very fine silty sand,
				well sorted, homogenous, wet, somewhat loose, strong odor.
				EOB @ 35.'

ARCADIS

Sample/Core Log

Boring/Well GMEWB-1 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 9/25/04 Drilling Completed 9/25/04

Total Depth Drilled 120 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 5', 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.17 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz Royce Brown

Prepared By Toni Schoen/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	2.5	13.3-17.67/	0-0.5' Silt: Slate, fill.
			7-15	0.5-1.5' Silt: Dark yellowish brown (10 YR 4/6), organic rich, roots, uniform,
				loose to crumbly, no odor, damp.
				1.5-2.0' Sand: Dark yellowish brown (10 YR 4/3), fine to coarse sand, mostly
				fine sand, little fine to coarse subangular to subrounded gravel up to 3 inches,
				loose, very poorly sorted, no odor, damp.
5	10	2.5	8.22-11.77/	0-1.0' Sand: Same as above.
			5-6	1.0-2.5' Sand: Dark yellowish brown (10 YR 4/6), very fine to coarse sand, mostly
				fine sand, little coarse sand, little fine to coarse subrounded gravel up to 2 inches,
				loose, very poorly sorted, no odor, moist.
10	15	5	5.5-6.2/0	0-5.0' Silt/Clay: Silt brown (7.5 YR 4/4), clay yellowish red (5 YR 4/6), interbedded,
				clay varve to 1 inch with the thicker layers from 2.5-5 feet, silt 1 to 4 inches (1-6
				inch layer) with the thickest layers from 0-2.5 feet, silt is smooth and crumbly
				when worked, fissily surfaces, clay is platy and plastic, HP = 1.0, stiff, no odor,
				saturated.
15	20	3	88.4-103/	0-3.0' Silt/Clay: Same as above.
			0.83-1.70	
20	25	5	318-1055/	0-1.0' Silt/Clay: Same as above but with fine sand seam from 0.25 to 0.35 feet,
			1.83-2.52	loose, well sorted, saturated.
				1.0-5.0' Silt: Brown (7.5 YR 4/4), interbedded, smooth and grainy layers, soft, silt
				is smooth and clayey (plastic likely clay varving), fissily surface, grainy silt is loose to
				somewhat crumbly, very fine sand seams from 4.5-5 feet each approximately
				1.5 inches.
25	30	5	1580-3410/	0-0.5' Silt: Same as above.
			2.78-3.30	0.5-2.25' Sand: Brown (7.5 YR 4/4), fine to medium sand, mostly fine sand,
				silt grades in from above, trace subrounded gravel up to 1.5 inches, loose,
				moderately sorted, slight odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWB-1

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				2.25-5.0' Sand: Brown (7.5 YR 4/3), fine to coarse sand, mostly medium sand,
				silty, loose, poorly sorted, strong odor, saturated.
30	35	5	2520-5530/	0-1.0' Sand: Same as above.
			4.6-5.75	1.0-4.0' Sand: Brown (7.5 YR 5/3), sharp contact with coarser sand above, fine
				sand, uniform, loose, very well sorted, strong odor, saturated.
				4.0-4.5' Silt: Reddish brown (5 YR 4/4), sharp contact with sand above, grainy,
				uniform, loose to somewhat firm, strong odor, saturated.
				4.5-5' Sand: Same as 27.25-30 feet.
35	40	5	1710-5501/	0-0.5' Sand: Same as above.
			2.5-71.	0.5-5.0' Silt: Reddish brown (5 YR 4/3), grainy, very soft to somewhat crumbly,
				uniform, fine to medium sand layer from 2.75 to 3 feet, strong odor, saturated.
40	45	5	2030-76300/	0-5.0' Silt: Same as above.
			7-11	
45	50	5	2110-8930/	0-1.0' Silt: Brown (7.5 YR 4/4), very clayey, likely interbedded, plastic, sticky,
			6-10	uniform, strong odor, saturated.
				1.0-4.0' Silt: Same as 35.5-40 feet.
				4.0-5.0' Silt: Same as 45-46 feet.
50	55	5	6780-23000/	0-5.0' Silt: Same as 35.5-40 feet with many methane vesicles.
			10-12	
55	60	5	2430-4860/	0-5.0' Silt: Brown (7.5 YR 4/4), interbedded, smooth and grainy silt, mostly grainy,
			5.3-6.4	very clayey where smooth and plastic (clay varving possible), uniform, liquefied to
				very soft, somewhat crumbly, strong odor, saturated, many methane vesicles.
60	65	5	2320-6710/	0-5.0' Silt: Same as above.
			5.8-7.4	
65	70	5	2640-11100/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy, uniform, very soft, somewhat crumbly,
			5.2-7.0	trace black staining, strong odor, saturated.
70	75	5	5840-11400/	0-5.0' Silt: Same as above.
			6-9.2	
75	80	5	921-2240/	0-2.0' Silt: Same as above.
			5.0-7.1	2.0-3.0' Sand/Silt: Brown (7.5 YR 5/4), very fine sandy silt, very soft to somewhat
				crumbly, strong odor, saturated.
				3.0-5.0' Silt: Brown (7.5 YR 4/4), interbedded smooth sand grainy layers, smooth
				silt is plastic, sticky and clayey, grainy silt is somewhat crumbly, soft, many methane
				vesicles, strong odor, saturated.
80	85	5	4940-16500/	0-2.5' Silt: Same as above.
			7.1-9.3	2.5-5.0' Sand: Brown (7.5 YR 5/4), very fine sand, very silty, very well sorted,
				loose, strong odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWB-1

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
85	90	5	--	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, clayey from 4-5 feet, uniform, very soft, somewhat crumbly, methane vesicles, strong odor, saturated.
90	85	5	--	0-3.0' Silt: Reddish brown (5 YR 5/4), grainy, uniform, very soft, somewhat crumbly, strong odor, saturated.
				3.0-4.0' Silt: Reddish brown (5 YR 5/4), smooth to grainy crumbly, trace clay (may have been interbedded with clay varves), strong odor, saturated.
				4.0-5.0' Sand: Brown (7.5 YR 5/4), very fine sand, borderline grainy silt, uniform, loose, somewhat crumbly due to moisture, strong odor, saturated.
95	100	--	--	No recovery.
100	105	--	--	No recovery.
105	110	--	--	No recovery.
110	115	5	2240-5617/ 3.6-5.7	0-5.0' Sand: Brown (7.5 YR 4/4), very fine sand, very silty, liquefied, methane vesicles, driller reports sloppy from 95-115, tripped twice to recover 5 feet, felt like liquefied sand for whole 20 feet from 95-115 feet.
115	120	5	3057- >95200/ 2.3-10.0	0-2.5' Sand: Brown (7.5 YR 4/3), very fine sand, very silty, uniform, trace (<5%), fine sand, well sorted, strong odor, saturated.
				2.5-4.0' Silt: Brown (7.5 YR 5/3), grainy, some very fine sand, uniform, somewhat crumbly, strong odor, saturated.
				4.0-5.0' Silt: Brown (7.5 YR 5/3), grainy, finer than above material, soft, holds body better, uniform, strong odor, saturated.
				EOB @ 120 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-1 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 6/7/04 Drilling Completed 6/16/04

Total Depth Drilled 159 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5', 10' and 20' long, 4" Core barrel Sampling Interval continuous feet

Land-Surface Elev. 1045.19 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	1.5	0/0	0-1.5' Silt: Dark reddish brown (2.5 YR 2.5/3), organic rich silt, moist, soft, contains roots, twigs, etc, loose.
5	10	3	4-124/0	0-1.0' Silt: As above.
				1.0-2.5' Sand: Strong brown (7.5 YR 5/6)-0-6", very dark gray (7.5 YR 3/1) 6"-2.5', fine to coarse sand, trace gravel subangular to subrounded, gravel up to 1", trace silt, saturated, loose, poorly sorted.
				2.5-3.0' Sand/Silt: Brown (7.5 YR 4/4), very fine to fine sand with silt, low to moderate cohesive, trace gravel 0.5-3" subangular to rounded, saturated, matrix well sorted.
10	15	4	20-748/0	0-0.5' Silt: Dark brown (7.5 YR 3/3), silt with trace fine sand, sticky, saturated moderate cohesion, very soft, uniform.
				0.5-1.0' Sand/Gravel: Dark yellow brown (10 YR 3/4), fine to coarse sand with fine to coarse gravel from 0.5-3" angular to subrounded, some silt , predominately medium sand, saturated, loose, poorly sorted.
				1.0-1.5' Silt: Dark yellowish brown (10 YR 4/4) silt, trace very fine sand, soft, low to moderate cohesion, saturated.
				1.5-2.0' Sand/Gravel: Dark yellowish brown (10 YR 4/4), medium to coarse sand with fine to coarse gravel, gravel subangular to subrounded and 0.25-2" diameter, trace silt, poorly sorted, loose, saturated.
				2.0-2.5' Silt: Brown (7.5 YR 4/4), silt with trace medium to coarse sand and trace gravel, gravel approximately 0.25" in diameter and subrounded, sand poorly sorted within silt, soft to medium stiff, low cohesion, somewhat crumbly.
				2.5-3.0' Sand/Gravel: As above.
				3.0-3.5' Silt: As above (2-2.5').
				3.5-4.0' Silt/Sand: Brown (7.5 YR 4/4), silt with very fine to fine sand, trace gravel, well sorted, very soft, uniform, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-1 Page 2 of 6

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
15	20	5	726-3195/	0-0.5' Slough.
			0	0.5-2.0' Sand: Reddish brown (5 YR 4/4), medium sand, trace silt, trace coarse sand,
				trace subangular gravel up to 0.25" in diameter, loose, saturated, moderately
				sorted.
				2.0-3.0' Gravel/Sand: Fine to coarse gravel with medium to coarse sand, gravel
				angular to subrounded, poorly sorted, loose, saturated, 2" seam of silt, as above
				2-2.5' of 10-15'.
				3.0-5.0' Silt/Sand: Brown (7.5 YR 4/4), silt with fine sand, some coarse sand, trace
				gravel, moderately sorted, saturated, soft, slight cohesion.
20	25	5	565-2535/	0-1.0' Sand: Brown (7.5 YR 4/4), fine to medium sand, traces silt, trace to some
			0	angular to subrounded gravel approximately 0.25-1" in diameter, poorly to
				moderately sorted, loose, saturated, gravel amount varies throughout.
				1.0-2.0': Silt/Sand: Dark yellowish brown (10 YR 4/4), silt with fine sand, trace clay,
				moderate cohesion, silt fissile, trace coarse sand, silt/clay seams up to 1",
				saturated, very soft.
				2.0-3.0' Sand: As above, trace gravel, matrix moderate to well sorted.
				3.0-3.6' Silt/Sand: Reddish brown (5 YR 4/3), silt with fine sand, little coarse sand,
				trace to little gravel, saturated, poorly sorted, low to moderate cohesion, sticky.
				3.6-4.0' Sand: As above, trace coarse gravel.
				4.0-4.8' Silt/Clay: Reddish brown (5 YR 4/4), silt/clay with some fine sand, trace
				coarse sand, trace gravel, soft to crumbly, saturated.
				4.8-5.0' Sand: Brown (7.5 YR 4/4), medium sand, trace coarse sand, trace silt,
				well sorted, loose, saturated.
25	30	5	1100-	0-1.0' Sand: Reddish brown (5 YR 4/4), medium sand, wells sorted, trace silt, trace
			28000/	fine gravel, loose, saturated, gravel subangular to subrounded.
			0.7-1.2	1.0-1.5' Silt/Clay: Silt brown (7.5 YR 4/4), clay reddish brown (5 YR 4/3),
				interbedded silt and clay, soft to medium stiff to crumbly, layers varved to 1" silt
				fissile.
				1.5-5.0' Sand: Reddish brown (5 YR 4/3), medium sand, trace silt, loose, saturated,
				well sorted, uniform.
30	35	5	100-6700/	0-3.5' Sand: As above.
			2.1-2.3	3.5-5.0' Sand, medium to coarse sand, predominately medium, trace subangular to
				subrounded gravel, well sorted, loose, saturated.
35	40	5	6-4200/	0-1.0' Sand: Reddish brown (5 YR 4/3), very fine to medium sand, trace silt, well
			4-4.5	sorted, loose, saturated, trace subrounded gravel up to 3" in diameter.
				1.0-2.0' Sand/Silt: Interbedded very fine to medium sand and very soft silt,
				intermixed pure portions, seams interbedded of sand as above.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-1 Page 3 of 6

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.0-2.5' Silt: Reddish brown (5 YR 5/3), very soft to crumbly, saturated, (same as
				silt above).
				2.5-5.0' Silt/Clay: Silt reddish brown (5 YR 4/3), clay reddish brown (5 YR 5/4),
				interbedded silt and clay, moderate to high cohesion, medium stiff to stiff, layers
				varved to 2", saturated, silt fissile, trace black staining.
40	45	5	4-12.5/	0-3.0' Silt/Clay: As above.
			3.8-3.9	3.0-5.0' Silt/Sand: Reddish brown (5 YR 4/4), silt with very fine sand, saturated, soft
				to crumbly, trace black staining, uniform.
45	50	5	4-18/	0-2.0' Silt/Sand: As above.
			3.5-3.6	2.0-5.0' Silt/Clay: Silt reddish brown (5 YR 4/3), clay reddish brown (5 YR 5/4),
				interbedded silt and clay, silt fissile, very soft to crumbly, moderate to high cohesion,
				plastic when worked, clay varved to 1" layers, silt 1-4" layers, saturated.
50	55	5	3.2-1002/	0-3.5' Silt/Clay: As above.
			3.1-4.9	3.5-4.5' Silt: Reddish brown (5 YR 5/4), trace very fine sand, very soft, very crumbly,
				loose, black staining, very low cohesion, saturated.
				4.5-5.0' Sand: Reddish brown (5 YR 5/4), very fine to fine sand, trace silt, loose,
				well sorted, saturated.
55	60	5	3-12.75/0	0-5.0' Silt: Reddish brown (5 YR 4/3), little clay, soft to crumbly, fissile, slightly
				sticky, uniform, saturated.
60	65	5	3-9/0	0-5.0' Silt: As above.
65	70	5	7-26/0	0-2.0' Silt: As above.
				2.0-5.0' Silt/Sand: Silt reddish brown (5 YR 4/3), sand dark reddish gray (5 YR 4/2),
				intermixed portions of pure very fine to fine sand and silt, soft to crumbly, fissile
				silt, each portion uniform, sand is loose, sand layers horizontal and vertical
				approximately 0.25-2", silt 3-6" thick, trace clay in silt.
70	75	5	1-19/0	0-0.5' Silt/Sand: As above.
				0.5-1.5' Sand: Brown (7.5 YR 4/3), very fine to fine sand, loose, well sorted,
				saturated, 0.25" silt seam reddish brown (5 YR 4/3).
				1.5-3.0' Sand/Silt: Color same as silt/sand as above, sand prominent over silt
				portions, sand layers 1-5.5" thick, silt layers 0.5-1.25", trace clay.
				3.0-4.0' Sand/Silt: Brown (7.5 YR 4/3), very fine to fine sand with some silt,
				saturated, loose, uniform, soft-crumbly, well sorted sand.
				4.0-5.0' Silt/Clay: Silt reddish brown (5 YR 4/3), clay reddish brown (5 YR 4/4),
				interbedded silt and clay, silt fissile, stiff to crumbly, clay plastic when worked,
				swirled interbedding.
75	80	5	1-2.5/0	0-0.5' Slough.
				0.5-1.25' Silt/Sand: Brown (7.5 YR 4/4), silt with very fine to fine sand, saturated,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-1 Page 4 of 6

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				trace angular to subangular gravel up to 2" in diameter, clay seam 1" thick,
				trace clay throughout.
				1.25-5.0' Sand: Brown (7.5 YR 4/3), very fine sand, loose, trace silt, well sorted,
				trace gravel up to 1" in diameter, silt amount varies throughout, thus greater
				cohesion in some areas.
80	85	5	1.5-2.9/0	0-3.0' Sand: Brown (7.5 YR 4/4), fine to medium sand, trace coarse sand, trace
				subrounded gravel, well sorted, uniform, coarsens with depth, last 6" medium
				sand, saturated.
				3.0-4.0' Silt/Clay: Silt brown (7.5 YR 4/3), clay reddish brown (5 YR 4/4), interbedded
				silt and clay, silt soft to crumbly, trace very fine sand, 0.25-0.5" clay layers, silt
				0.5-2" layers, clay plastic, sand pocket of medium sand with trace coarse 2" thick,
				silt fissile, moderate cohesion, saturated.
				4.0-5.0' Silt/Clay/Sand: Silt and sand brown (7.5 YR 5/3), clay reddish brown
				(7.5 YR 4/4), silt intertwined with clay, some gravel, fine to coarse sand, gravel
				angular to subrounded 0.25-2" in diameter, fissile silt, swirled along length, poorly
				sorted sand.
85	90	5	2-7/0	0-0.5' Sand/Gravel: Reddish brown (7.5 YR 4/3), fine to coarse sand with fine to
				coarse gravel, gravel angular to subrounded with diameter up to 1", trace silt,
				poorly sorted, loose, saturated.
				0.5-1.0' Silt/Clay: As above.
				1.0-1.5' Sand: Brown (5 YR 4/3), fine to coarse sand, predominately medium, trace
				subangular gravel up to 1" in diameter, matrix moderately sorted, loose, saturated.
				1.5-3.0' Silt/Clay/Sand: As above, clay reddish brown (5 YR 4/3), silt dark reddish
				brown (5 YR 4/2), more clay (3" plastic layer) than above, silt fissile, swirled and
				banded.
				3.0-5.0' Sand: Fine and coarse sand, some fine to coarse gravel which is
				subangular to rounded, poorly sorted, loose, saturated, gravel up to 1.5" in
				diameter.
90	95	5	3-17/0	0-3.0' Sand/Gravel: Brown (7.5 YR 4/3), fine to coarse sand, fine to coarse gravel,
				gravel is angular to subrounded, poorly sorted, trace silt, saturated, loose.
				3.0-5.0': Sand/Gravel: As above brown (7.5 YR 4/2), very silty, slight increase in
				amount of gravel.
95	100	5	5-18/	0-5.0' Sand: Brown (7.5 YR 4/4), fine to coarse sand, well sorted, predominately
			0.7-1.5	fine sand, loose, saturated, uniform, trace subangular to subrounded gravel, slight
				odor.

Sample/Core Log (continued)

Boring/Well GMEWC-1

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
100	105	5	6-14/	0-0.5' Sand: As above.
			0.7-2.5	0.5-3.5' Sand/Gravel: As above, some silt, holds shape low to moderate cohesive,
				sand becomes medium to coarse with depth, well sorted matrix, gravel up to 1" in
				diameter.
				3.5-4.5' Sand: Fine to coarse sand, predominately fine, some subangular to
				subrounded gravel, poorly sorted, loose, saturated, trace to little silt.
				4.5-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, predominantly fine sand,
				uniform, trace silt, well sorted, loose, saturated.
105	110	5	8-10/	0-0.5' Sand: As above.
			2.1-3.1	0.5-2.0' Silt/Clay: Clay reddish brown (5 YR 4/3), silt to brown (7.5 YR 4/3),
				interbedded silt and clay, 3" sand seam of very fine to fine sand, trace silt, well
				sorted, loose, silt soft to crumbly with clay varving, saturated.
				2.0-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, fine sand prominent, trace
				silt, loose, well sorted, saturated.
110	115	5	12-60/1.7-3	0-5.0' Sand: Brown (7.5 YR 4/2), fine to coarse sand, trace gravel, less than trace
				silt, predominantly medium sand, loose, saturated, well sorted, (2-3') very fine to
				fine sand, some silt, siltier than 0-2' and 3-5', predominantly fine sand coarsens and
				silt content decreases with depth.
115	120	5	14-35/	0-5.0' Sand/Silt: Dark reddish brown (5 YR 4/2), very fine to medium sand with
			0.1-0.4	silt, very silty, saturated, soft to loose, trace coarse sand, well sorted sand, last foot
				much less silt, predominately fine to medium sand.
120	125	5	310-2400/	0-5.0' Sand: Reddish brown (5 YR 4/3), fine to medium sand, predominately
			0.2-0.4	fine, little silt, trace coarse, well sorted, low cohesion, black staining, strong odor,
				2.5'-5' fine to coarse sand, predominately medium, trace silt, well sorted, loose,
				saturated.
125	130	5	4100-	0-5.0' Sand: As above (2.5-5 of 120-125') some coarse sand, trace gravel,
			31000/	moderate sorting, loose, saturated, trace to little silt, low cohesion, predominately
			0.2-0.5	fine.
130	135	5	920-31100/	0-0.5' Sand: Reddish brown (5 YR 4/3), as above.
			0.5-3.8	0.5-1.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, predominately fine,
				trace medium sand, trace silt, loose, saturated.
				1.0-2.0' Sand: Reddish brown (5 YR 4/3), very fine to medium, predominately
				fine sand, some subangular to subrounded gravel up to 1" in diameter, poorly
				sorted, loose, saturated.
				2.0-5.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, little to some silt,
				strong odor, well sorted, low cohesion to loose, predominately fine sand, variable

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Sample/Core Log (continued)

Boring/Well GMEWC-1 Page 6 of 6

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				silt in nodules throughout/pockets up to 1" diameter, contain very trace clay and
				black staining.
135	140	2	906-7600/	0-2.0' Sand: As above reddish brown (5 YR 4/3), trace coarse, trace gravel, no silt
			0-1.8	nodules, strong odor.
140	145	5	421-6300/	0-2.5' Sand: Color as above, fine to medium sand, trace coarse sand,
			0.1-2.2	predominately medium, trace subrounded gravel up to 0.5", well sorted, loose,
				saturated, little to some silt.
				2.5-4.0' Sand: Color as above, very fine to medium sand, predominately medium,
				well sorted, loose, saturated, trace silt, 1" silt seam (crumbly to soft).
				4.0-4.5' Silt: Reddish gray (5YR 5/2), soft, sticky, goes to grainy silt with depth,
				saturated, soft to crumbly, trace clay.
				4.5-5.0' Silt/Sand/Gravel/Clay: Till, gravel up to 3" angular to subrounded,
				weathered rock, fine to coarse sand, poorly sorted.
145	150	5.0	2300-	0-1.5' Silt/Sand/Gravel/Clay: As above.
			31000/	1.5-2.0' Sand, loose, very fine to medium sand, predominantly fine, trace silt, well
			2.2-5.7	sorted, saturated.
				2.0-2.5' Silt: Brown (7.5 YR 4/4), soft to crumbly silt, trace very fine sand, saturated,
				low to moderate cohesion.
				2.5-5.0' Silt: Brown (7.5 YR 4/4), grainy silt, trace coarse sand, soft to crumbly
				saturated, strong odor.
150	155	5	792-28600/	0-0.5' Silt/Gravel: Dark red brown (5 YR 3/2), silt soft to crumbly, poorly sorted
			5.9-7.2	gravel subangular to subrounded up to 1", saturated, strong odor, loose gravel.
				0.5-2.0' Sand: dark red gray (5 YR 4/2), very fine to coarse, predominately medium,
				well sorted, loose, saturated, coarsens with depth.
				2.0-2.5' Sand: Red brown (5 YR 4/3), very fine to medium, predominately fine, trace
				coarse, loose, saturated, well sorted.
				2.5-5.0' Silt/Gravel/Sand/Clay: Reddish brown (5 YR 4/3), soft to crumbly, subangular
				to subrounded gravel up to 1.5", saturated, poorly sorted, fine to coarse gravel, fine
				to coarse sand, till.
155	159	3	348-911/	0-3.0' Silt/Gravel/Sand/Clay: Soft to stiff, till.
			0-2.3	0-0.5' Color as above.
				0.5-3.0' Dark green gray (GLEY 1 4/5GY).
				EOB @ 159'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-1A Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 6/17/04 Drilling Completed 6/19/04

Total Depth Drilled 162.5 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5, 10, 20-foot lengths, 4-inch core barrel Sampling Interval continuous feet

Land-Surface Elev. 1045.68 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	55			Blind drilled. See log for GMEWC-1.
55	60	5	2.5-3.0/	0-5.0' Silt: Reddish brown (5 YR 4/3), trace clay, soft to crumbly, fissils, sticky,
			1.3-5.2	uniform, saturated.
60	65	5	3.6-14/	0-0.5' Silt: As above.
			1-3.1	0.5-1.5' Silt: As above with clay lenses, yellowish red (5 YR 4/6).
				1.5-5.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, trace silt, loose,
				well sorted, saturated.
65	70	5	7.8-9.3/	0-0.25' Silt: Reddish brown (5 YR 4/3), soft to crumbly, uniform, saturated.
			2-3.1	0.25-5.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, trace silt, clay
				lenses, yellowish brown (5 YR 4/6), loose, saturated.
70	75	5	2.7-6.2/	0-0.5' Silt/Clay: Silt reddish brown (5 YR 4/3) clay reddish brown (5 YR 4/4),
			3.1-4.5	interbedded, soft to crumbly, 1-2" thick silt layers, varve to 1" clay layers, fissil,
				saturated.
				0.5-1.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, clay lenses, loose,
				well sorted, saturated.
				1.0-5.0' Silt/Clay: Silt reddish brown (5 YR 4/3), clay yellowish red (5 YR 4/6),
				interbedded, grainy, soft to crumbly, fissil, clay varve to 1-inch, silt 0.5 to 4 inch,
				saturated.
75	80	5	0-1/	0-2.5' Silt: Reddish brown (5 YR 4/3), trace fine sand, trace clay, trace subrounded
			0.8-1.62	gravel, gravel up to 0.5 inch, grainy silt, soft to crumbly, saturated.
				2.5-3.0' Sand/Silt: Brown (7.5 YR 4/3), very fine to fine sand, trace clay, low
				cohesiveness, soft to crumbly, saturated.
				3.0-3.5' Gravel/Sand: Brown (7.5 YR 4/4), fine to coarse sand and gravel, gravel up
				to 2 inches, loose, poorly sorted, saturated.
				3.5-5.0' Silt: Brown (7.5 YR 4/3), grainy, trace medium to coarse sand, soft,
				uniform, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-1A

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
80	85	5	1.2/6	0-4.0' Sand/Silt: Brown (7.5 YR 4/3), very fine to fine sand, trace coarse sand
			0.8-12	3.5-4 feet, trace to little subrounded gravel, gravel up to 1inch, grainy silt, soft to
				loose, saturated.
				4.0-5.0' Silt/Clay: Silt reddish brown (5 YR 4/4), clay yellowish red (5 YR 4/6),
				interbedded, grainy silt, plastic, clay, soft to crumbly, clay varve to 0.5 inch, silt
				0.5-4 inch, saturated.
85	90	5	1.7-4.0/	0-4.0' Sand/Gravel: Brown (7.5 YR 4/4), fine to coarse sand, mostly fine,
			5.0-8.46	subangular to subrounded gravel, gravel up to 3 inches, little silt, poorly sorted,
				loose, saturated.
				4.0-5.0' Sand/Gravel: As above except mostly coarse sand.
90	95	3	2.2-3.6/	0-2.0' Sand/Gravel: As above.
			9.0-12.54	2.0-3.0' Gravel/Sand: Coarse sand, fine to coarse subangular to subrounded
				gravel, mostly gravel, loose, poorly sorted, saturated.
95	100	5	2.3-3.76/	0-0.5' Sand/Gravel: As above.
			1.4-0.94	0.5-5.0' Sand: Dark yellowish brown (10 YR 4/4), very fine to medium sand,
				mostly fine sand, trace to little silt, loose, well sorted, saturated.
100	105	5	3.6-5.4/	0-1.0' Sand: As above.
			.88-1.32	1.0-5.0' Sand: Dark yellowish brown (10 YR 4/4), fine to medium sand, mostly fine
				sand, trace silt, trace coarse sand, some subangular to subrounded gravel from
				1-1.5 and 2-2.5 feet loose, well sorted, saturated.
105	110	5	2.3-9.4/	0-4.0' Sand: Dark yellowish brown (10 YR 4/4), fine to coarse sand, mostly fine
			0.5-.97	and medium sand, trace gravel and silt, loose, well sorted, saturated.
				4.0-5.0' Sand: Yellowish brown (10 YR 5/4), very fine to fine sand, little silt, loose,
				well sorted, saturated.
110	115	4	3-5/0-0.91	0-1.0' Sand: Yellowish brown (10 YR 5/4), fine to coarse sand, mostly medium and
				coarse sand, trace silt, loose, well sorted, saturated.
				1.0-2.0' Sand: Yellowish brown (10 YR 5/4), very fine to fine sand, trace silt, loose,
				well sorted, saturated.
				2.0-4.0' Silt/Sand: Brown (10 YR 4/3), trace coarse sand and clay, soft to crumbly
				to loose, saturated.
115	120	5	920-3400/	0-5.0' Sand: Dark yellowish brown (10 YR 4/4), very fine to medium sand, mostly
			0.48-0.82	fine and medium sand, loose, moderately sorted, strong odor, saturated.
120	125	5	4000-9700/	0-5.0' Sand: Dark yellowish brown (10 YR 4/4), very fine to coarse sand, mostly
			.61-.98	fine to medium sand, trace silt, trace subrounded gravel, loose, moderately sorted,
				strong odor, saturated.
125	130	5	170-3400/	0-1.5' Sand: As above.
			.14-.58	1.5-3.0' Sand/Gravel: Dark yellowish brown (10 YR 4/4), very fine to coarse sand,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-1A

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				mostly fine sand, little silt, subrounded gravel, loose, poorly sorted, strong odor,
				saturated.
				3.0-5.0' Sand: Dark yellowish brown (10 YR 4/4), very fine to medium sand, mostly
				fine to medium sand, loose, well sorted, strong odor, saturated.
130	135	5	1500-8900/	0-1.0' Sand: As above.
			0.2-0.77	1.0-3.0' Sand: Dark yellowish brown (10 YR 4/4), very fine to fine sand, some silt,
				loose, well sorted, strong odor, saturated.
				3.0-4.5' Silt: Dark yellowish brown (10 YR 4/3), trace coarse and, stiff to crumbly,
				mostly uniform, strong odor, saturated.
				4.5-5.0' Sand: Yellowish brown (10 YR 5/4),fine to coarse and, trace gravel, little
				silt, mostly medium sand, loose, poorly sorted, strong odor, saturated.
135	140	5	1680-3400/	0-4.0' Sand: Brown (10 YR 4/3), very fine to medium sand, mostly fine, some silt,
			1.10-1.42	loose, well sorted, strong odor, saturated.
140	145	5	2000-3100/	0-3.0' Sand: As above.
			0.2-1.17	3.0-4.0' Silt: Dark yellowish brown (10 YR 4/4), some clay, stiff to crumbly, plastic,
				fissil, strong odor, saturated.
				4.0-5.0' Silt/Sand/Gravel: Dark grayish brown (10 YR 4/2) gravel up to 3 inches,
				stiff to loose, poorly sorted, strong odor, saturated.
145	150	5	1900-12000/	0-4.0' Silt/Sand/Gravel: As above.
			0.27-0.68	4.0-5.0' Sand: Dark yellowish brown (10 YR 4/4), very fine to medium sand, mostly
				fine to medium sand, loose, well sorted, strong odor, saturated.
150	155	5	2500-8000/	0-1.0' Silt: Dark grayish brown (10 YR 4/2), soft to crumbly, uniform, strong odor,
			0.33-1.08	saturated.
				1.0-1.5' Sand/Silt/Gravel: Same as 144-145'.
				1.5-3.0' Sand: Dark yellowish brown (10 YR 4/4), fine to medium sand, mostly
				medium sand, trace coarse sand, loose, well sorted, loose, strong odor, saturated.
				3.0-5.0' Sand: Dark yellowish brown (10 YR 4/4), fine to coarse sand, trace
				subrounded gravel, mostly medium to coarse sand, loose, poorly sorted, strong
				odor, saturated.
155	160	5	3300-10000/	0-1.0' Sand: As above, except trace silt, methane bubbles.
			0.56-1.42	1.0-5.0' Sand/Gravel: Brown (10 YR 4/3), fine to coarse sand, mostly medium to
				coarse sand, trace silt, more fine sand with depth (2.5-5'), gravel up to 3 inches,
				weathered rock-break by hand, loose, poorly sorted, strong odor, saturated.
160	162.5	2.5	600-3000/	0-1.5' Sand/Gravel: Dark grayish brown (10 YR 4/2), mostly fine sand, poorly
			0.3-0.56	sorted, loose, saturated.
				1.5-2.5' Bedrock: Crushed/powdered.
				EOB @ 162.5

ARCADIS

Sample/Core Log

Boring/Well GMEWC-2 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 6/17/04 Drilling Completed 6/19/04

Total Depth Drilled 192 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval 10-20 feet

Land-Surface Elev. 1043.87 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Jessie/Jo

Prepared By Paul Lenaker/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	3.3-42.7/	0-4.8' Silt: Dark brown (7.5 Yr 3/3) little to some clay, silt is mostly smooth, abundant
			1.39-10.1	organics, rootlets, twigs, color grades into somewhat darker brown very dark brown
				(7.5 YR 2.5/2) below approximately 2.5, wet to saturated, trace to little very fine
				sand, sandier layer approximately 2" thick at 3.0 and 0.5" thick at 4.0, no odor.
				4.8-5.0' Sand: Dark yellowish brown (10 YR 3/6), predominately very fine to fine
				grain, some silt, loose to somewhat cohesive some blackish staining, a few grains are
				shiny, no odor, wet to saturated.
5	10	5	4.2-7.5/	0-1.0' Slough.
			4.17-9.35	1.0-1.7' Sand: As above.
				1.7-3.0' Sand and Gravel: Very dark brown (7.5 YR 2.5/3) much silt, silt is grainy
				with some shiny grains (pyrite?), sand very fine to very coarse, poorly sorted mixture,
				gravel mostly subround to approximately 4", trace clay, loose, no odor.
				3.0-4.0' Sand and Gravel: As above, but color changes to dark yellowish brown
				(10 YR 3/6), and sand is somewhat coarser overall, also less silt, no odor.
				4.0-5.0' Sand: Brown (7.5 YR 4/4), fine to coarse, predominately medium, some to
				much gravel subangular to subround, up to approximately 3", moderately sorted,
				loose, wet, no odor.
10	15	1	6.47/31.1	0-1.0' Sand: As above, but slightly finer grain overall, one 4.5" oblong rock at end
				of sample, no odor.
15	20	5	-5.1-14.3/	0-5.0' Sand: Brown very fine to fine grain, silty areas (nodules) silt is grainy, trace
			3.71-20.45	very coarse sand and fine gravel, well sorted sand, loose, wet, no odor.
20	25	5	7.3-13.41/	0-5.0' Sandy Silt: Brown (7.5 YR 4/4), little gravel subangular to subround to 2",
			0.42-4.69	sand predominately trace to little clay in nodules yellowish red (5 YR 5/6), some-
				what cohesive, sandy seam at 3.0 medium to very coarse sand, also silty, wet, no
				odor, clay is plastic when worked.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-2 Page 2 of 5

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
25	30	5	16.4-17.6/	0-2.0' Sandy Silt: As above.
			0.92-17.12	2.0-4.0' Sandy Silt: Brown (7.5 YR 4/4), sand, trace gravel, subangular to subround
				to 1.5",sand in lenses/pockets, silt grainy to smooth, somewhat cohesive, trace clay
				as above, moist, no odor.
				4.0-5.0' Silt and Clay: Colors as above, silt as above, laminated with laminations
				mm's thick, gravel lenses with gravel up to 0.5" subround to subangular, firm,
				moist, no odor.
30	35	5	12.3-22.4/	0-3.5' Silt and Clay: As above, but laminations are more closely spaced down section.
			4.88-55.82	3.5-4.5' Sand and Gravel: Brown (7.5 YR 3/4) silty, sand very fine to very coarse,
				gravel subangular to subround to 0.5", poorly sorted mixture, loose, wet, no odor.
				4.5-5.0' Sandy Silt: As above in 27-29.
35	40	5.0	-4.67- -4.25/	0-0.5' Slough.
			8.6-815	0.5-5.0' Sand: Brown (7.5 YR 4/3), fine to medium grain, some very fine, trace
				coarse to very coarse, moderately well sorted, 2" thick coarser seam at 3.5
				predominately medium to coarse, loose, wet, no odor.
40	45	5	-4.75- -4.28/	0-2.0' Sand: Brown (7.5 YR 5/4), as above, but gradually fining toward 2.0,
			134-3300	predominately very fine to fine at 2.0, well sorted, no odor.
				3.0-5.0' Sand: Brown (7.5 YR 5/4), predominately very fine, some fine, well sorted,
				homogenous, loose, wet, no odor.
45	50	5	-4.68-3.93/	0-2.5' Sand: As above.
			27-2780	2.5-3.0' Sand and Gravel: Brown (7.5 YR 4/4) silty, sand very fine to very coarse,
				gravel subangular to subround to 3", poorly sorted mixture, loose, saturated,
				no odor.
				3.0-5.0' Silt: Reddish brown (7.5 YR 4/4), silt is grainy, trace to little clay, crumbly
				to slight to somewhat cohesive, slightly coarse 4.5-5.0' approaching very fine
				sand, saturated, no odor.
50	55	5	-4.22- -3.12/	0-5.0' Silt: As above, very grainy, approaching very fine sand, wet, no odor.
			19-39	
55	60	5	-5.31-0.46/	0-5.0' Silt: As above, reddish brown (5 YR 5/4) very grainy, grades into very fine
			7.13-12.1	sand in places, borderline silt/very fine sand throughout, slight coarsing 4.0-5.0',
				a few nodules where silt is smooth 0-1.0', overall homogenous, loose to slightly
				cohesive, wet to saturated, (drilling fluid), no odor.
60	65	5	-1.42 - 1.26/	0-5.0' Sand: Reddish brown (5 YR 5/4) very fine grained, approaches silt in places,
			24-116	slight trace reddish clay in small lenses, well sorted, loose, moist to wet, no odor.
65	70	5	-2.71 - 1.20/	0-5.0' Sand: As above, extremely fine grain, moist, no odor, slight coarsening down
			4.34 - 51	to very fine to fine grain at 5.0' .

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-2 Page 3 of 5

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
70	75	6	3.25-3.22/	0-5.0' Sand: Reddish brown (5 YR 5/4) very fine grained, very well sorted,
			27-77	homogenous, loose, moist, no odor.
75	80	5	-5.46- -4.84/	0-4.0' Silt/Sand: Reddish brown (5 YR 5/4) silt grainy to smooth, sand very fine,
			5.51-12.04	some to little clay, mostly in nodules, silt also concentrated in nodules but also in
				matrix, somewhat cohesive, but saturated/soupy from filling fluid, no odor.
				4.0-5.0' Silt and Very Fine Sand: As above, but clay nodules are reddish brown
				(5 YR 4/4).
80	85	5	-5.41 - -3.28/	0-5.0' Silt and Sand: Reddish brown as above, silt is grainy, homogenous,
			18.51-37	vesicles throughout, wet, trace dark colored staining, slight odor.
85	90	5	-4.09 - -2.95/	0-3.5' Silt/Very Fine Sand: As above.
			8.37-41	3.5-4.5' Silt: Brown (7.5 YR 4/4), finer grain than above, silt is smooth, firm,
				clayey, slightly plastic, somewhat cohesive, wet, slight to moderate odor.
				4.5-5.0' Silt/Very Fine Sand: As above.
90	95	5	-4.32 - -3.66/	0-1.0' Silt: Brown (7.5 YR 4/4), smooth, trace clay, somewhat cohesive, vesicles,
			14-42	moderate odor, gradation/contact with unit below, (coarsens).
				1.0-4.5' Silt and Sand: Brown (7.5 YR 4/4), sand is very fine, silt is grainy, comingled
				with sand, overall homogeneous unit, loose, well sorted, moist, moderate odor.
				4.5-5.0' Silt: Brown as above, very fine, smooth, somewhat cohesive, trace very
				fine sand, moist, slight odor.
95	100	5	5.59- -5.07/	0-5.0' Silt and Sand: As above in 91 to 94.5 brown (7.5 YR 4/4), sand very fine,
			15-795	silt is grainy, loose, homogenous, well sorted, saturated from drilling fluids, odor.
100	105	5	-5.43 - -5.22/	0-1.0' Silt and Very Fine Sand: As above.
			64.5-523	1.0-5.0' Silt: Brown (7.5 YR 5/4) grainy to smooth, vesicles, trace dark staining,
				loose to very slightly cohesive, wet, odor.
105	110	5	-5.24 - -4.04/	0-5.0' Silt: As above, more staining, possible trace clay.
			185-5.84	
110	115	5	5.30- -4.67/	0-5.0' Silt: As above, trace to little very fine sand 2.2-2.3, wet, homogenous
			541-932	throughout, odor.
115	120	5	-5.25 - -5.13/	0-5.0' Silt: Brown (7.5 YR 5/4), as above, smooth to grainy in places, trace very
			10.22-106.11	fine to very coarse sand 1.2-1.4', loose to slightly cohesive/firm, wet, odor.
120	125	5	-5.16 - -4.01/	0-5.0' Silt: Brown (7.5 YR 5/4) as above but slightly coarser, silt is grainer, some
			219-523	very fine sand 2.0-3.0 and 4.0-5.0 in lenses, trace clay in nodules or lenses 2.0-3.0
				and 4.0-5.0, clay is reddish brown, overall loose to slightly cohesive, moist to wet,
				odor, trace staining and vesicles.
125	130	5	4.91 - -4.78/	0-1.5' Silt: As above with very fine sand pocket at 1.3-1.5'.
			1492-2126	1.5-5.0' Sand: Brown (7.5 YR 4/2), some to much silt in places, silt in nodules and
				also intermixed, sand predominately fine, but some very fine, medium, trace

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Sample/Core Log (continued)

Boring/Well GMEWC-2 Page 4 of 5

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				coarse, somewhat coarser 1.5-2.5, moderately sorted, loose, odor.
130	135	5	-4.96 - -4.50/	0-2.0' Silty Sand: As in 1.5-5.0.
			752-2757	2.0-3.0' Sand: Brown (7.5 YR 4/3), predominately fine to medium, trace very fine,
				some coarse to very coarse, moderately sorted sand, trace fine gravel subangular to
				subrounded, loose, odor.
				3.0-3.2' Gravel: Multicolored, some coarse to very coarse sand, gravel fairly
				uniform size mostly 0.5-1" subangular to subround, some silt and very fine sand,
				loose, saturated, odor.
				3.2-5.0' Sand and Gravel: Very dark gray (7.5 YR 3/1) sand very fine to very coarse,
				gravel subround to 2", some silt, poorly sorted mixture, some fining down toward
				5.0', very silty with predominantly very fine to fine sand 4.5-5.0, loose, odor.
135	140	5	-4.57 - -4.07/	0-2.0' Sand and Gravel: Very dark gray (7.5 YR 3/1) some silt, gravel mostly fine,
			1008-6420	but some up to 3" subangular to subrounded, especially larger (cobbles), 1.5-2.0'
				sand, loose, very fine to very coarse, predominately coarse saturated, odor.
				2.0-4.5' Sand: Very dark gray as above, trace to little silt, trace fine gravel, sand
				very fine to very coarse, moderate sorted, predominately coarse to very coarse, loose,
				wet to saturated, odor.
				4.5-5.0' Sand: Brown (7.5 YR 4/3) very fine grained, some to much silt, well
				sorted, silt is grainy, loose, wet, odor.
140	145	5	-4.08 - -3.83/	0-5.0' Sand and Silt: Brown (7.5 YR 4/3), sand very fine to fine, silt mostly grainy,
			10100-13700	intermixed with sand 1.5-2.5, some sandier pockets throughout, loose to
				slightly cohesive overall, wet, odor.
145	150	5	-4.05 - -3.77/	0-5.0' Sand and Silt: Brown (7.5 YR 4/3) as above, silt grainy to somewhat smooth
			11800-15080	in places, sand predominately very fine with some fine grain 0-2.0 slightly coarser
				overall, 0-2.0' then fines downward, loose to slightly cohesive, sand/silt intermixed,
				wet, odor.
150	155	5	-3.97 - -3.71/	0-2.0' Sand and Silt: As above.
			13500-27500	2.0-5.0. Sand: Brown (7.5 YR 4/3) little silt, sand very fine to fine grain, well
				sorted, loose, wet, odor.
155	160	6	2.68-7.29/	0-5.0' Sand: Brown (7.5 YR 4/3), silty to very silty in places, trace very coarse sand
			720-6924	to very fine gravel 2.0-4.0, sand is very fine, well sorted, silt is grainy, much siltier
				4.7-5.0', less silty 2.0-4.0 with little to some silt, loose silt, wet, odor.
160	165	5	7.94 - 8.40/	0-3.5' Silt and Sand: Brown (7.5 YR 4/3) very silty, silt is grainy, sand very fine, clay
			2085-4110	nodules 1.5-2.5, reddish brown (5 YR 4/4), plalty/fissle in appearance, but
				cohesive and somewhat plastic when worked, also trace to little clay 2.5-3.5, slight
				to somewhat cohesive overall, wet to saturated, sandier 1-1.5', odor.
				3.5-5.0' Sand/Gravel/Silt: Brown (7.5 YR 4/3) trace to little clay, sand very fine to

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Sample/Core Log (continued)

Boring/Well GMEWC-2 Page 5 of 5

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				very coarse, gravel subangular to subround to 4", silt is grainy, poorly sorted
				mixture, till, fairly loose, and crumbly, noticeable fabric signature with gravel
				alignment, wet, odor.
165	170	5	9.12-10.08/	0-2.5' Sand/Gravel/Silt: As above slightly sandier 2.0-2.5' and becomes sandier
			2700-48900	2.0-2.5 and becomes sandier as silt grades into unit below.
				2.5-5.0 Sand and Gravel: Dark brown (7.5 YR 3/3), some silt, coarsens downward,
				trace clay, sand predominately fine to coarse, but poorly sorted mixture, mostly
				coarse to very coarse 4.5-5.0', but still silty, gravel subangular to subrounded to
				3", loose, wet to saturated.
170	175	5	10.52-11.13/	0-5.0' Sand and Gravel: As above, very silty, sand very fine to very coarse, but
			7095-51200	predominately coarse to very coarse, poorly sorted, gravel subangular to
				subround to 5", some weathered/rounded pieces of bedrock, (as gravel), fines are
				washed out, slightly finer overall 3.0-4.0, loose, wet, odor.
175	180	5	-20 - 1.44/	0-5.0' Sand and Gravel: Very silty, dark brown (7.5 YR 3/2) little clay, sand very fine
			935-9878	to very coarse, gravel subangular to subround to 4", very poorly sorted mixture,
				loose, wet, strong odor.
180	185	5	168-6.04/	0-1.5' Sand/Silt/Gravel: Brown (7.5 YR 5/3) trace clay, sand predominately very
			8335-98900	fine, some fine to medium, silt is grainy to smooth, gravel is angular to subangular
				up to 4", mostly weathered pieces of bluish to gray phyllite, hard, weathered
				parts are crumbly, mixture is loose, poorly sorted, grades into unit below.
				1.5-2.5' Silt and Sand: Brown (10 YR 4/3) some to much gravel mostly subround
				to 3" grading in from above, gravel fines out downward, no gravel 2.3-2.5, silt
				is grainy, approaching very fine sand, loose to slightly cohesive, moist to wet,
				odor.
				2.5-5.0' Silt/Sand/Gravel/Clay: Dark grayish brown (10 YR 4/2), sand very fine to
				very coarse, silt moistly grainy, gravel subangular to subround to 3", somewhat
				coarser overall 4.5-5.0', poorly sorted mixture, clay mixed in but also some
				reddish nodules slightly plastic, loose, wet, odor.
185	191	5	4.03-43.95/	0-2.0' Silt/Sand/Gravel/Clay: Dark grayish brown, as above.
			3815-42500	2.0-5.0' Silt/Sand/Gravel: Dark gray (7.5 YR 4/1) crushed hardpan till powdery,
				crumbly, poorly sorted mixture, silt grainy, sand very fine to very coarse, gravel
				angular to subround to 4", much is bedrock (?) pieces, phyllite greenish gray,
				some pieces of crushed hardpan can be broken by hand, weathered (?), loose,
				dry to damp, odor.
191	192	1	242/4000	0-1.0' Bedrock: Dark greenish gray (2 Gley 4/1) phillite, crushed into angular
				pieces and pulverized into powder, moist to dry, some odor.
				EOB @ 192.

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Sample/Core Log

Boring/Well GMEWC-2A Project/No. Ford/Kingsford WI001075.0023 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 9/28/04 Drilling Completed 9/29/04

Total Depth Drilled 195 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' and 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1043.77 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	2	16.72-173/	0-0.5' Fill: Silt, slate.
			8.8-15.14	0.5-2.0' Silt: Dark yellowish brown (10 YR 3/4), organic, roots, crumbly, damp to
				moist.
5	10	2	2.83-16.23/	0-1.0' Sand: Dark yellowish brown (10 YR 4/6), fine to coarse sand, mostly fine
			15.04-23.18	sand, little fine to coarse subrounded gravel up to 2 inches, trace clay, very silty,
				loose, very poorly sorted, no odor, saturated.
				1.0-2.0' Sand: Dark yellowish brown (10 YR 3/6), fine to coarse sand, mostly medium
				sand, trace subrounded gravel up to 2 inches, pyrite sample sparkles, loose, very
				poorly sorted, no odor, saturated.
10	15	1	18.8/12.91	0-1.0' Sand/Gravel: Dark yellowish brown (10 YR 3/6), fine to coarse sand, mostly
				fine sand, silty, some subrounded gravel up to 2 inches, loose, very poorly sorted,
				liquefied, saturated.
15	20	--	--	No recovery.
20	25	--	--	No recovery.
25	30	--	--	No recovery.
30	35	5	1.9-14.89/	0-1.0' Sandy Silt: Yellowish brown (10 YR 5/6), fine sand, very silty, low cohesion,
			0	no odor, saturated.
				1.0-2.0' Sandy Silt: Same as above but with some fine to medium subrounded
				gravel up to 1inch.
				2.0-4.0' Sand, dark yellowish brown (10 YR 4/4), fine sand, trace silt, loose, well
				sorted, no odor, saturated.
				4.0-5.0' Sandy Silt: Same as 31-32 feet.
35	40	5	15.02-10.01/	0-2.0' Sand: Yellowish brown (10 YR 5/6), very fine to fine sand, mostly fine sand,
			0	silty, trace medium sand, loose, moderately sorted, no odor, saturated.
				2.0-4.0' Sand: Same as above with trace coarse sand and trace subrounded
				gravel up to 1 inch.

Sample/Core Log (continued)

Boring/Well GMEWC-2A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				4.0-4.5' Sand: Dark yellowish brown (10 YR 4/4), medium sand, trace silt, uniform,
				loose, very well sorted, no odor, saturated.
				4.5-5.0' Sand: Yellowish brown (10 YR 5/4), very fine to fine sand, mostly fine
				sand, uniform, loose, well sorted, no odor, saturated.
40	45	5	5.89-17.07/	0-1.0' Sand: Same as above.
			0	1.0-5.0' Sand: Dark yellowish brown (10 YR 4/6), very fine sand, uniform, loose,
				well sorted, saturated.
45	50	5	12.15-17.89/	0-1.0' Sand: Same as above.
			0-2.28	1.0-3.0' Sand: Yellowish brown (10 YR 5/6), fine to coarse sand, mostly fine sand,
				loose, well sorted, saturated.
				3.0-5.0' Silt: Yellowish red (5 YR 5/6), grainy, trace smooth fissily silt, uniform, soft,
				crumbly when worked, no odor, saturated.
50	55	5	5.06-189/	0-5.0' Silt: Same as above (no smooth silt), reddish brown (7.5 YR 4/4).
			0.03-2.54	
55	60	6	4.78-31.00/	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, uniform, holds body, somewhat
			0	crumbly when worked, slight odor, saturated.
60	65	5	4.45-187/0	0-5.0' Silt: Same as above.
65	70	5	7.75-33.14/	0-5.0' Silt: Same as above, strong odor.
			0-1.69	
70	75	5	12.14-6113/	0-1.0' Silt: Same As above.
			1.98-2.47	1.0-3.0' Silt: Yellowish red (5 YR 5/6), grainy, trace clay varving, crumbly when
				worked, uniform, strong odor, saturated.
				3.0-5.0' Silt/Clay: Silt reddish brown (5 YR 5/4), clay yellowish red (5 YR 4/6),
				interbedded, varved clay, silt 1 to 4 inches, smooth and grainy silt interbedded,
				crumbly when worked, strong odor, saturated.
75	80	5	0.51-27.74/	0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, uniform, somewhat crumbly when
			0	worked, trace black staining, bubbles in sample bag, strong odor, saturated.
80	85	5	0.31-14.45/	0-2.0' Silt: As above.
			0-0.42	2.0-4.5' Silt: Reddish brown (5 YR 5/4), smooth, fissily surfaces, very clayey, likely
				clay varving destroyed during drilling, uniform, sticky, plastic, strong odor,
				saturated.
				4.5-5.0' Silt: Same as 75-80 feet, reddish brown (5 YR 5/4).
85	90	5	3.51-50.11/	0-2.0' Silt: Reddish brown (5 YR 4/4), smooth, uniform, trace black staining,
			1.31-2.79	crumbly when worked, strong odor, saturated.
				2.0-5.0' Silt: Reddish brown (5 YR 5/3), grainy, uniform, somewhat crumbly
				when worked, strong odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-2A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
90	95	5	5.74-189/	0-1.0' Silt: Same as above.
			0-2.61	1.0-3.0' Silt: Reddish brown (5 YR 5/4), smooth and grainy silt interbedded,
				smooth is crumbly when worked, grainy is somewhat loose, uniform, strong odor,
				saturated.
				3.0-5.0' Silt: Reddish brown(5 YR 5/4), stiff, smooth fissily silt, very clayey, slightly
				plastic in spots, clay varving faintly seen, strong odor, saturated.
95	100	--	--	95-115' No recovery. Retainer used. Boart reports nothing in core barrel or
100	105	--	--	casing. Extremely soft, soupy feel, pushed material into formation. Used high
105	110	--	--	vibration to retrieve fast without pushing into formation.
110	115	--	--	
115	120	5	135-721/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth, fissily surface, uniform, crumbly when
			0.68-1.42	worked, soft, strong odor, saturated.
120	125	5	88-561/	0-2.0' Silt: Same as above.
			1.91-3.01	2.0-5.0' Silt: Brown (7.5 YR 4/2), reddish brown clay (5 YR 4/4), grainy, uniform,
				trace clay, crumbly when worked, varved clay-faint beds, strong odor, saturated.
125	130	5	106-421/	0-1.5' Silt: Brown (7.5 YR 5/4), smooth to grainy interbedded silt, smooth fissily
			1.5-4.59	silt, crumbly when worked, trace clay, soft, strong odor, saturated.
				1.5-4.0' Silt: Silt brown (7.5 YR 4/3), sand brown (7.5 YR 5/4), likely very fine sand
				beds, highly disturbed sample, trace medium to coarse sand (<5%), trace clay,
				smooth silt, crumbly when worked, strong odor, saturated.
				4.0-5.0' Silt: Silt brown (7.5 YR 4/3), sand brown (7.5 YR 4/3), smooth fissily
				surface, crumbly when worked, stiff, very fine sand (trace medium to coarse sand)
				seams, jumbled sample.
130	135	5	416-1655/	0-2.0' Silt: Same as above.
			2.57-5.49	2.0-2.5' Sand: Brown (7.5 YR 5/3), very fine to fine sand, mostly very fine sand, loose,
				well sorted, strong odor, saturated.
				2.5-3.0' Silt: Brown (7.5 YR 5/3), smooth silt, crumbly when worked, strong odor,
				saturated.
				3.0-4.0' Sand: Brown (10 YR 5/3), very fine sand, loose, very well sorted, strong
				odor, saturated.
				4.0-5.0' Sand: Dark brown (7.5 YR 3/2), fine to coarse sand, mostly fine sand, little
				medium sand, loose, very poorly sorted, strong odor, saturated.
135	140	5	287-671/	0-2.0' Slough.
			0.2-0.41	2.0-3.0' Sandy Silt: Brown (7.5 YR 4/3), very fine sand, very silt, trace medium sand,
				loose to somewhat crumbly, moderately sorted, strong odor, saturated.
				3.0-3.5' Sand: Dark grayish brown (10 YR 4/2), fine to coarse sand, mostly fine
				sand, little medium to coarse sand, trace silt, loose, very poorly sorted, strong odor,

Sample/Core Log (continued)

Boring/Well GMEWC-2A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				saturated.
				3.5-4.0' Silty Sand: Dark grayish brown (10 YR 4/2), very fine to fine sand, trace
				medium sand, low cohesion, somewhat lose, moderately sorted, strong odor,
				saturated.
				4.0-5.0' Sandy Gravel: Very dark gray (2.5 Y 3/1), fine to coarse sand, mostly
				medium sand, subangular to subrounded gravel up to 3 inches, loose, very poorly
				sorted, strong odor, saturated.
140	145	5	2805-7984/	0-1.5' Sand: Brown (10 YR 4/3), fine sand, trace coarse sand, loose, well sorted,
			0.75-1.18	strong odor, saturated.
				1.5-1.75' Sand: Dark grayish brown (10 YR 4/2), very fine to coarse sand, mostly
				fine, trace subangular gravel, loose, very poorly sorted, strong odor, saturated.
				1.75-3.0' Sand: Brown (7.5 YR 5/2), very fine to fine sand, mostly fine sand, trace
				silt, loose, well sorted, strong odor, saturated.
				3.0-5.0' Silt: Brown (10 YR 5/3), smooth and grainy silt, low cohesion, somewhat
				crumbly, mostly grainy, liquefied, strong odor, saturated.
145	150	5	2863-8871/	0-0.5' Silt: Same as above.
			1.16-1.31	0.5-1.0' Sand: Brown (710 YR 4/3), fine sand, uniform, loose, very well sorted,
				strong odor, saturated.
				1.0-5.0' Silt: Brown (10 YR 5/3), grainy (less grainy than 150-155 feet), uniform,
				trace black staining, somewhat crumbly, strong odor, saturated.
150	155	5	7000-18800/	0-5.0' Silt: Brown (10 YR 4/3), grainy, uniform, loose to somewhat crumbly,
			1.76-1.83	strong odor, saturated.
155	160	5	2150-3746/	0-2.5' Sand: Brown (10 YR 5/3), very fine sand, trace coarse sand, loose to somewhat
			1.75-1.91	crumbly, well sorted, strong odor, saturated.
				2.5-5.0' Silt: Silt brown (10 YR 4/3), clay yellowish red (5 YR 4/6), grainy, 0.25 inch
				clay, sample grades from above, uniform, loose to somewhat crumbly, vesicles,
				strong odor, saturated.
160	165	5	2209-7100/	0-3.0' Silt: Same as above.
			1.75-2.21	3.0-4.0' Silt/Clay: Reddish brown (5 YR 5/3), smooth silt up to 0.25 inches, varved
				clay, plastic, sticky, liquidy, uniform bedding, strong odor, saturated.
				4.0-5.0' Silt: Grayish brown (10 YR 5/2), smooth, very clayey, likely interbedded,
				liquefied, strong odor, saturated.
165	170	5	2255-38800/	0-5.0' Silt: Dark grayish brown (10 YR 4/2), grainy, uniform, trace clay varves from
			1.81-3.17	1-2 feet, loose to somewhat crumbly, strong odor, saturated.
170	175	5	4309-13800/	0-3.0' Silt: Dark grayish brown (10 YR 4/2), smooth and grainy silt interbedded,
			1.31-3.71	fissily smooth silt, grainy silt is low cohesion and loose to somewhat crumbly,
				mostly grainy silt, strong odor, saturated.

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Sample/Core Log (continued)

Boring/Well GMEWC-2A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				3.0-4.0' Silt: Brown (10 YR 5/3), smooth, trace fine gravel subrounded, trace clay
				varving, low cohesion, crumbly when worked, strong odor, saturated.
				4.0-5.0' Silt/Sand/Gravel: Reddish gray (5 YR 5/2), fine to coarse sand, subangular
				to subrounded gravel up to 3 inches, low cohesion, very poorly sorted, strong
				odor, saturated.
175	180	4	2318-13800/	0-2.0' Sand/Gravel: Brown (7.5 YR 4/3), fine to coarse sand, mostly medium sand,
			3.06-3.78	subangular to subrounded gravel up to 2 inches, trace silt, loose, very poorly sorted,
				strong odor, saturated.
				2.0-5.0' Sand: Brown (7.5 YR 4/3), fine to medium sand, mostly fine sand, trace to
				little silt, trace coarse sand with depth, loose, moderately sorted, strong odor,
				saturated.
180	185	5	3378-17800/	0-1.5' Sand: Dark reddish brown (5 YR 4/3), fine to coarse and, mostly medium
			3.17-4.06	sand, loose, moderately sorted, strong odor, saturated.
				1.5-2.0' Sand: Brown (10 YR 4/3), fine to coarse sand, mostly fine sand, loose,
				poorly sorted, strong odor, saturated.
				2.0-3.0' Sand: Brown (10 YR 4/3), fine to coarse sand, little medium sand, trace
				silt, loose, very poorly sorted, strong odor, saturated.
				3.0-4.5' Sand/Gravel/Silt: Dark grayish brown (10 YR 4/2), fine to coarse sand, mostly
				fine to medium sand, little to some silt, loose, very poorly sorted, strong odor,
				saturated.
				4.5-5.0' Sand: Brown (10 YR 4/3), fine sand, trace medium sand, loose, well to
				moderately sorted, strong odor, saturated.
185	190	5	12700-	0-3.0' Sand/Gravel: Dark brown (10 YR 3/3), fine to coarse sand, mostly medium
			40500/	sand, subround gravel (pea grave size), loose, poorly sorted, strong odor,
			4.64-5.71	saturated.
				3.0-4.0' Sand: Brown (10 YR 5/3), very fine sand, uniform, loose, very well sorted,
				strong odor, saturated, sharp contact with sand/gravel above.
				4.0-5.0' Sand: Dark grayish brown (10 YR 4/2), very fine to medium sand, mostly
				very fine sand, trace subangular to subrounded gravel up to 0.25 inches, loose,
				poorly sorted, strong odor, saturated.
190	195	5	4835-11100/	0-4.0' Silt/Sand/Gravel/Clay: Till dark grayish brown (10 YR 4/2), fine to coarse sand,
			5.81-10.24	subangular to subrounded gravel, soft to stiff, crumbly and blocky, little iron
				staining, very poorly sorted, strong odor, saturated.
				4.0-4.5' Gravel: Brown (10 YR 5/3), powdered rock, angular to subrounded gravel
				up to 2inches, dry.
				4.5-5.0' Sand: Dark grayish brown (10 YR 4/2), very fine to coarse sand, mostly
				very fine sand, trace coarse sand, little fine subrounded gravel up to 0.25 inch,

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Sample/Core Log (continued)

Boring/Well GMEWC-2A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				loose, very poorly sorted, strong odor, saturated.
				EOB @ 195 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-3 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 6/7/04 Drilling Completed 6/14/04

Total Depth Drilled 175 Feet Hole Diameter 10 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval 10-20 feet

Land-Surface Elev. 1046.70 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Jo/Jessie

Prepared By Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.00	4.04-24.90/	0-2.0' Sand: Strong brown (7.5 YR 4/6), very fine to fine, some medium, trace
			0.5-2.0	coarse, trace silt, trace coarse gravel up to 1" subround to subangular, loose,
				somewhat poorly sorted, trace organic roots, moist, no odor.
				2.0-3.0' Clayey Silt: Very dark brown (7.5 YR 2.5/2), somewhat cohesive and
				somewhat plastic, trace to some sand very fine to fine, somewhat sticky, wet, no
				to slight organic odor.
				3.0-5.0' Sand: Strong brown (7.5 YR 5/6), fine to very fine, somewhat loose,
				somewhat well sorted, trace medium to coarse sand, seam 2" thick from 3.4-3.6'
				of sand and gravel dark olive brown (2.5 YR 3/3) sand fine to coarse, gravel up to
				1/2" subround to subangular, loose, wet, no odor.
5	10	5.0	0.68-2.3/	0-2.0' Sand: As above, with gravel increasing in content down section, sand
			0.8-3.0	fining down section grading into unit below.
				2.0-4.0' Silt: Reddish brown (5 YR 4/4), smooth to grainy, some clay, cohesive and
				somewhat plastic, trace sand, fine to coarse, trace to some gravel up to 1.5", in
				places clayey and in places sandy.
				4.0-5.0' Silt: As above, grading into more sand and gravel at 4.5, grading into.
10	15	2	0.24-4.81/	0-0.5' Silt and Sand: Color as above, sand predominately coarse but fine to medium
			0.6-5.0	also, loose, some clay in places, wet, no odor, sharp contact with unit below.
				0.5-2.0' Silt: Brown (7.5 YR 4/4), smooth to grainy and interbedded/interlaminated
				with clay, fissle and platy in appearance, cohesive, slight plastic to somewhat
				crumbly, yellowish brown (5 YR 4/6), and sand fine to medium grain, trace
				coarse, strong brown (7.5 YR 5/6) and sand fine to medium grain, trace coarse,
				strong brown (7.5 YR 5/6), loose, layers up to 1/2" thick for sand, mm's for
				clay, wet, no odor.
15	20	5	0.24-0.87/	0-2.0' Silty Clay and Gravel: Reddish brown (5 YR 4/4), smooth firm, gravel up to
			6-18	4" angular to subangular, very cohesive, medium plastic, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-3 Page 2 of 5

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.0-2.5' Sand: Yellowish red (5 YR 4/6), very fine to medium, predominately very
				fine to fine, some medium, trace coarse, trace gravel up to 3/4" subround to
				subangular, loose, trace silt, no odor, wet, grading into unit below.
				2.5-5.0' Sand: Brown (7.5 YR 4/4), medium to coarse, poorly sorted, predominately
				medium, some gravel up to 1" subround to subangular, loose, wet no odor
				grades into unit below.
20	25	5	.31-1.42/	0-2.0' Sand: As above, grading into predominately fine grain, some medium to
			8-1800	coarse, trace silt, poorly sorted, wet, sharp contact with unit below.
				2.0-5.0' Sand: Brown (7.5 YR 5/4), fine to medium grain, trace coarse, trace very
				fine sand, somewhat well sorted, loose, wet, no odor.
25	30	5	.72-1.61/	0-2.0' Sand: As above (2-5).
			600-2900	2.0-4.0' Sand. As above, but some to much coarse sand, trace gravel to 1/2"
				subround to subangular sharp contact with unit below.
				4.0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, very well sorted, possibly on
				threshold between silt and very fine sand, somewhat loose, wet, no odor.
30	35	2	0.83-1.26/	0-2.0' Silt: As above.
			800-1400	
35	40	5	-0.40-.88/	0-3.0' Silt: As above, approaching very fine sand size.
			620-850	3.0-5.0' Silt: Color as above, smooth to somewhat grainy, clay and silt interbedded
				up to 1/4" thick, clay yellowish red (5 YR 4/6), fissle/platy in appearance and
				crumbly and hard at first, cohesive and plastic when worked, silt brown (7.5 YR 4/2),
				somewhat clayey, somewhat cohesive and plastic, wet, slight odor, silt is
				borderline very fine sand in places.
40	45	5	-0.34--0.12/	0-5.0' Sand to Silt: Reddish brown (5 YR 4/4), very fine to grainy silt, some silt,
			55-2400	somewhat loose to loose to somewhat crumbly, noncohesive/nonplastic, very well
				sorted, wet, slight odor.
45	50	5	-0.38-1.21/	0-5.0' Sand to Silt: As above, odor stronger and trace black staining.
			55-4800	
50	55	5	0.58-2.16/	0-1.0' Sand to Silt: As above grading over 0.5' into unit below.
			700-3500	1.0-5.0' Silt: Reddish brown (5 YR 4/3), smooth to grainy, somewhat cohesive/slighlty
				plastic in places, crumbly in places, interbedded with sand to silt, as above, up to
				1" thick, trace clay interbeds/laminae up to mm's thick reddish brown (5 YR 5/4),
				overall wet with odor, becoming fine at 4.5-5.0 and very crumbly.
55	60	5	-0.30- -0.02/	0-5.0' Silt: As above, saturated.
			1100-8300	

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Sample/Core Log (continued)

Boring/Well GMEWC-3 Page 3 of 5

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
60	65	5	0.01-0.13/	0-5.0' Very fine Sand and Silt: Interbedded, reddish brown (5 YR 5/4), silt is
			1100-33000	grainy, very well sorted, somewhat loose, wet, odor, predominately very fine sand.
65	70	5	-0.32- -0.12/	0-1.0' Very fine sand and silt, as above.
			800-8200	1.0-3.0' Silt: Color as above, grainy with some very fine sand, interbeds as above,
				wet, odor, somewhat sticky, somewhat cohesive grading into unit below.
				3.0-5.0' Silt: Brown (7.5 YR 4/3), somewhat cohesive to cohesive, somewhat
				plastic, grainy in places but predominately smooth, wet, odor, some black staining.
70	75	5	-0.03-0.26/	0-2.0' Silt: As above.
			1670-9700	2.0-5.0' Silt: Color as above, smooth to grainy, interbedded with very fine sand
				and clayey silt, vesicules wet, odor.
75	80	5	-0.28-0.02/	0-2.0' As above, silt/sand (65 to 70', 1 to 3').
			1000-6200	2.0-5.0' Silt: Reddish brown (5 YR 4/4), somewhat cohesive to somewhat
				crumbly, vesicles (lots), black staining, strong odor.
80	85	5	-0.40- -0.08/	0-5.0' Silt: As above reddish brown (5 YR 4/4).
			1600-4200	
85	90	5	-0.32- -0.36/	0-5.0' Silt: As above, with very fine sand seams up to 0.5".
			1800-4000	
90	95	5	-0.32 - 1.2/	0-5.0' Silt: As above, smoother, interbedded clay (minor) but creates slightly more
			2000-30000	cohesion last 1' is dry opposed to 1to 4 saturated.
95	100		-0.47-1.38/	0-5.0' Silt/Sand: Sand brown (7.5 YR 4/3), clay yellowish red (5 YR 4/6), interbedded/
			500-1400	intermixed, very fine to fine sand, and silt, interbedded clay approximately 2" at 4',
				very soft, saturated, strong odor.
100	105	5	-0.36 - .22/	0-2.0' Silty Sand: Very fine to fine sand with silt, well sorted, saturated, low to
			1300-30000	moderate cohesive, somewhat sticky, silter and sandier variable along length.
				2.0-5.0' Sand: Very fine to fine sand, loose, some silt, low cohesion, mild odor, silter
				and sandier variable along length.
105	110	5	0.04-0.26/	0-0.5' Silt/Clay: Silt reddish brown (5 YR 4/4), interbedded silt and clay, layers <1"
			1300-30000	thick, sticky, cohesive, strong odor, very soft.
				0.5-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, some silt, saturated,
				strong odor, few interbedded clay layers <1" thick (2), loose.
110	115		0.11-0.63/	0-1.0' Sand: As above, fines with depth, trace gravel, loose.
			3000-13000	1.0-2.0' Sand/Gravel: Fine to coarse sand and fine to coarse gravel, poorly sorted,
				gravel angular to subrounded, loose, strong odor, predominantly medium sand,
				some silt.
				2.0-5.0' Silt: Clay reddish brown (5 YR 4/3), silt/sand brown (7.5 YR 4/3), silt with
				clay and very fine to fine sand with trace coarse interbedded, silt smooth, crumbly;

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Sample/Core Log (continued)

Boring/Well GMEWC-3 Page 4 of 5

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				clay somewhat fissile in appearance, very plastic, very cohesive; sand-loose, well
				sorted, interbeds up to 2.5" thick, moist.
115	120	5	-0.44-0.28	0-1.5' Silty and Clayey Sand: As above.
			211-5130	1.5-5.0' Sand: Brown (7.5 YR 4/3), fine to very fine grain, trace medium to coarse,
				well sorted, trace silt, loose, wet, odor.
120	125	5	0.27-0.98/	0-1.0' Sand: As above.
			8000-19200	1.0-2.0' Sand: As above, some medium to coarse sand.
				2.0-5.0' Sand: Color as above, fine to very fine grain predominately fine, some
				medium to coarse sand and gravel up to 3/4", flat and platy, much dark shale
				flakes subangular to angular, some silt nodules dark brown (7.5 YR 3/3) with
				medium to coarse sand within crumbly up to 3", silt smooth to grainy, wet, odor.
125	135	0		No recovery.
135	140	5	-1.77 --0.69/	0-3.5' Sand: Brown (7.5 YR 4/3), very fine to fine grain, trace to some coarse, trace
			840-7013	medium grain, trace silt, in places very silty, trace fine gravel up to 1/2"
				subround to subangular, somewhat loose, odor, wet.
				3.5-5.0' Sandy Silt: Color as above, sand very fine to coarse, silt is smooth to
				grainy with vesicles, trace clay, silt is crumbly to slight cohesive dependent on clay
				content, sand medium to coarse grain seam <2" thick at 4.0', wet, odor sharp
				contact with unit below.
140	145	5	-1.50-0.95/	0-3.0' Sand and Gravel: Dark brown (7.5 YR 3/2), sand very fine to coarse, gravel
			11500-24000	up to 1.5" subround to subangular, poorly sorted, some silt, somewhat loose,
				odor, wet, from 2-2.5 sand seam of predominantly medium grain and some very
				fine to coarse and some silt, somewhat sorted, loose, wet, odor, from 2.8-3.0 sand
				and gravel includes much clay or clay lenses reddish brown (5 YR 5/4) cohesive and
				plastic.
				3.0-4.7' Sand: Brown (7.5 YR 5/3), predominately very fine to fine grain, some
				silt, some gravel up to 1/2" subround to subangular, trace medium to coarse sand,
				somewhat loose, wet, no odor, in places more gravel up to 3.5-4.0'.
				4.7-5.0' As above.
145	150	5	-0.7- -0.45/	0-1.5' Silt: Grayish brown (10 YR 5/2), grainy to somewhat smooth, crumbly, odor,
			22400-49600	wet.
				1.5-2.5' Gravely Sand: Very dark gray (7.5 YR 3/1), sand predominately fine to
				medium but some to much coarse, some to much gravel up to 1 1/2" subround
				to subangular.
				2.5-5.0' Sand: Brown (7.5 YR 4/2), fine to medium grain, trace very fine and
				coarse, trace silt, loose, wet, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-3 Page 5 of 5

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
150	155	5	-0.84-0.61/	0-0.5' Sand: As above, grades into unit below.
			6719-150000	0.5-3.0' Sand: As above, becoming somewhat coarser grades over 1" into unit
				below.
				3.0-5.0' Silt: Grainy and boarderline very fine grain sand, somewhat loose to
				somewhat crumbly, trace very fine to fine sand in places, wet, odor.
155	160	5	-1.80-1.61/	0-5.0' Sand: Dark grayish brown (10 YR 4/2), very fine to fine grain, well sorted,
			1108-16300	some silt, wet, somewhat loose, odor, at 4.5 sand becomes predominately fine grain.
160	165	5	-1.61 --1.55/	0-1.0' Sand: As above, predominately fine grain.
			1120-15900	1.0-4.0' Silt: Brown (7.5 YR 4/2), smooth to slight grainy, trace gravel up to 4"
				subround to subangular, somewhat cohesive and somewhat plastic, some clay, wet,
				some vesicles, odor.
				4.0-5.0' Silt as above, becoming somewhat grainy and less clayey. From 4-4.2 sand
				seam, sand fine to medium with some gravel up to 3" angular to subround,
				loose, wet, odor.
165	170	5.0	-1.66-11.46/	0-5.0' Silt/Sand/Gravel/Clay: Gley (10 Y 3/1) till? Dense hard, sand very fine to
			108-1152	coarse gravel up to 4" round to angular, poorly sorted, trace vesicles, crumbly to
				somewhat cohesive, wet, slight odor, grading over 1.5' from 3.5 to 5.0' into
				unit below.
170	175	2	-1.05 - -0.42/	0-2.0' Clay/Silt/Gravel/Sand: Color as above, till?, sticky, cohesive, somewhat
			12.29-4701	plastic, gravel up to 1.5" round to subangular, sand very fine to coarse, some
				layering seen, in tip of core barrel was boulder of banded iron formation likely
				pushed last 3' of sample out into formation.
				EOB @ 175'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-4 (GMEW-9) Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 10/22/03 Drilling Completed 10/22/03

Total Depth Drilled 175 Feet Hole Diameter 12 inches

Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 feet by 6 inches

Sampling Interval Continuous feet

Land-Surface Elev. 1048.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Oiden Jayson Helper Chris

Prepared By Bruce Evans

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	115			Blind drill - no recovery, see core log for GMPZ-9 for description.
115	120	5	620-3,170/	0-3.0' Silt: Reddish brown (5 YR 4/3) soft, sometimes clayey, trace very coarse
			-21-+2.7	sand and fine gravel, angular to subround, wet, odor.
				3.0-3.5' Silt/Gravel: Reddish brown (5 YR 4/3) silt matrix, somewhat firm to
				slight plastic, clayey with fine to coarse gravel, angular to subrounded, at
				3.3' clay, yellowish red (5 YR 5/6) fissile looking, slightly friable but plastic when
				rolled, extremely effervescent with HCl, wet, odor.
				3.5-5.0' Gravel: Brown (7.5 YR 4/3) fine to very coarse gravel, angular to
				subround with some coarse sand, very silty and clayey, poorly sorted, trace
				cobbles to 2 inch diameter, loose but very sticky, wet, odor.
120	125	5	13,600-	0-0.5' Gravel: As above, very silty.
			19,200/	0.5-5.0' Sand/Gravel: Brown (7.5 YR 4/3) fine to very coarse sand, fine to coarse
			1.5-3.5	gravel, angular to subangular, trace cobbles to 4 inch diameter, very silty, very
				poorly sorted mostly fine to medium sand matrix, loose, slightly sticky, wet,
				odor.
125	130	5	24,600-	0-4.5' Sand/Gravel: As above becoming more dark brown (7.5 YR 3/3), very
			25,100/	poorly sorted, matrix mostly fine to coarse sand, less silt below 3 feet,
			1.8-4.2	loose, wet, odor.
				4.5-5.0' Sand: Brown (7.5 YR 5/2), very silty, very fine grain, well sorted, loose,
				wet, odor.
130	135			No recovery.
135	140	5	5,100-	Sand: Brown (7.5 YR 5/2) very fine grain, trace coarse sand, some fine, silty,
			11,500/	loose, wet odor.
			-4.2 - -2.5	
140	145	5	16,200-	0-2.5'Sand: As above, some medium to coarse gravel.
			26,000/	2.5-5.0': Mostly angular black slate flakes, loose, wet, odor.
			-3.0 - -1.2	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEW-9 Page 2 of 2

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
145	150	5	12,500-	0-1.0' Silt/Sand: Brown (7.5 YR 5/2) very fine grain sand grading to sandy
			33,000/	silt, with fine to coarse gravel, loose, wet, odor.
			-2.5 - 0.7	1.0-2.5' Gravel/Silt: Fine to very coarse gravel, angular to subrounded, poorly
				sorted, with silt and very fine grain sand, loose, wet, odor.
				2.5-5.0' Sand: Brown (7.5 YR 5/2) very fine grain, very silty, well sorted, some
				fine grain, loose, wet, odor.
150	155	5	16,900-	
			25,500/	0-3.2' Sand: Brown (7.5 YR 5/2) fine to very fine grain, well sorted, some silt,
			-3.0 - +0.6	loose, wet, odor. At 2.8', 2 inch thick silt seam/layer, reddish brown (5 YR 4/3),
				slightly firm to somewhat loose, grainy.
				3.2-4.0' Silt: As above 3.2-3.5' slightly firm, 3.5-4' grainy and sandy with very
				fine grain sand.
				4.0-5.0' Sand: Brown (7.5 YR 5/2) very fine grain, very silty, somewhat loose to
				slightly firm well sorted, wet, odor.
155	160	5		0-2.0' Sand: Brown (7.5 YR 5/2) fine to very fine grain, well sorted, with some
				fine to coarse gravel, angular to subrounded, loose, wet, odor.
				2.0-5.0' Sand: As above, no gravel.
160	165	5		Sand: Brown (7.5 YR 5/2) fine grain well sorted, some very fine, some medium
				below 3.0 feet.
165	170	5		Sand: As above, trace coarse to very coarse sand.
170	175			No recovery.
				EOB 175 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-5 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 6/21/04 Drilling Completed 6/22/04

Total Depth Drilled 195 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1050.91 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Jessie

Prepared By Paul Lenaker/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	-2.2- -4.1/	0-3.0' Sandy Silt: Yellowish red (5 YR 5/6), trace to little gravel subangular to
			2.03-4.62	subrounded to 0.5" (fine gravel), little to some clay mixed in, sand is very fine, trace
				fine to medium, silt is grainy, loose to slightly cohesive, soft, saturated, no odor.
				3.0-5.0' Silt: Brown (7.5 YR 4/4), trace very fine sand, silt is grainy to smooth in
				places, some yellowish red clay nodules, clay is plastic when worked, slightly cohesive,
				saturated, no odor.
5	10	5	-5.5 - -4.6/	0-3.0' Silt: Brown (7.5 YR 4/4), as above, trace to some clay mixed in matrix, slightly
			2.97-4.34	plastic overall, some clay nodules as above, yellowish red, plastic when worked,
				but fissle in appearance, saturated, no odor.
				3.0-5.0' Silt: As above, but more clay content, more yellowish red (5 YR 4/6)
				nodules, color changes to brown (7.5 YR 4/3), matrix, clay may have been layered,
				wet to saturated, somewhat cohesive, no odor.
10	15	5	-5.8- -4.96/	0-4.0' Silt: With little to some clay as above, brown (7.5 YR 4/3), silt is grainy to
			3.61-5.0	smooth, less clay than above, homogeneous overall, loose to slightly cohesive, wet
				to saturated, no odor.
				4.0-5.0' Silt and Clay: Silt is brown (7.5 YR 4/3), as above clay is yellowish red
				(5 YR 4/6) and is layered with layers approximately 0.25 to 1" thick, clay appears
				fissile on broken surfaces, yet plastic when worked HR = 1.2, silt appears as above,
				slightly cohesive overall, wet to saturated, no odor.
15	20	5	-6.15- -5.89/	0-4.5' Silt/Clay: Silt is brown (7.5 YR 4/3), clay is yellowish red (5 YR 4/6),
			49.1-2013	interbedded silt/clay layers, silt layers 0.5-2" thick, clay layers 0.25-1.5" thick, silt is
				grainy with trace sand very fine to very coarse, trace gravel to 2" subround, little
				blackish staining in silt, clay fissile appearance on broken surfaces yet plastic when
				worked, some of the clay is somewhat silty in a few places, somewhat cohesive,
				wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-5 Page 2 of 6

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.5-5.0' Sand/Silt/Clay: Brown (7.5 YR 4/4), sand very fine to medium, silt is
				grainy to smooth, poorly sorted mixture, somewhat cohesive, few clay nodules
				as above, slight odor.
20	25	5	-6.07- -4.17/	0-2.0' Silt/Gravel/Sand: Brown (7.5 YR 4/4), trace to little clay, very much silt, gravel
			1340-4200	subangular to subround to 4", sand very fine to very coarse, very poorly sorted
				mixture, grainy silt, loose, wet, slight odor.
				2.0-5.0' Sand/Silt/Gravel: Brown (7.5 YR 5/3) silty, sand very fine to very coarse,
				predominately coarse to very coarse, gravel subangular to subround to 3",
				somewhat finer/silt is 3.5-4.5, very poorly sorted mixture, loose, slight odor.
25	30	5	-5.25 - -4.71/	0-1.5' Sand/Silt/Gravel: As above, slightly less silty, wet, slight odor.
			1299-10900	1.5-5.0' Sand: Brown (7.5 YR 5/3), trace silt, trace fine gravel, sand fine to medium,
				trace coarse, well sorted sand, loose, wet to saturated, odor.
30	35	0		No recovery.
35	40	5	-6.39- -3.81/	0-0.5 Sand: Brown (7.5 YR 5/3) medium grain some fine to coarse, trace gravel to
			597-3750	3" round to subangular, loose, trace silt, wet, odor.
				0.5-5.0' Silt: Brown (7.5 YR 5/4) grainy almost very fine sand to grainy silty, some-
				what loose, in places finer/coarser (possible interbedded/laminated) trace coarse
				sand and gravel to 1" subround to subangular, wet, odor.
40	45	5	-4.02- -2.29/	0-5.0' Silt: As above, approaches very fine sand in places, strong odor.
			2540-14000	
45	50	5	-4.58- -4.04/	0-1.5' Silt: As above.
			699-5030	1.5-4.5' Silt with Clay: Brown (7.5 YR 4/3) matrix (silt) with large clay nodules
				2.0-2.5 especially yellowish red (5 YR 4/6) platy/fissile on broken surfaces, plastic,
				also reddish gray (5 YR 5/2), silty clay areas where silt grades fine into clay, silt
				mostly grainy, approaches very fine sand, slight to somewhat cohesive overall,
				wet to saturated, strong odor.
				4.5-5.0' Silt: Brown (7.5 YR 4/3) as above, very grainy, approaching very fine sand,
				homogenous, loose, wet, odor.
50	55	5	-4.45- -2.83/	0-5.0' Silt: As above, approaching very fine sand, very slight grainy size changes
			5015-11200	throughout, but overall homogenous, wet, odor.
55	60	5	-5.87- -4.84/	0-5.0' Silt: As above but reddish brown (5 YR 4/4).
			1590-14200	
60	65	5	-5.11- -4.71/	0-5.0' Silt: As above, but grading into slightly silter (or finer silt), less grainy below
			1810-4530	2.0, clayey band 2.5-3.0, band is cohesive, wet, saturated, odor.
65	70	5	-3.72- -2.66/	0-5.0' Silt: As above, redescribed: Reddish brown (5 YR 4/4),very grainy, approaches
			110-11000	very fine sand in places, trace clay, sandy 3.0-4.0 with very fine to fine sand, well
				sorted, but still mostly grainy silt, 1.5-2.5 much clay mixed with silt, color is same,

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Sample/Core Log (continued)

Boring/Well GMEWC-5 Page 3 of 6

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				somewhat cohesive, loose to slight cohesive overall, wet, strong odor.
70	75	5	-2.52 - -1.94/	0-5.0' Silt: As above, approaching very fine sand, homogenous throughout,
			226-12000	moist to wet, strong odor.
75	80	5	-1.56 -1.0/	0-5.0 Silt: As above, reddish brown (5 YR 5/3), trace to some clay in places, silt is
			460-6185	grainy approaching very fine sand in plug to smooth, many vesicles, homogenous
				overall, loose to slight cohesive, wet to saturated, strong odor.
80	85	5	-0.96 - -0.73/	0-5.0' Silt: As above.
			90- 3300	
85	90	5	-1.22 - 0.87/	0-5.0' Silt: As above, very many vesicles, very strong odor.
			2864-18600	
90	95	5	0.64-1.25/	0-7.0' Silt: As above.
			12400-39900	2.0-5.0' Silt: As above, but grainer, slightly coarser, some very fine sand, wet,
				strong odor.
95	100	5	3.01-3.98/	0-5.0' Silt: As above reddish brown (5 YR 5/3), trace clay in matrix, a few pockets
			4020-42200	1" thick of poorly sorted very fine to coarse sand at 0-1 and 1.5-2.0, silt is
				strong to smooth, loose to slightly cohesive, wet to saturated many vesicles, trace
				fine grade, strong odor.
100	105	5	2.73 - 3.06/	0-5.0' Silt: As above.
			3500-832000	
105	110	5	2.48 - 3.37/	0-5.0' Silt: As above, but grading into sand in toward 5.0, some to much very fine
			5000-75300	sand mixed in 3.0-5.0.
110	115	5	1.98 - 3.06/	0-2.5' Silt and Sand: Sand very fine as above, grading into sandy at 2.5 mostly
			14200-33800	very fine sand with some silt.
				2.5-5.0' Sand and Gravel: Brown (7.5 YR 4/3), very silty, sand very fine to very
				coarse, gravel subangular to subround to 2", very poorly sorted mixture,
				predominately fine to coarse sand, loose, saturated, odor.
115	120	5	-1.68 - -0.90/	0-3.0' Sand/Gravel/Silt: Brown (7.5 YR 4/3) as above, very silty, sand very fine to
			680-3120	very coarse, gravel subangular to subround to 4", very poorly sorted mixture,
				loose, saturated, grades downward into siliter/sandier unit below, odor.
				3.0-5.0' Sand and Silt: Brown (7.5 YR 4/4) trace gravel subangular to subround up
				to 0.5", trace clay, sand predominately very fine, some fine, loose to somewhat
				cohesive, saturated, odor.
120	125	5	-0.6 - -1.20/	0-1.5' Sand and Silt: As above, but grades downward into sandier unit below.
			6800-32700	1.5-5.0' Sand: Brown (7.5 YR 5/3) very silty in places, mostly little to some silt
				throughout, sand very fine with little to some fine in places, homogenous overall,
				loose, well sorted sand, wet, odor.

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Sample/Core Log (continued)

Boring/Well GMEWC-5 Page 4 of 6

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
125	130	5	0.70-224/	0-5.0' Sand: As above, silty, especially 0-3.0.
			6442-44300	
130	135	5	1.65-2.01/	0-2.5' Sand: As above very fine, silty.
			6787-36380	2.5-5.0' Silt: Brown (7.5 YR 4/3), trace gravel subangular to subround to 0.7",
				clay layer approximately 0.8" thick at 0.3', clay is reddish brown (5 YR 5/4), platy
				appearance, but plastic, when worked, sandy layer at 4.0 with very fine to medium,
				predominately very fine, moderately sorted sand, sand layer is approximately 0.5"
				thick, silt matrix is crumbly clay, smooth moist to wet, odor.
135	140	5	13.25-30.07/	0-1.0' Gravel: Brown (7.5 YR 4/4), some sand very fine to very coarse, very silty,
			4655-6800	trace to little clay, grade subangular to subround to 3", poorly sorted mixture,
				saturated from drilling fluid, loose, odor.
				1.0-2.0' Silt and Gravel: Brown (7.5 YR 4/4), trace very fine sand, trace clay, silt is
				smooth matrix, very gravelly, crumbly to slightly cohesive, wet, odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/4), grading from unit above, less gravel, little fine
				gravel 2.0-3.0 but grades out below, much sand very fine mixed in, trace fine
				gravel and fine to very coarse sand below 3.0, some reddish brown (5 YR 4/3) clay
				nodules, clay is plastic, fissile appearance on broken surfaces, HR >4.0, grainy to
				smooth silt, crumbly to slightly cohesive odor.
140	145	5	2.85-23.95/	0-4.5' Silt: Brown (7.5 YR 4/3) as above but less sandy, trace clay in matrix,
			1400-30100	increasing clay content in nodules, also approximately 4" thick clay layer at 2.0,
				clay properties as above, large clay nodules 4.5" diameter, somewhat cohesive
				matrix, odor.
				4.5-5.0' Sand: Brown (7.5 YR 4/3), little silt intermixed (could be from drilling), trace
				clay, sand very fine to medium, predominately very fine, very well sorted, loose,
				wet, odor.
145	150	5	18-38/	0-5.0' Sand: Brown (7.5 YR 4/3), some silty areas from drilling, very fine to very
			14400-30110	coarse sand, but predominately fine to medium, moderately to well sorted, loose,
				wet to saturated, odor.
150	155	5	22-23/	0-3.5' Sand: As above, but somewhat finer, predominately fine.
			9117-12600	3.5-5.0' Silt: Brown (7.5 YR 4/4), very grainy, approaches very fine sand, crumbly,
				homogenous, moist, odor.
155	160	5	-22-4.0/	0-3.5' Sand: Brown (7.5 YR 5/3), sand is predominately fine, trace medium, some
			8260-30600	very fine, well sorted, coarse 2.5-3.5 predominately fine to medium, loose, wet to
				saturated, odor.
				3.5-5.0' Silty Sand and Gravel: Brown (7.5 YR 4/3) graded into from unit above,
				sand predominately very coarse, little fine to coarse, trace clay, very silty, gravel is
				fine, but some up to 2", a few clay nodules 4.5-5.0 reddish brown (5 YR 4/4),

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Sample/Core Log (continued)

Boring/Well GMEWC-5 Page 5 of 6

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				loose, poorly sorted, mixture, saturated, odor.
160	165	5	-17 -11.2/	0-5.0' Silty Sandy and Gravel: As above, but progressively siltier, trace possible
			22200-161000	increasing clay content, gravel coarsens slightly, poorly sorted mixture, saturated,
				odor.
165	170	5	7-13/	0-5.0' Silty Sand and Gravel: As above, minor variations in constituents, but overall
			15800-77000	the same, predominately coarse to very coarse sand and gravel to 3", with much
				silt in matrix, wet to saturated, odor, loose to slightly cohesive.
170	175	5	7-23/	0-1.0' Silt/Sand/Gravel: As above, but more clay/silt content, clayey silt matrix
			17900-57800	dominated, somewhat cohesive, wet to saturated, odor.
				1.0-2.5' Silt/Sand/Gravel: Dark reddish brown (5 YR 3/2), some rust colored staining,
				very loose, dry, crumbly, gravel angular to subround to 3" grainy silt, poorly sorted
				mixture, odor.
				2.5-4.0' Silty Gravel: Reddish brown (5 YR 5/3), some sand, mostly coarse to very
				coarse, gravel angular to subround to 3", poorly sorted mixture, trace clay, loose,
				saturated, odor, grades over 0.2' into below section.
				4.0-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth, trace very fine to very coarse
				sand mixed in, crumbly homogenous, damp, odor.
175	180	5	2.17-4.0/	0-5.0' Sand: Brown (7.5 YR 4/3), some silt in places, predominately fine, little to
			870-71000	some medium, trace coarse, moderately sorted, some coarsening downward to
				predominately medium grain at 5.0, loose, wet to saturated, odor.
180	185	5	2.61-5.5/	0-5.0' Sand: As above, but somewhat coarser, predominately medium to coarse,
			14600-40900	some gravel to 1" subround to subangular 0-1.0, trace grave subangular to
				subround to 0.5".
				1.0-5.0' Silt: In places, loose, moderately sorted, also color changes below 1.0 to
				very dark gray (7.5 YR 3/1), wet to saturated, odor, siltier 4.0-5.0.
185	190	5	3.9-11.5/	0-1.0' Sand: As above, but very silty, grading into unit below.
			4600-22800	1.0-2.0' Silt: Brown (7.5 YR 5/2), trace sand fine to coarse, silt is very grainy,
				homogenous unit, crumbly, wet, odor.
				2.0-3.5' Sand and Silt: Brown (7.5 YR 4/4) little gravel subangular to subround to
				1", very silty, some silt in nodules, sand very fine to very coarse, poorly sorted mixture,
				loose, wet, odor.
				3.5-5.0' Silt/Gravel/Sand (till?): Dark gray (5 YR 4/1), little clay in matrix, hard, firm,
				sand very fine to very coarse, matrix predominately silt, gravel subangular to
				subround to 5", brittle, crumbly when broken, poorly sorted mixture, much grading
				subround bedrock pieces, damp, slight odor to moderate odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-5 Page 6 of 6

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
190	195	5	3.8-10.2/	0-4.0' Silt/Gravel/Sand: As above.
			1400-12300	4.0-5.0' Silt/Gravel/Sand: As above, but much sandier, loose and crumbly, sand
				very fine to very coarse, color changes to very dark gray (5 YR 3/1).
				EOB @ 195'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-6 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 6/20/04 Drilling Completed 6/20/04

Total Depth Drilled 175 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 8", 10", 5" diameter 5', 10', 20' casing length Sampling Interval continuous feet

Land-Surface Elev. 1048.72 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz

Prepared By Trika Nelson Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	4	102-4811	0-3.0' Silt: Dark brown (7.5 YR 3/4), organic, moist, soft to crumbly.
				3.0-4.0' Sand: Reddish brown (5 YR 4/3), very fine to coarse, mostly fine, little
				gravel, subangular to subrounded, gravel up to 2", poorly sorted, loose, moist.
5	10	3	29-2871	0-0.5' Sand: As above.
				0.5-1.0' Silt: Dusky red (2.5 YR 3/2), moist, soft to crumbly, little coarse sand/
				gravel, subrounded gravel up to 1".
				1.0-2.0' Sand/Gravel: Reddish brown (5 YR 4/3), fine to coarse sand, mostly medium,
				subangular to subrounded gravel, gravel up to 1/2", poorly sorted, saturated,
				loose, bottom 1/4" coarse sand to coarse gravel layer.
				2.0-3.0' Silt: Reddish brown (5 YR 4/3) some coarse sand, liquefied, poorly sorted
				4-5" cobble at base, saturated.
10	15	0.5	25.95/0	0-0.5' Silt/Gravel/Sand: Dark yellowish brown (10 YR 4/6), poorly sorted, liquified,
				gravel angular to subrounded, 3" gravel, fine to coarse sand, saturated.
15	20	5	102-7341/	0-0.5' Silt/Gravel/Sand: As above 3-1/2" cobble at base.
			0	0.5-1.0' Sand: Reddish brown (5 YR 4/4), fine to coarse sand, 50/50 medium coarse,
				moderately sorted, loose, saturated.
				1.0-3.0' Sand: Reddish brown (5 YR 4/4), medium to coarse sand, predominately
				medium, well sorted, loose, saturated.
				3.0-5.0' Sand: Reddish brown (5 YR 5/4), fine to medium sand, predominately
				medium, well sorted, loose, saturated.
20	25	5	520-5720	0-0.5' Sand: As above.
				0.5-2.0' Sand: Reddish brown (5 YR 5/4), fine to medium sand, mostly medium,
				well sorted, loose, saturated.
				2.0-2.5' Sand: Reddish brown (5 YR 4/4), very fine to fine sand, mostly fine, little
				silt, well sorted, loose, saturated.
				2.5-2.75' Sand/Gravel: Reddish brown (5 YR 4/4), fine to coarse sand, coarse gravel

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-6 Page 2 of 5

Prepared by Trika Nelson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				gravel up to 1", subrounded, mostly medium to coarse sand, poorly sorted,
				loose, saturated.
				2.75-3.0" Silt/Clay: Reddish brown (5 YR 4/3)-silt, reddish brown (5 YR 4/3)-clay,
				interbedded, stiff, soft to crumbly when worked, saturated, silt 1-2" thick, clay 1/2".
				3.0-5.0' Silt: Reddish brown (5 YR 4/3), trace clay, soft to crumbly, homogenous,
				saturated.
25	30	1	3400	0-1.0' Silt: As above.
30	35	0		No recovery.
35	40	5	100-4501/	0-1.0' Silt: Reddish brown (5 YR 4/4), soft to crumbly, homogeneous, saturated,
			0	grainy.
				1.0-1.25' Gravel: Subangular to subrounded, up to 2-1/2", saturated, poorly
				sorted, loose,
				1.25-5.0' Sand/Silt: Reddish brown (5 YR 4/4), very fine sand, 50/50 sand silt,
				crumbly, strong odor, saturated, homogenous.
40	45	5	902-1597/	0-5.0' Sand/Silt: As above.
			0	
45	50	5	501-4450/	0-3.0' Sand/Silt: As above.
			0	3.0-5.0' Silt: Reddish brown (5 YR 4/3), very soft to crumbly, homogenous,
				saturated, grainy.
50	55	5	2297-15900/	0-5.0' Silt: As above, trace staining lower 2'.
			0	
55	60	6	900-15000/	0-5.0' Silt: As above, trace staining, interbedded clay at 3', plasticity increases,
			0	methane bubbles.
60	65	5	4000-28000/	0-1.0' Silt/Clay: Reddish brown (5 YR 4/4), interbedded, staining, soft to crumbly,
			0	plastic to sticky, methane vesicles, saturated.
				1.0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, homogenous, soft to crumbly,
				saturated, staining, strong odor 3-5 same as 60-61', 0-2 1/2 same as 60-61',
				2 1/2-5 same as 61' 63'.
70	75	5	1000-12000/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, soft to crumbly, saturated, strong
			0-0.98	odor, homogenous.
75	80	5	690-20000/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, soft, liquified, methane vesicles,
			0	light staining, saturated, water turning black, 2 1/2-3 silt and clay.
80	85	5	500-2650/	0-3.0' Silt/Clay: Reddish brown (5 YR 4/4), interbedded, liquified, many methane
			0	vesicles, plastic to sticky, strong odor, saturated.
				3.0-5.0' Sand/Silt: Reddish brown (5 YR 4/4) very fine sand, grainy silt, soft to
				crumbly, homogenous, black staining, methane vesicles, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-6 Page 3 of 5

Prepared by Trika Nelson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
85	90	5	900-10000/0	0-5.0' Sand/Silt: Same as above, intertwined.
90	95	5	14000-29000	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, soft to crumbly, homogenous, trace
			0-1.27	clay varving strong odor, saturated, very fine sand at tip, trace black staining,
				heavy methane vesicles at 0-1'.
95	100	5	2000-16000	0-1.5' Silt: Reddish brown (5 YR 4/4), soft to crumbly, clay nodule, methane vesicles,
			0	clay varving, strong odor, saturated, liquefied, fissile, homogenous.
				1.5-3.0' Sand/Silt: Brown (7.5 YR 4/4), very fine to fine sand, mostley very fine sand,
				soft to loose, saturated, trace clay, strong odor, homogeneous, grainy.
				3.0-4.0' Sand: Brown (7.5 YR 4/4) very fine to fine sand, mostly fine, trace clay
				nodules, strong odor, loose, well sorted, saturated.
				4.0-5.0' Sand/Silt: Reddish brown (5 YR 4/4), fine to medium sand, predominately
				fine, soft to crumbly, strong odor, some silt layers, saturated.
100	105	5	120-17000/	0-3.0' Sand/Silt: As above.
			0	3.0-5.0' Sand: Reddish brown (5 YR 4/4), very fine to medium sand, mostly fine,
				strong odor, well sorted, loose, trace silt, saturated, methane vesicles.
105	110	5	920-17000/	0-1.0' Silt/Clay: Reddish brown (5 YR 4/4) silt, yellowish red (5 YR 4/6)-clay,
			0	interbedded, soft to crumbly, strong odor, clay is verve to 1/2", silt is 1-2",
				saturated, fissil.
				1.0-5.0' Sand: Reddish brown (5 YR 4/4), very fine to fine sand, little silt, trace clay,
				well sorted, loose, strong odor, saturated, methane vesicles.
110	115	5	3100-19000/	0-4.5' Silt/Clay: Silt reddish brown (5 YR 4/4), clay-yellowish red (5 YR 4/6),
			0	interbedded, fissil, soft to crumbly, strong odor, methane vesicles, saturated.
				4.5-5.0' Sand: Reddish brown (5 YR 4/4), very fine to fine sand, mostly fine sand,
				well sorted, loose, saturated, strong odor.
115	120	5	900-34000/	0-2.0' Sand: Reddish brown, (5 YR 4/4), fine to medium, mostly fine, well sorted,
			0	loose, methane vesicles, strong odor, saturated.
				2.0-5.0' Sand/Silt: Reddish brown (5 YR 4/4), very fine to fine sand, grainy silt,
				soft to loose, well sorted, saturated, strong odor, methane vesicles.
120	125	5	5000-19000/	0-5.0' Sand: Reddish brown (5 YR 4/4), very fine to fine, some silt, strong odor,
			0	well sorted, loose, methane vesicles, saturated.
125	130	5	2000-15000/	0-5.0' Sand: As above, 0-1 sand, very fine to fine, mostly very fine, well sorted,.
			0	strong odor, loose, saturated.
130	135	5	9000/57000	0-5.0' Sand: As above, silt/clay layer interbedded at 133.5 - 134.
			0	
134	140	5	2000-15000/	0-1.0' Sand: Reddish brown (5 YR 4/4), very fine to fine, mostly very fine, well
			0	sorted, loose, strong odor, saturated.
				1.0-2.0' Sand/Silt: Reddish brown (5 YR 4/4) interbedded, very fine to fine sand,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-6 Page 4 of 5

Prepared by Trika Nelson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				predominately very fine, low cohesion, saturated, strong odor, silt - fissil, methane
				vesicles.
				2.0-3.0' Sand: Reddish brown (5 YR 4/4), very fine to fine sand, mostly very fine,
				some silt, well sorted, mostly very fine, loose, saturated, strong odor, methane
				bubbles in water.
				3.0-5.0' Sand: Reddish brown (5 YR 4/4), very fine to fine sand, trace coarse, some
				silt, mostly very fine sand, well sorted, loose, saturated.
140	145	5	3200-10000/	0-3.0' Sand: As above.
			0	3.0-4.5' Sand: Reddish brown (5 YR 4/4), very fine to coarse, mostly very fine
				sand, trace angular gravel up to 1", clay nodules, moderately sorted,
				strong odor, saturated, loose.
				4.5-5.0' Sand: Reddish brown (5 YR 4/4), very fine to coarse, mostly very fine,
				poorly sorted, loose, some silt, strong odor, moderately sorted.
145	150	5	5000-24000/	0-5.0' Sand: Reddish brown (5 YR 4/4), very fine to fine, mostly fine, some silt,
			0	well sorted, loose, trace clay nodules, strong odor, trace medium sand/trace coarse
				gravel 3-5'.
150	155	5	55-19000/	0-2.0' Sand: As above.
			0	2.0-5.0' Silt/Clay: Brown (7.5 YR 4/4)-silt, yellowish red (5 YR 4/6)-clay, interbedded,
				soft to crumbly, fissile, strong odor, saturated, clay varied to 1", silt is 1/2" to 1".
155	160	5	7500-15000/	0-2.0' Silt: Reddish brown (5 YR 4/4) grainy, soft to crumbly, saturated, strong odor,
			0	trace sand, methane vesicles.
				2.0-4.0' Sand: Reddish brown (5 YR 5/4), very fine to fine, well sorted, saturated
				loose, strong odor.
				4.0-5.0' Silt/Clay: Brown (7.5 YR 4/4), soft to crumbly, strong odor, saturated.
160	165	5	2000-15000	0-1.0' Silt/Clay: As above.
				1-1.5' Sand: Reddish brown (5 YR 5/4), very fine to fine, mostly very fine, well
				sorted, loose, strong odor, saturated.
				1.5-5.0' Silt/Clay: Reddish brown (5 YR 4/4)-silt, yellowish red (5 YR 4/6)-clay,
				interbedded, soft to crumbly, varves strong odor, saturated
165	170	5	5000-15000/	0-1.5' Silt/Clay: As above.
			0	1.5-5.0' Silt/Clay: As above fine to coarse gravel, poorly sorted, subangular to
				subrounded gravel.
170	175	5	12000-17000/	0-1.0' Silt/Clay: As above.
			0	1.0-2.0' Silt: Reddish brown (5 YR 4/4), somewhat clayey, saturated, strong odor,
				somewhat firm, varves in clay, soft to crumbly.
				2.0-3.5' Sand: Reddish brown (5 YR 5/4), very fine to fine, well sorted, some silt,
				loose, saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-6

Prepared by Trika Nelson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				3.5-5.0' Silt: Reddish brown (5 YR 4/3), soft to crumbly, no clay, saturated, strong
				odor, becoming very sandy with very fine grains below 4.5'.
				EOB @ 175'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-7 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 7/1/04 Drilling Completed 7/6/04

Total Depth Drilled 175 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1049.56 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	3	4.6-62.4/	0-2.0' Silt: Dark brown (7.5 YR 3/4), organic, soft to crumbly, moist.
			13-58	2.0-3.0' Sand: Yellowish brown (10 YR 5/6), very fine to coarse and, mostly fine
				sand little subangular to subrounded gravel up to 1.5 inches, poorly sorted, loose,
				moist.
5	10	5	1.3-16.2/	0-4.0' Sand: Gravel up to 3 inches, as above.
			7-12	4.0-4.5' Sand: Yellowish brown (10 YR 5/6), very fine to medium sand, mostly fine
				sand, well sorted, loose, moist.
				4.5-5.0' Sand/Silt/Gravel: Light yellowish brown (10 YR 6/4), fine sand, gravel is
				subangular to subrounded up to 2 inches, poorly sorted, loose, moist.
10	15	4.5	7.1-742/	0-1.5' Sand/Silt/Gravel: As above yellowish brown (10 YR 5/4).
			2.58-15	1.5-2.25' Sand/Gravel: Dark brown (10 YR 3/3), fine to coarse sand, gravel is
				subrounded up to 2 inches, trace silt, poorly sorted, loose, 1/4" staining at base -
				no odor, saturated.
				2.25-4.5' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-reddish brown
				(5 YR 5/4),interbedded, fissily, soft to crumbly, plastic clay, clay to varve to 1 inch,
				silt-2 to 3 inches, saturated.
15	20	5	204-19800/	0-2.0' Sand/Gravel: Brown (7.5 YR 4/4), coarse sand and gravel, trace silt, loose,
			2.3-3.15	poorly sorted, strong odor, saturated.
				2.0-3.0' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly fine/medium sand,
				trace silt, trace subrounded gravel up to 1.5 inches, poorly sorted, loose, strong
				odor, saturated.
				3.0-4.0' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand, trace
				silt, trace subrounded gravel up to 05. inches, moderately sorted, loose, strong odor,
				saturated.
				4.0-5.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, mostly fine, little
				silt, well sorted, loose, strong odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-7 Page 2 of 5

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
20	25	3	124-23100/	0-1.0' Sand: As above, fine to coarse sand layer from 0.5-0.75, mostly medium
			2.5-3.0	sand.
				1.0-2.0' Sand: Yellowish brown (10 YR 5/4), fine to coarse sand, mostly medium
				sand, well sorted, loose, strong odor, saturated.
				2.0-3.0' Silt: Dark yellowish brown (10 YR 4/4), trace to little gravel (subrounded up
				to 3 inches), cobble at base, very soft, sticky, strong odor, saturated.
25	30	0	--	No recovery.
30	35	0	--	No recovery.
35	40	1.5	5260/3	0-0.5' Granite Cobble: Cored through, 4 inches tall.
				0.5-1.5' Silt: Reddish brown (5 YR 4/4), soft to crumbly, slightly sticky, fissily,
				heavy blank staining, strong odor, saturated.
40	45	5	711-3620/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, soft to crumbly, uniform, heavy
			0-1	black staining, strong odor, saturated.
45	50	5	1750-9900	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, soft to crumbly, trace black staining,
			2.5-4.7	methane vesicles, uniform, strong odor, saturated.
50	55	5	10200-28000/	0-2.0' Silt: Brown (5 YR 4/3), grainy, some smooth to fissily, trace black staining,
			1-7.12	strong odor, saturated.
				2.0-5.0' Silt: Reddish brown (5 YR 4/3), grainy, soft to crumbly, uniform, strong
				odor, saturated.
55	60	5	740-3870/	0-5.0' Silt: Reddish brown (5 YR 4/3), grainy, trace very fine sand, soft to crumbly,
			1-4.5	uniform, water turning black in soil bag, strong odor, saturated.
60	65	5	510-8300/	0-5.0' Silt: Reddish brown (5 YR 4/3), grainy from 0-3', less grainy from 3-5', fissle
			0-7.74	from 3-5', trace black staining, uniform, methane vesicles, strong odor,
				saturated.
65	70	5	6650-34700/	0-0.5' Silt: Grainy, as above.
			0-5.5	0.5-3.0' Silt/Clay: Reddish brown (5 YR 4/3), very clayey, very pliable, fissily,
				uniform, strong odor, saturated.
				3.0-4.75' Sand: Reddish brown (5 YR 5/4), very fine sand, well sorted, loose, strong
				odor, saturated.
				4.75-5.0' Silt: Same as 65-65.5.
70	75	5	6500-51200/	0-4.0' Silt: Reddish brown (5 YR 5/4), grainy, uniform, soft to crumbly, strong
			0-1.91	odor, saturated.
				4.0-4.5' Silt/Clay: Brown (7.5 YR 4/4), interbedded, soft to crumbly, strong odor,
				saturated.
				4.5-5.0' Sand: Reddish brown (5 YR 5/4), very fine sand, well sorted, loose, strong
				odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-7 Page 3 of 5

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
75	80	5	162-9000/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, trace very fine sand, soft to crumbly,
			0	uniform, methane vesicles, strong odor, saturated.
80	85	5	6500-12400/	0-5.0' Silt: Reddish brown (5 YR 4/4), some very fine sand, uniform, methane
			0	vesicles, strong odor, saturated.
85	90	5	1140-4200/	0-3.0' Silt: Reddish brown (5 YR 4/4), soft to loose, methane vesicles, uniform,
			0	strong odor, saturated.
				3.0-5.0' Silt: Reddish brown (5 YR 4/3),very clayey, slightly sticky, uniform, methane
				vesicles, strong odor, saturated.
90	95	5	690-15200/	0-5.0' Silt: Reddish brown (5 YR 4/3), little very fine sand from 3-5 feet, soft to
			0	crumbly from 3 to 5 feet, fissily, uniform, methane vesicles, strong odor, saturated.
95	100	5	1450-25000/	0-1.5' Silt: Reddish brown (5 YR 4/3), some very fine sand, uniform, methane
			1-3.15	vesicles, strong odor, saturated.
				1.5-2.5' Silt/Clay: Silt-reddish brown (5 YR 4/3), clay-reddish brown (5 YR 4/4),
				intertwined, soft to crumbly, slightly sticky, strong odor, saturated.
				2.5-5.0' Sand/Silt: Dark reddish brown (5 YR 3/3), very fine to fine sand, very clayey,
				sticky, loose in areas, jumbled, methane vesicles, strong odor, saturated.
100	105	5	1630-44600/	0-2.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, mostly fine, well sorted,
			1.6-3.17	loose, methane vesicles, strong odor, saturated.
				2.0-3.0' Silt/Sand: Brown (7.5 YR 4/3), fine sand, trace clay, intertwined, soft to
				crumbly, fissily, methane vesicles, strong odor, saturated.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, well sorted, loose,
				strong odor, saturated.
105	110	5	13600-81800	0-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, mostly fine sand, trace silt,
			1-2.5	well sorted, loose, strong odor, saturated.
110	115	5	2500-6200	0-5.0' Sand: As above.
			1-2.74	
115	120	5	3500-47500/	0-1.5' Silt: Brown (7.5 YR 4/3), some very fine sand, soft to crumbly, uniform,
			1.04-2.89	strong odor, saturated.
				1.5-5.0' Sand: Dark yellowish brown (10 YR 4/4), very fine to fine sand, trace silt,
				well sorted, loose, strong odor, saturated.
120	125	5	14300-91200/	0-2.0' Sand: As above.
			2.09-4.15	2.0-5.0' Sand/Silt: Dark yellowish brown (10 YR 4/4), very fine to fine sand, little
				silt, loose to crumbly, uniform, strong odor, saturated.
125	130	5	2340-33500/	0-4.0' Sand/Silt: As above.
			1.65-3.21	4.0-5.0' Sand: Dark yellowish brown (10 YR 4/4), fine to medium sand, mostly fine,
				well sorted, loose, strong odor, saturated.

Sample/Core Log (continued)

Boring/Well GMEWC-7 Page 4 of 5

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
130	135	5	1100-28500/	0-2.0' Sand: As above.
			1.13-1.67	2.0-5.0' Sand: Dark yellowish brown (10 YR 4/4), fine sand, little silt, loose, well
				sorted, strong odor, saturated.
135	140	5	2190-12000/	0-1.5' Sand: Dark yellowish brown (10 YR 4/4), very fine to fine sand, mostly fine
			0.59-1.22	sand, well sorted, loose, strong odor, saturated.
				1.5-3.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, mostly fine sand, little
				fine to coarse gravel (angular to subrounded up to 2 inches), moderately sorted,
				loose, strong odor, saturated.
				3.0-4.0' Sand: Brown (7.5 YR 4/), fine to medium sand, mostly fine sand, well
				sorted, loose, strong odor, saturated.
				4.0-5.0' Sand: Brown (7.5 YR 4/4), fine sand, well sorted, loose strong odor,
				saturated.
140	145	5	5280-17000/	0-5.0' Sand: As above.
			0	
145	150	5	10300-	0-5.0' Sand: As above.
			29100/0	
150	155	5	2240-12700/	0-0.5' Sand: As above.
			1.36-2.25	0.5-1.25' Sand/Silt/Gravel: Dark brown (7.5 YR 3/4), subangular to subrounded
				gravel, fine sand, poorly sorted, soft to crumbly, loose, strong odor, saturated.
				1.25-3.0' Sand: Brown (7.5 YR 4/3), fine to medium sand, mostly fine, some silt
				and clay nodules, soft to crumbly nodules, loose, strong odor, saturated.
				3.0-4.5' Silt: Brown (7.5 YR 4/3), fine to medium sand, mostly fine sand, well
				sorted, loose, strong odor, saturated.
				4.5-5.0' Silt: Brown (7.5 YR 4/3), very clayey, black staining, soft, slightly plastic,
				strong odor, saturated.
155	160	5	1220-4100/	0-1.5' Sand: Brown (7.5 YR 4/3), very fine to medium sand, mostly fine sand, silt
			0	layer 4 inch thick from 0.5-0.75 feet, well sorted, loose, fissily silt, strong odor,
				saturated.
				1.5-5.0' Silt/Clay: Silt-brown (7.5 YR 4/3), clay-reddish brown (5 YR 4/4),
				interbedded, clay-varve to 1 inch, silt-2.5 to 13 inches, fissily, soft to crumbly,
				medium sand layers 2 inches thick from 3-3.25 and 4.3-4.6 feet, strong odor,
				saturated.
160	165	5	590-6430/	0-2.0' Sand/Silt: Silt and sand-brown (7.5 YR 4/4), fine sand, jumbled, loose to soft
			0-0.22	to crumbly, saturated.
				2.0-3.0' Sand: Brown (7.5 YR 4/4), fine sand, some silt, low cohesiveness, well
				sorted, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-7 Page 5 of 5

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				3.0-5.0' Sand/Silt: Sand and silt-brown (7.5 YR 4/4), clay-reddish brown (5 YR 4/4),
				trace clay pockets, loose to soft to crumbly, saturated.
165	170	5	900-3880/	0-0.5' Sand/Silt: As above.
			0-0.80	0.5-5.0' Silt: Dark yellowish brown (10 YR 4/4), grainy to smooth, trace clay
				varving, fissily where smooth, soft to crumbly, saturated.
170	175	5	90-1310/	0-1.0' Silt: Clay-reddish brown (5 YR 4/4), silt-dark yellowish brown (10 YR 4/4),
			0-0.42	grainy, trace clay pockets, fissily, soft to crumbly, saturated.
				1.0-2.5' Silt: Dark yellowish brown (10 YR 4/4), some fine sand, grainy, uniform,
				soft to crumbly, saturated.
				2.5-5.0' Silt/Gravel-Till, very dark gray (1 Gley 3/1), stiff to hard, subrounded gravel
				up to 3 inches, very poorly sorted, 4" cobble at the base, saturated.
				EOB @ 175'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-7A Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 9/23/04 Drilling Completed 9/23/04

Total Depth Drilled 175 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10', 20' x 4" Sampling Interval continued feet

Land-Surface Elev. 1049.54 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz Royce Brown

Prepared By Toni Schoen/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2	1.49-5.62/	0-0.2' Crushed Slate: Fill.
			5.62-11.79	0.2-0.6' Silt: Black, topsoil, organic, rootlets, trace very fine sand, loose, damp,
				no odor.
				0.6-1.6' Silt: Dark yellowish brown (10 YR 4/6), uniform, crumbly when worked,
				loose, damp, no odor.
				1.6-2.0' Sandy Silt: Yellowish brown (10 YR 5/4), trace gravel subangular to
				subround up to 1", sand very fine to coarse, loose, dry, no odor.
5	10	5	0.15-1.51/	0-5.0' Sand: Yellowish brown (10 YR 5/6), little gravel fine to 3" subangular to
			5.02-20.22	subround, trace silt, sand is predominately very fine to fine, little medium to
				coarse, poorly sorted, color variations throughout, but same unit, dry to damp,
				loose, few silt nodules contain sand of all sizes at bottom of sample, no odor.
10	15	4	1.20-3.90/	0-1.0' Clayey Silt: Yellowish red (5 YR 4/6), trace medium to coarse sand, trace
			1.3-26.7	subangular to subround gravel up to 3", cohesive, sticky, somewhat plastic,
				soft, highly disturbed, moist, no odor.
				1.0-4.0' Silt: With a few clay interbeds, clay appears vared, but sample highly
				disturbed, clay plastic with platy appearance, silt predominately smooth, lightly
				interbedded, somewhat cohesive, soft saturated, no odor.
15	20	5	0-10.71/	0-4.0' Silt: Brown (7.5 YR 4/4), interbedded smooth and grainy silts, layers not
			303-2520	discernable but grin size variations apparent, trace clay vaving with yellowish red
				clay, grainy silt is very coarse, approaches very fine sand in places, trace black
				staining, saturated, crumbly when worked, strong odor.
				4.0-4.5' Sand: Brown (7.5 YR 5/4), fine grain, trace very fine, trace medium to
				coarse, moderately sorted, trace fine gravel subround, loose, saturated, strong
				odor.
				4.5-5.0' Silt/Sand/Gravel: Reddish brown (5 YR 4/4), sand predominately fine,
				little medium to coarse, very fine, gravel fine to 2", subangular to subround, very
				poorly sorted, loose, saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-7A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	1.44-1.77/	0-2.0' Silt/Sand/Gravel: As above, but silt is grading out and gravel up to 4",
			1082-2750	strong odor, increasing sand content decreases.
				2.0-5.0' Sand: Brown (7.5 YR 4/4), fine to very coarse, predominately medium,
				trace subangular to subround gravel up to 2", moderately sorted, loose, saturated,
				strong odor, very sharp contact with unit below.
25	30	5	3.5-4.32/	0-1.5' Silt: Brown (7.5 YR 5/4), very grainy (near very fine sand) uniform, saturated,
			19300-24400	loose, strong odor.
				1.5-4.5' Sand: Brown (7.5 YR 5/3), trace silt (grainy), very fine to fine grain,
				predominately fine, little medium to coarse 2.0-3.0', poorly sorted, loose, saturated,
				odor.
				4.5-5.0' Sand: As above in 23.0-25.0', predominately medium grain sand seam,
				sharp contact with unit below.
30	35	5	5.46-6.35/	0-5.0' Silt: Brown (7.5 YR 4/4), as above in 23.5-25.0, very grainy, more black
			3500-9500	staining, vesicles, loose when worked, saturated, strong odor.
35	40	5	3.21-6.37/	0-5.0' Silt: Brown, as above, very grainy silt, little black staining, many vesicles,
			130-2010	saturated, somewhat loose, uniform, strong odor.
40	45	5	4.21-6.1.8/	0-5.0' Silt: As above, but contains a few areas with smooth silt.
			240-5510	
45	50	5	5.25-6.74/	0-5.0' Silt: As above, very grainy, black staining, vesicles, saturated, odor.
			400-55000	
50	55	5	7.63-4.0/	0-5.0' Silt: A above, but 2.0-3.0' interval contains predominately smooth silt, and
			5000-24300	interbedded silts of varying grain size, color is predominately brown (7.5 YR 5/3),
				somewhat cohesive 2.0-3.0, otherwise as above, strong odor.
55	75	4	5.90-8.74/	Note: Had 20 feet of recovery, but sample fell out to coarse barrel onto deck,
			4800-10300	appeared to be all the same material, but only approximately 4 feet of sample
				recovered for description. 74-75 feet interval is real.
				0-3.0' Mixture of 55-74', silt, brown (7.5 YR 4/4) totally disturbed, predominately
				smooth, was partly interbedded silt, trace black staining, bubbles, vesicles, somewhat
				loose, saturated, strong odor.
				3.0-4.0' (74.0-75.0) silt, reddish brown (5 YR 4/6), very grainy, uniform, trace
				black strong, loose, saturated, strong odor, as above in approximately 30 - 55'.
75	80	5	6.59-9.77/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth, uniform, grainy to smooth,
			2300-3500	trace black staining, vesicles, somewhat cohesive to loose when worked,
				saturated, odor.
80	85	5	3.89-6.23/	0-5.0' Silt: As above.
			1300-2000	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-7A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
85	90	5	5.41-6.41/	0-5.0' Silt: As above.
			1100-5120	
90	95	5	6.93-8.97/	0-5.0' Silt: As above.
			5000-10300	
95	100	5	-1.0-1.74/	0-5.0' Silt and Sand: Silt, brown (7.5 YR 5/3), sand brown (7.5 YR 4/3), interbedded
			438-2570	smooth silt and very fine sand, predominately very fine sand, beds approximately
				0.5-1.0' thick, trace clay layers/varves <0.1" thick, clay yellowish red (5 YR 4/6) and
				plastic, loose, saturated, vesicles, trace black staining in sand, odor.
100	105	5	0.92-1.54/	0-2.5' Interbedded silt and sand brown (7.5 YR 5/3) as above, very fine sand is
			711-1812	approaching grainy silt (less sandy), trace clay as above, silt somewhat cohesive,
				saturated, odor.
				2.5-5.0' Sand: Brown (7.5 YR 4/3), very fine grain, well sorted, loose, uniform,
				saturated, strong odor.
105	110	5	1.35-2.8/	0-1.5' Sand: As above.
			5000-11000	1.5-5.0' Silt: Brown (7.5 YR 4/3), finely interbedded silts, smooth and grainy,
				loose, trace black staining, overall uniform, saturated, strong odor.
110	115	5	2.37-4.2/	0-0.5' Silt: As above.
			17000-28000	0.5-3.0' Sand: Brown (7.5 YR 5/3), very fine sand as above, grades into unit below.
				3.0-5.0' Silt and Sand: Brown (7.5 YR 4/3), very fine sand and grainy silt, loose,
				well sorted, saturated, trace black staining, strong odor.
115	120	5	-1.2-4.2/	0-5.0' Sand/Silt: Brown (7.5 YR 4/3), very fine sand near grainy silt size, trace black
			512-20000	staining, well sorted, uniform, loose, saturated, strong odor.
120	125	5	1.3-3.3/	0-0.5' Sand/Silt: As above.
			6000-50000	0.5-5.0' Silt: Brown (7.5 YR 4/3), trace to little very fine sand, very grainy, trace
				black staining, uniform, loose, saturated, strong odor.
125	130	5	1.5-3.27/	0-5.0' Sand/Silt: As above, color as above, very grainy, new very fine sand size, was
			2000-22000	interbedded grainy silt and very find sand, well sorted, loose, saturated, trace
				black staining, strong odor.
130	135	5	3.05-14.71/	0-5.0' Sand/Silt: As above.
			20000-46000	
135	140	5	-2.7- -0.1/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine grain, approaching fine grain, well sorted,
			15000-44000	loose, saturated, odor.
140	145	5	-1.2- -0.94/	0-5.0' Sand: Brown as above, very fine grain, well sorted, uniform, loose, saturated,
			2000-21000	odor.
145	150	5	-1.9-0.2/	0-2.0' Sand: As above.
			8300-23000	2.0-5.0' Silt: Brown (7.5 YR 4/4), some sand very fine, trace medium to coarse,
				trace gravel subround fine up to 4" cobbles, poorly sorted, somewhat

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-7A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				cohesive, saturated, odor.
150	155	5	-27- -1.11/	0-2.0' Sandy Silt: Reddish brown (5 YR 4/4), some clay layers/varves up to 0.25",
			2800-15000	silt grainy to smooth, clay yellowish red (5 YR 4/6), plastic, has fissle appearance on
				broken surface, trace gravel mostly fine subangular to subround, sand is very fine
				to very coarse, poorly sorted, somewhat cohesive, saturated, odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/4), as above, very fine grain, well sorted, uniform,
				loose, saturated, odor.
155	160	5	0.7-1.20/	0-5.0' Silt and Clay: Interbedded, silt brown (7.5 YR 4/4) clay, yellowish red
			215-6800	(5 YR 4/6), a few very fine and seams approximately 1-2" thick, clay is stiff, HP =
				4.0, plastic, appears fissile on broken surface, silt smooth, clay beds varved up to 2"
				thick, predominately silt, somewhat cohesive, crumbly when worked, saturated,
				no odor.
160	165	5	0.58-1.24/	0-4.5' Silt: As above, but less clay content, a few thin clay ??/layers up to 0.5",
			178-300	silt brown (7.5YR 5/3), somewhat cohesive, saturated, no odor.
				4.5-5.0' Sand: Reddish brown (5 YR 5/3), predominately fine, trace very fine,
				trace medium, loose, moderately sorted, saturated, odor.
165	170	5	.90-1.64/	0-0.5' Sand: As above.
			50-1700	0.5-1.0' Sand: As above (7.5 YR 4/4), but finer, very fine grain, trace fine to
				medium.
				1.0-5.0' Silt/Sand/Gravel/Clay: Dark greenish gray (1 Gley 3/10 Y) sand all sizes,
				gravel angular to subround, fine up to 4" cobbles, very hard, cohesive, poorly
				sorted, till, saturated, no odor.
170	175	5	1.34-2.56/	0-5.0' Silt/Sand/Gravel/Clay: As above, less gravel in places where color changes to
			5-6.8	brown (7.5 YR 4/4), weathered bedrock pieces, otherwise as above.
				EOB @175.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-8 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 7/8/04 Drilling Completed 7/8/04

Total Depth Drilled 195 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 20' x 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1047.03 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	3.23-11.80/	0-4.5' Topsoil: Silt, dark yellowish brown (10 YR 3/6), trace clay, trace very fine
			7.55-25.93	sand, much organics/rootlets, silt predominately smooth, some grainy, soft, loose,
				crumbly, little fine (<0.5") gravel subround 4.0-4.5', moist, organic odor.
				4.5-5.0' Sand and Silt: Dark yellowish brown (10 YR 4/6), little to some gravel
				angular to subround up to 2", sand predominately very fine to fine, little medium
				to very coarse, sand moderately sorted, poorly sorted mixture overall, loose, moist,
				no odor.
5	10	5	1.12-1.50/	0-5.0' Sand and Gravel: Dark yellowish brown (10 YR 4/6), silty in places, sand
			3.27-13.84	very fine to very coarse, but predominately very fine to fine, gravel subangular to
				subround to 2", sand, poorly sorted, loose, multi colored gravel, moist, no odor.
10	15	5	.36-2.82/	0-1.0' Sand and Gravel: Dark yellowish brown (10 YR 4/6) very silty, gravel,
			52-172	subangular to subround, up to 2", mostly subround, sand very fine to very coarse
				predominately very fine, poorly sorted sand, slight cohesive, wet to saturated, no
				odor.
				1.0-2.0' Silty Sand and Gravel: Dark yellowish brown (10 YR 4/1), predominately
				fine gravel/ very coarse sand, sand very fine to very coarse, subround gravel up to
				2.5", trace clay, very poorly sorted matrix, saturated, no odor.
				2.0-3.0' Silt with Silt/Clay/Sand Interbedds: Silt beds are dark yellowish brown
				(10 YR 4/4), silt/clay/sand beds are yellowish red (5 YR 4/6), alternating layers
				approximately 2" thick (both), silt layers are smooth to grainy with trace coarse
				sand, silt layers are uniform, silt/clay/sand layers contain some clay, some grainy
				silt, some well sorted very fine sand and are somewhat cohesive, wet and pasty
				texture, overall cohesive unit with no odor, grades into unit below with silt layers
				staying the same, but silt/clay/sand layers changing to clay, layers at approximately
				3.0.
				3.0-5.0' Silt/Clay Interbedds: Silt layers are same description as above, but about

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-8 Page 2 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-4" thick at 3.0 grading into 1-2" thick at 5.0, clay layers mm's thick (varved)
				to 1" thick, variable thickness 3.0-5.0, but more frequent 3.8-5.0', clay layers
				have fissile/platy appearance on broken surface, but plastic when worked, clay is
				yellowish red (5 YR 4/6), cohesive and firm overall, trace very fine sand seam at
				3.5', stiff silt and clay, moist to wet, no odor.
15	20	5	-.13-.92/	0-2.0' Slough: From above.
			1.5-1308	2.0-2.5' Silt/Clay: Interbedds as above grading into unit below.
				2.5-5.0' Clayey Silt: Reddish brown (5 YR 4/4), trace sand very fine to very coarse,
				predominately coarse to very coarse, trace fine, subrounded gravel, poorly sorted,
				sticky and cohesive, easily molded, crumbly appearance, disturbed silt and clay
				layers?, some clay nodules yellowish red, plastic, wet, slight odor.
20	25	5.0	.94-1.94/	0-5.0' Sand: Reddish brown (5 YR 5/4) trace silt, sand very fine to fine,
			2500-13000	predominately fine, slight trace medium to coarse, well sorted, loose, uniform, wet
				to saturated, strong odor.
25	30	5	1.74-2.76/	0-5.0' Sand: As above.
			6700-15400	
30	35	5	2.08-3.65/	0-1.0' Sand: As above.
			9050-10600	1.0-2.0' Sand: Reddish brown (5 YR 4/4) trace gravel subround to 1", trace silt,
				sand is very fine to very coarse, but predominantly medium, moderately well sorted,
				loose, wet to saturated, strong odor.
				2.0-5.0' Sand: Reddish brown (5 YR 4/4) very fine to fine sand, trace medium to
				very coarse, moderately to well sorted, loose, wet to saturated, strong odor.
35	40	5	1.64-2.08/	0-5.0' Sand: As above, with a gravelly layer 2.5-3.2 with much gravel up to 3"
			24300-25700	angular to subround, mostly angular white quartz pieces, storm deposit? Also
				one 4" quartz piece at 3.5, otherwise same sand as above.
40	45	5	1.06-1.80/	0-5.0' Sand: As above, well sorted, and very fine to fine, predominately fine, nice
			20300-15000	clean uniform sand.
45	50	5	1.31-1.75/	0-5.0' Sand: As above, very uniform, continues, very fine to fine sand,
			8000-20000	predominately fine, well sorted.
50	55	5	1.86-2.41/	0-5.0' Sand: As above, with little silt 3.5-5.0, this was a very inform, continuous
			8000-151600	sand from 32 to 55'.
55	60	5	.07-1.12/	0-5.0' Sand: As above, but very silty in places, also trace medium to coarse in places,
			920-13000	saturated from drilling fluid, strong odor.
60	65	6	.08-1.95/	0-5.0' Silt: Reddish brown (5 YR 4/4) trace to little clay, silt predominately smooth
			1000-3500	at 0.0 but grades into grainy at 5.0, trace to little clay, clay grades out toward 5.0,
				very sticky and more clayey 0.0-2.0, silt coarser down section and is borderline

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-8 Page 3 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				very fine sand at 3.5, by 5.0 it is very fine sand predominately, vesicles throughout,
				odor, saturated/soupy probably from drilling fluid.
65	70	5	.07-1.44/	0-5.0' Sand and Silt: Brown (7.5 YR 4/4) silt grainy to smooth, sand very fine, well
			800-25400	sorted, soft, somewhat cohesive to loose, well sorted sand, some siltier/sandier areas,
				uniform overall, might have been layered, but not distinguishable, wet, odor.
70	75	5	.96-1.94/	0-2.5' Silt: Reddish brown (5 YR 4/4) trace clay, silt is smooth, uniform, sticky and
			7500-10000	cohesive, trace black staining 0-1.5 vesicles, somewhat loose, saturated, odor.
				2.5-5.0' Silt and Sand: Yellowish red (5 YR 4/6) well sorted, silt very grainy, sand
				very fine, borderline very fine sand/silt, intermixed uniform sample, trace black
				staining, loose and crumbly, moist to wet, odor.
75	80	5	-.52-.47/	0-5.0' Silt: Reddish brown (5 YR 4/4) some clay, silt predominately smooth,
			107-270	uniform sample, saturated/soupy from drilling fluid, sticky/cohesive but soft,
				slight odor, possible small layers, but disturbed/intermixed, not distinusible.
80	85	5	-.56- -.44/	0-5.0' Silt: As above, but grading into less clay content, also silt becomes somewhat
			69-154	grainier in places, few vesides trace black staining, odor.
85	90	5	-.52-.42/	0-1.5' Silt: Reddish brown (5 YR 4/4) little to some well sorted very fine sand
			616-11500	intermixed in matrix, silt predominately grainy, some smooth, saturated with
				drilling fluid as above, soft, uniform, somewhat cohesive, odor.
				1.5-2.0' Silty Sand: Reddish brown (5 YR 4/3) very fine well sorted sandy layer, silt
				grainy to smooth, saturated as above, odor.
				2.0-5.0' Silt: As above in 0-1.5', trace black staining, saturated, odor.
90	95	5	-.10-.88/	0-0.5' Silt: As above.
			911-27500	0.5-5.0' Silt and Sand: Interbeds: silt is reddish brown (5 YR 4/4) sand is reddish
				brown (5 YR 4/3), layering is as follows: 0.5-1.1, silt, 1.1-1.4 sand well sorted
				very fine to fine with trace silt and no odor.
				1.4-1.8' Silt: Grainy as above, 1.8-1.9 sand well sorted very fine, 1.9-3.0 silt as
				above with one 0.5"with very fine sand seam at 2.5 and one 0.7" thick clay layer
				at 2.8, clay is yellowish red, plastic, medium dense 3.0-3.5 silt as above, 3.5-3.7
				silty sand very fine 3.7-3.8 silty clay, yellowish red, 3.8-5.0 silt and sand intermixed,
				with very fine sand and grainy silt, overall silt/sand interbred 0.5-5.0, somewhat
				cohesive, wet, odor.
95	100	5	-.45- -.41/	0-5.0' Sandy Silt: Brown (7.5 YR 4/4) matrix silt is smooth to grainy, sand it very
			687-2450	fine, with 3 sand layers, reddish brown (5 YR 4/4) at approximately 1.0, 1.6, 2.0,
				each is approximately 2" thick, somewhat distorted from drilling, sand well sorted
				very fine to fine, loose, some clay varving 3.0-5.0' with clay yellowish red
				(5 YR 4/6), possibly a few clay layers approximately 0.5" thick, but distorted, clay

Sample/Core Log (continued)

Boring/Well GMEWC-8

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				is plastic, matix is sandy with very fine sand, saturated, no odor throughout.
100	105	5	.43-1.01/	0-5.0' Silty Sand: Brown (7.5 YR 4/4) sand well sorted very fine, trace fine, trace clay
			4200-32400	nodules yellowsih red plastic to 2:, silt grainy to smooth, silt in matrix, but also a
				few layer 0.5-4" thick 2.0-5.0', but disturbed from drilling, so not clear, slight
				cohesive, loose, soft, wet, no odor.
105	110	5	-0.8-1.45/	0-1.0' Silty Sand: As above, less silt, cleaner sand.
			49-920	1.0-3.0' Silt: Reddish brown (5 YR 5/4), predominately smooth, some grainy, trace
				very fine sand, stiff and cohesive to somewhat crumbly when broken, trace black
				staining, trace clay layers <0.5" yellowish red and plastic, but not distinguisble,
				distorted, wet, no odor.
				3.0-4.0' Silty Sand: As above in 0-1.0, but siltier, grainy silt, less sand.
				4.0-5.0' Silt: as above in 1.0-3.0.
110	115	5	-.21-1.78/	0-1.5' Silt: Reddish brown (5 YR 4/4) trace to little clay in matrix, medium stiff,
			9-260	moderately cohesion, somewhat crumbly when worked, somewhat sticky,
				saturated, no odor.
				1.5-5.0' Silt/Clay: Interbeds, silt is brown (7.5 YR 4/4) clay is yellowish red
				(5 YR 4/6), silt is matrix/majority of sample with clay layers 0.5-4" thick, clay is
				plastic, fissile appearance on broken surfaces, moderately dense, some clay has silt
				varying within, clay layers prominent 2.5-4.5', otherwise sporadic, cohesive
				overall, saturated, no odor.
115	120	5	.15-1.37/	0-5.0' Sand: Brown (7.5 YR 4/4) trace to little silt in matrix, many silt nodules of
			3400-8900	brown, grainy silt up to 2", high concentration of nodules 0-0.5 (possibly slough?),
				sand is very fine, trace to little fine, well sorted, loose, uniform, wet, slight odor.
120	125	5	-.34-1.35/	0-5.0' Sand: As above, brown (7.5 YR 4/4), very fine to fine grain, well sorted,
			2015-9000	uniform, possible slight trace silt, loose, wet, no odor.
125	130	5	-.39-1.59/	0-5.0' Sand: As above, uniform, but odor.
			501-19100	
130	135	5	.07-1.59/	0-5.0' Sand: As above, strong odor, uniform 115-135.
			610-22100	
135	140	5	.25-.05/	0-5.0' Sand: Reddish brown (5 YR 4/3) trace silt, sand very fine to coarse,
			1700-8500	predominately fine to medium, moderately sorted, methane bubbles, loose,
				uniform, wet to saturated, strong odor.
140	145	5	0-3.24/	0-5.0' Sand: As above, trace silt grades out to no silt, predominately fine to
			10000-110000	medium, uniform, strong odor.
145	150	5	1.81-3.26/	0-5.0' Sand: As above.
			15000-10000	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-8 Page 5 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
150	155	5	1.42-1.98/	0-5.0' Sand: As above, but some coarsening 2.0-5.0; predominately fine to medium,
			14600-40700	but slightly more coarse grains, saturated, strong odor, this was a uniform sand
				135-155.
155	160	5	1.88-2.86/	0-5.0' Sand: As above, brown (7.5 YR 4/4), but trace silt, still predominately
			3800-17000	fine to medium uniform, loose, saturated, very strong odor.
160	165	5	.71-3.85/	0-5.0' Sand: As above, trace silt, strong odor.
			9000-37000	
165	170	5	1.19-2.02/	0-2.0' Sand: As above.
			1300-150000	2.0-5.0' Sand: As above, but becoming more poorly sorted with very fine to
				very coarse sand, and more silt, little to some silt, loose, saturated, strong odor.
170	175	5	.37-1.59/	0-3.5' Silty Sand: Brown (7.5 YR 4/4), 6" thick silt layer at 0.3, brown (7.5 YR 4/4),
			2000-13000	grainy, firm/cohesive matrix is sand very fine to very coarse, very poorly sorted, silty,
				trace fine gravel subangular to subround, loose, wet to saturated, strong odor.
				3.5-5.0' Silt: Brown (7.5 Yr 4/4) smooth 3.5-4.0', then grainy, little gravel
				subround to 1", very gravelly 3.5-4.0, trace very fine to very coarse sand,
				crumbly and loose overall, slightly cohesive when molded, wet, strong odor.
175	180	5	-.54-.67/	0-5.0' Silty Clay Intervals: Brown (7.5 YR 4/4) silt is smooth, soft, somewhat
			6.04-7.19	sticky, fairly uniform, silt is major constituent with clay interbeds varved to 1"
				thick sporadic, yellowish red (5 YR 4/6), clay is plastic, medium to dense, more
				prevalent 2.0-5.0, cohesive, saturated, no odor.
180	185	5	.32-2.35/	0-5.0' Silt: With clay interbeds/varying as above with trace subround gravel to 0.5",
			4.13-1279	and sand seam 3" thick at 2.0, dark brown (7.5 YR 3/3), well sorted very fine to fine,
				some black staining, no odor.
185	190	5	.29-4.84/	0-1.0' Silt/Clay: As above.
			8.24-24.57	1.0-5.0' Silt/Sand/Gravel: Brown (10 YR 4/3), trace clay, predominately silt and
				gravel, sand is very fine to very coarse intermixed in silt matrix, gravel subangular to
				subround, up to 3", possible fabric signature with long axes vertical in hole, many
				subround pieces of bedrock, silt smooth to grainy, had, dense, till (?), much coarser
				gravel 2.5-3.5', mostly 3-4", poorly sorted mixture, moist, no odor.
190	195	5	.01-7.5/	0-5.0' Silt/Sand/Gravel: As above, with many 4" subround bedrock pieces, somewhat
			8.12-50.73	sandier 2.0-5.0, no odor.
				EOB @ 195'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-8A Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 9/20/04 Drilling Completed 9/20/04

Total Depth Drilled 175 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' and 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1047.30 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	2.5	19-455/	0-0.5' Silt: Dark brown (7.5 YR 3/3), organic, rootlets, crumbly, loose, uniform,
			10.8-43.1	damp.
				0.5-2.5' Sand: Dark yellowish brown (10 YR 4/6), very fine to coarse sand, mostly
				fine, some subrounded gravel up to 1.5 inches, most gravel is pea gravel size,
				loose, poorly sorted, damp.
5	10	3	70.8-992/	0-3.0' Silty Sand: Dark yellowish brown (10 YR 4/6), fine sand, trace medium to
			21-87	coarse sand, some subangular to subrounded gravel up to 4 inches, mostly pea
				gravel size, base of sample obstructed by gravel cored through, loose, moderately
				sorted, damp.
10	15	2	193-500/	0-2.0' Silty Sand: Same as above, saturated.
			23-27	
15	20	--	--	No recovery.
20	25	1.5	78-849/0	0-0.5' Silt/Clay: Reddish brown (5 YR 4/4), interbedded, highly disturbed from drilling,
				trace subrounded gravel, soft to stiff, sticky, no odor, saturated.
				0.5-1.5' Sandy Silt: Brown (7.5 YR 4/3), fine sand, trace subrounded coarse sand,
				trace clay beds, very soft, low cohesion, uniform, no odor, saturated.
25	30	3	35-3255/0	0-2.0' Sandy Silt: Same as above.
				2.0-3.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, mostly fine sand, trace
				medium to coarse sand (< 5 percent), uniform, loose, well sorted, slight odor,
				saturated.
30	35	5	1174-2177/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, mostly fine sand, trace
			0	medium to coarse sand from 4 to 5 feet, loose, well sorted, uniform, strong
				odor, saturated.
35	40	5	1167-2073/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine sand, mostly fine sand, trace
			2.06-3.18	medium to coarse sand (<5 percent) from 4-5 feet, loose, very well sorted, strong
				odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-8A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
40	45	5	7420-8778/	0-5.0' Sand: Same as above, with no medium to coarse sand.
			5.31-19.47	
45	50	5	3620-13000/	0-5.0' Sand: Same as above.
			8-20	
50	55	5	1578-74000/	0-5.0' Sand: Same as above with trace medium to coarse sand.
			6.7-9.8	
55	60	5	1879-2929/	0-5.0' Sand: Same as above.
			3.09-9.95	
60	65	5	1120-2359/	0-5.0' Sand: Same as above with trace medium sand.
			1.75-2.94	
65	70	5	195-2544/	0-1.0' Sandy Silt: Brown (7.5 YR 4/4), mostly fine sand, some coarse sand, trace fine
			0.97-2.94	gravel, trace clay, low cohesion, very poorly sorted, strong odor, saturated.
				1.0-2.0' Silt/Clay: Brown (7.5 YR 4/4), likely interbedded (destroyed during drilling?),
				smooth, very clayey, uniform, sticky, plastic, methane vesicles, strong odor,
				saturated.
				2.0-5.0' Silt: Reddish brown (5 YR 5/3), grainy, uniform, trace black staining, very
				soft, strong odor, saturated.
70	75	5	1927-22000/	0-2.0' Silt: Same as above.
			3.41-7.07	2.0-4.0' Silt: Brown (7.5 YR 4/4), smooth, trace grainy silt layers from 3.5-4 feet,
				fissily surface, uniform, holds body, crumbly when worked, trace black staining,
				strong odor, saturated.
				4.0-5.0' Silt: Brown (7.5 YR 4/4), grainy, uniform, very soft, black staining, strong
				odor, saturated.
75	80	5	1129-7960	0-5.0' Silt: Reddish brown (5 YR 5/3), grainy, uniform, low cohesion, loose to
			1.3-9.0	crumbly, trace black staining, methane vesicles, strong odor, saturated.
80	85	5	236-6676/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth from 0-1 feet and 3-3.5 feet, grainy
			3.0-4.6	from 1-3 feet and 3.5-5 feet, very clayey where smooth, sticky, likely interbedded
				clay varving, low cohesion where grainy, uniform color, black staining, methane
				vesicles, strong odor, saturated.
85	90	3	961-4270/	0-3.0' Silt: Same as above, interbedded smooth and grainy with sand seams (<5 mm
			2-3	very fine sand, well sorted, loose, [7.5 YR 5/3]) from 3-3.5 feet and 4.5-5 feet.
90	95	5	976-53500/	0-5.0' Silt: Interbedded smooth and grainy.
			2-6.06	
95	100	5	681-5313/	0-2.5' Silt: Reddish brown (5 YR 5/4), smooth and grainy silt, clay interbedded from
			0-1.5	1-1.5 feet, liquefied, trace black staining, uniform, strong odor, saturated.
				2.5-5.0' Silt: Brown (7.5 YR 4/3), very grainy, borderline very fine sand, uniform,
				black staining, strong odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-8A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
100	105	5	153-2053/	0-4.5' Silt: Very grainy, borderline very fine sand, same as above.
			0-0.4	4.5-5.0' Silt: Brown (7.5 YR 4/3), smooth, low cohesion, uniform, crumbly when
				worked, no odor, saturated.
105	110	5	22-160/	0-1.0' Silt: Brown (7.5 YR 4/3), grainy, uniform, loose to somewhat crumbly, no
			0-1.02	odor, saturated.
				1.0-5.0' Silt: Brown (7.5 YR 4/3), smooth, uniform, fissily surface, crumbly when
				worked, very fine sand pocket from 4-4.5 feet, clay interbedded from 4.5-5 feet
				(varved), no odor, saturated.
110	115	5	20-107/0	0-5.0' Silt: Brown (7.5 YR 4/4), trace clay varves up to 1 inch, smooth silt, fissily
				surface, crumbly when worked, soft, no odor, saturated.
115	120	5	267-2755/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine sand, little silt, uniform, loose, well
			0-2.11	sorted, slight odor, saturated.
120	125	5	167-1324/0	0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine sand, trace silt, uniform, loose,
				well sorted, saturated.
125	130	5	1906-9787/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine sand, mostly fine sand, trace
			0	silt, uniform, loose, well sorted, strong odor, saturated.
130	135	5	252-10900/	0-5.0' Sand: Same as above.
			0-1.7	
135	140	5	278-3679/0	0-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, mostly fine sand, loose,
				well sorted, strong odor, saturated.
140	145	5	2450-7471/	0-5.0' Sand: Same as above.
			0	
145	150	5	4063-27200/	0-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, mostly fine sand, little
			0	medium to coarse sand, loose, moderately sorted, strong odor, saturated.
150	155	5	6673-24700/	0-5.0' Sand: Same as above.
			0-1.80	
155	160	5	814-20500/	0-5.0' Sand: Brown (7.5 YR 4/3), very fine to fine sand, little medium to coarse
			0-1.71	sand, loose, moderately sorted, strong odor, saturated.
160	165	5	14000-	0-5.0' Sand: Same as above.
			>100000/	
			0-1.1	
165	170	5	39000-	0-1.0' Sand: Same as above.
			>100000/	1.0-3.0' Sand: Brown (7.5 YR 5/3), very fine sand, grading into silt, uniform, loose,
			0-2.38	well sorted, strong odor, saturated.
				3.0-5.0' Silt: Brown (7.5 YR 5/4), smooth, slightly grainy, crumbly when worked,
				uniform, strong odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-8A

Prepared by Toni Schoen/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
170	175	5	956-9097/	0-0.5' Silt/Clay: Clay reddish brown (5 YR 4/4), clay layer 4" from 0.1-0.5, HP = 3.0,
			0-2.11	stiff, plastic, high cohesion, smooth silt, strong odor, saturated.
				0.5-3.0' Silt: Brown (7.5 YR 5/2), smooth to grainy interbedded, uniform, strong
				odor, saturated.
				3.0-5.0' Silt/Clay: Reddish brown (5 YR 4/3), interbedded, clay varve to 1 inch,
				silt 0.5-2 inches, grainy silt, strong odor, saturated.
				EOB @ 175 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-9 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/22/04 Drilling Completed 7/22/04

Total Depth Drilled 125 Feet Hole Diameter 12 inches

Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1048.75 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jason Helper Scott Schultz Royce Brown

Prepared By Paul Lenaker/Andy Mumpy

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	4	1.16-9.25/	0-3.5' Slate Flakes: Fill.
			5137/24800	3.5-4.0' Silt/Sand: Yellowish brown (10 YR 5/3), silt grainy to very fine sand,
				somewhat loose, well sorted, moist, no odor, trace roots.
5	10	5	-0.99-1.09/	0-2.5' Silty Sand: Reddish brown (5 YR 5/4), sand very fine to coarse, predominately
			25.64-129	fine to medium, little to some gravel to 3.5" round to subangular, trace clay,
				poorly sorted, somewhat loose, moist to wet, odor.
				2.5-5.0' Silty: Brown (7.5 YR 5/4), grainy to somewhat smooth, trace clay in layers
				<1/4" thick color change at 4.0 but no apparent wet change brown (7.5 YR 5/2),
				somewhat cohesive to somewhat crumbly to somewhat silty, moist to wet, odor.
10	15	5	-0.88-1.63/	0-1.5' Silt: As above.
			18.36-932	1.5-5.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/3), clay is yellowish red (5 YR 4/6),
				silt is smooth to slight grainy, crumbly clay is fissile/platy in appearance, somewhat
				plastic to somewhat cohesive, layers are fairly consistent up to 1" for clay and up to
				2.75 for silt, moist to wet, odor.
15	20	5	-0.99-1.11/	0-3.0' Silt: Brown (7.5 YR 4/7), smooth, trace to little clay, cohesive and somewhat
			29.8-14600	plastic, somewhat sticky, wet, odor, trace black staining, grades 1/2" into section
				below.
				3.0-5.0' Sand and Gravel: Brown (7.5 YR 4/3), sand very fine to coarse,
				predominately medium to coarse, silty, somewhat loose, poorly sorted, gravel up to
				3" subround to subangular, wet, slight odor.
20	25	5	-0.96-0.68/	0-2.0' Sand: Color as above, very fine to coarse, predominately medium to coarse,
			3165-4707	silty loose, trace gravel to 1" subround to subangular, wet, odor.
				2.0-5.0' Sand: Dark gray (7.5 YR 4/1), fine to coarse sand predominately medium to
				coarse, poorly sorted, little gravel to 3" subround to subangular, loose, wet, odor.
25	30	5	0.12-2.13/	0-4.0' Sand: Brown (7.5 YR 5/2), very fine to fine grain, well sorted, trace to little
			5055-	medium to coarse, loose, wet, odor, trace black staining, dark gray (4/1).
			23900	4.0-5.0' Sand: Color as above, very fine to medium, predominately fine to medium
				grain, saturated, loose, wet, odor trace gravel to 1/2" subround to subangular.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-9 Page 2 of 3

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
30	35	5	-1.30- -1.16/	0-1.5' Sand: As above, grading over 1' into section below.
			489-4608	1.5-5.0' Sand: Brown (7.5 YR 5/3), very fine grain, well sorted, trace fine grain,
				somewhat loose, wet, odor.
35	40	5	-1.58-2.07/	0-5.0' Silt/Sand: Reddish brown (5 YR 5/4), grainy silt, approaching very fine sand,
			1201-5619	uniformly very well sorted, somewhat loose, wet, odor.
40	45	5	-0.75-1.82/	0-5.0' Silt/Sand: As above, becoming slightly coarser down section, trace black
			7851-15700	staining.
45	50	5	0-2.49/	0-4.0' Silt/Sand: As above, slight variation in grain size over 1/2' increments,
			3441-11500	possibly interbedded.
				4.0-5.0' Silt: Reddish brown (5 YR 4/3), smooth, somewhat cohesive, slight plastic
				to somewhat crumbly, wet, odor.
50	55	5	2.67-8.0/	0-0.5' Silt: As above, grading into over 1/2'.
			7974-17100	0.5-5.0' Silt: Brown (7.5 YR 4/3) grainy, somewhat loose to somewhat crumbly,
				very well sorted, approaches very fine sand in places, moist to wet, odor.
55	60	5	-0.86-0.74/	0-5.0' Silt/Silt Interbeds: Alternating grainy and smooth, interbeds of smooth silt
			2090-4755	and silty grainy, reddish brown (5 YR 5/4), somewhat loose to somewhat crumbly,
				smooth is brown (7.5 YR 4/3), somewhat cohesive to somewhat crumbly interbedds
				approximately 1/2" thick, wet, strong odor at 3.5' interbed become predominately
				grainy.
60	65	5	0.61-4.62/	0-5.0' Silt: Reddish brown (5 YR 5/3), grainy, black staining, very well sorted,
			8835-9776	somewhat loose to somewhat crumbly, wet, strong odor.
65	70	5	0.57-2.71/	0-2.0' Silt: As above, grainy.
			1645-16500	2.0-5.0' Silt: Silt interbed as above (55-50 0-5'), black staining.
70	75	5	0.5-2.72/	0-5.0' Silt: Grainy, as above, approaches very fine sand in places.
			25000-26400	
75	80	0	--	No recovery.
80	95	0	--	No recovery.
95	105	6	-0.38-4.52/	0-3.0' Silt: Reddish brown (5 YR 5/3), smooth, vesicles, crumbly, interbedded with
			3026-12600	silt brown (7.5 YR 5/2) somewhat cohesive, somewhat and sticky, interbedds
				approximately 1/2 - 1" thick, wet, strong odor.
				3.0-5.0' Silt: Reddish brown (5 YR 5/4), grainy, crumbly, trace to little fine to coarse
				sand, predominately medium sand, poorly sorted from 3.5-4.5', above silt is grainy
				approaches very fine sand, moist to wet, odor.
				5.0-6.0' Silt: Color as above, smooth crumbly moist to wet, odor.
105	110	5	-0.15-0.74/	0-3.0' Silt: Brown (7.5 YR 5/3), smooth to grainy, possibly interbedded
			1544-3984	saturated/liquified, somewhat sticky to somewhat cohesive, possible trace clay, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-9 Page 3 of 3

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.0-4.0' Sand: Brown (7.5 YR 5/2), very fine to fine sand, predominately very fine
				grain, somewhat loose, somewhat sorted, some silt, grainy to smooth lense (up to
				1/4 to 1/2" thick with some clay, in lenses).
				4.0-5.0' Silt/Sand: Color as above grainy to smooth, sand very fine grain, wet, odor.
110	115	5	1.08-2.33/	0-1.0' Silt/Sand: As above.
			3205-45500	1.0-1.3' Sand: Brown (7.5 YR 5/2), fine to medium grain, trace coarse, poorly
				sorted, loose, wet, strong odor.
				1.3-2.5' Sandy Silt: Brown (7.5 YR 5/3), silt grainy to smooth, sand very fine grain,
				trace fine grain, interbedded up to 2" thick, vesicles.
				2.5-3.5' Sand/Sandy Silt: Brown (7.5 YR 5/2), very fine sand, grainy silt.
				3.5-4.0' Sand and Clay: Brown (7.5 YR 5/2), sand very fine to fine grain, loose,
				sorted, clay yellowish red (5 YR 4/6), varved (laminated up to 4 mm) wet, odor,
				clay cohesive and plastic.
				4.0-5.0' Sand: Brown (7.5 YR 4/2), very fine to fine, poorly sorted, some medium
				grain, loose, silty, a clay (as above) layer approximately 1/2-3/4" thick at 4.3', wet,
				odor.
115	120	5	0.27-3.8/	0-2.0' Sand/Silt: Brown (7.5 YR 5/3), sand very fine to fine grain, silty grainy to
			18000-66100	smooth interbedded, mainly sand interbedded silt interbeds up to 1", trace medium
				sand, mainly black flat flakes, somewhat loose, wet, odor grades over 0.5" into
				section below.
				2.0-5.0' Sand: Brown (7.5 YR 4/2), fine sand, some very fine, trace medium sand,
				well sorted, loose, possible silt in places or interbedded, wet, odor, from 4-4.25 a
				clayey silt/silty clay layer brown (7.5 YR 4/4) cohesive and somewhat plastic.
120	125	5	0.52-2.18/	0-1.5' Silt: Brown (7.5 YR 5/3), smooth to slight grainy, somewhat cohesive to
			14200-53800	somewhat crumbly, wet, strong door.
				1.5-5.0' Silty Sand: Brown (7.5 YR 5/3), very fine grain, very silty, some layers of
				silt, as above, mainly sand very fine grain/silt grainy borderline very fine sand,
				vesicles, somewhat loose, somewhat cohesive, somewhat crumbly, strong
				odor.
				EOB @125 feet.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-10 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 9/26/04 Drilling Completed 9/27/04

Total Depth Drilled 175 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	4.55-12.2/	0-1.5' Crushed slate, fill.
			14000-	1.5-3.0' Sand: Yellowish brown (10 YR 5/8), very fine grain, some grainy silt
			>100000	intermixed, well sorted, was probably interbedded, loose, moist, no odor.
				3.0-5.0' Silty Sand: Strong brown (7.5 Y 5/8), trace gravel subangular to subround
				up to 2", sand predominately very fine to fine, little medium to coarse, poorly
				sorted, loose, moist, no odor.
5	10	5	9.27-10.71/	0-2.0' Sand/Silt/Gravel: Yellowish brown (10 YR 5/8), trace clay, sand very fine to
			86-3800	very coarse, gravel fine up to 1.5", subangular to subround, very poorly sorted,
				iron staining, very silty, loose, soft, saturated, no odor.
				2.0-3.5' Silt: Dark yellowish brown (10 YR4/4) few clay interbeds 0.2-1.0" thick,
				silt is smooth, very uniform, clay is yellowish red (5 Yr 4/6), HP = 1.5, soft, cohesive,
				less clay decreases with depth, saturated, no odor.
				3.5-5.0' Silt: As above, but no clay.
10	15	5	7.85-12.54/	0-5.0' Silt/Clay: Silt, brown (10 YR 4/3), clay, yellowish red (5 YR 4/6), uniform
			10-72	interbedding with alternating silt/clay layers 0.5-1.5" thick, clast 50% each silt/clay,
				clay has platy appearance when broken, plastic, medium dense, HP = 2.0, silt
				predominately smooth but grainy in places, many silt layers contain voids, look
				like washed out pockets, cohesive, saturated, no odor.
15	20	5	0.35-7.7/	0-1.5' Silty Sand and Gravel: Strong brown (7.5 YR 5/6), sand very fine to very
			164-600	coarse, predominately fine, very silty, gravel subangular to subround, predominately
				fine grade, but some up to 1", poorly sorted, loose, saturated, no odor.
				1.5-1.8' Silt: Brown (7.5 YR 4/4) smooth, trace to little clay, somewhat cohesive,
				uniform, saturated, no odor.
				1.8-2.0' Silty Sand and Gravel: Reddish brown (5 YR 4/4), sand all sizes,
				predominately very fine to fine, poorly sorted gravel subangular to subround up to
				1.5", loose, saturated, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-10 Page 2 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.0-2.3' Gravel: Brown (7.5 YR 4/4) fine gravel subangular to subround, little
				silt, little sand very fine to very coarse, but silt and sand could be washed in from
				neighboring strata, loose, saturated, no odor.
				2.3-4.0' Silty Sand and Gravel: As above in 1.8-2.0'.
				4.0-5.0' Sand: Brown (7.5 YR 4/4) very fine to very coarse, predominately fine to
				medium, little silt, little gravel subangular to subround up to 2.5", poorly sorted,
				loose, saturated, no odor.
20	25	5	4.75-7.74/	0-3.0' Sand: As above.
			3200-6200	3.0-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine grain, predominately fine,
				well sorted, clean, loose, saturated, slight odor.
25	30	5	3.61-6.13/	0-2.0' Sand: As above.
			6900-11300	2.0-3.0' Sand: Brown (7.5 YR 5/4) fine to coarse, predominately fine, poorly to
				moderately sorted, loose, clean, saturated, odor.
				3.0-4.0' Sand: As above in 23.0-27.0', very fine to fine grain, predominately fine,
				saturated, odor.
				4.0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, well sorted, loose, saturated, odor.
30	35	0		No recovery.
35	40	5	3.07-7.94/	0-4.5' Sand: Brown (7.5 YR 4/4), trace gravel subangular to subround up to 1", but
			364-5063	predominately fine, sand predominately fine to medium, trace coarse, moderately
				sorted, loose, saturated, odor.
				4.5-5.0' Silt: Brown (7.5 YR 5/4), very grainy, uniform, loose when worked, trace
				black staining saturated, odor.
40	45	5	5.64-20.54/	0-2.5' Silt: As above, grading into section below.
			1611-3624	2.5-4.0' Silt: Brown (10 YR 4/3) smooth, trace to little clay, soft, sticky, liquefied
				from drilling, saturated, odor, grades into section below.
				4.0-5.0' Silt: As above, grainy.
45	50	5	8.72-17.5/	0-5.0' Silt: Brown (7.5 YR 4/4), very grainy, as above, trace black stains, very
			2000-11300	uniform, loose, when worked, saturated, odor.
50	55	5	12.02-26.64/	0-5.0' Silt: As above, but some interbedded, smooth silt 4.0-5.0'.
			10000-26000	
55	60	5	0.2-0.64/	0-5.0' Silt: Brown (10 YR 4/3), interbedded, grainy and smooth silt, highly disturbed
			554-1770	from drilling, sample appears uniform, vesicles, trace black staining, sticky, possible
				clay varving/bedding, somewhat cohesive, saturated, odor.
60	65	6	3.95-5.83/	0-5.0' Silt: Brown (7.5 YR 4/4), as above, grainy, vesicles, uniform, saturated, trace
			1550-262	dark staining, somewhat cohesive, strong odor.
65	70	5	3.81-8.18/	0-5.0' Silt: As above.
			2340-6470	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-10 Page 3 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
70	75	5	16.7-322/	0-5.0' Silt: As above.
			1500-11200	
75	80	5	5.24-13.16/	0-5.0' Silt: Color as above, grainy to smooth, trace black staining, uniform, bubbles
			515-1687	in water, vesicles, somewhat cohesive, saturated, odor.
80	85	5	10.45-12.05/	0-5.0' Silt: As above.
			1350-3310	
85	90	5	10.74-11.64/	0-4.0' Silt: As above.
			2417-5617	4.0-5.0' Silt: As above, but very grainy.
90	95	5	8.84-13.61/	0-0.5' Sand: Brown (7.5 YR 4/4), very fine grain, close to grainy, silt in size, uniform,
			7800-10100	well sorted, loose, saturated, odor.
				0.5-3.0' Silt: As above, very grainy.
				3.0-5.0' Silt: As above, predominately grainy, but some smooth, staining,
				saturated, odor.
95	100	5	0.2-1.43/	0-5.0' Silt: As above, brown (7.5 YR 4/4), predominately smooth, some grainy,
			523-1974	uniform sample, trace clay, somewhat cohesive, sticky, vesicles, trace black staining,
				saturated, strong odor.
100	105	5	0.43-3.78/	0-5.0' Silt: As above.
			2190-3440	
105	110	5	1.24-7.37/	0-3.5' Silt: As above.
			7900-11900	3.5-5.0' Sand: Brown (7.5 YR 4/3), very fine grain, well sorted, uniform,
				saturated, odor.
110	115	5	0.41-3.46/	0-1.0' Sand: As above, grading into section below.
			1000-9800	1.0-5.0' Sand: As above, interbedded with silt layers, predominately very fine sand,
				but contours abundant silt, beds not discernable due to drilling, highly disturbed, silt
				layers appear up to 2" thick, loose, saturated, odor.
115	120	5	3.29-5.58/	0-5.0' Silty Sand: Reddish brown (5 YR 4/3), trace clay layering 0-4.0, clay is
			2330-5740	yellowish red, plastic, appears platy when broken, clay layers <0.3" thick, very silty,
				sand is predominately very fine with some fine in places, slight cohesiveness,
				saturated, odor.
120	125	5	1.82-4.51/	0-5.0' Sand and Silt: Reddish brown (5 YR 4/3), predominately smooth silt, some very
			5700-11000	fine to fine sandy areas/pockets were probably sand seams up to 2" thick, but sill
				silty, trace gravel subangular to subround mostly fine, a few up to approximately
				1", slightly cohesive, saturated, strong odor.
125	130	5	8.23-9.09/	0-5.0' Sand: Brown (7.5 YR 4/3) very fine grain, very well sorted, uniform, trace
			35000-90000	black staining, saturated, strong odor.
130	135	5	0.11-9.05/	0-5.0' Sand: As above, very fine grain, grades decreases below 2.5 into every
			10000-32000	slightly finer, approaching very grainy silt in size, saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-10 Page 4 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
135	140	5	5.2-10.3/	0-5.0' Sand: Brown (7.5 YR 4/3), predominately very fine grain, little fine in places,
			5100-71300	slight trace medium, moderately sorted, loose, saturated, odor.
140	145	5	1.73-2.11/	0-0.5' Sand: As above.
			9800-16000	0.5-3.0' Sand: Brown(7.5 YR 5/4), very fine to fine grain, predominately fine, trace
				medium, moderately sorted, loose, saturated, odor.
				3.0-3.7' Sand: Color, as above, very fine to medium grain, predominately fine,
				trace coarse, poorly sorted, loose, saturated, odor.
				3.7-3.9' Sand: Brown (7.5 YR 4/3), very fine grain, trace fine to medium, some silt,
				poorly sorted, loose, saturated, odor.
				3.9-5.0' Silt: Dark brown (7.5 YR 3/3), trace very fine to coarse sand in places,
				smooth, somewhat cohesive, saturated, odor.
145	150	5	1.7-3.33/	0-4.0' Silt: Brown (7.5 YR 4/3), some sand in places, appears to have been 2 or 3
			5000-9600	seams very fine to fine approximately 0.5" thick, trace sand throughout, smooth silt,
				somewhat cohesive, saturated, odor.
				4.0-4.2' Sand: Brown (7.5 YR 4/4), very fine to fine grain, predominately fine, trace
				medium, approximately 2" thick seam, moderately sorted, loose, saturated, odor.
				4.2-5.0' Sand: Color as above, very fine grain, trace silt, trace fine, moderately
				sorted, loose, saturated, odor.
150	155	5	2.25-6.33/	0-5.0' Sand/Silt: Color as above, interbedded very fine sand and grainy silt,
			10000-32000	predominately silt, sand layers sporadic or 1" thick, well sorted, silt approximately 3
				to 6" thick, loose where sandy, otherwise somewhat cohesive, saturated, odor.
155	160	5	0.38-3.36/	0-5.0' Sand: Brown (7.5 YR 4/3), fine grain, little medium to coarse, trace very fine,
			2400-4700	some silt, moderately sorted, loose, saturated, odor.
160	165	5	3.58-4.42/	0-5.0' Sand: As above, little silt content, odor.
			10000-43000	
165	170	5	1.68-3.88/	0-5.0' Silt: Brown (10 YR 5/3), predominately grain, some smooth, very grainy in
			10000-	places approaching sand, loose, saturated, odor.
			>100000	
170	175	5	2.47-4.04/	0-5.0' Silt: As above.
			24000-	
			>100000	
175	180	5	3.33-13.50/	0-5.0' Sand: Brown (7.5 YR 4/4), little silt, fine grain, some very fine, trace medium,
			2450-5910	moderately sorted, loose, saturated, odor.
180	185	5	12.20-18.24/	0-2.0' Sand: As above, grades into section below, more silt 1.5-2.0'.
			10000-50000	2.0-2.5' Sandy Silt: Brown as above, very fine to very coarse sand, predominately
				coarse, very silty, poorly sorted, loose, saturated, odor.
				2.5-5.0' Silt: Yellowish brown (10 YR 5/4), grainy to smooth, trace sand very fine

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-10

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				to coarse, some coarse sand 2.5-3.0', trace clay, somewhat cohesive, saturated,
				odor.
185	190	5	12.48-29.90/	0-5.0' Silt: As above, but little sand very fine only, trace clay layering, predominately
			3400-6900	grainy silt, some smooth, somewhat cohesive, odor.
190	195	5	26.49-37.96/	0-4.5' Silt: As above, but interbedded with some very fine sand, silt, brown (10 YR
			10000-15000	4/3), sand dark yellowish brown (10 YR 4/4), predominately silt, trace gravel angular
				to subangular, bedrock fragments up to 1.5", highly disturbed from drilling, loose,
				somewhat cohesive, saturated, odor.
				4.5-5.0' Weathered bedrock: Greenish black (1 Gley 2.5/5GY), crumbly, loose,
				phyllite pieces, silty, weathered rock, damp, strong odor.
195	205			0-4.0' Bedrock: Phyllite pieces, black, some alteration, pyritization on many surfaces,
				vertical foliation pattern, hard, decease, fractured pieces, a few chunks of core up
				to approximately 5" long, saturated, odor.
				EOB @ 205'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-11 Project/No. Ford/Kingsford WI001095.0027 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 3/28/06 Drilling Completed 3/28/06

Total Depth Drilled 195 Feet Hole Diameter 8/12 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' X 4"

Sampling Interval continuous feet

Land-Surface Elev. 1050.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Weeks Helper Royce Brown Robert Korhonen

Prepared By Jill Flater

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	5	1.5	1.5/10.40	0-1.5' Silt/Sand/Gravel: Brown (7.5 YR 4/4) silt, smooth and fine to coarse sand,
				fine to coarse gravel (0-0.5) organics, poorly sorted sand slightly plastic silt,
				trace clay varves 0.8-1.5', fine to coarse gravel up to 2" diameter subangular to
				subround somewhat loose overall moist to wet.
5	10	5	0.14-0.62/	0-5.0' Silt: Brown (7.5 YR 5/3) smooth silt, somewhat clayey, somewhat plastic,
			8.41-8.68	moist, soft.
10	15	1	4.5/9.04	0-1.0' Silt: Clay, yellow red (5 YR 4/6) smooth silt as above, clay layers varved
				1/4", very soft, plastic, moist, no odor.
15	20	5	26-195/	0-5.0' Silt/Clay: Silt reddish gray (5 YR 5/2) clay yellowish red (5 YR 4/6)
			9.63-10.04	interbedded smooth silt and clay, smooth silt is somewhat loose to somewhat
				clayey varies with layers, soft-somewhat firm, silt layers 1/2" - 1-1/2", clay, soft to
				somewhat firm, plastic when worked, fissile on broken surface, layers 3/4" to 2"
				moist to wet, no odor.
20	25	5	480-1495/	0-4.0' Silt/Clay: As above interbedded.
			10.04-10.49	4.0-4.2' Sand: Brown (7.5 YR 5/3) fine grain sand, trace medium, trace fine
				gravel, trace silt, moderate well to well sorted loose, wet, slight odor.
				4.2-4.5' Silt/Sand/Gravel: Red brown (5 YR 4/3) fine to very coarse sand, fine to
				coarse gravel because of silt with smooth silt matrix, sand very poorly sorted, fine
				to coarse gravel up to 2" diameter subangular to subround, overall somewhat
				loose, moist, slight to no odor, wet.
				4.5-5.0' Sand: Brown (7.5 YR 5/3) medium to coarse grain, trace very coarse
				sand, some fine to coarse gravel up to 1" diameter from 4.5-5.8, trace 4.8-5.0
				fine gravel up to 1/2", subangular to subround, trace silt, loose, very poorly
				sorted, slight to no odor.
25	30	5	NA/	0-5.0' Sand: Brown (7.5 YR 4/3) fine to coarse grain sand, trace very coarse
			21.33-22.78	sand, very poorly sorted slight trace silt, fine to coarse gravel (trace to little) up
				to 2" diameter, most <1", subangular to subround, loose, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-11

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
30	35	5	NA/	0-1.0' Sand: As above.
			21.34-24.28	1.0-3.0' Sand: Brown (7.5 YR 4/3) fine grain, trace medium grain sand, slight
				trace very fine grain sand, moderate well to well sorted, loose, slight odor, wet.
				3.0-4.0' Sand: Color as above fine to coarse grain, trace very coarse sand, trace
				to little gravel up to 3" diameter, most at bottom (3.6-4) subangular to subround,
				very poorly sorted, loose, wet.
				4.0-5.0' Sand: Red brown (5 YR 5/4) fine grain, some very fine grained sand,
				well sorted, loose, wet, odor.
35	40	5	1300-4600/	0-3.0' Sand: Red brown (5 YR 5/3) very fine sand, well sorted, trace silt, loose,
			-0.27--1.18	wet, fine to coarse gravel up to 2" diameter.
				3.0-5.0' Silt: Red brown (5 YR 5/3) subangular to subround grainy silt, some to
				little very fine grain sand, wet, fines with depth, well sorted very fine sand,
				somewhat loose, vesicles wet slight odor.
40	45	5	2300-8500/	0-5.0' Silt: Red brown (5 YR 4/4) grainy silt, slight trace very fine grain sand in
			0.34-0.98	places, wet, somewhat loose, slight odor, homogenous.
45	50	5	430-1.11%/	0-4.0' Silt/Clay: Silt brown (5 YR 4/4), clay yellow red (5 YR 4/6) smooth silt
			-0.34--0.48	interbedded varved with clay smooth silt is clayey, somewhat plastics layers
				varved 2", clay, medium stiff, plastic, fissile on broken surface, layers varved 2",
				wet, odor.
				4.0-5.0' Silt: Red brown (5 YR 4/4) grainy silts, trace black staining, wet,
				somewhat loose, odor.
50	55	5	3900-8700/	0-5.0' Silt: Red brown (5 YR 4/4) grainy silt, trace to no very fine sand varies
			-0.45-0.28	throughout, wet, somewhat loose, odor, trace black staining.
55	60	5	860-4700/	0-2.5' Silt/Sand: Red brown (5 YR 4/4) grainy silt and very fine silty sand, well
			-0.43--0.55	sorted sand, somewhat loose, wet, gradational, odor.
				2.5-3.0' Silt: Red brown (5 YR 4/3) smooth silt, clayey, somewhat plastic, wet,
				odor.
				3.0-5.0' Silt/Sand: As above, gradational.
60	65	5	6600-21400/	0-1.5' Silt/Sand: As above gradational.
			-0.25-0.30	1.5-4.5' Silt: Red Brown (5 YR 4/4) grainy silt, homogenous wet, odor, trace
				black staining.
				4.5-5.0' Silt: Red brown (5 YR 4/4) grainy, dark red gray (5 YR 4/2) smooth
				varved/interbedded smooth and grainy silt, smooth silt is clayey somewhat
				plastic, overall wet, soft, more smooth than grainy.
65	70	5	860-25600/	0-0.5' Silt: As above, interbedded smooth/grainy.
			-0.39-0.58	0.5-4.0' Silt: Red brown (5 YR 4/4) grainy silt, sandy (very fine grain sand), some-
				what loose to loose, sand well sorted, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-11

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				4.0-5.0' Silt: Red brown (5 YR 4/4) smooth silt, trace clay varves, somewhat
				loose/crumble to somewhat plastic in places, wet, odor.
70	75	5	4000-24000/	0-5.0' Silt: Red brown (5 YR 4/4) grainy silt, varying amounts of very fine sand
			0.19-1.21	trace to some, somewhat loose to loose, wet, odor.
75	80	5	1200-5100/	0-5.0' Silt: Red brown (5 YR 4/4) grainy silt, somewhat loose, fines slightly with
			0.16-2.10	depth, wet, odor, somewhat clayey 4-5'.
80	85	5	1300-6400/	0-5.0' Silt: Grainy as above, smooth to dark red gray (5 YR 4/2) interbedded
			0.50-1.97	grainy and smooth silt, varved, overall somewhat clayey, trace vesicles, wet,
				odor, smooth silt, dominant, trace black staining.
85	90	5	4700-11000/	0-5.0' Silt: As above.
			0.11-2.84	
90	95	5	116-11800/	0-4.0' Silt: Red brown (5 YR 4/3) smooth silt, somewhat loose, wet, homogenous.
			0.58-5.54	4.0-5.0' Silt: Smooth as above, clayey dark red gray (5 YR 4/2) interbedded
				smooth and clayey silt, somewhat crumbly to somewhat plastic, varved 1" layers,
				wet, odor.
95	100	5	110-17300/	0-2.5' Silt: Red brown (5 YR 4/3) slightly grainy silt, coarsens slightly with depth,
			-0.16-1.95	wet, vesicles, odor.
				2.5-5.0' Silt: Red brown (5 YR 4/3) very grainy and sandy silt, wet, odor. Some-
				what loose, trace clay layer at 2.5, 1/8" thick.
100	105	5	6000-15100/	0-2.5' Silt: As above, as above color fines with depth.
			3.35-5.48	2.5-5.0' Silt: Red brown (5 YR 4/3) smooth silt, somewhat crumbly when worked,
				soft, wet, odor, trace black staining.
105	110	5	1800-7700/	0-5.0' Silt: Red brown (5 YR 4/3) smooth silt, somewhat clayey, somewhat plastic,
			2.52-4.00	wet, odor.
110	115	5	1080-9400/	0-5.0' Silt: As above, smooth silt.
			2.23-7.59	
115	120	5	1040-3200/	0-2.5' Silt: As above.
			0.80-2.55	2.5-5.0' Sand: Brown (7.5 YR 4/3) very fine grain sand, trace fine sand, well
				sorted, no to trace silt, wet, slight coarsening with depth, odor, loose.
120	125	5	3700-22700/	0-1.0' Silt: Brown (7.5 YR 5/3) grainy silt, somewhat loose, wet, odor.
			1.30-1.99	1.0-3.0' Sand: Brown (7.5 YR 5/3) very fine grain, silty, well sorted, loose, wet,
				odor; 2.2-2.7' silty matrix, somewhat loose.
				3.0-4.0' Sand: Brown (7.5 YR 5/3) very fine to fine grain, well sorted, trace silt,
				wet, loose, odor.
				4.0-5.0' Silt: Brown (7.5 YR 5/3) smooth silt, blocky, somewhat loose to crumbly,
				varves/interbeds of as above sand, wet, odor.
125	130	5	750-3400/	0-1.0' Sand: Brown (7.5 YR 4/3) very fine to fine grain, well sorted, wet, loose,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-11

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
			0.96-1.32	odor, coarsens with depth.
				1.0-5.0' Sand: Brown fine grain sand, trace medium grain sand, trace very fine,
				moderately well sorted, loose, wet, odor.
130	135	5	700-16400/	0-3.5' Sand: Brown (7.5 YR 4/3) fine to medium grain, trace coarse to very
			0.70-1.67	coarse, moderately sorted, loose, wet, odor.
				3.5-3.8' Clay/Sand/Gravel: Dark red brown (5 YR 4/3) fine to very coarse sand,
				fine to coarse gravel in clay matrix, gravel up to 1-1/2" angular to subround,
				very poorly sorted, sticky, cobble up to 3" diameter, wet, odor, staining.
				3.8-5.0' Sand: Brown (7.5 YR 4/3) medium to very coarse grain sand, trace fine
				grain, very poorly sorted, little to some fine to coarse gravel up to 2", most <3/4",
				angular to subround, loose, wet, odor, abundant angular shale.
135	140	5	550-1.03%/	0-1.0' Sand: Brown (7.5 YR 4/3) coarse and to fine gravel size, very fine to fine
			1.75-3.33	grain, silty/clayey matrix, poorly sorted, trace to some medium to coarse, sticky,
				trace coarse gravel at bottom subround up to 2" diameter, wet, odor.
				1.0-2.0' Silt/Sand: Brown (7.5 YR 4/3) interbedded smooth silt and sand as above
				(very fine to fine), trace fine to coarse gravel up to 1", subangular to subround,
				wet, sticky, odor, trace clay.
				2.0-4.0' Sand/Silt: Color as above, fine to very coarse sand, and silt very poorly
				sorted, wet, odor, sticky saturated mess.
				4.0-4.6' Silt/Sand/Gravel: Color as above fine to very coarse grain sand, fine to
				coarse gravel, in silt matrix, very poorly sorted, gravel up to 2" diameter angular
				to subround, most <3/4" diameter, saturated, sticky, odor, silt red brown (5 YR
				4/3), sand brown (7.5 YR 4/3).
				4.6.-5.0' Silt/Sand: Interbedded silt (smooth) and very fine sand, sand well sorted,
				somewhat loose to loose, wet, odor strong.
140	145	5	1400-13700/	0-1.0' Silt/Sand: As above.
			0.67-3.61	1.0-2.5' Sand: Brown (7.5 YR 4/3) fine grain sand, trace very fine sand, some
				medium sand trace coarse sand, no to trace silt, poorly sorted, wet, loose,
				strong odor.
				2.5-4.0' Silt: Brown (7.5 YR 4/3) smooth silt, somewhat clayey, somewhat
				plastic, trace very fine sand, wet, strong odor.
				4.0-5.0' Silt/Sand: Color as above, very fine silty sand and grainy sandy silt, well
				sorted, somewhat loose, wet, strong odor.
145	150	5	1100-14300/	0-5.0' Silt/Sand: As above, color as above, gradational between sandy silt and
			1.38-2.33	silty sand, very strong odor, vesicles.
150	155	5	1400-35300/	0-2.0' Silt/Sand: As above.
			1.32-4.86	2.5-5.0' Silt: Brown (7.5 YR 4/3) grainy silt, somewhat loose, wet, strong odor,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-11

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				clay varves 4.8-5.0'.
155	160	5	4.75-2.70/	0-5.0' Sand: Color as above, very fine grain, silty well sorted, homogenous, loose,
			0.52-1.57	wet, very strong odor.
160	165	2	7200/1.20	0-2.0' Sand/Gravel/Silt: Red brown (5 YR 4/3) very fine to fine grain sand, trace
				medium to very coarse sand and fine to coarse gravel and silt, very poorly sorted,
				gravel up to 2" angular to subround, wet, strong odor, very silty, sticky to some-
				what loose (3) cobbles 3-4" diameter subangular to subround in bottom.
165	170	NR		No recovery, 4" diameter cobble in bit.
170	175	NR		No recovery.
175	180	5	6800-2.57/	0-5.0' Sand: Brown (7.5 YR 4/3) fine to medium grain, little coarse grain, poorly
			1.33-2.07	sorted, wet, strong odor, no silt, loose.
180	185	5	6700-2.13/	0-0.5' Sand: As above, abundant black slate flakes.
			1.61-1.89	
185	190	5	4.6-5.8/	0-5.0' Sand: As above, trace fine gravel subangular to subround up to 1/2"
			1.48-1.72	diameter, some fine gravel 4.7-5.0'.
190	195	5	9800-2.16/	0-0.5' Sand: Brown (7.5 YR 4/2) very fine to fine grain sand, very silty, trace
			1.20-3.85	coarse sand (black slate flakes), trace fine gravel <1/4" diameter angular to
				subangular, somewhat loose, strong odor, wet, poorly sorted.
				0.5-4.5' Silt/Sand/Gravel: Dark gray (7.5 YR 4/1) silt matrix with very poorly
				sorted fine to very coarse sand and fine to coarse gravel, gravel up to 2"
				diameter subangular to subround, wet, very strong odor somewhat loose/sticky.
				4.5-5.0' Silt/Sand/Gravel/Cobbles Very dark gray (7.5 YR 5/1) dense silt matrix
				with fine to coarse sand, fine to coarse gravel, cobbles up to 3" diameter, very
				firm, compacted moist to wet, weathered bedrock angular to subround pieces,
				till like material, odor, crumbly when worked.
				EOB @ 195'.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-12 Project/No. Ford/Kingsford WI001095.0027 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 3/30/06 Drilling Completed 3/31/06

Total Depth Drilled 195 Feet Hole Diameter 8/12 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' X 4"

Sampling Interval continuous feet

Land-Surface Elev. 1048.4 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Weeks Helper Royce Brown Robert Korhonen

Prepared By Jill Flater

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	85	--	--	Blind drill: No sample recovery.
85	90	5	100-2.48%/	0-2.0' Silt: Reddish brown (5 YR 4/4) smooth silt, soft, somewhat loose, wet, odor.
			-10--3.08	2.0-4.0' Silt/Sand: Reddish brown (5 YR 4/4) sandy grainy silt and silty very fine
				sand, well sorted, loose to somewhat loose, wet, odor.
				4.0-5.0' Sand: Color as above, very fine grain silty, loose, wet, well sorted, odor.
90	95	5	2000-1.19%/	0-5.0' Silt: Reddish brown (5 YR 4/4) smooth silt, slightly clayey, slightly plastic,
			-10--4.11	soft, wet, strong odor, vesicles on broken surface.
95	100	5	1150-2.82%/	0-1.5' Silt: Reddish brown (7.5 YR 4/3) grainy silt, very sandy, well to well sorted,
			-10--12	very fine grainded sand, very fine grain sand, somewhat loose, wet, strong odor.
				1.5-5.0' Silt: Color as above, smooth silt, slight clayey/plastic, wet, strong odor,
				vesicles
100	105	5	1600-8.5%/	0-3.0' Silt: As above, smooth silt, abundant vesicles.
			-13--11	3.0-5.0' Sand: Dark reddish gray (5 YR 4/2) very fine to fine grain, some silt,
				loose moderately well sorted, strong odor, wet.
105	110	5	1400-3750/	0-3.5' Sand: Dark reddish gray (5 YR 4/2) very fine to fine grain, little medium
			-15--16	sand, some silt, moderately sorted; zones of silt 1/2" to 1" thick from 1.0-2.0
				(silt reddish brown (5 YR 4/4); wet, strong odor, loose.
				3.5-5.0' Sand: Color as above, very fine to fine grain sand, slight trace medium,
				moderately well sorted, some silt, loose, wet, strong odor, silt seam 1/2" thick
				at 4.5'.
110	115	5	6000-18%/	0-1.5' Sand: Color as above, very fine to fine grain, trace medium, moderately
			-13--16	well sorted, some silt, loose, wet, strong odor, 1" silt/clay seam at 1.4 (contact
				with lower).
				1.5-2.0' Sand: Color as above, very fine grain, silty, fines with depth, well sorted,
				somewhat loose, wet, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-12

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				2.0-5.0' Silt: Reddish brown (5 YR 4/4) clay yellowish red (5 YR 4/6), interbedded
				smooth and grainy silt, varved 1/2" layers, very soft, plastic clay, smooth silt is
				somewhat clayey/plastic, grainy is somewhat loose, overall, wet, strong odor,
				hard to distinguish thicknesses of beds of silt.
115	120	5	3700-4.17%/	0-1.0' Sand: Dark reddish gray (5 YR 4/2) very fine to fine grain, trace medium,
			-17--21	some silt, moderately well sorted, loose, strong odor, wet.
				1.0-1.4' Silt/Clay: Silt reddish brown (5 YR 4/4) clay yellowish red (5 YR 4/6)
				interbedded smooth silt and clay; silt is somewhat clayey/plastic; clay is medium
				firm, plastic, overall, wet, strong odor.
				1.4-2.4' Sand: Reddish brown (5 YR 4/4) very fine grain, very silty trace fine
				sand, somewhat loose to somewhat sticky in places, wet, strong odor.
				2.4-5.0' Sand: Reddish brown (5 YR 4/4) very fine grain, very silty, 1" layers
				irregular of very fine to fine sand, moderate sorted, wet intervals along length,
				somewhat loose, strong odor, wet.
120	125	5	6900-280000/	0-1.0' Sand: Dark reddish brown (5 YR 3/4) very fine to fine grain, very silty,
			-20--18	moderately well sorted, somewhat loose, wet, strong odor.
				1.0-3.5' Silt: Color as above grainy silt, very sandy with well sorted very fine grain
				sang, wet, somewhat loose, strong odor.
				3.5-4.0' Sand: Color as above, very fine to fine grain, moderately well sorted,
				loose, wet, strong odor, some silt.
				4.0-5.0' Silt: Reddish brown (5 YR 4/4) interbedded grainy and smooth silt;
				smooth is somewhat clayey/plastic; grainy is somewhat loose, sandy with well
				sorted very fine sand, overall wet, strong odor, layers varved, 2" thick.
125	130	5	3700-2.18%/	0-5.0' Silt/Sand: Reddish brown (5 YR 4/4) interbedded grainy silt and very fine
			-23--20	grain silty sand, very fine grain silty sand has trace fine sand, sand is moderately
				well sorted, somewhat loose to somewhat clayey, can't discern layer thicknesses,
				wet, very strong odor.
130	135	5	11800-69000/	0-4.0' Sand: Reddish brown (5 YR 4/3) very fine grain, silty, well sorted, loose,
			-20--19	wet, very strong odor.
				4.0-5.0' Silt: Color as above, grainy silt, somewhat loose, wet, very strong odor.
135	140	5	170-1.39%/	0-5.0' Sand: Brown (7.5 YR 5/2) very fine grain, trace fine sand, some silt, well
			-24--23	sorted, slight trace fine gravel <1/4" diameter angular to subround, loose, strong
				odor, wet.
140	145	5	107-9200/	0-3.0' Sand: Color as above, very fine grain, silty, somewhat loose, well sorted,
			-24--22	wet, strong odor, trace fine angular to subround ≤1/4" diameter.
				3.0-4.2' Silt: Reddish brown (5 YR 4/3) smooth silt somewhat plastic/clayey when
				worked; clay varving yellow red (5 YR 4/6) medium stiff, wet, strong odor, trace

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-12 Page 3 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				fine to coarse gravel
				4.0-4.2 up to 1.5" diameter angular to subround.
				4.2-5.0' Sand: Color as above, very fine to fine grain, trace medium, trace silt,
				moderately well sorted, wet, loose, strong odor.
145	150	5	4300-90000/	0-0.5' Sand: Reddish brown (5 YR 4/3) very fine to fine sand, very silty/clayey,
			-23--21	moderately well sorted, wet, somewhat sticky, strong odor.
				0.5-2.0' Sand: Brown (7.5 YR 4/3) very fine to medium grain, poorly sorted, trace
				coarse, little fine to coarse gravel up to 1.5" diameter most <1/4" angular to
				subround, loose, wet, very strong odor.
				2.0-3.5' Silt: Reddish brown (5 YR 4/3) smooth silt, somewhat clayey/somewhat
				plastic, wet, very strong odor
				3.5-4.5' Silt: Color as above, grainy silt somewhat loose, wet, very strong odor;
				at 3.7' 2" band fine to medium grain sand.
				4.5-5.0' Sand: Brown (7.5 YR 4/2) very fine to medium grain, trace coarse, poorly
				sorted, wet, loose, very strong odor.
150	155	5	36000-72000/	0-0.5' Sand: As above.
			-22--21	0.5-3.5' Silt: Red brown (5 YR 4/4) smooth silt, interbedded with varves 1/8" thick
				layers, yellow red (5 YR 4/6) somewhat plastic somewhat clayey.
				3.5-5.0' Sand: Brown (7.5 YR 4/4) very fine to fine grain, trace to little medium,
				trace silt, loose, wet, strong odor, with two clay layers 1" and 2" clay, yellow
				red (4/6) soft, plastic.
155	160	5	1750-5300/	0-4.5' Sand: Brown (7.5 YR 5/2) fine grain, little very fine, trace to some medium
			-0.34-0.65	fine quantity with depth, loose, wet, well sorted to moderately well sorted; 0-2.5'
				no silt, 2.5-4.5' little to some silt; strong odor.
				4.5-5.0' Silt: Reddish brown (5 YR 4/3) smooth silt, somewhat loose to somewhat
				clayey/plastic, 4.5-4.7' sandy with as above sand, wet, strong odor.
160	165	5	1900-6400/	0-0.2 Silt: As above.
			0.38-0.93	0.2-2.0' Silt: Brown (7.5 YR 4/3) smooth silt, somewhat clayey, somewhat plastic,
				wet, strong odor, abundant vesicles, trace clay layers, probably varved.
				2.0-5.0' Silt: Brown (7.5 YR 4/2) grainy silt, somewhat loose, no to trace very fine
				grain well sorted sand in places, wet, strong odor, trace fine angular gravel 4.7-
				4.8 up to 1/4" abundant vesicles.
165	170	5	8000-19000/	0-4.0' Silt: As above, no fine gravel, trace clay layers, very abundant vesicles.
			0.76-1.67	4.0-5.0' Silt/Clay: Silt reddish brown (5 YR 4/3) clay yellowish red (5 YR 4/6)
				interbedded varved smooth silt and clay, silt is clayey and somewhat plastic,
				clay is soft to medium firm, plastic when worked, abundant vesicles, wet, very
				strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-12 Page 4 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
170	175	5	7400-39000/	0-2.5' Sand/Silt: Brown (7.5 YR 4/2) very fine grain silty sand and grainy sandy
			0.44-0.91	silt somewhat loose, very strong odor, well sorted very fine sand, wet.
				2.5-3.0' Clay: Yellowish red (5 YR 4/6) soft clay, plastic when worked strong
				odor, wet.
				3.0-5.0' Silt: Brown (7.5 YR 5/2) grainy silt, fining with depth becoming smooth
				at bottom, little clay varving 1/8" thick clay as above, somewhat loose, overall;
				wet, very strong odor.
175	180	5	2000-5200/	0-4.5' Silt: Brown (7.5 YR 4/2) interbedded grainy and smooth silt, predominately
			-0.23-0.16	smooth, smooth is somewhat plastic, grainy is sticky, somewhat clayey, overall
				wet, very strong odor.
				4.5-5.0' Clay/Silt: Clay yellowish brown (5 YR 4/6) silt as above, interbedded
				smooth silt and clay, varved to 1/8" thick, clay is very soft plastic, smooth silt is
				somewhat plastic, wet, very strong odor.
180	185	5	1800-27800/	0-4.5' Silt: Reddish brown (5 YR 4/3) interbedded grainy and smooth silt overall:
			0.20-0.32	clayey, somewhat plastic, somewhat sticky smooth dominant, trace very fine sand
				4.0-4.5', wet, strong odor, abundant vesicles.
				4.5-5.0' Clay/Silt: As above.
185	190	5	4400-8700/	0-5.0' Silt: As above, interbedded grainy and smooth silt, predominately smooth
			0.02-0.29	from 3.0-4.0', clay layers at 1.0-1.2 and 4.8-5.0, predominately varved up to
				1/8" thick.
190	195	5	1800-3800/	0-1.0' Silt: Reddish brown (5 YR 4/3) smooth silt, somewhat loose, trace clay
			0.13-0.53	verves, wet, strong odor.
				1.0-1.5' Sand: Brown (7.5 YR 4/3) very fine to fine grain, trace to no silt, well
				sorted, loose, wet, strong odor.
				1.5-2.0' Silt: Varved interbeds of smooth and grainy silt, trace clay varves, overall;
				somewhat loose to crumbly when worked, wet, odor <1/8" clay layer, yellow red
				(5 YR 4/6) at 2.0 at contact.
				2.0-5.0' Silt/Sand/Gravel/Cobbles: Very dark gray (7.5 YR 3/1) smooth silt, fine to
				coarse grain sand, fine to coarse gravel, and cobbles, dense, compacted, firm silt
				matrix, very poorly sorted, gravel up to 2" angular to subround, cobbles up to 5",
				wet odor, somewhat clayey silt, till like material.
				EOB @ 195.

ARCADIS

Sample/Core Log

Boring/Well GMEWC-13 Project/No. Ford/Kingsford WI001095.0027 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 4/2/06 Drilling Completed 4/2/06

Total Depth Drilled 175 Feet Hole Diameter 8/12 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' X 4"

Sampling Interval continuous feet

Land-Surface Elev. 1048.33 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Weeks Helper Royce Brown Robert Korhonen

Prepared By Jill Flater

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	85	--	--	Blind drill, no sample recovery end drilling for day at 16:30.
85	90	5	1203-2106/	Continued drilling at 4/2/06.
			-0.4-1.98	0-1.5' Sand/Silt: Brown (7.5 YR 4/4) very fine grain silty sand and grainy silt,
				somewhat loose, well sorted, wet, very strong odor.
				1.5-5.0' Silt: Color as above, grainy silt, somewhat loose, trace very fine sand
				(1.5-2.5), wet, very strong odor.
90	95	5	2295-84500/	0-0.5' Sand/Silt: As above.
			0.68-1.48	0.5-3.5' Silt: Color as above, interbedded smooth and grainy silt layer thickness
				hard to discern; smooth is somewhat clayey, somewhat plastic; grainy is some-
				what loose; wet, very strong odor.
				3.5-4.0' Sand: Brown (7.5 YR 4/3) very fine grain, well sorted silty, loose, wet,
				very strong odor.
				4.0-5.0' Silt: Brown (7.5 YR 4/4) smooth silt, crumbly when worked, not clayey,
				wet, very strong odor.
95	100	5	17.99-6019/	0-2.0' Silt: Brown (7.5 YR 4/4) interbedded smooth and grainy silt, layers hard
			-0.14-2.47	to discern, wet, very strong odor, somewhat loose.
				2.0-5.0' Silt: Dark brown (7.5 YR 3/3) grainy silt, some well sorted very fine
				sand from 2.0-3.0 fining with depth, somewhat loose, wet, very strong odor,
				almost smooth sit at bottom.
100	105	5	1142-10300/	0-4.2' Silt: Brown (7.5 YR 4/3) smooth silt, somewhat clayey, somewhat plastic,
			0.84-3.40	wet, very strong odor.
				4.2-5.0' Sand: Brown (7.5 YR 4/4) very fine grain, little to some silt, well sorted,
				wet, very strong odor.
105	110	5	785-27900/	0-1.0' Sand: As above, Brown (7.5 YR 4/4) very fine grain, some silt.
			-0.79-2.84	1.0-2.0' Silt: Color as above, grainy silt, somewhat loose, wet, very strong odor.
				2.0-4.5' Silt: Brown (7.5 YR 4/4) smooth silt, somewhat clayey, somewhat
				plastic, wet, very strong odor, homogenous.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-13 Page 2 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				4.5-5.0' Sand: Brown (7.5 YR 4/3) very fine grain, trace fine grain, well sorted,
				no silt, loose, wet, strong odor.
110	115	5	2125-38400/	0-0.5' Sand: As above, trace to little silt, silt included with depth.
			0.15-0.93	0.5-1.5' Silt: Reddish brown (5 YR 4/3) smooth silt, somewhat clayey, somewhat
				plastic, uniform, homogenous, very strong odor, wet.
				1.5-2.2' Sand: Brown (7.5 YR 4/2) fine grain, trace very fine grain, well sorted,
				no silt, grades into lower fines with depth, wet, loose, very strong odor.
				2.2-3.0' Sand: Brown (7.5 YR 4/2) very fine grain, little fine, trace to little silt,
				well sorted loose, strong odor.
				3.0-3.7' Silt: Color as a above, smooth silt, slightly clayey, slightly plastic, wet,
				strong odor.
				3.7-4.5' Sand: Brown (7.5 YR 4/2) very fine grain, little fine, loose, moderately
				well sorted, trace to no silt, strong odor, wet.
				4.5-5.0' Sand: Color as above, fine grain, little medium, trace very fine,
				moderately well sorted, loose, wet, strong odor.
115	120	5	2818-16500/	0-5.0' Sand: Dark reddish gray (5 YR 4/2) very fine to fine grain, trace medium,
			-0.35-1.35	some stilt, moderately well sorted, wet, very strong odor, somewhat loose.
120	125	5	4130-62700/	0-1.0' Sand: As above, silty.
			0.20-1.04	1.0-2.5' Sand: Brown (7.5 YR 4/3) as above, very silty.
				2.5-3.5' Silt/Sand: Brown (7.5 YR 4/2) interbeded layers of grainy and smooth
				silt with sand as above, vesicles, somewhat plastic, somewhat clayey, wet,
				strong odor.
				3.5-4.0' Sand: Color as above, fine grain, well sorted, trace silt, loose, wet,
				strong odor.
				4.0-4.8' Sand: Color as above, very fine grain, trace fine grain, trace to little
				silt, well sorted, wet, strong odor.
				4.8-5.0' Silt: Brown (7.5 YR 4/3) smooth silt, trace clay varving, silt looks varied
				as well, silt is somewhat clayey, somewhat plastic, wet, strong odor.
125	130	5	7159-27300/	0-4.0' Sand: Brown (7.5 YR 4/2) very fine grain trace fine, silty, well sorted,
			-0.39-0.72	somewhat loose, wet, very strong odor, smooth silt layers at 0.4-0.6 and
				(boundary to lower) 3.8-4.0.
				4.0-5.0' Sand: Brown (7.5 YR 4/3) very fine grain, little fine grain, trace silt, well
				sorted loose, strong odor wet, coarsening slightly with depth.
130	135	5	10100-64900/	0-3.5' Sand: Brown (7.5 YR 4/2) very fine to fine grain, well sorted, trace silt,
			-0.06-0.34	loose, wet, strong odor.
				3.5-4.0' Silt: Brown (7.5 YR 4/3) smooth silt, firm, crumbly when worked, trace
				clay varves yellowish red (5 YR 4/6), trace fine gravel up to 1/2" diameter

Sample/Core Log (continued)

Boring/Well GMEWC-13 Page 3 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				angular to subangular, wet, strong odor.
				4.0-5.0' Sand: Brown (7.5 YR 4/3) fine grain, trace silt, well sorted, loose, wet,
				strong odor.
135	140	5	1707-12600/	
			-0.68-1.12	0-2.0' Sand: Brown (7.5 YR 4/2) fine grain, trace to some very fine, slight trace
				medium well sorted, loose, trace to no silt, wet, very strong odor, black staining,
				fines slightly with depth.
				2.0-5.0' Sand: Brown (7.5 YR 4/3) very fine to fine grain, well sorted, trace to
				no silt, loose, wet, very strong odor.
140	1445	5	13600-28000/	0-2.0' Sand: Color as above, as above silt increases slightly with depth.
			1.36-1.93	2.0-5.0' Sand: Color as above, as above trace to little silt.
145	150	5	1786-13800/	0-0.3' Sand: As above.
			0.09-0.73	0.3-1.0' Sand/Silt/Gravel: Brown (7.5 YR 4/3) fine grain sand, smooth silt, and
				fine to coarse gravel, sand is fine grain with trace medium to very coarse, poorly
				sorted; silt is somewhat clayey, as the matrix, the silt makes the section some-
				what sticky; gravel is fine to coarse up to 2" diameter angular to subround,
				overall; somewhat loose, wet, strong odor.
				1.0-1.5' Silt/Sand: Brown (7.5 YR 4/3) fine grain, well sorted and smooth
				clayey silt, may have been bedded, now very distorted, overall; clayey, sticky
				and somewhat plastic, wet.
				1.5-3.5' Sand/Silt/Gravel: Brown (7.5 YR 4/3) as above, slightly less silt, more
				sand.
				3.5-5.0' Silt: Brown (7.5 YR 4/2) smooth silt, trace clay varves 1/8" layers, clay is
				dark reddish (5 YR 3/3) 1/2" layer at top contact; silt is clayey and plastic and
				probably varved throughout with clay, wet, odor, clay is soft and plastic, less
				clay in silt with depth, vesicles.
150	155	5	705-11000/	0-3.8' Silt: Brown (7.5 YR 4/2) smooth silt varved with grainy silt, crumbly when
			-0.09-2.38	worked, somewhat firm in place, trace black staining, trace clay varves, 1"
				clay layer at 2.5 soft and plastic, wet, strong odor.
				3.8-4.5' Sand: Brown (7.5 YR 5/2) very fine grain, well sorted, loose, trace
				silt, wet, strong odor.
				4.5-5.6' Clay: Red brown (5 YR 4/4) clay is soft, plastic, plately on broken
				surface, wet, odor.
				4.6-5.0' Sand: Brown (7.5 YR 4/2) very fine to fine grain, trace to little silt,
				well sorted, loose, wet, strong odor.
155	160	5	3440-9321/	0-5.0' Sand: Brown (7.5 YR 4/2) fine grain, trace to some very fine, trace
			-0.83-0.18	medium to coarse, moderately sorted, loose trace silt, no silt, loose, wet,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMEWC-13 Page 4 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				strong odor.
160	165	5	11800-31100/	0-1.0' Sand: As above, slight silt included with depth.
			-0.41-0.45	1.0-4.0' Sand: Brown (7.5 YR 4/3) very fine to fine, some silt, silty (varies along
				lenght Somewhat loose to loose, well sorted, wet, odor, 1/2" layers of smooth silt
				at 2.0, 3.0 and 3.4'.
				4.0-5.0' Silt/Sand/Clay: Clay reddish/brown (5 YR 4/4), silt bronw (7.5 YR 4/2)
				sand reddish brown (5 YR 4/3) Interbedded smooth silt, fine grain silty sand and
				clay, silt is smooth, clayey somewhat plastic to plastic, clay varves 1/2" thick
				layers throughout silt, wet, odor; fine grain silty sand is well sorted, loose to
				somewhat loose, wet, strong odor, sand layers 2-4" thick, silt layers 2-4" thick,
				silt layers 2-4" thick; clay is soft, plastic, trace of subangular gravel up to 1/4"
				in silt/clay.
165	170	5	1127-5512/	0-5.0' Silt/Sand/Clay: As above, large sand layer from 3.0-3.8', sand as above.
			-0.32--0.15	
170	175	5	1976-12700/	0-5.0' Silt: Brown (7.5 YR 5/2) interbedded grainy and smooth silt, smooth silt
			0.05-0.61	dominant, layers 2-4" thick, somewhat loose to crumbly when worked, trace
				clay varves (color as above) in smooth silt, wet, odor, vesicles.
				EOB @ 175'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMGP-1 Project/No.: Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 08:25 12/12/00 Drilling Completed: 09:30 12/12/00

Total Depth Drilled: 24 Feet Hole Diameter: 2 inches Type of Sample/ Coring Device: Geoprobe Core Barrel

Length and Diameter of Coring Device: 4' x 1.5" Sampling Interval: Continuous feet

Land-Surface Elev.: 1089.48 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Gile Engineering Driller: Dale Gouss Helper: None

Prepared By: Pat Bartnik/Kevin Peterburs Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch)	OVA/OVM	Sample/Core Description
0	4	42"	0.8-1.4/	0-3": Topsoil.
			0-0	3-6': Silt. Dark yellowish brown (10 YR 4/6), clayey, trace very fine sand, dry.
				6-9": Silt. Yellowish brown (10 YR 5/6), clayey.
				9-18": Silt. Yellowish brown (10 YR 5/8), clayey, gravelly (2 mm - 50 mm),
				surrounded.
				18-42": Silt dark yellowish brown (10 YR 4/6) clayey, some to trace very fine sand.
4	8	24"	17-28/	0-24": Silt. Yellowish brown (10 YR 5/6), clayey, trace very fine sand.
			0-0	24-48": No recovery.
8	12	48"	29-7,000/	0-15": Silt. Brown (7.5 YR 4/4), clayey, no odor, dark lense with rootlets at
			0-0	10 inches, dry.
				15-28": Sand, dark yellowish brown (10 YR 4/6), very fine, silty, dry.
				28-33": Silt. Brown (7.5 YR 4/4), clayey, trace very fine sand, dry.
				33-48": Sand. Light yellowish brown, silty dry.
12	16	22"	20-40/	0-5": Silt. Very dark brown (7.5 YR 2.5/2), clayey, rootlets.
			0-0	5-8": Silt. Brown (7.5 YR 4/4), clayey.
				8-15": Sand. Very dark brown (7.5 YR 2.5/3), very fine to medium, some coarse,
				silty; mixed with black (Gley N 2.5) cinder-like material, very coarse to fine,
				vesicular, vitreous on fresh surface.
				15-22": Sand. Brown (7.5 YR 4/4) to strong brown (7.5 YR 4/6) to red
				(2.5 YR 3/6) to black (Gley N 2.5), very coarse to very fine, gravelly, silty, a
				random arrangement of soil and nonnative debris, including cinder-like material
				as above, metal, ceramic fragments, glass fragments.
16	20	34"	1.4-1.8/	0-34": Sand. Strong brown (7.5 YR 4/6), fine to very fine, silty, clayey between
			0-0	28" and 34".

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-1

Prepared by Pat Bartnik/Kevin Peterburs

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch)	OVA/OVM	Sample/Core Description
20	24	21"	4.1-69.5/	0-3": Sand. Strong brown (7.5 YR 5/6), very fine, silty.
			0-0	3-7": Sand. Strong brown (7.5 YR 5/6), fine to very fine, dry.
				7-11": Sand. Dark greenish gray (Gley 5G 3/1), coarse to medium, some fine
				to very fine.
				11-21": Sand. Dark reddish brown (2.5 YR 3/3), coarse to very fine, gravelly,
				(2 mm to 50 mm), subrounded to angular, silty, dry.
				EOB @ 24 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-2 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 12/12/00 Drilling Completed 12/12/00

Total Depth Drilled 24 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Geoprobe Core Barrel

Length and Diameter of Coring Device 4' x 2"

Sampling Interval Continuous feet

Land-Surface Elev. 1089.55 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Gile Engineering Driller Dale Gouss Helper None

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	28"	0.5-0.7/	0-4": Topsoil.
			0-0	4-16": Sand. Light brown (7.5 YR 6/4), medium to very fine, some silt, dry.
				16-28": Silt. Brown (7.5 YR 4/4), clayey, some to trace very fine sand, dry.
4	8	0		No recovery, rock in tip of core barrel.
8	12	48"	495-	0-48": Sand. Strong brown (7.5 YR 5/6), very fine, silty, dry.
			2,800/	
			0-0	
12	16	31"	2.2-7.6/	0-4": Silt. Very dark brown (7.5 YR 2.5/2), clayey, gravelly (up to 35 mm),
			NA	subangular to subrounded, glass fragments, ceramic pieces, wood fragments,
				dry.
				4-13": Sand. Very dark brown (7.5 YR 2.5/2), medium to very fine, silty, trace coarse
				sand to fine gravel, loose.
				13-25": Silt. Dark reddish brown (5 YR 3/4) to very dark brown (7.5 YR 2.5/2),
				clayey, metal fragments, dry wood (fragment to filaments).
				25-29": Debris. Brown (7.5 YR 5/4) to white (7.5 YR 8/1) to black (7.5 YR 2.5/1)
				to very dark brown (7.5 YR 2.5/2), stratifies cinders, burnt wood.
				29-31": Possible bone fragment, light yellow brown (10 YR 6/4) very brittle,
				vesicular.
16	20	23"	2.4-2.8/	0-23": Debris. Brown to white to gray to black, as above, cinders, glass,
			NA	wood and soil mixed together in random arrangement.
20	24	30"	1.3-88/	0-9": Debris. White to brown to black as above; soil, ceramic, metal nail,
			NA	stones, metal shard, random arrangement, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-2

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				9-23": Silt. From dark reddish brown (2.5 YR 2.5/4) just below waste to brown
				(7.5 YR 4/4) at bottom; clayey; trace very fine sand, moist.
				23-30": Sand. Brown (7.5 YR 4/4), very fine, silty, moist.
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-3 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 10:27 12/12/00 Drilling Completed 11:30 12/12/00

Total Depth Drilled 24 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Geoprobe Core Barrel

Length and Diameter of Coring Device 4' x 2"

Sampling Interval Continuous feet

Land-Surface Elev. 1089.91 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Gile Engineering Driller Dale Gouss Helper None

Prepared By Kevin Peterburs/Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	48"	1-1/NA	0-6": Topsoil.
				6-10": Sand. Dark yellowish brown (10 YR 4/6), medium to very fine sand,
				some silt, trace clay, dry, pebbles (4 mm to 35 mm).
				10-48": Silt. Dark yellowish brown (10 YR 4/6), trace sand (medium to very
				fine), trace clay, (lense sand 24-25" coarse to fine), coal (approximately 20 mm
				pieces), found 20" wood fragments, 35 mm found @ 33".
4	8	32"	137-246/	0-31": Silt. Dark yellowish brown (10 YR 4/6) to very dark brown
			NA	(10 YR 2/2), trace clay, dry, rootlets found throughout, 32" coal fragments
				(2-32 mm), wood fragment 40 mm, rootlets.
8	12	48"	4,700-	0-26": Silt dark yellow brown (10 YR 4/4), sandy (very fine), clayey, dry.
			6,200/NA	26-32": Rock fragments. Light greenish gray (Gley 10 Y 7/1) and rock powder,
				pulverized, strongly effervescent with HCl, dry.
				32-33": Silt. Olive yellow (2.5 Y 6/6), clayey, dry.
				33-35": Sand. Dark yellow brown (10 YR 3/6), medium to fine, trace silt.
				35-40": Sand. Very dark gray (2.5 Y 5/1), medium to very fine, some silt, dry.
				40-41": Silt, black (5 Y 2.5/1), clayey, organics (?) dry.
				41-48": Sand and silt sized (particles) debris, very dark gray (5 Y 3/1) to yellow
				(2.5 Y 7/8) to pale yellow (2.5 Y 8/3) with some larger (up to 25 mm) angular
				fragments of a black, brittle vitreous, vesicular substance, and a lavender
				(light bluish gray (2 Gley 5 PB, 7/1 was closest), substance.
12	16	32"	19-39/NA	0-8": Sand and silt-sized particles as above slough.
				8-12": Sand-sized particles, greenish black (Gley 2 5 BG 2.5/1); with larger

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-3

Prepared by Kevin Peterburs/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				fragments (up to 25 mm) angular, vitreous vesicular brittle, dry.
				12-16": Sand-sized particles, grayish brown (10 YR 5/2), unidentifiable debris.
				16-24": Charcoal-like debris. Very dark brown (7.5 YR 2.5/2) to black (1 Gley
				N 2.5/) smokey-odor, dry.
				24-32": Sand-, silt- and clay-sized particles. Very dark brown (7.5 YR 2.5/2) is
				the matrix surrounding ceramic pottery fragments; glass fragments; black
				vesicular, brittle material and a yellow (5 Y 7/8) soft crumbly material, dry.
16	20	20"	30-52/NA	0-20": Undifferentiated sequence of debris. Colors range from very pale brown
				(10 YR 8/2), to olive yellow (2.5 Y 6/6) to dusky red (2.5 Y 3/2) to very dark brown
				(7.5 YR 2.5/2) to black. Contents included soil, glass fragments, ceramic
				fragments, gravel (up to 30 mm) and unidentifiable debris.
20	24	32"	1.3-1.4/	0-10": Undifferenated debris, as above.
			NA	10-16": Silt, from black at top to very dark grayish brown (10 YR 3/2) at bottom,
				dry.
				16-32": Silt, dark yellowish brown (10 YR 4/6) clayey, trace very fine sand,
				dry.
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-4 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 12:22 12/12/00 Drilling Completed 13:05 12/12/00

Total Depth Drilled 24 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Geoprobe Core Barrel

Length and Diameter of Coring Device 4' x 2"

Sampling Interval Continuous feet

Land-Surface Elev. 1088.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Gile Engineering Driller Dale Gouss Helper None

Prepared By Kevin Peterburs/Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	42"	1.3-1.7/	0-8": Topsoil.
			NA	8-17": Silt. Dark yellow brown (10 YR 3/6), some clay, trace sand, dry.
				17-20": Silt. Yellow brown (10 YR 5/6), trace clay.
				20-24": Sand. Yellowish red (5 YR 4/6), fine to very fine, trace medium.
				24-39": Silt. Dark yellow brown (10 YR 4/6), some clay, trace very fine sand.
				39-42": Rock in tip.
4	8	48"	1.3-9.2/	0-4": Slough.
			0-0	4-11": Silt. Dark yellow brown (01 YR 4/6), clayey, trace sand.
				11-14": Silt. Yellowish red (5 YR 4/6), clayey.
				14-18": Silt. Dark yellowish brown (10 YR 4/6), some clay.
				18-48": Silt. Yellow brown (10 YR 5/6), clayey with two lenses of dark material
				(very dark gray [10 YR 3/1] to black) at 24" to 25" and 29" to 31". Silt to
				sand sized fragments of wood and glass.
8	12	48"	2.3-2.9/	0-7": Slough.
			0-0	7-15": Silt. Strong brown (7.5 YR 4/6), some clay, dry.
				15-48": Sand. Strong brown (7.5 YR 5/6), very fine, silty, dry.
12	16	41"	2.5-5.4/	0-12": Sand. As above, dry.
			0-0	12-14": Silt. Strong brown (7.5 YR 5/6), sandy, dry.
				14-15": Sand. Strong brown (7.5 YR 5/6), silty, dry.
				15-32": Silt. Strong brown (7.5 YR 5/6), clayey, wet.
				32-39": Sand. Grayish green (Gley 5G 4/2) to dark brown (7.5 YR 3/3), coarse
				to very coarse, gravelly (2 mm to 35 mm), subrounded, trace medium sand,

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-4

Prepared by Kevin Peterburs/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				damp.
				39-41": Silt. Strong brown (7.5 YR 5/6), trace clay.
16	20	37"	0.9-4.8/	0-37": Silt. As above with sand lenses at 12 to 13", 15 to 18" and 18 to 21".
			NA	Clay lense at 22 to 23". Sand coarse to medium, strong brown (7.5 YR 5/6),
				gravelly (2 mm - 15 mm), rounded.
20	24	48"	1.0-4.5/	0-48": Silt. Strong brown (7.5 YR 4/6), trace clay, wet.
			NA	
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMGP-5 | Project/No.: Ford/Kingsford Wi000804.0001 | Page 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 13:08 12/12/00 | Drilling Completed: 13:48 12/12/00

Total Depth Drilled: 24 Feet | Hole Diameter: 2 inches | Type of Sample/ Coring Device: Geoprobe Core Barrel

Length and Diameter of Coring Device: 4' x 2" | Sampling Interval: Continuous feet

Land-Surface Elev.: 1086.72 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Geoprobe

Drilling Contractor: Gile Engineering | Driller: Dale Gouss | Helper: None

Prepared By: Kevin Peterburs/Pat Bartnik | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	36"	1.3-1.8/	0-3": Topsoil.
			0-0	3-9": Silt. Strong brown (7.5 YR 4/6), clayey, trace sand.
				9-26": Sand. Dark yellow brown (10 YR 4/6), fine to very fine, silty, gravelly
				(2 mm to 45 mm), subrounded.
				26-34": Sand. Dark brown (10 YR 3/3), silty, gravelly (2 mm to >50 mm), dry.
				34-36": Silt. Dark yellow brown (10 YR 4/6), compact.
4	8	48"	3.1-4.0/	0-48": Silt. Yellow brown (10 YR 5/6), sandy, very fine, trace clay, dry.
			0-0	
8	12	31"	3.3-14.1/	0-9": Silt. Dark yellow brown (10 YR 4/6), clayey, damp.
			0-0	9-22": Sand. Dark yellow brown (10 YR 3/4) to dark brown (10 YR 3/3) to
				very dark gray (10 YR 3/1), very coarse to very fine, gravelly (2 mm to >50 mm),
				subangular to subrounded, trace silt, dry.
				22-31": Silt. Yellow brown (10 YR 5/6), trace clay, dry.
12	16	48"	2-8/0-0	0-39": Silt. As above.
				39-48": Sand. Very dark brown (10 YR 2/2) to grayish brown (10 YR 5/2) to
				yellowish brown (10 YR 5/8), very coarse to medium, some fine gravel (2 mm to
				5 mm), subrounded.
16	20	48"	1.2-15/	0-48": Silt. Strong brown (7.5 YR 4/6), clay lense reddish brown (2.5 YR 4/4)
			0-0	between 16 and 17", wet.
20	24	48"	1-19/0-0	0-48": Silt. As above.
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-6 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 14:00 12/12/00 Drilling Completed 14:55 12/12/00

Total Depth Drilled 24 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Geoprobe Core Barrel

Length and Diameter of Coring Device 4' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1085.76 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Gile Engineering Driller Dale Gouss Helper None

Prepared By Kevin Peterburs/Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	48"	1-1/NA	0-7": Topsoil.
				7-15": Silt. Dark yellowish brown (10 YR 46) to dark brown (10 YR 3/3), trace
				clay, trace sand, dry.
				15-21": Silt. Black (10 YR 2/1), rootlets, trace sand, dry.
				21-30": Silt. Dark yellowish brown (10 YR 4/6), trace clay, dry.
				30-48": Silt. Yellowish brown (10 YR 5/4), some very fine sand, trace clay,
				dry.
4	8	38"	1.9-2.6/	0-16": Same as above.
			NA	16-20": Silt. Dark yellowish brown (10 YR 4/6), some medium to very fine sand,
				trace clay, dry.
				20-38": Sand. Dark yellowish brown (10 YR 4/4) to dark greyish green
				(Gley 5G 3/2) to strong brown (7.5 YR 4/6), very coarse to medium, granular
				(2 mm to 4 mm), pebbles (4 mm to 45 mm), dry.
8	12	48"	2.3-6.2/	0-7": Same as above.
			NA	7-48": Silt. Yellowish brown (10 YR 5/4), trace clay, trace very fine sand, damp.
12	16	48"	1-15.6/	0-6": Same as above.
			NA	6-13": Sand. Greyish green (Gley 5G 4/2), to very dark brown (7.5 YR 2.5/3),
				very coarse to fine, granular (2 mm to 4 mm), pebbles (4 mm to 22 mm), dry,
				(10-11" lense of silt strong brown (10 YR 4/6)).
				13-48": Silt. Strong brown (7.5 YR 4/6), some very fine sand, trace clay,
				damp.
16	20	40"	1.3-13.8/	0-48": Silt. Strong brown (7.5 YR 4/6), trace very fine sand, trace clay, wet
			NA	(lense of clay at 4-5", 15-16" reddish brown (2.5 YR 4/4)).
20	24	32"	3.4-15.3/	0-8": Same as above.
			NA	8-11": Silt. Strong brown (7.5 YR 4/6), some very fine sand, trace clay, damp.
				11-32": Silt. Strong brown (7.5 YR 4/6), trace very fine sand, trace clay,
				damp.
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-7 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 07:40 12/13/00

Drilling Completed 08:30 12/13/00

Total Depth Drilled 24 Feet

Hole Diameter 2 inches

Type of Sample/ Coring Device Geoprobe Core Barrel

Length and Diameter of Coring Device 4' x 2"

Sampling Interval Continuous feet

Land-Surface Elev. 1083.15 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Geoprobe

Drilling Contractor Gile Engineering

Driller Dale Gouss

Helper None

Prepared By Kevin Peterburs/Pat Bartnik

Hammer Weight NA

Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	48"	1.5-1.5/	0-6": Topsoil.
			NA	6-13": Silt. Very dark brown (10 YR 2/2) to brown (10 YR 4/3), rootlets, pebbles
				(4-26 mm), trace clay, trace very fine sand, dry.
				13-26": Silt. Strong brown (7.5 YR 5/6), some very fine sand, trace clay, dry.
				26-48": Silt. Dark yellowish brown (10 YR 4/6), trace clay, trace very fine sand,
				damp.
4	8	28"	1.5-8.7/	0-15": Same as above.
			NA	15-21": Silt. Yellowish red (5 YR 4/4), sandy (medium to very fine), trace clay,
				damp.
				21-28": Sand. Dark reddish brown (5 YR 3/4) to dark greenish gray (Gley 1
				10 Y 4/1) to dark brown (7.5 YR 3/4), very coarse to medium, granular (2 mm to 4 mm),
				subrounded to subangular, pebbles (4 m to 50 mm).
8	12	42"	1.5-13/	0-6": Same as above.
			NA	6-8": Sand. Dark greenish grey (Gley 1 10 Y 4/1) to brown (7.5 YR 4/4), very
				coarse to medium, granular, subrounded to subangular, pebbles (4 mm to 16 mm),
				trace silt, dry.
				8-10": Sand. Brown (7.5 YR 4/4) to dark reddish brown (2.5 YR 3/3), very
				coarse to medium, granular, subrounded to subangular, pebbles (4 mm to 40 mm),
				dry.
				10-28": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay,
				damp.
				28-30": Silt. Yellowish brown (10 YR 5/4), sandy (fine to very fine), trace

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-7

Prepared by Kevin Peterburs/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				clay, damp.
				30-35": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace
				clay, damp.
				35-39": Sand. Yellowish brown (10 YR 5/4) to very dark brown (10 YR 2/2),
				very coarse to medium, some silt, damp.
				39-42": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay,
				damp.
12	16	48"	1.5-11.9/	0-3": Same as above.
			NA	3-7": Sand. Dark yellowish brown (10 YR 3/6) to dark reddish gray (10 R 3/1),
				very coarse to medium, granular; pebbles (4 mm to 44 mm), some silt, damp.
				7-23": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay,
				moist.
				23-25": Sand. Reddish brown (2.5 YR 4/3), medium to very fine, some silt, trace
				clay, wet.
				25-26": Clay. Dark reddish brown (2.5 YR 3/4), wet.
				26-35": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay.
				35-36": Clay, Dark reddish brown (2.5 YR 3/4), wet.
				36-38": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay,
				wet.
				38-39": Clay. Dark reddish brown (2.5 YR 3/4), wet.
				39-48": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay,
				wet.
16	20	48"	1.5-9.0/	0-6": Same as above.
			NA	6-10": Silt. Strong brown (7.5 YR 4/6), sandy, fine to very fine, damp, trace
				clay.
				10-48": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay,
				damp.
20	24	28"	11-39/	0-4": Same as above.
			NA	4-6": Clay. Dark reddish brown (10 YR 3/4), wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-7

Prepared by Kevin Peterburs/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				6-28": Silt. Dark yellowish brown (10 YR 3/4), trace very fine sand, trace clay,
				wet.
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-8 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 08:40 12/13/00

Drilling Completed 09:30 12/13/00

Total Depth Drilled 24 Feet

Hole Diameter 2 inches

Type of Sample/ Coring Device Geoprobe Core Barrel

Length and Diameter of Coring Device 4' x 2"

Sampling Interval Continuous feet

Land-Surface Elev. 1080.43 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Geoprobe

Drilling Contractor Gile Engineering

Driller Dale Gouss Helper None

Prepared By Kevin Peterburs/Pat Bartnik

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	42"	1-1/NA	0-6": Topsoil.
				6-10": Silt. Dark brown (7.5 YR 3/4), trace very fine sand, trace clay,
				rootlets, dry.
				10-15": Sand. Very dark brown (7.5 YR 2.5/2) to brown (7.5 YR 5/2) to dark
				brown (7.5 YR 3/4), very coarse to fine, granular (2 mm to 4 mm), pebbles (4 mm -
				16 mm), trace silt, dry, (rootlets).
				15-17": Sand. Very dark brown (7.5 YR 2.5/2) to black (7.5 YR 2.5/1), very coarse
				to very fine sand, some silt, rootlets, dry.
				17-28": Silt. Strong brown (7.5 YR 4/6) to dark brown (7.5 YR 3/4) to very dark
				brown (7.5 YR 2.5/2), rootlets, wood fragments (at 21"), trace clay, trace very
				fine sand, dry.
				28-29": Silt. Black (7.5 YR 2.5/1), rootlets, trace clay, trace very fine sand,
				dry.
				29-30": Silt. Brown (7.5 YR 5/2), rootlets, some very fine sand, trace clay, dry.
				30-42": Silt. Dark brown (7.5 YR 2.5/3), rootlets, trace very fine sand, trace clay,
				dry.
4	8	35"	1.3-4.2/	0-6": Slough. (Wood fragments, black and brown loose sand).
			NA	6-12": Silt. Dark brown (7.5 YR 2.5/3), rootlets, trace very fine sand, trace
				clay, dry.
				12-35": Silt. Strong brown (7.5 YR 4/6), rootlets, trace very coarse sand, trace
				clay, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMGP-8

Prepared by Kevin Peterburs/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
8	12	28"	1.5-29.5/	0-4": Silt. Dark brown (7.5 YR 3/4), rootlets, trace very fine sand, trace clay,
			NA	dry.
				4-5": Pebbles. (4 mm to 45 mm), dark bluish gray (Gley 2 5B 3/1).
				5-9": Sand. Red (2.5 YR 5/6), very coarse to medium, granular (2 mm - 4 mm),
				subangular to subrounded, pebbles (4 mm to 40 mm), trace silt.
				9-10": Sand, Dark brown (7.5 YR 3/3), very coarse to medium, granular (2 mm to
				4 mm), pebbles (4 mm to 20 mm), some silt, damp.
				10-15": Silt. Dark brown (7.5 YR 3/4), some coarse to medium sand, damp.
				15-18": Sand. Dark brown (7.5 YR 3/4), coarse to fine, granular (2 mm to 4 mm),
				pebbles (4 mm to 40 mm), some silt, damp.
				18-20": Silt. Dark brown (7.5 YR 3/4), some medium to very fine sand, damp.
				20-21": Sand. Very dark brown (7.5 YR 2.5/2), very coarse to medium, granular,
				pebbles (4 mm to 30 mm), trace silt.
				21-24": Silt. Brown (7.5 YR 4/4), some fine to very fine sand, trace clay, damp.
				24-28": Sand. Dark brown (7.5 YR 3/3) to black (7.5 YR 2.5/1), very coarse to
				medium, granular (2 mm to 4 mm), subangular, pebbles (4 mm to 25 mm), some
				silt, damp.
12	16	40"	20-42/NA	0-40": Silt. Dark brown (7.5 YR 3/4), trace sand (very fine), trace clay, wet.
16	20	48"	4-48/NA	0-48": Same as above.
20	24	26"	15-190/	0-26": Same as above.
			NA	
				EOB @ 24 feet.

ARCADIS

Sample/Core Log

Boring/Well GMGP-9 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 3/29/01 Drilling Completed 3/29/01

Total Depth Drilled 12 / Feet Hole Diameter 2 inches Type of Sample/ Coring Device Geoprobe Core BBL

Length and Diameter of Coring Device 4' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1087.82 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Giles Driller Paul Helper --

Prepared By Kevin Peterburs Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	TVA (ppm)	Sample/Core Description
0	4	24	3.5	0-24": Sand, yellowish red (5 YR 5/8) to dark gray (5 YR 4/1) fine to very coarse,
				rock fragments, trace silt, damp.
4	8	36	4.2	0-12": Same as above.
				12-24": Silt, brown (7.5 YR 4/3), some clay, damp.
				24-36": Silt, brown (7.5 YR 4/3), some sand, very fine, trace clay, damp.
8	12	16	2.0	0-16": Same as above.
12	16	--	--	Refusal at 12 feet.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-10 Project/No.: Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 3/29/01 Drilling Completed: 3/29/01

Total Depth Drilled: 12 Feet Hole Diameter: 2 inches Type of Sample/ Coring Device: Geoprobe Core Barrel

Length and Diameter of Coring Device: 4' x 2" Sampling Interval: Continuous feet

Land-Surface Elev.: 1086.92 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Driller: Paul Helper: --

Prepared By: Kevin Peterburs Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	TVA (ppm)	Sample/Core Description
0	4	26	1.6	0-2": Top soil.
				2-22": Sand, dark reddish gray (2.5 YR 3/1) to reddish brown (2.5 YR 5/4)
				fine to very coarse, gravelly, rock fragments.
				22-26": Silt, brown (7.5 YR 5/3), some clay, damp.
4	8	30	7.2	0-12": Silt, brown (7.5 YR 5/3), trace clay, dry.
				12-30": Silt, brown (7.5 YR 5/3), trace clay, damp.
8	12	24	1.4	0-8": Slough.
				8-24": Silt, brown (7.5 YR 5/3), trace clay, damp.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-11 | Project/No.: Ford/Kingsford WI000860.0001 | Page 1 of 1

Site Location: Kingsford, Michigan | Drilling Started: 3/29/01 | Drilling Completed: 3/29/01

Total Depth Drilled: 13 Feet | Hole Diameter: 2 inches | Type of Sample/ Coring Device: Geoprobe Core Barrel

Length and Diameter of Coring Device: 4' x 2" | Sampling Interval: Continuous feet

Land-Surface Elev.: 1087.51 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Geoprobe

Drilling Contractor: Giles | Driller: Paul | Helper: --

Prepared By: Kevin Peterburs | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	TVA (ppm)	Sample/Core Description
0	4	28	0.6	0-2": Top soil.
				2-28": Sand, yellowish red (5 YR 5/6) to dark reddish brown (5 YR 3/2), medium
				to very coarse, gravelly, rock fragments, damp.
4	8	28	2.2	0-16": Same as above.
				16-28": Silt, brown (7.5 YR 5/3), trace clay, dry.
8	12	48	2.0	0-48": Same as above.
12	13	12	2.5	0-12": Same as above.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-12 Project/No.: Ford/Kingsford WI000860.0001 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 3/29/01 Drilling Completed: 3/29/01

Total Depth Drilled: 12 Feet Hole Diameter: 2 inches Type of Sample/ Coring Device: Geoprobe Core Barrel

Length and Diameter of Coring Device: 4' x 2" Sampling Interval: Continuous feet

Land-Surface Elev.: 1089.58 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Driller: Paul Helper: --

Prepared By: Kevin Peterburs Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	TVA (ppm)	Sample/Core Description
0	4	30	1.6	0-6": Top soil.
				6-30": Sand, reddish brown (2.5 YR 4/4) to dark reddish gray (2.5 YR 4/1),
				medium to very coarse, gravelly, rock fragments, trace clay, damp.
				30-36": Sand, reddish yellow (7.5 YR 6/6) to dark brown (7.5 YR 3/2) fine to
				medium, rock fragment, damp.
4	8	40	16.4	0-30": Sand, reddish yellow (7.5 YR 6/6) to dark brown (7.5 YR 3/2) very fine to
				very coarse, gravelly, rock fragments, damp.
				30-36": Silt, brown (7.5 YR 4/4), trace clay, damp, thin clay lenses reddish brown
				(5 YR 4/4).
8	12	36	NA	0-36": Same as above.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMGP-13 | Project/No.: Ford/Kingsford WI000860.0001 | Page 1 of 1

Site Location: Kingsford, Michigan | Drilling Started: 3/31/01 | Drilling Completed: 3/31/01

Total Depth Drilled: 12 Feet | Hole Diameter: 2 inches | Type of Sample/ Coring Device: Geoprobe Macro Sampler

Length and Diameter of Coring Device: 4' x 2" | Sampling Interval: continuous feet

Land-Surface Elev.: 1117.38 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Geoprobe

Drilling Contractor: Giles Engineering | Driller: Paul | Helper: None

Prepared By: Pat Bartnik | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	4	42	2-4.7	0-3": Asphalt.
				3-18": Sand. Dark brown (7.5 YR 3/2), medium to very fine, silty, clayey, some
				gravel (2 mm - 30 mm), subangular to subrounded, very poorly sorted, dry.
				18-42": Sand. Reddish yellow (7.5 YR 6/6), medium, trace gravel (2 mm - 10 mm),
				subrounded, well sorted, dry.
4	8	31	1.2-9.2	0-31": Sand. As above.
8	12	46	2.2-11.2	0-46": Sand. As above except gravel up to 30 mm.
				EOB @ 12 feet bls

ARCADIS G&M

Sample/Core Log

Boring/Well: GMGP-14 Project/No.: Ford/Kingsford WI000860.0001 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 3/31/01 Drilling Completed: 3/31/01

Total Depth Drilled: 12 Feet Hole Diameter: 2 inches Type of Sample/ Coring Device: Geoprobe Macro Sampler

Length and Diameter of Coring Device: 4' x 2" Sampling Interval: continuous feet

Land-Surface Elev.: 1116.64 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Engineering Driller: Paul Helper: None

Prepared By: Pat Bartnik Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4	48	0.6-9.4	0-3": Asphalt.
				3-12": Sand. Brown (7.5 YR 4/3), medium to very fine, silty, gravelly (2 mm - 25 mm),
				subrounded, some clay, dry.
				12-18": Sand. Dark brown (7.5 YR 3/2), very fine, silty.
				18-48": Sand. Strong brown (7.5 YR 5/8), medium to fine, very well sorted, dry.
4	8	40	0.8-11.5	0-40": Sand. Light brown (7.5 YR 6/4), medium to fine, very well sorted, dry.
8	12	48	1.9-25	0-48": Sand. As above.
				EOB @ 12 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well GMGP-15 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 3/31/01 Drilling Completed 3/31/01

Total Depth Drilled 12 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Geoprobe Macro Sampler

Length and Diameter of Coring Device 4' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1117.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Giles Engineering Driller Paul Helper None

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	4	38	0.5-7.9	0-3": Asphalt.
				3-8": Silt. Yellowish red (5 YR 4/6), clayey, sandy, gravelly (2 mm - >30mm),
				angular to subrounded, very poorly sorted, dry.
				8-14": Sand. Dark brown (7.5 YR 3/2), fine to very fine, silty, clayey, some
				gravel (2 mm - 30 mm), subrounded, dry.
				14-20": Brown(7.5 YR 4/3), medium to very fine, silty, some gravel
				(2 mm - 25 mm), subrounded, dry.
				20-31": Silt. Brown (7.5 YR 4/4), sandy, clayey, moist.
				31-38": Sand. Strong brown (7.5 YR 5/6), medium to fine, trace silt, very
				well sorted, dry.
4	8	35	0.8-5.9	0-35": Sand. Light brown (7.5 YR 6/4), medium to fine, very well sorted, dry.
8	12	48	1.0-8.0	0-48": Sand. As above.
				EOB @ 12 feet bls.

ARCADIS

Sample/Core Log

Boring/Well GMGP-16 Project/No. Ford/Kingsford WI000925.0002 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 09:25 4/4/02 Drilling Completed 10:30 4/4/02

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Macrocore

Length and Diameter of Coring Device 4 foot by 2 inch Sampling Interval continuous feet

Land-Surface Elev. 1089.23 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Giles Engineering Driller Paul Helper

Prepared By Veronica Brieno/Rachel Saari Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/FID	Sample/Core Description
0	2	16	0.19	0-7": Topsoil and Sand. Dark brown, (7.5 YR 3/3), very fine to fine, organic
				material and rootlets throughout, frozen, wet.
				7-16": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, trace organic
				material, loose, moist, well sorted.
2	4	24	1.22	0-15": Sand. As above, moist.
				15-24": Cobbles of slate and well rounded granite, loose, dry.
4	6	5	0.49	0-5": Sand. Brown (7.5 YR 4/4), fine to medium, rock fragments, 1-20 mm (granite,
				slate, carbonates), angular to subrounded, poorly sorted, loose, moist.
6	8	24	2.10	0-24": Sand. Red (2.5 YR 5/6), fine to coarse, coarsening downward, poorly sorted,
				subangular to subrounded, loose, moist. Cobbles as above,
				subrounded to well rounded.
8	10	24	0.53	0-11": Sand. As above, gravel, 2-15 mm, moist.
				11-24": Silt and very fine sand, strong brown (7.5 YR 5/4) friable, well sorted,
				slightly loose, 1" lense clay, moist, slightly firm.
10	12	24	0.11	0-24": Silt and very fine sand, as above, interbedded with 1" lenses for clay and
				clayey silt from 0-5", red (2.5 YR 4/6), clayey silt/clay, friable, slightly dense, moist to
				very moist, HP = 0.5 in clayey silt/clay, HP = 2.0 in silt..
12	14	11	0.70	0-11": Silt and very fine sand, strong brown (7.5 YR 5/4), poorly sorted, lots of
				slate chips 2-5 mm, loose, friable, moist.
14	16	24	1.19	0-24": Sand. Strong brown (7.5 YR 5/4), angular to subrounded, lots of slate chips
				and cobbles (slate, granite, sandstone, carbonate rock), poorly sorted, loose, moist.
16	18	24	1.32	0-24": Sand. Yellowish red (5 YR 4/6), fine to very coarse, angular to subrounded,
				loose, poorly sorted, trace to some slate chips (2-4 mm), trace to some subrounded
				cobbles (10-20 mm), moist.

ARCADIS

Sample/Core Log (Cont.d)

Boring/Well: GMGP-16

Prepared by: V. Brieno/R. Saari

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/FID	Sample/Core Description
18	20	24	2.66	0-16": Sand. As above.
				16-24": Sand. Brown (7.5 YR 4/4), very fine to fine, subrounded, well sorted,
				friable, slightly loose, moist.
				EOB @ 20' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-17 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 10:40 4/4/02 Drilling Completed: 11:25 4/4/02

Total Depth Drilled: 20 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Macrocore

Length and Diameter of Coring Device: 4 foot by 2 inch Sampling Interval: continuous feet

Land-Surface Elev.: 1089.82 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Engineering Driller: Paul Helper:

Prepared By: Veronica Brieno/Rachel Saari Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/FID	Sample/Core Description
0	2	13	0.95	0-7": Topsoil and Sand. Dark brown (7.5 YR 3/3), very fine to fine, organic material
				and rootlets throughout, frozen, wet.
				7-13": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, trace organic
				material, well sorted, loose, moist.
2	4	24	1.81	0-8": Sand. As above.
				8-15": Waste material, charred wood fragments, slag, metallic luster, vesicular,
				loose, moist, black staining throughout.
				15-24": Sand. As above.
4	6	16	0.21	0-16": Sand. As above, color changed to strong brown (7.5 YR 4/6), moist.
6	8	24	0.54	0-24": Sand. As above, moist.
8	10	4	0.46	0-4": Sand. As above, moist.
10	12	24	0.59	0-6": Sand. As above, very moist.
				6-24": Sand. Yellowish red (5 YR 4/6), angular to subrounded, some slate chips
				and cobbles (slate, granite, sandstone., carbonate rock), poorly sorted, loose, moist.
12	14	24	2.81	0-11": Sand. As above, wet.
				11-24": Silt and very fine sand, brown (7.5 YR 4/4), well sorted, soft, friable, wet.
14	16	24	4.5	0-24": Silt and very fine sand as above, slightly friable, cohesive, wet.
16	18	24	1.37	0-24": Sand. Fine to very coarse, angular to subrounded, loose, poorly sorted,
				trace to some slate chips (2-4 mm), trace to some subrounded cobbles
				(10-15 mm), moist.
18	20	24	0.0	0-24": Silt and very fine sand as above, trace clay throughout , red (2.5 YR 4/6),
				cohesive, wet, slightly swollen.
				EOB @ 20' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-18 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 11:45 4/4/02 Drilling Completed: 12:14 4/4/02

Total Depth Drilled: 20 Feet Hole Diameter: 2 inches Type of Sample/ Coring Device: Macrocore

Length and Diameter of Coring Device: 4 foot by 2 inch Sampling Interval: Continuous feet

Land-Surface Elev.: 1090.74 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Engineering Driller: Paul Helper:

Prepared By: Veronica Brieno/Rachel Saari Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/FID	Sample/Core Description
0	2	13	0.42	0-13": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, well sorted, loose,
				moist, 2" lense concrete cobbles.
2	4	24	0.69	0-24": Sand. As above, moist.
4	6	24	5.55	0-24": Sand. As above, moist.
6	8	24	184	0-24": Sand. As above, moist.
8	10	24	34.5	0-24": Sand. As above, moist.
10	12	24	149	0-7": Sand. As above, moist.
				7-13": Sand. Very dark gray (10 YR 3/4), very fine to medium, some organic
				material, moderate to poorly sorted, loose, slightly moist to moist.
				13-24": Sand. As above, moist.
12	14	11	32.46	0-11": Sand. As above, color changed to brown (7.5 YR 4/4), 1" lense of silt,
				very moist.
14	16	24	1.75	0-24": Sand. As above, no silt, very moist, 40 mm cobble at 24".
16	18	12	9.39	0-5": Sand. As above.
				5-12": Sand. Fine to very coarse, angular to well rounded, loose, poorly sorted,
				lots of slate chips (2-6 mm), lots of well rounded quartz cobbles, (approximately
				50 mm), moist, brown (7.5 YR 4/4).
18	20	24	4.2	0-6": Sand. As above.
				6-24": Sand. Brown (7.5 YR 4/4), very fine to medium, coarsening downward to
				predominately medium grained, moderately sorted, cohesive, wet.
				EOB @ 20' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-19 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 12:25 4/4/02 Drilling Completed: 12:50 4/4/02

Total Depth Drilled: 20 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Macrocore

Length and Diameter of Coring Device: 4 foot by 2 inch Sampling Interval: continuous feet

Land-Surface Elev.: 1089.95 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Engineering Driller: Paul Helper:

Prepared By: Veronica Brieno/Rachel Saari Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/FID	Sample/Core Description
0	2	23	0.60	0-7": Topsoil and Sand. Dark brown (7.5 YR 3/3), very fine to fine, organic
				material and rootlets throughout, frozen, wet.
				7-24": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, trace black slate
				chips (2-10 mm), trace organic material, moderately well sorted, loose, moist.
2	4	24	0.61	0-24": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, loose, well sorted,
				moist.
4	6	16	0.96	0-16": Sand. As above, moist.
6	8	24	0.90	0-17": Sand. As above, moist
				17-24": Sand. Yellowish-red (5 YR 4/6), medium to coarse, subangular to
				subrounded, moderately sorted, loose, very moist, a 50 mm cobble.
8	10	4	1.54	0-4": Sand. As above.
10	12	24	0.35	0-16.5": Sand. Yellowish-red (5 YR 4/6), very coarse to large cobbles (5-50 mm),
				poorly sorted, loose, moist, subangular, well rounded.
				16.5-24": Sand. Brown (7.5 YR 4/4), very fine to fine, subrounded, well sorted,
				loose to slightly cohesive, moist.
12	14	24	0.07	0-4": Slough (Sand from above).
				4-24": Sand. As above, very moist.
14	16	24	1.4	0-24": Sand. As above, very fine, wet.
16	18	24	0.0	0-10": Sand. Very moist.
				10-24": Sand. Very fine, as above, wet.
18	20	24	0.0	0-24": Sand. As above, wet, trace to some clay/clayey silt, red (2.5 YR 4/6),
				cohesive.
				EOB @ 20' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-20 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 13:10 4/4/02 Drilling Completed: 13:40 4/4/02

Total Depth Drilled: 20 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Macrocore

Length and Diameter of Coring Device: 4 foot by 2 inch Sampling Interval: Continuous feet

Land-Surface Elev.: 1090.66 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Engineering Driller: Paul Helper:

Prepared By: Veronica Brieno/Rachel Saari Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/FID	Sample/Core Description
0	2	12	0.0	0-7": Topsoil and Sand. Dark brown (7.5 YR 3/3), very fine to fine, organic
				material and rootlets throughout, frozen, wet.
				7-24": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, well sorted,
				loose, moist.
2	4	24	0.0	0-24": Sand. As above, 1" lense of concrete cobble, a 20 mm cobble at 24".
4	6	24	0.0	0-24": Sand. As above, moist color changes to brown (7.5 YR 4/3) at 12".
6	8	24	1.18	0-24": Sand. As above, color (7.5 YR 4/3), moist.
8	10	24	0.0	0-22": Sand. As above, moist.
				22-24": Sand. Very dark gray (10 YR 3/4), very fine to medium, some organic
				material, moderately sorted, loose, moist.
10	12	24	3.79	0-2": Sand. Very dark gray as above, moist.
				2-24": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, well sorted,
				loose, moist.
12	14	16	0.0	0-16": Sand. As above, moist.
14	16	24	0.0	0-13.5": Sand. As above, very moist to wet.
				13.5-24": Sand. Yellowish-red (5 YR 4/6), very coarse to large cobbles (mostly
				pink gravel) (10-50 mm), poorly sorted, loose, moist, subangular to well rounded.
16	18	10.5	0.0	0-7": Sand. Very fine, as above, moist.
				7-10.5": Sand. As above, moist.
18	20	24	0.0	0-7": Sand. As above, moist.
				7-24": Sand. Very fine as above, interbedded fine to medium sand throughout,
				very moist, to wet.
				EOB @ 20' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMGP-21 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 13:55 4/4/02 Drilling Completed: 14:20 4/4/02

Total Depth Drilled: 20 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Macrocore

Length and Diameter of Coring Device: 4 foot by 2 inch Sampling Interval: Continuous feet

Land-Surface Elev.: 1089.39 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Geoprobe

Drilling Contractor: Giles Engineering Driller: Paul Helper:

Prepared By: Veronica Brieno/Rachel Saari Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/FID	Sample/Core Description
0	2	19.5	0.0	0-7": Topsoil and Sand. Dark brown (7.5 YR 3/3), very fine to fine, organic
				material and rootlets throughout, frozen, wet.
				7-19.5": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, well
				sorted, firm (frozen?), moist.
2	4	24	0.0	0-24": Sand. As above, firm (frozen?) upper 0-6", soft/loose 6-24".
4	6	6	0.0	0-6": Sand. As above, loose, very moist.
6	8	24	3.5	0-24": Sand. Yellowish-red (5 YR 4/6), very coarse to small cobbles (2-20mm),
				poorly sorted, loose, moist, subangular to well rounded, trace black material
				from 13.5 to 14".
8	10	14	0.0	0-14": Sand. As above, moist.
10	12	24	0.0	0-24": Sand and Gravel. Various colors from yellow to gray cobbles, cobbles range
				from 10-75 mm, angular to subrounded, poorly sorted, loose, some very coarse
				sand, moist.
12	14	23	0.0	0-11": Sand. As above, wet.
				11-23": Sand. Brown (7.5 YR 4/6), very fine to fine, subrounded, well sorted,
				soft, loose, wet.
14	16	24	0.0	0-24": Sand. As above, wet, trace clayey silt (2.5 YR 4/6) from 20-24", swollen.
16	18	24	0.0	0-18": Sand. As above, very moist.
				18-24": Sand. Very fine, as above, some silt, very moist.
18	20	24	0.0	0-24": Sand. Very fine, as above, some silt, very moist.
				EOB @ 20' bgs.

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SAMPLE/CORE LOG

Boring/Well GMP-1 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/14/97 Drilling Completed 5/14/97

Total Depth Drilled 30 feet Hole Diameter 2 inches Type of Sample/ Coring Device Slit spoon

Length and Diameter of Coring Device 2 ft x 1 in Sampling Interval Continuous

Land-Surface Elev. 1097.00 feet msl ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method (ESP) Geoprobe

Drilling Contractor Boart Longyear Driller Kevin Helper Larry

Prepared By Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	2			No Recovery.
2	4	1.4	<1.5/0.5	0-0.1': Silty Sand. Topsoil dark brown (7.5 YR 4/2), damp and crumbly.
				0.1-1.4': Fine Sand. Loose, damp strong brown (7.5 YR 5/8), well sorted.
4	6	0.8	<1.5/0.0	0-0.5': Gravel. Loose, well rounded pebble gravel of variable composition, dry. Trace dark brown sand, strong brown (7.5 YR 4/4).
				0.5-0.8': Coarse Sand. Trace to some gravel, dry, dense. Strong brown (7.5 YR 5/8).
6	8	1.1	1.5/0.3	0-0.5': Coarse Sand. As above.
				0.5-1.1': Damp Sand. Medium loose, strong brown, with trace grey.
8	10	1.1	1.5/0.0	Sand. Medium, as above.
10	12	1.1	<1.5/0.3	0-1': Sand. Medium, as above.
				1-1.1': Gravel. Loose, damp, well rounded, coarse sand, matrix (7.5 YR 5/6).
12	14	0.5	<1.5/0.7	0-0.3': Shattered metabasic clast.
				0.3-0.5': Sand. Medium to coarse, strong brown (7.5 YR 5/6), damp and loose.
14	16	1.1	<1.5/0.3	0-0.5': Coarse Sand with some Gravel. Loose and damp, variable composition and well rounded, brown (7.5 YR 5/2).
				0.5-0.7': Sand. Fine to medium, light brown (7.5 YR 6/4). Dense and damp.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMP-1

Prepared by Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				0.7-1.1': Sand. Medium to coarse, dense, damp, pinkish grey (7.5 YR 6/2), trace gravel.
16	18	1.2	<1.5/0.0	Medium Sand. Loose to slightly dense, damp. Coarse sand, trace well rounded gravel. Pinkish gray (7.5 YR 7/2).
18	20	1.6	<1.5/0.0	Medium Sand. Some coarse sand and trace sand, as above, damp and loose to slightly dense.
20	22	1.7	<1.5/0.4	Sand. As above, becoming fine (to finer sand) toward base, but remaining predominantly medium sand.
22	24	1.6	<1.5/0.3	Fine Sand. Well sorted, loose to slightly dense. Trace well rounded gravel, damp, pink (7.5 YR 7/4), some medium sand.
24	26	1.8	<1.5/0.3	Fine Sand. As above.
26	28	1.8	<1.5/0.1	Fine Sand. As above.
28	30	1.9	<1.5/0.2	Fine Sand. As above, damp and dense.
				End of hole 30' bgs.
				Abandoned on 5/14/97.

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SAMPLE/CORE LOG

Boring/Well GMP-2 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/13/97 Drilling Completed 5/13/97

Total Depth Drilled 30 feet Hole Diameter 2 inches Type of Sample/ Coring Device Slit spoon

Length and Diameter of Coring Device 2 ft x 1 in Sampling Interval Continuous

Land-Surface Elev. 1089 feet msl ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method (ESP) Geoprobe

Drilling Contractor Boart Longyear Driller Kevin Helper Larry

Prepared By Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	2	0.6	<2/0.4	0-0.4': Medium Sand. Trace silt, top soil, dark brown (7.5 YR 3/2), loose, dry to damp.
				0.4-0.6': Silt. Strong brown (7.5 YR 5/8), some sand, soft, cohesive, damp.
2	4	1.5	<2.5/0.7	0-0.2': Silt (Sand Rich). As above.
				0.2-1.5': Fine Sand. Reddish yellow (7.5 YR 16/6), loose, dry.
4	6	0.9	2.5/1.3	0-0.2': Fine Sand. As above.
				0.2-0.4': Fine to Medium Sand. Some gravel, dark greyish brown (2.5 YR 4/2), dry and loose.
				0.4-0.9': Fine to Medium Sand with Gravel. Strong brown (7.5 YR 5/8), loose and slightly damp, gravel, subrounded, variable composition.
6	8	0.5	2.5/1.3	0-0.5': Gravel. Subangular to subrounded pebble gravel, dry and loose, compositionally variable. Fragments of quartz, metamorphics, granite, medium sand, pinkish white matrix.
8	10	0.8	2.5/0.9	0-0.3': Gravel. As above.
				0.3-0.8': Medium to Coarse Sand. Some gravel, damp to loose, strong brown (7.5 YR 5/6).
10	12	0.9	2.5/1.0	Coarse Sand with Gravel. As above, damp and loose.
12	14	0.5	2.5/0.5	Coarse Sand with Gravel. As above, damp and loose.
14	16	0.4	2.5/0.9	Coarse Sand with Gravel. As above, damp and loose.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMP-2 Page 2 of 2

Prepared by Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
16	18	1.3	<2.0/1.2	0-0.3': Coarse Sand with Gravel. As above.
				0.3-1.3': Fine to Medium Sand. Medium light brown (7.5 YR 6/4), loose very damp, trace gravel, well sorted.
18	20	1.8	1.5/0.6	Medium to Fine Sand. As above, loose and damp.
20	22	1.7	1.5/0.5	0-0.9': Medium to Fine Sand. As above, loose to slightly dense and slightly damp.
				0.9-1.1': Coarse Sand. Trace gravel, reddish yellow (7.5 YR 6/6).
				1.1-1.7': Medium to Fine Sand. As in 0-0.9' interval, but denser, trace gravel. Well rounded, variable composition.
22	24	1.9	2.0/1.0	Medium to Fine Sand. As above. Coarse sand with gravel (same color) between (1.0 and 1.2'). Gravel subrounded and variable composition.
24	26	1.6	1.5/1.4	0-0.9': Medium Sand with some Gravel. Dense and damp, pinkish grey (7.5 YR 7/2).
				0.9-1.6': Fine Sand. Dense damp, well sorted, light brown (7.5 YR 6/4).
26	28	1.5	2.0/1.3	0-0.3': Coarse Sand with some Gravel. Dark brown (7.5 YR 3/2), trace silt.
				0.3-1.5': Fine Sand. As in overlying sample. Dense and damp, well sorted with trace coarse sand.
28	30	1.6	1.5/0.4	0-1.6': Dense Fine Sand. As above, damp.
				End of hole at 30' bgs.
				Hole abandoned on 5/13/97.

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SAMPLE/CORE LOG

Boring/Well GMP-3 Project/No. Ford Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 5/13/97 Drilling Completed 5/13/97

Total Depth Drilled 36 feet Hole Diameter 2 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 1" Sampling Interval Continuous from 18

Land-Surface Elev. 1100.00 feet msl ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Boart Longyear Driller Kevin Helper Larry

Prepared By Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
18	20	1.2	1/1	0-0.4': Coarse Sand. Loose (7.5 YR 4/6), some well rounded small pebbles of variable composition, damp.
				0.4-0.7': Medium Sand. Pinkish grey (7.5 YR 7/2), loose, damp.
20	22	1.4	0/0.1	Medium to Coarse Sand. As above, with some small gravel. Loose and damp, gravel well rounded and variable composition.
22	24	1.3	1.5/1.6	Medium to Coarse Sand. As above, with trace gravel.
24	26	2	1.0/1.7	Medium to Coarse Sand. As above, trace gravel.
26	28	1.5	<1.0/0.4	Medium Sand. Color as above, no gravel, damp to dry and dense.
28	30	1.6	<1.5/1.0	0-1.4': Fine Sand. Well sorted, dry and dense, light brown (7.5 YR 6/6).
				1.4-1.6': Coarse Sand. Trace gravel (7.5 YR 6/2), dense and dry to slightly damp.
30	32	1.8	<1.5/0.4	0-0.5': Coarse Sand with Gravel. As above.
				0.5-1.8': Fine to Medium Sand. Light brown (7.5 YR 6/6), grading down to medium sand with trace gravel (1.6-1.8'), dry and
32	34	1.3	<1.0/0.6	0-1.3': Fine to Medium Sand. Trace gravel, as above.
34	36	1.5	<1.5/0.5	0-0.3': Pea Gravel. Some medium to coarse sand over 0.3-1.5'. Fine to medium sand, as above, gravel matrix same color as sand, dry and dense.
				End of hole at 36' bgs.
				Hole abandoned on 5/13/197.
				Background OVA 2 ppm, OVM 1.0 ppm.

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SAMPLE/CORE LOG

Boring/Well GMP-4 Project/No. Ford Kingsford

Site Location Kingsford, Michigan

Drilling Started 5/13/97

Drilling Completed 5/13/97

Total Depth Drilled 28 feet

Hole Diameter 2 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2 ft x 1 in

Sampling Interval Continuous from 18 ft bgs

Land-Surface Elev. 1100 feet msl [ ] Surveyed [X] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Geoprobe (ESP)

Drilling Contractor Boart Longyear

Driller Kevin

Helper Larry

Prepared By Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
18	20	0.9	0.5/1.5	0-0.4': Dense Coarse Sand and Gravel. Gravel variable composition, damp. Pinkish grey (7.5 YR 6/2).
				0.4-0.8': Sand. Medium to fine, olive (54 4/4), dense, damp.
				0.8-0.9': Clay. 0.1" reddish brown (5 YR 5/4), stiff, over strong brown (7.5 YR 4/6) silt, firm and dry to slightly damp. Grades to same colored, dense very fine sand in bottom 0.1".
20	22	2	0.5/1.8	0-2': Very Fine Sand. Same as above, dense and saturated, reddish brown clay inclusions 1/8" thick at 0.5 and 1.2', contains trace silt in deposits above silt and some to abundant silt below inclusion at 0.5'.
22	24	2	0.5/1.0	0-1.5': Silt. Some very fine sand, strong brown (7.5 YR 5/6). Reddish brown clay inclusions at 0.5', 1.1', 1.3' which are 0.5", 0.5", 0.5" thick respectively. Saturated, cohesive, very firm.
				1.5-2': Very Fine Sand. Strong brown (7.5 YR 5/6) with some to abundant silt. Clay inclusions at 1.5' (1" thick) and 1.7' (1" thick).
24	26	2	1.5/1.2	0-0.1': Very Fine Sand. As above, saturated.
				0.1-0.4': Silt. Strong brown (7.5 YR 5/6), with some fine sand. Reddish brown clay (1" thick) at 0.2, firm and friable.
				0.4-1.1': Reddish Brown Clay. As in inclusions at 0.2'.
				1.1-2.0': Reddish Brown Clay. As above with 1" silt seams at 1.1' and 1.4'.
26	28	2	1.0/0.7	0-1': Reddish Brown Clay. As above, 1" silt seams at 0.5'.
				1-2': Silt and Clay. Interlayered (units descriptions as above) in following succession:

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMP-4

Prepared by R. Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1-1.3' Silt
				1.3 -1.4' Clay
				1.4 -1.5' Silt
				1.5 -1.6' Clay
				1.6 - 1.9' Silt
				1.9 - 2.0' Clay
				End of hole 28' bgs.
				Hole abandoned on 5/13/97.

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SAMPLE/CORE LOG

Boring/Well GMP-5 Project/No. Ford Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 5/13/97 Drilling Completed 5/13/97

Total Depth Drilled 30 feet Hole Diameter 2 inches Type of Sample/ Coring Device Slit spoon

Length and Diameter of Coring Device 2 ft x 1 in Sampling Interval Continuous from 18 ft bgs feet

Land-Surface Elev. 1101 feet msl [ ] Surveyed [X] Estimated Datum

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Boart Longyear Driller Kevin Helper Larry

Prepared By Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
18	20	2	1.0/1.4	0-2': Clayey Silt. Brown (7.5 YR 5/4), soft to slightly firm. Cohesive, saturated, trace fine sand at base of sample.
20	22	2	0.0/0.1	0-1.5': Silt. As above. Brown to dark brown (7.5 YR 4/2), firm to stiff. Cohesive, saturated.
				1.5-1.7': Clay. Stiff reddish brown (5 YR 5/3), stiff, damp.
				1.7-2.0': Silt. As at 0-1.5'. Trace very fine sand grading to some sand at base.
22	24	2	1.0/1.5	Very Fine Sand. Some silt containing reddish brown clay inclusion. Remainder of sample brown (7.5 YR 5/4). Dense saturated, very well sorted, slightly cohesive.
24	26	2	1.5/2.3	Very Fine Sand. As above, reddish brown clay inclusions at 1.8' (0.2" thick).
26	28	2	1.0/0.0	0-0.2': Very Fine Sand. As above.
				0.2-0.8': Silt. Some sand, dark brown (7.4 YR 4/4) cohesive, saturated, firm clay inclusions (reddish brown) at 0.5-0.7.
				0.8-2.0': Very Fine Sand. Becoming fine to very fine at base. Some silt with silt content decreasing with depth saturated dense. Dark brown (7.5 YR 4/4).
28	30	2	1.0/1.0	0-1.6': Fine to Very Fine Sand. As above, saturated.
				1.6-1.9': Laminated of reddish brown clay overlying dark brown silt grading into very fine to fine sand. Sand light brown (7.5 YR 6/4), interlayered with brown (7.5 YR 5/4), very finely laminated. (Clay approximately 0.1" thick) saturated.
				1.9-2.0': Clay. Grading to fine sand as above. Fine sand is dense.
				End of hole at 30' bgs.
				Hole abandoned on 5/13/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-Quarry Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 09/29/97 Drilling Completed 09/29/97

Total Depth Drilled 52 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 1" x 24" Sampling Interval Continuous

Land-Surface Elev. 1096 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Sean

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	5"		0-1": Top Soil.	3.5
				1-15": Sand and Gravel. Medium and gravel, with much coarse sand, loose, trace dark brown (7.5 YR 3/3), slight damp, some to much subrounded, variable gravel.	
2	4	9"	6-6-7-9	0-9": Sand. Medium to coarse, with much gravel, loose, damp, loose, damp, dark yellowish brown (10 YR 4/4), predominately fine gravel, trace coarse gravel, no HCL reaction.	3
4	6	20"	7-8-6-6	0-6": Gravel. Sandy, poorly sorted, trace silt, slough?	9
				6-14": Sand. Medium to coarse, light brown (7.5 YR 6/4), loose well sorted, trace well rounded gravel.	
6	8	13"	4-4-2-2	0-6": Sand. As above.	5
				6-9": Sand. Silty, well sorted, very soft brown, (7.5 YR 5/4) little to no HCL reaction, friable.	
				9-3": Sand. Silty as above, interlayered with silt, very soft (7.5 YR 5/4) no HCL reaction, damp.	
8	10	14"	5-5-5-7	0-1": Sand. Slough.	4.5
				1-1½": Silt. Reddish brown (5 YR 5/4) strong HCL reaction, 11½-14 fine sand, firm, very damp, reddish brown (5 YR 5/4), very well sorted, no HCL reaction.	
10	12	15"	17-6-7-9	0-9": Sand. Silty, saturated, soft to medium stiff (HP = 1.0) reddish brown (5 YR 4/4).	5
				9-15": Silt. Very soft, saturated, moderate HCL reaction, some fine sand, reddish brown (5 YR 4/4).	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-Quarry

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
12	14	6"	10-10-11-15	Silt. Sandy, as above.	3
14	16	18"	3-3-2-2	0-2": Sand. Slough, medium sand.	3
				2-18": Sand. Saturated, silty, very soft, reddish brown (5 YR 4/4), moderate HCL reaction.	
16	18	16"	3-3-3-6	0-16": Sand. Silty, very soft, saturated little to no reaction with HCL.	4
18	20	24"	4-4-4-4	0-12": Sand. Silty, as above.	3
				12-13": Silt. With clay inclusions, red brown (5 YR 5/3), very soft.	
				13-24": Sand. Silty, as 0-12.	
20	22	24"	7-7-3-4	Sand. Fine, silty sand, saturated trace coarse sand, very soft, more silty toward base, loose as above, moderate to strong reaction with HCL.	11
22	24	22"	5-5-7-11	Sand. Silty, as above, loose, saturated.	3.5
24	26	24"	5-5-5-5	0-24": Sand. Silty to sandy silt, as above, saturated.	6
26	28	24"	3-3-3-3	0-16": Sand. Silty to sand silt, as above, saturated.	7
				16-24": Sand. Fine, reddish barown (5 YR 5/4), some to much silt, very soft, saturated, no HCL reaction.	
28	30	24	5-6-5-11	Sand. Silty, very soft saturated, very well sorted, color as above, trace clay lenses.	4
30	32	24"	6-11-13-10	0-24": Sand. Silty as above, very soft, saturated, no HCL reaction.	3
32	34	23"	7-7-9-14	0-23": Sand. Silty as above, (5 YR 5/4) occasional black band of heavy mineral magnetite, more silty at base.	2.5
34	36	24"	6-11-11-12	0-24": Sand. Silty, as above.	3.5
36	38	24"	7-7-9-13	0-24": Sand. Silty, as above.	$\leq$30
38	40	22"	11-13-26-32	0-15": Sand. Silty, as above.	$\leq$ 15
				15-22": Sand. Silty, medium stiff, damp very well sorted (5 YR 5/6) silty clay lense, strong reaction with HCL at 22", sandy silt, weak reaction with HCL.	
40	42	24"	14-13-21-26	0-14": Sand. Silty, as above, slough.	22
				14-24": Silt. Sandy, medium stiff HP = 1.5, moderate HCL reaction, reddish (5 YR 5/4) 1" clay at 21", yellowish red (5 RY 4/6) strong reaction HCL, stiff HP = 2.0.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-Quarry

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
42	44	24"	7-13-21-26	0-18": Sand. Silty, slough.	15
				18-24": Silt. Medium stiff, HP = 1.5. Strong brown reaction HCL, brown (7.5 YR 5/4), friable, trace reddish brown clay lenses.	
44	46	10"	7-11-13-21	0-10": Silt. As above, very thin clay laminations every 2" in lowest 6". Lowest 1" clay yellowish red (5 YR 4/6) strong HCL reaction, hard.	<15
46	48	12"	7-7-6-7	012": Silt. As above, interlayered with clay (0-5, 6-7½, 10-12") clay, hard, silt very stiff HP = 3.2.	<15
48	50	7"	4-5-14-24	0-1": Silt. As above.	25
				1-2": Clay. Red, as above.	
				2-3": Silt. As above.	
				3-4": Sand. Fine, trace silt loose, no HCL reaction, reddish brown (7.5 YR 5/6).	
				4-7": Sand. Silty very finely laminated with brown silt.	
50	52	5.5	32-50	4": Silt. Sandy, brown (7.5 YR 5/3) stiff HP = 2.0, friable, damp strong reaction with HCL.	650

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SAMPLE/CORE LOG

Boring/Well GMSB-1 Project/No. Ford Kingsford Page 1 of 8

Site Location Kingsford, Michigan Drilling Started 5/16/97 Drilling Completed 6/03/07

Total Depth Drilled 331.5 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10ft x 4" Sampling Interval Continuous

Land-Surface Elev. 1117.47 feet msl , [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Bill Helper Ken

Prepared By Ray Flynn/Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	100/0.0	0-2.5': Sand/Gravel. Reddish brown (7.5 YR 4/4), fine to coarse sand, fine to coarse gravel very poorly sorted, moist.
				2.5-5': Sand. Dark yellow brown (10 YR 4/6), fine to coarse sand, with some gravel, poorly sorted, moist.
5	10	5	1,200/7.6	0-3': Sand. Gravel as above.
				3-5': Sand. Dark grey brown (10 YR 4/2), medium to coarse sand, poor sorting, some fine to coarse gravel, some roots, organics at 3.5'. Chunk concrete 3.0'.
10	15	5	9,000/10.3	0-1.5': Sand. Dark grey brown (10 YR 4/2), medium to coarse grained, trace gravel, moderate sorting.
				1.5-1.7': Organic material. Black roots.
				1.7-5': Sand. Strong brown (7.5 YR 4.6), medium grained, trace silt, moderate sorting with abundant gravel fine to coarse, trace pebbles.
15	20	5	2,400/257	0-2': Sand. Strong brown (7.5 YR 4.6), medium to coarse, moderate sorting, trace silt, abundant fine to coarse gravel, trace pebbles up to 2 inches diameter.
				2-5': Organic material. Black to very dark brown, wood, sawdust, wood chips, lightly charred, wet.
20	25	5	500/119	0-3': Organics. Black, and dark reddish brown (5 YR 3), reddish yellow (5 YR 6/8), wood, sawdust, wood chips lightly to heavily charred, wet to dry.
				3-4.5': Clay. Reddish yellow (7.5 YR 6/8), plastic, wet, laminated with black clay amorphous matter.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-1

Prepared by Bruce Evans/Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4.5-5': Organics. Wood as above.
25	30	5	300/25	0-3': Organics/Clay. Black to grey (10 YR 6/1), sawdust, mix laminated with clay, plastic, wet, sheen on water, trace pebbles.
				3-5': Silt. Yellowish brown (10 YR 5/4), to strong brown (7.5 YR 5/6 to 4/6), black staining, very clayey, soft sheen on water.
30	35	5	>10,000/9.5	0-1.5': Silt. Yellowish red (5 YR 4/6), with black lamination, some clay.
				1.5-5': Sand. Light yellowish brown (10 YR 6/4), strong brown (7.5 YR 5/8), black bands 0.25-2" thick at 1.5-2' and 3-4', fine grained, well sorted, trace fine to coarse gravel, moist.
35	40	5	>10,000/4.8	0-1': Sand. As above, black stains.
				1-2': Sand. Dark yellowish brown (10 YR 4/4), black stained, coarse grained, moderate sorting, with fine to coarse gravel, very moist.
				2-2.5': Sand. Very dark grey brown (10 YR 3/2), fine grained, well sorted, wet.
				2.5-5': Sand/Gravel. Very dark grey brown (10 YR 3/2), medium to coarse sand, fine to coarse gravel, very poorly sorted, wet, some black stains.
40	45	--	--	No recovery.
35	40	3	1,000/0.0	Sand/Gravel. As above, black stains, wet.
40	45	--	--	No recovery.
45	50	5	8,000/0.5	0-1': Gravel/Sand. Black to very dark brown (10 YR 2/2), fine to coarse gravel with coarse sand. Poor sorting, trace pebbles to cobbles to 3" diameter.
				4-5': Sand. Dark grey brown (2.5 YR 2/2), to black, coarse grained, some medium grained, moderate sorting, gravel, fine to coarse, wet.
50	55	5	800/1.8	0-5': Sand. Dark brown (10 YR 3/3), fine grained well sorted, places very fine grained trace silt, wet, black stain bands 0.5-1', 1.5-3', 4-5'.
55	60	5	350/3.1	0-5': Sand. Dark brown (10 YR 3/3), fine grained, some silt, well sorted, wet.
60	65	5	3,000/14.9	0-5': Sand. Dark brown (10 YR 3/3), very fine grain, silty, well sorted, wet, black staining in 0.1-3" bands 2.5-5.0'.
65	70	--	--	No recovery.
70	75	--	--	No recovery.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-1

Prepared by Bruce Evans/Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
75	80	5	>5/0-.01	Sand. Reddish brown (5 YR 5/3 - 5/4) fine grained, very clayey, abundant coarse gravel and pebbles to 2.5" diameter, black stained 4-4.5'.
80	85	5	800/0-.5	0-.5': Sand. As above.
				0.5-4': Sand. Brown (7.5 YR 4/2), fine grained, silty, trace clay, gravel, heavy black.
				4-5': Sand. Reddish brown (5 YR 5/3), fine grained, very clayey, fine to coarse gravel and pebbles, patches black stains, wet.
85	90	5	200/2.9-4.1	0-5': Sand. Brown (7.5 YR 4/3), fine grained, well sorted, silty, some clay, some fine to coarse gravel and pebbles, 1-3" diameter, wet, black staining 3-4'.
90	95	5	300/3-6.5	Sand. As above, black staining 0-5', 2-2.5', 4.5-5'.
95	100	5	500/11.3	Sand. Brown (7.5 YR 4/3), and black stained, fine grained, well sorted, some silt, with fine to coarse gravel and pebbles 1-3" diameter. Wet. Black from 0.5-5.0'.
100	105	5	900/13.8	Sand. Brown (7.5 YR 5/4), and black stained also grey, very fine grained, very silty, trace fine to coarse sand, moderate sorting, trace clay in places, trace fine to coarse gravel, few pebbles, wet black stains 0-3', 4-5'.
105	110	5	9,500/40	0-5': Silt. Brown (7.5 YR 4/3), trace clay with lenses and irregular inclusions (clasts) clay, (dark reddish brown (5 YR 3/4) fissile/platy appearance, plastic.) Wet.
110	115	5	>10,000/35	0-5': Silt. As above, less clay in matrix, grey alteration stains throughout along fracture planes, grey areas very clayey, moist.
115	120	5	>10,000/29	0-5': Silt. As above with grey alteration, trace fine grained sand seams at 4-5', moist.
120	125	2	>10,000/29	Sand. Dark grey (7.5 YR 4/1), fine to medium grained moderate sorting, some fine gravel, dark grey to black staining 1-2', wet.
125	130	5	50/0.4	Sand. Black (7.5 YR 2.5/1), medium grained, moderate sorting, trace fine and some coarse sands, trace gravel, wet.
130	135	2	50/0.4	Sand. As above.
				10:55 stop drilling at 135' to collect second water sample from GMSB-1.
135	140	5	20/0.0	0-3': Fine Sand. Loose, well sorted, saturated. Dark bluish grey (Gley 2/4/1), some medium sand.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-1

Prepared by Bruce Evans/Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-5': Coarse Sand. Loose, saturated, poorly sorted, some medium sand, some well rounded gravel of variable composition. Dark bluish grey (Gley 2/3/1), trace silt.
140	145	3	30/0.0	0-3': Coarse Sand. As above.
145	150	5	700/0.0	0-.5': Coarse Sand. As above.
				.5-3': Medium Sand. Saturated, loose, bluish black (Gley 2/2.5/1), some fine sand, well sorted.
				3-3.1': Silt. Brown (7.5 YR 5/4), firm, saturated, black staining or coloration.
				3.1-5': Fine to Very Fine Sand. Very dark greyish brown (10 YR 3/2), soft to slightly firm, slightly, cohesive, trace silt, well sorted.
150	155	5	2,500/0.0	0-2': Very Fine Sand. As above.
				2-2.5': Silt. Dark greyish brown (10 YR 4/2), firm, saturated.
				2.5-3.5': Fine Sand. Very well sorted, loose to slightly dense, trace medium sand, a trace medium sand, brown (7.5 4/4).
				3.5-5': Very Fine Sand. Brown (7.5 YR 4/3), firm, dark grey staining, some to much silt in thin seams. Approximately 5% of sample stained dark grey.
155	160	5	>10,000/0.0	0-0.1': Very fine sand. As above.
				0.1-5': Silt. Dark brown (7.5 YR 3/4), saturated, firm, cohesive, contains some dark reddish brown clay (5 YR 3/4), (plastic and fissile).
160	165	5	0,000/0.0	Silt. As above, firm and saturated.
165	170	5	10,000/0.0	Silt. As above, some to much clay, firm and saturated.
170	175	5	10,000/0.0	Silt. As above.
175	180	5	3,000/4.4	Silt. As above, without reddish brown clay inclusions.
180	185	5	10,000/9.2	Silt. As above. Attempt treatability sample in acrylic liner.
185	191	--	--	No recovery, nothing in treatability sample liner.
191	197	6		Fully filled liner base of sample very clay-rich silt as sample 180-185'.
197	205	--	--	No recovery, very fine sand in pipe above 207-217' interval.
205	210	5	4,500/2.3	0-2': Fine Sand. Reddish brown (5 YR 4/3), loose and saturated, very well sorted, some silt.
				2-3': Silt. Reddish brown (5 YR 4/4), firm and saturated.
				3-3.5': Fine Sand. As in 0-2' interval.
				3.5-4.5': Silt. As in 2-3' interval.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-1

Prepared by Bruce Evans/Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4.5-5': Gravel, coarse to medium angular to subangular, variable composition.
210	215	4	6,000/1.2	0-0.5': Gravel as above, coarse sand matrix.
				0.5-3': Fine Sand. Greyish brown (10 YR 5/2), loose, very well sorted, trace silt.
				3-4': Coarse to Medium Gravel. Fine to medium sand matrix, clasts well rounded to subangular with variable composition. Reddish grey (10 R 5/1).
215	221	3		First treatability sample, coarse blue to grey sand with gravel, noted through sleeve.
221	225	5.5		Second treatability sample.
				0-2': Coarse Sand.
				2-5.5': Silt. Some very fine sand observed through sleeve.
225	230	5	10,000/3	0-1': Fine Sand. Slightly dense, satured well sorted, trace silt reddish brown (5 YR 5/4).
				1-3.5': Very Fine Sand. Reddish brown, firm, much silt, saturated.
				3.5-5': Fine Sand. Brown (7.5 YR 5/3), loose, very well sorted, trace silt.
230	235	3	10,000/0.3	0-0.5': Fine Sand. As above.
				0.5-2.5': Medium Sand. Loose dark grey (5 Y/4/1). Well sorted, some coarse sand.
				2.5-3': Very Fine Sand. Reddish brown (5 YR 4/4), firm (dense), some silt, very well sorted.
235	240	5	7,000/3	0-5': Very Fine Sand. As above.
240	245	3	10,000/5.6	0-3': Very Fine Sand. As above.
245	250	5	>10,000/	0-3.5': Very Fine Sand. As above.
				3.5-4': Fine Sand. Loose saturated, dusky red (2.5 YR 3/2), well sorted.
				4-5': Fine to Very Fine Sand. Dark reddish grey (5 YR 4/2), very well sorted, trace silt.
250	255	3.5	10,000/2.6	0-2': Sand. As above.
				2-2.5': Medium Sand. Very dark greyish brown (10 YR 4/2), some coarse sand, trace silt, loose.
				2.5-3.5': Fine Sand. Reddish brown (5 YR 4/4), very well sorted, trace silt, loose.
255	260	4	1,000/0.0	0-4': Fine Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-1

Prepared by Bruce Evans/Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
260	265	4	5,000/0.0	0-4': Fine Sand. As above.
265	270	5	8,000/0.4	0-4.5': Fine Sand. As above.
				4.5-5': Fine Sand. Some coarse sand. Some subangular to subrounded very fine gravel. Reddish brown (5 YR 4/4), loose, gravel predominately slate.
270	275	4.5	10,000/0.7	0-0.2': Fine Sand with Gravel. As above.
				0.2-1.2': Very Fine Sand. Some to much silt, reddish grey (5 YR 1/2), loose.
				1.2-2.2': Medium Sand. Much coarse sand and some subrounded to subangular gravel (predominately slate), loose.
				2.2-4.5': Very Fine Sand. As in 0.2-1.2' interval, Photo #17 for 267-277' interval.
275	280	5	2,500/0.1	0-2.8': Sand. Reddish brown (5 YR 4/4), slightly dense, very well sorted trace to some silt.
				2.8-5': Gravel. Dark reddish grey (10 YR 3/1), loose, very poorly sorted, clasts of variable composition. but predominately slate, some silt and fine sand. Coarse sand matrix, 10-15% of sample.
280	285	5	10,000/0.1	0-3': Coarse Gravel. As above, with well rounded cobbles.
				3-5': Very Fine Sand. Reddish brown.
285	290	5	1,750/0.0	0-5': Coarse Clay/Silt. Rich in gravel as above.
290	295	5	3,500/0.0	0-1': Gravel. As above.
				1-5': Coarse Gravel. Very clay/silt-rich (approximately 30' of sample). Clasts subangular to subrounded, variable composition. Some coarse sand. Firm, very dense, dark reddish grey (5 YR 4/2) lowest 1' more sand-rich (coarse sand, less clay/silt, many clast have different colored, aureoles (rims) in matrix directly in contact with them. Possibly till. Red fragments staining on shale, contains trace graded iron clasts.
295	300	5	3,000/0.0	0-0.5': Coarse Very Clay-Rich Gravel. As above, very dense.
				0.5-2.5': Gravel. Loose saturated, dark brown (7.5 YR 3/3), well rounded to subrounded clasts loose.
				2.5-5': Gravel. Silty very dense gravel, possibly matrix supported. Brown (7.5 YR 4/3), gravel subrounded to subangular variable composition.
300	305	5	250/0.0	0-2.5': Gravel. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-1

Prepared by Bruce Evans/Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.5-3.5': Gravel. Loose very silty gravel brown (7.5 YR 4/3), variable composition subangular to well rounded clast supported, very poorly sorted.
				3.5-5': Gravel. As above (0-2.5) but dark grey (7.5 YR 4/1).
305	310	5	200/0	0-3.5': Coarse Sandy Gravel. Loose variable composition, subangular to well rounded, poorly sorted, coarse sand matrix. Clasts up to 2-1/2" diameter. Matrix dark reddish grey (10 YR 4/1).
				3.5-5': Medium Sand. Loose, dark reddish grey (5 YR 4/2), well sorted, trace gravel.
310	315	5	750/0.0	0-2.5': Medium Sand. As above.
				2.5-5.0': Very Fine Sand. Brown (10 YR 5/3), slightly dense, some silt, well sorted.
315	320	5	1,500/0.2	0-1': Gravel. Very silty loose saturated contains large angular fragments of slate. Some clayey silt nodules, fissile, greenish/grey (5/1/5 BG - Clay 2) angular fragments indicate drilled through slate boulder. Contains trace weathered subangular slate. Matrix fine sand saturated, some silt brown (7.5 YR 5/3). (Soil sample taken at 317').
				1-5': Sand. Fine to very fine well sorted, loose, reddish brown (5 YR 5/2) trace angular to subrounded slate gravel. Nodule of bluish grey silty clay noted at 4' bgs. Clay nodule taken for possible grain size analyses.
320	325	5	1,000/0.3	0-3': Sand. Fine grained, poorly sorted, some medium and trace coarse sand, coarser fraction predominantly slate fragments (subangular) weak red (2.5 YR 4/2), trace silt. Saturated.
				3-5': Medium Sand. Some coarse sand and some to much fine gravel (predominately subrounded slate). Lesser amounts of subrounded quartz in gravel. Loose and saturated dark reddish grey (2.5 YR 4/1). Trace silt/clay slightly cohesive.
325	330	5	>10,000/1	0-0.5': Sand as above.
				.5-3': Fine Sand. Some silt (cohesive) trace to some subangular to subrounded gravel. Clasts up to 2-1/2" in diameter. Clast of slate. Dark reddish grey (2.5 YR 4/1).
				3-4.5': Sand. Fine grained cohesive. Some to much silt clay, slightly dense, satured dark grey (7.5 YR 4/1). Sample for grain size analyses.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-1

Prepared by Bruce Evans/Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4.5-5': Sand. Fine to very fine grained some to much silt/clay. Cohesive soft. Saturated, some coarse gravel, angular to subrounded, variable composition (7.5 YR 4/1) dark grey.
330	335	1.5	9,000/0.0	0-1.5': Pulverized slate (dry) over cored slate (vertical cleavage).
				End of hole 331.5' bgs water sample 320 to 325' bgs.
				Hole abandoned on 6/3/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-2 Project/No. Ford Kingsford Page 1 of 7

Site Location Kingsford, Michigan

Drilling Started 5/17/97 17:45

Drilling Completed 5/30/97 20:30

Total Depth Drilled 363 feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 3 in

Sampling Interval Continuous

Land-Surface Elev. 1117.22 feet msl [X] Surveyed [ ] Estimated

Datum Ground Surface

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Dale

Helper Joe

Prepared By Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	2,500/5	0-1': Silt. Dark brown (7.5 YR 3/3) sandy with very fine to coarse sand, rootlets, moist.
				1-3.5': Sand. Brown (7.5 YR 4/3), medium coarse gravel, moderate sorting, some fine to coarse gravel, wood fragments at 1-1.5', moist.
				3.5': Sand. Dark brown (7.5 YR 3/2), fine to medium grain, silty, trace clay, trace fine to coarse gravel, poorly sorted, with wood fragments, sticks, metal and plastic, moist.
5	10	5	>10,000/21	0-1': Sand. As above with wood fragments.
				1-5': Refuse. Black, wood 2-4" pieces, trace glass, plastic, mica sheets, fine to coarse sand, trace gravel, charred wood, steel, very moist to wet.
10	15	1	>10,000/21	Refuse/Sand. As above, black.
15	20	5	>10,000/12	0-2.5': Refuse/Charcoal. Black, wood fragments, sawdust, 1-5" diameter charcoal pieces, cinders, trace sand and gravel, wet.
				2.5-4': Wood. Black, miscellaneous sized wood fragments, splintery, fibrous, with trace sand/gravel, wet, black coating on sand at 4'.
				4-5': Sand. Dark brown (7.5 YR 3/2), fine to medium grain poor sorting, silty, very clayey, trace gravel, abundant wood pieces 0.2-1" diameter.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-2

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
20	25	5	5,000/0.0	Cinders/Wood. Black, fine charcoal/cinders mixed with wood fragments, splintery, and sawdust(?), charred wood also cinders at 0.1-0.5" diameter, wet.
25	30	5	9,000/3.4	0-1': Cinders/Wood. Black as above, very fine grain charred wood.
				1-5': Wood. Dark brown (7.5 YR 3/3), sawdust compacted with splintery fragments, wood to 4" across, no black staining, moist.
30	35	5	8,000/0.0	0-2.5': Silt. Dark yellowish brown (10 YR 4/6), trace clay, some very fine grained sand, wet.
				2.5-3': Sand/Gravel. Dark yellow brown (10 YR 4/6), fine to medium grained, clayey, poor sorting, fine to coarse gravel some pebbles to 1" diameter, wet.
				3-5': Sand. Dark grey (5 YR 4/1), fine to medium grained, poor sorting, trace silt, fine to coarse gravel, wet.
35	40	5	>10,000/0.6	0-3': Sand. Dark grey brown (10 YR 4/2), fine to medium grained, moderately sorted, trace silt, fine to coarse gravel, trace pebble to 1" diameter, wet.
				3-5': Sand. Dark grey (10 YR 4/1), fine grain, well sorted, wet.
40	45	5	>10,000/0.0	0-5': Sand. Dark grey brown (10 YR 4/2), fine grain, well sorted, trace very fine grained, trace silt, black staining 3.5-5', wet.
45	50	5	350/0.0	0-5': Sand. Dark grey, very dark grey (10 YR 4/1-3/1), fine to medium grained, moderately sorted.
				1-2': Fine to Coarse Gravel. Large pebbles to 3.5" diameter, wet.
50	55	5	9/0.0	0-1.5': Sand. Very dark grey (10 YR 3/1), medium grained, with some fine to coarse sand, moderately sorted, trace coarse gravel, wet.
55	60	5	10/0.0	0-5': Sand. Very dark grey (10 YR 3/1), fine grained well sorted, some pebbles, 0.5-2" diameter, wet.
60	65	5	5/0.0	0-2': Sand. As above.
				2-5': Sand. Black, medium to coarse grained with fine to coarse gravel and pebbles, poor sorting, wet.
65	70	5	40/0.0	0-3': Sand/Gravel. Black to very dark grey (10 YR 3/1), coarse grained sand with fine to coarse gravel and pebbles to 2" diameter, poor sorting, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-2

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-5': Sand. Black to very dark grey (10 YR 3/1), medium grained with some coarse sand, moderate sorting. Some fine to coarse gravel and pebbles. Wet.
70	75	5	600/0.0	0-0.5': Sand. As above.
				0.5-5': Sand/Gravel. Black, very dark grey (10 YR 3/1), coarse to very coarse sand and fine to coarse gravel, poor sorting, some pebbles to 3" diameter, wet.
75	80	5	105/.1-.4	0-0.5': Sand/Gravel. As above.
				0.5-3': Sand. Dark grey brown (10 YR 4/2), wet, fine grain, well sorted, black staining in irregular patches and bands, wet.
				3-5': Silt. Dark reddish brown (5 YR 4/2), sandy with very fine grained sand, wet.
80	85	5	225/1.2	0-0.6': Sand. Dark reddish brown (5 YR 4/2), very fine grained, well sorted, silty, wet, black stain at 0.5'.
				0.6-3.5': Silt. Brown (7.5 YR 4/3), some very fine grained sand, wet.
				3.5-5': Sand. Dark brown (7.5 YR 3/3), fine grained, some silt, well sorted, wet, heavy black, staining below 4.5.
85	90	5	800/1.9	0-5': Sand. Very dark grey to dark gray brown (10 YR 3/1) to (10 YR 4/2), fine grain, well sorted, some silt, some coarse gravel and pebbles at 1.5-2', black staining creates various hue colors, wet.
90	95	5	1,000/1.7	0-4': Sand. As above, no gravel, wet.
				4-5': Sand. Very dark grey (10 YR 3/1), very fine grained, well sorted, some silt, wet.
95	100	5	100/0.0	0-3': Sand. Very dark grey (10 YR 3/1), fine grain, some very fine grained sand, well sorted, wet.
				3-4': Silt. Black, very dark grey (10 YR 3/1), trace very fine grained sand.
				4-5': Sand. Very dark grey brown (10 YR 3/2), very fine grain, well sorted, wet
100	105	5	200/0.0	0-5': Sand. 0-1.5' Brown (7.5 YR 4/3), below 1.5', very dark grey (10 YR 3/1) due to black staining, very fine to fine grained, well sorted, trace silt, wet trace reddish brown clay in 0.3" seam at 0.0'.
105	110	5	55/0.3	Sand. As above, black stained to very dark grey (10 YR 3/1).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-2

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
110	115	3	55/0.6	Sand. As above.
115	120	5	10/0.3	Sand. Dark greyish brown (10 YR 3/2), fine grain, well sorted, wet, black staining.
120	125	4	800/1.1	Sand. Dark grey brown (10 YR 3/2), with black staining in patches and seams, very fine to fine grained some silt, wet.
125	130	5	600/2.2	Sand. As above.
				1-2': Sand. Brown (7.5 YR 4/3), with black staining, very fine grained, some silt, well sorted, wet.
				2-5': Sand. Dark greyish brown (10 YR 4/2), very fine to fine grained, trace silt, dark discoloration below 3', wet.
130	135	2	600/2.4	Sand. Dark greyish brown (10 YR 4/2), black discoloration and staining, very fine to fine grained, trace silt, well sorted, wet.
135	140	5	100/6	Sand. As above, black staining, wet.
140	145	2	550/1.6	Sand. As above, black stained, wet.
145	150	5	1,500/4.8	0-1.5': Sand. As above.
				1.5-1.7': Silt. Brown (7.5 YR 5/2), with black bands, 1" or less of staining, wet.
				1.7-2.5': Sand. Brown (7.5 YR 4/3), very fine grained, silty, well sorted, wet.
				2.5-4.0': Silt. Reddish brown (4/3), with clay at 2.5', black stains at 2.5' and 4.0', wet.
				4-4.8': Sand. Brown (7.5 YR 4/2), very fine grained well sorted, trace silt.
				4.8-5.0': Silt. Reddish brown (5 YR 4/3), with clay inclusions (clasts) and irregular bands, reddish brown (5 YR 4/2), fissile appearance yet plastic, some black staining.
150	155	5	700/2.3	0-2': Silt. As above, with clay and black stains at 1.5' and 2.0'.
				2-2.5': Sand. Reddish brown (5 YR 4/3), very fine grain, silty, wet.
				2.5-2.7': Silt. As above.
				2.7-4.5': Sand. Very fine grain, as above.
				4.5-5.0': Silt. Reddish brown (5 YR 5/3), very sandy with very fine grain sand, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-2

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
155	160	5	3,000/1.5	Sand. Brown (7.5 YR 4/2), very fine grained, some silt, some bands of fine grained sand, well sorted, with inclusions of clay (reddish brown (5 YR 4/3), plastic, wet). Black stain 3.5'-4' in band.
160	165	5	4,500/9.2	0-1': Sand. Reddish brown (5 YR 4/3), very fine grained, trace silt, well sorted, with trace black stain at 1.0'.
				1-3': Silt. Reddish brown (5 YR 4/4), with patches (inclusions) of red brown clay (fissile appearance, plastic, wet).
				3.5-5.0': Sand. Reddish brown (5 YR 4/4), very fine grain, well sorted, trace fine grain, trace silt, wet, black discoloration 3.5'-4.0'.
165	170	5	4,000/8.5	Sand. Reddish brown (5 YR 4/4), very fine to fine grained, well sorted, trace silt, wet.
170	175	5	200/3.7	0-1': Sand. As above.
				1-3': Sand. Reddish brown (5 YR 4/4), very fine grain, well sorted, some silt, some reddish brown clay inclusions (clasts), as above.
				3-5': Silt. Reddish brown (5 YR 4/4), irregular bands reddish brown clay 3-4', clay varves (0.25") 4'-5', wet.
175	180	5	2,000/3.7	0-2.5 Sand. Reddish brown (5 YR 4/4), very fine grain, well sorted, trace slit, wet.
				2.5-3.0': Sand. As above grading to silt.
				3.0-5.0': Silt. Reddish brown (5 YR 4/4), clayey, wet. (Note no black discolors).
180	185	5	150/3.2	Silt. Reddish brown (5 YR 4/4), very clayey matrix and irregular patches/lenses of red brown clay, plastic, wet.
185	190	5	70/2.7	Silt. As above, very clayey, wet.
190	195	5	80/10.7	Silt. As above clay varves at 3'-5', wet.
195	200	5	3.5/3.8	Silt. As above, very clayey, wet.
200	205	5	150/12.8	Silt. As above, wet.
205	210	5	12.5/15.7	Silt. As above, from 1-1.5' large clay incision (reddish brown, fissile appearance grey staining at base in fractures and some black discoloration 0-5'), wet.
210	215	5	400/25	Silt. As above wet, less clayey.
215	220	5	60/14.7	Silt. Reddish brown (5 YR 4/4), as above, clayey, trace black and grey discoloration, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-2

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
220	225	5	125/18.6	Silt. As above, wet.
225	230	5	50/22.7	Silt. As above, vertical black discoloration, wet.
230	235	5	100/15.7	Silt. As above, trace very fine grain sand seam at 4.5', wet.
235	240	--	--	No recovery (attempt to recover 240 to 245' in next sample, borehole bottom at 239').
240	245	5	4,000/2.6	0-2': Silt. Reddish brown (5 YR 4/4), clayey, with inclusion reddish brown clay fissile appearance, plastic, wet.
				2-5': Sand. Reddish brown (5 YR 4/4), fine grain, well sorted, wet. Note: no black discoloration.
245	250	5	>10,000/6.9	Sand. Reddish brown (5 YR 4/4), very fine grain, well sorted, some silt, wet.
250	255	5	>10,000/10.9	Sand. As above.
255	261	--	--	Attempt acrylic liner for treatability, no recovery.
255	265	3.9	--	Sample collected for treatability in acrylic liner.
				0-3.9 Sand. Very fine grain, as above. Visual through liner.
265	270	5	>10,000/5.2	Sand. Reddish brown (5 YR 5/4), very fine grained, well sorted, trace silt, wet.
270	275	5	>10,000/3.2	Sand. Reddish brown (5 YR 5/3), very fine to fine grained, well sorted, wet.
275	280	5	>10,000/2.7	0-2': Sand. Reddish brown (5 YR 5/5), fine grain, trace very fine grained sand, trace medium grained sand, moderately sorted, wet.
				2-5': Sand. Reddish brown (5 YR 5/4), very fine grain, some silt, well sorted, wet. Very silty at 3.5-5'.
280	285	5	>10,000/3.9	Sand. Very fine grained, as above, wet.
285	290	5	3,000/3	Sand. As above, 0-1.5' abundant fine to coarse gravel and pebbles to 2" diameter, wet.
290	295	5	9,000/9	0-3.5': Sand. Very fine grain, as above, some fine grain at 2.5'-3'.
				3.5-4': Sand/Gravel. Reddish brown (5 YR 5/4), very fine to fine grained sand, very clayey, with fine to coarse gravel and pebbles to 2.5" diameter, wet.
				4-5': Sand. Reddish brown (5 YR 5/4), very fine to fine grained well sorted 1-3" beds, wet, some silt.
295	300	5	>10,000/10	0-4': Sand. Reddish brown (5 YR 5/4), and brown (7.5 YR 5/2), very fine grain, silty well sorted sand mixed with brown, fine grained sand. Well sorted, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-2

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4-5': Sand. Brown (7.5 YR 5/2), fine to medium grain, poorly sorted with reddish brown (5 YR 5/3), very fine grain silty sand, some gravel, fine to coarse and trace pebbles, wet.
300	305	5	>10,000/4.3	0-0.5': Sand. As above.
				0.5-1': Gravel. Grey (7.5 YR 5/1), fine to coarse gravel with coarse sand, very poorly sorted trace fine sand, wet.
				1-4': Very Fine Sand. Reddish brown (5 YR 5/4).
				4-4.2': Fine to Medium Sand. Brown (7.5 YR 5/2),with fine to coarse gravel, poorly sorted, wet.
				4.2-4.5': Very Fine Sand. As above.
				4.5-5.0': Fine to medium Sand. As above mixed with silt, as above, wet.
305	310	5	3,000/10.6	Sand. Fine to very fine reddish brown (5 YR 4/4), with gravel, subangular, >5% slate 0.1-0.5".
310	315	5	9,000/4.1	Sand. Fine to very fine reddish brown (5 YR 4/4), no gravel, to 312' then grades into a fine to medium sand, same color.
315	320	5	>10,000/4.5	Sand. Medium reddish brown (5 YR 4/4), well sorted.
320	325	5	10,000/3.8	0-1': Sand. Medium to fine.
				1-4': Sand. Fine to very fine, silty, reddish brown (5 YR 4/4).
325	330	5	8,500/15.3	Sand. Fine, reddish brown (2.5 YR 5/4), very fine, well sorted silty.
330	335	5	10,000/21.1	Sand. Reddish brown (2.5 YR 5/4), very fine, well sorted.
335	340	5	13.3/>10,000	Sand. Reddish brown (2.5 YR 5/4), very fine, well sorted.
340	345	5	10,000/10.3	Sand. As above.
345	346	1	>10,000/2.4	Silt. Dark grey (7.5 YR 4/1), clayey, sandy.
346	348	2	10,000/0.0	Silt. As above with gravel, subangular, 0.2-1".
348	359	11	9,500/0.4	Clay. Bluish black (5 B, 2.5/1) with subangular to subrounded gravel (0.1" to 4"), sand and silt, poorly sorted, cohesive, irridescence noted on water.
359	362	3	1,800/0.3	Clay. Sand and Gravel. Mottled (7.5 YR 5/6; 10 R 3/6; 10 G 4/1; strong brown, dark red, dark greenish brown) cohesive.
362	363	1		Phyllite light blue grey (Gley 2 7/1) vertical cleavage, pyrite vein.
				20:30 End borehole at a depth of 363'.
				Hole abandoned 6/1/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-3 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 6/13/97 09:30 Drilling Completed 6/13/97 14:05

Total Depth Drilled 110 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1102.86 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic Drill Rig

Drilling Contractor Boart Longyear Driller Kale Helper Ken/Arlo

Prepared By Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	4	3	0/0	0-0.5': Topsoil.
				0.5-1.5': Sand. Brown (7.5 YR 4/3), medium to fine silty, dry.
				1.5-3': Sand. Strong brown (7.5 YR 5/18), medium, well sorted, dry.
4	9	3.5	3.5/0.0	0-1.5': Sand, as above.
				1.5-3': Sand, reddish yellow (7.5 YR 6/8), medium to fine, silty, dry.
				3-3.5': Sand. As above.
9	14	4.5	8/0.8	0-1.5': Sand. Red yellow (7.5 YR 6/8) medium, well sorted, gravely.
				1.5-4.0. Sand. Brown (7.5 YR 5/4) medium, well sorted, dry.
				3-4.5': Sand. Brown (7.5 YR 5/3), medium to coarse, abundant gravel (0.1 to 0.5").
14	19	3	9.5/2.1	0-3': Sand. As above.
19	24	3.75		0-1': Sand. As above.
				1-3.75': Sand. Brown (7.5 YR 5/3) coarse to medium, gravelly (0 to 1.5 in. subrounded) wet at 20'.
24	29	5	12/0.8	0-1': Sand. As above but with a trace of silt.
				1-3.5': Sand. Brown (7.5 YR 4/3), very coarse, gravelly (0.1-2" subangular to subrounded), wet.
				3.5-4.5': Gravel. Brown (7.5 YR 5/3) fine to coarse, poorly sorted (0.1 to 4") sandy, wet.
				4.5-5': Sand, light brown (7.5 YR 6/4), coarse to medium, poorly sorted, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-3

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
29	34	4	8/0.5	0-1': Sand. Light brown (7.5 YR 6/4), same as above, wet.
				1-1.5': Sand. Light brown (7.5 YR 6/4), medium to fine, poorly sorted, trace silt, gravely ((0.1-2") subrounded), wet.
				1.5-2.5': Sand. Light red brown (5 YR 6/4), medium to fine, silty gravely (cobbles), wet.
				2.5-4': Sand. Brown (7.5 YR 5/4), coarse gravely ((0.1 to 3.5") subrounded), wet.
34	39	2	3.5/0.2	0-2': Sand. Yellow red (5 YR 4/6) fine to coarse gravely (fine to coarse), (0.1 to 2").
39	44	0		No recovery, 6" cobble in end of sample from 34 to 39' prevented any sample from 36' to 44' from entering core barrel.
44	49	5	3.5/0.5	Sand. Strong brown (7.5 YR 4/6) medium to very fine silty, trace clay, wet.
49	54	5	5.5/1.0	Sand. As above, gravelly. Clay content increases downward to about 2.5' when sample is clayey.
54	59	5	4/0.2	Sand. Brown (7.5 YR 4/4), fine to very fine silty.
59	64	5	4/0.2	0-1': Sand. As above.
				1-5': Silt. Brown (7.5 YR 4/4), clayey trace very fine sand. Silt is the matrix throughout with interbeds of very fine sand and clay, moist.
64	69	5	4.5/0.8	Silt. Brown (7.5 YR 4/4), clayey, moist.
69	74	5	5.5/1.6	0-4': Silt. As above, with inclusions (lamellae?) of clay red brown (5 YR 4/4).
				4-5': Sand. Strong brown (7.5 YR 4/6), fine to very fine, silty wet.
74	79	5	4.5/0.8	Silt. Strong brown (7.5 YR 4/6), clayey, moist.
79	84	5	5/0.8	Same as above.
84	87	3	5/0.2	0-2.75': Silt. As above.
				2.75-3': Phyllite. Dark greenish grey (1 Gley 4/1 10 GY).
87	94	7	4.0/0.0	0-7': Metamorphic Rock. Green grey, phyllitic, fractured pieces and solid core.
94	99	5	4.5/0.0	Metamorphic Rock. As above.
99	104	5	4.5/0.0	0-2.5': Metamorphic Rock. As above.
				2.5-2.7': Clay. Dark brown (7.5 YR 3/3), hard, dry, fissile.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-3

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.7-5.0': Metamorphic Rock. Light green grey, highly altered, weathered, fractured, some dark brown clay as above, mixed with fractured metamorphic rock, dry.
104	110	6		Rock. As above.
				End boring at 110'.
				Hole abandoned on 6/13/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-3B Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/16/97 10:50 Drilling Completed 6/16/97 11:25

Total Depth Drilled 35 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1129.01 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Dale Helper Joe

Prepared By Raymond Flynn/W. Brition

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	1/0.0	0-1': Topsoil. Sandy silt, loose, (crumbly) damp, some rootlets, very dark brown (7.5 YR 5/2).
				1-2': Fine Sand. Some to much silt, damp, loose, brown (7.5 YR 4/3).
				2-5': Fine Sand. Loose damp, very well sorted, slightly coarse with depth, light brown (7.5 YR 6/4).
5	10	5	1/0.1	0-1.5': Fine Sand. As above.
				1.5-5': Very Coarse Sand. Much pebble gravel, loose damp, reddish brown (5 YR 4/4), gravel variable composition subrounded to well rounded, poor sorting.
10	15	5	1/0.1	0-3': Sand. As above.
				3-5': Fine Sand. Very well sorted.
15	20	5	15/0.1	0-1.5': Coarse Sand. As 10-13', very damp, loose, some to much gravel (7.5 YR 4/3).
				1.5-2': Fine Sand. As 13-15', metal fragments, some well rounded gravel.
				2-2.2': Well rounded gravel with much, fine sand.
				2.2-5': Fine Sand. Very well sorted, damp, loose, light brown (7.5 YR 6/4).
20	25	5	10/0.5	Sand. As above, damp, loose.
25	30	5	12/0.5	0-3': Sand. As above.
				3-5': Fine Sand. Some to much silt inclusions, brown (7.5 YR 5/4). Inclusions contain some to much sand.

FORD/TF0920/DATAMNGT/TABLE/GMSB3b.XLS

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-3B

Prepared by R. Flynn/W. Briton

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
30	35	5	12/0.8	0-0.5': Medium Sand. Very poorly sorted some to much fine sand. Some gravel (fine, well rounded, variable composition), slough, loose, damp, brown (7.5 YR 4/4).
				0.5-1': Fine Sand. Trace silt inclusions. Light brown (7.5 YR 6/3), loose, damp.
				1-2': Silt. Firm, much sand, very well sorted, saturated, brown (7.5 YR 5/3).
				2-5': Fine to Very Fine Sand. Light brown (7.5 YR 6/3) loose, firm 1" silt layers at 2.5 and 6.5'. Sand has trace silt, damp.
				End of boring at 35' bgs.
				Hole abandoned 6/16/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-3C Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/16/97 11:30 Drilling Completed 6/16/97 12:10

Total Depth Drilled 25 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1129.99 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Dale Helper Joe

Prepared By Raymond Flynn/W. Brittion

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	2/1.8	0-1.5': Silty Sand. Top soil, black (7.5 YR 2.5/1), loose crumbly, damp. Some rootlets.
				1.5-2': Fine Sand. Some to much silt, damp, slightly firm, brown (7.5 YR 4/4).
				2-2.5': Silty Sand. Slightly firm, damp poorly sorted, brown (7.5 YR 5/4).
				2.5-5': Fine to Medium Sand. Very well sorted, strong brown (7.5 YR 5/4), loose damp.
5	10	5	2.5/1.8	0-3': Fine to Medium Sand. As above.
				3-5': Very Coarse Gravel, Rich Sand. Loose, very damp, very poorly sorted brown (7.5 YR 4/4), gravel, variable composition, well rounded.
10	15	5	20/0.1	0-1.5': Coarse Sand. As above, trace gravel.
				1.5-': Medium Sand. Moderate sorting, some coarse sand, loose, damp brown (7.5 YR 5/3).
				2-5': Fine Sand. Some to much gravel (well rounded, variable composition), some coarse sand, loose, damp, brown (7.5 YR 4/6).
15	20	5	9/1.8	0-2': Sand. As above.
				2-3': Fine Sand. Loose, damp, very well sorted, brown (7.5 YR 5/6).
				3-5': Medium Sand. Poorly sorted some to much fine sand, some gravel (7.5 YR 5/4).
20	25	5	20/0.5	0-2': Coarse Gravely Sand. Loose, poorly sorted, brown (7.5 YR 4/4), very damp.

FORD/TF0920/DATAMNGT/TABLE/GMSB3c.XLS

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-3C

Prepared by R. Flynn/W. Brittion

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2-3': Fine to Medium Sand. Loose, damp, very well sorted, reddish yellow (7.5 YR 6/6).
				3-5': Fine Sand. Very poorly sorted, some gravel, loose, dry, some coarse sand, brown (7.5 YR 5/4).
				End of hole 25' bgs.
				Hole abandoned 6/16/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-3D Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/16/97 12:35

Drilling Completed 6/16/97 13:15

Total Depth Drilled 35 feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in

Sampling Interval Continuous

Land-Surface Elev. 1127.31 feet msl [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Dale

Helper Joe

Prepared By Raymond Flynn/W. Briton

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	2/0.2	0-2': Silty Sand. Topsoil, loose, damp, poorly sorted, black (7.5 YR 2.5/1).
				2-3': Sandy Silt. Very dark brown (7.5 YR 2.5/2), loose, crumbly, damp.
				3-5': Silt. Cohesive, crumbly, very damp, some medium to coarse sand, strong red (7.5 YR 5/6).
5	10	5	2.5/0.1	0-1': Medium to Coarse Sand. Poorly sorted, some gravel, loose, damp brown (7.5 YR 4/6).
				1-5': Medium to Coarse Sand. Loose, strong red (7.5 YR 5/6), trace to some gravel, damp, some medium sand.
10	15	5	1.5/0.5	0-3': Medium to Coarse Sand. As above, with more coarse sand, brown (75 YR 4/6).
				3-5': Fine to Medium Sand. Poorly sorted, brown (7.5 YR 5/3), loose, dry, trace gravel (well rounded), some coarse sand.
15	20	5	2.5/0.1	Very Coarse Sand. Much gravel (mainly very fine, 30" up to pebble), moderate to poor sorting from coarse sand up. Clasts up to 2" in diameter, loose, damp, brown (7.5 YR 5/3).
20	25	3	2.5/0.1	0-1': Very Coarse Sand. As above.
				1-3': Very Fine Sand. Poorly sorted, some to much medium gravel, some medium to coarse sand, damp. Loose pinkish grey (7.5 YR 6/2).
25	30	5	85/3.2	0-3': Very Coarse Sand. Poorly sorted, some to much pebble and granular gravel, some medium sand, gravel contains charcoal fragments at base (1" thick unit) brown (7.5 YR 4/3), subangular grain.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-3D

Prepared by R. Flynn/W. Briton

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-5': Fine Sand. Some to much silt, trace gravel, loose, damp, some slightly cohesive nodules. Brown (7.5 YR 5/4).
30	35	5	11/0.5	0-1': Very Fine to Fine Sand. Some to much silt, damp slightly cohesive, otherwise loose, brown (7.5 YR 5/3).
				1-1.1': Fine Sand. Very well sorted, loose damp brown (7.5 YR 5/4).
				1.1-5': Silty Sand. Moderate sorting, brown (7.5 YR 4/4), trace coarse to medium gravel, slightly cohesive, damp loose to slightly firm.
				End of hole 35' bgs.
				Hole abandoned on 6/16/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-4 Project/No. Ford Kingsford Page 1 of 6

Site Location Kingsford, Michigan

Drilling Started 6/3/97 16:02

Drilling Completed 6/10/97 9:55

Total Depth Drilled 212 feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in

Sampling Interval Continuous

Land-Surface Elev. 1119.88 feet msl [X] Surveyed [ ] Estimated

Datum Ground Surface

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Dale

Helper Bill/Ken

Prepared By Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	5/1.9	0-2': Topsoil. Reddish black (10 R 2.5/2), grass and organics.
				2-3': Sand. Red (7.5 YR 5/1), medium to fine, with wood chips, rock fragments, metal (sawtooth).
				3-4': Sand. Dark grey, (7.7 YR 4/1), medium to fine, with gravel (0.1-2") size rock fragments, trace clay.
				4-4.5': Sand. Yellowish brown (10 YR 5/4), medium to fine, with clay and gravel (0.5-3"), decomposing wood fragments (red 10 R 4/6).
				4.5-5': Charred and Partly Charred Organic Material. Bluish black (Gley 2 2.5/1, 5 PB), clayey sized fragments approximately 10%, sand sized from (medium to fine grained) approximately 80%, gravel sized (approximately 1-2") approximately 10 percent. Gravel medium fragments includes brick and coal.
5	10		5/2.0	0-1': Black Charred Organic Material. As above.
				1-1.5': Sand. Dark greyish grey (Gley 3/1, 5 BG), fine, well sorted, trace gravel (approximately 1").
				1.5-1.8': Sand. Bluish black (Gley 2 2.5/1, 5 BG), medium to fine, clayey with gravel (0.1 to 0.5") and broken glass.
				1.8-2': Sand. Very dark greyish brown (10 YR 3/2), gravely (0.1 to 2").
				2-2.2': Charred Organic Rich-Sand. Dark red grey (10 R 3/1), with gravel-sized coal fragments.
				2.2-5': Sand. Brownish yellow (10 YR 6/6), coarse to fine, with gravel (0.5 to 2") steel fragments and coal.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-4

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
10	15	4	30/0.2	0-2.5': Organic Rrich Debris. Greenish black (Gley 2 2.5/1 10 BG), wood fragments, clay, sandy.
				2.5-5': Organics. As above, but bluish black (Gley 2 2.5/1 10B).
15	20	5	150/14.3	0-0.1': Sand. Yellow brown (10 YR 5/4), medium to fine, with gravel (4").
				0.1-2.5': Sand Clay and Gravel. Dark greenish-grey (Gley 2 2.5/1/10 BG), with metal fragments, glass fragments.
				2.5-2.6': Sand. Olive grey (5 Y 4/2), fine to very fine, silty.
				2.6-5': Sand. Bluish black (Gley 2 2.5/1/5 PB),organic-rich with wood fragments, gravel (2") and trace gravel.
20	25	5	400/2.9	0-1.5': Organic-rich Debris. Bluish black (Gley 2 2.5/1/5 PB), wood fragments larger (up to 4"), charred coal.
				1.5-2': Sand. Dark olive-grey (5 Y 3/2), medium to fine.
				2-4': Sand. As 0-1.5'.
				4-5': Clay. Dark grayish brown (2.5 Y 4/2), silty, moist, cohesive.
25	30	5	10/1.2	0-0.2': Clay. As above.
				0.1-.8': Sand. Dark bluish grey (Gley 2 3/1/10 PB), silty.
				0.8-5': Sand. Brownish-yellow (10 YR 6/6), medium-well sorted, trace gravel (0.1 to 2").
30	35	3.5	30/0.8	0-3.5': Sand. As above, gravelly from 2 to 3.5', fining downward from 1-0.1".
35	40	5	60/6.9	0-1': Sand. As above.
				1-1.2': Sand. Dark grey (5 Y 4/1), trace silt.
				1.2-5': Sand. Yellowish brown (10 YR 5/4), poorly sorted very coarse to medium with gravel (fine to coarse).
40	45	3		0-2': Sand. Light yellowish brown (10 YR 6/4), poorly sorted with gravel and pebbles, coarse, coarsens downward to 4" in size.
				2-3': Sand. Light brown (7.5 YR 6/4), with angular gravel.
45	50	5	30/3	0-1': Silt. Strong brown (7.5 YR 4/6), sandy, gravelly (0.1-0.5").
				1-5': Silt. Strong brown (7.5 YR 4/6).
50	55	5	7/2.8	0-5': Silt. As above, fissile clay inclusions at 0-5'. (Reddish brown (2.5 YR 4/3)).
55	60	5	5/2.9	0-5': Silt. As above with clay inclusions. Coarsening downward.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-4

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
60	65	5	5/5.9	0-5': Silt. As above.
65	70		60/3.4	0-1': Silt. As above.
				1-5': Sand. Pale brown (10 YR 6/3), silty, clayey with gravel (0.2-1.5").
70	75	5	60/7.0	0-0.5': Sand. As above.
				0.5-5': Sand (silt). Brown (pink 7.5 YR 7/4), medium, well sorted, possibly interbedded with silt (brown 7.5 YR 5/3). Silt is broken up and appears as inclusions. Some gravel.
75	80	5	25/2.2	Sand (silt?). Brown (7.5 YR 5/3), fine to very fine with clay inclusions, silty, red (10 R 4/6).
80	85	5	40/1.8	Silt. As above, sand fining downward to very silty. Clay inclusions change to clay lenses.
85	90	5	10-250/0.0	0-1': Clay. Reddish brown (7.5 YR 5/3), with silt and very fine sand lamine. Silt, reddish grey (7.5 YR 5/2). Sand light red, brown (7.5 YR 6/3) with trace gravel.
90	95	5	8,000/0.7	0-1.5': As above.
				1.5-5': Sand. Light brown (7.5 YR 6/3), medium to fine with interbedded silt layers brown (7.5 YR 4/3). Sand coarsens downward and has a lens of gravel and sand between 4.3-4.8'.
95	100	0		No recovery.
100	105	0		No recovery.
105	110	1	20/2.2	Sand. Reddish brown (5 YR 4/4), medium, well sorted.
110	115	5	45/0.8	Sand. Medium to coarse, coarsens downward, gravelly toward bottom. Coarse sand between 4-5' brown (7.5 YR 4/2).
115	120		6,000/0.5	0-4.5': Sand. As above, very coarse sand at bottom.
				4.5-5': Sand. Reddish brown (2.5 YR 5/4), very fine, well sorted.
120	125		>10,000/1.7	0-2': Sand. As above, strong brown (7.5 YR 4/6).
			landtec-	2-4': Silt. Strong brown (7.5 YR 4/6), clay inclusions.
			600-12,000	4-5': Sand. Reddish brown (5 YR 5/4), fine grained, well sorted.
125	130	5	5,000/3.8	0-1.5': Very Fine Sand. Loose to slightly dense, brown (7.5 YR 6/4), very well sorted, saturated.
				15-3.5': Silt. Some very fine sand, cohesive, firm brown,(7.5 YR 4/3).
				3.5-5': Very Fine Sand. Saturated, very well sorted, some silt, light brown (7.5 YR 6/3).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-4 Page 4 of 6

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
130	135	5	5,000/1.1	Very Fine Sand. As above.
135	140	5	1,500/1.1	0-0.5': Very Fine Sand. As above.
				0.5-4.5': Silt. Soft, cohesive, some very fine sand, brown (7.5 YR 4/2).
				4.5-5': Fine to Very Fine Sand. Well sorted, loose, some to trace silt, saturated, brown (7.5 YR 5/2).
140	145	5	>10,000/3	0-4': Fine Sand. As above.
				4-5': Silt. Firm, cohesive, saturated, brown (7.5 YR 4/4).
145	150	5	>10,000/0.4	0-2': Silt. As above.
				2-2.5': Very Fine Sand. Some to much silt, very cohesive, soft and saturated, brown (7.5 YR 4/3).
				2.5-3': Silt as 0-2'.
				3-5': Very Fine Sand. Some to much silt, brown (7.5 YR 4/4), saturated, cohesive, and soft.
150	155	5	8,000/0.3	0-1': Very Fine Sand. As above.
				1-5': Silt. Soft cohesive, saturated, brown (7.5 YR 4/3).
155	160	5	4,000/0.0	Silt. As above, with trace to some sand.
160	165	5	8,000/7.5	0-3': Silt. As above.
				3-5': Very Fine to Fine Sand. Loose, some to much silt, very well sorted, brown (5 YR 8/3).
165	170	5	2,100/0.7	0-0.3': Coarse Sand. Poorly sorted, loose satured, trace to some silt, reddish brown, sand grains variable composition, subangular.
				3-5': Silt. Soft to slightly firm, reddish brown (5 YR 4/4), some to much, very fine sand.
170	175	5	9,000/0.3	0-0.5': Silt. As above.
				0.5-1.5': Very Fine Sand. Much silt cohesive, large matrix supported clasts (cobble sized), some gravel, rich clay nodules, matrix supported, dark grey (2.5 YR 4/1).
				1.5-4.5': Fine Sand. Loose saturated, some medium sand, some matrix supported gravel-rich clay nodules.
				4.5-5': Coarse Sand. Poorly sorted loose, some gravel, saturated, gravel subrounded.
175	180	5	5,000/1	0-5': Coarse Sand. As above, gravel more abundant toward base.
180	185	5	800->10,000/	0-1': Coarse Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-4

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
			0.1-0.8	1-2.5': Medium Sand. Some coarse sand and some well rounded pebble gravel. Variable composition, subrounded to well rounded grain supported, loose saturated, brown (7.5).
				2.5-5': Fine Sand. Loose saturated, brown (7.5 YR 5/4), trace subrounded pebble gravel up to 1" in diameter, very well sorted.
				Water sample taken at 185.5' bgs. Second water sample from GMSB-4. 19:50 finish drilling for day June 9, 1997.
185	190	5	6,000/0.0	0-1': Coarse Sand. Some subangular gravel, trace to some silt, poorly sorted, loose satured, brown (7.5 YR 5/3).
				1-1.5': Silt. Very soft sand and gravel, rich saturated, gravel subangular, variable composition, brown (7.5 YR 5/4).
				1.5-4': Medium Sand. Some to much gravel (subangular and variable composition), trace silt, some coarse sand, brown (7.5 YR 5/4).
				4-5': Gravel. Loose, saturated variable composition, up to 2" in diameter, trace to some silt, much sand.
190	195	5	4,500/0.0	0-4': Coarse Sand. Loose saturated much gravel, subrounded to well rounded, variable composition. Trace silt, some to much medium sand, dark brown (7.5 YR 3).
				4-4.9': Silty Gravel. Color as above, much coarse and medium sand, loose saturated.
				4.9-5': Silty Gravel. As above, but dense and more silty.
195	200	5	1,500/1.1	0-0.1': Silty Gravel. As above.
				0.2-.5': Fine Sand. Some gravel, loose saturated, brown (7.5 YR 4/4).
				0.5-1': Silty Gravel. Loose, saturated, up to cobble size, dark brown (7.5 YR 3/3).
				1-3': Very Fine Sand. Some gravel, loose to slightly dense, saturated, brown (7.5 YR 5/3).
				3-5': Very Coarse Gravel (shattered boulder suspected). Dry, very angular uniform composition, loose, bluish grey (Gley 2 6/1/10 B).
200	205	5	350/0.3	0-4.9': Shattered Boulder. As above, much dry rock powder generated by drilling (slate).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-4

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4.9-5': Very Dense Gravelly Clay/Silt. Contains very angular to surrounded clasts of uniform composition (slate) matrix, dark greenish grey.
205	210	5	550/1.4	0-4': Very Dense Gravelly Clay/Silt. As above, with angular to subrounded clasts, large clasts frequent, larger than core barrel diameter. Dark greenish grey (Gley 2/3/1 10 BG), gravel single composition.
				4-5': Dry Very Angular Gravel with Dry Clay. Coarse (probably shattered boulder), all slate composition abundant pyrite in rock, soil sample 205'.
210	212	2	500/0.3	Angular Rock Fragments. Phyllitic/slate.
				End of hole 212' bgs.
				Hole abandoned on 6/10/97.

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SAMPLE/CORE LOG

Boring/Well GMSB-5 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan
Drilling Started 11/25/97 08:25
Drilling Completed 11/25/97 09:05

Total Depth Drilled 16 feet
Hole Diameter 8 inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1054.63 feet [X] Surveyed [ ] Estimated
Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Pat
Helper Shawn

Prepared By Bruce Evans
Hammer Weight 300
Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	1	1-1-1-1	0-.2': Top Soil/Organics. Very dark brown (7.5 YR 2.5/2) silt/trace sand/organics and roots, moist.	5/0.4 OVA backgroud = 4 ppm
				.2-1.0': Sand. Strong brown (7.5 YR 4/6) very fine to fine grained, well sorted, trace silt, wet.	OVM background = 0.0 ppm
2	4	1.5	2-4-4-6	0-1': Sand. As above.	5.5/09
				1-1.5': Sand. As above, with trace medium sand and some fine to coarse gravel, subangular, black, wet, moderately sorted.	
4	6	1.5	4-6-7-9	0-.3': Slump.	6.0/1.0
				.5-1.5': Sand/Gravel. Strong brown (7.5 YR 4/6) fine to medium sand, silty, poorly sorted, wet fine to coarse gravel and pebbles to 1" diameter, subangular to subrounded, wet.	
6	8	0.3	4-8-6-6	0-.2': Poor Recovery. Slump.	6.5/1.9
				.2-.3': Silt. Brown (7.5 YR 5/2) very sandy, with very fine grain sand, wet.	
8	10	1.5	3-3-4-4	0-.5': Slump.	7.0/2.1
				.5-1.5': Silt. Brown (7.5 YR 5/2) with trace clay reddish brown (5 YR 5/4) in thin bands.	
				.1-.2': Thick, still very sandy in some 1-3" band with very fine grain sand. Reaction to HCL acid in silt and some parts of clay, wet.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-5 Page 2 of 2

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
10	12	1.3	3-4-3-3	0-.5': Slump.	7.5/22
				.5-1.3': Silt. Brown (7.5 YR 5/2) very sandy with very fine grain sand and trace clay reddish brown (5 YR 5/4) in .05-.1 inch thick bands. Penetrometer: Silt = 0.5, clay = 0.25, HCL reaction as above, wet.	
12	14	1.6	2-2-2-3	0-.3': Slump.	9.0/3.1
				.3-1.6': Silt. As above, wet.	
14	16	2	3-4-6-7	0-.3': Slump.	6.0/1.5
				.3-2.0': Silt. As above, becoming very sandy with very fine grain sand, silt very reactive to HCL, wet.	
				9:05 End borehole at 16 feet.	
				Abandon borehole with bentonite chips.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-6 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/7/98 13:10 Drilling Completed 7/7/98 14:45

Total Depth Drilled 32 Feet Hole Diameter 6¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1114.58 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used none Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ted Powell and Dan Hegrenes Hammer Weight 300 Hammer Drop 34 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	10/2.5	2,2,3,2	0-5.0": Loam. Dark brown (7.5 YR 3/4) sandy, silt, "A Horizon" grass, roots,
				slightly moist, medium dense.
				5.0-10": Sand. Silty, yellow red (5 YR 5/6), sand fine, some medium, trace
				coarse, trace gravel 1/8 to ½ inch, subrounded to subangular, loose to
				medium dense, moderate sorting.
2	4	10/3.0	4,4,5,3	Sand and Gravel. Yellow red (5 YR 5/6), sand, fine with medium trace coarse and
				very coarse, gravel ¼ to 1 inch, subround, loose, poorly sorted.
4	6	0/-	7,7,5,10	No recovery, quartzite blocked recovery.
6	8	7/3.5	10,7,10,10	0-2.0": Large fractured cobble.
				2.0-7.0": Sand. Light red brown (5 YR 6/4) medium to coarse, some fine, trace
				silt and very coarse, coarsens down, medium dense, slightly moist, moderate
				sorting.
8	10	14/4.0	4,7,7,4	Sand. Light red brown (5 YR 6/4) medium with fine trace very fine, trace
				coarse, moderate well sorted, medium dense, trace ¼ inch gravel,
				subrounded to subangular.
10	12	13/3.5	3,7,3,5	0-2.0": Sand. As above.
				2.0-13":Sand. Coarse and very coarse, trace fine, with gravel 1/8 to 1 inch
				subrounded, red brown (5 YR 5/4) poorly sorted, very moist.
12	14	12/3.5	5,5,5,7	Sand and Gravel. Sand coarse with very coarse and medium, some fine gravel
				¼ to 1 ¼ inch, subround to subangular, fractured, very poorly sorted,
				red brown (5 YR 5/4) medium dense, slightly moist.
14	16	0/-	5,4,4,3	No recovery.
16	18	18/3.5	7,6,8,4	0-3.0": Clay. With gravel and sand, clay ripped up, sand coarse to very coarse,
				gravel ¼ to ½ inch, subrounded.
				3.0-7.0": Clay. Red brown (2.5 YR 4/4), plastic, trace mottling, soft,

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Sample/Core Log (Cont.d)

Boring/Well GMSB-6 Page 2 of 2

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				slump contrast between clay and sand.
				7.0-18": Sand. Light red brown (5 YR 6/4) medium some fine, well sorted,
				slightly mosit, moderate, dense.
18	20	15/3.5	5,4,6,6	0-5.0": Sand. As above.
				5.0-15": Sand. Light brown (7.5 YR 6/4) medium with fine, coarse and
				very coarse, trace 1/8 to ¼ inch gravel, moderate well sorted, medium dense,
				gravel subrounded.
20	22	17/4.0	5,6,6,4	0-4.0": Sand. As above.
				4.0-17": Sand. Light red brown (5 YR 6/4) fine with very fine, some silt,
				sorted, medium dense.
22	24	16/3.5	5,15,10,12	Sand. As above, at 11 inches a very fine (<1 mm) black lamination likely
				iron, or manganese.
24	26	17/3.25		0-13": Sand. Light red brown (5 YR 6/4), very fine to fine, some silt, dense,
				slightly moist.
				13-15.5": Silt. Yellow red (5 YR 4/6) some sand (variable) at approximately 14
				inches layered silt, and sand, very fine silty. Silt is dense, trace clay, silt.
				15.5 to 17": Sand. Yellow red (5 YR 4/6), very fine to fine, silty, slightly moist
				well sorted.
26	28	18/3.0		Sand. Light red brown (5 YR 6/4) very fine to fine, very well sorted, dense
				slightly moist at 3.5 and 4 inches, thin 1/8 inch clay seams, soft, silty.
28	30	17/3.0		Sand. Light red brown (5 YR 4/6) very fine to fine, well sorted, dense, slightly
				moist to dry. At 12 inches, approximately 1/8 inch thick sand lense, medium
				with fine trace coarse brown (7.5 YR 4/4) from 11 to 12 inch very fine
				black sand laminae.
30	32	18/2.5		Sand. Red brown (5 YR 4/4) as above at 3.5 to 4 and 8 to 8.5, silty sand, sand
				very fine. From 11 to 18 inches coarsens down, ending with medium
				sand, some fine, trace coarse and very coarse, moderate sorting, medium
				dense.
				EOB = 32 ft bgs. 14:45 will abandon hole, will not install vapor probes at
				this location.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-7 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/13/98 8:10 Drilling Completed 7/13/98 13:10

Total Depth Drilled 42 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1109.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used none Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Helper Steve

Prepared By Bruce Evans Hammer Weight 140 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1.4/5.0	2,1,4,5	0-0.3': Silt/Soil. Dark reddish grey (5 YR 4/2) rootlet and organic matter,
				trace clay, sand, loose, moist.
				0.3-1.4': Silt. Yellowish red (5 YR 5/8) trace fine to medium gravel,
				subangular to subrounded, loose, moist.
2	4	1.2/5.5	10,4,6,5	0-0.2': Silt/Gravel. As above.
				0.2-1.2': Sand. Yellowish red (5 YR 5/6) fine grain, well sorted, loose, moist.
4	6	1/5.0	8,7,12,13	0-0.7': Sand. As above, light reddish brown (5 YR 5/4).
				0.7-1.0': Sand. As above, becoming light reddish brown (5 YR 5/4) medium
				to coarse sand, fine to coarse gravel, subangular to subrounded, poorly
				sorted, gravel to 1 inch diameter; loose, moist.
6	8	1/5.0	4,5,7,9	Sand. Reddish brown (5 YR 5/3) medium to very coarse, trace medium gravel,
				poorly sorted, loose, moist.
8	10	1.3/5.0	7-10-9-13	Sand. As above.
10	12	1.1/6.0	7,10,9,12	Sand. Brown (7.5 YR 5/3) medium to coarse with very coarse, trace medium
				gravel, subangular to subrounded, poorly sorted loose, very moist.
12	14	0.8/5.5	2,4,3,2	Gravel. Brown (7.5 YR 5/3) fine to medium gravel, subangular to subrounded,
				trace medium to coarse sand, moderately sorted, loose, very moist.
14	16	1.3/5.0	11,8,7,5	0-0.5': Gravel. As above, sandy.
				0.5-0.9': Sand. Brown (7.5 YR 4/2) coarse to very coarse with medium to
				coarse gravel, trace clay, broken rock fragments, high iron oxidization and
				weathered, loose, very moist.
				0.9-1.3': Sand. Light brown (7.5 YR 6/4) fine grain, well sorted, moist.
16	18	1.3/5.0	12,13,15,26	0-0.5': Slough.
				0.5-1.3': Sand. As above, light brown.

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Sample/Core Log (Cont.d)

Boring/Well GMSB-7

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
18	20	1.2/5.5	8,9,13,19	0-0.7': Sand. As above, with trace fine gravel.
				0.7-1.2': Sand. Light brown (7.5 YR 6/4) very fine grain, well sorted, moist.
20	22	1.3/5.5	7,6,9,12	0-0.6': Sand. Light brown (7.5 YR 6/4) fine grain with trace coarse sand and
				fine gravel, well sorted, loose.
				0.6-1.3': Sand. Light brown (7.5 YR 6/4) very fine grain, well sorted, loose,
				moist.
22	24	1.3/5.5	8,11,19,35	Sand. Light brown (7.5 YR 6/4) fine grain, well sorted, loose, moist.
24	26	1.2/5.5	8,5,5,11	Sand. Light brown (7.5 YR 6/4) very fine to fine grain, well sorted, coarse,
				moist.
26	28	1.3/5.0	5,2,13,9	Sand. As above, trace fine gravel at 1.0.
28	30	1.3/5.5	7,14,7,14	Sand. Light brown (7.5 YR 6/4) fine grained, well sorted, loose, moist.
30	32	1.2/5.5	8,8,11,16	Sand. As above.
32	34	1.1/5.0	5,5,10,10	Sand. As above.
34	36	1.5/5.0	6,8,13,25	0-0.7': Sand. As above.
				0.7-1.5': Sand. As above, trace fine to medium gravel, subrounded, loose,
				moist.
36	38	1.3/5.5	8,19,22,38	Sand. Light brown (7.5 YR 6/4) very fine grain, well sorted, loose, moist.
38	40	1.3/6.0	4,19,11,25	Sand. Brown (7.5 YR 5/3) very fine to fine grain, well sorted, wet (saturated).
40	42	1.5/9.0	3,3,9,20	Sand. As above, wet.
				Stop drilling at 11:15 to discuss borehole with C. Austin MDEQ.
				13:00 begin abandoning borehole from a depth of 42 feet.
				EOB at 42 feet.

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SAMPLE/CORE LOG

Boring/Well GMSB-8 Project/No. Ford Kingsford Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 9/9/97 Drilling Completed 9/11/97

Total Depth Drilled 188 feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1097.90 feet msl [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Dale Helper Gabe/Ken

Prepared By Ray Flynn/Dan Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	8/NA	0-5': Sand. Fine, loose, trace fine gravel at 4-5'. Otherwise very well sorted, yellowish red (5 YR 5/6). Damp, dry at base, reddish grey (5 YR 5/2) when dry. No HCl reaction.
5	10	5	1/NA	1-4': Sand. Medium, some to much gravel, loose, dry, brown (7.5 YR 4/3). Becoming coarse sand at base. Coarse gravel, variable composition, trace cobbles.
				4-5': Sand/Gravel. With coarse sand loose, dry. Matrix pink to grey (7.5 YR 6/2) subrounded.
10	15	3	8/NA	0-3': Sand/Gravel. As above, fine gravel.
15	20	5	0/NA	0-4.5': Sand. Coarse with some to much fine gravel, loose, subrounded gravel, matrix grey (7.5 YR 5/1), variable composition.
				4.5-5.0': Sand. Medium, loose, light brown (7.5 YR 6/3).
20	25	5	0/NA	Sand. Medium, as above, trace rounded gravel.
25	30	5	15/	0-1': Sand. Coarse with some gravel, loose, trace cobbles, mainly fine gravel, possible slough, brown (7.5 YR 4/2).
				1-3': Sand. Little cohesive silty sand. Much medium sand. Soft (HP = 0.5), reddish brown (5 YR 4/3). No HCl reaction. Damp. Trace coarse sand.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-8

Prepared by Ray Flynn/Dan Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-5': Sand. Fine with trace well rounded gravel. Sand: reddish brown (5 YR 4/4) loose.
30	35	5	1/	0-5': Sand. Fine, as above.
35	40	5	13/	Sand. Fine, as above with trace rounded gravel.
40	45	5	1/NA	0-3.0': Sand. Brown (7.5 YR 4/4) fine, some medium, loose, dry. Trace well rounded gravel. Fine sand at base, very well sorted.
				3.0-5.0': Sand. Brown (7.5 YR 5/2) fine, as above, with some to much fine, well rounded, varilable composition, gravel. Loose, very weak HCl reaction (0.5 M HCl), damp.
45	50	5	2/NA	0-2.0': Sand. Brown (7.5 YR 5/4) medium, some fine sand. trace fine, well rounded gravel, loose.
				2.0-2.5': Silt. Brown (7.5 YR 5/3) stiff (HP = 1.5), damp.
				2.5-5.0': Sand. Medium, very well sorted as 0-2 feet. Becomes fine sand toward base. Loose.
50	55	5	3/NA	0.0-5.0': Sand. Fine to medium, as above, loose, silt lens at 0.5-1.0 feet. Damp.
55	60	5	20/NA	0.0-4.0': Sand. Brown (7.5 YR 5/3) fine to medium, very well sorted, slightly dense, damp.
				4.0-5.0': Silt. Strong Brown (7.5 YR 4/6), very stiff (HP), hard, >4.0. Strong to mild HCl reaction, matrix supported, trace fine gravel.
60	65	5	1/NA	0.0-2.0': Silt. Very stiff, as above. Lens of fine sand at 1.9.
				2.0-4.5': Silt. Dark Brown (7.5 YR 3/4) with mainly thin to thick lamellae of laminated clay. Clay: Reddish brown (2.5 YR 4/3) very stiff to hard HP = 3.8 to 4.0. Strong reaction with HCl in brown silt. Moderate HCl reaction with red clay.
65	70	5	0/NA	0.0-2.5': Silt/Clay. Succession as above.
				2.5-5.0': Silt/Sand. Dark Brown (7.5 YR 3/4) Laminated fine, well sorted sand becoming more dominant toward base. Silt: Stiff HP = 2.0. Sand: As silt in color, more dense.
70	75	5	1/0	0.0-0.5': Silt. Dark brown.
				0.5-1.0': Sand. Fine, trace silt.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-8

Prepared by Ray Flynn/Dan Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1.0-1.5': Silt. As 0.0-0.5".
				1.5-2.0': Sand. Fine, as 0.5-1.0, loose.
				2.0-4.5': Silt. With each clay lamination (fine at 2.2'). Abundant, very fine lamellae. Medium stiffness (HP = 1.0) no HCl reaction.
				4.5-4.6': Sand. Reddish brown (5 YR 4/3) fine at 0.5-1.0, loose to slightly dense, very well sorted.
				4.6-5.0': Sand. Reddish brown (5 YR 4/4) medium, very well sorted loose. No reaction with HCl.
75	80	5	4/NA	0.0-5.0': Sand. Reddish brown (5 YR 4/4) medium, loose to slightly dense, very well sorted.
80	85	5	6/NA	0-4.9': Sand. Medium, as above.
				4.9-5.0': Silt. Reddish brown (5 YR 4/4) soft (HP = 0.4). Some to much fine sand.
85	90	5	4/3.5	0.0-2.0': Sand. Reddish brown (5 YR 5/3) fine, very well sorted, loose, saturated, trace silt.
				2.0-5.0': Sand. Brown (7.5 YR 5/4) medium, very well sorted, loose, some coarse sand.
90	95	4	1.0/3.5	0-4.0': Sand. Medium, as above, some coarse sand in lowest 1 foot.
95	100	3	2.0/4.1	0-4.9': Sand. Brown (7.5 YR 5/4) medium as above, becomes coarse sand with increasing depth. Trace to some fine gravel, Subangular, variable composition, loose.
				4.9-5.0': Sand. Strong brown (7.5 YR 4/6), fine and silty, soft to medium stiff (HP = 1.0). Damp. Deposit well sorted, no reaction with HCl.
100	105	5	5.0/4.1	0.0-1.5': Sand. Silty, as above.
				1.5-3.0': Sand. Brown (7.5 YR 5/4) fine, loose very well sorted, trace silt. No HCl reaction.
				3.0-4.0': Sand. Brown (7.5 YR 5/4) as above with some silt.
				4.0-5.0': Silt. Brown (7.5 YR 5/4) soft (HP = 0.5), cohesive. Trace to some fine sand, very well sorted. No HCl reaction.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-8

Prepared by Ray Flynn/Dan Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
105	110	5	3/1.5	0.0-2.5': Sand. Strong brown (7.5 YR 4/6) fine, very well sorted, loose to slightly dense. No HCl reaction, trace to some silt.
				2.5-3.0': Silt. Brown (7.5 YR 4/4), trace to some sand, soft (HP = 0.5). No HCl reaction.
				3.0-5.0': Sand. Fine, as 0.0-2.5 but less silt.
110	115	5	4/0.2	0-5.0': Sand. Fine, as above.
115	120	5	3/0	0.0-2.0': Sand. Fine, as above.
				2.0-5.0': Silt. Brown (7.5 YR 4/4) soft to very soft (HP = 0.3-0.5), trace clay lenses, reddish brown (5 YR 5/4). No HCl reaction in clay or silt.
120	125	5	4/0	0.0-1.5': Silt. As above.
				1.5-4.0': Sand. Brown (7.5 YR 4/4) fine, very well sorted, some silt, medium density.
				4.0-5.0': Silt. As 0.0-1.5 except some to much fine sand present.
125	130	5	0/0	0.0-1.0': Silt. As above.
				1.0-5.0': Sand. Brown (7.5 YR 4/3) silty, very soft (HP <0.5), no HCl reaction. Well sorted.
130	135	5	4/0	0.0-3.0': Sand. Silty, as above.
				3.0-4.0': Silt. Brown (7.5 YR 4/4) soft, with thin clay lenses. No HCl reaction.
				4.0-5.0': Sand. Silty as at 0-3.0. No HCl reaction.
135	140	5	4.5/0	0.0-5.0': Sand. Strong brown (75 YR 4/6) fine, cohesive, some to much silt, soft (HP 0.5) very well sorted. No HCl reaction.
140	145	4	4.5/0	0.0-4.5': Sand. Fine, as above.
				4.5-5.0': Sand. Brown (5 YR 4/4) silty, very well sorted. No HCl reaction, soft.
145	150	5	4.5/0	0.0-4.0': Silt. Brown (7.5 YR 4/2), soft (HP = 0.5). No HCl reaction.
				4.0-5.0': Sand. Strong brown (7.5 YR 4/2) silty, soft (HP = 0.5), no HCl reaction.
150	155	5	4/0	0.0-1.0' Sand. Silty, as above.
				1.0-5.0': Silt. Brown (7.5 YR 4/2) with much fine sand. Very soft to soft (HP $\leq$ 0.5). No HCl reaction, very well sorted.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSB-8

Prepared by Ray Flynn/Dan Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
155	160	5	3/0	0.0-5.0': Silt. Brown (7.5 YR 4/3) trace clay, cohesive, firm (HP = 1.75) wet.
160	165	5	3/0	0.0-5.0': Silt. As above. Trace clay lenses. Clay: reddish brown (5 YR 4/3).
165	170	5	3.5/0	0.0-5.0': Silt. As above. Clay lens reaction with HCl.
170	175	5	3.5/0	0.0-5.0': Silt. Same as above. 2 to 4 feet silt includes trace fine sand.
175	180	5	50/0	0.0-5.0': Sand. Dark greyish brown (10 YR 4/2), fine grained, some silt, abundant fine to coarse gravel with pebbles (2.5 inches diameter), gravel subrounded to subangular, poorly sorted.
180	185	5	50/0	0.0-4.5': Sand. Dark grayish brown (10 YR 4/2), fine to medium grained, poorly sorted, abundant fine to coarse grained gravel, and abundant pebbles and cobbles.
				4.5-5.0': Clay. Greenish gray (10 GY 6/1) silty, trace sand, abundant gravel, angular rock fragments, possible ground-up boulder from drilling.
185	188	3	20/0	0.0-2.0': Sand. Dark grayish brown (10 YR 4/2), fine to medium grained, moderately sorted, trace silt, abundant fine to coarse gravel, subangular to subrounded gravel, cobbles up to 2 inches diameter.
				2.0-3.0': Bedrock. Greenish gray (1 GLEY 5/1) metamorphic, phyllitic, vertical folation. Secondary alteration, veining of calcite (veins react with HCl).

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Sample/Core Log

Boring/Well GMSB-11 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/13/98 14:25

Drilling Completed 7/13/98 18:05

Total Depth Drilled 58 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval continuous feet

Land-Surface Elev. 1119.49 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used none

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Mike Helper Steve

Prepared By Bruce Evans

Hammer Weight 140 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	2/7.0	3,2,2,3	0-0.7': Silt/Soil. Brown (7. 5YR 5/2) sandy, roots and organics.
				0.7-2': Silt: Strong brown (7.5 YR 5/6) trace fine gravel, loose, dry.
2	4	1/6.0	2,5,9,9	0-0.4': Silt. As above.
				0.4-1.0': Sand/Gravel. Strong brown (7.5 YR 5/6) medium sand with fine to
				coarse gravel, subangular to subrounded, to 1 inch diameter, poorly sorted,
				loose, moist.
4	6	1.1/6.0	2,4,5,10	Sand/Gravel. As above.
6	8	1/5.0	6,10,7,10	0-0.5': Sand. Brown (7.5 YR 5/4) medium grain, well sorted, with fine to
				medium gravel, subangular to subrounded, loose, moist.
				0.5-1.0': Gravel/Sand. Brown (7.5 YR 5/4) fine to coarse gravel to 1.5+E52 inch
				diameter, with medium to coarse sand, very poorly sorted, subangular to
				subrounded, loose, moist.
8	10	1.2/5.0	4,10,11,14	Sand. Brown (7. 5 5/4) medium to coarse, moderately sorted, with some
				fine to medium grain gravel, subangular to subrounded, loose, moist.
10	12	0.7/5.0	4,9,11,17	0-0.2': Pebbles. Grey to brown to 1.5 inch diameter, some broken, subrounded.
				0.2-0.7': Sand. Light brown (7.5 YR 6/4) fine to medium grain with some fine
				to medium gravel, subangular to subrounded, poorly sorted, loose, moist.
12	14	1/5.0	10,12,15,7	0-0.5': Sand/Gravel. Brown (7. 5YR 5/4) medium to very coarse sand, fine
				to medium gravel, poorly sorted, loose, moist.
				0.5-1.0': Sand. Brown (7.5 YR 5/4) coarse grain with some fine gravel,
				subangular to subrounded, poorly sorted, loose, moist.
14	16	1/5.5	7,3,6,3	Gravel/Sand. Brown (7.5 YR 5/4) fine to coarse gravel, to 1.5 inch
				diameter, subangular to subround with medium to coarse sand, very
				poorly sorted, loose, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-11 Page 2 of 3

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	1.5/5.5	9,8,10,13	Gravel/Sand. As above, wet.
18	20	1.3/5.0	4,8,10,6	0-0.5': Gravel/Sand. As above, wet.
				0.5-1.0': Sand. Brown (7.5 YR 5/4) medium to coarse grain, well sorted,
				trace gravel, loose, wet.
				1.0-1.2': Gravel/Sand. As above.
				1.2-1.3': Silt/Clay: Silt, reddish brown (5 YR 5/4) clay reddish brown (5 YR 4/4)
				silt with trace clay in matrix and clay in thin laminations, .2 to .4 inch thick
				pet - silt 1.0, clay 0.75, acid reaction in both, wet.
20	22	1.3/4.5	6,6,6,6	0-0.2': Silt/Clay. As above.
				0.2-1.3': Silt. Reddish brown (5 YR 5/3) no clay, pet 3.0, acid reaction, very
				moist.
22	24	1.4/5.5	7,9,14,21	Silt. As above, pet > 4.0, trace clay, reddish brown (5 YR 4/4) at .5 and 1.3
				in thin band (.2 thick thick), moist.
24	26	--	50/.3	No recovery, trace silt.
26	28	1.4/5.0	7,15,17,25	Silt. Brown (7.5 YR 5/3) extremely firm (pet > 4.0) trace clay reddish brown
				(5 YR 4/4) in thin bands at .3 and from 1.1 to 1.3, very moist to wet clay,
				fissile looking on broken surfaces, slightly plastic.
28	30	1.5/5.0	15,10,17,37	Silt. As above, interbedded with clay .2 to 1 inch thick bands, pet silt > 4.0
				clay 2.5, acid reaction in both, moist.
30	32	1.5/5.5	14,28,23,25	Silt. As above, with trace interbedded clay, moist.
32	34	1.2/3.0	5,9,7,11	Silt. With some interbedded clay as above, moist.
34	36	1.1/4.0	9,5,18,14	Silt: Brown (7.5 YR 4/3), slightly sandy in bands with very fine grain sand, trace
				clay (reddish brown (5 YR 4/4) in thin bands, pet silt 2.0. Clay to thin to
				measure, acid reaction, moist to very moist in sandy zones.
36	38	1.5/4.5	6,10,17,21	Silt. Interbedded with clay as above, no sand, moist.
38	40	1.4/5.0	20,31,42,19	Silt. As above with trace clay, interbedding, moist.
40	42	1.4/4.0	17,10,23,36	Silt. As above.
42	44	1/4.0	50/1.0	Silt. Brown (7.5 YR 5/3) trace very fine grain sand, no clay, moist, pet = 2.0.
44	46	2/5.0	20,34,38,50/	0-1.0': Silt. As above.
			2	1.0-2.0': Clay. Reddish brown (5 YR 4/3) fissile looking on broken surfaces,
				slightly plastic, pet = 3.75, firm, trace silt, brown (7.5 YR 5/3) in thin

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-11

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				laminations (< 2 inch) at 1.3 to 1.5 clay moist to dry, silt moist.
46	48	1/2.5	16,10,29,21	Clay: Reddish brown (5 YR 4/3) very firm (pet > 4.0), nonplastic, with
				very thin laminations (< .05 inches), thick silt, moist.
48	50	1.4/2.0	6,13,17,21	Clay. As above with silt partings, moist.
50	52	1.1/2.5	12,12,17,20	Clay. As above.
52	54	1/2.0	15,25,50	0-0.2': Clay. As above.
				0.2-1.0': Silt. Brown (7.5 YR 5/4), no clay, trace very fine grain sand,
				crumbly, petrometer = 1.5, moist.
54	56	1/20	7,8,12,9	0-0.4': Sand. Brown (7.5 YR 5/3) very fine grain, silty, well sorted, wet.
				0.4-0.7': Sand. Brown (7.5 YR 5/3) fine grain, well sorted, wet.
				0.7-1.0': Sand. Brown (7.5 YR 5/3) very fine to fine grain, silty, well sorted,
				with several thin (.2 to .4 inch) bands, silt, wet.
56	58	1/80	7,7,19,26	Sand. Brown (7.5 YR 5/3) fine sand, well sorted, trace very fine grain,
				trace silt in thin bands, wet, loose.
				18:05 end borehole at 58 feet.
				Check with Chris Austin and abandon borehole.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-12 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 11/3/98 Drilling Completed 11/3/98

Total Depth Drilled 32 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10" x 4'

Sampling Interval Continuous feet

Land-Surface Elev. 1081.67 feet [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used None

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Scott

Prepared By Ted Powell and Kevin Daleness

Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4.5	3.5-4.5/0	0-1.0': Dark brown silty, sandy, loam in fine gravel, roots, moist.
				1.0-2.0': Silt. Strong brown (7.5 YR 4/6), sandy, fine to medium, trace coarse and
				very coarse, some gravel, 1/8 to 3", subrounded, soft to moderately stiff. 1.0-1.25,
				very moist.
				2.0-3.0': Sand. Brown (7.5 YR 5/4) fine to very fine, some silt, trace medium, some gravel,
				1/8 to 1", very poorly sorted, loose, moist.
				3.0-4.5': Sand. Yellow brown (10 YR 5/8), fine, some medium, trace coarse and very
				coarse, loose, moderately sorted, moist.
5	10	4	2.5-8/0	0-0.5': Slough.
				0.5-3.0': Sand. As above.
				3.0-4.0': Sand. Red brown (5 YR 5/4) fine to medium with gravel, some very fine and
				coarse, trace very coarse. Gravel: 1/8 to 3", subrounded, poorly sorted, loose, moist.
10	15	4	2.5-6/0	0-1.0': Slough.
				1.0-3.0': Sandl. Dark red brown (5 YR 4/2) with gravel. Sand: coarse with some medium,
				trace fine, very poorly sorted. Gravel: fine to medium, subrounded to subangular,
				loose, moist.
				3.0-4.0': Sand. Dark brown (7.5 YR 3/4), some gravel. Sand: coarse to very coarse,
				some medium, trace fine, poorly sorted, loose, moist. Gravel: 1/8 to 3.5 inch, subrounded.
15	25	4	3-8/0-1.3	0-2.0': Sand. As above, with gravel, gravel increases from coarse to very coarse toward
				base.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-12 Page 2 of 2

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				2.0-4.0': Sand. Black brown (5 YR 4/4), medium with fine, very silty, some gravel, some
				coarse and very coarse, very poorly sorted, wet to saturated, gravel 1/8 to 4 inches,
				Subrounded, large gravel blocking recovery.
25	30	5	.5-35/.6-8.3	Sand. Very silty, as above, saturated.
30	32	2	1.5-7/1.0-	0-1.0': Sand. Fine to medium, trace coarse, silty, poorly sorted, some gravel and weathered
			32.6	slate chips, loose to medium density.
				1.0-2.0': Bedrock. Slate bluish black (2 GLEY 2.5/1.5) hardness 2.5.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-13 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 8/21/98 11:05 Drilling Completed 8/21/98 17:10

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotosonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1125.03 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Rob Reina and Dan Hegrenes Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	2-11/0.1-	0-1.0': Silt. Very dark grayish brown (10 YR 3/2) trace very fine sand, rootlets,
			1/19/00	slightly moist, medium dense to loose, trace gravel, (approximately ¼ to ½ inch
				diameter) subrounded.
				1.0-2.5': Sand. Silty with some gravel, reddish yellow (7.5 YR 6/6) dry, loose,
				gravels (approximately 1/8 to 1½ inch) subangular to subrounded, sand, very fine,
				fairly well sorted.
				2.5-3.5': Sand. Strong brown (7.5 YR 5/6), coarse to very coarse, some medium
				dry, loose, well sorted grave (approximately <1/8 to 3½ inch diameter)
				subangular to subrounded.
				3.5-4.0': Sand. Light brown (7.5 YR 6/4), medium, some fine to very fine, loose,
				dry, moderate sorting, some gravel (approximately ¼ to 3 inch), subrounded to
				subangular.
5	10	4	3-7/0-1.2	0-0.5': Slough.
				0.5-1.0': Sand. Yellow brown (10 YR 5/4) fine to medium, some very fine, loose,
				dry, moderate sorting, gravels (approximately 1/8 to 1½ inch), subrounded to
				subangular.
				1.0-2.0': Sand and Gravel. Strong brown (7.5 YR 4/6) trace fine loose, moist,
				gravels (approximately <1/8 to 1½ inch), subrounded to subangular, poor
				sorting.
				2.0-4.0': Gravel. With sand, dark yellow brown (10 YR 3/4) loose, moist, very
				poorly sorted, predominately pea gravel, (approximately 1/8 to 2 inch)
				subangular to subrounded. Sand is coarse to very coarse, some fine and medium
				with silt.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-13

Prepared by Rob Reina and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
10	15	5	5.5-25/0.0-	0-1.0': Slough.
			1.5	1.0-1.5': Sand. Grey brown (10 YR 5/2), gravely, medium to coarse, some
				fine, loose, moist, poor sorting, gravel approximately 1/8 to ½ inch, subrounded to
				subangular.
				1.5-2.0': Gravel and sand. Brown (10 YR 5/3), sand, coarse to very coarse, some
				medium, loose, moist, poor sorting, gravel approximately 1/8 to 3/4 inch,
				subrounded to subangular.
				2.0-3.5': Sand. With gravel, pale brown (10 YR 6/3), loose, moist, medium with
				coarse to fine gravels approximately 1/8 to 2 inches, subangular to subrounded.
				3.5-5.0': Sand. Light grayish brown (10 YR 6/2), medium, some fine and coarse,
				loose, dry, some silt; poorly sorted, gravels (1/8 to 1 inch) rounded to angular.
15	20	5	2.5-17/0-	0-1.5': Slough.
			3.1	1.5-2.0': Sand. As above.
				2.0-2.5': Gravel. Light brown grey (10 YR 6/2), sandy, loose, dry, poorly sorted, fine
				sand, some silt, gravel (approximately 1/8 to 1½ inch) subrounded to subangular.
				2.5-4.5': Silt. Brown (2.5 YR 5/3) with clay inclusions, stiff to hard, slightly moist,
				clay is effervescent. Clay reddish brown (2.5 YR 5/4) not plastic, fissile.
				4.5-4.75': Sand. Brown (7.5 YR 5/4) (tip of section), medium, some fines and
				coarse, slightly moist, fairly well sorted.
20	25	5	2-5/0-0.8	0-1.5': Sand. Light brown (7.5 YR 6/4) with gravel, coarse, some medium, loose,
				slightly moist, poor sorting.
				1.5-2.0': Sand. Pink (7.5 YR 7/3), medium, some fine, loose, dry, well sorted.
				2.0-5.0': Sand. Light brown (7.5 YR 6/3) coarse, some medium and fine, some
				gravel approximately 2 to 3 feet (1/8 to 1½ inch diameter),
				subround to subangular, loose, moist, fairly well sorted, trace gravel at 4.75 to 5
				feet, ¼ to ½ inch diameter, subrounded.
25	30	3	2.5-30/0-2.6	0-3.0': Sand. Brown (7.5 YR 4/4) coarse, some medium, trace gravel, loose, moist,
				fairly well sorted, gravel approximately 1/8 to 1 inch diameter, subrounded to
				subangular.
30	35	4	2-8/0.0	0-2.0': Sand. Brown (7.5 YR 4/3) medium, some coarse, loose, wet, fairly well

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-13

Prepared by Rob Reina and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				sorted, trace of gravel, approximately 1/8 to 1 inch diameter, subrounded to
				subangular.
				2.0-3.0': Sand. Brown (7.5 YR 5/4) medium, some coarse and fine,loose, slightly
				moist, well sorted.
				3.0-4.0': Sand. Light brown (7.5 YR 6/4) very fine to fine, with silt, loose, dry,
				well sorted, trace gravel (approximately 1/8 to ½ inch) subrounded, clasts of
				cemented sand.
35	40	4.5	1.5-35/0-2.2	0-1.5': Sand. Brown (7.5 YR 5/3) coarse to very coarse, some fine, trace gravel,
				loose, wet, poor sorting, gravels approximately 1/8 to 1½ inch diameter,
				subangular to subrounded.
				1.5-2.0': Sand. Dark brown (7.5 YR 3/4), medium to coarse, trace very coarse,
				loose, wet, fairly well sorted, gravel pea 1 inch, subrounded.
				2.0-4.5': Sand. Brown (7.5 YR 4/4), coarse, some sand, loose, wet, well sorted.
40	45	5	6-50/0.0-2.2	0-4.5': Sand. Light brown (7.5 YR 6/4), medium, some fine and silt , dry, loose,
				well sorted.
				4.5-4.75': Sand. Pinkish grey (7.5 YR 7/2) silty, some very fine, loose, dry,
				trace gravel approximately ½ inch diameter, subrounded.
				4.75-5.0': Sand. Strong brown (7.5 YR 4/6), with silt, medium, some fines,
				loose, moist, well sorted.
45	50	4	1.75-13/0-	0-4.0': Sand. Brown (7.5 YR 5/4), medium to coarse, trace gravel, loose,
			0.9	saturated, fairly well sorted, gravel approximately 1/8 to 3/4 inch, subrounded.
50	55	5	2.5-45/0.6-	0-1.0': Sand and Gravel. Strong brown (7.5 YR 4/6) loose, saturated, poorly
			1.6	sorted, some medium and coarse sand.
				1.0-2.5': Sand. Brown (7.5 YR 5/4), trace gravel, sand coarse to very coarse,
				gavel, pea sized to 1 inch, subrounded to angular.
				2.5-5.0': Silt. Strong brown (7.5 YR 4/6), with clay inclusions, silt, soft, moist
				clay inclusions, medium stiff to stiff, reddish brown (2.5 YR 4/4), strong
				effervescent, fissile, slightly moist, moderate plasticity.
55	60	5	1.5-2.5/0.2-	Silt. Brown (7.5 YR 4/4), with clay inclusions, medium dense, silt, wet, trace
			3.6	very fine sand, clay inclusions, medium stiff, slightly moist, red brown (2.5 YR 4/4),
				fissile, strong effervescent.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-13

Prepared by Rob Reina and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
60	65	4.5	1.5-3/0.2-	Silt. As above.
			1.8	
65	70	5	1.5-2.5/0.0	Silt. As above.
70	75	5	2-3/0.0	Silt. As above.
75	80	5	1-1.75/0.0	Silt. As above.
80	85	5	1-2.5/0.0	Silt. As above.
85	95	5	4-1/0.0	Silt. As above.
95	100	5	<1-1.25/0.0	Silt. As above.
100	105	5	1-2.5/0.0	Silt. As above.
105	110	5	<1/0.0	Silt. As above.
110	115	5	<1-10/0.0	Silt. As above.
115	120	5	<1-600/0.0	0-3.0': Silt. As above.
				3.0-5.0': Sand. Reddish brown (5 YR 5/1), very fine to fine, with silt, moderate
				dense, wet, well sorted
120	125	5	1,500-	0-5.0': Sand. Reddish brown (5 YR 5/1), very fine to fine, with silt, , medium,
			>10,000/0-	dense, loose wet, well sorted. Silt lense approximately 2 inch thick,
			0.3	brown (7.5 YR 4/3), medium stiff,124.5 to 125 feet.
125	130	5	700-5,500/	Sand. Reddish brown (5 YR 4/3), silty with very fine sand, medium dense,
			0.0	saturated, well sorted, sandy silt at 129.5 to 130 feet.
130	135	5	>10,000/	0-1.0': Silt. Reddish brown (5 YR 4/3), sandy, with very fine sand, medium
			0.0	dense, saturated, sand very fine.
				1.0-2.0': Sand. Reddish brown (5 YR 4/3), silty, very fine sand with fine, medium
				dense, well sorted, saturated.
				2.0-3.0': Silt. Brown (7.5 YR 4/2), sandy, medium dense, saturated.
				3.0-5.0': Sand. Silty very fine to fine sand, medium dense, saturated.
				EOB 135 ft

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-14 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/22/98 Drilling Completed 8/23/98

Total Depth Drilled 165 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1115.67 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Rob Reina Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	5	2.5-12/0.0	0-1.5': Silt. Dark brown (7.5 YR 3/4) with trace very fine sand, soft to loose,
				rootlets, dry.
				1.5-2.5': Sand. Strong brown (7.5 YR 5/9) very fine, trace silt, loose, with gravel,
				subrounded to angular approximate pea size, 1½ inch diameter, dry.
				2.5-3.5': Sand/Gravel. Strong brown (7.5 YR 5/6), medium, trace coarse,
				loose, dry, poor sorting, gravels subrounded approximate pea sized 2½ inch.
				3.5-4.5': Sand. Strong brown (7.5 YR 5/6) medium to coarse, trace fine, loose,
				slightly moist, gravels approximate pea-sized 1¼ inch, subrounded to angular,
				poorly sorted.
				4.5-5.0': Sand. Yellow brown (10 YR 5/4) medium to coarse, trace fine, loose,
				dry, poorly sorted, trace gravels approximate 1/8 to 1½ inch diameter,
				subrounded to subangular.
5	10	5	2-15/0.0	0-1.0': Slough.
				1.0-5.0': Sand. Strong brown (7.5 YR 5/6) with gravel, coarse, trace fine, loose,
				slightly moist to moist, moderate sorting, gravels approximate 1/8 to 2 inch,
				subrounded to subangular.
10	15	5	3.5-5/0.0	0-1.5': Slough.
				1.5-3.0': Gravel. Dark brown (7.5 YR 3/3), with some medium to coarse sand,
				loose, moist, very poorly sorted, gravel approximate pea-sized 2½ inch, subrounded.
15	20	5	2-4/0.0	0-1.0': Sand. With gravel dark brown (7.5 YR 3/4) some coarse, trace medium to fine,
				loose, wet, poorly sorted, gravels, pea sized to 2 inch, subrounded to subangular.
				1.0-3.0': Sand. Brown (7.5 YR 4/4) with some gravel, medium to coarse, trace fine,
				loose, dry, moderate to poor sorting, gravels approximately 1/8 to 3 inch,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-14

Prepared by Rob Reina

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				subrounded to subangular.
				3.0-4.0': Sand. Strong brown (7.5 YR 4/6) gravely, coarse, some medium, loose,
				moist, very poorly sorted, gravel approximate 1/8 to 2 inch, subrounded, minor
				subangular.
				4.0-5.0': Sand. Yellow red (5 YR 5/6) fine with silt, loose, slightly moist, well
				sorted.
20	25	5	2-6/0.0	0-4.0': Sand. As above.
				4.0-5.0': Sand. Reddish brown (5 YR 5/4) very fine, with silt, medium dense,
				slightly moist, well sorted.
25	30	5	3.5-20/0.0	0-1.0': Sand. Reddish brown (5 YR 5/4) very fine, with fine sand, trace gravel,
				soft, wet, well sorted, gravel 1/8 to ½ inch, subrounded.
				1.0-5.0': Sand. Reddish brown (5 YR 4/4) silty, very fine, medium dense, slightly
				moist, well sorted.
30	35	5	3.5-9/0.0	0-3.0': Sand. Light reddish brown (5 YR 6/4), silty, very fine medium
				dense, slightly moist, clay layer, 1 inch thick at top. Clay is red (2.5 YR 4/6),
				strong effervescent, fissile.
				3.0-4.0': Sand. Light reddish brown (5 YR 6/5) silty, very fine to fine loose, dry,
				well sorted.
				4.0-5.0': Silt. Yellow red (5 YR 5/6) sandy, with very fine sand, medium dense,
				dry.
35	40	5	3-7.5/0.0	0-1.5': Sand. Reddish brown (5 YR 5/4) very fine, with silt, medium dense
				wet, well sorted.
				1.5-4.0': Sand. Yellow red (5 YR 5/6) silty, abundant silt, loose to medium dense,
				slightly moist, well sorted.
				4.0-5.0': Sand. Very fine with silt, light reddish brown (5 YR 6/4) loose, slightly
				moist, well sorted.
40	45	5	8-30/0.0	Interbedded (approximately 0.5 feet thick) sands and silt, (2x), silt, with
				very fine sand, reddish brown (5 YR 4/4) medium dense, slightly moist.
				(3x) very fine sand, with silt, reddish brown (5 YR 5/4), loose, slightly moist, well
				sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-14 Page 3 of 4

Prepared by Rob Reina

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
45	50	5	2-30/0-0.1	0-5.0': Sand. Reddish brown (5 YR 5/4) silty, very fine trace fine, loose, slightly
				moist, well sorted, sandy silt lenses approximately 2 inch thick at thick at 3 feet,
				moderately dense, slightly moist.
50	55	5	6-80/0-2.1	0-5.0': Sand. As above, very fine, with silt.
55	60	5	3-17/0.0	0-5.0': Sand. Reddish brown (5 YR 4/4) very fine, with silt, loose to medium,
				dense, wet to moist, well sorted.
60	65	5	5-15/0.0	0-5.0': Sand. As above, very fine.
65	70	5	4-6/0.0	0-5.0': Sand. Reddish brown (5 YR 4/4) very fine, with silt, trace fine, loose,
				moderately dense, moist to wet, lenses of silt approximately 0.5 feet thick, well sorted.
70	75	5	3-7/0.0	0-5.0': Sand. As above, very fine, trace fine, 0.5 lense of silt at 2.5.
75	80	5	2-6/0.0	Sand. Reddish brown (5 YR 4/4) very fine, silty, (5 YR 4/4), medium dense, moist to
				wet, well sorted.
80	85	5	3.5-8/0	Sand. As above, very fine.
85	90	5	3-3.5/0.0	0-1.0': Sand. As above, very fine, with silt.
				1.0-5.0': Silt. Brown (7.5 YR 4/2) with very fine sand, trace clay inclusions, medium
				dense, wet to saturated. Clay reddish brown (5 YR 4/3) stiff, moist, platy, not plastic.
90	95	5	3-5.5/0.0	0-5.0': Silt. As above, trace fine sand.
95	100	5	5-5.5/0.0	Silt. As above.
100	105	5	5-10/0.0	Silt. As above.
105	110	5	5-125/0.0	Silt. As above.
110	115	5	15-125/0.0	Silt. As above.
115	120	5	20-125/0.0	Silt. As above.
120	125	5	100-300/0	Silt. As above.
125	130	5	125-1,250/	0-5.0': Silt. Brown (7.5 YR 4/3), with clay inclusions, medium dense, wet, clay
			0-0.7	inclusions, reddish brown (5 YR 4/3) medium, stiff, moist, strong effervescent.
130	135	5	200-	0-5.0': Silt. As above.
			>10,000/0-	
			1.8	
135	140	5	2,000-	0-4.0': Sand. Reddish brown (5 YR 4/3) very fine with silt, trace fine, loose,
			>10,000/0-	moist, well sorted.
			2.9	4.0-5.0': Silt. Brown (7.5 YR 4/3), with very fine sand, medium dense, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-14

Prepared by Rob Reina

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
140	145	5	1,750-	0-2.5': Silt. Brown (7.5YR 4/3), medium dense, wet.
			>10,000/0-	2.5-5.0': Sand. Reddish brown (5 YR 4/3), very fine with silt, loose, moist, well
			5.9	sorted.
145	150	5	700-4,000/	0-5.0': Sand. Brown (7.5 YR 4/3) silty, loose, saturated, well sorted.
			0.3-0.9	
150	155	5	1,000/	0-5.0': Sand. Brown (7.5 YR 4/3), very fine with silt, loose, saturated, well
			9,000/0.0	sorted.
155	160	5	500-7,000/	0-5.0': Sand. Brown (7.5 YR 4/3) very fine, with silt, loose, saturated, well sorted.
			0.2-1.5	
160	165	5	2,000-	0-1.0': Sand. As above, very fine.
			10,000/0.2-	1.0-5.0': Silt. Brown (7.5 YR 4/3), sandy, with very fine sand, medium dense,
			1.9	saturated, change in color to a grayish brown (10 YR 5/2) as silt oxidizes.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-15 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 9/1/98 Drilling Completed 9/1/98

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1121.45 feet [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Ted Powell Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	3.5-17.5/	0-.5': Loam. Brown (7.5 YR 4/3) silt, topsoil, roots, dry, loose.
			5.4-10.1	.5-1.0': Sand. Strong brown (7.5 YR 5/8) very fine with silt, trace coarse and
				very coarse, trace pea gravel, loose, dry, moderately sorted.
				1.0-1.5': Sand. Strong brown (7.5 YR 5/6) fine with medium, trace coarse and
				very coarse, moderately sorted, loose, dry.
				1.5-4.0': Sand. Brown (7.5 YR 5/4) medium with coarse, some very coarse and
				fine, moist, trace 1/8 to 1 inch, gravel, subrounded to angular, poorly sorted, loose.
5	10	4	3.5-5.5/	0-1.0': Slough.
			3.9-7.6	1.0-1.5': Sand. As above.
				1.5-4.0': Sand. Brown (7.5 YR 5/3) coarse with very coarse, some medium and fine,
				trace gravel 1/8 to 1.5 inch subrounded to subangular, loose, moist, poorly sorted.
10	15	4	4-8.6/3.5-7.3	0-1.5': Slough.
				1.5-2.0': Sand. As above.
				2.0-2.5': Sand. Brown (7.5 YR 5/3) fine to medium, some coarse and very fine,
				trace very coarse, trace 1/8 to ½ inch gravel, moderately to poorly sorted, loose,
				very moist.
				2.5-2.75': Sand. Brown (7.5 YR 4/3) very coarse, some coarse, medium and
				fine, some 1/8 to ½ inch gravel, subrounded, very moist to wet, loose, poorly sorted.
				2.75-3.25': Sand. Brown (7.5 YR 5/2) medium, some coarse, trace fine and very
				coarse, trace silt, trace pea gravel, very moist, poorly sorted, loose.
				3.25-4.0': Sand. Brown (7.5 YR 5/4) fine, some very fine, trace silt, medium and

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-15

Page 2 of 6

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				coarse, moderately sorted, loose to medium density, very moist, run casing at 20 feet.
15	20	4	3-22.5/	0-.75': Slough.
			5.2-35.6	.75-1.25': Sand. As above, but trace gravel, 1/8 to 1 inch subrounded, moderately
				sorted, loose, moist.
				1.25-2.5': Sand and Gravel. Brown (7.5 YR 4/3) very coarse, some coarse,
				moderately well sorted. Gravel: ¼ to 2.5 inch, subrounded to subangular, very moist,
				loose.
				2.5-3.0': Sand. Brown (7.5 YR 4/4) fine, some very fine with gravel, 1/8 to 3/4
				inch, subround, poorly sorted, loose, moist.
				3.0-4.0': Sand and Gravel. Dark yellow brown (10 YR 3/4) medium with fine
				and coarse, some very fine, trace silt, loose, very poorly sorted, slightly moist.
				Gravel 1/8 to 3 inch subround to subangular.
25	30	3	--	Slough.
30	35	3.5	2-25/5.9-6.7	0-1.0': Sand. Strong brown (7.5 YR 4/3) very fine to fine, some medium, trace coarse,
				very coarse and silt, poorly sorted, loose to medium density, slightly moist to
				very moist.
				1.0-3.5': Sand. Brown (7.5 YR 5/3) fine, some very fine, trace silt, loose to
				medium density, moderately well sorted, trace gravel ¼ to 1.5 inch, subrounded
				to subangular, very slightly moist.
35	40	3.5	1.5-3.75/	Sand. Brown (7.5 YR 4/4) fine, some very fine, trace medium, coarse and silt,
			2.5-3.4	very moist to wet, medium dense, trace gravel 1/8 to ½ inch, subround, moderately
				sorted.
40	45	4	1.5-2.5/	0-1.0': Sand. As above, but gravel up to 3 inch from .5 to 1 foot.
			2.9-3.2	1.0-4.0': Sand. Strong brown (7.5 YR 4/6), fine with very fine, very silty,
				some medium, trace coarse and very coarse, trace to 10 percent gravel, 1/8 to 1 inch
				subrounded to subangular, poorly sorted, wet to saturated.
45	50	5	1.25-2/3.5-	0-0.5': Sand. Strong brown (7.5 YR 4/6) silty with gravel,with very fine sand,
			4.7	trace medium gravel 1/8 to 2 inch, subangular to subrounded, loose, poorly
				sorted, wet.
				0.5-1.5': Sand. Strong brown (7.5 YR 4/6), fine with very fine, very silty, some

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-15

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				medium, trace coarse and very coarse, trace gravel. Gravel: pea-sized to 1½ inch,
				subangular to subrounded, poorly sorted, wet.
				1.5-2.0': Sand. Brown (7.5 YR 4/4) coarse, some fine to medium, moderately
				sorted, loose, saturated.
				2.0-4.5': Silt. Reddish brown (5 YR 4/4) some clay, medium stiffness (2.25), moderately
				plastic, moist, trace gravel (approximately ¼ to ½ inch).
				4.5-5.0': Sand. Strong brown (7.5 YR 4/6) fine and very fine, very silty,
				trace coarse and very coarse. Gravel: approximately ½ to 3/4 inch, subangular
				to subrounded.
50	55	5	1.5-2.5/	0-2.0': Sand. Reddish brown (5 YR 5/4) very silty, interspersed with silt lenses, silt
			3.5-4.6	as above, gravel approximately 3inches, subrounded, moist, moderately sorted, wet.
				2.0-3.5': Silt. As above, moderately plastic, moderately stiff to stiff (2.5).
				3.5-5.0': Sand. Reddish brown (5 YR 4/3), very silty, as above, with gravel
				approximately 1/8 inch, subangular to subrounded, increased silt content towards
				base to a very sandy silt.
55	60	5	1.25-3/4.1-5.4	Silt. Red brown (5 YR 4/3) very sandy, transitional in part to very silty sand, sand
				fine with medium, some coarse, trace very coarse, trace pea gravel, very
				poorly sorted, saturated, soft to medium stiffness (1.5), clayey in part.
60	65	5	1.25-3.75/	0-1.0': Silt. Very sandy, as above.
			4/1-5.6	1.0-3.0': Silt. Red brown (5 YR 4/4) variable sand, to very sandy. Sand: fine
				to medium, some coarse, trace very coarse, trace 1/8 to ¼ inch gravel, wet to
				very moist, very stiff (3.75).
				3.0-4.5': Silt. Very sandy, as above.
				4.5-5.0': Sand. Dark brown (7.5 YR 3/4) fine, some medium and very fine
				trace silt, saturated, medium density, trace coarse, moderately sorted.
65	70	5	1.25-1.5/	Sand. Brown (7.5 YR 4/3) very fine to fine, with silt, trace medium and gravel
			5.1-3.6	¼ to 2.5 inches, subrounded to subangular, moderately dense to dense, saturated,
				moderately sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-15 Page 4 of 6

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
70	75	5	1.25-2.25/	0-2.5': Sand. Very fine to fine, silty, trace medium (variable), dense, moderately
			3.3-3.8	sorted, saturated.
				2.5-3.0': Sand. Red brown (5 YR 5/4) fine with very fine, trace silt, moderately
				well sorted, medium density, wet to saturated.
				3.0-5.0': Sand. Brown (7.5 YR 4/3) silty. Silt variable throughout section. Sand
				predominately fine with some, medium grain lenses approximately 1 to 2 inch
				thick interspersed throughout, moderately sorted, dense.
75	80	5	3.5-4/	0-2.75': Sand. Brown (7.5 YR 4/3) fine with very fine, variable silt, trace
				medium to coarse, moderately sorted, dense.
				2.75-4.0': Sand. Dark brown (7.5 YR 3/3) fine with medium, some coarse and
				very fine, trace silt and very coarse, trace gravel (10 percent) 1/8 to ½ inch, subrounded
				to subangular, medium density, wet, moderately to poorly sorted.
				4.0-4.5': Silt. Red brown (5 YR 4/4) very sandy, fine to medium grain, some
				coarse and very coarse, very stiff (3.5), very moist, very poorly sorted, trace
				gravel ¼ to 2.5 inch.
				4.5-5.0': Sand. Red brown (5 YR 4/3), fine to medium, very silty, some coarse, trace
				very coarse, trace clay, some gravel ¼ to 1 inch, subrounded to subangular, very
				poorly sorted, saturated, moderate density.
80	85	5	3.5-5/	0-4.0': Sand. Very silty, some gravel, sand as above.
				4.0-4.5': Sand. Red brown (5 YR 5/3) fine, some medium and very fine, trace
				silt, moderately well sorted, medium density, trace gravel 1 to 3 inch at basal
				contact with lower unit, wet.
				4.5-5.0': Sand. Red brown (5 YR 4/4) very fine, silty, dense, moderately well sorted,
				very moist to wet.
85	95	5	2.5-3	0-1.5': Sand. Brown (7.5 YR 4/4) to dark yellow brown (10 YR 4/6), fine to
				medium, some coarse and silt, trace very coarse, trace 1/8 to ½ inch gravel,
				subrounded to subangular, very poorly sorted, dense, saturated.
				1.5-3.5': Sand. Brown (7.5 YR 4/3) very fine to fine, silty, trace medium and
				coarse, trace pea gravel, very poorly sorted, dense.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-15 Page 5 of 6

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-3.75': Sand. Color as above, medium with fine, some very fine, trace coarse and
				very coarse, poorly sorted, medium density, saturated, trace gravel 1/8 to ½ inch,
				subrounded.
				3.75-5.0': Silt. Red brown (5 YR 4/3), very stiff to hard on top 6 inches, trace
				coarse sand, at 4.25 feet a 3 inch sand and gravel lense, sand medium to coarse
				with fine, some very fine and very coarse, trace silt, very poorly sorted, gravel
				½ to 1 inch, subround, at 4.5 to 5 feet sandy silt, soft (.5) sand fine to medium
				some coarse, trace pea gravel.
95	100	5	3.5-4.5/	0-2.0': Silt. Red brown (5 YR 4/3) with alternating sequence of very fine to fine
			0-5.9	silty sand that is gradational to very fine sandy silt. Silt is soft (1.0), trace clay, variable
				sand, silty sand/sandy silt is saturated, sand fine to very fine, some medium.
				2.0-5.0': Silt. Color as above, trace to some clay, fairly homogeneous, moderately
				plastic, medium stiffness (2.0), wet.
100	105	5	3.5-4.5/0	Silt. Color as above, trace clay, inclusions/lenses, red (2.5 YR 5/6), moderately
				effervescent, plastic. In bottom 2 feet several very thin (<1 mm) sand seams,
				(very fine to fine trace medium), silt parts along sand seams.
105	110	5	3.5-20/0	0-1.0': Sand. Grey brown (10 YR 4/2) fine with very fine, some silt, moderately
				well sorted, dense, wet, several small (1 inch) lenses of silt interspersed, red
				brown (5 YR 5/3), medium stiffness (1.75), trace clay, and very fine sand.
				1.0-2.0': Silt. Red brown (5 YR 5/3) trace to some clay, moderately plastic where
				clay content increases, medium stiffness.
				2.0-5.0': Clay. Red brown (5 YR 4/2) to red brown (2.5 YR 4/4) silty, sandy, with gravel
				(till), matrix supported, very stiff to hard (3.5->4) moderately plastic where clayey.
				Sand ranges from fine to very coarse, gravel 1/8 to 4 inches, subrounded to
				angular, very moist to wet, slightly effervescent.
110	115	5	18-90/0	Till. Red brown (2.5 YR 4/3) silty, sandy clay matrix, till as above slightly moist, hard.
115	120	5	15-25/0	Till. Red brown (2.5 YR 4/4) as above, cored through large slate gravel from
				2.5 to 3 feet.
120	125	5	4-20/0	Till. Color as above, silty, sandy, clay matrix, matrix supported, composition

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-15

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				variable throughout. From 2 to 5 feet, gravely till, gravel ¼ to 5 inches, predominately
				slate, moderately weathered, subangular to subrounded, very hard, moist.
125	130	5	13-80/	0-2.5': Till. Red brown (2.5 YR 4/3) silty clay matrix, with fine to very coarse sand
				(variable), moderately plastic where clayey, wet, abundant weathered slate and slate
				gravel ¼ to 2.5 inch, subrounded, moderately stiff matrix.
				2.5-5.0': Till. Dusky red (2.5 YR 3/2) silty clay matrix, with fine to coarse
				sand, some gravel ¼ to 3 inch subround, phylitic slate, subrounded to angular,
				matrix is moderately stiff (2.0), moderately plastic.
130	134	4	22-420/	0-1.0': Till. As above, strongly iron stained.
				1.0-4.0': Weathered bedrock. Strongly iron stained, dusky red as above to
				dark reddish purple (no Munsel color match) heavily pulverized due to drilling, slightly
				moist to dry. Abundant slate and iron formation, several quartz cobbles in bit.
135	135	1	80-200/	Gravel. Crushed and broken bedrock. Slate, subvertical cleavage on cobbles.
				Slate is dark brownish grey (5 GY 4/1) hardness (2.5), calcite fracture filling along
				cleavage faces.
				TD at 135 feet bgs.
				Abandon boring with bentonite/cement grout.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-16 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 9/12/98 Drilling Completed 9/12/98

Total Depth Drilled 72 Feet Hole Diameter 8¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1127.57 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Tony

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	7"/	2,3,3,3	0-1.0": Top Soil. Grayish brown (10 YR 5/2) dry, crumbly silty sand, loam
		≤3.5		abundant rootlets, no HCl reaction.
				1.0-7.0": Sand. Light yellowish brown (2.5 YR 6/3) silty, loose, poorly sorted
				coarser to fine sand and some subangular to subrounded, variable composition
				gravel, dry and loose, no HCl reaction.
2	4	12"/	4,4,4,4	0-3.0": Sand. Silty, as above, with trace pebble gravel.
		5		3.0-12.0": Sand. Reddish yellow (7.5 YR 6/6)Coarse to medium with gravel,
				dry to slightly moist, loose, gravel mainly granular with some pebble up to
				spoon diameter, variable composition. No HCl reaction.
4	6	0	2,1,1,1	No recovery.
6	8	6"/	3,6,6,6	0-6.0": Sand. Silty, as 0 to 3 inch, slough.
		4		
8	10	11"/	6,4,4,4	0-6.0": Sand. Strong brown (7.5 YR 4/6) very coarse and fine gravel, moist,
		4.5		loose, poorly sorted, trace to some fine sand at top 2 inch of sample. No HCl
				reaction, grain variable composition, up to 1.5 cm diameter subangular, well
				rounded.
				6.0-11.0": Sand. Reddish yellow (7.5 YR 6/6) coarse to medium, moist, loose to
				slightly dense, well sorted, trace grain gravel, no HCl reaction.
10	12	9"/	8,5,6,3	0-1.0": Sand. As above, coarse to medium, moist, grading into.
		4		1.0-8.0": Sand and Gravel. Brown (7.5 YR 4/4) very coarse, moist, loose, gravel,
				subangular to subrounded, up to 1.5 cm in diameter, variable composition, sand
				very coarse, some to much coarse, some medium, trace fine.
				8.0-9.0": Sand. As 0 to 1 inch, coarse to medium, slightly moist, trace pebble
				and granular gravel.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-16

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
12	14	9.5"/	6,5,4,4	0-9.5": Sand. As above, very coarse and gravel, slightly moist, pebble, gravel
		5		more abundant, approximately 15 percent.
14	16	11"/	5,4,4,2	0-11.0": Sand. As above, very coarse and gravel, moist.
		4		
16	18	9"/	4,3,3,4	0-9.0": Gravel. Brown (7.5 YR 5/6) with some to much sand, gravel variable
		5		composition, predominately granular, some pebble, up to > spoon in diameter,
				moist, slightly dense.
18	20	10½"/	9,12,6,3	0-6.0": Gravel and Sand. As above, slightly moist.
		6		6-10½": Sand. Very pale brown (10 YR 8/2) medium, loose, slightly moist,
				trace coarse sand. No HCl reaction.
20	22	7.5"/	10,16,10,4	0-7.5": Sand. As above, medium, slightly moist, some coarse sand and granular
		5.5		gravel in lowest 4 inch.
22	24	13"/	4,4,7,9	0-4.0": Sand. Brown (7.5 YR 5/4) coarse to medium, some very fine sand, loose,
		4.5		dry. No HCl reaction.
				4.0-13.0": Sand and Gravel. Brown (7.5 YR 5/4) very coarse, dry, loose, trace to
				some pebble, gravel predominantly granular gravel, variable composition,
				subangular to subrounded, up to 2 cm diameter, sand poorly sorted very coarse,
				lesser amounts coarse and medium sand, some coarse, some medium.
				No HCl reaction.
24	26	12½"/	7,5,7,7	0-3.0": Sand and Gravel. As above, very coarse, moist.
		5.5		3.0-12½": Sand. Yellowish red (5 YR 4/6), fine, trace silt, trace coarse sand,
				moist, slightly dense, no HCl reaction, lense of medium sand at 6 to 6½ inch.
26	28	16½"/	5,7,9,9	0-16½": Sand. As above, fine, slightly moist.
		4.5		
28	30	12"/	6,7,10,9	0-12.0": Sand. As above, fine, slightly moist.
		4.5		
30	32	5"	16,17,11,10	0-5.0": Sand and Gravel. Slough.
32	34	12"/	6,8,8,11	0-5½": Sand. Reddish yellow (7.5 YR 6/6) fine, some medium sand, trace
		4.5		coarse sand, pebble > spoon diameter at 1 to 2½ inch.
				5½-8.0": Sand. Very pale brown (10 YR 7/4) medium, well sorted, dry, loose.
				8.0-12.0": Sand. As above with some to much pebble and granule gravel,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-16

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				variable composition subangular to subrounded.
34	36	19"/	8,7,7,9	0-3½": Sand. Yellowish red (5 YR 5/6) fine, trace to some silt, trace medium
		4		and coarse sand, dry, slightly cohesive, no HCl reaction.
				3½-6½": Sand. Very pale brown (10 YR 7/4) medium, well sorted, loose, some
				to much coarse sand at base.
				6½-19": Sand. Fine as 0-3½ inch but with trace silt and some medium and
				coarse sand, no HCl reaction, slightly moist.
36	38	16"/	6,8,9,11	0-3.0": Sand. As above, medium, slough.
		3.5		3.0-16.0": Sand. Fine as in overlying sample. Some medium and coarse sand,
				slightly moist.
38	40	4"/	50/6	0-4.0": Sand. As above, fine, moist.
		4		
40	42	16"/	9,4,5,9	0-16": Sand. As above, fine, moist, trace individual well rounded gravel up to
		5		greater than spoon diameter.
42	44	19"/	5,7,7,9	0-19.0": Sand. As above, fine with trace to some granular gravel. Moist, no
		3		HCl reaction.
44	46	18"/	4,5,8,8	0-11½": Sand. As above, fine, moist.
		4.5		11½-18": Sand. Reddish yellow (7.5 YR 6/6) medium with some to much
				coarse sand. dry, loose, trace granular gravel. No HCl reaction.
				9:15 stop drilling. 9:30 resume drilling.
46	48	18"/	5,6,8,10	0-18.0": Sand. Strong brown (7.5 YR 5/6) fine, trace medium sand, trace
		3.5		coarse sand and granular gravel, some to much very fine sand, slightly moist,
				slightly dense, no HCl reaction.
48	50	15"/	10,7,11,13	0-3.0": Sand. As above, fine.
		3.5		3.0-4.0": Sand. Very pale brown (10 YR 7/4) fine to medium, dry, loose very
				well sorted.
				4.0-7.0": Sand. Pale brown (10 YR 1/3) medium, trace coarse sand, dry, loose.
				7.0-15.0": Sand. Fine to medium, as 3 to 4 inches. Slightly moist, trace grain
				gravel.
50	52	16½"/	6,10,10,13	0-16½": Sand. Fine to medium, as above becoming medium sand from 6 inches
		5.5		to base of sample, some to much coarse sand, trace very coarse sand/granular

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-16

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				gravel, slightly moist, loose.
52	54	13"/	9,9,8,8	0-6.0": Sand. As above, fine to medium, with coarse pebble gravel (greater
		3.5		than spoon diameter) at base. Lowest 2 inch dry to slightly moist, slough.
				6.0-13.0": Sand. Strong brown (7.5 YR 4/6) fine, some medium and coarse
				sand, trace to some silt, very moist to saturated, HP = 1.0, no HCl reaction.
54	56	24"/	6,1,1,1	0-24.0": Sand. As above, fine, saturated (slough?) HP ≤ 0.5.
		3.5		
56	58	24"/	2,2,2,5	0-24.0": Sand. As above, fine, saturated.
		3		
58	60	24"/	2,2,2,5	0-24.0": Sand. As above, fine, saturated.
		3		
60	62	24"/	5,5,5,8	0-24": Sand. As above, fine, saturated. HP = 0.5.
		≤2.5		
62	64	24"/	3,9,10,12	0-24": Sand. As above, fine, saturated. HP = 0.5. Driller reports 1 to 1.5 feet
		4.5		of blow in. Hole flushed.
64	66	13"/	8,8,11,16	0-13.0": Sand. As above, fine, saturated, with very coarse sand/granular
		10		gravel lenses at 0-½, 2½ to 3, 4½ to 5 inch. Slightly HCl reaction, HP = 0.5,
				hole flushed.
66	68	14"/	9,15,16,13	0-6.0": Gravel. Saturated, well sorted, slough.
		10		6.0-14.0": Sand. As above, fine. Saturated.
				11:04 stop drilling, 11:16 resume.
68	72	--	--	Blind drill 68 to 72 hole flushed, unable to take sample at 72 feet.
				EOH = 72 feet bgs.
				Hole abandoned.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-17 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 9

Site Location Kingsford, Michigan Drilling Started 9/2/98 10:00 Drilling Completed 9/14/98 15:30

Total Depth Drilled _____ Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1102.27 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Ted Powell Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	55		--	Blind drill. See sample core log for GMSB-100.
55	60	5	1,750-	0-5.0': Silt. Red brown (5 YR 5/4) HP 2.75 dense, dry, hard, mildly effervescent,
			>10,000/0-.8	massive, interbedded with clay red brown (2.5 YR 4/4) platy to blocky, dense hard
				(HP 2.75) dry, strongly effervescent and clay brown (7.5 YR 5/3) very plastic,
				variable silt, weakly effervescent. Clay interbeds ranges in thickness from 1 to
				approximately 9 inches and clay brown (7.5 YR 4/3) very thinly bedded to fissile,
				mildly effervescent.
60	65	5	>10,000/	0-1.25': Silt. As above, but with trace sand, light brown (7.5 YR 6/3) occurring in
			0.3-0.9	fractures in silt, very thinly bedded.
				1.25-3.25': Sand. Light brown (7.5 YR 6/3) very fine, silty, trace clay. Silt
				occurring thin beds, approximately 1 inch, with clay bedded within.
				3.25-4.5': Sand. Pink (7.5 YR 7/3) very fine, color grades from the light brown to
				pink between 3.25 - 4.00, silty, dry. Silt bed occurs at 3.75 brown (7.5 YR 5/2)
				1 inch thick laminated dense. HP = 0.75
				4.5-5.0': Sand. Pinkish grey (7.5 YR 6/2) very coarse to very fine, gravely, 2 mm to
				2 inches, subrounded trace silt, weakly effervescent, (some CACO3 cementing
				between grains).
				Collect GM-53/63 for treatability and methanotrophic enumeration.
65	70	2.5	>10,000/-	Sand. Sample collected in acrylic liner. Medium to coarse, some very coarse and
				fine (variable) small gravel 1/8 to 3/4 inch, subrounded. Two cycles along
				core, coarse to very coarse variable medium and fine at top, approximately 1 foot,
				to approximately 1 foot of medium with coarse, some fine and very fine, to .5 feet
				of coarse to very coarse sand, saturated, moderate to poorly sorted, medium
				dense.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
70	75	5	-/-	Collect 5 feet acrylic liner for treatability sample. Appears to be sand, as above.
75	80	3	3.5-3,500/	Sand. Brown (7.5 YR 4/2) medium to coarse, some fine, trace very fine and silt,
			0-.6	moderately sorted, medium dense, trace grave ¼ to ½ inch, subrounded,
				saturated.
80	85	4	1,000-	0-2.0': Sand. Color as above, fine to medium, trace coarse and very coarse and
			>10,000/0-.5	very fine, moderately sorted, medium dense, saturated, trace gravel 1/8 to ½
				inch, subrounded.
				2.0-4.0': Sand. Dark brown (7.5 YR 4/1) coarse and medium, some very coarse,
				trace fine and very fine, some gravel 1/8 to 1 inch subrounded, medium dense,
				moderate sorting.
85	90	5	300-	0-4.0': Sand. Brown (7.5 YR 4/3) medium with coarse, some very coarse and fine,
			>10,000/	trace very fine, some gravel, approximately 20 percent, 1/8 to 2 inches, subrounded
			0-.01	to subangular, 2 inch gravel at basal contact with silt, poorly sorted, medium
				dense.
				4.0-5.0': Silt. Red brown (5 YR 4/4) very moist to wet, trace very fine sand, trace
				clay fairly homogenous, stiff (3.25), clay lenses interbedded throughout. Lense
				¼ to ½ inch thick, red (2.5 YR 4/6) fissile, strongly effervescent, moderate
				plastic, very moist, collect treatability sample GM-53/90.
90	95	5	8,500-	Silt. Red brown (5 YR 4/4) trace very fine sand, abundant gas vesicles, soft to
			>10,000/	medium stiff (1.25 to 2.5) very moist, several thin (1/8 inch) clay seams from
			.1-1.2	0 to .5 feet, clay as above.
95	100	5	1,500-	0-2.5': Silt. As above.
			>10,000/	2.5-4.0': Silt. Red brown (2.5 YR 4/3) with very fine sand, soft (1.0), interbedded
			0-.4	with two cycles of silt, red brown (5 YR 4/3) very homogenous, very stiff (3.5)
				slightly moist to moist, silt layers 3 to 4 inches thick.
				4.0-5.0': Sand. Red brown (2.5 YR 4/3) very fine, very silty, loose to medium
				dense, well sorted.
100	105	5	1,250-	Silt. Colors range from red brown (2.5 YR 4/3) to red brown (5 YR 4/4).
			>10,000/	Abundant gas vesicle from 0 to 1.5 feet, wet, trace to very sandy with very fine
			.4-.7	sand, very sandy from 3 to 4 feet, saturated, soft. Remainder of silt in core is
				very homogenous.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
105	110	4	400-2,000/	0-2.75': Sand. Red brown (5 YR 4/4) very fine, some silt, medium well sorted, dense,
			0-0.3	saturated.
				2.75-3.0': Silt. Dark grey (7.5 YR 4/1), some clay, moderate plastic, medium
				stiff (1.75), wet.
				3.0-4.0': Sand. Red brown (5 YR 4/4), very fine, trace silt, well sorted, medium
				dense.
110	115	4	1,250-4,500/	Sand. Red brown (2.5 YR 4/3) very fine, with silt, moderately well sorted, dense,
			.3-.7	saturated.
115	120	5	40-150/0-.5	0-0.5': Sand. As above, very fine, with silt .
				0.5-2.0': Sand. Red brown (5 YR 4/4) very fine silty, very dense, saturated,
				moderate well sorted. At 1 foot a 2 inch lense of silt, dark red grey (5 YR 4/2)
				with clay, moderate plastic, soft (.75), wet.
				2.0-2.5': Silt. Dark red grey (5 YR 4/2), homogenous, medium stiff (2.5), very
				moist to wet.
				2.5-5.0': Sand. Red brown (5 YR 4/4), very fine silty, grading to very fine, very sandy
				silt in part, very dense, saturated. At 3.5 feet and 4 feet 1 to 2 inch silt
				lenses, silt, as above.
120	125	5	35-60/0-.7	Sand. Red brown (5 YR 4/4) very fine, silt variable, medium dense to very dense,
				very moist, moderately well sorted. At 0.25 inch a ¼ inch clay seam, red brown
				(2.5 YR 4/3) strongly effervescent, platy, plastic. at 0.5 feet or 2 inches silt lense,
				silt, as above.
125	130	4	2-15/.2	Silt. Red brown (5 YR 4/3) very fine, very sandy, sand variable, saturated, soupy,
				very dense, medium well sorted. At 0.5 feet silt, dark red grey (5 YR 4/2) medium
				stiff, homogenous at 2.5 feet a ½ inch clay lessen, platy, red brown (5 YR 4/3)
				strongly effervescent, slightly to moderately plastic, moist.
130	135	4	4-45/.1-.2	Silt. Color range from red brown (5 YR 4/3) to dark red grey (5 YR 4/2) variable
				very fine sand, soft (1.0) soupy to saturated, moderately well sorted.
135	140	5	250-2,500/	0-2.25': Sand. Red brown (2.5 YR 4/3) silty, very fine, well sorted, dense to very
			.3-2.1	dense, saturated.
				2.25-5.0': Sand. Red brown (5 YR 4/3) very fine, some fine, trace silt, moderately
				well sorted, dense.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17 Page 4 of 9

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
140	145	5	250-1,750/	Sand. Color, as above, at top of section, sand as above grading to very fine
			.6-1.6	silty sand at base, well sorted, dense, trace black staining in bottom foot of core.
145	150	5	5-55/.3-1.0	Silt. Red brown (5 YR 4/4) very fine, sandy, saturated, soupy, very sandy in part,
				grading to very silty very fine sand, dense where sandy, soft where silty.
150	155	5	50-85/.8-2.8	Sand. Silty, very fine, color as above, trace fine dense to very dense, moderately
				well sorted.
155	160	5	9-60/0	Sand. As above, silty very fine.
160	165	5	30-55/0	Sand. Red brown (5 YR 4/4) silty, very fine, trace fine sand, moderately well sorted,
				dense, very moist to wet. At 2.3 to 2.8 feet to silt, weak red (2.5 YR 4/2) trace very
				fine sand, medium stiff (2.0) moderately well sorted, slightly moist to moist.
165	170	5	40-850/0	Sand. As above, silty, very fine, saturated.
170	175	5	325-2,000/0	0-4.0': Sand. As above, silty, very fine.
				4.0-4.5': Silt. Red brown (5 YR 4/4) some clay, moderately plastic, soft (.5), wet.
				4.5-5.0': Sand. Color as above, very fine, very silty, dense to very dense, saturated,
				moderately well sorted.
175	180	5	70-325/0	Silt. Red brown (5 YR 4/4), sandy, very fine grained, soft (0.5), very dense where
				very sandy, saturated, soupy.
180	185	5	300-8,000/0	0-0.5': Silt. As above.
				0.5-2.0': Silt. Color as above, variable very fine sand, grades to silty very fine sand
				in part, soft (0.5), trace clay, very moist to wet, moderate sorting.
				2.0-3.2': Sand. Brown (7.5 YR 4/4) fine, some medium and very fine, trace silt,
				moderately dense, moderately well sorted. 8,000 ppm on OVA.
				3.2-5.0': Silt. Red brown (5 YR 4/4) very fine sand, grading to very silty, very fine
				sand in part, dense, wet.
185	190	5	4,000-	0-4.5': Silt. Very fine sand, color as above, trace clay, wet to saturated, abundant
			>10,000/0	gas vesicles, soft (0.5).
				4.5-5.0': Silt. Color as above, variable very fine sand, moderate stiff (2.0),
				blocky, slightly moist.
190	195	4	8,000-	0-0.25': Silt. As above.
			>10,000/0	0.25-4.0': Sand. Dark grey brown (10YR 4/2) medium, some fine, trace very fine

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17

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Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				and coarse, medium dense, saturated, moderate sorting.
195	205	4	2,500-	Poor recovery, sand, dark grey brown (10 YR 4/2) medium with fine, trace coarse
			>10,000/0	and very fine, medium dense, moderate sorting.
205	215	0	--	No return, acrylic liner empty.
215	220	4	275-	Sand. Brown (7.5 YR 4/3), fine with very fine, some medium, trace coarse, medium
			>10,000/0	dense to dense, moderate sorting, saturated.
220	225	4	>10,000/0	0-1.0': Sand. As above.
				1.0-4.0': Sand. Red grey (5 YR 5/2), fine with very fine, trace silt, very dense, wet,
				moderate well sorted, coarsens slightly toward bottom to fine with very fine, trace
				medium and silt.
225	235	3	2,500-	Sand. Very poor recovery, color as above, fine to medium and very fine, trace
			>10,000/0	silt, moderate sorting, dense to very dense, saturated.
235	240	4	5,000-	0-2.0': Sand. Brown (7.5 YR 4/3) fine, some very fine, moderately well sorted, dense,
			>10,000/0	saturated.
				2.0-4.0': Sand. Dark brown (7.5 YR 3/4) very fine, silty, moderately sorted, very
				dense to dense, abundant gas vesicles. At 3 feet an 1/8 inch sand seam
				brown (7.5 YR 4/3) medium some fine, trace pea gravel, subronded.
240	245	4	5,000-	Sand. Dark brown (7.5 YR 3/4) very fine, silty, gas vesicles as above,
			>10,000/0	medium dense, wet, moderately well sorted.
245	250	5	3,500-	Sand. Color as above, very fine to fine, variable silt, abundant gas vesicles
			>10,000/0	in upper 3 feet, less prevalent at base. At 3 feet a ¼ to ½ inch fine sandy,
				silt lense, soft, brown (7.5 YR 5/3).
250	255	4	3,000-	0-1.0': Sand. As above.
			>10,000/0	1.0-2.0': Sand. Red brown (5 YR 4/3) very fine with fine, well sorted, medium
				dense to dense, very moist to wet.
				2.0-3.0': Sand. As from 0 to1 foot.
				3.0-4.0': Sand. Red brown (5 YR 4/3), fine, some medium and very fine, trace
				silt, moderately well sorted, medium dense, wet.
				9/9/98 11:45 collect groundwater Grab Sample GBGM-53/255.
255	260	4	10-30/00	0-3.5': Sand. Brown (7.5 YR 4/3) very fine, some silt, trace fine, moderately

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17 Page 6 of 9

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				well sorted, dense to very dense, saturated.
				3.5-4.0': Silt and Clay. Finely laminated, silt, dark brown (7.5 YR 3/4) wet, trace
				very fine sand, very stiff (3.25) ¼ to ½ inch thick lense, clay, red brown (5 YR 4/4)
				moderate plastic, very slightly effervescent, soft (075).
260	265	4	3-35/0	0-0.75': Sand. Red brown (5 YR 4/3) fine, trace medium, some silt and very fine,
				dense, moderate sorting.
				0.75-1.75': Silt and Clay. Interbedded, silt ½ to 3 inch thick, dark brown (7.5 YR 3/4)
				variable very fine and fine sand, trace clay, medium stiff (.15). Clay, dark red
				(2.5 YR 3/4) slightly effervescent, very had (>4.0).
				1.75-4.0': Sand. Brown (7.5 YR 5/2) fine, some very fine, trace medium, moderately
				well sorted, very dense.
265	270	5	4.5-18/0	0-3.5': Sand. Color as above, very fine, silty, grading to very fine sandy silt, very
				dense, moderately well sorted.
				3.5-4.5': Silt. Brown (7.5 YR 4/3) trace clay, variable, very fine to fine sand, medium
				stiff, 1.5.
				4.5-5.0': Sand. As from 0 to 3.5.
270	275	5	4-10/0	0-0.1': Sand. As above.
				0.1-4.5': Silt. Red brown (5 YR 4/3) trace clay in matrix, small pea gravel, from
				0.1 to 1.0 feet, medium stiff to stiff (2.0 to 3.25), silt breaks along very thin seams
				of very fine to fine sand, clay inclusions is lower portion of core, dark red brown
				(5 YR 3/3) trace fine gravel, subrounded, strongly effervescent, nonplastic,
				hard (3.75).
				4.5-5.0': Silt. Brown (7.5 YR 5/3) some very fine sand dried out from drilling,
				moderately wells sorted, and stiff (1.75), crumbles easily where dried out.
275	280	5	6-40/0	0-2.0': Silt. Dark brown (7.5 YR 3/3), some very fine sand, soft (1.0), moderately
				well sorted, wet.
				2.0-3.5': Sand. Color as above very fine, silty, very dense, moderately well sorted.
				3.5-5.0': Silt. Color as above, trace to some very fine sand, trace clay, very slightly
				plastic where clay contacts increases, medium stiff (1.25).
280	285	5	6-8.5/0	0-2.25': Silt. As above.
				2.25-4.75': Sand. Color as above, silty, very fine, moderately well sorted, very dense.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17 Page 7 of 9

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.75-5.0': Silt, dark red brown (5 YR 3/4), very homogenous, medium stiff (2.0),
				saturated, a ¼ inch clay lense at 4.80 feet, red brown (2.5 YR 4/4) moderate
				effervescence, soft, platy.
285	290	5	2.5-12/0	0-1.5': Silt. Dark brown (7.5 YR 3/4) trace to some clay in matrix, slightly plastic
				where clay contact increases, variable very fine sand, saturated, medium soft (2-2.5).
				1.5-2.2': Sand. Color as above, very silty, very fine, moderately well sorted,
				dense, saturated.
				2.2-5.0': Silt and Sand. Interbedded in approximately 6 inch cycles. Sand
				as above, silt as above, at 3 feet a ¼ inch clay lense, red brown (2.5 YR 4/4) very
				soft, wet, plastic, platy, moderately effervescence.
290	295	5	4-7/0	0-2.5': Silt. Brown (7.5 YR 3/3) trace to some very fine sand (variable), moderately
				stiff (2.25).
				2.5-3.7': Silt. Color as above, very fine sand, very moist, crumbly, moderately
				well sorted.
				3.7-5.0': Silt. Brown (7.5 YR 3/3) very homogenous, soft to medium stiff (1.25 to 1.5)
				very slight effervescent, wet.
295	300	5	2.5-4/0	Silt. Brown (7.5 YR 3/3) very sandy with very fine sand in part, trace to some clay in
				matrix where clay content increases, color is red brown (5 YR 4/4), nonplastic,
				stiff (3 to 3.5) several fine to very fine thin sand seams interspersed throughout.
300	305	5	3-6.5/0	Silt. As above.
305	310	5	2.5-4/0	Silt. Brown (7.5 YR 3/3) predominately very homogenous silt, stiff to medium stiff
				(3 to 3.5) very fine sand seams intersperse through. From 0.5 to 1.0 sandy silty clay
				grading to sand, red brown (5 YR 5/4) clay soft saturated, noneffervescent, silt
				becomes sandy at base, sand, very fine, silty.
310	315	5	2.5-15/0-0.1	0-1.0': Silt. Brown (7.5 YR 3/3) very fine sand grading to silty, very fine sand,
				dense, moderate sorting.
				1.0-4.5': Sand. Brown (75 YR 3/3), silty, very fine, moderately well sorted, medium
				dense, very moist, crumbles easily, several 1 to 2 inch homogenous silt seams
				interspersed throughout. In the bottom foot several 1 to 2 inch long ½ inch
				diameter pieces of siltstone, color as above, hardness equals 1.5.
				4.5-5.0': Silt. Color as above, trace clay, trace very fine sand, medium stiff (1.75), wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17 Page 8 of 9

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
315	320	3	6-20/0	Silt. Brown (7.5 YR 5/2) some clay, trace very fine sand, moderately plastic, medium
				stiff (2.0) saturated.
320	325	4	40-80/0	0-2.0': Silt. As above, but trace very coarse sand.
				2.0-3.0': Silt. Brown (7.5 YR 5/2) some very fine sand, trace fine, trace coarse, and very
				coarse, trace clay, slightly plastic, very stiff at top grading to very fine sandy silt,
				trace fine and very coarse, trace small gravel 1/8 to ¼ inch subrounded, very stiff
				(3.25) at bottom.
				3.0-4.0': Sand. Brown (7.5 YR 5/3) very fine, silty, trace fine, very dense, saturated,
				moderately well sorted.
325	330	5	70-225/0	0-0.7': Sand. Brown (7.5 YR 5/3) fine with very fine and silt, trace medium, very
				dense, moderate sorting.
				0.7-1.5': Sand. Color as above, very fine to fine, variable medium, variable silt,
				1 inch thick silt lenses at .9 and 1.4 feet. Brown (7.5 YR 5/2) soft (0.5 to 0.25)
				clayee, moderately plastic to plastic. A ½ inch thick clay lense at 1.5 feet, red brown
				(2.5 YR 4/4) very soft, plastic, moderately effervescence. At base of clay lense some
				pea gravel, subrounded to subangular.
				1.5-2.0': Sand. Brown (7.5 YR 5/3), fine to very fine and silt, trace medium,
				dense, moderate sorting.
				2.0-5.0': Silt. Brown (7.5 YR 5/2) with very fine sand, trace clay in matrix (variable)
				soft to medium stiff, (0.75 to 1.5) trace small (¼ to ½ inch) clay inclusion. Clay
				as above, isolated pockets of silt contain gas vesicles.
330	335	5	500-2500/	0-0.5': Sand. Brown (7.5 YR 5/3) very fine with silt, trace fine, dense to very dense,
			0-0.2	moderate sorting.
				0.5-1.5': Sand. Color as above, medium with very fine, some coarse, trace very
				coarse and silt, coarsens down, trace fine gravel 1/8 and ¼ inch at base,
				subrounded.
				1.5-1.75': Silt. Brown (7.5 YR 4/2) mottled with dark brown (7.5 YR 3/2)
				variable very fine and fine sand, trace clay, soft, slightly plastic, abundant gas
				vesicles.
				1.75-1.9': Clay and Silt. Thinly bedded, silt, as above, clay, red brown (5 YR 4/4),
				slightly effervescent, moderately stiff (1.75), slightly plastic, blocky.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-17

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1.9-5.0': Sand. Brown (7.5 YR 5/3) fine to medium, trace (10 percent) coarse,
				some very fine at top grading to fine, some medium and very fine, trace silt at
				bottom, saturated throughout, moderate sorting, dense.
				6" casing stuck at 325 ft bgs.
				8" casing stuck at 295 ft bgs.
				9/14/98 abandon hole with bentonite cement grout.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-18 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/15/98 Drilling Completed 9/15/98

Total Depth Drilled 75 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10" x 4' Sampling Interval Continuous feet

Land-Surface Elev. 1086.62 feet [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used Water to wash down casing Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Ted Powell and Kevin Dalness Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	1.5	3/0	0-0.3': Sand. Fine with silt and medium, possible fill material.
				0.3-0.7': Sand. Strong brown (7.5 YR 4/5) fine, some medium and coarse, trace very
				coarse and very fine, trace gravel: 1/8 to 2 inches, subrounded. Sand: loose, dry, moderately
				sorted.
				0.7-1.5': Sand. Dark brown (7.5 YR 3/4) fine with very fine and silt, some medium,
				roots. "A" soil horizon at 1.4 feet, slightly moist, loose, roots, peat.
5	10	5	4-15/0-2.4	0-1.0': Silt. Dark grey (2.5 Y 4/1) at top to black (2.5 Y 2.5/1), very fine sandy,
				trace fine, much roots and decaying organic matter, moist at top to saturated
				at base, moderately stiff (2.0) to very stiff (3.25).
				1.0-1.6': Sand. Dark gray as above and brown (7.5 YR 5/4) very fine to fine, very silty,
				mottled, trace clay, saturated, medium density, moderately well sorted.
				1.6-2.2': Sand. Brown (7.5 YR 5/4) fine, very silty, trace medium, soupy, trace
				black mottling, medium density.
				2.2-2.8': Sand. Brown (7.5 YR 4/2), fine with medium, silty, some coarse, trace very
				coarse, some gravel: ¼ to 2 inch, subrounded to angular, soupy, medium density, poorly
				sorted.
				2.8-3.4': Silt. Red brown (5 YR 4/4) trace to some clay, slightly to moderately plastic, no
				HCl reaction, wet, several ¼ inch clay lenses at base. Clay: red (2.5 YR 4/6), very soft
				(0.25), plastic, platy.
				3.4-5.0': Silt. Dark red grey (5 YR 4/2) homogeneous, trace clay in matrix, medium stiffness

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-18

Prepared by Ted Powell and Kevin Dalness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				(1.5), clay inclusions up to 1 inch thick in upper 1 foot, clay as above. At base clay seams
				approximately 0.5 to 1 inch thick, dark red brown (2.5 YR 3/4), very soft, plastic, wet, no HCl
				reaction.
10	15	5	4.5-12/	Silt. Dark red gray (5 YR 4/2), trace very fine sand and clay, slightly plastic, wet, moderately
			.8-2.6	well sorted, moderately stiff (2 to 2.5). At 1.5 feet a 2 inch clay lens, dark
				brown (7.5 YR 3/4), moderately stiff (2), blocky, moderately effervescent.
15	20	5.0	4-9/0-2.7	0-3.5': Slough. Ran casing at 15 feet.
				3.5-5.0': Silt. As above with a small pocket of silty fine sand at 4.8 feet, color as above,
				saturated, trace medium and coarse sand, poorly sorted.
20	25	5	5-8/0-3.3	Silt. Color as above, trace to some clay, moderately plastic where clay content increases.
				Several clay inclusions up to 2 inches thick interspersed throughout, blocky, very soft,
				plastic, color as above, moderately effervescent.
25	30	5	4-6/0-1.5	Silt. Very dark grey (7.5 YR 3/1), trace clay, very stiff (3.5), wet, some clay inclusions,
				very dark brown (7.5 YR 2.5/2), blocky, strongly effervescent, moderately stiff (2.25),
				moderately plastic, very moist.
30	35	5	4-5.5/13-2.1	Silt. As above, some clay inclusions, as above.
35	40	5	4.5-6/.1-1.5	0-3.0': Silt. As above, trace clay inclusions, as above.
				3.0-3.3': Clay. Dark red brown (2.5 YR 3/4) very hard (>4.0), massive, nonplastic, slightly
				effervescent.
				3.3-5.0': Silt. Red brown (5 YR 4/4) some very fine sand, trace clay, moderately stiff (1.5),
				moderately well sorted. A 0.5 inch clay lens at 4.5 feet, dark red brown (2.5 YR 3/4)
				fissile, medium stiffness (1.75), moderately plastic.
40	45	5	4-6/0-1.7	Silt. Dark red brown (5 YR 3/3), trace to some very fine sand, medium stiff. Two very sandy
				silt seams approximately 6 inch thick at 1.5 feet and 3.5 feet, saturated. Sand: very fine
				with fine, medium density.
45	50	5	4-4.5/0-0.4	Silt. As above.
50	55	5	4-6/0-1.0	0-2.0': Silt. As above with several thin ¼ to ½ inch clay seams. Clay: red brown
				(2.5 YR 4/4) fissle, medium stiffness (1.75), moist, slightly plastic, strongly effervescent.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-18

Prepared by Ted Powell and Kevin Dalness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				2.0-5.0': Silt and Clay. Interbedded. Silt; color as above, trace very fine sand, very moist
				to wet. Clay; dark red brown (5 YR 3/4), fissile, slightly moist,
				moderately plastic to slightly plastic, strongly effervescent. Beds ¼ inch thick at top to 2
				inch thick at base.
55	60	5	4-55/0-.3	0-2.5': Silt. Color as above, variable very fine sand, trace clay, medium stiffness (2.0),
				several clay seams, approximately ¼ inch thick, in top 1 foot. Clay as above. From 1 to 1.5
				feet a sand lens, dark red brown (5 YR 3/3), medium, trace coarse, some fine and very fine,
				trace silt. Poorly sorted, saturated, loose.
				2.5-4.0': Silt. Dark red brown (5 YR 3/2) very fine sandy, with small pockets of very fine
				sand, silt, some fine, poorly sorted, saturated, medium density.
				4.0-5.0': Sand. Dark red brown (5 YR 3/3) very fine, with silt, saturated, moderately
				dense, moderately well sorted.
60	65	5	80->10,000/	0-2.5': Sand. Very fine with silt as above, several thin (1 to 2 inch thick) very fine
			0	sandy silt lenses, medium stiffness, wet, trace clay. At 1 foot a ¼ inch clay len bordered
				by silt as above. Clay: red brown (5 YR 3/4) soft, plastic, platy.
				2.5-3.0': Silt. Dark red brown (5 TR 3/3) homogeneous, medium stiffness (1.5), trace clay
				in matrix.
				3.0-5.0': Sand. Red brown (5 YR 4/4) medium, some coarse, trace very coarse, fine and
				silt, medium density, saturated, poorly sorted, some (25 percent) gravel, ¼ to 3 inches,
				subrounded to angular. Collect treatabiltiy sample and methoanotrophic enumeration.
				From 4.2 to 5 feet coarse sand, some very coarse and medium, trace fine, some gravel,
				¼ to 1.5 inch, subrounded.
65	75	5	500-	Sand. With gravel, color as above, predominately coarse with medium and very coarse,
			>10,000/	some fine, trace very fine and silt, poorly sorted, medium density, saturated, gravel: ¼
			0-0.1	inch to 2.5 inch, subrounded to subangular. At 3 to 4 feet: coarse with very coarse,
				trace medium and fine, medium sorting, loose to moderately dense, some gravel, 1/8 to 1.5
				inch, subrounded to angular.
				Abandoned boring with bentonite/cement grout.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-19 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/13/98 Drilling Completed 9/22/98

Total Depth Drilled 65 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel and Split spoon

Length and Diameter of Coring Device Core Barrell: 10' x 4" Splitspoon: 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1128.75 feet [x] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Rotasonic: Potable water Hollow Stem Auger: None Drilling Method Rotasonic/ Hollow Stem Auger

Drilling Contractor Boart Longyear/Boart Longyear Driller Perry/Dan Helper Brian/Toby

Prepared By Kevin Daleness, Pat Bartnik/Raymond Flynn Hammer Weigh NA/300 Hammer Drop NA/30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	14"	7,4,3,3	0-6.0": Sand. Reddish yellow (7.5 YR 7/6) silty with much gravel, dry, loose, poorly
		5		sorted, some coarse and medium sand.
				6.0-14.0": Sand. Very pale brown (10 YR 7/3) medium with some gravel, dry, loose,
				gravel up to 1 cm in diameter subangular to subrounded, variable composition, trace to
				some coarse sand.
2	4	10"	4,4,4,4	0-2.0": Sand. Medium with some gravel as above, dry.
		6		2.0-7.0": Silt. Brown (10 YR 3/3) sandy, with black staining, trace to some granular
				gravel. Moist HP = 2.2
				7.0-10.0": Sand. Reddish yellow (10 YR 6/8) coarse to medium, slightly moist, no HCl
				reaction, trace silt, trace grain gravel, loose to slightly dense.
4	6	9"	12,5,4,6	0-9.0": Sand. Medium to coarse with some to much gravel. Gravel. Very pale brown
		5.5		(10 YR 7/4) gravel mainly granular, trace pebble gravel greater than spoon diameter,
				no HCl reaction, dry, loose.
6	8	8.5"	6,4,7,7	0-8.0": Sand and Gravel. Yellow (10 YR 7/10) very coarse, loose. slightly moist, gravel
		5		variable composition subrounded to well rounded up to greater than spoon diameter.
8	10	14"	7,4,4,5	0-14.0": Sand. Very coarse with some to much granular gravel. Gravel. Very pale
		5		brown (10 YR 7/4), loose, slightly moist, some pebble gravel, variable composition,
				subangular to subrounded, up to 1 cm diameter.
10	12	11"	2,2,3,4	0-11.0": Sand. Very pale brown (10 YR 8/4) medium to coarse, medium sand grading
		7		down into coarse sand to trace to some granular gravel at base, dry, loose, no HCl
				reaction.
12	14	6"	2,2,2,2	0-6.0": Sand. Coarse as at base of overlying sample with trace to some gravel (pebble
		5		sized).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-19 Page 2 of 3

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	8"	9,3,4,6	0-8.0": Sand. Light brown (7.5 YR 6/4) very fine, slightly firm, dry, thickly laminated
		9		with laminations less than 1 mm thick. No HCl reaction.
16	18	17"	2,4,4,5	0-17.0": Sand. Very fine as above, dry.
		4		
18	20	17"	3,5,7,9	0-17.0": Sand. Very fine as above, but firm (dense) thinly to very thin laminations 8 to
		5		11 inch. No HCl reaction, dry, slightly moist.
20	22	18"	4,5,6,8	0-18.0": Sand. Very fine, as above, dry but very thinly bedded faint laminations.
		5		
22	24	17.5	7,17,19,16	0-17.5": Sand. Very fine as above, dry with thinly bedded faint laminations from 0 to
		≤8		1 inch. No HCl reaction.
24	26	17"	8,13,18,20	0-17.0": Sand. Very fine, as above, slightly moist. Silt layer at 9 inches.
		6.5		
26	28	17"	8,15,15,20	0-17.0": Sand. Very fine as above, thinly bedded silt laminations from 14 to 16 inch,
		7.5		moist.
28	30	18"	11,16,15,14	0-16.0": Sand. Very fine, as above, with some silt, saturated.
		6		16.0-18.0": Sand. Light yellowish brown (10 YR 6/4) silty, HP = 3.0, moderate HCl
				reaction, very moist.
30	32	11.5"	6,7,13,11	0-11.5": Silt. Light yellowish brown (10 YR 6/4) sandy, abundant very fine sand, HP = 3.0
		6		slight to moderate HCl reaction, very moist to saturated.
32	34	15"	9,12,11,12	0-18.0": Silt. Sandy as above, moist.
		5.5		
34	36	16"	4,13,15,15	0-16.0": Silt. Sandy, as above, moist.
		6		
36	38	17"	9,10,14,16	0-17.0": Sandy Silt and Silty Sand. As above, but very fine sand more abundant, moist,
		5		1/16 inch clay at 3 inch.
38	40	13"	11,13,22,23	0-13.0": Silt. Sandy, as above, but with less very fine sand, very moist.
		6.5		
40	42	16"	11,15,19,21	0-18.0": Sandy Silt/Silty Sand. As above with sand more abundant, very moist to
		4.5		saturated.
42	44	18"	11,12,15,22	0-10.0": Silt. Sandy as above, saturated.
		6		10.0-12.0": Sand. Greyish brown (10 YR 5/2) very fine silty. HP = 2.5 slightly to

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-19

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/(feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				moderate HCl reaction.
				12.0-18.0": Silt. Brown (7.5 YR 5/3) HP greater than 4.0, moderate HCl reaction,
				nonplastic, saturated.
44	46	16"	5,10,12,12	0-16.0": Silt. As above, saturated. HP = 3.0, moderate HCl reaction.
		8.5		
46	48	10"	3,6,8,15	0-20.0": Silt. As above, moist, thinly interbedded with clay (approximately 30 percent
		4.5		of sample). Clay. Brown (7.5 YR 5/3) to light brown (5 YR 6/4) HP = 2 to 3.5, strong
				HCl reaction, slightly plastic.
48	50	16"	7,10,10,13	0-16.0": Sandy Silt/Silty Sand. Brown (7.5 YR 4/4) saturated, HP = 2.0, slight HCl
		4		reaction, clay lense 13 to 13.5 inch.
			OVA/OVM	
50	55	5'	4.5-20/	0-2.5': Silt. As above, fine to medium sand seams at 2.5, 1.5, 1 and 0.5 feet.
			0.1-2.8	2.5-3.0': Sand. Yellowish red (5 YR 5/6) moderately well sorted, trace silt and coarse
				sand, loose, wet.
				3.0-4.0': Silt. Dark bluish black (3 gley 3/1), clayey with gravel (1/8 to 1.5 inch) some
				medium to coarse sand.
				4.0-5.0': Slate with calcite inclusions. Slight reaction to HCl.
55	58	3'	3-6/0.1-1.3	0-3.0': Slate Rock. Very fine orientation of the foliation about 15 degrees from vertical.
58	65	7'		0-7.0': Same as above, pailite slate.
				EOB 65 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-19A Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 9/21/98 Drilling Completed 9/22/98

Total Depth Drilled 65 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Blind to 45 ft cont. to EOB feet

Land-Surface Elev. 1128.75 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Potable water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	45			Blind drill 9/12/98 and 9/14/98.
45	50	5	2.5-3.5/0-0	0-4.0': Silt. Brown (7.5 YR 4/3) clayey, trace very fine sand. 2.0 penotrometer, plastic
				with trace ¼ inch inclusions. Dark red (2.5 YR 3/4), no HCl reaction.
				4.0-5.0': Silt. Reddish brown (5 YR 4/3) trace clay and trace very fine sand, ½ inch fine
				to medium sand seam at 5 feet. Trace clay inclusions red brown (2.5 YR 4/3) 1/8 to ¼
				inch, no reaction to HCl.
50	55	5	4.5-20/	0-2.5': Silt. As above, fine to medium sand seams at 2.5 to 1.5, 1 and 0.5 feet.
			.1-2.8	2.5-3.0': Sand. Yellowish red (5 YR 5/6) medium well sorted, trace silt and coarse
				sand, loose, wet.
				3.0-4.0': Silt. Dark bluish black (2 gley 3/1) clayey with gravel 1/8 to 1.5 inch, some
				medium to coarse sand.
				4.0-5.0': Slate with calcutie inclusions. Slight reaction to HCl.
55	58	3	3-6/0.1-1.3	0-3.0': Slate Rock. Verified orientiation of the foliation about 15 degrees from vertical.
58	65	7		0-7.0': Same as above, pailite slate.
				EOB 65 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-20 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/23/98 Drilling Completed 9/24/98

Total Depth Drilled 85 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1114.12 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Potable water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Kevin and Pat Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	4-4/0-0	0-1.5': Silt. Light brown (7.5 YR 6/4) with gravel, (1/8 to 2 inches), trace very fine to
				coarse sand, rootlets, dry, loose.
				1.5-3.0': Sand. Red brown (5 YR 5/4), fine to very coarse, some gravel and silt, dry,
				loose, (1/16 to 1 inch) subangular to 3 inch pebble at bottom.
				3.0-5.0': Sand. Yellowish red (5 YR 5/4), very fine to fine, silty, some gravel (¼ to ½
				inch) subangular to subrounded, dry.
5	15	8	4-8/0-1.3	0-3.0': Slough. Silt and gravel.
				3.0-8.0': Sand. Reddish brown (5 YR 5/4), very fine to silty fine, some gravel (1/8 to 1
				inch), subangular to subrounded, moist, loose.
15	16	1	20-60/	Slough
			4-21.3	
16	20	4	4-30/	0-0.8': Sand, Gravel, and Clay. Brown (10 YR 4/3), silty, medium to very coarse
			0.6-2.3	sand. Gravel subangular to subrounded (1/8 to 1 inch), moist, slightly compact.
				0.8-1.0': Sand and Gravel. Brown (10 YR 4/3), some silt, trace clay, saturated (drilling
				induced).
				1.0-1.5': Silt. Brown (10 YR 4/3), some fine to coarse sand, trace gravel (1/8 to ¼
				inch), subangular, moist.
				1.5-3.0': Silt. Reddish brown (5 YR 4/4), trace clay, some fine to medium sand,
				trace gravel, moist.
				3.0-4.0': Clay. Some fine to medium sand, some silt, plastic, HP - 2.5, trace

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-20

Prepared by Pat and Kevin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				gravel.
20	25	5	3-25/0-1.4	0-1.0': Sand. Yellowish brown (5 YR 5/6), very fine to fine, some silt, loose, moist.
				1.0-4.5': Clay. Reddish brown (5 YR 5/4), very plastic, HP = 3.0, mottling of the clay
				(greenish grey), strong reaction to HCl, 1/8 inch very fine to fine sand seam near bottom.
				4.5-5.0': Sand. Brown (7.5 YR 5/4) very fine to fine, silty, loose, moderate reaction to
				HCl.
25	30	5	5-15/0-0.3	0-5.0': Sand. Dark yellow brown (10 YR 4/4) moderate to fine, some silt, moist. At 4
				feet: Clay, red (2.5 YR 4/6), dense, HP = 1.75, moderate HCl reaction.
30	35	5	2.5-3/0-0	0-2.0': Sand. As above, no clay lenses.
				2.0-5.0': Clay. Red (2.5 YR 4/6), dense, HP = 2.5, blocky to laminated, moderate
				reaction with HCl. Slightly plastic, dry. Sand seams at 3 and 4 feet, medium to fine,
				thinly bedded.
35	40	5	2.5-3/0-0	0-5.0': Silt. Dark reddish brown (5 YR 3/3), dense, dry, HP >3.5, brittle with clay
				inclusions. Inclusions occur as laminae (< 1 mm) to thinly bedded (approximately
				30 mm). Clay is blocky, moderate reaction with HCl, red (10 YR 4/6), dry.
40	45	5	2.5-6/0-0.5	0-5.0': Silt. As above with thin sand seam at 0-0.5 feet. Sand is reddish brown
				(5 YR 4/4), fine to very fine, silty, damp.
45	50	5	2-6/	0-5.0': Silt. Brown (7.5 YR 5/3), dense, moist, HP = 2.5, clay inclusion (½ to 2 inches),
			0-1.6	blocky, moderate to strong reaction to HCl. Reddish brown (2.5 YR 4/4), dry.
50	55	5	3-9/0.9-2.2	0-1.5': Silt. As above with clay inclusions.
				1.5-5.0': Silt. Brown (7.5 YR 4/4), some very fine sand, brittle, moist, with clay
				inclusions. Brown (5 YR 4/4). HP > 4.0, blocky, dry, strong reaction to HCl.
55	60	5	2-25/0-3.4	0-5.0': Silt. With trace clay inclusions as above, dark red (5 YR 4/2). Clay inclusions
				½ inch thick occurring approximately every 6 inches, moderate to strong reaction with HCl.
60	65	5	2-3/0.9-3.1	0-5.0': Silt. With clay inclusions as above, dark reddish grey (5 YR 4/2), very strong
				reaction to HCl, blocky, dry.
65	70	5	2-2/0.7-2.1	0-5.0': Silt. With clay inclusions, as above, reddish brown (5 YR 4/4). Inclusions occur as
				laminae (1-2 mm) and inclusions (¼ to 1 inch thick), moderate reaction to HCl, blocky,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-20

Prepared by Pat and Kevin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				dry.
70	75	5	2-1500/	0-3.0': Silt. With clay inclusions as above.
			1.7-3.5	3.0-4.5': Silt. With clay inclusions as above, dark brown (7.5 YR 3/3) , blocky, dry,
				strong reaction to HCl.
				4.5-5.0': Sand. Brown (7.5 YR 5/2) fine to coarse sand, trace very fine sand, some silt,
				loose, wet to saturated, trace gravel (1/8 to ½ inch), subrounded to subangular,
				moderately well to well sorted.
75	80	5	7000->10000	0-2.0': Sand. Light brown (7.5 YR 6/3) medium to coarse, trace fine, some silt, loose
			0.9/1.8	wet to saturated, some gravel, (1/8 to 1.5 inches), subrounded .
				2.0-5.0': Sand. Light brown (7.5 YR 6/3) as above, trace gravel (1/8 inch), wet to
				saturated.
80	85	5	4000-	0-1.0': Sand. As above.
			>10000/0.7-	1.0-5.0': Sand. Dark grayish brown (2.5 Y 3/2), coarse to very coarse sand, some
			3.1	medium sand, some silt, some gravel (1/8 to 1 inch), subangular to subrounded, loose,
				wet to saturated.
				EOB 85 feet

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-21 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 9/24/98 Drilling Completed 9/25/98

Total Depth Drilled 105 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1121.97 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Potable water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Kevin and Pat Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	2-15/0-0.5	0-1.0': Sand. Brown (10 YR 4/3) fine to very fine, some medium, silty. Trace subrounded
				gravel (2 mm to 20 mm), dry, rootlets.
				1.0-3.5': Sand. Strong brown (7.5 YR 5/8) medium, very well sorted, trace fine gravel,
				dry.
				3.5-5.0': Sand. Brown (7.5 YR 4/4) medium to fine, trace very fine, dry.
5	10	5	4-25/0.2-2.4	0-1.0': Slough.
				1.0-5.0': Sand. Brown (7.5 YR 5/4) medium to fine, some coarse to very coarse, subrounded
				gravel, (2 mm to 70 mm), damp.
10	15	5	10-25/	0-5.0': Sand. Brown (7.5 YR 4/3) coarse to fine, trace very fine, subrounded gravel (2 mm to
			0.2-1.3	3 inches) dry, no reaction with HCl.
15	20	5	6-30/0-4.4	0-1.0': Sand, Gravel, and Clay. Dark brown (7.5 YR 3/3). Undifferentiated sand, very
				coarse to very fine, silty; gravel (2 mm to 40 mm), subrounded, bed is till-like.
				1.0-3.0': Sand. Brown (7.5 YR 4/3) coarse to fine, some very fine, some gravel (2 mm to
				30 mm), subrounded, dry.
				3.0-4.5': Silt. Brown (7.5 YR 4/2) sandy and gravely (2mm to 20 mm) subrounded very loose.
				4.5-5.0': Sand. Brown (7.5 YR 5/3) coarse to very coarse, gravely (2 mm to 30 mm)
				subrounded, dry.
20	25	5	10-35/0-2.4	0-1.0': Sand. As above.
				1.0-3.5': Silt. Brown (7.5 YR 5/2) sandy, medium to very fine, gravely (2 mm to 2 inches)
				subrounded. Thin layer (<1 in) of calcareous coated gravel at 3.5 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-21

Prepared by Kevin and Pat

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-5.0': Silt. Strong brown (7.5 YR 4/6) dense, dry, bedded to blocky.
25	30		2.5-7/0-0.5	0-2.0': Silt. Red brown (5 YR 4/4), dense, compact, HP = 1.5 with clay inclusions, thinly
				bedded, dark red (2.5 YR 3/6), no reaction with HCl, dry.
				2.0-3.0': Silt. Red brown (5 YR 4/4), trace very fine sand, loose, dry.
				3.0-5.0': Silt. Red brown (5 YR 4/4), clayey, slightly plastic.
30	35	5	2-8/0-0.2	0-5.0': Silt. Red brown (5 YR 4/4), compact, HP = 1.5, clayey, nonplastic section contains
				silt with trace of very fine sand layers at 1 to 1.5, 2 to 2.5 and 3 to 3.5 feet and clay
				inclusions; dark red (2.5 YR 3/6), moderate reaction with HCl.
35	40	5	1.5-2/0-0	0-5.0': Silt. Reddish brown (5 YR 4/4), dense, compact, HP = 2.5, dry to slightly moist,
				with clay: dark red (2.5 YR 3/6) inclusions, blocky, mild reaction with HCl.
40	45	5	2.5-3/0-0.2	0-5.0': Silt. As above.
45	50	5	1.5-2.5/0-0	0-3.0': Silt. As above, with some clay, very slightly plastic.
				3.0-5.0': Silt. Reddish brown (5 YR 4/4), dense, compact, HP = 2.75, dry to slightly
				moist, with clay inclusions, moderate reaction with HCl.
50	55	5.0	1.5-4.5/0-0	0-5.0': Silt. As above.
55	60	5	1.5-2/0-0	0-2.5': Silt. As above.
				2.5-5.0': Sand. Brown (7.5 YR 4/4) very fine to fine, loose, wet, some silt, very well
				sorted.
60	65	5	1.5-3/0-0	Sand. As above.
65	70	5	1.5-3/0-0	0-5.0': Sand. As above.
70	75	5	2.5-4.5/0-0	0-5.0': Sand. As above, silt reaction to HCl
75	80	5	1.5-2/0-0	0-5.0': Sand. As above.
80	85	5	1.5-2/0-0	0-0.5': Sand. As above.
				0.5-5.0': Silt. Brown (7.5 YR 5/3) with trace very fine sand, slight reaction to HCl,
				HP = 2.0, with trace clay inclusions (this laminane), blocky, medium reaction to HCl,
				reddish (5 YR 5/3).
85	95	6	2-30/0-0.2	0-1.5': Silt. With clay inclusions, as above , strong reaction to HCl.
				1.5-4.5': Sand. Brown (7.5 YR 5/3) very fine to fine, silty, wet, loose, very well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-21

Prepared by Kevin and Pat

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.5-6.0': Sand. Light brown (7.5 YR 6/4), medium to coarse, trace gravel (1/8 inch),
				subrounded, loose, wet, no reaction to HCl.
95	100	5	15-800/0-0	0-3.0': Sand. As above.
				3.0-5.0': Sand. As above, light grey (10 YR 6/2) trace gravel (1/16 inch).
100	105	5	900-4000/	0-5.0': Sand. As above, less gravel as we decreased.
			0-1.2	
				EOB at 105 ft
				Borehole abandoned

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-22 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 9/27/98

Drilling Completed 9/27/98

Total Depth Drilled 65 Feet

Hole Diameter 8 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1116.58 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Bryan

Prepared By Bruce Evans and Bryan Zinda

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2	2.5-4/0-0.3	0-0.5': Concrete.
				0.5-1.0': Gravel/Concrete chips, dry.
				1.0-2.0': Sand/Silt. Yellowish brown (10 YR 5/8), fine grained, clayey, fill mixture, moist.
5	10	2	2.5-3/0.0	No Recovery. Slump material, concrete chips.
10	15	2	2-3/0.0	Sand. Brown (7.5 YR 5/4), fine to medium gravel, trace medium gravel, moderately
				sorted, moist.
15	20	2.5	2-3/0.0	0-1.0': Sand. As above, with some fine to coarse gravel, subangular to subrounded,
				moderately sorted, moist.
				1.0-2.0': Sand. Light brown (7.5 YR 6/3), very fine grained, trace fine gravel, silty, well
				sorted, moist.
20	25	--	--	No Recovery.
25	30	5	2.0/0.0	0-1.0': Sand. Very fine to fine grain, as above.
				1.0-4.0': Sand. Brown (10 YR 4/3), fine to medium grained with fine to coarse gravel,
				subangular to subrounded, poorly sorted, moist.
				4.0-5.0': Sand. Light brown (7.5 YR 6/4), very fine grained, silty, well sorted, 3" diameter
				cobble in sample, dry.
30	35	5	2-8/0-0.2	0-1.0': Sand. Light brown (7.5 YR 6/4), very fine grained silty, well sorted, with trace
				medium gravel and 4 inch diameter cobble, dry.
				1.0-3.5': Sand. Pink (7.5 YR 7/3) fine grain, some very fine grained, well sorted,
				trace fine to medium gravel, subangular to subrounded, moist.
				3.5-4.0': Sand. Pink (7.5 YR 7/3), very fine grained, well sorted, trace fine gravel, moist.
				4.0-5.0': Silt. Light brown (7.5 YR 6/4), grading to very fine grained, silty sand, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-22 Page 2 of 2

Prepared by Bruce Evans and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
35	40	5	3.5-100/	0-2.0': Slump.
			0.2-1.1	2.0-3.0': Sand. Light brown (7.5 YR 6/4), very fine grained, well sorted with some
				fine to coarse gravel, subangular to subrounded, dry.
				3.0-5.0': Sand. Brown (7.5 YR 5/4), very fine to fine grained, well sorted, moist.
40	45	5	9-70/	0-0.5': Silt. Light brown (7.5 YR 6/3), brittle, slight HCl reaction, dry.
			2.2-15.5	0.5-2.0': Sand. Light brown (7.5 YR 6/3), very fine grained, well sorted, moist, loose.
				2.0-2.5': Silt. Brown (7.5 YR 5/4), brittle, petrometer = 1.0, slight HCl reaction,
				very moist.
				2.5-3.0': Sand. Brown (7.5 YR 5/4), fine grained, well sorted, loose, moist.
				3.0-5.0': Silt. Brown (7.5 YR 5/4), as above, trace clay at 5.0 feet, moist to very moist.
45	50	5	1.5-7/0-0.2	0-1.0': Silt. Brown (7.5 YR 5/3), trace clay, petrometer = 2.5 to >4.0, no HCl reaction,
				wet.
				1.0-2.0': Sand. Brown (7.5 YR 5/3), fine to coarse grained, predominately medium
				grained, poorly sorted, loose, wet.
				2.0-5.0': Sand. Brown (7.5 YR 5/3), fine grained, well sorted, trace coarse sand, loose, wet.
50	55	5	6-15/0-1.7	0-2.0': Sand. Brown (7.5 YR 5/3), fine grained, well sorted, some fine to medium gravel,
				subangular mostly, some subrounded, wet.
				2.0-4.5': Sand. Brown (7.5 YR 5/3), fine grained, well sorted, no gravel, wet.
				4.5-5.0': Sand. Brown (7.5 YR 5/3), very fine grained, very silty, well sorted, wet.
55	60	5	2-4/0	Sand. Brown (7.5 RY 5/3), fine grained, well sorted, wet.
60	65	5	5-10/0-1.6	0-1.5': Sand. As above.
				1.5-3.0': Silt. Brown (7.5 YR 5/3), petrometer = 3 to >4, slight HCl reaction, some very
				fine grained sand, wet.
				3.0-4.5': Silt. As above, less sandy, some clay. Clay: reddish brown (5 YR 5/4) in thin
				varves, wet.
				4.5-5.0': Sand. Brown (7.5 YR 5/3), fine grained, well sorted, some silt, wet.
				End borehole at 65 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-23 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/29/98 Drilling Completed 9/29/98

Total Depth Drilled 65 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1119.45 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Potable Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Kevin Daleness Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	4-6/0-0	0-0.5': Asphalt, Fill. Very dark brown (10 YR 2/2).
				0.5-1.5': Sand. Yellowish red (5 YR 5/6), fine to coarse, some gravel (1/4 to 2 inch) and silt,
				moist, loose.
				1.5-2.0': Sand and Gravel. Yellowish brown (5 YR 5/6). Sand: fine to coarse. Gravel: 1/8 to
				1/2 inch, loose, moist.
				2.0-3.0': Sand. Yellowish brown (5 YR 5/6), fine to medium, some coarse, trace gravel,
				1/2 inch, loose, moist.
				3.0-4.0': Gravel. Brown (10 YR 5/3), 1/8 to 1/4 inch, subangular, poorly sorted, loose,
				wet.
				4.0-5.0': Sand. Very pale brown (10 YR 7/3), medium, well sorted, trace gravel and silt,
				some fine sand.
5	10	5	7-25/0-0	0-1.5': Slough.
				1.5-3.0': Sand. Brown yellowish brown (10 YR 6/4), medium to coarse, some very coarse,
				trace gravel, subangular to subrounded (1/8 to 1/4 inch), moist, loose, 1/2 inch slate
				seam at top of interval.
				3.0-5.0': Sand. Very pale brown (10 YR 7/3), fine to coarse, some very fine and silt,
				trace gravel, subrounded to subanuglar (1/4 to 1/2 inch), loose, dry.
10	15	5	5-20/1.1-3.0	0-0.5': Slough.
				0.5-1.0': Sand. Same as above.
				1.0-2.5': Sand. Light yellow brown (10 YR 6/4), medium to coarse, some very coarse, trace
				fine, silt, and gravel, subangular, moist, loose.
				2.5-2.75': Pulverized slate. Olive (5/1)

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-23 Page 2 of 2

Prepared by Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				2.75-5.0': Silt and Sand Interspersed. Silt: Reddish yellow (7.5 YR 6/6). Sand: Very
				pale brown (10YR 7/3), very fine to fine, trace silt, dry, loose. Silt HP = 2.0, very slight
				reaction to HCl.
15	20	7.5	3.5-30/3-8.6	0-2.5': Slough
				2.5-4.5': Silt. As above, medium brown (5 YR 5/4), with clay inclusions, platy, strong
				reaction to HCl.
				4.5-6.5': Sand. Very pale brown (10 YR 7/4) very fine to fine, trace silt, loose, moist.
				6.5-7.5': Sand and Silt. Interbedded. Sand: Color as above. Silt: yellowish brown
				(10 YR 5/6) trace very fine sand.
20	25	5	9-40/	0-1.0': Slough.
			3.2-11.6	1.0-5.0': Sand. Very pale brown (10 YR 7/4), fine to medium, trace coarse and gravel
				(1/8 to 1 inch), subrounded to subangular, moist.
25	30	5.0	5-100/	0-1.5': Silt and Sand. White (10 YR 8/1), pulverized during drilling.
			6.3-9.3	1.5-4.5': Sand. Reddish yellow (7.5 YR 6/6), fine to very fine, some medium, trace
				gravel, subrounded, loose, moist.
				4.5-5.0': Sand. Light brown (7.5 YR 6/4), fine, trace medium and very fine, trace silt,
				loose, moist.
30	35	5	3-5/6-13	0-2.5': Sand. As above.
				2.5-4.0': Silt. Brown (7.5 YR 4/3) some very fine sand, HP = 1.0 -1.5, no reaction to HCl.
				4.0-5.0': Silt and Sand, Interspersed. Silt as above. Sand as 0-2.5', moist to wet
				at top 5 feet.
35	45	6	5-20/4-26	0-6.0': Sand. Brown (7.5 YR 5/3) fine to medium, some silt and gravel, loose, moist. Bottom
				1 inch silt inclusions, trace clay and very fine sand, moderate reaction to HCl.
45	50	5	3-6/0-1.1	0-5.0': Sand. Brown (7.5 YR 5/4) medium to coarse, slightly sorted, trace very coarse and
				fine, trace gravel, subrounded (1/8 to 1/4 inch), loose, wet.
50	55	5	4-10/0.6-2.7	0-2.0': Sand. Brown (7.5 YR 4/3), fine to very fine, trace medium, and silt, HP = 0.5-1,
				loose, wet, well sorted.
				2.0-5.0': Sand. Brown (7.5 YR 5/4), coarse, some medium and very coarse, well sorted,
				loose, wet, trace gravel (1/8 inch).
55	60	5	2.5-4/0-0	0-5.0': Sand. As above, wet, well sorted.
60	65	5	2.5-3.5/0-0	0-5.0': Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-24 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 10/25/98 Drilling Completed 10/25/98

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1128.05 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Scott

Prepared By Ted Powell Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	2.5	2.5-3.5/0	0-0.5': Loam. Sandy, with gravel, grass and roots, very moist.
				0.5-2.5': Sand. Brown (7.5 YR 4/4) medium with coarse and very coarse, some fine
				and very fine, trace silt, trace clay, very poorly sorted, very moist, loose.
5	10	2.5	3/0-11	0-1.0': Sand. Strong brown (7.5 YR 4/6) very coarse, some coarse, trace medium and
				fine, moderately well sorted, loose, some gravel (20 percent) 1/8 to ½ inch, subrounded,
				moist.
				1.0-2.5': Sand. Very pale brown (10 YR 7/3) medium, some coarse, trace very coarse,
				and fine, moderate sorting, loose, moist.
10	15	3	3/0	0-1.5': Gravel. Brown (7.5 YR 4/4) with sand, gravel 1/8 to 2 inch, subrounded.
				Sand: Fine to coarse, some silt, very poorly sorted, loose, moist.
				1.5-3.0': Sand. Light brown (7.5 YR 6/4) medium, trace coarse and fine, moderately
				well sorted, loose, moist, trace (10 percent) gravel 1/8 to 2.5 inch, angular to
				subrounded.
15	20	3	6-10/	0-0.75': Slough
			1-3	0.75-1.0': Sand. As above.
				1.0-2.0': Sand and Gravel. Yellow brown (10 YR 5/4). Sand: medium with coarse and
				very coarse, some fine and very fine, loose, slightly moist, very poorly sorted. Gravel:
				1/8 to 1 inch, subrounded to subangular.
				2.0-3.0': Gravel. Pale brown (10 YR 6/3) with sand, fine to medium, with coarse,
				some silt, much pulverized gravel, slightly moist to dry. Gravel ¼ to 3.5 inch, angular,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-24

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				fractured from drilling, very poorly sorted.
20	25	5	12.5-25.0/	0-2.0': Slough
			.9-12.3	2.0-2.5': Sand. Brown (2.5 YR 5/4) some gravel. Sand: medium wtih fine, some coarse
				and very coarse, poorly sorted, dry, loose. Gravel: 1/8 to 1.5 inch subrounded to
				subangular.
				2.5-3.7': Sand. Light brown (7.5 YR 6/3) very fine, grading to silt with very fine sand
				at base, color grades to red brown (5 YR 5/3) at base, dry at top to moist at base.
				3.7-4.2': Sand. Light brown (7.5 YR 6/3) very fine, well sorted, loose, slightly moist.
				4.2-5.0': Silt. Red brown (5 YR 4/3) some clay, trace very fine sand, slightly moist,
				several thin clay seams at 4.5 feet. Dark red (2.5 YR 3/6) moderately effervescent, fissile,
				medium stiffness, moderately plastic.
25	30	5	25-35/0-.2	Silt. Red brown (5 YR 4/4) some clay, moderate stiffness (2.6 inch), moderately plastic, very
				moist to wet, trace clay inclusions, ¼ to 3/4 inch diameter, red (2.5 YR 4/6), stiff, mildly
				effervescent, moderately plastic.
30	35	5	2.5-5/0-.9	Silt. Red brown (5 YR 4/3) less clay than above, stiff (3.25) nonplastic, very moist, trace
				clay inclusions as above.
35	40	5	2.5-4.5/0-.2	0-4.5': Interbedded Silt and Clay. Silt: Brown (7.5 YR 4/4), hard (24.0), trace very
				coarse sand, slightly moist. Clay: Dark red brown (2.5 YR 3/3), fissile, strongly effervescent,
				nonplastic, clay lenses ¼ to 3 inch thick, color of clay grades to red brown (2.5 YR 4/4) at
				base, moderately effervescent.
				4.5-5.0': Sand. Brown (7.5 YR 4/3) medium with coarse, trace very coarse, some fine,
				moderately to poorly sorted, saturated, medium density.
40	45	5	2.5-20/0-1.5	0-4.5': Sand. Brown (7.5 YR 4/3) medium, some coarse, trace fine, moderately well sorted,
				medium density, saturated, trace gravel, ¼ inch, subrounded.
				4.5-5.0': Sand. Brown (10 YR 5/3), medium to coarse, with gravel, some very coarse
				and fine, trace silt nodules approximately 0.5 inches in diameter, very poorly sorted, loose to
				moderately dense. Gravel: ¼ to 1.5 inch, angular to subrounded.
45	50	5	3.5-30/0-1.9	Sand. Brown (7.5 YR 5/3) coarse with medium and very coarse, some fine, trace very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-24

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				fine at top gradational to medium with coarse, trace very coarse and fine at base.
				Some gravel: 1/8 to ¼ inch, medium density, poorly sorted at top, moderate sorting at
				base. Saturated.
50	55	5	2.5-3.5/	0-0.5': Sand. As at base of section above.
			0-3.1	0.5-2.25': Sand. Brown (10 YR 5/3), medium with gravel, some coarse, trace very coarse,
				fine, and silt, loose, dry. Top: slightly moist, poorly sorted. Gravel: 1/8 to 2 inches,
				subrounded to subangualar, very weakly cemented clasts, slightly effervescent.
				2.25-4.0': Sand. Light brown (2.5 TR 6/4) fine to medium, loose, slightly moist,
				pulverized rock at t 3.75 feet, moderately well sorted.
				4.0-5.0': Sand. Brown (7.5 YR 5/4) medium, some fine, trace very fine, loose to
				moderately dense, saturated, moderately well sorted, trace pea gravel.
55	60	5	5-85/0-0.4	0-1.5': Sand. Brown (7.5 YR 5/4) medium, some coarse and fine, trace very fine and
				very coarse, trace fine gravel, medium density, saturated, poorly sorted.
				1.5-3.25': Sand. Brown (7.5 YR 5/3) coarse with very coarse, some medium, trace fine,
				some gravel, 1/8 to 3/4 inch, subrounded, very poorly sorted, moderately dense.
				3.25-4.0': Sand. Brown (7.5 YR 4/3) very coarse, some gravel: 1/8 to ¼ inch, trace medium
				to fine, loose, very poorly sorted.
				4.0-5.0': Sand. Brown (7.5 YR 5/3) medium, some coarse, trace very coarse and fine,
				moderate sorting, loose, wet.
60	65	5	5-60/0-1.1	0-3.0': Sand. Color as above, medium, some coarse, trace fine and very fine, trace
				gravel: 1/8 to ¼ inch, moderately well sorted, loose to moderately dense.
				3.0-3.75': Sand. Brown (7.5 &R 4/3) coarse with medium and very coarse, some fine, trace
				very fine and silt, some gravel: 1/8 to 1 inch, subrounded, very poorly sorted, medium density.
				3.75-5.0': Sand. Color as above, medium with coarse, some fine, moderate sorting,
				trace gravel: 1/8 to ½ inch, subrounded to rounded, loose to moderately dense.
65	70	5	4.0-12/0-0.7	Sand. Brown (7.5 YR 4/3) medium, some coarse, trace very coarse and fine, moderately
				dense, trace (10 percent) gravel 1/8 to ¼ inch, subrounded, moderately to poorly sorted,
				fines downward slightly through section.
70	75	5	4-22/0-0.7	0-3.0': Sand. Color as above, coarse with medium, trace very coarse, fine, and very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-24

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				fine, poorly sorted, medium density, trace gravel 1/8 to 3/4 inch, subrounded.
				3.0-5.0': Sand. Dark brown (7.5 YR 3/3) with gravel. Sand coarse to very coarse, with
				medium, trace fine, some silt, very poorly sorted, medium density, saturated, gravel:
				1/8 to 2½ inch, subrounded to subangular.
75	80	3.5	6-20/0	0-0.5': Sand. With gravel, as above.
				0.5-3.0': Silt. Red brown (5 YR 4/4), trace clay in matrix, slightly to moderately plastic,
				soft (.75 to 1.0), wet.
80	85	4	25-125/	Silt. Red brown (5 YR 4/3) trace clay, medium stiffness (1.25 to 1.5), very moist, several thin
			0.2-0.6	¼ inch clay seams towards base, red brown (5 YR 4/4), slightly effervescent, soft.
85	90	5	3.0-6.0/0	0-4.0': Silt. As above with 3 inch clay lense at base, fissile, strongly effervescent, very
				stiff (3.0), nonplastic, dark red brown (2.5 YR 2.5/4).
				4.0-5.0': Silt. Dark red grey (5 YR 4/2), trace clay, wet to saturated.
90	95	5	4.5-25/0-0.3	Silt. Dusky red (10 R 3/2) As above, several thin (¼ inch) clay seams, plastic, soft,
				fissile.
				TD boring at 95 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-25 Project/No. WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 11/4/98 Drilling Completed 11/5/98

Total Depth Drilled 195 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1129.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used none Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Scott

Prepared By Kevin Daleness and Keith Marquardt Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	3.5	4.0/0-7.1	0.0-1.0': Sand and Silt. Yellowish red (5 YR 5/6), some gravel, loose, dry, trace
				rootlets. A horizon top soil.
				1.0-2.0': Sand. Reddish brown (2.5 YR 5/3), very fine to coarse, some gravel,
				¼ to 1 inch, loose, dry, trace silt.
				2.0-3.5': Sand. Brown (10.5 YR 4/14), as above, some gravel (¼ to ½ inch)
				subangular, trace silt, loose, dry.
5	15	4	5-6/2-5.4	0.0-1.5': Sand. As above, some gravel, loose, dry.
				1.5-4.0': Sand. Strong brown (7.5 YR 5/6), fine to medium, trace very fine,
				coarse, and very coarse, loose, damp, well sorted, trace gravel (¼ inch).
15	20	5	1-5/0	0.0-1.0': Slough.
				1.0-4.0': Silt and Clay. Interspersed. Silt: red brown (2.5 YR 5/4), clay: red
				(10 Y 4/6), clay HP - 3.5. Plastic, blocky, slight reaction to HCl. Silt, HP = 3.5.
20	25	5	2-5/1-6.5	0.0-2.0': Silt and Clay. As above.
				2.0-5.0': Sand. Light brown (7.5 YR 6/3), fine to very fine, well sorted, trace
				silt, loose, moist.
25	30	5	2-10/0-1.4	0.0-4.0': Sand. As above, moist, loose.
				4.0-5.0': Sand. Red brown (5 YR 4/4) as above, wet, some silt.
30	35	6	0-1.0/1-3	0.0-6.0': Sand. As above, very fine, some silt, wet.
35	40	5	1-3/0-3	0.0-5.0': Sand. As above, very fine, some silt.
40	45	5	1-12/0-1.4	0.0-1.0': Sand. As above.
				1.0-4.0': Silt. Brown (10.5 YR 4/4), trace very fine sand, HP = 3.0, no HCl reaction,
				blocky, wet.
45	50	5	1-4/0-1.9	0.0-2.0': Silt. As above.
				2.0-5.0': Sand. Color as above, very fine, some silt, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-25 Page 2 of 3

Prepared by Kevin Daleness and Keith Marquardt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
50	55	5	1-2/0-9.8	0.0-5.0': Silt. Color as above, trace very fine sand, wet, HP = 2-3.0, slight HCl
				reaction, blocky.
55	60	5	1-3/0	0.0-5.0': Silt. As above, trace to some very fine sand, wet.
60	65	5	1-3/0-2.4	0.0-5.0': Silt. As above, trace to some very fine sand, 1 inch very fine sand seam
				at 4 feet.
65	70	5	1-2/0	0.0-5.0': Silt. Red brown (5 YR 4/4) as above, trace clay inclusions, very strong
				reaction to HCl, ¼ to ½ inch, plastic, platy, wet.
70	75	5	1-1.5/0	0.0-5.0': Silt. As above, trace clay inclusions, wet.
75	80	4	1.0/0	0.0-3.0': Silt. As above with clay inclusions.
				3.0-4.0': Sand. Dark yellow brown (10 YR 4/4), very fine sand, with some silt,
				saturated.
80	85	4	1-2/0	Sand. As above, saturated.
85	90	5	1.0/0	0.0-2.5': Sand. As above, saturated.
				2.5-5.0': Sand. As above. Silt as above with interspersed clay inclusions.
90	95	5	1-2/0	0.0-3.5': Sand and Silt. Interspersed with clay inclusions, wet.
				3.5-5.0': Silt. As above with ¼ inch clay inclusions, wet, HP = 2.5, blocky.
95	100	5	1-2/0	0.0-3.0': Silt. As above.
				3.0-5.0': Silt. As above, color as above with clay inclusions every 2 inches (¼ inch)
				reddish brown (2.5 YR 4/4) and red brown (5 YR 4/5), strong reaction to HCl,
				platy.
100	105	5	1-2/0	0.0-5.0': Silt. With clay inclusions, as above.
105	110	5	1-3/0	0.0-5.0': Silt. With clay inclusions, as above.
110	115	5	1-1.5/0	0.0-1.0': Silt. As above.
				1.0-3.5': Sand. Brown (7.5 YR 4/4), medium to coarse, wet, well sorted, loose,
				trace gravel (1/8 to ¼ inch).
				3.5-5.0': Sand. Brown (7.5 YR 4/4), medium, trace coarse, wet, well sorted, loose.
115	120	5	10-50/0	0.0-1.5': Sand. As above.
				1.5-5.0': Sand and Gravel. Dark grey (7.5 YR 4/1). Sand: medium to very coarse,
				trace fine. Gravel: subangular to subrounded, 1/8 to 2 inches, loose, wet.
120	125	5	20-50/0	0.0-2.0': Sand. Brown (7.5 YR 5/4), medium, some coarse, trace gravel (1/8 to ¼
				inch) subrounded wet, loose.
				2.0-5.0': Silt. Red (5 YR 5/4), trace very fine sand, HP = 2 to 2.5, blocky, wet.
125	130	5	5-10/0	0.0-5.0': Silt. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-25 Page 3 of 3

Prepared by Kevin Daleness and Keith Marquardt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
130	135	5	5-10/0	0.0-2.0': Silt. As above.
				2.0-5.0': Silt. As above and 1 inch clay inclusion, red brown (25 YR 5/4),
				moderate reaction to HCl, platy.
135	140	5	4-10/0	0.0-5.0': Silt. As above, with clay inclusions (½ to 1 inch) HP = 3.5 to 4.0,
				slight reaction to HCl.
140	145	5	5-10/0	0.0-5.0': Silt. As above.
145	150	3.5	6-30/0	0.0-2.0': Silt. As above.
				2.0-3.5': Silt, Sand and Gravel. Dark reddish brown (5 YR 3/4), very hard, HP = >4
				gravel, subangular (¼ to 4 inches).
150	155	4	100/0-3.4	0.0-4.0': Till. As above.
155	160	5	50-300/	0.0-5.0': Till. As above, very hard >4 HP.
			3-17	
160	164	4	50-200/	0.0-4.0': Till. As above, very hard.
			2-16	
164	165	1	40/0	0.0-1.0': Silt, Sand and Gravel. Till as above, very hard, HP > 4.0, gravel ¼ to 1
				inch, subangular.
165	172	7	5-25/0	Till. As above, very hard, HP >4.
172	178	6	4-150/	Till. As above.
			0-110	
178	182	4	50-500/	Till. As above.
			0-65	
182	195			No recovery, hard drilling.
				TD 195 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-26 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 12/17/98 Drilling Completed 12/17/98

Total Depth Drilled 175 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1222.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Helper Mike and Jim

Prepared By Ted Powell and Dan Hegrenes Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2.5	2.5/0.0	0.0-6.0": Top Soil. Silty sand loam in bit, roots/grass, silt.
				6.0"-2.0': Sand. Strong brown (5 YR 5/8), fine to medium, trace coarse,
				silty, trace fine to coarse gravel, gravel up to 1 inch in diameter, gravel subangular to
				subrounded, moderately dense, poorly sorted, dry.
				2.0-2.5': Silt. Color as above, with fine to medium sand, trace pea gravel, moderately
				dense, dry.
5	10	5	2-2.25/0.0	0.0-0.2': Top Soil. Slough.
				0.2-1.0': Silt. As above, color as above.
				1.0-4.0': Sand. Strong brown (5 YR 5/6), fine and medium, silty, trace gravel
				up to 1 inch diameter, poorly sorted, slightly moist.
				4.0-5.0': Sand. Color as above, fine with medium, trace coarse, trace very
				fine, trace gravel up to 1 inch in diameter, moderately sorted, slightly moist.
10	15	5	2-3.5/0	0.0-0.5': Slough.
				0.5-3.5': Sand. Reddish yellow (7.5 YR 6/6), fine, trace very fine, well sorted,
				loose, dry.
				3.5-5.0': Sand. Reddish yellow (5 YR 5/6), fine, trace medium and coarse,
				occasional silt nodules, moderately sorted, slightly moist.
15	25	5	2-10/0-1.8	0.0-0.5': Slough.
				0.5-1.5': Sand. As above.
				1.5-3.5': Sand. Red (2.5 YR 5/6), fine, with trace medium and coarse,
				occasional silt nodules, with some gravel, angular to subrounded, 1/8 to 3 inches
				in diameter, poorly sorted, slightly moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-26 Page 2 of 6

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-4.5': Sand. Light brown (7.5 YR 6/4), very fine, with silt, trace clay, loose
				to moderately dense, slightly moist, moderately well sorted.
				4.5-5.0': Clay. Reddish brown (5 YR 4/3), silty, moderately plastic, soft HP = 0.25,
				moist.
25	30	5	0.5-7/0.1-	0.0-4.0': Clay. Reddish brown (2.5 YR 5/4) with thin to medium silt beds. Beds
			2.1	up to ½ inch thick (compressed from drilling method), moist, very hard clay. Silt
				brown (7.5 YR 5/4). Clay and silt, strongly effervescent with HCl. Silt very hard,
				HP >4.0.
				4.0-5.0': Silt. Color as above with some clay, moist.
30	35	4	0.5-4.5/0.1-	0.0-4.0': Silt. Color as above, trace clay inclusions in silt, silt very hard (HP >4.0)
			2.0	moist to wet at bottom 1 foot. Occasional clay seams, colors as above for clay.
35	40	5	0-4.0/0.1-	0.0-1.0": Silt. Reddish brown (5 YR 5/4) with clay, soft (HP = 1.0), very moist,
			0.6	moderately plastic.
				1.0-5.0': Sand. Pink (7.5 YR 5/4), very fine, with some silt to silty, well sorted,
				moderately dense, moist.
40	45	5	0.0-4.0/0.1-	0.0-1.0': Sand. As above.
			1.2	1.0-2.0': Silt. Brown (7.5 YR 5/4), very fine sandy, dense, slightly moist.
				2.0-4.0': Sand. Light brown (7.5 YR 6/3), very fine some fine, silty,
				moderately dense, slightly moist, well sorted.
				4.0-5.0': Silt. Light brown (7.5 YR 6/4), with some very fine sand, dense, slightly
				moist.
45	50	3	0-13/0.4-	0.0-2.0': Silt. Brown (7.5 YR 5/4) very fine sandy, grading to very fine silty sand in
			4.2	part, moderately dense to dense, slightly moist.
				2.0-3.0': Sand. Color as above, very fine with some silt, moderately dense,
				well sorted, slightly moist.
50	55	3	1.0-5.0/	0.0-1.5': Silt. Strong brown (7.5 RY 5/6), very fine sandy, dense, wet (saturated),
			0.1-1.2	soft.
				1.5-2.5': Sand. Color as above, very fine to fine, trace medium, coarse, and
				very coarse, some silt, moderately sorted, very moist, moderately dense.
				2.5-3.0': Sand. Brown (7.5 YR 5/3), medium to coarse, some very coarse, trace

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-26 Page 3 of 6

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				fine, very fine, and silt, some gravel. Gravel 1/8 to 3/4 inches in diameter, subangular
				to subrounded, very poorly sorted, saturated, loose.
55	60	3.5	0.5-17/	0.0-2.5': Sand. Brown (10 YR 5/3), medium with some coarse, trace coarse and
			0.1-2.3	fine, trace pea gravel, moderately sorted, saturated.
				2.5-3.0': Sand. Color as above, medium, trace coarse, very coarse, and fine,
				well sorted.
				3.0-3.3': Silt. Brown (7.5 YR 5/3), with some very fine to fine sand, dense, weakly
				cemented, very slightly calcareous, trace gravel, 1/8 to ¼ inches in diameter pinpoint
				porosity, very moist.
				3.3-3.5': Silt. Pinkish white (7.5 YR 8/2), very dry, floury, trace fine to coarse sand.
60	65	3	1-5/0.2-0.7	0.0-0.2': Silt. As above.
				0.2-2.5': Sand. Light brown (7.5 YR 6/3), fine to medium, some coarse, trace
				to some pea gravel, loose, dry to moist, well sorted.
				2.5-3.0': Sand. Light brown (7.5 RY 6/4), medium with some coarse and very
				coarse, trace pea gravel, wet, moist, moderately well sorted.
65	70	5	0-2.5/0-0.1	0.0-1.0': Sand. Brown (7.5 YR 5/4) medium to coarse, some fine and very
				coarse, some gravel, 1/8 to ½ inch in diameter subangular to subrounded, very moist,
				poorly sorted, loose, saturated.
				1.0-4.0': Sand. Color as above, medium, trace fine, coarse, and very coarse,
				well sorted, loose, saturated.
				4.0-5.0': Sand. Brown (7.5 YR 5/3), medium, with coarse, some fine, trace
				very fine, very coarse, and silts, moderately sorted, saturated.
70	75	5	0-5.5/0.1-	0.0-0.5': Sand. As above.
			0.8	0.5-4.0': Sand. Color as above, fine to medium, some very fine and silt, trace
				coarse, moderately sorted, loose, saturated.
				4.0-5.0': Sand. Light brown (7.5 YR 6/4), fine, trace medium, some silt, moderately
				dense, moderately sorted.
75	80	5	0-11/	0.0-3.5': Sand. Color as above, fine, some very fine, trace silt, loose to moderately
			0.1-0.6	dense, well sorted, very moist to moist.
				3.5-5.0': Sand. Pink (7.5 YR 7/4), very fine, trace fine and silt, moist to slightly

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

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Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				moist, loose to moderately dense.
80	85	5	0.0-16.5/	0.0-5.0': Sand. As above.
			0.0-0.1	
85	90	5	0-13.25/	0.0-5.0': Sand. Reddish brown (5 YR 6/4), very fine to fine, dense, very moist,
			0.8-3.2	well sorted.
90	95	4	1-6/0.5-1.5	0.0-4.0': Sand. Pink (7.5 YR 7/3), very fine to fine, as above, moist, well
				sorted.
95	99	3	1.5-8.0/	0.0-3.0': Sand. Color as above, very fine, some fine, slightly moist to moist,
			0.8-2.4	dense.
99	105	5	0-2/0.1-0.2	0.0-1.0': Silt. Pink (7.5 YR 8/3), trace very fine to fine sand, loose, dry, pulverized rock
				flour from drilling.
				1.0-5.0': Sand. Light brown (7.5 YR 6/4), fine, some medium, trace coarse very
				coarse, and fine gravel, moderately sorted, loose, slightly moist.
105	110	5	0.0-2.0/	0.0-1.5': Sand. As above.
			0.1-0.2	1.5-1.7': Silt. Very pale brown (10 YR 8/2), dry, loose, dry, pulverized rock flour
				appearance from drilling.
				1.7-2.0': Sand. Pink (7.5 YR 7/4), very fine to fine, loose, well sorted, dry.
				2.0-3.0': Sand. Pink (7.5 YR 7/3), very fine, some silt, loose, dry, pulverized
				rock flour from drilling.
				3.0-5.0': Sand. Light brown (7.5 YR 6/4,) fine, with very fine, loose, moist,
				well sorted.
110	115	5	0.7-2.3/	0.0-5.0': Sand. Color as above, very fine to fine, trace silt, well sorted, loose,
			0.1-0.3	moist.
115	120	4	0.0-4.0/	0.0-4.0': Sand. Light brown (7.5 YR 6/4), fine with very fine, trace silt, well
			0.4-1.9	sorted, loose, very moist.
120	125	4	14-19/4.1-	0.0-4.0': Sand. As above, fine with very fine, trace to some silt at bottom,
			7.3	well sorted, loose, very moist.
125	130	5	2-129/0.8-	0.0-1.5': Silt. Pinkish white (7.5 YR 8/2), loose, dry pulverized rock flour from drilling.
			29	1.5-3.5': Silt. Reddish brown (5 YR 5/4), clayey, moderately plastic, moderately stiff,
				HP = 2.0, moderate HCl reaction, very moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-26 Page 5 of 6

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-5.0': Sand. Brown (7.5 YR 5/4), fine, with very fine, well sorted, loose to
				moderately dense, very moist to wet.
130	135	5	1-10.3	0.0-0.5': Sand. As above.
			0.3-2.1	0.5-1.0': Silt. Brown (7.5 YR 5/4), trace clay, firm, dense, very moist.
				1.0-5.0': Sand. Color as above, very fine, silty, grading to silty very fine sand
				in part, dense to very dense, saturated.
135	140	5	0-1.5/0-0.1	0.0-2.5': Sand. Reddish brown (5 YR 5/4), very fine to fine, variable silt,
				moderately dense, moderately to well sorted, saturated, ½ inch thick clay lens at 2.5
				feet. Red (10 YR 4/6). Clay fissile, soft, plastic. 1 inch silt bed below clay lens.
				Silt. Brown (7.5 YR 5/3), trace fine sand in silt, moderately stiff.
				2.5-5.0': Sand. Reddish brown (5 YR 5/4), fine, some medium trace coarse
				to very coarse, moderately well sorted, saturated, loose.
140	145	5	0.5-4.0/	0.0-1.0': Sand. As above.
			0.1-0.2	1.0-2.0': Sand. Brown (7.5 YR 5/3), coarse, with medium and very coarse,
				trace fine, and fine gravel, subangular to subrounded, moderately to poorly sorted,
				loose, saturated.
				2.0-3.0': Sand and Gravel. Coarse to very coarse sand, trace medium, fine
				and very fine, gravel 1/8 to ½ inch in diameter, subangular to subrounded. Poorly
				sorted, loose, saturated.
				3.0-5.0': Sand. Color as above, fine to medium, trace coarse and very coarse,
				coarsening downward to medium to coarse. Sand subrounded, trace fine, and
				gravel up to 2 inches in diameter subrounded, poorly sorted, loose, saturated.
145	150	5	0.8-3.8/	0.0-2.5': Sand. Brown (7.5 YR 4/3), coarse, with medium, trace very fine, very
			0.1-0.4	coarse, and fine gravel, poorly sorted, loose, saturated.
				2.5-5.0': Sand. Brown (7.5 YR 5/4), medium with fine, some coarse trace very
				fine, very coarse, and pea gravel, moderately sorted, loose,
				saturated.
150	155	5	1.4-8.0/	0.0-2.5': Sand. As above.
			0.1-1.2	2.5-5.0': Sand. Light brown (7.5 YR 6/4), very fine to fine, trace medium and

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-26 Page 6 of 6

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				silt, well sorted, loose to moderately dense, saturated.
155	160	5	0.0-8.0/0.6-	0.0-5.0': Sand. Brown (7.5 YR 5/4) fine, with very fine, some medium, trace
			1.2	coarse and very coarse, moderately well sorted, loose to moderately dense, saturated.
160	165	5	7.1-11.25/	0.0-5.0': Sand. Color as above, medium, with fine, trace coarse, very coarse,
			0.7-1.7	and fine pea size gravel, poorly sorted, loose, saturated.
165	170	5	3-60.5/	0.0-3.0': Sand. As above, coarsening downward to some gravel up to 1 inch in
			0.7-7.20	diameter, saturated. Sand coarse to very coarse with very fine and silt, very poorly
				sorted.
				3.0-5.0': Sand. Color as above, fining downward from medium sand with fine,
				trace coarse, moderately sorted to fine sand with medium and very fine, trace coarse
				sand, moderately well sorted, saturated.
170	175	5	0.0-7.1/	0.0-5.0': Sand. Brown (7.5 YR 5/4), fine, with very fine, trace to some silt,
			0.2-0.6	well sorted, dense, saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-27 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 12/20/98 Drilling Completed 12/21/98

Total Depth Drilled 124 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1194.01 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Helper Mike and Jim

Prepared By Ted Powell and Dan Hegrenes Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2	4-4.5/0.0	0-0.5': Sand. Frozen silty sand loam with roots.
				0.5-2.0': Sand. Strong brown (7.5 YR 5/6), fine to medium with silt, some 1/8 to
				½ inch gravel, moist, clayey silt seam approximately 3 inches thick at 1 and 1.5
				feet, medium stiffness.
5	10	3	4.5-5/0.0	0.0-0.5': Slough.
				0.5-3.0': Sand. Yellow red (5 YR 5/8), fine with very fine, trace medium, silt,
				moist, 4 inch gravel at 2.5 feet. Sand grades to fine sandy silt in part, poorly
				sorted, very moist to wet. At 2 feet, a 2 inch lens of very fine to fine sandy silt,
				dark grey (7.5 YR 5/6). A thin (¼ inch thick) layer of black organics with roots rests
				on top of the silt.
10	15	4	4.5-8/0.0	0.0-1.75': Slough.
				1.75-2.5': Sand. Red (2.5 YR 5/6), fine with very fine, some silt, trace coarse and
				very coarse, moist, poorly sorted, trace gravel, (1/8 to 3/4 inch), subangular to
				subrounded.
				2.5-4.0': Silt. Very sandy, grading to very silty sand in part, sand red (2.5 YR 4/8),
				fine to medium, some coarse, trace very coarse and gravel, (1/8 to 2 inches),
				subangular, wet, very poorly sorted.
15	20	4.5	3.5-6/0.0-	0.0-0.5': Slough.
			0.5	0.5-3.0': Sand. Fine, some very fine and silt, color as above, trace gravel, (1/8 to 2.5
				inches), subrounded, poor to moderate sorting, moist, medium, dense.
				3.0-4.0': Sand. Color as above, fine, trace medium and coarse, some very fine, trace
				silt, moderately well sorted, loose to medium density, trace (<5 percent) fine gravel,
				moist.
				4.0-4.5': Silt. Sandy, color as above, sand very fine to fine, trace medium to coarse,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-27

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				moderate sorting, moist, soft.
20	25	4	3.5-12/	0.0-0.75': Silt. Red (2.5 YR 4/8), very sandy, grading to very silty, fine to medium
			0.0-1.1	sand in part, medium density, moist, abundant saprolitic weathered rock, light olive
				brown (2.5 YR 5/4), loose, slightly moist.
				0.75-4.0': Sand. Yellow red (5 YR 5/6), very silty, very fine with fine, trace medium,
				coarse and very coarse, trace gravel (1/8 to ½ inch), loose to medium density, slightly
				moist.
25	30	5	6-15/0.3-	0.0-0.8': Slough
			3.2	0.8-1.8': Sand. Strong brown (7.5 YR 5/6), fine, trace very fine, well sorted, loose,
				slightly moist.
				1.8-4.0': Silt. Yellow red (5 YR 4/6), sandy, medium with fine sand, trace coarse
				and very coarse, trace 10 percent fine gravel, medium stiffness, moist.
				4.0-4.2': Sand. Strong brown (7.5 YR 5/6), fine, trace very, fine well sorted, slightly
				moist.
				4.2-5.0': Sand. Very silty grading to very sandy silt in part, loose to medium
				density, moderately stiff where silty, slightly moist, trace gravel (1/8 to 1 inch),
				subrounded.
30	35	5	5-12/0.2-0.4	Sand. Very silty, grading to very sandy silt as above. At 4 feet, a 6 inch lens
				of sand, red yellow (5 YR 6/6), very fine to fine, some silt, moderately well sorted,
				loose, slightly moist.
35	40	3.5	7-25/0.7-	0.0-0.5': Slough.
			8.6	0.5-3.5': Sand. Very silty, color as above, very fine to fine, some medium, trace
				coarse, some gravel (15 percent) 1/8 to 1 inch, subrounded to subangular, moderately
				to poorly sorted, slightly moist, loose to medium density.
40	45	3.5	8-10/0.8-2.1	0.0-0.5': Sand. Very silty, as above.
				0.5-1.5': Sand. Red yellow (7.5 YR 6/6), fine with very fine, trace silt, loose,
				moderately well sorted, slightly moist.
				1.5-3.5': Sand. Very silty, fine to medium, with very fine, grading to very sandy
				silt, moist to very moist throughout, poorly sorted, trace (10 percent) gravel 1/8 to
				1.5 inches, subrounded, silt is moderately dense.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-27

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
45	50	4	4-30/0-5.5	0.0-0.5': Sand. Very silty, to sandy silt, as above.
				0.5-1.2': Silt. Red (2.6 RY 4/8), very sandy, very fine to fine sand, trace medium and
				coarse, abundant very thin (1 mm thick) lenses of black sandy silt interbedded
				throughout, moderately stiff to stiff, slightly moist.
				1.2-2.2': Sand. Brown (7.5 YR 4/4), very fine to fine, some silt, loose, slightly moist.
				2.2-4.0': Silt. Red brown (2.5 YR 5/4), sandy. Sand fine, some medium, trace coarse
				and very coarse, some gravel (1/8 to 1 inch), subrounded, moist, stiff.
50	55	4	10-25/0.5-	0.0-3.2': Silt. Thickly bedded sandy siltyas above, and very silty sand. Sand yellow red
			2.6	(5 YR 5/6), fine with very fine, trace medium and coarse, loose, slightly moist,
				moderate sorting.
				3.2-4.0': Sand. Brown (7.5 YR 5/4), very fine, silty, loose to medium density, slightly
				moist, trace 1/8 to ¼ inch gravel, moderate sorting.
55	60	4	5-20/0.3-	0.0-3.0': Sand. Yellow red (5 YR 4/6), very silty, fine with very fine, trace medium,
			11.2	coarse and very coarse, occasional 1 to 2 inch diameter silt nodules, slightly moist
				to moist, moderately dense, trace gravel (1/8 to 1.5 inches), subrounded to subangular.
				3.0-4.0': Silt. Brown (7.5 YR 5/4), sandy, very fine to fine, some medium, trace
				coarse and very coarse, some gravel (1/8 to 2 inches), subrounded, slightly moist to dry,
				pulverized due to drilling.
60	65	4	5-10/0-2.4	0.0-0.3': Sand. Silty, color as above, sand very fine to medium, trace coarse and
				very coarse, some gravel, fractured slate, angular to subrounded.
				0.3-3.5': Sand. Yellow red (5 YR 4/6), fine with very fine, some silt, trace coarse,
				trace fine gravel, moderately well sorted, slightly moist to moist, loose.
				3.5-4.0': Silt. Very sandy, color as above, sand fine, some very fine, trace medium
				and coarse, trace clay, very moist, medium stiffness.
65	70	4	2.5/0.2-1.9	Silt. Very sandy with sequences of very silty sand interbedded throughout,
				variable gravel interspread throughout, (1/8 to 3.5 inches), moist.
70	75	4	2-2.5/0-0.6	As above.
75	80	4	10-70/0.8-	0.0-1.0': Slough.
			12.6	1.0-4.0': Sand. Very silty, color as above, sand very fine to fine, trace medium,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-27 Page 4 of 5

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				moderately dense to loose, moist, trace gravel (1/8 to 0.5 inch), subrounded to
				subangular.
80	85	4	5-12/0.3-1.5	Sand. Red yellow (5 YR 4/6), very silty as above, medium density.
85	90	5	5-30/0.1-3.7	0.0-4.5': Sand. Red brown (5 YR 4/4), very silty sand, fine with very fine, some
				medium, trace coarse and very coarse, very poorly sorted, moderately dense to dense,
				variable gravel, (1/8 to 3 inches), very moist, occasional black seams of silty sand.
				4.5-5.0': Sand. Red brown, very silty, fine with very fine, trace medium and coarse,
				trace 1/8 to ¼ inch gravel, medium density, moist.
90	95	5	5-10/0.5-1.5	0.0-2.0': Sand. Red brown (5 YR 4/4), very silty, with gravel, (1/8 to 1 inch),
				subangular to subrounded, matrix supported, trace clay in matrix, moist, medium
				density. Sand fine with very fine, some medium trace coarse and very coarse.
				2.0-3.0': Sand. Silty, color as above, fine, some very fine and silt, trace medium,
				coarse and very coarse, some gravel (1/8 to ½ inch), subrounded to subangular,
				pulverized from drilling, moist, poorly sorted.
95	100	5	2.5-3.5/0.0-	0.0-0.3': Sand. Red brown (2.5 YR 4/4), very silty, fine with very fine, trace
			0.2	medium, coarse and very coarse, some gravel (1/8 to ½ inch), wet, medium density,
				poorly sorted.
				0.3-0.5': Gravel. Dark black grey (2 Gley 3/1), some fine to coarse sand, appears like
				crushed weathered granite. Gravel 1/8 to ½ inch, saturated, very poorly sorted.
				0.5-2.0': Sand. Very silty, as above, saturated.
				2.0-2.5': Sand. Dark red grey (5 YR 4/2), with gravel, fine to very coarse, gravel 1/8
				to 1 inch, subrounded to subangular, very poorly sorted, saturated.
				2.5-5.0': Till. Red brown (2.5 YR 4/4), silty clay matrix, matrix supported, abundant
				gravel (1/8 to 2 inches), medium stiff, saturated.
100	105	5	2.5-5/0.0-0.2	0.0-5.0': Till. As above, but gravel up to 4 inches.
105	107	2	6-15/0.0	0.0-1.0': Slough.
				1.0-1.5': Till. Red (10 R 4/6), matrix supported, matrix is composed of very fine
				sandy silt, trace medium and coarse, some clay, stiff, moist to very moist,
				gravel (approximately 20 percent) 1/8 to 3/4 inch, subrounded to subangular, very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-27 Page 5 of 5

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				poorly sorted.
				1.5-2.0': Weathered slate bedrock with silty clay matrix, moderately stiff to hard,
				matrix color as above, slightly moist.
107	110	3	20-70/4.6-	Weathered Michigamme Slate. Red (2.5 YR 5/6), with sandy silt and silty clay fracture
			19.2	filling, slate is phylitic and highly fractured and broken due to drilling.
110	113.5	3.5	20-100/	Weathered Slate bedrock rubble as above, very dry, due to drilling.
			2.7-3.9	
113.5	116	0.5	10-20/	Weathered rock as above, lost sample at bottom of barrel.
			1.4-3.4	
116	118	1.5	80-100/	Weathered slate rubble, as above, iron stained.
			10.7-15.8	
118	120	2	4.5-12/	As above.
			2.0-2.4	
120	124	4	10-60/	As above.
			1.6-8.9	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-28 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/10/99 Drilling Completed 6/10/99

Total Depth Drilled 30 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Hollow Stem Auger

Length and Diameter of Coring Device 2'x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1120.29 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Perry

Prepared By Bill McCrakin Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1.5	5,8,10,14	Top soil. Brown (7.5 YR 4/3), silty sand, with rootlets, organic rich,	5.5
				firm.	
				0.5-1.5': Sand. Brown (7.5 YR 5/4), very coarse to very fine, trace gravel,	
				(2 to 20 mm), subrounded, trace silt, loose, dry.	
2	4	0.3	3,5,5,4	0.0-0.3': Slough. Sampler blocked by stone.	
4	6	1	4,2,1,3,	0.0-0.5': Slough.	9
				0.5-1.0': Sand. Strong brown (7.5 YR 5/6), very coarse to very fine,	
				trace gravel, (2 to 20 mm), subrounded, trace silt, loose, dry.	
6	8	1	5,7,12,20	0.0-0.5': Slough.	15
				0.5-1.0': Sand. Brown (7.5 YR 4/3), very coarse to coarse, with gravel (2 to 20 mm),	
				firm, subrounded, dry.	
8	10	0	5,25,20,21	No recovery.	
10	12	1	14,15,20,21	0.0-0.3': Slough.	9
				0.3-1.0': Sand. Pink (7.5 YR 7/4), very coarse to very fine, with gravel	
				(2 to 15 mm), subrounded, firm, dry.	
12	14	1	8,12,13,15	0.0-0.1': Slough.	6
				0.1-1.0': Sand. Brown (7.5 YR 5/4), very coarse to very fine, with gravel	
				(2 to 30 mm), subangular.	
14	16	1	4,8,10,10	Sand. As above.	15
16	18	1	10,14,16,20	0.0-0.1': Slough.	15
				0.1-1.0': Sand. As above.	
18	20	1	18,20,20,20	0.0-0.1': Slough.	5
				0.1-0.9': Sand. As above.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-28 Page 2 of 2

Prepared by Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
				0.9-1.0': Silt. Hard brown (7.5 YR 5/3), firm, moist.	
20	22	1	21,27,33,34	0.0-0.1': Slough.	3
				0.1-1.0': Silt. Brown (7.5 YR 5/3), firm, moist, very thin laminations of	
				sand 1 to 2 mm thick, very thin lamination of clay 1 mm thick. Clay	
				is red (2.5 YR 4/8).	
22	24	1	20,22,22,23	0.0-0.1': Slough.	3
				0.1-1.0': Silt. As above.	
24	26	1	27,33,100	0.0-0.1': Slough.	2
				0.1-1.0': Silt. As above. No sand laminations.	
26	28	1	28,32,30,36	0.0-0.1': Slough.	2
				0.1-1.0': Silt. As above. No sand laminations.	
28	30	1	30,41,44,57	0.0-0.1': Slough.	2
				0.1-1.0': Silt. (7.5 YR 4/4), thickly laminated 4 to 10 mm. Grades	
				into very fine sand coarse silt with laminations. Clay laminations 10 to	
				25 mm thick, red (2.5 YR 3/6), platy, hard. Sequences: clay to silt up to very fine	
				sand and coarse silt 20 to 50 mm.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-29 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/10/99 Drilling Completed 6/10/99

Total Depth Drilled 30 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuos feet

Land-Surface Elev. 1120.38 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyar Driller Dan Z. Helper Perry

Prepared By Bill McCrakin Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVM
0	2	1	3,4,4,6	0.0-1.0': Sand. Strong brown (7.5 YR 4/6), very coarse to very fine, trace	7
				silt. With gravel, (2 to 10 mm), subangular, loose, dry.	
2	4	0	6,7,10,14	No recovery, rock >50 mm.	
4	6	1.5	20,6,6,10	0.0-0.6': Sand. Strong brown as above.	6
				0.6-1.5': Sand. Strong brown (7.5 YR 5/6), medium to very fine, trace	
				very coarse and coarse sand (5 percent), firm, dry.	
6	8	1	18,10,14,14	0.0-1.0': Sand. As above.	7
8	10	0.5	7,8,11,13	0.0-0.3': Slough.	6
				0.3-0.5': Sand. Dark brown (7.5 YR 3/2), very coarse to very fine with	
				gravel, (2 to 15 mm), trace silt, loose, subangular gravels.	
10	12	0	10,10,19,17	No recovery, very rocky.	
12	14	0.3	8,11,11,11	0.0-0.3': Sand. Strong brown (7.5 YR 5/6), medium to very fine, well	6
				sorted.	
14	16	1	10,10,14,20	0.0-1.0': Sand. As above.	6
16	18	1	31,15,15,10	0.0-0.2': Slough.	6
				0.2-1.0': Sand. Brown (7.5 YR 4/4), very coarse to very fine. Gravel,	
				(2 to 5 mm), subrounded, firm.	
18	20	0.1	30,22,22,22	0.0-0.1': Slough. Very loose.	
20	22	1	15,15,15,17	0.0-0.5': Slough.	5
				0.5-1.0': Gravel. Brown, (2 to 30 mm), subangular, with very coarse to	
				very fine sand. Clay matrix, reddish brown (2.5 YR 5/4), firm, platy.	
22	24	1.7	13,15,7,22	0.0-0.1': Slough.	5
				0.1-1.6': Sand. Light brown (7.5 YR 6/4), fine to very fine with thin 0.5	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-29 Page 2 of 2

Prepared by Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVM
				to 2 mm laminates of silt. Sequence: 3 mm sand, 0.5 mmsilt, 4 mm seam	
				1.0 mm silt, 6 mm sand, 0.5 mm silt etc. firm, dry.	
				1.6-1.7': Sand. Pink (7.5 YR 8/4), fine to very fine, silt absent, dry,	
				loose.	
24	26	1	26,14,17,25	0.0-0.4': Slough and Stone.	5
				0.4-1.0': Sand. Pink as above.	
26	28	1	29,23,30,28	0.0-0.1': Slough.	4
				0.1-1.0': Sand. Pink as above.	
28	30	1	20,20,20,22	0.0-1.0': Sand. Pink as above.	4

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-30 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 10/20/99

Drilling Completed 10/20/99

Total Depth Drilled 20 Feet

Hole Diamete 6 inches

Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1118.03 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller

Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2	1.5-2.25/0.0	0.0-2.0': Sand/Gravel. Strong brown (7.5 YR 5/6), sand fine to coarse, predominately
				medium, gravel fine to coarse, subangular to subrounded, poorly sorted, pebbles to 4
				inches in diameter. Rock stuck in spoon tip, moist. Rootlets and some silt at 1.5 feet.
5	10	5	1.5-3.25/	0.0-2.0': Sand/Gravel. As above, strong brown (7.5 YR 4/3), some wood fragments,
			.6-.9	odor.
				2.0-3.0': Sand. Strong brown (7.5 YR 4/3), medium to very coarse, with some fine
				to coarse gravel and pebbles, subangular to subrounded, moist, odor, poorly sorted.
				3.0-5.0': Sand. Reddish brown (2.5 YR 4/4), very fine, silty, with some medium
				to coarse gravel and pebbles, subangular to subrounded; well sorted, moist, slight
				odor.
10	15	5	1.75-9/0-0.7	Sand. As above, less gravel, no odor, moist.
15	20	5	1.25-6.5/	Silt. Reddish brown (2.5 YR 4/4), very fine sandy, trace fine to medium sand,
			0-1.4	trace fine gravel (subangular to subrounded) loose, moist, no odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Wel GMSB-31 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10/20/99 Drilling Completed 10/20/99

Total Depth Drilled 23 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1117.62 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.25-9/0-0.1	0.0-2.0': Sand. Light brown (7.5 YR 6/4), medium, some fine, trace fine gravel,
				subangular and subround, well sorted, moist.
				2.0-5.0': Sand. Light brown (7.5 YR 6/4) coarse to very coarse, with fine to
				coarse, gravel, subangular and subrounded, moderately sorted, moist.
5	10	5	1.25-5.5/	0.0-2.0': Sand/Gravel. Reddish yellow (7.5 YR 7/8), medium to very coarse sand,
			0.4-2.7	fine to very coarse gravel and pebbles to 3 inches in diameter, subangular and sub-
				rounded, poorly sorted, loose, moist.
				2.0-5.0': Sand. Light reddish brown (5 YR 6/3), very fine, very silty, trace fine
				to coarse gravel subangular to subrounded, moist, slight odor.
10	13	3	1.25-10/	0.0-3.0': Sand. As above, yellowish red (5 YR 5/8).
			0.2-0.8	
13	18	5	1.25-17/	0.0-5.0': Sand. Reddish yellow (5 YR 6/8), very fine, very silty, trace fine to
			0.0-7.9	coarse gravel and pebbles, subangular and subrounded, loose, moist, well sorted.
18	23	5	1.25-24/	Sand. Reddish yellow (5 YR 6/8), very fine, very silty, trace medium, trace
			0.9-8.5	coarse gravel and pebbles, subangular, well sorted, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-32 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/20/99 Drilling Completed 10/20/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.39 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.25-12/	0.0-2.0': Sand. Strong brown (7.5 YR 5/6), fine to medium, with some fine
			0.0-1.4	to coarse gravel and pebbles upto 2 inches in diameter, mostly subangular and angular,
				well sorted, loose, moist.
				2.0-3.0': Sand. Strong brown (7.5 YR 5/6), medium, well sorted, loose.
				3.0-5.0': Sand. Strong brown (7.5 YR 5/6), coarse, some medium, well sorted
				with some fine to coarse gravel and 1 inch diameter pebbles, subangular to
				subrounded, loose, moist.
5	10	5	1.25-320/	0.0-3.0': Sand/Gravel. Reddish yellow (5 YR 6/6), medium to very coarse sand,
			0.2-1.4	fine to very coarse gravel and pebbles up to 2 inches in diameter, subangular and
				subrounded, very poorly sorted, loose, moist.
				3.0-5.0': Sand. Reddish yellow (5 YR 6/6), fine to medium, some coarse,
				moderately sorted, trace pebbles to 1 inch in diameter, loose, moist.
10	15	3	1.25-250/	0.0-2.0': Sand/Gravel. Brownish yellow (10 YR 6/8), fine to coarse sand,
			0.0-3.0	predominately fine to medium, coarse gravel and pebbles up to 3 inches in diameter,
				moderate sorting, moist, loose.
				2.0-3.0': Sand. Grayish brown (10 YR 5/2), fine to medium with coarse, some
				fine to coarse gravel, subangular and subrounded, poor sorting, loose, moist.
15	20	5	1.25-	0.0-4.0': Sand. Black (5 YR 2.5/1), very fine, silty, trace fine to coarse
			>10,000/	gravel and pebbles up to 1.5 inches in diameter, well sorted, loose, moist, odor, black
			13.3-157	staining.
				4.0-5.0': Sand. As above, but brown (10 YR 4/5), no staining.
20	25	5	6.9-	0.0-2.5': Sand. As above, reddish brown (5 YR 5/4).
			>2,000	2.5-3.0': Silt. Brown (10 YR 4/3), with black staining, firm, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-32

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.0-5.0': Sand. brown (10 YR 4/3), very fine, silty, some fine, well sorted
				with trace coarse gravel and pebbles up to 2 inches in diameter, loose, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-33 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10/20/99 Drilling Completed 10/20/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.60 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.25-3.25/	Sand. Yellowish brown (10 YR 5/6), fine, some medium to coarse, well
			0-8.2	sorted, trace fine to coarse gravel and pebbles to 2 inches in diameter, subangular,
				loose, moist.
5	10	5	1.25-36/	Sand/Gravel. Yellowish brown (10 YR 5/6), fine to coarse sand, fine to coarse gravel,
			62-115	subangular to subrounded, pebbles to 3 inches in diameter, very poorly sorted, loose,
				moist. Black band of staining 1.2 to 1.5 feet. Burnt or stained sand.
10	15	5	1.25-14/	0.0-0.5': Sand/Gravel. As above.
			1-32	0.5-2.5': Sand. Light brown (7.5 YR 6/4), medium to coarse, well sorted with
				trace pebbles to 1 inch in diameter and trace coarse gravel, subangular to subrounded,
				moderately sorted, loose, moist.
				2.5-5.0': Sand. Strong brown (7.5 YR 4/6), fine, with very fine and silt,
				well sorted, trace rootlets and silt lens at 5 feet, loose, moist, slight odor.
15	20	5	1.25-	0.0-1.0': Silt. Black (5 Y 2.5/1), some very fine sand, black staining.
			>10,000/	1.0-2.0': Silt. Reddish brown (2.5 YR 4/3), with black staining, very clayey with
			115-225	abundant fine to medium sand and fine to coarse angular gravel in silty matrix,
				wet, odor, 1 to 3 inch diameter pebbles.
				2.0-5.0': Sand. Blue-black (Gley 2.5/1), very fine, very silty, trace very
				coarse gravel and pebbles to 2.5 inches in diameter, subangular, well sorted, loose,
				moist, odor, thoroughly stained.
20	25	5	>10,000/	0.0-3.0': Silt. Blue-black (Gley 2.5/1), very fine, sandy, also clay in zones,
			610->2,000	trace coarse gravel and pebbles, subangular to subrounded, very moist, loose, stained,
				odor.
				3.0-5.0': Silt. As above. Becoming black (7.5 YR 2.5/1), staining decreasing.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-34 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/20/99 Drilling Completed 10/20/99

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	3-475/	0.0-4.0': Sand. Strong brown (7.5 YR 5/8), fine, some medium to coarse, well
			6.1->2,000	sorted, with fine to coarse gravel and pebbles to 3 inches in diameter, subangular,
				some subrounded, loose, moist.
				4.0-5.0': Organics. Greenish black (Gley 2.5-1), rootlets, peat, silt, wood
				fragments, very moist, black staining, odor.
5	10	5	950-6,000/	0.0-1.0': Organics. As above, black.
			72->2,000	1.0-3.0': Organics. Black, wood splinters, and wood fragments, compacted, mixed
				with some silt/fine sand, odor.
				3.0-5.0': Sand. Dark green grey (Gley 10 Y 3/1), very fine, well sorted, occasional
				pebble to 1 inch in diameter, strongly stained, trace rootlets, loose, moist, odor.
10	15	5	2,000-	0.0-3.0': Sand. As above.
			3,500/190	3.0-5.0': Sand. Dark brown (7.5 YR 3/3), medium, well sorted, trace fine to
			235	coarse, with pebbles.
15	20	5	600-6,000/	0.0-2.0': Sand. Dark reddish brown (5 YR 3/3), fine to coarse, poor sorting,
			650->2,000	with trace fine to coarse gravel and pebbles to 1 inch in diameter, subangular to
				subrounded, loose, very moist to wet, odor.
				2.0-3.0': Sand. Light reddish brown (5 YR 6/3), medium, well sorted, moist,
				loose, odor.
				3.0-5.0': Sand/Gravel. Dark reddish brown (5 YR 3/3), medium to very coarse
				sand, fine to coarse gravel, subangular to subrounded, very poorly sorted, very coarse
				mix, loose, moist, odor.
20	25	5	550-9,000/	0.0-3.0': Sand/Gravel. As above.
			>2,000	3.0-5.0': Sand/Gravel. Black (Gley 2.5/1-10b), very moist, heavily stained, very
				strong odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-34

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
25	30	5	220-1,300/	0.0-1.5': Sand/Gravel. As above, black staining.
			380->2,000	1.5-5.0': Silt. Dark greenish grey (Gley 10Y 4/1), trace very fine sand,
				loose, soft, moist, strong odor, staining.
30	35	5	600-2,500/	Silt. As above, stained, odor.
			600-1,500	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-35 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/20/99 Drilling Completed 10/20/99

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1118.51 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	20.5-130/	0.0-2.0': Sand/Gravel. Reddish brown (5 YR 5/3), predominately fine to very fine
			1.9-172	sand with coarse sand, fine to coarse gravel and pebbles to 3 inches in diameter,
				subangular to subrounded, sand moderately sorted, moist, odor.
				2.0-5.0': Sand. Dark reddish brown (5 YR 3/3), fine with some medium to coarse,
				well sorted, trace coarse gravel, subangular to subrounded, loose, moist, strong odor.
5	10	5	2,250-	0.0-2.0': Sand. As above.
			>10,000/	2.0-4.0': Organics/Sand. Very dark grey (7.5 YR 3/1), rootlets/peat/natural organics,
			12->2,000	mixed with very fine to fine sand, very moist to wet, loose.
				4.0-5.0': Sand. Reddish brown (2.5 YR 5/3), coarse to very coarse, well sorted,
				trace very coarse gravel and pebbles to 1.5 inches in diameter, loose, moist, stained
				black.
10	15	5	150-	0.0-1.0': Sand. As above.
			>10,000/57-	1.0-2.0': Waste. Black reddish black organics, woods/refuse, metal, paper,
			>2,000	boot heel, wood pieces (blocks to 3 inches, square), mixed with carbonized wood, wet,
				very strong odor.
				2.0-4.5': Sludge/Tar. Dark yellowish brown (10 YR 3/6), soft, mucky, sludge-like
				material mixed with tar fragments (black) to 2 inches in size, angular, carbonized wood,
				trace silt, some wood splinters compressed/carbonized, wet, strong odor.
				4.5-5.0': Wood Fragments. Black (5 YR 2.5/1), splintery wood with sawdust and
				organic mass, some sludge-like material.
15	20	5	210-1,050/	0.0-0.5': Wood. As above, splintery.
			17.1-168	0.5-4.0': Tar/Sludge. Black shiny tar fragments in soft, clayey muck sludge.
				4.0-4.5': Sludge. Silt.
				4.5-5.0': Silt. Layered with sludge, thin laminations, paint-like.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-35

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
20	25	5	200-	0.0-5.': Organics/Wood. Wood pieces slender, fibers, mixed with peat and
			>10,000/	rootlets.
			>2,000	0.5-2.0': Organics/Silt. Black, fluffy, compacted organic material, possible sawdust/
				ash, rootlets, very moist, strong odor.
				2.0-4.5': Tar/Sludge. Coarse sized tar or carbon granules in a clay/sludge-like
				matrix, possible carbonized fragments and trace brick-like fragments.
				4.5-4.7': Rock fragment.
				4.7-5.0': Silt. Dark Reddish brown (5 YR 4/2), trace rootlets and fine twigs, trace
				coarse gravel, hard and firm, moist, black staining.
25	30	5	20-300/	0.0-1.0': Sand/Gravel/Rock fragments. Reddish brown (5 YR 5/3), fine to very fine
			>2,000	sand, well sorted, with fine to coarse gravel and rock fragments, angular, moist,
				odor.
				1.0-5.0': Sand. Reddish brown (5 YR 5/3), fine to very fine, well sorted, trace
				fine to coarse gravel and pebbles to 1 inch in diameter, moist, loose, odor.
30	35	1	40-300/	0.0-1.0': Sand. As above with increasing gravel content, loose, moist, odor.
			>2,000	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-36 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 10/20/99

Drilling Completed 10/20/99

Total Depth Drilled 45 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1119.34 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	--/>2,000	Sand. Reddish yellow (7.5 RY 6/6), fine to medium, well sorted, with some
				fine gravel and pebbles to 1 inch in diameter, loose, moist, slight odor.
5	10	5	250-300/	0.0-3.0': Tar/Sludge. Black and rusty, tar mixed with clay-like dried sludge material,
			>2,000	hard, firm, odor.
				3.0-5.0': Tar/Sludge/Wood. Tan or carbon, charcoal, black, hard, shiny, granular,
				coarse grain sized, intermixed with sludge, carbonized wood, wet, odor.
10	15	5	200-3,300/	0.0-1.0': Tar or Carbon. As above.
			77-380	1.0-2.0': Wood. Splintery fragments to 3 inches square, metal pieces, black, fine
				sand.
				2.0-4.0': Tar/Sludge-like Material. Coarse sand as above, finer granular-like tar/
				carbon-charcoal, some larger pieces, carbonized wood.
				4.0-5.0': Sand. Reddish brown (5 RY 4/3), predominately fine with medium to
				coarse, moderate sorting, trace fine to coarse gravel, subangular to subrounded,
				metal, nails, wood fragments 4.7 to 5.0 feet, moist, odor, loose.
15	20	5	150-1,050/	0.0-2.0': Sand. Bluish black (gley 2.5/1-10b), medium, well sorted, wet, loose,
			17-204	odor.
				2.0-3.0': Sand/Gravel. Bluish black (Gley 2.5/1-10b), fine to coarse sand, fine to
				coarse gravel, very poorly sorted, loose, stained, wet, odor.
				3.0-5.0': Carbon/Sludge/Carbonized Wood. Granular carbon or tar fragments
				in clayey to sludgy matrix, brittle, possible carbonized wood, moist, odor.
20	25	5	500-1,050/	0.0-5.0': Tar or Carbon. Red (2.5 YR 4/6), amorphous organic/clay-sludge, black tar,
			75-123	clay/sludge organics, hard, brittle, moist, odor.
25	30	5	30-2,000/	0.0-3.0': Waste. As above with wood chips and splinters, less carbonized material.
			12-37	3.0-5.0': Sand. Black (Gley 2.5/n), fine, well sorted with fine to coarse gravel

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-36

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				and pebbles to 3 inches in diameter, metal band pieces, wood fragments, loose to wet,
				staining, odor.
30	35	5	600-8,000/	0.0-3.0': Sand. Reddish brown (2.5 YR 5/4), fine, well sorted, with trace
			6.8-11.5	coarse gravel and pebbles, moist, loose, odor.
				3.0-5.0': Sand. Light reddish brown (2.5 YR 6/4), very fine, well sorted, some
				silt, loose, moist, odor.
35	40	5	55-700/	0.0-4.0': Sand/Gravel. Black (Gley 2.5/n), fine to coarse, fine to coarse
			4.3-44	gravel, poorly sorted, subangular to subrounded, pebbles to 2 inches in diameter, loose,
				black stained, moist.
				4.0-5.0': Sand. Black (Gley 2.5/n), very fine, silty, well sorted, loose, very moist,
				stained, odor.
40	45	5	300-8,000/	Sand. As above, very fine.
			1.6-10.2	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-37 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completed 10/21/99

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1118.72 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	8-3,000/0.0	Sand. Reddish brown (5 YR 6/4), fine, well sorted, trace fine to coarse gravel
				and pebbles to 2.5 inches in diameter, predominately subangular, loose, moist, no odor.
5	10	5	1,500-	0.0-3.0': Sand. Reddish grey (5 YR 5/2), fine, well sorted, trace rootlets, trace
			9,000/0-189	gravel/pebbles, loose, moist, black staining 2.5 to 3.0 feet.
				3.0-5.0': Waste. Wood/plastic, pieces of band metal, paper, carbonized wood,
				black, wet, strong odor, wood pieces to 4 x 4 inches, splintery.
10	15	5	90-1,750/	0.0-2.0': Tar. Black, soft, gooey.
			95-250	2.0-3.0': Tar/Sludge. Tar brittle, granular, mixed with clayey material (dried sludge),
				carbonized wood and wood fragments.
				3.0-4.0': Sludge/Charcoal-Carbonized Wood. Sludge reddish brown (5 YR 5/3),
				laminated with pockets of granular charcoal/carbonized wood.
				4.0-5.0': Charcoal/Sludge/Carbonized Wood. Dried tar fragments, loose, mixture,
				traces fibrous wood, moist, odor.
15	20	5	4,500-	0.0-1.0': Sand. Dark reddish brown (5 YR 3/2), fine, well sorted, loose, very
			7,000/	moist, black staining, odor.
			>2,000	1.0-4.0': Tar. Black, soft, gooey, contains some fibrous carbonized wood.
20	25	5	1,000-	0.0-2.0': Tar. As above.
			3,000/97-	2.0-3.0': Tar/Charcoal/Sludge/Carbonized Wood.
			>2,000	3.0-4.0': Sludge. Reddish brown, clayey with fine laminations, trace wood
				splinters, granular charcoal, dry.
				4.0-5.0': Sand. Dark bluish grey (Gley 4/1-5b), fine, well sorted, pebble to cobble
				gravel 4 inches in diameter, trace fine to coarse gravel, loose, blue staining, moist, odor.
25	30	5	70-1,050/	0.0-2.0': Sand. Black (Gley 2.5/), coarse to very coarse, well sorted with some
			>2,000	fine to coarse gravel, subangular to subrounded, loose, black staining, very moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-37

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				2.0-5.0': Sand/Gravel. Black (Gley 2.5/), medium to very coarse sand, fine to very
				coarse gravel, poorly sorted, subangular and subrounded pebbles to 1 inch in diameter.
				4 to 4.5 feet: pebble zone, subrounded pebbles 1 inch in diameter, abundant, loose,
				black stained, odor.
30	35	5	>10,000/	0.0-1.0': Sand/Gravel. As above.
			76->2,000	1.0-5.0': Silt. Black (Gley 2.5/), very fine sandy, well sorted, loose, stained,
				moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-38 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completed 10/21/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.40 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1,025-	0.0-1.0': Sand. Yellowish red (5 YR 5/8), fine with some medium to coarse,
			9,500/49-	moderately sorted, with fine to coarse gravel, mostly subangular, and pebbles up to
			>2,000	2 inches in diameter, loose, moist.
				1.0-2.0': Silt/Organics/Waste. Black (Gley 2.5/), peat/rootlets/silt/ash mixture,
				some charcoal pieces 0.5 inch in diameter, brick fragments, moist.
				2.0-2.5': Sand. Reddish brown (5 YR 4/4), fine, well sorted, loose, black
				staining at 2.5 feet, moist.
				2.5-3.0': Sand/Wood. Black, fine sand mixed with wood splinters, fibers and
				some bark chips, moist, trace pebbles up to 2 inches in diameter.
				3.0-5.0': Silt. Black. Clayey in places, some waste: glass, metal, rubber, trace
				wood splinters, brick/rock fragments, very moist, loose, odor.
5	10	5	800-	Waste. Black, reddish black. Wood particles: splinters/fibers, bark chips, saw dust,
			>10,000/	trace charcoal granules at 1.2 feet, very moist, loose, odor.
			290-	
			>2,000	
10	15	5	>10,000/	0.0-1.0': Silt/Sand. Mixed with wood fibers.
			>2,000	1.0-5.0': Silt. Greyish brown (10 YR 5/2), black stained, very fine sandy, loose,
				moist, odor, very sandy 3 to 5 feet, heavy black staining 2 to 3 feet.
15	20	5	700-	0.0-5.0': Sand. Brown (10 YR 5/3), fine, well sorted, some very fine and silt,
			>10,000/	trace pebbles upto 1.5 inches in diameter, subangular and subrounded, loose, moist,
			37->2,000	slight odor.
20	25	2	>10,000/57	Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-39 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completed 10/21/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.13 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.5-100/	Sand. Strong brown (7.5 YR 5/8), medium to coarse, trace fine, with trace
			16-66	fine to coarse gravel and pebbles to 2 inches in diameter, subangular to subrounded,
				loose, moist, no odor.
5	10	5	5,500-	0.0-1.5': Sand. As above, becoming brown (7.5 YR 5/2).
			>10,000/	1.5-2.0': Tar/Bark. Tar, black, gooey, mixed with bark chips, some splintery wood
			>2,000	fragments and carbonized wood.
				2.0-3.0': Wood. Bark chips and splintery wood.
				3.0-5.0': Silt. Dark brown (2.5 YR 3/3), with rootlets, loose, mixed with sawdust,
				moist.
10	15	5	1,250-	0.0-2.0': Silt. Strong brown (7.5 YR 5/6), loose, dry.
			>10,000/	2.0-3.5': Sand/Gravel. Reddish brown (5 YR 5/3), predominately fine to medium
			68->2,000	sand, with coarse, some fine to coarse gravel, subangular to subrounded, poorly
				sorted, loose, moist.
				3.5-4.0': Organics/Silt. Mixture of peat (black), rootlets, silt and trace bark chips.
				4.0-5.0': Sand. Light brown (7.5 RY 6/3) medium to coarse, moderate
				sorting, with fine to coarse gravel, subangular to subrounded, loose, very moist.
15	20	5	700-7,000/	Sand. Dark brown (7.5 YR 3/4), fine to medium, some coarse, moderately
			96->2,000	sorted, trace fine to coarse gravel, subangular and subrounded, loose, very
				moist, strong odor.
20	25	5	>10,000/	0.0-2.0': Sand. As above.
			>2,000	2.0-3.5': Sand. As above becoming reddish brown (5 YR 4/4).
				3.5-4.5': Sand/Gravel. Dark reddish brown (5 YR 2.5/2), fine to very coarse sand,
				fine to very coarse gravel with pebbles to 3 inches in diameter, very poorly sorted,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-39

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				subangular to subrounded, loose, moist, strong odor, heavy black staining at 4.3 feet.
				4.5-5.0': Silt. Black (Gley 2.5/), loose, moist, heavily stained.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-40 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completec 10/21/99

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.98 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Royce

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.25-1,700/	0.0-2.0': Sand/Gravel. Reddish brown (2.5 YR 5/3), fine to very fine sand, silty,
			6.1-290	with rootlets, moderately sorted with fine to coarse gravel and pebbles up to 2 inches in
				diameter, subangular, some angular shale pieces, loose, moist.
				2.0-5.0': Sand. Very dusky red (2.5 YR 2.5/2), fine to medium, some coarse,
				moderately sorted, some silt, trace fine to coarse gravel, subangular to subrounded,
				loose, very moist, strong odor.
5	10	5	2,750-	0.0-5.0': Sand. As above, loose, wet, odor.
			>10,000/	
			48->2,000	
10	15	5	100-5,000/	0.0-1.0': Sand. As above.
			650->2,000	1.0-2.0': Waste. Tar, black, gooey, mixed with carbonized wood, wood fibers,
				sludge.
				2.0-4.0': Sludge/Tar. Multicolored, rust to brown to yellow sludge - clayey,
				intermixed with brittle tar, black, laminations in sludge or possibly carbon, sludge
				soft to carbon hard, brittle.
				4.0-5.0': Carbon/Wood/Splinters/Fibers/Sludge. Brittle from 4.5 to 5 feet, hard but
				malleable 4 to 4.5 feet with wood fibers, charcoal or possible sawdust mix 4.5-5 feet,
				very moist, odor.
15	20	5	180-3,500/	0.0-5.0': Waste/Sludge. Carbon or brittle tar intermixed, as above carbon hard,
			220->2,000	brittle, sludge clayey, wet.
20	25	5	750-1,000/	0.0-2.0': Black Carbon/Sludge. Brittle, loose.
			260->2,000	2.0-3.0': Sludge, multicolored, yellow, brown, rusts, laminated, clay-like, moist
				block wood at 3 feet.
				3.0-4.5': Clay. Black, plastic, stained, odor, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-40

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.5-5.0': Wood. Black, fibers, splinters, wood chips, loose, moist.
25	30	5	750-	0.0-3.0': Wood. As above, intermixed with clay, wet.
			>10,000/	3.0-5.0': Wood. Sawdust with splintery wood and wood chips, moist, loose.
			40-90	
30	35	5	750-1,000/	0.0-2.0': Sand. Red (2.5 YR 4/6), fine, very clayey and silty, well sorted,
			260->2,000	trace gravel and pebbles to 1 inch in diameter, sticky, very moist, loose, black stained
				0 to 1 feet.
				2.0-5.0': Sand. Light reddish brown (5 YR 6/4), very fine, well sorted, silty,
				trace coarse gravel, subrounded, loose, moist, odor, no staining.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-41 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completed 10/21/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1115.19 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Brad

Prepared By Bruce Evans Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.75-6.5/	Sand. Strong brown (7.5 YR 5/6), fine to medium, silty, some coarse, fine to
			53-62	coarse gravel and pebbles to 2.5 inches in diameter, subangular, moderately sorted,
				loose, moist.
5	10	5	250-5,500/	0.0-2.0': Sand. As above.
			24-188	2.0-3.0': Organic Matter. Black, peat, rootlets, silt, wood chips (bark).
				3.0-5.0': Waste. Wood/Silt/Sawdust. Possible sludge on clay, black to red black,
				loose, wet, odor.
10	15	5	1,500-	0.0-1.0': Wood waste. As above.
			4,000/36-	1.0-4.0': Sand. Dark grayish brown (10 YR 4/2), very fine, well sorted, trace
			340	gravel, loose, moist, odor.
				4.0-5.0': Sand. Dark reddish brown (5 YR 4/2), very fine to coarse, poorly sorted,
				much fine to coarse gravel, subangular and subrounded, pebbles to 2 inches in
				diameter, loose, moist, odor.
15	20	5	250-	0.0-4.0': Gravel. Reddish brown (2.5 YR 2.5/1), fine to very coarse with pebbles
			>10,000/	to 2.5 inches in diameter, subangular and subrounded, very poorly sorted, loose, heavily
			9->2,000	stained, odor, very moist.
				4.0-5.0': Silt. Reddish brown (5 YR 4/3), some very fine sand, trace fine to coarse
				gravel, subangular to subrounded, loose, moist.
20	25	5	6,000-	0.0-5.0': Silt. Reddish brown, trace very fine sand, trace fine to coarse gravel,
			>10,000/16-	as above, loose, moist, staining 0-1 feet.
			27	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-42 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completed 10/21/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1116.45 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Brad

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.5-20/	0.0-2.0': Sand. Reddish brown (5 YR 4/3), fine to very fine, silty, moderately
			2.7-12.8	sorted, rootlets, trace fine to coarse gravel, subangular and subrounded, pebbles up to
				1.5 inches in diameter, loose, moist.
				2.0-3.5': Silt. Color as above, some clay, firm. Black staining, very moist, odor.
				3.5-4.0': Sand. As above, 0 to 2.0 feet.
				4.0-5.0': Silt. As above mixed with tar and fibrous, carbonized wood, moist,
				odor.
5	10	5	400-2,000/	0.0-1.0': Sand/Waste. Black. Fine sand mixed with wood fragments and fibers,
			9-37	rootlets, loose, very moist, stained, odor.
				1.0-1.5': Sand. Dark reddish brown (2.5 YR 2.5/3), fine, well sorted, trace
				wood and gravel, loose, very moist.
				1.5-3.0': Sand/Silt/Wood. Dark reddish brown (5 YR 2.5/2) mixture. Wood fragments,
				very fine sand, rootlets, loose, very moist, odor.
				3.0-5.0': Waste. Black to red black, wood fragments, sawdust, carbonized wood,
				tarry wood, some very fine sand/silt intermixed, stained, very moist to wet, odor.
10	15	5	1,500-	0.0-3.5': Sand. Very dark grey (10 YR 3/1), medium to coarse, moderately
			5,000/6.3-	sorted, some fine to coarse gravel, abundant pebbles up to 2 inches in diameter,
			20.2	subrounded 2.5 to 3.5 feet, loose, stained, moist.
				3.5-4.0': Sand. Brown (10 YR 4/3), very fine, well sorted, trace fine to
				medium gravel, loose, moist.
				4.0-5.0': Sand. Black (Gley 2.5/), very fine to coarse, poorly sorted, silty,
				fine to coarse gravel, loose, stained, odor.
15	20	5	500-4,500/	0.0-2.0': Sand. As above.
			1.6-7.4	2.0-3.0': Sand. Very fine, well sorted with fine to coarse gravel, subangular and

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-42 Page 2 of 2

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				subrounded, loose, very moist.
				3.0-5.0': Sand. Very dark greyish brown (2.5 YR 3/2), fine to very coarse, very
				poorly sorted, with some fine to very coarse gravel, subangular and subrounded,
				loose, stained, very moist.
20	25	5	1,500-	0.0-0.5': Sand. As above.
			3,200/3.8	0.5-3.0': Sand. Very dark greyish brown (2.5 R 3/2), fine, well sorted, some
			22	medium, loose, stained, odor.
				3.0-5.0': Sand. Very dark grey (Gley 3/), coarse, well sorted, trace pebbles
				at 4.8 feet up to 1.5 inches in diameter, subrounded, loose, stained, very moist, odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-43 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completed 10/21/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Brad

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	5.6-25	0.0-0.5': Sand. Dark brown (7.5 YR 3/2), very fine, silty, rootlets, with fine to
				coarse gravel, loose, moist.
				0.5-1.0': Gravel. Coarse fill 0.5 inches in diameter, subrounded to subangular.
				1.0-2.0': Sand. Strong brown (7.5 YR 5/8), very fine to medium, moderately sorted,
				some silt and fine to medium gravel, loose, moist.
				2.0-2.5': Silt. Dark brown (7.5 YR 3/2), with very fine sand, organics, peat, rootlets
				trace wood chips, loose, moist.
				2.5-5.0': Waste. Plastic at 2.5 feet, coarse sawdust and wood fibers, black. Silt and
				rootlets mixed in with 4.7 to 5 feet, loose, moist.
5	10	5	700-4,000/	0.0-1.0': Sand. Reddish brown (2.5 RY 5/3), very fine, silty, interbedded with
			42-820	silt beds 1 inch thick, rootlets.
				1.0-2.0': Sand. Dark reddish brown (2.5 YR 3/3), very fine, silty, interbedded with
				black organics, peat and rootlets, loose, moist.
				2.0-5.0': Silt. Reddish brown (5 YR 4/3), trace clay and very fine sand, slightly
				firm, wet, no odor.
10	15	5	1,000-	0.0-1.5': Silt. Reddish brown (5 YR 4/4), very clayey, slightly plastic, slightly firm, trace
			3,500/275-	black stains, wet.
			>2,000	1.5-3.0': Sand. Light reddish brown (5 YR 6/4), fine, well sorted, trace fine
				to coarse gravel, subangular to subrounded, loose, moist.
				3.0-5.0': Sand. Reddish brown (5 YR 5/4), medium to very coarse, moderately
				sorted, with much fine to coarse gravel, subangular to subrounded, loose, moist.
15	20	5	500-1,750/	0.0-5.0': Sand. Brown (7.5 YR 5/3), medium, well sorted, trace fine to coarse
			750-613	gravel, loose, gravel zone from 1 to 1.2 feet, fine to coarse gravel, black stained,
				moist, odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-43 Page 2 of 2

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
20	25	5	450-850/	0.0-4.0': Sand. Medium, as above.
			57-241	4.0-5.0': Sand. Black (Gley 2.5/), medium to coarse, moderately sorted,
				trace gravel, cobble (4 inches in diameter), loose, black stained, odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-44 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/21/99 Drilling Completed 10/21/99

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1119.07 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Brad

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	30->10,000/	0.0-3.0': Sand. Brown (7.5 YR 4/4), very fine, silty, with fine to coarse sand, abundant
			63->2,000	fine to coarse gravel, subangular and subrounded, many pebbles and cobbles to 3 inches
				in diameter, loose, moist.
				3.0-4.0': Sand. As above, dark brown (7.5 YR 3/2), concrete pieces and chips at 4
				feet.
				4.0-5.0': Silt. Dark brown (7.5 YR 3/2), some clay and trace gravel, fine to coarse
				and pebbles, trace black peat organics, moist.
5	10	5	2,500-	0.0-4.0': Silt. Dark brown (7.5 YR 3/4), intermixed with wood fibers, pieces,
			6,000/490-	rootlets, coarse sawdust, moist, loose.
			>2,000	4.0-5.0': Waste/Silt/Sand. Brown (7.5 YR 4/3), orange cloth at 4 feet, wire,
				blocky pieces wood intermixed with very fine sand and silt, loose, moist.
10	15	5	700-6,500/	0.0-1.0': Silt/Wood. As above.
			190->2,000	1.0-4.5': Silt. Dark reddish brown (5 YR 3/3), very sandy and clayey, trace black
				ash and wood cinders, some wood fibers and roots at 4.0 feet. Pieces of broken concrete
				at 4.5 feet.
				4.5-5.0': Waste. Black, sawdust, wood fibers, small chips, clayey and sludge-like at
				4.5 feet, wet at 4.5 feet to moist, loose.
15	20	5	1,500-	0.0-1.0': Waste. Sawdust/Sand. Trace twigs, black to dark brown.
			9,000/34-	1.0-2.5': Sand. Black (7.5YR 2.5/1), fine with very fine and silt, possible
			250	sawdust/organics, loose, black stained, very moist to wet.
				2.5-5.0': Sand. Dark brown (7.5 YR 3/3), fine to very fine, silty, moderately
				sorted, some clay, sticky but loose, trace fine to coarse gravel, very moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-44

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
20	25	5	3,000-	Sand. Brown (7.5 YR 5/4), very fine, well sorted, loose, moist.
			>10,000/	
			60-240	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-45 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 10/21/99

Drilling Completed 10/21/99

Total Depth Drilled 25 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1117.94 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Gabe Helper Brad

Prepared By Bruce Evans/John Keller

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1,500-	0.0-2.0': Sand. Brown (7.5 YR 4/3), very fine, silty, clayey, rootlets, some
			8,000/145-	fine to coarse gravel, subangular and subrounded, abundant pebbles to 2 inches in
			>2,000	diameter, 1.5 to 2 feet, loose, moist.
				2.0-5.0': Organics/Silt. Very dark brown (7.5 YR 2.5/2), silt, mixed wood, twigs,
				pine needles, roots, small branch pieces, loose, moist.
5	10	5	110-	0.0-2.0': Silt/Natural Wood. As above.
			>10,000/	2.0-2.5': Silt. Dark brown (7.5 YR 3/3), very sandy with very fine sand, loose,
			130->2,000	trace wood branches, moist.
				2.5-4.0': Charred and Burnt Wood. Charcoal, black, loose, moist.
				4.0-5.0': Wood. Dark brown to black, sawdust, fiberous wood and small splinters,
				some charred wood, loose, moist.
10	15	5	300-	0.0-4.5': Wood. Black and Reddish-Mahogany. Wood fibers, chips, charred wood,
			>10,000/85-	sawdust, bark, moist.
			600	4.5-5.0': Sand. Brown (7.5 YR 5/4), fine to very fine, silty moderately sorted,
				loose, moist.
15	20	5	NA	Sand. Brown (7.5 YR 5/3), fine, well sorted, loose, odor.
20	25	5	NA	Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-46 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 10/22/99

Drilling Completed 10/22/99

Total Depth Drilled 25 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1118.16 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Gabe Helper Brad

Prepared By Bruce Evans/John Keller

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	200-1,500/	0.0-1.0': Sand. Dark grey (Gley 4/), very fine to fine, well sorted, with silt, rootlets,
			0.1-1	trace fine to coarse gravel, subangular and subrounded pebbles, to 2 inches in diameter,
				loose, moist.
				1.0-3.0': Sand. As above, dark reddish brown (5 YR 3/3).
				3.0-5.0': Sand. Strong brown (10.5 YR 5/6), fine to very fine, well sorted,
				loose, moist.
5	10	5	1,500-	0.0-2.0': Sand. Dusky red (2.5 YR 3/2), fine to very fine, very silty, trace clay, abundant
			10,000/1.2-	fine to coarse gravel, subangular to subrounded in silt matrix, somewhat cohesive,
			2.9	some black staining, very moist, black charred wood at 1.7 feet.
				2.0-3.0': Sand/Silt/Organic. Black (Gley 2.5/N), peat, rootlets and wood fibers in
				very fine sand/silt mix, loose, moist.
				3.0-5.0': Wood. Black, charred/burnt wood pieces, sawdust, very moist, loose.
10	15			Boulder. Grey dense rock at 10 to 13 feet causing problems with borehole.
				Move rig 3 feet east and restart GMSB-46.
0	5			As above.
5	10			As above.
10	15	5	200-	0.0-1.0': Wood char, as above.
			>10,000/0-	1.0-1.5': Sand/Organics. Dusky red (2.5 YR 3/7), very fine to fine, very silty, with
			1.9	peat, rootlets, loose, very moist, odor.
				1.5-2.5': Sand. Dark yellowish brown (10 YR 4/4), fine to very fine, some medium,
				some silt, some fine to coarse gravel, moderate sorting, sticky, very moist.
				2.5-4.5': Sand. Dark yellow brown (10 YR 4/4), fine to medium, abundant fine
				to coarse gravel, subangular and subrounded, pebbles to 2 inches in diameter, poorly
				sorted, loose, coarsening downward.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-46 Page 2 of 2

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.5-5.0': Sand. Light olive brown (2.5 YR 5/3), very fine, some silt, well sorted,
				moist.
15	20	5	140-2,500/	0.0-4.0': Sand. As above, becoming yellowish brown (10 YR 5/6).
			0-0.5	4.0-5.0': Sand. Very dark grey brown (2.5 YR 3/2), very fine, well sorted,
				silty, loose, strong straining at 4 feet, odor.
20	25			No recovery.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-47 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/22/99 Drilling Completed 10/22/99

Total Depth Drilled 35 Feet Hole Diamete 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.19 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Brad

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	35-7,000/	0.0-2.0': Sand. Dark yellow brown (10 YR 4/6), fine to very fine, silty, much
			0.0	fine to coarse gravel, subangular to subrounded, pebbles to 2.5 inches, moderate
				sorting, loose 0 to 1 feet, moist, wet, cohesive 1 to 2 feet, dark brown at 2 feet.
				2.0-3.0': Sand/Silt/Organics. Reddish black (10 YR 2.5/1), fine to very fine
				silty sand, trace clay, peat, rootlets, slightly cohesive, very moist.
				3.0-5.0': Sand. Dark grey (10 YR 4/1), fine with very fine to medium, fine to
				coarse gravel and pebbles, clayey in places, rootlets, trace wood fragments, wire,
				moderate to poor sorting, sticky to loose.
5	10	5	800-6,500/	0.0-1.0': Sand. As above.
			0.0	1.0-3.0': Sand/Silt/Organics, mix of roots, grass, leaves, wood chips with sand,
				silt as above, very moist, odor.
				3.0-5.0': Wood. Black and rusty, wood chips, sawdust, splinters, fibers, degrading
				wood, cardboard, wire, loose, wet.
10	15	5	2,000-	0.0-5.0': Waste. Wood, dark reddish brown and black sawdust, wood chips.
			>10,000/	Bark chips, splinters, fibrous pieces of wood, trace fine to medium sand mixed
			0-0.3	throughout (3 to 5 feet predominately), bark chips, plastic chips, loose, very moist, odor.
15	20	5	600-2,250/	0.0-5.0': Wood. As above, black and degrading, also larger pieces, wood to
			0.3-22	4 inches, fibrous with cut edges, wet, loose.
20	25	5	300-9,000/	0.0-1.0': Wood. As above.
			0-5	1.0-2.0': Silt. Dark brown (7.5 YR 3/2) and black, with roots, peat, fine sand,
				loose, wet.
				2.0-3.0': Silt. Black, very clayey, plastic, wet, very heavily stained, odor.
				3.0-5.0': Sand. Very dark grey brown (10 YR 3/2), medium to coarse, well
				sorted, some fine to coarse gravel and pebbles to 2 inches in diameter, subangular to

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-47

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				subrounded from 3 to 3.5 feet, loose, very moist, heavily stained from 3 to 4 feet.
25	30	5	15-200/0-.6	0.0-5.0': Sand. Very dark grey (2.5 YR 3/1), fine, well sorted, loose, variable
				staining, moist, odor.
30	35	3	2-15/0.0	0.0-2.0': Sand. Black, very fine, well sorted, loose, stained, odor, moist.
				2.0-3.0': Sand. Black. Fine to coarse, poorly sorted, some fine to coarse gravel,
				subangular to subrounded, loose, moist, black staining, odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-48 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/22/99 Drilling Completed 10/22/99

Total Depth Drilled 45 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Corebarrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1118.16 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helpe Brad

Prepared By Bruce Evans/John Keller Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	80-7,000/	0.0-3.0': Sand. Reddish brown (5 YR 5/4), to dark reddish brown (5 YR 3/2), fine
			0-3	to coarse, very poorly sorted, clayey, fine to coarse gravel (pebbles/cobbles to
				4 inches), subangular and subrounded, loose, moist.
				3.0-4.0': Silt. Very dark grey (5 YR 3/1), with fine to coarse sand and fine to
				coarse gravel in silt matrix, firm, moist.
				4.0-5.0': Waste. Cloth, plastic, grass and leaf clippings in plastic, large wood
				branch, broken, fibrous, loose, moist.
5	10	5	450-3,250/	0.0-3.0': Wood/Metal/Sand/Silt. Large fibrous wood pieces 4 inches diameter
			0-21	(cut through by barrel), nails, band metal - aluminum mixed with silt, fine sand
				and gravel.
				3.0-5.0': Sand/Asphalt. Sand. Reddish brown (2.5 YR 5/3), fine to coarse with
				fine to coarse gravel mixed with old asphalt (granular up to 2 inch pieces), loose,
				poorly sorted, mixed.
10	15			No recovery.
15	20	5	5,500-	Waste. Sawdust. Very dark brown (7.5 YR 2.5/3), and black, trace glass fragments,
			>10,000/	trace wood pieces, splinters, moist to wet, loose.
			0.3-3.5	
20	25	5	>10,000/	0.0-2.0': Sawdust/charred Wood. Black sawdust with small pieces charred wood,
			0.0	loose, wet.
				2.0-5.0': Sawdust/Charcoal. Black sawdust intermixed with granular charcoal or
				carbon, loose, wet.
25	30	5	5,000-	0.0-1.0': Sawdust. Charcoal, as above.
			8,000/2.2-	1.0-5.0': Sawdust. Very dark brown (7.5 RY 2.5/3), coarse sawdust mixed with
			7.9	small twigs and wood splinters/fibers and rectangular pieces, loose, moist, very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-48

Prepared by Bruce Evans/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				little alteration.
30	35	5	100-1,000/	0.0-1.5': Sawdust. As above.
			4.3-16	1.5-2.5': Clay. Black (2.5 YR 2.5/1), soft, plastic, intermixed with fine to coarse
				sand, wet, strong odor.
				2.5-3.5': Sand. Dark brown (10 YR 3/3), fine to coarse, very poorly sorted,
				trace fine to coarse gravel, subangular and subrounded, some silt, loose but sticky,
				wet, odor.
				3.5-4.0': Silt. As above 1.5 to 2.5 feet.
				4.0-5.0': Wood. Bark chips and sawdust.
35	40	5	475-3,500/	0.0-1.0': Sawdust and Wood. Intermixed with silt and clay.
			6.4-13	1.0-2.0': Clay. Very dark greyish brown (2.5 Y 3/2), soft, very plastic, wet.
				2.0-2.5': Sand. Very dark greyish brown (2.5 YR 3/3), fine to coarse, very poorly
				sorted, loose, moist.
				2.5-5.0': Silt. Olive brown (2.5 Y 4/3), very clayey, somewhat plastic, wet.
40	45	5	375-690/	0.0-1.0': Silt. As above with trace medium to coarse gravel and pebbles to 2 inches
			5.1-15.5	in diameter, subangular to subrounded, wet.
				1.0-5.0': Sand. Very dark grayish brown (2.5 Y 3/2), fine to coarse, very poorly
				sorted, predominately medium. Fine to coarse gravel, subangular to subrounded, loose,
				black staining throughout, very heavily stained 40 to 42 feet, very moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-49 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 5/18/00 Drilling Completed 5/19/00

Total Depth Drilled 155 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1039.63 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Helper Ryan, Gabe and Randy

Prepared By John Keller/Craig Padar/Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	5	5	150-	0-0.5': Clay. Dark reddish brown (2.5 YR 2.5/3), silty, wet, rootlets, trace gravel.
			1,400/	0.5-4.5': Clay. Dark reddish gray (10 R 3/1), very plastic.
			0-0	4.5-5': Clay. Dusky red (10 R 3/3), sandy, gravelly (2 mm to 25 mm).
5	10	5	200-450/	0-4': Sand. Red very dark grayish brown (2.5 Y 3/2), medium to fine, some silt,
			0-0	trace gravel, saturated.
				4-5': Sand. Reddish brown (2.5 YR 4/4), very fine, silty, some clay.
10	15	5	800-	0-1': Sand. As above.
			8,000/0-0	1-5': Sand. Brown (7.5 YR 5/4), coarse to medium, fairly well sorted, wet.
15	20	5	20-	0-5': Sand. As above but with trace fine to medium gravel.
			10,000/	
			0-0.3	
20	25	5	8,000-	0-3': Sand. As above, but coarsens slightly downward to trace to some very
			>10,000/	coarse sand.
			0-3.2	3-5': Sand. Reddish brown (5 YR 5/3), medium to fine, some coarse, saturated
				grain size sample 23-25 feet.
25	30		1,500-	0-1': Sand. As above.
			>10,000/	1-1.5': Gravel. Reddish gray (5 YR 5/2), fine to coarse (2 mm to 50 mm)
			0-3	subangular to subrounded, variable composition, sandy.
				1.5-1.7': Silt. Reddish brown (5 YR 4/4), clayey.
				1.7-4.0': Sand. Reddish brown (5 YR 5/4), medium to fine, trace coarse.
				4-5': Silt. Reddish brown (2.5 YR 4/4), sandy (very fine).
30	35		750-	0-0.25': Silt. As above. Grain size sample 33-35 feet.
			5,000/	0.25-5': Sand. Reddish brown (2.5 YR 4/4), very fine to fine, silty, loose, well
			0-1.8	sorted, damp.
35	40	5	100-400/	0-3.5': Sand. Reddish brown (2.5 YR 4/4), fine to very fine, well sorted, trace
			0-0	silt, trace to some medium.
				3.5-5': Sand. Reddish brown (2.5 YR 5/4), fine to very fine, silty.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-49

Prepared by J. Keller/C. Padar/P. Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
40	45	5	17-500/	0-3.5': Sand. Reddish brown (2.5 YR 4/4), very fine, silty, grain size
			0-0.2	sample 41-42'.
				3.5-5': Silt reddish brown (2.5 YR 4/4), sandy (very fine).
45	50	5	0-4/0-0.1	0-4': Silt. As above but fining downward. Fine sand fraction decreases to only
				a trace.
				4-5': Silt. Reddish brown (2.5 YR 5/4), very well sorted.
50	55	5	1-10/0-	0-1': Silt. As above.
			0.4	1-1.8': Sand. Reddish brown (2.5 YR 5/4), fine to very fine, silty, trace medium
				sand.
				1.8-5': Silt. Reddish brown (2.5 YR 5/4), very well sorted, grain size
				sample 53-54'.
55	60	5	1.5-9/	0-3': Silt. Reddish brown (2.5 YR 5/3), trace to some sand (very fine to fine).
			0.2-0.6	3-4.5': Sand. Reddish brown (2.5 YR 4/4), very fine to fine, trace of medium,
				silty.
				4.5-5': Silt. Reddish brown (2.5 YR 5/3), trace to some sandy (very fine to fine).
60	65	5	1.5-3.5/	0-5': Silt. As above.
			0.0-0.7	
65	70	5	1.5/	0-5': Silt. Reddish brown (2.5 YR 5/4), sandy (very fine with trace of some fine),
			0.1-0.5	damp to wet, slightly compacted.
70	75	5	1.5-2.25/	0-4.8': Silt. As above.
			0.2-0.7	4.8-5': Sand. Brown (7.5 YR 4/3), medium to coarse, trace of fine, moderate to
				well sorted, damp.
75	80	4	1.5/	0-5': Sand. Reddish brown (2.5 YR 5/4), very fine to fine, silty, damp to wet,
			0.0-0.2	well sorted.
80	85	5	1-4/	0-0.5': Sand. As above.
			0.0-0.2	0.5-2.5': Silt. Reddish brown (2.5 YR 5/3), sandy (very fine to fine), damp to wet,
				slightly compacted.
				2.5-3': Sand. Reddish brown (2.5 YR 5/4), silty, very fine to fine, damp, loose.
				3-3.7': Silt. Reddish brown (2.5 YR 5/4), sandy (very fine to fine), damp to wet,
				moderately compacted.
				3.7-5': Sand. Reddish brown (2.5 YR 5/3), medium to coarse, trace of fine,
				moderately to well sorted, damp.
85	90	5	1.5-4/0-0	0-5': Sand. Reddish brown (5 YR 5/3), medium to coarse, trace of fine, moderate
				to well sorted, damp.
90	95	5	1.5-3.5/	0-5': Sand. As above.
			0-0	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-49 Page 3 of 4

Prepared by J. Keller/C. Padar/P. Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
95	100	5	1-8/	0-5': Sand. Reddish brown (5 YR 4/3), medium to coarse, trace of fine, well
			0.4-0.9	sorted, loose, damp.
100	105	5	5-8/	0-0.7': Sand. As above.
			0.2-0.7	0.7-2': Sand. Reddish brown (5 YR 4/3), medium to coarse, fining into clay at
				1.2' bgs.
				2-5': Clay. Reddish brown (5 YR 4/3), trace to some silt, trace of sand (very fine to
				fine) HP = 1.25, moderately plastic, damp to wet.
105	110	5	6-10/	0-5': Sand. Reddish brown (5 YR 4/3), medium, trace to some fine, trace of
			0.9-1.8	coarse, well sorted, loose, damp.
110	115	5	6-9/	0-3.5': Sand as above.
			0.8-2.2	3.5-4.1': Sand. Reddish brown (5 YR 4/3), very fine to fine, silty, laminations
				present (laminations/lenses are clay yellowish red (5 YR 5/6), non-plastic.
				4.1-4.4': Silt. Reddish brown (5 YR 4/3), trace to some sand (very fine to fine),
				trace to some clay.
				4.4-4.6': Sand. Reddish brown (5 YR 5/6), very fine to fine, trace of medium,
				trace of silt.
				4.6-5': Silt. Reddish brown (5 YR 4/3), trace to some sand (very fine to fine),
				some clay, yellowish red (5 YR 5/6) laminations/lenses.
115	120	0		No recovery.
120	125	0		No recovery.
125	130		4-4.5/	0-2': Silt. Dark reddish gray (5 YR 4/2) to dark red (5 YR 3/6), trace to some
			0.6-0.8	sand (very fine to fine), trace of clay, laminations present.
				2-5': Sand. Brown (7.5 YR 4/2), medium grained, trace to some (very fine to
				fine), well sorted, loose, damp.
130	135	5	5-8/	0-5': Sand. As above.
			1.3-1.8	
135	140		3.5-30/	0-5': Sand. Dark reddish gray (5 YR 4/2) to reddish brown (5 YR 4/3), medium
			0.6-1.3	grained, trace to some very fine to fine, well sorted, loose, damp.
140	145	5	3.5-20/	0-0.5': Sand. As above.
			0.5-0.9	0.5-2.7': Silt. Brown (7.5 YR 4/2), trace to some sand (very fine to fine), moderately
				to well compacted, trace of clay (small layer of medium sand contained within
				from 2.3-2.5' interval, reddish brown (5 YR 4/3), trace to some very fine to fine).
				2.7-3.9': Sand. Dark reddish gray (5 YR 4/2), medium, trace to some very fine
				to fine, few clay lenses scattered throughout clay, reddish brown (5 YR 4/4),
				well sorted, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-49

Prepared by J. Keller/C. Padar/P. Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
				3.9-5': Silt. Dark reddish gray (5 YR 4/2) some clay laminations from 3.9-4.2'
				interval (clay, red (2.5 YR 4/6)), moderate to well compacted, damp.
145	150	5	3-4/	0-1': Silt. With clay laminations as above.
			0.5-0.8	1-5': Silt. Dark reddish gray (5 YR 4/2), trace of clay, few scattered clay lenses,
				trace to some sand, very fine to fine.
150	155	5	3.25-4/	Silt. As above.
			0.5-0.7	
				EOB @ 155 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-50 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 5/31/00 Drilling Completed 5/31/00

Total Depth Drilled 125 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1049.80 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Helper Ryan and Jerry

Prepared By John Keller Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	3	2.3-5.1/	0-0.7': Silt. Dark brown (10 YR 3/3), organic-rich, trace to some rootlets, leaves,
			0.0-0.3	trace clay, trace to some very fine to fine sand.
				0.7-3': Silt. Dark brown (7.5 YR 3/4), very sandy, (very fine to fine), dry, loose.
5	10	5	85-7000/	0-5': Silt. Dark gray (10 YR 4/2), with clay layers/laminations throughout (clay,
			0.0-0.0	reddish brown (2.5 YR 4/3) (HP = 1.5), firm, dry) silt: HP = 2.25, firm, dry.
10	15	5	>10,000/	0-3.8': Silt. With clay layers as above.
			0.0-0.0	3.8-5': Sand. Dark reddish gray (5 YR 4/2), very fine to fine, silty, loose, dry.
15	20	5	225-	0-5': Sand. Dark reddish gray (5 YR 4/2), trace clay (very fine to fine), silty, loose,
			>10,000/	dry. Grain size analysis sample 16-17'.
			0.0-0.0	
20	25	5	1,000-	0-1': Sand. As above.
			>10,000/	1-2.5': Sand. Brown (7.5 YR 4/3), medium to very coarse, trace very fine to fine,
			0.0-0.0	gravelly (2 mm to 60 mm), subangular to subrounded, poorly sorted, slightly
				damp. Grain size analysis sample (23-25').
				2.5-3': Sand. Reddish brown (5 YR 4/3), medium to coarse, trace of gravel
				(2 mm - 10 mm), trace very fine to fine sand, loose, slightly damp, poorly sorted.
				3-5': Sand. Dark reddish gray (5 YR 4/2), medium to very coarse, trace very fine
				to fine, gravelly (2 mm - 50 mm), subangular to subrounded, poorly sorted, loose,
				slightly damp.
25	30	5	2,500-	0-5': Sand and Gravel. As above.
			>10,000/	
			0.2-2.0	
30	35	5	3,500-	0-3': Sand and Gravel. As above, grain size analysis sample 30-32'.
			>10,000/	3-5': Silt. Reddish brown (5 YR 4/3), trace clay, trace to some very fine to
			0.5-7.8	fine sand, (HP = 0.3).
35	40			No recovery.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-50

Prepared by J. Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
40	45			No recovery.
45	50	5	250-	0-2.5': Silt. Reddish brown (5 YR 4/3), trace clay, trace to some very fine to fine
			4,800/	sand.
			0-7.1	2.5-5': Sand. Reddish brown (5 YR 4/3), very fine to fine, silty, sand content
				increases as you go down section, loose, damp.
50	55	5	800-	0-5': Sand. Reddish brown (5 YR 4/3), very fine to fine, silty, loose, damp.
			>10,000/	
			0.5-2.8	
55	60	5	500-	0-5': Sand. As above. Grain size analysis sample 55-57'.
			4,000/	
			0.0-1.2	
60	65	5	3,800-	0-5': Sand. As above.
			>10,000/	
			1.0-1.6	
65	70	5	500-	0-3': Sand. As above.
			4,800/	3-4.5': Sand. Reddish brown (5 YR 4/4), very fine to fine, well sorted, trace of
			0.0-0.7	silt.
				4.5-5': Silt. Reddish brown (5 YR 4/3), some small clay layers throughout (clay
				dark gray (5 YR 4/1)), firm, damp to wet.
70	75	5	250-	0-5': Silt with clay layers as above.
			2,200/	
			0.0-1.0	
75	80	5	750-	0-3.2': Sand. Reddish brown (5 YR 4/3), very fine to fine, silty, well sorted, damp
			9,500/	to wet, loose.
			0.0-0.5	3.2-5': Silt. Reddish brown (5 YR 4/3), sandy (very fine to fine) loose, damp
				to wet.
80	85	5	60-	0-1.5': Silt. As above.
			>10,000/	1.5-5': Silt. Reddish brown (5 YR 4/3), trace of clay (HP = 0.8), moderately to
			0.0-0.4	well compacted, damp to wet.
85	90	5	4.9-10/	0-5': Silt. As above.
			0.0-1.8	
90	95	5	4-9.5/	0-5': Silt. As above.
			0.0-1.9	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-50 Page 3 of 3

Prepared by J. Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
95	100	5	8-70/	0-1': Sand. Dark reddish gray (5 YR 4/2), trace very fine to fine, medium,
			0.0-1.0	abundant silt content (silt nodules within the sand and silt layer (coating) on
				the outside of the sand, perhaps caused by drill rig?)
				1-5': Sand, dark reddish gray (5 YR 4/2), trace very fine to fine, medium,
				moderate to poorly sorted, loose, damp.
100	105	5	20-58/	0-5': Sand. As above.
			0.2-0.7	
105	110	5	9.5-36/	0-3': Sand. As above.
			0.3-0.9	3-5': Sand. Dark reddish gray (5 YR 4/2), trace very fine to fine medium, high
				silt content (numerous silt nodules/inclusions throughout).
110	115	5	10-22/	0-4': Silt. Dark reddish brown (5 YR 3/3), trace clay, sand content increases as
			0.3-0.7	you go down section and last 2' is sandy (very fine to fine) silt.
				4-5': Sand. Dark reddish gray (5 YR 4/2), trace very fine to fine, medium,
				moderately to poorly sorted, loose, damp.
115	120	5	5-12/	0-5': Sand. As above.
			0.4-0.2	
120	125	5	4-8.5/	0-4.5': Clay, dark reddish brown (2.5 YR 3/4), (HP = 3.0), very stiff. Silt. Dark
			0.4-1.3	reddish brown (5 YR 3/3), numerous clay layers/laminations throughout. Silt:
				moderate to well compacted.
				4.5-5': Sand. Dark reddish gray (5 YR 4/2), very fine to fine, silty, well sorted,
				loose, damp.

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Sample/Core Log

Boring/Well: GMSB-51 Project/No.: Ford/Kingsford Wi000804.0001 Page 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 6/17/00 Drilling Completed: 6/18/00

Total Depth Drilled: 165 Feet Hole Diameter: 6 inches Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" Sampling Interval: 135-165 feet

Land-Surface Elev.: 1052.19 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: Water Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear Driller: Mike Helper: Ryan, Jerry

Prepared By: John Keller Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	135			Blind drill.
135	140	5		0-3.5': Sand, medium to coarse, trace very fine to fine.
				3.5-5': Clay, trace to some silt, soft, moist.
140	145	5		0-5': Clay as above.
145	150	5		0-4': Clay as above.
				4-5': Sand, fine to medium, trace coarse, trace to some silt.
150	155	5		0-5': Sand as above.
155	160	5		0-1': Sand as above.
				1-4': Sand, very fine to fine, silty.
				4-5': Silt, very sandy (very fine to fine), trace to some clay.
160	165	5		0-3': Silt as above.
				3-5': Sand, very fine to fine, some medium, some silt, trace clay.
				EOB @ 165 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-52 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 07/05/00 Drilling Completed 07/05/00

Total Depth Drilled 35 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1104 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Helper Ryan, Jerry

Prepared By John Keller/Kevin Daleness Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	8-10/	0-2.5': Silt, very dark brown (7.5 YR 25/4), abundant rootlets, grass clippings,
			0.0-0.7	and twigs (organic-rich), some sand to sandy (very fine to fine). Sand content
				increases as you go down section. Some gravel to gravelly (2 mm to 40 mm),
				subrounded to subangular, trace clay, loose, dry.
				2.5-4': Sand, reddish brown (5 YR 5/4), medium to very coarse, trace to some
				very fine to fine, trace silt, gravelly (2 mm - 40 mm), subangular to subrounded,
				also contains rock fragments (slate/phyllite), loose, dry.
				4-4.5': Rock fragments (slate/phyllite), some rock flour, fragments are angular,
				greenish gray (1 Gley 6/1), dry.
				4.5-5': Sand, reddish brown (5 YR 5/4), medium to very coarse, trace to some
				very fine to fine, gravelly (2 mm - 15 mm), subangular to subrounded, loose, dry.
5	10	5	8-50/	0-1.5': Sand as above.
			0.0-7.8	1.5-3.5': Sand, reddish brown (5 YR 4/4), medium, trace to some very fine to fine,
				trace silt, trace to little gravel (<5 mm), subrounded, loose, dry.
				3.5-5': Sand,, reddish brown (5 YR 5/3), fine, some very fine, trace to some
				medium, some silt, trace to some fine gravel (<5 mm), subrounded, loose, dry.
10	15	5	25-45/	0-1.5': Sand as above.
			0.0-1.3	1.5-3.5': Silt, reddish brown (5 YR 5/4), very sandy (very fine to fine), sand
				content decreases as you go down section. (last 0.5' silt is blocky), loose, dry.
				3.5-5': Sand, reddish brown (5 YR 5/3), very fine to fine, trace to some silt,
				very well sorted, loose, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-52

Prepared by John Keller/Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
15	20	5	8-15/	0-5': Sand, dark brown (7.5 YR 3/3), medium to very coarse, some very fine to
			0.0-0.7	fine, trace to some silt, gravelly (2 mm to 35 mm), subrounded to subangular,
				very poorly sorted, rock fragment layer from 3-3.5' interval (slate/phyllite),
				fragments broken along aprallel plans (greenish gray), loose, dry.
20	25	4	8-15	0-1.5': Sand gray (7.5 YR 6/1), very fine to fine, some silt to silty, gravelly
			0.0-0.6	(<15 mm), subrounded to subangular, moderately to poorly sorted, loose, dry.
				1.5-2.5': Silt, pinkish gray (7.5 YR 7/2), sandy (very fine), trace to some fine sand,
				loose, very dry.
				2.5-4': Sand, reddish brown (5 YR 5/4), medium, trace to some very fine to fine,
				trace to some silt (silt nodules scattered throughout thickness of sand), well
				sorted, loose, dry.
25	30	5	10-80/	0-3': Sand, dark brown (10 YR 3/3), fine to medium, some coarse to very coarse,
			0.2-5.5	some very fine, trace to some silt, gravelly (2 mm to 90 mm), subrounded to
				subangular very poorly sorted, loose, dry.
				3-3.5': Silt, gray (10 YR 5/1), some gravel to gravelly (2 mm to 50 mm), subrounded
				to subangular, trace sand (very fine).
				3.5-5': Sand, reddish brown (5 YR 4/3), fine to medium, trace to some very
				fine, trace silt (may be slough from above?), well sorted, loose to slightly
				compacted, dry.
30	35	5	25-70/	0-1': Sand, as above.
			0.0-1.9	1-5': Sand, reddish brown (5 YR 4/3), medium trace to some very fine to
				fine, trace to some silt, very well sorted, loose, dry.
				EOB @ 35 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-53 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 08/17/00 Drilling Completec 08/17/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1088.81 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeffery Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.80	6.5/3.2	0-1.20: Sand, reddish-brown (5 YR 4/4), fine to very fine grained, trace silt,
				trace medium grained, loose compaction dry.
				1.20-1.80: Sand black (7.5 YR 25/1), fine to medium grained, with char,
				organic rich, with roots and wood, no odor.
2	4	1.50	6.0/2.2	0-1.50: Sand, reddish-brown (5 YR 4/4), fine to very fine grained, trace silt.
				Gravelly seam at 2'-2.25' (2 mm - 10 mm), subangular to subrounded.
4	6	0.25	5.0/2.3	0-0.25: Sand as above, except with organic-rich char and sand. Minimal
				recovery.
6	8	1.50	6.0/2.0	0-1.50: Sand, strong brown (7.5 YR 5/6), fine to medium, trace silt, trace coarse
				grained. Organic-rich banding at 6-6.5' (1 mm - 3 mm).
8	10	0.25		0-0.25: No recovery. Rock stuck in tip.
10	12	0.75	6.0/2.6	0-0.75: Sand, brown (7.5 YR 5/3), medium to fine, trace very fine. Crushed rock
				at 10.5' (10 mm - 40 mm) pieces. Loose compaction, dry.
12	14	1.50	5.0/1.7	0-1.50: Sand as above except with very fine sand, trace silt. Large stone at
				13.5' (50 mm). Subangular loose compaction, dry, slight banding at
				12'-12.5'.
				EOB @ 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMSB-54 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/18/00 Drilling Completec: 8/18/00

Total Depth Drilled: 14 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" Sampling Interval: continuous feet

Land-Surface Elev.: 1103.10 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Mike Helper: Marty

Prepared By: Jeff Guzick Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.25	7.0/.09	0-0.4': Topsoil. Dark brown (7.5 YR 3/2), with sand, trace char, medium to
				very fine, organic rich, trace roots. Char pieces 2 mm - 5 mm. Trace gravel
				2 mm - 10 mm.
				0.4-1.25': Sand. Brown (7.5 YR 5/4), medium to fine, trace very fine, trace coarse
				sand. Loose compaction, dry.
2	4	1.50	11.0/0.8	0-1.50': Sand. Brown (7.5 YR 5/4), medium to fine, with gravel seam from 3.5-4'.
				Trace very fine, gravel (2 mm - 15 mm), subangular to subrounded. Loose
				compaction, dry.
4	6	1.75	9.0/0.8	0-1.75': Sand. As above. Except trace gravel 2 mm - 4 mm. Subangular.
6	8	1.75	10.0/1.2	0-1.75': Sand. As above. Except some gravel 2 mm - 6 mm. Subangular.
8	10	1.70	11.0/0.6	0-1.70': Sand. As above. Except with 1.5" gravelly seam at 8.5'.
10	12	1.75	11.0/0.3	0-1.75': Sand. As above. Except trace gravel 1 mm - 3 mm. Subangular.
				Loose compaction, dry.
12	14	1.75	10/1.7	0-1.75': Sand. As above. Except coarse sandy seam at 13.75-14'. Loose
				compaction, dry.
				EOB at 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-55 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 8/18/00 Drilling Completec 8/18/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1102.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.80	9.0/0.2	0-1.0': Sand. Bluish-black 2 gley (5B 2.5/1), fine to very fine grained, with
				char, organic-rich, some roots, some topsoil, loose compaction, dry.
				1.0-1.80': Clay. H.P. = 0.75, dark brown (7.5 YR 3/3), silty, some sand, low
				plasticity, moist.
2	4	0.75	9.0/0.4	0-0.75': Sand. Silty, brown (7.5 YR 4/4), trace fine sand, loose compaction,
				dry.
4	6	1.50	11.0/0.6	0-1.50': Sand. Silty as above. Except trace roots, trace black streaks.
6	8	0.75	11.0/0.4	0-0.75': Sand. Brown (7.5 YR 5/4), coarse to fine grained, with gravel (5 mm -
				35 mm), subangular to subrounded. Trace crushed stone, loose compaction, dry.
8	10	0.50	11.0/0.7	0-0.50': Sand. As above. Except with coarse and gravel. Crushed weathered
				rock.
10	12	0.50	8.0/0.2	0-0.50': Sand. As above. Except 1.5" crushed stone seam at 10.25'.
12	14	1.50	10.0/0.2	0-1.50': Sand. Light brown (7.5 YR 6/4), medium to fine, trace coarse, trace
				very fine, loose compaction, dry.
				EOB at 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Wel GMSB-56 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/18/00 Drilling Completec 8/18/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1118.36 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.75	11.0/1.3	0-0.20': Topsoil. With sand, trace roots.
				0.20-1.75': Sand. Strong brown (7.5 YR 4/6), fine to medium grained, with very fine.
				Trace gravel (2 mm - 10 mm). Subangular. Loose compaction, dry.
2	4	1.0	12.5/0.7	0-1.0': Sand. Strong brown (7.5 YR 4/6), medium to fine, with gravel (2 mm - 40 mm).
				Subangular to subrounded, 2" crushed stone at 2.5'. Loose compaction, dry.
4	6	1.50	12.5/0.3	0-1.5': Sand. As above. Except brown (7.5 YR 5/4), trace coarse sand. Banding
				at 4.25' (1 mm - 2 mm thick), loose, dry.
6	8	0		Rock in tip. No recovery.
8	10	1.5	15.0/2.7	0-1.5': Sand. Brown (7.5 YR 5/4), medium to fine grained, with coarse sand, with
				very fine grained, some gravel (2 mm - 20 mm). Subangular to subrounded.
				Slight banding, loose compaction, dry.
10	12	1.50	11.0/1.5	0-1.5': Sand. As above, except trace gravel, banding appears darker in color
				2 mm - 3 mm.
12	14	1.50	10.0/1.4	0-1.50': Sand. As above, except with gravel (2 mm - 35 mm). Subangular to
				subrounded. Gravelly seam at 12.5', loose compaction, dry.
				EOB @ 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-57 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 8/18/00 Drilling Completec 8/18/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1119.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.75	11/1.0	0-0.20': Topsoil. With sand, trace gravel, with roots, loose compaction.
				0.20-1.75': Sand. Reddish-brown (5 YR 4/3), fine to medium grained, some gravel,
				trace silt, gravel (2 mm - 25 mm). Subangular, organic-rich banding at 1.5'
				1 mm - 3 mm thick, loose compaction, dry.
2	4	1.50	13.0/1.0	0-1.50': Sand. Brown (7.5 YR 4/4), coarse to medium grained, some fine grained
				with gravel (2 mm - 40 mm). Subangular to subrounded, loose compaction, dry.
4	6	1.0	7.0/0.4	0-1.0': Sand. As above. Except very coarse to medium grained. Some gravel
				(2 mm - 30 mm).
6	8	0.80	8.5/0.6	0-0.80': Sand. As above. Except crushed weathered stone (2" seam) at
				6.5', not fill.
8	10	0		No recovery.
10	12	0		Rock in tip, no recovery.
12	14	1.25	13.0/1.0	0-1.25': Sand. Brown (7.5 YR 5/4) medium to fine grained, with coarse, trace
				fine grained. Loose compaction, moist.
				EOB at 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-58 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 8/18/00 Drilling Completec 8/18/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1108.76 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.50	8.0/0.5	0-0.40': Topsoil. Black (7.5 YR 2.5/1), with sand, organic-rich, some char,
				trace roots, loose compaction, dry.
				0.40-0.80': Sand. Brown (7.5 YR 5/4), coarse to fine grained, with very coarse,
				some gravel (2 mm - 8 mm), subangular, loose compaction, dry.
				0.80-1.0': Sand. Black (7.5 YR 2.5/1), with char pieces, 2 mm - 8 mm.
				Organic-rich, some sand, loose compaction.
				0.80-1.50': Sand. Brown (7.5 YR 4/4), fine to very fine, trace silt, loose to
				medium compaction, dry.
2	4	1.70	8.0/1.0	0-1.70': Sand. As above except trace gravel (2 mm - 8 mm). Subangular.
4	6	0		No recovery.
6	8	0.25	5.0/0.2	0-0.25': Sand. As above, minimal recovery.
8	10	0.80	4.5/0.2	0-0.80': Sand. As above. Except trace medium grained, some gravel, 2 mm -
				40 mm. Subangular to subrounded. Loose compaction, dry.
10	12	0.50	5.0/0.4	0-0.50': Sand. As above, except some medium grained, some gravel 2 mm -
				30 mm. Subangular to subrounded. Loose compaction, dry.
12	14	1.50	8.0/0.4	0-1.50': Sand. Brown (7.5 YR 5/4), fine to medium grained, trace fine sand,
				trace gravel (2 mm - 3 mm). Reddish banding 1 mm - 3 mm at 13' and 12.5'.
				Loose compaction, dry.
				EOB @ 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMSB-59 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 8/19/00 Drilling Completed: 8/19/00

Total Depth Drilled: 14 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" Sampling Interval: continuous feet

Land-Surface Elev.: 1109.25 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Mike Helper: Marty

Prepared By: Jeff Guzick Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.25	3.5/0.6	0-0.65': Topsoil. With char, black (10 YR 2/1), with sand, very fine to medium
				grained, some silt, trace roots, trace gravel. Char pieces (2 mm to 20 mm), loose
				compaction, dry.
				0.65-1.25': Sand. Brown (7.5 YR 5/4), medium to fine grained, some coarse grained,
				trace very fine, slight banding, some gravel (2 mm - 25 mm). Subangular, loose, dry.
2	4	0.75	3.5/0.3	0-0.75: Sand. Brown (7.5 YR 4/4), very fine to silty, some fine grained, trace roots,
				trace medium, grained, loose, dry.
4	6	1.0	2.5/0.1	0-1.0': Sand. Brown (7.5 YR 5/4), coarse to fine grained, some very coarse, trace
				silt, some gravel (2 mm to 15 mm), subangular to subrounded, very loose
				compaction, dry.
6	8	1.25	3.0/0.1	0-1.25': Sand. Strong brown (7.5 YR 4/6), very fine to medium grained, some silt,
				5 mm organic-rich band at 6.5'. Trace gravel (2 mm - 10 mm). Subangular.
8	10	1.25	3.5/0.5	0-1.25': Sand. Strong brown (7.5 YR 5/6), fine to very fine grained, some medium,
				some gravel (2 mm - 25 mm). Subrounded to subangular, loose to medium,
				compaction, dry.
10	12	1.0	3.0/0.1	0-1.0': Sand. Light brown (7.5 YR 6/4), fine to very fine grained, trace medium
				grained, some gravel (2 mm - 25 mm). Subangular to subrounded, loose compaction,
				dry.
12	14	1.75	3.0/0.2	0-1.75: Sand. Reddish yellow (7.5 YR 6/6), fine to medium grained. With coarse
				to medium seam at 12 to 12.25'. Trace gravel (2 mm - 30 mm), with very fine
				grained, trace silt. Loose compaction, dry.
				EOB @ 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Wel GMSB-60 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/19/00 Drilling Completed 8/21/00

Total Depth Drilled 106 Feet Hole Diamete 8 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1142.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.75	5.0/0.6	0-0.2': Topsoil with sand, dark brown (7.5 YR 2.5/2), fine to very fine,
				organic-rich, with roots and wood, loose compaction, dry.
				0.2-1.75': Sand. Brown (7.5 YR 4/4), very fine to fine, trace silt, trace
				medium, trace gravel, loose compaction, dry.
2	4	1.75	4.5/0.6	0-1.75': Sand. Strong brown (7.5 YR 4/0), medium to fine, some gravel, trace
				silt, loose compaction, dry.
4	6	1.75	4.5/0.9	0-1.75': Sand. As above. Except reddish medium grained banding (2 mm -
				10 mm) at 4.5' and 5', loose to moderate compaction, dry.
6	8	1.60	4.5/1.2	0-1.60': Sand. As above, except trace fine grained to medium grained banding
				2 mm - 8 mm at 6.5' and 6.75', brown (7.5 YR 5/4).
8	10	1.80	6.5/2.3	0-1.80': Sand. As above, except trace coarse, 2" gravel seam at 8.10'
				(2 mm - 40 mm).
10	12	1.80	5.0/1.7	0-1.80': Sand. As above. Except coarse gravelly seam (1.5") at 11'.
				Organic-rich banding (2 mm thick) at 10.2', loose, dry.
12	14	1.75	4.75/1.8	0-1.75': Sand. As above. Except with coarse, slight organic-rich banding,
				trace gravel, loose, dry.
14	16	1.70	5.0/1.5	0-1.70': Sand. As above. Except brown (7.5 YR 5/5), 2" gravelly coarse
				sandy seam at 15.25' (1 mm - 3 mm).
16	18	1.70	4.25/1.1	0-1.70': Sand. As above. Except very coarse to coarse, with gravel
				(2 mm - 30 mm) subrounded to subangular at 16 - 16.4'.
18	20	1.60	4.5/0.6	0-1.60': Sand. As above. Except brown (7.5 YR 5/4), coarse-gravelly seam
				(3" thick) at 18.25'. Trace fine grained rock at 19' (2" seam) 40 mm.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-60 Page 2 of 5

Prepared by J. Guzick

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
20	22	1.50	4.0/0.6	0-1.50': Sand. As above, except coarse gravelly seam 2" thick at 20.5',
				(2 mm to 10 mm), loose, dry.
22	24	1.80	5.0/0.7	0-0.50': Very fine sand, yellowish-red (5 YR 4/6), with silt, medium
				compaction, moist to wet.
				0.50-1.80': Clay. Red (2.5 YR 4/6), silty, medium plasticity, firm, dry, 2.0
				penetrometer reading.
24	26	1.80	4.0/1.7	0-1.80': Silty fine sand. Reddish brown (5 YR 4/4), medium compaction, wet,
				trace medium sand.
26	28	1.50	4.25/1.1	0-1.50': Silty Fine Sand. As above, except silt seam at 26.25', wet, trace
				clay.
28	30	1.85	4.5/1.8	0-1.85': Silty fine sand as above. Except trace very fine, trace medium
				sand, wet.
30	32	1.60	5.0/2.2	0-1.60': Silty fine sand as above. Except clayey silt seam (2" thick) at 30.25'.
				Trace medium sand, medium compaction, wet.
32	34	2.00	4.0/0.6	0-2.0': Clay. Red (2.5 YR 4/6), silty, fine sand-silty seams. Stiff, dry,
				3.0 penetrometer reading.
34	36	1.25	3.75/0.5	0-1.25': Clay. As above, except fine sand to silty seams. Saturated, stiff
				to medium stiffness 2.0-2.5 penetrometer readings.
36	38	1.90	3.25/0.1	0-1.90': Clay. As above, except yellowish red (5 YR 4/6), stiff, 3.0-3.5
				penetrometer readings, fine sand to silty seams at 37 feet.
38	40	1.90	3.0/0.0	0-1.90': Clay. As above. Except stiff to very stiff, 3.0-4.0 penetrometer
				readings, silty seams, dry.
40	42	1.80	4.0/0.0	0-1.80': Clay as above. Except very stiff, 4.0 penetrometer readings, some
				silty seams, dry.
42	44	2.0	7.0/0.7	0-1.50': Clay. As above.
				1.50-2.0': Sand. Brown (7.5 YR 5/4), very fine to fine. Some silt, high
				compaction, dry to moist medium sand seam (2" thick) at 43.5'.
44	46	1.85	8.0/0.0	0-1.85': Sand. As above. Except brown (7.5 YR 4/4) with silt some fine, trace
				organic-rich bandings at 45' (1 mm to 2 mm).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-60 Page 3 of 5

Prepared by J. Guzick

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
46	48	1.75	6.8/0.0	0-1.75': Sand. As above. Except saturated back organic-rich banding
				at 47'.
48	50	2.0	7.0/0.2	0-2.0': Sand. Brown (7.5 YR 5/4), fine to very fine grained, some silt,
				high compaction, moist, organic rich (1 mm - 5 mm) banding at 49.75'.
50	52	1.85	6.0/0.4	0-1.85': Sand. As above. Except organic-rich banding (2 mm - 8 mm)
				at 51'.
52	54	1.85	7.0/0.2	0-1.85': Sand. As above. Brown (7.5 YR 4/4), saturated.
54	56	2.0	9.0/0.2	0-2.0': Sand. As above. Except clayey silt seams. Moist to wet.
56	58	1.85	8.0/0.5	0-1.85': Sand. (7.5 YR 4/4), very fine to fine, with silt. Silt seam at 56.5-
				57.0' high compaction, wet.
58	60	1.75	8.0/0.9	0-1.75': Sand. As above. Except saturated silt seam (2" thick) at 58.72'.
60	62	1.90	9.0/1.0	0-1.25': Sand. As above. Except fine to very fine grained, trace silt,
				saturated, high compaction.
62	64	1.90	9.0/1.9	0-1.90': Silty sand. Brown (7.5 YR 4/3), some very fine sand, trace fine sand.
				Medium to high compaction, wet.
64	66	1.75	8.5/1.5	0-1.75': Silty sand. As above. Except high compaction. Saturated.
66	68	1.90	5.5/0.2	0-1.90': Clay. Dark brown (7.5 YR 3/4), silty, firm to medium firm,
				(1.5-3.0 penetrometer readings). Trace red clay lamination. Saturated.
68	70	1.90	7.0/1.6	0-1.90': Clay. As above. Except soft silty clay seam at 69-69.5',
				medium firmness to firm. 2.0-3.0 penetrometer reading.
70	72	1.75	7.0/0.5	0-1.75': Clay. As above. Except with sandy seams. Low plasticity, firm
				2.0-3.5 pen readings, saturated.
72	74	1.90	11.0/1.6	0-1.90': Clay. As above. Except red clay seams at 72.25' and 72.5'
				(20 mm - 30 mm thick). Firm to medium stiffness (1.5-3.5 penetrometer),
				trace saturated seams (2") at 73' and 73.5', wet.
74	76	1.80	9.0/2.5	0-1.80': Clay. As above except interbedded levels of silt and clay. Medium
				firm to firm (2.0-3.5 pen readings) saturated.
76	78	1.90	9.0/1.8	0-1.90': Clay. As above. Except fine grained seams. 10 mm red clay lens
				at 77.5' and 78'. Firm to stiff (3.5 - 4.0 penetrometer) moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-60 Page 4 of 5

Prepared by J. Guzick

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
78	80	2.0	6.0/1.8	0-2.0': Clay. As above. Except interbedded layers of silt and clay 1.0"
				sand seam at 78.25'. Medium firm to firm, 2.5-3.5 penetrometer readings.
				Wet low to medium plasticity.
80	82	1.75	5.5/0.0	0-1.75': Clay as above. Except sandy 1" seam at 80.3'. Red clay seams
				4 mm - 8 mm thick. Soft to medium firm, 1.5-3.0 penetrometer readings.
				Saturated.
82	84	1.85	5.5/0.0	0-1.85': Clay. As above. Except sandy seams at 82.25' and 83.75', soft
				to medium firm, 1.5-3.5 pen readings saturated.
84	86	1.90	6.0/0.5	0-1.90': Clay. As above. Except 2 mm - 8 mm red clay seams at 84.25' -
				84.50' medium sand seam (1") at 84.5'. Soft to medium firm, 1.5-2.5
				penetrometer readings.
86	88	1.90	7.0/0.7	0-1.90': Clay. As above. Except soft to firm, 1.5-4.0 penetrometer readings.
88	90	1.80	1,000/1.1	0-1.40': Clay. As above. Except medium sandy seams at 89'.
				1.40-1.80': Sand. Brown (7.5 YR 4/4), medium to fine, 1" coarse to
				medium seams at 89.80'. Trace gravel (1 mm - 2 mm), medium compaction,
				moist.
90	92	1.75	4,000/	0-1.75': Sand. As above except with gravel (1 mm - 4 mm). Moist to wet,
			1.9	trace fine grained.
92	94	1.50	1,200/	0-1.0': Clay. As above. Alternating seams of silt and clay, except soft
			2.3	to medium firm.
				1.0-1.50': Sand. Dark brown (7.5 YR 3/2), coarse to medium grained with
				gravel 2 mm 0 35 mm. Subrounded to subangular. Trace fine grained,
				loose to medium compaction, saturated.
94	96	0.50	425/0.5	0-0.50': Sand. As above. Except coarse to fine, with gravel 2 mm - 40 mm
				Subangular to subrounded, saturated, loose compaction.
96	98	2.0	1,100/0.6	0-2.0': Sand. As above. Except dark brown (7.5 YR 3/3). Brown silty
				clay seam at 96.5-97.0'. Gravelly seam at 97.5' (2 mm - 35 mm).
				Subangular to subrounded, medium to loose compaction, saturated.
98	100	1.70	1,000/	0-1.70': Sand. As above. Except gravelly seam (2") at 99.5'. Gravel
			0.0	(2 mm - 20 mm). Subangular. Saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-60 Page 5 of 5

Prepared by J. Guzick

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
100	102	1.90	700/0.0	0-1.90': Sand. As above. Except mostly medium grained with gravel
				(2 mm - 50 mm). Subangular to subrounded, medium compaction,
				saturated.
102	104	2.00	1,500/0.0	0-2.0': Sand. As above. Except 1" gravelly seam at 103.8'. Gravel
				(1 mm - 4 mm) loose compaction. Saturated, wet.
104	106	1.25	1,200/	0-1.25': Sand. As above. Except some gravel (1 mm - 3 mm). Loose,
			1.1	saturated.
				EOB @ 106 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-61 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 8/22/00 Drilling Completec 8/22/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1099.96 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.0	7.5/0.2	0-1.0': Char. Black 1 Gley (2.5/1N), with charcoal pieces (2 mm - 25 mm),
				with topsoil, some roots, organic-rich, very loose compaction, dry, trace
				gravel.
2	4	1.25	7.5/0.5	0-1.25': Char. Same as above, except 15 mm medium to fine sand seam
				at 3.5', loose, dry.
4	6	2.00	10/0.0	0-2.0': Char. Same as above, except trace wood fibers. Loose, dry, trace
				sand.
6	8	1.75	8.0/1.2	0-1.75': Char. Same as above except 10 mm fine sand seam at 7.75'.
				Some sand, loose compaction, dry.
8	10	1.50	11.0/2.3	0-1.0': Char. Same as above.
				1.0-1.5': Sand. Light brown (7.5 YR 6/4), very fine to fine, some silt, 10 mm
				silty seam at 9.80', trace medium, loose compaction, dry.
10	12	1.75	11.0/2.7	0-0.25': Char. Same as above.
				0.25-1.75': Sand. Strong brown (7.5 YR 5/6), medium to fine, some coarse, some
				gravel (10 mm) seams at 11.5' and 11.80'. 2 mm - 8 mm reddish clayey silt seam
				10 mm at 11.25', loose compaction, dry.
12	14	0.5	11.0/1.6	0-0.5': Gravelly Sand. Brown (7.5 YR 4/3), coarse to medium, with very coarse,
				some medium gravel (2 mm - 30 mm). Subrounded to subangular loose, dry.
				45 mm stone stuck in tip.
				EOB @ 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-62 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/23/00 Drilling Completec 8/23/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1113.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.75	5.0/0.0	0-1.75: Sand. Very fine to fine, strong brown (7.5 YR 4/6), 3" medium seam at
				1.80", loose compaction, dry.
2	4	1.25	7.0/0.0	0-0.60: Sand. As above, except trace organic-rich banding.
				0.60-1.25: Sand. Reddish brown (5 YR 5/3), very coarse to medium, with gravel
				(2 mm - 35 mm), subrounded to subangular, loose compaction, dry.
4	6	0		No recovery, rock in tip of spoon.
6	8	0		No recovery.
8	10	0		No recovery. Rock in tip of spoon.
10	12	0.75	8.0/1.1	0-0.25: Sand. Reddish yellow (7.5 YR 6/6), medium to fine, some coarse. Banding
				(1 mm to 3 mm) at 11.50 and 11.75 feet. Strong brown (7.5 YR 5/6), trace
				gravel (2 mm to 20 mm).
12	14	0.20	5.5/0.0	0-0.20: Sand. As above. Minimal recovery.
				EOB @ 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-63 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/23/00 Drilling Completec 8/23/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1094.95 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	2.0	5.5/0.0	0-0.5': Char. With charcoal, black (5 YR 2.5/1), some sand, some roots, loose,
				dry.
				0.5-2.0': Sand. Strong brown (7.5 YR 4/6), very fine to fine, trace medium, loose
				compaction, dry.
2	4	1.25	6.5/1.9	0-1.25': Sand. As above, except medium to coarse seam (2") at 3.75'.
4	6	1.70	5.0/0.0	0-1.70': Sand. Light brown (7.5 YR 6/3), medium to fine, trace very fine, slight
				banding charcoal-rich 1 mm to 2 mm at 5.70-5.90'. Loose compaction, dry.
6	8	1.80	5.5/0.0	0-1.80': Sand. As above, except coarse sand at 7.75-7.85'. Some gravel
				2 mm - 35 mm. Subangular to subrounded.
8	10	1.50	4.5/0.0	0-1.50': Sand. As above, except with coarse sand, stone at 9.0', (2 mm - 35 mm).
				Subrounded, loose, dry.
10	12	0.5	5.5/0.0	0-0.5': Sand. As above.
12	14	1.0	5.5/0.0	0-1.0': Sand. As above.
				EOB @ 14 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-64 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 8/23/00 Drilling Completec 8/23/00

Total Depth Drilled 14 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1098.58 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By Jeff Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.80	6.0/0.0	0-12.0': Char. Black (5 YR 2.5/1), with charcoal, some sand, trace roots,
				charcoal (2 mm - 5 mm) subangular, loose, dry.
				1.20-1.80': Sand. Brown (7.5 YR 4/4), very fine to fine, trace medium, grayish
				silty sand seam (1.5") at 1.75 loose, dry.
2	4	1.85	6.0/0.0	0-1.85': Sand. As above, except some silty seams, medium compaction, dry.
4	6	1.75	7.5/0.2	0-1.75': Sand. Strong brown (7.5 YR 5/6), medium to fine with gravel (2 mm - 40 mm),
				Subrounded to subangular, coarse gravelly seam at 5.70-5.90', loose, dry.
6	8	1.25	8.5/0.1	0-1.25': Sand. Strong brown (7.5 YR 5/6), coarse to medium, some fine, some
				gravel, (2 mm - 15 mm), subangular to subrounded, loose, dry.
8	10	1.0	8.5/1.1	0-1.0': Sand. Strong brown (2.5 YR 5/6), medium to fine, some coarse, trace
				fine, some gravel (2 mm to 35 mm). Subrounded to subrounded, loose, dry.
10	12	1.9	8.5/0.9	0-1.85': Sand. Strong brown (7.5 YR 5/6), medium to coarse with gravel,
				coarse to gravelly seams at 11.50' and 11.85. Gravel (2 mm - 20 mm), subrounded
				to subangular, loose, dry.
12	14	1.6	10/0.8	0-1.60': Sand. Light brown (7.5 YR 6/3), gravel (2 mm - 10 mm), coarse to medium,
				some very coarse with gravel (2 mm - 15 mm). Subrounded to subangular,
				trace fine grained, loose, dry.
				EOB @ 14 feet.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-65 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 6/4/01 Drilling Completed 6/4/01

Total Depth Drilled 50 Feet Hole Diameter 8¼ inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1119.90 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Randy/Jay

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	15	--	0-8": Topsoil.
				8-10": Sand. Brown (7.5 YR 4/4), medium to fine, some very fine, trace silt,
				dry.
				10-14": Sand. Very dark grayish brown (10 YR 3/2), medium to fine, trace very
				fine, well sorted, dry.
				14-15": Sand. Light brown (7.5 YR 6/4) medium to fine, very well sorted,
				dry.
2	4	12	0.0	0-12": Sand. As above.
4	6	15	0.79	0-15": Sand. As above, dry.
6	8	24	0.68	0-24": Sand. As above, dry.
8	10	13	0.66	0-5": Slough.
				5-1.3: Sand. From red (10 R 4/8) to strong brown (7.5 YR 4/6) to dark yellowish+E64
				brown (10 YR 3/4), very coarse to fine, trace very fine, gravelly (2 mm to 40 mm),
				subangular to subrounded, moist, very poorly sorted.
10	12	24	1	0-13": Slough.
				13-24": Sand. As above.
12	14	0		No recovery.
14	16	19	0.44	0-3": Slough.
				3-14": Sand. Strong brown (7.5 YR 5/6), fine to very fine, silty, some clay, dry.
				14-16": Sand. Strong brown (7.5 YR 4/6), very fine, silty, clayey.
				16-19": Sand. Reddish yellow (7.5 YR 8/6) to reddish yellow (7.5 YR 6/6), fine,
				very well sorted, dry.
16	18	0		No recovery.
18	20	10	1.03	0-2": Slough.
				2-10": Sand. Pink (7.5 YR 7/3), fine, very well sorted, dry.
20	22	12	0.58	0-2": Slough.
				2-12": Sand. As above.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-65 Page 2 of 3

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
22	24	16	0.6	0-2": Slough.
				2-6": Sand. Light brown (7.5 YR 6/4), fine to medium, well sorted, dry,
				subangular to subrounded.
				6-16": Sand. Pink (7.5 YR 7/3), fine, very well sorted, dry.
24	26	15	0.61	0-10": Sand. Light brown (7.5 YR 6/4), fine to medium, trace very coarse sand,
				trace gravel (5-25 mm), moderate to well sorted, subangular to subrounded, dry.
				10-12": Quartz Cobble. Gray (10 YR 6/1), (40 mm).
				12-15": Sand. Pink (7.5 YR 7/3), fine to very coarse, poorly sorted, angular to
				subrounded, dry.
26	28	15	0.98	0-8": Sand. Light brown (7.5 YR 6/4), fine to medium, well sorted, subangular
				to subrounded, single cobble (28 mm) quartz, bluish gray (2 Gley).
				8-15": Sand. Pink (7.5 YR 7/3), fine to very coarse, trace gravel (10-20 mm),
				poorly sorted, angular to subrounded, dry.
28	30	16	0.80	0-8": Sand. Light brown (7.5 YR 6/4), fine to medium, well sorted, subangular
				to subrounded, single cobble (20 mm), quartz, dark bluish gray (2 GLEY 10 B)
				8-15": Sand. Pink (7.5 YR 7/3), fine to very coarse, trace gravel (15-20 mm),
				poorly sorted, angular to subrounded, dry.
30	32	19	1.03	0-7": Sand. As above (slough?).
				7-8": Sand. Light brown (7.5 YR 6/4), fine to very fine, well sorted, well rounded,
				dry.
				8-9": Sand. As above, color changes to brown (7.5 YR 6/4).
				9-19": Sand. Light brown (7.5 YR 6/4), fine to very fine, well sorted, well
				rounded, dry.
32	34	17	0.83	0-7": Slough.
				7-17": Sand as above. Weak red (10 R 5/4), 10 mm lense silty clay, dry.
34	36	14	0.55	0-4": Slough.
				4-14": Sand. As above.
36	38	18	0.79	0-5": Slough.
				5-11": Sand. As above.
				11-13": Sand. Brown (7.5 YR 4/4), very fine, well sorted, slightly moist.
				13-15": Sand. Pale brown (10 YR 6/3), medium to coarse, moderate to well
				sorted, trace gravel (10-25 mm), dry.
				15-18": Sand. Light brown (7.5 YR 6/4), fine to very fine, well sorted, well
				rounded, dry.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-65 Page 3 of 3

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
38	40	16	0.84	0-4": Slough.
				4-9": Sand. Brown (7.5 YR 4/4), very fine, well sorted, slightly moist.
				9-16": Sand. Light brown (7.5 YR 6/4), fine to very fine, well sorted, well
				rounded, dry.
40	42	14	1.04	0-2.5": Slough.
				2.5-14": Sand. As above.
42	44	14	1.10	0-3": Slough.
				3-8": Sand. As above.
				8-13.5": Sand. Light yellowish brown (10 YR 6/4), fine to very coarse, poorly
				to moderate sorting, subangular to subrounded, little gravel (10-40 mm), dry.
44	46	10	0.77	0-4": Sand. Light brown (7.5 YR 6/4), fine to very fine, well sorted, well
				rounded, dry.
				4-10": Sand. Light yellowish brown (10 YR 6/4), fine to very coarse, moderately
				sorted, subangular to subrounded, trace gravel (15 mm - 25 mm), slightly moist.
46	48	15	31.3	0-2": Slough.
				2-5": Sand. Light brown (7.5 YR 6/8), fine to very fine, well sorted, well
				rounded, very slight moisture.
				5-8": Sand. Light yellowish brown (10 YR 6/4), fine to very coarse,
				moderately sorted, subangular to subrounded, trace gravel (10 mm - 20 mm),
				moist.
				8-15": Sand. Brown (7.5 YR 5/8), fine to medium, trace coarse sand,
				subangular to subrounded, very moist.
48	50	14	30.78	0-4": Slough.
				4-8": Sand. As above.
				8-14": Sand. As above but slight black staining, very dark gray (5 Y 3/1),
				wet.
				EOB @ 50 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-66 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 6/5/01 Drilling Completed 6/5/01

Total Depth Drilled 46 Feet Hole Diameter 8¼ inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1119.49 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Randy/Jay

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	15	0.0	0-6": Topsoil. Grass
				6-15": Sand. Strong brown (7.5 YR 5/6), fine to medium, some very fine,
				trace coarse, subangular to subrounded, well sorted, dry.
2	4	17	0.0	0-5": Slough. (Topsoil), some gravel to cobbles (15-35 mm).
				5-17": Sand. As above.
4	6	17.5	0.0	0-4": Slough. (Topsoil mixed with sand, as above).
				4-12": Sand. As above.
				12-17.5": Sand. Light brown (7.5 YR 6/4), medium, little fine, traces of silt
				with black staining, traces of gravel (5-30 mm), moderate to poorly sorted,
				subangular to subrounded, slightly moist.
6	8	14.5	0.0	0-2": Slough. (Topsoil mixed with sand).
				2-7": Sand. Brown (10 YR 4/3), fine to medium, well sorted, subangular to
				subrounded, dry.
				7-12": Sand. Strong brown (7.5 YR 5/6), fine to medium, some very fine,
				trace coarse, one cobble (30 mm), subangular to subrounded, well sorted,
				dry.
				12-14.5": Sand and Gravel. From dark greenish gray (1 Gley 4/1) to red
				(2.5 YR 4/6), to dark yellowish brown (10 YR 4/4), coarse to very coarse, some
				very fine to fine, trace of silt, angular to subrounded, poorly sorted,
				slightly moist, gravel (2 mm - 10 mm).
8	10	16	0.0	0-6": Slough. (Topsoil mixed with sand).
				6-8": Sand. Strong brown (7.5 YR 5/6), fine to medium, some very fine,
				subrounded, well sorted, dry.
				8-16": Sand and Gravel. As above, colored reddish brown (5 YR 5/4), gravel
				(2-15 mm), dry.
10	12	12	0.0	0-7": Slough. (Topsoil mixed with sand), dry.
				7-12": Sand and Gravel. As above, gravel (2-10 mm), dry.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-66 Page 2 of 3

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
12	14	19	0.0	0-3": Slough. (Topsoil mixed with sand).
				3-19": Sand. Yellowish red (5 YR 4/6), fine to very fine, traces of black
				fragments (Michigannic slate), plate-like structure, brittle, well sorted, subangular
				to subrounded, dry, fragments (4 - 25 mm).
14	16	17	0.0	0-4": Slough. (Topsoil mixed with sand), dry.
				4-17": Sand. As above, traces of black fragments, as above, slightly moist.
16	18	17	0.0	0-4": Slough. (Topsoil mixed with sand), slightly moist.
				4-17": Sand. As above, no traces black fragments, slightly moist.
18	20	16.5	0.0	0-4": Slough. (Topsoil mixed with sand), slightly moist.
				4-14": Sand. As above, traces black fragments as above, slightly moist.
				14-16.5": Sand. Strong brown (7.5 YR 4/6), very fine to coarse, moderately sorted,
				slightly moist, subangular to subrounded.
20	22	7	0.0	0-5": Slough. (Topsoil mixed with sand).
				5-7": Sand. Brown (10 YR 4/3), fine to medium, well sorted, subangular to
				subrounded, slightly moist.
22	24	19	0.0	0-4": Slough. (Topsoil mixed with sand).
				4-18": Sand. Brown (7.5 YR 4/4), fine to very fine, trace slate chips, well sorted,
				subangular to subrounded, slightly moist.
				18-19": Slate cobbles (20-25 mm), loose, dry, angular.
24	26	11	0.0	0-1": Slough. (Topsoil mixed with sand).
				2-7": Sand. Brown (7.5 YR 4/4), fine to very fine, traces of slate chips, one slate
				cobble (35 mm), moderately sorted, angular to subrounded,
				slightly moist.
				7-9": Sand. Yellowish red (5 YR 4/6), very fine to very coarse, poorly sorted,
				subangular to subrounded, slightly moist.
				9-11": Clayey Sand. Reddish brown (5 YR 4/4), some slate cobbles (4 mm),
				trace medium to coarse sand, slightly dense, crumbly, poorly sorted, moist.
26	28	14	0.0	0-9": Sand. Yellowish red (5 YR 4/6), fine to very fine, well sorted, trace slate
				fragments, angular to subrounded, slightly moist.
				9-14": Sand. Pink (7.5 YR 7/4), medium, well sorted, subangular to
				subrounded, loose, dry.
28	30	12	0.0	0-12": Sand. As above, dry.
30	32	15	0.0	0-3": Slough. Fine to medium sand.
				3-9": Sand. Light brown (7.5 YR 6/4), fine to medium, well sorted, subangular
				to subrounded, slightly moist.

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Sample/Core Log

Boring/Well GMSB-66 Page 3 of 3

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
				9-15": Sand. Pink (7.5 YR 7/4), medium, well sorted, subangular to
				subrounded, loose, dry.
32	34	9	0.0	0-3.5": Slough. Fine to medium sand.
				3.5-9": Sand. As above.
34	36	17	0.0	0-2": Slough. Fine to medium sand.
				2-7": Sand. Brown (7.5 YR 5/6), fine to very fine, moderately sorted, some
				slate cobbles (2-24 mm), trace coarse sand, angular to subrounded, slightly
				moist.
				7-17": Sand. Light brown (7.5 YR 6/4), fine to very fine, well sorted,
				subrounded, slightly moist, approximately 2 mm lenses of oxidized coloration.
36	38	20	0.22	0-5": Slough. Fine to medium sand.
				5-20": Sand. As above, slightly moist from 5-11", moist from 11-20".
38	40	15	0.0	0-4.5": Sand. As above, moist.
				4.5-9": Sand. Brown (7.5 YR 5/4), very fine, some silt, well sorted, low
				plasticity, very moist.
				9-15": Sand. Light brown (7.5 YR 6/4), fine to very fine, well sorted, subrounded,
				slightly moist.
40	42	19	0.0	0-6": Slough. Very fine sand to medium sand.
				6-19": Sand. As above, moist.
42	44	14	0.07	0-6": Sand. As above, moist.
				6-14": Sand. Brown (7.5 YR 4/4), fine to medium, well sorted, subangular to
				subrounded, very moist to wet.
44	46	11	0.0	0-2": Slough. Very fine to medium sand.
				2-11": Sand. As above, trace slate, wet.
				EOB @ 46 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-67 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/6/01 Drilling Completed 6/6/01

Total Depth Drilled 44 Feet Hole Diameter 8¼ inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1119.59 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Randy/Jay

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	9	0.0	0-7": Topsoil and Fill. Cobbles of rock and brick, loose, dry.
				7-9": Sand. Brown (7.5 YR 5/4), fine to medium, trace very fine, trace coarse,
				moderately sorted, angular to surrounded, loose, dry.
2	4	18	0.0	0-6": Slough. Topsoil mixed with sand, as above.
				6-18": Sand. As above, trace gravel, (2-40 mm), slightly moist.
4	6	15	0.79	0-7": Slough. Topsoil, sand and gravel, trace black staining.
				7-15": Sand. Light brown (7.5 YR 6/4), medium, trace fine, trace coarse,
				moderate to well sorted, subangular to subrounded, loose, dry.
6	8	19	1.29	0-5": Slough. Topsoil, sand, gravel, brick.
				5-19": Sand. Brown (7.5 YR 5/4), fine to very coarse, moderate to poorly sorted,
				trace fine gravel (approximately 2 mm), angular to surrounded, loose, moist.
8	10	16.5	0.23	0-2": Slough. Topsoil, sand, trace brick.
				2-16.5": Sand. As above, trace gravel, (4-10 mm), moist.
10	12	15	2.09	0-4": Slough. Topsoil, sand, trace gravel.
				4-10": Sand. As above.
				10-15": Sand. Brown (7.5 YR 5/4), very fine to medium, trace silt, well sorted,
				subangular to subrounded, moist.
12	14	21	0.43	0-3": Slough. Topsoil, sand, trace brick.
				3-21": Sand. Strong brown (7.5 YR 4/6), very fine to fine, trace silt, trace
				slate chips, well sorted, subrounded, moist.
14	16	20	0.59	0-2": Slough. Topsoil, sand, trace gravel.
				2-20": Sand. As above, moist.
16	18	18	0.02	0-2": Slough. Topsoil, sand, trace gravel.
				2-18": Sand. As above, moist.
18	20	20	0.05	0-2": Slough. Topsoil, and sand.
				2-20": Sand. As above, moist.
20	22	23	0.21	0-2": Slough. Topsoil and sand.
				2-23": Sand. As above, moist.
22	24	20	0.0	0-20": Sand. As above, moist, one cobble of pumice-like material, black, shiny.

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Sample/Core Log

Boring/Well GMSB-67 Page 2 of 2

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
24	26	20	1.02	0-2": Slough. Topsoil, sand, slate chips.
				2-9": Sand. As above, moist.
				9-12": Clayey Sand. Reddish brown (5 YR 4/4), very fine to fine, slightly dense,
				lean, moderate plasticity, moist.
				12-20": Sand. Brown (7/5 YR 5/4), very fine to medium, trace silt, trace coarse,
				well sorted, subangular to subrounded, moist.
26	28	24	1.47	0-7": Slough. Topsoil, sand, trace gravel.
				7-20": Sandy Clay. Reddish brown (5 YR 4/4), very fine sand, dense, lean
				moderate to high plasticity, two 5 mm lenses of very fine sand, moist.
				20-24": Sand. Brown (7.5 YR 4/4), very fine, some silt, well sorted, slightly
				cohesive, moist.
28	30	19	1.71	0-4": Slough. Sand, fine to medium, some topsoil and brick.
				4-18": Clayey sand. Reddish brown (5 YR 5/4), very fine to fine, dense, lean,
				low plasticity, crumbly, moist.
				18-19": Sand. Light brown (7.5 YR 6/4), very fine to medium, trace coarse, moderate
				to well sorted, subangular to surrounded, slightly moist.
30	32	21	1.42	0-3": Slough. Topsoil, sand, trace gravel.
				4-6": Sand. As above.
				6-11": Clayey Sand. Reddish brown (5 YR 5/4), very fine to fine, dense, lean,
				low moderate to plasticity, slightly crumbly, moist.
				11-21": Sand. Light brown (7.5 YR 6/4), very fine to medium, trace coarse,
				moderate to well sorted, subangular to subrounded, slightly
				moist.
32	34	16.5	2.37	0-2": Slough. Sand, fine to medium, and topsoil.
				2-16.5": Sand. As above, moist.
34	36	19.5	2.10	0-3": Slough. Sand, fine to medium, and topsoil.
				3-19.5": Sand. As above, 2" lenses clayey sand as above, moist.
36	38	20	1.85	0-7": Sand. Strong brown (7.5 YR 4/4), very fine to fine, trace medium, well
				sorted, surbrounded, loose, moist.
				7-20": Sand. Light brown (7.5 YR 6/3), medium, trace, very fine to fine, well
				sorted, subangular to subrounded, loose, dry.
38	40	19	1.43	0-1": Slough. Sand, very fine to fine.
				1-19": Sand. As above, dry.
40	42	20	1.85	0-20": Sand. As above, moist.
42	44	16	3.01	0-16": Sand. As above, very moist 0-5", very wet 5-16".
				EOB @ 44 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSB-68 | Project/No.: Ford/Kingsford WI000860.0001 | Page 1 of 3

Site Location: Kingsford, Michigan | Drilling Started: 6/6/01 | Drilling Completed: 6/6/01

Total Depth Drilled: 46 Feet | Hole Diameter: 8¼ inches | Type of Sample/Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" | Sampling Interval: continuous feet

Land-Surface Elev.: 1119.47 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear | Driller: Jeff | Helper: Randy/Jay

Prepared By: Veronica Brieno/Rachel Sarri/Pat Bartnik | Hammer Weight: 140 | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	14	4.85	0-14": Sand. Strong brown (75 YR 4/6), medium, some very fine to fine, little
				fine gravel (2-30 mm), poorly sorted, angular to subangular, loose, slightly
				moist, trace topsoil in first 0.5".
2	4	13	1.35	0-7.5": Sand. As above, moist.
				7.5-13": Sand. Brown (7.5 YR 5/4), fine to medium, some very fine, well sorted,
				subangular to subrounded, loose, moist.
4	6	6	2.30	0-6": Slough. Sand and gravel (5-40 mm).
6	8	16	2.41	0-6": Slough. Sand and gravel, as above.
				6-16": Sand. Yellowish brown (10 YR 5/4), medium to coarse, some very coarse,
				little fine gravel (2-10 mm), moderate to poorly sorted, angular to subangular,
				loose, moist.
8	10	14	2.98	0-6": Slough. Sand and gravel, as above.
				6-14": Sand. Strong brown (7.5 YR 4/6), very fine to fine, trace slate
				fragments, trace gravel (approximately 10 mm), subrounded, moderate to
				well sorted, moist.
10	12	15	2.88	0-3": Slough. Sand and gravel, as above.
				3-15": Sand. As above, 1" lense of slate, moist.
12	14	15.5	3.22	0-2": Slough. Sand and gravel, as above.
				2-15.5": Sand. As above, 1" lense of slate, moist.
14	16	16.5	4.45	0-2.5": Slough. Sand and gravel, as above.
				2.5-13.5": Sand. As above, moist.
16	18	16.5	3.70	0-2.5": Slough. Sand and gravel, as above.
				2.5-16.5": Sand. As above, moist.
18	20	14.5	5.34	0-2": Slough. Sand and gravel, as above.
				2-8": Sand. As above, moist.
				8-14.5": Sand. Light brown (7.5 YR 6/3), medium to coarse, some fine, some
				very coarse, poorly sorted, subangular to subrounded, loose, dry.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-68

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
20	22	17.5	5.31	0-3": Slough. Fine to very coarse, sand and gravel.
				3-9": Sand. Strong brown (7.5 YR 4/6), very fine to fine, trace slate
				fragments, subrounded, well sorted, moist.
				9-17.5": Sand. Brown (7.5 YR 4/2), medium to coarse, some very coarse,
				little gravel and slate (2-35 mm), poorly sorted, subangular to subrounded,
				loose, moist.
22	24	5.5	5.37	0-5.5": Slough. Sand and gravel, as above.
24	26	14	7.29	0-6": Slough. Sand and gravel, as above.
				6-14": Sand. Brown (7.5 YR 5/4), very fine to fine, well sorted, subrounded,
				moist, 1" lense of sandy clay, reddish brown (5 YR 4/4), slightly
				dense, moderate plasticity, moist.
26	28	15	6.01	0-3.5": Slough. Sand and gravel, as a above.
				3.5-15": Sand. As above, no sandy clay lense, moist.
28	30	0		No recovery. Rock wedged into sampler.
30	32	16	8.21	0-2": Slough. Sand, fine to medium, trace slate.
				2-10": Sand. As above, sandy clay swirls as above, (turbulent environment),
				moist.
				10-15": Sand. Brown (7.5 YR 4/2), very fine, trace to little silt, well sorted,
				slightly cohesive, moist.
				15-16": Sand. Light brown (7.5 YR 6/4), very fine to fine, some medium,
				moderate to well sorted, loose, subrounded, dry.
32	34	19.5	5.91	0-4": Slough. Sand and gravel.
				4-6.5": Sandy Clay. Reddish brown (5 YR 6/4), slightly dense, moderate
				plasticity, moist, lean.
				6.5-19.5": Sand. Brown (7.5 YR 5/4), fine to medium, trace very fine, trace
				coarse to very coarse, well sorted, subangular to subrounded, loose, moist.
34	36	17	8.08	0-2": Slough. Sand (fine to medium), trace very coarse sand.
				2-5": Sandy Clay. Reddish brown (5 YR 6/4), slightly dense, moderate
				plasticity, lean, moist.
				5-8": Sand. Brown (7.5 YR 4/2), very fine to fine, trace slate chips, trace coarse
				sand, moderate to well sorted, subangular to subrounded, slightly loose, moist.
				8-12": Sand. Brown (7.5 YR 5/4), coarse to very coarse, some fine to medium,
				poorly sorted, subangular to subrounded, loose, moist.
				12-17": Sand. Brown (7.5 YR 6/4), medium, some fine, well sorted,
				subrounded, moist.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-68 Page 3 of 3

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
36	38	17	6.67	0-5": Slough. Fine to coarse sand and cobbles.
				5-17": Sand. As above, moist.
38	40	15.5	7.58	0-5": Slough. Sand, fine to medium and trace very coarse.
				5-15.5": Sand. As above, moist.
40	42	16	8.44	0-6": Sand. As above.
				6-16": Sand. Light brown (7.5 YR 6/4), medium, some fine, trace quartz
				(10-25 mm), well sorted, subrounded, slightly moist (sand as above
				with quartz).
42	44	14.5	7.81	0-14.5": Sand. As above (no quartz), very wet last 3", otherwise very moist.
44	46	17	11.59	0-17": Sand. As above, very wet.
				EOB @ 46 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSB-69 | Project/No.: Ford/Kingsford WI000860.0001 | Page: 1 of 2

Site Location: Kingsford, Michigan | Drilling Started: 6/7/01 | Drilling Completed: 6/7/01

Total Depth Drilled: 44 Feet | Hole Diameter: 8¼ inches | Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" | Sampling Interval: continuous feet

Land-Surface Elev.: 1118.24 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear | Driller: Jeff | Helper: Randy/Jay

Prepared By: Veronica Brieno/Rachel Sarri/Pat Bartnik | Hammer Weight: 140 | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	22	0.0	0-6": Topsoil. Gravel, organic material.
				6-14": Sand. Strong brown (7.5 YR 4/6), very fine to fine, some silt, slightly
				cohesive, subrounded, well sorted, moist.
				14-22": Sand. Strong brown (7.5 YR 4/6), fine, little medium, well sorted,
				loose, moist, subangular to subrounded.
2	4	13	0.0	0-2": Slough. Topsoil and sand.
				2-7": Sand. As above, moist.
				7-13": Sand and Gravel. Strong brown (7.5 YR 4/6), very fine to very coarse,
				gravel (2-35 mm), poorly sorted, angular to subrounded, loose, moist.
4	6	14	0.0	0-5": Slough. Sand, very fine to fine.
				5-12": Sand and gravel as above, moist.
				12-14": Sand. Strong brown (7.5 YR 4/6), very fine to fine, some silt, slightly
				cohesive, subrounded, well sorted, moist.
6	8	14	0.0	0-6": Slough. Sand and gravel.
				6-14": Sand. Yellowish red (5 YR 4/6), fine, trace very fine, trace medium,
				trace slate chips, well sorted, sorted angular to subrounded, moist.
8	10	19	0.0	0-6": Slough. Sand, gravel and slate.
				6-14": Sand. As above, moist.
10	12	14.5	0.0	0-14.5": Sand. As above, trace slate cobbles (approximately 30 mm), moist.
12	14	0		No recovery.
14	16	16	0.25	0-5": Slough. Sand as above.
				5-14": Sand. Brown (7.5 YR 5/4), medium, some fine, trace coarse to very
				coarse, trace slate chips, moderately sorted, slightly loose, angular to
				subrounded, moist.
				14-16": Sand. Yellowish red (5 YR 4/6), fine, trace very fine, trace medium, trace
				slate chips, well sorted, angular to subrounded, moist.
16	18	24		0-2.5": Slough. Sand.
				2.5-24": Sand. As above, no slate chips, slightly moist.

ARCADIS G&M
Sample/Core Log

Boring/Well GMSB-69

Prepared By Veronica Brieno/Rachel Sarri/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
18	20	21	0.0	0-21": Sand. As above, moist.
20	22	20	0.36	0-20": Sand. As above from 13-16" sandy clay, reddish brown (5 YR 4/4)
				lense slightly dense, lean, moderate plasticity, HP = 1.5, moist.
22	24	18	0.0	0-18": Sand. As above, no sandy clay, three 0.5" lenses of slate rock,
				(slightly weathered), moist.
24	26	19	0.0	0-5": Slough. Sand and gravel.
				5-19": Sand. Pink (7.5 YR 7/4), very fine to fine, well sorted, subrounded,
				slightly loose, moist.
26	28	17.5	0.0	0-3": Slough. Sand and one quartz rock (40 mm).
				3-17.5": Sand. As above, moist.
28	30	21	0.19	0-21": Sand. As above, moist.
30	32	16	1.0	0-16": Sand. As above, moist.
32	34	18	1.22	0-18": Sand. As above, moist.
34	36	18	0.87	0-18": Sand. As above, moist.
36	38	15.5	2.32	0-15.5": Sand. As above, 1" lense sandy clay, reddish brown (5 YR 4/4) slightly
				dense, lean, moderate, plasticity, moist, HP = 1.5.
38	40	17	3.55	0-4.5": Slough. Sand, very fine to fine, some gravel.
				4.5-17": Sand. As above, no sandy clay, moist.
40	42	19	2.96	0-5.5": Slough. Sand as above, gravel.
				5.5-19": Sand. As above, very moist to wet.
42	44	18	4.05	0-18": Sand. As above, very wet.
				EOB @ 44 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSB-70 | Project/No.: Ford/Kingsford WI000860.0001 | Page: 1 of 2

Site Location: Kingsford, Michigan | Drilling Started: 6/7/01 | Drilling Completed: 6/7/01

Total Depth Drilled: 42 Feet | Hole Diameter: 8¼ inches | Type of Sample/Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" | Sampling Interval: continuous feet

Land-Surface Elev.: 1116.68 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear | Driller: Jeff | Helper: Jay

Prepared By: Veronica Brieno/Rachel Sarri | Hammer Weight: 140 | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	13	2.31	0-5": Topsoil. Some gravel, organic matter.
				5-13": Sand. Strong brown (7.5 YR 4/6), fine to medium, little coarse,
				little very fine, moderate to well sorted, subangular to subrounded, loose, dry.
2	4	5	1.75	0-5": Slough. Topsoil, sand and gravel.
4	6	13.5	4.74	0-6": Slough. Topsoil, sand, breccia-type rock.
				6-13.5": Sand. Brown (7.5 YR 5/4), medium, some fine, trace slate chips, well
				sorted, subangular to subrounded, loose, moist.
6	8	4	1.90	0-4": Slough. Topsoil, sand, breccia-type rock.
8	10	17.5	3.70	0-3": Slough. Topsoil, sand and gravel.
				3-17.5": Sand. Light brown (7.5 YR 6/4), coarse, some medium, trace fine,
				trace very coarse, moderate to well sorted, subangular to subrounded,
				loose, moist.
10	12	13.5	3.11	0-13.5": Sand. As above, moist.
12	14	18	4.14	0-3": Slough. Topsoil, sand and gravel.
				3-7": Sand. As above, moist.
				7-18": Sand. Light brown (7.5 YR 6/4), fine to medium, trace coarse, well
				sorted, subangular to subrounded, loose, moist.
14	16	19	2.34	0-4": Slough. Topsoil, sand and gravel.
				4-19": Sand. As above, from 6-9" sand and gravel, coarse, gravel (2-35 mm),
				poorly sorted, subangular to subrounded, loose moist.
16	18	18	3.30	0-6": Slough. Topsoil, sand, gravel, crushed rock.
				6-18": Sand. As above, moist.
18	20	16	3.44	0-4": Slough. Sand and gravel, and rock.
				4-16": Sand. As above, moist.
20	22	17.5	3.44	0-17.5": Sand. As above, trace slate chips top 6", trace gravel top 3".
22	24	19	3.84	0-19": Sand. As above, no slate chips or gravel, moist.
24	26	18	2.34	0-18": Sand. As above, moist, 2" lense crushed rock (approximately 30-
				35 mm).

ARCADIS G&M
Sample/Core Log

Boring/Well GMSB-70 Page 2 of 2

Prepared By Veronica Brieno/Rachel Sarri

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
26	28	20	3.28	0-20": Sand. As above, moist.
28	30	16	3.97	0-16": Sand. As above with moist 1" lense sandy clay, reddish brown (2.5 YR 4/4),
				slightly dense, low to moderate plasticity, lean, moist.
30	32	17	2.85	0-17": Sand. As above, moist, no sandy clay.
32	34	18	4.25	0-18": Sand. As above, moist.
34	36	18	2.68	0-18": Sand. As above, moist, very moist last 3".
36	38	19	2.07	0-19": Sand. As above, wet, 1" lense sandy clay as above at bottom.
38	40	22	2.43	0-9": Sand. As above, wet.
				9-22": Sandy Clay. Reddish brown (2.5 YR 4/4), moderately dense, low to
				moderate plasticity, lean, very moist.
40	42	24	2.08	0-12": Sand. As above, wet.
				12-20": Sandy Clay. As above, expanded (i.e., swollen), very moist.
				20-24": Sand. As above, very wet.
				EOB @ 42 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-71 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site

Location Kingsford, Michigan Drilling Started 6/8/01 Drilling Completed 6/8/01

Total Depth Drilled 50 Feet Hole Diameter 8¼ inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 5' x 4½" auger, 2' x 2" splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1114.95 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Randy/Jay

Prepared By Veronica Brieno/Rachel Sarri Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	11.5	0.0	0-11.5": Topsoil. Sand, organic matter.
2	4	18	0.68	0-6": Topsoil. Fill, (brick, crushed rock).
				6-12": Sand. Strong brown (7.5 YR 5/6), medium, some coarse, trace very
				coarse, trace gravel, poorly sorted, subangular to subrounded, loose, dry.
				12-18": Crushed rock and gravel (10-35 mm), loose, subrounded, dry.
4	6	18.5	2.76	0-7": Slough. Topsoil, sand, crushed rock and gravel.
				7-18.5": Sand. Pink (7.5 YR 7/4), fine to medium, trace very fine, trace coarse,
				moderate to well sorted, subangular to subrounded, loose, slightly moist.
6	8	24	2.66	0-8": Sand. Strong brown (7.5 YR 4/6), fine, some medium, little coarse to
				very coarse, little gravel, poorly sorted, angular to subrounded, loose,
				slightly moist.
				8-24": Sand. As above, some gravel (2-20 mm) moderate to poorly sorted,
				slightly moist.
8	10	24	2.44	0-7": Slough. Topsoil, sand, gravel, and brick.
				7-24": Sand. As above, no gravel, moist.
10	12	14.5	3.28	0-14.5": Sand. As above, moist.
12	14	20	2.14	0-10": Slough. Topsoil, sand and gravel.
				10-20": Sand. As above, moist.
14	16	13	5.71	0-3": Slough. Sand and gravel.
				3-13": Sand. As above, moist.
16	18	15	3.50	0-4": Slough. Sand and gravel.
				4-13": Sand. As above, some gravel, poorly sorted, moist, gravel 2-10 mm.
				13-15": Sand. Light brown (7.5 YR 6/4), very fine to fine, trace very coarse,
				trace slate chips, subrounded, well sorted, loose, slightly moist.
18	20	16	3.29	0-6": Slough. Topsoil, sand and gravel.
				6-16": Sand. As above, no slate chips, no very coarse, moist.
20	22	15	6.02	0-2": Slough. Sand and fine gravel.
				2-15": Sand. As above, moist.

ARCADIS G&M
Sample/Core Log

Boring/Well GMSB-71 Page 2 of 2

Prepared By Veronica Brieno/Rachel Sarri

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
22	24	20	6.47	0-16": Sand. As above, moist.
				16-20": Silty Sand. Brown (7.5 YR 4/4), very fine, well sorted, slightly
				cohesive, no plasticity, moist.
24	26	16	10.18	0-16": Silty Sand. As above, moist.
26	28	24	6.40	0-6": Slough. Topsoil, sand and gravel.
				6-24": Silty Sand. As above, color slightly changes to light brown (7.5 YR 6/4).
28	30	21	7.28	0-3": Slough. Sand and very fine gravel.
				3-7": Silty Sand. As above, moist.
				7-21": Silt. Light brown (7.5 YR 6/4), well sorted, smooth, slightly cohesive,
				no plasticity, moist.
30	32	22	6.61	0-12": Silt. As above, moist, wet from 10-12" (perched water).
				12-18": Clayey Silt. Light brown (7.5 YR 6/4), slightly dense, crumbly, low
				plasticity, lean, moist.
				18-22": Silt. As above, moist.
32	34	21	8.82	0-2": Slough. Sand and crushed rock.
				2-21": Silt. As above, moist, very wet from 19-21".
34	36	16	6.89	0-16": Silt. As above, moist, very wet from 5-16".
36	38	18	6.20	0-18": Silt. As above, very wet (saturated).
38	40	14	7.65	0-14": Silt. As above, very wet (saturated).
40	42	19	9.18	0-2": Slough. Sand and gravel.
				2-19": Silt. As above, wet to very wet.
42	44	21	6.52	0-15": Silt. As above, wet.
				15-21": Silty clay. Reddish-brown (5 YR 4/4), dense, crumbly, low to
				moderate plasticity, lean, slightly moist. HP = 1.5.
44	46	20	4.60	0-20": Silt. As above, very wet 0-4", moist 4-20", 1" silty clay lenses, as
				above.
46	48	18	4.90	0-18": Silt. As above, intermingled throughout with silty clay as above, dense,
				slightly moist.
48	50	20	5.33	0-20": Silt and Silty Clay. Intermingled as above, dense, slightly moist, wet,
				from 0-3".
				EOB @ 50 feet bls.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSB-72 | Project/No.: Ford/Kingsford WI000860.0001 | Page: 1 of 2

Site Location: Kingsford, Michigan | Drilling Started: 6/11/01 | Drilling Completed: 6/11/01

Total Depth Drilled: 52 Feet | Hole Diameter: 8¼ inches | Type of Sample/Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" | Sampling Interval: continuous feet

Land-Surface Elev.: 1117.17 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear | Driller: Jim | Helper: Randy/Ben

Prepared By: Veronica Brieno/John Keller | Hammer Weight: 140 | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	24.0		0-6": Concrete.
				6-24": Fill Material. Sand and gravel.
2	4	19	-0.78	0-3": Slough. Crushed concrete.
				3-7.5": Sand. Reddish brown (5 YR 4/3), fine to medium, trace coarse, trace
				gravel (approximately 20 mm), well sorted, subangular to subrounded,
				loose, slightly moist.
				7.5-19": Sand. Strong brown (7.5 YR 5/8), fine, trace very fine, trace medium,
				well sorted, subrounded, loose, slightly moist.
4	6	19.5	-1.16	0-4": Sand and Gravel. Grey (7.5 YR 5/1), fine to very coarse, some very fine,
				some concrete powder, poorly sorted, angular to subrounded, loose,
				slightly moist.
				4-19.5": Sand. Reddish-yellow (7.5 YR 6/6), fine to medium, trace very fine,
				trace coarse, moderate to well sorted, subangular to subrounded, loose,
				slightly moist.
6	8	22	-1.16	0-2": Slough. Sand and some fine gravel.
				2-6": Sand. As above, slightly moist.
				6-16.5": Sand. Strong brown (7.5 YR 5/6), fine, some very fine, well sorted,
				subangular to subrounded, loose, dry.
				16.5-22": Sand. Strong brown (7.5 YR 5/6), very fine to fine, little silt, well
				sorted, subrounded, loose, dry.
8	10	14	-1.06	0-14": Sand. As above, some silt, dry.
10	12	18	-1.19	0-18": Sand. As above, some silt, dry to moist.
12	14	22	-1.10	0-22": Sand. As above, some silt, moist, predominantly very fine sand from 0-7".
14	16	20	-0.87	0-3": Slough. Sand and gravel.
				3-10": Sand. As above, predominately very fine sand, some silt.
				10-20": Sand. Light brown (7.5 YR 6/3), fine, some very fine, trace medium,
				well sorted, subrounded, loose, slightly moist.
16	18	20	-0.31	0-20": Sand. Light brown (7.5 YR 6/5), very fine, some silt, some fine, well
				sorted, slightly loose, slightly moist to moist.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSB-72 Page 2 of 2

Prepared By Veronica Brieno/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
18	20	22.5	-0.79	0-22.5": Sand. Light brown (7.5 YR 6/5), fine to very fine, some to little silt,
				well sorted, slightly loose, subrounded, moist to slightly moist.
20	22	18	-0.88	0-2": Slough. Sand and very fine gravel.
				2-7.5": Sand. As above, moist.
				7.5-18": Sand. Light brown (7.5 YR 6/3), very fine, little silt, well sorted,
				slightly loose, slightly moist.
22	24	20	-0.66	0-20": Sand. As above, slightly moist.
24	26	23	-0.56	0-1": Slough. Sand and Gravel.
				1-23": Sand. As above, slightly moist.
26	28	16	0.55	0-2": Slough. Sand and gravel.
				2-16": Sand. Light reddish brown (5 YR 6/4), very fine, some silt, well sorted,
				slightly cohesive, moist, 0.5" interbeds of silt lenses from 10-16".
28	30	20	-0.56	0-11": Silt. Reddish brown (5 YR 6/4), some very fine sand, well sorted,
				crumbly, slightly cohesive, slightly moist.
				11-20": Sand. Light brown (7.5 YR 6/3), very fine, some silt, well sorted, well
				graded, slightly loose, slightly moist.
30	32	24	0.16	0-21": Sand. As above, slightly moist.
				21-24": Silt. Reddish brown (5 YR 5/3), trace very fine sand, well
				sorted, moderately cohesive, crumbly, moist.
32	34	21	0.45	0-21": Silt. As above, moist.
34	36	24	-1.07	0-24": Silt. As above, 1" lense of silty clay, moist, silty clay reddish brown
				(2.5 YR 4/4).
36	38	24	0.65	0-24": Silt. As above, trace clay, moist.
38	40	24	-0.12	0-24": Silt. As above, trace clay, moist, very moist to wet from 16 to 24",
				slightly more cohesive in moist area.
40	42	24	0.49	0-2": Slough. Sand and silt.
				2-24": Silt. As above, trace clay, moist to very moist, trace silty clay lenses as
				above (approximately 0.25"), wet from 22-24".
42	44	22	1.06	0-22": Silt. As above, trace silty clay intermingled as above, slightly moist to moist.
44	46	24	0.57	0-24": Silt. As above, silty clay as above, intermingled at top, very moist at top,
				moist throughout.
46	48	24	0.99	0-24": Silt. As above, silty clay lense (1") as above, moist to slightly moist.
48	50	24	1.12	0-24": Silt. As above, no silty clay, moist to wet, wet from 20-24".
50	52	NR		No recovery. Sample lost down hole.
				EOB @ 52 feet bls.

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Sample/Core Log

Boring/Well GMSB-73 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/12/01 Drilling Completed 6/12/01

Total Depth Drilled 42 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2-foot by 2-inch

Sampling Interval 5 feet

Land-Surface Elev. 1117.97 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Driller Jim Helper Ben/Randy

Prepared By Veronic Brieno

Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	6"	1-2-2	0-6": Sand: Reddish yellow (7.5 YR 4/6), coarse, some very coarse, well sorted,
		0		subangular to subrounded, moist.
2	5			Blind drill.
5	7	13"	10-13-12	0-2": Sand: As above, moist.
		1.03		2-13": Silty clay: Brown (7.5 YR 5/3), dense, firm lean, low to moderate
				plasticity, HP = 1.5, slightly crumbly, trace reddish brown (5 YR 4/3) silty
				clay intermingled at bottom, moist.
7	10			Blind drill.
10	12	17"	17-14-14	0-1": Slough.
		0.35		2-5": Silty clay: Reddish brown (5 YR 4/3), slightly dense, moderately soft,
				slightly swollen, cohesive, moderate to high plasticity, HP = 1.0, very moist.
				5-17": Silt: Brown (7.5 YR 5/3), dense, firm, lean, no plasticity to very little
				plasticity, crumbly, slightly moist, 1" lense coarse sand as above, silt HP = 2.0'.
12	15			Blind drill.
15	17	17.5"	18-22-23	0-6": Silty clay: Brown (7.5 YR 4/3), slightly dense, moderately soft, moderately
		0.75		swollen, cohesive, moderate to high plasticity, HP = 1.0', very moist to wet.
				6-17.5": Silt: As above, very moist to wet.
17	20			Blind drill.
20	22	18"	16-18-24	0-1": Slough.
		1		2-10": Silty clay: As above, wet, very soft, HP = 0.5.
				10-18": Silt: As above, wet.
22	25			Blind drill.
25	27	18"	16-19-21	0-7": Silty clay: As above, wet, very soft.
		0		7-18": Silt: As above, wet.
27	30			Blind drill.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-73

Prepared by Veronic Brieno

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
30	32	20"	12-16-13	0-7": Silty clay: As above, wet, very soft.
		0.89		7-20": Silt: As above, wet, at 0.25" silty clay lenses, reddish brown (5 YR 4/3)
				throughout (interbedded).
32	35			Blind drill.
35	37	23"	9-11-13	0-4": Silty clay: As above, wet, very soft.
		0		4-23": Silt: As above, wet, tract to 2 mm silty clay (as above) lenses at bottom.
37	40			Blind drill.
40	42	24"	10-14-15	0-18": Silt: As above, wet.
		16.5		18-24": Sand: Pink (7.5 YR 3/3), coarse, little very coarse, little medium,
				moderately sorted, subangular to subrounded, loose, very moist to wet.
42	45			Blind drill.
45	47	18"	7-9-11	0-12": Silty clay: As above, saturated, very soft (? Slough).
		13.86		12-18": Sand: As above, very moist.
				EOB @ 47 feet.

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Sample/Core Log

Boring/Well GMSB-74 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/13/01 Drilling Completed 6/13/01

Total Depth Drilled 42 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2-foot by 2-inch Sampling Interval 5 feet

Land-Surface Elev. 1119.14 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jim Helper Ben/Randy

Prepared By Veronic Brieno Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	7"	11-9-11	0-7": Sand: Strong brown (7.8 YR 5/6), medium to coarse, some very coarse,
		0.19		moderately sorted, subangular to subrounded, loose, very moist.
2	5			Blind drill.
5	7	12"	15-15-18	0-0.5": Sand: Dark brown (7.5 YR 3/4), coarse to very coarse, some gravel (2-10
		0.44		mm), poorly sorted, subangular, loose, wet.
				0.5-12": Silt: brown (7.5 YR 4/3), dense, firm, lean, low plasticity, crumbly, HP =
				2.0, some silty clay, reddish brown (5 YR 4/3) intermingled throughout,
				slightly moist.
7	10			Blind drill.
10	12	--	100/6	No recovery. Driller states that they are "hitting a rock".
12	15			Blind drill.
15	17	18.5"	13-16-22	0-11.5": Silty clay: Brown (7.5 YR 4/3), slightly dense, moderately soft,
		19.97		moderate to high plasticity, slightly swollen, moist HP = 0.5, trace silty clay,
				reddish brown (5 YR 5/4).
				11.5-18.5": Silt: Brown (7.5 YR 4/3), dense, firm, lean, low
				plasticity, crumbly. HP = 2.0. 0.5" lenses silty clay, reddish brown (5 YR 4/3),
				slightly moist.
17	20			Blind drill.
20	22	4"	27-32-33	0-4": Silty clay: Brown (7.5 YR 4/3), slightly dense, moderately soft, moderate
		0.98		to high plasticity, slightly swollen, very moist, HP = 0.5.
22	25			Blind drill.
25	27	15"	10-14-14	0-6": Silty clay: As above.
		16.11		6-15": Silt: As above, moist, 0.25" interbeds of silty clay, reddish brown
				(5 YR 4/3).
27	30			Blind drill.

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Sample/Core Log (continued)

Boring/Well GMSB-74

Prepared by Veronic Brieno

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
30	32	17	15-12-17	0-7": Silty clay: As above, very moist to wet.
		13.61		7-13": Silt: As above, moist, no silty clay.
				13-15.5": Sand: Brown (7.5 YR 4/3), very fine, little silt, well sorted, dense,
				crumbly, slightly moist.
				15.5-17": Sand: Light brown (7.5 YR 4/4), medium, trace very coarse, well
				sorted, subangular to subrounded, loose, very moist.
32	35			Blind drill.
35	37	14"	7-13-12	0-5": Slough.
		15.5		5-14": Sand: As above, some coarse to very coarse, very moist to wet.
37	40			Blind drill.
40	42	12"	17-23-32	0-3": Slough.
		99.47		3-12": Sand: As above, trace coarse, wet.
				EOB @ 42 ft bls.

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Sample/Core Log

Boring/Well GMSB-75 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/4/01 Drilling Completed 9/4/01

Total Depth Drilled 65 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Leon/ Royce Brown

Prepared By John Keller/A MacAdam Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	3.5	150-1250/	0-1.5' Sand: Brown (7.5 YR 4/4), fine, some medium, some to abundant very
			0.0	fine, silty to very silty, abundant organic, material (grass clippings, rootlets) in
				upper 0.5-0.75', trace gravel (10 - 50 mm), crumbly, loose, dry.
				1.5-3.5' Sand: Black (10 YR 2/1), fine, some to abundant very fine, trace to some
				medium, trace to some gravel (5 mm to 25 mm), subrounded to subangular,
				silty, very well sorted, loose, dry, strong odor present (sewage).
5	10	4	-0.10-5160/	0-4.0' Sand: Dark yellowish brown (10 YR 4/6), medium to coarse, trace to some fine
			0.0	to medium, trace gravel at top progressing into gravelly sand at base, gravel (10
				mm to 3" in diameter), subround to subangular, some silt, silt content increases
				with depth so lower 1' is some silt to abundant silt, loose, dry to moist.
10	15	4.5	-0.12-38.68/	0-3.0' Sand: Dark yellowish brown (10 YR 4/6), medium to coarse, some fine to
			0.0	medium, trace very fine, some silt to abundant silt, some gravel (5 mm to 60 mm),
				subrounded to subangular, loose, dry to moist.
				3.0-4.5' Silt: Brown (7.5 YR 4/3) with clay lenses layers within clay, red (2.5 YR 4/6),
				clay is dense (HP = 3.75 - >4), tight, thicknesses range from 10-30 mm, average
				thickness of 15 mm, silt is also hard, dense (HP = 3.5 - >4), tight, dry.
15	20	3	-0.21-44/71/	0-3' Clay: Red (2.5 YR 4/6) with silt layers now clay is dominant size present with silt
			0.0	interspersed throughout, silt and clay characteristics as above.
20	25	3.75	-0.09-19.11/	0-3.75' Clay: As above.
			0.0	
25	30	5	-0.12-5.63/	0-3.0' Sand: Reddish brown (5 YR 4/3), very fine to fine, trace medium, silty to
			0.0	very silty, some clay, cohesive to loose, very well rounded, dry to moist.
				3.0-5.0' Sand: Light brown (7.5 YR 6/4), very fine to fine, very clean sand, very
				well rounded and sorted, loose, dry to moist.
30	35	5	-0.05-5.72/	0-5.0' Very fine to fine sand, as above.
			0.0	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-75

Prepared by John Keller/A MacAdam

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
35	40	5	0.05/1.08	0-5.0' Sand: Reddish brown (5 YR 4/3), very fine, some to abundant fine, silty
			0.0	to very silty, trace to some clay, soft (HP = 0.5-0.75), wet to saturated, hit water
				table at 36' bls.
40	45	5	0.07-1.61/	0-5.0' Sand: Silty as above.
			0.0	
45	50	5	0.19-1.93/	0-5.0' Sand/Silt: Reddish brown (5 YR 4/3), very fine sand, borderline of a very
			0.0	sandy silt/very silty sand, some clay, cohesive, moderately dense (HP = 1.5-2), wet.
50	55	5	0.21-0.89/	0-5.0' Silt/Sand: As above.
			0.0	
55	60	5	0.15-2.35/	0-5.0' Silt/Sand: Dark reddish gray (5 YR 4/2) borderline of very sandy silt/very
			0.0	silty sand, thin approximately 1" clayey sand lens at approximately 4', cohesive,
				wet to saturated.
60	65	5	0.13-2.71/	0-5.0' Silt/Sand: As above.
			0.0	
				EOB @65' bls.

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Sample/Core Log

Boring/Well GMSB-76 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/5/01 Drilling Completed 9/5/01

Total Depth Drilled 65 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown

Prepared By John Keller/Alec MacAdam Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	3.5	0.05-0.76/	0-3.5' Sand: Strong brown (7.5 YR 4/6), medium to coarse, some very fine to fine,
			0.0-0.9	trace to some very coarse, gravelly (2 mm to 60 mm), subrounded to subangular,
				very poorly sorted, some rock fragments and asphalt fragments present, loose,
				moist, some silt, trace clay.
0	5	1.5	0.02-3.95/	0-1.5' Sand and Gravel: As above.
			0.2-4.0	
5	10	5	-0.06-1.87/	0-1.0' Sand and Gravel: As above.
			0.0-2.5	1.0-3.5' Sand: Strong brown (7.5 YR 4/6), medium to coarse, trace to some very
				coarse, trace fine, some gravel (2 mm to 20 mm) subrounded to subangular, loose,
				moderately to poorly sorted, moist.
				3.5-5.0' Sand: Brown (10 YR 4/3), medium to coarse, some very coarse, some to
				abundant fine, trace to some very fine/silt, gravelly (5 mm to 75 mm), subrounded
				to subangular, loose, dry to moist, rock fragments (igneous-quartz present)
				present at bottom, sand is well rounded.
10	15	5	-0.06-7.87/	0-5.0' Silt: Reddish brown (2.5 YR 4/4) to brown (7.5 YR 4/4), very sandy (very fine
			0.0-5.4	to medium) trace to some and lenses within silt, very hard and tight (HP >4), some
				to abundant gravel (5 mm to 30 mm), subrounded to subangular, moist.
15	25	10	-0.10-1.89/	0-7.5' Clay: Reddish brown (2. 5YR 4/3), with silt layers interbedded, silt, reddish
			0.0-1.2	brown (5 YR 4/4), as you go downsection clay and silt are interbedded with silt
				begin dominant, both silt and clay very hard and dense (HP = 3.5- >4), clay is
				moderately plastic to nonplastic, tight, moist.
				7.5-10' Sand: Brown (7.5 YR 5/4), very fine, sity to very silty, trace fine sand, very
				well sorted and rounded, moist to dry.
25	30	5	0.04-2.91/	0-5.0' Silty Sand: As above.
			0.0-0.2	
30	35	5	0.05-6.15/	0-2.0' Silty Sand: As above.
			0.0-2.1	2.0-5.0' Silt: Brown (7.5 YR 4/4), sandy to very sandy very fine, slightly cohesive to

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Sample/Core Log (continued)

Boring/Well GMSB-76 Page 2 of 2

Prepared by John Keller/Alec MacAdam

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				loose, trace clay, dry.
35	40	5	0.12-3.66/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine, very silty, borderline of silty sand/sandy
			0.0-1.5	silt, some clay, moist.
40	45	5	0.12-7.73/	0-5.0' Silty Sand: As above.
			0-1.2	
45	50	5	0.21-8.11/	0-3.5' Silty Sand: As above.
			0-3.3	3.5-5.0' Silt: Brown (7.5 YR 4/4), very fine sandy, trace to some clay, loose to
				slightly cohesive, crumbly, dry to moist.
50	55	5	0.25-11.71/	0-5.0' Silt: As above.
			0-4.9	
55	60	5	0.45-3.10/	0-5.0' Silt: Brown (7.5 YR 4/3), sandy (very fine), some clay, moderately stiff
			0.0-2.4	(HP = 1.5 - 2.5), wet, hit water table around 55' bls.
60	65	5	0.21-7.81/	0-5.0' Silt: As above.
			0-1.3	
				EOB @ 65' bls.

ARCADIS

Sample/Core Log

Boring/Well GMSB-77 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location: Kingsford, Michigan (Smith Castings)

Drilling Started: 9/5/01 Drilling Completed: 9/5/01

Total Depth Drilled: 15 Feet Hole Diameter: 6 inches Type of Sample/ Coring Device: Core Barrel

Length and Diameter of Coring Device: 10' x 4" Sampling Interval: continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used: None Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear Driller: Jon Weeks Helper: Royce Brown

Prepared By: John Keller, Alec MacAdam Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	0.28-4.64/	0-1.5' Sand: Dark brown (7.5 YR 3/4), very fine to fine, some silt to abundant
			0.0-2.8	silt, some clay, gravelly (2 mm to 2" in diameter), subrounded to subangular, very
				poorly sorted, loose, moist.
				1.5-2.75' Sand: Dark yellowish brown (10 YR 4/6), medium to coarse, some very
				coarse, trace fine, well rounded, moderately sorted loose, dry to moist, some
				gravel (5 mm to 40 mm).
				2.75-5' Sand: Strong brown (7.5 YR 4/6), medium to coarse, trace to some very
				coarse, trace to some fine, trace silt, trace to some gravel (5 mm to 50 mm),
				subrounded to subangular, loose, moist.
5	10	5	0.48-3.72/	0-4.0' Sand: With gravel as above.
			0.0-2.2	4.0-5.0' Clay: reddish brown (5 YR 4/4), very sandy near top progressing into clayey
				sand near base, clay is moderately plastic to plastic, sand is very fine to fine, trace
				medium, cohesive, dry to moist.
10	15	5	0.45-0.50/	0-5.0' Clay: Reddish brown (2.5 YR 4/4), some very fine to fine sand, near top
			0.0-0.5	progressing into a solid, tight clay, very hard and dense (HP = 3.75 - >4), some
				silt to abundant silt, dry to moist, slightly plastic.
15	20	5	0.28-5.3/	0-3.75' Clay as above but with interbedded silt layers (silt, brown (10 YR 4/3), very
			0.0-2.3	tight (dense), trace to some very fine sand, moist.
				3.75-5' Silt: Brown (10 YR 4/3), contains clay lenses/layers up to 1/2" thick, some
				sand to very fine sand, tight dense, moist.
20	25	5	0.26-4.17/	0-2.5' Sand: Pale brown (10 YR 4/3), very fine, perhaps trace fine, silty to very
			0.0-2.8	silty, sand is well rounded and sorted, loose, moist.
				2.5-5.0' Silt: Yellowish brown (10 YR 5/4), sandy to very sandy, very fine, crumbly,
				lightly cohesive, dry to moist.
25	30	5	0.48-7.09/	0-5.0' Sandy Silt as above, becomes wet at approximately 27.5 ft bls.
			0.0-0.9	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-77 Page 2 of 2

Prepared by John Keller, Alec MacAdam

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
30	35	5	0.36-5.91/	0-5.0' Sandy Silt as above, wet silt now cohesive beneath water water.
			0.0-0.9	
35	40	5	0.23-2.72/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine, very silty borderline of silty sand/
			0.0-0.2	sandy silt, cohesive, sand grains are well rounded and sorted, wet, trace to some
				clay.
40	45	5	0.36-4.21/	Silty sand as above.
			0.0-1	
45	50	5	0.29-2.71/	0-5.0' Silt: Brown (7.5 YR 4/2), very sandy, very fine, some clay, crumbly, dry to
			0.0-1	damp, wet in isolated places.
50	55	5	0.46-5.47/	0-5.0' Sandy silt as above.
			0-1.3	
55	50	5	0.36-13.72/	0-5.0' Silt: Brown (7.5 YR 4/3), sandy (very fine), crumbly, slightly cohesive, trace
			0-2.4	to some clay, moist to damp.
60	65	5	0.42-3.91/	0-5.0' Silt as above.
			0-2.5	
				EOB @ 65'

ARCADIS

Sample/Core Log

Boring/Well GMSB-78 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 9/5/01 Drilling Completed 9/5/01

Total Depth Drilled 15 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown

Prepared By John Keller, Alec MacAdam Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	4.5	-1-133/	0-1.5' Sand: Dark reddish brown (5 YR 3/4), fine to coarse, trace to some very
			0.0-0.2	coarse, some very fine/silt, some clay, gravelly (5 mm to 45 mm), subrounded to
				subangular, very poorly sorted, trace organic material (upper 1" of interval), dry.
				1.5-4.5' Sand: Strong brown (7.5 YR 4/6), medium to coarse, trace to some very
				coarse, some fine, trace silt, gravelly (5 mm to 20 mm), subrounded to
				subangular, loose, very poorly sorted, dry.
5	10	5	-0.15-6.98/	0-5.0' Sand and gravel as above.
			0.0-3.0	
10	15	5	-0.12-4.78/	0-0.5' Sand and Gravel As above.
			0.3-3.7	0.5-1.0' Clay: Reddish brown (2.5 YR 4/3), trace to some very fine sand, trace
				silt, moderately dense, firm to hard, moderately plastic, moist.
				1.0-5.0' Silt/Sand: Reddish brown (2.5 YR 4/3), silty sand at top progressing into
				sandy silt at base, sand is very fine, trace fine, cohesive, moderately firm, moist.
				EOB @ 15' bls.

ARCADIS

Sample/Core Log

Boring/Well GMSB-79 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 9/5/01 Drilling Completed 9/5/01

Total Depth Drilled 15 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown

Prepared By John Keller, Alec MacAdam Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	4.5	0.12-49.73/ 0.0-1.5	0-1.5' Sand: Dark reddish brown (5 YR 3/3), fine to coarse, some very fine, some to abundant silt, gravelly (5 to 25 mm), subangular, trace clay, dry, very poorly sorted.
				1.5-4.5' Sand: Dark yellowish brown (10 YR 4/4), medium to coarse, trace to some very coarse, trace to some fine, trace silt, gravelly (5 mm to 35 mm), subrounded to subangular, very poorly sorted, dry, loose to slightly cohesive.
5	10	4	-0.06-4.18/ 1.0-1.1	0-4.0' Sand: Yellowish brown (10 YR 5/4), medium to coarse, trace to some very coarse, trace fine to very fine, trace gravel (approximately 10 to 15 mm), subrounded to subangular, moderately sorted, sand is well rounded, loose, moist.
10	15	5	-0.13-0.54/ 0.0	0-1.0' Sand and Gravel: Dark yellowish brown (10 YR 3/4), coarse to very coarse, some to abundant medium, trace fine, gravelly (2 to 40 mm), subrounded to subangular, very poorly sorted, moist and damp.
				1.0-1.5' Silt: Brown (7.5 YR 4/2) with clay layers interbedded (clay, reddish brown (5 YR 4/4), firm to hard HP = >4) tight, dense, dry to moist, clay is moderately plastic to nonplastic trace to some sand, very fine.
				EOB @ 15 ft

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Sample/Core Log

Boring/Well GMSB-80 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 9/5/01 Drilling Completed 9/5/01

Total Depth Drilled 15 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown

Prepared By John Keller, Alec MacAdam Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM (ppm)	Sample/Core Description
0	5	4	0.30-1288/	0-6" Sand: Fine, trace very fine to medium, subangular to subrounded, <10 percent
			0.0-0.2	coarse, yellowish brown (10 YR 5/4).
				6-30" Sand and Gravel: fine sand subangular/subround, trace to some medium,
				very fine, silt, gravel approximately 30 mm subrounded trace organic, poorly
				sorted, very dark gray (2.5 YR 3/1).
				30-36" Sand: Vvery fine to fine, silty, trace gravel, poorly sorted, black
				(2.5 Y 2.5/1), dry.
				36-48" Sand: Medium to fine, some coarse, some gravel approximately 30 mm
				subround/angular, poorly sorted, dark reddish brown (2.5 YR 3/3), dry.
5	10	3.5	0.01/0.2-27	0-30" Sand: Coarse to medium, trace very coarse, fine subangular to subround,
				trace gravel approximately 15 mm, poorly sorted, reddish brown (2.5 YR 4/4), dry,
				loose.
				30-40" Sand: Same as above, weak, red (10 YR 5/2).
10	15	5	0.0-0.2/	0-12" Sand: medium coarse, some very coarse, some fine and gravel, subround to
			.03-7	subangular, poorly sorted, loose, dry, brown (7.5 YR 4/3).
				12-60" Silty clay: Some very fine to fine sand, interbedded sandy layers in clay, clay
				reddish brown (5 YR 4/4).
				EOB @ 15 feet.

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Sample/Core Log

Boring/Well GMSB-81 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 9/6/01 Drilling Completed 9/6/01

Total Depth Drilled 65 Feet Hole Diameter 4 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Helper Royce

Prepared By Pat Bartnik/Alec MacAdam Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	0->1000/	0-0.5' Topsoil: Silt brown (10 YR 4/3), trace sand, dry, clayey.
			0-59	0.5-5.0' Silt: Brown (7.5 YR 4/3), gravelly (2 mm to 4") subrounded to subangular,
				clayey, some sand, rootlets, with some black (1 Gley 2.5/N) moist looking clay-
				sized substance, sample was fragmented by drilling and homogenized.
5	10	5	0-0/0-0	0-5.0' Sand: Brown (7.5 YR 4/4), coarse to fine gravelly (2 mm to 25 mm)
				subrounded, gravel coarser downward to 2" subrounded moist.
10	15	5	0-0/0-0	0-5.0' Clay: Reddish brown (5 YR 4/4), silty brown (2.5 YR 4/3), dense, compact
				HP = 2.5.
15	20	5	0-0/0-0	0-5.0' Silt as above.
20	25	5	0-0/0-0	0-4.0' Silt, as above.
				4.0-5.0' Sand: Light brown (7.5 YR 6/4), fine to very fine very well sorted, dry.
25	30	5	0-0/0-0	0-5.0' Sand: As above.
30	35	5	0-0/0-0	0-5.0' Sand: As above.
35	40	5	0-0/0-0	0-5.0' Sand: As above.
40	45	5	0-0/0-0	0-5.0' Sand: As above.
45	50	5	0-0/0-0	0-4.5' Sand: As above, silty.
				4.5-5.0' Silt (7.5 YR 4/3), sandy very fine, dry.
50	55	5	0-0/0-0	0-5.0' Silt: Brown (7.5 YR 4/3), sandy very fine, some clay, dry.
55	60	5	0-0/0-0	0-3.0' Silt: As above.
				3.0-5.0' Sand: Brown (7.5 YR 4/3), very fine, silty, wet, clayey.
60	65	6	0-0/0-0	0-5.0' Silt: Brown (7.5 YR 4/3), sandy very fine, dry, compact.
				EOB @ 65'.

ARCADIS

Sample/Core Log

Boring/Well GMSB-82 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/6/01 Drilling Completed 9/6/01

Total Depth Drilled 55 Feet Hole Diameter 4 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Helper Royce

Prepared By Pat Bartnik/Alec MacAdam Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	0-0	0-3.0' Sand: Strong brown (7.5YR 4/6), fine to very fine silty gravelly (2mm to
				>60 mm), subangular to subrounded, some clay, trace coarser sand, dry.
				3.0-5.0' Sand: Strong brown (7.5 YR 4/6), medium to fine some coarse some
				gravel (2 mm to 40 mm) subangular to subrounded, dry.
5	10	5	0-0	0-3.0' Sand: Strong brown (7.5 YR 4/6), medium to very fine silty gravelly (2mm to
				60 mm) subrounded, trace clay, dry.
				3.0-4.75' Sand: Strong brown (7.5 YR 4/6), coarse to medium, some to trace fine,
				some gravel (2 mm to 3") subround to rounded, trace moisture at bottom.
				4.75-5.0' Clay: Red brown (2.5 YR 4/3), dense (HP = 3.0), massive to laminated,
				dry.
10	12.5	2.5	0-0	0-2.5' Clay: As above.
12.5	15	0		No recovery.
15	20	5	0-0	0-3.0' Clay: Reddish brown (5 YR 4/3), dense (HP = 2.5), interbedded very fine to
				fine grain sand, dry.
				3.0-5.0' Silt: Brown (7.5 YR 4/3), trace amount of very fine sand, dense (HP = 3.0),
				very moist at 18.5.
20	25	5	2.5-7.0	0-0.5' Clay: Reddish brown (5 YR 4/3), some silt, soft, moist.
				0.5-5.0' Sand: Light brown (7.5 YR 6/4), fine to very fine grain size loose, well
				rounded subrounded, dry.
25	30	5	2.25-9.5	0-0.5' Sand: Some silt brown (7.5 YR 4/4), fine grain size, loose, subrounded,
				moist (0.5-5.0) sand brown (7.5 YR 6/4), fine to very fine grain size subrounded
				to some silt subangular, well sorted, wet.
30	35	5	2.5-6.25	Same as above.
35	40	5	6.0-45	0-5.0' Silty Sand: Silt dark brown (10 YR 3/3), sand brown (7.5 YR 4/4), fine to
				very fine grain size well sorted, subrounded to subangular, wet.
40	45	5	3.0-8.75	0-5.0' Silty Sand: Dark brown (7.5 YR 3/4), fine to medium grain size, some very
				fine grain size, well sorted, subrounded, wet.

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Sample/Core Log (continued)

Boring/Well GMSB-82

Prepared by Pat Bartnik/Alec MacAdam

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
45	50	5	3.0-8.25	0.0-5.0' Silty Sand: Silt, dark brown (7.5 YR 3/2), sand brown (7.5 YR 4/4), very
				fine grain size, well sorted, wet, medium stiff.
50	55	5	3.0-9.0	0.0-5.0' Sandy Silt: Dark brown (7.5 YR 3/2), very fine grain, well sorted, very moist,
				medium stiff.
				EOB @ 55'

ARCADIS

Sample/Core Log

Boring/Well GMSB-83 Project/No. Ford/Kingsford WI009860.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 9/6/01 Drilling Completed 9/6/01

Total Depth Drilled 13 Feet Hole Diameter 4.25 inches Type of Sample/ Coring Device Spiltspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Dave

Prepared By Pat Bartnik/John Keller/John O'Neal Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	2	2	30	0-8" Topsoil: Silt pale brown (10 YR 6/3), sandy clayey, dry, rootlets, trace fine
				gravel. Portion of a stump (tree).
				8-16" Silt: Dark reddish gray (5 YR 4/2) clayey trace sand, traces of black
				unidentifiable substances, decayed wooden sticks, rootlets.
				16-24" Silt: Very dark gray (5 YR 3/1).
2	4	22	6000	0-22" Alternating Layers of sand, dark reddish brown (5 YR 4/4), fine to very fine
				silty clayey and silt reddish brown (5 YR 3/2) stick (decaying), fragment of a decayed
				pine cone black decayed.
4	6	17	2000	0-5.0' Silt: Very dark gray (5 YR 3/1), sandy fine to very fine, some fine gravel,
				trace wood fragments.
				5-17" Sand: Reddish brown (5 YR 4/3), medium to fine, some very fine, some fine
				gravel to medium gravel (2 mm to 30 mm) subrounded.
6	8	18	900	0-8" Silt: Very dark gray (5 YR 3/1), trace of very fine sand, fragments (slough).
				8-18" Sand: As above.
8	8.5	0.33	0.5-39	0-0.33' Silt: Reddish black (2.5 YR 2.5/1), trace to some wood fragments/twigs
				(some charring of the wood is present), some splintered wood, some very fine to
				fine sand to sandy, trace fine gravel (approximate 2 mm), moist, slight odor
				(sewage).
9	11	1.75	-0.25-40	0-1.5' Clay: Reddish brown (2.5 YR 4/3), with silt layers interbedded, silt pinkish
				gray (5 YR 6/2), clay and silt are very hard and dense (HP >4), trace very fine sand,
				dry.
				1.5-1.75' Sand: Reddish brown (2.5 YR 4/4), very fine to fine, trace medium, silty
				to some silt, very well rounded and sorted, slightly cohesive, moist.
11	13	2	0.16-2.45	0-2.0' Clay: With interbedded silt as above, contains trace very fine sand lenses
				within clay, dry to moist.
				EOB @ 13 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-84 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 9/7/01 Drilling Completed 9/7/01

Total Depth Drilled 18 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Dave

Prepared By John Keller/J. O'Neal Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	2	1.5	0.80-7.52	0-1.5' Sand: Reddish brown (5 YR 4/4), medium to coarse, some to abundant
				fine, some very fine, trace very coarse, some to abundant gravel (2 mm to 20 mm),
				subrounded to subangular, very poorly sorted, trace silt, dry, loose.
2	4	1.0	0.20-2.71	0-1.0' Sand with Gravel: As above, large wood fragment (approximately 2" long)
				at base of sand interval, wood displays some charring, wood breaks off in thin
				layers, slight odor for wood.
4	6	1.5	0.78-4.60	0-0.3' Sand and Gravel: As above, splintered wood fragments present, wood
				chunks (approximately 15 mm) also present, moist.
				0.3-1.5' Sand: Yellowish red (5 YR 4/6), medium to coarse, some to abundant
				very coarse, trace to some fine, trace very fine, some gravel to gravelly (2 mm to
				20 mm), subrounded to subangular, very poorly sorted, trace clay, loose, dry to
				moist.
6	8	1.1	0.31-2.60	0-1.1' Sand and Gravel: Brown (10 YR 5/3), medium to very coarse, trace to some
				very fine to fine, trace silt, fine gravel (2 mm to 10 mm), subrounded to subangular,
				very poorly sorted, loose, dry.
8	10	1	0.50-16.2	0-1.0' Sand and Gravel: As above, rock fragments layer from 0.75 to 0.85'
				possible phyllite?, moist to damp.
10	12	1.1	0.68-4.30	0-1.1' Sand and Gravel: As above, damp.
12	14	1.8	0.8-4.12	0-0.7' Sand and Gravel: As above.
				0.7-1.8' Clay: Reddish brown (2.5 YR 4/3), with silt layers intermixed, silt pinkish
				gray (5 YR 6/2), trace very fine sand lenses near base, dense and hard (HP = 3.5
				to >4), tight, clay is plastic to moderately plastic at top of interval plasticity
				decreases as you go down section, dry.
14	16	1.1	-0.3-4.03	0-1.1' Silt: Dark reddish gray (5 YR 4/2), trace to some sand, very fine to fine, silt
				has clay layers interbedded tight, moderately hard to hard (HP = 2.75 in silt, >4 in
				clay), dry to moist (outside of splitspoon was wet), possible water table.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-84 Page 2 of 2

Prepared by John Keller/J. O'Neal

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
16	18	2	0.03-2.66	0-2.0' Clay: As above with silt layers interbedded, very tight (hard) and dense
				HP >4, damp to wet, outside of splitspoon is saturated.
				EOB @ 18'

ARCADIS

Sample/Core Log

Boring/Well GMSB-85 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 9/7/01 Drilling Completed 9/7/01

Total Depth Drilled 16 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Dave

Prepared By John Keller/J. O'Neal Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	2	1.2	1.5-1.25	0-0.5' Sand: Reddish brown (2.5 YR 4/3), fine to medium, some to abundant
				very fine, some silt, trace to some clay, trace fine gravel (2 mm to 5 mm),
				subrounded to subangular, trace asphalt fragments, loose to slightly cohesive,
				dry to moist.
				0.5-1.2' Sand: Yellowish red (5 YR 4/6), medium to coarse, some very coarse,
				trace very fine to fine, some gravel to gravelly (2 mm to 30 mm), subrounded to
				subangular, very poorly sorted, sand is well rounded, loose, moist.
2	4	1.25	0.5-2.75	0-1.0' Sand: With gravel, as above.
				1.0-1.25' Sand: Strong brown (7.5 YR 4/6), fine to medium, some very fine/silt,
				trace coarse, trace fine gravel (approximately 2 mm), cohesive, well sorted and
				rounded, trace clay, moist.
4	6	1.1	1-3.5	0-1.1' Sand and Gravel: Brown (7.5 YR 5/3), medium to very coarse, trace fine,
				gravelly (2 mm to 30 mm), subrounded to subangular, some rock fragments
				(igneous derived) near base, very poorly sorted, loose, moist.
6	8	1.2	1-2.25	0-1.2' Sand and Gravel: As above, rock fragment 5" from base (40 mm), moist.
8	10	1.25	1-2.5	0-1.25' Sand and Gravel: Grayish brown (10 YR 5/2), medium to very coarse,
				trace very fine, trace fine, gravelly (2 mm to 15 mm), subrounded to subangular,
				very poorly sorted, cohesive, moist to damp, trace silt.
10	12	0.0	--	No recovery, rock igneous in tip.
12	14	2	1-3	0-1.0' Sand and Grave: As above, wet.
				1.0-2.0' Clay: Reddish brown (2.5 YR 4/3), interbedded with silt, dark reddish
				gray (5 YR 4/2), trace to some sand (very fine), clay is moderately nonplastic to
				nonplastic, tight, hard (HP >4), dense, damp (outside of splitspoon was wet).
14	16	2.0	1-2.25	0-2.0' Clay: Interbedded with silt as above, damp.
				EOB @ 16' bls

ARCADIS

Sample/Core Log

Boring/Well GMSB-86 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 9/7/01 Drilling Completed 9/7/01

Total Depth Drilled 14 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Dave

Prepared By John Keller/J. O'Neal Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	2	1.1	1-2.5	0-1.1' Sand: Brown (01 YR 5/3), fine to medium, some to abundant very fine,
				some silt to silty, rock fragments layer 2-6" (fragments look igneous - quartz
				present) some gravel (2 mm to 25 mm), subrounded to subangular, loose, poorly
				sorted, dry to moist.
2	4	1.25	1-150	0-1.25' Sand: Brown (10 YR 5/3), fine, some medium, some to abundant very
				fine, some silt, some gravel to abundant (2 mm to 20 mm), subrounded to
				subangular, poorly sorted, loose to slightly cohesive, moist.
4	6	1	1-25	0-1.0' Sand: Yellowish red (5 YR 4/6), medium to coarse, trace to some very coarse,
				gravelly (2 mm to 15 mm), trace very fine to fine, subrounded to subangular
				gravel, very poorly sorted, loose, damp, trace clay.
6	8	0.8	1-25	0-0.8' Sand and Gravel: As above.
8	10	0	--	No recovery, rock in tip.
10	12	0	--	No recovery.
12	14	2	1.5-2.1	0-0.25' Sand: Reddish brown (5 YR 4/3), very fine to fine, silty to abundant silt,
				trace clay, well sorted and rounded, cohesive, damp.
				0.25-2.0' Clay: Reddish brown with interbedded silts, tight, hard, dense, clay is
				nonplastic to moderately plastic, damp.
				EOB @ 14' bls.

ARCADIS

Sample/Core Log

Boring/Well GMSB-87 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 12/12/01 Drilling Completed 12/12/01

Total Depth Drilled 15 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1118.59 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Kevin Daleness and Pat Bartnik Hammer Weight 150 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	10	28	0-10": From reddish yellow (7.5 YR 6/8) to reddish black (2.5 YR 2.5/1) to bluish
				black (2 Gley 2.5/1) mixture of tar and soil, tar range of from black and brittle
				(with conchoidal fracture) to orangish and very weathered (crumbly). Soil is
				sand size to silt size particles.
2	3	0		Concrete
3	5	14		0-14": Sand, reddish brown (5 YR 4/4) medium to very coarse, gravelly (2 mm to
				25 mm) subrounded, trace fine sand, slight odor, dry, stone in tip.
5	7	15	1.2	0-5": Slough.
				5-15": Sand, as above.
7	9	8	2.5	0-8": Sand dark reddish brown (5 YR 3/3) some very fine to fine, gravelly (2 mm
				to 10 mm) subrounded slight odor dry.
9	11	18	1.9	0-7": Slough.
				7-18": Sand light reddish brown (2.5 YR 6/4) medium to fine, trace to some very
				fine, well sorted, dry, very slight odor.
11	13	10	4.9	0-4": Slough.
				4-10": Sand as above.
13	15	16	0.4	0-3": Slough.
				3-16": Sand, light reddish brown (5 YR 6/3) fine to coarse, gravelly (2 mm to 10
				mm) subrounded, some to trace fine to very fine, very slight odor, dry.
				EOB @ 15 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-88 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 12/13/01 Drilling Completed 12/13/01

Total Depth Drilled 16 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1119.82 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Kevin Daleness and Pat Bartnik Hammer Weight 150 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	18	0.25	0-9': Topsoil, very dark brown (7.5 YR 2.5/2).
				9-18': Sand, strong brown (7.5 YR 5/8) fine to very fine, silty, some clay.
2.0	4.0	16	0.8	0-4': Slough.
				4-13': Sand, as above.
				13-16': Sand strong brown (7.5 YR 5/8) medium to fine, trace gravel (2 mm to 4
				mm).
4	6	0		No recovery, rock in tip of spoon.
6	8	13	0.70	0-3': Slough.
				3-13': Sand, as above but gravel coarsens to 20 mm (subangular to subrounded)
				some coarse sand.
8	10	15	0.25	0-2': Slough.
				2-15': Sand as above.
10	12	15	-0.3	0-2': Slough.
				2-15': Sand as above.
12	14	15	0.19	0-3': Slough.
				3-15': Sand as above.
14	16	1.5	0.30	0-2': Slough.
				2-15': Sand as above.
				EOB @ 16 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSB-89 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 12/13/01 Drilling Completed 12/13/01

Total Depth Drilled 15 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1118.42 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Kevin Daleness and Pat Bartnik Hammer Weight 150 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	24	0.12	0-9": Gravel subbase, reddish brown (5 YR 4/3) trace roots some clay and silt.
				9-14": Clay, black (5 YR 2:5/1), some gravel (1/8" to 1/4").
				14-24": Sand reddish brown (5 YR 4/4) fine to medium, some gravel (1/4" to 1/2")
				subrounded, loose, moist, well sorted.
2	4	24	0.18	0-10": Slough.
				10-24": Sand as above.
4	6	17	0.25	0-3": Slough.
				3-10": Sand as above.
				10-17": Sand, reddish brown (5 YR 5/3) very fine to medium sand, trace gravel
				and mafics, loose, moist.
6	8	13	0.28	0-4": Slough.
				4-13": Sand, reddish brown (5 YR 4/4) fine to very coarse, some gravel (1/4" to
				1/8") rounded, loose, moist.
8	10	16	0.23	0-3": Slough.
				3-16": Sand, as above.
10	12	15	0.25	0-3": Slough.
				3-15": Sand, as above.
12	14	14	0.15	0-14": Sand, as above.
14	16	8	0.10	Same as above, sand.
				EOB @ 16 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSB-90 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 12/13/01 Drilling Completed 12/13/01

Total Depth Drilled 15 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1119.76 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Kevin Daleness and Pat Bartnik Hammer Weight 150 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	16	0.20	0-4": Brown to black topsoil.
				4-7": Sand, reddish brown (5 YR 4/4) fine to medium, well sorted, trace silt.
				7-10": Black silt (topsoil), some organics, roots and wood.
				10-16": Sand, reddish brown (5 YR 4/4) fine to medium, well sorted, loose,
				moist.
2	4	15	0.24	0-9": Sand, as above.
				9-15": Sand and gravel, reddish brown (5 YR 4/4) weathered rock, sand very
				fine to very coarse, gravel (1/4" to 1/8"), subrounded, loose.
4	6			No recovery, pushed rock.
6	8	15	0.12	0-3": Slough.
				3-15": Sand and gravel as above.
8	10			No recovery.
10	12	6	0.10	0-1": Slough.
				1-5": Sand and gravel, as above.
12	14	17	0.25	0-3": Slough.
				3-17": Sand, reddish brown (5 YR 4/4) fine to medium, well sorted, rounded,
				loose.
14	16	13	0.12	0-2": Slough.
				2-13": Sand, as above.
				EOB @ 16 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSB-91 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 12/13/01 Drilling Completed 12/13/01

Total Depth Drilled 15 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1120.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Kevin Daleness Hammer Weight 150 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	24	0.70	0-6": Black topsoil.
				6-12": Sand, reddish brown (5 YR 5/4) fine to medium, some gravel (1/4" to
				1/2") loose.
				12-18": Black sand, foundry sand (?) no odor, trace wood particles, some coal.
				18-24": Sand, reddish brown (5 YR 5/4) fine to medium, trace gravel, loose.
2	4	17	0.52	0-6": Slough, more coal pieces.
				6-17": Sand, as above.
4	6	18	0.43	0-2": Slough.
				2-8": Sand, as above.
				8-18": Sand and gravel, light reddish brown (5 YR 6/4) sand very fine to
				very coarse, gravel (1/8" to 1"), loose.
6	8			No recovery.
8	10	13		0-2": Slough.
				2-13": Sand and gravel, as above.
10	12	15	0.51	0-15": Same as above.
12	14	13	0.40	0-2": Sand and gravel, as above.
				2-13": Sand, light reddish brown (2.5 YR 6/4) fine to medium, well sorted,
				rounded, loose, trace mafics.
14	16	10	0.42	0-10": Sand, as above.
				EOB @ 16 ft

ARCADIS

Sample/Core Log

Boring/Well GMSB-92 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location: Kingsford, Michigan (Smith Castings)

Drilling Started: 12/13/01 Drilling Completed: 12/13/01

Total Depth Drilled: 15 Feet Hole Diameter: 8.25 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 feet by 2 inches Sampling Interval: Continuous feet

Land-Surface Elev.: 1118.04 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Kevin Daleness Hammer Weight: 150 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	14	1.40	0-14": Sand and gravel fill, trace coal pieces, some clay and silt, moist, no odor.
2	4	11	1.25	0-2": Slough.
				2-11": Sand and gravel, strong brown (7.5 YR 5/6) sand to very fine to coarse,
				gravel (1/8" to 3/4") loose, moist, no odor.
4	6	6	1.31	0-2": Slough.
				2-6": Sand and gravel, as above.
6	8			No recovery.
8	10	15	1.25	0-6": Same as above.
				6-15": Sand, light reddish brown (5 YR 6/4) fine to medium, trace gravel, rounded,
				well sorted, loose.
10	12	16	1.25	0-1": Slough.
				1-16": Sand as above.
12	14	12	1.2	0-2": Slough.
				2-4": Sand as above.
				4-12": Sand and gravel, poorly sorted, light reddish brown (5 YR 6/4), sand
				very fine, gravel (up to 1/2").
14	16	14	1.25	0-2": Slough.
				2-14": Sand and gravel, as above.
				EOB @ 16 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSB-93 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 12/14/01 Drilling Completed 12/14/01

Total Depth Drilled 15 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1118.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Kevin Daleness Hammer Weight 150 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	10	0.47	0-4": Black topsoil and limestone fill.
				4-10": Light brown sand (7.5 YR 6/4) fine to medium, trace gravel, moist, loose.
2.0	4.0	15	0.52	0-3": Sand as above.
				3-15": Sand and gravel, light brown (7.5 YR 6/4) sand, very fine to very
				coarse, gravel (1/8" to 1/2") loose, moist, rounded.
4	6			No recovery, 1-2" slough.
6	8	14	0.40	0-10": Sand and gravel, as above.
				10-14": Sand, light reddish brown (5 YR 6/4) fine to medium, well sorted,
				rounded, loose.
8	10	17	0.42	0-6": Slough.
				6-17": Sand, as above.
10	12	4	0.44	Sand as above.
12	14	12		0-2": Sand as above.
				2-12": Sand and gravel, sand very fine to very coarse, gravel (1/8" to 1"), angular
				poorly sorted, loose.
14	16	14	0.43	0-2": Slough.
				2-14": Sand and gravel, as above.
				EOB @ 16 ft.

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Sample/Core Log

Boring/Well GMSB-94 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan (Smith Castings) Drilling Started 12/14/01 Drilling Completed 12/14/01

Total Depth Drilled 16 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1119.24 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Kevin Daleness Hammer Weight 150 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	2	12	0.52	0-4": Limestone chips.
				4-8": Black sand and gravel, trace coal pieces, no odor, loose.
				8-12": Sand and gravel, dark reddish brown (5 YR 3/4) sand, very fine to very
				coarse, gravel (1/8" to 1/2").
2	4			No recovery, pushed stone.
4	6	14	0.25	0-12": Sand and gravel, as above.
				12-14": Sand, light reddish brown (5 YR 4/4) very fine to medium, trace gravel
				(1/8" to 1/4"), loose, moist.
6	8			No recovery, pushed stone.
8	10	11	0.30	0-2": Slough.
				2-11": Sand as above.
10	12	15	0.25	0-2": Slough.
				2-15": Sand as above.
12	14	12	0.23	0-12": Sand as above.
14	16	6	0.21	0-6": Sand as above.
				EOB @ 16 ft

ARCADIS

Sample/Core Log

Boring/Well: GMSB-95 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 2

Site Location: Kingsford, Michigan Drilling Started: 08:25 3/07/02 Drilling Completed: 09:20 3/07/02

Total Depth Drilled: 18 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch Sampling Interval: continuous feet

Land-Surface Elev.: 1114.71 feet [X] Surveyed [ ] Estimated Datum: Ground surface (msl)

Drilling Fluid Used: None Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Bruce Evans Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	0.5/	25/5	Refusal at 6".
		2.0		Silt/Sand/Gravel: Strong brown (7.5 YR 4/6), fine sand mixed with silt, clay, gravel,
				brick fragments, frozen, moist.
2	4	2.0/	18 4 3 3	0-0.5': Slump.
		0.0		0.5-2': Sand, yellowish red (5 YR 5/8), fine to medium grain, some coarse, trace
				gravel, poorly sorted, loose, moist.
4	6	2.0/	7 4 3 3	0-0.4': Slump.
		9.0		0.4-2': Sand, as above slightly coarser below 1.5', poorly sorted, very moist.
6	8	1.8/	4 7 4 4	0-1': Sand, as above becoming reddish brown (5 YR 4/4), much gravel from 0.5-1'
		2000		very moist to wet.
				1-1.4': Silt/organic material, black, peat, rootlets mixed with silt, moist.
				1.4-1.8': Tar, black, brittle, virtuous, strong odor, hard.
8	10	1.7/	4 4 3 3	0-0.7': Slump.
		340		0.7-1.1': Tar black as above and slightly plastic.
				1.1-1.7': Organic mateiral/sand, black, fine, well sorted sand mixed with wood
				fragments, sawdust, bark, peat, rootlets, very moist, strong odor.
10	12	1.4/	3 3 3 3	0-0.4': Tar/Organic material, as above.
		440		0.4-1.4': Sand, brown (7.5 YR 4/3), fine to coarse grain, poorly sorted, trace
				gravel, fine, loose, some black staining, moist.
12	14	1.6/	3 5 6 6	0-0.3': Slump.
		35		0.3-0.8': Sand, strong brown (7.5 YR 5/6), fine grain, well sorted, loose, moist.
				0.5-1.6': Sand, brown (7.5 YR 5/3), medium to very coarse grain, poorly sorted,
				trace fine gravel, loose, moist.
14	16	1.5/	4 4 4 5	0-0.5': Slump.
		38		0.5-0.9': Gravel/Sand, dark brown (7.5 YR 3/5), fine to coarse gravel, subangular to
				subrounded, mixed with coarse to very coarse sand, poorly sorted, loose.

ARCADIS
Sample/Core Log (Cont.d)

Boring/Well GMSB-95

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				0.9-1.5': Sand, strong brown (7.5 YR 5/6), fine grain, mostly well sorted, with some
				coarse, sand and fine gravel, moist, loose.
16	18	1.5/	4 4 5 5	0-0.3': Slump.
		48		0.3-1.5': Sand, very dark brown (7.5 YR 2.5/3), medium to very coarse sand, with
				some fine to very coarse gravel, subangular to subrounded, very poorly sorted, loose,
				some staining, slight odor, moist.
				EOB @ 18' bgs

ARCADIS

Sample/Core Log

Boring/Well: GMSB-96 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 2

Site Location: Kingsford, Michigan Drilling Started: 10:00 3/07/02 Drilling Completed: 11:45 3/07/02

Total Depth Drilled: 18 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch Sampling Interval: continuous feet

Land-Surface Elev.: 1116.82 feet [X] Surveyed [ ] Estimated Datum: Ground surface (msl)

Drilling Fluid Used: None Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Bruce Evans Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	--	--	No recovery frozen ground.
2	4	2.0/	4 6 6 7	0-0.7': Sand/Gravel, strong brown (7.5 YR 4/6), fine to medium sand, with fine to
		8.0		coarse gravel, poorly sorted, loose, moist.
				0.7-2': Sand, reddish yellow (7.5 YR 6/6), fine grain, well sorted, with some fine
				to coarse gravel mixed in, loose, moist.
4	6	1.4/	5 7 8 8	0-1.4': Sand, strong brown (7.5 YR 5/8), fine to medium grain, with some coarse
		6.0		grain, and fine to coarse gravel, moderately sorted, loose, moist.
6	8	1.5/	3 2 2 1	0-1.2': Sand, strong brown (7.5 YR 5/8), medium grain, well sorted, with trace
		120		fine to coarse gravel, loose, moist, much gravel 1-1.2'.
				1.2-1.3': Sand, as above black stained, trace organics.
				1.3-1.5': Sand, brown (7.5 YR 4/3), fine to medium grain, poorly sorted, with some
				coarse grain and gravel, loose, wet.
8	10	1.5/	3 2 2 2	0-1': Sand, brown (7.5 YR 4/4), fine to coarse grain, poorly sorted, with fine to
		3260		coarse, gravel, loose to moist.
				1-1.5': Organics/Tar, black to reddish black, brittle tar chips mixed with wood
				fragments, peat and rootlets at top, odor, moist.
10	12	1.7/	3 3 2 2	0-0.7': Organics (Tar mixed with fine sand).
		3750		0.7-1.7': Sand, brown (7.5 YR 4/2), fine grain, well sorted, trace coarse sand and
				fine gravel, strong odor, some black staining in thin (0.2" and less) bands, moist,
				loose.
12	14	1.5/	3 3 3 4	0-0.3': Slump.
		810		0.3-1.5': Sand/Gravel, brown (7.5 YR 5/4), fine to coarse sand with fine to coarse
				gravel, subangular and subrounded, very poorly sorted, loose, moist, strong odor.
14	16	1.5/	2 2 3 3	0-1': Sand/Gravel, as above.
		18		1-1.5': Sand, brown (7.5 YR 5/4), medium to coarse grain, well sorted, loose, very
				moist, odor.

ARCADIS
Sample/Core Log (Cont.d)

Boring/Well GMSB-96

Page 2 of 2

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	1.3/	3 4 - -	0-1': Sand, as above.
		26		1-1.3': Rock, gray, crushed, friable, phyllitic, dry.
				Attempted to collect 3 inch splitspoon for sample from 16-18 feet.
				Refusal for splitspoon, attempt to drill through rock, auger refusal at 17 feet.
				Move rig 3 feet west of original borehole. Blind drill to 16 feet and collect sample.
16	18	--	3 3 3 3	No recovery.
				Attempt to drill to 18 feet. Auger refusal at 18 feet. Decide to abandon attempt
				to collect sample.
				EOB @ 18' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMSB-97 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 2

Site Location: Kingsford, Michigan Drilling Started: 12:30 3/07/02 Drilling Completed: 13:15 3/07/02

Total Depth Drilled: 20 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch Sampling Interval: continuous feet

Land-Surface Elev.: 1117.44 feet [X] Surveyed [ ] Estimated Datum: Ground surface (msl)

Drilling Fluid Used: None Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Bruce Evans Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	--	--	No recovery, frozen soil.
2	4	1.3/	3 3 2 2	Sand. Dark brown (7.5 YR 3/3), very fine to medium grain, with some coarse sand
		10.0		and, gravel (fine to coarse), poorly sorted, loose, moist.
4	6	1.0/	2 2 3 3	0-1': Sand. Dark brown (7.5 YR 3/3), fine grain with some medium to coarse sand
		5.0		trace gravel (fine to coarse), moderately sorted, moist, loose.
6	8	1.3/	2 1 2 2	0-0.2': Sand. As above, silty.
		9.0		0.2-1': Sand/Gravel. Reddish yellow (7.5 YR 6/6), fine to coarse sand, fine to coarse
				gravel, subangular to subrounded, very poorly sorted, moist, loose.
				1-1.3': Organics. Black to dark reddish brown, wood chips, peat, rootlets, sawdust?
				mixed with fine sand, loose, odor, moist.
8	10	1.7/	2 2 2 3	0-0.5': Slump.
		7.0		0.5-1': Organic material. Dark reddish brown as above with tar - brittle, hard, broken.
				1-1.7': Sand. Light brown (7.5 YR 6/4), coarse grain, well sorted, with trace fine to
				coarse, gravel, increasing at 1.6', loose moist, odor.
10	12	1.0/	2 3 3 3	0-0.4': Slump.
		5.0		0.4-1.0': Sand/Gravel: Strong brown (7.5 YR 5/6), coarse sand and fine to coarse
				gravel, poorly sorted, moist, loose.
12	14	1.3/	4 7 4 3	0-0.6': Sand/Gravel. As above.
		17.0		0.6-1.3': Sand. Strong brown (7.5 YR 5/8), very fine grain, well sorted, silty, loose,
				moist.
14	16	1.9/	3 3 3 4	0-0.2': Slump.
		18.0		0.2-0.9': Sand. As above.
				0.9-1.9': Silt. Strong brown (7.5 YR 5/8), trace very fine sand, moist.
16	18	1.5/	3 3 3 3	0-0.2': Slump.
		3.0		0.2-1.5': Sand. Strong brown (7.5 YR 5/8), very fine grain, well sorted, silty, loose,
				visible lamination with silt and cross-bedding - loose, trace black staining at 18 feet,

ARCADIS

Sample/Core Log (Cont.d)

Boring/Well GMSB-97

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				moist.
18	20	2.0/	3 3 3 4	0-0.3': Slump.
		8.0		0.3-2.0': Sand. Dark brown (7.5 YR 3/4), very fine grain, well sorted, some silt,
				loose, black staining 1.5-2.0', odor.
				EOB @ 20' bgs

ARCADIS

Sample/Core Log

Boring/Well: GMSB-98 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 14:00 3/07/02 Drilling Completed: 14:45 3/07/02

Total Depth Drilled: 20 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch

Sampling Interval: continuous feet

Land-Surface Elev.: 1117.33 feet [X] Surveyed [ ] Estimated Datum: Ground surface (msl)

Drilling Fluid Used: None Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Bruce Evans and Pat Bartnik Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	--	--	Frozen soil.
2	4	1.5/	6 5 5 4	Sand. Strong brown (7.5 YR 5/8), fine grain, well sorted, loose, moist.
		3.0		
4	6	1.5/	3 3 4 4	0-5": Sand. As above.
		7.0		5-18": Sand. Strong brown (7.5 YR 5/8), coarse to medium, trace fine, trace
				gravel (up to 20 mm subrounded), moderately well sorted, dry.
6	8	1.5/	4 4 4 4	0-18": Sand. As above.
		7.0		
8	10	1.0/	3 3 3 4	0-12": Sand as above, but gravelly (content increases) (7 mm - 35 mm)
		3.0		subrounded.
10	12	0.75/	25/2	0-8": Sand. As above. Rock in tip of spoon.
		6.0		
12	14	1.25/	3 3 3 3	0-15": Sand. Light brown (7.5 YR 6/4), fine to very fine, silty, dry, compact.
		6.0		
14	16	1.25/	4 4 5 9	0-15": Sand. As above except color ranges from light brown (7.5 YR 6/4) to
		6.0		reddish yellow (7.5 YR 6/8).
16	18	0.0	7 8 8 10	No recovery stone in tip of spoon.
18	20	1.5/	9 9 10 11	0-6": Sand. As above.
		700		6-12": Clay, brown (7.5 YR 5/2) to black (stained), silty, moist.
				12-18": Sand. Brown (7.5 YR 5/3), trace very dark brown (7.5 YR 2.5/3), very
				silty, wet.
				EOB @ 20' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMSB-99 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 2

Site Location: Kingsford, Michigan Drilling Started: 16:10 3/07/02 Drilling Completed: 16:55 3/07/02

Total Depth Drilled: 20 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch Sampling Interval: continuous feet

Land-Surface Elev.: 1116.67 feet [X] Surveyed [ ] Estimated Datum: Ground surface (msl)

Drilling Fluid Used: None Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Bruce Evans Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	--	--	Frozen Soil.
2	4	1.4/	5 6 4 3	0-0.3': Sand. Strong brown (7.5 YR 5/6), fine grain, silty, with gravel, trace rootlets
		3.0		loose, moist.
				0.3-1.1': Clay/Organics. Dark brown (7.5 YR 3/2), silty, clay mixed with organic
				peat and rootlets - plastic clay, moist, no odor.
				1.1-1.4': Sand. Strong brown (7.5 YR 5/6), fine grain, well sorted, with gravel
				and pebbles, loose, moist.
4	6	1.3/	3 3 3 3	0-0.6': Slump.
		5.0		0.6-1.3': Sand/Gravel. Reddish brown (7.5 YR 6/6), fine to coarse sand, fine to
				coarse gravel and pebbles to 0.5", very poorly sorted, loose, moist.
6	8	2.0/	4 4 5 5	0-0.6': Slump.
		3.0		0.6-2.0': Sand. Reddish yellow (7.5 YR 6/6), fine to medium grain, well sorted, with
				some fine gravel, very moist, loose, trace rootlets and black organics at 0.6'.
8	10	1.7/	4 5 5 6	0-0.3': Slump.
		4.0		0.3-1.5': Sand. Strong brown (7.5 YR 5/6), fine to coarse grain, with fine to
				coarse gravel subangular some subrounded, very poorly sorted, loose, moist.
				1.5-1.7': Sand. Light brown (7.5 YR 6/4), very fine grain, well sorted, loose, moist.
10	12	0.0	3 3 4 5	No recovery.
12	14	1.0/	3 3 3 4	0-0.2': Slump.
		5.0		0.2-0.5': Sand. As above.
				0.5-1.0': Sand/Gravel/Rock. Light brown (7.5 YR 6/4), fine to coarse sand and
				fine to coarse gravel, very poorly sorted, with pebbles to 1", broken rock
				fragments in spoon tip, loose, very moist.
14	16	1.0/	3 1 1 1	0-0.6': Slump.
		2.0		0.6-1.0': Gravel/Sand. Strong brown (7.5 YR 7/8), fine to coarse gravel, subangular
				to subrounded, with pebbles and fine to coarse sand, very poorly sorted, loose, moist.

ARCADIS

Sample/Core Log (Cont.d)

Boring/Well GMSB-99

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	1.7/2.0	4 4 4 5	0-0.3': Slump.
				0.3-0.5': Gravel/Sand. As above.
				0.5-1.7': Sand. Pink (7.5 YR 7/3), very fine grain, well sorted, silty, loose, moist.
18	20	1.5/4.0	4 4 5 5	0-0.2': Slump.
				0.2-1.5': Sand. As above.
				EOB @ 20' bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-100 Project/No. WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 7/09/98 Drilling Completed 7/09/98

Total Depth Drilled 52 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Split spoon Sampling Interval continuous feet

Land-Surface Elev. 1104.00 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1/7	2,2,3,3	0-2.0": Top Soil. Dark brown (7.5 YR 3/2), medium sand, slightly silty
				trace rootlets, crumbly, dry.
				2.0-12": Sand. Brown (7.5 Y 4/2), fine to medium, trace silt, trace pebble and
				gravel. Dry, loose, no HCl reaction.
2	4	14/17.5	2,2,3,4	0-2.0": Sand. Brown (7.5 YR 4/3), fine to coarse. Trace gravel, trace silt,
				slightly cohesive, damp.
				2.0-3.0": Sand. Grey (7.5 YR 6/1), fine, trace to some silt. Trace granular
				gravel, damp.
				3.0-14": Sand. Silty, strong brown (7.5 YR 5/6), damp, trace gravel, no HCl
				reaction, HP = 0.5, damp.
4	6	2/13	3,5,4,7	0-2.0": Sand. Silty, as above, with some gravel, no HCl reaction, very damp
6	8	11/13	3,5,7,7	0-1.0": Sand. Silty, as above.
				1.0-11": Sand. Reddish yellow (7.5 YR 6/8), coarse, with some granular gravel.
				Trace pebble to cobble gravel, loose, no HCl reaction, damp
8	10	24/4	3,5,5,4	0-24": Sand. Strong brown (7.5 YR 5/8) coarse, as above, with trace
				subangular pebble gravel. Lowest 8 inches have thick slightly silty medium sand
				laminations approximately every 2 inches, no HCl reaction.
10	12	14/10	4,5,4,6	0-14": Sand. Very pale brown (10 YR 7/3), coarse and granular gravel, trace
				pebble gravel. Gravel subangular to well rounded, variable composition,
				loose, damp, no HCl reaction.
12	14	16/14	3,2,3,3	0-16": Sand. Very pale brown (10 YR 7/3), coarse. Some to abundant subangular
				to well rounded pebble gravel. Variable composition, loose, damp, no HCl
				reaction.
14	16	14/4	2,2,4,5	0-2.0": Sand. Coarse. As above.
				2.0-14": Sand. Light brown (7.5 YR 6/3), coarse and granular gravel. Gravel

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-100 Page 2 of 3

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				subanuglar to subrounded, variable composition, trace pebble gravel. Loose,
				damp, no HCl reaction
16	18		5,6,6,3	No recovery.
18	20	24/20		0-7.0": Sand. Coarse. As above.
				7.0-24": Sand. Pink (7.5 YR 7/3), medium, very well sorted. Loose, damp.
				Saturated at lowest 5 inches (19 to 24 inches), no HCl reaction.
18	20	15/6	3,4,1,1	0-3.0": Sand. Reddish grey (5 YR 5/2), medium to fine, trace gravel, well sorted,
				loose, very damp to saturated.
				3.0-15": Sand. Reddish grey (5 YR 5/2), medium to coarse (coarser toward base),
				trace pebble gravel, loose, saturated
20	22	17/3.5	4,3,5,7	0-3.0": Gravel. Pinkish grey (7.5 YR 6/2), granular, abundant coarse sand, trace
				loose, saturated, sub and pebble gravel.
				3.0-17": Sand. Pinkish grey (7.5 YR 6/2), medium. Well sorted, loose,
				saturated, no HCl reaction.
22	24	21/10	4,5,7,9	0-8.0": Sand. Medium, as above, trace rounded pebble gravel, becoming
				more gravelly toward base.
				8.0-16": Gravel. Light brown (7.5 YR 6/4), granular, coarse to fine sand matrix,
				trace silt, subrounded to well rounded, loose, saturated, no HCl reaction.
				16-21": Silt. Brown (7.5 YR 4/4), HP = 0.5, very damp, slight HCl reaction.
24	26	19/7	10,9,9,15	0-14": Sand. Coarse. Slough (composition as above).
				14-19": Silt. Color as 16 to 21 inches above, but HP $\geq$ 4.0 and strong
				HCl reaction, slightly damp, clay lens at 19½ inches, strong HCl reaction.
26	28	19.5/10	6,6,8,9	0-9,0": Sand. Fine (slough?) Saturated, loose, well sorted.
				9.0-19.5": Silt. Color as silt above clayey, HP = 3.0. Slightly plastic, strong
				HCl reaction.
28	30	21/9	6,8,10,10	0-21": Silt. As above with clay lenses at 11 inches (½ inch thick) and 20 inches
				(¼ inch thick). Clay color red (2.5 YR 4/6), strong HCl reaction in clay and silt.
				HP (clay) = 2.5 HP (silt) = 3.0.
30	32	24/9	6,8,11,10	0-24": Silt. As above with clay layers at 5.5 inches (1/6 inch) and 6 inches (2
				inches). Silt: HP = 2.5, very damp, moderate HCl reaction. Clay: HP = 1.0,
				strong HCl reaction, very damp.
32	34	17/6	4,6,8,10	0-14": Silt. Brown (7.5 YR 5/4), HP = 1.2. Clay lens at 2 inches (2 inch thick).
				Silt moderate HCl reaction. Clay strong HCl reaction, saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-100 Page 3 of 3

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				14-17": Silt. Light brown (7.5 YR 6/4), some very fine sand, slight HCl reaction,
				HP = 2, damp.
34	36	20.5/4.5	4,5,5,7	0-13": Silt. Brown (7.5 YR 5/6), saturated, HP = 0.5, moderate HCl reaction.
				13-20.5": Silt. Brown (7.5 YR 5/3), sandy, abundant very fine sand, slight HCl
				reaction, HP = 1.5, damp.
36	38	20.5/15	7,9,11,15	Silt. As above. Clay lenses at 18 inches (1/8 inch thick), 12 inches (1/8 inch thick), 6
				inches (¼ inch thick).
38	40	23/25	5,5,7,8	0-13": Silt. As above, HP = 0.5, saturated.
				13-23": Silt. As above, HP = 2.7, moderate HCl reaction, clay lenses.
				(1/8 inch thick) at 14 and 17 feet. Strong HCl reaction in clay, very damp.
40	42	22/20	5,7,9,11	0-22": Silt as above, clay lenses at 3, 5, 13, 16, and 20 inches, saturated, silt
				moderate HCl reaction, HP = 1.5.
42	44	22/25	5,10,15,24	0-6.0": Silt. Very soft, saturated, (slough?)
				6.0-22": Silt as in previous sample clay lenses (1/8 inch thick) at 6, 12, and 21 inches
				Silt: HP = 2.0, moderate HCl reaction. Clay: HP = 2.5, strong HCl reaction.
44	46	20/25	10,5,10,15	Silt. As above. HP = 1.5, weak HCl reaction, saturated, clay lenses (approximately
				1/8 inch thick) at 12 and 16 inches.
46	48	19/10	5,7,8,10	Silt/Clay. Brown (7.5 YR 5/2), interbedded, lithologies as above. 12 clay layers
				approximately every 1.5 inches between ¼ and 1/8 inch thick. Very fine silty
				sand at base of lowest 2 cycles, saturated. Silt: HP = 2.5, weak HCl reaction.
				Clay: HP = 2.0, strong HCl reaction.
48	50	22/10	7,7,9,8	Clay/Silt. As above, clay approximately ¼ to ½ inch thick every 2 inches
				Silt: saturated, HP = 2.0. Clay HP = 2.0, damp, plastic.
50	52	13/1.5	5,5,4,4	Silt/Clay in approximately equal amounts. 4 clay layers up to 2 inches thick
				every 1½ inches. Silt, grey (7.5 YR 5/1), HP = 3.5, moderate HCl reaction.
				Trace some very fine sand, saturated. Clay: Reddish brown (5 YR 4/4)
				HP >4.0, strong HCl reaction, plastic, laminated.
				End of Hole = 52' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMSB-101 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 11:50 3/08/02 Drilling Completed: 12:45 3/08/02

Total Depth Drilled: 18 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch

Land-Surface Elev.: 1114.50 feet [X] Surveyed [ ] Estimated Sampling Interval: continuous feet

Drilling Fluid Used: None Datum: Ground surface (msl)

Drilling Contractor: Boart Longyear Drilling Method: Hollow stem auger

Prepared By: Bruce Evans Driller: Jeff Helper: Ben

Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	--	--	Frozen Soil.
2	4	2.0/	2 2 3 3	0-0.5': Sand/Gravel. Brown (7.5 YR 4/4), mostly fine grain, silty, with gravel and
		6.0		rootlets.
				0.5-1.5': Sludge/Wood/Sand. Olive brown (2.5 YR 4/3), soft, plastic, sludge mixed
				with fine sand and wood chips/fragments, some sawdust? Layered sludge, odor,
				very moist.
				1.5-2.0': Sand/Gravel. Strong brown (7.5 YR 4/6), fine to coarse sand, mostly
				fine mixed with gravel (fine to coarse), subangular to subrounded, very poorly
				sorted, moist.
4	6	2.0/	2 2 2 3	0-1': Slump.
		6.0		1-1.5': Sand. Strong brown (7.5 YR 5/8), fine grain, silty, with fine to coarse gravel
				moderately sorted, loose, moist.
				1.5-2.0': Sand. Olive brown (2.5 YR 4/3), very fine grain, silty, with some black
				organics, peat, rootlets, soft, moist. (Paleo surface)
6	8	2.0/	3 3 4 4	0-0.6': Slump.
		6.0		0.6-1.6': Sand. Strong brown (7.5 YR 5/6), fine to very fine grain, very silty and
				clayey with reddish clay, slightly plastic, many rootlets, moist.
				1.6-2.0': Sand. Strong brown (7.5 YR 5/8), fine grain, well sorted, trace fine
				gravel, loose, moist.
8	10	1.5/	4 7 7 5	0-0.5': Slump.
		6.0		0.5-1.5': Sand. As above some medium grains, some clay laminations, some
				iron staining in very thin laminations, loose, very moist to wet.
10	12	2.0/	6 8 8 8	0-0.3': Slump.
		5.0		0.3-2.0': Sand. Pink (7.5 YR 7/4), fine to medium grain, well sorted, loose, trace
				iron band staining, moist.

ARCADIS
Sample/Core Log (Cont.d)

Boring/Well GMSB-101

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
12	14	1.4/	5 6 6 7	0-0.3': Slump.
		5.0		0.3-0.5': Sand. As above.
				0.5-1.4': Sand. Reddish yellow (7.5 YR 6/6), coarse to very coarse grain, well
				sorted, loose black stained 1.2-1.4', moist.
14	16		7 8 8 10	No recovery, rock stuck in spoon tip.
16	18	2.0/	10 11 11 12	Sand. Gray brown (10 YR 5/2), fine grain, very well sorted, loose, odor, black
		9.0		staining 0-0.5' and in several black bands 0.1-0.2 inch throughout spoon length,
				moist.
				EOB @ 18' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMSB-102 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 13:40 3/08/02 Drilling Completed: 14:40 3/08/02

Total Depth Drilled: 22 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch

Land-Surface Elev.: 1115.30 feet [X] Surveyed [ ] Estimated Sampling Interval: continuous feet

Drilling Fluid Used: None Datum: Ground surface (msl)

Drilling Contractor: Boart Longyear Drilling Method: Hollow stem auger

Prepared By: Bruce Evans Driller: Jeff Helper: Ben

Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	--	--	Frozen Soil.
2	4	1.5/	10 10 10 10	Sand/Gravel. Reddish yellow (7.5 YR 6/6), fine to coarse sand, fine to coarse gravel,
		8.0		subangular and subrounded, very poorly sorted, loose moist.
4	6	1.0/	5 10 5 10	Sand/Gravel. As above with many pebbles to 1" diameter, loose, moist.
		31.0		
6	8	1.4/	3 3 4 3	0-0.7': Sand/Gravel. As above.
		120		0.7-0.9': Black organics, wood pieces and rootlets, moist.
				0.9-1.2': Clay. Dark yellowish brown (10 YR 4/4), very silty, odor, somewhat
				plastic, rootlets, very moist.
				1.2-1.4': Silt. Yellowish red (5 YR 4/4), clayey, soft, wet, strong odor.
8	10		5 7 8 8	No recovery.
10	12	1.0/	6 6 6 7	0-0.7': Silt. As above also mixed with very fine sand, wet.
		620.0		0.7-1.0': Sand. Strong brown (7.5 YR 4/6), very fine to fine grain, very silty and
				clayey, with medium to coarse gravel at 1.0', soft, wet.
12	14	1.4/	5 6 6 7	0-0.6': Sand. As above.
		97.0		0.6-0.8': Rock/Pebbles. Red fractured rock and subrounded pebbles.
				0.8-1.4': Sand. Light brown (7.5 YR 6/3), fine grain, some medium grain, well
				sorted, loose, moist, odor.
14	16	1.5/	4 4 5 5	0-0.5': Slump.
		27.0		0.5-1.0': Sand. Light brown (7.5 YR 6/3), fine to coarse grain, trace fine gravel,
				very poorly sorted, loose, moist, strong odor.
16	18	1.0/	4 5 5 6	0-0.5': Sand. As above.
		57.0		0.5-1.0': Sand/Gravel/Pebbles. Dark brown (7.5 YR 3/3), fine to coarse sand,
				fine to coarse gravel, mixed with pebbles, subangular to subrounded, also silty,
18	20		5 5 6 5	soft, very moist, slight odor.
				No recovery.

ARCADIS
Sample/Core Log (Cont.d)

Boring/Well: GMSB-102

Prepared by: Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	22	1.0/	5 6 6 6	Gravel/Pebbles. Dark brown (7.5 YR 3/2), fine to coarse gravel with pebbles to
		16.0		1" diameter, subangular, some subrounded, also some sand and silt, very poorly
				sorted, very coarse material with some clay also present, loose, moist, strong odor.
				EOB @ 22' bgs.

ARCADIS

Sample/Core Log

Boring/Well: GMSB-103 Project/No.: Ford/Kingsford WI000925.0002 Page: 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 15:25 3/08/02 Drilling Completed: 16:10 3/08/02

Total Depth Drilled: 21 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inch

Land-Surface Elev.: 1116.94 feet [X] Surveyed [ ] Estimated Sampling Interval: continuous feet

Drilling Fluid Used: None Datum: Ground surface (msl)

Drilling Contractor: Boart Longyear Drilling Method: Hollow stem auger

Prepared By: Bruce Evans Driller: Jeff Helper: Ben

Hammer Weight: 300 Hammer Drop: 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	--	--	Frozen Soil.
2	4	1.0/	5 8 8 10	Sand/Gravel. Strong brown (7.5 YR 5/6), fine to coarse sand, fine to coarse gravel,
		3.0		subangular to subrounded, some pebbles, very poorly sorted, loose, moist.
4	6	1.6/	4 4 2 3	0-0.6': Sand/Gravel. As above.
		124		0.6-1.2': Sand. Strong brown (7.5 YR 5/8) fine grain with some coarse grain,
				moderately sorted, loose, moist.
				1.2-1.4': Organics/Sand. Black, peat rootlets, wood fragments mixed with fine
				sand.
				1.4-1.6': Sand. Dark brown (2.5 YR 3/4), fine grain, well sorted, very moist, loose.
6	8	1.0/	3 4 4 4	0-0.3': Slump.
		7.0		0.3-0.6': Sand. As above.
				0.6-1.0': Sand. Strong brown (7.5 YR 5/6), fine to medium grain, with fine to
				medium gravel, subangular to subrounded, moderately sorted, loose, very moist.
8	10	1.3/	3 3 3 4	0-0.2': Slump.
		10.0		0.2-1.3': Sand. Light brown (7.5 YR 6/4), fine to coarse grain with much gravel
				poorly sorted, loose, moist.
10	12	1.3/	3 3 3 3	0-0.2': Slump.
		14.0		0.2-0.6': Sand. As above.
				0.6-1.3': Sand. Light brown (7.5 YR 6/4), coarse grain, well sorted, trace fine to
				coarse gravel, loose, moist.
12	14	1.5/	3 3 4 3	0-0.3': Slump.
		7.0		0.3-1.0': Sand. Pink (7.5 YR 7/3), fine to medium grained, well sorted, trace fine
				gravel, loose, moist.
				1-1.5': Sand/Gravel. Light brown (7.5 YR 6/4), medium to very coarse sand, fine
				to coarse gravel, poorly sorted, loose, moist.
14	16	1.2/	3 4 3 3	0-0.2': Slump.
		6.0		0.2-1.2': Sand/Gravel. As above.

ARCADIS
Sample/Core Log (Cont.d)

Boring/Well: GMSB-103

Prepared by: Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	0.3/	4 8 12 12	Sand/Gravel. As above very moist to wet.
		10.0		
18	19			Drill hard rock/gravel.
19	21	1.3/	4 4 5 5	0-0.2': Slump.
		91.0		0.2-1.3': Sand. Black to greenish black (Gley 3/1), very fine grain, silty, well sorted, trace pebbles to 0.5 inch, subangular, trace coarse gravel, loose, black stained, strong odor, moist.
				EOB @ 21' bgs.

ARCADIS

Sample/Core Log

Boring/Well GMSB-104 Project/No. Ford/Kingsford WI001025.0005 Page 1 of 3

Site

Location Kingsford, Michigan Drilling Started 5/13/03 Drilling Completed 5/13/03

Total Depth Drilled 50 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 in x 2 ft

Land-Surface Elev. 1113.96 feet [X] Surveyed [ ] Estimated Sampling Interval continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Paul Dickinson Helper Dave Morris

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	19	1.47	0-6": Topsoil.
				6-19": Sand: Reddish yellow (7.5 YR 7/8), medium to fine, trace coarse, dry.
2	4	18	1.39	0-2": Slough.
				2-18": Sand: Strong brown (7.5 YR 5/8), medium, very well sorted, dry.
4	6	18	1.46	0-3": Sand: As above.
				3-18": Sand: Light brown (7.5 YR 6/4), medium to fine, very well sorted, dry.
6	8	19	1.38	0-3": Slough.
				3-19": Sand: As above, but with gravel (trace) up to 10 mm, subangular to
				subrounded, dry.
8	10	14	1.36	0-8": Sand: As above.
				8-14": Sand: Strong brown (7.5 YR 5/6) to very dark brown (7.5 YR 2.5/2),
				medium to very coarse, gravelly, some fine to very fine, trace silt/clay, very
				poorly sorted, gravel 2 mm to 35 mm subangular to subrounded, dry.
10	12	20	1.20	0-10": Slough.
				10-20": Sand/Gravel: As above, gravel up to 35 mm, damp.
12	14	14	1.45	0-4": Slough.
				4-14": Sand/Gravel: As above.
14	16	20	1.10	0-4": Slough.
				4-15": Sand: Brown (7.5 YR 5/4), medium very well sorted, trace coarse.
				15-20": Sand: Strong brown (7.5 YR 5/6), very coarse to very fine, silty,
				gravelly very poorly sorted, dry to moist.
16	18	18	1.14	0-6": Slough.
				6-18": Sand: Strong brown (7.5 YR 5/6) to dark brown (7.5 YR 3/4), very coarse
				to medium, gravelly (2 mm to 20 mm angular to subrounded), dry.
18	20	15	1.05	0-2": Slough.
				2-8": Sand: As above, damp.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-104

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
				8-11": Silt: Strong brown (7.5 YR 5/8) to reddish yellow (7.5 YR 7/6), wet.
				11-15": Sand: Very coarse to medium, gravelly (2 mm to 40 mm), subangular
				to subrounded.
20	22	17	1.62	0-3": Slough.
				3-17": Gravel/Sand/Silt: Layered, strong brown (7.5 YR 5/8), silt from 4.5" to 6",
				gravelly sand 6" to 12", very coarse to medium, gravel 2 mm to 30 mm.
				Sand 12" to 17" coarse to medium, some very coarse, dry nodule of
				silty clay at 15", white (7.5 YR 8/1).
22	24	4	1.91	0-4": Sand: Brown (7.5 YR 4/4), medium to fine, trace silt.
24	26	18	1.11	0-4": Slough.
				4-18": Sand: Strong brown (7.5 YR 5/6), coarse to medium some very coarse,
				trace very fine gravel, dry.
26	28	19	1.68	0-4": Slough.
				4-19": Sand: Reddish brown (7.5 YR 4/3), very coarse to medium gravelly,
				angular to subrounded (2 mm to 30 mm), dry to moist.
28	30	16	1.28	0-4": Slough.
				4-6": Sand: As above.
				6-8": Stone (sandstone).
				8-16": Sand: Pink (7.5 YR 7/4), fine, very well sorted, dry.
30	32	--	--	No recovery, stone in tip of spoon.
32	34	17	1.42	0-2": Slough.
				2-17": Sand: Pink, as above.
34	36	20	2.04	0-3": Slough.
				3-20": Sand: Pink, as above.
36	38	20	2.40	0-15": Sand: As above.
				15-18": Silt: Brown (7.5 YR 4/3), compact, trace clay, dry.
				18-20": Sand: Light brown (7.5 YR 6/4), fine to very fine, very well sorted,
				cross bedded.
38	40	22	5.62	0-4": Slough.
				4-6": Sand: As above.
				6-13": Sand: Brown (7.5 YR 5/4), very fine, very well sorted, dry.
				13-21": Silt: Brown (7.5 YR 4/4), trace very fine sand, trace clay, dry.
				21-22": Sand: Light brown (7.5 YR 6/4), fine to very fine, very well sorted, dry.
40	42	23	2.21	0-3": Slough.
				3-9": Silt: Brown (7.5 YR 4/4), trace very fine sand, trace clay.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-104

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
				9-14": Sand: Brown (7.5 YR 5/4), fine to very fine, trace silt, dry.
				14-22": Silt: Brown (7.5 YR 5/4) to reddish brown (5 YR 4/4), grading into a clay
				silt compact, moist, clay very plastic, wet to fissile dry, non-effervescent.
				22-23": Silt: Brown (7.5 YR 4/4), trace very fine sand., dry.
42	44	24	49.50	0-7": Slough.
				7-16": Silt: As above, some clay.
				16-24": Sand: Strong brown (7.5 YR 4/6), very fine, silty, dry, 1 mm clay
				laminates at 23 inches.
44	46	22	24.13	0-7": Sand: As above.
				7-14": Sand: Brown (7.5 YR 4/4), silty, moist, clay laminate 5 mm thick at 10
				inches, brown (7.5 YR 5/3).
				14-21": Silt: Brown (7.5 YR 4/4), sandy moist.
				21-22": Clay: Brown (7.5 YR 5/3), slightly plastic, moist.
46	48	17	39.48	0-4": Slough.
				4-17": Silt: Dark brown (7.5 YR 3/4) to very dark brown (7.5 YR 2.5/2)
				sandy, very fine, saturated.
48	50	20	31.80	0-9": Slough.
				9-20": Silt: Very dark brown (7.5 YR 2.5/2) to black (7.5 YR 2.5/1), sandy.
				EOB @ 50 ft @ 11:46.

ARCADIS

Sample/Core Log

Boring/Well GMSB-105 Project/No. Ford/Kingsford WI001025.0005 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 5/14/03 Drilling Completed 5/14/03

Total Depth Drilled 48 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 in x 2 ft Sampling Interval continuous feet

Land-Surface Elev. 1115.45 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Paul Dickinson Helper Dave Morris

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	11	0.84	0-3": Topsoil.
				3-11": Sand: Strong brown (7.5 YR 5/8), gravelly (2mm - 20 mm) subrounded,
				silty, dry.
2	4	15	2.69	0-3": Slough.
				3-15": Sand: Strong brown (7.5 YR 5/6), fine, trace coarse, very well sorted, dry.
4	6	19	4.48	0-4": Slough.
				4-5": Sand: As above.
				5-19": Sand: Light brown (7.5 YR 6/4), medium to fine, trace coarse, very well
				sorted, dry.
6	8	16	3.81	0-1": Slough.
				2-16": Sand, as above, dry.
8	10	16	4.29	0-3": Slough.
				3-5": Sand: As above, dry.
				5-16": Sand: Reddish yellow (7.5 YR 7/6) to strong brown (7.5 YR 4/6), very
				coarse to medium, gravelly 2 mm - 40 mm subrounded, some fine, very poorly
				sorted, dry.
10	12	14	3.58	0-7": Slough.
				7-14": Sand/Gravel: As above, dry.
12	14	18	4.41	0-5": Slough.
				5-12": Sand/Gravel: As above, dry.
				12-18": Sand: Brown (7.5 YR 5/4), medium to coarse, trace very coarse,
				well sorted, dry.
14	16	16	4.85	0-3": Slough.
				3-16": Sand: Light brown (7.5 YR 6/4) to brown (7.5 YR 4/4), medium to very
				coarse, gravelly (2 mm - 30 mm subangular to subrounded), trace fine, dry.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-105

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
16	18	16	4.80	0-3": Sand: As above.
				3-16": Sand: Brown (7.5 YR 5/4), medium, very well sorted, dry.
18	20	15	5.67	0-15": Sand: As above, dry, but with trace gravel, 30 mm subrounded.
20	22	17	5.86	0-2": Slough.
				2-5": Sand: As above.
				5-17": Sand: Brown (7.5 YR 4/4), medium to coarse, some very coarse, some
				fine, very poorly sorted, graded downward to gravelly (2 mm to 18 mm)
				subrounded, dry.
22	24	11	6.53	0-4": Slough.
				4-8": Sand: Reddish yellowish (7.5 YR 6/8) to brown (7.5 YR 5/4), very coarse
				to medium, gravelly (2 mm - 23 mm) subrounded.
				8-11": Sand: Strong brown (7.5 YR 5/6), gravelly (2 mm to 25 mm) subrounded,
				trace fine sand, dry.
24	26	10	6.22	0-1": Slough.
				1-10": Sand: As above, but with abundant very fine sand and silt, very poorly
				sorted, dry.
26	28	14	4.81	0-4": Slough.
				4-14": Sand: Yellowish brown (10 YR 5/8), medium, some very coarse to coarse,
				some gravel 2 mm - 25 mm, subrounded, dry.
28	30	18	7.04	0-7": Slough.
				7-18": Sand: Strong brown (7.5 YR 5/8) to pink (7. 5 YR 7/4), fine, very well
				sorted, dry.
30	32	--	--	No recovery.
32	34	18	5.09	0-3": Slough.
				3-18": Sand: Pink (7.5 YR 7/4), fine, very well sorted, dry
34	36	16	5.27	0-2": Slough.
				2-16": Sand: As above, dry.
36	38	17	5.87	0-17": Sand: As above, dry.
38	40	17	8.44	0-17": Sand: As above, dry.
40	42	18	7.94	0-18": Sand: As above, dry.
42	44	17	8.23	0-2": Sand: As above.
				2-16": Sand: Brown (7.5 YR 5/4), very fine, silty, wet.
				16-17": Silt: Brown (7.5 YR 5/4), sandy, wet.
44	46	21	6.45	0-5": Sand: As above, silty, wet.
				5-10": Silt: Brown (7.5 YR 5/4), wet.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-105

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
				10-11": Clay: Red (2.5 YR 4/6), fissile, non effervescent.
				11-21": Clay: Brown (7.5 YR 5/4), plastic, saturated.
46	48	24	9.16	0-4": Slough.
				4-9": Silt: Brown (7.5 YR 4/4), clayey, saturated.
				9-20": Sand: Brown (7.5 YR 4/4), very fine, silty, changes to very dark
				brown (7.5 YR 2.5/3) at 15 inches.
				20-24": Silt: Brown (7.5 YR 4/2), clayey, slightly plastic, saturated.
				EOB @ 48 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-106 Project/No. Ford/Kingsford WI001025.0005 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/15/03 Drilling Completed 5/15/03

Total Depth Drilled 44 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 in x 2 ft

Land-Surface Elev. 1112.85 feet [X] Surveyed [ ] Estimated Sampling Interval continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Paul Dickinson Helper Dave Morris

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	18	0.48	0-7": Topsoil.
				7-14": Loam: Brown (7.5 YR 5/4), silty.
				14-18": Sand: Strong brown (7.5 YR 5/6), fine to very fine, silty, dry.
2	4	18	--	0-2": Slough.
				2-10": Sand: Brown (7.5 YR 4/4),medium, trace gravel (2 mm - 27 mm)
				subrounded.
				10-18": Sand: Strong brown (7.5 YR 5/8), medium, trace coarse, well sorted, dry.
4	6	15	1.56	0-3": Slough.
				3-8": Sand: As above.
				8-15": Sand: Strong brown (7.5 YR 5/6), medium, very well sorted, amount of
				very coarse sand increases in final 2 inches.
6	8	20	3.30	0-5": Slough.
				5-13": Sand: As above, very coarse to medium, strong brown (7.5 YR 5/6),
				minor amount gravel (2 mm - 20 mm) subrounded.
				13-20": Sand: Brown (7.5 YR 5/4) very coarse to medium, some gravel,
				2 mm - 23 mm subangular to subrounded.
8	10	16	3.78	0-3": Slough.
				3-16": Sand: As above, dry.
10	12	19	4.37	0-3": Slough.
				3-8": Sand: Brown (7.5 YR 4/4), very coarse to medium, some fine, trace silt,
				very poorly sorted.
				8-19": Sand: Brown (7.5 YR 5/4), very coarse to medium, some gravel, 2mm -
				10 mm subangular, dry.
12	14	9	6.46	0-1": Slough.
				1-9": Sand: As above, but gravel size increases to 22 mm.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-106

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
14	16	16	5.78	0-2": Slough.
				2-9": Sand: As above, but gravel size increases to 30 mm.
				9-16": Sand: As above, but gravel size decreases to 12 mm.
16	18	11	5.38	0-3": Slough.
				3-9": Sand: As above.
				9-11": Sand: Brown (7.5 YR 5/4), medium, trace coarse, very well sorted, dry.
18	20	15	7.38	0-9": Sand: As above.
				9-15": Sand: Brown (7.5 YR 5/4) medium, to very coarse, gravelly 2mm - 35 mm
				subangular to subrounded, dry.
20	22	12	7.03	0-4": Slough.
				4-7": Stone (Michiganne slate) > 50 mm, angular.
				7-12": Sand: Brown (7.5 YR 5/4), medium to coarse, some very coarse, some
				gravel, 2 mm - 12 mm subangular to subrounded, dry.
22	24	16	4.48	0-2": Slough.
				2-16": Sand: As above.
24	26	15	6.32	0-15": Sand: As above, but no gravel.
26	28	15	7.29	0-15": Sand: As above, dry.
28	30	17	8.12	0-17": Sand: As above, dry.
30	32	14	6.94	0-14": Sand: As above, dry.
32	34	16	7.92	0-16": Sand: As above, dry.
34	36	16	8.77	0-16": Sand: As above, dry.
36	38	18	7.78	0-8": Sand: As above.
				8-18": Sand: Brown (7.5 YR 4/4), medium to coarse, some very coarse, gravelly
				2 mm - 32 mm subangular to subrounded, dry.
38	40	16	6.69	0-16": Sand: As a above, but gravel increased in amount between 12 inches
				and 16 inches, wet at 12 inches.
40	42	16	9.52	0-16": Sand: As above, saturated.
42	44	20	11.47	0-20": Sand/Gravel: As above, but gravel size increases to >50 mm,
				saturated.
				EOB at 44 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-107 Project/No. Ford/Kingsford WI001025.0005 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/19/03 Drilling Completed 5/19/03

Total Depth Drilled 48 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 in x 2 ft

Land-Surface Elev. 1114.53 feet [X] Surveyed [ ] Estimated Sampling Interval continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Paul Dickinson Helper Dave Morris

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	10	0.78	0-5": Topsoil.
				5-10": Sand: Strong brown (7.5 YR 4/6), medium, trace coarse.
2	4	16	1.04	0-2": Slough.
				2-11": Sand: As above.
				11-16": Sand: Strong brown (7.5 YR 5/6), very coarse to medium, gravelly
				2 mm - 30 mm subrounded, very poorly sorted, dry.
4	6	19	2.04	0-9": Slough.
				9-19": Sand: As above.
6	8	18	2.44	0-9": Slough.
				9-13": Sand: As above.
				13-18": Sand: Brown (7.5 YR 5/4), coarse to medium, some fine, trace fine
				gravel (2 mm - 10 mm), poorly sorted, dry.
8	10	--	--	No recovery.
10	12	5	2.68	0-5": Slough.
12	14	18	2.57	0-6": Slough.
				6-18": Sand: Brown (7.5 YR 5/4), coarse to medium, some gravel (2 mm - 30 mm)
				subrounded, dry.
14	16	19	2.32	0-4": Slough.
				4-19": Sand: As above, except only a trace very fine gravel (2 mm - 10 mm
				subrounded) at 4 inch to 8 inch.
16	18	12	2.05	0-7": Slough.
				7-9": Sand: As above.
				9-12": Sand: Pink (7.5 YR 4/4), fine, silty , dry.
18	20	16	3.58	0-4": Slough.
				4-16": Sand: As above, dry.

ARCADIS

Sample/Core Log (continued)

Boring/Well: GMSB-107

Prepared by: Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
20	22	22	2.44	0-2": Slough.
				2-22": Sand: As above, except clay layer (with silt alternating) between 16"
				and 18".
22	24	18	3.67	0-7": Slough.
				7-18": Sand: As above.
24	26	18	3.65	0-5": Slough.
				5-18": Sand: As above.
26	28	18	3.65	0-5": Slough.
				5-18": Sand: As above.
28	30	16	4.43	0-16": Sand: As above, dry.
30	32	19	5.19	0-1": Slough.
				1-12": Sand: As above.
				12-15": Silt: Reddish brown (4.5 YR 4/3), clayey.
				15-18": Sand: As above.
				18-19": Silt: As above.
32	34	18	4.97	0-1": Slough.
				1-18": Sand/Silt: As above, sand 1-3 inches, silt 3-4 inches, sand 4-17 inches,
				silt 17-18 inches.
34	36	19	5.85	0-1": Slough.
				1-19": Sand: As above, except with silt as above at 4-5 inches.
36	38	21	6.36	0-1": Slough.
				1-21": Sand/Silt: Alternating layers as above, also with strongly
				effervescent clay, reddish brown (2.5 YR 4/4), section is mostly clayey silt,
				red clay at 9-10 inches.
38	40	19	5.95	0-1": Slough.
				1-12": Sand/Silt: As above, alternating layers, thin red clay laminate (4 mm)
				at 5 inches.
				12-18": Sand: As above
				18-19": Silt: As above, dry.
40	42	19	4.51	0-19": Sand/Silt: Sequences as above, sand at 2-3 inches, 9-12 inches
				14-19 inches.
42	44	19	5.14	0-19": Sand/Silt: As above, dry, sand at 3-5 inches, 6-17 inches.
44	46	20	5.28	0-9": Sand: As above.
				9-20": Silt: As above, plastic, moist to wet.
46	48	22	4.21	0-6": Slough.
				6-22": Silt: Reddish brown (5 YR 4/4), sandy, saturated.
				EOB @ 48 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-108 Project/No. Ford/Kingsford WI001025.0005 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 5/20/03 Drilling Completed 5/20/03

Total Depth Drilled 60 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 in x 2 ft Sampling Interval continuous feet

Land-Surface Elev. 1121.39 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Paul Helper Wes

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	21	2.24	0-8": Topsoil.
				8-21": Sand: Strong brown (7.5 YR 4/6), medium to very fine, silty, trace
				coarse to very coarse, moist.
2	4	19	3.88	0-3": Slough.
				3-19": Sand: As above, but with some gravel (2 mm to 12 mm) subrounded.
4	6	20	3.45	0-2": Slough.
				2-12": Sand: As above.
				12-20": Sand: Brown (2.5 YR 4/4), medium, some coarse, trace very fine gravel,
				trace fine sand, moderately sorted, dry.
6	8	18	3.96	0-5": Slough.
				5-18": Sand: As above, dry.
8	10	18	4.51	0-2": Slough.
				2-18": Sand: As above, but coarse fraction increases.
10	12	8	5.48	0-2": Slough.
				2-3": Sand: As above.
				3-8": Sand: Brown (10 YR 4/3), very coarse to very fine, silty, some gravel
				(2 mm to 27 mm) finely divided muscovite at 5-6 inches.
12	14	15	3.24	0-4": Slough.
				4-11": Sand: As above, but gravel is more coarse (>40 mm) subangular to
				subrounded, dry.
				11-15": Sand: Brown (7.5 YR 4/4), very coarse to medium, trace very fine,
				gravelly (2 mm - 12 mm), subrounded, moist.
14	16	9	5.17	0-3": Slough.
				3-9": Sand/Gravel: As above, but gravel size increasing to >40 mm, dry.
16	18	5	3.79	0-5": Slough.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-108

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
18	20	18	11.84	0-18": Sand/Gravel: As above, clay light gray (2.5 Y 7/2) at 16-17.
20	22	13	14.26	0-5": Sand/Gravel: As above.
				5-6": Stone.
				6-13": Sand/Gravel: As above, but color brown (7.5 YR 5/4) maximum
				gravel size 18 mm.
22	24	10	20.42	0-2": Slough.
				2-10": Sand: As above.
24	26	14	11.42	0-3": Sand: As above.
				3-14": Sand: Brown (7.5 YR 5/4), very fine, silty, dry.
26	28	--	--	No recovery.
28	30	18	10.96	0-2": Slough.
				2-14": Sand: As above.
				14-17": Clay: Brown (7.5 YR 4/3), some silt, slightly to moderately plastic.
				17-18": Sand: As above.
30	32	18	14.05	0-2": Slough.
				2-18": Sand/Silt: As above, silt at 6-7 inches, 13-14 inches, and 16.5 -17.5 inches.
32	34	18	15.55	0-2": Slough.
				2-18": Sand/Silt: As above, silt at 3-4 inches, 5.5-6.5 inches., 8-10 inches, and
				17.5-18 inches.
34	36	20	11.31	0-3": Slough.
				3-5": Sand: As above.
				5-7": Silt: Brown (7.5 YR 5/4) and clay reddish brown (7.5 YR 4/4), interbedded
				several cycles silt and clay, strongly effervescent.
				7-8": Silt/Sand: As above.
				8-11": Silt/Clay/Sand: Several cycles.
				11-15": Silt: Brown (7.5 YR 5/4), clayey, weakly effervescent.
				15-19": Sand: Light brown (7.5 YR 6/4), silty.
				19-20": Silt: As above, weakly effervescent, dry.
36	38	20	10.39	0-1": Slough.
				1-2": Sand: As above.
				2-3": Gravel: Brown (7.5 YR 4/2), sandy very coarse to medium, gravel (2 mm -
				7 mm) subrounded to rounded.
				3-7": Sand/Silt/Clay: As above, many cycles.
				7-8": Gravel: As above.
				8-9": Silt: Brown (7.5 YR 4/4), clayey, nonplastic.
				9-11": Sand/Silt: Numerous cycles of very fine silty sand and silt.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-108

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
				11-13": Sand: Very fine, silty.
				13-15": Silt/Clay: Silt (brown) and clay (red), as above, strong effervescent.
				15-16": Sand: Silty.
				16-20": Silt: As above, weakly effervescent.
38	40	19	7.15	0-2": Slough.
				2-3": Silt: Brown, clayey, as above.
				3-5": Sand: Silty, as above.
				5-5.5": Clay: Red, as above.
				5.5-6": Sand: Silty, as above.
				6-9": Silt: Brown, as above, weakly effervescent.
				9-11": Silt/Clay: Several cycles of silt (brown) and clay (red) strongly effervescent.
				11-20": Silt: Brown, as above, with 1 inch of very fine silty sand (saturated) at 16-17 inches.
40	42	17	4.48	0-1": Slough.
				1-13": Silt: As above, dry, moderately effervescent.
				13-16": Clay: Red, as above, dry, strongly effervescent.
				16-17": Silt: As above, dry.
42	44	18	9.81	0-6": Slough.
				6-18": Silt/Clay: Sequences as above, clay at 7-7.5 inches, 8.5-9inches, 12.5-13 inches, 17.5-18inches, wet from 10-18 inches.
44	46	19	3.47	0-3": Slough.
				3-19": Clay: Red, as above, strongly effervescent, dry, nonplastic.
46	48	21	12.23	0-4": Slough.
				4-21": Clay: As above, (but color grades to dark reddish brown (5 YR 3/3) at approximately 14 inches), also many very thin lamane of silt throughout thicker than 1 mm.
48	50	16	25.50	0-10": Clay: As above, dry.
				10-12": Silt: Brown (7.5 YR 4/4), clayey, dry.
				12-13.5": Silt: Brown (7.5 YR 4/4), damp.
				13.5-16": Silt: (brown as above), clayey, sandy, wet.
50	52	10	747	0-5": Clay: Dark reddish brown (5 YR 3/3), dry, strongly effervescent.
				5-10": Silt: Brown (7.5 YR 4/4), sandy, wet.
52	54	18	3,275	0-5": Silt: Brown (7.5 YR 4/4), sandy, saturated.
				5-18": Sand: Brown (7.5 YR 4/4), very fine, silty, saturated.
54	56	21	320	0-21": Sand: As above, saturated.
56	58	21	730	0-21": Sand: As above, saturated.
58	60	22	380	0-22": Sand: As above, saturated.
				EOB @ 60

ARCADIS

Sample/Core Log

Boring/Well GMSB-109 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 2

Site

Location Kingsford, Michigan (Lodal Park) Drilling Started 5/21/03 Drilling Completed 5/21/03

Total Depth Drilled 42 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2-feet by 2-inch

Land-Surface Elev. 1113.40 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Paul Dickinson Helper Wes Imhoff

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	20	7.97	0-3": Topsoil.
				3-7" Sand: Strong brown (7.5 YR 4/6), medium to very fine, silty trace clay,
				trace very fine gravel.
				7-13" Sand: Light brown (7.5 YR 6/4), medium, trace fine trace coarse.
				13-15.5": Buried topsoil horizon, very dark brown (7.5 YR 2.5/2).
				15.5-19" Sand: Strong brown (7.5 YR 4/6), coarse to medium, some fine trace
				very fine trace gravel.
				19-20": Topsoil horizon, very dark brown (7.5 YR 2.5/2).
2	4	0	--	No recovery.
4	6	20	13.68	0-4" Sand: strong brown (7.5 YR 5/6) to dark brown (7.5 YR 3/4), medium,
				trace coarse trace gravel, 2 small (4 mm) pieces of anthracite
				4-6": Topsoil horizon, very dark brown (7.5 YR 2.5/2), dry.
				9-20" Sand: Strong brown (7.5 YR 5/6), grades downward to reddish yellow
				(7.5 YR 6/8), medium to very coarse, trace gravel (2 mm-20 mm) subrounded.
6	8	15	14.46	0-2": Slough.
				2-6" Sand: As above.
				6-15" Sand: Strong brown (7.5 YR 5/6), very coarse to very fine, some fine gravel
				(2 mm - 20 mm) subangular to subrounded, dry.
8	10	15	10.79	0-4": Slough.
				4-10" Sand: As above.
				10-15" Sand: Dark brown (7.5 YR 3/3), very coarse to very fine, silty, gravelly
				(2 mm - 25 mm) subrounded, dry.
10	12	19	13.95	0-9": Slough.
				9-19" Sand: As above, but gravel size increase to >40 mm, thin (10-20 mm)
				lense of very dark olive gray (5 Y 3/2), silty clay-like substance, specular under
				magnification.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-109

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
12	14	17	10.84	0-8": Slough.
				8-17" Sand: Brown (7.5 YR 5/4), very coarse to medium, gravelly (2 mm - >30 mm)
				subangular to subrounded, trace silt, dry.
14	16	3	16.12	0-3": Slough.
16	18	16	19.64	0-3": Slough.
				3-8" Sand: As above.
				8-16" Sand: Light brown (2.5 YR 6/4), medium, very well sorted, dry.
18	20	5	19.33	0-3": Slough.
				3-5" Sand: As above.
20	22	3	18.19	0-3": Slough.
22	24	2	26.33	0-2": Slough.
24	26	14	52.03	0-2": Slough.
				2-14" Sand: Yellowish brown (10 YR 5/6), very coarse to medium, trace to some
				fine, gravelly (2 mm - >30 mm) subangular to subrounded, dry.
26	28	14	31.27	0-2": Slough.
				2-14" Sand: Brown (7.5 YR 5/4), coarse to medium, some very coarse, some
				gravel (2 mm - 15 mm) subrounded, dry.
28	30	15	22.95	0-1": Slough.
				1-2" Sand: As above.
				2-12.5" Sand: Light brown (7.5 YR 6/4), fine to very fine, trace silt, very well
				sorted, dry.
				12.5-14" Sand: Brown (7.5 YR 5/3) silty.
				14-15" Silt: Brown (7.5 YR 4/4), clayey compact, nonplastic, dry.
30	32	6	17.66	0-6": Slough, rock in tip of spoon, wet.
32	34	13	14.68	0-2": Slough.
				2-13" Silt: Dark brown (7.5 YR 3/4), trace black (7.5 YR 2.5/1) stained between
				2-6", at 7.5 " (3 mm), at 8.5 (12 mm) and at 11" (4 mm).
34	36	20	16.51	0-20" Silt: As above, staining throughout saturated.
36	38	15	51.63	0-2": Slough,
				2-13" Silt: As above, less staining, between 3 and 4", and 9 and 10".
				13-15" Sand: Brown (7.5 YR 4/4), slight staining, saturated.
38	40	18	64.92	0-2": Slough.
				2-6" Silt: Brown to black, as above.
				6-18" Sand: Brown to black, as above, very fine, silty, staining at 6-8", and at
				12", saturated.
40	42	20	102	0-20" Sand: As above, stained throughout, saturated.
				EOB @ 42'

ARCADIS

Sample/Core Log

Boring/Well GMSB-110 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 3

Site Location Kingsford, Michigan (Birch & Breen) Drilling Started 5/22/03 Drilling Completed 5/22/03

Total Depth Drilled 54 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2-feet by 2-inches

Land-Surface Elev. 1121.75 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Prepared By Pat Bartnik Driller Paul Helper Wes

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	7.5	5.66	0-7.5": Topsoil.
2	4	3	6.90	0-3": Slough.
4	6	11	11.50	0-1": Slough.
				1-11" Sand: Strong brown (7.5 YR 4/6), medium, trace coarse to very coarse,
				trace fine, very well sorted, dry.
6	8	17.5	11.69	0-3": Slough.
				3-17.5" Sand: As above, dry.
8	10	18	14.57	0-6": Slough.
				6-18" Sand: As above, but coarse fraction larger and with fine some fine gravel.
10	12	19	16.80	0-4": Slough.
				4-19" Sand: As above.
12	14	16	14.10	0-3": Slough.
				3-16" Sand: As above, but gravel up to 30 mm in size.
14	16	7	11.08	0-3": Slough.
				3-7" Sand: As above.
16	18	13	9.90	0-3": Slough.
				3-18" Sand: As above.
18	20	13	8.56	0-11.5" Sand: As above.
				11.5-13" Sand: Light brown (7.5 YR 6/4), medium to fine, well sorted, dry.
20	22	18	8.96	0-3": Slough.
				3-14" Sand: As above.
				14-18" Sand: Brown (7.5 YR 5/4), coarse to fine, moderately sorted, dry, trace to
				some very fine.
22	24	19	10.52	0-2": Slough.
				2-19" Sand: Brown (7.5 YR 5/4), medium to very fine, some silt.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-110

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
24	26	18	13.20	0-6" Sand: As above.
				6-18" Sand: Brown (7.5 YR 4/3), very coarse to medium, trace fine, gravelly
				(2 mm - 28 mm) subrounded, clay layer brown (7.5 YR 4/4) at 13" (1/2" thick).
26	28	20	10.62	0-4" Sand: As above.
				4-10" Silt/Clay: Silt reddish brown (5 YR 4/4) clay dark red (2.5 YR 3/6) clay
				occurs as 25 mm layer at 7", both silt and clay non effervescent.
				10-18" Sand: Light brown (7.5 YR 6/4) to yellowish red (5 YR 4/6), silty, dry.
				18-20" Sand: Light brown (7.5 YR 6/3), fine to very fine, silty.
28	30	22	17.49	0-2": Slough.
				2-4" Sand: As above.
				4-22" Silt: Brown (7.5 YR 4/4), clayey, dry to moist. Dark red (2.5 YR 3/6) clay
				laminae at 9-10", 10.5-11", and 15.5-16.5 in silt, weakly effervescent, clay
				moderately effervescent.
30	32	22	21.13	0-1": Slough.
				1-22": Silt: As above, clay lamenae at 15" (10 mm thick) occasional very fine
				sand lenses (at 8 and 16").
32	34	21	24.42	0-0.5": Slough.
				0.5-21" Silt: As above, red clay at 7-8" then 3 mm sand laminae at 11".
34	36	21	26.76	0-2": Slough.
				0-12" Silt/Clay: As above, red clay at 5" (6 mm) and between 7.5 and 9".
				12-21" Silt: Brown (7.5 YR 4/3), sandy, wet to saturated.
36	38	18	30.73	0-2": Slough.
				2-18" Silt: As above, saturated.
38	40	19	28.71	0-5" Silt: As above, sandy saturated.
				5-19" Silt: Brown (7.5 YR 4/4), clayey, dry, slightly plastic.
40	42	24	--	0-6": Slough.
				6-24" Clay: Brown (7.5 YR 4/4), silty, moderately plastic, dry , red clay layer
				(19 mm) at 12".
42	44	24	33.06	0-2": Slough.
				2-24" Clay: As above, dry, red clay layers at 4" (6 mm), 6" (3 mm), 8" (2 mm),
				between 11 and 12", 13.5-15", and dozens between 15 and 24".
44	46	24	21.26	0-24" Silty Clay/Clay: As above, red clay lenses too numerous to list, dry.
46	48	24	83.38	0-24" Silty Clay/Red Clay: As above, many red clay lenses, silty clay changes
				color at 4" from brown (7.5 YR 4/4) to dark brown (7.5 YR 3/4), red clay changes
				color to dark reddish brown (5 YR 3/4), strongly effervescent.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-110

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
48	50	24	11.78	0-22" Silty Clay/Red Clay: As above.
				22-24" Silt: Dark brown (7.5 YR 3/4), clayey, saturated at 20".
50	52	16	2246	0-2" Silty Clay: As above.
				2-16": Sand: Brown (7.5 YR 4/4), very fine, silty, saturated.
52	54	20	5130	0-7": Slough.
				7-20" Sand: As above, saturated sand is fine to very fine, silty from 17-20.
				EOB @ 54'

ARCADIS

Sample/Core Log

Boring/Well GMSB-111 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 08/15/03 Drilling Completed 08/15/03

Total Depth Drilled 26 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 4" x 10'

Land-Surface Elev. 1043.87 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller _____ Helper _____

Prepared By Pat Bartnik/Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	20			Blind drill see corelog for GM-78.
20	26.0	4	2700-	Sand/Gravel, dark brown (7.5 YR 3/3) coarse to very coarse sand with fine to
			4200/-2.5	coarse gravel, very poorly sorted, loose, wet 1-4 sand, brown (7.5 YR 4/3)
			+3.5	medium grain, well sorted, some patches/layers medium to coarse, sand loose,
				wet, no odor.

ARCADIS

Sample/Core Log

Boring/Well GMSB-112 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 09/02/03 Drilling Completed 09/03/03

Total Depth Drilled 220 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Land-Surface Elev. 1048.20 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Stacy Helper Chris/Scott

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	10-46/	0-2.5': Silt, strong brown (7.5 YR 4/6), many rootlets, loose, powdery, dry, no odor.
			-2/11	2.5-5': Sand/Gravel, brown (7.5 YR 4/3), fine to medium sand with fine to very
				coarse gravel subangular to subround, also cobbles to 3" diameter especially
				abundant at 2.5', very poorly sorted, loose, dry.
5.0	10	5	4-14/	0-2': Sand/Gravel, as above loose, moist.
			-3/10	2-3': Sand, light brown (7.5 YR 6/4), medium to coarse grain, well sorted, trace
				cobbles, loose, dry, no odor.
				3-5': Sand/Gravel, brown (7.5 YR 4/3), fine to coarse sand, fine to very coarse
				gravel, subangular to subround, many cobbles to 3" diameter, very poorly sorted,
				loose, moist.
10	15	2	3-10/	Sand/Gravel, as above.
			-3/-9	
15	20	5	11-40/	0-5': Sand, dark brown (7.5 YR 3/3), mostly coarse grain, some medium to fine
			-7/2	grain, some fine to coarse gravel and trace cobbles, some silt, loose, wet, no odor.
20	25	5	27-94/	0-0.5': Silt/Clay, silt brown (7.5 YR 4/3), clay reddish brown (7.5 YR 4/3), silt
			-10/-9	and clay thinly interbedded and varved, <0.1" thick, silt soft, somewhat plastic,
				clay plastic but fissile looking on broken surfaces wet, no odor.
				0.5-1.5': Silt, brown (7.5 YR 4/3), clayey matrix but less visible reddish clay,
				sticky, soft, wet.
				1.5-3': Silt, as above, becoming less clayey and then increasingly sandy with
				very fine grain sand, somewhat loose, wet, odor.
				3-4': Sand/Silt, reddish brown (5 YR 4/4), very fine grain sand interbedded with
				silt, somewhat loose, wet, odor.
				4-5': Sand, reddish brown (5 YR 4/4), fine to medium grain, moderately
				sorted, trace silt, very fine grain sand, loose, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-112

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
25	30	5	26-57/	Sand, brown (7.5 YR 5/2), coarse to very coarse sand, well sorted with some
			-8/-11	fine to very coarse gravel, subangular to subround, loose, wet, very strong odor.
30	35	5	73-22000/	0-3': Sand, as above, with gravel, wet, strong odor.
			-12/-8	3-5': Sand, reddish brown (5 YR 5/4), very fine grain well sorted, silty to very
				silty, somewhat loose, slightly firm, traces vein-like black staining, spider web-
				like, wet, strong odor.
35	40	5	38-72/	0-3': Sand, brown (7.5 YR 4/3), and silt reddish brown (5 YR 4/3), interbedded
			-14/-9	medium grain well sorted sand with very fine grain silty sand 2-4" thick beds,
				loose, wet, strong odor.
				3-3.5': Silt/Clay, silt reddish brown (5 YR 4/3), clay red (2.5 YR 4/6),
				interbedded to varved, layers as thick as 2" of clay, clay plastic yet fissile looking
				on broken surfaces, silt somewhat firm (HP 1-2.5) wet, odor.
				3.5-5': Silt, reddish brown (5 YR 5/3), and brown (7.5 YR 4/3), clayey silt,
				interbedded in beds <0.5", brown silt sticky clayey, reddish silt, somewhat
				loose, trace reddish clay, interbedded at 5 feet, wet, strong odor.
40	45	5	66-12000/	0-2': Silt/Clay, as above interbedded, wet, odor.
			-12/-9	2-4': Silt, strong brown (7.5 YR 4/6), somewhat loose to somewhat firm, wet,
				strong odor.
				4-5': Sand, reddish brown (5 YR 4/3), very fine grain, silty, somewhat loose,
				very well sorted, wet, strong odor.
45	50	5	37-17000/	Sand/Silt, reddish brown (5 YR 5/3), very fine grain silty sand and interbedded
			-14/-12	with sandy silt 0.2-1 foot thick, some clay 0-2 feet, somewhat plastic/sticky,
				2-5 somewhat loose to somewhat firm, wet, strong odor.
50	55			No recovery.
55	60	5	35-17000/	0-2': Sand/Silt, as above.
			-14/-6	2-5': Sand, reddish brown (5 YR 5/3), very fine grain, well sorted, some fine
				grain, trace silt in some layers, loose, wet, strong odor.
60	65	5	77-15000/	Silt, reddish brown (5 YR 5/3), soft (HP = 0.5), somewhat loose, very sandy 0-1
			-11	with very fine grain sand, trace black staining, wet, strong odor, vescules
				forming web-like on broken surfaces as gas escapes.
65	70	5	40-37000/	0-3': Silt, reddish brown (5 YR 5/3), very clayey, plastic from 0-1.5, no clay 1.5-3,
			-12/-9	soft (HP 0.5), wet, strong odor, vescules.
				3-4': Sand, reddish brown (5 YR 5/3), very fine grain, well sorted, some silt,
				loose, wet, strong odor.
				4-5': Silt, reddish brown (5 YR 5/3), sandy with very fine grain sand, soft to
				somewhat loose, wet, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-112

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
70	75	5	21000/	0-4.5': Silt, as above, very sandy, 1" thick layer brown clay at 3.3, wet, odor,
			-13/-9	vescules, trace black wet-like staining.
				4.5-5': Sand, reddish brown (5 YR 4/3), very fine grain, well sorted, loose, wet,
				odor.
75	80	5	600-	0-1': Silt, reddish brown (5 YR 5/3), soft, somewhat loose, wet, odor, vesicules.
			13500/-15	1-3': Sand, reddish brown (5 YR 4/3), fine grain, some very fine, well sorted,
			-10	loose wet, odor.
				3-5': Silt, reddish brown (5 YR 4/3), soft, somewhat loose, some very fine
				grain sand, wet, strong odor, vescules.
80	85	5	3700-	0-2.5': Silt, as above.
			14000/	2.5-3': Sand, reddish brown (5 YR 4/3), very fine grain, well sorted, loose, wet,
			-13/-12	odor.
				3-5': Silt, reddish brown (5 YR 4/3), very sandy with very fine grain sand,
				somewhat loose, wet, odor, some vescules.
85	90	5	1600-	Silt, reddish brown (5 YR 4/4), soft, somewhat loose, some very fine grain sand,
			17500/-15	very homogeneous, wet, strong odor, many vescules.
			-13	
90	95	5	3400-	Silt, reddish brown (5 YR 5/3), 0-3 very clayey matrix, slight plastic, 3-5 less clay,
			14500/-15	nonplastic, somewhat loose, wet, strong odor, many vescules throughout.
			-12	
95	100	5	1400-	0-1': Sand/Silt, reddish brown (5 YR 5/3), very fine grain, well sorted, very silty
			20500/-15	sand, loose but sticky, wet, odor.
				1-5': Silt, reddish brown (5 YR 5/3), clayey, no sand, slight plastic, wet, odor.
100	105	5	3200-9900/	0-1': Silt/Sand, silt as above, interbedded with seams very fine grain sand,
			-15/-14	brown (7.5 YR 5/2), wet, odor.
				1-3': Silt, reddish brown as above, but no sand, many vescules.
				3-5': Silt/Sand, silt as above interbedded with seams sand very fine grain and
				fine to medium grain, moderately sorted, seams to 1" thick generally <0.1",
				silt somewhat plastic, sticky, sand loose, wet, odor.
105	110	5	2900-	0-2': Silt/Sand, interbedded as above, also some red clay varves/bedding, some
			15200/-14	what firm to slight plastic, where clayey, wet, odor many vescules.
			-13	2-5': Sand, brown (7.5 YR 5/2), fine grain, well sorted, some very fine and medium
				grain, some interbedded silt layers 0.1-0.5" thick from 3-5, loose, wet, odor.
110	115	5	14300-	0-2': Sand, as above.
			26500/	2-3.5': Silt, brown (7.5 YR 5/2), somewhat soft to somewhat firm (HP = 0.5-1.0),
			-14/-13	trace reddish clay varves, wet, odor, trace vescules.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-112

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				3.5-5': Sand, brown (7.5 YR 5/2), fine to very fine grain, well sorted, loose,
				wet, odor.
115	120	5	1600-	0-3': Silt, brown (7.5 YR 5/2), somewhat loose, somewhat sandy with very fine
			30200/-15	grain sand, wet, odor.
			-12	3-4': Sand, brown (7.5 YR 5/2), very fine grain well sorted, silty, loose, wet,
				odor.
				4-5': Silt, brown as above, sandy.
120	125	5	1900-	Silt, brown (7.5 YR 5/2), soft, somewhat loose, very sandy in some places (very
			>76900/	fine grain sand) and especially 2-3 feet, 3" reddish clay layer at 0.5 feet,
			-14/-13	plastic, fissile looking on broken surfaces, extremely effervescent with HCL,
				many vescules 1-2 feet.
125	130	5	1600-	0-1': Silt, as above.
			15500/-10	1-3': Sand, brown (7.5 YR 4/3), very fine grain, well sorted, some silt, loose,
			-14	wet, odor.
				3-3.5': Silt, brown (7.5 YR 4/3), somewhat loose to slight firm, wet, odor.
				3.5-5': Sand, light brown (7.5 YR 6/3), very fine to fine grain, well sorted, loose,
				wet, odor.
130	135	5	1100-4800/	0-2': Sand, light brown (7.5 YR 6/3), fine grain, well sorted, loose, wet, odor.
			-14/-11	2-5': Sand, brown (7.5 YR 5/3), fine to very fine grain, well sorted, some silt
				below 3 feet, loose, wet, odor.
135	140	5	3900-	0-4': Sand, brown (7.5 YR 4/3), fine grain, well sorted, trace fine black gravel
			14200/	mostly angular to subangular, some medium sand 2-3 feet, loose, wet, odor.
			0.25-4.1	4-4.5': Silt, reddish brown (5 YR 4/3), somewhat clayey, slight plastic, trace
				fine gravel, angular to subangular in clayey silt matrix, somewhat firm
				(HP 1-1.5), wet, odor, some fine grain sand also at 4.5.
140	145	5	2580-	0-1': Silt/Gravel, as above with fine sand.
			17200/	1-3.3': Silt/Clay, reddish brown silt (5 YR 4/3), interbedded and varved with clay,
			1.1/2.1	yellowish red (5 YR 4/6), clay plastic, fissile looking on broken surfaces, silt clayey
				and soft, both somewhat effervescent with HCL, wet, odor.
				3.3-3.8': Sand, brown (7.5 YR 4/3), fine grain, well sorted, loose, wet, odor.
				3.8-5': Silt/Clay, as above, interbedded and varved.
145	150	5	3100-	0-1'; Silt/Clay, as above, also with 1-2" layer sand, brown (7.5 YR 4/3), very fine
			13800/	grain loose, wet, odor.
			0.5/6.5	1-5': Sand, brown (7.5 YR 4/3), fine grain, well sorted, with some very fine grain
				trace silt, loose, wet, odor, some fine to coarse black gravel in sand matrix at
				4.2-4.5 feet, angular to subangular.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-112

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
150	155	5	17000-	0-2': Sand, brown (7.5 YR 4/3), fine to very fine grain, well sorted, loose, trace
			>76900/	fine to coarse gravel angular to subangular 1-2, wet, odor.
			3.4/6.9	2-3': Clay/Silt/Gravel/Sand, yellowish red clay (5 YR 4/6), plastic soft, mixed with
				silt, fine to coarse gravel, angular to subangular and mostly black, and fine to
				very fine sand, somewhat soft, clay plastic, wet, odor.
				3-4': Sand, brown (7.5 YR 4/3), mostly fine grain, some very fine grain, well
				sorted, loose, wet, odor.
				4-4.5': Clay/Gravel, silt, as above.
				4.5-5': Sand, brown (7.5 YR 4/3), very fine grain, well sorted with trace fine
				black gravel angular to subangular, loose, wet, odor.
155	160	5	6.5-55/	0-2': Silt, brown (7.5 YR 5/2), somewhat firm (HP 1-2.0), moderately effervescent
			-8/-6.4	with HCL, sandy with very fine grain sand from 1-1.5, wet, no odor.
				2-5': Clay/Silt, silt as above, no sand, interbedded and varved with clay
				yellowish red (5 YR 4/6), clay dense somewhat plastic, fissile looking on
				broken surfaces, extremely effervescent with HCL, very dense 2-3 and mostly
				clay (HP >4.0), varving 2 mm and less, wet, no odor.
160	165	5	8-19/-7.5/	Silt/Clay, as above, very thinly varved, wet, no odor, .2" fine sand seam at 4.2.
			-6.7	
165	170	5	55-470/	0-2': Silt, brown (7.5 YR 5/2), no clay, firm (HP 2-3) somewhat soft, wet, no odor.
			-6.1/-1	2-3': Silt/Clay, as above, varved.
				3-5': Silt, as above, no clay.
170	175	5	120-505/	0-1': Sand, brown (7.5 YR 5/2), fine grain, well sorted, trace fine black gravel,
			-1.9/+7.0	loose, 0.5-0.7 sand/gravel seam, fine to coarse sand and fine to coarse gravel,
				very poorly sorted, subangular to subround, loose, wet, slight odor.
				1-2.5': Silt, brown (7.5 YR 5/3), very clayey, slight plastic, trace fine gravel,
				wet, slight odor.
				2.5-5': Silt/Gravel (Till?), dark gray (2.5 YR 4/1), very dense (HP >4.0), mixture of
				fine to very coarse gravel, angular to subangular in silt matrix, some fine to
				coarse sand grains in silt also, trace cobbles to 4" diameter, moist, no odor.
175	180	5	0.9-23/	0-3': Gravel/Silt/Clay, dark gray (7.5 YR 4/1), silt/clay matrix, very sticky, soft
			-11/-10	with fine to very coarse gravel, mostly angular to subangular, but also subround,
				cobbles to 3" diameter, angular black bedrock, much softer than above, wet,
				no odor.
				3-5': Silt, brown (7.5 YR 4/3), somewhat clayey, slight plastic to soft, trace fine
				to coarse gravel as above, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-112

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Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
180	185	5	4.1-43/-11	0-1.5': Silt/Gravel/Sand, brown silt (7.5 YR 4/3), with fine to coarse gravel and
				fine to coarse sand, very poorly sorted mixture, matrix sticky, soft, wet, no odor.
				1.5-3.5': Silt, as above, less gravel sand.
				3.5-5': Sand/Gravel, brown (7.5 YR 4/2), coarse to very coarse sand, fine to very
				coarse gravel subangular to subround, very poorly sorted, very coarse mix,
				loose, wet, no odor.
185	190	5	19-53/-12	Sand/Gravel, as above with less coarse, some fine to medium sand, trace silt, loose,
			-11	wet, no odor.
190	195	5	8.6-412/	0-2.5': Gravel, generally brown (7.5 YR 4/2), fine to very coarse gravel, angular
			-11/-10	to subround, some cobbles to 3" diameter, some coarse sand, trace silt, very
				poorly sorted, very coarse mixture, loose, wet, no odor.
				2.5-4': Sand/Gravel, brown (7.5 YR 4/2), medium to coarse sand, moderately
				sorted with fine to coarse gravel, angular to subround, loose, wet, no odor.
				4-5': Silt/Gravel/Sand, dark brown (7.5 YR 3/3), sandy silt matrix with fine to
				coarse sand, fine to coarse gravel, subangular to subround, very poorly sorted,
				silt slightly sticky, somewhat loose, wet, no odor.
195	200	5	2-21/-6.7/	0-1': Silt/Gravel/Sand, dark brown (7.5 YR 3/3), sandy silt matrix with fine to
			-3.5	coarse sand, fine to very coarse gravel, angular to subround, very heterogeneous,
				silt is clayey, somewhat dense (HP 3.0) but friable, wet, no odor.
				1-2': Sand/Silt/Gravel, dark brown as above, very silty fine to coarse sand with
				fine to very coarse gravel, angular to subround, somewhat loose but sticky, very
				poorly sorted, wet, no odor.
				2-5': Silt/Sand, dark brown (7.5 YR 3/3), clayey silt mixed with fine to very
				coarse sand, very poorly sorted, sticky, soft to loose, some gravel as before, wet,
				no odor.
200	202	2	2.5-511/	Silt/Rock/Gravel, dark gray (7.5 YR 4/1), with fine to coarse gravel and much broken,
			-7/-4.6	angular chips and fragments greenish black weathered bedrock, very dense,
				moist to dry, possibly weathered bedrock at 1.0 and pulverized into silt-like
				material.
202	210	--	--	No recovery, based on drilling section appeared to be silt/gravel, as above.
210	220	9	--	Bedrock, dark greenish gray (Gley 3/1) Michigamme slate, slate with vertical
				foliation, some secondary cementation with white quartz in the foliation planes,
				6-8 feet some red coloration in foliation plane, dense, hard, brittle, fractures
				along vertical foliation planes.

ARCADIS

Sample/Core Log

Boring/Well GMSB-113 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 6

Site

Location Kingsford, Michigan Drilling Started 09/04/03 Drilling Completed 09/05/03

Total Depth Drilled 230 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Land-Surface Elev. 1047.44 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Prepared By Bruce Evans Driller Stacy Helper Chris/Scott

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	0.2-3.5/	0-1': Silt/Gravel fill.
			16-240	1-5': Silt, brown (7.5 YR 5/3), slight clayey, slight plastic, slight firm (HP = 1.5),
				from 1-2 some clay , reddish brown (2.5 YR 5/3), layers/varves broken clay
				fissile looking, plastic, very moist to wet, no odor.
5	10	3	1.2-4.5/	0-1': Silt, as above.
			13-23	1-3': Sand/Gravel/Silt, brown (7.5 YR 5/4), very silty fine to coarse sand with
				fine to coarse gravel, angular to subangular, very poorly sorted, sticky, loose, wet,
				no odor.
10	15	--	--	No recovery.
15	20	5	18-39/	0-5': Clay/Silt, silt pinkish gray (7.5 YR 6/2) and clay reddish brown (5 YR 5/4)
			-8/-6.5	interbedded throughout sample, layers as thick as 5 inch to <0.1 inch (varved),
				clay fissile looking on broken surfaces, plastic, very highly effervescent, silt
				firm (HP 3-3.5), silt not effervescent, wet, no odor.
20	25	5	84-1222/	0-1': Silt/Clay, as above interbedded, wet, no odor.
			-8.5/-7.5	1-2': Sand, brown (7.5 YR 5/3), medium grain, some coarse grain, very silty,
				moderately sorted, loose, wet, no odor.
				2-3': Silt/Sand/Gravel, silty matrix is reddish brown (5 YR 5/3), very hetrogeneous
				mixture, silt, fine to very coarse sand, fine to very coarse gravel, subangular to
				subround, also cobbles to 2" diameter, loose, but very sticky, wet, no odor.
				3-5': Sand/Gravel, reddish brown (7.5 YR 5/3), coarse to very coarse sand with
				fine to very coarse gravel, angular to rounded trace cobbles to 2.5" diameter,
				poorly sorted, very coarse mixture, some silt, loose, wet, no odor.
25	30	5	50-2900/	0-1': Sand, brown (7.5 YR 5/3), medium to very coarse, moderately sorted, some
			-16	fine to coarse gravel subangular to subround, loose, wet, slight odor.
				1-5': Sand, brown (7.5 YR 5/3), medium to coarse grain, well sorted, trace

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-113

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Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				cobbles 1-2.5" diameter, loose, wet, slight odor.
30	35	5	1710-2210/	0-2': Sand, brown (7.5 YR 5/3), coarse grain, well sorted, trace cobbles, loose, wet,
			-16	slight odor.
				3-4.2': Sand, brown (7.5 YR 5/3), medium grain, some coarse grain, well
				sorted, trace fine gravel, trace cobbles to 3" diameter loose, wet, slight odor.
				4.2-5': Silt, reddish brown (5 YR 5/3), sandy with very fine grain sand, somewhat
				loose, wet, odor.
35	40	5	163-2906/	Sand, reddish brown (5 YR 5/4), very fine grain, silty, very well sorted, loose wet,
			-16/-15	odor, very homogeneous.
40	45	5	1096-9401/	0-1': Sand, as above.
			-15	1-5': Silt, reddish brown (5 YR 5/4), somewhat soft (HP = 1.0) to slight loose,
				wet, odor.
45	50	5	360-1495/	0-2': Silt/Clay, silt brown (7.5 YR 5/3), clay, red (2.5 YR 5/6), interbedded layers
			-15	<0.1 inch to 2 inch thick. Silt somewhat firm, clay plastic and fissile looking on
				broken surface, some varving, wet, no odor.
				2-5': Silt, reddish brown (5 YR 5/4), somewhat clayey in matrix, no interbedded
				clay, slight plastic, wet, no odor, clay, very effervescent with HCL.
50	55	5	651-4314/	0-2': Silt, as above, less clayey, 2" clay layer at 0.3.
			-15	2-3': Silt, reddish brown (5 YR 5/4), very sandy with very fine grain sand,
				somewhat loose, wet, no odor.
				3-5': silt, as above, less sand, soft (HP = 0.5).
55	60	5	908-5527/	Silt, as above, trace very fine sand, wet, slight odor.
			-14	
60	65	5	1553-	0-3': Silt, as above.
			10900/-14	3-5': Silt, reddish brown (5 YR 5/3), micro varved with clay, slight plastic, soft,
				wet, very slight odor.
65	70	5	2862-6397/	0-4': Silt, reddish brown (5 YR 5/4), no clay soft, not plastic, wet, slight odor.
			-14/-13	4-4.5': Sand, reddish brown (5 YR 5/3), very fine grain, well sorted, silty, loose
				wet, odor.
70	75	5	1141-8900/	0-1': Silt/Clay, as above.
			-14/-13	1-5': Silt, reddish brown (5 YR 5/4), no clay, soft (HP = 0.5), somewhat loose, very
				homogeneous vescules on broken surfaces, wet, strong odor.
75	80	5	1136-4152/	0-4': Silt, as above many vescules, wet, no trace clay, strong odor.
			-14/-12	4-5': Silt, as above, clayey, very slight plastic, wet, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-113

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
80	85	5	1942-	0-2': Silt, as above.
			4455/-12	2-3': Silt/Clay, varved.
			/-11	3-5': Silt, as above, less clay, trace varving, wet, strong odor.
85	90	5	3346-	0-1': Silt, reddish brown (5 YR 5/4), trace fine thin black staining, no clay, soft
			6987/-12	to slight loose, wet, strong odor.
				1-2': Silt/Clay, varved.
				2-5': Silt, reddish brown (5 YR 5/4), soft, clayey matrix, slight plastic wet, strong
				odor.
90	95	5	1496-5800/	Silt, as above slight clayey, many vescules.
			-12/-11	
95	100	5	1922-	Silt, as above many vesicules, wet, very strong odor possible some clay varves.
			11200/-12	
			-11	
100	105	5	670-5900/	Silt, as above.
			-12	
105	110	5	2910-8500/	0-3': Silt, as above, wet, strong odor.
			-11/-9	3-4': Silt, reddish brown (5 YR 5/4), soft, clayey matrix somewhat plastic with
				several layers clay reddish brown (2.5 YR 5/4) up to 1" thick, clay fissile looking on
				broken surfaces, plastic, clay very effervescent with HCL, silt somewhat effervescent.
				4-5': Silt, as above, no clay layers but slight clayey matrix, wet, odor.
110	115	5	1217-	0-3': Silt, as above.
			10500/-11	3-4': Silt/Clay varved/interbedded soft, plastic, wet, odor.
			-10	4-4.5': Silt, no clay.
				4.5-5': Sand, brown (7.5 YR 5/4), very fine grain, well sorted, silty, possible
				thinly interbedded with thin silt layers, loose, wet, strong odor.
115	120	5	2640-	0-4': Sand, brown (7.5 YR 5/3), very fine grain, very silty, somewhat loose, but
			13200/	very sticky, well sorted, wet, odor.
			-12/-10	4-5': Silt, brown (7.5 YR 5/4), soft, clayey, slight plastic, at 4.5-5.7 sand brown,
				very fine grain.
120	125	5	5460-	0-3': Silt, brown (7.5 YR 5/4), very sandy with very fine to medium grain sand in
			19600/-12	silt matrix, soft, sticky, wet, odor.
			/-10	3-4': Sand, brown (7.5 YR 5/3), very fine to fine grain, very silty, moderately
				sorted, loose but sticky wet, odor.
				4-5': Silt, reddish brown (5 YR 5/3), soft, some clay, slight plastic, many
				vescules, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-113

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
125	130	5	2440-	0-1': Sand, brown (7.5 YR 4/3), very fine grain well sorted, some silt, loose,
			13800/-9.5/	wet, strong odor.
			-8.5	1-2': Silt/Clay, silt brown (7.5 YR 5/3), clay, reddish brown (5 YR 5/4), interbedded,
				soft, some varving, wet, strong odor.
				2-2.5': Sand, brown (7.5 YR 4/3), very fine to fine, some medium grain, poorly
				sorted, very silty, trace fine gravel, somewhat loose, sticky, wet, strong odor.
				2.5-3.5': Silt, brown (7.5 YR 5/3), slight clayey, slight plastic, wet odor.
				3.5-4': Silt/Clay, as above interbedded some fine to coarse gravel.
				4-5': Silt, reddish brown (5 YR 5/3), sandy with fine to coarse sand, also some
				fine to coarse gravel subangular to subround, somewhat loose, wet, strong
				odor.
130	135	5	3080-	0-1': Silt/Sand/Gravel, reddish brown silt as above with fine to medium sand
			30000/	and fine to very coarse gravel in silt matrix, somewhat loose to slightly sticky,
			-10/-8	wet, odor.
				1-5': Sand, brown (7.5 YR 5/4), fine to very fine grain, well sorted, loose, silty,
				wet, strong odor.
135	140	5	3870-6700/	0-2': Silt, brown (7.5 YR 5/4), very sandy with very fine grain sand, somewhat
			-11/-9	loose to sticky, wet, odor.
				2-5': Sand, brown (7.5 YR 5/4), very fine grain, well sorted, very silty, loose to
				slightly sticky, wet, odor.
140	145	5	18900-	Silt/Gravel/Sand, reddish brown (5 YR 5/3), very heterogeneous, poorly sorted
			36500/	mixture of fine to coarse sand, fine to coarse gravel, angular to subround in
			-9/-7.6	silt matrix, somewhat firm (HP 1.5-2.0) to somewhat friable, wet, odor.
				2-3.5': Gravel/Sand, dark brown (7.5 YR 3/4), very silty, sticky, fine to very
				coarse gravel, angular to subround, and fine to coarse sand, many cobbles to
				3" diameter, very poorly sorted, loose, wet, odor.
				3.5-4': Sand, dark brown (7.5 YR 3/4), fine to very fine grain with fine to very
				coarse gravel poorly sorted, some silt, loose, wet, odor.
				4-4.5': Silt/Sand/Gravel, as above.
				4.5-5': Sand, dark brown (7.5 YR 3/4), fine gain, very silty, loose but sticky, some
				medium to coarse sand, wet, odor.
145	150	5	8520-	0-1': Silt/Gravel/Sand, reddish brown (2.5 YR 4/4), silt matrix with fine to coarse
			16200/-10	sand, fine to very coarse gravel, angular to subround, soft but densely packed
			/-8.5	gravel in silt matrix, wet, odor.
				1-5': Sand, brown (7. 5 YR 5/3), mostly fine to medium sand, with medium to
				coarse sand, fine to coarse gravel, moderately sorted matrix, some silt, loose

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-113

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				but sticky, gravel mostly black angular bedrock, wet, strong odor.
150	155	5	17500-	0-2': Sand, brown (7.5 YR 5/2), mostly medium grain with fine to coarse grain,
			23300/	silty, moderate to poor sorting, trace fine to coarse gravel angular to subround,
			-8.5/-8	loose, wet, odor at 1-1.2, sand/gravel seam coarse sand and gravel poorly
				sorted.
				2-3': Sand, dark gray (7.5 YR 4/1), coarse to very coarse grain, some fine gravel,
				moderately sorted, loose, wet, odor.
				3-4': Sand, brown (7.5 YR 4/3), fine to very fine grain, well sorted, loose,
				wet, odor.
				4-5': Sand, dark gray (7.5 YR 4/1), fine to very coarse grain, very poorly sorted,
				some silt, some fine to medium gravel subangular to subround, loose, wet,
				odor.
155	160	5	8047-	0-3': Sand, dark brown (7.5 YR 5/3), coarse to very coarse, with fine to medium
			65200/	gravel angular to subround, moderately sorted, loose, wet, odor.
			-14/-13	3-5': Sand, brown (7.5 YR 4/4), medium to very coarse grain, some fine gravel,
				mostly angular black bedrock flakes, moderately sorted, loose, wet, odor.
160	165	5	13100-	0-2': Sand, as above, medium to very coarse.
			>76900/	2-3': Sand, as above, mostly medium to coarse grain.
			-13	3-5': Sand, brown (7.5 YR 5/4), medium grain well sorted with some fine and
				coarse, loose, wet, odor.
165	170	5	3050-	Sand, light brown (7.5 YR 6/4), fine grain, very well sorted, very homogeneous,
			25100/	loose, wet, odor.
			-13/-12	
170	175	5	14500-	0-1': Sand/Gravel, light brown (2.5 YR 6/4), medium sand, silty, with fine
			22600/	gravel, mostly black angular flakes bedrock, loose, wet, odor.
			-12	1-5': Sand, brown (7.5 YR 4/3), fine to coarse grain, poorly sorted, with much
				fine gravel, mostly black flakes, as above, loose, wet, odor.
175	180	5	8577-	Gravel, dark brown (7.5 YR 3/2), fine to very coarse, angular to subround, with
			46500/	many cobbles to 4" diameter, some sand, some silt, loose, wet, odor.
			-15/-13	
180	185	5	16700-	0-4': Sand/Gravel, dark brown (7.5 YR 3/2), fine to coarse sand, fine to coarse
			>76900/	gravel, angular to subround, very silt/clayey, very poorly sorted, trace cobbles,
			-13/-12	loose but sticky, wet, odor.
				4-5': Silt/Gravel, gray (7.5 YR 5/1), clayey silt matrix with fine to very coarse
				gravel and some cobbles, some fine to coarse sand, somewhat firm, silt
				somewhat plastic, wet, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-113

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
185	190	5	692-4420/	0-3': Silt/Gravel, as above, but more firm/dense (HP = 3 >4), wet, slight odor.
			-15	3-5': Gravel, gray (7.5 YR 5/1), fine to very coarse, angular to subround, very
				silty/clayey, some fine to coarse sand, loose, but very sticky, some cobbles to 2.5"
				diameter, no odor.
190	195	5	117-9730/	Silt/Gravel, gray (7.4 YR 5/1), as above, silt matrix with gravel, silt very clayey, plastic,
			-16/-14	many cobbles to 4" diameter, very heterogeneous mix, fairly dense to somewhat
				loose and sticky where gravel content very high, wet, no odor.
195	200	5	23-122/-16	Sand, brown (7.5 YR 5/4), fine grain, well sorted, loose, wet, no odor.
200	205	5	108-337/	Sand, as above, wet, no odor, at 1.2 feet a 1.5" silt/clay seam, varved.
			-16	
205	210	5	21-88/-10	Sand, brown (7.5 YR 5/4), fine to medium grain, well sorted, trace coarse sand,
				trace fine gravel, wet, no odor.
210	215	5	46-204/	0-1': Sand/Gravel, brown (7.5 YR 5/4), fine to coarse sand, fine to coarse gravel,
			-16/-14	subangular to subround, very poorly sorted, many cobbles to 3" diameter,
				loose, wet, no odor.
				1-2': Silt, light brown (7.5 YR 6/3), firm (HP = 3.0), wet, no odor.
				2-5': Clay/Sand/Gravel, light brown (7.5 YR 6/3), silty clay matrix, plastic with fine
				to coarse sand, fine to coarse gravel angular to subround, some cobbles to 2"
				diameter, fairly dense/firm (HP = 3.5), but friable, wet, no odor.
215	220	5	118-823/	0-4': Silt/Gravel/Sand (Till), dark gray (10 YR 4/1), silt matrix, with fine to very
			-13/-12	coarse gravel, mostly angular, some subangular, and much cobbles of dark
				gray to black bedrock, often fractured, diameter >4", fine to coarse sand, very
				dense hard (HP >4) but somewhat brittle, friable where sandy, wet, no odor.
				4-5': Bedrock, bluish gray (Gley 6/1), drilling fractured pieces slate, vertical
				foliation, broken along foliation planes, very hard, brittle, much secondary
				pyrite along foliation planes, wet, no odor.
220	230	7	--	Bedrock, fractured pieces slate as above, fracturing due to drilling breaking
				the bedrock into pieces along foliation planes.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-114 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/19/98 Drilling Completed 8/19/98

Total Depth Drilled 82 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1093.56 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	9"/	1,1,1,1	0-6.0": Top Soil. Grayish brown (10 YR 5/2) dry, loose, crumbly, sandy silt with
		≤10		abundant rootlets.
				6.0-9.0": Sand. Reddish yellow (7.5 YR 6/2) silty, dry, loose, trace coarse sand,
				no HCl reaction.
2	4	22"/	1,1,1,1	0-6.0": Sand. Yellow (10 YR 8/6) dry, loose, well sorted, no HCl reaction.
		≤1.0		6.0-12": Sand. Reddish yellow (7.5 YR 6/8), silty, fine to medium, slightly
				moist, no HCl reaction.
				12-18": Sand. Reddish yellow (7.5 YR 7/8) fine to medium, slightly moist,
				some to much coarse sand, loose.
				18-22": Sand. Very pale brown (10 YR 7/4) fine, trace silt, loose to slightly
				cohesive, slightly moist, well sorted.
4	6	9"/	3,2,7,5	0-2.0": Sand. As above, fine, moist.
		≤10		2.0-4.5": Sand. Reddish yellow (7.5 YR 6/8) fine, trace silt, trace medium and
				coarse sand, moist. No HCl reaction, slightly cohesive.
				4.5-9.0": Sand. Very pale brown (10 YR 7/4) fine to medium. Moist, slightly
				dense, becoming coarser toward base, silt and sand lense 7½ to 8½ inch.
6	8	16"/	6,2,4,4	0-5.0": Sand. Brownish yellow (10 YR 6/6) fine to medium, trace coarse sand,
		1.5		trace silt, moist, loose to slightly dense, no HCl reaction.
				5.0-16": Sand. R+E61eddish yellow (7.5 YR 6/8), medium to coarse, with some gravel,
				slightly dense. Moist, trace to some sand, some granular gravel, trace pebble
				gravel (up to > spoon diameter) subangular to well rounded, variable composition.
8	10	14"/	3,2,4,6	0-6.0": Sand. As above, with some gravel, slightly moist.
		1.75		6.0-16": Sand. Very pale brown (10 YR 7/4) fine to medium, slightly moist,
				loose well sorted, no HCl reaction, slightly coarse toward base.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-114

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
10	12	16"/	5,3,5,6	0-16": Sand. Very pale brown (10 YR 7/4) fine, slightly moist, loose, thinly
		1.25		laminated in top 4 inch. Some medium sand.
12	14	14"/	5,5,8,11	0-14": Sand. As above, fine, slightly moist.
		2		
14	16	19"/	10,6,10,11	0-19": Sand. As above, fine, slightly moist.
		1.5		
16	18	21"/	12,6,6,7	0-8.0": Sand. As above, fine, slightly moist.
		≤1		8.0-21": Sand. Very pale brown (10 YR 7/4) medium to coarse trace to some
				very coarse sand, trace subrounded variable composition gravel, dry to slightly
				moist, loose, no HCl reaction.
18	20	13"/	4,4,6,7	0-13": Sand. As above, medium to coarse, ¼ inch lense of well rounded
		2		granular gravel at 6 inch, dry, slightly moist, loose.
20	22	18"/	12,6,6,6	0-18": Sand. As above, medium to coarse, with ¼ inch thick gravel lenses
		1.25		every 1 inch in lowest 6 inches.
22	24	15"/	11,8,5,6	0-6.0": Sand. As above, medium to coarse, dry to slightly moist, loose.
		2		6.0-15": Sand and Gravel. Very pale brown (10 YR 8/2) fine to very coarse
				sand with granular gravel, trace pebble gravel (subangular to subrounded),
				variable composition. Dry and loose.
24	26	15"/	11,3,7,9	0-11": Sand and Gravel. As above, saturated with pebble gravel in lowest 1 inch.
		2.25		11-15": Sand. Reddish brown (5 YR 5/4), very fine, no HCl reaction, trace to
				some silt, HP = 1.7, very moist to saturated.
26	28	18"/	5,6,7,11	0-18": Sand. As above, very fine, saturated.
		1.75		
28	30	17"/	5,6,5,9	0-8.0": Sand. As above, very fine, silty, with some to much silt, saturated.
		1.5		8.0-17": Sand. Brown (7.5 YR 5/4) very fine, silty to sandy silt, HP = 1.0,
				saturated, grading to silt at base.
30	32	19"/	3,5,7,6	0-19": Silt. As above, sandy to very fine silty sand, saturated.
		≤1.0		
32	34	13"/	5,7,10,12	0-8.5": Sand. As above, very fine, silty, saturated, silt lense 5 to 6 inches.
		≤2.75		8.5-13": Sand. Very fine, brown (7.5 YR 5/4) saturated, trace to some silt,
				some fine sand, no HCl reaction. Flowing "sands" reported by driller.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-114

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
34	36	15"/	3,5,7,8	0-15": Sand. Brown (7.5 YR 5/5), very fine, silty, saturated, slight HCl reaction,
		1.75		HP = 0.5 to 1.0.
36	38	13"/	3,2,4,6	Sand. As above, very fine, silty, saturated.
		2.2.5		
38	40	13"/	3,2,7,9	Sand. As above, very fine, saturated. Possible blow-in.
		2.5		
40	42	13"/	2,2,4,6	0-11.0": Sand. Brown (7.5 YR 5/4) very fine with trace to some silt. Saturated,
		1.5		very well sorted.
				11.0-13.0": Sand. As above, very fine, silty, but silt more abundant.
42	44	17"/	5,9,12,12	0-5.0": Sand. Light brown (7.5 YR 6/4) fine, well sorted, loose, saturated.
		3		5.0-17.0": Sand. Brown (7.5 YR 5/4) very fine, some to much silt, saturated,
				very well sorted.
44	48	15"/	7,8,11,10	0-13.0": Sand. As above, very fine, saturated.
		2.5		
46	48	11"/	3,6,6,5	0-9.0": Sand. As above, very fine, saturated.
		1.5		9.0-11.0": Silt. Reddish brown (5 YR 5/3) HP = 2.0, slight HCl reaction,
				saturated.
48	50	8"/	6,3,6,6	0-8.0": Silt. As above, moist ¼ inch clay lense at 2 inch. Silt contains some very
		≤20		fine sand in lowest 2 inch.
50	52	12"/	3,2,5,2	0-5.5": Silt. As above, sandy.
		≤1.25		5.5-12": Silt. Reddish brown (5 YR 5/4) HP = 2.0, moderate HCl reaction,
				moist, 1/8 inch clay lense at 7 inch.
52	54	20"/	3,4,7,6	0-20": Silt. As above, HP = 2.5 to 3.0, clay lenses at 7½ to 8½ and ¼ inch
		≤1.5		9 inch, lowest 10 inch silt reddish brown (2.5 YR 5/4) slight to moderate HCl
				reaction.
54	56	19"/	3,3,5,7	0-19": Silt. As above, moist.
		≤1.5		
56	58	21"/	6,6,610	0-10": Silt. Reddish brown (5 YR 5/4) sandy, HP = 1.6 to 2.0. Very moist, some
		≤1.5		to much very fine sand, weak HCl reaction.
				10-21": Silt. Brown (7.5 YR 5/3) HP = 2.0 to 2.5 moist, weak to moderate

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-114

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				HCl reaction. Clay 11 to11.5 inch and 17 to 18 inch. Clay red (2.5 YR 4/6) HP = 4.0.
				Slightly plastic.
58	60	18.5"/	4,7,7,9	0-18.5": Silt. Sandy, as in 0 to 10 inch above sample. HP = 2.0 to 4.0, slight
		2.25		HCl reaction. Lense of fine sand, well sorted at 3 to 4 inch. Saturated.
60	62	15"/	6,6,7,11	0-3.0": Silt. Brown (7.5 YR 5/4) HP = 1.5 to 2.0. Moist, slightly clayey, slight HCl
		2		reaction, (slough?)
				3.0-15": Silt. As above, sandy, saturated to very moist, HP = 2.5 to 3.5. Slight HCl
				reaction.
62	64	17"/	5,5,9,15	0-4.0": Silt. Brown (7.5 YR 5/4) slightly moist. 1/8 inch clay lenses at 0 and ½
		2.25		inch. HP = 2.5 to 3.0.
				4.0-10": Silt. As above, sandy, saturated.
				10-14": Silt. As 0 to 4 inch, HP = 3.0, slightly moist.
				14-17": Sand. Reddish brown (5 YR 5/4) fine to very fine, with silt, loose
				saturated, moderate HCl reaction.
64	66	9.5"/	6,6,9,13	0-9.5": Sand. Reddish brown (5 YR 5/6) fine to very fine, loose to slightly dense,
		≤2.5		saturated, trace silt, very well sorted, slight HCl reaction.
66	68	7.5"/	12,12,15,16	0-7.5": Sand. As above, fine to very fine, saturated, trace to some silt, weak
		3		reaction with HCl.
68	70	10"/	9,12,12,12	0-10": Sand. As above, fine to very fine, saturated, trace silt.
		3.5		
70	72	9.5"/	8,9,10,14	0-9.5": Sand. Reddish brown (5 YR 5/4) very fine, silty, saturated, nonplastic
		4		weak HCl reaction.
72	74	9"/	9,10,12,14	0-9.0": Sand. Brown (7.5 YR 4/4) very fine, silty to sandy silt. HP = 1.5 to 2.0, slight
		4		to moderate HCl reaction, saturated.
74	76	16"/	7,8,4,6	0-16": Silt. Brown (7.5 YR 5/3). HP = 3.0 to 4.0, some to much very fine sand
		<4.2		in lenses of sandy silt, moderate HCl reaction. Moist to saturated.
				Driller reports difficulty in turning augers. Will drill blind to 80 feet.
76	80	--	--	Blind drill.
80	82	14"/	5,5,7,10	0-11": Silt. As above, very moist to saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-114

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		≤3.5		11-14": Silt. Reddish brown (5 YR 5/4) sandy HP = 2.5 to 3.0. Moist to
				saturated, moderate HCl reaction.
				End of hole 82 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-115 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/20/98 Drilling Completed 8/20/98

Total Depth Drilled 62 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1088.73 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	18"/	2,2,2,2	0-6.0": Black Top and Gravel. Substrate.
		3.5		6.0-12": Sand. Yellow (10 YR 7/8) medium, dry, loose, well sorted.
				12-18": Sand. Strong brown (7.5 YR 5/6) medium, with trace silt, slightly
				moist, loose.
2	4	17"/	2,2,2,2	0-10": Sand. Yellow (10 YR 7/8) medium to coarse, slightly moist, loose,
		≤2.5		trace grain gravel.
				10-14": Sand. Yellow (10 YR 7/6) coarse, dry, loose, some granular gravel
				and very coarse sand.
				14-17": Sand. Medium to coarse, as 0 to 10 inch, slightly moist.
4	6	15"/	1,2,2,2	0-8.0": Sand. As above, medium to coarse, dry to slightly moist.
		1.5		8.0-15": Sand. Very pale brown (10 YR 7/4), fine, dry, loose, very well sorted,
				no HCl reaction.
6	8	12"/	1,2,5,6	0-4.0": Sand. As above, medium to coarse.
		1.5		4.0-12": Sand. Light yellowish brown (10 YR 6/4), medium to coarse, with some
				gravel, dry, loose, some fine sand, gravel subangular to subrounded,
				variable composition.
8	10	10"/	11,9,7,8	0-2.0": Gravel. Shattered, (greater than spoon diameter.)
		1.75		2.0-4.0": Sand. Brownish yellow (10 YR 6/6) medium to coarse, some
				subrounded to rounded granular gravel, dry, loose.
				4.0-10": Sand and Gravel. Matrix sand as 2 to 4 inch interval. Clasts up to
				greater than spoon diameter, with much very coarse sand.
10	12	11"/	5,3,4,5	0-2.0": Sand. Light brown (7.5 YR 6/4) very fine, dry, nonplastic, slightly loose,
		1		very well sorted, no HCl reaction, some to much silt.
				2.0-4.0": Silt. brown (7.5 YR 5/3) slightly moist, crumbly, HP = 1.5, no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-115

Page 2 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				4.0-11": Sand. Very fine, as 0 to 2 inches.
12	14	4"/	3,5,4,4	0-11": Sand. As above, very fine, thinly laminated with silt as above, slightly
		1		moist.
14	16	14"/	6,4,7,7	0-2.0": Sand. As above, very fine, with much silt, dry.
		2		2.0-6.0": Clay. Brown (7.5 YR 5/2) silty, HP = 3.0, slightly moist, moderate HCl
				reaction.
				6.0-10": Sand. Very fine, as 0 to 2 inch.
				10-14": Silt. Brown (7.5 YR 5/4) sandy, abundant very fine sand, moderate
				HCl reaction, slightly moist, crumbly, HP = 4.0, very thinly laminated.
16	18	16"/	4,2,2,7	0-8.0": Silt. Brown (7.5 YR 4/4) HP = 3.0 to 3.5 slightly HCl reaction, slightly
		1.25		moist.
				8.0-16": Sand. Light reddish brown (5 YR 6/4) very fine, trace silt, moderate
				HCl reaction, very well sorted, thinly laminated.
18	20	8"	1,5,5,7	0-8.0": Sand. As above, very fine, dry.
20	22	17.5"/	3,4,6,8	0-17.5": Sand. As above, very fine, dry.
		2		
22	24	20"/	6,8,8,8	0-16": Sand. As above, very fine, dry.
		1		16-20": Sand and Gravel. Red (2.5 YR 5/6) very fine to very coarse sand with
				some subangular to subrounded gravel, dry, loose, matrix predominately fine
				sand. Moderate HCl reaction, gravel subangular to subrounded, variable composition.
24	26	18"/	7,8,8,10	0-6.0": Sand. Yellowish red (5 YR 5/6) very fine, slightly moist, very well sorted,
		≤1.0		no HCl reaction, (slough?)
				6.0-15": Sand. Pale brown (10 YR 6/3) very coarse, granular gravel, trace
				to some pebble gravel, gravel variable composition to subangular, well rounded,
				dry, loose.
				15-18": Sand. Pink (7.5 YR 7/4) fine, dry, loose, very well sorted, no HCl
				reaction.
26	28	13"/	10,11,14,18	0-13": Sand. Very coarse, granular gravel as in overlying sample, dry.
		≤1.0		
28	30	11"/	7,11,14,16	0-11": Sand. As above, very coarse, gravel, dry, slightly dense, some fine
		2		pebble gravel, well rounded.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-115

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
30	32	12"/	5,9,10,10	0-12": Sand and Gravel. As above, very coarse, with trace pebble gravel.
		3		
32	34	16"/	8,10,14,15	0-16": Sand. Very pale brown (10 YR 7/4), medium, with some to much very coarse
		10		sand and granular gravel, dry, loose, variable composition, subangular
				to well rounded, some fine sand.
34	36	16" /	8,10,10,10	0-11": Sand. As above, medium dry, loose.
		3		11-16": Sand and Gravel. Light grey (10 YR 7/2) dry, loose, very coarse to
				medium sand matrix. Gravel subrounded to well rounded, variable composition,
				granular.
36	38	12"/	8,8,11,13	0-12": Sand and Gravel. As above, dry, slightly moist, slightly dense, some
		n/a		subangular to subrounded, variable composition. Pebble gravel, no HCl
				reaction.
38	40	12"/	8,7,11,9	0-12": Sand and Gravel. As above, very moist to saturated.
		4.5		
40	42	15"/	9,11,14,16	0-4.5": Sand. Lightly yellowish brown (10 YR 6/4) medium, some fine sand, some
		n/a		to much coarse sand, loose, wet, no HCl reaction, trace to some granular gravel.
				4.5-7.0": Sand and Gravel. As in overlying sample, saturated, subangular to
				subrounded, pebble and granular gravel, very variable composition.
				7.0-15": Sand. Light yellowish brown (10 YR 6/4) medium, loose, saturated,
				some fine and very fine sand.
42	44	19"/	6,5,7,10	0-19": Sand. As above, medium, with some coarse sand and granular gravel,
		2		trace pebble gravel, saturated.
44	46	15"/	6,9,8,11	0-15": Sand. Pale brown (10 YR 6/5) coarse, trace medium, some to much
		3		very coarse sand, loose, saturated.
46	48	17"/	9,13,20,24	0-11": Sand. As above, coarse, saturated.
		3		11-17": Sand. Reddish brown (5 YR 5/4) very fine, saturated, trace silt,
				slight HCl reaction, HP = 1.5
48	50	6.5"/	4,6,9,11	0-6.5": Sand. As above, very fine, saturated, some fine sand, slight HCl reaction.
		2		
50	52	18"/	13,16,19,20	0-18": Sand. As above, very fine, saturated, slight to moderate HCl
		2.25		reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-115

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
52	54	13"/	6,5,7,10	0-13": Sand. As above, very fine, saturated, slight HCl reaction.
		2.25		
54	56	21"/	6,12,10,11	0-21": Sand. As above, very fine, saturated, slight HCl reaction, some blow-in
		≤2.5		reported. Stop drilling.
56	60	--	--	Blind drill.
60	62	10"/	1,7,13,18	0-10": Sand. As above, very fine, saturated. Drillers believe augers may get
		3		stuck if drill deeper.
				Abandon hole at 62 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-116 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/11/03 Drilling Completed 8/13/03

Total Depth Drilled 244 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 4" x 10'

Land-Surface Elev. 1054.81 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Stacy Helper Steve/Dan

Prepared By Pat Bartnik/Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1/-4	0-0.5': Topsoil (7.5 YR 3.5/2 very dark brown), silty, very fine sand, dry, loose
				rootlets.
				0.5-3': Silt/Gravel, brown (7.5 YR 3/4), poorly sorted mix of sand/silt, fine to
				coarse sand, fine to coarse gravel (subangular to subround), loose, dry.
				3-4': Sand, pink (7.5 YR 7/3), fine grain, well sorted, loose.
				4-5': Sand/Gravel, brown (7.5 YR 5/4), fine to coarse sand, medium to very
				coarse gravel subangular to subrounded, very poorly sorted, mostly coarse
				gravel, loose, moist.
5	10	5	1-3/.310-5	0-3': Sand/Gravel, as above, but dark brown (7.5 YR 3/4).
				3-4': Sand, light brown (7.5 YR 6/4), fine grain, well sorted, loose dry.
				4-5': Sand/Gravel, strong brown (7.5 YR 4/6), fine to very coarse sand, fine to
				very coarse gravel, very poorly sorted, grain subangular to subrounded, some
				silt, loose, moist.
10	15	5	0-3/-7/-5	0-1': Sand/Gravel, as above.
				1-5': Silt: Strong brown (7.5 YR 4/6), firm, very slight plastic, some clay in matrix,
				some clay varves 1-2' and 3-4', clay reddish brown (2.5 YR 5/4), less than
				1 cm 1-2 inches apparent, plastic, effervescent To HCl, wet.
15	20	5	2.3-11.5/	0-5': Silt: Brown (7.5 YR 4/3) with clay lenses reddish brown (5 YR 4/3), silt firm,
			-6- -9	somewhat plastic, clay more prevalent than above, thicker lenses, 0.2-2 inch,
				HP 2.0 in silt/ 2.75 clay, clay somewhat effervescent, wet.
20	25	5	300-4000/	0-3.5': Silt, as above.
			-6/-9	3.5-5': Sand, brown (7.5 YR 4/3), very fine, well sorted, some silt in matrix and
				some thin silt lenses (<0.1 inch), slightly firm to loose, wet.
25	30	5	12-16000/	0-5': Sand, brown (7.5 YR 5/3), medium grain, well sorted, trace fine, loose, wet.
			-8/-10	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-116

Page 2 of 5

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
30	35	1	8000/-8	0-0.2': Sand, as above.
				0.2-0.5': Sand/gravel, brown (7.5 YR 4/4), coarse to very coarse sand with medium
				to very coarse gravel to 60 mm, larger gravel subrounded, sand moderately sorted
				with gravel inclusions, loose, wet.
				0.5-1': Sand, brown (7.5 YR 4/4), coarse to very coarse, well sorted, loose, with
				fine to medium gravel, subangular to subrounded, wet.
35	40	5	4000-	0-1.5': Sand, dark brown (7.5 YR 3/2) light brown (7.5 YR 6/3), coarse to very
			12000	coarse grain, some very coarse gravel subangular to 60 mm diameter, moderately
			-61-1.5	sorted, loose.
				1.5-2.5': Gravel, dark brown (7.5 YR 3/2), fine to medium grain, subangular to
				subrounded, well sorted, loose, wet.
				2.5-4.5': Sand, light brown (7.5 YR 6/3), coarse to very coarse grain, some fine
				to coarse gravel mostly subangular, well sorted, loose, wet.
				4.5-5': Sand, light brown (7.5 YR 6/3), coarse grain some moderate grain,
				some fine to coarse gravel, well sorted, loose, wet.
40	45	5	2700-	0-0.5': Sand, as above coarse.
			24000/	0.5-5.0': Sand, reddish brown (5 YR 5/4), very fine grain, well sorted, some silt,
			-11 -3	loose, wet.
45	50	5	132-5800/	0-4': Silt/Sand, reddish brown (5 YR 5/9), silt, very sandy with very fine grain sand,
			-2/-1.5	slight firm, trace clay, wet.
				4-5': Sand/silt, reddish brown (5 YR 5/4), very fine silty sand, loose, well sorted,
				wet.
50	55	5	9800-	Silt: Reddish brown (5 YR 5/4), very sandy with very fine grain sand - some
			12700/	alternating layers, very fine silty sand with sandy silt, units 3-8" thick, silt slightly
			1.3-1.8	firm, sand loose, wet.
55	60	5	300-1800/	Silt: Reddish brown (5 YR 4/3), with very fine sand as above, wet, odor.
			0.4/-3	
60	65	5	2050-6500/	0-1': Silt, reddish brown (5 YR 4/3), very clayey, firm to soft, wet.
			-0.3/2.6	1-5': Silt, reddish brown (5 YR 4/3), very sandy with very fine grain sand, slightly
				firm, loose, wet, odor.
65	70	5	122-10050/	Silt: Reddish brown (5 YR 4/3), very sandy with very fine grain sand, slightly
			03/+1.1	firm, extremely homogenous, odor, wet.
70	75	5	9600-	Silt: As above very sandy.
			27900/	
			+0.1/+2.4	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-116

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
75	80	5	No values/	Silt: Reddish brown (5 YR 5/4), as above, odor.
			-2.4/6	
80	85	5	15000-	Sand: Reddish brown (5 YR 5/3), fine grain, well sorted, loose, odor.
			35000/	
			8.1-14.41	
85	90	5	1500-	0-1': Sand, gray (5 YR 5/1), fine to very fine grain, well sorted, wet, odor.
			17000/	1-5': Sand, reddish brown (5 YR 5/4), very fine grain, some fine grain, well
			2.2-6.5	sorted, very homogenous, very slightly firm to loose, wet, odor.
90	95	5	13000-	Silt: Reddish brown (5 YR 5/4), some very fine sand, firm, wet, odor.
			21600/	
			2.0-4.2	
95	100	5	91-1500/	Silt: Reddish brown (5 YR 4/4), very clayey, slight to moderate plastic, extremely
			-51-6	homogeneous, firm, wet, no odor.
100	105	5	57-411/	Silt: As above, very clayey, no odor.
			-41-6	
105	110	5	69-137/	0-2': Silt, as above, clayey.
			8.5-9.8	2-5': Silt, reddish brown (5 YR 4/4), very clayey as above with layers clay
				yellowish red (5 YR 4/6) and varves, 0.1 inch to 2" thick, clay plastic, dense,
				silt, slight firm, wet, no odor.
110	115	4	57-615/	0-0.5': Sand, reddish brown (5 YR 5/4), fine to very fine grain, well sorted, loose,
			8.8-9.6	wet, no odor.
				0.5-4': Silt, reddish brown (5 YR 4/4) with clay varves - as above, no odor.
115	120	5	480-5900/	Sand: Brown (7.5 YR 4/3), medium grain, well sorted with much fine grain, loose,
			9-12	wet, odor.
120	125	5	490-5100/	0-3.5': Sand, as above, medium to fine grain.
			9-11	3.5-4.5': Sand, brown (7.5 YR 4/3), very fine grain, silty, well sorted, wet, loose,
				slight odor.
				4.5-5': Silt, brown (7.5 YR 4/3), firm to very clayey, slight plastic, wet, no odor.
125	130	5	92-190/	Sand: Reddish brown (5 YR 5/3), medium grain, some fine grain, well sorted,
			-81-3	loose, wet, slight odor.
130	135	5	118-441/	Sand: Reddish brown (5 YR 5/3), fine to medium grain, well sorted, trace silt,
			8-/-6	very homogeneous, loose, wet, no odor.
135	140	5	4-9/	0-2.5': Sand, reddish brown (5 YR 4/3) very fine to medium grain, some silt and
			-91/-8	trace clay in 2 inch varved layers, poorly sorted.
				2.5-5': Silt, reddish brown, firm, some very fine sand, wet, no odor,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-116

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
140	145	5	3-13/	0-1': Sand, light reddish brown (5 YR 6/3), fine grain, well sorted, some silt,
			-91-8	some medium, loose, wet, no odor.
				1-1.7': Silt, light reddish brown (5 YR 6/3), very clayey, firm to slight plastic.
				1.7-3.5': Sand/silt, light reddish brown (5 YR 6/3), fine sand intermixed with silt,
				trace medium sand, trace thin clay seams, yellowish red (5 YR 4/6) plastic, very
				poorly sorted, very inhomogeneous, slightly firm, wet, no odor.
				3.5-4': Silt, light reddish brown (5 YR 6/3), firm, wet, no odor.
				4-5': Sand, light reddish brown (5 YR 6/3), very fine grain, silty, well sorted,
				slight firm to loose, wet, no odor.
150	155	4	0.3-1/-7	0-4': Sand, reddish brown (5 YR 5/3), very fine grain, some fine, silty, trace clay,
				slightly firm, somewhat loose, wet, no odor.
155	160	5	0.4-1.5/	0-3': Sand, reddish brown (5 YR 5/3), very fine grain, silty, with some fine grain
			-10/-8	increasing finer grain with depth, several 1-2" thick layers silt, moderately
				sorted, somewhat loose, wet, no odor.
				3-5': Sand, reddish brown (5 YR 5/3), fine to medium grain, well sorted, some silt
				and very fine sand, loose, wet, no odor.
160	165	3	1.0-2.6/	Sand: Reddish brown (5 YR 5/3), fine to very fine grain, silty, moderately sorted,
			-8/8.5	slightly firm to loose, silt layer 2.3-2.5 feet wet, no odor.
165	170	5	0.1-4/	Sandy Silt: Reddish brown (5 YR 4/3), very fine grain, very silty sand with
			-12/-11	interbedded silt layers, occasional reddish brown clay layers (< 1 inch), clay plastic,
				somewhat firm (HP = 1 to 1.5), wet, no odor.
170	175	5	0.4-1.8/	0-4.2': Sand/silt, as above very fine silty sand interbedded with silt and some
			-12	clay, mostly nonhomogeneous, somewhat firm, wet, no odor.
				4.2-5': Silt/clay, silt brown (7.5 YR 4/3), clay red (2.5 YR 4/6), silt or clay
				interbedded and varved, somewhat firm, clay plastic and somewhat effervescent,
				wet, no odor.
175	180	5	0-1/-12	0-1': Silt, brown (7.5 YR 4/3), very sandy with trace very fine grain sand,
				somewhat firm, wet, no odor.
				1-5': Silt, as above, less sandy.
180	185	5	0.1-2.5/-12	0-3': Silt, brown (7.5 YR 4/3), some very fine sand, somewhat firm, wet, no odor.
				3-5': Silt, brown (7.5 YR 4/3), very clayey, also clay varves, firm, wet, no odor.
185	190	5	0.8-7.3/	0-3': Silt, brown (7.5 YR 4/3), somewhat sandy with very fine grain sand, some
			2.9-4.0	reddish clay varving, 0-0.5 soft (HP = 0.5) to somewhat firm, wet, no odor.
				3-5': Silt/Clay, silt as above with clay red (2.5 YR 4/6), varves and layers to
				0.5" thick, clay plastic, fissile looking on surface breaks, slight effervescent,
				wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-116

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
190	195	5	0.2-2.3/	0-0.5': Silt/clay, as above interbedded.
			2.7-3.2	0.5-1': Sand, brown (7.5 YR 4/3), very fine grain, silty, well sorted, loose, wet,
				no odor.
				1-5': Silt/clay, vared and interbedded as above.
195	200	5	0-0.6/	Silt: Reddish brown (5 YR 4/3), very clayey, soft, plastic, wet, no odor.
			-1.8-2.1	
200	205	5	0.4-2.2/	Silt/Clay: Reddish brown (5 YR 4/3), very clayey, soft, plastic, with some clay varves
			-1.3-1.9	and patches of clay red (2.5 YR 4/6), wet, no odor.
205	210	5	0-4/	0-4': Silt/clay, as above, 1.5" thick clay layer at 0.5.
			0.6-2.3	4-5': Sand, brown (7.5 YR 4/3), fine grain, well sorted, loose, wet, no odor.
210	215	5	0.5-4.5/	0-2': Silt/clay, silt reddish brown (5 YR 4/5), clay reddish brown and red
			-0.6-2.3	(2.5 YR 4/6), interbedded in 0.5 to 2 inch thick layers.
				2-5': Clay, reddish brown (5 YR 4/4), slightly effervescent, firm yet plastic, with
				some silt seams, very dense, wet, no odor.
215	220	5	-1-0.4/	Silt/clay, brown (7.5 YR 4/2), very clayey matrix, soft, plastic, with some red clay
			-8.2-8.6	layers and varved areas, wet, no odor.
220	225	5	-1/-2	Silt/clay: As above, 4.5-5 much clay varving wet, no odor.
			8.3-8.6	
225	230	5	-2/1.7	Silt/Clay: Clayey silt with some clay layers/varves/patches, as above, wet, no odor.
			-7.8/-8.8	
230	237	7	-0.5-0	0-6.7': Silt/clay, as above.
			-8.2-8.6	6.7-7': Silt/Sand/Gravel, brown (7.5 YR 4/2), poorly sorted mixture of silt with
				fine to coarse sand and fine to coarse gravel, mostly angular 2 mm to 25 mm
				gravel (gley 10 G 4/1), mostly Michigamme slate, firm to soft, (till?), wet, no odor.
237	242	5	11-20/	Silt/Sand/Gravel/Cobbles (Till): dark gray (2.5 YR 4/3), very poorly sorted
			-10/-8	mixture, silt/clay matrix with fine to coarse sand, fine to coarse gravel and
				cobbles to 4" diameter, mostly angular or subangular gravel/cobbles,
				very dense, moist to wet, no odor.
242	244	2	11-35/	0-1.8': Till, sandy clayey with gravel/cobbles as above.
			-1.2-3.3	1.8-2': Bedrock, gray phyllitic/slaty Michigamme slate.

ARCADIS

Sample/Core Log

Boring/Well GMSB-117 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 08/14/03 Drilling Completed 8/15/03

Total Depth Drilled 185 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 4" x 10'

Land-Surface Elev. 1043.17 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Stacy Helper Steve/Dan

Prepared By Pat Bartnik/Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	.4-3.3/	Silt/Clay/Organics: Very dark grayish brown (10 YR 3/2), sticky silt/clay mixture
			13-18	with much decaying organic material, rootlets, some medium to coarse gravel,
				subangular 4-5 feet, plastic, sticky, wet, no odor, also yellowish brown
				(10 YR 5/6) from 4-5.
5.0	10	5	.3-.8/	0-2': Sand/Silt, yellowish red (5 YR 4/6), fine to coarse sand with silt and clay,
			11.6-17.2	sticky very poorly sorted, loose, sticky, wet, some fine to coarse gravel.
				2-5': Silt brown (2.5 YR 5/4), clayey, some coarse sand seams, from 3.5-5, clay
				at layers and patches clay, red (2.5 YR 4/8), plastic, fissile looking on broken
				surfaces, silt sticky above 3.5, firm below 3.5 (HP 2.75), wet to moist, no odor.
10	15	5	.1-1.8/	Silt/Clay: Silt brown (7.5 YR 5/3), clay reddish brown (2.5 YR 4/4), interbedded silt/
			14.4-14.8	clay layers and irregular clay patches .1-2" thick layers, mostly clay below 4,
				firm, clay plastic but fissile looking on broken surfaces, clay HP 2.75, dry to
				moist, no odor, clay moderately effervescent.
15	20	5	.3-12.5/	0-2': Silt/Clay, as above, mostly clay.
			11.4-14.9	2-3': Sand/Gravel, light reddish brown (5 YR 6/4), medium to very coarse sand,
				fine to coarse gravel mostly subangular, with silt/clay, very poorly sorted,
				loose, but somewhat sticky with silt, wet, no odor.
				3-5": Sand, brown (5 YR 5/4), medium to coarse grain with some fine to coarse
				gravel and cobbles to 2" subangular, moderately sorted, loose, wet, no odor.
20	25	5	52-4100/	0-4': Sand, brown (5 YR 5/4), medium to coarse grain, well sorted with layers/
			12.1-9.1	patches very coarse grained sand and trace gravel (fine to coarse) and cobbles,
				loose, wet, no odor.
				4-5': Sand, dark yellowish brown (10 YR 4/6), coarse grain, well sorted, trace
				fine to coarse gravel (subangular to subround), loose, wet, no odor.
25	30	5	52-618/	0-1': Sand, as above.
			-1.4/+3.0	1-4': Silt, reddish brown (5 YR 3/4), somewhat firm to loose, no clay, very

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-117

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				homogenous - traces fine to medium gravel, subround at 3 feet, wet, no odor.
30	35	5	550-3106/	Silt: As above, trace coarse sand at 5 feet, wet, no odor.
			-0.8/+2.7	
35	40	5	110-540/	0-4': Silt, reddish brown (5 YR 4/4), clayey, with varves/patches clay red
			-2.1/-5.4	(2.5 YR 4/6), clay plastic, fissile looking on broken surfaces, strongly effervescent,
				wet, no odor.
				4-5': Silt, reddish brown (5 YR 4/4) at slightly clay in matrix, no clay varves,
				slightly sandy at very fine grain sand, slightly firm, wet, no odor.
40	45	5	2500-5500/	0-1': Silt, as above, lesser layer.
			-2.31/-5.6	1-2': Sand, reddish brown (5 YR 4/4), very fine grain well sorted, loose, wet,
				very slight odor.
				2-5': Silt, reddish brown (5 YR 4/4), slightly firm to loose (HP 0.5), very
				homogenous, traces irregular black staining in patchwork pattern, very thin
				(1 mm), wet no odor.
45	50	5	1200-4700/	Silt: Reddish brown (5 YR 4/4), sandy with very fine grain sand, slight firm to
			-4/-6.4	loose, very homogenous, wet, odor.
50	55	5	2600-	0-2.5': Clay/Silt, reddish brown (5 YR 4/4), clay and silt, mm varves and some
			12100/	thicker layers clay to 6" thick, silty clay, highly effervescent, slightly firm, wet,
			-6.4/-7.1	odor.
				2.5-5': Silt, reddish brown (5 YR 5/5), trace clay, soft, wet, odor.
55	60	5	1300-	Silt: Reddish brown (5 YR 5/5), some very fine grain sand, somewhat loose,
			28000/	wet, strong odor.
			-7.4/-9	
60	65	5	513-7900/	0-1': Silt, as above.
			-8.5/-9.1	1-4': Silt/Clay, reddish brown (5 YR 5/5), clayey silt (in matrix) with some micro
				varving with clay (<1 mm), very slightly plastic, some very thin black staining,
				wet, odor.
65	70	5	3900-5600/	Silt: As above, very clayey, wet, strong odor.
			-11-13	
70	75	5	5400-	0-1': Silt, reddish brown (5 YR 5/5), sandy with very fine grain sand, trace clay,
			21000/	wet, odor.
			-12	1-5': Silt, reddish brown (5+E32 YR 5/5) somewhat firm, trace clay, (HP = 0.5), wet,
				odor.
75	80	5	1300-	Silt: As above more clayey, wet, odor.
			13000/	
			-12/-13	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-117

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
80	85	5	3100-	Silt: Reddish brown (5 YR 5/5), clayey in matrix, (HP = 0.5), somewhat firm to
			17000/	somewhat plastic, wet, odor.
			-14/-12	
85	90	5	900-4200/	Silt: As above wet, strong odor.
			-15	
90	95	5	1100-	0-2.5': Silt, as above.
			14700/	2.5-4.5': Silt, reddish brown (5 YR 5/5), very sandy with very fine sand, trace
			-13/-15	fine to coarse gravel, (subangular), somewhat loose, wet, odor.
				4.5-5': Sand, reddish brown (5 YR 4/3), very fine grain, well sorted, some silt,
				some fine to coarse gravel, subangular, loose, wet, strong odor.
95	100	5	6000-	0-1': Sand, as above interbedded with silt.
			10200/	1-5': Silt, brown (7.5 YR 4/3) with patches very fine sand and clay, very
			-13/-14	clayey 1-2, somewhat firm (HP = 1), plastic in some places, wet, odor.
100	105	5	950-	0-1': Silt/Sand, as above, very fine grain sand.
			18700/	1-1.5': Sand, brown (7.5 YR 4/2), fine grain well sorted, loose, wet, odor.
			-11/-17	1.5-3': Silt, reddish brown (5 YR 4/3), some very fine sand, clay (red 2.5 YR 4/6),
				interbedded with silt 2.5-3, wet, odor.
				3-5': Sand, brown (7.5 YR 4/2) fine, some very fine, well sorted, loose, wet,
				odor.
105	110	5	1300-5900/	0-1': Sand/Silt/Gravel, brown (7.5 YR 4/3), very poorly sorted mixture of fine to
			-16	coarse sand and fine to coarse gravel in silt matrix, slightly firm, wet, odor.
				1-4': Sand, brown (7.5 YR 4/3), primarily medium to coarse grain sand with
				much silt and very fine, some fine to coarse gravel, subangular to subround,
				very poorly sorted, loose but sticky in places, wet, odor.
110	115	1	1000/-16	Sand/Gravel: Brown (7.5 YR 4/3), fine to very coarse sand, fine to coarse gravel,
				subangular to subround, very poorly sorted, with much silt in matrix, very
				silty, loose, odor.
115	120	5	5800-	0-3': Sand, brown (7.5 YR 4/3), fine grain, well sorted, trace fine to coarse gravel,
			58000/-11	subangular cobbles to 2" diameter, subangular at 2.5, loose, wet, odor.
				3-5': Sand, brown (7.5 YR 5/3), medium grain, well sorted, loose, wet, odor.
120	125	5	7800-	0-2': Sand, as above, medium grain.
			16500/-10	2-3': Sand, as above with fine grain.
			-11	3-5': Sand, brown (7.5 YR 5/3), fine grain, well sorted, becoming fine to very
				fine grain below 4', loose, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-117

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
125	130	5	4300-	Sand: Brown (7.5 YR 5/3), very fine grain, some fine grain, well sorted, loose,
			17800/-11	wet, slight odor.
			-10	
130	135	5	2400-	0-2': Silt, brown (7.5 YR 5/3), somewhat sandy with very fine grain sand, slight
			10200/	firm, wet, odor.
			-111/-10	2-2.3': Sand, brown (7.5 YR 5/3), mostly medium grain with silt and fine to very
				fine, poorly sorted, loose, wet, odor.
				2.3-5.0': Sand, brown (7.5 YR 5/3), mostly fine grain, with silt and some medium
				grain, trace fine to coarse gravel, subangular and subround, loose, but sticky,
				wet, odor.
135	140	5	2400-	Sand: Brown (7.5 YR 4/3), mostly fine grain with very fine grain, well sorted,
			11300/-11	trace fine black gravel, loose, wet, odor.
			-10	
140	145	5	4900-	0-3': Sand, brown (7.5 YR 4/3), fine to very fine grain, very silty, trace fine
			14600/	gravel, loose but sticky, wet, odor.
			-10/-9	3-3.5': Silt/Sand/Gravel/Clay: Brown (7.5 YR 4/3), very poorly sorted mixture
				fine to coarse sand fine to coarse gravel in silty/clayey matrix, several cobbles to
				1.5" diameter, wet, odor.
				3.5-5': Silt/Gravel, dark brown (7.5 YR 4/3), also very dark brown (7.5 YR 2.5/2),
				fine to coarse gravel, subangular with some subround and trace cobbles to 2"
				in silt matrix, some clay, very poorly sorted mix, firm to wet, odor.
145	150	5	9300-	0-1': Silt/Gravel, as above.
			46200/	1-1.5': Gravel, very dark brown (7.5 YR 2.5/2), fine to very coarse gravel, mostly
			-9/-8	subangular, with some fine to coarse sand and silt, very poorly sorted, loose,
				wet, odor.
				1.5-2': Sand/Gravel/Silt, very poorly sorted mixture, loose but sticky wet, very
				strong odor.
				2-5': Silt/Sand: Brown (7.5 YR 4/3), alternating layers (interbedded) of silt and
				fine to very fine sand, poorly sorted some fine to coarse gravel, sand loose,
				silt somewhat firm, wet, strong odor.
150	155	5	16500-	0-1': Sand, brown (7.5 YR 4/3), fine to very coarse grain, very poorly sorted, silty,
			>76900/	loose, wet, odor.
			-9/-8	1-1.5': Sand/Silt, alternating layers 1-2" thick as above.
				1.5-4': Sand, very dark brown (7.5 YR 2.5/2), mostly medium grain, but also fine
				to very fine grain, moderately sorted, trace fine to coarse gravel, mostly
				subangular some subround, loose, wet, very strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-117

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				4-5': Silt, brown (7.5 YR 4/3), very sandy with very fine to medium sand,
				somewhat loose and sticky, wet, strong odor.
155	160	5	2500-	0-2': Sand, brown (7.5 YR 4/3), fine to very fine grain, well sorted, some silt,
			12500/	loose, wet, odor.
			-9.8/-5.9	2-3': Clay/Silt, yellowish red (5 YR 4/6), clay mixed with silt, plastic, sticky, wet,
				odor.
				3-5': Silt, dark brown (7.5 YR 3/4), very clayey 3-4, very sandy with very fine sand.
				4-5': Clay/Silt, somewhat plastic, sandy silt, somewhat loose, wet, odor.
160	165	5	1200-	0-3': Silt, brown (7.5 YR 4/2), clayey, slight plastic, some fine to medium gravel
			4600/-9.9	mostly subangular, some subround, mostly black slate, somewhat firm
			-8.8	(HP = 1.25), effervescent with HCl acid.
				3-5': Silt/Gravel, black (7.5 YR 2.5/1), clayey silt mixed with fine to coarse
				gravel and cobbles to >4", angular to subangualr, very dense, (HP = 3.0),
				moist, slight odor.
165	170	5	94-400/	0-2': Silt/Gravel/Sand/Clay, black (7.5 YR 2.5/1), silt matrix, very clay in places,
			-17.8/-9.9	with some fine to very coarse sand, and much fine to very coarse gravel and
				cobbles to > 4" diameter, very poorly sorted, very dense, firm, matrix is somewhat
				plastic, wet, no odor.
				2-5': Silt/Gravel, dark brown (7.5 YR 3/3), silt matrix with fine to very coarse
				gravel and cobbles to >4" diameter, mostly angular black gravel,
				Michigamme shale, very dense, firm (HP 3.5) moist, no odor.
170	175	5	45-230/	0-1': Silt/Gravel, as above.
			8.9/32	1-5': Silt/Gravel/Sand (Till), bluish black (Gley 2.5/1) and dark yellowish brown
				(10 YR 4/4) (black 1-2 brown 2-5), extremely dense (HP >4), till mixture of mostly
				silt and gravel with some fine to very coarse sand grains. Silt matrix with fine
				to very coarse gravel, angular, subangular and subround, also cobbles and rock
				pieces of weathered bedrock pulverized by drilling, very hard, brittle, dry,
				no odor.
175	180	5	35-110/	Silt/Gravel Till, as above, crumbled and broken, loose, dry, no odor.
			10-17	
180	185	5	5.4-35/	0-0.5': Silt/Sand/Gravel, yellowish red (5 YR 5/6), dry crumbled silt, fine to
			13-17	coarse sand, fine to coarse gravel to cobbles 3" diameter, mostly angular,
				broken pieces rock oxidized red, dry, no odor.
				0.5-5': Silt/Gravel/Rock, grayish brown (10 YR 5/2), crumbled pieces till,
				silt, gravel, broken rock fragments, gravel fine to very coarse, angular to
				rounded, cobles to 2" diameter, silt (till) pieces very dense, loose, dry, no
				odor.

ARCADIS

Sample/Core Log

Boring/Well GMSB-118 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 08/16/03 Drilling Completed 08/16/03

Total Depth Drilled 145 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 4" x 10'

Land-Surface Elev. 1049.26 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Stacy Helper David

Prepared By Pat Bartnik/Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	24-15/	0-3': Silt/Soil, dark reddish brown (5 YR 3/4), silty topsoil, with rootlets and
			11-21	organic material, loose, dry.
				3-5': Sand/Gravel, dark yellowish brown (10 YR 3/4), fine to coarse sand, fine
				to coarse gravel subangular and subrounded, silty, very poorly sorted, loose,
				dry, no odor, trace cobbles to 3" diameter.
5	10	5	2-10/	0-1': Sand/Gravel, as above.
			1.4-8.4	1-2': Sand, brown (7.5 YR 5/4), medium grain well sorted, with much fine to
				coarse gravel subangular and subround, loose, moist.
				2-3': Sand/Gravel, as above, silty.
				3-5': Silt/Clay, brown (7.5 YR 4/4), silt red (2.5 YR 4/6), clay interbedded and
				varved silt and clay, somewhat firm (HP = 1.0), moderately effervescent, wet,
				no odor.
10	15	5	.5-340/	Silt/Clay: As above, interbedded layers 2-3" and also varved, clay plastic but
			-1/-3	fissile looking on broken surfaces, silt, more clayey in matrix, silt HP = 1.0,
				clay HP = 1.5, wet, no odor.
15	20	5	65-3600/	0-2': Silt/Clay, as above, some gravel and cobbles at 2, wet, no odor.
			-3/0	2-4': Silt, reddish brown (5 YR 4/4), sandy with very fine grain sand grading
				to silty sand, somewhat firm, somewhat loose, wet, slight odor.
				4-5': Sand, brown (7.5 YR 5/3), coarse grain, well sorted, some very coarse,
				loose, wet, slight odor.
20	25	5	3300-	0-1': Sand, as above, coarse.
			15000/	1-2': Sand, brown (7.5 YR 5/3), medium grain, well sorted, loose, wet, slight
			-1/+1	odor.
				2-3': Sand/Gravel, brown (7.5 YR 4/3), very silty, coarse to very coarse sand with
				fine to very coarse gravel, subangular to subround, poorly sorted, loose but
				sticky, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-118

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				3-5': Sand/Gravel, brown (7.5 YR 4/2), fine to very coarse sand, fine to very
				coarse gravel, subangular to subround, trace cobbles to 2" diameter, very
				poorly sorted, loose but slightly sticky, some silt, wet, odor.
25	30	5	1400-7100/	0-1': Gravel/Sand, dark reddish brown (5 YR 4/3), fine to very coarse gravel
			-14/-13	with very coarse sand some cobbles to 2" diameter, poorly sorted gravel
				subangular and subround, loose, wet, odor.
				1-3': Sand, reddish brown (5 YR 7/3), coarse grain, well sorted, loose, wet, odor.
				3-5': Sand, reddish brown (5 YR 4/4), very fine grain, well sorted, some silt,
				loose, wet, odor.
30	35	5	1100-8300/	0-5': Sand, reddish brown (5 YR 4/3), very fine grain, well sorted, some silt, loose
			-14/-11	wet, odor.
35	40	5	1200-	0-2': Silt, reddish brown (5 YR 4/3), sandy with very fine sand, somewhat loose,
			13400/	wet, strong odor.
			-13/-11	2-5': Sand/Silt, reddish brown (5 YR 4/3), very fine grain very silty sand, well sorted,
				somewhat loose, wet, strong odor.
40	45	5	1200-	0-1': Sand/Silt, as above.
			14700/	1-5': Silt, reddish brown (5 YR 4/3), some very fine sand, some clay 1-2, some-
			-13/-6	what loose, very homogenous below 2, wet, very strong odor.
45	50	5	1220-	Silt: Reddish brown (5 YR 4/3), soft (HP 0.5) very homogeneous, wet, strong
			12800/	odor.
			-14/-11	
50	55	3	788-	0-1': Silt, as above.
			48700/	1-2': Silt/Clay, silt brown (7.5 YR 4/3), clay reddish brown (5 YR 4/3), varved
			-17/-6	silt very clayey, clay plastic, effervescent, firm (HP 2.0), wet, very strong odor.
				2-5': Silt, reddish brown (5 YR 4/4), very homogenous, somewhat loose, wet,
				very strong odor.
55	60	5	6500-	0-3': Silt, as above.
			13600/	3-5': Silt, as above but more clayey, somewhat plastic, wet, very strong odor.
			-13/-8	
60	65	5	6000-	0-3': Silt, reddish brown (5 YR 4/4), very homogenous, somewhat loose, wet,
			18000/	very strong odor.
			-13/-6	3-5': Silt, as above but sandy with very fine gain sand, loose, wet, very strong
				odor.
65	70	5	711-6300/	0-1.5': Silt, as above not sandy, vescules.
			-13/-15	1.5-5': Silt/Clay, reddish brown (5 YR 4/3), very clayey silt, some varving
				and also clay in matirx, slight plastic to plastic, soft, somewhat sticky, wet, very

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-118

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				strong odor.
70	75	5	4200-	0-1': Silt/Clay, as above.
			776800/	1-2': Silt, reddish brown (5 YR 4/3), slightly firm, slightly loose, at 1.7 clay red
			-15/-13	(2.5 YR 5/6), fissile looking on broken surface, plastic, extremely effervescent.
				2-3': Silt, reddish brown (7.5 YR 4/3), very sandy with very fine gravel, loose,
				wet, odor.
				3-5': Silt, as above, not as sandy, many vescules in broken surface, somewhat
				loose, wet, very strong odor.
75	80	5	1050-4200/	0-5': Silt, reddish brown (7.5 YR 4/3), somewhat clayey, soft, very
			-14/-15	homogeneous, wet, odor.
80	85	3	2900-4200/	Silt: As above, wet, odor.
			-14/-15	
85	90	5	1500-7900/	Silt: Clayey as above, wet, odor.
			-15	
90	95	5	1500-	0-2': Silt, as above.
			17900/	2-3': Clay/Silt, clay red (2.5 YR 4/6), interbedded with silt as above 0.2-2"
			-15/-11	thick layers, clay fissile looking on broken surfaces, plastic, clay strongly
				effervescent, wet, odor.
				3-5': Silt, reddish brown (7.5 YR 4/3), clayey, soft (HP = 1.0), somewhat plastic,
				interbedded with several thin seams very fine grain sand, brown (7.5 YR 4/3)
				<0.4" thick, wet, odor.
95	100	5	2300-	Silt: As above with vescules, wet, odor.
			7300/-11	
			-4	
100	105	5	4800-	0-0.5': Silt, as above.
			59000/	0.5-1': Sand, reddish brown (5 YR 4/3), very fine grain, silty, well sorted, loose,
			-10/-7	wet, odor.
				1-2': Silt/Clay, silt reddish brown (5 YR 4/3), clay yellowish red (5 YR 4/6), clayey
				silt interbedded at clay, plastic, but fissile looking on broken surfaces, highly
				effervescent, 2" clay seam at 1.0, silt, sticky, soft, wet, odor, vescules in silt.
				2-2.5': Sand, reddish brown (5 YR 4/3), very fine grain, well sorted, some fine
				grain, loose, wet, odor.
				2.5-5': Silt/Clay, as above interbedded.
105	110	5	3600-	0-4.5': Silt/Clay, as above interbedded and varved, wet, odor.
			20200/	4.5-5.0': Sand, brown (7.5 YR 4/3), very fine grain, well sorted, loose, wet,
			-15/0.45	odor, vescules of methane breaking out of sample.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-118

Prepared by Pat Bartnik/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
110	115	5	11400-	0-4': Silt/Clay, as above interbedded and varved.
			28700/	4-5': Silt/Clay/Sand, silt clay as above but also interbedded with seams very
			-10/0.0	fine sand mixture somewhat firm (HP 1.5-2), also crumbly wet, strong odor
				(possible sand fine to very fine grain well sorted at 4-5 and silt/clay 0-3, 3-4).
115	120	5	500-	0-2': Silt/Sand/Clay, as above mostly silt and very fine sand interbedded, some
			12600/	clay layers <0.1", soft to somewhat loose, wet, odor.
			-16/-13	2-3': Silt, brown (7.5 YR 4/3), somewhat firm, wet, odor.
				3-5': Silt/Clay, as above clayey silt interbedded with thin clay lenses soft, silt
				somewhat plastic, clay plastic, wet, odor, note some very fine to fine gravel
				4-5.
120	125	5	25-1200/	Silt/Gravel (till?): Very dark gray (7.5 YR 3/1), fine to very coarse gravel, mostly
			-16/-7	subangular to angular in a dense silt matrix, very dense, firm (HP = >4.0),
				some cobbles to 3" diameter (subangular) mostly black, moist, no odor.
125	130	5	4-42/	Silt/Gravel (till): As above, becoming dark gray (7.5 YR 4/1), much very
			-13/-3	coarse gravel and cobbles to 4" diameter, very dense, firm, some fine to
				very coarse sand in silt matrix also, moist, no odor.
130	132	2	85-150/	0-1.5': Silt/Gravel/Cobble Till, as above.
			+6/+21	1.5-2.0': Weathered bedrock, greenish gray (Gley 5/1), crumbly, clay like
				fraction of pulverized rock, moist to dry, no odor.
				2.0': Bedrock, greenish gray (Gley 5/1), phyllitic shale/slate, vertical bedding and
				foliation, cleaves easily along vertical planes, dull soapy luster on fracture
				surface, some white quartz veining in foliation planes, some secondary
				calcite, trace pyrite, dense, hard, dry, no odor.
132	145	12		Bedrock, as above.

ARCADIS

Sample/Core Log

Boring/Well GMSB-119 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 8/17/03 Drilling Completed 8/17/03

Total Depth Drilled 187 Feet Hole Diameter 8 inches

Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval continued feet

Land-Surface Elev. 1045.19 feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Stacy Helper Jason/Dave

Prepared By Bruce Evans/Pat Bartnik

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	3.0	3-4/-5 - 4	Silt/Soil/Organics: Very dark brown (10 YR 2/2), silt soil mixed with rootlets and
				decaying organic material, loose, dry, no odor.
5	10	--	--	No recovery.
10	15	--	--	No recovery.
15	20	5	0.5-54/	0-4.5' Sand: Brown (7.5 YR 4/4), medium to fine grain, well sorted, trace fine gravel
			-91 - -3	loose, wet, no odor.
				4.5-5.0' Silt: Brown (&.5 YR 4/4),clayey, somewhat loose, clay seam at 4.5, same
				color as silt, wet, no odor.
20	25	5	7-103/	0-2.0' Silt: Brown (7.5 YR 4/4), very sandy with very fine grain sand, soft, somewhat
			-9 - -7	loose, wet, no odor.
				2.0-3.0' Sand: Brown (7.5 YR 4/4), very fine grain, silty, well sorted, loose, wet, no
				odor.
				3.0-3.5' Sand: Strong brown (7.5 YR 4/6), fine to medium grain, poorly sorted, trace
				very fine gravel, loose, wet, no odor, 3.5-4" diameter cobbles black subround.
				3.5-4.0' Silt: brown (7.5 YR 4/4), very clay with some fine to coarse gravel
				subangular to subround, slight plastic, wet, no odor.
				4.0-4.2' Sand/Gravel: Black (7.5 YR 2.5/1), medium to very coarse and, fine to
				coarse gravel, subangular and subround, very poorly sorted, loose, wet, no odor.
				4.2-5.0' Silt: Brown (7.5 YR 4/4), clayey, some fine to very coarse gravel subangular
				to subround, slight plastic, wet, no odor.
25	30	5	34-372/	0-3.0' Silt/Gravel: Strong brown (7.5 YR 4/6), sandy - clayey silt, medium to coarse
			-9 - -6.6	sand, with fine to coarse gravel angular to subround and also cobbles to 3"
				diameter, very clayey silt matrix, somewhat firm to slight plastic, wet, no odor.
				3.0-5.0' Sand/Silt/Gravel: Medium to coarse and, fine to very coarse gravel,
				angular to subround, in very clayey silt matrix, very poorly sorted, sticky, wet,
				no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-119

Prepared by Bruce Evans/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
30	35	5	31-478/	0-5.0' Silt/Sand/Gravel: As above cobble 4" dark gray subrounded sediment
			-9 - -8	rock.
35	40	5	187-1880/	0-0.5' Sand: Brown (7.5 YR 4/3) fine grain with medium and coarse, trace fine
			-9 - -8.5	gravel, poorly sorted, very silt and somewhat clayey, somewhat loose to sticky,
				wet, no odor.
				0.5-1.0' Silt/Sand/Gravel: Brown (7.5 YR 4/3), very poorly sorted mixture, sand fine
				to very coarse, grave mostly fine subangular to subround, firm, no odor.
				1.0-5.0' Sand: Brown (7.5 YR 4/3), coarse grain, well sorted, some very coarse grain,
				trace fine gravel, loose, wet, no odor.
40	45	5	1.73-2380/	0-2.0' Sand: Same as Above, coarse.
			9.1 - 8.6	2.0-3.0' Sand: As above, grading to medium grain.
				3.0-5.0' Sand: Brown (7.5 YR 4/3), medium grain, well sorted, loose, wet, no odor.
45	50	5	370-790/	Sand: Brown (7.5 YR 5/3), fine to medium grain, very well sorted, loose wet, no
			-91 - 5.5	odor.
50	55	5	190-790/	0-2.0' Sand: brown (7.5 YR 5/3), fine to very fine grain, very well sorted, loose, wet
			-9.1- -8	no odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/3), very fine grain, very well sorted, loose wet,
				no odor.
55	60	5	2-56/-2	Sand: Brown (7.5 YR 4/3), very fine grain, very silty, well sorted, loose, wet,
				no odor.
60	65	5	13-83/0-1	0-2.0' Sand: Brown (7.5 YR 4/3), fine grain, well sorted, loose, no odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/3), somewhat loose, wet, slight odor.
65	60	5	2-9/6-3	Silt: Brown (7.5 YR 4/3), somewhat loose, wet, slight odor.
70	75	5	3-16/4.3-1.0	0-1.0' Silt: As above.
				1.0-4.0' Silt: Brown (7.5 YR 4/3) also brown (7.5 YR 4/2), very clayey in thin
				layers, somewhat firm, HP = 1, wet, slight odor.
				4.0-5.0' Silt/Clay: Silt as above, interbedded with thin layers clay reddish brown
				(5 YR 4/4), HP = 1.75, fissle looking on broken surfaces, yet plastic, clay layers
				.1-1" thick, thin seam very fine grain sand, at 4.0, wet, no odor.
75	80	5	10-25/3.5-0	0-3.0' Sand: Reddish brown (5 YR 4/3), very fine grain, very silty, well sorted, some
				what loose, wet, no odor.
				3.0-5.0' Silt: Reddish brown (5 YR 4/3), somewhat soft to loose, wet, no odor.
80	85	5	1-6/-2-1.4	0-3.0' Clay: Reddish brown (5 YR 4/3), very silty, somewhat plastic to plastic,
				wet, no odor.
				3.0-5.0' Sand: Reddish brown (5 YR 4/3) very silty, very fine grain, well sorted,
				somewhat loose, wet, no odor.
85	90	5	0.5-5/	0-3.0' Sand: Reddish brown (5 YR 4/3), very clayey, slightly plastic, wet, no odor.
			-0.6-20.2	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-119 Page 3 of 5

Prepared by Bruce Evans/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.0-4.0' Silt: As above, no clay.
				4.0-5.0' Silt: As above, very clayey, wet, no odor.
90	95	3	0.7-24/	Silt: Reddish brown (5 YR 4/3), very clayey 0-1.5, somewhat soft to firm (HP =
			-.4-2	1.0-2.5), somewhat plastic to plastic, variable amounts of clay in matrix, wet,
				no odor.
95	100	5	2.4-17/	Silt: Brown (7.5 YR 4/3), very clayey, sticky, slight plastic clay layer (1" thick) at 4.0
			-15- -2	yellowish red (5 YR 4/6), possible clay varves throughout, but destroyed by
				sonic vibration, somewhat soft (HP = 2.0), slight plastic, clay slight effervescent,
				wet, very slight odor.
100	105	5	9.6-62/-3	Silt/Clay: Reddish brown silt, (2.5 YR 4/4), clay, interbedded and varved, <1 mm
				to 1 cm, also with some very fine grain sand seams at 1 foot and 3 to 5 feet,
				wet, odor.
105	110	5	5-31/	0-2.0' Sand: Brown (7.5 YR 4/2), very silty, fine to medium sand, with some fine
			-1.9- -2	gravel, mostly black angular also subangular, very poorly sorted, somewhat,
				loose, wet, odor.
				2.0-4.0' Silt/Clay: As a above interbedded also some fine to medium sand and
				fine to medium gravel, slightly plastic, wet, odor.
				4.0-5.0' Sand: Brown (7.5 YR 4/3), fine to medium grain, moderately sorted,
				some silt, trace fine to coarse gravel, mostly subangular, cobble to 1.5" diameter,
				loose, wet, odor.
110	115	5	2-34/	0-1.0' Silt/Gravel/Sand: Brown (7.5 YR 4/3), fine to coarse sand and gravel mixed
			-2.2 - -2.6	in a silt matrix, also some clay in matrix, somewhat firm, wet, odor.
				1.0-1.5' Silt: Brown (7.5 YR 4/2), very dense.
				1.5-5.0' Silt: Brown (7.5 YR 4/3), some clay in matrix, slight plastic to nonplastic,
				clay layer (2-3" thick) at 3.5 and 4.5' firm (HP 3.5), moderate effervescent, wet,
				no odor.
115	120	5	24-3200/	0-1.0 Silt: As above.
			-4.3 - -5.6	1.0-1.5' Sand: Brown (7.5 YR 4/3), fine to medium grain, well sorted, silty, loose
				1.5-5.0' Sand/Gravel: Dark gray (7.5 YR 4/1), fine to very coarse sand, fine to very
				coarse gravel angular to subrounded, cobbles to 2" diameter, very poorly sorted,
				silty matrix, loose, odor.
120	125	--	--	No recovery.
125	130	5	500-8000/	0-1.0' Sand/Gravel: As above.
			-3.5 - -2.1	1.0-3.-0' Silt/Sand/Grave/Clay: Gray (7.5 YR 5/1), fine to coarse sand, fine to
				very coarse gravel, subangular and subround, in a clayey silty matrix, very poorly
				sorted, cobbles to 1.5" diameter, sticky, matrix somewhat plastic, but sandy, wet,

Sample/Core Log (continued)

Boring/Well GMSB-119

Prepared by Bruce Evans/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/2), fine sand, very silty, some medium, moderately
				sorted, somewhat loose to sticky 2" seam coarse to very coarse sand with trace
				medium gravel at 4.5, wet, odor.
130	135	5	7400-13000/	0-1.0' Sand: Brown (7.5 YR 4/2), fine to coarse grain, mostly medium, poorly
			2.5-3.0	sorted through, silty, trace fine to medium gravel, loose, wet, odor.
				1.0-3.5' Gravel: Dark brown (7.5 YR 3/2), fine to very coarse gravel, silty and clayey,
				angular to subrounded, loose, but several sticky silty layers, several cobbles to 2"
				diameter, wet, odor.
				3.5-5.0' Sand: Dark brown (7.5 YR 3/3), fine to coarse grain, some fine to very
				coarse gravel, angular to subround, loose trace silt, wet, odor.
135	140	5	2700-6300/	0-1.0' Sand: Brown (7.5 YR 4/3), very fine grain, very silty, much fine to coarse
			-13	gravel, angular to subround, soft, sticky, wet, odor.
				1.0-2.0' Gravel: Dark brown (7.5 YR 3/2), fine to very coarse, angular to subangular,
				some subround, very poorly sorted, trace cobbles 1.5" diameter, loose, wet, odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/3), very fine grain, some fine, well sorted, very
				silty, trace fine gravel, somewhat loose to sticky, wet, odor.
140	145	--	--	No recovery.
145	150	5	1900-14300/	0-1.0' Sand: Brown (7.5 YR 4/3), medium grain, some fine grain, well sorted, trace
			-12 - -11	coarse to very coarse gravel subangular to subround, silty, loose, wet, odor.
				1.0-2.0' Sand: Brown (7.5 YR 4/3), very fine grain silty, well sorted, silt seam 1.5-
				1.7', silt some what plastic, sand loose to sticky, wet, odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/3), clayey very clayey 3 to 4 feet, trace fine to
				very coarse gravel throughout, angular to subangular, silt soft (HP 0.5-1), clay silt
				somewhat plastic, wet, odor.
150	155	5	2500-46600/	0-1.0' Silt/Sand/Gravel: Very dark grayish brown (10 YR 3/2), very heterogeneous
			-13-11	mixture of fine to coarse sand, fine to very coarse gravel, angular to subround,
				trace cobbles to 2" diameter, very poorly sorted, somewhat loose, but sticky clayey
				matrix, wet, odor.
				1.0-5.0' Sand: Very dark grayish brown (10 YR 3/2), predominately coarse to very
				coarsest grain, sand with fine to medium grain and trace fine to coarse gravel,
				moderately sorted, loose, wet, strong odor.
155	160	4	170-3300/	0-2.0' Gravel: Variable colors, fine to very coarse gravel and cobles to 3" diameter,
			-6 - 7	angular to subround, very poorly sorted, loose, wet, no odor.
				2.0-4.0' Silt/Sand/Gravel: Dark gray (10 YR 4/1), dense mixture of fine to coarse
				sand, fine to coarse gravel in a silt matrix, cobbles to 4" diameter and broken
				rock, firm (HP >4), wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-119

Prepared by Bruce Evans/Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
160	165	--	--	No recovery, very rapid drilling.
165	170	5	2300-19700/	Silt/Gravel Sand: Very dark gray (2.5 YR 3/1), fine to very coarse sand, fine to very
			-15 - -12	coarse gravel, angular to subround mostly angular, with cobbles to >4" diameter,
				mostly black, angular, thin bedrock in a dense silt matrix, sometimes clayey,
				hard, HP 2.5-3, silt matrix somewhat plastic, wet, odor.
170	175	5	2800-22300/	0-3.0' Silt/Gravel/Sand/Clay: As above.
			-13 - -3.5	3.0-4.0' Silt/Gravel/Sand: Dark bluish gray (gley 3/1), dense brittle mixture of
				mostly silt matrix with fine to coarse gravel mostly angular, very compacted,
				friable when broken, moist, odor.
				4.0-5.0' Silt/Sand/Gravel: Gray (10 YR 5/1), broken brittle compacted fragments of
				above mixture, dry, slight odor.
175	177	2	--	Bedrock, light greenish gray (10 GY 7/1) and greenish gray (10 GY 5/1), pulverized
				rock and rock powder (lighter color), hard, dry, no odor.
177	187	5	--	Bedrock, Slate dark greenish gray (5 BG 5/1) also red (2.5 YR 4/6) from 4-5 streaks
				within gray, hard, dense, vertical foliation, Michigamme slate, dry, no odor.
				EOB @ 187 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-120 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 9/22/98 Drilling Completed 9/22/98

Total Depth Drilled 102 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1115.17 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	9"/	3,3,3,3	0-3.0": Top Soil. Light brownish gray (10 YR 6/2) dry, slightly crumbly, silty sand.
		5.5		3.0-9.0": Sand. Light brownish gray (10 YR 6/4) dry, very fine, silty to sandy silt.
				loose, trace subangular pebbles, variable composition, no HCl reaction.
2	4	10"/	5,5,4,5	0-10": Sand. As above,very fine, silty, dry.
		8.5		
4	6	10"/	14,8,6,6	0-10": Sand and Gravel. Brownish yellow (10 YR 6/6) dry, loose. Sand medium
		5.5		to very coarse, mainly coarse. Gravel, predominantly granular with much pebble
				gravel, variable composition, subangular to subrounded, up to greater than spoon
				diameter. No HCl reaction, difficult drilling.
6	8	2"/	8,5,4,5	0-2.0": Sand and Gravel. As above, with trace silt, dry.
		5.5		
8	10	11"/	6,5,4,4	0-11": Sand and Gravel. As above, but predominately very coarse sand, slightly
		5		moist.
10	12	13"/	10,11,10,10	0-13": Sand and Gravel. As above, slightly moist.
		6		
12	14	11.5"/	9,9,9,14	0-11.5": Sand and Gravel. Light brownish gray (10 YR 6/2), coarse to medium,
		8		dry, loose, trace to some fine sand, granular and pebble gravel, variable composition,
				up to greater than spoon diameter, subrounded to+E61 well rounded. No HCl reaction.
14	16	15"/	20,17,11,11	0-15": Sand and Gravel. Very pale brown (10 YR 7/3) coarse to very coarse,
		5		dense, dry, gravel as above. Sand predominately very coarse and coarse, with
				some medium sand, slight HCl reaction.
16	18	7.5"/	10,6,8,8	0-7.5": Sand and Gravel. As above, dry.
		5		
18	20	1.5"/	8,7,6,6	0-1.5": Sand and Gravel. As above, very coarse, slightly moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-120 Page 2 of 5

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		≤4.5		
20	22	14"/	7,5,7,5	0-14": Sand and Gravel. As above, very coarse, slightly moist.
		5		
22	24	24"/	5,9,9,9	0-24": Sand and Gravel. As above, very coarse, dry.
		8.5		
24	26	11"/	11,16,13,12	0-11": Sand and Gravel. As above, dry.
		7		
26	28	15"/	6,10,10,11	0-15": Sand. Very pale brown (10 YR 8/2) medium with some to much coarse sand,
		5		loose, dry, some granular gravel, variable composition, subangular to subrounded,
				no HCl reaction.
28	30	14.5"/	14,14,15,14	0-14.5": Sand. As above, medium, with trace pebble gravel, slightly moist.
		5		
30	32	13.5"/	7,6,9,10	0-13.5": Sand. As above, medium, dry, some fine sand.
		6		
32	34	22"/	3,4,6,10	0-22": Sand. As above, medium, dry.
		5.5		
34	36	15"/	10,8,10,8	0-15": Sand. As above, medium, with much fine sand at top, becoming coarser
		5		toward base, with much coarse sand, dry.
36	38	16"/	13,10,10,13	0-16": Sand. As above, medium with much coarse sand, grading down into
		800		coarse to medium sand with some granular gravel, subangular, well rounded,
				variable composition, dry and loose, no HCl reaction.
38	40	18"/	10,18,20,23	0-7.0": Sand. As above, medium to coarse, with trace to some gravel, pebbles,
		6.5		variable composition, subrounded to lense rounded, dry.
				7.0-18": Sand. Pink (7.5 YR 8/3) fine, dry, loose, very well sorted, some to
				much very fine sand. No HCl reaction, sandy silt lense 12 to 13 inch underlain
				by ½ inch very thinly laminated sand and silt.
40	42	20"/	12,17,27,27	0-20": Sand. As above, fine, dry.
		4		
42	44	24"/	9,10,12,16	0-7.0": Sand. As above, fine, dry.
		4		7.0-24": Sand. Fine as above, moist.
44	46	17"/	11,11,11,11	0-17": Sand. As above fine, but saturated, some to much very fine sand, as

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-120

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		3.5		above.
46	48	17"/	9,11,14,16	0-17": Sand. As above, fine with very fine sand, saturated.
		4		
48	50	17.5"/	9,10,10,14	0-17.5": Sand. As above, fine with very fine sand, saturated. Silt lense from 5 to 6
		4		inches.
50	52	24"/	5,5,8,10	0-24": Sand. Reddish brown (5 YR 5/4) fine to very fine, very well sorted, slightly
		4		dense to dense. No HCl reaction, silt at 15 to 17 inch. Brown (7.5 YR 5/4)
				slight HCl reaction. HP = 2.0.
52	54	16"/	10,10,16,16	0-4.0": Sand. As above, fine to very fine, saturated.
		3.5		4.0-8.5": Silt. Brown (7.5 YR 5/3), sandy, with abundant very fine sand, HP =
				1.1, no HCl reaction, very moist.
				8.5-16": Sand. Fine to very fine, as 0 to 4 inch, saturated.
54	56	17.5"/	5,6,6,8	0-8.0": Sand. As above, fine to very fine, saturated.
		3		8.0-17.5": Silt. Brown (7.5 YR 5/3) HP = 1.5, moist, slight HCl reaction, trace very
				fine sand, ½ inch clay lense from 10 to 10½ inch with moderate HCl reaction.
56	58	20"/	8,8,8,8	0-20": Sand. Fine to very fine as in overlying sample, saturated, silt lense at
		3.5		16 to 16½ inch.
				9:20 hole flushed.
58	60	20"/	7,8,12,13	0-3.0": Sand. As above, fine to very fine, saturated.
		2.5		3.0-14": Sand. Brown (7.5 YR 5/3) very fine, silty, to sandy silt, HP = 1.5, slight HCl
				reaction, moist to saturated, ¼ inch clay lenses at 7 and 7½ inch.
				14-18": Sand. Brown (7.5 YR 5/3) very fine, saturated, loose, flowing, trace to
				some silt, no HCl reaction.
60	62	16"/	8,9,10,12	0-16": Sand. As above, very fine, saturated.
		3.5		
62	64	17"/	5,8,8,13	0-17": Sand. As above, very fine, with some silt, saturated. Silt lense at 4.5 to 5.5
		2.75		inches.
64	66	18"/	4,5,5,12	0-18": Sand. As above, fine to very fine, saturated.
		3.5		
66	68	17"/	5,6,12,12	0-17": Sand. As above, fine to very fine, saturated.
		4.5		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-120

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
68	70	16"/	6,8,8,15	0-16": Sand. As above, fine to very fine, saturated.
		6		
70	72	24"/	4,6,10,10	0-24": Sand. As above, fine to very fine, saturated.
		6		
				10:55 Stop drilling, 12:45 hole flushed.
72	74	17"/	8,10,12,12	0-14": Sand. As above, fine to very fine. Saturated.
		9.5		14-17": Silt. Brown (7.5 YR 5/6) with some very fine sand. HP = 1.5 to 2.0,
				slight HCl reaction, moist.
74	76	18"/	8,12,20,25	0-4.0": Sand. As above, fine to very fine. Saturated, slough.
		8.5		4.0-13": Sand. Very fine, silty to sandy. Silt: reddish brown (5 YR 5/3) HP = 1.0,
				saturated, no HCl reaction.
				13.0-18.0": Sand. Fine to very fine, as 0 to 4 inch, saturated, trace silt.
76	78	12"/	6,12,15,23	0-12": Sand. As above, fine to very fine, saturated, hole flushed.
		5		
78	80	16"/	12,14,18,23	0-16": Sand. As above, fine to very fine, saturated.
		5		
80	82	19"/	5,6,7,10	0-7.0": Sand. As above, fine to very fine, saturated.
		3		7.0-19": Sand. Very fine, silty to sandy. Silt: Reddish brown (5 YR 5/3) HP = 2.0,
				nonplastic, moderate HCl reaction, very moist, saturated.
82	84	23"/	6,6,6,6	0-23": Sand. Fine to very fine, as at 0 to 7 inch in overlying sample. Saturated.
		≤2.0		
84	86	23"/	7,7,8,9	0-23": Sand. As above, fine to very fine, saturated, slight HCl reaction.
		3		
86	88	16.5"/	7,7,7,7	0-16.5": Sand. As above, fine to very fine, saturated, slight HCl reaction.
		2.75		
88	90	15"/	9,13,13,17	0-15": Sand. As above, fine to very fine, saturated, slight HCl reaction.
		2.25		
90	92	24"/	16,5,5,10	0-24": Sand. As above, fine to very fine, saturated.
		2.25		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-120

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
92	94	24"/	10,14,23,27	0-24": Sand. As above, fine to very fine, saturated, slightly HCl reaction.
		1.75		
94	96	24"/	8,11,16,21	0-24": Sand. Fine to very fine, as above, saturated, no HCl reaction.
		2.5		
				15:35 stop drilling. 15:45 Resume drilling.
96	98			24" slough, hole flushed.
98	100	21"/	6,7,8,12	0-21": Sand. As above, fine to very fine, saturated, slight HCl reaction.
		4		
100	102	24"/	6,6,9,13	0-24": Sand. As above, fine to very fine. Saturated.
		5		
				End of hole a102 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-121 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 9/24/98 Drilling Completed 9/24/98

Total Depth Drilled 72 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1119.67 feet [X] Surveyed [ ] Estimated Datum Mean sea level/ ground surface

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	11"/	1,1,2,2	0-5.5": Top Soil. Grayish brown (10 YR 5/2) silty sand loam, crumbly, dry,
		4		some to much pebble gravel at base.
				5.5-11": Sand/Silt. Dark grayish brown (10 YR 4/2) to reddish yellow (7.5 YR 6/8)
				silty sand, dry, crumbly, HP =1.5. No HCl reaction.
2	4	11"/	3,2,2,3	0-5.0": Sand. Silty, as at base of overlying sample. Dry to slightly moist.
		4		5.0-11": Sand. Reddish yellow (7.5 YR 6/6) coarse with much gravel. Dry,
				loose, no HCl reaction, some very coarse sand and granular gravel, some pebble
				gravel, subrounded to well rounded, variable composition, up to 2½ centimeter
				diameter.
4	6	17"/	10,12,10,12	0-5.0": Sand. Silty (slough?).
		6		5.0-17": Sand and Gravel. Coarse, as in overlying sample, dry and loose.
6	8	11.5"/	4,7,7,10	0-11.5": Sand and Gravel. As above, coarse, dry.
		7		
8	10	10.5"/	10,10,7,10	0-3.5": Granite. Shattered cobble, dry.
		6		3.5-10.5": Sand. Very pale brown (10 YR 8/4) coarse to medium, dry, loose.
				Trace to some very coarse sand, trace granular and pebble gravel. No HCl reaction.
10	12	13"/	5,5,8,8	0-4.0": Sand. Light yellow to brown (10 YR 6/4) very coarse to coarse, with granular
		8		gravel, slightly moist, loose, (slough?).
				4.0-13": Sand. Very pale brown (10 YR 8/4) medium, slightly moist, loose, trace
				pebble gravel, subrounded, variable composition, matrix supported. Some coarse
				sand toward base. NO HCl reaction.
12	14	12.5"/	9,7,7,11	0-4.0": Sand. As above, medium, slightly moist and loose.
		7		4.0-12.5": Sand. Light yellow brown (2.5 Y 6/4), dry, loose, some to much pebble
				coarse and very coarse, granular gravel, dry, loose, some to much pebble gravel,
				subangular to well rounded, variable composition, up to greater than spoon diameter.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-121

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	4"/	13,13,16,15	0-4.0": Sand and Gravel. As above, slightly moist to (slough?).
		7		
16	18	13"/	6,9,9,10	0-13": Sand and Gravel. As above, coarse to very coarse, but with much
		7		pebble gravel, up to greater than spoon diamter. Dry.
18	20	11"/	9,8,7,9	0-5.0": Sand and Gravel. Very pale brown (10 YR 8/3), coarse to very coarse,
		7.5		dry, loose, trace medium sand, gravel subangular to well rounded, variable
				composition, trace pebble gravel. No HCl reaction.
				5.0-11": Sand. Very pale brown (10 YR 8/4) medium with some coarse sand
				dry, loose, trace pebble gravel. No HCl reaction.
20	22	15"/	10,14,14,15	0-4.0": Sand and Gravel. Very pale brown (10 YR 8/3) coarse to very coarse. No
		7		HCl reaction, trace pebble gravel, dry, loose. Gravel subangular to subrounded,
				variable composition up to 1 cm. diameter.
				4.0-9.0": Sand and Gravel. Coarse to very coarse, as 0 to 4 inches, but light gray
				(10 YR 7/2) trace to some medium sand.
22	24	16"/	6,6,6,6	0-16": Gravel. Pale brown (10 YR 7/3) granular with some pebble gravel and some
		5		coarse sand, dry, loose, no HCl reaction. Gravel subangular to well
				rounded, variable composition, up to 1 centimeter in diameter.
24	26	16"/	11,11,12,11	0-16": Gravel. As above, but with coarse sand, dry, loose, slight HCl reaction
		8		
26	28	4"/	5,4,4,5	0-4.0": Sand and Gravel. As above, dry, loose.
		4		
28	30	18"/	6,10,10,10	0-8.0": Clay. Reddish brown (2.5 YR 5/4) HP = 2.0, slight HCl reaction, plastic,
		6		slightly moist.
				8.0-18": Sand. Very pale brown (10 YR 8/3) medium, dry, loose, trace coarse
				sand, very well sorted, no HCl reaction.
30	32	19"/	10,13,13,13	0-5.0": Clay. As above, (slough?).
		6.5		5.0-19": Sand. As above, medium in overlying sample, dry and loose.
32	34	24"/	11,9,9,11	0-24": Sand. Very pale brown (10 YR 8/2) medium to coarse, becoming coarse
		9.5		sand at base, loose, dry, very well sorted. No HCl reaction, trace pebble
				gravel.
34	36	17.5"/	14,17,14,13	0-17.5": Sand. As above, medium coarse grading down into coarse and with
		10		much granular gravel and trace pebble gravel. Very pale brown (10 YR 8/3), dry
				and loose, gravel subrounded to well rounded, variable composition, up to 2.0
				centimeter in diameter.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-121

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
36	38	16"/	15,12,16,16	0-7.5": Sand. Very pale brown (10 YR 7/3) coarse, grading into very coarse sand
		12.5		with granular gravel, dry, loose, no HCl reaction
				7.5-18.5": Sand. Very pale brown (10 YR 7/3) fine to medium, dry, loose, some
				granular gravel, slightly HCl reaction.
38	40	15"/	12,23,27,30	0-9.5": Sand. Very pale brown (10 YR 8/2) medium to coarse, with gravel, dry, loose.
		7		Some fine sand, gravel subangular to well rounded, variable composition, mainly
				granular. Some shattered fragments greater than spoon diamter, moderate to
				strong HCl reaction.
				9.5-15": Sand. Very pale brown (10 YR 8/3) fine to very fine, dry, loose, well
				sorted, no HCl reaction.
40	42	24"/	15,12,14,17	Brass tube samples.
		--		40-40.5": Sand. As above, top coarse, base very fine sand.
				40.5-41": Sand. As above, fine to very fine, dry. Top and base.
				41-41.5": Sand. As above, fine to very fine, dry. Top and base.
				41.5-42": Sand. As above, fine to very fine, top dry, fine to very fine sand silty
				sand at base, moist.
42	44	17"/	13,15,17,21	0-3.5": Silt. Brown (7.5 YR 5/4) HP = 2.0, moderate HCl reaction, dry, crumbly
		6		grading down.
				3.5-17": Sand. Pale brown (10 YR 8/3), fine sand, dry, loose,
				very well sorted, no HCl reaction.
44	46	15.5"/	14,14,14,14	0-15.5": Sand. As above, fine, dry.
		10.5		
46	48	19"/	17,17,12,15	0-5.5": Sand. As above, fine.
		10		5.5-10": Sand. Brown (7.5 YR 5/4) fine to very fine, HP = 2.0, moderate HCl
				reaction, moist.
				10-18": Silt. Brown (7.5 YR 5/4) sandy, moist, moderate HCl reaction,
				abundant very fine sand, HP = 2.0.
48	50	18"/	9,11,11,11	0-6.5": Sand Brown (7.5 YR 5/4) fine to very fine, with trace to some silt HP = 2.0,
		9		moderate HCl reaction, very moist.
				12-18": Sand. Brown (7.5 YR 5/3) fine to very fine, moderate HCl reaction,
				firm, very well sorted.
50	52	16"/	10,11,12,13	0-16": Sand. As above, fine to very fine, saturated.
		7		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-121

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
52	54	18.5"/	10,7,10,12	0-13.5": Sand. Strong brown (7.5 YR 4/6) very fine, silty to sandy silt, saturated,
		9		HP = 1.0, moderate HCl reaction, clay 3.5 to 4 inch.
				13.5-18.5": Sand. Fine to very fine, as in overlying sample, saturated.
54	56	22"/	9,9,9,8	0-22": Sand. As above, fine to very fine, saturated, with 2 inch silt at 10 to 12
		10		inches. Brown (7.5 YR 5/4) moderate HCl reaction, HP = 2.0, saturated.
56	58	24"/	8,9,15,15	0-24": Sand. As above, fine to very fine, saturated.
		6.5		
58	60	21"/	10,10,15,25	0-21": Sand. As above, fine to very fine, saturated.
		6		
60	62	23"/	9,9,9,9	0-23": Sand. As above, fine to very fine, saturated.
		4		
62	64	11"/	11,14,14,11	0-11": Sand. As above, very fine with very thin silt laminations from 0 to 4½
		5		inches, saturated.
64	66	18"/	15,15,15,15	0-18": Sand. As above, fine to very fine, saturated.
		5.5		
66	68	21"/	12,12,15,12	0-21": Sand. As above, fine to very fine, saturated.
		6		
68	70	23"/	9,8,8,8	0-14": Sand. As above, fine to very fine, saturated.
		6		
70	72	23"/	5,7,8,8	0-23": Sand. As above, fine to very fine, saturated.
		5		
				EOH 72 feet bgs.

ARCADIS

Sample/Core Log

Boring/Well GMSB-122 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 09/08/03 Drilling Completed 09/08/03

Total Depth Drilled 165 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1048.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Stacy Helper Scott/Leon

Prepared By Bruce Evans/Jason Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	125	--	--	Blind drill, see core log for GM-25A/B/C.
125	130	5	1700-	0-1': Sand/Silt, sand brown (7.5 YR 4/3), silt reddish brown (5 YR 4/4), sand is
			34000/	very fine grain, some fine, well sorted silt, soft, some clay, somewhat plastic,
			3.7-4.3	sand/silt are thinly interbedded 2" and less, sand silty in some layers, wet, odor.
				1-2': Sand, brown (7.5 YR 4/3), fine grain well sorted, loose, wet, strong odor.
				2-4': Sand, brown (7.5 YR 4/3), very fine grain, very silty, well sorted, trace
				medium to coarse grain black angular slate flakes, somewhat loose to very
				sticky, wet, slight odor.
				4-4.5': Sand, color as above, very fine grain, well sorted, little silt, wet, slight
				odor.
				4.5-5': Silt, brown (7.5 YR 4/3), soft, very clayey, somewhat plastic, wet, strong
				odor.
130	135	5	11000-	0-1': Silt, as above.
			67000/	1-4.5': Silt, brown (7.5 YR 4/3), less clayey, soft, somewhat to non plastic, very
			3.5-5.2	sandy 3-4 with very fine grain sand, trace clay layer at 4.2 reddish brown
				(5 YR 5/4), plastic, fissile looking on broken surface, wet, odor.
				4.5-5': Sand, brown (7.5 YR 4/3), very fine to extremely fine grain, well sorted
				loose, some silt, wet, odor.
135	140	5	4680-	0-0.5': Silt, brown (7.5 YR 4/3), slight firm to soft, some fine to coarse gravel,
			50500/	trace black staining, wet, strong odor.
			2.2-5.8	0.5-3': Sand, strong brown (7.5 YR 4/6), very fine to fine grain, well sorted,
				loose, wet, strong odor.
				3-5': Sand, brown (7.5 YR 4/3), fine grain, very well sorted, trace fine to
				coarse black angular shale flakes, loose, wet, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-122

Prepared by Bruce Evans/Jason Dowling

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
140	145	5	13500-	0-1': Sand, brown (7.5 YR 4/3), as above, fine.
			776000/	1-3': Sand, brown (7.5 YR 4/3), very fine to fine grain, well sorted, some silt,
			4.3-5.4	loose, wet, strong odor.
				3-5': Sand, brown (7.5 YR 4/3), mostly fine grain, some very fine and medium
				grain, abundant black angular shale flakes medium to coarse grain size,
				trace to some silt, moderately sorted, loose, wet, strong odor.
145	150	5	8000-	0-1': Sand, brown (7.5 YR 5/2), fine to very coarse sand, silty, with some fine to
			56000/	medium gravel, subangular to subround, trace cobbles to 2" diameter, very
			1.5-3.9	poorly sorted, much angular black shale flakes, loose but somewhat sticky, wet,
				strong odor.
				1-2': Silt/Clay, silt brown (7.5 YR 4/3), clay yellowish red (5 YR 4/6), thinly
				interbedded and varved, clay plastic, fissile looking on broken surfaces, silt soft,
				wet, strong odor.
				2-3.5': Sand, brown (7.5 YR 5/3), very fine grain, silty, some fine grain, loose,
				wet, strong odor.
				3.5-5': Silt/Clay, as above interbedded and varved, many vescules forming on
				broken surfaces, wet, strong odor.
150	155	5	22000-	0-1': Silt/Clay, as above, interbedded, wet,odor.
			>76900/	1-4': Silt/Clay, as above but also with seams fine to very fine sand, 0.2-3" thick,
			3-3.1	especially sandy 2-3, wet, strong odor.
				4-5': Sand, brown (7.5 YR 5/3), very fine grain, some fine grain, well sorted,
				loose, wet, very strong odor.
155	160	5	7600-	0-3': Sand, brown (7.5 YR 4/2), mostly fine grain, with very fine and medium
			21000/	grain, some coarse grain but mostly black angular shale flakes, some silt,
			2.1-4.6	poor to moderately sorted, loose, slightly sticky, wet, strong odor.
				3-5': Silt/Clay, as above interbedded, wet, strong odor, many vescules.
160	165	5	1700-	0-1.5': Silt, brown (7.5 YR 4/2), very sandy with very fine grain sand, some clay,
			53000/	somewhat loose, wet, strong odor.
			1.7-3.0	1.5-2': Sand, brown (7.5 YR 4/2), very fine grain, very silty, loose, wet, strong
				odor.
				2-5': Silt, brown (7.5 YR 4/3), trace red to yellow clay, somewhat firm (HP = 2.0)
				very sandy from 4-4.7 with very fine grain sand, interbedded yellow red clay from
				4.7-5, wet, strong odor, vescules where clayey.

ARCADIS

Sample/Core Log

Boring/Well GMSB-123 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 09/09/03 Drilling Completed 09/09/03

Total Depth Drilled 165 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous from 125 feet

Land-Surface Elev. 1044.81 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Stacy Helper Scott/Leon

Prepared By Bruce Evans/Jason Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	125			Blind drill, see core log for GMSB-119.
125	130	5	88-6050/	0-1': Sand, brown (7.5 YR 4/2), very fine to fine, trace medium to coarse sand,
			8.1-8.6	trace silt, loose, wet, odor.
				1-5': Sand/Gravel/Silt, brown (7.5 YR 4/3), sand very fine to very coarse, gravel
				fine to coarse, trace cobble, subangular to rounded, very poorly sorted, loose,
				wet, odor, very silty.
130	135	5	650-3850/	0-1': Sand, brown (7.5 YR 4/2), fine grain, well sorted, trace fine to coarse gravel,
			8.8-9.2	some silt, wet, odor, loose.
				1-4': Sand, brown (7.5 YR 4/2), very fine grain, some fine grain, very silty some
				fine to coarse gravel subangular to subround, somewhat loose, slightly sticky,
				moderately sorted, wet, odor.
				4-5': Silt, brown (7.5 YR 4/2), very sandy with very fine grain sand, much
				fine to coarse gravel, soft to somewhat loose, wet, odor.
135	140	5	1405-	0-2.0': Silt, brown (7.5 YR 4/3), very sandy with very fine grain sand, some fine
			34500/	to coarse gravel, angular to subround, much black shale flakes, trace clay
			8.6-9.9	yellowish red (5 YR 4/6) in layers from 0-1, plastic, fissile looking on broken
				surfaces, soft to somewhat loose, wet, odor.
				2.0-2.5': Sand, brown (7.5 YR 4/3), very fine grain, well sorted, trace silt, loose,
				wet, odor, very silty.
				2.5-3': Silt, brown (7.5 YR 4/3), somewhat firm, little clay, wet, odor.
				3-3.5': Sand, dark brown (7.5 YR 3/3), fine to medium grain, moderately sorted,
				much black shale flakes coarse grain size, trace silt, loose, wet, odor.
				3.5-5': Sand, brown (7.5 YR 4/3), very fine to fine grain, silty, well sorted,
				loose, wet, odor.
140	145	5	7030-	0-3.2': Silt, brown (7.5 YR 5/2), very clayey 0-1, slight to nonplastic, some fine
			40000/	to coarse gravel throughout, cobbles 3-3.2, several thin very fine sand seams,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-123

Prepared by Bruce Evans/Jason Dowling

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
			10.4-12.9	possible varving 2-3 with silt and slightly lighter brown clay but mixed
				from drilling, wet, odor.
				3.2-5': Clay/Gravel/Sand, dark brown (7.5 YR 3/2), dense, very heterogeneous
				mixture of clay and sand matrix with gravel, very silty, mostly very fine to fine
				sand, fine to very coarse gravel angular to subangular, some cobbles, matrix
				slight plastic, but cohesive and friable due to sand, wet, no odor.
145	150	5	10200-	0-2': Clay/Gravel/Sand, as above.
			43000/	2-4': Sand, very dark brown (7.5 YR 2.5/2), medium to very coarse grain sand, some
			5.5-6.0	fine, very silty, much fine to coarse gravel angular to subround, much coarse to
				very coarse size angular black shale flakes poorly sorted, loose, but sticky, wet,
				odor.
				4-5': Silt, brown (7.5 YR 4/3), somewhat clayey, slight plastic, some cobbles
				and coarse gravel, wet, odor.
150	155	5	4600-	Silt/Gravel/Sand, dark gray (7.5 YR 4/1), very clayey silt/sand matrix with fine to
			23500/	very coarse gravel, angular to subround, and cobbles to 4" diameter, matrix
			4.4-6.5	somewhat plastic but friable due to sand/silt, fairly dense, wet, odor.
155	160	5	4860-	0-5': Silt/Gravel/Sand as above, wet, slight odor.
			8100/	
			4-5	
160	165	2	3870-	0-0.5': Silt, gray (7.5 YR 5/1), very clayey, sticky, with fine to coarse sand, trace
			10700/	fine to coarse gravel, wet, odor.
			4.5-5.1	0.5-1': Sand/Silt, gray (7.5 YR 5/1), fine to very coarse sand, very poorly sorted,
				with some fine to coarse gravel, somewhat loose to sticky soft, wet, odor.
				1-2': Sand/Gravel, gray (7.5 YR 5/1), very silty, fine to very coarse sand, fine to
				very coarse gravel, angular to subround, very poorly sorted, much black shale,
				angular flakes to subrounded gravel, loose, but fines somewhat sticky, wet,
				odor.

ARCADIS

Sample/Core Log

Boring/Well GMSB-124 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/29/03 Drilling Completed 10/29/03

Total Depth Drilled 78 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval continuous 58 feet

Land-Surface Elev. 1132.58 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Boart Longyear Driller Jeff Flaminio Helper Chris

Prepared By Bruce Evans Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	60			Blind drill, see corelog for GMSG-120 for descriptions.
40	42	1.5		0-0.5' Slump.
				0.5-1.5' Silt: Light reddish brown (5 YR 6/4) grainy, powdery some very fine
				grain sand, somewhat loose, moist.
58	60	1.3	14,16,20,18	Silt: As above, sandy.
			1,200/20.6	
60	62	1.2	24,25,25+	0-0.2' Slump.
			3,920/31	0.2-1.2' Silt: As above, grainy powdery, sandy, loose, dry to moist.
62	64	1.3	21,23,25,24	0-0.3' Slump.
			13,700/6.5	0.3-1.3' Silt: light reddish brown grainy, very sandy with very fine grain sand,
				below 1.0 some varving/interlayering with clayey silt, reddish brown (5 YR 5/3),
				and clay reddish brown (5 YR 4/3), clay is plastic, sandy silt is somewhat loose
				to powdery, moist to very moist/wet at 0.9 feet.
64	66	1.2	15,12,18,20	Sand/Silt: Reddish brown (7.5 YR 4/3) very fine grain, very silty sand grading to
			3,420/1.5	sandy silt, somewhat loose, traces thin horizontal black staining (<1 mm), wet.
66	68	1.4	12,18,20,25	0-0.1' Slump.
			670/-3.3	0.1-0.6' Silt: Reddish brown (7.5 YR 4/3) grainy, very sandy with very fine grain
				sand.
				0.6-1.4' Silt: As above, but less sandy and more clayey, some interbedding
				between grainy and clayey silt, clay silt slightly plastic, wet, trace black
				staining, very thin, trace vescules, on open surfaces.
68	70	1.5	19,23,25+	0-0.5' Slump.
			605/-4.3	0.5-1.5' Silt: Reddish brown (7.5 YR 4/3) section varved between grainy sandy
				silt and clayey silt, trace clay yellowish red (5 YR 7/6) at 1.0' plastic soft, but
				fissile looking on broken surfaces, trace black staining, wet, trace fine gravel
				and occasional coarse, subangular.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-124

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
70	72	1.5	20,23,25+	0-0.3' Slump.
			1,060/-5.0	0.3-1.5' Silt: As above mostly grainy, some very fine sand, wet.
72	74	1.5	19,20,23,25	0-0.5' Slump/Heave.
			875/-5.6	0.5-1.5' Silt: As above interbedded grainy and clayey silt, mostly clayey silt
				moderately plastic, 2 inch thick yellowish red clay layer at 0.8 feet, wet.
74	76	1.7	20,25,20,23	0-0.4' Slump/Heave.
			1,025/-8	0.4-1.1' Silt: Reddish brown (5 YR 5/3) grainy, very sandy with very fine grain sand
				somewhat loose, wet,
				1.1-1.2' Silt: very clayey and trace yellowish red clay.
				1.2-1.7' Sand: Reddish brown (5 YR 4/3) very fine grain, well sorted, very
				silty below 1.5 feet, somewhat loose, wet.
76	78	2	10,11,16,12	Silt: Reddish brown (5 YR 5/3) grainy and sandy with very fine grain sand,
			960/-12	somewhat loose, wet.
				EOB 78 feet

ARCADIS

Sample/Core Log

Boring/Well GMSB-125 Project/No. Ford/Kingsford WI001075.0015 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 4/19/04 Drilling Completed 4/20/04

Total Depth Drilled 112 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10 foot by 4-inch Sampling Interval Continuous feet

Land-Surface Elev. 1125.46 feet ☐ Surveyed ☐ Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Ray Helper Leon/John

Prepared By Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	5.0	-13, +2/	0-0.5' Topsoil: Silt black with some clay, abundant roots and organics, moist,
			-2.19 -	no odor.
			-2.81	0.5-1.5' Sand and Silt: Yellowish red (5 YR 4/6) somewhat loose, sand fine to
				medium grain, trace gravel up to 3/4" subround to subangular, some to trace
				organics (roots), no odor, moist to wet.
				1.5-3.0' Sand: Yellowish red (5 YR 5/8), loose, fine to medium, some to lots of
				coarse, trace gravel up to 1" subround to subangular, moist, no odor, grades
				into section below.
				3.0-5.0' Sand: Yellowish red (5 YR 4/6), loose, predominately medium to coarse
				grain, some fine, some to much gravel most in 1/4" range, but up to 3/4"
				subround to subangular, moist, no odor.
5	15	7	-11, -13/	0-2.5' Sand: As above, gravel up to 2".
			-1.29 -	2.5-4.0' Sand/Gravel: As above, with gravel up to 5.0" and much gravel, may call it
			-1.98	gravelly sand, loose, moist, no odor.
				4.0-7.0' Sand: Strong brown (7.5 YR 4/6), predominately medium grain, some
				very fine to coarse, loose, some to much gravel, up to 3.5", subround to round,
				some to trace silt/clay, dry to moist, no odor.
15	20	5	1.17-1.74/	0-2.5' Slough.
			-0.91 -	2.5-5.0' Sand: Reddish brown (5 YR 5/4), fine grain, trace medium to coarse,
			0.06	loose, trace to some gravel (up to 3" subround to subangular), moist, no odor.
20	25	5	-11 - -5.09/	0-1.5' Sand: Yellowish red (5 YR 4/6), very fine to fine, trace medium grain, trace
			-0.42 -	silt, trace gravel up to 1" subround to subangular, somewhat loose, moist, no
			0.12	odor, grades over 1-1.5' into section below.
				1.5-5' Sand: Color as above, very fine to fine, silty, somewhat lose, trace medium
				to coarse grain sand, trace gravel up to 3", subround to subangular moist, no
				odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-125 Page 2 of 3

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
25	30	5	-8.6 -	0-3.5' Slough.
			-8.3/	3.5-5.0' Sand: Yellowish red (5 YR 4/6), very fine to fine, trace to some medium
			1.05-	trace to some silt, trace coarse, trace gravel up to 1.5" subround to subangular,
			-0.65	loose to firmly packed, moist, no odor.
30	35	5	11 - -4.99/	0-5.0' Sand: Color as above, fine to very fine, trace silt, trace medium to coarse
			-0.15 -	sand, trace gravel up to 3", subround to angular, somewhat crumbly to loose,
			0.68	moist, no odor.
35	40	5	6.35-15.37/	0-1.0' Slough.
			2.11-2.86	1.0-3.5' Sand and Gravel: Reddish brown (5 YR 4/4), sand predominately fine,
				some medium to coarse, gravel up to 2.5" round to subangular, loose, poorly
				sorted, some sand is somewhat packed together, moist, no odor.
				3.5-5.0' Sand: Yellowish red (5 YR 4/6), very fine to fine, some silt, trace coarse
				sand, loose, well sorted moist, no odor.
40	45	5	49.85-	0-0.5' Sand: Brown (7.5 YR 4/4), fine grain, some very fine, some medium, trace
			95.37/	gravel up to 1/2" subround to subangular, loose, well sorted, dry, no odor.
			5.46-14.11	0.5-3.5' Sand: As above (3.5 - 5.0).
				3.5-5.0' Sand: Dark brown (7.5 YR 3/4), fine to very fine, some silt, (trace clay?),
				trace gravel up to 3/4" subround to subangular, loose to crumbly, moist, no odor.
45	50	5	-3.08 -	0-1.5' Sand: Yellowish red (5 YR 4/6), fine to very fine, trace medium to coarse,
			1.59/0.39 -	trace gravel, loose, fairly well sorted, moist, no odor.
			2.03	1.5-5.0' Sand: Strong brown (7.5 YR 4/6) very fine to fine, trace to some silt,
				trace gravel to 4", subround to angular, fairly well sorted, loose to somewhat
				crumbly, moist, no odor.
50	55	5	9.49 -	0-0.75' Sand: As above, but color strong reddish brown (5 YR 3/3).
			58.04/	0.75-3.25' Sand: Strong brown (7.5 YR 4/6), very fine to fine grain, trace gravel,
			2.27-7.47	up to 1", subround to subangular, trace silt, fairly well sorted, moist, no odor.
				3.25-5.04' Sand: As above, with alternating layers (1-2" thick) of sand, sand light
				brown (7.5 YR 6/4) fine to medium grain, loose, well sorted, wet, no odor.
55	60	5	25.2 - 38.5/	0-0.2' Slough.
			8.36 - 10.2	0.2-3.0' Silt: Brown (7.5 YR 5/4) smooth to grainy, noncoheisve and nonplastic,
				somewhat crumbly and slightly firm, wet, no odor.
				3.0-5.0' Silt: As above, with variable coloring/staining, color as above and brown
				(7.5 YR 4/3).
60	65	5	-7.73 -	0-5.0' Silt: Brown (7.5 YR 4/3), grainy, trace to some variable coloring as above, trace
			-0.31/	black staining, noncoheisve, nonplastic, somewhat crumbly, very wet, no odor,
			3.62 - 4.8	clay inclusions at 3.8' reddish brown (5 YR 4/4) crumbly/friable in appearances,
				cohesive and slight plastic when worked, very slight sticky.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-125

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
65	70	5	-12 - -11/	0-5.0' Silt: As above, with clay inclusions, black staining, predominately surrounds
			2.11 -	clay inclusions, also staining somewhat laminated, silt is becoming smoother and less
			2.31	grainy down section, clay inclusions up to 3/4" thick and up to 8" long (vertical
				trending).
70	75	5	-11 - -10/	0-5.0' Silt: As above (0-5), clay inclusions smaller.
			2.93 -	
			3.09	
75	80	5	-10 - -8/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy, may be trace very fine sand, somewhat loose,
			1.34-1.86	clay inclusions, red (2.5 YR 4/6), friable/platy appearance, tight to plastic and
				cohesive when worked, trace to some grayish black staining, wet, no odor.
80	85	5	-8 - -6.53/	0-3.2' Silt: As above, layer of rust color staining at 2.7 (1/2" thick).
			2.66 -	3.2-5.0' Silt: Brown (7.5 YR 4/3) with some color as above in bands, silt
			2.75	predominately grainy, some smooth, trace very fine sand, some black to gray
				staining trace to some, clay inclusions as above, some what crumbly, wet, no odor.
85	90	5	-11 - -10/	0-5.0' Silt: As above (3.2 - 5.0) some (more) clay inclusions, becoming hard and
			2.54 - 2.8	crumbly to approximately 3' and then at 3.5' fine grain sand lens.
90	95	5	-10 - -8/	0-0.6' Silt: As above.
			2.54 -	0.6-5.0' Silt/Clay/Sand: Alternating from silt brown (7.5 YR 4/3) grainy to
			2.68	smooth, trace clay, somewhat hard, crumbly trace to some very fine sand from
				4 to 5' bedding up to 2" thick, moist to wet, no odor; clay, reddish brown (5 YR 4/4),
				trace coarse sand pebbles crumbly up to 1/2" round to subround (dropstone)
				crumbly and very slightly sticky, nonplastic unless heavily worked, feels dry, friable/
				platy in appearance, noodor; clay dark brown (7.5 YR 3/3), crumbly, very slight
				cohesive and very slight plastic when worked, friable/platy in appearance, moist to
				dry, no odor. Note at 1.0' sand lens, sand brown (7.5 YR 5/3), fine to medium
				grain (mainly fine), lense <1/4" thick between silt and clay bed, loose, wet, no odor.
95	104	5	-12/.51 -	0-5.0' Bedrock: Hard rock, appears to be phyllite, dark greenish gray, (1 Gley 4/1),
			0.98	vertical veins of white (quartz/like material) follow fissile in rock. Effervesces in
				HCL very slightly on white material, trace rust to reddish color staining/weathering
				on white veins.
104	112	--	--	Very hard drilling, falling out of barrel.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-126 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/8/98 Drilling Completed 10/8/98

Total Depth Drilled 40 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1118.17 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Gary

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	10"/	1,1,1,1	0-10.0": Topsoil. Dark grayish brown (10 YR 4/2), sandy silty loam, moist, crumbly,
		≤4.5		abundant rootlets, no HCl reaction.
2	4	12"/	2,2,4,6	Sand and Gravel. Reddish yellow (7.5 YR 6/8), dry and loose, no HCl reaction. Matrix
		6.5		coarse and medium sand. Gravel, granular and pebble gravel variable composition,
				subangular to subrounded. Up to greater than 2 inches in diameter.
4	6	7"/	8,8,10,12	0-2.0": Sand and Gravel. As above, dry.
		8		2.0-7.0": Sand. Light yellowish brown (10 YR 6/4), coarse to very coarse, trace to some
				medium sand, trace granular gravel. Dry to slightly moist, loose, no HCl reaction.
6	8	12"/	4,6,9,13	0-5.0": Sand. Very pale brown (10 YR 7/4), medium to coarse, trace to some very coarse
		8		sand. Trace pebble gravel, dry loose, no HCl reaction.
				5.0-12.0": Sand and Gravel. Very pale brown (10 YR 7/3), dense, dry, no HCl reaction.
				Matrix, very coarse to fine sand. Pebble and granule gravel, variable composition,
				subangular to well rounded up to 2 cm in diameter.
8	10	12"/	3,8,8,10	0-12.0": Sand and Gravel. As above, with abundant very coarse sand, dry to slightly moist.
		9		
10	12	10.5"/	4,5,8,16	0-2.5": Sand and Gravel. As above, slightly moist.
		8		2.5-10.5": Sand. Very pale brown (10 YR 7/3), coarse to medium sand, some fine sand,
				trace granule and pebble sand. Dry, loose, no HCl reaction.
12	14	11"/	4,5,6,5	0-11.0": Sand and Gravel. Light yellowish brown (10 YR 6/4), loose, moist, no HCl
		7.5		reaction. Coarse to very coarse sand matrix with some medium and fine sand.
				Granular and pebble gravel, variable composition, subangular to well rounded, up to
				2 cm in diameter.
14	16	9"/	5,6,7,4	0-9.0": Sand and Granular Gravel. Very pale brown (10 YR 7/3), coarse to very coarse,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-126

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		7		trace medium sand, gravel, subangular to well rounded, variable composition, trace
				pebble gravel.
16	18	8.5"/	7,9,14,11	0-8.5": Sand and Gravel. Light yellowish brown (2.5 Y 6/4), dry, loose, no HCl reaction.
		7.5		Matrix: medium to very coarse sand with some fine sand and trace silt. Gravel: granular
				and pebble, variable composition, subangular to subrounded, up to greater than 2 inches in
				diameter.
18	20	10.5"/	7,12,13,10	0-10.5": Sand and Gravel. As above, dry.
		5		
20	22	0	6,8,11,18	No recovery.
22	24	1"/	9,13,18,16	0-1.0": Sand and Gravel. As above slightly moist.
		≤4.0		
24	26	17"/	3,5,6,11	0-17.0": Gravel with Sand. Pale yellow (2.5 Y 7/4), dry, loose, moderate HCl reaction.
		17.5		Fine to very coarse sand. Granular and pebble gravel, variable composition, subangular
				to well rounded, up to greater than 2 inches in diameter. Trace clay nodules.
26	28	10"/	9,10,9,12	Sand. Very pale brown (10 YR 8/3), fine, dry, loose, very well sorted, no HCl reaction.
		8		
28	30	16.5"/	3,8,10,12	0-16.5": Sand. Very pale brown (10 YR 7/4), very fine, dry, slightly dense, no HCl
		6		reaction, very well sorted. Silt lens between 9 and 10 inches, yellowish brown
				(10 YR 5/4), HP = 2.0, sandy, no HCl reaction.
30	32	19"/	6,9,15,20	0-19.0": Sand. Pink (7.5 YR 8/3), fine to very fine, dry, slight dense, very well sorted, no
		8		HCl reaction, very thinly laminated.
32	34	16.5"/	6,10,13,20	0-16.5": Sand. Fine to very fine, dry. Very thin laminations of sandy silt and sand
		8		in lowest 6 inches. Slight HCl reaction in silt.
34	36	19"/	6,10,10,11	0-7.0": Sand. Fine to very fine, as above, dry.
		8		7.0-14.5": Sand. Fine to very fine, as above, thinly laminated with sandy silt lenses (up
				to 1 inch thick at 13 to 14 inches)
				14.5-19.0": Sand. Fine to very fine, as above, dry.
36	38	15"/	5,6,7,11	0-15.0": Sand. Fine to very fine, as above, dry.
		5		
38	40	22"/	8,10,12,15	0-22.0": Sand. Fine to very fine, as above, dry.
		8		
				End of hole 40 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-127 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/9/98 Drilling Completed 10/9/98

Total Depth Drilled 40 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1117.62 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Gary

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	20"/	1,1,1,2	0-6.0": Topsoil. Dark grayish brown (10 YR 4/2), silty loam, with some sand and
		≤7.5		abundant rootlets, slightly moist, crumbly, no HCl reaction.
				6.0-20.0": Sand. Brownish yellow (10 YR 6/8), very fine, silty, dry, crumbly, (HP < 0.5),
				no HCl reaction.
2	4	9"/	5,7,10,11	0-9.0": Sand and Gravel. Yellow (10 YR 7/6), dry, loose, no HCl reaction. Matrix: coarse
		≤6.5		to fine, sand with some silt. Gravel: pebble size, up to greater than 2 inches in diameter,
				subangular to subrounded, variable composition.
4	6	13"/	6,7,6,8	0-13.0": Sand and Gravel. Very pale brown (10 YR 7/4), dry, loose, no HCl reaction.
		≤6		Matrix: very coarse to medium sand, some fine sand. Gravel: granule to pebble size,
				subrounded to well rounded, variable composition, up to greater than 2 inches in
				diameter.
6	8	8"/	10,7,7,11	0-8.0": Sand and Gravel. As above, dry.
		8		
8	10	12"/	6,7,8,11	0-12.0": Sand and Gravel. As above, dry to slightly moist.
		7.5		
10	12	15"/	10,7,9,10	0-15.0": Sand and Gravel. As above, slightly moist.
		8		
12	14	11"/	4,3,4,7	0-11.0": Sand. Very pale brown (10 YR 7/3), coarse to very coarse, with abundant granular
		6.5		gravel, loose, slightly moist, no HCl reaction. Trace to some pebble gravel. Gravel
				subangular to subrounded up to 2 cm in diameter, variable composition.
14	16	14"/	5,5,6,8	0-14.0": Sand and Gravel. Light gray (10 YR 7/2), slightly moist, loose, sand as above
		6		but with some medium sand. Gravel as above but more abundant.
16	18	13.5"/	10,10,14,14	0-13.5": Sand and Gravel. Very pale brown (10 YR 8/3), dry, loose, slight HCl

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-127

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		10		reaction. Sand fine to very coarse. Gravel: granular with some pebble gravel,
				variable composition, subrounded to well rounded, up to 2 cm in diameter.
18	20	14"/	4,6,14,10	0-14.0": Sand and Gravel. As above, dry.
		6.5		
20	22	15"/	4,3,6,7	0-14.0": Sand and Gravel. As above, dry.
		6		14.0-15.0": Silt. Strong brown (7.5 YR 5/6), plastic, moderate HCl reaction.
22	24	0	2,4,6,15	No recovery.
24	26	9.5"/	1,10,12,23	0-9.5": Gravel. With clay lenses. Lithologies as above. Silt at 1.0 to 2.0, 4.5 to 5.0,
		8		6.5 to 7.0 inches (gravel mixed in as slough).
26	28	1"/	10,10,11,12	0-1.0": Silt. With gravel as above, moist.
		≤ 3.5		
28	30	18"/	10,9,11,9	0-18.0": Sand. Pink (7.5 YR 7/3), fine to very fine, firm, dry, moderate to strong HCl
		6		reaction, very well sorted.
30	32	15"/	5,8,9,9	0-15.0": Sand. Fine to very fine, as above, dry.
		4.5		
32	34	18"/	2,6,10,14	0-18.0": Sand. Fine to very fine, as above, dry.
		7.5		
34	36	18.5"/	8,10,11,8	0-18.5": Sand. Fine to very fine, as above, dry.
		5.5		
36	38	19"/	3,6,10,14	0-19.0": Sand. Fine to very fine, as above, dry.
		3.5		
38	40	16.5"/	10,10,9,12	0-16.5": Sand. Fine to very fine, as above, dry.
		5.5		
				End of hole 40 ft bgs.

ARCADIS

Sample/Core Log

Boring/Well GMSB-128 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 4/22/04 Drilling Completed 4/22/04

Total Depth Drilled 145 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval 10 feet

Land-Surface Elev. 1120.72 feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Roy Helper Leon/John

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	FID/PID (ppm)	Sample/Core Description
0	115	0		Blind drill.
115	120	5	-7.34 -	0-4.0' Sand: Dark brown (7.5 YR 3/4), fine grain, trace to some medium, well
			-5.41/-6	sorted, loose, no odor, wet, grading into section below.
			-5.23	4.0-5.0' Sand: As above, becoming finer at 4-5, very fine sand, well sorted,
				loose, no odor.
120	125	5.0	-5 - 35.6/	0-5.0' Sand: Dark brown (7.5 YR 3/3), very fine grain, some fine grain, some silt,
			-5.01 -	well sorted, loose, slight odor to 3', odor prevalent at 3-5'.
			-6.06	
125	130	5.0	-8.32 -	0-5.0' Sand: Brown (7.5 YR 4/3), fine grain, fairly well sorted, loose, wet, slight odor
			-1.01/	at 4' trace clay, no odor.
			-7.83 -	
			-7.22	
130	135	5	23-70/	0-3.0' Silty Sand: Dark brown (7.5 YR 3/4), sand fine grain, some very fine, trace
			-3.18-3.27	medium, some to much silt, some clay nodules up to 3" thick very dark brown
				(7.5 YR 2.5/3), nodules platy in appearance but cohesive, trace gravel to 1.5"
				subround to subangular, plastic when worked, overall somewhat sticky, but
				some odor, grades into section below.
				3.0-5.0': As above, but, sandy silt progressively more silt down section.
135	140	5	23 - 47/	0-5.0': As above, increasing coarse sand and gravel in the 1/4 to 1/2" range,
			-6.24 - 5.5	gravel to 4" with odor.
140	145	5	57-90/	0-0.5': As above.
			-6.46 -	0.5-1.5' Silt: Dark brown (7.5 YR 3/3), hard and dense, somewhat crumbly but
			-7.16	hard, some coarse sand and gravel to 3", trace medium sand.
				1.5-2.2' Sand: Brown (7.5 YR 4/3) fine to medium, sorted, trace coarse sand,
				wet, loose, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-128

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	FID/PID (ppm)	Sample/Core Description
				2.2-3.5' Sand: Very dark brown (7.5 YR 2.5/3) medium grain, some coarse and
				fine, some gravel up to 3" subround to subangular, poorly sorted, loose, wet,
				slight to no odor at 3', changes color to very dark brown (7.5 YR 2.5/2).
				3.5-3.8' Sand: Dark brown (7.5 YR 3/4), fine grained, trace medium, well sorted,
				wet, loose, no odor.
				3.8-5.0' Sand: Very dark brown (7.5 YR 2.5/2), fine to medium grained, somewhat
				sorted, trace gravel to 1" subround to subangular, loose, wet, slight odor.
				EOB @ 145

ARCADIS

Sample/Core Log

Boring/Well GMSB-129 Project/No. Ford/Kingsford WI001075.0003 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 5/14/04 Drilling Completed 5/17/04

Total Depth Drilled 145 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1131.26 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Anderson Helper Chad/Joseph

Prepared By Bruce Evans Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5.0	2.2/9.0	0-1.0' Silt: Very dark brown (7.5 YR 2.5/3), sandy, rootlets, loose to dry.
				1.0-4.0': Sand, strong brown (7.5 YR 5/6), fine to very coarse grain, poorly sorted
				loose, some fine to very coarse gravel, subangular to subrounded.
				4.0-5.0' Silt/Sand: Dark brown (7.5 YR 3/4), silt with fine to coarse sand, some
				clay and gravel as above, loose to somewhat sticky, moist.
5	10	5.0	4/1.2	0-3.0' Silt/Sand: Clayey as above, moist sticky to loose, trace cobbles to 2".
				3.0-5.0' Sand/Gravel: Strong brown (7.5 YR 4/6), fine to very coarse sand, fine to
				coarse gravel, very poorly sorted, subangular to subrounded, loose, moist, more
				coarse sand from 3-4' with less gravel.
10	15	--	--	No recovery.
15	20	5	8/5.5	0-3.0' Sand/Gravel: Dark brown (7.5 YR 3/3), very silt, very fine to coarse grain
				sand, fine to coarse gravel, subangular to subround, poorly sorted, loose, slightly
				sticky, moist.
				3.0-4.0' Sand: Brown (7.5 YR 5/4), fine to medium sand with some very fine,
				gravel fine to medium, moderate sorted, loose, moist.
				4.0-5.0' Sand/Gravel: Brown (7.5 YR 4/3), fine to very coarse sand, fine to very
				coarse gravel, cobbles to 2" diameter, very poorly sorted, loose, moist.
20	25	3	1/2	0-3' Gravel/Sand: Brown (7.5 YR 4/5), gravel fine to very coarse, subangular to
				subrounded, with pebbles to 1" diameter, mostly subround, with fine to coarse
				sand, very poorly sorted, loose, moist.
25	30	5	71/11.7	0-5.0' Silt: Reddish brown (5 YR 4/4), very clayey silt, slightly plastic firm HP = 1-3.5,
				with some interbedded clay: yellowish red (5 YR 4/6) plastic, fissile looking on
				broken surfaces, highly effervescent with HCL, very moist to wet clay layers 0.1-2"
				increasing to clay layers below 2', 4" clay at 2.5', also 3" clay layer at 0.2-0.5'.
30	35	5	1/2.5	0-5' Sand: Reddish brown (5 YR 5/4), very fine grain, very well sorted, silty, very silty
				0.5-2', trace coarse sand grains and fine gravel, loose, dry.
35	40	5	21/5.4	0-4.0' Sand: As above, very fine grain.
				4.0-5.0' Silt: Light reddish brown (5 YR 6/4), grainy, powdery, loose, dry.

Sample/Core Log (continued)

Boring/Well GMSB-129

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
40	45	5	28/3.4	0-3.0' Silt: As above, some fine to coarse angular black gravel 0.8-1'.
				3.0-4.0' Silt/Sand: Light reddish brown (5 YR 6/4) silt with very fine grain sand
				light reddish brown (5 YR 6/4), silt with very fine grain sand, well sorted, trace
				coarse sand grains, loose, moist.
				4.0-5.0' Sand: Reddish brown (5 YR 5/4), very fine grain, with some fine grain and
				silt, moderately sorted, loose, very moist to wet.
45	50	5	33/3.5	0-2.5' Sand: As above moist.
				2.5-5.0' Silt: Reddish brown (5 YR 5/4), grainy, loose, varved with clayey silt 3-4',
				dry.
50	55	5	4200/3.5	Silt: Reddish brown (7.5 YR 5/4), grainy, powdery, loose 6" layer, 3-3.5" interbedded/
				varved clayey silt with the granular silt, firm, some very fine grain sand below 3.5',
				dry to moist.
55	60	5	7200/5.9	0-3.0' Sand: Reddish brown (5 YR 4/4), very fine grain, very silty, well sorted,
				loose, very moist.
				3.0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, loose, some very fine grain sand,
				very moist to wet.
60	65	5	11,900/2.7	Silt: Reddish brown (5 YR 4/4), somewhat grainy, sometimes sandy with very fine
				grain sand, loose to slightly firm, very moist to wet, slight odor below 3'.
65	70	5	39000/2.5	Silt: Reddish brown (5 YR 5/3), very grainy and very sandy with very fine grain
				sand, slightly firm to somewhat loose, very homogenous, very moist to wet, odor.
70	75	5	60000/3.3	0-2.0' Silt: As above, wet, odor.
				2.0-3.0' Silt: Reddish brown (5 YR 4/3), less grainy and sandy, varved with clayey
				silt, some color, more firm where clayey, wet, odor.
				3.0-4.0' Silt: As above grainy.
				4.0-5.0' Silt: reddish brown (5 YR 4/3), firm, interbedded/varved layers grainy/
				clayey silt with trace, clay yellowish red (5 RY 4/6), clay varved extremely thin
				layers, wet, odor.
75	80	5	146/2.9	Sand/Silt: Reddish brown (5 YR 4/3), very fine grain very silty sand grading to
				sandy silt, slightly firm to loose, wet, very slight odor.
80	85	5	72/2.5	0-1.0' Sand/Silt: As above.
				1.0-5.0' Silt: Reddish brown (5 YR 4/3) slightly grainy, less sand, some clay, slightly
				firm to slightly plastic, wet, no odor.
85	90	5	169/2.5	0-0.5' Silt: As above.
				0.5-2.0' Silt: Reddish gray (5 YR 5/2) very clayey, slightly plastic, some varves with
				grainy silt, wet, no odor.
				2.0-3.0' Silt: Reddish brown (5 YR 5/3), grainy, less clay, loose, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-129 Page 3 of 4

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.0-5.0' Sand: Reddish brown (5 YR 5/3), very fine grain, very silty, well sorted,
				loose, wet, no odor.
90	95	5	100/3.5	Silt: Reddish brown (5 YR 4/3), very clayey, moderately plastic, trace varving with
				yellowish red (5 YR 4/6) clay, clay very effervescent with HCL, plastic, yet fissile
				looking on broken surface, looking on broken surface, wet, no odor.
95	100	5	13/5.0	Silt: As above matrix extremely clayey moderately plastic to plastic, wet, no odor.
100	105	5	35/4.8	Silt: As above 2" very fine grain sand seam at 1.5'.
105	110	5	440/5.5	Silt: Very clayey as above, wet trace clay layers yellowish red.
110	115	5	650/6.4	0-1.5' Silt: As above.
				1.5-3.5' Silt: Brown (7.5 YR 4/3), grainy, some very fine grain sand, somewhat
				loose, wet, no odor.
				3.5-5.0' Silt: Reddish brown (5 YR 5/3), very clayey silt, moderately plastic to
				plastic with some varving of somewhat grainy silt with clayey silt, trace yellowish
				red clay in varves, wet, no odor.
115	120	5	-29-28/	0-1.5' Silt: Brown (7.5 YR 5/4), silt grainy trace clay, reddish brown (5 YR 4/4),
			226-249	slight plastic to clayey, wet, cohesive, mild odor, very sandier lenses.
				1.5-5.0' Sand: Brown (7.5 YR 4/2), very fine to fine, loose, well sorted, strong
				odor, wet.
120	124	4	-24.42-21.98/	0-3.0' Sand: As above with trace clay nodules, reddish brown (7.5 YR 4/4),
			3220-3980	platy in appearance, cohesive, sand somewhat loose, strong odor.
				3.0-4.0' Silt: Reddish brown (7.5 YR 4/4), grainy to clayey, slightly plastic, slightly
				cohesive where clayey, some to much clay in layers or nodules, somewhat crumbly
				where no clay.
124	128	4	-20.89- -15.2/	0-1.0' Silt: As above, grainy, smooth in places, clay as above.
			392-972	1.0-2.5' Silt: Reddish brown (5 YR 4/2), fissile in appearance, crumbly, firm to hard,
				some clay nodules, strong odor, moist some gravel, angular to subround, up to 2".
				2.5-4.0' Mixtures of as above, firm/hard with some phyllite chunks, loose and
				crumbly, very poorly sorted, pieces of phyllite have been broken up because of
				drilling, dry to trace moist, dark reddish brown (5 YR 3/3).
128	133	5	-11.52 - -10.51/	0-1.5' Silt: Yellowish red (5 YR 5/6) crushed gravel with silt matrix (silt possibly from
			220-503	drilling), loose, dry, mild odor, much gravel, platy, possible broken up bedrock, up
				up to 2" (phyllite).
				1.5-2.0' As above, reddish brown (5 YR 5/4) color change due to increase of
				crushed lighter phylite pieces.
				2.0-2.5': As above, yellowish red (5 YR 6/8) with less platey pieces, more rock
				chucks more dust/silt, loose, dry, mild odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-129

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.0-4.5' As above, but with fragments pulverized, pink (5 YR 7/4).
				4.5-5.0' As above, trace silty clay nodule, yellowish red (5 YR 4/6).
133	136	3	-15.32 - -15.0/	0-2.0' Clayey Silt: As above, could be pulverized from drilling, loose, dry, strong
			404-596	odor, somewhat adhesive, some to much phyllite gravel up to 3.5", rounded
				pebbles with gravel, not phyllite gravel.
				2.0-3.0' Silty Clay: Dark reddish brown (5 YR 5/3) somewhat cohesive, somewhat
				plastic, moist, odor, much crumbly rocks (looks like phyllite) that pulverize when
				worked.
136	145	3	-33.94-30.12/	0-1.5': Crushed phyllite bedrock and gravel up to 4" angular to subround.
			19-38.1	1.5-3.0' Phyllite rock with quartz veins green with reddish staining, quartz is
				light (white) 5-1/2" solid core, from 1.9-2.45' rest are pieces up to 4".
				EOB @ 145 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-130 Project/No. Ford/Kingsford WI001075.0003 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 5/18/04 Drilling Completed 5/18/04

Total Depth Drilled 152 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1131.87 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Alvin Helper Jessie/Jo

Prepared By Paul Lenaker/Lori Schmidt Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	3.46-4.73/	0-1.5' Topsoil (silt and sand), very dark brown (7.5 YR 2.5/3), sand very fine to
			5.84-6.59	medium, loose to somewhat cohesive, trace gravel round to subround up to 1.5",
				trace clay, organics (leaves and rootlets), some coloring at 1.0' yellowish red
				(5 YR 4/6) mainly in sandy zones, grades over 1-1.5 into section below, moist,
				no odor.
				1.5-1.8' Sand: Silty and gravel, strong brown (5 YR 4/6), hard to crumbly, sand
				fine to medium, gravel up to 1.5", moist no odor.
				1.8-3.0' Sand: Color as above, fine to medium grain (mostly fine grain), trace to
				some coarse grain, trace gravel up to 1.25" subround to subangular, trace rootlets,
				loose, moist, no odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), fine to medium grain, mainly medium grain,
				trace coarse grain, trace gravel up to 1.5" subround to subangular, loose, moist
				to dry, no odor.
5	10	0	--	No recovery.
10	15	5	1.33-1.41/	0-3.5' Sand: As above (3-5) grading into more coarse grain (some coarse), gravel
			9.49-5.34	angular to round up to 4.5", predominately medium grain, wet, loose, no odor.
				3.5-5.0' Sand/Silt/Gravel: Dark brown (7.5 YR 3/4), sand very fine to medium,
				mainly fine, gravel up to 1.5" round to subangular, packed hard, crumbly when
				worked, moist, slight odor, some staining-green, red, orange.
15	20	3	1.06-2.77/	0-1.0' Slough with grass and leafs and roots.
			17-47	1.0-1.5' Sand: Brown (10 YR 4/3), medium grained, some fine to coarse, some to
				much silt trace to some gravel up to 3/4", somewhat sticky, wet to saturated,
				no odor.
				1.5-3.0' Silt: Dark brown (10 YR 3/3), some fine to coarse sand, mainly medium
				grain, trace gravel up to 3", fairly loose, saturated interval from 1.5-1.8, moist
				otherwise, no odor, trace hard piece turn crumbly when worked.
20	25	3	1.02-0.59/	0-0.75' Silt: As above.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-130

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			6.7-7.8	0.75-2.25' Sand: Dark yellowish brown (10 YR 3/6), fine to medium grain, mainly
				fine grain, trace coarse, trace silt, trace gravel up to 1", loose, moist, no odor.
				2.25-3.0' Silt/Sand/Gravel: Brown (10 YR 4/3), sand very fine to coarse, gravel to
				2.5" angular to subround, no odor, loose, dry, no odor pulverized and dust.
25	30	5	2.07-5.90/	0-3.0' Sand/Gravel: Coarse, dark brown (10 YR 3/3), mainly coarse sand, trace to
			11.5-13	some fine to medium grain, loose, wet, no odor, grades over 1.5-2.0 into section
				below.
				3.0-4.5' Silt/Sand/Gravel: Brown (10 YR 4/3), sand fine to coarse, gravel up to 3.5"
				round to subangular, somewhat loose, trace red staining, moist, no odor.
				4.5-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine, loose, trace gravel up to 1/2",
				round to subround, moist, no odor.
30	35	5	1.31-2.11/	0-0.5' Sand: As above.
			3.9-4.5	0.5-2.0' Sand: Color as above, fine to medium grain, mainly fine, some medium,
				trace coarse, loose, moist, no odor.
				2.0-5.0' Sand: Light reddish brown (5 YR 6/4), very fine to fine, well sorted, loose,
				trace to some silt, no odor, moist, silt is generally in layer/lense.
35	40	5	3.63-4.04/	0-2.2' Silt: Brown (7.5 YR 4/4), smooth to grainy, somewhat cohesive to crumbly,
			20.1-22.6	trace clay lenses (or nodules red - 7.5 YR 4/6) some black staining, moist.
				2.2-4.2' Sand: Color as above, very fine to fine to silt, loose, well sorted, moist,
				no odor.
				4.2-5.0' Silt: Pink (5 YR 7/3), grainy, loose, dry, no odor.
40	45	5	3.71-5.44/	0-1.5' Silt: As above, moist,
			2.9-5.6	1.5-2.5' Silt: As above, with some to trace very fine sand, some firmly packed
				chucks that break-up when worked.
				2.5-5.0' Sand: Color as above, very fine grain, very well sorted, trace silt (and in a
				nodules) loose, dry, no odor.
45	50	5	0.15-0.71/	0-2.0' Sand: Brown (7.5 YR 5/4), fine grain, some very fine, well sorted, loose, moist
			438/1198	to wet, no odor.
				2.0-2.8' Silty Sand: Strong brown (7.5 YR 4/6), sand very fine to fine, fairly well
				sorted, some black staining, loose, moist, no odor.
				2.8-3.5' Sand: Color as above with black staining, very fine to fine, some silt,
				loose, moist, no odor.
				3.5-5.0' Sand and Silt: Pink (7.5 YR 7/3), sand very fine, loose, dry, no odor,
				dusty.
50	55	5	2.22-3.88/	0-1.0' Sand and Silt: As above.
			2780-2800	1.0-1.3' Silt: Strong brown (7.5 YR 4/6), smooth, crumbly and noncohesive,
				smooth, moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-130

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				1.3-2.0' Silt: Light brown (7.5 YR 6/4), grainy, loose, trace to some very fine
				sand, moist to dry, no odor.
				2.0-3.0' Silt: Brown (7.5 YR 4/4), crumbly, smooth, trace clay nodules (yellowish
				red - 5 YR 4/6) moist, no odor.
				3.0-3.5' Silt: As above, interbedded with sand, very fine to fine, loose, dry.
				3.5-5.0' Sand: Light reddish brown (5 YR 6/3), very fine to fine, loose, some silt
				in lense, smooth to grainy silt, well sorted, dry to moist, no odor.
55	60	5	7.02-1.62/	0-5.0' Sand: As above, but fine to very fine, silt in nodules, moist to dry.
			8120-8500	
60	65	5	8.13-9.04/	0-2.0' Sand and Silt: Reddish brown (5 YR 5/4), sand very fine to fine, silt smooth
			3700-5800	to grainy, loose, clumpy in spots, moist, no odor, some intertwined
				predominately fine sand from 1-2, trace black staining coarser down section.
				2.0-5.0' Silt and Sand: Brown (7.5 YR 4/4), silt, smooth to grainy, sand very fine
				to fine, some black staining, trace clay lenses, somewhat layered to somewhat
				firmly packed to crumbly, moist to wet, mild odor sand fine grain layer from
				4.2-4.6.
65	70	5	2.47-2.70	0-5.0' Silt and Sand: As above, becoming wet, water at <2.0-3.5', somewhat
			253-1291	sticky from 4-5 more (some to much black staining) some odor.
70	75	5	0.10-5.13/	0-1.0' Silt and Sand: As above.
			12.25-2800	1.0-2.0' Silt and Sand: As above, with trace gravel to 1/4" subround, interbedded
				with sand very fine to fine grain, loose, well sorted, odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/4), fine grain, some very fine, loose, well sorted,
				moist to wet at 2-2.5 sand is very fine to silty and grades to fine to very fine at
				4.7' silt lense approximately 0.2-0.3' thick, grainy to smooth.
75	80	5	0.80-1.80/	0-4.0' Silt and Sand: Brown (7.5 YR 4/4), interbedded/laminated layers of very fine
			1119-1540	to fine sand and grainy to smooth silt, trace clay nodules, wet to saturated, slight
				odor.
				4.0-5.0' Silt: Dark brown (7.5 YR 3/4), smooth to somewhat cohesive, wet/
				saturated clay lense at 4.8', clay dark reddish brown (5 YR 3/4), some odor.
80	85	5	0.04-0.12	0-2.5' Silt: As above.
			1580-2391	2.5-5.0' Sand: Color as above, very fine to fine, loose, wet, some odor, well sorted,
				trace silt.
85	90	5	0.50-4.30/	0-1.0' Sand: As above, strong odor.
			529-1080	1.0-4.8' Silt: Dark reddish brown (5 YR 3/4), smooth to grainy, some very fine,
				trace clay, somewhat interspersed sand lenses, trace clay lenses, overall somewhat
				cohesive to somewhat loose, wet, some odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-130

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.8-5.0' Silt: Dark brown (7.5 YR 3/6), grainy, some to trace very fine sand, loose
				to crumbly, wet, odor.
90	95	5	0.52-1.04/	0-1.0' Silt: As above.
			152-199	1.0-5.0' Silt: Color as above, smooth, slight cohesive, trace clay, clay in lenses, (red
				2.5 YR 4/6) wet, odor.
95	100	5	-0.7- -0.9/	0-4.0' Silty Clay: Reddish brown (5 YR 4/4), cohesive, somewhat plastic, sticky,
			20-191	wet, some odor.
				4.0-5.0' Silty Clay: As above, somewhat cohesive, slight plastic, slight sticky, wet,
				some odor.
100	105	5	1.66-2.99/	0-1.0' Silty Clay: As above, grading into section below.
			2390-7100	1.0-5.0' Silt: Brown (7.5 YR 4/4), some to much clay, slight cohesive to crumbly,
				smoother, trace clay lense dark reddish brown (5 YR 3/4).
105	110	5	1.72-4.49/	0-5.0' Silty: As above, with only trace to some clay, with some clay lenses
			2950-4600	becoming crumbly down section.
110	115	5	1.18-1.46/	0-4.5' Silt: As above, lenses die out in section below, becomes less clayey down
			1233-2100	section.
				4.5-5.0' Silt: Reddish brown (5 YR 4/4) hard and crumbly, moist to dry, odor.
115	120	5	-0.79- -0.69/	0-2.0' Silt: Brown (7.5 YR 4/3), grainy with some very fine sand, somewhat loose,
			2600-7000	wet, odor, interbedded with silt, reddish brown (5 YR 4/4), grainy, somewhat
				loose, wet, odor.
				2.0-5.0' Sand: Brown (7.5 YR 4/3), very fine grain trace to some fine, trace
				medium.
120	125	5	-0.02-0.4/	0-4.0' Sand: Brown (7.5 YR 4/3), fine grain, some medium and very fine, fairly well
			7400-13600	sorted, loose, wet, odor.
				4.0-4.5' Sand: Color as above, very fine to fine grain, trace medium, well sorted,
				loose, wet, odor.
				4.5-5.0' As below, silt.
125	130	5	1.4-3.21/	0-2.0' Silt: Dark reddish brown (5 YR 2/4), smooth, some clay, 'pod' of hard
			1922-23000	greenish colored, silt with coarse sand (some) and grainy to 1"-pod approximately
				3" diameter dark reddish gray (5 YR 4/2).
				2.0-5.0' Sand: Dark reddish gray (7.5 YR 4/2), fine to very fine, loose, fairly well
				sorted, trace medium grain, wet, odor.
130	135	5	0.90-1.55/	0-3.0' Sand: As above, with interbedded silt up to 1" thick, smooth, noncohesive
			13400-17100	and nonplastic, wet, odor.
				3.0-4.5' Silt: Reddish brown (5 YR 3/4), smooth, grainy, crumbly, wet, odor.
				4.5-4.9' Sand: Dark brown (7.5 YR 3/4), very fine to fine, some medium, loose,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-130 Page 5 of 5

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				somewhat sorted, wet, odor, trace silt.
				4.9-5.0' Silt: As above (3-4.5).
135	140	5	1.09-1.66/	0-2.2' Sand: Dark brown (7.5 YR 3/3), very fine to fine, loose, fairly well sorted,
			7410-9100	silty clay layer at 1.0-1.1', wet, odor.
				2.2-5.0' Silt: Brown (7.5 YR 4/3), grainy, somewhat firm, trace to some very fine
				sand, wet, odor includes well sorted 'silt swirl' at 3.0', smooth, brown (7.5 YR 5/3)
				from 3.3-3.8' includes some very fine sand.
140	145	5	2.05-2.78/	0-0.5' Silt: As above (2, 2-5) dark brown (7.5 YR 3/4).
			6900-18200	0.5-5.0' Silt/Sand/Grain: Dark brown (7.5 YR 3/4), some very fine to coarse sand,
				gravel to 3" round to subangular, some clay, (till), hard, very poorly sorted, wet, odor.
145	148	3	3.05-4.52/	0-3.0' As above, till, somewhat less gravel than above, and gravel smaller (mainly
			2800-6270	1/2" size) and more clay smear on outer core surface, yellowish red (5 YR 4/6).
148	150	2	8.33 - 8.98/	0-1.5' As above, till, dark reddish brown (2.5 YR 4/4).
			127-162	1.5-2.0' Weathered bedrock? Angular pieces of phyllite, stained reddish brown,
				pulverized piece up to 2".
150	152	4	7.13-12.22/	0-2.0' Slough: Red (2.5 YR 4/8).
			270-502	2.0-4.0' Crushed weathered phyllite red (2.5 YR 4/8), powdery to angular pieces
				up to 3", metallic sheen left on gloves, no odor, dry.
				EOB @ 152'.

ARCADIS

Sample/Core Log

Boring/Well GMSB-131 Project/No. Ford/Kingsford WI001075.0003 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 5/19/04 Drilling Completed 5/19/04

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 4" x 10'/20' Sampling Interval continuous feet

Land-Surface Elev. 1131.32 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Alvin Helper Jessie/Jo

Prepared By Paul Lenaker/Lori Schmidt Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	6.4-9.0/	0-3" Asphalt: Strong brown (7.5 YR 4/6).
			2.02-5.12	3"-2.5' Sand/Silt/Gravel: Sand mainly fine, trace medium to coarse sand, loose,
				hard to crumbly, gravel up to 2", no odor, moist, trace roots.
				2.5-2.9' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium grain, trace silt,
				dry to slightly moist, no odor.
				2.9-5.0' Sand: Reddish (7.5 YR 7/6) fine sand, some medium grain, trace coarse,
				some gravel up to 2.5"; moist, no odor.
5	10	5	15.5-18.35/	0-2.0' Sand: As above.
			4.50-8	2.0-2.5' Sand: as above, but more gravel angular to round; fine to medium sand,
				some coarse, moist, no odor.
				2.5-3.2' Sand: As above, but less gravel.
				3.2-5.0' Sand: As above (2-2.5) but with trace silt, maybe in lense.
10	15	5	17.4-17.5/	0-0.5' Sand: As above (2.5-3.2).
			2.92-7.42	0.5-5.0' Sand: As above, brown (7.5 YR 4/4) grading to finer between 4 and 5'.
15	20	5	15.3-16.4/	0-1.0' Sand: As above (0.5-5) except saturated/wet.
			5.23-8.60	1.0-2.0' Sand: Brown (7.5 YR 4/3) fine to medium; some to much silt, trace very fine
				sand, trace coarse, trace gravel, subangular to subround to 3", no odor, moist,
				mostly loose.
				2.0-5.0' Sand: Brown (7.5 YR 4/4) predominately fine with very fine , medium
				grain, trace silt nodules, trace gravel up to 1" subangular to subround, clumps,
				mostly loose, somewhat moist, no odor.
20	25	0	--	No recovery.
25	30	5	7.92-8.34/	0-2.0' Sand and Gravel: Brown (7.5 YR 4/3) gravel up to 5" subangular to round,
			9.59-12.20	sand predominately coarse with some fine to medium, trace silt, loose, wet, no
				odor, loose.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-131 Page 2 of 3

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.0-3.5' Gravelly sand: Brown (7.5 YR 4/2), medium to coarse sand with some
				fine, much silt, gravel up to 2" subangular to subround, moist no odor; clumpy,
				somewhat loose.
				3.5-5.0' Sand: Brown (7.5 YR 4/4), medium grain, some fine, trace coarse, some
				gravel up to 3" subround to subangular, loose, moist, no odor.
30	35	5	11.35-19.29/	0-3.5' Sand: As above (3.5-5') except more gravel, subangular to subround, poorly
			4.35-13.02	sorted, grading into finer matrix by 3.5'.
				3.5-5.0' Sand: Brown (7.5 YR 5/4), somewhat sorted, mostly fine with some medium
				grain to coarse, trace very fine, trace gravel up to 1.5" subround, moist, no odor,
				loose.
35	40	5	4.5-6.05/	0-0.5' Sand: Brown (7.5 YR 4/4), somewhat sorted, mostly fine, with trace to some
			4.7-11.74	medium grain and coarse, wet, loose, no odor.
				0.5-4.6' Sand: Brown (7.5 YR 5/4), somewhat well sorted, fine grain, slight silt
				lenses, trace medium grain, trace gravel up to 1" subround to subangular, wet,
				loose, no odor.
				4.6-5.0' Sandy Silt: Light reddish brown (5 YR 6/4) much sand very fine to fine;
				trace medium to coarse, silt in clumps, grainy clumps, packed but easily broken up,
				moist, no odor.
40	45	5	18.22-19.57/	0-1.5' Sandy Silt: As above.
			8.82-16.81	1.5-2.5' Sandy Silt: Color as above, sand is very fine, dry, no odor, silt still clumps
				a bit.
				2.5-5.0' Sand: Color as above, fine to very fine sand, well sorted, trace silt lenses,
				somewhat moist, loose, no odor.
45	50	5	4.25-4.67/	0-5.0' Sand: As above (2.5-5.0') reddish brown (5 YR 5/4) with trace gravel
			4200-6600	between 1.0-1.5'.
50	55	5	9.19-9.22/	0-1.5' Silt: Yellowish red (5 YR 5/4), smooth, some black staining in chunk,
			11500-13000	somewhat easily broken apart, trace very fine sand, moist, no odor.
				1.5-2.0' Silt dark reddish brown (5 YR 3/3), otherwise as above 0-1.5.
				2.0-4.5' Sand; Reddish brown (5 YR 5/3), well sorted fine grain, trace silt/very
				fine sand lenses, moist, no odor, loose.
				4.5-5.0' Sand: As above except reddish gray (5 YR 5/2).
55	60	5	0.91-1.02/	0-2.5' Sand: Brown (7.5 YR 4/4), well sorted very fine to fine, trace silt, somewhat
			1700-2003	packed, moist, no odor, staining, brown (7.5 YR 4/3) between 1.5-2.5.
				2.5-4.0' Sand: As above except reddish brown (5 YR 5/4), fine to very fine, not well
				packed, loose.
				4.0-5.0' Sand: As above (2.5-4.0) except dark reddish brown (5 YR 3/3).
60	65	5	0.97-1.17/	0-5.0' Sand: As above except reddish brown (5 YR 4/4), color grading to reddish

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-131 Page 3 of 3

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			662-895	brown (5 YR 4/3).
65	70	5	2.25-4.14/	0-0.3' As above (0-5.0).
			2360-8400	0.3-1.4' Silt: Dark reddish brown (5 YR 4/3), stiff, HP of 1.0, somewhat smooth to
				grainy, trace very fine sand gradually grading to much very fine sand, trace clay
				lenses, moist, mild odor, somewhat easily broken apart.
				1.4-5.0' Sand: Color as above (0.3-1.4), very fine to fine sand, well sorted, trace
				silt, trace clay lenses, well packed, moist, mild odor, dark staining and silt lense at 4.5.
70	75	5	3.67-4.82/	0-0.3' Sand: As above (1.4-5.0).
			5000-10300	0.3-3.5' Silt: Brown (7.5 YR 4/4), stiff, HP=2.5, silt is smooth to somewhat grainy,
				some fine to very fine sand lenses, trace dark staining, moist, strong odor.
				3.5-4.5' Sand: Reddish brown (5 YR 5/3), very fine to fine, well sorted, loose, moist,
				odor.
				4.5-5.0' Sand: Color as above (3.5-4.5), fine to very fine, well sorted, trace silt lenses,
				moist odor, somewhat packed and somewhat easily broken apart.
75	80	5	1.6-6.02/	0-5.0' Sand: Wet, very dark brown (75. YR 2.5/3), moist, brown (7.5 YR 4/3), very
			140-860	fine to fine grain, well sorted, somewhat lose, much dark staining, trace silt lenses,
				very wet to moist, strong odor.
80	85	5	5.65-5.81/	0-3.0' Sand: As above.
			701-1001	3.0-4.0' Silt: Dark brown (7.5 YR 3/3), silt is grainy, packed with some clay, trace
				very fine sand, moist, odor, black and reddish staining (some).
				4.0-5.0' Sand: Brown (7.5 YR 4/3), very fine, well sorted, saturated/wet, strong
				odor, trace silt, black stained banded at 5.0 with trace clay, somewhat packed.
85	90	5	5.29-5.71/	0-3.8' Sand: Brown (7.5 YR 4/3), very fine to fine grained, well sorted, much
			2900-3700	black staining, trace silt; very moist, odor.
				3.8-5.0' Silt: Brown (7.5 YR 4/3), smooth, stiff HP=1.25', moist, odor, trace dark
				staining.
90	95	5	8.08-11.02/	0-0.3' Silt: As above (3.8-5.0).
			2900-3800	0.3-1.0' Sand: Very fine, well sorted, packed, black staining, very moist, odor.
				1.0-1.8' Silt: As above (0-0.3).
				1.8-5.0' Sand: Black (7.5 YR 2.5/1) very fine, well sorted, well pack, very heavily
				stained (reflected in cold), some silt, very moist, odor.
				EOB @ 95 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-132 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 7/7/04 Drilling Completed 7/7/04

Total Depth Drilled 137 Feet Hole Diameter 12 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' and 20' x 4" Core barrel Sampling Interval continuous feet

Land-Surface Elev. 1047.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	2.5	236-368/0	0-1.5' Silt: Dark reddish brown (5 YR 3/3), organics, soft to crumbly, moist.
				1.5-2.5' Sand: Dark reddish brown (5 YR 3/3), very fine to coarse sand, mostly
				fine, some subangular to subrounded gravel up to 3 inches, mostly fine gravel,
				trace silt, loose, poorly sorted, moist.
5	10	5	214-1625/	0-0.5' Sand: As above.
			0-2.38	0.5-1.0' Silt: Dark brown (7.5 YR 3/3), trace subangular to subrounded gravel up
				to 0.5 inches, organics, trace silt/clay nodules-reddish brown (5 YR 4/4), soft to
				crumbly, low cohesiveness, moist.
				1.0-4.5' Sand: Dark reddish brown (5 YR 3/3), very fine to coarse sand, mostly fine
				sand, trace silt, some subangular to subrounded gravel, loose, poorly sorted, moist.
				4.5-5.0' Silt/Sand/Gravel: Brown (7.5 YR 44/), angular to subrounded gravel up to
				3 inches, soft to crumbly, somewhat cohesive, poorly sorted, moist,
10	15	5	4.67-102/	0-0.5' Sand: Dark reddish brown (5 YR 3/3), very fine to coarse sand, mostly fine
			1.01-5.18	sand, trace silt, some subangular to subrounded gravel, loose, poorly sorted, moist.
				0.5-2.0' Silt/Sand: Dark brown (7.5 YR 3/4), fine to coarse sand, little subrounded
				gravel, sandier with depth, mostly very fine to fine sand, soft, somewhat cohesive,
				poorly sorted, saturated.
				2.0-5.0' Silt/Clay: Silt-reddish brown (5 YR 5/4), clay-red (2.5 YR 4/6), interbedded,
				soft to crumbly, smooth to grainy silt, fissile, platy clay, uniform beds, silt-0.25-2
				inches clay-varve to 0.5 inches.
15	20	5	344-1924/0	0-1.5' Sand: Reddish brown (5 YR 4/3), fine to coarse sand, mostly coarse sand,
				trace silt, mostly fine sand from 1-1.3 feet, loose, well sorted, saturated.
				1.5-2.0' Sand: Brown (7.5 YR 4/3), fine to coarse sand, mostly medium sand, some
				subangular to subrounded gravel, trace silt, loose, poorly sorted, saturated.
				2.0-2.5' Sand/Gravel: Brown (7.5 YR 4/3), angular to subrounded gravel, trace
				silt, loose, poorly sorted, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-132 Page 2 of 4

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				2.5-5.0' Sand: Reddish brown (5 YR 4/3), very fine to coarse sand, mostly fine,
				strong odor, loose, well sorted, saturated.
20	25	5	933-13100/	0-5.0' Sand: As above.
			0	
25	30	5	2137-18600/	0-2.0' Sand: As above.
			0	2.0-5.0' Sand: Dark reddish gray (5 YR 4/2), fine to coarse sand, mostly medium
				sand, trace subrounded gravel, strong odor, loose, well sorted, saturated.
30	35	5	2837-13300/	0-0.5' Sand: As above.
			0	0.5-2.0' Sand: Reddish brown (5 YR 5/3), very fine to coarse sand, mostly very fine
				to fine sand, little subrounded gravel up to 1 inch, trace silt, strong odor, loose,
				moderately sorted, saturated.
				2.0-5.0' Sand: Reddish brown (5 YR 4/3), very very fine to very fine sand, some
				silt, strong odor, loose, well sorted, uniform, saturated.
35	40	5	276/6011/0	0-5.0' Sand: Reddish brown (5 YR 4/3), very very fine to very fine sand, trace
				subrounded gravel, strong odor, methane vesicles, loose, well sorted, saturated.
40	45	5	1867-15900/	0-5.0' Sand: As above.
			0	
45	50	5	5793-25600/	0-5.0' Sand: As above, fine sand pockets.
			0	
50	55	5	14300-	0-5.0' Sand: As above, fine sand pockets.
			45400/0	
55	60	5	7.21-227/0	0-5.0' Sand: Reddish brown (5 YR 4/3), very very fine to very fine sand, mostly
				very fine, some silt, strong odor, methane vesicles, loose, well sorted, saturated.
60	65	5	3128-12900/	0-5.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, mostly fine sand,
			0	some silt, trace coarse sand, strong odor, methane vesicles, loose, well sorted,
				saturated.
65	70	5	959-16900/	0-1.0' Sand: Reddish brown (5 YR 4/3), very fine to fine sand, mostly fine sand,
			0.09-2.61	trace coarse sand, some silt, trace subangular gravel, strong odor, loose, well sorted,
				saturated.
				1.0-5.0' Silt: Reddish brown (5 YR 4/), smooth to grainy, trace to little clay, trace
				subrounded fine gravel up to 0.5 inches at base, trace coarse sand, soft, slightly
				sticky, uniform, methane vesicles, somewhat cohesive, saturated.
70	75	5	2179/5464/	0-1.0' Silt: As above.
			1.31-5.91	1.0-1.5' Grades to very fine to fine sand.
				1.5-5.0' Sand: Reddish gray (5 YR 5/2), very fine to fine sand, some silt, strong
				odor, methane vesicles, uniform, loose, well sorted, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-132 Page 3 of 4

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
75	80	5	1108-9309/	0-5.0' Silt: Reddish brown (5 YR 4/3), grainy, uniform, soft, bubbles, methane
			0.91-1.21	vesicles, strong odor, saturated.
80	85	5	1807-1449/	0-5.0' Silt: Reddish brown (5 YR 4/3), grainy, fine sand pockets, soft, uniform,
			0.48-2.91	strong odor, methane vesicles, saturated.
85	90	5	1208-33600/	0-2.0' Silt: As above, but no sand pockets.
			3.97-5.92	2.0-5.0' Silt: Reddish brown (5 YR 4/3), grainy, 1-2 inch fine sand pockets, soft,
				uniform, strong odor, methane vesicles, saturated.
90	95	5	1208-59700/	0-2.0' Silt: As above.
			3.41-6.01	2.0-5.0' Silt: Reddish brown (5 YR 4/3), trace clay, smoother, less grainy, soft to
				crumbly, uniform, maintains crumbles, strong odor, saturated.
95	100	5	901-3212/	0-1.0' Silt: Dark reddish gray (5 YR 4/2), grainy, soft, uniform, strong odor,
			0-2.26	saturated.
				1.0-1.5' Sand/Silt: Dark reddish gray (5 YR 4/2), fine sand, grainy silt, uniform,
				strong odor, saturated.
				1.5-3.0' Silt: Same as 95-96 feet.
				3.0-3.5' Sand: Reddish brown (5 YR 4/3), very fine sand, strong odor, loose, well
				sorted, saturated.
				3.5-5.0' Silt: Same as 95-96 feet.
100	105	5	1256-2489/	0-5.0' Silt: Reddish brown (5 YR 4/3), grainy, trace to little very fine sand from
			0-3.99	4 to 5 feet, soft to crumbly, uniform, strong odor, methane vesicles, somewhat
				cohesive, saturated.
105	110	5	1089-14700/	0-5.0' Silt: Reddish brown (5 YR 4/3), trace clay, smooth to grainy, uniform, soft to
			3.61-4.73	crumbly, moderately cohesive, trace black staining from 4-5 feet, sticky from 3-4
				feet.
110	115	5	7749-48700/	0-0.5' Silt: As above.
			2.14-5.99	0.5-3.0' Sand: Reddish gray (5 YR 5/2), very fine to fine sand, mostly very fine,
				some silty, silty clay nodules-fairly plastic, red (2.5 YR 4/6), strong odor, uniform,
				loose, well sorted, saturated.
				3.0-3.5' Silt: Reddish brown (5 YR 4/3), grainy, soft, uniform, strong odor,
				saturated.
				3.5-4.0' Sand: Same as 110.5 - 113 feet.
				4.0-5.0' Silt: Same as 113-113.5 feet.
115	120	5	264-7163/	0-5.0' Silt: Brown (7.5 YR 4/3), clay-yellowish red (5 YR 4/6), some clay, smooth to
			0-1.06	grainy silt, plastic clay, sticky, fissily, strong odor, very soft, saturated.
120	125	5	24.68-408/	0-5.0' Silt/Clay: Reddish gray (5 YR 5/2), interbedded, smooth from 4-5 feet, grainy
			0.5-1.31	from 0-4 feet, soft to crumbly to firm, plastic clay, fisisly, sticky, strong odor,
				saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-132 Page 4 of 4

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
125	130	5	3.98-37.69/	0-4.0' Silt: Brown (7.5 YR 5/2), smooth, fissily, soft to crumbly, trace clay layers,
			0.9-2.71	platy clay, strong odor, saturated.
				4.0-5.0' Silt: Dark greenish gray (1 Gley 4/1), trace subangular to subrounded
				gravel at 130 feet with trace coarse sand, trace clay layers, crumbly to firm,
				cohesive, uniform, slight odor, saturated.
130	135	5	14.85-27.29/	0-5.0' Silt: Dark greenish gray (1 Gley 4/1), trace to little clay, trace coarse to very
			0.95-3.71	coarse sand, trace subangular to subrounded gravel (fine to coarse), weathered
				rock, hard, cohesive, poorly sorted, no odor, saturated, till.
135	137	2	20.13-36.77/	0-1.0' Silt-Till: Bluish gray (2 Gley 6/1), pulverized weathered rock, crumbly, trace
			0	fine to coarse gravel, angular to subrounded.
				1.0-2.0' Bedrock: Phyllite, foliated, white veins.
				EOB @ 137'.

ARCADIS

Sample/Core Log

Boring/Well GMSB-133 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 7/26/04 Drilling Completed 7/26/04

Total Depth Drilled 155 Feet Hole Diameter 12 inches

Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1048.95 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Paul Lenaker

Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	2.5	25.90-30.90/	0-2.3' Silt: Very dark brown (7.5 YR 2.5/2), topsoil, organics, rootlets, tree roots,
			80-127	grass, trace very fine sand, loose, grainy silt, clumpy, crumbly, moist, organic,
				odor.
				2.3-3.5' Silt: Yellowish brown (10 YR 5/4), smooth to grainy, some very fine to
				very coarse sand, little angular to subround gravel to 1", poorly sorted mixture,
				loose, crumbly, no odor.
5	10	5	0.57-2.67/	0-3.0' Sand and Gravel: Dark brown (2.5 YR 3/3), sand very fine to very coarse,
			271-533	predominately very fine to fine, gravel subangular to subround to 2", some
				silt, poorly sorted, loose, moist, no odor, grades over 2.5-3.0 into unit below.
				3.0-4.0' Sand: Brown (7.5 YR 5/4), very fine to fine grain, well sorted, loose,
				damp, no odor.
				4.0-5.0' Sand/Gravel: Brown (7.5 YR 4/3), silty, sand very fine to very coarse,
				predominately very fine, gravel angular to subround up to 1", poorly sorted
				mixture, loose, damp, no odor.
10	15	5	1.51- -0.8/	0-5.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/3) from 0-1.5 then grades into
			35-602	brown (7.5 YR 4/1), clay is yellowish red (5 YR 4/6), predominately silt with clay
				varving 0-1.5', then more clay below 1.5, clay interbeds increase downward
				ranging from varves to 1.5" thick layers, silt is grainy, trace black staining
				throughout, clay is plastic with platy appearance on broken surface, trace very
				fine sand in places (very thin layers), cohesive, clay firm (HP >4.0), moist, no odor.
15	20	3	-2.51 -0.85/	0-3.0' Silt/Clay Interbeds: As above with clay layers varved to 1" thick, no odor,
			290-3350	black staining in silt.
20	25	5	-2.79- -2.3/	0-2.0' Sandy Silt: Brown (7.5 YR 4/4), sand predominately very fine, little medium
			350-8710	to coarse, silt grainy to smooth, trace fine gravel, trace clay, sticky somewhat
				cohesive, black staining, saturated, no odor, grades into unit below.
				2.0-3.0' Silty Sand: Dark brown (7.5 YR 3/4), grading into sandier from above,
				predominately fine, but very fine to very coarse, and very silty, much gravel

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-133 Page 2 of 4

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				subangular to subround up to 2", very poorly sorted, loose, saturated, no odor.
				3.0-5.0' Silty Sand: Brown (7.5 YR 4/3) grading from above, sand predominately
				medium to coarse, little to some very fine to fine, very silty 3.0-4.0, silt is grading
				out decreases down section, little gravel subangular to subround to 1.5",
				moderately sorted, loose, saturated, odor.
25	30	5	-2.28 - -1.12/	0-5.0' Sand: Brown (7.5 YR 4/4), sand fine to very coarse, predominately medium,
			4600-10100	moderately to well sorted, trace subround gravel to 1.5", clean, loose, odor.
30	35	5	-1.84-0.89/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine grain, trace medium to coarse
			424-15100	and fine gravel subangular, well sorted, uniform, loose, saturated, odor.
35	40	4	0.32-3.73/	0-4.0' Sand: Brown (7.5 YR 4/4), predominately fine grain, little very fine, trace
			3707-7124	medium to coarse, silty in few places, probably silt beds approximately 1" thick
				at 1.0 and 3.0, trace angular to subround gravel to 1.5", moderately sorted,
				slightly coarser 3.5-4.0 with predominately medium grain, loose, wet, odor.
				4.0-5.0' Sand/Silt: Brown (7.5 YR 5/4), very very fine sand, approaching very
				grainy silt size, trace gravel angular to subround to 1.5", uniform, loose, wet,
				odor.
40	45	5	1.56-6.36/	0-5.0' Sand/Silt: As above, uniform sample, wet, odor.
			4400-24800	
45	50	5	0.81 - 6.49/	0-5.0' Silt: Brown (7.5 YR 4/3), a few areas with some clay in matrix, silt smooth
			1411-30700	to grainy, predominately grainy, black staining, loose to somewhat cohesive,
				saturated, odor.
50	55	5	0.03-4.12/	0-5.0' Silt: As above, brown, grainy, uniform sample black staining, some
			5000-35900	interbeding 4.0-4.5 with smooth silt/grainy silt, smooth silt is brown (2.5 YR 5/3),
				hard, layers/interbeds approximately 0.25 to 0.5" thick, otherwise as above, strong
				odor.
55	60	5	1.49-6.24/	0-5.0' Silt: brown (7.5 YR 4/4), very grainy, black staining, vesicles, uniform,
			917-10400	saturated, somewhat cohesive, somewhat sticky to somewhat loose, very strong
				odor.
60	65	5	0.32-4.91/	0-5.0' Silt: As above, but firmer, predominately smooth, some grainy, otherwise
			2010-3100	as above, strong odor.
65	70	5	16-86/	0-5.0' Silt: As above, grainy to smooth.
			25700-110000	
70	75	5	1.0-2.05/	0-5.0' Silt: As above, grainy to smooth, wet, strong odor.
			19500-	
			>151600	
75	80	5	-0.18-0.47/	0-5.0' Silt and Sand: Brown (7.5 YR 4/4), silt grainy to smooth, mostly grainy,
			1550-2352	sand very very fine, trace very fine to fine, slightly more sand/less silt below 3.0,

Sample/Core Log (continued)

Boring/Well GMSB-133 Page 3 of 4

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				vesicles, uniform somewhat cohesive to loose, trace black staining, saturated,
				strong odor.
80	85	5	-.54 - -.1/	0-5.0' Silt and Sand: As above, many vesicles, strong odor, saturated, uniform
			1331-14000	sample.
85	90	5	.31-2.54/	0-5.0' Silt: Brown (7.5 YR 5/4), as above, but slightly firmer, less very fine sand,
			478-31500	more toward grainy silt, some smooth, silt, slight grain size variations very minor,
				all the way from approximately 39.0', but overall uniform silt, loose to somewhat
				cohesive, wet to saturated, vesicles, strong odor.
90	95	5	.65-2.04/	0-5.0' Silt: As above, grainy to smooth, trace very fine sand in a few places, wet
			22500-59000	to moist, strong odor.
95	100	5	-.32-2.38/	0-5.0' Silt: As above, brown (7.5 YR 4/4), grainy to smooth, many vesicles, uniform,
			1009-8220	somewhat cohesive to loose, wet to saturated, strong odor.
100	105	5	-0.68-1.08/	0-5.0' Silt: As above, somewhat smoother 101.0-103.0, trace to little very fine
			1210-49100	sand 104.5 - 105.0, otherwise as above.
105	110	5	-.4-1.13/	0-1.5' Sand: Brown (7.5 YR 5/4), very fine to fine grain, predominately very fine,
			4500-121500	well sorted, loose, some silt, but most likely from core barrel, probably clean
				sand, saturated, strong odor, sharp contact with unit below.
				1.5-5.0' Silt: Brown (7.5 YR 4/4), smooth silt, somewhat sticky and cohesive,
				many vesicles, saturated, strong odor, trace very fine sand as above at very
				bottom of sample.
110	115	5	.25-1.07/	0-1.0' Silt: As above, but little very fine to fine sand mixed in matrix probably
			37100-79000	from unit below, strong odor, saturated.
				1.0-3.0' Sand: Brown (7.5 YR 4/3), very fine to fine grain, more fine grain than
				105.0-106.5, well sorted, loose, saturated, odor.
				3.0-5.0' Silt/Sand: Interbedded brown (7.5 YR 4/4), silt grainy to smooth, sand
				well sorted, very fine to fine, silt and sand layers appears approximately 3' thick,
				but hard to discern, distorted from drilling/intermixed, loose to crumbly,
				saturated, odor.
115	120		1.13-1.65/	0-5.0' Silt/Sand: Interbedded as above, sand very fine to fine, predominately sand
			1295-19500	interbeds up to 1.5' thick, separated by grainy smooth silt with vesicles, black
				staining silt interbeds up to 0.5' thick, separated by grainy to smooth silt with
				vesicles, black staining silt interbeds up to 0.5' thick, silt somewhat crumbly to
				somewhat cohesive, color is brown (7.5 YR 4/3), saturated, odor, trace fine
				gravel 4.5-5.0.
120	125	5	-.31- -94/	0-5.0' Silt/Sand: Interbedded as above, but predominately silt up to 3' thick, less
			4014-7801	sand.

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Sample/Core Log (continued)

Boring/Well GMSB-133 Page 4 of 4

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
125	130	5	.2 - -38/	0-5.0' Silt/Sand: Interbeds as above, trace medium grain sand in 4.0-5.0.
			4117-47000	
130	135	5	.26-.54/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine grain, well sorted, somewhat
			7000-91700	loose, saturated, odor.
135	140	5	5.26-10.59/	0-2.5' Silty Sand: Brown (7.5 YR 4/4), sand is very fine to fine grain, trace medium
			2710-139800	to coarse, silt, trace fine gravel, trace yellowish red (5 YR 4/6) clay vaving, moderately
				sorted, somewhat loose, saturated, odor.
				2.5-4.0' Sand: Brown (7.5 YR 4/3), fine grain, some silt in places, well sorted,
				somewhat loose, saturated, odor.
				4.0-4.2' Silt: Brown (7.5 YR 4/3), trace yellowish red clay varving, clay is plastic,
				silt is smooth somewhat cohesive, saturated, odor.
				4.2-5.0' Sand: Brown (7.5 YR 5/3), very fine grain approaches graining silt in
				places, trace subangular to subround gravel to 0.5", very well sorted, somewhat
				loose, saturated, odor.
140	145	5	8.65-12.68/	0-5.0' Sand: As above, brown (7.5 YR 5/3), very fine grain, trace fine, but with a
			14500-	few silt interbeds with smooth silt dark brown (7.5 YR 3/2), trace gravel angular to
			>151000	subround fine to 3", silt beds approximately 1-3" thick at 2.0 and 4.0, silt is
				cohesive, overall somewhat loose, saturated, odor.
145	150	5	9.91-12.06/	0-0.2' Sand: As above.
			4303-12900	0.2-0.7' Silt/Gravel/Sand: Brown (7.5 YR 4/3), trace clay in matrix, sand very fine
				to very coarse, gravel angular to subround up to 4", mostly bedrock pieces, silt
				smooth, very poorly sorted mixture, loose to somewhat cohesive, saturated,
				odor.
				0.7-5.0' Interbedded Silt and Clay: Predominately silt, silty is brown (7.5 YR 4/3),
				clay yellowish red (5 YR 4/2), clay varved to approximately 1" thick layers, mostly
				varved, intermixed, disturbed from drilling, little gravel angular to subround up
				to 3.5" but mostly fine gravel in matrix, sandy with very fine sand in places,
				especially 3.0-4.5, clay is plastic and cohesive with fissile appearance, overall
				somewhat cohesive to somewhat crumbly, moist to wet, odor.
150	155	5	16.49-12.99/	0-4.5' Sand: brown (7.5 YR 5/3), very fine to fine grain, some silt interbeds
			13100-91500	approximately 1" thick with smooth silt throughout, also silt clay interbeds 2"
				thick at 2.5, trace very fine to very coarse and in silty/clay, trace clay varving with
				yellowish red clay as above, sand is well sorted, loose, saturated, odor.
				4.5-5.0' Clay: Reddish brown (5 YR 4/4), with some fine silt laminations, hard,
				firm, HP >4.0, plastic when worked, trace very fine sand fine layers, platy
				appearance on broken surface, cohesive, moist, odor.
				EOB @ 155'.

ARCADIS

Sample/Core Log

Boring/Well GMSB-134 Project/No. Ford/Kingsford WI001075.0015 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 8/6/04 Drilling Completed 8/6/04

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10' x 4", 10' x 5" Sampling Interval continuous feet

Land-Surface Elev. 1069.16 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	0.65-1.56/	0-0.5' Asphalt Pavement: Black, crushed asphalt and hematite road base.
			0.22-4.16	0.5-5.0' Silt: Dark yellowish brown (10 YR 4/6), grainy to smooth, some gravel
				subangular to subround up to 2" little to some sand in places, very fine to fine, 2"
				thick cohesive silt layer at 2.5 with black laminations, layer could be compacted
				from drilling, overall loose, damp, no odor.
5	10	5	4.39-8.26/	0-3.0' Sand: Strong brown (7.5 YR 5/8), very fine to very coarse grain, little silt,
			1.91-6.85	very poorly sorted, little gravel subangular to subround up to 3" but mostly
				fine, loose, damp, no odor.
				3.0-5.0' Sand: Strong born (7.5 YR 5/6), fine grain, trace very fine, trace medium to
				coarse, little gravel subangular to subround up to 3" as above, but predominately
				fine gravel, moderately well sorted, loose, damp, no odor.
10	12.5	2.5	7.6-115/	0-0.2' Sand: As above.
			3.01-12.95	0.2-1.5' Clayey Silt: Strong brown (7.5 YR 4/6), little to some sand, medium to very
				coarse suspended in matrix (fabric), possibly was interbedded clay varves and silt,
				but also clay in matrix, massive cohesive, somewhat plastic, soft, moist, little fine
				gravel also suspended in matrix, no odor.
				1.5-2.5' Clayey Silt: As above, but broken up and intermixed with angular, broken
				pieces of hard, dense rock, probably bedrock, rock pieces are coated in white
				powdery layer, black (10 YR 4/1) when washed, very hard drilling, crumbly and
				loose overall, dry to damp, no odor.
12.5	15	2.5	10.27-38.5/	0-2.5' Bedrock. Pulvsized, powdery rock with some large pieces, broken from
			24-78	drilling, hard drilling, rock is black (10 YR 4/1), very hard, dense, massive, appears
				to have a near vertical foliation pattern, but not obvious.
15	25	10	--	0-10.0' Bedrock core as above, a few white veins, foliation is vertical relative to
				hole.
				EOB @ 25'.

ARCADIS

Sample/Core Log

Boring/Well GMSB-135 Project/No. Ford/Kingsford WI001075.0015 Page 1 of 7

Site Location Kingsford, Michigan Drilling Started 8/7/04 Drilling Completed 8/9/04

Total Depth Drilled 292 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4", 10' x 5", 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1125.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	3.41-4.43/	0-0.5' Grass and weeds.
			1.7-6.93	0.5-1.0' Sand and Silt: Light brown (7.5 YR 6/4), sand very fine to very coarse,
				trace fine gravel, powdery, poorly sorted, trace organics, loose, dry, no odor, fill.
				1.0-1.5' Silt: Brown (7.5 YR 5/4), many rootlets, organics, little very fine to fine sand,
				loose, powdery, dry, wood chips/pieces, no odor, fill.
				1.5-2.0' Wood chips, sticks, organics, compost, fill.
				2.0-5.0' Silt: As above brown (10 YR 4/3), but moist, also some wood chips, plastic,
				sheeting, fill.
5	10	5	4.72-7.05/	0-5.0' Fill Material, compost, black (10 YR 2/1), wood pieces, sand, gravel, silt mixed
			17-46	in, nails, garbage, moist to wet, organic odor.
10	15	5	1.25-4.75/	0-5.0' Silt/Clay Interbeds: Silt brown (7.5 YR 4/4), clay yellow red (5 YR 4/6),
			1.35-16.79	predominately smooth silt with regular clay interbeds varved to 1" thick, clay is
				plastic, somewhat stiff, HP = 2.5, fissile/platy appearance on broken surfaces,
				cohesive, black coloring on some laminae (not staining), silt somewhat cohesive
				and firm, somewhat crumbly when worked, overall moist, no odor.
15	20	5	9.22-20.26/	0-5.0' Silt with Clay Interbeds: As above, brown (7.5 YR 4/4), but also contains little
			37-138	sand very fine to very coarse, and trace fine subangular to subround gravel in silt
				matrix, highly distrubed from drilling, soft, clay is varved to 0.5", crumbly and
				somewhat smooth plastic, loose, moist, could be silt/clay interbeds as above,
				other constituents could be drilling phenomena, but appear to be real.
20	25	5	32.5-463/	0-4.0' Silt/Clay Interbed: As above in 10-15' with clay beds varved to 1" thick,
			3-51	much more clay content than above, still predominately silt, but many clay beds,
				moist, no odor.
				4.0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium, very well sorted,
				uniform, loose, moist, no odor.
25	30	5	3.86-8.40/	0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium, very well sorted,
			2.73-9.35	uniform, loose, damp, or odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-135 Page 2 of 7

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
30	35	5	4.93-17.30/	0-1.5' Sand: Strong brown (7.5 YR 4/6), fine to coarse grain, predominately fine,
			6.31-45.93	little subround gravel up to 1.5", moderately sorted, loose, moist (drilling fluid),
				no odor.
				1.5-2.0' Sand: As above, but fine to medium grain, trace coarse, trace fine gravel,
				loose, damp to moist, no odor.
				2.0-3.0' Silt and Sand: Yellowish brown (10 YR 5/4), sand very fine to coarse,
				predominately very fine to fine, very silty, little fine gravel subangular to
				subround, loose, powdery, damp, no odor.
				2.0-5.0' Sand: As above in 25-30',fine grain, very well sorted and uniform, loose,
				damp, no odor.
35	40	5	0-9.77/	0-3.0' Different types of sand as seen in above units, intermixed, slough.
			24-69	3.0-5.0' Sand: Yellowish brown (10 YR 5/4), very fine to very coarse, predominately
				fine to medium, trace silt, trace subangular to subround gravel up to 0.5", very
				poorly sorted, loose, moist, no odor.
40	45	5	-0.46-5.33/	0-3.0' Sand: As above, very poorly sorted, all sizes, predominately fine to medium,
			7-47	trace silt, moist, no odor.
				3.0-3.5' Sandy Silt: Dark yellowish brown (10 YR 4/4), sand very fine to very
				coarse, predominately very fine, little angular to subround gravel, poorly sorted,
				very silt, loose, powdery, some silt cemented in nodules, like hardpan, dry, no
				odor.
				3.5-4.0' Silt: Pale brown (10 YR 6/3), some sand very fine to very coarse, little
				gravel angular to subround up to 1.5", very loose, dusty/powdery, dry, no odor.
				4.0-5.0' Silty Sand: Dark yellowish brown (10 YR 4/4), very fine grain, little fine
				to coarse, trace angular to subround gravel up to 1", loose, powdery, damp,
				no odor.
45	50	5	0.21-0.41/	0-2.5' Sand: Dark yellowish brown (10 YR 4/4), fine grain, very well sorted, loose,
			1.85-2.83	moist, no odor.
				2.5-5.0' Sand: Very fine to fine grain, trace medium to coarse, trace gravel,
				subround up to 1", moderate to well sorted, loose, moist could be bad sample, core
				barrel moved up and down a lot.
50	55	5	1.20-3.23/	0-2.5' Slough: Intermixed sands and silt, extremely distorted from drilling.
			10-57	2.5-3.5' Silty Sand: Dark yellowish brown (10 YR 4/4), sand predominately very
				fine to fine, little medium to coarse, trace to little gravel subround up to 1", poorly
				sorted, loose, moist to wet, no odor, could be slough.
				3.5-4.0' Sand: Dark brown (10 YR 3/3), coarse grain, some fine to medium,
				moderately well sorted, trace fine subround gravel, many bright orange coarse
				sand grains, loose, saturated, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-135 Page 3 of 7

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.0-5.0' Silt Sand: As above, could be slough, looks very disturbed.
55	60	5	0.20-2.21/	0-0.5 Sand: As above in 53.5-54.0, predominately coarse grain, saturated, no odor.
			2.31-33.94	0.5-1.5' Sand: Dark brown (7.5 YR 3/3), fine coarse grain, predominately medium,
				poorly to moderately sorted, trace fine gravel subround, little silt but could be
				washed in from above, loose, saturated, no odor.
				1.5-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace to little medium to coarse,
				moderately to well sorted, trace fine subround gravel, little silt, but could be
				washed in from above, loose, saturated, no odor.
60	65	5	0.12-1.47/	0-0.5' Sand: As above, but slightly coarse, predominately fine to medium.
			2.14-16.58	0.5-2.0' Sand/Silt: Brown (7.5 YR 5/4), very fine sand to very grainy silt size, well
				sorted, uniform, loose, saturated, no odor.
				2.0-3.0' Silt: Brown (7.5 YR 4/4), grainy, approaching very fine sand size but
				somewhat finer than above, trace black staining, uniform, sharp contact with
				unit above, somewhat soft, somewhat loose, saturated, no odor.
				3.0-5.0' Sand: Brown (7.5 YR 5/4), very fine to fine grain, very well sorted, uniform,
				loose, saturated, no odor.
65	70	5	-2.22- -0.13/	0-4.0' Sand: As above, very fine to fine grain, saturated, no odor.
			0.66-14.67	4.0-5.0 Sand/Silt: Brown (7.5 YR 4/4), very very fine sand to very grainy silt, trace
				greenish and yellowish banding/staining in places, trace black staining, uniform,
				saturated, slight odor?
70	75	5	-0.43-1.95/	0-1.0' Sand/Silt: Brown (7.5 YR 5/4), very very fine sand, approaching grainy silt
			8.08-22.11	in size, heavy black staining, uniform, somewhat loose, saturated, no odor.
				1.0-2.5' Sand/Silt: As above, no staining.
				2.5-2.8' Silt: Brown (7.5 YR 4/4), smooth, somewhat cohesive and firm, crumbly
				when worked, uniform, moist to wet, no odor.
				2.8-5.0' Sand/Silt: As above, nodule black staining, saturated, slight odor.
75	80	5	-3.82- -2.22/	0-3.0' Silt: Brown (7.5 YR 4/3), very grainy, completely disturbed, liquefied from
			1.17-11.14	drilling, trace clay in matrix?, heavy black staining in places, vesicles, saturated,
				moderate odor.
				3.0-5.0' Silt: Brown (7.5 YR 4/4), smooth, trace clay in matrix, trace clay varving/
				layering, one visible clay layer at 3.5 approximately 0.25" thick, yellowish red,
				platy, plastic as above, disturbed, saturated, somewhat cohesive, moderate odor.
80	85	5	0.1-1.49/	0-2.0' Silt: As above, with trace clay layering, but disturbed as above, some black
			2.31-8.08	staining, slightly coarser in places, somewhat cohesive, somewhat loose, and
				crumbly, saturated, odor especially where grainy.
				2.0-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth, predominately smooth, grainy
				4.0-5.0, black staining, crumbly, loose, saturated, odor, strong odor

Sample/Core Log (continued)

Boring/Well GMSB-135 Page 4 of 7

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				where grainy.
85	90	5	0.93- -.06/	0-5.0' Sand/Silt: Brown (7.5 YR 4/4), grainy silt, approaching very fine sand in
			72-1021	places, trace black staining, methane bubbles in water, vesicles, saturated,
				disturbed, odor.
90	95	5	-1.0- -0.26/	0-5.0' Silt: As above, but grainy to smooth in places, black staining, wet to
			348-1547	saturated, somewhat cohesive where smooth, otherwise loose, odor.
95	100	5	-1.15- -0.47/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy, uniform, trace black staining, bubbles,
			711-1543	vesicles, saturated, somewhat cohesive to loose, odor.
100	105	5	-1.45 - -0.27/	0-5.0' Silt: Brown (7.5 YR 4/3), smooth, trace to little clay in matrix, trace clay
			374-1795	layers 0-1.5', clay plastic, yellowish red (5 YR 4/6), platy appearance, cohesive, silt
				somewhat cohesive and plastic, pasty texture, trace black staining, somewhat firm,
				wet to saturated, odor.
105	110	5	2.24- -1.83/	0-5.0' Silt: Brown (7.5 YR 3/4), as above, smooth, trace little clay in matrix, could
			405-2515	have been varved, uniform, somewhat cohesive, trace black staining, vesicles, wet
				to saturated, odor.
110	115	5	-3.07- -1.0/	0-5.0' Silt: Strong brown (7.5 YR 4/6), clayey 0-2.0 in matrix, clay grades out below
			96-2504	2.0', heavy black staining 0-2.0', trace black staining below 2.0', very smooth silt
				throughout, somewhat cohesive, uniform, trace vesicles, odor.
115	120	5	-4.44- -4.17/	0-5.0' Clayey silt: Reddish brown (5 YR 5/4), very smooth silt, probably varved to
			1900-16500	interbedded with clay, but layers not discernable trace to little clay in matrix,
				dark grayish brown (10 YR 4/2) areas, probably staining, disturbed, many
				vesicles, moderately plastic, soft, wet to saturated, approximately 2" thick very
				fine sand layer at bottom, brown (10 YR 5/3), sand is well sorted and uniform and
				contains many vesicles, strong odor.
120	125	5	-27- -0.47/	0-2.0' Silt: As above with trace grainy silt/very very fine sand pockets/layers.
			170000-	2.0-3.0' Silt: Reddish brown (5 YR 5/4), very grainy, soft, crumbly, uniform, black
			220000	staining, loose, wet, strong odor.
125	130	5	-4.56- -3.47/	0-5.0' Silt: Dark brown (7.5 YR 3/2), very grainy, approaches very fine sand size,
			1500-12500	2" thick very fine sand seam, well sorted at 2.0', sand is very dark brown (7.5 YR
				2.5/3), stained black, heavy black staining throughout, bubbles, vesicles, some-
				what loose, saturated, disturbed, strong odor.
130	135	5	-1.84-8.2/	0-1.0' Silt with some Clay: Silt, brown (10 YR 4/3), clay yellowish red (5 YR 4/6),
			7800-70000	predominately grainy silt matrix, clay layers varved to approximately 0.5",
				disturbed, clay plastic, cohesive, black staining, somewhat cohesive silt to loose,
				saturated, odor.
				1.0-5.0' Interbedded Silt and Sand: Silt, dark grayish brown (10 YR 4/2), sand,
				dark yellowish brown (10 YR 4/4), predominately very very fine sand/borderline

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-135

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				very grainy silt, with some grainy silt layers, disturbed, black staining, somewhat
				loose, sand well sorted, wet, strong odor.
135	140	5	-4.51- -3.64/	0-5.0' Sand: Dark brown(10 YR 3/3), very fine grain, well sorted, heavy black
			1900-17000	staining, loose, saturated, strong odor.
140	145	5	-3.49 - -.69/	0-5.0' Sand: Very fine grain, as above.
			6100-50100	
145	150	5	-1.54 - -1.04/	0-4.5' Sand: As above, very fine sand grading decrease into finer, approaches
			17000-180000	grainy silt at 4.5', saturated, odor.
				4.5-5.0' Silt: Reddish brown (5 YR 4/4), smooth, uniform, somewhat cohesive,
				saturated, odor.
150	155	5	-2.08- -1.34/	0-5.0' Sand/Gravel/Silt: Very dark gray (10 YR 2/1), very poorly sorted mixture,
			10000-40000	sand very fine to very coarse, sand/silt matrix, much gravel subangular to
				subround up to 3", larger pieces are weathered bedrock cobbles, loose, saturated,
				odor.
155	160	5	4.52-4.98/	0-1.5' Sand/Gravel/Silt: As above.
			47000-80000	1.5-5.0' Sand and Gravel: Dark brown (75. YR 3/2), some silt, very silty in places,
				sand fine to very coarse, predominately coarse, gravel mostly subround and fine,
				trace up to 2" subround, loose, poorly sorted, saturated, strong odor.
160	165	5	3.39-4.04/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine grain, trace medium to coarse,
			41000-120000	moderately well sorted, trace silt, 3" thick sand seam fine to very coarse at 2.5',
				very poorly sorted, loose, saturated, strong odor.
165	170	5	0-0.82/	0-1.0' Silt: Brown (7.5 YR 4/3), grainy, uniform, somewhat cohesive, soft,
			11700-40000	saturated, strong odor, could be slough.
				1.0-5.0' Silty Sand: Brown (7.5 YR 4/3), very fine to very coarse grain, predominately
				fine grain, little gravel subround up to 1", very silty in places, loose, saturated,
				odor.
170	175	5	-1.1- -0.3/	0-2.0' Silty Sand: As above.
			7800-12000	2.0-5.0' Sand and Gravel: Dark brown (7.5 YR 3/2), sand very fine to very coarse,
				predominately coarse to very coarse, gravel subangular to subround up to 2",
				silty, poorly sorted, loose, saturated, odor.
175	180	0	--	No recovery, probably sand like 185-190.
180	185	0	--	No recovery, probably sand like 185-190.
185	190	5	NA/212-	0-3.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium to coarse, well sorted,
			11300	loose, saturated, silty but probably washed in from drilling especially at top of
				sample, odor.
				3.0-5.0' Sands: Color as above, very fine to fine, predominately fine, well sorted,
				loose, saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-135

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
190	195	5	5.61-9.30/	0-1.0' Silt: Brown (7.5 YR 5/3), smooth, uniform, somewhat cohesive and firm,
			15-25000	bubbles, vesicles, saturated, strong odor.
				1.0-2.0' Silt and Sand: Brown (7.5 YR 5/4), silt as above with a thick (6") sand
				seam, sand is very fine to coarse, predominately very fine, moderate sorted, silty,
				but silt may be from drilling, loose, saturated, odor.
				2.0-5.0' Interbedded Silts with some Sand: Brown (7.5 YR 5/3), predominately
				silt, with interbeds several inches thick transitioning from grainy to smooth, also
				some layers very grainy, very fine sand, vesicles, bubbles, somewhat cohesive to
				loose, saturated/liquefied, strong odor.
195	200	0		No recovery.
200	205	5	NA/5691-	0-5.0' Silt: Reddish brown (5 YR 5/4), very grainy, very uniform, trace black staining
			73000	vesicles, loose, somewhat crumbly, wet to saturated, odor.
205	210	5	NA/48.36	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, trace silt in places, well sorted, loose,
			4,075	saturated, no odor.
210	215	5	NA/3218-	0-5.0' Sand with some Silt: Color as above, very fine to fine grain, well sorted,
			32700	uniform, silty in places, could be from drilling, loose, saturated, odor.
215	220	1	-0.44-0.25/	0-1.0' Sand/Silt: Reddish brown (5 YR 5/4), very very fine sand/borderline very grainy
			3625-8096	silt, little black staining, uniform, loose, crumbly, saturated, odor.
				1.0-5.0' No recovery.
220	225	0		No recovery, sample fell out.
225	230	0		No recovery, sample fell out.
230	235	0		No recovery, sample fell out.
235	240	5	0.31-1.04/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth to somewhat grainy, uniform, trace
			95-569	black staining, vesicles, somewhat cohesive and firm, saturated, odor.
240	245	5	0.38-1.13/	0-5.0' Silt: As above.
			52-95	
245	250	5	0.32-0.61/	0-5.0' Silt: Brown (7.5 YR 4/4), somewhat grainy, uniform, vesicles, somewhat
			30-703	cohesive and firm, saturated, trace black staining, odor.
250	255	5	0.47-1.16/	0-5.0' Silt: As above.
			65-1893	
255	260	3	0-0.37/	0-3.0' Silt: As above.
			16-774	
260	265	5	0-0.22/	0-2.5 Silt with Sand: Brown (10 YR 4/3), probably interbedded, silt predominately
			16-792	smooth to somewhat grainy, disturbed, sand is intermixed with silt from drilling,
				but looks like most of it was from a very fine seam 0.5-1.5?, trace fine grain,
				trace gravel subangular to subround up to 0.5", somewhat loose, saturated/
				liquefied, vesicles, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well: GMSB-135

Prepared by: Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.5-5.0' Silt with Sand and Gravel: Dark grayish brown (10 YR 4/2), predominately silt matrix with much sand and gravel suspended in matrix, trace clay, gravel predominately fine, some subangular to subround up to 1", sand very fine to very coarse, poorly sorted, somewhat cohesive to cohesive and firm, cemented, moist, appears to be till, slight odor.
265	270	5	0-0.47/ 509-1752	0-3.0' Sand and Gravel: Color as above, sand very fine to very coarse, predominately coarse to very coarse, gravel predominately fine, pea gravel, some up to 3" subangular to subround, silty, very poorly sorted, loose, saturated, odor. 3.0-5.0' Sand and Gravel: As above, but sand is fine overall, sand predominately fine grain, still silty, much gravel/fine to 1" subangular to subround, poorly, sorted, loose, saturated, odor.
270	275	5	0-0.11/ 150-580	0-2.5' Sand and Gravel: As above, silty, a few cobbles of subround bedrock up to 5", sand very fine to very coarse predominately fine, loose, saturated, slight odor. 2.5-5.0' Silt with Sand and Gravel: Brown (7.5 YR 4/4), as above in 262.5-265.0', predominately silt matrix with much sand and gravel suspended in matrix, stiff, cohesive, trace to little clay in matrix, gravel angular to subround up to 3", sand all sizes, wet to saturated, slight odor.
275	280	0		No recovery.
280	285	0		No recovery.
285	290	0		No recovery.
290	292	2	0.18-1.13/ 245-854	0-1.5' Silt with Sand and Gravel: As above, till. 1.5-2.0' Weathered Bedrock: Greenish gray (1 Gley 5/1GY) hard, crumbly, somewhat cohesive, uniform grain size, trace rock fragments, dry to moist, slight odor. EOB @ 292 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSB-136 Project/No. Ford/Kingsford WI001075.0015 Page 1 of 7

Site Location Kingsford, Michigan

Drilling Started 8/10/04 Drilling Completed 8/11/04

Total Depth Drilled 288 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 20' x 4", 10' x 4", 10' x 5" Sampling Interval continuous feet

Land-Surface Elev. 1130.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	27.93-472/	0-1.0' Silt: Dark yellow brown (10 YR 3/4), grainy to smooth, trace very fine sand,
			12-32	top soil, rootlets, organics, moist, loose, organic odor.
				1.0-2.0' Silty Sand: Strong brown (7.5 YR 5/6), sand very very fine, trace fine
				gravel subangular to subround up to approximately 1", well sorted sand, loose,
				moist, organic odor.
				2.0-4.0' Sand: Strong brown (7.5 YR 5/8), predominately very fine to fine grain,
				trace medium to coarse, trace gravel, predominately fine subround, a few up to
				2", well sorted, loose, moist, organic odor.
				4.0-5.0' Sand: Brown (7.5 YR 5/4), some gravel subangular, subround up to 1.5",
				predominately fine grain, trace medium to coarse, some silt, moderately well
				sorted sand, loose, moist, no odor.
5	10	5	7.53-11.76/	0-0.5' Sand: As above.
			2.15-6.84	0.5-2.5' Sand: Strong brown (7.5 YR 5/6), fine to medium grain, trace to coarse,
				trace gravel angular to subround up to 0.4", predominately fine gravel, well
				sorted, loose, moist, no odor.
				2.5-5.0' Sand: Brown (7.5 YR 4/4), fine grain, trace medium to coarse, trace fine
				gravel subangular to subround up to 1", moderately well sorted, loose, moist,
				no odor.
10	15	2	17.97-3021/	0-2.0' Sand: As above.
			5.04-9.53	
15	20	5	0.86-2.56/	0-1.0' Sand/Silt: Strong brown (7.5 YR 4/6), sand very very fine and well sorted,
			0.72-1.4	silty, borderline very very fine sand/very grainy silt, uniform, loose, moist, no odor,
				slough?
				1.0-5.0' Silt/Clay Interbeds: Silt brown (7.5 YR 4/4), clay yellow red (5 YR 4/6),
				predominately clay 1.0-2.0', predominately silt below 2.0', clay interbeds varved to
				approximately 3" thick, silt, smooth, clay plastic, stiff, HP = 3.0, has fissile
				appearance when broken, silt uniform, overall cohesive, firm, moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-136

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	5	2.16-3.69/	5.0' Silt/Clay: Interbeds as above, but less clay content, regular clay layers
			4.03-15.28	approximately every foot, about 0.5" thick, silt predominately smooth to somewhat
				grainy, silt has slightly different color: Dark yellowish brown (10 YR 4/4), firm,
				somewhat crumbly in places, trace black staining?, no odor.
25	30	5	1.70- -0.87/	0-5.0' Silt with Clay Interbed: As above, with slightly less clay content, layers are
			0	less frequent, silt somewhat grainier in places than above, overall the same as
				above.
30	35	5	-2.43- -1.47/	0-5.0' Silt: With a few clay layers as above, smooth silt, clay 0.5" - 1.5" thick.
			0.26-0.90	
35	40	5	2.5-0.03/	0-5.0' Silt/Clay Interbed: As above redescribed here: silt brown (10 YR 4/3), clay
			22-0.50	yellow red (5 YR 4/6), predominately smooth silt with regular clay interbeds 0.5"-
				3" thick occurring approximately every 0.5-1.0 feet, but varies somewhat, with
				depth, clay stiff, HP = 4.0, cohesive plastic, has fissle/platy appearance on broken
				surface, disturbed from drilling, overall somewhat cohesive to cohesive, moist,
				wet, no odor, bubbles in liquefied area.
40	45	5	-0.25 - -6.65/	0-5.0' Silt/Clay: Interbeds as above, slightly less clay varved to approximately 1.5"
			0.26-1.39	thick layers, moist, no odor.
45	50	5	-1.92- -0.81/	0-2.5' Silt/Clay Interbeds: As above, clay layers varved to approxiamtely 1" thick,
			1.3-28	predominately silt, moist, cohesive, form, no odor.
				2.5-5.0' Sand: Strong brown (7.5 YR 4/6), very fine grain, trace medium to coarse,
				well sorted, loose, moist, no odor.
50	55	5	-0.41-2.01/	0-4.0' Sand: Strong brown (7.5 YR 5/4), fine grain, trace medium to very coarse,
			0.6-2.11	4" thick clayey silt layer at 2.0' slough? Dark brown (7.5 YR 3/3), cohesive, soft,
				uniform, sand well sorted, loose, damp to moist, no odor.
				4.0-5.0' Sand: Strong brown (7.5 YR 5/4), fine grain, very well sorted, loose, damp,
				uniform, no odor.
55	60	5	0.27-0.8/	0-5.0' Sand: Brown (7.5 YR 3/4), water table at 55 feet, fine grain, trace medium
			8.26-361	to coarse as above, loose, well sorted, saturated, odor, grades into unit below.
60	65	5	0.10-0.56/	0-2.0' Sand: Strong brown (7.5 YR 4/6), some to much gravel subangular to
			5400-10300	subround up to 0.5", sand fine to very coarse, predominately medium coarse,
				little silty, loose, poorly sorted, saturated odor, grades into unit below.
				2.0-5.0' Sand: Brown (7.5 YR 4/2), fine to medium grain, little coarse, trace gravel
				angular to subround up to 1", moderate to well sorted, loose, saturated, odor.
65	70	5	-0.6-1.2/	0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, little medium to coarse, moderate to
			8011-13800	well sorted, loose, uniform, saturated, odor.
70	75	5	0.31-1.45/	0-3.0' Sand: Brown (7.5 YR 5/4), fine to very coarse, predominately fine, trace
			5863-22400	subangular to subround gravel up to 2", moderately sorted, loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-136

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine grain, predominately fine,
				trace medium to coarse, well sorted, loose, saturated, odor.
75	80	5	-2.31- -0.75/	0-1.5' Sand: Brwon(7.5 YR 5/4), fine grain, some very fine, well sorted, uniform,
			374-4168	loose, saturated, odor.
				1.5-2.0' Sand: Color as above, fine to medium grain, some coarse coarsening
				decrease down section, grading into coarser from unit above, moderately sorted,
				loose, saturated, odor
				2.0-5.0' Sand: Reddish brown (5 YR 5.4), very fine grain, some fine grain, trace
				gravel subround, fine up to approximately 1", well sorted, loose, saturated,
				odor.
80	85	5	-1.94- -0.13/	0-5.0' Sand: Color as above, very fine grain, slightly finer than above, well sorted,
			2120-5989	loose, saturated, odor.
85	90	5	-6.14-7.65/	0-3.0' Sand: As above, very fine grain, almost silt size.
			5950-13500	3.0-4.0' Silt: Reddish gray (5 YR 5/2), smooth, uniform, crumbly when worked,
				trace black staining, vesicles, loose, saturated, strong odor.
				4.0-5.0' Sand/Silt: Reddish brown (5 YR 5/3), very very fine sand, borderline silt
				size grain, well sorted, uniform, loose, saturated, odor.
90	95	5	7.09-12.61/	0-5.0' Sand/Silt: Color as above interbedded, sand very fine, interbeds,
			11100-27800	approximately.
				0.5-1", silt smooth, trace to little black staining, disturbed, loose, saturated, odor.
95	100	5	-1.61-17.84/	0-2.5' Silty Sand: Reddish brown (5 YR 5/3), very fine grain, very silty, probably
			450-18000	was interbedded, very fine sand/silt, somewhat loose, saturated, bubbles/vesicles,
				trace, black staining, strong odor.
				2.5-3.5' Silt: Interbedded silts, one is smooth, reddish brown (5 YR 5/3) other is
				clayey, gray (5 YR 6/1), layers appear varved to approximately 0.5", clayey silt is
				somewhat plastic, cohesive, saturated, vesicles, strong odor.
				3.5-5.0' Sand/Silt: Reddish brown (5 YR 5/4), very fine grain silty sand grading
				decrease down section to sandy silt, somewhat loose, saturated, trace black
				staining, strong odor.
100	105	5	0.54-20.77/	0-5.0' Silt/Clay Interbed: Silt reddish brown (5YR 5/4) clay, yellowish red (5 YR
			1690-10500	4/6) predominately silt matrix with some clay layers varved to 0.5" thick, clay is
				plastic, cohesive with fissile/platy appearance, heave black staining below 1.5,
				saturated, vesicles, some clay layers, stained black, very strong odor.
105	110	5	-1.34-0.45/	0-5.0' Sand/Silt: Reddish brown (5 YR 4/4), very fine sand, silty, borderline fine
			5800-11000	sand/silt size grain, uniform, trace black staining, somewhat loose, saturated,
				strong odor.
110	115	5	-0.71-1.65/	0-3.0' Sand/Silt: As above, but fine grain, slightly, grainy silt at 3.0, black staining,

Sample/Core Log (continued)

Boring/Well GMSB-136

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			7800-21000	strong odor.
				3.0-5.0' Silt: Dark reddish brown (5 YR 3/3), smooth, trace clay layers as above,
				heavy black staining, somewhat cohesive, uniform crumbly when worked,
				saturated, vesicles, very strong odor.
115	120	5	0.44-2.84/	0-5.0' Silt: Dark reddish brown (5 YR 2.5/2), very grainy, uniform, heavy black
			2945-11000	staining, saturated, almost very fine sand, very strong odor.
120	125	5	1.41-2.46/	0-2.0' Silt: As above, with slightly less staining, color is dark reddish brown (5 YR
			3153-15000	3/3), and some layers of smooth clayey silt, disturbed, somewhat loose, very
				strong odor.
				2.0-5.0' Silt: Brown (7.5 YR 4/4), smooth, uniform, little black staining, saturated,
				somewhat cohesive, very strong odor.
125	130	1.5	-0.41-0.3/	0-1.5' Clayey Silt: Reddish brown (5 YR 4/4), smooth, sticky, somewhat plastic,
			1016-2534	uniform, cohesive, saturated, very strong odor.
130	135	0	--	No recovery.
135	140	4	1.94-2.54/	0-5.0' Silt: Brown (7.5 YR 5/3), smooth, clayey in places, a few clay layers as
			1943-2515	above, yellowish red, plastic, 1/4" thick, uniform, somewhat firm and cohesive,
				trace black staining, uniform trace vesicles, very strong odor.
140	145	5	0-0.91/	0-5.0' Silt: As above.
			370-1995	
145	150	5	-0.83- -0.1/	0-2.0' Silt: As above.
			6677-17500	2.0-5.0' Sand/Silt: Interbedded very fine sand and grainy silt layers approximately
				3-6" thick, silt, brown (7.5 YR 4/3), sand, brown (7.5 YR 5/3), black staining in
				sand layers, sand well sorted, very fine, loose, silt somewhat cohesive, saturated,
				vesicles, strong odor.
150	155	5	6.54-0.07/	0-5.0' Interbedded sand/silt, as above.
			15000-39600	
155	160	3	-1.12-1.42/	0-3.0' Sand: Dark brown (7.5 YR 3/2), very fine to fine grain, some silt in places
			167-6402	probably washed in from above, well sorted, loose, saturated, strong odor.
160	165	5	-0.16-4.01/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine, very silty in places, were probably silt
			11000-18300	layers approximately 1.0" thick interbedded, sand well sorted, uniform, loose,
				vesicles, strong odor.
165	170	5	-0.57-0.57/	0-5.0' Silt and Sand: Interbedded silt and sand as above, silt grainy to smooth, silt
			1843-5422	layers appear approximately 2" thick, predominately very fine sand, well sorted,
				a few sand beds contain fine grain with some medium grain sand, loose, silt is
				somewhat cohesive, saturated, strong odor.
170	175	5	0.33-1.12/	0-1.0' Sand: Dark gray (7.5 YR 4/1), fine to medium grain, some coarse,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-136 Page 5 of 7

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
			12300-22200	moderately sorted, loose, saturated, odor.
				1.0-5.0' Sand: Dark gray (7.5 YR 4/1), sand very fine to very coarse,
				predominately fine, poorly sorted, some gravel subangular to subround and fine,
				trace up to 1", silty in places (from drilling?) loose, saturated, odor.
175	180	5	0.14-0.78/	0-2.5' Sand: Dark grayish brown (10 HR 4/2), very fine to fine grain, trace medium
			916-13000	to coarse, some silt (washed in?), well sorted, loose, saturated, odor.
				2.5-4.0' Sand: Very dark gray (5 YR 3/1), fine to very coarse, predominately
				medium, some silt (washed in?), poorly sorted, loose, saturated, odor.
				4.0-5.0' Silt with Sand: Reddish brown (5 YR 4/4), smooth silt with sand pocket/
				lens approximately 3"thick, disturbed, sand is very fine to coarse, poorly sorted,
				loose, saturated, strong odor, vesicles.
180	185	5	-0.12-1.07/	0-4.0' Silt: Color as above smooth, uniform, somewhat cohesive and firming,
			2847-10300	saturated, 3" thick sand seam and 2.0', dark reddish gray (5 YR 5/2), sand is fine
				grain, uniform well sorted, loose, saturated, strong odor.
				4.0-5.0' Sand: Brown (10 YR 4/3), very fine grain, fine grain 4.0-4.2, well sorted,
				loose, saturated, odor.
185	190	5	0.14-1.36/	0-0.5' Sand: As above.
			2300-5600	0.5-2.0' Sand: As above, with interbedded silt layers 3 to 6" thick, sand is
				somewhat coarser than above, predominately fine grain, color brown (10 YR 4/3).
				2.0-5.0' Sand and Silt Interbedded: Sand brown (10 YR 4/3), silt reddish brown
				(5 YR 4/4), beds are thick (approximately 1 to 2'), sand is very fine grain, well
				sorted, uniform, saturated, odor, silt is somewhat grainy, uniform, saturated.
190	195	5	0-0.78/	0-5.0' Sand and Silt: Interbedded as above.
			2100-4600	
195	200	5	0.12-1.28/	0-5.0' Sand/Silt: reddish brown (5 YR 4/4), very very fine sand/borderline grainy
			638-5200	silt, somewhat uniform, trace black staining?, somewhat cohesive, somewhat
				loose, saturated, bubbles in liquefied areas, odor.
200	205	5	0.90-2.39/	0-5.0' Sand/Silt: As above.
			5850-6100	
205	210	5	1.12-1.88/	0-5.0' Sand/Silt: As above.
			6450-12000	
210	215	5	1.39-2.07/	0-5.0' Sand/Silt: As above.
			3200-12800	
215	220	5	1.68-1.90/	0-5.0' Silt: As above, slightly finer than above, smooth to grainy silt, uniform odor.
			88.6-119	

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-136 Page 6 of 7

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
220	225	5	1.13-1.68/	
			66-158	0-5.0' Sand: As above.
225	230	5	1.90-2.99/	
			378-2133	0-5.0' Sand: As above.
230	235	5	1.89-4.87/	0-5.0' Silt: As above.
			976-5430	
235	240	4	-2.07- -1.82/	0-3.0' Silty Sand: Dark yellowish brown (10 YR 3/4), very fine to fine grain,
			550-763	predominately fine, trace medium to coarse, moderate to well sorted sand, very
				silty, trace gravel subangular to subround up to 2", loose, saturated, odor.
				3.0-4.0' Sand with Gravel: Dark brown (7.5 YR 3/4), silty, could be washed in, very
				fine to very coarse, predominately fine to medium, some gravel subangular to
				subround up to 1", very poorly sorted, loose, saturated, odor.
240	245	5	-1.84- -0.99	0-2.0' Silt with Sand and Gravel: Brown (10 YR 4/3), much coarse to very coarse,
			635-3240	sand and fine gravel suspended in matrix, looks like till, trace very fine to medium
				sand, gravel subangular to subround, predominately fine, up to 2", trace clay, firm,
				somewhat cohesive, saturated, odor.
				2.0-3.0' Silty Sand: Dark yellow brown (10 YR 3/4), fine to coarse sand,
				predominately fine, very silty, poorly sorted, trace fine gravel subround, loose,
				saturated, odor.
				3.0-4.0' Sand: Very dark brown (7.5 YR 2.5/2), fine to very coarse grain,
				predominately coarse to very coarse, trace gravel angular to subangular up to 1",
				poorly sorted, loose, saturated, strong odor.
				4.0-5.0' Silty Sand: As above in 2.0-3.0.
245	250	5	-0.71-0.27/	0-2.0' Sand: Color as above, fine to coarse grain, predominately fine, moderately
			5300-10200	sorted, loose, saturated, odor.
				2.0-3.0' Sand and Gravel: Very dark gray (7.5 YR 3/1), sand medium to very
				coarse, predominately coarse, subangular to subround gravel predominately fine,
				poorly sorted, loose, saturated, odor.
				3.0-5.0' Sand: Color as above, fine to very coarse grain, predominately fine to
				medium, little angular to subround gravel up to 0.5", moderately sorted, loose,
				saturated, odor.
250	255	5	-0.88- -0.34/	0-4.0' Sand: Very dark brown (2.4 YR 2.5/3), fine to coarse gravel, predominately
			2150-9380	medium, some silt?, trace subangular to subround fine gravel, loose, moderately
				sorted, saturated, odor.
				4.0-5.0' Sand: Very dark gray (10 YR 3/1), coarse to very coarse, well sorted,
				loose, saturated, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-136

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
255	260	5	-1.30- -0.66/	0-5.0' Silty Sand and Gravel: Dark yellowish brown (10 YR 3/4), sand fine to very
			2521-2839	coarse, some gravel size variation throughout, predominately fine to medium,
				gravel content increases down section, gravel subangular to subround up to 1",
				gets larger down section up to 2.5", silty, poorly sorted, loose, saturated, odor.
260	265	5	-1.68 - -0.16/	0-5.0' Silty Sand and Gravel: As above, sand very fine to very coarse,
			786-3199	predominately fine, gravel subangular to subround up to 2", very poorly sorted,
				loose, saturated, odor.
265	270	5	2.83- -0.42/	0-5.0' Silty Sand and Gravel: As above.
			515-3500	
270	275	5	-1.64- -1.31/	0-5.0' Sand: Very dark brown (7.5 YR 2.5/3), very fine to coarse grain,
			1159-3125	predominately fine, some coarse, some silt, little gravel subround up to 2.5",
				loose, poorly sorted, saturated, odor.
275	280	5	-1.94-4.20/	0-5.0' Silt with Sand and Gravel: Dark grayish brown (10 YR 4/2), sand very fine
			1008-5200	to very coarse, gravel subangular to subround to 2", vertical orientation/fabric,
				trace clay, gravel and sand suspended in silt matrix, till, hard, but easily broken,
				crumbly, somewhat cohesive, very poorly sorted, saturated, odor.
280	285	5	0.11-1.48/	0-5.0' Silt with Sand and Gravel: As above.
			31-525	
285	288	5	0.27-1.48/	0-3.0' Weathered bedrock: Very dark gray (1 Gley 3/N), soft, powdery, easily
			608-810	crushed with hands, phyllitic, obvious foliation, loose, wet, odor.

ARCADIS

Sample/Core Log

Boring/Well GMSB-137 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 9/20/04 Drilling Completed 9/20/04

Total Depth Drilled 125 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 5', 20' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1124.12 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz Royce Brown

Prepared By Toni Schoen/Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	2	68.2-78.4/	0-2.0' Sandy Silt: Dark yellowish brown (10 YR 3/4), fine sand, organic, wood,
			10.36-15.31	trace subrounded gravel, somewhat loose, low cohesion, poorly sorted, moist.
5	10	2	3.91-23.2/	0-2.0' Silt/Clay: Silt, brown (&.5 YR 5/4), clay yellowish red (5 YR 4/6),
			0.55-5.91	interbedded, clay varves to 1 inch (varved in last foot), silt is 1 to 2 inches, fissily
				surface, somewhat crumbly, smooth silt, clay is platy and plastic, fine sand layer
				(iron stained) from 0.5-0.75 feet.
10	15	5	2.53-73.2/	0-1.0' Silt: Brown (7.5 YR 4/3), soft to medium stiff, clayey (likely clay varving
			0-1.6	destroyed during drilling), fissily surface, smooth, uniform, somewhat crumbly,
				medium plasticity, saturated.
				1.0-5.0' Silt/Clay: silt brown (7.5 YR 4/3), clay yellowish red (5 YR 4/6),
				interbedded, clay is varved to 1 inch, silt to 0.25 to 2 inches, thicker clay and silt
				layers from 1 to 3 feet, silt is crumbly and smooth, fissily surface, clay is platey
				and plastic, voids are silt and smooth surfaced, several scattered fine sand
				pockets.
15	20	5	209-2310/	0-5.0' Silt/Clay: Silt, brown (7.5 YR 4/3), clay strong brown (7.5 YR 4/6),
			0-1.69	interbedded, clay is varved, silt is 0.5-4 inches, smooth and soft silt, medium
				plastic silt, fissily surface, platy clay, fairly uniform beds, black staining, saturated.
20	25	5	1330-15900/	0-1.0' Silt/Sand/Gravel: Reddish brown (5 YR 4/3), fine sand, smooth silt, medium
			0-1.83	to coarse subrounded gravel, very poorly sorted, low cohesion to loose, saturated.
				1.0-2.0' Sand: Reddish brown (5 YR 5/3), fine to medium sand, mostly medium
				sand, trace coarse sand, trace gravel up to 1 inch, loose, moderately sorted,
				saturated.
				2.0-3.0' Sand: Brown (7.5 YR 4/3), medium to coarse sand, mostly medium
				sand, little medium to coarse subrounded gravel up to 2 inches, loose, poorly
				sorted, saturated.
				3.0-5.0' Sand: Brown (7.5 YR 4/3), fine to coarse sand, mostly medium sand, trace
				trace medium subrounded gravel, loose, well sorted, saturated.

Sample/Core Log (continued)

Boring/Well GMSB-137

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
25	30	5	3715-9530/	0-4.0' Sand: Same as above, with less fine sand.
			0-1.32	4.0-5.0' Sand: Brown (7.5 YR 5/2), fine to coarse sand, mostly fine sand, loose,
				well sorted, saturated.
30	35	5	3560-5180/	0-4.0' Sand: Brown (7.5 YR 5/3), fine to medium sand, mostly fine sand, loose,
			0-0.52	well sorted, strong odor, saturated.
				4.0-5.0' Sand: Brown (7.5 YR 5/2), fine to coarse sand, mostly medium sand, loose,
				well sorted, strong odor, saturated.
35	40	5	970-3710/	0-5.0' Silt: Strong brown (7.5 YR 4/6), grainy, uniform, very soft to somewhat
			0-3.59	crumbly, methane vesicles on core sides, strong odor, saturated.
40	45	5	2620-9630/	0-5.0' Silt: Same as above.
			3.33-8.07	
45	50	5	1799-11800/	0-2.5' Silt: Same as above.
			9.07-14.31	2.5-5.0' Silt: Brown (7.5 YR 4/6), interbedded, smooth and grainy silt, fissily, 0.25
				inch smooth silt layers, methane vesicles, strong odor, saturated.
50	55	5	--	0-5.0' Silt: Reddish brown (5 YR 5/4), smooth to grainy, loose to crumbly (grainy
				to smooth), uniform, strong odor, saturated.
55	60	6	702-3510/	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, low cohesion, slightly plastic in spots
			5.0-7.2	(clayey), uniform, methane vesicles, strong odor, saturated.
60	65	5	1559-3780/	0-5.0' Silt: Reddish brown (5 YR 4/4), smooth and grainy, smooth fissile surface,
			3.2-6.7	slightly plastic, from 0-2.5 (clayey-likely varved clay destroyed during drilling),
				uniform, strong odor, saturated.
65	70	5	10000-	0-5.0' Silt: Reddish brown (5 YR 4/4), grainy, trace clay varves in top foot, uniform,
			101000/	trace black staining, crumbly in bag, loose crumbles, strong odor, saturated.
			2.8-9.5	
70	75	5	10000-	0-1.0' Silt: Same as above.
			38000/	1.0-3.0' Silt: Grainy is reddish brown (5 YR 5/4), smooth is reddish gray (5 YR 4/2),
			-1.18-2.1	interbedded, 0.25-1 inch smooth layers, platy in sections of the bag, crumbly when
				worked, strong odor, saturated.
				3.0-5.0' Silt: Same as 65-70 feet.
75	80	--	--	No recovery. Pushed into formation.
80	85	--	--	No recovery. Pushed into formation.
85	90	--	--	No recovery. Pushed into formation.
90	95	--	--	No recovery. Pushed into formation.
95	100	5	831-9915/	0-5.0' Silt: Reddish brown (5 YR 4/1), smooth and grainy silt interbeds, likely
			-2.9-1.3	varved clay destroyed during drilling, 1-1.25 silt layer with fine subrounded gravel,
				very soft to soft, too plastic to crumble, strong odor, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-137

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
100	105	5	1857-10300/	0-2.5' Silt: Same as above.
			-2.9-1.3	2.5-2.9' Sand: Brown (10 YR 4/3), very fine to fine sand, uniform, loose, strong
				odor, saturated.
				2.9-4.5' Silt: Reddish brown (5 YR 4/1), smooth to grainy beds, soft, strong odor,
				saturated, sharp contact with above sand -5 mm clay varve.
				4.5-5.0' Sand/Silt: Sand brown (7.5 YR 4/3), silt reddish brown (5 YR 4/4),
				interbedded, very fine sand seam less than 1-inch, trace fine subrounded gravel
				in sand seam, smooth to grainy silt (interbedded), trace black layer staining at
				base, strong odor, saturated.
105	110	5	5600-10200/	0-3.5' Sandy Silt: Brown (7.5 YR 4/2), very fine to fine sand, mostly very fine sand,
			-1.9-0.2	very silty, trace medium sand, uniform, no to low cohesion, liquefied in areas,
				methane vesicles, strong odor, saturated.
				3.5-4.5' Sand/Silt: Brown (7.5 YR 4/2), very fine to fine and, mostly fine sand,
				interbedded with smooth silt, 0.5 to 1 inch beds, well sorted sand, strong odor,
				saturated.
				4.5-5.0' Sand: Dark brown (7.5 YR 3/2), very fine to medium sand, mostly fine
				sand, some silt, loose, poorly sorted, strong odor saturated.
110	115	5	32000-	0-3.0' Sand: Brown (7.5YR 4/3), very fine to fine sand, mostly fine sand, some silt,
			45400/	beds (<0.5"), loose to soft, moderately sorted, strong odor, saturated.
			1.4-2.7	3.0-4.0' Sand: Reddish brown (5 YR 4/3), very fine sand, some silt, uniform, well
				sorted, strong odor, saturated.
				4.0-5.0' Silt: Reddish brown (5 YR 4/4), smooth, little clayey, plastic, possible clay
				varving destroyed during drilling, strong odor, saturated.
115	120	5	35000-	0-3.5' Silt: Reddish brown (5 YR 4/3), very grainy, borderline very fine sand, uniform,
			>100000/	methane vesicles, strong odor, saturated.
			-1.3-2.0	3.5-5.0' Sandy Silt: Reddish brown (5 YR 4/3), very fine sand, grainy silt, likely
				interbedded, well sorted, strong odor, saturated.
120	125	5	4007-35500/	0-1.0' Sandy Silt: Same as above.
			-1.7-0.7	1.0-1.5' Sand: Brown (7.5 YR 4/2), very fine to fine sand, silty, uniform, well sorted,
				strong odor, saturated.
				1.5-4.0' Sand: Brown (7.5 YR 4/2), very fine sand, very silty, trace fine sand, well
				sorted, strong odor, saturated.
				4.0-5.0' Silt/Sand: Silt reddish brown (5 YR 4/3), sand brown (7.5 YR 4/3),
				interbedded, very fine sand, silt 0.25-4 inches, sand 2-3 inches, grainy, silt,
				slightly plastic, well sorted, methane vesicles, strong odor, saturated.
				EOB @ 125 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSB-138 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 10/18/04 Drilling Completed 10/18/04

Total Depth Drilled 46 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1117.08 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Robert

Prepared By Andy Mumpy Hammer Weight 300 Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	PID/FID (ppm)	Sample/Core Description
0	2	0	--	10.6/-2.3	No recovery.
2	4	0.6	5 8 7 7		0-0.6' Silty Sand: Strong brown (7.5 YR 5/8), little gravel subround
					up to 0.5", sand very fine to fine, predominately very fine, loose,
					rock fragments 2" broken rock in spoon tip, moderately, sorted,
					damp, no odor.
4	6	0.8	7 6 7 8	92.3/-2.3	0-0.8' Sand: Yellowish red (5 YR 5/6), little gravel, angular rock
					fragments up to 0.5", sand fine, well sorted, loose, damp, no odor.
6	8	1.2	4 4 4 6	18.89/	0-0.6' Sand: Yellowish brown (10 YR 5/8), fine to medium grain,
				-2.18	trace coarse, poorly sorted, loose, damp, no odor.
					0.6-1.2' Sand: As above, but coarser, fine to coarse, predominately
					medium, and trace subround gravel up to 0.5", poorly sorted,
					loose, no odor.
8	10	0	9 16 8 7		0.2' of slough, no recovery.
10	12	1.6	4 6 7 7	8.73/-2.06	0-0.8' Slough.
					0.8-1.6' Sand: Brown (7.5 YR 5/4), fine grain, very well sorted,
					loose, damp, no odor.
12	14	1.4	3 4 4 3	7.42/-1.88	0-1.0' Sand: Brown (7.5 YR 4/4), little gravel subangular to subround,
					up to 0.7", sand fine to very coarse, predominately medium to
					coarse, poorly sorted, loose damp, no odor.
14	16	1.4	7 6 8 6	4.47/-1.7	0-0.5' Slough.
					0.5-1.4' Sand: As above.
16	18	0	5 4 6 4	9.70/-0.85	No recovery, contains 0.2' of slough (rock fragments, rootlets, silt).
18	20	0	7 8 6 7	--	No recovery.
20	22	1.3	13 5 8 7	4.65/-1.21	0-1.3' Sand: Brown (7.5 YR 4/4), predominately fine, some medium
					to coarse, trace gravel subangular to subround up to 0.5", poorly
					sorted, loose, moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-138 Page 2 of 3

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	PID/FID (ppm)	Sample/Core Description
22	24	1.8	4 5 7 4	3.60/-1.15	0-0.6' Slough.
					0.6-1.8' Sand: As above.
24	26	0.6	4 3 5 4	5.16/-1.15	0-0.6' Sand: As above, but with more (some) gravel, also little silt and
					clay in matrix 0.3-0.6, strong brown (7.5 YR 5/8) where silt and clay
					is present, poorly sorted, moist, slight odor?
26	28	1.2	4 3 5 4	2.68/-1.56	0-0.9' Sand: As above, Redescribed dark yellowish brown (10 YR 3/6),
					trace to little silt and clay in places (in matrix), predominately fine
					grain, some medium to coarse, trace gravel subangular to subround
					up to 1", loose, moist, poorly sorted, no odor.
					0.9-1.2' Clay: Yellowish red (5 YR 4/6), uniform, plastic, somewhat
					soft, cohesive, HP = 2.0, moist, no odor.
28	30	1.8	3 2 4 4	2.91/-1.34	0-0.5' Slough.
					0.5-1.8' Clay with silt interbeds: Clay as above, has platy appearance
					on broken surface, color as above, clay layers up to 4" thick,
					predominately clay a few silt layers up to approximately 0.7" thick,
					silt is brown (7.5 YR 4/4), smooth, one sand seam approximately 0.3"
					thick at 1.2', sand is fine to medium grain, well sorted, overall
					cohesive, damp to moist, no odor.
30	32	2.0	5 4 6 4	2.97/-1.4	0-0.6' Slough.
					0.6-1.6' Silt/Clay: Interbeds, as above, but much more silt,
					predominately silt with silt layers in 2" thick and clay layers
					approximately 0.5" thick, description as above.
					1.6-2.0' Sand: Light brown (7.5 YR 6/4), very fine to fine grain, trace
					medium to coarse, moderately sorted, loose, damp, no odor.
32	34	1.2	8 9 7 10	4.10/-0.67	0-1.2' Sand/Silt: Light reddish brown (5 YR 6/4), very fine grain,
					almost as fine as silt, very well sorted, loose, damp, uniform, moderate
					odor.
34	36	1.6	10 8 9 10	2.0/-0.9	0-0.2' Sand: As above, then fining down into silt.
					0.2-1.6' Silt: Reddish brown (5 YR 5/4), predominately grainy, some
					smooth layers brown (7.5 YR 4/4), somewhat cohesive/packed, damp,
					slight odor?
36	38	0.8	12 14 13 2	3.01/0.10	0-0.8' Sand/Silt: As above in 32' to 34', moderate odor.
38	40	1.3	10 11 13 13	1.31/-0.45	0-1.3' Sand/Silt: As above.
40	42	0.8	14 17 15 14	1.17/-0.59	0-0.8' Sand/Silt: As above, finely interbedded/laminated with some
					smooth silt as above in 34' to 36', predominately grainy, somewhat
					loose, damp, slight odor.
42	44	1.3	16 12 10 11	0.84/-1.09	0-1.3' Silt: As above, but slightly finer, silt, reddish brown (5 YR 5/4),
					grainy, uniform, some vesicles, trace black staining, damp 0 to 0.5',

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-138

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	PID/FID (ppm)	Sample/Core Description
					wet to saturated below 0.5, slight odor?
44	46	1.3	--	1.54/-0.05	0-1.3' Silt: As above, saturated, slight odor?
					EOB @ 46'

ARCADIS

Sample/Core Log

Boring/Well GMSB-139 Project/No. Ford/Kingsford WI001075.0004 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 10/19/04 Drilling Completed 10/19/04

Total Depth Drilled 56 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1118.69 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Robert

Prepared By Andy Mumpy Hammer Weight 300 Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	PID/FID (ppm)	Sample/Core Description
0	2	0			No recovery.
2	4	1.1	3 4 6 5	58.69/-3.3	0-0.4' Silt: Yellowish brown (10 YR 5/8), trace very fine to fine sand,
					trace rootlets/organics, grainy, uniform, somewhat cohesive, moist,
					no odor.
					0.4-1.1' Sand: Strong brown (7.5 YR 5/8), little gravel subangular to
					subround up to 0.8", sand very fine to coarse, predominately fine,
					poorly sorted, loose, moist, no odor.
4	6	0	4 5 3 5	--	No recovery.
6	8	0.5	4 6 5 6	89.9/-2.95	0-0.5' Sand: Strong brown (7.5 YR 4/6), very fine to very coarse
					grain, predominately fine, trace fine gravel subround, very poorly
					sorted, loose, damp, no odor.
8	10	0	7 8 7 9		No recovery.
10	12	1.4	6 7 6 6	102.7/-2.19	0-1.4' Sand: Strong brown (7.5 YR 4/6), predominately fine grain,
					some medium to coarse, poorly sorted, loose, damp, no odor.
12	14	0	4 3 5 5		No recovery.
14	16	1.5	5 4 6 4	107.6/6.6	0-0.3' Slough.
					0.3-1.5' Sand: Strong brown (7.5 YR 4/6), trace fine gravel subround,
					sand predominately fine, little medium to coarse, poorly sorted,
					loose, damp, no odor.
16	18	1.5	3 4 4 5	102.3/0.77	0-0.3' Slough.
					0.3-1.5' Sand: Color as above, fine grain, trace medium to coarse,
					well sorted, loose, damp, no odor.
18	20	1.2	5 4 5 6	103.0/-2.05	0-0.5' Sand: As above.
					0.5-1.2' Sand: Color as above, little gravel angular to subround up to
					0.7", sand fine to very coarse, predominately fine to medium, poorly
					sorted, loose, damp, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-139

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	PID/FID (ppm)	Sample/Core Description
20	22	1.5	10 11 13 11	105/-1.33	0-1.1' Sand: As above, but contains a few rock fragments broken by spoon, gray/white quartz fragments, no odor.
					1.1-1.5' Sand: Light brown (7.5 YR 6/4), trace subround gravel up to 0.5", fine grain, trace medium to coarse, moderately sorted, loose, damp, no odor.
22	24	1.0	7 6 7 8	79.7/-1.55	0-0.5' Sand: As above.
					0.5-1.0' Sand: Color as above, fine grain, well sorted, loose, damp, no odor.
24	26	1.8	6 5 7 6	27.07/-1.64	0-1.8' Silt with Clay Interbeds: Silt, brown (7.5 YR 4/4), clay, yellow to red (5 YR 4/6), predominately silt, silt layers up to 5" thick, clay layers varved to approximately 0.7" thick, silt smooth, somewhat cohesive, clay plastic, appears fissile on broken surfaces, soft, HP = 2.0, cohesive, damp, no odor.
26	28	1.4	6 12 11 10	11.48/-1.52	0-1.0' Silt: Brown (7.5 YR 4/4), smooth, uniform, somewhat cohesive, packed/hard, damp, no odor.
					1.0-1.4' Silt: Light reddish brown (5 YR 6/4), grainy, uniform, loose, dry, no odor.
28	30	1.0	16 14 15 13	6.62/-1.18	0-1.0' Silt: As above, but contacts fine laminations of smooth silt and a few finely interbedded clay layers, clay is yellowish red, as above, smooth silt is brown, as above, predominately grainy silt, damp, slight odor.
30	32	0.8	12 13 14 12	5.74/0.54	0-0.8' Sand: Light reddish brown (5 YR 6/4), very fine grain, well sorted, loose, dry, slight odor.
32	34	1.3	7 8 8 9	4.60/0.50	0-1.3' Sand: as above, very fine grain, uniform, very well sorted, loose, damp to dry, slight odor?
34	36	1.0	10 12 11 12	1.92/0.9	0-1.0' Sand: As above.
36	38	1.3	8 10 11 9	0.79/-1.63	0-1.3' Sand: as above, very fine, damp, slight odor.
38	40	1.5	9 10 11 9	1.28/-0.9	0-1.5' Sand: as above, very fine, slight coarsening down section into fine sand below 1.2, well sorted, loose, damp, no odor.
40	42	1.5	9 9 10 10	3.69/0.81	0-1.5' Sand: As above, light reddish brown (5 YR 6/4), very fine grain, well sorted, loose, damp, no odor.
42	44	1.6	10 11 9 10	2.35/-0.27	0-1.6' Sand: As above, slightly finer, approaching grainy silt size, very fine grain, damp, moist to wet below 1.3', loose, no odor.
44	46	1.3	8 9 8 7	2.63/-0.50	0-0.6' Sand: Reddish brown (5YR 5/4), fine grain, trace medium to coarse, moderate to sorted, loose, saturated, no odor.
					0.6-1.1' Sand: Brown (7.5 YR 5/4), fine to medium grain, trace coarse, moderately sorted, loose, saturated, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-139

Prepared by Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	PID/FID (ppm)	Sample/Core Description
					1.1-1.3' Sand: As above in 0-0.6.
46	48	1.6	10 9 10 11	0.52/-1.50	0-1.6' Sand: Reddish brown (5 YR 4/3), very fine to fine grain,
					predominately fine, trace medium to coarse, moderately sorted,
					loose, saturated, no odor.
48	50	2.0	11 11 9 10	0.74/-1.51	0-2.0' Sand: Reddish brown (5 YR 4/3), as above, slightly coarse,
					predominately fine grain, some very fine, trace medium to coarse,
					trace gravel subangular up to 0.8", trace clay layer at 0.8, clay
					appears yellowish red, soft, plastic, approximately 0.2" thick layer,
					sand moderately sorted, loose, saturated, slight odor?
50	52	2.0	8 9 10 10	2.38/0.16	0-2.0' Sand: As above, with a silt layer at 1.4' approximately 9" thick,
					silt smooth, cohesive, saturated, no odor.
52	54	2.0	7 6 7 8	3.59/-0.72	0-1.5' Sand: As above.
					1.5-2.0' Sand: Dark brown (7.5 YR 3/4), trace fine gravel subangular
					to subround, medium to coarse grain, some fine, moderately sorted,
					loose, saturated, no odor.
54	56	1.0	6 5 7 6	1.12/-1.17	0-1.0' Sand: Reddish brown (5 YR 4/3), very fine to fine grain,
					predominately fine, well sorted, uniform, saturated, no odor.
					EOB @ 56'.

ARCADIS

Sample/Core Log

Boring/Well GMSB-140 Project/No. Ford/Kingsford WI001095.0027 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 4/4/06 Drilling Completed 4/4/06

Total Depth Drilled 35 Feet Hole Diameter 8/12 inches

Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' X 4"

Sampling Interval continuous feet

Land-Surface Elev. 1049.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Jon Weeks Helper Royce Brown Robert Korhonen

Prepared By Jill Flater

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	5	1.0	63.3/'1.62	0-0.5' Silt/Topsoil: Very dark brown (7.5 YR 2.5/3) smooth silt, somewhat loose,
				organics grass/roots, moist, no odor.
				0.5-1.0' Silt/Sand: Dark brown (7.5 YR 3/4) silt and very fine to fine grain sand,
				moderate to well sorted, trace medium sand, loose, trace fine to coarse gravel,
				angular to subround up to 1-1/2".
5	10	2.5	2466-5420/	0-0.5' Silt: Dark brown (7.5 YR 3/3) smooth silt, slightly clayey, slightly plastic,
			1.00-1.83	trace fine to coarse angular to subround gravel up to 1" diameter, trace roots.
				0.5-1.0' Sand: Brown (7.5 YR 4/4) grained trace medium to moderate sorted,
				coarse, little fine to coarse gravel up to 2" diameter, up to 2" diameter most
				<1/2", loose, moist, no odor.
				1.0-1.7' Sand: Brown (7.5 YR 5/4) fine grain, well sorted, moist, loose, no odor.
				1.7-2.5' Sand: Brown (10 YR 4/3) fine to very coarse grain, very poorly sorted,
				some fine gravel up to 3/4" angular to subround, trace coarse gravel up to
				1-1/4" angular to subround, some silt, moist, loose, no odor.
10	12	NR		No recovery.
15	20		84-1950/	0-1.2' Silt/Clay: Brown (7.5 YR 5/4) smooth silt, very clayey, very plastic
			-1.39--0.67	probably clay varved through can't see them, slight swirl of reddish brown/
				yellowish red, wet, no odor.
				1.2-1.8' Silt/Sand/Clay: Brown (7.5 YR 4/4) smooth silt, fine sand and clay,
				sand is moderate sorted, trace medium to very coarse, trace fine gravel up to
				1/2", silt and clay very soft, overall: plastic, wet, no odor.
				1.8-3.0' Silt/Clay: (7.5 YR 4/4) smooth silt and clay with some fine grain
				moderate sorted sand, trace medium to coarse, very sticky, wet, no odor, no
				signs of bedding.
				3.0-4.0' Silt: Brown (7.5 YR 4/4) grainy silt, somewhat loose, wet trace black
				staining, odor, trace fine gravel angular to subangular.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-140

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
				4.0-5.0' Sand: Brown (7.5 YR 5/3) up to 3/4" fine grain, well sorted, no silt,
				trace very fine, loose, strong odor, wet.
20	25	2.5	17.76-3440/	0-0.5' Sand: As above.
			-0.84--1.26	0.5-1.0' Sand: Reddish brown (5 YR 5/4) fine grain, trace medium to very coarse,
				poorly sorted; 0.5-0.8 silty with some fine to coarse gravel up to 2" diameter
				subangular to subround; otherwise little silt, little fine to coarse gravel up to 2"
				subangular to subround, loose, wet, strong odor.
				1.0-2.0' Sand/Gravel: Dark brown (7.5 YR 3/4) trace to little very fine to fine
				medium to very coarse grain sand and fine to coarse gravel, very poorly sorted,
				loose, wet, strong odor, fine to coarse gravel up to 2" most fine ≤3/4"
				subangular to subround.
				2.0-2.5' Sand/Gravel: As above, very fine to very coarse sand.
25	30	0		No recovery (pushed rock).
30	35	1	7.06-9.33/	0-4.0' No recovery.
			1.32--1.39	4.0-5.0' Silt/Sand: Red brown (5 YR 5/4) grainy silt and very fine silty sand, well
				sorted homogeneous, somewhat loose to loose, wet, strong odor (pushed a
				rock only recovery was last foot of sample) 4" rock at 4.0, cored slightly by
				barrel.
				EOB @ 35'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-201 Project/No. WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 7/24/98 Drilling Completed 7/24/98

Total Depth Drilled 74 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 1" Sampling Interval continuous feet

Land-Surface Elev. 1100.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used none Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 300 lbs Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	12"/4.0	2,2,2,2	0-7.0": Top Soil. Light brownish grey (10 YR 6/2) sandy silt, abundant
				rootlets, dry and crumbly. No HCl reaction, trace granular gravel.
				7.0-12": Silt. Strong brown (7.5 YR 5/8) slightly moist, no HCl reaction,
				HP = 1.0, trace rootlets.
2	4	14"/4.5	1,1,1,2	0-1.0": Silt. As above.
				1.0-14": Sand. Medium, reddish yellow (7.5 YR 6/8), loose, dry, some fine
				sand, some coarse sand, no HCl reaction.
4	6	11"/5.0	2,2,3,4	0-7.0": Sand. Medium, as above, some to much fine sand.
				7.0-12": Gravel. Light brown (7.5 YR 6/4), dry, loose, poorly sorted coarse
				to fine sand, matrix. Gravel, pebble and granule size subangular to rounded,
				variable composition.
6	8	10½"/7.5	3,4,4,6	0-10.5": Sand and Gravel. Yellowish red (5 YR 5/6) composition as above
				with gravel size exceeding spoon diameter, ie, shattered fragments, slightly
				moist.
8	10	7"/8.5	5,4,5,4	0-7.0": Sand and Gravel. As above, moist.
10	12	0	6,5,5,6	No recovery.
12	14	13"/3.5	2,4,4,3	0-4.0": Sand. Coarse and granular gravel, light brown (7.5 YR 6/4), loose, damp.
				Some to much fine and medium sand, granular gravel, variable composition,
				subrounded to well rounded.
				4.0-13": Sand. Fine to medium, grading to coarse sand, pink (7.5 YR 6/3)
				loose, well sorted, slightly moist.
14	16	8"/3.5	5,7,6,8	Gravel. Pebble sized, yellowish red (5YR 4/6), loose saturated to very moist,
				with trace to some coarse sand, trace silt coating grains. Gravel, subrounded
				to well rounded, variable composition, clasts greater than spoon diameter.
16	18	13"/4.0	3,5,4,6	0-10": Sand and Gravel. As above, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-201

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				10-13": Sand. Coarse and granular gravel. Very pale brown (10 YR 7/4),
				loose, slightly moist, some fine and medium sand, some well rounded
				pebble gravel, no HCl reaction.
18	20	12"/3.5	5,8,6,7	0-3.0": Sand. Coarse and granular gravel as above.
				3.0-12": Sand. Medium to coarse with some pebble gravel, very pale brown
				(10 YR 7/4), loose, slightly moist, trace to some fine and medium sand. No
				HCl reaction.
20	22	16"/4.5	3,5,6,4	0-3.5": Sand. Coarse to medium, very pale brown (10 YR 7/4), loose, slightly
				moist, some granular gravel.
				3.5-12": Sand. Fine grading down into sand and gravel. Very pale brown
				(10 YR 7/4), loose, slightly moist, gravel has variable composition, subangular
				to rounded.
				12-16": Sand. Medium to coarse, very pale brown (10 YR 7/4), loose, slightly
				moist, no HCl reaction.
22	24	18"/4.0	6,5,7,9	0-16": Sand. Coarse, grading into sand and granular gravel as above
				(lowest 10 inches).
				16-18": Sand. Fine to medium, very pale brown (10 YR 8/2), dry, loose, some
				coarse sand and grain gravel.
24	26	15"/2.5	3,4,6,5	0-15": Sand. Fine to medium, as above. Dry to slightly moist, loose.
26	28	14"/3.0	9,5,7,8	0-14": Sand. Medium to coarse, very pale brown (10 YR 8/2) loose, slightly
				moist, some fine sand, trace to some granular gravel and pebble gravel. No
				HCl reaction.
28	30	17"/4.0	9,5,7,8	0-13": Sand. Medium to coarse, as above with some to much granular
				gravel, loose and dry.
				13-16": Sand. Fine, pink (7. 5YR 8/3) ,loose, dry to slightly moist, well sorted.
				16-17": Sand. Coarse to medium, very pale brown (10 YR 8/2) much fine
				sand, trace granular gravel, dry and loose.
30	32	17"/9.0	7,10,12,17	0-3.0": Sand. Coarse to medium, as above.
				3.0-17": Gravel. Light grey (10 YR 7/2), dry, loose, dominantly granular and
				small pebble gravel. Matrix coarse to fine sand. Gravel, angular to rounded
				and variable composition. No HCl reaction.
32	34	16"/14.0	10,10,10,12	0-7.0": Gravel. As above, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-201

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				7.0-16": Sand. Medium, very pale brown (10 YR 7/3), poorly sorted. Some
				coarse sand, some granular gravel, trace pebble gravel, loose and dry.
34	36	18"/≤5.0	9,12,17,17	0-18": Sand. Coarse to medium, very pale brown (10 YR 8/3), poorly sorted,
				some fine sand, some granular gravel and trace well rounded, variable
				composition pebble gravel. Dry and loose, no HCl reaction.
36	38	16"/≤3.0	9,10,10,12	0-5.0": Sand. Coarse to medium, as above, dry.
				5.0-16": Sand. Very coarse silty, reddish brown (5 YR 5/6), dry, crumbly, moderate
				HCl reaction. Well sorted. HP = 2.5 to >4.0.
38	40	11"/25	7,11,18,16	0-11": Sand. Very fine silty, as above, but moist.
40	42	13"/175	5,8,9,10	0-9.5": Sand. Very fine silty, as above, moist, becoming saturated at base.
				9.5-13": Silt. Very fine sandy, brown (7.5 YR 5/4). HP = 2.5 to 3.0. Very
				moist, to saturated, slight HCl reaction.
42	44	14"/125	8,8,10,13	0-14": Silt. Sandy, as above, moist. HP = 1.5 to 2.5, slight HCl reaction.
44	46	18"/35	3,7,7,8	0-6.0": Silt. Strong brown (7.5 YR 5/6), HP = 2.0 to 2.5 moderate HCl
				reaction, dry to moist. ¼ inch clay lense at 4 inches.
				6.0-18": Sand. Very fine silty sandy silt, reddish brown (5 YR 5/4) saturated to
				moist at base. HP = 1.5 to 2.5, slight HCl reaction.
				HCl reaction.
46	48	19"/4.0	4,6,6,10	0-6.0": Silt. Brown (7.5 YR 5/3), moderate HCl reaction, moist. Clay lense at 5½
				inches. HP = 0.5 to 1.0.
				6.0-15": Silt. Sandy, reddish brown (5 YR 5/4), saturated, HP = 1.5 to 2.0.
				15-19": Silt. Yellowish brown (10 YR 5/4), HP = 4.0. slightly moist, moderate
				HCl reaction (clay from15 to 16 inch). Clay, red (2.5 YR 5/6) HP = 3.0.
				Strong HCl reaction.
48	50	15"/4.0	5,3,8,7	0-6.0": Sand. Very fine, silty/ sandy silt as above, saturated.
				6.0-15": Interbedded silts and clays, finely laminated. Silts: brown (10 YR 5/3),
				HP = 2.5 to 3.0, variable very fine sand content. Moist to dry clay 6 to 6½
				inch, reddish brown (5 YR 5/4), HP = 3.0.
50	52	15"/3.0	5,5,6,3	0-15": Silt. As above, very moist, to saturated.
52	54	15"/3.0	5,4,4,7	0-15": Silt. As above, moist. Clay at 2.5 to 3.5 inch and 13 to 14 inch,
				reddish brown (5 YR 5/4) HP = 1.5 to 2.5. Strong HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-201 Page 4 of 4

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface)		Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6	
From	To	OVA (ppm)	Inches	Sample/Core Description
54	56	20/3.0	6,4,5,7	0-20": Silt. As above, with ¼ inch clay, lense at 2 inch. Saturated for top
				10 inches, moist for lower 10 inches.
56	58	14"/4.0	3,5,6,4	0-14": Silt. As above. Clay at 2 inch (½ inch) and 11 inch (¼ inch). Silt, top
				7 inch as saturated, lowest 7 inches moist.
58	60	5+C141"/	3,4,6,3	0-18.5": Silt. As above, but moist to dry. Clay at 2 to 3 inches and 15 to 16½
				inches. HP (silt) = 2.5 to 3.5. HP (clay) = 2.0 to 2.5. Silt: slight HCl reaction.
				Clay strong HCl reaction.
60	62	19"/4.0	3,5,6,8	0-19": Silt. As above, with little sandy silt. HP = 3.0 to >4.0. Slight to
				moderate HCl reaction.
62	64	19"/4.5	6,5,6,5	0-19": Silt. As above. Top 7 inches saturated rest of unit moist ¼ inch clay
				lenses at 12 and 14 inches. HP (silt) = 3.0 to 3.5, moderate HCl reaction.
				HP (clay) = 3.0, strong HCl reaction.
64	66	19.5"4.0	6,4,5,4	0-19.5": Silt. As above, sandy silt, saturated. Silt moist. HP = 1.5 to 3.5.
66	68	20"/4.0	6,8,9,7	0-20": Silt. As above, saturated.
68	70	21"/4.5	7,5,4,6	0-21": Silt. As above, saturated, to very moist. Clay at 6 to 8 inches.
				HP (silt) = 2.0 to 2.5. Slight HCl reaction. HP (clay) = 3.5. Strong HCl reaction.
70	72	18"/3.5	4,4,3,6	0-18": Silt as above, moderately HCl reaction. HP = 3.5. Very moist.
72	74	24"/4.0	6,6,7,11	0-24": Silt as above. Very moist to saturated.
				End of hole 74 feet bgs. Hole abandoned.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-203 Project/No. WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 7/26/98 Drilling Completed 7/26/98

Total Depth Drilled 60 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1097.87 feet [x] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used none Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 300 lbs Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inhes) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	12"/4.0	1,1,1,1	0-4.0": Top Soil. Dark brown (10 YR 3/3) silty sand, dry, crumbly, some to much
				roots. No HCl reaction. HP = 1.0
				4.0-12": Silty sand/sandy silt. Reddish yellow (7.5 YR 6/8), dry, crumbly, HP = 0.5.
				No HCl reaction.
2	4	12"/4.0	2,2,2,5	0-8.0": Sand. Brownish yellow (10 YR 6/6), fine to very fine silty, dry, crumbly,
				HP ≤ 0.5. No HCl reaction.
				8.0-12": Sand and Gravel. Strong brown (7.5 YR 5/6), coarse, , dry, loose,
				some to much coarse and medium sand, subrounded to well rounded
				gravel, spoon diameter, variable composition, predominantly granular
				gravel.
4	6	7"/5.0	2,5,5,5	0-7.0": Sand and Gravel. As above, dry.
6	8	8"/4.0	3,3,3,3	0-8.0": Sand and Gravel. As above, dry.
8	10	0	3,4,6,5	No recovery.
10	12	11"/7.0	5,5,4,6	0-11": Sand and Gravel. Coarse, as above but more abundant pebble
				gravel, some shattered, very moist, no HCl reaction.
12	14	8"/2.5	8,4,4,4	0-8.0": Sand and Gravel. Brownish yellow (10 YR 6/6), coarse, loose, moist,
				matrix predominantly coarse sand, some clasts larger than spoon diameter
				clasts, variable composition, subrounded to well rounded. No HCl
				reaction.
14	16	17"/4.0	4,2,4,5	0-6.0": Sand. Pink (7.5 YR 7/4), fine, loose slightly moist, some medium
				sand, no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-203 Page 2 of 3

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inhes) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				6.0-17": Sand. Very pale brown (10 YR 7/3), coarse and granular gravel, , loose,
				slightly moist to dry, some fine and medium sand, gravel variable composition
				and subangular to subrounded, trace pebble gravel. No HCl reaction.
16	18	16"/3.0	4,2,3,3	0-16": Sand. Pink (7.5 YR 7/4), fine,loose, slightly moist, trace medium
				sand and trace coarse sand. No HCl reaction.
18	20	17"/3.0	6,3,3,3	0-7.0": Sand. Fine as above with some to much granular gravel in lowest
				1 inch. Well rounded, variable composition, slightly moist.
				7.0-12": Same as above, fine sand to fine sand with some gravel.
				12-17": Sand. Fine, as above.
20	22	17"/3.0	4,2,2,3	0-7.0": Sand. Fine as above, slightly moist.
				7.0-17": Sand. Very pale brown (10 YR 7/4) medium to coarse, with trace gravel,
				pebble sized. Dry to slightly moist, loose, trace to some fine sand.
				Gravel variable composition, rounded, no HCl reaction.
22	24	17"/3.0	4,2,2,3	Sand. Medium to coarse, as above. Dry to slightly moist, trace some
				subrounded to subangular, variable composition, gravel.
24	26	17"/4.0	5,2,2,3	0-10": Sand. Light brown (7.5 YR 6/4) fine to medium, dry, loose, well
				sorted, no HCl reaction, trace coarse sand.
				10-17": Sand. Pinkish grey (7.5 YR 7/2) medium, loose, slightly moist to dry,
				very well sorted.
26	28	18"/8.0	6,2,2,3	0-5.0": Sand. Medium as above.
				5.0-8.0": Sand. Very pale brown (10 YR 8/3) medium to coarse, with trace
				some gravel, loose, dry, gravel up to pebble size 1 inch in diameter. No HCl
				reaction.
28	30	16"/3.5	3,3,3,5	0-16": Sand. Coarse as above with some granular gravel, loose and dry.
30	32	14"/3.5	10,12,11,13	0-9.0": Sand. Coarse as above, dry and loose.
				9.0-14": Sand and Gravel. Very pale brown (10 YR 8/2) coarse, gravel
				subrounded to well rounded, variable composition, dry and loose, some
				calcareous clasts.
32	34	19"/3.5	4,2,4,5	0-4.5": Sand and Gravel. Coarse, as above, slightly moist.
				4.5-5.5": Sand. Pink (7. 5YR 8/3) very fine, dry, loose, very well sorted. No
				HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-203

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inhes) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				5.5-16": Silt. Brown (7.5 YR 5/4), sandy, moist. HP = 1.5 slightly HCl
				reaction, abundant very fine sand.
				16-19": Sand. Very fine, as 4.5 to 5.5, moist.
34	36	14"/3.0	6,6,6,8	0-8.0": Sand. Very fine, as above, very moist.
				8.0-14": Silt. Brown (7. 5YR 5/4) very moist, HP = 1.0 to 1.5, slight HCl
				reaction, much very fine sand.
36	38	16"/5.0	3,3,3,5	0-16": Silt. As above, moist. HP = 0 to 2.7. Slight HCl reaction, some to
				much very fine sand. ¼ inch clay lense at 9½ inch.
38	40	17"/6.0	4,4,4,4	0-17": Silt. As above, but saturated.
40	42	13"/4.5	2,4,5,8	0-13": Silt. As above, moist, clay at 2¼ to 2.5 inch, strong HCl reaction in
				clay.
42	44	16"/5.5	8,9,7,9	0-10": Silt. As above, moist to saturated.
				10-16": Silt. Brown (10 YR 5/3) HP = 2.5 to 3.5, clayey, moderate HCl
				reaction.
44	46	14"/5.0	8,8,7,6	0-14": Silt. As 0 to 10 inch overlying sample, moist.
46	48	17"/4.0	5,5,3,5	0-17": Silt. As above, moist ¼ inch clay at 14 to 14.5 inch.
48	50	9"/3.0	2,3,4,4	0-9.0": Silt. As above, saturated.
50	52	15"/2.5	4,4,3,4	0-15": Silt. As above, saturated, clay at 2 to 2½ and 11 to 11½ and 12 to
				12½ inch. Clay: reddish brown (5 YR 4/4). HP = 2.5 to 2.6 strong HCl
				reaction.
52	54	13"/3.0	3,4,5,7	0-13": Silt. Brown (10 YR 5/3) clayey. HP ≥ 40, strong HCl reaction,
				clay at 7 to 8 inch, brown (7.5 YR 5/4) strong HCl reaction, HP > 4.0, dry.
54	56	13"/4.0	1,2,4,5	0-13": Silt. Brown (10 YR 5/3) HP = 2 to 2.5 saturated. Slight HCl
				reaction, clay brown (7.5 YR 5/4) 5 to 6 and 7.5 to 8.5. HP = 3.0, strong
				HCl reaction.
56	58	19"/5.5	5,3,4,5	0-19": Silt. As above. Clay at 8½ to 9 inch, 12 to 13 inch, 16½ to 17½
				inch. Silt, saturated.
58	60	15"/4.0	8,5,6,8	0-15": Silt. As above. Saturated, clay 3 to 4 inch and 11 to 12 inch.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-213 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 9/2/98 Drilling Completed 9/3/98

Total Depth Drilled 57 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval continuous feet

Land-Surface Elev. 1096.80 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Driller Dan Helper Tody

Prepared By Raymond Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	20"/	2,2,2,2	0.0-5.0": Top Soil. Brownish yellow (10 YR 6/6), crumbly, dry, sandy silt loam,
		≤9.5		much rootlets.
				5.0-13.0": Silt. Light yellowish brown (2.5 Y 6/4), sandy, dry, crumbly, trace
				angular pebble gravel.
				13.0-20.0": Sand. Reddish yellow (7.5 YR 7/8), medium, dry, loose, trace silt.
2	4	12"/	2,4,5,5	0.0-12.0": Sand. Reddish yellow (7.5 YR 6/6), medium to coarse, trace very coarse
		≤9.5		sand, well sorted, dry, loose. No HCl reaction.
4	6	10"/	8,5,7,7	0.0-10.0": Sand. Strong brown (7.5 YR 4/6), with gravel. Matrix: coarse to medium
		≤9.5		sand, some very coarse sand. Gravel subrounded to well rounded, granular and
				pebble gravel, dry, loose, up to greater than 2 inches in diameter.
6	8	0.5"/	7,7,7,7	0.0-0.5": Sand. As in sand matrix in overlying sample.
		≤4.0		
8	10	12.5"/	4,4,4,5	0.0-5.0": Sand and Gravel. Very Coarse Sand and Granular Gravel. Brownish
		3.0		yellow (10 YR 6/6), very coarse and granular, loose, slightly moist, some to much
				coarse sand, some medium sand.
				5.0-10.0": Sand. Very pale brown (10 YR 7/4), medium, very well sorted, loose,
				slightly moist.
				10.0-12.5": Sand. Very pale brown (10 YR 8/4), coarse, dry, loose, very well
				sorted.
10	12	12"/	5,2,3,3	0.0-12.0": Sand. Coarse as above, dry, slightly moist. No HCl reaction.
		4.0		
12	14	12"/	11,8,6,6	0.0-11.0": Sand. Very pale brown (10 YR 7/6), coarse with some pebble gravel.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-213 Page 2 of 3

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		4.5		Loose, slightly moist; subrounded to well rounded gravel up to greater than 2
				inches in diameter, some very coarse sand and granular gravel.
14	16	9"/	11,10,12,13	0.0-9.0": Sand and Gravel. Coarse sand as above with much very coarse sand and
		4.5		granular gravel, loose, slightly moist. Difficult drilling due to coarse gravel.
16	18	0/NA	9,10,10,10	No recovery.
18	20	0/NA	7,5,7,7	No recovery.
20	22	15"/	2,2,2,7	0.0-15.0": Sand. Pale brown (10 YR 8/3), coarse with trace to some granular
		5.5		gravel. Loose, slightly moist, trace to some very coarse sand. Gravel: subangular
				to subrounded, variable composition. Trace pebble gravel up to 1 cm in diameter.
22	24	0/NA	10,10,15,15	No recovery.
24	26	20/	5,5,5,7	0.0-9.0": Sand. Very pale brown (10 YR 8/3), medium. Some coarse sand, trace
		5.0		granular gravel. Dry to slightly moist, no HCL reaction.
				9.0-20.0": Sand. Brown (7.5 YR 5/4), fine to very fine, silty, HP = 1.0. No HCl
				reaction, very thinly laminated, very moist, more sandy at base.
26	28	16"/	5,5,7,9	0.0-16.0": Sand. Brown (7.5 YR 5/2), fine, saturated, slightly dense, some to
		5.0		much very fine sand. Well sorted.
28	30	8"/	7,10,7,9	0.0-8.0": Sand. Fine as above, saturated.
		≤4.0		
30	32	14"/	4,5,5,7	0.0-14.0": Sand. Brown (7.5 YR 5/2), fine to very fine, loose, saturated (some
		3.5		blow-in), very well sorted.
32	34	21"/	3,4,7,10	0.0-4.0": Sand. Fine to very fine, as above, saturated.
		3.5		
34	36	8"/	5,4,11,25	0.0-8.0": Sand. Fine to very fine, as above, saturated, boring flushed.
		≤2.5		
36	38	13"/	5,7,8,12	0.0-13.0": Sand. Fine to very fine, as above, saturated, boring flushed.
		3.0		
38	40	13"/	4,4,7,10	0-13.0": Sand. Fine to very fine as above, saturated.
		3.0		
40	42	18"/	2,5,7,17	0.0-18.0": Sand. Fine to very fine, as above, saturated. Boring flushed.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-213

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		2.5		
42	44	12"/	2,2,2,8	0.0-12.0": Sand. Fine to very fine as above, saturated. Boring flushed.
		2.25		
44	46	13"/	5,5,9,12	0.0-13.0": Sand. Fine to very fine as above, saturated. Boring flushed.
		5.5		
46	68	10"/	3,8,12,15	0.0-10.0": Sand. Fine to very fine as above, saturated. Boring flushed.
		3.5		
48	50	14"/	5,8,8,12	0.0-14.0": Sand. Fine to very fine as above, saturated. Boring flushed.
		4.0		
50	52	18"/	5,1,3,8	0.0-13.0": Sand. Fine to very fine as above, saturated.
		4.0		13.0-18.0": Silt. Brown (7.5 YR 5/4) moderate HCl reaction, slightly moist,
				HP = 3.2. Boring flushed.
52	57	17"/	7,10,14,15	0.0-17.0": Silt. As above, moist.
		7.5		
				End of boring 57 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-213A Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 9/22/98

Drilling Completed

Total Depth Drilled 105 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Barrel

Length and Diameter of Coring Device 10' x 4"

Blind Drill to 45 feet, Continuous Sampling Interval from 45 feet

Land-Surface Elev. 1096.80 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Potable Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Brian

Prepared By Kevin Daleness and Pat Bartnik

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	45			Blind drill. See boring log for GMSG-213.
45	50	5	4.5-20/	0.0-2.5": Sand. Brown (7.5 YR 5/3), very fine to fine, silty, loose, wet.
			0-0.3	2.5-5.0": Silt. Reddish brown (5 YR 5/3), trace clay, very competent, penotrometer
				>4, trace clay inclusions, reddish brown (5 YR 5/4), ¼ to 2 inches, slight
				HCl reaction.
50	55	5	5-12/0-0.8	0.0-6.0": Same as above.
				6.0-7.0": Sand. Brown (7.5 YR 5/4), medium to very coarse, trace silt and gravel
				(¼ inch) wet.
				7.0"-2.5': Silt. Brown (7.5 YR 5/3), trace very fine sand and gravel (¼ inch),
				penotrometer = 3 to 4, trace clay inclusions (1/16 inch), slight HCl reaction.
				2.5-5.0': Silt. Brown (7.5 YR 5/4), some very fine sand, trace gravel 1/8 inch, loose,
				slight HCl reaction, trace clay inclusions (1/16 inch).
55	60	5	3.5-40/	0-2.5': Sand. Yellowish brown (10 YR 5/4), medium to coarse, loose, wet, some
			0-0.1	gravel (1/8 to 1.25 inches), fine and very coarse sand, no HCl reaction.
				2.5-5.0': Sand. Brown (7.5 YR 5/4), fine, some very fine, loose, trace gravel, (1/8
				to 1/2 inch), slight HCl reaction.
60	65	5	6-15/0-0	0.0-5.0': Sand. As above.
65	70	5	3-6/0-0	0.0-1.5': Sand. Yellowish brown (10 YR 5/4), coarse to very coarse, some gravel,
				subrounded (1/8 to 2 inches) wet, loose.
				1.5-4.5': Sand. Yellowish brown (10 YR 5/4), medium to coarse, some very
				coarse, trace fine, loose, wet, trace gravel (1/8 to 3 inches).
				4.5-5.0': Silt. Brown (7.5 YR 5/3), trace clay, penotrometer = 2.0 to 2.5, slightly plastic,
				trace clay inclusions (1/4 to 2 inches), reddish brown (5 YR 5/3), strong HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-213A

Prepared by Kevin Daleness and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
70	75	5	3-8/0-0	0.0-5.0': Silt. As above, trace clay inclusions (1/8 to 1/2 inches), dark brown (7.5 YR 3/4), strong HCl reaction.
75	80	5	4.5-4.5/0-0	0.0-5.0': Silt. As above, trace clay inclusions, strong HCl reaction.
80	85	5	4.5-4.5/0-0	0.0-5.0': Silt. As above, trace clay inclusions, pentameter = 3.0 to 3.5.
85	90	5	1.5-2/0-0	0.0-1.0': Silt. As above, trace clay inclusions.
				1.0-5.0': Silt. Brown (7.5 YR 5/3), trace very fine sand, blocky, penotrometer = 1 to 2, saturated, no HCl reaction.
90	95	5	1.5-2.5/0-0	0.0-5.0': Silt. As above, trace very fine sand, saturated.
95	100	5	1.5-2.0/0-0	0.0-5.0': Silt. As above, trace very fine sand, wet.
100	105	5.0	1.5-10/0-0	0.0-3.5': Silt. As above.
				3.5-5.0': Silt. As above, trace clay inclusions, dark brown (7.5 YR 3/3), strong HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-217 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/22/98 Drilling Completed 9/22/98

Total Depth Drilled 57 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1090.47 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	16"/5.0	3,3,1,1	0.0-4.0": Top Soil. Pale yellow (2.5 Y 7/4), dry, loose, slightly silty sandy loam, some
				subrounded pebble gravel.
				4.0-6.0": Silt. Yellowish brown (10 YR 5/6) fine sandy, slightly moist, crumbly, some
				medium to coarse sand (black for top 2 inches), HP = 1.0. No HCl reaction.
2	4	8.5"/6.5	2,3,4,4	0.0-8.5": Silt. Fine sandy, as above, slightly moist.
4	6	11.5"/7.0	4,4,5,5	0.0-11.5": Sand. Yellow (10 YR 7/6) medium, well sorted, dry, loose, no HCl reaction,
				trace coarse sand,1/8 to 1/16 inch thick. Medium to thinly bedded silt laminations.
6	8	10"/17.5	5,9,6,9	0.0-3.0": Sand. Medium as above, slight moist.
				3.0-10.0": Sand. Yellowish brown (10 YR 5/4) with some gravel. Matrix: coarse to fine
				sand, mainly medium sand, dry, loose. Gravel: subrounded to well rounded,
				predominantly pebble gravel, variable composition up to greater than 2 inches in
				spoon diameter.
8	10	0/NA	9,11,11,12	No recovery.
10	12	9"/7.5	14,18,16,24	0.0-9.0": Sand. Light yellowish brown (10 YR 6/4), coarse to very coarse sand with
				gravel and some medium sand. Granular and pebble gravel, angular to subrounded
				up to 2 cm in diameter, variable composition. Dry and loose. No HCl reaction.
12	14	5"/6.0	7,7,9,12	0.0-5.0": Gravel. With much sand, compositionally as above but dominantly gravel up
				to 1 cm in diameter but modally less than or equal to 0.5 cm. Much granular gavel,
				loose and moist.
14	16	12"/7.5	11,9,5,5	0.0-12.0": Gravel. With much sand as above, and trace silt, slightly moist.
16	18	17"/8.0	7,10,9,10	0.0-13.0": Gravel. With sand as above, slightly moist to dry.
				13.0-17.0": Sand. Very pale brown (10 YR 8/3) medium, loose, dry, very well sorted,
				trace coarse sand. No HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-217

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
18	20	6.5"/9.0	7,12,10,18	0.0-6.5": Sand. Very pale brown (10 YR 8/3) medium to coarse, loose, dry, well
				sorted, trace grain gravel. No HCl reaction.
20	22	0/NA	14,14,16,19	No recovery.
22	24	23"/13.0	5,6,6,12	0.0-13.0": Sand. Medium to coarse, as 18 to 20 feet, saturated.
				13.0-23.0": Sand. Pale brown (10 YR 6/3) coarse to very coarse with some to much
				granular gravel. Loose, saturated, trace pebble gravel. Gravel subangular to
				subrounded, variable composition.
24	26	17"/10.0	5,6,7,10	0.0-17.0": Sand. Coarse to very coarse, with some to much gravel as above.
				Saturated.
26	28	24"/12.0	7,8,8,7	0.0-16.5": Sand. Brown (10 YR5/3) coarse to very coarse, with some gravel, saturated,
				loose. Predominantly granular gravel with trace pebble gravel, variable composition,
				subangular to well rounded. No HCl reaction.
				16.5-24.0": Sand. Very pale brown (10 YR 7/3) coarse to medium, loose, saturated,
				some very coarse and granular gravel. No HCl reaction.
28	30	23"/7.0	6,8,14,16	0.0-12.0": Sand. Coarse to medium as above with very coarse sand and granular
				gravel. Saturated.
				12.0-23.0": Sand. Reddish brown (5 YR 5/4) fine to very fine, slightly dense, saturated
				trace silt, very well sorted. No HCl reaction.
30	32	16"/8.0	9,11,11,11,	Sand. Fine to very fine as above, saturated.
32	34	15.5"/5.5	4,4,6,8	0.0-15.0": Sand. fine to very fine, as above, saturated, flowing.
34	36	9.5"/15	6,9,17,18	0.0-9.5": Sand. Fine to very fine as above, saturated. Boring flushed.
36	38	18.5"/22.5	7,8,9,9	0.0-22.5": Sand. Fine to very fine as above, saturated.
38	40	17"/1.3	6,6,6,6	0.0-17.0": Sand. Fine to very fine as above, saturated. Boring flushed.
40	42	22"/17.5	4,4,4,5	0.0-22.0": Sand. Fine to very fine as above, saturated.
42	44	24"/15.0	6,9,9,6	0.0-24.0": Sand. Fine to very fine as above, saturated.
44	46	23"/14	8,8,8,8	0.0-23.0": Sand. Fine to very fine as above, saturated. Boring flushed.
46	48	17"/12.5	14,14,18,23	0.0-17.0": Sand. Fine to very fine as above, saturated.
48	50	23"/8.5	8,8,8,8	0.0-23.0": Sand. Fine to very fine as above, saturated.
50	52	24"/8.0	5,4,5,6	0.0-24.0": Sand. Fine to very fine as above, saturated.
55	57	23"/5.5	6,8,9,9	0.0-23.0": Sand. Fine to very fine as above, saturated.
				End of boring 57 ft bls

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SAMPLE/CORE LOG

Boring/Well GM-1 Project/No. Ford Kingsford Page 1 of 7

Site Location Kingsford, Michigan Drilling Started 5/6/97 18:15 Drilling Completed 5/15/97 16:45

Total Depth Drilled 321.6 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1121.79 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Dale Helper Mike

Prepared By Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	0.0/0.0	0-1': Silt. Brown (7.5 YR 4/2), sandy with fine grained sand, roots, moist.
				1-5': Sand. Strong brown (7.5 YR 5/8), fine grained, well sorted, trace silt, moist.
5	10	5	0.0/0.0	0-2.9': Sand. As above.
				2.5': Sand/Gravel. Dark reddish brown (5 YR 3/3), fine to coarse sand, fine to coarse gravel, very poorly sorted, with pebbles 1-3" diameter, moist.
10	15	5	1.0/0.0	0-2.5': Sand/Gravel. As above.
				2.5-5.0': Sand/Gravel. Grey (5 YR 5/1), fine to coarse sand, fine to coarse gravel with pebbles 1-2" diameter, dry.
15	20	3	5/0.0	0-1.5': Sand/Gravel. Grey, as above.
				1.5-2': Sand/Gravel. Brown (2.5 YR 4/2), fine to coarse sand and gravel, very poorly sorted, moist.
				2-3': Sand/Gravel. Grey (2.5 YR 5/1), fine grained sand, silty with coarse sand and gravel, dry.
20	25	3	5/0.0	Sand/Gravel. Brown (7.5 YR 5/3), fine to coarse sand, fine to coarse gravel with pebbles 0.5-2" diameter, rounded very poorly sorted, moist.
25	30	5	10/0.0	Sand/Gravel. Greyish brown to light greyish brown (10 YR 5/2 - 6/2), fine to coarse sand, some silt, fine to coarse gravel, with many pebbles 0.5-3" diameter, dry to moist.
30	35	5	1/0.0	Sand. Light reddish brown (5 YR 6/4), when dry, reddish brown (5 YR 4/4), when wet, very fine grained, well sorted, some silt, dry 0-2', wet 2-4', moist 4-5'.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-1

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
35	40	4	0.5/0.0	0-1': Silt. Reddish brown (5 YR 4/4), sandy with very fine grained sand, trace clay yellowish red (5 YR 5/8), in thin seam, fissile appearance, plastic.
				1-3': Sand. Reddish brown (5 YR 5/4), very fine grained, well sorted, some silt, wet.
				3-5': Sand. Reddish brown (5 YR 5/4), fine grain, trace very fine sand and silt, well sorted, wet.
40	45	5	1/0.0	Sand. Fine grain, as above.
45	50	5	0.0/0.0	Sand. Reddish brown (5 YR 4/4), fine grained, some silt, well sorted, wet.
50	55	5	1/0.0	Sand. As above.
55	60	5	0.0/0.0	0-2.5': Sand. As above.
				2.5-5.0': Sand. As above, with inclusions (clasts) of 1-2" of clay, (dark reddish brown (5 YR 3/4), fissile appearance, plastic). Sand, wet. Clay moist.
60	65	5	0.0/.0.0	0-1.5': Sand. As above, with clay clasts.
				1.5-5.0': Silt. Reddish brown (5 YR 4/3), trace clay, with inclusions of (clasts) clay material, (dark reddish brown (5 YR 3/4) fissile appearance, plastic as clasts 1-2" diameter and irregular lenses) 0.2", silt, wet, clay moist.
65	70	5	0.3/0.0	Silt. Reddish brown (5 YR 3/4), to brown (7.5 YR 4/4), very sandy in places, trace clay, with inclusions of (clasts) claylike material (dark reddish brown (5 YR 3/4), irregular seams also, fissile appearance, plastic). Silt wet, clay moist.
70	75	5	2/0.0	0-4': Silt. As above.
				4-5': Silt. Brown (7.5 YR 5/4), clayey, very dense with abundant clay material as above, moist.
75	80	5	2,500/0.0	Silt. As above, very dense, very clayey, with inclusion/clast material.
80	85	5	>10,000/0.0	0-1': Silt. Reddish brown (5 YR 4/4), very sandy with very fine grained sand, some clay inclusions, as above.
				1-4': Sand. Reddish brown (5 YR 4/4), very fine grained, some silt, well sorted, wet.
				4-5': Sand. Reddish brown (5 YR 4/4), very fine to fine grained, trace silt, well sorted, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-1

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
85	90	5	15/0.0	Sand. Reddish grey (5 YR 5/2), coarse grained, well sorted, with abundant fine to coarse gravel and pebbles 0.5-2" diameter, wet.
90	95	5	2.5/0.0	0-4.5': Sand. As above with gravel.
				4.5-5': Sand. Brown (7.5 YR 4/4), medium grained, well sorted, with fine to coarse gravel, wet.
95	100	5	400/0.0	Sand. Reddish grey (5 YR 5/2), coarse grained, some fines, moderate sorting, with abundant fine to coarse gravel and pebbles to 2" in diameter, wet.
100	105	5	300/0.0	0-1.5': Sand. Brown (7.5 YR 5/3), coarse grained, well sorted,
				1.5-1.7': Sand. As above with coarse to fine gravel.
				1.7-2.3': Sand. Reddish brown (5 YR 4/3), very fine grained, well sorted, trace silt.
				2.3-2.5': Silt. Reddish brown (5 YR 4/3), with fine to coarse gravel.
				2.5-5.0': Sand. Pinkish grey (7.5 YR 6/2), coarse grained, well sorted, trace fine to coarse gravel at 4.8'. Abundant gravel to trace brown silt at 5.0'.
105	110	5	>10,000/0.0	Silt. Reddish brown (5 YR 4/3), trace clay, with irregular inclusions (clasts) of clay-like material, (dark reddish brown (5 YR 3/3), fissile in appearance yet plastic). Wet.
110	115	5	2,000/0.0	Silt. As above.
115	120	5	>10,000/0.0	Silt. Reddish brown (5 YR 5/4), very sandy with very fine grained sand, wet.
120	125	5	2,000/0.0	Silt. As above.
125	130	5	9,000/0.0	0-4': Silt. Reddish brown (5 YR 5/4), sandy with very fine grained sand, trace clay.
				4-5': Silt. As above, very sandy, grading to very fine grained sand with silt, wet.
130	135	5	8,000/0.0	0-3': Silt. As above sandy with trace clay.
				3-5': Sand. Reddish brown (5 YR 5/4), very fine grained, well sorted, trace silt, wet.
135	140	5	200/0.0	Sand. Reddish brown (5 YR 5/4), very fine grained sand, well sorted, trace silt, 3 to 4' very clayey, wet.
140	145	5	8,000/0.0	Sand. As above, no clay, wet.
145	150	5	500/0.0	Sand. As above, reddish brown (5 YR 4/4), very fine grained, well sorted, some silt, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-1

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
150	155	5	>10,000/0.0	Sand. As above, very silty 0 to 3', wet.
155	160	5	>10,000/0.0	0-3': Sand. Reddish brown (5 YR 5/4 to 4/4), very fine to fine grained, well sorted, trace silt, wet.
				3-5': Sand. Reddish brown (5 YR 4/4), very fine grained, well sorted, silty, wet.
160	165	5	>10,000/0.0	0-1': Sand. Very fine grained, as above.
				1-5': Sand. Reddish brown (5 YR 4/4), fine grained, well sorted, trace silt, wet.
165	170	5		Sample collected into liner for treatability study.
170	175	5	2,000/0.0	Sand. Reddish brown (5 YR 4/4), very fine to fine grained, well sorted, some silt, wet. 3 to 5', occasional fine black bands/varves of black minerals.
175	180	5	14,000/-	Sand. As above.
180	185	5	4,000/-	0-2.5 Sand. As above.
				2.5-2.5': Silt. Reddish brown (5 YR 4/3).
				3.5-5.0': Sand. Reddish brown (5 YR 4/4), very fine grained, well sorted, some silt, wet.
185	190	2	1,000	Sand. Reddish brown (5 YR 4/3), very fine to fine grained, well sorted, trace silt, trace fine black gravel, wet.
190	195	3	1,000- >10,000/-	Sand. As above, no gravel.
				17:00 Stop drilling at 195' to collect third water sample based on greater than 50' sand.
				May 14, 1997 11:10 - Resume drilling from 195'.
195	200	5	1,200/0.0	Sand. Reddish brown (5 YR 5/4), very fine grained, well sorted, some silt, wet.
200	205	5	10,000/-	0-2.5': Sand. As above.
				2.5-3': Sand. As above, with 1 to 2" seams of reddish brown clay and fine grained sand, well sorted.
				3-4': Sand. Very fine grained, as above.
				4-5': Sand. Reddish brown (5 YR 5/4), very fine grained, well sorted, with 1 to 2" seams clay (reddish brown (5 YR 4/3)) and sand, (reddish brown, fine grained, well sorted trace coarse gravel). Wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-1

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
205	210	5	3,000/-	0-.5': Sand. Very fine grained as above.
				0.5-5.0': Silt. Reddish brown (5 YR 5/3), with some very fine grained sand, very clayey, with irregular seams/varves of clay, (reddish brown (5 YR 4/4) plastic). Wet.
210	215	5	2,000/-	0-4': Silt. As above less clayey.
				4-5': Sand. Reddish brown (5 YR 5/4), very fine grained, silty, well sorted, wet.
215	220	5	3,500/-	0-2.5': Sand. Reddish brown (5 YR 5/4), very fine to fine grained, well sorted, trace silt, wet.
				2.5-3': Silty/Clay. Reddish brown (5 YR 4/3), with fine to coarse gravel.
				3-4': Silt. Reddish grey (5 YR 5/2), trace very fine grained sand, wet.
				4-5': Sand. Brown (7.5 YR 5/3), medium grained, well sorted, trace fine sand, wet.
220	225	5	10,000/-	Sand. Medium grained, as above.
225	230	5	>10,000/0.0	0-4': Sand. As above.
				4-5': Sand. Reddish brown (5 YR 4/4), very fine grained, silty, trace clay, well sorted, wet.
230	235	5	>10,000/0.0	0-0.7': Sand. Brown (7.5 YR 5/5), medium grained, well sorted, trace fine to coarse gravel, 1.5-3.0'.
				0.7-5': Sand. Reddish brown (5 YR 4/4), very fine grained, well sorted, with some fine grain sand and trace silt, wet.
235	240	5	10,000/1.7	0-3': Sand. Reddish brown (5 YR 4/4), fine grained, well sorted, some silt, wet.
				3-5': Sand. Reddish brown (5 YR 4/4), very fine grained to fine grained, some silt, wet.
240	245	5	>10,000/0-1.3	0-2': Sand. Reddish brown (5 YR 4/4), very fine to fine grained, well sorted, some silt, wet, trace reddish brown clay in thin
				2-2.5': Silt. Reddish brown (5 YR 4/4), very sandy with very fine grained sand.
				2.5-5': Sand. Reddish brown (5 YR 4/4), very fine grained, trace fine grain, some silt, wet. 4.6-4.8' silt seam.
245	250	5	8,000/1.7-Bkg.	0-2.5': Silt. Reddish brown (5 YR 4/4), some very fine grained sand, varves of clay, and trace clay in silt, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-1

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.5-5': Sand. Reddish brown (5 YR 4/3), very fine grain, some silt, well sorted, fine grain bands.
				2.5-3': and 4.7-5': wet.
250	255	5	>10,000/0.0	0-2': Sand. As above.
				2-2.5': Silt. Brown (7.5 YR 4/3), trace very fine sand, thin seams/varves, reddish brown clay.
				2.5-4.5': Sand. Brown (7.5 YR 4/3), fine grained, well sorted, some very fine grain sand, wet.
				4.5-5': Silt. Brown (7.5 YR 4/3), some very fine grained sand,
255	260	5	>10,000/0.0	0-3': Sand. Brown (7.5 YR 5/3), very fine grained with some fine sand, well sorted, trace silt, wet.
				3-3.3': Silt. Brown (7.5 YR 5/3).
				3.3-5': Sand. Very fine to fine grained as above.
260	265	5	>10,000/0.0	0-1': Silt. Brown (7.5 YR 5/3), with some fine sand, and laminae (varves) reddish brown clay, wet.
				1-5': Sand. Brown (7.5 YR 5/3), very fine to fine grained, well sorted, trace silt, 2" silt/clay seam at 2.0', wet.
265	270	5	>10,000/0.0	Sand. Brown (7.5 YR 5/3), fine grained, well sorted, trace silt, wet.
270	275	5	>10,000/0.0	0-2': Sand. Fine grained as above, wet.
				2-3': Silt. Brown (7.5 YR 5/3), trace clay in thin varves, very fine grained sand seam at 2.6-2.8' wet.
				3-4.2': Sand. Fine grained, as above, wet.
				4.2-5': Sand. Brown (7.5 YR 5/3), very fine grained, well sorted, trace silt, wet.
275	280	5	1,500/1.2	0-4': Sand. Brown (7.5 YR 4/3), fine grained, well sorted, trace fine gravel, trace silt, wet.
				4-5': Silt. Brown (7.5 YR 4/3).
280	285	5	1,000/1.2	Sand. Brown (7.5 YR 4/3), fine to very fine grained, well sorted, trace silt, wet.
285	290	5	80/1.6	0-4.5': Sand. Brown (7.5 YR 4/2), very fine grained, silty, well sorted, 2" silt seam at 4.2', wet.
				4.5-5': Silt. Brown (7.5 YR 4/2), trace very fine grained sand,
290	295	5	15/1.6	0-1.5': Sand. Brown (7.5 YR 4/2), very fine grained, silty, well sorted, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-1

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1.5-2.5': Silt. Reddish brown (5 YR 4/3), clayey, with fine irregular varves of clay.
				2.5-3': Sand. Brown, fine grained, as above.
				3-5': Silt. Brown (7.5 YR 4/5), with some very fine grained sand, also with inclusions/clasts of clay reddish brown (5 YR 4/3) varved with seams of silt, platy in appearance alternating clay/silt, wet.
295	300	5	10/1.1	0-3': with gravel fine to coarse at 2.5-3'. However may represent some type slough as isinconsistent with samples above and below.
300	307	5	15/1.1	0-1': Silt. Brown (7.5 YR 4/3), trace clay and reddish brown (5 YR 4/4), clay inclusions and irregular varves, wet.
				1-2': Sand. Brown (7.5 YR 4/3), very fine grained, well sorted.
				2-7': Silt. Brown as above with clay varves and inclusions, wet.
307	310	3	15/1.2	0-3': Silt. Brown as above with clay.
310	315	5	70/1.8	0-2.5': Silt. As above.
				2.5-3': Silt/Clay. Brown (7.5 YR 4/3), and reddish brown clay (5 YR 4/3). Silt clayey. Fine to coarse gravel in silt, wet.
				3-5': Sand. Brown (7.5 YR 4/3), fine grained, well sorted, some silt, some reddish brown clay nodules in sand 0.5-1" diameter, wet.
315	321	6*	30/0.0	0-4': Coarse Sand. Saturated, trace gravel (pebbles) brown (7.5 YR 5/2), poorly sorted, some to much in sand, pebbles well rounded, variable composition and including trace pale brown clay nodules, loose.
				4-6': Medium Sand. Brown (7.5 YR 4/4), brown, loose, saturated, well sorted, some fine sand.
				* Unable to penetrate beyond 321.6' bgs with rig due to difficult drilling conditions 0.5' of core missing. Bedrock suspected at 321' bgs. Part blue grey powder in core barrel - possibly slate.
				Well screen set at 220 to 230' bgs.

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SAMPLE/CORE LOG

Boring/Well GM-2A Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 5/7/97 7:50 Drilling Completed 5/7/97 11:00

Total Depth Drilled 50 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1121.3 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Bill Helper Ken

Prepared By Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM(ppm)	Sample/Core Description
0	5	5	0/0	0-2': Top soil.
			0.5/0	2-3': Sand. Red brown to yellow brown, medium, trace silt, some coarse sand, loose, medium sorting.
5	10	5	1/0	Fine to Medium Sand. Some coarse sand, trace small gravel, trace silt, slightly moist, yellow brown to red brown, moderate sorting.
10	15	5	2/0	Sand. As above.
15	20	5	2/0	Sand. As above.
20	25	5	3/1	Medium to Coarse Sand. Some fine grained sand, brown, dark yellow brown, to brown, trace silt, some small to medium gravel, subrounded to rounded, poorly sorted, moist.
25	30	5	20/0	0-2': Fine to coarse sand with small gravel, some silt, dark yellow brown to brown, wet, poorly sorted, medium dense.
				2-5': Clay. Trace fine to medium sand, mottled dark red-brown and strong brown, moderately plastic, wet, soft to firm, trace
30	35	5	40/0	Clay. Trace silt and very fine to medium sand, mottled red brown and strong brown. Red brown clay is platy and slightly plastic, firm. Strong black clay, plastic, to moderately plastic. Some very fine to medium sand, very moist.
35	40	5	500/0	0-2.5': Silt. Brown, some clay 0-1', trace clay 1-2.5', some very fine to fine sand, trace medium sand, wet, moderate sorting.
			3,000/0	2.5-5': Very Fine to Fine Sand. Trace to some silt, brown, medium dense, several approximately 1/2" thick silty clay lenses, strong brown, slightly plastic, trace red brown plastic clay approximately 1/8" thick.
40	45	5	150/0	Fine sand, trace silt, trace medium grained sand, light brown to slight light red-brown, medium dense, moist, well sorted.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-2A

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM(ppm)	Sample/Core Description
45	50	5	200/0	0-2': Fine to Medium Sand. Light brown, trace silt, well sorted saturated, dense to medium dense.
			1,100/0	2-5': Medium Sand. Some fine sand, trace very fine sand and coarse sand, trace silt moderately well sorted, medium dense, wet.
				Well screen set at 40 to 50' bls.

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SAMPLE/CORE LOG

Boring/Well GM-2B Project/No. Ford Kingsford Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 5/1/97 17:54 Drilling Completed 5/6/97 11:00

Total Depth Drilled 280.5 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1121.3 feet msl [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Bill Helper Ken and Joel

Prepared By Raymond Flynn/Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	0/5	0-0.5': Silty Sandy Clay Loam. Moist, roots, medium dense, dark brown.
				0.5-1.3': Fine to Medium Sand. Silt, trace small, round gravel, moist, loose to medium dense, strong brown.
				1.3-5': Medium and Some Fine to Coarse Sand. Trace silt, trace small gravel, yellowish brown, moist, moderately well sorted, loose.
5	15	5	0.75/0	Fine to Medium Sand. With coarse, yellowish brown, trace small gravel, subrounded to rounded, moist, moderate sorting, loose to medium dense.
15	25	5	0.75/0	0-2': Fine to Coarse Sand. Some silt, dark greyish brown, some small to medium, some gravel subrounded, slightly moist, loose, poorly sorted, trace loose gravel 1.5-2'.
				2-5': Medium to Coarse Sand. Some fine, light olive grey, moist moderate to poor sorting, some silt, trace cobble-size gravel, subrounded to rounded, loose.
25	30	5	400/30	0-3': Fine to Medium Sand. With coarse, some fine, light olive grey, trace silt, wet to saturated, traces subrounded to moderate to small gravel.
				3-4': Dark Red Brown Clay. Fissile, slightly moist to wet, moderate plastic, very firm, trace large rounded gravel, and red brown silt, trace very fine sand, dense, nonplastic, moist.
				4-5': Clay. Some silt, reddish grey, moderate plastic, very moist, some reddish grey, clay inclusions clay, fissile/plating, nonplastic.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-2B

Prepared by Raymond Flynn and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
30	35	5	>1,000/0	0-0.5': Reddish Grey Clay. As above.
				0.5-2.5': Silt. Brown, some very fine to fine sand, trace coarse sand, trace clay. Some greyish brown, very fine silt with very finely laminated red and grey varves, trace very fine sand, dense.
				2.5-4': Very Fine Sand. Some silt, light brown, dense, very moist to moist, some small lenses of brown clay, (with silt, very moist, moderate plastic).
				4-5': Medium Sand. Some fine to coarse sand, trace silt, trace small rounded gravel, strong brown, medium dense.
35	40		>1,000/0	0-3': Silty Sand. Reddish brown, trace medium gravel, subrounded, trace coarse sand, moderately to well sorted.
				3-5': Fine Sand. Red-brown, some medium grain, trace coarse, trace silt, medium dense.
40	45	3	>1,000/0	0-2': Fine Sand. Light red brown, some silt, trace medium grained, sand trace clay, moderately dense, moderate to well sorted.
				2-5': Fine Sand. Light reddish brown, trace silt, trace medium grained, medium dense to dense, well sorted.
45	50	5	>10,000	Fine to Medium Sand. Reddish brown, some silt, trace coarse sand and small round gravel, dense, medium well sorted.
50	55	5	>1,000/0	Medium Sand. Brown, some fine and coarse grained, trace silt, moderately to well sorted, graded gradation from 0-5' from fine to medium sand as above to medium sand.
55	60	5	50/0	0-2': Fine to Medium Sand. Light brown, some silt, trace coarse grained sand, moderately well sorted, dense, saturated.
				2-5': Medium Sand. Light brown, trace fine and coarse grained sand, trace well rounded pea gravel, dense, moderate sorting.
60	65	5	400/0	Coarse Sand. Some fine to medium, some rounded pea gravel, trace small rounded to subrounded gravel, abundant mafic sand grains, trace cobbles, (rounded), brown to red brown, medium dense.
65	70	5	0/30	0-1': Coarse Sand. With small gravel, some silt, dark brownish to grey to green, medium dense.
				2-4.5': Coarse Sand and Gravel. Some fine to medium grained sand, trace silt very poorly sorted, medium dense.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-2B

Prepared by Raymond Flynn and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4.5-5': Fine Sand. Some silt, trace medium grained sand, dense moderately well sorted, trace small gravel.
70	75	5	>1,000/0	Fine Sand. Trace very fine sand, trace silt, medium, dense, well sorted. At 2' a 3" lense of red brown silt, trace very fine sand, very fine laminations, some black silty layers, very dense, well sorted.
75	80	5	>1,000/0	Very Fine to Fine Sand with Silt. Reddish brown, dense, moderately well sorted.
80	85	5	>1,000/0	Very Fine to Fine Sand with Silt. As above, at approximately 1' there is a 6" lense of very dense very fine sand with silt, (color same as above, well sorted.)
85	90	5	800/0	0-0.8': Very Fine to Fine Sand with Silt. As above.
				0.8-2.5': Silt. Some very fine sand, some clay, red-brown, medium firm to medium-dense, slightly to moderately plastic, saturated.
				2.5-3.3': Very Fine Sand. With silt, red brown, dense moderately to well sorted.
				3.3-5.0': Silt. Red brown to strong brown, some clay, trace very fine sand, dark red brown fissile clay inclusions, moderately plastic.
90	95		4,500/0	0-0.7': Silt. Red brown to strong brown, as above.
				0.7-1.5': Silt. With dark red brown clay inclusions, as above.
				1.5-2.5': Silt. Red brown to brown, trace very fine sand, some clay, dense, wet.
				2.5-4.0': Very Fine to Fine Sand. Some silt, well sorted, very dense.
				4-5': Brown to Red Brown Silt. Trace clay, trace very fine sand, very dense, red brown to red fissile clay, moderate plastic.
95	100		600/0	Very Fine Sand with Silt. Trace fine sand, dense well sorted.
100	105		500/0	Very Fine Sand. As above.
105	110	5	8/0	Very Fine Sand. Some silt, dense to very dense, saturated, well sorted, reddish brown.
110	115	5	30/0	Very Fine to Fine Sand with Silt. Dense to very dense, wet to saturated, well sorted, reddish brown.
115	120	5	50/0	0-2': Very Fine Sand with Silt. Very dense, dark reddish brown, well sorted.
				2-3': Silt with Very Fine Sand. Trace fine sand, dark red brown, several 1/4" fissile clay lenses, reddish brown, plastic.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-2B

Prepared by Raymond Flynn and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				Silty Very Fine Sand. Trace clay, dark reddish brown, dense to stiff, saturated.
120	125	5	100/0	0-2.5': Very Fine Sand. Grading to fine sand at 2.5', trace to some silt, very dense, well sort.
				2.5-6': Silt. With very fine sand lenses intersperced throughout. Very dense dark red brown to red brown, at 2.5' a 1/2" seam of red clay, (plates) slight plastic.
125	130	5	500/0	0-3': Silt with Very Fine Sand. Red brown to grey brown, several very fine sand lenses approximately 2" thick. Very dense, wet.
				3-5': Red Brown Very Fine Sand. Trace fine sand, trace silt, very dense, moderate well sorted, very dense.
130	135	5	200/0	0-2': Very Fine Sand. As above.
				2-5': Very Fine Silty Sand to Very Fine Sandy Silt. Dark reddish grey, variable in compostion throughout, trace dark red and red grey clay lenses 1/4 to 1/2" thick, firm, slightly plastic, moist to very moist. Collect water grab sample at 135'.
135	140	5	20/0	Very Fine Sand with Fine to Very Fine Silty Sand. Trace clay, dark reddish brown, very dense, well sorted, saturated.
140	145	5	25/0	Very Fine Sand with Silt to Very Fine Silty Sand. As above. At 4.5' a 3" clay inclusion, dark red, plastic, slightly to nonplastic.
145	150	5	0/0	Silt. Reddish brown, trace clay, very firm to firm, very homogenous.
150	155	5	0/0	Silt. As above. At 4 to 5' some red clay inclusions approximately 1" thick, plating, nonplastic.
155	160	5	0/0	Silt. Reddish brown, some clay, moderately plastic, wet.
160	165	5	0/0	Silt. Reddish brown, trace clay, trace very fine sand, dense, well sorted, trace red clay inclusion, platy nonplastic.
165	170	5	0/0	Silt. Reddish brown, some clay, dense, moist, well sorted.
170	175	5	0/0	Silt. As above. Some clay inclusions, red, plating approximate 1/2 to 3/4" thick, nonplastic.
175	180	5	0/0	0-3': Silt. Reddish brown, some clay, trace very fine sand, well sorted, dense, stiff, slightly to moderately plastic, some small a 1/2" diameter moderately plastic clay inclusions to nonplastic intersperced throughout.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-2B

Prepared by Raymond Flynn and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-5': Silt. Reddish brown, with clay, very dense, slightly plastic, well sorted.
180	185	5	0/0	Silt. As above.
185	190	5	0/0	Silt with Clay to Clayey Silt. Weak red to reddish brown, moderately plastic, firm, dense, saturated.
190	195	5	0/1	0-3': Clayey Silt. Reddish brown, moderately plastic, saturated, trace bluish grey clay 1/8" thick by 1" to 1.5" long inclusions.
				3-5': Very Fine Sand. Reddish brown, trace to some silt, very dense, trace inclusions of silt with very fine sand, very dense, dark reddish brown, very fine sand, well sorted.
195	200	5	1/0	Very Fine Sand. Trace to some silt, reddish brown, very dense, very well sorted, saturated.
200	205	5	2/0	Very Fine Sand.
205	210	5	12/0	0-2.5': Very Fine Sand. Reddish brown, trace silt, dense, well sorted.
				2.5-5': Very Fine to Fine Sand. Trace silt, reddish brown, dense, trace dark red-brown clay lenses, inclusions approximately 1/2" thick, slightly plastic.
210	215	5	150/0	Fine sand. Red brown, very well sorted, medium dense to dense, very moist, 150 ppm from 4 to 5'.
215	220	5	2,000/0	Fine Sand. Some very fine sand, trace medium sand, trace silt, brown, dense, moderately well sorted, wet.
220	225	5	4,800/0	0-3': Fine Sand. As above.
				3-4.3': Clay. Reddish brown, plastic, finely laminated, medium stiff, trace coarse sand.
				4.3-5': Very Fine to Fine Sand. Trace silt, brown to light red brown dense, moderately well sorted, wet.
225	230	5	8,500/0	Very Fine to Fine Sand. Some silt, reddish brown to brown, very dense, trace medium grained sand, moderately sorted.
230	235	5	<10,000/0	Very Fine to Fine Sand. As above, 10,000 ppm at 4.5'.
235	240	5	1,000/0	Very Fine to Fine Sand. Reddish brown, trace silt, very dense, well sorted.
240	245	5	5,000/0	Very Fine to Fine Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-2B

Prepared by Raymond Flynn and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
245	250	5	800/0	Very Fine Sand. Some silt, reddish brown, dense to very dense, well sorted.
250	255	5	7,500/0	Very Fine Sand. As above, collect grab water sample GBGM-2/255.
255	260	5	2,000/0	Very Fine Sand. Some silt, reddish brown, well sorted, very dense.
260	265	5	4,000/0	Very Fine Sand. As above.
265	270	5	10,000/0	Very Fine Sand. Reddish brown, as above, but with trace brown clay in small lenses 1/4 to 1/3" thick (moderately plastic), wet.
270	275	5	>10,000/0	Very Fine Sand. Red brown, some fine sand, trace clay, very dense, saturated, well sorted.
275	280	5	>10,000/0	Very Fine Sand. Reddish brown with silt, abundant air/gas bubbles throughout, medium dense, trace medium to coarse sand. At approximately 1 to 1.5' medium sand, (trace fine and coarse grain, light brown, medium dense. 4,000 ppm OVA).
				At 1.5 to 2' Clay. Light red to red, moderately plastic to plastic, very fine sand is mixed in with the clay. These units may be slough material, driller notes he washed back and forth down the hole and in his opinion this material was slough.
280	280.5	0.5	60/0	Bedrock (metabasite), black to dark greenish black. Very hard (6-6.5') likely bedrock phaneritic, melenocralic.
				Well screen set at 271 to 281' bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-2C Project/No. WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/8/98 8:30 Drilling Completed 7/8/98 12:00

Total Depth Drilled 75 Feet Hole Diameter 8 3/4 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2"

Sampling Interval blind to 24, continuous 24 to 36 feet

Land-Surface Elev. 1121.36 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used none

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Scott

Prepared By Ted Powell

Hammer Weight 300 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	24			Blind Drill, predominately fine to medium sand with variable gravel.
24	26	8	7,4,3,6	Sand. Light brown (7.5 YR 6/4) medium to fine, trace coarse and very
				coarse, moist, medium dense, moderately well sorted. OVA 3.
26	28	14	3,2,2,3	Sand. Dark yellow brown (10 YR 4/4) medium to coarse, some fine trace
				very fine and very coarse moderately well sorted, loose to medium dense,
				top of spoon very moist, to wet, lower 4 inch saturated. OVA 3.
28	30	14	4,3,2,2	0-3': Sand. As above, but slightly more coarse and very coarse, saturated.
				3-14": Alternating seams of silt and clay, silt, brown (7.5 YR 4/4) medium
				stiff, variable clay content, very moist, clay. Red (2.5 YR 4/6) platy to fissile, soft
				to moderately firm, plastic, moist. OVA 3.
30	32	21	5,4,4,3	Alternating seams of silt and clay as above, silt seams 1 to 3 inches thick,
				medium stiff at top of spoon, hard at bottom. Silt has variable very fine to
				fine sand throughout. Clay seams ¼ to 2 inch thick, fissile, soft to medium
				stiff, plastic. OVA 3.
32	34	14	7,5,10,10	0-6": Clay and silt seams as above.
				6-11.5": Silt, as above with three 1 to 2inch very fine silty sand seams,
				brown (7. 5YR 5/4) top sand seam is very wet, lower are moist, medium
				dense to dense, moderately well sorted.
				11.5-14": Sand. Brown (7.5 YR 5/4) very fine with silt, trace clay, medium
				dense, very moist, moderate sorting. OVA 22.5.
34	36	15	8,10,12,15	0-3": Sand. Very silty, brown (7.5 YR 5/4) variable clay, two small ¼ inch
				red clay seams, plastic.
				3-7": Sand. Very fine with silt, brown (7.5 YR 5/4), trace clay in part, moderate
				dense to dense, moderate well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-2C

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				7-15": Sand. Light brown (7.5 YR 5/6) very fine with silt, well sorted, moderate
				dense, moist. OVA 700.
40	42	12	5,7,8,8	Sand. Brown (7.5 YR 5/4) very fine to fine, well sorted, dense, very moist at
				8 to 10 inches, sand fine to medium, medium dense, slightly moist, color
				as above. OVA 1,700.
45	47	17	5,7,5,6	Sand. Light brown (7.5 YR 6/3) predominately fine with very fine at 4 to 7, 8 to
				9 and 13 to 15 inches. Sand is medium with fine, trace very fine, medium
				dense to loose, slightly moist, moderately well sorted. OVA 625.
50	52	12	3,5,4,4	Sand. Light brown (7.5 YR 6/3), medium some fine and coarse, trace very
				coarse, very moist at top of spoon, saturated lower 3 inch of spoon,
				moderately to well sorted, medium dense. OVA 1,500.
55	57	24	4,10,12,12	Sand. Brown (7.5 YR 5/3) medium with coarse and fine, trace very coarse and
				very fine, moderate sorting, medium dense to dense, saturated, trace gravel
				1/8 to 3/8 inch, subrounded. At 13 inches ¼ inch lense (ripped up) of clay,
				red, soft plastic. OVA 1,800.
60	62	24	7,10,20,25	0-15": Sand. Very coarse with coarse, trace medium and fine, Dan indicates
				slough (heave).
				15-24": Sand. Medium with fine and coarse, some very coarse, trace gravel,
				¼ to 3/8 inch, subround, moderate sorting, dense, saturated, brown
				(7.5 YR 4/4). OVA 600.
65	67	12	6,8,8,15	Sand. Brown (7.5 YR 4/4) coarse with very coarse and medium, some fine,
				trace very fine, trace (approximately 10 percent) gravel 1/8 to ¼ inch
				subrounded to subangular, dense, poorly sorted, at 11½ inch thick
				clay lense, red brown (5 YR 4/4) soft, moderate plastic, some fine to medium
				sand. OVA 200.
73	75	10	8-8-10-12	Sand. Red brown (5 YR 4/4) very fine with silt, trace coarse and very coarse,
				approximately 1 percent, dense, moderately well sorted. OVA 200.
				TD at 75 feet at 12:00.
				Set well screen 64 to 74 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSB-3A Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/16/97 Drilling Completed 6/16/97

Total Depth Drilled 25 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1128.59 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Dale Helper Joe

Prepared By Ray Flynn

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	5	0-1/0.1-0.5	0-1.0': Topsoil. Very dark brown (10 YR 2/2), loose, crumbly, damp sandy silt.
				1.0-2.5': Sand. Dark yellowish brown (10 YR 3/4), some silt, loose, damp, moderate
				sorting.
				2.5-3.0': Sand. Brown (10 YR 3/3) as above.
				3.0-4.5': Sand. Yellowish red (5 YR 5/6), fine to medium, some silt, slightly dense,
				damp.
				4.5-5.0': Sand. Yellowish red (5 YR 4/6), medium to coarse, trace well rounded
				gravel, loose, damp.
5	10	5	0-2/0.1-0.8	0-1.0': Sand. Yellowish red (5 YR 5/6), medium well sorted, loose to trace to some
				well rounded gravel at base.
				1.0-5.0': Sand. Brown (7.5 YR 4/4), very coarse, trace pebble gravel, loose, damp,
				some to abundant very fine gravel, poorly sorted.
10	15	1.5	0-2/0.1-0.8	0.0-1.0': Sand. As above, very coarse.
				1.0-1.5': Sand. Brown (7.5 YR 5/4), fine, very well sorted, damp, loose.
15	20	5	0-8/0-0.1	0-1.5': Sand. Fine, as above.
				1.5-3.5': Sand. Brown (7.5 YR 4/4), coarse, abundant gravel (fine to well rounded,
				variable composition) loose, slightly damp, very poorly sorted, some medium
				sand.
				3.5-4.5': Sand. Light brown (7.5 YR 6/3) as above, gravely, but some to abundant fine
				sand, dry, loose.
				4.5-5.0': Sand. Coarse as 1.5 to 3.5 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSB-3A

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	25	5	0-10/	0-2.5': Sand. As above, coarse.
			0.1-1.8	2.5-5.0': Sand. Light brown (7.5 YR 6/4), fine to very fine, dry, loose, trace silt.
				EOH 25 feet bgs.

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SAMPLE/CORE LOG

Boring/Well GM-3B Project/No. Ford Kingsford

Site Location Kingsford, Michigan
Drilling Started 4/29/97 11:22
Drilling Completed 5/3/97 17:45

Total Depth Drilled 307 feet
Hole Diameter 6 inches
Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in
Sampling Interval Continuous

Land-Surface Elev. 1119.61 feet msl [X] Surveyed [ ] Estimated
Datum Mean Sea Level

Drilling Fluid Used Water
Drilling Method Rotasonic

Drilling Contractor Boart Longyear
Driller Dale
Helper Mike

Prepared By Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	3.5	0.0/0.0	0-1': Clay. Dark brown and red brown (5 YR 3/6) silty, trace sand, rootlets, moist.
				1-2': Sand. Dark red brown (5 YR 3/6), fine grained, moderately well sorted, with fine to coarse gravel, dry.
				2-3.5': Sand. Strong brown (5 YR 3/4), as above, some pebbles to 1" diameter, dry.
5	10	2	0/0.0	0-1': Sand. Dark brown (5 YR 3/4), fine to coarse grain, poor sorting, some fine to coarse gravel, trace pebbles to 1", trace silt, dry.
				1-2': Sand. Brown to strong brown, medium to coarse grained, moderately sorted, trace fine gravel, moist.
10	15	2.5	0/0.0	0-1.5': Sand. Strong brown. As above.
				1.5-2.5': Sand. Strong brown, fine to medium grained, poorly sorted, silty, trace clay, some gravel, fine to coarse, dry to moist, weathered igneous materials.
15	20	4	0/0.0	0-1': Sand. Very dark brown, fine to medium grain, moderate sorting, trace silt, trace fine gravel.
				1-1.5': Sand. Red brown to dark red brown, fine to medium grained, trace clay and silt, abundant fine to coarse gravel, trace pebbles, dry to moist.
				1.5-4': Sand. Dark reddish brown (5 YR 4/3), very fine to medium grained, some silt, poor sorting, abundant fine to coarse gravel, trace pebbles abundant mica flakes, very moist and igneous rocks.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-3B

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
20	25	3.5	0.0/0.0	0-1.5': Sand. Red brown, fine to medium grained, some silt, poor sorting, abundant, fine to coarse gravel and pebbles, very moist.
				1.5-2': Sand. Light red brown, fine to medium grained, moderate sorting, trace silt, trace gravel, very moist.
				2-3.5': Sand. Reddish brown, fine to coarse grained, poorly sorted, some silt, some fine to coarse gravel, possible mica flakes, very moist.
25	30	5	0.0/0.0	0-0.3': Sand and Gravel. As above at top, core may be slump.
				0.3-5': Silt. Dark reddish grey brown (5 YR 3/4), some clay, and pockets dark red brown (clasts) clay (3-5" diameter fissile). Wet, clay. Very moist, clay material possibly weathered shale.
30	35	5	0.0/0.0	Silt. Reddish grey brown (5 YR 4/2), trace clay with pockets (clasts) of red brown (5 YR 4/3) clay material (2-4" diameter fissile). Wet, very moist. Clay, dry to moist.
35	40	5	0.0/0.0	Silt. Dark grey brown, (5 YR 4/2), trace clay, with clay clasts (fissile, red brown (5 YR 4/3), as above).
40	45	5	0.0/0.0	0-2': Silt. Dark grey brown (5 YR 4/2). As above.
				2-3': Silt. Dark reddish brown (5 YR 4/3), very clayey, more dense than above, moist.
				3-5': Silt. Dark grey brown (5 YR 4/2), wet, trace clay, with clasts (pockets) reddish brown (5 YR 4/3), clay like material, fissile, moist.
45	50	5	0.0/0.0	Silt. Brown (5 YR 4/2), trace clay, with pockets (clasts) of clay, (reddish brown (5 YR 4/3), 0.25-4" diameter fissile, wet, moist).
50	55	5	0.0/0.0	Silt. Dark reddish grey (5 YR 5/2), to brown (5 YR 4/2), as
55	60	5	0.0/0.0	Silt. Dark reddish grey to dark reddish brown (5 YR 5/2), wet, trace clay, trace to some very fine grained sand. Clay clasts as above.
60	65	5	0.0/0.0	Silt. Dark reddish grey (5 YR 5/2) to dark reddish brown (5 YR 3/5), trace clay, slightly sandy, wet, very fine grained sand, clay pockets (clasts) as above, silt, wet, clasts. Moist.
65	70	5	0.0/0.0	0-3': Silt. As above, sandy.
				3-4': Silt. Reddish grey (5 YR 5/2), very sandy with very fine grained sand, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-3B

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4-5': Sand. Reddish brown (5 YR 4/3), very fine grained, silty, well sorted, wet, trace black banding in sand (magnetite), rare trace coarse sand.
70	75	5	0.0/0.0	0-4.5': Sand, reddish brown (5 YR 4/3), fine to medium grained, with silt and very fine sand, moderately well sorted, wet, trace clay, clasts, as above.
				4.5-5': Reddish Brown (5 YR 3/4) Silt. Very clayey, wet.
75	80	5	0.0/0.0	Sand. Reddish brown (5 YR 4/3), fine to medium grained, well sorted, trace silt, wet, trace bubbles in water in sand.
80	85	5	2.0/0.0	0-5': Sand. Reddish brown (5 YR 4/2). Fine to medium grained, well sorted, trace silt, wet at 2.0', pocket of coarse sand 3-3.5', very silty and very fine grained.
85	90	5	13/0.0	0-1': Sand. Reddish brown, (5 YR 4/5), very fine to fine grained, silty, well sorted, wet.
				1-2': Sand. Reddish brown, (5 YR 5/5), fine to medium grained, trace silt, well sorted, wet.
				2-3': Sand. As above, very fine grained.
				3-5': Sand. As above, fine, very medium grained, trace gravel (pea) and coarse sand, wet.
90	95	5	5/0.0	Sand. Reddish brown (5 YR 5/4), fine to medium grained, well sorted, wet.
95	100	5	6/0.0	0-4': Sand. As above.
				4-5': Sand. As above, with coarse sand, wet.
100	105	5	12/0.0	0-1': Sand. Reddish brown (5 YR 4/4), fine to coarse grained with abundant fine to coarse gravel, moderate sorting, wet.
				1-4': Sand. As above, less gravel.
				4-5': Sand. Reddish brown (5 YR 5/5), very fine to medium grained, very silty, some gravel, wet.
105	110	5	2-3/0.0	0-2': Sand. Brown (7.5 YR 4/4), fine to medium grained, well sorted, wet.
				2-5': Sand. Reddish brown (5 YR 5/5), very fine grained well sorted, silty with trace clay and trace claylike clasts, wet.
110	115	5	--/0.0	0-4.3': Sand. Reddish brown (5 YR 5/5), very fine grained silty, well sorted, trace clay and trace clay clasts, wet.
				4.3-5': Silt. Reddish brown (5 YR 5/5), clayey, trace very fine sand, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-3B

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
115	120	5	70/0.0	0-4': Sand. Reddish brown (5 YR 5/4), very fine to fine grained, well sorted, some silt, trace coarse sand, wet.
				4-5': Silt. Reddish brown (5 YR 5/4), trace clay, trace very fine sand, wet.
120	125	5	300/0.0	Silt. Reddish brown (5 YR 5/4-4/4), trace very fine sand, with patches (clasts) dark red brown, dark red (5 YR 3/4 - 3/6), clay, (fissile in appearance but plastic clay as inclusion in silt, 0.2-2" diameter). Wet.
125	130	5	15/3.0	Sand. Reddish brown, (5 YR 4/3), very fine to extremely fine grained, silty, well sorted, wet.
130	135	5	30/2.2	0-4': Sand. As above, with trace reddish clay inclusions, as before, wet.
				4-5': Sand. Reddish brown, fine grained, well sorted, silty, wet.
135	140	5	0.5/0.0	Sand. Reddish brown (5 YR 4/3), very fine to fine grained, some silt, well sorted, wet.
140	145	5	3.0/0.0	Sand. As above, trace black banding consisting of black grains of mineral.
145	150	5	0/0	Silt. Reddish brown (5 YR 4/5-4/4), very clayey and grading to silty clay, inclusions (clasts) of dark red (5 YR 3/6), clay-like material (0.1-3" diameter, fissile in appearance, plastic when rolled, silt wet, clay, moist).
150	155	5	0/0	Silt. Reddish brown, as above.
155	160	5	5.0/0	Silt. Reddish brown, very clayey, as above, trace coarse sand and gravel in 1" pocket at 0-0.3'.
160	165	5	1,000/0	0-4': Sand, reddish brown (5 YR 5/4), very fine grained, very silty, well sorted, wet.
				4-5': Sand. Reddish brown (5 YR 5/4), fine grained, some silt, well sorted, wet.
165	170	5	100/0.0	Sand. Reddish brown, (5 YR 5/3), fine grained, well sorted with trace very fine grain sand and silt, wet.
165	170	5	100/0.0	Sand. Reddish brown (5 YR 5/3), fine grained, well sorted with trace very fine grained sand and silt, wet.
170	175	5	1,000/0	Sand. As above, becoming very fine grained at 4.0'.
				16:45 Stop drilling to collect third water sample from 175'.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-3B

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				May 2, 1997 8:00 place corebarrel into borehole to resume drilling from 175' at 8:15.
175	180	2	8/0.0	Sand. Brown (7.5 YR 5/3), very fine to fine grained, silty, well sorted, wet.
180	185	5	350/0.0	Sand. Brown (7.5 YR 5/3), fine to medium grained, trace silt, well sorted, wet.
185	190	5	3,500/0.0	Sand. Brown (7.5 YR 4/2), fine grained well sorted, with very fine grain sand and trace silt, wet.
190	195	5	>10,000/0.0	Sand. Brown, fine grained, as above.
195	200	5	400/0.0	Sand. Reddish brown (5 YR 5/3), very fine grained, silty, wet.
200	205	5	2,000/0.0	0-1': Sand. Reddish brown (5 YR 5/3), very silty, very fine grained, trace coarse sand, wet.
				1-4': Sand. Reddish brown (5 YR 5/3), very fine grained, well sorted, silty, wet.
205	210	5	250/0.0	Sand. Reddish brown (5 YR 5/4), very fine to fine grained, well sorted, silty, wet.
210	215	5	500/0.0	Sand. As above, wet.
215	220	5	1,500/0.0	Sand. Reddish brown (5 YR 5/4), very fine to fine grained, well sorted, silty, wet.
220	225	5	9,000/0.0	Sand. As above, wet.
225	230	5	10,000/0.0	Sand. Reddish brown (5 YR 5/4), very fine to extremely fine grained, very silty, well sorted, wet.
230	235	5	>10,000/0.0	Sand. As above, wet.
235	240	5	5,000/0.0	Sand. As above, wet.
240	245	5	>10,000/0.0	0-1': Sand. Reddish brown (5 YR 5/4) very fine to extremely fine grained, well sorted, silty, trace black (gravel) shale or slate pieces (0.1-0.5"), wet.
				1-5': Sand. As above, no gravel.
245	250	5	>10,000/0.0	0-5': Sand. Reddish brown (5 YR 5/4) very fine grained, well sorted, silty, wet.
250	255	5	>10,000/0.0	0-3.5': Sand. As above.
				3.5-5': Sand. Brown (7.5 YR 5/3), fine grained, well sorted, some very fine grained sand and silt, wet.
255	260	5	>10,000/0.0	0-5': Sand. Brown (7.5 YR 5/3), medium grained, well sorted, some fine sand, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-3B

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
260	265	5	>10,000/0.0	0-1.5': Sand. As above.
				1.5-5': Sand. Brown (7.5 YR 5/3), fine grained, well sorted, some very fine grained sand and silt, wet.
265	270	5	>10,000/0.0	0-2.5': Sand. As above.
				2.5-2.7': Clay. Reddish brown (5 YR 4/4), trace silt, very plastic.
				2.7-5.0': Silt. Reddish brown (5 YR 5/3), trace clay, trace very fine sand, wet.
270	275	5	>10000/0.0	Silt. Reddish brown (5 YR 5/3), trace very fine grained sand, wet.
275	280	5	10,000/0.0	0-1': Silt. As above.
				1-2': Sand. Reddish brown (5 YR 5/5), very fine grained, well sorted, some silt.
				2-3': Sand. Brown (7.5 YR 4/3), fine grained, well sorted, trace silt.
				3-3.5': Silt. Reddish brown (5 YR 4/3).
				3.5-5': Sand. Brown, fine grained, as above, wet.
280	285	5	>10,000/0.0	Silt. Reddish brown (5 YR 4/4), some very fine grained sand with a fine sand seam at 3.0-3.2', wet.
285	290	5	>10,000/0.0	Sand. Reddish brown (5 YR 4/4), very fine grained, well sorted, some silt, trace fine grained sand, wet.
290	295	5	>10,000/0.0	0-0.3': Sand. Brown (7.5 YR 4/5), fine grained, well sorted, trace very fine sand.
				0.3-5': Silt. Reddish brown (5 YR 4/4), some fine sand, with brown fine as above at 4.3-4.5', wet.
295	300	5	>10,000/0.0	Sand. Reddish brown (5 YR 5/4), very fine grained, silty in places, with patches and thin seams or brown fine grained sand, wet.
300	307	7	>10,000/0.0	Sand, as above.
				End borehole at 307', collected sixth water sample.
				Well screen set at 170 to 180' bgs.

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SAMPLE/CORE LOG

Boring/Well GM-4 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 6/14/97 11:38 Drilling Completed 6/15/97 13:40

Total Depth Drilled 137 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1125.54 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Kale Helper Ken

Prepared By Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	4	9/0	0-0.5': Sand. Strong brown (7.5 YR 4/6), medium to fine, silty, dry.
				0.5-.8': Sand. Strong brown (7.5 YR 4/6), fine to very fine, silty, damp.
				0.8-4': Sand. Strong brown, (7.5 YR 5/6), coarse to fine, dry.
5	10	5	12.5/0	0-1': Sand. Strong brown (7.5 YR 4/6), medium to fine, trace silt.
				1-5': Sand. Strong brown (7.5 YR 5/8), very coarse to medium damp, moist to wet at 4'.
10	15	4	70/0	0-3': Sand. As above.
				3-4': Sand. Brown (7.5 YR 4/4), coarse to fine, silty.
				4-5': Sand. As above, but pulverized by drill bit.
15	20		30/0	0-1': Sand. As above.
				1-4.5': Sand. Light brown (7.5 YR 6/3), medium to fine, damp.
				4.5-5': Sand. Light brown (7.5 YR 6/4), very coarse to fine, poorly sorted, gravelly, damp.
20	25	2.5	16/0	0-2.5': Sand. As above.
25	30	5	80/0	0-5': Sand. As above.
30	35	5	75/0	0-1': Sand. As above.
				1-2.5': Sand. Strong brown (7.5 YR 5/6), medium to very fine, poorly sorted, dry, gravelly.
				2.5-5': Sand. Strong brown (7.5 YR 5/6), medium to fine, silty, gravelly (0.1 to 4"), dry.
35	40	2.5	17/0	0-1': Sand. As above, dry.
				1-2.5': Sand. As above but very poorly sorted, brown (7.5 YR 4/4).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-4 Page 2 of 3

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
40	45		65/0	0-3': Sand. As above.
				3-5': Sand. Brown (7.5 YR 4/4), medium to fine, silty, gravelly (0.2-0.5") subrounded, moist.
45	50	--	--	No recovery.
50	55	--	--	No recovery.
				Sample fell from the core barrel from the 45-55' depth (estimated at 7' of recovery) was of a uniform lithology (sand).
55	60	3.5	7/0	Sand. Strong brown (7.5 YR 4/6), medium to very fine, silty, wet. Trace gravel.
60	65	5	9/0	Sand. As above.
65	70	3	9/0	0-2': Sand. As above.
				2-3': Sand. Brown (7.5 YR 4/4), medium to very fine, wet, trace gravel (0.1 to 1').
70	75	5	22.5/0.0	0-2.5': Sand. As above.
				2.5-5': Sand. Brown (7.5 YR 4/4), very fine, silty, with lamellae of medium sand (and silt), up to 1" in thickness, wet.
75	80		15/0.0	0-2': Sand. Brown (7.5 YR 4/4), medium, well sorted, trace very fine sand.
				2-4': Sand. Brown (7.5 YR 4/4), very fine, silty, wet.
80	85	5	25/0	Sand. Brown (7.5 YR 4/4), fine to very fine, silty with lamellae of very fine silty sand up to 1"thick.
85	90	5	4/0	0-4': Sand. Brown (7.5 YR 4/4), fine to very fine, trace gravel, trace silt, wet.
				4-5': Silt. Strong brown (7.5 YR 4/6), trace gravel.
90	95	5	7/0	Silt. As above.
95	100	5	500/26.8	0-3': Silt. As above, sandy.
				3-5': Clay. Brown (7.5 YR 4/4), sandy, gravelly (0.1 to 2") subrounded, dry.
100	105	5	500/6.9	Clay. As above.
105	110	5	1,000/16.1	Clay. As above.
110	111	1	1,000/16.1	Clay. As above.
111	115	4	6.5/1.2	1-3': Clay. Light greenish grey (2 Gley 7/1 5 BG), gravelly, silty, sandy, dry, compact.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-4 Page 3 of 3

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				0-1': Clay. As above. Cored through an approximate 18" granite boulder at 111'.
115	121	6	85/1.1	0-3': Clay. Reddish brown (5 YR 4/4), wet, shattered rock at 2.0', gravelly (0.1 to 3"), sandy.
				3.5-6': Rock. Pulverized by drilling - undifferetrated rocks are phyllite greenish grey.
				3-3.5': Clay. Red (2.5 YR 4/8), silty, with fine to coarse gravel (angular to subrounded (possibly a paleo soil)).
121	130	5	9/0	Pyllite (highly weathered, breaks apart with hand), greenish grey (relatively unaltered), to red (2.5 YR 4/8) (highly altered). Weathering appears in thin lamellae as a red clay.
130	137	7	40/0	Phylitic rock fragments and clay as above.
				End boring at 13:40 at 137' blg.
				Set well screen at 76 to 86' bgs.

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SAMPLE/CORE LOG

Boring/Well GM-5 Project/No. Ford Kingsford Page 1 of 8

Site Location Kingsford, Michigan Drilling Started 6/11/97 12:25 Drilling Completed 6/14/97 9:00

Total Depth Drilled 265 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1122.18 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Dale Helper Joe

Prepared By Raymond Flynn/Daniel Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	1/0	0-2': Sandy Topsoil. Some silt, yellowish red (5 YR 5/8). Cohesive damp, some rootlets.
				2-5': Sand. Medium, some coarse. Poorly sorted, trace pebbles, yellowish red (5 YR 5/6). Loose, damp, gravel well rounded, variable composition.
5	10	5	0/0	Medium to Coarse Sand. As above, but gravel smaller (up to 1" diameter, subrounded) Light reddish brown (5 YR 6/3) loose, damp.
10	15	5	0/0	0-2': Sand as above.
				3-4': Sand. Coarse as above but fine well sorted, loose, damp. Trace gravel.
				4-5': Coarse Sand. Reddish brown (5 YR 5/3), loose, damp, some to much gravel (approximately 20%). Subangular, variable composition.
15	20	5	20/0.1	0-1.5': Fine Sand. Damp, loose, brown (7.5 YR 6/3), trace silt, trace subangular gravel.
				1.5-5': Sandy Gravel. Reddish brown (5 YR 5/3) loose, some coarse gravel (variable composition clasts up to core barrel diameter), damp and loose, medium to coarse sand, matrix.
20	25	--	--	No recovery.
25	30	3	7/0.0	0-1.5': Sandy Gravel. Fine to medium sand matrix, trace to some silt, brown (7.5 YR 5/4), loose, slightly damp, approximately 20-30% (some to much) gravel. Subrounded, variable composition up to 3/4" in diameter.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-5 Page 2 of 8

Prepared by R. Flynn/D. Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1.5-3': Gravel. Poorly sorted, medium to coarse sand matrix, trace silt, clasts variable composition, matrix reddish brown (7.5 YR 5/3).
30	35	3	10/0	0-0.3': Gravel as above.
				0.3-3': Coarse Sand. Light reddish brown (5 YR 6/3), trace pebble gravel, trace medium sand.
35	40	5	10.0/0.3	0-1': Coarse Sand. As above.
				1-2.5': Gravelly Sand. Fine, brown (7.5 YR 5/3), much well rounded pebble gravel, subrounded, variable composition. Loose, damp.
				3.5-5': Coarse Gravely Sand. Loose, damp, reddish brown (5 YR 5/4), much fine (granule sized) gravel. Trace pebble gravel, well rounded, variable composition.
40	45	2.5	6/0.3	0-2': Gravelly Sand. As above.
				2-2.5': Fine Sand. Loose, damp, trace silt, some gravel, well rounded, variable composition (reddish grey 5 YR 5/2).
45	50	5	12/1.4	0-4': Coarse Sand. Some gravel, otherwise as above. Sharp contact.
				4-5': Fine Sand. Damp, loose, trace silt, very well sorted, light reddish brown (5 YR 5/4).
50	55	5	8/0.0	Fine Sand. As above, trace gravel (well rounded), at 4-5' interval.
55	60	5	5.5/0.0	0-1.5': Fine to Very Fine Sand. As above, trace silty and fine gravel, reddish brown (5 YR 4/4), damp and loose.
				1.5-5': Sand. As above but light reddish brown (5 YR 6/3).
60	65	5	20/0.0	0-4.9': Sand. As above.
				4.9-5': Fine Sand. Dense with trace angular gravel, very damp, reddish brown (5 YR 4/4).
65	70	5	4/0.0	0-0.5': Gravelly Sand. Poorly sorted, fine to medium sand matrix trace silt, brown (7.5 YR 4/4), saturated, slightly cohesive. Some to much subrounded gravel.
				0.5-5': Silt. Firm saturated silt with some to much very fine sand, very well sorted, trace subrounded gravel reddish brown (5 YR 5/3) trace clay inclusions.
70	75	5	6/0.0	Silt. As above with 1" medium sand seam at 72.5'. (Saturated, very well sorted) and 3" silt rich fine sand at 73'. Trace weak red (10 YR/5/4) clay inclusions (firm and fissile) from 73.5-75' bgs.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-5 Page 3 of 8

Prepared by R. Flynn/D. Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
75	80	5	5/0.0	Sandy Silt. As above with 3" clay inclusion at 0.3-0.5', distorted laminations forming swirls. (Bag sample taken.) No gravel detected, sample has dark brown (7.5 YR 3/3) color. Trace clay, inclusions, further large clay inclusions at 76' and 79' bgs.
80	85	5	8/0-0.1	Sandy Silty. As above, firm and saturated, 1/4" lamination of medium sand at 83.5', immediately underlain by similar thickness of weak red clay.
85	90	5	25/0.0	0-3': Sandy Silt. As above with trace to some weak red clay, inclusions.
				3-5': Sandy Silt. Weak red clay seams in approximately equal amounts, distinct boundaries.
90	95	5	250/0.3	0-2.5': Sandy Silt. Weak red clay as above.
				2.5-2.6': Clay. Fissile, very firm, saturated, dark brown (7.5 YR 3/4).
				2.6-5': Fine to very fine sand, loose to slightly dense, saturated, dark brown (7.5 YR 3/4) trace angular gravel, clay inclusions at 3.8 and 4.1'.
95	100	5	600/0.0	0-2': Silt, clay interbedded with fine. Clay laminations more abundant toward top, more sandy toward base, saturated and firm. Overall dark brown (7.5 YR 3/4).
				2.5-5': Sand. Fine to very fine, slightly dense, very well sorted, brown (7.5 YR 5/3).
100	105	5	300/0.0	0-2': Sand. As above.
				2-2.5': Silt. Firm, some very fine sand, saturated, fine pale grey lamination otherwise brown (7.5 YR 5/3).
				2.5-3': Fine Sand. Very well sorted, brown yellow (10 YR 6/6) mottling (approximately 60 percent). Rest of sample same texture but brown (7.5 YR 5/3).
				3-3.5': Clay. Weak red (10 R 5/4), firm to very firm, fissile/saturated with approximately 0.2' of finely laminated brown silt.
				3.5-5': Medium Sand. Becoming finer with depth. Loose, saturated very well sorted, brown (7.5 YR 5/3).
105	110	5	35/1.3	Sand. Medium to fine sand, well sorted, loose, saturated. Trace to some well rounded gravel. Gravel content increases toward base of sample. Sand light brown (7.5 YR 6/4). Gravel well rounded to surounded, variable composition.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-5

Prepared by R. Flynn/D. Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
110	115	5	700/1.7	0-2': Sand as above with trace gravel at top becoming less abundant with depth.
				2-4.8': Sandy Gravel. Pebble/cobble sized well rounded to subangular gravel with coarse sand, brown (7.5 YR 6/2), matrix trace medium sand, poorly sorted. Variable composition gravel. Predominately pebble sized gravel. Loose, saturated.
				4.8-5': Medium Sand. Trace to some pebble gravel, loose, saturated brown (7.5 YR 4/2).
115	117	2	200/0.2	0-0.5': Medium sand. As above.
				0.5-2': Sand. Fine to very fine, well sorted, brown (7.5 YR 5/4), saturated.
117	120	3	1,500/0.1	Very Fine Sand. As above.
120	125	5	9,000/1.3	Very Fine Sand. As above.
125	130	5	9,000/2.2	0-2': Very Fine Sand. As above.
				2-3': Very Fine Sand/Sandy Silt. Very well sorted (borderline grain sizes between sand and silt) loose to slightly dense. Saturated, brown (7.5 YR 4/4).
				3-5': Sandy Silt. Firm, saturated, very well sorted, strong brown (7.5 YR 4/6) contains 2" thick clay inclusion at 4-1/2' weak red (10 R 4/4).
130	135	5	8,000/4.6	0-2': Silt. As above, with clay inclusions.
				2-5': Very Fine Sand. Loose, saturated, very well sorted, trace silt brown (7.5 YR 5/3).
135	140	5	6,000/1.1	0-2.5': Silt. Saturated, soft to slightly firm, brown (7.5 YR 4/4).
				2.5-4.5': Fine to Very Fine Grained Sand. Very well sorted, trace to some silt, saturated, strong brown (7.5 YR 4/6).
				4.5-5': Silt. As in 0-2.5' interval.
140	145	5	2,500/1.3	0-1': Silt. As above.
				1-2.5': Sandy Silt. Much very fine grained sand, cohesive, saturated, slightly firm, very well sorted, brown (7.5 YR 4/4).
				2.5-3.5': Very Fine Sand. Some silt, saturated, loose to slightly dense, very well sorted, brown (7.5 YR 4/4).
				3.5-5': Silt. Cohesive, firm, dark brown (7.5 YR 3/4), saturated.
145	150	5	>10,000/2.0	0-2': Silt. As above darker (7.5 YR 3/6).
				2-5': Fine to Very Fine Sand. Brown (7.5 YR 4/4), loose, saturated, very well sorted, trace silt.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-5

Prepared by R. Flynn/D. Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
150	155	5	12,000/3.7	0-4': Sand. As above.
				4-4.2': Silt. Some sand, firm, saturated, brown (7.5 YR 4/3).
				4.2-4.5': Sand. As 0-4', interval.
				4.5-5': Silt. As 4-4.5' interval.
155	160	5	800/0.3	0-2': Silt. Brown (7.5 YR 4/3), firm, saturated.
				2-2.5': Sand. Brown (7.5 YR 4/3), very fine grained, well sorted, trace silt, saturated.
				2.5-6': Silt. As above. Sandy with very fine grained sand, saturated.
160	165	5	600/0.5	0-1.2': Silt. As above, no sand.
				1.2-1.5': Sand. Brown (7.5 YR 4/3), very fine grained, well sorted, saturated.
				1.5-5': Silt. Brown (7.5 YR 4/5), trace very fine grained sand, also some varves, very fine grain sand, saturated.
165	170	5	5,000/1.8	Sand. Brown (7.5 YR 4/3), very fine grained, well sorted, trace silt, some 1-2" thick beds, silt, saturated.
170	175	5	8,000/6.5	0-.5': Silt. Brown (7.5 YR 4/3), saturated.
				.5-5': Sand. Brown (7.5 YR 4/3), to reddish brown (7.5 YR 4/4), very fine grained, well sorted, trace silt in 1-2" thick beds, silty below 4.5", saturated.
175	180	5	150/0.0	Sandy Silt. Saturated, firm, very well sorted. Sand very fine grained. Brown (7.5 YR 4/3-4).
180	185	5	300/0.0	Sandy Silt to Silt. As above.
185	190	5	1,000/0.0	Sandy Silt to Silt. As above.
190	195	5	900/0.0	0-2': Silt. As above.
				2-3': Very Fine Silty Sand. Trace pebbles, clay inclusions, firm saturated. Brown (7.5 YR 4/4), pebbles subangular, matrix supported.
				3-4.5': Sandy Silt. Brown (7.5 YR 4/4), firm, saturated, grading into very fine sand from 4.5-5.0'.
				4.5-5': Very Fine Sand. Trace subangular angular pebbles, very well sorted, brown (7.5 YR 4/4), trace to some silt.
195	200	5	1,000/0.0	0-3': Sand. As above, with some clay inclusions, yellowish red (5 YR 4/6). Some silt.
				3-3.5': Fine Sand. Slightly dense, saturated, very well sorted.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-5

Prepared by R. Flynn/D. Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.5-3.8': Silt. Very dense, saturated with some to much fine gravel very angular to subrounded, variable composition, brown (7.5 YR 4/3).
				3.8-5': Fine Sand. Very well sorted, dense, saturated, brown (7.5 YR 4/3). Silt inclusion 6" long at 4-4.5'.
200	205	5	100/0.0	0-0.1': Fine Sand. As above.
				0.1-.5': Silt. Dense, saturated, contains some to much sand and fine gravel. Brown (7.5 YR 4/3). Lowest 0.1 contains red (2.5 YR 4/6) clay inclusion.
				0.5-.6': Gravel. Loose, saturated, dark reddish grey, coarse sand matrix (5 YR 4/2), some silt.
				0.6-2': Silt. Reddish brown (5 YR 4/3), very dense, saturated, contains some matrix supported subangular gravel up to 3" in diameter.
				2-5': Medium Sand. Loose, saturated with some to much well rounded to subangular gravel, some coarse sand.
205	210	5	1,000/0.0	Medium Sand. Some to much gravel, angular to well rounded clasts.
210	215	5	2,000/0.0	0-0.1': Sand with Gravel. As above.
				0.1-2.5': Interbeded Medium to Fine Sand and Clay Sand. Poorly sorted, dense, some gravel, saturated, brown (7.5 YR 4/6), some silt, some coarse sand. Clay, very firm, fissile, damp, some fine gravel, reddish brown (5 YR 4/4), coarse to medium laminations between sand and clay.
				3-5': Fine Sand. Very poorly sorted, dense, some coarse sand, some silt , some gravel (angular to subrounded variable composition), brown (7.5 YR 4/4).
215	220	5	>10,000/0.0	Fine Sand. Well sorted, some medium sand, trace silt, saturated brown (7.5 YR 4/3), trace well rounded gravel.
220	225	5	>10,000/0.0	0-0.5': Sand. As above.
				0.5-2.5': Silt. Firm, saturated, well sorted, brown (7.5 YR 4/3).
				2.5-5': Sand. As 0-0.5' interval with trace silt inclusions near to base.
225	230	5	>10,000/0.0	0-2': Sand. As above, with trace to some well rounded to subrounded gravel in lowest 1'.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-5 Page 7 of 8

Prepared by R. Flynn/D. Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2-2.5': Gravel. Subangular to well rounded, loose, saturated, trace to some medium sand (matrix as in 0-2.0'). Clasts variable composition up to 1-1/2" in diameter, predominantly slate.
				2.5-5': Sand. As per 0-2', with slightly coarser gravel.
230	235	5	>10,000/0.0	0-0.2': Sand. As above.
				0.2-4': Gravel. Loose, saturated, some medium sand, coarse, predominantly pebble sized, subangular to well rounded, trace cobble size (2" diameter).
				4-4.2': Sand. Loose, saturated, poorly sorted, some gravel, some to much medium sand.
				4.2-5': Silty Sand. Very poorly sorted, slightly firm cohesive some subrounded to subangular gravel, trace coarse sand, brown (7.5 YR 4/4).
235	240	5	>10,000/0.0	0-2': Fine to Medium Sand. Poorly sorted, loose, saturated, some to much coarse sand, (7.5 YR 4/3), brown.
				3-5': Gravely Sand. Loose, saturated, fine to medium sand matrix (as above), gravel subangular to subrounded, variable composition.
240	245	5	>10,000/0.0	0-0.2': Sandy Gravel. As above.
				0.2-4.8': Fine to Very Fine Sand. Slight cohesive, well sorted, trace to some silt, brown (7.5 YR 4/2), trace coarse sand.
				4.8-5': Sand. As above with some to much subangular gravel, up to 1" in diameter, variable composition.
245	250	5	10,000/0.0	0-1': Medium Sand. Well sorted, trace to some coarse sand, brown (7.5 YR 4/3), loose saturated.
				1-4': Fine Sand. Very well sorted, loose, trace silt, saturated, trace medium sand.
				4-6.3': Sandy Silt. Cohesive, slightly firm, brown (7.5 YR 4/5), some to much very fine sand.
				4.3-4.6': Medium Sand. Poorly sorted, loose, some gravel (subanuglar to subrounded, variable composition), some silt.
				4.6-5': Silt. Firm, brown (7.5 YR 4/3).
250	255	5	>10,000/2.0	0-0.5': Silt. As above.
				0.5-1': Fine Sand. Very poorly sorted, some to much fine gravel, subangular, variable composition, loose to saturated.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-5

Prepared by R. Flynn/D. Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1-1.5': Sandy Gravel. Coarse sand with much gravel, very dark grey (7.5 YR 3/1). Trace to some silt, more silty toward base, clasts up to 2-1/2" in diameter, variable composition.
				1.5-2.5': Fine Sand. Brown (7.5 YR 4/3), cohesive, slightly firm, some silt, trace well rounded gravel.
				2.5-5': Sandy Silt. Firm, cohesive, brown, moderate sorting, much very fine sand, trace subangular gravel.
255	260	5	10,000/0.6	0-3.5': Fine Sand. Loose, saturated, very well sorted, trace silt, brown (7.5 YR 4/3).
				3.5-4': Medium Sand. Loose, saturated, moderately sorted, brown (7.5 YR 4/3), trace coarse sand.
				4-5': Silty Gravel. Cohesive, soft, very poorly sorted, brown (7.5 YR 4/2) some coarse sand, gravel, angular to subrounded gravel up to 2" in diameter.
260	265	5	4,500/2.7	0-2': Gravel. As above, some to much coarse sand. Becoming stiffer with depth, saturated*. Stiff.
				3-5': Very angular single composition gravel, broken bedrock, greenish grey (Gley 1/6/1/10Y). Phylite, subvertical cleavage.
				End of hole 265' bgs.
				* Changes color to dark brown (7.5 YR 3/2) for last 1'.
				Well screen set at 250 to 260' bgs.

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SAMPLE/CORE LOG

Boring/Well GM-6 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 15:50 5/12/97 Drilling Completed 13:00 5/14/97

Total Depth Drilled 205 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1124.07 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Bill Helper Ken

Prepared By Ray Flynn and Kevin Daleness

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	1/0	0-1': Silty Sand. (Topsoil), firm, moist, abundant rootlets, dark yellowish brown (7.5 YR 4/6).
				1-3': Medium Sand. Strong brown (7.5 YR 4/6), trace well rounded gravel, some coarse sand, loose, dry to slightly damp.
				3-5': Fine Sand. Reddish yellow (7.5 YR 6/6), well sorted, no
5	10	5	1/0	0-1': Medium Sand. Loose, dry, trace gravel, yellowish red (7.5 YR 5/6).
				1-4': Fine Sand. Reddish yellow, well sorted, reddish brown (7.5 YR 5/4), loose, slightly damp.
10	15	5	1/0	1-4': Fine Sand. As above.
				4-5': Coarse Sand. Some gravel, reddish brown (7.5 YR 4/4), gravel, well rounded, variable composition, loose and damp.
15	20	4	3/0	0-1': Medium Sand. Some gravel, dark yellow brown (7.5 YR 3/6), gravel well rounded/variable composition.
				1-4': Coarse Sandy Gravel. Much coarse sand, loose, damp, brown (7.5 YR 4/3), gravel well rounded variable composition.
20	25	4	0/3	0-0.5': Sandy Gravel. As above.
				0.5-4': Fine Sand with Clay Inclusions. Some silt ((10 R 3/6), dark red, clay inclusions, firm, fissile) loose.
25	30	5	1/0	0-2': Clayey Silt, Silty Clay. Stiff, distintly colored laminae. Predominately dark brown (7.5 YR 3/3), stiff, damp clay-rich silty, friable. Red (10 R 4/6), more clay rich, friable, fissile, dry to damp, sharp distinct boundaries.
				2-5': Fine to Very Fine Sand. Light brown (7.5 YR 6/4), trace silt, well sorted, loose, dry, no gravel.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-6 Page 2 of 3

Prepared by R. Flynn/K.Daleness

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
30	35	5	1/0	Fine Sand. As above.
35	40	5	2/0	Fine Sand. As above.
40	45	5	0.5/0	0-.5': Very Fine Sand. Some silt, brown (10 YR 5/3), saturated, dense.
				0.5-2': Silt. Brown, firm, saturated, some very fine sand.
				2-3': Sand. Fine to very fine, brown, saturated, dense.
				3-3.5': Silt. Brown, firm, saturated with some very fine sand.
				3.5-5': Sand. Brown, very fine, dense, saturated.
45	50	5	30/0	Very Fine Sand. Brown (7.5 YR 4/4), very well sorted, some silt (coarse), dense and saturated.
50	55	5	10/0	0-3': Sand. As above.
				3-5': Silt. Firm, friable, saturated, brown (7.5 YR 4/4), clay inclusions at 3.5 and 3.8' (Dusky red (10 R/3/4)), firm, friable.
55	60	5	0/0	0-3.5': Silt. Dark brown with trace very fine sand (7.5 YR 3), saturated, clay inclusions.
				3.5-5': Silt. Brown (7.5 YR 4/2), clay inclusions (dark reddish brown (5 YR 3/4)). Saturated.
60	65	5	0/0	Silt. Brown (7.5 YR 4/2), with clay, saturated, dark reddish brown (5 YR 3/4).
65	75	10	0/0	0-10': Clayey Silt. Brown (7.5 YR 4/2), with clay inclusions, (dark reddish brown (2.5 YR 3/4)).
75	80	5	0/0	0-0.5': Clayey Silt. Weak red (2.5 YR 4/2).
				0.5-5': Very Fine Sand. Trace clay inclusions, (dusky red (10 R 3/4)).
80	85	5	0/0	Very Fine Sand. Brown (7.5 YR 4/2).
85	90	5	0/0	Very Fine Sand. Brown (7.5 YR 4/2), trace clay inclusions, (dark reddish brown (2.5 YR 3/4)).
90	95	5	1/15.1	Very Fine Sand. Same as above, with trace clay inclusions.
95	100	5	0/0	Very Fine Gravelly Sand. Saturated brown (7.5 YR 4/2), interbedded with friable clay (reddish brown (2.5 YR 4/3)).
100	105	5	3/0	Fine to Medium Sand. Reddish grey (5 YR 5/2), with trace friable clay (reddish grey (5 YR 5/2)).
105	115	5-6'	2,000/0	0-1.5': Fine to Medium Sand. Dark reddish brown (5 YR 3/3), same as above.
				1.5-2.5': Medium Sand (7.5 YR 5/2). Brown with coarse gravel, well rounded.
				2.5-6': Medium Sand. Well sorted, (7.5 YR 5/2).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-6

Prepared by R. Flynn/K.Daleness

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
115	122	7	5,000/0	0-1': Sand. As above.
				1-7': Medium to Coarse Sand. Very dark greyish brown, (10 YR 3/2), trace coarse gravel, poorly sorted, saturated, yellow stained lens (1"), dark yellow brown.
122	125	3	5,000/0	Fine to Medium Sand. Brown (7.5 YR 4/2), trace coarse sand. and gravel, saturated.
125	135	10	6/0	Fine to Medium Sand. Brown (7.5 YR 4/2), well sorted, trace clay inclusions at 127' (3") dark reddish brown (2.5 YR 3/4), saturated.
135	136	1	15/0	Sand. As above.
136	140	4	15/0	Fine Sand, (2.5 YR 3/3). Dark reddish brown with clay interspersed.
140	142	2	15/0	Fine to Medium Sand. Brown (7.5 YR 4/2), with trace clay interspersed, saturated.
142	145	3	15/0	Medium Sand. Brown (7.5 YR 4.2), well sorted, saturated.
145	150	5	10/0	Sand. As above.
150	155	5	1,000/0	0-0.5': Clay Band. Dark reddish brown (2.5 YR 3/4).
				0.5-5': Fine Sand. Brown (7.5 YR 4/2), clay inclusions, dark reddish brown (2.5 YR 3/4). Saturated.
155	160	5	2,000/0	Sand. As above.
160	165	5	8,500/0	Clay. Dark reddish brown clay (5 YR 3/4). Gravel. Very dark grey (7.5 YR 3/1), trace sand, saturated.
165	175	0	>10,000/30	Clay and Gravel. As above, saturated.
175	185	10	>10,000/0	Clay and Gravel. As above.
185	187	2	7,000/0	Clay and Gravel. As above.
187	191	4	2,000/0	Fine to Medium Sand. Dark grey (7.5 YR 4/1), well sorted, saturated.
191	194	3	150/0	Very Fine Sand. Brown (7.5 YR 4/2), saturated, trace silt.
194	195	1	50/0	Very Fine Sand and Clay. Brown (7.5 YR 4/2), some gravel, saturated.
195	202	7	50/0	Clay and Coarse Gravel. Dark (7.5 YR 4/1) grey fades to dark greenish grey, (10 BG 3/1), saturated.
202	205	2	20/0	Clay and Gravel. Dark reddish brown (5 YR 3/2), fades to dark red, (2.5 YR 3/6), highly weathered, dry.
				Refusal with rig at 204' bgs.
				Well screen set at 165 to 175' bgs.

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SAMPLE/CORE LOG

Boring/Well GM-7 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 16:57 6/9/97 Drilling Completed 17:45 6/11/97

Total Depth Drilled 228 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 3 in Sampling Interval Continuous

Land-Surface Elev. 1107.63 feet msl [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Kale Helper Arlo/Ken

Prepared By Pat Bartnik and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	10/0.2	0-1': Topsoil. Dark brown (7.5 YR 3/4), silty and sandy with rootlets, moist.
				1-5': Sand. Strong brown (7.5 YR 5/6), medium with coarse to fine gravel (angular to rounded), trace pebbles to 2" diameter, dry to moist.
5	10	5	8/0.1	0-1': Sand. As above.
				1-4': Sand. Reddish yellow (7.5 YR 6/6), medium to well sorted, trace gravel (rounded to subrounded approximately 0.1 to 1").
				4-5': Sand. Strong brown (7.5 YR 5/6), fine to very fine, trace gravel, trace silt dry to moist.
10	15	5	10/1.1	0-2': Sand. Strong brown (7.5 YR 5/6), same as above.
				2-5': Sand. Strong brown (7.5 YR 5/6). Dry to moist.
15	20	5	50/5.1	0-5': Sand. Strong brown (7.5 YR 5/8), medium to fine, trace gravel (0.1-1") dry to moist.
20	25	5	50/11.7	0-1': Sand. As above.
				1-4.5': Sand. Strong brown (7.5 YR 5/6), medium to fine, trace gravel ((0.1-0.5") angular to rounded). Dry.
				4.5-5': Sand. Light brown (7.5 YR 6/4), medium to fine, trace silt, color difference results form rotation, of core barrel and dissociation and pulverizing of sample.
25	30	5	100/3	0-5': Sand. Reddish brown (5 YR 4/3), as above with trace gravel ((0.1 to 0.5 ") subrounded), dry to moist.
30	35	0		Sample lost during extrusion from core barrel.
35	40	5	90/4.1	0-5': Sand. As above.
40	45	5	30/7.2	0-1': Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-7 Page 2 of 4

Prepared by P. Bartnik/B. Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1-5': Sand. Reddish brown (5 YR 5/4), medium to fine, silty, trace gravel (0.1 to 1"), subrounded, moist.
45	50	5	22/0.0	0-1.5': Sand. As above, moist.
				1.5-1.6': Sand. As above, but with gravel (0.1 to 1"), subrounded, wet.
				1.6-4.5': Sand. Reddish brown (5 YR 5/4), medium to fine moist to wet.
				4.5-4.8': Sand. Reddish brown (5 YR 5/4), very fine, silty, moist.
				4.8-5': Silt. Reddish brown (5 YR 5/4), wet, trace clay.
50	55	5	50/16.8	0-1': Silt. As above.
				1-1.5': Sand. Reddish brown (5 YR 5/4), medium to fine, trace gravel, wet.
				1.5-4': Sand. Reddish-brown (5 YR 5/4), interbeds 2-4" in thickness of very fine gravel to silty and medium sand, well sorted, trace silt, trace gravel, wet.
				4-5': Sand. Strong brown (7.5 YR 4/6), medium, well sorted from 4.5-5 poorly sorted from 4-4.5' with gravel (0.5 to 1") subrounded, wet.
55	60	4	17/0.0	Sand. Brown (7.5 YR 4/4), medium to fine, trace gravel ((0.1 to 1") subrounded), wet.
60	65	5	13/0	0-2.5': Sand. Brown (7.5 YR 4/4), medium, trace gravel.
				2.5-3': Sand. Gravelly and poorly sorted, wet.
				3-5': Sand. Strong brown (7.5 YR 4/6), medium to fine, wet.
65	70	5	12/0	0-1': Samd. As above, wet.
				1-3': Sand. Brown (7.5 YR 4/4), coarse to fine, gravelly, poorly sorted, wet.
				3-5': Sand. Brown (7.5 YR 4/4), medium to fine, trace gravel.
70	75	5	19/20.5	0-2': Sand. As above.
				2-2.5': Sand. Brown (7.5 YR 4/4), coarse to fine, gravelly, poorly sorted.
				2.5-3.5': Sand. Brown (7.5 YR 4/4), fine to very fine, silty, wet, trace gravel.
				3.5-5': Sand. Brown (7.5 YR 4/4), medium to very fine, silty, trace gravel, wet.
75	80	5	9/0.0	0-1.5': Sand. As above.
				1.5-2.3': Sand. Brown (7.5 YR 4/4), coarse to fine gravelly, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-7 Page 3 of 4

Prepared by P. Bartnik/B. Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.3-5': Sand. Brown (7.5 YR 4/4), medium to fine, wet.
80	85	5	18/0	0-1': Sand. As above.
				1-1.5': Sand. Brown (7.5 YR 4/4), fine to very fine, silty, wet.
				1.5-3': Sand. Medium to fine, silty, brown (7.5 YR 4/4), wet.
				3-4.5': Sand. Brown (7.5 YR 4/4), medium to fine. Gravelly at base, wet.
				4.5-5': Sand. Brown (7.5 YR 4/4), fine to very fine, silty, wet.
85	90	0	--	No recovery.
90	95	4	9/0	Sand. Brown (7.5 YR 4/4), coarse to fine, silty, poorly sorted, wet.
95	100	0	--	No recovery.
100	105	1.5	0/0	Sand. Brown (7.5 YR 4/4), medium to fine, trace silt, wet.
105	110	0	--	No recovery, even with a (used) retainer.
110	115	0	--	No recovery.
105	110	0	--	No recovery.
110	115	3	5/1.1	Sand. Brown (7.5 YR 4/6), medium to fine, trace silt, wet.
115	120	3	50/4.8	0-1.5': Sand. Brown (7.5 YR 4/2), medium to fine, trace silt, wet.
				1.5-3': Sand. Brown (7.5 YR 4/2), coarse to fine, trace silt, gravelly, wet (0.1 to 1"), subangular to rounded.
120	125	4	50/4.8	0-4': Sand. Brown (7.5 YR 4/4), medium to fine, trace silt, wet.
125	130	5	3/1.1	0-2': Sand. Reddish brown (5 YR 4/4), fine to very fine, silty, wet.
				2-5': Silt. Reddish brown (5 YR 4/4), wet.
130	135	5	4/1.2	0-5': Silt. Reddish brown (5 YR 4/4), trace very fine sand, wet.
135	140	5	10/0.9	0-1': Silt. As above.
				1-5': Clay. Dark reddish brown (5 YR 4/4), dry, hard, silt as irregular laminae and patches.
140	145	5	6/0.5	0-1.5': Clay. As above.
				1.5-4.5': Silt. Reddish brown (5 YR 4/4), trace sand, wet.
				4.5-5': Sand. Reddish brown (5 YR 4/4), silty, wet, very fine grained, well sorted.
145	150	5	>10,000/2.4	0-2.5': Sand. Strong brown (7.5 YR 4/6), coarse to medium, trace gravel, wet.
				2.5-5': Sand. Reddish brown (5 YR 4/4), medium to fine, trace silt, wet.
150	155	5	10,000/0	Sand. Reddish brown (5 YR 4/4), fine to very fine, silty, wet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-7 Page 4 of 4

Prepared by P. Bartnik/B. Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
155	160	5	>10,000/0.0	Sand. As above.
160	165	5	>10,000/0.4	0-1.5': Sand. As above.
				1.5-2.5': Silt. Reddish brown (5 YR 4/4), sandy (very fine), wet.
				2.5-4.5': Sand. Reddish brown (5 YR 4/4), very fine, silty, wet.
				4.5-5': Silt. Reddish brown (5 YR 4/4), trace sand (very fine grained), moist.
165	170	0		No recovery.
170	175	5	5,000/2.2	Silt. Reddish brown (5 YR 4/3), sandy (very fine), wet.
175	180	5	1,000/2.2	Silt. As above.
180	185	5	600/2.5	Silt. As above, trace of clay inclusions, reddish brown (5 YR 4/4), wet.
185	190	5	200/0.4	Silt. Reddish brown (5 YR 4/3), trace matrix clay and with some irregular incusions (patches) and laminee of (clay, reddish brown (5 YR 4/4), fissile appearance yet plastic, wet).
190	195	5	150/0.0	Silt. As above, wet.
195	200	5	10/0.0	Silt. As above, trace clay as above, wet.
200	205	5	4/0.0	Silt. As above, trace clay as above, wet.
205	210	5	8/1	Silt. Brown (7.5 YR 4/4), trace clay in matrix, (reddish brown (5 YR 4/4), as irregualr inclusions (patches) and fine laminae, fissile apparance, plastic). Wet.
210	215	5	3/0.4	Silt. As above with clay, wet.
215	220	5	3/0.4	Silt. As above, trace very fine grain sand, trace clay, wet.
220	225	5	3/1.6	Silt. As above (215-220), wet.
225	230	3	18/3.4	0.5': Clay. Dark blue grey, (Gley2 4/1 5B), plastic, wet, with broken bedrock fragments (angular (1-2")).
				0.5-3': Slate/Phyllite. Quartz veins, pyrite veins greenish to grey, foliation, cleavage approximately 25 to 30 degrees from vertical.
				End drilling a 228' bls. Bedrock reached at 225.5' bls, borehole secured by screening drill head into casing.
				Well screen set at 145 to 155' bgs.

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SAMPLE/CORE LOG

Boring/Well GM-8 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/25/97 13:33 Drilling Completed 6/25/97 16:30

Total Depth Drilled 90 feet Hole Diameter 6 inches Type of Sample/ Coring Device Hollow Steel Corer

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1043.64 feet [X] Surveyed [ ] Estimated Datum Ground Surface

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Dale Helper Joe, Ken

Prepared By Dan Hegrenes and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	3.5/3.5	0-2': Clay/Silt/Topsoil. Dark reddish brown (5 YR 3/4), silt clay mixture, rootlets, trace organics.
				2-4': Sand. Fine grain, strong brown (7.5 YR 5/6), moderately sorted, some very fine sand, trace fine to coarse gravel, moist.
				4-5': Sand/Gravel. Strong brown (7.5 YR 4/6), fine to medium grained sand, moderate sorting, fine to coarse gravel, subangular to subrounded.
5	10	5	3.5-5/3.5	0-3': Sand/Gravel. Strong brown (7.5 YR 5/8), fine to coarse sand, fine to coarse gravel, poorly sorted, moist.
				3-5': Sand. Light brown (7.5 YR 6/4), medium grained, well sorted, trace gravel, fine to coarse.
10	15	3	5/4.8	0-2': Sand. Reddish brown (5 YR 5/4), fine grained, some medium grained moderately sorted, moist.
				2-2.5': Sand/Gravel. Brown (7.5 YR 4/4), moist, coarse sand well sorted, fine to coarse gravel.
				2.5-3': Sand. Dark brown (7.5 YR 3/4), fine grained, well sorted, wet.
15	20	5	3.5/3.2	Sand. Brown (7.5 YR 4/4), fine to medium grained, well sorted, trace coarse sand, wet.
20	25	5	3.4/2.9	0-5': Sand. As above.
25	30	5	3.5/0.8	0-3': Sand. Brown (7.5 YR 5/4), fine to medium poorly sorted, trace fine to coarse gravel.
				3-5': Sand. Brown (7.5 YR 5/4), fine, well sorted.
30	35	5	7/1.3	Sand. Brown (7.5 YR 5/4), fine, well sorted, trace coarse sand.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-8 Page 2 of 2

Prepared by Dan Hegrenes and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
35	40	5	10/0.7	Sand. As above.
40	45	5	20/1.3	0-3': Sand. As above.
				3-5': Sand. Brown (7.5 YR 5/4) fine to medium, grained, moderate sorting, trace coarse sand, wet.
45	50	5	2.5/0.3	Sand. As above.
50	55	5	2.0/1.0	Sand. As above.
55	60	5	5/1.7	Sand. As above. Took sample for grain size.
60	65	5	15/5.5	0-1': Sand. As above, strong brown (7.5 YR 5/8).
				1-1.5': Sand/Gravel. Fine to coarse sand, wet. Fine to coarse gravel, poorly sorted.
				1.5-3.5': Sand. Strong brown (7.5 YR 5/8), fine to medium grained, trace coarse, some gravel, moderately sorted.
				3.5-5': Sand. Strong brown (7.5 YR 5/8), fine to medium grained, trace coarse, moderate sorting, wet.
65	70	5	2.5/0.8	Sand. As above, brown (7.5 YR 5/4), wet.
70	75	5	6/1.0	Sand. As above.
75	80	5	15/0.2	Sand. As above.
80	85	5	22/2.2	Sand. As above.
85	90	5	60/51.2	0-4.5': Sand. As above.
				4.5-5': Bedrock. Bottom. Phyllitic, glacial striations on top surface, dark greenish grey, quartz veining.
				End drilling at 90 feet.
				Well screen set at 80 to 90' bgs.

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SAMPLE/CORE LOG

Boring/Well GM-9 Project/No. Ford Kingsford Page 1 of 8

Site Location Kingsford, Michigan

Drilling Started 9/12/97 9:15

Drilling Completed 9/15/97 14:20

Total Depth Drilled 244 feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in

Sampling Interval Continuous

Land-Surface Elev. 1053.04 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Roy/Perry

Helper Ken/Gabe

Prepared By Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	2.5/0	0-1': Dark brown to black organic top soil, roots, silty with fine sand, loose to slight moist.
				1-5': Very Fine to Fine Sand. Well sorted, loose, dry, trace roots, trace small gravel, subrounded, red to yellow (7.5 YR 6/6).
5	10	5	3.5/0	0-1': Fine Sand. Trace coarse, some silt and small gravel, loose, brown (7.5 YR 4/4).
				1-5': Fine to medium sand and small to medium gravel, poorly sorted, gravel subround to subangular, trace cobbles, loose, trace silty fine sand, strong brown (7.2 YR 5/6).
10	15	5	4.5-6/0-01.1	1-4': Fine to medium sand. As above.
				4-5': Silt. Some clay, nonplastic, medium stiff, dark brown (7.5 YR 3/2).
15	20	5	2.5/0	Silt with Clay. Soft to medium stiff, at 2-3 feet several 1/4 inch clay seams. Silt is brown (7.5 YR 4/2) clay, red brown (5 YR 4/4) trace silt, moderate plastic to plastic, soft.
20	25	5	2.5/0	Silt. As above with occasional 1/8 to 1/4 inch red brown clay inclusions, moderately plastic, slightly platy (fissile).
25	30	5	2.5/0	Silt with Clay. Brown (7.5 YR 4/3) soft to medium stiff, slightly to moderately plastic, and clay red brown (5 YR 4/4) platy, very hard, nonplastic to medium plastic silty and clay occuring in alternating beds. 1.5 to 2.5 inch thick, in spots clay grades to soft and moderate plastic.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-9

Prepared by Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
30	35	5	2.5-15/0	0-2': Silt and Clay. As above.
				2-3': Silt. As above with trace clay medium stiff.
				3-4': Very Fine to Fine Sand. Well sorted, medium dense, brown (7.5 YR 4/3) several 1/4 to 1/2 inch silt seams.
				4-4.5': Silt. Medium, stiff, brown (7.5 YR 4/3) well sorted trace 1/16 to 1/8 inch red clay seams.
				4.5-5': Very fine to medium Sand. Trace coarse and silt, loose, poorly to moderately sorted, brown (7.5 YR 5/3).
35	40	5	4.5-55/0	0-4': Sand. Medium to coarse, trace fine, variable compostion quartz and mafics, loose to medium dense, trace small gravel, moderately to poor sorting, brown (7.5 YR 5/4).
				4-5': Sand. As above, some small gravel approximately 10 mm, lose, brown (7.5 YR 5/4).
40	45	5	25-175/0	0-1.5': Sand. Medium to coarse, some fine, loose to medium dense, trace small gravel subangular to subround, color as above.
				1.5-2.5': Sand. Coarse some fine and gravel 1/8 to 1 inch subrounded to subangular, very poorly sorted, loose.
				2.5-5': Sand. Very fine to medium some coarse, trace silt medium dnese, very poorly sorted (7.5 YR 5/4).
45	55	0	-/-	Lost sample to formation - put on retainer. Trip in - sample is still in borehole - recover sample although will be highly disturbed.
45	50	5	10-20/0-.7	Sand. Coarse some medium to trace fine and very fine, some gravel, 1/8" - 3/4", subround to subangular, loose very poorly sorted variable compositon (quartz, feldspar, mafices) brown (7.5 YR 4/3).
50	55	5	20-100/0-2.0	Sand. As above.
55	60	5	200-3,000/-	0-3': Sand. Medium, some coarse and fine, trace very fine, poorly sorted, loose to medium dense, some gravel 1/8 to 1/2 inch, subrounded to subangular, brown (10 YR 5/3).
				3-5': Sand and Gravel. Sand fine to coarse, gravel 1/8 to 3/4 inch, subround to subangular, loose very poorly sorted.
60	65	5	700-6,000/-	0-3.5': Sand and gravel as above, trace cobbles. 2 to 3 inch subround to round.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-9

Prepared by Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.5-5': Sand. Fine to coarse with gravel 1/8" to 1/2", subround to subangular, very poorly sorted, loose, 6,000 ppm on OVA, very dark grey (no mansel match) large (3") cutting of sandstone weak red to dusky red (10 R 3/3 to 4/3) in bit.
65	70	5	0-20/0	Sand. Fine with very fine, some silt, trace coarse, well sorted, dense, red brown (5 YR 4/4).
70	75	5	5-11/-	Sand. As above, collect groundwater grab sample SBGM-7/62 at 15:30.
75	80	4	4-8/-	Sand. Fine with medium and very fine, trace coarse, some silt moderately well sorted, loose, brown (7.5 YR 4/4).
80	85	0	-/-	Only 4 feet of recovery from 75 to 85 feet, core run - bottom half of barrel like lost.
85	90	5	2-3.5/-	Sand. Very fine to fine with silt some medium, trace coarse, brown (7.5 YR 5/3), very loose moderate well sorted, very homogenous.
90	95	5	2.5-10/-	Sand. As above.
95	100	5	2.5-17/-	Sand. As above.
100	105	5	5-17/-	Sand. As above. Stop drilling for the day.
105	110	2	23/0	Sand. Very fine fo fine some medium, trace coarse, some silt, red brown (5 YR 6/3), poorly sorted, loose.
110	115	5	2/4/2000	0-2.5': Silt. Trace very fine and fine grain sand, soft nonplastic, red brown (5 YR 4/4) trace clay.
				2.5-3': Sand. Very fine with silt, trace fine, medium dense, red brown (5 YR 4/3).
				3-4': Clayee Silt. Trace very fine sand, moderate plastic, red brown (5 YR 5/4).
				4-5': Sand. Very fine with silt, trace fine, brown (7.5 YR 5/3) dense, trace red brown clay inclusions 1/4 to 1/2 inch, slight plastic platy, medium stiff.
115	120	5	2-7/-	0-4.5': Sand. Very fine to fine, trace medium, some silt, dense, brown (7.5 YR 5/4), moderate sorting.
				4.5-5': Silt. With very fine sand, trace clay, moderate dense, red brown (5 YR 5/3).
120	125	5	2-4/-	0-2.5': Silt. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-9

Prepared by Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.5-4.5': Sand. Very fine to fine, some silt, brown (7.5 YR 5/3) dense, moderately sorted at 3 and 3.5 feet. 1.5-2 inch silt seams, some very fine sand, red brown (5 YR 5/8) soft.
				4.5-5': Silt. Trace clay and very fine sand, red brown (7.5 YR 5/3) medium stiff.
125	130	4	1.5-3/-	Sand. Very fine with silt trace fine to medium, very soupy, loose to medium dense, moderate well sorted, brown (7.5 YR 5/3).
130	135	5	1.5-3/-	0-1.5': Sand. As above.
				1.5-2': Silt. Trace very fine and clay, medium dense to dense, moderately well sorted, red brown (5 YR 4/4).
				2-5': Sand. Medium with fine, some silt, trace coarse, medium sorting, medium dense, brown (7.5 YR 5/3).
				Casing twisted off at approximately 125 ft bls, unable to retrieve or drill further. Retrieve casing and rods, resume drilling at 14:10.
135	140	3	1.5-5/-	Sand. Fine and very fine, some medium, some silt, trace clay, medium dense, moderate well sort, brown (7.5 YR 5/3).
140	145	0	-/-	Apparently Sand. As above, lost sample.
145	150	5	2.5-5/-	Sand. Very fine with fine and silt, trace medium dense, brown (7.5 YR 5/3). At 3 feet a 2 inch silt seam, very dense with approximately 1/4 to 1/2 inch of clay red brown (5 YR 5/4) soft
150	155	5	2.5-30/-	0-.5': Sand. Fine with very fine, some medium, medium dense, moderately well sorted, brown (7.5 YR 5/2).
				.5-2.5': Silt. Some very fine sand, trace clay, color as above.
				2.5-4.5': Sand. Fine some very fine, trace medium, dense, moderately well sorted, brown (7.5 YR 5/2) at 3.5 feet a 1/4 inch silty clay seam, very stiff to hard.
				4.5-5': Silt. With very fine sand, very dense brown (7.5 YR 5/2) abundant very fine laminae (varves) alternating silt as above and red brown silty clay (30 ppm).
155	160	5	2.5-17/-	Sand. Fine with very fine, some silt, trace medium dense, brown (7.5 YR) moderate well sorted.
160	165	5	7-40/-	0-2': Silt. Trace clay, trace very fine sand, very dense, hard, 1/8" to 1/4" laminae.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-9

Prepared by Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2-5': Sand. Very fine, some fine, some silt, moderate well sorted, brown (7.5 YR 4/3) (40 ppm).
165	170	5	5-22/1.7-2.2	0-2.5': Sand. As above, likely slough.
				2.5-3.5': Silt. Some very fine sand, trace clay, brown (7.5 YR 4/2) moderate stiff to stiff.
				3.5-5': Sand. Very fine, some silt, trace fine, dense, brown (7.5 YR 4/3) moderate well sorted.
170	175	5	15-50/1.7-2.2	Sand. Fine to very fine in top foot of core, grading to fine with medium in bottom 3 feet. Moderate well sorted, dense, brown (7.5 YR 4/3).
175	180	5	2.5/1.1	0-4': Sand. Brown (7.5 YR 4/3), very fine sand with silt, trace clay, moderately dense to dense, clay reddish brown (2.5 YR 5/4), as inclusions 2 to 4 inch, plastic, soft.
				4-5': Sand. Same color, fine to very fine, some medium grained, trace coarse, some silt.
180	185	5	2.5-3/1.5-2.0	0-0.5': Sand as above.
				0.5-5': Silt. With very fine to fine sand lenses brown (7.5 YR 5/4), lenses 1 to 2 inch thick, silt breaks to silty very fine sand.
185	190	5	2.5/0.3-0.8	0-3.5': Silt. With very fine to fine sand, trace clay, occasional lenses very fine to fine silty sand. Lenses occur 1 to 6 inch thick, medium dense.
				3.5-4': Silt. With clay reddish brown (5 YR 4/3) lenses/ laminated layers, plastic, soft.
				4-5': Sand. Very fine to fine grained, with silt.
190	195	5	2.5-8/0.9-1.1	0-2.5': Sand. Very fine to fine, trace medium, some silt, brown (7.5 YR 5/3), dense.
				2.5-3': Silt. With clay, trace very fine sand. Upper 6 inch is silty clay. Cohesive, moderately plastic.
				3.5-5': Silt. With very fine sand, trace clay brown (7.5 YR 5/2), dense.
195	200	2	2.5-4/.7-1	1-2': Sand. Fine to very fine, some silt, trace medium moderate dense, moderately sorted, brown (7.5 YR 4/3).
200	215	-	-/-	No recovery.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-9

Prepared by Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
215	235	-	-/-	No recovery - Casing twisted off at 190 feet pull rods and upper 190 feet of casing and abandon hole with bentonite - cement grout.
				9/15/97 Skid rig approximately 8 feet to the northeast and start GM-9 again.
0	195			Blind drill. Install casing to 195 feet no returns.
195	200	5	3.5-5/2.3-3.2	0-2': Sand. Very fine to fine, some silt, trace medium, moderate well sorted, dense, red brown (5 YR 4/3).
				2-5': Sand. Very fine, silty, trace fine, very dense clay inclusion at 2.5 feet, soft, platic red brown (2.5 YR 4/3) sand grades to silt with a very fine sand at 4 feet.
200	205	5	3.5-4.5/2.6-3.2	0-3': Silt. Some very fine sand, trace clay, stiff, red brown (5 YR 4/3), 1/4 to 1/2 inch clay seam at 1 foot, red brown, plastic soft.
				3-3.5': Clay, trace silt, soft to plastic, dark red brown (2.5 YR 3/4).
				3.5-4.5': Sand. Very fine to fine, some silt, dense, moderately well sorted, brown (7.5 YR 4/2).
				4.5-5': Silt. With very fine sand, trace clay, dense, brown (7.5 YR 4/3).
205	210	5	4.5-5/2.3-2.2	0-.5': Clay. Silty, soft, plastic, red brown (5 YR 4/3).
				.5-5': Silt. With a very fine sand, trace clay, dense 1/8 to 1/4 inch clay lenses at 3 feet and from 4.5 to 5 feet clay is soft moderate plastic, plastic, red brown (2.5 YR 4/4).
210	215	5	4.5-6/2.1-2.6	0-3': Silt. Trace to some very fine sand, moderate stiff, brown (7.5 YR 4/3) trace clay. At 1-1.5 ft clay medium stiff, moderately plastic, red brown (2.5 YR 4/4) silt will separate along very thin (<1 mm) seams of very fine sand.
				3-3.5': Clay. Moderate stiff to stiff, moderately plastic, very fine laminae, slightly platy, red brown (2.5 YR 4/4).
				3.5-5': Silty Clay. Stiff, moderate plastic, trace very fine sand. Dark red grey (5 YR 4/2) trace pea gravel, subangular, clay will part along very fine sand seams (<.5 mm thick) clay lenses range from 1/4 to 1/2 inch.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-9

Prepared by Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
215	220	5	3-5/2.6-3.2	0-2': Silt to clayey silt, trace very fine sand, medium stiff dark red gray (5 YR 4/2). At 2 feet a red brown clay seam approximately 1 inch thick medium stiff (2.5 YR 4/4) nonplastic, platy.
				2-3.5': Silt with clay, moderately stiff, trace small gravel 2-3 mm, subangular to subround, slightly plastic.
				3.5-5': Till. Matrix is clayee silt to Silty clay, dark grey (10 YR 4/1), with sand fine to coarse, trace small gravel, subangular to subround. At 4.5 feet clay, red brown (2.5 YR 4/4) laminated 1/8 inch seams separated by silt (< .5 mm) medium sitff, non to slight plastic.
220	225	5	3-5/2.1-2.8	0-1': Till. As above.
				1-2': Silty Clay. Trace very fine sand, medium stiff, moderately plastic, trace small gravel subround to subangular, dark grey (10 YR 4/1).
				2-3': Silt. Some clay, trace coarse sand and small gravel, subangular, trace red brown platy clay inclusions 1/2 inch thick, nonplastic.
				3-5': Till, matrix is silty clay with very fine to fine sand, red brown (5 YR 4/3) with coarse sand and small gravel, subround to subangular, trace cobbles 2 to 3 inch.
225	230	5	3-5/2.3-3.2	0-5': Till. As above.
230	235	5	5-8/2.3-3.4	0-2': Till. As above.
				2-4.5': Clay. Some silt, trace pea gravel subround to subangular, dark red brown (5 YR 4/3) hard, nonplastic.
				4.5-5': Till. Matrix is clay and silt, with fine to coarse sand and small gravel 1/4 to 1 inch brown (7.5 YR 5/2).
235	240	5	8/7.2-8.0	0-4.5': Till. Silty clay grading to silt with clay in part, hard, some medium to coarse sand, some small to medium gravel 1/8 to 2 inch subround to subangular, gravel range from felsic to mafic. Red brown (5 YR 4/3) to brown (7.5 YR 4/2).
				4.5-5': Till. Clay to silty clay, with fine to very coarse sand and silt and gravel, small to large 1/8 to 2 inch subround to subangular, very poorly sorted.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-9

Prepared by Dan Hegrenes and Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
240	244	4	30-40/7.2-8.2	0-1': Till. Bluish grey grading to fractured, pulverized slate and silty clay.
				1-4': Bedrock. Slate, greenish black to bluish black, hardness 2.5, cleave approximately 20 degrees off vertical with calciteveins.

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SAMPLE/CORE LOG

Boring/Well GM-10 Project/No. Ford Kingsford Page 1 of 6

Site Location Aurora, Wisconsin Drilling Started 9/16/97 7:47 Drilling Completed 9/23/97 12:25

Total Depth Drilled 205 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1056.20 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Roy Helper Oscar

Prepared By Dan Hegrenes and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	3	1.5-10/2.3-2.8	0-1': Topsoil. Loamy organic rich, strong brown (7.5 YR 4/6) fine gravel (trace).
				1-2': Silt. Yellowish red (5 YR 5/6) with very fine sand blocky dry, stiff.
				2-3': Sand. Yellowish red (5 YR 5/8) medium to fine, silty, trace gravel (2 mm to 20 mm) subrounded.
5	10	5	2-20/0-0.2	0-0.5': Sand. Yellowish red (5 YR 4/6) fine to very fine, well sorted, wet.
				0.5-5': Sand. Reddish brown (5 YR 4/4) very coarse to very fine, very poorly sorted, gravely (2 mm to 3 in.) subangular to subrounded silty, wet.
10	15	5	3-7/0-0.1	0-2.5': Sand. Same as above.
				2.5-5': Silt. Brown (7.5 YR 5/3) medium stiff, wet, clayey plastic where present, with clay inclusions deep red (10 R 5/4) occur as lenses thinly laminated or inclusions, also with small pocket of fine to very fine sand.
15	20	5	1.5-2/0-0	0-4.5': Silt. As above, yellowish red (5 YR 5/6).
				4.5-5': Silt. As above, grading into a silt [brown (7.5 YR 4/3)] with trace of very fine sand.
20	25	5	1.5-2/0-0	0-5': Silt. Brown (7.5 YR 4/3) medium stiff, with clay inclusions, yellowish brown (7.5 YR 4/4) that occur as thinly laminated lenses or in pockets, very fissile, slight effervescence with HCL.
25	30	5	1.5-1.5/0-0.1	0-5': Silt. Same as above, trace fine gravel.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-10

Prepared by Dan Hegrenes and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
30	35	5	1.5-1.5/0-0	0-1.5': Silt. As above.
				1.5-5': Silt. But without the abundance of red clay inclusions, trace very fine sand in matrix, sand lenses or laminae occasional occurrence, medium stiff.
35	40	5	1.5-3.5/0-4.0	0-0.5': Silt. as above, brown (7.5 YR 5/3).
				0.5-5': Sand. Brown (7.5 YR 4/3) very coarse to fine very poorly sorted gravely (2 mm to 30 mm) subrounded wet, loose, no recovery with HCL, from 1.5 to 2.0 clay in matrix bends matrix.
40	45	0		No recovery.
45	50	5	1.5-3/0-0	0-2': Sand. Brown (7.5 YR 5/4) coarse to medium, fairly well sorted, trace fine gravel (2 to 3 mm) subrounded.
				2-5': Sand. Brown (7.5 YR 5/3) very coarse to medium, poorly sorted gravely (2 mm to 20 mm).
50	55	3	3-8/0-0	0-3': Sand. Brown (7.5 YR 5/3) medium to very coarse, gravely (2 mm to 40 mm) subangular coarsens to subrounded downward trace fine sand, loose.
55	60	5	3-5/0-0	0-3.5': Gravel. Fine to coarse (2 mm to 50 mm) dark brown (7.5 YR 3/2) with sand (very coarse to medium) very poorly sorted, loose.
				3.5-5': Sand. Reddish brown (5 YR 4/4) fine to very fine, silty well sorted, no recovery with HCL.
60	65	5	2-3.5/0-0.1	0-1': Sand. As above.
				1-3.5': Sand. Light brown (7.5 YR 6/3) medium to fine, well sorted, trace silt.
				3.5-5': Sand. Reddish brown (5 YR 4/4) very fine, silty, with laminae of medium to fine sand as in 1 foot to 3.5 foot segment.
65	70	5	1.5-3.5/0.0-0.7	0-1': Sand. As above.
				1-4': Sand. Light reddish brown (5 YR 6/3) fine, silty trace medium sand, well sorted.
				4-4.5': Sand. Light reddish brown (5 YR 6/3) coarse to medium, gravely (2 mm to 50 mm) subangular to subrounded, trace fine sand poorly sorted, loose.
				4.5-5': Sand. Light reddish brown (5 YR 5\6/3) coarse to medium, trace fine gravel (2 mm to 15 mm) subrounded, poorly sorted, loose.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-10

Prepared by Dan Hegrenes and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
70	75	5	1.5-3.5/0-1.0	0-0.5': Sand. As above, but no gravel.
				0.5-1.5': Sand. Reddish brown (5 YR 4/4) very fine, silty compact well sorted.
				1.5-2': Sand. Reddish brown (5 YR 4/4) fine trace medium sand trace very fine sand.
				2-4.5': Sand. Reddish brown (5 YR 4/4) fine to very fine, well sorted, trace silt.
				4.5-5': Sand. Reddish brown (5 YR 4/4) medium to fine, trace very fine well sorted.
75	80	5	1.5-2.5/0-0.3	0-5': Sand. Reddish brown (5 YR 4/4) fine to very fine, silty very well sorted.
80	85	5	2.5-4/0-0.6	0-3.5': Sand. As above.
				3.5-4': Silt. Reddish brown (5 YR 4/4) very soft compact.
				4-5': Sand. Reddish brown (5 YR 4/4) interbedded layers of fine to very fine sand and silt.
85	90	5	1.25-3/0.4-2.4	0-5': Sand. Reddish brown (5 YR 4/4) (7.5 YR 4/3) very fine, silty very well sorted.
90	95	5	1.25-4/0.2-0.5	0-3': Sand. Brown (7.5 YR 5/3) medium to fine, trace very fine very well sorted, thin clay inclusion (laminae) at 3.7 feet reddish brown (5 YR 5/3).
				3-5': Silt. Reddish brown (5 YR 4/3) with clay inclusions (occur as laminae up to 4 mm thick) reddish brown (5 YR 5/3), silt medium stiff, clay inclusions medium stiff, moist, non-plastic, no recovery with HCL.
				14:45 Stopped drilling to collect water sample.
				17:30 Collect a water sample from 95 to 90 feet GBGM-10/95.
				18:22 Stopped drilling for day at 95 feet.
95	100	5	1.25-3.5/0-0.2	0-1': Silt. Brown (7.5 YR 4/3) trace very fine sand, compact soft.
				1-5': Sand. Brown (7.5 YR 5/3) fine to very fine, trace silt.
100	105	5	1.25-4.5/0.4-8.5	0-1.5': Silt. Brown (7.5 YR 4/3) as above.
				1.5-3.0': Clay. Brown (7.5 YR 4/3) silty plastic.
				3-3.5': Sand. Brown (7.5 YR 5/3) fine to very fine, silty, well sorted

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-10 Page 4 of 6

Prepared by Dan Hegrenes and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.5-5': Silt. Brown (7.5 YR 4/3) compact soft.
105	110	5	1.25-3.5/1.1-2.3	0-2.5': Sand. Brown (7.5 YR 4/4) fine to very fine, silty well sorted, clayey between 2 and 2.5 ft. 2.5-5': Silt. Brown (7.5 YR 4/4) compact soft clay inclusions, reddish brown (5 YR 4/4) occur as laminae (approximately 3 mm) or lenses (up to 20 mm) fissile, dry, stiff, no recovery with HCL.
110	115	5	1.5-6.5/0.9-2.3	0-5': Sand. Brown (7.5 YR 5/3) medium to fine, trace very fine, well sorted inclusions of silt and clay from above.
115	120	5	1.25-2.5/0.6-0.9	0-5': Sand. As above.
120	125	0		No recovery, catcher failed.
125	130	5	1.5-2.5/-	0-5': Sand. Brown (7.5 YR 4/3) fine to very fine, trace medium trace silt, well sorted.
130	135	5	1.5-4/-	0-3': Sand. As above.
				3-5': Sand. Brown (7.5 YR 4/3) medium to fine, trace coarse sand, trace fine sand fairly well sorted, loose.
135	140	5	1.5-4.5/-	0-0.5': Sand. As above.
				0.5-1.0': Sand and Gravel. Brown (7.5 YR 4/2) very poorly sorted. Sand very coarse to fine gravel very fine (2 mm) to cobbles (approximately 2 in.) subangular to subrounded predominately blackish (phyllite).
				1-2.5': Sand. Brown (7.5 YR 4/3) fine to very fine, silty, trace medium sand with clay inclusions reddish brown (5 YR 4/4) occur as small pocket with no particular orientation.
				2.5-4.5': Sand. Brown (7.5 YR 4/3) fine to very fine, silty, gravely, poorly sorted, gravel (2 mm to 2 in) subangular to subrounded predominately blackish.
				4.5-5': Sand. Brown (7.5 YR 4/3) very coarse to very fine, trace silt, very poorly sorted.
140	145	5	1.5-3/-	0-2': Sand. Brown (7.5 YR 4/3) very coarse to very fine, trace very fine gravel (2 mm to 5 mm) subrounded blackish, with clay inclusions reddish brown (5 YR 4/4) dry fissile very mild recovery with HCL, occur as small (approximately 15 mm) to large
				(2 in) clay balls.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-10

Prepared by Dan Hegrenes and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2-3.5': Sand (7.5 YR 4/3) brown, very coarse to fine, very poorly sorted, trace gravel (2 mm to 1.5 in), with trace clay inclusions, dark reddish brown (5 YR 3/4) occur as large clay balls (1 inch).
				3.5-5': Sand and Gravel. (7.5 YR 4/3). Sand very coarse to very fine, very poorly sorted gravel, fine (2 mm) to cobbles (3 in) with clay inclusions dark reddish brown (5 YR 3/4) laminated internally.
145	150	5	1-2/-	0-1': Sand and Gravel. Same as above without clay inclusions.
				1-2': Gravel. Dark brown (7.5 YR 3/2) sandy (very coarse to very fine, very poorly sorted) gravel fine (2 mm) to cobbles (4 in) subangular to subrounded.
				2-5': Sand. Brown (7.5 YR 5/4) medium to fine, trace coarse sand, trace fine sand, moderately sorted, trace gravel fine (2 mm) to medium (2 in) subangular to subrounded.
150	155	5	2-9/-	0-5': Sand. Brown (7.5 YR 4/3) fine to very fine, silty, fairly well sorted.
155	160	5	1-4/-	0-1': Sand. Brown (7.5 YR 4/3) as above.
				1-3': Silt. Brown (7.5 YR 4/3) compact stiff.
				3-5': Silt. Very dark brown (7.5 YR 2.5/2) gravely (2 mm to 1.5 in) subangular to subrounded, trace sand, dry dense compact very stiff (till).
155	160	5	1-3/-	0-5': Silt. As above.
				11:45 Stop drilling for the day. Will return on 9/22/97 to continue. Will begin by collecting a water sample then.
				13:30 9/22/97 Resume drilling activities at GM-10 by collecting water sample (#2) at 150-155 feet. Drill depth 160 ft.
				17:15 Collected Sample GBGM-10/155.
				18:10 Completed sampling and left site for the day.
				Tuesday 9/23/97 continued drilling.
165	170	5	1.5-9/0-0	0-4.5': Silt. As above, brown (7.5 YR 4/2) gravel (cobbles) up to 2.5 in.
				4.5-5': Sand. Brown (7.5 YR 5/2) clayey trace gravel (2 mm to 1 in).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-10 Page 6 of 6

Prepared by Dan Hegrenes and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
170	175	5	3-11/0-0.6	0-0.5': Sand/Clay. Interbedded, sand medium to fine, poorly sorted clay, hard, dry compact.
				0.5-4.5': Sand. Brown (7.5 YR 5/3) medium, very well sorted abundant quartz trace coarse to very coarse sand, loose.
				4.5-5': Silt. Reddish brown (5 YR 4/3) variegated with brown (7.5 YR 4/2) clayey trace fine gravel (up to 7 mm).
175	180	5	2.5-12/0-0.6	0-4.5': Clay/Silt/Sand. Brown (7.5 YR 4/3) bedded (2 in to 3 in) trace gravel (up to 45 mm) sand is fine to very fine and silty.
				4.5-5': Sand. Fine to very fine, silty with thin beds (up to 30 mm) of silt.
180	185	5	1.5-30/0-0.5	0-5': Sand. Brown (7.5 YR 4/3) fine to very fine, silty with thin beds of silt as above, becoming less frequent, trace gravel (up to 30 mm).
185	190	5	1.5-3.5/0-0.5	0-0.5': Silt. Brown (7.5 YR 4/3) sandy.
				0.5-1': Sand. Brown (7.5 YR 4/3) medium to fine, silty.
				1-5': Clay. Brown (7.5 YR 4/3) and reddish brown (5 YR 4/3) variegated silty.
190	195	5	2-7/0-0.6	0-5': Clay. Brown (7.5 YR 4/3) hard occasional thick laminae of fine to very fine silty sand, trace angular gravel (20 mm).
195	200	5	2-7/0-0	0-5': Clay. As above.
200	205	5	2-25/0-0.7	0-2': Clay. Brown (7.5 YR 4/2) silty trace very fine sand, gravely (2 mm to 2.5 in) angular to rounded (till).
				2-3': Clay. Red (2.5 YR 4/8) to yellowish red (5 YR 4/6) silty trace very fine sand, gravely, angular hard weathered bedrock surface.
				3-5': Fragmented bedrock mixed with drill cutting of till, blackish, angular bedrock, phyllite/slate bluish.

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SAMPLE/CORE LOG

Boring/Well GM-11 Project/No. Ford Kingsford Page 1 of 6

Site Location Kingsford, Michigan
Drilling Started 9/27/97 13:49
Drilling Completed 9/28/97 14:30

Total Depth Drilled 188 feet
Hole Diameter 6 inches
Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"
Sampling Interval Continuous

Land-Surface Elev. 1067.84 feet [X] Surveyed [ ] Estimated
Datum Mean Sea Level

Drilling Fluid Used Water
Drilling Method Rotasonic

Drilling Contractor Boart Longyear
Driller Mike
Helper Gabe

Prepared By Ted Powell/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/PID	
0	5	5	3.5-12/0-0.7	0-2': Silt Loam. "A Horizon", loose to moist, abundant roots, loose.
				2-3': Sand. Very fine, silty, red brown (5 YR 5/4) some roots, moist, loose.
				3-3.5': Silt. With very fine sand, medium dense, slightly moist, trace roots, red brown (5 YR 4/4).
				3.5-5': Sand. Very fine to fine, some coarse, loose, dry, red brown (5 YR 5/4). At 4 to 5 feet sand contains some gravel, .5 to1 inch diameter, subrounded to subangular.
5	10	5	3.5-4.5/0-0.2	0-1': Sand and Gravel. Sand very fine to coarse, loose poorly sorted, gravel 1/8-1.5 inch, subrounded to subangular, red (5 YR 4/6).
				1-3.5': Sand. Very fine to coarse, some silt, poorly sorted, loose, very moist to wet, trace gravel, 1/8 to 1/4 inch, subrounded, yellow red (2.5 YR 4/6), occasional silty sandy clay nodules approximately 1 inch diameter sand fine to nonplastic, dark red (2.5 YR 5/6).
				3.5-5': Sand and Gravel. Sand fine to coarse, trace silty, gravel 1/8 to1.5 inch, subrounded, very poorly sorted, loose, saturated, red brown (5 YR 4/4).
10	15	5	4-11/0.3-1.2	0-2': Sand and Gravel. As above (gravel to 3 inch, rounded).
				2-2.5': Clay. Some silt, wet, soft, moderate plastic to plastic, red brown (5 YR 4/4), 1 inch clay seam at top of section, silty sandy clay, soft, slightly plastic, sand fine to coarse, red (2.5 YR 4/6).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-11 Page 2 of 6

Prepared By Ted Powell/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/PID	Sample/Core Description
				2.5-4': Sand and Gravel. Sand very fine to coarse, trace silt, gravel 1/8 to 1 inch, subrounded to subangular, loose, red brown (5YR4/4).
				4-5': Sand. Very fine to fine, some silt, medium dense, moderately well sorted, red brown (5 YR 4/4) saturated.
15	20	2.5	3-5/0	0-2.5': Sand. Very fine to medium, some coarse, some small gravel, 1/8 to 1/4 inch subrounded to subangular, medium dense, moderately sorted, trace sandy silt nodules, approximately 1/2 inch diameter, trace clay, soft.
20	25	5	3-11/0-0.1	0-3': Clayey Silt. Trace fine sand, trace small gravel, 1/8 to 1/4 inch, subrounded, soft, saturated, slight to moderate plastic, red brown (5 YR 4/4).
				3-4.5': Medium to Coarse Sand. Some medium to fine, trace silt, loose, moderate sorted, red brown (5 YR 4/4). At 3.5 ft a 2 inch silt seam, trace very fine and medium sand, soft to medium stiff, trace clay.
				4.5-5': Gravel. Some sand, sand medium to coarse, gravel 1/8 to 1.5 inch, rounded to subangular, felsic and mafic, dark red brown (5 YR 3/3), poorly sorted.
25	30	5	10-90/0-0.2	0-5': Gravel. Trace very fine to coarse sand, trace silt, gravel, 1/8 to1 inch, subrounded to angular, moderate to moderately well sorted, loose, felsic to mafic composition.
30	35	5	30-70/.2-1.1	0-3.5': Gravel. As above.
				3.5-4': Clay. Trace silt, very hard, nonplastic, red brown (3.5 YR 4/4) clay is bedded along occasional very fine (<1 mm) silt seams, and along beds.
				4-5': Silt. Red brown (5 YR 4/3) with very fine sand, trace medium and coarse sand, trace gravel 1/8 to 3/4 inch, subrounded to angular, medium stiff, several thin (1/4 inch) clay seams at 4.5 feet, clay red brown (3.5 YR 4/4) soft, moderate plastic.
				Collect water grab sample GBGM-11/35. Resume drilling.
35	40	5	4-7/.4-.9	0-5': Silt. Trace very fine sand, trace clay, trace gravel 1/8 to 3/4 inch, subangular to round, soft to medium stiff, ocasional small zones (up to 1 inch) of sandy silt, sand very fine to coarse, red

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-11 Page 3 of 6

Prepared By Ted Powell/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/PID	Sample/Core Description
				(5 YR 4/3) , occasional clay inclusions (approximately 1/2 inch) soft to medium stiff, fissile-blocky, non to slightly plastic, red brown (2.5YR 4/4).
40	45	5	4-9/.9-1.3	0.5': Silt. As above, with clay, silty nonplastic zone at 1' approximately 6 inch thick.
45	50	5	4-7/.4-.5	0-3.5": Silt. Trace to some very fine sand, soft, trace clay well sorted/homogenous, red brown (5 YR 4/3) several small zones (2 to 3 inch) of clay, some silt, medium stiff, slight fissile, clay ports along very fine bed of silt. Clay red brown (2.5 YR 4/4).
				3.5-4': Sandy Silt. Sand very fine to fine, soft, red brown (5 YR 4/3).
				4-5': Silt. As from 0-3.5' above.
50	55	5	4-12/.4-1.1	0-2.5': Silt with clay zones as above.
				2.5-3': Silty very fine sand, trace clay, loose to medium dense, moderately well sorted, soupy, red brown (5 YR 4/3).
				3-5': Silty Very Fine Sand. Well sorted, medium dense, trace fine sand, color as above.
55	60	5	4-8.5/.6-1.2	0-1.5 Silty Very Fine Sand. As above, red brown (5 YR 4/4).
				1.5-5 Silt. With very fine sand, soft, trace clay inclusion/lenses, approximately 1/2 inch thick, clay is soft medium stiff, trace silt, slightly plastic, red brown (5 YR 4/3).
60	65	5	4-8.5/.8-1.4	0-2': Silty Very Fine Sand. Medium dense, well sorted.
				2-4.5': Silt. With very fine sand, soft, red brown (5 YR 4/3) occasional clay inclusions 1/2 to 3/4 inch thick, platy, medium stiff, slight plastic, slight reaction to HCL.
				4.5-5': Silty Very Fine Sand. As above.
65	70	5	3.5-4.5/.3-.9	0-.5': Silty Very Fine Sand. Trace clay, medium dense, moderately well sorted, red brown (5 YR 4/4).
				.5-5': Silt. With very fine sand, very sandy in part, trace fine sand, trace clay, soft to medium stiff, occasional clay inclusions .5 to 1 inch thick, fissile, medium stiff to stiff, non to slightly plastic.
70	75	5	3.5-4.5/.3-1.1	0-5': Silt. Trace very fine sand, trace clay, soft to medium stiff, from 3.5-5' silt trace clay, homogenous, brown (7.5 YR 4/4).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-11

Prepared By Ted Powell/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/PID	Sample/Core Description
				clay inclusions at 0-3.5', medium stiff to stiff, slight to nonplastic, red brown (2.5 YR 4/4) slightly reactive to HCL.
75	80	5	3-3.5/0-1.0	0-5': Silt with Clay, to clayee silt, soft to medium stiff, moderately plastic where clayey, brown (7.5 YR 4/3). At 2.5 ft and 3.5 ft clay inclusions 1-2" thick, stiff, fissile, non-plastic dark red brown (2.5 YR 3/4). Effervescent in HCL. At 2.5 feet, trace gravel, 3/4" subangular.
80	85	5	3-4/.4-1	0-5': Silt. With clay at top of section grading to trace clay at bottom, medium stiff, moderate plastic where clayee. At 2.5 feet a 2" sand seam, very fine, some silt, medium dense, occasional clay inclusions, dark red brown (2.5 YR 3/4), platy non to slightly plastic, effervescent.
85	90	5	3/0-.6	0-5': Silt. Variable clay, soft to moderate stiff, with very fine sand in part, moderately plastic where silty, brown (7.5 YR 4/4) two clay lenses (1' and 2.5') 1 and 2" thick, very stiff to platy, slightly effervescent, non to slightly plastic, dark red brown (2.5 YR 3/4).
90	95	5	2.5-3.5/0.3-.7	0-5': Silt. As above, clay inclusions/seams at .1', 3' and 4.5 ft, 1/4" to 3" thick, clay inclusions as above.
95	100	5	2.5-4/0-.6	0-5': Sandy Silt. Sand very fine to fine, trace clay, variegated color due to silt/sand percentage, silt is dark red grey (5 YR 4/2) sandy silt is brown (7.5 YR 4/4) soft to medium stiff.
100	105	5	2.5-5.5/0-.7	0-4.5': Sandy Silt and Silt. As above with red brown clay inclusions, moderate stiff, slight plastic, red brown (5 YR 4/3).
				4.5-4.7': Silty Clay. Brown (7.5 YR 4/3) very hard, nonplastic, homogenous.
				4.7-5.0': Very Fine Sand. Some silt, trace fine, dense, red brown (5 YR 4/3) moderate well sorted.
105	110	5	3.5-7/.1-.7	0-.5': Very Fine Sand. With silt, color as above, dense.
				.5-5': Very Fine Sand. Trace silt, well sorted, medium dense, red brown (5 YR 5/4) noneffervescent.
110	115	5	3.5-7/.3-1.0	0-5': Very Fine Sand. As above but with trace fine sand.
115	120	5	2.5-4/0-1.1	0-4': Very Fine Sand. Some silt, trace fine, dense, moderately well sorted, red brown (5 YR 5/4).
				4-5': Very Fine Sand and Silt. Some very fine sand, trace clay, medium stiff, red brown (5YR 4/3) very fine sand is as above, red brown (2.5 YR 4/4) color varies depending on silt/sand

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-11

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From (feet)	To (feet)	Core Recovery (feet)	OVA/PID	Sample/Core Description
120	125	5	2.5-7/.7-1.7	0-5': Very Fine Sand. Some silt, trace fine, moderate dense, moderate well sorted, red brown (2.5 YR 4/4).
125	130	5	3-6.5/.4-.8	0-2': Very Fine Silty Sand. With gravel at 1.5-2', 1/2"-3", subrounded, dolomite, gabbro and sandstone, sand is medium dense, moderately well sorted.
				2-2.8': Silt. Soft to medium dense, trace clay brown (7.5 YR 5/2).
				2.8-4.5': Sand. Very fine to fine, variable silt, trace coarse, trace gravel, 1/8"-1" subrounded to subangular. Color as above.
				4.5-5': Sand. Fine to medium, trace very fine, trace coarse, trace silt, loose.
130	135	5	4-9/.4-1.2	0-2': Sand. Fine to medium some coarse,variable silt moderate sorting, loose to medium dense, brown (7.5 YR 5/3). Occasional silt inclusions (1-2") trace very fine sand, soft to medium stiff, red brown (5 YR 5/3).
				2-5': Very Fine Sand. Some silt, medium dense, occasional medium dense, 1/4-.5" thick brown (7.5 YR 5/3) at 4.5 feet silt, approximately 2" thick, soft to medium stiff, homogenous, brown (7.5 YR 5/2).
135	140	5	3.5-5/0-.2	0-3.5': Sand. Very fine, trace to small silt, medium dense to dense, trace gravel 1/4", subrounded.
				3.5-3.9': Silt. Dark, red grey (5 YR 4/2) stiff, homogenous, trace clay.
				3.9-5': Silty Very Fine Sand. Trace fine grain mica, soupy to dense.
140	145	5	2.5-3.5/0-0.1	0-.5': Silty Very Fine Sand.
				.5-1': Very Fine Sand and Silt. Sand is medium dense trace silt, well sorted, red brown (5 YR 4/3) silt, brown (7.5 YR 4/2) trace very fine sand, soft to medium stiff.
				1-1.5': Silt. As above.
				1.5-3': Silty Very Fine Sand. Medium dense, moderately well sorted, red brown (5 YR 4/3).
				3-5': Silt. Some very fine sand, trace clay, soft to moderate stiff, brown (7.5 YR 4/3).
145	150	5	2.5-8.5/0-0.4	0-2': Silt. Occasional inclusions of very fine sand, medium stiff, trace clay to with clay, with clay is moderate plastic, red brown (5 YR 4/3).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-11

Prepared By Ted Powell/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA	Sample/Core Description
				2-2.5': Very Fine Sandy Silt. Medium stiff, some very fine to fine sand lenses, approximately 1/4" thick, color as above.
				2.5-5': Sand. Very fine, some silt, medium dense, well sorted, red brown (5 YR 4/4), trace small gravel (1/8-1/4") slate - subround to subangular.
150	155	5	3.5-6/0-.5	0-5': Sand. As above.
155	160	5	1.5-7/0	0-5': Sand. Very fine to fine, trace medium, trace coarse, trace silt, moderately sorted, medium dense, trace small gravel, 1/8'1/2" subrounded, red brown (5 YR 5/4).
160	165	5	2.5-7/0-.2	0-2': Sand. As above.
				2-5': Silt. Trace clay, very soft to soft, abundant very fine mica grains, trace sand, red brown (5 YR 4/3).
165	170	5	2.5-9/0-1.1	0-3': Silt. As above, grading to very fine sandy silt from 2.5-3 feet.
				3-5': Sand. Very fine, some silt, some fine to medium mica grains, trace coarse sand (mafics) medium dense moderately sorted, red brown (5 YR 4/3).
170	175	5	6.5-12/0-0.8	0-5': Sand. Very fine to fine, some medium grain, trace silt, medium dense, red brown (5 YR 4/4). At 1' a 3" lense of silt, trace very fine sand, very stiff, brown (7.5 YR 4/4) and has trace small gravel 1/8-1/4", mafices and dolomite, subrounded to subangular.
175	180	5	1.5-4/0-.3	0-5': Sand. Very fine to fine, trace medium and coarse, trace silt dense, moderate sorting, trace small gravel 1/8", subrounded.
180	185	5	3-8/0-.4	0-5': Sand. As above.
185	186.5	1.5	30/.4	0-5': Sand and Gravel. Sand fine to medium, some very fine, trace coarse, trace silt, poorly sorted, brown (7.5 YR 4/3) gravel 1/8"-3" subrounded to subangular, weathered igneous and metamorphic, slates and phyllites, trace BIF.
186.5	188	1.5	45/.1-.4	Michigamme Slate. Very phyllitic in part, subvertical slatey cleavage, hardness 2-2.5 black (1 GLEY 2.5/N) to dark grey (1 GLEY 4/N).

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SAMPLE/CORE LOG

Boring/Well GM-12 Project/No. Ford Kingsford Page 1 of 11

Site Location Kingsford, Michigan
Drilling Started 9/30/97 9:00
Drilling Completed 10/9/97 19:00

Total Depth Drilled 315 feet
Hole Diameter 6 inches
Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in
Sampling Interval Continuous

Land-Surface Elev. 1120.49 feet [X] Surveyed [ ] Estimated
Datum Mean Sea Level

Drilling Fluid Used Water
Drilling Method Rotasonic

Drilling Contractor Boart Longyear
Driller Perry
Helper Gabe

Prepared By Dan Hegrenes and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	1.5-3/0-0.6	0-1': Sand. Strong brown (7.5 YR 4/6) medium, well sorted, dry, loose.
				1-1.3': Sand. Strong brown, medium to fine, silty, loose, dry with black organic-rich sandy debris.
				1.3-2': Sand. Strong brown (7.5 YR 5/6) medium to very fine, silty, trace clay, dry, compact.
				2-2.5': Sand. Strong brown (7.5 YR 5/8) medium, well sorted, loose, dry.
				2.5-5': Sand. Yellow brown (10 YR 5/6) medium, well sorted, dry, loose.
5	10	5	2.5-4.5/0-0.4	0-2.5': Sand. As above.
				2.5-3.5': Sand. Strong brown (7.5 YR 5/6) medium to very fine, silty, gravely (2 mm to 50 mm) subrounded.
				3.5-5': Sand. Brown (7.5 YR 4/4) very coarse to very fine, trace silt, gravely (2 mm to 3 in) subrounded with a white to grey sticky substance, plastic, malleable. At 4.5 feet, bluish grey (2 gley 6/1 5 PB).
10	15	5	4-8/0.1-1.0	0-3.5': Sand. As above.
				3.5-3.7': Sand. Red yellow (7.5 YR 6/6) medium to fine, fairly well sorted, loose, dry.
				3.7-3.8': Sand. As above, but with glass-like substance, bluish black (2 gley 2.5/1 10 B) angular to subangular mixed with sand possibly gabbro.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12

Prepared by Ted Powell and Pat Barnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.8-3.9': Sand. Brown (7.5 YR 5/4) coarse to fine, poorly sorted gravely (2 mm to 1.5 in) subrounded.
				3.9-5': Sand. Light brown (7.5 YR 6/4) fine to very fine, loose well sorted, slightly moist.
15	20	5	5.5-17/0.2-3	0-5': Sand. As above.
20	25	5	20-300/3.9-45	0-2.5': Sand. As above.
				2.5-4': Sand. Light brown (7.5 YR 6/4) medium to fine, trace very fine silty dry.
				4-5': Sand. Brown (7.5 5/4) medium to fine, well sorted, trace silt.
25	30	5	15-2,200/0.2-10.8	0-1': Sand. Strong brown (7.5 YR 5.6) fine to very fine, silty, gravely (2 mm to 20 mm) subrounded, dry.
				1-3.5': Sand. Brown (7.5 YR 4/4) very coarse to very fine, trace silt, gravely (2 mm to 40 mm) subrounded to subangular, very poorly sorted.
				3.5-5': Sand. Light brown (7.5 YR 6/4) fine to very fine, silty, fairly well sorted, dry, loose.
30	35	5	2,000-8,000/2.5-25.5	0-1': Sand. Strong brown (7.5 YR 5/6) fine, to very fine, silty fairly well sorted, dry loose.
				1-3': Sand. Yellowish brown (10 YR 5/8) medium to very fine, trace silt, loose, dry trace gravel (2 mm to 20 mm) subrounded to subangular.
				3-4': Sand. Dark yellowish brown (10 YR 3/6) fine, to very fine, silty, gravely (2 mm to 40 mm) subangular to subrounded, very poorly sorted.
				4-5': Sand. Brown (7.5 YR 5/4) medium to very fine, silty multi-layered, very fine sand with black silt laminae approximately 1 mm.
35	40	5	27.5-12.50/3.0-9.8	0-1': Sand. Brown (7.5 YR 5/4) medium to very fine, gravely (2 mm to 20 mm) subrounded, trace silt very poorly sorted, loose, dry.
				1-4': Sand. brown (7.5 YR 4/4), very coarse to very fine, silty gravely (2 mm to 3 in) angular to subrounded, very poorly sorted, trace clay, red (2.5 YR 4/8) dry, non plastic.
				4-5': Sand. Brown (10 YR 5/3) very coarse to very fine, silty gravely (2 mm to 10 mm) subrounded.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
40	45	5	300-10,000/0-4.7	0-1.5': Sand. Black (5 YR 2.5/1) medium to very fine, silty with silty clay inclusion, dark yellow to brown (10 YR 4/4) trace very fine gravel (4 mm).
				1.5-5': Sand. Very dark brown (7.5 YR 3/1) to brown (7.5 YR 5/2) fine to very fine, silty, trace medium sand, loose to medium dense, trace fine gravel (7 mm) subrounded.
45	50	5	30-150/0-0.4	0-1.5': Sand. Black (1 gley 2.5 1N) medium to very fine, moderately sorted, silty, trace gravel, trace coarse sand.
				1.5-3': Sand. Very dark greyish brown (10 YR 3/2) fine, to very fine, silty, well sorted compact.
				3-5': Sand. Black (1 gley 2.5 N) silty grades into a sandy silt.
50	55	5	5-300/0-1.1	0-1.5': Sand. Very dark greyish brown (10 YR 3/2) very fine, silty, very well sorted.
				1.5-1.8': Sand. Greenish black (GLEY 2.5/1 10 GY) to black (1 GLEY 2.5/N) medium to fine, well sorted, trace fine gravel (approximately 3 mm) subrounded.
				1.8-1.9': Clay. Dark grey (10 YR 4/1) silty, plastic.
				1.9-3.5': Sand. Black (1 GLEY 2.5N) medium to very fine, silty, very poorly sorted, gravely (2 mm to 4 in).
				3.5-5': Sand. Very dark greyish brown (2.5 YR 3/2) medium to very fine, silty, trace coarse sand, trace very fine, gravel (approximately 2 mm to 4 mm).
55	60		30-200/0-1.3	0-0.7': Silt. Black (1 GLEY 2.5/N) sandy (very fine) soupy (watery).
				0.7-1': Silt. Dark brown (7.5 YR 3/3) sandy (very fine) soft.
				1-5': Sand. Very dark grey (7.5 3/1) variegated black (2.5 Y 2.5/1) fine to very fine, silty.
60	65	5	60-130/0-2.2	0-5': Sand. As above, but with silt laminae, soft to medium stiff, very dark grey (7.5 YR 3/1) medium dense, between 3.5 and 4 feet.
65	70	5	4-27/0-0.1	0-5': Silt. Variegated brown (7.5 YR 4/2) and black (1 GLEY 2.5N) soft to medium stiff, black coloring increases downward and is dominant between 4 and 5 feet. Clayey, black areas may be sandy silt.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
70	75	5	15-110/0-0.6	0-1.5': Silt. As above.
				1.5-3.5': Sand. Brown and black variegated as above, very fine silty.
				3.5-4': Silt. Brown (7.5 YR 4/2) and black (5 YR 2.5/1) variegated.
				4-5': Sand. Black (5 YR 2.5/1) very fine, silty, compact.
				Collect water sample GBGM-12/65 from 60 to 65 feet.
				End drilling for the day.
				10/1/97 continue drilling.
80	85	5	35-160/0-0.7	0-2.5': Sand. variegated black and brown, as above, silty, very fine.
				2.5-3.5': Silt. Brown and black variegated, trace very fine sand, medium stiff to soft.
				3.5-4': Sand. Brown and black variegated, as above, very fine, silty.
				4-5': Silt, as above.
				NOTE: Clay in tip of core barrel, brown (7.5 YR 4/3) silty to trace silt, plastic, soft.
85	90	5	30-60/0.7-1.8	0-5': Silt. With lenses of very fine sand, silt reddish brown (5 YR 4/4) with black (7.5 YR 2.5/1) mottling, medium stiff, trace very fine sand, trace clay to clayey, where clayey moderately plastic. Sand reddish brown with black mottling, as above, occurs as lenses ranging from 1 inch to 6 inches thick at 1.5, 2.5, 2.9 and 3.3 feet.
90	95	5	30-125/0.2-0.7	0-1': Silt. As above.
				1-3': Sand. Black (1 GLEY 2.5/N) very fine, silty.
				3-4': Sand. As above, but black (1 GLEY 2.5/N) and brown (7.5 YR 4/3) mottled.
				4-5': Silt. Brown (7.5 YR 4/3) medium stiff, trace very fine sand, trace clay.
95	100	5	50-120/0.7-1.8	0-0.5': Clay. Brown (7.5 YR 4/3) silty moderately plastic.
				0.5-5': Silt. Brown (7.5 YR 4/3) trace very fine sand, medium stiff with lenses of very fine sand, very dark grey (7.5 YR 3/1).
100	105	5	110-160/0-1.2	0-1': Silt. Brown (7.5 YR 4/3) with very dark grey (7.5 YR 3/1) mottling in very fine sand lenses.
				1-1.5': Silt. Reddish brown (5 YR 4/3) trace very fine sand, trace clay.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1.5-3.5': Sand. Reddish brown (5 YR 4/3) very fine silty, no mottling or staining.
				3.5-5': Silt. Reddish brown (5 YR 4/3) trace very fine sand, trace clay, medium stiff.
105	110	5	35-110/0-0.2	0-5': Silt with Sand. Lenses and clay inclusions. Silt, reddish brown (5 YR 4/3) trace very fine sand, trace clay. Sand, very fine silty, very well sorted occurs in lenses between 1.0 and 1.3, 1.4 and 1.6 ft, clay inclusions, mottled reddish brown (5 YR 4/4) and blackish (1 GLEY 2.5N), medium stiff.
110	115	5	35-105/0-1.4	0-5': Silt and Sand. Lenses as above. Sand lenses between 1.0 and 1.3 and 4.8 and 4.9 ft. Clay inclusion at 2.3 to 2.5 ft is mottled red and black as above.
115	120	5	35-170/-	0-5': Sand. Brown (7.5 YR 4/3) very fine, trace silt, very well sorted.
120	125	5	80-195/-	0-4': Silt. Brown (7.5 YR 4/3) and dark grey (7.5 4/1) clayey, moderately plastic to plastic, medium stiff, with clay inclusions reddish brown (5 YR 4/3) and black (1 GLEY 2.5N) mottled.
				4-5': Sand. Brown (7.5 YR 4/3) very fine silty.
125	130	5	40-275/-	0-1': Sand. Brown (7.5 YR 4/3) very fine silty trace clay, very well sorted.
				1-1.2': Silt. Brown (7.5 YR 4/2) sandy.
				1.2-5': Sand. Brown (7.5 YR 4/3) very fine, silty.
130	135	5	65-250/-	0-1': Silt (7.5 YR 4/3) brown, trace very fine sand, trace clay inclusions, reddish brown and black, as above.
				1-2': Sand. Brown (7.5 YR 4/3) very fine silty.
				2-5': Silt. Brown (7.5 YR 4/3) medium stiff, homogenous trace clay.
135	140	5	65-350/-	0-5': Silt. Reddish brown (5 YR 4/3) clayey, soft to medium stiff, predominately plastic to plastic, occasional clay inclusions, dark reddish brown (5 YR 4/3) platy to blocky, nonplastic with black (1 GLEY 2.5N) blocky inclusions that are soft.
140	145	5	170-10,000/-	0-5': Silt. As above, but vesicular (gas bubbles).
145	150	5	2,200->10,000/-	0-5': Silt. As above, but medium stiff and very fine inclusions.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12 Page 6 of 11

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
150	155	5	2,500->10,000/-	0-5': Silt. As above.
155	160	5	200->10,000/-	0-5': Silt. As above, but vesicles decreases in occurrence with depth as does clay content.
160	165	5	900-5,000/-	0-5': Silt. Brown (7.5 YR 4/3) as above with only one product of vesicles at 1 foot, clay inclusions, dark reddish brown (5 YR 3/4) fissile at 3 to 3.5 feet.
165	170	5	375-2,000/-	0-3': Silt. As above.
				3-5': Silt. Brown (7.5 YR 4/3) clayey with occasional pockets of vesicles medium stiff, moderately plastic.
170	175	5	100-1,100/-	0-1.5': Silt. As above, but no vesicles.
				1.5-3.5': Silt. Brown (7.5 YR 4/3) medium stiff to stiff, nonplastic.
				3.5-5': Silt. Reddish brown (5 YR 4/3) very hard, trace gravel (angular 15 mm) trace clay, blocky. Several horizontal and vertical fractures, silt breaks along fractures, very thin (<1 mm) bed of clay (soft to platy) partially filling fractures.
175	180	5	250-1,500/-	0-5': Silt. Reddish brown (5 YR 4/3) medium stiff to stiff, clayey moderately plastic, plasticity decreases downward.
180	185	5	25-1,500/-	0-5': Silt. As above.
185	190	5	400-1,000/-	0-5': Silt. As above.
190	195	5	300-1,100/-	0-5': Silt. As above.
				End drilling for the day at 195 feet.
				10/6/97 12:30 resume drilling.
195	200	5	130-625/6.4-0.7	0-5': Silt. Reddish brown (5 YR 4/3) medium stiff, clayey moderately plastic.
200	205	5	250-350/0.1-1.2	0-5': Silt. As above.
205	210	5	700-3,200/0.3-1.6	0-4': Silt. With a clay inclusion, reddish brown (5 YR 4/4) at 3.5 feet.
				4-5': Silt. Brown (7.5 YR 4/3) with sand, fine to very fine, silty, inclusions to laminae brown (7.5 YR 4/2), silt stiff to very stiff.
210	215	5	3,000-7,000/1.1-2.4	0-0.5': Silt. With sand inclusions, as above.
				0.5-1.5': Sand. Dark grey (10 YR 4/1) fine to very fine, trace silt to silty fairly well sorted, compact in places.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12 Page 7 of 11

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1.5-3': Silt. Brown (7.5 YR 4/3) medium stiff.
				3-4.5': Sand. Black (1 GLEY 2.5N) coarse to very fine, gravely, trace very fine sand, gravel is 2 mm to 50 mm, subrounded color ranges from black (pyritic) to red.
				4.5-5': Silt, reddish brown (5 YR 5/3) medium stiff, clayey.
215	220	5	250-900/0.3-0.5	0-1': Gravel/Sand/Clay. Very dark greyish brown (10 YR 3/2) very poorly sorted, loose. Gravel 2 mm to 60 mm subangular to subrounded. Sand, very coarse to very fine, silty.
				1-1.5': Sand. Very dark grey (10 YR 3/1) very coarse to fine, very poorly sorted, trace very fine gravely, subangular to subrounded (2 mm to 30 mm), some silt (nodules).
				1.5-2': Sand. Very dark grey (10 YR 3/1) medium to fine trace coarse sand, trace very fine sand/silt fairly well sorted, loose.
				2-5': Gravel. Black (1 GLEY 2.5/N) to black (2.5 Y 2.5/1) lightens downward, very poorly sorted (2 mm to 3 in) angular to round, sandy, very coarse to medium, trace fine sand to silt, silt and clay content increase between 3 and 5 feet, loose.
220	225	5	500-1,800/0.3-1.2	0-0.5': Gravel. As above.
				0.5-1': Sand very dark grey (10 YR 3/1) coarse to medium, trace very coarse, trace fine to very fine, gravely (2 mm to 60 mm) subanuglar to subrounded.
				1-5': Gravel. Black (2.5 Y 2.5/1) and (1 GLEY 2.5N) darkens downward, very poorly sorted (2 mm to 3 in) angular to subrounded trace sand/silt.
225	230	5	1,300-4,500/0.1-1.2	0-5': Gravel. As above, but size of gravel increases to 4 in at 2.5 feet.
230	235	5	2,200-3,800/0.4-200	0-2.5': Gravel. Very dark grey (2.5 Y 3/1) very poorly sorted (2 mm to >4 in) subangular to subrounded, sand, very coarse to very fine.
				2.5-5': Gravel/Sand/Clay. Very dark grey (2.5 Y 3/1) very poorly sorted, mildly cohesive, gravel (2 mm to > 4 in), sand, very coarse to very fine.
				Rain and thunder, halt drilling to collect water sample between 225 and 230 feet.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				17:40 still raining, cease operations for the day. No water sample collected.
				10/7/97 Will collect water sample this morning between 225 and 230 feet.
				Collected water sample GBGM-12/230.
				Unable to advance or remove casing. End of drilling.
				Casing free in hole trip in with 20 foot core barrel.
				6" casing installed to 235 ft bls.
235	240	5	300-2,100/-	0-1': Sand and Gravel. Very poorly sorted, loose to medium dense, sand medium to very coarse, some fine and very fine, trace silt, gravel, subround to subangular, 1/8" to 1". Dark grey (5 YR 4/1).
				1-4': Sand with gravel, very poorly sorted, loose, sand medium to very fine with fine some very fine, some silt, gravel subround to subangular, 1/8" to 3" very dark grey (7.5 YR 3/1).
				4-5': Gravel. With sand, poorly sorted, gravel 1/8 to 1/4" subrounded to subangular, predominately mafics, sand coarse to very coarse with fine, trace very fine, and silt, color as above.
240	245	5	300-2,100/-	0-1': Gravel. With sand as above.
				1-5': Gravel. Loose, poorly sorted 1/8" to 2/5" subround to angular, some coarse to very coarse sand, trace fine sand, trace silt very dark grey (5 YR 3/1).
245	250	5	100-250	0-1.5': Gravel. Moderately sorted, highly fractured, 1/4" to 4" subround to anglar, some very coarse sand, trace fine and medium, loose very dark grey (5 YR 3/1).
				1.5-3.5': Sand. Very fine to fine, trace very coarse sand, trace 1/8 to 1/4" gravel. At 2.5 feet a 2" gravel lense 1/8 to 1/4" subangular, with medium to very coarse sand, trace silt. From 2 to 3.5 feet several large to medium gravel 1/2" to 3" subround to subangular, sand ranges in color from red brown (5 YR 4/3) to dark red brown (5 YR 2.5/2).
				3.5-5': Sand. With gravel, sand medium to very coarse, some fine trace very fine, gravel 1/8 to 2" subrounded to angular, very poorly sorted, dark red brown (5 YR 3/2).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12 Page 9 of 11

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
250	255	5	60-325/-	0-1': Gravel. With sand, poorly sorted, color as above, gravel 1/8 to 1.5", sand coarse to very coarse, some medium trace very fine to fine, loose.
				1-1.5': Gravel 1/8 to 1.5" subround to subangluar, predominately mafics, some coarse and very coarse sand, trace fine and medium sand, loose, color as above.
				1.5-4.5': Gravel with sand, gravel 1/8 to 3" slates and mafics, subrounded to subangular, sand is coarse to very coarse, some medium and fine, trace very fine, very poorly sorted, loose, very dark grey (5 YR 3/1).
				4.5-5': Likely Till. (diamict) Gravely with silty, sandy clay matrix, very stiff, nonplastic, gravel ranges from 1/8 to 2" in diameter, sand medium to very coarse, granular material subrounded to subangular, dark red brown (5 YR 3/2).
255	260	5	60-150/0	0-5': Gravel, some sand, very poorly sorted, very dark grey brown (10 YR 3/2), gravel 1/8 to 2 inch subrounded to subangular, loose, sand coarse to very coarse, trace very fine to medium, trace silty modules, 1/2 to 3/4 inch soft to medium stiff, nonplastic.
260	265	5	60-1,000/0	0-5': Gravel. As above but dark brown (7.5 YR 3/2).
265	270	5	325-800/0	0-.5': Sand and gravel, sand coarse to very coarse, some medium trace very fine and fine, gravel 1/8 to 1", subrounded to subangular, very poorly sorted, loose, trace silt, brown (7.5 YR 4/2).
				.5-2.5': Sand. Some gravel, poorly sorted, color as above, sand medium to very coarse, trace very fine to fine, trace silt, loose, very poorly sorted, gravel 1/8" to 3/4" subrounded to subangular, abundant slate and phyllites.
				2,5-2.7': Sandy Silt. Trace clay, sand fine to coarse, trace very coarse, medium stiff to stiff, brown (7.5 YR 4/2).
				2.7-3.2': Gravel. With very coarse sand, some coarse, trace fine and medium gravel 1/8 to 3/4", loose, black (1 GLEY 2.5N).
				3.2-5': Gravel with Sand. Very poorly sorted, gravel 1/8 to 3.5", predominately 1/4", subrounded to subangular, sand fine to very coarse, trace very fine, trace silt, loose, brown (7.5 YR 4/2).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12 Page 10 of 11

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
270	275	5	55-550/0-0.1	0-5': Gravel and Sand. Loose, very poorly sorted, gravel 1/8 to 2.5 inch, subrounded to subangular, variable composition, granite, slates, Jacobville sandstone, sand coarse to very coarse with medium, trace fine, trace silt, dark grey brown (10 YR 4/2).
275	280	5	45-100/0	0-2': Gravel, some sand, dark grey (2.5 Y 4/1) gravel 1/8 to 2 inch, subround to subangular, sand medium to very coarse, trace very fine to fine, trace silt, very poorly sorted, loose.
				2-4': Gravel with Sand. Very poorly sorted, color as above, gravel 1/8 to 2 inch, subrounded to subangular, sand, coarse to very coarse, some medium, trace very fine to fine, loose.
				4-5': Sand with Gravel. Sand, medium to very coarse, some fine and very fine, trace silt, very poorly sorted, loose, grey brown (10 YR 5/2).
280	285	5	3-25/2000	0-2': Sand some Gravel. Sand medium, some coarse and fine, trace very coarse, trace silt, moderate to poor sorting, loose, gravel 1/8 to 3/4" subrounded to subangular, grey brown (10 YR 5/2).
				2-3': Gravel with Sand. Very poorly sorted, loose, gravel predominately 1/8 to 1/4 inch, trace gravel up to 2 inch, subrounded to subangular, sand coarse to very coarse, some medium, trace very fine to fine, color as above.
				3-5': Sand. Some gravel, sand varies from very fine to fine, some silt, red brown (5 YR 5/4), some coarse, trace very coarse, trace silt, medium dense, brown (7.5 YR 4/3) gravel is 1/4 to 3" subround to subangular.
285	290	5	3.25-20/0	0-1': Sand. Some gravel as above.
				1-5': Gravel with Sand. Very poorly sorted, loose to medium dense, gravel 1/8 to 3.5 inch, subrounded to subangular, sand medium to very coarse, some very fine to fine, trace silt, loose. At 1.5 feet a 4 inch lens of large gravel 3-4" predominately slate, abundant sulfides, black interstial material, sandy silt some clay appears very weathered.
290	295	5	12-70/0	Gravel. With sand medium to very coarse, very poorly sorted, gravel 1/8 to >4", subrounded to subangular, some fine sand, trace silt, silt and sand content are variable through the section, color

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-12 Page 11 of 11

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				ranges from greenish-black to black (1 GLEY 2.5/1) to red brown (5 YR 5/3) abundant slate and weathered slate with sulfide mineralization.
295	300	5		Collect 5 foot splitspoon with acetate liner for microbial analysis. (GM-12/300) core appears to be comprised of gravel and sand as above.
300	305	4	25-110/0	0-1.5': Sand and Gravel. Very poorly sorted, loose, sand medium to very coarse, some fine and very fine grey (10 YR 5/1) gravel 1/8 to 3.5 inch subrounded to subangular, variable composition (metamorphics, dolomite and slate).
				1.5-4': Weathered Michigamme Slate. Bluish grey (GLEY 2 6/1/10B). Hard - very stiff, remnant slaty cleavage present - vertical to subvertical.
305	315	6.5	10-60/0	0-2': Weathered Slate. As above.
				2-4': Michigan Slate. Hardness of 2. Dark bluish grey (GLEY 2 3/1/10B), trace sulfide mineralization, subvertical slaty cleavage. Actual inferred depth form drilling is 307 to 309 ft bls. Inferred top of bedrock is 307 ft bls.
				4-6': Weathered Slate. As above.
				6-6.5': Michigamme Slate. Color as above, hardness 2.5-3 subvertical cleavage no visible sulfide mininlization.
				Inferred depth is 307 for competent bedrock.
				Total depth drilled is 315 ft bls.

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SAMPLE/CORE LOG

Boring/Well GM-13 Project/No. Ford Kingsford Page 1 of 9

Site Location Kingsford, Michigan Drilling Started 9/17/97 10:35 Drilling Completed 9/25/97 13:25

Total Depth Drilled 343 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval 10 feet

Land-Surface Elev. 1116.10 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water to wash down casing Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Gabe

Prepared By Ted Powell and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	3.5-20/.4-1.8	0-.5': Sand. Dark brown (5 YR 4/2) fine to medium grained, poor sorting, very silty, organic, roots, moist.
				.5-3': Sand. Yellowish red (5 YR 4/5) very fine grained, very silty, well sorted, moist to wet.
				3-4': Sand. Yellowish red (5 YR 4/5) fine grained with some coarse sand, trace fine to coarse gravel, moderate sorting, moist.
				4-5': Sand. Dark yellow brown (10 YR 4/6) fine to medium grained, poorly to moderate sorting, trace fine to coarse gravel, loose, moist.
5	10	5	3.5-8/0-.2	Sand. Strong brown (7.5 YR 5/6) medium to coarse grained, moderate sorted, some fine to coarse gravel subangular to subrounded, pebbles to 2 inch diameter, loose, moist to dry.
10	15	5	2.5-9.5/0-.4	Sand. Strong brown (7.5 YR 5/6) coarse to very coarse, moderate sorting, abundant gravel fine to coarse, subangular to subrounded, trace pebble to 2 inch diameter, loose, moist.
15	20	5	3-4/0-.1	Sand. As above with cobbles to 1 to 3 inch subrounded to subangular, very gravely.
				4.5-5': Loose, moist, poorly sorted.
20	25	5	3.5-10/0-.6	0-3.5': Sand/Gravel. Dark yellow brown (10 YR 4/6) coarse to very coarse sand, fine to coarse gravel, subangular to subrounded, pebbles and cobbles to 2 inch diameter, very poorly sorted, loose, moist.
				3.5-5': Sand. Strong brown (7.5 YR 9/6) very fine to fine grained, trace silt, well sorted, loose, moist to dry.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13

Prepared by Ted Powell and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
25	32	7	3.5-17/1.5-3.2	Sand. Strong brown, as above.
32	35	3	3.5-6/1-6.6	Sand. Light brown (7.5 YR 6/4) very fine to fine grained, some silt, well sorted, loose, moist to very moist.
35	40	5	4-5/0-.8	0-4': Sand. As above.
				4-5': Sand. Strong brown (7.5 YR 4/6) very fine grained, some silt, well sorted, loose, moist to very moist, wet.
40	45	5	30-85/0-6.6	Sand. Very fine to fine, some silt, well sorted, medium dense, very moist, brown (7.5 YR 5/4).
45	50	5	2.5/0	0-4': Sand. Very fine with silt, trace fine, medium dense to dense, well sorted, brown (7.5 YR 5/7).
				4-4.5': Sand. Very fine to fine, with medium and coarse, some silt, moderate sorting, color as above.
				4.5-5': Sand. Very fine, silty, some fine moderate well sorted, dense to medium dense, brown (7.5 YR 5/4).
50	55	5	2.5-3/0	0-.3': Clay. Some silt, soft, plastic, dark brown (7.5 YR 3/2).
				.3-3.5': Sand. Silty, dense, very fine grained, some fine trace medium, brown (7.5 YR 5/4) moderate well sorted.
				3.5-5': Silt. Very fine sand, trace fine, brown (7.5 YR 5/4) medium dense, moderate well sorted.
55	60	5	2.5/0	Sand. Very fine with silt, trace fine, well sorted, medium dense, brown (7.5 YR 4/4).
60	65	5	2.5-4/0-0.5	Sand. As above, at 1 foot there is a 2 inch silt lense, silt with very fine sand, dense to medium dense, brown (7.5 YR 4/4).
65	70	5	2.5/0	0-2': Sand. Very fine silty, medium dense to dense, moderate well sorted brown (7.5 YR 4/4).
				2-5': Silt. Some very fine sand, trace clay. At 2.5 and 3 feet, 2 inch clay seams, medium stiff, non to slight plastic, red brown (2.5 YR 4/4).
70	75	5	2.5/0	Silt, soft to medium stiff, trace very fine sand, trace clay, moderate well sorted, brown (7.5 YR 4/3). Clay seams (1-2 inch) interspersed throughout, soft, fissile, non to slightly plastic, red brown (5 YR 4/4).
75	80	5	3.5-30/0	Silt. Some clay grading to silty clay in part, dark red brown (5 YR 4/2) soft to medium stiff, moderately plastic in clayey zones, slight plastic in silt, clay inclusions, nonplastic to fissile, red brown (2.5 YR 4/4).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13

Prepared by Ted Powell and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
80	85	5	5-40/0-2	Silt. With red brown clay, as above.
85	90	5	4-70/9.7-12.4	Silt. Some very fine sand, trace clay, medium stiff, brown (7.5 YR 4/3) at 3.5 to 5 feet clay inclusions red (2.5 YR 4/6) fissile, soft to moderate stiff, slight plastic, silt has trace coarse sand and small gravel, subrounded.
90	95	5	110-500/8.3-10.2	0-1': Silt with Clay. Trace very fine sand, medium stiff, brown (7.5 YR 4/3).
				1-4.5': Clay and Silt. Fine lamination 1/16 to 3/4 inches thick, clay is hard to nonplastic, red brown (5 YR 4/3) silt is medium stiff, trace to some very fine sand, red grey (5 YR 5/2).
				4.5-5': Sand. Very fine with silt, medium dense brown (7.5 YR 5/3). Occasional thin (1/2 inch) silt seams, silt medium stiff with very fine sand, color as above.
95	100	5	300-5,000/0	Sand. fine with very fine, some medium, trace silt, medium dense, moderately well sorted, red brown (7.5 YR 5/4).
100	105	5	500-10,000/0	Sand. As above, grading to medium, some coarse and fine, trace silt in bottom of sample.
105	110	3	150-1,750/0	Sand. Fine to medium, some silt, trace coarse, loose to medium dense, moderate well sorted, red brown (5 YR 5/4).
110	115	3	1,000-1,700/0	Sand. As above.
115	125	0		No recovery.
125	130	5	2,000-7,000/0	0-2': Sand. Very fine to fine with silt, trace coarse, dense moderate well sorted, red grey (5 YR 5/2).
				2-3.5': Sand. Fine to coarse, some very fine, some silt, medium dense dark bluish grey (GLEY 2 4/10B) poorly sorted, trace small gravel 1/16 to 1/2 inch, subrounded to subangular.
				3.5-4.5': Sand. Very fine to fine, medium dense, moderate well sorted, at 4' a thin (1/4 inch) seam of silty clay, soft, moderate plastic, weak red (2.5 YR 5/2).
130	135	5	2,000-8,000/0	Sand. Fine to very fine, some silt, medium dense, moderate well sorted, red grey (2.5 YR 5/1) at 4.5 feet a 3/4 inch silt seam, soft.
135	140	5	2,000-10,000/0	Sand. Fine with very fine and silt, trace medium, moderate well sorted, medium dense brown (7.5 YR 4/4) at 0.5 feet a 2 inch lense of red brown silt with very fine to fine sand and black clay layers

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13 Page 4 of 9

Prepared by Ted Powell and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				approximately 1/16 to 1/8 inch thick, soft and plastic, slightly platy.
140	145	5	500/2,000/0	0-4': Sand. Fine, some very fine, trace medium, some silt, moderate well sorted, dense.
				4-4.5': Silt. With very fine sand, brown (7.5 YR 5/3) dense, several thin 1/8 inch black clay seams, soft.
				4.5-5': Sand. Fine to medium, some silt, pinkish grey (7.5 YR 6/2) medium dense, moderate well sorted.
145	150	5	200-400/0	0-3': Sand. Very fine to fine, some silt, dense, moderate well sorted.
				3-5': Silt. Trace very fine sand, dark grey (5 YR 4/2) medium stiff, trace clay, black staining.
150	155	5	800-10,000/0	0-2': Silt. As above.
				2-2.3': Clay. Platy, trace silt, non to slight plastic, stiff.
				2.3-4': Silt. Trace very fine sand, trace clay, soft to medium stiff.
				4-5': Sand. Very fine silty, loose to medium dense, red brown (5 YR 5/3) moderate well sorted.
				Set temporary well screen at 140-145 and collect water grab sample GBGM-13/145.
155	160	5	1,000-10,000/0-2.3	0-3': Sand. Very fine with silt, trace fine, moderate well sorted, medium dense, red brown (5 YR 4/4).
				3-5': Silt. Trace very fine sand, trace to some clay, soft, red brown (5 YR 5/3) slight plastic.
160	165	5	1,200-10,000/0.4-2.2	0-2.3': Silt. As above with clay inclusions, clay is soft, platy, slight to moderate plastic, red brown (5 YR 5/3).
				2.4-5': Sand. Very fine, some silt, well sorted, medium dense to dense, color as above.
165	170	5	300-10,000/0.3-7.1	0-1': Sand. As above.
				1-1.5': Sandy Silt. Sand is very fine, some clay soft to medium dense, color as above.
				1.5-2': Clay. Silty, moderate dense, moderate plastic, platy, color as above.
				2-5': Sand. Fine with very fine, trace medium, some silt, moderate well sorted, medium dense, light red brown (5 YR 6/3).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13 Page 5 of 9

Prepared by Ted Powell and Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
170	175	5	500-10,000/0.5-2.3	0-2': Sand. As above.
				2-4': Silt. With very fine, sand, trace clay, soft to loose brown (7.5 YR 5/3).
				4-5': Sand. Very fine some silt, moderate well sorted, medium dense red brown (5 YR 5/3).
175	180	5	4,000-10,000/0-0.7	0-.5': Sand. As above.
				.5-5': Silt. With very fine sand, soft, well sorted, abundant gas bubbles, (vesicles) brown (7.5 YR 4/3).
180	185	5	800-10,000/0-1.6	0-3': Silt. As above.
				3-3.5': Silt. Some clay trace very fine sand, soft minor vesicles, brown (7.5 YR 4/2) slight plastic.
				3.5-3.8': Clay. Trace silt, hard, nonplastic, reacts with HCL, brown (7.5 YR 4/3).
				3.8-5': Silt. Some very fine sand, trace clay, medium stiff, weak HCL reaction, brown (7.5 YR 4/4).
185	190	5	150-1,000/0	Silt. Some clay, some very fine sand, soft, non to slightly plastic depending on clay content, color as above.
190	195	5	200-1,100/0	0-1': Silt. As above.
				1-1.3': Clay. Red brown (2.5 YR 4/4), platy, fissile, soft to medium stiff, slight plastic, strong HCL reaction.
				1.3-2': Silt. Some clay, medium dense, trace very fine sand, red brown (2.5 YR 4/4).
				2-2.5': Clay. Trace silt, hard, fissile nonplastic, red brown (2.5 YR 4/4).
				2.5-5': Silt. Clayey, trace very fine sand, medium stiff, brown (7.5 YR 4/3) slight to moderate plastic, depending on clay content.
195	200	5	3.5-9/0-0.7	Silt. Clayee, soft to medium stiff, trace very fine sand, moderate plastic in clay zones, brown (7.5 YR 4/4) homogenous. At 2 feet a 2 inch thick red brown clay, fissile, medium stiff, slight plastic, effervescent in HCL.
200	205	5	5-12/0-3.2	Silt. As above.
205	210	5	3.5-5.5/0	Silt. As above.
210	215	5	3-3.5/0	0-5': Silt. As above with clay lense at 4-4.1. Fissile, platy, strong reaction with HCL, medium stiff, reddish brown (5 YR 4/4).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13 Page 6 of 9

Prepared by Ted Powell and Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
215	220	5	2.75-5/0	Silt. Clayey, trace very fine sand, homogeneous, medium stiff, slight to medium plastic, brown (5 YR 4/4).
220	225	5	3-7/0	Silt. As above.
225	230	5	3.5-4.5/0	0-4': Silt. As above.
				4-5': Sand. Silty, some very fine, trace medium, moderate well sorted, medium dense, brown (5 YR 4/4).
230	235	5	5-75/0-3.6	0-1': Silty Sand. As above.
				1-5': Sand. Very fine trace fine, some silt, trace (25 ppm in sand) clay, medium dense, moderate well sorted, red brown (5 YR 5/4). Occasional silt lenses .5 to 1 inch thick, silt with very fine sand, dense. At 4 feet a 6 inch silt seam as above, red brown (5 YR 5/4).
235	240	5	.5-1,000/0	Sand. Very fine trace fine and medium, silty, dense, moderately well sorted, light brown (7.5 YR 6/4). A 1.5 inch thick silt lense at 3.5 feet, moderate stiff.
240	245	5	300-2,000/0	0-1': Sand. As above.
				1-1.7': Silt. With very fine sand, medium stiff, brown (7.5 YR 4/4).
				1.7-3.5': Sand. Very fine, with fine, some silt, moderate well sorted, brown (7.5 YR 4/4).
				3.5-5': Silt. Trace very fine sand, stiff, well sorted, brown (7.5 YR 4/4).
245	250	5	90-325/0	Silt. Stiff to very stiff, very well sorted, color as above, very homogenous.
250	255	5	225-1,225/0	0-1': Silt. As above.
				1-2': Silt. With very fine sand, trace fine and medium in very thin lenses (< 1/16 inch thick) very stiff, color as above.
				2-5': Sand. Very fine with fine, some silt, moderate well sorted light brown (7.5 YR 4/4), dense to medium dense, at 4.9 to 5 feet silt, as above.
255	260	5	100-1,000/0-0.2	0-2.5': Sand. Very fine with silt, medium dense to dense, well sorted, brown (7.5 YR 4/4).
				2.5-5': Silt, with very fine sand, trace clay, soft to medium stiff, color as above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13 Page 7 of 9

Prepared by Ted Powell and Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
260	265	5	200-2,500/0-0.9	0-1': Silt. As above.
				1-5': Sand. With silt to silty, dense, moderate well to well sorted, brown (7.5 YR 4/4).
265	270	5	200-2,500/0-0.3	0-.5': Sand. As above.
				.5-1.5': Sand. Medium with fine, some very fine, trace silt, loose to medium dense, some gravel, subangular to angular, 1/2 to 3/4 inch, brown (7.5 YR 4/4).
				1.5-5': Sand. Very fine to fine, with silt, occassional thin lenses of medium sand, 1/2 to 1 inch thick.
270	275	5	450-2,750/0-0.1	0-1.5': Sand. Fine, some medium, some very fine, trace silt, medium dense, moderate well sorted, color as above.
				1.5-1.8': Silt. With very fine sand, soft to medium stiff.
				1.8-5': Sand. Fine to very fine, occasional zone of medium, very silty in part, dense, color as above.
275	280	5	500-1,750/0	Sand. Very fine with fine, some silt, dense well sorted, brown (7.5 YR 4/4). At 2.5 feet a 2 inch lense of silt, very sandy (very fine sand) soft, color as above.
280	285	5	1,500-4,000/0	Sand. Very fine to fine, trace medium, trace clay within laminae <1 mm, very silty in part, medium dense to dense, moderate well sorted, color, as above.
285	290	5	700-8,500/0-0.2	Sand. Very fine, some fine, some silt, well sorted, dense, brown (7.5 YR 4/4).
290	295	5	1,000-5,500/0	0-.5': Sand. As above.
				.5-.8': Silt. Some very fine sand, trace clay, moderate stiff, brown (7.5 YR 4/3).
				.8-5': Sand. Very fine to fine, variable silt, dense, moderate sorting, color as above. At 3.5 feet a 1/2 to 3/4 inch clay seam, stiff, nonplastic, trace silt, dark brown (7.5 YR 3/4). From 3 to 3.5 feet interbedded sand, very fine, some fine, silt and clay, poorly laminated, clay is very silty, nonplastic. Small lenses of fine to medium sand interspersed throughout.
295	300	5	2,500-5,500/0-0.2	Sand. Very fine to fine, trace to some silt, well sorted, medium dense, brown (7.5 YR 4/4).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13

Prepared by Ted Powell and Dan Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
300	305	5	4,000-10,000/0-0.3	Sand. As above.
305	310	5	500-6,000/0-0.2	Sand. As above, trace medium grained.
310	315	5	1,700-6,000/0-0.4	Sand. Very fine to fine, trace to some silt (variable), trace coarse sand, from 0-1 foot trace small gravel 1/8 to 1/4 inch, angular, mafics and quartz, at 1 to 1.5 foot silty very fine sand, very dense, color as above.
315	320	5	1,000-10,000/0-0.1	Sand. Fine with very fine, some silt trace moderate and coarse medium dense, moderate sorting, red brown (5 YR 5/4), trace clay nodules at 4.5 feet (1/2 to 1 inch), very hard red brown (5 YR 5/3).
320	325	5	2,000-10,000/0-0.3	0-4.5': Sand. As above.
				4.5-5': Sand. Very fine and fine, with silt, trace medium dense, red brown (7.5 YR 5/4).
325	330	5	50-1,500/0	0-3': Sand. Silty, very fine, some fine, dense, moderate well sorted, color as above.
				3-4': Silt, sandy with very fine sand, soft, moderate well sorted, color as above.
				4-5': Sand. Very fine, some silt, dense, well sorted, red brown (7.5 YR 5/4).
330	335	5	300-3,000/0	0-4': Sand. As above.
				4-5': Sand and Gravel. Highly weathered, matrix is clayey sandy silt, sand fine to coarse, abundant sulfides, pyrite and chalcopyrite, gravel is comprised of shale and mafices, round to subangular, 1/4 to 3 inch, bluish black, (2 GLEY 5 PB 2.5/1) possible basal till .
335	340	5	10-800/0-1.2	0-5': Gravel/Sand/Clay and Silt. (Basal till), zones of clay matrix, with fine to coarse sand and small gravel 1/8 to 1/2 inch, rounded to subrounded, predominately subangular gravel is comprised of igneous and metamorphics, abundant slate gravel, abundant sulfides, gravel zones at 2.5 to 3 and 4 to 4.5 feet small to medium gravel 1/8 to 3/4 inch subrounded, trace sand and silt, loose, color,

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-13 Page 9 of 9

Prepared by Ted Powell and Dan Hegrenes

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
340	343	3	30-100/0-.9	Bedrock. Michigamme Slate. Heavily chloritized, silicous in part, calcite veins with sulfide mineralization, slatey cleavage appears to be just off vertical, hardness 2.5 to 7, chloritized material color is greyish green (1 GLEY 56 3/2), slate is dark bluish grey (2 GLEY 10 B3/1).
				Total Depth = 343 ft bls

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SAMPLE/CORE LOG

Boring/Well GM-14 (GMSB-9) Project/No. Ford Kingsford Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 9/17/97 12:05 Drilling Completed 9/13/97 14:15

Total Depth Drilled 175 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1115.05 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Gabe

Prepared By Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	2-3.5/0-1.5	0-1': Silt. Dark brown (7.5 YR 3/3), some sand and gravel, rootlets, grass, organics, moist.
				1-5': Sand/Gravel. Strong brown (7.5 YR 4/6) fine to coarse sand, fine to coarse gravel subangular to subrounded, very poorly sorted, pebbles and cobbles to 3 inch diameter, loose, moist.
5	10	5	1.5-3.5/0-1.5	0-4': Sand/Gravel. As above.
				4-5': Sand. Light brown (7.5 YR 6/4) fine to coarse grained sand, some fine gravel, poorly sorted, loose, moist.
10	15	1	1.5/1.5	Sand. As above.
15	20	5	3.0-6.0/0-1.9	0-1': Sand. As above.
				1-3': Sand/Gravel. Brown (7.5 YR 4/4) fine sand, silty with fine to coarse gravel, poor sorting, moist, loose.
				3-4': Sand/Gravel. Brown (7.5 YR 4/4) medium to coarse sand with medium gravel, moderate sorting, loose, moist.
				4-5': Sand/Gravel. Light brown (7.5 YR 6/4) fine grained, well sorted, fine to coarse gravel, poor sorting, trace pebbles, loose, moist.
20	25	5	1.5-6.0/0-1.2	0-2': Sand/Gravel. As above, dark brown (7.5 YR 3/4).
				2-3': Sand/Gravel. Light brown (7.5 Yr 6/4) medium to coarse sand, medium to coarse gravel, very poor sorting, trace pebbles to 2 inch diameter, loose, moist.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-14 (GMSB-9)

Prepared by Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-5': Sand. Brown (7.5 YR 4/4) medium grained, well sorted, abundant medium to coarse gravel subrounded to rounded, loose, moist.
25	30	5	2-18/1.4-2.6	0-4': Sand/Gravel. Dark brown (7.5 YR 3/4) fine sand, trace silt, well sorted with fine to coarse gravel, subangular to subrounded, poorly sorted, trace pebbles, loose, moist.
				4-5': Sand. Brown (7.5 YR 5/4) medium to coarse grain, moderately sorted, some fine to medium gravel, loose, moist.
30	35	3	8-15/1.3-2.8	0-1': Sand. As above.
				1-3': Sand. Reddish brown (5 YR 4/4), fine to medium grained, poor sorting, some fine gravel, very soft, wet.
35	40	5	2.8/0-1.1	0-2.5': Sand. Reddish brown (5 YR 4/4) coarse to medium, gravely poorly sorted, gravel up to 5 mm subrounded.
				2.5-5': Sand. Reddish brown (5 YR 4/4) medium to fine, poorly sorted gravely (2 to 20 mm) subangular to subrouned, soft.
40	45	5	2-15/0-1.6	0-0.5': Sand. Reddish brown (5 YR 4/4) coarse to medium, poorly sorted, trace gravel, subrounded (2 to 40 mm).
				0.5-1.5': Sand. Brown (7.5 YR 5/3) medium to fine, moderate sorted, trace gravel (approximately 30 mm) subrounded.
				1.5-3.5': Sand. Brown (7.5 4/4) very coarse to medium, poorly sorted gravely (2 mm to 3 inches) subrounded.
				3.5-5': Sand. Brown (7.5 YR 5/3) medium to fine, well sorted.
45	50	5	2-25/0-1.3	0-0.5': Gravel. Brown (7.5 YR 4/4) very sandy, coarse to medium, very poorly sorted. Gravel 2 mm to 2 inch, loose.
				0.5-2': Sand. Brown (7.5 YR 4/4) medium to fine, silty gravel, wet (gravel up to 30 mm).
				2-5': Sand. Brown (7.5 YR 4/4) coarse to medium, trace fine sand, poorly sorted gravel (2 mm to 5 inches) subangular to subrounded.
50	55	5	5-15/0.2-1.4	0-2.5': Sand. Brown (7.5 YR 5/3) coarse to medium, trace gravel (2 mm to 20 mm), loose.
				2.5-5': Sand. Brown (7.5 YR 5/3) medium, well sorted, trace coarse sand, loose.
55	60	5	10-40/0.2-0.9	0-3': Sand. Brown (7.5 YR 5/3), medium, well sorted.
				3-3.5': Sand. Brown (7.5 YR 5/3) coarse to medium, gravel (2 mm to 35 mm) subrounded.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-14 (GMSB-9)

Prepared by Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.5-5': Sand. Brown (7.5 YR 5/3) medium to fine, trace gravel, up to 20 mm.
60	65	5	25-90/0.6-1.7	0-4.5': Sand. As above.
				4.5-5': Sand. Reddish brown (5 YR 4/4) fine to very fine silty fairly well sorted.
65	70	5	7-50/0.2-2.1	0-5': Sand. Brown (7.5 YR 5/3) fine to very fine silty, as above.
70	75	5	18-185/0.7-2.4	0-5': As above. Brown (7.5 YR 4/3).
75	80	5	300/0-1.3	0-5': Sand. As above.
80	85	5	30-375/0.6-1.2	0-1': Sand. As above.
				1-2': Sand. Brown (7.5 YR 4/3) medium to fine, well sorted, loose, wet.
				2-5': Sand. Brown (7.5 YR 4/3) fine to very fine, very silty thin bands and varves of silt and clay.
85	90	5	10-200/0.5-1.8	0-1': Sand. Brown (7.5 YR 4/3), as above.
				1-4.5': Silt. Brown (7.5 YR 4/3) with clay inclusions (patches and lenses) color of clay reddish brown (5 YR 4/3) trace fine gravel to coarse sand.
				4.5-5': Sand. Brown (7.5 YR 5/3) medium to very fine, silty, trace black gravel (9 mm).
90	95	5	500-2,000/0.7-2.1	0-4': Sand. As above.
				4-4.5': Sand/Gravel. Sand medium to coarse poorly sorted gravel (2 mm to 2 inches) subrounded, black platy.
				4.5-5': Sand. Same as 0-4 feet.
				14:50 stopped drilling at 95 feet to collect first water sample between 80 and 85 feet.
				18:45 end drilling for day after collected water sample GBGMSB-9/85 end depth 95 feet.
				Saturday 9/13/97 continue drilling GMSB-9, OVA background = 2.5 ppm, OVM background = 0.0 ppm.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-14 (GMSB-9) Page 4 of 5

Prepared by Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
95	100	5	500-2,500/0.0-0.4	0-1': Sand. Brown (7.5 YR 4/4) medium to fine, well sorted, coarsens downward to 1 foot.
				1-3.5': Gravel/Sand. Brown (7.5 YR 4/4) gravel 2 mm to 3 inch, subrounded sand, coarse to medium poorly sorted, loose.
				3.5-5': Sand. Brown (7.5 YR 4/4) medium to very fine, poorly sorted.
100	105	3	500-2,000/0-0.4	0-3': Sand. Brown (7.5 YR 4/4) medium to fine lens of very coarse sand to fine gravel at 2.5 to 2.7 mixed with medium to fine sand, very poorly sorted.
105	110	5	800-2,000/0-0.8	0-1': Sand. Brown (7.5 YR 4/3) coarse to fine, very poorly sorted, loose.
				1-5': Sand. Brown (7.5 YR 4/3) medium, trace fine sand, loose trace gravel.
110	115	2	800-2,000/0-0.8	0-2': Same as above.
115	120	5	40-300/0-0.4	0-1': Sand. Brown (7.5 YR 4/2) fine trace medium sand, trace silt, well sorted.
				1-1.5': Sand/Gravel. Brown (7.5 YR 4/2) sand, fine to coarse gravel (2 mm to 2 inches) subrounded.
				1.5-5': Sand. Brown (7.5 YR 4/3) medium to fine, poorly sorted, gravely (2 mm to 1.5 inches) subrounded.
120	125	5	100-550/0-0.5	0-5': Same as above.
125	130	5	200-1,000/0-0.7	0-5': Sand. Brown (7.5 YR 5/3) medium to fine, poorly sorted, trace fine gravel (2 mm to 20 mm), loose.
130	135	3	1,000/0.7	0-3': Same as above.
135	140	5	500-3,000/0-0.5	0-5': Sand. Same as above.
140	145	5	400-5,000/0-0	0-2': Sand. Brown (7.5 YR 5/3) fine to very fine well sorted, trace silt.
				2-3': Sand. Brown (7.5 YR 5/3) medium to fine, well sorted. 3-5': Sand. Brown (7.5 YR 5/3) fine to very fine, trace silt, well sorted.
145	150	5	250-1,500/0-0.1	0-5': Sand. Brown (7.5 YR 5/3) fine to very fine, silty well sorted.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-14 (GMSB-9)

Prepared by Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
150	155	5	500-1,500/0-0.1	0-5': Sand. As above.
155	160	5	180-400/0-0.2	0-2': Sand. Same as above.
				2-5': Silt and Sand. Alternating layers of silt (approximately 6 m thick) in sand as above. Silt (7.5 YR 5/3) clayey.
160	165	5	200-400/0-0.9	0-2.5': Silt and Sand. As above. Silt becomes predominant and sand layers lessen in thickness to laminae. Clay inclusions (5 YR 3/4) dark reddish brown.
				2.5-5': Silt. Brown (7.5 YR 4/3) clayey (till) trace very fine gravel (2 mm to 10 mm), dry, hard.
165	170	5	80-400/0-0.2	0-5': Silt. Brown (7.5 YR 4/3) dry, very stiff, clay inclusions, dark reddish brown (5 YR 3/3) fissile, occur as thick to thin laminae.
170	175	5	150-600/0-0.4	0-2.5': Silt. As above, at base are cobbles (3 inches) subangular.
				2.5-5': Phyllite weathered, fissile bluish to greenish grey.
				Bedrock at 172.5 ft bls
				Total Depth at 175 ft bls

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SAMPLE/CORE LOG

Boring/Well GM-15 (GMSB-10) Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 9/09/97 09:35 Drilling Completed 9/11/97 10:00

Total Depth Drilled 183 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 to 20 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1127.20 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Jim/Mike

Prepared By Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	3.0/7.1-17	0-1': Silt/Sand. Dark reddish brown (5 YR 3/3), very fine grained sand, roots organic material, grass, dry.
				1-2': Silt. Strong brown, (7.5 YR 5/6), trace rootlets, dry.
				2-3.5': Sand. Yellowish red, (5 YR 4/6) medium to coarse grained, poorly sorted, loose, with some fine gravel, dry.
				3.5-5': Sand. Strong brown (7.5 YR 5/6) medium to coarse grained, poor sorting, abundant fine to coarse gravel, dry.
5	10	5	3.5-4/11-13.5	0-1.5': Sand. As above.
				1.5-5': Sand/Gravel. Strong brown (7.5 YR 4/6) fine to coarse sand, predominantly coarse, fine to coarse gravel and pebbles, very poorly sorted, loose, moist.
10	15	3	3-7/10.2-13.7	0-1': Sand/Gravel. As above.
				1-1.5': Sand. Brown (7.5 YR 5/4) fine grained, well sorted, loose, moist.
				1.5-3': Gravel/Sand. Brown (7.5 YR 4/4) fine to coarse gravel, with pebbles, to 2 inch diameter, fine sand, poor sorting, loose, moist, no acid reaction.
15	20	5	2.5-7/13.1-16.4	0-4.5': Gravel/Pebbles/Sand. As above.
				4.5-5': Sand. Brown (7.5 YR 5/4) very fine grained silty, well sorted, loose, moist to dry.
20	25	5	2.5-12/4.4-28.8	0-1': Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-15 (GMSB-10)

Prepared by Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				1-2': Silt. Light brown (7.5 YR 6/4).
				2-3': Silt. As above, with fine to coarse gravel, loose, very soft,
				3-5': Silt. Light brown (7.5 YR 6/4) loose, very soft, dry to moist.
25	30	5	3-15/18.8-29.4	0-2.5': Slump from above, sand and gravel.
				2.5-5': Silt. Light brown (7.5 YR 6/4) loose, very soft, dry to moist, at 4 to 5 feet trace clay. Reddish brown (5 YR 4/4) in thin bands and lenses .25 inches and less, firm, medium to stiff, moist.
30	35	5	3-15/26-34	0-.5': Silt. As above.
				.5-3': Sand. Light brown (7.5 YR 6/4) very fine to fine grained, silty, well sorted, dry, very soft, some fine gravel, subrounded.
				3-5': Silt. Light brown (7.5 YR 6/4) loose, soft, moist to wet.
35	40	5	15-30/1-52	Sand. Dark yellowish brown (10 YR 3/4) fine to coarse grained, poorly sorted, trace clay and silt with fine to coarse gravel and pebbles to 3 inch diameter, subangular, soft, no acid reaction. Note: added water and installed casing to 35 feet. 35-40 feet may represent slump material.
40	45	3	18-60/5.3-65	Sand. Brown (7.5 YR 4/4) fine to medium grained, moderately sorting, with fine to coarse gravel, predominately black, flat subangular gravel, soft, wet.
45	50	5	3.5-7/8.6-12.2	Sand. Reddish brown (5 YR 5/4) very fine to fine grained, some silt, well sorted, trace fine to coarse gravel, loose, soft, wet.
50	55	5	3.5-5/12-12.5	0-4': Sand. Reddish brown (5 YR 5/4) fine to medium grained, moderate sorting, abundant, fine to coarse gravel, loose, soft, wet.
				4-5': Sand. Reddish brown (5 YR 5/4) very fine to fine grained, well sorted, loose, soft, wet.
				13:00 stop drilling to collect first water sample from borehole at 55 feet.
				17:55 End drilling for day at 55 feet after collecting water sample.
55	60	5	2.5-4/0-0	0-3.5': Sand. Strong brown (7.5 YR 4/6) fine to very fine, silty.
				3.5-5': Sand. Very fine, strong brown (7.5 YR 4/6) silty trace
60	65	5	3.5-5.5/0-0	0-4.5': Sand. Light brown (7.5 YR 6/4) medium to very fine, silty.
				4.5-5': Sand. Light brown (7.5 YR 6/4) fine to very fine, silty.
65	70	5	2.5-5.5/0-0	0-5': Sand. Strong brown (7.5 YR 4/6 - 5/6) fine to very fine,
70	75	5	3.5-5.5/0-0	0-5': Sand. Brown (7.5 YR 4/6) fine to very fine, silty.
75	80	4	2.5-30/0-0	0-4': Sand. Brown (7.5 YR 4/4) very fine, silty.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-15 (GMSB-10)

Prepared by Bruce Evans and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
80	85	5	3-4.5/0-0	0-2.5': Sand. As above, 2 inch thick silt lense between 2.3 and 2.4 ft.
				2.5-4.5': Clay. Dark red grey (5 YR 4/2) silty with blocky reddish clay inclusions, noncohesive, nonplastic, reddish brown (5 YR 4/4). Matrix moderately cohesive, moderate plasticity.
				4.5-5': Silt. Brown (7.5YR 5/4) clayey, trace very fine sand with blocky reddish brown clay inclusions.
85	90	5	2.5-3/0-0	0-5': Silt. Brown (7.5 YR 5/3) with reddish brown clay inclusions, as above occur as laminae to lenses (3 mm to 1.5 cm) to fissile lenses up to 2.5 cm thick. Matrix color grades to strong brown (7.5 YR 4/6), dry crumbly, very dense, very stiff.
90	95	5	3-13/0-0	0-3.5': Clay. As above. OVA 3 to 4.
				3.5-5': Sand. Brown (7.5 YR 5/4) medium to fine, thin very fine to fine gravel lense between 3.6 and 3.7. Subangular to subrounded, sand matrix, loose.
95	100	4	6-9/0-0	0-1': Sand. Reddish brown (5 YR 4/4) very coarse to fine, poorly sorted, trace very fine gravel.
				1-4': Sand. Reddish brown (5 YR 4/3) very coarse to fine, poorly sorted, gravely, Subangular to subrounded (2 mm to 40 mm).
100	105	4	22.5-37.5/0-0	0-1.5': Sand. Strong brown (7.5 YR 4/6) coarse to medium, trace fine to medium gravel (2 mm to 20 mm) subrounded.
				1.5-4': Sand. Brown (7.5 YR 5/4) medium to fine, fairly well sorted, trace fine sand, trace coarse sand, loose.
105	110	4	4-17/--	0-3': Sand. Brown (7.5 YR 5/4) coarse to medium, gravely at 2 to 3 feet (2 mm to 30mm) subrounded, trace nodules of cohesive fine sand bound by silt, loose.
				3-4': Sand. Brown (7.5 YR 5/4) medium to fine, gravely (less than above) loose (2 mm to 30 mm).
110	115	4	27-55/--	0-4': Sand. As above.
115	120	4	3-9/-	0-1': Sand. Brown (7.5 YR 5/3) very coarse to medium, poorly sorted, gravely (2 mm to 20 mm) subangular to subrounded, loose.
				1-4': Sand. Light reddish brown (5 YR 6/4) medium to very fine, trace gravel (2 mm to 20 mm), loose.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-15 (GMSB-10)

Prepared by Ted Powell and Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
120	125	4	17-25/--	0-4': Sand. Brown (7.5 YR 5/4) medium to fine, moderately well sorted, loose. Lens of coarse to medium sand between 0.5 and 1 foot.
125	130	5	3.5-9/--	0-5': Sand. Brown (7.5 YR 5/3) medium to fine, well sorted,
130	135	0		No recovery.
135	140	5	6-250/-	0-2.5': Sand. As above.
				2.5-4.5': Silt. Brown (7.5 YR 4/4) hard, dry, blocky clay inclusions occur as laminae (3 to 4 mm) reddish brown (5 YR 4/4).
				4.5-5': Sand. Brown (7.5 YR 5/4) fine to very fine, silty.
140	145	5	125-270/--	0-1': Sand. As above (7.5 YR 5/3).
				1-5': Silt. Brown (7.5 YR 4/3) very stiff, fissile clay inclusions.
				14:30 instructed drillers to begin set-up to sample 135 to 140 feet.
				19:35 end drilling for the day after collecting water sample from 135 to 140 feet.
				9/11/97 continued at GMSB-10. OVA background = 2 ppm, OVM not working.
145	150	5	100-400/--	0-5': Silt. Very reddish brown (5 YR 4/3), dry, stiff, trace, clay inclusions, as above.
150	155	5	150-300/-	0-5': Silt. As above, reddish brown.
155	160	5	90-220/-	0-5': Silt. As above.
160	165	5	150-250/-	0-5': Silt. As above.
165	170	5	90-250	0-1.5': Sand. Brown (7.5 YR 4/4) fine to very coarse, coarsens downward, well sorted in its gradational sequence.
				1.5-2': Sand/Gravel. Brown (7.5 YR 4/3) very coarse sand to fine gravel, rounded to subangular, loose trace moderately sorted.
				2-5': Silt. Brown (7.5 YR 5/3) clayey, moderately plastic, moderately stiff.
170	175	5	65-100/-	0-5': Silt. As above.
175	180	5	50-600/-	0-4': Silt. OVA = 50 to 225 ppm clayey very low plasticity, moderate stiff.
				4-5': Silt. As above, with large inclusions of slate/phyllite, dark bluish grey (10 B 3/1 to 4/1) highly weathered and gravel (2 mm to 20 mm) subrounded gravel overlies slate inclusions.
180	183			Slate/Phyllite. Dark bluish grey (10B 4/10).
				Bedrock = 180 ft bls
				Total Depth = 183 ft bls

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SAMPLE/CORE LOG

Boring/Well GM-16 Project/No. Ford Kingsford Page 1 of 5

Site Location Kingsford, Michigan
Drilling Started 10/11/97 16:43
Drilling Completed 10/13/97 11:23

Total Depth Drilled 144 feet
Hole Diameter 6 inches
Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in
Sampling Interval Continuous

Land-Surface Elev. 1130.25 feet [X] Surveyed [ ] Estimated
Datum Mean Sea Level

Drilling Fluid Used Water to wash down casing
Drilling Method Rotasonic

Drilling Contractor Boart Longyear
Driller Perry
Helper Jim/Mike

Prepared By Ted Powell and Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	17.5/0.8	0-2': Topsoil. Loose sandy gravel with some silt, moist, loose. Gravel predominantly small with trace coarse. Dark reddish brown (5 YR 3/3). Some rootlets in top 1/2 feet. Grey well rounded subangular, variable composition.
				2-3': Silty Sand. Damp, soft, trace fine gravel, trace well rounded to subrounded variable composition gravel, no HCL reaction.
				3-4': Sand. Medium to fine with some to much silt, moist. Strong brown (7.5 YR 4/6). No HCL reaction.
				4-5': Sand. Fine to medium with some coarse sand. Moderate sorting, loose, moist, trace fine gravel, strong brown (7.5 YR 5/6).
5	10	5	6/1.4	0-2': Sand. Medium to coarse, loose, moist, color as above, no HCL reacton, becomes coarse sand with some fine gravel at base.
				2-4': Sand. Medium, some fine, coarse, some fine gravel, loose moist gravel subangular to well rounded variable composition, no HCL reaction. Reddish yellow (7.5 YR 6/6).
				4-4.5': Sand and Gravel. Sand fine to coarse matrix, some fine gravel, very moist, some coarse gravel, up to 3 inches, loose dark yellowish brown (10 YR 4/4), subrounded to angular, variable composition.
				4.5-5': Sand. Some silt, trace coarse, trace fine gravel, variable composition, subrounded yellowish red (5 YR 4/6) no HCL reaction, moist.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-16

Prepared by Ted Powell and Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
10	15	5	5.5/0-0	0-5': Sand. Silty with trace to some fine angular to subrounded gravel, variable composition, very soft, loose, yellowish red (5 YR 4/6) no HCL reaction.
15	20	5	42/104	0-0.5': Sand. Silty fine, as above.
				.5-1': Sand. Fine to medium, some coarse sand, trace fine grain, subangular to subrounded, loose. Dark yellow brown (10 YR 4/4). No HCL reaction.
				1-2': Sand. Silty with some gravel, some fine to medium sand, subangular to subrounded, medium stiff. No acid reaction, red brown (5 YR 4/4).
				2-5': Sand. Fine, loose, medium dense, pink (7.5 YR 7/4) very well sorted. Clay lense at 4.0, medium stiff to stiff. Weak HCL reaction, reddish brown (2.5 YR 4/4) silt enclosing clay, brown (7.5 YR 5/3) some to much silt. No HCL reaction in sand.
20	25	5	500/188	0-5': Sand. Fine with much silt, as above, very well sorted, lower 2.5 feet, moist to very moist, brown (7.5 YR 5/4).
25	30	5	22/2.1	0-4': Sand. Fine with silt, saturated, loose, brown (7.5 YR 4/4), no HCL reaction, silt content decreasing with depth. 4-5': Sand. Fine, trace to some silt, very well sorted, saturated, brown (7.5 YR 5/4), no HCL reaction.
30	35	5	60/15.6	0-5': Sand. Fine, as above.
35	40	5	60/0	0-3': Sand. Fine, as above, saturated.
				3-5': Silt. Very stiff, saturated, no HCL reaction brown (7.5 YR 4/4).
40	45	5	11/1.3	0-1': Silt. As above.
				1-1.3': Sand. Silty, color as above, very well sorted, no HCL reaction, soft to loose.
				1.3-5': Silt. Very stiff saturated, no HCL reaction, brown (7.5 YR 4/3).
45	50	5	4/0.3	0-5': Silt. As above, dark red clay inclusions at 3 feet. Sandy silt at 2.5 to 3 feet. Silt brown (7.5 YR 4/4) clay yellowish red (5YR 4/6) moderate reaction with HCL.
50	55	5	8/0.1	0-0.5': Silt. As above.
				0.5-1': Sand. Silty, loose, dry.
				1-5': Silt. As above 0-0.5, moderate reaction with HCL.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-16

Prepared by Ted Powell and Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
55	60	5	2.25/0.8	0-5': Silt. As above with clay lenses at 2 to 2.5', silt very stiff to hard, clay strong reaction with HCL, silt weak to moderate HCL reaction.
60	65	5	2/0	0-5': Silt. As above with clay lenses up to 1/2 inch thick at 2, 2.5 and 5 foot strong HCL reaction in clay. Silt has some clay, moderately weak, HCL reaction.
65	70	5	1.5/8.0	0-1': Silt. As above with clay inclusion soft, saturated.
				1-5': Silt, sandy, soft to medium stiff, saturated, trace clay, brown (10 YR 4/3).
70	75	5	2.75/0.1	1-5': Silt. Sandy, as above, clay lenses coarse to medium, thick in on 2 feet, strong HCL reaction, silt has moderate HCL recovery, medium stiff.
75	80	5	1.5/0	0-5': Silt. Some fine sand, brown (7.5 YR 4/5) clay inclusions up to 1 inch thick in top 2 feet of sample, at approximately 6 inch spacing. Silt, soft moderate to weak HCL reaction, clay, very stiff strong, HCL reacation, platy, reddish brown (5 YR 4/3).
80	85	5	2.25/0.5	0-5': Silt. As above but with much sand, 1/2 inch thick clay from 1.5 to 5.0 approximately every 8 inchs, strong HCL reaction in clay, weak to moderate in silt.
85	90	5	4.5/0.1	0-1.5': Clay. As in sample above but very hard. Strong HCL reaction layers of silt approximately 20 percent.
				1.5-5.0': Silt. Medium stiff with 1/4 inch lenses of clay as above. Saturated, moderate to weak HCL reaction brown (7.5 YR 5/4). Silt becomes more sandy toward base.
90	95	5	5.0/1.2	0-1': Silt. Sandy, interbedded with clay as above. Moderate HCL reaction medium stiff brown (7.5 YR 5/4) clay, strong HCL reaction.
				1-2.5': Sand. Fine with silt grading up to 50% clay in 3 distinct sequences, very fine, very thin laminae in silt, sand satured loose, silt medium stiff, clay stiff, sand brown (7.5 YR 4/3). Silt and clay same as above, silt contains lesser amounts brown (7.5 YR 4/2).
				2.5-4.8': Sand. Fine, loose, saturated, no HCL reaction, red brown (5 YR 5/4).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-16

Prepared by Ted Powell and Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4.8-5.0': Sand. Silty with clay, 2 cycles, each approximately 0.1" thick, properties as in 1-2.5 foot interval.
95	100	4.5	2/0.1	0-1': Sand. Fine with much silt, loose, saturated, possible slough.
				1-2': Sand. With much silt, grading to clay, 3 mm thick, deposits as at base of 90 to 95 feet interval.
				2-4.5': Sand. Fine to medium with some to much coarse sand, loose, very well sorted, saturated.
100	105			No HCL reaction, brown (7.5 YR 5/4), trace fine gravel, subrounded.
105	110	1	15/0.9	0-1': Sand. As above, saturated.
				Set up to collect groundwater Grab Sample GBGM-16/115.
110	115			No recovery. Assumed sand as above which fell out on withdrawal, no catcher in barrel, water sample 110 to 115.
115	120		6/0	0-2': Sand. Fine to medium with much coarse sand, loose, saturated, brown (7.5 YR 5/4) some to much fine and coarse at 1.5 to 2.0'.
				2-5': Silt and Clay. With much clay in distinct layers, approximately equal amounts silt, medium stiff, reddish brown (5 YR 4/3). Moderate HCL reaction in clay. Platy, hard, strong HCL reaction, reddish brown (2.5 YR 4/3).
120	125	5	3.5/0	Silt to Clay. As above with clay at 1.5 feet (layer 1 inch thick). Silt and clay contain trace subangular to subrounded gravel up to 1 inch in diameter, matrix supported.
125	130	5	8.5/0.4	0-1': Silt. With clay as above. Medium stiff.
				1-3': Silty Clay. With 5 inch silt layer, as 0-1'. At 2.0 feet clay, stiff, strong HCL reaction, reddish brown (5 YR 4/3).
				3-5': Silty Clay. Diamict. Fine and coarse gravel, very stiff, gravel is variable in composition, subrounded to subangular. Matrix reddish brown (5 YR 4/3) moderate HCL reaction.
130	133	3	4/0.3	0-1.5': Clay and Gravel. Diamitic, silty, as above.
				1.5-2': Silty Clay. With some fine and coarse gravel, hard, moderate HCL reaction.
				2-3': Silty Clay. Diamictic as 0-1.5 with some sand very stiff.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-16

Prepared by Ted Powell and Raymond Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
133	140	7.5	12/2.9	0-7': Gravel. Diamictic, silty as above, but grave more abundant hard. Gravel subangular to angular, coarse gravel abundant, predominately slate (3 GLEY 5/1/10G). Silt dark reddish brown (5 YR 3/2). Moderate to strong HCL reaction, Sate
				becomes more abundant with depth. Proportion of non-slate gravel, decreases with depth.
140	144	4	7/1.9	0-2': As above.
				2-5': Rock. Pulverized to very angular unimodal slate and gravel, becomes coarser to base of sample, moderate HCL reaction. Greenish grey (GLEY 5/1/10GM) driller believes competent bed rock to be at 141 ft bgs.

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SAMPLE/CORE LOG

Boring/Well GM-17 Project/No. Ford Kingsford Page 1 of 9

Site Location Kingsford, Michigan Drilling Started 10/20/97 14:25 Drilling Completed 10/22/97 16:20

Total Depth Drilled 272.5 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10 ft x 4 in Sampling Interval Continuous

Land-Surface Elev. 1111.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Gabe

Prepared By Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	5	2.50-10/0	0-1.5': Sand. With gravel, sand very fine to coarse, some very coarse, some silty, poorly sorted, loose, slight moist, roots, gravel 1/8 to 1/2 inch subrounded to angular, brown (7.5 YR 4/4).
				1.5-3': Silt. Trace fine to coarse sand, soft, wet, trace clay, yellow brown (10 YR 5/6) fairly homogenous, moderately well sorted.
				3-5': Sand. Fine to medium, trace very fine, trace silt, loose, moist, trace gravel 1/4 to 1/8 inch subround, moderately well sorted, red yellow (7.5 YR 6/6).
5	10	5	2.5-5/.1-.5	0-2': Sand. Medium to coarse, trace fine, trace very coarse, trace silt, loose, light brown (7.5 YR 6/4), trace gravel 1/8 to 1/4 inch subround to subangular.
				2-2.3': Sand. Very fine to fine, some silt, loose, light olive brown (2.5 Y 5/4) trace gravel 1/8 to 1/2 inch, subrounded to subangular.
				2.3-3': Gravel. With silt, gravel 1/8 to 1.5 inch, subround to subangular, silt has trace clay, brown (7.5 YR 4/4).
				3-3.7': Sand. Very coarse, trace fine, trace silt, moderately well sorted, some gravel 1/8 to 1/2 inch subround to subangular, strong brown (7.5 YR 5/6) loose, slight moist.
				3.7-5': Sand. Fine with very fine, trace silt, moderately well sorted, loose, pink (7.5 YR 7/4). At base of section, there is some gravel, 1/4 to 1/2 inch, subround to subangular.
10	15	5	5-40/1.5-3	0-2.5': Slough.
				2.5-4': Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				4-5': Sand. Fine to very coarse, some very fine, trace silt, poorly sorted, loose, dry, some gravel 1/8 to 1/4 inch, subround to subangular, brown (7.5 YR 5/4).
15	20	2	2.5-7/1-1.4	0-1.5': Sand. Fine to medium, some coarse to very coarse, some silt, poorly sorted, some 1/8 to 1/4 inch gravel, possible slough.
				1.5-2': Sand. Very fine to fine, with silt, strong brown (7.5 YR 5/6) some coarse and very coarse sand, some 1/8 to 1/4 inch gravel, subround, poorly sorted, loose to medium dense, slightly moist, begin running casing.
20	25	3	2-4.5/0-1.0	0-2.5': Sand. Fine to medium, some coarse, trace very coarse, trace silt, some gravel, 1/8 to 1-1/4 inch, subangular to subrounded, poorly sorted, loose, brown (7.5 YR 5/4) slightly moist.
				2.5-3': Sand and Gravel. Sand is very fine to fine, with silt, loose, strong brown, (7.5 YR 5/6) some 1/8 to 1/4 inch gravel, subround to subangular, one large cobble (>4 inch) gabbro glacial erratic.
25	30	2	2.5-9/0-.8	Silt. Brown (7.5 YR 4/4) trace fine sand, trace coarse sand, stiff to very stiff, poor recovery, some sand and gravel mixed in, likely slough.
30	35	5	2.5-9/0-.5	Sand. Very fine, trace medium, trace silt, moderately well sorted, trace gravel 1/8 to 1/2 inch, subrounded to subangular, loose, pink (7.5 YR 7/4), wet to very moist.
35	40	5	2.5-4/0	0-1.5': Sand with Gravel. Sand fine to medium, some coarse, trace very coarse, trace silt, moderate to poor sorting, loose to medium dense, gravel 1/8 to 3/4 inch, round to subangular, wet.
				1.5-2': Sand. Very fine, silty, trace fine grain, medium dense to dense, brown (7.5 YR 4/4) trace gravel 1/4 inch subangular to subrounded.
				2-5': Sand. Medium to coarse, some fine, trace very fine, trace very coarse, trace silt, poorly sorted, trace gravel (approximately 10 percent) 1/8 to 1 inch, subround to subangular from 4 to 5 feet, proportion of coarse and very coarse grain increases, brown (7.5 YR 5/4).
40	45	5	3-7/.1-.8	Sand. Fine to coarse, trace very fine, trace very coarse, moderately sorted, medium dense, trace gravel, 1/8 to 3 inch, subround to subangular, color as above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
45	50	5	2-5.5/0-.1	0-2.5': Sand. Fine to medium with coarse, trace very coarse, some very fine, trace silt, medium dense, moderately sorted, trace gravel, 1/8 to 1/4 inches, subround to subangular, brown (7.5 YR 5/4).
				2.5-5': Sand. Fine to medium, some coarse, trace very coarse, trace silt and very fine, trace gravel 1/8 to 1/4 inch subround to subangular, medium dense, moderately sorted, brown (7.5 YR
50	55	5	3-6/0-.4	0-3': Sand. As above.
				3-4': Sand with Gravel. Sand coarse to very coarse, some fine, trace very fine, trace silt, gravel 1/8 to 1/2 inch, subround to subangular, poorly sorted, dark brown (7.5 YR 4/2) medium dense.
				4-5': Sand. Fine to medium, some coarse and very coarse, trace very fine and silt, trace gravel, 1/8 to 1/4 inch, angular and subround, medium dense, moderately sorted.
55	60	5	2-4/0-.1	0-5': Sand. Fine to coarse, some very coarse, some very fine, trace silt, brown (7.5 YR 4/4), some gravel (approximately 15 percent) 1/8 to 1 inch, subround to subangular, moderately to poorly sorted, medium dense.
60	65	5	2-8/0-.2	0-2': Sand. As above.
				2-5': Sand. Fine to medium, some very fine, some coarse, trace very coarse, trace silt, trace gravel 1/8 to 1/4 inch subanuglar to subround, moderately sorted, medium dense, brown (7.5 YR 4/4).
65	70	5	2-3.5/0	0-3': Sand. As above.
				3-5': Sand. As above, with several silt lenses, interspersed throughout, silt is brown (7.5 YR 4/4) sample is very disturbed, silt apparently in lense approximately 2 inch thick, soft, trace clay and very fine sand.
70	75	5	2-6.5/0-.3	0-3': Sand. Very fine, silty, medium dense to dense, moderately well sorted. From 0 to 1 foot, very fine silty sand to very fine sandy silt, red brown (5 YR 4/4).
				3-3.5': Silt. Some very fine sand, trace fine, medium stiff, red brown (5 YR 4/4).
				3.5-5': Sand. Fine to medium, trace coarse to very coarse, some very fine, trace silt, medium dense, trace gravel 1/4 inch, subround, moderately to poorly sorted.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
75	80	5	2-3.5/0-.1	Sand. Fine to medium, some very fine, some coarse, trace silt, trace very coarse, trace gravel 1/8 to 1/4 inch, subround, moderately sorted, medium dense.
80	85	5	2-6/0-0.3	0-2': Sand. As above.
				2-2.5': Sand. Very fine to fine, some silt, medium dense to dense, moderately well sorted, brown (7.5 YR 4/4).
				2.5-5': Sand. Medium to coarse, some fine, trace very coarse, trace silt (10 percent), trace gravel 1/8 to 1/2 inch, subangular to subround, medium dense, brown (7.5 YR 4/4), moderately sorted.
85	90	5	2-7/0	0-2': Sand. Fine to coarse, some very coarse, trace very fine, trace silt, moderately well sorted, medium dense, trace gravel 1/8 inch dark brown (7.5 YR 4/4).
				2-5': Sand. Fine with medium, some coarse, trace very coarse, some very fine, trace silt, moderately well sorted, medium dense, trace gravel 1/4 to 1/2", subround to subangular, color as above.
90	95	5	3.5-9/0-0.3	Sand. Fine to medium, some coarse, trace very coarse, some very fine, trace silt, trace gravel 1/4 to 1 inch, subround, medium dense, moderately well sorted.
95	100	5	2-7/0	0-2.5': Sand. Fine to medium, some coarse, some very fine, trace silt, trace 1/4 inch gravel, subround, moderately well sorted, dense, dark brown (7.5 YR 4/4).
				2.5-5': Sand. Fine to medium, with coarse, trace very coarse, trace silt, trace very fine, moderately well sorted, medium dense.
100	105	5	3-6/0-.2	0-2': Sand. As above, at 2 feet there is a 1/4 inch clay seam, red brown (2.5 YR 4/3) soft, slightly platy, moderately plastic, directly below the clay seam very fine silty sand. Approximately 2 inch thick, dense, red brown (5 YR 4/3).
				2-5': Sand. Fine with medium, trace coarse, some silt, moderately well sorted, medium dense, brown (7.5 YR 4/4), trace gravel 1/8 inch subround.
105	110	5	1.5/0	Sand. Very fine to silty, trace to some fine as progressing down through section, well sorted, medium dense to dense, strong brown (7.5 YR 4/6).
110	115	5	1.5/0	Sand. As above.
115	120	5	1.5/0	0-3': Sand. Very fine silty, trace fine and medium, trace very coarse, dense, strong brown (7.5 YR 4/6) moderately well sorted.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3-5': Sand. Very fine, very silty (approximately 45 percent) trace fine, dense, well sorted, color as above.
120	125	5	1.5-4.5/0	0-2': Sand. Very fine silty, to very fine sandy silt, gradational along section, dense, trace clay, some clay inclusions. Red (2.5 YR 5/6) plastic, soft, platy to blocky in part.
				2-5': Silt. With very fine sand and small (.5 to 1 inch) pockets/lenses very fine to medium sand, silt soft to medium stiff, strong brown (7.5 YR 5/6) no reaction to acid, trace clay.
				Set up to purge temp well and collect groundwater grab sample GBGM-17/105.
125	130	5	2.0/0	0-2': Sand. Very fine silty, trace fine, medium dense, trace clay, grades to very fine sandy silt in part, moderately well sorted.
				2-3': Silt. With very fine sand, trace clay brown (7.5 Yr 5/4) moderately stiff inclusions/lenses approximately 1/4 inch thick, red (2.5 YR 5/8) soft moderately plastic.
				3-5': Silt. Very clayee in part, some very fine sand, where clayee soft, moderately plastic to plastic, brown (7.5 YR 5/4), abundant red clay inclusions, medium stiff, fissile, slight reaction in HCL.
130	135	5	1.75 -2/0	0-1': Silt. As above.
				1-4': Sand. Very fine silty, trace clay, dense, moderately well sorted.
				4-4.5': Silt with very fine sand, dense to medium stiff, very clayee in part, moderate plastic where clayee, brown (7.5 YR 5/4).
				4.5-4.8': Sand. Very fine, trace fine, with silt, medium dense, well sorted, color as above.
				4.8-.5': Silt. With very fine sand, trace clay, medium stiff, brown (7.5 YR 5/4).
130	140	5	1.75-2/0	0-2.5': Silt. With very fine sand, trace clay, soft, trace fine sand, trace red clay inclusions approximately 1/4 inch thick, fissile, medium stiff, moderately plastic, moderate reaction in HCL, silt brown (7.5 YR 5/4).
				2.5-3.5': Sand. Silty very fine, some fine, moderately well sorted, medium dense, color, as above.
				3.5-5.': Silt. With clay (variable) moderately plastic, medium stiff to soft. Occasional red clay inclusions, red (2.5 YR 5/8) fissile and small very fine to fine sand lenses throughout.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17 Page 6 of 9

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
140	145	5	1.75-3/0	0-3': Silt. As above.
				3-3.3': Silt. Sandy very fine grain, dark brown (7.5 YR 3/2) variegated, brown (7.5 YR 5/4) medium stiff.
				3.3-5': Silt. With very fine sand, grading to silt with very fine sand in part, trace fine sand, medium stiff to medium dense, brown (7.5 YR 5/4).
145	150	5	1.25/0	0-2.5': Silt. Some very fine sand, well sorted, soft, trace clay, brown (7.5 YR 5/4).
				2.5-3.5': Clay. Silty, trace very fine sand, hard to very stiff, nonplastic, red brown (2.5 YR 4/3).
				3.5-5': Silt. Trace very fine sand, trace to some clay, soft to medium stiff, slight to moderately plastic, brown (7.5 YR 5/3).
150	155	5	1.25/0	0-2.5': Silt. Very fine sandy, trace to some clay, soft to medium stiff, slight to moderately plastic depending on clay content, brown (7.5 YR 5/4).
				2.5-5': Clay. Silty to clayee silt, trace very fine sand at 3 to 4 feet occasional red clay inclusions, red (2.5 YR) soft, plastic, slightly platy. At 3.5 feet a 1/4 to 1/2 inch sand and gravel lense, sand coarse to very coarse, gravel to 1/2 inch subround to subangular from 3.5 feet to 5 feet trace gravel throughout, matrix grades to silty clay, medium stiff to stiff, moderately plastic, red (5 YR 5/6).
155	160	5	1.25-2/0	0-.5': Silt. Clayee with trace 1/2 inch gravel, as above.
				.5-5': Silt. Some clay, very well sorted, homogenous, yellow red (5 YR 4/6) stiff to very stiff, slightly plastic.
160	165	5	1.25-1.5/0	Silt. As above, at 4 feet a sand lense approximately 2 inches thick, very fine to fine, some silt, dense, moderately well sorted, red brown (5 YR 5/4).
165	170	5	0-2.5/0	0-1.5': Sand. Fine to medium, some very fine trace very coarse, trace silt, moderately well sorted, medium dense, light brown brown (2.5 YR 6/4).
				1.5-3.5': Clay. Silty, strong brown (7.5 YR 5/6) stiff, non plastic to slightly plastic.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				3.5-5': Silt. Some clay and sand, predominately more sand as progress down through section, sand fine with very fine, trace to some silt, trace medium and coarse, very pale brown (10 YR 7/4), loose to medium dense, non effervescent, moderately sorted.
170	175	5	2.5-5.5/0	0-1': Sand. Fine to coarse, some very coarse some very fine, trace silt, some gravel 1/8 to 1/2 inch subround to subangular, light yellow brown (2.5 YR 6/32) loose to medium dense, poorly sorted.
				1-3': Sand. Fine to medium, some coarse, trace very fine to trace silt, trace 1/8 inch gravel, subangular to subround, poorly sorted color as above.
				3-4': Sand. Very fine, silty, dense, moderately well sorted, very pale brown (10 YR 7/3).
				4-5': Sand. Medium to coarse, some fine and very coarse, trace very fine, trace silt, loose to medium dense, color as above.
175	180	5	3.5-6.5/0	0-2.5': Sand. Fine with very fine, some medium to coarse, moderately well sorted, loose to medium dense.
				2.5-5': Sand. Medium to coarse, some fine, trace very fine, trace silt, trace very coarse, trace gravel 1/8 to 1/4 inch, subround to subangular, pale yellow (2.5 Y 7/3).
180	185	5	3.5-5.5/0	0-.5': Sand. As above.
				.5-1': Sand. Very fine with silt, trace fine, moderately well sorted, medium dense to dense, pale yellow (2.5 Y 7/3).
				1-5': Sand. Fine to medium, some very fine, trace coarse moderately well sorted, medium dense, very pale brown (10 YR 7/4).
185	190	5	3-7.5/0.1	0-1.5': Sand. As above.
				1.5-5': Sand. Medium with fine and coarse, some very coarse, trace very fine, trace silt, moderately sorted, medium dense, light yellow brown (10 YR 6/4).
190	195	5	2.5-7.5/0	0-2': Sand. As above.
				2-5': Sand. Medium to coarse with very coarse, coarsens downward, trace very fine and silt, trace gravel 1/8 to 1/2 inch subround to subangular, moderately sorted, color as above.
195	200	5	2.5-4/0	0-2.5': Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				2.5-5': Sand. Medium and coarse with gravel, trace fine and silt, gravel 1/8 to 1/2 inch subangular to subround, poorly sorted, loose to medium dense.
200	205	5	2.5/0	Sand. Coarse with medium and very coarse, trace fine, trace silt and gravel, grey brown (2.5 Y 5/2) gravel 1/8 to 3/4 inch angular to round, poorly sorted, loose to medium dense, the section from 185 to 205' coarsens downward.
205	210	5	4-6.5/0	0-2': Sand. Fine to medium with coarse, some very fine, trace silt, trace gravel (10 percent) 1/8 to 3/4 inch subround to subangular, poorly sorted, medium dense, light yellow brown (2.5 Y 6/3).
				2-2.5': Gravel. With sand, gravel 1/8 to 2.5 inches, round to angular, sand medium to coarse, some fine and very fine, very poorly sorted, loose to medium dense, grey brown (2.5 Y 5/2).
				2.5-5': Sand. Fine to medium, some coarse and very coarse, some gravel 1/8 to 2.5 inch, subangular to subround, poorly sorted, medium dense, light yellow brown (2.5 Y 6/3).
210	215	5	4-17/0	Sand. Fine to medium, some coarse and very coarse, trace silt, some gravel 1/4 to 1.5 inch, subangular to subround, poorly sorted, medium dense.
215	220	3	0/5-12	Sand. Fine to medium with coarse, some very coarse, trace very fine and silt, trace gravel (1 to 3.5 inch cobble, subround) medium dense, poorly sorted to moderately sorted.
220	225	0	-/-	Lost recovery.
225	230	5	20-2,000/0	0-2': Sand. Medium to coarse some very coarse, with fine, and some very fine, trace silt, moderately sorted, medium dense, grey brown (10 YR 5/2).
				2-5': Sand. As above, although slightly more coarse and very coarse grey brown (10 YR 5/2).
230	235	5	400-5,500/0	Sand. Coarse with medium and very coarse, some fine, trace very fine and silt, medium dense, angular to subround, poorly sorted, trace gravel 1/8 inch, grey (10 YR 6/1).
235	240	5	250-900/0-.2	Sand. As above.
240	245	5	15-105/.1-.7	Sand. Coarse some medium , with very coarse, some fine, trace very fine and silt, medium dense, trace gravel 1/8 inch subangular to subround, moderately to poorly sorted, grey (10 YR 6/1).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
245	250	5	8-30/0-0.1	0-4': Sand. Medium with coarse and fine, some very coarse, some fine, trace silt, moderately to poorly sorted, medium dense to dense, grey brown (10 YR 5/2).
				4-5': Sand. Fine to very coarse, some very fine, trace silt, some gravel 1/8 to 1/2 inch subround to subangular, medium dense brown (10 YR 5/3) poorly sorted.
250	255	5	15-40/0-.4	Sand. Fine to coarse, with very coarse, some fine, trace silt, with gravel 1/8 to 1.5 inch subround to subangular, very poorly sorted, gravel is predominately slate/phylite, brown (10 YR 5/3).
255	260	5	9-50/0-.1	Sand. Fine to coarse some very coarse, some very fine, trace silt, some gravel 1/8 to 1 inch subround to subangular, very poorly sorted, pink greyish brown (10 YR 4/2) dense.
260	265	5	12-42/0-.3	Sand and Gravel. Sand fine to coarse, some very fine, trace silt, gravel 1/8 to 3 inch, round to angular, very poorly sorted, medium dense to dense, very dark greyish brown (10 YR 3/2).
265	270	5	29-175/.3-12.6	0-2': Gravel. Some sand, sand is very fine to very coarse, trace silt gravel 1/8 to 1.5 inch, subround to subangular, poorly sorted, loose to medium dense, greyish brown (10 YR 5/2).
				2-4.5': Sand. Very coarse with coarse, trace very fine to fine, some gravel 1/8 to 3/4 inch, round to subangular, poorly sorted, medium dense, dark greyish brown (2.5 Y 4/2).
				4.5-5': Sand. Medium with coarse and very coarse, some fine, trace very fine, medium dense, moderately to poorly sorted, trace gravel 1/8" subround to subangular, dark grey (10 YR 4/1).
270	272.5	2.5	45-125/13-17	0-1': Diamict, matrix is sandy silt, some clay, sand fine to medium, some coarse, matrix supports gravel and fractured weather bedrock (slate) at base, gravel 1/4 to 4 inch subround to angular, medium stiff, grey (10 YR 5/1).
				1-2.5': Slate. Phylitic impart, subvertical slaty cleavage, hardness 2.5, 1 GLEY dark greyish green (2.5/56/3/2). Slate mildly weathered at top. Competent bedrock at 271 ft bgs.

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SAMPLE/CORE LOG

Boring/Well GM-18 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 11/24/97 13:40 Drilling Completed 11/24/97 16:40

Total Depth Drilled 60 feet Hole Diameter 8 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2 ft x 2 in Sampling Interval Continuous

Land-Surface Elev. 1120.13 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Chris

Prepared By Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	20	1-2-2-2	0-5": Grass. Silty clay loam, frozen to 3"	4.5
				5-11": Sand. Silty, very fine, some fine and medium, trace coarse, very moist, trace roots, moderately well sorted, strong brown (7.5 YR 4/6).	OVA Background = 2.5 ppm
				11-20": Sand. Medium to coarse, some fine, trace very coarse, loose, slightly moist, well sorted, strong brown (75 YR 5/6).	
2	4	14	2-2-2-2	0-2": Sand. As above.	6
				2-14": Sand. Coarse to medium and very coarse, some fine, trace very fine, some gravel 1/8 to 1" subrounded to angular, poorly sorted, loose dark yellow brown (10 YR 4/6), moist.	
4	6	13	3-3-4-4	Sand. As above.	5
6	8	7	7-7-7-7	Sand. As above.	
8	10	6	7-7-8-8	Sand. Coarse with very coarse to medium some fine and very fine moist, very poorly sorted, some gravel 1/8" to 1.5", angular to subangular, medium dense, dark yellow brown (10 YR 4/6).	4.5
10	12	1	8-8-8-8	Sand. Fine to coarse with very coarse, silty, poorly sorted, medium dense, very moist to wet, brown (7.5 YR 4/4).	5.5
12	14	0	10-12-9-9	No recovery.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-18

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
14	16	4	9-9-9-9	Sand and Gravel. Sand coarse to very coarse, some fine and medium, trace very fine, gravel 1/8" to 1.5" subrounded to angular, very poorly sorted, medium dense, very moist, brown (7.0 YR 4/4).	6
16	18	13	11-11-11-11	Sand. Medium to coarse with trace very coarse, some fine trace very fine, with gravel 1/8" to 1" subrounded to subangular, very poorly sorted medium dense, moist yellow brown (10 YR 5/4).	5.5
18	20	14	8-8-8-7	Sand. As above.	5.5
20	22		12-12-12-12	Sand and Gravel. Sand, coarse with medium and very coarse, trace very fine and fine. Gravel 1/8 to 3/4", subrounded to angular, very poorly sorted, dense, moist, dark grey brown (2.5 YR 42).	7.5
22	24	0	50/1ft	No recovery, pounded on boulder.	
24	26	14	4-5-7-8	Sand. Medium with fine, some very fine trace coarse, moderately well sorted, medium dense, very moist, light brown (7.5 YR 6/4).	8.5
26	28	15	3-7-9-11	Sand. Fine, some very fine trace medium and silt, well sorted, moist, dense, light brown (7.5 YR 6/4).	7.5
28	30	14	7-8-8-9	Sand. Fine, some medium and very fine and silt, well sorted, dense very moist, color as above.	7.5
30	32	18	7-9-10-10	Sand. As above, but slightly more silt and trace very coarse sand.	8.5
32	34	17	10-11-11-12	0-9": Sand. As above.	8.5
				9-17": Sand and Gravel. Sand, coarse with very coarse and medium, some fine and very fine and silt, gravel 1/8 to 1¼" angular to subrounded, very poorly sorted, dense, moist, dark brown (7.5 YR 3/3).	
34	36	10	9-9-9-10	Sand and Gravel. As above, but very moist.	7
36	38	1	26-26-26-26	Gravel. Large piece of dolomite in tip prevented recovery, wet.	9.5
38	40	15	7-7-7-7	Sand. Fine with very fine, trace silt, well sorted, dense, moist, brown (7.5 YR 5/4).	6.5
40	42	15	9-7-10-10	Sand. Very fine, trace fine and silt, well sorted, dense, moist, light brown (7.5 YR 6/4).	8.5
42	44	18	9-9-9-9	Sand. As above, moist to very moist.	7

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-18 Page 3 of 3

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
44	46	18	10-10-10-10	Sand. Very fine, trace fine, trace to some silt, well sorted, dense to very dense, moist, light brown (7.5 YR 6/4).	7.5
46	48	18	11-11-11-11	Sand. As above.	6.5
48	50	17	9-9-10-10	Sand. Very fine, trace fine, trace to some silt, well sorted, dense to very dense, very moist in lower 1/3 of spoon. At 12" a 1/8" thick clay lense, soft, moderately plastic, red brown (5 YR 4/4), non effervescent.	9
50	52	21	8-8-9-9	0-9": Sand. As above, very moist.	9.5
				9-21": Sand. Very fine, some silt, well sorted, dense, wet to saturated in tip, brown (7.5 YR 4/4).	
52	54	17	11-11-12-12	0-3": Sand. As above, very moist to wet.	8
				3-11": Sandy Silt. Very fine, gradational to very silty sand in part, dense to very dense, saturated, brown (7.5 YR 4/4).	
				11-17": Sand. Very fine, silty, dense, well sorted, color as above, very moist to wet.	
54	56	21	8-8-8-8	Sand. Very fine with silt, trace fine, dense, well sorted, saturated at approximately 55 feet, brown (7.5 YR 4/4).	9.5
56	58	22	12-12-12-12	Sand. Very fine with silt, moderate well sorted, dense to very dense, saturated, red brown (5 YR 4/4) to brown (7.5 YR 4/4).	7
58	60	24	8-10-12-12	Sand. As above brown (7.5 YR 4/4). at 17" a 3/4" diameter clay nodule, fissile, soft medium stiff, noneffersent, at 23" a 1/8" thick silty clay seam, red brown (5 YR 4/4).	7.5
				Over drill to 61 feet and knock blow up out of augers. Set well screen 50 to 60 feet.	

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SAMPLE/CORE LOG

Boring/Well GM-19 Project/No. Ford Kingsford Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 11/25/97 8:15 Drilling Completed 11/25/97 11:05

Total Depth Drilled 57 feet Hole Diameter 8 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2 ft x 2 in Sampling Interval Continuous

Land-Surface Elev. 1117.13 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Chris

Prepared By Ted Powell Hammer Weight Hammer Drop inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	19	2-3-3-3	0-4": Topsoil. Grass, roots "A Horizon", top 3" frozen sandy silt loam, dark red brown (5YR 3/2).	6.5
				4-9": Sand. Very fine to fine, silty, trace clay, medium dense, trace gravel ¼" angular, moist strong brown (7.5 YR 5/6).	OVA background = 3 ppm
				9-19": Sand. Fine, some medium, trace very fine and silt, moderate sorting, trace very coarse, loose, moist, color as above.	
2	4	17	3-3-3-4	0-4": Sand. As above.	9.5
				4-17": Sand. Grading to sand with gravel at bottom of spoon, loose, slightly moist, sand coarse with medium and very coarse, gravel 1/8 to 1/4", subrounded to angular, brown (7.5 YR 4/4) very poorly sorted.	
4	6	15	5-5-5-5	0-9": Sand. As above.	9.5
				9-15": Sand. Medium with coarse, trace very coarse, trace fine and very fine, strong brown (7.5 YR 5/6), poorly sorted, medium dense, slightly moist.	
6	8	12	7-7-8-8	0-4": Sand. As above.	12
				4-12": Sand and Gravel. Sand coarse and very coarse some medium, trace fine and very fine, gravel 1/8 to 1" angular to subrounded, very moist, medium dense, very poorly sorted, brown (7.5 YR 4/4).	
8	10	7	8-8-9-9	Sand and Gravel. As above, brown (10 YR 4/3).	10

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-19

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
10	12	12	8-8-8-8	Sand and Gravel. As above.	12.5
12	14	13	4-4-4-6	0-9": Sand and Gravel. As above.	13
				9-12": Sand. Medium and fine, some coarse trace very coarse and very fine, light brown (7.5 YR 6/4), moderate sorting, loose to medium dense, moist.	
				12-13": Sand and Gravel. Sand, medium with coarse some fine and very fine, gravel 1/8 to 1", angular to rounded, very poorly sorted, medium dense, moist, sand is brown (7.5 YR 5/4).	
14	16	14	5-5-5-5	0-8": Sand. As above.	13.5
				8-14": Sand. Coarse with medium, some very coarse trace fine and very fine, some gravel 1/8 to 1.2", angular and subrounded, brown (10 YR 4/3), medium dense to loose, moist.	
16	18	16	11-11-11-12	0-6.5": Sand. Medium with coarse, trace (10 percent) very coarse, trace very fine to fine, trace 1/8 to 1/2" gravel subrounded, very poorly sorted, medium dense, yellow brown (10 YR 5/4).	12
				6.5-16": Gravel with Sand. Gravel 1/8 to 1" subrounded to angular, sand, coarse to very coarse with medium, some fine, trace very fine, very poorly sorted, dense, slightly moist, dark yellow brown (10 YR 4/4).	
18	20	17	12-12-13-13	Sand and Gravel. As above, but slightly more sand.	11
20	22	11	5-5-5-6	Sand with Gravel. Some coarse with very coarse, some medium, trace fine, gravel 1/8 to 1" subangular to rounded, very poorly sorted, medium dense, very moist dark grey brown (10 YR 4/2).	13
22	24	22	10-10-10-10	0-13": Sand with Gravel. As above.	13
				13-20": Sand. Fine with trace coarse and very fine, light yellow brown (10 YR 6/4), medium dense, slightly moist, moderate well sorted.	
24	26	14	7-7-7-8	Sand. Fine, some medium, trace very fine, well sorted, very moist, medium dense, light yellow brown (10 YR 6/4).	12.5
26	28	19	7-7-7-7	0-7": Sand. As above.	7

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-19 Page 3 of 5

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				7-19": Sand. Some gravel, sand medium some coarse, trace very coarse, some fine, trace very fine, gravel 1/8 to 3/4", angular to subrounded, medium dense, very moist, dark yellow brown (4/6).	
28	30	20	9-9-9-9	0-6": Sand. Medium to fine, trace coarse and very coarse, trace very fine, trace gravel (fractured cobble) yellow brown (10 YR 4/4), moist.	9
				6-20": Sand. Fine to medium and coarse and very coarse, trace 1/8" gravel, subangular to subrounded, light yellow brown (10 YR 6/4), slightly moist to moist, moderate sorting.	
30	32	16	10-10-10-10	Sand. Fine, some medium, trace coarse, trace very fine and silt, moderate well sorted, medium dense, moist to very moist, light yellow brown (10 YR 6/4).	11
32	34	10	16-18-18-20	0-5": Sand. Fine some medium and coarse and very coarse trace fine gravel, subrounded to angular, very moist, medium dense, yellow brown (10 YR 5/6).	11
				5-10": Sand and Gravel. Sand fine to coarse trace very fine and silt, some very coarse, gravel 1/8 to 1/2" subround to subangular, very poorly sorted, very moist, dense. At 5 to 6" clay lense, some silt, red brown (5 4/3) medium stiff, slightly effervescent.	
34	36	15	9-9-9-8	0-7": Sand and Gravel. As above, 1 clay inclusion at 4" clay, as above.	9
				7-15": Sand. Very fine, some silt, light brown (75 YR 6/4) well sorted, medium dense, slight moist to moist.	
36	38	16	5-5-5-5	Sand. Very fine, trace fine, trace silt, moderate well sorted, light brown (7.5 YR 6/4) medium dense, moist to very moist.	12
38	40	18	10-11-12-11	Sand. Very fine, some silt, well sorted, moist, dense, light brown (7.5 YR 6/4).	13
40	42	17	6-6-6-6	Sand. As above with trace fine.	13.5
42	44	23	9-9-9-10	Sand. Very fine some fine, trace (10 percent) silt, medium dense to dense, moist, light brown (7.5 YR 6/4). At 10-11" very silty very fine sand, dense to very dense, strong brown (7.5 YR 4/6), moist.	16

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-19 Page 4 of 5

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
44	46	24	6-7-7-7	0-13": Sand. Very fine some silt trace fine, well sorted, light brown (7.5 YR 6/4), medium dense, slight moist.	12
				13-22": Sand. Very fine, silty, grading to very fine sandy silt, dense, slight moist, strong brown (7.5 YR 4/6).	
				22-24": Sand. Vey fine, some fine, some silt, moderate well sorted, moist, dense, light brown (7.5 YR 6/4).	
46	48	24	12-12-13-13	0-12": Sand. Interbedded very fine to fine, trace silt, light brown (7.5 YR 6/4) and very fine sandy silt, brown (7.5 YR 4/4), moist to very moist dense to very dense, beds 1/4 to 3/4" thick.	14
				12-24": Sand. Very fine, some fine, trace silt, well sorted, moist, dense to very dense, light brown (7.5 YR 6/4).	
48	50	14	5-5-6-6	0-8": Sand. Very fine to fine, trace silt, medium dense, moist, moderate well sorted, light brown (7.5 YR 6/4).	12.5
				8-14": Sand. Very fine silty to very fine sandy silt, gradational throughout, dense, wet to very moist, brown (7.5 YR 4/4).	
50	52	18	7-7-7-8	Sand. Very fine to fine silty sand, gradational to very fine to fine sandy silt, saturated at 3 to 6", otherwise wet. From 11-13" silt with very fine to fine sand, dense, brown (7.5 YR 4/4).	13
52	54	24	11-11-11-12	0-17": Sand. Very fine to fine with silt, dense, saturated, moderate well sorted, red brown (5 YR 4/4).	14
				17-24": Sand. Very fine some fine, silty, dense, brown (7.5 YR 4/3) well sorted.	
54	56	20	10-10-10-10	0-5": Sand. Blow up.	14
				5-9": Sand. Very fine to fine, silty, dense, dark red brown (5 YR 4/2) moderate well sorted.	
				9-10": Silt. Trace very fine sand, trace clay, very dark grey (5 YR 3/1), very dense.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-19

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				10-20": Sand. Very fine silty, well sorted, brown (7.5 YR 4/3), very dense.	
				Over drill to 57 feet, knockout blow up and set well from 46 to 56 ft bls.	

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SAMPLE/CORE LOG

Boring/Well GM-20 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan
Drilling Started 11/25/97 13:55
Drilling Completed 11/25/97 16:05

Total Depth Drilled 53 feet
Hole Diameter 8¼ inches
Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1119.10 feet [X] Surveyed [ ] Estimated
Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Randy
Helper Chris

Prepared By Ted Powell
Hammer Weight 300
Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	18	2-2-2-2	0-6.5": Grass. Roots, topsoil, silty sandy loam, frozen to 3.5", black (10 YR 2/1).	4 Background 3.5 to 5 ppm
				6.5-8.5": Sand. Medium to coarse, trace fine and very coarse, trace 1/8 to 1/4" gravel, very poorly sorted, dark yellow brown (10 YR 4/4).	
				8.5-17.5": Sand. Some gravel, sand medium to coarse, trace very coarse, trace fine, gravel 1/8 to 1/2" subround, very moist, very poorly sorted, strong brown (7.5 YR 5/6).	
				17.5-18": Silt. With fine sand, trace medium, medium dense, strong brown (7.5 YR 5/8), very moist.	
2	4	1	1-1-1-1	Grass. roots, silty sand. Slough, must have pushed rock.	
4	6	18	2-2-3-3	0-6": Silt. Sandy fine, some medium, trace coarse, very moist, medium dense, strong brown (7.5 YR 5/8).	3.5
				6-18": Sand. Medium, trace coarse and fine, trace very coarse, trace 1/8" gravel, subrounded to subangular, moderately sorted, loose, moist, strong brown (7.5 YR 5/6).	
6	8		4-4-4-4	No recovery.	
8	10	16	3-3-3-3	0-2": Sand. Fine, some medium and very fine, trace silt, red yellow (7.5 YR 6/6) and dense, very moist, moderately well sorted.	3.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-20 Page 2 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				2-13": Sand. Some gravel, sand coarse to very coarse, some medium, trace very fine and fine, gravel 1/8" subround to subangular, very moist, medium dense, strong brown (7.5 YR 6/8).	
				13-16": Sand. fine, some medium, and coarse to very coarse, trace very fine, loose, moist, light brown (7.5 YR 6/4).	
10	12	6	3-3-3-3	0-3": Sand. As above.	3.5
				3-6": Sand. With gravel, sand medium with coarse and fine some very coarse, trace very fine, gravel 1/8 to 1" angular to subrounded, very poorly sorted brown (7.5 YR 5/4).	
12	14	11	4-4-5-5	Sand and Gravel. Sand medium with coarse and very coarse, some fine, trace very fine, gravel 1/8 to 1", subrounded to angular, brown (7.5 YR 4/4), medium dense very moist.	3.75
14	16	10	7-7-7-7	Sand and Gravel. As above.	3.75
16	18	--	4-4-4-4	No recovery, cobble stuck in tip of spoon.	
18	20	16	4-5-4-5	Sand. Medium, some coarse, some fine, trace very coarse and very fine, poorly sorted, medium dense, moist, some gravel 1/8 to 3/4", subround to subangular, dark yellow brown (10 YR 4/4).	4
20	22		5-5-5-5	Sand. With gravel, sand coarse with medium and very coarse, small fine gravel 1/8 to 3/4", subrounded to subangular, medium dense, moist to very moist, very poorly sorted, yellow brown (10 YR 5/4).	3.75
22	24	18	8-8-8-8	0-6": Sand. With gravel as above.	4
				6-18": Sand. With gravel, sand coarse with very coarse and medium, trace fine, gravel 1/8 to 1/2" subrounded to subangular, very poorly sorted, dense, moist, yellow brown (10 YR 5/8).	
24	26	15	7-7-7-7	Sand. With gravel, as above, color tending more towards strong brown (7.5 YR 5/8).	4.25
26	28	15	5-6-5-6	0-7": Sand. With gravel as above.	4.25

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-20 Page 3 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				7-15": Sand. Some gravel, sand coarse, some very coarse and medium, trace fine, gravel 1/8 to 3/4" angular to subrounded, poorly sorted, moist, medium dense, brown yellow (10 YR 6/8).	
28	30	16	10-10-10-10	0-5": Sand. Some gravel, as above.	4.25
				5-16": Sand. Coarse to very coarse, some fine, gravel 1/8 to 3/4" angular to round, poorly sorted, dense, moist, strong brown (7.5 YR 5/8).	
30	32	9	6-6-6-6	Sand. Coarse with very coarse, some fine trace very fine, some gravel 1/8 to 1" subrounded to subangular, poorly sorted, very moist, medium dense, color as above.	4.5
32	34	19	7-6-7-6	0-.5": Sand. As above.	4.5
				.5-19": Sand. Fine trace very fine, well sorted, medium dense, moist, brown yellow (10 YR 5/6).	
34	36	16	9-9-9-10	Sand. As above but dense, and light brown (7.5 YR 6/4).	4.5
36	38	17	9-9-9-9	Sand. As above.	4.75
38	40	18	11-11-11-11	Sand. Fine, trace very fine, very well sorted, moist, dense to very dense, pale brown (10 YR 6/3) to light brown (7.5 YR 6/3).	4.5
40	42	18	8-9-9-9	Sand. Fine some very fine, trace silt, well sorted, slightly moist, dense, light brown (7.5 YR 6/4).	4.5
42	44	21	9-10-10-10	0-7": Sand. Fine, as above.	4.5
				7-21": Sand. Fine, trace very fine, and silt, slightly moist, dense, mottled, color ranges from light brown (7.5 YR 6/4) to yellow brown (10 YR 5/8).	
44	46	19	11-11-11-11	0-9": Sand. Fine, some very fine, trace silt, moist at top to very moist at 9", brown yellow (10 YR 6/6) well sorted, dense to very dense.	5
				9-19": Sand. As above, color ranges from brown yellow (10 YR 6/6) at 9" to brown (7.5 YR 5/4) at 19", wet at bottom of spoon.	
46	48	20	10-10-12-12	0-10": Sand. Very fine with fine, trace silt, moderate well sorted, dense to very dense, very wet, brown (7.5 YR 5/4).	5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-20

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				10-12.5": Silt. Trace very fine to fine sand, dense, wet to saturated, brown (7.5 YR 4/4).	5
				12.5-15": Sand. Very fine silty, saturated/soupy, dense, brown (7.5 YR 4/4).	
				15-19.5": Sand. Very fine, some silt, trace fine, moderately well sorted, saturated, color as above.	
				19.5-20": Silt. As above.	
48	50	16	10-10-10-11	0-13": Silt. Very sandy, very fine to fine in part, dense to very dense, saturated, red brown (5 YR 5/4) 1/4" clay lense at 2", soft to medium stiff moderate plastic, non effervescent.	5.5
				13-16": Sand. Very fine some fine, some silt, dense well sorted, very dark grey (5 YR 3/1).	
50	52	5	4-4-4-4	Sand. Very fine to fine, some silt, moderately well sorted, dark red brown (5 RY 3/2) to red brown (5 YR 4/3).	5
				Over drill to 53 feet, set well 42 to 52 feet.	

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SAMPLE/CORE LOG

Boring/Well GM-21 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 11/24/97 13:35

Drilling Completed 11/24/97 15:00

Total Depth Drilled 24 feet

Hole Diameter 8 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2 ft x 2 in

Sampling Interval Continuous

Land-Surface Elev. 1055.99 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Driller Pat

Helper Shawn

Prepared By Bruce Evans

Hammer Weight 300

Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	2	2-2-1-1	0-.5': Topsoil. Very dark brown (7.5 RY 2.5/2) silt with organic water and roots, frozen.	6/0 OVA background = 4 ppm OVM background = 0 ppm
				.5-2.0': Sand. reddish yellow (7.5 YR 6/6) very fine to fine gravel, well sorted, trace silt, moist.	
2	4	0.7	1-1-1-1	0-.2': Slump.	5.5/0.8
				.2-.7': Sand. As above.	
4	6	1.7	2-3-3-5	0-0.3': Slump.	4/0.5
				.3-1': Sand/Gravel. Strong brown (7.5 YR 4/6) fine to medium sand, with fine to coarse gravel, subangular to subrounded, poorly sorted, very moist, trace roots and organics.	
				1-1.7': Sand. Strong brown (7.5 YR 4/6) very fine to fine grained, silty, trace rootlets, wet.	
6	8	0.7	2-3-3-3	0-.2': Slump.	8.0/2.8
				.2-.4': Sand. As above.	
				.4-1.7': Sand. Brown (7.5 YR 5/4) fine to medium grained with fine to coarse gravel, poorly sorted, wet.	
8	10	0.7	3-3-3-5	0-.3': Slump.	6.4/2.7
				.3-.7': Sand/Gravel. Brown (7.5 YR 5/4) fine to coarse sand, silty, with fine to coarse gravel and pebbles to 1" diameter, subangular to subrounded, very poorly sorted, wet.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-21 Page 2 of 2

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
10	12	1	5-7-8-11	0-.5': Slump.	7.5/2.4
				.5-1.0': Sand/Gravel. As above, broken rock fragments, wet.	
12	14	0.2	2-4-7-8	Sand/Gravel. Poor recovery, as above, slump? Wet.	6.0/2.7
14	16	1	2-2-3-3	0-.1': Slump.	8.0/2.9
				.1-1.0': Silt. Brown (7.5 YR 5/2) with some bands (.1-.3') clay reddish brown (5 YR 5/4), silt, sandy in places at very fine grained.	
16	18		3-5-6-7	No recovery.	
18	20	1.5	3-4-5-4	Silt/Clay/Sand. Brown (17.5 YR 4/4) silt and sand, reddish brown (5 YR 5/4) clay, at bedded sequence 1-4" thick silt and very fine grained well sorted silty sand, clay .1-.3' thick, wet.	4.0/0.9
20	22	1.3	3-4-5-4	0-.3': Slump.	5.0/1.6
				.3-1.3': Sand. Brown (7.5 YR 4/4) very fine grained well sorted, some silt with trace thin beds silt and clay as above, wet.	
22	24	1.7	4-4-5-6	0-.7': Slump.	4.5/1.3
				.7-1.7': Sand. As above, interbedded with silty and clay, HCI reaction in clay, wet.	
				15:00 End borehole at 24 feet.	
				Set well screen 5-15 ft. Plugged back bottom of borehole with bentonite chips to 17 ft.	

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SAMPLE/CORE LOG

Boring/Well GM-22 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan
Drilling Started 11/25/97 10:00
Drilling Completed 11/25/97 10:55

Total Depth Drilled 18 feet
Hole Diameter 8 inches
Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1064.23 feet [X] Surveyed [ ] Estimated
Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Pat
Helper Shawn

Prepared By Bruce Evans
Hammer Weight 300
Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	1.5	1-1-2-4	Sand. Strong brown (7.5 YR 5/8) very fine to fine grained, trace medium, silty, moderate sorted, trace coarse gravel, subangular, roots at 0-.2', moist.	8.0/2.7 OVA background = 4.0 ppm OVM background = 0.0 ppm
2	4	2	4-5-5-6	0-1': Sand. As above.	2,000/2.9
				1-1.9': Sand. Strong brown (7.5 YR 4/6) very fine grained, well sorted, silty, rootlets, moist.	
				1.9-2.0': Topsoil. Very dark brown (7.5 YR 2.5/2) organic matter, roots, silt, moist.	
4	6	0.5	6-6-7-7	0-.3': Slump. Broken pebble at .2.	190/3.7
				.3-.5': Sand. Dark yellowish brown (10 YR 4/6) very fine grained, well sorted, silty, moist.	
6	8	1.8	2-3-3-5	0-.5': Slump.	900/3.6
				.5-1.8': Sand. Dark yellowish brown (10 YR 4/6) very fine to fine grained, well sorted, trace coarse gravel and pebbles to 1" diameter, moist.	
8	10	1.7	2-2-2-3	0-.3': Slump.	30/2.9
				.3-1.2': Sand. As above.	
				1.2-1.7': Silt. (7.5 YR 4/6) with trace clay in thin bands .05-.1" thick reddish brown (5 YR 5/4) Penetrometer: Silt and clay = 0.2, very slight HCL acid reaction in clay and silt, wet.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-22 Page 2 of 2

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
10	12	1.8	2-3-3-2	0-.2': Slump.	40/3.2
				.2-1.8': Silt. As above, interbedded with clay, silt becoming very sandy with very fine grain sand Penetrometer: Clay = 0.2 silt = 1.5, good acid reaction with silt, slight in clay, moist.	
12	14	1.9	3-3-4-5	0-.2': Slump.	35/3.0
				.2-1.9': Silt/Clay. As above, moist at 1.7', coarse sand seam olive brown (2.5 YR 4/3) .2" thick, wet.	
14	16	1.9	3-4-3-5	0-.7': Slump.	30/2.9
				.7-1.9': Silt/Clay. As above, silt very sandy with very fine grain sand in 1-3" thick beds, wet.	
16	18	2	3-3-3-3	0-.4': Slump.	25/1.3
				.4-.9': Silt/Clay: Silt brown (7.5 YR 4/3) clay reddish brown (5 YR 5/4) clay in .1-1" thick beds, Penetrometer: Silt/clay = .2 soft, HCL acid reaction in silt and some parts clay, wet.	
				.9-2.0': Sand. Brown (7.5 YR 4/3) very fine grained, silty, with trace clay in thin beds, as above, wet.	
18	20	1.5	2-3-3-5	0-.2': Slump.	12/2.2
				.2-.4': Silt/Clay. As above.	
				.4-1.5': Sand. Brown (7.5 YR 5/3) very fine grained, very silty, well sorted, wet.	
				10:55 End borehole at drill depth of 18 feet sampled to 20 feet.	
				Set well screen 16 to 6 feet.	

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SAMPLE/CORE LOG

Boring/Well GM-23 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 11/26/97 07:45 Drilling Completed 11/26/97 08:20

Total Depth Drilled 14 feet Hole Diameter 8 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2 ft x 2 in Sampling Interval Continuous

Land-Surface Elev. 1055.90 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Pat Helper Shawn

Prepared By Bruce Evans Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	1.8	1-1-1-1	0-.3': Topsoil. Very dark brown (7.5 YR 2.5/2) silt and very fine grained sand, organics and roots, moist.	7.0/1.6 OVA background = 3.4-4 ppm
				.3-1.8': Sand. Strong brown (7.5 YR 5/8) very fine to fine grained, some silt, well sorted, trace roots, moist.	OVM background = 0 ppm
2	4	2.0	2-2-2-7	0-.2': Slump.	8.0/2.7
				.2-2.0': Sand. As above, trace fine to medium gravel, black, subangular, moist.	
4	6	2.0	4-3-5-4	0-.2': Slump.	8.5/2.3
				.2-2.0': Sand. As above moist to wet at 4.5 feet.	
6	8	1.4	1-1-1-2	0-.3': Slump.	11/2.2
				.3-1': Sand. As above, wet.	
				1-1.4': Sand. As above, mixed with fine to coarse gravel subangular to subrounded, and coarse sand, black coarse sand seam at 1.4.	
8	10	1.5	6-4-4-5	0-.2': Slump.	7.5/1.7
				.2-.8': Sand. Dark yellowish brown (10 YR 4/6) fine to coarse sand, poorly sorted with fine to coarse gravel subangular to subrounded, some very thin bedding of fine and medium sand within poorly sorted sand, wet.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GM-23 Page 2 of 2

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				.8-1.5': Silt. Brown (7.5 YR 5/2) with some very fine grained sand and trace clay, reddish brown (5 YR 5/4) in thin banks 1.1" thick. Penetrometer: Silt = 0.5, clay = 0.2, some reaction to HCL in silt and clay, wet.	
10	12	1.5	2-3-3-4	0-.5': Slump.	5.5/0.0
				.5-1.5': Silt. As above, with trace clay, very reactive to HCL in silt and clay, wet.	
12	14	2.0	2-2-4-5	0-.3': Slump.	10/0.0
				.3-2.0': Silt. As above. Penetrometer: Silt = 0.5, clay = 0.2 some acid reaction especially surrounding clay beds. Wet.	
14	16	1.5	2-2-3-3	0-.5': Slump.	35/0.0
				.5-1.5': Silt. With trace clay, as above, wet. 1" medium sand seam at 1.3, well sorted.	
				08:20 End borehole at drilled depth of 14 feet	
				Sampled to 16 feet. Set well screen 13.5 to 3.5.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-24 A/B/C Project/No. Ford/Kingsford WI000675.0001 Page 1 of 6

Site Location Kingsford, Michigan

Drilling Started 10/19/99 Drilling Completed 10/22/99

Total Depth Drilled 215 Feet Hole Diamete 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1099.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Scott

Prepared By Raymond Flynn/Kevin Daleness

Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	3-10/0.0	0.0-8.0": Top Soil. Dark brown (10 YR 3/3), sandy silt loam, abundant rootlets,
				dry and crumbly. No HCl reaction.
				8.0"-1.5': Silt. Strong brown (7.5 YR 4/6), sandy, abundant very fine sand, crumbly,
				no HCl reaction, dry.
				1.5-3.0': Sand. Strong brown (7.5 RY 4/6), fine to very fine, some silt, trace coarse
				sand and granular gravel, loose, no HCl reaction. Coarser at base.
				3.0-5.0': Sand. Brown (10 YR 4/3), with gravel, fine to very fine sand with abundant
				granular gravel, some pebble gravel, loose. Pebbles subangular to subrounded,
				variable composition, up to 2½ inch diameter.
5	10	5	2.5-3.0/0.0	0.0-1.0': Sand. With gravel as above.
				1.0-3.5': Sand. Yellowish red (5 YR 5/6), medium, with trace to some coarse sand
				at base (lowest 1 foot), very well sorted. Loose, no HCl reaction.
				3.5-5.0': Sand and Gravel. Dark brown (7.5 YR 3/4), very coarse, some medium and
				trace fine sand. Gravel: Granule to cobble sized, variable composition, subangular
				to well rounded, loose and dry.
10	15	5	2.5-3.0/	0.0-3.0': Sand and Gravel. As above, becoming gravel with sand in lowest 1
			0-0.3	foot. Mainly pebble gravel at base.
				3.0-5.0': Silt and Sandy Silt. Strong brown (7.5 YR 4/6), very thinly laminated,
				HP = 1.5, slight to no HCl reaction, trace to some clay laminations (approximately
				every 3 to 4 inches) weak red (10.2 4/4), foliated, slightly plastic, no HCl reaction,
				laminations up to 1/8 inch thick.
15	20	6	10-40/0-0.7	0.0-6.0': Silt, and sandy silt as above, yellowish brown (10 YR 5/4), moderate HCl
				reaction. Trace to some clay inclusions as above, but HP to 1½ inch thick. Very

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Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				fine sand lense at 3 to 3.5 feet. Trace to some silt, crumbly, slight HCl reaction.
				Clay inclusions more abundant and clay has strong HCl reaction. HP > 4.0.
20	25	6.5	20-1,250/	0.0-5.5": Silt and Clay. As above. Units finely bedded and in approximate
			0-0.4	equal amounts.
				5.5-6.5": Silt and Clay. Reddish brown (2.5 YR 2.5/4) as above, clay dark reddish
				brown. Silt and clay in approximate equal amounts. Clay strong HCl reaction.
				Silt slight HCl reaction.
25	30	5	2,000/	0.0-1.0': Sand and Gravel. Dark red brown (5 YR 3/5), silty, coarse to very fine
			9,000/0.0-	sand. Pebble and granular gravel, some cobbles, slough.
			0.6	1.0-2.0': Silt. Reddish brown (5 YR 4/4), trace well rounded, matrix supported
				pebbles, HP = 2.0, strong HCl reaction.
				2.0-3.5': Sand. Reddish brown (5 YR 4/4), fine, silty, strong HCl reaction, crumbly,
				nonplastic, HP = 1.0, much very fine sand.
				3.5-5.0': Sand. Light reddish brown (5 YR 6/4), very fine, loose, dry, very well
				sorted, slight to moderate HCl reaction.
30	35	5	1,000-	0.0-1.0': Sand. Dusky red (2.5 YR 3/2), medium to very coarse, slightly silty, trace
			>10,000/	pebble gravel, slough.
			0-0.9	1.0-2.0': Sand. Reddish brown (2.5 YR 4/4), fine, trace granular gravel becoming
				more abundant at base, dry, well sorted, loose. No HCl reaction.
				2.0-3.0': Sand. Reddish brown (5 YR 4/4), fine to medium, well sorted, loose,
				no HCl reaction.
				3.0-3.5': Sand and Gravel. Reddish brown (5 YR 5/3), very fine to very coarse sand,
				granular to cobble gravel of variable composition, subangular to well rounded,
				slight to moderate HCl reaction, dry, loose.
				3.5-5.0': Sand. Light red brown (5 YR 6/4) at top, reddish brown (5 YR 4/4) at base, fine
				sand grading down into medium. Top: fine sand, light red brown, with some
				coarse sand and trace to some silt. No HCl reaction, dry and loose. Base: Medium to
				coarse sand. Some fine sand, trace granular gravel. No HCl reaction, loose.
				Contains calcareous concretions (nodules) of sand with calcite cement.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
35	40	5	4,500/	0.0-1.0': Sand. Brown (7.5 YR 5/3), coarse to medium, much fine sand, some
			0.0-1.9	granular gravel, loose, no HCl reaction.
				1.0-2.0': Granular Gravel. Dark reddish brown (5 YR 3/4), with much sand,
				predominately very coarse to some coarse and medium, some subrounded
				pebbles, (variable composition), loose.
				2.0-3.5': Sand. Very dark brown (7.5 YR 2.5/3), very coarse with some gravel, trace
				silt, some to much medium sand, mainly pebble gravel, variable composition,
				subangular to subrounded.
				3.5-4.0': Sand. Coarse with some granular gravel, strong brown (7.5 YR 4/6)
				much very coarse sand, loose, no HCl reaction.
				4.0-5.0': Sand and Gravel. Pinkish gray (7.5 YR 6/2), coarse to very coarse, much
				medium, fine and very fine sand, some silt, dry, moderate HCl reaction, loose.
				Gravel subrounded to well rounded, variable composition up to 1 inch diameter.
40	45	4.5	200-5,000/	0.0-0.5': Sand and Gravel. As above.
			0-2.1	0.5-5.0': Silt. Reddish brown (2.5 YR 4/4), HP = 2.0, some very fine sand, nonplastic,
				slight HCl reaction, trace to some clay inclusions . Clay, dark red (2.5 YR 3/6),
				foliated, moderate HCl reaction, HP = 2.0.
45	50	5	5-30/0-0.2	0.0-5.0': Silt. As above, 0.5 inch clay inclusions, dark red brown (5 YR 3/4), at 4.5
				feet, moderate HCl reaction.
50	55	5	5-50/0-0.2	0.0-5.0': Silt. As above, trace to some clay inclusions in top 3 feet.
55	60	5	2-5/0-0.2	0.0-5.0': Silt. As above. HP = 2.5, slight HCl reaction, trace clay inclusions.
60	65	5	2-4/0.0	0.0-5.0': Silt. As above, trace clay inclusions.
65	70	5	15-3,500/	0.0-5.0': Silt. As above.
			0.0	
70	75	5	3,000-	0.0-0.5': Silt. As above.
			>10,000/0.0	0.5-1.0': Sand and Silt. Thickly laminated. Sand: brown (7.5 YR 4/2) fine to medium,
				very wet, loose, well sorted, no HCl reaction. Silt: very dark gray (10 YR 3/1),
				moderate HCl reaction. HP ≥4.0.
				1.0-2.0': Sand. As above without silt.
				2.0-4.0': Sand. Reddish brown (5 YR 4/3), fine, loose, slightly dense, crumbly, very

From	To	(feet)	OVA/OVM	Sample/Core Description
				well sorted. No HCl reaction.
				4.0-4.5': Silt. Strong brown (7.5 YR 4/6), thinly laminated with some clay lenses,
				HP > 4.0, slight to moderate HCl reaction.
				4.5-5.0': Sand. Dark yellow brown (10 YR 4/6) coarse, some medium sand, trace
				very coarse sand, loose, no HCl reaction.
75	95	10	150-2,500/	0.0-7.0': Sand. Reddish brown (5 YR 5/4), coarse, some to much medium sand,
			0.0	loose, trace gravel, no HCl reaction.
				7.0-7.5': Sand and gravel. Deep red (2.5 YR 4/2), coarse to very coarse, some coarse
				and medium, granular and fine pebble gravel, subangular to well rounded,
				variable composition, loose. No HCl reaction.
				7.5-9.0': Sand. Deep red (2.5 YR 4/2), coarse with some gravel, loose, gravel as
				above.
				9.0-10.0': Silt. Reddish brown (5 YR 4/4), HP = 3.0, moderate HCl reaction.
95	100	5	30-1,000/	0.0-5.0': Silt. As above, clay inclusion at 2.5 feet.
			0.0	
100	105	5	300->10,000/	0.0-3.0': Silt. As above, with some clay inclusions.
			0.0	3.0-4.0': Sand. Reddish brown (5 YR 4/4), very fine, silty, HP = 1.5, moderate HCl
				reaction, cohesive, nonplastic.
				4.0-5.0': Sand. Reddish brown (5 YR 4/4), fine to very fine, well sorted, slight HCl
				reaction, loose.
105	115	7	1,000-	0.0-7.0': Sand. Reddish brown (5 YR 5/4), medium grading to medium to coarse
			7,000/0.0	sand with depth, well sorted, loose.
115	120	5	≤2.0/0.0	0.0-5.0': Silt. Reddish brown (5 YR 4/4), variable very fine sand content (trace to
				much), HP = 2.0-2.5, slight to moderate HCl reaction, clay inclusions toward base.
120	125	5	<2.0/0.0	0.0-5.0': Silt. Reddish brown (5 YR 4/4), with much sand to sandy silt. HP = 1.0 to
				1.5, slight HCl reaction.
125	130	5	≤2.0/0.0	0.0-5.0': Silt. Sandy, with fine silty sand at base.
130	135	5	5-30/0.0	0.0-2.0': Silt. Reddish brown (5 YR 4/4), HP = 2.0. No HCl reaction.
				2.0-5.0': Sand. Reddish brown (5 YR 4/4), very fine, silty, dry, crumbly, HP =
				1.0 to 1.5. No HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-24 A/B/C

Prepared by Raymond Flynn/Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description

135	140	5	≤2.0/0.0	0.0-3.0': Silt. Reddish brown (5 YR 4/4), variable very fine sand content (trace
				to much), HP = 0.5, slight HCl reaction.
				3.0-5.0': Silty Sand/Sandy Silt. Reddish brown (5 YR 4/4) gradational contact with
				overlying unit. Contains trace to some very fine to fine sand lenses.
140	145	5	<2-4/0-0.2	0.0-3.0': Silty Sand/Sandy Silt. As above.
				3.0-5.0': Sand. Very fine with some silt. Silt reddish brown (5 YR 4/4), dense,
				slight to moderate HCl reaction, very well sorted.
145	150	5	2-15/0.0	0.0-5.0': Sand. Very fine, as above, with trace silt, slight HCl reaction.
150	155	5	5-6.0/0.0	0.0-5.0': Sand. Reddish brown (5 YR 4/4), fine to very fine, very well sorted, no
				HCl reaction, blocky, crumbly, slightly dense.
155	160	5	≤2.5-4.5/0.0	0.0-4.0': Sand. Brown (7.5 YR 5/4) very fine, with some silt, HP = 0.5. No HCl
				reaction.
				4.0-5.0': Silt. Brown (7.5 YR 5/4), sandy, HP ≤ 0.5 . No HCl reaction.
160	165	5	≤2.5-7.0/0.0	0.0-5.0': Silt. Brown (7.5 YR 5/4), HP ≤0.5. No HCl reaction, some to much very
				fine sand in lowest 1 foot.
165	170	5	3-20/0.0	Silt. As above with some to much very fine sand.
170	175	5	8-45/0-0.2	0.0-1.5': Sand. Brown (10 YR 5/3), fine to very fine, very well sorted, very firm to
				dense. Slight HCl reaction.
				1.5-5.0': Silt. Brown (7.5 YR 4/3), HP = 2.5, moderate HCl reaction, nonplastic,
				some clay inclusions. Clay: reddish brown (5 YR 5/3), moderately strong HCl
				reaction, ¼ inch fine sand lense at 4½ feet.
175	180	5	4-25/0.0	0.0-5.0': Silt. As above, without clay inclusions. Variable very fine sand content
				(trace sand to silt with sand).
180	185	5	2.5-4.0/0	0.0-5.0': Silt. As above, with some clay inclusions and trace matrix supported
				pebbles (subrounded). Clay inclusions up to 8 inches thick (HP >4, slight HCl
				reaction).
185	190	5	2.5-3.5/0.0	0.0-5.0': Silt. With clay as above.
190	195	5	2.5-25/0.0	0.0-2.0': Silt. As above with some matrix supported pebbles in lowest 1 foot.
				2.0-4.0': Sand. Brown (10 YR 5/3), medium, trace to some coarse sand, trace
				pebble gravel, slightly silty (trace silt), loose, no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-24 A/B/C

Prepared by Raymond Flynn/Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.0-5.0': Sand and Gravel. Brown (10 YR 5/3), coarse to medium sand with some
				fine sand, granular to cobble sized gravel, variable composition, angular to subrounded,
				no HCl reaction.

195	200	6.5	7-175/0-4.1	0.0-3.0': Sand. Pale brown (10 YR 6/3), with some gravel, fine to medium, some
				coarse and trace silt. Gravel: pebble to cobble, variable composition, angular to
				subrounded, loose, no HCl reaction.
				3.0-6.5': Rock/Boulder. Pulverized. Residual fragment appears porphyroclastic
				with approximately 45 to 60 degrees dip on foliation.
200	210	10	N/A	0.0-10.0': Rock. As above. Bedrock.
210	215	0	N/A	No recovery.
				GM-24A Total Depth 95 ft.
				GM-24B Total Depth 115.5 ft.
				GM-24C Total Depth 215 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-25 A/B/C Project/No. Ford/Kingsford WI000675.0001 Page 1 of 7

Site Location Kingsford, Michigan

Drilling Started 6/8/98 Drilling Completed 6/10/98

Total Depth Drilled 220 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 4" x 10'

Sampling Interval continuous feet

Land-Surface Elev. 1047.94 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotosonic ~~Hollow stem auger~~

Drilling Contractor Boart Longyear

Driller Perry Helper Scott and Jeremy

Prepared By Ray Flynn and Dan Hegrenes

Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	7.0/0.5	0-0.5': Silt. Dark reddish brown (5 YR 3/3). some fine sand, trace rootlets,
				damp, HP = 1.0.
				0.5-2.0': Sand. Fine, brown (7.5 YR 5/3), some to much gravel in 1.0 to 2.0,
				loose, damp, variable composition, gravel.
				2.0-5.0': Sand. Silty, reddish brown (2.5 YR 4/4) HP = 0.7, very moist to
				saturated, trace angular gravel. No HCl reaction, some to much rounded
				gravel from 4.0 to 5.0.
5	10	5	10/0.0	0-1.5': Clay. Silty, red (10 R 5/6) finely interbedded with silt. Reddish brown
				(5 YR 5/4) with some to much fine sand. HP clay = 1.25. HP silt = 2.0
				saturated, clay strong HCl reaction. Silt weak HCl reaction. Silt very finely
				laminated.
				1.5-5.0': Silt. As above, but brown (7.5 YR 4/3) HP = 1.0. Saturated, no
				HCl reaction.
10	15	5	700/0.0	0-2.0': Silt. As above, saturated, interbedded with clay, reddish brown,
				(2.5 YR 4/4) strong HCl reaction. Silt/clay laminations thick to thinly laminates.
				HP clay = 1.5. HP silt = 1.0. clay is fissile and plastic.
				2.0-5.0': Clay/Silt. As above, clay reddish brown (5 YR 4/4) thin laminations
				of fine to medium sand, lowest ½ foot (4.5 to 5.0).
15	20	5	3,500/0.3	0-2.0': Silt. As above, saturated but very soft. HP = 0.0.
				2.0-3.0': Silt. Reddish brown (2.5 YR 4/4) with thin clay laminations above,
				strong HCl reaction. Coarsening down to silt, gray (5 YR 5/1) very finely
				laminated. No HCl reaction with sand laminations, reddish brown (5 YR 5/3)
				3.0-3.5': Sand. Reddish brown (5 YR 5/3). Fine to medium sand, very
				well sorted. No HCl reaction, loose.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-25 A/B/C

Prepared by Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-5.0': Sand and Gravel. Brown (7.5 YR 5/4) loose, saturated. Medium to
				coarse sand with granule to cobble sized variable composition, well rounded
				to subrounded. No CH4 at drill floor, 4 ppm (background).
20	25	1.5	4,000/0.3	0-0.5': Sand and Gravel. As above, saturated.
				0.5-1.5': Sand. Coarse, with some to much gravel, brown (7.5 YR 5/3)
				loose, saturated gravel, granule to cobble sized, subangular to subrounded,
				variable compostion.
25	30	5	>10,000/2.7	0-0.5': Sand. Coarse, saturated, as above.
				0.5-2.0': Sand. Medium to coarse, brown (7.5 YR 5/3) loose, saturated, no
				HCl reaction.
				2.0-5.0': Sand. Fine to medium, brown (7.5 YR 5/4) loose, very well sorted,
				saturated, trace well rounded pebble gravel.
30	35	5	>10,000/5.0	0-1.5': Sand. Fine to medium, as above, slightly coarser with some gravel
				(cobbles) at 1.5 feet.
				1.5-5.0': Silt/Clay. Interbedded in approximately equal amounts, clay
				reddish brown (2.5 YR 4/4) platy, plastic, strong HCl reaction. HP = 2.3, silt
				reddish brown (5 YR 4/3). HP = 2.2, saturated.
35	40	5	8,000/0.0	0-3.0': Sand. Silty very fine sand, reddish brown (5 YR 4/3) very well sorted.
				HP = 1.0, saturated.
				3.0-3.1': Clay. Reddish brown (5 YR 4/4) strong HCl reaction, plastic,
				platy.
				3.1-5.0': Sand. Silty, as above, becoming fine sand at base.
40	45	5	>10,000/0.1	Sand. Fine, reddish brown (5 YR 5/3), saturated, very well sorted, slightly firm.
45	50	5	3,500/0.5	0-3': Sand. Fine, reddish brown (5 YR 5/3) very well sorted, trace to some
				silt, slightly firm, saturated.
				3-3.2': Silt. Brown (7.5 YR 5/3) slightly plastic, HP = 1.1.
				3.2-5.0': Sand. Fine, as 0 to 3 but reddish brown (5 YR 5/4) very well
				sorted, saturated.
50	55	5	9,500/1.5	0-1.0': Sand. Fine, as above, saturated.
				1.0-2.0': Silt. Brown (7.5 YR 4/3) HP = 0.2, some to much fine sand. No
				HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-25 A/B/C

Prepared by Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				2.0-5.0': Sand. Fine, reddish brown (5 YR 4/3) very well sorted, loose, very
				damp to saturated, very finely laminated with black laminations 53 to 54 feet.
55	60	5	8,000/3.8	0-0.5': Sand. As above.
				0.5-1.5': Silt. Brown (7.5 YR 4/3). HP = 0.7, saturated. No HCl reaction,
				slightly plastic.
				1.5-2.5': Sand. Silty, reddish brown (5 YR 4/3) saturated, HP = 0.1.
				2.5-3.0': Sand. Fine, reddish brown (5 YR 5/4) firm, trace to some silt, very
				well sorted, saturated, no HCl reaction.
				4.0-5.0': Sand. Silty, very fine sand, reddish brown (5 YR 5/4). HP = 0.3,
				very well sorted.
60	65	5	7,000/8.1	0-3': Sand. Silty, as above.
				3-5': Silt, reddish brown (5 YR 4/3) saturated, trace laminations and very fine
				sand HP = 0.7. No HCl reactions.
65	70	5	2,500/4.1	0-1.5': Silt. Brown (7.5 YR 4/3) saturated, with much sand. HP = 0.1. No HCl
				reaction.
				1.5-5.0': Sand. Fine, brown (7.5 YR 4/3) trace silt, slightly cohesive, very
				well sorted, saturated.
70	75	5	7,000/6.9	0-2': Sand. Fine, as above.
				2-3': Silt, dark brown (7.5 YR 3/2) HP = 0.6, saturated, slight HCl reaction.
				3-5': Sand. As 0 to 2.
75	80	5	4,000/4.8	0-1': Silt. Very fine sand, brown (7.5 YR 4/3) some to much medium to
				coarse sand.
				1-5': Silt. Very fine sand, as above, with no medium to coarse sand, very
				well sorted. HP = 0.2, moderate HCl reaction.
80	85	5	9,500/7.2	0-2': Silt. Very fine sand, as above.
				2-3.5': Silt. Dark brown (7.5 YR 3/3) saturated, moderate HCl reaction. HP =
				0.75.
				3.5-5': Silt. Very fine sand, as 0 to 2, saturated.
85	90	5	>10,000/5.4	0-1.5': Sand. Silty, brown (7.5 YR 4/3), no HCl reaction, saturated HP = 1.25.
				1.5-2.5': Sand. Fine, brown (7.5 YR 4/3) very well sorted, slightly dense.
				2.5-4.9': Sand. Fine to medium, brown (7.5 YR 5/3) loose, very well sorted,
				saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-25 A/B/C

Prepared by Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.9-5.0': Silt. Brown (7.5 YR 4/3) HP = 0.25, saturated, slight HCl reaction.
90	95	5	4,000/6.3	0-5': Silt. As above with silty sand seam 4 to 4.1 feet. Silt HP = 1.2, with
				trace angular gravel, weak HCl reaction.
95	100	5	8,000/4.6	0-2': Silt. Brown (7.5 YR 4/3) some to much very sand saturated HP = 0.0.
				No HCl reaction.
				2-3': Sand. Silty, reddish brown (5 YR 4/3) some clay, saturated. HP = 0
				very soft.
				3-5': Sand. Fine to medium, brown (7.5 YR 4/2) very well sorted, saturated,
				some silt.
100	105	5	>10,000/2.2	0-5': Sand. As above, becoming medium sand with depth, trace coarse
				sand and some silt, medium sand, brown (7.5 YR 4/2) as above, saturated,
				no HCl reaction.
105	110	5	>10,000/3.6	0-4.5': Sand. Medium, as above.
				4.5-5.0': Sand. Medium, as above, with clay lense approximately 0.5 inch
				thick, strong HCl reaction, saturated.
110	115	5		0-1.5': Sand. Fine, reddish brown (5 YR 5/4) very well sorted, trace silt,
				loose, saturated.
				1.5-4.0': Silt. Reddish brown (5 YR 4/3) saturated, moderate HCl reaction.
				HP = 0.5.
				4.0-4.3': Clay. Reddish brown (2.5 YR 4/4) strong HCl reaction, platy and
				plastic, damp, HP = 2.0.
				4.3-5.0': Sand. Fine, brown (7.5 YR 5/3) some silt, no HCl reaction, very
				damp.
				Water sample requested from 105 to 110 feet bgs.
115	120	5	6,000/2.0	Sand. Fine, brown (7.5 YR 4/3) some silt, saturated, trace to some medium
				sand, soft, no HCl reaction.
120	125	5	>10,000/3.3	Sand. Fine, as above, with much silt at base, trace pebbles.
125	130	5	>10,000/5.5	Sand. Fine, as above.
130	135	2	>10,000/4.4	0-1.5': Sand. Fine, as above.
				1.5-2.0': Sand. Fine with lenses (<1 cm) of silt, reddish brown (5 YR 4/3).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-25 A/B/C

Prepared by Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				Moderate HCl reaction in silt, loose, very moist, (due to drilling method).
135	140	5	>10,000/3.0	Sand. Fine, brown (7.5 YR 4/3) loose, saturated, well sorted, trace to some
				fine gravel, becoming more abundant toward base.
140	145	5	>10,000/2.1	0-1': Sand. fine, as above.
				1-2": Silt. Brown (7.5 YR 4/2) moist HP = 1.0. Moderate HCl reaction, clay
				lense at base, reddish brown (5 YR 4/3), platy, plastic, strong HCl reaction.
				HP = 0.5.
				2-5': Sand. Fine as 0 to 1 foot, slightly coarser, fine to medium, toward base
				with trace to some fine gravel.
145	150	5	>10,000/2.1	0-1.5': Sand. Fine to medium , as above, with some coarse sand and some to
				much well rounded fine gravel, saturated, loose.
				1.5-3.0': Sand. Fine, brown (7.5 YR 5/3) well sorted, loose, saturated.
				3.0-5.0': Silt. Brown (7.5 YR 4/2) HP = 0.5, weak HCl reaction, saturated.
150	155	5	>10,000/3.0	0-1.0': Silt. As above.
				1.0-2.0': Silt, very fine sand, brown (7.5 YR 5/3). HP = 0.1, no HCl reaction
				saturated, very well sorted.
				2.0-2.5': Clay. Dark reddish brown (5 YR 3/3). HP = 1.5, moderate HCl
				reaction, platy, crumbly, damp.
				2.5-5.0': Sand. Medium to coarse, brown (7.5 YR 4/2) saturated, trace fine
				gravel, loose.
155	160	5	4,500/0.5	0-2': Sand. Medium to coarse, brown (7.5 YR 4/2) saturated, loose, trace silt,
				some fine sand.
				2.0-3.5': Silt. Brown (7.5 YR 4/3) saturated, very soft, no HCl reaction.
				3.5-4.0': Sand. Coarse, brown (7.5 YR 4/2), loose, saturated.
				4.0-5.0': Silt. Brown (7. 5YR 4/3) very saturated, HP = 0.2, no HCl reaction,
				capped by 1 inch lense of silty clay, dark reddish grey (5 YR 4/2) HP = 0.4,
				moderate, HCl reaction.
160	165	5	>10,000/1.6	Silt. As above with clay lenses at 2.5 and 5.0 feet, clay in 159.5 to 160
				interval.
165	170	5	8,000/0.8	0-0.5': Silt. As above.
				0.5-1.5': Sand. Silty/sandy silt, brown (7. 5YR 5/2) saturated, HP = 0.4,
				no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-25 A/B/C

Prepared by Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1.5-3.0': Silt. Very fine sand, brown (7.5 YR 5/2) slightly cohesive,
				saturated, very well sorted, no HCl reaction.
				3.0-5.0': Silt. Brown (7.5 YR 5/2) saturated, HP = 0.7, no HCl reaction,
				grains barely visible, very well sorted.
170	175	5	3,500/1.8	0-1.0': Silt. Very fine sand, brown (7.5 YR 5/2) no HCl reaction very well
				sorted, saturated.
				1.0-1.5': Sand. Fine, reddish brown (7.5 YR 4/3) loose, saturated, very well
				sorted.
				1.5-5.0': Silt. Very fine sand, as 0 to 1.0 interval, very damp, (drilling
				artifact).
175	180	5	2,500/0.0	0-5': Silt. Brown (7 R 4/3) saturated very soft, trace fine sand. HP = 0.1.
180	185	5	8,000/1.2	0-5': Silt. As above, weak HCl reaction. Clay lense (1.5 inch) at 4.8, clay,
				reddish brown (5 YR 4/3) strong HCl reaction. HP = 2.0
185	190	5	1,500/0.2	0-3': Silt. As above.
				3-5': Silt. Very fine sand, brown (7.5 YR 4/2) very well sorted, saturated,
				HP = 0.5, weak HCl reaction. Occasional clay lenses <¼ inch , as above.
190	195	5	1,500/1.6	0-1': Silt. Very fine sand, as above.
				1-2': Sand. Fine, brown (7.5 YR 4/2) very well sorted, loose, saturated.
				2-3': Clay. Silty, brown (7.5 YR 4/2) moderate HCl reaction, HP = 3.0.
				3-5': Boulder. Slate, metamorphic with abundant augening, horizontal
				foiliations, suggest not bedrock but boulder since bedrock foliation typically
				vertical, No HCl reaction.
195	200	5	1,700/0.5	0-1': Sand. Fine, dark grey (7.5 YR 4/1) well sorted, medium dense, (drilling
				artifact) saturated.
				1-2': Sand and Gravel. Very dark grey (7.5 YR 3/1), poorly sorted, gravel,
				variable composition, subangular to subrounded.
				2-5': Clay. Silt, dark reddish brown (5 YR 3/2) HP = 4.0, diamictic.
				Abundant matrix supported gravel (approximately 30 percent). No HCl
				reaction, saturated.
200	205	5	900/0.4	0-1': Diamictic silty clay, as above.
				1-5': Sand. Fine to medium, brown (7.5 YR 4/2) moderate sorting, trace
				fine gravel, some to much coarse sand. No HCl reaction, loose, saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-25 A/B/C

Prepared by Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
205	210	5	600/0.3	Sand. Fine to medium, as above.
210	215	5	150/0.5	0-2.5': Sand. Fine to medium, as above.
				2.5-3.5': Gravel. Fine, variable compostion, subangualr to subrounded,
				saturated, fine to coarse sand, matrix brown (7.5 YR 4/2). No HCl reaction,
				loose.
				3.5-5.0': Gravel. Large granitic and slate cobbles.
215	220	5	25/0.2	0-1': Gravel. Dark bluish grey (Gley 2 4/1), very poorly sorted, clast
				supported very dirty, much silt and fine sand. Loose, gravel, variable
				composition.
				1-2': Sand. Medium to coarse, very dark grey (7.5 YR 3/1) very poorly
				sorted, saturated, loose. Some to much fine gravel, variable composition,
				much silt.
				2-4½': Diamictic silt. Dark bluish grey (2 Gley 3/3/1) abundant gravel
				matrix supported variable composition up to cobble size HP > 4.0 to 2.0.
				Saturated, gravel, no HCl reaction, subangular to subrounded.
				4½-5.0': Slate, vertical foliation, bedrock.
				GM-25A Total Depth 30 ft.
				GM-25B Total Depth 109 ft.
				GM-25C Total Depth 220 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-26 A/B/C Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 6/15/98 15:25

Drilling Completed 6/17/98 10:20

Total Depth Drilled 205 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval 10 feet

Land-Surface Elev. 1047.27 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry

Helper Scott and Jermey

Prepared By Ray Flynn, Dan Hegrenes and Bruce Evans

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	4	3.5-10/0-1	0-0.5': Gravel/Silt/Sand. Brown (7.5 YR 4/3) soil mixture with rootlets and
				organics, loose, moist.
				0.5-3.0': Sand. Brown (7.5 YR 4/3) very fine graine,d silty, trace coarse gravel,
				loose, moist.
				3.0-4.0': Sand/Gravel. Brown (7.5 YR 5/3) fine sand mixed with fine to
				coarse gravel, some pebbles, poorly sorted, loose, moist.
5	10	5	250-8,000/0	0-1.0': Sand/Gravel. Brown, as above, very silty.
				1.0-5.0': Sand/Gravel. Brown (7.5 YR 5/3) fine to coarse sand, fine to coarse
				gravel, very poorly sorted, trace some pebbles, loose, wet.
10	15	2	60-1,000/	0-0.5': Sand/Gravel. Brown, as above.
			0-.6	0.5-2.0': Sand. Brown (7.5 YR 5/4) very fine to fine grain, some silt, abundant,
				fine to coarse gravel, sand moderately sorted, loose, wet to moist.
15	20	5	60-800/0	0-3.0': Silt. Brown (7.5 YR 4/3) sandy with very fine to fine grain sand, bands
				clay, red brown (2.5 YR 4/4). Petrometer 1.8 silt, 0.1 to 1 inch thick, acid
				reaction, wet.
				3.0-4.5': Gravel. Brown (7.5 YR 4/3) fine to very coarse, with pebbles, very
				poorly sorted, wet.
				4.5-5.0': Sand. Brown (7.5 YR 4/4) medium grained, well sorted, trace fine
				gravel, wet, loose.
20	25	5	125-8,000/0	0-0.5': Sand. Brown, as above.
				0.5-3.0': Silt. Brown (7.5 YR 5/2) sandy with very fine grained sand interbedded
				with clay, reddish brown (2.5 YR 4/4) .2 to 1 inch thick (petrometer 0.9)
				fissile looking but plastic, petrometer silt 1.2, wet clay, acid reaction slightly
				in silt.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-26 A/B/C

Prepared by Bruce Evans, Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.0-5.0': Sand. Brown (7.5 YR 5/3) medium grained well sorted, trace to
				coarse gravel, loose, wet.
25	30	4	400-8,000/	0-4.0': Sand. Brown (7.5 YR 4/3) medium grain, well sorted, loose, wet.
			0-.4	
30	35	4	8,000-	0-0.5': Sand. As above.
			>10,000/	0.5-1.5': Sand. Brown (7.5 YR 4/3) medium to coarse sand, well sorted, some
			0-2.2	fine to coarse gravel subangular to subrounded, loose, wet.
				1.5-4.0': Sand. Brown (7.5 YR 4/3) medium grained, well sorted, trace
				fine gravel subrounded to subangular, loose, wet.
				16:20 Stop at 35 feet to collect first water sample from borehole GBGM26/30
				from 30 to 35 feet.
35	40	5	105->10,000	0-4.0': Sand. Light brown (7.5 YR 6/3) medium to coarse grained, trace
			0-0.6	gravel first 3 to 4 feet, loose, saturated.
				4.0-5.0': Sand. Same color as above, medium grained, some to much gavel,
				fine to coarse, subangular to well rounded, variable composition.
40	45	0		No recovery.
45	50	5	5,000-	0-5.0': Sand. Color as above, light brown (7.5 YR 6/3) medium grained, well
			>10,000/0	sorted, loose.
50	55	0		No recovery.
				6/16/98 7:40 Resume drilling
55	60	5	3,500-	0-4.5': Sand. As above, 1 inch thick, clay lense at 4 to 4½ feet.
			>10,000/0-	4.5-5.0': Silt. Brown (7.5 YR 5/3) no HCl reaction, HP = 2.5, some to much
			3.1	medium sand. Grain size sample collected at 56 feet.
60	65	5	3,000-	0-2.0': Sand and Silt. Fine grained, brown (7.5 YR 5/4), no HCl reaction, HP =
			>10,000/0-	0.7, silt increasing downward.
			0.4	2.0-2.5': Sand. Light brown (7.5 YR 6/3), medium grained, loose, well sorted.
				2.5-3.5': Silt. Brown (7.5 YR 5/4), trace fine sand, no HCl reaction, HP = 0.5.
				3.5-4.5': Sand. Light brown (7.5 YR 6/3) medium grained, loose, well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-26 A/B/C

Prepared by Bruce Evans, Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.5-5.0': Silt. As 2½ to 3½.
65	70	5	150-6,000/0	0-3.0': Sand. Brown (7.5 YR 5/3) medium grained, some fine grained, trace
				silt. Moderately sorted.
				3.0-5.0': Silt. Brown (7.5 YR 5/3) no HCl reaction, HP = 1.1.
70	75	5	520->10,000	0-2.0': Silt. As above.
			0	2.0-3.0': Sand. Brown (7.5 YR 5/3), medium grained some fine, trace silt.
				3.0-4.0': Sand, Brown (7.5 YR 5/3), very fine grained, some silt.
				4.0-5.0': Silt. Brown (7.5 YR 5/4) HP = 0.5, no HCl reaction.
75	80	5	100-2,000/	0-3.0': Sand. Silty, brown (7.5 YR 5/4), fine grained, HP = 0.5
			0-0.3	3.0-5.0': Silt. Brown (7.5 YR 5/4), firm, cohesive.
80	85	5	9-70/0-0.1	0-5.0': Silt. As above.
85	90	5	10-50/0	0-3.0': Silt. As above.
				3.0-3.5': Sand. Color as above (75. YR 5/4), silty, fine to medium grained.
				3.5-5.0': Silt. Color as above.
90	95	5	25-50/0	0-1.0': Silt. As above.
				1.0-1.5': Sand. Brown as above, medium grained, well sorted.
				1.5-2.0': Silt. Color as above, trace to some fine to medium sand.
				2.0-5.0': Silt. Color as above, clay, reddish brown (2.5 YR 5/4) lense equal
				½ to 1 inch thick, slight HCl reaction, trace fine sand lenses.
95	100	5	8-200/0-0.1	0-3.0': Silt and Sand. Silt, brown (7.5 YR 4/4) interbedded in approximately
				equal amounts. Sand, brown (7.5 YR 4/3) fine grained, silt HP = 0.2, no
				HCl reaction.
				3.0-4.0': Sand. Brown (7.5 YR 4/3) medium to fine grained.
				4.0-5.0': Silt. Brown (7.5 YR 4/4) clay, red (2.5 YR 4/8) lense approximately 1 inch
				thick HP = 0.5 at 4½ feet.
100	105	5	5-200/0-0.6	0-1.0': Silt. As above.
				1.0-5.0': Sand. Brown (7.5 YR 5/3) fine grained, very well sorted, silt, cohesive.
105	110	5	4-9/0-0.1	0-5.0': Sand. Brown (7.5 YR 4/3) fine grained, fine to medium at 4 to 5 feet.
				Well sorted, loose.
110	115	5	03/05/00	0-1.0': Sand. As above, fine to medium grained.
				1.0-5.0': Silt. Reddish brown (5 YR 5/3) HP = 0.6, moderate HCl reaction,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-26 A/B/C

Prepared by Bruce Evans, Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				approximately 1 to 2 inch fine sand, interbedded seams throughout, clay
				reddish brown (2.5 YR 4/4). Clay HP = 1.5 clay seams interbedded throughout.
115	120	5	2.5-7/0	0-1.0': Clay. Red (2.5 YR 4/6) strong HCl reaction, slightly plastic, HP = 3.6.
				1.0-4.0': Silt. Brown (7.5 YR 4/3) interbedded clay seams, medium HCl reaction,
				clayey.
				4.0-5.0': Clay. As above.
120	125	5	2.5-8/0	0-4.0': Sand and Clay. As above.
				4.0-5.0': Sand. Brown (7.5 YR 5/2) fine grained, very well sorted, loose.
125	130	5	5-45/0-0.8	0-4.0': Sand. Light grey (7.5 YR 7/1) fine, very well sorted, loose.
				4.0-5.0': Sand. Light grey (7.5 YR 7/1) fine to medium, well sorted.
130	135	5	7-30/0-1.9	0-5.0': Sand. As above.
135	140	5	9.5-150/0-0.8	0-3.0': Sand. As above.
				3.0-5.0': Sand. Brown (7.5 YR 5/2) fine grained, very well sorted, loose.
140	145	5	60-1,000/	0-4.0': Sand. As above.
			0-2.1	4.0-5.0': Silt. Brown (7.5 YR 4/2) weak HCl reaction. HP = 0.5, clay inclusions,
				reddish brown (2.5 YR 4/3) clay HP = 1.5. Strong HCl reaction.
				14:05 Collect water sample GBGM-26/140 screened interval 140 to 145.
				15:15 Resume drilling.
145	150	5	2,000-	0-5.0': Sand. Brown (7.5 YR 4/3) fine, very well sorted, loose.
			>10,000/0-	
			0.6	
150	155	5	3,000-	0-0.5': Sand. Some color as above, very fine, some fine, well sorted, loose.
			>10,000/0-1	0.5-5.0': Sand. Same color, fine, very well sorted, loose.
155	160	5	700->10,000	0-5.0': Sand. Same color as above, brown (7.5 YR 4/3) fine, trace very fine
			0-7.1	gravel seams, well sorted, loose.
160	165	1	8,000-	0-1.0': Sand. As above.
			>10,000/0-	
			1.1	
165	170	5	70->10,000/	0-5.0': Sand. Brown (7.5 YR 5/3) fine grained, very well sorted, loose, ½ inch
			0-0.8	clay lense at 3½ feet.
170	175	5	5,000-	0-4.0': Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-26 A/B/C

Prepared by Bruce Evans, Ray Flynn and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			>10,000/0-	4.0-4.5': Sand. As above, with much fine to coarse gravel, grading upward.
			0.4	4.5 -5.0': Silt. Brown (7.5 YR 4/2), HP = 1.5 weak HCl, clay, red (2.5 YR 4/6). HP =
				2.5 strong HCl readtion, clay lenses.
175	180	5	12-2,000/0	0-1.0': Sand/Silt. Grey (7.5 YR 5/1) very fine grained sand lenses.
				1.0-5.0': Silt. Grey (7.5 YR 5/1) HP = 2, finely laminated, ¼ inch clay lense.
180	185	5	5-15/0-1.7	0-3.5': Silt. Grey (7.5 YR 5/1) finely laminated with very fine sand and clay.
				3.5-5.0': Silt/Clay. Approximately equal amounts, clay is platy and plastic.
185	190	5	3/0	0-2.0': Silt. Brown (7.5 YR 2/3) HP = 0.1, moderate HCl reaction, with some
				very fine sand.
				2.0-5.0': Silt. Brown (7.5 YR 2/3) HP = 0.1 trace to some very fine to fine sand in
				lenses, trace fine to coarse gravel which is matrix supported by silt.
190	195	5	7-60/0.2-3.7	0-5.0': Silt. Same color as above, with much gravel. Coarse to cobbles, silt
				matrix support, subanulgar to subrounded. Silt HP = 0.5, moderately HCl
				reaction, clayey and plastic, gravel is variable composition.
195	200	5	4-50/1.8-2.4	0-5.0': Silt/Clay. Shattered rock and/or boulder mixed from drilling and
				compresed. Foliations horizontal possibly metaudcanic, weak to moderate HCl
				reation, heavily weathered. Fresh fractured surface of rock color, greenish gray
				(Gley 6/1/5g). Weathered rock clay/silt, color, dark reddish brown (5 YR 3/4).
200	206	6	3-4/0-2.7	0-5.0': Weathered Rock. Clay/Silt/Fractured Rock, as above.
				5.0-6.0': Fresh bedrock. Subvertical foliations, dark greenish grey (Gley 4/1/5g)
				massive.
				Top of Bedrock weathered at 195 feet.
				Top of Competent Bedrock at 205 feet.
				10:20 End borehole at a depth of 205 feet.
				GM-26A Total Depth 40 ft
				GM-26B Total Depth 111 ft
				GM-26C Total Depth 205 ft

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-27 A/B/C Project/No. Ford/Kingsford WI000675.0001 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 6/24/98 Drilling Completed 6/25/98

Total Depth Drilled 222 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval 10 feet

Land-Surface Elev. 1052.53 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan/ Scott

Prepared By Ray Flynn Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	4	2-10/0-0.3	0-3.0': Sand. Fine, red (2.5 YR 4/6) moderate sorting, dry, loose, some fine
				gravel, some medium sand, coarse sand, trace coarse gravel. No HCl
				reaction.
				3.0-4.0': Sand. Fine, as above, strong brown (7.5 YR 5/6).
5	10	5	3-3.5/0-0.3	0-1.5': Sand. Fine, as above, with some coarse subangular gravel, loose,
				dry.
				1.5-3.0': Silt. reddish brown (5 YR 5/3) HP = 0.1, saturated, no HCl reaction,
				trace fine sand.
				3.0-3.5': Sand. As 0 to 1.5.
				3.5-5.0': Silt. As 1.5 to 3.0 with clay lenses, dark red (2.5 YR 3/6), moderate to
				weak HCl reaction.
10	15	5	2.5-3.0/0-0.3	0-5': Silt. As above, with clay lenses to ½ inch thick, approximately
				every 0.3 feet.
15	20	5	8-100/0-0.4	0-1.0': Sand. Fine, well sorted, trace coarse angular gravel, loose.
				1.0-5.0': Silt/Clay Interbedded. Silt reddish brown (5 YR 4/3) HP = 2.5, moderate
				HCl reaction. Clay, dark red (2.5 YR 3/6) strong HCl reaction. HP = 2.0
				present in approximate equal amounts, silt slightly clayey.
20	25	5	150-125/	0-0.3': Silt. As above, no clay.
			0-0.4	0.3-4.0': Sand. Fine, very fine sand, brown (7.5 YR 4/3) loose, very well sorted.
				4.0-5.0': Sand. Fine, brown (7.5 YR 5/3) trace medium, very well E62
				sorted, loose.
25	30	5	20-900/0.1-	0-5.0': Sand. Medium to coarse, brown (7.5 YR 4/4) very well sorted, loose.
			0.6	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-27 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
30	35	4	3,000-	0-2.5': Sand. Medium to course, as above.
			>10,000/1.2-	2.5-4.0': Gravel. Fine, dark brown (7.5 YR 3/3) loose, subangular to rounded,
			3.3	variable composition, much coarse sand, some medium to fine sand, trace
				silt, trace coarse gravel, up to cobble size.
35	40	5	150->10,000/	0-2.0': Gravel. As above, but some to much coarse gravel in lowest 1 foot.
			0-5.2	2.0-5.0': Sand. Medium, brown (7.5 YR 5/3) loose, very well sorted.
40	45	5	4,500-	0-0.5': Sand. Medium, as above.
			>10,000/1.2-	0.5-5.0': Sand. Very fine, silt, reddish brown (5 YR 5/3) very well sorted,
			4.2	trace well rounded pebbles, HP = 0.2. No HCl reaction.
45	50	5	600->10,000/	0-1.0': Sand. Very fine, as above, reddish brown (5 YR 4/4).
			0.7-3.2	1.0-1.3': Silt. Reddish brown (5 YR 4/3) HP = 0.4. Moderate HCl reaction.
				1.3-5.0': Sand. Very fine, as 0 to 1.0.
50	55	5	5,000-	0-0.2': Sand. Very fine, as above.
			>10,000/2.1-	0.2-1.0': Sand. Fine, reddish brown (5 RY 5/3) very well sorted, loose.
			4.2	1.0-2.0': Sand. Silty, reddish brown (5 YR 5/3) very fine sand, no HCl
				reaction, HP = 0.6.
				2.0-5.0': Sand. Very fine silt, reddish brown (5 YR 5/3), very well sorted,
				loose to slightly cohesive, no HCl reaction.
55	60	5	700-7,000/	0-5.0': Sand. Very fine, as above, reddish brown (2.5 YR 4/4) with some to
			0.9-2.9	much silt, no HCl reaction, crumbly. (Drilling artifact.)
60	65	5	500-6,000/	0-5.0': Sand. Very fine, as above.
			0.4-2.2	
65	70	5	700-1,500/	0-5.0': Sand. Very fine, silty, reddish brown (5 YR 4/4) HP = 0.4, no HCl
			0-1.9	reaction.
70	75	5	25-50/0-10	0-4.0': Silt. Reddish brown (5 YR 4/3). HP = 0.2, strong HCl reaction. Some to
				much clay.
				4.0-5.0': Sand. Very fine, reddish brown (5 YR 5/4) loose, no HCl reaction, very
				well sorted.
75	80	5	N/A/0.0	0-5.0': Silt. Reddish brown (5 YR 4/3) very soft, strong to moderate HCl
				reaction. HP = 0.1. Trace fine sand, water logged.
80	85	5	35/1.0	0-5.0': Silt. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-27 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
85	90	5	5-35/0-0.9	0-1.0': Sand. Fine to very fine, reddish brown (5 YR 4/3) very well sorted, loose
				to slightly cohesive. No HCl reaction.
				1.0-4.0': Silt. Reddish brown (2.5 YR 4/3) HP = 0.3, plastic, moderate HCl
				reaction.
90	95	5	3-20/0-1.3	0-5.0': Silt. As above, with clay lense at 4.6 to 4.7, platy. Reddish brown,
				(2.5 YR 4/4) strong HCl reaction, HP = 1.0.
95	100	5	15-110/0-0.9	0-5.0': Silt. reddish brown (2.5 YR 3/3) HP = 0.1 moderate HCl reaction,
				plastic.
100	105	5	500-2,500/	0-0.5': Silt. As above.
			0-2.9	0.5-1.0': Clay. Reddish brown (2.5 YR 4/4) HP = 3.5 strong HCl reaction
				platy and plastic.
				1.0-5.0': Sand. Fine to medium, brown (7.5 YR 4/4) loose, very well sorted.
105	110	5	30-650/0-0.3	0-5.0': Sand. Medium to fine, as above.
110	115	2.5	130/300/	0-2.5': Sand. Medium to fine, as above, silt lenses at 110.
			0-2.4	
				Water sample 105 to 110 feet bgs.
115	120	5	250-1,050/	0-5.0': Sand. Fine to medium.
			0-0.3	
120	125	5	8-125/0-0.3	0-0.5': Silt. Reddish brown (5 YR 4/3), moderate HCl reaction, clay inclusion
				dark red (2.5 YR 3/6) strong HCl reaction. HP = 0.5
				0.5-1.0': Sand. Fine to medium, as above.
				1.0-1.5': Silt. As above.
				1.5-2.0': Sand. Fine to medium, as above.
				2.0-4.0': Silts and Clays. Interbedded, reddish brown (5 YR 4/3) HP = 0.5
				slightly clayey to very clayey, moderate HCl reaction. Clay dark red (2.5 YR 3/6).
				Strong HCl reaction, platy, plastic.
				4.0-5.0': Sand. Fine to medium, reddish brown (5 YR 4/3) loose, very
				well sorted, no HCl reaction.
125	130	5	4-25/0-0.6	0-0.2': Sand. Fine to medium, as above.
				2.0-3.0': Silt. Reddish brown (5 YR 4/3) slightly clayey, moderate HCl
				reaction HP = 0.6. clay inclusion, strong HCl reaction.
				3.0-3.5': Sand. Fine to medium, as above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-27 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-5.0': Silt/Clay. Interbedded finely laminated, moderate HCl reaction.
				Silt layers up to ½ inch thick clay layers up to ¼ inch. Silt reddish brown
				(5 YR 4/3), clay reddish brown (2.5 YR 4/4) HP = 0.5.
130	135	5		0-4.0': Sand. Fine, reddish brown (5 YR 5/3), loose to slightly firm, very well
				sorted.
				4.0-4.1': Clay. Red (2.5 YR 5/6) platy plastic, strong HCl reaction, HP - 1.1.
				4.1-5.0': Silt. Reddish brown (5 YR 4/3) with fine clayey silt laminae.
				strong HCl reaction. HP = 1.0.
135	140	5	2.5-15/0-1.2	0-5.0': Sand. Fine, reddish brown (5 YR 4/3) trace to some silt, very well
				sorted, loose.
140	145	5	8-12/0.5-2.7	0-2.0': Sand. Fine, as above.
				2.0-2.5': Silt. Reddish brown (5 YR 4/3) HP = 1.6, moderate to strong HCl
				reaction. Crumbly.
				2.5-5.0': Sand. Fine as above.
145	150	5	3.5/0-0.1	0-5.0': Sand. Fine, as above.
150	155	5	3.5/0-0.1	0-5.0': Sand. Fine, as above.
155	160	5	2-10/0-1.5	0-5.0': Sand. Fine, as above.
160	165	5	2/0.0	0-5.0': Silt. Reddish brown (5 YR 4/3) HP = 3.0, moderate HCl reaction,
				super saturated from drilling.
165	170	5	2.8/0-0	0-1.5': Silt. Reddish brown (5 YR 4/3).
				1.5-2.5': Sand. Fine reddish brown (5 YR 4/3), loose, very well sorted. No HCl
				reaction, clay inclusions, reddish brown (2.5 YR 4/4).
				HP = 1.5, strong HCl reaction.
				2.5-3.5': Sand. Fine, reddish brown (5 YR 4/3) loose, well sorted.
				3.5-3.6': Clay. Reddish brown (2.5 YR 4/4), strong HCl reaction. HP = 2.5.
				3.6-5.0': Silt/Clay. Reddish brown (5 YR 4/3) HP = 2.5 moderate HCl
				reaction.
170	175	5	5-30/0.8-2.9	0.5-4.5': Sand. Fine, as above.
				4.5-5.0': Sand. Very fine, silt, reddish brown (5 YR 4/3) HP = 1.0, no HCl
				reaction.
175	180	5	≤4.0/0-0.4	0-5.0': Sand. Silty, very fine, brown (7.5 YR 4/3), very well sorted, HP = 0.2.
				Becoming more sandy, very fine sand, toward base, trace clay. No HCl

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-27 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				reaction.
180	185	5	≤4.0/0-0.8	0-1.0': Silt. Brown (7.5 YR 4/2) contains some to much very fine sand, HP = 0.6.
				No HCl reaction.
				1.0-3.5': Sand. Very fine, brown (7.5 YR 4/2), very well sorted, loose to slightly
				firm.
				3.5-5.0': Silt. Dark reddish gray (5 YR 4/2), finely laminated, HP = 1.0, strong
				HCl reaction.
185	190	5	<2.0-40/0-1.4	0-0.5': Silt. As above.
				0.5-1.0': Sand. Silty, brown (7.5 YR 4/2) HP = 1.0.
				1.0-5.0': Silt. As above, brown (7.5 YR 4/2) HP = 1.5, moderate to
				slight HCl reaction. Becoming slightly clayey at base.
190	195	5	<2-4.5/0.5	0-5.0': Silt. As above, with some clay inclusions at base. HP = 4.0 dark
				reddish brown (2.5 YR 3/4), very strong reaction to HCl clay most abundant
				toward base (lowest 1 foot) where in approximately equal quantities to silt.
				Clay foliated and plastic.
195	200	5	≤3/0-0.4	0-5.0': Silt. As above, with much very fine sand, moderate HCl reaction,
				HP = 0.5, clayey at base.
200	205	5	<2.5-10/0-1.8	0-4.0': Silt. As above, clayey.
				4-4.8": Clay. Reddish brown (2.5 YR 4/3) plastic foliated, finely laminated,
				HP = 4.0. Contains thin lense of very fine sand (<1/8 inch). Strong HCl
				reaction.
				4.8-5.0': Sand. Fine, brown (7.5 YR 5/3) loose, very well sorted. No HCl
				reaction.
205	210	5	≤2.5-5.0/0.1-	0-0.5': Sand. As above.
			1.3	0.5-1.0': Sand. Silty, very fine, brown (7.5 YR 4/3) HP = 0.7, contains
				laminated silty clays. Reddish brown (2.5 YR 5/3) HP = 3.2, slight HCl
				reaction.
				1.0-5.0': Silts and Clays. Interbedded. Clay, reddish brown (2.5 YR 4/4)
				HP = 1.6 strong HCl reaction. Silt, reddish gray (5 YR 5/2) HP = 1.5, moderate
				HCl reaction.
210	215	5	5-30/0-0.1	0-1.0': Silt. Brown (7.5 YR 5/2) HP = 2.6. No HCl reaction.
				1.0-1.5': Diamictic Gravel. Very dense, dark gray (7.5 YR 4/4), moderate

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-27 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				HCl reaction, much fine sand, some silt, poorly sorted. Variable composition,
				gravel, subangular to subrounded.
				1.5-5.0': Sand. With much gravel, brown (7.5 YR 5/3) fine to coarse sand,
				loose, poorly sorted, coarse to fine gravel, angular to subrounded, up to
				cobble size, variable composition.
215	220	5	12-60/0.8-1.4	0-2.0': Sand. Fine to medium, brown (7.5 RY 5/3) loose. Trace some coarse
				sand.
				2.0-3.0': Gravel. Fine, brown (7.5 YR 4/2) some coarse sand, trace fine to medium
				sand and silt. Gravel variable composition, subangular to subrounded, loose.
				3.0-5.0': Sand. Fine, brown (7.5 YR 4/3) loose, some to much subangular to
				subrounded, gravel, variable composition, some to much coarse sand.
220	225	2	6.5-30/0.2-	Slate metamorphic rocks, dark bluish gray (Gley 3/5 B) vertically foilated,
			8.1	occurring quartz veins.
				EOB at 222 feet bls.
				GM-27A Total Depth 41 ft
				GM-27B Total Depth 156 ft
				GM-27C Total Depth 222 ft

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-28 A/B Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 6/27/98 Drilling Completed 6/29/98

Total Depth Drilled 155 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1061.85 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan/Scott

Prepared By Ray Flynn and Pat Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	3½	15-2,500/	0-2.5': Sand. Fine, yellowish red (5 YR 4/6) loose, trace silt, trace to some
			0.4-1.8	well rounded, variable composition gravel.
				2.5-3.5': Silt. Dark brown (7.5 YR 3/4) trace fine sand, no HCl reaction.
				HP = 1.5, dry and crumbly.
5	10	4½	100-500/0.2-	0-0.5': Silt. As above, with seams of very fine sand. Much black staining,
			1	silt and sand approximately equal amounts sand, olive brown (2.5 YR 4/3).
				0.5-1.5': Silt. Brown (7.5 YR 5/4) HP = 1.0, very moist. No HCl reaction, clay
				lenses = 1/8 inch thick. Every 4 inches toward base of sample, platy and
				plastic, slight HCl reaction.
10	15			No reaction.
15	20	1.5	25-30/0.7-0.9	0-1.0': Silt. Dark brown (7.5 YR 3/4) HP = 0.2, very plastic, strong reaction
				with HCl.
				1.0-1.5': Boulder in base of barrel.
20	25	0		No recovery.
25	30	5	2.5-8.0/	0-5.0': Silt. With clay inclusions. Silt, dark brown (7.5 YR 3/4) slight clayey.
			0.4-0.8	HP = 1.7 slight plastic, no HCl reaction. Clay reddish brown (7.5 YR 4/4).
				HP = 3.7, platy, fissile, strong HCl reaction, inclusions, most abundant toward
				base, (lowest 1 foot) of sample.
30	35	5	7.5-10/0.4-	0-1.0': Silt. With clay as above.
			0.6	1.0-3.0': Silt. As above, with clay inclusion at 2.7, strong HCl reaction. Dark
				reddish brown (5 YR 3/3).
				3.0-5.0': Sand. Fine to very fine, dark brown (7.5 YR 3/4) loose to slightly
				dense, trace to some silt.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-28 A/B

Prepared by Ray Flynn and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
35	40	5	225-6000/	0-2.0': Sand. Fine to very fine, as above, clay inclusions.
			0.3-0.8	2-2.5': Sand. Medium, brown (7.5 YR 4/4) loose, well sorted.
				2.5-3.0': Sand. Medium to coarse, brown (7.5 YR 4/4) loose, well sorted,
				coarse rounded gravel at base.
				3.0-5.0': Gravel. Brown (5 YR 4/4) granular gravel, variable composition,
				subangular to rounded. Some gravel up to cobble size. Some coarse to fine
				sand, trace silt.
40	45	1.5	>10,000/1.0	0-1.1': Gravel. As above.
				1.1-1.5': Sand. Medium, brown (5 YR 4/4) trace to some variable composition,
				rounded granular gravel.
45	50	4½	150->10,000	0-3.0': Gravel. Very sandy, reddish brown (5 YR 4/4) with much sand.
			1.3-1.5	Predominantly granular gravel and coarse sand, gravel up to 3.5 centimeters
				in diameter, variable composition, subrounded to well rounded. Some medium
				and fine sand.
				3.0-4.5': Sand. Medium, reddish brown (5 YR 4/4). Some to much coarse
				sand, trace to some fine gravel.
50	55	0.0		No recovery.
55	60	5	100-1,000/	0-1.2': Gravel. Reddish brown (5 YR 4/4) granular gravel with some pebbles,
			0.6-1.2	variable composition, subangular to subrounded. Some to much coarse
				sand. Trace to some silt, gravel coarsest at base.
				1.2-5.0': Sand. Very fine, silty, reddish brown (2.5 YR 4/4) weak to moderate
				HCl reaction. HP = 0 to 0.3, very silty, well sorted.
60	65	5	100-1,000/	0-1.5': Sand. Very fine, silty, as above.
			0.6-1.2	1.5-3.0': Silt. Reddish brown (5 YR 4/3) HP = 1.3, strong to moderate HCl
				reaction.
				3.0-5.0': Sand. Very fine, silty, reddish brown (5 YR 4/4), as 0 to 1.5.
65	70	5	70-600/	0-3.0': Sand. Very fine, silty, as above.
			0.5-1.1	3.0-4.5': Silt. Reddish brown (5 YR 4/4) moderate to strong HCl
				reaction, HP = 0.6
				4.5-5.0': Sand. Very fine, silty, as 0 to 3 feet.
70	75	5	300-900/	0-3.0': Sand. Very fine, silty, as above.
			6.6-1.4	3.0-4.0': Sand. Fine, reddish brown (5 YR 5/4), loose, very well sorted.
				4.0-5.0': Sand. Very fine, silty, as 0 to 3 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-28 A/B

Prepared by Ray Flynn and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
75	80	1.5	6-25/0.1-0.9	0-1.5': Sand. Very fine, silty, as above.
80	85			No recovery.
85	90	5	11-1,500/	0-5.0': Sand. Fine to very fine, reddish brown (5 YR 4/4) loose, slightly firm,
			0.0-0.5	very well sorted, saturated.
90	95	5	250-2500/	0-5.0': Sand. Fine to very fine, as above, saturated.
			0-10	
95	100	5	30-400/0-0.3	0-5.0': Silt. Reddish brown (5 YR 4/4) with much very fine sand. HP = 0.1,
				slight HCl reaction. Saturated.
100	105	5	6-15/0-0.4	0-5.0': Silt. As above. Saturated.
105	110	5	3-12/0-0.5	0-5.0': Silt. As above, saturated.
110	115	5	4-10/0-0.4	0-5.0': Silt. As above, but reddish brown (2.5 YR 4/4), damp.
115	120	5	1.5-2.0/0-0.1	0-5.0': Silt. Reddish brown (2.5 YR 4/7) strong to moderate HCl reaction,
				HP = 0.7, clayey saturated.
120	125	5	1.5-1.0/NA	0-1.0': Silt. As above, saturated.
				1.0-2.0': Sand. Very fine to fine, reddish brown (5 YR 4/3) grading to fine at
				base, some to much silt decreasing with depth, well sorted.
				2.0-5.0': Sand. Fine to medium, reddish brown (5 YR 5/3) loose, well sorted,
				damp.
125	130	5	1.5-5/NA	0-3.0': Sand. Medium, reddish brown (5 YR 5/3) loose, well sorted, damp.
				3.0-5.0': Silt. Reddish brown (2.5 YR 4/3) HP = 1.5, clayey, moderate HCl
				reaction.
130	135	5	1.5-4/NA	0-0.5': Silt. As above with clay inclusions, reddish brown (2.5 YR 5/4)
				platy and fissile.
				0.5-1.0': Sand. Fine to medium, reddish brown (5 YR 4/3) well sorted,
				loose.
				1.0-2.0': Sand. Fine to medium, (predominantly), grading upward into silt,
				HP = 0.6, no HCl reaction, reddish brown (5 YR 5/3), damp.
				2.0-3.5': Silt. Reddish brown (5 YR 5/3) moderate HCl reaction, HP = 0.7,
				crumbly, damp.
				3.5-4.8': Sand. Fine, reddish brown (5 YR 4/3) well sorted, loose to trace
				silt.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-28 A/B

Prepared by Ray Flynn and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				4.8-5.0': Silt. Reddish brown (5 YR 5/3) slight HCl reaction, HP = 1.6.
135	140	5	2-4.5/NA	0-0.5': Silt. Strong brown (7.5 YR 4/4) sandy, very fine.
				0.5-0.6': Silt. Strong brown (7.5 YR 4/4) HP = 0.7 slight HCl reaction.
				0.6-2.5': Sand. Strong brown (7.5 YR 4/4) fine to very fine, silty.
				2.5-3.5': Silt. Strong brown (7.5 YR 4/4) clayey plastic, very slight HCl
				reaction.
				3.5-4.5': Sand. Strong brown (7.5 YR 4/4) fine to very fine, silty.
				4.5-5': Silt. Strong brown (7.5 YR 4/4) trace very fine sand.
140	145	5.0	2-3.5/NA	0-1.0': Silt. As above.
				1.0-2.0': Sand. Strong brown (7.5 YR 4/4) fine to very fine, silty.
				2.0-3.0': Silt. Strong brown (7.5 YR 4/4) clayey plastic, HP = 0.7, slight reaction
				with HCl.
				3.0-4.5'; Sand. Strong brown (7.5 YR 4/4) fine to very fine, silty.
				4.5-5.0': Silt. Strong brown (7.5 YR 4/4) clayey.
145	150	5	1.5-3/NA	0-1.0': Silt. Strong brown (7.5 YR 4/4) clayey, plastic, trace very fine sand, clay
				inclusions, reddish brown (2.5 YR 4/4).
				1.0-4.0': Sand. Strong brown (7.5 Yr 4/4) fine to very fine, silty.
				4.0-5.0': Silt. Strong brown (7.5 YR 4/4) clayey, clay inclusions, reddish brown
				(2.5 YR 4/4).
150	155	5	3-20/NA	0-1.5': Silt. as above.
				1.5-2.5': Silt. Strong brown (7.5 YR 4/4) trace clay.
				2.5-4.0': Sand. Strong brown (7.5 YR 4/4) medium to very fine, silty.
				4.0-4.5': Sand. Strong brown (7.5 YR 4/4) fine to very fine, silty.
				4.5-5.0': Silt. Strong brown (7.5 YR 4/4) clayey, HP = 1.5.
				Set well Screen 125 to 130 feet, for GM-28B, 40 to 50 feet for GM-28A.
				GM-28A Total Depth 50 ft
				GM-28B Total Depth 155 ft

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-29 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/29/98 Drilling Completed 6/29/98

Total Depth Drilled 65 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device NA Sampling Interval Continuous feet

Land-Surface Elev. 1053.15 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan/Scott

Prepared By Ray Flynn Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	65	--	--	Blind drill.
				Set well screen 55 to 65 feet.
				See core log from GM-9.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-30 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 6/30/98 Drilling Completed 7/6/98

Total Depth Drilled 125 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1121.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan/Scott

Prepared By Ray Flynn and Pat Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5	4	2.5-3/0.3-1.1	0-1.0': Sand. Dark brown (7.5 YR 3/3) fine to very fine, silty, trace clay, trace gravel (3 inch).
				1.0-1.5': Silt. Very dusky red (10 R 2.5/2) dark organic, rich rootlets with silt, dark reddish brown (5 YR 3/3).
				1.5-2.5': Sand. Light yellow and brown (10 YR 6/4) fine to very fine, silty, trace gravel 1.5 inches, subrounded (10 YR 5/4).
				2.5-4.0': Sand. Yellowish brown (10 YR 5/4) medium to very fine, gravely 2mm to 2 inch subangular to subrounded.
5	10	5	2.5-4/0-0	0-0.5': Sand. Dark red brown (5 RY 3/2) medium to very fine, silty, trace clay, trace gravel 2 millimeter to 20 millimeters.
				0.5-1.5': Clay. Yellowish red (5 YR 5/6) silty, trace, sand trace gravel 2 millimeter to 10 millimeters, subrounded, moist. HP = 0.5, no HCl reaction.
				1.5-2.0': Sand. Reddish brown (5 YR 4/4) very coarse to very fine silty gravely, 2 millimeter to 60 millimeter, very poorly sorted.
				2.0-5.0': Sand. Reddish yellow (7.5 YR 7/6), medium to fine, trace coarse sand, trace gravel up to 60 millimeters.
10	15	5	3.5-20/0-0	0-0.5': Sand. As above.
				0.5-1.0': Sand. Yellowish brown (10 YR 5/4) very coarse to very fine, silty, gravely 2 millimeter to 40 millimeter, trace clay.
				1.0-4.0': Sand. Light yellowish brown (10 YR 6/4) coarse to fine, trace very coarse, trace very fine silt, gravely 2 to 30 millimeters, subrounded.
				4.0-5.0': Sand. Very pale brown (10YR 7/3) medium to fine, trace very fine, well sorted, dry.
15	25	6	3-20/0-0	0-1.0': Sand. Medium to very fine, trace silt, dark brown (7.5 YR 3/2) trace

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-30

Prepared by Ray Flynn and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				gravel 2 millimeter to 1.5 inches, subrounded.
				1.0-2.0': Silt. Light brown (7.5 YR 6/4) sandy, fine to very fine, trace gravel.
				2.0-3.0': Sand. Reddish yellow (7.5 RY 6/6) very coarse to very fine, silty, gravely
				very poorly sorted, 2 millimeter to 2 inches, subrounded, dry.
				3.0-5.0': Gravel. Light yellowish brown (2.5 YR 6/4) 2 millimeter to 2 inches
				subangular to subrounded, sandy very coarse to fine, very poorly sorted, dry.
				5.0-6.0': Sand. Light brownish gray (2.5 YR 6/2) very coarse, trace very fine,
				silty, gravely 2 millimeter to 2 inches, subrounded, very poorly sorted, dry.
25	30	5.0	3-17/0-0	0-2.0': Gravel. Light olive brown (2.5 Y 5/3) 2 millimeter to 2.5 inches,
				subanuglar to subrounded, sandy, very coarse to very fine silt, very poorly sorted,
				wet.
				2.0-3.0': Sand. Brown (7.5 YR 4/4) fine to very fine, silty, gravely 2 to 20
				millimeter, subrounded.
				3.0-5.0': Sand. Brown (7.5 YR 4/4) very coarse, to very fine, silty, gravely
				2 to 70 millimeter, subangular to subrounded, very poorly sorted, dry.
30	35	5	3-25/0-0	0-2.5': Sand. As above.
				2.5-4.0': Sand. Pale brown (10 YR 6/3) very coarse to medium, gravely
				2 to 50 millimeter, subangular to subrounded, trace fine sand, dry.
				4.0-4.2': Sand. Pinkish red (7.5 YR 6/2) very fine, silty, well sorted, dry.
				4.2-5.0': Silt. Light brown (7.5 YR 6/4) sandy, very fine, trace clay, slight
				reaction with HCl.
35	40	5	15-65/0-0	0-0.5': Silt. Yellowish red (5 YR 4/6) very fine, sandy, gravely HP = 3.1,
				moderate reaction HCl.
				0.5-1.0': Boulder. Shattered, Michagme slate.
				1.0-4.0': Sand. Reddish yellow (7.5 YR 6/6) fine to very fine, silty, gravely
				2 millimeters to 2 inches, subangular to subrounded.
				4.0-5.0': Silt. Reddish brown (7.5 YR 4/4) compact dry, with clay laminae, red
				(2.5 YR 4/6) strong reaction with HCl, HP = 1.0.
40	45	5	7-40/0-0	0-1.0': Sand. As above, but trace very fine sand and no clay laminae.
				1.0-2.5': Silt. Reddish brown (7.5 YR 4/6) sandy, very fine, gravely
				2 millimeters to 3 inches, subrounded, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-30

Prepared by Ray Flynn and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				2.5-3.5': Sand. Reddish brown (5 YR 4/4) fine to very fine, silty, very well
				sorted, dry.
				3.5-5.0': Silt. Reddish brown (2.5 YR 5/3) trace very fine sand.
45	50	5	2-6/0-0	0-5.0': Sand. Brown (7.5 YR 4/4) very coarse to very fine, silty, gravely 2
				millimeters to 2 inches, subrounded, trace clay, with clay balls, red (2.5 YR 5/6)
				blocky to laminated, slight reaction to HCl.
50	55	5	2-3/0-0	0-2.0': Clay. Dark grayish brown (2.5 Y 4/2) HP = 0.5, no HCl reaction.
				2.0-3.0': Gravel. Granular, strong brown (7.5 YR 5/6) loose, very poorly sorted,
				silty, subrounded, slightly cohesive, much fine and medium sand.
				3.0-4.0': Silt. Brown (7.5 YR 5/2) slight HCl reaction, HP = 0.7, trace matrix
				supported, pebbles, well rounded, variable composition, saturated.
				4.0-5.0': Gravel. Granular as 2 to 3.
55	60	5	35-10,000/	0-1.0': Silt. Yellowish red (5 YR 4/6) HP = 0.0 very wet, matrix supported
			0-0	gravel, slough?
				1.0-2.0': Silt/Clay. Silt reddish brown (5 YR 4/4) HP = 0.5, moderate HCl
				reaction. Clay reddish brown (7.5 YR 4/4) platy and plastic, strong HCl
				reaction. HP = 1.25, present in approximately equal amounts.
				2.0-3.0': Sand. Coarse, brown (7.5 YR 4/4) well sorted, loose, trace medium
				sand, some granular gravel.
				3.0-4.0': Sand and Gravel. Dusky red (2.5 YR 3/2) coarse to fine sand, with
				abundant granular and pebble gravel. Gravel, subangular to subrounded,
				variable composition, loose.
				4.0-5.0': Sand. Coarse to medium, reddish brown (5 YR 4/3) well sorted, loose,
				trace pebbles, gravel.
60	65	5	2000-	0-0.5': Sand. Coarse to medium, as above.
			>10,000/	0.5-2.5': Sand and Gravel. Brown (7.5 YR 4/4) loose. Coarse to mediumd sand
			0-0.5	matrix with abundant subangluar to subrounded pebble and granule
				gravel.
				2.5-5.0': Sand. Medium to coarse, brown (7.5 YR 4/3) loose to much
				granular gravel, coarse sand and fine sand, some well rounded pebble gravel
				of variable composition.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-30 Page 4 of 5

Prepared by Ray Flynn and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
65	70	5	700->10,000	0-3.5': Sand and Gravel. Dark reddish brown (5 YR 3/3) loose, saturated,
			0-0	granular gravel, with some pebble gravel, trace silt, gravel subrounded to
				well rounded variable composition.
				3.5-5.0': Sand. Medium to coarse, brown (7.5 YR 5/4) some to much pebble
				gravel. Loose and some to much coarse sand.
70	75	5	500->10,000	0-2.5': Sand. As above.
			0-0.5	2.5-3.0': Sand and Gravel. Sand as above with abundant granular and
				pebble gravel of variable composition, subangular to subrounded.
				3.0-5.0': Gravel. With sand, reddish brown (5 YR 4/3) subangular to
				angular, variable composition, gravel including concrete fragments, strong
				HCl reaction. Loose and dry, contains abundant dry clay fragments, crumbly
				clasts, sand medium to fine grained, loose. Much fragments, dense and
				lamented with calcareous cement, strong HCl reaction.
75	80	5	1000-5500/	0-1.5': Sand. Medium to fine, dark reddish brown (5 YR 3/4) some coarse
			0-0.1	sand, loose and saturated.
				1.5-3.5': Sand. Medium to coarse, dark brown (7.5 YR 3/2) loose, some
				granular gravel, more abundant at base.
				3.5-5.0': Sand. Coarse, dark reddish gray (5 YR 4/2) much granular
				gravel.
80	85	5	1000-4000/	0-1.0': Sand. Coarse, as above, with trace well rounded pebbles.
			0.0	1.0-2.0': Sand. Medium to coarse, brown (7.5 YR 5/3) loose, some to much
				fine sand.
				2.0-5.0': Silt. With clay inclusions. Silt, reddish brown (2.5 YR 5/3) moderate
				HCl reaction, HP = 2.0, very clayey. Clay, red (2.5 YR 4/6) strong HCl reaction,
				HP = 2.1 platy and plastic.
85	90	5	2.5-10/0.0	0-5.0': Silt. With clay inclusions, as above, clay layers horizontally
				stratified, inclusions from 1.5 to 2.5 feet.
90	95	5	275-80/0.0	0-5.0': Silt. As above with clay inclusions in lowest 0.5 feet.
95	100	5	2-9/0.0	0-5.0': Silt. As above.
100	105	5	2-1,000/0.0	0-1.0': Silt. As above.
				1.0-5.0': Sand. Very fine, silt, reddish brown (7.5 YR 5/4) very well sorted, loose
				to slightly dense.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-30 Page 5 of 5

Prepared by Ray Flynn and Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
105	110	5	150-1,500/	0-5.0': Silt. Very fine sand, as above.
			0.0	
110	115	5	700-4,500/	0-5.0': Silt. Very fine sand, as above.
			0.0	
				Finish drilling for 6/30/98.
115	120	5	200->10,000	0-1.0': Silt. Very fine sand, as above, saturated.
			0-1.5	1.0-3.0': Silt. Reddish brown (5 YR 5/3) HP = 0.3, sandy, saturated.
				3.0-4.0': Silt. Reddish brown (5 YR 5/3) HP = 0.4, saturated.
				4.0-5.0': Sand. Fine to very fine, reddish brown (5 YR 4/3) trace silt, very well
				sorted, slightly cohesive, saturated.
120	125	5	1,100-4,000/	0-1.0': Sand. Fine to very fine, as above, saturated.
			0.2-0.8	1.0-4.0': Sand. Very fine, silty, reddish brown (5 YR 5/3) HP = 0.3, slightly+E221
				cohesive, damp.
				4.0-5.0': Silt. Reddish brown (5 YR 5/3) crumbly, damp.
				EOH 125 feet bgs.
				Set well screen 75 to 85 feet.

ARCADIS

Sample/Core Log

Boring/Well GM-30A Project/No. Ford/Kingsford WI001075.0022 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/24/04 Drilling Completed 7/24/04

Total Depth Drilled 83 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1121.99 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Paul Lenaker/Andy Mumpy Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-0.45- -0.5/	0-1.0' Silt/Topsoil/Dust: Yellowish brown (10 YR 5/4), from 0-0.4 glass and rocks,
			1.4-2.22	silt is grainy to powdery, loose, dry, no odor.
				1.0-5.0' Sand: Dark yellowish brown (10 YR 4/6), very fine to fine, predominately
				fine grain, trace medium to coarse, trace silt, loose, somewhat sorted, trace gravel
				to 1"subround to subangular, moist, no odor.
5	10	5	-0.52-19.25/	0-1.5' Slough.
			1.52-15.23	1.5-3.0' Sand: As above.
				3.0-5.0' Sand: Brown (7.5 YR 5/3), fine to medium grain, trace very fine to trace
				coarse and very coarse, poorly sorted, trace gravel to 2" subround to subangular,
				loose, dry to moist, no odor.
10	15	5.0	2.87-3.86/	0-1.0' Slough.
			1.76-3.89	1.0-2.0' Sand: As a above, fine to medium grain.
				2.0-5.0' Sand: Light reddish brown (5 YR 6/3), fine grain, trace medium, well
				sorted, trace gravel to 1/2" subround to subangular, loose, moist, no odor.
15	20	5	2.71-6.59/	0-5.0' Slough: Organics pulverized sand and gravel to powder, gravel up to 2"
			5.49-16.42	subround to subangular, loose, dry, no odor, mixture of units above.
20	25	--	--	No recovery.
25	30	5	5.62-16.88/	0-1.0' Sand: Brown (7.5 YR 5/4), very fine grain, trace fine to medium, well sorted,
			5.11-28.64	loose, moist, no odor.
				1-3' Silt/Sand: Light brown (7.5 YR 6/4), silt, grainy, except for smooth nodules/
				layers up to 2" thick , brown (10 YR 5/3), sand very fine grainy, borderline with
				grainy silt, very well sorted, loose, no odor.
				3.0-5.0' Silt/Sand: Light brown (7.5 YR 6/2), grainy to very fine grain borderline
				with trace medium to very coarse, trace gravel up to 2" subround to subangular
				layer from 3-3.4' of predominately fine grain sand, well sorted with trace medium
				to coarse 0-0.5" silt/sand, as above.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-30A

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
30	35	5	5.65-14.11/	0.5-5.0' Sand/Silt: Light brown (7.5 YR 6/3), silt grainy to very fine sand borderline,
			8.38-18.88	very well sorted, loose, dry to moist, no odor at 4.8-5.0', silt, brown (7.5 YR 5/3)
				finely laminated/varved smooth, crumbly, dry, no odor also clay laminate up to
				1/2" thick, yellowish red (5 YR 4/6), platy to fissile in appearance but cohesive and
				plastic when worked overall, dry, moist, no odor.
35	40	5	2.67-17.45/	0-4.0' Silt: Brown (7.5 YR 5/4), smooth to somewhat grainy, vesicles, some black
			8.02-59.80	staining, crumbly, uniform, no odor, moist, looks like may have been laminated/
				layer from color appearance.
				4.0-5.0' Sand: Light brown (7.5 YR 6/4), fine grain, trace medium to very coarse,
				trace gavel to 1/2" round to subangular, coarsen below section slightly, somewhat
				sorted, loose, moist, no odor.
40	45	5	5.42-8.65/	0-3.0' Silty Sand: Brown (7.5 YR 4/4), sand fine grain, trace very fine to very coarse,
			6.05-20.84	somewhat loose, poorly sorted, trace gravel up to 1" subround to subangular,
				moist to wet, odor.
				3.0-4.0' Silty Sand: As above, no trace gravel.
				4.0-5.0' Silt/Clay: Laminate, varved, silt smooth brown (7.5 YR 5/4), crumbly, clay
				yellowish red (5 YR 4/6), fissile/platy in appearance, somewhat cohesive, slight
				plastic, moist, no odor.
45	50	5	-0.83-5.69/	0-2.0' Silty Sand: Brown (10 YR 4/3) as above, with gravel contact with section
			2.99-22.83	below.
				2.0-5.0' Clayey Silt: Brown (7.5 YR 5/4), smooth to grainy in places, somewhat
				crumbly to somewhat cohesive dependant on clay contact, some orange staining,
				through (< mm's) laminate of clay in places from 2-2.4' clay layers more abundant,
				wet, no odor.
50	55	5	-0.88-2.63/	0-5.0' Clayey Silt: As above becoming more stick down section trace pockets/
			3.78-16.72	lenses of very fine to fine sand up to mm's in thickness from 3.0-4.0 becomes
				more clay rich, brown (7.5 YR 5/3) with more cohesive/plastic texture and trace
				fine to medium sand mixed in.
55	60	5	0.78-16.77/	0-0.5' Silt: Brown (7.5 YR 5/3), clayey, sticky and cohesive, trace to little sand, wet,
			2.07-78.23	no odor.
				0.5-2.5' Sand: Brown (7.5 YR 5/4), fine grain, trace to little very fine to coarse,
				poorly sorted, silty trace gravel to 1" subround to subangular, somewhat loose,
				wet, no odor.
				2.5-5.0' Sand: Light brown (7.5 YR 6/4), fine grain, sorted, trace very fine to medium,
				trace gravel to 1", subround to subangular, loose, moist to wet, no odor at 4.0,
				includes more gravel to 2" subround to subangular and trace very fine to very
				coarse sand, loose, moist to wet, no odor.

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Sample/Core Log (continued)

Boring/Well GM-30A

Prepared by Paul Lenaker/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
60	65	5	13.35-23.2/	0-0.5' Sand: As above.
			24.01-105	0.5-2.0' Silty Sand: Light brown (7.5 YR 6/4), sand very fine to fine grain,
				predominately fine grain, somewhat sorted trace medium grain, trace to little
				clumps of nodules of sandy silt, discolored black/blue/red, crumbly up to 1.5"
				thick, loose, dry to moist, no odor, grades over 0.5' into section below.
				2.0-5.0' Sand: Light brown (7.5 YR 6/3) fine grain, trace very fine to coarse, trace
				gravel to 1/2" subround to subangular, grades at 4.5' into predominately fine
				to medium grain, loose, moist, no odor, at 3.5 includes little silt in matrix.
65	70	5	5.29-7.76/	0-2.5' Sand: Fine to medium grain, predominately fine grain, trace coarse, trace
			7.13-13.74	gravel to 3" angular to subround, loose, sorted, some clay/layers of sandy silt,
				discolored as above, grades into section below, moist, no odor.
				2.5-5.0' Sand: As above, predominately fine grain trace to little very fine to medium,
				trace gravel to 1/2" subround to subangular, loose, moist, no odor.
70	75	5	6.34-11.55/	0-3.0' Sand: Light brown (7.5 YR 6/3), fine grain, some very fine grain, trace medium
			6.86-13.17	to very coarse, trace gravel to 1.5" subround to subangular, loose, somewhat
				sorted, trace silt, moist to wet, no odor.
				3.0-3.5' Sand: Color as above, very fine to fine grain, moderately sorted, loose
				trace medium to coarse, moist to wet, no odor.
				3.5-4.5' Sand: Color as above, medium grain, little coarse, trace very fine, sorted,
				trace gravel to 1" subround to subangular, loose, moist to wet, no odor.
				4.5-5.0' Sand: Very fine to fine grain, as above.
75	80	5	0.74-3.76/	0-0.5' Sand: As above, very fine to fine grain.
			82.12-11.53	0.5-3.0' Sand: Brown (7.5 YR 4/3), fine to medium grain, trace very fine to very
				coarse, trace gravel to 1" subround to subangular, poorly sorted, loose, silt,
				seam 6"thick from 2.0-2.6, brown (7.5 YR 4/4) with clay yellowish red (5 YR 4/6)
				layer (1") silt is smooth to crumbly, clay is fissile/platy in appearance and cohesive
				and plant when working, wet, slight odor.
				3.0-4.5' Sand: Brown (7.5 YR 5/4), fine grain, somewhat well sorted, trace medium
				to coarse, possible little silt but could be from side of core barrel, gravel up to 1"
				subround to subangular but only from 4.2-4.5, loose, wet to saturated, slight to
				no odor.
				4.5-5.0' Silt: Brown (7.5 YR 4/3), smooth, crumbly, trace clay layers as above, wet,
				slight to some odor, HP approximately 3.0, somewhat firm.
80	83	3	1.14-3.69/	0-1.5' Silt: As above, trace blackish/gray staining.
			1.26-533	1.5-3.0' Sand: Brown (7.5 YR 5/4), very fine to fine grain, well sorted, trace medium
				to coarse, trace to little silt in matrix, somewhat loose, wet to saturated, slight
				odor.
				EOB @ 83 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-31 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8:10 7/7/98 Drilling Completed 7/7/98

Total Depth Drilled 115 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device NA Sampling Interval blind to 115 feet

Land-Surface Elev. 1121.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan/Scott

Prepared By Ray Flynn Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	115	--	--	Blind drill.
				See Core Log from GM-5.
				Set well screen 115 to 105.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-32 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 17:15 7/7/98 Drilling Completed 7/9/98

Total Depth Drilled 150 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core band

Length and Diameter of Coring Device 10' x 4" Sampling Interval blind to 95 10 feet

Land-Surface Elev. 1116.14 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan/Rodriguez

Prepared By Dan Hegrenes, Bruce Evans and Ray Flynn Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	95	--	--	Blind drill. See GM-13 log.
				7/7/98 20:10 stop drilling for day at 95 feet.
				7/8/98 8:10 begin (continued) drilling at 95 feet.
95	100	0		No recovery.
100	105	1	300/0.0	0-1.0': Sand. Brown (7.5 YR 5/4) fine grained, some very fine grained, trace medium,
				well sorted, loose, wet.
105	110	5	1,000-5,000/	0-5.0': Sand. As above.
			0	
110	115	5	1,000-5,000/	0-5.0': Sand. As above.
			0	
115	125	0		No recovery.
				9:45 stop to collect water sample. 5 feet screen internal at 125 to 120 feet bgs.
				13:00 collect GBGM-32/125 water sample.
125	135	5	2,000-	0-1.0': Sand. Dark reddish grey (5.YR 4/2) coarse grained, trace some fine to medium,
			>10,000/	trace gravel fine to coarse subrounded, loose, trace cobbles.
			1.2-10.6	1.0-5.0': Sand. Brown (7.5 YR 4/4) fine grained, trace silt, well sorted, loose,
				clay inclusions at 1½ to 2 feet.
				Note: Photo #2 taken of sample.
135	140	0		Acrylic core sample, no recovery.
140	145	2		0-2.0': Sand. Fine, brown, inside acrylic liner.
145	150	5		0-5.0': Sand. Fine, brown inside acrylic liner.
				17:15 end borehole at 150 feet.
				Set well screen 135 to 145 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-33 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 7

Site Location Kingsford, Michigan

Drilling Started 7/9/98 14:15

Drilling Completed 7/11/98 14:50

Total Depth Drilled 265 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Steel Core barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1119.43 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Brian

Prepared By Ted Powell, Bruce Evans and Kevin Daleness

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	0-15/0-2.8	0-0.5': Silt/Soil. Dark red brown (5 YR 4/3) clayey, roots, organic material, moist.
				0.5-2.0': Sand. Yellowish red (5 YR 4/8) medium to coarse grain with gravel fine
				to coarse, moderately sorted, dry.
				2.0-4.5': Sand. Strong brown (7.5 YR 5/6) fine, well sorted, dry.
				4.5-5.0': Sand/Gravel. Brown (7.5 YR 5/3) fine grain with fine to coarse gravel,
				well sorted, sand, subangular to subrounded gravel, trace pebbles to 1 inch
				diameter, moist.
5	10	5	5-7/0-.4	0-3.0': Sand/Gravel. Brown (7.5 YR 5/4) medium to coarse sand, medium to
				coarse gravel, subrounded to subangular, very poorly sorted, trace pebbles to 2
				inch diameter, moist.
				3.0-5.0': Gravel/Sand. Reddish brown (5 YR 4/4) fine to coarse gravel, medium to
				coarse and, very poorly sorted, pebbles to 2.5 inch diameter, very moist, subangular
				to subrounded.
10	15	5	7-9/.7-1.7	0-1.0': Sand/Gravel. As above.
				1.0-2.0': Sand. Brown (7.5 YR 4/4) fine grain, trace gravel, trace rootlets, well sorted
				sand, moist.
				2.0-5.0': Sand/Gravel. Reddish brown (5 YR 4/4) medium to coarse sand, fine to
				coarse gravel, trace pebbles to 2 inch diameter, very poorly sorted, very moist
				predominately subround gravel.
15	20	5	6-12/0-1.7	0-3.0': Sand/Gravel. Brown (7.5 YR 4/2) medium to coarse sand, fine to medium
				gravel, trace pebbles to 3 inch diameter, subangular to subrounded, poorly
				sorted, moist.
				3.0-5.0': Sand/Gravel. Strong brown (7.5 YR 4/6) fine to medium sand, fine to medium
				gravel, subangular to subrounded, poorly sorted, less gravel than 0 to 3, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-33

Prepared by Ted Powell, Bruce Evans and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
20	25	1	5-7/0-.1	Gravel/Sand. Brown (7.5 YR 4/2) fine to coarse sand, fine to coarse gravel, subangular to subrounded, very poorly sorted, trace silt, pebbles to 2 inch diameter, moist.
25	30	5	12-90/1.6-5.2	0-5.0': Sand/Gravel. Brown (7.5 YR 4/4) very fine to coarse sand, fine to coarse gravel, less than above, subangular to subrounded, trace silt, very poorly sorted, moist, pebbles to 3 inch diameter.
30	35	3	9-15/1.3-2.1	0-3.0': Gravel/Sand. Reddish brown (5 YR 4/3) fine to coarse gravel, subangular to subrounded, mixed with very fine to coarse sand, some silt, very poorly sorted, moist to very moist.
35	40	5	4-15/0-.9	0-1.0': Sand. Reddish brown (2.5 YR 4/3) coarse to very coarse, trace gravel fine to coarse, poorly sorted, wet. 1.0-1.5': Clay. Reddish brown (2.5 YR 4/4) plastic with trace silt laminations, petrometer 2.5, very stiff. 1.5-2.0': Sand. Reddish brown (5 YR 5/4) fine grain, well sorted, wet. 2.0-5.0': Silt. Reddish brown (5 YR 4/4) trace clay in matrix and trace clay reddish brown (2.5 YR 4/4) in thin beds and laminations <1 inch thick, clay plastic, wet.
40	45	5	4-9/0-.2	0-5.0': Silt. Reddish brown (5 YR 4/4) as above, with trace clay, wet, petrometer 2 to 2.5, very stiff, acid reaction.
45	50	5	2.5/0	0-5.0': Silt. Reddish brown (5 YR 4/4) with trace clay in thin (<.5 inch) beds, clay reddish brown (2.5 YR 4/4) plastic, petrometer clay 4.0. Petrometer silt, 2.0, very stiff, acid reaction in both, wet.
50	55	5	2.5/0-.1	0-5.0': Silt. Reddish brown (5 YR 4/4) with trace clay in thin bands (< .5 inches) clay reddish brown (2.5 YR 4/4) plastic petrometer 4.0 clay, 2.0 silt, acid reaction in both, wet, some clay in silt matrix, rare small gravel.
55	60	5	3-4/0-.8	0-5.0': Silt. As above, wet.
60	65	5	3-8/0-1.7	0-5.0': Silt. Reddish brown (5 YR 4/3) with clay, as above.
65	70	5	3-6/0-1.6	0-5.0': Silt. As above.
70	75	5	3-15/0-2.2	0-5.0': Silt. As above, trace very fine grain sand 4 to 5 feet, wet, sand, brown (7.5 YR 4/4).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-33

Prepared by Ted Powell, Bruce Evans and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
75	80	5	>10000/0	0-1.5': Silt. As above, wet.
				1.5-5.0': Sand. Reddish brown (5 YR 4/3) extremely fine grain, very silty, well
				sorted, dry.
80	85	5	>10000/	0-5.0': Sand/Silt. Reddish brown (5 YR 4/3) extremely fine grain silty sand to sandy
			0-1.2	silt, well sorted, dry to wet at 1 to 5 feet (81 feet).
85	90	5	300-5000/	0-5.0': Sand. Brown (7.5 YR 5/3) medium grain, well sorted, trace gravel, fine to
			0	medium grain, subangular to subrounded, loose, wet.
90	95	5	3000-5000/	0-5.0': Sand. Brown (7.5 YR 5/3) medium grain, well sorted, trace gravel, subangular
			0-.3	to subrounded, fine to medium, wet.
95	100	5	150-400/	0-1.0': Sand. As above.
			0-.2	1.0-5.0': Sand. Brown (7.5 YR 5/4) fine grain, well sorted, loose, slight trace
				fine to medium gravel, subrounded, wet.
100	105	5	800-3000/	0-0.5': Sand. Brown (7.5 YR 5/4) medium grain, well sorted, loose, wet.
			.1-.6	0.5-3.0': Sand. Reddish brown (5 YR 5/4) very fine grain, well sorted, trace silt,
				loose, wet.
				3.0-5.0': Sand. Light reddish brown (5 YR 6/4) medium with coarse and very
				coarse, abundant gravel fine to coarse to 2 inch diameter, very poorly sorted,
				loose, wet, (coarse gravel zone at 3 feet).
				18:15 End drilling to collect water sample at 105 feet.
				19:20 End drilling for day at 105 feet.
				7-10-98 collect groundwater grab sample GBGM-33/105.
				12:45 Resume drilling GM-33.
105	110	5	1500-6000/	0-0.5': Sand. Dark yellowish brown (10 YR 3/6) medium to very fine, some coarse
			0.8-3.5	to very coarse, trace gravel (2 to 30 millimeters, subrounded.
				0.5-3.5': Sand. Very dark grey (5 YR 3/1) very coarse to very fine, silty, gravely,
				2 millimeters to 2,5 inches, subrounded, very poorly sorted.
				3.5-5.0': Silt. Brown (7. 5YR 4/4) compact, HP = 1.5 trace clay nonplastic, moist.
110	115	5	1500-3000/	0-5.0': Silt. As above, with clay inclusions, strong brown (7.5 YR 4/6) blocky to
			0.8-1.9	laminated, dry.
115	120	5	600-1500/	0-4.5': Silt. As above.
			0.8-1.5	4.5-5.0': Silt. Dark brown (7.5 YR 3/4) dry, clayey, trace fine gravel, 4 to 6 millimeters.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-33

Prepared by Ted Powell, Bruce Evans and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
120	125	5	900-6500/	0-2.0': Silt. As above.
				2.0-5.0': Sand. Dark brown (7.5 YR 4/6) fine to very fine, silty, very well sorted,
				homogenous.
125	130	5	350-2500	0-2.0': Silt. Red brown (5 YR 4/3), trace to some very fine sand, variable soft (.5),
				saturated, trace clay, brown (7.5 YR 4/2), stiff blocky, trace gravel 1/8 to ¼ inch
				subrounded.
				2.0-5.0': Sand. Red brown (5 YR 4/3) very silty, very fine sand, saturated, medium
				dense, moderately sorted, saturated.
130	135	5	400-2500	0-2.0': Sand. As above.
				2.0-5.0': Silt. Some very fine sand, to very sandy, trace clay, soft to medium stiff,
				saturated.
135	140	5	3000-	Sand. Very fine, very silty, red brown (5 YR 4/4) very well sorted, medium dense to
			10000	dense, very moist to wet.
140	145	5	3000/	0-3.0': Sand. As above.
			10000	3.0-4.8': Silt. Very fine sand in part, brown (7.5 YR 4/3) moist, crumbly, dense,
				stiff depending on sand content.
				4.8-5.0': Sand. Very fine, very silty, dense, very well sorted, very homogenous.
145	150	5	600-2500/	0-1.0': Silt. With clay, very sandy in part with very fine sand, silt, brown (7.5 YR 4/2)
			.7-7	very soft, sandy, clay, red brown (2.5 YR 4/3) blocky, medium stiff (2.0).
				1.0-1.75': Sand. Very fine silty sandy, grading to silt with very fine sand, red brown
				(2.5 YR 4/3) and dense, moderately well sorted.
				1.75-5.0': Silt. Trace clay, variable very fine sand, soft (.5) dark red brown (2.5 YR 3/3)
				vesicles and gas bubbles throughout.
150	155	5	200-2750/	0-5.0': Silt. As above.
			.5-3	
155	160	5	5000-	0-5.0': Silt. Very fine sandy, sand content variable, at 0 to 1 foot pockets of very fine
			10000/1.4-	sand with silt, dark red brown (2.5 YR 3/3) soft, gas bubbles (vesicles) throughout.
			5.4	
160	165	5	1500-	0-1.5': Silt. As above.
			+10000/	1.5-2.5': Silt. Trace clay, trace very fine sand, soft (0.5 to 0.75) gas bubbles,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-33

Prepared by Ted Powell, Bruce Evans and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			1.2-5.7	dark brown (7.5 YR 3/3).
				2.5-5.0': Silt. Color as above, soft to medium stiff (.75 to 1.5) several 1 to 2 inch
				very fine sand seams, some silt, medium dense. Gas bubbles throughout silt.
165	170	5	1500-8000/	0-5.0': Silt. Variable very fine sand, trace to very sandy, red brown (5 YR 4/3) very soft
			.3-2.8	(<0.25), packets are saturated, soupy, moderate sorting, pockets of gas bubbles.
170	175	5	1000-	0-5.0': Silt. As above.
			+10000/.2-	
			3.4	
175	180	5	1000-7000/	0-4.0': Silt. Trace to some very fine sand, trace clay, wet to saturated, very soft,
			.1-1.9	gas bubbles throughout.
				4.0-5.0': Silt. Red brown (5 YR 4/3) trace very fine sand, well sorted, slightly moist.
180	185	5	+10000/	0-5.0': Silt. Trace to some very fine sand, color as above, slightly moist, crumbly,
			.2-3.2	minor gas bubbles, occasional lenses of very fine silty sand .5 to 1.5 inch thick.
185	190	5	3000-	0-5.0': Silt. Very fine sand, variable, trace clay, very soft to soft, moderate well to
			+10000/	well sorted, abundant gas bubbles, red brown (5 YR 4/3).
			.5-2.1	
190	195	5	2000-	0-5.0': Silt. As above at 2.5 to 3 feet silt is gradation to very fine silty sand.
			10000/1.5-	
			5.1	
195	200	5	2500-	0-5.0': Silt. Variable very fine sand, abundant gas bubbles, vidsicules, very soft
			+10000/.6-	(0 to 0.25) soupy in part, well sorted red brown (5 YR 4/3).
			2.8	
200	205	5	1000-	0-5.0': Silt. Trace very fine sand, color as above, well sorted, very soft (.5) at lower 2
			+10000/	feet of core, silt is slightly moist, dark red brown (2.5 YR 4/3) gas bubbles, increase
			.2-3.3	trace clay, soft (1.0).
205	210	5	1500-5000/	Silt. Dark red brown (2.5 YR 3/4) trace clay, very soft (.25) wet, abundant gas
			0-0.4	bubbles, very homogenous, one large cobble 3 inch at 1 foot subrounded.
210	215	5	2750-8500/	0-3.0': Silt. As above.
			0-0.5	3.0-5.0': Silt. Trace to some clay, medium stiff (1.5), trace very fine to fine sand,
				isolated pockets of gas bubbles, abundant slate gravel at 3.5 to 4.5, ½ to 2.5 inch,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-33

Prepared by Ted Powell, Bruce Evans and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				subangular, clay inclusions, yellow red (5 YR 4/6) hard, silty, nonplastic.
215	220	5	150-700/0	0-5.0': Silt. Red brown (2.5 YR 4/4) homogenous stiff (3.0), at 3.5 to 4.5, silt contains
				some clay, stiff (3 to 3.25 red brown (5 YR 4/4).
220	225	5	20-250/.1-	0-5.0': Silt. Dark red brown (5 YR 3/3) trace to some clay some very fine to fine sand
			1.7	in part, stiff (3 to 3.25) zones of slate gravel interspread throughout ¼ to 2 inches
				some slate is highly weathered.
				19:55 Stop drilling for the day.
225	230	5	4.5-15/0-.03	0-1.5': Silt. Trace clay, trace very fine sand, medium stiff (1 to 1.5) red brown
				(5 YR 4/4/), trace gravel, ¼ to ½ inch, subangular slate, slightly weathered.
				1.5-2.0': Clay. Dark red brown (5 YR 3/4) stiff (3.0), platy to blocky nonplastic,
				trace (10 percent) slate gravel ¼ to ½ inch, subround to subangular.
				2.0-4.0': Till. Very poorly sorted, matrix is silt, some very fine to fine sand, greenish
				black (Gley 2.5/1) variable clay, soft to medium stiff, gravel ranges from 1/8 to 2
				inches, predominantly slate, subrouned to subangular.
				4.0-5.0': Clay. With silt variable sand very fine to medium, soft, medium plastic,
				dark red brown (5 YR 3/2), some gravel (20 percent), ¼ to 3/4 inches, subrouned,
				some highly weathered.
230	235	5	10-30/.5-1.9	0-4.5': Silt. Brown (7.5 YR 4/2), variable clay, trace to some very fine sand,
				medium stiff (1.5 to 2.0), trace weathered slate gravel throughout at .6 to 1 foot
				cored through slate boulder, slightly weathered.
				4.5-5.0': Sand. Brown (7.5 YR 5/2), very fine to fine, some silt, dense, saturated,
				moderate well sorted.
235	240	5	5-400/.7-4.7	0-5.0': Silt. Brown (7.5 YR 5/2) with very fine sand in part, very dense (3.5 to 4),
				occasional lense (0.5 inch thick) of very fine sand, at 2 foot clay inclusions,
				from 4 to 5 feet silt becomes clayey, medium stiff, stiff, slightly moist to dry,
				some very fine to fine sand.
240	242	--	--	0-1.0': Clay. Very silty, trace very fine sand, hard (4.0) dry, trace fine slate gravel,
				dark brown (7.5 YR 3/2).
				1.0-1.5': Silt/Sand/Gravel. Matrix is silt with very fine to fine sand and coarse
				sand, trace clay, green black (2.3/10 Y), dry. Gravel is predominately slate and

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-33

Prepared by Ted Powell, Bruce Evans and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				weathered slate which has been broken, crushed and compacted by drilling,
				very dark grey (Gley 3/2).
				1.5-2.0': Slate. Highly fractured and pulverized by drilling, very dark grey (Gley 3/4)
				hardness 1 to 2.5, sulfide mineralization along fracture faces, subvertical cleavage.
242	245	3	27-125/9-76	0-3.0': Slate. Badly fractured and ground into rock flour due to drilling, blue black
				(2 Gley 2.5/1,5B) hardness 2.5, trace sulfide minerilization, calcite veins, dense
				submitted foliation.
245	265	--	--	Michiganne Slate. Competent bedrock, as above, with much calcite from 260 to 266.
				EOB 265. Set screen 74 to 89 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-34 A/B Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 7/13/98 9:45

Drilling Completed 7/14/98 10:30

Total Depth Drilled 194 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core band

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1088.01 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Bryan

Prepared By Ted Powell and Dan Hegrenes

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	5	3.5-11/0-1.1	0-2.0': Sand. Silty loam "A Horizon" dark brown (7.5 YR 3/4) sand very fine to fine,
				trace medium and coarse, trace gravel ¼ to 1.5 inch, subangular, dry, loose, roots,
				moderate sorting.
				2.0-4.0': Sand. Medium sand, some fine, trace coarse, moderate well sorted,
				dry, loose, yellow brown (10 YR 5/6), very silty from 2 to 3 feet.
				4.0-5.0': Sand. With gravel, light olive brown (2.5 YR 5/6), sand is fine to medium,
				some silt, trace coarse and very coarse, poorly sorted, dry loose, gravel ¼ to 1.5
				inch, subrounded to subangular.
5	10	5	4-5/00	0-2.5': Sand and Gravel. Strong brown (7.5 YR 5/6) sand, coarse to very coarse,
				trace very fine and medium, very moist to wet at base. Gravel ¼ to 3 inches,
				subrounded to subangular, very poorly sorted.
				2.5-5.0': Silt. Strong brown (7.5 YR 4/6) small gravel, fine sand in top foot,
				sand medium to coarse, trace clay, soft (1.2), several thin 1/8 inch clay lenses, soft,
				plastic, yellow red (5 YR 4/6), wet.
10	15	5	4.5-9.5/0-3.2	Silt. Brown (7.5 YR 4/4) trace very fine sand, wet, soft to medium stiff (0-1.75),
				variable clay, trace ¼ inch gravel subrounded, occasional clay inclusions and 1/8 to ¼
				inch lenses, red (2.5 YR 4/6), platy, to blocky, moderate plastic.
15	20	5	3.5-6/0	Interbedded silt and clay, silt, brown (7.5 YR 5/3) trace very fine sand in part,
				trace clay, moderate stiff, slightly moist to wet, moderately well sorted beds
				½ to 1 inch thick clay, red brown (5 YR 5/4) fissile, stiff (3 to 3.5) slightly plastic, beds
				range from 1 inch thick at top to 3 inches at base, slightly moist.
20	25	5	4-12/0	0-3.5': Silt and Clay. As above. Silt beds 1 to 4 inch thick, much less clay.
				3.5-5.0': Sand. Brown (7.5 YR 4/4) moderate with fine and coarse, trace very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				coarse, trace silt, wet, moderate sorting, trace fine gravel, subrouned, moderate
				dense.
25	30	4	4.5-13/0	Sand. Brown (7.5 YR 4/4) coarse with much very fine coarse, some fine and
				very fine, trace silt, small fine gravel, 1/8 to ¼ inch subrounded, saturated.
30	35	4	6.5-10/0	Sand. Color, as above, medium grain with fine, some coarse, to very coarse,
				trace silt, moderate to poor sorting, trace gravel, subround to subangular, medium
				dense.
35	40	5	5.5-13/0	0-3.0': Sand. Brown (7.5 YR 5/4) medium to coarse, small fine, trace silt, trace very
				coarse, trace gravel ¼ to ½ inch, subround, moderate sorting, medium dense,
				saturated.
				3.0-5.0': Sand. Red brown (5 YR 5/4) very fine silty sand, well sorted, dense.
40	45	5	5.5-13/out	Sand. Very fine very silty, color as above, dense to very dense, sand gradation
				to very fine sandy silt in part, well sorted.
45	50	5	5-5.5/-	Silt. Very fine sandy, to very silty very fine sand, brown (7.5 YR 5/3) predominately
				very fine sandy silt, at 1 to 1.5 several thin 1/8 to ¼ inch clay lenses, red brown
				(5 YR 5/4) fissile, plastic, at 2 to 3 feet soft very soupy.
50	55	5	5.5-8.5/-	Sand. Very fine silty, color as above, dense to very dense, trace ¼ inch gravel
				(1 percent) subround, moderate well sorted.
55	60	5	4-4.5/-	0-5.0': Sand. Reddish brown (5 YR 5/4) very fine gained, silty, well sorted,
				saturated, medium dense.
60	65	5	4-7/-	0-1.0': Sand. As above.
				1.0-1.5': Silt. Reddish brown (5 YR 4/4), very fine sand, trace to some clay, PET = 2.25.
				1.5-1 3/4':Sand. Strong brown (7.5 YR 4/6) coarse grained, trace very coarse,
				trace medium, trace silt, trace fine gravel, loose, saturated.
				1 3/4-5.0': Sand. Reddish brown (5 YR 4/3) very fine, very silty, medium dense,
				well sorted.
65	70	5	4-8/0	0-3.0': Sand. Coarse grained, some medium and fine, trace silt, loose, moderate
				sorted, trace fine gravel, bottom ½ foot, saturated.
				3.0-4.0': Clay/Silt. Clay, reddish brown (2.5 YR 4/4). Silt, reddish brown (5 YR 4/4)
				clay silt interbedded, very hard PET >4.0.
				4.0-5.0': Clay. Reddish brown (5 YR 4/3) clay very hard. PET >4.0, dry.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
70	75	5	4-10/0	0-2.0': Clay. Reddish brown (5 YR 4/3) very thin silt laminations, PET >4.0.
				2.0-5.0': Clay/Silt. Silt, brown (5 YR 4/3). Clay, reddish brown (2.5 YR 4/3) clay and
				silt interbedded. Beds ½ inch to 2 inch thick. Clay is fissile, nonplastic, dry to
				moist, silt is saturated to wet.
75	80	5	5-15/0	0-3.0': Clay. With very thin silt laminations, very hard.
				3.0-5.0': Clay/Silt. Clay, dark reddish brown (5 YR 3/3). Silt, brown (7.5 YR 4/3)
				clay and clayey silt interbedded, beds ½ to 2 inch thick, clay is fissile, nonplastic.
80	85	5	7-22/-	0-2.5': Clay/Silt. As above, silt beds dominant, medium sand lens at 2 feet, trace
				coarse and fine grained sand, reddish brown (5 YR 4/3).
				2.5-3.0': Silt. Very fine sandy, strong brown (7.5 YR 4/6) dense, saturated.
				3.0-5.0': Sand. Brown (7.5 YR 4/4) fine grained, some medium, some silt. Two
				silt lenses, 1 inch thick at 4½ and 5 feet, silt lens, brown (7.5 YR 4/3).
85	90	5	4-5/-	0-2.5': Sand. Strong brown (7.5 YR 4/6) fine gained, some very fine, trace silt,
				trace medium, moderated sorted, loose.
				2.5-3.0': Sand. Color, as above, medium grained, some fine, very fine, trace
				coarse, trace fine gravel, loose, moderate sorted.
				3.0-5.0': Sand. Brown (7.5 YR 4/4) coarse grained, some very coarse, trace medium,
				fine, trace to some fine gravel, coarsening downward, loose, saturated, poorly
				sorted.
90	95	3	8-10	0-1.0': Sand. Color as above, very coarse grained, much coarse and fine gravel,
				trace medium, poorly sorted, loose, saturated.
				1.0-3.0': Sand. Color as above, coarse grained, some coarse and fine gravel, fining
				downward to much medium grain, trace gravel, poorly sorted, loose.
				Collect water sample, set screen at 90 to 95 feet. GBGM-34/95.
				17:30 Collect GBGM-34/95 water sample.
95	100	5	4-7/-	0-1.0': Sand/Gravel. Brown (7.5 YR 4/4) fine to medium grained, silt, fine to coarse
				gravel, gravel up to 3 inch diameter, subrounded to subangular.
				1.0-5.0': Silt. Occasional clay inclusions from 1 to 2½ feet. Silt, reddish brown
				(5 YR 4/3). Clay, reddish brown (5 YR 4/4). PET clay = 3.75 nonplastic, very stiff,
				PET silt = 3.0. Some clay in silt.

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Sample/Core Log (Cont.d)

Boring/Well GM-34 A/B

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description

100	105	5	5-7/-	0-5.0': Silt. Color, as above, clayey PET silt = 3.0, stiff.
105	110	5	4-9/-	0-5.0': Silt. As above.
110	115	5	8-70/-	0-3.0': Silt. Color, as above with very fine sand. PET = 1.0.
				3.0-4.0': Silt. Color as above, clayey to silty clay, very soft PET = 0.025, saturated,
				plastic.
				4.0-5.0': Silt/Sand. Very fine, reddish brown (5 YR 5/4) very fine sandy silt grading to
				silty very fine sand, well sorted, moist, very dense. OVA = 70.
115	120	5	50-80	0-0.5': Silt. Reddish brown (5 YR 4/4) clayey, medium stiff, PET = 1.5 to 2.0.
				0.5-5.0': Sand. Reddish brown (5 YR 4/4), silty, well sorted, very dense.
120	125	5	20-225	0-5.0': Sand. Very fine, color as above, grading to sandy silt, very silty, variable
				amounts of clay, soft.
125	130	5	15-350	0-5.0': Sand. Color as above, grading to sandy silt. Very silty, well sorted, very
				dense.
130	135	5	130-275	0-5.0': Sand. Very fine, reddish brown (5 YR 5/4) very silty, zones of very fine sandy
				silt at 2 to 3 feet, very dense.
135	140	5	2.5-8	0-5.0': Sand. Very fine, reddish brown (5 YR 5/4) very silt, very dense, trace gravel,
				angular from 4 to 5 feet.
140	145	5	3-3	0-5.0': Sand. Very fine, as above, very silty.
145	150	5	2.5-4	0-5.0': Silt. Reddish brown (5 YR 4/4) very fine sandy, very dense.
150	155	5	2.5-4.5	0-5.0': Silt. Color as above, very fine sandy, very dense.
				20:00 end drilling for the day.
155	160	5	2-3.5	0-5.0': Silt. Reddish brown (2.5 YR 4/3) variable amounts of very fine sand and
				clay, soft PET = 0.5, homogenous.
160	165	5	2-3	0-5.0': Silt. Brown (7.5 YR 4/3) silt a above, homogenous.
165	170	5	2-6/0-0.8	0-5.0': Silt. As above, brown (7.5 YR 4/3) PET = 0.5 to 1.5, soft to medium stiff,
				homogenous.
170	175	5	2.5-7/0-0.7	0-5.0': Silt. As above.
175	180	5	2.75/0	0-5.0': Silt. Reddish brown (5 YR 4/3) clayey, trace very fine sand from 0 to 1 foot,
				soft, homogenous.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-34 A/B

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
180	185	5	3-10/0-1.6	0-5.0': Silt. As above, trace very fine sand from 3½ to 5 feet.
185	190	5	25-42/	0-0.5': Silt. As above.

			0.2-2.9	0.5-2.5': Sand. Brown (7.5 YR 5/3) fine grained, silty, dense.
				2.5-5.0': Clay. Silty, dark gray (7.5 YR 4/1) with fine to coarse sand, and fine to
				coarse gravel up to 3 inch. Subangular to subrounded, weathered fragments of
				slate. PET = 1.5 medium stiff.
190	194	4	6-25/0.1-8.6	0-4.0': Bedrock. Greenish black (2 Gley 2.5/1) portions ground up from drilling
				vertical foliation, slate calcite filling fractures hardness approximately 2.5, massive.
				Bedrock at 190 feet E.O.H. at 194 feet.
				GM-34A Total Depth 41 ft.
				GM-34B Total Depth 194 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-35 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 7/20/98 15:35 Drilling Completed 7/20/98 10:05

Total Depth Drilled 51 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1120.49 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Brian

Prepared By Ted Powell and Tim Jones

Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	25			Blind drill.
25	30		15-75/	0-2.0': Sand and Gravel. Red brown (5 YR 4/3) sand medium with coarse and very
			0.6-1.7	coarse, some fine, trace silt, very poorly sorted, moist, loose to moderate
				dense, gravel ¼ to 3 inch, subround to subangular.
				2.0-3.0': Sand. Some gravel, reddish brown (2.5 YR 5/3) sand, fine, some coarse,
				trace silt, moderate sorting, moist, moderate dense, gravel ¼ to 3/4 inchs,
				subrounded.
				3.0-4.0': Sand. Very fine silty, some fine gravel, red grey (5 YR 5/2) dry, loose,
				gravel 1/8 to ½ inch subround to subangular.
				4.0-5.0': Sand. Fine some very fine, trace silt, moderate well sorted, moderate dense,
				red yellow (7.5 YR 6/6).
30	35			0-0.5': Sand. As above.
				0.5-1.5': Sand. Light brown (7.5 YR 6/3) fine and very fine, trace silt, moderate
				well sorted, very moist, some yellowish mottling.
				1.5-5.0': Sand. Black (1 Gley 2.5 N) very fine to very silty, slightly moist, moderately
				well sorted. Collect sample for chemical analyses (VOCs, SVOCs/PCBs, TOC,
				metals).
35	51			Blind drill.
				Set well from 40 to 50 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-36 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 8:45 7/21/98

Drilling Completed 12:20 7/21/98

Total Depth Drilled 106 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 2"

blind to 105, continuous to nuous to Sampling Interval 106 feet

Land-Surface Elev. 1127.17 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Brian

Prepared By Ted Powell and Tim Jones

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	85			Blind drill. See sample/core log for GM-15 for lithologic descriptions.
85	90	5	5-8/0	Silt. Red grey (5 YR 5/2) variable clay content in silt, medium stiff to stiff
				(1.5-3.0), where clayey to moderately plastic, where none clay - nonplastic, clay
				inclusions intepared throughout. Red brown (5 YR 4/3) fissile, nonplastic, dry.
90	95	5	7-33/0	0-3.0': Silt. As above, but with less clay inclusions.
				3.0-4.2': Interbedded clay and silt lenses ranging in thickness from 1/8 to 1 inch. Silt:
				red grey (5 YR 5/2) slightly moist to dry, trace very coarse sand, medium stiff clay.
				Red brown (2.5 YR 4/4) fissile, non to slightly plastic.
				4.2-5.0': Sand. Brown (7.5 YR 5/3) fine to medium, some silt, wet to saturated,
				moderate sorting, several .5-1 inch clay and silt seams as above interspersed
				throughout sand, trace gravel in sand, 1/4-1/2 inch subangular.
95	100	4	9/30/2000	0-1.0': Sand. as above, some coarse and very coarse, trace fine gravel, subangular,
				a 3/4 inch clay seam at .75 feet and stiff, possible slough.
				1.0-4.0': Sand with gravel. Red brown (5 YR 5/3), sand coarse with very coarse, some
				fine and medium, trace (10 percent) silt, loose to medium dense, poorly sorted.
				Gravel 1/8 to 2 inches, subround to subangular.
100	105	0	0	Lost sand and gravel out of core barrel bottom upon retrieval.
				Well set screen 95 to 105 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-37 A/B Project/No. Ford/Kingsford WI000675.0001 Page 1 of 8

Site Location Kingsford, Michigan Drilling Started 7/21/98 Drilling Completed 7/25/98

Total Depth Drilled 349 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.29 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Kale Helper Mike

Prepared By Tim Jones and Bruce Evans Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	3-4/0	0-0.5': Top soil. With organics, dark brown (7.5 YR 3/2) dry, trace medium gravel,
				subangular.
				0.5-2.0': Sand. Fine, red yellow (7.5 YR 6/6) fine grained, well sorted, trace fine
				gravel, moist.
				2.0-4.0': Sand. Medium to coarse, strong brown (7.5 YR 5/6) poorly sorted, some
				fine to medium gravel, subangular, moist.
5	10	5	20-4.5/0.0	0-1.0': Organic. Slough.
				1.0-2.0': Sand. Medium to coarse, as above, moist.
				2.0-4.0': Sand. Pink (7.5 YR 7/4) fine grained, well sorted, with fine to coarse
				gravel, subangular to subrounded.
				4.0-5.0': Gravel. With sand, brown (7.5 YR 5/3) medium to very coarse sand,
				fine to coarse gravel. Subangular to subrounded, loose, moist.
10	15	5	2.0-3.0/0.0	0-1.0': Sand. Medium to coarse, brown (7.5 YR 4/2) medium to coarse grained,
				poorly sorted, some fine to medium gravel, subrounded to subangular, loose,
				moist.
				1.0-1.5': Sand. Light brown (7.5 YR 6/4) fine grained, well sorted, some medium
				gravel, loose, moist.
				1.5-4.0': Gravel/Sand. Brown (7.5 YR 5/3) medium grain sand, poorly sorted,
				some coarse grain, and fine to coarse gravel, 2 inch subrounded, loose, moist.
				4.0-4.5': Sand. Light brown (7.5 YR 6/3) fine sand, trace fine gravel, moist, loose.
				4.5-5.0': Sand/Gravel. Brown (7.5 YR 5/3) fine to medium grain, fine to medium
				gravel, poorly sorted, loose, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
15	20	4	2.0-5.0/0.0	0-1.5': Sand/Gravel. Brown (7.5 YR 5/3) fine sand, poorly sorted, fine to coarse
				gravel, 1 inch diameter, loose, moist.
				1.5-2.5': Gravel/Sand. Brown (7.5 YR 5/4) sand, fine to coarse gravel, poorly sorted,
				loose, moist.
				2.5-4.0': Sand/Gravel. Brown (7.5 YR 5/4) medium to coarse sand, medium to
				fine gravel, very poorly sorted, loose, moist.
20	25	5	5.0-20/0.0	0-4.5': Sand/Gravel. As above, with some pebbles to 3 inch, loose, moist.
				4.5-5.0': Sand. Reddish yellow (7.5 YR 7/6) fine sand, well sorted, some fine
				to medium gravel, subrounded, loose, moist.
25	30	5	4.0-10.0/0.0-	0-1.0': Slough.
			0.4	1.0-4.0': Sand. Fine grained sand, well sorted, as above.
				4.0-4.5': Gravel/Sand. Strong brown (7.5 YR 5/6) fine to coarse gravel with fine
				to medium sand. Poorly sorted, loose, moist.
				4.5-5.0': Sand. Strong brown (7.5 YR 5/8) fine to medium sand, some fine to
				medium gravel, moderately sorted, loose, subangular to subrounded, moist.
30	35	5	3.0-9.0/0.0	0-1.0': Sand. Strong brown (7.5 YR 5/6) fine sand, well sorted, fine to medium
				gravel, subangular, loose, moist.
				1.0-1.5': Sand. Red yellow (7.5 YR 6/6) fine sand, very well sorted, loose, moist.
				1.5-4.0': Sand and Gravel. Strong brown (7.5 YR 5/6), fine to coarse, very poorly
				sorted, fine to coarse gravel to 2 inch diameter, subangular to subrounded, loose
				moist.
				4.0-4.5': Silt. Pink (7.5 YR 7/4) very soft to loose, moist.
				4.5-5.0': Sand/Gravel. Brown (7.5 YR 5/3) fine to very fine sand, well sorted,
				some medium to coarse gravel, subangular to subrounded, loose, moist.
35	40	5	5.0-7.0/0.6-6	0-5.0': Silt. Yellow red (5 YR 5/6) moist, trace fine sand, friable.
40	45	5	4.0-9.0/4.4-	0-1.0': Sand. Pink (5 YR 7/4) very fine sand, some silt, very well sorted, loose,
			7.6	moist.
				1.0-5.0': Silt. Yellowish red (5 YR 5/6), friable, moist, trace very fine sand.
45	50	5	3.0-12.0/	1.0-4.0': Sand. Brown (7.5 YR 5/4) very fine grain with some silt, very well sorted,
			0.2-0.4	wet.
				4.0-5.0': Silt. Brown (7.5 YR 5/4) friable, trace very fine sand, very moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
50	55	5	4.0-7.0/	0-3.5': Sand. Brown (7.5 YR 5/3) very fine grained, silty, very moist, to wet, soft,
			0.0-0.6	loose.
				3.5-5.0': Silt. Red brown (5 YR 5/3) some very fine sand, friable, HP = 2.25,
				medium stiff, wet.
				18:50 End drilling for day at 55 feet.
				08:05 July 22, 1998 resume drilling at 55 feet.
55	60	5	4.0-12.0/	0-5.0': Silt. Red brown (5 YR 5/3) some very fine sand, very soft, wet, HP = 0.75.
			0.0-0.3	
60	65	5	160-280/	0-5.0': Silt. As above, wet.
			0.0-0.4	
65	70	5	200-400/	0-5.0': Silt. Red brown (5 YR 5/4) trace very fine sand, medium stiff, HP = 1.5 to
			0.0-0.1	2.5, wet.
70	75	5	300-600/	0-5.0': Silt. Red brown (5 YR 4/4) trace clay in matrix, medium plastic, medium
			0.1-0.6	stiff, HP = 1.75 to 2.5, wet.
75	80	5	50-150/0.1-	0-5.0': Silt. As above, with trace clay, wet.
			0.3	
80	85	5	25-40/0.1-	0-5.0': Silt. As above, with trace clay, wet.
			0.6	
85	90	5	5.0-9.0/0.0	0-5.0': Silt. Red brown (5 YR 5/4) with some color banding, red grey (5 YR 5/2) some
				clay in matrix, medium plastic, medium stiff, HP = 2.5, wet, trace clay red brown
				(5 YR 4/4) thin bands, plastic, fissile looking plating when broken, wet, HP = 2.5.
90	95	5	5.0-12.0/	0-5.0': Silt. As above, clay is variable in matrix, wet, acid reaction, trace clay,
			0.1-1.1	as above.
95	100	5	5.0-7.0/0.0-	0-5.0': Silt. Red brown (5 YR 5/4) silt with some clay as above, wet.
			0.1	
100	105	5	5.0-10/0.1-	0-5.0': Silt. With some clay, as above, wet, medium stiff, HP = 2.5.
			0.3	
105	110	5	4.0-10/0.0	0-5.0': Silt. As above becoming brown (7.5 YR 5/4), wet.
110	115	5	8.0-12.0/0.0	0-5.0': Silt. As above with some clay becoming brown (7.5 YR 4/4), wet.
115	120	5	6.0-9.0/0.2-	0-5.0': Silt. With color banding brown (7.5 YR 5/4) to brown (7.5 YR 5/3) some

From	To	Recovery (feet)	OVA/OVM	Sample/Core Description
			0.8	clay as above, wet, black stain from 3.0 to 5.0 interval.
120	125	5	6.0-10.0/	0-5.0': Silt. With some clay as above, color banding not present, brown (7.5 YR 4/4),
			0.2-1.1	wet, staining from 0-1.0.
125	130	5	6.0-9.0/	0-5.0': Silt. As above, brown (7.5 YR 4/4) trace clay red brown (5 YR 4/4) in
			0.1-0.4	matrix, distinct band at 3.0 to 3.5 feet, medium stiff HP = 2.5, wet, medium
				plastic.
130	135	5	10-40/0.3-	0-4.5': Silt. With some clay in matrix as above, some color banding red
			0.7	brown (5 YR 5/4) to red brown (5 YR 5/3) medium stiff to stiff, HP = 2.5 to 3.0.
				4.5-5.0': Silt. Red brown (5 YR 5/4) trace fine gavel, predominately black,
				subangular friable, wet, medium to very stiff, HP = 2.5 to 3.5.
135	140	5	500-1,500/	0-5.0': Silt. As above, brown (7.5 YR 5/4) very fine sand at 1.0 feet, wet.
			0.0	
140	145	5	1,500-5,000/	0-2.5': Silt. Red brown (5 YR 5/4) very sandy, very fine sand, wet, friable,
			0.0	medium stiff, HP = 2.5.
				2.5-4.0': Sand. Red brown (5 YR 5/4) very fine, loose, wet, very well sorted, trace
				silt.
				4.0-5.0': Sand. Brown (7.5 YR 4/3) fine grained, well sorted, loose, wet, trace
				very fine sand.
145	150	--	--	No recovery, set screen.
150	155			This 10 foot interval to take grab water sample.
				14:40 Stop drilling at 155 feet to collect first water sample from borehole
				GBGM-37. Note: No water sample obtained.
155	160	5	1,000-	0-1.0': Silt. Banded colors between brown (7.5 YR 5/4) to brown (7.5 YR 5/2)
			10,000/0.4-	medium stiff, HP = 2.5 trace clay in matrix, friable, wet.
			7.4	1.0-5.0': Silt. Brown (7.5 YR 5/4) very sandy, very fine grain sand, soft, wet,
				0.05 foot band clay at 3.5 foot red brown (7.5 YR 4/4) trace black staining,
				fissile looking, medium plastic, staining on top of seam.
160	165	4	>10,000/	Sand. Brown (7.5 YR 5/4) 0-4.0 foot very silty, very fine gain, well sorted, loose,
			2.4-9.6	wet.
				19:05 end drilling for day at 165 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-37 A/B

Prepared by Tim Jones and Bruce Evans

From	To	Sample/Core Depth (feet below land surface) Core Recovery (feet)	OVA/OVM	Sample/Core Description
				Thursday July 23, 1998, resume drilling at 165 feet - 08:10 (OVA background =

				3.5 ppm)
165	170	5	700-5,000/	0-3.0': Sand. Red brown (5 YR 5/4) very fine grain, loose, wet, well sorted, silty
			1.2-6.6	from 2.0 to 3.0.
				3.0-5.0': Silt. Red brown (5 YR 5/4) some color banding, grey (5 YR 6/2)
				very sandy, very fine sand, very soft wet.
170	175	5	1,500-	0-1.0': Silt. Red brown (5 YR 4/4) very sandy with very fine grained sand, very soft,
			>10,000/1.2-	HP = 0.5, wet.
			9.9	1.0-5.0': Sand. Red brown (5 YR 4/4) very fine grain, loose, some silt, well sorted,
				wet.
175	180	5	4,000-	0-1.0': Silt. Red brown (5 YR 4/4) some color banding, gray (5 YR 6/2) sandy
			>10,000/2.4-	with very fine sand, soft HP = 1.5, wet.
			7.2	1.0-5.0': Sand. Red brown (5 YR 4/4) very fine grain, well sorted, loose, very
				silty, wet.
180	185	5	>10,000/3.2-	0-3.0': Sand. Red brown (5 YR 4/4) very fine grain, well sorted, very silty, loose, wet.
			7.8	3.0-5.0': Silt. Red brown (5 YR 4/4) soft HP = 1.5, very sandy with very fine
				sand, friable, wet.
185	190		1,500-5,000/	0-4.0': Sand. Red brown (5 YR 4/4) very fine grain, well sorted, very silt, wet, loose.
			1.4-2.9	4.0-5.0': Silt. Red brown (5 YR 4/4) some color banding red grey (5 YR 5/2), very
				fine sandy, very soft HP = 0.5, trace clay in matrix, medium plastic, wet.
190	195	5	3,000-	0-2.0': Silt. As above, wet.
			>10,000/2.3-	2.0-5.0': Sand. Red brown (5 YR 4/4) very fine gain, well sorted, loose, very silty,
			6.4	wet.
195	200		3,000-7,000/	0-2.0': Silt. Brown (7.5 YR 4/4) HP = 1.0, trace clay in matrix, moderate plastic,
			0.0	trace coarse gravel to 1 inch diameter, subrounded, wet.
				2.0-3.0': Sand. Red brown (5 YR 4/4) very fine grain, loose, very silty, wet.
				3.0-5.0': Silt. Brown (7.5 YR 4/4) some very fine sand, trace clay, moderate
				plastic, very soft, wet.
200	205		7,000-	0-3.0': Silt. Red brown (5 YR 5/2) as above, wet. Discoloration, abundant
			>10,000/0.5	vesicles present throughout.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-37 A/B

Prepared by Tim Jones and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			2.7	3.0-5.0': Silt. Brown (7.5 YR 5/4) trace very fine sand, friable, HP = 1.0, moist.
				11:15 stop drilling at 205 feet to attempt to cut sample with each
				acrylic liner from 205 to 215 feet.

205	215	6	NA	0-6.0': Sand. Red brown (5 YR 4/4) very fine gained, loose, very silt, wet.
215	220	5	>10,000/	0-5.0': Sand. Brown (7.5 YR 5/4) very fine gained, well sorted, very silty, loose,
			4.4-9.8	visible vesicles, wet.
220	225	5	>10,000/	0.0-5.0': Sand. As above, wet.
			5.5-9.4	
225	235	5	2,000-9,000/	0.0-5.0': Sand. As above, wet.
			1.2-6.4	
230	250	5	3,000-9,000/	0.0-5.0': Sand. As above, wet.
			10.1-12.6	
				End drilling for day at 235 feet bgs.
				July 24, 1998 - 08:30 begin drilling for day at 235 feet.
235	240	5	50-1,000/0.0	Sand. Brown (7.5 YR 4/3) very fine grain, well sorted, some silt, loose, wet,
				visible vesicles.
240	245	5	300-2,000/	Sand. As above.
			0.0-6.0	
245	250	5	1,000-8,000/	Sand. As above, becoming brown (7.5 YR 4/4).
			0.0-6.0	
250	255	3	1,000-9,000/	Sand. As above.
			0.0-3.0	
255	260	5	30-500/0.0	Sand. As above.
260	265	5	9,000-	Sand. Brown (75. YR 4/4) very fine grain, very silty, well sorted, loose, wet.
			>10,000/	
			0.0-6.0	
265	20	1	9,000/0.0	Sand. As above.
270	275			No recovery. 11:30 attempt to cut 5 feet acrylic liner core from 275 to 280 feet.
275	280	5		Acrylic liner, recovered 5 feet liner cracked. Sand as above.
280	285	5	1,000-8,000/	Sand. Brown (7.5 YR 4/4) very fine grain, silty, loose, wet visible vesicles.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-37 A/B

Prepared by Tim Jones and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			0.0-0.7	
285	290	5	2,000-	Sand. As above.
			>10,000/	
			0.0-6.0	
290	295	5	5,000-	Sand. Brown (7.5 YR 4/4) less porous than above, very fine grain, very silty, well

			>10,000/	sorted, visible+E296 vesicles, loose, wet.
			0.0-1.8	
295	300			16:45 Attempt acrylic liner core from 295-300 feet, no recovery.
295	300	5	2,000-9,000/	Sand. As above.
			0.0-0.3	
300	305	5	>10,000/	Sand. As above.
			0-1.9	
305	310	5	2,000-	Sand. Brown (7.5 YR 4/4) very fine grain, trace silt, some fine grain, well sorted,
			>10,000/	loose, wet, vesicles.
			0.0-0.1	
310	315	5	6,000-	0-3.5': Sand. Brown (7.5 YR 5/3) fine grain, wet, some very fine grain, well sorted,
			>10,000/	trace fine gravel, subangular to subrounded, loose, wet, vesicles.
			0.2-2.1	3.5-5.0': Sand. Brown (7.5 YR 5/3) very fine grain and trace fine grain, well
				sorted vesicles, loose, wet.
				19:05 End drilling for day at a depth of 315 feet.
				July 25, 1998 8:00 resume drilling activities from a depth of 315 feet.
315	320	5	80-4,500/	Sand. Brown (7.5 YR 5/4) very fine grain, silty, well sorted, loose, some vesicles,
			0.0-15.1	trace possible black staining, wet.
320	325	5	500-2,700/	Sand/Silt. Silty sand to sandy silt, very fine grain, well sorted, loose, brown
			4.6-26.6	(7.5 YR 5/4) some vesicles, wet.
325	330	5	1,200-	0-3.0': Sand. Brown (7.5 YR 5/4) very fine grain, silty, loose, some vesicles, wet.
			>10,000/	3.0-5.0': Gravel. Very dark brown (7.5 YR 2/5/2) fine to coarse gravel to 2 inch
			22-36	diameter, subangular to subrounded, very poorly sorted.
330	335	5	5,000-	0.0-2.0': Sand. Brown (7.5 YR 5/3) fine grain, well sorted, trace very coarse
			>10,000/	gravel to 1.5 inch diameter. Subrounded, loose, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-37 A/B

Prepared by Tim Jones and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			26-52	2.0-2.5': Sand/Gravel. Dark brown (7.5 YR 3/2) fine to medium sand with fine to
				coarse gravel, very poorly sorted, subangular to subrounded gravel, loose.
				2.5-5.0': Sand/Gravel. Dark brown (7.5 YR 3/2) fine to coarse sand, fine to
				coarse gravel, subangular to subrounded to 3.5 inch diameter, in very clayey matrix,
				very poorly sorted, loose abundant, black, subangular slate as gravel, till type
				material, wet.
335	340	5	500-	Sand. Dark brown (7.5 YR 3/2) fine to medium grain with some fine gravel,

			>10,000/	subangular to subrounded, moderately sorted, loose, wet.
			15-36	
340	346	6	1,000-7,000/	Sand/Gravel. Dark brown (7.5 YR 3/2) fine to coarse sand, fine to medium
			15-34	gravel, subangular to subrounded, poorly sorted, loose, wet.
346	340	3	300-9,000/	0.0-0.5': Clay/Gravel. Very dark grey (7.5 YR 3/1) silty, slight plastic with fine
			0-18.8	to coarse gravel subangular to subrounded (petrometer = 4.0) firm, slight acid
				reaction, till material, wet.
				0.5-2.3': Silt/Gravel/Rock. Dark bluish grey (Gley 4/1) extremely dense silt with
				fine to coarse gravel and rock. Rock fragments very dense till material, dry.
				2.3-2.5': Silt. Dark brown (7.5 YR 3/3) very dense, firm, with medium gravel,
				subround to subangular and some medium to coarse sand, moist.
				2.5-2.8': Silt/Till. Blue grey as above, dense, dry, crumbles to reaction powder.
				2.8-3.0': Rock Fragments and Powder. Bluish grey (Gley 5/1) phylitic/metamorphic
				rock.
				Bedrock at 348.8 feet.
				16:15 stop drilling at 349 feet.
				Lost bottom of borehole - pulled back and set well screen 144 to 154 feet.
				GM-37A Total Depth 349 ft.
				GM-37B Total Depth 338.5 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-38 A/B/C Project/No. Ford/Kingsford WI000675.0001 Page 1 of 7

Site Location Kingsford, Michigan Drilling Started 8:25 7/22/98 Drilling Completed 20:00 7/23/98

Total Depth Drilled 231.5 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1097.29 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Ted Powell and Kevin Daleness Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	3.5-15/	0-0.5': Silt/Loam. "A" horizon, dark brown (7 YR 3/3) dry to loose, grass, roots,
			2.4-6.7	trace fine gravel.
				0.5-1.5': Sand. Dark yellow brown (10 YR 4/6), very silty in top grading to fine
				and medium grain in bottom, loose, dry.
				1.5-4.0': Sand. Light brown (7.5 YR 6/4) medium, some coarse, trace very
				coarse and fine, medium sorting, slightly moist, loose.
5	10	5	4.5-10/	0-1.0': Slough.
			3.5-7.7	1.0-5.0': Sand and Gravel. Sand matrix is brown (7.5 YR 4/4) sand, very coarse
				with coarse and medium, trace fine and silt, loose, slightly moist, very poorly
				sorted, gravel 1/8 to 3.5 inches, subrounded to angular.
10	15	5	4.5-17/0-6.4	0-1.5': Slough.
				1.5-5.0': Sand. Brown (7.5 YR 5/4) medium, some coarse and very coarse, trace
				fine, some gravel at top grading to trace gravel at bottom, loose, slightly moist,
				moderate sorting, gravel ¼ to 1.5 inches, subrounded.
15	20	4	8-18/.2-7.2	0-1.0': Sand. With gravel, brown (7.5 YR 4/4) sand, fine to very coarse, trace
				silt, very poorly sorted, loose, slight moist, gravel 1/8 to 3 inches, subrounded.
				1.0-2.0': Sand. Brown (7.5 YR 4/2) medium with fine, some coarse, some silt,
				dry, loose, poorly sorted.
				2.0-3.0': Sand. Light brown (7.5 YR 6/4) medium, some fine, trace coarse, moderate
				well sorted, slightly moist, loose.
				3.0-4.0': Sand. With gravel. Brown (7.5 YR 4/4) sand, coarse with very coarse
				and medium, some fine, trace silt, poorly sorted, dry, loose. Gravel 1/8 to 2 inches
				subrounded to subangular.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
20	25	5	7-60/0-7.6	0-2.0': Sand. With gravel, as above.
				2.0-3.0': Sand. Silty, brown (7.5 YR 5/2) with medium and fine grain, dry, loose,
				moderate sorting.
				3.0-4.0': Sand. Brown (7.5 YR 5/4) coarse with medium and very coarse, trace
				fine gravel, angular to subangular, poorly sorted, slightly moist, loose.
				4.0-5.0': Sand. Light brown (7.5 YR 6/4) fine to medium with silt, trace coarse
				and very coarse, some gravel 1/8 to 2.5 inches, poorly sorted, dry. Pulverized
				gravel due to drilling.
25	30	5	60-350/out	0-1.0': Slough.
				1.0-4.0': Sand. Brown (7.5 YR 5/2) fine to medium, very silty in part, gravel lense
				at 1.5 to 2.5 feet, 1 to 3.5 inches, subrounded to angular, dry, loose, pulverized
				gravel.
				4.0-5.0': Sand. Very silty, fine, dark grey (7.5 YR 6/2) trace coarse and very coarse,
				dry, loose, some fine gravel, poorly sorted.
30	35	5	20-150/--	0-0.5': Sand. Red brown (5 YR 4/3) coarse some very coarse and medium, trace fine,
				medium dense to loose, wet to saturated.
				0.5-5.0': Sand. Red brown (5 YR 4/4) very fine, silty, well sorted, and dense, wet
				from 2 to 3 feet, several approximately 1 inch thick very fine sandy silt lesnes,
				color as above.
35	40	5	4.5-7.5/--	Sand. Very fine silty, red brown (2.5 YR 4/3) well sorted, medium dense, wet to
				saturated in bottom.
40	45	5	4.5-10/--	Sand. Very fine silty, as above, saturated.
45	50	5	8-9/bkg=8	0-2.0': Silt. Very clayey in part. Dusty red (10 YR 3/2) medium stiff (1.75) slightly
				plastic to moderate plastic, where clayey, variable very fine sand throughout.
				2.0-2.5': Sand. Red brown (2.5 YR 4/4) very fine to silty, saturated, medium
				dense, well sorted.
				2.5-5.0': Silt. Trace to some clay (variable), trace very fine sand, stiff to very
				stiff (2.5 to 3.5) color mottled in lower 2 feet, predominantly dusty red (10 YR 3/2)
				with very dusty red (10 R 2.5/2).
50	55	5	8/out	0-1.0': Silt. As above.

Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				1.0-5.0': Silt and Clay. Silt dark red grey (5 YR 4/2) trace very coarse sand, hard,
				some very fine to fine sand lenses interspersed throughout. Clay dark red
				brown (2.5 YR 3/4) very stiff to hard, nonplastic, platy to block, clay lenses and
				inclusions 1 to 2.5 inch thick.
55	60	5	8=bkg/--	Silt. Dark red grey (5 YR 4/2) medium stiff (2 to 2.5 feet) with clay inclusions at 0-1.5
				and 4.5 feet, trace to some clay insult matrix. At 2.5 to 3 feet silt with very fine sand,
				saturated, soft clay, dark red brown (2.5 YR 3/4) fissile, stiff, nonplastic.
60	65	5	8-9/--	0-4.5': Silt. As above, with minor clay inclusions, clay, as above.
				4.5-5.0': Silt. Dark red brown (5 YR 3/2) very stiff, homogenous.
65	70		8=bkg/--	Silt. Dark red grey (2.5 YR 3/1) soft to medium stiff (1 to 2.5) trace clay, trace very
				fine sand, clay lenses at 0.5 feet, clay inclusions at 1.5 to 2 foot and 3 to 4 feet,
				clay very dusty red (2.5 YR 2.5/2) fissile, very stiff to hard, nonplastic.
70	75	5	2-10/--	Silt. As above, clay inclusion from 0 to 2 feet, and at 3.5 feet, clay, hard, dry, non
				plastic, dark red brown (2.5 YR 3/4).
75	80	5	6=bkg/--	Silt. Clay inclusions form 0 to 1.5 and 4 to 5 feet. silt contains variable very fine
				and fine sand, trace clay, color is mottled from 2 to 5 feet, medium stiff, dark
				black grey (5 B 4/1) and dark red brown (5 YR 3/2) clay, as above.
80	85	5	6/--	0-2.0': Silt. As above.
				2.0-5.0': Silt and Clay. Interbedded, clay, dark red brown (2.5 YR 2.5/4) very hard,
				platy to blocky, some plastic, lenses 1 to 3 inch thick, dry. Silt, dark red brown
				(5 YR 3/2) variable very fine and fine sand, trace clay, very hard and dry where no
				sand, medium stiff where sand is present.
85	90		8=bkg/--	0-2.25': Silt and Clay. Interbeded, silt color as above, trace to with clay,
				moderately plastic where clayee, medium stiff (1.5 to 2) clay, dark red brown
				(5 YR 3/3) fissile, stiff to hard, nonplastic, dry.
				2.25-2.5': Sand. Coarse with medium, some very coarse, trace very fine and fine
				moderate sorting, loose, saturated, very dark grey (3N).
				2.5-5.0': Silt. Some very fine sand, trace clay (variable) grading to very fine silty
				sand towards bottom, saturated, soft to medium stiff.
90	95	5	8-20/--	0-1.5': Sand. Very fine silty to very fine sandy silt, dark red brown (5 YR 3/4)
				soupy, dense, well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-38 A/B/C

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) Core Recovery

From	To	(feet)	OVA/OVM	Sample/Core Description
				1.5-2.75': Silt. Very fine sandy, trace clay, trace fine sand, color as above,
				medium dense to dense.
				2.75-5.0': Sand. Fine to medium, some very fine, trace coarse and very coarse,
				brown (7.5 YR 4/4) loose to medium dense, at 4 feet and 2 inch silt lense,
				trace to some clay, medium stiff (2) dark red brown (5 YR 3/3).
95	100	5	8-12.5/--	Sand. Fine to coarse, some very fine, and some gravel. Brown (7.5 YR 4/3)
				trace silt, loose, wet.
100	105	4	13-45/--	Sand. Fine to coarse, some very fine and gravel brown (7.5 YR 4/3) trace silt, loose,
				wet.
				19:30 collect grab sample GBGM-38/105.
105	110	5	2-4/.1-.2	Silt. Dark red brown (5 YR 3/3) soft (.75 to 1), trace to some clay, moderately
				plastic where clay content is greater, from 0-0.5 feet silt contains some gravel,
				1/8 to 1 inch, subrounded.
110	115	5	2-4.5/0	Silt. Color as above, soft to medium stiff (1 to 1.5), trace to some clay, variable
				very fine sand content, wet, moderate plastic where lay content is greater.
115	120	5	2-6/.2-.3	0-1.5': Silt. As above.
				.15-3.5': Sand. Very fine silty, color as above, medium dense, moderately well
				sorted, wet.
				3.5-5.0': Silt. Very sandy very fine sand, dark red brown (5 YR 3/3), soft to
				medium stiff.
120	125	5	2-9/.2-.7	0-0.5': Silt. As above.
				0.5-1.5': Silt. Color as above, very homogenous, medium stiff (1.5).
				1.5-5.0': Sand. Very fine silt, dark red brown (5 YR 3/3) medium dense, slightly
				moist to moist, moderate well sorted, at 2 feet silt seam approximately 1 inch
				dark red brown (5 YR 3/2) homogenous, medium stiff.
				sorted, wet.
				3.5-5.0': Silt. Very sandy very fine sand, dark red brown (5 YR 3/3), soft to
				medium stiff.
120	125	5	2-9/.2-.7	0-0.5': Silt. As above.
				0.5-1.5': Silt. Color as above, very homogenous, medium stiff (1.5).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-38 A/B/C

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface)

From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1.5-5.0': Sand. Very fine silt, dark red brown (5 YR 3/3) medium dense, slightly

				moist to moist, moderate well sorted, at 2 feet silt seam approximately 1 inch
				dark red brown (5 YR 3/2) homogenous, medium stiff.
125	130	5	2.5-12/0-0.2	Silt. Predominately dark red brown (5 YR 3/3) some dark red brown (3 YR 3/2)
				some very fine sand to very fine sandy silt, very soft to medium stiff (0-1.5)
				saturated.
130	135	5	3-8/0-0.4	Silt. As above.
135	140	5	5-9/.1-1.4	Silt. Dark red brown (5 YR 3/3) some very fine sand, trace clay, soft (0.5), fairly
				homogenous.
140	145	5	6-12/0.2-2.2	0-2.0': Silt. As above, bottom medium stiff (1.5).
				2.0-3.0': Sand. Very fine silty, grading to very fine sandy silt, color as above, slightly
				moist, medium dense.
				3.0-5.0': Silt. With very fine sand, red brown (5 YR 4/4) wet, moderately well
				sorted, blocky. At 4.75 feet at ¼ inch sand seam, color as above, fine grain
				some medium, trace very fine and silt, loose.
145	150	4	4.5/0	0-4.0': Silt. Very fine very sandy, trace clay, soupy, red brown (5 YR 3/3).
150	155	5	45-95/0	0-0.5': Silt. Very fine sandy, as above.
				0.5-1.0': Silt. Very fine sandy silt, and sand. Sand yellow brown (10 YR 5/4)
				fine to some medium, some very fine, moderate sorting, medium dense.
				1.0-5.0': Sand. Yellow brown (10 YR 5/4) moderate with fine, some very fine and
				coarse, trace silt, moderate well sorted, medium dense.
155	160	5	45-280/0-0.6	Sand. As above.
160	165	5	225-500/	Sand. Color as above, medium with fine, trace coarse and very fine, trace silt,
			0.3-0.5	moderate dense, moderate sorting. At 4 feet a ½ inch silt lense, some very fine
				sand, red brown (5 YR 5/3).
				14:00 Collect groundwater grab sample GBGM-38/166.
165	170	5	18-450/--	Sand. As above, but coarsens slightly toward bottom.
170	175	5	125-750	0-0.5': Sand. Medium with fine some very fine and coarse trace very coarse,
				moderate sorting, medium dense.
				0.5-2.0': Silt. Dark red brown (5 YR 3/3) trace clay, trace very fine sand, soft to

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-38 A/B/C

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				medium stiff.
				2.0-3.5': Sand. Brown (7.5 YR 4/3) fine with medium and very fine, trace
				coarse, trace silt, medium dense, saturated.

				3.5-4.0': Silt. Dark red brown (5 YR 3/3) trace very fine sand, torn up from drilling,
				homogenous.
				4.0-5.0': Sand. Very fine with silt, trace medium, dark red grey (5 YR 4/2)
				medium dense to dense, torn-up silt lense at 4.5 feet approximately 1 inch
				thick silt as above.
175	180	5	10-250	Sand. Very fine silty, dark red brown (5 YR 4/2) moderately well sorted, dense,
				saturated/soupy. Top 2 feet of core contain some silt inclusions, silt as above.
180	185	5	30-550	0-2.5': Sand. Very fine, some silt, variable, brown (7.5 YR 4/3) moderate
				dense, moderate well sorted, at 1 foot a 2 inch thick silt seam, silt, as above.
				2.5-5.0': Interbedded silt and sand. Silt, dark red brown (5 YR 3/3) variable
				very fine and fine sand, blocky, moist, silt ranges from 1 inch to 8 inch thick.
				Sand, brown (7.5 YR 4/3), very fine to fine, some silt, trace moderate, moderately
				well sorted, moderate dense, sand ranges from 6 to 3 inches thick.
185	190	5	70-150/--	0-1.0': Sand. Brown (7.5 YR 4/3) fine to very fine, some silt medium dense,
				moderate well sorted. At .75 feet a 1 inch silt lense, moderate stiff, red brown
				(5 YR 4/3).
				1.0-5.0': Silt. Red brown (5 YR 4/3) variable very fine sand, trace clay, soft, top 1
				foot contains much very fine to fine sand, brown (7.5 YR 4/3).
190	195	5	30-225/--	Silt. Red brown (5 YR 4/3) very homogenous soft (0.5 to 0.75), trace caly.
195	200	5	7.5-85/--	0-3.0': Silt. As above.
				3.0-5.0': Silt. As above, with clay inclusions, clay, dark red brown (5 YR 3/4),
				fissile, moderate plastic to plastic, several pockets of very fine sand with silt at
				4 feet, brown (7.5 YR 4/3) moderate dense.
200	205	5	40-200/--	0-3.5': Sand. Dark red grey (5 YR 4/2) very fine with silt, some fine well sorted,
				medium dense, occasional zones of very fine sandy silt 0.5-1.5 inch thick,
				medium dense to dense, color as above.
				3.5-5.0': Silt. Very fine sandy, to very silty very fine sand, dark red grey (5 YR 4/2),

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-38 A/B/C

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				dense to very dense, moderate sorting, very moist.
205	210	5	9-30/--	Sand. Brown (7.5 YR 5/3) fine to medium, some very fine, trace silt, moderate
				sorting, medium dense.
210	215	5	7-20/--	0-1.0': Sand. As above, at .7 feet a silt seam, red brown (5 YR 5/3) trace very fine to
				fine sand, dense.
				1.0-2.0': Silt. Red brown (5 YR 4/4) soft to medium stiff, (0.5 to 1.5) some clay,

				trace very fine sand, very moist to wet.
				2.0-5.0': Clay. Strong, till, matrix supported, color ranges from dark red brown
				(5 YR 3/2) at top to very dark grey (5 YR 3/1) at bottom. Matrix is silty sandy clay,
				hard, sand ranges from fine to very coarse, gravel ranges from 1/8 to 3 inch,
				subangular to angular.
215	220	5	2-35/--	Till. As above, very hard at bottom 3 feet. Gravel ranges up to 4 inches in
				diameter. Saturated lense at top1 foot, dry elsewhere.
220	226	6	3-12/1.0-2.6	0-3.0': Silt. Dark brown (7.5 YR 3/2) very dense, hard (4.0) trace to some clay,
				trace fine gravel 1/8 to 1 inch, subrounded to subangular, dry. Saturated along
				fracture faces.
				3.0-5.0': Silt. With gravel, dark brown (7.5 YR 3/2) very hard, dry, sandy towards
				bottom, sand is medium to very coarse, gravel 1/8 to 4 inch, subrounded to
				subangular, some well weathered slate.
226	231.5	4	9-35/.2-.5	0-1.5': Till, dark red brown (75 YR 3/3) matrix supported, very gravely 1/8 to 1.5
				inch, subrounded to subangular weathered rock fragments, matrix is sandy silty
				clay. Sand fine to coarse, stiff.
				1.5-4.0': Bedrock. Dark black grey (2 Gley 5 PB 4/1) abundant rock flour and
				crushed rock due to drilling, rock is Michiganne Slate, hardness 2.5, subvertical
				cleavage, abundant calcite fracture filling, chloritized in part. Interpreted top
				of competent bedrock from drilling is 228 ft bgs.
				Set well screen.
				GM-38A Total Depth 106 ft.
				GM-38B Total Depth 171 ft.
				GM-38C Total Depth 231.5 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-39 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 7/26/98 Drilling Completed 7/28/98

Total Depth Drilled 240 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1087.29 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan Adonay

Prepared By Tim Jones and Katie Panczak Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	3	5.5-6.0/0.0	0-1.0': "A" horizon. Top soil, fine sand and gravel, some organics from 0-0.5 feet,
				red brown (5 YR 4/4).
				1.0-2.0': Silt. Strong brown (7.5 YR 4/6) some fine sand, very soft, some fine
				to coarse gravel to 2 inch, subangular, moist.
				2.0-3.0': Sand. Strong brown (7.5 YR 5/6) fine grain sand, some very fine sand,
				trace silt, well sorted, loose, much fine to coarse grave to 3 inch, subrounded,
				moist.
5	10	1		Slough.
10	15	5	5.5-6.0/	0-0.5': Clay. Red brown (5 YR 4/4) very soft, wet, some coarse sand at 1.0 to 2.0
			0.0-0.6	some very coarse gravel/cobbles, very plastic.
				0.5-2.0': Clay. Red brown (5 YR 4/4) clay inclusions through rod (2.5 YR 4/6).
				2.0-4.0': Plastic. Very, trace coarse sand, fine to medium gravel, subangular,
				strong HCl reaction, wet.
				4.0-5.0': Silt. Red grey (5 YR 5/2) soft (HP = 1.0), no HCl reaction, trace very
				fine sand, wet.
15	20	5	5.5-6.0/0.0	0-3.0': Silt. Brown (7.5 YR 4/3) clay inclusion throughout, silt is moderate
				stiff HP = 1.5, no HCl, clay red brown (2.5 4/4) moderate HCl reaction. Matrix is
				wet, very coarse gravel to cobble.
				3.0-5.0': Clay. Red brown (2.5 YR 4/4) very stiff (HP = 3.5) moderate HCl
				reaction, moderate plastic, moist.
20	25	5	60-7.0/	0-5.0': Silt. Brown (7.5 YR 5/3) clay inclusions, brown (7.5 YR 4/3) silt is stiff,
			0.3-0.9	HP - 2.5, wet, clay inclusions at 1.0-2.0, 3.5, 4.5-5.0. Very stiff, moderate
				plastic, moist, very coarse gravel.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-39

Prepared by Tim Jones and Katie Panczak

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
25	33	8	6.5-8.0/	0-8.0': Silt and Clay. As above, silt with clay inclusions through matrix, wet,
			1.3-2.7	very soft to stiff (HP = 1.5 to 3.5).
				0-3.0': Silt and Clay. Red brown (2.5 YR 4/4).
				3.0-5.0': Silt. Brown (7.5 YR 4/3) clay is plastic, moist.
				5.0-8.0': Clay and Silt. As above, wet, moderate to strong HCl reaction, very
				coarse gravel, subrounded.
33	40	7	9.0-11.0/	0-7.0': Silt. With clay inclusions, as above, very moist to wet, medium to very
			0.6-1.4	stiff, moderate to very strong HCl reaction. (OVA background 10 ppm).
40	45	5	0-1.0/0.0	0-5.0': Silt. With clay inclusions as above, stiff to very stiff (HP = 3.0 to >4.0), no
				to strong HCl reaction, silt is wet, clay is very moist.
45	50	5	0/0	0-5.0': Clay. Red brown (5 YR 5/3) some silt, very stiff (HP = 4.0) very moist,
				strong HCl reaction, moderate plastic.
50	55	5	0.0/0.0	0-5.0': Clay. Brown (7.5 YR 5/3) silty, stiff, (HP = 3.5), moderate plastic, very
				moist to wet, strong HCl reaction.
55	60	5	0.0/0.0	0-5.0': Silt and Clay. Silt red grey (5 YR 5/2). Clay red brown (5 YR 5/4) silt with
				distinct clay inclusions throughout, silt has some clay. Silt has no HCl
				reaction, clay has strong HCl reaction, moderate soft to very stiff (HP = 1.5 to >4.0)
				very plastic (clay), plastic limit (silt) very moist to wet, clay is platy, fissile look.
60	65	5		0-5.0': Silt and Clay. As above, very moist to wet, is silt.
65	70	5	0-2.5/0-0	0-5.0': Silt and Clay. As above, wet to very moist clay.
70	75	5	0.0/0.0	0-5.0': Silt and Clay. As above, wet to very moist clay.
75	80	5	0.0/0.0	0-5.0': Silt and Clay. As above, very moist, hard.
80	85	5	0.0/0.0	0-1.5': Silt and Clay. As above, very moist, to wet.
				1.5-2.5': Silt and Sand. Red brown (5 YR 5/3) silt, soft (HP = 1.0), fine grain
				sand, some medium sand, wet.
				2.5-4.5': Sand. Brown (7.5 YR 4/3) fine gain, loose, wet, trace very fine grain
				sand, well sorted.
				4.5-5.0': Sand. Brown (7.5 YR 5/3) fine to coarse grain, moderate to poorly sorted,
				loose, trace fine to medium gravel, subangular, wet.
				15:00 end drilling activity for day at 85' bgs. OVA background 3.0 ppm/OVM
				background = 7.4

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-39 Page 2 of 5

Prepared by Tim Jones and Katie Panczak

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
85	90	5	30-2,000/	0-5.0': Sand. Light brown (5 YR 6/4) medium to coarse grain, loose, poorly sorted,
			0.1-2.6	trace fine gravel, subangular, trace fine to very fine sand, wet.
90	95	5	1,000-	0-4.0': Sand. Light brown (5 YR 6/4) fine to medium sand, loose, trace coarse and
			>10,000/	very fine sand, trace silt, trace fine gravel, subangular, wet.
			1.5-2.0	4.0-5.0': Sand. Brown (7.5 YR 5/3) coarse grain, poorly sorted, trace very fine sand
				and silt, trace fine to coarse gravel, trace cobble to 2 inches, well rounded, wet.
				Set screen @ 90-95' bgs prepare to take grab water sample.
95	100	5	15-25/	0-1.0': Sand. Red brown (5 YR 4/4) very fine with some coarse and very coarse
			0.0-2.3	sand, very soft, wet, trace fine gravel, subangular.
				1.0-5.0': Sand. Red brown (5 YR 4/4) very fine sand, very soft, HP = 0.5, well sorted,
				no HCl reaction, wet, loose, trace silt.
100	105	5	22.5-50/0.0	0-5.0': Sand. As above, wet, no HCl reaction.
105	110	5	150-1,250/	0-5.0': Sand. As above, wet, no HCl reaction.
			0.0	
110	115	5	60-2,000/	0-5.0': Sand. As above, wet, no HCl reaction.
			0.0	
115	120	5	1,500-7,000/	0-5.0': Sand. As above, wet.
			NA	
120	125	5	300-	0-3.0': Sand. As above, wet.
			>10,000/NA	
				3.0-4.5': Silt. Dark red brown (5 YR 3/3) clay inclusions throughout, brown
				(7.5 YR 4/2) moderate stiff HP = 2.0, moderate plastic, wet.
				4.5-5.0': Sand. Very fine grain, loose, wet, well sorted, trace silt.
125	130	5	6.0-250/NA	0-5.0': Silt. With clay inclusions throughout silt brown (7.5 YR 4/3), wet. Clay
				red brown (5 YR 4/3) very moist. Silt is soft HP = 1.5, wet, no HCl reaction, matrix
				moderate plastic clay is hard HP = 4.0, moderate HCl reaction, moderate plastic,
				platy/fissile look.
130	135	5	20-150/NA	0-5.0': Silt. With clay inclusions throughout as above, wet (silt), very moist, (clay).
135	140	5	20-100/	0-5.0': Silt. With clay inclusions throughout as above, clay has strong HCl reaction,
			0.0-0.2	silt has no reaction, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-39

Prepared by Tim Jones and Katie Panczak

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
140	145	5	40-75/	0-5.0': Silt. With clay inclusions, as above, wet/moist.
			0.0-0.7	
145	150	5	40-150/0.0	0-5.0': Silt. With clay inclusions throughout as above, wet/moist.
150	155	5	80-1500/	0-5.0': Silt. With clay inclusions throughout as above, wet/very moist.
			0.3-2.3	
155	160	5	175-900/0.0	0-1.5': Sand. Red brown (5 YR 5/3) very fine gain, well sorted, loose, trace
				silt, wet, trace clay, matrix, moderate plastic.
				1.5-5.0': Sand. Red brown (5 YR 5/3) very fine grain, well sorted, loose, wet.
				Trace silt, no HCl reaction.
160	165	5	750-1,500/	0-5.0': Sand. Very fine, as above, wet.
			0.0	
165	170	5	125-1,250/	0-5.0': Sand. Very fine, as above, wet.
			0.0	
170	175	5	1,500-4,000/	0-5.0': Sand. Very fine, as above, wet.
			0.0	
175	180	5	150-2,000/	0-5.0': Sand. Red brown (5 YR 4/3) very fine grain, as above, loose, wet, well
			0.0	sorted, no HCl reaction.
180	185	5	2,000-	0-5.0': Sand. Red brown (5 YR 4/3) very fine grain, well sorted, some fine grain
			>10,000/	sand, loose, wet, no HCl reaction.
			0.3-1.7	
185	190	5	500-8,000/	0-5.0': Sand. Brown (7.5 YR 5/4) fine sand with some very fine sand, well
			0.3-2.7	sorted, loose, wet, gas vesicles, present in formation,, no HCl reaction.
190	195	5	800-	0-5.0': Sand. Red brown (5 YR 5/4) fine grain, with some to much very fine
			>10,000/	grain sand, well sorted, wet, no HCl reaction, loose.
			0.4-1.9	
195	205	7	40-150/NA	0-7.0': Sand. Red brown (5 RY 5/3) fine gain sand, well sorted, loose, trace
				very fine sand, wet.
205	210	5	10-150/NA	0-5.0': Sand. Fine, red brown (5 YR 5/4) fine grain, well sorted, some very fine
				grain sand, loose, wet, no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-39

Prepared by Tim Jones and Katie Panczak

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
210	215	5	20-70/NA	0-2.0': Sand. Fine, as above, wet.
				2.0-4.0': Sand. Red brown (5 YR 5/4) very fine grain, well sorted, trace fine
				grain, loose, wet.
				4.0-5.0': Silt. Sandy, red brown (5 YR 5/3) very soft, sand is very fine gained, no
				HCl reaction, wet.
				End of drilling activity for the day, will set screen at 190 to 195 feet and
				attempt grab water sample on 7/28/98 a.m.
				Continue sampling @ 215 feet on 7/28/98
215	220	5	0-2.0/0.0	0-5.0': Sand. Red brown (5 YR 4/3) very fine grain, well sorted, loose, trace clay,
				no HCl reaction, wet.
220	225	5	0-10/NA	0-4.5': Sand. Very fine as above, wet.
				4.5-5.0': Sand. Light brown (7.5 YR 6/3) very fine to fine grain, well sorted,
				loose, wet, no HCl reaction.
225	230	5	0-1.0/NA	0-1.0': Sand. Very fine to fine, as above, wet.
				1.0-5.0': Silt. Red brown (5 YR 5/3) moderate stiff (HP = 1.5), trace clay in matrix,
				at plastic limit, wet.
230	235	5	0-10/NA	0-3.0': Sand. Silt, clay, gravel, very dense sand is fine gain, red brown (5 YR 5/3)
				wet, (possible introduced water).
				3.0-5.0': Sand. Silt, clay, gravel, as above, dry, till material.
235	240	5	0-35/NA	0-5.0': Sand. Silt, clay, gravel, cobble, (2 Gley blue gray 5B 5/1), very dense,
				strong HCl reaction, till material.
				End boring at 240' bgs, chip back to 100' bgs, set well at 95 feet; bgs with screen
				from 85 to 95 feet bgs, end of day.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-40 A/B Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 8/3/98 17:10

Drilling Completed 8/4/98 14:30

Total Depth Drilled 155 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1115.15 feet [X] Surveyed [ ] Estimated

Datum Mean sea level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Bryan

Prepared By Pat Bartnik and Katie Pankczak

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	3	0-10/0.0	0-0.5': Top Soil. Grass, silty clay, red (2.5 YR 5/2) traces sand.
				mildly plastic, moist.
				0.5-1.0': Sand. Brown (7.5 YR 5/4) silty, fine to very fine, gravely 2 mm to 1.5
				inches, subrounded dry.
				1.0-2.5': Sand. Yellow red (5 YR 5/8) silty, very coarse to very fine, gravely 2 mm to
				1 inch, subrounded.
				2.5-3.0': Sand. Brown (10 YR 5/3) medium to very fine, gravely as above, dry.
5	10	5	1-10/0-0.9	0-0.5': Sand. As above.
				0.5-1.0": Sand. Brown (7.5 YR 4/3) medium to very fine trace silt, some coarse
				to very coarse sand, trace gravel, subrounded (10 mm).
				1.0-1.5': Sand. Light brown (7.5 YR 6/4) medium to fine, fairly well sorted, trace
				coarse to very coarse, trace gravel up to 30 mm, dry.
				1.5-4.5': Sand. Brown (7.5 YR 4/3) coarse to very fine, trace silt, trace gravel, dry.
				4.5-5.0': Sand. Dark yellow brown (10 YR 4/4) , fine to very fine, silty some gravel,
				subrounded up to 30 mm.
10	15	3	5-20/0-4.2	0-2.5': Sand. Dark yellow brown (10 YR 4/4) very coarse to very fine, gravely,
				trace silt, gravel (2 mm to 50 mm) subrounded, dry to damp.
				2.5-3.0': Silt. Gray (10 YR 6/1) sandy, trace gavel, very fine.
15	20	--	--	No sample.
20	25	5	4-10/0.0	0-1.0': Sand. Brown (7.5 YR 4/4) medium to very fine, silty, gravel (2 mm to 3 inch)
				subrounded, dry.
				1-1.5': Sand. Brown (7.5 YR 4/4) fine to very fine, silt, gravely (2 mm to 50 mm)
				subrounded, dry.
				1.5-2.0': Sand. Grayish brown (10 YR 5/2) fine to very fine, very silty, gravely

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				(2 mm to 2.5 inches) subrounded.
				2.0-3.0': Sand. Brown (10 YR 5/3) coarse to medium, some fine, trace very fine,
				trace gravel, well sorted dry to damp.
				3.0-5.0': Sand. Dark brown (10 YR 3/3) medium to very coarse, gravely (2 mm to
				40 mm) subrounded, some fine to very fine trace silt, very poorly sorted, damp.
25	35	8	7-20/0.0	0-1.5': Sand. Brown (10 YR 4/3) medium to very fine, silty, gravely (2 mm to 40 mm)
				subrounded, dry.
				1.5-2.0': Silt. Brown (7.5 YR 5/3) sandy (fine) gravely (2 mm to 20 mm),
				subrounded, dry.
				2.0-3.0': Sand. Dark brown (7.5 YR 3/3) very coarse to very fine, gravely (2 mm to
				50 mm) subrounded, some fine to very fine, silty.
				3.0-4.5': Sand. Dark brown (10 YR 3/3) medium to very fine, silty, trace gravel (up
				to 10 mm subrounded) damp. 33.5 feet to 35 feet sand brown (7.5 YR 4/3),
				very fine, silty, well sorted, moist.
35	40	5	3.5-5/0.0	0-1.5': Silt. Dark red brown (5 YR 3/3) sandy, very fine, some clay, undifferentiated
				and in nodules, wet.
				1.5-3.5': Sand. Dark red brown (5 YR 3/3) very fine, silty, trace clay.
				3.5-5.0': Sand and Silt. As above, interbedded.
40	45	5	3-9/0.0	0-2.5': Sand. Dark red brown (5 YR 3/3) fine to very fine, trace silt, wet.
				2.5-3.5': Sand and Silt. Thin beds, as above.
				3.5-5.0': Silt. Dark red brown (5 YR 3/3) sandy, very fine, blocky, damp.
45	50	5	3.5-5/0.0	0-5.0': Silt. Reddish gray (5 YR 5/2) with occasional clay, reddish brown (2.5 YR 4/4)
				inclusions. Clay is massive to platy. HCl reaction, strong, HP = 3.5.
50	55	5	3.5-5/0.0	0-5.0': Silt. As above.
55	60	5	3.5-5/0.0	0-5.0': Silt. As above.
60	65	5	3.5-5/0.0	0-5.0': Silt. As above.
65	70	5	3-6/0.0	0-5.0': Silt. as above. HP = 2.0 to 2.5, moderate to strong HCl reaction. Clay
				inclusions in lowest foot up to 4 inches in diameter.
70	75	5	9-50/0.0	0-5.0': Silt. As above, with abundant clay beds. Clay reddish brown (5 YR 4/3)
				HP = >4.0, strong HCl reaction, foliated, nonplastic, dry. Clay forming

Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				approximately 40 percent of the sample. Beds up to 6 inch thick, occur approximately
				every 6 inches, medium bed size 2 to 3 inches.
75	80	5	200-3,500/	0-1.0': Silt. As above, with some fine to medium sand.
			0.0	1.0-5.0": Sand. Reddish brown (5 YR 5/5) fine to medium, very well sorted,
				loose, slight to no HCl reaction.
80	85	5	1,000-3,500/	0-5.0': Sand. As above.
			0.0	
85	90	5	200-1,000/	0-2.5': Sand. Reddish brown (5 YR 4/3) fine to very fine, slight HCl reaction, well
			0.0	sorted, trace silt. 2.5 foot medium sand, reddish brown (5 YR 5/4) trace to some
				fine sand, with lense of very fine sand, at 4 foot, loose.
90	95	5	500-1,250/	0-2.0': Sand. Medium, as above.
			0.0	2.0-5.0': Sand. Dark reddish gray (5 YR 4/3) medium, well sorted, loose, trace
				sand, no HCl reaction.
95	100	5	50-900/0.0	0-1.0': Sand. Dark yellowish brown (10 YR 3/4) medium, loose, saturated, trace
				coarse sand, some medium sand, no HCl reaction.
				1-4.5': Sand. Dark reddish brown (5 YR 3/3) coarse, some very coarse, trace pebble
				and granular gravel, variable composition, subangular to subrounded.
				4.5-5.0': Gravel. Dark brown (7.5 YR 3/3) some to much coarse sand, some gravel
				granular with much pebble gravel, variable composition, subangular to subrounded,
				variable, loose, saturated.
100	105	5	125-5,000/	0-1.0': Sand. Brown (7.5 YR 4/3), coarse, some to much medium sand, loose,
			0.0	saturated, some very coarse sand and granular gravel, trace pebble gravel.
				1.0-3.0': Sand. As above, coarse with very coarse and granular gravel, trace
				pebble gravel, variable composition, subrounded to well rounded.
				3.0-5.0': Silt. Brown (7.5 YR 4/3) saturated, moderate HCl reaction, HP
				0.0. Black staining at top of unit. At 3.5 to 4.0 clay, reddish brown (5 YR 4/3)
				foliated, strong HCl reaction, HP = 1.2.
105	110	5	125-3,000/	0-1.0': Silt. As above, with clay lense at 0.5 feet.
			0.0	1.0-3.5': Sand. Reddish gray (5 YR 4/2) fine, loose, trace to some very fine sand.
				Trace silt, slight to moderate HCl reaction. Contains trace silt lense beds,
				laminated with some black staining, silt with much very fine sand and finely

Sample/Core Log (Cont.d)

Boring/Well GM-40 A/B

Prepared by Pat Bartnik and Katie Panczak

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description

				laminated.
				3.5-5.0': Fine sand, reddish brown (5 YR 4/3) loose, slight HCl reaction, trace silt.
110	115	5	300-	0-3.5': Sand. As above, fine, moist.
			>10,000/	3.5-5.0': Sand. Reddish brown (5 YR 4/3) very fine, loose to slightly firm,
			0.0	
115	120	5	700-1500/	0-5.0': Sand. Brown (75 YR 4/3), fine with some very fine, trace silt, slight to
			0-1.7	moderate HCl reaction.
120	125	5	1,500-	0-5.0': Sand. As above, fine with clay nodule lense at 1.5 feet. Some black staining
			>10,000/1.8-	on sand, at 127 feet. (Soil sample collected), exterior of clay different color to
			13.7	interior, HP approximately 0.0. Strong HCl reaction, exterior (Gley 2 5/1/10B).
				Interior reddish brown (2.5 YR 4/4) with some black marks on exposed foilations.
125	130	5	100-	0-5.0': Sand. As above, fine.
			>10,000/0-	
			10	
130	135	5	500-	0-4.0': Sand. As above, fine.
			>10,000/0-	4.0-4.5': Sand. As above, Interbedded (medium bedding), with finely laminated silt.
			16.1	Silt, brown (7.5 YR 4/2) moderate HCl reaction, HP < 0.5.
				4.5-5.0': Clay. Clay reddish brown (2.5 YR 4/4), stained bed/nodule as in sample at
				120 to 125. HP = 1.0, strong HCl reaction, foliated, staining at edges,
				black and bluish gray (Gley 2 5/1/5PB).
135	140	5	150-4,000/	0-3.0': Sand. Red brown (2.5 YR 4/4), very fine with fine, some silt, medium
			0-32.8	dense to dense, moderately well sorted.
				3.0-5.0': Silt. Red brown (2.5 YR 4/3) variable very fine and fine sand, very soft to
				medium stiff (HP 0.5 to 1.5). At 4 feet a 1/8 to ¼ inch clay seam, soft, platy, gray
				black staining, blue gray (26/FY 5/1 10 B)
140	145	5	80-550/	Silt. As above, at 1.5 and 2.5 feet clay lense 1.0 to 1.5 inch thick, red brown
			0-19.7	(2.5 YR 4/4) slight fissile, stiff to very stiff, nonplastic, moderate reaction in HCl.
				At 2 feet two thin seams of gray silt.
145	150	5	25-	Silt. Red brown (5 YR 4/4), very fine sandy, sand is variable, trace clay, soft (0.5),
			>10,000/	some bubbles from 1.5 to 4 feet.
			.7-34.8	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-40 A/B

Prepared by Pat Bartnik and Katie Panczak

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
150	155	5.0	2,000-	0-0.5': Silt. As above very fine sandy.
			>10,000/	0.5-1.5': Sand. Color, as above, very fine, silty, medium dense,

			9-30.2	1.5-5.0': Silt. Red brown (5 YR 4/3 to 5 YR 4/4) very fine, sandy, soft, abundant
				bubbles. At 3 feet, a ½ inch clay lense, fissile, strong HCl reaction, medium
				stiff (1.5), slight to moderate plastic.
				TD GM-40 at 155 feet bgs. 14:30
				GM-40A Total Depth 155 ft.
				GM-40B Total Depth 131.5 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-41 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 8/6/98 13:20 Drilling Completed 8/7/98 8:20

Total Depth Drilled 155 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1120.17 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Kale Helper Mike

Prepared By Kevin Daleness and Ray Flynn

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	<2-3.75/0.0	0-0.5': Concrete.
				0.5'-1.5': Sand. Dark brown (7.5 YR 3/4) fine to medium, silty, gravel, black
				stained silts.
				1.5-2.0': Sand. Strong brown (7.5 YR 5/6) medium gravel, trace coarse sand,
				2.0-2.5': Sand. Dark yellow brown (10 YR 3/6) silty, fine to medium, moist, loose,
				no HCl reaction, black staining lowest 1 inch.
				2.5-3.0': Sand. Dark brown (7.5 YR 3/4), silty, fine to medium, as above.
				3.0-3.5': Sand. Strong brown (7.5 YR 5/6), medium, no HCl reaction, moist, loose.
				Trace coarse sand.
				3.5-5.0': Sand. Strong brown (7.5 YR 4/6) medium to coarse, slightly moist, loose,
				some coarse sand, trace to some subangular to well rounded, variable composition,
				pebble gravel.
5	10	5	10-15/10	0-1.0': Sand. Medium to coarse, with some gravel.
				1.0-1.5': Sand. Gray brown (7.5 YR 4/4) coarse loose, slightly moist, some
				medium and fine sand, some to much granular gravel, trace to some subrounded to
				well rounded, variable composition gravel.
				1.5-2.5': Sand. Light brown (7.5 YR 6/4) fine to medium, loose, dry, well sorted.
				2.5-3.5': Sand and Gravel. Very dark brown (7.5 YR 2.5/3) slightly moist.
				3.5-5.0': Sand. Fine to medium, as 1.5 to 2.5.
10	15	5	10-3,000/0.0	0-1.5': Sand. Very dark brown (7.5 YR 2.5/3) coarse with gravel, very poorly
				sorted, some to much fine and medium sand, much very coarse sand and granular
				gravel, some pebble and cobble gravel. Loose and moist gravel subrounded to
				rounded variable composition.
				1.5-2.5': Sand. Dark brown (7.5 YR 3/4), coarse, some medium sand, some very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-41

Prepared by Kevin Daleness and Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				coarse and granule, trace pebble, slightly moist, loose.
				2.5-3.5': Gravel. Dark brown (7.5 YR 3/3), with some coarse to medium sand,
				dry, loose, gravel, as above.
				3.5-4.5': Sand. Brown (7.5 YR 5/3) fine, very well sorted, trace to some very fine
				sand, dry, loose, no HCl reaction.
				4.5-5.0': Sand. Dark yellow brown (10 YR 7/4), coarse, very poorly sorted some
				to much coarse and medium sand, trace to some very coarse sand and granular
				gravel, trace pebble, variable composition, subrounded to well rounded.
15	20	5	700-1,750/	0-1.0': Sand. As above, poorly sorted, coarse with gravel.
			NA	1.0-5.0': Sand. Brown (7.5 YR 5/3) fine to very fine, dry, loose, no HCl reaction
				very well sorted.
20	25	5	200-2,000/	0-5.0': Sand. As above, fine to very fine.
			NA	
25	30	5	700-	0-1.5': Sand. As above, fine to very fine, dry and loose.
			>10,000/NA	1.5-2.0': Sand. Very dark brown (7.5 YR 2.5/2) very fine, silty, dry, crumbly, no
				HCl reaction.
				2.0-5.0': Sand. Fine to very fine, as 0 to 1.5.
30	35	5.0	100-	0-5.0': Sand. Light brown (7.5 YR 6/3), fine, trace very fine sand, very well sorted,
			>10,000/NA	dry, loose.
35	40	5	1,500-	0-1.0': Sand. Dark grayish brown (10 YR 4/2), fine to medium, trace coarse sand,
			>10,000/NA	well sorted, dry and loose.
				1.0-1.5': Sand. Very dark grayish brown (10 YR 3/2) silty, fine to very fine, dry,
				slightly moist. Slightly cohesive, moderate HCl reaction.
				1.5-4.0': Sand. Fine, dark grayish brown (10 YR 3/2) dry, loose, very well sorted,
				no HCl reaction.
				4.0-5.0': Sand. Fine to medium, very dark gray (10 YR 2/1) loose, slightly moist,
				well sorted.
40	45	2.5	1,000/	0-2.5': Sand. Trace silt and gravel, grayish brown (2.5 Yr 5/2) saturated, no reaction
			>10,000/NA	to HCl, loose, water added while driving casing.
45	50	4	50-1,250/NA	0-2.0': Sand. Fine to medium, gray brown (2.5 YR 5/2) trace silt and gravel
				saturated, no HCl reaction, loose.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-41

Prepared by Kevin Daleness and Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				2.0-4.0': Sand. Fine to medium, very dark grey (2.5 YR 3/1), some silt, trace gravel,
				saturated, silt reaction to HCl, stained.
50	55	5	35-200/NA	0-3.0': Sand. Fine to medium, brown (7.5 YR 4/3) some silt and gravel, wet, silt
				reaction to HCl, some pebbles, loose.
				3.0-5.0': Sand. Fine to medium, brown (7.5 YR 5/3) silty, slightly dense, some
				gravel and pebbles, wet, no reaction to HCl, crumbly, penetrometer = 0.75.
55	60	5	35-1,000/NA	0-1.0': Sand. Fine, dark reddish brown (5 YR ??/??) saturated, well sorted, some
				to much very fine sand.
				1.0-2.5': Sand. Fine to medium, brown (5 YR 4/3) very well sorted, loose.
				2.5-3.5': Sand. Fine as 0 to 1 foot.
				3.5-4.0': Sand. Medium to coarse, dark brown (7.5 YR 3/2), much fine and
				medium, trace pebble gravel.
				4.0-5.0': Silt. Brown (7.5 YR 4/3) HP > 4.0, moderate HCl reaction, slightly moist.
60	65	5	700-3,500/	0-0.5': Sand. Fine to medium, greenish brown (Gley) stained silt lense, fine
			NA	laminated (Gy 5/5/1) sand, very well sorted, loose, moist.
				0.5-1.5': Sand. Fine, dark reddish brown (5 YR 3/3) saturated, loose, very well
				sorted.
				1.5-3.5': Sand. Fine, dark reddish brown (5 YR 3/3) saturated, some very fine sand,
				trace silt.
				3.5-5.0': Sand. Dark reddish brown, fine, loose, saturated, very well sorted.
65	70	5	80-5,000/NA	0-5.0': Sand. As above, fine.
70	75	5	1,500-	0-5.0': Sand. As above, fine.
			>10,000/NA	
75	80	5	20-250/NA	0-3.0': Sand. Dusky red (2.5 YR 3/2) fine to medium, very well sorted, loose, moist
				to saturated, very slight HCl reaction.
				3.0-5.0': Sand. Dark gray (7.5 YR 4/1) medium, loose, moist to saturated, trace
				to some, fine sand.
80	85	5	8-300/NA	0-5.0': Sand. As above, medium very moist,
85	90	5	3-15/NA	0-2.5': Sand. Very dark gray (10 YR 3/1) medium to coarse, loose, very moist,
				some fine sand.
				2.5-4.0': Sand. Dark gray (10 YR 4/1) fine to medium, loose, very moist, very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-41

Prepared by Kevin Daleness and Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				well sorted.
				4.0-4.8': Sand. Brown (7.5 YR 4/3) medium, loose, well sorted, some fine sand.
				4.8-5.0': Sand. Very dark brown (10 YR 2/2) very fine, (silt) moderate HCl reaction,
				some black staining, crumbly, well sorted.
90	95	5	3-45/NA	0-0.2': Sand. As above, very fine (silt).
				0.2-0.5': Sand. Brown (7.5 YR 4/2), medium, loose, very well sorted.
				0.5-2.0': Sand. Dark reddish brown (5 YR 3/3), very fine (silt) as 0 to 0.2, no HCl
				reaction.
				2.0-3.0': Sand. Reddish brown (5 YR 4/4) medium, some to much fine sand, trace
				coarse sand, loose.
				3.0-3.5': Sand. Dark greenish gray (5 Y 3/1) very coarse and granular gravel, loose,
				saturated, trace subangular to subrounded, pebble to cobble gravel.
				3.5-5.0': Sand. Dark reddish brown (5 YR 3/3) very fine, well sorted, crumbly,
				moist, color changes to (5 YR 4/3) lowest 1 foot, top 6 inch contain some black
				staining, (leached with acid).
95	100	5	3-25/NA	0-5.0': Sand. Brown (7.5 YR 4/2), very fine, wet, well sorted, crumbly, strong
				reaction with HCl, loose.
100	105	5	3-45/NA	0-5.0': Sand. Very fine to fine, same color as above, saturated, crumbly, silt reaction
				with HCl, loose.
105	110	5	5-50/NA	0-2.5': Sand. As above, very fine to fine, wet.
				2.5-4.5': Silt. Brown (10 YR 5/3) thin clay lense (2 mm) with black staining, trace
				very fine sand, very moist.
				4.5-5.0': Sand. As above, very fine to fine, 0 to 2.5 feet.
110	115	5	20-100/NA	0-1.0': Sand. As above, very fine to fine.
				1.0-3.0': Sand. Greenish black (5 B6 2.5/1) fine to medium, staining evident, silt
				reaction to HCl, loose, very moist, trace very fine sand.
				3.0-5.0': Sand. Brown (10 YR 5/3) fine to medium, trace very fine, 1 inch silt
				seam with staining, loose, slight reaction to HCl, moist.
115	120	5	3-50/NA	0-3.5': Sand. Brown (7.5 YR 5/3), fine to medium, loose, trace very fine sand, silty,
				slight reaction to HCl, moist, 4 mm clay seams, red brown (5 YR 4/9).
				3.5-3.75': Sand. Dark gray (7.5 YR 4/9), very fine, moderate reaction to HCl.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-41 Page 5 of 5

Prepared by Kevin Daleness and Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5 penetrometer.
				3.75-5.0': Same as 0 to 3.5.
120	125	5	10-50/NA	0-2.0': Sand. Brown (7.5 YR 5/3), fine to medium, loose, moist, trace very fine sand.
				2.0-5.0': Sand. Silty very fine, clay inclusions at 4.5 feet (6 inch), trace clay, moist.
125	130	5	5-40/NA	0-3.0': Sand. Brown (7.5 YR 5/3) silty, very fine, wet, trace clay, same as 2 to 5 feet.
				3.0-4.0': Sand. Brown (7.5 YR 5/3) very fine to fine, wet, staining, slight HCl
				reaction.
				4.0-5.0': Sand. Same as 0 to 3 feet, with clay inclusions.
130	135	5	5-	0-2.0': Sand. Same as 4 to 5 feet before, very fine silty.
			>10,000/NA	2.0-4.5': Sand. Brown (75 YR 5/3), fine, staining at top 4 inches. Loose, silty
				reaction to HCl, moist well sorted, blocky.
				4.5-5.0': Sand. Brown (7.5 YR 5/3) very fine, silty, slight reaction to HCl, 1.5
				penetrometer loose to blocky.
135	140	5	500-8,000/	0-3.5': Silt. Brown (7.5 YR 5/4) trace very fine sand, wet, slight reaaction to acid. 0.5
			NA	penetrometer. Last 4 inches clay seam, strong reaction to acid.
				3.5-5.0': Sand. Fine to very fine, staining near top of sand, loose, slight reaction
				to acid.
140	145	5	40-700/NA	0-5.0': Silt. Same color, trace clay lense and very fine sand, slight reaction to acid.
				0.5 penetrometer, wet.
145	150	5	10-450/NA	0-1.0': Silt. As above.
				1.0-5.0': Silt. With very fine to fine sand, (lenses 2 inch thick) slight reaction to acid,
				2.0 penetrometer, blocky, staining at bottom of 5 feet.
150	155	5	100-300/NA	0-5.0': Silt. Brown (7.5 YR 5/3) clay, rich penetrometer ranges from 1 to 3 feet.
				Moderate reaction to acid.
				EOB @ 155 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-42 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 8/6/98 13:20

Drilling Completed 8/7/98 17:50

Total Depth Drilled 100 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1121.17 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Brian

Prepared By Ted Powell and Kevin Wilson

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	4	4-25/0-1,000	0-0.5': Sand. Black (10 YR 2/1), foundry sand, medium with fine and silt, loose,
				trace roots.
				0.5-1.25': Sand. Brown (7.5 YR 4/4) foundry sand, fine to medium, some cemented
				chunks, friable, slightly moist, very dense.
				1.25-1.5': Sand. Black (10 YR 2/1) foundry sand, fine with medium, trace coarse
				sand silt, loose, moist, moderate sorting, 1,000 ppm on PID 15 ppm on OVA.
				1.5-3.5': Concrete. Broken and pulverized due to drilling.
				3.5-4.0': Brick. Red, some silty sand, trace 1/8 to ¼ inch gravel, subrounded, poorly
				sorted.
5	10	4	2.5-6/0-40	0-0.5': Brick/Silty Sand. As above, loose, slight moist.
				0.5-2.5': Sand. Brown (7.5 YR 5/4), two cycles, approximately 6 inches thick, medium
				with fine, some coarse, loose, moderate sorting, and coarse with medium, some
				very coarse and fine, poorly sorted, some gravel ¼ inch to 2.5 inch subrounded,
				subangular.
				2.5-4.0': Sand. Dark red brown (10 YR 4/2), coarse upward, at top very coarse to
				coarse, some medium, trace fine with gravel ¼ to 2 inches, subrounded, with poorly
				sorted, at bottom coarse with medium, and very coarse, some fine, trace 1/8 to ¼
				inch gravel, poorly sorted, loose, moist.
10	15	4	1-4/0	0-1.0': Sand. Dark red brown (10 YR 4/2), some gravel sand, coarse with very coarse
				some medium, trace fine, poorly sorted, loose, gravel ¼ to 2 inches, subrounded.
				1.0-1.25': Sand. Very dark grey brown (10 YR 4/2), foundry, fine some medium and
				silt, trace gravel ¼ to ½ inch, moderate to poorly sorted.
				1.25-4.0': Sand. Light red brown (5 YR 6/6) medium, some coarse and fine,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-42

Prepared by Ted Powell and Kevin Wilson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				moderately well sorted, loose, very moist, trace gravel ¼ to ½ inch subrounded to
				subangular.
15	20	5	2-9/0	0-2.5': Slough.
				2.5-4.0': Sand. Light red brown (5 YR 6/6), medium sand, as above.'
				4.0-4.5': Silt. Red brown (5 YR 5/4), very well sorted, slightly moist, soft, loose.
				4.5-5.0': Sand, Dark yellow (7.5 YR 6/6) fine to very fine, trace silt, loose, slightly
				moist, well sorted.
20	25	4	--	0-2.5': Slough.
				2.5-3.0': Sand. Red yellow (7.5 YR 6/6) as above.
				3.0-3.5': Sand. Red yellow (7.5 YR 7/8), fine with very fine, trace silt, loose,
				moderately well sorted.
				3.5-4.0': Sand. Red yellow (7.5 YR 6/6) very fine to fine, loose, well sorted, slightly
				moist at 3.5 feet 2 thin (<1 mm) laminae of black very fine silt and sand.
25	30	4	3.5-90/4.5-	0-2.0': Slough. Sand and gravel, brown.
			13.2	2.0-2.25': Sand. Red yellow (7.5 YR 6/8) very fine to fine, trace silt, moderately
				well sorted, loose, slightly moist.
				2.25-4.0': Sand. Red yellow (7.5 YR 6/6) very fine, some silt, well sorted, loose,
				medium dense, slightly moist.
30	35	4.5	3-20/3-8.7	0-2.5': Slough.
				2.5-3.1': Sand. Red yellow (7.5 YR 6/8) very fine to fine, trace silt, moderately well
				sorted, loose to medium dense, slightly moist.
				3.1-4.5': Sand. Light brown (7.5 YR 6/4), very fine, trace silt, with silt seam (¼ to ½
				inch) brown (7.5 YR 5/3) moderately to well sorted, loose to medium dense, slightly
				moist. Running casing at 35 feet.
35	40	3	3.5-300/0-.3	0-2.0': Sand. Brown (7.5 YR 4/3) to strong brown (7.5 YR 5/8) very fine, silty,
				moderately well sorted, medium dense, wet from washing down casing.
				2.0-3.0': Sand. Black (10 YR 2/1) very fine, very silty, medium dense, well sorted.
40	45	4	300-750/.3	Sand. Black (2.5 4/1) to Grey (2.5 Y 5/1), very fine, very silty, as above.
45	50	5	30-550/0.0	0-3.0': Silt. Mottled very dark grey (2.5 Y 3/1) and very dark
				grey brown (2.5 Y 3/2). Very fine sandy, saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-42 Page 3 of 4

Prepared by Ted Powell and Kevin Wilson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	
				3.0-3.75': Sand. Dark grey (2.5 Y 4/1) fine, some medium, trace silt, dense, moderate
				sorting, saturated.
				3.75-5.0': Silt. Color as above, very fine sand, dense, saturated, moderate well
				sorted.
50	55	5	200-2,000/	0-0.5': Silt. Black (10 YR 2/1), variable very fine sand, dense, soupy.
			0.0	
				0.5-2.0': Silt. Black as above, and mottled with very dark grey brown (2.5 YR 3/2),
				very fine sand, dense, soupy, soft to medium stiff (0 to 1.5).
				2.0-2.5': Silt. black (10 YR 2/1) as above.
				2.5-5.0': Silt. As above, from 3 to 5 feet, sandy, silt grading to silty sand, red
				brown (5 YR 4/4), sand fine to medium, medium dense, moderate to poorly
				sorted where sand content increases.
55	60	5	20-4,500/0.0	0-2.5': Silt. Color varies from very dark gray (2.5 Y 3/1) to dark brown
				(7.5 YR 3/3) to black (10 YR 2/1), sandy, sand very fine to medium, trace coarse sand
				content variable throughout, soft (0.75 to 1) trace gravel, ¼ to 1 inch, subrounded.
				2.5-3.0': Sand. Black (10 YR 2/1) fine to medium, trace coarse and very coarse,
				some silt, poorly sorted, medium dense, trace fine gravel, subrounded to
				subangular.
				3.0-5.0': Silt. Red brown (5 YR 4/4) with fine sand, trace medium and coarse,
				trace fine gravel, large gravel at 4 feet, subangular, several small lenses/pockets of
				black very fine, very silty sand. Silt is soft to medium stiff (.75 to 2.25).
60	65	5	3-90/0.0	0-3.5': Silt. Colors as above, sandy sand fine to medium, some coarse and very
				coarse, variable sand content throughout, soft to medium stiff.
				3.5-4.5': Gravel. With sand, dark grey (2.5 Y 3/1) gravel ¼ to 3 inch, subround to
				subangular, abundant slate, sand coarse to very coarse with medium to some
				very fine, trace silt, very poorly sorted, loose to medium dense.
				4.5-5.0': Silt. Red brown (5 YR 4/4) with fine to medium sand trace coarse and
				very coarse, stiff (3.0), moist, trace (10 percent) fine gravel, subrounded.
65	70	5	125-1,000/	Silt. As above, but gravel content increases from 2.5 to 3.5 feet, ½ to 2.5 feet,
			0.0	subangular to rounded. At 1.5 feet to 2.5 feet black silty sand to fine sandy silt,
				trending vertically through core section.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-42

Prepared by Ted Powell and Kevin Wilson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
70	75	5	200-800/0.0	0-1.75': Silt. As above, color ranges from red brown (5 YR 4/4) to grey (10 YR 5/1)
				mottled, very hard (4.0).
				1.75-2.0': Clay. Pinkish grey (5 YR 6/2) silty, hard (3.5 to 4), slightly moist,
				several thin lamanee of red brown (2.5 YR 4/3) clay, fissile, non to slightly plastic.
				2.0-3.25': Sand. Red brown (5 YR 5/3) coarse to very coarse some medium, trace
				very fine and silt, poorly sorted, loose to medium dense, trace 10 percent, 1/8 to ½
				inch gravel, subrounded to subangular.
				3.25-3.5': Sand. Weak red (2.5 YR 5/2) very fine, silty dense, moderate sorting.
				3.5-5.0': Sand. Red grey (5 YR 4/2) coarse, some very coarse, some moderate,
				trace fine and silt, poor to moderate sorting, moderate dense.
75	80	5	30-250/0.0	0-1.5': Sand. Red brown (5 YR 5/2) fine with moderate some very fine, trace silt,
				moderate sorting, loose, soupy, possible slough.
				1.5-5.0': Sand. Dark grey (5 YR 4/1) very coarse, with coarse, some medium trace
				fine and silt, some gravel, 1/8 to 2 inch, subrounded to subangular, poorly sorted,
				loose to medium dense.
80	85	5	40-225/0.0	0-2.0': Sand. Grey (5 YR 5/1) coarse with medium, some very coarse, some fine,
				trace silt, moderate to poorly sorted, medium dense.
				2.0-5.0': Sand. Dark grey (5 YR 4/1) coarse with medium and very coarse, some fine
				and very fine, trace silt, poorly sorted, medium dense, some gravel, 1/8 to 2 inch,
				subrounded.
85	90	5	60-200/0.0	Sand. Very dark grey (2.5 Y 3/1) coarse with medium sand, very coarse, some
				fine, trace silt, moderate sorting, trace gravel, 1/8 to 2 inch subround to
				subangular, medium dense.
90	95	3	5/0.0	0-0.5': Sand. As above.
				0.5-1.0': Silt. Red grey (5 YR 5/2), very well sorted, homogenous, soft (0.75).
				1.0-3.0': Sand. Coarse, some medium, and very coarse, trace very fine and silt,
				moderate sorting, trace gravel, 1/8 to ½ inch subrounded.
95	100	2	10-100/0.0	Sand. Pinkish grey (7.5 YR 6/2) medium with fine, some coarse, trace silt, and
				very fine, moderately well sorted, medium dense.
				TD at 100 feet bgs. Set well 72 to 82 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-43 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 14:55 8/7/98 Drilling Completed 8:55 8/8/98

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 4" x 10' Sampling Interval Continuous feet

Land-Surface Elev. 1122.48 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Ted Powell and Kevin Daleness Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	5/--	0-0.5': Top Soil. "A Horizon" silty sand loam, dark brown (10 YR 3/3) loose, dry,
				roots, large gravel.
				0.5-1.0': Sand. Light brown (7.5 YR 6/4) coarse with medium, some very coarse,
				trace fine and very fine, moderate sorting, loose.
				1.0-4.0': Sand. Brown (7.5 YR 5/4) very coarse with coarse, some trace fine,
				moderate sorting, some gravel ¼ to 3/4 inch subrounded.
5	10	5	5-15/--	0-1.0': Slough.
				1.0-1.5': Sand and Gravel. Sand, coarse with very coarse and medium, brown
				(7.5 YR 4/3), loose, moist. Gravel ¼ to 3 inches subrounded to subangular,
				very poorly sorted.
				1.5-2.0': Sand. Red yellow (5 YR 6/6) medium with coarse, trace very coarse,
				trace fine and very fine, moderate sorting, loose.
				2.0-2.5': Sand. Yellow red (5 YR 5/6) coarse, medium and very coarse trace fine
				and silt, loose, moist, moderate sorting.
				2.5-3.0': Sand and Gravel. Very coarse with coarse, some medium and fine,
				trace silt, strong brown (7.5 YR 4/6) loose, gravel ¼ to 3 inch subround, very poorly
				sorted.
				3.0-5.0': Sand. Light brown (7.5 YR 5/4) medium with fine, some coarse, moderate
				and sorted, loose, moist.
10	15	4	15-20	0-2.0': Slough.
				2.0-2.5': Sand. Brown (7.5 YR 5/3) medium and coarse, some very coarse,
				some very fine, trace silt, poorly sorted, loose, moist, trace (10 percent), gravel
				¼ to½ inch, subrounded.
				2.5-4.0': Gravel. Brown (10 YR 4/3) 1/8 to ¼ inch, well sorted, trace fine to coarse
				sand, loose, very moist to wet.
15	20	5	5-22	0-0.5': Gravel. As above, but considerably more fine sand.
				0.5-0.75': Sand. Dark yellow brown (10 YR 4/4), medium some fine, trace

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-43 Page 2 of 3

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				coarse and very fine, loose, moist, moderate sorting.
				0.75-2.0': Sand. Dark brown (7.5 YR 3/3) medium to coarse some very coarse,
				some fine, trace very fine silt, poorly sorted, loose, dry, some gravel 1/8 to 2
				inches, subrounded to subangular.
				2.0-2.5': Silt. Weak red (2.5 YR 4/2) with medium and coarse sand, trace fine
				gravel, trace clay. Soft, mottled with dark red grey (2.5 YR 3/1) mottled across
				area, very sandy silt, coarse sand, large gravel (3.5 inch) at 2.5 feet.
				2.5-5.0': Silt. Red brown (2.5 YR 5/4) homogenous HP = 1.5 to 2.5, at 4.5 feet a
				¼ clay lense, soft, plastic, effervescent, red (10 R 4/8) silt appears to be native
				material.
20	25	5	5-120	0-2.5': Silt. As above.
				2.5-5.0': Silt. With clay lenses/inclusions, silt as above, clay red (10 R 4/8) fissile
				medium stiff, very hard, 2.5 to >4 on HP, nonplastic.
25	30	5	3-5.5	Silt. With occasional clay lense. Silt color as above, medium stiff to stiff (2.5 to 3.5)
				some clay, trace very coarse sand, slightly to moderate plastic where clay content
				is higher. Clay inclusions/lenses are ¼ to 2 inch thick, fissile, effervescent, stiff,
				nonplastic.
30	35	5	3-8	Silt. With clay lenses, as above.
35	40	5	3.5-4.5	Silt. Brown (2.5 YR 5/2) some clay, stiff 1.5 to >4, slight plastic, with clay lense,
				red brown (2.5 YR 4/5) lense are ¼ to 1 inch thick, effervescent in HCl, stiff, blocky.
4-	45	5	4.5-5	Silt. With clay lense as above, except clay lense, red brown (2.5 YR 5/4) large
				clay lense at 2.5 to >4 makes up approximately 40 percent of sample, silt
				effervescence.
45	50	5	4-4.5	0-4.5': Silt. Brown (75 YR 4/2) some clay, stiff 4.0 silty plastic; with clay lenses, as
				inclusions 1/8 to ½ inch red brown (5 YR 4/4) stiff to nonplastic.
				4.5-5.0': Silt. Red brown (5 YR 4/4) massive, medium stiff (25).
50	55	5	4.5-5	0-15': Silt. As 45 to 47.5.
55	60	5	5-3,000	0-5.0": Silt. As above becomes wet at 6.5. Silt with clay nodules, red as above,
				medium stiff.
60	65	4.5	1,500/	0-4.0': Silt. As above.
			>10,000	4.0-5.0': Sand. Pink (7.5 YR 7/4) fine to medium, sorted, trace gravel, angular
				to subrounded variable composition, 2 to 4 cm., loose, moist, no HCl reaction.
65	70	5	1,500 to	0-1.0': Sand. As above.
			>10,000	1.0-2.5': Sand. Brown (7.5 YR 4/4) fine to coarse, trace silt, trace fine gravel,
				loose, moderate sorted.
				2.5-3.5': Sand. Dark brown (7.5 YR 5/4) fine to coarse, trace silt, trace fine gravel,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-43 Page 3 of 3

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				loose, moist gravel angular to subrounded, variable composition.
				3.5-3.9': Sand. Red yellow (5 YR 6/8) medium to very fine, trace coarse, trace very
				fine gravel.
				3.9-5.0': Gravel. With matrix as above, brown (7.5 YR 5/3) subangular to
				subrounded, variable composition, slight HCl reaction.
70	75	5	5,000 to	0-3.0': Sand. Brown (7.5 YR 5/6) fine to coarse, trace fine gravel, medium sorted,
			>10,000	coarsens downward, increasing gravel and silt nodules towards bottom, gravel
				is subangular to subrounded.
				3.0-4.0': Sand. Light yellow brown (10 YR 6/4) medium to coarse, trace fine,
				trace gravel, fine to medium, angular to subrounded, variable composition.
				4.0-5.0': Sand. Light brown grey (10 YR 6/3) medium to coarse trace fine, trace
				gravel, fine to medium, subangular to subrounded, trace silt modules, calcareous
				effervescent, loose, moderate sorted.
80	85	5	4,000-7,000	0-1.0': Sand. As above.
				1.0-3.0': Sand. Color, as above, medium grained, some coarse and fine,
				trace very fine, well sorted, loose, saturated.
				3.0-4.5': Sand. Brown (7.5 YR 5/4) coarse to very coarse grained, some medium,
				well sorted, loose, trace fine gravel, saturated.
				4.5-5.0': Silt/Sand/Gravel. Dark grey brown (10 YR 4/2) trace clay, very poorly
				sorted, fine to coarse gravel, gravel up to 1½ inch, gravel subrounded to
				subangular, saturated.
85	90	5	60-100	0-0.5": Gravel. Fine to coarse gravel, subangular to subrounded, up to 1 inch
				diameter trace coarse sand, loose, saturated.
				0.5-5.0': Sand. Brown (10 YR 4/3) coarse to very coarse grained, trace to some
				fine to coarse gravel, subangular to subrounded, gravel up to 1 inch diameter.
				Trace fine to medium sand and silt, moderate sorting, loose, saturated.
90	95	5	40-175	0-1.5': Sand. As above, trace gravel, sand and gravel at contact of underlying
				silt. Gravel up 2 inch.
				1.5-4.0': Silt. Reddish brown (5 YR 5/4) trace clay in silt, also ¼ inch clay lense at
				4 feet. Clay lense platy, fissile, petrometer 0.25 to 0.5 saturated.
				4.0-4.5': Silt. As above. Petrometer 3.25, moist.
				4.5-5.0': Silt. As above, saturated, soft petrometer 0.75.
				End of boring at 95 feet.
				Set 2 inch well from 64 feet to 74 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-44 Project/No. Fordl/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/9/98 Drilling Completed 8/9/98

Total Depth Drilled 85 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1122.97 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Ted Powell and Kevin Daleness Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	3-7/0.3-1.4	0-0.5': Top Soil. Silty sand loam "A Horizon" loose, dry, roots, trace gravel,
				subrounded, very dark brown (10 YR 2/2).
				0.5-1.0': Silt Loam. Trace, (10 percent), pea gravel, yellow brown (10 YR 5/6),
				dry, loose, moderately sorted.
				1.0-3.5': Sand. Yellow brown (10 YR 5/8) medium, some fine and coarse, trace
				very coarse, trace very fine and silt, some gravel ¼ to 1 inch, subround to
				subangular, loose, slightly moist, moderately to poorly sorted.
				3.5-4.0': Sand. Brown (10 YR 4/3) medium to coarse, some very coarse, some
				fine, trace very fine and silt, some gravel 1/8 to 1.5 inch, subrounded, poorly sorted,
				loose, dry.
5	10	5	3-15/0.5-1.1	0-2.5': Sand. Dark yellow brown (10 YR 4/4) at top grading to brown (10 YR 4/3)
				at bottom, fines downward through section, at top medium with coarse trace
				very coarse and fine, some gravel ¼ to 2 inch, subrounded, moist, loose, poorly
				sorted. At bottom, fine with medium , some very fine and silt, trace very
				coarse, trace (10 percent) gravel ¼ to 1 inch, subrounded, poorly sorted.
				2.5-5.0': Sand and Gravel. Red brown (5 YR 4/4) sand, coarse and very coarse
				trace medium and fine, gravel ¼ to 2.5 inch subrounded to subangular, very
				poorly sorted, loose, wet to very moist.
10	15	5	3-6/.2-1.7	0-1.5': Sand and Gravel. As above.
				1.5-3.0': Sand. Strong brown (7.5 YR 4/6) medium, some coarse, some fine,
				trace very fine trace very coarse, some gravel ¼ to 1 inch, subrounded, very poorly
				sorted, slightly moist, loose.
				3.0-5.0': Sand. Red brown (2.5 YR 4/3) medium, some coarse, some fine, trace
				very coarse and very fine, trace gravel ½ to 1 inch, subrounded, very poorly

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-44 Page 2 of 4

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				sorted, slightly moist, loose.
15	20	4	3.5-5/0-0.6	0-1.0': Sand. Fine to medium, trace coarse and very coarse and very fine, trace
				gravel 1/8 to 1 inch, subrounded to subangular, loose, slightly moist, poorly
				sorted, brown (7.5 YR 4/3).
				1.0-2.5': Sand. Strong brown (7.5 YR 4/6) medium with coarse, some very coarse,
				trace fine and very fine, some gravel, poorly sorted loose, slightly moist.
				2.5-4.0': Sand and Gravel. Dark brown (7.5 YR 3/4) fine to very coarse, with
				very fine and silt, gravel ¼ to 3.5 inch, angular to subrounded, very poorly sorted,
				loose, slightly moist.
20	25	5	6-12/.9-3.7	0-1.0': Sand and Gravel. As above.
				1.0-5.0': Sand. Reddish brown (5 YR 5/4) very fine with silt, well sorted, slightly moist,
				loose to medium dense. At 2.5 feet a 1/8 inch clay lense, some silt interspersed,
				red brown (2.5 YR 4/3) soft, slightly plastic.
25	27	4.5	5-50/8-27.5	4.5 feet of slough, 5 feet of very fine sand, as above. Ran casing and cleaned out
				hole.
27	30		4-15/0-4.5	Sand. Light red brown (2.5 YR 6/4) very fine, some silt, moderately well sorted,
				loose to medium dense, slightly moist.
30	35	5	5-25/.8-5.5	Sand. As above, medium dense. At 2 feet at 1.5 inch thick zone of finely laminated
				sand as above, and silt, silt is dark red brown (5 YR 3/2) trace very fine sand in
				silt, dense, slight moist.
35	40	5	3 (bkg)/.3-.6	Silt. Red brown (5 YR 4/3), trace clay in matrix, trace clay inclusions, soft, plastic,
				¼ inch in diameter, trace pea gravel (1 percent), dark red (2.5 YR 3/6) silt is
				medium stiff (1.5 in HP) very moist.
40	45	5	3/.2-.3	Silt. As above.
45	50	5	3.5-4.5/0-.7	0-2.5': Silt. As above, at 2.5 feet a 3 inch clay seam, weak red (10 R 4/4) strongly
				effervescent, very stiff to hard (3 to>4 in HP) fissile, slightly plastic.
				2.5-5.0': Silt. Dark red brown (5 YR 3/3) trace clay, trace very fine to fine sand,
				medium stiff (2.0), trace clay inclusions in upper 1 foot, silt is very moist to wet
				in part.
50	55	5	3-7/.3-3.9	Silt. As above, several small pockets of sand interspreaded throughout, dark
				yellow brown (10 YR 3/4) silty with fine and medium sand grains, wet. Trace clay

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-44 Page 3 of 4

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				inclusions approximately ¼ inch thick interspersed throughout, plastic, effervescent,
				soft.
55	60	5	25-1,750/	0-1.5': Silt. Very dark brown (7.5 YR 2.5/2) medium stiff (1.5) well sorted,
			0-1.8	very moist, clay lenses 1/8 to 1.5 inch thick interspersed throughout, top clay lense,
				red brown (2.5 YR 4/3) fissile, medium stiff, plastic, strongly effervescent, lower clay
				lenses, dark brown (7.5 YR 3/4), fissile, moderate plastic, effervescent.
				1.5-3.0': Silt. Dark red brown (5 YR 3/3) soft (.5), with very fine and fine sand,
				moist to very moist. Several thin clay lenses, red brown (2.5 YR 4/3) fissile soft,
				plastic.
				3.0-3.5': Sand. Red brown (5 YR 4/3) medium grain with fine, some silt, trace
				clay, poorly sorted, medium dense, moist to very moist.
				3.5-5.0': Sand. Brown (7.5 YR 5/4) medium, some coarse, trace fine, trace ????
				moderate well sorted, loose to medium dense, moist.
60	65	5	200-	0-2.0': Sand. As above.
			>10,000/	2.0-4.5': Sand. Light brown (7.5 YR 6/3), fine to medium, some very fine and coarse
			.3-1.4	trace silt, trace (10 percent) gravel, 1/8 to ½ inch subround, moderate.
				4.5-5.0': Sand. Red brown (5 YR 4/4) fine to coarse, some very fine and very
				coarse, trace silt, some gravel 1/8 to ¼ inch subrounded to subangular, saturated,
				poor sorting, loose to medium dense, dry to slightly moist, sand is slightly
				effervescent, collect GM-44/64 for microbial analysis.
65	70	4	5,000-	0-2.0': Sand. Red brown (5 YR 4/4) medium, some coarse and fine, trace very
			>10,000/	fine, trace fine gravel, medium sorting, wet, likely due to drilling, medium dense.
			0.2-1.0	2.0-3.5': Sand. With gravel, red brown (5 YR 5/4) sand: coarse with medium and
				very coarse, trace fine and very fine, poorly sorted, saturated, gravel 1/8 to 2.5 inch,
				subrounded.
				3.5-4.0': Sand. Strong brown (7.5 YR 5/6) medium with coarse, some fine, trace
				very coarse, very fine and silt poorly sorted, very moist, trace gravel 1/8 inch,
				subrounded.
70	75	5	3,500-	0-3.0': Sand. As above, but some gravel from 2 to 3 feet, gravel ¼ to 2 inch,
			>10,000/	subrounded, sand slightly moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-44

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			0-1.1	3.0-5.0': Sand and Gravel. Brown (7.5 YR 5/2) sand, very fine to fine, trace
				medium, silty, gravel ¼ to 2.5 inch subrounded to angular, weakly cemented
				with calcareous, sandy silt, highly pulverized due to drilling, some dry, tip of
				sample is wet to saturated.
75	80	5	1,500-	0-2.0': Sand. Brown (7.5 YR 5/3) medium with coarse and fine, some very coarse
			>10,000/	and very fine, trace silt moderate to poorly sorted, medium dense, wet to
			.4-1.7	saturated.
				2.0-4.0': Sand. Brown (7.5 YR 4/3) coarse with very coarse and medium, trace
				fine and very fine, some gravel 1/8 to 2 inch, subrounded, saturated, collect soil
				sample for microbial analysis (GM-44/78.5).
				4.0-5.0': Silt. Red brown (5 YR 5/4) trace clay, homogenous, wet to saturated,
				medium stiff (1.5 to E1741.75 HP).
80	85	5	15-550/	Silt. As above, clay inclusions at 2 feet and 4.5 feet, dark red brown (2.5 YR 3/4)
			.5-1.9	fissile, soft, slightly plastic, strongly effervescent.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-45 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 8/10/98 Drilling Completed 8/10/98

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1122.94 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Ted Powell and Kevin Daleness Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2.5	1.5-2.25/	0-2.5': Silt, Sand and Gravel. Disturbed during test pit excavation, brown (7.5 YR 4/4),
			0-0.1	dark brown (7.5 YR 3/4) some gravel.
5	10	4	2.5/0-0.4	0-2.5': As above. Mixture of silt, sand and gravel.
				2.5-4': Sand. Medium and coarse, light brown (7.5 YR 6/4) trace fine sand, trace
				mafics moist, loose, well sorted.
10	15	4	2.5-8/0-3.0	0-6": As above.
				6"-1.5': Sand. Coarse, silty, dark brown (7.5 YR 4/3) some very coarse
				sand, trace gravel (¼ to 2 inch) moist, loose.
				1.5-2.0': Sand. Medium to coarse, silty, light brown (7.5 YR 6/4), trace gravel,
				(¼ to ½ inch) and fine sand, moist.
				2-4': Sand. Very coarse, brown (7.5 YR 5/4) with some gravel (1/8 to 2.5 inches)
				trace coarse and medium sand, very moist, loose.
15	20	3	7.5-70/0-1.9	0-2.0': As above.
				2.0-3.0': Sand. Medium to coarse, light brown (7.5 YR 6/4) some very fine to fine
				sand and trace silt and gravel (1/8 to ¼ inch), moist, loose, trace coarse sand
				(10 percent).
20	25	5	2-5/.1-1.2	0-3.0': Sand. With gravel, likely slough.
				3.0-5.0': Sand. As above, fining down to medium with coarse sand, pink (7.5 YR 7/3)
				trace fine and very coarse sand, loose, moist.
25	32	5	2.5-20/0	0-3.0': Sand. Very fine pink (5 YR 7/4), dry, loose.
				3.0-4.0': Sand. Very fine, pink (5 YR 7/3) with silt mottled dry, loose, very dense,
				indicated by drilling.
				4.0-5.0': Sand. Very fine, pink (5 YR 7/4) dry, loose.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-45A

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVM/OVA (ppm)	Sample/Core Description
				damp, no odor.
				1.0-5.0' Sand: Reddish brown (5 YR 4/4), predominately fine, coarse 1.0-2.0'
				predominately fine to medium, little very fine to very coarse throughout, some silt
				in places, poorly sorted, little gravel subangular to subround to 2", loose, dry, no
				odor.
20	25	5	1.12-170/	0-3.0' Sand: Brown (7.5 YR 5/3), predominately fine, trace very fine, medium to
			5.26-30.14	very coarse, trace gravel angular to subround to 1", loose, damp to dry,
				moderately sorted, no odor.
				3.0-5.0' Sand: As above, but slightly coarse and more poorly sorted, predominately
				fine to medium, some very fine, coarse, very coarse, trace silt, 2" thick clay layer
				at 4.7 yellowish red (5 YR 4/6), plastic, cohesive, firm to hard, sand/gravel
				inclusions in clay probably from drilling, overal loose, dry, no odor.
25	30	5	1.61-22.3/	0-1.0' Sand: As above in 23.0-25.0 with 1" thick clay layers as above, out of
			9-33	place from drilling, poorly sorted, very fine to very coarse sand with some fine
				subangular to subround gravel to 0.5", loose, poorly sorted, dry, no odor.
				1.0-5.0' Sand: Strong brown (7.5 YR 5/6), very fine (very very fine approaching
				very grainy silt), very well sorted, trace black staining, uniform, loose, damp, silty,
				powdery 1.0-1.5, no odor.
30	35	5	5.48-14.3/	0-3.5' Sand: As above.
			5-21	3.5-4.8' Silt: Pale brown (10 YR 6/3), powdery, uniform, well sorted, loose, dry,
				no odor.
				4.8-5.0' Sand: As above in 3.0-33.5.
35	40	5	5.49-99/	0-5.0' Sand: As above, strong brown as above, very fine (very very fine), uniform,
			5.41-6.52	well sorted, loose, no odor, dry.
40	45	0		No recovery.
45	50	3	1.11-426/	0-2.0' Sand: As above, sharp contact with unit below.
			3.13-6.53	2.0-3.0' Silt: Reddish brown (5 YR 4/4), grainy to smooth, clay vaving, some clay
				layers mm's thick, trace black staining, clay yellowish red (5 YR 4/6), plastic, fissle
				appearance, overall somewhat cohesive, wet, no odor.
50	55	0	--	No recovery.
55	60	5	1.34-9.01/	0-3.0' Silt/Clay Interbeds: Silt is reddish brown (5 YR 4/4), clay is yellowish red
			14.59-54	(5 YR 4/6), silt smooth, clay layers varved to 2" thick, plastic, very hard (HP >4.0),
				clay appears fissle on broken surface, overall somewhat cohesive, firm, moist,
				no odor.
				3.0-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth, trace yellow red clay varving,
				somewhat loose, somewhat cohesive, uniform, wet, trace black staining, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-45A

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVM/OVA (ppm)	Sample/Core Description
60	65	5	-.17-0.57/	0-5.0' Silt with clay interbeds, silt is brown (7.5 YR 4/4), two different clay colors:
			431-14300	dark brown (7.5 YR 3/4) and yellowish red (5 YR 4/6) but most of it is yellowish red,
				smooth silt matrix with somewhat sporatic clay interbeds, little black and gray
				staining in silt matrix, clay layers varved to 2" thick, yellow red clay is plastic, hard,
				firm, with fissile appearance, brown clay is very hard and somewhat crumbly to
				somewhat plastic, more clay beds 2.0-3.0', overall somewhat cohesive, moist to
				wet, odor.
65	70	5	0.78-1.35/	0-1.5' Silt: Brown (7.5 YR 4/4), smooth to grainy, trace very fine sand, some
			312-2405	yellow red clay varving as a above, but out of place, broken silt is crumbly to
				loose, distorted from drilling, trace black staining, dry, no odor.
				1.5-1.9' Sand: Light brown (7.5 YR 6/4), predominately fine grain, trace very fine,
				trace medium to coarse, trace gravel subangular to subround to 0.7", moderately
				sorted, loose, damp, no odor.
				1.9-2.5' Sand: With some gravel, light brown (7.5 YR 6/3), sand very fine to very
				coarse, predominately fine, some gravel subangular to subround to 1.5",
				poorly sorted, loose, damp, no odor.
				2.5-3.2' Sand: Light brown (7.5 YR 6/4), predominately fine grain, trace medium
				to coarse, trace subangular to subround fine gravel, <0.5" grainy silt layer crumbly
				and dry at 2.5', loose, damp, dry, slight fining toward 3.2' where very fine to
				fine sand, moderately to well sorted, no odor.
				3.2-3.4' Silt: Brown (7.5 YR 4/4), grainy to smooth, then silt seam, loose, dry,
				crumbly, trace black staining, no odor.
				3.4-3.6' Silt with Sand: Gray (7.5 YR 6/1), silt grainy, sand very fine, trace
				fine gravel angular to subround, powdery mixture, very dry, loose, no odor.
				3.6-5.0' Sand: Brown (7.5 YR 5/4), fine grain, very well sorted, little angular
				gravel and some silt at 5.0' probably slough, loose, damp, no odor.
70	75	5	0.15-1.51/	0-1.0' Sandy Silt: Brown (7.5 YR 5/4), smooth to grainy silt, some very fine to fine
			5077-93100	sand, trace medium, trace black staining, loose and crumbly, moist, slight odor.
				1.0-2.0' Sand: Light brown(7.5 YR 4/4), very fine grain, some fine, trace medium
				to very coarse, moderately sorted, trace angular to subround gravel to 2", loose,
				damp, no odor.
				2.0-3.5' Sand: Light brown (7.5 YR 6/4), predominately fine grain, some very
				fine, trace very coarse, well sorted, loose, damp, no odor.
				3.5-4.0' Sandy Silt: As above in 70.0-71.0'.
				4.0-5.0' Sand: As above in 71.0-72.0.
75	79	4	0.66-5.71/	0-1.5' Sandy Silt: As above, grainy to smooth silt with some very fine to fine
			7300-16200	sand, loose, damp, crumbly, no odor, as above in 70-71 and 73.5-74.0.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-45A

Prepared by Andy Mumpy/Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVM/OVA (ppm)	Sample/Core Description
				1.5-2.3' Sand: Brown (7.5 YR 5/4), fine grain, some silt, trace to medium coarse,
				trace subround gravel to 0.5", moderately well sorted, loose, damp, no odor grades
				into section below.
				2.3-2.9' Sandy Silt: Brown (7.5 YR 4/2), silt smooth to grainy, sand very fine to
				fine, trace angular to subround gravel to 05.", clumpy, trace black staining,
				loose, crumbly, damp, no odor.
				2.9-4.0' Silty Sand: Brown (7.5 YR 5/4), sand well sorted very fine to fine, silty
				matrix, trace black staining, loose, slightly cohesive, moist, slight odor.
79	85	6	0.37-1.06/	0-6.0' Silty Sand: brown (7.5 YR 4/4), sand predominately fine grain, less silty in
			5570-18910	some places, predominately very fine sand and grainy silt 2.0-2.7', otherwise fine
				grain and silty, trace medium to coarse and trace black staining throughout,
				uniform sample, loose, saturated, no odor, water table at 79'.
				EOB @ 85'

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-46 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 8/11/98 14:30 Drilling Completed 8/11/98 17:30

Total Depth Drilled 75 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1123.01 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Ted Powell and Kevin Daleness Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	4	9-12/13-18	0-0.5': Loam. Silty some gravel, dark brown (10 YR 2/3) roots, dry, gravel to
				2 inch, subrounded.
				0.5-1.0': Sand. And Gravel, dark yellow brown (10 YR 4/6) sand, fine with medium
				and very fine, some silt, trace coarse and very coarse, poorly sorted, loose, dry.
				1.0-2.0': Sand. Yellow brown (5 YR 4/6), very coarse with coarse, some medium,
				gravel 1/8 to 1.5 inch, subrounded, dry, loose.
				2.0-4.0': Sand. Strong brown (7.5 YR 4/6) coarse with very coarse and medium, trace
				very fine and fine, some gravel ¼ to ½ inch, subrounded, very moist at base.
5	10	4	5-7/0	0-1.0': Slough.
				1.0-2.5': Sand. As above but trace fine gravel.
				2.5-3.0': Gravel. With sand, dark brown (7.5 YR 3/4) sand medium to coarse,
				some very coarse, trace fine and silt, gravel ¼ to 3 inches, subrounded to subangular,
				very poorly sorted, very moist, loose.
				3.0-3.5': Sand. Medium, some coarse, trace very coarse and fine, brown (7.5 YR 3/4)
				loose, moderate sorted, very moist.
				3.5-4.0': Sand and Gravel. Brown (7.5 YR 4/3) very poorly sorted, loose, very
				moist, sand, coarse to very coarse, some medium, trace fine and very fine, gravel
				1/8 to 3 inch, subrounded to angular.
10	15	4	8-9/0-1.5	0-1.0': Slough.
				1.0-3.0': Sand and Gravel. As above.
				3.0-4.0': Sand. Brown (7.5 YR 5/3) poorly sorted, loose, moist, some gravel,
				sand medium with coarse, some very coarse, trace fine and very fine, gravel
				1/8 to 3/4 inch, subrounded.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-46 Page 2 of 3

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
15	20	4	7-15/0-.7	0-2.0': Slough.
				2.0-4.0': Sand. With gravel, brown (7.5 YR 4/4) loose, moist, sand very coarse
				with coarse, some medium, trace fine, moderate sorting, gravel 1/8 to 1.5 inch,
				round to angular, begin running casing at 20 to 25 feet interval.
20	25	4	7-15/0-1.1	0-3.0': Slough. Sand gravel silt, with roots.
				3.0-4.0': Sand. Dark reddish brown (5 YR 3/2) coarse to very coarse, some medium
				trace fine, poorly sorted, loose, trace pockets of silt, some gravel 1/8 to 3 inches,
				subrounded very moist to wet.
25	30	5	5-9/0	0-3.5': Sand. Very fine with silt, strong brown (7.5 YR 4/6) moderate well to
				well sorted, medium dense, moist.
				3.5-4.0': Sand. Very fine, silt to very fine silty sand, color as above, very moist,
				well sorted.
				4.0-5.0': Silt. Very fine sandy, color as above, soupy to saturated, dense.
30	35	5	5-8/0	0-5.0': Sand. Very fine, silty, wet to saturated, color as above, dense,
				section grades into very fine sandy silt in bottom 1.5 feet of sample.
35	40	5	8-15/0	Silt. Red brown (5 YR 4/3) small with very fine sand, variable throughout
				section, moderate well sorted, very dense, stiff (3 to 3.5) very moist, trace clay
				in matrix from 4 to 5 feet.
40	45	5	6-30/0	Silt. As above.
45	50	5	5-6/0	0-2.5': Silt. Brown (7.5 YR 4/3), trace of sand, as above, moist.
				2.5-3.0': Silt. As above, clay inclusions reddish brown (5 YR 4/3) with strong
				reaction to HCl, non to slightly plastic.
				3.0-5.0': Silt. Brown (7.5 YR 4/2) with clay inclusions (¼ to 1 inch) as above,
				color ranges from brown (7.5 YR 4/2) to brown (7.5 YR 4/3).
50	55	5	5-8/0	0-3.0': Silt (75 YR 4/2), trace fine sand, blocky with clay inclusions, reddish
				brown (5 YR 4/3) and red brown (2.5 YR 4/4) only slight reaction to HCl on
				red brown (2.5 YR 4/4) moderate plastic.
				3.0-5.0': Silt Brown (7.5 YR 4/2) trace coarsse and, blocky, wet, 3.25 penotrometer
55	60	5	6.5-14/0	0-3.0': Silt. Brown (7.5 YR 4/3), as above.
				3.0-5.0': Silt. Very fine sandy, brown (7.5 YR 4/3).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-46 Page 3 of 3

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
60	65	5	6.5-850/	0-1.0': Silt. Sandy, as above.
			0-0.1	1.0-4.0': Silt. Very fine sandy with clay inclusions, reddish brown (5 YR 4/4),
				soft, strong reaction to HCl, 1/8 to 4 inches of clay, slightly plastic, platy, several
				1 inch silt and very fine sand seams.
				4.0-5.0': Sand. Very fine silty, very dense, no reaction to HCl, >4 penotrometer,
				trace clay.
65	70	5	1,200-	0-1.5': Sand. Medium to very coarse and gravel, brown (7.5 YR 5/3), some
			>10,000/0	cement pieces, grain 1/8 to 1.5 inch, wet, strong reaction to HCl, trace silt and
				clay, loose, wet, poorly sorted.
				1.5-2.0': Sand. Medium to very coarse, some gravel, ¼ to ½ inch, loose, wet,
				silt, reaction to HCl, trace silt.
				2.0-5.0': Sand. Brown (7.5 YR 5/4) medium to coarse, some fine and very coarse,
				trace silt, loose, wet, no reaction to HCl.
70	75	5	>10,000/	0-6.0": Sand. Medium to coarse, as above.
				6"-3.0': Sand and Gravel. Fine to very coarse, some clay, trace silt, loose, wet, slight
				reaction to HCl.
				3.0-4.5': Sand. Yellowish brown (10 YR 5/4) fine to very coarse sand, some
				gravel, loose, wet, trace silt and clay.
				4.5-5.0': Silt. Reddish brown (5 YR 4/4) trace very fine sand and clay, dense, 3.5 =
				penotrometric, blocky, trace clay inclusions (¼ inch) reddish brown (2.5 YR 4/4)
				weak reaction to HCl, platy, moderately plastic, 1.5 = pentameter.
				EOB 75 feet, set screen 65 to 75.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-47 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 8/17/98 16:30 Drilling Completed 8/18/98 9:20

Total Depth Drilled 85 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1126.11 feet [X] Surveyed [ ] Estimated Datum Mean Sea Leel

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Ted Powell and Rob Reina Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	4.5	2-9/1.4-2.5	0-.25': Sand. Silty, loam "A Horizon", roots, slightly moist, loose, dark
				brown (7.5 YR 4/3).
				.25-1.0': Sand. Brown (7.5YR 5/3) fine with medium and coarse, trace very
				coarse and silt, very poorly sorted, loose, dry, with gravel ¼ to 3 inches,
				subrounded, trace wood.
				1.0-1.25': Sand. Dark grey (5 YR 4/3) very fine with fine, some medium sand and
				silt, trace coarse and very coarse, very poorly sorted, abundant roots, paleosol
				trace fine gravel, loose, dry.
				1.25-2.5': Sand. Color ranges from yellow brown (10 YR 5/6) at top to strong
				brown (7.5 YR 5/6) at bottom, very fine, silty, trace fine and medium, loose, dry,
				poorly sorted, and gravel.
				2.5-3.5': Sand and Gravel. Pink brown (2.5 YR 6/2) fine to coarse, some very
				fine, trace silt and very coarse, dry, loose, gravel 1/8 to 3 inch, angular to
				subangular.
				3.5-4.5': Sand. Yellow brown (5 YR 4/4) very fine to fine, trace silt, moderate
				sortings, loose, slightly moist.
5	10	4	1.5-6.5/	0-1.0': Slough.
			0.2-1.5	1.0-1.5': Sand. Strong brown (7.5 YR 5/6) fine with medium, trace very fine and
				silt, moderate sorting, loose, moist.
				1.5-2.0': Sand and Gravel. Sand, strong brown (7.5 YR 5/6) very coarse and
				coarse, trace medium and fine, poorly sorted, loose, moist, gravel 1/8 to 2.5
				inch, angular to subrounded.
				2.0-3.5': Sand. Brown (7.5 YR 5/4) coarse with very coarse, trace fine and medium,
				moderately well sorted, loose, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-47 Page 2 of 5

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-4.0': Sand. With gravel, dark yellow brown (10 YR 3/4) medium to coarse
				some fine trace very fine and silt, poorly sorted, moist. Gravel 1/8 to 2 inch,
				subrounded to subangular.
10	15	4	2.25-9/.6-2.4	0-0.5': Sand. With gravel, as above.
				0.5-1.0': Sand. Strong brown (10 YR 4/6) fine with medium and very fine, trace
				coarse, and very coarse, loose, dry.
				1.0-2.0': Sand and Gravel. Sand, dark yellow brown (10 YR 4/4) silty fine with
				medium, some coarse trace very coarse, very poorly sorted, loose, dry, gravel
				1/8 to 2.5 inches, subround to angular.
				2.0-3.5': Sand. Brown (7.5 YR 4/4) coarse to very coarse, some medium trace
				10 percent, gravel 1/8 to 3/4 inch, subround, very moist, moderate sorting,
				loose.
				3.5-4.0': Sand. Strong brown (7.5 YR 4/4) medium with coarse and fine trace
				very fine and very coarse, trace to with gravel in tip of sample, 1/8 to 1 inch,
				subrounded to angular, poorly sorted.
15	20	5	1.5-12/0-2.7	0-0.75': Sand. Dark yellow brown (10 YR 4/6) very coarse, some coarse, trace
				medium, some gravel 1/8 to 2 inch, subround, poorly sorted, wet, loose to
				medium dense.
				0.75-2.0': Silt and Clay. silt dark red brown (2.5 YR 3/4) trace clay, medium
				stiff (3.0) clay, red (2.5 YR 4/6) soft to medium stiff (1 to 1.5) plastic, very moist,
				non effervescent.
				2.0-3.0': Silt. Very sandy with very fine sand, strong brown (7.5 YR 4/6)
				trace clay, soft (0.75).
				3.0-5.0': Silt and Clay. Interbedded, beds .5 to 3 inch thick. Silt with clay top of
				section, red brown (5 YR 4/3) very stiff to hard, 3.8 to 4.0. Clay, soft, plastic,
				effervescent, red (5 YR 4/6). Bottom of section silt is brown (7.2 YR 5/4) medium
				stiff 2.5 to 3, homogenous, slightly moist.
20	25	5	.5-6.5/0-1.5	0-4.0': Silt and Clay. Interbeds, as above. Bottom 2 feet no predominately,
				clay with thin 1/8 inch, silt seams interspersed, clay is red brown (2.5 YR 4/4),
				fissile to blocky, strongly effervescent, medium stiff to stiff 2 to 3, moderate
				plastic.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-47 Page 3 of 5

Prepared by Ted Powell and Rob

From	To	Sample/Core Depth (feet below land surface)	Core Recovery (feet)	OVA/OVM	Sample/Core Description
					4.0-5.0': Sand. Brown (7.5 YR 5/4) very fine with silt, well sorted, loose to
					medium dense, slightly moist, at clay/sand content a thin lense of gravel ¼ to 1
					inch, angular to subrounded.
25	30		5	3.5-15/1.9-	0-2.0': Slough.
				3.2	2.0-5.0': Sand, red brown (5 YR 5/4) very fine with silt, well sorted, slighty
					moist, medium dense.
30	35		5	2-7.5/.8-2.1	0-2.0': Sand. As above, but red yellow (7.5 YR 5/6) silt, content coarsens toward
					bottom and color goes to red brown (7.5 YR 5/4) as moisture content and silt
					contact increase.
					2.0-5.0': Sand. Very fine, silty, brown (7.5 YR 4/4) moist at top of section to
					saturated at bottom, very dense, moderate well to well sorted.
35	40		5	4.5-12/0	0-2.5': Sand. Very fine, silty, as above at 0.5 feet, a 2 inch silt lense, some very fine
					sand, very dense to stiff, moist, brown (7.5 YR 5/3).
					2.5-5.0': Sand. Brown (7.5 YR 5/4) fine with very fine, variable silt, medium
					dense to dense, very moist, moderately well sorted.
40	45		5	2.25-16/0	0-0.5': Sand. As above.
					0.5-4.0': Silt. Brown (7.5 YR 4/4) some very fine sand, trace clay, in part, soft to
					medium stiff, moist. At 3 to 3.5 feet silt with several small ¼ to 1 inch thick clay
					lenses, clay red brown (2.5 YR 4/4) soft, very slight effervescent, fissile, plastic.
					4.0-5.0': Silt. Very fine, sandy, grading to very fine silt sand at bottom of sample,
					red brown (5 YR 4/4) dense, moderately well sorted, moist to very moist.
45	50		5	1.5-4.5/0	0-0.5': Sand. Very fine silty, to very fine sand silt, as above.
					0.5-5.0': Silt. Red brown (5 YR 4/4) some very fine sand in top 2 feet grading to trace
					very fine sand at bottom, moderate well sorted, stiff 3.5. At 3 to 3.5 feet some
					clay, yellow red (5 YR 4/6) soft, platy, slightly effervescent, lenses are approximately
					¼ inch thick.
50	55		5	1.5-3.5/0	Silt. Color as above, very homogenous, very stiff to hard (3.5 to >4.0), trace
					clay in matrix.
					18:50 stop drilling for the day.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-47 Page 4 of 5

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
55	60	5	.25-2.25/	Silt. Brown (2.5 YR 4/4) homogenous clay lenses at .5 and 1.5 foot approximately 2
			.2-.6	inch thick, fissle, medium stiff (2.75 to 3) dark red brown (2.5 YR 4/2) effervescent.
				At 3 to 5 feet, silt contains trace very fine sand.
60	65	5	1-5.5/0-1.2	Silt. Color as above, trace to some very fine sand, several sections contain some
				very fine and trace fine sand, isolated 1/8 to ¼ inch clay lenses, clay as above.
65	70	5	1,000-	0-3.0': Silt. Brown (7.5 YR 4/3) very soft, some clay in matrix, moderate
			3,500/0-0.6	plastic, very moist to wet. At 2 to 3 feet several 2 to 3 inch lenses of clay,
				red brown (2.5 YR 4/4) medium stiff to hard (3.5) fissile, effervescent.
				3.0-5.0': Sand and Gravel. Red brown (5 YR 4/4) sand, medium to coarse
				with very coarse some fine and very fine. Wet 3 to 4 feet moist from 4 to 5 feet,
				very poorly sorted, gravel ¼ to 2 inch, subround to angular.
70	75	5	2,500-	Sand with Gravel. Grey brown (10 YR 5/2) sand, medium to very coarse and fine
			>10,000/0	some very coarse and very fine, proportion of very fine increase towards bottom,
				moist at top to dry in bottom gravel 1/8 to 2 inch subrounded to angular, loose,
				very poorly sorted.
75	80	5	175-	0-3.0': Sand and Gravel. Dark brown (7.5 YR 3/3) coarsens up, at top very
			>10,000/0	coarse with coarse, some medium and fine, trace very fine, very poorly sorted,
				gravel 1/8 to 2 inch round to subangular. At bottom very coarse with coarse sand,
				some medium and fine, trace very fine and silt, some gravel, as above.
				3.0-5.0': Sand. Brown (7.5 YR 5/3) medium with fine, some coarse trace very fine
				poorly sorted, loose to medium dense, trace ¼ to ½ inch gravel, subrounded.
80	85	5	20-	0-2.75': Sand. Light brown grey (10 YR 6/2) fine to medium, some coarse, trace
			>10,000/	very coarse, some fine, trace very fine and silt very poorly sorted, loose, slightly
			0-0.1	moist to dry, abundant pea size inclusions of calcareous, slightly cemented, silty,
				effervescent. Some gravel ¼ to 2.5 inches, subrounded to subangular.
				2.75-3.75': Sand. Dark brown (7.5 YR 3/3) coarse with medium, some fine,
				trace very coarse and very fine, saturated, poorly sorted, some gravel ¼ to 1 inch,
				subrounded.
				3.75-5.0': Silt. Red brown (5 YR 4/3) top 6 inch very hard (>4) bottom of
				section soft to wet, trace clay. Hard silt is very homogenous dark red brown

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-47

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				(5 YR 3/4). clay lenses at 4.5 feet red brown (2.5 YR 4/6) stiff (2.75) fissle
				moderate plastic. 20 ppm an OVA, collect treatabiltiy sample GM-47/73.
				Set well 69 to 84 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-48 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 8/18/98 17:40 Drilling Completed 8/19/98 10:50

Total Depth Drilled 85 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1124.98 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Ted Powell and Rob Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2.5	2.5-5/0-1.9	0-1.0': Silt. Loam, some coarse and very coarse sand "A Horizon" roots, grass,
				loose, dry, dark red brown (5 YR 3/3).
				1.0-2.5': Sand. Fine silty, strong brown (7.5 YR 5/6) some coarse, trace very
				coarse, some gravel ¼ to 3.5 inch, dry, loose, poorly sorted, large gravel,
				blocking recovery.
5	10	4.5	4.5-5/.1-1.1	0-1.0': Slough.
				1.0-1.5': Sand. As above.
				1.5-4.0': Sand. Brown (7.5 YR 4/4) with gravel, sand coarse some very coarse and
				medium, trace fine and very fine, poorly sorted, loose, very moist to wet, gravel
				1/8 to 3 inch, subrounded.
				4.0-4.5': Sand. Brown (7.5 YR 4/3) medium, some coarse trace very coarse, fine to
				silty, poorly sorted, loose, moist, trace (10 percent) gravel 1/8 to 1 inch,
				subrounded.
10	15	4	4.5-10/.6-3.4	0-2.0': Slough.
				2.0-3.0': Sand. Some gravel as above, only very moist.
				3.0-4.0': Sand. Brown (7.5 YR 4/2) very coarse with coarse, some fine and medium,
				trace very fine to silt, very poorly sorted, very moist to wet, loose to medium
				dense.
15	20	4	3-5.5/0-1.8	0-2.0': Slough.
				2.0-4.0': Sand. As above.
20	25	3	3-8/0-2.1	0-0.75': Sand and Gravel. Dark brown (7.5 YR 3/4) sand is very coarse, some
				coarse and medium, trace fine, poorly sorted, loose gravel 1/8 to 1.5 inch,
				subrounded to subangular.
				0.75-1.25': Clay. Sandy, gravely, matrix supported, dark red (2.5 YR 3/6)

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-48

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				clay is soft to medium stiff, plastic, effervescent where silty, occasional black staining
				sand, very coarse, some coarse, some silt inclusions, gravel 1/8 to ½ inch
				angular to subround.
				1.25-3.0': Sand. Light brown (7.5 YR 6/4) very fine, some silt, moderately well
				sorted, moderate dense, slightly moist.
25	30	5	1.5-10/0-1.1	0-3.0': Sand with Gravel. Slough. Sand medium with coarse some very
				coarse and fine, trace very fine, very poorly sorted, loose to medium dense.
				3.0-5.0': Sand. Strong brown (7.5 YR 4/6) very fine with silt, wet, medium dense,
				moderately well sorted, grade to very fine sandy silt at base.
30	35	5	2.5-100/0-	Silt. Very sandy, grading to silt with variable very fine and in bottom half of sample,
			6.2	color as above, isolated pockets of gas bubbles, (vesicles), in silt, from 3 to 5 feet
				several 1 to 2 inch fine silty sand lenses.
35	40	5	4-6/0-1.0	Silt. Dark red brown (5 YR 4/2) trace very fine sand, medium stiff at 2.5, trace
				clay inclusions, soft, fissile noneffervescent.
40	45	5	1.75-4.5/0-.8	Silt. As above, but with trace clay in matrix, several clay lenses (1 to 2 inch thick)
				interspersed throughout section. Clay red brown (2.5 YR 4/3) blocky, strongly
				effervescent, medium stiff (1.5 to 2) slightly plastic.
45	50	5	2.25-4.0/0	0-2.0': Silt. With 15 to 20 percent clay in matrix, brown (7.5 YR 5/2) with clay lense,
				approximately 1.5 diameter, approximately 0.5 to 1.5 feet, slightly effervescent,
				medium stiff, moist to wet. Clay, reddish brown (5 YR 4/3) nonplastic, stiff.
				2.0-4.5': Silt. With some clay, as above, stiff, clay inclusions interspersed
				moist to wet.
50	55	4.5	2.5-5.5/0.0-	0-4.5': Silt. With clay inclusions, as above, clay (5 YR 4/4), platy, nonplastic, slightly
			0.5	effervescent, stiff.
55	60	3.5	2.5-12.5/0-	0-3.5': Silt. With some (15 to 200 precent) clay and sand, as above, (25 to 5 percent)
			1.4	and, very fine to fine, wet, clay, platy, moderately stiff, as above.
60	65	5	5-500/0-2.2	Silt. 15 to 20 percent. Some clay and sand, medium stiff with clay inclusions,
				variable sand at 3.0 to 3.5 feet, approximately 5 inches thick, very fine to medium
				(moist) to medium dense, saturated clay, as above, soft, plastic, no effervescent
				(2.5 YR 4/3) reddish brown.
65	70	3.5	5,000-	0-2.0': Sand. Very fine to coarse, loose, moist to wet, yellowish red (5 YR 5/6)
			>10,000/	gravel, minor <15 percent at base, increase to top. Approximately 1/8 to 2

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-48

Prepared by Ted Powell and Rob

From	To	Sample/Core Depth (feet below land surface) / Core Recovery (feet)	OVA/OVM	Sample/Core Description
			0-1.5	inch diameter, poorly sorted, subrounded.
				2.0-2.5': Sand. Gravel lense, very fine to coarse, loose, dry, matrix is pale
				brown (10 YR 5/3) some gravel (15 to 25 percent) subrounded, very poorly
				sorted.
				2.5-3.5': Sand. With silt, loose (5 YR 5/6) yellowish red, faint moisture, moderate
				sorting, minor gravel (<15 percent) subrounded to subangular.
				3.5-5.0': Sand. Loose very fine, reddish yellow (7.5 YR 6/6) medium sorting,
				trace coarse, slight moisture.
70	75	5	>10,000/	0-0.5': Sand. And gravel, loose, medium to very coarse, slight moist, poorly
			0.0	sorted, light brown (7.5 YR 6/3) gravel, subround to angular.
				0.5-3.0': Sand and Gravel. Loose to dry, poorly sorted, pinkish grey (7.5 YR 6/2)
				cemented caliche/ fragment (ground) dry, moderate to coarse and some fine
				gravel (approximately 1/8 to 3 inch) subround to subangular, increased
				moisture approximately 2.5 to 3 feet.
				3.0-5.0': Sand. Loose, dry, light grey (10 YR 7/1) fine to medium, trace very
				fine to coarse, moderate sorting, some (<10) gravel, subrounded to subangular.
80	85	4	1,750-	0-4.0': Sand. Medium to coarse, trace to fine, wet to saturated, loose, grayish
			>10,000/0	brown, (10 YR 5/2) fairly well sorted, trace gravel (1/8 to 3/4 inch), subrounded.
				Set well at 65 to 85 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-49 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 8/20/98 Drilling Completed 8/20/98

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1121.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Ted Powell and Rob Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	4.5	4-28/0-2.1	0-1.0': Silt. Brown (10 YR 4/2), with trace clay (fines), roots, grass, loose, dry.
				1.0-2.0':Silt. Very dark gray (10 YR 3/2), with trace clay (fines), roots, loose, dry.
				2.0-2.5': Silt. Reddish yellow (7.5 YR 4/4), with trace fines (clay), loose, dry, trace
				rootlets.
				2.5-3.5': Silt. Strong brown (7.5 YR 5/8), with gravel, loose, dry, gravels, (1/8 to 1
				inch), subrounded to subangular.
				3.5-4.0': Sand. Strong brown (7.5 YR 5/8) some gavel, medium to coarse with fine
				poorly sorted, gravel content increases, subangular to subrounded, dry.
				4.0-4.5': Sand and Gravel. Light grayish brown (10 YR 6/2), fine, some medium
				to coarse, trace very fine silt and very coarse, loose, dry gravels approximately 1/8 to
				2½ inch, subrounded to angular.
5	10	4.5	8-21/0.2-1.1	0-0.5': Slough.
				0.5-0.75': Sand and Gravel. Light grayish brown (10 YR 6/2) fine, some medium
				to coarse, trace very fine silt and very coarse, loose, dry, gravels approximately
				2½ inch, subrounded to angular.
				0.75-4.5': Sand. Reddish yellow (7.5 YR 6/6), transitions to yellow brown (10 YR 5/4),
				trace to some grave, loose, very moist, coarse to very coarse, some medium grades
				to coarse to medium, trace very coarse at top, gravesl 1/8 to 2 inches, subrounded.
10	15	4	6-16/0-0.5	0-1.0': Slough.
				1.0-4.0': Sand and Gravel. Brown (7.5 YR 5/4) transitions to brown (10 YR 5/3)
				at top, very coarse sand with coarse, trace very fine and medium, very poorly sorted,
				loose, very moist, gravel 1/8 to 2 inch, silty sand 3 inch lense at 1.5 feet,
				trace clay.
15	20	4	6-15/0.0-0.7	0-1.5': Slough.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-49

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1.5-3.0': Sand. Light yellow brown (10 YR 4/4), with gravel, very moist, trace fine,
				moist, loose, fairly well sorted.
				3.0-4.0': Sand. Some gravel, fine to medium, some coarse poorly sorted, loose,
				wet, gravels approximately 1/8 to ½ inch, subrounded.
20	25	4	5.5-7.5/0-1.1	0-4.0': Silt. Brown (7.5 YR 5/3), trace very fine sand, medium stiff, slightly moist,
				clay inclusions, reddish brown (2.5 YR 6/4), soft, slightly moist, some effervescent
				with silt laminations.
25	30	4	19-55/	0-0.5': Slough.
			1.4-8.2	0.5-1.5': Clay. Reddish brown (5 YR 5/3) silty, sandy, soft, plastic, moist, trace
				gravel, approximately 1/8 to 1 inch, subrounded sand, fine to medium poorly
				sorted.
				1.5-2.5': Sand. Brown (7.5 YR 4/4) with gravel, fine to medium, trace coarse,
				loose, moist, gravel approximately 1/8 to 1 inch, subangular to subrounded.
				2.5-3.0': Clay. Reddish brown (2.5 YR 4/4) with silt, effervescent, slightly plastic,
				soft to medium stiff, dry, silt (2.5 YR 6/4).
				3.0-4.0': Sand. Light brown (7.5 YR 6/4) trace gravel, fine to medium, some
				coarse, loose, moist, gravels approximately 1/8 to 1 inch, subangular to
				subrounded.
30	35	4	4-19/3.1-6.6	0-1.5': Sand. As above, with trace gravel, gravel content decreases at
				approximately 1.5 feet.
				1.5-2.5': Sand. Brown (7.5 YR 5/4) some gravel, medium to coarse, some fine,
				loose, moist, gravels to approximately 1.5 inches, angular to subrounded.
				2.5-3.0': Sand. Pink (7.5 YR 7/4), very fine, some fine, trace silt, loose, moist.
				3.0-4.0': Sand. Light brown (7.5 YR 6/4) with gravel, decreasing gravel content
				up section, fines upward, medium to coarse, some very coarse, loose, slightly
				moist, gravels approximately 1/8 to 2 inch, subangular to subrounded.
35	40	4	4-250/0-3.3	0-3.0': Sand. Brown (10 YR 5/3) trace gravel, medium to coarse, trace fine, loose
				well sorted, saturated, gravel approximately 1/8 to ¼ inch subrounded.
				3.0-4.0': Sand. Brown (7.5 YR 5/3), as above, gravel decreases.
40	45	4	10-42/0-1.7	0-1.0': Sand. As above.
				1.0-3.5': Sand. Light brown (7.5 YR 6/4) trace gravel, loose, slightly moist,
				very fine to fine, with medium.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-49

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.5-4.0': Sand. Brown (7.5 YR 5/3) fine, very fine in matrix with silt, loose, moist,
				fairly well sorted.
45	50	5	2.5-3.5/0.0	0-5.0': Sand. Brown (7.5 YR 5/3) trace gravel, grdational throughout,
				coarse to very coarse, with medium and fine, nodules reddish brown (2.5 YR 4/4)
				clay approximately ¼ inch diameter, loose, moderate sorting, saturated,
				gravel (1/8 to ¼ inch diameter) approximately 0.5 feet thick gravels (approximately
				1/8 to 1½ inch) subangular to subrounded.
50	55	5	3.75-9/0-0.3	0-5.0': As above. At 4 to 5 feet sand are fine with medium to coarse,
				some very fine, no gravel.
55	65	3	2.25-19/	Poor recovery.
			0-0.1	0-2.25': As above. At 2.25 feet sand with gravel, as above gravel approximately
				1/8 to 1 inch diameter).
				2.25-3.0': Sand. Reddish brown (5 YR 5/4) very fine with silt, medium dense,
				very moist, well sorted. Contact between coarse sand and very fine sand is
				infered to be at 60 feet.
65	70	5	3.25-3.5	0-5.0': Sand. Brown (75 YR 5/4), very fine, some silts and fines, medium dense,
			0.0	very moist, well sorted.
70	75	5	3.25-5/	0-5.0': Sand. As above, very fine, moderate dense, very moist.
			0-0.4	
75	80	5	3-7.5/0-0.7	0-2.5': Sand. As above, saturated.
				2.5-4.0': Silt. Reddish brown (5 YR 4/4), trace clay, soft, saturated.
				4.0-5.0': Silt. Brown (7.5 YR 5/2), with clay, dense, slightly moist, clay, reddish
				brown (2.5 YR 4/4) very strongly effervescent, very hard (4), fissile.
80	85	4.75	11-5,500/	0-4.0': Silt. As above, with clay. Clay dark brown (7.5 YR 3/3), as above.
			0-1.3	4.0-4.75': Sand. Brown (7.5 YR 5/3) medium, some fine, trace coarse, medium
				dense, trace pea gravel, subrounded.
85	95	--	5-10	Poor recovery, sand, brown (7.5 YR 5/3), loose, saturated, medium with some
				coarse, some very fine, trace silt, (approximately 10 percent) moderately sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-50 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/24/98 8:45 Drilling Completed 8/24/98 12:00

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1120.64 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Ted Powell and Rob Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	3	2.5-5.5/	0-0.25': Asphalt with medium sand.
			0.5-7.9	0.25-3.0': Sand. Brown (7.5 YR 4/4) medium with fine, trace coarse, loose, moist,
				moderately sorted, from 2.0 to 3.0 some gravel ¼ to 2.5 inch, subrounded to
				subangular.
5	10	3.5	2.5-9/.7-107	Sand. Dark brown (7.5 YR 3/3) with gravel, sand, medium with coarse, some very
				coarse, trace fine and very fine, poorly sorted, moist, loose. Gravel 1/8 to 2.5
				inches, subangular to subrounded.
10	15	4	2-12/.1-2	0-1.0': Slough.
				1.0-2.5': Sand and Gravel. Dark brown (7.5 YR 3/3) sand, as above, gravel
				content greater than above.
				2.5-4.0': Sand. Brown (7.5 YR 4/3) with gravel, sand, coarse with medium and
				very coarse, trace fine and very fine, poorly sorted, slightly moist, loose gravel
				1/8 to 3 inch angular to round.
18	29	3	2-20/0-1.5	0-1.5': Slough.
				1.5-1.75': Sand. Grey (7.5 YR 4/1) with gravel, sand, medium with fine and very
				fine, trace silt, coarse and very coarse, poorly sorted, dry, loose, gravel 48 to ½
				inch, angular to subrounded.
				1.75-3.0': Sand. Brown (7.5 YR 4/3) some gravel, sand, coarse with medium,
				trace very coarse and fine moderate sorting, loose, moist, gravel 1/8 to 1 inch
				subrounded.
20	25	3	2-22/0-1.7	0-1.5': Sand. As above, some gravel.
				1.5-2.5': Sand. Brown (7.5 YR 5/3) some gravel, sand, fine with medium, some
				very fine, trace coarse and silt, moderately to poorly sorted, loose, dry, occasional
				sandy, silt nodules approximately ½ inch in diameter, calcareous, gravel 1/8

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-50 Page 2 of 4

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				inch to 3/4 inch, subround to subangular.
				2.5-3.0': Sand. Brown (2.5 YR 4/3) fine with medium, some very fine and coarse,
				trace silt and very coarse, slightly moist, loose.
25	30	0	2-150/0-5.6	Slough, sand and gravel. Ran casing at 25 feet.
30	35	3	2-20/0-1.8	0-1.5': Sand. Brown (7.5 YR 4/3) small gravel, sand, coarse some medium and
				very coarse, trace fine, loose, slightly moist to moist, poorly sorted, gravel ¼ to 1.5
				inch, angular to subrounded.
				1.5-3.0': Sand. Red brown (5 YR 5/4) very fine, some silt, medium well sorted,
				medium dense, slightly moist.
35	40	5	2-4/0	0-4.0': Sand. Red brown (5 YR 4/3), very fine, some silt, as above, wet.
				4.0-5.0': Silt. Red brown (5 YR 4/4) very fine sandy, saturated, soft (0.75 HP)
				trace clay in matrix, moderately sorted.
40	45	5	2-6/0	0-0.5': Sand. Dark red brown (5 YR 3/4) very fine silty, moderately well sorted,
				dense, wet.
				0.5-1.75': Silt. Red brown (5 YR 4/4) with very fine sand (variable) soft to
				medium stiff, (1 to 1.5 on HP) moderate sorting.
				1.75-3.75': Sand. Red brown (5 YR 4/4) very fine, with silt, dense to very dense,
				moderately well sorted, wet.
				3.75-5.0': Silt. Very fine, very sandy, grades to silty, very fine sand at 4.5 to 5 feet,
				color as above, sand dense to very dense, very moist to wet.
45	50	5	2-4.5/0	Sand. Red brown (5 YR 4/4), very fine, with silt, silt content variable, moderately
				well sorted, dense.
50	55	5	2-8/0	Sand. Very fine, as above.
55	60	5	2-5/0	0-0.5': Sand. As above.
				0.5-1.5': Silt. Brown (7.5 YR 4/4), trace clay in matrix (HP = 2.0), wet, slightly
				plastic, several ¼ inch clay lenses, red brown (2.5 YR 4/3), soft plastic, non-effervescent.
				1.5-4.5': Silt. Brown (7.5 YR 4/4) saturated, trace clay, variable sand, trace to some,
				soft to medium stiff.
				4.5-5.0': Sand. Red brown (5 YR 4/3), very fine, trace fine and silty, dense to very
				dense, very moist, moderate sorting.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-50 Page 3 of 4

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
60	65	5	2-5.5/0	Sand. Color as above, very fine, some silt, variable, very moist to wet, moderate
				sorting, very dense. At 3.0 to 3.5 feet silt, red brown (5 YR 4/4), trace very fine
				sand, fairly homogenous, with 2-1/8 inch thick clay seams, red (2.5 YR 4/6)
				soft, plastic, slightly effervescent.
65	70	5	1.5-3/0	Sand. Red brown (5 YR 4/3), very fine, with silt, dense to very dense, saturated,
				moderate well sorted.
70	75	5	1.5-3.5/0	0-3.0': Sand. As above, very fine, very silty, from 2 to 3 feet.
				3.0-5.0': Silt. Red brown (5 YR 4/4), trace clay in matrix, very soft to medium
				stiff (0.5 to 1.75) saturated, fairly homogenous.
75	80	5	>10,000/0	0-1.0': Silt. Brown (7.5 YR 4/4) trace clay, wet. ½ inch clay lense at 0.5 feet, variable
				very fine sand, silt, medium stiff (1.5) clay, red (2.5 YR 4/6) fissile, slightly to
				nonplastic, strongly effervescent.
				1.0-5.0': Sand. Brown (7.5 YR 5/4) very fine, silty, moderately well sorted,
				very dense, slightly moist.
80	85	5	>10,000/0-2	Sand. Brown (7.5 YR 4/4) very fine silty, very dense, moderately well sorted,
				slightly moist to moist towards bottom. At 3.5 feet a 3 inch very fine to fine
				sandy silt lense, color as above, gas vesicles. 1/8 inch red clay lense at base, very
				soft, strongly effervescent.
85	90	5	400-7,000/	0-2.0': Sand. Strong brown (7.5 YR 4/6) very fine, silty, very dense, moderately
			0	sorting. At 1 foot a 6 inch zone of silt, brown (7.5 YR 4/3) soft to medium,
				stiff, (1.0 to 1.5) variable very fine sand and trace clay.
				2.0-4.0': Sand. Brown (7.5 YR 4/2) saturated coarsens downward, at top
				coarse, trace medium and very coarse and fine, moderate well sorted, trace fine
				gravel, at base coarse, some very coarse, trace medium to fine, small gravel,
				1/8 to 1 inch, subangular to subrounded, saturated.
				4.0-5.0': Sand. Brown (7.5 YR 5/4) fine to medium, trace coarse and very coarse,
				trace very fine, moderate to poorly sorted, dense, trace fine gravel, saturated.
90	95	2	3,500-4,500/	0-1.0': Sand. Brown (7.5 YR 4/2) coarse, some medium trace very coarse,
			0	medium dense, poorly sorted, trace gravel 1/8 to ½ inch, subrounded to
				subangular.
				1.0-1.5': Sand. Brown (7.5 YR 4/4), medium some very fine and very fine,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-50

Prepared by Ted Powell and Rob

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				several sandy silt nodules (approximately 1 inch diameter) with trace red clay,
				clay effervescent, silt, sandy.
				1.5-2.0': Sand and Gravel. Dark red brown (5 YR 4/2) silty, sand, fine to coarse,
				some very coarse, gravel 1/8 to 3 inch subangular to rounded,
				matrix is weakly cemented in part, slightly effervescent.
				Set screen 91 to 76 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-51 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/23/98 Drilling Completed 8/23/98

Total Depth Drilled 80 Feet Hole Diameter 8¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1095.88 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	3"/	8,7,6,5	0-3.0": Sand and Gravel. Light yellow brown (10 YR 6/4) very coarse, moist,
		≤4.5		loose, much coarse sand, some medium and fine sand; gravel, subrounded to
				well rounded, variable composition, up to 2 cm in diameter, no HCl reaction.
2	4	12-½"/	5,5,5,6	0-12": Sand and Gravel. As above, very coarse, dry.
		6.5		
4	6	14"/	10,2,2,3	0-11": Sand and Gravel. As above, very coarse, dry, some pebbles, spoon
		4.5		diameter.
				11-14": Sand. Pink (7.5 YR 8/4), fine, dry, loose, very well sorted. No HCl
				reaction.
6	8	10"/	3,5,5,5	0-10": Sand. Pink (7.5 YR 8/4) fine to medium, dry, loose, very well sorted,
		7		no HCl reaction.
8	10	10"/	10,7,5,5	0-10": Sand. Very pale brown (10 YR 8/10) coarse to medium, with gravel,
		4.5		some fine sand, some very coarse sand, gravel subrounded to well rounded,
				granule up to greater than spoon diameter, dry and loose.
10	12	7"/	12,18,21,15	0-7": Sand. Pink (7.5 YR 7/4) fine to very fine, with much silt, dry, loose, well
		3.25		sorted.
12	14	15"/	3,3,4,7	0-12": Sand. As above, fine to very fine, dry, laminations of 1/16 inch thick,
		3.25		silty horizons.
				12-15": Sand. Pink (7.5 YR 7/5) fine to medium, trace to some coarse sand,
				dry and loose, no HCl reaction.
14	16	13½"/	3,4,7,9	0-13.5": Sand. Very pale brown (10 YR 7/4) fine, loose, slightly moist, very
		4		well sorted, no HCl reaction, 1 inch silt lense at 5 to 6 inch.
16	18	14"/	5,5,9,11	0-14": Sand. Very pale brown (10 YR 8/3) very fine, loose, slightly dense, very
		2.75		well sorted, dry, slightly moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-51

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
18	20	14½"/	8,10,10,11	0-14.5": Sand and Sandy Silt. Yellowish brown (10 YR 5/4) finely interbedded very
		4		fine, very fine sand as above, silt, slightly moist, nonplastic, HP =1.5, slight HCl
				reaction.
20	22	17"/	4,5,8,11	0-5": Silt. As above. Finely interbedded very fine sand and sandy silt.
		3		5-15": Sand. Yellowish brown (10 YR 5/4) very fine silty to sandy silt, moderate
				HCl reaction, moist, HP = 2.5
				15-17": Sand. Light yellowish brown (10 YR 6/4), fine to very fine, loose, slightly
				dense, well sorted, trace silt, slight HCl reaction, slightly moist.
22	24	18"/	5,8,11,13	0-18": Sand. Yellowish brown (10 YR 5/6), very fine with trace to some silt,
		4		very moist, saturated variable silt content, more abundant at top of sample
				fine sand lense at 4 to 4½ inch and 5½ to 6 inch.
24	26	14"/	6,8,9,11	0-9.0": Sand. Yellowish brown (10 YR 5/6), fine to very fine, well sorted,
		3.5		saturated, trace silt, crumbly.
				9.0-14.0": Sand. Brownish yellow (10 YR 6/6) very fine silty to sandy silt, very
				moist to saturated, HP = 2.7 to 3.0, slightly HCl reaction.
26	28	15"/	5,12,12,12	0-15": Sandy Silt. Yellowish brown (10 YR 5/4) moist, slight HCl reaction
		3.5		abundant, very fine sand ¼ inch clay lense at 3.5 inch.
28	30	10"/	8,7,9,11	0-10": Silt. As above, slightly moist, clay lense at 3 to 4 and 7½ and 8 inch
		3.0		lense of very fine sand at 6 to 7 inches.
30	32	18"/		0-18": Silt. As above with some very fine sand. Yellowish brown (10 YR 5/4)
		4.0		moist HP = 2.5 to 3.0, moderate HCl reaction ¼ inch very fine sand, lense at 2½
				inch.
32	34	18½"/	8,7,9,8	0-18.5": Sand. Brown (10YR 5/3) Very fine silty to sandy silt, very moist to
		3.0		saturated. HP = 1.5 to 2.0, slightly HCl reaction, ¼ inch clay lense at 7 inches.
34	36	10"/	3,5,7,8	0-10": Silt. Grayish brown (10 YR 5/2) slightly to moderate HCl reaction, HP =
		≤3.75		2.0 to 2.5. Top 7½ inch have some very fine sand. 7½ to 8½ have clay lense,
				red (10 R 4/6) HP = 3.5, slightly plastic, strong HCl reaction.
				9:48 stop drilling to dump soil.
36	38	18"/	5,5,7,9	0-18": Silt. As above, saturated clay lenses to 2½ to 3 inch and 9 to 10 inch.
		≤4.5		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-51

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
38	40	14"/	5,7,5,7	0-14": Silt. As above, saturated, clay lenses at 2 to 3 inch and 10 to 11½ inch.
		5		
40	42	19"/	2,4,4,6	0-19": Silt. As above, saturated, clay lenses at 3 to 3½, 7 to 8 inch and 1/8 inch
		4.5		at 11 inch.
42	44	18½"/	5,5,6,7	0-18.5": Silt. As above, saturated. Clay lense at 2½ to 3.0, 7 to 9 inch and ¼
		4		inch at 13½ inch.
44	46	22"/	3,4,6,3	0-22": Silt. As above, saturated, clay at 1½ inch, 6 to 7 inch, 11 to 12
		4		inch and 18½ to 19 inch.
46	48	19"/	3,4,7,9	0-3.0": Silt. As above, clay at 2 to 2½.
		4		3.0-19": Silt. Brown (7.5 YR 5/3), sandy, abundant, very fine sand, slight to
				moderate HCl reaction, HP = 2.0 to 2.5.
48	50	8½"/	3,3,3,8	0-8½": Sand. Yellowish brown (10 YR 5/4) very fine silty , saturated HP = 1.5,
		6		very slight HCl reaction, 1/16 inch clay lense at 1.75 inch.
50	52	15"/	4,7,10,9	0-4.5": Sand. As above. Very fine silty, saturated.
		5.5		4.5-15": Silt. Yellowish brown (10 YR 5/4) with some very fine sand, HP = 2.5
				to 4.0, slight HCl reaction, saturated.
52	54	14"/	3,4,7,7	0-14": Silt. Brown (7.5 YR 4/3) with some to much very fine sand, saturated
		5.5		HP = 2.0 to 2.6, nonplastic.
54	56	13½"/	10,12,25,29	0-6.5": Silt. As above. With some to much very fine sand.
		8		6.5- 15.5": Silt. Grayish brown (10 YR 5/2) moderate HCl reaction, trace to some
				very fine sand, moderate HP = 3.0 to 3.5. Moist to very moist, 1/8 inch clay
				lense at 9½ inch.
56	58	11"/	2,5,6,9	0-11": Silt. Grayish brown (10 YR 5/2) sandy.
		4.5		HP = 2.0 to 2.5, slight HCl reaction, saturated, clay lense at 1 to 1½, ¼, inch at
				2, 6 and 8 inches.
58	60	20"/	3,5,6,7	0-20": Silt. As above, saturated, with very fine sand, clay at 2, 11½, 14 and 16½
		6		inch.
60	62	14.5"/	3,5,8,13	0-14.5": Silt. Dark grayish brown (10 YR 4/2) moist, HP = 2.5 to 3.0 moderate HCl
		4.5		reaction, ¼ inch clay lense every 1 inch. Lense of saturated silty sand 4.5 to 5.0
				inch.
62	64	20.5"/	2,2,4,7	0-20.5": Silt. Finely bedded, silty sand and clay. Silt as above, slightly moist to

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-51

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
		9		dry. Very fine silty sand, brown (10 YR 5/3) HP = 2.0 to 2.5, slightly HCl reaction,
				saturated. Clay, reddish brown (5 YR 4/4) foliated, dry, nonplastic, HP = 3.0,
				strong HCl reaction.
64	66	10"/	3,16,11,15	0-10": Silt and Clay. Finely interbedded, as above, with fine to very fine sand.
		20		Sand, grayish brown (10 YR 5/2) very well sorted, moist, silt and clay slightly
				moist to dry, very thin, laminated.
66	68	8"/	3,3,6,7	0-2.0": Silt, Clay and Sand. As above, finely interbedded, moist to dry.
		750		2.0-8.0": Sand. Brown (10 YR 5/3), medium to coarse, loose, saturated, trace
				gravel, subrounded, variable composition.
68	70	16"/	4,4,11,14	0-16": Sand. As above. Medium to coarse, saturated.
		950		
				13:25 Some blow-in, water added to clean hole.
70	72	8½"/	3,4,5,11	0-8.5": Sand. As above, medium to coarse, saturated.
		50		
72	74	13"/	10,16,20,25	0-9.0": Sand and Granular Gravel. Light gray (10 YR 7/2), very coarse, loose
		350		saturated, some medium and much coarse sand, gravel subangular to
				subrounded, variable composition.
				9.0-13": Sand. Very pale brown (10 YR 7/3) fine, saturated, loose, very well sorted.
74	76	10½"/	9,16,19,20	0-10.5": Sand. As above, fine, saturated.
		800		
76	78	15½"/	10,20,31,25	0-15.5": Sand. Pinkish grey (7.5 YR 6/2) fine to medium, very well sorted,
		1,100		saturated, slightly dense.
75	80	10"/	10,12,17,19	0-10": Sand. As above. Fine to medium, saturated.
		500		
				End of Hole 80 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-52 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 8/25/98 11:00 Drilling Completed 8/25/98 15:40

Total Depth Drilled 95 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Rotasonic Core barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval Continuous feet

Land-Surface Elev. 1119.74 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Perry Helper Brian

Prepared By Ted Powell and Pat Bartnick

Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	3.5-9.5/	0-0.5': Silt Loam. Top soil "A Horizon", roots, loose, dry to slightly moist.
			1.5-12.2	0.5-2.0': Sand. Strong brown (7.5 YR 5/8), very fine silty, trace medium and
				coarse, dry, loose, moderately well sorted.
				2.0-2.5': Sand. Color, as above, fine with very fine and silt, trace medium and
				coarse, dry, loose.
				2.5-3.0': Sand. Strong brown (7.5 YR 5/6) fine to very fine, some medium, trace
				coarse and very coarse, small gravel, ¼ to 2.5 inch. Subrounded, poorly sorted.
				3.0-4.0': Sand. With gravel, red brown (5 YR 5/4), coarse to medium, some
				very fine and fine, trace very coarse, loose, dry, poorly sorted, gravel 1/8 to 2.5 inches,
				angular to subrounded.
5	10	4	2.5-5/.4-1.8	0-0.75': Slough.
				0.75-4.0': Sand. With gravel, top of section, as above, graduational to strong
				brown (7.5 YR 4/6) medium, some coarse, trace very coarse and fine, moist,
				small gravel 1/8 to 2.5 inches, subangular to rounded, very poorly sorted.
10	15	4	3-6/.4-2.6	0-2.0': Slough.
				2.0-4.0': Sand. With gravel, strong brown (7.5 YR 4/6) medium with coarse, some
				very coarse, trace fine and very fine, poorly sorted, very moist, loose, gravel 1/8 to 4
				inches, subrounded to subangular.
15	20	4	3-5/.4-2.5	0-2.0': Slough.
				2.0-3.0': Sand. With gravel, color as above, very coarse with coarse, trace
				medium, very moist to wet, very poorly sorted, loose, gravel 1/8 to 3 inches,
				predominantly pea gravel, subrounded.
				3.0-4.0': Sand. Brown (7.5 YR 5/4) medium, trace fine and coarse, moderately well
				sorted, very moist, loose.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-52

Prepared by Ted Powell and Pat Bartnick

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
20	25	3.5	3-6/.3-1.8	0-2.5': Slough.
				2.5-3.5': Sand. As above, run casing at 25 feet.
25	35	5	2-6/.9-1.6	0-0.5': Slough.
				0.5-1.5': Clay. Red (2.5 YR 4/6) noneffervescent, very soft to medium stiff,
				(5-2), fissile, moderatly plastic, wet, trace very coarse sand and pea gravel.
				1.5-2.0': Sand. Yellow red (5 YR 4/6) medium with fine, trace coarse, very coarse
				and silt, saturated, loose, poorly sorted, trace ¼ inch gravel, subrounded.
				2.0-5.0': Sand. Light red brown (5 YR 6/4) very fine with silt, moderately to well
				sorted, loose to medium dense, slightly moist.
35	40	5	2-4.5/.1-.2	Sand. As above. Very fine with silt, saturated.
40	45	5	3.5-5.5/0-.3	Sand. Very fine with silt, grading to very fine silty sand. At approximately 1.5 feet
				a ¼ to ½ inch clay lense, red (2.5 YR 4/6) soft (1.0) platy, moderately plastic, mildly
				effervescent, medium dense to dense in bottom of sample. Several thin (<1 mm)
				black very fine sandy silt laminae from 2.0 to 3.5 feet.
45	50	5	2.5-5.5/0-1.4	Sand. Very fine with silt, color as above, medium dense, moderately well sorted,
				saturated.
50	55	5	5-9/.8-1.2	Sand. As above. Very fine.
55	60	5	2-4/0-.8	Sand. Red brown (5 YR 4/4) very fine silty, saturated, dense to very dense, moderately
				well sorted.
60	65	5	5-9/.8-1.2	0-0.5': Sand. As above. Very fine silty.
				0.5-1.5': Silt. Color, as above, medium stiff (1.25 to 1.75), trace very fine sand
				throughout, trace clay inclusions (¼ to 3/4 inch diameter) clay, red (2.5 YR 4/4)
				mildly effervescent, blocky, soft, plastic.
				1.5-2.5': Sand. Red brown (5 YR 4/4), very fine silty, with small (.5 to 1 inch) lense of
				silt, slight to medium stiff (1.75) sandy in part. Sand dense to very dense,
				very moist to wet.
				2.5-5.0': Sand. As above. Very fine silty.
65	70	5	2-3/0-.1	Silt. Red brown (5 YR 5/3) variable clay, trace very fine sand, soft to medium
				stiff (.5 to 1.75) plastic where clay content increases. Isolated clay inclusions,
				red (10 YR 4/6) fissile, stiff (3.0) strongly effervescent.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-52

Prepared by Ted Powell and Pat Bartnick

From	To	Sample/Core Depth (feet below land surface)	Core Recovery (feet)	OVA/OVM	Sample/Core Description
70	75		5	2-25/.1-2.5	0-2.0': Silt. As above.
					2.0-5.0': Silt. Interbedded with clay, beds range from approximately 1/8 to 2
					inch thick, silt; slightly moist, medium effervescent stiff to hard (1.75 to 4) red
					brown (5 YR 4/3) clay, slightly moist, very stiff (3.0) platy to blocky, effervescent,
					slightly plastic, dark red (10 R 3/6). Silt breaks along thin bedding planes of
					very fine to fine sand. At 4 feet a thin 1/8 inch lense of sand, red brown (5 YR 4/4)
					medium to coarse, trace very coarse, and fine, loose, poorly sorted.
75	80		5	>10,000/	Sand. Red brown (5 YR 5/3) very fine, with silt, moderately well sorted, dense,
				0-.2	very moist to wet, gas bubbles (vesicles), several approximate 1 inch thick silt
					lenses, brown (7.5 YR 5/3) silt contains trace to some very fine sand, at center of
					silt lenses is very thin (<1 mm) clay seam.
80	85		5	>10,000/0	Sand. As above. Very fine, with silt lenses at .5, 1.5, 4, and 4.5 to 5 feet. Silt,
					brown (7.5 YR 5/3) medium stiff (2.75), trace very fine sand, at 1.5 feet silt
					contains clay lense, red brown (2.5 YR 5/3) mildly effervescent, soft, plastic.
					Collect GM-52/82 for treatable
85	95		5	1,000-6,000/	0-1.0': Sand. Brown (7.5 YR 4/3) medium, trace coarse and fine, moderately
				0-0.5	well sorted, medium dense, saturated. Gravel at basal contest with lower
					unit, 1 to 2 inch, angular to subangular.
					1.0-2.5': Sand. Brown (7.5 YR 4/3) medium, some fine, trace coarse and very
					coarse, moderate sorting, saturated, dense.
					2.5-5.0': Sand. Brown (7.5 YR 4/3), very coarse with coarse, some medium and
					fine with gravel, 1/8 to 1 inch subrounded to subangular, very poorly sorted,
					saturated, dense.
					TD at 95 feet bgs 15:40
					Set screen 75 to 95.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-53B A/B Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10/13/98 Drilling Completed 10/13/98

Total Depth Drilled 205 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic

Length and Diameter of Coring Device 10" x 4' Sampling Interval cont. feet

Land-Surface Elev. 1103.83 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Scott

Prepared By Ray Flynn and Pat Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydrualic Pressure or Blows per 6 Inches	Sample/Core Description
0	175			Blind drill. Refer to log for GMSB-17 for lithology.
175	180	5	15-2,500/	0-1.0": Silt. Reddish brown (5 YR 4/4) sandy (very fine) nonplastic.
			0-0	1.0-5.0": Sand. Reddish brown (5 YR 4/4) very fine silt, silty layer at 3 to 3.5 feet.
180	185	5	200-8,000/	0-1.0": Sand. As above.
			0-0	1.0-3.0": Sand. Light brown (7.5 YR 6/3) medium to very fine silty, wet.
				3.0-5.0": Silt. Reddish brown (5 YR 4/4) compact sandy.
185	190	5	45-1,250/	0-1.0": Sand. Reddish brown (5 YR 4/4) fine, silty, wet.
			0-0	1.0-5.0": Silt. Red brown (5 YR 4/4) trace very fine sand, trace clay inclusions reddish
				brown (2.5 YR 4/4) moderate to weak reaction with HCl laminated, dry.
190	195	5	1,000-	0-1.0": Silt. As above.
			3,000/0-0.2	1.0-5.0": Interbedded Sands and Silts. Sands light gray (10 YR 7/2), coarse to medium.
				Silt light brown (2.5 YR 5/4) fine sand. Sand coarse to medium 1 to 2. Silt and fine
				and between 2 to 5. Silt HP 1.0. Stop drilling at 14:00 rig problems.
195	205	6	20-	0-6.0": Sand. Brown (7.5 YR 5/2) brown, trace to some fine sand, loose, very well
			>10,000/0-0	sorted, no HCl reaction.
				End of hole 205 feet bgs.
				GM-53A Total Depth 95 ft
				GM-53B Total Depth 205 ft

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-54 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 9/26/98 7:15 Drilling Completed 9/26/98 14:00

Total Depth Drilled 115 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1126.88 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Weeks Helper Mike

Prepared By Bruce Evans and Bryan Zinda Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	5	4	2.5-20/	0-0.5": Soil/Grass Roots/Silt. Dry.
			28-13.2	0.5-1.0": Silt. Light yellow brown (10 YR 6/4) with trace fine to coarse gravel
				subangular to subrounded, roots, dry.
				1.0-2.0": Sand. Brown (7.5 YR 5/3) fine to medium sand with some fine to medium
				gravel subangular to subrounded, moderately sorted, dry.
				2.0-4.0": Silt. Yellowish brown (10 YR 5/6), moist.
5	10	4	2.5-18/	0-2.0": Sand/Gravel. Yellow brown (10 YR 5/6) fine to coarse sand with fine to
			0-4.0	medium gravel, subangular to subrounded, poorly sorted, moist.
				2.0-4.0": Sand/Gravel. Brown (10 YR 5/3), as above.
10	15	4	3.5-4.5/	0-1.0": Sand. Dark yellow brown (10 YR 4/4) fine to medium grain, some silt,
			1.8-2.2	some fine to coarse gravel, subangular to subrounded, moderately sorted, dry.
				1.0-3.0": Sand. Yellowish brown (10 YR 5/6), fine grain, well sorted, moist.
				3.0-4.0": Sand. Yellowish brown (10 YR 5/6) fine to medium grain, some
				coarse and trace coarse gravel, subangular to subrounded, moderately sorted,
				moist.
15	20	5	2.5-10/	0-2.0": Sand/Gravel. Brown (7.5 YR 5/3) fine to medium sand with fine to
			2.9-4.1	coarse gravel, subangular to subrounded, trace silt, very poorly sorted, moist.
				2.0-5.0": Clay. Reddish brown (5 YR 5/3) plastic yet very firm (petrometer = >4.0)
				fissile appearance on broken surface, trace very fine silt laminations. Silt brown
				(7.5 YR 4/3), moist strong HCl acid reaction in clay.
20	22	2	2.5/4.4-4.8	Clay. As above.
22	25	3	4-8.5/6.0-9.4	0-3.0": Silt. Brown (7.5 Y 4/3) very sandy to grading to silty very fine grain sand,
				slight HCl acid reaction, trace clay seam (2 inch) at 2.7 clay as above, very moist,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-54

Prepared by Bruce Evans and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				silt.
25	30	5	3-8/11-12.8	0-0.5": Silt. As above, very sandy.
				0.5-5.0": Clay. Reddish brown (5 YR 5/3) very fine (petrometer >4.0), fissile on
				broken surfaces, plastic, with silt laminations, micron sized silt. Brown (7.5 YR 5/2)
				strong HCl reaction in clay, slight HCl reaction in silt, moist.
30	35	5	6-45/NA	Sand. Light brown (7.5 YR 6/4) very fine grain, trace silt, well sorted, moist.
35	40	5	5-19/NA	0-2.0": Sand. As above, very fine grained.
				2.0-5.0": Sand. Brown (7.5 YR 5/4) very fine to fine grain, well sorted, loose,
				dry to moist.
40	45	5	2.5-3.5/NA	0-1.0": Silt. Brown (7.5 YR 4/4) sandy, moist.
				1.0-5.0": Sand. Brown (7.5 YR 4/4) very fine grain, very silty, well sorted, moist
				to wet.
45	50	5	3-14/NA	Silt/Sand. Brown (7.5 YR 4/4), very fine grain sand, silty, well sorted, interbedded
				with sandy silt. 0.5 to 1.0 foot beds, wet, petrometer 0.5 to 1.5, slight HCl
				reaction.
50	55	5	3.5-15/NA	0-3.0": Silt. Brown (7.5 YR 4/4), trace very fine grain sand, moist to wet.
				3.0-3.5": Clay/Silt. Brown (7.5 YR 5/3) finely laminated silt/clay, brittle, dry,
				petrometer >4, strong acid reaction.
				3.5-5.0": Silt. Dark brown (7.5 YR 3/3) trace clay in matrix, petrometer = 1,
				slight HCl reaction, wet.
55	60	5	2-2.5/NA	0-5.0": Silt. Brown (7.5 YR 4/3), trace clay, very slight plastic, slight HCl
				reaction.
60	65	5	2.5-3/NA	0-5.0": Silt/Sand. Silt. Reddish brown (2.5 YR 5/3) as above, laminated and finely
				interbedded with very fine grain, well sorted sand.
65	70	5	2.5-3/NA	0-5.0": Sand. Brown (7.5 YR 4/3) very fine grain, very silty, well sorted, some
				thin silt beds <0.5 feet, as above. Wet, petrometer = 0.5. No HCl reaction.
70	75	5	3-4.5/NA	0-1.0": Silt. Brown (7.5 YR 4/2) very sandy wet, very fine grain sand, petrometer
				0.5 to 1.0, wet.
				1.0-1.3": Sand. Brown (7.5 YR 4/2) medium grain, well sorted, loose, wet.
				1.3-5.0": Silt. Brown (7.5 YR 4/2) some very fine grain sand in beds. 0.5 to 1 foot

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-54

Prepared by Bruce Evans and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
				thick, petrometer 0.5 to 1.0, no HCl reaction, wet.
75	80	5	40-	0-5.0": Silt. Brown (7.5 YR 4/3) some very fine grain sand, trace clay reddish
			>10,000/NA	brown (2.5 YR 5/3) below 3 in thin bands and inclusions, fissile looking, plastic,
				strong HCl reaction, petrometer 0.5 in silt, no acid reaction.
80	85	5	8000-	0-1.0": Silt. As above, with clay.
			>10,000/NA	1.0-5.0": Sand. Brown (7.5 YR 5/3) fine to medium grain, trace coarse, moderate
				sorted at 4.0 bands silt as above, very hard, wet.
85	90	5	700-2000/	0-2.0": Sand. Brown (7.5 YR 5/3) medium grained well sorted, loose, trace
			NA	coarse gravel at 0 to 0.2, wet.
				2.0-5.0": Sand. Dark grey (7.5 YR 4/1) fine grain, well sorted, wet.
90	95	5	600-3000/	0-4.0": Sand. Dark grey, as above, 1 inch silt seam at 2.5, wet.
			NA	4.0-4.5": Sand. Dark grey brown (10 YR 4/2) very fine grain, well sorted.
				4.5-5.0": Silt. Brown (7.5 YR 5/3), trace very fine grain sand, trace clay,
				petrometer = 1.0, no acid reaction.
95	100	5	9-40/NA	0-5.0": Sand. Brown (7.5 YR 5/3) fine grain, well sorted, trace silt, wet.
100	105	5	8-30/NA	0-5.0": Sand. Brown (7.5 YR 5/3) very fine to fine grain well sorted, trace silt, at
				4.0 2 inch band of dark yellowish brown staining (10 YR 3/6).
105	110	5	7-11/NA	Sand. Brown (7.5 YR 5/2) very fine to fine grain, well sorted, wet.
110	115	5	30-375/NA	0-2.0": Sand. As above.
				2.0-3.0": Silt. Brown (7.5 YR 5/2) sandy with very fine grain sand, wet.
				3.0-4.5": Sand. Brown (7.5 YR 5/2) fine to medium grain moderate sorted,
				abundant black grains, wet.
				4.5-5.0": Sand. Brown (7.5 YR 5/3) very fine grain silty, well sorted, wet.
				14:00 End borehole at 115 feet.
				Prep to set well screen 80 to 90 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/We GM-55 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/26/98 Drilling Completed 9/26/98

Total Depth Drilled 95 Feet Hole Diameter 4 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1126.68 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Brian

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	6-15/0-0.6	0-1.0': Silt. Dark yellow brown (10 YR 4/4) trace gravel, trace sand, rootlets, dry.
				1.0-2.5': Silt. Dark brown (10 YR 3/3), sandy (fine to very fine), some gravel, 2 mm to
				20 mm, subrounded.
				2.5-4.0': Sand. Strong brown (7.5 YR 4/1) medium to very fine, silty, trace fine
				gravel, dry.
				4.0-5.0': Silt. Dark red brown (5 YR 3/1) sandy (very fine) trace gravel, subrounded.
5	10	5	4.5-200/	0-1.0': Slough.
			0.1-4.4	1.0-2.0': Sand. Strong brown (7.5 YR 4/6) medium to very fine, silty, cohesive, damp,
				trace fine gravel, subrounded.
				2.0-3.0': Loam. Very dark brown (10 YR 2/2) silty clay, rootlets with gravel (2 mm to 40
				mm) subrounded (topsoil horizon) damp.
				3.0-4.0': Sand. Yellow brown (10 YR 5/6) medium to fine trace silt, well sorted, dry.
				4.0-5.0': Silt. Dark brown (10 YR 3/3) sandy, fine to very fine, trace fine gravel, rootlets,
				dry to moist.
10	15	5	4.5-15/	0-0.5': Sand. Strong brown (7.5 YR 4/1) medium to fine, silty, trace fine gravel.
			0-0.5	0.5-2.5': Sand. Brown (7.5 YR 5/2) very coarse to very fine, silty, very poorly sorted,
				gravelly (2 mm to 3 inch), subrounded.
				2.5-3.5': Sand. Brown (7.5 YR 3/3) very coarse to very fine, silty, gravelly (2 mm to 2 inch)
				subrounded, very poorly sorted, moist.
				3.5-5.0': Sand. Dark yellow brown (10 YR 4/4) very coarse to very fine, silty, gravelly
				(2 mm to 1.5 inch), subrounded, dry.
15	20	5	15-125/	0-0.5': Sand. As above.
			2.9-21.6	0.5-1.0': Silt. Very dark brown (10 YR 2/2), sandy (fine to very fine), trace clay, mildly
				cohesive rootlets (topsoil - like).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-55 Page 2 of 3

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1.0-1.5': Sand. Brown (7.5 YR 4/3), coarse to very fine, silty, gravely (2mm to 20 mm),
				subrounded, dry.
				1.5-5.0': Sand. Brown (7.5 YR 5/4) very coarse to very fine, silty, some gravel (2 mm to 40
				mm), subrounded.
20	25	5	8-75/	0-1.0': Sand. As above.
			0.8-9.1	1.0-1.5': Sand. Light red brown (5 YR 6/4), very fine, silty, dry, very well sorted.
				1.5-2.0': Silt. Brown (7.5 YR 4/2) to red brown (5 YR 4/4), blocky, dry, HP = 2.5.
				2.0-4.5': Sand. Light red brown (5 YR 6/4) very fine, silty very well sorted, dry.
				4.5-5.0': Sand. Red brown (2.5 YR 4/3), very fine, silt to trace silt, dry.
25	30	5	40-200/	0-1.5': Sand. As above.
			25-106	1.5-5.0': Sand. As above, but silt content ranges from trace to some at 4.5 to 5.0.
30	35	5	8-150/	0-5.0': Sand. As above, silt ranges from trace to some at 2 to 3 and 4 to 5 feet.
			1-40	
35	40	5	2-35/0-0	0-5.0': Silt. Reddish brown (5 YR 4/4), trace very fine sand, compact. HP = 1.0. No
				reaction with HCl, dry to damp.
40	45	5	3-40/0-0	0-3.5': Silt. Reddish brown (5 YR 4/4) variable amount of very fine sand (from trace to
				some), loose to firm.
				3.5-5.0': Silt. Dark reddish brown (5 YR 3/2) compact, dry.
45	50	5	2-2.5/0-0	0-5.0': Silt. Dark brown (7.5 YR 3/4) to red (2.5 YR 4/6) as above, but with clay inclusions,
				inclusions occur as lamine and inclusions. Moderate reaction with HCl, HP = 3.5 dense,
				compact.
50	55	5	2-6/0-0	0-4.0': Silt. As above.
				4.0-5.0': Silt. Brown (10 YR 4/3), trace very fine sand, blocky, HP = 1.5, sand also occurs
				as laminae.
55	60	5	1.5-2.5/0-0	0-1.0': Silt. As above.
				1.0-5.0': Silt. Reddish brown (5 YR 4/4), trace very fine sand, compact, HP = 1.5, no
				reaction with HCl. With clay laminae and inclusions: Ranges from dark brown
				(7.5 YR 3/4) to red (2.5 YR 4/6) mild to strong reaction with HCl, HP = 2.0.
60	65		1.5-3/0-0	0-5.0': Silt. As above.
65	70			No recovery.
70	75			No recovery.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-55 Page 3 of 3

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
75	80	5	600-2,500/	0-5.0': Silt. As above.
			0-0	
80	85	5	5,000-	0-0.5': Silt. As above.
			10,000/	0.5-3.0': Sand. Light brown (7.5 YR 6/4) medium to fine, trace coarse, trace gravel
			0-0.2	(2 mm to 40 mm), subrounded, appears dry.
				3.0-4.0': Sand. Brown (7.5 YR 5/4) coarse to medium, some very coarse to fine gravel
				(2 mm to 10 mm), subrounded, dry.
				4.0-5.0': Sand. Greyish brown (10 YR 5/2) very coarse to very fine, silty, gravelly (2 mm to
				35 mm) subangular to subrounded. Gravel has calcite cement on it, strong reaction
				with HCl, dry.
85	90	5	3.5-10/	0-5.0': Silt. Brown (5 YR 4/4) trace clay, compact, HP = 1.5 sand lens (medium to fine
			0-0.3	reddish brown (5 YR 4/3) at 1 foot.
90	95	5	2.5-50/	0-2.0': Silt. As above.
			0-0.3	2.0-2.5': Silt. Brown (5 YR 4/4) gravelly (2 mm to 20 mm) angular to subrounded,
				grades downward to
				2.5-3.5': Sand. Dark reddish brown (5 YR 3/4), silt, clay, gravel, wet.
				3.5-3.8': Silt. Reddish brown (5 YR 4/4), dense, compact, HP = 3.0.
				3.8-5.0': Sand. Dark brown (7.5 YR 3/4) medium to fine, trace very fine, well sorted,
				wet.
				End of boring at 95 feet

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-56 Project/No. WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/28/98 Drilling Completed 9/28/98

Total Depth Drilled 65 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotasonic corebarrel

Length and Diameter of Coring Device 10' x 4' Sampling Interval continuous feet

Land-Surface Elev. 1118.56 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bryan

Prepared By Bruce Evans and Bryan Zinda Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	2-10/0.0	0.0-0.3': Silt/Soil/Grass/Rootlets. Organic material, dark brown, dry.
				0.3-4.0': Silt. Brownish yellow (10 YR 6/6) loose, dry, trace rootlets.
				4.0-5.0': Sand. Brownish yellow (10 YR 6/6) fine to coarse gravel, trace
				medium to coarse gravel, subanuglar to subrounded, very poorly sorted, loose,
				dry.
5	10	5	2-15/0.0	0-2.5': Sand. Brownish yellow (10 YR 6/8) medium to coarse grain, trace
				fine to coarse gravel, moderately sorted, loose, moist.
				2.5-5.0': Sand. Yellowish brown (10 YR 5/6) coarse grain, some fine to coarse
				gravel subangular to subrounded, well sorted, loose, moist.
10	15	5	2-20/0-0.4	0.0-2.0': Sand. Light yellowish brown (10 YR 6/4) medium to coarse grain,
				some fine to coarse gravel, trace cobbles to 2.5 in diameter. Subangular to
				subrounded, moderately sorted, loose, moist.
				2.0-2.5': Sand. Pale brown (10 YR 6/3) fine grain well sorted, loose, moist.
				2.5-5.0': Sand. Yellowish brown (10 YR 6/4) fine to coarse grain, trace fine to
				medium gravel, subangular to subrounded, very poorly sorted, loose, moist.
15	20	5	2.5-4/0-0.6	Sand. Light yellowish brown (10 YR 6/4) fine to medium grain, trace fine gravel,
				subangular to subrounded, moderately sorted, loose, moist.
20	25			No recovery.
25	30	5	6-70/10.3-	Sand. Light brown (2.5 YR 6/4) fine to medium grain, trace coarse, trace silt,
			32.5	trace fine to coarse gravel, moderately sorted, loose, moist.
30	35	1.5	3-50/3-8	Sand. As above, 0.5 inch silt seam at 1.0 foot.
35	40	5	2-20/.9-2.6	0.0-1.0': Sand. As above.
				1.0-5.0': Sand. Light brown (7.5 YR 6/4) medium to very coarse grain, some
				fine to medium gravel subanglar to subrounded, poorly sorted, loose, very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-56 Page 2 of 2

Prepared by Bruce Evans and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				moist to wet.
40	45			No recovery.
45	50	5	2.5-3/0	0.0-1.0': Sand. Brown (7.5 YR 5/3) very fine grain silty, well sorted, loose, wet.
				1.0-4.0': Sand. Brown (7.5 YR 5/3) very fine grain well sorted, wet.
				4.0-4.5': Sand. Brown (7.5 YR 5/3) fine grain well sorted, loose, wet.
				4.5-5.0': Sand. Brown (7.5 YR 5/3) very fine grain, very silty, well sorted, loose,
				wet.
50	55	5	3-5.5/0-0.8	0.0-1.0': Sand. Very fine grain to silty, as above.
				1.0-4.5': Sand. Brown (7.5 YR 5/3) trace grain, some very fine grain, well
				sorted, trace fine gravel, loose, wet, gravel in a seam at 4.3 feet, fine to coarse,
				subangular to subrounded.
				4.5-5.0': Sand. Brown (7.5 YR 5/3) very fine grain, very silty, well sorted,
				slightly firm, wet.
55	60	5	2.5-3/0	0.0-1.0': Sand. Brown (7.5 YR 5/3) very fine to fine grain, silty, some clay, some
				coarse sand, moderately sorted, wet.
				1.0-4.0': Sand/Silt. Brown (7.5 YR 5/3) alternating bands of silt and sand in
				units 2 to 5 inches thick, sand very fine to fine grain. Silt has some clay,
				petrometer 1 to 2, slight HCl reaction.
60	65	5	2.5-3.5/0	Sand/Silt. Interbedded as above, some fine to medium gravel, predominately
				subangular black chips, also subrounded, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-57 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Startec 10/26/98 Drilling Completed 10/26/98

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10" x 4' Sampling Interval Continuous feet

Land-Surface Elev. 1130.81 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Scott

Prepared By Ted Powell and Bryan Zinda Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	3	5.5/0	0.0-0.5': Topsoil, roots, grass.
				0.5-3.0': Sand. Thin brown (10 YR 5/6), medium, some coarse, very coarse, and fine,
				trace very fine, slightly moist, loose, moderate sorting, trace (10 percent) gravel 1/8 to
				1 inch, subrounded.
5	10	1.5	6/0	Sand and Gravel. Color as above, medium, some coarse, very coarse and fine, trace very
				fine and silt, loose, slightly moist, gravel ¼ to 4 inches, subrounded, large gravel,
				blocking recovery.
10	15	4	6.5/0-.9	0.0-1.0': Sand. Some gravel, sand as above.
				1.0-4.0': Sand. Yellow brown (10 YR 5/8), medium, some coarse, very coarse, trace
				fine and very fine, loose, moist, moderate to poorly sorted, gravel 1/8 to 1 inch,
				subrounded to angular.
15	23	5	6.5-9/	0.0-1.0': Slough.
			1.8-3.2	1.0-4.0': Sand. Brown (10 YR 5/3), medium with coarse, some very coarse, trace fine and
				very fine, trace (10 percent) gravel, 1/8 to 1 inch, subrounded, poorly sorted, loose, moist.
				4.0-5.0': Sand. Very pale brown (10 YR 7/3), very fine, trace silt, loose, very slightly moist,
				moderate to well sorted.
				At 4 feet a ½ inch thick clay seam, red brown (5 YR 5/4), slight HCl reaction, medium
				stiffness. Clay contains very coarse sand and fine gravel.
23	25	2	4.5-15/0-1.4	Sand. Color as above, very fine, some silt, well sorted, loose, slightly moist.
25	35	5	7-10/0-1.3	Sand. Very fine sand with silt, loose to medium density, color as above, slightly moist,
				moderately well sorted.
35	40	5	2-2.5/0	Sand. Brown (7.5 YR 5/4) as above but saturated, medium to high density.
40	45	5	2-4/0	0.0-2.0': Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-57 Page 2 of 3

Prepared by Ted Powell and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				2.0-5.0': Silt. Brown (7.5 YR 4/4), medium stiffness (2.0), very homogenous, very slightly
				effervescent, trace clay inclusions at 2.1 feet, approximately 1 mm thick, soft, red
				brown (5 YR 5/4).
45	50	5.0	2-4.5/0	Silt. Brown (7.5 YR 4/4) variable very fine sand, trace clay in part, slight HCl reaction,
				moderately stiff to hard (2.4) at .25 to .5 feet and 3 to 3.5 feet, sand lenses, color as above,
				very fine silty, saturated.
50	55	5	2.5-3/0-.1	0-2.5': Silt. Brown (7.5 YR 4/3), some clay, slightly plastic, wet, medium stiffness (1.5 to
				2.25). Several thin 45 mm clay lenses interspersed throughout, red brown (5 YR 4/4),
				soft, fissile, plastic, strong effervescent.
				2.5-5.0': Silt. Color as above, very homogeneous, very stiff to hard. Part clay,
				thinly (2 mm) bedded lenses.
55	60	5	2/0	0-2.5': Silt. Brown (7.5 YR 4/3), with clay inclusions/beds, plastic, soft to
				medium stiffness (1.25 to 1.5). Clay, red brown (5 YR 4/4), fissile, strongly effervescent,
				very stiff (0.3), moderately plastic.
				2.5-5.0': Silt. Color as above, some clay, very stiff (3.5), trace very coarse sand.
60	65	5	2-2.5/0	0-1.5': Silt. As above.
				1.5-5.0': Silt, color as above, occasional thin clay inclusions/beds (2 to 3 mm thick),
				clay as above, variable very fine sand, stiff (2.75) variable clay.
65	70	5	2/0	Silt. Brown (7.5 YR 4/3), trace clay, variable very fine sand, medium stiffness (2 to 2.5), wet
				to saturated. From 3 to 6 feet occasional clay inclusions, red brown (5 YR 4/4), soft,
				fissile, plastic.
70	75	5	2-7/0	Silt. As above, moderately stiff to hard (1.5 to 3). Occasional clay beds
				interspersed throughout, red brown (5 YR 4/3) , 1 to 3 inch thick, hard (>4), fissile to blocky,
				nonplastic, dry, to slightly moist.
75	80	5	250-3,500/	0.0-1.0': Silt. As above.
			0	1.0-4.0': Sand. Brown (7.5 YR 5/3) fine, coarse to medium, some very fine, trace
				coarse, very coarse and silt, trace fine gravel, very poorly sorted, occasional sandy silt
				nodules 1 to 2 inch diameter weakly cemented with calcite cement. Moderately dense to
				loose, very moist at top to wet at base.
				4.0-5.0': Sand. Medium to coarse, some very coarse and fine, trace very fine and silt,
				some gravel 1/8 to 1.5 inches, round to subangular, very poorly sorted, medium density,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-57 Page 3 of 3

Prepared by Ted Powell and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				saturated.
80	85			No recovery.
85	90	5	250-4,500/	0.0-4.0': Sand. Light brown (7.5 YR 6/4), fine to medium with coarse, some very fine and
			0	silt, trace coarse at top grading to coarse. Some very coarse, trace medium and fine at
				base, very poorly sorted at top to medium sorting at base, medium density, saturated,
				trace gravel throughout 1/8 to ¼ inch, subrounded to subangular.
				4.0-5.0': Sand. Light brown (7.5 YR 6/3), medium, some fine, trace coarse, medium
				sorting, medium density.
90	95	5	15-3,750/0	0-0.5': Sand and Gravel. Color as above. Sand: fine to very coarse, some very fine, and silt,
				very poorly sorted. Gravel: 1/8 to 3 inches subrounded to angular.
				0.5-5.0': Silt. Red brown (5 YR 5/3) with clay, moderately plastic to plastic, moderately
				effervescent, soft to medium stiffness (1 to 2.5). Clay lens at 4.5 feet (2 inches thick),
				color as above, fissile, non to slightly plastic.
				TD at 95 ft bls.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-58 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 10/27/98 Drilling Completed 10/27/98

Total Depth Drilled 95 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1130.90 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Scott

Prepared By Ted Powell and KevinDaleness Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	3.5	2-4/0-5.3	0-0.5": Top Soil. Silty sand loam with gravel, roots, grass, "A horizon" very moist.
				0.5-1.0": Sand. Strong brown (7.5 YR 4/6), medium, some fine, trace coarse and very coarse, poorly sorted, loose, very moist.
				1.0-2.0": Sand/Gravel. Dark brown (7.5 YR 3/4). Sand: medium with coarse, some very coarse and fine, trace silt, very poorly sorted, loose, moist. Gravel: 1/8 to 1 inch, subrounded to subangular.
				2.0-3.0": Sand. Dark yellow brown (10 YR 4/6), very fine with fine, trace silt, loose, moderate to well sorted, moist.
				3.0-3.5": Sand and Gravel. Brown (10 YR 4/3), fine to coarse with very coarse, some silt, very poorly sorted, loose, moist. Gravel 1/8 to1.5 inches, subrounded to angular.
5	10	5	2-3/0-5.7	0.0-2.0": Slough
				2.0-3.5": Sand. Brown (7.5 YR 5/4), small gravel, medium with coarse some fine and very coarse, trace very fine and silt, very poorly sorted, loose, moist.
				3.5-5.0": Sand. Light brown (7.5 YR 6/4), medium with coarse, some very coarse gradational to medium with fine, trace very fine moderate to well sorted at base, loose, moist.
10	15	5	2.3-9/0-4.1	0.0-1.0": Slough.
				1.0-1.5": Sand. Light brown (7.5 YR 6/4), medium with fine, trace coarse and very coarse, trace fine gravel, moderate sorting, loose, moist.
				1.5-2.5': Gravel. Olive brown (2.5 Y 4/3) with sand. Gravel: 1/8 to 4 inches, subrounded to angular, abundant pulverized rock from drilling. Sand: fine to

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-58 Page 2 of 4

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				medium with coarse and very coarse, some silt, very poorly sorted, loose, moist.
				2.5-3.5': Sand. Red brown (5 YR 5/4), fine, trace very fine, well sorted, loose,
				moist.
				3.5-5.0': Sand. Color as above, very fine, some silt, moderate well sorted, loose
				to moderate, loose to moderate density, moist.
15	21	5	2.5-7/	0.0-3.0': Sand. As above.
			0-14.3	3.0-5.0': Sand. Light red brown (5 YR 6/4), very fine, trace silt, well sorted, loose
				to moderate density, moist.
21	25	4	3-15/0-4.4	Sand. Color as above, very fine, trace to some silt, moderate to well sorted, loose
				to moderate density, slightly moist to moist.
25	30	5	3-20/0-22.9	Sand. As above but very moist.
30	35	5	1.5-13.5/0	Sand. Red brown (5 YR 4/4), very fine, trace some silt variable, moderately dense,
				wet to saturated, moderate to well sorted.
35	40	5	1.5-2/0	Sand. Red brown (5 YR 4/4) as above.
40	45	5	2-2.5/0	0.0-3.9': Sand. As above, increasing silt toward base.
				3.9-5.0': Silt. Red brown (5 YR 4/3), trace very fine sand, finely homogenous,
				soft to moderately stiff (1.5 to 2) saturated, very slightly effervescent.
45	50	5	1.5/0	Silt. Dark red brown (5 YR 3/3), trace clay, stiff to very stiff (3.25 to 3.75), slightly
				plastic, abundant clay inclusions from 0 to 11 feet, red brown (2.5 YR 4/4), very
				stiff (3.5 feet) fissile, strongly effervescent.
50	55	5	1.5-2.5/0	Silt. As above, fine 3 to 3.5 feet, very sandy, fine, wet. Silt: slightly
				effervescent.
55	60	5	1.5/0	0.0-1.5': Silt. Yellow red (5 YR 4/6) with clay. Moderately stiff to stiff (1.75 to 3.25)
				moderately plastic, several clay inclusions, dark red (2.5 YR 3/6), soft (.75), plastic,
				moderately effervescent.
				1.5-5.0': Silt. Dark red grey (5 YR 4/2), some clay, moderately stiff (1.5 to 2.5),
				saturated, trace clay inclusions, red brown (2.5 YR 4/4), moderately stiff (1.75)
				platy, strongly effervescent.
60	65	5	1.5-2/0	Silt. Color as above, trace to some very fine sand, some clay, moderately stiff,
				occasional thin 2 to 3 mm clay seams. Clay, as above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-58 Page 3 of 4

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
65	70	5	1.5-2.5/0	1.0-4.0': Silt. Dark red gray (5 YR 4/2), some clay, variable very fine sand (trace to some), wet, medium stiffness, trace clay inclusions (¼ to ½ inch diameter). Clay, as above 4.0-5.0': Thickly Bedded Sand and Silt/Clay. Sand: Brown (7.5 YR 5/3), medium, some coarse and fine, trace very coarse and very fine, poorly sorted, saturated, loose. Clay: very dark brown (7.5 YR 2.5/3), strongly effervescent, fissile, stiff. Silt, as above.
70	75	5	2-550/0	0.0-4.0': Silt and Clay. Medium bedded (30 - 100 cm) silt; some to abundant clay: color as above, moderately plastic, stiff to hard (3.5 to >4). Trace to some very fine sand. Clay: color as above, platy, dry, nonplastic, strongly effervescent. 4.0-4.25': Sand. Strong brown (7.5 YR 4/6), very fine, silty, medium density, saturated, medium sorting. 4.25 to 5.0': Silt with clay incisions. Silt, strong brown (7.5 YR 4/6), trace to some clay, clayey in part, variable very fine sand, trace to sandy, soft to medium stiffness (1.0 to 1.5). Clay: Dark red (2.5 YR 3/6), very stiff (3.75), platy, moist, strongly effervescent.
75	85	5.5	>10,000/0	0.0-2.0': Sand. Light brown (7.5 YR 6/4), medium, trace fine, very well sorted, moist, loose. 2.0-4.0': Sand. Brown (7.5 YR 5/4), as above but wet to saturated. 4.0-5.5': Gravel. Sand, trace clay, apparent till, matrix supported, dark red brown (5 YR 7/2). Gravel 1/8 to 3 inches, subrounded to angular, igneous and metamophics. Sand: medium to very coarse, some fine and very fine, variable silt. Very poorly sorted, weakly cemented, very slightly effervescent.
85	90	5	3-10/0	0.0-1.5': Sand. Brown (7.5 YR 4/2), coarse, some very coarse and medium, trace fine and very fine, some gravel 1/8 to 1 inch, subrounded to subangular, very poorly sorted, medium density, saturated. 1.5-3.5': Sand. Strong brown (7.5 YR 4/6), medium, some fine, trace coarse and very fine, moderate sorting, medium density. 3.5-5.0': Silt. Red brown (5 YR 4/4), some clay, moderately stiff (2.0), moderately plastic. Some clay inclusions, red brown (5 YR 4/4), soft (0.75), plastic.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-58

Prepared by Ted Powell and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
90	95	0.5	3-5/0	0.0-1.0': Silt. As above.
				1.0-1.5': Sand. Strong brown (7.5 YR 4/6), fine, some medium and very fine,
				trace silt, moderate sorting, moderately dense to dense.
				1.5-2.0': Silt. Red brown (5 YR 4/3), some very fine sand, soft to moderate
				stiffness, saturated.
				2.0-3.5': Sand. Brown (7.5 YR 4/3), very fine to fine, with silt, moderate sorting,
				dense.
				3.5-4.0': Silt. As above.
				4.0-5.0': Sand. Brown (10 YR 4/3), medium, some fine, trace coarse, very coarse,
				with silt, dense, poorly sorted, saturated.
				TD 95 ft

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-59 Project/No. WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/6/1998 Drilling Completed 11/7/98

Total Depth Drilled 125 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1129.97 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Scott

Prepared By Kevin Daleness and Keith Marquardt Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	125	NA	NA	Blind drilled. See sample/core log of GMSB-25 for description.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-60 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 11/8/98 Drilling Completed 11/8/98

Total Depth Drilled 121 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1191.33 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Bubba

Prepared By Ted Powell and Keith Marquardt Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
0	5	4	10-10,000/	0.0-0.6': Sand. Red brown (5 YR 4/4) with gravel. Sand: fine to medium, with
			0	silt, some coarse and very coarse, moist, loose, gravel 1/8 to 2 inch, subrounded
				to subangular.
				0.6-1.5': Sand. Very dark brown (7.5 YR 2.5/2), medium with fine, some coarse,
				poorly sorted, loose, moist, some gravel 1/8 to 1 inch, subrounded.
				1.5-2.0': Sand. Color as from 0.0-0.6 with gravel. Sand: medium to coarse, some
				very coarse, some fine and silt. Very poorly sorted, loose, slightly moist. Gravel:
				1/8 to 2 inch, subrounded.
				2.0-2.8': Silt. Brown (7.5 YR 4/3), sandy, fine to medium, wet, soft (0.5).
				2.8-4.0': Sand. Red brown (5 YR 5/4), fine to medium, trace coarse and very
				coarse, loose, very moist, poorly sorted, gravel 1/8 to 3/4 inch, subrounded.
5	10	3	300-1,500/	0.0-0.5': Slough.
			0-16	0.5-1.5': Sand. Red brown (2.5 YR 4/4), fine to medium, some very fine, trace
				coarse and very coarse, very poorly sorted, loose, moist with gravel, 1/8 to 3 inch,
				subangular to angular.
				1.5-3.0': Sand. Red (2.5 YR 5/6), fine with very fine, some silt, very silty in part,
				trace coarse and very coarse, poorly sorted, loose to medium density, with gravel
				1/8 to 3 inch, subrounded to angular.
10	15	5	60-100/	0.0-3.5': Sand. With gravel, as above.
			0-1.3	3.5-5.0': Sand. Color as above, fine, some very fine and medium, trace silt, trace
				coarse, moderate sorting, slightly moist to moist, loose, trace to 10 percent gravel,
				(1/8 to ½ inch), subrounded to angular.
15	20	4	100-100/	Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-60 Page 2 of 5

Prepared by Ted Powell and Keith Marquardt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
			0.6-2.8	
20	25	4	150-6,000/	Sand. Color as above, fine, some medium, some very fine, moderate to well sorted,
			2.2-35/35	moist, trace gravel (1/8 to ¼ inch), subrounded, loose to medium density.
25	30	3	50-300/	Sand. As above, collect soil sample GMSB-26/30 for TOC, VOC, SVOCs and PCBs.
			0-5.5	
30	35	4	300-2,000/	Sand. As above.
			0	
35	40	5	50-300/0	0.0-1.0': Sand. As above, very moist.
				1.0-3.5': Sand. Red brown (5 YR 4/3), very silty. Trace of fine gravel. Sand: fine, some
				medium, trace coarse, poorly sorted,?????? to very sandy, silt in part, wet,
				moderately dense.
				3.5-4.5': Gravel. Brown (7.5 YR 4/2) with sand. Sand, coarse with medium and
				very coarse, some fine, trace very fine, silt, very poorly sorted, loose, wet to
				saturated, gravel (1/8 to 3 inches), subrounded to angular.
				4.5-5.0': Sand. Yellow red (6 YR 4/6), very fine, trace fine and silt, moderately
				well sorted, very moist, medium density.
40	45	5	100-2,000/	0.0-1.0': Sand. As above.
			0	1.0-3.0': Sand. Red brown (5 YR 5/4), fine, some medium, trace coarse and silt,
				moderate to well sorted, loose, slightly moist.
				3.0-4.0': Sand. Brown (7.5 YR 4/3), medium with fine, some coarse, trace very
				coarse and silt, moderately to poorly sorted, loose, slightly moist, trace clay inclusions
				and very thin lenses (2 to 3 mm), red (2.5 YR 4/6), soft, fissle, moderately effervescent.
				4.0-5.0': Sand. Light red brown (5 YR 6/4), very fine, moist, moderately well
				sorted, loose.
45	50	5	100-1,500/	0.0-1.5': Sand, very silty. Medium bedded with clay, silty sand and sandy silt,
			2.0-67.0	red brown (5 YR 5/4), gradational, sand predominately fine with very
				fine, trace medium, medium density, very moist, moderate sorting, mottled
				with dark gray to black in part. Clay: red (2.5 YR 4/6), fissile, moderately stiff to
				stiff (2.5 to 3.0), moderate reaction, slightly plastic.
				1.5-5.0': Sand. Red yellow (5 YR 6/6), very fine, some silt, dry to slightly moist, well

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-60 Page 3 of 5

Prepared by Ted Powell and Keith Marquardt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
				sorted, loose, several lenses of thinly bedded silt and clay approximately 2 inches
				thick. Clay, as above. Silt red brown (5 YR 5/4), slightly moist, medium stiffness.
50	55	5	150-400/	0.0-3.0': Sand. Pink (5 YR 7/4) as above from 0 to 1, dry loose, slightly moist
			439-101	from 0-2, very fine, well sorted.
				3.0-4.0': Silt. Red brown (5 YR 4/4) with clay (variable), trace to some very fine
				sand, occasional gas vesicles, medium stiffness, moist.
				4.0-5.0': Clay. Red brown (2.5 YR 5/4), trace silt, stiff to hard, strongly
				effervescent, non to slightly plastic, moist.
55	60	5	10-20/	Interbedded silt and clay. Clay, red brown (2.5 YR 5/4), hard, slightly moist, beds
			0-38.2	from 2 mm to 20 mm thick, strongly effervescent. Silt, red brown (5 YR 5/3), stiff,
				slightly moist.
60	65	5	10-22/	0-1.0': Silt and clay, as above.
			23.2-101	1.0-4.0': Sand. Yellow red (5 YR 4/6), very fine to fine, very silty gradational to
				very sandy silt in part, wet to saturated, trace clay lenses and inclusions, thin
				(1 to 3 mm) red brown (2.5 YR 5/4), plastic.
65	70	5	20-1,000/	0.0-2.5': Clay with thin band of silt and grading to silt. Clay: red (2.5 YR 4/6),
			2.7-73	fissile, stiff (3.0) strongly effervescent. Silt: brown (7.5 YR 4/3), homogenous,
				stiff (3.0), very moist.
				2.5-5.0': Sand. Red brown (5 YR 5/4), fine, trace medium, some silt, saturated,
				moderately dense, moderate to well sorted.
70	75	5	1,500-	Interbedded, sand and clay with variable silt. From 0.0 to 2.0 feet thinly bedded
			10,000/26.5	clay (approximately 2 mm) with (1 mm) beds of sand. Pink (7.5 YR 7/4) sand fine
			-33	to medium, trace coarse, dry to slightly moist, loose. Clay: soft, moderately plastic,
				sandy, trace silt, moderately effervescent. From 2 to 5 feet: sand lenses up to 6 inches
				thick, fine to medium some coarse, trace very coarse, silty, very poorly sorted,
				saturated, medium density. Clay as above, but grades to moderate stiffness.
75	80	5	5,000-	Sand. Brown (7.5 YR 5/3) to red gray (5 YR 5/2), very fine with silt, gradational to
			>10,000/	very silty in part, very moist to wet, abundant gas vesicles, loose to medium
			50-700	density, moderate sorting.
80	85	5	>10,000/	Sand. As above, saturated to very moist, very silty, in part gradational to very fine

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-60

Prepared by Ted Powell and Keith Marquardt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
			100-540	sandy silt.
85	90	5	300-5,000/	Sand. Red brown (5 YR 5/4), very fine with silt, moderate to well sorted, wet to saturated
			80-125	at top grading to slight moist at bottom, less silt at bottom, gas vesicles at top of
				section.
90	95	5	300-3,000/	Sand. Color as above, very fine with silt, loose to medium density, very moist,
			85-205	moderate to well sorted.
95	100	5	100-	0.0-3.5': Sand. As above, saturated.
			>10,000/	3.5-5.0': Silt. Red brown (5 YR 5/3), homogenous, stiff to very stiff (3 to 3.5),
			10-33	with very fine sand, wet.
100	105	5	3,000-	0.0-1.0': Silt. As above.
			>10,000/	1.0-1.5': Clay and Silt. Interbedded, 2 to 20 mm thick. Clay: red brown (2.5 YR 4/4),
			41-270	soft (.75), plastic, moderately effervescent, fissile. Silt: brown (7.5 YR 4/4), some
				clay, medium stiffness (2.0), trace very fine sand.
				1.5-2.0': Clay, Silt and Sand. Interbedded. Clay and silt as above. Sand: Dark
				brown (7.5 YR 3/4) medium with fine, some coarse and fine, trace very coarse
				and silt, very poorly sorted, loose, very moist to moist.
				2.0-3.5': Sand with Gravel. Red brown (5 YR 5/3), saturated to wet at top, very
				silty, with medium to coarse grain, gradational to coarse with medium trace very coarse
				sand at approximately 3.0 to 3.5 feet, loose, very moist, gravel 1/8 to 1 inch.
				3.5-5.0': Sand. Pinkish gray (7.5 6/2), small gravel, medium with fine, some coarse
				and very coarse, abundant silt nodules, poorly cemented and effervescent, loose,
				dry to slightly moist, gravel 1/8 to ½ inch, subrounded, very poorly sorted, wet
				at base.
105	110	5	300-3,000/	0.0-2.5': Sand. Brown (7.5 YR 5/4), medium, some fine with trace coarse, trace coarse
			30-202	to very coarse and silt, saturated, medium density, moderate sorting.
				2.5-3.0': Clay. Red brown (2.5 YR 5/4), sandy, fine to medium, some coarse,
				some silt, very soft, moderate plastic, wet.
				3.0-5.0': Till. Matrix supported, silty sandy clay, red brown (2.5 YR 4/4), very
				moist, very poorly sorted, gravel 1/8 to 2 inches, subrounded to angular, abundant
				shale gravel, hard (4.0).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-60

Prepared by Ted Powell and Keith Marquardt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/PID	Sample/Core Description
110	115	5.0	200-2,500/	0.0-4.5': Till. Red brown (5 YR 4/3) at top to dark red (2.5 YR 3/6) at base,
			224-1,724	matrix supported, hard (>4), moist to very moist, very gravely at top gradational to
				iron-rich clay with sand (coarse to very coarse), trace gravel at base, dry.
				4.5-5.0': Boulder. Stuck in core barrel bit, subvertical bedding appears to be
				metamorphous sediments. Bedded meta schist with quartz and jasper. Hardness >7.0.
115	121	6	100-1,000/	Till. Matrix supported. Dark reddish brown (2.5 YR 3/4), iron rich, matrix is sandy
			724	clay, some silt, soft to medium stiffness, plastic, gravel consist of abundant slate
				from ¼ to 3 inch, drilled as if on competent bedrock at 121 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-61 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 7

Site Location Kingsford, Michigan Drilling Started 12/15/98 Drilling Completed 12/16/98

Total Depth Drilled 195 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1209.08 feet [X] Surveyed [ ] Estimated Datum Mean Seal Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Helper Mike and Jim

Prepared By Ted Powell Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	3	4-8/0-0.7	0.0-0.25': Sand. Dark red brown, fine to medium, with roots and leaves, very moist.
				0.25-2.5': Sand. Brown (7.5 YR 4/4), variable silt, sand very fine to fine, some medium,
				trace roots, very moist, loose to moderately dense, some gravel, 1/8 to 2 inch,
				subrounded to subangular.
				2.5-3.0': Sand. Brown (7.5 YR 5/4), fine with medium, trace coarse and very fine,
				some gravel, 1/8 to 3/4 inch, subrounded, loose, dry, moderate to poor sorting.
5	10	5	2-37/0-0.7	0.0-0.5': Slough.
				0.5-2.5': Sand. Strong brown (7.5 YR 5/6), fine, some medium, some silt, trace to
				some gravel, 1/8 to 3 inch, subrounded to angular, loose, moderte sorting.
				2.5-3.0': Sand. Light brown (2.5 YR 6/3), very fine to fine, loose, well sorted.
				3.0-5.0': Sand. Pale brown (10 YR 6/3), with gravel, sand very fine to medium,
				with coarse, some very coarse, some silt, very poorly sorted, loose, dry.
10	15	5	3-8/0.4-3.9	0.0-1.0': Slough.
				1.0-1.5': Sand. With gravel, as above.
				1.5-3.0': Sand. Red brown (2.5 YR 4/4), silty with gravel. Sand fine to medium, trace
				coarse, very silty in part, moderately dense, gravel 1/8 to 1.5 inch, very poorly sorted,
				slightly moist.
				3.0-5.0': Sand. Strong brown (7.5 YR 4/6), fine, trace medium and coarse, some
				very fine, moderately well sorted, loose, slightly moist, trace fine to medium gravel,
				subrounded.
15	20	5	3-8/0-1.3	Sand. Strong brown (7.5 YR 4/6), fine with very fine, trace to some silt, trace medium,
				coarse and very coarse, trace fine gravel, subrounded to subangular, loose to moderately
				dense, very dry, moderate sorting. At 2.5 feet a 4 inch lens of silty very fine sand,
				brown (7.5 YR 5/4), dense, very dry, trace to some fine gravel, moderately to poorly

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-61

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				sorted.
20	25	5	3.5-5/0-0.8	Sand. Strong red brown (5 YR 5/4), fine, some very fine, variable silt (trace to some),
				trace medium and coarse, trace (10 percent) gravel 1/8 to 2inch angular to
				subrounded, poorly sorted, slightly moist, moderately dense.
25	30	5	4-6.5/3.4-	0.0-2.0': Silt. Dark brown (7.5 YR 3/4) sandy, variable to silty sand in part. HP = 2.0-2.5
			1,999	abundant rotten shale gravel in silt.
				2.0-3.0': Sand. Brown (7.5 YR 5/4), very fine, trace silt, loose, dry, well sorted.
				3.0-4.5': Silt. Red brown (5 YT 5/4), sandy, some gravel, slightly moist, sand fine
				with very fine and medium, moderate sorting.
				4.5-5.0': Clay. Red brown (2.5 YR 4/3), trace fine sand, hard (4.0), nonplastic,
				blocky, moderately effervescent.
30	35	4	2.5-5.5/	0.0-2.5': Sand. Red brown (2.5 Y 5/4), with silt, some clay, with gravel, ¼ to 4 inches,
			2.8-6.1	subrounded. Sand fine to medium, with very fine, some silt, some coarse, trace very
				coarse, very poorly sorted, dry to slightly moist. Clay red (10 R 4/6), soft, slightly
				plastic, slight HCl reaction.
				2.5-4.0': Sand. Brown (7.5 YR 5/4), fine with very fine, trace silt, trace fine gravel,
				moderately well sorted, loose, slightly moist.
35	40	5	8-45/1,999	Sand. Red brown (5 YR 4/4), predominately fine with medium, trace to some very fine,
				trace silt, occasional sandy silt lenses 0-2 inch thick, dense, moist, trace fine gravel
				and very coarse sand. Variable gravel interspersed throughout, 1/8 to 3 inches,
				subrounded to angular, abundant weathered shale chips in part, very poorly sorted,
				loose to moderately dense.
40	45	5	4-9.5/1,999	Sand. With occasional silt lenses, variable gravel as above. At 4.8 feet a 1 inch thick clay
				lens, thinly laminated with very thin silt layers. Clay, red brown (2.5 YR 4/4), hard,
				(4.0), slight HCl reaction.
45	50	5	7.5-40/2.7-	0.0-1.0': Silt. Red brown (2.5 YR 4/4), trace fine sand, some clay, soft (1.25), very
			1,999	moist, effervescent where clay content increases, trace weathered shale.
				1.0-3.0': Sand. Brown (7.5 YR 5/3), very fine to fine, trace silt, moderately well sorted,
				moderately dense, slightly moist.
				3.0-5.0': Silt. Red brown (5 YR 5/4), with very fine to fine sand, soft (1.0), very moist,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-61

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				very slight HCl reaction, some gas vesicles.
50	55	5	3.5-9/1,999	0.0-1.0': Sand. Very fine, silty, color as above, dense, moderately well sorted.
				1.0-2.0': Sand. Brown (7.5 YR 5/4) fine, some very fine, trace silt, dry. 1 to 1.5, moist
				1.5 to 2, well sorted, loose to moderately dense.
				2.0-3.0': Silt. Brown (7.5 YR 4/4), very fine sandy, grading to very silty sand,
				moderately well sorted, moderately dense, slightly moist, several very thinly bedded fine
				to medium sand lenses towards base.
				3.0-4.0': Clay. Red brown (2.5 YR 4/4), silty, trace very fine sand, 3.5 (HP), moist,
				moderately plastic.
				4.0-5.0': Sand. Brown (7.5 YR 5/3) very fine, some silt, slightly moist, loose, moderately
				well sorted.
55	60	5	2-35/1,999	Silt and Clay. Interbedded. Silt: brown (7.5 YR 5/3), very stiff (3 to 3.5), homogeneous,
				moist to very moist. Clay: red (10 R 4/6) very stiff (3.5), strongly effervescent,
				slightly plastic, very moist, bed thickness range from 1 to 4 inches thick in clay to 0.5 to
				2.0 inches thick in silt, occasional thin, fine to medium sand seams intermixed
				throughout, very moist.
60	65	5	2-5/1,999	0.0-1.0': Silt. Variable fine sand, color as above, very moist, some gas vesicles,
				moderately stiff.
				1.0-3.5': Silt and Clay. Interbedded, as from 55 to 60.
				3.5-4.0': Sand. Pink (7.5 YR 7/4) very fine, trace silt, loose, dry to slight moist,
				well sorted.
				4.0-5.0': Silt and Clay. Interbedded. Clay as a above. Silt: trace very fine to fine
				sandy lenses interspersed throughout, <1 mm thick, yellowish staining.
65	70		8-45/0-	Sand. Yellow red (5 YR 4/6), silty grading to sandy silt, soft to moderately stiff,
			1,999	abundant vesicles in part. Sand fine to very fine, some medium very moist to wet,
				trace to some clay in matrix, poorly sorted.
70	75	5	3-14/65-	0.0-2.0': Silt. Brown (7.5 YR 4/4), trace very fine sand, very stiff (3.5), very moist to
			1,999	wet, several thin (0.5 inch thick) clay lenses, weak red (10 R 4/4) moderately stiff (2.5),
				fissile, moderately effervescent.
				2.0-2.5': Sand. Light brown (7.5 YR 6/4), very fine, trace to some silt, moderately

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Sample/Core Log (Cont.d)

Boring/Well GM-61

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				well sorted, dry, loose.
				2.5-5.0': Sand. Pink (7.5 YR 7/4), fine to very fine, trace to some medium, trace
				coarse and very coarse top of section. Trace fine gravel in top of section, dry, loose,
				moderate sorting, occasional silt modules, moderately stiff, trace fine sand, brown
				(7.5 YR 5/4).
75	80	4	4-30/1,200-	Sand. Light brown (7.5 YR 6/4), very fine, some fine, trace silt, loose to moderately
			1,999	dense, moderately well sorted, slightly moist.
80	85	4	5.5-12/360-	0.0-1.0': Sand. Very fine, grading to very fine silty sand at bottom, moderately dense,
			1,999	moderate sorting, moist, color as above.
				1.0-4.0': Silt. Brown (7.5 YR 4/4), with interbedded clay from 1.5 to 3 feet, moist.
				Stiff (3.5), trace fine sand in part. Clay red (2.5 YR 4/6), moist to very moist, fissile,
				strong HCl reaction, very stiff to hard (3.8), nonplastic.
85	95	5.5	2.5-13/0-	0.0-2.0': Silt. Brown (7.5 YR 5/4), very sandy. Sand very fine, some fine, moderately
			247	stiff (3.0), wet but likely due to drilling.
				2.0-2.5': Sand. Brown (7.5 YR 4/4), fine to medium, some coarse, trace very coarse,
				some silt, moderately dense, poorly sorted, trace fine gravel, wet.
				2.5-5.5': Sand. Light brown (7.5 YR 6/4), from 2.5 to 3, fine, some medium and very
				fine, trace silt, loose to moderately dense, moderately well sorted, moist. From 3 to 5.5
				grain size is same as above, but sand is wet to saturated. Brown (7.5 YR 5/4),
				moderately dense, moderately well sorted. A 2 inch thick sandy silt lens at 4.5 feet,
				color as above.
95	100	5	3-35/0-139	0.0-3.0': Sand. Brown (7.5 YR 4/4), fine to medium, trace to some silt, some coarse
				in part, trace very coarse, trace fine gravel, subrounded to subangular, poorly sorted.
				3.0-5.0': Clay. Red brown (5 YR 4/4), hard (>4.0), blocky, very slightly plastic, very
				slightly effervescent, very thinly bedded with silt, brown (7.5 YR 5/3).
100	105	5	2-2.5/0-118	Very thinly bedded silt and clay as above, very hard.
105	115	5	50-550/0	Silt and Clay, thinly to medium bedded, as above, very hard.
115	120	5	150-1,000/	0.0-1.0': Silt and Clay. As above.
			0-0.2	1.0-3.0': Silt. Dark grey (7.5 YR 4/1), with occasional thin clay lenses. Silt, very stiff,
				homogeneous. Clay, soft, fissile slightly effervescent, red (2.5 YR 4/8).

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Sample/Core Log (Cont.d)

Boring/Well GM-61

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.0-4.0': Silt. Brown (7.5 YR 4/3), trace to some clay, hard, moist.
				4.0-5.0': Sand. Brown (7.5 YR 5/4), very fine silty, saturated, dense, moderately well
				sorted.
120	125	5	100-250/0-	0.0-2.0': Sand. Red brown (5 YR 4/4), very silty. Sand very fine to fine, trace clay,
			13.6	some vesicles, grading to very fine sandy silt in part, moderately stiff.
				2.0-4.2': Sand. Brown (7.5 YR 5/4), very fine, silty, moderately dense to dense, wet,
				moderate sorting.
				4.2-5.0': Silt. Some very fine sand, very hard, color as above, very moist.
125	130	5	20-90/0	Silt. Brown (7.5 YR 4/4), variable clay and very fine to fine sand, modertely stiff (2.0)
				very sandy in part, saturated.
130	135	5	13-200/32-	Silt. Dark brown (7.5 YR 3/3), some clay, very sandy in part, moderately stiff,
			49	saturated.
135	140	5	60-2,000/	0.0-3.0': Silt. Brown (7.5 YR 5/4), trace to some very fine sand, trace clay, soft (0.5-
			24-28	0.75), wet to saturated.
				3.0-5.0': Sand. Brown (7.5 YR 5/3), coarse with medium, some very coarse, some
				fine, trace very fine and silt, trace gravel, 1/8 to ¼ inch subrounded, saturated, poorly
				sorted.
140	145	4	450-2,250/	0-2.2': Sand. Strong brown (7.5 YR 4/6), fine to medium at top, grading to
			26-28	medium, some coarse trace very coarse towards bottom, moderately dense to loose,
				saturated, moderately well sorted, sandy silt lens 2 inches thick at 0.2 feet.
				2.2-2.4': Silt. Brown (7.5 YR 4/4), some very fine and fine sand, soft.
				2.4-4.0': Sand. Color as above, fine with medium, trace silt, loose to moderately
				dense, moderately well sorted, saturated. An approximately 2 inch thick silt seam at 3.2
				feet, silt, as above.
145	150	5	45-80/22.5-	0-4.0': Silt. Brown (7.5 YR 4/3), very sandy in part with very fine to fine sand,
			32	soft (0.75), wet. Trace clay, several small seams (0.5 to 1 inch thick), fine sand, silty,
				saturated, moderately dense.
				4.0-5.0': Silt. As above, interbedded with fine sand lenses and clay. Clay, red
				brown (2.5 YR 4/4) fissile, soft, moderately plastic.

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Sample/Core Log (Cont.d)

Boring/Well GM-61

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
150	155	5	6.5-14/0	0.0-2.0': Silt and Sand. Medium. Interbedded, sand, fine to coarse, trace
				very coarse and silt, trace fine gravel, subrounded, poorly sorted. Silt: brown (7.5 YR 4/4)
				some very fine to fine sand, stiff.
				2.0-4.0': Sand. Color as above, fine to medium, some silt, trace coarse and very
				coarse, very poorly sorted, loose to moderately dense.
				4.0-4.5': Silt. Brown (7.5 YR 4/4), trace clay, stiff, fairly homogeneous.
				4.5-5.0': Sand. As from 2 to 4 feet.
155	160	4	3.5-15/0	Sand. Brown (7.5 YR 4/3), fine to medium, some coarse and very coarse, variable
				silt, variable gravel 1/8 to ¼ inch subrounded, saturated, poorly sorted. Silt lenses at
				1.5 feet and 3 feet, 3 to 4 inches thick, very hard, trace clay, moist.
160	165	4	6-14/0-0.2	0.0-1.0': Sand. As above.
				1.0-4.0': Sand. Brown (7.5 YR 5/4), very fine to fine, trace to some silt, very dense,
				moderately well sorted, too dark to obtain accurate colors.
165	171	6	8-25/0.0-0.9	0.0-2.0': Sand. Brown (7.5 YR 5/4), fine to medium grained, some very fine, well
				sorted, moderately dense, very moist, grading to sand: weak red (10 YR 4/4), very fine
				to fine, silty, moderately sorted, dense, very moist in bottom 0.4 feet.
				2.0-4.5': Till. Weak red (10 YR 4/4), silt/clay matrix supporting abundant gravel.
				Gravel mostly weathered shale composition, angular to subrounded,
				fractured fragment, strong iron staining/weathering, gravel 1/8 to 1 inch.
				4.5-6.0': Bedrock. Weathered fragments (Michigamme slate) hardness 1 to 1.5 μohs scale.
				Slate fragments, foliated, fragments 1/8 to 3 inches. Bedrock slate: bluish gray
				(2 Gley 6/1), reddish iron staining throughout.
171	174	3	50-175/0.0	0.0-3.0': Bedrock. Weathered fragments, as above, bedrock Michigamme slate
			2.9	mixed with reddish clay/silt matrix. Clay/silt appears in place in thin beds
				(approximately ¼ inch thick) in weathered bedrock occasionally. Note OVA readings 175
				ppm in clay/silt. Till slough from above.
174	177	3	22-150/0.0-	0.0-3.0': Bedrock. Weathered fragments mixed with clay/silt till matrix as above.
			0.1	Note: OVA reading 150 ppm from clay/silt till matrix slough from above.
177	180	3	25-80/0.0-	0.0-3.0': Bedrock. Weathered fragments mixed with clay/silt till matrix as above.
			0.1	

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Sample/Core Log (Cont.d)

Boring/Well GM-61

Prepared by Ted Powell

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
180	195	8	1.5-4/0.0	0.0-8.0': Bedrock. Michigamme slate. Driller indicates competent bedrock
				encountered approximately 187 feet bgs. Bedrock subvertical to vertical foliations,
				bluish gray (2 Gley 5/1). Water used for drilling washed silt/clay sediment away.
				Bedrock hardness approximately 1.5, phyllitic to slatey cleavage/foliated.
				Bedrock has some weathering, white to off-white to pinkish mineral filling slatey
				cleavages in areas. Maybe quartz, no HCl reaction.
				Sparse pyrite along cleavages.

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Sample/Core Log

Boring/Well GM-62 A/B/C Project/No. Ford/Kingsford WI000675.0001 Page 1 of 10

Site Location Kingsford, Michigan Drilling Started 6/8/99 Drilling Completed 6/10/99

Total Depth Drilled 357 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4 " Sampling Interval continuous feet

Land-Surface Elev. 1124.77 feet [X] Surveyed (GM-62C) [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Gabe Helper Scott

Prepared By Bruce Evans and Bill McCrackin Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	3-4/0.0	0.0-0.1': Soil/Grass/Organics.
				0.1-1.0': Silt/Sand. Yellowish red (5 YR 5/6), silt with fine to coarse sand, some fine to
				coarse gravel, subangular.
				1.0-5.0': Sand/Gravel. Yellow red (5 YR 4/6), fine to coarse sand, fine to coarse gravel,
				poorly sorted, subrounded to subangular gravel, couple pebbles/cobbles to 4 inches in
				diameter, dry.
5	10	5	3-6/0.0	0.0-3.0': Sand/Gravel. As above, dry.
				3.0-5.0': Sand. Reddish brown (2.5 YR 4/3), very fine, well sorted, silty, moist,
				loose.
10	15	5	3-10/0.0	0.0-5.0': Sand. Reddish brown (5 YR 5/4), very fine, trace fine, some silt, well sorted,
				loose, moist, trace fine to coarse gravel.
15	20	5	5-9/0.0	0.0-3.0''' Sand. Very fine as above.
				3.0-5.0': Sand. Light brown (7.5 YR 6/3), fine to very fine, well sorted, some silt,
				trace coarse, medium to fine gravel, subangular, dry to moist.
20	25	5	3-6/0.0	0.0-1.0': Sand. Reddish brown (5 YR 5/4), very fine, well sorted, silty, trace coarse
				sand, moist, loose.
				1.0-4.0': Sand. Brown (7.5 YR 5/4), fine to very fine, some silt, well sorted, trace
				fine to coarse gravel and pebbles up to 1 inch in diameter, subangular to subrounded,
				moist, loose.
				4.0-5.0': Sand. Yellowish red (5 YR 4/6), very fine, well sorted, trace fine to
				coarse gravel, subangular to subrounded, dry, loose.
25	30	5	9-15/0.0	0.0-2.0': Sand. Very fine, as above.
				2.0-5.0': Sand. Yellowish red (5 YR 5/6), fine to very fine, well sorted, some very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				fine gravel, subangular, loose, moist.
30	35	5	7-25/0.0	0.0-1.0': Sand. As above.
				1.0-4.0': Sand. Reddish brown (5 YR 4/4), fine to very fine, with silt, poorly
				sorted, abundant fine to coarse gravel, subangular, shale flakes, clayey, petrometer =
				3.5, trace pebbles up to 3 inches in diameter, till-like appearance, moist.
35	40	5	4-11/0.0	0.0-2.0': Sand, with silt. As above, some possible black staining in sand.
				2.0-3.0': Sand/Gravel. Reddish brown (5 YR 4/4), fine to very fine, with fine to
				coarse gravel, subangular black shale flakes, trace pebbles up to 2 inches in diameter,
				subangular, silty, poorly sorted, moist.
				3.0-5.0': Sand. Reddish brown (5 YR 4/4), fine, very silty, with some fine gravel,
				moderately sorted, moist, crumbly to loose.
40	45	5	4-5/0.0	0.0-1.0': Sand. Yellowish red (5 YR 4/6), fine to very fine, silty, trace gravel, very
				moist.
				1.0-2.0': Sand. Reddish brown (5 YR 5/4), fine, with some medium to coarse, with grav
				Gravel: fine to coarse, subangular to subrounded, pebble to 4 inches in diameter,
				subangular, moderately sorted, wet.
				2.0-4.5': Sand. Reddish brown (5 YR 4/4), fine to medium, well sorted, trace fine
				gravel, wet, loose.
				4.5-5.0': Sand/Gravel. Reddish brown (5 YR 5/4), fine, silty matrix with medium to
				coarse sand and fine to coarse gravel. Gravel: subangular to subrounded, pebbles to
				2 inches in diameter, poorly sorted, loose, wet.
45	50	5	5-12/0.0	0.0-5.0': Sand/Gravel. As above, very silty matrix, wet, crumbly, petrometer = 2.5.
50	55	5	8-15/0.0	0.0-5.0': Sand. Brown (7.5 YR 4/3), fine, trace very fine, well sorted, wet, loose.
55	60	5	4.5-6/0.0	0.0-2.0': Clay. Red (2.5 YR 4/6), plastic, platy, fissile appearance on broken surface,
				moderate HCl reaction, petrometer = 3.5, wet.
				2.0-2.5': Silt. Dark brown (7.5 YR 3/2), some clay, petrometer >4.0, dense, strong HCl
				reaction, moist to dry.
				2.5-3.5': Silt/Clay. As above, interbedded 1 to 2 inch thick beds.
				3.5-4.5': Silt. Dark brown (7.5 YR 3/2), trace clay in matrix and thin laminations.
				Clay content decreases with depth, petrometer = 3.5, strong HCl acid reaction, moist.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.5-5.0': Sand. Brown (7.5 YR 4/2), very fine to medium, moderate sorting, silty,
				trace coarse sand, wet.
60	65	5	6-11/0.0	0.0-5.0': Silt. Brown (2.5 YR 4/3), dense, with some beds/pods clay. Clay: reddish brov
				(7.5 YR 4/4), plastic yet fissile/platy on broken surface. Strong HCl reaction in clay,
				weak HCl reaction in silt, petrometer clay = 2.0, silt = 0.75, moist to wet.
65	70	5	5/0.0	0.0-5.0': Silt. Brown (7.5 YR 4/3), dense, trace clay in matrix and some clay as pod
				inclusions and thin bedding. Clay: reddish brown (2.5 YR 4/3), plastic and fissile on
				broken surfaces. Clay: very strong HCl reaction. Petrometer = 4.0, moist. Silt: moderat
				to strong HCl reaction, silt = 2.5, wet.
70	75	5	5-8/0.0	0.0-5.0': Silt. As above interbedded with clay layers 0.1 to 1 inch thick, also
				varved. More abundant than above, silt denser (petrometer >4.0), moist to dry.
75	81	6	8-15/0.0	0.0-6.0': Silt. Reddish brown (5 YR 4/3), as above with clay.
81	89	7	60-200/0.0	0.0-7.0': Silt, with clay as above. Odor in lower 3 feet.
89	95	5	400-4,000/	0.0-0.5': Sand. Reddish brown (5 YR 4/3), medium with silt, trace, fine and coarse
			0.0	sand, moderately sorted, wet, loose, odor.
				0.5-5.0': Sand. Bluish black (Gley 2.5/1 10 BG), medium to coarse, moderately
				sorted, some fine to coarse gravel, subangular to subrounded, loose, wet, odor.
95	100	4.0	15-70/0.0	Sand. Very dark Grey (2.5 YR 3/1), medium to coarse, moderately sorted, some
				fine to medium gravel, subrounded to subangular, wet, odor.
100	105	4	150-800/	Sand. As above, trace, fine to coarse, gravel, wet, odor.
			0.0	
105	110	5	25-400/0.0	0.0-3.0': Sand. Very dark gray (2.5 YR 3/1), medium to coarse, well sorted, trace
				fine gravel, predominately subangular, black slate flakes, wet, odor, loose.
				3.0-5.0': Sand. Dark olive brown (2.5 YR 3/5), fine, well sorted, wet, loose, odor.
110	115	5	250-4,000/	0.0-3.0': Sand. Brown (7.5 YR 4/3), fine, well sorted, trace very fine, loose,
			0-3.6	wet, odor.
				3.0-4.0': Sand. As above, very silty with thin band of silt at 3.5' (1 inch thick).
				4.0-5.0': Sand. Brown (7.5 YR 4/3), fine, some very fine, well sorted, wet,
				loose, odor.
115	120	5	50-600/	0.0-5.0': Sand. Brown (10 YR 4/3), fine, some very fine, well sorted, wet,
			0-0.3	loose, very strong odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-62 A/B/C

Prepared by Bruce Evans and Bill McCrackin

Sample/Core Depth

(feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
120	125	5	200-2,000/	0.0-4.0': Sand. Brown (10 YR 4/3), fine to very fine, well sorted, loose, very
			3.6-10.9	strong odor, black staining in 1 inch thick silt beds at 3 and 3.7 feet, wet.
				4.0-5.0': Sand. As above, no staining, becoming fine.
125	130	5	7-40/	0.0-3.0': Sand. Very dark grey brown (10 YR 3/2), fine to very fine, well
			1.0-13.9	sorted, some silt, loose, wet, strong odor.
				3.0-3.3': Silt. Color as above, with black stain in middle of unit, moist, odor.
				3.3-5.0': Sand. Fine to very fine, as above.
130	135	5	25-90/	0.0-3.5': Sand. Very dark grey brown (10 YR 3/2), fine to very fine, well sorted,
			18-29.7	wet, odor.
				3.5-4.0': Silt. Very dark grey brown (10 YR 3/2), very fine, sandy, odor.
				4.0-5.0': Sand. Yellow red (5 YR 4/6), very fine, well sorted, some silt, loose, wet,
				odor.
135	140	5	130-650/	0.0-1.0': Silt. Brown (7.5 YR 4/4), very sandy, loose, petrometer = 0.5, wet, odor.
			12.4-28	1.0-1.5': Sand. Brown (7.5 YR 4/4), silty, well sorted, very fine, silty, loose, wet, odor.
				1.5-5.0': Silt. Brown (7.5 YR 4/4), very sandy, very fine, loose, wet,
				odor, black stain at 4.0 feet, gas vesicles.
140	145	5	400-4,750/	0.0-1.0': Silt. As above.
			4.8-34	1.0-5.0': Sand. Reddish brown (5 YR 5/4), fine to very fine, well sorted, some
				silt, wet, odor, black stain in silty zone at 1.5 feet.
145	150	5	2,000-	0.0-2.5': Sand. Reddish brown (5 YR 5/4), very fine, well sorted, some silt, loose,
			7,000/	wet, odor.
			9.2-26.9	2.5-5.0': Silt. Reddish brown (5 YR 5/4), sandy with trace very fine sand,
				petrometer = 0.5, slight HCl reaction, wet, odor.
150	155	5	3,500-	0.0-0.5': Silt. As above.
			>10,000/	0.5-1.5': Sand. Reddish brown (5 YR 5/4), very fine, well sorted, trace silt, loose,
			6.1-13.3	wet, odor.
				1.5-4.5': Silt. Dark yellowish brown (10 YR 4/6), petrometer = 1.0, trace clay in matrix,
				clay bed at 4.3 to 4.5 feet. Clay: yellowish red (5 YR 4/6), plastic, fissile- and brittle-
				looking on broken surfaces. Clay: moderate HCl reaction, silt: moderate HCL reaction
				wet, odor.
				4.5-5.0': Sand. Brown (7.5 YR 4/3), very fine, well sorted, silty, wet, odor.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-62 A/B/C

Prepared by Bruce Evans and Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description

155	160	5	2,250-	0.0-2.0': Sand. Brown (7.5 YR 4/4), as above.
			3,000/	2.0-3.0': Sand. As above becoming fine.
			3.2-3.8	3.0-5.0': Sand. Strong brown (7.5 YR 4/6), very fine, well sorted, loose, wet, odor.
160	165	3	2,500-	0.0-2.0': Sand. Very fine as above.
			7,000/	2.0-3.0': Silt. Strong brown (7.5 YR 4/6), very sandy, very fine, petrometer =
			4.8-5.3	0.9, moderate HCl reaction, wet, odor.
165	170	--	--	No recovery.
170	175	--	--	No recovery.
175	180	5	350-1,500/	0.0-5.0': Silt. Brown (7.5 YR 4/4), some clay, petrometer = 0.75, moderate HCl
			3.2-4.3	reaction, wet, odor.
180	185	5	125-	0.0-5.0': Sand. Dark brown (7.5 YR 3/4), fine, well sorted, some very fine, loose,
			>10,000/	black staining at 0.5 and 4.5 feet, wet, odor, silty very fine sand at 1.5 to 2.0 feet.
			3.2-10.5	
185	190	5	1,200-	0.0-5.0': Sand. Brown (7.5 YR 5/3), very fine, well sorted, trace fine, trace
			>10,000/	silt, loose, wet, odor.
			5.5-14.3	
190	195	5	3,000-	0.0-4.0': Sand. Brown (7.5 YR 5/3), very fine, well sorted, some silt, loose, wet,
			>10,000/	odor.
			7.7-8.8	4.0-5.0": Sand. Brown (7.5 YR 5/4), very fine to fine, well sorted, trace silt,
				loose, wet, odor.
195	200	5	>10,000/	0.0-5.0': Sand. Reddish brown (5 YR 5/3), fine, well sorted, trace very fine
			6.4-8.2	sand, loose, wet, odor.
200	205	5	4,000-	0.0-2.0': Sand. As above.
			>10,000/	2.0-2.5': Sand. As above, black staining, very fine, some silt.
			4.8-6.9	2.5-3.5': Sand. Brown (7.5 YR 5/3), fine, well sorted, loose, wet, odor.
				3.5-5.0': Sand. As above, becoming very fine, black staining, loose, wet, odor.
				4.0-5.0': Silt. Reddish brown (5 YR 5/3,) petrometer = 0.5, crumbly, odor, moist, black
				staining at 4.0 feet at contact with sand above.
205	210	5	100-300/	0.0-1.0': Sand. Brown (7.5 YR 5/3), very fine to fine, well sorted, loose, wet,
			1.7-2.4	OVM background 3.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-62 A/B/C

Prepared by Bruce Evans and Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1.0-5.0': Sand. Brown (7.5 YR 5/3), fine, well sorted, loose, wet.
210	215	5.0	600-4,000/	0.0-1.0': Silt. Brown (7.5 YR 5/3), with clay. Clay: reddish brown (5 YR 5/4), plastic,

			1.9-2.9	fissile/brittle appearance on broken surface. HCl reaction clay strong/silt moderate.
				1.0-1.3': Sand. Brown (7.5 YR 5/3), fine to medium, well sorted, loose, wet.
				1.3-4.0': Silt. Reddish brown (5 YR 5/3), trace clay, petrometer = 0.5, gas vesicles,
				wet.
				4.0-5.0': Sand. Reddish grey (5 YR 5/2), fine, with some medium sand, well
				sorted, loose, wet.
215	220	5	400-1,000/	0.0-2.0': Sand. As above.
			2.9-3.2	2.0-5.0': Sand. Reddish grey (5 YR 5/2), very fine, well sorted, loose, wet, odor.
220	225	5	400-700/	0.0-3.0': Sand. Brown (7.5 YR 4/2), fine, well sorted, loose, wet.
			2.5-3.6	3.0-4.0': Silt. Brown (7.5 YR 5/3), some very fine sand, crumbly, black staining
				from 3.0 to 3.5 feet, wet.
				4.0-5.0': Sand. Reddish brown (5 YR 5/3), very fine, well sorted, some silt,
				loose, wet, odor.
225	230	5	2,000/	0.0-5.0': Sand. Reddish brown (5 YR 5/3), very fine to fine, well sorted, trace
			>10,000/	fine to medium gravel, subangular, loose, wet, odor. 1 inch thick silt band at
			0-1.2	4.5 feet, black staining. OVM background 0.
230	235	5	>10,000/	0.0-5.0': Sand. Reddish brown (5 YR 5/3), fine, well sorted, trace medium, some
			0.0	silt below 4.5 feet, loose, wet, odor.
235	240	5	>10,000/	0.0-2.0': Sand. Reddish brown (5 YR 5/3), very fine, silty, well sorted, loose,
			0.0	wet, odor.
				2.0-5.0': Sand. Light reddish brown (5 YR 6/4), very fine, well sorted, loose,
				wet, odor.
240	245	5	>10,000/	0.0-3.5': Sand. As above.
			0.0	3.5-5.0': Silt. Reddish brown (5 YR 5/4), very fine, sandy, crumbly, wet, odor.
245	250	5	3,000/	0.0-5.0': Sand. Reddish brown (5 YR 5/4), very fine, well sorted, loose, wet,
			>10,000/	odor. OVM background 0.
			0.0-0.5	
250	255	5.0	>10,000/	0.0-1.0': Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-62 A/B/C

Prepared by Bruce Evans and Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			0.4-1.8	1.0-2.0': Silt. Reddish brown (5 YR 5/3), with some fine to coarse gravel, subangular
				to subrounded, wet, odor.
				2.0-5.0': Silt. Reddish brown (5 YR 5/3), some very fine sand, crumbly, wet,
				odor.

255	260	--	--	No recovery.
260	265	--	--	No recovery.
265	270	5	3,000-	0.0-5.0': Sand. Reddish brown (5 YR 5/3), very fine, well sorted, loose, wet,
			>10,000/	odor, abundant vesicles.
			1.1-3.9	
270	275	5.0	>10,000/	0.0-5.0': Sand. As above, some silt, 1 inch diameter pebble at 2 feet, subangular,
			2.0-2.9	abundant gas vesicules.
275	280	5	>10,000/	0.0-2.0': Sand. Very fine, as above.
			2.0-5.0	2.0-3.0': Sand. Reddish brown (5 YR 5/4), fine, well sosrted, loose, wet, odor.
				3.0-5.0': Sand. Reddish brown (5 RY 5/3), very fine, some silt, well sorted,
				loose, wet, black staining for 4 to 5 feet.
280	285	5	>10,0000/	0.0-4.5': Sand/Silt. Reddish brown (5 RY 5/4), silty sand grading to sandy silt, very
			1.0-2.8	fine sand, somewhat crumbly, wet, odor.
				4.5-5.0': Silt. Reddish brown (5 YR 4/4), some very fine sand, wet, odor.
285	290			Plugged back to 102 feet and set well screen 90 to 100 feet.
				Will move rig 5 feet east and redrill to 275 feet and continue borehole.
275	280	4.5	2,000-	0.0-2.0': Sand. Weak red (10 R 5/4), fine to very fine moderate sorting, trace
			>10,000/	silt, trace fine gravel (2 mm diameter), subrounded, loose, wet, odor.
			0.9-3.5	2.0-2.3': Sand. Dark grey (5 YR 4/1), medium to coarse, well sorted, loose,
				wet, odor.
				2.3-4.5': Sand. Weak red (10 R 5/4), fine to very fine, moderate sorting, trace
				silt, loose, wet, odor.
280	285	5	5,000/	0.0-5.0': Sand. Weak red (2.5 YR 5/2), fine to very fine, moderate sorting,
			>10,000/	some silt, black staining (10 R 2.5/1) from 0.5 to 1.0, loose, wet, odor.
			3.5-19.2	
285	290	5	6,000/	0.0-5.0': Sand. Reddish brown (2.5 YR 5/3), very fine to fine, moderate

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-62 A/B/C

Prepared by Bruce Evans and Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			>10,000/	sorting, trace medium sand and fine gravel (≤ 16 mm diameter), subangular to
			2.5-5.4	subrounded, trace silt, abundant vesicles, loose, wet, odor.
290	295	5	>10,000/	0.0-0.7': Sand. As above.
			1.9-5.2	0.7-1.3': Sand. Light reddish brown (2.5 YR 6/4), very fine to medium,,
				moderate sorting, trace silt, vesicular, loose, wet, odor.
				1.3-5.0': Sand. Reddish brown (2.5 YR 5/3), very fine to fine, moderate
				sorting, some silt, vesicular, loose, wet, odor.

295	300	5	>10,000/	0.0-2.0': Sand. As above.
			1.0-4.8	2.0-2.4': Sand. Reddish brown (2.5 YR 5/4), fine to very fine, moderate sorting,
				some silt, trace medium to fine gravel (≤ 13 mm diameter), subangular to subrounded,
				vesicular, loose, wet, odor.
				2.4-2.9': Sand. Light reddish brown (5 YR 6/3), very fine, moderate sorting,
				some silt, trace clay, vesicular, cohesive, wet, odor, moderate HCl reaction.
				2.9-5.0': Sand. Brown (7.5 YR 5/2), fine to very fine, moderate sorting, some
				silt, trace medium sand, vesicular, loose, wet, odor, moderate to strong HCl reaction.
300	305	5	>10,000/	0.0-2.0': Sand. Reddish brown (5 YR 4/3), very coarse to medium, moderate
			0.3-0.8	sorting, some gravel (≤ 40 mm diameter), subangular to subrounded, trace fine sand,
				loose, wet, odor.
				2.0-2.6': Sand. Dark reddish grey (5 YR 4/2), very coarse to medium, poorly
				sorted, some clay: red (2.5 YR 4/8), some gravel (≤ 30 mm diameter), subangular to
				subrounded, somewhat cohesive due to clay composition, wet, odor, no HCl reaction.
				2.6-5.0': Sand. Brown (7.5 YR 5/3), medium to fine, moderate sorting, trace
				silt, some vesicles, loose, wet, odor.
305	310	5	1,500-	0.0-2.5': Sand. Brown (7.5 YR 5/3), coarse to fine, moderate sorting, trace gravel,
			>10,000/	(≤ 30 mm diameter), angular to subrounded, loose, wet, odor.
			0.0-0.8	2.5-5.0': Sand. Dark grey (7.5 YR 4/1), very coarse to coarse, moderate sorting, some
				gravel (≤ 45 mm diameter), angular to subrounded, trace medium sand, loose, wet,
				odor.
310	315	5	>10,000/	0.0-5.0': Gravel. Dark reddish grey (2.5 YR 3/1) fine to coarse (10 to 30 mm),
			0.1-0.8	angular to subrounded, poorly sorted, some very coarse to medium sand.
				trace fines sand, loose, wet, odor, trace cobble (≤ 70 mm diameter).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-62 A/B/C

Prepared by Bruce Evans and Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
315	320	5	>10,000/	0.0-0.8': Gravel. As above.
			0.3-0.5	0.8-2.1': Sand. Dark reddish grey (5 YR 4/2), very coarse to medium, well sorted,
				trace fine gravel (≤ 5 mm diameter), subangular, trace silt, loose, wet, odor.
				2.1-5.0': Sand. Reddish grey (5 YR 5/2), coarse to medium, some very coarse,
				well sorted, trace fine sand, trace fine gravel (≤ 12 mm diameter), subangular, loose,
				wet, odor.
320	325	5.0	>10,000/	0.0-4.0': Sand. As above.
			0.3-1.0	4.0-5.0': Gravel. Reddish brown (5 YR 5/3), coarse to fine (60 mm diameter),
				poorly sorted, some coarse to medium sand, trace clay, loose, wet, odor, slight HCl

				reaction.
325	330	5	>10,000/	0.0-1.5': Slough. Well washed gravel similar to unit below.
			1.3-5.5	1.5-5.0': Gravel. Reddish brown (5 YR 5/3), coarse to fine, angular to subrounded,
				(≤ 50 mm diameter), poorly sorted, some very coarse to medium sand, some silt/clay,
				trace fine sand, loose, wet, odor.
330	335	5	2,500-	0.0-0.7': Sand. Reddish brown (5 YR 4/4), medium to fine, moderate sorting,
			>10,000/	some silt, trace fine gravel (≤ 10 mm diameter), subangular to subrounded, slightly
				cohesive, wet, odor.
			0.5-1.5	0.7-1.4': Clay. Dark reddish grey (2.5 YR 4/1), some silt, poorly sorted, some gravel,
				coarse to fine (≤ 65 mm diameter), subangular to rounded, cohesive/crumbly,
				wet, odor, moderate HCl reaction.
				1.4-3.0': Sand. Reddish brown (5 YR 4/3), very coarse to medium, well sorted,
				trace fine gravel (≤ 5 mm diameter), subangular to subrounded, loose, wet, odor.
				3.0-5.0': Sand. Dark reddish grey (5 YR 4/2), very coarse, poorly sorted, some
				coarse to medium sand, some coarse to fine gravel, angular to subrounded, some clay/
				silt, trace cobbles (≤ 75 mm diameter), loose, wet, odor, slight HCl reaction (till).
335	340	5	4,500-	0.0-3.0': Gravel. Color as above, coarse to fine (≤ 65 mm diameter), poorly sorted,
			>10,000/	some very coarse to fine sand, some silt/clay, slightly cohesive, wet, odor (till).
			0.4-2.5	3.0-4.0': Sand. Dark reddish grey (5 YR 4/2), very coarse, poorly sorted, some
				coarse to medium sand, some coarse to fine gravel (≤ 50 mm diameter), angular to
				subrounded, some silt/clay, slightly cohesive, wet, odor (till).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-62 A/B/C

Prepared by Bruce Evans and Bill McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.0-5.0': Sand. Reddish brown (5 YR 4/4), coarse to medium, well sorted, fining
				downward, trace medium to fine gravel (≤ 35 mm diameter), subangular to subrounded,
				trace silt, loose, wet, odor (till).
340	345	5	1,500-	0.0-0.9': Sand. Color as above, coarse to fine, moderately sorted, fining
			>10,000/	downward, some coarse to fine gravel, angular to subrounded, trace small cobbles
			0.4-2.5	(≤ 70 mm diameter), trace silt, loose, wet, odor (till).
				0.0-3.0': Gravel. Dark reddish grey (2.5 YR 4/1), coarse to fine, angular to
				subrounded, poorly sorted, gravel ≤ 65 mm diameter, some very coarse to medium sanc
				some silt/clay, slightly cohesive, wet, odor, slight HCl reaction (till).
				3.0-5.0': Sand. Dark reddish grey (2.5 YR 4/1), coarse to medium, well sorted,
				trace very coarse and fine sand, trace medium to fine gravel (≤ 20 mm diameter),

				subangular to subrounded, loose, wet, odor (till).
345	350	5	10-	0.0-1.5': Sand. Dark reddish grey (2.5 YR 4/1), very coarse to medium, moderate
			>10,000/	sorting, some fine gravel (≤ 10 mm diameter), subangular to subrounded, trace
			0.8-4.9	medium gravel (≤ 15 mm diameter), subangular, loose, wet, odor.
				1.5-4.0': Weathered bedrock, schist with clay.
				4.0-5.0': Bedrock, schist.
				GM-62A Total Depth 102 ft.
				GM-62B Total Depth 205 ft.
				GM-62C Total Depth 357 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GM-63 A/B | Project/No.: Ford/Kingsford WI000804.0001 | Page 1 of 4

Site Location: Kingsford, Michigan | Drilling Started: 5/15/00 | Drilling Completed: 5/16/00

Total Depth Drilled: 135 Feet | Hole Diameter: 6 inches | Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" | Sampling Interval: Continuous feet

Land-Surface Elev.: 1049.72 feet | [X] Surveyed | [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: Water | Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear | Driller: Mike | Helper: Gabe Ryan, Randy

Prepared By: Pat Bartnik/John Keller | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	6.5/0.0	0-1.0': Sand. Reddish black (2.5 YR 2.5/1), very fine, silty, some clay, rootlets.
				1.0-3.5': Sand. Brown (7.5 YR 5/6) very fine, silty, well sorted, dry.
5	10	5	10,000/	0-2.5': Sand. As above.
			0-0.0	2.5-5': Sand. Dark red brown (5 YR 3/3), coarse to very fine, gravelly
				(2 mm - 3"), subangular to subrounded, silty, very poorly sorted, dry.
10	15	5	>10,000/	0-0.5': Sand. As above.
			0-1.0	0.5-2.5': Sand. Light red brown (5 YR 6/3), medium, very well sorted, trace
				gravel (15 mm) subrounded.
				2.5-4': Sand. As above but with gravel (2 mm to 3"), subangular to subrounded
				dry.
				4-5': Sand. Very dark gray (7.5 YR 3/1) very coarse to very fine silty
				clay gravelly (2 mm - 3") subangular to subrounded very poorly sorted,
				moist to wet.
15	20	5	1,000-	0-2': Sand. As above.
			>10,000/	2-3.5': Clay. Yellowish red (5 YR 4/6), dense compact, (HP = 3.5), dry,
			0-0	laminated with silt reddish brown (5 YR 5/4).
				3.5-5': Sand Reddish brown (5 YR 4/4), very silty, moist to wet, cohesive,
				clayey, grades down to a sand at 5.0 very fine silty.
20	25	5	7,000/	0-5': Sand. Reddish gray (5 YR 5/20 medium to fine trace gravel (2 mm)
			>10,000/	some coarse sand wet, odors.
			0-0	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-63 A/B

Prepared by P. Bartnik/J. Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
25	30	5	>10,000/	0-5.0': Sand. As above, but with lenses of medium sand to fine gravel
			0-1.3	(2 mm - 15 mm) at 2 and 4 feet.
30	35	5	3,500-	0-1': Sand. As above grading into sand, reddish gray (5 YR 5/2), very coarse
			>10,000/	to fine, trace silt, gravelly (2 mm to 30 mm) subrounded.
			0-0.7	1-2': Sand. Very coarse to fine, reddish gray (5 YR 5/2), trace silt, gravelly
				(2 mm - 30 mm) subrounded, wet.
				2-2.5': Silt. Reddish brown (2.5 YR 4/3), dense, damp, (HP = 0.5), clayey.
				2.5-5': Sand. Reddish brown (2.5 YR 5/3), very fine, silty, trace clay.
35	40	5	4,000-	0-5': Sand. Reddish brown (5 YR 5/3), fine to very fine, silty, well sorted,
			9,000/	damp, loose.
			0-0	
40	45	5	4,500-	0-5': Sand. As above.
			>10,000/	
			0-0	
45	50	5	2.5-	0-5': Sand. Reddish brown (2.5 YR 1/4), very fine to medium, trace to some
			>10,000/	silt, well rounded, damp.
			0-0	
50	55	5	2,000-	0-3': Sand. As above.
			>10,000/	3-5': Sand. Reddish brown (2.5 YR 5/4), silty well rounded, damp.
			0-0	
55	60	5	6,000-	0-3': Sand. Reddish brown (2.5 YR 5/4), very fine, silty, trace to some
			>10,000/	fine, well sorted, damp.
			0-0	3-5': Silt. Reddish brown (2.5 YR 4/4), clayey, damp.
60	65	6	4,000-	0-3.5': Silt. As above.
			>10,000/	3.5-5': Sand. Reddish brown (2.5 YR 4/4), very fine to fine, trace to some
			0-0	silt, well sorted, damp.
65	70	5	2,500-	0-2.5': Silt. Reddish brown (2.5 YR 4/4), clayey, slightly compacted, damp.
			>10,000/	2.5-5': Sand. Reddish brown (2.5 YR 4/4), very fine to fine, trace of
			0-0.3	medium, well sorted, loose, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-63 A/B

Prepared by P. Bartnik/J. Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
70	75	5	2,500-	0-5': Sand. As above, last 3" of sample has increased clay content.
			>10,000/	
			0-0.3	
75	80	5	600-	0-3.5': Sand. Reddish brown (2.5 YR 4/4), very fine to fine, well sorted,
			3,000/	slightly compacted, damp.
			0-0.4	3.5-5': Silt. Reddish brown (2.5 YR 4/4),some clay, compacted, damp.
80	85	5	100-400/	0-5': Silt. As above. Some black coloration the last 1" (due to the drill
			0-0.4	rig) on outside of core.
85	90		2.5-110/	0-1': Clay. Reddish brown (2.5 YR 5/3), trace to some silt, moderately
			0-0.4	plastic.
				1-4': Silt. Reddish brown (2.5 YR 4/3), clayey, clay inclusions between
				2-5 feet, trace gravel between 4.5-5 feet (2 mm - 20 mm) gravel area,
				weak red (2.5 YR 4/2).
				4-5': Clay. Reddish brown (2.5 YR 4/3), gravelly (2 mm - 35 mm) angular
				to subrounded (Michigannine), silty, trace sand.
90	95	5	2.5-24/	0-2': Clay. As above but gravel increases to 100 mm.
			0-0.4	2-3.5': Sand. Weak red (2.5 YR 4/2), fine to very fine, silty, blocky, dry.
				3.5-5': Silt. Reddish brown (2.5 YR 4/3), dense, hard, dry, HP = >4.0.
95	100	5	3-7/0-0	0-5': Silt. Reddish brown (2.5 YR 4/3), some clay, trace of gravel
				(2 mm - 25 mm).
100	105	5	20-50/	0-4.5': Silt. As above, contains small pockets of sandier material at 101.5 to
			0-0	102 feet and 102.5 to 103 feet bgs.
				4.5-5': Sand. Reddish brown (2.5 YR 4/4), very fine to fine, silty.
105	110		3-112/	0-1': Sand. Brown (7.5 YR 4/3), medium to very coarse, wet, gravelly, gravel
			0-105	ranges from 2 mm to 50 mm, poorly sorted.
				1-5': Sand. Brown (7.5 YR 4/2), some gravel (approximately 2-5 mm),
				moderately sorted, wet, several larger sized gravel (approximately 30 mm).
110	112		3-5/0-0	0-1.5': Silt. Dark gray (7.5 YR 4/1),sandy, gravelly (2 - 50 mm) till?
				1.5-2': Silt. Gley (5/10G) to dusky red (10 R 3/3), clay, very dense, dry,
				crumbles with some difficulty to a mildly cohesive powder; possibly

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-63 A/B

Prepared by P. Bartnik/J. Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				laminated. Drilled 110-112' with extreme difficulty.
112	115	3	3-4/0-0	0-3': Pulverized rock (rock flour). Color changes from pale red (2.5 YR 7/2)
				to light greenish gray gley at 113 feet. Particles in sample range in size
				from clay to 3". Larger particle sizes are compressed aggregates of
				smaller particle sizes. Sample is too pulverized for more meaningful
				description.
115	120	5	2-4.5/	0-5': Pulverized Rock Fragments. Mixture throughout of both pale red
			0-0	(2.5 YR 7/2) light greenish gray (glay 8/56) mainly larger particles, which are
				compressed aggregates of smaller particle sizes present, slate pieces
				present.
120	123	3	No	0-3': Pulverized rock (rock flour). Greenish gray (Gley 6/1) particles in
			reading/	sample range in size from clay (rock flour) to approximately 2" larger
			0-0	particles are compressed aggregates of smaller particle sizes. Larger
				particles tend to be bowl shaped, smaller fragments appear to have
				broken off from some of the larger pieces.
123	135	3	No	0-3': Rock Fragments. Dark greenish gray, phyllite foliation at
			reading/	approximately 75/80' to vertical, gley (4/1 5G).
			0-0	
				GM-63A Total Depth 50 ft.
				GM-63B Total Depth 135 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GM-64 A/B | Project/No.: Ford/Kingsford WI000804.0001 | Page 1 of 5

Site Location: Kingsford, Michigan | Drilling Started: 5/20/00 | Drilling Completed: 5/22/00

Total Depth Drilled: 214 Feet | Hole Diameter: 6 inches | Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" | Sampling Interval: Continuous feet

Land-Surface Elev.: 1055.13 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: Water | Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear | Driller: Mike | Helper: Ryan, Randy

Prepared By: John Keller and Joe Riepenhoff | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	2.5/	0-1.5': Silt. Black (7.5 YR 25/1), sandy (very fine to fine), abundant rootlets,
			0.9-1.1	leaves, some grass clippings and twigs.
				1.5-2.5': Sand. Strong brown (7.5 YR 5/6), very fine to fine, trace of
				medium.
				2.5-4.25': Silt. Brown (7.5 YR 4/4), some sand (very fine to fine), trace of
				clay.
				4.25-5': Sand. Olive (5 Y 4/3) to reddish brown (5 YR 4/3), gravelly (2 mm -
				50 mm), gravel subrounded to angular, poorly sorted.
5	10	2.5	2.5-3/	0-2': Silt. Strong brown (7.5 YR 4/6) to dark brown (7.5 YR 3/2), sandy
			0.0-1.5	(very fine to fine), trace clay, slightly damp.
				2-2.5': Sand. Reddish brown (5 YR 4/4) to red (2.5 YR 4/8), abundant gravel
				(2 mm - 40 mm), poorly sorted, some coarse sand present, wet.
10	15	2.5	2.75-3/	0-2.5': Sand and Gravel. As above.
			1.2-1.6	
15	20	5	3-25/	0-1': Sand. Reddish brown (5 YR 4/4), silty, gravelly (2 mm - 50 mm), sand
			1.4-1.7	very fine to coarse, poorly sorted, saturated.
				1-5': Clay. Dark reddish gray (2.5 YR 3/1), very silty (numerous silty layers
				weak red [10 R 4/4]), (HP = 2), moderately plastic, medium stiffness,
				moderately compacted, damp.
20	25	5	3.25-3.5/	0-5': Clay. As above.
			3-1.7	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-64 A/B

Prepared by J. Keller/J. Riepenhoff

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
25	30	5	4-20/	0-5': Clay. As above, becoming increasingly more silty as you go
			1.1-1.7	downsection.
30	35	3	23-30/	0-3': Sand. Dark reddish brown (5 YR 3/2) to very dark gray (7.5 YR 3/1),
			1.1-1.2	medium to very coarse, gravelly (2 mm - 80 mm), some fine to very fine
				sand, poorly sorted, saturated.
35	40	5	60-2,000/	0-5': Sand and Gravel. As above.
			0-1.0	
40	45	5	25-2,500/	0-3': Sand and Gravel. As above.
			0.1-1.3	3-5': Silt. Reddish brown (5 YR 4/3), trace to some of very fine to fine
				sand, moderately compacted, damp to wet, (HP = 0.25).
45	50	5	2.5-80/	0-5': Silt. Reddish brown (5 YR 4/3), sandy (very fine to fine), damp to
			0.9-1.3	wet, moderately compacted.
50	55	5	5-20.25/	0-0.5': Silt. As above.
			0.9-1.5	0.5-5': Silt. Reddish brown (5 Yr 4/3), trace to some sand (very fine to
				fine), containing less sand as you go downsection.
55	60	5	1.75/	0-2': Silt. Reddish brown (5 YR 4/3), trace to some very fine to fine sand,
			0.7-1.1	moderately compacted, wet.
				2-5': Silt. Reddish brown (5 YR 4/3), sandy (very fine to fine), damp, loose,
				sand content increasing as you go downsection.
60	65	5	1.75/	0-5': Silt. Reddish brown (5 YR 4/3), very sandy (very fine to fine), damp,
			0-1.4	loose.
65	70	5	1.75-2/	0-5': Sand. Reddish brown (5 YR 4/3), silty, very fine to fine grained,
			0.9-1.2	well sorted, damp, loose.
70	75	5	1.75-2/	Sand. As above.
			0.5-1.2	
75	80	5	1.75-2/	0-5': Sand. Brown (7.5 YR 4/3), medium, trace to some very fine to fine,
			1.2-1.6	well sorted, loose, damp.
80	85	5	1.75-2/	0-3.5': Sand. As above.
			0.7-1.5	3.5-5': Silt. Dark reddish brown (5 YR 3/3), sandy (very fine to fine),
				loose, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-64 A/B

Prepared by J. Keller/J. Riepenhoff

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
85	90	5	80-2,500/	0-5': Silt. Reddish brown (2.5 YR 4/3), very sandy (very fine to fine), loose
			0.0-0.0	to moderately compacted, (HP = 0.5), damp.
90	95	5	150-	0-5': Silt. As above.
			4,500/	
			0.0-0.0	
95	100	3.5	5.5-275/	0-3.5': Silt. Reddish brown (5 YR 4/3), very sandy (very fine to fine), loose
			0.0-0.0	to moderately compacted, damp to wet.
100	105	3.5	600-	0-3.5': Silt. As above.
			1,750/	
			0-0	
105	110	5	325-	0-1.2': Silt. As above.
			3,000/	1.2-2.5': Sand. Reddish brown (5 YR 4/3), very fine to fine, silty, loose, damp
			0-0	to wet, well sorted.
				2.5-5': Sand. Brown (7.5 YR 4/2), medium, trace to some very fine to fine,
				well sorted, slightly cohesive, damp, trace clay.
110	115	5	300-	0-4.5': Sand. As above.
			2,500/	4.5-5': Silt. Dark reddish brown (5 YR 3/3), trace to some clay, (HP = 1.5),
			0-0	moderately compacted, dry to damp.
115	125	5	375-	0-5': Sand. Brown (7.5 YR 4/2), medium, trace to some very fine to fine,
			5,000/	well sorted, loose, damp.
			0-0	
120	125	5	2,750-	0-3': Sand. As above.
			6,000/	3-4.6': Sand. Brown (7.5 YR 4/2), medium, some very fine to fine, silty,
			0-0	well sorted, damp, loose.
				4.6-5': Silt. Brown (7.5 YR 4/2), sandy (very fine to fine), (HP = 0.5), loose
				to moderately compact, damp.
125	130	5	1.5-20/	0-5': Silt. Dark reddish gray (5 YR 4/2), clay layers/laminations throughout
			0-0	Clay, reddish brown (25 YR 4/4), (HP of clay = 4.0; HP of silt = 0.75), clay
				is firm, well compacted, silt has trace very fine to fine sand.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-64 A/B

Prepared by J. Keller/J. Riepanhoff

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
130	135	5	2.5-45.5/	0-2.2': Silt. With clay layers/laminations as above.
			0-0	2.2-5': Sand. Brown (7.5 YR 4/2), medium, trace of very fine to fine,
				well sorted, damp, loose to slightly compacted.
135	140	5	<1-12.5/	0-5': Sand. As above.
			0-0	
140	145	5	1.5-11/	0-2': Silt. Brown (7.5 YR 4/2), trace to some sand (very fine to fine), trace
			0-0	of clay.
				2-3': Silt. Brown (7.5 YR 4/2), very sandy (very fine to fine).
				3-5': Silt. As above but fining downsection.
145	150	5	1.1-75/	0-1.5': Sand. Brown (7.5 YR 4/2), very fine to fine, silty, wet to saturated,
			0-0	well sorted.
				1.5-5': Silt. Brown (7.5 YR 4/2), several clay layers throughout (clay,
				reddish brown (2.5 YR 4/4), trace to very fine to fine sand, clay (HP = 2),
				firm, moderately to well compacted.
150	155	5	1-1/0-0	0-3.5': Silt. With clay layers as above.
				3.5-5': Sand. Brown (7.5 YR 4/2), very fine to fine, silty, wet to saturated,
				well sorted.
155	160	5	1.25-2/	0-5': Sand. Brown (7.5 YR 4/2), very fine to fine, silty, clay lenses present
			0.5-0.8	throughout clay reddish brown (2.5 YR 4/4), firm, silt is moderate to well
				compacted, damp to wet.
160	165	5	1.25-8/	0-4': Sand. As above.
			0.4-1.2	4-5': Silt. Brown (7.5 YR 4/2), very sandy (very fine to fine), trace clay (some
				very thin (approximately 1 mm), clay laminations present throughout, well
				compacted, damp.
165	170	5	1.25-	0-5': Silt. As above, contains a thin silty sand layer at 4.5-5' interval (sand
			4.75/	is very fine to fine).
			0.3-1.3	
170	175	5	1.75-6.5/	0-5': Silt. As above, contains two distinct silty sand (very fine to fine) layers
			0.4-1.4	at 0.5-1.5' interval, 3-3.4' interval.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-64 A/B

Prepared by J. Keller/J. Riepanhoff

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
175	180	5	1-1.75/	0-5': Silt. Brown (7.5 YR 4/2), very sandy (very fine to fine), some very thin
			0.1-0.8	clay laminations, clay, reddish brown (2.5 YR 4/4) firm, well compacted,
				damp.
180	185	5	1-2/	0-5': Silt. As above.
			0.2-1.2	
185	190	5	1-1.75/	0-5': Silt. As above.
			0.2-1.1	
190	195	5	1.75-	0-5': Silt. As above.
			4.75/	
			0.1-1.1	
195	200	5	1.25-325/	0-5': Silt. As above.
			0-1.0	
200	205	5	2.25-5/	0-4': Silt. As above.
			0-1.9	4-5': Silt. Dark reddish gray (5 YR 4/2), trace to some clay, trace of sand
				(very fine to fine), HP = 0.9, well compacted, wet, firm.
205	210	5	1.5-30.5/	0-5': Silt. As above.
			0-15.1	
210	215	5	1-4/	0-4': Clay. Gley (2 5/1) blue to gray, silty, sandy (very fine to coarse),
			0-1.5	gravelly (2 mm to >100 mm) very poorly sorted, damp to wet, stiff to
				hard, (HP = 1.5).
				Bedrock (gneiss/schist) at 214' bgs
				EOB @ 214 feet.
				GM-64A Total Depth 45 ft.
				GM-64B Total Depth 214 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-65 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 6

Site

Location Kingsford, Michigan Drilling Started 9:12 6/2/00 Drilling Completed 13:15 6/3/00

Total Depth Drilled 205 Feet Hole Diamete 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1065.21 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Helper Ryan, Jerry

Prepared By John Keller and Bill Schulz Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5			No recovery.
5	10	5	1.2-1.6/	0-0.9': Silt: Very dark brown (10 YR 3/2), trace to some sand, trace of
			0.0-0.0	gravel (2 mm to 40 mm) at the base (0.7-0.9'), layer of dark yellowish
				brown (10 YR 3/6) silt from 0.2-0.45', trace clay (possible slough from
				above)
				0.9-5': Silt: Reddish brown (5 YR 4/3), with clay, yellowish red (5 YR 4/6)
				layers dispersed throughout (H.P. = 0.2: silt, H.P. = 2.0: clay), damp to wet.
10	15	5	1.2-1.9/	0-3.5': Silt: With clay layers, as above.
			0.0-0.0	3.5-4': Silt: Dark brown (7.5 YR 3/4), trace to some very fine to fine sand,
				loose to slightly compacted, damp to wet.
				4-5': Silt: Reddish brown (5 YR 4/3), with clay, yellowish red (5 YR 4/6)
				layers throughout, (H.P. = 2.0 in silt: H.P. = 2.0 in clay), moderately
				compacted, damp to wet.
15	20		1.2-2.0/	0-5': Silt: With clay layers, as above.
			0.0-0.0	
20	25		1.2-1.5/	0-5': Silt: With clay layers, as above with trace to some very fine to
			0.0-0.0	fine sand in the lower 3 feet.
25	30		1.5-1.8/	0-5': Silt: With clay layers, as above with abundant clay layers from
			0.0-0.0	4.5-5' interval.
30	35	5	25-1,800/	0-4.5': Silt: With clay layers as above with abundant clay layers from
			0.0-0.0	0-1.8' interval.
				4.5-5': Sand: Dark reddish gray (5 YR 4/2), medium to fine, trace to some

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-65 Page 2 of 6

Prepared by John Keller and Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				very fine, trace to some silt, loose, damp, well sorted.
35	40	5	250-	0-5': Sand: dark reddish gray (5 YR 4/2) medium to very coarse, gravelly
			>10,000/	(2 mm to 70 mm), gravel is subangular to subrounded, poorly sorted,
			0.0-0.0	loose, damp to wet.
40	45	5	>10,000/	0-5': Sand and Gravel: As above.
			0.0-0.0	
45	50	5	1,500-	0-5': Sand and Gravel: As above.
			6,200/	
			0.0-0.0	
50	55	5	2,700-	0-4.2': Sand and Gravel: As above.
			7,200/	4.2-5': Sand: Reddish brown (5 YR 4/3), fine to very fine, silty trace to
			0.0-0.0	some medium, well sorted, loose, damp.
55	60	5	480-	0-5': Sand: Reddish brown (5 YR 4/3), very fine to fine, silty, trace clay,
			1,800/	well sorted, damp to wet, loose.
			0.0-0.0	
60	65	5	6,700-	0-3.75': Sand: As above.
			>10,000/	3.75-4.2': Silt: Reddish brown (5 YR 4/3) with clay inclusions, dark gray
			0.0-0.0	(5 YR 4/1) (H.P. = 1.5), moderately compacted, damp.
				4.2-5': Sand: Reddish brown (5 YR 4/3), fine to very fine, some silt, well
				sorted, loose, damp.
65	70		650-	0-3': Sand: As above.
			6,800/	3-5': Silt: Reddish brown (5 YR 4/3), sandy (very fine to fine), some clay
			0.0-0.0	nodules, loose, damp to wet.
70	75		5,300-	0-2.75': Silt: As above.
			>10,000/	2.75-4.25': Silt: Reddish brown (5 YR 4/4) with abundant clay laminations/
			0.0-0.0	layers (clay: dark reddish gray 5 YR 4/2) (H.P. = 0.75; silt and H.P. = 1.25)
				clay moderately compacted, damp to wet.
				4.25-5': Sand: Reddish brown (5 YR 4/3), silty, very fine to fine grained,
				well sorted, loose, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-65 Page 3 of 6

Prepared by John Keller and Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
75	80	5	50-5,300/	0-5': Sand: As above.
			0.0-0.0	
80	85	5	3,800-	0-2.5': Sand: As above.
			>10,000/	2.5-5': Silt: Reddish brown (5 YR 4/4), some clay, some sand (very
			0.0-0.0	fine to fine), loose, damp to wet.
85	90	5	2,400-	0-5': Silt: As above, but with increasing sand content (sandy very fine
			8,400/	to fine silt).
			0.0-0.0	
90	95	5	5,500-	0-4': Silt: As above.
			>10,000/	4-5': Sand: Reddish brown (5 YR 4/3), silty very fine to fine, well sorted,
			0.0-0.0	loose, damp to saturated.
95	100	5	58-	0-1.5': Silt: Reddish brown (5 YR 4/3) with clay layers/laminations (clay,
			8,000/	dark reddish gray 5 YR 4/2), firm, saturated.
			0.0-0.0	1.5-4.5': Silt: Reddish brown (5 YR 4/8), sandy (very fine to fine,
				saturated.
				4.5-5': Sand: Reddish brown (5 YR 4/4), silty (very fine to fine), well
				sorted, loose, damp to saturated.
100	105	5	1,900-	0-0.8': Sand: As above.
			>10,000/	0.8-3.5': Silt: Reddish brown (5 YR 4/3), some clay content (H.P. = 1.5),
			0.0-0.0	firm, damp to wet.
				3.5-4.5': Sand: Reddish brown (5 YR 4/4), very fine to fine trace to
				some silt, well sorted, damp.
				4.5-5': Silt: Reddish brown (5 YR 4/3), some clay, crumbly, damp.
105	110	5	3,900-	0-5': Silt: Reddish brown (5 YR 4/3), sandy (very fine to fine) but sand
			>10,000/	content decreases as you go down section, saturated.
			0.0-0.0	
110	115	5	6,900-	0-0.5': Silt: Reddish brown (5 YR 4/3), some sand (very fine to fine),
			>10,000/	saturated.
			0.0-0.0	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-65 Page 4 of 6

Prepared by John Keller and Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
115	120	5	3,000-	0-5': Silt: Dark reddish brown (5 YR 3/4), with thin clay layers/laminations
			7,400/	throughout (clay, dark gray 5 YR 4/1) (H.P. = 0.5), moderately to
			0.0-0.0	well composted, damp to saturated.
120	125	5	100-	0-5': Sand: Dark reddish gray (5 YR 4/2), medium, trace very fine to fine,
			>10,000/	well sorted, loose, damp to wet.
			0.0-0.0	
125	130	5	920-	0-0.5': Silt: Brown (7.5 YR 4/4), trace to some clay, saturated.
			>10,000/	0.5-5': Sand: Brown (7.5 YR 4/3), medium, trace to some very fine to
			0.0-0.0	fine, well sorted, loose, saturated, sand fines as you go down section.
130	135		1,200-	0-1.5': Sand: Brown (7.5 YR 4/3) medium, trace very fine to fine, well
			>10,000/	sorted, wet to saturated, loose.
			0.0-0.0	1.5-3': Silt: Dark reddish gray (5 YR 4/2) with clay layers/laminations
				(clay: gray 5 YR 5/1), trace sand (very fine to fine).
				3-3.7': Sand: Dark reddish brown (5 YR 3/2), medium to very coarse,
				fine gravel (2 mm to <10,000 mm), poorly sorted, very wet.
				3.7-5': Sand, dark reddish brown (5 YR 3/2), medium to very coarse, fine
				gravel (2 mm to <10,000 mm), trace to some very fine to fine sand, trace
				to some clay, some silt.
135	140	5	92-	0-5': Sand: Dark reddish brown (5 YR 3/2), coarse to medium, with very
			>10,000/	coarse, some fine, trace very fine, poorly sorted, loose, damp to wet.
			0.0-0.0	
140	145	5	6,700-	0-5': Sand: As above, but fining slightly as you go down section.
			>10,000/	
			0.0-0.0	
145	150	5	690-	0-5': Sand: As above.
			>10,000/	
			0.0-0.0	
150	155	5	2,100-	0-5': Sand: As above, but fining slightly as you go down section.
			>10,000/	
			0.0-0.0	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-65 Page 5 of 6

Prepared by John Keller and Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
155	160	5	>50,000/	Sand: Dark brown (7.5 YR 3/2), medium to fine, trace to some very fine,
			0.0-0.0	trace silt, well to moderately sorted, damp to wet (0-5').
160	165	5	750,000/	0-2.5': Sand: Dark brown (7.5 YR 3/2), fine, trace to some very fine, trace
			0.0-0.0	to some medium, some silt (silt content increases as you go down
				section).
				2.5-3.25': Silt: Reddish brown (5 YR 4/3) with clay layers throughout
				(clay reddish brown 2.5 YR 4/3; plastic)
				3.25-3.75': Silt: Reddish brown (5 YR 4/3), sandy (very fine to fine), loose
				to moderately compacted, damp to wet.
				3.75-4.5': Gravel: Very dark gray (5 YR 3/1) (2 mm to 70 mm), some fine
				to very coarse sand, trace very fine sand, trace silt.
				4.5-5': Silt: Dark brown (7.5 YR 3/4), trace very fine to fine sand, loose,
				damp.
165	170	5	3,500-	0-5': Sand: Brown (7.5 YR 4/3), medium to fine, trace to some very fine,
			>10,000/	trace to some silt, well sorted, damp, loose.
			0.0-0.0	
170	175	5	>10,000/	0-5': Sand: As above.
			0.0-0.0	
175	180	5	2,000-	0-0.9': Sand: As above.
			>10,000/	0.9-1.5': Sand: Brown (7.5 YR 4/3) very fine to fine, silty, trace coarse
			0.0-0.0	sand, trace to some medium sand, trace clay, well sorted, damp, loose.
				1.5-5': Sand: Brown (7.5 YR 4/8) medium to coarse, trace very fine to
				fine, moderate to well sorted, loose, damp.
180	185	5	7,000-	0-2.5': Sand: As above.
			>10,000/	2.5-3.5': Sand: Brown (7.5 YR 4/2) medium to very coarse, trace very fine
			0.0-0.0	to fine, trace to some fine gravel (2 m to <5 mm), poorly sorted, loose, damp.
				3.5-4.5': Silt: Brown (7.5 YR 4/3), some medium to coarse sand, some
				very fine to fine sand, trace to little clay, trace fine gravel (approximately
				2 mm), crumbly, slightly cohesive, dry to damp, poorly sorted.
				4.5-5': Sand: Brown (7.5 YR 4/3), medium, trace to some very fine to
				fine, trace silt, well sorted, loose, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-65 Page 6 of 6

Prepared by John Keller and Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
185	190	5	1,000-	0-3.5': Sand: As above.
			>10,000/	3.5-5': Sand: Brown (7.5 YR 4/3), medium to coarse, trace very fine to fine,
			0.0-0.0	trace very coarse, moderately sorted, loose, damp.
190	195	5	>10,000/	0-3': Sand: As above.
			0.0-0.0	3-5': Sand: Brown (7.5 YR 4/3), very fine to fine, silty, well sorted, loose,
				damp.
195	200	5	1,800	0-5': Sand: Brown (7.5 YR 4/2), medium to fine, trace to some very fine,
			>10,000/	trace to some silt, well sorted, loose, damp.
			0.0-0.0	
200	205	5	>10,000/	0-1': Sand: As above with trace of gravel (5 mm to 50 mm) at 0' interval.
			0.0-0.0	1-5': Silt: Brown (7.5 YR 4/3) to dark grayish gray (Gley 4/1 10Y),
				clayey, sandy, some gravel (2 mm to 75 mm) gravel content increases as
				you go down section. Last 1' gravelly, clay laminations/layers within
				silt last 1.5' (H.P. = 0.5 - 3.25), last 1.5' density and composition increases
				(last 1.5' = till?), stiff to very stiff, dry to damp.
				EOB @ 205'

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GM-66 A/B Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 6

Site Location: Kingsford, Michigan Drilling Started: 6/4/00 Drilling Completed: 6/5/00

Total Depth Drilled: 175 Feet Hole Diameter: 6 inches Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" Sampling Interval: Continuous feet

Land-Surface Elev.: 1045.72 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: Water Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear Driller: Mike Hansen Helper: Jerry and Ryan

Prepared By: John Keller Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2	10-12/	0-1': Silt, very dark brown (7.5 YR 2.5/2), organic-rich, abundant rootlets, some small
			0.0-0.0	twigs, trace sand (very fine to fine), crumbly, loose.
				1-2': Silt, dark reddish brown (5 YR 3/4), some sand (very fine to fine), trace rootlets
				and small twigs, trace clay, crumbly, loose.
5	10	5	1.5-3/	0-2.5': Sand, very dark brown (7.5 YR 2.5/3) to strong brown (7.5 YR 5/8), very fine
			0.0-0.0	to fine, silty, well sorted, slightly cohesive, damp.
				2.5-3.5': Sand, black (7.5 YR 2.5/1), medium to very coarse, trace to some very fine
				to fine, trace silt, gravelly (2 mm to 60mm), gravel; subrounded to subangular, poorly
				sorted, damp to wet, loose.
				3.5-5': Silt, strong brown (7.5 YR 4/6), very sandy (very fine to fine), trace of gravel
				from 3.5 to 4' (10 mm-65 mm), loose to slightly compacted, damp to wet.
10	15	5	2.5-3/	0-5': Silt, as above.
			0.0-0.0	
15	20	5	3/	0-5': Silt, as above.
			0.0-0.0	
20	25	5	5-700/	0-0.5': Silt, as above.
			0.0-0.0	0.5-1.5': Silt, brown (7.5 YR 4/4), trace to some sand (very fine to fine), trace clay,
				gravelly (2 mm to 120 mm) (huge piece of gravel from 1-1.5'), slightly compacted to
				moderately compacted, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-66 A/B

Prepared by John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1.5-5': Sand, reddish brown (5 YR 4/3), medium to coarse, trace very fine to fine
				(sand coarsens as you go down section), trace silt, trace clay, moderate sorted,
				loose, damp.
25	30	5	15-3,000/	0-3': Sand, reddish brown (5 YR 4/3), medium to very coarse, trace very fine to fine,
			0.0-0.0	gravelly (2 mm - 75 mm), trace silt, trace clay, damp.
				3-4': Sand, brown (7.5 YR 4/4), medium to very fine, trace of coarse, trace very
				coarse, trace clay, silty, gravelly (2 mm - 50mm), loose, poorly sorted, damp.
				4-5': Sand brown (7.5 YR 4/4), medium to coarse, some very coarse, clay layer from
				4.75-4.95' [clay: reddish brown (2.5 YR 4/4)], trace to some silt, (H.P. of clay = 2.5),
				some gravel (2 mm - 70 mm).
30	35	5	1,000-	0-1': Sand, as above.
			8,000/	1-5': Sand, brown (7.5 YR 4/4), medium, trace to some coarse, trace very fine to fine,
			0.0-0.0	well sorted, loose, damp, trace clay, trace of gravel from 4.5-5' interval.
35	40	5	100-500/	0-5': Sand, brown (7.5 YR 4/4), medium to coarse, trace to some very coarse, trace
			0.0-0.0	very fine to fine, some gravel (2 mm - 90 mm), loose, poorly sorted, damp, abundant
				gravel from 3.5-5' interval.
40	45	5	100-200/	0-2': Sand, as above.
			0.0-0.0	2-5': Silt, reddish brown (5 YR 5/4), some clay, trace of sand (very fine to fine),
				moderately compacted, crumby, damp
45	50	5	2.5-3.5/	0-5': Silt, reddish brown (5 YR 5/4), trace to some clay, trace of sand (very fine to
			0.0-0.0	fine), moderately to well compacted, damp to wet.
50	55	5	3-5/	0-5': Silt, as above.
			0.0-0.0	
55	60	5	2.5-4/	0-5': Silt, as above (H.P. = 1.0).
			0.0-0.0	
60	65	5	2.5-3.5/	0-4.5': Silt, as above.
			0.0-0.0	4.5-5': Silt, reddish brown (2.5 YR 5/3), sandy (very fine to fine), trace clay, crumbly,
				damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-66 A/B

Prepared by John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
65	70	5	10/	0-5': Silt, as above.
			0.0-0.0	
70	75	5	3-8/	0-1.5': Sand, brown (7.5 YR 4/3), medium, some very fine to fine, some silt, trace
			0.0-0.0	clay, well sorted, loose, damp.
				1.5-3.5': Sand, brown (7.5 YR 4/3), coarse to very coarse, some medium, some very
				fine to fine, gravelly (2 mm to 70 mm), poorly sorted, damp, loose.
				3.5-4': Sand, brown (7.5 YR 4/2), medium to very fine, some clay (clay nodules/
				inclusions), some gravel to gravelly (inbedded in clay matrix), trace silt, damp, slightly
				compacted.
				4-5': Sand, brown (7.5 YR 4/3), coarse to very coarse, some medium, some very fine
				to fine, gravelly (2 mm to 80 mm), poorly sorted, damp, loose, trace clay.
75	80	5	3-12/	0-3': Sand and gravel, as above with clay layer from 1.3-1.5' interval [clay: firm
			0.0-0.0	(H.P. = 3.0), reddish brown (5 YR 5/4)].
				3-5': Silt, brown (7.5 YR 4/4), sandy (very fine to fine), trace of clay, sand content
				increases as you go down section (last 1' is a very sandy very fine to fine) silt.
80	85	5	5-12/	0-2': Sand, brown (7.5 YR 5/3), very fine to fine, trace medium, silty, well sorted,
			0.0-0.0	loose, damp.
				2-2.8': Sand, brown (7.5 YR 5/3), medium, trace to some very fine to fine, trace silt,
				well sorted, loose, damp.
				2.8-5': Sand, brown (7.5 YR 5/3), medium to very coarse, trace to some very fine to
				fine, gravelly (2 mm to 40 mm), poorly sorted, loose, damp to wet.
85	95	5	1-6/	0-5': Sand, brown (7.5 YR 5/3), medium to coarse, trace very coarse, trace to some
			0.0-0.0	very fine to fine, well to moderately sorted, loose, wet.
90	95	5	4-25/	0-5': Sand as above.
			0.0-0.0	
95	100	5	3-20/	0-4.25': Sand, as above.
			0.0-0.0	4.25-5': Sand, brown (7.5 YR 4/2), medium, trace to some very fine to fine, some
				gravel (2 mm to 25 mm), well sorted, loose, damp to wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-66 A/B

Prepared by John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
100	105	5	10-70/	0-1': Sand as above but becoming increasingly more silty as you go down section.
			0.0-0.0	1-5': Sand, brown (7.5 YR 4/2), medium to coarse, trace very coarse, trace to some
				very fine to fine, trace to some gravel (2 mm to 50 mm), moderately to poorly sorted,
				loose, damp, trace silt.
105	110		650-750/	0-5': Sand, dark brown (7.5 YR 4/2), medium to coarse, trace very coarse, trace to
			0.0-0.0	some very fine to fine, trace gravel (2 mm to 50 mm), moderately to poorly sorted,
				loose, damp.
110	115	5	3,000-	0-5': Sand, as above.
			>10,000/	
			0.0-0.0	
115	120	5	600-4,200/	0-1.5': Sand, as above.
			0.0-0.0	1.5-3': Sand, brown (7.5 YR 4/2), medium, trace to some coarse, trace to some very
				fine to fine, well to moderately sorted, loose, damp.
				3-5': Sand, brown (7.5 YR 4/2), medium to coarse, trace very coarse, trace to some
				very fine to fine, trace gravel (2 mm to 30 mm), moderately to poorly sorted, loose,
				damp.
120	125	5	600-	0-3': Sand, as above but gravel content increases as you go down section, gravel
			>10,000/	(2 mm to 50 mm).
			0.0-0.0	3-4.5': Gravel, very dark gray (5 YR 3/1), predominately fine gravel (2 mm to 20 mm),
				but contains some large pieces (up to 50 mm), some medium to very coarse sand,
				trace very fine to fine sand, very poorly sorted, loose, damp to wet.
				4.5-4.6': Clay, dark brown (7.5 YR 3/2), gravelly (gravel inbedded in clay matrix), trace
				to some very fine to fine sand.
				4.6-5': Sand, dark brown (7.5 YR 3/2), medium to very fine, well sorted, loose, damp.
125	130		2,200-	0-3.5': Sand, dark brown (7.5 YR 3/2), medium to very coarse, trace very fine to fine,
			9,000/	gravelly (2 mm to 30 mm), gravel is subrounded to subangular, very poorly sorted,
			0.0-0.0	loose, wet.
				3.5-3.6': Clay, yellowish red (5 YR 4/6), and gravel (2 mm to 100 mm), gravel
				supported in clay matrix.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-66 A/B

Prepared by John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.6-4.5': Sand, dark brown (7.5 YR 3/2), medium to very coarse, trace very fine to
				fine, gravelly (2 mm to 30 mm), very poorly sorted, loose, wet.
				4.5-5': Sand, dark brown (7.5 YR 3/2), medium, trace coarse, trace to some very fine
				to fine, trace of gravel (approximately 5 mm), well sorted, loose, damp. -
130	135	5	1,500-	0-2.5': Sand, as above.
			>10,000/	2.5-5': Sand, dark brown (7.5 YR 3/2), medium to very coarse, trace very fine to fine,
			0.0-0.0	gravelly (2 mm to 50 mm), subangular to subrounded, very poorly sorted, loose, wet.
135	140	5	500-9,000/	0-3.5': Sand, as above but gravel size increases (more larger pieces of gravel
			0.0-0.0	>20 mm).
140	145	5	1,100-	0-3.5': Sand, as above.
			8,000/	3.5-5': Sand, brown (7.5 YR 4/3), very fine to fine, silty, well sorted, loose, damp.
			0.0-0.0	
145	150	5	900-4,100/	0-3.5': Sand, brown (7.5 YR 4/3), medium to coarse, trace very coarse, trace to some
			0.0-0.0	very fine to fine, moderately to poorly sorted, loose, damp.
				3.5-4': Silt, reddish brown (5 YR 4/8), some clay, sandy (very fine to medium), some
				gravel (<10 mm), subangular to subrounded.
				4-5': Gravel (2 mm to 70 mm), very dark gray (5 YR 3/1), sandy (medium to very
				coarse), trace very fine to fine, gravel is subangular to rounded, very poorly sorted,
				loose, wet, trace to some clay, trace silt.
150	155	5	400-1,400/	0-2.5': Gravel, as above but gravel size increases as you go down section.
			0.0-0.0	2.5-5': Sand and gravel, dark brown (7.5 YR 3/2) sand is medium to very coarse,
				trace very fine to fine, trace to some clay, trace silt, gravel is subangular to rounded,
				very poorly sorted, loose, wet, gravel: (2 mm to 80 mm).
155	160	5	400-4,700/	0-1.5': Sand and gravel, as above.
			0.0-0.0	1.5-3.25': Clay, dark greenish gray (Gley 4/1/5G) to dark brown (7.5 YR 3/3), sandy
				(very fine to fine), trace medium to coarse, silty, gravelly (2mm to 100 mm), silt/sand/
				gravel supported by clay matrix (till?), very poorly sorted, crumbly, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-66 A/B

Prepared by John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3.25-4': Sand, strong brown (7.5 YR 4/6), medium to very coarse, trace to some very
				fine to fine, trace silt, trace clay, trace to some gravel (2 mm to 30 mm), subrounded
				to subangular, moderately to poorly sorted, loose, wet.
				4-5': Clay, dark greenish gray (Gley, 4/1/5G), sandy (very fine to fine), trace medium,
				trace coarse, silty, gravelly (2 mm to 80 mm), silt/sand/gravel supported by clay matrix
				(till?) very poorly sorted, crumbly, damp (H.P. < 0.5).
160	165	0		Converted to drilling with water (no recovery).
165	170	5		0-4': No recovery, some pebbles, pieces of weathered bedrock.
				4-5': Competent bedrock.
170	175	5		0-5': Bedrock: Phyllite or slate (bluish gray) vertical foliations, secondary calcification,
				minor amounts of pyrite, breaks into angular fragments.
				EOB @ 175'.
				GM-66A Total Depth 37 ft.
				GM-66B Total Depth 175 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/We GM-67 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 8

Site Location Kingsford, Michigan Drilling Started 6/13/00 Drilling Completed 6/15/00

Total Depth Drilled 265 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1115.90 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Hansen Helper Jerry and Ryan

Prepared By John Keller/Bill Schulz Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	1.1-2.1/	0-1.5': Silt, reddish brown (5 YR 4/4), some clay to clayey, trace to some
			0.0-0.2	rock fragments in upper 0.5' interval, trace rootlets.
				1.5-2.5': Sand, yellowish red (5 YR 4/6), medium, some gravel (2 mm to
				45 mm), subrounded to subangular, trace very fine to fine, trace silt, trace
				coarse, poorly sorted, loose, dry.
				2.5-3.5': Sand, strong brown (7.5 YR 4/6), fine to medium, trace very fine,
				trace silt, trace gravel (2 mm to 30 mm), subrounded, moderately to well
				sorted, loose, dry.
				3.5-5': Sand, brown (7.5 YR 4/4), medium, trace coarse, trace very fine to
				fine, trace silt, some gravel (2 mm to 50 mm), subrounded to subangular,
				poorly to moderately sorted, loose, dry.
5	10	2.5	2.2-10/	0-2': Sand, very dark grayish brown (10 YR 3/2), medium, trace very fine to
			0.0-1.8	fine, small clay modules throughout (clay may be slough?), trace to some
				fine gravel (2 mm to <10 mm), subrounded to subangular loose, poorly
				to moderately sorted.
				2-2.5': Sand, brown (10 YR 4/3), medium to coarse, trace very coarse, trace
				very fine to fine, trace very fine gravel (<5 mm), poorly to moderately sorted,
				loose, damp.
10	15	2.5	1.9-3/	0-2': Sand, as above.
			0.0-0.0	2-2.5': Sand, dark brown (10 YR 3/3), fine to medium, some very fine,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-67

Prepared by John Keller/Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				some silt, gravelly (2 mm to 35 mm), subrounded to subangular, loose, dry.
15	20	3	12-100/	0-2.5': Sand, as above with gravel (2 mm to 20 mm).
			0.0-20.9	2.5-3': Sand, dark brown (7.5 YR 3/4), medium to coarse, trace very coarse,
				some gravel (2 mm to 50 mm), subrounded to subangular, poorly to
				moderately sorted, loose, damp.
20	25	3	3.4-8.8/	0-1.5': Sand, dark brown (7.5 YR 3/4), medium to very coarse, trace very
			0.0-1.0	fine to fine, gravelly (2 mm to 50 mm), trace silt, trace clay.
				1.5-2.2': Sand, brown (7.5 YR 4/4), medium, trace very fine to fine, some
				silt to silty, trace fine gravel (<5 mm), well sorted, loose, damp.
				2.2-3': Sand, brown (7.5 YR 5/4), very fine to fine, silty, trace gravel (2 mm to
				40 mm), large boulder (60 mm) at bottom of section.
25	30	2	7-14/	0-2': Sand, brown (10 YR 4/3), medium, trace very fine to fine, trace silt,
			0.0-2.9	trace clay, gravelly (2 mm to 50 mm), subrounded to angular, poorly to
				moderately sorted, loose, dry.
30	35	5	1.1-42/	0-5': Sand, brown (7.5 YR 5/4), very fine to fine, trace to some medium,
			0.0-5.4	trace to some silt, well sorted, loose, dry.
35	40	2.5	1.2-2.2/	0-1.5': Silt, brown (7.5 YR 4/3), with clay layers/laminations throughout
			0.0-0.6	[clay, dark brown (7.5 YR 3/2) H.P. = 1.75], H.P. of silt = 0.75, moderately
				well compacted, dry to damp.
				1.5-2.5': Silt, brown (7.5 YR 5/4) very sandy (very fine to fine), loose, dry.
40	45	2.5	1.8-4.7/	0-2': Silt, as above.
			0.0-0.9	2-2.5': Silt, brown (7.5 YR 4/3) with clay layers/laminations throughout
				clay, dark brown (7.5 YR 3/2), moderately well compacted, dry to damp.
45	50	5	4.6-13/	0-1': Sand, brown (7.5 YR 4/3) medium, trace very fine to fine, trace coarse,
			0.0-2.4	trace coarse, trace silt, well sorted, loose, damp.
				1-5': Sand, brown (7.5 YR 4/4), fine to medium, trace to some very fine,
				trace to some silt, well sorted, loose, damp.
50	55	3	8.5-23/	0-1.5': Sand, as above.
			0.0-3.0	1.5-3': Sand, brown (10 RY 4/3), very fine, trace to some fine, silty, trace

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

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Prepared by John Keller/Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				clay, loose to slightly compacted, dry to damp, well sorted.
55	60	5	2.2-4.0/	0-3': Silt, brown (7.5 YR 4/3) with clay layers/laminations throughout, (clay,
			0.0-2.4	dark red (2.5 YR 3/6)) (H.P. silt = 2.25 H.P. clay = 2.5), tight, well compacted,
				damp to wet.
				3-5': Sand, brown (7.5 YR 4/3), very fine to fine, trace clay, trace to some
				silt, well sorted, loose, damp.
60	65	5	2.2-3.9/	0-1.5': Sand as above.
			0.0-1.6	1.5-5': Silt, dark brown (7.5 YR 3/2) with clay layers/laminations through-
				out, (clay, brown (7.5 YR 4/3)) (H.P. silt = 2.5 H.P. clay = 1.25), dense, well
				compacted, damp to wet.
65	70	5	2.2-2.4/	0-5': Silt with clay layers/laminations as above. H.P. silt = 2.8 H.P. clay = 3.
			0.0-1.0	
70	75	5	2.2-2.5/	0-5': Silt with clay layers/laminations as above, H.P. silt = 1.8, H.P. clay >4.
			0.0-0.6	
75	80	5	2.2-2.4/	0-5': Silt with clay layers/laminations, as above (clay layers much less
			0.0-0.6	abundant as before), H.P. clay >4, H.P. silt = 1.8.
80	85	5	2.2-2.3/	0-5': Silt with clay layers/laminations as above (again clay layers much less
			0.1-0.6	abundant).
85	90	5	2.1-2.5/	0-5': Silt with sparse clay layers/laminations, as above.
			0.3-0.6	
90	95	5	2.2-2.6/	0-5': Silt with sparse clay layers/laminations, as above.
			0.2-0.7	
95	100	5	2.3-2.6/	0-5': Silt, dark brown (7.5 YR 3/3), with abundant clay layers/laminations
			0.0-0.0	throughout (clay: dark reddish brown (5 YR 3/4)), both silt and clay are very
				dense, clay very hard (driller had difficulty drilling through it) H.P. > 4 for
				both, silt displays small patches with color of dark gray (7.5 YR 4/1), well
				compacted, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-67 Page 4 of 8

Prepared by John Keller/Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
100	105	5	2.3-3.1/	0-5': Silt with clay layers/laminations as above.
			0.0-0.0	
105	110	5	2.1/	0-5': Clay, dark reddish brown (5 YR 3/4), trace to some silt (H.P. >4), very
			0.0-0.0	hard (drillers had difficulty drilling through it), slight HCl reaction with clay,
				extremely vigorous HCl reaction with $CaCO_3$ laminaes contained through-
				out clay, very well compacted.
110	115	5	2.1-14/	0-3': Clay, as above.
			0.0-0.0	3-4.5': Silt, dark reddish gray (5 YR 4/2), very dense, well compacted, H.P. =
				3.7.
				4.5-5': Clay, dark reddish gray (5 YR 4/2) to reddish brown (5 YR 4/3),
				slight HCl reaction, trace silt (H.P. >4), very hard, very well compacted.
115	120	5	5.5-850/	0-4': Silt, dark reddish brown (5 YR 3/4), very clayey (clay, brown (7.5 YR
			0.0-0.0	4/3), trace very fine to fine sand, well compacted, clay hard, silt moderately
				dense.
				4-5': Sand, brown (7.5 YR 4/3), fine to medium trace to some very fine,
				trace to some silt, well sorted, loose, damp to wet.
120	125	5	250-750/	0-1': Sand, as above.
			0.0-0.0	1-5': Sand, brown (7.5 YR 4/2), medium to very coarse, trace very fine to
				fine, gravelly (2 mm to 40 mm), trace clay, very poorly sorted, loose, damp.
125	130	5	150-310/	0-4': Sand and gravel, as above.
			0.0-0.0	4-5': Silt, brown (7.5 YR 3/3), very sandy (very fine to fine), trace clay, loose,
				damp.
130	135	5	33-130/	0-1.5': Silt, brown (7.5 YR 3/3), very sandy (very fine to fine), trace clay, loose,
			0.0-0.0	damp.
				1.5-5': Sand, brown (7.5 4/3), medium, trace to some very fine to fine,
				trace very coarse, well sorted, loose, damp.
135	140	5	180-850/	0-5': Sand, reddish brown (5 YR 4/3), very fine to fine, gravelly (10 mm to
			0.0-0.2	60 mm) interval from 3.5 to 4', gravel subangular to subrounded, some silt
				to silty, very well sorted (except for gravel interval), loose, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

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Prepared by John Keller/Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
140	145	5	850-2,200/	0-5': Sand, as above.
			0.0-0.5	
145	150	5	280-850/	0-2': Sand, as above.
			0.0-0.0	2-5': Silt, dark reddish brown (5 YR 3/3), sandy (very fine to fine), loose,
				dry to damp.
150	155	5	110-440/	0-5': Silt as above, with last 2' of the silt being dry and crumbly.
			0.0-0.1	
155	160	5	12-21/	0-5': Silt, dark reddish brown (5 YR 3/3), sandy (very fine to fine), loose,
			0.0-0.0	saturated.
160	165	5	1.8-55/	0-5': Silt as above, but sand content increases as you go down section
			0.0-0.0	(last 0.5' interval is borderline of a sandy silt/silty sand).
165	170	5	20-120/	0-5': Sand, reddish brown (5 YR 4/3), very fine to fine, silty, well sorted,
			0.0-0.0	loose, damp, to saturated.
170	175	5	1.2-35/	0-2': Sand, as above.
			0.0-0.1	2-3': Silt, dark reddish brown (5 YR 3/3) some clay to clayey, trace to some
				very fine to fine sand, loose, saturated.
				3-4': Silt, dark reddish brown (5 YR 3/3), very sandy (very fine to fine), trace
				clay, loose, damp to saturated.
				4-5': Silt, dark reddish brown (5 YR 3/3), trace to some very fine to fine
				sand, trace clay, loose to moderately compacted, damp.
175	180	5	1.0-1.8/	0-1': Silt, dark reddish brown (5 YR 3/3), some clay to clayey, trace very fine
			0.0-0.0	to fine sand, moderately compacted, saturated.
				1-3': Sand, reddish brown (5 YR 4/3), very fine to fine, some silt to silty,
				well sorted, moderately compacted, damp to wet.
				3-5': Silt, reddish brown (5 YR 5/3), some sand to sandy (very fine to fine)
				moderately compacted (H.P. = 2.0), damp to wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

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Prepared by John Keller/Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
180	185	5	1.3-1.5/	0-4.5': Silt, reddish brown (5 YR 4/3), with some clay (clay present both in
			0.0-0.1	silt matrix and as layers) clay, dark reddish brown (5 YR 3/3), trace sand
				(very fine to fine).
				4.5-5': Silt, reddish brown (5 YR 4/3), sandy (very fine to fine), moderately
				compacted, wet, trace, clay.
185	190	5	1.1-1.8/	0-1': Silt. As above.
			0.0-0.0	1-3.75': Silt, reddish brown (5 YR 4/3), trace to some sand (very fine to
				fine), trace to some clay, moderately compacted, damp to wet.
				3.75-4': Sand, reddish brown (5 YR 4/3), very fine to fine, silty, well sorted,
				loose, damp.
				4-5': Silt, reddish brown (5 YR 4/3), trace to some sand (very fine to fine),
				trace to some clay, moderately compacted, damp.
190	195	5	1.1-2.8/	0-5': Silt, as above.
			0.0-0.1	
195	200	5	1.0-2.3/	0-5': Silt, reddish brown (5 YR 4/3), some sand (very fine to fine), trace clay,
			0.0-0.0	loose to moderately compacted, saturated.
200	205	5	1.0-2.3/	0-5': Silt. As above.
			0.0-0.0	
205	210		<1-1.3/	0-5': Silt, reddish brown (5 YR 4/3), interbedded with clay, dark brown
			0.0-0.0	(7.5 YR 3/2), (H.P silt = 1.5; H.P. clay = 1.0), trace to some sand (very fine
				to fine), moderately compacted, saturated.
210	215	5	<1-2.2/	0-5': Silt and clay, as above with the last 2' interval having equal
			0.0-0.0	amounts of clay and silt or slightly more clay than silt.
215	220	5	<1-1/NA	0-5': Silt, dark reddish gray (5 YR 4/2) with abundant clay layers/
				laminations (clay, dark reddish brown (5 YR 3/3), moderately to well
				compacted, damp to wet.
220	225	5	<1-1.2/NA	0-5': Silt with clay layers/laminations as above.

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Sample/Core Log (Cont.d)

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Prepared by John Keller/Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
225	230	5	<1-2/NA	0-5': Silt, dark reddish gray (5 4/2), trace clay, trace very fine sand,
				moderately to well compacted, damp.
230	235	5	<1-2.5/	0-5': Silt as above.
			NA	
235	240	5	<1-1.2/	0-4.5': Clay, dark reddish brown (5 YR 3/4) to reddish brown 5 YR 4/3),
			0.0-0.0	gravelly (2 mm to 90 mm), gravel is subrounded to subangular, silty,
				trace to some sand (very fine to fine), firm to hard (H.P. = 2.75 - >4), dry
				to damp.
				4.5-5': Clay, dark reddish gray (5 YR 4/2) to dark gray (10 YR 4/1),
				gravelly (2 mm - 80 mm), sandy to very sandy (very fine to fine), silty,
				gravel is subrounded to subangular, soft to moderately stiff, (H.P. = 1.4-
				2.6). Till?
240	245	5	<1-2.0/	0-5': Clay as above, sandy/silty/gravelly, (till?).
			0.0-0.4	
245	250		<1-4.5/	0-5': Clay. Dark gray (10 YR 4/1), very sandy (very fine to fine), silty,
			0.0-0.0	gravelly (2 mm to 100 mm), soft, (H.P. = 0.6), gravel rounded to
				subangular, some gravel pieces appear to be weathered bedrock (slate/
				phyllite).
250	255	5	2.4-8.0/	0-1": Clay as above.
			0.0-0.0	1-5': Sand, grayish brown (10 YR 5/2), very fine to fine, silty, some clay
				(may be slough from above?), trace fine gravel (<5 mm), very dense,
				poorly sorted, damp.
255	260	5	1.5-26/	0-2.5': Sand, dark grayish brown (10 YR 4/2), very fine to fine, trace to
			0.0-5.4	some medium, silty, trace fine gravel (<5 mm), subrounded, trace clay.
				2.5-5': Silt, dark grayish brown (10 YR 4/2), very sandy (very fine to fine),
				some clay, trace to some fine gravel (<5 mm), subrounded, moderately
				compacted, damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-67

Prepared by John Keller/Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
260	263	3	18-52/	0-1.6': Clay, dark bluish gray (Gley 5B 4/1), to dark grayish brown
			1.2-31.5	(10 YR 4/2), sandy (very fine to fine), silty some gravel (2mm to 80 mm),
				subrounded to subangular.
				1.6-2': Sand, dark bluish gray (Gley 5B 4/1), coarse to very coarse, gravelly
				(2 mm to <10 mm), some silt, some very fine to fine sand, trace clay.
				2-3': Silt, dark bluish gray (Gley 5B 4/1), some sand to sandy (very fine
				to fine), trace clay abundant rock fragments (zone of weathered
				bedrock?).
263	265			Competent bedrock, greenish/bluish gray. Abundant metamorphic (Schist/
				Gneiss) with subvertical foliations (- 80°), abundant pyrite deposits
				along foliation planes, near vertical quartzite layering.
				EOB @ 265 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-68 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 5

Site Location: Kingsford, Michigan

Drilling Started: 6/28/00 Drilling Completed: 6/29/00

Total Depth Drilled: 243 Feet Hole Diameter: 6 inches Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" Sampling Interval: Continuous feet

Land-Surface Elev.: 1105.72 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: Water Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear Driller: Mike Hansen Helper: Jerry and Ryan

Prepared By: John Keller/Dawn Gabardi Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	8/0.1-1.0	0-0.5': Silt very dark grayish brown (10 YR 3/2), rich organic layer, trace to
				some sand (very fine to fine), some gravel (approximately 20 mm), some
				rootlets and grass clippings, loose.
				0.5-2': Sand reddish brown (5 YR 4/4), medium, some very fine to fine,
				gravelly (2 mm - 50 mm), subrounded. Trace silt, trace clay, poorly sorted,
				dry.
				2-5': Sand, yellowish brown (10 YR 5/6), medium, trace very fine to
				fine, very well sorted, loose, dry.
5	10	3	8-15/	0-0.5': Sand, as above.
			0.2-1.0	0.5-1.5': Sand, yellowish brown (10 YR 5/6), medium, trace very fine to fine,
				abundant small pieces of ground-up rock fragments and rock flour present
				(rock is bluish-gray), fragments are subangular to subrounded.
				1.5-3': Sand, light brown (7.5 YR 6/4), medium, some coarse, trace very
				fine to fine, gravelly (2 mm - 60 mm), very poorly sorted, loose, dry.
10	15	3	8-17.5/	0-3': Sand, strong brown (7.5 YR 5/6), medium to very coarse, trace very fine
			0.3-1.0	to fine, gravelly (2mm - 80 mm), poorly sorted, loose, dry.
15	20	2.5	11-80/	0-2.5': Sand and gravel, as above.
			0.2-1.2	
20	25	2.5	15-70/	0-2.5': Sand and gravel, as above.
			0.0-1.0	
25	30	5	10-130/	0-1': Sandy very dark grayish brown (10 YR 3/2), coarse to very coarse,
			0.2-5.4	some medium, trace very fine to fine, gravelly (2 mm - 20 mm),
				subangular to subrounded, very poorly sorted, loose, dry.
				1-2': Sand, brown (10 YR 4/3), medium, some very fine to fine, trace coarse
				gravel (50-70 mm), some finer gravel also present (10-30 mm), moderately
				to well sorted, loose, damp (due to water added by drillers).
				2-3': Clay, reddish brown (5 YR 4/3), some silt, trace sand, (very fine to
				fine), soft, plastic (HP = 0.75).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

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Prepared by John Keller/Dawn Gabardi

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				3-4.5': Silt, brown (10 YR 4/3), trace very fine sand, trace of clay (may be
				slough from above?), loose, dry.
				4.5-5': Sand, light reddish brown (5 YR 6/4), very fine, silty , very well
				sorted, loose, some clay, dry.
30	35	0		No recovery.
35	40	5	0-6.5/	0-5': Sand, brown (7.5 YR 4/3), fine to medium, trace to some very fine
			0.0-1.2	sand, trace silt, several clay layers throughout the sand, (clay : reddish
				brown (5 YR 4/3) clay is soft, plastic, damp to wet), sand also has some
				clay content besides layers.
40	45	5	6-12/	0-3': Sand, brown (7.5 YR 4/3), fine to medium, trace to some silt, trace
			0.0-2.0	very fine, trace gravel (2 mm - 15 mm), subangular, well sorted, loose,
				damp.
				3-5': Sand, brown (10 YR 4/3), medium to very coarse, trace very fine to
				fine, trace silt, gravelly (2 mm - 50 mm), subangular to subrounded,
				poorly sorted, loose, damp.
45	50	5	7-10/	0-5': Sand and gravel. As above.
			0.0-2.5	
50	55	0		No recovery.
55	60	5	7-14/	0-1.5': Sand, brown (7.5 YR 5/3), medium to very coarse, trace to some
			0.2-1.1	very fine to fine, gravelly (2 mm to 10 mm), subangular to subrounded,
				trace silt, loose, damp, very poorly sorted.
				1.5-5': Sand, brown (7.5 YR 5/3), medium to very coarse, trace to some
				very fine to fine, trace silt, loose, moderately sorted to poorly sorted, damp,
				trace gravel (< 10 mm), subrounded.
60	65	5	7-9/	0-5': Sand, as above.
			0.0-0.7	
65	70	5	8-12/	0-1.5': Sand as above.
			0.0-0.6	1.5-5': Sand, brown (7.5 YR 5/3), medium, trace coarse, trace to some very fine
				to fine, trace silt, well sorted, trace gravel (<10mm), subrounded, loose, damp.
70	75	5	7-9/	0-5': Sand as above.
			0.0-1.2	
75	80	5	6-10/	0-5': Sand, brown (7.5 YR 5/4), medium to coarse, trace very coarse, some very
			0.0-2.0	fine to fine, trace silt, some gravel (2 mm - 15 mm), subrounded, moderately
				to poorly sorted, loose, damp.
80	85	3	6-12/	0-3': Sand as above.
			0.0-0.2	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-68

Prepared by John Keller/Dawn Gabardi

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
85	90	5	7-11/	0-5': Sand as above.
			0.0-0.1	
90	95	5	7-13/	0-3.5': Sand as above.
			0.0-1.3	3.5-5': Sand, brown (7.5 YR 5/4), medium to coarse, trace very coarse, some
				very fine to fine, trace silt, trace to some gravel (20 - 70 mm), subrounded to
				subangular, loose, moderately to poorly sorted, damp.
95	100	5	7-9/	0-5': Sand, brown (7.5 YR 5/4) medium, some very fine to fine, trace silt,
			0.0-0.3	well sorted, damp, loose.
100	105	3	7-9/	0-2': Sand as above.
			0.0-0.5	2-3': Silt, brown (7.5 YR 4/3), very sandy (very fine to fine), trace to some clay,
				loose to moderately compacted, wet to saturated.
105	110	5	7-8/	0-4.5': Sand, brown (7.5 YR 5/3), medium, some coarse, trace very coarse,
			0.0-0.6	trace very fine to fine, trace silt, moderately to well sorted, loose, damp.
				4.5-5': Silt, brown (7.5 YR 4/4), very sandy (very fine to fine), trace clay, loose
				to moderately compacted, wet.
110	115	5	7-8/	0-3': Silt, brown (7.5 YR 4/4), very sandy (very fine to fine), trace clay, loose
			0.0-0.2	to moderately compacted, damp to wet.
				3-5': Sand, brown (7.5 YR 4/4), very fine to fine, very silty, very well sorted,
				loose, damp to wet.
115	120	5	10-11/	0-5': Silty sand as above.
			0.0-0.3	
120	125	5	10-12/	0-2': Silty sand as above.
			0.0-1.0	2-5': Sand, brown (7.5 YR 4/3), fine to medium, trace to some very fine, trace
				to some silt, well sorted, loose damp.
125	130	5	10-12/	0-5': Sand as above.
			0.0-0.5	
130	135	0		No recovery.
135	140	5	7-21/	0-5': Sand, brown (7.5 YR 5/4), medium, trace fines, trace silt, very well sorted,
			0.0-0.01	loose, damp.
140	145	5	7-18/	0-5': Sand as above.
			0.0-0.0	
145	150	5	7-21/	0-5': Sand as above, with very minor trace gravel, subangular.
			0.0-0.1	
150	155	1	7-18/	0-1': Sand as above.
			0.0-0.1	

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-68 Page 4 of 5

Prepared by John Keller/Dawn Gabardi

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
155	160	5	4.5-9.5/	0-1': Sand. Brown (7.5 YR 5/4), medium, some fines, trace silt, very well sorted,
			NA	wet.
				1-5': Silt. Brown (7.5 YR 5/3), sandy (fine to very fine), well sorted, wet.
160	165	5	4-8/	0-3': Silt, same as above, but damp.
			NA	3-5': Silt, brown (7.5 YR 4/2), some very fine sand, thin seams of clay (reddish
				brown 2.5 YR 4/3), clay is thinly laminated, damp.
165	170	5	4.5-7/	0-2': Silt. Dark reddish brown (2.5 YR 3/4), some clay, trace very fine sand, wet.
			NA	2-5': Silt, color as above, more clay, trace very fine sand, damp.
170	175	5	4.5-5.75/	0-5': Clay, reddish brown (2.5 YR 4/3), (HP = 4), very silty, well compacted,
			NA	trace gravel (0.5-1 mm), subangular, dry to slightly damp.
175	180	5	5.75-7/	0-5': Clay, reddish brown (5 YR 5/3), and reddish brown (5 YR 4/4), silty,
			0.0-0.0	trace sand, coarse and fine to very fine, clay alternates from soft to well
				compacted (0.7-2.0 (soft)) (HP >4 hard), moist to wet.
180	185	5	5.5-6.5/	0-3.5': Clay. Same as above.
			0.0-0.0	3.5-5': Clay (color same as above), thin silt seams, some fine to coarse sand,
				(HP 0.5-1.0), moist to wet.
185	190	5	5.5-6.25/	0-0.5': Clay, same as above.
			0.0-0.2	0.5-1': Sand, dark reddish brown (2.5 YR 3/4), fine to medium, clayey
				(HP = 1-2.0), wet.
				1-5': Clay dark reddish brown, (2.5 YR 3/4), silty, trace very fine sand, moist
				to wet.
190	195	4	5.25-6.75/	0-5': Silt, reddish-brown (5 YR 4/3), sandy, very fine to fine, trace clay, moist
			0.0-0.0	to wet.
195	200	5	5.25-6.5/	0-1': Clay, reddish brown (5 YR 4/3), (HP 2.2-3), silty, trace fine sand, wet.
			0.0-0.0	1-1.5': Sand, dark reddish gray (5 YR 4/2), fine to medium, some clay
				(HP = 1.5), wet.
				1.5-5': Sand, color as above, very fine to fine, trace medium, well sorted,
				trace silt and clay, wet.
200	205	5	5.25-12/	0-5': Sand, as above, wet.
			0.0-0.0	
205	210	5	5.5-8/	0-5': Sand, as above, wet.
			0.0-0.0	
210	215	5	5.5-12.5/	0-2': Sand, as above, wet.
			0.0-0.0	2-2.5': Clay, reddish brown (2.5 YR 4/3), (HP = 1.5), very silty, some fine sand,
				damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-68 Page 5 of 5

Prepared by John Keller/Dawn Gabardi

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				2.5-5': Sand, brown (11.5 YR 5/3), fine to medium, well sorted, interbedded with
				silt and very fine sand, damp.
215	220	5	8-9.5/	0-5': Silt, reddish-brown (5 YR 5/3), with somne clay (reddish brown
			0.0-0.2	(2.5 YR 4/4), (HP on clay 1.0), trace veryfine sand, moist to wet.
220	225	5	8-10/	0-3.5': Silt, reddish brown (2.5 YR 4/4), clayey (reddish brown (2.5 YR 4/4)), trace
			0.0-0.2	sand, very fine, wet.
				3.5-4': clay (same color as above), HP >4, silty, trace gravel (1-2 mm), well
				compacted, dry.
				4-5': Silt, (same color as above), abundant clay, compacted, (clay HP = 2.5), dry to
				damp.
225	230	5	8-8.5/	0-4.5': Silt, color as above, abundant clay (color as above), trace sand, fine
			0.0-0.3	to very fine, moist to wet.
				4.5-5': Clay, reddish brown (2.5 YR 4/4), HP >4, compacted, silty, trace sand,
				fine to very fine, dry.
230	235	5	8-10/	0-2': Clay, dark bluish gray (Gley 10 B 4/1) to reddish brown (2.5 YR 4/4), HP >4,
			0.0-0.3	silty, gravelly (2-30 mm), subrounded to angular, very fine sand, very poorly
				sorted, very well compacted (dense), damp to dry, Till?
				2-5': Clay, dark bluish gray (Gley 10 B 4/1), silty, gravelly (2 mm - 80 mm),
				subrounded to angular, layer gravel possibly bedrock fragments (slate or phyllite),
				trace sand, fine to very fine, very poorly sorted, well compacted, dense, dry,
				HP >4, till?
235	240	5	8-75/	0-1': Clay, as above, till?
			0.0-2.1	1-4': Clay, as above, except slightly less gravel, (Gley 10 BG 5/1), till?
				4-5': Bedrock, greenish gray (Gley 10 BG 5/1), to greenish gray (Gley 5 BG 6/1),
				weathered, foliated, loose, friable.
240	243	3	8-25/	0-2.5': Bedrock, weathered, as above.
			0.0-0.3	2.5-3': Bedrock, competent, foliated, phyllite or slate.
				EOB @ 243' bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-69 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/6/00 Drilling Completed 7/6/00

Total Depth Drilled 85 Feet Hole Diamete 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1086.47 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Helper Ryan, Jerry

Prepared By John Keller and Kevin Daleness Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	55			Blind drill.
55	60	5	5-80/	0-3': Silt, brown (7.5 YR 4/2), with clay layers/laminations throughout
			0.0-0.0	(¼-1" thick) (clay: dark reddish brown 5 YR 3/2) silt: moderately to well
				compacted, medium stiffness to stiff (H.P. = 2.5), trace to some sand
				(very fine to fine) (sand content increasing as you go down section), wet.
				3-5': Silt, dark reddish brown (5 YR 3/2), very sandy (very fine to fine),
				moderately dense, trace to some clay, trace medium sand, wet to
				saturated.
60	65	5	100-	0-0.5': Silt as above.
			>10,000/	0.5-3': Sand, dark reddish brown (5 YR 3/3), very fine to fine, very
			0.0-0.0	silty, trace medium sand, well sorted, loose to moderately compacted,
				damp.
				3-5': Sand, reddish brown (5 YR 4/4), coarse to very coarse, some
				medium, trace fine, gravelly (2 mm - 60 mm), subrounded to
				subangular, very poorly sorted, damp to wet, loose.
65	70	5	100-	0-5': Sand and gravel as above.
			>10,000/	
			0.0-0.0	
70	75	5	2,000-	0-1': Sand and gravel as above.
			6,000/	1-4': Sand, light brown (7.5 YR 6/4), medium to coarse, trace to some
			0.0-0.0	very coarse, trace very fine to fine, trace silt, trace gravel (2 mm -
				<10 mm).

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-69

Prepared by John Keller and Kevin Daleness

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4-5': Sand, brown (7.5 YR 4/2), coarse to very coarse, some medium,
				trace fine, some gravel to gravelly (<5 mm), very poorly sorted, loose,
				damp to wet.
75	80	5	600-	0-1.5': Sand and gravel, as above.
			>10,000/	1.5-3': Sand, brown (7.5 YR 4/2), medium to coarse, trace very coarse,
			0.0-13.3	trace very fine to fine, trace silt, moderately to poorly sorted, loose, wet.
				3-5': Sand, brown (7.5 YR 4/2), coarse to very coarse, some medium,
				trace fine, gravel (2 mm - 40 mm), subangular to subrounded, very
				poorly sorted, loose, wet.
80	85	5	800-	0-1': Sand and gravel, as above.
			5,000/	1-5': Silt, reddish brown (2.5 YR 4/4), sandy (very fine to fine), trace
			0.0-3.9	to some clay, loose to moderately compacted, soft (H.P. <1.0), damp
				to wet.
				EOB @ 85 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-70 Project/No. Ford/Kingsford/WI000804.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/8/00 Drilling Completed 7/8/00

Total Depth Drilled 55 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval Continuous feet

Land-Surface Elev. 1117.95 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Helper Ryan, Jerry

Prepared By John Keller and Dave Buser Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	3	5.5-13/	0-3': Sand: Brown (7.5 YR 4/4), medium to coarse, trace to some very
			0.0-2.6	coarse, trace to some very fine to fine, trace silt, gravelly (2 mm - 70 mm),
				subangular to subrounded trace clay, odor noted, poorly sorted, moist.
5	15	4	6-12/	0-2.5': Sand and gravel: As above.
			0.0-0.8	2.5-3': Sand: Brown (7.5 YR 4/4), medium to coarse, trace to some very
				coarse, trace to some very fine to fine, trace silt, trace of clay, gravelly
				(coarse gravel) (30 mm - >100 mm), odor noted.
				3-3.75': Sand: Reddish brown (5 YR 4/4), medium to very coarse, trace
				to some silt, trace to some very fine to fine, gravelly (2 mm - 25 mm),
				subangular to subrounded, some organics (charcoal/carbonized wood
				fragments), odor noted.
				3.75-4': Sand: Brown (7.5 YR 4/4), very fine to fine, trace to some medium,
				some silt to silty, gravelly (2 mm - 20 mm), subrounded to subangular,
				odor noted.
15	25	3.5	1,000-	0-0.75': Sand: As above.
			>10,000/	0.75-1.5': Sand: Dark gray (2.5 Y 4/1), very fine to fine, silty (silty is blocky),
			0.0--0.6	gravelly (2 mm - 80 mm), subrounded to subangular, entire layer displays
				black staining, odor noted, loose, well sorted.
				1.5-2.5': Sand: Brown (7.5 Yr 4/3), very fine to fine, silty, trace to some
				medium, trace coarse, trace clay, trace to some fine gravel (2 mm - 15 mm),
				loose, dry to moist, very well sorted.
				2.5-3.5': Sand: Reddish brown (5 YR 5/3), very fine to fine, silty, reddish

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-70

Prepared by John Keller and Dave Buser

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				brown sand displays ¼-½" thick black-stained laminations throughout, trace
				fine gravel (<5 mm), loose, moist.
25	30	5	1,300-	0-5': Sand: Dark gray (2.5 Y 4/1) with black staining, very fine to fine,
			>10,000/	trace to some medium, trace to some silt, trace gravel (<20 mm), subrounded,
			0.0-0.0	loose, well sorted, dry to moist.
30	35	5	140-	0-2.5': Sand: Bluish black (2 Gley 2.5/1 10B) very fine to fine, trace to some
			7,000/	medium, trace silt, trace clay, trace fin gravel (<10 mm), subrounded to
			0.0-0.0	subangular, well sorted, loose, damp to moist.
				2.5-5': Silt: Light brown (7.5 YR 6/3), with occasional clay layer/laminations
				(clay, reddish brown (5 YR 4/4) H.P. >4) H.P. of silt >4, very dense, very well
				compacted, upper 0.5' of silt shows black staining.
35	40	5	400-	0-5': Silt: With clay layers/laminations as as above, with clay content
			3,500/	increasing (clayey silt).
			0.0-23.6	
40	45	5	550-	0-2': Clayey silt: As above.
			>10,000/	2-3': Sand: Brown (7.5 YR 5/3) medium to coarse, trace very fine to fine,
			0.0-18.4	trace fine gravel (<10 mm), subrounded to subangular, moderately to well
				sorted, loose, moist.
				3-5': Sand: Gray (2.5 Y 5/1) medium, trace fine sand, some silt and clay
				nodules (may be slough from above) very well sorted, loose, dry.
45	50	5	5,000-	0-1': Sand: As above.
			>10,000/	1-5': Sand: Very dark gray (2.5 Y 7/1) medium, trace very fine to fine,
			0.0-0.0	sand coarsens down section (last 0.5 of interval is medium to coarse sand),
				well sorted, loose, wet.
50	55	5	6,000-	0-1': Sand: Very dark gray (2.5 Y 3/1) medium to coarse, trace very
			>10,000/	coarse, trace very fine to fine, moderately sorted, loose, wet.
			0.0-0.0	1-5': Sand: Black (Gley N 2.5/), medium to very coarse, trace very fine
				to fine, trace silt, trace clay, gravelly (2 mm - 30 mm), subangular to
				rounded, very poorly sorted, loose, wet to saturated.
				End boring at 55 ft at 17:05.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GM-71 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 3

Site Location: Kingsford, Michigan Drilling Started: 7/9/00 Drilling Completed: 7/9/00

Total Depth Drilled: 51 Feet Hole Diameter: 6 inches Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" Sampling Interval: Continuous feet

Land-Surface Elev.: 1118.00 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: Water Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear Driller: Mike Helper: Ryan, Jerry

Prepared By: John Keller and Dave Buser Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2	5.75-9/	0-0.5': Sand: Dark grayish brown (10 YR 4/2), fine to medium, very silty,
			0.0-0.0	organic-rich layer, abundant rootlets and grass clippings, some gravel
				(2 mm - 20 mm), subrounded to subangular, trace to some twigs, loose,
				dry.
				0.5-1.5': Sand: Strong brown (7.5 YR 4/6), medium to coarse, trace very
				coarse, trace to some very fine to fine, trace to some silt, trace fine
				gravel (<15 mm), subangular to subrounded, loose to slightly
				cohesive, trace clay, dry to moist.
				1.5-2': Sand: Bluish black (2 Gley 5 PB 2.5/1), fine to medium, some
				very fine, trace wood chips (chips do not show evidence of carbonization),
				some silt, trace to some clay, black-staining.
5	15	3	5-30/	0-0.5': Black-stained sand: As above.
			0.0-0.2	0.5-1': Sand: Brown (7.5 Yr 4/2), with black staining (interval displays
				some black laminations within the sand), fine to medium, trace coarse,
				trace to some very fine to fine, some silt, trace to some clay, trace gravel
				(10-20 mm), rounded, well sorted, loose, dry.
				1-3': Sand: Light brown (7.5 YR 6/4), medium, trace fine, trace coarse,
				very well sorted, some black staining first (upper) 0.5' interval, loose,
				dry.
15	20	3	25-65/	0-0.5': Sand: As above.
			0.0-02.9	0.5-1': Sand: Bluish black (2 Gley 5B 2.5/1), fine to medium, some silt,
				trace to some clay, some brown sand within the black-stained sand.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-71

Prepared by John Keller and Dave Buser

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				1-1.75': Sand: Brown (7.5 YR 5/3), medium to very coarse, trace fine,
				gravelly (2 mm - 60 mm), subangular to subrounded, very poorly sorted,
				loose, dry.
				1.75-3': Sand: Brown (7.5 YR 4/4), coarse to very coarse, trace medium,
				gravelly (2 mm - 30 mm), very poorly sorted, loose, dry to moist.
20	25	3.5	125-	0-2': Sand: Light brown (7.5 YR 6/4), very fine to fine, some silt (silt increasing
			2,000/	down section), very well sorted, loose, dry.
			0.0-0.6	2-2.75': Silt: Dark brown (7.5 YR 3/20 with bluish black (2 Gley 5B 2.5/1),
				laminations throughout, very sandy (very fine to fine), trace clay, blocky,
				slightly compacted.
				2.75-3.5': Sand: Grayish brown (2.5 Y 5/2), with black staining present,
				very fine to fine, some silt to silty, trace clay.
25	35	3.5	3,000-	0-2.5': Sand: Bluish black (2 Gley 5B 2.5/1) very fine to fine, some silt
			>10,000/	to silty, very well sorted, loose dry.
			0.0-0.5	2.5-3.5': Sand: Dark bluish gray (2 Gley 5 PB 3/1), very fine, silty, very
				well sorted, loose, dry.
35	45	8	1,000-	0-1.5': Black-stained sand: As above.
			>10,000/	1.5-2.5': Sand: Brown (7.5 YR 4/2) with black staining throughout (some
			0.0-1.6	black laminations within the brown sand) very fine to fine, trace to some
				medium, trace to some silt, trace gravel (2 mm - 20 mm) subrounded
				to subangular, trace to some clay, moderately to well sorted, loose, dry.
				2.5-5.5': Sand: Brown (7.5 YR 4/3) fine to medium (sand coarsens down
				section), trace to some very fine, some clay, trace gravel (20 mm- 50 mm)
				subrounded, loose, moist to damp, well sorted.
				5.5-6': Sand: Very dark grayish brown (10 YR 3/2), with some black
				staining, fine to medium, trace to some very fine, trace silt, trace clay,
				loose to slightly cohesive, wet to saturated, well sorted.
				6-7.5': Sand: Bluish black (2 Gley 10 B 2.5/1) fine, some very fine, some
				silt, trace to some clay, trace gravel (5 mm - 55 mm), subrounded, loose,
				saturated, very well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-71

Prepared by John Keller and Dave Buser

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				7.5-8': Sand: Brown (7.5 YR 4/3), very fine, trace fine, silty, trace to
				some clay, loose to slightly cohesive, saturated, very well sorted.
45	51	--	--	No recovery.
				End borehole at 51 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GM-72 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 3

Site Location: Kingsford, Michigan

Drilling Started: 7/9/00 Drilling Completed: 7/9/00

Total Depth Drilled: 55 Feet Hole Diameter: 6 inches Type of Sample/ Coring Device: Rotasonic Core Barrel

Length and Diameter of Coring Device: 10' x 4" Sampling Interval: Continuous feet

Land-Surface Elev.: 1118.83 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Rotasonic

Drilling Contractor: Boart Longyear Driller: Mike Helper: Ryan, Jerry

Prepared By: John Keller and Dave Buser Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	2.5	7-11/	0-1.25': Sand: Dark brown (7.5 YR 3/4) medium to coarse, some
			0.0-0.2	very coarse, trace to some very fine to fine, trace to some silt, gravelly
				(2 mm - 70 mm), subangular to subrounded, trace rootlets, grass clippings,
				very poorly sorted, loose, dry.
				1.25-2': Sand: Brown (7.5 YR 5/4), medium, trace to some fine, trace
				very fine, trace to some silt, very well sorted, loose, dry.
				2-2.5': Silt: Dark brown (7.5 YR 3/3), very sandy (very fine to fine), trace
				clay, moderately compacted.
5	10	2.5	400-	0-0.5': Sand: Brown (7.5 YR 4/3), medium, trace fine, trace silt, trace clay,
			8,000/	moist, well sorted, loose to slightly cohesive.
			0.0-1.7	0.5-1.75': Sand: Brown (7.5 YR 4/3), fine to medium, some very fine,
				some silt to silty, trace clay, gravelly (2 mm - 25 mm), subrounded to
				subangular, poorly sorted, loose, dry.
				1.75-2.5': Sand: Black (7.5 YR 2.5/1), very fine to fine, some silt to silty,
				well sorted, loose, dry to moist.
10	15	4	1,000-	0-0.5': Sand: As above.
			>10,000/	0.5-1.25': Sand: Brown (7.5 YR 4/3), medium to very coarse, trace very
			0.0-	fine to fine, trace silt, gravelly (2 mm - 30 mm) subrounded to subangular,
			>1,000	very poorly sorted, loose moist to wet.
				1.25-2': Organic material: Black (7.5 YR 2.5/1) to dark reddish brown
				(7.5 YR 2.5/1), wood pieces, rectangular and irregular in shape - fibrous,
				some tar, wood sludge, fibrous wood fragments, some sand to sandy

ARCADIS GERAGHTY & MILLER
Sample/Core Log (Cont.d)

Boring/Well GM-72

Prepared by John Keller and Dave Buser

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				(black-stained).
				2-4': Sludge and tar: Black, blocky and crumbly to tarry. In the sun, the
				tar partially liquefies to a thick viscous, slowly running mass, the
				viscous tar is vitreous in luster.
15	25	6	300-	0-2': Organic material: Black (7.5 YR 2.5/1) to dark reddish brown
			>10,000/	(5 YR 3/2), abundant tar material, very sandy (fine to coarse) (tar
			2.5-54.8	material makes sand cohesive), tar partially liquefies to a thick, viscous
				material in the heat of the sun, tar material is glassy/vitreous in luster.
				2-3': Organic material: Dark reddish brown (5 YR 2.5/2) to yellowish
				brown (10 YR 5/6), wood sludge material, some cinders, trace hardened
				pieces of tar, very sandy (very fine to fine), very silty (both sand and silt
				are black-stained), trace charcoal, loose, dry.
				3-6': Sand: Yellowish brown (10 YR 5/4) to dark gray (10 YR 4/1) to dark
				grayish brown (10 YR 4/2), very fine to medium, trace to some silt, slight
				trace of fine gravel(<5 mm), subangular, very well sorted, loose, dry,
				slight black staining lower 1' interval.
25	35	4	2,000-	0-0.5': Sand: Very dark gray (7.5 YR 3/1), very fine to medium, some
			9,000/	coarse, some very coarse, silty, gravelly (2 mm - 55 mm), subrounded
			4.3-48.4	to subangular, very poorly sorted, loose, dry.
				0.5-2.5': Sand: Dark grayish brown (2.5 Y 4/2), medium to coarse, some
				very fine to fine, some silt, moderately to well sorted, trace gravel (5 mm -
				15 mm), subangular to subrounded, loose, dry.
				2.5-3': Sand: Grayish brown (2.5 Y 5/2), fine, trace to some very fine,
				very well sorted, loose, dry.
				3-4': Nonnative material, gray (5 Y 5/1), minor colors: light reddish brown
				(2.5 YR 4/6), pulverized to slightly compacted, dry, poorly sorted, compacted
				pieces composed of wide ranges of particle sizes when pulverized but
				mostly composed of silt-sized particles.
35	45	6	700-	0-0.5': Sand: Very dark gray (2.5 Y 3/1), very fine to fine, very well
			>10,000/	sorted, loose, some black-staining present, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-72 Page 3 of 3

Prepared by John Keller and Dave Buser

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
			12.3-	0.5-1': Sand: Black (2.5 Y 2.5/1), very fine to medium, some coarse,
			44.9	trace very coarse, some silt to silty, trace to some gravel (2 mm - 55 mm),
				moderately to poorly sorted, loose, dry.
				1-2': Sand: Dark gray (2.5 Y 4/1), very fine, very silty (interval contains
				equal amounts of very fine sand and silt), trace to some fine, trace
				medium, trace coarse to very coarse, gravelly (2 mm - <15 mm), subangular
				to subrounded, very poorly sorted, loose, dry, trace clay.
				2-4': Silt: Dark gray (2.5 Y 4/1), very sandy (very fine to fine), trace medium,
				trace coarse to very coarse, gravelly (2 mm - 70 mm) subangular to
				subrounded, loose, very dry.
				4-4.75': Sand: Very dark gray (2.5 Y 3/1) to grayish brown (10 YR 5/2),
				fine to medium, trace to some very fine trace to some fine gravel
				(2 mm - <5 mm), well sorted, loose, very dry.
				4.75-6': Silt: Dark gray (10 YR 4/1), very sandy (very fine to fine), trace
				medium, trace coarse to very coarse, gravelly (2 mm - 30 mm), subangular
				to subrounded, trace clay, poorly sorted, loose, very dry.
45	55	8	14-140/	0-8': Sand: Black, medium, some very fine to fine, some silt to silty,
			0.2-2.4	trace to some gravel (5 mm - 25 mm), subrounded to rounded, trace
				coarse, trace clay, moderately sorted, loose to slightly cohesive, wet to
				saturated.
				Water table approximately 46' bgs.
				Finish drilling at 17:35 (TD = 55')

ARCADIS

Sample/Core Log

Boring/Well GM-72A Project/No. Ford/Kingsford WI001075.0013 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/4/04 Drilling Completed 8/4/04

Total Depth Drilled 56 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Corebarrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval NA feet

Land-Surface Elev. 1118.83 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott/Royce

Prepared By Andy Mumpy Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID	Sample/Core Description
0	56	--		Blind drill.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GM-73 | Project/No.: Ford/Kingsford WI000804.0001 | Page 1 of 3

Site Location: Kingsford, Michigan | Drilling Started: 8/15/00 | Drilling Completed: 8/15/00

Total Depth Drilled: 52 Feet | Hole Diameter: 8 inches | Type of Sample/Coring Device: Split spoon

Length and Diameter of Coring Device: 2' x 2" | Sampling Interval: Continuous feet

Land-Surface Elev.: 1111.42 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear | Driller: Mike | Helper: Marty

Prepared By: Pat Bartnik | Hammer Weight: 300 | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.5	0.0	0-0.25': Topsoil.
				0.25-0.5': Sand dark brown (7.5 YR 3/3), medium to fine with very fine,
				some silt, trace very fine gravel and coarse sand, dry, loose.
				0.5-0.75': Black organic, charcoal fragments non-native coal-like
				debris, very finely divided except for the small (10 mm) charcoal
				fragments.
				0.75-1.5': Sand, strong brown (7.5 YR 5/6), medium to very fine, some
				silt, trace coarse sand, dry, loose.
2	4	0.8	8	0-0.3': Sand reddish black (2.5 YR 2.5/1), medium to very fine, silty, trace
				coarse, organic-rich, dry.
				0.3-0.8': Sand, medium to very fine, trace to some coarse sand, silty, dry,
				loose, reddish yellow (7.5 YR 6/6).
4	6	0.5	7-8.5	0-0.2': Sand, dark red brown (5 YR 2.5/1), medium to very fine, silty, trace
				fine gravel, loose, dry.
				0.2-0.5': Sand, light brown (7.5 YR 6/4), medium to very fine, trace
				silt, dry, loose.
6	8	0.5	8.5	0-0.5': Sand brown (7.5 YR 4/4), coarse to very fine, silty, gravelly
				(2 mm to 40 mm), subrounded, some clay, very poorly sorted trace
				moisture.
8	10	1	8.5	0-0.25': Silt, very dark brown (7.5 YR 2.5/2), sandy (fine to very fine),
				some gravel, some clay, mildly cohesive, moist.
				0.25-0.75': Sand, brown (7.5 YR 4/4), very coarse to very fine, gravelly

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-73 Page 2 of 3

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				(2 mm - 40 mm), silty, very poorly sorted, trace moisture.
				0.75-1.0': Sand, strong brown (7.5 YR 5/6), fine to very fine, some silt,
				fairly well sorted, loose, dry.
10	12	0.5	9.5	0-0.5': Sand, strong brown (7.5 YR 5/7), very coarse to medium, some
				fine to very fine, gravelly (2 mm - 50 mm) subrounded dry, loose.
12	14	0.75	9.5	0-0.75': Sand as above.
14	16	0.5	8	0-0.5': Sand as above.
16	18	1.5		0-1.5': Sand as above.
18	20	1		0-1.0': Sand, light brown (7.5 YR 6/4), coarse to medium, some fine, very
				well sorted, trace very fine gravel, loose, dry.
20	22	1	9	0-1.0': Sand, light brown (7.5 YR 6/3), coarse to medium, very well
				sorted, loose, dry.
22	24	1	8	0-1.0': Sand as above.
24	26	1.25		0-1.25': Sand as above.
26	28	1	7.5	0-0.5': Sand as above.
				0.5-1.0': Sand, coarse to fine, light brown (7.5 YR 6/3), with gravel, trace
				very coarse sand, trace medium sand, gravel (2 mm - 50 mm). Subangular
				to subrounded, loose compaction, dry.
28	30	1	9	0-1.0': Sand, light brown (7.5 YR 6/3), coarse to medium, trace very
				coarse, trace very fine sand, medium compaction. Gravel (6 mm -
				30 mm). Subrounded to subangular, loose, compaction, dry.
30	32	0		No recovery. Rock in tip of spoon.
32	34	1	8	0-1.0': Sand. Light brown (7.5 YR 6/3), coarse to medium, trace fine,
				with gravel (2 mm - 35 mm). Subrounded to subangular, loose compaction,
				dry.
34	36	0.8	8	0-0.8': Sand as above. Except light brown (7.5 YR 6/4).
36	38	1	7.5	0-1.0': Sand as above except light brown (7.5 YR 6/3).
38	40	1.5	9	0-0.8: Sand, as above except larger gravel greater than 35 mm.
				0.8-1.5': Sand, pink (7.5 YR 7/3), medium to fine, silty, very slightly
				cohesive, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-73

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
40	42	1.5	7	0-1.5': Sand same as above except color light brown (7.5 YR 6/3).
42	44	2	8	0-2.0': Sand same as above.
44	46	1.5	8	0-1.5': Sand same as above except wet, light brown (7.5 YR 6/4).
46	48	1.5	7	0-1.5': Sand same as above except saturated, brown (7.5 YR 5/4).
48	50	1.5	9	0-1.5': Sand same as above except thin lenses of gravel disseminated in
				the sand at 0.9 feet, brown (7.5 YR 4/4).
50	52	1.5	1/9/1900	0-1.5': Sand same as above except color strong brown (7.5 YR 4/6).
				EOB @ 52 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-74 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site

Location Kingsford, Michigan Drilling Started 08/16/00 Drilling Completed 08/16/00

Total Depth Drilled 44 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1100.95 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By J. Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.5	5.5/0.8	0-0.2': Topsoil.
				0.2-1.5': Sand. Brown (7.5 YR 5/4), medium to fine, with trace very fine sand.
				Loose compaction, dry.
2	4	1.5	6.0/1.3	0-1.5': Sand as above. Except trace gravel (2 mm - 15 mm).
4	6	1.25	6.0/1.5	0-0.3': Sand as above. Except with organics, medium sand content (10% - 20%).
				0.3-1.25': Sand. Brown (25 YR 5/4), medium to fine. Some coarse sand. Loose
				compaction, dry.
6	8	1.75	5.5/1.0	0-1.75': Sand as above. Except with trace very coarse sand 1 mm banding in
				sand at 6.5'.
8	10	1.75	5.5/1.5	0-1.0': Sand as above. Except color. Brown (7.5 YR 4/4).
				1.0-1.3': Sand. Brown (7.5 YR 4/4), coarse to fine sand, trace very fine sand
				with gravel 2 mm to 10 mm. Loose compaction, dry.
				1.3-1.75': Sand. Some color. Fine to very fine sand, trace silt, loose compaction,
				dry.
10	12	1.5	5.0/1.5	0-1.5': Sand as above. Except trace medium sand, slight banding at 10.5'.
12	14	2	5.0/0.9	0-2.0': Sand as above. Except trace very coarse sand.
14	16	1.75	5.0/0.7	0-1.75': Sand as above. Except some silt. Slight banding 0.5-1 mm thick.
16	18	1.80	5.0/0.5	0-1.80': Sand as above. Except some medium sand at 16.25'.
18	20	1.80	5.0/0.9	0-1.80': Sand as above. Except trace gravel at 18.25' (2 mm - 25 mm). 1-1.5"
				silt seam at 18.5'.
20	22	1.50	6.5/0.7	0-1.50': Sand as above. Except trace medium sand. Banding with organics 0.5-1.5 mm
				thick at 21.5'. Loose compaction, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-74

Prepared by J. Guzick

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
22	24	1.75	6.0/0.4	0-1.75': Sand as above. Except with medium sand. Trace very coarse sand.
				Silty lens at 22.75'. Banding with trace organics at 23.5'.
24	26	1.80	7.0/	0-1.80': Sand as above. Except with silty seams. Slight banding at 25.5'.
26	28	1.80	6.0/	0-1.20': Sand as above.
				1.20-1.80': Silt. Strong brown (7.5 YR 4/6), with very fine sand, some clay, medium
				compaction, moist.
28	30	1.80	9.0/	0-1.80': Sand. Brown (7.5 YR 4/4), very fine to fine grained. Trace medium silt
				seams at 29.5'.
30	32	1.5	11.0/	0-1.5': Sand. Brown (7.5 YR 5/4), fine to very fine. Trace silt. Trace medium
				grained, medium compaction. Slight banding at 31.75'.
32	34	1.75	8.0/	0-1.75': Sand. Brown (7.5 YR 4/4), medium to fine with very fine sand. Some silty
				sand at 33.5'. Medium compaction, moist.
34	36	1.75	8.0/	0-1.75': Sand as above. Except with trace coarse sand (3" seam at 35.25'). Medium
				compaction, wet.
36	38	1.50	9.5/1.1	0-1.50': Sand. Dark brown (7.5 YR 3/4), fine to very fine sand. Trace silt,
				trace medium sand. Medium compaction, saturated.
38	40	1.75	9/1.8	0-1.75': Sand. Dark brown (7.5 YR 3/4), very fine to fine. Some medium grained,
				trace coarse sand. Medium compacted, saturated.
40	42	1.75	9.5/1.5	0-1.75': Sand as above. Except with gravel seam at 41' (2 mm - 25 mm).
				Trace medium grained.
42	44	1.75	10/2.8	0-1.75': Sand as above. Except some medium grained at 42.5'. Medium
				compaction.
				EOB @ 44 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Wel GM-75 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site

Location Kingsford, Michigan Drilling Started 08/17/00 Drilling Completec 08/17/00

Total Depth Drilled 34 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1089.05 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Mike Helper Marty

Prepared By J. Guzick Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	1.75	9.0/1.0	0-0.5: Sand. Strong brown (7.5 YR 4/6), fine to very fine sand, trace silt, medium
				to loose compaction, dry.
				0.5-0.9: Sand. Black (7.5 YR 2.5/1), fine to very fine. Organic-rich, with wood,
				some roots, trace medium sand.
				0.9-1.75: Sand. Dark brown (7.5 YR 3/2), fine to very fine. Organic-rich, with
				roots, seam of (7.5 YR 4/6) sand at 1.80'.
2	4	1.80	8.0/1.3	0-1.80: Sand. Brown (7.5 YR 5/4), fine to very fine, trace silt, trace medium grained,
				medium compaction, dry.
4	6	1.50	7.0/1.9	0-0.80: Sand. Brown (7.5 YR 4/4), silty, trace fine sand. Banding 0 mm - 3 mm,
				medium compaction.
				0.80-1.50: Sand. Brown (7.5 YR 5/4), fine to very fine, trace medium sand, medium
				compaction.
6	8	1.80	8.0/2.5	0-0.60: Sand. Yellowish-red (5 YR 4/6), fine to very fine, trace silt, medium compaction.
				0.60-1.80: Sand. Brown (7.5 YR 5/4), medium to fine grained, trace very fine sand,
				2" gravel seam at 7 feet. (2 mm - 10 mm), subangular to subrounded. Loose
				compaction, dry.
8	10	1.80	11.0/1.7	0-1.80: Sand. Brown (7.5 YR 5/4), fine to medium, with very fine, trace silt, loose
				compaction. Banding at 8.5 feet (2 mm - 4 mm).
10	12	1.80	11.0/2.5	0-1.80: Sand. As above, banding at 6.5 and 7.0 feet (2 mm - 3 mm thickness),
				loose compaction.
12	14	1.75	8.0/2.2	0-1.75: Sand. Brown (7.5 YR 5/4), medium to fine grained, with very fine sand.
				Silty seam at 13.5'. Banding appears darker in color. 2 mm - 4 mm thickness.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GM-75 Page 2 of 2

Prepared by J. Guzick

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
14	16	1.75	10/2.3	0-1.75: Sand. Brown (7.5 YR 5/3), fine to very fine, trace medium grained, thin
				banding 1 mm - 2 mm.
16	18	1.80	11/2.5	0-1.80: Sand as above. Brown (7.5 YR 5/3), silty seam (20 mm thick) at 17 feet.
				Thin banding appears slightly darker in color.
18	20	1.80	10/2.5	0-1.80: Sand as above. Banding 2 mm - 4 mm at 18.5'.
20	22	1.75	10/2.2	0-1.75: Sand. Brown (7.5 YR 5/4), medium to very fine grained. Banding 2 mm
				at 21 feet. Loose compaction, dry.
22	24	1.75	8.0/2.2	0-1.75: Sand as above. Except brown (7.5 YR 4/4), moist to wet. Trace coarse
				grained, loose compaction.
24	26	1.25	10/2.7	0-1.25: Sand. Brown (7.5 YR 4/4,) fine to very fine, with medium. Saturated.
26	28	1.25	12/3.5	0-1.25: Sand as above.
28	30	1.25	6.0/2.0	0-1.25: Sand. Brown (7.5 YR 4/4,) very fine to fine. Trace silt, trace medium grained.
30	32	1.75	8.0/1.5	0-1.75: Sand as above. Except gravel at 30 feet (2 mm - 30 mm). Subangular.
32	34	2	8.0/1.5	0-2.0: Sand as above. Except medium compaction.
				EOB @ 34 ft bgs

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-76 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 12/5/2000 Drilling Completed 12/5/2000

Total Depth Drilled 13 Feet Hole Diameter 7 O.D. 4 I.D. inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' long, 2" O.D., 1.5" I.D. Sampling Interval Continuous feet

Land-Surface Elev. 1059.36 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Sean Helper Randy

Prepared By Bill Schutz Hammer Weight 104 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Blows per 6 inches/ OVA	Sample/Core Description
0	2	auger	drill	0-12": Topsoil (Native material) Sand with some silt and organics, black
				(N1), wet, very fine grained.
				12-24": Sand. With some silt, moderate brown (5 YR 4/4), wet to
				saturated, very fine grained.
2	4	5	11-13-13-20/	Sand. With trace silt, moderate brown (5 YR 4/4), medium dense to dense,
			9	saturated, very fine grained, laminated.
4	6	14	16-26-24-25/	0-10": Sand. With some gravel, dark yellow brown (10 YR 5/4), medium
			9	dense, saturated, very fine to fine grained, gravel average approximately
				0.4" diameter, subrounded to rounded.
				10-14": Silt. With some sand, moderate brown (5 YR 4/4), medium dense,
				saturated, nonplastic, laminated, very fine grained sand.
6	8	11	17-11-24-28/	0-11": Silt. As above.
			9	
8	10	12	7-7-7-7/9	0-12": Silt. With trace clay (varved deposit of silt with few clay layers), silt
				is pale to dark yellow brown (10 YR 6/2 - 10 YR 5/4), medium dense,
				saturated, laminated; clay as few laminae (average 0.2" thick), moderate
				reddish brown (10 R 4/6), stiff, moist, moderate plastic.
10	12	7	6-7-9-9/9	0-7": Silt. As above.
12	13	auger	drill	
				EOB @ 13 feet.

ARCADIS

Sample/Core Log

Boring/Well GM-77 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 9/06/03 Drilling Completed 9/07/03

Total Depth Drilled 165 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 4" x 10' Sampling Interval Continuous feet

Land-Surface Elev. 1043.06 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Stacy Helper Scott/Lean

Prepared By Bruce Evans/Jason Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	-0.6/+5.0	Silt/Organics, dark reddish brown (2.5 YR 3/3), soft silt mixed with rootlets and
			-3/+1.2	natural organic material, some clay, dry loose to 4.5', moist to wet at 4.5 then
				slightly plastic, soft, no odor.
5	10	5	1.4-28/	0-0.5': Silt/Organics, as above.
			-2.0/-4.5	0.5-1': Silt/Sand/Gravel, brown (7.5 YR 5/3), heterogeneous mixture fine to
				coarse sand fine to coarse gravel, subangular to subround, very poorly sorted,
				some rootlet/organic material, loose, moist, no odor.
				1-4.5': Sand/Gravel, brown (7.5 YR 5/3), mostly fine to medium sand, with
				coarse, fine to coarse gravel, angular to subrounded, poorly sorted, some cobbles
				to 3" diameter, loose, wet, no odor.
				4.5-5': Gravel, brown (7.5 YR 5/3), fine to coarse as above with cobbles, loose,
				wet, no odor.
10	15	2	545-555/	Sand, brown (7.5 YR 5/4), medium grain, well sorted, some coarse black grains,
			-4.5/-5.5	loose, wet, no odor.
15	20	5	52-70/	Sand, light brown (7.5 YR 6/3), medium grain, some coarse and some fine to
			-8.1	coarse gravel, subangular to subround, moderately sorted, loose, wet, no odor.
20	25	--	--	No recovery.
25	30	5	400-1280/	0-4': Sand, brown (7.5 YR 5/4), fine gain, very well sorted, loose, wet, no odor.
			-10	4-5": Sand/Cobbles, brown (7.5 YR 5/4), mostly fine to medium sand with some
				coarse, trace gravel, many cobbles to 2.5" diameter poorly sorted, loose, wet,
				no odor.
30	35	5	390-1350/	0-1': Silt, light brown (7.5 YR 6/4), sandy, somewhat loose, wet, no odor.
			-12/-11	1-5': Sand, light brown (7.5 YR 6/4), very fine grain, some fine grain, very
				well sorted, very homogeneous, loose, wet, no odor.
35	40	5	200-500/	Silt/Sand, light reddish brown (5 YR 6/4), sandy soft, HP = 0.5, somewhat loose,
			-12/'-11	no clay, occasionally grading to extremely fine grain sand and very fine grain

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-77

Prepared by Bruce Evans/Jason Dowling

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				sand homogeneous, wet, no odor.
40	45	5	650-2900/	Silt, as above, very sandy, wet, no odor, traces black staining very thin, web-like.
			-11	
45	50	5	520-1130/	Sand, light brown (7.5 YR 6/4), very fine grain, silty, very well sorted very
			-12	homogeneous, loose to very slight firm, wet, slight odor.
50	55	5	24-1000/	0-1.5': Sand, as above very fine grain silty.
			-14	1.5-2.5': Silt, brown (7.5 YR 5/2) and reddish brown (5 YR 5/3), clayey, somewhat
				plastic, brown silt interbedded and varved mm thickness with non clayey silt,
				HP =1.5, wet, slight odor.
				2.5-5': Silt, reddish brown (5 YR 5/3), no clay, somewhat sandy, somewhat loose,
				wet, slight odor.
55	60	5	0.2-34/'-16	Silt, reddish brown as above, no clay, wet, no odor.
60	65	5	7-51/-15	0-4': Silt, as above, trace thin black staining web-like 2 to 3 feet, wet, no odor.
				4-5': Silt, as above interbedded varved with clayey silt, brown (7.5 YR 5/2)
				matrix somewhat plastic, wet, no odor.
65	70	5	7.8-14/	Silt/Clayey Silt, as above, mm varved throughout sample, wet, very slight odor.
			-17/-16	
70	75	5	3.3-150/	Silt, reddish brown (5 YR 5/3), no clay, no interbedded, soft to somewhat loose,
			-16	trace black staining 2-3" very homogenous, wet, no odor.
75	80	5	125-1055/	0-3': Silt, as above no clay, wet, very slight odor, trace black staining (2.5-3)
			-17/-16	3-5': Silt/Clay, brown (7.5 YR 5/3), varved silt with clay, soft, plastic, wet, odor.
80	85	5	370-5175/	Silt/Clay, varved as above, wet, odor.
			-16/-15	
85	90	5	52-175/'-17	0-5': Silt/Clay, varved as above, wet, odor.
90	95	2	187-730/	0-2': Silt/Clay, varved as above, less clay content, wet, odor.
			-17/-18	
95	100	5	91-370/-17	0-1.5': Sandy silt, reddish brown (5 YR 4/4), sand very fine to medium, varved,
				wet, slight odor.
				1.5-2.5': Silt/Clay, reddish brown (5 YR 5/3) clay, yellowish black (5 YR 4/6) clay
				interbedded, varved, clay is plastic, silt soft, HP = 1.5-2.0, clay is extremely
				effervescent, silt not effervescent, clay fissile appearance on surface, wet, odor.
				2.5-5.0': Silt/Clay, as above, trace of sand, wet, odor.
100	105	5	102-1267/	0-2.5': Silt/Clay as above, trace very fine sand seams from 1.5 to 2.5', trace fine
			-17/-16	to coarse gravel 2.0-2.5, wet, odor.
				2.5-5.0': Sand, reddish brown (5 YR 4/3), fine grained, well sorted, trace
				fine to very fine gravel, loose, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-77

Prepared by Bruce Evans/Jason Dowling

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
105	110	5	1250-	0-5': Sand, reddish brown (5 YR 5/3), fine sand with trace medium sand, trace
			11800/-17	medium bedrock flakes, wet, odor, well sorted.
110	115	5	1620-7300/	0-3': Sand, as above, wet, odor.
			-17/-16	3-4.5': Sand, reddish brown (5 YR 5/3), very fine to fine sand, trace silt, loose,
				well sorted, wet, slight odor.
				4.5-5.0': Silt, reddish brown (5 YR 4/3), trace interbedded clay, red (2.5 YR 5/6),
				varved silt is somewhat firm (HP = 1.5), wet, odor.
115	120	5	1120-7600/	0-1': Silt reddish brown (5 YR 5/3), trace fine gravel, black, firm (HP = 2.0), wet,
			-17	odor.
				1-3': Sand, brown (7.5 YR 5/3), fine grained, well sorted, wet, odor.
				3-4': Sand/Gravel, sand as above, fine grained gravel fine to coarse, angular
				to subrounded, predominantly black slate flakes (bedrock pieces), loose, wet,
				odor.
				4-5': Sand, fine grained, as above.
120	125	5	2400-	0-1': Silt, brown (7.5 YR 5/3), as above.
			23000/-17	1-4.2': Sand, brown (7.5 YR 5/3), very fine grained, well sorted, wet, slight odor.
				4.2-5.0': Sand, brownish (7.5 YR 4/3), very fine to fine grained, trace coarse
				sand, trace fine gravel, predominantly black slate flaky bedrock pieces,
				moderately sorted, loose, wet, odor.
125	130	5	3000-	0-5': Sand/Gravel, brown (7.5 YR 4/3), sand is fine to very coarse, gravel is fine
			22500/	to coarse, very silty, gravel is angular to subrounded, predominantly black,
			-18/-17	angular, slate (bedrock pieces), very poorly sorted, loose, but sticky, wet, odor.
130	135	5	7400-	0-3': Sand/Gravel, as above except, cobbles seen, and silty, wet, odor.
			23000/	3-4': Sand, very dark brown (7.5 YR 2.5/2), fine to very coarse grained,
			-18/-17	trace fine to coarse gravel, gravel predominantly black, angular slate pieces
				(bedrock pieces), very poorly sorted, wet, odor.
				4-5': Sand, brown (7.5 YR 4/2), predominantly medium grained, some coarse,
				trace fine to coarse gravel, which is angular to subrounded, loose, moderately
				sorted, wet, odor.
135	140	5	1800-	0-1': Silty sand, light brown (7.5 YR 6/3), sand is very fine, very silty, well sorted,
			13200/	soft, somewhat loose, wet, strong odor.
			-18/-17	1-5': Sand, brown (7.5 YR 5/2), sand is predominantly fine to medium grained,
				some very fine, trace silt, moderately to well sorted, wet, strong odor.
140	145	5	2400-	0-2': Sand, as above, wet, strong odor.
			35000/-17	2-4': Silt, brown (7.5 YR 5/3), very sandy, very fine to fine from 2 to 3', trace
				coarse sand and fine to coarse gravel seams from 3.7 to 4', soft, wet, strong

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-77

Prepared by Bruce Evans/Jason Dowling

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
				odor.
				4-5': Sand, brown (7.5 YR 4/2), very fine to fine, well sorted, loose, wet, odor.
145	150	5	2700-	0-4': Gravel/Sand, dark brown (7.5 YR 3/3), gravel is fine to very coarse,
			14600/-18	sand is fine to coarse, gravel is angular to subrounded, matrix is more gravel
				than sand, trace silt, very poorly sorted, loose, wet, odor.
				4-5': Sand, brown (7.5 YR 5/2), fine grained, well sorted, loose, wet, odor.
150	155	5	1550-	0-5': Sand, brown (7.5 YR 5/2), fine to very fine, well sorted, loose, wet, odor,
			25400/	trace fine to medium gravel from 4 to 5'.
			-18/-17	
155	160	5	10300-	0-5': Sand, brown (7.5 YR 4/3), sand is very fine, with some fine, silty from 4 to 5',
			18100/	loose, well sorted, wet, odor.
			-18/-17	
160	165	5	17400-	0-4': Silt, brown (7.5 YR 4/3), sandy, somewhat loose, wet, odor.
			21400/	4-5': Sand, brown (7.5 YR 4/3), very fine grained, very silty, somewhat loose,
			-17/-16	wet, odor.

ARCADIS

Sample/Core Log

Boring/Well GM-78 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/09/03 Drilling Completed 9/10/03

Total Depth Drilled 35 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 4" x 10' Sampling Interval Continuous feet

Land-Surface Elev. 1049.24 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Stacy Helper Lean/Jeff

Prepared By Bruce Evans/Jason Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	0.12-4.6/	0-1.5': Silt, strong brown (7.5 YR 5/8), many rootlets and organic material,
			19.1-21.9	loose, dry, no odor.
				1.5-5': Silt, brown (7.5 YR 5/4), very clayey, slight plastic trace gravel, fine to
				very coarse, subangular to subrounded, trace cobbles, some rootlets, moist,
				no odor, many cobbles and some coarse sand 4.5-5.
5	10	5	6.2-15.5/	0-1': Silt/Gravel, reddish brown (5 YR 5/4), slightly clayey silt matrix with fine
			23-29.8	to coarse gravel and cobbles, subangular to subrounded, some reddish yellow
				very fine sand, wet, no odor.
				1-5': Silt, brown (7.5 YR 4/3) very clayey, slight plastic, with trace gravel fine to
				coarse, and some clay layers, clay reddish brown (5 YR 5/3) plastic but fissile
				looking on broken surfaces, 0.1-2" thick, mostly in 2-3, no clay layers below 3.5,
				wet, no odor.
10	15	5	5.2-52.7/	0-1': Silt, as above, no clay layers.
			16-22	1-2': Silt, as above, several clay layers as above.
				2-5': Silt/Clay, colors as above, interbedded silt somewhat firm clay plastic, more
				clay than silt, clay layers 1-3" thick, silt 0.5-3" thick, wet, no odor.
15	20	5	1700-	0-2': Silt/Clay, as above interbedded.
			4280/	2-3': Silt/Sand/Gravel, reddish brown (5 YR 5/3), very poorly sorted mixture fine
			13.3-14.6	to very coarse sand, fine to very coarse gravel, angular to subround, very silty,
				sticky to loose, wet, no odor.
				3-3.5': Sand/Gravel, reddish brown (5 YR 5/3), medium to coarse and with fine
				to coarse sand with fine to coarse gravel and cobbles, loose, wet, no odor.
				3.5-5': Sand/Gravel, reddish brown (5 YR 5/3), fine to coarse sand, moderately
				sorted, with fine to very coarse gravel, subangular to subround, loose, wet,
				no odor, trace silt.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-78

Prepared by Bruce Evans/Jason Dowling

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
20	25	5	3000-	0-1': Sand/Gravel, as above and becoming more coarse grain, loose, wet, no odor.
			14700/	1-2': Sand, brown (7.5 YR 5/4), medium grain well sorted, some fine grain, trace
			12.2-13.5	silt, trace fine to medium gravel, subanuglar to subround, loose, wet, no odor.
				2-5': Sand/Gravel, dark reddish gray (5 YR 4/2), coarse to very coarse sand,
				fine to very coarse gravel, angular to subround, many cobbles to 2.5"
				diameter, moderately sorted, very coarse mixture loose, wet, no odor.
25	30	5	1060-	Sand, brown (7.5 YR 4/3), medium grain, some coarse, trace fine gravel
			12500/	subangular to subround, well sorted loose, wet, very slight odor.
			17-17.8	
30	35	5	7700-	Sand, brown (7.5 YR 4/3), medium to coarse grain some very coarse, some fine
			14700/	to coarse gravel subangular to subround, well sorted to moderately sorted, loose,
			10-15	wet, slight odor.

ARCADIS

Sample/Core Log

Boring/Well GM-79 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 9/10/03 Drilling Completed 9/10/03

Total Depth Drilled 35 Feet Hole Diameter 8 inches

Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 4" x 10'

Sampling Interval Continuous feet

Land-Surface Elev. 1052.81 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used Water

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Stacy Helper Leon/Jeff

Prepared By Bruce Evans/Jason Dowling

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	0.38-2.6/	0-2': Silt/Gravel: Brown (7.5 YR 4/4) silt with rootlets and organic material
			11.3-19.9	and gravel, fine to very coarse, subangular to subround, some cobbles to 2",
				loose, dry, no odor.
				2-5': Sand/gravel, reddish yellow (7.5 YR 6/6), mostly fine to very fine sand, some
				medium to coarse, with fine to very coarse gravel and cobbles, subangular to
				subround, poorly sorted, loose, dry to moist, no odor.
5	10	5	0.06-3.5/	0-1': Sand/Gravel, as above.
			10.2-11.9	1-1.5': Sand, light brown (7.5 YR 6/4), very fine grain, well sorted, loose, dry,
				no odor.
				1.5-3.5': Sand/Gravel, as above.
				3.5-4.5': Sand, as above, very fine grain.
				4.5-5': Silt/Clay, silt brown (7.5 YR 4/4), clay reddish brown (2.5 YR 4/4)
				interbedded silt somewhat firm (hp = 1.5), clay plastic, but fissile looking on
				broken surfaces, silt matrix somewhat clayey layers .2 - varved in thickness,
				moist to wet, no odor.
10	15	--	--	No recovery.
15	20	5	-0.5-4.10/	Silt/Clay, as above interbedded and varved increasing clay, clay layers as thick
			5.9-6.5	as 4", wet, no odor.
20	25	5	0.8-9.9/	0-3': Silt/Clay, as above.
			5.8-6.5	3-4': Sand, reddish brown (5 YR 5/4) very fine grain, well sorted, loose, trace
				thin black staining, trace thin silt seams, wet, no odor.
				4-4.5': Sand, reddish brown (5 YR 5/4), fine grain, some very fine, moderately
				sorted, some yellowish staining at 4.3-4.5, loose, wet, no odor.
				4.5-5': Sand/Silt, reddish brown (5 YR 5/4), thinly interbedded very fine sand
				and silt <1" layers, trace yellow red clay layers, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-79

Prepared by Bruce Evans/Jason Dowling

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA (ppm)	Sample/Core Description
25	30	5	85-10100/	0-4': Sand, brown (7.5 YR 4/4), medium to coarse grain, very well sorted,
			3.5-5.3	loose, wet, no odor.
				4-5': Sand/Gravel, reddish brown (5 YR 5/4), sand mostly coarse to very
				coarse, very silty gravel fine to very coarse, angular to subangular, many
				cobbles to 3" diameter, very poorly sorted, loose, but slightly sticky, silty matrix,
				wet, no odor.
30	35	--	--	No recovery.

ARCADIS

Sample/Core Log

Boring/Well GM-80 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 4/21/04 Drilling Completed 4/22/04

Total Depth Drilled 190 Feet Hole Diameter 6 to 8 inches

Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4"

Sampling Interval continuous feet

Land-Surface Elev. 1120.75 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Driller Roy Helper Leon/John

Prepared By Paul Lenaker

Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	5.0	-13 - -14	0-1.0' (Topsoil) Sand: Dark gray to black, fine grain, trace medium to coarse,
			-3.38 -	much organics, grass/rootlets, trace gravel up to 1" subangular, loose to bound
			-3.29	by roots, moist, no odor.
				1.0-2.5' Sand: Yellowish brown (10 YR 5/6), very fine to fine, some to much silt,
				some coarse sand and gravel up to 2" round to subround, somewhat loose, moist
				to wet, no odor.
				2.5-3.5' Sand: Strong brown (7.5 YR 5/6), fine grain some medium, trace coarse
				sand and gravel up to 1/2" subangular to angular, loose, moist, no odor.
				3.5-5.0' Fill: Mix of sand, silt, and gravel, dark yellowish brown (10 YR 4/6), trace
				to some clay, crumbly, some black and red and yellow/green staining, sand is fine
				to coarse, gravel up to 1.5" subround to subangular, moist, no odor.
5	15	5	-10 - 3.12/	0-2.0' Slough, topsoil with organics and sand.
			-2.12 -	2.0-4.0' Sand: Strong brown (7.5 YR 5/6), medium grain some coarse, trace gravel
			-2.28	up to 1" subround to subangular, loose, no odor, moist.
				4.0-5.0' Fill: Sand, silt and gravel as above.
15	20	5.0	-12 - -15/	0-1.5' Fill: As above.
			-1.9 - -2.2	1.5-3.0' Sand: Dark yellowish brown (7.5 YR 3/6), medium grain, some fine to
				coarse, some silt, loose, moist, no odor.
				3.0-3.8' Fill: As above.
				3.8-5.0' Crushed Rock and pulverized concrete, rock up to 4", mainly angular
				and platy, powdery, dry.
20	25	5	-1.9 - 5.02/	0-2.0' Crushed Rock. As above.
			0.75 - 1.1	2.0-5.0' Sand: Strong brown (7.5 YR 4/6), fine grain, some silt, trace medium
				sand, trace gravel to 3/4", subround to subangular, somewhat loose to
				crumbly, moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-80

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
25	30	5	-8 - -4.5/	0-3.5' Gravel: Brown (10 YR 4/3) up to 3" round to subangular, loose, some silt and
			-0.7 - 1.1	very fine sand, wet (from drilling) no odor, grades into next unit for 0.5'.
				3.5-5.0' Sand: Yellowish red (5 YR 5/2), very fine to fine, trace to some silt, trace
				medium to coarse grain, trace gravel up to 3/4" subround to round, loose,
				no odor.
30	35	5	-4.5 - 57.8/	0-5.0' Sand: As above, at 4' crushed rock fragments, trace to some black/green
			-0.2 - 2.91	staining.
35	40	3.5	-2.2 - -4.5/	0-1.5' Sand: Brown (7.5 YR 5/4), mainly fine with some medium, some gravel, up to
			-0.38 -	2" somewhat poorly sorted, subround to subangular, some silt, somewhat sticky,
			-0.54	wet, no odor.
				1.5-3.5' Sand: Strong brown (7.5 YR 4/6), very fine to fine grain trace medium to
				coarse and gravel to 3" subround, trace silt loose fairly well sorted, moist.
40	45	5	11.11-3.04/	0-4.0' Sand: As above grades into.
			1.11-1.27	4.0-5.0' Sand: Brown (7.5 YR 5/4), very fine to fine grain with some silt (increasing
				silt), somewhat crumbly, moist, no odor.
45	50	5	-7.03- -6.47/	0-2.0' Sand: Strong brown (7.5 YR 4/6), predominately fine grain, some very fine to
			0.30 - 0.40	medium, trace coarse, some silt, trace to some gravel to 2", subround to subangular,
				trace clay in nodules, somewhat sticky, wet, poorly sorted, no odor.
				2.0-4.0' Sand: Color as above, fine grain, some very fine to medium, well sorted,
				wet, no odor.
				4.0-5.0' Sand: Brown (7.5 YR 4/2), medium to coarse grain, some gravel to 1"
				subround to subangular, poorly sorted, many coarse grain is black platy grains
				wet, no odor, some rust color staining at 49'.
50	55	5	-10 - -9/	0-5.0' Sand: Brown (7.5 YR 4/4), fine grain, some very fine to coarse, trace to some
			0.64 - 0.81	silt and clay, trace gravel up to 3" subround to subangular, somewhat loose and
				somewhat sticky, somewhat poorly sorted, wet, no odor, well sorted sand medium
				grain seam 2" thick at 51'.
55	60	5	-12 - -10/	0-3.0' Sand: As above.
			0.51 - 0.74	3.0-5.0' Sand: As above, with intermixed areas of predominately medium sand,
				and gravel to 4".
60	65	5	-2.25 -	0-1.5' Sand: As above (3-5).
			-1.25/1.16 -	1.5-2.3' Silt: Color as above, grainy, crumbly, noncohesive and no plastic, wet, no
			1.42	odor.
				2.3-3.2': Sand brown (7.5 YR 4/6) fine grain well sorted, wet, no odor.
				3.2-5.0' Sand: As above (55 to 60', 3-5').
65	70	5	8 - -4.85/	0-3.0' Sand: Brown (7.5 YR 4/4) very fine to fine, loose, well sorted, wet, no odor.
			0-49 - 1.72	3.0-5.0': Sand, color as above, very fine to fine, loose, well sorted some to trace

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-80

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				silt, wet, no odor.
70	75	5	-9 - -8/	0-4.0' Sand: As above with trace to some silt.
			1.15 - 1.18	4.0-5.0' Sand, color as above, mainly fine to trace medium and very fine,
				loose, well sorted, wet, no odor trace clay nodules red (2.5 YR 4/6).
75	80	5.0	-12 - 10/	0-5.0' Sand: As above increasing clay nodules down section.
			0.64 - 0.72	
80	85	5	-5 - -4/	0-2.0' Sand: As above, brown (2.5 YR 4/4), increasing clay nodules.
			1.34-1.52	2.0-5.0' Silt: Brown (7.5 YR 4/4) and silt down section grainy, crumbly, some clay
				red (7.5 YR 4/6) inclusions plastic and cohesive, trace fine sand in lenses, inclusions
				have platy appearance, throughout, wet to moist, no odor.
85	90	5	12 - -8.08/	0-3.5' Sandy silt, brown (7.5 YR 4/4), sand very fine, silt is grainy to smooth,
			22 - 1.5	saturated, no odor.
				3.5-5.0' Silt: Color as above, trace very fine sand, silt is grainy, somewhat crumbly,
				at first, moist to wet, no odor.
90	95	5	-11 - -9/	0-0.4' Silt: As above.
			2.41 - 2.23	0.4-5.0' Sand: Brown (7.5 YR 5/4), fine to medium grain, trace coarse, trace gravel
				to 1" subround to angular, somewhat well sorted, loose, wet, no odor, from 1.4 -
				2.0 predominately medium coarse grain with some gravel, trace rust color staining/
				coloring at 0.4-0.8'.
95	100	5	17-16/	0-3.0' Sand: As above.
			2.76-2.85	3.0-5.0' Sand: Brown (7.5 YR 5/4), fine to medium grain, well sorted, loose, wet,
				no odor.
100	105	5	-2 - -3/	0-1.0' Sand: As above, predominately fine grain (fining) grading into section below.
			2.95-3.03	1.0-5.0': Silt and Sand: Intermixed, brown (7.5 YR 4/4), sand brown (7.5 YR 5/4),
				silt is in nodules and is crumbly to soft, nongrainy and smooth with grayish to
				reddish/pink banding, sand is intermixed throughout silt nodules, fine to coarse
				grain, predominately fine to medium grain, loose, trace gravel to 1" subround to
				subangular, over all wet and no odor.
105	110	5	174 - 131/	0-1.5' Slough: Silt, sand and gravel.
			2.2 - 2.3	1.5-3.0' Sand: Dark brown (7.5 YR 3/4), fine grain some very fine, some silt, trace
				gravel up to 1" subround, saturated, no odor.
				3.0-3.7' Sand: Color as above, fine grain, interbedded with silt, grainy, bed are
				1/4 to 1/2" thick, wet, no odor.
				3.7-5.0' Sand: Dark brown (7.5 YR 3/4), predominately medium grain with very
				fine to coarse, trace gravel to 1" angular to subround, loose, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-80

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
110	115	5	357 - 390/	0-1.0' Sand: As above.
			3.5 - 3.4	1.0-3.5' Sand: Brown (7.5 YR 5/3), fine to medium grain, loose, wet, no odor,
				interfingering contact with section below.
				3.5-5.0' Sand: Color as above, dark brown (7.5 YR 3/2), fine grain, loose with some
				to much silt in nodules, silt is somewhat crumbly, grainy to smooth, wet, no odor.
115	120	5	55 - 977/	0-2.0' Sand: As above and silt nodules, slight odor.
			2.08-2.40	2.0-5.0' Silt: Brown (7.5 YR 4/3), some grainy some smooth, some very fine sand in
				lenses, somewhat crumbly at first to smooth, trace fine sand in lenses, wet, odor.
120	125	5	178-187/	0-1.8' Silt: Brown (7.5 YR 4/3) smooth to grainy, trace to some very fine sand,
			2.75 - 3.95	somewhat loose to somwhat crumbly, moist, odor.
				1.8-3.1' Silt: Brown (7.5 YR 4/3) smooth to grainy, trace to some very fine sand,
				somewhat loose to somewhat crumbly, some clay inclusions reddish brown
				(5 YR 4/4), hard, platy at first, plastic and cohesive when worked,overall hard, moist
				to wet, no odor (approximately 20 percent clay inclusions.
				3.1-3.4' Sand: Fine to medium grain in lense but not continuous across core,
				silt as above also brown (7.5 YR 4/4), loose, moist to wet, no odor.
				3.4-5.0' Silt: With clay inclusions as above, increased amount of clay (approximately
				50 percent) comes up with no recovery, send back with tooth/trap to attempt
				to retrieve.
125	145	0		No recovery, loose sands.
145	150	5	.04 - 7.9/	0-5.0' Sand: Brown (7.5 YR 5/3) fine to medium grain, predominately fine grain,
			-4.42 -	trace coarse gain, trace silt, trace gravel up to 1.5" subround to round, loose,
			-4.49	wet, no odor, somewhat sorted.
150	155	5	7.3 - 10/	0-3.0' Sand: As above.
			-3.51 -	3.0-5.0' Sand: Color as above, fine to medium, predominately fine, some silt and
			-3.98	clay in nodules, trace to some gravel up to 2.5" subround to subangular, wet,
				no odor.
155	160	5	10.6-38/	0-0.5' Sand: As above, silt to clay in nodules, trace to some gravel up to 2.5"
			-2.26 -	subround to subangular, wet, no odor.
			-3.20	
160	165			0.5-2.0' Silt: Brown (7.5 YR 4/3), smooth to grainy, laminated, crumbly at first to
				soft, trace to some clay, wet, no odor, trace gravel to 1" subround to subangular.
				2.0-3.0' Sand: Dark brown (7.5 YR 3/3), fine to medium grain, loose, trace coarse,
				trace silt, no nodules, wet, no odor.
				3.0-3.5' Silt/Clay: Dark brown (7.5 YR 3/3) and sand (fine to medium), sticky,
				somewhat crumbly, nonplastic, mainly silt/clay and sand give it grainy

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-80

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				appearance, wet to moist, no odor.
				3.5 - 4.0' Sand: Brown (7.5 YR 4/3), fine grain, well sorted, loose, wet, no odor.
				4.0-5.0' Sand and Gravel: Dark brown (7.5 YR 3/3) with silt and clay, sand very
				fine to coarse, gravel up to 2", rounded to subangular, silt and clay holds
				grain together, red/brown/gray/green strong colorations/mottling, very poorly
				sorted, wet, no odor.
165	170	5	7.3 - 10.15/	0-3.5' Sand and Gravel: Coarse sand predominately, silt and clay as above grading
			-3.08 -	over 1' into section below.
			-4.41	3.5-5.0' Sand: Color as above, sand fine to coarse, mainly medium grain, much
				gravel up to 2" angular to subround, trace silt, poorly sorted, wet, no odor.
170	175	5	11.3 - 10.7/	0-2.0' Sand: As above.
			3.86 - 4.38	2.0-5.0' Sand: As above, with silt, grainy to smooth on outside of core.
175	180	5	27.38 - 36/	0-1.5' Sand/Gravel/Silt: Mixture, saturated from drill fluids, sand fine to
			3.08-3.71	coarse, silt grainy to smooth, and gravel up to 2" subround to subangular,
				saturated, no odor.
				1.5-2.5' Sand and Gravel: Sand coarse, predominately coarse, some medium,
				trace gravel mostly 1/2 to 3/4" up to 3" subround to subangular, somewhat
				sorted, saturated, grades over 1/2' into section below.
				2.5-4.0': Alternating layers (up to 2" thick) of fine to medium grain sand
				brown (7.5 YR 4/3), well sorted, loose and silty sand, dark gray (7.5 4/1) fine to
				very fine with trace medium, loose saturated, no odor.
				4.0-5.0' Silty Clay: Dark greenish gray (Gley 10 Y 4/1), somewhat plastic and
				cohesive, trace sand fine to medium, trace gravel up to 2" round to subround,
				wet, no odor, at 180-5" core of phyllite had rock with white and red veins.
180	190			Phyllite hard rock core, white and red veins.

ARCADIS

Sample/Core Log

Boring/Well GM-81A Project/No. Ford/Kingsford WI001075.0015 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 5/25/04 Drilling Completed 5/26/04

Total Depth Drilled 185 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10-20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1110.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Bill Helper Jessie/Jo

Prepared By Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	145	0		Blind drill.
145	150	5	0.10-1.56/	0-0.3' Silt and Clay: Reddish brown (5 YR 4/4), firm and hard, HP >4.0, crumbly
			285-1100	at first, but cohesive and plastic when worked, moist, slight odor.
				0.3-1.0' Sand: Brown (7.5 YR 5/4), trace medium, trace subround to subangular
				gravel to 1.0", fine grained, grading into 1-3', well sorted, loose, wet, odor.
				1.0-3.0' Sand: Color as above, trace coarse, trace subround to subangular gravel
				to 2-5", trace fine, medium grained, loose, somewhat sorted, wet, odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), some silt, trace coarse and medium sand,
				subround to subangular gravel to 1", very fine to fine, somewhat loose, wet,
				strong odor.
150	155	5	6.51-1.62/	0-4.0' Sand: Brown (7.5 YR 4/4) some to much silt, brown (7.5 YR 4/3), mainly
			2400-3100	in lenses up to 1" thick, silt is smooth, crumbly, at times has trace to some clay
				making it somewhat cohesive and somewhat plastic, very fine to fine, somewhat
				well sorted, some black staining starting at 3', wet, odor.
				4.0-5.0' Silt: Brown (7.5 YR 4/4), smooth very slight cohesive to crumbly, grainy
				in places, clay laminations layered with silt yellowish red (5 YR 4/6), some black
				staining, cohesive and plastic, platy appearance.
155	160	5	2.27-2.62/	0-5.0' Silt: Dark brown (7.5 YR 3/3), smooth, noncohesive and nonplastic, grainy
			5090-14500	in places, at 4.8' some clay lenses give it a somewhat cohesive/plastic texture,
				some dark gray to black staining throughout, wet, odor.
160	165	5	3.79-4.56/	0-5.0' Silt: Overall grainy and crumbly, smooth in places, some clay lenses
			12700-16000	(<mm's in thickens) give it a more red appearance/color, noncohesive,
				nonplastic, wet, odor.
165	175	5	.97-1.11/	0-5.0' Silt: Brown (7.5 YR 4/4), trace to some clayey silt to silty clay lenses reddish
			18300-30030	brown (5 YR 4/4), grainy to smooth, somewhat crumbly, trace dark grayish
				staining, has appearance of popped vesicles throughout, wet, slight odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-81A

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
175	185	5	2.87-3.36/ 30200-40000	0-5.0' Silt: As above, becoming somewhat less grainy down section.

ARCADIS

Sample/Core Log

Boring/Well GM-81B Project/No. Ford/Kingsford WI001075.0015 Page 1 of 8

Site Location Kingsford, Michigan

Drilling Started 5/20/04 Drilling Completed 5/24/04

Total Depth Drilled 321 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10-20' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1111.32 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Alvin Helper Jessie/Jo

Prepared By Paul Lenaker/Lori Schmidt Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-1.89-2.86/	0-1.0' Topsoil: Very dark brown (7.5 YR 2.5/2), silt and very fine sand, organic rich
			8.49-14.02	(rootlets), somewhat loose, trace subround to subangular gravel to 3/4", grades
				into section below, moist, no odor.
				1.0-2.0' Sand: Strong brown (7.5 YR 4/6), trace round to subround gravel to 1.5",
				some to much very fine to fine sand, somewhat loose when picked at, staining in
				layers, moist, no odor.
				2.0-5.0' Sand: Strong brown (7.5 YR 5/8), trace medium to coarse, trace
				subround to subangular gravel to 2", predominately fine, loose, moist, no odor.
5	10	5	-1.44- -1.95/	0-0.8' Slough: Grass/topsoil.
			26-29	0.8-1.5' Sand: As above, rounded gravel to 3", predominately medium grain.
				1.5-2.0' Sand: Strong brown (7.5 YR 5/6), trace medium, trace gravel to 1/4"
				fine grain, fairly well sorted, loose, moist, no odor.
				2.0-4.0' Sand: Dark brown (7.5 YR 3/4), some fine to coarse, trace silt, trace round
				to subangular trace gravel to 2", medium grain, loose, moist, no odor.
				4.0-5.0' Silty Sand: Color as above, trace medium to coarse, trace angular to
				subround gravel to 3/4", very fine to fine grain, loose to crumbly in
				places, moist, no odor.
10	15	5	0.2-6.2/	0-1.0' Sand: Dark brown (10 YR 3/4), some medium grain, trace coarse grain,
			17.99-27.72	trace round to subangular gravel to 1.5", trace silt in small pods, fine grain, loose,
				somewhat sorted, moist, no odor.
				1.0-3.0' Silty Sand: As above.
				3.0-5.0' Silty Sand: As above, dark brown (10 YR 3/3), increasing round to
				subangular gravel content (some) to 3", medium grain.
15	20	4	0.83-1.87/	0-1.0' Silty Sand: As above.
			10.63-11.5	1.0-2.0' Sand: Dark brown (10 YR 3/3), trace coarse, trace round to subangular
				gravel to 1-3/4", fine to medium, somewhat poorly sorted,

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-81B

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				loose, wet, no odor.
				2.0-4.0' Sand: Dark yellowish brown (10 YR 3/6), some fine, trace coarse, trace
				subround to subangular gravel to 1", medium grain, somewhat sorted, loose,
				moist, no odor.
20	25	0	--	No recovery.
25	30	5	-0.35- -0.88/	0-5.0' Sand: Brown (7.5 YR 4/4), trace medium to coarse, trace very fine, trace
			3.17-9.64	silt lenses, strong brown (7.5 YR 4/6), trace subround to subangular gravel to 1",
				fine grain, loose, fairly well sorted, smooth, moist, dryer at 4-5', no odor.
30	35	0	--	No recovery.
35	40	5	1.2-2.04/	0-1.0' Sand: Dark yellow brown (10 YR 3/4), some very fine, trace medium to
			7.27-15.6	coarse, trace subround to subangular gravel to 1/2", fine grain, loose, moist, no
				odor.
				1.0-5.0' Sand: Color as above, trace very fine to coarse, trace angular to
				subrounded gravel to 1", fine to medium grain, loose, somewhat sorted, moist,
				no odor.
40	45	5	2.19-3.86/	0-0.5' Sand: As above.
			9.7-21.1	0.5-4.0' Sand: Brown (7.5 YR 4/4), trace medium and very fine, trace fine to
				coarse, fine to medium grain, alternating layers up to 4" thick of fine grain, fairly
				well sorted, trace gravel in medium grain layers, fine grain layers, well sorted, loose,
				no odor.
				4.0-5.0' Sand: Color as above, trace coarse, trace subround to subangular gravel
				to 1", fine to medium grain, somewhat sorted, loose, moist, no odor.
45	50	5	10.06-11.20/	0-1.0' Sand: Dark brown (7.5 YR 3/4), some very fine, fine grain, well sorted, loose,
			10.27-18.8	wet, no odor, grades over 2" into section below.
				1.0-2.5' Sand: Color as above, some fine, medium grain, well sorted, loose,
				at 2-2.5' progressively more coarse grain to some coarse at 2.5, moist.
				2.5-4.0' Sand: Dark brown (7.5 YR 3/4), some medium, trace coarse, fine grain,
				loose, moist, no odor.
				4.0-4.2' Sand: Medium grain as above.
				4.2-5.0' Sand: As above (2.5-4).
50	55	5	10.4-11.2/	0-5.0' Sand: Brown (7.5 YR 4/4), some very fine, trace round to subangular gravel
			5.3-14.4	to 1", interbedded layers up from 4-6" with sand medium grain as above, fine
				grain, well sorted, loose, moist.
55	60	5	-2.39- -1.36/	0-3.5' Sand: Brown (7.5 YR 4/4), trace medium to coarse, trace subround to
			2.41-3.03	subangular gravel to 1.25" (mainly 1/2" pieces), layer of some medium to
				coarse sand from 2.2-2.4', fine grain, well sorted, loose, wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-81B

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				3.5-5.0' Sand: Color as above, some to much medium grain, trace coarse,
				fine grain.
60	65	5	-0.66- -.58/	0-5.0' Sand: Color as above, trace coarse, trace to no subround
			1.51-5.96	gravel to 1/2", fine to medium grain, well sorted, loose, wet, no odor.
65	70	5	0.11-0.26/	0-1.0' Sand: As above, fine to medium grain.
			0.61-7.92	1.0-1.5' Silt: Color as above, smooth to somewhat grainy, intertwined up to 2"
				thick with very fine sand, grainy silt, loose, wet, no odor, grading over 0.3" into
				section below.
				1.5-5.0' Sand: Color as above, fine to medium grain, very well sorted, loose, wet,
				no odor.
70	75	5	0.45-1.72/	0-2.0' Sand: As above, with trace coarse sand.
			6.90-18.1	2.0-2.8' Silt: Very fine sand interbeds color as above, smooth to somewhat grainy,
				loose to crumbly, wet, no odor.
				2.8-5.0': Interbeds of fine to coarse sand, predominately very fine silt, grainy up to
				2" thick, loose, wet, no odor.
75	80	5.0	-0.26-7.24/	0-2.0' Sand: Brown (7.5 YR 4/4) trace medium to coarse, very fine to fine, very
			3.01-3.33	well sorted, loose, wet, no odor.
				2.0-4.8' Sand: Color as above, trace medium, fine grain, well sorted, loose, wet,
				no odor.
				4.8-5.0' Silty Sand: Color as above, very fine to fine, silt is grainy, loose, wet,
				no odor.
80	85	5	0.29-1.13/	0-5.0' Sand: Brown (7.5 YR 4/4), some silt in places, very fine to fine, very well
			3.61-4.56	sorted, loose, wet, no odor, grading into predominate fine grain from 4.8-5.0'.
85	90	5	-0.18-0.12/	0-5.0' Sand: Brown (7.5 YR 4/4), trace to some very fine in places, fine grain,
			3.01-3.83	very well sorted, loose, wet, no odor.
90	95	5	-4.26- -4.24/	0-0.2' Sand: Fine grain as above.
			1.58-1.65	0.2-0.9' Sand: Fine to medium grain, grading into predominately medium with
				trace coarse from 0.6-0.9', sorted, loose, wet, no odor.
				0.9-2.5' Sand: Color as above, from 0.9-1.5: fine grain, well sorted, loose, wet, no
				odor, grading over 3" into sand same color, sharp contact, trace to some
				coarse, fine to medium grain, loose wet, no odor.
				2.5-5.0' Silt and very fine sand: Brown (7.5 YR 4/4), trace to some fine, grainy,
				somewhat loose in places, wet, slight odor.
95	100	5	-3.09- -3.29/	0-2.0' Sand: Brown (7.5 YR 4/4), silt (smooth grainy) lenses, fine grain, well sorted,
			2.97-13.60	loose, wet, very slight odor.
				2.0-5.0' Sand: Color as above, some very fine, fine, very well sorted, somewhat

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-81B

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				loose, wet, slight odor.
100	105	5	0.52-0.68/	0-5.0' Sand: Color as above, from 3-3.7 silty sand, silt smooth to grainy, sand very
			128-137	fine to fine, color as above, trace very fine, trace silt lenses (hard silt up to 5 mm
				thick), fine, very well sorted, wet, some odor.
105	110	5	0.79-1.29/	0-5.0' Sand: Brown (7.5 YR 4/4), some areas of some silt, grainy, progressively
			927-1038	grades to mainly very fine at 4-5', trace black staining, very fine to fine grain, very
				well sorted, loose, wet, odor,
110	115	5.0	0.08-4.83/	0-4.0' Silt: Dark brown (10 YR 3/3), clay inclusions/beds up to 1.75" thick, brown
			158-1662	(7.5 YR 3/4), some to trace grayish staining at 4.0', smooth to somewhat grainy,
				somewhat firm, fissile/platey in appearance, slight cohesive/plastic, wet, odor.
				4.0-5.0' Silt: Dark brown (10 YR 2/3), grainy, hard to crumbly, moist to wet, odor.
115	120	5	2.82-3.95/	0-3.0' Silt: Brown (7.5 YR 4/3), smooth to slightly grainy, crumbly, wet, slight odor.
			282-418	3.0-5.0' Silt: as above but less grainy, with clay conclusions/lenses up to 1" thick,
				platy/fissile in appearance, not very cohesive but somewhat plastic, wet, slight odor.
120	125	5.0	4.02-5.47/	0-2.0' Silt: As above (3-5), HP = 2.5.
			552-771	2.0-3.5' Silty Clay: Dark brown (7.5 YR 3/4), very hard and firm, cohesive and plastic
				when worked, brittle at first, moist, no odor. HP >4.0.
				3.5-5.0' Silty Clay: Trace coarse to fine, gravel to 1/4" (possible drop stones), soft,
				cohesive and plastic, smooth moist, no odor.
125	130	5	4.57-7.89/	0-3.0' Silty Clay: As above (2-3.5), very hard and firm.
			641-1407	3.0-5.0' Silt: Brown (7.5 YR 4/3), trace to some clay, smooth to somewhat grainy,
				in spaces soft to crumbly to sticky dependent on water and clay content,
				wet, some odor.
130	135	5	4.78-7.11/	0-5.0' Silt: Brown (7.5 YR 4/3), trace to some clay inclusions, clay hard cohesive/
			804-1900	plastic when worked, varies from smooth to grainy, crumbly to somewhat loose.
135	140	5	-3.81-4.65/	0-1.0' Sand: Brown (7.5 YR 5/4), some to much silt, silty clay lenses at 1',
			16-176	cohesive and plastic, fine, somewhat sorted, wet, slight odor.
				1.0-5.0' Sand: Brown (7.5 YR 5/4), trace silty clay lenses as above, fine, very well
				sorted, loose, wet, no odor.
140	145	5	-4.29- -2.87/	0-3.0' Sand: Color as above, fine, very well sorted, loose, wet, slight odor.
			196-442	3.0-5.0' Sand: As above with trace medium to coarse sand.
145	150	5	-3.38- -4.40/	0-2.5' Sand: Brown (7.5 YR 5/3), trace coarse, fine to medium, somewhat
			95-189	loose, grading into section below, wet.
				2.5-3.5' Sand: Color as above, some fine, trace coarse grain, trace round to
				subangular gravel to 2.5", medium, loose, wet, slight odor.
				3.5-5.0' Silty Sand: Brown (7.5 YR 4/4), very fine to fine, well sorted,
				somewhat loose to crumbly, wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-81B

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
150	155	5	4.22- -2.57/	0-0.8' Silt: Brown (7.5 YR 4/3), some very fine sand, crumbly, some dark staining
			638-2500	smooth, slightly grainy, wet, odor.
				0.8-3.0' Sand: Brown (7.5 YR 4/4), some silt in lenses, very fine to fine, grading into
				section below, well sorted, loose to somewhat loose, wet, odor.
				3.0-4.6' Sand: As above, some to much silt, very fine, wet, odor.
				4.6-5.0' Silt: Dark brown (7.5 YR 3/3), some very fine sand, black staining, crumbly,
				smooth to somewhat grainy, wet, strong odor.
155	175	2.5	1.03-2.05/	0-2.5' Silty Clay: Silt dark brown (7.5 YR 3/4), clay reddish brown (5 YR 4/4), clay is
			2900-4600	hard and crumbly, silt is smooth, both somewhat cohesive and somewhat plastic
				when worked, saturated, strong odor.
175	180	5	4.2-5.3/	0-5.0' Silt: Dark brown (7.5 YR 3/4), to clay silt or silt in some to much clay, clay
			2600-5200	in lenses reddish brown (5 YR 4/4), overall somewhat cohesive/platy, somewhat
				sticky, predominately platy to fissile in appearance, cohesive to plastic when
				worked, wet, strong odor, HP <0.5.
180	155	5.0	4.8-6.03/	0-5.0' Silt: As above, color dark reddish gray (5 YR 4/2) and dark reddish brown
			7010-7100	(5 YR 4/3), color banding between throughout (varving or smeared by drilling),
				becomes somewhat crumbly when worked at 184.6-185.2, very much clay
				lenses/pods.
185	190	5	3.95-4.99/	0-5.0' Silt: As above, Intervals of very much clay lenses from 188.5 - 190', very
			6900-11300	crumbly at first becoming somewhat cohesive/plastic when worked, some grayish
				black staining in layers.
190	195	5	3.76-4.15/	0-5.0' Silt: As above, clay lenses becoming more crumbly when worked. HP = 1.5.
			2350-2600	
195	200	5	2.41-3.22/	0-5.0' Silt: Dark reddish brown (5 YR 3/3), some to much clay, somewhat cohesive
			117-130	and somewhat plastic, smooth, HP 1-1.5, somewhat firm, lenses clay, hard, fissile to
				platy in appearance, dark reddish brown (5 YR 3/4) in lenses or pods up to 4" thick,
				very hard/firm HP >4.0 (thicker clays from 1.5-2 and 2.5-3.2'), wet, slight odor.
200	205	5	2.55-3.6/	0-5.0' Silt: As above, with clay lenses/pods at 0.2-0.8 as above (very hard HP >4.0),
			27.1-74	silt progressively changing from somewhat cohesive and somewhat plastic
				to crumbly down section, also less clay lenses down section.
205	210	5	4.27-4.34/	0-2.0' Silt: As above.
			42.3-66.6	2.0-3.0' Clay: Dark reddish brown (5 YR 3/4), some silt, very hard HP = >4.0, firm,
				mostly crumbly to slightly cohesive.
				3.0-5.0' Silt: As above, less clay and more crumbly, more organic-like.
210	215	5	3.84-3.93/	0-3.0' Silt: As above, less clay but still some in lenses.
			17.7-18.2	3.0-4.8' Silt: Reddish brown (5 YR 4/3), trace to no clay, smooth, crumbly,
				moist to wet, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-81B

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				4.8-5.0' Clay: See below
215	220	5	2.13-2.25/	0-1.0' Clay: As above (205-210/2-3'), some thin lenses silt layers within.
			1.76-2.19	1.0-5.0' Silt: Brown (7.5 YR 4/3), trace to some clay, clay also in lenses/pods
				reddish brown (5 YR 4/4), smooth, somewhat cohesive/plastic.
220	225	5	2.48-2.60/	0-1.5' Silt: As above.
			71.7-272	1.5-5.0' Silt: Reddish brown (7.5 YR 4/3), trace clay, slight cohesive/slight plastic
				clay lenses not observed, somewhat grainy but smooth, HP <1.0, wet, no odor.
225	230	5	2.50-3.14/	0-3.0' Silt: As above, clay lenses/pods from 0.8-1.4'.
			1.81-370	3.0-3.5' Sand: Brown (7.5 YR 4/3), fine to very fine, well sorted, loose, wet, no
				odor.
				3.5-5.0' Silt: As above with clay lenses, color banding of reddish brown (5 YR 4/3)
				and brown (7.5 YR 4/2).
230	235	5	2.84-4.25/	0-5.0' Interbeds of silt: As above, with color banding, crumbly, nonplastic/non-
			6.97-7.92	cohesive clay lenses (only from 3-5') as above, HP 3.5, sand brown (7.5 YR 5/3), very
				fine grain to grainy silt, interbeds up to 2" thick and twisted likely due to drilling.
235	240	5	2.65-2.75/	0-5.0' Silt: As above, with clay lenses at 1.5' from 3.8-4.7', very fine silty sand/
			8.01-26.38	very fine sandy silt lenses at 0.5' trace throughout, sandy silt is grainy,
				very moist, slight organic odor.
240	245	5	2.16-4.06/	0-5.0' Silt and Sand: Interbeds, silt reddish brown (5 YR 4/3), grainy to smooth
			3.38-4.81	somewhat cohesive/plastic, sand brown (7.5 YR 4/3), very fine to fine, well sorted,
				sand interbeds up to 6" thick, silt interbeds up to 2' thick, somewhat loose, wet,
				no odor.
245	250	5	2.88-3.25/	0-5.0' Silt and Sand: Interbeds as above, but silt includes trace clay nodules
			3.10-3.88	reddish brown (5 YR 4/4) crumbly and fissile, very slight cohesive when worked,
				sand beds progressively becoming finer grained down section to very fine to fine to
				very fine with grainy silt.
250	255	5	2.90-4.15/	0-5.0' Silt and Sand: Interbeds, as above (245-250/0-5), layer of clay interbed
			1.5-9.01	between 3.5-4.0', as above.
255	260	5	-0.08- -0.20/	0-5.0' Silt and Sand: Interbeds as above, but primarily silt, interbeds of very fine
			0.64-2.3	sand up to 1" thick, also some interbeds of clay as above up to 1/4-1/2" thick.
260	265	5	-0.05-0/	0-5.0' Silt and Sand: Interbeds as above, some fine sand interbeds up to
			.61-1.3	4" thick from 2.5-2.9'.
265	270	5	0.5-0.73/	0-2.0' As above.
			77-132	2.0-3.0' Sand: Brown (7.5 YR 4/3), some medium, fine, well sorted, loose, wet,
				no odor.
				3.0-4.0' Silt and Sand and Clay: Interbeds as above, only trace sand.
				4.0-5.0' Sand: Brown (7.5 YR 4/3), trace to some silt, very fine to fine, well sorted,

Sample/Core Log (continued)

Boring/Well GM-81B

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				somewhat loose, wet, no odor.
270	275	5	1.57-2.39/	0-2.5' Sand: Very fine to fine, as above.
			172-278	2.5-3.2' Silt: Reddish brown (5 YR 4/3), slightly firm, somewhat grainy, noncohesive
				and nonplastic, grading into next unit (becomes more grainy).
				3.2-4.0' Sand: Color as above, some to much silt in lenses, very fine to fine,
				somewhat loose, wet, no odor.
				4.0-5.0' Silt and Gravel: Reddish brown (5 YR 4/3), much phylite pieces, some coarse
				sand, silt smooth to grainy, overall hard and firm, crumbly, round to subangular
				gravel to 3", some wet color staining, dry, no odor.
275	280	5	0.40-6.62/	0-2.5' Silt and Gravel: Wet color as above, loose, much medium to coarse sand,
			780-6500	round to subangular gravel to 4" diameter, poorly sorted, wet, odor.
				2.5-2.8' Sand: Dark reddish gray (5 YR 4/2), some medium, grades over 2" into
				section below, coarse, loose, wet, odor.
				2.8-3.2' Sand: Color as above, trace to some coarse, trace to some silt, medium,
				loose, wet, odor.
				3.2-5.0' Sand and Gravel: Color as above, trace to some silt, poorly sorted sand,
				fine to coarse predominately medium to coarse, round to subangular gravel to
				2.5", wet, odor.
280	285	5	3.3-3.38/	0-1.5' Sand and Gravel: As above.
			7310-12000	1.5-3.5' Interbedded to interlaminated sand and silt, brown (7.5 YR 4/4), sand
				very fine to fine grain, silt grainy to smooth, somewhat loose, well sorted,
				wet, odor.
				3.5-5.0' Sand: Dark reddish brown (5 YR 3/3), trace coarse, trace subround to
				subangular gravel 1/2", medium, sorted, loose, wet, odor.
285	290	5	4.36-4.5/	0-1.0' Sand: As above, medium grain.
			13500-21500	1.0-5.0' Sand: Brown (7.5 YR 4/4), some interbed up to 4" thick of only very fine
				to fine, some of only medium grain, fine to medium, all loose, sorted to well
				sorted, wet, strong odor.
290	295	5	5.8-5.92/	0-2.5' Sand: Reddish brown (5 YR 4/3), trace coarse, fine to medium, somewhat
			24400-24600	well sorted, loose, wet, odor.
				2.5-2.8' Silt: Reddish brown (5 YR 4/4), smooth, noncohesive/nonplastic, somewhat
				loose to crumbly, wet, odor.
				2.8-5.0' Sand and Gravel: Dark reddish gray (5 YR 4/2), trace silt, sand medium to
				coarse predominately coarse, angular to subangular gravel to 3.5", loose, wet,
				odor.
295	300	5	-2.62-2.91/	0-2.0' Sand and Gravel: Brown (7.5 YR 4/3), some silt, sand fine to very fine
			14500-38000	predominately fine to medium, subround to subangular gravel to 2.5",

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-81B

Prepared by Paul Lenaker/Lori Schmidt

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				loose, wet, odor.
				2.0-5.0' Sand: Reddish brown (5 YR 5/4), trace to some very fine, trace silt
				(grainy), fine, very well sorted, loose, wet, odor.
300	305	5	3.05-3.60/	0-1.0' Sand: As above, grading over 2" into section below.
			15600-19400	1.0-5.0' Sand: Color as above, trace to some silt, very fine to fine grained
				predominately very fine, very well sorted, loose, wet, odor.
305	310	5	4.55-4.22/	0-1.0' Sand: As above, grading down section.
			23000-29700	1.0-5.0' Sand: Color as above, trace to some silt, predominately very fine, trace
				black staining, loose, wet, odor.
310	315	5	5.6-5.73/	0-2.0' Sand: As above.
			14700-23600	2.0-4.0' Sand: As above with silt, reddish brown (5 YR 5/4), interbedded (up to 2"
				thick), silt is somewhat loose, smooth to slight grainy, moist, odor.
				4.0-4.5' Sand: Color as above, fine to medium predominately fine, grades to next
				section, well sorted, loose, wet, odor.
				4.5-5.0' Sand: Color as above, fine to very fine, loose, wet, odor.
315	321	4	3.41-8.25/	0-1.0' Sand: Reddish brown (5 YR 4/4), fine grain, well sorted, loose, wet, some
			480-5400	odor.
				1.0-3.5' Silt/Clay: Very dark gray (1 Gley 3/N), some to much angular to subround
				gravel to 1.5", very hard, firm, HP >4.0, moist, no apparent odor.
				3.5-4.0' Crushed rock from angular to powder, Phyllite pieces finely laminated,
				sheen on surface, platy (bedrock).
				EOB @ 321'.

ARCADIS

Sample/Core Log

Boring/Well GM-82A Project/No. Ford/Kingsford WI001075.0023 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/4/04 Drilling Completed 6/5/04

Total Depth Drilled 115 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Corebarrel

Length and Diameter of Coring Device 4" x 20' Sampling Interval continuous feet

Land-Surface Elev. 1121.63 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Bill Helper Jessie/Jo

Prepared By Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID	Sample/Core Description
0	75	0.0		Blind drill.
75	80	5	2.35-10.64/	0-5' Silt: Reddish brown (5 YR 4/4), smooth to somewhat grainy, some clay lenses
			13.3-96.6	yellowish red (5 YR 4/6), clay is fissle in appearances somewhat cohesive and
				plastic when worked, silt is somewhat crumbly to somewhat cohesive, trace to
				some clay in places-makes silt more cohesive, wet, no odor, clay lenses
				abundant at 4.5-5.
80	85	5.0	13.3-8.46/	0-0.4' Silt: As above.
			10.04-3749	0.4-2.0' Silt: Brown (7.5 YR 4/4), grainy, crumbly, noncohesive, trace to some clay
				in places making it somewhat cohesive, wet, no odor, grades into next
				description.
				2.0-4.0' Silt: As above, with some to much very fine sand.
				4.0-5.0' Sand: Brown (7.5 YR 4/3), loose, fine grain, some very fine, well sorted,
				wet, no odor, trace grainy silt nodules, somewhat hard and crumbly.
85	90	5	4.35-5.68/	0-1.0' Sand: As above, trace silt.
			1683-4545	1.0-5.0' Sand: Brown (7.5 YR 4/3), fine grain, fine to medium grain, well sorted,
				trace silt nodules, loose, wet, no odor.
90	95	5	5.0-8.37/	0-5.0' Sand: Brown (7.5 YR 4/3), fine grain, well sorted in places borders fine to
			4191/5417	medium grain and in places borders fine to very fine grain, grades throughout,
				trace silt nodules, trace coarse sand and fine gravel to 1/2" round to subround,
				wet, loose, no odor.
95	100	5.0	2.78-4.55/	0-5.0' Sand: Brown (7.5 YR 4/4), loose, fine to medium grain, some medium
			129-332	grain, trace coarse, somewhat sorted, wet, no odor.
100	105	5	2.65-4.71	0-0.5' Sand: As above grades into.
			2507-6463	0.5-5.0' Sand: Brown (7.5 YR 5/4), fine grain, well sorted, loose, trace medium
				grain, wet, no odor, trace grainy silt nodules.
105	115	0	--	No recovery.

ARCADIS

Sample/Core Log

Boring/Well GM-82B Project/No. Ford/Kingsford WI001075.0015 Page 1 of 6

Site Location Kingsford, Michigan Drilling Started 6/2/04 Drilling Completed 6/3/04

Total Depth Drilled 250 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval 10-20 feet

Land-Surface Elev. 1121.86 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Bill Helper Jessie/Jo

Prepared By Paul Lenaker Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	-0.2-1.37/	0-1.0' Topsoil: Organics (grass and roots) silt, some clay, trace sand fine to
			-1.04-8.71	medium, black, moist, no odor.
				1.0-1.8' Silt: Strong brown (7.5 YR 5/6), some sand very fine to fine, somewhat
				packed and somewhat firm, trace gravel and clay, moist, no odor.
				1.8-2.8' Sand: Strong brown (7.5 YR 5/8), fine grain, trace coarse, well sorted,
				loose, moist, no odor.
				2.8-5.0' Sand: Dark yellowish brown (10 YR 4/4), fine to medium grain, some very
				fine and coarse, some gravel up to 2" subrounded to subangular, trace to some silt,
				poorly sorted, loose, moist, no odor.
5	10	5	7.20-9.59/	0-2.5' Sand: Brown (7.5 YR 5/4), predominately medium grain, some fine to coarse
			1.1-9.1	trace gravel up to 3" subrounded to round, somewhat sorted, loose, moist, no
				odor, grading over 1" into unit below.
				2.5-5.0' Sand: Color as above, trace gravel up to 3" subrounded to subangular, very
				fine to fine and coarse sand trace to some medium sand, trace silt, poorly sorted,
				moist, no odor.
10	15	5	6.25-10.20/	0-2.0' Sand: As above, predominately medium grain.
			1.35-30	2.0-5.0' Sand: Color as above, fine grain, well sorted, trace medium grain, moist,
				loose, no odor.
15	20	5	7.45-11.52/	0-1.0' Sand: As above, fine grain.
			.35-8.9	1.0-2.0' Sand: Brown (7.5 YR 5/4), predominately medium grain with very fine to
				coarse, trace gravel up to 2", round to subangular, moist, loose, somewhat sorted,
				no odor.
				2.0-5.0' Sand: Light brown (7.5 YR 6/4), fine to very fine, with trace to some
				medium to coarse grain, trace gravel up to 3" round to subangular, moist, loose,
				sorted overall but poorly sorted (with gravel).

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-82B

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	3	10.32-	0-1.0' Silt: Reddish brown (5 YR 5/4), smooth to grainy, somewhat crumbly to
			14.45/1.11-	loose, moist, no odor, grades over 0.5' into unit below.
			6.16	1.0-3.0' Sand: Pinkish gray (5 YR 7/2), very fine grain, very well sorted, trace to
				some silt, loose, no odor.
25	30	5.0	10.2-15.37/	0-5.0' Silt and very fine sand, dark reddish brown (2.5 YR 3/4), loose, well sorted,
			7.67-380	trace silty clay nodules, very slight cohesive when worked but crumbly, dry to
				moist, no odor, trace black staining.
30	35	5	3.62-4.29/	0-2.0' As above, silt and very fine sand.
			1430-5705	2.0-5.0' Sand: Pink (7.5 YR 7/3), very fine, very well sorted, trace silt, loose moist
				to dry, no odor.
35	40	5	3.5-21/	0-0.5' Silt and Sand: Strong brown (7.5 YR 4/6), sand very fine to fine, trace
			453-7384	medium to coarse, trace gravel subround to 0.5", silt is grainy, slightly cohesive,
				moist, mostly loose, no odor.
				0.5-1.5' Silt and Sand: Light brownish gray (10 YR 6/2), sand very fine, trace fine
				to coarse, trace gravel subangular to subround to 1", powdery mixture, loose,
				damp, no odor.
				1.5-2.0' Sand: Brown (7.5 YR 5/3), very fine to very coarse, some silt, poorly sorted
				mixture, though predominately fine grained, loose, damp, no odor.
				2.0-5.0' Sand: Pink (7.5 YR 7/2), very fine to fine, very well sorted, homogenous
				down to approximately 4.5, then slightly silty, trace gravel subangular to subround
				up to approximately 1", trace silty clay nodules, dark reddish brown (5 YR 3/4),
				somewhat cohesive at first, then crumbly, damp, no odor.
40	45	5	0-10.25/	0-2.0' Silt: Dark brown (7.5 YR 3/4), trace clay, silt is smooth to grainy, crumbly to
			18.08-3205	somewhat cohesive, somewhat firm, moist to wet, no odor, HP - 1.5, some clay
				lenses reddish brown (5 YR 4/4), lenses appear fissile, but plastic, and cohesive
				when worked.
				2.0-5.0' Silt/Sand: Pink (7.5 YR 7/4), sand very fine, siltier in places, especially 2.5-2.8
				and 4.0-4.3 where there is trace to some clay and silt is somewhat cohesive,
				otherwise powdery, loose, borderline silt/very fine sand, damp to moist, no odor.
45	50	5	0.64-2.25/	0-5.0' Silt/Sand: As above, silter places are 2.4 to 2.8' and 3.7 to 4.1' trace to
			1.71-2005	some grayish to black staining in places.
50	55	0	NR	No recovery, partial sample probably included in next section.
55	60	5	-1.27-	0-5.0' Silt: Brown (7.5 YR 4/4), smooth to somewhat grainy, somewhat crumbly
			-1.26/-1.8-	with clay nodules, reddish brown (5 YR 4/4) fissile to platey in appearance to smooth
			3.4	cohesive/plastic when worked, wet, no odor, HP = 3.0.
60	65	6	-1.01- -1.09/	0-5.0' Silt: As above.
			-2.9--1.8	

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-82B

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
65	70	5	-1.30- -1.15/	0-5.0' Silt: Reddish brown (5 YR 5/4), smooth to slightly grainy, trace clay, some-
			0-43	what cohesive and plastic when worked, somewhat firm, HP approximately 2.5, clay
				lenses or small nodules yellowish red (5 YR 5/6) plastic and cohesive when worked,
				crumbly in appearance, somewhat sticky overall on wet surfaces, wet, no odor.
70	75	5.0	1.30- -1.05/	0-5.0' Silt: As above, becoming somewhat grainier down section until somewhat
			-3.4-39	hard and crumbly at 4.8-5'.
75	80	5	3.91-9.41/	0-5.0' Silt: As above, vesicules forming upon opening, trace blackish staining.
			9.54-60	
80	85	5	15.4-14.1/	0-1.0' Silt: As above, grading into unit below.
			6.7-3616	1.0-5.0' Silt/Sand: Silt is grainy, sand is very fine, very well sorted, somewhat
				crumbly , to very hard in places, drilling got very hard at this unit.
85	90	5.0	9.80-15.45/	0-1.0' Silt/Sand: Brown (7.5 YR 5/4), sand very fine to fine, silt is grainy to smooth,
			859-32200	trace to some coarse sand in places, coarse sand in "nodules", somewhat sorted,
				wet, no odor.
				1.0-5.0' Sand: Brown (7.5 YR 5/3), fine grain or fine to medium grain, well sorted,
				loose, trace clay silt nodules up to 1/2" diameter, wet, no odor, vesicles.
90	95	5	8.54-12.31/	0-5.0' Sand: Brown (7.5 YR 5/3), fine grain, well sorted, some nodules of silt,
			556-9748	grainy, gray staining from 0-1, trace gravel up to 1/2" subround, trace sand fine
				grain or fine to medium grain wet at 4.5' loose, no odor.
95	100	5	2.93-4.96/	0-5.0' Sand: Brown (7.5 YR 5/3), trace gravel subround to 0.5", trace to some silt
			789-3100	nodules to approximately 1" with color same as above, silt is grainy to smooth
				sand is fine, very well sorted, trace to some gray/black staining throughout, wet,
				no odor.
100	105	5	5.37-6.96/	0-5.0' Sand: As above, but trace medium sand 3.5-4.5 and some very fine sand 4.5
			2249-22000	to 5.0 with some to much silt 4.5-5.0, no odor.
105	110	5	1.30-3.24/	0-5.0' Sand: Brown (7.5 YR 5/3), fine, but grades into fine to medium down
			24-108	section, well sorted, loose, wet, no odor.
110	115	5	1.75-2.28/	0-5.0' Sand: Brown as above, fine to medium, moderately well sorted, trace gravel
			98-584	subrounded to 1" 4.0-5.0, also trace coarse sand 4.0-5.0, loose, wet, no odor.
115	120	5	1.25-2.5/	0-1.5' Sand: Brown (7.5 YR 5/3), fine, well sorted, loose, wet to saturated, slight
			695/23200	odor.
				1.5-2.0' Sand: (7.5 YR 5/2) fine to medium, well sorted, loose, wet, moderate
				odor.
				2.0-3.0' Sand: As above, but grading into coarse down section, predominately
				medium to coarse, some to much very coarse sand.
				3.0-3.5' Sand: Medium to very coarse as above, but with 6" thick gravelly layer at

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-82B

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				base of sand, gravel is subangular to subround up to approximately 1.5", poorly
				sorted mixture of sand/gravel, loose, wet, odor.
				3.5-5.0' Silt: Reddish brown (5 YR 4/4), trace fine to medium sand, silt is grainy,
				loose, crumbly to slightly cohesive, wet, odor.
120	125	5	1.71-2.21/	0-1.5' Silt: As above, but with little gravel 0-0.5 subround to 0.5", wet, odor.
			19300-	1.5-2.5' Silt: As above, but grading into very fine sand down section.
			23450	2.5-5.0' Sand and Silt: Reddish brown (5 YR 5/4), sand is very fine, less silty in some
				places, trace gray/black staining throughout, loose, wet, odor.
125	130	5	1.50-1.89/	0-5.0' Sand: Brown (7.5 YR 5/3), very fine to fine, well sorted, trace to some gray
			5065-	to black staining throughout, homogeneous, wet, loose, odor.
			24300	
130	135	5.0	1.75-3.98/	0-4.0' Sand; As above, very fine to fine, odor.
			7749-	4.0-5.0' Silty Sand: Brown (7.5 YR 4/4), sand is very fine, silt is grainy, trace grayish
			28900	staining, loose to very slightly cohesive, wet, strong odor.
135	140	5	0.92-1.97/	0-3.0' Sand: Brown (7.5 YR 5/3), very fine, very well sorted, trace silt, loose, moist
			857-46900	to wet, odor, grades 3.0-3.5 into section below.
				3.0-5.0' Grading from above, silt: Dark brown (7.5 YR 3/4) grainy to very slightly
				smooth, some vesicles breaking on surfaces, loose, and crumbly, saturated, odor.
140	145	5	1.76-2.79/	0-2.5' Silt: As above with possible very slight coarsening, approaches very fine
			1043-4249	sand in some places.
				2.5-3.5' Silt: Brown (7.5 YR 4/3), some clay reddish brown (7.5 YR 4/3), also some
				clay nodules with fissile appearance, but somewhat plastic/cohesive when worked,
				silt is grainy to smooth, saturated, strong odor.
				3.5-5.0' Silt: As above in 0-2.5.
145	150	5	1.22-3.33/	0-5.0' Silt: As above, reddish brown (5 YR 4/4), grainy to smooth is some places, a
			2843-35300	few vesicles, loose to crumbly, wet to saturated, odor.
150	155	5	2.32-3.65/	0-1.0' Silt: As above, but grading into very fine sand at 1.0.
			5073-98900	1.0-5.0' Sand: Brown (7.5 YR 4/4), very very fine, almost silt-like, little-some silt
				in nodules, trace gray to black staining, sand is very well sorted, loose to crumbly,
				wet, odor.
155	160	5	1.72-3.31/	0-5.0' Sand: As above, very fine.
			1000-18600	
160	165	5	1.74-3.96/	0-2.0' Sand: As above, very fine grading into silt down section, strong odor.
			5400-	2.0-5.0' Silt: Brown (7.5 YR 4/4), silt is grainy, loose to crumbly, very slight
			190200	cohesive, wet to saturated, strong odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-82B

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
165	170	5	2.84-4.8/	0-5.0' Silt: As above, but many vesicles breaking, strong odor, some patches of
			720-12500	silt with different color, darker brown.
170	175	5	2.81-4.33/	0-5.0' Silt: As above many vesicles, strong odor, slightly coarser 2.0-3.0 appraoching
			7229-	very fine sand.
			39700	
175	180	5	1.30-2.24/	0-5.0' Silt: Brown (7.5 YR 4/3) and reddish brown (5 YR 5/4), grainy, many vesicles,
			1086-3814	patchy color variation, wet to saturated (drilling fluid), loose to crumbly, odor.
180	185	5	1.65-2.20/	0-5.0' Silt: As above.
			1435-7500	
185	190	5	2.61-3.68/	0-5.0' Silt: As above, brown/reddish brown, very grainy, some vesicles, trace
			12300-20980	gray to black staining, slightly coarser in places, approaching very fine sand, a few
				sandy areas 3.0-4.0 with very fine sand, possibly interbedded, moist to wet, odor.
190	195	5.0	2.21-5.25/	0-5.0' Silt: As above.
			34500-	
			110,210	
195	200	5	2.25-3.60/	0-5.0' Silt: Brown (7.5 YR 4/4), very grainy, almost approaching very fine sand in
			14500-39600	many places, loose to crumbly, vesicles, odor, wet.
200	205	5	2.23-3.20/	0-5.0' Silt: Brown (7.5 YR 4/4), very grainy, almost approaching very fine sand in
			3011-10390	many places, loose to crumbly, somewhat sandy 3.0-4.0 with very fine sand also
				trace gravel subrounded to 1.5" 3.0-4.0, sand is brown (7.5 YR 5/4), slight trace
				clay nodules throughout, usually <0.5" diameter, clay is red, fissile looking yet
				plastic when worked, very slight coarsening toward very fine and 4.0-5.0, vesicles
				and strong odor throughout, wet.
205	210	5	1.9-4.7/	0-5.0' Silt: Reddish brown (5 YR 5/4), very grainy, approaching very fine sand in
			21400-91700	places, trace very fine to fine sand in places, somewhat sandy with very fine to fine
				sand 1.0-1.5 and 3.0-3.5, somewhat loose to crumbly, moist, strong odor
				throughout.
210	215	5	3.4-6.41/	0-5.0' Silt: As above, strong odor.
			30900-	
			61300	
215	220	5	1.4-3.25/	0-5.0' Silt: Brown (7.5 YR 4/4), trace to some black staining, very grainy, approaching
			2350-16300	very fine sand in some places, homogenous, loose to crumbly, wet to saturated,
				many vesicles, very strong odor.
220	225	5	2.61-3.02/	0-5.0' Silt: As above.
			6900-42000	

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-82B

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
225	230	5	1.78-2.91/	0-5.0' Silt: As above.
			4653-60100	
230	235	5	2.99-3.72/	0-5.0' Silt: As above.
			26700-	
			104200	
235	240	5	1.20-2.42/	0-5.0' Silt: As above.
			564-15200	
240	243	3	1.24-2.83/	0-1.8' Silt: As above.
			1923-15600	1.8-3.0' Clay/Silt/Sand/Gravel: Very dark gray (7.5 YR 3/1) till (?), poorly sorted
				mixture, appears to have gradational contact with unit above, but could be from
				drilling, silt/clay is crumbly, sand very fine to very coarse, gravel subangular to
				subrounded, some are rounded, up to approximately 3 inches, mostly pieces of
				phyllite, moist, odor, large piece of phyillite in end of core barrel approximately
				5" long, oblong, rounded oval shaped, sheared off on one end.
243	245	2	1.2-2.63/	0-2.0' Clay/Silt/Sand/Gravel: As above, rounded gravel present to 245.
			490-7600	
245	250	5	3.8-25.6/	0-3.5' Clay/Silt/Sand/Gravel: As above.
			226-2108	3.5-4.5' Sand and Gravel: Dark brown (7.5 YR 3/3), sand very fine to very coarse,
				some silt, gravel is angular to subround much of it is bedrock pieces to
				approximately 2.5", moist, odor, poorly sorted.
				4.5-5.0' Bedrock: Greenish gray (2 Gley 6/1), phyllite, vertical banding (foliation),
				white veins, pyritization, hard, dense.
				EOB @ 250.

ARCADIS

Sample/Core Log

Boring/Well GM-83 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 6/5/04 Drilling Completed 6/5/04

Total Depth Drilled 128 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10 feet lenghts, 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1131.92 feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By J. Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	5.0	0.2-8.9/	0-0.5': Silt, dark brown (7.5 YR 3/4), trace fine sand, organic rich silt, loose, dry,
			0-9.3	0.5-1.5': Sand, strong brown (7.5 YR 5/6), very fine grained sand with silt, trace
				trace fine to coarse gravel, subrounded, loose, well sorted, moist.
				1.5-4': Sand, strong brown (7.5 YR 5/6), fine to coarse sand with gravel, fine to
				coarse gravel angular to subrounded, trace silt, poorly sorted, loose, moist.
				4-5': Sand, strong brown (7.5 YR 5/8), fine, trace medium, well sorted, loose, moist.
5	10	5	2-35/0-8	0-1': Slough.
				1-5': Sand, strong brown (7.5 YR 5/6), fine to coarse sand, some gravel fine to
				coarse subangular to subrounded, loose, moist, trace predominately medium sand,
				cobbles up to 4" diameter, moderately sorted.
10	15	5.0	0-15.4/0	0-1': Slough.
				1-3': Same as above, more coarse sand.
				3-5': Sand, strong brown (7.5 YR 5/8), fine to medium sand, trace subrounded
				gravel, trace coarse sand, loose, moist, moderately sorted.
15	20	3	0-19.5/	0-2': Slough.
			0-1.6	2-3': Sand/Gravel, strong brown (7.5 YR 5/6), fine to coarse sand, fine to coarse
				gravel, subangular to subrounded, loose, trace silt, poorly sorted.
20	25	--	--	No recovery.
25	30	5	3-51/	0-2.5': Same as above.
			3.5-16	2.5-4': Sand, brown (7.5 YR 4/4), medium to coarse sand, fine to coarse gravel,
				little gravel, predominately medium sand, loose, moist, moderately sorted.
				4-5' Sand: Strong brown (7.5 YR 5/6), very fine to fine sand, trace silt, well sorted
				loose, moist.
30	35	5.0	10-55/	0-3': Slough.
			2-42	3-3.8': As above, sand.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-83 Page 2 of 4

Prepared by J. Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				3.8-4.5': Sand, light brown (7.5 YR 6/4), very fine sand, well sorted, loose, slightly
				moist.
				4.5-5': Sand/Silt, brown (7.5 YR 5/4), very fine sand with silt, sandy silt, grainy silt,
				well sorted, dry, loose,
35	40	5	20-80/	0-2': Slough.
			22-66	2-4': Silt, yellow red (5 YR5/6), grainy silt, moist, trace to some very fine sand, loose
				to crumbly.
				4-5': Silt, as above, light red brown (5 YR 6/4), dry.
40	45	5	10-53/	0-3.5': Silt: As above, varies moist to dry.
			24-92	3.5-4.5': Sand, light red brown (5 YR 6/4), very fine to fine sand, trace silt, well
				sorted, dry.
				4.5-5': Silt, brown (7.5 YR 5/4), silt with trace very fine sand, loose, moist, grainy,
				very homogenous.
45	50	5	2000-	0-0.5': Slough.
			29000/14-	0.5-1.25': Silt/Clay, silt brown (7.5 YR 4/4), clay yellow red (5 YR 4/6), interbedded
			70	silt and clay varved to 1" layers), soft to crumbly (0.5-2" layers silt), moist.
				1.25-2': Silt, red brown (5 YR 5/4), grainy silt, soft, crumbly, moist, trace very fine
				sand.
				2-2.5': Silt/Clay, as above clay and silt more intertwinned, soft to crumbly, moist.
				2.5-5': Sand, light red brown (5 YR 6/4), very fine sand with trace silt, loose, moist
				very homogenous/uniform.
50	55	5	5500-	0-5': Same as above, black staining 3.5-5' dark gray (5 YR 4/1), strong odor where
			69000/	stained black.
			11-130	
55	60	5	7100-	0-0.5': Slough.
			28000/	0.5-2.': As above, sand,
			0-25	2-2.5': Silt/Sand, red brown (5 YR 5/3), grainy silt, soft to crumbly, black staining,
				trace very fine sand, moist.
				2.5-5': Sand, red brown (5 YR 4/4), very fine sand, slight black staining, trace silt,
				well sorted, moist, uniform, odor.
60	65	5	16000-	0-0.5': Silt, dark red gray (5 YR 4/2), same as above, silt (2-2.5"), soft to crumbly,
			75000/	moist, odor.
			0-91	0.5-1.5': Sand, brown (7.5 YR 4/2), very fine to fine sand, black staining odor,
				loose, moist, interbedded silt layers, trace silt.
				1.5-2.5': Silt, red brown (5 YR 4/3), black staining, moist, soft to crumbly.
				2.5-5': Sand/Silt, red brown (5 YR 4/3), silt with trace very fine sand, loose,
				uniform, moist, some staining.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-83 Page 3 of 4

Prepared by J. Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
65	70	5	500-7900/	0-3': Silt/Sand, dark red brown (5 YR 3/2), silt with very fine sand, soft, black
			0	staining uniform, saturated.
				3-4': Silt/Clay, interbedded silt and clay, soft to crumbly, black staining,
				intertwined.
				4-5': Silt, strong brown (7.5 YR 4/4), very soft to stiff, little clay, low-moderate
				cohesion, saturated.
70	75	5	100-1100/	0-0.25': As above, silt with thick clay lens approximately 3".
			0	0.25-5': Sand/Silt, dark red gray (5 YR 4/1), silt with very fine sand, saturated,
				uniform, black staining, odor, very soft.
75	80	5	17-468/0	0-1': Silt/Sand, as above.
				1-3.9' Silt/Clay, red brown (5 YR 4/4), interbedded/intermixed silty/clay,
				saturated, very soft to stiff, black staining, silt fissiling, 1" clay seam at bottom, odor.
				3.9-5': Sandy silt, red brown (5 YR 4/4), very very fine sand with silt, saturated,
				uniform, soft to crumbly, black staining.
80	85	5	104-2300/	0-1': As above sandy silty, red brown (5 YR 5/4).
			0	1-5': Silty sand, reddish brown (5 YR 4/4), with very fine sand with silt, soft, black
				staining, uniform, saturated.
85	90	5	500-2300/	0-4.8': Silt, red brown (5 YR 4/3), black staining, moderately stiff to stiff, trace
			0	interbedded silty sand, saturated, crumbly.
				4.8-5': Silty Sand, red brown (5 YR 4/3), silt with very fine sand, uniform, black
				staining, soft to crumbly, saturated.
90	95	5	100-7000/	0-2': Same as above.
			0	2-5': Silt/Clay, reddish brown (5 YR 4/4), clay interbedded, heavy black staining,
				very soft to stiff, saturated, low to moderate cohesiveness, fissly, silt stained,
				somewhat crumbly.
95	100	5	1000-	0-5': Silt, reddish brown (5 YR 5/4), trace subrounded gravel, odor, very soft to
			23000/0	mostly crumbly, moist, homogeneous.
100	105	5	1000-	0-2': Same as above, silt, light brown (7.5 YR 6/3), grainy, loose, uniform, moist,
			7000/0	odor.
				2-3.5': Silt, brown (7.5 YR 4/3), grainy silt, very soft to crumbly, moist, odor.
				3.5-5': Sand, brown (7.5 YR 5/3), very fine, trace silt, very soft to loose, odor,
				moist.
105	110	5	100-10000/	0-0.5': Sand, brown (7.5 YR 5/4), medium to coarse, dry, odor, loose, moderately
			0	sorted.
				0.5-3.0' Sand: Pinkish gray (7.5 YR 6/2), fine to coarse sand, some angular to
				subrounded gravel, dry, loose, poorly sorted, odor.
				3-5': Sand, brown (7.5 YR 4/4), medium to coarse sand, trace silt, trace subangular

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-83 Page 4 of 4

Prepared by J. Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
				to subrounded gravel, loose, well sorted, saturated, poorly sorted 1.5-2'.
110	115	5	106-	0-0.5': Silt, brown (7.5 YR 4/4), till, hard, silt with mostly subrounded gravel,
			13000/0	poorly sorted.
				0.5-5': Same as above, pulverized, dry.
115	120	5	1100-	0-2': Same as above, loose, saturated, slightly dense.
			61900/	2-5': Same as above, pulverized, dry.
			1.8-10	
120	125	0	--	No recovery, methane release, water squirting from top casing.
125	130	3	0-4.5/0	0-1': Sand, dark reddish gravel (5 YR 4/2), fine to medium sand, well sorted,
				saturated, loose.
				1-2': Weathered bedrock, dark greenish gray, (1Gley 3/10Y), sticky, plastic,
				saturated.
				3': Bedrock phylite, massive, black, quartz veins.
				EOB @ 128 feet

ARCADIS

Sample/Core Log

Boring/Well GM-84 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/29/04 Drilling Completed 6/29/04

Total Depth Drilled 93 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' and 20' x 4" Core barrel Sampling Interval continuous feet

Land-Surface Elev. 1052.72 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Royce Brown Scott Schultz

Prepared By Toni Schoen/Jill Flater Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
0	5	3	2.8-4.1/0	0-0.5' Fill.
				0.5-3.0' Sand/Silt: Dark yellowish brown (10 YR 3/6), very fine to fine sand, trace
				subrounded gravel, organics, loose, well sorted, moist.
				0-1.0' Sand/Silt: As above.
				1.0-3.0' Silt/Clay: Reddish brown (5 YR 4/4), intertwined, stiff to crumbly, fissily,
				plastic clay, slightly sticky, moist.
				0-1.5' Silt/Clay/Sand: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red
				(5 YR 4/6), fine sand, intertwined, soft to crumbly, fissily, loose sand, saturated.
				0-5.0' Silt/Clay: Dark yellowish brown (10 YR 3/4), intertwined, jumbled, few clay
				layers, soft to crumbly trace iron staining, fissily, saturated.
				0-3.0' Silt/Clay: Silt-brown (7.5 YR 4/3), clay-reddish brown (5 YR 4/4), interbedded,
				fissily silt, platy clay, stiff to crumbly, silt-1 to 4inches, clay-varve to 1-inch,
				saturated.
				3.0-5.0' Silt/Clay/Sand: Sand-dark yellowish brown (10 YR 4/6), fine sand, jumbled-
				vertical layers, soft to loose, iron staining in the sand, well sorted, saturated.
25	30	5	4-11/5.3-6.1	0-4.0' Sand: Brown (7.5 YR 4/3), fine to medium sand, mostly medium, trace
				coarse sand, loose well sorted, saturated.
				4.0-5.0' Sand: Brown (7.5 YR 4/4), very fine to fine sand, mostly fine, loose, well
				sorted, saturated.
30	35	5	1.04-7.12/	0-5.0' Sand: As above.
			5.8-7.4	
35	40	5	5.27-7.63/	0-5.0' Sand: As above.
			2.7-7.8	
40	45	5	3.48-5.47/	0-2.5' Sand: As above.
			4.6-4.8	2.5-5.0' Sand: Brown (7.5 YR 4/4), very fine to medium sand, mostly medium,
				loose, well sorted, saturated.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-84 Page 2 of 2

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/PID (ppm)	Sample/Core Description
45	50	5	1.02-8.0/	0-1.5' Sand: As above.
			4.8-7.7	1.5-4.5' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6)
				interbedded, soft to crumbly, somewhat sticky, fissily silt, clay-varve to 1 inch,
				silt-1 to 2.5 inches, saturated.
				4.5-5.0' Clay: Yellowish red (5 YR 4/6), very stiff, platy clay, uniform, saturated.
50	55	5	7.2-36/	0-4.0' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6),
			1.01-5.97	interbedded, soft to crumbly, somewhat sticky, fissily silt, clay-varve to 1-inch, silt-
				1 to 2.5 inches, saturated.
				4.0-5.0' Silt: Dark yellowish brown (10 YR 4/4), grainy, trace clay, soft to crumbly,
				fairly uniform, saturated.
55	60	5	1.4-2.81/	0-0.5' Silt: As above.
			0.8-2.1	0.5-2.0' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6),
				grainy silt, interbedded, soft to crumbly, clay-varve to 2 inches, silt-1 to 2 inches,
				saturated.
				2.0-3.0' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6),
				3 inch clay layer, very stiff, uniform, saturated.
				3.0-5.0' Silt/Clay: Same as 55.5-57 feet.
60	65	5	1.02-2.73/	0-0.5' Clay: Yellowish red (5 YR 4/6), very stiff, slightly platy, uniform, saturated.
			1.2-2.5	0.5-5.0' Silt/Clay: Silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6),
				interbedded, fissily to sticky silt, soft to crumbly, clay-varve to 1-inch, silt-1 to 3
				inches, saturated.
65	70	5	11-20.5/	0-1.0' Silt/Clay: As above.
			2.9-5.11	1.0-5.0' Sand: Brown (10 YR 5/3), very fine to fine sand, mostly fine, some silt,
				loose, well sorted, saturated.
70	75	5	3.2-13.3/	0-4.0' Silt/Clay: silt-dark yellowish brown (10 YR 4/4), clay-yellowish red (5 YR 4/6),
			1.4-6.25	interbedded, soft to crumbly, fissily silt, plastic clay, saturated.
				4.0-5.0' Sand: Brown (10 YR 5/3), very fine to fine sand, mostly fine, some silt,
				loose, well sorted, saturated.
75	80	5	0.8-6.14/	0-5.0' Sand: As above.
			0.3-1.5	
80	85	5	2-32/	0-5.0' Sand: Brown (7.5 YR 4/3), mostly very fine, some silt, loose, well sorted,
			1.3-2.2	saturated.
85	90	5	9-41/6-24	0-5.0' Silt/Gravel: Dark greenish gray (Gley 1 3/10 Y), lodgment till?, subrounded
				gravel up to 0.5 inches, hard, poorly sorted, saturated.
90	93	3	16-50/	0-2.0' Silt/Gravel: Dark greenish gray (Gley 1 3/10 Y), till, hard to loose.
			0.5-2.7	
				2.0-3.0' Bedrock, phyllitic type material.
				EOB @ 93'.

ARCADIS

Sample/Core Log

Boring/Well GM-85 Project/No. Ford/Kingsford WI001075.0015 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/6/04 Drilling Completed 8/7/04

Total Depth Drilled 215 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval continuous feet

Land-Surface Elev. 1070.49 feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used Water Drilling Method Rotqsonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	0.36-7.06/	0-0.5' Asphalt core with hematite/iron road base fill material.
			1.78-19.41	0.5-1.5' Silt: Dark brown (10 YR 3/3), trace medium to coarse sand, little very fine
				sand, some rootlets, organics, loose, silt smooth, damp, crumbly, no odor.
				1.5-2.5' Silt: Dark yellowish brown (10 YR 4/6), trace medium to coarse sand,
				some very fine to fine sand, trace organics, silt grainy to smooth, loose, damp,
				crumbly, no odor.
				2.5-5.0' Sandy Silt: Dark yellowish brown as above, sand very fine to very coarse,
				some gravel angular to subround up to 2", poorly sorted mixture, loose, damp,
				crumbly, no odor.
5	10	5	10.88-37.87/	0-1.0' Silt: Brown (10 YR 5/3), grainy to smooth, very powdery, loose, dry, dusty,
			2.24-7.25	no odor.
				1.0-5.0' Silt/Sand: Yellowish brown (10YR 5/6), very very fine sand/borderline grainy
				silt, very well sorted, uniform, loose, damp, no odor, one 2" thick layer of smooth
				silt with clay varves, yellowish red (5 YR 5/6) at 3.5', smooth silt is dark yellowish
				brown (10 YR 4/4), somewhat cohesive and clayey, no odor.
10	15	5	13.08-21.61/	0-3.0' Slough: From above.
			9.17-28.19	3.0-5.0' Silt/Sand: As above, possibly a few interbedded smooth silt layers as
				above, but destroyed from drilling/intermixed, moist, no odor.
15	20	5	2.11-3.41/	0-5.0' Silt: Brown (7.5 YR 5/4), grainy-smooth, predominately grainy, uniform, trace
			1.21-34.97	black staining and oily odor, but probably from asphalt above, somewhat
				cohesive somewhat loose, saturated (not drilling fluid), no odor.
20	25	5	0.21-3.92/	0-5.0-Silt: Brown, as above, but one clay layer at 3-5', 2" thick, yellowish red
			1.22-13.93	(5 YR 4/6), firm, HP = 2.5, platy appearance on broken surface, plastic, cohesive,
				possibly confining layer causing perched water above, silt somewhat cohesive, as
				above, saturated above clay, moist to wet below clay, no odor.
25	30	5	3.51-7.40/	0-5.0' Silt: As above, brown (7.5 YR 5/4), predominately some smooth grainy, trace
			12-34	sporadic clay varves/layers up to 0.2", clay description as above, silt somewhat

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-85 Page 2 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				cohesive and firm, somewhat loose and crumbly when worked, wet -
				saturated, no odor.
30	35	5	2.11-9.04/	0-5.0' Silt: As above, smooth to grainy, trace well sorted very fine sand in a few
			7.75-24.51	places, possibly layers, uniform, trace clay varving/layers as above, wet to saturated,
				no odor.
35	40	5	-0.23-2.60/	0-5.0' Silt: As above, slightly more clay content, saturated, no odor.
			5.36-15.7	
40	45	5	1.32-2.79/	0-5.0' Silt: As above, brown (7.5 YR 5/4), grainy to smooth but predominately
			1.82-9.34	smooth, trace clay varving/layers, clay description as above, somewhat cohesive and
				firm, somewhat loose and crumbly when worked, wet to saturated, no odor.
45	50	5	0.50-3.02/	0-5.0' Silt: As above, slightly moderate clay content, one 1.5" thick clay layer at
			2.02-7.53	2.5', also trace varving/layers as above, wet to saturated, no odor.
50	55	5	0.5-7.70/	0-5.0' Silt: As above, possible minor trace black staining, trace vesicles, very slight
			7.35-24	odor?
55	60	5	0.79-5.24/	0-0.7' Silt/Clay Interbeds: Silt grayish brown (10 YR 4/2) clay, dark brown (7.5 YR
			6.06-19.57	3/4) fine interbedding, vared to 0.2" thick, clay is hard, HP >4.0, plastic when
				worked, appears fissile on broken surface, moderately uniform interbeds, silt is
				smooth, overall cohesive, firm, moist, no odor.
				0.7-5.0' Clay: Dark brown (7.5 YR 3/4), some fine silt interbed, but 90 percent clay,
				silt description as above, clay description as above, uniform clay, plastic, hard, HP
				>4.0, moist, no odor.
60	65	5	2.83-5.82/	0-3.0' Silt/Clay: Interbeds silt and clay descriptions as above, predominately clay,
			5-18	clay beds vared to 4", silt layer 0.5" or less, very hard, stiff, cohesive, moist, no
				odor.
				3.0-4.5' Sand: Brown (7.5 YR 5/4), very fine to fine grain, predominately fine, trace
				medium to coarse moderately sorted, trace silt, but probably washed in from
				above, loose, saturated, no odor.
				4.5-5.0' Sand: Color, as above, very fine grain, approaching grainy silt size, trace
				fine to medium, well sorted, loose, saturated, no odor.
65	70	5	0.70-4.76/	0-5.0' Sand: Strong brown (7.5 YR 4/6), fine to coarse, predominately fine to
			11-34	medium, little coarse, trace fine gravel, moderately sorted, loose, saturated, no
				odor, a few 2-3" rocks at bottom of sample.
70	75	5	0.07-5.62/	0-1.0' Sand: As above.
			2-48	1.0-3.0' Sand: Brown (7.5 YR 4/4), fine to very coarse grain, predominately
				medium to coarse, little subangualr to subrounded grave lup to 1.5", poorly sorted,
				poorly sorted, loose, saturated, no odor.
				3.0-5.0' Sand: Brown (7.5 YR 4/4), fine to very coarse grain, predominately fine to
				medium, moderately sorted, trace subround gravel to 1", trace silt, but could be

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-85 Page 3 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				washed in, loose, saturated, no odor.
75	80	4	-0.64-13.47/	0-2.0' Sand: Brown (7.5 YR 4/4), fine to coarse, predominately medium to coarse,
			4.01-104	silty, but probably washed in, moderately well sorted, loose, saturated, slight odor?
				2.0-2.5' Silty Gravel: Brown as above, pea gravel layer, subround fine gravel,
				moderately sorted, loose, saturated.
				2.5-4.0' Sand: Color as above, fine grain, trace medium to coarse, trace subround
				gravel up to 2", moderately well sorted, loose, saturated, slight odor.
80	85	4	1.70-5.09/	0-1.0' Sand: As above.
			24-127	1.0-1.3' Sand: Multi-colored, very fine to very coarse grain, predominately
				fine to medium, silty, little fine subround gravel, gradational contact between
				sand above and silt below, somewhat cemented, loose when broken, saturated,
				slight odor.
				1.3-4.0' Silt: Brown (10 YR 4/3), grainy to smooth, uniform, trace vesicles, some-
				what cohesive to somewhat loose, saturated, odor.
85	90	5	0-0.93/	0-1.5' Silt: As above, brown (7.5 YR 4/3), with trace clay varving/layering, clay is
			12-75	plastic, description as above, grainy to smooth silt, uniform, saturated, slight odor.
				1.5-5.0' Silt: Reddish brown (5 YR 4/4), very grainy, approaching very fine sand
				size, low cohesion, somewhat loose, saturated, slight odor.
90	95	5	0.17-3.59/	0-5.0' Silt: Reddish brown, as above, trace black staining, very grainy, uniform,
			35-84	somewhat crumbly and loose, wet, slight odor.
95	100	5	1.74-2.91/	0-5.0' Sand/Silt: Reddish brown (5 YR 4/4), very grainy silt approaching very fine
			350-1282	sand size, uniform, very well sorted, some black staining, vesicles, somewhat
				loose, saturated, odor.
100	105	5	0.73-2.06/	0-5.0' Sand/Silt: As above, strong odor.
			104-1455	
105	110	5	0-4.16/	0-5.0' Sand/Silt: As above, strong odor.
			120-1361	
110	115	5	0.04-2.41/	0-4.0' Sand/Silt: As above, more black staining, wet, odor 4.0-4.5' interbedded/
			9-178	laminated, smooth silt very grainy silt, one 0.2" thick clay layer at approximately 4.5'
				below silt laminations, clay yellowish red, description as above, moist, slight odor.
				4.5-5.0' Silt: As above, but slightly fine grain, smooth, moist, slight odor, trace
				black staining.
115	120	5	0.20-8.13/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth trace clay varying/layers as above,
			16-55	uniform, somewhat cohesive, saturated, no odor.
120	125	5	-1.75- -0.9/	0-5.0' Silt: As above.
			4-8	

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-85 Page 4 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
125	130	5	-0.11-2.20/	0-5.0' Silt/Sand: Brown (7.5 YR 4/4), very grainy, approaches very fine sand in
			3-22	size, uniform, little black stains, crumbly and loose, moist, slight odor in places.
130	135	5	-0.19-0.67/	0-5.0' Silt/Sand: As above.
			9-20	
135	140	5	-2.84- -2.36/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth, approaching very fine sand in
			2.42-2.92	places, somewhat cohesive to loose and crumbly when worked, trace black staining,
				wet to saturated, no odor.
140	145	5	-2.15-0.26/	0-5.0' Silt: As above, but grainy, approaching very fine sand, color as above, no
			4.1-11.15	odor.
145	150	5	-1.63-7.96/	0-3.5' Silt: As above.
			12-48	3.5-5.0' Silt: Color as above, smooth, firm, somewhat cohesive, trace clay varves/
				layers as above, clay yellowish red (5 YR 4/6), plastic, appears fissile/platy on broken
				surface coarse, also trace to little clay in silt matrix, (but could be from drilling),
				moist to wet, no odor.
150	155	5	0.72-5.11/	0-5.0' Silt: Brown (7.5 YR 4/4), grainy to smooth, predominately very grainy,
			17-41	approaching very fine sand in places, somewhat cohesive, but loose and crumbly
				when worked, little black staining, wet to saturated, no odor.
155	160	5	0.2-2.30/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth, somewhat firm, loose to crumbly when
			4-28	worked, black staining, uniform, no odor, saturated, methane vesicles on outside
				core.
160	165	5	0-1.14/	0-5.0' Silt: Brown (7.5 YR 4/4), smooth, uniform, fissily, no odor, crumbly when
			3-15	worked, somewhat firm/cohesiveness, saturated.
165	170	5	0/3-10	0-5.0' Silt: Brown (7.5 YR 4/4), smooth to grainy, uniform, somewhat firm,
				crumbly when worked, no odor, saturated.
170	175	5	0-6.07/2-7	0-5.0' Silt: Brown (7.5 YR 4/4) smooth, trace clay varving in places, trace black
				staining, uniform, smooth silt, somewhat firm to cohesive, but somewhat loose
				and crumbly when worked, possible slight odor.
175	180	5	1.07-2.4/	0-5.0' Silt with Clay Particles: Silt, brown (7.5 YR 4/4), clay, silt is smooth
			4.37-7.78	throughout, uniform, regular clay interbeds with 0.5-1.0" thick layers every foot,
				clay is stiff, HP = 3.5, plastic, cohesive, platy/fissile appearance on broken surface,
				silt somewhat cohesive to cohesive and somewhat plastic, moist to wet, slight
				odor?
180	185	5	1.4-2.17/	0-5.0' Silt: With clay interbeds as above, but less clay content, clay beds destroyed
			2.24-5.38	from drilling, clay appears varved to approximately 0.5" thick, otherwise as above,
				moist to wet, slight odor?
185	190	5	1.56-4.12/	0-5.0' Silt: Brown (7.5 YR 4/4), as above, with very little clay content, no discernable
			5.02-15.34	layers, but traces of yellowish red clay coloring, probably clay varves destroyed

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-85 Page 5 of 5

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				by drilling, silt smooth, fissle appearance when broken, uniform, somewhat
				cohesive, moist to wet, slight odor?
190	195	5	1.02-3.72/	0-5.0' Silt: As above, smooth, but crumbly due to less moisture, probably not
			3.91-12.73	affected by drilling fluid as above, damp to moist, somewhat cohesive where
				moist, slight odor?
195	200	0	--	No recovery.
200	205	5	0.84-1.34/	0-5.0' Silt: Brown (7.5 YR 4/4), very smooth, uniform, somewhat cohesive,
			2.50-9.87	somewhat firm, somewhat plastic, moist to wet, slight odor?
205	210	5	1.15-2.54/	0-5.0' Silt: As above.
			5.01-11.70	
210	215	5	1.04-2.20/	0-3.0' Silt: Brown (7.5 YR 4/4), little gravel angular to subround fine to 2"
			7.23-17.01	suspended in matrix, trace sand very fine to very coarse, trace to little clay in
				matrix, somewhat plastic in places, poorly sorted mixture, somewhat cohesive,
				somewhat crumbly, moist to wet, where sandy, no odor.
				3.0-4.5' Silt/Sand/Weathered Bedrock Pieces: Greenish gray (1 Gley 5/10Y) sand
				very fine to very coarse, predominately fine, much silt, many broken angular pieces
				of weathered rock with secondary mineralization on surface, some fine to coarse
				gravel, predominately any bedrock pieces, loose, crumbly, moist to wet, no odor.
				4.5-5.0' Bedrock: Very dark gray (1 Gley 3/N), hard, dense, phyllite, vertical
				foliation relative to hole, pyritization on some surfaces, massive.
				EOB @ 215'.

ARCADIS

Sample/Core Log

Boring/Well GM-86 A/B Project/No. Ford/Kingsford WI001095.0030 Page 1 of 9

Site Location Kingsford, Michigan - Lodal Park Drilling Started 1/16/06 Drilling Completed 1/19/06

Total Depth Drilled 351 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' X 4" Sampling Interval continuous feet

Land-Surface Elev. 1115.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Hansen Helper Leon Grosskreutz Charles Johnson

Prepared By Jill Flater/Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	5	5	1.3-1.5/	0-0.5' Sand/Gravel/Silt/Soil: Topsoil mix, brown (7.5 YR 4/4), very poorly sorted,
			53.8-52	rootlets and organic mix.
				0.5-4.0' Sand: Strong brown (7.5 YR 4/5), fine to coarse grain, predominately
				fine to medium grain, some fine to coarse gravel, subangular, poorly sorted, loose,
				moist at 3.8' silt/organic material (rootlets) black (10 YR 2/1).
				4.0-5.0' Sand: Brown (7.5 YR 5/4) fine to very fine grain moderately to well
				sorted, loose, some coarse sand and fine to coarse gravel 4-4.5', moist.
5	10	5	2.3-3.4/	0-1.0' Sand: As above, fine to very fine.
			49.7-50.5	1.0-4.0' Sand/Gravel: Brown (7.5 YR 4/4) fine to coarse grain, predominately
				medium grain, fine to coarse gravel, subangular to subround, very poorly sorted,
				loose, moist.
				4.0-5.0' Sand/Gravel: Dark brown (7.5 YR 3/4) as above except very silty and
				clayey, loose but somewhat sticky, very moist.
10	15	1	1.5/5.0	0-1.0' Sand/Gravel: Dark brown (7.5 YR 4/3) fine to very coarse grain sand, fine to
				coarse gravel, very silty/clayey, very poorly sorted, somewhat sticky to loose, very
				moist 3" diameter coble in bottom of sample.
15	20	5	1.9-4.8/	0-1.0' Sand/Gravel: As above.
			49.0-49.6	1.0-1.5' Silt/Sand: Brown (7.5 YR 4/4) silt with fine to very fine grain sand, trace
				fine to coarse gravel, loose to slight coherent, some rootlets and organic material,
				moist.
				1.5-2.0' Sand/Gravel: As above from 0-1, at 2.0' some black staining and flakey
				material.
				2.0-4.0' Sand: Light brown (7.5 YR 6/4) medium to coarse grain, trace fine to
				coarse gravel, moderately sorted, loose, moist.
				4.0-5.0' Sand: Brown (7.5 YR 5/4) medium to very coarse grain, poorly sorted,
				some fine to coarse gravel subangular to subround, loose, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
20	25	3	2.9-3.9/	0-3.0' Sand/Gravel: Brown (10 YR 4/3) medium to very coarse grain some fine grain,
			485-48.9	fine to very coarse gravel, subangular to subround, very poorly sorted, mostly
				loose, several bands with silt that are more cohesive, sticky, moist.
25	30	5	17-33/	0-2.0' Silt/Sand/Gravel: Dark grayish brown (10 YR 4/2), very fine to coarse sand,
			48-49	fine to coarse gravel, very silty, very poorly sorted, loose to sticky, moist.
				2.0-3.5' Sand: Grayish brown (10 YR 5/2) fine to medium grain, moderately
				sorted, some fine to coarse gravel, subangular to subround, loose, moist to
				very moist.
				3.5-4.0' Silt/Sand/Gravel: Strong brown (7.5 YR 4/6) very poorly sorted mixture,
				silt, fine to coarse sand, fine to coarse gravel, subangular to subround, loose but
				sticky and slight cohesive due to silt, very moist, much gravel at 4 feet.
				4.0-5.0' Silt: Reddish brown (5 YR 5/4), smooth, some variation to more clayey
				and sandy with very fine grain sand at 4.0-4.5', color variable with strong brown
				(7.5 YR 5/8) some black staining especially in clay rich layers, moist to very moist.
30	35	5	180-858/	0-0.3' Silt: As above.
			47-53	0.3-1.0' Silt: Strong brown (7.5 YR 5/6) very grainy and sandy with very fine grain
				sand, slight loose, soft, moist.
				1.0-3.5' Silt: Reddish brown (5 YR 4/4) smooth and clayey to grainy from 3-3.5,
				firm and blocky to loose and powdery, abundant black staining 2.0-2.5', moist.
				3.5-4.0' Silt: Strong brown (5 YR 5/6) predominately grainy but also clayey pieces,
				grainy loose, clayey firm, moist.
				4.0-4.5' Silt/Sand: Dark grayish brown (2.5 YR 4/2) very fine to medium sand
				mixed with silt matrix, poorly sorted, trace coarse sand and fine gravel,
				predominately loose to somewhat firm, moist.
				4.5-5.0' Silt: Reddish brown (7.5 YR 5/6) grainy, smooth to powdery, moist.
35	40	5	130-11500/	0-5.0' Silt: Reddish brown (5 YR 4/4), smooth with some clayey layers, abundant
			45.8-52.9	black staining in clayey layers, some interbedding with grainy, sandy layers 0.5-1.0
				feet thick, moist, odor.
40	45	3	4490-26500/	0-3' Silt: As above, predominately smooth, black staining predominate 1-2 feet,
			46.1-47	moist, odor.
45	50	5	11600-33600/	0-5.0' Silt: Reddish brown (5 YR 5/3) grainy, powdery, with some very fine grain
			42.1-43.8	sand, color change at 2.5 feet to dark reddish gray (5 YR 4/2) and black staining
				4-5 feet, moist to very moist.
50	55	3	9800-33200/	0-2.0' Silt: Dark reddish gray (5 YR 4/2) grainy, some to trace very fine grain
			43.5-45.5	sand, somewhat smooth to somewhat loose, very moist, odor.
				2.0-3.0' Silt: Reddish brown (5 YR 4/3), smooth, no sand and not grainy, black
				staining, very moist to wet at 2 feet (52 feet).

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
55	60	0	NR	No recovery.
60	65	0	NR	No recovery.
65	70	5	129-3200/	0-5.0' Sand: Red brown (5 YR 4/3) very fine grain, very silty, well sorted, loose,
			-0.45- -1.61	some areas of higher silt content more firm/blocky, (fines in places slightly more
				cohesion), odor, wet, trace back staining.
70	75	5	1250-4700/	0-4.0' Sand: As above (very fine grain, silty), wet.
			-1.2-0.9	4.0-5.0' Sand: As above, very dark gray (5 YR 3/1) saturated, slightly darker in
				color.
75	80	5	750-4400/	0-1.5' Sand: Dark red brown (5 YR 2.5/2) very fine grain, silty, well sorted (loose to
			9.04-9.22	somewhat cohesive), wet.
				1.5-2.5' Silt (color as above), grainy, somewhat loose, trace very fine grain
				sand, wet, odor.
				2.5-3.5' Silt: Dark red brown (5 YR 3/3) smooth, clayey, somewhat plastic,
				sticky, odor, wet.
				3.5-5.0' Silt: Color as above, grainy, somewhat smooth, no clay, wet, loose to
				somewhat cohesive, odor.
80	85	5	1800-4100/	0-2.0' Silt: Dark red gray (5 YR 4/2) smooth, clayey, somewhat plastic, sticky,
			9.21-11.11	wet, odor.
				2.0-5.0' Silt: Smooth, blocky in appearance, crumbly when worked (grainy in places),
				black staining, odor.
85	90	5	550-3700/	0-4.0' Sand/Silt: Red brown (5 YR 4/3) gradational (very fine grain) sandy silt and
			13.5-14.8	silty very fine grain sand, loose to somewhat cohesive in places, well sorted,
				wet, odor, homogeneous.
				4.0-5.0' Silt/Sand: Very dark gray (5 YR 3/1) interbedded units of silty very fine
				grain sand, smooth silt and grainy silt, silt somewhat blocky/firm, silty very fine
				sand well sorted, loose, layers range from 0.5-2 inches thick, odor, wet.
90	95	5	1010-6200/	0-2.0' Sand: Very dark gray (5 YR 3/1) silty very fine grain sand, crumbly, well
			14.6-17.0	sorted, loose, wet.
				2.0-3.5' Silt: Red brown (5 YR 5/4) smooth, blocky, somewhat firm, (crumbly when
				worked) trace black staining, wet, odor.
				3.5-4.0' Sand: Color as above, very fine grain, silty, loose, well sorted, wet,
				black staining.
				4.0-5.0' Silt/Sand: Dark red gray (5 YR 4/2), gradational silty very fine sand,
				grainy silt, and smooth silt, variable throughout length, smooth to grainy silt,
				somewhat blocky, crumbly when worked, silty very fine grain sand, somewhat
				crumbly/loose, wet, odor, trace black staining.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
95	100	5	25-2610/	0-2.5' Silt: Dark red gray (5 YR 4/2) smooth to somewhat grainy, somewhat
			19.3-20.2	cohesive, slightly plastic/clayey, wet, odor, black staining.
				2.5-3.5' Silt/Clay: Silt red brown (5 YR 3/3), clay yellow red (5 YR 4/6), smooth
				silt with clay varved/interbedded silt, cohesive to somewhat crumbly, silt some-
				what grainy, clay plastic, soft, wet, odor, black staining, clay mainly top 4".
				3.5-4.5' Silt: Red brown (5 YR 4/3) smooth, very clayey, cohesive, slightly plastic,
				wet, odor.
				4.5-5.0' Clay: Yellow red (5 YR 4/6) plastic, medium stiff, but fissile/platey on
				broken surfaces, trace black staining, odor, wet.
100	105	5	380-1900/	0-5.0' Silt: Red brown (5 YR 4/4) smooth, clayey, crumbly to somewhat cohesive,
			19.4-20.4	trace clay layering, clay, as above, no staining, wet, odor.
105	110	5	25-1390/	0-5.0' Silt: As above, very clayey, plastic/cohesive trace clay varves.
			20.9-21.1	
110	115	5	450-4520/	0-5.0' Silt: Red brown (5 YR 4/4) smooth, crumbly, somewhat firm, trace to no
			21.5-22.0	clay, wet, odor, no staining.
115	120	5	109-350/	0-5.0' Silt: As above, slightly clayey in places.
			22.1-22.7	
120	125	5	3-206/	0-5.0' Silt: As above, slightly more clay, evidence of yellow red clay varves through
			22.8-23.4	out, slight odor, odor (100-105').
125	130	5	49-505/	0-2.0' Silt: Red brown (5 YR 4/4) smooth silt, very clayey, cohesive, possible
			25.6-27.3	interbedded varved clay soft to medium, slightly plastic, odor, wet, no staining.
				2.0-5.0' Clay: Yellow red (5 YR 4/6) clay with silt (smooth) interbedded (varved),
				plastic, medium firm to firm, wet, odor, trace black staining, increasing silt
				content with depth.
130	135	5	52-510/	0-5.0' Silt/Clay: As above, varved, wet, odor.
			27.4-29	
135	140	5	22000-79000/	0-5.0' Silt/Clay: As above, interbedded varves, abundance of vesicules, black
			48-49.2	staining.
140	145	5	5300-670000/	0-3.0' Silt/Clay: As above interbedded varues, sharp contact with below.
			49-51.3	3.0-5.0' Sand: Very dark gray (5 YR 3/1) to black (Gley 2.5) very fine grain sand,
				some fine grain with depth, loose, well sorted, odor, wet, intense black staining.
145	150	5	--	0-2.0' Sand: As above, intense black staining top foot, staining decease with
				depth, very strong odor.
				2.0-4.5' Silt: Red brown (5 YR 4/4) grainy, smooth in places, crumbly to some-
				what cohesive, soft, odor, wet.
				4.5-5.0' Silt: As above with varying degrees of very fine grain sand.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
150	155	5	1500-8200/	0-1.0' Silt/Sand/Clay: Color as above, interbedded layers fo grainy silt, smooth silt,
			0.9-2.5	clay and very fine grain silty sand, layers 1/2-1" thick, also varved in sections, wet,
				odor, trace black staining.
				1.0-5.0' Silt: Red brown (5 YR 4/4) and (5 YR 4/3) coarsens slightly with depth,
				smooth to grainy, black staining 3-4' wet, odor, crumbly to somewhat loose.
155	160	5	470-1500/	0-5 Silt: Red brown (5 YR 4/4) smooth to somewhat grainy, crumbly, wet, trace
			0.6-1.1	black staining, strong odor, abundant vesicules.
160	165	5	1011-16200/	0-1.0' Silt: As above.
			0.4-4.0	1.0-2.0' Silt: Color as above, grainy silt with some very fine grain sand, black
				staining, loose, very strong odor, wet.
				2.0-5.0' Silt: Color as above, grainy silt, 4-5' smooth, somewhat loose to blocky,
				vesicles in bottom foot, wet, very strong odor.
165	170	5	2400-6800/	0-5' Silt: Grainy with some very fine grain sand to smooth and clayey, somewhat
			1.6-2.3	loose to somewhat plastic, blocky in places, abundant vesicles in clayey fragments,
				wet, strong odor.
170	175	5	4200-14200/	0-5.0' Silt: Red brown (5 YR 4/4), smooth, somewhat loose to crumbly at top
			4.4-5.0	0.5' to wet, very strong odor, trace black staining.
175	180	5	270-6045/	0-5.0' Silt: Red brown (5 YR 4/4), smooth to grainy silt, crumbly to somewhat
			1.1-2.5	cohesive clayey in 4-5' with black staining, wet, very strong odor.
180	185	5	2400-77000/	0-0.5' Silt: As above (4-5 of 175-180) with black staining.
			0.8-3.2	0.5-5.0' Silt: Red brown (5 YR 4/4) smooth to somewhat grainy, somewhat
				loose to crumbly, very strong odor, wet, no black staining.
185	190	5	170-4000/	0-5.0' Silt: As above, very homogenous, trace vesicles at top, no black staining.
			0.4-0.7	
190	195	5	620-8000/	0-5.0' Silt: As above, very homogenous, no vesicles at top, no staining.
			0.5-1.5	
195	200	5	0.06-4700/	0-5.0' Silt: As above.
			0.1-0.7	
200	205	5	700-2900/	0-5.0' Silt: As above, trace vesicles.
			0.3-0.7	
205	210	5	1800-17700/	0-5.0' Silt: As above, trace very fine sand, no vesicles
			0.3-1.2	
210	215	5	1800-24700/	0-5.0' Silt: Color as above, very sandy (very fine grain) silt, homogenous, well
			2.1-2.9	sorted very fine sand, loose, wet, strong odor, no staining.
215	220	5	45000-127000	0-5.0' Sand: Red brown (5 YR 5/3) very fine grain, very silty, loose to somewhat
			-1.55- -1.37	blocky, well sorted, very strong odor, abundant vesicles, no staining.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
220	225	5	950-523000/	0-5.0' Sand: As above, very fine grain, silty.
			-1.4-0.4	
225	230	5	22000-88000/	0-5.0' Sand: As above, color change to red brown (5 YR 4/4) very fine grain, silty,
			1.3-4.7	still abundant vesicles, very strong odor.
230	235	5	760-69000/	0-5.0' Sand/Silt: Color as above, very fine grain sand and grainy silt, somewhat
			3.0-9.5	loose to blocky, well sorted very fine sand, very homogenous, wet, very strong odor.
235	240	5	48000-133000/	0-3.0' Sand: Red brown (5 YR 4/4) very fine grain, very silty, somewhat loose,
			7.3-10.6	well sorted, trace gravel (3-4 pieces ≤1/2") fine to coarse gravel predominately
				black slate, wet, very strong odor.
				3.0-5.0' Silt: Color as above, smooth, somewhat clayey, clay interbedded varves in
				3.0-3.5', crumbly, low cohesion, soft, wet, strong odor, no staining.
240	245	5	13000-89000/	0-5.0' Silt: Color as above, smooth silt, somewhat grainy and clayey in places,
			9.3-10.2	somewhat cohesive, very abundant vesicles, blocky in places, soft, wet, strong odor,
				no staining,
245	250	5	27500-160000/	0-5.0' Silt: As above, smooth, clayey/grainy in places, abundant vesicles.
			9.1-12.8	
250	255	5	63000-101000/	0-5.0' Silt: As above, smooth, neither clayey or grainy.
			7.5-10.4	
255	260	5	29000-139000/	0-5.0' Silt: Color as above, red brown (5 YR 4/4) smooth, grainy in places, abundant
			1.8-4.7	vesicles, somewhat loose to blocky, wet, very strong odor.
260	265	5	32000-169000/	0-2.5' Silt: As above with very fine grain silty sand, dark red gray (5 YR 4/2)
			5.0-7.4	layer, 2" thick at 1', well sorted, wet, strong odor, no staining.
				2.5-5.0' Sand: Very fine grain, silty, well sorted, loose, wet, very strong odor, no
				staining.
265	270	5	141000-	0-5.0' Sand: Color as above, very fine grain as above, slightly less silt.
			179000/	
			8.6-10.3	
270	275	5	132000-	0-2.5' Sand: Color as above, very fine grain, silty.
			980000/	2.5-3.0' Silt: Red brown (5 YR 4/4) and gray (5 YR 5/1) smooth, finely interbedded
			4.3-5.6	silts of different colors, soft, crumbly, wet, very strong odor, no staining.
				3.0-5.0' Silt: Red brown (5 YR 4/3) smooth, crumbly when worked, blocky, wet,
				very strong odor, no staining.
275	280	5	462-12700/	0-5.0' Silt: Red brown (5 YR 4/4) smooth, grainy in places, blocky to crumbly
			1.7-2.8	when worked, abundant vesicles, wet, very strong odor, trace black staining.
280	285	5	570-78000/	0-5.0' Silt: As above, slightly more grainy.
			1.7-4.1	

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
285	290	5	570-60800/	0-0.5' Silt: As above, smooth.
			7.8-9.3	0.5-5.0' Silt: Color as above, grainy, clayey from 1-1.5', varved interbeds with
				black staining, somewhat plastic, somewhat loose, wet, very strong odor, trace
				black staining.
290	295	5	5200-710000/	0-1.0' Silt: As above, grainy, driller had a hard time getting sample out of core
			7.6-10.1	barrel, very jumbled hard to differentiate layers.
				1.0-2.5' Sand: Red brown (5 YR 4/3) fine grain, some very fine grain sand, silty
				(probably mostly from above to jumbled), poorly sorted, wet, very strong odor,
				loose to somewhat blocky, no staining.
				2.5-4.0' Sand: Brown (7.5 YR 4/3) fine grain sand, trace medium grain, trace to
				little silt (again maybe from above), moderately well sorted, wet, loose, strong
				odor, no staining, 2 pieces coarse gravel at 2.5' subangular both 2"x1".
				4.0-5.0' Sand: Very fine grain sand, grading to grainy silt, silty clayey in places,
				loose to somewhat loose, slightly plastic in bottom 2", wet, very strong odor.
295	300	5	2110-17800/	0-3.5' Sand: As above, very fine grain, lacks clayey portions, silt increases with
			0.9-4.9	depth, abundant vesicles, sharp contact with below.
				3.5-5.0' Silt: Red brown (5 YR 4/3) grainy silt, smooth in places becoming finer
				with depth, blocky, somewhat loose, wet, very strong odor,
				abundant vesicles, no staining.
300	305	5	2305-28700/	0-2.0' Silt: As above, grainy, trace black staining.
			3.35-8.5	2.0-3.0' Sand: Brown (7.5 YR 5/3) fine to medium grain, trace coarse, trace very
				fine, moderately sorted (predominately fine), wet, strong odor, no staining.
				3.0-5.0' Sand/Silt: Colors as above, intermixed sand fine to medium grain (above)
				and grainy silt (above), sand layers are very silty, characteristics as above, sample is
				jumbled. approximate layering 1-5" thick, wet.
305	310	5	7310-15800	0-1.0' Sand/Silt: As above.
			3.7-7.3	1.0-4.0' Sand: Red brown (5 YR 4/4) very fine grain sand, silty, loose, well sorted,
				homogenous, strong odor, wet, fines with depth.
				4.0-5.0' Silt: Color as above, red brown (5 YR 4/4) grainy, trace very fine sand at
				top, somewhat loose, wet, very strong odor, trace black staining.
310	315	5	2660-61500/	0-2.5' Silt: As above, grainy, no very fine grain sand.
			3.1-7.3	2.5-3.0' Sand: Light brown (7.5 YR 6/3) fine grain, trace very fine, well sorted,
				loose, wet, strong odor.
				3.0-4.0' Silt: As above, grainy.
				4.0-5.0' Sand: Very fine grain, brown (7.5 YR 4/4) interbedded very fine grain,
				silty, and fine grain sand (color as above), well sorted, jumbled intermixed of
				different solid color, very fine grain, loose, wet, strong odor, no staining.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
315	320	5	8000-41000/	0-5.0' Sand: Brown (7.5 YR 4/3) very fine grain, silty, loose, wet, well sorted,
			4.2-7.0	homogenous trace black staining, strong odor.
320	325	5	1130-12400/	0-4.0' Sand: As above, very fine grain, silty.
			1.5-5.0	4.0-5.0' Silt: Color as above, grainy silt, trace very fine grain sand, somewhat
				loose to wet, very strong odor, trace black staining.
325	330	5	4200-70400/	0-0.5' Silt: Red brown (5 YR 4/4).
			4.4-4.7	0.5-3.5' Sand/Silt: Very fine grain silty sand and grainy silt, somewhat loose, wet,
				very strong odor, no staining.
				3.5-5.0' Silt: Red brown (5 YR 4/4) slightly grainy silt, smooth and clayey in places,
				mostly somewhat loose, some places slightly plastic, wet, very strong odor, no
				staining.
330	335	5	4600-74800/	0-2.5' Silt: As above, no clayey parts, trace very fine grain sand at bottom.
			2.3-10.4	2.5-3.5' Sand: Color as above, very fine grain sand, silty, little to trace fine to
				coarse grain sand, poorly sorted, loose, wet, strong odor.
				3.5-4.0' Silt/Gravel: Dark red gray (5 YR 4/2) smooth to grainy silt, fine to coarse
				gravel up to 2" diameter most <1/2"angular to subangular, silt slightly clayey,
				somewhat plastic to somewhat loose, wet, strong odor.
				4.0-5.0' Silt: Color as above, grainy, trace fine to coarse gravel up to 1" diameter
				angular to subangular, clayey, somewhat plastic, wet, very strong odor.
335	340	5	9100-17200/	0-5.0' Sand: Dark brown (7.5 YR 3/2) fine grain sand, trace very fine, and medium
			2.8-3.1	grain, well sorted, loose, trace silt 0-0.5', wet, very strong odor, no staining.
340	345	5	32600-58500/	0-1.0' Sand: As above, fine grain, fines with depth.
			2.5-6.6	1.0-2.0' Sand: As above, some very fine grain sand, some silt.
				2.0-3.0' Silt: Red brown (5 YR 4/3) smooth, clayey, somewhat plastic to plastic,
				soft, wet, very strong odor, vesicles.
				3.0-4.0' Sand: Dark red gray (5 YR 4/2) very fine grain, very silty, loose to somewhat
				loose, wet, well sorted, very strong odor.
				4.0-5.0' Sand/Silt: Color as above, interbedded very fine grain silty sand and smooth
				silt, both above characteristics and colors, intermixed irregularly, abundant
				vesicles in smooth clayey silt, very strong odor, wet, varved 4" layering.
345	350	5	5000-160000/	0-2.5' Sand/Silt: As above, very fine grain silty sand, smooth clayey silt.
			1.2-3.5	2.5-5.0' Clay/Gravel: Very dark gray (Gley 1 3/N) (till), clay, fine to coarse gravel
				angular to subangular up to 4" diameter, same fine to very coarse sand, some
				smooth silt, clay is plastic, vesicles, soft, till as whole very dense, compacted mass,
				gravel and sand in matrix of silt/clay, crumbly when worked, wet, strong odor.
350	355	1.5	5100/0.6	0-0.5' Silt/Clay/Gravel: As above, till, more silt.
				0.5-1.5' Weathered/pulverized bedrock, rocks are green/black slate Gley 1 (2.5/56Y),
				weathered, pulverized to silt/sand/gravel pieces fine to coarse up to 3" diameter,

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-86 A/B

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				angular, powdery silt, fine to coarse grain greenish black sand.
				EOB @ 351'

ARCADIS

Sample/Core Log

Boring/Well GM-87 A/B Project/No. Ford/Kingsford WI001095.0030 Page 1 of 4

Site - North of Lab Building Drilling Drilling
Location Kingsford, Michigan - at Treatment Plant Started 1/23/06 Completed 1/24/06

Total Depth Drilled 135 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' X 4" Sampling Interval continuous 10 feet

Land-Surface Elev. 1054.92 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Mike Hansen Helper Leon Grosskreutz Ryan Larsen

Prepared By Jill Flater Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	5	5	3.58-48.60/	0-1.5' Silt/Gravel/Sand: Dark brown (7.5 YR 3/4) topsoil, somewhat clayey, grainy
			9.23-9.51	silt, fine to coarse sand, gravel up to 1" diameter, fine to coarse, moist, somewhat
				loose, organic odor, trace roots, twigs.
				1.5-2.5' Silt: Strong brown (7.5 YR 5/8) grainy silt, very dense/firm, very hard to
				break, trace organics, moist.
				2.5-4.0' Sand: Color as above, very fine grain, silty, trace fine sand, loose, moist,
				no odor, moderate sorted.
				4.0-5.0' Sand: Strong brown (7.5 YR 4/6) very fine to very coarse grain, very silty,
				some gravel up to 2" diameter subangular to subround, loose, moist, poorly
				sorted.
5	10	3	2.81-7.38/	0-0.5' Sand: As above.
			9.5-10.1	0.5-3.0' Sand: Brown (7.5 YR 5/4) fine grain, trace medium to coarse, well
				sorted to poorly sorted along length, 4" layers of well sorted with layers of fine
				to very coarse grain sand with some gravel up to 1" subangular to subround,
				loose, moist, poorly sorted, no odor.
10	15			No recovery.
15	20	5	0.31-1.45/	0-1.0' Sand: Dark brown (7.5 YR 3/4) fine to very coarse grain, very silty/clayey,
			9.8-10.8	gravel some fine to coarse gravel up to 1" diameter subangular to subround,
				very poorly sorted, moist to wet, somewhat loose, no odor.
				1.0-5.0' Silt: Silt clay brown (7.5 YR 5/4) smooth, clayey, somewhat plastic to
				plastic, varied 1/2" clay interbedding soft, clay is platey on broken surface, soft
				plastic, moist, no odor.
20	25	5	0.64-2.09/	0-1.0' Silt: As above interbeds of grainy silt.
			10.9-11.5	1.0-5.0' Silt/Clay: Clay red brown (5 YR 4/4) smooth silt, clayey, interbedded with
				soft clay, silt is very clayey, somewhat plastic to plastic, soft, clay is soft to firm in
				places, plastic, platey on broken surface layers, silt range from 0-3", silt 1-3" moist,
				no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-87 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
25	30	5	1.21-28.6/	0-1.0' Silt/Clay: As above, trace black staining neighboring the clay layers, layers of
			12.4-13.3	clay 1/4-1/2" thick, silt 1-1.5" thick.
				1.0-2.0' Silt/Clay: As above (20-25'; 1-5') clay color is red brown (5 YR 4/3),
				clay firm.
				2.0-3.5' Silt: Brown (7.5 YR 4/2) interbedded varved clay, silt is smooth to grainy ,
				silt grading to very fine sand (silty) in places, layering undistinguishable, smooth
				silt is clayey, plastic, grainy silt is somewhat loose, wet, no odor.
				3.5-5.0' Sand/Silt: Brown (7.5 YR 5/3) very fine grain, silty sand and sandy silt, sand
				moderately well sorted, somewhat loose, wet, slight odor, somewhat clayey/
				plastic at bottom.
30	35	3.5	6.02-82.4/	0-2.0' Sand/Silt/Clay: Interbedded, very fine grain silty sand, smooth clayey silt,
			12.3-13.1	clay red brown (2.5 YR 5/4) soft clay; sand less silty in 1.5-2.0', somewhat loose;
				wet, slight odor, moderately sorted, silt brown (7.5 YR 5/3) smooth, slight to
				somewhat plastic, (clay soft, plastic), less clayey portions somewhat loose.
				2.0-3.0' Sand: Fine grain sand, some medium, moderate well sorted, little silt,
				loose, wet, no odor.
				3.0-3.5' Sand: Brown (7.5 YR 4/3) very fine grain, silty, some gravel fine to coarse
				up to 3" diameter, angular to subround, well sorted, wet, no odor,
35	40	5	90-12700/	0-1.5' Sand: Brown (7.5 YR 4/4) fine grain, trace medium to very coarse, silty,
			12.7-13.3	some gravel up to 2" diameter, angular to subround, very poorly sorted, very wet,
				no odor.
				1.5-2.5' Sand/Gravel: Brown (7.5 YR 4/2) fine to very coarse grain sand, fine to
				coarse gravel, trace silt probably from above, very poorly sorted, wet, no odor,
				fine to coarse gravel up to 2" angular to subround, mostly <1/4", loose.
				2.5-5.0' Sand: Brown (7.5 YR 5/4) fine to medium grain, little coarse to very
				coarse sand, trace to little gravel in places fine to coarse, trace to no silt, poorly
				sorted, loose, wet.
40	45	5	80.10-11400/	0-2.0' Sand: Color as above, fine to medium sand, no silt, trace coarse, sand
			12.9-14.4	moderate well to well sorted in places, wet, loose, slight odor.
				2.0-2.5' Silt/Clay: Overall color brown (7.5 YR 4/3) smooth silt and clay, interbedded
				(varved 1/8"), soft, clay isplastic, wet, odor.
				2.5-5.0' Silt: Red brown (5 YR 5/4) grainy silt grading to very fine sand, silty in places,
				somewhat loose, wet, odor, trace black staining.
45	50	5	94.6-1640/	0-5.0' Silt: Red brown (2.5 YR 4/4) grainy silt, slightly plastic/clayey in places,
			13.1-13.3	grades to silty/very fine grain sand in others, wet, somewhat loose to somewhat
				plastic, odor, trace black staining.

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-87 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
50	55	5	7740-12400/	0-2.5' Silt: As above, less clayey.
			14.1-14.8	2.5-5.0' Silt: Red brown (5 YR 5/4) smooth to grainy, blocky to crumbly, one dense
				clayey silt layer at 4-4.3' coarsens with depth, wet, trace black staining, odor.
55	60	5	4480-26100/	0-1.0' Silt: As above, no clay, wet, no staining.
			14.4-15.2	1.0-1.5' Sand: Red brown (5 YR 4/4), fine grain, trace to no silt, well sorted, wet,
				odor, loose, no staining.
				1.5-2.5' Silt: Red brown (5 YR 3/4) smooth, interbedded, trace varves of clay,
				blocky, crumbly to slightly plastic when worked, soft, wet, odor.
				2.5-4.0' Silt: Red brown (5 YR 5/4) grainy silt grading to very fine silty sand
				especially nearing bottom (coarsens with depth), somewhat loose to loose, wet,
				odor.
				4.0-5.0' Sand: Color as above, very fine grain, silty, well sorted, loose, odor, moist,
				no staining.
60	65	5	4750-30300/	0-5.0' Sand: Color as above.
			14.4-15.5	
65	70	5	21.26-14100/	0-2.5' Sand: As above.
			16.3-18.3	2.5-5.0' Sand/Silt: Color as above, sandy (very fine), grainy silt and silty very fine grain
				sand, sand well sorted, somewhat loose to loose, slightly finer than above, wet,
				odor.
70	75	3.5	880-4210/	0-2.5' Sand/Silt: As above.
			16.7-16.9	2.5-3.5' Silt: Color as above, grainy silt, trace very fine grain sand, somewhat loose,
				wet, odor.
75	80	5	908-3930/	0-5.0' Sand: Brown (7.5 YR 4/4) very fine to fine grain, predominately fine,
			13.08-13.3	trace medium, no silt 2-5' 1-2' very wet, some silt, well sorted to moderately well
				sorted, fines slightly with depth, loose, wet, odor, no staining.
80	85	3.5	1105-3420/	0-1.5' Sand: As above, very fine/fine grain.
			13.1-15.2	1.5-2.0' Sand: Color as above, sand very fine, also red brown (5 YR 4/4) sand as
				above interbedded with very fine silty sand, sands moderate well sorted, jumbled
				layering, loose to somewhat loose, wet, odor,
				2.0-3.5' Sand/Silt: Red brown (5 YR 4/4) very fine grain, silty, and grainy silt,
				somewhat loose, well sorted sand, wet, odor, fines
				slightly with depth.
85	90	2.5	36-145/	0-2.5' Sand/Silt: As above, very wet.
			15-15.3	
90	95	NR		No recovery.
95	100	5	20-558/	0-4.0' Sand/Silt: As above, coarsens with depth, trace black staining.
			15.5-16.2	4.0-5.0' Sand: Brown (7.5 YR 5/4) very fine grain, silty to trace silt in places

ARCADIS

Sample/Core Log (continued)

Boring/Well GM-87 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				trace fine, well sorted, loose, wet, odor.
100	105	3	22-49/	0-3.0' Sand: As above, very fine grain, no to some silt in places, variable along
			15.2-15.3	length.
105	110	5	.76-4.4/	0-1.0' Sand: As above, very fine, trace silt.
			12.1-12.4	1.0-4.0' Sand: Brown (7.5 YR 4/3) fine grain, some very fine, well sorted, loose,
				wet, odor, no staining.
				4.0-5.0' Clay: Red brown (5 YR 4/3) clay is soft, plastic, interbedded with smooth
				silt (vaves), wet, no odor.
110	115	2.5	0.51-0.7/	0-0.5' Clay/Silt/Sand: Sand color as above, silt dark red brown (5 YR 3/4), clay color
			12-12.2	as above, sand fine to medium grain, well sorted, interbedded with clay (as above)
				and smooth silt is medium firm, blocky, layers varvied to 1/4" thick, wet, no odor.
				0.5-1.5' Silt: Dark red brown (5 YR 3/4) smooth, clayey, somewhat plastic to
				almost plastic in places, wet, no odor.
				1.5-2.0' Sand/Silt: Colors as above, jumbled interbedding of smooth clayey silt
				above and fine to medium grain well sorted sand, wet, overall somewhat plastic,
				no odor.
				2.0-2.5' Sand: Red brown (5 YR 4/3) very fine to fine grain, silty, clayey in places,
				well sorted, trace gravel fine up to 1/2" diameter subround, wet, somewhat loose,
				no odor.
115	120	5	0.76-1.53/	0-5.0' Sand: Brown (7.5 YR 4/4) fine to medium grain, trace very fine grain, trace
			13.4-13.8	coarse, moderate well sorted to well sorted, mostly well sorted, loose, wet, no
				odor, no staining.
120	125	3	0.56-1.5/	0-3.0' Sand: As above.
			12.8-13.1	
125	130	5	--	0-1.0' Sand: As above.
				1.0-1.5' Silt: Dark red brown (5 YR 3/3) smooth silt, top 2" grainy, sharp
				contact with above, medium firm, blocky, crumbly when worked, wet, slight odor.
				1.5-2.0' Sand: As above, color as above, fine to medium grain.
				2.0-2.5' Silt: As above, somewhat clayey/plastic in places.
				2.5-4.0' Sand: As above with irregularly placed interbedded silt as above with
				clay varves, silt, color as above, clay red brown (5 YR 4/3), layers 1/4"-1" thick.
				4.0-5.0' Silt/Clay: Silt dark red brown (5 YR 3/3), clay (5 YR 4/3) smooth silt with
				interbedded clay varves, color as above, somewhat plastic to plastic, soft, wet,
				no odor.
130	135	1	--	0-0.5' Silt/Clay: As above, 0.2-0.4 large clay layer, 0.4-0.5 silt layer with clay
				varves, clay very soft.
				0.5-1.0' Sand As above, fine to medium grain.
				EOB @ 135'

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-100 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 7/23/98 Drilling Completed 7/23/98

Total Depth Drilled 70.5 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1103.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	58			Blind drill, see GMSG-100 log for details.
58	60	24"/	5,7,10,16	0-10": Sand and Gravel. Saturated, sloughy.
		1,000		10-24": Silt/Clay. Interbedded with lenses of silty sand. Clay reddish
				brown (5 YR 4/4) strong HCl reaction, HP ≥4.0. Plastic and foliated.
				Silt, brown (7.5 YR 4/3) moderate HCl reaction HP ≥ 4.0 slightly moist,
				silty sand lenses every 4 inches, approximately ¼ inch thick.
60	62	7"/	4,3,11,16	Sand. Brown (7.5 YR 4/2) very fine silty, with silt laminations (fine), very well
		1,300		sorted, slightly moist, becomes fine sand at base, moderate HCl reaction.
				Water added to offset gas pressure.
62	64	8"/	10,11,15,16	0-8.0": Sand. As above, silty.
		500		
64	70.5	--	--	Blind drill, no recovery.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GM-118D Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 9/9/98 Drilling Completed 9/10/98

Total Depth Drilled 59 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1116.64 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	57	NA	NA	Blind drill. See Sample/Core Log of GMSG-118 for stratigraphy.

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Sample/Core Log

Boring/Well GMIM-1 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/27/03 Drilling Completed 10/27/03

Total Depth Drilled 26 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Auger Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1041.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method auger

Drilling Contractor Boart Longyear Driller Jeff Helper Chris

Prepared By Paul Lenaker Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM (ppm) Background = 0.70/-1.5	Sample/Core Description
0	2	1.3	21.1/23.98	0-0.3': Topsoil, very dark brown (7.5 YR 2.5/2) silt and clay and organics, roots
				0.3-0.8': Silt, brown (7.5 YR 4/4) with trace coasre sand, trace organics, moist.
				0.8-1.3': Silt, color as above, some to lots of sand, medium to coarse grain, some
				gravel, subround to subangular, up to 1/2", trace clay, loose, moist.
2	4	1.1	83.77/	0-0.4': Silt, as above, but brown (7.5 YR 4/3).
			24.67	0.4-0.5': Sand, color as above, coarse grain, some medium to fine, some silt, trace
				gravel, loose, moist.
				0.5-1.0': Sand, brown (7. 5YR 5/3), fine grain, well sorted, loose, moist, no odor,
				grading into.
				1.0-1.1': Silt, color as above, grainy, some fine sand, loose, moist, no odor.
4	6	0.5	619/117	0-0.3': Clayey silt, trace coarse sand, trace gravel up to 1 inch rounded, slightly
				cohesive but loose, moist, no odor.
				0.3-0.5': Sand and gravel, dark bluish gray (Gley 3/1), sand fine to coarse, gravel
				subangular to subrounded up to 1", loose and some silt and clay, wet, odor.
6	8	0.85	1,200/	0-0.2': Silt and sand, brown (7.5 YR 4/2), very fine to medium grain, moderately
			62.06	sorted, saturated, loose, odor.
				0.2-0.55': Sand gravel, color as above, poorly sorted, sand fine to coarse, gravel
				up to 1.5" subrounded to subangular, silty clay lens, dark red (7.5 YR 3/3), sticky,
				somewhat cohesive.
				0.55-0.85': Sand and gravel, color as above, poorly sorted, no to trace silt,
				wet, odor.
8	10	0.35	812/68.0	0-0.35': Sand, brown (7.5 YR 4/2), fine to medium grain, trace coarse sand to
				fine gravel, fairly well sorted, loose, wet, odor. Large piece of igneous rock stuck in
				spoon tip.
10	12	1	1,010/36.0	0-0.2': Sand, as above.
				0.2-1.0': Sand and gravel, color as above, with strong sheen and reddish hue in

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Sample/Core Log (continued)

Boring/Well GMIM-1

Prepared by Paul Lenaker

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM (ppm) Background = 0.70/-1.5	Sample/Core Description
				lower 2", sand fine to coarse, gravel fine to coarse, subrounded to angular, some
				silt and clay, poorly sorted, loose to saturated, strong odor.
12	14	1.2	12,800/	0-0.55': Sand, brown (7.5 YR 4/2) very fine to medium grain, some silt, moderate
			22.6	to fairly well sorted, loose, wet, odor, small red/brown (5 YR 4/4) clay lenses.
				0.55-0.60': Sand and gravel, color as above, sand as above, gravel up to 0.5"
				subrounded to angular.
				0.6-1.2": Sand, brown (7.5 YR 5/2) fine grain, well sorted, loose, odor.
14	16	1.7	3,500/25.8	0-0.8': Sand, brown (7.5 YR 4/2), medium grain, well sorted, loose, odor.
				0.8-1.7': Sand and gravel, color as above, sand predominately medium grain,
				lots of coarse, some fine, gravel up to 1" round to angular, loose, wet, odor.
16	18	1.3	9,873/	0-0.8': Sand, brown (7.5 YR 4/2), fine to medium grain, some very fine,
			23.45	fairly well sorted, loose, wet, odor.
				0.8-1.3': Sand as above, with increasing amounts of medium to coarse sand and
				silt, also some gravel up to 0.5" mainly black slatey flakes, loose, wet, odor.
18	20	1.4	5,320/	0-1.4': Sand, color as above, fine to medium, trace coarse, fairly well sorted,
			24.23	loose, wet, odor, at 1.3 to 1.4 predominately coarse sand.
20	22	0.8	2,419/32	0-0.8': Sand, color as above, fine grain, some medium grained, moderately well
				sorted, loose, wet, odor.
22	24	2.2	5,200/46.0	0-1.7': Sand, as above at 1.2" increasing coarse sand and fine gravel.
				1.7-2.0': Sand, pinkish gray (7.5 YR 6/2), very fine to coarse, poorly sorted, some
				silt, some gravel fine, subrounded to subangular, loose, wet, odor.
24	26	2	9,500/64	0-1.2': Slough, as per conversation with driller.
				1.2-2.0': Silt, reddish brown (5 YR 4/4), moderately soft (HP = 1.1 to 1.5,
				crumbly to slightly cohesive, trace to some clay, trace black staining, moist, odor.
				EOB at 26'.

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Sample/Core Log

Boring/Well GMIM-2 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/28/03 Drilling Completed 10/28/03

Total Depth Drilled 24 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1041.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Boart Longyear Driller Jeff Flaminio Helper Chris/Jay

Prepared By Bruce Evans Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches OVA/OVM	Sample/Core Description
0	2	1.0	8.9/11.6	0-0.3' Silt: Dark brown (7.5 YR 3/2) rootlets, organic material, fine gravel, loose,
				moist.
				0.3-1.0' Silt/Gravel: Strong brown (7.5 YR 4/6) silt matrix with fine to coarse
				gravel, angular to subrounded, some fine to coarse sand, loose, moist.
2	4	--	--	No recovery, slump.
4	6	1.0	956/15.6	0-0.6': Slump.
				0.6-1.0' Gravel/Rock: Dark gray (7.5 YR 4/1) fine to coarse gravel and rock
				(cobble) fragments, angular to subrounded, some fine sand and silt loose, wet.
6	8	1.0	416/16.5	0-0.2': Slump.
				0.2-1.0' Gravel: Dark gray (7.5 YR 4/1) fine to very coarse gravel angular to
				subrounded, very poorly sorted, much black slate flakes/pieces, no sand, loose, wet.
8	10	0.2	613/20.7	Little recovery, trace gravel as above, and cobbles fragment stuck in spoon tip,
				wet.
10	12	0.3	1280/25	Poor recovery, gravel as above with some fine to coarse sand, mostly fine,
				dark gray (5 YR 4/1), loose, wet.
12	14	1.2		0-0.4': Slump.
				0.4-1.2' Gravel/Rock Fragments: Fine to very coarse gravel with much broken
				cobble fragments matrix is somewhat silty with reddish brown silt, loose, wet,
				odor.
14	16	0.7	670/14.0	0-3': Slump.
				0.3-0.7' Sand/Gravel: Dark gray (5 YR 4/1) fine to coarse sand, fine to very coarse
				gravel and cobble fragments, very poorly sorted, very silty, loose, but somewhat
				sticky, wet, odor.
16	18	1.0	3031/16.5	Sand: Dark reddish gray (5 YR 4/2) fine to coarse grain, but predominately fine
				to medium, moderately sorted, silty, loose, trace gravel below 0.8', wet, odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMIM-2

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches OVA/OVM	Sample/Core Description
18	20	1.5	6080/19	0-0.3': Slump.
				0.3-1.5' Sand/Gravel: Dark reddish gray (5 YR 4/3), medium to very coarse sand
				with fine to medium gravel, angular to subrounded, moderately sorted, loose, fairly
				coarse mixture, wet, odor.
20	22	1.0	2910/17.5	0-0.5': Slump.
				0.5-1.0' Sand/Gravel: As above but more medium grain matrix, loose, wet, odor.
22	24	1.5	4546/22	0-2' Sand/Gravel: as above, coarse.
				0.2-0.8' Sand: Dark reddish gray (5 YR 4/1) medium grain, well sorted, some
				fine and coarse, loose, wet, odor.
				0.8-1.5' Silt: Reddish brown (5 YR 4/3) soft, very slight plastic, wet, odor.
				EOB 24 feet.

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Sample/Core Log

Boring/Well GMIM-3 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/28/03 Drilling Completed 10/28/03

Total Depth Drilled 24 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1042.15 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Boart Longyear Driller Jeff Flaminio Helper Chris/Jay

Prepared By Bruce Evans Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches OVA/OVM	Sample/Core Description
0	2	1.5	3.6/17	0-0.7' Silt: Dark brown (7.5 YR 3/2) organic material, rootlets, loose, soft, moist.
				0.7-1.5' Silt: Strong brown (7.5 YR 5/6) loose, soft, dry.
2.0	4.0	1.0	3.9/23	0-0.5' Silt: As above with fine to coarse gravel, subangular to subrounded, no odor.
				0.5-1.0' Gravel/Sand: Mostly brown (7.5 YR 4/2) fine to coarse sand with fine to
				coarse gravel, some cobbles as rock fragments broken by drilling, very poorly sorted,
				loose, moist.
4	6	0.9	1820/17	0-0.3': Slump.
				0.3-0.9' Gravel: Dark gray (7.5 YR 4/1) fine to very coarse gravel, some fine to
				coarse sand, rock fragments, much angular black slate pieces, very poorly sorted,
				wet, loose, odor.
6	8	1.0	1435/25	0-0.2': Slump.
				0.2-0.5' Sand: Dark gray (7.5 YR 4/1) fine to medium sand, some coarse, some fine
				to coarse gravel, moderately sorted, loose, wet, odor.
				0.5-1.0' Gravel: Mostly dark gray, as above, fine to coarse grain, moderately sorted,
				angular to subangular, much black slate pieces/flakes, loose, wet, odor.
8	10	1.0	680/3.3	Gravel: As above also with broken cobble pieces, some fine to coarse sand, loose,
				wet, odor.
10	12	1.0	1370/78	Gravel: As above, with fine to medium sand, wet, odor.
12	14	1.5	3590/36	0-0.5' Sand: Dark brown (7.5 YR 3/2) fine to medium grain, trace coarse, well
				sorted, loose, wet, odor.
				0.5-0.8' Sand/Gravel: Sand as above with fine to coarse gravel, subrounded to
				angular, loose, wet odor.
				0.8-1.5' Sand: Reddish gray (5 YR 5/2) fine grain, well sorted, trace medium grain,
				loose, wet, odor.
14	16	1.3	3302/38	0-0.3' Sand: As above with some gravel.
				0.3-1.3' Sand/Gravel: Dark reddish brown (5 YR 3/2) fine to coarse sand, fine to

ARCADIS

Sample/Core Log (continued)

Boring/Well GMIM-3

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches OVA/OVM	Sample/Core Description
				coarse gravel, angular to subrounded, some broken cobble fragments, sand mostly
				fine, some very fine silt, very poorly sorted loose, wet, odor.
16	18	1.4	4220/42	Sand: Dark reddish brown (5 YR 4/2) mostly fine sand with some medium, and fine
				to coarse gravel, angular to subrounded, sand well sorted and matrix for gravel,
				loose, wet, odor, silty below 1.0
18	20	1.5	7320/42	Sand: As above increasing to gravel.
20	22	1.7	3170/40	0-1.2' Sand: Dark reddish brown (5 YR 4/2), fine to medium grain, well sorted, trace
				coarse to very coarse, loose, wet, odor.
				1.2-1.7' Sand: Reddish brown (5 YR 4/3) fine to very coarse sand, trace silt,
				very poorly sorted, trace fine gravel, mostly angular black slate flakes, loose, wet
				odor.
22	24	2.0	4690/46	0-1.3' Sand: Dark reddish brown (5 YR 4/2) fine to coarse grain, mostly medium
				grain, moderately sorted, trace fine to coarse gravel, angular to subrounded
				loose, wet, odor.
				1.3-2.0' Silt: Reddish brown (5 YR 5/4) soft, somewhat loose, wet, odor, thin 1"
				thick clay layer at sand/silt contact yellowish red (5 YR 5/6) plastic, but firm and
				fissile-like.
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: AGMGT-1 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 2

Site Location: Kingsford, Michigan Drilling Started: 12/04/00 Drilling Completed: 12/04/00

Total Depth Drilled: 32 Feet Hole Diameter: 7 inches Type of Sample/ Coring Device: Splitspoon, Shelby tube

Length and Diameter of Coring Device: 24", 2" OD, 1.4" ID Splitspoon Sampling Interval: Variable feet

Land-Surface Elev.: 1053.62 feet [X] Surveyed [ ] Estimated Datum: Mean sea level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Sean Helper: Randy

Prepared By: Bill Schulz Hammer Weight: 140 lb Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
0	2			Auger drill - frozen soil: (Fill) Silt with little sand, clay and organics, dark yellow
				brown (10 YR 4/2), loose, moist, nonplastic, trace metal chips.
2	4	8	21,24,27,22	0-4": As above.
				4-8": (Native Material) Silt with some sand, trace gravel, moderate brown
				(5 YR 4/4), medium dense, moist, non-plastic, rounded gravel to 1.2"
				diameter.
4	6	11	5,16,18,12	0-2": As above.
				2-11": Sand with some gravel to gravel with some sand, moderate brown
				(5 YR 4/4), medium dense to dense, moist, sand well graded from fine to very
				coarse, subangular, gravel subangular to subround, average 0.3" diameter
				and up to 1" diameter.
6	8	11	12,16,24,21	0-11": Sand with some gravel as above.
8	10	14	21,29,17,24	As above, but wet at 6 inches.
10	12	14	13,18,24,28	0-2": As above.
				2-14": Sand, moderate brown (5 YR 4/4), dense, wet to saturated, primarily
				fine to medium grained but with little coarse to very coarse.
12	15			Auger drill.
15	17	13	20,18,18,18	0-13": Silt with trace sand and clay, moderate brown (5 YR 4/4), dense, wet,
				nonplastic, laminated, trace very fine sand, few silty clay laminae to 0.3"
				thick, moderate reddish brown (10 R 4/6), thin (approximately 3") perched
				saturated zone above upper clay layer.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well AGMGT-1

Prepared by B. Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
17	19			Push shelby. As above at 19 feet.
19	20			Auger drill.
20	22	19	10,12,12,15	As above, but medium dense, silt grades to dark yellow brown (10 YR 5/4),
				little silty clay layers every approximate 2" (varves), 0.1-0.4" thick.
22	25			Auger drill.
25	27	18	7,8,8,8	0-16": As above.
				16-18": Sand with some silt, dark yellow brown (10 YR 4/2), medium dense,
				saturated, very fine to fine grained.
27	30			Auger drill.
30	32	24	17,26,24,18	Sand as above, but dense and with trace coarse to very coarse.
				EOB @ 32 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well AGMGT-2 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 12/04/00 Drilling Completed 12/04/00

Total Depth Drilled 30 Feet Hole Diameter 7 inches Type of Sample/ Coring Device Shelby tube, splitspoon

Length and Diameter of Coring Device 2', 2" OD, 1.4" ID Splitspoon Sampling Interval Variable feet

Land-Surface Elev. 1052.98 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Sean Helper Randy

Prepared By Bill Schulz Hammer Weight 140 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
0	2			Auger drill - frozen soil (Native Material). Sand with some silt, little organics,
				trace clay, moist, very fine grained.
2	4	13	12,22,24,28	0-13": Sand with some gravel, moderate brown (5 YR 4/4), medium dense,
				to dense, moist, fine to very coarse, gravel subround to subangular with few
				well rounded, average 0.4" with some >2" diameter.
4	6	9	29,27,27,20	0-9": As above, but with two, 1" thick, poorly-graded (fine grained) sand
				layers.
6	8	7	29,30,24,26	0-7": As above (interbedded sand and sand with gravel, 1 to 2" thick
				layers).
8	10	8	13,13,14,14	0-8": As above, but wet, saturated at 6 inches.
10	12	17	5,6,6,6	0-17": Sand with some silt, moderate brown (5 YR 4/4), medium dense,
				wet to saturated, very fine grained sand interbedded with silt with some very
				fine sand, average approximate 1.5" layers, sand layers saturated, silt wet.
12	15			Auger drill.
15	17	0	28,37,27,27	No recovery, trace rock fragments in shoe. Auger to 17 feet.
17	19	0	20,19,24,32	Silt with some clay in shoe (very disturbed).
19	20			Auger drill.
20	22	14	9,13,13,15	0-8": Sand with some silt, trace gravel, moderate brown (5 YR 4/4), medium
				dense, saturated, very fine to medium grained with trace coarse to very
				coarse, gravel subangular, average approximately 0.3" diameter.
				8-14": Silt with little sand, dark yellow brown (10 YR 4/2), medium dense,
				wet, nonplastic, laminated.
22	24	0		Push shelby - no recovery.
24	28			Auger drill.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well AGMGT-2

Prepared by B. Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
28	30	22	28,30,32,32	0-22": Sand, dark yellow brown (10 YR 5/4), dense, wet, very fine to fine grained with trace medium to very coarse.
				EOB @ 30 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: AGMGT-3 Project/No.: Ford/Kingsford WI000804.0001 Page 1 of 2

Site Location: Kingsford, Michigan Drilling Started: 12/05/00 Drilling Completed: 12/05/00

Total Depth Drilled: 30 Feet Hole Diameter: 7 inches Type of Sample/ Coring Device: Shelby tube, splitspoon

Length and Diameter of Coring Device: 2', 2" OD, 1.4" ID Splitspoon Sampling Interval: Variable feet

Land-Surface Elev.: 1052.79 feet [X] Surveyed [ ] Estimated Datum: Mean sea level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Sean Helper: Randy

Prepared By: Bill Schulz Hammer Weight: 140 lb Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
0	2			Auger drill - Frozen Soil (Native Material) Sand with some gravel, little silt and organics, dark yellow brown (10 YR 4/2), sand very fine to medium grained with trace coarse to very coarse.
2	4	3	10,20,21,17	0-3": Sand with gravel, moderate brown (5 YR 4/4), medium dense to dense, primarily very fine to fine but with little medium to very coarse grains, subangular to rounded gravel, average approximate 0.5" diameter and up to >2" (3" diameter stuck in shoe).
4	6	8	7,8,13,13	0-8": As above.
6	8	7	12,13,24,18	0-7": As above, but with a 1" thick sand layer.
8	10	10	17,12,23,23	0-10": As above, but with alternating primarily sand and sand and gravel layers.
10	12	17	10,10,18,23	0-17": Silt with some sand, trace clay, moderate brown (5 YR 4/4), medium dense, wet to saturated at 4", nonplastic, laminated, sand very fine grained, trace clay as a 0.2" thick silty clay layer, moderate reddish brown (10 R 4/6), stiff, moist, moderately plastic.
12	13.5	19		Push shelby - tip bent at end of run on rock, as above at 13.5 feet.
13.5	18			Auger drill.
18	20	18	9,12,21,26	0-18": Silt with some clay, consists of alternating layers of silt (average 0.7" thick), pale to dark yellow brown (10 YR 6/2 - 10 YR 4/2), medium dense, wet to saturated, non-plastic, laminated; and silty clay (average 0.2" thick), moderate reddish brown (10 R 4/6), stiff, moist, moderately plastic, blocky texture.
20	23			Auger drill.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well AGMGT-3

Prepared by B. Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
23	25	21	17,21,22,20	0-12": As above.
				12-21": Sand with little silt, moderate brown (5 YR 4/4), dense,
				saturated, very fine grained.
25	28			Auger drill.
28	30	17	11,16,18,18	0-17": As above.
				EOB @ 30 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: AGMGT-4 Project/No.: Ford/Kingsford WI000804.0001 Page 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 3/4/02 Drilling Completed: 3/4/02

Total Depth Drilled: 52 Feet Hole Diameter: 6.25 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 feet by 2 inches Sampling Interval: Variable feet

Land-Surface Elev.: 1120.99 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Bill Schulz Hammer Weight: 140 lb Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
0	2	--	--	Auger, no recovery.
2	4	5	frozen	(Fill) clayey, silty sand with trace organics, light brown (5 YR 5/6) with little dusky
				yellow brown (10 YR 2/2) mottling, moist to wet (frozen solid) fine to medium
				grained, rootlets.
4	6	4	7-21-25	(Fill) silty sand with trace clay organics and debris, dusky yellow brown
				(10 YR 2/2), with little brown mottling (5 YR 5/6), loose, moist, fine to coarse
				grained.
6	8	15	12-7-6-6	0-6": As above.
				6-15": (Native Deposit) Sand with trace gravel, light brown (5 YR 5/6), loose to
				medium dense, moist, medium to coarse grained with fine grained, subangular
				to subrounded (SP).
8	10	18	12-13-12-12	0-12": As above (SP).
				12-18": Sand, medium yellow brown (10 YR 5/4) to light brown (5 Y 5/6),
				medium dense, damp, medium grained with little fine (SP).
10	12	13	13-16-20-24	As above (SP).
12	14	12	7-12-12-12	Grading to medium grained with some fine (SP).
14	16	16	12-12-13-13	As above.
16	20	--	--	Auger, no recovery.
20	22	16	22-23-25-25	0-7": As above.
				7-16": Sand, medium yellow brown (10 YR 5/4) with some dark gray (N3) grains
				(approximately 20%), dense, moist, medium grained with little fine and coarse (SW).
22	25	--	--	Auger, no recovery.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well AGMGT-4

Prepared by Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
25	27	12	12-13-15-17	0-2": Sand, medium yellow brown (10 YR 5/4), medium dense, moist to wet,
				medium grained, subrouned (SP).
				2-12": Sand with some gravel, medium yellow brown (10 YR 5/4) with some
				dark gray (N3), medium dense, moist, sand fine to very coarse, subrounded, gravel
				fine to medium, subrounded with little subangular (SW).
27	30	--	--	Auger, no recovery.
30	32	20	20-24-24-21	0-6": As above.
				6-20": Sand, dark yellow orange (10 YR 6/6) to medium yellow brown (10 YR 5/4),
				dense, damp, medium grained with trace fine, generally subrounded (SP).
32	35	--	--	Auger, no recovery.
35	37	17	13-23-21-25	Sand, dark yellow orange (10 YR 6/6) to medium yellow brown (10 YR 5/4)
				dense, damp, primarily medium grained but with little fine and coarse grains (SP-SW).
37	40	--	--	Auger, no recovery.
40	42	14	32-35-32-38	0-3": As above.
				3-5": Silty sand with trace gravel, medium brown (5 YR 4/4), dense to very
				dense, damp, fine to coarse grained (SM).
				5-14": Sand, dark yellow orange (10 YR 6/6) to medium yellow brown
				(10 YR 5/4), dense, damp, fine grained (SP).
42	45	--	--	Auger, no recovery.
45	47	4	>50/4"	Sand, dark yellow orange (10 YR 6/4) to medium yellow brown (10 YR 5/4), very
				dense, dry, very fine grained (SP).
47	50	--	--	Auger, no recovery.
50	52	13	34-27-31-30	As above but wet at 4", saturated at 10".

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well AGMGT-5 Project/No. Ford/Kingsford WI000804.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 3/5/02 Drilling Completed 3/5/02

Total Depth Drilled 53 Feet Hole Diameter 6.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 foot by 2 inches Sampling Interval Variable feet

Land-Surface Elev. 1120.61 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Jeff Helper Ben

Prepared By Bill Schulz Hammer Weight 140 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
0	4	--	--	(Fill) sandy silty clay with little debris (glass, wire, cinders) black (N1), with little
				medium brown (5 YR 4/4) mottling, wet, slightly plastic, (logged from cuttings).
4	6	12	12-7-9-7	0-6": As above, soft (HP = 0.3).
				6-12": (Fill), cinders, black (N1), loose, dry, trace soil material.
6	8	9	6-7-8-7	(Fill) clayey, silty sand, some debris (glass, cinders, wood, wire, brick), black (N1)
				with trace medium brown (5 YR 4/4) mottling, loose, wet to dry (wet at 3-5").
8	10	19	3-4-7-7	(Fill) organics with clay, silty sand and debris (metal castor (?), cinders, glass,
				wire) in variable proportions, dusky yellow brown (10 YR 2/2), black (N1), loose/
				soft, damp, fines slightly plastic, organics primarily poorly decomposed wood
				fragments.
10	12	12	2-3-5-5	As above.
12	14	24	3-2-2-1	0-5": As above.
				5-24": (Native Deposit) silty sand, medium brown (5 YR 4/4), very loose, moist to
				wet at 20", fine to medium grained (SM).
14	16	18	3-7-10-10	0-7": As above, wet to saturated.
				7-18": Sand with trace gravel, medium brown (5 YR 4/4), loose to medium
				dense, moist, fine to coarse, subrounded, fine subrounded gravel (SW).
16	20	--	--	Auger.
20	22	13	13-20-21-18	Sand with trace gravel, medium yellow brown (10 YR 5/4), medium dense, moist,
				medium to coarse grained, subrounded gravel to fine to medium, subrounded to
				rounded (SW).
22	25	--	--	Auger.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well AGMGT-5

Prepared by Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
25	27	16	17-15-13-13	As above, but with trace fine sand (SW).
27	30	--	--	Auger.
30	32	18	17-17-21-20	Sand, medium yellow brown (10 YR 5/4) to dark yellow orange (10 YR 6/6), dense,
				damp to dry, fine grained with little medium (SP).
32	35	--	--	Auger.
35	37	10	7-8-11-11	Sand, with little gravel, medium yellow brown (10 YR 5/4) to dark yellow orange
				(10 YR 6/6), medium dense, wet, coarse grained and subrounded to subangular,
				fine to medium gravel, subangualr to subrounded (SP).
37	40	--	--	Auger.
40	42	8	28-50/5	As above but with some gravel (SP), damp, dense.
42	45	--	--	Auger.
45	47	10	36-50/4"	0-3": As above.
				3-10": Sand, medium yellow brown (10 YR 5/4) to dark yellow orange (10 YR 6/6),
				dense to very dense, damp, fine grained with trace medium to coarse (SP).
47	50	--	--	Auger.
50	51	8	42-50	Silt, dark yellow brown (10 YR 4/2), very dense to medium dense in lower 3", wet
				to saturated at 5", nonplastic (ML).
51	52	--	--	As above in bottom of tube (ML).

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: AGMGT-6 | Project/No.: Ford/Kingsford WI000804.0001 | Page 1 of 2

Site Location: Kingsford, Michigan | Drilling Started: 3/5/02 | Drilling Completed: 3/5/02

Total Depth Drilled: 50.5 Feet | Hole Diameter: 6.25 inches | Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inches | Sampling Interval: Variable feet

Land-Surface Elev.: 1120.62 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear | Driller: Jeff | Helper: Ben

Prepared By: Bill Schulz | Hammer Weight: 140 lb | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
0	4	--	--	(Fill) sand with some silt and clay, medium yellow brown (10 YR 5/4), wet (logged
				from cuttings).
4	6	8	13-15-17-17	(Fill) sandy silt with little clay, organics, dark yellow brown (10 YR 4/2), with little
				medium brown (5 YR 4/6) and black (N1) mottling dense, moist, slightly
				plastic, organics primarily wood debris.
6	8	16	3-5-3-4	(Fill), sand with little silt, organics, debris (cinders, wire) and trace gravel and
				clay, dusky yellow brown (10 YR 2/7), loose, moist, organics primarily wood debris.
8	10	2	2-3-3-5	As above.
10	12	16	4-5-5-7	As above, but with some organics (wood debris).
12	14	8	3-2-4-4	As above.
14	16	12	3-5-5-4	As above.
16	20	--	--	Auger.
20	22	4	17-21-16-13	(Fill), sand with little silt and clay, trace organic black (N1), medium dense, moist,
				fine grained.
22	25	--	--	Auger.
25	27	22	3-5-7-7	0-14": (Fill) sand with little organics, trace silt, dark yellow brown (10 YR 4/2),
				dense, moist, fine grained 0.6" thick organic layer at base, very strong rotten
				egg odor.
				14-22": (Native Deposit) Sand with little silt, medium brown (5 YR 4/4), moist,
				fine grained (SP).
27	30	--	--	Auger.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well AGMGT-6

Prepared by Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
30	32	14	13-21-17-14	Sand with little gravel, medium yellow brown (10 YR 5/4) to dark yellow
				(10 YR 6/2), medium dense, moist, medium to coarse grained, medium to fine
				gravel, subangular to subrounded (SW).
32	35	--	--	Auger.
35	40	13	13-15-17-21	As above but with little fine sand, becoming dense.
37	40	--	--	Auger.
40	42	4	24-32-54/5	As above, but very dense (SW).
42	45	--	--	Auger.
45	47	10	42-34-25-25	As above, but with trace fine sand, some gravel (SW).
47	50	--	--	Auger.
50	52	3	50/5"	As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: AGMGT-7 Project/No.: Ford/Kingsford WI000804.0001 Page 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 3/6/02 Drilling Completed: 3/6/02

Total Depth Drilled: 52 Feet Hole Diameter: 6.25 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2 foot by 2 inches Sampling Interval: Variable feet

Land-Surface Elev.: 1120.32 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Jeff Helper: Ben

Prepared By: Bill Schulz Hammer Weight: 140 lb Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
0	4	--	--	(Fill) Sand moderate yellow brown (10 YR 5/4), wet (frozen), primarily medium
				grained with trace fine and coarse (logged from cuttings)
4	6	22	7-6-6-5	(Fill) sandy clay to clayey sand with some debris (cinders wood) little silt and organics
				black (N1) with little medium and dark yellow brown (10 YR 5/4, 10 YR 4/2)
				mottling, variable consisting but primarily soft/loose, moist, fines slightly plastic,
				composition varies in layers augering approximately 3" thick.
6	8	20	3-5-5-4	As above.
8	10	14	3-4-4-5	0-2": As above.
				2-14": (Fill) Sand with trace gravel and cinders, medium brown (5 YR 4/4), loose,
				moist, fine to coarse sand, fine gravel.
10	12	12	5-7-2-4	As above but with little silt and clay, several dark yellow brown (10 YR 4/2) layers.
12	14	2	5-4-3-3	As above.
14	16	4	5-3-4-4	As above.
16	20	--	--	Auger.
20	22	18	3-5-3-4	(Fill) organics with little and, clay and debris (cinders, wire), black (N1) with little
				dark yellow brown (10 YR 4/2) mottling, loose/soft, moist to damp, organics
				primarily wood.
22	25	--	--	Auger.
25	27	0.00	18-58/5	Pushed a stone in shoe.
27	30	--	--	Auger.
30	32	10	22-50/5	0-3": As above.
				3-10": (Native Deposit) Sand, light brown (5 YR 5/6), dense, moist, medium

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well AGMGT-7

Prepared by Bill Schulz

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description
				grained (SP).
32	35	--	--	Auger.
35	37	20	23-25-25-28	As above, but with little fine and coarse grains (SP), wet, dense.
37	40	--	--	Auger.
40	42	18	28-32-50/2	Sand, medium yellow brown (10 YR 5/4) to dark yellow orange (10 YR 6/6), dense to
				very dense, moist to wet, fine grained with little medium, trace coarse (SP).
42	45	--	--	Auger.
45	47	17	28-32-57/6	As above.
47	50	--	--	Auger.
50	52	16	21-19-17-20	As above.

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Sample/Core Log

Boring/Well AGMGT-8 Project/No. Ford/Kingsford WI001025.0022 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 1/6/04 Drilling Completed 1/6/04

Total Depth Drilled 40 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 foot by 2 inch

Sampling Interval continuous feet

Land-Surface Elev. 1054.04 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Mike Mueller Helper Jason Drabek

Prepared By Bruce Evans/Andy Mumpy

Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
0	2	--	--	Blind drill. Auger cuttings. Silt/gravel: Brown (10 YR 4/3), fill, compacted silt with fine to coarse gravel, mostly angular to subangular, trace cobbles to 2 inch diameter, well graded gravel, frozen to dry.
2	4	1.0	15-13-17-19	Silt/Gravel/Sand: Strong brown (7.5 YR 5/6), mostly silt matrix, with silty very fine grain sand with some fine to coarse grain, fine to coarse gravel, angular to subrounded, well graded, frozen to 0.5 then loose, dry to moist, HP = 1.0.
4	6	0.8	9-16-15-17	Sand/Gravel: Brown (7.5 YR 5/4), sand very fine to fine grain, trace medium to coarse, fine to coarse gravel, angular to subround, moderately graded, loose, HP = 0.5, moist.
6	8	0.6	17-21-37-16	Sand/Gravel: Light brown (7.5 YR 6/3), fine to coarse sand, some very fine and silt, well graded, fine to coarse gravel, angular to subround, loose, HP = 0.5, moist to very moist, angular broken 1" diameter cobble in spoon tip.
8	10	0.5	10-14-10-12	Sand/Gravel: As above, slightly less gravel, more fine grain sand, loose, moist, HP = 0.5.
10	12	--	10-13-8-7	No recovery.
12	14	0.1	7-13-40-25	Sand: Brown (7.5 YR 4/4), poor recovery, mostly fine to very fine grain with trace medium to coarse gravel, silty, sticky, wet.
14	16	1.0	23-17-15-14	Silt: Brown (7.5 YR 4/4), soft, somewhat plastic, HP = 0.75, with traces clay, yellowish red (5 YR 4/6), plastic but fissle looking on broken surfaces, interbedded/varved with silt in very thin layers (<1.0 mm), wet.
16	18	--	--	Push Shelby tube.
18	20	1.0	10-16-17-14	Silt/Clay: As above, interbedded layers, clay more prevalent, clay layers thicker 0.25-0.5 inch, clay plastic, silt somewhat plastic to somewhat firm, HP = 2.5-4.0, very moist to wet.
20	22	--	19-25-31-25	No recovery.

ARCADIS

Sample/Core Log (Cont.d)

Boring/Well AGMGT-8 Page 2 of 2

Prepared by Bruce Evans/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
22	24	1.0	6-17-20-23	0-0.3' Silt: As above, less clay.
				0.3-1.0' Sand: Reddish brown (5 YR 4/4), very fine grain, poorly graded, silty in places,
				loose, HP = 0.5, interbedded with thin silt layers <0.5 inch between 0.9 to 0.7, wet.
24	26	1.3	12-7-10-15	0-0.7' Sand: As above, very fine grain, trace fine grain, loose, poorly graded, HP = 0.5, wet,
				0.7-1.3' Sand: Reddish brown (5 YR 5/3) with black staining, very fine to fine grain, some
				medium grain, becoming coarser below 1.0, moderately graded, silty, loose, HP = 0.5, wet.
26	28	1.0	8-12-27-24	Sand: Reddish brown (5 YR 5/3), fine grain, some medium grain, trace very fine grain, very
				poorly graded, loose, HP = <0.5, wet, no staining.
28	30	1.0	10-12-19-20	0-0.4' Sand: As above.
				0.4-0.7 Silt: Reddish brown (5 YR 5/4), grainy, very slightly plastic to slightly firm HP = 1.0,
				some clay, wet.
				0.7-1.0 Sand: Reddish brown (5 YR 5/4) fine grain, some medium grain, trace very
				fine grain, poorly graded, loose, wet.
30	32	1.2	15-20-23-18	Sand: As above, fine grain, loose, HP = 0.5-1.0, wet.
32	34	0.9	15-17-23-25	Sand: As above.
34	36	0.8	15-17-13-12	0-0.6' Sand: As above, becoming very silty below 0.4, trace silt bedding very thin
				(<0.1 inch).
				0.6-0.8 Sand: Reddish brown (5 YR 4/3), fine to very coarse sand, some very fine and
				silty, very well graded, trace fine gravel, loose, wet.
36	38	0.3	12-8-10-14	Sand: As above, very fine to coarse grain, loose, HP = 0.5, wet.
38	40	0.4	12-13-8-7	Sand: Reddish brown (5 YR 4/3), fine to very fine grain, very silty, trace medium to very coarse
				sand, trace fine gravel, subangular to subround, moderately graded, loose, HP = 0.5,
				wet.

ARCADIS

Sample/Core Log

Boring/Well AGMGT-9 Project/No. Ford/Kingsford WI001025.0022 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 1/7/04 Drilling Completed 1/7/04

Total Depth Drilled 40 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 foot by 2 inch Sampling Interval continuous feet

Land-Surface Elev. 1054.04 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Mueller Helper Jason Drabek

Prepared By Bruce Evans/Andy Mumpy Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
0	2	--	--	Blind drill. Auger cuttings. Silt: dark brown (7.5 YR 3/3), frozen with organic material, rootlets, and gravel fine to very coarse, angular to subrounded, trace cobbles to 2" diameter, silt mostly granular and sandy with fine to coarse sand, moist.
2	4	1.2	19-21-22-29	Sand/Gravel: Strong brown (7.5 YR 5/6), sand mostly very fine to fine grain with some medium to coarse grain, gravel fine to very coarse grain, angular to subround often broken fragments, well graded, loose, HP = 0.5, moist, 1" thick layer very fine, poorly graded sand at 1.0, some silt throughout.
4	6	--	23-50+	No recovery, 1" angular rock and broken rock fragments in spoon tip.
6	8	--	24-28-32-23	No recovery.
8	10	1.0	25-35-23-15	0-0.7' Sand: Brown (7.5 YR 5/4), mostly fine grain, poorly graded, with some very fine, medium to coarse grain, some fine to coarse gravel, angular to subround, loose, HP = 0.5, moist. 0.7-1.0' Sand/Gravel: Brown (7.5 YR 5/3), very fine to coarse sand, fine to coarse gravel, well graded, some silt, loose, HP = 0.5, very moist to wet, trace silt in spoon tip.
10	12	--	24-10-14-23	No recovery, trace silt in spoon tip.
12	14	0.1	22-30-20-20	Silt: Brown (7.5YR 5/4), soft, sticky, wet, mixed with gravel and sand, possible slump from above.
14	16	0.2	28-18-32-23	Silt: Brown (7.5 YR 5/4), soft, sticky, as above, with trace gravel, fine to coarse, HP = 0.5, wet.
16	18	--	--	Pushed shelby tube, tube end collapsed. In tube end: Silt: Reddish brown (5 YR 5/3), grainy, somewhat plastic, very moist to wet.
18	20	1.0	10-9-7-6	Silt/Clay: Silt reddish brown (5 YR 5/3), clay yellowish red (5 YR 4/6), silt grainy, very slightly plastic, clay plastic yet fissile looking on broken surface, silt/clay are very uniformaly

ARCADIS

Sample/Core Log (Cont.d)

Boring/Well AGMGT-9 Page 2 of 3

Prepared by Bruce Evans/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
				inter-layered, clay 0.2 - 0.5 inch thick, silt, 0.5-1 inch thick, HP 2-4 in both silt and clay,
				very moist to wet.
20	22	1.5	12-13-18-21	Silt/Clay: interbedded as above, HP 3-3.5 in both, very moist to wet.
22	24	1.2	8-7-18-15	0-0.3': Silt/Clay, as above.
				0.3-1.2' Sand: Reddish brown (5 YR 5/5), very fine grain, very silty, poorly graded, loose,
				HP = 0.5-1.0, wet, interbedded with several silt layers, approximately 0.5 inch thick at
				0.5 ft, 0.8 ft, and 1 ft, silt as above but no clay.
24	26	1.0	7-8-8-9	0-0.3' Sand: Very fine grain, silty, as above.
				0.3-0.5' Sand: Brown (7.5 YR 5/2), very fine to fine grain, trace medium grain, well graded,
				loose, HP = 0.5, wet.
				0.5-0.8' Sand: Reddish brown (5 YR 5/4), very fine grain, very poorly graded, loose, wet,
				HP - 0.5.
				0.8-1.0' Sand: Brown (7.5 YR 5/3), fine grain, some medium grain, poorly graded, loose,
				wet, HP = 0.5
26	28	0.8	8-8-7-8	Sand: Brown (7.5 YR 5/4), fine grain, some medium grain and trace very fine grain, very
				poorly graded, loose, HP = 0.2 - 0.5, wet.
28	30	1.0	8-9-9-10	0-0.9' Sand: As above, wet, HP = 0.2.
				0.9-1.0' Silt/Clay: Silt reddish brown (5 YR 5/3), clay yellowish red (5 YR 4/6), very thinly
				interbedded/varved, <0.1inch thick, wet.
30	32	0.9	8-7-7-10	0-0.3' Silt: Reddish brown (5 YR 5/3), very sandy with very fine to fine grain sand, soft,
				sticky, HP = 0.5, wet.
				0.3-0.9' Sand: Reddish brown (5 YR 5/3), fine grain, very poorly graded, some very fine
				grain and medium grain, loose, wet, HP = 0.3.
32	34	0.6	8-7-7-10	0-0.4' Sand: Reddish brown (5 YR 5/3), very fine to fine grain, very silty, loose to somewhat
				sticky, HP = 0.5, poorly graded, wet.
				0.4-0.6' Sand: Reddish brown (5 YR 3/3), fine to very coarse grain, some silt, loose, very
				well graded, trace fine gravel, HP = 0.5, wet.
34	36	0.5	7-18-19-23	0-0.2' Sand: As above, very fine to coarse.
				0.2-0.5' Sand: Light reddish brown (5 YR 6/3), mostly fine to medium grain, some very
				fine grain and silt, loose, HP = 0.3, poorly graded, wet.
36	38	0.6	19-14-13-11	Sand: Light reddish brown (5 YR 6/3), fine to very coarse grain, trace very fine, very well
				graded, trace fine gravel, subangular to subround, loose, HP = 0.3, wet.

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Sample/Core Log (Cont.d)

Boring/Well AGMGT-9 Page 3 of 3

Prepared by Bruce Evans/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
38	40	1.0		0-0.5' Sand: Reddish brown (5 YR 5/5), very fine to fine grain, with medium to coarse grain, very silty, sticky, somewhat loose, moderately graded, trace coarse gravel subangular to subround, wet. 0.5-1.0' Silt: Reddish brown (5 YR 5/4), grainy, somewhat loose, wet, odor, note some methane vescules in silt.

ARCADIS

Sample/Core Log

Boring/Well AGMGT-10 Project/No. Ford/Kingsford WI001025.0022 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 1/7/04 Drilling Completed 1/7/04

Total Depth Drilled 40 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 foot by 2 inch Sampling Interval continuous feet

Land-Surface Elev. 1055.51 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Mueller Helper Jason Drabek

Prepared By Bruce Evans/Andy Mumpy Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
0	2	--	--	Blind drill, auger cuttings.
				Frozen soil: Silt with gravel: Strong brown (7.5 YR 4/6), trace organics (wood, rootlets),
				gravel fine to very coarse, loose, moist, trace very fine to coarse sand.
2	4	1.0	11-11-12-10	0-0.3' Silt/Gravel: As above
				0.3-1.0' Sand/Gravel: Strong brown (7.5 YR 5/6), sand predominantly very fine to fine grain,
				with some medium to coarse, gravel fine to very coarse, angular to subround, trace
				cobbles to 2" diameter, sometimes broken, loose, moderately graded, moist, HP = 0.1
4	6	0.6	7-8-11-10	0-0.6' Sand/Gravel: As above, moist.
6	8	0.5	20-18-10-10	0-0.5': Sand/Gravel: As above, moist.
8	10	1.0	18-14-15-25	0-1.0' Sand/Gravel: As above, 0-0.3 coarser with more gravel, broken rock fragment in
				spoon tip, moist.
10	12	0.8	15-25-13-12	0-0.8' Sand/Gravel: As above, more medium to coarse grain sand below 0.6, HP = 0.5,
				moist to wet.
12	14	1.1	10-14-17-17	0-1.1' Silt: Reddish brown (5 YR 4/3), with several thin clay layers (less than 0.2 inch),
				clay yellowish red (5 YR 4/6), interbedded, silt somewhat plastic, medium stiff, HP = 1.3,
				saturated, clay is plastic.
14	16	1.0	19-29-31-26	0-1.0' Silt: As above, but slightly more clay content, very thin clay layers, interbedded and
				varved with mm thickness, HP = 1.5, wet.
16	18	--	--	Push Shelby tube. Tube end collapsed. In tube end: Silt:reddish brown (5 YR 5/3), very
				moist to wet, somewhat plastic.
18	20	1.2	15-18-16-15	0-1.2' Silt: As above, reddish brown (5 YR 4/3), with interbedded clay layers yellowish red
				(5 YR 4/6), silt grainy, somewhat plastic, somewhat firm to stiff (HP = 2.5), clay layers
				0.2-0.5 inch thick, some fine interbedding/varving as well. Clay plastic yet fissile looking
				on broken surfaces, wet.

ARCADIS

Sample/Core Log (Cont.d)

Boring/Well AGMGT-10 Page 2 of 2

Prepared by Bruce Evans/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
20	22	1.1	16-16-12-12	0-1.1' Silt: As above, with interbedded clay layers increasing in thickness to 0.5 to 1.0 inch.
				HP = 2.5, thin (<0.5 inch) sand seam at 0.9, sand fine, trace medium.
22	24	1.9	12-14-14-16	0-1.9' Silt: As above, with interbedded/varved clay layers, sand seam 1 inch thick at 1.7,
				sand very fine, very poorly graded, silt becoming reddish gray (5 YR 5/2) below 1.0 feet.
24	26	1.4	8-9-9-10	0-0.4' Silt: As above with interbedded clay.
				0.4-1.2' Sand: Light reddish brown (5 YR 6/3), very fine grain, becoming reddish brown
				below 0.7 (5 YR 5/3), silty, poorly graded, wet, loose, HP = <0.5.
				1.2-1.4' Sand: Light reddish brown (5 YR 5/3), very fine to medium sand, moderately
				graded, some silt, wet.
26	28	0.4	12-15-15-20	0-0.4' Sand: Fine grained, poorly graded, some silt reddish brown (5 YR 5/3), 0-0.3
				blackish to green staining, wet, no odor.
28	30	1.0	10-12-14-14	0-1.0' Sand: Reddish brown (5 YR 5/3), predominantly fine grain, trace medium, trace very
				fine, very poorly graded black to green staining 0-0.8', wet, no odor.
30	32	1.0	9-8-8-8	0-1.0' Sand: Reddish brown (5 YR 4/3), fine with little very fine, very poorly graded,
				saturated, loose.
32	34	0.9	15-18-16-14	0-0.5' Sand: Brown (7.5 YR 4/3), very fine grain, very silty, sticky, somewhat loose, moderately
				graded, wet.
				0.5-0.9' Sand: Reddish brown (5 YR 5/3), fine grain with some very fine, trace silt, loose,
				poorly graded, satuared.
34	36	0.5	15-14-16-13	0-0.4' Sand: Brown (7.5 YR 4/3), very fine to fine grain, very poorly graded, very silty, sticky,
				somewhat loose, saturated.
				0.4-0.5' Sand: Brown (7.5 YR 4/3), very fine to very coarse grain, silty, very well graded,
				trace very fine gravel, subangular to subround, saturated.
36	38	0.5	14-15-15-12	0-0.5' Sand: As above, silty, very fine to very coarse grain, very well graded, trace fine
				gravel, wet.
38	40	--	7-7-9-6	No recovery.

ARCADIS

Sample/Core Log

Boring/Well AGMGT-11 Project/No. Ford/Kingsford WI001025.0022 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 1/8/04 Drilling Completed 1/8/04

Total Depth Drilled 40 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 foot by 2 inch

Sampling Interval continuous feet

Land-Surface Elev. 1057.41 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Mike Mueller Helper Jason Drabek

Prepared By Bruce Evans/Andy Mumpy

Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
0	2	--	--	Blind Drill: Auger cuttings: Silt (topsoil); strong brown (7.5 YR 4/6), granular, trace organics, rootlets, trace fine gravel, subangular to subround, frozen, dry to moist, loose, trace very fine to coarse sand.
2	4	1.5	7-7-6-5	0-0.6' Silt: As above, frozen. 0.6-1.5' Silt/Gravel: Strong brown (7.5 YR 5/6), silt grainy, very sandy with very fine grain sand, gravel fine to coarse, subangular to subround, trace rootlets, loose, moist, HP = 0.3.
4	6	0.6	8-10-11-15	0-0.6' Silt/Gravel: As above.
6	8	0.2	14-14-14-14	0-0.2' Sand: Strong brown (7.5 YR 5/6), predominately very fine, some fine, trace medium to coarse, silty, some gravel, fine to coarse, angular to subround, cobbles to 2" diameter, loose, moist, sand moderately graded.
8	10	0.5	13-13-19-21	0-0.5': Sand/Gravel: Strong brown (7.5 YR 4/6), mostly fine sand, some very fine, trace medium to coarse, silty, gravel angular to subround, loose, HP = 0.1, sand moderately graded, mixture well graded overall, moist.
10	12	--	16-15-17-21	No recovery, sand/gravel as above in spoon tip, sand somewhat coarser than above, predominantly fine, some medium.
12	14	0.6	10-14-13-19	0-0.2' Sand: Strong brown (7.5 YR 4/6), very fine to coarse grain, silty, sticky, very well graded, trace gravel fine to coarse, subangular to subround, trace cobble to 2 inch diameter, saturated, loose, HP = 0.1. 0.2-0.6' Sand: Strong brown (7.5 YR 4/6), sand very fine grained, silty, sticky, some gravel fine to coarse, angular to subround, trace cobbles to 2 inch diameter, saturated, loose, poorly graded mixture.
14	16	0.5	12-14-14-16	0-0.3' Sand: Strong brown (7.5 YR 4/6), as above, very fine grained, very silty, sticky, some fine gravel, angular to subround, saturated, loose, poorly graded mixture.

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Sample/Core Log (Cont.d)

Boring/Well AGMGT-11 Page 2 of 2

Prepared by Bruce Evans/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
				0.3-0.5' Sand: As above, but with much more gravel, fine to coarse gravel.
16	18	1.2	16-17-17-16	0-1.2' Silt: Reddish gray (5 YR 5/2) with traces of interbedded clay layers, yellowish red
				(5 YR 4/6), silt grainy, sticky, soft, HP = 0.7, silt somewhat plastic, wet, clay layers very thin
				(mm thickness), clay is plastic.
18	20	0.5	18-20-15-17	0-0.5' Silt: As above, with very minor clay layers.
20	22	--	--	Pushed Shelby tube.
22	24	1.2	16-15-15-19	0-1.2' Silt/Clay: Silt reddish brown (5 YR 5/3), clay yellowish red (5 YR 4/6), interbedded silt
				and clay, very uniformly interbedded layers, clay 0.2-1.0" thick, silt 0.5 to 1.0 inch thick, silt
				somewhat grainy, clayey, moderately plastic, clay plastic yet fissile-looking on broken
				surfaces, wet, clay HP = 2.0, silt HP = 1.5.
24	26	0.2	15-16-17-15	Silt/Clay, as above.
26	28	1.4	14-13-12-11	0-0.2' Silt/Clay, as above.
				0.2-0.7' Sand: Reddish brown (5 YR 5/3), very fine grained, silty, sticky, loose, HP = 0.1,
				wet, poorly graded.
				0.7-1.1' Sand: Brown (7.5 YR 4/4), mostly fine to medium grained, poorly graded, loose,
				wet, traces of 0.2-0.5 inch silt seams.
				1.1-1.4' Sand: Dark brown (7.5 YR 3/3), very fine grain, very silty, somewhat sticky,
				poorly graded, loose, wet.
28	30	0.4	5-7-8-5	0-0.4' Sand: Brown (7.5 YR 4/3), fine grained, some very fine, trace silt, wet, green to
				black staining 0.1-0.4', very poorly graded, loose, no odor.
30	32	0.8	7-6-7-7	0-0.2' Sand: Brown (7.5 YR 4/3), very fine grained, very silty, HP = 0.5, loose, wet, very
				poorly graded. Possible slough from above.
				0.2-0.8' Sand: Reddish brown (5 YR 5/3), fine grained, very poorly graded, trace very fine
				sand, wet, loose,
32	34	0.9	10-13-12-15	0-0.9' Sand: Reddish brown, as above.
34	36	0.8	18-17-16-19	0-0.8' Sand: Reddish brown (5 YR 5/3), fine grained, some very fine, some silt, trace silt
				banding in places, loose, wet, poorly graded.
36	38	2.0	17-16-17-17	0-2.0' Sand: As above, but finer, primarily very fine to fine grain, poorly graded, loose,
				wet, more silty from 1.0-2.0.
38	40	0.4	15-14-14-15	0-0.4' Sand: Reddish brown (5 YR 4/3), very fine grain, very silty, sticky but loose, wet,
				poorly graded.

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Sample/Core Log

Boring/Well AGMGT-12 Project/No. Ford/Kingsford WI001025.0022 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 1/8/04 Drilling Completed 1/8/04

Total Depth Drilled 40 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2 foot by 2 inch Sampling Interval continuous feet

Land-Surface Elev. 1052.59 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Mueller Helper Jason Drabek

Prepared By Bruce Evans/Andy Mumpy Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
0	2	--	--	Blind drill: Auger cuttings: Sand/gravel: Strong brown (7.5 YR 4/6), frozen topsoil, sand
				mostly very fine to fine, very silty, some medium to coarse sand, gravel fine to coarse,
				angular to subrounded, some organic material, rootlets, loose, moist, well graded
				overall, frozen to approximately 6 inches.
2	4	0.2	15-25-30-28	0-0.2' Sand/Gravel: As above.
4	6	0.7	25-20-18-23	0-0.7' Sand: Strong brown (7.5 YR 4/6), very fine to fine grained, some medium to coarse
				grained in bedding, silty, trace fine gravel, angular to subround, moderately graded, loose,
				moist, trace cobbles 1.5 inch diameter.
6	8	0.3	8-7-7-7	0-0.3' Sand: As above, wet.
8	10	--	15-25-25-30	No recovery.
10	12	0.3	20-25-23-24	0-0.3' Sand/Gravel: Strong brown (7.5 YR 4/6), very fine to coarse sand, silty, gravel fine
				to coarse, angular to subround, well graded, wet, loose, possilbe slough.
12	14	1.0	13-15-18-16	0-1.0' Silt/Clay: Silt reddish brown (5 YR 4/3), clay yellowish red (5 YR 4/6), silt grainy,
				sticky, soft , HP = 0.5, clay layers interbedded (thinly) and varved, clay plastic yet fissile
				looking on broken surfaces, clay HP = 1.5, wet.
14	16	1.0	10-14-10-16	0-1.0' Silt/Clay: As above, interbedded, clay layers 0.2-0.5 inches thick.
16	18	1.0	13-11-10-9	0-1.0' Silt/Clay: As above, interbedded, clay layers becoming thicker up to 1.2 inches.
18	20	0.1	14-12-11-15	0-0.1' Silt/Clay: As above, interbedded.
20	22	0.8	11-12-14-15	0-0.8' Silt/Clay, as above, interbedded, traces of intervarved clay with color pinkish gray
				(5 YR 6/2), clay layers becoming thinner below 0.4, sand seam 0.4" thick at 0.5, sand
				medium grain, well sorted.
22	24	1.0	12-13-13-14	0-0.2' Silt/Clay: Interbedded, as above.
				0.2-0.6' Sand: Reddish brown (5 YR 5/3), very fine grain, very poorly graded, some silt,

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Sample/Core Log (Cont.d)

Boring/Well AGMGT-12 Page 2 of 2

Prepared by Bruce Evans/Andy Mumpy

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
				wet, loose.
				0.6-0.65' Silt/Clay seam.
				0.65-1.0' Sand: Dark reddish gray (5 YR 4/2), very fine to medium grain, moderately graded,
				silty, loose, wet.
24	26	0.3	2-3-7-6	0-0.3' Sand: Reddish brown (5 YR 5/3), fine grain, little very fine, very poorly graded,
				some green to black staining throughout, loose, wet, no odor.
26	28	1.2	12-13-13-16	0-1.2' Sand: Reddish brown, as above, traces clay seams at 0.2 and 1.0, green to black
				staining throughout, wet.
28	20	1.0	12-14-14-14	0-1.0' Sand: As above, few thin (1 to 2 mm) clay seams intervarved throughout.
30	32	--	15-17-18-16	No recovery.
32	34	--	14-13-12-15	No recovery. Sand/Gravel in spoon tip, sand fine to coarse, gravel fine.
34	36	0.6	12-13-12-11	0-0.1' Sand/Gravel: Brown (7.5 YR 4/3), very fine to very coarse sand, some silt, gravel
				fine to coarse, subangular to subround, loose, well graded, saturated.
				0.1-0.5' Sand: Reddish brown (5 YR 5/3), predominately medium grain, some very fine
				to fine, poorly graded, loose, wet.
				0.5-0.6' Sand/Gravel: As above in 0 to 0.1.
36	38	0.4	20-15-17-16	0-0.4' Sand: As above in 0.1-0.5.
38	40	0.3	10-11-11-12	0-0.3' Sand/Gravel: As above, brown (7.5 YR 4/3), very fine to very coarse sand, some silt,
				gravel fine to coarse, subangular to subround, loose, well graded, saturated.

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SAMPLE/CORE LOG

Boring/Well GPR-1 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 10/07/97 Drilling Completed 10/07/97

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 24" x 2" Sampling Interval Continuous

Land-Surface Elev. 1100.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Oidar

Prepared By Tim Jones/Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	--	--	Top Soil. No sample taken. Fine sand with some well rounded gravel - cuttings.	
2	4	8"	17-7-7-8	Sand. Fine to medium, loose very slight damp, trace silt, some to much well rounded fine gravel variable composition. Reddish brown (5 YR 4/4) weak ran HCL.	4
4	6	10"	6-5-4-7	Sand. Fine to medium, as above, with some coarse sand with some to much fine gravel.	4.5
6	8	16"	27-20-14-8	Gravel. Variable composition coarse gravel angular (shattered) to well rounded. medium to coarse sand matrix, loose, dry, forms approximately 15 percent of sample, reddish brown (5 YR 4/4).	4
8	10	16"	15-12-8-9	0-2": Sand. Fine to medium loose, damp, trace fine ravel, no reaction to HCL, reddish brown (5 YR 5/4).	4
				2-12": Gravel. Coarse, as above (6-8).	
				12-16": Sand and Gravel. Coarse sand, very damp loose, well rounded, sand yellowish red (5 YR 5/6) fine variable composition gravel subangular to well	
10	12	12"	2-4-8-7	0-4": Sand. Fine to medium with wood fragments, slough.	4
				4-12": Sand and Gravel. As above in 12-16" interval. Color brown (7.5 YR 5/3). No HCL reaction, loose, very damp.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-1 Page 2 of 3

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
12	14	14"	14-16-10-9	0-4": Sand. Fine to medium, slough.	3
				4-5": Pebble over.	
				5-9": Sand. Fine to medium with some coarse sand, some fine gravel, damp, loose, no HCL reaction, light brown (7.5 YR 6/3).	
				9-14": Sand. Fine to medium with traced to some silt, brown (7.5 YR 5/3), very damp with some fine gravel.	
14	16	11"	8-7-10-11	Gravel. With some sand, damp gravel variable compostion,some coarse gravel (shattered) and fine gravel, well rounded. Matrix of fine to coarse sand, brown (7.5 YR 5/3). No HCL reaction.	4
16	18	12"	17-9-11-10	0-6": Silt. Medium stiff to stiff, friable damp, brown (7.5 YR 5/3) no reaction with HCL.	70
				6-11": Sand. Silty fine, very well sorted, stiff, no HCL reaction, brown (7.5 YR 5/3).	
				11-12": Sand. Fine, loose, slight damp, well sorted, pink to light brown (7.5 YR 6.5/3). No HCL reaction.	
18	20	16"	11-14-10-7	0-16": Sand. Fine as above, with silt lenses at 7" and 11".	10
20	22	14"	13-8-8-10	0-14": Sand. Fine to medium, very well sorted, loose, damp, trace coarse sand, no HCL reaction, pinkish grey (7.5 YR 7/2).	40
22	24	11"	4-5-7-14	Sand. As above, slightly damp.	50
24	26	18"	6-6-10-11	Sand. As above, but with some fine gravel, well rounded variable composition, no HCL reaction.	105
26	28	14"	4-7-13-14	Sand. As above, trace coarse well rounded gravel.	17
28	30	7"	10-14-8-7	0-7": Sand. As above, with pebble in last 1" of spoon.	4
30	32	16"	6-7-17-16	Sand. As above at top becoming gravel at base with much fine to coarse sand, loose, slightly damp, no HCL reaction. Gravel variable composition, subangular to subrounded.	4
32	34	16"	8-8-9-10	0-11": Sand and Gravel. Coarse sand and fine well rounded to subangular variable composition gravel, some medium and fine sand damp, light brown (7.5 YR 6/3).	3

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-1 Page 3 of 3

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				11-16": Sand. Fine to medium (trace gravel) pinkish grey, (7.5 YR 6.5/2) loose damp, some coarse sand.	
34	36		10-10-20-20	No Recovery.	
36	38	20"	6-7-13-19	Sand. Fine to medium, loose, damp, some coarse sand, trace fine gravel, pinkish grey (7.5 YR 7/2).	25
38	40	17"	7-8-13-15	0-7.5": Sand and Gravel. Coarse to medium sand, with fine gravel. Loose damp sand coarse to medium pinkish grey (7.5 YR 6/2) gravel well rounded to subrounded variable composition.	75
				7.5-17": Silt. Sandy, medium stiff (HP = 1.0) friable, brown (7.5 YR 5/3) saturated moderate HCL reaction.	
40	42	6½"	13-18-25-8	0-6½": Silt. Sandy, as above.	400
42	44	17"	1-7-13-20	0-17": Silt. Sandy to silty sand with clay lenses at 5-5½" and 14-14½". Medium stiff (TCL = 0.75) saturated brown (7.5 YR 5/3) moderate HCL reaction. Clay, yellowish red (5 YR 4/6) strong HCL reaction platy, silt to very finely laminated.	600
44	46	19"	5-6-6-7	Sand. Silty, sandy silt as above, thin clay lenses (clay ¼") at 3", 6" and 14", moderate HCL reaction in silt, strong reaction in clay.	400
46	48	24"	5-6-6-7	Silt. Sandy, as above, no clay lense.	125
48	50	24"	5-5-6-7	Silt. Sandy, as above, clay at 18-18½".	
				End of hole 50' bgs.	

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SAMPLE/CORE LOG

Boring/Well GPR-2 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 10/08/97 Drilling Completed 10/08/97

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 24" x 2" Sampling Interval Continuous

Land-Surface Elev. 1088.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Oidar

Prepared By Tim Jones/Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	6"	1-2-1-1	0-6": Top Soil. Sandy trace to some silt, damp, loose to very soft, brown (7.5 YR 4/2), no reaction with	6.5
2	4	24"	2-2-1-2	0-6": Top Soil. As above, slough?	7
				6-8": Sand. Fine silty, soft, friable damp, very well sorted, no HCL reaction, brown (7.5 YR 4/4).	
				8-11": Sand. Fine silty, soft HP (0.8) damp, very well sroted, strong brown (7.5 YR 5/8).	
				11-24": Sand. fine to medium, color as above, loose, damp, very well sorted. No HCL reaction, trace fine gravel, coarse sand.	
4	6	24"	4-5-4-3	0-6.5": Sand. Silty, slough (same material as in top of previous sample).	8
				6.5-24": Sand. As 11" to 24" above but with some very fine gravel, strong brown (7.5 YR 5/6).	
6	8	20"	3-4-7-8	0-9": Sand. Fine to medium, as above.	5.5
				9-13": Sand. Fine, loose slight damp, very well sorted, trace medium sand, no HCL reaction, some well rounded gravel, very dark composition at base, light brown (75 YR 6/4).	
				14-17": Silt. Soft friable, dry strong brown (7.5 YR 4/6), slight reaction, with HCL.	
				17-20": Sand. Fine silty, brown (7.5 YR 5/4) very soft HP (<0.2) friable, very well sorted, slight damp.	
8	10	17"	5-4-3-5	0-5": Sand. Slough?, fine as 9-13" above.	0.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-2 Page 2 of 3

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				5-17": Sand. fine silty, as 17-20" above, slight damp.	
10	12	20"	3-3-7-9	0-20": Sand. Silty as above, damp, weak HCL reaction.	6
12	14	21"	4-5-3-4	0-9": Sand. Silt, as above, damp, no HCL reaction ½" silt lense 4.5-5.	5.5
				9-21": Silt. With clay lenses, silt strong brown (7.5 YR 4/6). Medium stiff damp, no HCL reaction clay: at (13.5 to 13.75). No HCL reaction soft (HP = 0.5) reddish brown (5 YR 4/4) some to much fine sand.	
14	16	23"	4-2-3-3	0-23": Silt. Sandy, as above clay lenses (8.1" to 8.3") (12.5-12.6) (18-18.3) (20.9-21) (21.5-21.7) top 7" very damp, lowest 7" saturated, lowest 4" brown own (7.5 YR 4/5) moderate to strong HCL reaction in lowest 4".	8
16	18	22	5-7-9-6	0-5.5": Silt. Strong brown, as top of previous sample, slough.	
				5.5-22": Clay. Silt as above with <1/8" lenses of clay at 9", 13", 15" and 17". Silt/Clay strong HCL reaction, coarse sand, lenses at 12.5-12.8, 16.8-17" well sorted loose saturated brown (7.5 YR 5/3).	
18	20	24"	7-10-6-9	0-6": Sand. Silty, slough.	5.5
				6-24": Silt/Clay. Sandy interlayered sandy silt turns to becoming fine silty sand at 16" bgs. Saturated, very stiff (HP = 2.6). Clay lenses 3 <1/8" thick 6-7", 7-7.5, 9-10.2, 11-12, 13-13½, 17-18, 20-21, 22-23.5. Clay silt strong HCL reaction.	
20	22	22"	4-7-5-3	0-2": Sand. silty slough.	6
				2-7": Silt. Sandy as in sample above.	
				7-10": Sand. Silty as above.	
				10-22": Silt. Sandy as above, clay at 7-8" 2 seams <1/8" thick, individual seams 14½-15, 16-17, 17.9-18.2, moderate HCL reaction in silt, strong reaction in	
22	24	24"	3-4-6-5	Sand. Silty, sandy silt interbedded with clay, units as above, although silty very finely laminated fine sand lense at 14.3-14.5". Second sand seam 22½-23 strong brown (7.5 YR 5/6) loose, saturated, very well sorted,	5.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-2 Page 3 of 3

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				moderate HCL reaction, saturated, very stiff (HP = 3.2).	
24	26	20"	7-5-8-10	0-6": Sand. Silty, clay very soft slough.	4
				6-13": Silt. As above, laminated with strong HCL reaction, medium stiff to stiff (HP = 1.1).	
				13-20": Sand. Silty fine, brown (7.5 YR 4/3), very stiff (HP - 2.6) moderate HCL reaction.	
26	28	23		0-21": Sand. Silty fine, grading to fine sand to much silt toward base, saturated. Stiff, HP = 1.5. Brown (7.5 YR 4/4).	1
				21-21.1": Clay. Red lenses.	
				21.1-23": Sand. Fine, brown (7.5 YR 5/4) saturated some to much sand, well sorted, weak HCL reaction.	
28	30	24"	3-6-6-8	Sand. Fine to medium, as above, becoming medium sand at base, loose, saturated, trace coarse sand, trace gravel, no HCL reaction, silt lense 11.5-12".	2.2
30	32	20"	10-8-8-12	Sand. Fine to medium, as above. Saturated.	2.5
32	34	24"	3-5-8-12	0-24": Sand. Fine to medium as above, saturated, trace silt.	3
34	36	24"	5-7-6-6	0-8": Slough (Sand).	2.3
				8-26": Sand. Fine to medium as above, saturated. No gravel.	
36	38	24"	6-9-12-14	0-24": Sand. Saturated fine to medium, as above.	3
38	40	24"	5-4-9-14	0-24": Sand. Saturated fine to medium, as above.	2.3
40	42	24"	3-6-4-7	0-24": Sand. Saturated fine to medium, as above.	1.9
42	44	24"	6-4-4-5	0-24": Sand. Saturated fine to medium, as above.	2
44	46	12"	7-6-6-8	0-12": Sand. Saturated fine to medium, as above.	1.9
46	48	19"	4-7-7-8	0-19": Sand. Saturated fine to medium, as above.	2.5
48	50	26"	7-8-8-10	0-17": Sand. Saturated fine to medium, as above.	7
				17-24": Sand and Gravel. Poorly sorted loose saturated, trace silt, no HCL reaction, gravel, variable composition, subangular to well rounded, matrix, coarse to fine sand. Brown (7.5 YR 3/4).	
				End of Hole 50' bgs.	

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SAMPLE/CORE LOG

Boring/Well GPR-3 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 10/09/97 Drilling Completed 10/09/97

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 24" x 2" Sampling Interval Continuous

Land-Surface Elev. 1121.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotary Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Oidar

Prepared By Tim Jones/Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	24	1-2-1-1	0-5": Top Soil. Silty sand, black to very dark grey (10 YR 3/1) loose, friable, damp, no HCL reaction.	5
				5-9": Sand. Silt, very soft, slight friable, trace fine gravel, strong brown (7.5 YR 4/6), damp, no HCL reaction.	
				9-12": Sand. silt, very well sorted, very damp, very soft, strong brown (7.5 YR 4.5/6). No HCL reaction.	
2	4	4"	1-3-4-3	0-4": Sand. Silty, as above.	5
4	6	13"	6-3-4-5	0-2": Sand. Silty, as above.	5.5
				2-13": Sand. With some gravel, fine to coarse sand with some to much fine gravel. Subangular to well rounded, variable composition, sand, yellowish brown (10 YR 5/8) trace coarse gravel, damp, loose.	
6	8	13	7-8-8-4	0-5": Sand. Silty, slough.	4
				5-13": Sand. With much fine gravel, as above, but mainly medium to coarse sand, some fine, dry.	
8	10	7	5-7-9-8	0-7": Sand and Gravel. As above but coarser some coarse gravel, dry, no HCL reaction.	5
10	12	11	7-5-3-9	0-11": Sand. Coarse with some fine gravel, some medium to fine sand, loose, slight damp, no HCL reaction, very pale brown (10 YR 7/6).	4.5
12	14	0	4-7-8-9	No recovery.	
14	16	7	5-10-12-9	0-6.5": Sand. Coarse, as 10-12", slight damp.	4.1

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-3

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				6.5-7": Sand. Fine, very well sorted, loose slight damp, pale brown (10 YR 6/3) no HCL reaction.	
16	18	12"	5-7-7-4	0-10": Sand. Coarse to medium with much fine gravel, trace coarse gravel, loose, damp, no HCL reaction, brown (7.5 YR 5/4).	2.5
				10-12": Sand. Coarse to fine, loose, damp, trace fine gravel, no HCL reaction, light reddish brown (5 YR 6/4).	
18	20	9"	10-14-8-6	0-9": Gravel. With some to much sand. Fine gravel with some coarse gravel, well rounded to angular (shattered) variable composition. Loose some damp fine to medium sand matrix. Reddish brown (5 YR 5/4). No HCL reaction.	3.2
20	22	11	12-13-10-10	0-3": Sand. Fine, very well sorted, loose, slight damp, no HCL reaction, light reddish brown (5 YR 6/4).	2.25
				3-11": Sand and Gravel. Coarse to medium sand with subrounded to well rounded fine gravel, some fine sand, loose, dry, yellowish brown (10 YR 5/4) no HCL reaction.	
22	24	7"	8-10-11-9	0-7": Sand. Coarse to fine, some well rounded to subrounded variable composition gravel, loose damp, no HCL reaction, light yellowish brown (10 YR 6/4).	2
24	26	12"	14-9-9-7	0-12": Sand. As above, but predominatly fine to medium sand.	2
26	28	15½"	4-9-8-10	0-4": Sand. As above.	2
				4-15½": Sand. Fine with some silt, loose very well sorted, slight damp, no HCL reaction, light brown (7.5 YR 6/4).	
28	30	15"	8-10-9-10	0-15": Sand. Fine as above, damp.	2.5
30	32	18"	8-9-10-7	0-16½": Sand. As above, but pink (7.5 YR 7/3).	
				16½-18": Silt. Silt very soft (HP = 0.2) damp, brown (7.5 YR 4/4) no HCL reaction.	
32	34	15½"	7-6-7-4	0-15½": Sand. fine with some silt, loose slight damp, pink (75 YR 7/3) fine silty laminations at 6½ to 7½". No HCL reaction.	2
34	36	½"	13-16-14-15	No Recovery. Sand as above, recovered from shoe of spoon.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-3

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
36	38	18"	10-12-14-13	1-3": Sand. Fine as above.	3
				3-9": Silt. Damp, medium to stiff, (HP = 1.0) strong brown (7.5 YR 4/6). Red clay lenses 6-6.3". No HCL reaction in clay or silt.	
				9-18": Sand. Fine as 1-3".	
38	40	15"	8-9-7-6	Sand. Fine as above, damp thin (<1/8") laminae (sand) every ½" approximately, some dipping, cross stratification.	4
40	42	19"	8-10-9-11	0-19": Sand. Fine as above, without laminae, slight damp.	4
42	44	18"	10-13-12-7	0-16": Sand. Fine, as above.	2.5
				16-18": Sand. With silt, strong brown (7.5 YR 4/6), medium stiff, (HP = 10) damp, moderate HCL reaction.	
44	46	18"	10-9-7-7	Sand. Silt, fine, as above, interbedded silt 0-3" and 5-8" laminae becoming thinner and more widely spaced. Sand graded up into silt >20 cycles noted between 9½ and 18" lowest 2" sand, no HCL reaction in sand, moderate reaction in silt, Photo #12.	2
46	48	18"	9-7-7-6	Sand/Silt. As above although sand predominant. Two silt layers ¼" thick from 2-3½" very damp.	2.5
48	50	17"	6-8-7-4	0-17": Sand. As above, saturated.	2.2
				End of Hole 50' bgs.	

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SAMPLE/CORE LOG

Boring/Well GPR-4 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 10/09/97 Drilling Completed 10/10/97

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 24" x 2" Sampling Interval Continuous

Land-Surface Elev. 1091.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotary Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Oidar

Prepared By Tim Jones/Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	15"	1-1-1-1	0-3": Top Soil. with trace coarse gravel, subanuglar, moist, trace fine sand, dark greyish brown (10 YR 4/2).	1.5
				3-11": Sand. Fine with much silt, loose, moist, trace fine to coarse gravel, subangular to subrounded, no HCL reaction, color as above, moist.	
				11-15": Sand. As above, brownish yellow (10 YR 4/6) trace gravel absent, dry.	
2	4	18"	2-1-3-1	0-6": Sand. Fine with silt slough.	1.5
				6-18": Sand. Fine, dry, loose, very well sorted, no HCL recovery, yellow (10 YR 8/8).	
4	6	16"	4-2-2-3	0-2": Sand. Fine, with silt slough.	2
				2-16": Sand. Fine, as above, dry, no HCL recovery.	
6	8	13"	4-7-8-5	0-2": Sand. Fine with silt, slough.	1.5
				2-13": Sand. Fine to medium, dry, loose, trace fine to coarse gravel, subanuglar well sorted, trace coarse sand, no HCL recovery yellow (2.5 Y 7/6).	
8	10	16"	7-6-7-9	0-5": Sand. Fine with silt slough.	1.25
				5-16": Sand. Medium to coarse, loose, dry, well sorted, reddish yellow (7.5 YR 7/6), no HCL reaction, trace fine gravel, subangular.	
10	12	16"	8-6-7-3	0-2": Sand. Fine with silt, slough.	1.5
				2-13.5": Sand. Medium to coarse, as above, dry.	
				13.5-16": Sand, fine, dry, loose, very well sorted, pink (7.5 YR 8/4) no HCL reaction.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-4

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
12	14	17"	7-4-4-8	0-1": Sand. Fine with silt, slough.	2.5
				1-17": Sand. Coarse to fine, with fine gravel, subangular to subrounded, pink (7.5 YR 7/4) damp, loose, no HCL reaction.	
14	16	11"	3-4-3-6	0-1": Sand. Fine with silt, slough.	1.5
				1-16": Sand. Coarse to medium, loose, moist, trace fine gravel, yellow (10 YR 7/6) no HCL reaction, gravel, subrounded.	
16	18	14"	4-7-6-5	0-1": Sand. Fine with silt, slough.	1.5
				1-14": Sand. Coarse to medium, as above, moist.	
18	20	0		No recovery.	
20	22	2"	50/8"	0-2": Sand. Fine with silt, slough.	
22	24	16"	10-14-14-13	0-1": Sand. Fine with silt, slough.	2
				1-16": Sand. Fine, moist, loose, very well sorted, no HCL recovery, pink (7.5 YR 7.5/4).	
24	26	18"	5-6-9-9	0-2": Sand. Medium to coarse, slough.	1.5
				2-18": Sand. Medium to coarse, moist, loose, well sorted, trace fine gravel pinkish white (5 YR 8/2). No HCL recovery.	
26	28	15"	6-8-9-14	0-10": Sand. Coarse, moist, loose, poorly sorted, no HCL reaction, very pale brown (10 YR 8/3).	1.75
				10-15": Sand. Coarse, as above, trace fine gravel subangular to well rounded, color as above.	
28	30	15"	8-10-9-9	0-1": Sand. Coarse, slough.	1.25
				1-15": Sand. Fine to medium, loose, moist, trace fine gravel, no HCL reaction, very pale brown (7.5 YR 4/3).	
30	32	15"	8-10-9-5	1-15": Sand. Fine to medium as above, moist.	1.25
32	34	13"	10-11-15-12	0-2": Sand. Medium slough.	1
				2-13": Sand. Fine to medium with fine gravel, loose, mosit, well sorted, subanuglar, very pale brown (10 YR 7/4) to rounded.	
34	36	13"	8-14-7-9	0-5": Sand. Medium to coarse sand with gravel, slough.	2
				5-13": Sand. Fine with some silt, dry, loose, friable, no HCL reaction, light reddish brown (5 YR 6/4).	
36	38	14"	8-10-12-8	0-3": Sand. Medium to coarse slough.	1.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-4 Page 3 of 3

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				3-14": Sand. Fine with some silt, as above, dry.	
38	40	16"	7-6-9-10	0-2": Sand. Medium to coarse, slough.	15
				2-16": Sand. Fine with some silt, moist becoming very moist, with depth at 14 to 16".	
40	42	8"	7-10-12-10	0-1": Sand. Medium to coarse slough.	2.5
				1-8": Sand. Fine with some silt as above, very moist.	
42	44	16"	8-5-4-3	0-3": Sand. Medium to coarse, slough.	4
				3-10": Sand. Fine with some silt, as above, saturated.	
				10-16": Silt. Medium stiff (HP = 1.0), reddished brown (5 YR 4/4) saturated, no HCL reaction.	
44	46	18"	7-5-7-3	0-7": Sand. Medium to coarse, slough.	3
				7-18": Sand. Fine with some silt, loose, saturated, reddish brown (5 YR 5/4). No HCL reaction.	
46	48	17"	4-5-9-7	0-9": Sand. Moderate to coarse, slough.	15
				9-17": Silt. Stiff (HP = 1.25) moderate HCL reaction, brown (7.5 YR 4/3) saturated clay lense at 13-13.5", moderate HCL reaction, yellowish red (5 YR 4/6), trace to some fine sand.	
48	50	19"	7-4-4-3	0-2": Sand. Fine with silt, slough.	3.5
				2-10": Sand. Silty, medium (HP = 1.0) saturated brown (7.5 YR 4.5/4).	
				10-13": Silt. Very stiff, trace clay, weak to moderate HCL reaction, saturated, color as above.	
				13-19": Sand. Silty as above, saturated.	
				End of boring at 50' bgs.	

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SAMPLE/CORE LOG

Boring/Well GPR-5 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 10/08/97 Drilling Completed 10/08/97

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 24" x 2" Sampling Interval Continuous

Land-Surface Elev. 1091.00 feet [ ] Surveyed [X] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotary Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Oidar

Prepared By Tim Jones/Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	22"	2-1-2-1	0-4": Top Soil. Silty sand, trace fine gravel, moist.	7
				4-9": Sand. Silty, trace fine gravel, subrounded to angular, moist, loose (10 YR 3/4) dark yellowish brown.	
				9-11": Sand. Fine, silty, trace gravel moist, yellowish brown (10 YR 5/4).	
				11-16": Sand. Fine, silty, trace gravel, as above.	
				16-22": Silt. Fine sandy, dry, light, loose olive brown (2.5 YR 5/6), no HCL reaction.	
2	4	21"	3-4-2-2	0-5": Top Soil. Slough, as above.	
				5-10": Sand. Fine silty, as above, dry, grades into fine sand, with depth.	
				16-21": Sand. Fine, moist, loose, brown yellow (10 YR 6/8) no HCL reaction.	
4	6	19"	6-7-7-5	0-9": Sand. Silty, top soil, slough, dry.	1
				9-19": Sand. Fine, as above, dry, loose, no HCL reaction, brownish yellow (10 YR 6/8) trace silt.	
6	8	17"	6-5-5-7	0-7": Top Soil. Silty sand, slough.	1
				7-13": Sand. Fine, some silt, moist, loose, no HCL reaction, trace fine gravel yellowish brown (10 YR 5.5/8).	
				13-17": Sand. Fine silty, trace fine gavel, strong brown (7.5 YR 5/8) slight HCL reaction, very soft.	
8	10	13"	5-6-6-8	0-3": Sand. Fine silty, slough.	1

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-5

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				3-6.5": Gravel. Coarse, class 1-3, loose.	
				6.5-13": Sand. Fine with trace medium to coarse sand, mixed with some coarse gravel, mostly fine, light brown (7.5 YR 6/5) moist, loose, gravel is subangular to rounded, no HCL reaction.	
10	12	16"	6-4-4-9	0-5": Top Soil. Silty, sand, slough.	1
				5-9": Sand. Fine, with trace medium to coarse, as above trace silt at 9-10".	
				9-16": Sand. Fine, moist, loose, pink (7. 5YR 7/4) very well sorted.	
12	14	13"	5-4-3-5	0-5": Sand. Fine slough as above, moist.	1.5
				5-13": Sand. Fine, moist, loose, very well sorted, no HCL reaction, pink (7.5 YR 7/3).	
14	16	1"	4-7-10-9	Sand. Fine as above, moist.	1
16	18		10-11-12-20	No recovery.	
18	20	17"	6-10-9-9	0-2": Sandy slough.	
				2-17": Sand. Fine to coarse, trace fine to coarse gravel, loose, grave is subanuglar to subrounded, light grey (2.5 Y 7/2), no HCL reaction, gravel has variable composition.	
20	22	16"	4-5-8-7	0-3": Sand. Fine to coarse, slough.	2
				3-16": Sand. Fine to coarse, as above, moist saturated at 9-10", no HCL reaction, loose.	
22	24	7"	5-7-9-12	0-7": Sand. Fine to coarse, saturated, trace silt, trace fine to coarse gravel, loose, gravel is variable composition, subangular to subrounded, light brownish grey (2.5 YR 6/2) no HCL reaction.	2
24	26	7"	6-7-10-11	0-7": Sand. Fine to coarse, as above, loose, saturated.	1.5
26	28	22"	4-3-5-7	0-6": Sand. Fine to coarse, slough, as above.	5.5
				6-15.5": Sand. Fine silty, saturated soft (HP = 1.0) reddish brown (5 YR 6/3) no HCL reaction.	
				15.5-20": Sand. Silt with trace fine sand, saturated medium stiff, clay lense at 17-18" no HCL reaction, strong brown (7.5 YR 4/6).	
				20-22": Sand. Fine silty, as above.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-5

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
28	30	16"	4-6-7-5	0-3": Sand. Fine to coarse, slough, saturated.	4.5
				3-16": Sand. Fine silty, as above, very soft to soft, saturated, no HCL reaction.	
30	32	24"	4-7-5-3	0-8": Sand. Fine to coarse, silty sand slough.	5
				8-24": Sand. Fine silty, as above, satured, no HCL reaction, soft to medium soft (HP = 0.5).	
32	34	17"	7-4-3-6	0-5": Sand. Fine to coarse sand, silty sand slough.	5
				5-17": Sand. Fine silty sand, as above, saturated, grading to fine sand with much silt, no HCL reaction.	
34	36	17"	7-3-4-6	0-4": Sand. Fine silty, slough.	6
				4-17": Sand. Fine silty, as above, saturated.	
36	38	24"	7-6-10-8	0-8": Sand. Silty, slough.	6
				8-24": Sand. Fine silty to sand with much silt, saturated, soft to medium soft (HP = 1.0) color as above, no HCL reaction.	
38	40	22"	7-8-10-9	0-8": Sand. Fine silty slough.	5.5
				8-22": Sand. Fine silty, sand with much silty as above, saturated.	
40	42	19"	6-10-7-4	0-5": Sand. Fine silty slough.	8
				5-19": Sand. Silty sand with much silt, as above.	
42	44	24"	7-7-10-11	0-13": Sand. Fine silty, slough, satured.	5
				13-17.5": Sand. Fine silty as above, saturated.	
				17.5-20": Silt. Saturated, medium stiff, strong HCL reaction, color as above (HP = 1.25).	
				20-24": Clayey. Silt, medium stiff, saturated strong HCL reaction, color as above.	
44	46	24"	10-10-9-8	0-9": Sand. Fine silty, slough, saturated.	4.5
				9-24": Silt. Sandy, saturated, medium soft, strong HCL reaction, reddish brown (5 YR 5/4) clay lense at 22-24", strong HCL reaction, red (2.5 YR 4/6).	
46	48	23"	7-3-4-9	0-8": Silt. Slough, saturated.	4
				8-23": Silt. As above, saturated, moderate HCL reaction, clay lenses at 8-9", 17-17.5", 19-19.5", strong HCL reaction, color as above.	
48	50	24"		0-6": Silt. And fine sand, slough.	4.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-5

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				6-7": Sand. Fine silty, trace clay, saturated, stiff, weak HCL reaction, color as above.	
				7-24": Silt. As above, saturated, moderate HCL reaction (lay lense at 10-11", 16" (<¼"), 17-18", 19-20", stiff, strong HCL reaction.	
				End of boring at 50 bls.	

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SAMPLE/CORE LOG

Boring/Well GPR-6 Project/No. Ford Kingsford Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 10/07/97 Drilling Completed 10/08/97

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 24" x 2" Sampling Interval Continuous

Land-Surface Elev. 1092.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Oidar

Prepared By Tim Jones/Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	17"	1-0-1-0	0-5": Top Soil. Loose, damp, silty sand, dark yellowish brown (10 YR 3/4).	3
				5-17": Sand. Fine, loose, slight damp, trace silt, trace fine gravel, yellowish brown (10 YR 5/6) and very weak HCL reaction.	
2	4	24"	4-3-3-2	0-8": Top Soil. Slough.	3.5
				8-10": Sand. Silty, trace fine to medium sand, slight damp (soft HP = 0.6), no HCL reaction, dark yellowish brown (10 YR 4/6).	
				10-12": Sand. Some silt, loose, slight damp, dark yellowish brown (10 YR 4/4).	
				12-24": Sand. Silty, as 8-10 with black staining from 13-15 otherwise yellowish brown (10 YR 5/8).	
4	6	24"	5-5-6-7	0-5": Top Soil. Slough.	2.5
				5-24": Sand. Medium to fine, some coarse sand, trace fine gravel, yellowish brown (10 YR 5/8) trace silt, loose slight damp, becoming darker with depth. Yellowish brown (10 YR 5/6) no reaction with HCL, silt lense 17.5-18. Damp, soft.	
6	8	20"	5-5-5-6	0-7": Top Soil. Slough.	2.2
				7-11": Sand. As above.	
				11-20": Sand. As above, but with some coarse gravel, variable composition, subangular, lose, damp, no HCL reaction, yellowish brown (10 YR 5/6).	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-6

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
8	10	22"		0-3": Top Soil. Slough.	2.5
				3-7": Sand. As above with some fine gravel.	
				7-22": Silt. Soft to medium stiff (HP = 1.0), saturated, very weak no HCL reaction, strong brown (7.5 YR 4/6) ½" thick red clay at 15" and 17" yellowish red (5 YR 4/6).	
10	12	24"	1-1-1-7	0-2": Top Soil. Slough.	2.3
				2-24": Slit. As above, with clay lenses <¼" at 7 and 9". Silt has trace to some fine sand. Silty sand seam at 12", saturated soft (HP = 0.5).	
12	14	15"	3-5-4-3	0-2": Top Soil. Slough.	2.5
				2-15": Silt. As above, very soft to soft (HP = 0.25) becoming medium stiff with depth (HP = 0.75), saturated, with clay seams at 6, 11, 15" approximately ¼" thickness, strong HCL reaction in clay, moderate HCL reaction in silt.	
14	16	22"	4-4-4-4	0-1": Top Soil. Slough.	2.5
				1-22": Silt. As above, stiff (HP = 1.25) becoming medium stiff at depth (HP = 0.60) clay seams at 5, 9.5, 18, <¼" thickness, saturated.	
16	18	24"	2-3-5-5	0-2": Top Soil. Slough.	2.5
				2-6": Silt. Stiff (HP = 0.75), clay seam at 5, 11, 18, <1" thickness, brown (7.5 YR 4/4) fissle silt.	
				7-11": Sand. Fine silty, stiff (HP = 1.2), moist, brown (7.5 YR 4/2), 11-24" silt, as above, strong HCL reaction in clay, moderate HCL reaction in silt.	
18	20	24"	5-6-6-7	0-2": Top Soil. Slough.	3.5
				2-10": Silt. Sandy, soft to very soft, color as above, (HP = 0.2) becoming stiff at depth (HP = 1.75) moist, clay seams at 8-9, 10.5-11, 13-13.2, 15-16, 17-21" clay, very stiff (HP = 2.2) strong HCL reaction, moderate HCL reaction in silt, reddish brown (2.5 YR 4/4).	
20	22	24"	7-7-8-9	0-1": Top Soil. Slough.	2.5
				1-6": Silt. Sandy, as above, possible slough.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-6

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				6-24": Silt. Medium stiff, (HP = 1.6) to hard (HP = >4), damp, contains 50 percent clay, 50 percent silt, distinct in horizons, clay at 5-8, 9.5-10, 11-12.5, 15-15.5, 16.5-19,21-23", very stiff (HP = 2.7) clay strong reaction with HCL, moderate, HCL reaction in silt, colors as above.	
22	24	24"	5-5-7-7	1-7": Silt. Very soft, slough.	2.5
				7-14": Silt. With clay, lenses at 7-7.5, 9-9.5, 10.5-11, 15.5-16, <¼ at 17, 19.5-20, 21 <¼, 23 <¼, 24 <¼", silt is very stiff (HP = 3.5), moist, brown (7.5 YR 4/3.5), clay is moist, platy, medium stiff to stiff (HP = 1.0), reddish brown (2.5 YR 4/4) brown (2.5 YR 4/4) strong HCL reaction in clay, moderate HCL reaction in silt.	
24	26	23"	2-2-5-7	0-3": Silt. Slough.	2.5
				3-14.5": Silt. With fine laminations, moist, stiff to very stiff (HP = 2.2) color as above, clay and silt, clay lenses at 15-15.5, 16 approximately ¼", 20 <¼", lense of fine to coarse sand, trace silt, trace fine gravel, saturated. slight HCL reaction, brown (7.5 YR 4/4) clay strong HCL reaction, moderate HCL reaction in silt.	
26	28	24"	6-5-5-7	0-3": Silt. Slough.	4.5
				3-5": Silt. Soft to very soft, saturated (HP <0.25) slight HCL reaction, brown (7.5 YR 5/4).	
				7-8": Medium to coarse sand lense, loose, saturated, trace silt, color as above.	
				8-10": Sand. Silty, saturated, soft to medium stiff (HP = 0.5), 10-14" silt with clay lenses, weak to no HCL reaction, soft to medium stiff (HP = 0.5).	
				14-15": Sand. Medium to coarse, as above.	
				15-24": Sand. Silty, fine ,well sorted, saturated, no HCL reaction, strong brown, (7.5 YR 4/6).	
28	30	24"	4-2-3-2	0-10": Sand. Silty, slough.	3.5
				10-12.5": Silty. Fine sandy, saturated, very soft (HP <0.25), trace clay, no HCL reaction, strong brown (7.5 YR 4/6).	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-6 Page 4 of 5

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
				12.5-14": Sand. Silty, saturated, very soft, color as above.	
				14-20": Silt. Fine sandy saturated, soft to medium stiff (HP = 0.5).	
				20-24": Sand. Medium silty, saturated, very soft, loose, well sorted, color as above.	
30	32	19"	2-2-1-3	0-6": Silt. slough.	
				6-10": Silt. With trace clay, soft (HP = 0.4). No HCL reaction, color as above, clay lenses at 6-6.5, 8-8.5", very weak HCL reaction.	
				10-12": Sand. Medium with silt, satured, very soft to soft (HP = 0.1) color as above.	
				12-19": Sand. Fine with some to much silt, loose, saturated, strong brown (7.5 YR 4.5/6), well sorted to very well sorted.	
32	34	19"	4-3-3-2	0-5.5": Silt. Slough.	3.5
				5.5-19": Sand. Fine, as above, saturated, loose.	
34	36	16"	4-6-5-6	0-16": Sand. Fine, as above, saturated, loose.	8.5
36	38	19"	4-5-7-8	0-6": Sand. Fine, slough.	4.5
				6-8": Sand. Silty, lenses with trace clay, saturated, no HCL reaction.	
				8-19": Sand. Fine, as above, saturated.	
38	40	18"	2-5-5-7	0-6": Sand. Fine, slough.	3.5
				6-18": Sand. Fine, well sorted to very well sorted, saturated, trace fine size gravel at 12" rounded to subrounded.	
40	42	19"	2-5-5-7	0-5": Sand. Fine, sand and silt, slough.	4
				5-19": Sand. Fine, as above, saturated.	
42	44	15"	3-4-12-15	0-4": Sand. Fine, silt, slough.	4
				4-7": Sand. Fine as above, saturated, no HCL reaction.	
				7-10.5": Sand. Medium with some fine and coarse, trace fine gravel, subrounded, strong brown (7.5 YR 5.5/6) variable composition.	
				10.5-15": Sand. Medium to fine, saturated, color as above, very weak HCL reaction, loose.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-6 Page 5 of 5

Prepared by Tim Jones/Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
44	46	16"	6-9-9-9	0-6": Sand. Fine, with trace clay (possible slough).	5
				6-9": Sand. Fine as above, saturated, loose.	
				9-16": Sand. Fine to medium, as above, trace coarse sand, saturated, loose.	
46	48	15"	5-7-7-8	0-4": Sand. Fine, silt slough.	3.5
				4-15": Sand. Fine to medium, as above, saturated, loose.	
48	50	21"	7-8-9-9	0-3": Sand. Fine, slough.	4
				3-21": Sand. Fine to medium, as above, saturated, loose, trace clay at 8-10".	
				End of Boring 50' bls.	

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SAMPLE/CORE LOG

Boring/Well GPR-7 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 10/13/97 Drilling Completed 10/13/97

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 24" x 2" Sampling Interval Continuous

Land-Surface Elev. 1087.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Wayne Helper Sean

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
0	2	13"	1-0-1-1	0-6": Top Soil. Loose, very soft, silty sand, some rootlets, trace subangular gravel, dark brown (7.5 YR 3/4), no HCL reaction.	1.5
				6-11": Sand. Fine, trace silt, loose, well sorted, yellowish brown (10 YR 5/8) no HCL reaction.	
2	4	15"	1-2-2-3	0-15": Sand. Fine to medium, loose, slight moist, yellowish brown (10 YR 5/6), trace coarse sand.	3
4	6	21"	2-3-2-3	0-21": Sand. Medium, loose, becoming slightly coarser with depth, moist loose strong brown (7.5 YR 5/8), no HCL reaction.	2.5
6	8	12"	1-2-4-6	0-11": Sand. As above, with subrounded to well rounded variable composition, gravel, at 11 to 11½", moist.	3.7
				11½-12": Sand. As above, but strong brown (7.5 YR 5/6), no HCL reaction in whole sequence.	
8	10	10"	1-6-10-8	0-3": Sand. As above.	5
				3-10": Gravel. With sand, loose, moist gravel variable composition, subrounded, coarse sand matrix with much fine grave, pinkish grey (7.5 YR 6/2). No HCL reaction, many gravel fragments with greater diameter than spoon.	
10	12	6"	1-7-8-6	0-6": Sand. With gravel, gravel as above, coarse and with some medium to fine, mosit, loose greyish brown (10YR 5/2), trace silt, no HCL reaction.	4

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-7

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
12	14	13"	3-3-4-6	0-13": Sand. Fine to medium, some coarse sand, loose, pink (7.5 YR 7/3) good to moderate soring, trace fine gravel at top of sample, well rounded, variable composition, no HCL reaction, moist.	3
14	16	15"	3-4-5-7	0-11": Sand. as above, moist.	2.5
				11-15": Sand and Gravel. Fine to coarse, loose sand, moist, gravel subangular to subrounded, variable composition, color as above.	
16	18	19"	5-9-8-8	0-11": Sand with Gravel. As above, very moist, light brown (7.5 YR 6/3) gravel predominantly fine, variable composition.	4.5
				16-19": Sand. Light brown (7.5 YR 6/4) loose, saturated, some medium sand, trace silt, no HCL reaction.	
18	20	11"	2-1-3-2	0-11": Sand. Fine as above, saturated.	3
20	22	22"	3-5-6-5	0-22": Sand. As above, saturated, trace gravel, 7-8" bgs, subrounded, variable composition.	1.5
22	24	19"	3-4-6-6	0-4": Sand. Fine to medium, as above, loose satured.	1.5
				4-19": Sand. Fine to coarse, with trace silt, loose satured, trace fine gravel, no HCL reaction, light brown (7.5 YR 6/3).	
24	26	8"	4-6-6-9	0-8": Sand. As above, saturated.	≤1.0
26	28	18"	3-2-5-11	0-10": Sand. Fine to coarse, as above, saturated becoming coarse sand in lower.	1.5
				10-18": Sand. Fine, loose, saturated very well sorted, trace silt, no HCL reaction, light reddish brown (5 YR 6/6).	
28	30	14"	3-2-5-6	0-14": Sand. Fine to coarse, loose, saturated, trace silt, trace fine gravel, light brown (7.5 YR 6/4). No HCL reaction, driller notes blow-in below 30'.	1.25
30	32	18"	3-2-2-7	0-10": Sand. Fine to coarse, as above, blow in?	1.25
				10-15": Sand. Fine, very well sorted, loose, saturated, trace silt, reddish brown (5 YR 6/4), no HCL reaction.	
32	34	18½"	0-2-5-8	0-18½": Sand. Fine as above, saturated with medium sand lenses at 2-2½" and 5½-6". No HCL reaction.	≤1.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-7

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA/OVM Headspace
34	36	13"	4-6-7-8	0-13": Sand. Fine to medium, loose, saturated, blow in (?), no HCL reaction, light reddish brown (7.5 YR 6/4).	2
36	38	23"	5-7-9-13	0-22": Sand. As above.	2
				22-23": Silt. Soft (HP = 0.75) saturated weak HCL reaction, brown (7.5 YR 5/4).	
38	40	24"	6-10-12-14	0-15": Sand. Slough.	1.5
				15-24": Silt. Sand, soft to medium stiff, saturated weak HCL reaction, reddish brown (5 YR 4/6).	
40	42	19"	6-9-11-13	9-19": Silt. Sandy as above, except moderate HCL reaction, medium stiff (HP = 1.0) Platy clay lense at 5.5-6.0 strong HCL reaction, red (2.5 YR 5/8).	1
42	44	23"	4-5-7-7	0-23": Silt. Sandy as above, with clay lenses at 19-19½, 20-20½, 21-21½", clay reacts strongly with HCL. No silt reaction with HCL above clay, silt below clay, more clay rich and reacts moderately with HCL clay and clayey silt, stiff to very stiff.	1
44	46	21"	4-6-9-8	0-21": Silt. Sandy, with clay lenses as above, clay at 7½-8 and 19½-20 sandy silt becomes clay rich for approximately ½" below clay. Clay/clayey silt strong HCL reaction.	1
46	48	24"	4-7-8-8	0-24": Silt. Sandy grading up to clayey silt capped but red clay as above. Thin clay lenses (< 1/8") at 5, 7, 7½, and 21". clay strong to moderate HCL reaction, silt moderate to no reaction, silt soft (HP = 0.8) very moist.	1.5
48	50	20"	3-6-6-8	Silt. Sandy with clay lenses as above, clay at 15 and 15½" both lenses <1/8" thick.	1
				End of Hole 50' bgs.	

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SAMPLE/CORE LOG

Boring/Well GPR-8 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan
Drilling Started 11/17/97 14:25
Drilling Completed 11/17/97 17:00

Total Depth Drilled 50 feet
Hole Diameter 8¼ inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1122.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Randy
Helper Chris

Prepared By Ted Powell
Hammer Weight 300
Hammer Drop 36 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	18.00	8-6-4-2	0-2": Sand. Dark brown, loam "A" horizon moist, frozen roots, trace small gravel.	4 OVA background = 4 ppm
				2-6": Sand. Fine to coarse, some silt, dark brown (10 YR 5/3) frozen.	
				6-18": Sand. Medium to coarse, trace fine some very coarse, loose medium dense, trace small 1/8" gravel, strong brown (7.5 YR 5/6).	
2	4	14.0	4-6-6-8	Sand. Medium some coarse very coarse, trace fine, strong brown (7.5 YR 5/6) medium dense, trace 1/8" gravel, moderate sorting.	4
4	6	15.0	4-4-4-4	0-1": Sand. As above.	4
				1-11": Sand. Coarse, with medium, some very coarse, trace fine trace 1/8" gravel rounded to subrounded, moderate sorting, loose, moist, yellow brown (10 YR 5/6).	
				11-15": Sand. Very coarse, some coarse and medium, trace fine trace gravel 1/8 to 1/2" subrounded, moderate to poor sorting, loose, slight moist, dark yellow brown (10 YR 4/4).	
6	8	12	6-8-10-10	Sand. Coarse with medium fine very coarse, trace fine dark yellow brown (10 YR 4/4) moderate sorting, medium dense, trace gravel 1/8 to 1/4" round to subangular, slight moist.	4

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-8 Page 2 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
8	10	15	10-12-10-10	Sand. As above, dark yellow brown, (10 YR 4/6).	4.5
10	12	12	8-6-9-8	0-2": Sand. Coarse with very coarse, some medium trace fine, dark yellow brown (10 YR 4/6) moderate dense, moderate sorting, moist.	
				2-12": Sand. Coarse and very coarse with medium trace fine, dark yellow brown (10 YR 3/6) some gravel 1/8 to 1/2" subrounded to angular, poorly sorted, coarsens toward bottom of spoon.	5.0
12	14	10	17-10-12-12	0-3": Slough.	
				3-5": Sand. As above, very moist to wet.	5.5
				5-5.5": Sand. Light yellow brown (10 YR 6/4) fine to medium trace coarse and very coarse, trace very fine, moderate sorting, medium dense, moist.	
				5.5-8": Sand. Medium, some coarse and very coarse to fine, dark yellow brown (10 YR 4/6) trace fine gravel 1/8" subangular to subrounded, moderate sorting, moist, medium dense.	
				8-9.5": Sand. Brown (7.5 YR 5/4), fine to medium some coarse, trace very fine, moderate well sorted, medium dense, moist.	
				9.5-10": Sand and Gravel. Sand, as above, gravel angular (fractured) and subrounded, 1/2 to 3/4", moist.	
14	16	16	16-17-18-18	0-10": Sand. Coarse and very coarse, some medium trace fine, dark yellow brown (10 YR 4/6), trace gravel (approximately 10 percent) 1/4 to 1.5" subrounded to angular (fractured by spoon) medium to poorly sorted, very moist, dense.	5.5
				10-16": Sand. Medium with fine, trace very fine some coarse, light brown (7.5 YR 6/4) dense, moderate to well sorted.	
16	18	16	14-12-12-10	0-16": Sand. Medium with fine, some coarse trace very fine, trace very coarse, light brown (7.5 YR 6/3), moderate, well sorted, slight moist, medium dense, trace gravel, 1/4 to 1/2" subrounded.	6
18	20	16	10-12-10-12	Sand. Medium with coarse, trace very coarse, trace fine, yellow brown (10 YR 5/4) trace gravel 1/8 to 1/4" subrounded, medium dense, slightly moist.	5.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-8

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
20	22	15	10-8-12-10	0-5': Sand. As above, light yellow brown (10 YR 6/4).	6.0
				5-9': Sand with Gravel. Sand medium to very coarse, trace fine and very fine, gravel 1/8 to 1.5" subrounded to subangular, poorly sorted, medium dense, moist.	
				9-15': Sand. Medium with fine some coarse trace very coarse, light barown (7.5 YR 6/4) trace very fine, trace gravel 1/4 to 1/8" subangular to subrounded, well dense, moist, moderate sorted.	
22	24	11	8-20-16-14	0-2": Sand. Medium very coarse, trace fine, light brown (7.5 YR 6/4) trace fine gravel 1/8" moderate sorting.	5
				2-11": Sand and Gravel. Sand medium to coarse trace very fine and fine, some very coarse, gravel 1/8 to 1" fractured to subrounded, poorly sroted, dense, slight moist.	
24	26	8	20-18-19-17	Gravel. Predominatly fine 1/8 to 1/4" subrounded pinkish grey (7.5 YR 6/2) to angular, some of the larger pieces have been fractured, moderate well sorted, slight moist.	6.5
26	28	9	18-22-20-22	0-3": Gravel. As above.	6
				3-9": Sand. Medium some coarse trace fine and very coarse, dense, moderate well sorted, slight mosit.	
28	30	10	18-19-20-24	Sand. Medium to coarse, some very coarse trace fine, trace fine gravel 1/8" subrounded, moderate to poor sorting, slight moist, dense.	7
30	32	12	18-18-20-20	0-6": Sand. Coarse and very coarse, some medium trace fine, trace fine gravel 1/8" subround, light yellow brown (10 YR 6/4) dense moderate to poorly sorted.	6.5
				6-9': Sand. Medium some coarse, trace very coarse and fine, pink (7.5 YR 7/3) moderate soring slight moist to moist.	
				9-12": Sand. Brown (10 YR 5/3), dense fine to medium some coarse and very coarse, trace very fine trace gravel 1/8 to 1/4" (approxiamtely 10 percent) subrounded to subangular, moist, poorly sorted.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-8

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
32	34	15	19-22-22-24	0-4': Sand. Coarse very coarse, some medium, trace fine, brown (10 YR 5/3) trace gravel, 1/4 to 1/2" subrounded, dense, poorly sorted, very mosit.	6.5
				4-15": Sand. Pale brown (10 YR 6/3) medium with fine and coarse, some very coarse, some (approximately 15 percent) gravel 1/8 to 3/4" subrounded to angular poorly sorted dense, moist to very mosit.	
34	36	11	20-22-24-24	0-3": Sand. Fine to medium, trace coarse, trace very fine, trace silt, very pale brown (10 YR 6/3), medium dense, very moist, moderate well sorted.	6.0
				3-5": Clay. Very stiff, trace silt, slight plastic, slight fissile, red brown (5 YR 5/4).	
				5-7.5': Silt. Trace very fine to fine sand, trace clay in part, medium dense to dense, brown (7.5 YR 5/4).	
				7.5-11": Sand. Fine with very fine trace silt, well sorted, dense, slight moist, pink (7.5 YR 7/3).	
36	38	11	19-20-18-18	Sand. As above.	7
38	40	11	18-18-19-20	Sand. Very fine to fine, trace some silt, light brown (7.5 YR 6/4) moderate well sorted, dense, very moist.	6.5
40	42	7	18-18-26-20	Sand. As above, very moist to wet.	5.5
42	44	1	50-50-50-50	Sand. As above, very poor recovery, possible slough.	5
44	46	12	20-22-22-24	Sand. Fine with very fine, some medium, trace silt, brown (7.5 YR 5/4) well sorted, very moist, dense.	5.5
46	48	14	20-20-22-26	Sand. Very fine to fine, trace silt, well sorted, dense, very moist to wet, light brown (7.5 YR 6/4).	4.5
48	50	16	18-16-20-20	Sand. Very fine to fine, trace to some silt, in bottom of spoon, does not appear satured yet, medium dense, well sorted.	
				Abandon boring at 50 feet with HolePlug.	

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SAMPLE/CORE LOG

Boring/Well GPR-9 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 11/17/97 14:10

Drilling Completed 11/17/97 16:45

Total Depth Drilled 50 feet

Hole Diameter 4.25 inches

Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in

Sampling Interval Continuous

Land-Surface Elev. 1121.00 feet ☐ Surveyed ☒ Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Driller Bryan

Helper Shawn

Prepared By Pat Bartnik

Hammer Weight 300

Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	0.75	5-3-2-3	0-4': Top Soil. Very dark brown (7.5 YR 2.5/20.	0 OVA backgaround 4.5 ppm
				4-9': Loam. Sandy, very dark brown (7.5 YR 2.5/2).	
2	4	1.5	2-2-3-3	0-0.2'; Loam. Sandy, same as above.	
				0.2-1.5': Sand. Strong brown (7.5 YR 5/8) fine to coarse poorly sorted, trace gravel.	0
4	6	1.7	2-3-3-3	0.5': Slump.	0
				0.5-1.0': Sand. As above.	
				1.0-1.5': Sand. Light brown (7.5 YR 6/4) fine to medium, moderate sorted with fine gravel.	
6	8	1.5	2-2-3-4	0-0.5': Slump.	0
				0.5-1.5': Sand. Light brown (7.5 YR 6/4) fine to medium poorly sorted, some coarse sand.	
8	10	1.75	3-3-4-5	0-0.25': Slump.	0
				0.25-1.75': Sand. Light brown (7.5 YR 6/4) fine to coarse poorly sorted gravely (2 mm to 30 mm) subangular to subrounded.	
10	12	0.9	3-5-12-6	0-0.9': Sand. As above.	0
12	14	0.5	3-4-4-5	0-0.5': Sand. As above.	0
14	16	1	3-4-6-7	0-1.0': Sand. Except gravel up to 40 mm.	
16	18	1.25	5-6-8-12	0-0.25': Slump.	1.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-9

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				0.25-1.25': Sand. Light brown (7.5 YR 6/3) fine to coarse, very poorly sorted, gravely (2 mm to 30 mm) subrounded.	
18	20	0.75	6-6-10-15	0-0.2': Slump.	0
				0.2-0.75': Sand. As above.	
20	22	1.75	4-8-10-11	0-0.5': Slump.	0
				0.5-1.75': Sand. As above.	
22	24	1.75	6-7-9-9	0.5-1.75': Slump.	0
				0.5-1.75': Sand. As above.	
24	26	1.75	7-8-9-12	0-0.2': Slump.	6.0
				0.2-0.75': Sand. As above.	
				0.75-1.75': Silt. Brown (7.5 YR 5/4) clay inclusions reddish brown (5 YR 5/4) wet at 25.8 feet (saturated).	
26	28	1.5	7-9-10-10	0-0.2': Slump.	0
				0.2-1.5': Silt. As above, red clay effervesces with HCL.	
28	30	1.5	5-7-9-10	0-0.25': Slump.	0.5
				0.25-1.5': Silt. As above.	
30	32	1.75	5-7-8-8	0-0.25': Slump.	0.5
				0.25-1.75': Silt. As above, saturated between 0.25 and 1.0 just above a red clay inclusion, varves of very fine sand.	
32	34	2	4-6-7-7	0-0.2': Slump.	0.5
				0.2-2.0': Silt. As above, dry.	
34	36	2	5-7-8-9	0-0.2': Slump.	0
				0.2-1.5': Silt. As above, dry.	
				1.5-1.7': Sand. Reddish brown (5 YR 4/4) fine to very fine, silty, saturated.	
				1.7-2.0': Silt. Brown (7.5 YR 5/4).	
36	38	1.75	24-9-12-14	0-1': Sand. Reddish brown (5 YR 4/4) fine to very fine, silty saturated.	2.0
				1-1.75': Silt. As above.	
38	40	1.9	8-11-13-15	0-0.5': Slump.	0.0
				.5-1.9': Silt. Reddish brown (5 YR 4/4) and dark brown (7.5 YR 3/3) inclusions, dry.	
40	42	0	12-17-23-21	No recovery.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-9

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
42	44	2	8-10-11-13	0-2': Silt. As above, but with no brown, clay inclusions, dry.	1.0
44	46	2	10-35-36-38	0-0.2': Slump.	
				0.2-1.8': Silt. As above.	90
				1.8-2.0': Sand. Brown (7.5 YR 5/4) very fine silty, damp.	
46	48	2	10-11-14-15	0-0.5': Slump.	2500
				0.5-1.9': Sand. As above.	
				1.9-2.0': Sand. Brown (7.5 YR 4/4) fine to very fine, silty, trace medium sand.	
48	50	1.25	11-12-14-12	0-0.25': Slump.	7000
				0.25-1.25': Sand. As above, damp.	
				End of Boring 50 feet.	

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SAMPLE/CORE LOG

Boring/Well GPR-10 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 11/18/97 08:35

Drilling Completed 11/18/97 10:55

Total Depth Drilled 50 feet

Hole Diameter 8 inches

Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in

Sampling Interval Continuous

Land-Surface Elev. 1122 feet ☐ Surveyed ☒ Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Driller Bryan

Helper Shawn

Prepared By Bruce Evans

Hammer Weight 300

Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	1.8	3-2-1-2	0-.8': Top Soil. Very dark brown (7.5 YR 25/2) silt with organics and roots, moist.	3.0 Background = 3 ppm
				.8-1.8': Sand. Strong brown (7.5 YR 5/8) very fine grained, silty, trace clay, trace fine gravel, very moist.	
2	4	1.3	1-2-2-2	0-.3': Slump.	3.0
				.3-1.0': Sand. Strong brown (7.5 YR 5/8) fine grain well sorted, trace coarse sand to fine gravel subanuglar, flat, moist.	
4	6	1.9	2-2-3-3	0-.6': Slump.	3.5
				.6-1.4': Sand. As above.	
				1.4-1.9': Sand. Light brown (7.5 YR 6/4) fine to medium grained, modest sorted, trace coarse sand and fine gravel, moist.	
6	8	1.7	3-4-6-6	0-.2': Slump.	3.5
				.2-1.7': Sand. As above, 1" coarse gravel seam at 1.5 subangular grains, moist.	
8	10	1.5	6-5-4-4	0-.2: Slump.	3.5
				.2-1.5': Sand. Light brown (7.5 YR 6/4) fine to coarse grained, poorly sorted, some fine to coarse gravel, subangular to subrounded, trace pebbles to .7" diameter, moist.	
10	12	1.5	4-4-5-5	0-.2': Slump.	3.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-10 Page 2 of 4

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.2-1.5': Sand. Light brown (7.5 YR 6/4) fine to medium grained, moderately sorted, some coarse sand, moist.	
12	14	1	3-5-6-7	0-.1': Slump.	3.5
				.1-5.0': Sand. As above.	
				.5-1.0': Sand/Gravel: Brown (7.5 YR 5/4) fine to coarse sand, fine to coarse gravel, poorly sorted, subangular to subround, moist.	
14	16	1.5	4-4-6-7	0-.5': Slump.	3.0
				.5-1.5': Light brown (7.5 YR 6/4) fine to coarse and poorly sorted with some fine and coarse gravel, subangular to subrounded, moist.	
16	18	1.5	4-4-4-5	0-.3': Slump.	3.0
				.3-1.5': Sand. Pink (7.5 YR 7/3) fine grained well sorted, moist to dry.	
18	20	1.5	4-6-6-7	0-.3': Slump.	3.5
				.3-1.5': Sand/Gravel. Light brown (7.5 YR 6/4) fine to coarse sand, fine to coarse gravel with some pebbles >1" diameter, poorly sorted, moist.	
20	22	1.5	4-4-7-7	0-0.3': Slump.	3.5
				.3-.7': Sand/Gravel. As above.	
				.7-1.0': Sand. Light brown (7.5 YR 6/4) medium grained well sorted.	
				1.0-1.5': Sand/Gravel. Brown (7.5 YR 5/4) fine to coarse sand, fine to coarse gravel, very poorly sorted, trace pebbles, subangular to subrounded, moist.	
22	24	1.5	4-5-5-6	0.3': Slump.	3.0
				0.3-1.5': Sand. Light brown (7.5 YR 6/4) medium to very coarse grained, poorly sorted, some fine gravel, moist.	
24	26	1.3	4-7-9-10	0-.9': Sand/Gravel. Light brown (7.5 YR 6/3) fine to coarse sand, fine to coarse gravel, pebbles subrounded to subangular, very poorly sorted and coarse, moist.	3.5
				.9-1.3': Silt. Brown (7.5 YR 5/4) with lenses of clay .2-.5" thick, reddish brown (5 YR 5/4), wet.	
26	28	1.9	6-8-9-11	0-.4': Slump.	3.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-10

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.4-1.9': Silt. Brown (7.5 YR 5/4) some lamanae of very fine grain sand and lense. .2-1" thick of clay, reddish brown (5 YR 5/4) plastic and firm, moist to dry. Clay reactive, silt and clay reactive with HCL.	
28	30	1.8	7-7-9-10	0-0.1': Slump.	3.5
				.1-1.8': Silt. With clay, as above, wet at 29.5 feet, slightly sandy below 1.3 with very fine grain sand. Silt and clay reactive with HCL.	
30	32	1.5	8-9-12-12	0-.3': Slump.	3.5
				.3-1.5': Silt. As above with clay lenses moist to dry from .8 to 1.3, sandy with very fine grain sand and wet in this interval. Silt and clay reactive with HCL.	
32	34	2	9-10-13-15	0-.3': Slump.	3.5
				.3-2.0': Silt. As above with clay, wet. Silt and clay reactive with HCL.	
34	36	1.8	9-13-14-13	0-.1': Slump.	5.5
				.1-.8': Silt. As above.	
				.8-1.8': Sand. Brown (7.5 YR 5/4) very fine grained, well sorted, trace silt, wet.	
36	38	2	7-9-13-14	0-.5': Slump.	5.0
				.5-1.4': Sand. As above, wet.	
				1.4-2.0': Silt. Brown (7.4 YR 5/4) with clay reddish brown (5 YR 5/4) in thin lenses, moist to dry, silt reactive and clay slightly, reactive with HCL.	
38	40	2	8-10-11-15	0-0.5': Slump.	3.5
				.5-2.0': Silt. Brown (7.r YR 5/4) with lenses .2 to 1" thick clay reddish brown plastic. Penetrometers clay = 2.0 firm, silt = 3.5 hard, silt very reactive to HCL clay non to very slight reaction to HCL, wet.	
40	42	1.5	9-13-12-12	0-.5': Slump.	4.0
				.5-1.5': Clay. Silt, as above, wet, sandy with very fine grain at 1.2 to 1.4, wet.	
42	44	2	10-11-15-18	0-.3': Silt.	4.0
				.3-1.0': Silt. As above.	
				1-1.3': Silt. Brown (7.5 YR 5/3) sandy at very fine grain sand, wet, trace red brown clay.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-10

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				1.3-2.0': Silt/Clay. Laminations varves brown silt (7.5 YR 5/3) with plastic red brown clay (5 YR 4/4) 1.5 very reactive to acid, dry to moist.	
44	46	2	10-17-26-30	0-.6': Slump.	4.0
				.6-2.0': Silt/Clay. Varved lamanie as above dry to moist, traces very fine grain sand, silt reactive clay not.	
46	48	2	10-11-14-13	0-.8': Slump.	4.5
				.8-2.0': Silt/Clay. As above, varves also with very fine grain sand varves mixed in sequence, .1" and less, dry to clay, moist to dry, sand wet.	
48	50	2	10-11-14-13	0-.5': Slump.	3.5
				.5-2.0': Silt/Clay/Sand. Varued sequence .1" and less silt, brown (7.5 YR 5/4) clay reddish brown (5 YR 5/4) sand brown (7.5 YR 5/2) firm, silt reactive with HCL clay slight reactive with HCL, clay plastic, clay to silt, dry to moist, sand wet, sand very fine grained, well sorted.	
				10:55 End borehole at 50 ft.	

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SAMPLE/CORE LOG

Boring/Well GPR-11 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan
Drilling Started 11/18/97 08:15
Drilling Completed 11/18/97 10:28

Total Depth Drilled 46 feet
Hole Diameter 8¼ inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1120.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Randy
Helper Chris

Prepared By Ted Powell
Hammer Weight 300
Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	19	2-2-1-2	0-9": Top Soil. "A Horizon" dark brown (7.5 YR 3/3) roots silty clay loam, frozen to approximately 4".	4.0 OVA background = 4 ppm
				9-19": Sand. Coarse with very coarse trace medium and fine, trace gravel, yellow red (5YR 5/6) 1/8 to 1/4" subrounded to subangular, poorly sorted.	
2	4	13	2-3-4-4	Sand. Coarse with very coarse and medium trace fine and very fine, strong brown (7.5 YR 4/6) gravel 1/8 to 1/4" subrounded to subangular, poorly sorted, loose, moist.	4.0
4	6	14	4-4-6-4	0-3": Sand. As above.	4.0
				3-9": Sand. Medium to very coarse with fine and very fine trace silt, some gravel subangular to rounded, loose, moist, poorly sorted, strong brown (7.5 YR 5/6).	
				9-14": Sand. Light brown (7.5 YR 6/4) fine to medium some coarse and very coarse, trace gravel 1/4 to 1/8" moderate sorting, loose.	
6	8	17	4-4-5-7	Sand. Yellow brown (10 YR 5/4) medium to coarse, some very coarse and fine and very fine, approximately 10 percent very coarse, angular to subrounded, loose, moist.	4.0
8	10	14	6-8-6-6	0-9": Sand. As above.	4.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-11 Page 2 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				9-14": Sand. Very coarse sand, trace fine, very fine and silt and gravel 1/8 to 1/4" angular to subrounded, medium dense, moderate to poorly sorted, slight to moist, strong brown (7.5 YR 4/6).	
10	12	14	4-6-8-10	0-5": Sand. Very coarse with coarse, with gravel, Gravel 1/8 to 1/4" angular to subrounded, sand also contains fine and very fine, poorly sorted medium dense, wet to saturated.	4.0
				5-14": Sand. Medium with coarse and fine, some very coarse, trace very fine and silt, trace gravel, large fractured gravel in tip of spoon, slight moist, medium dense, brown (7.5 YR 5/4).	
12	14	1	4-6-8-10	Sand. Medium to coarse, some very coarse, some small gravel, wet, very poor recovery.	4.5
14	16	5	4-10-10-10	Sand. Brown (7.5 YR 4/4) with gravel, sand medium to very coarse, some fine trace very fine, gravel 1/8 to 1/2", subrounded very poorly sorted medium dense, very moist.	4.0
16	18	0.5	10-10-12-12	Basically no recovery, large piece of rock in spoon tip, iron formation.	
18	20	14	8-10-10-10	0-7": Sand. Medium with fine and coarse some very coarse trace very fine brown (7.5 YR 4/4) with gravel, 1/4 to 3/4" subrounded, very poor sort, medium dense, slight moist.	3.5
				7-11": Sand. Fine to very fine, trace silt, trace medium pink (7.5 YR 7/4) moderate well sorted, medium dense, moist.	
				11-14": Sand and Gravel. Sand fine to very coarse to silt, gravel 1/8 to 3/4" subrounded, brown (10 YR 5/3) subangualr, very poorly sorted, slightly moist to moist.	
20	22	5	12-12-12-12	Sand and Gravel. As above, large gravel in tip prevented further recovery.	3.5
22	24	0.5	25-25-25-25	Sand and Gravel. Large piece of quartzite in spoon tip prevented further recovery, sand fine to coarse, wet (slough?) in center.	4.0
24	26	0.1	25-25-22-22	Slough. Sand with gravel, wet with roots.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-11

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
26	28	12	8-10-12-12	0-11.5": Sand with Gravel. Sand fine to very coarse, trace very fine and silt, gravel 1/8 to 3/4" subrounded to angular, medium dense, slight moist, very poorly sorted, brown (10 YR 5/3).	3.5
				11.5-12": Clay. Silty, soft, plastic, red brown (2.5 YR 5/4), wet.	
28	30	20	6-8-10-10	0-15": Clay and Silt. Alternating sequence, 1 to 2" thick, clay at top is as above, clay at 5, 8 and 11" is very stiff, plastic, silty in part nonplastic, effervescent in HCL (collected sample for TOC) silt is sandy in part (fine sand) dense brown (7.5 YR 4/4) moist gravelly silty clay from 13 to 15".	3.5
				15-20": Silt, as above, with 1/4" clay lenses at 17 and 19".	
30	32	15.0	10-10-12-12	0-10": Silt and Clay. Sequences as above, clay lenses are smaller, 1/4 to 1/2" thick, color as above, soft to moderate stiff, fissile effervescent, silt lenses 1 to 2 " thick, color as above, moist.	2
				10-11": Sand. Very fine, some fine with silt, medium dense, very moist, well sorted, brown (7.5 YR 4/4).	
				11-15": Silt and Clay. Interbeded as from 0 to 10".	
32	34	16	10-12-13-14	0-8": Silt. Interbedded very fine, silty, sand sequence, silt brown (7.5 YR 5/3) 1/4 to 1" thick very fine sand in part, moist, sand, silty, very fine trace fine, well sorted, slight moist, brown (7.5 YR 5/4) medium dense.	0.5
				8-16": Sand. Very fine with silt, medium dense, very moist, brown (7.5 YR 4/4) well sorted.	
34	36	16	12-10-14-16	Sand. Fine some medium some very fine, moderate well sort, moist, medium dense, light brown (7.5 YR 6/4).	1.5
36	38	17	10-10-12-11	Sand. Fine to medium, some very fine, moderately well sorted, medium dense, pink (7.5 YR 7/4).	1.5
38	40	18	15-15-15-12	Sand. As above, light brown (7.5 YR 6/4) dense, very moist towards bottom.	1.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-11 Page 4 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
40	42		14-14-12-12	Sand. Fine with medium some very fine, trace silt, moderate well sorted, medium dense, moist, color as above.	1.0
42	44	15	16-16-16-16	Sand. Fine to medium, grading to medium with fine, trace coarse towards bottom of spoon, dense, very moist, light brown (7.5 YR 6/4).	0.5
44	46	18	14-15-16-17	Sand. Fine with medium, some very fine trace silt, moderate well sorted, dense, moist to very moist.	0.5
				Total depth at 46'.	

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SAMPLE/CORE LOG

Boring/Well GPR-12 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 11/18/97 13:05 Drilling Completed 11/18/97 16:10

Total Depth Drilled 50 feet Hole Diameter 8¼ inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in Sampling Interval Continuous

Land-Surface Elev. 1094.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Chris

Prepared By Ted Powell Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	14	2-3-3-2	0-3": Sand. Silty loam roots, a horizon soft loose, moist, dark brown.	4.5 OVA background = 4
				3-14": Sand. Medium to coarse, some fine trace very fine and silt, dark brown (7.5 YR 3/4) trace gravel 1/4" subrounded poorly sorted, loose, very moist.	
2	4	13	2-3-3-2	Sand. Medium with coarse, some fine trace very fine dark yellow brown (10 YR 4/6) trace very coarse, trace gravel 1/8 to 1/4" subangular to subrounded, poor sorted, loose, moist.	4.5
4	6	17	2-2-2-2	0-13": Sand. Medium to coarse, some fine, trace very coarse, strong brown (7.5 YR 5/6) at 5 to 6 very fine silty sand lense, wet, medium dense to loose.	5.0
				13-17": Sand. Silty fine to medium, trace coarse, roots, dark brown (7.5 YR 3/3) old base of slope prior to grading for road bed, loose, very moist.	
6	8	13	1-1-2-2	Sand. Fine with medium and very fine, trace coarse, some silt, strong brown (7.5 YR 4/6) trace gravel (5 percent) 1/8 to 1/4" subrounded, very moist, coarse moderate sorting.	4.5
8	10	16	4-4-8-6	0-8": Sand. As above.	4.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-12 Page 2 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				8-16": Sand. Medium, some fine trace coarse and very fine, strong brown (7.5 YR 5/6), trace gravel 1/4" subrounded, loose to moderate sorting, moist.	
10	12	16	6-6-6-6	Sand. As above, but medium dense.	5.0
12	14	18	7-7-7-7	Sand. as above, with large gravel in tip, subrounded.	4.5
14	16	16	8-8-8-8	Sand. Fine to medium, some very fine, trace silt, trace coarse, moderate well sorted, color as above, medium dense.	4.5 OVA background = 4
16	20	18	8-9-10-9	Sand. As above, moist.	5.0
18	20	18	10-10-12-12	Sand. As above.	5.0
20	22	3	12-12-12-13	Sand. Fine with medium, trace very fine trace coarse, medium dense, moderate well sorted, light brown (7.5 YR 6/4) moist.	5.0
22	24	21	8-8-8-9	Sand. Medium, some fine, trace coarse, moderate well sorted, medium dense, moist to very moist to 14", wet to saturated 14 to 21", light brown (7.5 YR 6/4) percent of coarse increases in bottom, trace gravel.	5.5
24	26	14	8-8-8-9	Sand. Medium to coarse, with fine some very fine trace silt, trace very coarse some (15 percent) gravel 1/4 to 1.5" angular to subrounded, medium dense,	
26	28	7	20-20-22-22	Sand. Medium with coarse and fine, trace very fine brown (7.5 YR 4/4) and silt, trace very coarse, saturated, dense, moderate well sorted.	6.5
28	30	20	10-10-12-14	0-4": Sand. Coarse with medium, some very coarse, some fine trace very fine sand silt some, gravel, 1/8 to 1" angular to subrounded, poor sorting, medium dense.	5.5
				4-20": Sand. Very fine to fine, trace medium trace silt, moderate well sorted, medium dense, strong brown (7.5 YR 4/6) at 18 or 1" lense of gravel, igneous and medormorphic, some highly weathered, subangular to rounded.	
30	32	16	4-4-6-8	Sand. Fine with medium, some coarse trace very coarse, trace very fine, moderate well sorted, loose, saturated, brown (7.5 YR 4/4).	5.0
32	34	19	6-6-6-6	Sand. Brown (7.5 YR 5/4) medium with fine, trace coarse and very coarse, trace very fine moderate well sorted, medium dense.	6.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-12 Page 3 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
34	36	24	7-7-7-7	0-15": Sand. As above.	12.5
				15-19": Gravel. Some sand, gravel 1/4 to 1.5" subangular to subrounded, sand, very fine to coarse, some silt, black (7.5 R4 2.5/1) to brown (7.5 YR 4/4).	
				19-24": Sand. Very fine silty, brown (7.5 YR 4/4) medium dense, well sorted, homogenous.	
36	38	10	6-6-7-8	0-6": Slough.	160
				6-10": Sand. Very fine silty, as above brown (7.5 YR 4/4) 2 large 1.5" pieces of fractured gravel (igneous) at 8".	
38	40	18.0	10-10-9-8	0-6": Sand. Very fine, some silt, trace gravel 1/4 to 1/2" subrounded moderately well sorted, medium dense, brown (7.5 YR 4/4).	200
				6-12": Sand. Very fine silty, well sorted, medium dense, brown (7.5 YR 5/4).	
				12-18": Silt. With very fine sand, brown (7.5 YR 4/3) very sandy in part, medium dense.	
40	42	18	9-9-9-9	0-5": Sand. Very fine to fine, some silt, likely slough.	500
				5-18": Silt. With very fine to fine sand, variable, at 7" clay lense 1/4" thick, soft red brown (5 YR 5/4) very fine sandy silty to very fine silty sand 16 to 18" brown (7.5 YR 4/4).	
42	44	14	12-12-14-14	0-6": Sand. Very fine silty, to very fine sandy silt, gradationed in lenses approximately 1 to 2" thick, brown (7.5 YR 4/3), saturated.	1000
				6-14": Silt. With very fine sand in part, trace clay (amiable) medium dense. At 7 " a 1/4" red brown clay seam, soft, plastic.	
44	46	21	10-10-12-11	Silt. Variable sand (very fine to fine), soft to moderate stiff. At 9 to 10.5" very fine silty sand, saturated brown (7.5 YR 4/4), at 17" a 1/4" clay seam, fissile, medium stiff.	800
46	48	20	8-8-8-8	0-4": Silt. Very fine sand in part, trace clay, soft to medium dense, red brown (5 YR 4/3).	300

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-12

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				4-20": Sand. Very fine silty, well sorted, brown (7.5 YR 4/3) medium dense.	
48	50	24	7-8-9-10	0-6": Likely Slough. Silt, some red clay, very sandy with fine sand soupy and torn up.	50
				6-12": Sand. Very fine silty, medium dense, moderate well sorted.	
				12-17": Silt. variable very fine and fine sand throughout, brown (7.5 YR 5/3).	
				17-18": Clay. Slight fissile, soft to medium stiff, red brown (5 YR 4/4).	
				18-24": Sand. Very fine silty, well sorted, medium dense, brown (7.5 YR 5/4).	
				Total Depth 50 feet. Abandon with HolePlug.	
				Water table approximately 23.7 feet.	

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SAMPLE/CORE LOG

Boring/Well GPR-13 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan
Drilling Started 11/18/97 13:15
Drilling Completed 11/18/97 16:05

Total Depth Drilled 46 feet
Hole Diameter 8 inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1088.00 feet ☐ Surveyed ☒ Estimated
Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Bryan
Helper Shawn

Prepared By Bruce Evans
Hammer Weight 300
Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	0.5	4-2-2-2	0-.4': Topsoil. Very dark brown (7.5 YR 2.5/2) silt with organic matter, roots, moist.	9.0 OVA background = 4.0 ppm
				.4-.5': Sand. Strong brown (7.5 YR 5/8) very fine to fine grained, well sorted, moist.	
2	4	0.3	2-2-4-7	Sand. Yellowish red (7.5 YR 6/6) fine grained, silty, well sorted, moist, 1.5" pebble stuck in spoon tip.	11.0
4	6	0.6	7-7-6-6	0-.3': Slump.	12.0
				.3-.6': Sand. Reddish yellow (7.5 YR 6/6) fine grained, well sorted, trace silt, moist. Minor acid reaction.	
6	8	0.2	6-7-7-10	Sand. Brown (7.5 YR 4/4) very fine to fine grained, well sorted, trace silt, rock fragments in spoon tip.	8.0
8	10	2	4-9-9-6	0-.3': Slump.	6.0
				.3-2.0': Silt. Brown (7.5 YR 5/4) some fine beds, clay, reddish brown (5 YR 5/4) plastic Penetrometer: Clay = 0.5, silt firm 1.0, some fine bands (varves) interbeds of very fine grain sand, moist.	
10	12	2	4-7-7-7	Silt/Clay/Sand. Thinly interbeded sequence varves/lamanae of sand. Light brown (7.5 YR 6/4) silt brown (7.5 YR 5/4) and clay reddish brown (5 YR 5/4) moist sand/silt readly reacts to HCL, clay no reaction, sand very fine grained, well sorted.	5.0
12	14	2	5-6-8-8	0-.3': Slump.	4.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-13 Page 2 of 3

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.3-1.5': Silt/Clay/Sand. As above, interbedded.	
				1.5-1.8': Sand. Brown (7.5 YR 5/4) very fine grained, well sort, trace silt, wet. Less acid reaction.	
				1.8-2.0': Silt/Clay/Sand. As above, wet.	
14	16	2	6-8-9-10	0-.2': Slump.	5
				.2-2.0': Silt/Clay. Silt brown (7.5 YR 5/4) sandy in places with very fine grain sand, interbedded with clay lenses reddish brown (5 YR 5/4) to .5". Thick, wet acid reaction silt and clay.	
16	18	2	4-4-6-8	0-.2': Slump.	5.5
				.2-1.0': Silt/Clay. As above interbedded, trace very fine sand, moist.	
				1.0-2.0': Clay/Silt/Sand. Banded interbeds of silt and very fine grained well sorted sand in clay colors as above, varves/beds .5" thick clay dominant below 1.5, moist to dry.	
18	20	0.7	6-8-11-13	0-.3': Slump.	5
				.3-.7': Clay. Reddish brown (5 YR 5/4) with silt brown (7.5 YR 5/4) fine interbeds/varves trace very fine grains and, moist to strong acid reaction, clay and silt.	
20	22	2	6-7-7-9	0-.4': Slump.	5
				.4-2.0': Clay/Silt. Colors as above, fine interbeds .2-1" thick repetitive cycle, moist clay 3.0 Penetrometer: Silt = 4.0, very firm acid as above with 1.6 .5" thick fine to medium sand seam, moderate sorted.	
22	24	2	7-8-10-13	0-.5': Slump.	7.0
				.5-1.6': Clay/Silt. As above, trace very fine sand seams.	
				1.6-2.0': Sand. brown (7.5 YR 5/4) medium grained, well sorted, wet, crushed pebbles at 1.6.	
24	26	2	6-8-9-9	Sand. Brown (7.5 YR 4/4) medium grained, well sorted, wet.	6.0
26	28	1.8	5-6-6-6	Sand. Brown (7.5 YR 4/4) medium to coarse grained, well sorted, trace medium gravel, wet.	6.0
28	30	1.8	1-1-1-2	0-.14': Sand. As above.	5.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-13 Page 3 of 3

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				1.4-1.5': Silt. Brown (7.5 YR 5/4) thin seam, trace reddish brown clay.	
				1.5-1.8': Sand. Brown (7.5 YR 4/4) fine to medium grained, well sorted, wet.	
30	32	1.7	4-5-8-10	0-1.6': Sand. Brown (7.5 YR 5/4) medium grained well sorted, trace coarse gravel subangular blank, wet.	4.4
				1.6-1.7': Sand. Brown (7.5 YR 5/4) very fine grained, silty, well sorted, wet.	
32	34	1.5	4-6-7-11	Sand. Brown (7.5 YR 4/4) medium grained, well sorted, trace fine gravel, wet (is this heave?). Mix grout to place in auger to reduce heave.	7.0
34	36	1.0	2-3-4-6	0-.1': Slump/Heave.	4.5
				.1-1.0': Sand. Reddish brown (7.5 YR 5/4) very fine grained well sorted, some silt, wet, no acid reaction.	
36	38	1.5	5-7-10-11	0-.5': Slump/heave.	5.0
				.5-1.5': Sand. Reddish brown (5 YR 5/4) very fine extremely fine grained, well sorted, some silt below 1.3, wet.	
38	40	1.8	5-6-8-9	0-.5': Slump.	5.0
				.5-1.8': Sand/Silt. Reddish brown (5 YR 5/4) very fine grained silty sand to sandy silt, wet.	
40	42	1.8	5-8-8-12	0-.3': Slump.	5.0
				.3-1.5': Sand. Reddish brown (5 YR 4/4) very fine grained well sorted, silty, wet.	
				1.5-1.8': Silt. Reddish brown (5 YR 4/4) with trace clay reddish brown (5 YR 5/4) wet.	
42	44	1.7	6-6-8-11	Silt. Reddish brown (5 YR 4/4) with trace clay reddish brown (5 YR 5/4) in thin beds (varves) moist to wet.	6.5
44	46	2	8-11-14-19	0-.2': Slump.	5.5
				.2-2.0': Silt. As above, with clay, wet.	
				16:05 End Borehole at 46 feet.	

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SAMPLE/CORE LOG

Boring/Well GPR-14 Project/No. Ford Kingsford Page 1 of 5

Site Location Kingsford, Michigan
Drilling Started 11/19/97 08:30
Drilling Completed 11/19/97 11:20

Total Depth Drilled 50 feet
Hole Diameter 8¼ inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1089.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Randy
Helper Chris

Prepared By Ted Powell
Hammer Weight 300
Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	12	2-2-2-3	0-5": Top Soil. Grass roots, 1-3" frozen, very dark brown to black (10 YR 2/1) silty clay loam.	3.5 background = 3.5
				5-12": Sand. Fine to very fine, some silt, trace medium, loose, moist yellow brown (10 YR 5/8) medium well sorted.	
2	4	14	4-4-4-3	0-3": Silty Sand. Very fine to medium, moist, medium dense, trace 1/4 to 3/4" gravel, subrounded, moderate sorting, dark yellow brown (10 YR 3/6).	4.0
				3-10": Sand with Gravel. Sand fine some medium and very fine trace silt, gravel 1/4 to 1.5" subrounded to angular, poorly sorted, loose, moist.	
				10-11": Sand. Very fine silty, trace medium, very dark brown (7.5 YR 2.5/1) moist.	
				11-13.5": Sand. Very coarse, some coarse trace fine and medium, loose brown (7.5 YR 3/4) moderate sorting.	
				13.5-14": Silt. Trace very coarse sand, medium stiff, moist, strong brown (7.5 YR 4/6), trace black organic mottling.	
4	6	0.5	10-10-10-14	Rock in tip of spoon.	
6	8	11	10-12-10-12	0-2": Silt and Gravel. Silt trace very fine sand, medium stiff, gravel 1/2 to 1.5" fractured by spoon.	3.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-14

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				2-11": Silt. Sandy in part (very fine to fine) moderate well sorted brown (7.5 YR 4/2) slight moist.	
8	10	1	12-12-13-13	Silt. As above, and clay gravel slough, torn up and saturated.	
10	12	17	5-5-5-5	Silt. Trace very fine sand, well sorted, medium dense, brown (7.5 YR 4/3) moist at 7.5-9" clay, silty in part red brown (5 YR 4/31) medium stiff, strongly effervescent in HCL, slight fissile, nonplastic.	3.5
12	14	23	10-10-10-11	Silt. trace clay, very fine to fine sand in part, brown (7.5 YR 4/2), medium dense, dry to slightly moist, several thin approximately 1/4" clay lenses interspersed throughout section, clay, trace silt soft, moderate plastic, red brown (5 YR 4/3) mildly effervescent.	4.0
14	16	23	8-8-8-8	Silt. As above from 16 to 22" round brown clay lenses (laminae) bedded between very fine silt beds (<1 mm).	4
16	18	9	10-10-10-12	0-6": Ripped up clay, silt and gravel (slough).	4.0
				.6-9": Silt. As above.	
18	20	24	8-8-8-8	0-4": Clay. Very silty, medium stiff, slight plastic, red brown (5 YR 4/3).	4.5
				4-11.5": Silt. Trace very fine sand, medium dense, dark brown (7.5 YR 3/2) several thin (1/8") interbedded silty clay lenses throughout, red brown (5 YR 4/4) nonplastic.	
				11.5-18": Clay. Interbedded with silt, stiff to very stiff, slight plastic, clay 1/4" lenses separated by very thin silt beds, red brown (5 YR 4/3) slight moist to moist.	
				18-24": Silt. Very homogenous, wet to saturated medium dense, dark brown (7.5 YR 3/2).	
20	22	24	8-9-10-10	0-7.5": Silt Clay. Interbedded clay, moderate plastic, soft to medium stiff, silt in part, red brown (5 YR 4/3) silt as above, slight moist.	5.0
				7.5-10": Silt. Trace very fine sand, dark grey brown (10 YR 4/2), saturated, homogenous, medium stiff.	
				10-15": Silt. Brown (7.5 YR 4/2), trace clay, moist, medium dense.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-14

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				15-24": Clay. Stiff to very stiff, non to slight plastic, red brown (5 YR 4/4) dry.	
22	24	0	12-12-14-14	No visible recovery, spoon bent and broken, can not open.	
24	26	20	10-10-10-10	0-5": Clay. Very stiff, slight plastic, mildly effervescent in HCL, red brown (5 YR 4/4) dry.	6.0
				5-20": Silt. Very homogenous, saturated, medium stiff, brown (7.5 YR 4/2).	
26	28	19	8-8-10-10	Silt. Trace clay at 2-4", some very fine sand interspersed throughout, satured, medium stiff.	6.0
28	30	20	8-8-8-10	0-14": Silt. Red grey brown (10 YR 3/2) trace to some very fine sand (variable) wet to saturated, medium stiff.	6.0
				14-14.5": Clay. Medium stiff, moderate plastic, red brown (5 YR 4/4) moist effervescent in HCL.	
				14.5-18": Sand. Very fine with silt, medium dense, saturated soupy, brown (7.5 YR 4/3).	
				18-20": Silt. Slight moist to moist, red brown (5 YR 4/3) trace very fine sand, medium dense.	
30	32	22	2-2-3-3	0-4": Silt. Some clay, soft, saturated brown (7.5 YR 4/2) to red brown (5 YR 4/3) depending on clay content.	7
				4-6.5": Silt. Very fine sandy, very soupy, very soft, brown (7.5 YR 4/3).	
				6.5-8.5": Clay. Stiff, fissile effervescent in HCL, moderate plastic, moist.	
				8.5-18": Sand. Silty very fine, brown (7.5 YR 4/3), saturated/soupy, medium to dense.	
				18-22": Clay. Red as from 6.5-8.5" but sandy in part.	
32	34	18	18-18-18-20	0-9.5": Clay. Red brown (5 YR 4/4) some silt, moderate plastic, very stiff, slight moist.	6.5
				9.5-18": Silt. With very fine sand, trace clay, medium dense, wet, brown (7.5 YR 4/3).	
34	36	20	12-12-13-14	0-3": Clay. Red brown (5 YR 4/4) as above.	
				3-20": Silt. As above, 1/4" clay lenses at 4.9 and 13".	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-14 Page 4 of 5

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
36	38	24	10-12-13-14	0-9": Silt. Brown (7.5 YR 4/2) medium stiff, dense, very homogenous wet to saturated.	6.5
				9-24": Clay. Silty in part, very stiff, moderate effervescent, slight plastic, red brown (5 YR 4/3) at 10-11.5" interbedded silt (as above) and clay approximately 1/2" thick beds.	
38	40	21	12-12-12-14	Clay. Red brown (5 YR 4/3) silty in part, moist, as above, silt at 2.5-3 and 17-19", brown (7.5 YR 4/2) some very fine sand, moderate well sorted, wet to saturated.	7
40	42	21	6-8-8-8	0-7": Silt. As above.	6.0
				7-11": Clay. As above.	
				11-13": Silt. As above.	
				13-21": Clay. As above.	
42	44	18	10-10-8-8	0-14": Clay, red brown (5 YR 4/3) very stiff, slight to moderately plastic, slight moist, occasional silt inclusion approximately 1/4 to 1/2".	8 OVA background = 5.5
				14-18": Silt. Trace very fine sand, trace clay brown (7.5 YR 4/2) medium dense, wet.	
44	46	20	10-10-10-10	0-4": Clay. As above, with large fractured gravel (quartzite) silty.	7
				4-20": Silt. As above, 1/8" sand (very fine) seam at 7.5", slight moist, dense.	
46	48	18	11-11-12-12	0-6": Clay. Color as above, occasional silt inclusions, clay is silty inparts, where no silt moderate plastic.	7.5
				6-20": Silt. Trace very fine sand, clayey in part, where no clay silt is satured, moist where clayey, brown (7.5 YR 4/2).	
48	50	24	10-10-8-8	0-1": Silt. As above.	7.5
				1-5": Clay. Stiff, some to trace silt, red brown (5 YR 4/3), slight effervescent moderate plastic, small 1/4" diameter silt inclusions, moist.	
				5-14": Silt. Trace very fine sand, medium dense to dense, wet to saturated, trace clay in part.	
				14-15.5": Clay. As above.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-14

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				15.5-19": Silt. As above.	
				19-24": Clay As above.	
				Total depth 50 feet abandoned with Hole Plug.	

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SAMPLE/CORE LOG

Boring/Well GPR-15 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan
Drilling Started 11/19/97 08:45
Drilling Completed 11/19/97 10:40

Total Depth Drilled 50 feet
Hole Diameter 8.0 inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1120.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Bryan
Helper Shawn

Prepared By Bruce Evans/Pat Bartnik
Hammer Weight 300
Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	2.0	2-1-1-2	0-.5': Top Soil. Very dark brown (7.5 YR 2.5/3) silt with organic matter and roots, frozen.	4.0 OVA background 3.5 - 5
				.5-2.0': Sand. Strong brown (7.5 YR 5/6) fine grained, silty, well sorted, trace fine gravel, moist.	
2	4	1.3	2-2-3-3	0-0.3': Slump.	4.0
				.3-1.3': Sand. As above.	
4	6	1.7	4-5-5-7	0-0.5': Slump.	4.5
				.5-.7': Sand.	
				.7-1.7': Sand. Light brown (7.5 YR 6/4) fine grained well sorted, trace silt, abundant gravel fine to coarse grain, subangular to subrounded, moist.	
6	8	1.5	3-5-7-8	0-.3': Slump.	4.0
				.3-1.5': Sand. Light brown (7.5 YR 6/4) fine to coarse grained poorly sorted, some fine gravel, moist.	
8	10	1.5	4-3-5-6	0-0.4': Slump.	4.0
				.4-1.5': Sand. Light brown (7.5 YR 6/4) predominately fine grained with some coarse sand and fine gravel, moderately sorted, moist.	
10	12	1.4	3-4-6-6	Sand. Light brown (7.5 YR 6/4) fine to coarse grained, poor sorted, some fine to coarse gravel, subangular to subrounded, moist.	3.5
12	14	0.8	4-4-5-7	0-.4': Slump.	4.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-15

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.4-.8': Sand. Dark brown (7.5 YR 3/2) medium to coarse grained, poor sorted some fine to coarse gravel (subangular to subrounded), moist.	
14	16	1.5	4-8-8-11	0-.1': Slump.	3.5
				.1-.3': Sand. As above.	
				.3-1.3': Sand. Light brown (7.5 YR 6/4) fine grained well sorted trace coarse sand and fine gravel, dry to moist.	
				1.3-1.5': Sand. Light brown (7.5 YR 6/4) fine to medium grained, moderate sorting, trace coarse sand and gravel, moist.	
16	18	1.5		0-.3': Slump.	4.0
				.3-.4': Sand. As above.	
				.4-1': Sand and Gravel. Brown (7.5 YR 4/3) medium to very coarse poor sorted sand with fine to coarse gravel and broken pebbles, moist.	
				1-1.5': Sand. Light brown (7.5 YR 6/40 fine to medium grained with some coarse grained, moderate sorted, moist.	
18	20	1.2	9-6-9-12	0-.7': Slump.	3.5
				.7-1.2': Sand. Light brown (7.5 YR 6/4) fine to medium grained with some coarse grained, moderate sorted, moist.	
20	22	1.5	8-9-11-14	0-.3': Slump.	4.5
				.5-1.5': Sand/Gravel. Pinkish grey (7.5 YR 6/2) fine to coarse sand, fine to coarse gravel. subangular to subrounded, very poorly sorted, dry to moist.	
22	24	1.5	10-11-9-12	0-.4': Slump.	5.5
				.4-.9': Sand and Gravel. As above.	
				.9-1.5': Sand. Light brown (7.5 YR 6/4) fine grain, well sorted, moist.	
24	26	1.3	7-9-10-11	0-.3': Slump.	5.0
				.3-1.3': Sand. Light brown (7.5 YR 6/4) fine to medium grained, well sorted, trace coarse sand, moist.	
26	28	1.5	8-8-10-11	0-.1': Slump.	3.5
				.1-.3': Sand. As above.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-15 Page 3 of 4

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.3-1.5': Sand and Gravel. Pinkish grey (7.5 YR 6/2) fine to coarse sand, fine to coarse gravel subangular to subrounded, very poorly sorted, mostly coarse and .3-1.0, moist.	
28	30	1.4	9-11-12-12	0-.3': Slump.	3.5
				.3-1.4': Sand/Gravel. Pinkish grey (7.5 YR 6/2) fine to coarse sand, fine coarse gravel, subangular to subrounded, trace pebbles, .5 = diameter, very poorly sorted, moist.	
30	32	1.4	10-11-11-14	0-.1': Sand/Gravel: As above.	4.0
				.1-.2': Silt. Reddish brown (5 YR 4/4) trace clay.	
				.2-.9': Sand. Light brown (7.5 YR 6/4) fine grained well sorted with abundant fine to coarse gravel subangular to subrounded, dry to moist.	
				.9-1.4': Sand. Pink (7.5 YR 7/4) very fine to fine grained wells sorted, trace silt, dry.	
32	34	1.5	10-10-12-13	0-1.5': Slump.	4.5
				.1-1.5': Sand. Light brown (7.5 YR 6/4) very fine to fine grained well sorted, trace silt some fine to coarse gravel and trace pebbles, subangular to subrounded, dry.	
34	36	1.3	11-12-15-18	0-.2': Slump.	4.0
				.2-1.3': Sand. As above, trace fine to coarse gravel, no pebbles, dry to moist.	
36	38	1.5	12-13-16-15	0-.1': Slump.	4.0
				.1-1.5': Sand. Light brown (7.5 YR 6/4) very fine to fine grained, well sorted, dry.	
38	40	1.5	10-12-14-13	0-.1': Slump.	4.5
				.1-.9': Sand. As above.	
				.9-1.5': Silt. Light brown (7.5 YR 6/4), dry.	
40	42	1.7	11-9-10-14	0-.3': Slump.	4.0
				.3-.7': Silt. As above.	
				.7-1.7': Sand. Light brown (7.5 YR 6/4) very fine grained well sorted, trace silt, dry.	
42	44	1.6	11-12-11-11	0-.1': Slump.	3.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-15 Page 4 of 4

Prepared by Bruce Evans/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.1-.3': Sand. As above.	
				.3-1.3': Sand. As above with trace fine gravel.	
				1.3-1.5': Silt. Brown (7.5 YR 5/4) very moist to wet.	
				1.5-1.6': Sand. Light brown (7.5 YR 6/4) very fine grained well sorted, moist.	
44	46	1.4	10-9-9-12	0-.1': Slump.	4.5
				.1-.4': Sand. As above.	
				.4-1.2': Silt. Brown (7.5 YR 4/4) with trace interbedded very fine grained sand, wet.	
				1.2-1.4': Sand. Light brown (7.5 YR 6/4) very fine grained well sorted, trace silt, dry.	
46	48	1.5	8-10-13-14	0-.1': Slump.	3.5
				.1-1.3': Silt. Brown (7.5 YR 5/4) wet.	
				.3-1.0': Sand. Light brown (7.5 YR 6/4) very fine grained, trace silt well sorted, piece gravel, very moist.	
				1.0-1.3': Silt. As above, wet.	
				1.3-1.5': Sand. Light brown (7.5 YR 6/4) very fine to fine grain, well sorted, trace silt, moist.	
48	50	1.5	8-8-9-9	0-.1': Slump.	11.0
				.1-.3': Silt. Brown (7.5 YR 5/4) sandy, wet.	
				.3-1.5": Sand. Brown (7.5 YR 5/4) fine to medium grained, well sorted, trace fine gravel subangular to flat to subrounded, wet, silt seam 1" thick at 1.3.	
				10:40 End borehole at 50 feet.	

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SAMPLE/CORE LOG

Boring/Well GPR-16 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 11/19/97 13:25

Drilling Completed 11/19/97 15:45

Total Depth Drilled 50 feet Hole Diameter 8.0 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in Sampling Interval Continuous

Land-Surface Elev. 1121.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Bryan Helper Shawn

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	1.5	3-2-2-2	0-0.5': Top Soil. Very dark brown (7.5 YR 2.5/2).	4.0
				0.5-1': Sand. Yellowish red (5 YR 5/6) medium to fine silty, clayey, moist.	OVA background = 4 ppm
				1.-1.5': Sand. Reddish yellow (7.5 YR 6/6) medium well sorted dry, trace gravel.	
2	4	2	2-2-2-2	0-0.2': Slump.	4.0
				0.2-1.5': Sand. As above.	
4	6	1.5	2-3-2-3	0-0.4': Slump.	4.0
				0.4-0.5': Sand. As above.	
				0.5-1.5': Sand. Strong brown (7.5 YR 5/6) coarse to medium, fairly well sorted, trace fine gravel, dry.	
6	8	1.5	3-4-6-6	0-0.2': Slump.	
				0.2-1.5': Sand. As above, dry.	
8	10	1.2	3-4-6-6	0-0.1': Slump.	4.0
				0.1-1.2': Sand. As above, slightly damp.	
10	12	1.5	3-4-5-6	0-0.2': Slump.	
				0.2-0.5': Sand. As above.	5.0
				0.5-1.5': Sand. Light brown (7.5 YR 6/4) medium well sorted trace fine sand, thin lenses (approximately 1.0 inch) of coarse to medium sand.	4.0
12	14	1.5	3-4-4-5	0-0.2': Slump.	3.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-16

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				0.2-1.5': Sand. As above but with trace of gravel (size up to 20 mm subrounded).	
14	16	1.5	3-3-5-6	0-0.2': Slump.	3.5
				0.2-0.8': Sand. Pink (7.5 YR 7/4) medium well sorted, trace coarse sand slightly damp.	
				0.8-1.5': Sand. Pinkish grey (7.5 YR 6/3) coarse to very fine, very poorly sorted, gravely (2 mm - 1 inch) subrounded.	
16	18	1.5	3-5-5-5	0-0.2': Slump.	3.5
				0.2-0.8': Sand. Pink (7.5 YR 7/4) medium well sorted, trace coarse sand slightly damp.	
				0.8-1.5': Sand. Pinkish grey (7.5 YR 6/3) coarse to very fine, very poorly sorted, gravely (2 mm - 1 inch) subrounded.	
16	18	1.5	3-5-5-5	0-0.2': Slump.	7.0
				0.2-0.8': Sand. As above, light brown (7.r YR 6/4).	
				0.8-1.5': Sand. Pink (7.5 YR 7/4) medium trace coarse sand well sorted, damp.	
18	20	1.7	5-6-6-8	0-0.2': Slump.	6.5
				0.2-1.7': Sand. As above, slightly damp.	
20	22	1.2	4-6-7-8	0-0.2': Slump.	6.0
				0.2-1.2': Sand. Pink (7.5 YR 7/4) coarse to fine gravely (2 mm - 35 mm) subrounded very poorly sorted, coarsens downward.	
22	24	1.2	6-7-7-8	0-0.1': Slump.	5.5
				0.1-1.2': Sand. Light brown (7.5 YR 6/4) medium to fine trace coarse trace gravel very slightly damp.	
24	26	1.3	4-4-4-4	0-0.1': Slump.	6.0
				0.1-0.2': Sand. As above.	
				0.2-0.5': Sand. Light brown (7.5 6/5) very coarse to fine gravely (2 mm - 10 mm) subrounded very poorly sorted wet to damp.	
				0.5-1.3': Silt. Brown (7.5 YR 5/4) with clay lenses reddish brown (5 YR 5/4) Penetrometer = 0.8, moist.	
26	28	1.5	3-5-5-7	0-0.2': Slump.	5.0
				0.2-1.5': Silt. As above, dry.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-16

Prepared by Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
28	30	1.2	4-7-9-9	0-0.2': Slump.	5.0
				0.2-1.2': Silt. As above, moist.	
30	32	1.3	5-5-6-8	0-0.2': Slump.	6.0
				0.2-1.3': Silt. As above, red clay lenses effervescent, mildly with HCL.	
32	34	1.4	6-7-9-10	0-0.1': Slump.	6.0
				0.1-1.4': Silt. As above, saturated between 1.0 and 1.2 otherwise moist (clay lenses dry).	
34	36	1.2	6-9-10-12	0-0.1': Slump.	5.0
				0.1-1.2': Silt. As above (silt) dry, clay dry, but with thin laminae (1 to 2 mm) of very fine sand. Clay and silt alternative layers.	
36	38	1.2	8-8-9-12	0-0.1': Slump.	
				0.1-1.2': Silt. With clay as above, dry.	5.0
38	40	1.3	7-9-9-11	0-0.1': Slump.	7.0
				0.1-1.3': Silt. As above, except clay is reddish brown (5 RY 5/3) silt is Pinkish grey brown (7.5 YR 5/2) Penetrometer = 12.5.	
40	42	0	6-9-11-14	No recovery.	
42	44	1.5	13-15-17-18	0-0.2': Slump.	6.0
				0.2-1.5': Silt. As above.	
44	46	1.5	11-13-14-14	0-0.2': Slump.	7.0
				0.2-1.5': Silt. As above.	
46	48	1.5	9-10-12-15	0-0.1': Slump.	6.0
				01.-1.5': Silt. As above.	
48	50	1.2	13-13-15-14	0-0.1': Slump.	6.0
				0.1-1.2': Silt. As above.	
				End boring at 50 feet 15:45	

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SAMPLE/CORE LOG

Boring/Well GPR-17 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 11/19/97 Drilling Completed 11/19/97 16:05

Total Depth Drilled 50 feet Hole Diameter 8.0 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in Sampling Interval Continuous

Land-Surface Elev. 1094.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Helper Chris

Prepared By Ted Powell Hammer Weight 300 Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	18	2-2-2-1	0-6": Top Soil. Roots, silty sandy loam, dark brown (7.5 YR 3/2) trace gravel.	3.0
				6-18": Sand. Very silty, very fine sand, from 12 to 18" silty fine to medium sand, some coarse and very coarse, loose, moist, strong brown (7.5 YR 4/6).	OVA backround = 3 ppm
2	4	14	6-6-6-6	Sand. Very fine with silt, well sorted, moist, medium dense, strong brown (7.5 YR 4/6).	3.5
4	6	16	4-4-4-4	0-13": Sand. Very fine to fine some silt, (variable) silty in part, trace fine gravel from 10 to 13, very moist, moderate sorting.	
				13-16": Sand and Gravel. Sand coarse with very coarse and medium, trace fine, gravel 1/8 to 1" rounded to subangular, very poorly sorted, loose, slight moist, dark brown (7.5 YR 3/4).	
6	8	3	14-2-10-10	Sand and Gravel. As above, wet, large gravel, blocked recovery.	3.5
8	10	6	6-6-5-5	Sand and Gravel. As above.	3.25
10	12	7	3-4-4-4	Sand. Trace gravel, sand coarse, trace very coarse, trace medium trace fine, well sorted, very moist, loose gravel 1/4" to 3/4", subrounded to subangular, dark yellow brown (10 YR 4/6).	3.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-17 Page 2 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
12	14	13	4-4-5-6	Sand. Some gravel, sand coarse some very coarse, trace fine to medium, very poorly sorted, very moist, gravel 1/8 to 3/4" subrounded to subangular, brown (10 YR 4/3).	3.5
14	16	15	6-6-6-6	Sand. As above, but dark yellow brown (10 YR 4/4).	3.75
16	18	13	6-6-6-6	Sand. Some gravel (15 percent), sand coarse to very coarse, some medium trace fine, gravel 1/8 to 1/2" subrounded, poorly sorted, very moist dark yellow brown (10 YR 4/4).	4
18	20	8	6-6-6-8	Sand. Coarse some very coarse, some medium, trace very fine and fine, trace gravel 1/8 to 1", angular to subrounded, moist, color as above, poorly sorted.	3.5
20	22	12	5-6-6-6	Sand. Coarse with very coarse, some medium trace fine and very fine moist, some gravel 1/8 to 1/2" subangular to subrounded, poorly sorted. Brown (10 YR 5/3) sand approximately 60 percent quartz.	4
22	24	11	6-6-6-6	Sand. As above.	3.5
24	26	11	8-8-8-10	Sand. Fine some very fine, some coarse, trace very coarse, moderate sorting, trace gravel, 1/8 to 1.5" subrounded to fractured by spoon, slight moist, loose, brown (7.5 YR 5/4).	4.75
26	28	0	10-10-12-12	No recovery.	
28	30	17	10-10-10-11	0-7": Sand. Medium with fine trace very fine and silt, trace coarse, moderate well sorted, medium dense, very moist, strong brown (7.5 YR 5/6).	4.25
				7-17": Sand. With gravel, sand, medium to coarse, some fine and very coarse, trace very fine gravel 1/8 to 3/4", subrounded to subangular, very sharp contact at 7" lense weathered shale cobble, brown (7.5 YR 4/4) slight moist.	
30	32	13	20-20-20-20	Sand. With gravel, as above.	3.5
32	34	1	4-4	Gravel, three large fractured pieces of granite.	
34	36	14	20-20-25-25	0-6": Sand with Gravel. Sand, fine to medium, with coarse, some very coarse, some very fine, trace silt, dry to slight moist, gravel 1/8 to 1/2" subangular to subrounded, very poorly sorted, dense.	4.25

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-17 Page 3 of 4

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				6-11.5": Sand. Fine with medium, trace coarse, trace very fine, moist to very moist, strong brown (7.5 YR 5/6) moderate well sorted, dense.	
				11.5-14": Sand. Medium with fine some coarse trace very coarse, some gravel 1/8 to 1/2" angular to subrounded, poorly sorted, moist very dense.	
36	38	0	60/ft	No recovery.	
38	40	1	24-40-20-24	Gravel. Some sand, sand, fine to medium, trace coarse, some silt, wet, gravel 1/2 to 1.2", subrounded to rounded, very poorly sorted, brown (7.5 YR 4/3).	4.5
40	42	3	25-25-25-25	Gravel. Some sand, gravel 1/4 to 1.5", subrounded to fractured abundant granite sand, very fine to fine, some medium to very coarse, trace silt, slight moist, very dense, very poorly sorted, brown (10 YR 5/3).	4.5
42	44	13	40-40-30-20	0-1": Shattered, Michigame slate.	4
				1-10": Sand with Gravel. Sand fine and medium some very fine trace silt, slight moist, pale brown (10 YR 4/3) poorly sorted, gravel 1/8 to 1" subrounded to	
				10-13": Sand. Fine with medium, trace coarse and very coarse, moderate sorting, slight moist, trace 1/8 to 1/4" gravel, subrounded, yellow brown (10 YR 5/4).	
44	46	14	20-20-18-18	0-12": Sand with Gravel. Brown (7.5 YR 4/4) sand medium to coarse, with fine, trace very coarse and very fine very moist, gravel 1/8 to 1.25", subrounded to angular, very poorly sorted, dense.	5.5
				12-14": Sand. Fine to medium, some very fine and coarse, trace silt, moderate sorting, very moist, strong brown (7.5 YR 5/6).	
46	48	16	9-9-10-10	0-5.5": Sand. As above.	4.5
				5.5-15": Sand. Some gravel, sand medium with coarse and fine, trace very coarse and very fine, poorly sorted, medium dense, very moist to wet, strong brown (7.5 YR 4/6), gravel 1/8 to 1/2" rounded to subrounded.	
				15-16": Sand. Very fine, some fine, trace (10 percent) silt, moderate well sorted, dense, very moist.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-17

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
48	50	16	20-20-22-22	0-3": Sand. As above.	4.25
				3-13.5": Sand and Gravel. And, medium to very coarse, some fine trace very fine, gravel 1/8 to 3/4" subangular to subrounded, very poorly sorted, moist to very moist, brown (7.5 YR 4/3).	
				13.5-16": Gravel. Some sand, gravel is predominately fractured carbonate, sand is very fine and silty, dry likely pulverized rock.	
				Total Depth at 50 ft bls at 16:05.	
				Abandon with bentonite chips (holeplug).	

GERAGHTY & MILLER, INC.
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SAMPLE/CORE LOG

Boring/Well GPR-18 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 11/20/97 08:35

Drilling Completed 11/20/97 11:10

Total Depth Drilled 50 feet

Hole Diameter 8.0 inches

Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in

Sampling Interval Continuous

Land-Surface Elev. 1096.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Driller Randy

Helper Chris

Prepared By Ted Powell

Hammer Weight 300

Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	6	2-3-3-2	0-2": Top Soil. Grass, roots, very dark brown (10 YR 2/2) silt, loam, moist to frozen.	3.5 OVA background = 3.5 ppm
				2-6": Sand. Fine to very fine, trace medium to coarse silty, trace fine gravel 1/8 to 1/4", moist, loose, strong brown (7.5 YR 4/6).	
2	4	13	3-3-2-2	0-3": Sand. Very dark brown (7.5 YR 2.5/3) medium to fine, some very fine, trace silt, trace coarse, trace very fine gravel, very moist.	4.5
				3-13": Sand and Gravel. Strong brown (7.5 YR 4/6) very moist, loose, sand fine to medium with coarse some very coarse, trace very fine and silt, poor sorting, gravel 1/8 to 1/2" subrounded to subangular.	
4	6	14	2-2-2-2	Sand. Some gravel, sand medium some fine and coarse, trace very coarse and very fine, gravel 1/8 to 3/4", subrounded, poorly sorted, loose, moist, strong brown (7.5 YR 5/8).	4
6	8	15	3-3-3-4	0-4": Sand. As above.	4.5
				4-15": Sand with Gravel. Fine sand, coarse with very coarse some medium trace fine, gravel 1/8 to 3/4", rounded to angular, very poorly sorted, loose, dark yellow brown (10 YR 4/4).	
8	10	7	2-2-3-4	Sand with Gravel. As above.	4.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-18 Page 2 of 3

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
10	12	5	4-4-4-4	Sand and Gravel. Sand, very coarse some coarse medium, trace fine, gravel 1/4 to 3/4" angular to subrounded, very poorly sorted, very moist, loose, red brown (5 YR 4/4).	4.5
12	14	3	5-5-6-6	Gravel. Some sand, gravel 1/4 to 1.5" angular to subrounded, sand, medium to coarse, some fine to very fine and silt, wet, poorly sorted, color variable due to gravel content.	5
14	16	8	3-3-3-3	Sand with Gravel. Sand coarse to very coarse, some medium trace fine, gravel 1/8 to 3/4" angular brown (7.5 YR 4/4) subrounded, very poorly sorted, loose, very moist.	4
16	18	18	4-4-4-4	0-4.5": Gravel with Sand. Sand very coarse to coarse, trace medium, gravel 1/8 to 1/2" rounded to subangular saturated, brown (7.5 YR 4/3).	6
				4.5-18": Silt, brown (7.5 YR 5/4) saturated, soft, some clay, clayey, in part.	
18	20	17	3-3-3-3	Silt. Saturated, soft, trace medium stiff at bottom, trace to some very fine sad, trace clay, color as above.	4.5
20	22	15	4-4-5-5	Silt. Trace to some very fine sand, soft to medium stiff, several 1/4" clay lenses from 2 to 7", red brown (2.5 YR 4/4) soft, plastic mildly effervescent, slight plastic.	5
22	24	17	4-4-5-4	Silt. Trace very fine sand, some very fine sand at 5-9", soft to medium stiff, saturated, several red brown clay lenses throughout (approximately 1/4" thick) clay as above, silt color as above.	5.0
24	26	18	5-4-5-4	Silt. Clayey in part, some trace very fine sand, very most to moist, medium stiff, red brown (5 YR 5/4), clay lenses throughout 1/4" to 1.5" thick, fissile, medium stiff, strongly effervescent, moderately plastic, red brown (2.5 YR 4/4).	5.5
26	28	20	10-10-10-10	Silt with red brown clay lenses, silt, as above but slight more clay, clay very stiff, moderate plastic, moist, strongly effervescent, firm 16 to 19" very thin laminae of clayey silt, brown (7.5 YR 4/4) and very fine sandy silt, brown (10 YR 5/3).	5.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-18 Page 3 of 3

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
28	30	8	10-10-10-10	Sand. Light brown (7.5 YR 6/4) medium some fine, trace coarse, moderate well sorted, medium dense, wet on top half to moist on bottom.	5.25
30	32	10	10-12-12-12	Sand. Fine, trace medium and very fine, well sorted, medium dense, brown (7.5 YR 5/4).	6.0
32	34	15	14-14-12-12	Sand. Fine with very fine, trace medium, trace silt, brown (7.5 YR 5/4) very dense, moderate well sorted, wet to saturated.	5.5
34	36	16	7-7-7-7	Sand. Fine, some very fine trace medium, trace silt, moderately well sorted, dense to medium dense, saturated, brown (7.5 YR 5/4).	5.25
36	38	22	12-12-13-13	Sand. Fine with medium, some very fine trace silt, color as above, well sorted.	5
38	40	22	9-9-9-9	Sand. As above, except some medium.	6.5
40	42	18	9-9-8-8	Sand. Fine some medium, some very fine trace silt, moderate well sorted, medium dense to dense, saturated, brown (7.5 YR 5/4).	5
42	44	21	7-7-8-9	Sand. As above.	4.25
44	46	13	8-8-7-7	Sand. As above with inclusion of clay at 7", red brown (5 YR 4/4) soft, plastic, no effervescent. apparent lense approximately 3/4" thick, ripped appearance.	4.25
46	48	14	7-7-8-9	Sand. Fine with medium, some very fine, trace silt brown (7.5 YR 4/4) medium dense.	5.25
48	50	23.0	9-9-9-9	0-12": Sand. As above, except trace coarse and very coarse from 0-6".	6.5
				12-12.5": Clay. Red brown (5 YR 4/4) very soft, plastic, no effervescent.	
				12.5-23": Coarsening down sequence, top sand as above, grading to sand and gravel, at bottom, sand in lower half is predominately coarse to very coarse, some medium, trace fine and silt, very poorly sorted, brown (7.5 YR 4/3), gravel 1/8 to 1/2", subangular to rounded.	
				Total depth at 50 ft bls at 11:10	
				Abandon boring with 3/8" Bariod holeplug.	

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SAMPLE/CORE LOG

Boring/Well GPR-19 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan
Drilling Started 11/20/97 09:25
Drilling Completed 11/20/97 11:40

Total Depth Drilled 50 feet
Hole Diameter 8 inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1121.00 feet ☐ Surveyed ☒ Estimated
Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Bryan
Helper Shawn

Prepared By Bruce Evans
Hammer Weight 300
Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	1.9	2-2-2-3	0-.5': Top Soil. Very dark brown (7.5 YR 2.5/R), silt with organics and roots, frozen.	4 OVA background = 4 ppm
				.5-1.3': Sand. Strong brown (7.5 YR 5/8) very fine grain silty, well sorted, trace roots, moist.	
				1.3-1.9': Sand. Strong brown (7.5 YR 5/8) medium rain, well sorted, with some fine to medium gravel, subangular, moist.	
2	4	1.3	2-3-3-4	0-.2': Slump.	3.5
				.2-1.3': Sand. As above, slight more gravel below 1.0.	
4	6	1.5	3-4-4-6	0-.5': Slump.	3.5
				.5-1.5': Sand. Light brown (7.5 YR 6/4) medium grain, well sorted, with fine to medium.	
6	8	1.7	4-4-6-7	0-.6': Slump.	4.0
				.6-1.1': Sand. As above.	
				1.1-1.4': Sand and Gravel. Light brown (7.5 YR 6/4) fine to medium sand with fine to coarse gravel and pebble to 1" diameter, very poorly sorted, subangular to subrounded, moist.	
				1.4-1.7': Sand. Pink (7.5 YR 7/4) fine grained, well sorted, trace silt, moist.	
8	10	1.4	5-5-5-7	0-.4': Slump.	4.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-19 Page 2 of 4

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.4-1.4': Sand. As above with trace fine gravel subangular to subrounded, moist.	
10	12	1.4	5-6-4-6	0-.3': Slump.	3.5
				.3-.7': Sand and Gravel. Light brown (7.5 YR 6/4) fine to mediums and with fine to coarse gravel, poorly sorted, moist.	
				.7-1.3': Sand. Light brown (7.5 YR 6/4) medium grained well sorted, moist.	
				1.3-1.4': Sand and Gravel: Light brown (7.5 YR 6/4) fine to coarse sand, fine to coarse gravel, subangular to subrounded, very poorly sorted, moist.	
12	14	1.3	8-10-12-13	0-.6': Sand. Brown (7.5 YR 5/4) fine to medium grained, with some fine to coarse gravel, poorly sorted moist.	4.2
				.6-1.3': Sand and Gravel. Brown (7.5 YR 5/3) coarse and with fine to coarse gravel and pebbles to 1" diameter, subangular to subround, very poorly sorted, moist.	
14	16	0.2	12-13-13-14	Poor Recovery - slump.	3.5
16	18	1.4	6-6-8-9	0-.3': Slump.	4.0
				.3-1.0': Gravel. Light brown (7.5 YR 6/4) fine to coarse subangular to subrounded, with some coarse sand, moist.	
				1.0-1.4': Sand. Pink (7.5 YR 7/3) fine to coarse grained with trace fine to coarse gravel, very poorly sorted, moist.	
18	20	1.5	7-8-11-7	0-.2': Slump.	4.5
				.2-1.0': Sand. As above.	
				1.0-1.5': Gravel. Light brown (7.5 YR 6/4) fine to coarse, subangular to subrounded, trace fine to coarse sand, moist to dry.	
20	22	1.4	8-9-14-14	0-.4': Slump.	4.0
				.4-1.4': Gravel. As above with pebbles to .75" diameter, dry to moist.	
22	24	1.5	9-10-12-15	0-.3': Slump.	4.0
				.3-1.0': Gravel. As above.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-19 Page 3 of 4

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				1-1.5: Sand. Pink (7.5 YR 7/3) fine grained, well sorted, trace silt, moist.	
24	26	2	11-8-9-10	0-.6': Slump.	4.0
				.6-2.0': Sand. Pink (7.5 YR 7/4) very fine to fine grained, well sorted, occasional trace coarse sand grains, moist.	
26	28	1.8	8-9-9-11	0-0.4': Slump.	3.5
				.4-1.8': Sand. As above.	
28	30	1.9	9-10-11-10	0-.4': Slump.	4.0
				.4-1.9': Sand. As above, with trace silt within 1 to 2" bands, moist.	
30	32	1.8	8-11-12-10	0-.2': Slump.	4.0
				.2-1.8': Sand. Pink (7.5 YR 7/3) very fine grained, well sorted, some silt within sand and as .2 to .5" thick bands, very moist.	
32	34	2.0	7-8-9-13	Sand. As above, with varves of silt at .5 to 1" spacing, very moist.	3.5
34	36	2.0	7-6-7-8	0-.6': Sand. As above.	5.5
				.6-2.0': Sand. Light brown (7.5 YR 6/4) very fine grained well sorted, moist.	
36	38	1.7	7-10-11-12	0-.17': Sand. As above, trace silt, varves below 1.7, moist.	6.0
38	40	1.5	6-8-10-12	Sand. Light brown (7.5 YR 6/4) very fine grained, well sorted, some silt in sand matrix and trace silt as thin varves, moist to dry.	5.0
40	42	1.7	6-9-10-12	Sand. As above, no silt varves moist to very moist.	5.0
42	44	1.5	7-9-10-13	0-.2': Slump.	5.5
				1.4-1.5': Silt. Brown (7.5 YR 5/4) with a thin band (.2") of clay reddish brown (5 YR 5/4) wet. Acid reaction to HCL in silt and clay, Penetrometer: Clay = 0.5, silt = 1.0.	
44	46	1.3	8-12-15-17	Sand. Brown (7.5 YR 5/4) very fine to fine grained, well sorted, trace silt, wet.	6.0
46	48	1.5	9-13-16-17	0-.1': Slump.	6.0

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-19

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.1-1.5': Sand. Brown (7.5 YR 5/4) very fine grained, silty, well sorted, .1" band reddish brown clay at .5 and 1" thick band silt brown, at 1.3, wet.	
48	50	1.5	8-11-13-12	0-.7': Sand. As above, no clay or silt bands.	7.0
				.7-1.5': Silt. Brown (7.5 YR 5/4) very sandy with very fine grain sand, wet.	
				11:40 End borehole at 50 feet.	

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SAMPLE/CORE LOG

Boring/Well GPR-20 Project/No. Ford Kingsford Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 11/20/97 13:30 Drilling Completed 11/20/97 15:40

Total Depth Drilled 50 feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in Sampling Interval Continuous

Land-Surface Elev. 1120.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Bryan Helper Shawn

Prepared By Bruce Evans Hammer Weight 300 Hammer Drop 24 inches

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	1	8-3-3-5	0-.5': Top Soil. Very dark brown (7.5 YR 2.5/2) silt with organics and roots, frozen.	6 OVA background = 3.5 ppm
				.5-1.0': Sand. Strong brown (7.5 YR 5/8) predominately fine grained with coarse sand and fine to coarse gravel, poorly sorted, moist.	
2	4	1.3	3-3-4-5	0-.2': Slump.	5.5
				.2-1.2': Sand. Reddish yellow (7.5 YR 6/6) fine grained, well sorted, moist.	
				1.2-1.3': Sand. Reddish yellow (7.5 YR 6/6) fine to coarse grained with fine to coarse gravel, subangular to subrounded, poorly sorted, moist.	
4	6	1.4	3-5-5-7	0-.3': Slump.	5.5
				.3-1.4': Sand. Light brown (7.5 YR 6/4) medium grain with some fine to coarse grain, moderate sorted, trace fine gravel, subangular, moist.	
6	8	1.4		0-.2': Slump.	6.0
				.2-.4': Sand. As above.	
				.4-1.4': Sand. Light brown (7.5 YR 6/3) medium to coarse sand, fine to medium gravel, subangular to subrounded, trace pebbles to 1" diameter, poorly sorted, moist.	
8	10	1.4	4-5-4-5	0-.2': Slump.	5.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-20 Page 2 of 4

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				.2-1.4': Sand. Light brown (7.5 YR 6/4) fine to coarse grained, with trace medium gravel, poorly sorted,	
10	12	1.3	3-5-6-5	0-.2': Slump.	5.0
				.2-1.3': Sand. As above.	
12	14	1.2	4-4-4-4	0-.2': Slump.	5.5
				.2-1.2': Sand. Light brown (7.5 YR 6/4) fine to medium grained, well sorted, moist.	
14	16	1.5	5-7-8-8	0-.2': Slump.	5.5
				.2-.4': Sand. As above.	
				.4-1.4': Sand. Light brown (7.5 YR 6/3) coarse grained with fine to medium gravel and pebbles to 1" diameter, subangular to subrounded, poorly sorted, moist.	
				1.4-1.5': Sand. Pink (7.5 YR 5\7/4) fine grained well sorted, moist.	
16	18	1.4	4-7-8-9	0-.2': Slump.	6.0
				.2-1.4': Sand. As above, with trace fine to medium gravel, moist.	
18	20	1.1	4-6-7-9	0-.2': Slump.	7.0
				.2-1.1': Sand. Pink (7.5 YR 7/4) fine to medium sand, moderate sorted with trace fine to medium gravel, moist.	
20	22	1.6		0-.4': Slump.	8.0
				.4-1.6': Sand. As above, moist.	
22	24	1.1	6-9-10-9	0-.2': Slump.	6.0
				.2-1.1': Sand. As above.	
24	26	1.5	4-5-7-7	0-.5': Slump.	5.8
				.5-1.0': Sand. Pinkish grey (7.5 YR 7/2) coarse grained, well sorted, with some fine to coarse gravel, subangular to subrounded, moist.	
				1.0-1.5': Sand. Pink (7.5 YR 7/3) very fine to fine grain well sorted with some fine to coarse gravel, moist.	
26	28	1.66	4-5-5-6	0-.3': Slump.	4.5
				.3-.5': Sand. As above.	
				.5-.7': Silt. Brown (7.5 YR 5/4) very moist to wet.	
				.7-1.5': Sand. As above, moist.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-20 Page 3 of 4

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				1.5-1.6': Silt. As above, very moist to wet, very slight reaction to HCL.	
28	30	1.5	4-3-3-3	0-.4': Slump.	4.5
				.4-.6': Silt. Brown (7.5 YR 5/4) wet.	4.5
				.6-1.5': Sand. Light brown (7.5 YR 6/4) very fine grain, well sorted, trace silt in matrix and trace silt as thin varues below 1.0, moist.	
30	32	1.5	4-3-4-4	0-.2': Slump.	4.5
				.2-.7': Silt. Brown (7.5 YR 6/4) with several thin banks .1" clay reddish brown (5 YR 5/4), no acid reaction, Penetrometer: Silt = 0.5.	
				.7-1.5': Sand. Light brown (7.5 YR 6/4) very fine grained, well sorted, trace coarse sand, trace silt, moist.	
32	24	1.5	3-5-6-8	0-.1: Slump.	6.5
				.1-.8': Silt. Brown (7.5 YR 5/4) with trace reddish brown clay, wet.	
				.8-1.1': Sand. Light brown (7.5 YR 6/4) very fine grained, well sorted, trace silt, moist.	
				1.1-1.5': Silt. Brown (7.5 YR 5/4) with varves very fine grain sand, wet.	
34	36	1.2	5-6-7-8	0-.1': Slump.	5.5
				.1-1.2': Sand. Light brown (7.5 YR 6/4) very fine to fine grained, well sorted, trace silt, 1" silt seam at 1.0, trace medium gravel, subangular, very moist.	
36	38	1.2	4-5-7-6	0-.2': Slump.	5.5
				.2-1.2': Sand. Light brown (7.5 YR 6/4) very fine to fine grained, well sorted, trace coarse sand, very moist.	
38	40	1.1	3-5-6-9	0-.1': Slump.	5.5
				1-1.1': Sand. As above, very moist.	
40	42	1.4	4-6-7-7	0-.3': Slump.	6.0
				.3-.6': Sand. As above.	
				.6-.8': Sand. Light brown (7.5 YR 6/4) fine to coarse, moderate sorting, moist.	
				.8-1.4': Sand. Light brown (7.5 YR 6/4) very fine to fine grained, trace silt, well sorted, trace fine gravel, subangular to subrounded, moist.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-20

Prepared by Bruce Evans

From (feet)	To (feet)	Core Recovery (feet)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
42	44	1.1	5-5-6-6	0-.1': Slump.	5.0
				.1-1.1': Sand. Light brown (7.5 YR 6/4) fine grain, well sorted, with trace medium to coarse sand, moist.	
44	46	1.8	6-7-6-8	0-.1': Slump.	5.0
				.1-1.8: Sand. Pink (7.5 YR 7/3) fine grain, well sorted, with trace medium to coarse sand, moist.	
46	48	1.5	4-6-7-8	0-.2': Slump.	5.5
				.2-.7': Sand. As above, very moist to wet.	
				.7-1.5': Sand. Brown (7.5 YR 5/4) fine to medium grained well sorted, wet.	
48	50	1.8	4-5-5-6	0-.1': Slump.	8.5
				.1-1.8': Sand. As above, wet.	
				15:40 End borehole at 50 feet.	

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SAMPLE/CORE LOG

Boring/Well GPR-21 Project/No. Ford Kingsford Page 1 of 5

Site Location Kingsford, Michigan
Drilling Started 11/20/97 13:55
Drilling Completed 11/20/97 16:30

Total Depth Drilled 50 feet
Hole Diameter 8 inches
Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 ft x 2 in
Sampling Interval Continuous

Land-Surface Elev. 1092.00 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None
Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear
Driller Randy
Helper Chris

Prepared By Ted Powell
Hammer Weight 300
Hammer Drop 30 inches

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
0	2	19	2-2-2-2	0-4": Top Soil. Silty sand loam, frozen.	3.5
				4-19": Sand. Medium with fine trace very fine and coarse, loose, slight moist, some gravel, 1/8 to 1/2" angular to subrounded, strong brown (7.5 YR 5/6).	OVA background = 3.5 ppm
2	4	22.0	2-2-2-2	0-17.5": Sand. Brown (7.5 YR 4/4) medium, some fine and coarse, trace very fine, loose, slight moist.	3.5
				17.5-22": Sand. Medium, trace coarse trace fine and very fine, moderate well sorted, loose, moist, strong brown (7.5 YR 5/6).	
4	6	13.0	2-2-3-3	1-7": Sand. As abovc.	4.25
				7-10": Sand. Medium with fine, trace very fine, loose, slight moist, well sorted, strong brown (7.5 YR 4/4).	
				10-13": Silt. Some fine to medium sand, some clay (loam) decayed organics, former land surface.	
6	8	19	1-1-1-1	Sand. Very silty, fine to medium, trace coarse and very coarse, trace fine gravel 1/8" subrounded, occasional roots, loose, slight moist, strong brown (7.5 YR 5/6).	4.5
8	10	15	4-4-4-4	Silty Sand. As above, very moist.	7
10	12	19	7-7-7-7	0-6": Sand. Silty fine, some very fine, trace medium, some (15 percent) gravel 1/8 to 1/2" subrounded to subangular, moist, moderate sorting, color as above.	7.5

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-21 Page 2 of 5

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				6-11": Sand. Medium with fine, trace coarse and very coarse, trace gravel, 1/8 to 1/4" subrounded to subangular, poor sorting, very moist, color, as above.	
				11-19": Sand. Medium to coarse, some fine and very fine trace silt, trace gravel (approximately 10 percent) 1/8 to 1/2" subrounded to subangular, poorly sorted, strong brown (7.5 YR 4/6).	
12	14	13.0	6-6-6-6	Sand. Very fine to fine, some silt. Trace medium and coarse, moderate sorting, slight moist, strong brown (7.5 YR 5/8). At 11-11.5", silt, some very fine sand, dense, moist brown (7.5 YR 4/4).	9
14	16	16	6-6-7-7	0-13": Sand. Very fine silty, some silt, silt variable, color as above, medium dense, slight moist.	13
				13-16": Silt. Trace very fine sand, well sorted, wet to saturated, brown (7.5 YR 4/4).	
16	18	18	11-11-8-9	0-2": Silt. As above.	11
				2-3": Clay. Fissile, soft to medium stiff, moderate plastic, effervescent in HCL, red brown (2.5 YR 4/4).	
				3-10": Sand. Very fine, silty, wet, dense brown (7.5 YR 4/4) well sorted.	
				10-13": Silt. Saturated, trace very fine sand, some clay, color as above.	
				13-16": Sand. Very fine, silty, saturated, soupy, dense.	
				16-18": Silt. As from 10-13".	
18	20	18	7-7-8-6	0-10": Sand. Interbedded very fine silty and silt as above, saturated, dense.	11
				10-18": Sand. Very fine to fine, some silt, dense, well sorted, saturated, brown (7.5 YR 4/3).	
20	22	18	8-8-8-7	0-8": Sand. Very fine silty, dense, brown (7.5 YR 4/3) well sorted.	12
				8-12": Silt. Homogenous, dense, saturated, color as above.	
				12-17": Sand. Very fine silty, as above.	
				17-18": Sand. Very fine silt, some clay, medium stiff, color as above.	
22	24	23	7-7-7-8	0-2": Silt. Very fine sandy, some clay, as above.	11

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-21 Page 3 of 5

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				2-5": Silt. Very fine sandy, brown (7.5 YR 5/4) trace red brown clay inclusions, soft, moderate plastic.	
				5-5.5": Silt. Dark brown (7.5 YR 3/3) stiff, trace very fine sand.	
				5.5-20": Silt. Brown (7.5 YR 4/4) very clayey in part, trace to some very fine to fine sand (variable) dense to stiff.	
				20-23": Clay. Some silt, trace very fine sand, dark red brown (2.5 YR 3/4) moderate plastic, medium stiff, slightly effervescent.	
24	26	20	7-7-7-7	0-2": Sand. Very fine to fine, silty, trace clay, red brown (5 YR 4/4), moderate well sorting, saturated.	13
				2-6.5": Silt. Sandy very fine to fine, soupy, brown (7.5 YR 4/3).	
				6.5-8": Clay. Medium stiff, moderately plastic, slight fissile, strongly effervescent, red brown (2.5 YR 4/4).	
				8-20": Silt. Very sandy (very fine to fine) in part, variable clay (trace to some) medium dense to medium stiff, brown (7.5 YR 4/2).	
26	28	18	8-8-8-8	0-13.5": Silt. Very sandy in part (very fine to fine) trace some clay (variable) dark brown (7.5 YR 3/2), stiff to very stiff.	13
				13.5-13.8": Sand. Very fine, silty, well sorted, brown (7.5 YR 4/4).	
				13.8-14.5": Clay. Red brown (2.5 YR 4/4) medium stiff, to stiff, slight to moderate plastic.	
				14.5-18": Silt. Trace very fine to fine sand in top portion, dark brown (7.5 YR 3/2), wet.	
28	30	18	8-8-8-8	0-8": Silt and Clay. Interbedded, as above.	9
				8-18": Silt. Medium stiff to stiff, with very fine to fine sand in part, trace clay, wet to saturated, brown (7.5 YR 4/2).	
30	32	20	7-8-7-8	0-1": Silt. As above.	12
				1-2": Clay. Red brown (2.5 YR 4/4) fissile, medium stiff, very moist, moderate plastic, strongly	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-21 Page 4 of 5

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
				2-17.5 Silt. Variable clay and sand, very fine to fine, content throughout, medium dense to stiff, brown (7.5 YR 4/2).	
				17.5 -20": Clay. Very stiff, slight to moderately plastic, color as above, strongly effervescent.	
32	34	18	7-8-7-8	0-4": Silt. Very sandy, very fine to fine, in part, brown (7.5 YR 4/2) medium dense.	8
				4-18": Silt. Clayey in part, some very fine sand at 10 to 10.5; at 13 to 17.5 red brown clay as above, very stiff.	
34	36	18.5	6-7-8-9	Silt and Clay. Interbedded, silt is clayey in part, trace to some very fine sand, brown (7.5 YR 4/2) very stiff to slight moist clay at 12 and 14", approximately 2" thick, very stiff slightly moist, slight effervescent, red brown (2.5 YR 4/2) fissile to blocky.	
36	38	20	7-8-7-8	0-4": Interbedded silt and clay, as above.	9
				4-8": Silt. With clay, brown (7.5 YR 4/2) to dark brown (7.5 YR 3/2), thin laminae of very fine silty sand, interspread throughout, brown (7.5 YR 5/3), slight moist, dense.	
				8-20": Clayey Silt. Interbedded with clay, clayey silt is dark brown (7.5 YR 4/2) stiff, slight moist, clay is red brown (2.5 YR 4/2) medium stiff, moderate plastic, no effervescent.	
38	40	18	6-6-6-6	Silt and Clay. Interbedded, as above.	7
40	42	21	7-7-7-7	Clayey Silt and Clay. Interbedded, clayey silt is brown (7.5 YR 4/2) to dark brown (7.5 YR 3/2) some very fine to fine sand in part, dense, clay is mildly effervescent, red brown (2.5 YR 4/3) very stiff to hard, slight platic, slight mosit, beds are 2 to 3" thick.	
42	44	20	7-8-9-9	Clayey Silt and Clay. Interbedded, as above. From 13 to 20" thin laminae of red clay (1/8 to 1/4" thick) and very thin silt (<1 mm) clay slight effervescent, medium stiff, fissile slight plastic, red brown (2.5 YR 4/3).	10

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GPR-21 Page 5 of 5

Prepared by Ted Powell

From (feet)	To (feet)	Core Recovery (inches)	Time/Hydraulic Pressure of Blows per 6 inches	Sample/Core Description	OVA Headspace
44	46	22	6-6-7-7	0-11": Clay. Dark red brown (5 YR 3/4) hard, some silt, effervescent, slight moist.	8
				11-12": Silt. Trace clay, homogenous brown (7.5 YR 4/2).	
				12-22": Clay. Very stiff to hard, trace, some silt, red brown (5 YR 4/3) slight plastic, slight effervescent.	
46	48	22	7-7-7-7	Clay. Silty, red brown (5 YR 4/3) very stiff, non to slight plastic, dry to slightly moist. At 9.5 to 11 silt, trace very fine sand, dark brown (7.5 YR 3/2) slightly moist, dense.	8.5
48	50	18	6-6-7-7	0-1.5": Silt. Saturated, dark brown (7.5 YR 3/2), dense, homogenous.	
				1.5-8": Clay. Very stiff to hard, slight moist, trace to some silt, fissile to slight bocky, effervescent, red brown (too dark to get Munsel color).	
				8-18": Silt. Dark brown (7.5 YR 3/2) saturated, dense, trace to some clay.	
				Total Depth 50 feet bls at 16:30	

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SAMPLE/CORE LOG

Boring/Well GMSG-1 Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/11/97 Drilling Completed 9/11/97

Total Depth Drilled 34.5 feet Hole Diameter 2 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 24" x 1" Sampling Interval Continuous

Land-Surface Elev. 1121.54 feet msl [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Boart Longyear Driller Wayne Helper Scott

Prepared By Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	OVA	Sample/Core Description
0	2	18"	0.5	0-11": Fine Sand. Much silt, loose. top 3" contain some rootlets, dry. Dark grayish brown (2.5 Y 4/2). some fine gravel 11-18" fine to medium sand, some gravel. Loose, dry, some subrounded fine gravels yellowish red (5 YR 5/8). No HCL reaction.
2	4	14"	0.5	0-10": Medium Sand as above. Grading into coarse sand with some gravel (fine well rounded 10-14"), dry.
4	6	19"	4.5	0-19": Medium Sand. Loose, damp. some coarse sand, trace fine gravel, no HCL reaction, pinkish grey (7.5 YR 7/2).
6	8	17"		0-17": Medium to Fine Sand. Loose damp, trace fine gravel, reddish yellow (7.5 YR 17/6). No HCL reaction.
8	10	15"	5.5	0-6": Coarse Sand. Loose, damp. Some to much gravel, light brown (7.5 YR 6/4). Some to much fine gravel. 6" to 15" fine sand. Loose damp, much medium and coarse sand, trace fine gravel. Pinkish grey (7.5 YR 6/2).
10	12			No recovery.
12	14			No recovery.
14	16			No recovery.
16	18	2"	4.5	Coarse to Medium Sand. Some to much fine gravel, loose, damp. Pinkish grey (7.5 YR 7/2).
18	20	15"	4.5	Coarse to Medium Sand. As above, with brown rock shattered pebbled fragments at 2-3". No HCL reaction.
20	22	14"	4.5	Fine Sand. Loose damp, very uniform, no HCL reaction. (7.9 YR 6/2). Pinkish grey.
22	24	21"	4	Fine Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-1

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	OVA	Sample/Core Description
24	26	13"	4.5	Fine Sand. As above.
26	28	15"	4	0-15": Fine Sand. As above, trace fine gravel, loose trace to some coarse sand, very damp to saturated. Pinkish grey (7.5 YR 7/2).
28	30	18"	7.5	Fine Sand. As above, saturated.
30	32	24"	4.5	0-23': Medium to Coarse Sand. Saturated, loose trace fine gravel, no HCL reaction. Pinkish grey (7.5 YR 7/2).
				23-24": Silt. Soft, damp, some to much fine sand, no HCL reaction, dark brown (7.5 YR 4/4).
32	34	24"	300	0-15": Silt. As above, very damp.
				15-18": Silty Sand. Abundant, very well sorted fine sand, very soft, very weak HCL reaction. Brown (7.5 YR 5/3).
				18-14": Fine Sand. Damp, very well sorted, moderate HCL reaction, light brown (7.5 YR 6/4).
				End of hole 34' bgs.
				Note: Hole redrilled with 2¼" inner diameter augers before installing gas probe.

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SAMPLE/CORE LOG

Boring/Well GMSG-2A/B Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/12/97 Drilling Completed 9/12/97

Total Depth Drilled 42 feet Hole Diameter 6 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2" x 2' to 35'; 2' x 1" to 50' Sampling Interval Continuous

Land-Surface Elev. 1121.64 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger/Geoprobe

Drilling Contractor Boart Longyear Driller Wayne Helper Scott

Prepared By Ray Flynn/Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA/Time-Hydraulic Pressure or Blows per 2 feet	Sample/Core Description
0	2	1"	0/10	0-1": Silty Sand. Slightly damp, cohesive, soft, strong brown (7.5 YR 5/6-8). Loose, no reaction with HCL.
2	4	8½"	5/18	Medium to Fine Sand. Loose, slightly damp, some coarse sand, trace fine gravel (subangular variable composition), reddish yellow (7.5 YR 6/8), no reaction with HCL.
4	6	1"	6/14	Medium to Fine Sand. As above with different color, strong brown (7.5 YR 5/6). Fine gravel slightly more abundant.
6	8	15"	5/18	Medium Sand. Pinkish grey (7.5 YR 7/2), loose, damp, some fine gravel, some to much coarse sand. No HCL reaction.
8	10	14"	3½/8	Medium Sand. As above with some coarse sand and fine gravel.
10	12	9"	4/12	Medium to Fine Sand. With trace fine gravel, otherwise as above.
12	14	14"	7/11	Medium to Fine Sand. As above.
14	16	16"	6/10	Medium to Fine Sand. As above.
16	18	13"	14	Medium Sand. Some fine gravel, otherwise as above.
18	20	16"	5/18	0-3": Medium Sand. As above.
				3-9": Coarse Sand. Much fine gravel, loose, very damp, gravel well rounded and variable composition. No HCL reaction, pinkish grey (7.5 YR 6/2).
				9-16": Fine Sand. Loose, damp, very well sorted, pink (7.5 YR 7/4). No HCL reaction.
20	22	23"	6.5/0	0-9: Slough. Medium sands with some gravel.
				9-23" Fine sand as 18-20'. Trace medium sand, fine gravel, very slightly HCL reaction, pink (7.5 YR 7/4).

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-2A/B

Prepared by Ray Flynn/Ted Powell

From (feet)	To (feet)	Core Recovery (feet)	OVA	Sample/Core Description
22	24	17"	4.5/0	0-17": Fine Sand. With trace gravel as above. Damp to very damp.
24	26	19"	4.5/0	0-19": Fine Sand. As above without fine gravel, very well sorted, very damp.
26	28	15"	9/0	0-15": Fine to Medium Sand. Loose, saturated, some coarse sand, trace fine gravel, light brown (7.5 YR 6/4). No HCL reaction.
28	30	20"	8.5/0	0-20": Fine to Medium Sand. As above, saturated.
30	32	21"	9/0	0-13": Fine to Medium Sand. As above, saturated.
				13-18": Silt. Soft to moderately stiff (HP = 0.6). Damp. Dark brown (7.5 YR 4/4). Clay lense at 16½". No HCL reaction.
				18-12": Silty Sand. Soft to medium stiff, damp, dark brown (7.5 YR 4/4). No HCL reaction.
32	34	24"	45/0	0-16": Silty Sand. Saturated, soft top 10" saturated. Silt lense (<½") at 10". Below 10" damp, dark brown (7.5 YR 2/4). No HCL reaction.
				16-24": Fine Sand. Very well sorted loose, damp. fine to very thin black laminations, trace silt. Brown (75. YR 5/4).
34	36	24	100/0	0-20": Fine Sand. With some silt, soft (slightly cohesive) damp. Brown (7.5 YR 5/2).
				20-24": Fine Sand. Very well sorted gravel, medium sand, light brown (7.5 YR 6/4) no HCL reaction.
36	38	17"	500/0	0-17": Fine Sand. As above. Top 10" saturated, lowest 5" damp.
38	40	22"	250/0	0-22": Fine Sand. As above.
40	42	20"	300/0	0-20": Fine Sand. As above.
				End of Hole 42' bgs.
				Note: Change from hollow stem auger to Geoprobe at 22' bgs.
				OVA background = 3 ppm
				GMSG-2A Total Depth 24.5 feet
				GMSG-2B Total Depth 42 feet

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SAMPLE/CORE LOG

Boring/Well GMSG-3A/B Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/12/97 Drilling Completed 9/12/97

Total Depth Drilled 50 feet Hole Diameter 2/6 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 1" x 24", 2" x 24" Sampling Interval Continuous

Land-Surface Elev. 1121.68 feet [X] Surveyed [ ] Estimated Datum Mean Sea level

Drilling Fluid Used None Drilling Method Geoprobe to 40'/Hollow Stem Auger to 50'

Drilling Contractor Boart Longyear Driller Wayne Helper Scott

Prepared By Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA	Sample/Core Description
0	2	18"	3.5	0-9": Silty Sand. Top soil dry, loose. No reaction with HCL, dark brown (7.5 YR 7/3).
				9-18": Medium Sand. Some to much silt. Loose (slightly cohesive), weak reaction with HCL. Strong brown (7.5 YR 4/6).
2	4	21"	3.5	Fine to Medium Sand. Very well sorted, dry, loose. Strong brown (7.5 YR 4/6). Grading to reddish yellow at base (7.5 YR 7/6). Trace subangular gravel, variable composition, no reaction with HCL.
4	6	7½	3.5	0-17.5": Fine to Medium Sand. As above, dry.
6	8	22	9	0-16": Fine Sand. As above, damp.
				Fine to Medium Sand. Damp, loose, some to much fine gravel, dry. Reddish yellow (7.5 YR 6/6). No reaction with HCL.
8	10	14"	10	Fine to Medium Sand. As above, with out gravel.
10	12	6"	4.5	Fine to Medium Sand. As above, with trace gravel, no reaction with HCL.
12	14			No recovery.
14	16	18"	8.5	Fine to Medium Sand. As above, some to much fine gravel.
16	18	15"	8	0-8": Medium Sand. Loose, damp, some to much coarse sand, trace fine gravel. Reddish yellow (7.5 YR 7/6), no reaction with HCL.
18	20	20"	8	Fine to Medium Sand. Very uniform, loose damp, no HCL reaction. Reddish yellow (7.5 YR 7/6).
20	22	17	8	Fine to Medium Sand. As above, with trace coarse sand, dump.
22	24	17"	7.5	1-18": Fine to Medium Sand. As above.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-3A/B

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA	Sample/Core Description
				16-17": Silt. Soft to medium stiff (HP = 0.9). Strong brown (7.5 YR 5/6). No HCL reaction damp.
24	26	24"	7	Silt. With abundant thin laminations of clay. Silt, damp, dark brown (7.5 YR 4/2). Moderate reaction with HCL. Medium stiff (HP = 1.0). Clay, reddish brown (5 YR 5/4) fissile (medium stiff [HP = 1]). clay laminae most abundant from 0-12" strong HCL reaction.
26	28	24"	6	Clay. As above, but stiff (HP = 1.5-2.0) strong HCL reaction. Some very fine laminations of silt as above, slightly moist to
28	30	24"		0-19": Silt. Some fine sand, no HCL reaction, saturated and soft to stiff (HP = 2.5) max. clay lenses at 1718". Reddish brown (5 YR 5/4). Strong reaction HCL. Stiff (HP = 1.5).
				19-23": Clay. As in clay lense at 17-18" stiff to very stiff (HP max = 3.5).
				23-24": Silt as at 0-19".
30	32	24"	5.5	Silt/Clay. Sequence as above. 0-3" Silt. 3-4" Clay. 5-10" Silt. 10-11" Clay. 11-16" Silt. 16-22" Clay. 22-24" Silt. Clay strong HCL reaction, very stiff (HP = 3.5). Silt no reaction, stiff (HP = 2.5), all damp.
32	34	24"	5	Silt/Clay. Sequence as above. 0-3" Silt. 3-10" Clay. 10-14" Silt. 14-17" Clay. 17-24" Silt. Moist, silt mild reaction with HCL. Clay strong HCL reaction.
34	36	24"	7	Silt/Clay. Succession as above. 0-5" Silt. 5-9" Clay. 9-14" Silt. 14-15" Clay. 15-17" Silt. 17-18" Clay. 18-19.5 Silt. 19.5-21" Clay. 21-24" Silt. Silt, weak HCL reaction. Clay strong HCL reaction.
36	38	24	4	Silt/Clay. As above. 0-5" Silt. 5-11" Clay. 11-24" Silt.
38	40	24	100	0-18": Silt. As above with clay lenses at 9-9½" and 14½-15" (clay strong reaction with HCL).
				18-23": Sand Silt. Pinkish grey (7.5 YR 6/2). Stiff (HP = 1.5) very weak reaction with HCL. Moist 23-24, silt as 17-18", moist.
			Blows per 6 inches	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-3A/B

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
40	42	13	20/40/50	0-3": Clay. Reddish brown (5 YR 5/4), very stiff (HP = 20). Damp, strong reaction with HCL.
				5-9": Sand. Fine grained with some to much silt, loose to very soft (HP < 0.5) light reddish brown (5 YR 6/4) damp.
				9-10": Silt. Stiff (HP = 1.25) slight moist, reddish grey (5 YR 5/2) moderate reaction with HCL.
				10-13": Sand. As at 5-9" bgs.
42	44	15"	47,50	0-5": Clay. As 0-3" above. OVA/65
				5-15": Fine Sand. Very well sorted, dry, loose pink (7.5 YR 7/3) no reaction with HCL.
44	46	15"	50,50	0-5": Fine Sand. As above. OVA/200
				5-6": Silt. Stiff, (HP = 1.0) damp, no reaction with HCL, dark reddish grey (5 YR 4/2).
				6-8": Medium Sand. Loose damp very well sorted, no reaction with HCL. Light reddish brown (5 YR 6/3).
				8-9": Silt. As above at 5-6".
				9-15": Medium Sand. As at 6-8".
46	48	15"	35/45/50	0-4": Silty Sand. Very soft (HP < 0.5) damp, moderate reaction with HCL. Reddish grey (5 YR 5/2).
				4-15": Fine Sand. Very well sorted, loose, damp, no reaction with HCL. Becoming fine to medium with depth, pink (5 YR 7/4).
48	50	14"	30/50/53/65	Fine to Medium Sand. As above, saturated for lowest 9".
				End of hole 50' bgs.
				GMSG-3A Total Depth 23 feet
				GMSG-3B Total Depth 50 feet

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SAMPLE/CORE LOG

Boring/Well GMSG-4A/B Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/13/97 Drilling Completed 9/13/97

Total Depth Drilled 50 feet Hole Diameter 2/6 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 1" x 2' Sampling Interval Continuous

Land-Surface Elev. 1121.3 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe to 30'/Hollow Stem Auger to 50

Drilling Contractor Boart Longyear Driller Wayne Helper Scott

Prepared By Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA (background = 2.5 ppm)	Sample/Core Description
0	2	16"	2.5	0-7": Topsoil. Dark brown (7.5 YR 3/2). Loose crumbly, damp.
				7-16": Silty Sand. Strong brown (7.5 YR 4/6) damp very soft (HP <0.5) crumbly sand sized sand, trace fine gravel, no HCL reaction.
2	4	18"	2.5	0-10": Medium Sand. With some to much coarse sand, trace fine gravel, dry, loose strong brown (7.5 YR 5/6).
				10-18": Fine Sand. With some coarse sand, trace fine gravel, loose dry reddish yellow (7.5 YR 6/6).
4	6			No recovery.
6	8	17"	2.5	Medium Sand. Loose dry, some to much coarse sand, trace fine to coarse gravel, light brown (7.5 YR 6/4). Gravel coarser than spoon diameter.
8	10	17"	2.5	Medium sand. As above with some to much fine sand, damp, becoming medium to fine sand with depth.
10	12	14"	2.5	Medium to Fine Sand. As above, damp.
12	14	7"	2.5	Medium Sand. With some to much gravel (largest fragments > spoon diameter) loose, damp. Much coarse sand, no reaction with HCL. Brown (7.5 YR 5/2).
14	16	12"	2.5	0-10": Coarse Sand. With much gravel, damp, loose. Pinkish grey (7.5 YR 6/2).
				10-12": Medium to Fine Sand. With some coarse sand and trace gravel, pinkish white (7.5 YR 8/2).
16	18	18"	2.5	Medium to Fine Sand. As above, with some fine gravel, trace coarse gravel, no HCL reaction.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-4A/B

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	OVA (background = 2.5 ppm)	Sample/Core Description
18	20	19"	2.5	0-10": Sand. Pinkish white, some medium sand, loose, damp.
				10-18": Sand. As above, but medium to fine.
				18-19": Sand. As 0-10.
20	22	21"		0-21": Fine Sand. Very well sorted. Loose, damp, trace medium sand, trace thin laminations abundant throughout approximately ¼" separation. No HCL reaction, light brown (7.5 YR 6/4).
22	24	19"	2	0-18": Fine Sand. As above, damp.
				18-19": Sand. With Gravel. Poorly sorted, loose very damp, abundant coarse sand, strong brown (7.5 YR 5/8).
24	26	11"	2.5	0-1": Sand. With gravel, saturated as above, embedding.
				1-11": Silt. Soft (HP = 0.5) very damp, brown (7.5 YR 5/4). Strong HCL reaction clay lenses at 8½, 10. Clay red (2.5 YR 4/6) strong HCL reaction, damp.
26	28	24"	2.5	Silt. As above, clay at 1", 7", 12", 17", very damp, soft (HP = 0.5).
28	30	24"	2.5	Silt. With clay lenses as above, mild HCL reaction, clay at 12", 17" 19", 21". Strong HCL reaction.
				End of Hole 30' bgs.
				Resume drilling on 9/15/97 with hollow stem auger.
			Blows per 6 inches	
30	32	20"	8/35/20/18	0-4": Silty Sand. Topsoil, brown.
				4-12": Very soft saturated silty sand, dark yellowish brown (10 YR 4/6).
				12-16": Medium Sand. Saturated loose, some to much coarse sand, trace fine well rounded gravel.
				16-20": Silt. Dry to Damp. Stiff to very stiff (HP max = 2.5). Strong reaction on HCL. Brown (7.5 YR 5/2) to clayey laminae 2mm thick each at 19½ and 17. Strong reaction with HCL. Reddish brown (5 YR 5/3).
32	34	12"	10/15/20/22	0-6": Brown. Topsoil.
				6-12": Silt. With clay lenses as above, but dry.
34	36	17"	8/15/25/40	Silt/Clay. As above, approximately equal amounts of silt and clay. OVA/3.0.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-4A/B

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (feet)	Blows per 6 inches	Sample/Core Description
36	38	21"	10/20/32/45	0-18": Silt. Clay, as above. OVA/70.
				18-21": Silty Sand: Very well sorted, very soft, damp, strong reaction with HCL. Light brown (7.5 YR 6/4).
38	40	15"	40/50	0-3": Silt/Clay. Possible in sluff. OVA/2,500
				3-15": Sand. Fine, trace silt, damp loose, moderate reaction with HCL. Light brown (7.5 YR 6/4) very well sorted.
40	42	26"	42/50	0-14": Fine Sand. As above. OVA/500
				14-17": Medium Sand. Very well sorted, loose slightly damp, some fine sand, light reddish brown (7.5 YR 6/4).
				17-24": Fine to Medium Sand. Loose damp, very well sorted, weak reaction with HCL, pink (5 YR 7/4).
42	44	20"	20/35/40/50	Medium to Fine Sand. As above, damp. OVA/1,100
44	46	13½	15/38/50	0-13½": Fine to Medium Sand. As above, damp, weak reaction with HCL. OVA/900
46	48	21"	15/25/20/31	0-21": Fine to Medium Sand. As above, damp, no reaction with HCL. OVA/1,750
48	50	17"	20/35/20/45	0-4": Fine to Medium Sand. As above, damp. OVA/1,000
				4-17": Sand. As above, saturated.
				End of hole 50' bgs.
				GMSG-4A Total Depth 22 feet
				GMSG-4B Total Depth 50 feet

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SAMPLE/CORE LOG

Boring/Well GMSG-5 Project/No. Ford Kingsford Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/16/97 Drilling Completed 9/16/97

Total Depth Drilled 50 feet Hole Diameter 6¼ inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous

Land-Surface Elev. 1121.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Ken Helper Scott

Prepared By Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description	OVA
0	2	18"	1/1/2/1	0-1": Topsoil. Grey (5 YR 5/1) abundant rootlets, silty sand, dry and crumbly.	<20.0
				1-8": Silty Sand. Dry crumbly yellow (5 YR 5/8). No reaction HCL.	
				8-18": Silty Sand. As above, but strong brown (7.5 YR 4/6), loose, dry, weak reaction with HCL.	
2	4	18"	2/2/2/7	0-9": Silty Sand. As above.	<12.0
				9-18": Medium Sand. Dry, loose, some to much coarse sand, trace gravel, well rounded variable composition reddish yellow (7.5 YR 6/8), becoming light brown (7.5 YR 6/4) with depth. No HCL reaction.	
4	6	15"	5/4/3/5	0-8": Sand. As above.	<15
				8-15": Medium Sand. Much coarse sand some trace gravel. Loose, dry light brown (7.5 YR 6/4).	
6	8	20"	3/3/4/5	Fine to Medium Sand. Some coarse sand, trace well rounded variable composition gravel, grey (7.5 YR/N5), loose slightly damp, becoming coarse toward base with some fine gravel.	<12
8	10	11"	5/2/4/2	0-1": Fine to Medium Sand. As above, damp.	<12
10	12	13"	4/2/2/2	0-3": Fine to Medium Sand. As above, damp.	<12
				3-13": Coarse Sand. Some medium sand, trace fine gravel, damp, loose, pinkish grey (7.5 YR 6/2).	
12	14	13"	4/3/3/2	0-6": Fine to Medium Sand. Becoming coarse sand to base. Loose, damp, grey (7.5 YR N/5).	<12

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-5 Page 2 of 3

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description	OVA
				6-13": Medium Sand. Loose very damp, some to much gravel at base. Sharp contact with above.	
14	16	15"	5/5/7/6	0-15": Medium to Coarse Sand. With gravel, damp, loose, gravel well rounded, variable composition, no HCL reaction.	<12
16	18	11"	4/5/4/7	0-11": Sand with Gravel. Medium to coarse sand with abundant fine gravel and some coarse gravel, loose, damp. Gravel well rounded variable composition, some fine sand, matrix dark brown (7.5 YR 4/2).	<12
18	20	11"	12/7/18/9	0-11": Sand. With gravel, as above.	<12
20	22	16"	10/5/5/4	Sand. With gravel as above, some to much coarse gravel, very damp, no HCL reaction.	<12
22	24	4"	19/6/6/5	Sand. With gravel as above, although predominantly fine sand matrix. Damp, loose dark brown (10 YR 4/3), trace silt.	<12
24	26	18"	18/7/6/5	0-14": Sand. With gravel becoming finer toward top, loose, damp, greyish brown (10 YR 5/2). Medium sand matrix with some fine sand and much coarse sand.	<12
				14-17": Fine to Medium Sand. With some gravel, very pale brown (10 YR 7/3), loose, very damp.	
				17-18": Silt/Clay: Equal amounts very soft to soft (HP = 0.5) damp clay, red (2.5 YR 6/6), silt, weak red (2.5 YR 4/2) no HCL reaction.	
26	28	14"	5/4/4/3	0-14": Fine to Medium Sand. With gravel, as above at 14-17" interval.	8
28	30	19"	19/6/6/5	0-8": Sand. With gravel as above, lowest 4" saturated.	5.5
				8-19": Silt. Weak red (2.5 YR 4/2) soft to medium stiff (HP = 10). some clay laminations very thin strong HCL reaction with silt and clay lamination.	
30	32	19½"	11/11/7/10	0-5": Sand. With gravel, brown.	8
				5-19½": Silt. With occasional clay laminations soft to stiff. Reddish brown (2.5 YR 4/4) very damp to damp (moisture decreasing with depth) strong HCL reaction.	
32	34	24"	7/8/10/7	0-1": Sand. With gravel, saturated, brown.	8
				1-24": Silt. As above but saturated, clay lense at 20-21" (stiff HP = 2.5) reddish brown (2.5 YR 4/4) strong reaction with HCL.	

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-5 Page 3 of 3

Prepared by Ray Flynn

From (feet)	To (feet)	Core Recovery (inches)	Blows per 6 inches	Sample/Core Description	OVA
34	36	22"	6/5/6/4	0-22": Silt. With clay as above, clay at 8" (<1/8") 10" (¼"), 14 (½"), 17½ (½"). Strong reaction with HCL. Saturated.	6
36	38	18"	6/8/6/7	Silt. With clay as above. clay lenses at 11" (1/8"), 15" (1/8"), 17" (¼").	6
38	40	20"	5/6/5/4	0-20": Silt. As above, clay lenses at 1" (¼") and 3" (1/8").	6.5
40	42	22"	9/9/11/11	Silt. With clay as above, clay lense (¼") at 12".	5.5
42	44	22"	7/5/6/6	Silt. With clay as above, clay at 6" (¼"), 13 (¼"), 14 (¼"), 17 (¼"), water level measured at 35' bgs.	5.5
44	46	18"	4/5/5/7	Silt. With clay as above, clay at 3" (1/16), 13" (1/16"), 14" (1/16"), 15" (1/16"), strong reaction with HCL.	2.5
46	48	24"	6/6/5/8	Silt and Clay. As above, although thin (≤ 1/16"clay laminations more abundant finely spaced.	3
48	50	20"	6/7/7/9	0-20": Silt/Clay. In approximately even amounts, very densely laminated thin laminations hard (HP >40) some fine dry sand laminations (≤ 1/8" thick), sand very well sorted, strong reaction with HCL. Damp to dry with	3
				End of hole 50' bgs.	

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SAMPLE/CORE LOG

Boring/Well GMSG-6A/B/C Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/24/97 Drilling Completed 9/24/97

Total Depth Drilled 50 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Steel Core Barrel

Length and Diameter of Coring Device 10' x 4" Steel core barrel Sampling Interval Continuous

Land-Surface Elev. 1120.5 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Roy Helper Ken

Prepared By Ray Flynn/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	5/0.3	0-6": Topsoil. Loose dry crumbly, sandy (coarse and medium sand), some silt.
				6-12": Silt Sand. Loose, crumbly dry to slightly damp, dark reddish brown (5 YR 3/4).
				1-2': Silt. Dark yellowish red (5 YR 4/1) very soft, damp, some fine sand at 2 feet, trace fine gravel.
				2-5': Medium Sand. Loose, damp, some well rounded gravel (variable composition) some fine sand reddish brown (5 YR 4/4).
5	10	5	12/0.3	0-2": Sand. As above, but with trace silt and much coarse sand, damp.
				2-3": Fine Sand. Damp, loose some medium and coarse sand, trace fine gravel, brown (7.5 YR 5/4).
				3-5": Coarse sand with gravel, loose, damp, well rounded, variable composition. Gravel dark brown (7.5 YR 3/3) some medium and fine sand.
10	15	5	12/0.3	0-0.5': Sand. With gravel, as above.
				0.5-5': Fine Sand. With some to much fine gravel. Some medium and coarse sand, loose damp. Brown (7.5 YR 4/4). Becoming coarse (more gravel) with depth. Lighter colored, strong brown (7.5 YR 4/6).
15	20	4	4/0.1	0-4": Sand. With gravel, medium and coarse sand, some fine sand. Loose slightly damp, dark red brown (5 YR 3/2) trace silt, trace coarse gravel to cobble size.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-6A/B/C

Prepared by Ray Flynn/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM	Sample/Core Description
20	25	5	3/0.1	0-4": Sand. With gravel, as above.
				4-5": Fine Sand. Damp loose well sorted, brown (7.5 YR 5/4).
25	30	5	3/0.1	0-1.5": Medium to Coarse Sand. With some to much gravel. Trace silt, loose, very damp to damp, dark brown (7.5 YR 3/2).
				1.5-2.5": Fine to Medium Sand. Loose and saturated. Some to much coarse sand and fine gravel, brown (7.5 YR 4/4).
				2.5-3.5": Coarse Sand and Gravel. Loose, saturated (or very damp) some coarse gravel trace silt, dark brown (7.5 YR 3/4).
				3.5-5": Silt. Very damp medium stiff to stiff (maximum HP = 1.5) reddish brown (2.5 YR 4/4) interbedded with clay fissile, platey, medium sitff to stiff, dark red (2.5 YR 3/6).
30	35	5	3/0.1	0-4.8": Silt and Clay. As above clay becoming very stiff (HP = 3.5) silt stiff (2.0) very damp to damp.
				4.8-4.9": Silt. With some to much fine sand, medium stiff to stiff (HP = 1.5) reddish brown (5 YR 4/4).
				4.9-5.0": Silty Sand. Color as above but loose, dry.
35	40	5	500/0.0	0-1.5": Very dirty gravel. (Silty much coarse, medium, fine sand). Saturated.
				1.5-2.0": Silty Sand. As 4.9-5.0 above.
				2.0-2.3": Silt. Slightly stiff reddish brown (2.5 YR 4/4) finely laminated.
				2.3-5.0": Fine Sand. With some silt, loose very well sorted silt lense at 2.6, red brown (2.5 YR 4/4).
40	45	5	>10,000/0.0	0-1.0": Fine Sand. As above.
				1.0-5.0": Fine Sand. Loose, damp, very well sorted, reddish brown (5 YR 4.5/4).
45	50	5	1,500/0.1	0-3": Coarse to Medium Sand. With some to much gravel, loose, damp, brown (7.5 YR 5/4).
				3-5": Fine Sand. Damp, very well sorted, trace silt, reddish brown (5 YR 5/4).
				End of Hole 50' bgs.
				GMSG-6A Total Depth 25 feet
				GMSG-6B Total Depth 50 feet
				GMSG-6C Total Depth 41.2 feet

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SAMPLE/CORE LOG

Boring/Well GMSG-7 A/B/C Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/24/97 Drilling Completed 9/26/97

Total Depth Drilled 60 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Steel core barrel Sampling Interval Continuous

Land-Surface Elev. 1120.24 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Roy Helper Ken

Prepared By Ray Flynn/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	3/0.1	0-0.5': Topsoil. Dry crumbly silty sand, abundant, rootlet, dark brown (7.5 YR 3/3).
				0.5-1.5': Silty Sand. Dry to slightly damp, crumbly, yellowish red (5 YR 5/6).
				1.5-5.0': Sand. Coarse to medium, some to much fine sand, dry, loose, trace to some fine gravel, (5 YR 5/8), yellowish red. Gravel well rounded, variable composition.
5	10	4	0.5/0.0	0-4': As above but saturated due to flush water, yellowish red (5 YR 4/6), sand becoming finer with depth.
10	15	3	5/0	0-3': Sand. With some fine gravel, loose, fine sand, some to much coarse sand. Strong brown (7.5 YR 5/8), becoming yellowish red (5 YR 4/6) with depth.
15	20	5	6/0	0-5': Gravel. Sandy fine gravel, loose, well rounded, variable composition matrix of coarse and very coarse sand with some medium sand. Strong brown (7.5 YR 4/6), trace silt.
20	25	5	5/0	0-1': Sand. As above.
				1-1.3': Silt. Stiff, friable, reddish brown (5 YR 4/4).
				1.3-2.5': Silty Sand. Very well sorted, loose to very soft, dry, light reddish yellow (5 YR 6/4).
				2.5-3.5': Silt. Stiff (HP = 2.2) reddish brown (5 YR 4/3) damp, red (2.5 YR 4/6) clay inclusion.
				3.5-5': Silty Sand. As at 1.3-2.5.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-7A/B/C

Prepared by Ray Flynn/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA	Sample/Core Description
25	30	5	0.5/0	0-5': Silty Sand. As above, top 1.5 saturated (flush water?) dry below. Red clay inclusion (lense) at 0.7'. Sand when dry, yellowish red (5 YR 5/6) silt lense at 2.0' very stiff, friable strong brown (7.5 YR 4/4).
30	35	5	3/0	0-1': Silty Sand. As above.
				1-5': Silt. Reddish brown (5 YR 4/4), cohesive very stiff, (HP = 4.0). Interbedded with clay lenses, dark red (2.5 YR 5/6) friable platy, very stiff (HP = 3.5) intervals of clay between 1-2.5" thick, occur every 2/3" approximately.
35	40	5	2/0	0-1.5': Silt/Clay. As above.
				1.5-4.5': Sandy Silt. Friable stiff (HP = 2.5) reddish brown (5 YR 4/4).
				4.5-5.0': Clay. Dark red (2.5 YR 3/6) friable platy, medium stiff (HP = 1.5).
40	45	5	5.5/0	0-1': Silty Sand. Soft (HP <0.75) very well sorted, reddish brown (5 YR 4/4) fine sand.
				1-5': Interbedded silt/clay as 36-40' bgs.
45	50	5	9000/0.0	0-2.5': Sandy Silt. Soft (HP = 1.0) friable, reddish brown (5 YR 4/3) weak reaction with HCL. Some fine sand, some thin clay laminae platy friable strong reaction with HCL. Stiff (HP = 2.5) Reddish brown (2.5 YR 4/4).
				2.5-5.0': Silty Sand. Fine sand, soft (HP = 1.0) Friable very well sorted, occasional silt lenses, reddish brown (5 YR 4/3).
50	55	5	3000/0.0	0-1.5': Silty Sand. As above.
				1.5-5.0': Sand. Fine to medium, loose, brown (7.5 YR 5/4), very well sorted, no reaction with HCL.
55	60	5	4000/0.0	0-5': Fine to Medium Sand. As above.
				End of hole 60' bgs.
				GMSB-7A Total Depth 20 ft.
				GMSB-7B Total Depth 60 ft.
				GMSB-7C Total Depth 53 ft.

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SAMPLE/CORE LOG

Boring/Well GMSG-8 A/B Project/No. Ford Kingsford Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 9/26/97 Drilling Completed 9/26/97

Total Depth Drilled 50 feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Steel core barrel Sampling Interval Continuous

Land-Surface Elev. 1122.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Water Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Roy Helper Ken

Prepared By Ray Flynn/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5	5	5.5/3.4	0-1.0': Silty Sand. Loose silty sand with some to much angular gravel, very dark brown (7.5 YR 2.5/3), crumbly.
				1.0-2.5': Silty Sand. Damp with some to much medium to fine sand, trace coarse sand, well rounded, fine gravel. Yellowish red (5 YR 4/6), weak reaction with HCL.
				2.5-5.0': Medium Sand. With some to much coarse sand, loose, dry, trace fine, well rounded gravel, yellowish red (5 YT 5/6) no reaction with HCL.
5	10	5	5/0	0-5': Fine to Medium Sand. With some to much coarse sand, angular fine gravel, trace coarse gravel. Strong brown (7.5 YR 4/6) gravel subrounded to rounded, variable composition.
10	15	5	5/2.3	0-1': Sand. As above.
				1-5': Medium Sand. Except strong brown (7.5 YR 5/6) some to much fine sand, some fine gravel, some coarse sand.
15	20	5	5/0.5	0-5': Gravel. Some to much coarse sand, medium sand, trace fine sand and silt. Some coarse gravel, subangular, well rounded, variable composition, loose, matrix, dark brown (7.5 YR 3/2).
20	25	5	19/0	0-1': Gravel. As above with much coarse sand.
				1-5': Fine Sand. Loose, very well sorted, trace medium sand, light brown (7.5 YR 6/4).
25	30	5	17/1.6	0-4.5': Fine to Medium Sand. Loose, well sorted reddish brown (5 YR 4/3), at top becoming reddish grey (5 YR 5/2) toward base.
				4.5-4.6': Sand with Gravel. Coarse to fine gravel, in silty sand matrix, soft.

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SAMPLE/CORE LOG (Cont.d)

Boring/Well GMSG-8 A/B

Prepared by Ray Flynn/Pat Bartnik

From (feet)	To (feet)	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				4.6-5.0': Silty Sand. Soft (HP = 0.75) friable, reddish brown (5 YR 4/4).
30	35	5	3.5/0	0-1.0': Silty Sand. As above.
				1-5.0': Silt. Soft to stiff, reddish brown (5 YR 4/4). Moderate reaction with HCL. Interbedded with clay reddish brown (2.5 YR 4/6). Two 3" bands at 1.5' and 2.0' strong reaction with HCL. Stiff (HP = 1.75). Lamination less than 1/16" in remainder of sample occurs approximately every 6".
35	40	5	9,500/0.0	0-5.0': Silt/Clay. As above, clay seams 2-3" thick at approximately 6-8" intervals.
40	45	5	8,000/0	0-3.5': Silt/Clay. As above.
				3.5-4.0': Silty Sand. Very soft to soft (HP = 0.5) brown (7.5 YR 4/4).
				4.0-5.0': Fine Sand. Trace sand very well sorted, loose brown (7.5 YR 5/4).
45	50	5	>10,000/0	0-3½': Fine Sand. As above except reddish brown (5 YR 5/6). Loose.
				3½-5': Fine sand, light reddish brown (5 YR 6/4) otherwise as above.
				End of hole 50' bgs.
				GMSG-8A Total Depth 26 ft.
				GMSG-8B Total Depth 50 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-9 Project/No. Ford/Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/26/97 Drilling Completed 11/26/97

Total Depth Drilled 15 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device none

Length and Diameter of Coring Device none Sampling Interval none feet

Land-Surface Elev. 1092 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Dale Helpe Joe

Prepared By Ted Powell Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	15			Blind drill, no recovery.
				See Core log for GPR-21 for sample descriptions.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-10 Project/No. Ford/Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/26/97 Drilling Completed 11/26/97

Total Depth Drilled 11 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device none

Length and Diameter of Coring Device none Sampling Interval none feet

Land-Surface Elev. 1120 feet [ ] Surveyed [X] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Bryan Helpe Shawn

Prepared By Bruce Evans Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	11			Blind drill, no recovery.
				See Core log for GPR-20 for sample descriptions.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-11 Project/No. Ford/Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started _____ Drilling Completed _____

Total Depth Drilled 6 Feet Hole Diameter 8.5 inches Type of Sample/ Coring Device none

Length and Diameter of Coring Device none Sampling Interval none feet

Land-Surface Elev. 1088 feet ☐ Surveyed ☒ Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Bryan Helpe Shawn

Prepared By Bruce Evans Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	6			Blind drill, no recovery.
				See Core log for GPR-13 for sample descriptions.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-12 Project/No. Ford/Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 4/23/98 Drilling Completed 4/23/98

Total Depth Drilled 12 Feet Hole Diameter 1 inches Type of Sample/ Coring Device none

Length and Diameter of Coring Device none Sampling Interval none feet

Land-Surface Elev. 1121.47 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method AMS Push Probe

Drilling Contractor ARCADIS Geraghty & Miller, Inc. Driller T. Powell Helper D. Hegreness

Prepared By Ted Powell Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	12			Blind drill, no recovery.

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ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMSG-13 Project/No.: Ford/Kingsford Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 4/23/98 Drilling Completed: 4/23/98

Total Depth Drilled: 12 Feet Hole Diameter: 1 inches Type of Sample/ Coring Device: none

Length and Diameter of Coring Device: none Sampling Interval: none feet

Land-Surface Elev.: 1121.48 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: AMS Push Probe

Drilling Contractor: ARCADIS Geraghty & Miller, Inc. Driller: T. Powell Helper: D. Hegreness

Prepared By: Ted Powell Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	12			Blind drill, no recovery.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-14 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 16:30 7/06/98 Drilling Completed 17:55 7/06/98

Total Depth Drilled 30 Feet Hole Diameter ¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1112.86 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Scott

Prepared By Ted Powell and Dan Hegrenes Hammer Weight 300 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA/PID	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	24"	1,1,2,3	0-6.0": Top Soil. Dark brown (7.5 YR 3/2) with roots and grass, silty sand loam,
		4/2.1		slightly moist.
				6.0-10": Sand. Yellowish red (5 YR 5/6) fine with medium some coarse sand some
				silty, trace very coarse, slightly moist, medium dense.
				10-12": Silt. Brown (7.5 YR 4/4) sandy, trace clay, sand fine to medium slightly
				moist, dense.
				12-24": Sand. Reddish brown (5 YR 5/3), fine to medium, trace coarse and very
				coarse, loose, trace ¼ inch gravel, subrounded.
2	4	12	2,4,5,5	0-7.5": Sand. Yellowish red (5 YR 5/6) fine to medium, trace coarse and very
		8.5/1.7		coarse, trace silt, some gravel, 1/8 to 1/2 inch, subrounded, slightly dense,
				moderate to poor sorting.
				7.5-9.0": Silt. Brown (7.5 YR 4/3) sandy, sand very fine to fine, trace medium,
				trace clay, slightly moist, medium dense.
				9.0-12": Silt. Yellowish red (5 YR 5/6), sandy. Sand fine to medium, very moist
				to wet, medium dense.
4	6	18	3,3,5,4	0-6.0": Sand. Reddish brown (5 YR 5/4) medium with fine, some coarse, trace
		80/1.7		very coarse, moderate sorting, medium dense to loose.
				6.0-18": Sand. Yellowish red (5 YR 5/8) fine with medium trace silt, loose,
				well sorted.
6	8	12	6,3,5,5	0-2.0": Sand. Strong brown (7.5 YR 5/6) fine, some very fine, trace medium
		15/1.9		and coarse, loose to medium dense, slightly moist.
				2.0-12": Sand. Light brown (7.5 YR 6/4) fine with medium, coarsens downward to
				fine to medium, sand some coarse and very coarse, some 1/8 to 1/4 inch gravel,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-14 Page 2 of 3

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA/PID	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				subrounded to subangular, poorly sorted in bottom.
8	10	1	3,7,8,9	Sand/Gravel. Brown (7.5 YR 5/4) fine to coarse sand, fine gravel, poorly
		400/4.6		sorted, moist, rock chip in spoon tip.
10	12	1	3,5,7,7	0-0.5": Sand. Light brown (7.5 YR 6/4) fine to medium grain, moderate sorted,
		400/4.5		moist, trace coarse sand.
				0.5-1.0": Sand/Gravel. Brown (7.5 YR 4/4) fine to coarse sand, fine to coarse
				gravel, very poorly sorted, subangular to subrounded, moist.
12	14	0.8	3,5,7,10	Sand/Gravel. Brown (7.5 YR 5/4) fine to coarse sand, fine to coarse gravel,
		400/6.1		subangular to subrounded, very poorly sorted, trace pebbles to 1 inch
				diameter, very moist.
14	16	13	3,5,7,6	Sand. Brown coarse (7.5 YR 5/3) loose, slightly moist, some gravel 1/8 to ¼
		250/6.9		inch, subrounded to subangular, moderately well sorted.
16	18	9	5,5,6,8	Sand and Gravel. Color as above, sand medium to coarse, some fine,
		75/3.9		gravel 1/8 to1 inch, subrounded to subangular, medium dense, slightly moist,
				poorly sorted.
18	20	1.5	3,5,7,6	Sand and Gravel. As above, but with medium sand, trace coarse in tip of
		55/4.0		spoon, moderately well sorted, loose to medium dense.
20	22	14	4,6,6,5	Sand. Light brown (7.5 YR 6/4) medium, some fine, some coarse, trace very
		600/1.3		coarse, trace (approximately 10 percent) gravel 1/8 to 3/4 inch, subrounded
				to subangular, moderate sorting loose, medium dense.
22	24	13	5,5,4,4	0-3.0": Sand. Light brown, as above.
		524/.8		3.0-13": Sand and Gravel. Brown (7.5 YR 5/4) sand, medium to very coarse,
				some fine, gravel 1/8 to 1 inch, subrounded to subangular, very poorly sorted,
				loose, slightly moist.
24	26	11/200/	3,5,5,4	Sand and gravel, as above.
		1.6		
26	28	10	3,5,50/3"	Sand and gravel, brown (7.5 YR 4/3) sand is coarse to very coarse, some fine
		125/1.2		and medium, gravel 1/8 to 1 inch, subrounded, very poorly sorted, loose.
28	30	14	10,7,6,8	0-2.0": Sand. And gravel, as above.
		125/1.4		2.0-10": Sand. Light reddish brown (5 YR 6/4) very fine with silt, well sorted,
				medium dense, dry.
				10-14": Silt. Reddish brown (5 YR 5/3) trace clay, trace very fine sand, moderate

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-14 Page 3 of 3

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA/PID	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				well sorted, medium dense, very moist to wet.
				17:55 End of boring 30 feet bgs.
				Set vapor probe screen at 21 to 22 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-15 Project/No. Ford/Kingsfor WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 8:10 7/7/98 Drilling Completed 9:50 7/7/98

Total Depth Drilled 30 Feet Hole Diameter 6¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1117.08 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ted Powell and Dan Hegrenes Hammer Weight 300 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA/PID	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	14"	3,3,5,4	0-1.0": Top Soil.
		3.5/1.1		1.0-14": Sand. Reddish brown (5 YR 4/4) fine to medium grained, trace
				gravel, fine to coarse, subrounded to subangular, gravel up to 1 inch
				diameter, poorly sorted, ½ inch black staining at 8 inches. Bottom 4 inches
				sand. Fine, silty, moderately well sorted.
2	4	16"	3,2,2,3	0-6.0": Sand. Brown (7.5 YR 4/4) fine to medium, trace fine gravel, poorly
		50/1.2		sorted, subangular to subrounded. Gravel up to ¼ inch diameter, trace
				silt.
				6.0-16": Sand. Brown (7.5 YR 5/1 silty with much mottled black staining, fine
				sand.
4	6	8"	2,2,3,2	0-5.0": Sand. Brown (7.5 YR 4/4) fine to medium grained, trace to some
		20/6.8		gravel, fine to coarse, subangular to subrounded, gravel up to 1 inch diameter,
				poorly sorted.
				5.0-8.0": Sand. Very dark brown (7.5 YR 2.5/3) fine to medium sand with silt,
				trace coarse, trace subrounded gravel, loose to medium dense.
6	8	1.5"	4,3,3,2	0-1.5": Sand. Color as above, silty, fine to medium, trace coarse sand, trace
		180/29.4		gravel up to ½ inch diameter, subangular to subrounded.
8	10	8"	1,2,1,1	0-8.0": Sand. Very dark brown (7.5 YR 2.5/2) silty fine to medium, trace gravel
		575/9.5		up to 1 inch diameter, subrounded abundant organics, sticks, twigs,
				branches.
10	12	1.5"	5,5,4,4	0-1.5": Sand. Silty, as above, color as above, abundant organics, wood,
		200/10.7		approximately 3/4 inch piece of metal, very poorly sorted.
12	14	6"	6,12,10,6	0-6.0": Crushed brick, black staining around brick. Brick is pale yellow
		160/9.6		(5Y 7/4) bottom 4 inch pulverized crushed rock, light grey (2.5 Y 7/2),
				limestone or dolomite.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-15 Page 2 of 2

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface)		Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
From	To	OVA/PID		
14	16		1,1,1,1	No recovery.
16	18	12"	5,10,10,8	0-2.0": Concrete.
		2100/21		2.0-12": Wood chips with black staining at about 7 to 9 inches, black cinders
				(1 Gley 2.5 N) slightly moist, trace silt, strong odor.
18	20	2"	6,8,8,7	0-2.0": Silt/Concrete Rubble/Wood Chips. Black stained as above, wet.
		500/11.7		
20	22	1.5"	2,2,2,3	0-1.5": Silt/Sand/Wood. Black (7.5 YR 2.5/1) black to dark brown, stained as
		1000/4.1		above, very poor recovery, wet.
22	24		1,1,1,1	No recovery. Water in bottom shoe, sandy silt remnants in shoe, strong
				odor, black color as above, saturated.
24	26	3"	2,2,1,3	0-3.0": Sand/Wood. Silty, black stained color as above, saturated, strong odor,
		400/9.5		large wood chips in shoe.
26	28	22"	4,4,3,3	0-5.0": Silt/Sand/Wood. As above.
		600/7.5		5.0-16": Silt. Light olive brown (2.5 Y 5/4) sandy, fine sand, soft, medium stiff,
				wet, sharp contact with 0-5 inch material.
				16-22": Silt. Light yellowish brown (2.5 YR 6/4) with some to much fine sand,
				wet, well sorted. HP = 1.5, medium stiff.
28	30	20"	3,2,2,5	0-12": Sluff Material. Black stained silt/sand/wood.
		250/9.0		12-15": Silt as above, color as above, light yellowish brown (2.5 YR 6/4)
				15-19": Silt. Brown (7.5 YR 4/4), olive brown (2.5 YR 5/3) sandy, to fine sand,
				mottled colors light HP = 1.25.
				19-20": Sand. Brown (7.5 YR 4/4) some silt fine grained, saturated, wet,
				strong odor.
				Set well screen at 16 to 17 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-16 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 11:15 7/7/98 Drilling Completed 18:30 7/7/98

Total Depth Drilled 30 Feet Hole Diameter 6¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1120.5 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ted Powell and Dan Hegrenes Hammer Weight 300 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA/PID	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	11	3,4,4,3	Sand. Yellowish red (5 YR 4/6) medium, some coarse, somel gravel ¼ to 1 inch,
		2.75/1.0		subrounded to subangular, moderate to poor sorting, slightly moist, loose.
2	4	14	5,5,4,6	Sand. Yellowish red (5 YR 4/6), medium with fine, some coarse, trace
		3/2.0		(approximately 10 percent) gravel 1/8 to 3/4 inch, moderate sorting, very
				moist, loose to medium dense.
4	6	13	4,4,5,3	0-7.0": Sand. Coarse with medium, some very fine, trace gravel ¼ to 1¼
		35/4.0		inch, subrounded, very moist, poorly sorted, strong brown (7.5 YR 5/6).
				7.0-13": Sand. Light reddish brown (5 YR 6/4) fine with medium, trace very
				fine, well sorted, medium, dense, very moist.
6	8	13	4,3,3,5	Sand. Color, as above, fine, some very fine, trace silt, trace medium and coarse,
		90/1.1		rootlets (at 2 to 6 inchs), moist, medium dense.
8	10	12	3,5,4,4	0-8.5": Sand. Light brown (7.5 YR 6/4) fine and medium, trace coarse, trace
		160/2.3		very fine, moderate, sorting, moist. At 8.5 and ¼ inch brown sand,
				medium to coarse, trace 1/8 to ¼ inch gravel, subrounded.
				8.5-12": Sand. Color as from 6 to 8 feet. Fine with very fine, trace silt, medium
				dense, well sorted.
10	12	13	5,4,4,6	0-1.0": Sand. As above.
		25/2.0		1.0-13": Sand. Light brown (7.5 YR 6/4) medium with coarse, trace very coarse,
				trace, fine gravel, with 1/8 to ½ inch, subrounded to subangular, poorly sorted,
				moist.
12	14	15	3,5,5,5	Sand. Pink (7.5 YR 7/4) fine with medium and very fine, well sroted, moist, loose
		300/2.3		to medium dense.
14	16	17	3,3,5,5	Sand. Light reddish brown (5 YR 6/4) fine with medium, trace very fine, well
		225/1.8		sorted, moist, medium dense,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-16 Page 2 of 2

Prepared by Ted Powell and Dan Hegrenes

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA/PID	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	17	3,3,2,4	0-5.0": Sand. Light brown (7.5 YR 6/4) fine with medium, sand very fine, trace
		550/2.7		silt, moderate sorted, loose and medium dense.
				5.0-11.5": Sand. Light yellowish brown (10 YR 6/4) coarsen down sequence,
				medium with fine to coarse with very coarse, some medium, some gravel (20
				percent) ¼ to ½ inch, subrounded, poorly sorted.
				11.5-17": Sand. Coarsens downward as from 5 to 11.5 inch, two cycles.
				5 to 11.5 and 11.5 to 17 inchs, very moist.
18	20	14	3,2,2,3	Sand. Light brown (7.5 YR 6/4) coarsens down from 0 to 14 one cycle, top of
		350/3.0		spoon: medium, some coarse, some fine, trace very fine, moderate sorting,
				moist, bottom of spoon: pink (7.5 YR 7/4) coarse, some medium, some very
				coarse, some gravel 1/8 to ¼ inch, subround.
20	22	14	2,2,4,6	Sand. Pale brown (10 YR 6/3) with gravel, coarse with medium, some fine, gravel
		35/2.6		¼ to1¼ inch subround to subangular, very poorly sorted, moist, medium dense.
22	24	16	5,5,4,15	0-4.5": Sand. Pale brown (10 YR 6/3), coarse with medium and very coarse,
		225/3.1		some fine trace small fine trace gravel ¼ to ½ inch subrounded, poorly sorted,
				moist, one large 2 inch cobble at 4.5 to 5 inch.
				5.0-16": Sand. Pink (5 YR 7/4), fine, some very fine, trace medium, moist.
				well sorted, medium dense.
24	26		50,-,-,-,	No recovery.
26	28	8		0-2.0": Clay. Yellowish red (5 YR 4/6) soft, plastic, some coarse sand, round
		175/2.0		clay likely slough.
				2.0-4.5": Fractured rock, metamorphic.
				4.5-8.0": Silt. Red brown (5 YR 5/4) trace very fine sand, medium stiff. A ¼
				inch clay lense at 73/4 inch, blocky, stiff.
28	30	19		0-15.5": Silt. Brown (7.5 YR 4/4) trace clay, medium stiff, very moist to wet.
		150/2.1		At 15.5 inch a ¼ inch clay seam, red (2.5 YR 4/8) moderate plastic, slightly fissile.
				15.5-19": Silt. Brown (7.5 YR 5/3) medium stiff to stiff, very homogenous,
				slightly moist to moist.
				End of boring at 30 feet bgs.
				Will set probe from 17 to 18 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-17 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 13:15 7/10/98 Drilling Completed 16:05 7/10/98

Total Depth Drilled 42 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1120.86 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Helper Steve

Prepared By Bruce Evans Hammer Weight 140 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1.5/	2,4,2,5	0-0.5': Silt. Very dark brown (7.5 YR 3/2) rootlets and organic matter, trace
		5.5		gravel, dry.
				0.5-1.5': Silt. Strong brown (7.5 YR 4/6) some very fine grain sand and trace
				fine gravel, subangular to subround, dry.
2	4	1.5/	14,3,1,1	0-0.6': Silt. As above.
		5.5		0.6-1.5': Sand. Strong brown (7.5 YR 4/6) fine to coarse sand with some
				fine to medium gravel, subangular, poorly sorted, loose, dry.
4	6	1.3/	4,5,5,6	0-0.7': Sand. As above.
		5		0.7-1.3': Sand. Brown (7.5 YR 5/3) fine grain well sorted with some coarse
				grain, loose, dry.
6	8	1/	2,4,4,6	Sand. Light brown (7.5 YR 6/3) fine grain with some coarse to very coarse
		5.5		sand, trace fine gravel, subangular to subround, loose, moist.
8	10	1.3/	4,4,6,8	0-1.0': Sand. As above.
		5.5		1.0-1.3': Sand. Brown (7.5 YR 5/4) fine to coarse with some fine to coarse
				gravel, subangular to subrounded, poorly sorted, loose, moist.
10	12	1.5/	4,5,8,10	0-0.5': Sand. As above.
		6		0.5-1.5': Sand. Brown (7.5 YR 5/4) medium to coarse grain, moderately
				sorted, trace fine to medium gravel, loose, moist.
12	14	1.5/	5,5,7,8	Sand. As above.
		5		
14	16	0.5/	5,11,15,10	Sand/Gravel. Brown (7.5 YR 5/3) medium to coarse sand with trace fine to
		5.5		coarse gravel to 1 inch diameter. Subangular to subrounded, very poorly
				sorted, loose, very moist.
16	18	2/5.5	5,5,7,8	Sand. Light brown (7.5 YR 6/3) fine grain with some medium to coarse
				grains, moderately sorted, trace fine to medium gravel, loose, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-17 Page 2 of 2

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
18	20	1/5.5	5,5,7,9	0-0.6': Sand. As above.
				0.6-1.0': Sand. Pinkish grey (7.5 YR 7/2) very fine grain, well sorted, loose,
				moist.
20	22	1.3/5.0	6,6,7,8	Sand. As above, very fine grain, moist.
22	24	1/6.0	12,12,10,13	Sand. As above.
24	26	1.5/6.0	7,7,10,8	Sand. As above.
26	28	0.5/5.0	5,6,6,8	0-0.3': Sand. As above.
				0.3-.5': Sand/Gravel. Brown (7.5 YR 5/3) fine to coarse sand with fine to
				coarse gravel, poorly sorted, loose, black rock chips, black shale fragment
				stuck in spoon tip, moist to wet.
28	30	1.2/5.0	2,4,5,5	Clay. Reddish brown (5 YR 4/4) firm plastic, PET = 3.0. Acid reaction
				trace silt in matrix and trace silt reddish brown (5 YR 5/3) in clay partings
				(laminations), moist.
30	32	1.5/5.0	3,5,4,7	Clay. As above, with silt laminations, moist.
32	34	1.4/5.0	3,4,7,13	Clay. As above, fissle looking on broken surfaces, moist to dry.
34	36	1/5.5	3,7,12,15	0-0.6': Clay as above.
				0.6-1.0': Silt: Reddish brown (5YR 5/3) sandy with very fine grain sand,
				trace clay reddish brown (5 YR 4/4) in thin (<.1 inch) lamiantions Pet = 2.5
				in silt, acid react in both, very moist.
36	38	1.3/200	3,5,9,13	Sand. Reddish brown (5 YR 5/3) very fine grain, silty, well sorted, with some
				thin laminations (.1 inch) of silt at 1.0, wet.
38	40	1/150	50/.6'	Sand. As above, with silt, very moist.
40	42	1.2/1500	50/1.2'	Sand. Light reddish brown (5 YR 6/4) fine grain, well sorted, loose, moist.
				16:05 end borehole at 42 feet prep to set vapor probe 42 to 43 feet.
				Note: Recorded 11.5 percent methane (OVA >10,000 ppm) in augers
				after spooning to 42 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-18 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/11/98 10:10 Drilling Completed 7/11/98 14:10

Total Depth Drilled 36 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval 2 feet

Land-Surface Elev. 1121.93 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Helper Steve

Prepared By Dan Hegrenes and Bruce Evans Hammer Weight 140 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1.8/	1,2,5,9	0-0.5': Silt. Brown (7.5 YR 4/3) rootlets, organic material, some fine to
		2.5		coarse sand.
				0.5-1.8': Silt. Strong brown (7.5 YR 5/6) dry, loose.
2	4	1.5/	5,7,7,8	0-1.0': Sand. Yellowish red (5 YR 4/6) fine to medium, trace coarse sand,
		3		moderately sorted, loose, dry.
				1.0-1.5': Sand. Yellowish red (5 YR 4/6) medium to coarse grained, poorly
				sorted, loose, moist.
4	6	1/3.5	2,7,9,11	0-1.0': Sand. Brown (7.5 YR 5/4) medium to coarse grained, trace fine to
				medium gravel subangular to subrounded, moderately sorted, loose,
				moist.
6	8	1.3/	5,5,9,10	0-1.3': Sand. Brown (7.5 YR 5/4) medium to coarse grained, some fine
		4		to coarse gravel subangular to subrounded, poorly sorted, loose, moist.
8	10	1.4/4.5	8,10,11,13	0-1.4': Sand. As above (same as 6 to 8 feet).
10	12	1.4/4.5	9,10,15,16	0-1.4': Sand. Brown (7.5 YR 5/4) medium to coarse grained, fine to coarse
				gravel, up to ½ inch diameter, subangular to subrounded, poorly sorted,
				loose, moist.
12	14	1/4.0	7,8,14,20	0-1.0': Sand. As above, very moist.
14	16	2/3.5	5,5,7,6	0-0.8': Sand. As above, coarsening downward.
				0.8-2.0': Sand. Light brown (7.5 YR 6/3) fine grained, well sorted, loose,
				moist.
16	18	0.6/3.5	5,5,7,9	0-0.6': Sand. Brown (7.5 YR 5/3) medium to coarse grained, trace, fine to
				medium gravel, subangular to subrounded, loose, moist.
18	20	1.3/4.0	7,13,21,25	0-1.3': Sand. Light brown (7.5 YR 6/3), medium grained, trace coarse grained,
				well sorted, loose, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-18 Page 2 of 2

Prepared by Dan Hegrenes and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	22	1.3/5.0	7,12,22,13	0-0.9': Sand. As above.
				0.9-1.3': Sand. Same color as above, fine grained, well sorted, loose, moist.
22	24	0.5/4.5	4,7,13,22	0-0.4': Sand. As above.
				0.4-0.5': Gravel. Brown (7.5 YR 5/4) fine to coarse gravel, subangular to
				subrounded with some fine to coarse sand, loose, very moist, very poorly sorted.
24	26	1/4.0	4,4,7,9	0-0.5': Gravel. With sand as above.
				0.5-1.0': Silt/Clay. Silt reddish brown (5 YR 5/3), clay reddish brown (5 YR 4/4)
				silt interbedded with fine clay laminae PET (silt) = 1.5. PET (clay) = 1.0. Clay
				fissile appearing on broken surface, plastic clay laminae/beds about 1/16 to
				¼ inch thick to ½ inch thick, moist.
26	28	1.8/4.0	10,12,28,31	0-1.8': Silt/Clay. Interbedded as above, clay layers 0.1 to 1 inch thick. Silt
				PET = 4. Clay PET = 3. HCl reaction in both, firm, moist, clay, platy, fissile,
				as above.
28	30	1.6/4.0	10,14,31,23	0-1.6': Silt/Clay. As above.
30	32	1.5/4.5	14,24,33,22	0-0.1': Silt/Clay. As above.
				0.1-1.5': Sand. Light reddish brown (5 YR 6/4) very fine grained, silty, well
				sorted, trace silt bedding from 0.3 to 0.5, moist.
32	34	1/300	14,22,31,50	0-1.0': Sand. Light reddish brown (5 YR 6/4) fine grained, well sorted, loose,
				moist.
34	36	1.2/450	10,15,15,22	0-1.2': Sand. Fine grained as above. OVA reading at top of auger is
				500 to 2,000 ppm. Gas probe screened interval at 33 to 34 feet bgs.
				TD = 36 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-19 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/11/98 17:00

Drilling Completed 7/12/98 9:00

Total Depth Drilled 40 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interv. 2 feet

Land-Surface Elev. 1121.23 feet [X] Surveyed [ ] Estimated

Datu Mean Sea Level

Drilling Fluid Used None

Drilling Methoc Hollow stem auger

Drilling Contractor Boart Longyear

Drille Mike Helper Steve

Prepared By Dan Hegrenes and Bruce Evans

Hammer Weigh 140 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	2/3	3,3,4,5	0-0.6': Silt. Very dark brown (5 YR 3/1) grass, rootlets, organic material.
				0.6-1.5': Silt. Yellowish red (5 YR 4/6) with fine and medium sand, loose,
				dry.
				1.5-2.0': Sand. Yellowish red (5 YR 6/6) fine to medium grained, trace fine to
				medium gravel, moderately sorted, loose, dry to moist.
2	4	1/3.5	2,4,4,5	0-1.0': Sand. As above with fine to coarse gravel, loose, dry.
4	6	1.2/3.5	3,4,6,11	0-1.0': Sand. Brown (7.5 YR 5/4) fine to coarse grained, trace fine gravel,
				loose.
				1.0-1.2': Sand. Brown (7.5 YR 5/4) fine to coarse grained, trace fine to coarse
				gravel up to ½ inch diameter, subangular to subrounded, loose, poorly
				sorted.
6	8	1.4/4.0	7,9,13,16	0-1.4': Sand. Light brown (7.5 YR 6/4) fine to medium grained, trace
				coarse grained, moderately sorted, loose, slightly moist.
8	10	1.2/3.0	4,7,9,13	0-1.0': Sand. Brown (7.5 YR 5/4) fine to medium grained, trace coarse,
				trace fine to medium gravel subanuglar to subrounded, loose, moist.
				1.0-1.2': Sand. Medium to coarse grained, trace fine to medium gravel
				subangular to subrounded, loose, moist.
10	12	1/3.0	3,8,8,10	0-1.0': Sand. Brown (7.5 YR 5/4) fine to medium grained, trace coarse,
				moderately sorted, loose, moist.
12	14	1/4.0	3,6,8,10	0-1.0': Sand. Light brown (7.5 YR 6/4) fine to coarse grained, fine to
				medium gravel subangular to subrounded, poorly sorted, loose.
14	16	1/3.0	3,3,3,11	0-1.0': Sand. Light brown (7.5 YR 6/4) medium to coarse grained, trace
				fine gravel, moderately sorted, loose, moist.
16	18	1.2/3.5	3,3,8,12	0-1.2': Sand. Pinkish grey (7.5 YR 6/2) medium grained, some fine to coarse
				trace fine to medium gravel, moderately sorted, loose, moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-19 Page 2 of 3

Prepared by Dan Hegrenes and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
18	20	0.8/3.0	4,4,4,5	0-0.8': Sand/Gravel. Light brown (7.5 YR 6/3) medium to coarse grained,
				fine to coarse gravel up to 1½ inch diameter, very poorly sorted, loose,
				moist. Subangular to subrounded.
20	22	1.3/4.0	3,3,4,5	0-0.3': Sand/Gravel. As above.
				0.3-1.3': Sand. Brown (7.5 YR 5/3) coarse to very coarse grained, with some
				fine to medium gravel, very poorly sorted, loose, very moist. Gravel
				subangular to subrounded.
22	24	1/8.5	6,8,7,22	0-0.1': Sand. As above.
				0.1-1.0': Sand. Brown (7.5 YR 5/3) coarse to very coarse grained, some fine to
				medium gravel, subangular to subrounded, poorly sorted, loose, moist.
24	26	1.3/4.5	6,8,12,18	0-1.0': Sand. As above.
				1.0-1.3': Sand. Light brown (7.5 YR 6/4) fine to medium grained, trace
				fine gravel, well sorted, loose, moist.
26	28	0.5/3.0	3,3,8,12	0-0.2': Sand. Brown (7.5 YR 5/2) fine to medium grained, trace fine
				gravel, well sorted, loose, wet.
				0.2-0.5': Silt/Clay. Silt brown (7.5 YR 5/3). Clay reddish brown (5 YR 4/4)
				silt clay interbedded. 0.2 to 0.5 inch thick beds. PET (clay = 1.5. PET (silt) = 3.0.
				Clay is fissile looking on broken surfaces, plastic. Very moist to wet.
				18:20 End drilling for the day.
				Resume drilling 7/12/98 at 8:05.
28	30	2/3.0	9,12,13,10	0-2": Silt/Clay. Silt: Dark brown (7.5 YR 3/4). Clay: Dark reddish brown
				(5 RY 3/4) silt and clay interbedded. Clay beds range from ¼ to 1½ inch
				thick. Clay has "fissile" type appearance. PET (clay) = 3.1. PET (silt) = 3.3
				slightly moist.
30	32	1.5/3.75	15,10,16,32	0-0.5": Silt/Clay. As above.
				0.5-0.8": Sand/Gravel. Dark reddish brown (5 YR 3/3) fine to coarse grained,
				fine to coarse gravel up to ½ inch diameter subangular to subrounded
				gravel, some silt, moist, very poorly sorted.
				0.8-1.5": Silt/Clay. Interbedded as above. Silt: dark brown (7.5 YR 3/4)
				Clay: dark reddish brown (5 YR 3/4).
32	34	1.9/2.5	12,19,23,14	0-1.9": Silt/Clay. Interbedded as above with one sand lense medium to

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-19 Page 3 of 3

Prepared by Dan Hegrenes and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				coarse grained ¼ to ½ inch thick at 0.3 from bottom.
34	36	1.5/100	12,14,19,22	0-1": Silt/Clay. Interbedded as above.
				1-1.5": Silt. Silt interbedded with fine to very fine grained sandy silt.
				Brown (7.5 YR 4/3) sandy silt. Sandy silt beds 1½ to 2 inch thick, silt beds
				contain trace of clay.
36	38	1.4/4750	16,21,50,50	0-0.1": Sand. Very fine to fine grained, loose, moist, well sorted.
				0.1-0.7": Sand. Brown (7.5 YR 4/4) very fine to fine grained, silty, trace
				clay in with bands, moist, PET = 0.6.
				0.7 -1.4": Sand. Reddish yellow (7.5 YR 6/6) fine grained, well sorted, loose,
				moist.
38	40	1/2750	7,11,8,20	0-1": Sand. As above (0.7 to 1.4). PET = 0.5.
				Set GMSG-19 screen 38 to 39 feet bgs.
				EOB at 40 feet at 9:00.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-20 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 7/12/98 12:10

Drilling Completed 7/12/98 12:55

Total Depth Drilled 46 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval 2 feet

Land-Surface Elev. 1121.93 feet [X] Surveyed [ ] Estimated

Datun Mean Sea Level

Drilling Fluid Used None

Drilling Methoc Hollow stem auger

Drilling Contractor Boart Longyear

Driller Mike

Helper Steve

Prepared By Dan Hegrenes and Kevin L. Daleness

Hammer Weight 140

Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	42			Blind drill (see GMSG-8 log).
42	44	1.1/	9,14,50,50	0-0.5': Sand. Very fine to Fine grained, silty, moist to wet. PET = 1.25.
		3250		0.5-0.6': Sand. Fine grained, well sorted, saturated.
				0.6-1.0': Sand. Fine grained, well sorted, trace silt, 1 inch sandy silt layer at
				1 inch. Moist.
				1.0-1.1': Sand. Brown (7.5 YR 5/4) fine grained, well sorted, loose, dry.
44	46	1/	10,10,14,18	0-0.6': Silt. Sluff from inside auger.
		1800		0.6-1': Sand. Brown (7.5 YR 5/4) fine grained, well sorted, loose, dry to
				moist.
				EOB 46 feet at 12:55
				Set screen at 45 to 46 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-21 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/14/98 13:37 Drilling Completed 7/14/98 16:15

Total Depth Drilled 46 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval 2 feet

Land-Surface Elev. 1122 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Mike Helper Steve

Prepared By Dan Hegrenes and Bruce Evans Hammer Weight 140 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1.5/2.0	4,4,5,6	0-0.3': Silt. Brown (7.5 YR 4/3) with fine sand, rootlets, organic
				material. 1 inch black organic materials at 0.3 feet.
				0.3-1.5': Sand. Yellowish red (5 YR 5/6) very fine to fine, silty, loose, dry,
				well sorted.
2	4	1.1/2.5	4,4,6,9	0-1.1': Sand. Reddish yellow (7.5 YR 6/6) very fine to fine grained, trace fine
				gravel, well sorted, loose, dry.
4	6	1/6.0	4,7,11,10	0-1.0': Sand. Light brown (7.5 YR 6/4) fine grained, loose, well sorted, dry to
				slightly moist. Very thin laminated red staining layer at 0.8
6	8	0.4/2.5	5,7,6,4	0-0.3': Sand. Light brown (7.5 YR 6/4) fine grained, loose, well sorted,
				moist.
				0-0.1': Sand. Dusky red (10 R 3/2) fine grained, loose, well sorted, moist
				rock in shoe.
8	10	1.1/3.5	6,6,7,9	0-0.3': Sand. Brown (7.5 YR 5/4) fine grained, well sorted, loose, very
				moist.
				0.3-1.1': Sand/Gravel. Medium to coarse sand, fine to coarse gravel up to
				½ inch. Subangular to subrounded, very poorly sorted, loose, wet.
10	12	1/3.0	2,4,5,9	0-1.0': Sand/Gravel. As above, wet.
12	14	1/4.0	6,8,5,13	0-0.9': Sand. Brown (7.5 YR 5/4) medium to coarse grained, with some
				fine to coarse gravel, subangular to subrounded, gravel up to 3/4 inch.
				Gravel increases at 0.8 to 0.9 feet, moist, loose, poorly sorted.
				0.9-1.0': Sand. Light brown (7.5 YR 6/4) very fine to fine grained, well
				sorted, loose, slightly moist.
14	16	1.1/3.0	6,5,7,4	0-1.1': Sand. As above. Very silty form 0.3 to 0.9 feet, moist.
16	18	1/3.5	3,5,7,12	0-1.0': Sand. Color as above, very fine grained, silty, grading to sandy silt

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-21 Page 2 of 3

Prepared by Dan Hegrenes and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				within laminations, dark brown, bottom 0.3 feet about every ½ to 1 inch.
				Well sorted, loose.
18	20	1.5/3.5	10,8,13,15	0-1.5': Sand. Color as above, light brown (7.5 YR 6/4) very fine to fine grained,
				silty, well sorted, loose, moist.
20	22	1/4.0	8,8,12,17	0-1.0': Sand/Silt. Very fine silty sand grading to sandy silt, well sorted, loose,
				moist.
22	24	1.1/4.0	4,9,9,15	0-0.3': Sand/Silt. As above.
				0.3-1.1': Sand. Light brown (7.5 YR 6/4) fine grained, well sorted, loose,
				moist, trace yellowish banding.
24	26	1.3/4.5	10,8,20,18	0-1.3': Sand. Olive yellow (5 YR 6/8) fine grained, well sorted, loose, moist,
				yellowish laminations/mottling.
26	28	1.2/8.0	9,11,20,16	0-0.1': Sand. As above.
				0.1-0.9': Sand. Black (gley 3/3) very fine to fine grained, well sorted, loose,
				moist.
				0.9-1.2': Sand. Unstained, light brown (7.5 YR 6/3) fine grained, well
				sorted, loose, moist. Black stained layer as above ½ inch thick at base.
28	30	1.5/100	9,20,10,13	0-1.5': Sand. Black stained as above, alternating with light brown (7.5 YR 6/3)
				where not stained, very fine grained, well sorted, silty. Saturated at 0.8 to
				1 foot.
30	32	1.5/250	9,8,15,12	0-0.5': Sand. Black stained, as above.
				0.5-1': Sand. Brown (7.5 YR 4/2) very fine grained, well sorted, loose,
				moist, trace black staining.
32	34	1.1/100	12,9,16,25	0-1.1': Sand. As above. Very silty, black staining bands.
34	36	1.2/700	15,11,21,32	0-1.2': Sand. Brown (7.5 YR 5/2) black staining, very fine grained, silty,
				loose, well sorted, moist.
36	38	1.4/225	19,25,32,24	0-0.4': Sand. As above.
				0.4-1.0': Silt. Brown (7.5 YR 5/2) some black staining, with very fine grained
				sand, well sorted. PET = 2.0 very moist.
38	40	1.4/50	16,29,20,31	0-0.4': Silt. As above.
				0.4-1.1': Sand. Brown (7.5 YR 5/2) very fine grained, silty, well sorted, loose,
				black staining.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-21 Page 3 of 3

Prepared by Dan Hegrenes and Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				1.1-1.4': Silt. Brown (7.5 YR 5/2) some very fine sand. PET = 1.0
				black staining.
40	42	1/220	10,20,25,37	0-0.8': Silt. As above.
				0.8-1.0': Sand. Color as above, very fine grained, silty, loose, well sorted,
				moist, black staining.
42	44	1.3/220	15,21,27,19	0-1.3': Sand. As above, black staining. Silt band 1.0 to 1.1 feet, moist
				to wet at 1.1 to 1.3.
44	46	2/1500	20,14,23,16	0-2.0': Sand. Very dark grey (7.5 YR 3/1) to black. Fine grained, well
				sorted, loose, saturated.
46	48	1.5/300	12,20,9,16	0-1.3': Sand. As above.
				1.3-1.5': Silt. Black stained, some very fine sand, saturated.
				Soil probe screen set at 32 to 37 feet bgs.
				EOB = 48 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-22 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/9/99 Drilling Completed 6/9/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1112.44 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Perry

Prepared By William McCrakin Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	1.5/3.0	5,7,10,12	0.0-0.5': Top soil. Dark brown (7.5 YR 3/2) rootlets, organic rich, silty loam.
				0.5-1.0': Sand. Brown (7.5 YR 4/4) fine to very fine, silty, some gravel 2 to 8 mm
				subrounded.
				1.0-1.5': Sand. Strong brown (7.5 YR 5/6) medium to very fine sands, silty trace clay,
				trace gravel to 8 mm subrounded, dry.
2	4	1.0/4.5	5,7,9,14	0.0-0.25': Slough.
				0.25-1.0': Sand. Strong brown (7.5 YR 5/6) very coarse to fine, silty, gravelly (2 to 5 mm)
				subrounded, loose, dry.
4	6	1.0/3.5	6,11,14,14	0.0-0.3': Slough.
				0.3-1.0': Sand. Strong brown (7.5 YR 5/6) very coarse to fine, gravelly, 2 to 30 mm
				subrounded, trace very fine, dry, loose.
6	8	0.75/10	16,11,10,9	0.0-0.5': Slough.
				0.5-0.75': Sand. As above.
8	10	1.0/2	4,4,5,7	0.0-0.25': Slough.
				0.25-1.0': Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-23 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/9/99 Drilling Completed 6/9/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1127.42 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Perry

Prepared By William McCrakin Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	1.5/2.5	4,5,7,9	0.0-0.3': Top soil. Dark brown (7.5 YR 3/2), rootlets, organic rich, silty loam, one 30 mm
				piece of coal, 2 inches below ground surface.
				0.3-1.5': Sand. Strong brown (7.5 YR 4/6) fine to very fine, trace silt, trace gravel 2 to
				25 mm subrounded, loose, dry.
2	4	1.75/2.0	15,15,21,25	0.0-0.5': Sand. As above.
				0.5-0.55': Granite cobble >2 inch diameter white (7.5 YR 8/1).
				0.5-1.75': Sand. Strong brown (7.5 YR 4/6) very coarse to very fine, poorly sorted with
				gravel and cobbles, 2 to >40 mm. Firm, subangular gravels.
4	6	1.5/2.0	13,25,15,20	0.0-0.3': Slough.
				0.3-1.5': Sand. Coarse to fine, strong brown (7.5 YR 5/8) well sorted, firm.
6	8	1.0/2.0	7,8,8,14	0.0-0.3': Slough.
				0.3-1.0': Sand. Strong brown (7.5 YR 5/8) pebbles to very fine sand, poorly sorted,
				gravels to 2 to 30 mm subangular. Sands subangular, firm, dry.
8	10	1.0/2.5	3,8,14,25	0.0-1.0': Sand. Same as above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-24 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/9/99 Drilling Completed 6/9/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1128.11 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Perry

Prepared By William McCrakin Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	1.2/0.5	7,7,7,14	0.0-0.3': Top soil. Dark brown (7.5 YR 3/2), rootlets, organic rich, silty sandy loam,
				medium firm.
				0.3-1.0': Sand. Strong brown (7.5 YR 4/6) very coarse to very fine, trace silt, trace gravel
				2 to 15 mm, subrounded, loose, dry.
				1.1-1.2': Sand. Brown (7.5 YR 4/2) coarse to very fine, silty, trace gravel, 2 to 6 mm
				subrounded, loose, dry.
2	4	1.5/2.0	20,20,10,15	0.0-0.5': Slough.
				0.5-1.5': Sand. Strong brown (7.5 YR 5/8), very coarse to very fine, with gravel 4 to >40
				mm subrounded. Trace silt, dry, loose.
4	6	1.0/2.5	6,8,12,12	0.0-0.1': Slough.
				0.1-1.0': Sand. Very coarse to very fine, subangular grains, strong brown (7.5 YR 5/8),
				with gravel 2 to 20 mm well to subrounded, loose, dry.
6	8	1.0/2.0	6,8,11,10	0.0-0.5': Slough.
				0.5-1.0': Sand. Same as above.
8	10	1/2.0	6,11,11,10	0.0-0.1': Slough.
				0.1-1.0': Sand. Same as above.

ARCADIS

Sample/Core Log

Boring/Well GMSG-24R Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 4/17/04 Drilling Completed 4/17/04

Total Depth Drilled 7.2 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1128.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand auger

Drilling Contractor Driller Helper

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	7.2			Fill consisting of sand, gravel and silt, some to trace clay, moist to approximately
				4.5' and turning wet, refusal at 7'2", no odor.
				EOB @ 7.2

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-25 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/9/99 Drilling Completed 6/9/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1128.3 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Perry

Prepared By William McCrakin Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	1/6	4,5,5,5	0.0-0.5': Top soil. Silty sand, strong brown (7.5 YR 4/4) medium to very fine with silt
				and trace clay. Trace gravel 5 to 20 mm subrounded, loose.
				0.5-1.0': Sand. Strong brown (7.5 YR 4/6) very coarse to very fine, trace gravel 2 to 10
				mm, subrounded, loose, dry.
2	4	1.8/5	19,11,11,15	0.0-1.8': Sand. As above, moist at 1.0.
4	6	1/5	29,8,5,7	0.0-1.0': Sand. As above (2 to 4 foot interval) moist. Note: 29 to >40 mm piece of
				granite gravel.
6	8	1/4.5	6,5,5,3	0.0-1.0': Sand. As above.
8	10	1/5	8,6,6,5	0.0-1.0': Sand. As above.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-26 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/11/99 Drilling Completed 6/11/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1128.16 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By William McCrakin Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2			Asphalt and subgrade gravel, hard.
2	4	1.0/1.5	11,13,13,12	0.0-0.5': Slough.
				0.5-1.0': Sand. Yellowish red (5 YR 4/6), very coarse to very fine with silt and gravel.
				Gravel 2 to 20 mm subrounded, firm, dry, very poorly sorted.
4	6	0.1/1.5	7,7,9,11	0.0-0.1': Sand. As above but with a piece of well rounded gravel.
6	8	0.7/1.5	7,11,7,8	0.0-0.7': Sand. As above.
8	10	0.2/1.5	8,8,8,8	0.0-0.2': Sand. As above, rock in shoe.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-27 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/10/99 Drilling Completed 6/10/99

Total Depth Drilled 30 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1122.06 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Perry

Prepared By William McCrakin Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	1.3/2	10,11,11,15	0.0-0.6': Sand. Dark brown (7.5 YR 3/4) very fine to very coarse, silty, trace organic
				matter, soft, loose, trace gravel 2 to 10 mm.
				0.6-1.3': Sand. Strong brown (7.5 YR 5/8), very coarse to very fine, trace silt, trace
				gravel 2 to 10 mm subrounded.
2	4	1.2/3	14,17,21,29	0.0-0.2': Sand. As above.
				0.2-1.2": Sand. Yellowish red (5 YR 5/8), very coarse to very fine, trace gravel, 2 to 20
				mm subangular, firm, dry.
4	6	1/3	10,12,13,20	0.0-0.3': Slough.
				0.3-1.0': Sand. Pink (7.5 YR 7/4), very coarse to very fine, trace gravel 2 to 10 mm,
				subangular, loose, dry.
6	8	0.8/3	6,8,12,18	0.0-0.1': Slough.
				0.1-0.8': Sand. As above, with coarser gravel, 2 to >40 mm.
8	10	0	26,20,21,17	No recovery.
10	12	0	28,20,22,18	No recovery. Rock in way.
12	14	2/3	12,15,12,18	0.0-2.0': Sand. Strong brown (7.5 YR 5/6), very coarse to very fine, trace silt, trace
				gravel, 2 to 20 mm subangular, loose.
14	16	0	28,35,60,72	No recovery.
16	18	0	50,41,40,44	No recovery.
18	20	0.3/8	100-2"	No recovery.
20	22	0.3/8	100-4"	0.0-0.3': Rock chips and silt mixed. Silt: strong brown (7.5 YR 4/6), moist, firm.
				0.3-1.4': Silt. Dark brown (7.5 YR 3/4), moist, firm.
				1.4-1.5': Silt and Clay. Sequence, silt as above, 2 to 3 cm beds, clay (5 YR 4/4), reddish
				brown, platy, moist. Clay lamini 1mm to 15 thick.

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Sample/Core Log (Cont.d)

Boring/Well GMSG-27

Prepared by William McCrackin

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
24	26	0	100-5"	No recovery, rock.
26	28	2/1	100-8"	0.0-1.0': Slough, only with rock chip - some rock we've beat on for 14 feet.
				1.0-2.0': Silt. Dark brown (7.5 YR 3/3) moist, massive bedding.
28	30	1.5/12	26,20,28,33	Silt. As above, interbedded with clay. Silt layers 10 to 30 mm thick, clay reddish brown
				(5 YR 4/3) firm in layers 5 mm to 20 m thick, platy, fissle.

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Sample/Core Log

Boring/Well GMSG-28 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/11/99 Drilling Completed 6/11/99

Total Depth Drilled 10 Feet Hole Diameter 6½ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1150.49 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By David Buser/Bill McCrackin Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)/ OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1/1.0	6,6,7,8	0.0-0.4': Top soil. Dark brown (7.5 YR 3/4), silty sandy loam with rootlets and organic
				matter, loose, dry.
2	4	1/1.0	12,4,4,3	0.0-0.5': Slough.
				0.5-1.0': Sand. Strong brown (7.5 YR 5/6) very coarse to very fine, trace gravel, subangular,
				firm, dry.
4	6	1.5/1.0	12,3,3,4	0.0-0.3': Slough.
				0.3-0.6': Sand. Brown (7.5 YR 5/3), very fine to coarse, with gravel, subangular, firm,
				dry.
				0.6-1.5': Sand. Light brown (7.5 YR 6/3), medium to very fine, firm, bedded 30 to 40 mm
				thick, interbedded with silt, brown (7.5 YR 5/4), with trace very fine sand, bedded 20 mm
				thick.
6	8	0.8/1.0	6,3,3,2	0.0-0.3': Slough.
				0.3-0.8': Sand. Light brown (7.5 YR 6/4), very coarse to very fine, with gravel, 2 to 30 mm,
				subangular, firm, dry.
8	10	1.0/1.0	13,7,7,9	0.0-0.1': Slough.
				0.1-1.0': Sand. Brown (7.5 YR 5/4), very coarse to very fine, with gravel, 2 to 20 mm,
				subangular, very fine sand layer 0.6 to 0.7 strong brown (7.5 YR 5/6), with silt, firm.
				EOB at 10 ft at 9:05.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-29 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/5/00 Drilling Completed 6/5/00

Total Depth Drilled 25 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1117.63 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Mike

Prepared By Bruce Evans and Steve Vasas Hammer Weight 140 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches/OVA	Sample/Core Description
0	2	14	pushed/	0-6": Sand/Gravel/Silt. Grass, roots. Loose.
			1.5	6-14": Sand. Dark yellowish brown (10 YR 4/4), fine to very fine grained, silty,
				trace fine to medium gravel, subangular to subrounded, poorly sorted, loose, dry.
2	4	18	350	Silt. Dark yellowish brown (10 YR 3/4), very sandy, very fine to fine sand, with
				some gravel fine to coarse, subangular, trace charcoal/charred, black at 1 foot,
				loose, moist.
4	6	12	600	0-6": Sand. Dark yellowish brown (10 YR 3/4), very fine to fine, very silty, rootlets,
				gravel as above, very moist, well sorted.
				6-12": Sand. Black (5 YR 2.5/1), very fine to fine silty, well sorted, rootlets and
				organic material, trace medium to coarse sand, loose, wet.
6	8		6-7-10-9/	No recovery. Trace black sand as above in spoon tip with fractured stone.
			200	
8	10	14	1,100	0-6": Silt. Black (5 YR 2.5/1), very sandy with very fine to fine sand, trace
				organics.
				6-14": Silt. As above, with much organics, rootlets, leaves, pine needles, twigs,
				trace char, very moist.
10	12	14	400	0-8": Silt/Organics. Black (Gley 2.5), mixture silt, trace sand and organic material
				as above.
				8-12": Concrete fragments, broken, white.
				12-14": Silt/Organics. As above, wood, grass, char.
12	14		100	No recovery. Trace black organics, wood in spoon tip, wet.
14	23		1,000	Blind drill, fill material.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-29 Page 2 of 2

Prepared by B. Evans/S. Vasas

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches/OVA	Sample/Core Description
23	25	19	1,000	0-6": Black organic material with char, wet odor.
				6-13": Silt. Dark reddish brown (5 YR 2.5/2), sandy with very fine to medium sand
				and mixed with rootlets, loose, very moist.
				13-19": Silt. Dark reddish brown (5 YR 2.5/2) with some black staining, trace
				rootlets some very fine sand, odor, wet, possibly native.
				EOB @ 25 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-30 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 6/5/00 Drilling Completed 6/5/00

Total Depth Drilled 30 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1119.55 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Mike

Prepared By Bruce Evans and Steve Vasas Hammer Weight 140 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches/OVA	Sample/Core Description
0	2	24"	2-2-3-2/	0-6": Grass/Soil/Silt/Rootlets. Loose, dry.
			1.0	6-8": Ash/Cinder: Black burnt wood char - charcoal ash burned soil horizon,
				dry, loose.
				8-24": Silt. Strong brown (7.5 YR 5/6), trace very fine sand. Trace gravel, fine
				to medium, subangular to subrounded, loose, dry.
2	4	12"	5-7-7-9/	0-8": Sand/Gravel. Fine to coarse sand, fine to coarse gravel, very poorly
			1.5	sorted, gravel subangular to subrounded, loose, dry.
				8-12": Sand. Yellowish brown (10 YR 5/8), very fine grained, well sorted, trace
				silt , loose, dry.
4	6	24"	5-5-5-4/	0-8": Slough.
			1.5	8-24": Sand. Light brown (7.5 YR 6/4), very fine grained, well sorted, dry to moist,
				3-6 inches silt layer.
6	8	21"	8-5-5-7/	0-8": Slough.
			2.0	8-21": Sand. Light brown (7.5 YR 6/4) very fine grained, well sorted, trace silt,
				trace of iron staining, loose, dry to moist.
8	10	21"	9-3-5-4/	0-4": Slough.
			2.0	4-21": Sand. Light brown (7.5 YR 6/4), very fine grained well sorted, trace silt, trace
				of iron staining, loose dry to moist.
10	12	18"	5-3-3-3/	0-2": Slough.
			1.5	2-6": Sand. As above.
				6-14": Sand. Light brown (7.5 YR 6/4) medium to coarse grained, some fine,
				moderately sorted, loose, moist.
				14-18": Sand. Light brown (7.5 YR 6/4), fine grained, well sorted, trace of fine
				gravel, loose, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-30 Page 2 of 2

Prepared by B. Evans/S. Vasas

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches/OVA	Sample/Core Description
12	14	16"	3-3-4-5/	0-16": Sand. As above.
			2.0	
14	16	18"	5-4-5-4/	0-5": Sand. As above.
			1.5	5-18": Sand. Brown (7.5 YR 5/3), medium to coarse grained, moderately sorted,
				fine to coarse gravel subangular and subrounded gravels, loose, moist.
16	18	15"	4-4-5-7/	0-13": Sand. Light brown (7.5 YR 6/3), fine to medium grained, moderately sorted,
			2.0	trace of fine gravel, subangular, loose, moist.
				13-18": Sand. Light brown (7.5 YR 6/3), medium to coarse grained, moderately
				sorted, fine to coarse gravel, subangular and subrounded gravel, loose, moist.
18	20	20"	5-8-10-10/	0-20": Sand. Same as above.
			1.5	
20	22	19"	7-7-11-9/	0-9": Sand. Reddish yellow (7.5 YR 6/6), fine to very fine, well sorted, trace of
			3.0	fine gravel, loose, moist.
				9-19": Sand. Pink (7.5 YR 7/3), medium to coarse grained, moderately to poorly
				sorted, loose, moist.
22	24	15"	5-4-6-7/	0-4": Slough.
			2.0	4-15": Sand. Pink (7.5 YR 7/3), fine grained, well sorted, trace of fines, loose,
				moist.
24	26	16"	5-5-7-7/	0-2": Sand. Same as above.
			3.0	2-16": Sand. Brown (7.5 YR 5/4), medium to very coarse, some gravel, poorly
				sorted, loose, very moist.
26	28	0	8-9-9-15	No recovery.
28	30	10"	7-5-4-7	Sand/Gravel. Strong brown (7.5 YR 5/4), fine to very coarse sand, fine to coarse
				gravel trace pebbles, very poorly sorted, subangular gravel subangular pebbles,
				loose, very moist to wet.
				EOB @ 30 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-31 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/6/00 Drilling Completed 6/6/00

Total Depth Drilled 24 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1118.43 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Randy Helper

Prepared By Kevin Daleness Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	4			Blind drill.
4	6	24	1-1-1-1	0-2": Silt/Sand. Very dark brown (5 YR 2.5/2), some organics and sand (fine to
				medium), trace wood chips and charcoal, loose, moist.
6	8	13	1,2,3,2	0-3": Silt/Sand. As above.
				3-13": Sand. Reddish brown (5 YR 5/4), fine to medium, well sorted, some
				gravel (2 mm to 20 mm) loose, moist.
8	10	14	3,4,4,4	0-6": Sand. As above.
				6-14": Sand. Reddish brown (5 YR 6/3), fine, loose, trace medium sand, very
				well sorted, moist.
10	12	20	4-4-4-4	Sand. As above, at 8" sand graded to medium to trace coarse, loose, moist,
				trace gravel, (2 mm to 4 mm).
12	14	20	3-4-4-3	0-10": Sand. As above.
				10-20": Sand. Color as above, medium to coarse, some very coarse, loose, moist,
				trace gravel (1 mm to 2 mm).
14	16	21	2-1-1-2	Sand. As above.
16	18	14	3-2-2-3	0-14": Sand. As above.
18	20	11	3-2-3-3	0-11": Sand and Gravel. Color as above. Medium to very coarse, gravel (2 mm
				to 40 mm) subangular loose, poorly sorted, moist.
20	22	8"	3-2-2-4	Sand and Gravel. As above.
22	24	14"	2-2-2-3	Sand. Color as above fine to medium, some coarse, trace very coarse,
				moderately sorted, subrounded, loose, moist to wet.
				EOB @ 24 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/We GMSG-32 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/6/00 Drilling Completed 6/6/00

Total Depth Drilled 22 Feet Hole Diamete 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interva continuous feet

Land-Surface Elev. 1117.91 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Randy Helper

Prepared By Kevin Daleness Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2			Blind Drill.
2	4	20	4,6,7,7	0-8": Sand. Yellowish brown (10 YR 5/4), silty, fine to medium, trace coarse, some
				organics and gravel (2 mm to 10 mm), loose, moist.
				8-17": Sand and Gravel. Dark gray (Gley 3/1), some silt, medium to coarse sand,
				angular, gravel (2 mm to 20 mm), angular, moist, loose.
				17-20": Silt. Dark reddish gray (5 YR 4/2), some sand fine to medium, trace gravel
				(2 mm to 10 mm), stiff, moist.
4	6	18"	2,3,3,3	0-18": Silt. As above, grades to some gravel (2 mm to 20 mm).
6	8	11"	1,1,1,1	0-6": Silt. As above.
				6-11": Sand. Reddish brown (5 YR 4/3), fine to medium, some charcoal and wood
				fragments loose, some gravel (2 mm).
8	10	10"	4,3,3,3	Sand. As above. Some brick fragments and black sand, trace charcoal and wood
				particles, moist and loose.
10	12	0	2,2,2,1	No recovery - brick fragment in tip.
12	14	4"	1,1,2,2	Sand. As above with some wood (paper) fragments, moist, loose.
14	16	3"	5,4,4,8	0-3": Sand and Gravel. Very dark brown (7.5 YR 2.5/2), silty, sand fine to
				medium, trace coarse gravel, (2 mm to 4 mm), loose, moist to wet.
16	18	0	3,4,5,5	No recovery.
18	20	1"	1,1,1,1	Sand and Gravel. As above.
20	22	2"	1,1,1,1	Sand. As above, piece of wood stuck in shoe, wet.
				EOB @ 22 feet.

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Sample/Core Log

Boring/We GMSG-33 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/6/00 Drilling Completec 6/6/00

Total Depth Drilled 20 Feet Hole Diamete 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interva continuous feet

Land-Surface Elev. 1117.02 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Randy Helper

Prepared By Kevin Daleness Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2			Blind Drill.
2	4	12"	1,2,2,2	0-12": Sand and Gravel. Brown (7.5 YR 4/3), silty, medium to very coarse, poorly
				sorted, gravel (2 mm to 20 mm), loose, moist.
4	6	15"	1,1,1,1	0-5" Sand and Gravel. As above.
				5-15": Wood and Sand. Some gravel (2 mm to 40 mm), loose, moist.
6	8	10"	2,1,2,2	0-5": Sand and Gravel. Silty brown (7.5 YR 4/3), medium to coarse, gravel
				(2 mm to 10 mm), loose, moist.
				5-10": Sand and Gravel. Trace silt, dark grayish brown (2.5 Y 4/2), fine to very
				coarse, gravel (2 mm to 5 mm), moist, loose, trace black plastic and wood pieces.
8	10	10"		Sand and Gravel. As above, more silty.
10	12	.0	2,2,2,2	No recovery.
12	14	0	1,3,3,2	Pushed rock.
14	16	1"	3,4,4,4	Sand and Gravel. As above with 4-5 wood chips and twigs in spoon.
16	18	5"	17,26,29,	Hit brick or something, bent spoon looks like brick fragments. Will drill to
			30	20' and set screen at 5-20'.
				EOB @ 20 feet.

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Sample/Core Log

Boring/Well GMSG-34 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 3/30/01 Drilling Completed 3/31/01

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Geoprobe Macro Sampler

Length and Diameter of Coring Device 4 x 2" Sampling Interval continuous feet

Land-Surface Elev. 1117.31 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Giles Engineering Driller Paul Helper None

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	4	36	0-1,500	0-3": Asphalt.
				3-14": Sand. Very dark brown (7.5 YR 2.5/2), medium to fine, trace to some
				silt, some clay, some gravel (2 mm - 30 mm), angular to subrounded, dry, some
				cinder-like fragments at top of sample, brick fragments at approximately 14 inches.
				14-36": Sand. Color grades from very dark brown (7.5 YR 2.5/2) to strong
				brown (7.5 YR 4/6), fine to very fine, silty, clayey, trace gravel (2 mm - 10 mm),
				subrounded, moist at bottom, lense of sand black (7.5 YR 2.5/1), fine to very
				fine, clayey.
4	8	36	100-	0-4": Sand. As above.
			30,000	4-5": Sand. Black (7.5 YR 2.5/1), very coarse to fine, cinder-like gravelly (2 mm -
				15 mm), subangular.
				5-12": Sand. Strong brown (7.5 YR 5/6), medium to fine, some very fine, trace
				silt.
				12-36": Sand. Yellowish brown (10 YR 5/4), coarse to medium, some fine, some
				very coarse, trace gravel at bottom up to 2.25 inches, subrounded.
8	12	48	5,500-	0-48": Sand. As above, dry.
			36,000	
12	16	48	2.300-	0-48": Sand. As above, dry.
			10,900	
16	20	48	400-	0-40": Sand. As above.
			33,000	40-48": Sand. Strong brown (7.5 YR 5/6), fine to very fine, very well sorted,
				finely laminated, dry.

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Sample/Core Log

Boring/Well: GMSG-37 | Project/No.: Ford/Kingsford WI000860.0001 | Page 1 of 2

Site Location: Kingsford, Michigan | Drilling Started: 6/12/01 | Drilling Completed: 6/12/01

Total Depth Drilled: 46 Feet | Hole Diameter: 8¼ inches | Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' x 2" | Sampling Interval: continuous feet

Land-Surface Elev.: 1117.29 feet [X] Surveyed [ ] Estimated | Datum:

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear | Driller: Jim | Helper: Randy/Ben

Prepared By: Veronica Brieno/John Keller | Hammer Weight: 140 | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
0	5	0		Blind Drill.
5	7	24	149	0-24": Sand, medium grained.
7	10	0		Blind Drill.
10	12	22	580	0-22": Sand, medium to coarse grained.
12	15	0		Blind Drill.
15	17	20	630	0-20": Sand, medium grained.
17	20	0		Blind Drill.
20	22	24	518	0-7": Sand. Pale brown (10 YR 6/3), medium, some coarse, some fine, trace
				fine gravel (2-10 mm), moderate to poorly sorted, subangular to subrounded, loose,
				moist.
				7-24": Sand. Reddish brown (2.5 YR 5/3), very fine, trace silt, well sorted, slighlty
				to moderately loose, slightly moist.
22	24	14.5	558	0-5": Sand. As above, moist.
				5-14.5": Sand. Light reddish brown (2.5 YR 6/3), fine to very fine, well
				sorted, subrounded, slightly to moderately loose, slightly moist.
24	26	24	497	0-24": Sand. As above, predominately very fine, slightly moist.
26	28	17	809	0-1.5": Slough. Sand, trace gravel.
				1.5-17": Sand. As above, predominately very fine, slightly moist.
28	30	19.5	483	0-19.5": Sand. As above, predominately very fine from 0-16", fine to very fine, from
				16-19.5", slightly moist.
30	32	16	1136	0-16": Sand. As above, grading from fine to very fine to fine from 0-16",
				slightly moist.
32	34	16	1185	0-4": Sand. As above, predominantly very fine, slightly moist.
				4-16": Sand. Light reddish brown (2.5 YR 7/3), fine, trace very fine, well
				sorted, subrounded, slightly to moderately loose, slightly moist.
34	36	17	1209	0-2": Slough. Sand, trace gravel.
				2-17": Sand. As above, grades into medium grained from 13-17", slightly
				moist.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSG-37 Page 2 of 2

Prepared By Veronica Brieno/John Keller

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
36	38	17	1518	0-17": Sand. As above, predominantly fine, some medium, slightly moist.
38	40	15.5	858	0-15.5": Sand. As above, predominantly fine, trace medium, slightly moist.
40	42	18	1018	0-18": Sand. As above, predominantly fine, some very fine, slightly, moist.
42	44	20	916	0-20": Sand. As above, very fine to fine, slightly moist from 0-9", moist to
				very moist from 9-20".
44	46	18.5	204	0-6": Sand. As above, very fine to fine, slightly moist.
				6-14": Sand. As above, fine, very moist.
				14-18.5": Sand. As above, fine, wet, gray to black staining throughout,
				slight odor present, wet to very wet.
				EOB at 46 feet bls.

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Sample/Core Log

Boring/Well GMSG-45 Project/No. Ford/Kingsford WI000950.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 08:10 2/12/02 Drilling Completed 08:50 2/12/02

Total Depth Drilled 11.33 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand auger bucket

Length and Diameter of Coring Device

Land-Surface Elev. 1115.28 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval continuous feet

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor ARCADIS G&M, Inc. Driller Paul/Jake Helper

Prepared By Paul Lenakes/Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	OVA ppm	Sample/Core Description
0	6"			Topsoil.
6"	48"			Silt to fine sand, dark yellowish brown (10 YR 3/4), trace medium sand, trace clay, trace gravel (2 mm to 15 mm) subrounded to subangular, dry.
48"	116"			Fine to medium sand, strong brown (7.5 YR 4/6), trace silt, trace coarse sand, trace gravel (2 mm to 18 mm); subangular to subrounded, dry.
116"	122"			Silt, brown (7.5 YR 4/4), some clay, trace fine sand, moist (note some blackish banding to color).
122"	136"			Fine sand, yellowish red (5 YR 4/6), trace silt, trace medium sand, dry.

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Sample/Core Log

Boring/Well GMSG-49 Project/No. Ford/Kingsford WI000950.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 10:10 2/12/02 Drilling Completed 14:30 2/12/02

Total Depth Drilled 9.83 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand auger bucket

Length and Diameter of Coring Device

Land-Surface Elev. 1111.06 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval continuous feet

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor ARCADIS G&M, Inc. Driller Paul/Jake Helper

Prepared By Paul Lenaker/Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	OVA ppm	Sample/Core Description
0	6"			Topsoil.
6"	44"			Fine sand, yellowish red (5 YR 5/6), some medium sand, trace silt, trace coarse sand, roots, dry.
44"	50"			Silt, strong brown (7.5 YR 4/6), trace fine to medium sand, roots, moist.
50"	106"			Fine sand, yellowish red (5 YR 5/6), some medium sand, trace silt, trace coarse sand,
				trace gravel (2 mm to 25 mm/30 mm), subrounded to subangular, dry.
106"	118"			Fine to medium sand, yellowish red (5 YR 5/6), some gravel (2 mm to 20 mm), subrounded
				to subangular, trace silt, dry.

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Sample/Core Log

Boring/Well GMSG-50 Project/No. Ford/Kingsford WI000950.0002 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11:30 2/11/02 Drilling Completed 14:50 2/11/02

Total Depth Drilled 11 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger Bucket

Length and Diameter of Coring Device Sampling Interval continuous feet

Land-Surface Elev. 1111.92 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor ARCADIS G&M, Inc. Driller Paul/Jake Helper

Prepared By Paul Lenaker/Jason Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	42"			Fine and medium sand, red (2.5 YR 5/6), some coarse sand, some fine gravel
				(5 mm - 10 mm), trace silt, trace clay, dry.
42"	60"			Silt with some fine sand, reddish yellow (7.5 YR 6/6), dry.
60"	68"			Fine sand with some medium, reddish yellow (7.5 YR 6/6), dry.
68"	72"			Fine and medium sand, dark reddish brown (5 YR 3/4), trace to some coarse sand,
				moist.
72"	132"			Medium and coarse sand, reddish brown (5 YR 4/4), trace gravel (subrounded,
				2 mm to 15 mm), moist.

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Sample/Core Log

Boring/Well GMSG-51 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Brooks Aviation, Kingsford, Michigan Drilling Started 8/15/01 Drilling Completed 8/15/01

Total Depth Drilled 3 Feet Hole Diameter 4 inches Type of Sample/ Coring Device Drill Cuttings

Length and Diameter of Coring Device Sampling Interval continuous feet

Land-Surface Elev. feet ☐ Surveyed ☐ Estimated Datum Ground surface (msl)

Drilling Fluid Used None Drilling Method Little Beaver/Hand Auger

Drilling Contractor ARCADIS G&M, Inc. Driller Stephen Vasas Helper Dave Buser

Prepared By Stephen Vasas Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	6"	6"		Silt. With sand and some gravel, tan, grass and roots, hard, dry (fill).
6"	1.5	1		Silt. With sand trace gravel, dark brown, moist, trace cobles that are rounded
				and 1'-3" diameter, hard (fill).
1.5	2	6"		Silt. With sand and gravel, trace cobbles that are rounded and 1'-5" diameter,
				wood bits that slow carbonization, black to dark brown, moist, hard, fill.
				Refusal with hand auger at 2' switch to motor auger.
2	3	NA		Silt. With sand and cobbles trace gravel cobbles are 3-6" diameter, dark
				brown, very hard, moist (fill).
				Refusal at 3'.

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Sample/Core Log

Boring/Well GMSG-52 Project/No. Ford/Kingsford WI000860.0002 Page 1 of 1

Site Location Brooks Aviation, Kingsford, Michigan

Drilling Started 8:30 8/15/01 Drilling Completed 8:35 8/15/01

Total Depth Drilled 5.5 Feet Hole Diameter 4 inches Type of Sample/ Coring Device Drill Cuttings

Length and Diameter of Coring Device

Sampling Interval continuous feet

Land-Surface Elev. feet ☐ Surveyed ☐ Estimated Datum Ground surface (msl)

Drilling Fluid Used None Drilling Method Little Beaver

Drilling Contractor ARCADIS G&M, Inc. Driller Stephen Vasas Helper

Prepared By Stephen Vasas Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	1.5			Sand. Silty with trace gravel, very fine to medium grained, poorly sorted, dry,
				light brown (fill).
1.5	5.5			Sand. Silty with trace gravel and trace cobbles (3-6" diameter) cobbles are
				rounded, very fine to medium grained and, poorly sorted, moist, medium brown
				(fill).

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Sample/Core Log

Boring/Well GMSG-53 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/17/01 Drilling Completed 8/17/01

Total Depth Drilled 4 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor _____ Driller _____ Helper _____

Prepared By Pat Bartnik Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA	Sample/Core Description
				No samplings collected for characterization.

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Sample/Core Log

Boring/Well GMSG-54 Project/No. Ford/Kingsford WI000860.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 14:55 8/28/01 Drilling Completed 15:25 8/28/01

Total Depth Drilled 10 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1112.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Todd Helper Ben

Prepared By John Keller Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1.25	4,4,4	0-2": Asphalt.
				2-15": Sand. Brown (7.5 YR 4/4), fine to medium some very fine, some silt,
				trace clay, some gravel (25 mm - 1" in diameter), subrounded to subangular,
				very poorly sorted, loose, lower 1.5" is charred wood fragment (along with
				splintered wood pieces), dry (fill).
2	4	1.3	10,11,10,	0-1.3": Sand. Brown (7.5 YR 4/4), fine to coarse, some very fine, trace very
			12	coarse, some silt, trace clay, gravelly (2 mm - 1" in diameter), subrounded to
				subangular, rock fragments (phyllite?), present, trace glass fragments, trace
				asphalt pieces (< 2mm), dry, loose (fill).
4	6	1.75	7,9,10,10	0-1.75": Sandy fill. As above, splintered wood, bark pieces present.
6	8	1.5	3,4,6,6	0-1.5": Sand. Brown (7.5 YR 4/4), medium to coarse, some very fine to fine,
				trace very coarse, some silt; some clay, gravelly (2 mm - 2/3" in diameter),
				glass fragments, possible trace of metal pieces, trace wood fragments, dry,
				loose (fill).
8	10	1.50	4,6,6,8	0-1.5" Fill. Sandy, as above.

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Sample/Core Log

Boring/Well GMSG-55 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/30/01 Drilling Completed 8/30/01

Total Depth Drilled 10 Feet Hole Diameter ____ inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval 2 feet

Land-Surface Elev. 1121.79 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor ____ Driller NA Helper ____

Prepared By A. Macadam Hammer Weight 140 Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	13	1 4 4 6	Sand: Dark brown (7.5 YR 3/3), medium to coarse, some very fine to fine, well sorted, subrounded, trace gravel, dry.
2	4	6	2 4 3 3	Sand: Dark brown (7.5 YR 3/3) medium to coarse, some very fine to fine, subrounded moderately, sorted, some granules, trace gravel, dry.
4	6	13	3 4 4 5	Sand: Dark brown (10 YR 3/3), medium to coarse, some fine, moderately sorted subangular, trace gravel, <10 percent cobbles, dry, 3'1" phyllite pieces.
6	8	10.5	7 7 4 3	Sand: Dark yellowish brown (10 YR 3/4) medium to coarse, some fine, well sorted subrounded to subangular, trace granules.
8	10	11.5	10 8 2 2	Sand: Very dark brown (7.5 YR 2.5/3), coarse to medium, trace fine, well sorted subrounded/subangular trace granules, moist.

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Sample/Core Log

Boring/Well GMSG-56 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/30/01 Drilling Completed 8/30/01

Total Depth Drilled 10 Feet Hole Diameter ____ inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval ____ feet

Land-Surface Elev. 1121.82 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor ____ Driller ____ Helper ____

Prepared By A. Macadam Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	15	3 3 3 3	0-3": Topsoil, dark brown, sand, medium to coarse, some very coarse, well sorted,
				some organics, dry.
				3-9.5": Sand, brown (7.5 YR 4/4) medium/coarse, some fine, well sorted, trace
				granules, piece of stone at 5" (phyllite).
				9.5-13": Sand: Medium/coarse, some fine, some granules, moderately sorted,
				trace gravel pieces of flacky red stone at 9.5", dry.
				13-15": Sand, black, medium to fine, well sorted, some woodchips, dry.
2	4	24	3 4 6 9	1.0-3.5": Sand, black (2.5 YR 2.5/1) medium to fine, trace very fine, trace gravel
				well sorted, dry.
				3.5-4.5": Sand, coarse, subangular, moderately sorted, trace granules, dry.
				4.5-11.5":Sand, very dark grayish brown (2.5 YR 3/2) medium to fine, very
				well sorted, subrounded, dry.
				11.5-24": Sand, strong brown (7.5 YR 4/6) coarse, very well sorted, subrounded.
4	6	14	4 5 6 6	0-5": Sand, as above.
				5-12": Sand, dark yellowish brown (10 YR 4/6) very coarse to coarse, well sorted,
				subrounded, trace medium, trace granules, dry.
				12-14": Sand, dark yellowish brown (10 YR 4/6) coarse to medium, very well
				sorted, trace fine, subrounded, dry.
6	8	12	5 6 10 13	0-12": Sand: dark yellowish brown (10 YR 4/6) coarse, some very coarse, trace
				fine/granules, very well sorted, subrounded, dry.
8	10	13	6 7 10 8	1-8.5: Sand, same as above.
				8.5-11": Sand, coarse, some granules, trace gravel, very poorly sorted, subangular,
				dry.
				11-13": Sand, strong brown (7.5 YR 5/6) coarse, some very coarse, trace fine, dry.

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Sample/Core Log

Boring/Well GMSG-57 Project/No. Ford/Kingsford WI000950.0002 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 09:35 2/08/02 Drilling Completed 10:15 2/08/02

Total Depth Drilled 6 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger Bucket

Length and Diameter of Coring Device Sampling Interval continuous feet

Land-Surface Elev. 1124.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS G&M, Inc. Driller Paul/Jake Helper Pat

Prepared By Paul Lenaker/Jason Dowling/Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	6"			Topsoil.
6"	12"			Silt, brown, sandy, clayey, trace gravel (rounded to subrounded, (2 mm - 10 mm),
				dry.
				Silt, as above.
12"	18"			Clay, brown, silty, sandy, trace gravel, rounded to subrounded, (2 mm - 10 mm),
				dry.
18"	60"			Clay as above.
60"	72"			Silt, brownish orange, clayey, sandy, trace gravel, (rounded to subrounded, (2 mm -
				12 mm), dry.

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Sample/Core Log

Boring/Well: GMSG-58 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 12:30 2/08/02 Drilling Completed: 12:55 2/08/02

Total Depth Drilled: 6 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1125.03 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Paul/Jake Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	6"			Topsoil.
6"	12"			Topsoil, as above.
12"	18"			Silt, orangish brown, sandy, trace clay, trace fine gravel (subrounded, 2 mm -
				10 mm), dry.
18"	24"			Silt, as above.
24"	30"			Fine sand, brown, silty, trace clay, trace fine gravel (subrounded, 2 mm to 8 mm), dry.
60"	72"			Fine to medium sand, orangish-brown, some silt, trace clay, trace gravel (2 mm to
				20 mm, subrounded), dry.

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Sample/Core Log

Boring/Well: GMSG-59 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 14:10 2/08/02 Drilling Completed: 14:40 2/08/02

Total Depth Drilled: 6 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1114.19 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Paul/Jake Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	12"			Topsoil.
12"	72"			Fine to medium sand, dark reddish brown (2.5 YR 3/4), trace clay, trace silt, trace fine gravel, dry.

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Sample/Core Log

Boring/Well: GMSG-60 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 15:25 2/08/02 Drilling Completed: 15:54 2/08/02

Total Depth Drilled: 6 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1127.12 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Paul/Jake Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	6"			Topsoil.
6"	58"			Fine to medium sand with trace coarse sand, yellowish red (5 YR 4/6), trace silt, trace clay, trace gravel (2 mm to 8 mm, subrounded), dry.
58"	72"			Medium to coarse sand, yellowish brown (10 YR 5/6), some gravel (2 mm to 12 mm), subrounded to subangular, dry.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-61 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 07:50 2/09/02 Drilling Completed: 08:25 2/09/02

Total Depth Drilled: 6 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1123.00 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	6"			Topsoil.
6"	48"			Fine to medium sand, reddish brown (2.5 YR 5/4), trace silt, trace clay, trace fine gravel (2 mm - 10 mm), rounded, dry.
48"	72"			Medium sand, reddish brown (2.5 YR 5/4), some fine gravel (2 mm - 30 mm), subrounded to rounded, dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-61R Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - NLJ

Drilling Started 8/17/06 Drilling Completed 8/17/06

Total Depth Drilled 11.20 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1123 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	1.25	--	--	Grass and Topsoil: Silt, dark brown, trace clay, poor sorting, rocks 1/2"-4", subrounded/rounded, noncohesive, dry.
1.25	8.25	--	--	Sand: Reddish/light brown, medium, some sorting with rocks 1/2"-1", trace clay, noncohesive, slight moisture.
8.25	9.5	--	--	Clay: Red/black, silty, poorly sorted, some cohesiveness, slight moisture (damp), wood chip like debris present.
9.5	9.7	--	--	Sand: Light brown, medium, silty, poorly sorted, non-cohesive, moderate moisture.
9.7	10.6	--	--	Gravel: Subrounded 1-2", trace clay, poorly sorted, noncohesive, moderate moisture, densely packed.
10.6	11.2	--	--	Sand: Light brown, coarse, well sorted, non-cohesive, high moisture.

ARCADIS G&M

Sample/Core Log

Boring/Well GMSG-62 Project/No. Ford/Kingsford WI000950.0002 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 09:25 2/09/02 Drilling Completed 09:40 2/09/02

Total Depth Drilled 6 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger Bucket

Length and Diameter of Coring Device

Sampling Interval continuous feet

Land-Surface Elev. 1123.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS G&M, Inc. Driller Paul/Jake Helper

Prepared By Paul Lenaker/Jason Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	6"			Topsoil.
6"	30"			Fine to medium sand, reddish brown (2.5 YR 4/3) trace silt, trace clay, trace gravel
				(rounded to subrounded, 2 mm - 6 mm), dry.
30"	72"			Medium sand with fine sand, reddish brown (2.5 YR 4/4), trace silt, trace clay, trace
				gravel (2 mm to 12 mm, subrounded), trace organics, dry.

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Sample/Core Log

Boring/Well GMSG-62R Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - NLJ

Drilling Started 8/10/06 Drilling Completed 8/10/06

Total Depth Drilled 11.00 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1123.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.6	--	--	Grass and Topsoil: Silt, dark brown, organic debris, trace clay, poorly sorted, non-cohesive, slight plasticity, slight moisture.
0.60	11.0	--	--	Sand: Light brown, medium, clay chunks, red and gray, silty poorly sorted, non-cohesive, rocks 1/2-2", slight moisture. Sand progressively got coarser with a mix of fine sand at about 10.75' but then went back to being the original above soil.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-63 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 14:20 2/09/02 Drilling Completed: 15:15 2/09/02

Total Depth Drilled: 5.75 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1127.76 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Paul/Jake Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	6"			Topsoil.
6"	69"			Fine to medium sand, red (2.5 YR 5/6), trace silt, trace clay, fine gravel (2 mm - 20 mm), trace organics, dry.

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Sample/Core Log

Boring/Well GMSG-64 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10/19/02 Drilling Completed 10/19/02

Total Depth Drilled 4.3 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand auger bucket

Length and Diameter of Coring Device 6" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1128.44 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Pat Helper

Prepared By P. Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.5			Topsoil/dark brown loam.
0.5	2.8			Sand, light brown, medium, very well sorted.
2.8	4.3			Sand, reddish brown, medium to very fine, silty.
				EOB @ 4.3 feet.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-65 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 9:30 2/10/02 Drilling Completed: 09:55 2/10/02

Total Depth Drilled: 5.75 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1122.36 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Paul/Jake Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	48"			Fine sand with medium, reddish brown (2.5 YR 5/4), trace silt, trace clay, trace
				coarse sand, trace fine gravel (2 mm - 10 mm), dry.
48"	69"			Fine sand, reddish brown (2.5 YR 6/4), trace silt, trace medium and coarse, fine
				gravel (2 mm - 15 mm), dry.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-66 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 16:25 2/10/02 Drilling Completed: 16:55 2/10/02

Total Depth Drilled: 6 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1124.44 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Paul/Jake Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	30"			Sand, fine to medium, some coarse sand, dusky red (10 R 3/3), trace silt, trace clay, trace fine gravel (10 - 20 mm), subrounded, dry.
30"	72"			Sand, medium with fine, reddish brown, some coarse sand, reddish brown (2.5 YR 3/4), trace silt, trace clay, trace fine gravel (5 - 20 mm), subrounded, dry.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-67 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 08:35 2/11/02 Drilling Completed: 08:55 2/11/02

Total Depth Drilled: 6 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Sampling Interval: continuous feet

Land-Surface Elev.: 1122.08 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Paul/Jake Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	4"			Topsoil.
4"	36"			Fine and medium sand, light reddish brown (2.5 YR 7/4), trace silt, trace clay, trace
				fine gravel (5 - 15 mm), dry.
36"	70"			Fine sand and silt, reddish brown (2.5 YR 5/4), trace fine gravel, subrounded, dry.
70"	72"			Silt and clay, reddish brown (2.5 YR 5/4), trace fine sand, dry.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-68 Project/No.: Ford/Kingsford WI000950.0002 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 09:30 2/11/02 Drilling Completed: 09:45 2/11/02

Total Depth Drilled: 5.75 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger Bucket

Length and Diameter of Coring Device:

Land-Surface Elev.: 1122.09 feet [X] Surveyed [ ] Estimated Sampling Interval: continuous feet

Drilling Fluid Used: None Datum: Mean Sea Level

Drilling Method: Hand Auger

Drilling Contractor: ARCADIS G&M, Inc. Driller: Helper:

Prepared By: Paul Lenaker/Jason Dowling Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	42"			Fine sand, some medium sand, dark reddish brown (5 YR 3/4), some silt, trace coarse sand, dry.
42"	69"			Medium sand, some fine sand, yellowish red (5 YR 4/6), some silt, some coarse sand, trace gravel (2 mm to 8 mm), subrounded, moist.

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Sample/Core Log

Boring/Wel GMSG-69B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan (Khoury) Drilling Started 8/2/05 Drilling Completed 8/2/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1114.88 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	4.5/0	1.5	1 2 5 7	0-0.25' Grass: Topsoil, black, loose, moist.
					0.25-1.5' Sand: Dark yellowish brown (10 YR 4/4), very fine to fine sand, some
					silt, some subangular to subround gravel, loose, very poorly sorted, moist.
2	4	11.7/10	0.5	13 13 15 12	0-0.5' Sand: strong brown (7.5 YR 5/6), fine sand, trace medium sand, loose,
					well sorted, moist.
4	6	10.6/10.1	1.5	7 3 7 11	0-1' Silt/Sand: Strong brown (7.5 YR 4/6), trace subround gravel, very soft,
					low cohesion to loose, moist.
					1-1.5' Sand: Strong brown (7.5 YR 5/8), fine sand, trace medium sand, loose,
					well sorted, moist.
6	8	10.92/9.1	1.5	4 9 8 18	0-1.5' Sand: Strong brown (7.5 YR 5/8), medium to coarse sand, little
					subround gravel from 1.25-1.5', loose, moderately sorted, moist.
8	10	13.01/5.1	1	4 5 7 7	0-1' Sand: Brown (7.5 YR 4/4), fine to very coarse sand, mostly very coarse,
					some fine gravel, loose, very poorly sorted, moist.
10	12	10.01/1.2	1	4 4 6 7	0-1' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand,
					trace subrounded gravel, very coarse sand layer from 0.5-0.75', loose, poorly
					sorted, moist.
12	14	13.7/0	1	4 4 6 9	0-0.5' Sand: Strong brown (7.5 YR 5/6)), coarse sand, loose, uniform, well
					sorted, moist.
					0.5-1' Sand: Strong brown (7.5 YR 5/6), medium sand, trace coarse sand,
					loose, uniform, well sorted, moist.
14	16	20.18/0	1	4 5 5 6	0-0.5' Sand: As above.
					0.5-1' Sand: Reddish yellow (7.5 YR 6/6), fine sand, trace medium sand, loose,
					well sorted, moist.
16	18	17.31/0	1	4 4 4 5	0-1' Sand: Reddish yellow (7.5 YR 6/6), very fine to very coarse sand, mostly
					medium sand, trace fine gravel, loose, very poorly sorted.
18	20	18.65/0	1.5	4 5 5 7	0-0.5' Sand: Strong brown (7.5 YR 4/6), very fine to coarse sand, mostly fine
					sand, loose, poorly sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-69B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					0.5-1.5' Sand: Strong brown (7.5 YR 5/6), fine to coarse sand, mostly medium
					sand, loose, poorly sorted, moist.
20	22	13.90/0	1	3 4 5 5	0-0.5' Sand: As above (18-18.5').
					0.5-1' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand,
					loose, well sorted, moist.
22	24	9.53/0.5	1.5	4 4 7 15	0-0.5' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand,
					loose, well sorted, moist.
					0.5-0.75' Crushed quartz rock.
					0.75-1.5' Sand: Strong brown (7.5 YR 4/6), fine to coarse sand, mostly
					medium sand, trace subrounded gravel, loose, poorly sorted, moist.
24	26	11.34/0.4	1.5	7 8 8 10	0-0.5' Sand: Brown (7.5 YR 4/4), very fine to coarse sand, mostly fine sand,
					loose, very poorly sorted, moist.
					0.5-1.5' Sand: Strong brown (7.5 YR 3/6), fine to coarse sand, trace
					subrounded fine gravel, mostly fine sand, loose, poorly sorted, moist.
26	28	11.15/0	1.5	4 7 15 23	0-0.5' Sand: Brown (7.5 YR 4/4), very fine to coarse sand, mostly medium,
					loose poorly sorted, moist.
					0.5-1.5' Sand: Reddish yellow (7.5 YR 6/6), very very fine sand, uniform, trace
					silt varving, very well sorted, moist.
28	30	10.04/0	1	6 6 19 29	0-1' Sand: As above.
30	32	26.44/0	1.5	6 16 19 24	0-1.5' Sand: As above, fewer silt varves.
32	34	18.52/0	1.5	9 15 19 22	0-1.5' Sand: As above, no silt varves.
34	36	18.36/0	1.5	6 9 15 21	0-0.5' Sand: As above.
					0.5-1' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
					sorted, moist.
					1-1.5' Sand: As above (26.5-27.5').
36	38	18.83/0	1.5	7 11 15 18	0-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
					sorted, moist.
38	40	19.83/0	1.5	11 14 14 17	0-1.5' Sand: As above, wet at 39.25-39.75'.
40	42	28.54/0	1.5	6 9 15 15	0-1.5' Sand: Dark yellowish brown (10 YR 4/6), very fine to fine sand, mostly
					fine, uniform, loose, well sorted, wet.
					EOB @ 42'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-70B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan (Khoury) Drilling Started 8/2/05 Drilling Completed 8/2/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1114.36 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	3.19/6.5	1.5	2 2 3 4	0-0.25' Grass: Topsoil, black, loose, moist.
					0.25-1.5' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly fine sand,
					loose, moderately sorted, moist.
2	4	2.85/5.72	1	2 2 9 9	0-0.5' Sand: as above.
					0.5-1' Sand: Brownish yellow (10 YR 6/6), fine to coarse sand, mostly medium,
					loose, well sorted, moist.
4	6	3.59/6.10	1.5	4 4 5 6	0-1.5' Sand: Light brown (7.5 YR 6/4), 3" fine sand, 3" medium sand, 3" very
					fine to fine sand, 7" medium sand, loose, well sorted, moist.
6	8	5.40/5.0	1	5 4 4 9	0-0.5' Sand: Brown (7.5 YR 4/3), fine sand, trace medium and coarse sand,
					loose, moderately sorted, moist.
					0.5-1' Sand: Light brown (7.5 YR 6/4), medium sand, loose, very well sorted,
					moist.
8	10	7.68/3.64	1.5	4 4 5 6	0-1.5' Sand: As above, with trace coarse sand, well sorted.
10	12	6.71/2.78	1	4 5 7 9	0-0.5' Sand: Yellowish brown (10 YR 5/4), very fine to coarse sand, mostly
					medium sand, loose, poorly sorted, moist.
					0.5-1' Sand: Light brown (7.5 YR 6/4), fine to medium sand, mostly fine sand,
					loose, well sorted, moist.
12	14	7.43/5.26	1.75	3 3 5 7	0-1.5' Sand: Light brown (7.5 YR 6/4), fine to coarse sand, mostly medium,
					loose, moderately sorted, moist.
					1.5-1.75' Sand: Light brown (7.5 YR 6/4), fine to coarse sand, mostly medium
					sand, trace subrounded medium gravel, loose, very poorly sorted, moist.
14	16	4.19/2.30	1	3 3 5 11	0-1' Sand: Light brown (7.5 YR 6/4), fine to medium sand, trace subround
					gravel in last 2", trace coarse sand, mostly fine sand, loose, well sorted, moist.
16	18	7.42/2.56	1	4 5 7 7	0-1' Sand: Yellowish brown (10 YR 5/4), fine to coarse sand, mostly medium
					sand, little subround fine gravel, loose, very poorly sorted, moist.
18	20	10.75/4.03	1.5	5 5 4 4	0-0.75' Sand: Brown (10 YR 4/3), fine to coarse sand, mostly fine sand, loose,
					poorly sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-70B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					0.75-1.5' Sand: As above16-17'.
20	22	6.71/5.89	1	4 5 5 6	0-1' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand, little
					coarse sand, trace subround gravel, loose, very poorly sorted, moist.
22	24	8.54/4.76	1	4 4 6 6	0-1' Sand: Strong brown (7.5 YR 4/6), very fine to coarse sand, mostly
					medium sand, trace subround gravel, loose, very poorly sorted, moist.
24	26	5.91/4.59	1	4 4 7 8	0-1' Sand/Gravel: Strong brown (75. YR 4/6), fine to coarse sand, mostly
					medium sand, subround gravel, loose, very poorly sorted, moist.
26	28	9.35/2.51	1	4 6 6 8	0-0.75' Sand: Strong brown (7.5 YR 4/6), fine to coarse sand, mostly medium
					sand, little subround gravel from 0.25" to 1.25" wide, loose, very poorly
					sorted, moist.
					0.75-1' Clay: Reddish brown (5 YR 5/4), very soft, uniform, plastic, moist to
					wet.
28	30	14.77/3.34	0.3	12 16 16 15	0-0.3' Sand: Brown (7.5 YR 4/4), fine sand, trace (-) medium and coarse sand,
					loose, well sorted, moist.
30	32	16.59/2.96	1.5	14 10 11 14	0-1.5' Sand: Strong brown (7.5 YR 5/6), fine to coarse sand, mostly medium
					sand, trace subround gravel up to 0.25", loose, moderately sorted, moist.
32	34	15.21/5.37	1.5	6 11 15 14	0-0.5' Sand: Strong brown (7.5 YR 4/6), medium sand, trace coarse sand,
					loose, well sorted, moist.
					0.5-1.5' Sand: As above, but light brown (7.5 YR 6/3).
34	36	16.59/3.38	1.5	10 10 15 21	0-0.5' Sand: As above (32-32.5').
					0.5-1.5' Sand: Brown (7.5 YR 5/4), medium sand, trace fine to coarse sand,
					loose, well sorted, moist.
36	38	10.19/3.53	1	10 11 16 25	0-0.5' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand, 2"
					gravel at 0.5', loose, well sorted, moist.
					0.5-1' Sand: Light reddish brown (5 YR 6/4), very fine sand, uniform, loose,
					very well sorted, moist.
38	40	11.51/3.27	1.75	10 16 20 26	0-1.75' Sand: As above (39.75-40') wet, with trace silt varving.
40	42	29.07/2.78	1.5	12 15 23 26	0-1.5' Sand: As above, wet.
					EOB @ 42'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-71 B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location: Kingsford, Michigan (Khoury) Drilling Started: 8/7/05 Drilling Completed: 8/7/05

Total Depth Drilled: 40 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1114.74 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Randy Radke Helper: Kevin Frome

Prepared By: Toni Schoen Hammer Weight: 300 Hammer Drop: 30 ins.

Note: OVM Readings Not Accurate

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	8.93/	1.0	2 2 3 4	0-0.25' Grass: Topsoil, black, loose, moist.
		1184			0.25-1' Sand: Yellowish brown (10 YR 5/4), fine sand, trace (-) medium sand,
					loose, well sorted, moist.
2	4	5.99/	1.5	3 4 4 7	0-1.5' Sand: Strong brown (7.5 YR 4/6), very fine sand, loose, very well sorted,
		2200			moist.
4	6	9.14/	1.25	3 5 5 7	0-1' Silt/Sand: Sand, strong brown (7.5 YR 4/6), silty fine sand, loose to low
		2000			cohesion, very soft, moist.
					1-1.25' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, trace coarse
					sand, loose, poorly sorted, moist.
6	8	6.84/	0.5	5 8 8 9	0-0.5' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, some coarse
		2400			sand, loose, very poorly sorted, moist, rock wedged in spoontip.
8	10	10.66/	0.5	5 5 6 8	0-0.5' Sand: Brown (7.5 YR 5/4), fine sand, trace (-) medium sand, loose, well
		3000			sorted, moist.
10	12	11.47/	0.5	5 7 9 9	0-0.5' Sand/Gravel: Strong brown (7.5 YR 4/6), fine to coarse sand, subangular
		981			to subround gravel, loose, very poorly sorted, moist.
12	14	7.90/	1	5 7 9 7	0-0.1' Sand: Brown (7.5 YR 5/4), fine sand, loose, very well sorted, moist.
		601			0.1-1' Sand: Brown (7.5 YR 5/4), fine to medium sand, little coarse sand, loose,
					poorly sorted, moist.
14	16	9.47/	1	7 7 7 9	0-1' Sand: Strong brown (7.5 YR 5/4) fine to medium, more medium than 12-
		1450			14', trace coarse sand, little subround fine gravel, loose, very poorly sorted,
					moist.
16	18	102.5/	1.5	6 8 8 9	0-1.5' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, little to some
		1563			coarse sand, little fine gravel, loose, very poorly sorted, moist.
18	20	12.89/	1	8 11 11 11	0-1' Sand/Gravel: Brown (7.5 YR 5/4), fine to medium, and coarse sand,
		1200			subangular to subround gravel up to 0.5", loose, very poorly sorted, moist.
20	22	9.31/	1.5	7 10 9 9	0-1.5' Sand: Brown (7.5 YR 5/4), medium sand, little coarse sand, trace (+)
		3100			subangular to subround fine gravel, loose, very poorly sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-71 B

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
22	24	12.04/	2	4 6 6 11	0-1' Sand: Strong brown (7.5 YR 4/6), coarse to very coarse sand, some
		959			medium sand, little fine subangular to subround gravel, loose, poorly sorted,
					wet.
					1-2' Silt/Clay: Silt brown (7.5 YR 4/4), clay reddish brown (5 YR 4/4), silt dense,
					smooth, crumbly when worked, uniform, 2-3" thick, clay, uniform, dense,
					plastic, 0.5" thick, moist.
24	26	8.10/	1	4 10 10 11	0-1' Silt/Clay: As above, silt 1-2" thick, clay 0.5-1" thick, wet.
		1100			
26	28	8.27/	2	10 14 14 16	0-2' Silt: Dark grayish brown (10 YR 4/2), smooth, uniform, medium stiff,
		335			crumbly when worked, clay varving at 9", 12", and 20", wet.
28	30	5.66/12	1	8 10 11 11	0-1' Silt/Clay: Dark grayish brown (10 YR 4/2), clay reddish brown (5 YR 5/4),
					smooth, uniform, dense, crumbly when worked, clay varving from 0.5-1', wet.
30	32	6.12/96	1.5	8 10 12 16	0-1.5' Silt/Clay: As above, silt 0.25-2" thick, clay varve to 0.5", varves 1.0-1.5',
					wet.
32	34	7.6/88	1.5	7 18 18 21	0-1.5' Silt/Clay: As above, evenly distributed beds, 2" silt layers, 0.5" clay layers,
					wet.
34	36	4.37/0	1	7 13 19 26	0-1' Silt/Clay: Silt brown (7.5 YR 4/3), dense, smooth, uniform, crumbly when
					worked, trace clay varving throughout, wet.
36	38	5.27/0	1	6 11 15 21	0-1' Silt/Clay: As above, clay varves every 0.5-1", uniform interbedding.
38	40	2.64/0	1	6 11 11 15	0-1' Silt/Clay: As above.
					EOB @ 40'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-72 B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location: Kingsford, Michigan (Khoury) Drilling Started: 8/8/05 Drilling Completed: 8/8/05

Total Depth Drilled: 42 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1114.30 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Randy Radke Helper: Kevin Frome

Prepared By: Toni Schoen Hammer Weight: 300 Hammer Drop: 30 ins.

Note: OVM not working.

Sample/Core Depth (feet below land surface) From	To	OVA/ (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	3.82	1.0	2 2 3 5	0-1' Sand: Strong brown (7.5 YR 5/6), fine sand, loose, uniform, very well
					sorted,moist.
2	4	5.25	1.25	2 3 4 8	0-1.25' Sand: As above, rock lodged in spoontip.
4	6	7.12	1	6 6 8 11	0-0.5' Sand: As above.
					0.5-1' Sand: Strong brown (7.5 YR 5/6), medium sand, little to some fine
					sand, trace coarse sand and fine gravel, one subangular gravel 1" diameter,
					2" gravel lodged in spoontip, loose, very poorly sorted, moist.
6	8	7.70	0.5	4 6 6 14	0-0.5' Sand: Strong brown (7.5 YR 5/6), fine sand, loose, very well sorted, 2"
					crushed rock at base, moist.
8	10	5.7	1	4 6 11 14	0-1' Sand: Brown (7.5 YR 5/4), fine to medium sand, little to some coarse
					sand, trace fine gravel, loose, very poorly sorted, moist.
10	12	7.4	1	4 7 9 11	0-0.5' Sand: Brown (7.5 YR 4/4), fine to medium, trace coarse to very coarse
					sand, loose to somewhat hard, poorly sorted, moist.
					0.5-1' Sand: Brown (7.5 YR 5/4), medium sand and fine sand, trace (-) coarse
					sand, loose, poorly sorted, moist.
12	14	3.81	1.5	4 5 7 7	0-1.5' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace (-) coarse sand,
					loose, poorly sorted, moist.
14	16	7.14	0.5	4 7 9 12	0-0.5' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace coarse sand,
					loose, poorly sorted, moist.
16	18	7.78	1.25	4 5 7 7	0-0.3' Sand: Brown (7.5 YR 5/4), fine sand, loose, uniform, very well sorted,
					moist.
					0.3'-1.25' Sand: Brown (7.5 YR 5/4), fine to medium sand, little coarse sand,
					loose, poorly sorted, moist.
18	20	10.96	1	4 5 6 9	0-0.5' Sand: As above, 16-16.25'.
					0.5-1' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace coarse sand,
					trace fine to coarse gravel up to 0.75", loose, poorly sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-72 B

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	22	9.69	0.75	4 6 7 7	0-0.5' Sand: Strong brown (7.5 YR 5/6), fine sand, trace medium sand, loose,
					well sorted, moist.
					0.5-0.75' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace coarse sand,
					trace fine to coarse subangular to subrounded gravel up to 0.75", loose, very
					poorly sorted, moist.
22	24	6.68	1	6 7 7 12	0-1' Silt/Clay: Brown (7.5 YR 5/3), clay reddish brown (5 YR 5/4), silt smooth
					and grainy interbedded, dense, uniform, crumbly when worked, one clay layer
					(0.5" thick) at 0.5', dense, plastic, somewhat crumbly, uniform, moist.
24	26	3.97	1	10 8 8 11	0-1' Silt/Clay: Brown (7.5 YR 5/3), smooth and grainy silt interbedded, soft,
					uniform, crumbly when worked, trace clay varves from 0.5-1', moist.
26	28	7.31	1.5	4 5 7 12	0-1.5' Silt/Clay: As above, clay reddish brown (5 YR 4/4), one 3" clay layer at
					0.3'.
28	30	6.46	1.5	4 6 8 8	0-1.5' Silt/Clay: Silt brown (7.5 YR 4/2), clay, reddish brown (5 YR 5/3), silt
					grainy, dense, crumbly when worked, uniform, silt 4" thick, clay 0.5-2" thick,
					evenly bedded, clay dense, plastic, uniform, wet.
30	32	5.90	1.5	4 4 5 7	0-1.5' Silt/Clay: As above, smooth and grainy silt beds evenly bedded, silt 3"
					thick, clay 1" thick, wet?
32	34	4.96	1.5	6 8 9 11	0-1.5' Silt/Clay: As above, silt 2-3" thick, clay 0.5-1" thick, moist?
34	36	4.75	1.75	6 8 10 10	0-1.75' Silt/Clay: Silt brown (7.5 YR 5/3), clay reddish brown (2.5 YR 4/4),
					interbedded, smooth and grainy silt, dense, uniform, crumbly when worked,
					clay, hard plastic, somewhat crumbly, 0.5-1" clay layers from 0-1', varved
					from 1-1.75', silt 2-3", thick layer, moist.
36	38	4.06	2	6 9 9 11	0-2' Silt/Clay: As above, clay is varved every 0.5-2.5", 0.5" clay layer at 1.8'.
38	40	6.83	1	6 6 9 10	0-1' Silt/Clay: As above, clay varies every approximately 2.5", wet?
40	42	4.93	1.5	6 7 9 9	0-1.5' Silt/Clay: As above, clay 0.25-1" thick, silt, is 1-2.5" thick, wet.

ARCADIS

Sample/Core Log

Boring/Well GMSG-73 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Delta Do-It Center, Kingsford, Michigan Drilling Started 7/9/02 Drilling Completed 7/9/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1115.24 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	10	N/A		Medium with fine sand, reddish brown (2.5 YR 3/4), some fine gravel 5-10 mm, trace silt, damp.
				EOB @ 10'

ARCADIS

Sample/Core Log

Boring/Well GMSG-74 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Delta Do-It Center, Kingsford, Michigan Drilling Started 7/9/02 Drilling Completed 7/9/02

Total Depth Drilled 10.3 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1117.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	10.3			Medium with fine sand, reddish brown (2.5 YR 3/4), some fine gravel (2-20 mm)
				subrounded, moist.
				EOB @ 10.3'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-75 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Delta Do-It Center, Kingsford, Michigan Drilling Started 7/9/02 Drilling Completed 7/9/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device

Sampling Interval Continuous feet

Land-Surface Elev. 1119.63 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5			Silty sand, dusky red (10 YR 3/3) some fine gravel, some coarse sand, moist (fill?).
5	10.0			Medium with fine sand, reddish brown (2.5 YR 4/4) some fine gravel,
				subrounded, trace brick, moist.
				EOB @ 10'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-76 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Smith Castings, Kingsford, Michigan Drilling Started 7/9/02 Drilling Completed 7/9/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1123.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	5			(Rocks, rubble) silty sand, (2.5 YR 4/3) reddish brown, some fine gravel (2-20 mm),
				some large gravel, also trace bricks, concrete, metal rebar, moist.
5.0	10.0			Silty sand (2.5 YR 4/3) reddish brown, trace fine gravel, moist.
				EOB @ 10'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-77 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location ZAM's, Kingsford, Michigan Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device

Land-Surface Elev. 1120.82 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	6"			Concrete.
6"	10.0			Sand, reddish brown (2.5 YR 4/3), medium with some fine and coarse sand,
				trace fine gravel (2-10 mm), moist.
				EOB @ 10'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-78 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location UPS, Kingsford, Michigan Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 5 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1127.63 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1			Rocks/rubble, silty sand (2.5 YR 4/3) reddish brown, fine gravel (2-20 mm),
				large gravel.
1.0	5.0			Sand, reddish brown (2.5 YR 4/4) medium with some fine and coarse sand
				trace of fine gravel (2-20 mm), moist.
				EOB @ 5'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-79 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location GAD (west side), Kingsford, Michigan Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 5.5 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1121.31 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1			Rocks/rubble, reddish brown (2.5 YR 4/3) fine gravel (2-20 mm), large gravel,
				moist.
1.0	5.0			Sand with silt, black (2.5 YR 3/2) medium with fine gravel (2-20 mm) moist.
				EOB @5'

ARCADIS

Sample/Core Log

Boring/Well GMSG-80 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location GAD (south side), Kingsford, Michigan Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1120.18 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	10			Sand with silt, reddish brown (2.5 YR 4/4) medium with some fine and coarse sand, trace of fine gravel (2-20 mm).
				EOB @ 10'

ARCADIS

Sample/Core Log

Boring/Well GMSG-81 Project/No. Ford/Kingsford WI000975.0002 (commercial MDEP) Page 1 of 1

Site Location Old Witlock Building (West Side) Kingsford, Michigan Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device None

Length and Diameter of Coring Device None Sampling Interval Continuous feet

Land-Surface Elev. 1119.6 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.6			Concrete.
0.6	10.0			Sand: Reddish brown (2.5 YR 4/3) medium with some fine and coarse sand, silty, trace of fine gravel, (2-10 mm), moist.
				EOB @10'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-81 B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 4

Site Location Kingsford, Michigan (KHP) Drilling Started 8/15/05 Drilling Completed 8/15/05

Total Depth Drilled 43 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1119.51 feet [x] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Jill Flater Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1	0/	0.75	--	Concrete.
		100			
1	3		0.8	3 3 4 6	0-0.5' Sand: Strong brown (7.5 YR 4/6) fine to medium sand, little coarse
					sand, trace angular to subangular gravel 1" diameter, poorly sorted, dry,
					loose (fill).
					0.5-0.6' Silt: Grainy, trace fine sand loose, crumbly, dry,
					0.6-0.8' Sand: Fine to medium sand, trace coarse sand.
3	5	1.83/	0.5	5 8 5 11	0-0.5' Sand: Strong brown (7.5 YR 4/6) medium to very coarse sand, trace to
		98			little fine, very poorly sorted, trace gavel subangular to subround up to 1",
					moist.
5	7	1.94/	1	7 5 7 7	0-1.0' Sand: Brown (7.5 YR 4/4) as above, trace fine, little fine gravel 90
		86			percent < 1/4" diameter.
7	9	1.73/	0.7	3 4 4 10	0-0.7' Sand: Brown (7.5 YR 4/4), medium sand, trace silt, little fine, trace fine
		43			gravel up to 1-1/4" subangular to subrounded, loose to somewhat crumbly.
9	11	2.89/	1.7	14 8 8 9	0-0.2' Sand: As above.
		98			0.2-0.9' Sand: Brown (7.5 YR 4/3) medium sand, trace fine, trace silt, little
					coarse sand, trace fine gravel subangular to subround up to 1/2" diameter,
					dry to moist, dry may be from sun, loose.
					0.9-1.7' Sand: Brown (7.5 YR 5/4) very fine sand, trace fine sand, well
					sorted, loose, moist.
11	13	1.61/	0.9	6 7 7 7	0-0.9' Sand: Interbedded fine brown (7.5 YR 5/3) and very fine brown
		84			(7.5 YR 5/4) sand layers (50/50) fine sand layers 1/4"-2" thick, trace (2-3
					percent) medium, well sorted, moist, loose, very fine sand layers 1/4-1" thick,
					uniform, well sorted, moist, loose, thinnest layering 0.5-0.7'.
13	15	2.03/	1.5	6 6 7 10	0-0.2' Sand: As above.
		117			0.2-1.4' Sand: Brown (7.5 YR 5/4) very fine to fine sand, little silt, loose to
					crumbly trace (2-3%) medium sand, trace angular to subangular gravel

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-81 B/C

Page 2 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					up to 1" diameter, moist, weathered slate at 1.3-1.4.
					1.4-1.5' Sand: Light brown (7.5 YR 6/4) fine sand, well sorted, moist, loose.
15	17	1.91/	0.9	8 10 10 13	0-0.9' Sand: Brown (7.5 YR 5/4) interbedded fine sand and fine sand with
		92			little silt. Fine sand, well sorted, loose, moist, fine sand with little silt, somewhat
					crumbly, moist, trace 2-3% medium to coarse sand.
17	19	2.61/	2	8 10 12 16	0-1' Sand: Brown (7.5 YR 4/4) very fine to fine sand, little silt, trace medium,
		114			trace fine gravel, 90% <1-1/4" diameter up to 1" subangular to subrounded,
					loose, moist, somewhat sorted.
					1-2' Sand: Color as above, 30% interbedded sand above and 70% fine sand
					fine sand, well sorted, loose, moist 1/4-6", 1-1-1/2" thick sand above layers,
					somewhat crumbly.
19	21	2.23/	1.7	7 9 11 20	0-0.5' Sand: As above, with little silt.
		102			0.5-0.8' Sand: Brown (7.5 YR 5/4) fine sand, loose, well sorted, moist.
					0.8-1.1' Sand: Brown (7.5 YR 4/4) very fine sand, well sorted, uniform,
					loose, moist.
					1.1-1.7 Sand: Brown (7.5 YR 5/4) fine sand, well sorted, uniform, loose, moist.
21	23	2.23/	2	8 15 21 21	0-0.3' Sand: Color as above, very fine to fine sand, trace silt, trace medium,
		104			somewhat crumbly to loose, moist, trace <1% fine gravel subrounded <1/4"
					diameter.
					0.3-2 Sand: Light brown (7.5 YR 6/3) fine sand, trace 1-2% medium sand,
					well sorted, loose, moist, 1/2" band @ 1.5-1.55 of little medium sand.
23	25	4.23/	1.6	8 15 21 30	0-0.8' Sand: Brown (7.5 YR 4/4) very fine to fine sand, little silt, trace medium
		105			to coarse 2-3%, trace 1% fine gravel up to 1/4" diameter subrounded,
					black silt varves 0.4-0.8, matrix firms downward, moderately sorted, loose,
					moist.
					0.8-1.0' Sand: Light brown (7.5 YR 6/4) very fine, little silt, uniform, well
					sorted, moist, loose.
					1.0-1.6 Sand: Color as above, clay yellow red (5 YR 4/6) very fine to fine
					sand, well sorted, clay layers varved to 1/4", plastic to somewhat
					stiff, 1/4" thick layers at 1.0 and 1.5.
25	27	2.76/	2	12 16 21 28	0-1.0' Sand: Brown (7.5 YR 4/4) fine sand, trace medium, well sorted,
		96			moist, loose.
					1.0-1.1' Sand: Brown (7.5 YR 5/4) very fine sand, very well sorted, loose,
					moist.
					1.1-2' Sand: Brown (7.5 YR 5/4) fine sand, well sorted, loose, moist,
					interbedded uniformly with varved clay layers (yellow red) 70/30 sand
					layers 1/4-1/8" thick.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-81 B/C

Page 3 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
27	29	3.37/	2	9 12 16 27	0-0.5' Sand: Brown (7.5 YR 4/4) very fine to fine sand, well sorted, moist,
		97			loose, trace 2% silt varves at bottom.
					0.5-1' Sand: Brown (7.5 YR 5/3) fine sand, well sorted, loose, trace very fine,
					moist, intermixed nodules of clay (yellow red) and vertical 1" layer, (from
					drilling) platey on broken surfaces, plastic when worked, soft, moist,
					1-2' Sand: Brown (7.5 YR 5/3) fine sand, very well sorted, uniform, moist,
					loose.
29	31	2.85/	1.7	12 16 29 33	0-0.8' Sand: Brown (7.5 YR 4/4) as above.
		100			0.3-0.4 Clay: 3/4" layer, platy on broken surface, soft, plastic when worked,
					moist, sharp contact with below.
					0.8-1.7' Silt: Brown (7.5 YR 4/4) smooth to crumbly, moist, very stiff,
					dense.
31	33	1.89/	1.8	12 16 22 27	0-0.5' Sand: Brown (7.5 YR 4/4) very fine to fine sand, trace silt, moist,
		83			loose to somewhat cohesive, clay nodules, disarray plastic, same sharp contact,
					(may be from above).
					0.5-1.3' Silt: Brown (7.5 YR 4/4) smooth and grainy interbedded silt, varved
					uniformly, crumbly when worked, stiff/dense, moist.
					1.3-1.8' Sand: Brown (7.5 YR 4/4) very find sand, uniform, very well sorted,
					loose, moist, with clay varves, 5% silt/clay varves, sand 1/4-1" thick.
33	35	2.55/	1.8	12 16 20 27	0-0.1' Sand: As above, sharp contact with below.
		88			0.1-1.1' Silt: Brown (7.5 YR 4/4) smooth, crumbly, soft to somewhat
					stiff, moist.
					1.1-1.5' Silt: Brown (7.5 YR 4/4) grainy approaching very fine sand in places,
					sharp contact with below, moist, loose when worked.
					1.5-1.8' Sand: Brown (7.5 YR 4/4) very fine sand, uniform, moist, very well
					sorted, loose.
35	37	5.05/	1.6	9 15 19 23	0-1.2' Sand: Brown (7.5 YR 4/4) as above, very fine sand, uniform, 1-1.2'
		102			varved with silt, sand/silt 60/40.
37	39	2.53/	1.7	12 14 18 20	0-0.3' Silt: Brown (7.5 YR 5/4) grainy, crumbly to somewhat cohesive,
		110			sharp contact below.
					0.3-1.1' Sand: Brown (7.5 YR 5/4) fine sand, trace medium, trace very fine,
					well sorted, loose, moist, very fine sand layer at 0.9 and 1.0, uniform, moist,
					loose, well sorted.
					1.1-1.7' Sand: Brown (7.5 YR 4/3), fine sand, trace 10% medium sand,
					trace 5% coarse to fine gravel up to 1/4" diameter, subanglar to subround.
39	41	2.77/	1.6	12 16 21 30	0-0.9' Sand: Brown (7.5 YR 4/4) very fine to fine sand, well sorted, moist,
		116			uniform, loose.
					0.9-2' Sand: Brown (7.5 YR 4/4) very fine to fine sand, well sorted, uniform,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-81 B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					loose, 1.4-1.6' 1" very fine sand seam, fine to medium sand, little coarse,
					moderately sorted, trace fine gravel subangluar to subround >1/4" diameter,
					moist, loose.
41	43	3.51/	1.7	12 17 33 35	0-1.7' Sand: As above.
		118			
					EOB @ 43'

ARCADIS

Sample/Core Log

Boring/Well GMSG-82 Project/No. Ford/Kingsford WI000975.0002 (commercial MDEP) Page 1 of 1

Site Location Northwoods Mfg (North Side) Kingsford, Michgian

Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device None

Length and Diameter of Coring Device None

Sampling Interval Continuous feet

Land-Surface Elev. 1117.13 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.6			Concrete.
0.6	10.0			Sand: Reddish brown (2.5 YR 4/4), medium with some fine and coarse sand,
				silty, trace of fine gravel, (2-10 mm), moist.
				EOB @10'.

ARCADIS

Sample/Core Log

Boring/W GMSG-82 B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan/Northwoods Drilling Started 8/10/05 Drilling Completed 8/10/05

Total Depth Drilled 41 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1117.16 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contract Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen/Jill Flater Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surfa From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1	--	0.5	--	Concrete.
1	3	3.5/2.1	1.2	3 2 3 4	0-0.6' Silt/Sand: Brown (7.5 YR 4/4) smooth silt with fine sand, very soft,
					black oily substance within, moist, low cohesion (fill material).
					0.6-1.2' Sand: Brown (7.5 YR 4/4) fine sand, little to some medium to
					coarse sand, loose, poorly sorted, trace subangular to subrounded fine
					gravel up to an 1" diameter, moist.
3	5	--	0.3	4 4 8 10	0-0.3' Sand: Brown (7.5 YR 4/6) as above, different color, trace very coarse
					sand, lacks fine gravel.
5	7	5.19/	1.1	4 5 7 8	0-0.5' Sand: As above, some medium to coarse sand, poorly sorted.
		2.7			0.5-0.6' Sand/Gravel: Fine to medium sand, poorly sorted, loose, trace coarse
					moist, fine gravel subangular to subrounded up to 1/4" diameter.
					0.6-1.1' Sand: Strong brown (7.5 YR 4/6) fine to medium sand, trace coarse,
					moderately sorted, moist, loose.
7	9	4.64/5.5	1.3	4 4 5 8	0-1' Sand: Brown (7.5 YR 4/4), medium sand, little to some coarse sand, loose,
					some fine to coarse gravel with depth, subangular to subrounded, very sorted,
					moist, coarsens with depth, more gravel at bottom.
					1-1.3' Sand: Strong brown (7.5 YR 4/6) fine sand, some medium to very
					coarse sand, trace fine gravel up to 1/2" subrounded, loose, poorly sorted,
					moist.
9	11	2.95/	1.1	4 7 7 6	0-0.8' Sand: As above, (0-1 of 7-9') at depth some gravel.
		4.75			0.8-0.9' Clay: Red brown (5 YR 4/4) very soft, plastic when worked, moist.
					0.9-1.1' Sand: Strong brown (7.5 YR 5/6) very fine to fine sand, trace medium
					sand, loose, well sorted, moist.
11	13	3.21/	1.3	4 7 10 10	0-1.3' Sand: Brown (7.5 YR 5/4) very fine sand, very well sorted, loose, moist,
		4.48			uniform.
13	15	1.63/3.2	1.2	4 5 6 6	0-0.2' Silt: Brown (7.5 YR 4/4), grainy, very soft, low cohesion, somewhat

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-82 B/C

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surfa From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					crumbly, uniform, moist.
					0.2-0.4' Sand: Light brown (7.5 YR 6/4) fine sand, uniform, sharp contact
					with silt above, very well sorted, moist, loose.
					0.4-1.2' Sand: Strong brown (4/6 7.5 YR) very fine sand, trace fine to
					medium sand, uniform, very soft, loose, moist, moderately well sorted.
15	17	1.82/	1.1	5 6 6 9	0-1.1' Sand: As above, 10% fine to medium, sand layer 0.2-0.3 fine sand,
		5.3			trace medium to coarse, trace fine gravel subangular to subrounded, up to
					1/4" diameter, loose, poorly sorted, trace very fine, moist.
17	19	2.05/	2	4 6 6 9	0-2' Sand: Strong brown (7.5 YR 4/6) very fine sand, very soft, trace medium
		7.98			to very coarse, trace subrounded gravel, loose, moist, uniform, well sorted.
19	21	2.86/	1	9 19 9 10	0-0.5' Sand: As above, 1-1/2" rocks crushed by spoon.
		10.49			0.5-1.0' Sand: Brown (7.5 YR 4/4), very fine, light brown (7.5 YR 6/4) fine
					sand, interbedded fine and very fine sand, layers of fine sand 1/4-1/2" thick,
					loose, well very sorted moist, very fine sand 1/4-1/2" thick, loose to somewhat
					crumbly, moist, trace fine sand, loose, moist, well sorted.
21	23	3.87/	1.2	9 12 16 15	0-0.6' Sand/Gravel/Silt: Brown (7.5 YR 4/3) fine sand, silt, angular to subrounded
		9.71			fine gravel up to 1" diameter, very poorly sorted, gravel of all sizes, loose,
					variable color throughout, moist.
					0.6-1.2' Sand: Gradational change of gravel in 0.6-0.8 into fine sand
					(gradational change observed in shoe sample), loose, some very fine sand,
					dry to moist, very well sorted.
23	25	--	0	23 19 18 22	No recovery.
25	27	2.53/7.7	1.2	10 15 18 29	0-1.2' Sand: Light brown (7.5 YR 6/4) fine sand, uniform, loose, (tightly
					packed), moist, very well sorted.
27	29	2.05/	1.3	7 9 11 12	0-1.3' Sand: Light brown (7.5 YR 6/4) fine sand, coarsens every so slightly with
		6.88			depth yet still fine sand, very well sorted, moist.
29	31	1.86/	1.5	7 8 12 14	0-1.5' Sand: As above.
		7.02			
31	33	2.01/	1.4	7 11 14 20	0-1.4' Sand: As above, (pretty tightly packed).
		4.39			
33	35	8.13/	1.5	8 13 18 20	0-1.5' Sand: As above, 0.5-1.5' color varving not grain size change black/brown
		0.56			3 mm varve slightly thicker layers toward bottom, moist, loose, very well sorted.
35	37	2.53/3.79	1.5	11 11 15 20	0-0.3' Sand: As above 0-1.4 31-33'.
					0.3-0.5' Sand: As above 0-1.4 31-33' with trace silt varving, slightly denser
					material, loose, moderately well sorted, moist.
					0.5-1.5' Sand: As above 0-0.3'.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-82 B/C

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surfa From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
37	39	1.41/	1.5	9 15 19 23	0-1.5' Sand: Brown (7.5 YR 5/4) very fine sand, loose, moist to wet, very
		4.76			well sorted, tightly packed, uniform.
39	41	2.34/	1.8	10 15 17 21	0-1' Sand: As above, wet at 39.5'.
		4.13			1-1.8' Silt: Brown (7.5 YR 4/4) interbedded grainy/smooth silt, uniform color,
					dense, loose (grainy portion) to somewhat crumbly (smooth portions) wet, no
					to low cohesion, 1/4-1/2" beds.
					EOB @ 41'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-83 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 1

Site Location South Side Old Wittock Building, Kingsford, Michigan

Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 10 Feet Hole Diameter 10 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device

Sampling Interval continuous feet

Land-Surface Elev. 1118.64 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suavez Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	8"			Concrete.
8"	10'			Sand with silt, reddish brown (2.5 YR 4/3) medium grain, trace fine gravel (2-20 mm), moist.
				EOB @ 10'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-83 B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/16/05 Drilling Completed 8/16/05

Total Depth Drilled 43 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon, 5' X8" Auger Sampling Interval continuous feet

Land-Surface Elev. 1118.33 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used None Drilling Method

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Jill Flater Hammer Weight 330 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1	0.8			Concrete.
1	3	4.12/	1.2	2 3 5 7	0-0.3' Silty Sand: 50/50 strong brown 4/6 silty fine sand, with sorted sand,
		122			trace medium, slight cohesion to loose, moist.
					0.3-0.9' Sand: Strong brown 4/6 fine to medium sand, some silt, little fine
					gravel subround up to 1/2", loose moist, poorly sorted.
					0.9-1.2' Sand: Strong brown 4/6 medium to very coarse sand, little fine sand,
					little silt, 10% little fine gravel angular to subround up to 1/2" most 1/4",
					very poorly sorted, moist, loose.
3	5	5.59/	0.9	4 5 6 6	0-0.9' Sand: As above, medium to very coarse, trace silt 5%.
		110			
5	7	4.28/	0.7	6 6 6 9	0-0.3' Sand: As above, medium to very coarse, little silt.
		116			0.3-0.7' Sand: Brown 5/4 fine to medium sand, little coarse sand, trace fine
					angular to subround gravel 2-5% most <1/4" loose, moist, poorly sorted.
7	9	3.75/	1.1	5 4 4 3	0-0.7' Sand: Light brown (7.5 YR 6/4) fine sand, very well sorted, loose, moist.
		111			0.7-1' Sand: Fine sand, well sorted, trace 5% medium sand, loose, moist.
					1-1.1' Sand: As above 0-0.7 brown (7.5 YR 5/4).
9	11	3.43/	1.1	5 3 3 3	0-0.4' Sand: As above brown (7.5 YR 5/4).
		73			0.4-1.1' Sand: Dark brown (7.5 YR 3/4) fine to medium sand, little coarse,
					trace silt, some fine gravel angular to subround most ≤ 1/4" up to 1", loose,
					moist, very poorly sorted.
11	13	3.59/	1.0	4 5 7 7	0-0.1' Sand: As above.
		74			0.1-0.5' Sand: Brown (7.5 YR 4/3) fine to very coarse sand, some fine gravel
					angular to subround up to o 1" most 1/4-1/2", loose, very poorly sorted.
					0.5-0.6' Rock: Weathering slate.
					0.6-0.7' Silt: Brown (7.5 YR 4/4), grainy silt, loose to some crumbly, moist
					sharp contact below, soft.
					0.7-1' Sand: Brown (7.5 YR 5/4) very fine, uniform, very well sorted,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-83 B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					moist, loose.
13	15	3.90/	1.3	7 7 11 14	0-1.3' Sand: Brown (7.5 YR 5/4) very fine sand, moist, loose, very well sorted,
		76			swirled disturbed by drilling light silt varves at 4' with length different color
					fine sand pocket/layer at 0.8-0.9' moderate sorted trace medium, moist,
					loose.
15	17	4.16/	1.4	7 11 14 14	0-0.5' Sand: As above.
		81			0.5-1.4' Sand: Brown (7.5 YR 5/3) very fine sand, trace medium 5%, moist,
					loose, well sorted.
17	19	3.47/	1.8	7 9 12 16	0-0.5' Sand: Color in description layered very fine and fine sand, very fine to
		71			well sorted brown 5/4, loose, moist, uniform layering approximately every 1",
					fine sand, moderately well sorted, trace medium, loose, moist, brown (7.5 YR
					6/4).
					0.5-1.4' Sand: Brown (7.5 YR 5/4) fine sand, trace medium <5%, well
					sorted, loose, moist.
					1.4-1.8' Sand: Color as above, fine sand, some very fine, trace 5% medium
					to coarse trace 1% fine gravel angular to subround <1/4", poorly sorted.
19	21	3.52/	1.4	7 9 11 18	0-0.2' Sand: Strong brown (7.5 YR 4/6) very fine sand, well sorted, trace fine
		64			sand, moist, loose sharp contact with below.
					0.2-0.7' Sand: Light brown (7.5 YR 6/4) fine sand, trace 10% medium sand,
					trace 5% coarse sand moderately sort, sharp contact with below, moist,
					loose.
					0.7-1.4' Sand: Brown (7.5 YR 4/4), very fine to fine sand, uniform, well
					sorted, moist to loose.
21	23	3.63/	1.8	5 7 9 11	0-0.1' Sand: Brown (7.5 YR 4/4), fine to very fine sand, trace medium to
		69			coarse, moderately sorted, loose, moist.
					0.1-0.7' Silt: Brown (7.5 YR 4/4) smooth silt, medium stiff, crumbly to low
					cohesion, moist, uniform.
					0.7-0.8' Sand: Brown (7.5 YR 5/4) fine sand, moist, loose, well sorted.
					0.8-1.3' Sand: Brown (7.5 YR 5/40 very fine sand, uniform, very well sorted,
					moist loose.
					1.3-1.8' Sand: Color as above, fine sand, well sorted, loose, moist.
23	25	2.90/	1.6	7 9 11 13	0-0.5' Sand: Strong brown (7.5 YR 4/6) very fine to fine sand, trace medium,
		47			moderately sorted, moist, loose.
					0.5-0.8' Sand: Brown (7.5 YR 5/4) very fine sand, uniform very well sorted,
					loose, moist.
					0.8-1' Silt: Brown (7.5 YR 4/4) smooth silt medium stiff, crumbly, moist,
					uniform.
					1-1.6' Sand: Brown (7.5 YR 5/4) very fine to fine, well sorted, loose, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-83 B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
25	27	5.43/	2	5 8 11 13	0- 27
		52			0.5-1.1' Sand: Brown (7.5 YR 5/4) very fine to fine sand, well sorted, moist,
					loose, from 1.1-1.3 1/4" fine sand and silt seams silt as above sand fine, well
					sorted, ??
					1.1-1.7' Sand: Brown (7.5 YR 5/4) fine sand well sorted, ??
					1.7-2' Sand: Color as above, very fine to fine, well sorted, moist ??
27	29	3.20/	1.5	4 9 15 8	0-1.2' Sand: Light brown (7.5 YR 6/4) fine sand, little medium, moist, loose,
		37			moderate well sorted, trace coarse.
					1.2-1.3' Sand: Brown (7.5 YR 4/4) very fine sand, uniform, very well sorted,
					sharp contact, no loose.
					1.3-1.5' Sand: Color as above, very fine to fine sand, well sorted, moist,
					loose.
29	31	4.08/	2.0	10 14 14 18	0-0.5' Sand: Brown (7.5 YR 5/3), trace fine gravel subangular to subround
		42			up to 1/2" most <1/4" <5%, fine sand, trace medium, moist moderately
					well sorted, loose brown (7.5 YR 4/4).
					0.5-1.0' Silt/Sand: Interbedded sand/silt, smooth silt, uniform moist, soft
					varved -1/4" 70/30 sand/silt sand very fine to fine 1/4"- 3/4" well sorted,
					moist, loose.
					1.0-2.0' Sand: Light brown (7.5 YR 6/4) fine sand, very well sorted, color not
					grain size banding, moist, loose.
31	33	5.74/	1.5	6 9 17 21	0-0.9' Sand: As above.
		48			0.9-1.0' Sand: Brown (7.5 YR 4/4) very fine sand, well sorted, trace silt,
					moist, loose.
					1.0-1.5' Sand: As above, 0-0.9'.
33	35	4.16/		9 11 18 26	0-1.4' Sand: Brown (7.5 YR 5/4) fine sand very well sort, moist, loose.
		46			
35	37	5.39/		11 16 26 40	0-1.4' Sand: As above.
		46			0.6-0.7' Black staining.
37	39	--	1.5	10 17 21 24	0-0.4' Silt: Brown (7.5 YR 4/4) grainy silt, soft, crumbly to somewhat cohesive,
					moist, uniform sharp contact below.
					0.4-1' Sand: Light brown (7.5 YR 6/4), very fine to fine sand, very well sorted,
					moist, loose.
					1-1.3' Sand/Silt: Interbedded grainy silt, soft, uniform, moist and very fine
					sand, uniform 1/4" layers uniform.
					1.3-1.5' Sand: Very fine to fine sand, as above 0.4-1.
39	41	--	1.7	12 17 23 31	0-0.2' Silt: Brown (7.5 YR 4/4) smooth silt, crumbly, moist, soft uniform.
					0.2-0.4' Sand: Brown (7.5 YR 5/4) very fine sand, very well sorted, loose,
					moist.
					0.4-1.5' Silt/Sand: 40/60 both brown 4/4 grainy silt, uniform, layers, moist,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-83 B/C

Page 4 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					crumbly 1/8-1/2" thick, sand very fine well sorted and moist 1/4-3/4" thick,
					moist, loose.
					1.5-1.7' Silt: As above 0-0.2.
					1.7-1.9' Sand: Brown (7.5 YR 4/4) fine sand, well sorted, trace medium to
					fine, moist, loose.
41	43	--	1.7	10 15 24 42	0-0.3' Very fine sand: Brown (7.5 YR 5/4).
					0.3-1.7' Layer of coarse at water 41.5 sand, trace coarse trace fine sub to sub
					gravel up to 1/4" fine sand, well sorted, 0.3-0.5 moist loose, 0.51-1.7 wet.

ARCADIS

Sample/Core Log

Boring/Well GMSG-84 Project/No. Ford/Kingsford WI000975.0002 (commercial MDEP) Page 1 of 1

Site Location Zams (North Side), Kingsford, Michigan

Drilling Started 7/10/02 Drilling Completed 7/10/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device None

Length and Diameter of Coring Device None

Land-Surface Elev. 1119.97 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.4			Concrete.
0.4	10.0			Sand: Reddish brown (2.5 YR 4/4), medium with some fine and coarse, silty,
				trace of fine gravel (2-10 mm), moist.
				EOB @10'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-85 Project/No. Ford/Kingsford WI000975.0002 (commercial MDEP) Page 1 of 1

Site Location MBM Construction (East Side), Kingsford, Michigan Drilling Started 7/11/02 Drilling Completed 7/11/02

Total Depth Drilled 5 Feet Hole Diameter 3 inches Type of Sample/ Coring Device None

Length and Diameter of Coring Device None

Land-Surface Elev. 1114.52 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.5			Rocks/rubble.
0.5	5.0			Sand: Reddish brown (2.5 YR 4/4) medium with fine and coarse sand, silty,
				trace of fine gravel (2-30 mm), moist.
				EOB @5'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-86 Project/No. Ford/Kingsford WI000975.0002 (commercial MDEP) Page 1 of 1

Site Location MBM Construction (West Side), Kingsford, Michigan

Drilling Started 7/11/02 Drilling Completed 7/11/02

Total Depth Drilled 5 Feet Hole Diameter 3 inches Type of Sample/ Coring Device None

Length and Diameter of Coring Device None

Sampling Interval Continuous feet

Land-Surface Elev. 1114.55 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.5			Rocks/rubble.
0.5	5.0			Sand: Reddish brown (2.5 YR 4/3), medium with fine and coarse sand, silty
				trace of fine gravel (2-20 mm), moist.
				EOB @5'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-87 Project/No. Ford/Kingsford WI000975.0002 (commerical MDEP) Page 1 of 1

Site Location Northwoods Mfg, (East Side) Kingsford, Michigan

Drilling Started 7/11/02 Drilling Completed 7/11/02

Total Depth Drilled 10 Feet Hole Diameter 3 inches Type of Sample/ Coring Device None

Length and Diameter of Coring Device None

Sampling Interval Continuous feet

Land-Surface Elev. 1116.78 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Kleiman Driller Daryl Helper Jake

Prepared By Gus Suarez Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.5			Concrete.
0.5	10.0			Sand: Reddish brown (2.5 YR 4/4) medium with fine and coarse sand, silty,
				trace of fine gravel (2-20 mm), moist.
				EOB @10'.

ARCADIS

Sample/Core Log

Boring/W GMSG-87B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Northwoods) Drilling Started 8/9/05 Drilling Completed 8/9/05

Total Depth Drilled 41 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1116.80 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contract Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen/Jill Flater Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surfa From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1	0.5			Concrete.
1	3	1.38/	1.3	3 3 4 5	0-1' Sand: Strong brown (7.5 YR 4/6) fine to medium sand, little coarse
		2.51			sand, trace subangular to subround fine gravel, loose, poorly sorted, gravel
					up to 1-1/4", trace silt, dry.
					1-1.3' Sand: Strong brown (7.5 YR 5/6) medium sand, loose, very well sorted,
					slightly moist.
3	5	2.45/	1.1	6 5 5 7	0-1.1' Sand: As above, trace (-) coarse sand, trace (-) fine gravel.
		3.70			
5	7	3.68/2.1	1.2	6 5 7 10	0-1.2' Sand: As above, varved color in lower 0.5'.
7	9	6.68/	1.0	16 21 41 16	0-1' Sand: Strong brown (7.5 YR 4/6), fine sand, trace (-) medium, trace (-)
		6.71			fine gravel, loose, well sorted, moist, split spoon bent.
9	11	2.65/	1.25	3 3 6 9	0-1.25' Sand: Brown (7.5 YR 5/4) very fine sand, loose, very well sorted,
		11.5			moist.
11	13	2.15/	1.3	4 8 8 12	0-1.3' Sand: Light brown (7.5 YR 6/4) fine sand, very well sorted, loose, moist,
		20.9			trace (-) medium sand.
13	15	2.49/	1.8	6 9 9 11	0-0.6' Sand: As above.
		10.9			0.6-1.4' Sand: Brown (7.5 YR 5/4) very fine sand, silt varving (some), uniform,
					loose, very well sorted, moist.
					1.4-1.8' Sand: Light brown (7.5 YR 6/4) very fine to fine sand, trace (-),
					medium sand, loose, moderately sorted, moist.
15	17	2.69/	0.8	6 9 11 19	0-0.3' Sand: Brown (7.5 YR 5/4), very fine to fine sand, some medium sand,
		10.1			loose, moderately sorted, moist.
					0.3-0.8' Sand: Light brown (7.5 YR 6/4) very fine to fine sand, loose, well
					sorted, moist, uniform.
17	19	3.3/	1.1	4 8 11 12	0-0.9' Sand: Light brown (7.5 YR 6/4), fine sand, well sorted, trace (-) medium
		9.8			sand, loose, moist.
					0.9-1.1' Sand: Light brown (7.5 YR 6/4), very fine sand, very well sorted,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-87B

Page 2 of 3

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surfa From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					loose, moist.
19	21	4.1/	1.3	4 9 12 12	0-1.3' Sand: Light brown (7.5 YR 6/4) fine sand, trace (-) medium sand,
		10.91			loose, moist, little very fine sand, well sorted, uniform.
21	23	2.47/	1.6	5 12 15 21	0-1.6' Sand: Light brown (7.5 YR 6/4) fine sand, trace (-) medium to coarse
		5.3			sand, trace very fine well sorted, loose, moist.
23	25	5.19/	1.7	5 12 14 15	0-1.2' Sand: Brown (7.5 YR 5/4) fine sand, loose, uniform, moist, well sorted.
		6.8			1.2-1.4' Sand: As above, little medium to coarse sand.
					1.4-1.7' Sand: As above, (0-1.2 of 23-25') varving (color change not grain
					size).
25	27	2.78/	1.1	5 11 15 17	0-1.1' Sand: Brown (7.5 YR 5/4) fine sand, trace (-) very fine sand (3-5%),
		4.7			loose, moist, well sorted, silt varving from 0.2-0.8 bedded approximately
					every 1/4".
27	29	2.10/	1.7	7 10 10 13	0-1.7' Sand: Strong brown (7.5 YR 4/6), very fine sand, loose, uniform, 2 fine
		10.4			sand layers in top 0.5', 1/4-1/2" thick, well sorted, loose to somewhat crumbly,
					moist, trace silt varves in 1.2-1.7' predominant in bottom 0.2', approximately
					1/8" thick, different color.
29	31	2.8/	1.7	7 12 15 17	0-1.7' Sand: Light brown (7.5 YR 6/4) very fine sand, loose, moist, somewhat
		10.8			crumbly; 0-0.5 bedded fine and very fine sand layers, both well sorted,
					approximately 1/2-1" thick, 0.5-1.0 silt varving (trace), 1-1.7' very fine sand,
					uniform.
31	33	5.5/	1.8	12 15 16 20	0-0.8' Silt: Brown (7.5 YR 5/4) grainy, uniform, moist, soft, somewhat
		4.7			crumbly, in top 0.3" very fine sand, varved 1/2" thick, 0.3-0.8' varved-1/4"
					very fine sand layers with trace clay varving-1/4" thick.
					0.8-1.4' Silt: Brown (7.5 YR 5/4), grainy, crumbly when worked, moist,
					uniform.
					1.4-1.8' Sand/Silt: Interbedded grainy silt and very fine sand 1/8-1/2" thick,
					uniform, loose, well sorted, moist, silt 1/8-1/4" thick, very fine sand layers
					predominately (70/30) sand/silt, tight bedding, thinner layers in bottom 1.7-1.8'.
33	35	3.06/	1.5	12 18 18 20	0-1.5' Silt/Sand: Silt brown (7.5 YR 4/4) sand brown (7.5 YR 5/4), interbedded
		7.3			grainy silt and very fine sand, varved to 0.5", much bedding, very fine sand is
					loose, uniform, very well sorted silt is grainy, soft, uniform, moist.
35	37	7.84/	1.5	9 18 18 22	0-0.7' Sand: Brown (7.5 YR 5/4) very fine sand, loose, moist, uniform, very
		10.9			well sorted.
					0.8-1.0' Silt: Brown (7.5 YR 4/4) grainy, crumbly, moist, little very fine sand
					bedding, well sorted, loose, moist, trace clay bedding, varved, crumbly to
					somewhat plastic when worked, very soft.
					1.0-1.5' Sand: Brown (7.5 YR 5/4) very fine sand, very well sorted, loose,
					moist, moist trace (5%), silt (grainy) layers from 1.3-1.5', varving.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-87B

Prepared by Toni Schoen/Jill Flater

Sample/Core Depth (feet below land surfa From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
37	39	2.64/	1.7	14 21 26 24	0-0.4' Sand: Brown (7.5 YR 5/4) very fine sand, well sorted, moist, little fine
		8.1			sand, loose.
					0.4-1.1' Sand: Light brown (7.5 YR 6/5) fine sand, loose, moist, uniform,
					very well sorted.
					1.1-1.7' Sand: As above, with grainy silt beds, varved, fairly uniform.
39	41	3.55/	1.8	13 22 26 26	0-1.8' Sand/Silt: Fine sand/grainy silt 1/4-1" beds, uniform bedding, beds 0-0.5
		7.1			fine sand/grainy; 0.5-1.8' very fine sand beds, grainy 1/4-1/2" thick, loose,
					uniform, very well sorted, wet, grainy uniform dense, crumbly when worked,
					very fine sand to well sorted, wet, loose.
					EOB @ 41'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-88 Project/No. Ford/Kingsford WI000975.0002 (commerical MDEP) Page 1 of 1

Site Location Superior Land Fastening (South Side), Kingsford, Michigan

Drilling Started 7/13/02 Drilling Completed 7/13/02

Total Depth Drilled 5 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 8" Hand Auger - 5.5' Flight

Sampling Interval Continuous feet

Land-Surface Elev. 1133.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Gus Helper Jake

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	--	--	Sand: Reddish brown (2.5 YR 2/4), medium with fine, moist.
2	5.0	--	--	Sand: Reddish brown (2.5 YR 4/4), fine and medium, some coarse sand (4-12 mm), moist.
				EOB @5'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-89 Project/No. Ford/Kingsford WI000975.0002 (commercial MDEP) Page 1 of 1

Site Location Superior Land Fastening (Nouth Side), Kingsford, Michigan Drilling Started 7/13/02 Drilling Completed 7/13/02

Total Depth Drilled 5.25 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 8" Hand Auger - 5.5' Flight

Land-Surface Elev. 1134.33 feet [X] Surveyed [ ] Estimated Sampling Interval Continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Jake Helper Gus

Prepared By Jake Dowling Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	--	--	Sand: Reddish brown (2.5 YR 2/4), medium with fine, moist.
2	5.25	--	--	Sand: Reddish brown (2.5 YR 4/4), fine and medium, some coarse sand (5-15 mm), moist.
				EOB @5.25'.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-90 Project/No.: Ford/Kingsford WI000975.0003 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 09/10/02 10:30 Drilling Completed: 09/10/02 14:00

Total Depth Drilled: 5.9 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: 6" x 3"

Sampling Interval: continuous feet

Land-Surface Elev.: 1114.91 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: None Driller: Pat Helper:

Prepared By: Pat Bartnik Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From (in)	To (in)	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	4			Decorative stones, topsoil.
4	67			Sand, brown, fine to medium, trace to some coarse, trace fine gravel.
67	71			Sand, brown, medium to very coarse, gravelly.
				EOB @ 71 inches.

ARCADIS G&M

Sample/Core Log

Boring/Well: GMSG-91 Project/No.: Ford/Kingsford WI000975.0003 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 09/10/02 Drilling Completed: 09/10/02

Total Depth Drilled: 8 Feet Hole Diameter: 3 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: 6" x 3"

Land-Surface Elev.: 1115.14 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level Sampling Interval: continuous feet

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: None Driller: Pat Helper:

Prepared By: Pat Bartnik Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From (in)	To (in)	Core Recovery (in)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	3			Topsoil/grass.
3	50			Sand, brown, fine to medium, some coarse, gravelly.
50	72			Sand, brown, very fine to medium, silty, wet.
72	96			Sand, brown, medium to very coarse, gravelly (very fine).
				EOB @ 96 in.

ARCADIS

Sample/Core Log

Boring/Well GMSG-92 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10/19/02 Drilling Completed 10/19/02

Total Depth Drilled 4.3 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand auger bucket

Length and Diameter of Coring Device 6" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1128.59 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Pat Helper

Prepared By P. Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	3.3			Sand, light brown, medium to fine, silty, trace very fine gravel.
3.3	4.3			Sand, reddish brown, medium to very fine, silty, trace very fine gravel.
				EOB @ 4.3 feet

ARCADIS

Sample/Core Log

Boring/Well GMSG-93 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/11/02 Drilling Completed 11/11/02

Total Depth Drilled 6 Feet Hole Diameter 3 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device 6" x 3" Sampling Interval continuous feet

Land-Surface Elev. 1118.48 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller NA Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	0.75			Topsoil.
0.75	3			Sand, orangish brown, medium, well sorted, dry.
3	6			Sand, brown, silty, clayey, gravelly, dry.
				EOB @ 6'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-94 Project/No. Ford/Kingsford WI001075.0023 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 11/18/02 Drilling Completed 11/18/02

Total Depth Drilled 8 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 6" x 3" Sampling Interval continuous feet

Land-Surface Elev. 1132.16 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller NA Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	0.5			Topsoil.
0.5	4.25			Sand, brown to dark brown, clayey silty, wet.
4.25	6			Sand, orangish brown, coarse to medium trace very fine gravel, fairly well sorted,
				damp.
6	8			No recovery, boring between these depth was driven due to presence of gravel
				and inability to use hand auger.
				EOB @ 8'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-95 Project/No. Ford/Kingsford WI000975.0002 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/18/02 Drilling Completed 11/18/02

Total Depth Drilled 4 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand auger

Length and Diameter of Coring Device 6" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1132.29 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Pat Helper

Prepared By P. Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.75			Gravel, coarse (25 mm - 35 mm), subangular, sandy.
0.75	4.0			Sand, dark reddish brown, silty dry.
				EOB @ 4 feet.

ARCADIS

Sample/Core Log

Boring/Well GMSG-96 Project/No. Ford/Kingsford WI001025.0005 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 5/16/03 Drilling Completed 5/16/03

Total Depth Drilled 52 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 in x 2 ft Sampling Interval continuous feet

Land-Surface Elev. 1113.45 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Paul Dickinson Helper Dave Morris

Prepared By Pat Bartnik Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
0	2	16	0.43	0-5": Topsoil.
				5-16": Sand: Strong brown (7.5 YR 5/6), medium, some coarse, trace very
				coarse, brick fragment at 10 inches, wood fragment at 15 inches.
2	4	19	2,209	0-2": Slough.
				2-5": Sand: As above.
				5-9": Sand: Dark brown (7.5 YR 3/2), medium to very fine, silty, some clay,
				possibly former topsoil.
				9-19": Silt: Strong brown (7.5 YR 5/6), sandy fine to very fine, some medium.
4	6	8	98	0-2": Slough.
				2-6": Sand. As above.
				6-8": Stone.
6	8	16	328	0-1": Slough.
				1-6": Sand: Reddish yellow (7.5 YR 6/6), medium, very well sorted.
				6-16": Gravel: Brown (7.5 YR 4/3) to strong brown (7.5 YR 5/8), sandy very
				coarse to very fine, gavel 2 mm - 30 mm subrounded, very poorly sorted, dry.
8	10	19	1,632	0-7": Slough.
				7-19": Sand: Brown (7.5 YR 5/3), coarse to medium, some very coarse, trace
				gravel 2 mm - 10 mm subrounded, dry.
10	12	18	1,473	0-6": Slough.
				6-18": Gravel: Dark brown (7.5 YR 3/3) to strong brown (7.5 YR 5/6),
				sandy very coarse to medium some fine, gravel 2 mm - 35 mm subrounded,
				very poorly sorted, dry.
12	14	--	--	No recovery.
14	16	14	357	0-11": Sand: Brown (7.5 YR 4/3), very coarse to medium, gravelly 2 mm - >40 mm
				subrounded, very poorly sorted, dry.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-96

Page 2 of 3

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
16	18	16	4,112	0-7": Slough.
				7-16": Sand: Brown (7.5 YR 5/3), medium some coarse, trace gravel in bottom
				of spoon (20 mm subrounded), dry.
18	20	16	5,445	0-3": Slough.
				3-16": Sand: As above, but gravel size smaller (10 mm maximum) subrounded,
				dry.
20	22	17	2,745	0-17": Sand: As above.
22	24	12	432	0-3": Sand: As above.
				3-7": Sand: Strong brown (7.5 YR 5/6), very coarse to medium, some fine,
				poorly sorted.
				7-12": Sand: Brown (7.5 YR 4/4), very coarse to fine, gravelly 2 mm to >30 mm
				subrounded, clayey in spots.
24	26	23	1,353	0-4": Slough.
				4-7": Sand: As above.
				7-8": Crushed stone.
				8-23": Silt: Light brown (7.5 YR 6/4), clay laminate (20 mm) at 11 inches
				reddish brown (2.5 YR 4/4), compact (HP = 2.0), noneffervescent, silt dense
				and dry.
26	28	18	1,535	0-1": Slough.
				1-18": Silt: As above, dry, varved with thin laminate (1 mm - 4 mm) very fine
				sand, clay laminate at 5 inches.
28	30	22	1,758	0-1": Slough.
				1-22": Silt: Pink (7.5 YR 7/4) to brown (7.5 YR 5/3), occurs as layers, sample
				varved between 2 and 8 inches, dark silt at 8 to 9 inches, light silt 9 to 16
				inches, dark silt 16 to 18 inches, sample varved between 18 and 22 inches.
30	32	21	1,346	0-21": Sand/Silt: Pink (7.5 YR 7.4) and brown (7.5 YR 5/4), alternating layers of
				very fine sand and silt between 13 and 21 inches.
32	34	21	2,856	0-12"Sand/Silt: Light brown (7.5 YR 6/3) to brown (7.5 RY 5/3) varves
				individual laminate up to 2 mm .
				12-21": Silt: Light brown (7.5 YR 6/4), sandy.
34	36	22	2,987	0-10": Silt: As above.
				10-15": Silt/Sand: Alternating laminate of silt and very fine sandy silt, iron
				discoloration in alternating layers.
				15-18": Sand: Pink (7.5 YR 7/4), very fine, silty.
				18-22": Sand/Silt: Alternating layers, as above.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-96 Page 3 of 3

Prepared by Pat Bartnik

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA (ppm)	Sample/Core Description
36	38	21	1,652	0-10": Sand/Silt: As above.
				10-18": Silt: Gray (1 gley greenish gray 5/1) to black (black 1 gley 2.5/1),
				dry, stains.
				18-19": Silt: Strong brown (7.5 YR 4/6).
				19-21": Sand: Pink (7.5 YR 7/4), dry.
38	40	21	2,679	0-5": Slough.
				5-21": Sand: Light brown (7.5 YR 6/4), very fine, silty, dry.
40	42	17	1,832	0-17": Sand: As above, dry.
42	44	22	2,762	0-9": Sand: As above.
				9-11": Silt: Reddish yellow (7.5 YR 6/6) to dark red (2.5 YR 3/6) to black
				(1 gley 2.5/1).
				11-22": Sand: Dark reddish gray (10 R 4/1) and black (1 gley 2.5/1), fine,
				stained, dry.
44	46	20	5,874	0-4": Slough.
				4-20": Sand: As above, except for thin 0.5 inch silt layer at 19 inches.
46	48	22	1,821	0-10": Sand: As above, dry.
				10-22": Silt: Dark brown (7.5 YR 3/4), wet.
48	50	19	774	0-6": Slough.
				6-10": Silt: As above.
				10-15": Clay: Dark brown (7.5 YR 3/4), compact (HP = 1.5).
				15-19": Sand: Brown (7.5 YR 4/4) very fine, silty, wet.
50	52	21	2811	0-21": Sand: As above, but color changes between 11 inches and 21 inches
				to very dark brown (7.5 YR 2.5/3) silty, stained, saturated.
				EOB 52 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSG-96A Project/No. Ford/Kingsford WI001075.0023 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 6/19/04 Drilling Completed 6/19/04

Total Depth Drilled 25 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 5' x 4" core barrel Sampling Interval continuous feet

Land-Surface Elev. 1113.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Jon Weeks Helper Scott Schultz

Prepared By Trica Nelson Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
0	5	3.0	3.99-4.34/	0-0.5' Silt/Organic: Dark brown (7.5 YR 3/4), soft to crumbly, moist.
			2.35-2.6	0.5-1.0' Sand: Dark yellowish brown (10 YR 4/6), very fine to fine sand, trace
				subrounded gravel, well sorted, loose, moist.
				1.0-2.0' Sand/Silt: Dark brown (10 YR 3/3), very fine to fine sand, trace subrounded
				gravel, soft to crumbly, moist,
				2.0-3.0' Sand: Yellowish brown (10 YR 5/6), very fine to fine sand, well sorted,
				loose, moist.
5	10	5	2.5-10.5/	0-1.0' Sand/Silt: Dark yellowish brown (10 YR 3/6), fine sand, trace gravel, loose to
			0.42-2.37	crumbly, moist,
				1.0-2.0' Sand: Dark yellowish brown (10 YR 4/6), medium to very coarse, loose,
				moist.
				2.0-4.0' Sand: Brownish yellow (10 YR 6/6), fine to coarse sand, well sorted, loose,
				moist.
				4.0-5.0' Sand/Gravel/Silt: Dark yellowish brown (10 YR 4/6), fine to coarse sand
				and gravel, angular to subrounded gravel, loose to crumbly, poorly sorted,
				moist,
10	15	5	0.97-10.4/	0-0.5' Sand: Dark yellowish brown (10 YR 3/6), very fine to medium, trace gravel,
			2.6-11.7	loose to crumbly, well sorted, moist.
				0.5-1.0' Silt/Sand: Dark yellowish brown (10 YR 3/6), mostly fine sand, loose to
				crumbly, well sorted, moist,
				1.0-2.0' Sand: Dark yellowish brown (10 YR 4/6), medium to coarse and, trace
				subangular to subrounded gravel, gravel up to 2", loose, moderately sorted,
				moist,
				2.0-2.5' Sand: Dark yellowish brown (10 YR 4/6), medium to coarse (50/50%)
				sand, trace gravel, loose, well sorted, moist.
				2.5-5.0' Sand/Gravel: Dark yellowish brown (10 YR 3/4), mostly medium sand, very

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-96A

Prepared by Trica Nelson

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM (ppm)	Sample/Core Description
				silty, subangular gravel, loose to crumbly to somewhat fine, poorly sorted, moist,
15	20	5	0-6.75/	0-3.0' Sand/Gravel: Dark yellowish brown (10 YR 3/4), fine to coarse sand
			0-45.9	predominately fine sand, trace silt, subangular to subrounded gravel, loose,
				poorly sorted, moist.
				3.0-5.0' Sand: Dark yellowish brown (10 YR 3/4), fine to coarse, mostly fine to
				medium, trace subangular to subrounded gravel, loose, well sorted, moist,
20	25	5	0/0-2.45	0-0.5' Sand: As above.
				0.5-1.0' Sand: Dark yellowish brown (10 YR 4/6), fine to medium sand,
				predominately medium, angular to subrounded gravel, loose, poorly sorted, moist.
				1.0-2.0' Silt: Brownish yellow (10 YR 6/8), grainy, very soft to crumbly, homogenous,
				moist.
				3.0-5.0' Silt: Dark yellowish brown (10 YR 4/6), not as grainy, more crumbly,
				homogeneous, moist, trace clay at tip.
				EOB 25 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSG-97 Project/No. Ford/Kingsford WI001025.0002 (commerical MDEP) Page 1 of 1

Site Location Kingsford/Central Supermarket Drilling Started 6/3/03 Drilling Completed 6/3/03

Total Depth Drilled 4 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 6-inch by 3-inch Sampling Interval Continuous feet

Land-Surface Elev. 1121.14 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller NA Helper NA

Prepared By Rachel Saari, Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1			Topsoil.
1	4.0			Sand: Reddish brown, medium.
				EOB @4'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-98 Project/No. Ford/Kingsford WI001025.0002 (commerical MDEP) Page 1 of 1

Site Location Kingsford/Central Supermarket Drilling Started 6/3/03 Drilling Completed 6/3/03

Total Depth Drilled 4 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 6-inch by 3-inch Sampling Interval Continuous feet

Land-Surface Elev. 1121.37 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller NA Helper NA

Prepared By Rachel Saari, Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1			Asphalt.
1	4.0			Sand: Reddish brown, medium.
				EOB @4'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-99 Project/No. Ford/Kingsford WI001025.0002 (commerical MDEP) Page 1 of 1

Site Location Kingsford/Quality Kitchens

Drilling Started 6/3/03 Drilling Completed 6/3/03

Total Depth Drilled 10.5 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 6-inch by 3-inch Sampling Interval Continuous feet

Land-Surface Elev. 1122.11 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller NA Helper NA

Prepared By Rachel Saari, D. Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	3"			Topsoil.
3"	4.0			Sand: Reddish brown, medium.
4.0	5.0			Sand: Reddish brown, silty, wet.
5	10.5			Sand: Reddish brown, medium.
				EOB @ 10.5'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-100 Project/No. WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/10/98 Drilling Completed 7/10/98

Total Depth Drilled 70 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Split spoon

Sampling Interval continuous from 50 feet

Land-Surface Elev. 1103.69 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Scott

Prepared By Ray Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	50	--	--	Blind drill. See GMSG-100 log for details. Flushed out before sampling.
50	52	7.5"/	12,15,20,20	0-7.5": Silt and Clay, interbedded. Clay, red (2.5 YR 4/6), HP = 3.8, strong
		3		HCl reaction, platy and plastic. Silt, brown (7.5 YR 6/2), HP = 1.5, moderate
				HCl reaction, damp. Approximately equal amounts units up to 1½ inches
				thick. Some laminations of very fine sand, damp.
52	54	16"/	10,10,12,12	Interbedded silts and clays as above with very fine sand, more abundant in
		100		lenses up to ¼ inch thick, damp. Lens of medium sand at 11½ to 12 inches,
				loose, well sorted, saturated. Light brown (7.5 YR 6/4).
54	56	19"/	8,7,10,12	Interbeded clay, very fine sand and silts as above. Coarse to medium sand
		200		at 14½ to 15 inches, very damp. HP Silt and Clay = 2.0. Strong HCl reaction.
56	58	24"/	5,7,4,10	0-24" Interbedded clays, silts and very fine sands as above. Silts and sands
		150		very damp, medium sand lens at 3½ to 4 inches.
58	60	24"/	4,4,9,8	0-24": Interbedded clays, silts and very fine sands as above. Medium sand
		300		lens (¼ inch) at 17 inches. Very damp to saturated.
60	62	17"/	20,25,22,40	0-16": Interbedded clays and silts as above.
		650		16-17": Very Fine Sand. Silt, brown (7.5 YR 5/3), loose, damp, very well
				sorted, slight to moderate HCl reaction.
62	64	14"/	22,20,35,45	0-5.0": Interbedded silts and clays as in sample above.
		5000		5.0-14": Very fine sand, as in sample above, damp, loose.
64	66	10½/	32,40,42,47	Medium to Coarse Sand. Pink (7.5 YR 7/3), some to abundant gravel. Loose,
		900		very damp, gravel variable composition, subrounded to well rounded, up
				to pebble size in spoon. Some fragments shattered, trace silt, slightlHCl
				reaction.
66	68	12"/	10,15,22,30	0-12": Coarse to Medium Sand. Very pale brown (10 YR 5/2). Dry, loose,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-100

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		9000		trace to some granular gravel, trace well rounded pebble gravel, no HCl
				reaction.
68	70	12"/	15,20,35,25	Coarse Sand and Gravel: Grey (10 YR 6/1), dense, poorly sorted, coarse sand
		5000		with abundant fine and medium sand, fine gravel. Variable composition,
				subangular to subrounded, dry to damp.
				EOH 70 ft bgs.
				Set well screen 70-65 feet

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-101 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/09/98 Drilling Completed 7/09/98

Total Depth Drilled 54 Feet Hole Diameter 8 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval continuous feet

Land-Surface Elev. 1101.18 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Scott

Prepared By Ray Flynn

Hammer Weight 140 Hammer Drop 36 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	13"/	3,2,2,2	0-5.0": Top Soil. Reddish brown (5 YR 5/4). Trace rootlets, medium sand
		15		some silt, dry and crumbly.
				5.0-10": Sand and Gravel. Matrix, strong brown (7.5 YR 5/6), silty coarse
				sand, gravel, pebbles, angular, subangular, variable composition, slightly
				dense.
				10-13": Sand. Pink (7.5 YR 7/3) fine to medium, dry, loose, well sorted,
				some pebble gravel.
2	4	13"/	2,4,4,3	0-13": Sand. Fine to medium, as above, grading into medium sand at base.
		15		Dry, no HCl reaction.
4	6	6"/	3,3,4,5	0-2.0": Sand. Brown (7.5 YR 5/3), fine to medium sand with some granular
		12		gravel. loose, dry.
				2.0-3.0": Coarse sand and pebble gravel. Brown (7.5 YR 5/3). Gravel well
				rounded variable composition sand, poorly sorted, loose and dry.
				3.0-6.0": Sand. Very pale brown (10 YR 7/3) fine to medium, very well
				sorted, loose dry, no HCl reaction, trace coarse.
6	8	16"/	2,3,2,2	0-16": Sand. Fine to medium, as above, with some coarse sand.
		15		
8	10	14"/	2,2,3,2	0-8.0": Sand. Fine to medium. As above, no HCl reaction.E66+E48
		14		8.0-9.5": Coarse sand and granular gravel. Very pale brown (10 YR 7/3) loose,
				dry, gravel subangular to subrounded, variable composition.
				9.5-14": Sand. Fine to medium as 0-8 inch with some granular gravel. No
				HCl reaction.
10	12	18"/	2,2,2,2	0-18": Sand. Fine to medium, as above. Dry and loose, no HCl reaction.
		20		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-101 Page 2 of 3

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
12	14	11"/	4,4,3,5	0-11": Sand. Fine to medium, as above. Dry and loose, no HCl reaction.
		20		
14	16	--	--	No recovery.
16	18	19"/	3,4,6,7	Silt. Brown (7.5 YR 5/3) HP = 0.5 Slightly to moderate HCl reaction, some to
		12		much very fine sand. Saturated.
18	20	20"/	6,4,6,5	Silt as above. Saturated. HP = 0.5.
		15		
20	22	20"/	3,3,2,4	Silt as above. Saturated. HP = 1.0. Slight HCl reaction.
		8		
22	24	24"/	2,3,4,8	0-24": Sand. Reddish brown (2.5 YR 4/6) very fine silty. Slightly HCl
		6		reaction, HP = 1.5. Very well sorted.
24	26	23"/	3,3,3,5	0-23': Sand. Very fine, silty as above saturated. HP = 0.5.
		6		
26	28	14"/	6,8,8,10	0-24": Sand. Very fine, silty. As above saturated. HP = 0.2.
		7.5		
28	30	22"/	8,7,10,11	0-22": Sand. Very fine silty. As above, saturated. HP = 1.0. Slight HCl
		12		reaction, heave.
30	32	13"/	6,6,5,4	Sand. Fine to very fine silty. As above, saturated. HP = 0.2 slightly to
		12		moderate HCl reaction.
32	34	18"/	6,8,9,10	0-11": Sand. Very fine silty. As above, saturated.
		20		11-18": Silt. Brown (7.5 YR 5/3). HP = 1.6 saturated. Slightly HCl
				reaction.
34	36	24"/	2,15,15,30	0-9.0": Very fine silty sand, very soft, saturated, slough.
		13		9.0-24": Silt. Brown (7.5 YR 5/4) saturated, HP = 1.6, moderate HCl
				reaction, two clay lamellae at 19.5 and 23.5 inch (1/16 inch thick).
36	38	24"/	2,15,15,30	0-9.5": Sand. Very fine silty, slough.
		11		9.5-24" Silt with clay layers as above, silt fines up into clay. Silt, damp,
				HP = 2.0. Moderate to strong HCl reaction. Clay lamellae at 12, 13 and 15.5
				inches (¼ inch thick).
38	40	24"/	5,12,22,30	0-5.0": Sand. Silty, slough.
		9.5		5.0-24": Silt. As above, with very fine sand seams. HP = 2.0, very damp.
40	42	24"/	5,20,20,30	0-10": Sand. Silty. Slough.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-101 Page 3 of 3

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface)		Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6	
From	To	OVA	Inches	Sample/Core Description
		9		10-24": Silt. Brown (7.5 YR 5/3) saturated. HP = 0.6. Moderate HCl
				reaction, some very fine sand. Clay lense at 17 inches (strong HCl
				reaction - platy). Note: Water added to drive out slough.
42	44	22"/	0,10,15,2	0.4-5": Sand. Silty. Slough.
		12		4.5-22": Interbedded silt and clay, clay up to 1.5 inch thick. Red (2.5 YR 4/6)
				HP = 4.0. Strong HCl reaction, laminated plastic, silt. Brown (7.5 YR 5/4).
				fining up into clay. Some very fine sand at base of each cycle, damp.
				HP = 1.6. Weak HCl reaction. Cycles every 2 to 3 inches.
44	46	21"/	5,25,35,3	0-5.0": Sand. Silty slough.
		20		5.0-21": Silt and clay as above but clay up to 2½ inch thick. Damp HP clay =
				>4.0. HP silt = 1.0
46	48	24"/	0,20,20,1	0-8.0": Sand. Silty slough.
		350		8.0-24": Silt and clay as above, but silt more abundant ¼ inch medium sand
				seam at 17 inches. Silt and clay damp, silt very finely laminated. HP = 2.0.
				Strong HCl reaction, clay strong HCl reaction. HP = 3.8
48	50	17.5"/	0,15,30,5	Sand/Silt. Reddish brown (5 YR 5/3), very fine, very well sorted, moderate
		90		HCl reaction, clay lense at 12 inches.
50	52	10"/	5,25,35,4	0-4.0": Sand/Silt. Very fine as above, damp.
		2000		4.0-10": Sand. Pink (7.5 YR 7/3) finely laminated, well sorted dense,
				1/8 inch clay layers at 3 and 5 inches bgs. light grey (5 YR 7/1), very slightly
				HCl reaction, damp.
52	54	8"/	3,12,12,1	Sand. Light grey (5 YR 7/1) coarse to medium very loose, dry, some to much
		4000		granule gravel some pebble gravel. No HCl reaction, some to much fine
				sand.
				Set gas probe 53.3 - 52.2 feet
				54 ft bgs - EOB

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMSG-102 Project/No.: Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location: Kingsford, Michigan Drilling Started: 7/10/98 Drilling Completed: 7/10/98

Total Depth Drilled: 55 Feet Hole Diameter: 6 inches Type of Sample/ Coring Device: Split spoon

Length and Diameter of Coring Device: 2" x 2' Sampling Interval: continuous feet

Land-Surface Elev.: 1105.09 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear Driller: Dan Helper: Scott

Prepared By: Ray Flynn Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	15"/	4,4,4,4	0-2.0": Sand. Brown (10 YR 5/4) coarse sand, loose, dry, some to much
		20		medium sand, some fine gravel, no HCl reaction.
				2.0-6.0": Sand and Gravel. Brown (10 YR 5/4), loose, dry. Sand as above,
				gravel rounded and variable composition.
				6.0-15": Sand. Yellowish brown (10 YR 5/4) medium to coarse some fine
				sand, trace fine gravel, loose, dry.
2	4	16"/	3,5,4,3	0-6.0": Sand: Dark yellowish brown (10 YR 4/4) fine to medium trace silt,
		20		trace to some fine gravel, loose and damp, no HCl reaction.
				6.0-16": Sand. Yellowish brown (10 YR 4/4) coarse some medium and fine
				sand. Some fine gravel, loose and damp.
4	6	1"/	3,4,4,4	0-1.0": Sand. Brown (10 YR 4/3), fine to coarse saturated slight silty (trace silt)
		6		trace fine gravel, loose.
6	8	13"/	5,4,3,2	0-6.0": Sand and Gravel. Yellowish brown (10 YR 5/4) coarse sand with
		20		some to much medium and fine sand with fine gravel (subangular to
				subrounded), variable composition, maximum clast: 2" diameter (shattered)
				damp and loose.
				6.0-13": Sand. Yellow (10 YR 7/6) coarse some fine gravel, damp and loose.
8	10	13"/	2,4,3,1	0-13": Sand and Gravel: Brownish yellow (10 YR 6/6) loose, very damp,
		30		coarse to medium sand and granular gravel with some pebbles, gravel
				well, rounded, variable composition.
10	12	0"	4,4,3,2	No recovery, cobble in shoe of split spoon.
12	14	3.5"/	3,5,5,7	0-3.5": Sand. Light yellowish brown (10 YR 6/4) medium to fine no HCl
		15		reaction, damp and loose, well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-102

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	19"/	2,2,3,5	0-19": Sand: Brownish yellow (10 YR 6/6) medium to fine some coarse sand,
		15		loose, damp, no HCl reaction.
16	18	16"/	3,3,3,6	0-4.5": Sand. Very pale brown (10 YR 7/4) medium some fine sand, trace
		6		to some granular gravel at base. Loose, damp.
				4.5-14": Sand. Very pale brown (10 YR 7/3) medium to coarsesome fine
				sand, loose damp. Becoming coarse sand at base with some granular
				gravel.
				14-16": Sand. Very pale brown (10 YR 7/3) fine, loose damp, very well
				sorted.
18	20	16"/	3,2,2,5	0-6.0": Sand. Fine as above with some to much medium to coarse sand.
		20		6.0-8.0": Sand. Coarse and granular gravel. Very pale brown (10 YR 7/3)
				loose and damp, gravel subrounded to rounded.
				8.0-16": Sand. Fine as 0-6 inch, damp.
20	22	15"/	4,4,4,4	0-15": Sand. Yellowish brown (10 YR 5/4) medium to coarse loose and
		150		saturated, trace coarse sand and granular gravel.
22	24	22"/	1,2,1,4	0-2.0": Sand. Medium to coarse, as above.
		15		2.0-22": Silt. Brown (7.5 YR 5/4) HP = 0.5. No HCl reaction, saturated.
24	26	22"/	3,4,5,7	0-20": Silt. As above, very damp.
		30		20-22": Clays and Silts. Interbedded finely laminated, silts as above.
				Clays (2.5 YR 4/8) strong HCl reaction. HP = 3.0, platy and plastic.
26	28	20"/	3,7,9,13	0-6.0": Silt. As above. Damp.
		30		6.0-12": Silt. Yellowish brown (10 YR 5/6). HP = 2.0 moderate HCl
				reaction, damp.
				12-13": Silt and Clay. Interbedded as in 24 to 26 inches.
				13-20": Silt. As 6 to 12 inch, damp.
28	30	20"/	7,10,10,15	0-20": Silt. As above. HP = 1.8 moderate HCl reaction, very damp, clay
		200		lense (1/16") at 10 inches.
30	32	19.5"/	5,8,8,9	0-19.5": Silt. As above, no HCl reaction. HP = 0.6.
		12		
32	34	21"/	6,7,10,15	Silt. As above, with clay lense at 3.5 and 6.5 inches (1/16 inch) slightly HCl
		2		reaction in silt. HP = 0.6.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-102

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
34	36	18"/	7,9,11,15	0-18": Silt. As above. Slight to moderate HCl reaction. Clay lenses at 7 inch
		2.5		(½ inch) and 8½ (1/16 inch). HP (silt) 0.7 to 1.5 yellowish red (5 YR 4/6)
				wet (saturated), clay strong HCl reaction. HP = 2.0.
36	38	24"/	6,8,10,12	0-10": Silt. As above. Saturated.
		3		10-20.5 ": Sand. Yellowish brown (10 YR 5/4) very fine silty saturated. HP =
				0.8 very slight HCl reaction.
				20.5-24": Silt. As 0-10. HP = 1. Slight to moderate HCl reaction, clay
				seam (1.8 inch) at 20.5.
				Heaving sand, hole needs to be cleared.
38	40	14"/	8,8,7,10	0-2.0": Sand. Silty, as above, saturated.
		70		2.0-3.5": Silt. As above, moderate HCl reaction. HP = 1.2
				3.5-6.0": Sand. Silty, saturated.
				6.0-13": Silt. ½ inch clay lense at 7.5 inch, weak HCl reaction.
				13-16": Silt. With clay lense at 14 inch moderate to strong HCl
				reaction, damp.
40	42	16"/	10,12,10,10	0-3.0": Sand. Yellowish brown (10 YR 5/6) coarse, silty saturated, HP = 0.2,
		2.5		coarse sand, slough.
				3.0-6.0": Silt. Yellowish brown (10YR 5/6), HP = 2.0, saturated, some to much
				very fine sand. Clay lense at 3 to 3½ inch.
				6.0-9.0": Sand. Yellowish brown (10 YR 5/6) very fine, silty saturated.
				9.0-16": Silt. Yellowish brown (10YR 5/6) finely laminated. Slightly to
				moderate HCl reaction. HP = 1.7, damp.
42	44	18"/	6,6,12,20	Silt and Clay. Interbedded with occasional fine to medium sand at base of
		3		each cycle - grading upward. Litholoiges as above. Clay lenses more
				abundant toward base, every 2 to 3 inch at top to every 1 inch at base. Nine
				clay lenses HP (silt) = 1.6. HP = 1.0 (clay) sand on silt over clay (not on clay).
44	46	16"/	8,10,10,12	Sand. Interbedded silt and clay as above. Clay lenses every 1 to 1½ inch up to
		3		1 inch thick. Fine sand, more abundant whole unit, damp.
46	48	20"/	10,12,10,10	0-13": Silt. Finely laminated, clays, to sands.
		350		13-16": Sand. Fine, pink (7.5 YR 7/3) dry, loose very well sorted.
				16-18": Silts and Clays. Laminated strands.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-102

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				18-20": Sand. Fine as 13 to 16 inch, dry, loose.
48	50	13"/	8,9,11,10	0-7.0": Silts and Clays. Sands interbedded as above.
		1000		7.0-13": Sand. Very light gray (10 YR 7/2) fine to medium loose, dry
				some coarse, trace granular gravel slight to moderate HCl reaction.
52	54	10"/	7,8,7,8	0-9.0": Sand. Fine to medium as above with trace damp coarse sand.
		5000		9.0-10": Sand. Greyish brown (10 YR 5/2) coarse to medium sand: Trace fine
				gravel, loose, damp, over drilled by 1 foot, , moderate HCl reaction.
				End of boring 55 feet bgs.
				Installed screen from 50 to 55 feet bls.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-103 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan

Drilling Started 7/11/98 Drilling Completed 7/11/98

Total Depth Drilled 38 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval 2 feet

Land-Surface Elev. 1088.89 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	--	--	Blind drill. Hard rod over sand and gravel.
2	4	12"/3.0	5,5,4,3	0-12": Sand. Brown (10 YR 4/3), fine to very fine loose, dry to slightly damp.
				Trace to some silt, trace coarse sand and well rounded pebble gravel,
				variable composition, slight to moderate HCl reaction.
4	6	6"/2.5	3,2,2,4	0-6.0": Sand. Fine to very fine, as above, silty damp. Some medium sand,
				trace coarse, moderate HCl reaction, loose, damp to slightly damp.
6	8	4"/2.5	2,2,1,1	0-5.0": Fine to very fine sand, as above.
				5.0-6.0": Sand. Coarse, dry, loose, no HCl reaction. Very well sorted.
				6.0-9.0": Sand. Strong brown (7.5 YR 5/6) fine, trace medium and coarse
				moderate dry, loose, no HCl reaction.
8	10	1"/2.0	1,1,1,2	0-1.0": Sand. Brown (7.5 YR 5/4) medium to fine some to much fine sand,
				trace silt, dry and loose, slight HCl reaction.
10	12	12.5/2.5	1,2,1,3	0-12.5": Sand. Strong brown (7.5 YR 5/5) very fine silty saturated. HP = 0.3.
				Medium to coarse sand lenses 5 and 11 (1/8 inch thick). No HCl reaction,
				dry.
12	14	11"/2.5	5,7,7,9	Sand and Gravel. Very pale brown (10 YR 7/3) sand coarse to medium loose
				damp to dry. Gravel variable composition, subangular to well rounded. No
				HCl reaction.
14	16	12"/3.0	2,2,2,4	0-3.0": Sand and Gravel. As above, damp.
				3.0-4.0": Sand. Yellowish brown (10 YR 5/6) very fine to fine Some to much
				silt. No HCl reaction, dry.
				4.0-7.0": Sand. Light brown (7. 5YR 6/4), fine loose, dry, very well sorted, some
				granular gravel at base.
				7.0-12": Sand. Brown (7.5 YR 6/4) very fine silty. No HCl reaction. HP = 0.5
				crumbly dry to damp.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-103

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	2½"/3.0	7,5,5,4	Shattered clast, with medium silty sand coating clast fragment, saturated.
18	20	20.5/3.5	4,6,8,9	0-1.0": Sand. Coarse to medium silty, saturated. No HCl reaction.
				1.0-20.5": Silt. Brown (7.5 YR 4/4) HP = 1.4-0.6 stiffer toward base,
				saturated clay inclusion at 4 inch. Red (2.5 YR 4/6) silt, trace some very fine
				sand. No HCl reaction.
20	22	17"/3	5,7,9,15	0-4.0": Silt. Slough. HP = 0.5 to 1.0 sand.
				4.0-17": Silt. Brown (7.5 YR 5/3) saturated. No HCl reaction. HP = 1.0 to 3.5
				stiffer toward base of sample. Damp for lowest 7 inches.
22	24	20.5/2.5	5,6,6,6	Silt. As above, slight clayey, saturated.
24	26	21"/2.5	5,6,7,5	0-21": Silt. As above, saturated.
26	28	20"/4	9,9,8,7	0-20": Silt. As above, saturated, some very fine sand.
28	30	24"/6.25	5,7,5,5	0-24": Silt. As above, saturated, moderate HCl reaction.
30	32	18"/3.5	5,5,4,7	0-18": Silt as above. Saturated.
32	34	23"/15	5,7,7,7	0-23": Silt. as above saturated with clay lenses at 11 to 12 inches.
				5 (1/8 inch) 4½ (1/8 inch) red (2.5 YR 4/6). HP = 1.4, strong HCl reaction.
34	36	24"/3	5,5,4,4	0-24": Silt. Saturated, with clay lenses at 1 inch (2 inch) 14 inch (¼ inch) and
				20 inches. Fine silty sand lenses at 13½ to 14 inch. Saturated.
36	38	24"	5,3,6,8	Silt and Clay. As above. Clay at 20, 14, 7 inch. Clay approximately ¼ inch
				thick.
				EOH at 38 feet bgs.
				Plug back borehole to 15 feet set well screen from 7 to 12 feet bls.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: GMSG-104 Project/No.: Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location: Kingsford, Michigan

Drilling Started: 7/12/98 Drilling Completed: 7/12/98

Total Depth Drilled: 62 Feet Hole Diameter: 6 inches

Type of Sample/ Coring Device: Split spoon

Length and Diameter of Coring Device: 2" x 2'

Sampling Interval: continuous feet

Land-Surface Elev.: 1097.69 feet [X] Surveyed [ ] Estimated

Datum: Mean Sea Level

Drilling Fluid Used: None

Drilling Method: Hollow stem auger

Drilling Contractor: Boart Longyear

Driller: Dan Helper: Scott

Prepared By: Raymond Flynn

Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	10"/3.5	1,1,1,1	0-2.5": Some top soil. Abundant rootlets, dry, loose, no HCl reaction.
				2.5-6": Sand. Strong brown (7.5YR 5/6) fine to medium well sorted,
				loose, dry, no HCl reaction.
				6.0-12": Coarse sand with gravel. Dark yellowish brown (10 YR 4/6), loose
				dry, poorly sorted, some medium sand, some fine sand, fine gravel,
				subangular to subrounded, variable composition. No HCl reaction.
2	4	2"/2.5	4,3,3,2	0-2.0": Sand. Dark yellowish brown (10 YR 4/4) fine to medium Sand. Some
				fine gravel, dry, loose. No HCl reaction.
4	6	16"/2	4,2,2,3	0-3.0": Sand. Dark yellow brown (10 YR 4/6) Coarse, some medium sand,
				some granular gravel, loose, damp, well rounded, variable composition.
				3.0-11": Clay. Red (2.5 YR 4/6) HB 1.5-2.0. Strong HCl reaction, plastic, platy.
				11-16": Sand. Pink (7.5 YR 7/4) very fine, silty, dry, very well sorted, loose.
6	8	14"/3	4,4,4,6	0-3.0": Sand. Coarse, slough.
				3.0-4.0": Clay. Red as above, yellow red (5 YR 4/6). HP = 1.0. Strong HCl
				reaction, platy and plastic.
				4.0-11.5": Sand. Pink (7.5 YR 3/4) very fine, dry, loose very well sorted.
				11.5-14": Silt. Reddish yellow (5 YR 6/6) HP = 1.5 damp, no HCl
				reaction, slightly clayey.
8	10	15"/5.5	2,4,7,7	0-5.0": Sand. Pink (7.5 YR 3/4) v+E61ery fine, loose, dry, possible slough.
				5.0-15": Silt. As above, sample HP = 1.1. No HCl reaction.
10	12	15"/≤7	4,4,4,5	0-1.0": Silt. As above.
				1.0-15": Sand. Light brown (7.5 YR 6/3) fine, damp, loose to scattered,
				firm, no HCl reaction, very well sorted.
12	14	20"/10	4,4,4,5	0-20": Sand. Reddish brown (5 YR 5/4) fine to very fine. Saturated, trace+E82
				silt, very well sorted. No HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-104

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	19"/<10	3,4,3,4	0-4.0": Slough.
				4.0-19": Sand. Fine to very fine, as above. Sample soft, very slight HCl
				reaction.
16	18	24"/<12	4,4,7,4	0-24": Sand. Fine to very fine, as above, with some to much silt.
				Saturated.
18	20	17"/<15	2,2,3,4	0-17": Sand. Very fine, silty, color as above. Saturated.
20	22	21.5"/	3,3,4,4	0-21.5": Sand. Brown (7.5 YR 4/4) very fine silty, very well sorted,
		17.5		saturated. HP = 0.1 to 0.5
22	24	22"/<17	6,8,8,10	0-8.0": Sand. Very fine, silty as above, saturated.
				8.0-13": Silt. Brown (7.5 YR 5/4) HP = 1.5 Clay lense at 13.5. Clay, red
				(2.5 YR 4/6) silt, moderate HCl reaction. Clay, strong HCl reaction.
				13-22": Sand. Brown (7.5 YR 4/4) silty, moderate HCl reaction. HP = 1.0 to
				1.5, saturated.
24	26	24"/15	6,5,8,9	0-24": Sand. Silty, as above, saturated, moderate HCl reaction.
26	28	26"/50	6,6,8,8	0-24": Sand. Strong brown (7.5 YR 4/6) silty, as above, grading to well sorted,
				fine to very fine sand at base, saturated sand, moderate HCl
				reaction. HP = 1.5 silty sand.
28	30	24"/≤9.0	7,9,10,12	0-24": Sand. Brown (7.5 YR 5/4) very fine to fine, very well sorted, saturated,
				moderate HCl reaction, firm, trace to some silt.
30	32	15"/≤7.5	7,7,9,6	0-15": Sand. Very fine to fine, as above, saturated.
32	34	22"/≤8.0	8,10,10,10	0-22": Sand. Very fine to fine, as above, saturated water added to remove
				blow-in.
34	36	15"/9.0	6,8,10,12	0-15": Sand. Strong brown (7.5 YR 4/6) fine to very fine, as above,
				saturated.
36	38	19"/9.0	10,12,15,20	0-19": Sand. Very fine to fine, as above, saturated.
38	40	19"/12.5	7,9,13,23	0-19": Sand. Very fine to fine, as above, saturated, well flushed before
				next sample.
40	42	17"/9.5	4,5,7,7	0-17": Sand. Very fine to fine, saturated, well flushed.
42	44	22/9.0	7,10,15,12	0-22": Sand. Very fine to fine, top 14 inch reported as slough, well
				flushed.
44	46	20"/≤7.0	4,8,8,10	0-20": Sand. Very fine to fine, as above, saturated.
46	48	17"/12.5	4,5,7,10	0-17": Sand. Very fine, as above, saturated, clay lenses (1/16 inch) at 14

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-104

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				inches.
48	50	24"/9	10,12,12,10	0-19": Sand. Very fine to fine, as above.
				19-24": Silt. Reddish brown (5 YR 5/4) very clayey, strong HCl reaction.
				HP = 3.0
50	52	24"/10	6,5,7,10	0-24": Interbedded Silt and Clay. Approximately 60 percent clay, red
				(2.5 YR 4/6). HP = 3.7 strong HCl reaction, 40 percent silt, brown (7.5 YR 5/3)
				HP = 2.5 to 3.0 moderate strong HCl reaction. Clay/silt sequences, layers
				between ¼ to 2 inch thick.
52	54	20"/80	4,7,10,12	0-20": Interbedded Silt and Clay. As above with clay more abundant toward
				base. But 0.4 and 5.9 clay. Silt finely laminated at base. HP = 4.0 ½ inch
				sand seam at 16 inch. Fine to medium grained very damp. Silt and clay,
				strong HCl reaction.
54	56	19"/1500	7,38,42,50	0-13": Silt. With clay laminations. Lithologies as above, damp.
				13-19": Sand. Brown (7.5 YR 5/3) fine to very fine, damp, slightly dense.
				Strong HCl reaction, trace some silt.
56	58	24"/450	18,30,30,47	0-1.5": Sand. Brown (7.5 YR 5/4) very fine to fine, very well sorted,
				saturated, slough, slight HCl reaction.
				15-21": Silt/Clay. Interbedded subvertical laminations, strong HCl
				reaction. Slough? Silt reddish brown (5 YR 5/3). Clay reddish brown
				(2.5 YR 4/4).
				21-24": Sand. Brown (7.5 YR 4/4) very fine to fine,damp, very well sorted,
				moderate HCl reaction.
58	60	15"/95	32,3/50	0-11": Sand. Very fine, saturated, slough.
				11-15": Sand. Brown (7.5 YR 5/3) fine to very fine, slight HCl reaction
				dense, very well sorted, damp.
60	62	14"/86	35,25,42,30	0-6.0": Sand. Very fine to fine, saturated as above.
				6.0-14": Sand. Brown (7.5 YR 4/3) coarse, saturated, trace to some fine
				gravel, well rounded, loose.
				End of hole 62 ft bgs.
				Set well screen 62.7 to 57.7 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-105 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 7/13/98 Drilling Completed 7/13/98

Total Depth Drilled 70 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1097.33 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	10"/10	1,1,1,1	0-2.0": Sand. Very pale brown (10 YR 7/4) fine, loose, dry, well sorted, no
				HCl reaction.
				2.0-10": Gravel with Sand. Light yellowish brown (10 YR 6/4) subangular to
				subrounded granular gravel of variable composition in medium to fine sand
				material, dry, loose.
2	4	12"/10	2,2,3,3	Sand. Very pale brown (10YR 7/3) medium to fine with gravel,). Dry, loose,
				much coarse sand, gravel angular to rounded variable composition, up
				to pebble size.
4	6	15"/14	4,3,4,5	Sand and Gravel. Vvery pale brown (10 YR 7/3) coarse, loose, damp, much
				medium to fine sand, no HCl reaction. Gravel granular to pebble size,
				various composition, and subrounded.
6	8	6"/10	2,3,5,7	0-1.0": Sand and Gravel. Coarse, as above.
				1.0-6.0": Sand. Light yellow brown (10 YR 6/4) coarse to medium, some fine
				sand and gravel, up to pebble size, damp and loose, no HCl reaction.
8	10	15"/7.5	2,4,4,5	0-7.5": Sand. Very pale brown (10 YR 7/4) medium, damp, loose very well
				sorted.
				7.5-8.0": Gravel. Light yellowish brown (10 YR 6/4) granular, loose, damp,
				some coarse sand.
				8.0-15": Sand. Medium to coarse very pale brown (10 YR 7/4) damp, loose,
				no HCl reaction.
10	12	15"/10	4,4,4,3	Sand. Medium to coarse as above, grading to coarse sand with much
				medium and fine sand (toward base of sample), trace to some granular gravel.
12	14	13"/4	2,4,7,8	0-8.0": Sand. Light yellow brown (10 YR 6/4) medium to coarse, well
				sorted, trace granular gravel, saturated, loose. No HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-105

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				8.0-9.0": Sand. Light yellow brown (10 YR 6/4) coarse, with granular gravel.
				Saturated, loose, no HCl reaction.
				9.0-13": Sand. Medium to coarse as 0 to 8 inch, no HCl reaction,
				saturated.
14	16	17"/4	2,4,6,8	Sand and Gravel. Pale brown (10 YR 6/3), loose, saturated, sand fine to
				coarse, poorly sorted, fine gravel, variable composition, subangular to
				rounded. No HCl reaction.
16	18	15"/8	3,3,5,6	Sand and Gravel. As above, saturated and coarser toward base,
				predominantly granular gravel.
18	20	13"/70	4,4,7,8	Sand and Gravel. Coarse, as above, saturated, no HCl reaction.
20	22	23"/4	6,6,8,10	0-13.5": Gravel. Pale brown (10 YR 6/3) granular with much coarse sand.
				saturated, no HCl reaction.
				13.5-23": Sand. Yellowish red (5 YR 5/8) very fine, silty, saturated HP = 1.3
				moderate HCl reaction, well sorted, occasional (1/16 inch) silty clay,
				laminations.
22	24	18"/4.5	5,7,9,14	0-4.5": Gravel. Granular, slough.
				4.5-16": Sand. Very fine silty, as above, grading to fine sand at base (2
				inch saturated).
				16-18": Silt. Reddish brown (5 YR 5/4) with some very fine sand. moderate
				HCl reaction. HP = 1.5, saturated.
24	26	17"/7	7,9,9,14	0-17": Silt. Reddish brown (5 YR 5/4) saturated, moderate HCl
				reaction, clayey HP = 2.0 to 2.5 clay lense (¼ inch) at 12 inch.
26	28	18.5"/5.5	8,10,7,11	Silt. Brown (10 YR 5/3) clayey HP = 3.0 to 3.5. Clay lenses 2, 11½, and 16½
				inch. Silt moderate HCl reaction, clay, strong HCl reaction, silt very damp.
28	30	18½"/5	8,10,10,5	0-18.5": Silt. As above, silt at 5½, 7½, 11, and 13 inch. Clay yellowish
				red (5 YR 4/6) up to ½ inch thick. Strong HCl reaction. HP = 3.0.
30	32	22"/6	7,13,10,15	0-22": Silt. With clay lenses as above. Clay at 2 (¼), 6 (1), 7½ (½), 13 (½)
				inches.
32	34	22"/5	10,15,15,20	0-22": Silt and Clay. As above, clay at 4 (¼), 6 (¼), 7 (¼), 9 (½), and 8 (½)
				inches, saturated.
				HP = 1.5 to 2.0.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-105

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
34	36	22"/35	10,12,8,10	0-22": Silt and Clays. As above, 9 to 11 and 15 to 16 inches clay. Dark
				reddish grey (5 YR 4/2). HP = 2.0 to 5.0 plastic, laminate, foliated, silt
				moderate HCl reaction, clay strong reaction, very damp.
36	38	24"/7.5	8,8,10,12	0-8.0": Silt and Clay. Interbedded, as above, saturated. Glays (all ¼ inch
				thick) 5, 6, 6½, and 7 inches.
				8.0-24": Sand. Brown (75 YR 5/2) very fine, silty, saturated, more sand-rich
				toward base. HP = 1 to 1.5.
38	40	24"/7.5	7,11,11,13	0-12": Silt. Slough
				12-24": Silt. Brown (7.5 YR 4/2) with some to much very fine sand. HP = 1.5 to
				1.7 weak HCl reaction. Clay lense at 20 inches.
40	42	24"/4.5	5,10,15,13	0-8.0": Silty Slough.
				8.0-24": Silty Sand. Interbedded and silt as above. Clay lenses at 10, 12, and
				14 inches. Moderate HCl reaction, saturated.
42	44	18"/10	3,5,7,10	Sand. Brown (7.5 YR 5/2) silt/silty, saturated, clay at 15 inch (1/16 inch)
				HP = 0.7 moderate to strong HCl reaction.
44	46	18"/10	6,5,8,10	0-18": Silt. Brown (7.5 YR 4.5/2) sandy, saturated ½ inch clay seams at
				3.5 and 8 inch. Silt moderate HCl reaction HP = 1.5 to 1.6, clay strong HCl
				reaction. HP = 1.3
46	48	24"/5	5,7,9,10	0-10": Silt. Slough.
				10-24": Silt. Sandy as above, saturated clay at 13, ¼ and 16, ¼ inch.
48	50	21"/4	10,10,15,12	Silt and Clay. Interbedded.
				Silt. Brown (7.5 YR 5/2) damp, HP = 2 to 3.6 moderately HCl reaction.
				Clay, reddish brown (5 YR 4/4). HP = >4.0. Fissile plastic, strong HCl
				reaction. Clay and silt in approximate even amounts in lowest 6 inches.
50	52	19"/7.5	6,16,15,25	Silt and Clay. Interbedded, above finely laminated, damp.
52	54	19"/5.5	7,9,10,10	0-19": Sand. Grey (7.5 YR 4.5/1) saturated, silty, clay layers at .1 and 16 inchs.
				HP = 1.1 to 2.0, moderate reaction with HCl.
54	56	15"/9	5,8,12,12	0-15": Sand. Grey (7.5 YR 4.5/1) saturated, silty as above. W+E164eak HCl
				reaction, clay at 1/8 and 16, 1/8 inch.
56	58	20"/8	7,10,10,13	Silts. Interbedded silty sand, with clay layers at 2, 9½, 15 inchs. All
				lithologies as encountered over last 10 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-105

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
58	60	17"/6	10,10,9,13	Silts. Interbedded, sands and clays as above, saturated.
60	62	18"/4.5	8,8,5,9	0-11": Sand. Saturated, silts very fine silts, as above.
				11-18": Silt and Clay. Interbedded sand approximately 50 percent clay
				lenses, damp.
62	64	18"/7.5	10,10,15,25	0-18": Silts and Clays. Interbedded and very fine sands as above, but damp
				½ inch fine sand, lenses at 13 inchs, silts and clays finely laminated.
64	66	20"/70	10,20,30,50	0-20": Silts and Clays. Interbedded and very fine sands. 14 to 20 inch fine
				sand, more abundant approximately 60 percent of lowest 6 inch. Finely
				laminated very fine sand. Brown (7.5 YR 5/2) moderate HCl reaction, loose to
				some firm, saturated, some to much silt, very well sorted.
66	68	19"/55	10,10,35,62	0-6.0": Silts and Clays. Interbedded as above.
				6.0-19": Sand. Light brown (7.5 YR 5/3) very fine to fine,saturated, finely
				laminated, slight HCl reaction, trace to some silt, loose to firm.
68	70	13½"/	25,20,43,30	0-7.5": Sand. Very fine to fine, as above. Saturated.
		175		7.5-13": Sand and Gravel. Medium to coarse, greyish brown (10 YR 5/2).
				Saturated, dense, gravel up+E160 to >1½ inch in diameter. Variable composition,
				subangular to subrounded. Matrix of coarse sand, very fine gravel, trace
				silt, some medium to fine sand. No HCl reaction.
				EOH = 70 feet bgs.
				Set well screen 70-65 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-106 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 7/13/98 Drilling Completed 7/13/98

Total Depth Drilled 66 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1088.6 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	6"/8.0	1,1,1,1	Top Soil. Sandy silt, pale brown (10 YR 6/3) dry crumbly, no HCl reaction,
				some rootlets.
2	4	14"/8.0	1,3,4,4	0-6.0": Silt. Sandy, as above, trace rootlets.
				6.0-9.0": Sand. Yellow (10 YR 7/6) fine, loose, dry, very well sorted, no HCl
				reaction.
				9.0-14": Sand. Yellow (10 YR 7/8) medium, no HCl reaction, trace pebble
				gravel, dry, loose.
4	6	8"/7.5	4,4,3,6	Sand. Brown yellow (10 YR 6/8) medium, loose, damp, some coarse sand,
				some fine sand, trace well rounded, pebble gravel.
6	8	1"/6.5	20,22,20,15	Sand and Gravel. Yellowish brown (10 YR 5/6), silty, dry, loose, poorly sorted,
				coarse to fine sand, subangular gravel, no HCl reaction.
8	10	0"	9,11,13,10	No recovery.
10	12	0"	10,10,10,10	No recovery.
12	14	10"/5.5	10,10,9,8	0-1.0": Sand and Gravel. As above, with shattered cobble.
				1.0-10": Sand. Pinkish grey (YR YR 6/3) fine to very fine, dry, , loose to slightly
				dense, no HCl reaction, trace silt, very well sorted.
14	16	0"	10,12,12,10	No recovery, cobbles reported by driller.
16	18	15"/6.5	5,5,7,7	0-15": Sand. Fine to very fine, as above (12-14 inch) slightly damp, no
				HCl reaction.
18	20	16"/9.5	3,4,5,12	0-16": Sand. Fine to very fine, as above, slightly damp.
20	22	17"/7	10,10,10,10	0-17": Sand. Very fine as above, slightly damp, no HCl reaction.
22	24	18"/8.5	6,8,10,10	0-18": Sand. Very fine as above, slightly damp.
24	26	17"/7.5	7,9,9,8	0-10": Sand. Very fine as above, slightly damp.
				10-17": Sand. Brown (7.5 YR 5/3) silty, damp, no HCl reaction. HP = 1.1 to
				1.3.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-106

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface)		Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6	
From	To	OVA (ppm)	Inches	Sample/Core Description
26	28	17.5"/7.5	8,8,12,8	0-14": Silt. Brown (7.5 YR 5/3) sandy, saturated. HP = 0.5 to 1, very weak
				HCl reaction.
				14-14.5": Clay. Brown (7.5 YR 4/3) platy, plastic.
				14.5-17.5": Sand. Brown (7.5 YR 5/3) silty, saturated, no HCl reaction, very
				well sorted, HP = 1.1
28	30	18"/6.5	4,4,8,12	Sand. Interbedded, silty, silt and clay as above, clays at 3.0 (¼) inch and 9 to
				11 inch, saturated.
30	32	16"/9.0	8,10,10,7	Sand. Silty, silt, interbedded as above, saturated, clay layers at 5, 6, and
				7 inches (2¼ inch thick), silty sand, well sorted.
32	34	18½/7	2,10,10,15	0-13": Sand. Silty, as above, saturated.
				13-18.5": Silt. Brown (7.5 YR 5/4) HP = 1.5 to 3.2. Moderate HCl
				reaction, very damp.
34	36	14½"/10	8,8,10,11	0-14.5": Silt. As above, interbedded with very fine sands, finely laminated,
				very moist, damp.
36	38	16½"/7.5	5,5,5,8	0-16.5": Sand and Silts. Interbedded, laminated, very fine, as above, with clay
				at 6 to 7 inches.
38	40	8"/1	2,2,5,7	0-5.5": Sands and Silts. Interbedded, very fine, as above.
				5.5-8.0": Silt. Grey (10 YR 5/1) clay (¼ inch) at 6 to 6½ inch. Silt very
				clay rich, strong HCl reaction.
40	42	16"/12	7,7,6,5	Silts and Clays. Interbedded, saturated, clays approximately every ½ inch.
				Clay, brown (7.5 YR 5/3). HP = 1 to 1.5 plastic, strong HCl reaction,
				Silt very damp at base of sample, ¼ inch coarse sand lens at 12 inch, very
				damp to saturated.
42	44	18"/9	10,12,12,15	0-18": Silt. Brown (7.5 YR 5/3), saturated. HP = 1 to 1.6 weak HCl reaction,
				clay lenses at 2.0 (2 inch) and 13 inch (1/16 inch).
44	46	19"/8	5,10,,12,15	0-19": Silt. As above, saturated, clay at 1.5 (1/8 inch) and 15.5 (1/16 inch).
46	48	16"/13	7,10,12,12	0-16": Silt. Sandy silt interbedded. Silt, brown (7.5 YR 5/4) finely
				laminated HP = 1 to 1.5. Saturated, clay seam at 11.5 inch moderate HCl
				reaction, sandy silt color as above, very fine grained saturated HP = 0.5 to 1.5,
				moderate to slight HCl reaction.
48	50	13"/20	5,7,12,12	Silt and Sand. As above, saturated with clay at 8 (½ inch) and 12 (1/16 inch).
				Dark grey staining in center of clay seams.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-106

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
50	52	16"/9.5	8,8,10,9	Silts and Clay. Interbedded, silts saturated, silt as above, clay reddish brown
				(5 YR 4/4) strong HCl reaction. HP = 1.5. Plastic and foliated no
				black staining in center.
52	54	14"/8.5	4,6,8,15	Silts and Clay. Interbedded HP = >4.0 as above, but lowest 8 inches damp,
				1/8 inch lenses of fine sand every 2.3 inch at base, lowest 8 inches.
				Approximately 40 percent clay every ½ inch up to ¼ inch thick.
54	56	16"/16	12,6,8,8	Silts and Clays. Interbedded, as above with approximately 70 percent clay.
				Damp to dry, silt HP = 3 to 3.5, strong HCl reaction. Clay HP = >4.0, strong
				HCl reaction, fine sand lens at 15 inches (¼ inch) thick.
56	58	20"/600	4,8,7,12	0-19": Silts and Clay. Interbedded as above, damp.
				19-20": Sand. Pinkish grey (7.5 YR 6/2) very fine, well sorted, loose, to
				slightly dense, damp.
58	60	11"/2000	12,12,20 ,30	0-11": Sand. Interbedded, very fine, silts and clays, very damp, lithologies as
				in above samples.
60	62	9"/1000	20,22,43,40	0-9.0": Sand. Brown (7.5 YR 5/3) very fine, saturated, loose to slightly dense,
				moderate HCl reaction, some silt, clay lenses at 3 inch (1/6 inch thick).
62	64	15"/300	12,22,32,40	0-12": Sand. Very fine, as above, saturated.
				12-15": Sand. Brown (7.5 YR 5/2) coarse with gravel, poorly sorted,
				saturated, gravel subangular to rounded, variable composition.
64	66	24"/1000	5,11,20,30	0-20": Sand. Brown (7.5 YR 5/3) fine to medium with trace some gravel,
				saturated, slight HCl reaction.
				20-24": Sand and Gravel. Brown (7.5 YR 4/3) granular gravel angular to
				subrounded variable composition, coarse to fine sand, poorly sorted, trace
				silt, dense, no HCl reaction.
				EOH 66 feet bgs.
				Installed probe screen from 60 to 65 feet bls.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-107 Project/No. WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/20/98 Drilling Completed 7/21/98

Total Depth Drilled 66 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2"

Sampling Interval continuous feet

Land-Surface Elev. 1089.27 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Toby

Prepared By Ray Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	22"/	1,1,1,2	0-6.0": Sand. Grayish brown (10 YR 5/2) silty. Top Soil. dry, crumbly, some to
		7.5		much rootlets.
				6.0-15": Silt. Brownish yellow (10 YR 6/8) sandy, dry, loose, no HCl
				reaction very well sorted.
				15-22": Sand. Brownish yellow (10 YR 6/6) fine to medium, loose, dry, very
				well sorted.
2	4	14.5"/	2,2,3,3	0-14.5": Sand. Yellowish brown (10 YR 5/8) fine, very well sorted, loose
		5		and dry, trace to some medium sand at base. 1/8 inch silt lense at 14 inches.
4	6	12-½"/	1,3,4,5	0-12.5": Sand. Fine as above, grading to medium and coarse sand at
		5		base. No HCl reaction, dry and loose.
6	8	8"/	15,13,8,6	Gravel. Brown (7.5 YR 5/4) shattered cobbles of variable composition, some to
		4.5		much coasrse silty sand, damp, slightly cohesive. No HCl reaction.
8	10	6"/	8,7,6,13	0-4.0": Gravel as above. Subrounded to well rounded, saturated and loose.
		6		4.0-6.0": Sand and Gravel. Brown (75 YR 5/4) very damp, loose, gravel
				variable composition, subangular to well rounded. No HCl reaction.
10	12	2"/	11,10,13,12	Sand and Gravel. As above, damp.
		4.5		
12	14	0	6,5,4,5	No recovery.
14	16	9"/	2,4,4,5	Sand. Very pale brown (10 YR 7/4) coarse with some gravel, Damp, loose,
		4.5		some medium sand. Gravel subrounded to well rounded, variable
				composition. No HCl reaction.
16	18	16"/	5,5,5,7	Sand. Very pale brown (10 YR 7/3) medium with some to much coarse sand,
		5		loose, dry, well sorted, trace granular gravel, no HCl reaction.
18	20	16"/	5,4,6,7	Sand. As above with trace gravel, slightly damp.
		5		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-107

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	22	16"/	2,4,3,5	0-10": Sand. As above, damp.
		5		10-16": Sand. Light reddish brown (5 YR 6/4), very fine, silty, very well
				sorted, dry to slight damp. No HCl reaction.
22	24	9.5"/	2,4,6,7	0-9.5": Sand. Very fine as above. Damp.
		4		
24	26	20"/	3,5,5,7	Sand. Light reddish brown (5 YR 6/4) fine, damp, slightly firm, very well
		4.5		sorted, trace to some silt.
26	28	16"/	7,4,7,9	0-1.0": Sand. As above, fine.
		5.5		1.0-16": Sand. Reddish brown (2.5 YR 5/3) very fine, silty, saturated. HP = 1.
				Slight to moderate HCl reaction, moderate sorting.
28	30	14½"/	6,8,6,7	0-14.5": Sand. Very fine silty, as above, saturated.
		4		
30	32	13"/	3,9,8,7	0-8.0": Sand. Very fine, silty as above with clay lense at 0-0.5 inches,
		5		saturated.
				8.0-13": Reddish brown (2.5 YR 4/4) sandy silt, HP = 1.5 to 2.5. Weak to
				moderate HCl reaction, saturated.
32	34	12"/	3,7,8,5	0-12": Sand. Reddish brown (5 YR 5/3), silty. Moderate to strong HCl
		6		reaction, HP = 0.5, saturated.
34	36	20"/	9,8,7,11	Silt. Reddish brown (5 YR 5/3) sandy, moderate HCl reaction. HP = 2 to 2.2
		6		clay lense 0 to 1 inch. Strong HCl reaction, red (2.5 YR 4/6) HP = 2.
36	38	17"/	8,10,10,12	0-17": Silt as above. Clay lense 13½ to 14 as above. Saturated.
		4		
38	40	9.5'/	5,7,11,10	0-9.5": Silt. Sandy, as above. Clay lense at 3 to 3.5 inch, saturated.
		5.5		
40	42	13"/	8,14,16,13	0-13": Silt. Sandy, as above, clay at 1 to 2 inches and at 9½ to 10 inches.
		3.5		Top 6 inch saturated. Lowest 7 inches damp.
42	44	16"/	9,11,14,16	Interbedded silts and clays as above. Clay at 3 to 6 inch, 6½ to 7 inches and
		3.5		12½ to 13 inches. Silts very damp to saturated, moderate HCl reaction.
				HP = 2.5 to 3.7. Clay strong HCl reaction, HP = 1.5 to 3.2 medium sand
				stringer 1/16 inch thick at 14.2 inch.
44	46	14"/	2,2,9,10	0-4.0": Interbedded silts and clays as above.
		3		4.0-14": Silt. Dark grayish brown (10 YR 4/2) saturated, HP = 1 to 2. Weak

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-107

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				HCl reaction.
46	48	13"/	8,9,14,12	0-13": Interbedded silts and clays as encountered in previous sample.
		4.5		Clay at 1.5 to 2 inch and 9 inch and 10 inch (¼ inch seams). Very damp
				silt and moderate HCl reaction, clay strong HCl reaction.
48	50	12"/	5,9,15,13	Interbedded silts and clays as above, saturated. Clay (1/8 inch thick) at
		4		4, 7 and 18 inches.
50	52	13"/	5,11,14,15	0-13": Interbedded silts and clays as above, ¼ inch sand lense at 11.5 inches.
		3		
52	54	13"/	6,7,14,9	Interbedded silts and clays as above, very damp to saturated. ¼ inch clay
		3.5		lenses every 1 to 1.5 inches.
54	56	15"/	5,7,5,7	Interbedded silts and clays as above, ½ inch. Clay layers every 1 inch
		6		approximately 50 percent clay layers. Strong HCl reaction in silts
				and clays. HP (silt) >4.0. HP(clay) 3 to 3.5. Damp.
56	58	17"/	3,4,7,9	Interbedded silts and clays as above (in approximate equal amounts).
		75		Beds between ¼ and 1 inch thick, damp.
58	60	19"/	6,9,20,17	0-12": Interbedded silts and clays as above. Damp.
		700		12-19": Sand. Brown (7.5 YR 5/4) fine, becoming medium sand at base.
				damp, trace to some silt (at top). Moderate to well sorted.
60	62	17"/	6,19,20,22	0-9.0": Interbedded silts and clays as above.
		900		9.0-17": Sand. Brown (7.5 YR 5/3), fine to very fine trace to some silt.
				Very damp to saturated. Moderate HCl reaction, well sorted, coarser
				toward base.
62	64	16"/	6,22,21,19	0-6.5": Silts and Clays. Possible slough.
		70		6.5-19": Sand. Fine to very fine, as above, saturated, moderate HCl
				reaction.
64	66	15"/	6,8,9,17	0-12": Sand. Fine to very fine. As above saturated, slough.
		40		12-15": Gravel. Brown (7.5 YR 5/4) pebble gravel. Subangular to
				subrounded, various composition, coarse to medium sand matrix with
				trace to some silt, saturated.
				EOB at 66 feet bls.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-108 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 7/21/98 Drilling Completed 7/22/98

Total Depth Drilled 82 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval continuous feet

Land-Surface Elev. 1109.84 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Toby

Prepared By Raymond Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	10"/	1,2,3,3	0-10": Sand. Strong brown (7.5 YR 5/8) fine. Dry, loose, trace to some gravel
		12		well rounded, variable composition, some to much silt.
2	4	7"/	9,6,7,9	0-7.0": Sand. Strong brown (7.5 YR 5/8) silty. Dry, loose, trace some gravel and
		6		coarse sand. No HCl reaction.
4	6	9"/	8,8,5,4	0-4.0": Sand. Silty. As above, dry and loose.
		12		4.0-9.0": Sand. Light reddish brown (5 YR 6/3) fine, very well sorted, dry and
				loose.
6	8	5"/	9,8,7,8	0-5.0": Sand. Light brown (7.5 YR 6/4), medium to fine with Gravel. Dry and
		9		loose, some silt, no HCl reaction, gravel subrounded to well rounded up to 4
				inch diameter.
8	10	9"/	6,3,5,6	Sand. Medium to fine, as above.
		10		
10	12	--	2,5,5,3	No recovery.
12	14	11"/	2,3,2,2	Sand and Gravel. Yellow (10YR 7/6), coarse. Loose and dry, No HCl reaction.
		12		Gravel granular to pebble sized, subrounded to well rounded.
14	16	14"/	3,1,2,2	Sand. Coarse, as above, moist, some fine gravel, as above.
		12		
16	18	14"/	1,2,3,3	Sand. Coarse, as above, moist with some medium sand and trace fine gravel.
		7		
18	20	16"/	2,2,2,2	Sand. Very pale brown (10 YR 7/4), coarse to medium. Loose and moist, very
		8.5		well sorted, no HCl reaction.
20	22	17"/	2,2,2,2	Sand. Coarse to Medium, as above, moist.
		10		
22	24	18"/	2,2,2,2	Sand. Coarse to Medium, as above, moist.
		9		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-108

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
24	26	15"/	2,2,2,2	0-10": Sand. Coarse to medium, moist.
		9		10-15": Sand. Coarse to medium, saturated.
26	28	14"/	1,4,5,4	0-2.0": Sand. Coarse to Medium, as above, saturated.
		8		2.0-16": Silt. Brown (10 YR 4/3) moderate HCl reaction. HP 2.0-2.5 very moist to
				saturated.
				16-17": Clay. Dark reddish brown (7.5 YR 3/4) platey, plastic, strong HCl
				reaction, HP 1.6.
28	30	14"/	5,5,5,5	0-10": Silt. As above, clay lenses at 2.5 to 3.0, saturated.
		10		10-14": Sand. Brown (10 YR 5/3) very fine, silty saturated very well sorted.
				HP = 1.0-1.1. Weak to moderate HCl reaction.
30	32	14"/	4,5,5,7	0-6.0": Sand. Very vine silty, as above, saturated.
		7.5		6.0-14": Silt with clay lenses. Silt: Dark grayish brown (10 YR 4/2). HP = 3.0-3.5,
				trace some very fine sand. Moderate HCl reaction. Clay: Reddish brown
				(5 YR 4/4) HP = 2.5-2.7 strong HCl reaction, plastic, foiliated.
32	34	12"/	6,8,7,9	0-12": Silt. As above with clay lenses at 6" (1/8").
		8		
34	36	10"/	1,4,6,7	Silts. As above, moist clay at 3 to 4 inch. Strong HCl reaction in both.
		7		
36	38	15"/	5,5,6,7	Silts. As above, moist. Clay more abundant lenses at : 0 to 1 inch, 8 to 9 inches
		11		and 14 to 15 inches.
38	40	8"/	1,5,5,7	Silts. As above. Clay lenses 3.5 to 4, moist.
		8.5		
40	42	14"/	5,6,7,9	Silts. As above with clay lenses at 0 to 0.5 inch, 3 to 4 inch, 8 to 10 inch, moist
		15		silt. HP = 2.5. Clay HP = 2.4.
42	44	11"/	6,6,6,8	Silt. As above, ¼ inch clay lenses at ½ inch and 7 inch. Moist.
		11		
44	46	16"/	3,5,7,8	Silt. As above, moist 1/8 inch clay lenses at 4 inch. Clay 7 to 8 inches.
		7		
46	48	11"/	3,6,7,10	0-2.0': Silt. As above with 1/6 inch clay lenses at 1 inch.
		9.5		2.0-8.0": Silt. Strong brown (7.5 YR 4/6), very fine, sandy saturated. HP = 1.0
				moderate HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-108 Page 3 of 4

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				8.0-11": Silt. As 0-1 inch but slightly more sandy. Moist, clay lenses 8½ to
				9 inch.
48	50	15"/	5,6,7,10	0-10": Sand. Brown (7.5 YR 4/4), very fine silty. Saturated. HP = 1.6 moderate
		9		HCl reaction.
				10-15": Silt. As above, very moist, 1/8" clay lenses at 10½ inches.
50	52	14"/	6,8,10,16	0-10": Silty Sand. Silt and clay interbedded as above, saturated.
		8		10-14": Silt and Clay. As above, but moist.
52	54	16"/	4,9,11,10	0-16": Interbedded Silt. Silty sand and clay as above, but saturated. ¼ inch
		6		clay lenses at 2 inches, 5 inches, and 10 inches.
54	56	13.5"/	6,5,5,11	0-13.5": Interbedded silt. Silty sand and clay, 1/4 inch clay at 2 inches, 3½
		10		inches, 7½ inches and 11 inches, saturated.
56	58	12"/	5,6,9,11	0-4.0": Silt and Silty Sand. Interbedded as above, saturated.
		10		4.0-12": Interbedded silt and clay as above, with ¼ inch clay layers at 6 inches,
				8 inches, and 11 inches, moist.
58	60	11"/	5,5,9,12	0-11": Interbedded silt and clay as above ¼ inch clay at 2 inches, 4 inches, 8
		8.5		inches, ½ inch clay at 6 inches, very fine sand, lenses 9.5 to 10 inch, moist. HP
				(silt) = 2.5 to 24. HP (clay) = 3.
60	62	11"/	6,6,10,13	Interbedded Silt and Clay. As above, but clay more abundant 1/8 to 1 inch.
		6		Lenses every ½ to 1 inch, slight moist. HP clay = >4.0 HP Silt = >4.0
62	64	11½"/	7,9,11,14	Interbedded silt and clay, as above clay lenses up to 2 inches thick. 1/8 inch
		6.5		sand laminations every ¼ inch, 8 inches, 9½ inches. HP Clay = >4.0, slightly
				moist. HP Silt = >4.0.
64	66	18"/	7,8,8,11	Interbedded silt and clay as above with very fine sand lenses, finely laminated
		6.5		in lowest 2 inches, slightly moist.
66	68	17"/	8,8,10,14	0-6.0": Silts and Clays. With very fine sand, laminations as above. Moist.
		6.5		6.0-10": Sand. Brown (7.5 YR 4/3) very fine silty, saturated, very well sorted.
				HP = 0.5 to 1.0. Slightly HCl reaction.
				10-17": Interbedded Silts and Clays as 0 to 6 inch, moist 1/4 inch clay lenses
				at 11 inches, 12½ inches and 17 inches.
68	70	12"/	2,5,7,12	0-12": Silt. With 1¼ inch clay at 2 inch and 11.5 inch as above, top 3 inch
		2.5		moist, lower 3 inches saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-108

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
70	72	22"/	7,8,11,14	0-22": Interbedded silts and clays as above, but slightly moist, approximately
		80		50 percent clay layers up to 1½ inch thick every ½ to 1 inch.
72	74	20"/	6,12,21,35	0-20": Interbedded silts and clays as above. Moist, fine to very fine silty sand
		300		lenses at 14 to 15 inches and 17 to 18 inches (7.5 YR 5/3) well sorted.
				HP = 3.0 Moderate HCl reaction.
74	76	12"/	7,19,41,32	Interbedded silts and clays as above, 1/8 inch seam of very fine sand as above
		250		at 7½ inch, moist.
76	78	12"/	17,20,20,23	0-0.3": Interbedded silts and clays. As above, moist.
		1000		3.5-7.0": Sand. Light brown (7.5 YR 6/4) fine, very moist to saturated, very well
				sorted, slight to moderate HCl reaction.
				7.0-12": Sand. Light brown (7.5 YR 6/3) coarse with some to much fine gravel.
				loose, saturated. Gravel subrounded to well rounded, variable composition.
78	80	13.5"/	17,20,16,15	0-13.5": Sand. Coarse, with some to much fine gravel as above, saturated.
		700		
80	82	13"/	8,11,15,10	0-13": Sand. Coarse, with gravel as above, saturated.
		50		
				End of hole 82 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-109 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 7/22/98 Drilling Completed 7/23/98

Total Depth Drilled 66 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1089.66 feet [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	15"/9	2,2,2,7	0-8.0": Top Soil. Brown (10 YR 5/3) dry, loose, medium sand, trace to some
				silt. Some rootlets, some well rounded gravel.
				8.0-15": Sand. Yellowish brown (10 YR 5/8) fine silty, slightly damp,
				crumbly HP = 1.0, no HCl reaction.
2	4	12"/5	6,2,2,4	0-5.0": Sand. Fine silty, as above, moist.
				5.0-12": Sand. Very pale brown (10 YR 7/4) fine to medium, trace coarse
				sand, trace granular gravel, dry, loose, no HCl reaction.
4	6	17"/4	6,2,2,4	Sand. Brownish yellow (10 YR 6/6) medium grained to coarse sand, lowest 6
				inch, loose, dry, coarse sand at base has some granular gravel, no HCl
				reaction.
6	8	8"/4	11,5,5,5	Gravel. Light brown (7.5 YR 6/4) granular gravel with trace pebbles and
				some coarse sand, loose, very moist.
8	10	15"/3	2,4,6,3	0-12": Gravel. Granular as above, very moist some to much pebble gravel,
				greater than spoon diameter.
				12-15": Sand. Coarse to medium, yellow (10 YR 8/6) loose, moist, trace
				granular gravel, no HCl reaction.
10	12	15"/6	2,4,3,4	0-6.0": Sand. Very pale brown (10 YR 7/4) coarse grading to medium sand,
				saturated slightly firm, trace granular gravel.
				7.0-11": As 0.6 second cycle,
				11-15": As above third cycle, to of cycle has ¼ inch fine sand with trace
				some silt, reddish yellow (7.5 YR 7/8) no HCl reaction.
12	14	14"/7	6,2,2,2	0-14": Sand. Light brownish grey (10 YR 6/2) coarse with some gravel,
				very moist to saturated, trace some well rounded variable composition,
				pebble gravel, loose.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-109 Page 2 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	14"/9	6,5,4,3	0-8.0": Sand. Coarse with some gravel, as above, saturated.
				8.0-16": Sand. Brownish yellow (10 YR 6/6) coarse to medium sand,
				poorly sorted, some fine sand, some granular gravel, very moist, no HCl
				reaction, loose.
16	18	17"/6	5,3,3,4	0-17": Sand. Yellow (10 YR 7/6) coarse and granular gravel, moist, loose,
				trace pebble gravel, subrounded.
18	20	15"/7	1,5,4,6	0-15": Sand. Coarse and granular gravel as above, moist, some pebble
				gravel.
20	22	16"/7	2,2,2,4	0-16": Sand. Coarse and some granular gravel, lithology as above, moist.
22	24	17"/5	6,8,9,5	0-5.0": Sand. Coarse and some gravel, as above, moist.
				5.0-17": Sand. Brown (7.5 YR 6/4) very fine, dry to moist, very well
				sorted, loose to slight firm and crumbly.
24	26	0	10,11,14,12	No recovery.
26	28	15"/4.5	5,9,5,7	0-3.0": Sand. Very fine, as above, dry, slough?
				3.0-15": Silt. Reddish brown (5 YR 5/4) HP = 2.0 to 2.5. Saturated, no HCl
				reaction.
28	30	13"/4.5	4,5,9,7	0-7.0": Sand. Yellowish red (5 YR 5/6) very fine, silty, saturated, HP = 2.0 to 2.5.
				7.0-13": Silt and clay interbedded, silt brown (7.5 YR 5/4) moist to moderate
				HCl reaction, HP = 3.5 to 4.0. Clay, red (2.5 YR 4/6) strong HCl reaction,
				moist from 11 to 13 inches. HP = 3.5.
30	32	9"/5	5,7,4,6	0-9.0": Silt. Reddish brown (2.5 YR 5/4) very fine, sandy, saturated, some
				to much very fine sand. HP = 2.0 to 2.5, slightly HCl reaction.
32	34	19"/5.5	56,7,8	0-19": Sand. Very fine, silty as above, saturated, clay lense 9 to 10 inches.
34	36	20"/6.5	6,6,6,7	0-5.0": Sand. Very fine, silty, as above.
				5.0-8.0": Silt. Brown (7.5 YR 5/3) moderate HCl reaction, clay lense 6 to 6½,
				HP = 1.5 saturated.
				8.0-13": Sand. Reddish brown (5 YR 5/4) silty, moderate HCl reaction. HP =
				2.5, saturated.
				13-20": Silt. As 5 to 8 inches.
36	38	12"/7.5	5,4,7,10	0-4.5": Silt. As above, saturated.
				4.5-5.5": Clay. Red (2.5 YR 4/6). HP = 2.5 strong HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-109 Page 3 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				5.5-10": Silt. As 0 to 4½.
				10-12": Silt. Brown (7.5 YR 4/3), sandy, very finely laminated saturated,
				HP = 2.0 to 3.0, moderate HCl reaction.
38	40	16"/5	6,4,7,10	0-6.0": Silt. Sandy, as above, saturated.
				6.0-7.5": Silt. Brown (7.5 YR 5/3) moist HP = 3.5 moderate HCl reaction.
				7.5-15": Clay. Reddish brown (5 YR 5/4) HP = 4.0, plastic, foliated, strong
				HCl reaction.
				15-16": Silt. As 6 to 7½ inch, slightly moist.
40	42	17"/5	5,7,5,10	0-17": Silt. Reddish brown (5 YR 4/4), sandy, saturated. HP = 1.5 to 2.0,
				slightly HCl reaction.
42	44	11"/7.5	6,9,11,13	0-3.5": Silt. Sandy, as above.
				3.5-5.0": Silt. Brown (7.5 YR 5/3). HP = 2.5, moderate HCl reaction, ¼ inch
				clay lense 3½ inch, moist.
				5.0-11": Silt. Sandy, as above, saturated.
44	46	13"/5.5	4,5,6,11	0-13": Silt. Sandy, as above, clay lense (1/8 inch) at 3½ inch saturated.
46	48	11"/5.5	5,5,9,11	Silt. Sandy, as above, 1/8 inch clay lenses at 3, 5½, and 8 inches,
				saturated.
48	50	16"/10	5,5,10,11	0-16": Silt. Sandy, as above, saturated, 1/8 inch clay lenses at 4, 7, 13½
				inch.
50	52	13"/7.5	5,8,9,11	0-13": Silt. Sandy, as above, saturated 1/8 inch clay lenses at 1, 8 and 11
				inch.
52	54	10"/10	4,7,10,16	0-10": Silt. Sandy, as above, moist. ¼ inch clay lenses at 2, 4, 5½, 8 and 9
				inches.
54	56	16"/90	5,6,8,12	Silt and Clay. Interbedded. Silt, greyish brown (10 YR 5/2) HP = 4.0,
				moderate HCl reaction, moist. Clay, yellowish red (5 YR 4/6) HP > 4.0
				strong HCl reaction ½ to ¼ inch clay beds every 1 inch.
56	58	13"/2000	12,5,7,25	0-12": Silts and Clays. Interbedded as above with fine sand lenses at 5 to 5½
				and 11 to 11½ inch.
				12-13": Sand. Pale brown (10 YR 6/3) fine, loose to slightly dense, moist,
				very well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-109

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
58	60	8/3500	19,25,30,24	0-8.0": Sand. Brown (10 YR 5/3) fine to very fine, very well sorted, slight
				HCl reaction, clay lense, 6½ to 7 inch. Trace to some silt, very moist to
				saturated.
60	62	12"/300	12,13,14,13	0-12": Sand. Brown (10 YR 5/3), fine, loose, very well sorted, no HCl
				reaction, clay lense at 5½ to 6 inch and 10 to 10½ inch, much very fine
				sand, saturated.
62	64	11"/150	14,15,37,32	Sand. Fine, as above 1/8 inch clay seams at 10½ and ½ inch, saturated.
64	66	10"/400	15,16,15,17	Sand and Gravel. Light brown (7.5 YR 6/4) coarse sand with granular
				gravel, some to much pebble gravel, gravel variable composition subrounded
				to well rounded, saturated, dense, trace silt, fine to medium sand.
				EOH 66 feet at bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-110 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/8/1998 Drilling Completed 8/9/98

Total Depth Drilled 74 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1094.79 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	24"/	2,2,2,2	0-3.0": Top Soil. Strong brown (7.5 YR 4/6), dry, crumbly.
		3.5		3.0-7.0": Silt. Brown (7.5 YR 4/4) sandy, dry, crumbly.
				7.0-10": Silt. Light brown (7.5 YR 6/4) dry, loose, no HCl reaction.
				10-20": Silt. Strong brown (7.5 YR 5/6) dry, crumbly.
				20-24": Sand. Fine, strong brown (7.5 YR 5/8) dry, loose, some medium and
				coarse, no HCl reaction.
2	4	20"/	1,1,1,2	0-6.0": Silt. Strong brown (7.5 YR 5/6) sandy, crumbly, dry, some to much very
		3.5		fine sand, no HCl reaction. (Slough?)
				6.0-20": Sand. Strong brown (7.5 YR 5/6) fine to medium, dry, loose, no HCl
				reaction, trace to some coarse sand.
4	6	14"/	6,5,6,7	0-7.0": Sand. As above, dry.
		4		7.0-16": Sand and Gravel. Reddish brown (2.5 YR 4/4) coarse, gravel pebbles,
				dry, loose, gravel subrounded to well rounded, variable composition, maximum clast,
				greater than spoon diameter. Matrix is coarse sand, poorly sorted, some to medium
				sand and some fine sand.
6	8	0	6,8,8,11	No recovery.
8	10	11"/	10,8,6,10	Gravel. Rusty red (10 R 3/4), moist, dense, some to much medium to coarse
		4.5		sand, much pebble gravel, many clasts greater than spoon diameter (>1 inch).
10	12	13"/	13,9,20.14	Sand and Gravel. Very coarse, color and composition, as above but very coarse
		4		and coarse sand, more abundant, (approximately 50 percent), slightly moist.
12	14	~4.0"/	4,8,9,11	0-4.0": Sand and Gravel. As above, very coarse, but with trace silt, medium HCl
		4		reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-110

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	14"/	6,5,6,6	0-12": Sand and Gravel. As above, very coarse, moist, loose.
		3		12-14": Sand. Light reddish brown (2.5 YR 7/3) coarse to medium slightly
				moist, loose, some fine sand, very slight HCl reaction.
				15:10 stop drilling.
16	18	11"/	6,6,6,7	Sand. Light reddish brown (2.5 YR 6/4) fine, some very fine sand, well sorted,
		3		loose, dry.
18	20	2.5"/	9,9,13,10	Sand. As above, fine, dry.
		3.5		
20	22	15"/	8,5,7,7	0-5.0": Sand. As above, fine, slightly moist.
		2.5		5.0-15": Sand and Gravel. Reddish brown (2.5 YR 5/4) coarse, loose,
				slightly moist, gravel subrounded and rounded, variable composition.
22	24	15"/	9,5,7,8	0-7.0": Sand and Gravel. As above, coarse, gravel dry to slightly moist.
		3		7.0-15": Sand. Light reddish brown (2.5 YR 6/4) medium, loose, slightly
				moist, some to much fine sand, trace coarse sand.
24	26	12"/	7,6,5,7	0-7.0": Sand and Gravel. As above, coarse, slough (top 5 inches).
		3		7.0-12": Sand. Light reddish brown (2.5 YR 7/4) fine, very well sorted, loose,
				slightly moist. No HCl reaction.
26	28	15"/	7,5,5,9	0-3.5": Sand. Reddish brown (5 YR 5/4) poorly sorted, fine to medium, loose,
		2.5		slightly moist, some coarse sand, trace fine gravel.
				3.5-10": Sand and Gravel. Light reddish brown (5 YR 6/3) coarse to
				fine sand, granular gravel, variable composition, subrounded to well rounded grain
				gravel, loose, slightly moist.
				10-12": Sand. Light reddish brown (5 YR 6/4) medium, loose, slightly moist,
				very well sorted, no HCl reaction.
28	30	12"/	6,5,6,10	0-4.5": Sand. Reddish brown (5 YR 4/3) medium to coarse, loose, slightly moist
		2.5		very well sorted.
				4.5-12": Sand. Reddish brown (5 YR 5/4) fine, very well sorted.
30	32	12"/	9,7,7,11	0-12": Sand. As above, slightly moist, thinly bedded 1/8 to 1/16 inch, silt
		3		laminations. No HCl reaction in sand or silt.
32	34	18"/	9,5,5,8	0-5.0": Sand. Fine to medium, reddish brown (5 YR 5/4) dry, well sorted, loose.
		3		5.0-15": Sand. Coarse to medium, grading up into fine sand, color as above,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-110

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				loose, slightly moist.
				15-18": Sequence as above but fine sand has trace to some silt, reddish brown
				(5 YR 4/4).
34	36	15"/	11,6,9,8	0-5.0": Sand. As above, slightly moist, fine.
		4		5.0-15": Sand. Lightly brown (7.5 YR 6/4) fine to medium, loose, slightly moist,
				no HCl reaction.
36	38	18"/	11,4,7,9	0-18": Sand. As above, fine to medium, but saturated, reddish brown (5 YR 4/3).
		3.5		
38	40	22"/	3,3,5,8	0-22": Sand. As above, fine to medium, becoming coarse sand and granular
		4		gravel in base of cycle every 2 to 5 inch, loose, saturated, clay lense 18 inches.
40	42	--	--	No sample.
42	44	24"/	6,5,4,6	0-15": Sand. Dark reddish brown (5 YR 3/3) with some to much pebble/granule
		3.5		gravel in fine to medium sand matrix.
				15-24": Silt. Dark reddish brown (5 YR 3/3) sandy. HP = 2.5 to 3.0, moist,
				slight HCl reaction, some to much very fine sand.
44	46	19"/	4,6,7,6	0-7.5": Silt. As above, sandy, saturated.
		3		7.5 -12": Silt. With clay laminations silt very dark brown (7.5 YR 2.5/2) slight
				HCl reaction. HP = 2.5, moist, clay, dark brown (7.5 YR 3/4) HP = 2.0, strong
				HCl reaction.
				12-19": Silt. Very fine sand, saturated as 0-7.5" interval, moderate HCl reaction.
46	48	20"/	6,6,7,8	0-13": Silts and Clay. As above, finely bedded, some medium sand, dense,
		2.5		saturated at 3 inches.
				13-20": Silt. Very fine sand, as in overlying sample, saturated, HP = 1.5,
				slight HCl reaction.
48	50	13"/	9,8,7,9	0-13": Silt. Dark reddish grey (5 YR 4/3) HP = 2.5, slight HCl reaction, clay
		3		lense at 9.5 to 10.0, saturated.
50	52	13"/	8,8,10,10	0-13": Silt. As above, very moist, clay lense at 5 to 6 and 12 to 13 feet. Silt
		3		HP = 2.5, moderate HCl reaction. Clay strong HCl reaction, HP = 2.5
52	54	18"/	5,7,7,6	0-6.0": Silt. Dark reddish brown (5 YR 3/3) sandy. HP = 2.0, saturated, slight
		3		HCl reaction, clay lense at 2 to 2.5.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-110

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				6.0-18": Silt. Color as above, with some very fine sand, HP = 2.5. Slight HCl
				reaction.
54	56	17"/	3,4,7,7	0-7.0": Silt. As above sandy, saturated.
		3		7.0-11": Sand. Dark reddish brown (5 YR 3/4), very fine silty, very well sorted,
				saturated, HP = 1.0. Slight HCl reaction.
				11-17": Silt. Sandy as 0 to 7.0 inch, saturated, to very moist at base. Silt and
				silty sand finely and faintly laminated.
56	58	11"/	4,7,9,10	Silt/Sand. finely bedded. Lighologies as above, saturated, 1/8 inch clay
		3		lense at 2 and 7 inches.
58	60	9"/	5,6,11,10	Silt/Sand. As above, finely bedded, as above. Clay at 1.5 to 2.0 and 5.5 to 6.0,
		3		¼ inch clay at 8½ inch. Saturated. Silt slight HCl reaction, HP = 1.5. Clay
				strong HCl reaction, HP = 2.0.
60	62	12"/	6,5,5,5	Silt/Sand. Finely bedded, as above, saturated, ½ inch clays at 1, 5½, 6, 8, 10,
		3		and 11½ inch. 1/16 inch lense of coarse sand at 10½ inch.
62	64	13"/	3,4,6,7	Silt/Sand. Finely bedded, as above, with finely bedded ¼ to ½ inch clay.
		4		Clay yellowish red (5 YR 5/8) HP = 2.7 strong HCl reaction, dry to slightly moist.
64	66	17"/	9,8,9,15	Silt/Clay/Silty Sand. Finely bedded, dry to slightly moist, 1/16 inch lenses of
		70		fine to very fine sand.
66	68	13"/	8,18,28,36	0-6.0": Silt/Clay. Interbedded, as above, dry to moist.
		350		6.0-13": Sand. Reddish brown (5 YR 5/3) very fine, some fine sand, trace some
				silt, slightly cohesive, moderate HCl reaction, saturated.
68	70	18"/	12,16,18,32	0-15": Sand. As above, very fine, saturated.
		450		15-18": Sand. Reddish grey (5 YR 5/2) coarse, some medium sand, saturated,
				loose.
70	72	20"/	3,5,6,8	0-20": Sand. As above, coarse to medium, with lense of pebble gravel 18 to 19
		900		inch, saturated. Heaving sands noted.
72	74	12"/	9,16,15,22	0-3.0": Sand and Gravel. Reddish brown (5 YR 5/4) pebble gravel, variable
				composition, subrounded to well rounded. Matrix medium to fine sand with much
				coarse and very coarse sand and trace silt, saturated, loose, slight HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-110

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				3.0-12": Sand. Reddish brown (5 YR 5/3) fine to medium, saturated, loose, well
				sorted.
				End of boring 74 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-111 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/10/1998 Drilling Completed 8/10/1998

Total Depth Drilled 68 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1088.87 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Rodriguez

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	24"	4,5,5,5	0-8.0": Top Soil. Brown (7.5 YR 4/3), moist, crumbly, silty sand, no HCl reaction.
		≤2.0		8.0-24.0": Silt. Strong brown (7.5 YR 5/6) sandy, dry, crumbly, no HCl reaction,
				light brown (7.5 YR 6/3) between 12 and 18.
2	4	14"	3,4,6,5	0-6.0": Silt. As above, sandy, dry.
		2.5		6.0-14.0": Sand. Reddish yellow (7.5 YR 6/6) fine, loose, dry, trace to some to
				medium sand, no HCl reaction.
4	6	7"	2,5,5,7	0-2.0": Sand. As above.
		≤2.0		2.0-7.0": Sand. Red (10 R 5/8), coarse, some medium sand, trace to some very fine
				pebble/granular gravel, subrounded to well rounded, variable composition, dry,
				loose. No HCl reaction.
6	8	3.5	22,14,14,9	0-3.0": Sand and Gravel. Red (2.5 YR 5/8) very coarse sand, with shattered clast at
		2.5		top. Poorly sorted, some medium sand, some fine sand, granular and pebble,
				gravel subrounded to rounded, dry, loose.
8	10	7.5	7,13,11,8	0-7.5": Gravel. As above, with sand, moist, loose, clasts up to greater than spoon
		2.5		diameter. No HCl reaction.
10	12	0	4,4,6,4	No recovery, gravel fragments (shattered).
12	14	11"	2,4,5,7	Sand. Brown (7.5 YR 5/4) coarse, moist to loose, trace to some pebble and
		3		granular gravel. Some medium sand, no HCl reaction.
14	16	17"	4,8,5,6	0-10.0": Sand. As above, coarse.
		3.5		10.0-17.0": Sand. Light brown (7.5 YR 8/4), coarse to medium, some very coarse
				sand and granular gravel. Thinly spaced 1/16 inch lense of silty sand in lowest
				6 inch, loose and moist.
16	18	17"	5,8,4,6	0-7.0": Sand. Brown (7.5 YR 5/4) coarse and medium, moist, loose, some very
		2.5		coarse sand and trace to some granules. No HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-111 Page 2 of 5

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				7.0-17.0": Sand and Granular Gravel. Strong brown (7.5 YR 5/6), coarse, slightly
				moist, loose, trace pebble gravel. Gravel subrounded to well rounded. No HCl
				reaction.
18	20	16"	4,2,7,7	0-5.0": Sand and Gravel. As above, coarse, slightly moist.
		2.5		5.0-16.0": Sand. Light brown (7.5 YR 6/4) medium, slightly moist, loose, no HCl
				reaction, well sorted, trace fine sand.
20	22	18"	2,7,6,4	0-4.5": Sand. Strong brown (7.5 YR 5/6) coarse with granular gravel, loose,
		≤2		saturated, trace pebble gravel.
				4.5-16.0": Silt. Red (2.5 YR 4/6) HP = 1.5 to 2.5. No HCl reaction, clay lense ½
				inch at 10 and 16 inches. Clay, weak red (10 R 4/4). No HCl reaction.
				16.0-18.0": Sand. Red (7.5 YR 4/6) very fine, silty, no acid reaction, saturated,
				very well sorted HP = 1.0.
22	24	17"	2,6,8,5	0-2.0": Silt. Reddish brown (2.5 YR 5/3) clayey, red clay lense as above at 0.5 to
		2.25		1 inch, moderate HCl reaction in silt, strong in clay.
				2.0-17": Silt. Weak red (10 R 5/4), sandy to very fine silty sand. slight HCl
				reaction. Saturated, HP = 1.0 to 1.5.
24	26	9"	2,6,5,8	0-5.5": Silt. As above, sandy to silty sand.
		≤2.0		5.5-9.0": Silt. Reddish brown (2.5 YR 5/4) moderate HCl reaction, finely
				laminated. HP = 2.5 to 3.0. Clay 7.5 to 8.0 inch, moist.
26	28	8"	6,5,11,13	Silt. As above very fine sand, saturated. Slight to moderate, HCl reaction, HP = 1.5.
		3		
28	30	14"	1,5,6,10	0-10": Silt. As above, sandy, saturated.
		2.25		10-14": Silt and Clay. Finely interbedded. Silt, grayish brown (5 YR 5/4). Slightly
				moist, HP = 3.0, moderate HCl reaction, nonplastic. Clay, reddish brown (2.5 YR 5/4)
				lenses up to 1 inch thick, strong HCl reaction. HP = 3.5.
30	32	16"	5,8,9,11	0-12.0": Sand. Reddish brown (5 YR 5/4) very fine, silty, saturated, HP = 1.5 to
		2		2.0, slight HCl reaction.
				12.0-16.0": Silt. Reddish brown (5 YR 5/2) moderate HCl reaction, HP = 2.5 to 3.5
				dry to slightly moist, clay lense 12 to 12.5 inches.
32	34	0	--	No recovery.
34	36	14.5	8,12,12,11	0-2": Silt. As above, saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-111 Page 3 of 5

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		2.25		2.0-7.0": Clay. Weak red (10 R 4/3). HP = 3.2, strong HCl reaction, nonplastic.
				7.0-14.5": Silt. Reddish gray (2.5 YR 5/1), moderate HCl reaction, HP = 2.0 to 3.0
				stiffer in lowest 2 inch. ¼ inch clay at 13½ inch, saturated to moist, apporaching
				base.
36	38	0	8,9,11,17	No recovery.
38	40	6.5	9,10,11,14	0-2.5": Silt. Reddish brown (2.5 YR 4/3). HP > 4.0, strong HCl reaction, ¼ inch
		2		lense of fine well sorted sand, saturated.
				2.5-6.4": Silt. Reddish gray (2.5 YR 5/1) HP = 5.8, strong HCl reaction, faint very
				fine laminations, saturated.
40	42	18½	6,11,9,12	0-18½": Silt. As above, saturated. Clay lense ¼ to ½ inch at 4, 10, 15, 16 inches
		2		HP = 2.5 to 3.0.
42	44	18"	8,9,11,14	0-18.0": Silt. As above, saturated, clay at 2, 5½, 11 and 16 inches.
		2.5		
44	46	15"	11,7,8,12	0-13.0": Silt. As above, saturated. 1/16 inch clay at 3 to 4, and 7½ to 8½ inch.
		2.25		Medium sand at 12½.
				13.0-14.0": Clay. Dark red (10 R 3/6) HP = 3.0, strong HCl reaction.
				14.0-15.0": Silt. Weak red (2.5 YR 5/2) HP = 1.5 slight to moderate HCl reaction.
				Finely laminated.
46	48	12"	7,9,12,14	0-7.0": Sand. Very fine silty, grading into silt capped by 1/8 inch clay. Silt sand,
		2.5		reddish brown (2.5 YR 4/3) saturated. HP = 1.0 moderate HCl reaction, saturated.
				HP = 1.0 moderate HCl reaction - silt. Color as above, trace very fine sand, silt
				HCl reaction moist to saturated.
				7.0-11.5": Sequence as above.
				11.5-12.0": Silt. As above.
48	50	14"	11,7,8,12	0-3.0": Silt. As above, sandy.
		2.5		3.0-9.0": Sand. As above, silty, clay saturated.
				9.0-14.0": Sand. Reddish gray (5 YR 5/2) very fine, silty, saturated, HP = 2.8,
				moderate acid reaction.
50	52	15"	8,16,16,14	0-15": Sand. As above, very fine, silty saturated, clay 3 to 3½ inch, 1/8 inch seams
		3.5		at 6, 10 and 15 inches.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-111 Page 4 of 5

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
52	54	16"	8,12,12,12	0-16.0": Sand/Silt. Very finely interbedded, silty, grading up to silts and
		≤2.5		clays at top. Clay at approximately every 2, 3 inches saturated. Black staining in
				clay.
54	56	16"	7,9,11,12	0-16.0": Sand/Silt. Very finely interbedded sand silts and clays, cycles approximately
		≤2.0		every 3 inches. Silts and sands very finely laminated. Black staining on clays,
				saturated. HP = 3.8 (silt). HP = 30 (clay). both have strong HCl reaction.
56	58	20"	4,7,9,11	0-20.0": Silts and Clays. Very finely interbedded, approximately 50 percent of
		2.5		each deposit, bed of clay every 1 to 2 inches. Silt, red to gray (5 YR 5/2) moist to
				dry, moderate HCl reaction HP = 4.0 some very fine sandy. Clay reddish (2.5 YR 4/3)
				HP = 2.5, non plastic, strong HCl reaction, foliated.
58	60	9"	4,3,8,9	Silt/Clay. As above, very finely interbedded, dry to slightly moist.
		5.5		
60	62	16"	9,20,16,15	0-12": Silts/Clay. As above, very finely interbedded, beds ¼ to 1 inch thick.
		250		Approximately 10 percent very fine to fine saturated sand.
				12.0-16.0": Sand. Reddish brown (5 YR 4/4) fine to very fine, trace to some silt,
				slight HCl reaction, saturated.
62	64	16"	12,22,26,28	0-16.0": Sand. Reddish brown (5 YR 4/4) fine, moderately laminated.
		55		Silt lense at 2 and 1 inch. Silt and clay at 15 to 16 inch. Saturated, some
				to much very fine sand, trace silt, slight HCl reaction.
64	66	18"	6,14,13,18	0-8.5": Sand. As above, fine, saturated.
		800		8.5-9.0": Silt. Very finely laminated.
				9.0-12.0": Sand. Brown (7.5 YR 4/4) coarse to medium, loose saturated, some to
				much very coarse sand.
				12.0-16.0": Sand. Brown (7.5 YR 5/3) fine, loose, saturated, some to much very fine
				sand.
				16.0-18.0": Sand. Fine with pebble gravel, matrix as above, subrounded to well
				rounded, variable composition, pebbles and some granular gravel. No HCl
				reaction.
66	68	13"	10,13,12,17	0-7.5": Sand. Brown (7.5 YR 5/4) coarse to medium, loose, slightly dense,
		750		with trace to some gravel, saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-111

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				7.5-9.5": Sand. Brown (7.5 YR 5/3) Fine, trace to some medium, saturated,
				very well sorted.
				9.5-13.0": Sand. Dark brown (7.5 YR 3/2) coarse to very coarse, some to much
				granular gravel, saturated, loose.
				EOH 68 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-112 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/11/1998 Drilling Completed 8/11/1998

Total Depth Drilled 66 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1089.14 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Jerry

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	12"/	1,2,2,1	0-3.0": Top Soil. Dark reddish gray (5 YR 4/2) silty sand. Dry and crumbly, some
		≤6.0		rootlets.
				3.0-18.0": Silt. Dark reddish brown (5 YR 3/2)sandy, dry, crumbly, trace some
				coarse and medium sand, trace pebble gravel.
				11.0-12.0": Sand. Yellowish brown (10 YR 5/4) medium, silty, dry, loose, trace
				silt, trace fine sand, no HCl reaction.
2	4	12"/	2,2,3,2	0-4.0": Sand. As above, silty, dry.
		≤6.0		4.0-12.0": Sand. Yellow (10 YR 7/8) fine to medium, dry, loose, trace coarse,
				trace well rounded, matrix supported, variable composition pebble gravel, no
				HCl reaction.
4	6	11"/	5,4,4,6	0-9.0": Sand. As above. Fine to medium, with coarse sand and granular gravel,
		≤6.0		more abundant toward base. Dry.
				9.0-11.0": Sand. Brownish yellow (10 YR 6/6) coarse to very coarse, dry, loose,
				trace to some well rounded, variable composition grain gravel.
6	8	8	13,10,10,10	No recovery.
8	10	6.5"/	6,15,9,12	0-6.0": Shatter clast, dolomite.
		≤5		6.0-6½": Sand and granular gravel. Brown (7.5 YR 5/3) dry, loose, some to much
				fine and medium sand, gravel subrounded to well rounded, moist.
10	12	9"/	5,6,4,4	0-5.0": Sand and Pebble. Coarse with granular gravel, compositionally as above,
		≤4.5		but gravel clasts up to > 1 inch (spoon diameter) saturated.
				5.0-9.0": Silt. Dark yellowish brown (10 YR 4/4) HP = 1.5, saturated, no HCl
				reaction, clay lense at 8 to 8½ inch. Yellowish red (5 YR 4/6). No HCl reaction.
12	14	0	12,4,4,8	No recovery, outside of spoon, saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-112 Page 2 of 4

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	½"/	7,5,6,9	0-½": Silt. As above, saturated.
		≤4		
16	18	19½"/	5,6,5,5	0-19½": Silts and Clays. Finely interbedded. Silts approximately 60 percent.
		≤3.5		Silt brown (7.5 YR 5/5) HP = 3.9 slight HCl reaction, slightly moist to dry. Clay,
				red (2.5 YR 4/6) HP = 2.5 moderate HCl reaction, foliated, nonplastic.
18	20	8"/	3,2,3,8	0-8.0": Silt. As above, HP = 0.0 (slough?) subrounded quartz pebble in shoe.
		≤3.5		
20	22	6"/	3,7,9,12	0-6.0": Silt. As above, soft, saturated, pebble gravel in shoe (slough?)
		≤3.5		
22	24	18"/	7,7,10,7	0-5.0": Silt. Brown (5 YR 5/3) trace very fine to fine sand, medium stiff (2.0).
		3		5.0-18.0": Silt. Brown (5 YR 5/4) saturated, soft to moderate stiff, variable,
				very fine sand.
24	26	1"/	6,7,10,8	Silt. Color as above, soft (.5), with clay in silt matrix, plastic, several thin clay lenses,
		<3		stiff red brown (5 YR 5/4).
26	28	21"/	5,5,8,12	Silt. Color ranges from brown (7.5 YR 5/3) to red brown (5 YR 5/3) where clay
		3.25		content increases, from 5 to 7 inches some very fine to fine sand, soft to medium
				stiff (0.5 to 1.5 HP) trace thin (1/8") clay lenses, clay as above, slightly
				effervescent.
28	30	0	3,6,10,10	No recovery.
30	32	15"/	3,8,12,9	0-6.0": Silt. Brown (7.5 YR 5/3) with very fine sand, soupy, very soft.
		2.5		6.0-15.0": Silt. Color as above, trace to some very fine sand, trace clay, medium
				stiff, thin clay lense at 7 inches, red brown (5 YR 5/4), soft, platy, plastic,
				effervescent, 1 to 1.5 inch fracture. Gravel at 13.5 to 15.
32	34	16"/	3,6,9,13	Silt. Brown (7.5 YR 4/3) variable very fine sand, trace fine, medium stiff to stiff
		2.75		(2.5 to 3.5). At 7 inch a 1/8 inch very fine to fine sand lense, dry, loose to medium
				dense. At 3 and 4 inches, thin ¼inch clay seams, fissile, soft, moderately plastic,
				red brown (5 YR 4/3). At 14 to 15 inch 2 foot to 1 inch clay lense, color as above,
				hard, 3.5 to 4, platy, strongly effervescent.
34	36	17.5"/	5,9,9,12	Silt. As above, ¼ inch clay lense at 4, 10.5 and 14 inch, clay red brown (5 YR 4/3),
		2.5		fissile, strongly effervescent, moderate stiff (2.5), moderately plastic.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-112 Page 3 of 4

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
36	38	17"/	5,7,10,12	Silt. Brown (7.5 YR 4/3) trace very fine sand, medium stiff to hard (2 to 4).
		2.75		Clay lense at 5 to 8 inch and 16 to 17 inch, clay as above.
38	40	15"/	8,10,10,14	Silt. As above, but medium stiff (2 to 2.5 HP). Clay lenses at 2 to 3 inch and 9.5 to
		3		10 inch. Clay red brown (5 YR 4/4) very stiff (3 to 3.5) platy, strongly effervescent,
				moderately plastic.
40	42	15"/	8,9,11,15	Silt. As above, with clay lense at 1, 8.5 and 13 inches, lenses .5 to 1 inch thick,
		2.75		red brown (5 YR 4/3) fissile, slightly to moderately plastic, strongly effervescent.
42	44	15"/	6,13,14,19	0-14.0": Silt. As above, with ¼ inch clay seams at 4.5 and 7.5 inch. Clay
		3		red brown (2.5 YR 4/8), very weakly effervescent, platy, slightly plastic, medium
				stiff (2.0). At 12.5 inch a thin 1/8 inch sand seam, medium, some coarse and fine,
				trace very fine.
				14-15": Silt. Brown (7.5 YR 4/3) trace very fine sand, trace clay, medium stiff
				(1.75) moist.
44	46	14.5"/	5,6,10,12	0-8.0": Silt. Brown (7.5 YR 4/2) HP = 2.0. Slight HCl reaction, saturated.
		3		8.0-12": Sand. Brown (7.5 YR 4/2) very fine, silty, HP = 0.7, slight HCl reaction,
				saturated.
				12.0-14.5": Silt. As 0 to 8 inch, saturated, 1/16 inch clay lense at 13 inches.
46	48	13"/	7,10,14,14	0-13.0": Silt. Brown (7.5 YR 5/2) finely laminated, sandy, saturated, much very
		5		fine sand, HP = 2.0. Slight HCl reaction, laminations fairly visible.
48	50	14"/	6,10,13,14	0-3.0": Sand. Very fine, grading up to silt and capped by clay lense ¼inch thick
		3		lithologies as above, saturated.
				3.0-6.0": Cycle as 0 to 3.0 inch.
				6.0-12.0": Cycle as above.
				12.0-14.0": Sand. Brown (7.5 YR 5/2) silty, moist, HP = 2.0, moderate HCl
				reaction, finely laminated.
50	52	10.5"/	6,10,10,14	0-10.5": Silt/Clay/Sand. Finely interbedded,sand silty, saturated, clay at 3½ to 4
		2.5		inch ¼ inch seams at 6½ and 10 inches.
				11:27 stop drilling.
				12:42 resume drilling.
52	54	12.5"/	6,8,10,13	0-12.5": Silt/Clay/Sand. Finely interbedded, as above, moist.
		≤ 3		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-112 Page 4 of 4

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
54	56	18"/	4,4,8,8	0-18.0": Silt/Clay/Sand. Finely interbedded, sands silty as above, moist.
				Approximately 40 percent clay. Sand lenses (1/8 inch) at 3½ and 14 inch.
56	58	20.5"/	5,8,10.14	0-20.5": Silt/Clay/Sand. Coarsely laminated, as above. Moist to dry, fine
		800		sand lenses at 1½ inch (¼ inch) 8 to 9 and 19 to 20 inch.
58	60	18"/	7,10,14,22	0-3.0": Silt/Clay. Interbedded, as above, moist.
		1000		3.0-5.0": Sand. Light brown (7.5 YR 6/5) medium to coarse, well sorted, loose,
				saturated, no HCl reaction.
				5.0-18.0": Sand. Brown (7.5 YR 5/3) fine to very fine, very moist to saturated,
				well sorted, trace silt, loose to slightly firm. ¼ inch silt lenses at 5, 7½, and 11 inches.
60	62	9"/	12,15,19,22	0-9.0": Sand. As above, fine to very fine, thinly laminated ¼ inch silt at 6¼ inch.
		350		
62	64	16"/	15,20,20,24	0-10.0": Sand. As above, fine to very fine, saturated.
		750		10.0-16.0": Sand and Gravel. Light brown (7.5 YR 6/3) very coarse, loose and
				saturated. Pebble and granular gravel, variable composition, subangular,
				rounded. Some to much coarse sand.
64	66	9"/	14,19,17,19	0-9.0": Sand and Gravel. As above, very coarse, but dense, saturated.
		125		
				EOH at 66 feet bgs

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-113 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/17/98 Drilling Completed 8/18/98

Total Depth Drilled 80 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1102.36 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn and Pat Kero Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	16"/	2,2,2,2	0-3.0": Top Soil. Dry, crumbly, much rootlets, silty sand, loam.
		≤4.5		3.0-7.0": Sand. Light brown (7.5 YR 6/4) silty, trace to some granular gravel and
				coarse sand. No HCl reaction, dry, loose.
				7.0-10": Silt. Brownish yellow (10 YR 6/8) sandy, dry, loose, trace fine sand,
				much very fine sand. No HCl reaction.
2	4	22"/	2,2,2,2	0-4.0": Silt. As above, sandy, dry, loose.
		≤4.5		4.0-11.5": Silt. Brownish yellow (10 YR 6/6) sandy, dry, crumbly, no HCl
				reaction, much very fine sand, trace to some fine sand.
				11.5-22": Sand. Light yellowish brown (10 YR 6/4) fine to medium, dry, loose
				some coarse sand.
4	6	12"/	4,3,3,6	0-12": Sand. Brownish yellow (10 YR 6/6) medium to coarse, dry, loose. Trace
		≤4.5		very coarse sand, well sorted.
6	8	13"/	5,2,1,1	0-6.0": Sand. As above, medium to coarse. (Slough?)
		≤4.5		6.0-13": Sand and Gravel. Brownish yellow (10 YR 6/6) very coarse, abrupt
				contact. Granular gravel with trace to some fine pebble gravel. Matrix coarse to
				fine sand. Dry, loose, variable composition, subrounded to well rounded.
8	10	14"/	2,1,3,4	0-2.0": Sand and Gravel. As above, very coarse, dry.
		≤5.0		2.0-5.0": Silt. Brown (7.5 YR 4/4) clayey, slight plastic, HP = 1.0 to 1.5. No HCl
				reaction, moist.
				5.0-14": Sand. Reddish yellow (7.5 YR 7/6) fine, very well sorted, dry, loose.
10	12	15"/	2,2,2,2	0-8.5": Silt. Yellowish red (5 YR 4/6), sandy, moist, HP = 1.5, very slightly plastic,
		3.5		some very fine sand.
				8.5-15": Clay. Reddish brown (5 YR 4/4) silty. HP = 4.0, strong HCl reaction
				very finely laminated, some silt inclusions, brown (7.5 YR 5/3) nonplastic.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

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Prepared by Ray Flynn and Pat Kero

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
12	14	16"/	1,3,3,4	0-16": Silt. Brown (7.5 YR 5/3) sandy, saturated, some very fine sand. HP = 2.0 to
		4.5		2.5, clay lense 11½ to 12 inch.
14	16	18"/	6,2,5,8	0-9.0": Sand. Brown (7.5 YR 5/4) fine grading up to very fine silty sand, very
		4.5		well sorted, saturated, moderate HCl reaction.
				9.0-12.5": Clay. Red (2.5 YR 5/6) strong HCl reaction, nonplastic, HP = 2.0 to 2.5
				12½ to 18 sandy silt, brown (7.5 YR 5/6) as overlaying sample, saturated. HP = 2.5 to
				3.0, nonplastic.
16	18	15"/	4,6,6,8	0-15": Silt. Brown (7.5 YR 4/3). HP = 3.7 to >4.0, moderate HCl reaction, non
		6		plastic, very moist to saturated.
18	20	15"/	2,5,5,5	0-10.5": Sand. Very fine silty, grading up into silt as in above sample. Saturated,
		≤4.0		lowest 3 inch silty sand, brown (7.5 YR 5/3), slight HCl reaction.
				10.5-11.5": Silt. brown (7.5 YR 5/2) HP = 2.0 moderate HCl reaction.
				11.5-15": Clay. Red (2.5 YR 5/6) strong HCl reaction, HP = 2.5.
20	22	15.5"/	4,6,6,6	0-15.5": Silt. Some very fine sand, very finely laminated satuated, HP = 2.5 to
		≤4.5		4.0. Increasing with depth, slight HCl reaction. ¼ inch clay
				lense at 10.5 inch, ½ inch lense of very fine sand at 8½ inch.
22	24	18"/	4,5,5,7	0-18": Silt. As above, very moist to saturated, clay at 8½ to 9 inch, 16 to 17
		≤4		inch very fine and at 7 to 7½ inch. HP = 2.5 to 3.0.
24	26	18"/	6,6,5,6	0-18": Silt. Brown (7.5 YR 4/3) sandy, much very fine sand, HP = 1.5 to 2.0,
		≤4.5		saturated, nonplastic, ¼ inch clay lense at 3 inch.
26	28	17"/	5,4,5,7	0-17": Silt. Brown (7.5 YR 4/2) saturated HP = 2.0 to 2.5, slight HCl reaction,
		≤4.0		finely laminated clay lenses at 4½ to 5, 9½ to 10, 14 to 15 inch clay reddish brown
				(5 YR 4/4) HP = 2.0, strong HCl reaction, nonplastic, foliated.
28	30	12.5"/	4,8,6,5	0-12": Silt. As above, saturated, clay lense at 1.5 to 2.0.
		≤4.0		
30	32	12"/	4,6,5,7	0-10": Silt. As above, with clay lense at 6½ to 7½ inch. Silt saturated.
		≤3.5		10-12": Silt. As above, but moist, silty sand lense at 10½ inch.
32	34	16"/	5,5,6,7	0-16": Silt. As above, moist, clay at ½ and 8½ inch
		≤3.8		
34	36	24"/	7,9,11,8	0-13": Silt. Silt, brown (7.5 YR 4/3) sandy. HP = 3.0 to 3.5, slight to moderate
		≤3.5		HCl reaction, saturated, clay lense at 6 to 7 inch.

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Sample/Core Log (Cont.d)

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Prepared by Ray Flynn and Pat Kero

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
36	38	19.5"/	7,8,5,8	0-19": Silt. As above, clay at 15 to 15½ and 2 to 3 inch, saturated.
		≤3.5		
38	40	6"/	1,1,1,7	0-6.0": Silt. As above, slightly moist to dry. HP = 4.0, moderate HCl reaction,
		≤3.3		¼ inch clay lense at 2½ inch.
40	42	14"/	3,7,9,9	0-14": Silt. As above, moist to saturated, clay lenses at 1½ to 2½ and 6 to 6½
		≤3.7		inch, HP of silt 3.0 to 3.2.
42	44	15"/	8,10,13,15	0-8.0": Silt. As above, moist, clay 3 to 4 inch.
		4.5		8.0-15": Sand. Reddish brown (5 YR 4/3) very fine, silty, saturated, HP = 2.5.
				Nonplastic, ¼ inch clay at 8½ inch. Note 1/16 inch medium sand lense at 8
				inches.
44	46	16"/	8,9,10,13	Silt. Brown (7.5 YR 4/3) sandy, saturated, much very fine sand. HP = 2.0 to 3.0
		4.5		slight HCl reaction.
46	48	11"/	3,7,8,10	0-4.0": Silt. Brown (7.5 YR 4/3) HP = 3.5, moderate HCl reaction.
		<4.0		4.0-9.0": Sand. Very fine, silty, as in overlying sample, saturated.
				9.0-11": Silt. As 0 to 4 inch, with ½ inch clay at 9 inches. Saturated.
48	50	10"/	6,6,6,6	0-10": Sand. Very fine, silty, as in overlying sample saturated 1/8 inch clay
		≤3.8		lense at 7½ inch.
50	52	11"/	4,4,7,8	0-11": Sand. Brown (7.5 YR 5/3) fine silty, finely laminated, saturated, slight
		3.5		HCl reaction.
52	54	10"/	3,5,5,7	0-10": Sand. As above, very fine, silty, interbedded with silt and clay lenses.
		3.7		Approximately 30 percent of sampled, finely bedded silts, very finely
				laminated, brown (7.5 YR 4/3) saturated, much very fine sand. Nonplastic, moderate
				HCl reaction, 1/16 inch clay at 2 and 4½ inch.
				Stopped drilling for the day.
54	56	18.5"/	6,11,12,11	0-7.0": Sand. Brown (7.5 YR 5/2) very fine, silty, slight to moderate HCl reaction,
		3.25		saturated, nonplastic, HP = 3.5
				7.0-8.5": Clay. Reddish brown (5 YR 4/3) HP = 4.0, strong HCl reaction.
				8.5-18.0": Silt. Brown (7.5 YR 5/2) sandy, much very fine sand, saturated,
				HP = 3.5, 1/8 inch clay laminations at 9½ and 15½ inch, fine sand lamination at
				9 inch.

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Sample/Core Log (Cont.d)

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Prepared by Ray Flynn and Pat Kero

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
56	58	17"/	5,12,12,17	0-12": Silt. As above, saturated with ¼ inch clay lense at 6 and 1/8 inch,
		≤3.0		medium sand lense at 12 inches.
				12-13": Clay. Reddish brown (5 YR 5/4) HP = 4.0, slight to moderately
				plastic, moderate HCl reaction.
				13-17": Sand. Brown (7.5 YR 5/4) very fine, silty, HP = 4.0, nonplastic to
				slightly plastic, saturated, slight HCl reaction.
58	60	14"/	6,12,17,22	0-1.0": Sand. As above, very fine, silty.
		3.5		1.0-3.0": Clay. Reddish brown (2.5 RY 4/4) HP = 2.0, slightly plastic, moderate
				HCl reaction.
				3.0-14": Sand. Brown (7.5 YR 4/3) very fine, silty to sandy silt, saturated,
				very fine silty sand grading up into sandy silt, HP = 2.0 to ≥4.0, slight to
				moderate HCl reaction, nonplastic.
60	62	15"/	12,15,15,17	0-12": Sand. As above, very fine, silty, saturated.
		3		12-15": Sand. As above, very fine, silty, but very thinly laminated, very
				moist, 1/8 inch clay lense at 12 inches.
62	64	16"/	5,7,12,17	0-7.0": Sand. As above, very fine, silty, saturated.
		3.5		7.0-10": Sand. Brown (7.5 YR 4/3) very fine, silty to sandy silt, sand grading up
				into silt, saturated, very slight HCl reaction, 1/8 inch clay at 7 inches.
				10-12": Same above cycle, sand to silt, to clay.
				12-17": Sand. As above, grading to silt into clay, saturated.
64	66	14"/	10,13,14,17	0-14": Sand. As above, very fine, silty to sandy silt and clay cycles, very moist.
		10		Thinly bedded cycles of silt and silty sand, thinly laminated, saturated.
66	68	11"	9,8,9,11	0-11": Sand. Very fine, silty, grading to sandy silt capped by clay thinly to very
				thinly bedded, moist. OVA off the scale. (Replace OVA)
68	70	20"/	9,9,10,14	0-20": Silt. Very thinly bedded, silty sands and clays. Clay approximately 40
		4.5		percent sample, moist, HP (silt) = 2.5 to 3.5 HP (clay) = 3.5 to >4.0.
70	72	21"/	3,7,8,11	0-21": Silt and Clay. Very thinly bedded, ½ inch coarse sand seam at 16½
		≤5.0		inch. Slightly moist to dry.
72	74	15"/	3,7,8,23	0-3.0": Silt and Clay. As above, very thinly bedded, dry.
		8		3.0-14": Sand. Brown (7.5 YR 4/2) very fine to fine, with some silt. moderate
				HCl reaction to very slight HCl reaction, well sorted, HP = 2.0.

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Sample/Core Log (Cont.d)

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Prepared by Ray Flynn and Pat Kero

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				14-15": Sand. Brown (7.5 YR 5/3) fine, very well sorted, saturated, loose.
74	76	9"/	8,20,26,39	0-9.0": Sand. As above, fine, very finely interbedded lenses of silt and sand,
		15		very finely laminated, very moist to saturated.
76	78	12"/	24,30,32,50	0-3.0": Sand. As above fine, but very well sorted and no laminations. Saturated,
		30		some to much very fine sand.
				3.0-12": Sand and Gravel. Brown (7.5 YR 5/2) very coarse to fine sand with
				trace silt, mainly coarse to medium sand. Pebble and granular gravel, variable
				composition, subangular to subrounded. Matrix clast size greater than spoon
				diameter, dense and saturated.
78	80	10"/	24,25,38,32	Sand and Gravel. As above, saturated.
		75		
				End of hole 80 feet bgs.

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Sample/Core Log

Boring/Well GMSG-116 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/25/98 Drilling Completed 8/25/98

Total Depth Drilled 82 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1121.78 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	17"/	1,1,1,1	0-6.0": Top Soil. Dark grayish brown (10 YR 4/2) loose, silty sand loam, dry
		≤1.0		crumbly, abundant rootlets.
				6.0-17": Sand. Very pale brown (10YR 8/2) very fine, silty to sandy silt, dry,
				crumbly, HP = 1.0, no HCl reaction.
2	4	14.5"/	4,4,4,4	0-10": Sand. As above, very fine, silty to sand silt, dry.
		≤1.0		10-14.5": Sand and Gravel. Pink (7.5 YR 7/4) medium to coarse, some fine
				sand and gravel, subrounded to well rounded. Granular up to greater than spoon
				diameter, variable composition, dry and loose.
4	6	11"/	7,8,9,7	0-11": Sand and Gravel. As above, mainly clasts greater than spoon diameter,
		1.5		dry.
6	8	6"/	10,10,8,8	0-6.0": Sand. Yellow (10 YR 7/6) coarse with gravel, slightly moist, loose,
		≤1.0		gravel variable composition, angular to well rounded, granular with trace
				pebble gravel up to greater than spoon diameter.
8	10	9.5"/	3,4,5,8	0-9.5": Sand. As above, coarse with gravel, slightly moist.
		4.5		
10	12	11"/	4,5,3,4	0-11": Sand. Light yellowish brown (10 YR 6/4) coarse to very coarse, with gravel,
		1.5		loose, moist, some to much granular gravel, trace to some pebble gravel up to
				greater than spoon diameter, gravel subangular to well rounded, variable
				composition, no HCl reaction.
12	14	15"/	2,2,3,6	0-15": Sand. As above, coarse to very coarse with gravel, moist, some to much,
		1.75		subrounded to well rounded, variable composition, pebble gravel, no HCl
				reaction.
14	16	10"/	6,5,15,10	0-10": Sand. Light yellowish brown (10 YR 6/4) coarse with some to much gravel,
		1.5		loose, moist, some to much medium sand, some very coarse sand. Granular to

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Sample/Core Log (Cont.d)

Boring/Well GMSG-116

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				pebble sized, subrounded to well rounded, variable composition gravel up to
				spoon size in diameter. No HCl reaction.
16	18	5"/	7,8,5,7	0-5.0": Sand. as above coarse with some to much gravel, moist.
		2		
18	20	12"/	7,5,4,4	0-12": Sand. Very pale brown (10 YR 8/3) coarse to very coarse with granular
		1.5		gravel. (10 YR 8/4) loose, moist, trace to some well rounded variable composition
				pebble gravel up to greater than spoon sized, some medium sand.
20	22	12"/	3,3,3,3	0-12": Sand. Very pale brown (10 YR 8/5) medium, some coarse and very
		1		coarse, trace to some granular gravel, moist, loose, no HCl reaction.
22	24	16"/	3,2,3,5	0-16": Sand. As above, medium moist, trace subangular to, subrounded, variable
		1.5		composition pebble gravel.
24	26	13"/	10,3,5,5	0-13": Sand. As above, medium to coarse, becoming coarse to very coarse sand
		1.5		at depth with trace to some granular to pebble gravel, loose, slightly moist.
				No HCl reaction, very pale brown (10 YR 8/4).
26	28	12"/	6,10,9,9	0-9.0": Sand. As above, coarse with gravel becoming coarse to fine gravel, From
		2.5		3 inch downward some to much variable composition pebble gravel, moist to
				loose.
				9.0-12.0": Sand. Pale brown (10 YR 8/4) medium, very well sorted, loose, slightly
				moist.
28	30	14"/	13,6,7,6	0-2.0": Sand. As above to moist, medium.
		3		2.0-7.0": Sand and Gravel. Pale brown (10 YR 6/3) coarse to very coarse, loose,
				moist, much pebble gravel, well rounded, up to spoon diameter.
				7.0-14": Sand. Very pale brown (10 YR 8/3) fine to medium, very well sorted,
				dry, slightly moist, loose. No HCl reaction.
30	32	16"/	5,4,5,7	0-5.0": Sand. As above, fine to medium, slightly moist, some coarse to very
		6		coarse sand, trace granular gravel grading into below.
				5.0-14": Sand. Very pale brown (10 YR 7/3), very coarse, granular gravel, dry
				to slightly moist, loose, gravel subangular to subrounded, variable composition,
				trace well rounded variable composition pebble gravel, 2 cm diameter maximum.
32	34	11"/	4,4,10,20	0-11": Sand. As above very coarse and gravel, with much pebble gravel,
		8		greater than spoon diameter, dry, loose to slightly dense.

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Sample/Core Log (Cont.d)

Boring/Well GMSG-116

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
34	36	15"/	18,20,15,10	0-13": Sand. As above, very coarse, gravel dry.
		5		13-15": Sand. Pink (7.5 YR 7/14) fine to very fine, dry, loose, very well sorted,
				no HCl reaction.
36	38	14"/	5,4,5,8	0-4.5": Silt. Yellowish red (5 YR 5/6) with some very fine sand, moist HP = 1.0,
		2.5		no HCl reaction, nonplastic.
				4.5-14": Sand. Brown (7.5 YR 5/3) very fine, moist to dry, lowest 2 inch, very
				well sorted, no HCl reaction.
38	40	17"/	8,8,8,10	0-8.5": Sand. As above, very fine, moist, trace to some silt.
		1.5		8.5-17": Sand. Pink (7.5 YR 7/4) fine to very fine, moist, loose to slight dense
				reaction.
40	42	14"/	8,7,8,12	0-14": Sand. As above, fine to very fine, dry to slightly moist, very thin laminations
		1.75		in lower 8 inch.
42	44	16.5"/	7,8,8,11	0-16.5": Sand. As above, fine to very fine, slightly moist, laminations indicate less
		1		bedding (i.e., dipping).
44	46	18"/	8,8,7,9	0-9.0": Sand. As above, fine to very fine, slightly moist.
		3		9.0-12": Silt. Reddish brown (5 YR 5/3) sandy, moist, HP = 2.5, nonplastic,
				slight HCl reaction.
				12-18": Sand. Fine to very fine, as 0-9 inch, interval slightly moist.
46	48	16"/	5,6,5,6	0-14": Sand. As above, fine to very fine, moist to very moist.
		1.5		14-16": Silt. Brown (7.5 YR 5/4) HP = 1.0, slightly clayey, slight HCl reaction,
				slightly plastic, clay lense from 15 to 15.5 inch.
48	50	14.5"/	5,4,6,7	0-14.5": Sand. Brown (7.5 YR 5/4) fine to very fine, saturated, slightly dense,
		2		no HCl reaction.
50	52	13"/	8,11,11,15	0-13": Sand. As above, fine to very fine, saturated.
		1.25		
52	54	14.5"/	8,7,10,13	0-14.5": Sand. As above, fine to very fine, saturated.
		2		
54	56	11"/	5,7,9,13	0-11": Sand. As above, very fine to fine, saturated.
		2.75		
56	58	12"/	3,8,9,13	0-7.0": Sand. As above, very fine, saturated.
		1.75		7.0-10": Silt. Brown (7.5 YR 5/3) HP = 1.5, slight HCl reaction, clayey, slightly

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Sample/Core Log (Cont.d)

Boring/Well GMSG-116

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				plastic, clay lense from 7 to 7.5 inch.
				10-12": Sand. As above, very fine, saturated, some silt.
58	60	12"/	3,2,5,4	0-12.0": Silt. Brown (7.5 YR 5/3) moist to slightly moist at depth, trace to some
		2		very fine sand, slight HCl reaction. HP = 2 to 3, slightly plastic, finely laminated.
				Clay lenses at 5 to 6 and 11 to 12 inch.
60	62	16"/	2,3,3,4	0-16": Sand. Brown (7.5 YR 5/4) very fine, silty to sandy silt, saturated. HP = 0.5,
		2.50		no HCl reaction. 11:30 break for lunch - dump soil
62	64	13"/	8,12,25,21	0-13": Sand. Reddish brown (5 YR 5/4), very fine with trace to some silt
		2		saturated, very well sorted, slight HCl reaction.
64	66	15"/	8,6,50/4	0-2.0": Sand. As above, very fine, saturated.
		2		2.0-15": Silt. Reddish brown (5 YR 5/4) with trace very fine sand, HP = 2.5,
				slightly plastic, slight to moderate HCl reaction.
66	68	16"/	50/12"	0-8.0": Sand. Reddish brown (5 YR 5/3), fine to very fine, very well sorted,
		2.5		saturated, (slough?).
				8.0-12": Sand. Color as above, silty, HP = 0.5 to 1.0, slight HCl reaction.
				12-16": Silt. Color as above, sandy, HP = 1.0, abundant very fine sand, slight
				HCl reaction, saturated. Hole flushed.
68	70	4.5"/	4,5,7,8	0-4.5": Silt. Brown (7.5 YR 5/4) dry to slightly moist, HP - 4.0, nonplastic, 1/16 inch
		n/a		clay lense at 1 inch.
70	72	16.5"/	3,5,7,9	0-16.5": Silt. As above, slightly moist to dry, clay lenses at 5 to 6, 9.5 to 10 and
		1.75		¼ inch at 13 inch. Clay reddish brown (2.5 YR 5/4) HP = 3.0, strong HCl reaction,
				slightly plastic.
72	74	21"/	4,8,9,18	0-4.0": Silt. As above, slightly moist to dry, 1/8 inch clay lense at 1, 10½, 12 and
		≤1.0		17 inch, HP (silt) = 4.0, strong HCl reaction.
74	76	16"/	8,11,11,21	0-16": Silt and Clay. Finely interbedded, dry, HP (silt) = 4.0, HP (clay) = 4.0, 1/16
		≤1.0		inch lense of coarse sand at 15½ inch.
76	78	6"/	3,18,31,29	Sand. Light yellowish brown (10 YR 6/4) fine to very fine, slightly moist, very well
		>10,000		sorted, moderate HCl reaction, trace silt.
78	80	9"/	18,26,32,25	0-9.0": Sand. As above, fine to very fine, dry to slightly moist.
		6000		

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Sample/Core Log (Cont.d)

Boring/Well GMSG-116

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
80	82	8"/	30,27,20,25	0-8.0": Sand. As above, fine to very fine, but moist, trace to some silt, moderate
		9000		HCl reaction.
				EOB 82 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-117 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 8/31/98 Drilling Completed 9/1/98

Total Depth Drilled 87 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1118.83 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	13"/	2,2,2,2	0-5.0": Top Soil. Gray (10 YR 5/1) loose, dry, crumbly, silty sand loam, trace
		≤7.5		to much roots.
				5.0-12": Silt. Brownish yellow (10 YR 6/6) sandy, loose, crumbly, much black
				staining, dry some charcoal fragments.
2	4	9"/	4,4,4,4	Sand and Gravel. Brownish yellow (10 YR 6/8) coarse, dry, loose, much very
		≤7.5		coarse sand, gravel subrounded to well rounded, up to1 cm in diameter, variable
				composition, no HCl reaction.
4	6	8"/	4,5,5,6	0-8.0": Sand and Gravel. As above, coarse, with gravel greater than spoon
		≤7.5		diameter, dry.
6	8	4"/	5,7,6,6	0-4.0": Sand and Gravel. As above, coarse, trace silt, slightly moist.
		≤7.5		
8	10	11"/	6,5,6,6	0-3.0": Sand. Light brown gray (10 YR 6/2) coarse to very coarse, loose, slightly
		9		moist, trace granular gravel.
				3.0-14": Sand and Gravel. Yellowish brown (10 YR 5/6) coarse, some medium
				and very coarse sand. Mainly granular gravel, some pebble sized up to greater
				than spoon diameter, subrounded to well rounded, variable composition, slightly
				moist, dense.
10	12	11"/	4,4,4,4	0-11": Sand. Pale brown (10 YR 6/3) coarse with gravel, some to much medium
		≤8.5		sand, slightly moist, loose, gravel subrounded to well rounded, variable composition
				up to 1 cm diameter. No HCl reaction.
12	14	4.5"/	4,4,4,6	0-4.5": Sand and Gravel. As above, coarse, slightly moist.
		≤8.5		
14	16	11.5"/	3,3,4,4	0-5.0": Sand and Gravel. Grayish brown (10 YR 5/2) coarse, slightly moist,
		9.5		slightly dense, much subangular to well rounded, pebble gravel matrix with

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-117

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				very coarse sand.
				5-11.5": Sand. Very pale brown (10 YR 7/3) coarse to very coarse, dry to slightly
				moist, loose, trace granular gravel, no HCl reaction.
16	18	11"/	3,2,4,4	0-11": Sand. Very coarse and granular gravel. Very pale brown (10 YR 7/4)
		8		loose, moist, gravel subangular to well rounded, variable composition, some pebble
				gravel up to 1 cm in diameter. No HCl reaction.
18	20	11"/	5,3,4,4	0-2.0": Sand and Gravel. As above, moist.
		8		2.0-11": Sand. Very pale brown (10 YR 7/3) coarse to very coarse, some medium
				to fine sand, dry loose, trace to some pebbles and granular gravel. No HCl reaction.
20	22	10"/	4,5,5,5	0-10": Sand. As above, coarse to very coarse, with much granular gravel, trace
		9		pebble gravel, dry to loose gravel, subrounded to well rounded, variable composition.
22	24	12.5"/	5,6,6,7	0-12.5": Sand and Gravel. As above, coarse to very coarse, dry.
		8.5		
24	26	7.5"/	2,3,6,8	0-7.5": Sand. Gravel, pale brown (10 YR 6/3) coarse to very coarse pebble
		8		dry, loose, subrounded to well rounded, gravel variable composition, up to 1.5
				cm diameter.
26	28	1"/	10,10,12,11	0-1.0": Sand and Gravel. As above, coarse to very coarse, slightly moist.
		≤8.0		
28	30	15"/	9,8,7,7	0-9.0": Sand and Gravel. As above, coarse to very coarse, dry.
		8.5		9.0-15": Sand. Pink (7.5 YR 8/3) medium to coarse, some to much fine sand,
				loose, dry, no HCl reaction.
30	32	12"/	9,8,11,12	0-2.0": Sand. As above, coarse to medium, dry.
		8		2.0-12": Sand. Very fine, with trace silt, pink (7.5 YR 8/3) dry, loose, slight to
				moderate HCl reaction, very well sorted.
32	34	1"/	10,11,16,20	0-1.0": Sand. Very fine, moist, dry in shoe of spoon.
		6.5		
34	36	17.5"/	10,11,16,17	0-17.5": Sand. As above, very fine, dry, slight HCl reaction, dense.
		8		
36	38	17"/	8,8,11,13	0-6.0": Sand. as above, dry to slightly moist.
		10		6.0-9.0": Silt. Brown (7.5 YR 5/4) slightly moist, nonplastic, HP = >4.0, moderate
				HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-117

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				9.0-17": Sand. Very fine, as 0 to 6 inch but moist, light brown (7.5 YR 6/4)
				slight HCl reaction.
38	40	15"/	11,10,11,19	0-5.0": Silt. As in overlying unit.
		4		5.0-9.0": Sand. Light brown (7.5 YR 6/4) fine to very coarse, moist, slight to
				moderate HCl reaction, very well sorted, dense.
				9.0-13": Silt. As 0 to 5 inch, with ¼ inch clay lense at 10 inches.
				13-15": Sand. Fine to very fine, as 5 to 9 inch.
40	42	10"/	9,9,12,15	0-10": Sand. As above, fine to very fine, moist.
		≤7.0		
42	44	10"/	12,8,9,11	0-7.0": Sand. As above, fine to very fine, saturated.
		8		7.0-10": Silt. Reddish brown (5 YR 5/4) sandy, with abundant very fine sand,
				nonplastic, HP = 2.0, slight HCl reaction, very moist.
44	46	8"/	5,6,8,10	0-6.0": Silt. As above, sandy.
		8		6.0-8.0": Sand. Fine to very fine, as in overlying sample, very moist to saturated.
				16:46 break 17:10 resume.
46	48	14"/	8,8,11,12	0-14": Sand. As above, fine to very fine, saturated.
		≤4.0		
48	50	13"/	5,7,12,14	0-13": Sand. As above, fine to very fine, saturated.
		6.5		
50	52	17"/	5,7,11,14	0-17": Sand. As above, fine to very fine, saturated.
		≤4.5		
52	54	14"/	9,10,12,11	0-10": Sand. As above, fine to very fine, saturated.
		4.5		10-14": Silt. Brown (7.5 YR 5/4) moderate HCl reaction, HP = 3.0, very
				moist.
54	56	9"/	1,2,4,12	0-3.0": Sand. Fine to very fine, as in overlying sample.
		5		3.0-9.0": Silt. Reddish brown (5 YR 5/4) HP 3.0, slightly clayey, strong HCl
				reaction, slightly moist, nonplastic.
56	58	6"/	5,7,8,8	0-6.0": Silt. As above, dry to moist at base, clay inclusions, strong HCl reaction in
		4.5		clay.
58	60	13"/	2,2,2,5	0-13": Silt. As above, moist, 1/8 inch clay at 9 inch. 1 inch clay from 0 to 1 inch,
		3.5		clay yellowish red (5 YR 5/6) HP = 2.0, slightly plastic, moderate HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-117

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
60	62	12"/	4,4,6,9	0-12": Silt. As above, 1/16 inch clay at 2½ and 1¼ inch clay at 8 inches. Silt
		2.5		very moist to saturated HP = 1.5, slight HCl reaction.
62	64	26"/	7,8,11,14	0-16": Silt/Sand. Finely interbedded, very fine to fine sand and clay. Silt, light
		3.5		yellowish brown (10 YR 6/4) HP = 3.0, moderate HCl reaction, moist, very fine to
				fine sand. Pale brown (10 YR 6/3) slightly silty, saturated, very well sorted. Clay
				red (2.5 RY 4/8) HP = 3.5, slightly plastic, strong HCl reaction. Stop 18:14
64	66	16.5"/	8,12,14,16	0-16.5": Silt/Sand. As above, finely interbedded, very fine to fine sand, trace to
		5.5		some clay lenses at 4, 5, 7, 14 inches. Saturated sand have some silt.
66	68	16"/	8,10,11,13	0-16": Silt/Sand. As above, interbedded, very fine to fine sands saturated. ¼ inch
		8		clay at ½, 8, 10, 14 inch ½ inch at 12 inches.
68	70	11"/	3,6,10,15	0-11": Silt/Clay/Sand. Very finely bedded to coarsely laminated, fine to very fine
		11.0		sands, lighologies as above with sand containing trace to some silt, ¼ inch
				medium to coarse sand at 4 inches. Moist to saturated, silt very thinly laminated,
				slight HCl reaction.
70	72	17"/	3,5,6,9	0-17": Silt and Clay. As above, very finely interbedded, with trace to some
		15		fine to very fine sand lenses. Silt, brown (10 YR 5/3), dry, HP = 4.0, moderate HCl
				reaction, nonplastic. Clay, reddish brown (5 YR 4/4) to (at depth) brown (7.5 YR 4/4),
				platy, slightly plastic, strong HCl reaction, HP = 4.0.
72	74	15"/	3,8,11,13	0-15": Silt and Clay. As above, very finely interbedded, with some fine to very
		200		fine sand lense, slightly moist, ¼ inch coarse sand and granular gravel lense at
				4½ inch (top).
74	76	12.5"/	11,13,23,23	0-12": Sand. Light brown (7.5 YR 6/3) fine to very fine, dry to slightly moist,
		4000		trace silt, slight to moderate HCl reaction, very well sorted, ½ silt lense at 8½ inch.
76	78	12"/	21,35,42,-	0-12": Sand. Pink (7.5 YR 7/3) fine, dry, dense, very well sorting, very fine
		4000		sand, very thin faint laminations. Silt lense from 6 to 7 inch.
78	80	9"/	50/6	0-9.0": Sand. As above, fine, dry.
		5000		
80	82	14"/	28,42,50/6	0-14": Sand. As above, fine, dry to slightly moist.
		8500		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-117

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
82	87	13"/	4,6,6,9	0-13": Sand. Light brownish gray (10 YR 6/) medium, loose, saturated, trace
		1500		coarse sand some fine sand.
				EOB 87 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-118 A/B/C Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 9/9/98 Drilling Completed 9/10/98

Total Depth Drilled 96 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1116.25 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weigh 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	16"/	2,2,2,2	0-11": Top Soil. Grayish brown (10 YR 5/2) dry, crumbly, sandy silt loam, trace
		≤4.5		gravel, abundant rootlets.
				11-16": Silt. Very pale brown (10 YR 7/4) sandy, dry, crumbly, nonplastic.
2	4	9"/	4,4,4,5	0-2.0": Silt. As above sandy, with trace to some pebble gravel, dry.
		7		2.0-9.0": Sand. Light brownish gray (10 YR 6/2) with some gravel. very fine to
				coarse sand with some silt, granular and pebble gravel, well rounded, variable
				composition, dry and loose.
4	6	8"/	9,5,6,6	Sand. Yellow (10 YR 7/8) coarse to very coarse, dry, loose, some to much medium
		8		sand, some fine sand, trace to some granular gravel, no HCl reaction.
6	8	0	8,9,9,12	No recovery.
8	10	12.5"/	7,7,4,8	0-2.0": Sand. Very pale brown (10 YR 7/4) medium, dry to slightly moist, loose,
		7		very well sorted.
				2.0-12.5": Sand and Gravel. Pale brown (10 YR 6/3) coarse to very coarse sand,
				granular and pebble gravel, subangular to well rounded, variable composition, up
				to greater than spoon diameter, slightly moist, loose.
10	12	13"/	8,4,4,4	0-2.5": Sand. Very pale brown (10 YR 7/6) medium, dry to slightly moist, loose,
		5.5		some coarse sand, some granular gravel.
				2.5-13": Sand and Gravel. As above but with some silt in top 3 inch, dry.
12	14	4"/	5,7,6,6	0-9.0": Sand. Very pale brown (10 YR 7/3) fine, dry, loose, very well sorted.
		300		
14	16	14.5"/	7,4,5,5	0-14.5": Sand. As above, fine but with silt lenses, brown (10 YR 5/3). HP = 1.5, no
		1100		HCl reaction, 1 inch lense 2 to 3 inches, very thinly laminated in lowest 10 inches,
				dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-118 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	16"/	7,8,10,12	0-16.0": Sand. As above, fine without silt laminations, dry.
		2000		
18	20	9"/	5,8,8,11	0-9.0": Sand. Pink (7.5 YR 7/3) very fine, trace silt, moderate HCl reaction, dry,
		4500		loose, very well sorted.
20	22	16"/	5,7,8,10	0-4.0": Sand. As above, very fine, moderate HCl reaction, dry.
		3000		4.0-8.0": Sand. Pink (7.5 YR 7/3) fine, dry, slightly dense to loose, very well
				sorted, moderate HCl reaction.
				8.0-16": Sand. Very fine as 0 to 4 inch, dry.
22	24	15"/	10,11,16,20	0-15.5": Sand. Pink (7.5 YR 8/3) fine to very fine, slightly dense, dry, very well
		1400		sorted, moderate to strong HCl reaction, very thinly laminated (faintly) silt lense
				2 to 3 inch.
24	26	16.5"/	9,8,9,11	0-16.5": Sand. Pink (7.5 YR 8/3), fine, moderate HCl reaction, very well sorted,
		1250		dry, slightly moist, slightly dense.
26	28	15"/	7,9,11,14	0-15": Sand. As above, fine, dry.
		2000		
28	30	17.5"/	7,8,8,12	0-17.5": Sand. As above, fine, dry.
		3500		
30	32	14.5"/	8,7,12,12	0-14.5": Sand. As above, fine, dry, well head OVA = 95 ppm.
		2,250		
32	34	17"/	5,6,7,14	0-17": Sand. As above, fine dry top 15 inch; slightly moist to 17 inches. Silt
		1000		lenses 8 to 8½ and 13 to 14 inches.
34	36	16"/	4,7,8,10	0-3.0": Sand. As above, fine slightly most.
		4000		3.0-5.0": Silt. Brown (7.5 YR 5/3) slightly moist, crumbly, no HCl reaction.
				5.0-16": Sand. Pink (7.5 YR 8/3) fine to very fine, slightly dense, slightly moist,
				very finely laminated, slight HCl reaction, very well sorted.
36	38	19"/	5,6,7,9	0-19": Sand. Very pale brown (10 YR 8/3) fine, slightly dense, dry to slightly
		5500		moist, very well sorted, thinly laminated. OVA 2000 ppm at well head.
38	40	18"/	6,8,9,9	0-18": Sand. As above, fine dry to slightly moist.
		8000		
40	42	16"/	9,9,9,11	0-16": Sand. As above, fine, dry slightly moist.
		4000		
42	44	20"/	4,6,5,5	0-13.5": Sand. As above, fine with very thin silt laminations, moist. Sandy silt
		800		lense 9 to 10.5 inch.
				13.5-20.0": Silt. Dark grayish brown (10 YR 4/2) moderate HCl reaction, HP = 2.0,
				clay lense from 18 to 19 inches. HP = 2.5, strong HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-118 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
44	46	16"/	7,8,9,11	0-2.0": Sand. Fine as in overlying sample, moist (slough?).
		200		2.0-8.0": Silt. As in overlying sample, moist.
				8.0-16": Sand. Pink (7.5YR 7/4) fine to very fine, very well sorted, slightly moist,
				slightly dense, moderate to strong HCl reaction.
46	48	21"/	8,8,10,13	0-21": Sand. As above, fine to very fine, but moist for lowest 10 inch.
		50		
48	50	21"/	8,5,5,14	0-9.0": Sand. As above, fine to very fine, moist.
		95		9.0-21": As above, but very moist to saturated, black mottling at 9 to 11 inch
				in thin silt laminations, moderate HCl reaction.
50	52	11"/	11,8,9,11	0-11": Sand. As above, fine, moderate HCl reaction. Saturated
		250		
52	54	14"/	4,8,8,10	0-14": Sand. As above, saturated, fine.
		6		
54	56	16.5"/	5,7,8,12	0-16.5": Sand. As above, saturated, fine, flowing.
		4.5		
56	58	19.5"/	3,7,8,10	0-19.5": Sand. As above, saturated, fine, flowing, driller report tight hole.
		8		
58	60	15"/	5,5,7,8	0-14": Sand. As above, fine saturated.
		7		14-15": Silt. Yellowish brown (10 YR 5/4) HP = 2.0, moderate HCl reaction,
				¼ inch clay lense at 4½ inch.
60	62	7"/	8,11,3,3	0-7.0": Silt. As above, 1 inch clay at 5 to 6 feet. Moist, moderate HCl reaction,
		4		HP = 3.0. Hole flushed.
62	64	21"/	5,5,5,5	0-21": Silt. As above, very moist, clay at 17 to 18 inches and 20 to 2.5 inches.
		5		
64	66	14.5"/	3,4,7,7	0-14.5": Silt. As above, but moist, HP = 3.5, moderate HCl reaction, clay lenses
		4		5 to 5.5, and 11 to 11.5.
66	68	8.5"/	11,13,20,23	0-8.5": silt. As above, moist, with trace to some very fine sand. 1/16 inch clay
		4		layer at ½ inch.
68	70	20"/	5,6,8,6	0-20": Silt. As above, moist to saturated, trace to some very fine sand, clay
		4		16 to 17 inch.
70	72	19"/	6,6,6,4	0-19": Silt. As above, moist to very moist.
		5		
72	74	18"/	6,6,10,14	0-18": Silt. As above, moist, lowest 8 inch contains much very fine sand,
		5		moderate HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-118 A/B/C

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
74	76	10"/	8,5,6,7	0-10": Silt. Brown (7.5 YR 5/4) sandy, saturated, abundant very fine sand,
		8.5		HP = 1.5, slight to moderate HCl reaction.
76	78	10"/	6,7,11,13	0-10": Silt. As above, sandy, saturated.
		40		
78	80	9"/	6,13,13,15	0-9.0": Sand. Brown (7.5 YR 5/4) very fine, saturated, slightly dense, slight HCl
		15		reaction, flowing.
80	82	14"/	16,19,23,22	0-14": Sand. Reddish brown (5 YR 5/4) silty, saturated, HP = 1.5, slight HCl
		6		reaction, ¼ inch clay at 3.5 inch.
82	84	18"/	5,5,6,5	0-18": Silt. Brown (7.5 YR 5/4) sandy, HP = 1.5, slight to moderate HCl
		4		reaction, abundant very fine sand becoming more silty. In lowest 6 inch silt with
				sand, ¼ inch clay at 9.5 inch.
84	86	20"/	5,4,6,7	0-20": Silt. Brown (7.5 YR 5/4) with trace to some very fine sand, moist, HP = 2.0,
		2.25		slight to moderate HCl reaction, clay lense at 9 to 9.5 inches.
86	88	18"/	4,4,3,4	0-18": Silt. As above, with trace sand, moist clay at 2 to 3 inches.
		2.5		
88	90	14"/	6,5,9,7	0-14": Silt. As above, moist, clay at 2 to 3 inch and 9 to 10 inches.
		2.5		
90	92	11"/	4,4,4,7	0-11": Silt. As above, moist.
		5.5		
92	94	24"/	3,3,3,3	0-24": Silt as above, moist.
		≤2.25		
94	96	15"/	4,4,6,6	0-15": Silt as above, moist, clay at 3 to 4 inches.
		2.5		
				GMSG-118A Total Depth 13 ft
				GMSG-118B Total Depth 29 ft
				GMSG-118C Total Depth 96 ft

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-119 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan

Drilling Started 9/14/98 Drilling Completed 9/15/98

Total Depth Drilled 90 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1119.69 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	12"/	4,4,4,4	0-2.0": Top Soil. Light grayish brown (10 YR 6/2) dry, crumbly, abundant rootlets.
		8		2.0-12": Sand. pale brown (10 YR 6/3) very fine, silty, dry, loose, trace pebble
				gravel, no HCl reaction.
2	4	16"/	4,4,4,4	0-9.0": Sand. As above, very fine silty.
		≤6.5		9.0-16": Sand. Reddish yellow (7.5 YR 6/8), fine with some medium sand, dry
				loose, no HCl reaction.
4	6	9.5"/	16,7,7,8	0-9.5": Sand and Gravel. Brownish yellow (10 YR 6/6) dry, loose, sand medium to
		≤5.0		coarse with some very coarse gravel up to greater than spoon diameter, variable
				composition, subangular to well rounded, no HCl reaction.
6	8	3"/	5,7,8,7	0-3.0": Sand. Very pale brown (10 YR 7/3), coarse with very coarse, some gravel,
		≤5.0		dry, loose, gravel subangular to subrounded, variable composition, up to 2
				centimeter in diameter. No HCl reaction.
8	10	10"/	5,6,7,9	0-4.0": Sand. As above, coarse to very coarse, dry.
		7.5		4.0-10": Sand and Gravel. Very pale brown (01 YR 7/3) very coarse, dense, dry to
				slightly moist, gravel angular subrounded, variable composition, predominantly
				granular up to 1.5 centimeter in diameter sand, some coarse sand.
10	12	10"/	6,6,6,6	0-10": Sand and Gravel. As above, very coarse, but some to much coarse sand,
		6		dry, clasts up to greater than spoon diameter.
12	14	11"/	2,4,4,6	0-11": Sand and Gravel. Very pale brown (10 YR 7/3), dry to slightly moist,
		8		loose, some very coarse sand. Gravel predominantly granular with some pebble
				gravel. Subangular to well rounded, variable composition, up to 2 centimeter in
				diameter. No HCl reaction.
14	16	13"/	21,7,6,5	0-13": Sand and Gravel. As above, coarse, with much pebble gravel up to
		8		greater than spoon diameter in top 6 inches.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-119 Page 2 of 5

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface)		Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6	
From	To	OVA (ppm)	Inches	Sample/Core Description
16	18	15"/	6,4,2,4	0-15": Sand. Brown (10 YR 7/4) medium with coarse sand, loose, dry, some to
		≤4.0		much fine sand, lense of very coarse sand from 6½ to 7 inches.
18	20	17"/	6,4,4,4,	0-9.0": Sand. As above, medium with coarse sand, dry.
		≤5.0		9.0-17": Sand. Medium as above, but with trace coarse and fine sand, very
				well sorted, dry.
20	22	15"/	2,3,3,4	0-15": Sand. As above, medium, with lenses containing sand and granular gravel
		4		at 0 to 2 and 5 to 6 and 11 to 15 inches, trace pebble gravel in lowest 4 inch, dry.
22	24	16"/	4,5,6,9	0-5.0": Sand. As above, medium with coarse sand at base, trace granular gravel,
		4		dry.
				5.0-16": Sand. As above, medium, with trace coarse to very coarse sand and
				granular gravel, dry, to moist at base, (in shoe).
24	26	4.5"/	5,3,4,5	0-4.5": Sand. Very pale brown (10 YR 7/3), medium with coarse sand, moist,
		4.5		loose, trace granular, gravel.
26	28	7"/	50/6	0-7.0": Sand. As above, medium, but with shattered rock fragments in shoe, dry
		5.5		to slightly moist.
28	30	16"/	13,8,10,12	0-6.0": Sand. As above, medium grading down into coarse to very coarse sand
		5.5		with some gravel, light yellowish brown (2.5 YR 6/4) loose, moist, gravel subangular
				to subrounded.
				6.0-16": Sand. Pink (7.5 YR 7/4) very fine, grading down into fine sand at 2½
				and 5 inches, slightly dense, very well sorted, no HCl reaction, dry, slightly moist.
30	32	18"/	10,7,10.9	0-4.0": Sand. As above, very fine, dry with some silt.
		≤4.5		4.0-7.0": Sand. Pink (7.5 YR 8/3) fine, loose, dry, very well sorted, no HCl reaction.
				7.0-18": Sand. Very fine as 0 to 4 inches but slightly moist with trace to some
				silt.
32	34	15.5"/	10,12,10,14	0-4.0": Sand. Fine, as in overlying sample, dry and loose.
		4.5		4.0-15": Sand. Very fine, as in overlying sample, slightly moist, thinly laminated
				(faint).
				15-15.5": Sand. Fine as 0 to 4 inch, dry to slightly moist, dense.
34	36	19"/	10,12,11.18	0-4.0": Sand. Light brown (7.5 YR 6/4) very fine, silty, HP = 0.5, nonplastic,
		6		dry and crumbly, no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-119

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				4.0-19": Sand. Pink (7.5 YR 8/3) very fine to fine, very well sorted, dry and
				slightly dense, moderate HCl reaction, trace silt.
36	38	15"/	10,13,11,12	0-15": Sand. As above, fine to very fine, dry. Lense of silty sand 6 to 8 inches.
		6		
38	40	17"/	8,9,9,9	0-4.0": Silt. Light brown (7.5 Yr 6/4) HP = 2.5, very slight HCl reaction, very thinly
		5.5		laminated, nonplastic.
				4.0-11.5": Silt. As above, thickly laminated with fine to very fine sand as in
				overlying sample.
				11.5-17": Sand. Pink (7.5 YR 8/3) very fine to fine, moist, loose, moderate HCl
				reaction, some to much silt in lowest 3 inches.
40	42	15"/	5,8,8,12	0-15": Sand. As above, fine to very fine, very moist, silty from 13 to 16 inches.
		7		
42	44	14"/	8,7,8,8	0-14": Sand. As above, fine to very fine, but saturated.
		7		
44	46	16"/	5,7,9,9	0-16": Sand. As above, fine to very fine, saturated, trace silt.
		5.0		
46	48	18"/	5,5,5,6	0-18": Sand. As above, fine to very fine, saturated, flowing.
		6		
48	50	20"/	8,4,4,8	0-20": Sand. As above, fine to very fine, saturated, flowing
		4		
50	52	23"/	7,11,12,16	0-23": Sand. As above, fine to very fine, saturated, flowing.
		6		
52	54	23"/	8,7,10,13	0-23": Sand. As above, fine to very fine, saturated, flowing.
		6		
54	56	21.5"/	3,4,3,3	0-21.5": Sand. As above, fine to very fine, saturated, flowing.
		5		
56	58	16"/	6,8,14,18	0-16": Sand. As above, fine to very fine, as above, saturated,
		6.5		
58	60	18"/	10,10,9,15	0-18": Sand. As above, fine to very fine, as above, saturated,
		7.5		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-119

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
60	62	22"/	4,5,5,8	0-14": Sand. As above, fine to very fine, saturated.
		4		14-22": Silt. Reddish brown (5 YR 5/4) dry to slightly moist, HP = 4.0,
				moderate to strong HCl reaction, nonplastic, 1/16 inch clay laminations at 3 to 4
				inches.
62	64	--	--	Blind drilled to prevent augers seizing. Difficult drilling.
64	66	21"/	6,6,5,10	0-21": Silt. Brown (7.5 YR 5/3) moderate HCl reaction, slightly moist, HP = 3.0
		4		
66	68	16.5"/	6,8,12,24	0-16.5": Silt. As above, moist.
		4		
68	70	20"/	8,12,20,18	0-8.0": Silt. As above.
		4.5		8.0-20": Silt. Grayish brown (10 YR 5/2) sandy, HP = 2.3, slight HCl reaction,
				abundant very fine sand, saturated, very moist, ½ inch clay lense at 4½ and 8½ inch.
70	72	19"/	8,12,20,13	0-16": Silt. As above, very moist to saturated, clay to 7½ and 11½ inches.
		3.0		16-19": Silt. Brown (7.5 YR 5/3) HP = 3.5, moderate HCl reaction, ½ inch
				clay at 16½ inch and ¼ inch at 17½ inch.
72	74	6"/	8,10,18,20	0-6.0": Silt. As above, very moist with some very fine sand, 1/16 inch clay at 4
		6.5		inches.
74	76	15"/	10,15,17,15	0-15.0": Silt and Clay. Thinly interbedded, silt as above with trace to some very
		3.5		fine sand, dry (base) to very moist. Clay, reddish brown (5 YR 5/4) HP = 3.5, strong
				HCl reaction, slightly plastic, foliated, approximately 20 percent of sample.
76	78	23.5"/	6,10,14,20	0-23.5": Silt and Clay. As above, thinly interbedded with fine sand lense at 14 to
		5		15 inches. Silt, slightly moist to dry, HP = 4.0, moderate HCl reaction. Clay, HP =
				4.0, strong HCl reaction, fine sand, brown (10 YR 5/3) very moist to saturated,
				well sorted. Clay approximately 30 percent of sample.
78	80	15"/	8,12,18,20	0-4.0": Sand. As above, fine, saturated.
		5		4.0-15.0": Silt. As above, finely interbedded silt and sand.
80	82	18.5"/	5,4,10,18	0-18.5": Silt. Finely interbedded with sand and clay, slightly moist to dry. Silt, HP =
		50		4.0, moderate HCl reaction, very thinly laminated. Clay, approximately 40 percent
				sample, strong HCl reception. Sands, fine to very fine, moist, well sorted, slight HCl
				reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-119

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
82	84	16"/	7,20,50/3	0-9.0": Silt/Sand/Clay. As above, interbedded, moist to dry.
		4		9.0-16.0": Sand. Light brown (7.5 YR 6/3) very fine to fine, dense, very moist,
				slight HCl reaction, very well sorted.
				10:10 Stop drilling 10:28 Resume drilling.
84	86	7"/	20,50/5	0-7.0": Sand. As above, very fine to fine, very moist.
		55		
86	88	18"/	20,45,30,50	0-18.0": Sand. As above, fine to very fine, saturated.
		300		
88	90	12"/	15,30,35,30	0-12.0": Sand. Pale brown (10 YR 6/3) coarse, dense, saturated, well sorted, no
		500		HCl reaction.
				EOH 90 feet bgs.

ARCADIS

Sample/Core Log

Boring/Well GMSG-120 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 10/27/03 Drilling Completed 10/27/03

Total Depth Drilled 62 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2 feet by 2 inches Sampling Interval Continuous feet

Land-Surface Elev. 1132.59 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Auger

Drilling Contractor Boart Longyear Driller Jeff Flamino Helper Chris

Prepared By Bruce Evans Hammer Weight 300 Hammer Drop 24 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1.5	9,7,78	Silt: Brown (10 YR 4/3) mostly firm, slightly loose, rootlets, some small wood
			450/12.2	pieces (roots and twigs), trace fine sand and gravel, wood is slightly black/
				decaying, fill, moist.
2	4	1.5	6,5,6,7	0-0.5' Silt: As above, compacted.
			690/24.8	0.5-1.5' Sand: Strong brown (7.5 YR 5/6) fine to medium sand, some coarse,
				trace fine gravel, angular to subround, moderately sorted, loose, dry to moist.
4	6	1.5	9,8,8,10	0-0.4' Slump.
			480/5.3	0.4-1.5' Sand: Light brown (7.5 YR 6/3) medium grain, some coarse, well sorted
				trace coarse gravel and cobble pieces to 1 inch diameter at 1.0 feet, loose,
				dry to moist.
6	8	0.5	7,8,11,10	0-0.2' Sump.
			51/5.3	0.2-0.5 Sand: Brown (7.5 YR 4/2), fine to coarse grain, poorly sorted, silty
				with cobble in spoon tip, moist.
8	10	1	15,11,12,16	0-0.3' Sand: As above silty, moist.
			690/13.5	0.3-0.5' Rock Fragments: White shattered.
				0.5-1.0' Sand: Brown (7.5 YR 5/3) coarse grain, some medium grain, well
				sorted some fine to coarse gravel, loose, moist.
10	12	1.3	6,7,7,8	0-0.7' Sand: Pink (7.5 YR 7/3) medium to coarse grain well sorted, trace black
			470/26.5	angular shale flake as fine gravel, loose, moist.
				0.7-1.3' Sand/Gravel: Pinkish gray (7.5 YR 6/2) medium to very coarse sand,
				fine to coarse gravel, angular to subround, very poorly sorted, loose, moist.
12	14	1	20,15,12,10	0-0.3' Slump.
			350/5.0	0.3-1.0' Sand/Gravel: As above, moist.
14	16	0.5	4,6,6,5	Sand/Gravel: As above but sand fine to coarse grain, moist.
			99/-9	
16	18	0.7	15,12,5,4	0-0.2' Slump.
			80/-9	0.2-0.7' Sand/Gravel: Brown (7.5 YR 4/2) medium to very coarse sand, fine to

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-120

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				coarse gravel, angular (black slate flakes) to subrounded, cobble 1.5" diameter in
				spoon tip, very poorly sorted, very coarse, loose, very moist.
18	20		13,14,12,10	No recovery.
20	22	1.3	20,14,15,10	0-0.6' Sand/Gravel: As above.
			81/0.3	0.6-0.9' Silt/Sand/Gravel: Dark grayish brown (2.5 YR 4/2) silt matrix with
				mostly fine to medium sand and fine to coarse gravel, somewhat loose, moist.
				0.9-1.3' Gravel/Cobbles: Gray (2.5 YR 5/1) fine to coarse gravel, angular to
				subangular with cobbles to >1.5 inch diameter, much shattered rock
				fragments some fine to medium sand, poorly sorted, loose, moist to dry.
22	24	1.3	23,21,15,17	0-0.4' Slump.
			145/-7	0.4-1.1' Gravel/Cobbles: As above much broken rock fragments and some sand,
				moist.
				1.1-1.3' Sand/Gravel: Light grayish brown (10 YR 6/2) mostly fine to medium
				sand, some coarser, fine to coarse gravel, subangular to subrounded, poorly
				sorted, loose, moist to very moist.
24	26	0.5	30+	0-0.2' Slump.
			156/-11	0.2-0.5' Sand/Gravel: As above, possibly less gravel, becoming brown (7.5 YR 5/2)
				very moist.
26	28	1.5	5,7,8,6	0-0.3' Slump.
			550/-11	0.3-1.5' Sand: Mostly gray (7.5 YR 6/1) but grains variable in color, coarse to
				very coarse grain, some medium grain, poorly sorted, some fine to coarse
				gravel, loose, very moist.
28	30	0.2	20,21,18,17	Slump? No recovery?
			460/-10	
30	32		23,18,19,19	No recovery.
32	34	0.8	23,25+	Sand/Gravel: Mostly gray (7.5 YR 5/1) medium to very coarse sand, fine to
			2,400/-9	coarse gravel, angular to subround, very poorly sorted, loose, very moist to
				slightly wet, splitspoon refusal at 0.8 inches, very difficult drilling.
34	36	1.1	15,17,20,16	0-0.1' Red Rock Powder.
			10,400/-12	0.1-1.1' Silt: Pink (5 YR 7/4), sandy, very fine grain sand, grainy, powdery, loose,
				some varving and very thin layers (<1 mm) with clayey silt, reddish brown
				(5 YR 5/4), grainy silt is dry to moist, clayey silt is moist.
36	38	1.3	25-25+	0-0.3' Slump.
			18,800/-13	0.3-1.3' Silt: Light reddish brown (5 YR 6/3) soft, powdery, loose, no clay,
				sandy, grainy, dry to moist.
38	40	1.5	16,15,15,17	0-0.2' Slump.
			5,100/-11	0.2-1.5' Silt: As above, very homogenous, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-120

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
40	42	1.5	17,18,18,18	Silt: As above, powdery, moist.
			8,300/-12	
42	44	1.5	16,18,19,16	Silt: As above.
			14,500/-14	
44	46	1.5	17,400/-13	Silt: As above.
46	48	1.2		Silt: Light reddish brown (5 YR 6/3), grainy, sandy with very fine grain sand, less
				powdery, loose, very homogenous, moist.
48	50	1.5	4,150/-12	Silt: Sandy, as above.
50	52	1.3	3,300/-13	Silt: As above sandy, dry.
52	54	1.2	4,630/-12	Silt: Light reddish brown (5 YR 6/3) grainy, powdery, varved/interbeded with
				clayey silt, reddish brown (5 YR 5/3) somewhat plastic, grainy silt is dry, clayey
				silt is moist.
54	56	1.5	7,860/-12	0-1.0' Silt: As above.
				1.0-1.5' Silt: Predominately clayey interlayered/varved with grainy silt,
				very moist.
56	58	1.4	8,200/-10	0-0.4' Silt: Grainy, powdery as above.
				0.4-0.9' Silt: Clayey as above, trace thin layers clay (<1 mm) yellowish red
				(5 YR 5/6) fissile looking but plastic, moist.
				0.9-1.4' Silt: Light reddish brown (5 YR 6/3) grainy, powdery, dry.
58	60	1.3	3,600/-11	Silt: Light reddish brown (5 YR 6/3) grainy, powdery, trace very fine grain sand,
				very homogenous, loose, dry to slightly moist.
60	62	1.4	211/-12	Silt: As above, dry to slightly moist.
				EOB 62 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-122 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 9/25/98 Drilling Completed 9/25/98

Total Depth Drilled 68 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1090.18 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	19"/	3,3,4,5	0-5.0": Top Soil. Light brown to grey (10 YR 6/2) silty sand loam, trace to some
		3.5		variable composition subangular pebbles, dry, crumbly, no HCl reaction.
				5.0-9.0": Sand. Light brown grey (10 YR 6/2), fine silty, dry, crumbly.
				9.0-19": Sand. As above, fine silty, but yellow (10 YR 7/8) with trace some
				subrounded pebbles. No HCl reaction.
2	4	10"/	4,5,4,5	0-10": Sand. Reddish yellow (7.5 YR 7/6) medium, dry, loose, no HCl reaction,
		4.5		well sorted.
4	6	11"/	4,2,2,4	0-11": Sand. Reddish yellow (7.5 YR 6/6) coarse with granular gravel. Dry, loose,
		5		no HCl reaction, some to much medium and very coarse sand. Gravel subangular
				to well rounded, variable composition, trace pebble gravel.
6	8	12"/	8,6,6,7	Brass tube samples.
		n/a		6-6.5": Slough.
				6.5-7.0": Slough.
				7.0-7.5": Sand and Loam. Coarse, dry.
				7.5-8.0": Sand and Gravel. Coarse, dry.
8	10	1"/	10,10,11,15	0-1.0": Shattered rock fragments, dry.
		10		
10	12	8"/	8,8,10,8	0-8.0": Sand and Gravel. Reddish yellow (7.5 YR 7/6), coarse to very coarse, dry,
		8		slightly moist, much pebble gravel, trace to some medium sand. Gravel, subangular
				to well rounded, variable composition, up to greater than spoon diameter. No HCl
				reaction loose.
12	14	15"/	2,2,2,3	0-15": Silt. Brown (7.5 YR 5/4) saturated, HP = 0.5. No HCl reaction.
		8		
14	16	13"/	10,10,10,12	0-13": Silt. Brown (7.5 YR 5/4) HP = 1.6, moderate HCl reaction, very moist,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-122 Page 2 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		10		some very fine sand.
16	18	18"/	8,11,11,8	0-18": Silt. As above grading down into very fine sand with much silt. HP = 2.0.
		7		Slight HCl reaction, saturated, color as above brown (7.5 YR 5/4).
18	20	14"/	5,9,9,5	0-14": Sand. Brown (7.5 YR 5/4) very fine, silty HP = 2.5, slight HCl reaction,
		6		saturated. Clay lense 5½ to 6 inches.
20	22	16"/	3,3,3,3	0-3.0": Sand. Brown (10 YR 5/3) coarse to very coarse, loose, saturated, trace
		7		to some silt. 1 inch dusty red (10 YR 3/2) band at top of sample.
				3.0-8.0": Sand. Very fine, silty as in overlying sample with clay at 0 to ½,
				3 to 3½ and 4½ to 5 inches. Clay reddish brown (2.5 YR 5/4), HP = 1.7, strong HCl
				reaction.
				8.0-16": Silt. Grayish brown (10 YR 5/2) HP = 2.5, moderate HCl reaction.
22	24	24"/	5,8,9,11	Brass liners: Based on lithologies at tube end.
		n/a		22-22.5": Silt. With slough, saturated.
				22.5-23": Silt. As above, saturated.
				23-23.5": Silt. As above, some very fine sand.
				23.5-24": Silt. As above, saturated.
24	26	21"/	5,5,5,5	0-21": Silt. Grayish brown (10 YR 5/2), HP = 2.0, slight HCl reaction, saturated.
		3		Trace to some very fine sand, clay at 2 to 2.5 and 5 to 5.5.
26	28	21"/	7,10,9,10	0-21": Silt. As above, saturated.
		2.5		
28	30	14.5"/	6,7,6,7	0-14.5": Silt. As above, saturated.
		4		
30	32	18"/	9,13,13,13	0-18": Silt. As above, saturated.
		4.5		
32	34	23"/	8,8,7,9	0-23": Silt. As above, saturated, clay at 0 to 1½, ¼ inch at 13 and 21 to 23
		9		inches. Clay, reddish brown (5 YR 4/4) strong HCl reaction, HP = 3.5, friable,
				nonplastic.
34	36	20"/	6,7,6,10	0-20": Silt. As above, saturated. Clay at 2 to 3 inch, ¼ inch at 12 inches
		8.5		and 19 to 20 inches. Clay dark reddish gray (7.5 YR 4/2) strong HCl reaction,
				HP = 2.0.
36	38	20"/	12,11,11,8	0-20": Silt. As above, saturated. Clay at 14½ to 15, 15½ to 16½ and 19 to 20
		11		inches. HP = 3.5, strong HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-122 Page 3 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
38	40	8.5"/	4,4,10,10	0-8.5": Silt. As above, saturated ½ inch of very fine sand at 0 to 0.5 inch, clay
		9.5		at 1 to 2 inch and at 7½ to 8 inch.
40	42	14½"/	10,10,13,17	0-19½": Silt. Grayish brown (10 YR 5/4) HP = 4.0, moderate to strong HCl
		5		reaction, moist, clay at 8½ to 9, 13 to 13½, and 14 to 15 inches. HP = 3.5,
				strong HCl reaction, friable, slightly plastic.
42	44	17"/	7,7,9,10	0-17": Silt. Yellowish brown (10 YR 5/4) saturated, HP = 2.0, slight HCl
		3.5		reaction, clay at 9½ to 10 and 14 to 14½ inch.
44	46	15"/	9,12,12,15	0-15": Silt. As above, saturated, clay at 5 to 6, 9 top 10, 14 to 15 inches.
		2.5		
46	48	19"/	11,12,11,7	0-9.0": Silt. As above, saturated.
		3.5		9.0-13": Sand. Brown (7.5 YR 5/4) very fine silty, loose, slight to moderate
				HCl reaction.
				13-19": Silt. As 0-9 inch but with some to much very fine sand, saturated.
48	50	8"/	3,7,10,10	0-8.0": Silt. As above, 1/8 inch clay at ½, 3½, and 6 inches, saturated.
		4		
50	52	17"/	7,15,15,15	0-17": Silt. As above, grading down into very fine silty sand, saturated, HP -
		5		2.1, moderate HCl reaction, 1/8 inch clay at 2, 5½ and 15 inch.
52	54	16"/	9,13,13,15	0-7.0": Silt. Grayish brown (10 YR 5/2) HP = 1.5, moderate HCl reaction,
		5.5		saturated. Some very fine sand.
				7.0-9.0": Sand. Silty, as in overlying sample, saturated.
				9.0-16": Silt. As 0 to 7 inch with thin laminations of very fine silty sand.
				Clay at 6 to 7, 9 to 9½ and 12½ to 13 inches.
54	56	17.5"/	5,10,10,12	0-17.5": Silt/Sand/Clay. Finely bedded, silty sandy and clay lithologies as above,
		4		satuated, clay approximately 20 percent of sample.
56	58	23"/	8,6,8,6	0-23": Silt/Sand/Clay. As above, finely bedded, silty sand and clays dry to slightly
		3.5		moist. Clay approximately 40 percent of sample. HP (silt) > 4.0, HP (clay)
				>4.0. Silt and clay strong HCl reaction.
58	60	24"/	5,9,15,13	Based Liner samples: Based on lithologies at tube ends.
		3		58 to 58.5": Silts and Clay. As above, interbedded.
				58.5 to 59": Silts and Clay. As above, interbedded.
				59.0 to 59.5": Silts and Clay. As above, interbedded.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-122 Page 4 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				59.5 to 60": Silts and Clay. As above, interbedded.
60	62	24"/	12,12,17,17	0-10": Silt/Sand/Clay. As above, interbedded, dry. Sample collected for treatability.
		400		10-24": Sand. Brown (7.5 YR 5/3) fine to very fine, very firm, slight to
				moderate HCl reaction, very well sorted, saturated, silt lenses at 12.5 to 13.5 inches.
62	64	17"/	10,11,12,16	0-17": Sand. As above, fine to very fine, saturated. Clay at 3 inch, 9 to 9½ inch,
		55		and 13 to 14 inch.
64	66	18"/	20,20,21,23	0-11": Sand. As above, fine to very fine, saturated.
		550		11-18": Sand. Very pale brown (10 YR 8/2) coarse with some gravel.
				saturated, loose, some to much medium sand, trace silt. Gravel, granular,
				variable composition, subrounded to well rounded, trace pebbles.
66	68	19"/	9,12,12,17	0-12": Sand and Gravel. Very pale brown (10 YR 7/3), coarse to very coarse,
		80		dense, saturated, trace medium sand. Granular and pebble gravel. Gravel becomes
				coarser toward base. Variable composition, subangular to subrounded, up to
				greater than spoon diameter.
				12-19": Sand. Pink (7.5 YR 7/4) fine, saturated, firm, very well sorted,
				no HCl reaction.
				EOH 68 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-123 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 9/28/98 Drilling Completed 9/28/98

Total Depth Drilled 56 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1117.99 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	12"	4,5,5,5	0-3.0": Topsoil. Dark grayish brown (10 YR 7/2) silty loam, moist, slightly crumbly. No
		5		HCl reaction.
				3.0-12.0": Silt. Yellow (10 YR 7/6). Dry, loose, trace gravel, some very fine sand,
				no HCl reaction.
2	4	11"	5,4,7,8	0-11.0": Sand and Gravel. Very pale brown (10 YR 7/4). Sand: Coarse to very coarse,
		5		some medium. Gravel: subangular to subrounded, predominately pebbles, various
				composition, dry, loose, no HCl reaction.
4	6	2"	15,10,12,10	0-2.0": Silt. As in 0 to 2 foot interval with rootlets. Slough.
		N/A		
6	8	6"	11,8,7,9	0-6.0": Sand and Gravel. As in 2 to 4 foot interval. Dry.
		6		
8	10	0	17,8,8,7	No recovery.
10	12	0	3,4,4,4	No recovery, 5 cm wide pebble of granite in shoe of spoon.
12	14	11.5"	5,3,3,5	0-11.5": Gravel. With coarse to very coarse sand. Sand: Very pale brown (10 YR 7/3)
		4		some medium sand. Gravel mainly granular with some to much pebble gravel,
				subangular to well rounded, variable composition up to 3 cm in diameter. Dry to
				slightly moist, loose. No HCl reaction.
14	16	12"	12,7,6,6	0-12.0": Gravel. As above, moist.
		4		
16	18	11.5"	7,5,4,6	0-11.5": Gravel. As above, moist with coarse to very coarse sand.
		3.5		
18	20	15"	9,6,6,6	0-15.0": Sand and Gravel. Coarse to very coarse, unit as above but sand more
		4		abundant. Moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-123 Page 2 of 3

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	22	0	13,9,11,11	No recovery. 3.5 cm pebble in shoe.
22	24	13"	6,10,13,13	0-13.0": Sand and Gravel. Coarse to very coarse, as 18 to 20 feet. Dry.
		6		
24	26	14"	12,10,8,7	0-14.0": Sand and Gravel. Coarse to very coarse, as above, dry, clay in shoe.
		4.5		
26	28	24"	3,5,3,4	0-24.0": Silt and Clay. Finely Interbedded. Silt: Yellowish brown (10 YR 5/4). No HCl
		3.5		reaction, HP = 3.5, moist. Clay: Red (2.5 YR 5/6), HP = 1.5, slightly plastic, foliated,
				no HCl reaction. Fine sand lens at 17 to 18 inches, moist.
28	30	24"	6,6,5,6	0-24.0": Silt and Clay. Interbedded. As above, clay approximately 70 percent of
		4		sample. Clay has strong HCl reaction. HP $\geq$ 4.0. Silt as above, moderate HCl
				reaction. Coarse sand and gravel lens at 5 to 7 inches, brown (7.5 YR 5/4) moist,
				dense.
30	32	23.5"	8,6,5,10	0-22.0": Silt and Clay. Interbedded. As above, moist. Coarse sand and gravel lens
		3		as above at 16 to 17 inches.
				22.0-23.5": Sand. Pink (7.5 YR 8/3) fine, loose, dry, very well sorted, moderate HCl
				reaction.
32	34	13"	12,15,17,23	0-13.0": Sand. Fine as above, dry, dense, very well sorted, moderate HCl reaction.
		3.5		
34	36	13.5"	10,13,16,19	0-13.5": Sand. Fine as above, dry.
		3.5		
36	38	18"	15,14,10,10	0-18.0": Sand. Pink (7.5 YR 8/3) fine to very fine, dry, dense, very well sorted. Faint
		3		thinly bedded fine laminations. Silt at 8 to 9 inches.
38	40	15"	17,15,17,17	0-15.0": Sand. Fine to very fine as above, dry.
		3		
40	42	17.5"	9,10,13,15	0-17.5": Sand and Silt. Interbedded. Sand: fine, as above. Silt: Brown (7.5 YR),
		2.5		some to much very fine sand. HP = 1.5, moderate HCl reaction, very thinly laminated.
42	44	17"	12,13,15,16	0-2.0": Silt. Sandy as above, moist.
		4.5		2.0-11.0": Sand. Fine to very fine as in overlying sample, dry.
				11.0-17.0": Silt. Sandy as 0 to 2 inch, moist.
44	46	22"	8,10,12,14	0-5.0": Sand. Fine to very fine as in overlying sample, dry.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-123 Page 3 of 3

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		900		5.0-21.0": Silt. Sandy, as above, moist, fine to very fine sand lens at 13 to 14 inches,
				¼ inch clay lens at 14 inches.
				21.0-22.0": Sand. Light brown (7.5 YR 6/4) very fine, silty, moderate HCl reaction,
				HP = 2.1, moist.
46	48	16"	6,8,12,12	0-16.0": Silt and Sand. Finely interbedded. Lithologies as above, saturated.
		2,500		
48	50	16"	12,8,10,11	0-4.0": Sand. Silty as above.
		3,500		4.0-16.0": Sand. Reddish brown (5 YR 5/4), fine to very fine, very moist, slightly
				dense, trace silt, moderate HCl reaction.
50	52	17"	10,12,10,8	0-11.0": Sand. Fine to very fine as above, saturated.
		1,000		11.0-17.0": Sand and Silt. Very fine silty. Silt: Brown (7.5 YR 5/3), moderate HCl
				reaction, HP = 1.5, saturated.
52	54	19"	10,8,8,8	0-19.0": Sand. Brown (7.5 YR 5/4), fine to very fine with trace to some silt. Saturated,
		2,250		dense, moderate HCl reaction.
54	56	22"	3,4,4,6	0-22.0": Sand. Fine to very fine, as above, saturated.
		20		
				End of Boring 56 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-124 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/30/98 Drilling Completed 9/30/98

Total Depth Drilled 54 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1117.12 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Gary

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	14"/	2,2,3,3	0-3.0": Topsoil. Dark gray (10 YR 4/1), dry silty sand loam with trace pebbles, crumbly,
		≤1.0		no HCl reaction.
				3.0-14.0": Silt. Very pale brown (10 YR 8/3), sandy dry, HP = 1.0, crumbly, trace
				pebbles, no HCl reaction.
2	4	13"/	5,6,6,8	0-6.0": Silt. As above, sandy, dry.
		2		6.0-13.0": Sand and Gravel. Pink (7.5 YR 7/4), coarse to very coarse, dry, loose, gravel
				subangular to well rounded, variable composition.
4	6	9"/	11,11,12,13	0-9.0": Sand and Gravel. As above, dry.
		1		
6	8	14"/	5,6,7,6	0-7.5": Sand and Gravel. Very pale brown (10 YR 7/4), coarse, slightly moist, loose,
		2.5		some to abundant medium sand. Gravel, mainly granular, subrounded to well rounded,
				trace pellets, variable composition, pebbles more abundant at base.
				7.5-14.0": Sand. Very pale brown (10 YR 8/3), fine to medium, with abundant gravel and
				abundantcoarse to very coarse sand. Granular gravel with trace pebble gravel, variable
				composition, dry loose, no HCl reaction.
8	10	11"/	6,6,5,6	0-11.0": Sand. Very pale brown (10 YR 7/4), coarse to very coarse, with some granular
		2.5		gravel. Some medium and fine sand, gravel subrounded to well rounded, variable
				composition, trace pebble gravel, no HCl reaction, dry, loose.
10	12	9"/	5,6,5,6	0-9.0": Sand and Gravel. Very pale brown (10YR 7/4), very coarse, loose, slightly moist,
		1.5		no HCl reaction. Gravel predominately granular with some pebble gravel up to greater
				than 2 inches in diameter. Gravel subangular to well rounded and variable composition.
12	14	13"/	8,5,5,5	0-13.0": Sand and Gravel. Very coarse, as above, slightly moist, some medium and
		2		coarse sand.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-124

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	12"/	4,4,5,4	0-12.0": Sand and Gravel. Very coarse, as above, moist.
		2.5		
16	18	14"/	6,6,4,6	0-14.0": Sand and Gravel. Very coarse, as above, slightly moist.
		1.5		
18	20	16"/	6,6,7,8	0-16.0": Sand and Gravel. Very coarse as above, slightly moist.
		3.75		
20	22	7"/	12,14,16,23	0-7.0": Sand and Gravel. Very coarse, as above, moist, some to abundant medium and
		1.75		coarse sand.
22	24	0	12,12,10,16	No recovery.
24	26	0	15,17,15,17	No recovery.
26	28	0	12,15,14,12	No recovery.
28	30	21"/	17,10,10,14	0-21.0": Sand. Pink (7.5 YR 8/3), fine, dry, loose, some medium to coarse sand, some
		11		grain gravel, variable composition, granular.
30	32	12"/	11,11,12,13	0-12.0": Sand. Fine as above, with some granular and pebble gravel, (up to 2 cm in
		4.5		diameter) in 1 mm to 5 mm laminations, thickly laminated, dry, loose.
32	34	15"/	10,9,10,12	0-15.0": Sand. Pink (7.5 YR 8/3), fine to very fine, firm, dry, very well sorted, no HCl
		5.5		reaction.
34	36	17"/	9,10,9,11	0-17.0": Sand. Fine to very fine, as above. Sandy silt lenses at 3 to 3.5 inches and 5 to
		3.25		6 inches, dry.
36	38	21"/	7,8,10,10	0-8.5": Sand. Fine to very fine, as above, dry, sandy silt at 5 to 6 inches.
		4.5		8.5-21.0": Silt. Brown (7.5 YR 5/4), some very fine sand, non plastic, moist, HP = 1.5 to
				2.0, no HCl reaction. 8 inch clay lens at 16 inches.
38	40	18"/	9,9,9,9	0-11.0": Sand. Fine to very fine, as above, dry.
		800		11.0-18.0": Silt. Brown (7.5 YR 5/4), sandy, HP = 3.0, slightly moist, moderate HCl
				reaction.
40	42	15"/	7,6,8,10	0-2.0": Silt. Sandy, as above, dry.
		4,000		2.0-12.0": Sand. Very pale brown (10 YR 8/4), fine to medium, firm, dry, very well sorted
				faint 1 mm thin laminations, no HCl reaction.
				12.0-15.0": Sand. Pink (7.5 YR 7/4), fine to very fine, firm, dry, very well sorted,
				slight HCl reaction. Silt lens at 14.5 to 15 inches.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-124

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
42	44	13"/	9,11,12,14	0-6.0": Sand. Fine to very fine, as above, dry, silt lenses at 2.5 to 3 inches and 6 to
		>10,000		6.5 inches.
				6.0-13.0": Sand. Fine to very fine, as above, but with some to abundant silt.
44	46	18"/	15,13,12,16	0-2.0": Sand. Fine to very fine, with some to abundant silt as above, dry.
		>10,000		2.0-18.0": Sand. Pink (7.5 YR 7/4), very fine to fine, dry, firm, very well sorted,
				moderate to strong HCl reaction.
46	48	21"/	9,9,11,14	0-5.0": Sand. Fine to very fine, as above, dry.
		1,500		5.0-11.0": Silt. Sandy, finely interbedded with very fine sand. Silt: Brown (7.5 YR 5/4),
				slight HCl reaction, HP = 2.0, ¼ inch thick clay lens from 8-8½ inches very moist to saturated.
				11.0-21.0": Sand. Brown (7.5 YR 5/4), fine to very fine as 0 to 5 inches, but very moist,
				moderate HCl reaction.
48	50	15"/	10,11,11,11	0-7.0": Sand. Fine to very fine, as above.
		800		7.0-8.0": Silt. Brown (7.5 YR 5/4), HP = 1.5, slight HCl reaction, very moist.
				8.0-15.0": Sand. Reddish brown (5 YR ???), fine to very fine, slight to moderate HCl
				reaction, moist.
50	52	17"/	8,8,10,8	0-17.0": Sand. Fine to very fine, as above, very moist.
		250		
52	54	22"/	NA	0-22.0": Sand. Fine to very fine as above, saturated.
		NA		
				End of hole 54 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-125 (A/B) Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 10/6/98 Drilling Completed 10/6/98

Total Depth Drilled 30 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1115.59 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper Gary

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	17"/	1,2,6,9	0-9.0": Topsoil. Very dark grayish brown (10 YR 3/2), silty sand loam, trace pebbles,
		10		very moist. Abundant rootlets, no HCl reaction.
				9.0-16.0": Silt. Yellow (10 YR 8/8), some very fine sand, dry, loose, no HCl reaction.
2	4	16"/	6,10,12,15	0-16.0": Sand and Gravel. Pink (7.5 YR 7/4), coarse to medium sand matrix with some
		3.5		fine sand, pebble and granule gravel, variable composition, subangular to well rounded,
				up to greater than 2 inches in diameter. Dry, loose, no HCl reaction.
4	6	8"/	9,10,10,11	0-8.0": Sand and Gravel. As above, dry.
		3		
6	8	7"/	3,4,9,13	0-7.0": Sand and Gravel. As above, dry.
		3		
8	10	16"/	3,4,6,6	0-10.0": Sand and Gravel. As above, but mainly granular gravel, moist.
		5		10.0-16.0": Sand. Yellow (10 YR 8/6), medium, dry to slightly moist, loose, no HCl
				reaction.
10	12	12"/	5,6,6,8	0-12.0": Sand and Gravel. Very pale brown (10 YR 7/4), medium to very coarse sand,
		4.5		trace fine sand. Granular and pebble gravel, variable composition, up to greater than
				2 inches in diameter. Dense and slightly moist, no HCl reaction.
12	14	15"/	3,4,8,13	0-15.0": Sand and Gravel. As above, moist. Predominately granular gravel and very
		4.5		coarse sand, some to much pebble gravel, abundant coarse sand, loose, slightly moist.
14	16	19"/	6,5,6,7	0-19.0": Silt. Light brown (7.5 YR 6/4), HP = 3.5, moderate HCl reaction. Slightly moist,
		30		clay lenses at 3.5 (1/4 inches thick) and 6 to 7 inches.
16	18	21"/	3,6,7,15	0-15.0": Silt. As above. Dry to slightly moist.
		4,000		15.0-21.0": Sand and Gravel. Light red brown (2.5 YR 7/3) coarse to very coarse sand
				and granular gravel. Some to much pebble gravel, variable composition, subangular,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-125 (A/B)

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				well rounded, dry, strong HCl reaction.
18	20	11"/	4,6,11,13	0-4.5": Sand and Gravel. As above, dry, strong HCl reaction, ½ inch silt lens at
		2,500		3 inches.
20	22	17"/	5,6,6,12	0-2.0": Silt. Yellowish brown (10 YR 5/6), slightly moist, moderate HCl reaction, HP = 1.5.
		>10,000		2.0-17.0": Sand. Pink (7.5 YR 7/3), very fine, very well sorted, very firm, dry to slightly
				moist, very thinly laminated. Silt lens at 6.5 inches, clay lens at 16.5 inches, moderate
				HCl reaction.
22	24	17"/	6,8,10,12	0-17.0": Sand. Pink (5 YR 7/8) very fine, dry, loose to firm, very well sorted, moderate
		>10,000		HCl reaction. Silt lens at 3.5 to 4 inches.
24	26	17"/	4,7,10,13	0-17.0": Sand. As above, fine to very fine. Dry, silt at 3 to 5 inches. Silt. Brown
		>10,000		(7.5 YR 5/3), sandy, dry to slightly moist, HP = 1.0, moderate HCl reaction.
26	28	18"/	5,5,8,13	0-18.0": Sand. As above, fine to very fine, dry.
		>10,000		
28	30	17"/	5,8,11,15	0-17.0": Sand. As above, fine to very fine, dry to slightly moist.
		>10,000		
				End of hole 30 ft bgs.

ARCADIS

Sample/Core Log

Boring/Well GMSG-126 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 4/5/04 Drilling Completed 4/5/04

Total Depth Drilled 49 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Blind

Length and Diameter of Coring Device _____ Sampling Interval _____ feet

Land-Surface Elev. 1122.05 feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Gary Helper John

Prepared By Paul Lenaker Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches OVA/OVM	Sample/Core Description
0	49			Blind drill
				End of boring at 49.

ARCADIS

Sample/Core Log

Boring/Well GMSG-127 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 4/5/04 Drilling Completed 4/5/04

Total Depth Drilled 40 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Blind

Length and Diameter of Coring Device Sampling Interval feet

Land-Surface Elev. 1120.13 feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Gary Helper John

Prepared By Paul Lenaker Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches OVA/OVM	Sample/Core Description
0	40			Blind drill
				End of boring at 40.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-128 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 12/16/98 Drilling Completed 12/16/98

Total Depth Drilled 82 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval cont. feet

Land-Surface Elev. 1090.92 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper S. Schultz, B. Hansen

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	16"	1,1,1,1	0-8.0": Silt. Dark grey brown (10 YR 4/2) sandy, moist. HP = 0.8, trace pebbles, some
		≤3.5		rootlets. Topsoil.
				8.0-16.0": Sand. Strong brown (7.5 YR 4/6) fine to medium, moist, loose, trace coarse
				sand. No HCl reaction.
2	4	11"	3,2,2,3	0-3.0": Sand. Fine to medium, as above, moist.
		≤3.5		3.0-6.0": Silt. Brown (7.5 YR 4/4) sandy, HP = 1.0, very moist, no HCl reaction.
				6.0-11.0": Sand. Fine to medium as 0-3", moist.
4	6	19"	3,5,6,5	0-7.0": Topsoil. Slough.
		30		7.0-19.0": Sand. Strong brown (7.5 YR 5/8) medium to coarse, trace grain gravel, trace
				fine sand, loose, moist, no HCl reaction.
6	8	7"	3,5,6,4	0-3.0": Topsoil. Slough
		2.5		3.0-7.0": Sand. Medium to coarse, as above, but with some granular gravel, moist.
8	10	15"	2,4,6,9	0-7.0": Sand. Yellowish red (5 YR 5/6) coarse with some to much gravel. Moist, loose,
		≤2.5		some to much medium sand. Some fine sand. Gravel variable composition.
				7.0-15.0": Sand. Strong brown (7.5 YR 5/6) medium to coarse, slightly moist, well
				sorted, loose, no HCl reaction, trace pebble gravel.
10	12	16"	3,5,7,8	0-16.0": Sand. Medium to coarse, as above, slightly moist.
		3		
12	14	16"	2,4,6,9	0-4.0": Sand. Medium to coarse as above, moist.
		8		4.0-7.0": Sand. As above, but with grey staining. Pebble gravel 6.5 to 7.0".
				7.0-16.0": Sand. Medium to coarse, as above, slightly moist. No HCl reaction.
14	16	13"	2,5,9,15	0-7.0": Sand. Medium to coarse, as above.
		3		7.013.0": Sand. Very fine, interbedded with sandy silt. Sand: yellowish red (5 YR 5/6)

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-128

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				very well sorted, loose to slightly firm, very slight HCl reaction. Silt: reddish brown
				(5 YR 5/4) HP = 1.5, slight HCl reaction, slightly moist.
16	18	19"	3,5,7,10	0-19.9": Sand. Yellowish red (5 YR 5/6) very fine, very well sorted, loose, slightly moist.
		4		No HCl reaction, clay at 6.0 to 7.0" and 10.0 to 11.0". Reddish brown (5 YR 5/4),
				slightly moist, HP = 2.0. No HCl reaction.
18	20	20"	3,5,5,12	0-6.0": Sand. Yellowish red (5 RY 5/8) fine, well sorted, slightly moist, loose.
		5.5		6.0-20.0": Sand. Reddish yellow (7.5 YR 6/6) coarse well sorted, trace gravel, loose and
				slightly firm, slightly moist.
20	22	18"	4,5,8,12	0-7.0": Sand. Reddish yellow (7.5 YR 6/6) coarse, loose, well sorted, slightly moist.
		3.5		No HCl reaction.
				7.0-18.0": Sand. Light brown (7.5 YR 6/4) fine, no HCl reaction. Firm (slightly dense)
				trace silt laminations. Some medium sand toward base.
22	24	16"	3,5,5,10	0-16.0": Sand. Brown (7.5 YR 5/4) medium grading down into coarse sand with much
		3		gravel. No HCl reaction, moist.
24	26	19"	3,4,6,10	0-6.0": Sand. Brown (7.5 YR 5/4) coarse to medium with granular gravel. Loose, trace
		3		silty sand lenses, moist, no HCl reaction.
				6.0-19.0": Sand. Brown (7.5 YR 5/4) fine. Grading down to medium sand, no HCl
				reaction, slightly moist, trace sandy silt lenses as above, no HCl reaction.
26	28	18"	3,5,8,10	0-5.0": Sand. Brown (7.5 YR 4/4) medium grading into coarse sand. Loose, some to
		5		much fine sand, slightly moist no HCl reaction.
				5.0-18.0": Sand. Light brown (7.5 YR 6/3) medium to coarse with trace to some gravel.
				Slightly moist, loose, gravel well rounded and variable composition. No HCl reaction.
28	30	16"	10,15,20,15	0-9.0": Sand. Medium to coarse as above.
		≤2.0		9.0-16.0": Sand. Light brown (7.5 YR 6/3), medium some coarse and fine sand, trace
				to some subrounded to well rounded pebble gravel. Slightly moist, loose. No HCl
				reaction.
30	32	13"	5,10,12,15	0-7.0": Sand. Medium as above, slightly moist to dry.
		2.25		7.0-13.0": Sand. Brown (7.5 YR 5/3) coarse with some gravel, loose, slightly moist to dry
				gravel well rounded variable composition up to 1 cm diameter. Trace to some medium
				sand, no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-128 Page 3 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
32	34	6"	4,8,15,22	0-5.5": Sand. Light brown (7.5 YR 6/4) fine to medium, loose, slightly moist to dry.
		≤3.0		Trace gravel (slough).
				5.0-6.0": Sand and Gravel. Coarse, as in overlying sample.
34	36	17"	5,10,20,32	0-4.0": Sand. Coarse, with some gravel grading into gravel.
		2.25		4.0-17.0": Sand and Gravel. Very pale brown (10 YR 7/3) slightly moist to dry, loose,
				no HCl reaction much coarse sand. Gravel: variable composition, subangular to well
				rounded up to 1.5 cm diameter, predominately granule sized.
36	38	15"	3,10,12,15	0-15.0": Sand. Pink (7.5 YR 7/4) fine to medium, very well sorted, dry and loose, no
		≤2.0		HCl reaction.
38	40	14"	3,8,10,15	0-14.0": Sand. Fine to medium as above, slightly moist 0 to 8.0 inch. 8.0-14.0 inch
		3		saturated.
40	42	17"	4,6,8,20	0-7.0": Sand. Fine to medium, as above saturated.
		5		7.0-16.0": Sand and Gravel. Brownish yellow (10 YR 6/6) very coarse, dense, saturated,
				much coarse and much medium sand. No HCl reaction. Gravel: angular to well rounded,
				variable composition up to 2 cm diameter.
				16.0-17.0": Sand. Reddish brown (5 YR 5/4) very fine, silty, HP = 1.31 slight HCl
				reaction, saturated.
42	44	17.5"	4,10,8,15	0-17.5": Sand. Reddish brown (5 YR 8/4) very fine, silty, as above with thinly bedded
		3		silts, same color. HP = 1.0 slightly to moderate HCl reaction. Saturated.
44	46	17"	3,8,8,11	Sand. Very fine and Silt. As above. Saturated, moderately laminated clay lenses
		150		up to 1/8 inch thick in lowest 6". Silt HP = 1.5 slightly to moderate HCl reaction.
46	48	19"	3,6,8,13	Sand. Very fine, as above, and silt. Interbedded, saturated. HP silt = 1.5, slight HCl
		70		reaction.
48	50	22"	3,6,10,20	0-22.0": Silt. Reddish brown (5 YR 5/4) as above, with clay at 5.0 to 7.0" moderate
		4		HCl reaction. HP = 3.9, silt very faintly laminated.
50	52	19"	8,9,11,15	0-19.0": Silt. With clay lenses as above, moist.
		3		
52	54	21"	3,6,9,15	0-21.0": Silt. With clay lenses as above, moist.
		8.5		

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-128 Page 4 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
54	56	24"	3,6,12,14	0-24.0": Silt. With clay lenses, finely interbedded as above. Slightly moist to dry.
		225		
56	58	22"	3,10,20,30	0-12.0": Silt. With clay lenses as above dry to slightly moist.
		1,250		12.0-22.0": Sand. Brown (7.5 YR 5/6) fine to very fine, slightly silty. Very well sorted,
				saturated, moderate HCl reaction, loose.
58	60	16"	25,50,4	0-16.0": Sand. Fine to very fine, as above, saturated, slight HCl reaction.
		2,250		
60	62	21"	11,12,20,25	0-6.0": Sand. Yellowish brown (10 YR 5/4) coarse, well sorted, loose, saturated, trace
		1,000		granular gravel.
				6.0-21.0": Sand and Gravel. Brown (10 YR 5/3) very coarse, some to much coarse
				sand, dense. Gravel up to spoon diameter. Gravel variable composition,
				subangular to subrounded.
62	64	22.5	4,4,8,20	0-18.0": Sand and Gravel. As above.
		250		18.0-22.5": Sand. Reddish brown (5 YR 5/3) fine to very fine, saturated, well sorted,
				no HCl reaction.
64	66	17"	5,10,10,13	0-6.0": Sand. Fine to medium, saturated, slough.
		250		6.0-17.0": Sand. Pale brown (10 YR 6/3) coarse to very coarse, much granular gravel,
				loose, saturated, trace pebble gravel variable composition, subangular to subrounded
				up to 1 cm diameter. Hole flushed at 70 ft bgs.
70	72	10"	5,15,25,30	0-10.0": Sand and Gravel. Brown (7.5 YR 5/4) fine to very coarse sand, granular
		350		gravel with some pebble gravel. Saturated, dense. Gravel subangular to well rounded.
				Variable composition.
75	77	7"	5,10,12,25	0-7.0": Sand and Gravel. As above, saturated. Hole flushed at 80 ft bgs.
		950		Driller notes different drilling at 79 ft bgs.
80	82	16"	5,10,15,15	0-16.0": Silt. Brown (7.5 YR 5/4) with very fine sand, finely interbedded, HP = 1.5 to 3.0,
		5		moderate HCl reaction.
				Very fine sand. Brown (7.5 YR 5/4) some to much silt, moderate HCl reaction, very well
				sorted.
				End of hole 82 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-129 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan

Drilling Started 12/17/98 Drilling Completed 12/17/98

Total Depth Drilled 82 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval cont. feet

Land-Surface Elev. 1092.78 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Z. Helper S. Schultz, B. Hansen

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	16"	2,2,2,2	0-5.0": Topsoil. Strong brown (7.5 YR 4/6) crumbly, silty sand with abundant rootlets,
		10		moist. No HCl reaction.
				5.0-16.0": Sand. Brownish yellow (10 YR 6/8) very fine, some to much silt, HP - 1.0.
				No HCl reaction, well sorted, moist.
2	4	21"	8,11,12,13	0-6.0": Sand. Very fine, as above, moist.
		≤7.0		6.0-12.0": Sand. Yellow (10 YR 7/8) coarse, slightly moist, loose, some very coarse
				sand, some to much medium sand, trace pebble gravel.
4	6	9"	3,5,9,9	0-9.0": Sand. Yellow (10 YR 7/6) coarse to medium, slightly moist, loose, trace very
		10		coarse sand, no HCl reaction.
6	8	17"	2,4,4,7	0-17.0": Sand. Reddish yellow (7.5 YR 7/8) coarse, slightly moist, loose. Some to much
		30		very coarse sand, some granular gravel, no HCl reaction.
8	10	14"	2,2,2,4	0-8.0": Sand. Coarse, as above, slightly moist.
		≤20		8.0-14.0": Silt. Yellowish brown (10 YR 5/8) sandy, HP = 2.8. Abundant very fine
				sand. No HCl reaction. Very faint fine laminations.
10	12	16"	3,3,4,7	0-5.0": Sand. Coarse as above, slough.
		≤20		5.0-16.0": Silt. Sandy, as above with lenses of very fine sand and clay. Moderate to
				strong HCl reaction in clay.
12	14	18"	3,3,6,4	0-18.0" Silt. Sandy, as above. Interbedded with clay: Red 2.5 YR 4/6), dry to slightly
		≤17		moist. HP = 2.5, strong HCl reaction, foliated.
14	16	20	6,5,5,7	0-8.0": Silt and Clay. As above.
		10		8.0-14.0": Sand. Very pale brown (10 YR 7/4) fine to very fine well sorted, loose, slightly
				moist to dry, no HCl reaction.
				14.0-19.0": Silt and Clay. As 0-8.0".

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-129 Page 2 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				19.0-20.0": Sand. Fine to very fine, as 8-14".
16	18	12"	4,6,8,12	0-12.0": Sand. Fine to very fine, as above, dry, some silt lenses, loose, no HCl reaction.
		15		
18	20	21"	4,6,10,15	0-21.0": Sand. Fine, as above, but mainly fine sand, trace silt lenses. Dry.
		≤12		
20	22	16"	3,5,10,18	0-16.0": Sand. Fine, as above. Dry.
		≤20		
22	24	19"	6,5,7,12	0-6.0": Sand. Fine, as above, dry.
		4		6.0-19.0": Sand. Very pale brown (10 YR 7/4) coarse, dry, loose, some pebble gravel
				(subangular to subrounded, variable composition) much very coarse sand. No HCl
				reaction.
24	26	19"	4,6,12,15	0-19.0": Sand. Coarse as above, dry.
		10		
26	28	16"	4,5,10,10	0-3.0": Sand. Coarse as above, dry.
		17		3.0-16.0": Sand. Very pale brown (10 YR 8/4) medium, dry, loose, much coarse sand,
				trace very coarse sand. No HCl reaction.
28	30	16"	5,7,10,15	0-16.0": Sand. Medium, as above, dry.
		18		
30	32	17"	5,7,10,14	0-17.0": Sand. Medium, as above, dry.
		10		
32	34	16"	6,10,17,20	0-16.0": Sand. Medium, as above, but no coarse sand, very well sorted.
		22.5		
34	36	20"	6,7,15,22	0-14.0": Sand. Medium as above.
		7		14.0-20.0": Sand. Light gray (10 YR 7/2) coarse to very coarse, dry, loose, trace gravel,
				no HCl reaction.
36	38	12"	5,8,11,13	0-12.0": Sand with Gravel. Light grey (10 YR 7/2) coarse to very coarse, loose, slightly
		2.5		moist. Gravel: subangular to subrounded, variable composition.
38	40	15"	6,8,10,20	0-15.0": Sand. Very pale brown (10 YR 8/3) coarse, trace to some very coarse sand,
		12		slightly moist, loose. No HCl reaction.
40	42	16"	6,10,15,20	0-4.0": Sand. Very pale brown (10 YR 7/4) coarse to medium, slightly moist, loose. No
		≤5.5		HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-129

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				4.0-8.0": Sand. Very pale brown (10 YR 7/4) coarse to very coarse, slightly moist, loose,
				no HCl reaction. Trace to some pebble gravel, subangular to well rounded, variable
				composition.
				8.0-16.0": Sand. Coarse to medium, as 0-4.0" with trace very coarse sand.
42	44	15"	7,9, 13,12	0-15.0": Sand. Very pale brown (10 YR 8/3) medium, slightly moist to dry, loose, well
		6		sorted, trace gravel, no HCl reaction.
44	46	17"	7,10,13,19	0-17.0": Sand. Medium, as above, grading down into coarse to medium sand, dry,
		22		trace well rounded pebbles. No HCl reaction.
46	48	17"	4,7,8,10	0-17.0": Sand. Very pale brown (10 YR 8/3) coarse to medium, as above, grading down
		5.5		into coarse sand, very dry, loose, trace well rounded gravel.
48	50	13"	8,8,10,15	0-4.5": Sand. Coarse as above, with some very coarse sand.
		15		4.5-13.0": Sand. Yellowish red (5 YR 5/6) fine to very fine, very well sorted, firm, very
				moist to saturated, no HCl reaction.
50	52	17"	6,8,6,9	0-17.0": Sand. Fine to very fine, as above, saturated, no HCl reaction, finer with depth.
		10		
52	54	18"	5,7,7,10	0-18.0": Sand. Reddish brown (5 YR 5/4) very fine, saturated, HP = 1.0. No HCl
		2.5		reaction.
54	56	20"	5,5,8,9	0-20.0": Sand. Very fine, as above, saturated.
		4.5		
56	58	22"	5,7,7,10	0-14.0": Sand. Very fine, as above, saturated.
		15		14.0-19.0": Silt. Brown (7.5 YR 5/4), very sandy, very slight HCl reaction. HP = 1.5,
				saturated trace clay lenses.
				19.0-22.0": Sand. Very fine as 0-14.0 inch.
58	60	33"	5,7,10,8	0-6.0": Sand. Very fine, as above, saturated.
		10		6.0-23.0": Silt. As above, saturated.
60	62	23"	5,8,9,9	0-23.0": Silt. As above, saturated, HP = 0.8. Trace clay lenses.
		6.5		
62	64	18.5"	4,5,5,7	0-18.5": Silt. Sandy, as above, very moist to saturated, trace clay lenses, trace HCl
		4.5		reaction. Silt very finely laminated. Slight HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-129 Page 4 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
64	66	21"	6,6,5,8	0-21.0": Silt. Very sandy, as above. HP = 1.1 slight HCl reaction. Trace clay lamination.
		8.5		
66	68	19"	3,5,7,7	0-19.0": Silt. Brown (7.5 YR 5/2) saturated, HP = 1.5 slight HCl reaction, locally sandy,
		6		trace clay lenses.
68	70	19"	3,5,12,13	0-19.0": Silt. As above, moist, moderate HCl reaction, HP = 2 to 2.5 trace clay lenses.
		8.5		
70	72	22"	3,4,5,9	0-22.0": Silt as above, moist.
		8.5		
72	74	18"	6,8,10,15	0-18.0": Silt. As above with thinly bedded very fine sand laminations. Saturated
		1.75		HP > 4.0 medium HCl reaction (trace clay lenses).
74	76	16"	4,6,8,8	0-16.0": Silt. With some clay lenses, lithology as above, very moist to saturated.
		2.5		
76	78	23"	5,3,6,15	0-23.0": Silt. As above, without clay lenses. Saturated to very moist.
		8.5		
78	80	19"	3,9,10,20	0-19.0": Silt. As above, moist to saturated, slight HCl reaction. HP = 3.0.
		8.5		
80	82	19"	6,6,8,10	0-19.0": Silt. As above very moist to saturated.
		9		
				EOH 82 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-130 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 12/18/98 Drilling Completed 12/18/98

Total Depth Drilled 87 Feet Hole Diameter 6 ¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1091.10 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper S. Schultz/ B. Hansen

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	8"/	4,4,3,4	0-8.0": Sand. Brown (7.5 YR 4/4), silty, abundant rootlets, crumbly, slightly moist,
		≤2		no HCl reaction. Sandy at base (fine sand with silt).
2	4	8"/	3,5,5,5	0-8.0": Sand. Brown (7.5 YR 5/4), medium, loose, slightly moist, some to abundant
		≤2		fine sand, trace coarse sand, trace gravel, trace silt.
4	6	4"/	3,2,2,3	0-4.0": Sand. Medium as above, dry to slightly moist.
		≤2.5		
6	8	10"/	2,2,4,8	0-10.0": Sand. Pale brown (10 YR 6/3), medium, loose, slightly moist, no HCl
		2		reaction, well sorted, trace coarse sand.
8	10	0	5,5,5,5	No recovery.
10	12	13"/	6,3,5,4	0-13.0": Sand. Very pale brown (10 YR 8/4), coarse, loose, dry to slightly moist,
		2		no HCl reaction, some medium sand.
12	14	13.5"/	4,3,3,5	0-13.5": Sand. Coarse as above, slightly moist.
		2		
14	16	17"/	3,5,4,3	0-17.0": Sand. Coarse as above, slightly moist.
		1.75		
16	18	16"/	4,3,4,6	0-16.0": Sand. Coarse as above, slightly moist.
		≤1.5		
18	20	16"/	2,4,4,4	0-16.0": Sand. Coarse as above, slightly moist, abundant medium sand, trace pebble
		≤1.75		gravel.
20	22	18"/	4,6,6,8	0-18.0": Sand. Coarse as above, with trace to some medium sand, slightly moist.
		≤1.5		
22	24	14"/	4,6,9,12	0-14.0": Sand. Yellow (10 YR 7/6), medium, very well sorted, loose, dry, no HCl

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-130 Page 2 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		1.75		reaction.
24	26	17"/	5,7,9,13	0-17.0": Sand. Very pale brown (10 YR 8/4), medium as above, dry to slightly moist,
		2		abundant coarse sand in lowest 6 inches, loose, well sorted.
26	28	17"/	6,6,10,11	0-1.0": Sand. Medium, as above, slightly moist.
		1.75		1.0-17.0": Sand. Very pale brown (10 YR 7/4), coarse, some to abundant medium
				sand, loose, slightly moist, no HCl reaction, trace clay lenses.
28	30	20"/	7,8,8,13	0-20.0": Sand. Coarse, as above with some to abundant very coarse sand, slightly
		≤1.5		moist.
30	32	11"/	8,10,13,23	0-2.5": Sand. Coarse as above.
		<1.75		2.5-11.0": Sand. Pink (5 RY 7/4), very fine, dry, slightly firm, slight HCl reaction,
				very well sorted.
32	34	19"/	5,9,11,10	0-19.0": Sand. Very fine as above, thinly laminated, dry.
		3.5		
34	36	20"/	8,12,18,19	0-20.0": Sand. Very fine as above with trace to some silt lenses, dry.
		2.5		
36	38	16"/	8,8,11,15	0-6.0": Sand. Very fine as above, slightly moist.
		2.5		6.0-16.0": Sand. Brown (7.5 YR 5/4), very silty, fine, very moist to saturated, HP = 1.0
				to 1.5, slight HCl reaction.
38	40	21.5"/	8,7,6,10	0-21.5": Sand. Brown (7.5 YR 5/4), silty (top 5 inches) grading into sandy silt with clay
		2.5		lenses. Slight HCl reaction, HP = 1.5 to 2.0.
40	42	18"/	7,6,10,10	Silty Sand/Sandy Silt. As above, very moist to saturated.
		≤12		
42	44	20"/	5,7,9,12	0-20.0": Silty Sand/Sandy Silt. As above, very moist to saturated. Some silt lenses,
		≤12		trace clay lenses.
44	46	16"/	7,7,9,10	0-16.0": Silt. Sandy, otherwise as above, with trace silt and clay lenses, very moist
		≤15		to saturated.
46	48	22"/	8,8,9,10	0-22.0": Silt. Reddish brown (5 YR 4/8), HP = 2.5 to 3.5, slight HCl reaction,
		<20		trace clay lenses, moist.
48	50	15"/	6,6,5,7	0-15.0": Silt. As above, moist, HP = 1.5 to 2.0, slight HCl reaction.
		25		
50	52	21"/	4,6,5,9	0-2.0": Silt. As above, slightly moist to moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

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Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		30		
52	54	19"/	5,4,8,9	0-19.0": Silt. As above, moist.
		<30		
54	56	21"/	6,6,9,8	0-21.0": Silt. As above, with some very fine sand, very moist to saturated.
		30		
56	58	24"/	3,6,7,9	0-24.0": Silt. As above, very moist.
		30		
58	60	19"/	5,8,8,9	0-19.0": Silt. As above, very moist to saturated.
		32		
60	62	12.5"/	5,7,9,9	0-12.5": Silt. As above, with some clay lenses, dry to slightly moist, HP = 2.5 to 3.5.
		45		
62	64	19.5"/	8,10,12,15	0-19.5": Silt and Silty Sand Interbedded. Silt: Greyish brown (10 YR 5/2), HP = 2.5 to
		≤32		3.0, moderate HCl reaction, some clay lenses, dry to slightly moist. Very fine silty
				sand: Brown (10 YR 4/3), HP = 1.0, saturated, no HCl reaction.
64	66	20"/	11,17,19,27	Sand. Brown (7.5 YR 5/4) fine, loose to slightly dense, saturated, well sorted, slight
		513		HCl reaction.
66	68	23"/	4,8,4,12	0-12.0": Sand. Fine as above.
		11.6		12.0-23.0": Sand. Brown (7.5 YR 5/3), coarse to very coarse, with some gravel,
				loose, saturated, some medium sand. Gravel: variable composition, subangular to
				subrounded.
68	70	7"/	7,10,8,9	Sand. Coarse with some gravel as above, trace to some silt, saturated.
		101		
70	72	19"/	8,13,9,9	0-19.0": Sand. Brown (10 YR 5/3), very coarse to coarse with gravel, loose slightly
		38.5		dense, saturated, trace to some medium sand, subangular to subrounded gravel,
				variable composition. Boring flushed.
75	77	8"/	11,9,15,23	0-8.0": Sand. Coarse to very coarse, as above, saturated. Boring flushed.
		29.5		
80	82	8"/	6,8,8,15	Sand. Light brown (10 YR 6/4), medium, well sorted, saturated, dense, no HCl
		7.8		reaction, tight drilling conditions.
85	87	6"/	4,6,14, 10	0-6.0": Silt. Yellowish red (5 YR 5/6). Note: driller reports change in conditions at

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-130

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		1.6		approximately 83 ft bgs. HP = 3.0 to 3.5, slightly moist, sandy, slight HCl
				reaction.
				EOH 87 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-131 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 12/19/98 Drilling Completed 12/19/98

Total Depth Drilled 79 Feet Hole Diameter 6 ¼ inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1090.82 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper S. Schultz/B. Hansen

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	22"/	4,4,4,4	0-6.0": Topsoil. Brown (7.5 YR 5/4), moist, crumbly, sandy silt, abundant rootlets,
		60		HP = 1.0.
				6.0-22.0": Sand. Reddish yellow (7.5 YR 6/8), fine, slightly dense, well sorted, some
				angular coarse sand, trace silt, no HCl reaction. Trace silt layers.
2	4	14"/	5,6,8,4	0-2.5": Sand. Fine as above, but with some to abundant medium to coarse sand, moist.
		3		2.5-6.0": Silt. Strong brown (7.5 YR 5/6), sandy, some black organic fragments,
				HP = 1.5, no HCl reaction, moist.
				6.0-14.0": Sand. Fine, as in overlying sample, moist.
4	6	12"/	2,3,2,5	0-12.0": Sand. Yellow (10 YR 8/6), fine to medium, some coarse sand, trace
		3		granular and pebble gravel, loose, moist, no HCl reaction.
6	8	5"/	4,6,8,12	0-5.0": Sand and Gravel. Brownish yellow (10 YR 6/6), very coarse, loose, slightly
		≤1.5		moist, some medium sand, abundant coarse sand, no HCl reaction.
8	10	0	10,8,8,9	No recovery.
10	12	1"/	10,11,12,11	0-1.0": Sand and Gravel. As 6 to 8 feet, moist.
		≤1.6		
12	14	15.5"/	3,3,3,4	0-15.5": Sand. Yellow (10 YR 7/6), coarse, moist, loose, some very coarse sand,
		2		trace granular gravel, no HCl reaction.
14	16	14"/	6,5,4,8	0-14.0": Sand. Coarse, as above with some to abundant gravel. Gravel subangular to
		2		well rounded, variable composition, up to 1 cm in diameter.
16	18	10"/	5,8,8,8	0-10.0": Sand. Pale brown (10 YR 8/3), coarse to medium, trace to some very coarse
		≤1.5		sand, dry, loose, (trace gravel), no HCl reaction.
18	20	16"/	4,7,9,9	0-4.0": Sand and Gravel. Light brownish gray (10 YR 6/2), coarse to very coarse,

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Sample/Core Log (Cont.d)

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Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		2.5		loose, slightly moist, no HCl reaction. Gravel subangular to well rounded, variable
				composition.
				4.0-16.0": Sand. Pink (7.5 YR 7/3), fine to medium, very well sorted, slightly
				moist, loose, no HCl reaction.
20	22	15"/	6,7,9,9	0-8.0": Sand and Gravel. Very coarse as 0 to 4 inches above.
		1.75		8.0-15.0": Sand. Pale yellow (2.5 V 8/3), coarse with gravel, dry, loose, no HCl
				reaction, gravel subangular to well rounded, variable composition.
22	24	16"/	3,7,7,9	0-16.0": Sand. Very pale brown (10 YR 7/3), coarse to very coarse, loose, slightly
		1.75		moist, trace gravel, no HCl reaction.
24	26	15.5"/	4,6,8,12	0-3.0": Sand. Coarse to very coarse, as above, slightly moist.
		2.25		3.0-15.5": Sand. Very pale brown (10 YR 8/3), medium, very well sorted, slightly moist,
				loose, no HCl reaction.
26	28	16"/	3,4,8,11	0-6.0": Sand. Medium as above with trace coarse sand.
		≤1.5		6.0-16.0": Sand. Very pale brown (10 YR 7/3) coarse, trace gravel, trace very coarse
				sand, loose, slightly moist, no HCl reaction.
28	30	14"/	5,8,14,16	0-14.0": Sand. Coarse as above with some to abundant gravel, dry.
		1.75		
30	32	11.5"/	8,7,10,13	0-11.5": Sand. Pink (7.5 YR 7/4), very fine, trace silt, dry, loose, moderate HCl
		2.5		reaction, well sorted.
32	34	17"/	7,9,15,14	0-7.0": Sand. Brown (7.5 YR 5/4), very fine as above, slightly moist, very thin silt
		3.5		laminations.
				7.0-17.0": Interbedded Silt and Sand. Brown (7.5 YR 5/4), very thin and very fine
				sand. Sand as above. Slight HCl reaction, HP: 0.5, moist.
34	36	16"/	8,8,9,12	0-16.0": Sandy Silt/Silty Sand. Brown (7.5 YR 5/4) very moist to saturated, HP = 1.2,
		2		no HCl reaction. Silt at 6 to 8 inches, brown (7.5 YR 5/4), HP = 1.5, no HCl reaction.
36	38	15"/	5,5,8,9	0-15.0": Silt. Sandy as above, with silt lenses, very moist as above, with clay
		10		lenses. Clay: yellowish red (5 YR 5/6), slight HCl reaction, HP = 2.0.
38	40	14"/	6,7,8,8	0-19.0": Silt. Sandy, interbedded with silt and clay lenses as above, saturated.
		17		
40	42	18"/	4,8,11,10	0-18.0": Silt. Sandy, thinly interbedded with clay lenses as above, saturated.
		55		

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Sample/Core Log (Cont.d)

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Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
42	44	22"/	8,11,13,12	0-22.0": Silt. Sandy, thinly interbedded with clay lenses as above, saturated.
		50		
44	46	19"/	5,6,7,9	0-19.0": Silt. With clay lenses, lithologies as above, very moist to saturated, silt
		50		has trace to some very fine sand.
46	48	22"/	5,6,5,7	0-22.0": Silt. With clay lenses as above, saturated, some silty sand/sandy silt lenses.
		20		
48	50	18"/	6,5,5,7	0-18.0": Silt. With clay lenses interbedded with very fine sandy silt,
		7.0		saturated. Sandy silt: brown (7.5 YR 5/4), saturated, HP = 1.0, no HCl reaction.
50	52	18"/	6,5,5,5	0-18.0": Silt. With clay lens as above interbedded with silty sand lenses, moist.
		6		
52	54	20"/	6,6,7,6	0-20.0": Silt. With clay lenses as above, very moist to saturated.
		15		
54	56	16"/	7,7,6,7	0-16.0": Silt and Clay. Lithologies as above, slightly moist.
		100		
56	58	16"/	6,50/1	0-4.0": Silt and Clay. As above, slightly moist.
		2000		4.0-16.0": Sand. Brown (7.5 YR 5/2), fine to very fine, very moist, slightly dense,
				silty horizons contain silty and clay lenses. Lithology as 0 to 4".
58	60	20"/	NA	0-20.0": Sand. Fine to very fine as above, saturated.
		200		
60	62	13"/	10,8,8,12	0-13.0": Sand and Gravel. Brown (7.5 YR 5/3), very coarse, some to abundant coarse
		225		sand, some medium and fine sand, trace silt. Gravel subangular to well rounded,
				variable composition, loose, saturated.
62	64	14"/	5,7,7,13	0-10.5": Sand and Gravel. Very coarse, as above.
		475		10.5-14.0": Sand. Reddish brown (5 YR 5/4), fine, very well sorted, saturated,
				loose, no HCl reaction.
64	66	24"/	6,8,12,20	0-7.0": Sand. Fine, as above.
		65		7.0-14.0": Sand. Reddish brown (5 YR 5/4), coarse to medium, saturated, loose.
				Grading down to coarse to very coarse sand in lowest 3 inches.
				14.0-24.0": Sand. Light brown (7.5 YR 6/4), coarse, saturated, loose, trace very
				coarse sand, becoming more abundant toward base (lowest 2 inches) lowest 2 inches

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Sample/Core Log (Cont.d)

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Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA/(ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				have some gravel, subangular to subrounded, variable composition.
66	68	11"/	7,9,12,10	0-11.0": Sand. Coarse as above, with some gravel, saturated.
		350		
68	70	13"/	7,6,10,9	0-13.0": Sand. Coarse with some gravel as above, saturated. Boring flushed and
		90		blind drill 5 feet.
75	77	13"/	20,40,50	0-12.0": Sand. Light brown (7.5 YR 6/4), fine to medium sand, well sorted, trace coarse
		45		sand, saturated, loose.
				12.0-13.0": Sand. Reddish brown (2.5 YR 5/4), very fine silty, HP = 0.5, no HCl
				reaction.
77	79	15"/	10,15,22,26	0-15.0": Silty Sand/Sandy Silt. Reddish brown (5 YR 5/4), HP = 1.5, no HCl reaction.
		11		
				TD 77 feet.

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Sample/Core Log

Boring/Well GMSG-132 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 12/20/98 Drilling Completed 12/20/98

Total Depth Drilled 92 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1092.17 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper S. Schultz/B. Hanse

Prepared By Ray Flynn Hammer Weigh 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	23"	2,2,2,2	0-4.0": Sand. Brownish yellow (10 YR 6/6) fine to very fine, some rootlets, dry,
		1.75		loose.
				4.0-23.0": Sand. Brownish yellow (10 YR 6/8) fine to very fine, some to much silt,
				HP ≤ 0.5 slightly moist.
2	4	18"	4,5,7,8	0-10.0": Sand. Reddish yellow (7.5 YR 6/8) fine to very fine as above with silt layer
		3		at 5 to 8 inches. Moist HP = 1.0.
				10.0-12.0": Sand. Reddish yellow (7.5 YR 7/8) coarse to medium dry, loose, some
				very coarse sand.
				12.0-18.0": Sand. Brownish yellow (10 YR 6/6) fine, well sorted, dry, loose. No
				HCl reaction.
4	6	14"	3,3,5,7	0-2½": Sand. Fine as above. Dry to slightly moist.
		3.5		2½-14.0": Sand. Reddish yellow (7.5 YR 7/6) fine to medium with some gravel, dry
				loose, some coarse sand. Gravel: subrounded to well rounded, variable composition.
6	8	14"	3,5,5,4	0-2.0": Sand. Medium with some gravel as above, dry.
		2.25		2.0-14.0": Sand. Reddish yellow (5 YR 6/8) coarse to very coarse, dry, loose, some
				medium sand; trace granular gravel.
8	10	12"	3,3,5,5	Sand. Pink (7.5 YR 8/4) medium, slightly moist, loose, some to much coarse sand,
		3		trace grain gravel.
10	12	18"	4,2,2,3	0-10.0": Sand. Light brown (7.5 YR 6/4) medium to coarse, saturated, loose, trace
		1.75		to some well rounded granular gravel.
				10.0-18.0": Silt. Brown (7.5 YR 5/4) with clay lenses. HP = 1.5, some clay lenses,
				very moist to saturated, no HCl reaction.

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Sample/Core Log (Cont.d)

Boring/Well GMSG-132 Page 2 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
12	14	17"	4,3,2,2	0-17.0": Silt. As above but slightly moist. HP = 3.5 slight HCl reaction. Some
		1.5		to much clay lenses, yellowish (5 YR 5/6), slight HCl reaction. Clay foliated, moderate
				HCl reaction, HP = 1.5.
14	16	15"	4,5,3,5	0-15.0": Silt/Clay. As above with trace to some sand lenses at base.
		1.75		
16	18	7½"	5,4,6,4	0-2.0": Silt/Clay. As above, very moist.
		3.5		2.0-17½": Sand. Pink (7.5 YR 7/4) very fine to fine, dry to slightly moist, loose, very
				well sorted, no HCl reaction.
18	20	16"	6,6,8,5	0-13.0": Sand. Fine as above, dry with trace to some silt lenses.
		2.5		13.0-16.0": Sand. Very pale brown (10 YR 8/4), medium, dry, loose, trace coarse
				sand. No HCl reaction.
20	22	15"	3,5,5,4	Sand. Very pale brown (10 YR 8/3) coarse to medium, dry, loose, no HCl reaction.
		1.75		Very well sorted.
22	24	13"	4,7,8,10	0-13.0": Sand. Coarse to medium as above with some to much well rounded,
		1.75		various composition gravel, dry and loose.
24	26	13"	4,5,7,10	0-13.0": Sand. Coarse to medium as above with out gravel, dry, loose.
		2.5		
26	28	14"	3,6,9,8	0-14.0": Sand. Coarse to medium as above, dry.
		1.75		
28	30	18"	5,6,8,11	0-12.0": Sand. Coarse to medium as above, dry.
		1.75		12.0-18.0": Sand. Light brown (10 YR 7/4) coarse to very coarse with some gravel,
				dry, loose. No HCl reaction, some granular gravel.
30	32	13"	5,8,8,10	0-13.0": Sand/Gravel. Very pale brown (10 YR 7/3) coarse and very coarse, loose,
		2.5		moist. Gravel: variable composition, granular with trace to some pebble gravel.
				Subrounded to well rounded.
32	34	12½"	5,5,8,12	0-12½": Sand. Very pale brown (10 YR 8/3) coarse to medium with some gravel,
		3.5		loose, slightly moist, some pebble gravel, some to much coarse and very coarse sand.
				No HCl reaction.
34	36	14"	8,10,12,17	0-14.0": Sand. Coarse to medium as above, slightly moist.
		3		
36	38	15"	4,7,7,9	0-13.0": Sand. Coarse to medium as above with some clay inclusions in lowest 6

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Sample/Core Log (Cont.d)

Boring/Well GMSG-132 Page 3 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		2.5		inches, dry.
				13.0-15.0": Silt. Light reddish brown (3.5 YR 6/4) sandy some very fine sand. HP =
				0.7 moderate HCl reaction, dry, slightly moist.
38	40	15"	5,8,9,9	0-15.0": Silt. Sandy as above with trace to some sand and sandy silt lenses. Lowest
		7		6 inches saturated.
40	42	15"	5,8,7,5	Sand. Silty, interbedded with silt as above, moist to saturated.
		3.5		
42	44	19"	8,10,12,17	0-19.0": Silt. Sandy as above, moist.
		2.75		
44	46	17"	10,8,10,13	0-17.0": Silt. Trace to some sandy silt lenses, lighologies as above, moist.
		8		
46	48	16"	6,8,12,10	0-16.0": Silt. Trace to some sandy silt as above with trace clay lenses, thinly
		3.5		laminated very clay to strong HCl reaction.
48	50	21	7,7,7,9	0-21.0": Silt. Trace sandy silt and clay lenses. Thinly laminated, moist.
		8		
50	52	21	5,7,9,11	0-21.0": Silt. As above, slightly moist.
		2.5		
52	54	19"	2,3,4,6	0-19.0": Silt. As above with some to much sand toward base, moist to very moist.
		15		
54	56	17"	10,9,10,13	0-17.0": Silt. As above, moist.
		30		
56	58	18"	11,10,11,12	0-9.0": Silt. As above, moist.
		17.5		9.0-18.0": Silt. Yellowish brown (10 YR 5/4) with clay interbedded. Slightly moist
				HP $\geq$ 4.0 moderate HCl reaction. Clay reddish brown (5 YR 5/4) strong HCl reaction,
				foliated, HP $\geq$ 4.0.
58	60	18"	5,4,8,7	0-18.0": Silt. As above with trace to some clay lenses, moist to very moist.
		30		
60	62	15"	5,7,12,10	0-15.0": Silt/Clay. Finely interbedded with trace coarse sand laminations. Silt and
		15		clay as in 55 to 58 sample, moist.

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Sample/Core Log (Cont.d)

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Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
62	64	19"	7,10,20,30	0-12.0": Silt/Clay. Interbedded as above.
		20		12.0-19.0": Silt/Clay. Interbedded with fine and very fine sand. Fine to very
				fine sand: Brown (7.5 YR 5/4) moist, loose, trace silt, slight HCl reaction.
64	66	15"	8,10,10,13	0-4.0": Silt. As above.
		15		4.0-15.0": Sand. Fine to very fine as above becoming fine sand at base, very moist
				to moist fine to very fine sand grading into.
66	68	15"	8,6,7,9	Sand/Gravel. Brown (7.5 YR 5/4) very coarse, saturated, trace to some silt, much
		10		coarse sand, some medium sand. Silt in base. Iron blow-up reported.
70	72	12"	8,8,12,20	0-6.0": Sand. Light brown (7.5 YR 6/4) coarse to very coarse, loose, saturated,
		≤5.0		some medium sand, some fine sand, trace granular gravel.
				6.0-12.0": Sand. Light brown (7.5 YR 6/4) fine to medium sand, loose, saturated,
				trace to some very fine sand.
75	77	22"	5,7,15,30	0-22.0": Sand and Gravel. Brown (7.5 YR 6/4) coarse to very coarse, loose,
		10		saturated, much medium sand, some fine sand, trace silt. Granular and pebble
				gravel, subangular to well rounded, variable composition.
80	82	24"	8,10,12,23	0-24.0": Sand and Gravel. Coarse to very coarse, as above, but without pebble
		5.5		gravel, saturated, boring flushed.
85	87	19	5,7,13,22	0-9.0": Sand and Gravel. Coarse to very coarse, as above, saturated.
		5		9.0-18.0": Sand. Reddish yellow (7.5 YR 6/6) coarse to medium, loose, saturated,
				some to much fine sand, trace to some very coarse sand, silt reported at 87.5 feet.
90	92	17	12,15,22,30	0-17.0": Silt. Brown (7.5 YR 5/4) HP 2.0 to 3.0, slight HCl reaction, trace clay
		3		lenses.
				EOB at 92 ft bls.

ARCADIS

Sample/Core Log

Boring/Well GMSG-133 Project/No. Ford/Kingsford WI001025.0002 (commerical MDEP) Page 1 of 1

Site Location Kingsford/Kingsford Medical Assoc. Drilling Started 6/3/03 Drilling Completed 6/3/03

Total Depth Drilled 9 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 6-inch by 3-inch Sampling Interval Continuous feet

Land-Surface Elev. 1112.77 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller NA Helper NA

Prepared By Rachal Sarri, Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	6"			Topsoil.
6"	9.0			Sand: Reddish brown, medium with rocks up to 3" diameter.
				EOB @9'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-134 Project/No. Ford/Kingsford WI001025.0002 (commerical MDEP) Page 1 of 1

Site Location Kingsford, Michigan (Little Buckhorn) Drilling Started 6/12/03 Drilling Completed 6/12/03

Total Depth Drilled 11' 4" Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 6-inch by 3-inch Sampling Interval Continuous feet

Land-Surface Elev. 1122.31 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller NA Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	7"			Asphalt: Subgrade.
7"	2.0			Sand: Orangish brown, fine, silty, wet.
2.0	6.0			Sand: Reddish brown, medium to fine, some silt, trace gravel (up to 35 mm,
				subrounded).
6.0	11.4			Sand: Reddish orange, medium, some coarse to very coarse, some fine gravel
				(up to 10 mm, subrounded).
				EOB @11'4".

ARCADIS

Sample/Core Log

Boring/Well GMSG-135 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 4/6/04 Drilling Completed 4/6/04

Total Depth Drilled 43 Feet Hole Diameter 8.25 inches Type of Sample/ Coring Device Blind

Length and Diameter of Coring Device _____ Sampling Interval _____ feet

Land-Surface Elev. 1116.49 feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Gary Helper John

Prepared By Paul Lenaker Hammer Weight _____ Hammer Drop _____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches OVA/OVM	Sample/Core Description
0	43			Blind drill
				End of boring at 43.

ARCADIS

Sample/Core Log

Boring/Well GMSG-136 Project/No. Ford/Kingsford WI001025.0033 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 6/23/04 Drilling Completed 6/26/04

Total Depth Drilled 127 Feet Hole Diameter 10 inches Type of Sample/ Coring Device

Length and Diameter of Coring Device Sampling Interval feet

Land-Surface Elev. 1132.23 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Mud Drilling Method Mud Rotary

Drilling Contractor Boart Longyear Driller Todd Schorslfeld Helper Matt/Cory

Prepared By Bruce Evans Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	127			Not Logged. See core log for Gm-83.
				EOB @ 127'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-137 Project/No. Ford/Kingsford WI001075.0011 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 8/3/04 Drilling Completed 8/3/04

Total Depth Drilled 85 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotosonic Core Barrel

Length and Diameter of Coring Device 20' x 4" Sampling Interval continued feet

Land-Surface Elev. 1124.38 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotosonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5.0	-1.26-9.06/	0-0.5' Sandy Silt: Yellowish brown (10 YR 3/4), sand very fine to fine, topsoil,
			1.37-3.03	predominately smooth silt, much organics, rootlets, grass, dry to damp, organic
				odor.
				0.5-5.0' Sand: Strong brown (7.5 YR 5/8), fine grain, trace medium to coarse,
				little gravel angular to subround 0.5-1.5', then trace fine subround ground from
				1.5-5.0', medium wells sorted, loose, damp, organic odor.
5	10	5	2.02-13.77/	0-2.0' Sand and Gravel: Dark yellowish brown (10 YR 4/4), sand fine to very coarse
			4.01-11.15	predominately fine gravel subangular to subround to 2", poorly sorted, loose, damp
				no odor.
				2.0-5.0' Sand: Brown (7.5 YR 5/4), predominately fine, trace medium to very
				coarse, trace fine subround gravel, well sorted, loose, no odor.
10	15	5	.57-2.28/	0-4.5' Sand: As above.
			2.14-4.04	4.5-5.0' Sand and Gravel: As above.
15	20	5	34-76/	0-0.7' Sand and Gravel: As above.
			27-60	0.7-5.0' Sand: Strong brown (7.5 YR 5/6), predominately fine, little medium to
				coarse, trace fine gravel angular to subround, moderately well sorted, loose,
				damp, uniform, no odor.
20	25	5	1644-42.42/	0-0.5' Sand: As above.
			32-101	0.5-1.3' Sand: Strong brown (7.5 YR 4/6), fine grain, some very fine, trace
				medium to coarse, trace fine gravel subround, moderate to well sorted, loose,
				damp, no odor.
				1.3-1.5' Silty Sand and Gravel: Strong brown as above, sand very fine to very
				coarse, predominately very fine, silty, gravel angular to subround to 0.5", silt
				nodules with multi-colored laminations within poorly sorted mixture, loose, damp,
				no odor.
				1.5-1.8' Sand: As above.
				1.8-2.3' Silty Sand and Gravel: As above.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-135

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				2.3-3.1' Sand: As above.
				3.1-5.0' Silty Sandy and Gravel: As above, redescribed here, brown (10 YR 4/3),
				sand very fine to very coarse, predominately very fine to fine, gravel angular to
				subround to 1.5", silt nodules multi-colored as above, very silty, loose, moist,
				no odor.
25	30	5	19.1-65/	0-1.0' Silt and Sand: Dark yellowish brown (10 YR 3/6), trace clay, trace subround
			25-55	gravel to 0.5", silt in matrix, grainy to smooth, some silty nodules as above, sand
				predominately very fine to fine, some coarse, moderately sorted, loose, damp,
				no odor.
				1.0-2.5' Silt and Sand: As above, but color is brown (10 YR 4/3), and dry.
				2.5-3.5' Silt and Sand: As above in 25-26, brown (10 YR 4/3).
				3.5-5.0' Silt/Sand/Gravel: Trace clay in matrix, also a few multicolored plastic
				clay nodules, may have been layered, silt grainy to smooth, also some silt nodules
				as above, sand very fine to very coarse, predominately fine, gravel angular to
				subround to 2", very poorly sorted, loose, damp, no odor.
30	35	5	22.37-64.08/	0-0.5' Silt/Sand/Gravel: As above.
			17-71	0.5-5.0' Sand/Silt: Strong brown (7.5 YR 5/6), much clay 2.5-3.0, probably as
				clay layer, clay is strong brown (7.5 YR 4/6), very soft, plastic, otherwise uniform,
				very grainy silt/borderline very very fine sand, very well sorted, loose, damp,
				no odor.
35	40	5	-3.27-0.62/	0-5.0' Sand/Silt: As above, but saturated, liquefied from drilling.
			3-40	
40	45	0	--	No recovery.
45	50	5	-4.31- -1.32/	0-3.0' Silt with Clay Interbeds: Silt is brown (7.5 YR 5/4), clay is yellowish red
			3.17-15.42	(5 YR 4/6), predominately smooth silt, with clay layers varved to approximately 1",
				clay is plastic when worked and has fissile platy appearance on broken surface,
				soft, HP = 0.5, overall cohesive, firm, wet (from drilling), no odor.
				3.0-5.0' Silt: Brown (7.5 YR 4/4), trace clay varves as above, smooth to grainy,
				cohesive wet, uniform, no odor.
50	55	5	-.59- -4.1	0-5.0' Silt: As above, brown (7.5 YR 4/4), with trace clay varving as above, smooth
			5.02-19.73	to somewhat grainy, uniform, moist to wet (from drilling?), slight odor?
55	60	5	1.97-8.36/	0-2.0' Silt: As above.
			756-10000	2.0-5.0' Silt/Clay: Interbeds: Silt, brown (7.5 YR 5/4), clay yellowish red (5 YR 4/6),
				clay layers varved to 2" thick, abundant clay, but still predominately silt, smooth
				to somewhat grainy, clay appears fissile on broken surface as above, but is hard,
				HP = 4.0, plastic, overall firm, cohesive, damp to moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSB-135 Page 3 of 3

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
60	65	5	2.44-6.78/	0-1.0' Silt and Sand: Brown (7.5 YR 4/4), sand very fine grain well sorted, very
			208-7800	silty, liquefied, saturated from drilling, sticky, uniform, no odor.
				1.0-1.8' Sand: Strong brown (7.5 YR 4/6), fine to medium grain, well sorted,
				uniform, loose, wet (from drilling), no odor.
				1.8-5.0' Sand: Brown (7.5 YR 5/4), little gravel angular to subround to 2.5", sand
				very fine to very coarse, predominately fine, poorly sorted, grain size variation
				throughout, loose, dry, no odor.
65	66	1	3.7-3.9/	0-1.0' Sand: Strong brown (7.5 YR 5/6), fine grain, very well sorted, clean, very
			85-517	uniform, loose, moist to wet (from drilling), no odor.
66	70	4	2.21-6.56/	0-2.0' Silt/Sand/Grave/Clay: Intermixed, saturated, soft, liquefied, slough.
			728-20000	2.0-2.5' Sand: Strong brown (7.5 YR 5/6), predominately very fine grain, trace
				fine to coarse, moderately well sorted, uniform, somewhat loose, damp, no
				odor.
				2.5-4.0' Sand: Brown (7.5 YR 5/4), very fine to very coarse, predominately fine,
				little subround gravel up to 1", poorly sorted, loose, damp, no odor.
70	75	5	3.32-10.17/	0-1.0' Sand: As above in 68.5-79.0', but more coarse grain sand in matrix.
			8700-12000	1.0-2.0' Sand: Brown (10 YR 5/3), very fine to very coarse, predomately very fine
				to fine, little silt, little angular to subround gravel to 2.5", poorly sorted, dry,
				powdery, loose, no odor.
				2.0-4.0' Sand: As above, silty, but wet, no odor.
				4.0-5.0' Sand: As above, but dry, could be drilling phenomena with probably at 72
				feet, powdery.
75	80	5	1.34-3.10/	0-5.0' Sand: Brown (7.5 YR 4/2), fine to coarse, predominately medium grain,
			124-1050	slight coarse, medium to coarse (3.0-5.0), trace subround gravel to 2", poorly
				sorted, loose, saturated, slight odor.
80	85	5	1.74-5.98/	0-0.5' Gravel: Dark brown (7.5 YR 3/2), silty, some sand very fine to very coarse,
			125-975	gravel subangular to subround to 1", poorly sorted, loose, saturated, slight odor.
				0.5-5.0' Silt: Brown (7.5 YR 4/4), smooth silt, firm, hard, uniform, clay layer at
				2.5, approximately 0.7" thick, clay yellowish red (5 YR 4/6), platy appearance,
				plastic, trace clay varves throughout, somewhat cohesive, crumbly when worked,
				saturated, slight odor.
				EOB @ 85'

ARCADIS

Sample/Core Log

Boring/Well GMSG-138 Project/No. Ford/Kingsford WI001075.0011 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 8/5/04 Drilling Completed 8/5/04

Total Depth Drilled 85 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core Barrel

Length and Diameter of Coring Device 10' x 5" Sampling Interval continuous feet

Land-Surface Elev. 1125.46 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Jason Helper Scott Schultz Royce Brown

Prepared By Andy Mumpy/Toni Schoen Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
0	5	5	4.24-5.0/	0-0.5' Silt: Black, little very fine to fine sand, topsoil, many organics, rootlets,
			2.07-3.39	grass, little fine gravel, moist, loose, organic odor.
				0.5-1.0' Silty Sand: Very fine to fine grain, trace to little subround gravel to 1.5",
				well sorted sand, loose, damp, organic odor.
				1.0-1.4' Silt: Dark yellowish brown (10 YR 4/4), very grainy, some very fine to fine
				sand, silt is somewhat cohesive, contains gravel subround up to 2.5" in matrix,
				crumbly when broken, damp, no odor.
				1.4-5.0' Sand: Strong brown (7.5 YR 5/6), fine grain, trace medium to very coarse,
				moderately well sorted, trace fine subangular to subround gravel, loose, damp,
				no odor.
5	10	5	0.12-6.26/	0-3.5' Sand: As above, but with more medium to very coarse grains, predominately
			1.17-7.62	fine, some medium to very coarse, poorly sorted, color as above, also more gravel
				content, little to some subangular to subround gravel to 3", loose, dry to moist,
				no odor.
				3.5-5.0' Silt/Sand/Gravel: Brown (7.5 YR 4/4), sand very fine to very coarse,
				predominately sand matrix, very poorly sorted, silty, much fine gravel angular to
				subround, some up to 1", loose, damp, no odor.
10	15	5	6.22-6.80/	0-0.5' Sand: Fine to very coarse gravel, predominately medium, poorly sorted,
			0.75-2.78	trace fine subround gravel, loose, moist, no odor.
				0.5-5.0' Sand: Brown (7.5 YR 5/4), fine to medium grain, trace coarse, trace
				angular to subround gravel up to 1", well sorted, loose, clean sand, moist,
				no odor.
15	20	5	5.04-9.95/	0-5.0' Sand: Brown (7.5 YR 4/4), very fine to very coarse grain, predominately
			91.8-21.3	fine, trace gravel angular to subround to 1.5", little gravel 1.0-3.0, little silt in
				places, poorly sorted, loose, damp, no odor.
20	25	5	8.11-11.79/	0-1.0' Sand: Brown (7.5 YR 5/4), as above, but somewhat firmer, predominately
			8.75-22.97	very fine grain, moderately to well sorted, less gravel, loose, damp, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-138

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				1.0-5.0' Silt: Brown (7.5 YR 5/3), smooth, uniform, crumbly, some very very fine
				sand 3.0-3.2, very well sorted, soft, loose, damp, no odor.
25	30	5	7.35-11.44/	0-5.0' Silt: As above, smooth, uniform, brown (7.5 YR 5/3), soft, crumbly,
			5.07-16.39	somewhat cohesive to somewhat loose, damp to moist, no odor.
30	35	5	8.11-10.99/	0-5.0' Silt: As above, trace clay varves at 32', clay is yellowish red (5 YR 5/6), plastic,
			3.45-17.91	has fissle appearance, otherwise uniform silt as above, moist to wet, somewhat
				cohesive to somewhat loose, soft, somewhat crumbly, some vesicles, no odor.
35	40	5	4.64-7.44/	0-5.0' Silt: As above, brown (7.5 YR 5/4), slightly more clay, a few sporadic clay
			2.09-9.12	layers as above, varved to approximately 0.5" thick, predominately silt matrix as
				above, uniform, smooth, wet to saturated, somewhat cohesive (due to moisture
				content), vesicles, soft, no odor.
40	45	5	6.98-12.26/	0-5.0' Silt: As above with a few clay layers, as above.
			9.74-26.59	
45	50	5	4.47-10.75/	0-5.0' Silt: As above, brown (7.5 YR 5/4), trace clay varying as above, but color
			6.28-128.91	grades into brown (10 YR 5/3), below 3.0, otherwise same as above, uniform,
				smooth, soft to somewhat firm, somewhat cohesive, wet, trace vesicles, no odor.
50	55	5	4.51-8.77/	0-2.0' Silt: As above.
			3.01-11.97	2.0-3.0' Silt: Brown (10 YR 4/3), darker color then above, smooth to grainy, some
				clay layers, varved to 1" thick, clay is plastic, yellowish red (5 YR 4/6), with fissile
				appearance on broken surface, medium dense, HP = 3.0, silt is somewhat
				cohesive to somewhat loose and crumbly, soft to somewhat firm, moist to wet,
				no odor.
55	60	6	4.86-9.53/	0-2.0' Silt/Clay Interbeds: Silt is brown (7.5 YR 4/4), clay is yellowish red (5 YR 4/6),
			19000-150000	silt matrix is smooth to very grainy in places, approaches very very fine sand below
				1.0', clay is plastic, dense, HP = 4.0, clay layers varved to approximately 1.5" thick,
				fissile/platy appearance on broken surface, silt matrix is somewhat cohesive and
				contains trace clay, overall damp to moist, no odor, possible confining unit holding
				perched water above, sharp contact with dry sandy unit below.
				2.0-2.5' Sand: Brown (7.5 YR 5/4), predominately fine grain, trace medium to
				coarse, trace fine subangular to subround gravel up to 1", moderately well
				sorted, loose, dry to damp, no odor.
				2.5-5.0' Sand: Light brown (7.5 YR 6/3), sand predominately fine, little medium
				to very coarse, some very fine, some silt, little gravel angular to subround up to
				1.5", powdery, poorly sorted, loose, dry, no odor.
60	65	5	8.63-11.21/	0-5.0' Sand: As above, powdery, dry, some silt, no odor, 1.5-2.5' interval contains
			301-2450	some sand, strong brown (7.5 YR 4/6), fine grain, but probably drilling
				phenomena, very silty 4.5-5.0', predominately very fine sand and silt 4.0-5.0', dry,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-138

Prepared by Andy Mumpy/Toni Schoen

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
				loose, no odor.
65	70	5	5.34-21.80/	0-5.0' Silty Sand: Light brown (7.5 YR 6/3), predominately very fine to fine grain,
			7600-12000	trace medium to coarse, 65-66' contains some medium to coarse, little gravel
				subangular to subround up to 2", 65-66', trace fine subangular to subround gravel
				below 66', very silty in places, less silt 3.0-4.0', sand is moderately to well sorted,
				loose, powdery, dry, no odor.
70	75	5	6.37-11.03/	0-0.5' Sandy Silt: Pinkish gray (7.5 YR 6/2), powdery silt with sand very fine grain,
			5000-27000	trace medium to coarse, trace fine gravel subangular to subround, loose, dry,
				dusty, no odor.
				0.5-1.0' Sand: Pinkish gray (7.5 YR 7/2), very fine to fine grain, well sorted, loose,
				dry, no odor.
				1.0-1.5' Sandy Silt: As above in 70-70.5', interbedded sandy silt vs very fine sand
				in 0-5.0'.
				1.5-2.0' Sand: As above, pinkish gray, very fine to fine grain, well sorted, dry.
				2.0-2.5' Sandy Silt: As above.
				2.5-4.0' Sand: As above, but slightly coarser, predominate fine grain, very well
				sorted, dry, trace silt, but silt could be from bounding layers of sandy silt.
				4.0-5.0' Sandy Silt: As above, dry, powdery, no odor.
75	80		3.74-10.65/	0-2.0' Sandy Silt: As above, dry, powdery, no odor.
			7.16-15000	2.0-5.0' Sand: Brown (7.5 YR 5/4), fine grain, trace medium to coarse, well sorted,
				loose, saturated, no odor.
80	85	5	4.5-7.66/	0-1.5' Sand: Brown (7.5 YR 4/4), predominately very fine to fine grain, trace
			911-1650	medium to coarse, moderately to well sorted, loose, saturated, no odor.
				1.5-5.0' Sand: Dark brown (7.5 YR 3/3), medium grain, trace coarse, well sorted,
				loose, no odor.
				EOB @ 85'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-200 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site

Location Kingsford, Michigan Drilling Started 7/24/98 Drilling Completed 7/24/98

Total Depth Drilled 48 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Land-Surface Elev. 1100.15 feet [X] Surveyed [ ] Estimated Sampling Interval continuous feet

Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Prepared By Ray Flynn Driller Dan Helper Toby

Hammer Weight 300 lbs Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	7"/6.0	2,2,2,2	0-3.0": Top Soil. Very dark grey brown (10 YR 3/2), silty sand, dry and crumbly with some rootlets.
				3.0-4.0": Sand and Gravel. Very pale brown (10 YR 7/4), no HCl reaction, fine sand with much coarse sand, granular gravel, some to much silt, dry, crumbly.
				4.0-7.0": Silt. Yellowish brown (10 YR 5/6). HP = 1.5, no HCl reaction, moist.
2	4	13"/5.0	3,3,3,5	0-7.0": Sand. Fine, reddish yellow (7.5 YR 6/8) dry, loose, very well sorted, no HCl reaction, trace coarse sand.
				7.0-13": Sand. Medium, brownish yellow (10 YR 6/6) some to much coarse sand, well sorted, dry, loose.
4	6	10"/5.0	5,3,3,3	0-10": Sand and Gravel. Coarse, yellow (10 YR 7/6), loose, slightly moist, abundant, granular gravel of variable composition, subangular to subrounded.
6	8	14"/4.0	3,2,2,2	Sand. Coarse, brownish yellow (10 YR 6/6), dry, loose, moderate sorting, some granular gravel. No HCl reaction.
8	10	13"/3.5	2,5,4,3	0-7.5": Sand. Coarse, as above.
				7.5-13": Gravel. Brown (7.5 YR 5/4), granular gravel with much pebble gravel and coarse to fine sand. Trace silt, moist, no HCl reaction. Loose to slightly cohesive, some fragments larger than spoon-shattered.
10	12	6.5"/4.5	2,4,5,7	Gravel. As above very moist to saturated.
12	14	0	4,5,2,2	No recovery.
14	16	17"/4.0	5,2,2,2	0-7.5": Silt. Sandy, yellowish red (5 YR 5/6), moist, no HCl reaction. HP = 1.5 to 2.5, some to much very fine sand, clay lenses 0.5 to 1.5 inches and 8½ to 9 inches. Clay red (2.5 YR 5/6), no reaction with HCl foliated HP = 1.0 to 1.5 inches.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-200

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	12"/5.0	5,6,6,6	0-12": Silt. As above, very moist, but slight HCl reaction. Clay at 0 inch (1/8
				inch) and 9½ inch (¼ inch). Clay moderate HCl reaction, more sandy
				toward base, becoming silty very fine sand.
18	20	16"/5.0	3,3,6,8	Silt. Clay and silty sand as above, interbedded. Moderate laminations up
				to ½ inch thick 1/8 inch clay at 4, 6½, 8½, 11½ and 14½ inches. HCl
				reaction (ranging from) strong in clay to weak in silty sand. Saturated.
20	22	14.5"/3.5	4,6,5,8	Interbedded moderately laminated silt and silty sand, as above with clay
				lenses (1/16 inch) at ½, 4½, 7½, 9½, 11½ inches, saturated to moist at base.
22	24	16"/4.5	6,8,8,10	Interbedded silt, silty sand and clay as above, saturated. Clay 0, 4, 8¼ inch
				thick clay lenses at 12 and 15 inches. Well sorted, fine sand lenses at 7 inches
				(1/8 inches) and 16.5 inches (¼ inches) saturated.
24	26	17"/3.5	3,4,5,8	Interbedded silt, silty sand and clay as above, very moist to saturated ½ thick.
				Clay at lenses 4, 5, 8¼ inch clay lenses at, 11, 13½, 16½ inches. HP (silt) 2.5 to
				>4.0. HP (clay) = 2.0 to 2.5, HP (silty sand) = 1.0 to 1.5. Crumbly.
26	28	20"/3.5	6,5,4,8	0-7.0": Interbedded silts, clays and silty sands, saturated.
				7.0-20": Interbedded silty sands, silts and clay as above, but mainly silty
				sand and clay. Moist. Clay main lithology, up to 3 inches thick, moist to dry,
				HP = 3.5 to 4.0, strong HCl reaction.
28	30	20"/15	3,4,6,8	0-20": Interbedded silty sand, silt and clay as above, but mainly silt and clay,
				moist to dry, HP (silty) 3 to 4. HP (clay) 3.5 to 4.0.
30	32	17"/150	3,5,6,8	0-7.0": Interbedded silt, silty sand and clay as above, dry to slightly moist.
				7.0-10": Clay. Reddish brown (5 YR 5/4) dry, HP = 2.5. Strong HCl reaction.
				10-17": Interbedded very fine sand, silty sand and silt. Moderately
				laminationed (units up to ¼ inch thick) dry to slightly moist, fine sand lense
				15 to 15.5 inch, dry (HP silt = 3.0). Sand more abundant toward base.
32	34	9"/600	11,12,12,13	0-9.0": Sand. Fine to very fine, pink (7.5 YR 7/4), dry, loose, slight HCl
				reaction, finely laminated
34	36	5"/5	6,7,11,10	0-4.0": Sand. Fine to very fine, as above, dry and loose.
				4.0-5.0": Sand. Coarse, brownish yellow (10 YR 6/6), dry, loose, some to much
				granular gravel, much sample lost. No retainer.
36	38	12"/50	11,10,13,12	Sand. Fine to medium, pinkish white (7.5 YR 8/2), dry, loose, very well sorted,
				no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-200

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
38	40	10"/10	3,4,5,10	Sand. Fine to medium, as above, dry and loose trace grangular gravel.
40	42	12"/80	3,7,10,12	0-12": Sand. Fine to medium, as above, dry and loose.
42	44	15"/40	4,5,7,9	0-4.0": Sand. Fine to medium grading into.
				4.0-15": Sand. Coarse, light grey (10 YR 7/2), loose, slightly moist, trace
				granular gravel, no HCl reaction.
44	46	16"/8	9,7,10,11	0-4.0": Sand. Fine to medium, as above, dry and loose, slough.
				4.0-6.0": Sand. Coarse to medium, as above, very moist.
				6.0-16": Sand and Gravel. Yellowish brown (10 YR 5/4), very poorly sorted,
				fine to coarse sand with trace silt. Gravel. Granular with some pebble gravel
				subangular to rounded, variable composition, loose to slightly dense
				saturated.
46	48	16"/10	9,11,14,15	0-16": Sand and Gravel. Saturated, as above.
				End of hole 48 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-202 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/25/98 Drilling Completed 7/25/98

Total Depth Drilled 46 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval Continuous feet

Land-Surface Elev. 1099.81 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Toby

Prepared By Ray Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	16"/6.0	2,2,2,2	0-8.0": Top Soil. Light brown (10 YR 7/1), sandy silt, dry, loose and crumbly.
				8.0-16": Silty Sand. Strong, brown (7.5 YR 5/8), slightly most to dry, HP = 0.5
				crumbly trace rootlets. No HCl reaction.
2	4	6"/3.5	3,3,1,2	0-3.0": Silty Sand. As above, slightly moist.
				3.0-6.0": Sand and Gravel. Yellowish brown (10 YR 5/6) loose, dry. Matrix
				coarse sand, some medium. Gravel well rounded, no HCl reaction, abundant
				pebble gravel.
4	6	15"/7.0	3,3,3,3	0-15": Sand and Gravel. As above, dry.
6	8	12"/9.0	2,2,2,2	0-12": Sand and Granular Gravel. Pale brown (10 YR 6/3), coarse, some
				medium and fine sand, trace pebble, loose and slightly moist.
8	10	16"/8.0	3,3,3,3	0-4.0": Sand and Gravel. Coarse, as above.
				4.0-16": Sand. Medium, very pale brown (10 YR 7/4), very well sorted, loose,
				slightly moist, no HCl reaction.
10	12	10"/9.5	2,3,4,4	0-4.0": Sand. Medium as above.
				4.0-10": Sand. Coarse sand and pebble gravel. Light yellowish brown
				(10 YR 6/4), moist, loose, trace silt, trace medium and fine sand. Gravel
				subangular to subrounded.
12	14	10"/6.0	4,6,5,4	0-10": Sand and Gravel. As above, moist. Clasts, greater than spoon diameter,
				i.e. shattered.
14	16	10"/7.5	6,4,3,1	0-2.0": Sand and Gravel. As above, saturated.
				2.0-10": Silt. Yellowish brown (10 YR 5/4), HP = 1.0-1.5. No HCl reaction.
				Silty sand lense from 3 to 4 inch. Saturated. Ccolor as silt HP = 1.5. No HCl
				reaction.
16	18	15"/7.0	8,5,4,6	0-15": Interbedded Silts and Clays. Silt: yellowish brown (10 YR 5/4),
				dry HP = 2.0-2.5. Moderate HCl reaction. Clay: red (2.5 YR 5/6), HP = 3.0-3.5

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-202

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				plastic, foliated, strong HCl reaction. Silty sand as above, at 15 to 16 inches.
				1 inch clay seams every 2 inches approximately.
18	20	17"/6.0	3,4,5,4	0-17": Silt. Silty sand and clay interbedded as above. Silt and sand,
				dry to slightly moist.
20	22	16"/350	4,3,4,6	0-16": Silt. Silty sand and clay interbedded as above. Silty sand, more
				abundant toward base, dry to slightly moist.
22	24	10.5"/	6,6,6,6	0-9.0": Sand. Fine, light brown (7.5 YR 6/4), some very fine sand, and some
		1,250		silt. Moderate HCl reaction, loose, dry, finely laminated at 9 to 10½ inch
				medium sand, very pale brown (10 YR 8/3), loose, dry, very well sorted.
24	26	11"/	5,4,5,6	0-11": Sand. Coarse, with granular gravel. Very pale brown (10 YR 8/3),
		2,500		loose, dry. Some to much fine sand and medium sand, trace subrounded
				pebble gravel.
26	28	13"/	5,6,9,11	0-13": Sand. Fine to medium, very pale brown (10 YR 8/2), well sorted, trace
		1,250		pebble gravel, trace coarse sand, dry, loose, no HCl reaction.
28	30	16"/350	5,5,5,7	0-16": Sand. Medium. Very pale brown (10 YR 8/2) dry, loose some coarse
				sand, and trace granular gravel.
30	32	15"/	3,4,5,7	0-4.0": Sand. Medium, as above.
		2,750		4.0-15": Sand. Fine, pinkish white (7.5 YR 8/2), very well sorted, dry, loose,
				no HCl reaction.
32	34	14"/	5,7,8,8	0-3.0": Sand. Fine as above.
		4,500		3.0-14": Sand. Coarse and granular gravel. Very pale brown (10 YR 8/2),
				dry, loose. Gravel, subrounded to well rounded, variable composition.
34	36	14"/750	6,6,8,8	0-14": Sand. Medium, very pale brown (10 YR 8/2) dry, loose, trace coarse
				sand and trace granular gravel. No HCl reaction.
36	38	16½"/	5,4,5,4	0-16.5": Sand. Medium, as above, dry, loose.
		3,000		
38	40	15"/500	6,7,11,10	0-3.0": Sand. Medium, as above, dry and loose.
				3.0-15": Silt. Reddish brown (5 YR 5/4), HP = 3.5 to 4.0, moderate HCl
				reaction, dry, crumbly.
40	42	17"/950	5,5,8,8	0-2.0": Silt. As above.
				2.0-17": Interbedded coarsely laminated silt and very fine silty sand. Moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-202

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				Silt as above. Silty sand, reddish brown (5 YR 5/4), moderate to strong HCl
				reaction, HP = 2.0.
42	44	15"/600	4,5,5,8	Interbedded moderately laminated silt and silty sand. Clay layer at 3 to 3½
				inches. Slightly moist.
44	46	17"/350	7,6,5,6	Interbedded silt and silty sand, as above, slightly moist. Clay at 1 inch (¼ inch)
				and 12 inches (½ inch).
				EOH 46 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-204 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/26/98 Drilling Completed 7/26/98

Total Depth Drilled 54 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval continuous feet

Land-Surface Elev. 1100.57 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used none Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	23"/3.5	2,2,2,2	0-6.0": Top Soil. Grayish brown (10 YR 5/2) sandy silt, dry crumbly, trace
				pebble gravel.
				6.0-14": Sand. Brownish yellow (10 YR 6/6), silty, dry and crumbly.
				14-22": Sand. Yellow (10 YR 7/6), very fine silty, well sorted, dry, crumbly,
				no HCl reaction.
2	4	7"/5.0	1,2,4,5	0-7.0": Sand. Brownish yellow (10 YR 6/6) fine, dry, loose, very well sorted,
				no HCl reaction.
4	6	2"/3.0	10,6,7,6	0-2.0": Sand. Dark grayish brown (10 YR 4/2), medium with some gravel, no
				HCl reaction, dry and loose, possible slough.
6	8	6"/3.0	4,4,4,4	0-6.0": Sand and Gravel. Light brownish gray (10 YR 6/2) fine to medium
				sand matrix, some coarse sand, clasts greater than spoon diameter to
				granule size. Variable composition, subrounded, dry and loose, some
				slight calc. clasts, moderate HCl reaction.
8	10	4"/≤3.0	4,6,6,8	0-4.0": Sand and Gravel. As above, dry and loose.
10	12	11"/≤2.5	5,4,4,5	0-7.0": Sand and Gravel. As above, dry and loose.
				7.0-12": Sand. Very pale brown (10 YR 7/3) fine, dry, loose, very well sorted,
				no HCl reaction.
12	14	17"/≤2.5	3,2,2,3	0-17": Sand. Very pale brown (10 YR 7/3) medium, dry to slightly moist,
				loose, very well sorted, no HCl reaction.
14	16	5"/3.5	5,5,2,2	0-5.0": Sand. Very pale brown (10 YR 8/3) fine, dry to slightly moist, loose,
				very well sorted, no HCl reaction.
16	18	9"/10	6,3,4,5	0-5.0": Sand. Very pale brown (10 YR 8/3) coarse to fine, dry to slightly moist,
				loose and well sorted.
				5.0-9.0": Silt. With clay lenses. Silt, light reddish brown (5 YR 6/3). HP = 2.0
				strong HCl reaction, moist. Clay, reddish brown (5 yr 5/4) slightly plastic,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-204

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				strong HCl reaction, moist.
18	20	20"/<3.5	4,6,5,6	Interbedded Silt and Clay. Silt, pale brown (10 YR 6/3) HP = 2.0 slightly
				moist, to dry, strong HCl reaction, clay as above. HP = 2.0, strong HCl reaction
				17 to 17½ inch medium sand lense.
20	22	4"/4.0	7,9,7,7	Silt and Clay. As above, moist to dry.
22	24	12"/7.0	5,6,5,5	0-12": Sand. Very pale brown (10 YR 8/3), fine to medium, dry, loose, no HCl
				reaction, very well sorted.
24	26	14"/5.0	1,4,5,5	0-14": Sand. Pinkish white (7.5 YR 8/2), fine, dry and loose, very well sorted.
26	28	12½"/4.0	3,4,9,8	0-12.5": Sand. Very pale brown (10 YR 8/3) coarse and granular gravel dry,
				loose, no HCl reaction, gravel subangular to subrounded and variable
				composition.
28	30	11"/5.0	3,4,7,8	0-11": Sand. Coarse granular gravel as above, trace pebble gravel, dry and
				loose.
30	32	11½/≤4.0	5,5,7,10	0-11.5": Sand. Coarse and granular gravel as above, slightly moist, loose,
				trace pebble gravel.
32	34	15"/≤4.0	3,6,9,13	0-3.0": Sand. Coarse and gravel as above.
				3.0-15": Sand. Light grey (10 YR 7/2), coarse, loose, dry, well sorted.
34	36	14"/≤4.0	3,4,7,9	0-14": Sand. Coarse, as above with some to much granular gravel, dry to
				slightly moist, loose.
36	38	11½"/4.0	6,7,6,9	0-11.5": Sand. Very pale brown (10 YR 8/3) fine to medium, dry, loose, some
				coarse sand and some trace gravel, no HCl reaction.
38	40	10"/4.5	4,7,7,9	0-10": Sand. Pinkish white (7.5 YR 8/2) fine, dry, loose, moderate sorting,
				some medium and coarse sand, no HCl reaction.
40	42	12"/≤3.5	8,9,6,7	0-8.0": Sand. Very pale brown (10 YR 8/4) coarse and granular gravel, , loose,
				dry, granular grain variable composition, subangular to subrounded.
				8.0-12": Sand. Reddish brown (5 YR 5/4), very fine, moist, crumbly, trace to
				some silt, very finely laminated.
42	44	16"/175	6,7,10,13	0-6.0": Sand. Very fine, as above, very moist.
				6.0-18": Interbedded silts and clays. Silt, reddish brown (5 YR 5/3), very
				moist HP = 1.5 to 2.5 slight HCl reaction. Clay at 6½ to 7½ inch at 12 to 13
				inches. Red, (2.5 YR 4/6) HP = 2.5 to 3.0, strong HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-204

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
44	46	20"/450	5,6,5,7	0-20": Sand. Yellowish red (5 YR 5/6) very fine, silty, sandy silt, HP = 1.5 to 2.0,
				saturated.
46	48	19"/≤6.0	3,4,5,5	0-19": Silt. Sandy as above with clay from 10 to 11 inches, saturated.
48	50	17"/≤4.0	4,4,4,7	0-17": Silt. Sandy silty sand as above, saturated. Clay at 3 to 4 inch and 17 to
				17½ inch, silty becoming more sandy toward base.
50	52	19"/≤4.0	5,5,5,5	0-15": Silt. Sandy as above, saturated.
				15-19": Silt. Brown (10 YR 5/3) slightly clayey, HP - 1.5 to 2.0, moderate HCl
				reaction. Clay from 17 to 17.5 inches. Silt moist.
52	54	19.5"/≤4	3,3,5,7	0-19.5": Silt. Sandy as above, saturated clay at 6 to 6½ inches.
				EOH 54 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-205 Project/No. WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 7/27/98 Drilling Completed 7/28/98

Total Depth Drilled 56 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2"

Sampling Interval continuous feet

Land-Surface Elev. 1099.65 feet [x] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used none

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Toby

Prepared By Raymond Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	24"/≤4.5	2,2,2,2	0-6.0": Top Soil. Grayish brown (11 YR 5/2), dry, crumbly silty sand with
				abundant rootlets.
				6.0-14": Sand. Brownish yellow (10 YR 6/6), very fine silty, dry, crumbly. No
				HCl reaction.
				14-24": Sand. Very pale brown (10 YR 7/4) fine, dry, loose very well sorted.
2	4	5"/3.5	3,3,3,2	Sand. Pale brown (10 YR 6/3) coarse, pebble gravel, subangular to
				subround pebble gravel with coarse sand, some medium sand, trace fine sand,
				loose, dry. No HCl reaction.
4	6	10"/3.5	7,5,4,3	Sand. Brownish yellow (10 YR 6/8) coarse, with some to much gravel,
				some medium sand, dry, loose, gravel, subrounded to rounded, variable
				composition.
6	8	5.0"/≤3.0	4,4,3,4	0-5.0": Sand. With much gravel, as above, dry and loose.
8	10	12"/≤2.5	5,3,5,6	Sand and Gravel. Light yellowish brown (10 YR 6/4) dry, loose, coarse sand
				with much medium sand. Well rounded granular and pebble gravel of
				variable composition. No HCl reaction.
10	12	7"/4.5	2,5,6,8	Sand and Gravel. As above, dry and loose.
12	14	10½/≤2.5	3,4,6,5	0-10.5": Sand and Gravel. As above, dry and loose.
14	16	13"/<2.5	5,7,1,1	0-3.0": Sand and Gravel. As above, moist and loose.
				3.0-13": Interbedded silt with clay lenses. Silt, brown (7.5 YR 5/3) HP = 1.5 to
				3.0, moist, slightly HCl reaction. Clay, reddish brown (5 YR 5/4) slightly
				plastic, foliated. No to slight HCl reaction, ¼ inch lenses at 5, 7½, 9½, and
				1/8 inch lense at 11 inches.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-205

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	14"/≤2.5	7,3,4,4	Interbedded silt and clay, approximately 70 percent clay beds up to 2 inches thick. Clay, HP = 3.0 to 4.0, strong HCl reaction, no plastic. Silt, HP = 2.5 to 3.0, strong HCl reaction, dry.
18	20	15"/≤2.5	1,5,3,6	0-11": Interbedded silt and clay as above, silt approximately 60 percent of beds, dry. 11-15": Sand. Light brown (7.5 YR 6/4) fine, dry, loose, well sorted, no HCl reaction.
20	22	12"/≤3.0	6,8,10,9	0-5.0": Interbedded silt, silty band and clay lenses. Silt, brown (7.5 YR 5/3), slightly moist, moderate HCl reaction. Silty sand, brown (7.5 YR 5/3), HP 1.5 to 2.0 slightly moist, moderate HCl reaction, clay as above. 5.0-12": Sand. Brown (7.5 YR /53) very fine, some silt, slight HCl reaction, very well sorted, dry to slightly moist.
22	24	0	12,16,15,10	No recovery.
24	26	15"/3.0	1,3,4,4	Sand. Very pale brown (10 YR 8/3) coarse to medium, dry, loose, well sorted, trace grain gravel, no HCl reaction.
26	28	13"/5.0	6,6,8,11	0-13": Sand. Very pale brown (10 YR 8/3), fine to medium, some coarse sand, some well rounded variable composition, granular gravel, loose, dry, granular gravel most abundant at 8 and 13 inches.
28	30	16"/3.5	3,6,6,7	0-16": Sand. Fine to medium, as above, but with trace grain gravel, loose and dry.
30	32	10"/2.5	5,6,7,9	0-10": Sand. Very pale brown (10 YR 8/3), fine, loose, dry, very well sorted, no HCl reaction.
32	34	14"/≤2.5	2,3,5,8	0-14": Sand. Fine as above, grading into granular, pea gravel pebble sized gravel, with fine to medium sand, dry, loose, no HCl reaction.
34	36	14"/≤3.0	5,5,6,7	0-14": Gravel. Very pale brown (10 YR 7/4), fine granular with coarse to fine sand, dry, loose, gravel variable composition, subangular to rounded, no HCl reaction.
36	38	17"/≤2.5	5,9,9,1	0-5.0": Gravel. Granular as above, dry and loose. 5.0-17": Sand. Very pale brown (10 YR 8/2), medium to coarse, dry, loose, moderate sorting, no HCl reaction, trace granular gravel.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-205

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface)		Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6	
From	To	OVA (ppm)	Inches	Sample/Core Description
38	40	15"/≤3.0	5,9,9,11	0-7.0": Sand. Medium to coarse, as above, dry and loose.
				7.0-10": Sand. Very pale brown (10 YR 8/2) fine, dry, loose very well sorted,
				no HCl reaction.
				10-15": Silt. Brown (7.5 YR 5/4) HP = 2.0 to 2.5, moderate HCl reaction,
				moist, some to much very fine sand.
40	42	12"/≤3.0	5,7,9,11	0-5.0": Sand. Brown (7. 5YR 5/4) very fine, saturated, some silt, HP = 2.5,
				slight HCl reaction.
				5.0-12": Silt. Brown (7.5 YR 5/4) HP = 1.5, slight to moderate, HCl reaction,
				moist.
42	44	14"/≤2.5	7,7,7,10	0-14": Sand. Very fine as above, but with trace silt, saturated.
44	46	15"/30	4,3,5,7	0-5.0": Sand. Brown (7.5 YR 5/4),vVery fine silty, HP = 2.5 to 3.0. Slightly HCl
				reaction, saturated.
				5.0-15": Silt. Brown (7.5 YR 5/4) HP = 3.0 to 3.5, moderate HCl reaction.
46	48	15"/65	3,3,4,5	0-15": Silt. Sandy with silt laminations HP = 2.0 to 3.0. Brown (7.5 YR 5/4)
				very fine silt laminations, saturated slightly to moderate HCl reaction, silt
				contains some to much very fine sand.
48	50	16"/150	5,5,6,5	0-16": Silt. Sandy as above, saturated, slight HCl reaction.
50	52	16"/45	4,4,4,5	0-14": Silt. Sandy as above, saturated.
				14-16": Silt. Yellowish brown (10 YR 5/4) with clay lenses ¼ at 14 inch and 1/8
				at 16 inch. HP = 2.5, slight HCl reaction, finely laminated.
52	54	16"/≤2.5	2,2,4,5	0-16": Silt. As above, saturated, clay inclusions, 1/8 at 6 inch, 7 to 7½ inch,
				silt finely laminated with more sand rich, very fine sand, horizons.
54	56	15"/≤2.5	4,4,4,7	0-15": Silt. As above, saturated, clay lenses 13 to 13.5 inches.
				EOB at 56 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-206 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 7/28/98 Drilling Completed 7/28/98

Total Depth Drilled 38 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1090.72 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used none Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) PVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	15"/8.0	3,3,3,3	0-3.0": Top Soil. Yellowish brown (10 YR 5/6) silty sand, dry, crumbly and
				abundant rootlets.
				3.0-15": Sand. Yellow (10 YR 7/6), coarse with much granular gravel, dry,
				no HCl reaction, gravel subrounded to well rounded, variable composition.
2	4	10"/12.5	4,2,1,3	0-10": Sand and Gravel. As above, dry and loose.
4	6	3"/9.0	5,4,3,2	0-1.0": Sand and Gravel. As above.
				1.0-3.0": Silt. Brown (7.5 YR 5/4) HP = 1.0 strong to medium HCl reaction,
				trace clay inclusion, much very fine sand.
6	8	9"/6.0	10,7,5,5	0-6.5": Silt. Brown (7.5 YR 5/4) sandy, HP = 2.5 to 3.0, moderate HCl
				reaction, abundant very fine sand, 1/16 inch clay at 6 inch, 6½ to 9.0
				very fine sand, light brown (7.5 YR 6/4) dry, loose, trace silt, slight HCl
				reaction.
8	10	18"/12	5,4,6,4	Interbedded Silt and Silty Sand. Brown (7.5 YR 5/4), silty sand. Very moist,
				saturated HP = 2.5 to 3.0 slight HCl reaction, approximately 60 percent.
				Sample, silt, moist, HP = 3.0 to 3.5, moist, moderate HCl reaction. Clay
				lenses at 3, 6, 9, 13 inches up to ½ inch thick underlain by silt. Red
				(2.5 YR 5.8) strong HCl reaction.
10	12	1"/10	10,10,10,9	0-1.0": Silt. As above.
12	14	17"/12	2,1,2,1	0-17": Interbedded silt and clay. Present in seams up to 1½ inch thick,
				approximately 60 percent clay dominate in lowest 7 inch of sample
				(5½ of 7 inches) slight moist to dry. Clay, reddish brown (5 YR 5/3) HP = 2.5
				at top to 4.0 at base, strong HCl reaction. Silt, brown (7.5 YR 5/2). HP = 4.0
				moderately strong HCl reaction.
14	16	18"/6.5	1,1,2,3	0-18": Interbedded silt and clay as above, slightly moist to dry ¼ inch,
				silty sand lense at 10 inch. Clay approximately 60 percent.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-206

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) PVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
16	18	20"/6.5	1,2,5,7	0-20": Interbedded silt and clay as above, dry. Very fine sand lense at 12 and
				14½ inches.
18	20	16"/7.5	6,12,10,11	0-3.0": Silt and Clay. As above.
				3.0-16": Sand. Light brown (7.5 YR 6/4) very fine, dry, crumbly, moderately,
				HCl reaction, very well sorted, trace some silt.
20	22	15"/6.0	4,6,7,6	0-10": Sand. Very fine, as above.
				10-14": Sand. Very pale brown (10 YR 8/2) medium and coarse with much
				gravel, dry, loose, slight HCl reaction, gravel, subangular to subrounded,
				variable composition, trace to some fine sand.
22	24	11"/7.0	4,4,5,7	0-3.0": Sand. Medium and coarse, with much gravel as above.
				3.0-11": Sand. Very pale brown (7.5 YR 7/3) fine, dry, loose, some medium
				sand, trace coarse sand and trace granular gravel, no HCl reaction.
24	26	12"/8.0	5,5,5,8	Sand and Gravel. Very pale brown (10 YR 8/3) coarse, dry, loose, some fine
				and medium sand, gravel up to ½ inch in diameter subrounded, well
				rounded, variable composition, no HCl reaction.
26	28	13"/6.0	4,5,6,8	Sand. Pink (7.5 YR 7/3), fine to medium, loose, dry very well sorted, no
				HCl reaction.
28	30	15"/4.5	6,6,8,11	0-2.5": Sand. Fine to medium, as above, dry.
				2.5-15": Gravel. Light grey (10 YR 7/2), granular, dry, loose, subangular to
				subrounded, trace pebble gravel. Some to much coarse and medium sand.
30	32	15"/9.0	5,7,7,14	0-15": Gravel. As above, dry and loose with some to much pebble, gravel.
32	34	12"/11	2,4,6,6	0-12": Gravel. As above, with some to much pebble gravel up to ¼ inch
				in diameter, loose, slightly moist.
34	36	17"/11	5,5,6,5	0-17": Sand and Gravel. Light brown (7.5 YR 6/4) loose and saturated,
				fine to coarse sand, poorly sorted. Gravel subrounded to well rounded,
				variable composition, granular with some to much gravel.
36	38	14"/11	3,4,4,7	0-6.0": Sand and Gravel. Saturated, as above.
				6.0-14": Silt. Brown (7.5 YR 4/4), HP = 3.5 to 4.0, moderate HCl reaction.
				Clay lense at 9 inches.
				EOH 38 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-207 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 8/3/98 Drilling Completed 8/3/98

Total Depth Drilled 52 Feet Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2'

Sampling Interval Continuous feet

Land-Surface Elev. 1089.69 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Driller Dan Helper Toby

Prepared By Ray Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	16"	4,4,4,4	0-4.0": Top Soil. Pink (7.5 YR 7/4) sandy, some to much silt, some granular
		5		gravel, dry and crumbly. No HCl reaction.
				4.0-16.0": Gravel. Pink (7.5 YR 7/4) granular with coarse sand, dry, loose
				some medium and fine sand, trace to some silt, no HCl reaction.
2	4	13"	22,3,2,2	0-9.0": Gravel. As above, granular with sand.
		5.5		9.0-13.0": Silt. Brown (7.5 RY 5/4) dry, moderate to strong HCl reaction,
				HP ≥ 4.0, finely laminated. ¼ inch clay lens at 10 inches, dry.
4	6	15"	2,3,3,4	0-5.0": Silt. Yellowish red (5 YR 5/6), HP = 3.0, strong HCl reaction, some
		3.5		clay, trace very fine sand, very moist.
				5.0-15.0": Silt/Sand: Brown (7.5 YR 5/10), interbedded, finely laminated silt and
				very fine sands, dry to slightly moist, strong HCl reaction. HP > 4.0, clay lense at
				8½ to 9 inches, and 13 to 13½ inches. Fine sand at 8 inches.
6	8	10"	2,3,3,5	0-10.0": Silt. Light brown (7.5 YR 6/4) sandy, HP = 1.0, moderate HCl reaction.
		3		Abundant very fine sand. Clay lens at 7 to 8 inches. Clay: red (2.5 YR 4/8) HP =
				2.0, Foliated, nonplastic, some black staining, strong HCl reaction, very moist.
8	10	12"	1,2,5,7	0-3.0": Silt. As above, sandy.
		5.5		3.0-12.0": Sand. Strong brown (7.5 YR 5/6) very fine, silty, HP = 1.5, slight HCl
				reaction, saturated.
10	12	18"	1,4,4,5	0-18.0": Sand. As above, silty, with 1/16 inch clay layers at 6, 8, 11, and 14 inches
		4		finely laminated, silt more abundant below clay layers, becomes sand with depth.
				Moderate HCl reaction, saturated.
12	14	13"	1,4,4,4	0-13.0": Sand. Strong brown (7.5 YR 5/6) silty, HP = 1.5, moderate HCl reaction,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-207

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		4.5		1/16 inch clay seams lenses at 3, 7, and 11 inches. Moderate HCl reaction.
				Saturated, finely laminated.
14	16	18"	1,4,4,5	0-6.0": Silt. Sandy; as above, saturated.
		4.5		6.0-8.0": Sand. Light brown (7.5 YR 6/4) very fine, saturated, very well sorted,
				trace silt, slightly HCl reaction.
				8.0-18.0": Sand. Silty; as above, clay lenses at 11½ and 13½ inches,
				saturated.
16	18	14"	2,2,5,6	0-14.0": Sand. Silty as above, saturated, ¼ inch clay lenses at 3½, 4, 9½, inch;
		3.5		1/8 inch lenses at 11 and 13 inches.
18	20	12"	1,1,1,1	0-6.5": Silt and Clay. As above, interbedded ½ to 1 inch bed, moist.
		4		6.5-12.0": Silt and Clay. As above, interbedded, but also very fine sand lenses
				interbedded (finely laminated) with silt. Clay: brown (7.5 YR 4/4) HP > 4.0, strong
				HCl reaction.
20	22	19"	2,2,2,2	Silt. As above, interbedded ½ to 1 inch with very fine sands and clays. 1 inch lense
		5.5		of well sorted, moist fine sand at 17 inches.
22	24	17"	3,4,7,8	0-11.0": Silt. As above. Interbedded with very fine sand and clay. 1/16 inch lense
		5		of medium sand at 8 inches, dry to slightly moist.
				11.0-17.0": Sand. Light brown (7.5 YR 6/4) fine to very fine, very moist, moderate
				HCl reaction, very well sorted.
24	26	8"	3,5,7,8	0-8.0": Silt. As above, interbedded with very fine sand, as above. Approximately
		4.0		70 percent sand, moist. 1/8 inch lense of medium sand at 0 inches, moderate
				HCl reaction.
26	28	11"	8,12,11,10	0-2.0": Sand. As above, fine to very fine with fine silt laminations at 0 to 1 inch.
		3		2.0-5.5": Sand. Pink (7.5 YR 8/3) medium, loose, dry, well sorted, no HCl
				reaction.
				5.5-11.0": Sand. Medium, as above, with some coarse sand and pebble gravel.
28	30	13"	7,7,7,9	0-6.0": Sand. As above, medium, with gravel.
		--		6.0-13.": Sand. As above, coarse, with granular gravel, very pale brown
				(7.5 YR 7/4) loose, dry. Gravel subrounded to well rounded, variable composition,
				no HCl reaction, some fine sand.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-207

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
30	32	17"	3,4,4,7	0-13.0": Sand. Very pale brown (10 YR 7/4), medium to coarse, loose, slightly
		4		moist, some to much subround to well rounded granular and pebble gravel, no
				HCl reaction.
32	34	16"	5,5,7,11	0-16": Sand. As above, medium to coarse, some to much granular gravel, moist to
		6		saturated to base. No HCl reaction.
34	36	18"	5,5,5,5	0-18.0": Sand. As above, medium to coarse, saturated.
36	38	24"	3,5,10,13	0-17.0": Sand. As above, medium to coarse, saturated.
		8.0		17.0-24.0": Gravel. Pale brown (10 YR 6/3) granular, loose, saturated, some
				pebble gravel. Some coarse and medium sand, no HCl reaction.
38	40	10"	7,7,7,10	0-10.0": Sand. As above, medium to coarse, saturated.
		3.5		
40	42	14.5"	5,3,4,3	0-14.5": Sand. As above, medium to coarse, saturated.
		3.5		
42	44	16"	5,5,5,9	0-5.0": Sand. As above, medium to coarse, saturated.
		7		5.0-16.0": Gravel. Yellowish brown (10 YR 5/4), granular, saturated, some to
				much coarse to fine sand. Gravel: variable composition, subangular to subrounded
				loose, saturated.
44	46	11"	6,6,12,28	0-11.0": Sand. As above, medium and coarse.
		5		
46	48	0	15,13,20,23	No recovery.
48	50	18"	10,11,15,20	0-18.0": Sand. Medium to coarse as 44 to 46 feet, saturated.
		3.5		
50	52	18"	5,8,8,11	Silt. Light reddish brown (5 YR 6/4). Saturated, slight HCl reaction, trace to much
		3.5		fine sand, clay lens from 11.5 to 12 inches.
				EOH 52 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-208 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 8/4/98 Drilling Completed 8/5/98

Total Depth Drilled 44 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1087.25 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Help Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	12	1,2,4,4	0-4.0": Top Soil. Light grayish brown (10 YR 6/2) loose, crumbly, sandy silt. Dry.
		3.5		4.0-10.0": Sand. Very pale brown (10YR 7/3) coarse, silty,loose, dry, some medium
				and fine sand, trace pebble gravel, no HCl reaction.
				10.0-12.0": Sand. Brownish yellow (10 YR 6/8), fine to medium, silty, trace pebble
				gravel, trace coarse and very coarse sand.
2	4	12"	2,4,4,4	0-7.0": Sand. Silty, as above.
		3.5		7.0-12.0": Sand. Yellowish brown (10 YR 5/6), very fine, dry, loose, some coarse
				and some medium sand, trace granular gravel, no HCl reaction.
4	6	10"	3,2,3,3	0-10.0": Sand. Very pale brown (10 YR 7/4) coarse, dry, loose. Some to much
		4		medium sand, some fine sand and trace pebble gravel. No HCl reaction,
				subangular.
6	8	11"	7,3,4,2	0-7.0": Sand. Brown (10 YR 5/3) Fine to medium, much coarse sand and granular
		2.5		to pebble gravel, slightly moist, loose.
				7.0-11.0": Sand and Gravel. Very pale brown (10 YR 7/3) coarse, loose, slightly
				moist. Gravel: subangular to subrounded, variable composition, much medium sand.
8	10	9"	5,2,2,2	0-9.0": Sand and Gravel. As above, coarse, saturated, gravel up to 1 inch
		4.5		in diameter.
10	12	11"	2,5,7,2	0-7.0": Sand and Gravel. Coarse as above, but with some to much well rounded
		4		gravel of variable composition, saturated.
				7.0-11.0": Silt. Yellowish brown (10 YR 5/4) HP = 2.0, very slight HCl reaction,
				clay lamination at 10 inches. Saturated.
12	14	5"	4,6,6,8	0-5.0": Silt. Yellowish brown (10 YR 3/6) sandy, slight to moderate HCl reaction,
		3		finely laminated, saturated, HP = 2.0, much very fine sand.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-208

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	16"	6,6,4,6	0-10.0": Silt. Sandy, as above, clay lens 3 to 3.5 and 1/8 inch lenses at 8.5 inch.
		3.75		10.0-12.0 inch: Sand. Yellowish brown (10 YR 5/4) silty, loose, saturated, abundant,
				very fine sand, slight HCl reaction.
				12.0-16.0: Silt. Sandy, as 0 to 10 inches, 1/8 inch clay lens at 13 inches.
16	18	18"	3,2,4,3	Silt and Clay. Finely interbedded. Silt: (60 percent of sample), grayish brown
		5		(10 YR 5/2) HP = 2.5 to 3.0. Moist, finely laminated, trace to some very fine
				sand, moderate HCl reaction. Clay, reddish brown (5 YR 5/4) HP = 2.5 to 3.0,
				platy, strong HCl reaction, nonplastic.
18	20	12"	1,1,5,5	Silt and Clay. As above, finely bedded, but clay with trace very fine sand
		4.5		laminations, silt is moist.
20	22	16"	2,3,5,5	Silt and Clay. As above, finely bedded, with saturated medium sand at 11 to 11.5
		6		inch. Silt very finely laminated with very fine silty sand 13 to 13.5, saturated.
22	24	12"	2,2,8,10	0-4.0": Silt and Clay. As above, with fine and medium sand, from 3 to 3.5 inch,
		5.5		saturated.
				4.0-12.0": Sand. Brown (7.5 YR 5/3) very fine, silty, saturated, moderate HCl
				reaction, HP = 1.5, crumbly.
24	26	12"	2,4,9,10	0-12.0": Sand. Brown (7.5 YR 5/4) fine to very fine, crumbly, well sorted, trace silt,
		8		slight HCl reaction, saturated, faint coarsely spaced laminations, 1/8 inch clay
				lens at 5 inches.
26	28	11"	8,8,10,7	0-11.0": Sand. Pink (7.5 YR 7/3), fine to medium, well sorted, trace coarse
		3.5		sand and granular gravel, no HCl reaction, moist, loose, coarsely laminated, 1/16 inch
				black laminations.
28	30	12"	5,7,7,8	Sand. Fine to medium, as above, dry.
		3.5		
30	32	15"	5,6,6,6	0-10.0": Sand. Very pale brown (10 YR 7/4), medium with much fine sand,
		4		moist to dry, loose, trace granular gravel. Becoming medium to coarse sand
				toward base.
				10.0-15.0": Sand. Medium to coarse, as above, saturated.
32	34	16"	2,3,4,3	0-6.0": Sand. Medium to coarse, as above, saturated.
		3.5		6.0-16.0": Sand. Pale brown (10YR 6/3) medium to coarse, with some to much

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-208

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				granular gravel, some fine sand. Gravel: variable composition, subangular to
				subrounded, trace pebble gravel, loose and saturated.
34	36	12"	2,3,4,5	0-3.0": Sand. Medium to coarse, with much gravel, as above, saturated.
		4		3.0-12.0": Sand. Grayish brown (10 YR 5/2) very coarse, with granular gravel,
				much coarse sand, some medium and fine sand, saturated. Gravel variable
				composition, subangular to well rounded, loose.
36	38	15.5"	6,5,7,7	0-15.5": Sand and Gravel. As above, very coarse, saturated.
		4.5		
38	40	15"	7,9,10,13	0-15.0": Gravel. Light brownish gray (10 YR 6/2) granular with some coarse and
		7		very coarse sand. Saturated, dense, gravel composition as above, some pebbles gravel,
				1/8 inch lense of silt at 11 inches, surrounded by gravel.
40	42	21"	3,2,7,11	0-17.0": Gravel. As above, saturated.
		≤3.0		17.0-21.0": Silt. Yellowish red (5 YR 4/6) sandy, moderate HCl reaction. HP = 2.5 to
				3.5. Clay lens at 19 to 19.5 underlain by ½ inch lens of clayey silt, both have
				strong HCl reaction, abundant very fine sand.
42	44	17"	3,4,7,10	0-17.0": Silt. Sandy, as above, with abundant very fine sand, saturated, finely
		3		laminated.
				EOH 44 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-209 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/20/98 Drilling Completed 8/20/98

Total Depth Drilled 70 Feet Hole Diar 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1100.73 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	10"	2,4,4,4	0-4.0": Top Soil. Grayish brown (10YR 5/2), dry, loose, loam, silty sand with
		3		much rootlets.
				4.0-10.0": Sand. Gray (10 YR 5/1) coarse to fine, silty, poorly sorted, slightly
				moist, crumbly, trace pebble gravel, no HCl reaction.
2	4	17.5"	4,4,4,5	0-5.0": Sand. Strong brown (7.5 YR 5/6) very fine, silty, trace to some
		2.5		pebble gravel, slightly moist, nonplastic, HP = 0.5, no HCl reaction.
				5.0-17.5": Sand. Very pale brown (10 YR 7/4), fine to medium, very well sorted,
				loose, dry.
4	6	9"	5,5,5,10	0-9.0": Sand and Gravel. Very pale brown (10 YR 7/4), dry, loose, fine to very
		3		coarse sand with some to much granular gravel, much pebble gravel, some gravel
				greater than 2 inches diameter, variable composition, subangular to well rounded.
6	8	4"	4,9,9,7	0-4.0": Sand and Gravel. As above, but saturated (from wet spoon?), gravel less
		2.75		than than 2 inches in diameter.
8	10	10"	12,8,8,8	0-10.0": Sand and Gravel. As above with some to much coarse pebble
		5		gravel (greater than 2 inches in diameter) dry, loose. No HCl reaction.
10	12	1"	8,7,7,8	Shattered rock fragment otherwise no recovery.
12	14	13"	4,5,6,5	0-12.5": Sand and Gravel. Brownish yellow (10 YR 6/6), loose, moist, subrounded
		5		to well rounded, variable composition. Gravel up to ½ inch in diameter in
				coarse to fine sand matrix.
				12.5-13.0": Sand. Yellowish brown (10 YR 5/6), very fine, silty, slightly moist,
				no HCl reaction.
14	16	10.5"	4,2,6,5	0-3.0": Silt. Yellowish brown (10 YR 5/8), sandy, moist, HP = 1.1. No HCl reaction,
		4		very thin clay laminations.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-209 Page 2 of 4

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				3.0-6.0": Sand. Color as above, very fine, moist, very well sorted.
				6.0-10.5": Silt. Yellowish brown (10 YR 5/4), moist, slight HCl reaction, HP = 3.6 to
				>4.0.
16	18	14"	6,5,6,8	0-14.0": Silt. Brown (10 YR 5/3), finely interbedded silt and sandy silt, moist,
		3		moderate HCl reaction, HP = 2.0 to 3.5, nonplastic, ½ clay lenses at 6 and 9½
				inches, strong, HCl reaction.
18	20	17"	3,5,4,5	0-6.0": Sand. Light brown (7.5 YR 6/4) fine to very fine, trace to some silt,
		3.5		saturated, slightly cohesive, slight HCl reaction.
				6.0-17.0": Sand/Silt/Clay. Finely interbedded. Sand: very fine, silt and clay,
				lithologies as above, moist to saturated.
20	22	15"	2,5,5,7	0-15.0": Sand/Silt. Yellowish brown (10 YR 5/4) very fine silty, sandy silt, moist,
		3		saturated, moderate HCl reaction, very thinly laminated.
22	24	17"	6,8,8,5	0-17.0": Sand/Silt. As above, saturated. Clay lenses at 5 to 6 inches and 14 to 15
		3		inches, reddish brown (2.5 YR 5/4) HP = 2.0 to 2.6, strong HCl reaction, slighlty
				plastic, becoming more silty at base.
24	26	12"	5,5,6,7	0-12.0": Silt. Sandy, as above with fine to very fine silty sand lens at 5 to 6
		3		inches, and clay lens at 8½ to 9 inch. Very moist to saturated.
26	28	16"	7,7,7,9	0-16.0": Silt. Sandy, as above, saturated, ¼ inch fine sand lens at 14 inches.
		7.0		Clay lens at 4 to 5 inches.
28	30	13"	5,5,7,7	0-13.0": Silt. Sandy, as above, very moist to saturated. Clay from 9 to 11 inches
		5		HP = 3.5, strong HCl reaction.
30	32	16.5"	4,5,5,6	0-16.0": Silt. Grayish brown (10 YR 5/2) very moist to saturated, HP = 2.0 to 2.5,
		9		slight to moderate HCl reaction. Clay at 7 to 8 inches and 14 to 15 inches. HP = 3.5
				strong HCl reaction.
32	34	15"	6,6,7,9	0-15.0": Silt. As above, saturated, faintly very thinly laminated. Clay at 4 to 4½
		6		and 11 to 12 inches.
34	36	17"	3,9,7,8	0-17.0": Silt. As above, with some very fine sand. Clay lenses at 3 to 4 inches and
		4		9 to 10 inches, very moist to saturated.
36	38	13"	5,7,9,11	0-13.0": Silt. As above, saturated, 1/8 inch clay lens at 1.5, 7½ to 8 and 11½ to
		5.5		12 inches. Silt HP = 2.5 to 3.5 moderate HCl reaction. Clay HP = 3.5 strong HCl

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-209

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				reaction. 1/16 inch silty sand seam at 11 inches.
38	40	14"	3,5,7,7	0-14.0": Silt. As above, very moist to saturated. Clay lenses at 2 to 3, 7 to 8
		5		and 12 to 13½ inches.
40	42	12"	5,6,8,10	0-12.0": Silt. As above, but with some to much very fine sand, saturated, clay
		4		lens at 2 to 3 inches.
42	44	15"	6,8,8,12	0-15.0": Sand/Silt. Grayish brown (10 YR 5/3), very fine silty sand and sandy silt,
		4.5		saturated, HP = 2.5 to 3.5, moderate HCl reaction, abundant very fine sand.
44	46	15"	3,7,7,10	0-15.0": Silt. Sandy, as above with less very fine sand, saturated, clay lenses at
		4		3, 7, 10 and 13 inches.
46	48	17"	8,9,14,12	0-7.0": Silt. Sandy, as above, saturated, 1/16 inch clay laminations at 1½, 4½ and
		5.5		7 inches.
				7.0-13.5": Silt. Sandy, as above, brown (7.5 YR 5/2).
				13.5-15.5": Sand. Brown (7.5 YR 5/2) very fine, very well sorted, saturated,
				slight HCl reaction.
				15.5-17.0": Silt. Sandy, as 7 to 13½ inch, clay lens at 15½ to 16 inches.
48	50	16"	4,8,10,10	0-16.0": Sand/Silt. Finely interbedded, very fine silty sand and silt. Silt as above.
		4.5		Silty sand: brown (7.5 YR 5/2) saturated, very well sorted. Clay lenses at 5, 8,
				11, and 13 inches.
50	52	13.5"	6,8,10,10	0-10.5": Silt and Clay. Finely interbedded, as above, saturated.
		3.5		10.5-13.5": Silt. Brown (7.5 YR 5/2) sandy, saturated. HP = 4.0, moderate to
				strong HCl reaction.
52	54	22"	4,6,8,11	0-22.0": Silt and Clay. Very finely interbedded. Silt: dark grayish brown (10 YR
		5.5		4/2) HP = 4.0. Trace to much very fine sand, moderate HCl reaction, moist.
				Clay: red (2.5 YR 4/6) to brown (7.5 YR 4/2) at base,HP >4.0, strong HCl
				reaction, approximately 40 percent clay.
54	56	15"	2,2,10,7	0-15.0": Silt and Clay. Very finely interbedded, as above, dry to slightly moist.
		6.5		Approximately 60 percent clay.
56	58	21"	10,17,20,25	0-21.0": Silt and Clay. Coarsely laminated. Fine sand lenses at 13½, 17 and
		3.5		20 inches. Sand saturated; silt very moist to dry and saturated at base. Silt contains
				very thin bluish gray (2 Gley 6/1/10B) clayey laminations. Moderate to strong

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-209

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inch) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				HCl reaction.
58	60	19"	5,8,10,10	Sand. Brown (7.5 YR 5/3) fine to very fine, saturated, very well sorted, trace silt,
		5		slight HCl reaction.
60	62	10"	5,5,11,17	0-10.0": Sand. Fine to very fine, as above, saturated, ¼ inch silt lens at 8½ inches.
		5		
62	64	11"	6,5,11,13	0-11.0": Sand. Brown (7.5 YR 5/3) medium to coarse, loose, well sorted, saturated,
		5.5		trace very coarse sand, no HCl reaction.
64	66	7"	8,8,10,12	0-3.0": Sand. Medium to coarse, as above, . Saturated.
		6.5		3.0-7.0": Sand. Brown (10 YR 5/3) loose, fine, saturated, trace to some medium
				sand.
66	68	6"	7,3,5,7	0-1.0": Sand. Fine, as above.
		7.5		1.0-6.0": Sand. Pale brown (10 YR 6/3) medium, saturated, loose, very well
				sorted, trace fine sand.
68	70	10"	7,9,10,16	0-10.0": Sand. Medium, as above, saturated.
		6.0		
				EOH 70 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-210 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 4

Site Location Kingsford, Michigan Drilling Started 8/22/98 Drilling Completed 8/22/98

Total Depth Drilled 52 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1100.08 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Ray Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	16"	2,2,2,2	0-6.0": Top Soil. Dark grayish brown (10YR 4/2) loose, crumbly, loam, silty sand,
		≤2.5		dry.
				0-16.0": Sand. Brownish yellow (10 YR 6/8) fine, loose, dry, trace medium and
				coarse sand.
2	4	19"	2,2,2,2	0-7.0": Sand. Fine as above, dry.
		≤2.5		7.0-19.0": Sand. Yellow (10 YR 7/8) fine to medium, dry, loose, trace to some
				medium and coarse sand, trace fine pebble gravel.
4	6	14"	2,2,4,5	0-7.0": Sand. Fine to medium as above, becoming medium sand at base of sample.
		2.5		7.0-14.0": Sand. Strong brown (7.5 YR 5/6) very coarse with gravel, trace to some
				coarse and medium sand. Gravel: subrounded to very well rounded, variable
				composition, dry and loose.
6	8	2"	12,14,20,22	0-2.0": Sand. Fine to medium, as in above sample, possibly slough.
		3		
8	10	13"	4,5,6,8	0-13.0": Sand. Very pale brown (10 YR 7/4) coarse with gravel, slightly moist,
		3.5		loose, much very coarse sand, trace fine sand with granular gravel and some
				pebble gravel up to greater than 2 inches in diameter, subrounded to well
				rounded, variable composition.
10	12	15"	20,5,5,8	0-6.0": Sand. Coarse with gravel, as above, moist.
		2		6.0-15.0": Sand. Very pale brown (10 YR 7/4) medium, slightly moist to dry, very
				well sorted. No HCl reaction.
12	14	6"	8,7,4,4	0-6.0": Sand. Yellowish brown (10 YR 5/4) fine to very coarse sand with gravel.
		2.5		Gravel: subrounded to well rounded, variable composition. Slightly moist,
				loose.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-210

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
14	16	20"	3,3,3,4	0-20.0": Silt. Light brown (7.5 YR 6/4) moist, HP = 2.5 to 3.0. No HCl reaction.
		3.5		½ inch clay lenses at 6, 10 and 14 inches. Clay has no reaction with HCl,
				nonplastic, foliated, HP = 1.5
16	18	16"	2,4,7,8	0-3.0": Silt. As above, moist, slight HCl reaction.
		3.5		3.0-16.0": Silt/Sand. Moderately laminated. Silts as above. Sand: very fine to
				slightly silty, (7.5 YR 6/4) moist, well sorted, slightly cohesive, slight HCl
				reaction.
18	20	12"	5,6,7,7	0-12.0": Silt/Sand. As above, moderately laminated ¼ inch clay horizon at 3.5
		2.25		inch, 1/18 inch horizon at 9½ inch. Moist, HP (silt) = 3.0, silt contains trace to some
				very fine sand, moderate HCl reaction, very finely
				laminated in lowest 2 inches.
20	22	19"	4,5,5,6	0-16.0": Sand/Silt. Moderately laminated, very fine sand and sandy silt. Color, sand
		2		and silt, brown (7.5 YR 6/4) HP (silt) = 2.5, slight HCl reaction, contains variable
				amounts of very fine sand. 1/16 inch clay lenses at 4, 13, 16 inches. Cycles from very
				fine sand into silt into clay. Saturated.
				16.0-19.0": Silt. As above, clay lens at 17½ inch. Very moist to saturated.
22	24	14"	5,5,5,9	0-14.0": Silt. As above, with variable very fine sand composition, trace to sandy
		2.5		silt, ¼ inch clay lenses at 4 and 10 inches and ¼ inch fine silty sand lens above
				10 inch clay lens, moist.
24	26	18.5"	6,7,9,8	0-18.5": Silt and Clay. Finely bedded. Silt brown (7.5 YR 5/4) variable sand
		2.75		composition (trace to sandy silt) faintly and thinly laminated, HP = 2.0 to 2.5.
				Slight HCl reaction, slightly moist to dry. Clay, red (2.5 YR 5/6),
				strong HCl reaction, HP = 2.0, slightly plastic, foliated, lenses 1/8 to 1 inch thick.
				Approximately 20 percent of sample.
26	28	17"	3,5,4,6	0-17.0": Silt and Clay. As above, finely bedded. Silts contain trace fine sand lenses,
		2.5		(clay approximately 40 percent of sample), slightly moist to dry, silt more
				sandy toward base of sample.
28	30	12"	2,4,4,7	Silt and Clay. Finely bedded, as above, slightly moist to dry, clay forms 30 to 40
		500		percent of sample, lenses up to 1½ inch thick. Silt very finely laminated with some
				very fine sand seams.
30	32	16"	6,8,8,13	0-5.0": Silt and Clay. Finely bedded, as above. Silt contains much very fine sand,
		750		dry to slightly moist.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-210

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				5.0-12.0": Sand. Pink (7.5 YR 7/4) very fine, dry, loose, very well sorted, grading
				into medium sand in lowest 1 inch.
				12.0-16.0": Silt/Sand. Brown (7.5 YR 5/4) moderately laminated, very fine silty sand,
				HP (silty sand) = 2.0, slightly moist, silt as in 0 to 5 inches.
32	34	14"	7,7,7,9	0-11.0": Sand. Pink (7.5 YR 7/4) very fine to fine, dry, loose, very well sorted,
		>10,000		thinly laminated with dark gray sand, 1/16 inch thick.
				11.0-14.0": Sand. Light gray (10 YR 7/2) coarse, dry, loose, much medium sand,
				trace granular gravel.
34	36	14"	4,10,13,17	0-14.0": Sand. Medium, as above, dry, loose.
		500		
36	38	16"	20,6,6,10	0-4.0": Sand. Medium, as above, dry.
		5500		4.0-16.0": Sand. Pink (7.5 YR 7/4) fine, dry, loose, very well sorted, no HCl
				reaction.
38	40	16"	11,11,13,14	0-16.0": Sand. Fine, as above, dry, loose.
		>10,000		
40	42	12"	10,13,11,13	0-12.0": Sand. Fine, as above, dry, loose, grading to fine to medium sand at
		9500		base, (lowest 2 inches).
42	44	17"	10,10,13,18	0-2.5": Sand. Very pale brown (10 YR 7/4) coarse, dry to slightly moist, loose,
		>10,000		trace granular gravel.
				2.5-4.0": Sand. Fine as in overlying sample. Dry to slightly moist.
				4.0-17.0": Sand. Very pale brown (10 YR 8/2) very coarse, with fine gravel,
				some to much coarse sand, some medium sand. Gravel: granular and fine
				pebble, ¼ inch diameter, variable composition, subrounded to well
				rounded, dry to slightly moist, loose.
44	46	13"	6,8,9,11	0-13.0": Sand. Coarse to very coarse, with gravel as above, dry to slightly moist,
		4,500		loose.
46	48	14"	6,7,8,8	0-13.5": Sand. Very coarse with gravel as above, saturated, loose.
		25		13.5-14.0": Silt. Reddish brown, HP = 3.0 slight HCl reaction, nonplastic,
				saturated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-210

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface)		Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 Inches	
From	To	OVA (ppm)		Sample/Core Description
48	50	16"	4,6,5,10	0-16.0": Silt. As above, very moist to saturated, nonplastic, variable very fine
		5.5		sand content, trace sand to much very fine sand, ¼ inch clay lense at 7½ inch.
50	52	21.5"	7,8,8,8	0-21.5": Silt. As above, moist, ½ inch clay lenses at 2, 12 (¼ inch) and 18½ inch.
		10		
				EOH 52 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-211 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan

Drilling Started 8/22/98

Drilling Completed 8/23/98

Total Depth Drilled 62 Feet

Hole Diameter 6 inches

Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2"

Sampling Interval continuous feet

Land-Surface Elev. 1099.24 feet [X] Surveyed [ ] Estimated

Datum Mean sea level

Drilling Fluid Used None

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Driller Dan Helper Toby

Prepared By Ray Flynn

Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	7"	1,0,1,0	0-7.0": Top Soil. Grayish brown (10 YR 5/2) dry, loose, silty sand, loam, much
		1.5		rootlets.
2	4	21"	1,1,1,1	0-4.0": Top Soil. As above, likely slough.
		1.75		4.0-21.0": Sand. Strong brown (7.5 YR 5/6) fine, silty. Moist, HP = 0.5, no HCl
				reaction, trace coarse sand, coarser toward base.
4	6	13"	1,1,1,1	0-9.0": Sand. Fine, silty, as above, moist.
		2		9.0-13.0": Sand and Gravel. Strong brown (7.5 YR 5/6), silty. Matrix of fine
				silty sand. Gravel: subangular to well rounded, variable composition, up to 2 inches
				in diameter.
6	8	12"	3,4,5,5	0-12.0": Sand and Gravel. Reddish yellow (7.5 YR 6/8) loose to slightly dense.
		4		Poorly sorted, coarse sand matrix with some fine and medium sand. Gravel:
				subrounded to well rounded, up to greater than 2 inches in diameter, variable
				composition, no HCl reaction.
8	10	0	6,9,8,7	No recovery, rock fragment in spoon shoe, dry.
10	12	14"	25,5,4,5	0-14.0": Sand and Gravel. As 0 to 12 inches, but with abundant granular gravel
		3		and trace pebble gravel.
12	14	8"	2,3,4,4	0-6.0": Sand. Coarse, and granular gravel as above, slightly moist.
		6.5		6.0-8.0": Sand. Very pale brown (10 YR 7/3) medium, dry, loose, trace to some
				coarse sand, no HCl reaction.
14	16	11"	6,6,8,9	0-1.0": Sand. Medium, as above.
		6		1.0-11.0": Sand and Gravel. Yellowish red (5 YR 5/6) coarse to very coarse, loose,
				slightly moist. Matrix coarse to very coarse sand with some medium sand.
				Gravel: granular, variable composition, trace pebble, to greater than 2 inch in diameter,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-211

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
				subangular to subrounded.
16	18	11"	20,15,13,14	0-11.0": Sand and Gravel. As above, dry.
		7.5		
18	20	12"	18,9,5,5	0-3.0": Sand and Gravel. As above, dry.
		4		3.0-12.0": Sand. Very pale brown (10 YR 8/3) coarse, trace very coarse and
				granular gravel. Dry, loose, very well sorted.
20	22	0	50 for 1 in.	No recovery.
22	24	0	8,10,14,17	No recovery.
24	26	12"	8,10,7,7	Sand. Pink (7.5 YR 7/4) fine, dry, loose, very well sorted. No HCl reaction.
		3.5		
26	28	18"	4,5,6,7	0-14.5": Sand. Fine, as above, dry to slightly moist.
		4		14.5-18.0": Sand. Fine, as above but moist to saturated.
28	30	7"	18,14,6,6	0-7.0": Sand. Fine, as above, saturated.
		4		
30	32	10.5"	7,4,4,4	0-4.0": Sand. Fine, as above, saturated.
		3		4.0-10.5": Silt. Reddish brown (5 YR 5/4), HP = 2.5 to 3.0. No HCl reaction,
				variable very fine sand content (trace to some) 1/16 inch clay lens at
				7.5 inches. Moist.
32	34	13"	5,5,5,10	0-13.0": Silt. As above, moist, with horizons of sandy silt to 1 inch
		4.5		thick. ¼ inch clay lens at 12 inches.
34	36	17.5"	5,6,5,6	0-17.5": Silt. As above, moist, 1/8 inch clay lens at 1½ and 13½ inches. Silt
		4		slight HCl reaction, clay moderate to strong HCl reaction.
36	38	14"	4,6,8,13	0-14.0": Silt. As above, slightly moist, clay at 2 to 3 inches and ¼ inch lens at
		2.75		12 inches.
38	40	10.5"	6,9,11,13	0-10.5": Silt. As above, slightly moist. Very finely laminated, interbedded, silt and
		4		sandy silt.
40	42	4.5	5,17,20,28	0-4.5": Sand. Light brown (7.5 YR 6/4) fine to very fine, trace to some silt, well
		5		sorted, slightly dense, very moist.
42	44	15"	15,15,17,17	0-15.0": Sand. Very pale brown (10 YR 8/3) coarse with some gravel, dense. No
		3.5		HCl reaction, dry, trace to some medium sand. Gravel: granular to ½ centimeter
				diameter, subangular to well rounded, variable composition.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-211

Prepared by Ray Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
44	46	12"	13,13,11,12	0-12.0": Sand. Very pale brown, coarse to medium, slightly dense, dry, trace granular
		3		gravel, grading down to medium sand. Lowest 3 inches very moist.
46	48	18"	9,9,9,10	0-12.0": Sand. Coarse to medium as above, saturated.
		6		12.0-18.0": Sand. Pale brown (10 YR 6/3) coarse to very coarse, with some gravel.
				Dense, saturated, some medium sand, trace fine sand. Gravel: granular to 1
				centimeter diameter variable composition, subrounded to well rounded.
48	50	16"	5,6,8,13	0-16.0": Sand. Coarse to very coarse, as above, with some to much subangular to
		4.5		well rounded, granular and pebble gravel, variable composition. Saturated.
50	52	15"	5,5,7,9	0-15.0": Sand. Coarse to very coarse, as above, with trace to some gravel, saturated,
		6		very fine pebble gravel lense at 6 to 7 inches.
52	54	20"	4,3,4,8	0-20.0": Sand and Gravel. Pale brown (10 YR 6/3) very coarse sand, granular gravel,
		7.5		loose to dense, saturated, much coarse sand, trace silt, some medium and fine
				sand. Gravel: variable composition, subangular to well rounded, up to ½ centimeter
				in diameter, trace to some pebble gravel.
54	56	14"	11,18,20,25	0-14.0": Sand and Gravel. Very coarse, as above, but with trace pebble gravel,
		7.0		saturated.
56	58	12"	4,7,11,18	0-12.0": Sand. Light brownish gray (10 YR 6/2) coarse with trace to some gravel,
		4.5		loose, saturated. Gravel: subangular to well rounded, variable composition up to
				1 centimeter in diameter.
58	60	18"	7,7,10,18	0-9.0": Sand. Light brown (7.5 YR 6/3) coarse, slightly dense, well sorted,
		7		saturated, trace to some medium sand.
				9.0-12.0": Sand and Gravel. Light gray (10 YR 7/2) very coarse, loose,
				saturated. Gravel: granular, angular to subrounded, variable composition.
				12.0-18.0": Sand. Pale brown (10 YR 6/3) medium to coarse, with some gravel.
				dense, saturated. Gravel up to 1 centimeter in diameter, subangular to well rounded,
				variable composition.
60	62	11"	15,12,4,4	0-11.0": Sand. Medium to coarse, as above, saturated.
		5		
				EOH 62 feet bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-212 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 5

Site Location Kingsford, Michigan Drilling Started 9/1/98 Drilling Completed 9/2/98

Total Depth Drilled 88 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1098.77 feet [X] Surveyed [ ] Estimated Datum Mean sea level

Drilling Fluid Used Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Blows per 6 Inches	Sample/Core Description
0	2	18"/4.0	2,2,2,2	0.0-6.0": Top Soil. Grayish brown (10 YR 5/2), dry, crumbly, sandy silt loam, trace
				pebble gravel.
				6.0-16.0": Silt. Reddish yellow (7.5 YR 6/8), sandy, dry, crumbly, abundant black staining,
				no HCl reaction.
				16.0-18.0": Sand. Reddish yellow, coarse, dry, loose, trace very coarse sand. No
				HCl reaction.
2	4	15"/4.0	4,4,4,4	0.0-15.0": Sand. Coarse as above with some very coarse and trace granular gravel.
				Becoming brownish yellow (10 YR 6/6) toward base, dry.
4	6	11.5"/4.0	2,2,2,2	0.0-11.5": Sand. Coarse as above, slightly moist.
6	8	2.5"/4.5	18,50/6	0.0-2.5": Sand. Coarse as above, slightly moist, trace well rounded pebble gravel.
8	10	3"/6.5	5,7,11,13	0.0-3.0": Sand. Coarse as above with shattered rock fragments, slightly moist.
10	12	0.5"/≤2.5	49 50/6	0.0-0.5": Shattered Rock fragments as above, slightly moist.
12	14	16"/2.5	2,2,2,5	0.0-16.0": Silt. Yellowish brown (10 YR 5/6), HP = 1.5 to 2.5, slight to no HCl reaction
				at top, moderate HCl reaction at base, ¼ inch clay lenses at 2½, 14 and 15 inches,
				trace to some sand, plastic, very moist to saturated.
14	16	13"/3.0	3,3,4,4	0.0-2.0": Silt. As above.
				2.0-5.5": Sand. Light brown (7.5 YR 6/4), fine, moist, slightly dense, very well sorted,
				faint thin laminations. No HCl reaction.
				5.5-7.0": Sand. Light brown (7.5 YR 6/4), fine to very fine, moist, slightly dense,
				very well sorted.
				7.0-13.0": Sand. Light brown (7.5 YR 6/4), very fine, silty, moist, HP = 2.5,
				nonplastic, slight to moderate HCl reaction. Thinly bedded ¼ inch clay lenses
				throughout sample.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-212 Page 2 of 5

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Blows per 6 Inches	Sample/Core Description
16	18	18"/2.5	5,5,8,8	0.0-18.0": Silt. Yellowish brown (10 YR 5/4), very moist, HP = 2.5, slight HCl reaction,
				nonplastic.
18	20	19"/4.0	5,8,7,7	0.0-19.0": Silt As above, very moist, clay from 10½ to 11 inches, trace to some very
				fine sand in silt.
20	22	16"/2.5	7,7,8,11	0.0-16.0": Silt. As above, HP = 1.0-3.0, slight HCl reaction, very moist, coarsely
				laminated with silt and some very fine sand, clay lens at 14 to 14.5 inches.
22	24	16.5"/2.5	7,7,7,7	0.0-7.5": Silt. Light brown (7.5 YR 6/4), sandy, saturated, HP = 1.5, very slight HCl
				reaction, abundant very fine sand.
				7.5-15.0": Silt. As above, very moist, clay from 8½ to 9 inches.
				15.0-16.5": Silt. Sandy as 0 to 7.5 inches saturated.
24	26	18.5"/2.0	7,8,8,11	0.0-4.0": Silt. Sandy, as above, very moist.
				4.0-6.0": Sand. Light yellowish brown (10 YR 6/4), fine to medium, wet, loose, no
				HCl reaction.
				6.0-18.5": Silt. Dark yellowish brown (10 YR 4/4), HP = 2.0, slight HCl reaction, very
				moist to saturated, 1/8 inch thick clay layer at 15.5 inches.
26	28	20"/2.0	6,8,8,10	0.0-2.0": Silt. As above, moist, ¼ inch thick clay layer at 4 inches, ½ inch thick clay
				layer at 15 inches, 1/8 inch thick coarse sand layer at 3 inches.
28	30	14"/3.0	5,7,7,7	0.0-14.0": Silt. As above, moist, clay. Yellowish red (5 YR 5/6) at ½ to 1½
				inches and 8 to 9½ inches. Foliated, slightly plastic, HP = 2.5, slight HCl reaction.
30	32	12"/3.5	3,4,6,7	0.0-12.0": Silt. As above, moist, clay lenses at 5 to 6½ and 10 to 12 inches, silty
				sand lens at 9½ to 10 inches.
32	34	18"/2.5	4,4,6,9	0.0-8.0": Silt. As above, moist.
				8.0-9.0": Clay. Lens as above.
				9.0-18.0"; Silt. Grayish brown (10 YR 5/2), saturated, slight HCl reaction, HP
				= 2.5.
34	36	18"/2.5	6,5,7,8	0.0-18.0": Silt. As above, moist; clay lenses at ½ to 2 inches, 9½ to 10 inches and
				17 to 18 inches. Coarse sand lens at 15 to 15½ inches, saturated.
36	38	18.5"/	4,5,6,6	0.0-16.5": Silt. As above, very moist, clay lenses at 3 to 3½, 7 to 7½, and 15
		2.0		to 16 inches.
38	40	11"/2.5	6,6,6,8	0.0-11.0": Silt. As above, moist, clay lenses at 4½ to 5 and 9 to 10 inches. Silt:
				HP = 2.5 to 3.5, slight to moderate HCl reaction, nonplastic.
40	42	20"/2.0	4,7,5,7	0.0-11.0": Silt. As above, clay lenses at 1.5 to 2.0 inches and 7 to 9 inches.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-212 Page 3 of 5

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Blows per 6 Inches	Sample/Core Description
				11.0-20.0": Silty Sand/Sandy Silt. Reddish brown (5 YR 5/4), saturated, HP = 0.5 to
				1.0, very slight HCl reaction.
42	44	8"/1.75	7,7,8,9	0.0-8.0": Silt. Light brown (7.5 YR 6/4), HP = 2.0-2.5, very slight HCl reaction,
				nonplastic.
44	46	18"/3.5	8,7,6,8	0.0-18.0": Silt. As above, with some lenses of very fine sandy silt. Clay lens at 12 to
				12½ inches. 1/16 inch thick clay lenses at 2 and 7½ inches. Silt very thinly laminated,
				very moist to saturated.
46	48	16"/3.5	7,7,7,11	0.0-4.0": Silt. As above with 1/8 inch clay layer at 1 inch and 4 inches.
				4.0-7.5": Sand. Brown (7.5 YR 5/4), very fine, silty, saturated, HP = 0.5. No HCl
				reaction, very well sorted.
				7.5-9.0": Silt. As 0 to 4 inches, very moist to saturated.
				9.0-16.0": Sand. Very fine as 4 to 7.5 inches, saturated.
48	50	10"/≤6.0	3,7,8,11	Sand. Very fine, very finely interbedded (20 percent) with silt as above.
				1/16 inch thick clay lenses at ½ and 7½ inches. Silt and sand: saturated.
50	52	13"/≤4.0	4,6,6,7	0.0-13.0": Silt. As above, saturated, with very fine sand layer at 7 to 8.5 inches, clay
				lenses at 1.5 to 2.0, 5 to 6 and 9½ to 10 inches.
52	54	11"/≤5.0	4,10,16,23	0.0-11.0": Silt. As above, ¼ inch clay horizon at 2 inches, saturated.
54	56	13"/6.0	13,15,11,15	0.0-5.0": Silt. As above, very moist to saturated.
				5.0-9.5": Sand. Light brown (7.5 YR 6/4), fine to very fine, loose to slightly
				dense, saturated, no HCl reaction, very well sorted.
				9.5-13.0": Silt. As 0 to 5 inches, HP = 4.0, moderate HCl reaction, nonplastic.
56	58	15.5"/4.0	6,8,8,14	0.0-15.5": Silt. Yellowish brown (10 YR 5/4), sandy, HP = 3.0-3.5, very slight
				HCl reaction, abundant very fine sand.
58	60	12.5"/2.5	8,12,13,13	0.0-3.0": Sand. Brown (7.5 YR 5/4), very fine, silty, saturated, HP = 2.5 to 3.0,
				slight HCl reaction, very well sorted.
				3.0-10.0": Silt. As in overlying sample. Clay from 8½ to 9 inches. Sandy silt to
				very fine silty sand from 10 to 12.5 inches. Yellowish brown (10 YR 5/4), HP = 2.0,
				very slight HCl reaction.
60	62	18"/2.5	11,13,11,14	0.0-18.0": Finely interbedded silty sand and silt as above, saturated, ¼ inch clay
				layer at 1½ inches and from 15 to 16 inches.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-212

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Blows per 6 Inches	Sample/Core Description
62	64	11"/2.0	8,11,13,14	0.0-11.0": Silt. Grayish brown (10 YR 5/2), with some very fine sand, HP = 2.0,
				no HCl reaction. Clay at 10 to 10½ inches.
64	66	14"/2.0	6,9,11,14	0.0-4.0": Silt. With some to abundant very fine sand as above, very moist to saturated.
				4.0-6.0": Sand. Brown (7.5 YR 5/4), very fine to fine, trace silt, thinly laminated,
				saturated, slightly dense.
				6.0-14.0": Silt. As 0 to 4 inches, very thinly laminated. Clay, ¼ inch thick at
				2½ inches, 1/8 inch thick at 7 and 10 inches.
66	68	13"/1.5	8,7,15.22	0.0-13.0": Silt and Clay. Finely interbedded. Silt: brown (7.5 YR 5/2), HP >4.0,
				moderate to strong HCl reaction, nonplastic to slightly plastic, very thinly
				laminated. Clay: Reddish brown (5 YR 4/4), foliated, slightly plastic, HP >4.0,
				strong HCl reaction. 1/8 inch thick very fine sand lens at 3 inches.
68	70	6"/1.75	8,8,12,12	0.0-2.0": Sand. Brown (10 YR 5/3), very fine, silty, loose, saturated, very well sorted.
				2.0-6.0": Silt. Grayish brown (10 YR 5/2), sandy, very finely laminated, slight to
				moderate HCl reaction, HP = 1.5.
70	72	13"/1.5	6,7,8,12	0.0-13.0": Silt and Clay. Very thinly bedded. Silt: grayish brown (10 YR 5/2),
				HP >4.0, moderate to strong HCl reaction, slightly moist, very thinly laminated,
				some very fine sand. Clay: brown (7.5 YR 5/3), HP 3.0 to 4.0, strong HCl
				reaction, foliated.
72	84	13"/1.5	7,7,7,12	Silt and Clay. Interbedded, thickly laminated, lithologies as above. Silt slightly
				moist to dry, some 1/8 inch thick lenses of fine to very fine dry sand. Clay
				approximately 50 percent sample.
74	76	10.5"/1.5	7,8,10,13	0.0-10.0": Silt and Clay. Interbedded as above, thickly laminated, dry, slightly
				moist.
76	78	14"/1.75	3,5,6,4	0.0-14.0": Silt and Clay. Interbedded thickly laminated as above, dry to
				slightly moist, ¼ inch thick fine sand seam at 11 inches.
78	80	16"/5.5	8,9,11,28	0.0-15.0": Silt and Clay. Interbedded thickly laminated as above, dry to slightly
				moist, 1/8 inch thick coarse sand lens at 8 inches.
				15.0-16.0": Sand. Light brown (7.5 YR 6/3), fine to very fine, trace to some silt,
				moist, dense, very well sorted.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-212

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Blows per 6 Inches	Sample/Core Description
80	82	16"/25	3,7,13,20	0.0-16.0": Sand and Silt. Thickly interbedded laminated. Sand: brown
				(10 YR 5/3), fine to very fine, very well sorted, saturated, slightly dense, slight
				HCl reaction. Silt: as in overlying sample, very moist, HP = 4.0.
82	84	12"/4.0	18,22,34,38	0.0-12.0": Sand. Brown (7.5 YR 5/3), fine, very well sorted, saturated, slight
				HCl reaction.
84	86	11"/	17,17,18,25	0.0-4.0": Sandy Silt/Silty Sand. Brown (7.5 YR 4/3), abundant very fine sand,
		2,500		nonplastic, saturated, HP = 1.0, slight HCl reaction.
				4.0-7.0": Sand. Brown (7.5 YR 5/3), fine, very well sorted, saturated, no
				HCl reaction.
				7.0-11.0": Sand. Brown (7.5 YR 5/2), coarse, some medium and fine sand, trace
				granular gravel, saturated, loose.
86	88	9.5"/	12.17,21,18	0.0-9.5": Sand and Gravel. Coarse and granular. Coarse sand as above.
		1,250		Abundant gravel subrounded to well rounded, variable composition, granular, trace
				sand and pebble gravel up to ½ cm in diameter.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-214 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/3/98 Drilling Complete 9/3/98

Total Depth Drilled 52 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval Continuous feet

Land-Surface Elev. 1099.20 feet [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	16"/≤6.0	2,2,2,2	0.0-3.0": Top Soil. Gray (10 YR 6/1), dry, crumbly, abundant rootlets, silty sand loam.
				3.0-9.0": Silt. Yellowish brown (10 YR 5/4), sandy, dry, crumbly, trace pebble gravel,
				no HCl reaction.
				9.0-15.0": Silt. Reddish brown (7.5 YR 6/6), sandy, dry, crumbly, trace medium sand,
				no HCl reaction.
2	4	15"/≤6.0	4,5,7,7	0.0-10.0": Sand. Reddish yellow (7.5 YR 7/6), medium, dry, loose, trace coarse sand.
				10.0-15.0": Sand and Gravel. Pink (7.5 YR 7/3), coarse to very coarse, granular, dry,
				loose. Gravel: variable composition, up to greater than or equal to 2 inches in diameter,
				subangular to subrounded.
4	6	10.5"/7.5	3,4,7,9	0.0-10.5": Sand and Gravel. Yellow (10 YR 7/6), coarse to very coarse, granular gravel
				as above, with trace well rounded pebble gravel, dry.
6	8	12"/7.5	3,3,4,5	0.0-12.0": Sand and Gravel. Coarse to very coarse, gravel as above, dry.
8	10	14"/6.0	5,5,7,7	0.0-13.0": Sand and Gravel. Coarse to very coarse, gravel as above.
				13.0-14.0": Sand. Very pale brown (10 YR 8/3), medium, dry, loose, very well
				sorted, no HCl reaction.
10	12	12"/4.5	4,4,5,7	0.0-12.0": Sand. Medium as above, dry.
12	14	14"/4.5	4,3,4,7	0.0-8.0": Sand. Medium as above, dry.
				8.0-14.0": Sand and Gravel. Brown (7.5 YR 5/4), coarse to very coarse, loose, slightly
				moist, some medium and fine sand. Gravel: subrounded to well rounded, variable
				composition up to greater than 2 inches in diameter.
14	16	0.5"/≤3	6,8,8,11	0.0-0.5": Sand. Fine to medium, with silt slough.
16	18	12.5"/3.5	3,4,4,6	0.0-12.5": Silt. Yellowish red (5 YR 5/6), HP = 3.0 to 4.0, dry, slightly moist, some to
				abundant very fine sand, very thinly laminated.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-214 Page 2 of 3

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
18	20	16"/3.0	3,3,4,6	0.0-13.0": Silt. As above, slightly moist.
				13.0-14.0": Clay. Red (2.5 YR 4/8), HP = 2.0, foliated, slightly plastic, moderate to
				strong HCl reaction.
				14.0-16.0": Silt. Light brown (7.5 YR 6/4), sandy, with abundant very fine sand, dry,
				crumbly, moderate HCl reaction.
20	22	9"/2.5	3,6,8,13	0.0-6.0": Sand. Light brown (10 YR 7/4), very fine with some to abundant silt, HP = 2.4,
				slight HCl reaction, very thinly laminated, dry.
				6.0-9.0": Silt. Yellowish brown (10 YR 5/4), moderate HCl reaction, HP $\geq$ 4.0, slightly
				moist.
22	24	12"/3.0	10,11,9,8	0.0-3.0": Silt. As above, slightly moist.
				3.0-6.0": Sand. Light yellowish brown (10 YR 6/4), very fine, some to abundant silt,
				slightly moist, very thinly laminated, slight to moderate HCl reaction.
				6.0-12.0": Silt. As 0 to 3 inches, slightly moist to moist (lowest 2 inches). ¼ inch thick
				clay lenses at 2½, 9 and 10 inches.
24	26	14"/2.5	5,7,9,10	0.0-10.0": Silt. As above, very moist.
				10.0-12.0": Sand. Yellowish brown (10 YR 5/6), very fine, silty, HP = 3.5, moderate
				HCl reaction.
				12.0-14.0": Silt. As 0 to 10 inches, saturated, moderate HCl reaction. 1/16 inch thick
				clay lenses at 2, 9, 12½, and 16 inches.
26	28	21"/2.5	7,8,9,11	Silt. Finely interbedded with sandy silt. Silt as above, sandy silt with abundant very
				fine sand. Clay lenses at 5 to 6, 9½ to 10 and ¼ inch thick lens
				at 14 inches.
28	30	13"/2.5	5,9,10,10	0.0-13.0": Silt. As above, moist clay lenses at 5 to 5.5, 6.5 to 7 inches, and ¼ inch thick
				lens at 10 inches.
30	32	14"/2.0	3,6,7,11	0.0-12.0": Silt. As above, dry. Clay lenses at 1.5 to 2 and 6.5 to 7.5 inches.
				12.0-14.0": Silty Sand/Sandy Silty. Brown (7.5 YR 5/4), saturated, abundant very
				fine sand, slight to moderate HCl reaction, HP = 1.0.
32	34	15"/2.25	7,10,11,15	0.0-4.0": Silt. As in overlying sample, dry to slightly moist.
				4.0-15.0": Silty Sand/Sandy Silt. As above, 1/8 inch thick clay lens at 10 inches.
34	36	17"/$\leq$2.0	7,7,9,10	0.0-17.0": Silty Sand/Sandy Silt. As above, finely interbedded, very moist to

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-214 Page 3 of 3

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
				saturated. Clay at 3.5, 10 and 16 inches. Moderate HCl reaction in clay and silt.
36	38	15"/<1.75	5,7,8,12	0.0-15.0": Sand. Very fine, silty finely interbedded with silt. Silt as above. Very moist
				to saturated. Clay lenses at 7.5 to 8, 11 to 11.5 and 14 to 14.5 inches.
38	40	14"/≤1.75	6,7,10,8	0.0-14.0": Sand. Very fine, finely interbedded with silt. Silt as above, very moist.
				Clay lenses at 2 (¼ inches thick), 7.5 to 8, 9.5 (¼ inches thick) and 12 to 12.5 inches.
40	42	14"/2.5	7,8,8,10	0.0-14.0": Silt and Clay. Thickly laminated interbedded silt, yellowish brown
				(10 YR 5/6), moderate HCl reaction, HP = 2.0 to >4.0 at base, moist to dry. Clay,
				yellowish red (5 YR 4/6), HP = 3.0, foliated.
42	44	15"/	5,5,8,11	0.0-9.0": Silt and Clay. Interbedded as above, slightly moist to dry.
		>10,000		9.0-15.0": Sand. Yellowish brown (10 YR 6/4), medium, loose, slightly moist, very
				well sorted, no HCl reaction.
44	46	11"/	6,9,11,12	0.0-11.0": Sand. Medium as above, slightly moist.
		>10,000		
46	48	19"/1,000	7,7,7,10	0.0-3.0": Sand. Medium as above, slightly moist.
				3.0-19.0": Silt. Light brown (7.5 YR 6/4), HP = 3.5 to >4.0, moderate to strong HCl
				reaction, slightly moist to dry, crumbly.
48	50	16"/600	6,8,10,10	0.0-16.0": Silt. As above, dry to slightly moist, moderate to strong HCl reaction. Clay
				at 6 to 6.5 and 10 to 10.5 inches.
50	52	19"/225	5,5,7,9	0.0-19.9": Silt. As above, dry to slightly moist, clay at 10 to 11 inches.

ARCADIS

Sample/Core Log

Boring/Well GMSG-214R Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/1/05 Drilling Completed: 8/1/05

Total Depth Drilled: 50 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1099.13 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Randy Radke Helper: Kevin Frome

Prepared By: Toni Schoen Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	40		--	--	Blind drill, no recovery.
40	42	193/0	1	57 56 42 29	0-1' Silt/Clay: Silt brown (7.5 YR 4/4), clay reddish brown (2.5 YR 4/4),
					interbedded, silt is smooth, dense, uniform, 1.5-2" thick, clay is dense, plastic,
					uniform, 0.25-0.75" thick.
42	44	285/6	1.5	24 36 52+	0-1.5' Silt/Clay: As above, silt 1-1.5" thick, clay is 1-4" thick, fine sand,
					uniform, well sorted in splitspoon tip.
44	46	287/191	1	10 11 16 16	0-1' Slough: Silt and clay, mush, wet, very soft, sticky, tip of splitspoon is fine
					sand, uniform, well sorted.
46	48	--	--	--	No recovery.
48	50	980/300	1.5	8 10 14 22	0-1.5' Silt: Brown (7.5 YR 4/4), trace clay varves, smooth, uniform, crumbly
					when worked, wet.
					EOB @ 50'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-215 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/8/98 Drilling Completed 9/8/98

Total Depth Drilled 62 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1097.27 feet [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Dan Helper Toby

Prepared By Raymond Flynn Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	23"/4.5	2,2,2,2	0.0-7.0": Top Soil. Brown (10 YR 5/3), dry, crumbly, sandy silt loam, rootlets, trace
				pebble gravel.
				7.0-14.5": Silt. Yellowish brown (10 YR 5/8), sandy, some very fine sand, dry,
				crumbly, trace granular gravel, no HCl reaction. Non plastic, HP = 1.0.
				14.5-23.0": Sand. Yellowish brown (10 YR 5/8), fine to medium, some very fine sand
				and silt, trace gravel, dry, loose, no HCl reaction.
2	4	7.5"/4.5	4,4,4,7	0.0-7.5": Sand. Fine to medium as above, dry.
4	6	10.5"/5.5	4,3,4,4	Sand and Gravel. Brownish yellow (10 YR 6/6), coarse to very coarse, dry, loose, some
				medium and some fine sand. Gravel: variable composition, subrounded to well
				rounded, granule, trace to some pebble gravel.
6	8	3"/9.5	10,9,10,10	0.0-3.0": Sand and Gravel. As above, slightly moist.
8	10	12"/5.0	3,3,4,7	0.0-12.0": Sand. Coarse with trace to abundant gravel. Gravel: very pale brown
				(10 YR 7/3). Trace medium sand, dry to slight moist, loose, no HCl reaction.
10	12	8"/5.0	4,5,9,11	0.0-4.5": Sand. Very pale brown (10 YR 8/3), medium, loose, slightly moist, trace
				coarse sand, well sorted.
				4.5-8.0": Sand. Very pale brown (10 YR 7/3), coarse, some medium, slightly
				moist, well sorted, loose.
12	14	9"/5.5	5,5,12,9	0.0-9.0": Sand. Strong brown (7.5 YR 5/6), coarse to very coarse with granular
				gravel, very moist, loose, trace to some pebble gravel. Gravel: subangular to subrounded,
				variable composition to 1 cm in diameter.
14	16	3"/4.5	50/6	0.0-3.0": Sand. Coarse to very coarse with gravel as above. Gravel up to
				greater than 2 inches in diameter.
16	18	13"/5.0	7,7,9,9	0.0-13.0": Sand. Pink (7.5 YR 7/3), very fine, dry, slightly dense, no HCl reaction,

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-215 Page 2 of 3

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
				very well sorted.
18	20	14"/4.5	5,6,8,9	0.0-14.0": Sand. Fine to very fine as above, slightly moist.
20	22	15"/6.0	7,7,7,10	0.0-15.0": Sand. Fine to very fine as above, slightly moist.
22	24	16"/5.5	5,5,7,9	0.0-16.0": Sand. Fine to very fine as above, slightly moist.
24	26	18"/4.0	6,7,7,7	0.0-18.0": Sand. Fine to very fine as above, slightly moist.
26	28	17"/4.5	8,10,9,10	0.0-17.0": Sand. Brown (7.5 YR 5/4), fine to very fine as above. Top 4 inches slightly
				moist. Lower 13 inches saturated.
28	30	16"/3.5	4,6,7,6	0.0-16.0": Sand. Fine to very fine as above, saturated.
30	32	19"/4.5	4,3,5,5	0.0-19.0": Sand. Fine to very fine, as above, saturated and flowing.
32	34	13"/4.5	5,7,10,14	0.0-13.0": Sand. Fine to very fine as above, saturated.
34	36	15"/6.5	50/6	0.0-15.0": Sand. Fine to very fine as above saturated. Boring flushed.
36	38	13.5"/6.0	4,7,9,11	0.0-13.5": Sand. Fine to very fine as above, saturated.
38	40	22.5"/4.5	4,6,8,15	0.0-22.5": Sand. Fine to very fine as above, saturated.
40	42	17.5"/5.0	6,12,8,4	0.0-17.0": Sand. Fine to very fine as above, saturated, clay lens from 10 to 11 inches.
				17.0-17.5": Silt. Brown (7.5 YR 5/4), abundant very fine sand, no HCl reaction, saturated.
				Boring flushed.
42	44	16"/6.0	11,12,12,14	0.0-16.0": Silt. Yellowish brown (10 YR 5/4), HP = 3.0 to 3.5, moist, slight to moderate
				HCl reaction, ¼ inch thick clay lens at 2, 6, 9, and 13 inches. Clay: Reddish brown
				(2.5 YR 4/4), platy, nonplastic, HP = 2.5, moderate HCl reaction.
44	46	10.5"/7.5	3,9,12,12	0.0-10.5": Silt. As above, very thinly laminated, HP >4.0. 1/8 inch thick clay lenses at
				2.5 and 7.5 inches.
46	48	15"/6.0	8,9,10,10	0.0-15.0": Silt. As above, becoming more sandy in lower 8 inches (sandy silt), saturated,
				¼ inch clay lens at ½ inch.
48	50	15"/5.0	12,14,16,17	0.0-15.0": Silt. As above with lenses containing trace to some very fine sand.
				Saturated, 1/8 inch thick, clay lenses at 7.5 and 9.5 inches.
50	52	6"/6.0	4,6,10,15	0.0-6.0": Silt. As above with 1/8 inch thick clay lenses at 3 and 5 inches.
52	54	13.5"/	7,6,9,10	0.0-3.0": Silt. As above, moist to saturated.
		1,200		3.0-6.0": Sand. Very pale brown (10 YR 7/3), coarse to medium, loose,
				saturated, trace very coarse sand and granular gravel.
				6.0-13.5": Silt. Reddish brown (5 YR 5/4), moderate HCl reaction, HP > 4.0, very

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-215 Page 3 of 3

Prepared by Raymond Flynn

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
				thinly laminated, moist, 1/8 inch thick clay lenses at 11 and 11.5 inches.
54	56	13"/35	5,6,5,6	0.0-13.0": Silt. As above with clay lenses at 5 to 6 and 6.5 to 7 inches. HP (silt) = >4.0,
				moderate HCl reaction, moist. Clay: HP >4.0, strong HCl reaction.
56	58	17"/400	4,5,5,7	0.0-17.0": Silt. As above moist. 1/8 inch thick clay lenses at 5 and 10 inches.
58	60	18"/70	3,5,7,7	0.0-18.0": Silt. As above, moist, ¼ inch thick clay lenses at 11 and 12 inches. Lowest 3
				inches have some to abundant sand, very moist.
60	62	22"/100	7,8,6,10	0.0-22.0": Silt as above, moist, 1 inch thick clay lens at 3 inches.
				TD 62 ft.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-216 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 3

Site Location Kingsford, Michigan Drilling Started 9/21/98 Drilling Completed 9/21/98

Total Depth Drilled 52 Feet Hole Diamete 6 inches Type of Sample/ Coring Device Split spoon

Length and Diameter of Coring Device 2" x 2' Sampling Interval continuous feet

Land-Surface Elev. 1098.41 feet [X] Surveyed [ ] Estimated Datum MSL

Drilling Fluid Used Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Dan Helper Scott

Prepared By Raymond Flynn and Bryan Zinda Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA(ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	2	14.5"/4.5	3,3,3,3	0.0-3.0": Top Soil. Pale brown (10 YR 6/3), dry, crumbly, silty sand loam.
				3.0-14.0": Silt. Pale brown (10 YR 6/3), sandy, dry, loose, trace to some subangular
				pebble gravel, no HCl reaction.
2	4	14"/5.0	3,4,3,4	0.0-7.0": Silt. Sandy as above, dry, loose.
				7.0-14.0": Sand. Strong brown (7.5 YR 5/6), medium, some coarse. Trace pebble
				gravel up to greater than 2 inches in diameter, dry, loose, no HCl reaction.
4	6	9.5"/5.5	7,6,6,6	0.0-4.0": Sand. Medium as above, dry.
				4.0-6.0": Sand. Medium as above, with some to abundant coarse to very coarse sand.
				6.0-9.5": Sand. Very pale (10 YR 7/4), fine, dry, loose, well sorted, no HCl reaction.
6	8	12"/6.5	7,8,8,7	0.0-12.0": Sand. Pink (7.5 YR 7/4), medium, dry, loose, well sorted.
8	10	14.5"/7.5	8,12,15,16	0.0-7.0": Sand. Medium, as above.
				7.0-10.0": Sand. Light yellow brown (10YR 6/4), medium to coarse, dry, loose, well
				sorted, no HCl reaction.
				10.0-14.5": Gravel. Shattered, greater than 2 inches in diameter, subangular to
				subrounded, variable composition, dry.
10	12	5.5"/6.0	20,26,15,18	0.0-4.0": Sand. Brown (7.5 YR 5/4), medium, dry, loose, well sorted, no HCl
				reaction.
				4.0-5.5": Sandy Silt/Silty Sand. Strong brown (7.5 YR 5/6), dry, some to abundant
				pebble gravel, no HCl reaction, HP = 3.0.
12	14	16"/7.0	5,4,4,6	0.0-1.5": Silt. Dark yellow brown (10 YR 4/6), with some sand, dry, crumbly (non-
				plastic), HP = 0.6.
				1.5-6.0": Sand. Very pale brown (10 YR 7/13), very fine, dry, slightly dense, very well
				sorted, no HCl reaction.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well GMSG-216 Page 2 of 3

Prepared by Raymond Flynn and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA(ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
				8.0-10.0": Silt. Brown (10 YR 4/3), HP = 2.5, moist, no HCl reaction.
				10.0-11.0": Clay. Reddish brown (2.5 YR 4/4), foliated, nonplastic, HP = 2.0, no HCl
				reaction.
				11.0-16.0": Silt. As 8 to 10 inches, moist.
14	16	12"/7.0	12,8,10,8	0.0-12.0": Silt. As above, moist, trace to some very fine sand.
16	18	19.5"/6.5	6,10,10,10	0.0-3.5": Silt. Brown (10 YR 5/3), moist, HP = 2.0, moderate HCl reaction.
				3.5-19.5": Silt. As above, very moist. Contains trace very fine sand.
18	20	10.5"/6.0	9,12,17,18	0.0-4.0": Silt. As above, very moist.
				4.0-10.5": Silt. Brown (7.5 YR 5/3), thickly laminated with very fine silty sand. Silt:
				HP = 3.6, very moist, moderate HCl reaction. Silty sand: yellow brown (10 YR 5/6),
				HP = 2.0, moderate HCl reaction, very moist.
20	22	17"/5.0	8,8,13,13	0.0-17.0": Silt. Thickly laminated silts and very fine silty sand as above, very moist.
				Very fine sand lens at 2.5 to 3 inches. Clay lenses at 3.5 to 4.0 and 13.5 to 14 inches.
22	24	17.5/5.5	8,10,13,15	0.0-17.5": Silt. Brown (7.5 YR 4/3), with some very fine sand, HP = 25, slight HCl
				reaction, very thinly laminated, moist to very moist. Clay at 3 to 4.5 inches and 7 to 8
				inches. Reddish brown (2.5 YR 4/4), HP = 2.1, nonplastic, foliated, strong HCl reaction.
24	26	17"/5.5	12,12,12,10	0.0-17.0": Silt. Very thinly laminated, as above, very moist. Clay as above at 3 to 4
				inches and 9.5 to 11.5 inches.
26	28	22"/4.0	7,9,13,16	0.0-22.0": Silt. Very thinly laminated as above, moist to very moist. HP (silt) >4.0,
				moderate HCl reaction. Clay at 5.5 to 7, 11 to 12 and 17 to 18 inches. HP (clay) $\geq$ 4.0,
				strong HCl reaction.
28	30	13"/4.0	8,11,12,12	0.0-13.0": Silt and clay. As above, moist, clay at 5.5 to 6 inches and 10 to 11.5 inches.
30	32	19.5"/4.0	8,8,8,8	0.0-19.5": Silt and Clay. As above, moist.
32	34	18"/5.5	7,9,11,13	0.0-16.0": Silt and Clay. As above, moist to very moist, clay at 1.5 to 2, 5.5 to 6,
				10 to 10.5, and 15 to 16 inches, 1/8 inch thick medium to coarse sand lens at 14.5
				inches.
				16.0-18.0": Sand. Reddish brown (5 YR 4/3), very fine, silty, HP = 2.0, moist, moderate
				HCl reaction.
34	36	18"/5.5	6,10,11,12	0.0-18.0": Silty Sand/Sandy Silt. Reddish brown (5 YR 4/3), saturated, HP = 1.0, no
				HCl reaction, clay at 4.5 to 5.5 inches and 1/8 inch thick at 16 inches.
36	38	22"/5.5	8,8,9,10	0.0-22.0": Silt. Brown (7.5 YR 4/4), with clay lenses, HP = 1.5 to 2.5, moderate HCl

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Sample/Core Log (Cont.d)

Boring/Well GMSG-216 Page 3 of 3

Prepared by Raymond Flynn and Bryan Zinda

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)/ OVA(ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
				reaction, trace to some very fine sand, moist, 1/8 to ¼ inch thick clay lenses at 2.5, 10,
				13.5, 15, 17, and 20 inches.
38	40	15"/4.5	7,6,6,7	0.0-15.0": Silt and Clay. Thickly laminated, thinly bedded, lithologies as above,
				slightly moist to moist, 1/8 inch fine to very fine sand lens at 3.5 inches, HP (silt) = 2.5
				HP (clay) = 3.0.
40	42	14"/35.0	6,9,10,13	0.0-14.0": Silt and Clay. Thickly laminated to thinly bedded as above, slightly moist,
				1/16 inch coarse sand lens at 14.5 inches.
42	44	20"/	9,9,15,27	0.0-12.0": Silts and Clays. Thinly laminated, lithologies as above, slightly moist,
		1,250		coarse to medium sand lens at 9.5 to 10 inches.
				12.0-16.0": Sand. Brown (7.5 YR 5/3), fine to very fine, very moist to saturated, slightly
				dense, slight HCl reaction, lowest ½ inch coarse sand.
				16.0-20.0": Sand. Brown (7.5 YR 5/4), very fine, slightly dense, very well sorted,
				slight to moderate HCl reaction.
44	46	15"/	8,9,13,15	0.0-15.0": Sand. Brown (7.5 YR 5/2), fine to very fine, slightly dense to dense,
		2,250		saturated, very well sorted, no HCl reaction.
46	48	22"/45	6,6,7,6	Sand. Dark yellow brown (10 YR 4/4), coarse to medium, loose to slightly dense,
				saturated, well sorted, coarser toward base.
48	50	22"/20.0	4,5,5,5	0.0-12.0": Sand. Very pale brown (10 YR 7/4), medium, with trace to some coarse
				sand, loose, saturated, well sorted, possible blow in.
				12.0-22.0": Sand. Light yellowish brown (10 YR 6/4), coarse to very coarse with
				granular gravel, saturated, loose. Gravel: subangular to subrounded, variable
				composition, trace to some pebble gravel up to 1 cm in diameter.
50	52	24"/9.0	7,7,7,7	0.0-24.0": Sand. Pale brown (10 YR 6/3), medium to coarse, loose, saturated, well
				sorted, trace very coarse sand to granular gravel.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-300 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 11/9/98 Drilling Completed 11/9/98

Total Depth Drilled 25 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Rotasonic Core Barrel

Length and Diameter of Coring Device 10' x 4" Sampling Interval 5 feet

Land-Surface Elev. 1191.32 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller Perry Helper Scott/Rodriquez

Prepared By Bill Jones Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	20			Blind drill, refer to GM-60 core log for stratigraphy.
20	25			Sand. Reddish brown, very fine to fine, little silt. Some gravel, rounded, 0.25 to
				0.75 inch. Moist.
				End of Boring 25 ft bgs.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-301 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 12/19/98 Drilling Completed 12/19/98

Total Depth Drilled 85 Feet Hole Diameter 6 inches Type of Sample/ Coring Device Core barrel

Length and Diameter of Coring Device 10' x 4" Continuous from Sampling Interval 65 feet

Land-Surface Elev. 1191.36 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Rotasonic

Drilling Contractor Boart Longyear Driller John Helper Mike, Jim

Prepared By Dan Hegrenes Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery feet	OVA/OVM	Sample/Core Description
0	65			0-65.0': Blind drill (see GM-60)
65	70	5	5->10,000/	0-4.0': Silt. Yellowish red (5 YR 5/6), with very fine to fine sand, trace to some clay,
			0.0	dense, saturated, (HP <0.5).
				4.0-5.0': Clay. Red (2.5 YR 4/6), strong HCl reaction, very hard (HP ≥4).
70	75	5	300-8,000/	0-1.0': Clay. As above.
			0.0	1.0-5.0': Sand. Pink (7.5 YR 7/4), fine decreasing red clay inclusions, yellowish red
				(5 YR 4/6), in bottom 2 feet, well sorted, loose, moist.
75	80	5	200-	0-5.0': Sand. Very fine, silty, brown, well sorted, dense, dry.
			>10,000/0.0	
80	85	5	200-	0-5.0': Sand. Very fine, silty, as above, 1/2 inch clay nodule at 3 feet.
			>10,000/	
			0.0-2.6	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-302 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 06/11/99 Drilling Completed 06/11/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1191.40 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By Bill McCraken and David Buser Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	1.2	10,10,7,8	0.0-0.2': Asphalt. Strong brown (7.5 YR 4/6), weathered, black, loose.	50
				0.2-0.5': Sand. Strong brown (7.5 YR 4/6), very coarse to very fine, with gravel,	
				subangular to subrounded, trace silt, loose, dry.	
				0.5-1.0': Sand. Dark brown (7.5 YR 3/2), very coarse to very fine, with gravel,	
				subangular to subrounded, loose, dry.	
				1.0-1.2': Sand. Strong brown (7.5 RY 4/6), very coarse to very fine, with	
				gravel, subangular, trace silt, loose, dry.	
2	4	1.0	11,7,7,9	0.0-0.5': Slough	150
				0.5-1.0': Sand. As above.	
4	6	1.1	4,2,2,3	0.0-0.1': Slough.	600
				0.1-1.1': Sand. As above.	
6	8	1.2	6,3,3,1	0.0-0.1': Slough.	1,000
				0.1-1.2': Sand. Strong brown (7.5 YR 4/6), very coarse to very fine, with gravel,	
				subangular to subrounded, silty 0.6 to 1.2 feet, loose, moist below 0.6 feet.	
8	10	0.9	6,6,7,9	0.0-0.1': Slough.	3,000
				0.1-0.9': Sand. Strong brown (7.5 YR 4/6), very coarse to very fine,	
				with gravel, subangular to subrounded, trace silt, loose, moist.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-303 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 06/11/99 Drilling Comple 06/11/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1192.23 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By Bill McCraken and David Buser Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1	2,2,8,7	0.0-0.2': Top soil. Dark brown (7.5 YR 3/2), loose, grass and rootlets.	2
				0.2-0.8': Sand. Strong brown (7.5 YR 4/6), very coarse to very fine,	
				with gravel, subangular to subrounded, some silt, loose, moist.	
2	4	1.3	17,11,12,4	0.0-0.3': Slough.	3
				0.3-1.3': Sand. As above, firm.	
4	6	1.3	7,7,8,7	0.0-1.3': Sand. As above, firm.	2
6	8	1.5	13,9,9,8	0.0-0.1': Slough.	1
				1.0-1.5': Sand. As above, predominately fine sand and silt.	
8	10	1.2	8,8,8,8	0.0-1.2': Sand. As above.	1

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-304 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 06/11/99 Drilling Completed 06/11/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1192.02 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By Bill McCraken and David Buser Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2	2	70	0.0-0.3': Top soil. Very dark greyish brown (10 YR 3/1), sandy loam, rootlets,
				organic matter, soft.
				0.3-1.0': Asphalt. Weathered, black, loose.
				1.0-2.0': Sand. Strong brown (7.5 YR 4/6), very coarse to very fine, with
				gravel, subangular, firm, moist.
2	4	1.5	30	0.0-0.7': Slough.
				0.7-1.0': Sand. Strong brown (7.5 YR 4/6), very coarse to very fine,
				predominately medium with gravel, subangular, firm, moist.
				1.0-1.5': Silt. Color as above, with gravel, subangular, trace clay, trace
				sand, very coarse to very fine, cohesive, wet.
4	6	1	30	0.0-0.4': Slough.
				0.4-1.0': Sand. Color as above, very coarse to very fine, with gravel,
				subangular to subrounded, firm, moist.
6	8	0.9	25	0.0-0.2': Slough.
				0.2-0.8': Sand. Color as above, very coarse to very fine, with gravel,
				subangular to subrounded, trace silt, firm, wet.
				0.8-0.9': Rock. Crushed, black (asphalt slough?).
8	10	1	300	0.0-0.1': Slough.
				0.1-1.0': Sand. Color as above (7.5 YR 4/6), with gravel, subangular to
				subrounded, trace silt, firm, wet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-305 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/11/99 Drilling Completed 6/11/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1201.10 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By Bill McCraken and David Buser Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1.3	7,3,3,2	0.0-0.5': Top soil. Dark brown (7.5 YR 3/2), some roots and organic	3
				matter, loose, dry.	
				0.5-1.3': Silt. Brown (7.5 YR 4/4), some gravel, subangular 0.5 to 0.7 feet,	
				cohesive, moist.	
2	4	0.6	4,2,2,3	0.0-0.5': Slough.	2
				0.5-0.6': Silt. Brown (7.5 YR 4/4), trace fine sand, trace fine gravel,	
				cohesive, moist.	
4	6	1.1	8,3,3,2	0.0-0.3': Slough.	2
				0.3-0.4': Silt. As above.	
				0.4-1.1': Sand. Strong brown (7.5 YR 5/8), medium to fine, 0.8-1.1	
				predominantly fine sand, moist, firm.	
6	8	1.2	6,4,3,3	0.0-0.3': Slough.	3
				0.3-1.2': Sand. Strong brown (7.5 YR 5/8), medium to fine,	
				moderately sorted, some coarse sand/gravel, subangular, moist,	
				firm.	
8	10	1.1	6,6,7,8	0.0-0.2': Slough.	3
				02.-1.1': Sand. As above.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-306 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/11/99 Drilling Completed 6/11/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1192.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By Bill McCraken and David Buser Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	0.8		0.0-0.1': Top soil. Dark brown (7.5 YR 3/3), loose, organic matter.	1.5
				0.1-0.8': Sand. Strong brown (7.5 YR 4/6), medium to very fine,	
				moderately sorted, trace coarse sand/gravel, firm, moist.	
2	4	1.3		0.0-1.0': Slough. Isolated roots at 0.9, crushed black rock (coal)	3
				at 0.9-1.0.	
				1.0-1.3': Silt. Strong brown (7.5 YR 4/6), some very fine sand,	
				cohesive, moist.	
4	6	1.6		0.0-0.6': Slough.	2
				0.6-1.6': Sand. Strong brown (7.5 YR 5/8), medium, well sorted,	
				some gravel, subangular to subrounded, loose, moist.	
6	8	0.6		0.0-0.2': Slough.	2
				0.2-0.6': Sand. Strong brown (7.5 YR 4/6), medium to very fine,	
				moderate sorting, some coarse sand/gravel, firm, moist.	
8	10	0.8		0.0-0.3': Slough.	2
				0.3-0.8': Sand. As above.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-307 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/11/99 Drilling Completed 6/11/99

Total Depth Drilled 10 Feet Hole Diameter 6.5 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. 1179.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear Driller Jeff Helper Dolan

Prepared By Bill McCraken and David Buser Hammer Weight 130 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1.1		0.0-0.7': Top soil. Dark brown (7.5 YR 3/3), roots and organic matter.	1
				0.7-1.1': Sand. Strong brown (7.5 YR 4/4), medium, moderately	
				sorted, some coarse sand/gravel, loose, moist.	
2	4	0.5		0.0-0.5': Sand. As above.	
4	6	1.1		0.0-0.7': Slough.	4
				0.7-1.1': Sand. Dark yellowish brown (10 YR 4/6), medium, well sorted,	
				trace coarse sand/gravel, loose, moist.	
6	8	0.9		0.0-0.4': Slough.	8
				0.4-0.9': Sand. As above.	
8	10	1.2		0.0-0.3': Slough.	15
				0.3-1.2': Sand. As above, very well sorted.	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-308 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 7/9/99 Drilling Completed 7/9/99

Total Depth Drilled 9 Feet Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1198.35 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Helper

By Pat Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	0.5			Top soil.
0.5	9			Sand. Fine to medium, traces of gravel.

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ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-309 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 7/24/99 Drilling Completed 7/24/99

Total Depth Drilled 10 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device

Sampling Interval Continuous feet

Land-Surface Elev. 1192.69 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Helper

Prepared By Pat Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	0.5			Top soil.
0.5	10			Sand. Brown, very fine to very coarse. Traces of clay and gravel.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well GMSG-310 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 7/26/99 Drilling Completed 7/26/99

Total Depth Drilled 6 ft 4 in Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Sampling Interval Continuous feet

Land-Surface Elev. 1194.80 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor None Driller Helper

Prepared By Pat Bartnik Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches) OVA (ppm)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
0	0.5			Top soil.
0.5	6.3			Sand. Brown, very fine to very coarse. Traces of clay and gravel.

ARCADIS

Sample/Core Log

Boring/Well GMSG-401 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1500 W. Breen, Kingsford, Michigan

Drilling Started 10/08/03 Drilling Completed 10/08/03

Total Depth Drilled 50 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1121.56 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None Driller Dennis Charette Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	3"			Topsoil.
3"	50"			Medium grain, medium brown sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-402 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1500 W. Breen, Kingsford, Michigan Drilling Started 10/08/03 Drilling Completed 10/08/03

Total Depth Drilled 50 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1120.86 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Dennis Charette Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	6"			Topsoil.
6"	39"			Wet dark brown sand.
39"	50"			Medium grain, light brown sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-403 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1220 W. Breen, Kingsford, Michigan

Drilling Started 10/08/03 Drilling Completed 10/08/03

Total Depth Drilled 48" Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1121.79 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None Driller Dennis Charette Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	2"			Topsoil.
2"	48"			Fine grain sand light brown in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-404 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 700 W. Sagola Kingsford, Michigan Drilling Started 10/08/03 Drilling Completed 10/08/03

Total Depth Drilled 50 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Land-Surface Elev. 1109.98 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Dennis Charette Helper Tony Mathweg

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4"			Topsoil.
4"	24"			Medium grain sand, medium brown in color with 2" rocks.
24"	50"			Dark brown sand, medium grain.

ARCADIS

Sample/Core Log

Boring/Well GMSG-405 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1101 W. Breen, Kingsford, Michigan Drilling Started 10/08/03 Drilling Completed 10/08/03

Total Depth Drilled 109 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 138" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1118.88 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Dennis Charette Helper Tony Mathweg

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	1"			Topsoil.
1"	96"			Medium grain sand, medium brown in color.
96"	109"			Medium grain sand with 1" rocks sand is medium brown in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-406 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1227 W. Breen, Kingsford, Michigan Drilling Started 10/08/03 Drilling Completed 10/08/03

Total Depth Drilled 125 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 138" x 3"

Land-Surface Elev. 1121.82 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Dennis Charette Helper Tony Mathweg

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	14"			Topsoil.
14"	125"			Medium grain, medium brown sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-407 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1212 W. Breen, Kingsford, Michigan Drilling Started 10/08/03 Drilling Completed 10/08/03

Total Depth Drilled 120 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 130" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1121.94 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	10"			Topsoil.
10"	120"			Medium grain, medium brown sand, tree roots at 48".

ARCADIS

Sample/Core Log

Boring/Well GMSG-408 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1310 W. Breen, Kingsford, Michigan Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 115 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 138" x 78" Sampling Interval Continuous feet

Land-Surface Elev. 1121.78 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	18"			Top soil.
18"	105"			Medium grain sand, brown in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-409 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 324 Balsam, Kingsford, Michigan Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 77 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 130" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1123.32 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	6"			Topsoil.
6"	12"			Medium grain sand, dark in color.
12"	77"			Medium grain sand, reddish in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-410 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 324 Balsam, Kingsford, Michigan Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 77 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 130" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1122.86 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	6"			Topsoil.
6"	77"			Medium grain sand, reddish in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-411 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1628 W. Breen, Kingsford, Michigan

Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 110 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 138" x 3"

Land-Surface Elev. 1121.45 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Tony Mathweg Helper

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	12"			Topsoil with 4" rocks.
12"	24"			Wet reddish silt.
24"	110"			Medium grain sand reddish in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-412 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1628 W. Breen, Kingsford, Michigan

Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 59 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1121.66 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None

Driller Tony Mathweg Helper

Prepared By Dennis Charette

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	12"			Topsoil with 4" rocks.
12"	24"			Wet reddish silt with no rocks.
24"	59"			Medium grain sand reddish in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-413 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 101 Lyman, Kingsford, Michigan Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 57 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1116.53 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	20"			Medium grain sand, reddish in color with tree roots.
20"	57"			Same sand, no roots.

ARCADIS

Sample/Core Log

Boring/Well GMSG-414 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 101 Lyman, Kingsford, Michigan

Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 54 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1114.22 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None

Driller Tony Mathweg Helper

Prepared By Dennis Charette

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	20"			Topsoil with 1" rocks.
20"	54"			Medium grain sand reddish in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-415 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1000 Breitung Avenue, Kingsford, Michigan

Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 48 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1113.04 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None

Driller Tony Mathweg Helper

Prepared By Dennis Charette

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	18"			Sand with 2" to 4" rocks.
18"	36"			Wet silt.
36"	48"			Medium grain sand with 1" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-416 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1300 W. Breitung Avenue, Kingsford, Michigan Drilling Started 10/09/03 Drilling Completed 10/09/03

Total Depth Drilled 56 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Land-Surface Elev. 1116.44 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Tony Mathweg Helper

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	12"			Medium grain sand, brown in color with 2" rocks.
12"	24"			Wet silt.
24"	56"			Medium grain sand, brown in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-417 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1565 Pyle Drive, Kingsford, Michigan

Drilling Started 10/10/03 Drilling Completed 10/10/03

Total Depth Drilled 56 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Land-Surface Elev. 1132.98 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Tony Mathweg Helper

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4"			Landscape rock and mesh liner.
4"	18"			Medium grain sand with 1-3" rock.
18"	56"			Medium grain sand, fill sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-417B Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1565 Pyle Drive, Kingsford, Michigan Drilling Started 10/17/03 Drilling Completed 10/17/03

Total Depth Drilled 84 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 138" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1132.98 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4"			Landscape rock and mesh liner.
4"	18"			Medium grain sand with 1-3" rock.
18"	84"			Medium grain sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-417C Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1565 Pyle Drive, Kingsford, Michigan

Drilling Started 10/21/03 Drilling Completed 10/21/03

Total Depth Drilled 84 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 138" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1132.32 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None

Driller Tony Mathweg Helper

Prepared By Dennis Charette

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4"			Topsoil.
4"	84"			Medium grain sand medium brown in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-418 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 510 S. Westwood,Kingsford, Michigan

Drilling Started 10/21/03 Drilling Completed 10/21/03

Total Depth Drilled 48 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1131.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger Post Hole Digger

Drilling Contractor None

Driller Tony Mathweg Helper

Prepared By Dennis Charette

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	6"			Topsoil and sand mix.
6"	42"			Medium grain sand with 1-3" rocks.
42"	48"			Medium grain sand with 3-4" rocks.
48"				Hit something hard and could not go any farther.

ARCADIS

Sample/Core Log

Boring/Well GMSG-419 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1525 Pyle Drive, Kingsford, Michigan

Drilling Started 10/15/03 Drilling Completed 10/15/03

Total Depth Drilled 59" Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1132.71 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	12"			Medium grain sand, no rocks, brown in color.
12"	59"			Medium grain sand, with small rocks, brownish in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-420 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1515 Pyle Drive, Kingsford, Michigan Drilling Started 10/10/03 Drilling Completed 10/10/03

Total Depth Drilled 60 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1132 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	60"			Medium grain sand, brown in color, small 3" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-421 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1295 Pyle Drive, Kingsford, Michigan Drilling Started 10/10/03 Drilling Completed 10/10/03

Total Depth Drilled 49" Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Land-Surface Elev. 1126.89 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Tony Mathweg Helper

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	6"			Topsoil.
6"	49"			Sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-422 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1295 Pyle Drive, Kingsford, Michigan

Drilling Started 10/10/03 Drilling Completed 10/10/03

Total Depth Drilled 56" Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1127.04 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None

Driller Tony Mathweg Helper

Prepared By Dennis Charette

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	6"			Topsoil.
6"	56"			Sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-423 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1075 Pyle Drive, Kingsford, Michigan

Drilling Started 10/22/03 Drilling Completed 10/22/03

Total Depth Drilled 61 Inches Hole Diameter 3 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1125.44 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None

Driller Tony Mathweg Helper

Prepared By Dennis Charette

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	44"			Medium grain sand reddish in color.
44"	52"			Wet silt brown, black in color.
52"	61"			Medium grain sand reddish color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-424 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1051 Pyle Drive, Kingsford, Michigan Drilling Started 10/24/03 Drilling Completed 10/24/03

Total Depth Drilled 50 Inches Hole Diameter 8 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 8"

Land-Surface Elev. 1125.85 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Tony Mathweg Helper

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	50"			Medium grain sand with 1 to 3" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-425 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1051 Pyle Drive, Kingsford, Michigan Drilling Started 10/24/03 Drilling Completed 10/24/03

Total Depth Drilled 60 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1126.11 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	18"			Medium grain sand with 1-6" rocks.
18"	24"			Dark brown silt.
24"	60"			Medium grain sand with 3" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-426 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1021 Pyle Drive, Kingsford, Michigan Drilling Started 10/22/03 Drilling Completed 10/22/03

Total Depth Drilled 50 Inches Hole Diameter 8 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 8"

Land-Surface Elev. 1126.53 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	50"			Medium grain sand with 1-6" rocks used post hole diggers.

ARCADIS

Sample/Core Log

Boring/Well GMSG-427 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1021 Pyle Drive, Kingsford, Michigan Drilling Started 10/22/03 Drilling Completed 10/22/03

Total Depth Drilled 50 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Land-Surface Elev. 1126.53 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Tony Mathweg Helper

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	50"			Medium grain sand with 1 to 2" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-428 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 917 Pyle Drive, Kingsford, Michigan Drilling Started 10/15/03 Drilling Completed 10/15/03

Total Depth Drilled 56 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Land-Surface Elev. 1126.58 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level Sampling Interval Continuous feet

Drilling Fluid Used

Drilling Contractor None Drilling Method Hand Auger

Prepared By Dennis Charette Driller Tony Mathweg Helper

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	12"			Very dense silt brown in color.
12"	56"			Medium grain sand brown in color with 4" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-428 B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (Maranatha Messengers) Drilling Started: 8/18/05 Drilling Completed: 8/18/05

Total Depth Drilled: 44 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1126.42 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Randy Radke Helper: Kevin Frome

Prepared By: Jill Flater Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	1.91/	1.6	2 2 1 2	0-0.3' Silt: Brown (10 YR 4/3) silt with organic matter, grass/roots, trace very
		31.3			fine to fine sand, dry, loose.
					0.3-0.5' Silt: Dark brown (10 YR 3/3) sandy with fine to medium sand,
					trace coarse, trace fine subangular to subround gravel up to 1/4" diameter,
					loose, slightly, moist.
					0.5-1.6' Sand: Strong brown (7.5 YR 4/6) fine sand, some medium to coarse,
					poorly sorted, trace fine gravel up to 1/2" most ≤1/4", loose, moist.
2	4	2.10/	1.4	1 1 1 2	0-1.4' Sand: As above, fine sand.
		28.8			
4	6	3.53/	0.6	3 6 50+	0-0.1' Sand: As above, fine sand.
		40.5			0.1-0.5' Sand: Brown (7.5 YR 4/4) fine to medium sand, some coarse, little
					fine gravel up to 1/2" most ≤1/4", loose, moist, poorly sorted.
					0.5-0.6' Silt: Dark brown (7.5 YR 3/4) grainy, trace fine sand, soft, slightly
					cohesive uniform, moist.
6	8	1.80/	1.4	7 7 9 11	0-0.1' Sand: As above, fine to medium sand.
		45.7			0.1-0.2' Silt: As above, grainy.
					0.2-1.4' Sand: Strong brown (7.5 YR 5/6) very fine to fine sand, slight
					trace medium, well sorted, loose, moist, silty very fine sand beds/laminations,
					varved to 1/2", throughout fine sand layers 1/4"-1" thick, silty very fine
					sand layers are strong brown (7.5 YR 4/6).
8	10	.96/	2	5 6 6 7	0-0.5' Sand: Dark brown (7.5 YR 3/3) silty, fine to medium sand, trace
		8.4			coarse, somewhat cohesive, moist.
					0.5-0.7' Sand: Strong brown (7.5 YR 5/6) very fine to fine sand, well sorted,
					moist, loose, uniform.
					0.7-1.0' Sand: Dark brown (7.5 YR 3/3) very silty, as above, very fine to
					fine sand, trace coarse, trace fine gravel angular to subround, up to 1/2" to
					somewhat cohesive, soft, poorly sorted sand.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-428 B

Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					1.1-1.6' Sand: As above, less silt, crumbly, very slightly cohesive.
					1.6-2' Sand: As above 0.7-1.0', fine to medium sand, silty, somewhat
					cohesive, different color, strong brown (&.5 YR 4/6.
10	12	2.48/	1.5	3 5 5 3	0-0.3' Sand: As above (0.7-1.0), silty, very fine to fine sand.
		13			0.3-0.8' Sand: Strong brown (7.5 YR 4/6) very fine to fine sand, well sorted,
					loose, moist.
					0.8-1.5' Sand: Strong brown (7.5 YR 4/6) medium sand, some fine, trace
					coarse, trace fine gravel up to 1/2 subangular to subround, loose, moist,
					poorly sorted.
12	14	2.13/	1.5	6 7 7 8	0-0.4' Sand: As above (0.7-1.0) silty, very fine to fine.
		11.7			0.4-0.5' Weathered rock fragments.
					0.5-1.5' Sand: Strong brown (7.5 YR 5/6) medium sand, some fine, little
					coarse, trace fine gravel up to 1/2" most ≤1/4", poorly sorted, loose, moist,
					top 0.1 foot trace silt.
14	16	2.77/	0.9	3 4 4 3	0-0.1' Sand: As above, medium sand, trace silt, lacks gravel.
		15.5			0.1-0.3' Sand: As above, medium sand (0.5-1.5).
					0.3-0.9' Sand/Gravel: Brown (7.5 YR 4/3) very fine to very coarse sand, fine
					to coarse gravel angular to subround, trace silt, loose, moist, very poorly
					sorted, gravel up to 1.5" most ≤1/4".
16	18	4.75/	1.3	3 3 5 6	0-0.5' Sand: Brown (7.5 YR 4/4) medium sand, little fine, little coarse, trace
		11.7			fine subangular to subround gravel up to 1/4", loose, poorly sorted, trace to
					little silt in bottom 0.1".
					0.5-1.3' Sand/Gravel: Brown (7.5 YR 4/3) medium to very coarse sand,
					some very fine to fine, very poorly sorted, fine angular to subround gravel,
					loose, moist, gravel up to 1/2" most ≤1/4".
18	20	7.68/	1	3 3 3 5	0-1.0' Sand/Gravel: as above, medium to very coarse sand, fine gravel.
		24			
20	22	7.32/	1.3	3 3 4 4	0-0.5' Sand/Gravel: As above, medium to very coarse sand, fine gravel.
		29.3			0.5-1.2' Sand: Light brown (7.5 YR 6/4) medium sand, trace fine, trace coarse
					to very coarse, slight trace fine gravel up to 1/2" subround, loose, poorly
					sorted, moist.
22	24	11.56/	0.4	3 5 5 7	0-0.4' Sand/Gravel: Brown (7.5 YR 3/4) medium to very coarse sand, trace fine
		31.3			gravel up to 1" most ≤1/2", trace silt.
24	26	12.16/	1.1	4 7 9 15	0-1.1' Sand/ Gravel: As above, medium to very coarse sand, fine gravel
		35.4			(0-0.4) of 22-24, 0-0.2 trace silt.
26	28	11.47/	0.9	6 21 9 9	0-0.1' Sand/Gravel: As above, medium to very coarse sand fine, gravel 0.5-1.3
		37			of 16-18.
					0.1-0.2' Sand: Brown (7.5 YR 5/4) very fine sand, uniform, very well sorted,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-428 B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					moist, loose.
					0.2-0.4' Silt: Brown (7.5 YR 4/4) grainy, soft, uniform, somewhat
					cohesive, moist.
					0.4-1.0' Sand: As above, very fine with silt as above grainy varves.
28	30	9.91/	1.4	6 14 9 12	0-1.4' Sand: Colors as above, very fine sand, thinly laminated/varved beds of
		37			grainy silt throughout, moist, loose to somewhat cohesive in places, well
					sorted sand.
30	32	10.72/	1.7	6 7 10 10	0-1.4' Sand: As above, very fine, with silt varves.
		36.90			
32	34	10.99/	1.9	5 6 10 11	0-1.9' Sand: As above, very fine, with silt varves.
		37.2			
34	36	7.37/	1.9	5 6 9 11	0-1.9' Sand: As above, very fine, with silt varves.
		32.6			
36	38	7.27/	2	5 7 9 9	0-2' Sand: As above, very fine, with silt varves.
		27.7			
38	40	9.82/	1.8	5 6 7 8	0-0.6' Sand: As above, very fine with, silt varves.
		26.6			0.6-1.0' Sand: Light brown (7.5 YR 6/4) very fine sand, uniform, very well
					sorted, moist, loose.
					1.0-1.8' Sand: Brown (7.5 YR 5/4) very fine to fine sand, trace medium,
					moderately sorted, loose, moist.
40	42	9.62/	2	6 6 9 9	0-0.6' Silt: Brown (7.5 YR 4/4) grainy, very soft, uniform, moist, sharp
		25.5			contact with below, coarse gravel at contact.
					0.6-2' Sand: Strong brown (7.5 YR 4/6) clayey silty, fine sand, cohesive,
					very moist to wet at bottom, trace medium to coarse sand sticky.
42	44	9.74/	1.3	6 6 8 10	0-1.3' Sand: As above 0-0.2, clayey, silty wet rock fragments at 0.2, slate.
		23.7			0.2-1.3 saturated.
					EOB @ 44'

ARCADIS

Sample/Core Log

Boring/Well GMSG-429 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 136 N. Hooper, Kingsford, Michigan Drilling Started 10/31/03 Drilling Completed 10/31/03

Total Depth Drilled 48 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1117.89 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4"			Topsoil.
4"	48"			Medium grain sand, reddish in color with 1" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-430 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 136 N. Hooper, Kingsford, Michigan

Drilling Started 10/31/03 Drilling Completed 10/31/03

Total Depth Drilled 61 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 78" x 3"

Sampling Interval Continuous feet

Land-Surface Elev. 1115.7 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used

Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	20"			Medium grain sand with 1 to 5" rocks.
20"	61"			Medium grain sand with 1" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-431 Project/No. Ford/Kingsford WI001025.0002 Page 1 of 1

Site Location 1565 Pyle Drive, Kingsford, Michigan

Drilling Started 10/28/03 Drilling Completed 10/28/03

Total Depth Drilled 84 Inches Hole Diameter 3 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device 138" x 3" Sampling Interval Continuous feet

Land-Surface Elev. 1133 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method Hand Auger

Drilling Contractor None Driller Tony Mathweg Helper

Prepared By Dennis Charette Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	OVA/OVM	Sample/Core Description
0	4"			Landscape rock with mesh liner.
4"	84"			Medium grain sand with 1 to 3" rock, medium brown in color.

ARCADIS

Sample/Core Log

Boring/Well GMSG-459 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (Woodland Elementary School)

Drilling Started: 7/7/05 Drilling Completed: 7/7/05

Total Depth Drilled: 5.5 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1127.65 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: NA Helper: NA

Prepared By: RJG/GJM Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2			Dirt: Gray large gravel.
2	4.5			Sand: Brown, moist, low percent of silt, fine to coarse gain, with subangular fine gravel.
4.5	5.5			Sand: Brown, fine to medium grain subrounded, higher percent of silt, very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-460 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (Woodland Elementary School)

Drilling Started: 7/7/05 Drilling Completed: 7/7/05

Total Depth Drilled: 5.3 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1127.73 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: NA Helper: NA

Prepared By: RJG/GJM Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	5.3			Sand: Brown with orange tint, fine grain very soft, moist, with silt, trace some gravel bits throughout.

ARCADIS

Sample/Core Log

Boring/Well GMSG-461 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (Woodland Elementary School)
Drilling Started: 7/7/05
Drilling Completed: 7/7/05

Total Depth Drilled: 5.6 Feet
Hole Diameter: 2.5 inches
Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket
Sampling Interval: continuous feet

Land-Surface Elev.: 1127.9 feet [X] Surveyed [ ] Estimated
Datum: Mean Sea Level

Drilling Fluid Used: None
Drilling Method: Hand Auger

Drilling Contractor: ARCADIS
Driller: NA Helper: NA

Prepared By: RJG/GJM
Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.6			Topsoil: Gray, dry.
0.6	5.6			Sand: Brown with orange tint, fine grain, very soft, moist, with silt, trace some gravel bits throughout.

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Sample/Core Log

Boring/Well GMSG-462 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 7/8/05 Drilling Completed 7/8/05

Total Depth Drilled 4.1 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1127.84 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	4.1			Sand: Brown, moist, subangular medium to fine grain, with gravel fine and coarse.

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Sample/Core Log

Boring/Well GMSG-463 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (2000 W. Pyle Drive - Woodland Elem.)

Drilling Started 7/8/05 Drilling Completed 7/8/05

Total Depth Drilled 5.7 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1128.21 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	5.7			Sand: Brown, moist, subangular medium to fine grain, with gravel fine and coarse.

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Sample/Core Log

Boring/Well GMSG-464 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (2000 W. Pyle Drive - Woodland Elem.)

Drilling Started 7/8/05 Drilling Completed 7/8/05

Total Depth Drilled 5 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1127.93 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	5			Sand: Brown, moist, subangular medium to fine grain, with gravel fine to coarse throughout.

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Sample/Core Log

Boring/Well GMSG-465 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (American Martyrs Chruch 908 Sagola)

Drilling Started: 7/11/05 Drilling Completed: 7/11/05

Total Depth Drilled: 7 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Auger (Hand)

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1111.10 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: RTG Helper: NA

Prepared By: RTG/GJM Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2			Soil: Gray, with dry organic fine sand.
2	4			Sand: Orange, fine grain, subangular, very moist, trace silt.
4	6			Sand/Silt: Orange, with clay mix.
6	6.2			Clay: Black, with fine sand particles.
6.2	6.6			Sand/Silt: Orange, with clay mix.
6.6	7			Sand: Orange, moist, subangular, coarse and fine grain with fine to medium gravel.

ARCADIS

Sample/Core Log

Boring/Well GMSG-466 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (American Martyrs Chruch 908 Sagola) Drilling Started 7/12/05 Drilling Completed 7/12/05

Total Depth Drilled 8 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1111.11 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.1			Black top.
0.1	0.4			Sand/Gravel: Brown with orange tint, mix mostly gravel, moist.
0.4	5.2			Sand: Brown, fine grain, moist, subangular, trace silt.
5.2	8			Sand: Brown, subangular to subrounded quartzite, very moist, coarse grain, some gravel (fine).

ARCADIS

Sample/Core Log

Boring/Well GMSG-467 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Noel's Mini-Storage) Drilling Started 7/13/05 Drilling Completed 7/13/05

Total Depth Drilled 5 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1132.42 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2			Sand: Brown (light) fine to coarse grain, dry near surface moist about 0.5' below,
				some gravel.
2.0	2.4			Dirt: Black organic.
2.4	4			Sand: Orange, fine to coarse grain, very moist, subangular.
4	5			Sand: Light brown, coarse grain, with little gravel, very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-468 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (American Martyr's School 906 Sagola)

Drilling Started 7/14/05 Drilling Completed 7/14/05

Total Depth Drilled 10.5 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1113.55 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.5			Black top.
0.5	7.0			Sand: Brown, moist, fine to coarse grain, low percent of fine gravel.
7.0	10.5			Sand: Light brown, very moist, coarse grain, low percent of fine gravel.

ARCADIS

Sample/Core Log

Boring/Well GMSG-469 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Becon Ambulance) Drilling Started 7/14/05 Drilling Completed 7/14/05

Total Depth Drilled 5.1 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1132.44 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RJG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.2			Black top.
0.2	0.8			Sand/Gravel: Fine with coarse grain sand.
0.8	2.1			Sand: Orange, fine to medium grain.
2.1	2.3			Silt: Black, organic soil
2.3	4			Sand: Orange, medium to coarse grain, very moist.
4	5.1			Sand: Light brown, coarse grain, very very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-470 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Noel's Storage #4 West, 1491 Pyle Dr.)

Drilling Started 7/15/05 Drilling Completed 7/15/05

Total Depth Drilled 5.1 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1131.32 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.1			Sand/Silt: Brown, mostly fine particles soft with grit, dry.
1.1	4.5			Sand: Slightly tinted orange, fine to medium grain, moist, low percent of coarse.
				grain.
4.5	5.1			Sand: Light brown, very moist, coarse grain with low percent of fine gravel.

ARCADIS

Sample/Core Log

Boring/Well GMSG-471 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Noel's Storage #3 West, 1491 Pyle Dr.) Drilling Started 7/15/05 Drilling Completed 7/15/05

Total Depth Drilled 5.8 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1131.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1			Sand/Silt: Brown, mostly fine particles, soft with grit, dry.
1	4.5			Sand: Slightly tinted orange, fine to medium grain with low percent of coarse sand, moist.
4.5	5.8			Sand: Light brown, very moist, coarse grain, with low percent of fine gravel.

ARCADIS

Sample/Core Log

Boring/Well GMSG-472 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Noel's Storage #2 West, 1491 Pyle Dr.) Drilling Started 7/15/05 Drilling Completed 7/15/05

Total Depth Drilled 5.2 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1130.90 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1			Sand/Silt: Brown, mostly fine particles, soft with grit, dry.
1	2.1			Sand: Orange, mixture with black silt/sand, fine to medium grain.
2.1	4.5			Sand: Orange, fine to medium grain.
4.5	5.2			Sand: Light brown, coarse grain, very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-473 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (Noel's Storage #4, 1491 Pyle Dr.)
Drilling Started: 7/18/05
Drilling Completed: 7/18/05

Total Depth Drilled: 5 Feet
Hole Diameter: 2.5 inches
Type of Sample/ Coring Device: Auger (Hand)

Length and Diameter of Coring Device: Auger Bucket
Sampling Interval: continuous feet

Land-Surface Elev.: 1131.32 feet [X] Surveyed [ ] Estimated
Datum: Mean Sea Level

Drilling Fluid Used: None
Drilling Method: Hand Auger

Drilling Contractor: ARCADIS
Driller: RTG Helper: NA

Prepared By: RTG/GJM
Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1			Sand: Brown, fine grain, with fine to medium gravel, dry.
0.7	3.2			Sand: Brown to orange tint, fine to medium grain, moist.
3.2	4.5			Sand: Orange, fine grain, moist.
4.5	5			Sand: Light brown, coarse to fine grain, very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-474 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (Noel's Storage #3, 1491 Pyle Dr.)

Drilling Started: 7/18/05 Drilling Completed: 7/18/05

Total Depth Drilled: 5 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Auger (Hand)

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1131.44 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: RTG Helper: NA

Prepared By: RTG/GJM Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1			Sand: Brown, fine grain, with fine to medium gravel, dry.
1	5.0			Sand: Brown, fine grain subangular, medium and coarse grain sand mixed in, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-475 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Noel's Storage #2, 1491 Pyle Dr.) Drilling Started 7/18/05 Drilling Completed 7/18/05

Total Depth Drilled 5 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1130.94 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.6			Sand: Brown, fine grain, with fine gravel, dry.
0.6	2.7			Silt/Sand: Brown, very soft, moist.
2.7	4.5			Sand: Orange, silty, very soft, moist.
4.5	5			Sand: Light brown, trace silt, coarse grain, very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-476 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Noel's Storage #2, 1491 Pyle Dr.) Drilling Started 7/19/05 Drilling Completed 7/19/05

Total Depth Drilled 3.5 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1115.25 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.5			Black top.
0.5	3.5			Sand: Brown, moist, medium to coarse grain, with fine to coarse gravel.

ARCADIS

Sample/Core Log

Boring/Well GMSG-477 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (Warner Electric 1400 W. Breitung Ave.)

Drilling Started: 7/19/05 Drilling Completed: 7/19/05

Total Depth Drilled: 5.1 Feet Hole Diameter: 2.5 inches Type of Sample/ Coring Device: Auger (Hand)

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1115.03 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: RGT Helper: NA

Prepared By: RTG/GJM Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.2			Topsoil.
0.2	3.5			Sand: Brown, mostly fine to medium grain subangular, mixed with silt.
3.5	4.0			Silt/Sand: Brown, mostly silt mixed with medium grain sand, moist.
4	5.1			Sand: Orange to red, coarse grain, trace silt, very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-478 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Noel's Min Storage #1, 1491 Pyle Dr) Drilling Started 7/19/05 Drilling Completed 7/19/05

Total Depth Drilled 5.2 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Auger (Hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1132.26 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller RTG Helper NA

Prepared By RTG/GJM Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.2			Black top.
0.2	0.9			Gravel/Sand: Brown, fine to coarse grain mix, dry.
0.9	3.5			Sand: Medium to fine grain, trace silt, moist.
3.5	3.6			Silt: Black/brown, with fine grain sand, moist.
3.6	4.7			Silt: Black, fine grain sand mix, moist.
4.7	5.2			Sand: Light brown, very moist, coarse grain.

ARCADIS

Sample/Core Log

Boring/Well GMSG-479A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Khoury) Drilling Started 8/3/05 Drilling Completed 8/3/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1114.58 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	4.56/	1.5	3 3 4 5	0-1' Silt/Sand: Dark yellowish brown (10 YR 3/6), fine sand, some subangular
		0			to subround gravel, low to no cohesion, loose, very poorly sorted, moist.
					1-1.5' Sand: Strong brown (7.5 YR 5/6), fine sand, trace medium sand, loose,
					well sorted, moist.
2	4	5.62/	1.5	7 5 7 15	0-0.5' Sand: Dark brown (7.5 YR 3/4), fine sand, trace medium to coarse
		1.01			sand, little silt, trace fine subrounded gravel, loose, poorly sorted, moist.
					0.5-1.5' Sand: Strong brown (7.5 YR 5/6), fine sand, loose, well sorted, moist.
4	6	8.49/	1	7 9 12 12	0-0.5' Sand: Brown (7.5 YR 4/4), fine sand, trace fine to coarse subrounded
		2.14			gravel 0.25" to 1", loose, poorly sorted, moist.
					0.5-1' Silt/Sand: Dark brown (7.5 YR 3/4), fine sand, dense, uniform, loose to
					somewhat crumbly when worked, moist.
6	8	10.48/	0.25	7 9 9 15	0-0.25' Sand: Strong brown (7.5 YR 4/6), fine to coarse sand, mostly fine,
		3.41			little fine subrounded gravel, rock lodged in spoontip, loose, very poorly
					sorted, moist.
8	10	14.23/	1	4 7 10 12	0-1' Sand: Strong brown (7.5 YR 5/6), fine sand, trace medium sand, little
		5.69			subrounded gravel up to 0.5", loose, moderately sorted, moist.
10	12	16.13/	1	4 7 9 11	0-1' Sand: Strong brown (7.5 YR 5/6), fine to coarse sand, mostly medium
		6.27			sand, some fine to coarse gravel up to 1.5", loose, very poorly sorted, moist.
12	14	19.64/	1	8 6 8 8	0-1' Sand: Brown (7.5 YR 4/4), medium sand, trace fine to coarse sand, trace
		7.11			fine subrounded gravel, loose, moderately sorted, moist.
14	16	14.41/	1	4 7 9 9	0-1' Sand: Brown (7.5 YR 4/4), fine to medium sand, trace coarse sand, little
		8.29			fine subrounded gravel up to 1.5", loose, very poorly sorted, moist.
16	18	15.11/	1	4 7 9 11	0-0.25' Sand: Brown (7.5 YR 4/4), medium sand, little fine sand, trace coarse
		3.79			sand, loose, poorly sorted, moist.
					0.25-1' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, trace coarse
					sand, loose, moderately sorted, moist.
18	20	16.52/	1.5	4 7 9 11	0-1' Sand: Brown (7.5 YR 5/4), fine sand, trace medium to coarse sand, loose,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-479A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		4.73			well sorted, moist.
					1-1.5' Sand: Brown (7.5 YR 5/4), fine sand, little coarse sand and gravel up
					to 1", loose, very poorly sorted, moist.
20	22	14.1/	1	7 11 11 10	0-0.5' Sand: Brown (7.5 YR 4/4), fine sand, uniform, loose, very well sorted,
		10.5			moist.
		10.5			0.5-1' Sand: Strong brown (7.5 YR 4/6), medium sand, little coarse sand and
					fine gravel, loose, very poorly sorted, moist.
22	24	7.51/	1.25	3 3 2 3	0-1' Sand: Brown (7.5 YR 4/4), coarse sand, little medium sand, loose,
		14.31			moderately sorted, moist.
					1-1.25' Clay: Reddish brown (5 YR 5/4), medium stiff, uniform, high plasticity,
					moist.
24	26	3.62/	2	4 7 10 12	0-0.5' Sand: Brown (7.5 YR 4/4), medium to coarse sand, little fine gravel,
		1.47			loose, very poorly sorted, wet.
					0.5-2' Silt/Clay: Silt brown (7.5 YR 5/4), clay reddish brown (5 YR 5/4),
					interbedded smooth silt, uniform, dense, crumbly when worked, 0.25" to 4"
					thick from 0.5-1', clay 0.25-3.5" thick, 3.5" thick clay layer at 1', 4" silt layer
					at 1.5', moist.
26	28	1.0/	2	7 14 22 23	0-1' Silt/Clay: Silt brown (7.5 YR 5/4), clay reddish brown (5 YR 5/4), silt 0.25
		0.57			to 0.5", clay varves to 0.25", nearly uniform bedding, plastic clay, crumbly
					smooth silt.
					1-2' Silt: Brown (7.5 YR 5/4), smooth, uniform, dense, crumbly when worked,
					moist.
28	30	3.45/	1.25	9 13 15 28	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
		2.11			sorted, moist.
30	32	3.11/	1.5	7 14 17 28	0-1.5' Sand: As above.
		1.59			
32	34	5.71/	2	8 12 15 23	0-2' Sand: Light brown (7.5 YR 6/4), very fine sand, trace silt, uniform, loose,
		2.11			very well sorted, moist.
34	36	6.18/	1.5	10 16 21 28	0-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
		2.5			sorted, moist.
36	38	4.56/	2	10 12 16 23	0-1' Sand: Brown (7.5 YR 5/4), very fine, some silt varves, uniform, loose, very
		2.02			well sorted, moist.
					1-1.5' Silt: Brown (7.5 YR 5/4), grainy, somewhat crumbly to loose, uniform,
					very soft, moist.
					1.5-2' Sand: Brown (7.5 YR 5/4), fine sand, loose, very well sorted, moist.
38	40	7.73/	1.5	7 11 17 29	0-0.5' Sand: Brown (7.5 YR 5/4), very fine, trace silt varves, loose, very well

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-479A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
		4.51			sorted, moist.
					0.5-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, loose, very well sorted,
					moist.
40	42	3.92/	1	7 12 18 27	0-0.5' Sand: Brown (7.5 YR 5/4), very fine, trace to some silt varves, loose,
		4			very well sorted, moist.
					0.5-1' Sand: Brown (7.5 YR 5/4), fine sand, loose, very well sorted, moist,
					wet at 41'.
					EOB @ 42'

ARCADIS

Sample/Core Log

Boring/Well GMSG-480 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan (Khoury) Drilling Started 8/6/05 Drilling Completed 8/6/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1115.10 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	6.59/	1.5	1 2 2 2	0-1.5' Sand: Strong brown (7.5 YR 4/6), fine sand, trace (-) medium to coarse
		359			sand, trace subrounded gravel to 0.5", loose, moderately sorted, moist.
2	4	6.52/	1.25	3 4 4 5	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand, loose,
		420			nearly uniform, well sorted, moist.
4	6	10.96/	0.75	3 4 4 7	0-0.75' Sand: As above.
		230			0.75-1' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly medium sand,
					1" rock at 1', loose, poorly sorted, moist.
6	8	11.04/	1.25	4 4 4 6	0-1' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
		185			sorted, moist.
					1-1.25' Sand: Brown (7.5 YR 5/4), medium sand, trace fine gravel in spoontip
					uniform, loose, well sorted, moist.
8	10	8.9/	1.5	3 4 6 6	0-1.5' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace fine gravel
		120			throughout, loose, poorly sorted, moist.
10	12	10.71/	1.25	3 4 4 6	0-1.25' Sand: As above.
		210			
12	14	12.16/	1	2 4 7 9	0-0.5' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand, loose,
		262			well sorted, moist.
					0.5-1' Sand: Brown (7.5 YR 5/4), fine to coarse sand, mostly medium sand,
					trace subrounded fine gravel, loose, poorly sorted, moist.
14	16	11.08/	1.5	3 4 5 7	0-1.5' Sand: Light brown (7.5 YR 6/4), medium sand, trace coarse sand and
		164			fine subround gravel, loose, well sorted, moist.
16	18	11.07/	1	7 6 6 7	0-0.5' Sand: As above.
		158			0.5-1' Sand: Light brown (7.5 YR 6/4), fine sand, trace (-) medium sand,
					loose, well sorted, moist.
18	20	7.95/	0.25	7 6 7 7	0-0.25' Sand: Brown (7.5 YR 5/4), fine to coarse sand, mostly medium sand,
		130			trace fine gravel, loose, poorly sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-480 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	22	13.42/	1.25	4 5 10 11	0-1.25' Sand: Strong brown (7.5 YR 4/6), same as above.
		224			
22	24	7.70/	1.5	5 8 13 11	0-1.5' Sand: Strong brown (7.5 YR 4/6), medium sand, trace (-) fine and
		79			coarse sand, little subrounded gravel up to 0.25" from 0-1', loose, poorly
					sorted, moist.
24	26	11.56/	1.5	4 6 11 11	0-1.5' Sand: Strong brown (7.5 YR 4/6), medium sand, trace fine and coarse
		23			sand, little subrounded gravel up to 0.25", loose, very poorly sorted, moist.
26	28	8.28/	1.25	9 18 21 19	0-1.25' Sand: As above, with some subangular to subrounded gravel up to 2"
		11			
28	30	7.99/	0.75	9 16 25 26	0-0.75' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, trace coarse
		121			sand, little subrounded gravel up to 0.25" from 0.5-0.75', loose, very poorly
					sorted, moist.
30	32	9.43/	0.75	25 20 20 18	0-0.75' Sand: Light brown (7.5 YR 6/4), very fine, uniform, trace silt varving,
		310			loose, very well sorted, moist.
32	34	9.95/	1.25	18 12 15 22	0-1' Sand: Light brown (&.5 YR 6/4), fine sand, uniform, loose, very well
		16			sorted, moist.
					1.-1.25' Sand: Light brown (7.5 YR 6/4), very fine sand, uniform, loose, very
					well sorted, moist.
34	36	6.12/	1.5	12 19 17 20	0-1.5' Sand: Reddish yellow (7.5 YR 6/6), fine sand, trace to little medium
		0			sand, trace coarse sand from 0.5-1.25', loose, well sorted, moist.
36	38	12.92/	1.75	11 15 19 22	0-1.75' Sand: Reddish yellow (7.5 YR 6/6), fine sand, trace (-) medium sand,
		971			uniform, loose, well sorted, moist.
38	40	12.02/	1	11 14 19 21	0-1' Sand: Reddish yellow (7.5 YR 6/8), fine sand, uniform, loose, very well
		125			sorted, moist.
40	42	3.31/	2	8 15 20 20	0-2' Sand: As above, wet.
		0			
					EOB @ 42'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-481 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location: Kingsford, Michigan (Khoury)

Drilling Started: 8/5/05 Drilling Completed: 8/5/05

Total Depth Drilled: 40 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1114.99 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Randy Radke Helpe: Kevin Frome

Prepared By: Toni Schoen Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	3.20/	0.5	2 2 2 3	0-0.5' Silt/Sand: Dark brown (10 YR 3/3), fine sand, little subrounded fine
		1.79			gravel, low cohesion to loose, moist.
					0.5-0.75' Sand: Brown (7.5 YR 5/4), fine sand, loose, very well sorted, moist.
2	4	5.66/	1.25	3 3 4 5	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand 0-0.75' medium, 0.75-
		2.1			1.25' sand, trace silt varving, loose, very well sorted, moist.
4	6	4.90/	1.25	3 3 5 6	0-1.25' Sand: Brown (7.5 YR 5/4), fine to medium sand, loose, poorly
		3.1			sorted, moist, fine sand layer 1-1.15'.
6	8	7.59/	1	3 4 4 5	0-0.25' Sand: Brown (7.5 YR 5/4), very fine, uniform, loose, very well sorted,
		1.7			moist.
					0.25-1' Sand: Strong brown (7.5 YR 4/6), medium sand, trace coarse sand,
					trace fine gravel from 0.25-0.75', loose, poorly sorted, moist.
8	10	5.64/	0.5	3 4 4 7	0-0.5' Sand: Dark brown (7.5 YR 3/4), 0-0.25' fine sand, 0.25-0.5' fine to
		23			medium sand, loose, moderately sorted, moist, rock lodged in spoontip.
10	12	5.67/	1.25	3 3 5 5	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand, loose,
		1			well sorted, moist.
12	14	4.65/	1.5	3 4 6 6	0-1' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand, loose,
		2.7			well sorted, moist.
					1-1.5' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, loose,
					moderately sorted, moist.
14	16	8.03/	1.5	3 4 4 6	0-0.5' Sand: Strong brown (7.5 YR 4/6), fine sand, loose, uniform, very well
		2.8			sorted, moist.
					0.5-1' Sand: Light brown (7.5 YR 6/4), medium sand, trace coarse sand,
					loose, moderately sorted, moist.
					1-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, trace (-) medium sand,
					loose, well sorted, moist.
16	18	8.45/	1.5	3 4 7 7	0-1' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand, loose,
		1.1			well sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-481 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					1-1.5' Sand: Brown (7.5 YR 5/4), very fine to coarse sand, mostly fine to
					medium, trace subround fine gravel, loose, very poorly sorted, moist.
18	20	9.79/	1	4 4 6 6	0-0.25' Sand: Strong brown (7.5 YR 4/6), fine sand, little medium sand,
		2.4			loose, poorly sorted, moist.
					0.25-0.5' Sand: Strong brown (7.5 YR 4/6) fine sand, some medium, trace
					(-) subround gravel, loose, poorly sorted, moist.
					0.5-0.75' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium to coarse,
					loose, moderately sorted, moist.
					0.75-1' Sand: As above, 0.25-0.5'.
20	22	9.91/	0.5	3 4 8 11	0-0.5' Sand: As above.
		1.3			
22	24	10.11/	0.5	4 5 6 6	0-0.5' Sand: As above, sand, strong brown (7.5 YR 4/6) little coarse sand,
		0.7			little subangular to subround gravel up to 1" , loose, very poorly sorted,
					moist.
24	26	8.34/	1.5	5 11 21 18	0-1.5' Sand/Gravel: Strong brown (7.5 YR 4/6), fine to coarse sand, mostly
		1.3			fine to medium subangular to subround gravel, loose, very poorly sorted,
					moist.
26	28	8.97/2.5	0.5	12 16 21 22	0-0.5' Sand/Gravel: As above.
		1			
28	20	7.43/	1.5	19 12 16 21	0-1.5' Sand/Gravel: Strong brown (7.5 YR 4/6) medium to coarse sand,
		1			subangular to subrounded gravel, loose, very poorly sorted, moist.
30	32	4.73/	1.5	10 14 16 21	0-1.5' Sand: Brown (7.5 YR 4/4), fine to coarse sand, mostly coarse sand,
		0.3			trace to little fine gravel, loose, very poorly sorted, moist.
32	34	6.41/	1	9 16 21 22	0-1' Sand: Light brown (7.5 YR 6/4) medium sand, loose, very well sorted,
		0.6			moist.
34	36	5.53/	0.5	12 18 28 31	0-0.5' Sand: Light brown (7.5 YR 6/4) fine to medium sand, mostly medium,
		0.75			poorly sorted, loose.
					0.5-1' Sand: Light brown (7.5 YR 6/4) very fine sand, loose, very well sorted,
					moist.
36	38	6.73/	1.5	15 21 26 28	0-1.5' Sand: Light brown (7.5 YR 6/4) very fine, loose, very well sorted,
		1.3			moist.
38	40	7.70/	1.5	11 24 23 23	0-1.5' Sand: As above, silt varving from 1-1.5'.
		1.7			
					EOB @ 40'

ARCADIS

Sample/Core Log

Boring/Well GMSG-482 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan (Khoury) Drilling Started 8/5/05 Drilling Completed 8/5/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1114.55 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	2.79/	1	2 2 4 7	0-0.75' Sand: Brown (7.5 YR 4/4), silty, fine to medium sand, some sub-
		0			angular to subrounded gravel up to 0.5", loose, very poorly sorted, moist.
					0.75-1' Sand: Dark brown (7.5 YR 3/4), very fine, loose, very well sorted,
					moist.
2	4	1.27/	1	3 3 4 7	0-1' Sand: Reddish yellow (7.5 YR 6/6), fine sand, loose, uniform, very well
		0			sorted, moist.
4	6	1.71/	1.25	2 3 5 7	0-1.25' Sand: Light brown (7.5 YR 6/4), alternating every 3": Fine sand,
		0			trace medium, loose, well sorted, moist - fine to medium sand, trace coarse,
					loose, poorly sorted, moist.
6	8	1.95/	1.5	2 3 3 6	0-0.5' Sand: Dark yellowish brown (10 YR 4/6), fine sand, trace medium,
		0			loose, well sorted, moist.
					0.5-1.5' Sand: Light brown (&5. YR 6/4), fine to medium sand, loose, poorly
					sorted, moist.
8	10	1.61/	1	2 3 4 7	0-1' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
		0			sorted, moist.
10	12	2.5/	1.25	2 4 4 7	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand, loose, uniform, very well
		0			sorted, moist.
12	14	2.25/	1.25	3 5 5 7	0-1.25' Sand: As above, fine, moist.
		0			
14	16	2.77/	1.25	2 4 4 6	0-1.25' Sand: As above, fine, moist.
		0			
16	18	3.24/	1	3 5 5 5	0-1' Sand: Light brown (7.5 YR 6/4), medium sand, trace coarse, trace fine
		0			sand, 2 rocks up to 2" (quartz and phyllite), trace subrounded gravel, loose,
					poorly sorted, moist.
18	20	3.85/	1	3 4 6 9	0-1' Sand: Strong brown (7.5 YR 5/6), medium to coarse sand, little very
		0			fine to fine sand, trace fine subrounded gravel, loose, very poorly sorted,
					moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-482 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
20	22	2.92/	1	6 8 8 8	0-1' Sand/Gravel: Strong brown (7.5 YR 5/6), medium to coarse sand, little
		0			to some fine sand, subangular to subrounded gravel up to 1", rock lodged
					in spoontip, loose, very poorly sorted, moist.
22	24	2.60/	1	3 3 5 7	0-1' Sand/Gravel: As above.
		0			
24	26	--	1	--	0-1' Sand/Gravel: Strong brown (7.5 YR 5/6) medium to coarse sand, sub-
					angular to subrounded gravel, little to some very fine to fine sand, loose,
					very poorly sorted, moist.
26	28	1.63/	2	4 4 6 6	0-0.5' Silt/Clay: Silt brown (7.5 YR 5/4), clay reddish brown (5 YR 5/4), silt
		0			smooth, dense, crumbly when worked, uniform, 0.5" thick, clay is dense,
					plastic, platy, 0.25" thick, moist.
					0.5-2' Clay: Reddish brown (75. YR 5/4), dense, platy, plastic to somewhat
					crumbly, uniform, silt layer from 1.5-1.75', moist.
28	30	1.49/	2	6 6 7 9	0-0.5' Clay: Reddish brown (5 YR 5/4), dense, medium plasticity, somewhat
		0			crumbly, uniform, moist.
					0.5-1' Silt/Clay: Brown (7.5 YR 5/4), dense, medium plastic clay, crumbly silt,
					uniform, one 0.5" clay layer at 0.75', moist.
					1-2" Clay: Reddish brown (5 YR 5/4), dense, platy, plastic, uniform, some-
					what crumbly, moist.
30	32	1.45/	1	6 6 11 12	0-1' Silt/Clay: Silt brown (7.5 YR 5/4), clay reddish brown YR 5/4), smooth,
		0			uniform, dense, crumbly when worked, clay layer 2" thick at 30' and clay
					varving from 0.75-1', clay is stiff, low plasticity, somewhat crumbly, moist.
32	34	1.13/	1.25	9 16 18 23	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand, loose, uniform, very well
		0			sorted, moist.
34	36	0.84/	1.25	11 13 18 21	0-1.25' Sand: Light brown (7.5 YR 6/4), very fine, loose, uniform, one
		0			orange layer (2mm) very fine sand layer at 6" mark, very well sorted, moist.
36	38	1.92/	1.5	11 13 17 21	0-1.5' Sand: Light brown (7.5 YR 6/4), very fine sand, loose, uniform, trace
		0			silt, varving from 1.25-1.5', very well sorted, moist.
38	40	1.21/	1.5	8 13 18 31	0-1.5' Sand: As above, with silt varving from 1-1.5, wet at 1.25-1.5'.
		0			
40	42	1.28/	2	7 14 18 22	0-2' Sand: As above, wet throughout, silt varving throughout.
		0			
					EOB @ 42'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-483 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 8/6/05 Drilling Completed 8/6/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuou feet

Land-Surface Elev. 1114.46 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Reocvery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	11.10/	1.0	3 7 6 6	0-0.5' Silt Sand: Brown (7.5 YR 4/4), fine sand, little to some subround
		3300			gravel, soft, loose to low cohesion, poorly sorted, moist.
					0.5-1' Sand: Light brown (7.5 YR 6/4), fine sand, loose, very well sorted,
					moist.
2	4	7.19/	1.5	3 6 7 9	0-1.5' Sand: As above, trace orange fine sand varves.
		1500			
4	6	16.67/	0.5	3 4 6 9	0-0.5' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, trace coarse
		2250			sand, rock lodged in shoe, loose, poorly sorted, moist.
6	8	17.11/	0.5	12 7 10 10	0-0.5' Sand: Brown (7.5 YR 4/4), fine to medium sand, trace subrounded
		1600			gravel up to 0.25", loose, poorly sorted, moist.
8	10	11.22/	2.0	5 6 6 8	0-1' Sand: As above, with no gravel, trace coarse sand.
		1200			1-2' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace coarse sand,
					loose, poorly sorted, moist.
10	12	11.60/	1.0	6 4 6 7	0-1' Sand: As above.
		1500			
12	14	17.46/	1.0	5 5 5 5	0-1' Sand: Brown (7.5 YR 4/4), medium sand, trace coarse sand and
		1000			subrounded gravel up to 0.5", loose, poorly sorted, moist.
14	16	10.51/	1.0	2 4 4 5	0-1' Sand: Brown (7.5 YR 4/4), fine to medium sand, some coarse sand,
		950			trace fine subround gravel, loose, very poorly sorted, moist.
16	18	17.56/	1.0	4 5 5 8	0-1' Sand: As above.
		1251			
18	20	20.75/	1.0	5 6 6 7	0-1' Sand: Brown (7.5 YR 5/4), medium sand, trace fine, little coarse sand,
		3000			trace subround fine gravel, loose, very poorly sorted, moist.
20	22	16.30/	1.0	4 4 6 7	0-1' Sand: Brown (7.5 YR 4/4), medium sand, some fine sand, trace coarse
		241			sand, trace subround fine gravel, loose, poorly sorted, moist.
22	24	21.1/	1.0	4 4 6 6	0-1' Sand: Brown (7.5 YR 4/4), fine to medium sand, little coarse sand,
		252			some fine to medium subround gravel, loose, very poorly sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-483 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Reocvery (feet)	Blows per 6 Inches	Sample/Core Description
24	26	24.90/	0.3	5 7 50 for	0-3' Sand: Fine to medium sand, trace coarse sand, rock lodged in shoe,
		272		0.1	loose, poorly sorted, moist.
26	28	19.46/	1.5	9 14 21 18	0-1.5' Sand: Light brown (7.5 YR 6/4), very fine sand, uniform, trace silt
		243			varves, loose, very well sorted, moist.
28	20	20.01/	1.5	8 18 19 23	0-1.5' Sand: As above.
		217			
30	32	8.98/	2.0	9 11 18 21	0-2' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
		75			sorted, moist.
32	34	16.64/	1.5	8 12 12 14	0-1.5' Sand: As above.
		174			
34	36	10.74/	1.0	8 10 12 15	0-1' Sand: Brown (7.5 YR 4/4), fine to medium sand, trace coarse sand,
		80			loose, poorly sorted, moist.
36	38	16.5/	1.5	10 14 19 21	0-1.25' Sand: Brown (7.5 YR 5/4), very fine to fine, trace medium sand,
		12			loose, uniform, poorly sorted, moist.
					1.25-1.5' Sand: Light brown (7.5 YR 6/4), very fine sand, uniform, loose,
					very well sorted, moist.
38	40	14.57/	1.5	10 14 18 20	0-1.5' Sand: Brown (7.5 YR 5/4), fine sand, uniform, loose, very well sorted,
		31			moist.
40	42	18.62/	1.5	11 19 21 22	0-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, trace silt varving
		28			from.
					0-1', loose, very well sorted, moist, wet from1-1.5'.
					EOB @ 42'

ARCADIS

Sample/Core Log

Boring/Well GMSG-484 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan/Khoury's Drilling Started 8/7/05 Drilling Completed 8/7/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon, 5' X 8" Auger Sampling Interval continuous feet

Land-Surface Elev. 1114.72 feet [X] Surveyed [ ] Estimated Datum Above Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	4.19/	0.3	2 3 3 4	0-3' Silt Sand: Brown (7.5 YR 4/4), fine sand, trace subround gravel up to
		34			0.25", loose, no to low cohesive, moist.
2	4	7.92/	1.0	3 4 4 4	0-1' Sand: Reddish yellow (7.5 YR 6/6), very fine sand, loose, very well
		124			sorted, moist.
4	6	5.01/	1.25	3 4 6 7	0-1' Sand: Reddish yellow (7.5 YR 6/6), fine sand, loose, very well sorted,
		51			moist.
					1-1.25' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace (+) very fine
					sand, loose, poorly sorted, moist.
6	8	7.98/	0.3	14 8 11 14	0-3' Same as 0-2' slough?, rock lodged in shoe.
		140			
8	10	9.49/	1.25	5 7 8 11	0-0.25' Sand: Brown (7.5 YR 4/4), very fine to fine sand, trace (-) medium
		209			sand, loose, poorly sorted, moist.
					0.25-1.25' Sand: Light brown (7.5 YR 6/4), fine to medium sand, trace
					coarse sand from 1-1.25', loose, poorly sorted, moist.
10	12	10.63/	1.25	4 6 7 7	0-1.25' Sand: Light brown (7.5 YR 6/4), very fine to medium sand, loose,
		330			very poorly sorted, moist.
12	14	6.72/	1.25	4 8 12 10	0-0.5' Sand: Brown (7.5 YR 4/4), fine sand, little to some medium sand,
		200			loose, poorly sorted, moist.
					0.5-1.25' Sand: Brown (7.5 YR 5/4), fine to coarse sand, mostly fine to
					medium, little subangular to subround fine gravel, loose, very poorly sorted,
					moist.
14	16	13.71/	1.0	4 6 8 12	0-0.5' Sand: Same as 12-12.5'
		380			0.5-1' Sand: Same as 12.5-13', rock lodged in shoe.
16	18	10.85/	1.0	4 5 6 7	0-1' Sand: Brown (7.5 YR 4/6), fine to coarse sand, mostly medium sand,
		201			some subround gravel up to 0.5", loose, very poorly sorted, moist
18	20	11.5/	1.5	4 9 11 15	0-1.5' Sand: Brown (7.5 YR 5/4), fine to medium sand, mostly medium,
		201			trace (-) coarse sand and fine gravel, loose, moderately sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-484 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
20	22	8.94/	1.0	5 12 11 12	0-1' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace coarse sand and
		111			fine gravel up to 0.5", some fine gravel from 0.75-1' loose, poorly sorted,
					moist.
22	24	15.95/	0.3	12 15 21 22	0-3' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace to little coarse
		99			sand, trace fine gravel loose, very poorly sorted, moist.
24	26	8.40/	1.25	6 11 12 12	0-0.5' Sand: Brown (7.5 YR 4/4), medium sand, trace to little coarse sand,
		63			trace fine sand, loose, poorly sorted, moist.
					0.5-0.75' Sand: Light brown (7.5 YR 6/3), medium sand, loose, very well
					sorted, moist.
					0.75-1.25' Sand: Brown (7.5 YR 5/3), fine to medium sand, little coarse sand,
					trace subround gravel, loose, poorly sorted, moist.
26	28	10.79/	1.25	6 15 17 20	0-1.25' Sand: Brown (7.5 YR 5/4), medium sand, little fine sand, little to
		104			some coarse sand, little subround gravel, loose, very poorly sorted, moist.
28	30	14.25/	1.0	6 15 19 21	0-1' Sand: Brown (7.5 YR 5/4), fine to medium, some coarse sand, some
		251			subangular to subround gravel up to 1", loose, very poorly sorted, moist.
30	32	10.30/	1.5	5 16 17 20	0-1.5' Sand: As above.
		246			
32	34	8.84/	1.5	7 16 24 25	0-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, loose, very well sorted,
		308			moist.
34	36	9.70/	1.5	12 18 21 30	0-1.5' Sand: Light brown (7.5 YR 6/4), very fine sand, trace silt varves, loose,
		96			very well sorted, moist.
36	38	13.73/	1.5	16 27 31 32	0-1.5' Sand: As above.
		0			
38	40	4.79/	1.5	11 16 21 29	0-0.5' Sand: As above.
		0			0.5-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, trace (-) medium sand,
					loose, well sorted, moist.
40	42	9.31/	1	8 16 16 19	0-0.5' Sand: Light brown (7.5 YR 6/4), very fine sand, loose, uniform, very
		0			well sorted, moist.
					0.5-1' Sand: Light brown (7.5 YR 6/4), fine to medium sand, trace coarse
					sand and fine gravel, loose, poorly sorted, moist, wet from 0.75-1'.
					EOB @ 42'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-485 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan 1395 Pyle Drive - Kodiak Mini Storage Drilling Started 8/10/05 Drilling Completed 8/10/05

Total Depth Drilled 5 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1128.88 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Ricky G. Helper NA

Prepared By Ricky Guenther Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.5			Silt/Sand: Light brown (7.5 YR 6/4), fine to low percent of medium grain,
				some fine gravel, loose, moist, subangular, soft.
2.5	3			Silt/Sand: Strong brown (7.5 YR 5/6), high percent silt, very fine to fine grain,
				very moist, subangular, soft.
3	3.7			Silt: strong brown (7.5 YR 5/6) and black (7.5 YR 2.5/1), moist, some fine
				grain sand.
3.7	5			Sand: Strong brown (7.5 YR 5/6), fine to medium grain, trace silt, moist,
				subangular, soft.

ARCADIS

Sample/Core Log

Boring/Well GMSG-486 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan/Khoury's Drilling Started 8/3/05 Drilling Completed 8/3/05

Total Depth Drilled 44 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon, 5' X 8" Auger Sampling Interval continu feet

Land-Surface Elev. 1114.12 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	4.87/-	2.0	1 1 1 2	0-0.5' Topsoil: Black, wood chips, soft, moist.
					0.5-2' Sand: Strong brown (7.5 YR 4/6), fine sand, trace fine subangular
					gravel, some silt, loose, well sorted, moist.
2	4	8.55/-	1.0	1 1 1 1	0-1' Sand: Strong brown (7.5 YR 4/6), fine sand, little subrounded gravel,
					some silt, loose, well sorted, moist.
4	6	10.45/-	1.25	2 2 4 5	0-0.25' Silt Sand: Brown (7.5 YR 4/3), fine to medium sand, no cohesion,
					loose, poorly sorted, moist.
					0.25-0.5' Sand: Strong brown (7.5 YR 4/6), fine sand, trace medium to
					coarse sand, trace subrounded gravel up to 0.25", loose, moderately
					sorted, moist.
					0.5-1' Sand: Strong brown (7.5 YR 5/8), fine sand, trace medium to coarse
					sand, loose, moderately sorted, moist.
					1-1.25' Sand: Strong brown (7.5 YR 5/8), medium sand, some fine sand,
					loose, moderately sorted, moist.
6	8	14.62/-	1.25	3 5 8 11	0-0.25' Silt Sand: Brown (7.5 YR 4/3), fine sand, trace medium sand, loose
					to low cohesion, moderately sorted, moist.
					0.25-1.25' Sand: Brown (7.5 YR 4/4), medium sand, some fine to coarse
					sand, trace to some subrounded gravel up to 0.5", loose, poorly sorted,
					moist.
8	10	7.99/-	1.0	3 6 6 9	0-1' Sand: As above.
10	12	12.81/-	1.5	3 5 8 11	0-0.25' Silt Sand: Strong brown (7.5 YR 4/6), very fine to coarse sand,
					loose to very low cohesion, very poorly sorted, moist.
					0.25-0.5' Sand: Light brown (7.5 YR 6/4), medium sand, little fine and
					coarse sand, trace fine subrounded gravel, loose, poorly sorted, moist.
					0.5-1.5' Sand: Light brown (7.5 YR 6/4), medium sand, loose, very well
					sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-486 A/B

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
12	14	9.43/-	1.0	5 7 12 16	0-0.33' Sand: As above with trace fine sand.
					0.33-0.66' Sand Gravel: Strong brown (7.5 YR 5/6), fine to coarse sand,
					mostly fine, subrounded gravel up to 0.5", loose, very poorly sorted, moist.
					0.66-1' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand,
					loose, well sorted, moist.
14	16	10.70/-	1.25	8 8 10 11	0-0.25' Sand: Yellowish brown (10 YR 5/4), medium sand, trace fine sand,
					uniform, loose, very well sorted, moist.
					0.25-0.75' Sand: Strong brown (7.5 YR 5/6), very fine sand, uniform, loose,
					very well sorted, wet.
					0.75-1' Sand Gravel: Strong brown (7.5 YR 5/6), fine to coarse sand, mostly
					medium sand, subrounded gravel up to 2", loose, very poorly sorted, moist.
					1-1.25' Silt: Brown (7.5 YR 4/3), grainy, uniform, loose to low cohesion,
					moist.
16	18	4.55/-	1.0	4 7 12 18	0-0.25' Sand: Strong brown (7.5 YR 5/6), very fine sand, uniform, loose,
					very well sorted, moist.
					0.25-1' Sand: Strong brown (7.5 YR 5/6), medium sand, trace coarse sand,
					little subrounded gravel up to 0.5" from 0.25-0.5' and 0.75-1', loose,
					moderately sorted, moist.
18	20	12.35/-	1.25	14 15 12 12	0-0.75' Sand: Brown (7.5 YR 4/4), fine to medium sand, trace coarse sand,
					loose poorly sorted, moist.
					0.75-1' Crushed quartz rock.
					1-1.25' Sand: Brown (7.5 YR 4/4), medium sand, little fine sand, little
					subrounded gravel up to 0.5", loose, very poorly sorted, moist.
20	22	4.69/-	1.25	7 10 15 12	0-0.5' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, trace coarse
					sand, loose, moderately sorted, moist.
					0.5-1.25' Sand: Brown (7.5 YR 4/2), very fine to coarse sand, mostly
					medium sand, trace subrounded gravel up to 2", loose, very poorly sorted,
					moist.
22	24	9.15/35	1.0	15 35 12 15	0-1' Silt/Clay: Silt brown (7.5 YR 4/3), clay reddish brown (5 YR 5/4), smooth
					silt, uniform, dense, crumbly when worked, 1 clay layer (0.5" thick), at 0.5'
					plastic, somewhat crumbly, uniform, soft, moist.
24	26	8.11/	1.25	19 9 10 15	0-1.25' Silt: Brown (7.5 YR 4/3), smooth, silt, uniform, dense, crumbly when
		10.11			worked, trace clay varving from 0-0.5', moist.
26	28	13.22/	1.5	37 17 14 19	0-1.5' Silt/Clay: Silt brown (7.5 YR 4/3), clay reddish brown (5 YR 4/4),
		13.44			interbedded smooth and grainy silt every approximately 0.5", 1 clay bed
					from 0.25-0.35', dense, crumbly when worked, plastic clay, platy, uniform,
					medium stiff, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-486 A/B

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
28	30	6.67/	1.5	19 9 12 15	0-1' Silt: Dark brown (7.5 YR 3/2) from 0.5-1', brown (7.5 YR 4/3) from
		3			0-0.5', smooth and grainy silt interbedded, uniform, dense, crumbly when
					worked, moist.
					1-1.5' Silt/Clay: Silt dark brown (7.5 YR 3/2), clay reddish brown (2.5 YR 4/
					4), smooth and grainy silt, interbeded, crumbly when worked, dense, 2"
					clay layer at 1', medium stiff, plastic to somewhat crumby, moist.
30	32	11.42/	1.0	15 7 9 9	0-0.5' Silt: Dark brown (7.5 YR 3/2), interbedded, smooth and grainy silt,
		2			uniform, dense, crumbly when worked, moist.
					0.5-1' Silt/Clay: Silt brown (7.5 YR 4/3), clay reddish brown (5 YR 4/3), 3
					clay layer at 0.5', clay varves to 1', medium stiff, plastic, uniform, moist.
32	34	16.20/	1.5	5 8 8 9	0-1.5' Silt/Clay: Silt brown (7.5 YR 4/2), clay reddish brown (5 YR 4/4),
		2			interbedded, smooth and grainy silt, dense, crumbly when worked,
					uniform, clay is varved up to 2" thick, dense, uniform, platey, wet?
34	36	9.07/-	1.0	27 9 12 16	0-1' Silt/Clay: Silt brown (7.5 YR 4/2), clay reddish gray (5 YR 4/2), inte-
					bedded, smooth and grainy silt, dense, crumbly when worked, dense,
					uniform, clay is varved to 1" from 0-0.5', dense, uniform, plastic, wet?
36	38	8.56/-	1.0	18 7 7 8	0-1' Silt/Clay: Silt dark brown (7.5 YR 3/2), clay reddish brown (5 YR 4/3),
					same as above, but clay only from 0.25-0.75' and 0.25" to 2.5" thick.
38	40	11.57/-	1.5	7 7 9 11	0-1.5' Silt/Clay: Same as above, but clay beds throughout and 0.5" to 2"
					thick.
40	42	8.25/-	1.5	10 5 8 12	0-1.5' Silt/Clay: Same as above, clay is 0.5" to 1.5".
42	44	1.0/0	1.5	4 7 9 9	0-1.25' Silt/Clay: silt dark brown (7.5 YR 3/2), clay reddish brown (5 YR 4/3),
					as above.
					1.25-1.5' Sand: Brown (7.5 YR 4/3), fine sand, uniform, loose, very well
					sorted, wet.
					EOB @ 44'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-487 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan/Khoury's Drilling Started 8/4/05 Drilling Completed 8/4/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon, 5' X 8" Auger Sampling Interval continuous feet

Land-Surface Elev. 1114.66 feet [X] Surveyed [ ] Estimated Datum Above Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helpe Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	5.13/	1.0	2 2 3 4	0-0.25' Topsoil: Black, soft, wet.
		1.8			0.25-1' Sand: Strong brown (7.5 YR 4/6), very fine to fine sand, trace
					medium sand, loose, well sorted, moist.
2	4	6.98/	1.25	4 9 9 13	0.1.25' Sand: Strong brown (7.5 YR 4/6), very fine to fine sand, trace
		0.5			coarse sand, trace subrounded gravel up to 0.5", loose, well sorted, moist.
4	6	7.89/	2.0	6 7 9 13	0-0.5' Sand: As above.
		2.12			0.5-1.5' Silt Sand: Strong brown (7.5 YR 4/6), very fine to fine sand, trace
					subrounded gravel up to 0.5" from 1.25-1.5', loose to very low cohesion,
					moist.
					1.5-2' Sand: Strong brown (7.5 YR 4/6), fine sand, loose, very well sorted,
					moist.
6	8	7.01/	1.5	4 7 9 11	0-0.5' Sand: Strong brown (7.5 YR 4/6), fine sand, trace medium to coarse
		1.57			sand, loose, moderately sorted, moist.
					0.5-1' Sand: Strong brown (7.5 YR 4/6), medium sand, trace coarse sand,
					trace fine sand, loose, moderately sorted, moist.
					1-1.5' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, little coarse
					sand and subrounded gravel up to 0.75", loose, poorly sorted, moist.
8	10	9.63/	1.5	6 12 12 9	0-0.5' Sand: Strong brown (7.5 YR 4/6), fine sand, some very fine, trace
		4.51			medium sand, loose, moderately sorted, moist.
					0.5-1' Sand: Strong brown (7.5 YR 5/6), fine sand, trace medium sand,
					loose, well sorted, moist.
					1-1.5' Sand: Strong brown (7.5 YR 4/6), very fine to coarse sand, trace
					subangular to subrounded gravel up to 2", loose, very poorly sorted, moist.
10	12	8.74/	1.5	6 8 8 10	0-0.5' Silt Sand: Strong brown (7.5 YR 4/6), very fine sand, loose to very
		2.09			low cohesion, uniform, moist.
					0.5-1' Sand: Brown (7.5 YR 4/4), fine sand, little medium sand, loose,
					moderately sorted, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-487 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					1-1.5' Sand: Brown (7.5 YR 4/4), very fine to coarse sand, mostly fine to
					medium sand, some subrounded fine gravel, loose very poorly sorted,
					moist.
12	14	8.13/	1.0	5 7 9 10	0-0.25' Silt Sand: Same as 10-10.5'.
		1.02			0.25-0.5' Sand: Light brown (7.5 YR 6/4), very fine to fine sand, trace
					medium sand, trace subround gravel up to 0.75", loose, moderately
					sorted, moist.
					0.5-1' Sand: Brown (7.5 YR 5/4), fine sand, trace very fine and medium
					sand, loose, well sorted, moist.
14	16	7.45/1	1.0	6 8 8 11	0-1' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace very fine and
					medium sand, loose, moderately sorted, moist.
16	18	6.45/	1.0	6 7 13 10	0-0.5' Sand: Light brown (7.5 YR 6/4) medium sand, uniform, loose, very
		1.25			well sorted, moist.
					0.5-1' Sand: Light brown (7.5 YR 6/4), fine to coarse sand, mostly fine to
					medium, loose, poorly sorted, moist.
18	20	3.94/1	1.0	7 7 8 10	0-1' Sand: Light brown (7.5 YR 6/4), medium sand, trace fine sand and
					coarse sand, loose, well sorted, moist.
20	22	4.34/	1.0	6 7 6 6	0-0.5' Sand: Brown (7.5 YR 4/4), medium, sand, loose, very well sorted,
		0.59			moist.
					0.5-1' Sand: Brown (7.5 YR 4/4) very fine to coarse sand, little to some
					subangular to subrounded gravel up to 0.25", mostly fine to medium
					sand, loose, very poorly sorted, moist.
22	24	1.06/0	2.0	6 7 7 10	0-2' Silt/Clay: Silt Brown (7.5 YR 5/4), clay reddish brown (5 YR 5/4),
					interbedded, silt smooth and grainy beds, 0.25-2.5" beds, dense, crumbly
					when worked, uniform, clay dense platy, uniform, 0.25-3" beds, moist.
24	26	2.90/	2.0	6 6 8 11	0-2' Silt/Clay: As above, clay beds are 0.25-2" and thicker from 0-1', silt
		1.3			beds are 0.25-0.5" and more present 1-2'.
26	28	2.89/	1.5	13 13 14 16	0-1.5' Silt: Brown (7.5 YR 4/4), soft, grainy silt, uniform, crumbly when
		1.4			worked, trace clay varves from 0-0.25', moist.
					1.5-2' Sand: Light brown (7.5 YR 6/4), very fine, uniform, loose, very well
					sorted, moist.
28	30	3.82/	1.0	6 14 15 21	0-1' Sand: Light brown (7.5 YR 6/4), very fine, uniform, trace silt varving,
		1.1			loose, very well sorted, moist.
30	32	5.95/	1.0	10 15 21 22	0-1' Sand: As above, silt varving mostly from 0.5-1'.
		2.1			
32	34	2.69/	1.0	7 12 21 24	0-1' Sand: As above, silt varving throughout.
		1.1			

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-487 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)		Blows per 6 Inches	Sample/Core Description
34	36	4.42/	1.5	6 13 13 18	0-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
		0.75			sorted, moist.
36	38	1.95/0.5	1.0	7 12 16 21	0-0.5' Sand: Same as 32-34'.
					0.5-1' Sand: Same as 34-36'.
38	40	6.30/	1.0	7 10 16 23	0-1' Sand: As above.
		2.1			
40	42	4.02/	1.5	6 10 21 21	0-1.5' Sand: As above, trace silt varves between 0.5-0.75', wet 41.75-42'.
		1.1			
					EOB @ 42'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-488 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan/Northwoods Drilling Started 8/8/05 Drilling Completed 8/8/05

Total Depth Drilled 41 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon, 5' X 8" Auger Sampling Interval continuous feet

Land-Surface Elev. 1116.82 feet [X] Surveyed [ ] Estimated Datum Above Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 lb Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	1		1.0		0-0.9' Concrete.
					0.9-1.0' Gravel base.
1	3	4.51/	0.8	2 2 3 3	0-0.8' Sand: Strong brown (7.5 YR 4/6), very fine sand, loose, very well
		2596			sorted, moist.
3	5	7.28/	1.0	5 6 8 8	0-1' Sand: Strong brown (7.5 YR 4/6), fine to medium and, trace coarse to
		3730			very coarse sand, trace subangular fine gravel, loose, very poorly sorted, moist.
5	7	7.08/	0.75	5 6 7 9	0-0.5' Sand: As above.
		1670			0.5-0.75' Sand: Strong brown (7.5 YR 5/6), fine sand, trace medium, loose,
					well sorted, moist.
7	9	7.09/	1.33	3 4 6 6	0-1" Clay: Reddish brown (5 YR 3/4), soft, plastic, uniform, moist.
		1320			1"-1.33' Sand: Strong brown (7.5 YR 5/6), fine to coarse sand, mostly
					medium sand, loose, poorly sorted, moist.
9	11	--	--	3 4 7 9	Rock lodged in shoe.
11	13	5.51/	0.75	7 7 9 9	0-0.75' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace (-) coarse sand,
		1200			loose, moderately sorted, moist.
13	15	7.29/	1.0	4 6 7 9	0-1' Sand: Brown (7.5 YR 5/4), fine to medium sand, little coarse sand, mostly
		1770			fine sand, loose, moderately sorted, moist.
15	17	10.66/	1.0	7 7 7 9	0-1' Sand: Light brown (7.5 YR 6/4), fine to medium sand, loose, moderately
		4250			sorted, moist.
17	19	11.72/	1.5	5 7 7 8	0-1' Sand: Brown (7.5 YR 5/4), very fine sand, trace silt varves, loose, very well
		7920			sorted, moist.
					1-1.5' Silt: Brown (7.5 YR 4/4), grainy, uniform, very soft, no to low cohesion,
					moist.
19	21	8.71/	1.5	4 6 9 9	0-1.5' Sand/Silt: Brown (7.5 YR 5/4), very fine sand interbedded with grainy
		1770			silt, very soft silt, sand is loose, very well sorted, bed are varve to 0.5", one
					clay lense (0.25" thick) at 1', uniform, plastic, yellowish red (5 YR 4/6), moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-488 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
21	23	7.29/	2.0	7 10 10 12	0-0.25' Silt: Same as 18-18.5'.
		1650			0.25-0.5' Sand: Brown (7.5 YR 5/4), fine sand, loose, very well sorted, moist.
					0.5-1.3' Sand: Same as 17-18' with no silt varving.
					1.3-2' Sand: Brown (7.5 YR 5/4), very fine to fine sand, trace medium sand
					from 1.3-1.5', loose, poorly sorted, moist.
23	25	15.38/	1.25	6 10 12 14	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium to coarse
		2200			sand, some coarse from 0-1" to 7-8", loose, well sorted, moist.
25	27	10.37/	1.5	7 12 15 18	0-1' Sand: Strong brown (7.5 YR 4/6), very fine to fine sand, trace medium
		3,750			to coarse sand, loose, moderately sorted, moist.
					1-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, loose, very well sorted,
					moist.
27	29	7.09/	1.75	7 14 19 23	0-1.75' Sand: Light brown (7.5 YR 6/4), very fine sand interbedded with fine
		1008			sand, 2-3" layers, very fine sand is "packed" tight, loose, very well sorted,
					moist.
29	31	10.41/	1.75	10 16 16 20	0-1.75' Sand: Light brown (7.5 YR 6/4), fine sand, some coarse sand from 11-
		1850			12", loose, very well sorted, moist.
31	33	8.21/	1.5	10 13 18 21	0-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, some coarse sand and fine
		1250			subangular gravel up to 0.5" from 2"-5', loose, very well sorted, moist.
33	35	18.22/	1.5	8 14 17 21	0-1.5' Sand: Light brown (7.5 YR 6/4), very fine to fine sand, trace silt varving
		2200			from 0.5-1', trace medium sand, tight, loose when handled, moderately
					sorted, moist.
35	37	17.21/	1.75	12 18 25 31	0-1' Sand: Light brown (7.5 YR 6/4), fine sand, trace medium sand, loose,
		1750			well sorted, moist.
					1-1.5' Silt: Brown (7.5 YR 4/4), grainy, soft, no to low cohesion, uniform,
					moist.
					1.5-1.75' Sand: Brown (7.5 YR 5/4), fine sand, loose, very well sorted, moist.
37	39	14.21/	1.1	11 17 23 30	0-0.75' Sand: Light brown (7.5 YR 6/4), very fine sand, trace silt varves, tightly
		3530			packed, loose, when handled, very well sorted, moist.
					0.75-1' Silt: Brown (7.5 YR 5/4), grainy, soft, no to low cohesion, uniform,
					moist.
					1-1.1' Silt/Sand: Brown (7.5 YR 5/4), very fine to fine sand, grainy silt, inter-
					bedded, trace coarse sand, trace fine subround gravel, loose to low cohesion,
					moist.
39	41	8.03/0	1.0	9 16 18 18	0-1' Silt: Brown (7.5 YR 4/4), grainy, soft, uniform, loose to low cohesion,
					wet.
					EOB @ 41'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-489 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan/Northwoods Drilling Started 8/9/05 Drilling Completed 8/9/05

Total Depth Drilled 41 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon, 5' X 8" Auger Sampling Interval continuous feet

Land-Surface Elev. 1117.34 feet [X] Surveyed [ ] Estimated Datum

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Toni Schoen Hammer Weight 300 lbs Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA (ppm)	Core Recovery (fee)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1		1.0		0-0.8' Concrete.
					0.8-1.0' Gravel base.
1	3	2.73	1.0	2 3 3 4	0-0.5' Sand: Strong brown (7.5 YR 4/6), very fine to fine sand, little medium
					sand, little subangular to subround gravel, loose, very poorly sorted, moist.
					0.5-1' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, little coarse
					sand, trace subangular to subround fine gravel, loose, very poorly sorted,
					moist.
3	5	3.2	0.5	3 4 5 5	0-0.5' Sand: Strong brown (7.5 YR 5/6), fine to medium sand, trace to little
					coarse sand, loose, moderately sorted, moist.
5	7	6.37	1.0	5 4 4 4	0-0.5' Sand: Strong brown (7.5 YR 5/6), fine sand and (35-50%) medium
					sand, trace (-) coarse sand, loose, moderately sorted, moist.
					0.5-1' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, little coarse
					sand, trace fine subangular to subround fine gravel, loose, poorly sorted,
					moist.
7	9	5.39	1.5	3 3 4 5	0-1' Clay: Reddish brown (5 YR 4/6), soft, plastic, uniform, moist.
					1-1.5' Sand: Strong brown (7.5 YR 4/6), medium sand, little fine sand,
					some coarse sand, trace subangular to subround fine gravel, loose, very
					poorly sorted, moist.
9	11	6.69	0.5	4 3 3 4	0-0.5' Sand: As above, with some fine sand.
11	13	7.90	0.6	3 2 2 3	0-0.6' Silt/Sand: Strong brown (7.5 YR 4/6), very fine to coarse sand and
					(35-50%) fine to coarse subangular to subround gravel, loose, very poorly
					sorted, moist to wet.
13	15	5.51	0.7	2 2 2 2	0-0.7' Silt Sand: As above.
15	17	7.19	0.5	3 2 2 2	0-0.5' Silt Sand: As above.
17	19	9.58	1.0	4 5 6 9	0-1' Silt Sand Gravel: Dark brown (7.5 YR 3/2), fine to coarse sand, loose,
					very poorly sorted, moist to wet, slough?
19	21	6.18	1.2	4 4 7 7	0-0.75' Sand: Brown (7.5 YR 5/4), fine to medium sand, trace to little

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-489 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA (ppm)	Core Recovery (fee)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					coarse sand, loose, moderately sorted, moist.
					0.75-1.2' Silt Sand: Reddish brown (7.5 YR 4/4), very fine sand, silty, low
					cohesion, very soft, moist.
21	23	5.9	1.0	9 12 14 16	0-0.8' Sand: Brown (7.5 YR 5/4), fine to medium sand, little to coarse sand,
					little subangular to subround gravel up to 0.5", some coarse sand and
					gravel from
					0.5-0.7', loose, very poorly, moist.
					0.8-1.0' Crushed Rock: Foliated, slate, dry.
23	25	3.01	0.8	11 16 18 18	0-0.8' Slough: Rock lodged in shoe (rose quartz).
25	27	2.61	1.2	27 9 12 16	0-1.0' Silt Sand: Dark brown (7.5 YR 3/2), fine sand, some medium, trace
					coarse sand, some fine to coarse subangular to subround gravel up to 1",
					loose, very poorly sorted, moist.
					1.0-2.0' Sand: Light brown (7.5 YR 6/4), sharp contact with above, fine
					sand, very fine (1" thick) at 14", coarse sand 2" above and below very fine
					sand, loose, very well sorted, moist.
27	29	2.21	1.5	8 12 15 15	0-0.5' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, loose, very well
					sorted, moist.
					0.5-0.75' Silt: Brown (7.5 YR 4/4), grainy, uniform, soft, somewhat crumbly,
					moist.
					0.75-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, uniform, varving 11-
					13", loose, very well sorted, moist.
29	31	1.89	1.5	9 12 15 18	0-0.4' Sand: Brown (7.5 YR 5/4), very fine sand, uniform, loose, very well
					sorted, moist.
					0.4-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, silt varving 1-1.5',
					uniform, loose, very well sorted, moist.
31	33	2.86	2.0	12 15 19 20	0-2' Sand: Light brown (7.5 YR 6/4), fine sand, little to some medium to
					coarse sand, trace (-) fine subround gravel, uniform, loose, moderately
					sorted, moist.
33	35	2.40	2.0	12 14 15 20	0-1.25' Sand: Light brown (7.5 YR 6/4), fine sand, trace (-) medium to
					coarse sand, uniform, loose, very well sorted, moist.
					1.25'-1.3' Silt Gravel: Dark brown (7.5 YR 3/2), fine subround gravel
					(3 mm), very soft, very poorly sorted, moist.
					1.3-2' Sand: Light brown (7.5 YR 6/4), fine sand, trace (-) medium sand,
					uniform, loose, very well sorted, moist.
35	37	2.67	1.5	9 11 16 16	0-0.25' Sand: As above, but brown (7.5 YR 4/4).
					0.25-1.5' Sand: Brown (7.5 YR 5/4), fine sand, trace (-) medium sand,
					uniform, loose, very well sorted, moist.
37	39	1.16	1.5	9 12 15 23	0-0.25' Sand: Brown (7.5 YR 4/4), very fine to fine sand, loose, moderately

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-489 A/B/C

Prepared by Toni Schoen

Sample/Core Depth (feet below land surface) From	To	OVA (ppm)	Core Recovery (fee)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					sorted, moist.
					0.25-1.5' Sand: Light brown (7.5 YR 6/4), fine sand, trace silt varving,
					uniform, loose, lvery well sorted, moist.
39	41	1.69	1.75	12 12 17 21	0-0.25' Sand: Brown (7.5 YR 5/4), very fine to fine sand, uniform, loose,
					moderately sorted, moist.
					0.25-1.75' Sand: Light brown (7.5 YR 6/4) where moist, brown (7.5 YR 4/
					4) at 40' where wet, fine sand, loose, very well sorted, moist to wet.
					EOB @ 41'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-490 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan 1395 Pyle Drive - Kodiak Mini Storage

Drilling Started 8/10/05 Drilling Completed 8/10/05

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1129.00 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller NA Helper NA

Prepared By Ricky Guenther Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	4.4			Sand: Light brown (7.5 YR 6/4), medium to fine grain mix, subangular, very moist, some fine gravel, quartzite sand, soft.
4.4	5.2			Sand: Light brown (7.5 YR 6/4), medium to coarse grain, low percent of fine gravel, subangular, very moist, quartzite sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-491 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan 1395 Pyle Drive - Kodiak Mini Storage

Drilling Started 8/4/05 Drilling Completed 8/4/05

Total Depth Drilled 5 Feet Hole Diameter 2.5 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1129.15 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller NA Helper NA

Prepared By Ricky Guenther Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	5			Sand: Light brown, medium to fine grain, subangular, very moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-492 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan 1395 Pyle Drive - Kodiak Mini Storage

Drilling Started 8/10/05 Drilling Completed 8/10/05

Total Depth Drilled 5.7 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1129.00 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used NA Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Ricky G. Helper NA

Prepared By Ricky Guenther Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.5			Gravel/Sand: Brown (7.5YR 5/3), medium to fine grain sand, fine gravel,
				moist, subangular.
0.5	5.7			Sand: Brown (7.5 YR 5/4), mixed with trace silt, fine grain, subangular, very
				moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-493 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan 1395 Pyle Drive - Kodiak Mini Storage

Drilling Started 8/10/05 Drilling Completed 8/10/05

Total Depth Drilled 4.8 Feet Hole Diameter 2.57 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1129.04 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Rick G. Helper NA

Prepared By Ricky Guenther Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.5			Sand: Light brown (2.5 YR 6/4), medium to fine grain, subangular, very moist,
				some fine gravel, trace coarse gravel, quartzite sand.
3.5	4.5			Sand: Light brown (7.5 YR 6/4), fine to medium grain, subangular, moist,
				trace gravel, quartzite sand.
4.5	4.8			Sand: Light brown (7.5 YR 6/4), medium and coarse grain, mix with high
				percent of fine gravel, subangular, very moist, quartzite sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-494 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan Bianco's Fitness 601 Westwood Drilling Started 8/11/05 Drilling Completed 8/11/05

Total Depth Drilled 4.9 Feet Hole Diameter 2.57 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1128.68 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Rick G. Helper NA

Prepared By Ricky Guenther Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.7			Sand/Gravel: Dark brown (7.5 YR 3/4), coarse and medium grain sand with
				fine gravel, very moist, subangular particles.
0.7	2.0			Sand: Light brown (7.5 YR 6/4), fine grain with trace medium grain, very
				moist, trace silt.
2	3.2			Sand/Silt: Light brown (7.5 YR 6/5), subangular moist.
3.2	4.9			Sand/Silt: Light brown (7.5 YR 6/5), medium and coarse grain sand to gravel,
				moist, subangular.

ARCADIS

Sample/Core Log

Boring/Well GMSG-495 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan Bianco's Fitness 601 Westwood

Drilling Started: 8/18/05 Drilling Completed: 8/18/05

Total Depth Drilled: 3 Feet Hole Diameter: 2.57 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1128.50 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: Rick G. Helper: NA

Prepared By: Ricky Guenther Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Sand: Light brown, fine to medium grain, subangular, soft.
1.5	3			Sand: Brown, fine to medium grain, subangular, layer of compacted gravel at 3'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-496 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan Bianco's Fitness 601 Westwood

Drilling Started 8/18/05 Drilling Completed 8/18/05

Total Depth Drilled 3 Feet Hole Diameter 2.57 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1128.66 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Rick G. Helper NA

Prepared By Ricky Guenther Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Sand: Light brown, fine to medium grain, subangular, soft.
1.5	3			Sand: Brown, fine to medium grain, subangular, layer of compacted gravel at 3'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-497 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 4

Site Location Kingsford, Michigan (KHP) Drilling Started 8/16/05 Drilling Completed 8/16/05

Total Depth Drilled 43 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1118.86 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Jill Flater Hammer Weight 300 Hammer Drop 30 ins.

Note: PID not working, no OVM values.

Sample/Core Depth (feet below land surface) From	To	OVA (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1	--	0.8	--	Concrete.
1	3	2.33	1.1	2 2 2 3	0-0.1' Silt/Sand: Black (7.5 YR 2.5/1) silty, fine to medium sand, somewhat
					cohesive to loose, moist.
					0.1-0.4' Silt: Brown (7.5 YR 4/4), low cohesion, some fine to medium
					sand, soft, moist.
					0.4-0.5 Sand: Strong brown (7.5 YR 4/6) contact to above defined by
					weathered slate 0.4-0.5', medium sand, some silt, trace fine subround
					gravel up to 1/4", poorly sorted.
					0.8-1.1' Sand: Strong brown (7.5 YR 4/6) medium to coarse sand, little fine
					gravel, subangular to subround up to 1/2" diameter, loose, moist, some silt,
					very poorly sorted.
3	5	5	0.3	2 3 4 4	0-0.3' Sand: As above, medium to coarse.
5	7	2	1.0	4 3 4 4	0-1.0' Sand: Strong brown (7.5 YR 4/6) fine to very coarse sand, very poorly
					sorted, loose, moist, little fine gravel subangular to subrounded, up to 1"
					diameter.
7	9	1.21	1.4	4 4 4 6	0-0.1' Sand: As above, fine to very coarse.
					0.1-0.8' Sand: Brown (7.5 YR 4/4) fine to medium sand, some coarse, little
					fine gravel, subangular to subrounded up to 1/2", loose, moist, poorly sorted.
					0.8-1.4' Sand: Dark brown (7.5 YR 3/4) medium sand, trace fine 5%, trace
					coarse, trace fine gravel subrounded up to 1/4", 2-3%, moderately well sorted,
					loose, moist.
9	11	4.29	1.2	4 4 7 6	0-0.3' Sand: As above, medium sand, little subround to subangular gravel
					<1/2".
					0.3-0.5' Sand: Brown (7.5 YR 4/4) coarse to very coarse sand, trace fine to
					medium 10 %, little fine gravel subangular to subrounded up to 1/4", loose,
					very poorly sorted.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-497 A/B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					0.5-0.9' Sand: Brown (7.5 YR 4/4) medium sand, trace 10% coarse sand,
					little gravel up to 1-1/2" diameter subangular, loose, moist, very poorly
					sorted.
					0.9-1.2' Sand: Brown (7.5 YR 4/4) fine to very coarse sand, very poorly sorted,
					10% fine gravel up to 1/2" diameter, subangular to subrounded, loose,
					moist.
11	13	5.17	0.5	4 6 8 13	0-0.5' Sand: As above, (0.9-1.2 of 9-11') fine to very coarse, rock in
					spoontip prohibit sampling.
13	15	4.32	1.5	4 7 7 9	0-0.4' Sand: As above, fine to very coarse, gravel subangular to subround up
					to 3/4".
					0.4-1.5' Sand: Brown (7.5 YR 4/3) medium sand, trace coarse 5%, trace 1-2%
					fine gravel subangular to subround up to 1/2" three 1/2" pieces along length,
					well sorted, loose, moist.
15	17	4.53	1.4	4 6 6 10	0-0.3' Sand: As above, medium sand.
					0.3-0.6' Sand: Brown (7.5 YR 5/3) fine sand, trace 5% very fine, well sorted,
					loose, moist.
					0.6-1.14' Sand: Color as above, fine to medium sand, trace coarse, loose,
					moderately well sorted, trace 5% fine gravel under 1/4" subangular to
					subround, moist.
17	19	5.32	1.5	4 5 12 17	0-0.2' Sand: As above, fine to medium.
					0.2-0.4' Sand: Dark brown (7.5 YR 3/3) sand medium, trace 10% fine sand,
					trace coarse sand 10%, little to some fine gravel up to 1/2" most under 1/4",
					subangular to subround, loose, poorly sorted, moist.
					0.4-0.6' Silt: Dark brown (7.5 YR 3/4) smooth, medium stiff, crumbly
					when worked, moist, sharp contact above and below, single 1/4" clay layers
					in middle, yellow red, platey on broken surface, plastic when worked, very
					soft.
					0.6-1.5' Sand: Brown (7.5 YR 5/3) very fine to fine sand, clean, uniform,
					well sorted, loose, moist, coarsens ever so slightly with depth.
19	21	4.54	1.4	5 11 16 25	0-0.3' Sand: Light brown (7.5 YR 6/4) very fine to fine sand, loose, moist,
					well sorted.
					0.3-0.7' Sand: Brown (7.5 YR 5/3) very fine sand, very well sorted, uniform,
					moist, loose, sharp contact above and below.
					0.7-1.4' Sand: As above (0-0.3), very fine to fine.
21	23	3.74	1.5	8 12 12 20	0-0.5' Sand/Silt: Brown (7.5 YR 4/4) interbedded very fine and grainy silt,
					fine layers 1/2" varved prominent in 0-0.25', well sorted, moist, loose, very
					fine sand varved to 1/2" prominent in 0.25-0.5 uniform, loose, moist, well
					sorted.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-497 A/B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					0.5-1.5' Sand: Light brown (7.5 YR 6/4) very fine to fine sand, very well sorted,
					loose, moist, grainy silt varves (brown 4/4) in 0.3-0.4'.
23	25	4.05	1.8	8 12 16 21	0-0.9' Silt: Brown (7.5 YR 5/4) grainy, trace very fine sand, loose to some-
					what crumbly, moist, very soft.
					0.9-1.3' Sand: Color as above, very fine sand, very well sorted, loose, moist,
					sharp contact.
					1.3-1.5' Sand: Light brown (7.5 YR 6/4) fine sand, very well sorted, loose,
					moist.
					1.5-1.8' Sand: Light brown 6/4 very fine to fine, well sorted, loose, moist.
25	27	5.45	1.8	11 15 18 21	0-0.8' Sand: Brown (7.5 YR 4/4) very fine sand, well sorted, uniform, moist
					loose, trace 5% black silt varving.
					0.8-1.8' Sand: Light brown (7.5 YR 6/3) (0.9-1.0) sand as above, very fine
					layer, sharp contact with above layer, fine sand, very well sorted, loose,
					moist, 2-3% medium sand.
27	29	5.28	1.6	8 12 17 27	0-0.3' Sand: Light brown (7.5 YR 6/4) very fine sand, trace 5% fine sand,
					well sorted, uniform, moist, loose, sharp contact with below.
					0.3-1.6' Sand: Brown (7.5 YR 5/4) fine sand, very well sorted, loose, moist
					starting at 0.9 color not grain size varving, uniform every 1/8-1/4".
29	31	5.32	1.5	9 15 17 23	0-0.3' Sand: As above, fine sand, only color change as above last 0.1" strong
					brown (4/6).
					0.3-0.6' Sand: Brown (7.5 YR 5/3) very fine sand, uniform, very well sorted,
					moist, loose.
					0.6-1.5' Sand: As above 0-0.3', fine sand, color varving only on 0.9-1.0'.
31	33	3.94	1.6	8 8 15 23	0-0.3' Sand: As above 0.6-1.5, color change brown (7.5 YR 4/4), sharp color
					contact.
					0.3-1.5' Sand: Brown (7.5 YR 5/4) fine sand, trace 10% medium sand, well
					sorted, lose, moist.
					1.5-1.6' Sand: As above, fine sand, little medium to coarse sand 15%.
33	35	5.67	1.5	9 15 15 21	0-0.3' Sand: As above, fine sand.
					0.3-0.4' Sand: Light brown (7.5 YR 6/3) silty, very fine to fine sand, trace
					medium to coarse, poorly sorted, loose, dry to moist.
					0.4-1.5' Sand: Brown (7.5 YR 5/3) fine sand, 10% trace medium, 1-2% trace
					coarse, well sorted, color varving not grain size 1.0-1.5 approximately every
					1/4", loose, moist.
35	37	4.91	1.4	8 15 19 23	0-0.5' Sand: As above, fine sand, trace fine gravel 1-2% three pieces 1/4-1/2"
					subangular to subround.
					0.5-1.0' Sand: Brown (7.5 YR 6/3) fine sand, very well sorted, loose, moist.
					1.0-1.4' Sand: As above, fine sand, trace medium 10%.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-497 A/B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
37	39	4.73	1.5	8 17 24 31	0-0.4' Sand: As above, color change brown (7.5 YR 4/4).
					0.4-0.9' Sand: Brown (7.5 YR 5/4), fine sand, very well sorted, moist, loose.
					0.9-1.5' Sand: Brown (7.5 YR 5/4), fine sand, well sorted, loose, moist, trace
					1-2% medium to coarse, 0.9-1.2' silt uniform varving every 1/4".
39	41	3.34	1.4	9 15 18 23	0-1' Sand: Brown (7.5 YR 5/3), fine sand, moist, well sorted, loose, 0.2-0.3'
					color layer not grain brown 5/4.
					1-1.4' Sand: As above, trace fine medium to coarse sand layers 1/4" thick,
					poorly sorted, loose, wet.
41	43	4.17	1.4	8 14 17 21	0-1' Sand: Brown (7.5 YR 4/4) firm to medium sand, trace coarse, wet,
					loose, moderately well sorted.
					1-1.3' Sand: Color as above, fine sand, moist loose, well sorted.
					1.3-1.4' Sand: As above, 0-1'.
					EOB @ 43'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-498 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (KHP, Motion Industries)

Drilling Started: 8/17/05 Drilling Completed: 8/17/05

Total Depth Drilled: 43 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1119.53 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Randy Radke Helper: Kevin Frome

Prepared By: Jill Flater/Bruce Evans Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1	--	0.5	--	Concrete.
1	3	0.5/	0.8	4 4 5 6	0-0.3' Silt: Strong brown (7.5 YR 4/6) smooth silt, trace gravel subangular
		140			to subround up to 1" diameter, loose to somewhat crumbly, moist, trace
					black staining.
					0.3-0.8' Sand: Strong brown (7.5 YR 4/6) very fine to medium sand, some
					silt, loose, moist, trace coarse sand, little fine gravel up to 1" diameter,
					moist ≤1/2" very poorly sorted.
3	5	0.57/	0.8	4 6 7 8	0-0.2' Sand: As above, very fine to medium, some fine gravel up to 1/2".
		120			0.2-0.4' Sand: Strong brown (7.5 YR 5/6), fine to medium sand, trace
					coarse sand, loose, moist, trace fine gravel up to 1/4" subangular to sub-
					round, moderately to poorly sorted.
					0.4-0.8' Sand: Strong brown (7.5 YR 4/6), fine to coarse sand, loose,
					moist, poorly sorted, some fine gravel angular to subround up to 1/2".
5	7	-4.8/	0.8	12 4 6 6	0-0.8' Sand/Gravel: Brown (&.5 YR 4/4) fine to very coarse sand, loose to
		-25			somewhat cohesive, moist, very poorly sorted, fine gravel up to 1"
					diameter, moist ≤1/2" angular to subround, some silt/silty.
7	9	--	0	9 11 18 23	No recovery.
9	11	3.9/	0.9	7 7 13 16	0-0.2' Sand: Brown (7.5 YR 5/4) fine sand, little medium to coarse sand,
		80			trace fine subangular to subround gravel up to 1/4", loose, poorly sorted.
					0.2-0.4' Rock: Weathered rock fragment, phylitic (Michigamme shale).
					0.4-0.9' Sand: Brown (7.5 YR 5/2) very fine to very coarse sand, very
					poorly sorted, some silt, little gravel angular to subround up to 3/4",
					loose, moist.
11	13	5.26/	0.9	5 7 9 9	0-0.2' Sand/Gravel: Color as above, sand, as above.
		79.8			0.2-0.9' Sand: Brown (7.5 YR 5/3) fine to medium sand, some coarse,
					moderate sorting, some fine gravel, angular to subround up to 1/4"

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-498 Page 2 of 3

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					diameter, loose, moist.
13	15	--	0	5 13 12 12	No recovery.
15	17	6.0/	1.2	9 9 8 9	0-0.1' Sand: As above, fine to medium.
		77.8			0.1-1.0' Silt/Sand: Silt, brown (7.5 YR 4/4) sand light brown (7.5 YR 6/4)
					interbedded smooth and very fine sand thinly laminated, silt < 1/8 to 1/4"
					thick uniform, soft, moist, very fine silty sand 1/4-1" thick, well sorted,
					somewhat cohesive, moist, trace clay with silt 1/8" thick layer, yellow red,
					plastic, silt slightly plastic.
					1.0-1.2' Silt: Brown, light brown (7.5 YR 6/4) grainy, moist, uniform, soft.
17	19	7.4/	1.3	5 7 10 10	0-0.3' Clay: Red brown (5 YR 4/4) clay smooth, varved with silt layers,
		83.5			plastic to somewhat cohesive, moist, clay crumbly when worked, trace
					silt within.
					0.3-1.3' Sand/Silt: Sand light brown (7.5 YR 6/4), silt brown (7.5 YR 4/4)
					grainy silt and very fine sand, grading to very fine sand, less silty with depth,
					vertical grainy silt laminations, well sorted, slight interbedded at top,
					horizontal lamination, moist, loose.
19	21	7.7/	1.5	6 8 12 15	0-1.5' Silt/Sand: As above, grainy silt to very fine sand (0-0.5) horizontal
		52.6			bedding/laminations silt, 0.5-1.5' vertical laminations (silt).
21	23	12.5/	1.6	6 6 11 14	0-0.4' Sand: Red brown (5 YR 5/4) silty, very fine sand, uniform, loose,
		77			moist, well sorted.
					0.4-1.3' Silt: Red brown (5 YR 4/4) grainy, some very fine sand, loose-
					somewhat cohesive, moist.
					1.3-1.6' Sand: Red brown (5 YR 5/4) silty, very fine sand, loose to somewhat
					cohesive, some silt, uniform, moist, very well sorted.
23	25	9.3/	1.8	8 8 19 21	0-0.7' Silt: Red brown (5 YR 4/4) grainy, uniform, trace black staining
		36.4			moist, loose to crumbly.
					0.7-1.8' Sand: Light red brown (5 YR 6/4) silty, very fine sand, dry to
					moist, powdery, well sorted.
25	27	6.03/	1.5	8 9 14 18	0-0.5' Silt: Red brown (5 YR 5/4) grainy, uniform, moist, slightly
		4.66			cohesive.
					0.5-1' Silt/Sand: Thinly interbedded silt and very fine sand, very fine sand
					is silty, uniform, well sorted, powdery, loose, grainy silt laminated within,
					dry.
					1-1.5' Silt: Red brown (5 YR 4/4), smooth and grainy interbeded
					laminations, all silt crumbly, moist, uniform layers slightly cohesive, hard to
					describe individual beds.
27	29	11.8/	1.5	6 8 14 18	0-1.5' Silt/Sand: As above, very thinly interbedded/varved, intermixed in
		-3.5			portions, dry to moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-498 Page 3 of 3

Prepared by Jill Flater/Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
29	31	11.8/	1.8	7 9 11 18	0-1.8' Silt: Red brown (5 YR 5/4) grainy, clay and very fine silty sand
		-1.15			varves interbedded, moist, very soft throughout, crumbly to somewhat
					cohesive, clay yellow red (5 YR 4/6) plastic, cohesive.
31	33	6.2/	1.7	8 11 14 18	0-1.0' Silt: As above.
		-19			1.0-1.7' Silt/Clay: Silt strong brown (7.5 YR 4/6), clay yellow brown (5 YR
					4/6) interbedded smooth silt and clay, silt is uniform, moist, crumbly, soft,
					clay plastic, soft, very thinly interbedded/laminated, trace very fine sand layer
					at 1.3', well sorted, loose, moist.
33	35	5.3/	1.4	7 8 14 16	0-0.4' Silt: Red brown (7.5 YR 5/4) grainy, uniform, soft, moist, crumbly
		-12			to somewhat cohesive.
					0.4-0.7' Silt/Clay: As above interbedded.
					0.7-1.1' Sand: Light red brown (5 YR 6/4) very fine sand, trace medium to
					coarse, loose, moist, well sorted.
					1.1-1.4' Sand: Light red brown (5 YR 6/4) fine sand, some medium to
					coarse, poorly sorted, loose, moist, trace fine gravel subround up to 1/4", 2
					very fine pieces over length.
					1.3-1.4 sand as above (0.7-1.1).
35	37	-1.3/	1.2	6 11 16 21	Sand: Light reddish brown (5 YR 6/3) mostly fine grain with some medium
		-35			to coarse grain and very fine grain, moderately sorted, some gravel, fine
					to coarse, subangular to subround, loose, dry.
37	39	1.2/	1.3	7 14 21 23	0-0.5' Silt: Reddish brown (5 YR 5/4) slightly grainy, slightly coherant
		-30			moist.
					0.5-0.6' Sand: Light reddish brown (5 YR 6/3) very fine grain, silty, well
					sorted, loose, dry.
					0.6-1.0' Silt: As above.
					1-1.5' Sand: As above (.5-.6) grading to very fine grain sandy silt, loose,
					powdery, dry.
39	41	1.9/	1.3	9 18 21 28	Sand: Light reddish brown (5 YR 6/3) becoming reddish brown (5 YR 5/4)
		-28			below 1.1, very fine grain, well sorted, little silt, slight trace medium to
					coarse sand grains, loose, somewhat powdery, moist to very moist below
					1.2'.
41	43	.8/	1.5	10 12 17 27	0-0.8' Sand: As above, very fine grain with some fine, very moist to wet.
		-29			0.8-1.5' Sand: Reddish brown (5 YR 4/4) mostly fine grain, well sorted, wet,
					with gradations to very fine to fine sand, loose, wet at 42.2 feet.
					EOB @ 43'

ARCADIS

Sample/Core Log

Boring/Well GMSG-499 A/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 4

Site Location: Kingsford, Michigan (KHP/UP Special Delivery) Drilling Started: 8/18/05 Drilling Completed: 8/18/05

Total Depth Drilled: 45 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1120.44 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Boart Longyear Driller: Randy Radke Helper: Kevin Frome

Prepared By: Jill Flater Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	1	--	1	4 3 2 3	0-0.4' Asphalt.
					0.4-0.5' Silt: Dark brown (10 YR 3/3), little very fine to fine sand, trace
					medium to coarse, little fine gravel angular to subround up to 1" moist ≤1/2"
					dry, loose.
					0.5-1.0' Concrete.
1	3	--	0.2	4 5 4 3	No recovery, rock stuck in spoon tip.
3	5	--	0	4 3 1 5	No recovery, rock stuck in spoon tip.
5	7	--	0	--	No recovery.
7	9	345/	1.2	5 5 6 9	0-0.3' Silt: Dark yellow brown (10 YR 3/4) with little very fine to fine sand,
		2030			slight trace medium to coarse, slight trace fine gravel 3/4 to 1" diameter,
					angular to subround, somewhat cohesive.
					0.3-0.5' Sand: Very dark gray brown (10 YR 3/2) silty, fine sand, little medium
					to coarse sand, slight trace fine angular to subround gravel up to 1/4",
					loose to slightly cohesive, moist.
					0.5-0.7' Rock: Crushed weathered rock and fragments.
					0.7-1.2' Sand: Strong brown (7.5 YR 4/6) fine to coarse sand, little fine
					gravel up to 1/4" subangular to subround, loose, very poorly sorted, moist.
9	11	214/	0.7	9 8 7 7	0-0.2' Sand: As above, fine to coarse.
		4600			0.2-0.7' Sand: Strong brown (7.5 YR 4/6) fine to medium sand, little coarse,
					trace fine gravel up to 1", angular to subround, loose, poorly sorted, moist.
11	13	85/	0.5	16 6 5 5	0-0.5' Sand: Strong brown (7.5 Yr 4/6) fine to very coarse sand, some fine
		2013			gravel subangular to subround up to 1/2" diameter, loose, very poorly sorted,
					moist, rock in spoontip.
13	15	29.09/	0.7	6 4 4 10	0-0.3' Sand: Dark brown (7.5 YR 3/4) fine to coarse sand, some fine gravel
		3640			up to 1/4", loose to slightly cohesive, little silt, moist, poorly sorted.
					0.3-0.5' Sand: Dark gray brown (10 YR 4/2) fine to very coarse sand,
					silty, loose, dry to moist, very poorly sorted, trace gravel up to 1" most fine

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-499 A/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					under 1/4".
					0.5-0.7' Sand: Brown (7.5 YR 5/4) fine to medium sand, trace coarse sand,
					loose, moist, poorly sorted, slight trace fine gravel up to 1/2".
15	17	11.18/	1.2	6 4 3 3	0-0.5' Sand: As above, fine to medium, little silt (possible slump).
		1750			0.5-0.6' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, 10% trace
					coarse sand, loose, moist, moderately sorted, clean, sharp contact above and
					below.
					0.6-0.8' Silt: Brown (7.5 YR 4/4) clayey, smooth, very soft, uniform, slightly
					plastic when worked, cohesive, varved yellow red clay lamination at top
					and bottom of length, slightly fissile and crumbly.
					0.8-0.9' Sand: As above, fine to medium, some fine gravel up to 1/2".
					0.9-1.0' Silt: As above, clayey.
					1.0-1.1' Sand/Weathered Rock: Dark gray brown (10 YR 4/2) very fine sand,
					weathered rock, crumbles on touch, rock fragments and very well sorted
					sand from weathering process.
					1.1-1.2' Sand: Strong brown (7.5 YR 4/6) fine to very coarse sand, trace fine
					gravel angular to subround up to 3/4", loose, moist, very poorly sorted.
17	19	5.41/	1.8	4 4 4 5	0-0.1' Silt: Strong brown (7.5 YR 4/6) grainy, uniform, soft, moist, loose to
		1850			crumbly.
					0.1-0.3' Sand: Brown (7.5 YR 5/4) very fine sand, well sorted, uniform, loose,
					moist.
					0.3-1.8' Sand: Strong brown (7.5 YR 4/6) silty, very fine sand, trace 10%
					fine to medium sand, somewhat cohesive, trace fine gravel up to 1/2"
					most ≤1/4".
19	21	16.58/	1.5	4 6 7 9	0-1.5' Sand: As above, silty, very fine sand varies to very fine to fine in
		2810			places.
21	23	---	0	8 15 16 16	No recovery.
23	25	4.98/	1.3	6 10 10 14	0-0.4' Sand: As above, silty, very fine sand.
		2100			0.4-0.5' Weathered rock.
					0.5-0.6' Sand: Light brown (7.5 YR 6/4) fine sand, clean, sharp contact
					above and below, loose, moist, very well sorted.
					0.6-1.0' Sand: Brown (7.5 YR 5/4) very fine to fine sand, loose, moist, slight
					trace medium sand, well sorted.
					1.0-1.3' Sand: Light brown (7.5 YR 4/4) fine sand, well sorted, loose, moist,
					slight trace medium sand.
25	27	5.85/	1.5	6 6 7 11	0-0.4' Sand: As above, silty, very fine sand, very fine to fine in places,
		2660			0.4-0.5' Sand: Light brown (7.5 YR 6/4) fine sand, some very fine, trace
					medium sand, moderately sorted.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-499 A/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					0.5-1.5' Sand: As above, silty, very fine sand, very fine to fine in places,
					two 1/4" fine sand seams at 1.0 and 0.9, fine sand, well sorted, loose, moist,
					rock lodged in spoontip.
27	29	15.65/	1.7	6 11 16 21	0-1.7' Sand: As above, silty, very fine sand, very fine to fine in places, trace
		2310			10% gravel, 1/2"-1" diameter angular to subround.
29	31	7.63/	1.4	10 14 21 33	0-0.3' Sand: As above, silty.
		1810			0.3-1.4' Sand: Light red brown (5 YR 6/4) fine sand, trace very fine, slight
					trace medium, moderately well sorted, moist, loose.
31	33	4.42/	1.3	6 10 31 43	0-0.4' Sand: Yellowish red (5 YR 5/6) fine sand, trace medium, well sorted,
		182			percent medium increasing with depth from trace to little, moist.
					0.4-0.8' Sand: Red brown (5 YR 5/4) fine to medium sand, little coarse to
					very coarse, trace fine gravel, angular to subround up to 1/4", loose, slight
					trace silt, moist.
					0.8-1.3' Sand: As above, fine to medium sand, angular to subround fine
					gravel up to 1/2", some silt.
33	35	5.94/	0.8	7 50+	0-0.3' Sand: Brown (7.5 YR 5/4) silty, fine sand, trace medium, little coarse
		441			gravel 3/4"-1.5", angular to subround, loose to somewhat cohesive, trace
					very fine sand.
					0.3-0.8' Sand/Gravel: Pinkish gray (7.5 YR 6/2) fine to coarse sand, fine to
					coarse gravel, loose, somewhat powdery, dry, weathered rock fragments
					throughout, trace coarse gravel 3/4-1.5" angular to subangular, most
					gravel fine under 1/2" diameter, subangular to subround, spoon had difficult
					time going through coarse gravel, some silt.
35	37	4.39/	1.3	10 15 21 32	0-1.3' Sand: Light red brown (5 YR 6/4) fine sand, well sorted, loose, moist,
		750			silty very fine sand layer at 0.2, varved laminations throughout silt and very
					fine sand, (0.9-1.0) silt/clay silt brown (7.5 YR 4/4) clay yellow red (5 YR 4/6),
					interbedded smooth silt and clay silt, crumbly 3/4" thick moist, uniform,
					soft, clay plastic, cohesive, uniform, 1/4" thick at base of length, very
					soft.
37	39	--	1.5	10 19 23 31	0-0.2' Sand: As above, fine sand.
					0.2-0.3' Sand: Brown (7.5 YR 4/4) silty, very fine to fine sand, trace medium
					to coarse, poorly sorted, loose to somewhat cohesive, moist.
					0.3-0.5' Sand: Very fine yellow red (5 YR 4/6), fine light red brown (5 YR 6/4),
					interbedded swirled laminations of very fine and fine sand, very fine sand,
					well sorted, loose, moist, fine sand, well sorted, loose, moist.
					0.5-1.5' Sand: Light red brown (5 YR 6/4) fine sand, very well sorted,
					moist, loose.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-499 A/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
39	41	3.16/	1.4	9 17 21 29	0-0.2' Sand: As above, very fine to fine interbedded.
		327			0.2-1.4' Sand: As above, fine sand.
41	43	3.03/	1.9	10 14 21 25	0-1.9' Sand: As above, fine sand coarsens ever so slightly with depth, moist
		404			to very moist, not wet.
43	45	3.98/	1.5	9 14 23 26	0-0.2' Sand: As above, fine sand.
		388			0.2-1.5' Sand/Silt/Clay: Overall color yellow red (5 YR 4/6) thinly laminated
					very fine to fine sand, smooth silt, grainy silt, and clay, wet, clay, very soft
					plastic, cohesive, uniform, silt, smooth crumbly, uniform, silt, grainy, loose
					to slightly cohesive, very fine to fine sand, well sorted, wet, loose.
					EOB @ 45'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-500 A/B/C Project/No. Ford/Kingsford WI001095.0002 Page 1 of 4

Site Location Kingsford, Michigan (KHP) Drilling Started 8/19/05 Drilling Completed 8/19/05

Total Depth Drilled 46 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1120.87 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Jill Flater Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	5.81/	1.1	1 2 2 2	0-0.2' Asphalt.
		30			0.2-0.3' Sand: Dark brown (10 YR 3/3) silty, fine to coarse sand, loose, dry
					to moist, very poorly sorted, fine gravel up to 1/4" diameter angular to
					subangular.
					0.3-0.6' Silt: Strong brown (7.5 YR 4/6) grainy, trace fine to medium sand,
					somewhat cohesive to crumbly, very soft, moist.
					0.6-1.1' Sand: Strong brown (7.5 YR 5/6) fine sand, trace medium sand,
					well sorted, loose, moist, uniform.
2	4	10.63/	1.2	2 2 3 5	0-1.2' Sand: As above, fine sand thin lamiantions/varves of silty very fine sand
		1090.0			throughout length, little fine gravel subangular to subround up to 1/2" in
					bottom 0.1.
					1.1-1.2' Sand: Color as above, fine to medium sand, little fine gravel angular
					to subround up to 1/2", loose, poorly sorted, moist.
4	6	8.63/	0.9	3 5 5 7	0-0.1' Sand: As above, fine sand.
		703			0.1-0.2' Rock: Weathered rock fragments.
					0.2-0.6' Sand: Strong brown (7.5 YR 4/6) fine to medium sand, little coarse,
					trace fine gravel subangular to subround up to 1" diameter most ≤1/4",
					loose, moist, poorly sorted.
					0.6-0.9' Sand: Light brown (7.5 YR 6/4) fine sand, very well sorted, loose,
					moist, trace thin lamiantions/varves of silty very fine sand.
6	8	8.98/	0.8	3 6 6 9	0-0.4' Sand: Brown (10 YR 4/3) fine to medium sand, some coarse to very
		587			coarse, little fine gravel up to 1" most fine ≤1/4" angular to subround, very
					poorly sorted, loose, moist.
					0.4-0.6' Sand: Brown (7,.5 YR 5/4) fine sand, trace medium, well sorted,
					loose, moist.
					0.6-0.8' Sand: As above, fine sand, some medium, trace coarse to very coarse,
					slight trace fine gravel up to 1/4" subround.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-500 A/B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
8	10	12.61/	0.4	15 10 11 11	0-0.4' Slump: Rock fragments, phyllitic slate throughout.
		605			
10	12	11.89/	1	12 11 10 11	0-0.1' Rock: Phyllite, slightly weathered.
		663			0.1-0.6' Sand: Dark brown (7.5 YR 3/4) fine sand, little coarse to very coarse,
					little fine gravel angular to subround up to 1/2" most ≤1/4", very poorly
					sorted, loose, moist.
					0.6-1.0' Sand: Brown (7.5 YR 5/4) fine to coarse sand, trace 10% very coarse
					sand, poorly sorted, trace fine gravel angular to subround up to 1/4",
					loose, moist.
12	14	10.08/	0.5	7 7 12 11	0-0.5' Sand: As above, fine to coarse, slight trace coarse gravel up to 1"
		587			diameter subround, slight trace very fine sand.
14	16	15.56/	0.9	12 7 9 14	0-0.6' Sand: Light brown (7.5 YR 6/4) fine sand, some medium, trace coarse,
		562			slight trace fine gravel up to 1/2" subround, loose, moist, moderately sorted.
					0.6-0.7' Sand: Very dark gray brown (10 YR 3/2) silty, very fine sand,
					biotite rich, well sorted, uniform, loose, moist.
					0.7-0.9' Sand: Brown (7.5 YR 4/3) fine to medium sand, little coarse to
					very coarse sand, trace fine gravel subangular to subround up to 3/4", loose,
					moist, very poorly sorted.
16	18	18.89/	0.8	9 7 8 12	Three 1" rocks at top of sample.
		640			0-0.2' Sand: Brown (7.5 YR 5/4) fine sand, trace medium, well sorted, loose
					moist.
					0.2-0.4' Sand: Color as above, fine sand as above, some medium sand, trace
					coarse.
					0.4-0.5' Sand: Color as above, very fine to fine sand, loose, moist, very well
					sorted.
					0.5-0.6' Sand: Color as above, fine to medium sand, trace coarse, moderate
					sorted, loose, moist.
					0.6-0.8' Sand: Brown (&.5 YR 5/4) fine sand, trace medium to coarse, well
					sorted, loose, moist.
18	20	1246/	1.1	12 12 9 11	0-1.1' Sand: Brown (7.5 YR 5/4) interbedded very fine to fine and very fine
		649			sand layers with laminations/varves of silt and clay throughout, very fine to fine
					sand, well sorted, loose, moist, very fine sand, little silt, trace fine, well sorted,
					loose, moist, clay varved 1/8" thick, yellow red (5 YR 4/6), very soft, plastic
					when worked, silt is varved, brown (7.5 YR 4/4).
20	22	13.02/	1.2	7 7 15 14	0-0.2' Sand: Brown (7.5 YR 5/4) silty, very fine sand, trace fine sand,
		422			well sorted, loose, moist.
					0.2-0.8' Sand: Light brown (7.5 YR 6/4) very fine to fine sand, coarsens
					slightly with depth, slight trace medium, trace silt, moderately well sorted,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-500 A/B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					loose, moist.
					0.8-1.2' Silt: Brown (7.5 YR 4/4) smooth, crumbly, soft, uniform, moist.
22	24	16.72/	1.2	11 12 15 18	0-1.2' Sand/Silt Sand: Silt brown (7.5 YR 5/4) sand light brown (7.5 YR
		289			6/4), interbedded laminations of silty very fine sand, very fine to fine sand,
					and silt varves, trace fine sand layers, gradations between layers, sand layers
					appear to be 1/2-1" thick, overall appearance of sands well to very well
					sorted, loose, moist, silt uniform
24	26	14.82/	1.4	5 9 14 17	0-1.4 Sand: Light brown (7.5 YR 6/4) fine sand, trace medium sand, slight
		283			trace coarse sand, loose, moist, well sorted, trace very fine sand at top
					increasing with depth to almost a very fine to fine sand at bottom.
26	28	15.10/	1.7	9 12 16 18	0-0.4' Sand: Brown (7.5 YR 5/4) very fine sand, well sorted, uniform,
		273			moist, loose.
					0.4-1.7' Silt: Brown (7.5 YR 4/4) smooth, very stiff, slightly cohesive to
					crumbly when worked, moist, uniform, interbedded clay 1/16" thick (trace),
					clay yellow red (YR 4/6) <1/16" sand lamination above each clay layer very
					fine to fine sand, well sorted, moist, clay is plastic when worked, soft.
28	30	10.74/	1.2	6 11 14 15	0-0.1' Silt: As above, smooth silt, trace clay layers.
		313			0.1-0.9' Sand: Light brown (7.5 YR 6/4) thinly interbedded very
					fine to fine sand, fine sand, and silty very fine sand, trace grainy silt varves,
					overall appearance well to moderately well sorted, moist, loose.
					0.9-1.2' Silt: Brown (7.5 YR 5/4) grainy, soft, uniform, moist, loose to
					somewhat cohesive.
30	32	15.24/	1.3	7 11 14 14	0-0.5' Sand: Light brown (7.5 YR 6/4) fine sand, slight trace medium sand,
		492			trace very fine sand, well sorted, loose, moist.
					0.5-0.8' Sand: Brown (7.5 YR 5/4) silty, very fine sand, well sorted,
					loose, moist.
					0.8-1.3' Sand: Brown (7.5 YR 5/4) fine sand, trace to little very fine in places,
					uneven distribution, slight trace medium, well sorted, loose, moist.
32	34	12.43/	1.6	6 7 11 13	0-1.6' Sand: Brown (7.5 YR 5/4) very fine to fine sand, moderately well sorted,
		222			slight trace medium sand to little in places, ratio very fine to fine sand varies
					along length.
34	36	17.36/	1.4	5 7 11 11	0-0.4' Sand: As above, very fine to fine, fine, silty very fine.
		261			0.4-0.5' Silt/Clay: Overall color brown (7.5 YR 4/4) thinly laminated beds of
					silt/clay, smooth silt, stiff formation, moist.
					0.5-1.4' Sand: Light brown (7.5 YR 6/4) very fine sand, very well sorted, top
					0.2' silty, loose, moist, 1/2" fine sand layer with some medium to very coarse
					sand, poorly sorted, loose, moist at 0.8, 1.2" grainy silt layer at 1.0, black
					laminations at 0.95-1.0'.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-500 A/B/C

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
36	38	14.86/	1.4	5 5 7 12	0-0.1' Sand: As above, very fine.
		227			0.1-0.2' Silt/Clay: As above, smooth with thin lamination.
					0.2-1.4' Sand: Light brown (7.5 YR 6/3) fine sand, very well sorted, loose,
					moist.
38	40	12.85/	1.0	6 6 11 12	0-0.1' Sand: As above, fine sand.
		219			0.1-0.5' Sand: Brown (10 YR 5/3) very fine to fine, some medium to coarse,
					trace fine gravel subangular to subround up to 1/2" up to 1" subround,
					slight trace coarse gravel, little silt, very poorly sorted, loose, moist.
					0.5-1.0' Sand: Light brown (7.5 YR 6/4) fine sand, some very fine, well sorted,
					moist, loose.
40	42	9.77/	1.4	6 7 9 13	0-0.4' Sand: Brown (7.5 YR 5/4) fine sand, trace very fine, slight trace medium
		162			sand, well sorted, loose moist.
					0.4-1.4' Sand: Brown (7.5 YR 5/4) very fine sand, very well sorted, trace silt
					in places, loose, moist.
42	44	10.59/	1.4	6 9 11 13	0-1.4' Sand: As above, very fine sand.
		201			
44	46	8.9/5	1.5	6 6 13 16	0-1.5' Sand: As above, very fine sand, black staining (swirly) 0-0.1, swirled
		170			clay laminations at 1.1-1.2, very soft, cohesive plasticity, moist 0-1.0, wet
					1.0-1.5'.
					EOB @ 46'

ARCADIS

Sample/Core Log

Boring/Well GMSG-501 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location: Kingsford, Michigan - Northwoods facility inside SW corner Drilling Started: 8/19/05 Drilling Completed: 8/19/05

Total Depth Drilled: 42 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1117.51 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Driller: Randy Ochs Helper: Brent Swanson

Prepared By: Bruce Evans Hammer Weight: 110 Hammer Drop: 36 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	--	--	--	Blind drill, no recovery.
					0.3 feet concrete.
					Drill Cuttings: Silt/Sand/Gravel: Dark yellowish brown (10 YR 4/4) mostly fine
					to medium sand mixed with silt and fine to coarse gravel, loose to somewhat
					sticky and coherent, moist.
2	4	--	--	5 7 8 9	No recovery, cuttings as above sand/silt/gravel, dry.
4	6	8.0/	1.3	6 7 8 11	Sand: Dark yellowish brown (10 YR 4/4) fine to very coarse grain, very poorly
		30.1			sorted, loose, some fine to coarse gravel, subangular to subround, dry.
6	8	28.8/	1.0	7 9 10 11	Sand: As above, dry.
		40.3			
8	10	30.7/	1.2	5 8 10 13	Sand: Dark yellowish brown (10 YR 4/4) fine to medium grain, well sorted,
		44.7			loose, no gravel, dry.
10	12	39.8/	1.2	6 9 12 15	Sand: Dark yellowish brown (10 YR 4/4) fine grain, well sorted, loose, dry
		51			to moist.
12	14	55.0/	0.9	4 12 17 23	Sand: As above, with some medium grain and gravel.
		57.2			
14	16	22.4/	1.1	7 14 18 25	Sand: Dark yellowish brown (10 YR 4/4) fine to very coarse grain, poorly
		16.2			sorted, trace fine to coarse gravel, subangular to subround, loose, moist.
16	18	40.8/	1.3	8 12 15 22	Sand: Strong brown (7.5 YR 4/6), fine to medium grain, trace coarse grain,
		21.6			moderately sorted, loose, moist.
18	20	54.2/	1.1	21 23 40 49	0-0.5' Sand: As above.
		21.6			0.5-0.6' Silt: Dark reddish brown (5 YR 3/4) clayey, somewhat plastic, moist.
					0.6-1.1' Sand: Strong brown (7.5 YR 4/6), very fine grain, well sorted,
					some silt, loose, moist.
20	22	42.2/	1.5	10 12 26 57	0-0.5' Sand: As above, very fine grain.
		17.5			0.5-0.9' Silt/Clay: Silt dark reddish brown (5 YR 3/3) clay, dark reddish brown
					(5 YR 3/4) interbedded and varved, 0.5 inch to 0.1 inch thick layers, silt soft,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-501 A/B

Page 2 of 2

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					slight plastic, clay brittle and fissile on broken surfaces, but plastic, moist.
					0.9-1.5' Sand: Strong brown (7.5 YR 4/6) extremely fine grain, well sorted,
					trace silt, loose, moist.
22	24	63.1/	1.3	15 34 43 37	0-0.3' Silt/Clay: As above (0.5-0.9) interbedded.
		24.2			0.3-1.3' Sand/Silt: Light reddish brown (5 YR 6/4) extremely fine grain sand
					grading into sandy silt, well sorted, loose, powdery, moist to dry.
24	26	67.7/	1.5	11 26 48 50	0-0.3' Sand/Silt: As above.
		24.5			0.3-0.6' Sand/Silt: Silt dark reddish brown (5 YR 3/34) sand light reddish
					brown (5 YR 6/3) interbedded layers 1" to 0.5", silt soft, smooth, slight
					plastic, sand extremely fine grain, loose, dry to moist.
					0.6-1.5 Sand: Light reddish brown (5 YR 6/3) extremely fine grain, some silt,
					well sorted, loose, powdery, moist.
26	28	55.6/	1.0	21 41 50+	Sand: Reddish brown (5 YR 5/3) very fine grain to, extremely fine grain, well
		21.5			sorted, loose, somewhat powdery, dry to moist.
28	30	68.2/	1.5	24 37 50+	0-0.6' Sand: As above, very silty 0.5-0.6'.
		25.8			0.6-1.5' Sand: Reddish brown (5 YR 5/3) fine to very fine grain, size decreases
					with depth, well sorted, loose, moist.
30	32	70.2/	1.2	17 39 50+	Sand: Light reddish brown (5 YR 6/3) very fine grain, well sorted, trace very
		26.5			fine gravel or coarse sand, loose, moist.
32	34	50.3/	1.6	20 30 44 36	0-1.3' Sand: As above, with some fine grain sand.
		18			1.3-1.6' Sand/Silt: Sand as above interbedded with silt and extremely fine
					grain sand, sand layers 0.3-0.5"thick, silt 0.2-<.1 inch, silt smooth, soft, slight
					plastic, moist.
34	36	43.4/	1.2	12 29 50+	0-0.3' Sand: Reddish brown (5 YR 5/3) very fine grain, silty, well sorted, loose,
		17			moist.
					0.3-1.2' Silt: Reddish brown (5 YR 5/3) smooth, slight firm, slight plastic,
					trace thin red clay layer at .7, moist to very moist.
36	38	11.6/	0.7	31 50+	0-0.2' Silt: As above.
		42			0.2-0.3' Sand: Light reddish brown (5 YR 5/3) extremely fine grain, silty, loose,
					powdery, dry.
					0.3-0.7 Silt: Reddish brown (5 YR 4/3) smooth, slightly firm, very homogenous,
					very moist.
38	40	17.8/	1.4	17 36 50+	0-0.6' Silt: As above.
		42			0.6-1.4' Sand: Brown (7.5 YR 4/2) mostly very fine grain with some fine grain,
					well sorted, loose, very moist to wet.
40	42	1.7/	1	24 46 50+	Sand: Brown (7.5 YR 4/2) mostly fine grain with some very fine and medium
		7			grain, moderately sorted, trace fine to coarse gravel, subangular mostly,
					loose, wet.
					EOB @ 42'

ARCADIS

Sample/Core Log

Boring/Wel GMSG-502 A/B/C | Project/No. Ford/Kingsford WI001095.0002 | Page 1 of 3

Site Location: Kingsford, Michigan - Northwoods Facility | Drilling Started: 8/20/05 | Drilling Completed: 8/21/05

Total Depth Drilled: 40 Feet | Hole Diameter: 8.5 inches | Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon | Sampling Interval: continuous feet

Land-Surface Elev.: 1117.0 feet | [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering | Driller: Randy Ochs | Helper: Brent Swanson

Prepared By: Bruce Evans | Hammer Weight: 110 | Hammer Drop: 36 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	--	--	--	Blind drill, no recovery.
					0-0.6' Concrete in two pouring.
					0.6-2' Sand/Silt/Gravel: Auger cuttings.
2	4	8.2/	0.5	4 11 14 15	Sand: Dark yellowish brown (10 YR 3/4) fine grain, some very fine, very silty,
		48			trace fine to coarse gravel, moderately sorted, loose, but somewhat sticky,
					moist, piece concrete stuck in spoon tip.
					6:50 Auger refusal at 2.5 feet, auger can't get past refusal that spoon
					penetrated, auger tilting to right, apparently obstruction in left side borehole.
					Abandon borehole. 16:55 Restart GMSG-502, 7 feet west.
0	2	--	--	--	Blind drill, no recovery.
					0-0.6' Concrete.
					0.6-2' Auger Cuttings Sand/Silt/Gravel: Brown.
2	4	--	--	--	Blind drill, no recovery.
4	6	40.2/	1.0	11 11 14 17	Sand: Strong brown (7.5 YR 5/6) predominately fine grain with some
		11.8			medium to coarse grain, some fine to coarse gravel angular to subround,
					poorly sorted, loose, dry.
6	8	--	--	11 24 24 23	No recovery.
8	10	42/	1.0	10 14 8 10	0-0.1' Rock fragments.
		67.2			0.1-0.6' Sand: As above.
					0.6-1.0' Sand: Yellowish brown (10 YR 5/4) fine to medium grain, trace
					coarse grain, trace fine gravel, moderately sorted, loose, moist.
10	12	2.3/	1.0	44 8 11 13	0-0.1' Black Rock Fragments - Slate.
		42.6			0.1-1.0' Sand/Gravel: Dark yellowish brown (10 YR 4/4) predominately fine
					grain with some medium to very coarse grain, fine to coarse gravel,
					angular to subround, poorly sorted, trace silt, loose, very moist.
12	14	3.1/	1.5	14 16 23 30	0-0.6' Sand/Gravel: As above.
		45			0.6-1.3' Sand: Yellowish brown (10 YR 5/4) fine to very fine grain, well

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-502 A/B

Page 2 of 3

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					sorted, several seams medium to coarse grain sand 1.0-1.3, loose, moist.
					1.3-1.5' Sand: Yellowish brown (10 YR 5/4) extremely fine grain, very silty,
					well sorted, loose, moist.
14	16	2.9/	1.3	9 9 10 10	0-0.6' Sand: Yellowish brown (10 YR 5/4) very fine to extremely fine grain,
		44.2			well sorted, with several thin silt seams throughout 0.1-inch and less,
					loose, moist.
					0.6-0.7' Sand: Yellowish brown (10 YR 5/4) fine to medium grain, well
					sorted, loose, moist.
					0.7-0.8' Silt: Reddish brown (5 YR 4/4) smooth, soft, somewhat loose, moist.
					0.8-1.3' Silt/Sand: Reddish brown (5 YR 4/4) silt as above grading to very
					fine grain silty sand, some interbedding and some gradation between 2
					layers, soft to loose and somewhat firm in places, moist.
16	18	8.1/	0.8	10 9 8 10	0-0.2' Sand/Silt: as above.
		48.5			0.2-0.4' Sand: Brown (7.5 YR 4/4) fine to very fine grain, moderately sorted,
					loose, dry.
					0.4-0.8' Silt: Brown (7.5 YR 4/4) smooth, soft, slightly grainy, somewhat
					loose, slightly powdery, moist.
18	20	9.2/	1.5	6 6 7 8	0-0.2' Silt: As above.
		53.5			0.2-0.4' Sand: Reddish brown (5 YR 5/4) extremely fine grain, very well
					sorted, loose, dry.
					0.4-0.8' Silt: Reddish brown (5 YR 4/3) soft, smooth, somewhat clayey,
					slightly plastic, moist to very moist.
					0.8-1.5' Silt: Brown (7.5 YR 4/4) alternating between smooth and somewhat
					grainy, soft to slightly firm, clayey in several layers, moist.
20	22	8.8/	1.3	5 5 6 7	Silt: As above, alternating layers, varves, of clayey silt and grainy silt, moist.
		33.9			
22	24	9.5/	1.5	6 4 9 10	0-0.9' Silt: Reddish brown (5 YR 4/3) smooth, soft, slightly plastic, trace
		17.5			clay, wet.
					0.9-1.5' Sand/Gravel: Brown (7.5 YR 4/3) very fine to very coarse grain sand,
					fine to coarse gravel subangular to subround, very poorly sorted mixture,
					loose, dry to moist.
24	26	12.3/	1.0	12 14 16 15	Sand/Gravel: As above, but sand becoming more very fine to fine grain, also
		17.2			some pebbles and rock fragments to 0.5 inch diameter, dry to moist.
26	28	10.5/	1.2	5 6 9 13	0-0.1' Sand/Gravel: As above.
		6.6			0.1-1.0' Sand: Dark yellowish brown (10 YR 4/4) fine grain, some very fine
					grain, well sorted, much fine black shale flakes, loose, moist.
					1-1.2' Sand: Yellowish brown (10 YR 5/4) very fine grain, well sorted, loose,
					dry to moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-502 A/B

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
28	30	12.6/	1.1	11 15 19 31	0-0.5' Sand: Brown (10 YR 5/5) fine grain, well sorted, some black flakes shale,
		12.3			loose, dry.
					0.5-1.1' Sand: Reddish brown (5 YR 5/3) very fine to extremely fine grain,
					very well sorted, loose, somewhat powdery, dry.
30	32	8.3/	1.3	11 17 24 40	0-0.8' Sand: Reddish brown (5 YR 5/4) very fine to extremely fine grain, some
		6.3			silt, very well sorted, very homogenous, loose, somewhat powdery, dry to
					moist.
					0.8-1.3' Sand/Silt: Reddish brown (5 YR 5/4) for both, very fine to extremely
					fine grain sand as above layered with smooth silt, layers < .1 inch, loose to
					slightly firm, moist, sand powdery.
32	34	10.6/	1.2	15 24 34 50+	Sand: Reddish brown (5 YR 5/2) very fine to extremely fine grain, very well
		5.4			sorted, trace silt, loose, powdery, dry.
34	36	7.5/	1.4	17 27 37 50+	0-0.9' Sand: As above, trace silt varves, dry.
		3.5			0.9-1.4' Sand: Reddish brown (5 YR 5/3) very fine grain, very well sorted,
					very homogenous, loose, dry to moist.
36	38	6.9/	1.3	16 35 47 50+	Sand: As above, some silt banding/layering 0-0.4, dry to moist.
		3.5			
38	40	3.7/	1.5	19 24 30 41	Sand: Reddish brown (5 YR 5/2) very fine grain, very well sorted, very
		2.4			homogenous, loose, somewhat powdery, moist to wet at 1.0 (39.5 ft).
					EOB 40 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSG-503 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan - Northwoods Facility Drilling Started: 8/20/05 Drilling Completed: 8/21/05

Total Depth Drilled: 40 Feet Hole Diameter: 8.5 inches Type of Sample/Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1116.85 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Driller: Randy Ochs Helper: Brent Swanson

Prepared By: Bruce Evans Hammer Weight: 110 Hammer Drop: 36 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	--	--	--	Blind drill, no recovery.
					0-0.6' Concrete.
					Soil Cuttings: Sand/Silt/Gravel: Very dark brown (7.5 YR 2.5/2) very moist,
					sticky, loose.
2	4	2.3/	1.2	4 3 8 6	0-0.2' Sand/Gravel/Silt: As above, with black slate fragments.
		45			.2-1.2' Sand/Silt: Strong brown (7.5 YR 3/6) very fine grain with some fine to
					medium grain, very silty, trace fine to coarse gravel, angular to subround, loose
					to somewhat sticky, moist.
4	6	4.9/	1.0	11 9 8 7	Sand/Gravel/Silt: Dark yellowish brown (10 YR 4/4) fine to very coarse sand
		46.8			with some very fine, fine to coarse gravel, angular to subround, very poorly
					sorted, fairly coarse mixture, very silty, loose, moist, based on drilling also rock
					and cobbles in formation.
6	8	5.5/	1.3	5 7 8 9	0-0.3' Sand/Gravel/Silt: as above.
		39.7			0.3-1' Sand/Gravel: Dark yellowish brown (10 YR 4/4) medium to very coarse
					sand, fine to coarse gravel, very poorly sorted, very coarse mixture, some
					pebbles and rock chips, loose, moist.
					1-1.3' Sand: Brown (7.5 rye 5/4) mostly medium grain with some coarse
					gravel, moderately sorted, loose, moist.
8	10	8.7/	1.0	5 8 12 13	0-0.3' Sand: As above.
		42.5			0.3-1.0' Sand/Gravel: Dark yellowish brown (10 YR 4/4) fine to very coarse
					grain sand, fine to coarse grain gravel, very poorly sorted, loose, moist.
10	12	14.8/	1.2	12 7 7 8	Sand/Gravel: As above, with coarse gravel/pebble seam 0.8-1, very moist to
		36.9			wet in gravel.
12	14	18.4/	0.7	4 4 5 7	Sand/Gravel/Silt: Dark brown (7.5 YR 3/2) very fine to very coarse grain sand,
		42.3			fine to coarse gravel and pebbles to 1" diameter, very silty, very poorly sorted,
					loose but sticky, very moist.
14	16	14.9/	1.0	4 8 23 24	0-0.8' Sand/Gravel/Silt: As above.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-503 A/B

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
		36.8			0.8-1.0' Sand: Brown (7.5 YR 4/4) fine to very fine grain, well sorted, loose,
					moist.
16	18	11.8/	1.2	12 13 18 50+	0-0.2' Sand: As above.
		29.2			0.2-0.3' Sand: Dark brown (7.5 YR 3/3) fine to coarse grain, poorly sorted,
					with some fine to coarse gravel, loose, moist.
					0.3-0.9' Silt: Reddish brown (5 YR 4/4) smooth, somewhat firm, very slight
					plastic, moist.
					0.9-1.2' Sand: Brown (7.5 YR 4/4) fine grain, some very fine grain and silt,
					well sorted, loose, moist, greenish rock in spoon tip.
18	20	--	--	50+	Splitspoon refusal, bouncing on obstruction, no recovery, auger was able to
					penetrate obstruction.
20	22	18.7/	1.5	5 13 34 50	Sand: Reddish brown (5 YR 5/3) fine to very fine grain, very well sorted,
		12.4			loose, dry.
22	24	13.8/	1.0	22 32 34 38	0-0.5' Sand: As above.
		5.9			0.5-1.0' Sand: As above, with some fine to coarse gravel, angular to
					subrounded, much black shale flakes, dry.
24	26	30.1/	1.2	18 24 25 25	0-0.1' Sand: As above, less gravel.
		11.7			0.1-0.3' Sand: Dark reddish brown (5 YR 3/4) fine to very fine grain, very
					silty, trace coarse gravel subangular, loose but sticky, very moist.
					0.3-0.9' Sand: Reddish brown (5 YR 5/3) fine grain, well sorted, loose, dry.
					0.9-1.2' Sand: Reddish brown (5 YR 4/4) fine to very fine grain, very silty,
					well sorted, loose but sticky, moist.
26	28	--	--	--	No recovery, splitspoon refusal.
28	30	40.8/	1.0	6 11 21 25	Sand/Gravel: Reddish brown (5 YR 5/3) predominantly very fine to fine grain
		15			sand with some medium to coarse grain, mixed with fine to very coarse gravel,
					angular to subrounded but predominately subangular, very poorly sorted,
					loose, dry to moist.
30	32	31.8/	1.5	14 27 40 50+	0-0.4' Sand/Gravel: As above.
		11			0.4-0.8' Sand: Light reddish brown (5 YR 6/3) very fine grain, well sorted,
					loose, dry.
					0.8-1.2' Sand: Light reddish brown (5 YR 6/3) extremely fine grain with some
					fine grain, very well sorted, some silt, loose, somewhat powdery, dry to
					moist.
					1.2-1.5' Silt: Light reddish brown (5 YR 6/3) grainy, powdery, moist.
32	34	29.8/	1.3	16 24 33 50	0-0.4' Silt: As above, grainy, moist.
		9.2			0.4-1.3' Sand: Light reddish brown (5 YR 6/3) very fine to extremely fine
					grain, very well sorted, trace coarse grain sized black flakes of thin angular
					shale, loose, dry to moist, somewhat powdery at 1.0-1.3'.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-503 A/B

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
34	36	35.5/	1.2	13 28 41 50+	Sand: As above, mostly very fine grain, loose, dry to moist.
		11.9			
36	38	38.6/	1.4	20 35 50+	Sand: As above, grading between very fine grain and extremely fine grain,
		12.6			powdery, dry to moist.
38	40	22.6/	1.4	20 39 50+	Sand: Light reddish brown (5 YR 6/3) to reddish brown (5 YR 5/3) when
		8			saturated, mostly very fine with extremely fine grain, trace silt, very well sorted,
					loose, moist to wet at .9 (39.5 ft).
					EOB @ 40 ft.

ARCADIS

Sample/Core Log

Boring/Well GMSG-504 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan - Northwoods Facility Drilling Started: 8/21/05 Drilling Completed: 8/21/05

Total Depth Drilled: 40 Feet Hole Diameter: 8.5 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1116.84 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Driller: Randy Ochs Helper: Brent Swanson

Prepared By: Bruce Evans Hammer Weight: 110 Hammer Drop: 36 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	--	--	--	Blind drill. No recovery.
					0-0.6' Concrete.
					0.6-2' Drill Cuttings: Brown sand/silt/gravel.
2	4	0.9/	1.0	6 4 4 3	Sand/Gravel/Silt: Dark yellowish brown (10 YR 3/4) fine to coarse grain sand
		32			mixed with fine to very coarse gravel, very silty matrix, very poorly sorted,
					trace pebbles and rock chips, loose, moist.
4	6	3.2/	0.7	2 2 1 3	Sand/Gravel/Silt: As above.
		20.8			
6	8	--	--	9 18 16 17	No recovery: Sand/Gravel as above in spoon tip.
8	10	9.7/	1.0	14 6 8 8	0-0.3' Sand/Gravel/Silt: As above.
		7.1			0.3-1.0' Sand: Strong brown (7.5 YR 4/6) predominately medium grain, some
					fine to coarse grain, some fine to coarse gravel, subangular to subrounded,
					moderately sorted, loose, moist.
10	12	19.2/	1.0	4 6 6 10	0-0.7' Sand: Dark brown (7.5 YR 3/4) medium to very coarse grain, with some
		11.6			fine to coarse gravel, subangular to subround, moderately sorted, very coarse
					sand, loose, very moist.
					0.7-0.9' Clay: Dark reddish brown (5 YR 3/4) plastic but firm, fissile looking on
					broken surfaces, moist.
					0.9-1.0' Sand: As above (0-0.7'), coarse, moist.
12	14	26.9/	1.2	5 7 9 10	Sand: Dark brown (7.5 YR 3/3) medium to very coarse grain, with some fine
		14.7			to coarse gravel, subangular to subround, poorly sorted, very coarse sand,
					loose, very moist.
14	16	20/	1.1	7 12 20 25	Sand: As above, coarse, very moist.
		9.1			
16	18	12.2/	1.3	12 24 20 30	0-1' Sand: Brown (7.5 YR 4/3) medium to very coarse grain, trace fine gravel,
		5.4			subangular, moderately sorted, loose, very moist.
					1.0-1.1' Clay: Dark reddish brown (5 YR 3/4) plastic but firm, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-504 A/B

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					1.1-1.3' Sand: As above (0-1), more gravel, moist.
18	20	16.5/	1.5	10 15 20 29	Sand: Brown (7.5 YR 4/5) fine to very coarse grain, with some fine to coarse
		5.9			gravel, subangular to subround, very poorly sorted, loose, moist.
20	22	18.3/	1.3	10 19 20 25	0-0.7 Sand: As above, coarse, moist.
		6.1			0.7-0.9' Gravel/Sand: Fine to coarse gravel subangular to subround with
					sand as above.
					0.9-1.3' Sand: Brown (7.5 YR 4/3) predominately medium grain with some
					coarse, trace fine gravel subangular to subround, moderately sorted, loose,
					moist.
22	24	18/	1.2	8 20 27 37	Sand: As above (.9-1.3'), mostly medium grain, with more gravel fine to
		5.6			coarse, loose, moist.
24	26	25.8/	1.1	14 21 33 33	0-0.8' Sand/Gravel: Brown (7.5 YR 4/3) predominately medium grain sand
		8.6			with some coarse to very coarse grain, fine to coarse gravel, subangular to
					subrounded, poorly sorted, loose, very moist.
					0.8-0.9' Silt: Reddish brown (5 YR 4/3) soft, smooth, moderately plastic,
					with trace yellowish red clay.
					0.9-1.1' Sand/Gravel: As above.
26	28	21/6.7	1.1	5 27 45 50+	0-0.4' Sand/Gravel: As above.
					0.4-0.5' Silt: Reddish brown (5 YR 4/3) somewhat clayey, soft, smooth,
					moderately plastic, very moist.
					0.5-0.8' Sand: Light reddish brown YR 6/3), very fine to extremely fine grain,
					well sorted, loose, grading downward into silt, very moist.
					0.8-1.1' Silt: Reddish brown (5 YR 4/3) grainy and grading downward to
					smooth, somewhat firm, non-plastic, very moist to wet.
28	30	29.8/	1.5	12 28 30 50+	0-0.3' Silt/Sand: Silt: as above, interbedded with very fine to extremely fine
		10			grain sand, layers 0.2-<.1 inch, very moist to wet.
					0.3-1.5' Silt: Reddish brown (5 YR 4/3) smooth, somewhat plastic but firm,
					very moist, several yellowish red clay layers 0.1-0.3 inch below 1.2, clay
					plastic, firm, fissile looking on broken surfaces, very moist to wet.
30	32	22.9/	1.5	21 45 49 50+	0-0.2' Silt: As above, no clay.
		7.2			0.2-0.4' Sand: Light reddish brown (7.5 YR 6/3) extremely fine grain, well
					sorted, loose, moist.
					0.4-1.3' Silt; Dark reddish gray (5 YR 6/2) smooth, firm, very slight plastic,
					wet.
					1.3-1.5' Silt/Clay/Sand: Interbedded, varved, layers of material described
					above, silt wet, sand very moist.
32	34	28/	1.2	21 39 50+	0-0.2' Silt: As above, no clay/sand.
		8.8			0.2-0.9' Silt/Sand: Reddish brown (5 YR 5/3) grainy silt or silty extremely fine
					grain sand, somewhat firm to loose, very homogeneous, very moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-504 A/B

Page 3 of 3

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
					0.9-1.2' Silt: Reddish brown (5 YR 5/3) smooth and grainy silt, interbedded
					as varves, very moist.
34	36	37.6/	1.4	21 39 50+	0-0.7' Silt: As above, interbedded but predominately smooth, soft, moist.
		10.9			0.7-1.1' Silt: Light reddish brown (5 YR 6/3) grainy, powdery, firm to some
					what loose, moist to dry.
					1.1-1.4' Silt: Reddish brown (5 YR 4/3) smooth, firm, very slightly plastic,
					some traces varving layers with grainy silt, moist.
36	38	33.3/	1.3	25 47 50+	0-0.3' Silt: As above (1.1-1.4) smooth.
		10.7			0.3-1.3' Sand: Reddish brown (5 YR 5/3) predominately very fine grain sand,
					well sorted, loose, traces fine to coarse black shale flakes, some interbeds of
					extremely fine grain sand 1-2 inches thick, dry to moist, powdery.
38	40	25.2/	1.2	27 50 50+	0-0.3' Sand: As above.
		8.3			0.3-0.9' Sand: Reddish brown (5 YR 5/3) very fine grain, well sorted, loose,
					dry to moist, 1" limestone pebble at 0.8.
					0.9-1.2' Sand: Reddish brown (5 YR 4/3) very fine to extremely fine grain,
					very well sorted, very homogenous, loose, wet at 39.5',

ARCADIS

Sample/Core Log

Boring/Well GMSG-505 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 4

Site Location Kingsford, Michigan (KHP, Motion Industries) Drilling Started 8/19/05 Drilling Completed 8/19/05

Total Depth Drilled 44 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon, 5' X8" Auger Sampling Interval continuous feet

Land-Surface Elev. 1120.98 feet [X] Surveyed [ ] Estimated Datum Above Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Jill Flater Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	5.57/	1.1	2 2 2 2	0-0.2 Asphalt.
		1.19			0.2-0.3' Sand: Brown (10 YR 4/3) very fine to medium sand, trace silt, little
					fine gravel, subangular to subround up to 1/2" diameter, loose to very
					slightly cohesive, poorly sorted, moist.
					0.3-0.4 Sandy Silt: Dark brown (7.5 YR 3/3) grainy silt with fine to medium
					sand, somewhat cohesive, very soft, upper and lower boundary black
					staining, no odor, moist.
					0.4-0.9' Silty Sand: Strong brown (7.5 YR 4/6) silty very fine sand, uniform,
					well sorted, loose, moist.
					0.9-1.1' Sand: Strong brown (7.5 YR 4/6) very fine sand, very well sorted,
					loose, moist.
2	4	7.32/	0.8	2 3 5 7	0-0.4 Sand: As above, very fine.
		8.03			0.4-0.8 Sand: Strong brown (7.5 YR 5/6) fine to coarse sand, trace very
					coarse, trace fine gravel angular to subround up to 1", very poorly sorted,
					little very fine to fine, loose, moist.
4	6	6.67/	1.0	2 3 5 7	0-0.2 Silt: Yellow brown (10 YR 5/6) grainy silt, trace very fine sand, uniform,
		35.30			slightly cohesive to loose, moist.
					0.2-0.5 Sand: As above, fine to coarse sand.
					0.5-0.9 Sand: Light brown (7.5 YR 6/4), fine sand, little medium, slight
					trace fine gravel up to 1/4" subround, moderately sorted, loose, moist.
					0.9-1.0' Sand: As above, fine to coarse sand.
6	8	7.75/	0.5	8 13 10 10	0-0.5 Slump. Rock in shoe.
		15.65			
8	6	9.88/	0.9	6 6 12 13	0-0.9' Sand: As above, fine to coarse sand, slight trace coarse gravel up to
		24.29			1" subangular to subround.
10	12	10.34/	0.9	6 9 9 8	0-0.5 Sand: As above, fine to coarse sand.
		25.63			0.5-0.8 Sand: Light brown (7.5 YR 6/4) fine sand, some medium to coarse,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-505

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					little fine gravel up to 1/4" subangular to subround, loose, poorly sorted,
					moist.
					0.8-0.9 Sand: Very dark gray brown (2.5 Y 3/2) very fine to fine sand,
					trace medium to coarse, little fine gravel up to 1/4" subangular to
					subround, moist, loose, biotite rich, moist gravel quartz.
12	14	10.14/	1.5	5 4 4 6	0-1.5 Silt: Strong brown (7.5 YR 4/6) grainy silt, soft, uniform, slightly
		50.80			cohesive, little very fine sand, slight trace fine sand, moist.
14	16	10.67/	1.7	4 4 8 8	0-1.7 Silt: As above, grainy silt phyllitic slate rock at 1.1.
		28.37			
16	18	13.66/	1.7	3 6 6 8	0-0.5 Silt: As above, grainy silt.
		25.58			0.5-1.4 Silty Sand: Red brown (5 YR 4/4) silty very fine sand, trace very
					fine to fine sand layers approximately 1/8" thick, well sorted, light brown
					(7.5 YR 6/4) loose, moist to trace silt layers approximately 1/8" thick, soft,
					brown (7.5 YR 4/4).
					1.4-1.7 Silty Sand: As above color, silty very fine to fine sand, slightly trace
					medium, trace fine gravel up to 3/4" subangular to subround, loose to
					slightly cohesive, moist.
18	20	13.17/	1.9	6 9 9 10	0-0.4 Silty Sand: As above, silty very fine to fine sand.
		26.15			0.4-0.5 Sand: Brown (7.5 YR 5/4) very fine to fine sand, trace medium to
					coarse, well sorted, loose.
					0.5-1.0 Silty Sand: As above, (silty very fine to fine sand.
					1.0-1.9 Sand/Silty Sand: Very fine to fine sand strong brown (7.5 YR 4/6),
					very fine silty brown (7.5 YR 5/4) thinly laminated/bedding very fine to fine
					sand and silty very fine sand, well sorted units varved 1/8" horizontal
					and diagonal, loose moist, trace medium to coarse sand throughout,
					trace fine gravel subangular to subround up to 1/4".
20	22	14.57/	1.1	4 6 10 10	0-0.5 Sand: Strong brown (7.5 YR 4/6) very fine to fine sand, little medium,
		65.12			trace silt, moderately well sorted, moist.
					0.5-0.6 Silty Sand: Red brown (5 YR 4/4) silty very fine sand, trace fine to
					medium, slight cohesive to loose, moist, soft, moderately sorted.\
					0.5-1.1 Sand/Silty Sand/Silt: Overall strong brown (7.5 YR 4/6) thinly
					interbedded, very fine to fine sand, silty very fine, grainy silt, and fine with
					little medium all layers under 1/4", silty portions slightly cohesive, sandy
					portions, loose, moist, units of very fine and fine silty very fine appears to be
					well sorted, and/dominant silty sand.
22	24	13.98/	1.3	5 8 12 14	0-0.2 Silty Sand: As above, silty fine sand.
		65.90			0.2-0.8 Sand: Brown (7.5 YR 5/4) very fine to medium sand, little coarse to
					very coarse, trace fine gravel up to 3/4" angular to subround, loose, little

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-505 Page 3 of 4

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					silt, poorly sorted, dry to moist.
					0.8-1.3 Sand/Silty Sand/Silt: As above, silt is medium stiff, slightly cohesive
					to crumbly.
24	26	14.97/	1.3	4 9 12 12	0-1.3' Sand/Silty Sand/Silt: As above silty layers 1/4-1/2" thick, trace fine
		61.30			sand very well sorted, loose 1/4p1/2" thick, silt dominates length.
26	28	16.56/	0.2	8 13 13 15	0-0.2 Slump.
		38.55			
28	30	11.69/	1.4	5 11 16 20	0-0.7 Silty Sand: Brown (7.5 YR 4/4) silty very fine sand, trace fine to coarse,
		42.37			soft, moderately well sorted, slightly cohesive to loose, moist 2" phylliticslate
					at 0.2.
					0.7-0.8 Clay: Yellow red (5 YR 4/6) very soft clay, uniform, plastic when
					worked cohesive, moist.
					0.8-1.1 Silty Sand: As above, silty very fine sand little to some fine to
					coarse, moderately sorted.
					1.1-1.2 Clay: As above.
					1.2-1.4 Sand: Brown (7.5 YR 5/4) very fine sand, trace to little silt, well
					sorted, loose, moist.
30	32	13.86/	1.1	6 11 11 12	0-0.2 Clay: As above.
		22.54			0.2-1.1 Sand: Brown (7.5 YR 5/4) very fine sand, with thinly laminated
					silty very fine sand and silty throughout, horizontal and slightly diagonal,
					very fine sand is well sorted trace to little silt, loose, moist.
32	34	12.27/	1.3	4 7 15 15	0-0.4 Sand: Brown (7.5 YR 5/3) fine to medium sand, trace coarse to very
		8.65			coarse, slight trace fine subangular to subround gravel up to 1/4" diameter,
					poorly sorted, loose, moist.
					0.4-1.3 Sand: Light brown (7.5 YR 6/4) very fine sand, some silt, well sorted,
					moist, loose to very slight cohesion, slight trace silt laminations.
34	36	14.64/	1.6	4 6 13 15	0-0.6 Sand: Light brown (7.5 YR 6/3) fine sand, some very fine, well sorted.
		19.82			0.6-1.6 Silty Sand: Brown (7.5 YR 5/4) silty very fine sand, well sorted,
					moist, loose, thinly laminated silt (grainy) and fine sand beds throughout,
					fine sand, trace very fine, well sorted, loose, moist.
36	38	15.50/	1.3	4 8 12 15	0-0.1 Silty Sand: As above, silty very fine sand.
		12.37			0.1-1.3 Sand: Light brown (7.5 YR 6/4) fine sand, interbedded (thinly) with
					very fine sand, well sorted, moist, loose, and silty very fine sand, well sorted,
					moist, loose, fine sand dominates, overall well sorted, loose, moist.
38	40	8.80/	0.8	5 12 12 16	0-0.8 Sand: As above, fine sand.
		5.92			
40	42		1.3	4 10 15 15	0-0.1 Sand: As above, fine sand, interbedded very fine and silty very fine.
					0.1-0.5 Silty Sand: Brown (7.5 YR 4/3) silty fine sand, slight trace medium to

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-505

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					coarse, well sorted slightly cohesive, moist.
					0.5-1.3 Sand: Brown (7.5 YR 5/4) fine sand, somewhat very fine, trace
					medium, well sorted, loose, moist.
42	44	14.85/	1.5	5 9 12 15	0-0.6 Silty Sand: Brown (7.5 YR 5/4) silty very fine sand, thin laminations of
		3.53			silt within throughout, well sorted, moist.
					0.6-0.9 Sand: Brown (7.5 YR 5/4), fine sand, well sorted, loose moist, wet
					at bottom.
					0.9-1.0 Silty Sand: Brown (7.5 YR 4/4) silty very fine to fine sand, brown
					(7.5 YR 4/4) fine sand, some very fine, trace silt, trace medium to coarse,
					slight trace fine gravel angular to subangular up to 1/4", loose, poorly
					sorted, wet.
					EOB @44'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-506 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Maranatha Messengers) Drilling Started 8/20/05 Drilling Completed 8/20/05

Total Depth Drilled 42 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1126.4 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear Driller Randy Radke Helper Kevin Frome

Prepared By Jill Flater Hammer Weight 300 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	2	0.92/	1.4	0 4 6 6	0-0.3' Asphalt.
		130			0.3-0.4' Sand: Brown (7.5 YR 4/3) silty, very fine to medium sand, trace
					coarse to very coarse, trace fine gravel up to 1/2" angular to subround,
					poorly sorted, moist, loose to slightly cohesive.
					0.4-0.9' Sand: Brown (7.5 YR 4/4) fine sand, some medium to coarse, little
					to some silt, slight trace very coarse, trace fine gravel up to 1/2" angular to
					subround, poorly sorted, loose, moist, trace coarse gravel up to 1-1/2".
					0.9-1.4' Sand: Brown (7.5 YR 4/4) silty fine sand, trace medium, trace fine
					gravel up to 1/2" angular to subround, somewhat cohesive, moist,
					moderately sorted.
2	4	1.78/	1.3	4 6 8 8	0-0.3' Sand: As above, silty, fine sand.
		190			0.3-1.0' Sand: As above, fine sand, some silt.
					1.0-1.3' Silt: Strong brown (7.5 YR 4/6) grainy, uniform, soft, somewhat
					cohesive, moist.
4	6	3.92/	1.3	5 7 8 7	0-0.2' Sand: As above, dark brown (7.5 YR 3/4) silty, fine sand.
		206			0.2-0.6' Sand: As above, fine sand.
					0.6-0.7' Sand: Dark yellow brown (10 YR 4/4) silty, very fine sand, trace
					fine sand, well sorted, loose, moist
					0.7-0.8' Sand: As above, no silt.
					0.8-1.1' Sand: Dark brown (01 YR 3/3) silty, very fine to fine sand, well
					sorted, slightly cohesive, moist, rock at 0.9-1.0'.
					1.1-1.3' Sand: Brown (7.5 YR 4/4) fine sand, trace medium to slight trace
					very coarse, well sorted, little silt, loose, moist.
6	8	--	0	4 6 7 13	No recovery.
8	10	-35/	1.3	4 6 7 7	0-0.3' Sand: Strong brown (7.5 YR 4/6) fine to coarse sand, trace very coarse,
		190			little subround gravel up to 1/2", loose, moist, very poorly sorted.
					0.3-0.8' Sand: Strong brown (7.5 YR 5/6) fine sand, trace medium, trace

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-506 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					very fine, well sorted, loose, moist.
					0.8-1.1' Sand: As above, fine to coarse, little silt.
					1.1-1.3' Sand: Strong brown (7.5 YR 4/6), fine to medium sand, some very
					fine, slight trace coarse to very coarse, moderate sorted, loose, moist.
10	12	4.37/	1	4 6 8 8	0-0.3' Sand: Brown (7.5 YR 4/4), fine to coarse, slight trace very coarse,
		230			poorly sorted, moist, loose.
					0.3-0.6' Sand: Strong brown (7.5 YR 4/4) very fine to medium sand, little
					coarse to very coarse, trace fine gravel up to 1/2", loose, moist, poorly
					sorted.
					0.6-0.8' Sand: Light brown (7.5 YR 6/4) very fine sand, trace fine to medium,
					well sorted, loose, moist.
					0.8-1.0' Sand: Brown (7.5 YR 4/4), medium sand, trace coarse, trace very fine
					to fine, moderately sorted, moist, loose.
12	14	4.57/	1	6 5 5 7	0-0.5' Sand: Light brown (7.5 YR 6/4) fine sand, little very fine, little medium
		208			to coarse, trace very coarse, loose, moist, poorly sorted.
					0.5-1.0' Sand: Light brown (7.5 YR 6/4) fine sand, trace very fine, very well
					sorted, uniform, moist, loose.
14	16	6.78/	0.9	4 5 7 11	0-0.9' Sand: Brown (7.5 YR 5/4) very fine to coarse sand, some silt, some fine
		268			gravel angular to subround up to 1/2", trace coarse gravel up to 1-1/4",
					loose, moist, very poorly sorted, two very fine to fine sand, light brown
					(7.5 YR 6/4) layers at 0.3 and 0.8 each approximately 1/2" thick, well sorted,
					loose, moist.
16	18	7.13/	1	7 12 6 8	0-1.0' Sand: Light brown (7.5 YR 6/4), very fine to coarse sand, very poorly
		597			sorted, loose, moist, trace very coarse, (0.3-0.4) little fine gravel subround up
					to 3/4"
18	20	--	0.1	6 7 7 9	0-0.1' Sand: As above, very fine to coarse sand (0-1.0 of 16-18).
20	22	5.52/	0.4	4 5 7 7	0-0.4' Sand: Brown (7.5 YR 4/4) fine to medium sand, some very fine, little
		528			coarse to very coarse, trace fine gravel subangular to subround up to 1/2"
					diameter loose, moist, poorly sorted, trace silt.
22	24	4.68/	1.5	3 4 4 7	0-0.3' Sand: As above, fine to medium sand.
		159			0.3-0.5' Sand: Light brown (7.5 YR 6/4) fine to medium sand, trace very fine,
					clean, little coarse to very coarse, trace fine gravel up to 1/2" most ≤1/4",
					loose, poorly sorted, moist.
					0.5-1.5' Sand: Light red brown (5 YR 6/4) silty, very fine sand, well sorted,
					uniform, moist, loose, thinly laminated with silt from (0.9-1.0) and slight trace
					throughout, powdery.
24	26	2.87/	1.5	4 6 7 11	0-1.5' Sand: Light brown (7.5 YR 6/4) interbedded very fine sand, silty
		733			very fine sand, and fine sand, very fine sand, well sorted, loose, moist,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-506 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	PID/FID (ppm)	Sample/Core Description
					1/4"-3" thick, silty very fine sand, uniform, well sorted, loose, moist, 2-5"
					thick, fine sand, varved 1/2" thick, well sorted, moist, loose, thinly laminated
					varves in horizontal a diagonal curves (similar appearance to crossbeds in
					sand stone perfectly preserved) of silt.
26	28	7.01/	1.7	4 6 8 11	0-1.0' Sand: As above, interbedded very fine sand, silty very fine sand, fine
		157			sand.
					1.0-1.7' Silt: Brown (7.5 YR 4/4) grainy, thinly laminated/varved, smooth
					silt, silty and very fine sand throughout, very soft, moist, slight trace clay
					varving.
28	30	6.09/	1.5	6 7 10 10	0-1.5' Silt: As above, grainy.
		399			
30	32	9.09/	0.9	29 18 14 10	0-0.4' Silt: Brown (7.5 YR 4/4) smooth, uniform, very soft, cohesive,
		750			crumbly in places, fractured weathered rock (0.3-0.4) pink quartzite.
					0.4-0.9' Sand: Yellow red (5 YR 4/6) silty, very fine to fine sand, trace
					medium, trace fine gravel, angular to subround up to 1/2", slightly cohesive
					to loose, moist.
32	34	7.14/	1.3	6 6 7 12	0-1.3' Sand: As above, silty, very fine to fine sand, trace medium to coarse,
		713			slightly less silt 0.8-1.0.
34	36	8.63/	1.8	4 6 9 12	0-1.8' Sand: As above, silty, very fine to fine.
		438			
36	38	5.00/	1.6	4 6 7 12	0-1.6' Sand: As above, silty very fine, to fine, slight trace coarse gravel up to
		666			1-1/4" angular to subround.
38	40	3.67/	1.7	6 7 7 10	0-1.7 Sand: As above, slight trace coarse gravel up to 2" angular to
		857			subround.
40	42	1.40/	2	3 5 7 7	0-2' Sand: As above, silt, very fine to fine, moist 0-1.1, wet 1.1-2.
		215			
					EOB @ 42'

ARCADIS

Sample/Core Log

Boring/Well GMSG-507 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Kingdom Hall) Drilling Started 9/7/05 Drilling Completed 9/7/05

Total Depth Drilled 4.9 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1132.17 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Trika Helper NA

Prepared By Trika Nelson Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.2			Sand: Dark brown, fine to coarse grain, mostly medium grain, loose, dry, no odor.
3.2	4.9			Sand: Orangish brown, very fine to very coarse grain, mostly medium to coarse grain, loose, moist, no odor, trace gravel up to 10 mm, subangular.

ARCADIS

Sample/Core Log

Boring/Well GMSG-508 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Kingdom Hall) Drilling Started 9/12/05 Drilling Completed 9/12/05

Total Depth Drilled 4.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1132.12 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Trika Helper NA

Prepared By Trika Nelson Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.5			Sand: Light brown, fine to very coarse, mostly medium grain, minor gravel up to
				45 mm, loose, subrounded, dry, no odor.
2.5	3.0			Sand/Gravel: Dark brown, mostly medium grain, very fine to coarse, gravel
				subrounded up to 30 mm, loose, moist, no odor.
3.0	3.7			Sand: Orangish-brown, fine to coarse, mostly medium grain, loose, moist, no odor.
3.7	4.2			Sand: Orangish-brown, fine to very coarse, mostly coarse grain, minor gravel up to
				18 mm, subrounded.

ARCADIS

Sample/Core Log

Boring/Well GMSG-509 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan (Kingdom Hall)
Drilling Started: 9/12/05 Drilling Completed: 9/12/05

Total Depth Drilled: 4.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1132.22 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: Trika Helper: NA

Prepared By: Trika Nelson Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.8			Sand: Dark brown, soft to loose, silty, organics, very fine to coarse, mostly fine to
				medium, moist, no odor.
0.8	1.6			Sand: Light brown, fine to coarse, mostly medium, loose, dry, no odor.
1.6	3.0			Sand: Same as above, minor gravel, up to 17 mm, subround, moist.
3.0	4.2			Sand: Light brown, medium to coarse grain, mostly medium grain, trace fine sand,
				loose, moist, no odor.

ARCADIS

Sample/Core Log

Boring/Well GMSG-510 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Balsam St. Church) Drilling Started 9/12/05 Drilling Completed 9/12/05

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1122.57 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Trika Helper NA

Prepared By Trika Nelson Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.5			Sand/Gravel: Brown, fine to coarse, mostly medium grain, gravel up to 30 mm, loose, subrounded, dry.
3.5	5.2			Sand: Dark brown, very fine to coarse, mostly medium grain, moist, no odor, loose, no gravel.

ARCADIS

Sample/Core Log

Boring/Well GMSG-511 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan (Balsam St. Church) Drilling Started 9/13/05 Drilling Completed 9/13/05

Total Depth Drilled 4.1 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1126.87 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Trika Helper NA

Prepared By Trika Nelson Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.4			Sand/Gravel: Brown, fine to coarse, mostly medium sand, loose, gravel up to
				40 mm, subrounded, dry, no odor.
1.4	1.9			Sand/Gravel: Same as above, moist.
1.9	2.8			Sand: Brown, very fine to coarse, mostly medium to coarse, loose, moist, no odor.
2.8	4.1			Sand/Gravel: Brown, very fine to very coarse, mostly coarse grain, gravel up to
				42 mm, loose, subrounded, moist, no odor.

ARCADIS

Sample/Core Log

Boring/Wel GMSG-512 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Grace Baptist Church - 1295 Pyle Drive Drilling Started 10/12/05 Drilling Completed 10/12/05

Total Depth Drilled 4.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1126.45 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller Jay Helper Kristen

Prepared By K Waldbillig Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	4			Sand: Light to reddish brown, fine to medium grained.

ARCADIS

Sample/Core Log

Boring/Wel GMSG-513 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Grace Baptist Church Drilling Started 10/26/05 Drilling Completed 10/26/05

Total Depth Drilled 4.5 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Auger (hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1124.42 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper CA

Prepared By C. Anderson, K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1			Sand: Reddish brown, fine with some gravel.
1	4.5			Sand: Brown, well sorted, medium to fine, moist.

ARCADIS

Sample/Core Log

Boring/Wel GMSG-514 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Balsam St. Church - 324 S. Balsam

Drilling Started 10/26/05 Drilling Completed 10/26/05

Total Depth Drilled 4.9 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Auger (hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1120.27 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper CA

Prepared By C. Anderson, K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Sand: Light brown, medium to fine.
1.5	4.9			Sand: Darker reddish brown, coarse to medium, layer of compacted gravel at 3.5' down.

ARCADIS

Sample/Core Log

Boring/Well GMSG-515 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Larson's Custom Counters

Drilling Started: 4/20/06 Drilling Completed: 4/20/06

Total Depth Drilled: 4.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1113.3 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	3.0	--	--	Gravel: Reddish brown to brown, loose, well sorted rocks 1" - 2", semi saturated.
3.0	4.0	--	--	Sand: Reddish brown, trace gravel, poorly sorted, 1/2" - 1" rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-516 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Larson's Custom Counters

Drilling Started: 4/20/06 Drilling Completed: 4/20/06

Total Depth Drilled: 4.3 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1113.1 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	4"	--	--	Asphalt.
4"	2.25'	--	--	Gravel: Brown, coarse well sorted, 1" - 3" rocks.
2.25	3.6	--	--	Sand: Reddish brown, medium trace gravel, poorly sorted, saturated.
3.6	3.75	--	--	Clay: Stiff, dark brown, medium.
3.75	4.2	--	--	Sand: Reddish brown, medium, poorly sorted, trace gravel, saturated.
4.2	4.3	--	--	Clay: Yellowish orange to brown, medium stiff.

ARCADIS

Sample/Core Log

Boring/Well GMSG-517 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Larson's Custom Counters

Drilling Started: 4/27/06 Drilling Completed: 4/27/06

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1113.2 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	2.0	--	--	Sand: Light brown, coarse, trace gravel, well sorted, rock 1/2" - 2", very dry.
2.0	3.0	--	--	Sand: Reddish brown, coarse, mildly sorted, rocks 1/2" - 1" mild saturation.
3.0	5.0	--	--	Sand: Reddish brown, medium, well sorted, dark brown medium stiff clay chunks, saturated.

ARCADIS

Sample/Core Log

Boring/Well: GMSG-518 | Project/No.: Ford/Kingsford WI001095.0002 | Page 1 of 1

Site Location: Kingsford, Michigan, Dickinson Homes

Drilling Started: 11/1/05 | Drilling Completed: 11/1/05

Total Depth Drilled: 5.0 Feet | Hole Diameter: 2.75 inches | Type of Sample/Coring Device: Auger (hand)

Length and Diameter of Coring Device: Auger Bucket | Sampling Interval: continuous feet

Land-Surface Elev.: 1115.6 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hand Auger

Drilling Contractor: ARCADIS | Driller: JM/KW | Helper:

Prepared By: K. Waldbillig | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3			Sand: Reddish brown, medium, dense, loose with subangular rocks.
3	5			Sand: Reddish brown, fine to medium.

ARCADIS

Sample/Core Log

Boring/Well: GMSG-519 | Project/No.: Ford/Kingsford WI001095.0002 | Page 1 of 1

Site Location: Kingsford, Michigan, Dickinson Homes

Drilling Started: 11/1/05 | Drilling Completed: 11/1/05

Total Depth Drilled: 5.25 Feet | Hole Diameter: 2.75 inches | Type of Sample/Coring Device: Auger (hand)

Length and Diameter of Coring Device: Auger Bucket | Sampling Interval: continuous feet

Land-Surface Elev.: 1115.47 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hand Auger

Drilling Contractor: ARCADIS | Driller: JM/KW | Helper:

Prepared By: K. Waldbillig | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Sand: Reddish brown, coarse to medium, with subangular rocks.
1.5	3			Gravel: Reddish brown, coarse, with many subangular rocks.
3	4			Sand: Light brown, very fine, very loose.
4	5.25			Sand: Yellowish orange, fine to medium.

ARCADIS

Sample/Core Log

Boring/Wel GMSG-520 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes Drilling Started 11/1/05 Drilling Completed 11/1/05

Total Depth Drilled 4.75 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Auger (hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1115.63 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2			Sand: Reddish brown, coarse to medium, with subangular rocks.
2	3.5			Sand: Light brown, very fine, very loose.
3.5	4.75			Sand: Yellowish orange, fine to medium.

ARCADIS

Sample/Core Log

Boring/Well GMSG-521 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes

Drilling Started 11/3/05 Drilling Completed 11/3/05

Total Depth Drilled 4.6 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Auger (hand)

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1115.41 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.5			Sand: Dark brown, medium, dense, with subangular rocks.
3.5	4.0			Clay: Reddish brown, soft.
4.0	4.6			Sand: Reddish orange, medium to fine, loose, with a few subangular rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-522 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes

Drilling Started 11/1/05 Drilling Completed 11/1/05

Total Depth Drilled 4.6 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Auger (hand)

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1116.04 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller JM/KW Helper

Prepared By K. Waldbillig

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.5			Sand: Reddish brown, medium with subangular rocks.
2.5	4.6			Sand: Light brown, fine to medium.

ARCADIS

Sample/Core Log

Boring/Well: GMSG-523 | Project/No.: Ford/Kingsford WI001095.0002 | Page 1 of 1

Site Location: Kingsford, Michigan, Dickinson Homes

Drilling Started: 11/1/05 | Drilling Completed: 11/1/05

Total Depth Drilled: 5.2 Feet | Hole Diameter: 2.75 inches | Type of Sample/Coring Device: Auger (hand)

Length and Diameter of Coring Device: Auger Bucket | Sampling Interval: continuous feet

Land-Surface Elev.: 1115.68 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hand Auger

Drilling Contractor: ARCADIS | Driller: JM/KW | Helper: --

Prepared By: K. Waldbillig | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2			Sand: Reddish brown, medium with subanglar rocks.
2	4			Sand: Light brown, fine, very loose.
4	5.2			Clay: Reddish brown, soft, mottled.

ARCADIS

Sample/Core Log

Boring/Well GMSG-524 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes Drilling Started 11/1/05 Drilling Completed 11/1/05

Total Depth Drilled 5.25 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1116.24 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.5			Sand: Reddish brown, medium, dense with subangular rocks.
2.5	4.6			Sand: Yellowish/brown, very loose.
4.6	5.25			Sand: Reddish brown, fine to medium, medium dense.

ARCADIS

Sample/Core Log

Boring/Well GMSG-525 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes

Drilling Started 11/1/05 Drilling Completed 11/1/05

Total Depth Drilled 5.6 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuou feet

Land-Surface Elev. 1116.19 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller JM/KW Helper --

Prepared By K. Waldbillig

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3			Sand: Dark to reddish brown, medium, dense with angular rocks.
3	4			Sand: Brownish, fine to medium.
4	5.6			Clay: Reddish brown, soft, mottled.

ARCADIS

Sample/Core Log

Boring/Well GMSG-526 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan, Dickinson Homes

Drilling Started: 11/1/05 Drilling Completed: 11/1/05

Total Depth Drilled: 4.3 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1116.15 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JM/KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Sand: Reddish brown, medium to fine with subanuglar rocks.
1.5	3			Sand: Light brown, fine, very loose.
3	4.3			Gravel: Brown/red, fine, mottled.

ARCADIS

Sample/Core Log

Boring/Well GMSG-527 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes

Drilling Started 11/3/05 Drilling Completed 11/3/05

Total Depth Drilled 3.6 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1116.06 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.6			Sand: Reddish brown, medium dense, coarse with many subangular cobbles.

ARCADIS

Sample/Core Log

Boring/Well GMSG-528 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes

Drilling Started 10/28/05 Drilling Completed 10/28/05

Total Depth Drilled 4.75 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1121.60 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller JM/KW Helper --

Prepared By K. Waldbillig

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3			Sand: Light brown, medium to fine.
3	3.6			Clay: Yellowish orange, stiff.
3.6	4.5			Black tar-like residue mixed with stiff yellowish orange clay chunks, very aromatic.
4.5	4.75			Sand: Orangish, fine, mixed with black tar-like residue and yellowish orange clay.

ARCADIS

Sample/Core Log

Boring/Well GMSG-529 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes Drilling Started 10/28/05 Drilling Completed 10/28/05

Total Depth Drilled 2.40 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.33 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.4			Gravel: Reddish brown, with medium to small angular rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-530 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Dickinson Homes

Drilling Started 10/28/05 Drilling Completed 10/28/05

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1121.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller JM/KW Helper --

Prepared By K. Waldbillig

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.2			Sand: Reddish brown, fine to medium, with medium to large angular rocks.
2.2	2.5			Clay: Reddish brown, medium stiff, mixed with black tar-like residue, stiff clay.
2.5	4.75			Clay: Reddish brown, medium stiff, very aromatic.
4.75	5.2			Tar-like residue, wet hard clay, very black and aromatic.

ARCADIS

Sample/Core Log

Boring/Well GMSG-531 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan, MBM Office - Breen Avenue

Drilling Started: 11/16/05 Drilling Completed: 11/16/05

Total Depth Drilled: 8.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1121.85 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: CA

Prepared By: K Waldbillig Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.8			Grass/Topsoil: Dark brown mottled reddish brown, fine to medium, well sorted,
				very cohesive.
1.8	2.6			Clay: Orange-brown, very stiff, saturated.
2.6	4.8			Sand: Reddish brown, fine to medium sand, trace gravel subrounded 025"-0.5", well
				sorted, slight cohesiveness.
4.8	6.8			Sand: Light brown, trace coarse gravel, well sorted, low to no cohesiveness.
6.8	7.8			Sand: Light brown, fine to medium sand, trace fine gravel, subrounded 0.1"-0.25",
				well sorted, low to no cohesiveness.
7.8	8.2			Sand: Light brown, medium to coarse sand, mixed gravel, subrounded 0.25-0.5",
				poorly sorted, low cohesiveness.

ARCADIS

Sample/Core Log

Boring/Well GMSG-532 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan, MBM Office - Breen Avenue

Drilling Started: 11/16/05 Drilling Completed: 11/16/05

Total Depth Drilled: 8.25 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1121.87 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: CA

Prepared By: K Waldbillig Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.6			Grass/Topsoil: Dark brown mottled reddish brown, fine to medium, well sorted, very
				cohesive.
1.6	3.4			Clay: Orange-brown, very stiff, saturated.
3.4	6.0			Sand: Reddish brown, fine to medium sand, moderate gravel subrounded 0.25-0.5",
				well sorted.
6.0	8.25			Sand: Light brown, fine to medium sand, trace gravel subrounded 0.1-0.25", well
				sorted, saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-533 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, MBM Office - Breen Avenue

Drilling Started 11/16/05 Drilling Completed 11/16/05

Total Depth Drilled 8.2 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1121.94 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller KW Helper CA

Prepared By K Waldbillig

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.6			Grass/Topsoil: Dark brown mottled reddish brown, fine to medium grain, well sorted,
				very cohesive.
1.6	3.0			Clay: Orange-brown, very stiff, saturated.
3.0	5.6			Sand: Reddish brown, fine to medium sand, moderate gravel subrounded 0.25-0.5",
				well sorted.
5.6	8.2			Sand: Light brown, fine sand, trace gravel subrounded 0.25-0.5", well sorted, low to
				no cohesiveness.

ARCADIS

Sample/Core Log

Boring/Well GMSG-534 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, MBM Storage - 721 N. Balsam Street

Drilling Started 10/27/05 Drilling Completed 10/27/05

Total Depth Drilled 4.75 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1114.73 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller JM/KW Helper --

Prepared By K. Waldbillig

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	4			Sand: Medium to fine with coarse gravel intermixed with light reddish brown sand.
4	4.75			Sand: Brown, medium to fine.

ARCADIS

Sample/Core Log

Boring/Well GMSG-535 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan, MBM Storage - 721 N. Balsam Street

Drilling Started: 10/27/05 Drilling Completed: 10/27/05

Total Depth Drilled: 4.6 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1114.65 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JM/KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.5			Sand: Reddish brown, gravelly, with subangular rocks.
3.5	4.6			Sand: Brown, fine to medium, with some mottled yellowish brown clay.

ARCADIS

Sample/Core Log

Boring/Well GMSG-536A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan, Dickinson Homes Drilling Started: 11/11/05 Drilling Completed: 11/11/05

Total Depth Drilled: 36 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Split spoon

Length and Diameter of Coring Device: 2' Splitspoon, 2" diameter Sampling Interval: continuous feet

Land-Surface Elev.: 1116 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Driller: Randy Ochs Helper: Dan Absolon

Prepared By: Jill Flater Hammer Weight: 300 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	2.41/	1.4	4 4 4 5	0-0.4' Topsoil/Fill: Brown (7.5 YR 4/4).
		13.14			0.4-0.9' Sand: Strong brown (7.5 YR 4/6) silty, very fine to fine sand, slightly
					cohesive, trace medium sand, moist, no odor, moderately well sorted.
					0.9-1.4' Sand: Strong brown (7.5 YR 5/6) fine sand, well sorted, loose, moist,
					no odor.
2	4	3.10/	1.2	4 5 5 6	0-0.3' Sand: Strong brown (7.5 YR 4/6) silty, very fine to fine sand, trace
		13.10			medium to coarse, slight trace fine gravel, subangular to subround, 1/2" (up
					to) fine gravel.
					0.3-1.2' Sand: Strong brown (7.5 YR 5/6) fine sand, uniform, well sorted,
					moist, loose, varved in interbeds uniformly every 1/2", looks to be color
					not size.
4	6	2.80/	1	5 10	0-0.3' Sand: Strong brown (7.5 YR 4/6), fine sand, trace silt, slight trace
		12.04		15 16	medium to coarse sand, loose, moist, no odor, moderately well sorted.
					0.3-0.6' Sand: Brown (7.5 YR 5/4) very fine to fine sand, loose, moist, sharp
					contact with above, moderately well sorted, well sorted.
					0.6-0.8' Weathered rock: Dark gray (10 YR 4/1) micaceous weathered rock
					and sand very fine to coarse sand, very poorly sorted, some angular to
					subangular fine gravel up to 1/4".
					0.8-1.0' Sand: Strong brown (7.5 YR 4/6) very fine to coarse sand, some
					very fine to fine gravel up to 1", subangular to subround, loose, moist, no
					odor, very poorly sorted.
6	8	3.76/	1.3	5 8	0-0.5' Sand: Strong brown (7.5 YR 4/6) very fine to fine sand, trace medium,
		12.50		12 15	trace silt, trace fine gravel subangular to subround up to 1" most <1/4", loose,
					moist, moderately sorted, no odor, little subangular to subround gravel in
					lower 0.1'.
					0.5-0.7' Sand: Brown (7.5 YR 5/4) fine to medium sand, little coarse, trace
					fine gravel subangular to subround up to 1/2" diameter, most <1/4", loose,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-536A/B Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					moist, poorly sorted, no odor.
					0.7-1.3' Sand: Brown (7.5 YR 5/4) fine to medium, trace coarse sand, loose,
					moderately well sorted, moist, no odor.
8	10	4.70/	1	5 10	0-0.3' Sand: Strong brown (7.5 YR 4/6) very fine sand, trace fine sand, some
		12.04		12 15	silt, slight cohesive to loose, moist, no odor, moderately sorted.
					0.3-1' Sand: Brown (7.5 YR 4/4) fine to medium sand, trace coarse, trace
					gravel up to 1-1/4", subangular to subround, loose, poorly sorted, moist, no
					odor, most gravel <1/2".
10	12	4.31/	0.5	5 10	0-0.4' Sand: As above.
		12.55		12 11	0.4-0.5' Sand: Brown (7.5 YR 4/4) medium sand, trace fine, well sorted,
					moist, loose.
					0.5-0.6' Sand: Brown (7.5 YR 4/4) fine sand, some medium, trace coarse to
					very coarse, poorly sorted, moist, loose, no odor.
12	14	5.70/	1.1	5 7 9 11	0-1.1' Sand: Light brown (7.5 YR 6/4) fine sand, some medium to coarse,
		12.96			poorly sorted, loose, moist, no odor.
14	16	4.83/	0.9	5 6 6 7	0-0.4' Sand: Brown (7.5 YR 5/4) very fine to fine sand, some medium to
		12.22			coarse, slight trace fine gravel up to 1/4" diameter, subangular to subround,
					poorly sorted, moist, loose.
					0.4-0.7' Sand: Brown (7.5 YR 4/3) fine to medium sand, very poorly sorted,
					moist, loose, no odor, some coarse to very coarse sand.
					0.7-0.9' Sand: Color as above, fine sand, some medium to coarse, poorly
					sorted, loose, moist, no odor.
16	18	5.38/	0.4	23 17	0-0.4' Sand: Brown (7.5 YR 4/4) fine sand, little medium sand, trace coarse,
		12.41		16 15	poorly sorted, trace silt to very fine sand, loose, moist.
18	20	6.52/	0.4	14 14	0-0.3' Sand: Brown (7.5 YR 4/4) silty, very fine sand, moderately sorted other
		12.68		18 16	than trace fine gravel, subround up to 1/2", loose to slight cohesion, moist.
					0.3-0.4' Sand: brown (7.5 YR 4/4) fine to medium sand, some coarse to very
					coarse trace fine gravel, subangular to subround up to 1/4", moist, trace silt,
					loose, poorly sorted, trace black staining at top, no odor.
20	22	9.51/	1.2	8 6 4 3	0-0.2' Sand: As above.
		14.89			0.2-0.7' Sand: Dark brown (7.5 YR 3/2) fine to coarse sand, trace very coarse
					to fine gravel up to 3/4" most <1/4", subangular to subround, moist, poorly
					sorted, loose, no odor, coarsens with depth.
					0.7-1.2' Sand: Dark brown (7.5 YR 3/2) fine to very coarse sand, some gravel
					up to 1-1/4", subangular to subround, most <1", loose, moist, no odor, very
					poorly sorted, trace silt, rock lodged in shoe.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-536A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
22	24	5.24/	0.2	13 14	0-0.2' Sand: Dark brown (7.5 YR 3/3) fine to medium sand, little to some
		11.12		10 11	coarse to very coarse, trace fine gravel, subround, up to 1/4", loose, poorly
					sorted, moist (rock lodged in shoe) trace silt, silt more than likely from above,
					slough.
24	26	7.23/	0.8	5 5 6 7	0-0.2' Sand: As above.
		12.78			0.2-0.4' Sand: As above, minus the silt, coarsens slightly with depth.
					0.4-0.8' Sand: Brown (7.5 YR 4/4) fine to medium sand, some very fine, some
					coarse to very coarse, trace fine gravel up to 1" diameter most <1/2",
					subround, moist, loose, very poorly sorted.
25	28	4.77/	1.3	12 14	0-0.2' Sand: As above, trace silt, most likely from above slough.
		10.80		13 11	0.2-0.8' Sand: As above (0.4-0.8 of 24-26) trace silt, little gravel, up to 1"
					most >1/2".
					0.8-1.3' Sand: Brown (7.5 YR 4/3) fine sand, some medium to coarse, trace
					very coarse sand to fine gravel <1/4", subround, loose, moist, poorly sorted.
28	30	6.29/	0.7	6 4 5 6	0-0.7' Sand: Brown (&.5 YR 4/4) fine to medium sand, trace to little coarse,
		11.72			slight trace gravel, subangular to subround up to 1/2" diameter, poorly
					sorted, loose, wet water at approximately 28 ft bgs.
30	32	8.71/	1.3	10 16	0-0.5' Sand: As above, trace coarse, trace silt at bottom approximately 0.1',
		12.78		17 16	sharp contact with below.
					0.5-0.6' Clay: Yellow red (5 YR 4/6) very soft, plastic when worked, sticky,
					wet, cohesive.
					0.6-1.1' Silt: Brown (7.5 YR 4/4) smooth uniform, medium stiff, cohesive to
					somewhat crumbly.
					1.1-1.3' Clay: Yellow red (5 YR 4/6) soft to somewhat firm, platey on broken
					surface, plastic when worked.
32	34	--	1	20 25	0-0.2' Clay: As above, varved grainy silt interbeds at bottom, wet.
				25 30	0.2-1.0' Silt: Brown (7.5 YR 4/2) smooth, clay and grainy silt varves
					throughout, soft, somewhat crumbly to cohesive, wet.
34	36	8.02/	0.1	35 45	0-0.1' Sand: Very fine, silty, moderately well sorted, trace medium to coarse,
		20.04		33 39	very wet, loose, pretty sure its slough.
					EOB @ 36'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-537 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, MBM Truck Rental - 1300 W. Breitung

Drilling Started 10/26/05 Drilling Completed 10/26/05

Total Depth Drilled 5.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1116.85 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Sand: Dark brown, medium to fine with small stones.
1.5	3.0			Sand: Dark reddish brown fine.
3.0	5.0			Clay: Mottled reddish/dark brown, medium stiff.

ARCADIS

Sample/Core Log

Boring/Well GMSG-538 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan, MBM Truck Rental - 1300 W. Breitung

Drilling Started: 10/27/05 Drilling Completed: 10/27/05

Total Depth Drilled: 4.6 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1116.53 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JM/KW Helper:

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Sand: Reddish brown, medium to coarse with gravel throughout.
1.5	3.3			Sand: Reddish brown, medium with small cobbles.
3.3	4.0			Clay: Reddish to dark brown, mottled, medium, stiff.
4	4.6			Sand: Reddish brown, medium to fine.

ARCADIS

Sample/Core Log

Boring/Wel GMSG-539 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, MBM Truck Rental - 1300 W. Breitung

Drilling Started 10/27/05 Drilling Completed 10/27/05

Total Depth Drilled 5.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1117.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM/KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	0.15			Topsoil.
0.15	0.4			Black top.
0.4	3.0			Sand: Reddish brown, medium to fine with gravel through out.
3.0	4.0			Clay: Red, medium stiff.
4.0	5.0			Sand: Yellow-brown, medium to fine.

ARCADIS

Sample/Core Log

Boring/Well: GMSG-542 Project/No.: Ford/Kingsford WI001095.0002 Page: 1 of 1

Site Location: Kingsford, Michigan, Julie's TopHat Studio

Drilling Started: 11/15/05 Drilling Completed: 11/15/05

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket 2' x 2" Sampling Interval: continuous feet

Land-Surface Elev.: 1133.22 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: CA

Prepared By: K Waldbillig Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.5			Sand: Reddish brown, medium grain, trace gravel, subrounded to subangular, poorly
				sorted, moderately cohesive.
2.5	3.5			Sand/Silt: Light brown, fine to medium, trace gravel subangular from 0.25 to 0.5"
				diameter, very loose.
3.5	5.0			Sand: Reddish brown/black, fine to medium sand, trace silt, well sorted, low
				cohesiveness.

ARCADIS

Sample/Core Log

Boring/Well GMSG-540 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - NLJ

Drilling Started 8/10/06 Drilling Completed 8/10/06

Total Depth Drilled 11.3 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1123.1 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	1.25	--	--	Grass and topsoil: Silt, dark brown, organic, poorly sorted, non-cohesive, loosely packed, dry.
1.25	9.7	--	--	Sand: Light brown, medium, poorly sorted, rocks 1/2-4", noncohesive, approximately 9.4' went through a layer of clay, light brown with some gray, crumbly slight moisture.
9.7	10.6	--	--	Sand: Light brown/red, coarse, some sorting, noncohesive, high moisture.
10.6	11.25	--	--	Sand: Light brown, fine, some sorting, noncohesive, moderate moisture, damp to the touch.

ARCADIS

Sample/Core Log

Boring/Well GMSG-541 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - NLJ

Drilling Started: 8/15/06 Drilling Completed: 8/15/06

Total Depth Drilled: 11.1 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.3 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JE Helper: --

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.8	--	--	Grass and topsoil: Sand, dark brown, trace silt, trace clay, poorly sorted, noncohesive, dry.
0.80	8.1	--	--	Sand: Light brown, medium to coarse, poorly sorted with rocks 1/2-3.5" diameter, subrounded, noncohesive, moderate moisture (damp).
8.10	10.6	--	--	Sand: Various light/dark brown, coarse,trace clay, trace gravel, poorly sorted, noncohesive, high moisture.
10.6	11.1	--	--	Sand: Light brown, fine, some sorting, non-cohesive, high moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-543 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Julie's TopHat Studio

Drilling Started 11/15/05 Drilling Completed 11/15/05

Total Depth Drilled 3.25 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket 2' x 2" Sampling Interval continuous feet

Land-Surface Elev. 1132.74 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper CA

Prepared By K Waldbillig Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.25			Sand: Reddish brown, medium to coarse sand, moderate gravel subangular 0.5-0.75" diameter, poorly sorted, moderate cohesiveness, no odor.

ARCADIS

Sample/Core Log

Boring/Well GMSG-543R Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan, Julie's TopHat Studio Drilling Started: 11/29/05 Drilling Completed: 11/29/05

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1132.74 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JM Helper: KW

Prepared By: K Waldbillig Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.2			Clay: Light brown, medium stiff, saturated.
2.2	4.0			Sand: Light reddish brown, trace gravel, 0.25-0.5" diameter subround, low
				saturation level.
4.0	5.0			Sand: Reddish orange, trace gravel, 0.25-0.5" diameter subangular to subround,
				well sorted, low saturation level.

ARCADIS

Sample/Core Log

Boring/Well GMSG-544 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Julie's TopHat Studio Drilling Started 11/15/05 Drilling Completed 11/15/05

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1132.96 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper CA

Prepared By K Waldbillig Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.2			Sand: Light to reddish brown, moderate gravel 0.5" to 0.75" diameter, subrounded
				to subangular, medium to coarse sand, well sorted.
3.2	5.2			Sand: Reddish brown mottled light brown silt, poorly sorted, very loose, low
				cohesiveness.

ARCADIS

Sample/Core Log

Boring/Well GMSG-545 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan, Superiorland Contracting

Drilling Started: 11/17/05 Drilling Completed: 11/17/05

Total Depth Drilled: 5.6 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1121.81 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JM Helper: KW

Prepared By: K Waldbillig Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.4			Sand: Dark brown, moderate gravel subrounded to subangular 0.5-1.0" diameter,
				well sorted, low to no cohesiveness.
1.4	2.0			Asphalt layer.
2.0	4.0			Sand: Dark brown, heavy subangular gravel with slate chunks 1-2" diameter, well
				sorted, low to no cohesiveness.
4.0	5.6			Sand: Dark brown, trace gravel/silt, poorly sorted, moderate cohesiveness, moderately
				saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-546 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Superiorland Contracting Drilling Started 11/17/05 Drilling Completed 11/17/05

Total Depth Drilled 5.4 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.97 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM Helper KW

Prepared By K Waldbillig Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.25			Sand: Dark brown, little gravel subrounded to subangular 0.5-2.0" in diameter, low
				to no cohesiveness, saturated.
2.25	4.4			Sand/Silt: Reddish brown, fine to medium sand, high cohesiveness.
4.4	5.4			Sand: Light brown fine to medium sand, trace gravel subrounded, 0.1-0.5" diameter,
				poorly sorted, saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-547 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, Superiorland Contracting Drilling Started 12/2/05 Drilling Completed 12/2/05

Total Depth Drilled 5.4 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.94 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM Helper KW

Prepared By K Waldbillig Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Grass/Topsoil: Reddish to dark brown loamy, little gravel 0.5 to 0.75" diameter,
				poorly sorted.
1.5	2.5			Black, waste-like hard solid material, no odor.
2.5	3.7			Light gray ash-like material, very silty, slight odor.
3.7	5.4			Sand, reddish/orange, very fine, well sorted, no odor.

ARCADIS

Sample/Core Log

Boring/Well GMSG-548 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan, KPSD

Drilling Started 11/18/05 Drilling Completed 11/18/05

Total Depth Drilled 4.7 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1131.49 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper CA

Prepared By K Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	3.5			Gravel: Dark brown, subrounded to subangular, 0.5"-1.5" diameter, well sorted,
				low cohesiveness.
3.5	4.7			Sand/Gravel: Light with mottled dark brown, subround to subangular 0.5"-0.75",
				well sorted, saturated, low to no cohesiveness.

ARCADIS

Sample/Core Log

Boring/Well GMSG-549 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan, KPSD

Drilling Started 11/18/05 Drilling Completed 11/18/05

Total Depth Drilled 5.1 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1131.36 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper CA

Prepared By K Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	4			Gravel/Sand: Dark reddish brown, subround to subangular, 0.25"-0.5" diameter,
				medium to coarse sand, moderately sorted, low to moderate cohesiveness.
4	5.1			Sand, reddish brown, fine to medium, poorly sorted, high cohesiveness, saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-550 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - KPSD

Drilling Started 11/28/05 Drilling Completed 11/28/05

Total Depth Drilled 10.8 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1135.88 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller JM Helper KW

Prepared By K Waldbillig

Hammer Weight

Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	7.5			Sand/Gravel: Reddish brown, little gravel, 0.5-0.75" diameter subangular to subround,
				well sorted, semi-saturated.
7.5	10.8			Sand: Reddish brown, trace gravel, 0.25-0.5" diameter, well sorted, low saturation
				level.

ARCADIS

Sample/Core Log

Boring/Well GMSG-551 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan, KPSD

Drilling Started: 11/18/05 Drilling Completed: 11/18/05

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1125.1 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: CA

Prepared By: K Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.5			Sand: Dark/light brown, saturated (mud) standing water in hole.
2.5	4.2			Sand: Light brown, well sorted, high cohesiveness, saturated.
4.2	5.0			Sand: Reddish brown, poorly sorted, high cohesiveness.

ARCADIS

Sample/Core Log

Boring/Well GMSG-552 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan, KPSD Drilling Started 11/21/05 Drilling Completed 11/21/05

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1125.11 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper CA

Prepared By K Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	2.5			Sand: Dark brown, trace gravel 0.5"-0.75" diameter, subround to subangular, well
				sorted, low cohesiveness.
2.5	4.2			Sand: Light brown, poorly sorted, high cohesiveness.
4.2	5.2			Sand/Clay: Reddish brown, high cohesiveness, clay medium stiff.

ARCADIS

Sample/Core Log

Boring/Well: GMSG-553 | Project/No.: Ford/Kingsford WI001095.0002 | Page: 1 of 1

Site Location: Kingsford, Michigan - Extreme Fitness | Drilling Started: 11/29/05 | Drilling Completed: 11/29/05

Total Depth Drilled: 5.25 Feet | Hole Diameter: 2.75 inches | Type of Sample/Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket | Sampling Interval: continuous feet

Land-Surface Elev.: 1121.43 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hand Auger

Drilling Contractor: ARCADIS | Driller: JM | Helper: KW

Prepared By: K Waldbillig | Hammer Weight: | Hammer Drop: ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Grass/Topsoil.
1.5	2.2			Sand: Reddish brown mottled black topsoil, trace gravel 0.25-0.5" diameter subround
				to subangular, poorly sorted, low saturation level.
2.2	5.25			Sand: Reddish brown, little gravel 0.5-0.75" diameter subround to subangular, poorly
				sorted, low saturation level.

ARCADIS

Sample/Core Log

Boring/Well GMSG-554 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Extreme Fitness Drilling Started 11/29/05 Drilling Completed 11/29/05

Total Depth Drilled 5.25 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.06 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JM Helper KW

Prepared By K Waldbillig Hammer Weight Hammer Drop ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1.5			Grass/Topsoil.
1.5	2.9			Clay: Reddish mottled brown, medium stiff, saturated.
2.9	5.25			Sand: Reddish brown, trace gravel 0.25-0.5" diameter subangular to subround, well sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-555 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Rice Juice

Drilling Started: 12/2/05 Drilling Completed: 12/2/05

Total Depth Drilled: 4.9 Feet Hole Diameter: 2.75 inches Type of Sample/Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1114.79 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JM Helper: KW

Prepared By: K Waldbillig Hammer Weight: Hammer Drop: ins.

Sample/Core Depth (feet below land surface)

From	To			Sample/Core Description
0	1			Grass, topsoil.
1	3.5			Sand: Light brown, little gravel 0.25-0.5" diameter, subround to subangular, well sorted.
3.5	4.9			Sand: Reddish brown, trace gravel 0.25-0.5" diameter, well sorted, low saturation level.

ARCADIS

Sample/Core Log

Boring/Well GMSG-556 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Rice Juice Company

Drilling Started: 5/26/06 Drilling Completed: 5/26/06

Total Depth Drilled: 5.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1114.8 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JE Helper:

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.75	--	--	Top Soil. Sandy, dry.
0.75	3.4	--	--	Clay: Dark brown, chunks silty, some sand, reddish brown, rock 1/2" -1".
3.4	5.2	--	--	Sand: Reddish brown, some rocks 1/2", moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-557 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (Lake Shore, Inc.) Drilling Started: 2/27/06 Drilling Completed: 2/28/06

Total Depth Drilled: 39 Feet Hole Diameter: 8 inches Type of Sample/Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1111.98 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company Driller: Doug Lantagne Helper: Jim Van Laanen

Prepared By: Jill Flater Hammer Weight: 140 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	1.5	-4.28/	1	14 9 7	0-0.6' Silt: Topsoil, dark brown (7.5 YR 3/3) silt with organics, roots/grass,
		1.16			frozen, some fine sand.
					0.6-1.0' Sand: Strong brown (7.5 YR 4/6), very fine to fine grained sand,
					trace silt, trace medium to coarse grain sand, trace fine subangular gravel
					up to 1/4" diameter, poorly sorted, loose, moist, no odor.
1.5	3	-3.28/	0.9	7 8 14	0-0.2' Sand: Light brown (7.5 YR 6/4) fine grain, little medium, trace coarse
		0.78			grain, trace fine gravel up to 1/4" angular to subangular, poorly sorted,
					loose, moist to dry, no odor.
					0.2-0.9' Sand: Strong brown (7.5 YR 5/6), very fine to fine grain, well sorted,
					loose, moist, no odor.
3	4.5	-2.98/	1	7 10 8	0-1.0' Sand: Strong brown (7.5 YR 5/6) fine grain, trace to little medium
		-1.54			sand in layers approximately 1/4" thick, trace to little silt, some very fine
					grain, trace fine angular to subangular gravel up to 1/2" diameter, silt
					amount varies throughout in layers, over all moderately to poorly sorted,
					loose, moist, no odor.
4.5	6	-1.98/	1	3 2 2	0-0.4' Sand: As above, layering less prominent, little silt.
		-0.47			0.4-1.0' Sand: Strong brown (7.5 YR 4/6) fine grain, little very fine grain
					sand, trace medium, no silt, slight trace fine to coarse gravel, subangular to
					subround up to 1" diameter, poorly sorted, loose, moist, no odor.
6	7.5			2 2 1	No recovery.
7.5	9	-2.06/	0.20	4 4 6	0-0.2' Sand: As above, color darker, brown (7.5 YR 4/4) little silt, may be
		5			partial slough since barely any recovery.
9	10.5	-1.45/	1	7 7 10	0-0.2' Sand: (7.5 YR 4/4) fine grain, little very fine, no silt, poorly sorted,
		5.92			trace medium, slight trace fine subround gravel up to 1/4".
					0.2-1.0' Sand: Brown (7.5 YR 5/4) fine to medium grain, trace coarse,
					moderately well sorted, trace fine to coarse subangular to subround gravel

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-557 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					in bottom 0.2' up to 1" diameter, loose, no odor, coarsens with depth, moist.
10.5	12	4.6/	0.7	30 10 9	0-0.4' Sand: Brown (7.5 YR 5/4) medium grain, some coarse to very coarse
		10.83			grain, little fine gravel angular to subround up to 1/4" diameter, poorly
					sorted, loose, moist, no odor.
					0.4-0.7' Sand: Brown (7.5 YR 4/4), coarse to very coarse grain, trace
					medium grain sand, trace fine angular to subround gravel up to 1/4", poorly
					sorted, loose, moist, no odor.
12	13.5	7.02/	0.7	4 11 10	0-0.4' Sand: Brown (7.5 YR 4/4), medium grain, trace coarse grain, trace
		12.22			fine to coarse subangular to subround gravel, most up to 1/2" diameter,
					poorly sorted, two pieces coarse gravel from 0.2-0.4 subround 1.5"
					diameter, loose, moist, no odor.
13.5	15	2.78/	0.8	5 7 7	0-0.8' Sand: Brown (7.5 YR 5/4), medium to very coarse grain, coarsens with
		7.9			depth, trace to little fine gravel throughout subangular to subround up to
					1/4" diameter, gravel increases with depth, trace coarse gravel 0.7-0.8'
					subround up to 1.5" diameter, poorly sorted, loose, no odor.
15	16.5	11.12/	1	6 10 10	0-0.5' Sand: As above.
		16.99			0.3-0.4' Sand: Dark brown (7.5 YR 3/4) very fine grain, silty, well sorted,
					moist, somewhat loose.
					0.5-1.0' Sand: Light brown (7.5 YR 6/3) fine grain, little medium, trace
					coarse, poorly sorted, loose, moist, no odor, little fine subangular to
					subround gravel 0.6-0.7 up to 1/4" diameter.
16.5	18	19.6/	0.7	7 8 9	0-0.1' Sand: As above, fine grain.
		28.3			0.1-0.7' Sand: Brown (7.5 YR 5/4) medium grain, trace fine grain sand,
					trace to little coarse grain, coarsens with depth, poorly sorted slight trace
					subangular to subround <1/4" diameter gravel, loose, moist, no odor.
18	19.5	3.2/	0.8	6 11 12	0-0.8' Sand: Brown (7.5 YR 5/3) medium grain, trace fine grain, little coarse
		7.5			to very coarse, poorly sorted, trace fine to coarse, subangular to subround
					gravel up to 1" diameter, loose, no odor, moist.
19.5	21	5.1/	1	6 8 10	0-0.4' Sand: As above.
		10.3			0.4-0.5' Sand: Fine grain, well sorted, loose, moist, no odor.
					0.5-1.0' Sand/Gravel: Dark brown (7.5 YR 3/2) fine to very coarse sand and
					fine gravel subangular to subround up to 1/2" diameter, very poorly sorted,
					loose, moist, no odor.
21	23	18.8/	1.1	9 9 11 11	0-0.5' Sand: Brown (7.5 YR 4/3) medium grain, trace fine grain sand, trace
		18.5			coarse grain sand, trace angular to subround fine gravel up to 1/4" diameter,
					poorly sorted, moist, loose, no odor.
					0.5-1.1' Sand/Gravel: Brown (7.5 YR 4/4) fine to coarse sand and fine to
					coarse gravel, gravel up to 1-1/2" diameter most <1"angular to subround,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-557 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					very poorly sorted, loose, moist, no odor.
23	25	19.5/	0.7	2 5 14 14	0-0.5' Sand/Gravel: As above.
		16			0.5-0.6' Rock/Gravel: Broken angular pieces >1/2" diameter, broken in tabs,
					phyllite.
					0.6-0.7' Sand: Brown (7.5 YR 4/4) medium grain, trace coarse, moderately
					sorted, slight trace fine gravel <1/4"subround, loose, moist, no odor
					(phyllite/slate stuck in bottom of shoes).
25	27	12.7/	1.2	9 12 18 25	0-0.1' Sand: As above, medium grain.
		6.2			0.1-1.2' Sand: Light reddish brown (5 YR 6/4) very fine grain, silty, uniform/
					homogeneous, moist, loose, no odor, well sorted.
27	29	12.3/	1.5	9 11 12 14	0-1.0' Sand: As above, very fine grain, silty.
		10.09			1.0-1.5' Silt: Brown (7.5 YR 5/4) grainy silt, trace very fine sand, somewhat
					loose, moist, no odor, soft.
29	31	10.09/	1.3	10 14 16 21	0-0.2' Silt: As above, grainy.
		-2.13			0.2-1.3' Sand: Light reddish brown (5 YR 6/4) very fine grain, silty,
					homogeneous, loose, moist, well sorted, no odor.
31	33	-2.48/	0.4	18 21 30 25	0-0.1' Rock: 1-1/2" diameter subround gravel, single piece, broken slightly
		-9			by spoon.
					0.1-0.4' Sand/Silt: Sand, Light reddish brown (5 YR 6/4); silt Brown (7.5 YR
					5/4), interbedded varved to 1/8" layers of silty very fine grain sand and sandy
					grainy silt, uniformly layered throughout, well sorted very fine sand, loose to
					somewhat loose.
33	35	1.13/	1.5	8 16 20 27	0-0.1' Sand/Silt: As above.
		-6.3			0.1-0.8' Sand: Light reddish brown (5 YR 6/4) very fine grain, silty, loose,
					coarsens slightly with depth, well sorted, loose, moist, no odor.
					0.8-1.5' Sand: Light reddish brown (5 YR 6/4) very fine grain, trace silt, well
					sorted, loose, moist, no odor.
35	37	0.67/	1.5	9 16 21 29	0-1.5' Sand: As above, 0-1.3' moist, 1.3-1.5' moist to wet.
		-7.12			
37	39	-1.53/	1.3	10 16 22 26	0-1.3' Sand: Reddish brown (5 YR 5/4) very fine grain, trace fine grain sand,
		-11			no silt, wet, loose, no odor, well sorted.
					EOB @ 39'

ARCADIS

Sample/Core Log

Boring/Well GMSG-558 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 4

Site Location: Kingsford, Michigan (Lake Shore, Inc.) Drilling Started: 2/28/06 Drilling Completed: 2/28/06

Total Depth Drilled: 38 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous 2 feet

Land-Surface Elev.: 1112.03 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company Driller: Doug Lantagne Helper: Jim Van Laanen

Prepared By: Jill Flater Hammer Weight: 140 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	-2.7/	0.9	6 5 9 14	0-0.9' Silt: Dark brown (7.5 YR 3/3) smooth, trace fine to medium grain
		-5.3			sand, trace organics (roots/grass), 0-0.5' frozen, otherwise somewhat loose,
					no odor, moist, soft (topsoil).
2	4	-2.7/	1.7	6 10 11 11	0-0.2' Silt: As above.
		-5.8			0.2-0.5' Sand: Strong brown (7.5 YR 4/6) fine to coarse grain, trace very fine,
					trace fine gravel angular to subround up to 1/2" diameter, poorly sorted,
					loose, moist to dry, no odor, sharp contact with below.
					0.5-1.1' Silt: Very dark brown (7.5 YR 2.5/2) smooth, sandy, fine grain sand,
					trace medium grain sand, somewhat firm, crumbly to somewhat loose
					when worked, moist, no odor sharp contact with above and below.
					1.1-1.5' Silt: Strong brown (7.5 YR 4/6) smooth, little fine sand, medium
					firm, crumbly when worked, moist, no odor.
					1.5-1.7' Sand: Strong brown (7.5 YR 5/6) very fine to fine grain sand,
					some silt, slight trace medium grain sand, well sorted, loose, moist.
4	6	-2.8/	1.0	6 7 9 16	0-0.6' Sand: As above, very fine to fine grain, trace silt.
		-6.2			0.6-1.0' Sand: As above, Strong brown (7.5 YR 4/6), color change, some
					silt, little very coarse grain sand from 0.6-0.7, sharp color contact with
					above, moist, loose, no odor.
6	8	-4.3/	1.2	11 15 18 14	0-0.2' Sand: Strong brown (7.5 YR 5/6) very fine to fine grain sand, trace
		-8.5			silt, well sorted, loose, moist, no odor.
					0.2-1.2' Sand/Gravel: Strong brown (7.5 YR 4/6) fine to very coarse grain
					sand and fine to coarse angular to subround gravel, trace very fine grain
					sand, gravel up to 2" diameter, very poorly sorted, loose, moist, no odor.
					1.1-1.2' Sand: Brown (7.5 YR 5/4) fine grain, some medium grain sand,
					trace fine gravel <1/4" diameter sub angular to subround, moderately to
					poorly sorted, loose, moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-558 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
8	10	0.03/	1.2	8 10 11 11	0-0.1' Sand: As above, sharp contact with below.
		-2.2			0.1-0.3' Sand: Brown (7.5 YR 5/4) fine grain, little very fine, well sorted,
					loose, moist.
					0.3-0.6' Sand: Color as above, very fine to medium grain, poorly sorted,
					loose, moist, trace fine to coarse gravel sub angular to subround up to 1"
					diameter.
					0.6-1.2' Sand: Brown (7.5 YR 5/4) fine grain, trace to little very fine, trace
					medium, moderately well sorted, loose, moist, no odor.
10	12	-1.3/	1.0	3 5 11 10	0-0.1' Sand: As above.
		-4.8			0.1-0.8' Sand/Gravel: Dark brown (7.5 YR 3/4) fine to very coarse grain sand
					and fine to coarse gravel, gravel angular to subround up to 1" diameter
					though most <1/2" diameter, very poorly sorted, loose, moist, (0.7-0.8 sand
					matrix very fine to medium).
					0.8-1.0' Sand: Brown (7.5 YR 4/4) fine grain sand, some medium to very
					coarse, trace sub angular to subround fine gravel <1/4" diameter, poorly
					sorted, loose, moist, no odor.
12	14	-3.9/	1.3	7 10 12 14	0-0.1' Sand: As above, sharp contact with below.
		-9.5			0.1-1.3' Sand/Gravel: Brown (7.5 YR 4/4) medium to very coarse grain sand
					and fine gravel; slight trace coarse gravel (three pieces) approximately 1"
					diameter, sub angular to subround; fine gravel <1/4" diameter sub angular
					to subround; very poorly sorted, loose, moist, no odor.
14	16	-2.0/	1.1	6 9 9 12	0-0.7' Sand/Gravel: As above.
		-7.2			0.7-1.1' Sand: Light brown (7.5 YR 6/4) fine grain sand, trace medium,
					well sorted, loose, moist, no odor; completely weathered rock at 0.9-1.0,
					in situ, Brownish yellow (10 YR 6/6) rimmed by medium to coarse sand,
					which was stained Strong brown (7.5 YR 5/6) weathered rock is now a very
					fine silty sand, very firm in place, loose when worked, 1-1/2" diameter.
16	18	-2.77/	1.3	5 7 7 10	0-1.3' Sand: Brown (7.5 YR 5/4) fine to medium grain, trace coarse grain,
		21.75			trace fine gravel subround up to 1/4" from 0-0.2 and 0.8-0.9'; moderately
					sorted overall, loose, moist, no odor.
18	20	-1.5/	1.2	5 8 8 11	0-1.2' Sand: Brown (7.5 YR 4/4) fine sand, some medium to coarse, trace
		21.50			fine gravel <1/4" diameter angular to subround, poorly sorted; some fine
					to coarse gravel from 0.5-0.9', 1/2-2" diameter, subround; loose, moist,
					no odor, appears wet 1.1-1.2'.
20	22	-0.22/	0.5	3 6 8 8	0-0.2' Sand: As above.
		21.67			0.2-0.5' Sand: Brown (7.5 YR 4/4) medium to very coarse grain, little fine to
					coarse gravel, most gravel <1/4", angular to subround, poorly sorted, moist
					to wet, loose, no odor, (2" rock lodged in shoe).

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-558 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
22	24	5.6/	1.2	4 7 6 6	0-0.3' Sand: As above.
		28.2			0.3-1.0' Silt: Brown (7.5 YR 5/4) smooth interbedded with varved to 1/8"
					layers of plastic, soft clayey silt, Brown (7.5 YR 4/4), silt is powdery, very
					soft, dry to almost moist, no odor.
					1.0-1.2' Silt: Brown (7.5 YR 4/4) smooth silt, clayey, somewhat plastic to
					somewhat crumbly when worked, soft, moist, no odor, 1.0-1.1 clay layer
					yellowish red (5 YR 4/6) very soft, platey on broken surface, plastic.
24	26	0.08/	1.3	4 5 6 11	0-0.5' Silt: Clayey silt, Brown (7.5 YR 4/4), powdery silt, Brown (7.5 YR 5/4)
		22.18			interbedded clayey silt and powdery silt, as above, trace clay varves as
					above, clay, moist, textures as above, no odor.
					0.5-1.3' Silt/Clay: Silt, Brown (7.5 YR 4/4); clay, Yellowish red (5 YR 4/6),
					interbedded smooth silt and clay; silt is clayey and somewhat plastic, clay is
					very soft and plastic, clay layers varved to approximately 1/8"thick, silt layers
					1/2-2" thick, very moist to wet.
26	28	-0.48/	1.5	8 10 14 16	0-0.1' Silt/Clay: As above.
		19.60			0.1-0.4' Clay: As above, Yellowish red (5 YR 4/6) clay, very soft, plastic (0.1-
					0.2 varved with silt as above).
					0.4-1.5' Sand: Light brown (7.5 YR 6/4) interbedded fine grain, very fine
					grain and silty very fine grain sand; fine grain layers have little medium to
					coarse, trace fine gravel <1/4", subround, poorly sorted; from 0.3-0.4",
					very fine grain layers have trace fine sand and are well sorted, 1/2-3" thick
					and dominant along length; silty very fine layers from 0.2-0.3 and 0.5-0.6 ,
					brown (7.5 YR 5/4); overall loose, moist, no odor.
28	30	-2.73/	1.2	8 10 11 12	0-1.2' Sand: Light brown (7.5 YR 6/4) very fine to fine grain sand, trace
		16.27			medium, moderately sorted, loose, moist; seam of some medium to coarse
					from 0.5-0.55 with trace fine subround gravel.
30	32	-2.71/	1.2	7 11 10 12	0-1.2' Sand: As above, very fine to fine grain, trace to little medium to coarse
		15.99			varies along length, coarsens slightly with depth, fine sand becomes more
					dominant with depth.
32	34	-2.3/	1.3	8 9 10 13	0-1.3' Sand: Light brown (7.5 YR 6/4) interbedded fine grain sand, very
		10.07			fine grain sand, and silty very fine grain sand, fine grain sand has trace
					medium to coarse, trace fine gravel subangular to subround, moderately
					sorted, very fine grain sand has trace fine sand and is well sorted; silty v
					very fine sand is well sorted, silty, layers approximately 1/4-1/2" thick and
					are uniform throughout length, uniform distribution of layers; overall loose,
					moist, no odor.
34	36	-4.10/	1.3	9 12 11 11	0-1.3' Sand: As above, but only fine grain and very fine grain layers, (0.5-0.7
		9.58			varves of silty very fine sand), very fine grain sand dominant.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-558 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
36	38	-3.29/	1.3	8 15 17 17	0-1.3' Sand: Light brown (7.5 YR 6/4) very fine grain sand, trace to little fine
		10.46			grain sand varies along length, loose, moist 0-0.4', wet 0.4-1.3, well sorted,
					no odor.
					EOB @ 38'

ARCADIS

Sample/Core Log

Boring/Well GMSG-559 A/B | Project/No. Ford/Kingsford WI001095.0002 | Page 1 of 3

Site Location: Kingsford, Michigan (Lake Shore, Inc.) | Drilling Started: 3/1/06 | Drilling Completed: 3/1/06

Total Depth Drilled: 37 Feet | Hole Diameter: 8 inches | Type of Sample/Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon | Sampling Interval: continuous 2 feet

Land-Surface Elev.: 1111.62 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company | Driller: Doug Lantagne | Helper: Dan Knox

Prepared By: Jill Flater | Hammer Weight: 140 | Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	1		NR		0-0.5' Asphalt.
					0.5-1.0' Topsoil.
1	3	-1.35/	0.2	50	0-0.2' Sand: Brown (7.5 YR 5/4) fine to medium grain sand, silty, trace
		-3.5			coarse to very coarse grain, trace fine gravel angular to subangular broken
					rock up to 1/2" diameter, loose, dry to somewhat moist, no odor (50
					blow counts, stop and drill, probably frost or rock).
3	5	2.57/	0.9	8 5 3 2	0-0.9' Sand: Reddish yellow (7.5 YR 6/6) very fine to fine grain, interbedded
		1.27			layers of silty very fine to fine sand and very fine to fine sand, very fine to
					fine grain sand, well sorted; silty layers dominant; 1/8"-1/2" thick layers,
					color darker with silt, Strong brown (7.5 YR 5/6) loose, moist, no odor.
5	7	1.55/	1.2	4 6 6 10	0-0.2' Sand: As above.
		-0.35			0.2-1.1: Silt: Strong brown (7.5 YR 4/6) smooth, 0.2-0.5' crumbly
					when worked, grades into somewhat plastic clayey 0.5-1.2, soft to medium
					firm with depth, moist, no odor; Black (7.5 YR 2.5/2) staining 0.2-0.3
					no odor, mix of silt and sand above, crumbly.
					1.1-1.2' Sand: Strong brown (7.5 YR 5/6) very fine to fine grain, slight trace
					medium grain sand, moderately well sorted, silty, loose, moist, no odor.
7	9	1.00/	1.2	6 9 11 15	0-0.7' Sand: As above.
		-1.08			0.7-1.0' Sand; Strong brown (7.5 YR 4/6) fine grain, trace medium grain
					sand, well sorted, loose, moist, no odor.
					1.0-1.2' Sand/Gravel: Color as above, fine to coarse grain sand and fine to
					coarse gravel, gravel is angular to subround, up to 1-1/2" diameter, thought
					most gravel >1", moist, no odor, very poorly sorted.
9	11		NR	8 10 15 18	No recovery.
11	13	2.68/	1.1	9 9 12 13	0-0.2' Large 2" diameter rock fills spoon.
		-0.17			0.2-1.1' Sand: Brownish yellow (10 YR 6/6) fine to medium grain sand, some
					coarse to very coarse, trace fine to coarse gravel subangular to subround

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-559 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					up to 1", most >1/2", poorly sorted, loose, moist, no odor.
13	15	3.15/	1.3	7 11 12 18	0-0.1' Sand: Strong brown (7.5 YR 5/6) fine to medium grain, moderately
		-0.17			well sorted, loose, moist, trace coarse grain sand, no odor.
					0.1-0.4' Sand: Light brown (7.5 YR 6/4) fine grain, well sorted, loose,
					moist.
					0.4-1.3' Sand: Light brown (7.5 YR 6/4) medium grain sand, some fine
					and coarse, trace fine gravel subangular to subround up to 1/4", poorly
					sorted, loose, moist, no odor.
15	17	5.02/	1.3	4 10 10 12	0-0.8' Sand: Light brown (7.5 YR 6/4) fine to medium grain sand, trace to
		1.46			some coarse grain sand, varies along length, poorly sorted; 0.5-0.8 trace
					fine to coarse gravel up to 1" diameter angular to subround; loose, moist.
					0.8-1.3' Sand/Gravel: Brown (7.5 YR 4/4) medium to very coarse grain sand
					and fine gravel, gravel angular to subround up to 1/2" diameter, very poorly
					sorted, loose, moist, no odor.
17	19	3.47/	0.8	8 10 11 11	0-0.3' Sand/Gravel: As above (0.2-0.3 1" diameter subangular rock)
		-1.26			0.3-0.8' Sand: Brown (7.5 YR 5/4) fine to medium grain sand, some coarse
					to very coarse, poorly sorted, loose, moist, no odor.
19	21	-/-	0	14 20 19 19	No recovery.
21	23	0.81/	1.2	5 9 10 14	0-1.2' Sand: Light brown (7.5 YR 6/4) fine to medium grain, trace to little
		-25			coarse to very coarse, varies along length; 0.3-0.6 trace fine gravel up to 1/2"
					diameter subangular to subround; poorly sorted, loose, moist, no odor.
23	25	3.64/	1.3	4 6 8 9	0-0.7' Sand: As above, trace coarse to very coarse, trace fine gravel up to
		-23			1/2" diameter subangular to subround.
					0.7-1.3' Sand: Brown (7.5 YR 4/4) fine to very coarse grain, poorly sorted,
					loose, moist, trace fine gravel angular to subround up to 1/2", 1.1-1.3
					some fine to coarse gravel angular to subround up to 1" diameter.
25	27	3.71/	1.1	5 45 12 14	0-0.2' Sand: As above.
		-22			0.2-0.4' Sand/Gravel: Color as above, fine to very coarse sand as above and
					fine to coarse gravel, angular to subround up to 1-1/2" diameter, very poorly
					sorted, loose, moist, sharp contact with below.
					0.4-0.9' Silt: Brown (7.5 YR 5/4) smooth silt, powdery, somewhat moist,
					soft, no odor.
					0.9-1.1' Silt: Brown (7.5 YR 4/4) smooth silt with clayey silt varves throughout;
					1 clay layer approximately 1/8" thick at 0.9 yellow red (5 YR 4/6), plastic
					very soft; moist, no odor, somewhat plastic to somewhat loose when worked.
27	29	6.18/	1	7 8 11 12	0-0.1' Silt: As above.
		-25			0.1-0.4 Clay: Yellowish red (5 YR 4/6) clay, soft, plastic, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-559 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					0.4-1.0' Silt: Silt powdery brown (7.5 YR 5/4) clayey brown (7.5 YR 4/4)
					interbedded clayey smooth silt and powdery smooth silt, varved to 1/2" beds,
					trace clay varves to 1/8" thick, clayey silt portions somewhat plastic, overall
					moist, somewhat crumbly, no odor.
29	31	0.76/	1.1	28 16 22 24	0-0.1' Silt: As above, one 1/8" clay layer as above.
		-32			0.1-1.1' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, slight trace
					medium sand, well sorted, loose, moist, no odor.
31	33	3.78/	1.5	9 15 20 25	0-1.5' Sand: Light brown (7.5 YR 6/4) very fine grain sand, trace fine grain,
		-29			homogeneous, well sorted, loose, moist, no odor.
33	35	6.03/	1.5	11 20 24 35	0-1.5' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, well sorted,
		-28			loose, moist, no odor.
35	37	2.49/	1.4	13 18 24 26	0-1.4' Sand: As above, very fine to fine grain, well sorted, loose, no odor
		-33			coarsens slightly with depth (0-1.3 moist, 1.3-1.4 wet).
					EOB @ 37'

ARCADIS

Sample/Core Log

Boring/Well GMSG-560 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (Lake Shore, Inc.) Drilling Started: 3/6/06 Drilling Completed: 3/6/06

Total Depth Drilled: 38 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: continuous/ Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous 2 feet

Land-Surface Elev.: 1112.58 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company Driller: Randy Ochs Helper: Dan Knox

Prepared By: Jill Flater Hammer Weight: 140 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	1.01/	1.3	15 9 8 9	0-0.2' Asphalt pieces.
		24.32			0.2-0.7' Silt/Sand/Gravel: Dark brown (7.5 YR 3/4) smooth silt, very fine to
					very coarse grain sand, and fine gravel; sand poorly sorted, gravel up to 3/4"
					diameter angular to subround; overall somewhat loose, moist, no odor.
					0.7-1.11' Sand/Gravel: Strong brown (7.5 YR 4/6) as above, no silt.
					1.1-1.3' Sand: Strong brown (7.5 YR 5/6) very fine to fine grain, trace
					medium to coarse, trace to some silt, somewhat loose to loose (dependant
					on silt quantity) moist, no odor, poorly sorted.
2	4	0.50/	0.5	9 10 11 10	0-0.2' Sand: As above, slight trace coarse gravel subangular to subround
		21.27			1/2" to 1" diameter.
					0.2-0.4' Sand: Brown (7.5 YR 5/4) fine grain, little very fine grain sand, trace
					medium to coarse sand, trace fine gravel up to 1/2" diameter angular to
					subround, poorly sorted, loose, moist.
					0.4-0.5' Sand: Light yellowish brown (2.5 Y 6/3) very fine to fine grain, trace
					medium grain sand, moderately well sorted, loose, moist, no odor.
4	6	4.26/	1.1	6 2 2 2	0-0.1' Sand: Strong brown (7.5 YR 4/6) fine grain, trace to little medium to
		24.71			coarse, trace very fine grain sand, trace fine gravel up to 1/2" angular to
					subround, slight trace coarse gravel subangular to subround up to 1",
					poorly sorted, loose, moist.
					0.1-0.2' Silt: Brown (7.5 YR 4/4) smooth silt, trace to little fine to medium
					sand, somewhat loose, moist.
					0.2-0.9' Sand: As above.
					0.9-1.1' Silt/Sand: Brown (7.5 YR 3/4) smooth silt and fine to medium sand
					(moderately well sorted) trace fine gravel up to 1/4" subangular to
					subround, moist, somewhat loose.
6	8	9.04/	0.8	6 4 5 7	0-0.1' Sand: As above, color change, Strong brown (7.5 YR 5/6).
		26.42			0.1-0.4' Sand: Strong brown (7.5 YR 5/6) fine grain, trace medium sand,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-560 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					moderately well sorted, trace silt, moist, loose.
					0.4-0.8' Sand: As above, color as above, trace to little medium to coarse
					sand, trace fine gravel up to 1/4" subangular to subround, moderately to
					poorly sorted, loose, moist, no silt.
8	10	5.33/	0.9	6 6 8 10	0-0.1' Rock. Phyllite core and broken fragments.
		24			0.1-0.9' Sand: Reddish yellow (7.5 YR 7/6) fine to medium grain sand, trace
					very fine in places, trace to little very coarse, poorly sorted, loose, moist, no
					odor, trace fine gravel up to 1/4" diameter angular to subround.
10	12	5.62/	0.8	7 9 9 11	0-0.8' Sand: As above, Reddish yellow (7.5 YR 7/6) fine to medium grain,
		20.33			trace very fine in places, trace to some coarse to very coarse, moist, loose,
					poorly sorted, trace fine angular to subround gravel up to 1/4".
12	14	--	0.0	8 9 9 9	No recovery.
14	16	3.12/	0.9	9 9 9 12	0-0.5' Sand: As above, 0.4-0.5' some coarse gravel 1 to 1-1/4" diameter,
		4.93			angular to subround.
					0.5-0.9' Sand: Light brown (7.5 YR 6/4) fine grain, trace medium to coarse
					sand, moderately well sorted, loose, moist, no odor (2" diameter angular
					quartzite lodged in shoe).
16	18	--	0	9 13 11 12	No recovery.
18	20	6.09/	0.8	24 22 10 12	0-0.8' Sand: Brown (7.5 YR 5/4) very fine grain, trace silt, well sorted, loose,
		7.82			moist, no odor.
20	22	4.67/	1.5	6 6 9 11	0-1.5' Sand: As above, trace to little silt, fines slightly with depth, color
		6.02			varving throughout.
22	24	6.35/	1.0	15 18 14 15	0-0.5' Sand: As above, little to some silt.
		5.47			0.5-1.0' Silt/Sand: Sand, as above color, silt Brown (7.5 YR 4/4) interbedded
					very fine grain silty sand and smooth/grainy silt, approximately 1" beds
					uniform along length; very fine silty sand is somewhat loose to loose, moist,
					well sorted; grainy/smooth silt, somewhat firm, crumbly to somewhat loose
					when worked; moist, no odor; trace silt varving in very fine grain sand.
24	26	9.82/	1.6	7 8 10 13	0-0.4' Silt/Sand: As above.
		8.21			0.4-1.3' Sand: Light brown (7.5 YR 6/4) very fine grain, no to trace silt,
					well sorted, trace (faint) silt/color varving throughout, loose, moist, no odor,
					trace fine sand.
					1.3-1.6' Silt/Sand: As above, very fine grain silty sand and grainy/smooth silt,
					2" layers.
26	28	10.06/	1.5	10 11 12 14	0-0.5' Silt/Sand: As above, varved to 1/4" layers, grades into lower section.
		7.43			0.5-1.5' Sand: Light brown (7.5 YR 6/4) very fine grain, well sorted, little
					silt, moist, loose, trace color/silt varving throughout (faint).

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-560 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
28	30	5.31/	1.4	8 8 11 15	0-0.2' Sand/Silt: As above, varved to 1/8" layers, grades into lower section.
		3.28			0.2-1.4' Sand: As above, very fine grain, little silt, well sorted, trace faint
					color/silt varving throughout, loose, moist.
30	32	3.73/	1.1	9 12 12 15	0-1.1' Sand: Light brown (7.5 YR 6/4) very fine grain sand, some silt, faint
		2.35			silt/color varving throughout, well sorted very fine sand, loose when worked,
					somewhat firm in place in the spoon, compacted.
32	34	10.71/	1.5	7 9 12 15	0-1.5' Sand: As above, very fine grain, some silt, etc.
		17.62			
34	36	9.03/	1.3	12 13 17 17	0-1.3' Sand/Silt: Overall color approximately Light brown (7.5 YR 6/4)
		3.28			interbedded layers of very fine grain silty sand, very fine grain sand with
					little to some silt, and silt layers varved to 1/4", sand well sorted throughout,
					loose to somewhat loose, silt only varved (slightly darker in color), moist,
					no odor.
36	38	0.38/	1.4	7 9 9 12	0-1.4' Sand: Brown (7.5 YR 5/4) very fine grain sand, silty, well sorted, loose
		-6.32			to somewhat loose, wet, vesicles.
					EOB @ 38'

ARCADIS

Sample/Core Log

Boring/Well GMSG-561 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (Lake Shore, Inc.) Drilling Started: 3/6/06 Drilling Completed: 3/6/06

Total Depth Drilled: 38 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: continuous/ Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1112.59 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company Driller: Randy Ochs Helper: Dan Knox

Prepared By: Jill Flater Hammer Weight: 140 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	4.49/	1.7	92 72 55 40	0-0.2' Asphalt.
		17.79			0.2-1.0' Silt/Gravel/Sand: Dark brown (7.5 YR 3/3) smooth silt, fine to coarse
					grain sand, fine gravel, sand is poorly sorted, gravel is angular to subround
					and up to 3/4" diameter, most <1/4", moist to wet (thaw) somewhat loose.
					1.0-1.7' Sand: Strong brown (7.5 YR 4/6) fine grain, trace very fine sand,
					trace medium to very coarse sand, trace fine to coarse gravel angular to
					subround up to 1" diameter, moist, loose, some silt, poorly sorted.
2	4	5.99/	0.8	19 11 13 15	0-0.3' Sand: As above. (0.1-0.2' appears to be frozen).
		21.50			0.3-0.5' Sand: Brown (10 YR 5/3) very fine to fine grain, trace medium to
					coarse sand, moderately well sorted, loose, moist, no odor.
					0.5-0.8' Sand: Strong brown (7.5 YR 4/6) fine grain, trace medium to coarse
					sand, some very fine, moderately sorted, loose, moist.
4	6	10.11/	1.3	5 4 4 6	0-0.1' Sand: As above, very silty.
		26.43			0.1-1.1' Silt/Sand: Brown (7.5 YR 4/4) and strong brown (7.5 YR 4/6)
					smooth silt, very sandy with as above sand, 1/8" to varved layers of two
					colors, appears to be less sand in darker layers, overall somewhat loose,
					moist, no odor.
					1.1-1.3' Sand: Strong brown (7.5 YR 4/6) fine grain, trace medium sand,
					moderately well sorted, trace silt, loose, moist, no odor.
6	8	10.69/	1.5	4 5 2 2	0-0.1' Sand: As above.
		20.14			0.1-1.5' Silt/Sand: Colors as above, interbedded smooth silt with as above
					sand and as above sand with some silt varved to 1/8", overall very silty,
					somewhat loose, moist, moderately well sorted sand.
8	10	9.78/	1.4	4 3 3 3	0-1.0' Silt/Sand: As above, Dark brown (7.5 YR 3/4) sand layers very silty,
		13.45			silt > than above (6 to 8 feet).
					1.0-1.4' Sand: Strong brown (7.5 YR 4/6) fine to medium grain, trace coarse
					sand, trace fine subangular to subround gravel up to 1/2", poorly sorted, little

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-561 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					to some silt, loose, moist.
10	12	9.05/	0.9	5 6 8 9	0-0.1' Sand: As above, fine to medium grain.
		16.81			0.1-0.7' Sand: Strong brown (7.5 YR 5/8) fine grain, trace medium,
					moderately well sorted, loose, moist, no odor.
					0.7-0.9' Sand: Strong brown (7.5 YR 5/8) fine to medium grain, trace
					coarse grain sand, trace very fine sand, trace fine gravel up to 3/4" diameter
					subangular to subround, poorly sorted, loose, moist.
12	14	-/-	0	11 9 8 10	No recovery.
14	16	.31/	0.9	7 7 8 11	0-0.2' Sand: Brown (7.5 YR 5/4) fine to medium grain, trace coarse sand,
		-4.44			trace very fine sand, trace fine to coarse gravel, most <1/4" but up to 1",
					angular to subround, poorly sorted, loose, moist.
					0.2-0.9' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium
					to coarse, moderately well sorted, loose, moist, no odor, rock lodged in shoe.
18	20	-/-	0.0	10 9 7 6	No recovery.
20	22	-/-	0.2	6 6 10 15	0-0.2' Sand: Dark brown (7.5 YR 3/4) fine to very coarse grain sand, trace
					silt, trace fine subangular to subround gravel up to 1/2"diameter, most
					<1/4", very poorly sorted, loose, moist (possibly slough).
22	24	0.87/	1.3	4 7 8 11	0-0.3' Sand: As above, trace coarse gravel angular to subround up to 2"
		-15			diameter, 2" rock at contact with lower.
					0.3-1.3' Silt: Brown (7.5 YR 5/4) overall color; interbedded varves of grainy
					silt and smooth silt, trace clay varves, soft, somewhat crumbly when worked,
					moist, no odor.
24	26	1.70/	1.0	15 9 12 12	0-1.0' Silt: As above, grainy silt, Light brown (7.5 YR 6/4); smooth silt,
		-15			Brown (7.5 YR 4/4); clay Yellowish red (5 YR 4/6), varved to 1/4" thick
					layers; grainy is somewhat loose to powdery; smooth is slightly plastic,
					soft; clay is plastic, very soft; overall moist, no odor.
26	28	.78/	1.2	11 9 8 11	0-0.5' Silt: As above, grainy and smooth silt interbedded.
		-16			0.5-1.2' Silt/Clay: Colors as above, smooth silt, grainy silt, and clay
					interbedded, varves to 1/2" thick layers, descriptions as above, smooth
					silt is clayey, some what plastic, clay is platey on broken surface; overall
					moist, no odor.
28	30	-0.20/	1.2	11 8 14 20	0-1.2' Silt: As above, smooth and grainy interbedded silt, trace varved 1/8"
		-17			clay; descriptions as above, (smooth is clayey, etc.), moist, smooth silt has
					vesicles on broken surface.
30	32	-0.55/	1.1	24 25 36 44	0-0.6' Silt: Brown (7.5 YR 4/4) smooth silt, soft, trace clay varves - 1/8"
		-17			layers, silt is slightly clayey, abundant vesicles on broken surface, clay is
					very soft and plastic, Yellowish red (5 YR 4/6), moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-561 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					0.6-0.9' Sand: Brown (7.5 YR 5/4) very fine grain, well sorted, moist,
					somewhat loose, little to some silt, no odor.
					0.9-1.0' Silt: Brown (7.5 YR 5/4) grainy silt with smooth silt varves,
					somewhat loose, moist.
					1.0-1.1' Sand: Light brown (7.5 YR 6/4) very fine to fine grain sand, trace
					medium to coarse sand, moderately well sorted, moist, loose.
32	34	0.93/	1.0	10 24 34 38	0-1.0' Sand: Brown (7.5 YR 5/4) interbedded layers of fine grain sand and
		-14			poorly sorted fine to medium grain sand, approximately 1/4" layers of fine
					grain which is well sorted, loose, moist; fine to medium sand has little to
					some coarse to very coarse, trace fine gravel up to 1/4" angular to subround,
					approximately 2-4" layers, dominant; trace very fine sand, throughout,
					moist, loose; 0.9-1.0 trace coarse gravel up to 1" angular to subround.
34	36	4.15/	0.9	20 19 22 25	0-0.4' Sand: Light brown (7.5 YR 6/4) very fine to fine, trace medium sand,
		-14			moderately well sorted.
					0.4-0.9' Sand: As above 0-1.0 of (32-34) fine to medium grain sand has trace
					to some medium to very coarse (quantity differs in layers), trace fine gravel
					up to 1/4" subangular to subround, poorly sorted to moderately well sorted
					layers, loose moist, no odor.
36	38	1.84/	0.9	17 24 27 29	0-0.6' Sand: Light brown (7.5 YR 6/4) fine grain, trace to little very fine sand,
		-17			slight trace medium to coarse sand, slight trace fine gravel, moderately
					sorted, loose, moist, no odor, fine gravel up to 1/2" subangular to subround;
					0.5-0.6' color/silt varving.
					0.6-0.9' Sand: As above, wet.
					EOB @ 38'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-562 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (Lake Shore, Inc.) Drilling Started: 3/2/06 Drilling Completed: 3/2/06

Total Depth Drilled: 38 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous 2 feet

Land-Surface Elev.: 1112.58 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company Driller: Doug Lantagne Helper: Dan Knox

Prepared By: Jill Flater Hammer Weight: 140 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	.33/	1.5	3 4 5 7	0-0.3' Frozen/Topsoil.
		3.82			0.3-0.8' Sand: Strong brown (7.5 YR 4/6) fine grain, trace medium to coarse
					sand, trace organics, some silt, trace fine gravel subangular to subround up
					to 1/2" diameter, moderately sorted, loose, moist.
					0.8-1.5' Sand: Brown (7.5 YR 5/4) fine grain, trace very fine sand, trace
					medium to very coarse sand, trace fine to coarse gravel, angular to
					subround, up to 1" diameter, poorly sorted, loose, moist.
2	4	.12/	1.3	4 8 5 4	0-0.1' Sand: As above.
		1.46			0.1-0.2' Sand: Strong brown (7.5 YR 4/6) fine sand, silty, trace medium,
					trace fine gravel subangular to subround up to 1/4", moderately sorted to
					moderately well sorted, loose, moist.
					0.2-0.5' Sand: Fine sand, trace medium, well sorted, moist, loose, 0.2-0.25
					quartz fine sand well sorted, Pale yellow (2.5 Y 8/2).
					0.5-0.8' Sand: Fine to medium grain, little coarse, trace fine angular to
					subround gravel <1/4" diameter, poorly sorted, moist, loose.
					0.8-1.3' Silt: Strong brown (7.5 YR 4/6), smooth silt, trace fine to medium
					sand, soft, crumbly when worked, moist, no odor.
4	6	.60/	1.5	4 6 12 15	0-0.1' Silt: As above.
		1.09			0.1-0.3' Sand: Strong brown (7.5 YR 4/6) fine grain, trace medium, silty,
					well sorted, loose to somewhat loose, moist, no odor.
					0.3-0.8' Sand: Yellowish red (5 YR 5/8) fine grain, trace medium, well sorted,
					trace silt, moist, loose.
					0.8-1.5' Sand: Color as above, fine to medium grain, trace to some coarse
					to very coarse sand, trace fine to coarse gravel in places, very poorly sorted,
					trace silt, loose, moist, gravel up to 1" diameter, subround to subangular.
6	8	0.67/	1.3	6 9 10 11	0-0.4' Sand: As above.
		-0.52			0.4-1.3' Sand: Reddish yellow (7.5 YR 6/6) fine to medium grain sand, trace

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-562 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					to little coarse, moderately to poorly sorted, no silt, coarsens with depth,
					loose, moist, no odor.
8	10	0.54/	1.1	5 7 7 8	0-1.1' Sand: Light brown (7.5 YR 6/4) medium sand, trace to some very
		-2.81			coarse to coarse grain sand, varies throughout length, fine to coarse
					angular to subround gravel up to 1" diameter, most <1/2", moderately to
					poorly sorted.
10	12	-1.17/	0.7	6 8 8 8	0-0.1' Sand: As above.
		-32			0.1-0.7' Sand: As above, trace silt, may be from single rock in shoe,
					weathered rock.
12	14	0.56/	1.2	4 6 8 10	0-0.1' Sand: As above, no silt.
		-38			0.1-1.2' Sand: Light brown (7.5 YR 6/4) fine to medium grain, trace to
					little coarse to very coarse, trace fine to coarse gravel up to 1" diameter,
					most ≤1/4", subangular to subround, loose, moist, no odor, poorly sorted.
14	16	-1.51/	1.1	4 4 4 4	0-0.3' Sand: As above, grades into lower section.
		-41			0.3-1.1' Sand:, Fine to coarse grain, trace very coarse, trace fine gravel up to
					3/4" subangular to subround, very poorly sorted, loose, moist, no odor.
16	18	1.34/	0.6	2 9 6 5	0-0.3' Sand: As above.
		-39			0.3-0.5 Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium,
					moderately well sorted, loose, moist, no odor.
					0.5-0.6' Sand: Brown (7.5 YR 4/3) very fine to medium grain, trace coarse
					grain sand, poorly sorted, loose, moist.
18	20	-1.10/	1.3	4 6 5 5	0-1.2' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium to
		-31			coarse, trace fine gravel angular to subround, up to 1/2" diameter, poorly
					sorted, loose, moist.
					1.2-1.3' Sand: Pink (7.5 YR 7/4) very fine to fine grain, well sorted, loose,
					moist.
20	22	0.47/	1.0	5 7 6 7	0-1.0' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace to
		-40			little medium to coarse sand, varies throughout, trace fine angular to
					subround gravel <1/4" diameter, poorly to moderately sorted (varies),
					loose, moist, no odor.
22	24	0.23/	1.2	2 4 6 5	0-1.2' Sand: Pink (7.5 YR 7/4) interbedded 1/4-1/2" layers of very fine grain
		-41			sand and very fine to fine grain sand, very fine sand has trace silt, well
					sorted, loose, moist, and very fine to fine grain sand has trace to some
					medium to coarse sand, moderately to poorly sorted, loose, moist; trace
					fine gravel <1/4" subangular to subround, majority of layers fine to very
					fine sand, layers coarsen with depth.
24	26	1.18/	1.4	3 5 7 8	0-1.4' Sand: Light brown (7.5 YR 6/4) very fine to fine grain sand, slight trace
		-42			to trace medium to coarse (varies) moderately sorted, loose, moist, trace

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-562 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					fine gravel, subangular to subround up to 1/4" in places.
26	28	-0.73/	1.6	4 7 7 9	0-1.6' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium
		-43			to coarse, trace fine grain <1/4" subangular to subround in places,
					moderately sorted, loose, moist; 0.9-1.0' very fine to fine grain, well sorted,
					silty.
28	30	-1.36/	1.5	4 6 11 11	0-1.5' Sand: As above, no gravel; three 1/4" seams of very fine to very
		-47			coarse sand, poorly sorted, no silt, coarsens with depth.
30	32	-.86/	1.4	5 7 9 10	0-1.0' Sand: Brown (7.5 YR 5/4) fine grain, trace to some very fine sand,
		-46			trace medium to coarse sand, moderately sorted, loose, moist.
					1.0-1.4' Sand: Light brown (7.5 YR 6/4) very fine grain, little silt, well sorted,
					loose, moist, no odor.
32	34	-0.21/	1.3	5 7 10 12	0-0.8' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium
		-48			to coarse, silt varying from 0-0.4', moderate sorted, loose, moist.
					0.8-1.0' Silt: Smooth silt, soft, somewhat plastic to somewhat crumbly
					when worked, moist, no odor.
					1.0-1.3' Sand: As above, very fine to fine grain, trace medium to coarse
					sand, silt varying, moderately sorted, loose, moist.
34	36	-1.58/	1.1	14 11 10 13	0-1.1' Sand: Pink (7.5 YR 7/4) fine grain, trace to some very fine, trace
		-49			medium, moderately sorted, slight trace coarse to very coarse sand, color
					varying throughout, loose, moist.
36	38	-1.60/	1.4	4 10 10 11	0-1.4' Sand: Light brown (7.5 YR 6/4) very fine grain, trace to little silt, well
		-49			sorted, trace fine grain, loose, 0-0.6 moist, 0.6-1.4 wet, no odor.
					EOB @ 38'

ARCADIS

Sample/Core Log

Boring/Well GMSG-563 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (Lake Shore, Inc.)

Drilling Started: 3/1/06 Drilling Completed: 3/2/06

Total Depth Drilled: 36 Feet Hole Diameter: 8 inches

Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon

Sampling Interval: continuous 2 feet

Land-Surface Elev.: 1112 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None

Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company

Driller: Doug Lantagne Helper: Dan Knox

Prepared By: Jill Flater

Hammer Weight: 140 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2				No recovery. Asphalt and topsoil/fill.
2	4	0.28/	1.2	9 9 10 11	0-0.2' Frozen: Topsoil, fill.
		17.45			0.2-1.2 Sand: Strong brown (7.5 YR 5/6) fine grain sand, little medium to
					coarse sand, trace fine gravel subangular to subround up to 3/4" diameter,
					poorly sorted, loose, moist, no odor.
4	6	0.81/	0.7	5 9 13 13	0-0.7' Sand: Brown (7.5 YR 4/4) fine grain, little to some medium to very
		-3.71			coarse, trace fine to coarse gravel, angular to subround up to 1" diameter,
					very poorly sorted, trace silt, loose, moist, no odor.
6	8	1.16/	1.2	4 4 6 5	0-1.2' Sand: As above, fine grain, little to some medium to very coarse, etc.
		-3.54			
8	10	5.36/	1.1	5 4 3 5	0-1.1' Sand: As above, gravel up to 1.5", little silt, little medium to very
		0.64			coarse.
10	12	6.03/	1.3	7 7 6 8	0-1.0' Sand: As above, gravel up to 2" diameter; 0-0.5' little silt, 0.5-0.9'
		-5.91			some silt.
					1.0-1.3' Sand: Strong brown (7.5 YR 4/6) fine grain, trace medium to
					coarse sand, silty, moderately well sorted, somewhat loose, moist, trace
					coarse gravel 1/2-1" diameter, no odor.
12	14	8.63/	1.0	5 4 4 8	0-1.0' Sand: Dark yellowish brown (10 YR 3/4) interbedded 1/8" layers of
		-5.21			very fine to coarse sand with varying amounts of silt, trace fine gravel
					throughout, subangular to subround up to 3/4" diameter, poorly sorted,
					no silt to silty layers, 1/4" clay seam at 0.9', Yellowish red (5 YR 4/6) loose to
					somewhat loose varies, moist.
14	16	2.42/	0.7	4 3 2 1	0-0.7' Sand: Strong brown (7.5 YR 4/6) fine grain, some medium to very
		-13			coarse, trace fine gravel subangular to subround up to 1/2" diameter, one
					piece coarse, subangular gravel 1.5" diameter, poorly sorted, trace silt,
					loose, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-563 Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
16	18	-1.26/	1	2 2 2 3	0-0.5' Sand: As above.
		-16			0.5-1.0' Sand: Strong brown (7.5 YR 4/6) fine grain, trace medium to coarse,
					trace fine gravel ≤1/4" subround to subangular, very silty, poorly sorted,
					somewhat loose, color change 0.5-0.8 Very dark brown (7.5 YR 2.5/2) may
					be staining or natural color, no odor, moist, firm/compacted.
18	20	1.83/	0.4	12 15 20 17	0-0.1' Rock and broken fragments fill diameter of spoon.
		-13			0.1-0.4' Sand: Light brown (7.5 YR 6/4) very fine grain, silty, powdery,
					trace fine, well sorted, loose, moist, no odor.
20	22	0.82/	1.6	8 12 13 16	0-0.5' Silt: Brown (7.5 YR 5/4) grainy silt, with varves of smooth silt, some-
		-13			what powdery to loose, uniform varving, moist.
					0.5-1.0' Sand: Light brown (7.5 YR 6/4) very fine to fine sand, trace to some
					medium to very coarse varies throughout, loose, moist, moderately to
					poorly sorted, color varving throughout.
					1.0-1.6' Sand: Brown (7.5 YR 5/4) color change, very fine grain, trace fine,
					well sorted, loose, moist, varves of silt uniformly throughout (different color).
22	24	-0.27/	1.3	8 12 12 14	0-1.1' Sand: As above.
		-15			1.1-1.3' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium,
					well sorted, loose, moist, no odor.
24	26	0.23/	1.3	7 10 14 16	0-1.3' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace to some
		-15			medium to coarse, varies throughout, fines with depth, moderately to
					poorly sorted, color varving throughout, loose, moist, no odor.
26	28	3.81/	1.6	8 14 14 16	0-1.6' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium
		4			sand in places, well sorted, loose, moist, color varving throughout, no odor.
28	30	3.82/	1.3	7 14 18 22	0-0.9' Sand: As above.
		4.82			0.9-1.3' Sand: Light brown (7.5 YR 6/4) very fine grain, silty, well sorted, silt
					varves of different color throughout, loose, moist, no odor.
30	32	0.49/	1.7	9 16 20 24	0-0.2' Sand: As above, very fine grain, silty, etc.
		0.27			0.2-0.7' Sand: Pink (7.5 YR 7/3) very fine to fine grain, trace to little medium
					sand varies throughout length, moderately sorted, loose, moist.
					0.7-1.7' Sand: Pink (7.5 YR 7/4) very fine grain, trace to some fine to medium
					in 1/8" layers approximately ever 1", moderately sorted, color varving
					throughout, loose, moist.
32	34	0.01/	1.1	10 18 26 32	0-0.4' Sand: As above.
		-0.62			0.4-1.1' Sand: Light brown (7.5 YR 6/4) very fine grain, silty, color/silt
					varves throughout, well sorted, loose, moist, no odor.
34	36	0/	1.5	9 15 18 20	0-0.1' Sand: As above, moist.
		-0.72			0.1-0.5' Sand: as above, wet.
					0.5-1.5' Sand/Silt: Very fine silty sand and sandy grainy silt. Sand is very fine

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-563 Page 3 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					grained, and well sorted, somewhat loose, wet, no odor.
					EOB @ 36'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-564 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Lake Shore, Inc.) Drilling Started 3/7/06 Drilling Completed 3/7/06

Total Depth Drilled 38 Feet Hole Diameter 8 inches Type of Sample/ Coring Device continuous/ Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1112.31 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company Driller Randy Ochs Helper Jim Van Laanen

Prepared By Jill Flater Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	0.00/	1.7	85 75 53 15	0-0.3' Asphalt.
		0.64			0.3-1.3' Sand/Gravel/Silt: Dark brown (7.5 YR 3/4) very fine to medium
					grain sand and fine to coarse gravel and smooth silt; very fine to medium
					sand, trace to little coarse to very coarse, poorly sorted; fine to coarse gravel
					up to 1" diameter angular to subround, overall somewhat loose, moist
					(partially frozen).
					1.3-1.7' Sand: Dark brown (7.5 YR 3/4) fine grain, little medium sand, trace
					coarse to very coarse sand, trace fine to coarse angular to subangular gravel
					up to 1" most <1/2", poorly sorted, loose, moist, little silt.
2	4	1.29/	1.2	21 13 12 13	0-1.2' Sand: As above, trace to little medium sand, trace fine gravel
		2.3			subangular to subround, up to 1/2" diameter, trace silt, 1/4" clay layer at 0.5,
					clay is very soft, plastic, Yellowish red (5 YR 4/6).
4	6	0.79/	1.2	9 7 7 6	0-1.2' Sand: As above trace to little silt, coarsens slightly at bottom.
		0.90			
6	8	0.69/	1.0	4 5 4 5	0-1.0' Sand: As above, Dark brown (7.5 YR 3/4) fine grain, trace to little
		0.51			medium sand, trace coarse to very coarse sand, trace fine gravel subangular
					to subround up to 1/2" diameter, trace to little silt, poorly sorted, layers of
					increased silt varved to 1/8" throughout, color varies slightly throughout
					length, moist, loose.
8	10	-/-	0.0	6 4 3 3	No recovery, 2 large 2" diameter, subangular rocks in spoon.
10	12	0.00/	0.9	4 4 5 4	0-0.9' Sand: As above, Brown (7.5 YR 4/4) trace to some silt, silt quantity
		-5.88			varies in 1/8" bands, trace coarse gravel (0.4-0.9) up to 1-1/2" diameter
					most ≤1".
12	14	0.54/	0.6	5 4 4 8	0-0.2' Sand: As above, 0-0.1 2" angular rock.
		-5.11			0.2-0.3' Sand: Strong brown (7.5 YR 4/6) fine grain, trace medium sand,
					trace very fine sand, no silt, moderately well sorted.
					0.3-0.6' Sand/Silt: Sand, Brown (7.5 YR 4/4); silt Dark brown (7.5 YR 3/2)

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-564 Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					interbedded smooth sandy silt and fine to coarse grain sand approximately
					1" layers; smooth sandy silt has very fine to medium poorly sorted sand,
					soft in place, somewhat loose when worked; fine to coarse sand has trace
					fine gravel subangular to subround up to 1/4", no silt, loose, poorly sorted;
					overall moist.
14	16	2.28/	0.7	8 10 14 12	0-0.4' Sand: Brown (7.5 YR 5/4), fine to very coarse grain, trace very fine
		-4.06			sand, trace to little fine gravel up to 1/4" subangular to subround, very
					poorly sorted, loose, moist, no silt.
					0.4-0.7' Silt: Dark brown (7.5 YR 3/4) smooth sandy silt, very fine to fine
					grain moderately sorted sand, trace medium sand, soft, somewhat loose,
					moist, no odor.
16	18	0.82/	1.5	9 10 14 16	0-0.1' Silt/Sand: Colors as above, intermixed fine to very coarse sand, as
		-4.93			above, and smooth silt, soft, somewhat loose, very poorly sorted, moist.
					0.1-1.5' Silt: grainy Light brown (7.5 YR 6/4); smooth, Brown (7.5 YR 3/4)
					grainy silty, varved to 1/8" layers, smooth silt (clayey) throughout, overall
					loose to somewhat powdery, smooth silt is somewhat plastic.
18	20	0.96/	1.3	9 10 10 13	0-1.3' Silt: As above, trace clay varves to 1/8" thick layers, Yellowish red
		-8.82			(5 YR 4/6), very soft, plastic.
20	22	5.37/	1.3	9 12 10 9	0-1.3' Silt: As above.
		-6.77			
22	24	4.40/	1.5	8 5 7 8	0-0.5' Silt: As above.
		-4.04			0.5-1.0' Silt/Clay: silt Brown (7.5 YR 4/4); clay Yellowish red (5 YR 4/6);
					smooth silt varved with grainy silt and interbedded with very soft clay, smooth
					silt is somewhat plastic/clayey somewhat crumbly (due to grainy varves),
					clay is plastic, overall moist, no odor.
					1.0-1.5' Silt: As above, Light brown (7.5 YR 6/4) grainy, varves to 1/8"
					layers of smooth silt and clay throughout (characteristics as above); moist,
					somewhat powdery to somewhat plastic in places.
24	26	3.24/	1.7	6 4 5 7	0-0.4' Silt: As above.
		-5.37			0.4-1.7' Silt/Clay: silt Brown (7.5 YR 4/4); clay Yellowish red (5 YR 4/6)
					interbedded smooth clayey silt and very soft clay, smooth clayey silt is
					somewhat plastic, soft, trace grainy silt varves; clay is plastic, platey on
					broken surface; overall moist, no odor; silt layers 1/2" to 1", clay layers 1/4"
					to 1" thick.
26	28	4.12/	1.4	3 7 10 14	0-1.4' Silt/Clay: As above, smooth clayey silt with very soft clay interbedded
		-2.00			(1.2-1.4' silt is grainy and smooth, varved to 1/8" layers), vesicles in smooth
					silt on broken surface.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-564 Page 3 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
28	30	10.58/	1.8	10 9 10 10	0-1.8' Silt/Clay: As above interbedded smooth silt and clay, silt 1-2" layers,
		-5.11			clay 1/4-3/4" layers, more silt than clay approximately 60:40.
30	32	9.53/	1.3	5 5 7 6	0-1.3' Silt/Clay: As above, silt layers 1/4-1" thick, silty clay ratio 40:60, clay
		-3.43			is soft (not very soft).
32	34	6.31/	2.0	5 6 7 9	0-2' Silt/Clay: As above, Interbedded and intermixed (jumbled layers) varved
		-9.00			to 2" thick, 50:50 silty: clay ratio, 0-0.5' moist, 0.5-2, wet.
34	36	1.00/	1.9	5 8 18 20	0-1.4' Silt/Clay: As above.
		-18			1.4-1.9' Sand: Brown (7.5 YR 5/4) very fine to fine grain sand, no to some silt
					varies in layers varved to 1/4" thick, well sorted (1.4-1.7 trace to no silt),
					loose, moist.
36	38	0.23/	1.3	13 14 15 17	0-1.3' Sand: Brown (7.5 YR 5/4) very fine to fine grain, well sorted, trace silt
		-20			(0-0.4 some silt), wet, loose.
					EOB @ 38'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-565 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Larson's Custom Counters

Drilling Started 4/27/06 Drilling Completed 4/27/06

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1118.48 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.4	--	--	Grass, topsoil.
0.4	1.0	--	--	Sand: Dark brown mottled with reddish brown, fine, poorly sorted, rock 1/2" - 1".
1.0	3.25	--	--	Sand: Light to reddish brown, fine to medium, poorly sorted, rock 1/2" - 1",
				mildly saturated.
3.25	5.2	--	--	Sand: Brown, medium, poorly sorted, saturated, trace rocks.

ARCADIS

Sample/Core Log

Boring/Well GMSG-566 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Independent Hair Cutters

Drilling Started 4/27/06 Drilling Completed 4/27/06

Total Depth Drilled 5.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1118.65 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper AS

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Grass, topsoil.
0.3	3.0	--	--	Sand:Dark brown mottled with light brown, fine, poorly sorted, small rocks,
				1/2" - 1", saturated.
3.0	4.0	--	--	Sand: Red to brown, medium moderately sorted, mildly saturated.
4.0	4.75	--	--	Sand: Coarse with medium stiff clay, poorly sorted, rocks 1" - 2", saturated.
4.75	5.0	--	--	Sand: Light reddish brown, medium poorly sorted, mildly saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-567 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Independent Hair Cutters

Drilling Started 4/27/06 Drilling Completed 4/27/06

Total Depth Drilled 4.75 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1118.89 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper AS

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.4	--	--	Grass, topsoil.
0.4	3.2	--	--	Sand: Dark brown mottled with light brown, fine, poorly sorted, small rocks
				1/2" - 1", saturated.
3.2	3.7	--	--	Sand: Dark brown, coarse with medium stiff clay mixed in, poorly sorted,
				trace rocks, saturated.
3.7	4.75	--	--	Sand: Reddish brown, fine, well sorted, trace small 1/2" - 3/4" rocks,
				saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-568 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Church of Jesus Christ Latter Day Saints

Drilling Started: 5/5/06 Drilling Completed: 5/5/06

Total Depth Drilled: 5 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1131.83 feet. [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.25	--	--	Mulch.
0.25	1.7	--	--	Sand: Reddish brown, coarse, rocks 1/2" to 1", trace silt, well sorted, no saturation.
1.7	4.75	--	--	Sand: Reddish brown, medium trace rocks, trace silt, poorly sorted, mildly saturated.
4.75	5	--	--	Clay: Reddish brown, soft, some sand, trace rocks, mildly saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-569 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Church of Jesus Christ Latter Day Saints

Drilling Started: 5/5/06 Drilling Completed: 5/5/06

Total Depth Drilled: 5 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1137.57 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.25	--	--	Mulch.
0.25	3.75	--	--	Sand: Reddish brown, medium rocks 1/2-1", well sorted, no saturation.
3.75	4.4	--	--	Sand: Reddish brown medium with trace black chunks, trace silt, rocks 1/2-
				3/4", saturated.
4.4	5	--	--	Sand: Reddish brown, medium rocks 1/2-1", well sorted, no saturation.

ARCADIS

Sample/Core Log

Boring/Well GMSG-570 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Church of Jesus Christ Latter Day Saints

Drilling Started: 5/5/06 Drilling Completed: 5/5/06

Total Depth Drilled: 4.75 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1131.75 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.25	--	--	Mulch.
0.25	0.70	--	--	Clay: Dark brown, soft, chunky, some sand, well sorted, semi-saturated, rocks
				1/2 - 1".
0.7	3.8	--	--	Sand: Reddish brown, medium trace clay chunks, poorly sorted, semi-saturated.
3.8	4.25	--	--	Sand: Reddish brown, medium soft clay chunks (brown), trace rocks, poorly
				sorted, semi-saturated.
4.25	4.75	--	--	Clay: Reddish brown, poorly sorted, saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-571 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Church of Jesus Christ Latter Day Saints

Drilling Started: 5/8/06 Drilling Completed: 5/8/06

Total Depth Drilled: 4.4 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1131.56 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.25	--	--	Mulch.
0.25	1.75	--	--	Clay: Dark brown, soft some sand (reddish brown), rocks 1/2 - 1", well sorted, semi saturated.
1.75	4.4	--	--	Sand: Reddish brown, medium to fine, rocks 1/2 - 3/4", well sorted, no saturation.

ARCADIS

Sample/Core Log

Boring/Well GMSG-572 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Trico Opportunities

Drilling Started: 5/8/06 Drilling Completed: 5/8/06

Total Depth Drilled: 4.3 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1117.57 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.4	--	--	Landscaping rocks.
0.4	3.8	--	--	Sand: Brown to dark brown, medium, some gravel (reddish brown), well sorted, semi-saturated.
3.8	4.3	--	--	Clay: Dark brown, some medium sand, reddish brown, poorly sorted, rock 1/2 - 2", saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-573 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Trico Opportunities

Drilling Started: 5/10/06 Drilling Completed: 5/10/06

Total Depth Drilled: 2.75 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1117.89 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	2.2	--	--	Sand: Dark brown, coarse rocks 1/2 - 3", trace silt, well sorted, no saturation.
2.2	2.75	--	--	Sand: Reddish brown, medium rocks 1/2 - 2", trace silt, poorly sorted, no saturation.

ARCADIS

Sample/Core Log

Boring/Well GMSG-574 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Harvey Patterns Works

Drilling Started: 5/18/06 Drilling Completed: 5/18/06

Total Depth Drilled: 4.5 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1123.22 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Landscaping mulch.
0.3	3.0	--	--	Sand: Reddish to light brown, medium rocks 1/2 - 2", well sorted, no saturation.
3	4.5	--	--	Silt: Light brown, with trace medium sand, trace rocks 1 - 2", poorly sorted, mildly saturated.

ARCADIS

Sample/Core Log

Boring/Well GMSG-575 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Harvey Patterns Works

Drilling Started: 5/18/06 Drilling Completed: 5/18/06

Total Depth Drilled: 3.25 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1123.98 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Rock landscaping.
0.3	3.25	--	--	Sand: Reddish brown, medium rock 1/2 - 2", well sorted, no saturation.

ARCADIS

Sample/Core Log

Boring/Well GMSG-576 Project/No. Ford/Kingsford WI001095.0020 Page 1 of 1

Site Location: Kingsford, Michigan - Harvey Patterns Works

Drilling Started: 5/19/06 Drilling Completed: 5/19/06

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1121.29 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	3.3	--	--	Sand: Medium, reddish to light brown, some rocks 1-2", decreasing as depth
				increases, well sorted, mildly saturated.
3.3	3.75	--	--	Sand: Reddish, medium black stiff clay chunks, trace rocks 1/2 - 3/4", no
				saturation.
3.75	4.3	--	--	Clay: Dark brown to brown, some (medium) poorly sorted sand, mildly
				saturated.
4.3	5.0	--	--	Sand: Brown, mediu with clay, some dark soft clay chunks, poorly sorted,
				mild saturation.

ARCADIS

Sample/Core Log

Boring/Well GMSG-577 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Post Office) Drilling Started 5/15/06 Drilling Completed 5/15/06

Total Depth Drilled 38 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1113.71 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company Driller Randy Ochs Helper Ryan Backlund

Prepared By Jill Flater Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	FID/ PID (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	0.81/	1.2	2 2 3 3	0-0.3' Topsoil: Silt, Dark brown (7.5 YR 3/2) sandy silt, very fine to fine
		11.54			sand, loose, moist, no odor, roots/grass.
					0.3-0.6' Sand: Brown (7.5 YR 5/4) very fine to fine grain, trace medium
					sand, trace silt, loose, moist, moderate sorted, no odor.
					0.6-1.2' Sand: Brown (7.5 YR 4/3) very silty, very fine to fine grain sand,
					moderately well sorted, trace medium, somewhat loose, moist, no odor.
2	4	1.23/	1.3	4 4 5 9	0-0.5' Sand: As above.
		12.10			0.5-1.3' Sand: Brown (7.5 YR 5/4) very fine to fine grain, little medium,
					trace coarse, moderately sorted, loose, no silt, moist.
4	6	2.38/	1.1	11 12 12 9	0-0.4' Sand: As above. (0-0.5 of 2-4), very silty very fine to fine grain
		13.05			sand.
					0.4-1.1' Sand: Brown (7.5 YR 5/4) very fine to fine grain, little medium to
					coarse, trace fine to coarse gravel subangular to subround, up to 1"
					diameter, most <1/4', poorly sorted, 0.4-0.8 little silt, 0.8-1.1 no silt,
					loose, moist, no odor.
6	8	2.04/	1	6 8 11 13	0-0.5' Sand: As above, no to trace silt.
		11.66			0.5-0.6' Sand/Gravel: Brown (7.5 YR 5/4) sand as above with fine to
					coarse gravel up to 1" diameter angular to subangular, loose, moist, no
					odor, very poorly sorted.
					0.6-0.9' Sand: Strong brown (7.5 YR 4/6) fine to medium grain, trace very
					fine, trace coarse grain sand, trace fine gravel up to 1/2" angular to sub-
					angular poorly sorted, loose, moist, no odor.
					0.9-1.0' Sand: Light brown (7.5 YR 6/4) very fine to fine grain sand,
					moderately well sorted, no silt, loose, moist, no odor.
8	10	3.34/	0.4	11 11 14 17	0-0.4' Sand: As above. (0-0.1) gravel 2" gravel.
		13.24			

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-577 Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
10	12	5.63/	0.9	6 16 9 12	0-0.1' Gravel phyllite, 2" rock.
		18.42			0.1-0.3' Sand: Brown (7.5 YR 5/4) very fine to fine grain, little medium to
					very coarse, trace fine gravel up to 1/2 angular to subround, loose, poorly
					sorted.
					0.3-0.9' Sand: Brown (7.5 YR 4/4) very fine to medium grain sand, little
					coarse to very coarse, trace fine gravel up to 1/4" subangular to subround,
					loose, very poorly sorted, moist, no odor.
12	14		0.2	25 31 21 16	0-0.2' Gravel broken phyllite, coarse gravel 2" diameter piece broken
					angularly.
14	16		NR	13 14 16 13	
16	18	1.88/	0.3	13 17 17 18	0-0.3' Sand: Light brown (7.5 YR 6/4) very fine grain, slight trace fine, well
		11.63			sorted loose, moist, no odor.
18	20	8.12/	0.1	20 27 21 20	0-0.1' Sand: As above.
		14.82			
20	22	3.44/	1.4	12 12 16 16	0-1.4' Sand: As above 1.1-1.4' (0-0.4) light brown (7.5 YR 6/4) no fine
		11.84			sand (0.4-1.4) pink (7.5 YR 7/4).
22	24	4.14/	1.5	12 13 15 16	0-1.5' Sand: As above, light red brown (5 YR 6/4) very fine grain, well
		12.03			sorted, loose to somewhat powdery, moist, no odor.
24	26	7.61/	1.3	11 15 16 21	0-1.3' Sand: As above, trace very fine to fine grain layers; 0-0.3' light red
		16.97			brown (5 YR 6/4); 0.3-1.3' pink (7.5 YR 7/4).
26	28		1.5	12 12 15 18	0-1.5' Sand: As above 0-1.3' of 24-26 very fine grain sand, well sorted, trace
					very fine to fine grain sand layer, loose, moist, 0-0.3' light red brown (5 YR 6/4),
					0.3-1.5 light brown (7.5 YR 6/4).
28	30	9.43/	1.5	14 14 17 19	0-0.4' Sand/Silt: Light brown (7.5 YR 6/4) silty very fine sand and sandy grainy
		14.29			silt, loose, moist, well sorted.
					0.4-1.5' Sand: Pink (7.5 YR 7/4) very fine grain, well sorted, loose, moist,
					no odor.
30	32	7.76/	1.6	18 14 15 18	0-1.6' Sand: Very fine grain, well sorted silty to very silty, loose to somewhat
		14.29			loose, still sand not grainy silt/sand, moist, no odor.
32	34	1.01/	1.5	11 13 14 21	0-0.8' Silt/Sand: Brown (7.5 YR 5/4) sandy grainy silt and silty very fine sand,
		12.42			well sorted, somewhat loose, no odor, silt varving (trace) 0.7-0.8' grades into
					lower.
					0.8-1.5' Sand: Light brown (7.5 YR 6/4) very fine grain, well sorted, loose,
					moist, no odor.
34	36	0.07/	1.5	13 14 13 20	0-1.5' Sand: Brown (7.5 YR 5/4) very fine grain, well sorted, silty, silt varves
		8.41			throughout, firm in place, somewhat loose to loose, moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-577

Page 3 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
36	38	0.11/	1.7	12 14 14 18	0-1.7' Sand/Silt: Silty very fine grain sand with sandy grainy silt, silt varves
		7.20			throughout, firm in place, somewhat loose, moist to almost wet.
38	40	0.26/	1.3	11 13 14 21	0-0.5' Silt: Grainy silt, sandy, wet, somewhat loose, trace black varves 0.4-0.5.
		6.73			0.5-1.3' Sand/Silt: Silt sand interbedded silt (smooth and grainy) and silty
					very fine sand, 1/2" - 1" thick, somewhat loose, wet, no odor.
					EOB @ 38'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-578 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Post Office) Drilling Started 5/19/06 Drilling Completed 5/19/06

Total Depth Drilled 32 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous 2 feet

Land-Surface Elev. 1107.09 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company Driller Randy Ochs Helper Ryan Backlund

Prepared By Jill Flater Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	FID/ PID (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	-2.27/	1.75	4 9 10	0-0.75' Concrete.
		15.2		0.7/0.2	0.75-0.95' Sand: Strong brown (7.5 YR 5/6) fine sand, little medium to
					coarse poorly sorted loose, moist, no odor (fill).
					0.95-1.35' Sand: Strong brown (7.5 YR 5/8) fine sand, well sorted, loose,
					moist.
					1.35-1.75' Sand: Strong brown (7.5 YR 5/8) very fine to fine sand, trace
					medium to coarse, trace fine to coarse gravel, poorly sorted, gravel up to 1"
					angular to subround, loose, moist.
2	4	2.11/	1.1	10 9 9 7	0-0.5' Sand: Strong brown (7.5 YR 5/6) very fine to fine gravel, little medium
		16.1			to coarse, trace fine to coarse gravel up to 1" angular to subround, poorly
					sorted, loose moist, silty.
					0.5-0.9' Sand: Dark yellow brown (10 YR 4/4) very fine to coarse grain,
					little fine to coarse gravel up to 1.5" diameter angular to subround, silty.
					0.9-1.1' Sand: Strong brown (7.5 YR 5/6) fine to medium grain, trace
					coarse, moderately sorted, loose, moist, little silt.
4	6	2.18/	1.3	5 5 7 10	0-0.2' Sand: Strong brown (7.5 YR 5/6) very fine to fine grain, little medium
		13.7			to coarse, trace fine gravel up to 1/4" subangular to subround, poorly sorted,
					loose, moist, silty.
					0.2-1.3' Sand: Light brown (7.5 YR 6/4) fine grain, little to some medium,
					trace coarse to very coarse in places moderately to poorly sorted varies in
					layers along length, overall fine predominant, loose, moist.
6	8	-0.72/	0.8	14 17 14 16	0-0.5' Gravel/Sand/Silt: Color varies brown (7.5 YR 4/4) fine to coarse gravel,
		18.1			fine to medium sand, and silt; fine to coarse gravel up to 1.5" diameter
					angular to subangular, fine to medium sand, trace coarse to very coarse,
					poorly sorted, silt matrix, loose, moist, no odor.
					0.5-0.6' Sand: Brown (7.5 YR 5/4) very fine to very coarse grain, very
					poorly sorted, trace fine gravel up to 3/4" diameter, angular to subround,

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-578 Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					loose, moist, silty.
					0.6-0.8' Sand: Light brown (7.5 YR 6/4) very fine grain well sorted, loose,
					moist silty, somewhat powdery.
8	10	-0.83/	1	2 3 4 4	0-0.6' Sand/Silt: Pink (7.5 YR 7/4) sand as above with silt varves throughout,
		18.1			loose to somewhat powdery, moist, well sorted.
					0.6-1.0' Silt: Light brown (7.5 YR 6/4) grainy silt, smooth silt varves
					throughout, somewhat loose, moist.
10	12	--	NR	6 9 10 11	No recovery.
12	14	0.13/	1.4	8 7 6 10	0-0.8' Silt/Sand: Light brown (7.5 YR 6/4) grainy silt, very fine grain sand,
		19.3			trace coarse gravel up to 1" diameter angular to subround, sorted, overall
					loose, moist, trace medium to very coarse sand, sand moderately well
					sorted.
					0.8-1.4' Silt: Light brown (7.5 YR 6/4) grainy silt, some very fine well sorted
					sand, somewhat loose, moist.
14	16	0.36/	1.4	7 6 7 9	0-0.1' Silt: As above.
		19.3			0.1-0.6' Sand/Silt: Light brown (7.5 YR 6/4) very fine well sorted sand and
					grainy silt, trace fine to medium sand, loose, moist, no odor.
					0.6-1.4' Sand/Silt: Interbedded very fine silty sand, very fine to fine grain
					sand, and grainy silt, beds varved to 1/4" thick; very fine silty sand is well
					sorted and loose; very fine to fine sand has trace medium sand, and loose
					some silt, and is moderately well sorted, grainy silt is somewhat loose, overall
					moist, no odor.
16	18	-2.29/	1.4	5 5 6 6	0-1.4' Silt/Sand: Sand pink (7.5 YR 7/4) silt (7.5 YR 5/4) brown interbedded
		18.4			very fine silty sand and grainy silt, layers 1-2" thick, very fine silty sand, is
					well sorted, loose and moist, grainy silt is varved with smooth silt, somewhat
					loose and moist.
18	20	-0.15/	1.5	6 5 5 5	0-1.5' Silt: Brown (7.5 YR 4/14) smooth, light brown (7.5 YR 6/4) grainy
		37			grainy silt, trace smooth silt varves, somewhat loose, moist, no odor.
20	22	-0.74/	1.1	7 6 5 6	0-0.9' Silt/Sand: As above (0-1.4 of 16-18) layers 1/4 - 1" thick.
		32.3			0.9-1.1' Sand: Light red brown (5 YR 6/4) very fine to fine sand, well sorted,
					trace silt varving little to some silt, loose, moist.
22	24	-0.65/	1.1	4 7 9 12	0-0.4' Sand: As above.
		33.4			0.4-1.1 Sand: Light red, brown (5 YR 6/4) very fine to fine grain sand, trace
					coarse, silty, some medium, poorly sorted, loose, moist.
24	26	0.05/	1.3	5 9 10 15	0-0.9' Sand: As above, trace coarse to very coarse.
		74.6			0.9-1.3' Silt/Sand: Brown (7.5 YR 5/3) interbedded grainy silt and very fine
					well sorted silty sand, somewhat loose to loose (varies), moist, no odor.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-578 Page 3 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
26	28	.38/	1.4	5 8 12 17	0-0.2' Silt/Sand: As above.
		47.1			0.2-0.6' Sand: Interbedded very fine silty sand and fine silty sand, very fine
					silty sand is well sorted, loose, and moist, fine sand is well sorted, silty, moist,
					loose.
					0.6-1.4' Silt: Pink (7.5 YR 7/4) grainy silt, uniform smooth silt varves
					throughout, very little color contrast, somewhat loose, moist.
28	30	.84/	1.3	5 6 10 13	0-1.3' Silt: Light brown (7.5 YR 6/4) grainy silt, somewhat loose, moist, no
		67.2			odor.
30	32	.49/	1.2	8 10 11 13	0-1.2' Silt: As above, 0-0.6 moist, 0.6-1.2 wet.
		57.3			
					EOB @ 32'

ARCADIS

Sample/Core Log

Boring/Well GMSG-579 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Post Office) Drilling Started 5/18/06 Drilling Completed 5/18/06

Total Depth Drilled 34 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous 2 feet

Land-Surface Elev. 1107.44 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company Driller Randy Ochs Helper Ryan Backlund

Prepared By Jill Flater Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	FID/ PID (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	-3.69/	1.8	10 14 21	0-0.75' Concrete: With rebar.
		1.00		0.7/0.2	0.75-1.8' Sand: Strong brown (7.5 YR 5/6) very fine to fine grain, little to
					some medium to coarse, trace fine gravel subangular to subround, up to
					1/4" diameter, poorly sorted, loose, moist, no odor, no silt.
2	4	-2.80/	1.2	13 23 28 40	0-0.4' Sand: As above, brown (7.5 YR 5/4) little to some silt.
		6.1			0.4-1.2' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium
					to coarse, slight trace (in places) fine to coarse gravel up to 1" diameter
					subangular to subround, poorly to moderately sorted, loose, no silt, moist.
4	6	-1.54/	1.6	10 36 37 39	0-0.7' Sand: As above, 0-0.2 some silt, brown (7.5 YR 5/4), 0.2-0.7 light
		10.3			brown (7.5 YR 6/4), no to trace silt.
					0.7-1.6' Sand: Brown (7.5 YR 5/4) very fine to medium grain, little coarse to
					very coarse, little fine to coarse gravel angular to subround up to 1-1/2"
					diameter, most ≤1", very poorly sorted, loose, moist, trace silt to little silt
					in places.
6	8	-1.30/	1.7	18 29 42 37	0-0.4' Sand: As above, some silt.
		10.1			0.4-1.7' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace to little
					medium, trace coarse to very coarse, slight trace fine gravel up to 1/4"
					diameter, angular to subround, poorly sorted, loose, moist, little silt.
8	10	-0.93/	1.5	17 20 23 25	0-0.4' Sand: As above, some silt.
		10.2			0.4-0.8' Sand: Strong brown (7.5 YR 5/6) very fine to fine grain sand,
					trace medium to coarse, moderate to poorly sorted silt varves throughout,
					little silt in sand, loose, moist, no odor.
					0.8-1.5' Sand/Silty: Brown (7.5 YR 5/4) interbedded silty sand, as above and
					sandy silt, silt is smooth and grainy, poorly sorted sand, firm in place, some-
					what loose when worked, black staining 0-0.2 'and at 0.4 in 1/8" layers, no
					odor, moist.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-579 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
10	12	0.23/	1	4 10 12 11	0-0.4' Sand: Light brown (7.5 YR 6/4) fine grain sand, well sorted, no silt,
		10.6			loose, moist, no odor.
					0.4-1.0' Sand: Light brown (7.5 YR 6/4) fine to medium grain, trace coarse
					to very coarse, slight trace fine gravel up to 1/4" subangular to subround,
					poorly sorted, moist, no odor.
12	14	6.02/	0.1	6 8 9 10	0-0.1' Sand/Silt: Brown (7.5 YR 5/4) very fine grain with grainy silt, well
		13.7			sorted, moist, loose, no odor.
14	16	5/15.3	1.2	3 4 4 5	0-1.2' Silt: Brown (7.5 YR 5/4) grainy silt with very fine silty sand and smooth
					silt varves throughout, crumbly to somewhat powdery when worked, moist,
					no odor.
16	18	2.53/	1.6	4 4 8 7	0-0.5' Silt: As above.
		15.3			0.5-1.1' Silt: Brown (7.5 YR 5/4) smooth silt, varves of grainy silt throughout,
					trace clay, somewhat clayey, moist, no odor.
					1.1-1.6' Sand: Light brown (7.5 YR 6/4) very fine to fine sand, silty, some
					silt varves throughout, well sorted, moist, loose, no odor.
18	20	2.57/	1.3	5 4 4 5	0-0.1' Silt: Brown (7.5 YR 5/4) grainy silt and smooth silt interbedded
		0.31			varved, somewhat loose, moist.
					0.1-1.3' Sand: Pink (7.5 YR 7/4) very fine grain silty, grainy and smooth silt
					varves throughout, loose, well sorted, trace fine sand (1.0-1.2 very fine to
					medium sand, trace coarse to very coarse, trace fine gravel up to 1/4"
					subround, loose, moist), moist.
20	22	-2.08/	1.1	5 4 5 8	0-0.6' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium,
		0.48			moderately well sorted, little silt, moist, loose, silt varves throughout.
					0.6-1.1' Sand: Color as above, very fine grain, trace fine, well sorted, silt
					varves throughout, loose, moist, silty.
22	24	-1.05/	0.8	6 8 8 12	0-0.3' Sand: As above.
		1.09			0.3-0.5' Sand: Light brown (7.5 YR 6/4) very fine to medium grain, trace
					coarse to very coarse, poorly sorted, loose, moist, trace fine gravel up to 1/4"
					subangular to subround.
					0.5-0.8' Sand: Pink (7.5 YR 7/3) very fine to fine grain, little medium, trace
					coarse, moderate sorted, silt varying throughout, loose, moist.
24	26	-1.02/	1.3	5 6 8 12	0-0.2' Sand: As above (0.3-0.5 of 22-24).
		1.32			0.2-0.35' Silt: Light brown (7.5 YR 6/4) grainy silt and smooth silt varves
					interbedded, somewhat loose, moist.
					0.35-0.75' Sand: As above (0.6-1.1 of 20-22).
					0.75-1.3' Sand: Pink (7.5 YR 7/3) very fine to fine grain, little medium,
					moderate sorted, little silt, moist, loose.

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-579 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
26	28	-1.71/	1.1	9 11 12 14	0-0.3' Sand: As above.
		0.83			0.3-0.8' Sand: Light brown (7.5 YR 6/3) very fine grain, well sorted, silty,
					silt varves throughout, loose, moist.
					0.8-1.1' Sand: Color as above, very fine to fine grain, some medium, trace
					coarse to very coarse trace fine gravel up to 1/4" diameter, subangular to
					subround, poorly sorted, loose, moist.
28	30	-1.93/	1.1	10 14 15 17	0-1.1' Sand: As above (0.3-0.8 of 26-28), very fine grain.
		1.01			
30	32	-1.51/	1.2	9 11 14 17	0-0.4' Sand: As above.
		1.17			0.4-1.2' Silt: brown (7.5 YR 4/4) smooth silt, trace grainy silt and clay varves,
					somewhat loose to somewhat plastic, moist, no odor.
32	34	-1.39/	1.6	12 12 17 19	0-0.1' Silt: As above.
		1.78			0.1-0.4' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium,
					moderate sorted, silt varves throughout, loose, moist.
					0.4-1.3' Sand: Very fine grain, trace to little fine (varies along length) slight
					trace medium, moderately well to well sorted, moist 0.4-0.9, wet 0.9-1.3).
					1.3-1.6' Silt: Brown (7.5 YR 5/4) interbedded smooth and grainy varves,
					somewhat loose, wet, no odor.
					EOB @ 34'

ARCADIS

Sample/Core Log

Boring/Well GMSG-580 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Post Office) Drilling Started 5/16/06 Drilling Completed 5/17/06

Total Depth Drilled 36 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous 2 feet

Land-Surface Elev. 1111.01 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company Driller Randy Ochs Helper Ryan Backlund

Prepared By Jill Flater Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	FID/ PID (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	1.25/	1.2	5 7 13 18	0-0.2' Silt: Topsoil, very dark brown (7.5 YR 2.5/2) smooth sandy silt well
		72.94			sorted very fine to fine sand, root/grass/organics, somewhat loose, moist,
					organic smell.
					0.2-1.2' Sand: Strong brown (7.5 YR 4/6) very fine to fine grain, trace
					medium to coarse, moderately well sorted, loose, moist, no odor, little
					coarse gravel from 0.5-0.6 and 0.2-0.4 3/4"- 1" diameter, subround, trace
					silt in places.
2	4	1.63/	1	14 18 24 39	0-1.0' Sand: As above, trace fine gravel throughout up to 3/4" subangular to
		82.4			subround, trace coarse gravel up to 1-1/2" subangular, trace to little silt.
4	6	2.57/	0.9	6 26 34 43	0-0.5' Sand: As a above with trace fine and coarse gravel.
		82.3			0.5-0.9' Sand: Strong brown (7.5 YR 5/6) fine grain, trace very fine, trace
					silt, poorly sorted, little medium sand, trace fine gravel ≤1/4", subangular to
					subround, loose, moist, no odor, granite rock in shoe (cored)
6	8	3.13/	1.0	9 17 25 23	0-0.2' Sand: As above, some very fine.
		74.17			0.2-1.0' Sand: Brown (7.5 YR 4/4) very fine to fine grain, little medium to
					coarse, trace fine gravel up to 1/4" subangular to subround, loose, moist,
					no odor, no silt to trace at bottom, slight trace coarse gravel subround up to
					1-1/2".
8	10	3.17/	1.1	5 23 28 42	0-1.1' Sand: As above, very fine to fine little medium to coarse, trace fine and
		72.5			coarse gravel, trace to little silt.
10	12	2.80/	0.9	22 38 43 49	0-0.9' Sand: As above, little silt to some silt in places.
		71.3			
12	14	4.23/	0.10		0-0.1' Sand: As above, 0.09 of 10-12, little to some silt.
		61.2			
14	16		1.0	2 10 14 18	0-0.1' Sand: As above.
					0.1-1.0' Sand/Clay/Gravel: Sand/gravel, brown (7.5 YR 5/4) clay, red yellow
					(5 YR 4/6) interbedded very fine to very coarse grain sand, clay, and fine

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-580 A/B

Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					gravel; very fine to very coarse grain sand is very poorly sorted; clay is soft,
					plastic, fine gravel up to 3/4" diameter angular to subround; bedding is
					jumbled sand and gravel somewhat loose to loose, very silty, no odor, moist,
					layers appear to be up to 1" thick.
16	18	3.08/	1	5 6 6 7	0-0.1' As above.
		36.7			0.1-1.0' Sand: Brown (7.5 YR 5/4) fine to medium grain, little coarse to very
					coarse trace very fine, very poorly sorted, trace fine gravel up to 1/4", trace
					silt, loose, moist, no odor, clay layers at 0.4, 0.5, 0.8 1/2-1-1/4" thick red
					yellow (5 YR 4/6), very soft, plastic.
18	20	3.10/	0.8	7 13 9 9	0-0.6 Sand: Colors as above, sand as above, clay varves to 1/4" beds
		35.2			irregularly placed throughout concentrated 0.2-0.5'.
					0.6-0.7' Sand: Brown (7.5 YR 5/4) very fine to fine grain, little medium,
					trace coarse poorly sorted, loose, moist, trace silt.
					0.7-0.8' Clay: Reddish yellow (5 YR 4/6) clay is soft, plastic, moist.
20	22	1.86/	1.2	10 10 9 14	0-0.5' Clay: As above, trace coarse gravel 1-2" diameter, subangular to
		35.5			subround; fine to very coarse sand layer 0.2-0.25, silty, somewhat loose,
					moist.
					0.5-0.8' Sand: Brown (7.5 YR 5/4) very fine to fine grain, trace medium,
					moderately well sorted, clay varves throughout, loose, moist, no odor.
					0.8-1.2' Sand/Clay: Sand (7.5 YR 5/4) brown, clay reddish yellow (5 YR 4/6)
					clay as above interbeded sand as above and clay as above, soft, plastic
					1.8-1" layers.
22	24	2.75/	0.7	17 18 10 14	0-0.6' Sand: Light brown (7.5 YR 6/4) fine grain, little very fine, trace
		31.8			medium to coarse, poorly sorted trace fine gravel up to 1/4" diameter
					subangular to subround, loose, no silt, moist.
					0.6-0.7' Clay: Red yellow (5 YR 4/6) clay is soft, plastic, moist, no odor.
24	26	4.45/	1.1	7 9 12 17	0-1.1' Sand: Light red brown (5 YR 6/3) very fine grain, trace silt, uniform,
		33.2			well sorted, loose to somewhat powdery (when dry), moist, no odor.
26	28	3.65/	1	5 7 6 11	0-1.0' Sand: As above, resume drilling at 09:25 5/17/06.
		31.5			
28	30	-2.61/	1.2	15 13 17 12	0-1.0' Sand: As above, trace to little silt, silt varves of darker color throughout.
		1.66			1.0-1.2' Silt/Sand: Silt brown (7.5 YR 4/4) sand as above interbedded sand
					as above, and smooth silt, layers varved 1/4" thick, overall somewhat
					loose, moist, no odor.
30	32	1-13/	1.1	4 9 11 14	0-0.3' Silt/Clay/Sand: Silt as above, clay red yellow (5 YR 4/6) sand as above,
		3.72			interbedded varves of sand as above, silt smooth as above, and clay is very
					soft and plastic; overall somewhat loose to somewhat plastic, moist, no odor.
					0.3-1.1' Silt: Smooth silt with some very fine, silty sand and clay varves, overall

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-580 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					firm in place, moist, somewhat loose when worked.
32	34	-1.67/	1.3	3 4 4 6	0-0.5' Sand/Silt/Clay: varved 1/4" beds, moist.
		2.23			0.5-1.3' Silt: Brown (7.5 YR 4/4) smooth, clayey silt, varved with clay as
					above, soft, somewhat plastic to plastic, wet, vesicles.
34	36	.71/	1.1	3 4 4 3	0-1.1' Silt: As above, clay layers varved 1/8" thick clay is platey on broken
		4.23			surface.
					EOB @ 36

ARCADIS

Sample/Core Log

Boring/Well GMSG-581 A/B Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location: Kingsford, Michigan (Post Office) Drilling Started: 5/17/06 Drilling Completed: 5/17/06

Total Depth Drilled: 38 Feet Hole Diameter: 8 inches Type of Sample/ Coring Device: Splitspoon

Length and Diameter of Coring Device: 2' X 2" Splitspoon Sampling Interval: continuous feet

Land-Surface Elev.: 1110.79 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hollow Stem Auger

Drilling Contractor: Coleman Engineering Company Driller: Randy Ochs Helper: Ryan Backlund

Prepared By: Jill Flater Hammer Weight: 140 Hammer Drop: 30 ins.

Sample/Core Depth (feet below land surface) From	To	FID/ PID (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	-4.48/	1.4	3 7 9 12	0-0.4' Silt: Topsoil, very dark brown (7.5 YR 2.5/2) smooth, sandy silt, very
		12.8			fine to fine moderately well sorted sand, trace medium, somewhat loose,
					organic rich (grass/roots), moist, no odor.
					0.4-1.4' Sand: Strong brown (7.5 YR 4/6) very fine to fine grain, little to
					some medium to coarse, poorly sorted, trace fine gravel up to 1/4" diameter
					subangular to subround, coarse gravel from 1.0-1.2 up to 2" subround,
					loose, trace silt, moist, no odor, slight trace subround gravel up to 1-1/2".
2	4	-2.59/	1.3	10 12 22 31	0-1.3' Sand: As above, little silt, loose.
		14.5			
4	6	-1.65/	1.2	6 20 21 28	0-1.2' Sand: As above , some medium brown (7.5 YR 4/6), trace coarse to
		15.8			very coarse, trace to little silt very fine to fine grain, poorly sorted, trace fine
					gravel up to 1/4" diameter subangular to subround, slight trace coarse
					gravel subangular to subround up to 1-1/2" loose, moist; 0.7-0.9' very
					silty very fine to fine grain moderately well sorted sand.
6	8	-2.27/	1.0	12 14 28 31	0-1.0' Sand: As above, strong brown (7.5 YR 5/6) (0-0.2 some silt, 0.2-1.0
		14.8			trace to little silt) coarse gravel up to 1" diameter subangular to subround.
8	10	-1.13/	1.3	8 18 25 32	0-1.3' Sand: As above (0-1.2 of 4-6') coarse gravel up to 1-1/2" still slight
		16.7			trace little silt.
10	12	-2.35/	0.7	12 14 28 33	0-0.7' Sand: As above, silty sand dark brown (7.5 YR 3/4) little medium
		17.4			sand, 0-0.5' some silt, 0.5-0.7' silty, 0.5-0.7' loose to somewhat loose.
12	14	-1.94/	1.4	18 14 10 12	0-1.1' Sand: As above, silty sand: dark brown (7.5 YR 3/4) little silt: brown
		18.9			(7.5 YR 4/4) (0-0.6 + 0.9-1.1 silty; 0.6-0.9 little silt).
					1.1-1.4' Silt: Dark yellow brown (10 YR 3/4) sandy smooth silt, soft, some-
					what loose to crumbly when worked, color varves throughout, moist, no
					odor, sand as above.
14	16	-1.82/	0.2	9 10 13 13	0-0.2' Silt: As above, brown (10 YR 4/3) slight color change.
		22.5			

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-581 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
16	18	-1.92/	1.3	3 3 4 6	0-1.3' Silt/Clay: Silt: Brown (7.5 YR 5/4) clay, strong brown (7.5 YR 4/6)
		22.7			interbeded smooth clayey silt and clay varved layers, somewhat plastic to
					plastic, very soft, moist to almost water (could be perched water), no odor.
18	20	-0.90/	1.7	4 8 5 4	0-0.2' Silt/Clay: As above above.
		23.2			0.2-0.7' Sand: Strong brown (7.5 YR 5/6), fine grain, trace to little very fine,
					silty, moderately well sorted, somewhat loose to loose, moist to wet, no
					odor.
					0.7-1.7' Silt/Clay: as above trace sand as above interbedding lens, thin iron
					like staining in lenses (strong brown (7.5 YR 4/6), wet.
20	22	-0.99/	1.2	4 8 15 15	0-0.5' Silt/Clay: As above.
		24			0.5-0.9' Sand: Brown (7.5 YR 5/4) fine grain, trace very fine, trace medium,
					moderate well sorted, silty, wet, loose.
					0.9-1.0' Sand: Strong brown (7.5 YR 4/6) fine grain, well sorted, silty,
					loose, wet, no odor.
					1.0-1.2' Silt/Clay/Sand: Interbedded silt/clay (as above) with fine grain sand
					(0.5-0.9 of 20-22).
22	24	1.94/	2	11 14 13 18	0-0.7' Silt/Clay/Sand: As above.
		23.5			0.7-1.6' Sand: Strong brown (7.5 YR 4/6) very fine to fine grain, trace to
					some medium, silty, moderate to poorly sorted, loose, moist.
					1.6-2.0' Sand: As above, strong brown (7.5 YR 5/6) little silt.
24	26	-1.97/	2	14 19 21 25	0-0.4' Sand/Silt: Strong brown (7.5 YR 4/6) fine grain sand and clayey
		21			smooth silt, well sorted, somewhat plastic, moist, soft.
					0.4-0.8' Silt/Clay: As above.
					0.8-1.2' Sand/Silt: As above.
					1.2-1.6' Sand: Brown (7.5 YR 5/4) fine grain sand, trace medium to coarse,
					moderate sorted, slight light trace fine gravel up to 1/4" diameter subangular
					to subround, loose.
					1.6-2.0' Sand/Silt/Gravel: Brown (7.5 YR 4/4) very fine to fine grain sand,
					smooth silt and fine to coarse gravel; very fine to fine grain sand, little medium
					to coarse, poorly sorted, loose, silty, fine to coarse gravel up to 1" diameter
					angular to subround, overall firm in place, loose, when worked, no odor,
					rock crumble, moist.
26	28	0.14/	0.9	13 14 16 18	0-0.4' Sand/Silt/Gravel: As above.
		19.7			0.4-0.9' Sand: Brown (7.5 YR 5/4) fine to medium grain, trace coarse to
					very coarse, trace fine gravel up to 1/4" subangular to subround, poorly
					sorted, little silt, loose, moist.
28	30	-0.42/	0.7	26 16 18 14	0-0.2' Sand: As above.
		19.7			0.2-0.7' Sand: Brown (7.5 YR 5/4) fine to very coarse grain sand, very poorly

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-581 A/B

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					sorted, loose, moist trace fine gravel up to 1/4" subangular to subround,
					little silt.
30	32	-1.01/	0.9	6 10 14 17	0-0.9' Sand: As above.
		19.9			
32	34	-0.96/	0.6	10 12 10 10	0-0.6' Sand: As above, moist.
		8.7			
34	36	-1.09/	0.4	14 18 13 12	0-0.4' Sand: Brown (7.5 YR 4/4) fine grain, trace very fine, well sorted, loose,
		17.8			silty, wet.
36	38	-3.30/	1	--	0-0.4' Sand: As above.
		16.7			0.4-1.0' Silt: Grainy silt, trace clay varves, one 1/8" thick layer at 0.8 (clay red
					yellow [5 YR 4/6]; wet, no odor, somewhat loose clay to plastic, very soft.
					EOB @ 38'

ARCADIS

Sample/Core Log

Boring/Well GMSG-582 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 2

Site Location Kingsford, Michigan - Post Office Drilling Started 10/4/06 Drilling Completed 10/4/06

Total Depth Drilled 40 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Sampling Interval continous feet

Land-Surface Elev. 1110.9 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Giles Engineering Driller Tim Helper BJ

Prepared By Erik Wright Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/ PID (ppm)	Blows per 6 Inches	Sample/Core Description
0	2	0.70	8.92/	1 4 6 9	0-0.3' Asphalt.
			22.78		0.3-0.5' Gravel: Medium, angular, loose, gray, dry.
					0.5-0.7' Sand: Light brown to orange, fine to medium little gravel fine to
					medium, subangular, loose, dry.
2	4	1.3	12.52/	5 8 9 9	Same as above, trace gravel light brown fine to medium subrounded.
			48.76		
4	6	1.5	11.78/	7 17 25 3	0-0.7' Same as above.
			98.23		0.7-1.5' Same as above, little silt, loose, dry.
6	8	1.0	14.50/	7 14 16 19	0-0.5' Same as above, trace gravel, light brown, medium to coarse,
			47.62		rounded, dry.
					0.5-0.6' Gravel: White, fractured quartzite.
					0.6-1.0' Sand: Light bronw fine to coarse, little gravel fine to medium,
					subangular, moist, loose, moderately sorted.
8	10	1.5	13.72/	5 11 15 16	0-0.4" Same as above.
			76.82		0.4-0.6' Sand: Brown, fine to medium, angular, gravel black, loose, dry.
					0.6-1.0' Sand: Light brown, very fine to medium, little silt, moist, loose,
					well sorted, light brown.
10	12	0.70	9.47/	7 11 15 17	Sand: Light brown, medium to coarse, little gravel, fine, subangular, well
			35.76		sorted, moist, loose.
12	14	0.80	8.27/	5 18 36 17	Same as above, at 0.6' gravel, coarse, fractural quartzite, white.
			26.83		
14	16	0.80	10.12/	29 9 8 9	0-0.3' Same as above.
			45.68		0.3-0.8' Silt: Brown, little sand very fine to fine, well sorted, moist,
					compact.
16	18	1.3	9.08/	23 10 9 7	Silt: Brown little sand, very fine to fine, well sorted, moist, compact.
			37.88		

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-582 Page 2 of 2

Prepared by Eirk Wright

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	FID/ PID (ppm)	Blows per 6 Inches	Sample/Core Description
18	20	1.8	8.56/	19 10 6 6	Silt: Brown, trace sand/gravel, fine, subangular, well sorted, compact,
			24.86		moist.
20	22	0.6	7.12/	18 11 11 9	Sand: Light brown, medium to coarse, little gravel, fine to medium
			36.78		subangular, loose, well sorted.
22	24	1.3	7.78/	14 9 11 12	Sand: Light brown, silty very fine to medium, well sorted, light brown,
			26.32		loose, dry.
24	26	--	--	50/2	Drill through rock.
26	28	1.8	7.07/	10 7 8 6	Silt: Brown, some clay, subround stiff, compound.
			15.36		
28	30	--	--	50/4	Gravel piece in base of spoon.
30	32	1.9	6.75/	17 15 15 12	0-1.3' Same as above.
			10.62		1.3-2.0' Silt: Light brown, sandy fine to medium, loose, dry.
32	34	1.7	13.94/	59 21 18 13	Same as above, at 0.7' piece of fractured granite.
			45.76		
34	36	0.4	21.31/	83 58 50/2	Silt: Brown clayey trace gravel fine to medium, subangular, compact,
			32.76		stiff, dry.
36	38	1.8	6.94/	8 12 15 14	Silt: Brown, trace clay/sand fine to medium, compact, moist, stiff.
			12.17		
38	40	1.8	4.36/	18 18 15 16	Same as above, wet.
			18.76		
					EOB

ARCADIS

Sample/Core Log

Boring/Well GMSG-583 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 3

Site Location Kingsford, Michigan (Post Office) Drilling Started 5/19/06 Drilling Completed 5/19/06

Total Depth Drilled 38 Feet Hole Diameter 8 inches Type of Sample/ Coring Device Splitspoon

Length and Diameter of Coring Device 2' X 2" Splitspoon Sampling Interval continuous feet

Land-Surface Elev. 1111.05 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company Driller Randy Ochs Helper Ryan Backlund

Prepared By Jill Flater Hammer Weight 140 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	FID/ PID (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
0	2	-2.18/	1.2	4 7 8 12	0-0.1' Silt: Topsoil, dark brown (10 YR 3/3) sandy smooth silt, very fine to
		33.7			fine sand, well sorted, organics rich, grass, roots, somewhat loose, moist,
					no odor.
					0.1-1.2' Sand: Yellowish brown (10 YR 5/4) fine grain, trace to little medium,
					trace coarse, trace fine gravel up to 3/4", angular to subround, poorly sorted,
					loose, moist, trace silt.
2	4	-2.33/	1.2	9 10 15 26	0-1.2' Sand: As above, little medium to coarse.
		33.2			
4	6	-1.64/	1.0	12 20 28 23	0-0.6' Sand: As above, (0-0.2 silty, rock 0.1-0.2; 0.2-0.6 little silt).
		45.2			0.6-0.8' Sand: Yellow brown (10 YR 5/4) fine grain, trace medium to coarse,
					moderately well sorted, no to trace silt, loose, moist, no odor.
					0.8-1.0' Silt: Dark yellow brown (10 YR 4/4) smooth sandy silt, sand fine
					grain well sorted, somewhat loose, moist, no odor.
6	8	-1.72/	1.0	10 20 18 17	0-1.0' Sand/Gravel/Silt: Dark yellow brown (10 YR 4/4) very fine to medium
		24.6			grain sand, fine to coarse gravel and a silt matrix, firm in place somewhat
					loose when worked; very fine to medium sand poorly sorted, little coarse to
					very coarse; fine to coarse gravel up to 1" diameter angular to subround,
					silt fills all pore spaces, moist, no odor.
8	10	-1.68/	0.9	6 7 9 12	0-0.4' Sand: Brown yellow (10 YR 6/6) fine sand, well sorted, loose, trace silt,
		32.7			moist, no odor.
					0.4-0.7' Sand: Yellow brown (10 YR 5/4) fine grain, some medium to coarse,
					trace very fine, poorly sorted, trace coarse gravel up to 1" diameter angular
					to subangular, trace silt, loose, moist.
					0.7-0.9' Sand: As above, dark yellow brown (10 YR 4/4) silty, no coarse
					gravel, trace fine gravel up to 1/2" angular to subround.
10	12	-1.78/	0.8	4 9 10 8	0-0.6' Sand: Light yellow brown (10 YR 6/4) fine to medium grain, trace
		23.3			coarse to very coarse, trace silt to no silt, poorly sorted, loose, moist, no

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-583 Page 2 of 3

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					odor, poorly sorted, lose, moist, no odor, trace fine to coarse gravel, loose,
					moist, no odor, trace fine to coarse gravel up to 1-1/4" diameter subangular
					to subround.
					0.6-0.8' Sand: Brown (10 YR 4/3) very fine to coarse grain, very poorly sorted,
					some silt, loose, moist, trace fine gravel up to 1/2" diameter angular to
					subround.
12	14	-1.38/	0.8	7 12 16 9	0-0.5' Sand: As above, silty.
		29.8			0.5-0.8' Sand: Light brown (7.5 YR 6/4) fine grain, little medium to very
					coarse, trace very fine, poorly sorted, moist, loose, trace to no silt.
14	16	-0.80	0.6	3 5 5 7	0-0.2' Sand: As above, trace fine gravel up to 1/4" subangular to subround.
		27.8			0.2-0.3' Sand: Yellow brown (10 YR 5/4) fine to coarse grain, very poorly
					sorted, trace fine gravel up to 1/4" angular to subround, loose, moist.
					0.3-0.6' Sand: Light brown (7.5 YR 6/4) very fine grain, trace fine to medium,
					moderately sorted, loose, moist, little silt.
16	18	0.19/	1	4 3 4 4	0-1.0' Sand: Pale brown (10 YR 6/3) very fine grain, well sorted, loose, moist,
		27.8			trace silt, trace silt varving.
18	20	-0.34/	1.3	7 13 12 14	0-0.1' Gravel: 2" rock fragmented into broken layers.
		27			0.1-0.4' Sand: As above.
					0.4-1.3' Sand: Light yellow brown (10 YR 6/4) very fine to medium grain,
					trace coarse, trace fine gravel up to 1/2" angular to subround, silty, poorly
					sorted, loose, moist, no odor.
20	22	-2.64/	1.3	18 17 12 14	0-0.3' Sand: Yellow brown (10 YR 5/4) very fine to fine grain, trace medium
		5.7			to coarse, moderate sorted, loose, little silt, moist.
					0.3-0.7' Sand: Pale brown (10 YR 6/3) fine grain, little medium to coarse,
					trace fine gravel up to 1/4" angular to subround, loose, silty, moist.
					0.7-1.0' Sand/Gravel/Silt: Yellow brown (10 YR 5/4) fine to very coarse sand,
					fine to coarse gravel, silt matrix; fine to very coarse sand is poorly sorted; fine
					to coarse gravel up to 1-1/2", angular; overall firm in place crumbly when
					worked.
					1.0-1.3' Sand: Pale brown (10 YR 6/3) very fine to fine sand, trace medium,
					moderate sorted, loose, moist, no odor.
22	24	-2.31/		6 9 16 12	0-0.2' As above, sand, silty.
		5.4			0.2-0.8' Sand: Light yellow brown (10 YR 6/4) fine sand, little very fine,
					little medium to coarse, poorly sorted trace fine gravel up to 1/2" angular
					to subround, loose, moist, silty.
24	26	-2.54/	0.9	9 15 10 12	0-0.4' Sand: As above.
		5.1			0.4-0.9' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, trace medium
					to coarse, moderate to moderate well sorted, loose, moist, no odor, no to

ARCADIS

Sample/Core Log (continued)

Boring/Well GMSG-583

Prepared by Jill Flater

Sample/Core Depth (feet below land surface) From	To	OVA/ OVM (ppm)	Core Recovery (feet)	Blows per 6 Inches	Sample/Core Description
					trace silt.
26	28	-1.81/	1.2	9 9 12 14	0-0.7' Sand: As above.
		5.8			0.7-1.2' Sand: Light brown (7.5 YR 6/4) fine grain, well sorted, moist, loose,
					no silt.
28	30	-1.47/	1.1	7 8 10 13	0-0.6' Sand: As above, trace medium.
		5.8			0.6-1.1' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, well sorted,
					moist, loose, no silt.
30	32	-1.45/	0.7	10 14 16 19	0-0.7' Sand: As above.
		4.1			
32	34	-2.14/	1.2	13 16 17 19	0-1.2' Sand: Light brown (7.5 YR 6/3) very fine to fine grain, trace medium,
		1.95			trace coarse in places, moderately to poorly sorted, silt varves along length
					little to some, trace silt varves, loose, moist, no odor.
34	36	-2.48/	0.9	9 10 9 17	0-0.4' Sand: Light brown (7.5 YR 6/3) fine grain, well sorted, loose, moist.
		1.8			0.4-0.9' Sand: Light brown (7.5 YR 6/4) very fine to fine grain, moderately
					well sorted, silty, trace medium, loose, moist.
36	38	-2.35/	1.3	10 11 15 17	0-0.2' Sand: As above.
		0.81			0.2-1.3' Sand: Light brown (7.5 YR 6/3) fine grain, trace to some very fine,
					trace to some medium to coarse, quantities varies along length, trace to little
					silt, loose, moderate to poorly sorted, loose, moist.
					EOB @ 38'.

ARCADIS

Sample/Core Log

Boring/Well GMSG-584 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - IDG

Drilling Started 5/23/06 Drilling Completed 5/23/06

Total Depth Drilled 5.1 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1126.95 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper JE

Prepared By J. Evans Hammer Weight -- Hammer Drop -- ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Mulch.
0.3	1.6	--	--	Topsoil.
1.6	3.75	--	--	Clay: Reddish brown, fine silty, trace topsoil, mild saturated, small pebbles, high
				cohesiveness.
3.75	4.2	--	--	Clay: Reddish brown, silty thick chunks of hard clay, very moist, stiff.
4.2	4.7	--	--	Clay: Reddish brown, medium, stiff, trace silt, saturated.
4.7	5.1	--	--	Sand: Reddish brown, medium, trace rocks 1/2 - 1", mildly saturated, decreased
				cohesiveness, poorly sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-585 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - IDG

Drilling Started: 5/23/06 Drilling Completed: 5/23/06

Total Depth Drilled: 4.6 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1117.19 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	2.75	--	--	Silt: Light brown, medium reddish brown trace sand, some rocks 1/2 - 1", well sorted, mild cohesiveness, mildly saturated.
2.75	4.4	--	--	Silt: Reddish brown, medium, some dark brown clay chunks, trace rocks, poorly sorted.
4.4	4.6	--	--	Clay: Dark brown, medium silty, some sand, trace rocks, poorly sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-586 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - U.P. Travel & Rec

Drilling Started: 5/23/06 Drilling Completed: 5/23/06

Total Depth Drilled: 5.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1123.83 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Mean Sea Level

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	5.2	--	--	Sand: Reddish brown, medium some rocks 1/2-1", well sorted, trace silt, mild saturation.

ARCADIS

Sample/Core Log

Boring/Well GMSG-587 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - U.P. Travel & Rec

Drilling Started 5/30/06 Drilling Completed 5/30/06

Total Depth Drilled 5.1 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1124.90 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Mean Sea Level

Drilling Contractor ARCADIS Driller KW Helper JE

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	0.8	--	--	Sand: Reddish brown, medium, some gravel, well sorted, rocks 1/2 - 1".
0.8	2.5	--	--	Sand: Bown, medium, trace silt, little gravel, 1/2" - 3/4" rocks, well sorted, some
				cohesiveness.
2.5	4.8	--	--	Sand: Red to brown, fine, some silt, trace rocks, some cohesiveness.
4.8	5.1	--	--	Sand: Light brown, fine, trace sand, reddish brown, some silt, poorly sorted,
				some cohesiveness.

ARCADIS

Sample/Core Log

Boring/Well GMSG-588 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Donna's School of Dance

Drilling Started: 5/23/06 Drilling Completed: 5/23/06

Total Depth Drilled: 5 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1123.85 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Rock landscaping.
0.3	1.7	--	--	Sand: Light brown, fine, no rocks, poorly sorted, some cohesiveness.
1.7	3.9	--	--	Sand: Silty, reddish brown, medium, some dark brown soft clay chunks, poorly sorted, low cohesiveness.
3.9	5.0	--	--	Sand: Reddish brown, red color increasing as depth increases, medium some rocks 1/2 - 1", poorly sorted, trace sand.

ARCADIS

Sample/Core Log

Boring/Well GMSG-589 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Donna's School of Dance

Drilling Started 5/23/06 Drilling Completed 5/23/06

Total Depth Drilled 4.75 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1125.30 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper JE

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.75	--	--	Mulch.
0.75	3.8	--	--	Sand: Light brown, fine, some dark brown soft clay, trace rocks 1/2-3/4".
3.8	4.75	--	--	Clay: Dark brown, meidum, trace rocks, trace sand, poorly sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-590 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Donna's School of Dance

Drilling Started: 5/24/06 Drilling Completed: 5/24/06

Total Depth Drilled: 5.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1125.09 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Mulch.
0.1	3.0	--	--	Sand: Light brown, 1/2-1" rocks, moderate moisture.
3.0	3.4	--	--	Clay: Dark brown (silty clay), high moisture, traces of sand.
3.4	4.6	--	--	Clay: Light brown, chunks, silty, thick, high moisture, small amount sand.
4.6	5.2	--	--	Sand: Reddish brown, small rocks 1/2-2", moderate moisture, poorly sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-591 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Controls Supply

Drilling Started 5/30/06 Drilling Completed 5/30/06

Total Depth Drilled 5.1 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1120.1 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller KW Helper JE

Prepared By K. Waldbillig

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.7	--	--	Sand: Dark brown, medium, some gravel, rocks 1/2-3/4", dry, well sorted.
0.7	3.2	--	--	Sand: Dark brown, trace silt, fine sand, some soft clay, reddish orange, moist, high cohesiveness.
3.2	5.1	--	--	Sand: Reddish brown, fine, moist, some medium sand, dark brown, poorly sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-592 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Controls Supply

Drilling Started: 5/31/06 Drilling Completed: 5/31/06

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1120.4 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	1.2	--	--	Grass/Sand: dark brown, medium, some topsoil, rocks 1/2-1", well sorted.
1.2	2.6	--	--	Clay: Reddish brown, medium, some sand, poorly sorted, moist.
2.6	5.0	--	--	Sand: Reddish to light brown with increasing depth, fine, little silt, poorly sorted, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-593 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Controls Supply

Drilling Started: 5/31/06 Drilling Completed: 5/31/06

Total Depth Drilled: 4.25 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1119.4 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: AS

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.7	--	--	Grass and topsoil.
0.7	2.3	--	--	Sand: Dark brown, mottled with reddish brown, medium, rocks 1/2-3/4", well sorted, dry.
2.3	4.25	--	--	Sand: Dark brown, medium, trace silt, trace rocks, well sorted, dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-594 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Salon Solutions

Drilling Started: 6/7/06 Drilling Completed: 6/7/06

Total Depth Drilled: 6.75 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1110.0 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Grass
0.3	2.4	--	--	Silt: Reddish brown, some sand, fine mixed with medium clay orangish mottled
				with dark brown, poorly sorted, most.
2.4	5.3	--	--	Clay: Black to dark brown medium mottled reddish brown, trace silt, trace sand,
				some small rocks, poorly sorted, moist.
5.3	6.3	--	--	Clay: Light reddish brown, stiff, saturated.
6.3	6.75	--	--	Clay: Reddish brown, stiff, mixed with sand, poorly sorted, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-595 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Salon Solutions

Drilling Started: 6/8/06 Drilling Completed: 6/8/06

Total Depth Drilled: 4.60 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1109.6 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.5	--	--	Grass and topsoil.
0.5	2.0	--	--	Silt: Reddish brown mixed with soft clay, mottled with dark brown, poorly sorted, moist.
2.0	3.9	--	--	Sand: Reddish brown, medium rocks 1/2-1", well sorted, dry.
3.9	4.6	--	--	Sand: Light reddish brown, tine to medium trace rocks, poorly sorted, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-596 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Salon Solutions

Drilling Started 6/8/06 Drilling Completed 6/8/06

Total Depth Drilled 4.4 Feet Hole Diameter 2.75 inches

Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket

Sampling Interval continuous feet

Land-Surface Elev. 1110.5 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Driller KW Helper JE

Prepared By K. Waldbillig

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.5	--	--	Landscaping rocks, topsoil.
0.5	2.5	--	--	Sand: Reddish brown, medium poorly sorted, rocks 1/2-2", moist.
2.5	4.4	--	--	Sand: Light brown, fine some gravel, rocks 1/2-1", dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-597 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Van Ert Electric

Drilling Started 6/12/06 Drilling Completed 6/12/06

Total Depth Drilled 4.4 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper JE

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	1.0	--	--	Gravel: Brown, coarse subrounded to subangular rocks 1/2-3/4", well sorted,
				moist.
1.0	3.25	--	--	Sand: Dark brown, fine trace rocks, poorly sorted, slight odor, warm and moist.
3.25	4.0	--	--	Sand: Dark brown to black, fine to medium some silt, trace rocks, poorly sorted,
				some cohesiveness, mild odor, moist.
4	4.8	--	--	Sand: Black, medium some silt, trace rock-like substance yellow-orange,
				choesive, poorly sorted, strong odor, moist (soil leaves stain when smeared).

ARCADIS

Sample/Core Log

Boring/Well GMSG-598 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Van Ert Electric

Drilling Started 6/12/06 Drilling Completed 6/12/06

Total Depth Drilled 4.8 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.9 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper JE

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	1.2	--	--	Gravel: Brown, coarse subangular rocks 1/2-1", well sorted, slight odor, moist.
1.2	3.25	--	--	Sand: Black, medium trace fine sand, brown, rocks 1/2-3/4", poorly sorted, mild odor, moist.
3.25	4.8	--	--	Clay: Black, medium stiff some medium sand, strong odor, wet, (soil leaves stain when smeared).

ARCADIS

Sample/Core Log

Boring/Well GMSG-599 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Van Ert

Drilling Started 6/30/06 Drilling Completed 6/30/06

Total Depth Drilled 4.5 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1122 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper D. Charette

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt
0.3	0.6	--	--	Sand: Reddish brown, silty, sand silt mixture, medium, poorly sorted,
				noncohesive, dry.
0.6	4.0	--	--	Silt/Sand: Light brown, medium, poorly sorted, dry, with rocks
				1/2-4", noncohesive.
4.0	4.5	--	--	Sand/Clay: Brown clay and dark brown sand, medium, poorly sorted,
				moderate cohesiveness, damp, rocks 1/2-2.5", mild odor.

ARCADIS

Sample/Core Log

Boring/Well GMSG-600 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Van Ert Electric

Drilling Started 6/13/06 Drilling Completed 6/13/06

Total Depth Drilled 5.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1116.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper JE

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	3.0	--	--	Sand: Light brown, fine, trace large rocks, poorly sorted, moist.
3.0	4.4	--	--	Gravel: Dark brown, coarse rocks 1/2-3/4" subangular, well sorted, moist.
4.4	4.8	--	--	Clay: Brown, soft, some sand, some rocks, poorly sorted, wet.
4.8	5.0	--	--	Gravel: Reddish brown, medium some coarse gravel dark brown, poorly sorted, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-601 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Kingsford Broach & Tool

Drilling Started: 6/14/06 Drilling Completed: 6/14/06

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1116.7 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt (previously torn up).
0.3	1.1	--	--	Sand: Dark brown medium to fine mottled with light brown, poorly sorted,
				rocks approximately 1/2", cohesive, moist.
1.1	4.4	--	--	Sand: Reddish brown, medium rocks 1/2-1", poorly sorted, moist.
4.4	5.0	--	--	Gravel: Reddish brown, medium some soft clay, gray, chunky, poorly sorted,
				moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-602 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Kingsford Broach & Tool

Drilling Started: 6/14/06 Drilling Completed: 6/14/06

Total Depth Drilled: 4.6 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1115.8 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Landscaping mulch/topsoil.
0.1	4.3	--	--	Gravel: Light brown, medium rocks subrounded 1/2-1", little cohesiveness, well sorted, moist.
4.3	4.6	--	--	Silt: Black, some sand, brown, trace clay, poorly sorted, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-603 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Broache & Tool

Drilling Started: 7/21/06 Drilling Completed: 7/21/06

Total Depth Drilled: 5.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1116.0 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: J. Evans Helper: --

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Broken up asphalt, mixed with silty sand, dark brown, non-cohesive, poorly sorted.
0.3	2.5	--	--	Clay: Dark brown/black, silty, poorly sorted, mixed with rocks 1/2-3", cohesive, high plasticity, moderately moist.
2.5	3.0	--	--	Sand: Reddish brown, fine sand, poorly sorted, noncohesive, dry.
3.0	4.25	--	--	Clay: Black, sandy, thick, cohesive, high plasticity, poorly sorted, stain mark, tar-like, high moisture, mixed with wood chips that had a reddish purple color, no odor present.
4.25	5.0	--	--	Clay: Clay is a blackish gray, sandy, sand is light brown, some cohesiveness, some plasticity, mixed with rocks 1/2-1" and wood chips with a reddish purple color, wood chips have a varnish like odor, moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-604 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Broache & Tool

Drilling Started 7/20/06 Drilling Completed 7/20/06

Total Depth Drilled 5.30 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1116.7 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.5	--	--	Asphalt.
0.5	1.5	--	--	Clay: Dark brown, silty, some cohsiveness, soft, poorly sorted with rocks 1/2-1",
				moderate moisture.
1.5	2.3	--	--	Sand: Light brown, coarse, some cohesiveness, poorly sorted, moderate moisture.
2.3	3.5	--	--	Sand: Reddish brown, fine ,some cohesiveness, poorly sorted, moderate
				moisture.
3.5	5.3	--	--	Sand: Reddish brown, coarse, some cohesiveness, well sorted with rocks 1/2-2",
				moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-605 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Kingsford Medical

Drilling Started: 6/18/06 Drilling Completed: 6/18/06

Total Depth Drilled: 4.8 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1113.1 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JE Helper:

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.08	--	--	Grass and top soil.
0.08	1.6	--	--	Dark brown sandy soil, mixed with rocks 1/2-2", dry, noncohesive, poorly sorted.
1.6	4.3	--	--	Sand: Reddish brown mixed with light brown soil, moderately moist, noncohesive,
				poorly sorted.
4.3	4.8	--	--	Sand: Reddish brown, well sorted, noncohesive, moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-606 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Kingsford Medical

Drilling Started: 6/20/06 Drilling Completed: 6/20/06

Total Depth Drilled: 9.1 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1111.5 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: JE/DC

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	1.7	--	--	Silt: Light brown, fine, poorly sorted, noncohesive, rocks 1/2-2".
1.7	2.0	--	--	Sand: Reddish brown medium moderate moisture, sorted, noncohesive, rocks 1/2-2".
2.0	7.9	--	--	Sand: Light brown, fine poorly sorted, moderate moisture, some cohesiveness, rocks <1/2".
7.9	8.5	--	--	Clay: Reddish brown soft silty, some cohesiveness, sorted, rocks, 1/2-1".
8.5	9.1	--	--	Gravel, sorted, rocks 1/2-2".

ARCADIS

Sample/Core Log

Boring/Well GMSG-607 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Kingsford Medical

Drilling Started: 6/19/06 Drilling Completed: 6/19/06

Total Depth Drilled: 8.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1112.1 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JE Helper: DC

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.2	--	--	Grass and topsoil.
0.2	1.7	--	--	Silt: Light brown fine, poorly sorted, noncohesive, rocks 1/2-2".
1.7	7.9	--	--	Sand: Reddish brown medium, moderate moisture, sorted, noncohesive,
		--	--	rocks 1/2-2".
7.9	8.2	--	--	Gravel, sorted, rocks 1/2-2".

ARCADIS

Sample/Core Log

Boring/Well GMSG-608 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Paul Car Care

Drilling Started: 7/25/06 Drilling Completed: 7/25/06

Total Depth Drilled: 5.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.1 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: J. Evans Helper:

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Grass and topsoil.
0.1	1.7	--	--	Soil: Dark brown, silty, tightly packed, rocks approximately 1/2-3", poorly sorted, noncohesive, dry, a mild petroleum like smell present.
1.7	2.6	--	--	Clay: Light grayish brown, silty, high plasticity, moderate moisture, some cohesiveness, tightly packed.
2.6	4.4	--	--	Sand: Reddish brown, coarse moderate, sorting with rocks approximately 1/2", noncohesive, dry.
4.4	5.2	--	--	Sand: Reddish brown, fine, soft, poorly sorted, noncohesive, dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-609 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Paul Car Care

Drilling Started: 7/25/06 Drilling Completed: 7/25/06

Total Depth Drilled: 5.3 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.8 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: J. Evans Helper:

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Grass and topsoil.
0.1	2.0	--	--	Soil: Dark brown, silty, poorly sorted, noncohesive, dry, a lot of roots.
2.0	2.9	--	--	Clay: Reddish brown, silty,soft, poorly sorted with rocks approximately 1/2"
				noncohesive, dry.
2.9	5.3	--	--	Sand: Reddish brown, coarse, moderately sorted, noncohesive.

ARCADIS

Sample/Core Log

Boring/Well GMSG-610 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Paul Car Care

Drilling Started 7/25/06 Drilling Completed 7/25/06

Total Depth Drilled 10.1 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	2.25	--	--	Open space, window vent, concrete box.
2.25	4.5	--	--	Soil: Dark brown, silty, poorly sorted, noncohesive, dry, miscellaneous debris
				mixed in with soil.
4.5	6.0	--	--	Sand: Tan, coarse,poorly sorted, noncohesive, dry.
6.0	6.9	--	--	Sand: Light brown, fine, poorly sorted, noncohesive, dry.
6.9	8.2	--	--	Sand: Light brown, fine, poorly sorted with rocks approximately 1/2-1",
				trace amounts of dark brown silt, non-cohesive, dry.
8.2	10.1	--	--	Sand: Light brown reddish, fine,soft, poorly sorted, noncohesive, dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-611 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Brooks Storage

Drilling Started: 7/26/06 Drilling Completed: 7/26/06

Total Depth Drilled: 5.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1108.8 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: J. Evans Helper:

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Grass and topsoil.
0.10	2.9	--	--	Soil: Light brown, silty, poorly sorted with rocks 1/2-2", noncohesive, many tree roots, very dry.
2.9	3.03	--	--	Soil: Dark brown, silty, poorly sorted with rocks 1/2-2", noncohesive, very, dry.
3.03	5.2	--	--	Sand: Reddish brown, silty, some sorting, noncohesive, rocks 1/8-2", dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-612 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Brooks Storage

Drilling Started 7/26/06 Drilling Completed 7/26/06

Total Depth Drilled 5.3 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1106.9 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Soil: Dark brown, silty, poorly sorted with rocks 1/2-1" noncohesive, dry.
0.30	5.3	--	--	Sand: Reddish brown, silty, some sorting, rocks 1/2-4", noncohesive, very dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-613 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Brooks Storage

Drilling Started 7/26/06 Drilling Completed 7/26/06

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1106.7 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Topsoil and grass.
0.10	2.8	--	--	Soil: Dark brown, silty, poorly sorted with rocks 1/2-4", noncohesive, dry,
				tree roots and miscellaneous debris mixed in with soil.
2.8	5.20	--	--	Sand: Reddish light brown, silty,some sorting, rocks 1/2-3", noncohesive,
				dry, some miscellaneous debris present.

ARCADIS

Sample/Core Log

Boring/Well GMSG-614 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Brooks Storage

Drilling Started 7/26/06 Drilling Completed 7/26/06

Total Depth Drilled 8.3 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1108 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.25	--	--	Slab of concrete (movable by shovel).
0.25	0.4	--	--	Soil: Dark brown color, silty, poorly sorted, noncohesive, mixed with tree roots
				and miscellaneous debris, very dry.
0.4	7.9	--	--	Soil: Light reddish brown, silty, noncohesive, poorly sorted with rocks
				1/2-3" , dry.
7.9	8.3	--	--	Sand: Reddish light brown, fine, poorly sorted, noncohesive, moderate
				moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-615 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - U.P. Electric/New Wittock

Drilling Started: 7/28/06 Drilling Completed: 7/28/06

Total Depth Drilled: 5.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1117.1 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: J. Evans Helper: --

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Grass and topsoil.
0.1	4.3	--	--	Clay: Dark brown, silty, tightly packed, poorly sorted, rocks 1/2-6", some cohesiveness, moderate moisture.
4.3	5.2	--	--	Sand: Reddish light brown, well graded, fine, some sorting, very little cohesiveness, moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-616 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - U.P. Electric/Wittock

Drilling Started 7/31/06 Drilling Completed 7/31/06

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1115.4 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.1	--	--	Landscape rock.
0.1	3.25	--	--	Clay: Dark brown, silty, smooth, poorly sorted with some rocks 1/2-4", low plasticity, some cohesiveness, moderate moisture.
3.25	4.75	--	--	Clay: Dark brown, silty, smooth, poorly sorted with some rocks 1/2-2", high plasticity, high cohesiveness, high moisture content.
4.75	5.2	--	--	Clay: Reddish light brown, silty, tight packed, poorly sorted, high plasticity, high cohesiveness, high moisture content.
5.2	5.3	--	--	Sand: Reddish, fine, loosely packed, poor sorting, some cohesiveness, moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-617 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - U.P. Electric/Wittock

Drilling Started 7/31/06 Drilling Completed 7/31/06

Total Depth Drilled 5.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1116.2 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.4	--	--	Grass and topsoil, silty soil, dark brown color, poorly sorted, noncohesive, moderate moisture.
0.4	4.2	--	--	Clay: Light brown, silty, poorly sorted, some rocks 1/2-6", tightly packed, noncohesive, moderate moisture.
4.20	5.0	--	--	Sand: Reddish brown, silty, tightly packed, poorly sorted, some cohesiveness, moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-618 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - U.P. Electric/Wittock

Drilling Started 8/1/06 Drilling Completed 8/1/06

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1115.5 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller J. Evans Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.8	--	--	Landscape rocks.
0.8	3.75	--	--	Sand: Light brown, medium, poorly sorted, rocks 1/2-4", some cohesiveness, moderate moisture, loosely packed.
3.75	4.75	--	--	Sand: Red, medium, poorly sorted, rocks 1/2-2", some cohesiveness, moderate moisture.
4.75	5.2	--	--	Sand: Light brown, coarse,ome sorting, rocks 1/2-2", some cohesiveness, moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-619 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - U.P. Electric/Wittock

Drilling Started 8/1/06 Drilling Completed 8/1/06

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1115.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper JE

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.8	--	--	Landscape rocks.
0.8	3.3	--	--	Sand: Dark brown, some silt, poorly sorted, rocks 1/2-1", moderate moisture.
3.3	5.2	--	--	Sand: Light brown, fine, little silt, some moisture, poorly sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-620 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - U.P. Electric/Wittock

Drilling Started: 8/2/06 Drilling Completed: 8/2/06

Total Depth Drilled: 11.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.1 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JE Helper: --

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	2.6	--	--	Sand: Dark brown, medium, trace amounts of silt, some cohesiveness, poorly sorted, moderate moisture, friable.
2.6	3.75	--	--	Sand: Light brown, medium, silty, noncohesive, poorly sorted, slight moisture, loose packed.
3.75	6.7	--	--	Sand: Reddish light brown, coarse, noncohesive, poorly sorted, some debris found-glass, went through a small root approximately 1/2" diameter, slight moisture to loosely packed.
6.7	9.25	--	--	Sand: Light brown, very noncohesive, poorly sorted, some debris found-glass, moderate moisture to loosely packed.
9.25	11.2	--	--	Sand: Light brown, coarse, non-cohesive, some sorting, slight moisture, friable.

ARCADIS

Sample/Core Log

Boring/Well GMSG-621 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Veterans Center

Drilling Started: 8/3/06 Drilling Completed: 8/3/06

Total Depth Drilled: 11.3 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1121.9 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JE Helper: --

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.4	--	--	Grass and topsoil to sand, dark brown, silty poorly sorted, noncohesive, dry,
				crumbly, loose.
0.4	1.75	--	--	Sand: Light brown, silty, poorly sorted, noncohesive, dry, loosely packed, some
				debris found glass and metal.
1.75	3.4	--	--	Sand: Reddish light brown, some sorting, noncohesive, trace amounts of
				black and gray clay, slight moisture, loosely packed, as increase depth chunks
				of clay, grayish light brown, sticky, and some plasticity, found.
3.4	8.5	--	--	Sand: Light brown, medium, noncohesive, some sorting, sporadic rocks
				approximate 2" diameter, friable.
8.5	9	--	--	Sand: Light brown, coarse, noncohesive, sorted, slight moisture, loosely
				packed.
9	11.3	--	--	Sand: Light brown, fine, noncohesive, sorted, slight moisture, loosely packed.

ARCADIS

Sample/Core Log

Boring/Well GMSG-622 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Veterans Center

Drilling Started 8/3/06 Drilling Completed 8/3/06

Total Depth Drilled 11.1 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1122.2 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.5	--	--	Grass and topsoil, sand, dark brown, silty, organic, poorly sorted, noncohesive,
				slight moisture, crumbly, tightly packed, easily penetrated with shovel.
0.5	2.8	--	--	Clay: Reddish brown, silty, nonplastic, slightly sticky, some sorting, rocks 1/2-1",
				friable, slight moisture.
2.8	5.4	--	--	Sand: Reddish light brown, fine, silty, non-cohesive, some sorting, loose and
				crumbly, slight moisture.
5.4	7	--	--	Sand: Reddish light brown, coarse, sorted, noncohesive, loosely packed,
				slight moisture.
7	11	--	--	Sand: Light brown, fine, non-cohesive, sorted, some rocks 1/2-2", loosely
				packed, trace amounts of red sand, slight moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-623 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Quality Kitchen

Drilling Started 8/7/06 Drilling Completed 8/7/06

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.7 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.4	--	--	Grass and topsoil. Topsoil was silty, dark brown, trace amounts of clay, slight plasticity, slight cohesiveness, poorly sorted, slight moisture, miscellaneous human debris.
0.4	3.2	--	--	Clay: Light brown, with reddish sand mixed in, some cohesiveness, poorly sorted, slight moisture, as decrease in depth clay becomes more compact in chunks in the sand.
3.2	5.2	--	--	Sand: Reddish light brown, medium, some sorting, non-cohesive, slight moisture (damp). Sorting became more apparent as depth increased.

ARCADIS

Sample/Core Log

Boring/Well GMSG-624 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Quality Kitchen

Drilling Started 8/8/06 Drilling Completed 8/8/06

Total Depth Drilled 5.3 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.7 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.6	--	--	Topsoil with density packed roots from the above vegetation.
0.6	1.25	--	--	Silt: Dark brown, trace clay present, noncohesive, poorly sorted, slight moisture.
1.25	2.7	--	--	Clay: Light brown mixed with red silt, noncohesive, poorly sorted, slight plasticity, some roots present (very small), slight moisture.
2.7	4.0	--	--	Sand: Reddish light brown, medium, silty, some sorting, noncohesive, some rocks 1/2-1", slight moisture.
4.0	5.3	--	--	Sand: Light brown, fine, sorted, with some rocks 1/2", noncohesive, slight moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-625 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Quality Kitchen

Drilling Started 8/8/06 Drilling Completed 8/8/06

Total Depth Drilled 11.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.7	--	--	Grass and topsoil.
				Silt: Dark brown, trace clay, poorly sorted, no cohesive, slight moisture but
				crumbly.
0.7	3.4	--	--	Sand: Light brown, fine/medium, trace gray/black clay (silty), some sorting,
				noncohesive, slight moisture, one random rock approximately 4" diameter.
3.4	9.25	--	--	Sand: Reddish/light brown, medium, gray/brown chunks of clay (silty) present,
				some sorting, noncohesive, slight moisture damp to touch.
9.25	11.2	--	--	Sand: Light brown, fine, moderate sorting, some rocks 1-2", non-cohesive, slight
				moisture to loose and crumbly.

ARCADIS

Sample/Core Log

Boring/Well GMSG-626 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Buckhorn

Drilling Started 8/21/06 Drilling Completed 8/21/06

Total Depth Drilled 8.8 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.3 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Cement.
0.3	0.7	--	--	Clay: Dark brown with some light brown, silty, poorly sorted, some cohesiveness, slight plasticity, high moisture.
0.7	2.2	--	--	Clay: (10 YR 4/4), silty, poorly sorted, cohesive, high plasticity, high moisture.
2.2	3.4	--	--	Sand: (7.5 YR 5/6), coarse, some sorting, noncohesive, slight moisture.
3.4	7.5	--	--	Sand: (10 YR 5/6), medium, sorted, noncohesive, slight moisture.
7.50	8.8	--	--	Sand: (10 YR 5/4) fine, sorted, noncohesive, slight moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-627 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Buckhorn

Drilling Started 8/21/06 Drilling Completed 8/21/06

Total Depth Drilled 5.2 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1122.4 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	1.7	--	--	Clay: (10 YR 2/2 and 10 YR 5/6), silty, poorly sorted, slight cohesiveness, slight plasticity, moderate/low moisture.
1.7	2.6	--	--	Clay: (10 YR 4/3) silty, poorly sorted, some cohesiveness, some plasticity, tightly packed with moderate moisture content.
2.6	4.5	--	--	Sand: (10 YR 4/4), medium, trace silt, trace clay, poorly sorted, some cohesiveness, slight moisture.
4.5	5.2	--	--	Sand: (10 YR 5/6) fine, some sorting, noncohesive, moderate moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-628 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Buckhorn

Drilling Started 8/21/06 Drilling Completed 8/21/06

Total Depth Drilled 9.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1121.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Asphalt.
0.3	6.1	--	--	Sand: Light brown, medium, trace clay, some sorting, noncohesive, slight moisture.
6.1	9.0	--	--	Sand: Light brown, fine, trace clay, some sorting, layer of gravel at 7.1' noncohesive, slight moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-629 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Kodiak Storage #2 Drilling Started 9/4/06 Drilling Completed 9/4/06

Total Depth Drilled 5.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1129.1 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.4	--	--	Gravel: Reddish light/brown, subrounded, some sorting, trace sand, non-cohesive, dry.
0.4	5.0	--	--	Sand: Reddish/light brown, medium, some sorting, non-cohesive, dry.

ARCADIS

Sample/Core Log

Boring/Well GMSG-630 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Kodiak Storage #2

Drilling Started: 9/4/06 Drilling Completed: 9/4/06

Total Depth Drilled: 4.9 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1129.0 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: JE Helper: --

Prepared By: J. Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Gravel: Reddish, subrounded, some sorting, trace sand, noncohesive, dry.
0.3	4.9	--	--	Sand: Reddish light brown, medium, poor sorting, noncohesive, slight moisture.
				Pulled up a cement like chunk at 4.7' approximately 3" length.

ARCADIS

Sample/Core Log

Boring/Well GMSG-631 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Kodiak Storage #2 Drilling Started 9/4/06 Drilling Completed 9/4/06

Total Depth Drilled 5.1 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1128.9 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller JE Helper --

Prepared By J. Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.3	--	--	Gravel: Reddish/light brown, poorly sorted, trace sand, noncohesive, dry.
0.3	4.8	--	--	Sand: Reddish/light brown, medium, trace silt, poor sorting, noncohesive, slight moisture.
4.8	5.1	--	--	Sand: Coarse sorted, noncohesive, slight moisture.

ARCADIS

Sample/Core Log

Boring/Well GMSG-632 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Kodiak Storage (New)

Drilling Started: 9/28/06 Drilling Completed: 9/28/06

Total Depth Drilled: 4.9 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1128.8 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	2.25	--	--	Gravel: Reddish brown, coarse some sand, poorly sorted, moist.
2.25	4.75	--	--	Sand: Light reddish brown, fine, poorly sorted, trace clay, trace rocks 1/2"-1"
				diameter, moist.
4.75	4.90	--	--	Gravel: Dark brown, fine, well sorted, little sand, trace rocks (small), moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-633 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Kodiak Storage (New) Drilling Started 9/28/06 Drilling Completed 9/28/06

Total Depth Drilled 5.0 Feet Hole Diameter 2.75 inches Type of Sample/ Coring Device Hand Auger

Length and Diameter of Coring Device Auger Bucket Sampling Interval continuous feet

Land-Surface Elev. 1129.0 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Hand Auger

Drilling Contractor ARCADIS Driller KW Helper --

Prepared By K. Waldbillig Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	2.0	--	--	Sand: Light to medium brown, fine to medium, mixed with coarse gravel, poorly sorted, moist.
2.0	5.0	--	--	Sand: Light brown, fine, poorly sorted, trace clay, trace gravel, trace rocks 1/2"-1".

ARCADIS

Sample/Core Log

Boring/Well GMSG-634 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Great Beginnings Daycare

Drilling Started: 10/4/06 Drilling Completed: 10/4/06

Total Depth Drilled: 8.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.6 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper:

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	0.5	--	--	Grass and topsoil.
0.5	3.8	--	--	Sand: Mottled light reddish-brown with black topsoil, medium trace small rocks,
				poorly sorted, moist.
3.8	5.3	--	--	Sand: Brown, coarse/medium some small rocks, saturated.
5.3	7.2	--	--	Silt:Light brown, fine sandy trace small rocks, poorly sorted, moist.
7.20	8.0	--	--	Gravel: Brown to reddish brown, medium/coarse, some sand, moist, well sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-635 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Great Beginnings Daycare

Drilling Started: 10/4/06 Drilling Completed: 10/4/06

Total Depth Drilled: 8.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.7 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper: --

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	2.3	--	--	Grass/topsoil, medium, sand, brown, poorly sorted.
2.3	4.2	--	--	Silt: Light brown, fine sandy trace small rocks, poorly sorted, moist.
4.2	5.0	--	--	Sand: Light to dark brown fine little medium stiff clay chunks, trace small rocks,
				well sorted.
5.0	6.8	--	--	Silt: Light brown, fine sandy trace small rocks, poorly sorted, moist.
6.8	7.2	--	--	Sand/Gravel: Dark brown, medium trace small rocks, poorly sorted.
7.2	8.0	--	--	Gravel: Brown to reddish brown, coarse/medium, some sand, moist well sorted.

ARCADIS

Sample/Core Log

Boring/Well GMSG-636 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Great Beginnings Daycare

Drilling Started: 10/4/06 Drilling Completed: 10/4/06

Total Depth Drilled: 5.2 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.5 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper:

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	1.8	--	--	Grass/Topsoil.
1.8	2.6	--	--	Clay: Dark brown, medium stiff, trace sand, reddish brown, well sorted, saturated.
2.6	3.1	--	--	Clay: Light reddish brown, stiff, some sand, poorly sorted, saturated.
3.1	4.8	--	--	Sand: Reddish brown, medium little clay, well sorted, moist.
4.8	5.2	--	--	Sand: Light reddish brown, medium/fine trace small rocks, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-637 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location: Kingsford, Michigan - Great Beginnings Daycare

Drilling Started: 10/4/06 Drilling Completed: 10/4/06

Total Depth Drilled: 8.0 Feet Hole Diameter: 2.75 inches Type of Sample/ Coring Device: Hand Auger

Length and Diameter of Coring Device: Auger Bucket Sampling Interval: continuous feet

Land-Surface Elev.: 1122.5 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Hand Auger

Drilling Contractor: ARCADIS Driller: KW Helper:

Prepared By: K. Waldbillig Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/ OVM (ppm)	Sample/Core Description
0	1.0	--	--	Grass/Topsoil.
1.0	2.5	--	--	Silt: Light brown, fine/medium sandy trace small rocks, well sorted, moist.
2.5	3.0	--	--	Clay: Reddish brown, medium stiff, some sand, poorly sorted, saturated.
3.0	7.2	--	--	Sand: Reddish brown, fine/medium, trace silt, trace small rocks, poorly sorted, moist.
7.2	8.0	--	--	Silt: Light brown, fine sandy, moist.

ARCADIS

Sample/Core Log

Boring/Well GMSG-638 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Zams

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push Tube

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1120.2 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	30.0	(0-2.5)	0-6" Concrete.
			3.65/-44	6-8" Wood.
			(2.5-5)	8-18" Sand: Dark yellowish brown (4/4) soft, moist, silty, very fine to coarse,
			3.07/-43	mostly fine to medium, trace gravel up to 12 mm, metal odor.
				18-22" Silt/Sand/Gravel: Dark yellowish brown (4/4), loose very fine to very
				coarse, mostly coarse gravel, up to 20 mm, subround, moist, metal odor.
				22-30" Sand: Dark yellowish brown (4/4), loose, moist, sand, very fine to very
				gravel coarse, mostly coarse, trace up to 14 mm, subround.

ARCADIS

Sample/Core Log

Boring/Well GMSG-639 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Zams

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1120.3 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	28	(0-2.5)	0-6" Concrete.
			0.34/-46	6-17" Silt: Very dark grayish brown (3/2), soft, sandy silt, minor gravel, very fine
			(2.5-5)	medium to very coarse, mostly coarse, moist, no odor, gravel is subangular up
			-0.30/-4.6	to 1".
				17-24" Sand: Strong brown (5/8) soft, silty, very fine to coarse, mostly fine to
				medium, moist, no odor.
				24-28" Sand/Gravel: Loose, minor silt, very fine to very coarse, mostly very
				coarse, gravel subround to subangular, up to 1/2", no odor.

ARCADIS

Sample/Core Log

Boring/Well GMSG-640 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Zams

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push Tube

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1120.2 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	36	(0-2.5)	0-4" Concrete.
			-0.012/-46	4-17" Silt: Dark yellowish brown (4/4) soft, sandy very fine to medium, mostly
			(2.5-5)	fine, moist, slight odor.
			-0.28/-4.6	17-26" Sand: Yellowish brown (5/8), soft, silty sand, very fine to medium, mostly
				fine, moist, slight odor.
				26-36" Sand/Gravel: Loose very fine to very coarse, mostly very coarse,
				dry, no odor, gravel up to 1", subround to subangular.

ARCADIS

Sample/Core Log

Boring/Well GMSG-641 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Zams

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push Tube

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1119.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	30	(0-2.5)	0-4" Concrete.
			0.41/-46	4-17" Sand: Dark brown (3/4) soft, silty very fine to coarse, mostly medium to
			(2.5-5)	coarse, moist, no odor.
			0.71/-43	17-30" Silt: Dark yellowish brown (4/4) soft, sandy, very fine to medium, mostly
				medium moist, no odor, trace gravel up to 1/2", subround to round.

ARCADIS

Sample/Core Log

Boring/Well GMSG-642 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - Zams

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push Tube

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1120.4 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	12	(0-1)	0-12" Silt/Sand/Gravel: Brown (4/3), loose, silt sand gravel, very fine to coarse,
			-0.10/-45	mostly medium to coarse, moist, no odor.
				Poor recovery due to rock in end of sleeve.

ARCADIS

Sample/Core Log

Boring/Well GMSG-643 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - GAD

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push Tube

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1121 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	30	(0-2.5)	0-16" Silt/Sand/Gravel: Very dark grayish brown (3/2) loose very fine to very
			1.14/-41	coarse, dry mostly medium to coarse gravel up to 1", subangular to round.
			(2.5-5.5)	16-18" Concrete.
			1.01/-41	18-30" Sand: Yellowish brown (5/6), loose, very fine to coarse, mostly medium,
				minor silt, trace gravel up to 1", subround.

ARCADIS

Sample/Core Log

Boring/Well GMSG-644 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - GAD

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push Tube

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1120.8 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	16	(0-2.5)	0-10" Sand: Dark brown (3/4), soft, silty, very fine to coarse, mostly fine to
			0.71/-42	medium, trace gravel up to 1/2", subround, moist.
				10-16" Sand: Strong brown (5/6), very fine to very coarse mostly coarse to very
				coarse, no odor, trace gravel up to 1", subround to angular.

ARCADIS

Sample/Core Log

Boring/Well GMSG-645 Project/No. Ford/Kingsford WI001095.0002 Page 1 of 1

Site Location Kingsford, Michigan - GAD

Drilling Started 10/18/06 Drilling Completed 10/18/06

Total Depth Drilled 5.0 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Direct Push Tube

Length and Diameter of Coring Device 5 foot by 2 inches Sampling Interval continuous feet

Land-Surface Elev. 1120.2 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Geoprobe

Drilling Contractor Coleman Engineering Driller Scott Helper --

Prepared By TLNK Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (in)	FID/ PID (ppm)	Sample/Core Description
0	5.0	24	(0-2.5)	Silt/Sand/Gravel: Dark brown (3/4), soft to loose, moist, very fine to very coarse,
			-0.71/-46	mostly medium to coarse, gravel up to 1", subround to subangular, no odor.
5.0	10.0	30	(2.5-5)	0-25" Silt: Reddish brown (4/4), soft sandy, very fine to most, mostly fine,
			-0.40/-46	moist, no odor, trace gravel up to 10 mm, subround.
			(5-7.5)	25-30" Sand: Yellowish brown (5/4), loose,fine to very coarse, mostly coarse,
			0.17/-43	dry, no odor, trace gravel up to 15 mm, subround.
10	15.0	50	(7.5-10)	0-35" Silt: Reddish brown (4/4), soft, sandy very fine to medium, mostly fine,
			0.41/-43	moist, no odor, trace gravel up to 20 mm, subround to round.
			(10-12.5)	35-50" Sand: Light yellowish brown (6/4), loose dry, sand, very fine to very coarse,
			1.17/-43	mostly medium to coarse, trace gravel up to 1/2", subangular to round,
			(12.5-15)	trace silt, no odor.
			1.91/-43	

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: RTP-1 Project/No.: WI000675.0001 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 6/25/1998 7:50:00 AM

Drilling Completed: 6/25/1998 08:47 AM

Total Depth Drilled: 13' 10" Feet Hole Diameter: ____ inches

Type of Sample/Coring Device: Backhoe bucket

Length and Diameter of Coring Device: Backhoe bucket

Sampling Interval: Continuous feet

Land-Surface Elev.: 1118.95 feet [X] Surveyed [ ] Estimated

Datum: Mean Sea Level

Drilling Fluid Used: None

Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Company

Driller: Tyrone Helper: NA

Prepared By: Pat Bartnik

Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	~3.5	---	---	Dark brown, organic-rich top soil. Sand medium to fine, silty, trace clay, some gravel-
				size. Apparent paleo-soil, horizon at approximately 1.5 feet (possible mold
				filliments).
3.5	5			Fill and charred wood, brick, clay-tiles broken glass, rubber, metal fragments, foundry
				sand mixed in with dark brown soils (sand/silt).
5	7			Layer of beige to tan brick (fine brick) (large wood fragments above brick layer)
				Note: Approximately percentages soils 80-85 percent, brick 5-7 percent, wood
				fragments 3 percent, metal fragments (thin 1-1/8" to 1/4" diameter
				cable-like),1 percent, cloth 1 percent, glass 1 percent (light bulbs, soda bottles) part
				of a 55 gallon drum; oil soaked wood fragments (trace), (20 to 30 ppm with OVA),
				rubber sheeting or belt.
7	13'10"			Mix of soils and above listed items.
				TD 13'10" (filled in test pit).
				Brick fragment markings LFB WKS and ArtnA Louisville.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-2 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 9:00 AM 6/25/1998

Drilling Completed 9:20 AM 6/25/1998

Total Depth Drilled 7 Feet Hole Diameter NA inches

Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket

Sampling Interval Continuous feet

Land-Surface Elev. 1125.01 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Backhoe

Drilling Contractor Bacco Construction Company

Driller Tyrone Helper NA

Prepared By Pat Bartnik

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	7			Sand. Brown, very coarse to very fine, silty gravely (2mm to 12 inches) subrounded, very poorly sorted. Two approximately 12 gauge coated wire at approximately 6 inches. Several with first bucket. No fill material or non-native materials.
				TD = 7 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-3 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan

Drilling Started 9:28 AM 6/25/1998

Drilling Completed 9:45 AM 6/25/1998

Total Depth Drilled 9 Feet Hole Diameter NA inches

Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket

Sampling Interval Continuous feet

Land-Surface Elev. 1120.28 feet [X] Surveyed [ ] Estimated

Datum Mean Sea Level

Drilling Fluid Used None

Drilling Method Backhoe

Drilling Contractor Bacco Construction Company

Driller Tyrone Helper NA

Prepared By Pat Bartnik

Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	4			Matrix sand, brown, medium to fine, silty, gravely (2 mm - ?? inches).
				Non native materials, plastic (trash bags), shingles, railroad tie, wood fragments,
				metal binding cables (approximately 1/4 inch diameter), discarded shoes, cloth,
				plastic bubble wrap, vinyl flooring, bed spring coils, aluminum siding, glass
				bottles (apple juice), metal sheeting, paper, carpeting, chicken wire, "municipal
				waste" muffler, concrete base of a fence post.
4	5			Sand and Gravel. Brown, poorly sorted.
5	9+			Sand. Tan to bronze, very coarse to medium, gravely.
				TD = 9 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: RTP-4 | Project/No.: Ford/Kingsford WI000675.0001 | Page: 1 of 1

Site Location: Kingsford, Michigan | Drilling Started: 10:00 AM 6/25/1998 | Drilling Completed: 10:12 AM 6/25/1998

Total Depth Drilled: 8 Feet | Hole Diameter: NA inches | Type of Sample/Coring Device: Backhoe bucket

Length and Diameter of Coring Device: Backhoe bucket | Sampling Interval: Continuous feet

Land-Surface Elev.: 1122.49 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Company | Driller: Tyrone | Helper: NA

Prepared By: Pat Bartnik | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	3			Matrix sand/silt, very fine, orange to tan, trace gravel, layers of organic rich soil at
				1'6", charred (grass fire?) organic layer at 1.5 feet.
3	8			Sand, orange, very coarse to medium, trace silt, gravely (2 mm to 6 inches)
				subrounded, very poorly sorted.
				TD = 8 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-5 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 10:21 AM 6/25/1998 Drilling Completed 10:53 AM 6/25/1998

Total Depth Drilled 12 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1118.23 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	12			Matrix: Silt, dark brown, organic - rich. Wood fragments, some charred, small to medium sized (1 inch to 14 inches) both milled and unmilled, coal fragments, sawdust. From 2'8" to 4' in northeast corner of test pit is a lense of tan to beige fill appears to be sandy with subrounded cobbles, wood fragments, 6 inch diameter rubber hosing (?). OVA = 4 ppm
				TD = 12 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-6 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/25/1998 Drilling Completed 11:30 AM 6/25/1998

Total Depth Drilled 11 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1119.40 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	7			Matrix: Silt, brown to dark brown, sandy, gravely (2mm to 6 inches) subrounded
				non-native materials: brick (beige fire brick) occurs as a layer between 1.5 feet
				and 2.5 feet, wire (1/8" to 1/4" diameter) between 2.5 feet and 7 feet appear
				to be two fill layers of 2 feet thick; contains charred wood or coal fragments.
7	11			Sand, orange, medium to fine, silty, gravely.
				TD = 11 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RPT-7 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11:45 AM 6/25/1998 Drilling Completed 12:20 AM 6/25/1998

Total Depth Drilled 13 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1119.75 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used NA Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	~3.5			Matrix: Sand, dark brown, medium to fine gravelly, trace silt. Non-native materials:
				coal, broken concrete (5 feet diameter), glass, wood fragments; (red) brick slag
				metal, roofing paper (felt), carbonized wood fragments, wood chips (deep rust
				color).
3.5	10.5			Fill, concrete rubble underlainly by sand/silt, black carbonized wood fragments.
10.5	11			Thin layer of black carbonized wood, some metal fragments (strapping?).
11	13			Wood chips and fragments, deep rust color, loose.
				TD = 13 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-8 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 12:45 AM 6/25/1998 Drilling Completed 12:55 AM 6/25/1998

Total Depth Drilled 9 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1122.19 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	3			Silt. Orangish to light brown, sandy.
3	5			Sand, tan, fine to medium, rootlets, gravely (2 mm to 4 inches) (subrounded).
5	9			Sand, pinkish gray, fine to medium, well sorted.
				TD = 9 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-9 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 13:13 6/25/1998 Drilling Completed 13:25 6/25/1998

Total Depth Drilled 7 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1123.34 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	4			Sand, orangish brown, medium to fine, gravely (2mm to 2 inches) subrounded.
4	7			Sand, tan, medium to fine, gravely (2 mm to 2 inches) subrounded. Layer of coarse gravel and sand between 3.5 and 4 feet.
				TD = 7 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-10 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 13:37 6/25/1998 Drilling Completed 13:50 6/25/1998

Total Depth Drilled 7 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1122.55 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used NA Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	4			Silt, orangish brown, trace very fine sand, trace fine gravel.
4	7			Sand, tan coarse to medium, trace fine gravel.
				TD = 7 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-11 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/25/1998 Drilling Completed 6/25/1998 14:30

Total Depth Drilled 10.5 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1119.61 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used NA Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	7			Matrix, silt, dark brown, gravely (2 mm to 2 inches) subangular to subrounded
				organic-rich, moldy wood fragments at approximately 2 feet. Nonnative materials,
				wood fragments (burned/charred), metal, platy chrystalline fragments at
				approximately 2 feet angling downward toward the north (sample retained), ash,
				roofing tar paper at approximately 6 to 7 feet.
7	10.5			Silt, orangish brown, trace sand, trace gravel.
				TD = 10.5 feet.
				Note: Debris appears to be sloping downward approximately northward.

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Sample/Core Log

Boring/Well: RTP-12 Project/No.: Ford/Kingsford WI000675.0001 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 14:45 6/25/1998 Drilling Completed: 15:15 6/25/1998

Total Depth Drilled: 7 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe bucket

Length and Diameter of Coring Device: Backhoe bucket Sampling Interval: Continuous feet

Land-Surface Elev.: 1120.79 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Company Driller: Tyrone Helper: NA

Prepared By: Pat Bartnik Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	3.5			Matrix, silt, dark brown, sandy, some gravel (2 mm to 3 inches) subrounded,
				non native materials; wood fragments, light bulb, fire brick, metal sheet
				fragments, solidified tar, charcoal briquettes, 0 to 1 foot dark grey ash-like layer,
				1 to 2 feet medium brown sandy layer with wood fragments and above listed
				material, 2 to 3.5 feet silt, very dark grey to black organic rich rootlets, no odor,
				contains roofing felt and solidified tar.
3.5	5.3			Silt, orangish brown, sandy, some gravel.
5.3	6			Sand, orangish brown, coarse to medium, trace fine gravel.
6	7			Sand, orangish brown, coarse to medium, gravely (2 mm to 2 inches) subrounded.

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Sample/Core Log

Boring/Well RTP-13 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 6/25/1998 Drilling Completed 16:15 6/25/1998

Total Depth Drilled 13' 6" Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1115.36 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	13.5			Matrix, silt, dark brown to light brown, sandy gravelly. Non native materials;
				clumps of white fibrous materials, concrete, metal fragments, black organic-rich
				layers at 3 feet and 4.5 feet. White large (approximately 8 inches diameter)
				nodule at 4.5 feet, brick burned/charred organic-rich nodules, red brick, mason
				jar, several discrete layers of black organic-rich debris between 4 and 6 feet, black
				organic rich layers at 7'6" to 10'8" layer of fine brick between 6' and 7 '.
				TD = 13'6"
				No native materials encountered.

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Sample/Core Log

Boring/Well RTP-14 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Wisconsin Drilling Started 16:35 6/25/1998 Drilling Completed 17:05 6/25/1998

Total Depth Drilled 12'4" Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device Backhoe bucket Sampling Interval Continuous feet

Land-Surface Elev. 1119.02 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used NA Drilling Method Backhoe

Drilling Contractor Bacco Construction Company Driller Tyrone Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	12'4"			Matrix, silt, dark brown, sandy, with fine gravel. Non native materials; metal, fire
				brick, paper, glass, empty spool of solder, wood fragments, black
				carbonized material, wire, layer of fire brick 2' to 3' angling downward toward
				the west, charred wood fragments, electrical cable (at contact between native and
				non native material. Black carbonized between approximately 8' and 9'.
				Orangish soils below this carbonized layer but it appears to have inclusions of black
				carbonized material at about 10 to 11'.
				TD = 12'4"

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well RTP-15 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 15:20 7/12/99 Drilling Completed 16:00 7/12/99

Total Depth Drilled 6 Feet Hole Diameter NA inches Type of Sample/ Coring Device NA

Length and Diameter of Coring Device Backhoe bucket Sampling Interval NA feet

Land-Surface Elev. 1111 feet [ ] Surveyed [X] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method NA

Drilling Contractor Bacco Construction Company Driller Randy Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.5			Very dark brown to black organic rich layer. Some fractured charcoal briquettes on north side of pit. No briquettes on south side.
0.5	6			Sand orangish brown, medium to very fine grained, silty, trace clay, some gravel (2 mm to 2 inch) subrounded.
				Final pit dimensions 5 ft x 5 ft x 6 ft deep

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Sample/Core Log

Boring/Well RTP-16 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 16:17 7/12/99 Drilling Completed 16:30 7/12/99

Total Depth Drilled 5.5 Feet Hole Diameter NA inches Type of Sample/ Coring Device NA

Length and Diameter of Coring Device Backhoe bucket Sampling Interval NA feet

Land-Surface Elev. 1118.00 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used Drilling Method NA

Drilling Contractor Bacco Construction Driller Randy Helper NA

Prepared By Pat Bartnik Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	0.5			Top soil black organic rich. Abundant very small fragments of charcoal.
0.5	5.5			Sand grayish brown medium to very fine grained, silty, trace clay, some gravel.

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Sample/Core Log

Boring/Well TP-1 Project/No. WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 9/29/98 Drilling Completed 9/29/98

Total Depth Drilled 67 Inches Hole Diameter 3/4 inches Type of Sample/ Coring Device Bucket Auger Hollow stem auger

Length and Diameter of Coring Device 3/4" x 2" Sampling Interval Every 1 foot feet

Land-Surface Elev. 1118.5 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used none Drilling Method Hand Auger

Drilling Contractor ARCADIS Geraghty & Miller, Inc. Driller Ray Helper Pat

Prepared By Raymond Flynn Hammer Weight 10 Hammer Drop 30 ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 Inches	Sample/Core Description
0	3	3		Concrete.
3	6			Medium Sand. Yellowish brown (10 YR 5/8), with trace to some coarse sand
				and trace pebble gravel. Slight HCl reaction, loose. Dry but wetted when
				cored using 3 inch bucket auger. Gravel - concrete fragments.
6	9			Sand. Yellowish brown (10 YR 5/8), medium to coarse, some fine sand. Trace to
				some pebble gravel - concrete fragments, bucket auger sample.
18	24			Sand. Medium to coarse, as above with concrete fragments as above.
24	30			Sand. Yellowish Brown (10 YR 5/4), medium to coarse, dry, loose, some granular
				gravel, no HCl reaction.
32	37			Sand. Yellowish brown (10 YR 5/4), medium, loose, dry, some coarse to very
				coarse sand, trace to some granular gravel (subrounded) well rounded, variable
				composition, trace pebble gravel.
48	52			Sand. Yellowish brown (10 YR 5/6), coarse and granular gravel, loose, dry, trace
				pebble gravel. No HCl reaction. Grave subangular to well rounded, variable
				composition.
64	67			Sand. Brownish yellow (10 YR 6/6), coarse to medium, loose, damp (possibly due to
				water added) trace to some granular gravel. Trace pebble gravel. No HCl
				reaction.
				End of Hole 67 inch bgs.

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Sample/Core Log

Boring/Well TP-5a Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/2/99 Drilling Completed 11/2/99

Total Depth Drilled 8 Feet Hole Diameter ____ inches Type of Sample/ Coring Device ____

Length and Diameter of Coring Device ____ Sampling Interval ____ feet

Land-Surface Elev. 1116.54 feet [X] Surveyed [ ] Estimated Datum ____

Drilling Fluid Used ____ Drilling Method ____

Drilling Contractor Bacco Construction Driller Tyrone Helper ____

Prepared By John Keller Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2			Native soil composed of sands, silts, and gravels that are massive (do show some laminae).
2				Tar: Black, vitreous, frozen (vertical extent of the tar was not determined prior to its removal).
				Final pit dimensions 23 ft x 5 ft x 8 ft deep.

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Sample/Core Log

Boring/Well TP-7a Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/2/99 Drilling Completed 11/2/99

Total Depth Drilled 9.5 Feet Hole Diameter ____ inches Type of Sample/ Coring Device ____

Length and Diameter of Coring Device ____ Sampling Interval ____ feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used ____ Drilling Method ____

Drilling Contractor Bacco Construction Driller Tyrone Helper ____

Prepared By John Keller Hammer Weight ____ Hammer Drop ____ ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	4			Sand; light brown, coarse to fine grained, moist.
4	9.5			Organic-rich layer: black to dark brownish black, contains abundant degraded wood.
0	7			Sand: light brown, coarse to fine grained, moist.
7				Organic-rich layer: large wood fragments (not decomposed), and for: black, vitreous,
				frozen (extent of organic-rich layer was not determined).

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Sample/Core Log

Boring/Well TP-10 Project/No. Ford/Kingsford WI000675.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 11/3/99 Drilling Completed 11/3/99

Total Depth Drilled 9.5 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe

Length and Diameter of Coring Device Backhoe Sampling Interval NA feet

Land-Surface Elev. 1117.47 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used NA Drilling Method NA

Drilling Contractor Bacco Construction Driller Tyrone Helper NA

Prepared By John Keller Hammer Weight NA Hammer Drop NA ins.

Sample/Core Location From	To	Core Recovery (feet)	Vertical Extent	Sample/Core Description
	35' NW		0-1'	Sand: Light brown, coarse to fine grained, loose, moist.
			1-2.5'	Organic-rich layer: Composed of mostly wood fragments, rootlets, and decomposed
				woody material. Also contains some crushed, fragmented brick.
			2.5-10'	Sand: Some as above.
35'	43' NW		0-1'	Sand. As above.
			1-12'	Organic-rich layer as above (thickest part of the organic-rich layer is at 43 feet NW of
				origin -- center of the channel).
43'	57' NW		0-1'	Sand. As above.
			1-B.O.T.	Organic-rich layer as above (channel feature extends from 35 to 57 feet NW of origin).
57	79' NW		0-1'	Sand. As above.
			1-4'	Organic-rich layer, as above.
			0-B.O.T.	Sand. As above (organic-rich layer pinches out at 79 feet NW of origin).
				B.O.T. = Bottom of trench.

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Sample/Core Log

Boring/Well: TP-11 | Project/No.: Ford/Kingsford WI000675.0001 | Page 1 of 1

Site Location: Kingsford, Michigan | Drilling Started: 11/4/99 | Drilling Completed: 11/4/99

Total Depth Drilled: 11 Feet | Hole Diameter: NA inches | Type of Sample/Coring Device: NA

Length and Diameter of Coring Device: NA | Sampling Interval: ____ feet

Land-Surface Elev.: 1117.19 feet | [X] Surveyed | [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: NA | Drilling Method: NA

Drilling Contractor: Bacco Construction | Driller: Tyrone | Helper: NA

Prepared By: John Keller | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Location (lateral Extent) From	To	Core Recovery (feet)	Vertical Extent	Sample/Core Description
	6' NW		0-3'	Sand. Medium to fine grained, brown, gravelly.
			3-4.5'	Organic - rich layer: Abundant carbonized wood, plant matter, plastic, metal.
			4.5-5.5'	Silt/Clay/very fine sand.
			5.5-5.75'	Organic - rich layer: Carbonized wood, charcoal.
			5.75-11'	Sand. Coarse to very fine, silt, gravel, apparent native soil.
6'	19.5' NW		0-2.5'	Sand. Same as 0-3' interval above.
			2.5-4'	Organic rich layer: Same as 3 to 4.5 feet interval above.
			4-4.5'	Silt/Clay/Very Fine Sand.
			4.5-5'	Thin organic - rich band: carbonized wood.
			5-6'	Silt/Clay/very fine sand.
			6-6.25'	Organic - rich layer: Same as 5.5-5.75 feet interval above (This layer pinches out
				at 19.5 feet NW of origin).
			6.25-8'	Sand: Same as 5.57 to 11 feet interval above.
19.5'	35.5' NW		0-1.5'	Sand: Medium to fine grained, brown, gravelly.
			1.5-4'	Organic to rich layer: Abundant carbonized wood, plant matter, plastic, metal.
			4-4.25'	Silt/Clay/very fine sand.
			4.25-4.5'	Thin organic - rich band: carbonized wood. (This layer pinches out at 35.5' NW of
				origin).
			4.5-8'	Sand: Coarse to very fine, silt, gravel (apparent native soil).
35.5'	42.5' NW		0-1'	Sand: Medium to fine grained, brown, gravelly.
			1-4'	Organic rich layer: Abundant carbonized wood, plant matter, plastic, metal.
			4-B.O.T.	Silt/Clay/very fine sand.
				Note: B.O.T. = Bottom of trench.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well TP-12 Project/No. Ford/Kingsford/WI000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/21/00 Drilling Complete 8/21/00

Total Depth Drilled 12 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe

Length and Diameter of Coring Device NA Sampling Interva NA feet

Land-Surface Elev. 1118.33 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Driller Mike Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	3			Sand/Gravel, dark brown, fine to coarse sand, fine to coarse gravel with pebbles and
				cobbles up to .5' in diameter, poorly sorted, fill mix.
3	4			Sand. Light brown, medium to coarse, well sorted.
4	12			Sand, coarse, interbedded with sand/gravel, poorly sorted, loose, visible bedding.
				Test Pit Dimensions: 8' wide, 10' long, 12' deep.
				No visible tar or waste mateiral. Return all excavated material to pit and regrade
				to original suface.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well TP-13 Project/No. Ford/Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/21/00 Drilling Complete 8/21/00

Total Depth Drilled 12.5 Feet Hole Diamet NA inches Type of Sample/ Coring Device Backhoe

Length and Diameter of Coring Device NA Sampling Interval NA feet

Land-Surface Elev. 1117.43 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Driller Mike Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	3.5			Sand/Gravel: Brown, fine to coarse sand, fine to coarse gravel, poorly sorted with
				pebbles to cobbles 1' diameter, fill.
3.5	5			Sand: Black-stained, rootlets organic material, clayey, reed material.
5	7			Sand: Fine to medium, some black staining, large roots at 7'.
7	12.5			Sand: Light reddish brown, medium to coarse grained, poorly sorted, very moist to
				wet.
				Note water seeping in on north wall at 7'.
				Test Pit Dimensions: 10' wide, 12' long, 12.5 deep
				Removed small piece of tar at 2.5', small 1" vein 2' long at NE side of pit at 2.5'. No
				other tar or waste material encountered. Black soil is stained sand or organic material.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-14 Project/No.: Ford/Kingsford/WI000804.0001 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/21/00 Drilling Completed: 8/21/00

Total Depth Drilled: 13 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1117.90 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	3			Sand/Gravel: Light reddish brown, fill.
3	3.5			Organics/Sand: Black dense layer of ash and burnt wood chips, some pieces of
				wood, rootlets.
3.5	7			Sand: Light reddish brown, fine to coarse, moderately sorted, loose, moist.
7	13			Sand: Light reddish brown to reddish brown, medium to coarse and coarse to very
				coarse varying amounts of gravel in bedding 2" to 8" thick.
				Test Pit Dimensions: 9' wide, 13' ling, 13' deep.
				No tar encountered, very limited waste in .5' zone 3-3.5'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-15 | Project/No.: Ford/Kingsford/WI000804.0001 | Page 1 of 1

Site Location: Kingsford, Michigan | Drilling Started: 8/21/00 | Drilling Completed: 8/21/00

Total Depth Drilled: 12 Feet | Hole Diameter: NA inches | Type of Sample/Coring Device: Backhoe

Length and Diameter of Coring Device: NA | Sampling Interval: NA feet

Land-Surface Elev.: 1116.82 feet ☐ Surveyed ☐ Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Backhoe

Drilling Contractor: Bacco Construction | Driller: Mike | Helper:

Prepared By: Bruce Evans | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	1			Sand/Gravel: Light brown.
1	1.5			Organics: Black, charred ash and wood.
1.5	2			Bark chips: Reddish brown.
2	5			Organics/Sand/Wood timbers: fill mix of black stained sand, ash, charred wood,
				wire, large timber 4 x 8" 8' long
5	8.5			Sand: Pinkish brown, coarse grained some gravel, with abundant wood and timber,
				tree roots and stumps, several black stained beds 2-3" thick, discontinuous dense
				ash and charred wood with sand/clay.
8.5	9			Organics: black roots rootlets/reed material,top of paleo surface.
9	12			Sand: Light brown, fine to coarse grained with silt, trace clay, poorly sorted, some fine
				to coarse gravel, moist.
				Test Pit Dimensions: 10' long, 10' wide, 12'deep.
				No tar material encountered - mostly sand/gravel fill with timbers and ash/charred
				wood fragments.

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Sample/Core Log

Boring/Well: TP-16 Project/No.: Ford/Kingsford/WI0008040001 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/21/00 Drilling Completed: 8/21/00

Total Depth Drilled: 16 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1118.65 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5			Sand/Gravel: Light brown, fine to coarse sand and gravel fill.
5	9			Sand/Wood/Organics/Roots: Black, fill mix mostly medium to very coarse sand with various wood fragments, trace timbers, trace brick fragments.
9	16			Sand: Gray, black stained, fine to coarse grained, silty, variable amounts of fine to coarse gravel and cobbles up to .5' in diameter, very poorly sorted. Root zone at 9 feet.
				Note: Small water influx at 7 feet in NE corner of excavation.
				Test Pit Dimensions: 11' wide, 12' long, 16' deep.
				No tar encountered, fill primarily sand/gravel mixed with wood.

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Sample/Core Log

Boring/Well: TP-17 Project/No.: Ford/Kingsford/WI000804.0001 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/21/00 Drilling Completed: 8/21/00

Total Depth Drilled: 14 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1119.64 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weigh: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5			Sand/Gravel: Light brown, fill.
5	7			Fill: Gray; clay with sand, burnt and charred wood fragments, wood
				timber, roots, lime?, ash, compacted charred wood, wire, mortar?.
7	11			Sand/Fill: Alternating layers black charred wood with sand zones wood pieces/
				timber/plywood pieces/unprocessed brick, soft.
11	14			Sand: Reddish brown, fine to coarse grained, mostly fine to medium grained, poorly
				sorted, some fine to coarse gravel.
				End pit at 14 feet.
				Test Pit Dimensions: 9' wide, 12' long, 14' deep.
				No tar found, fill 5-11 feet mostly sand/clay mixed with wood and burnt wood.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well TP-18 Project/No. Ford/Kingsford Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 8/21/00 Drilling Completed 8/21/00

Total Depth Drilled 13 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe

Length and Diameter of Coring Device NA Sampling Interval NA feet

Land-Surface Elev. 1119.85 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Driller Mike Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	3			Sand: Light reddish brown, coarse grained with some fine to coarse gravel, fill.
3	9			Demolition Debris: Rebared concrete, bricks, wood, concrete, metal bands, plastic
				sheeting, much of concrete is formed 1" thick and rebarred, black vitreous coating
				on some concrete, very loosely packed debris.
9	11			Fill: Mix of sand/clay, dark gray to black wood fragments and splintery wood, charred
				wood, organics, roots and rootlets, sawdust, bark, decomposing wood.
11	13			Sand: Tan some black staining at 11 feet, coarse grained, well sorted, with fine to
				coarse gravel.
				End test pit at 13 ft.
				Test Pit Dimensions: 12'long, 12' wide, 13' deep.
				No tar, mostly construction fill to 7 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-19 Project/No.: Ford/Kingsford Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/21/00 Drilling Completec: 8/21/00

Total Depth Drilled: 12 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1118.83 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2			Sand/Gravel: Light brown, fine to coarse grained, fill.
2	8			Fill-construction debris: Concrete reinforced with rebar, wood, also hard brittle
				carbonized wood mixed with sand. Zone of carbonized wood in north wall 3-7
				ft, very hard, brittle odorous.
8	12			Sand: Tan, medium to very coarse grained, poorly sorted, some gravel.
				End Test Pit at 12 feet.
				Test Pit Dimensions:: 10' wide, 11' long, 12' deep.
				No tar observed. Fill mix construction debris, carbonized wood, sand.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-20 Project/No.: Ford/Kingsford Page 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/21/00 Drilling Completed: 8/21/00

Total Depth Drilled: 12 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1118.13 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	4			Sand/Gravel: Light reddish brown, fine to coarse sand, fine to coarse gravel, very
				poorly sorted, fill.
4	11			Sand: Light brown, medium to coarse grained, some fine, some fine to coarse gravel,
				poorly sorted, trace silty zones, <1" thick.
11	12			Sand/Gravel: Pinkish brown, coarse to very coarse sand and fine to coarse gravel
				and pebbles, very poorly sorted, very coarse, wet, odor.
				End Test Pit at 12 feet.
				Test Pit Dimensions: 12' wide, 13' long, 12' deep.
				Note pit caved readily. No paleo soil zone or roots noted. No tar or waste.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-21 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/21/00 Drilling Completed: 8/21/00

Total Depth Drilled: 10 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1117.49 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5			Sand/Gravel. Light reddish brown, fine to coarse sand, fine to coarse
				gravel, some pebbles and cobles, fill roots at 5'.
5	10			Sand: Light brown, medium to coarse grained, some fine, some fine to coarse
				gravel, poorly sorted.
10	10			Tar: Trace black, firm, gooey, sometimes brittle, mixed with carbonized
				wood, very strong odor.
				Hole continues to collapse and can not penetrate below 10 feet.
				Abandon test pit at 10'.
				Note: water influx at 5 feet in all walls of excavation.
				Observed tar at 10', no waste in upper 10'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/W. TP-22 Project/No. Ford/Kingsford Page 1 of 1

Site

Location Kingsford, Michigan Drilling Started 8/21/00 Drilling Completed 8/21/00

Total Depth Drilled 15 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe

Length and Diameter of Coring Device NA Sampling Interval NA feet

Land-Surface Elev. 1117.75 feet [X] Surveyed [ ] Estimated Datum Ground surface

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractc Bacco Construction Driller Mike Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	1			Sand: Light tan, fine to medium grained some coarse moderate sorting with
				fine to coarse gravel.
1	7			Sand: Black stained fine to medium grain mixed with organics, rootlets, sawdust,
				small wood fragments, trace bark, fill but mostly sand and sawdust, steel cable
				at 7', strong rotten egg odor.
7	15			Sand: Black and tan, fine to medium grain, mostly fine with some fine to coarse
				gravel, pebbles/cobbles, patchy staining in sand.
				End Pit at 15'.
				Test Pit Demensions: 9' wide, 14' long, 15' deep
				No tar observed, mostly sand fill mixed with wood/sawdust to 7'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-23 Project/No.: Ford/Kingsford WI000804001 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 8/21/00 Drilling Completed: 8/21/00

Total Depth Drilled: 13 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1120.43 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	6			Sand/Gravel: Light brown, fine to coarse sand, fine to coarse gravel, fill mixed with occasional debris-metal, wood pieces, rootlets, several inconsistent black-stained horizon 1-3" thick, most predominate at 6 feet, trace burnt and charred wood.
6	13			Sand. Reddish brown to yellowish brown, fine to coarse grained, poorly sorted, very silty in some horizons, trace gravel and pebbles.
				Test Pit dimensions: 9' wide, 14' long, 13' deep
				No tar or waste observed.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well TP-24 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/21/00 Drilling Completed 8/21/00

Total Depth Drilled 12.5 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe

Length and Diameter of Coring Device NA Sampling Interval NA feet

Land-Surface Elev. 1120.54 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Driller Mike Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	1			Sand/Gravel: Light brown, fine to coarse sand and gravel, fill.
1	1.5			Sand: Reddish brown to black, some staining, organic material, silty, rootlets.
1.5	9			Sand. Reddish brown to yellowish brown, fine to medium grained, trace fine to coarse
				gravel, well sorted, some silt.
9	12.5			Sand/Gravel: Light reddish brown, mostly sand, medium to very coarse with fine to
				coarse gravel, moderate to poorly sorted, some pebbles.
				Test Pit dimensions: 8' wide, 10' long, 12.5' deep
				No tar or waste material, observed.
				Native material at 1.5'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well TP-25 Project/No. Ford/Kingsford Wi000804.0001 Page 1 of 2

Site Location: Kingsford, Michigan

Drilling Started: 8/21/00 Drilling Completed: 8/22/00

Total Depth Drilled: 8 - 12 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1116.98 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				TP-25 orientated NW-SE across supposed channel between NE and SW Pits.
				Started at SE end of pit.
0	1.5			Sand/Gravel: Light brown, fine to medium sand with variable fine to coarse gravel,
				moderate to poor sorting. At 1.5' paleo soil horizon. Black organics, root/rootlets
				mixed with sand.
1.5	5			Sand. Reddish brown, fine to medium grained, moderate to well sorted, trace fine
				gravel.
5	10			Sand: Light reddish brown, coarse to very coarse, some medium with, varying
				amounts fine to coarse gravel.
				From SE end of pit to approximately 27' NW sequence same 1' fill - black horizon-
				native soil. At 27' along trench from SE channel beginning to form. Fill to 5 feet
				at 27'. Fill to 7 feet at 45'.
0	5/7			Fill predominately sand, light brown to reddish brown, mixed with organic
				material-burnt/charred soil and wood, also pieces wood/limbs/trunks roots, trace
				wire, metal.
				At 50' along trench from SE, fill increases to 10-12'. 1-10 predominately sand.
				10' wood organic material. Tar/carbonized wood mixed with wood.
				From 50 to 65 feet along trench, bottom old channel at 9 feet.
				Tar mixed with carbonized wood and trace limbs present in this zone primarily 6-9'
				in a thick mass.
				Typical section.
0	2			Sand/Gravel: Light brown, fine to coarse mostly sand.
2	6			Sand. Light brown to reddish brown, fine to coarse mixed with minor wood.
				Several dense black beds 1-4" thick, not continuous.
6	9			Sand/Wood/Tar/Carbonized wood: Tightly matted, broken and splintered wood, tree
				limbs, trunks, stumps, roots.
9	12			Sand/Gravel: Light reddish brown, medium to very coarse grained, poorly sorted with
				fine to coarse gravel and pebbles, odor.
				Tar ends at approximately 65'.

ARCADIS GERAGHTY & MILLER
Sample/Core Log (Cont.d)

Boring/Well TP-25 Page 2 of 2

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				At 70' from SE end bottom channel rises to 5 feet.
				AT 85 feet end trench.
0	2			Sand/Gravel: Fill.
2	10			Sand with some interbedded sand/gravel units, light brown, predominately fine to
				medium grain, with coarse to very coarse sand and gravel, poorly sorted.
				Note black soil horizon ends at approximately 80' and 2' depth.
				Test pit dimensions: 6-10' wide, 85' long, 8-12' deep.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-26 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 1

Site Location: Kingsford, Michigan

Drilling Started: 8/22/00 Drilling Completed: 8/22/00

Total Depth Drilled: 7 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1116.97 feet [X] Surveyed [X] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2.5			Sand/Gravel. Light reddish brown, fine to coarse.
2.5	5			Sand. Light brown, fine to medium, clayey, some gravel.
5	7			Fill. Black burnt construction debris, ash, charred wood and wood
				timbers, metal, banded metal, wire, bricks, bottles. All fill heavily charred
				and burned.
				Test pit dimensions: 5' wide, 8' long, 7' deep
				No tar or carbonized wood observed to 7'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-27 Project/No.: Ford/Kingsford WI000804.0001 Page: 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/22/00 Drilling Completed: 8/22/00

Total Depth Drilled: 7-12 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1120.35 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2			Sand/Gravel, light brown fine to coarse.
2	2.2			Black organic-rich horizon.
2.2	12			Sand: Light reddish brown fine to coarse grained, variable gravel.
				18" Concrete slab at 7 feet on the southwestern side of pit orientated
				SE-NW through south wall, west wall, west end of north wall.
				No visible tar beneath slab original pit 17 wide by 20'long x 11 deep.
				Enlarged to test pit TP-27 to further exposure the cement slab.
				Advanced test pit to SW following cement slab.
				At 38' intersect junction box with cement slab.
				Cement slab has conducts in pipe in cement, intersects manhole conduct
				junction made of brick with cement cover holding old lines for power-
				plant. Subsurface similar along length of cement slab.
0	2			Sand/Gravel.
2	2.5			Fill zone black, charred debris.
2.5	7			Sand, some gravel.
				Test pit dimensions from 20': 8' wide, 18' long, 7' deep.
				Total Test Pit length 38'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well TP-27A Project/No. Ford/Kingsford Page 1 of 1

Site Location Kingsford, Michigan Drilling Started 8/22/00 Drilling Completed 8/22/00

Total Depth Drilled 11 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe

Length and Diameter of Coring Device NA Sampling Interval NA feet

Land-Surface Elev. 1120.11 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Driller Mike Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	2			Sand/Gravel. Fill.
2	2.5			Sand/Organics: Black stained, fine to medium, charred wood, carbonized
				wood, trace brittle black tar and vitreous material in places.
2.5	11			Sand: Light brown to light reddish brown fine to medium grained, some
				coarse, and gravel.
				Test Pit dimensions: 10' wide, 20' long, 11' deep.
				Trace brittle tar in layer at 2'. No other tar or waste below 2.5'.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-28 Project/No.: Ford/Kingsford WI000804.001 Page 1 of 1

Site Location: Kingsford, Michigan Drilling Started: 8/22/00 Drilling Completed: 8/22/00

Total Depth Drilled: 7 Feet Hole Diameter: NA inches Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA Sampling Interval: NA feet

Land-Surface Elev.: 1119.05 feet [X] Surveyed [ ] Estimated Datum: Mean Sea Level

Drilling Fluid Used: None Drilling Method: Backhoe

Drilling Contractor: Bacco Construction Driller: Mike Helper:

Prepared By: Bruce Evans Hammer Weight: NA Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	5			Sand/Gravel Fill.
5	7			Fill sand/wood/cable/metal/fire hydrant/charred wood, trace black tar,
				crystalline.
				Water began influxing into pit on south wall bottom at 7 feet.
				Test Pit dimensions: 9' wide, 8' long, 7' deep.
				No waste in top 5'. Trace of tar at 7' and construction debris.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-29 | Project/No.: Ford/Kingsford | Page: 1 of 2

Site Location: Kingsford, Michigan | Drilling Started: 8/22/00 | Drilling Completed: 8/22/00

Total Depth Drilled: 11-13 Feet | Hole Diameter: NA inches | Type of Sample/Coring Device: Backhoe

Length and Diameter of Coring Device: NA | Sampling Interval: NA feet

Land-Surface Elev.: 1116.42 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Backhoe

Drilling Contractor: Bacco Construction | Driller: Mike | Helper:

Prepared By: Bruce Evans | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				Beginning at SE end of Pit.
0	1			Silt: Light brown, rootlets.
1	3			Sand: Reddish brown, fine to medium grained, some coarse to very
				coarse, with gravel.
3	5			Fill: Organics, roots, charred and burnt wood fragments, sawdust, clay,
				ash?, white sugary material (mortar?).
5	8			Sand: Light reddish brown, fine to medium, rootlets.
8	11			Sand: Reddish brown to yellowish brown, fine to medium, very silty and
				clayey with gravel and coarse sand.
				From 15 ft to 25 ft: black horizon thins and dips downward.
0	7			Sand/Gravel: Fill.
7	7.5			Black horizon
7.5	11			Sand: Reddish brown, also stained black.
				At 25 feet: Fill zone thickens.
0	7			Sand/Gravel.
7	10			Black fill. Woody mass.
10	12			Sand: Base sometimes stained.
				From 25 to 40 feet: fill thickens again downward.
0	7			Sand.
7	11			Fill. Carbonized tary mix.
11	12			Sand.
				Fill is a black mass of wood fibers, branches and limbs shattered, carbonized
				wood and tar, wood bark chips also mixed in.
				At 50 feet from SE end, large influx of water from woody fill.
				Base fill still approximately 11 feet.

ARCADIS GERAGHTY & MILLER

Sample/Core Log (Cont.d)

Boring/Well TP-29

Prepared by Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
				Less tar 40 to 50 feet intermixed with woody fill. Fill still approximately
				7 to 11' but sand units starting to develop 7 to 9 feet. (9-11' still
				solid organics/wood).
				From 50-60 feet east wall has little woody fill, west wall displays thick
				section still.
				60 feet channel ends; fill goes from 6-10 feet to 5-6 feet over 3 feet
				(60 to 63). From 63-73, base channel approximately 5 feet at NW end
				of pit.
0	4			Fill sand/gravel.
4	5			Fill sand/organics, black, woody, clayey, dense, charred wood.
5	11			Sand. Light reddish brown, mostly fine to medium with coarse sand and
				gravel beddings 6" to 1' thick.
				Note several 1-2" black horizons, discontinuous, in top 1 foot fill.
				Minor tar present 25 to 50' within fill at 7-11'.
				Test pit dimensions: 12' wide, 73' long, 11-13' deep
				TP-29 is a test trench oriented NW-SE.

ARCADIS GERAGHTY & MILLER

Sample/Core Log

Boring/Well: TP-30 | Project/No.: Ford/Kingsford/WI000804.0001 | Page 1 of 1

Site Location: Kingsford, Michigan | Drilling Started: 8/22/00 | Drilling Completed: 8/22/00

Total Depth Drilled: 12 Feet | Hole Diameter: NA inches | Type of Sample/ Coring Device: Backhoe

Length and Diameter of Coring Device: NA | Sampling Interval: NA feet

Land-Surface Elev.: 1115.12 feet [X] Surveyed [ ] Estimated | Datum: Mean Sea Level

Drilling Fluid Used: None | Drilling Method: Backhoe

Drilling Contractor: Bacco Construction | Driller: Mike | Helper:

Prepared By: Bruce Evans | Hammer Weight: NA | Hammer Drop: NA ins.

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	OVA/OVM	Sample/Core Description
0	6			Fill: Sand/Gravel, light reddish brown, fine to coarse, poorly sorted, trace
				roots, wire, several thin <1" black horizons, discontinuous; at 6'
				interface with native soil; black organics; roots, rootlets, natural.
6	12			Sand: Light reddish brown to slightly grey to black stained, fine to
				coarse grain, poorly sorted, fine to coarse gravel, trace pebbles.
				Note water influx at 6' in north and south wall of pit at fill/native material
				interface.
				Test Pit Dimensions: 6' wide, 9' long, 12' deep

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Sample/Core Log

Boring/Well TP-31 Project/No. Ford/Kingsford WI000950.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 3/6/02 Drilling Completed 3/6/02

Total Depth Drilled 9 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device 24-inch bucket Sampling Interval continuous feet

Land-Surface Elev. 1118.80 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Driller Dave Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To	Length (feet)		Sample/Core Description
0	2.5	0	9	Brown silt underlain by silt/sand with rock and gravel, some red clay.
2.5	3.5			Sand, brown, mostly medium-coarse grain.
	3.5			Paleo soil horizon: Roots/rootlets black, in coarse sand.
3.5	7			Sand: Dark brown, coarse with gravel, moist.
	7			Second Paleo surface: Black organic material, roots, rootlets, peat, reeds, trace charred
				wood and burnt wood fragments, moist, strong odor.
7	9			Sand: Dark brown to light reddish brown, medium -coarse grain with gravel and pebbles,
				very poorly sorted, loose, some dark staining, some odor. No evidence of any waste
				material.
		9	11	No waste material.
				Fill soil to approximately 7 feet, some black staining in sand fill from 3.5 to 7 feet and
				black staining and some odor below 7 feet. No staining or odor in upper 3.5 feet of
				sand/gravel, fill.
0	12	11	14	Material same as before.
		14	18	No observed waste with exception of bricks and brick fragments and a 2 foot piece of
				processed wood at the 7 foot paleo horizon.
		18	20	Sequence similar to start of test pit (west end).
0	3.5			Rock/gravel/sand fill.
3	3.5			Coarse sand/gravel fill with rootlets and some black staining.
6	7			Paleo horizion.
7	12			Sand: Fine to medium grain with gravel, native material.
		20	25	Lower paleo horizon rising to 6 feet several wood pieces - limb fragments and metal band
				present Paleo horizon.

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Sample/Core Log

Boring/Well TP-31

Prepared By Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Length (feet)		Sample/Core Description
		25	30	Lower Paleo horizon at approximately 6 feet some wood pieces, processed 2 x 4s
				and tree limbs present primarily at Paleo Horizon at 6 feet, minor black staining in
				upper fill some black stainig and odor in Paleo Horizon and underlying native sand.
				No waste material or tar or demolition debris noted with exception of the wood pieces and
				several brick fragments at approximately 10 feet along length of test pit from west,
				test pit 5-6 feet wide 30 feet long by 9-12 feet deep.

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Sample/Core Log

Boring/Well TP-32 Project/No. Ford/Kingsford WI000950.0001 Page 1 of 2

Site Location Kingsford, Michigan Drilling Started 3/6/02 Drilling Completed 3/6/02

Total Depth Drilled 11 Feet Hole Diameter NA inches Type of Sample/ Coring Device Backhoe bucket

Length and Diameter of Coring Device 24-inch bucket Sampling Interval continuous feet

Land-Surface Elev. 1119.2 feet [X] Surveyed [ ] Estimated Datum Mean Sea Level

Drilling Fluid Used None Drilling Method Backhoe

Drilling Contractor Bacco Construction Driller Dave Helper

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

Sample/Core Depth (feet below land surface)

From	To	Length (feet)		Sample/Core Description
0	3	0	14	Sand: Light reddish brown, medium-coarse with gravel and rock, frost line at
				approximately 2 feet.
	3			Soil Horizon, black, 1 foot thick, thinning westward, charred sand/gravel/organic material,
				bits of charred wood.
4	7			Sand: Light brown, fine-coarse grain with some gravel and rock, trace metal wire at 5 feet
				along length.
	7			Paleo surface second horizon approximately 3-4" thick, black horizon with organic
				material and peat.
7	11			Sand: Light brown, coarse grain with some medium grain, gravel and pebbles, loose,
				moist, no staining.
		14	20	
3	7			Demolition Debris: Concrete with rebar reinforced concrete 2" thick, often with a coating
				of tar, concrete black staining on one or both sides, pieces wood - processed and charred,
				some tar thin layers black flexible material, similar to roofing tar, some sheet metal,
				demolition debris is in the fill unit from 3 to 7 feet. Appears to be native sand at
				approximately 7 feet.
		20	25	Same as above fill/demolition derris to 7 feet.
		25	27	Demolition debris ends, black horizon from 3 feet to approximately 6 to 7 feet visible on
				south wall, north wall 3 to 5 feet or approximately 2 feet both underlain by sand fill.
				Native sand still at approximately 7 feet.
3	6			Black material observed above dense unit of organic material, mostly ash and charred
				wood, mixed with burnt sand, some sawdust, trace bark and unburnt wood chips. No+E76
				tar to sludge visible in the black material between 3 and 7 feet.

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Sample/Core Log

Boring/Well TP-32

Prepared By Bruce Evans

Sample/Core Depth (feet below land surface) From	To	Length (feet)		Sample/Core Description
		27	31	Top of black material dips to 4 feet then 5 feet and thins to approximately 2 feet thick
				(5 to 7 feet) visible in south and north walls. Black material, organic rich, primarily woody
				material, sawdust, bark shreds, rootlets, peat. Majority of demolition debris in north wall
				is from 15 to 22 feet along pit from east and in interval 3 to 7 feet.
				2-3' black material in north wall at 30 feet.
		31	32	At north wall at east end test pit approximately 1 foot black material in 3 to 4 feet.
				Test Pit TP-32 5 to 6 feet wide by 32 feet long x 10 to 11 feet deep only visible tar
				associated with demo debris.

Appendix B

Stratigraphic Columns

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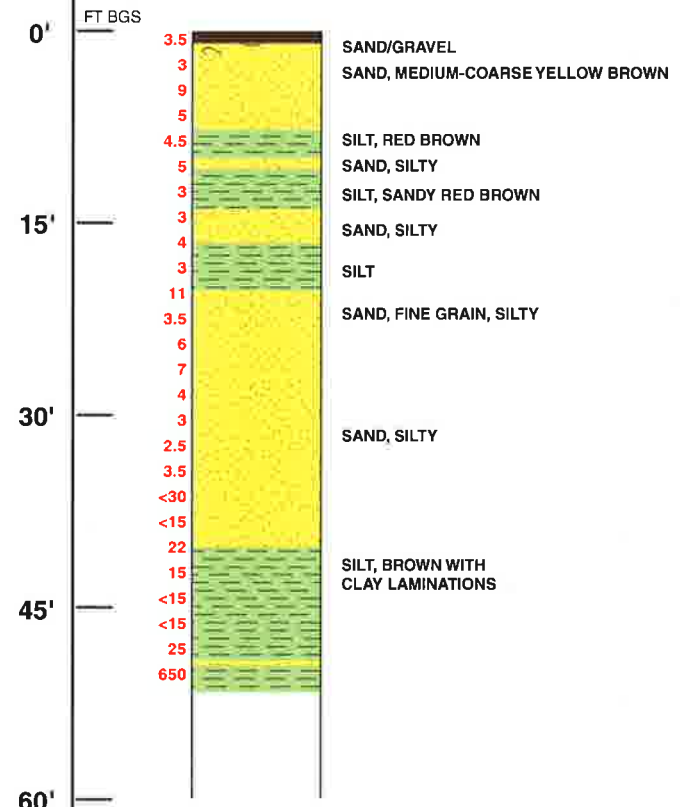
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-QUARRY

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1096 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Wayne	Boart Longyear	Hollow Stem Auger	9/29/97



VERTICAL SCALE ~1"= 15'

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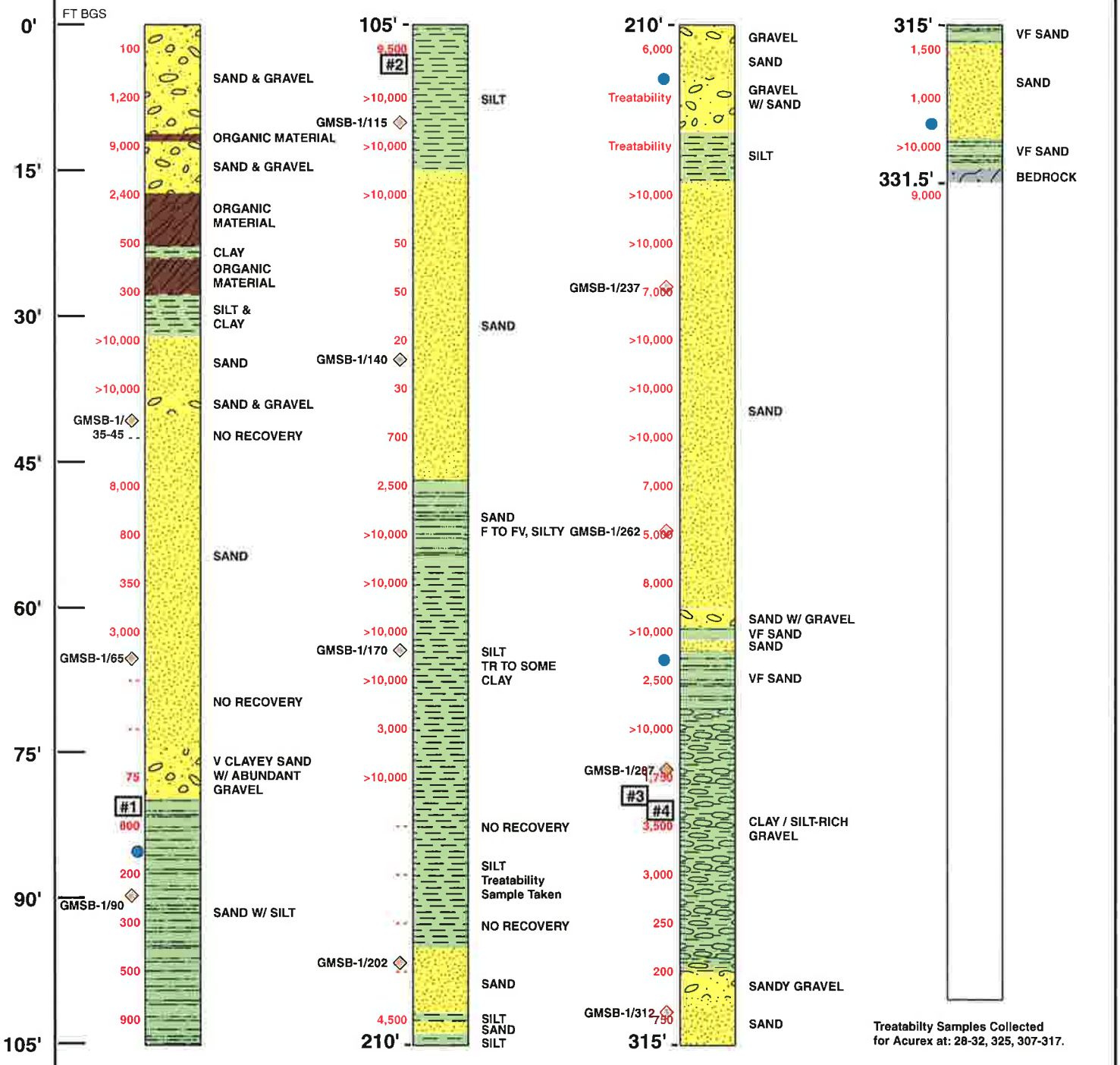
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-1

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1117.47
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans / R. Flynn	Continuous	Rotasonic Core Barrel	331.5 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Dale	Boart Longyear	Rotasonic	6-2-97



Treatabilty Samples Collected for Acurex at: 28-32, 325, 307-317.

VERTICAL SCALE ~1"= 15'

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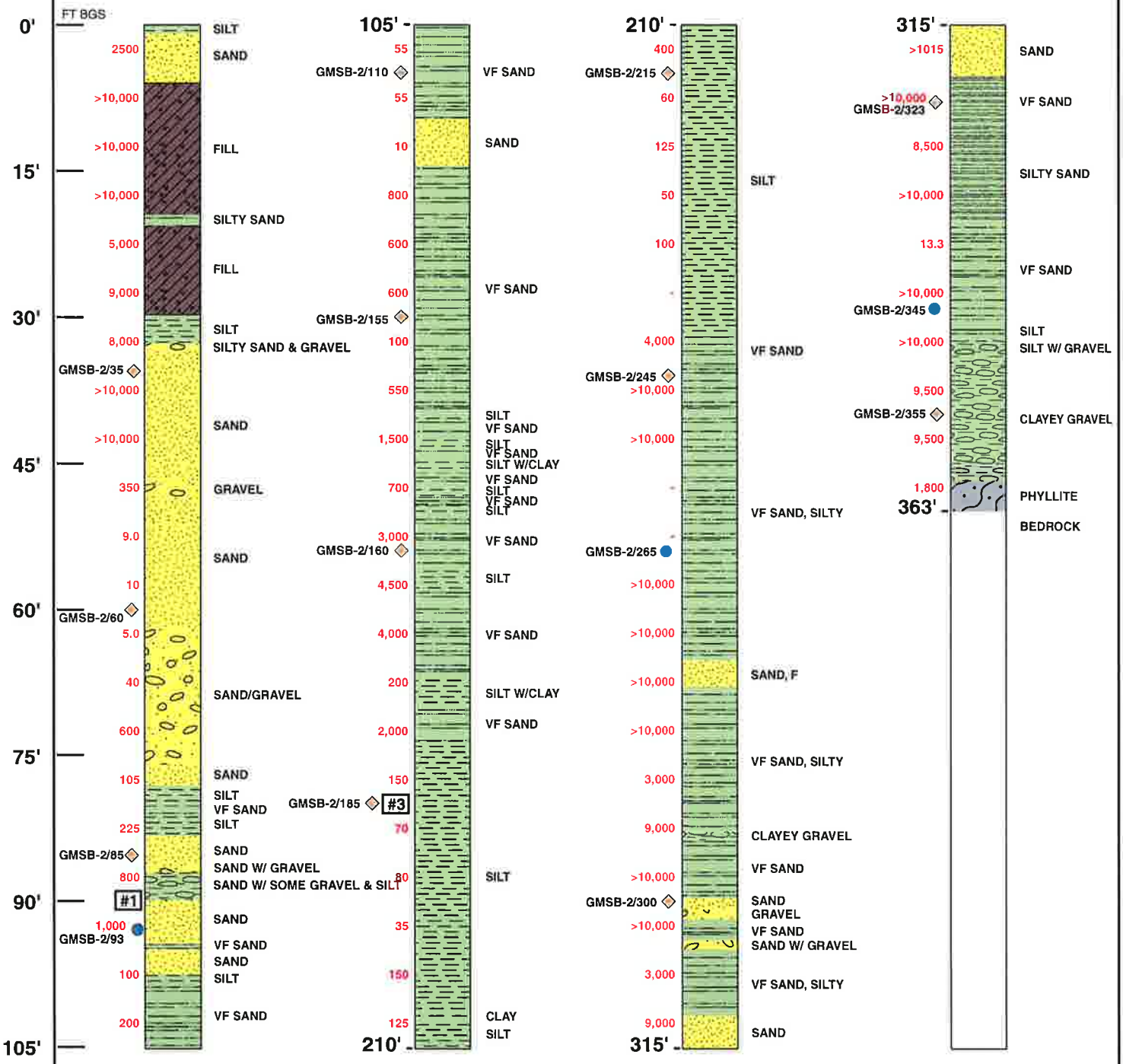
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-2

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1,117.22
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans / P. Bartnik	Continuous	Rotasonic Core Barrel	363 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Dale	Boart Longyear	Rotasonic	5/30/97



VERTICAL SCALE ~1"= 15'

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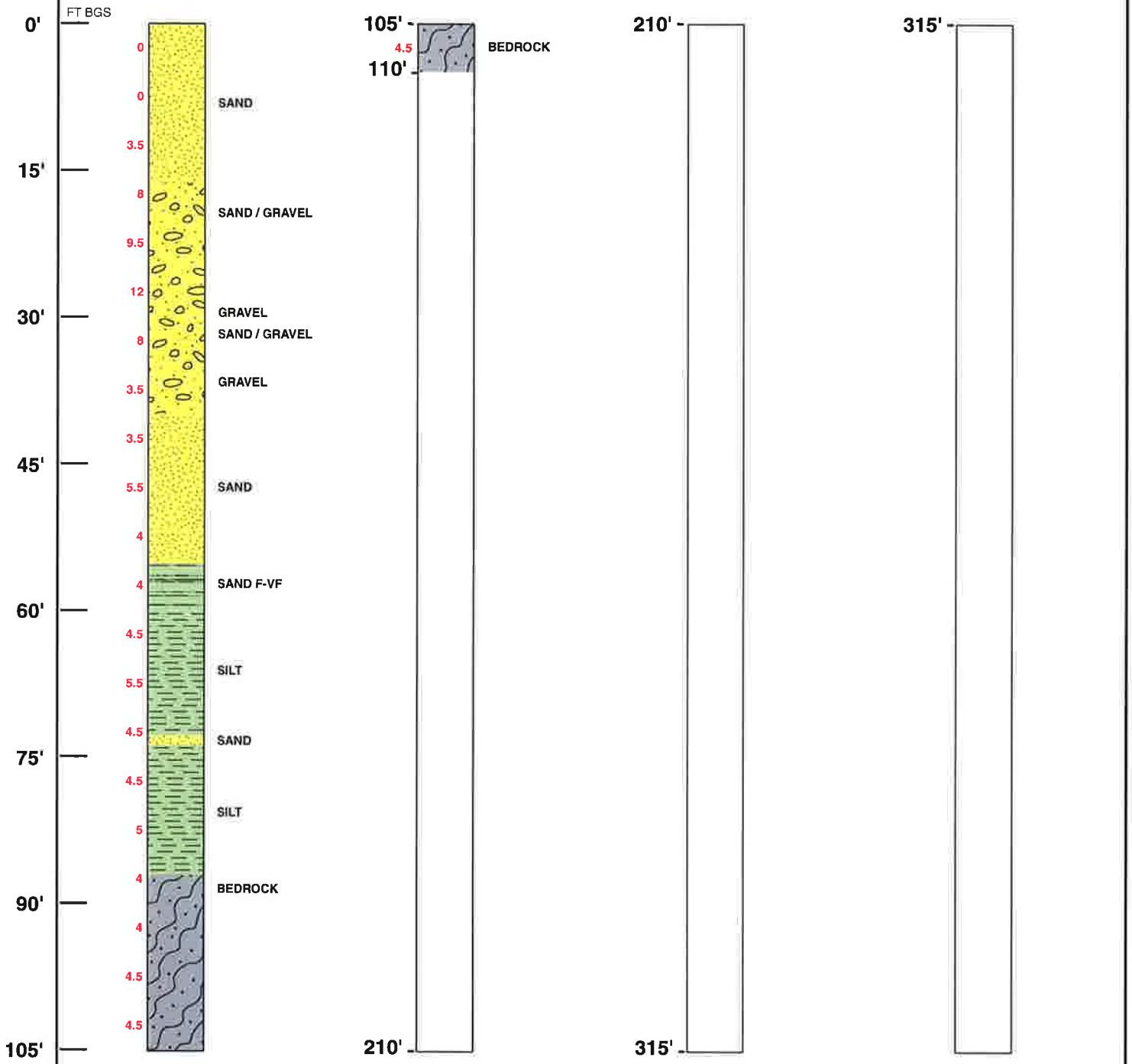
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-3

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1102.86 Feet MSL
GEOLOGIST P. Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 110 Feet BLS
DRILLER Dale	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/13/97



VERTICAL SCALE ~1"= 15'

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ARCADIS

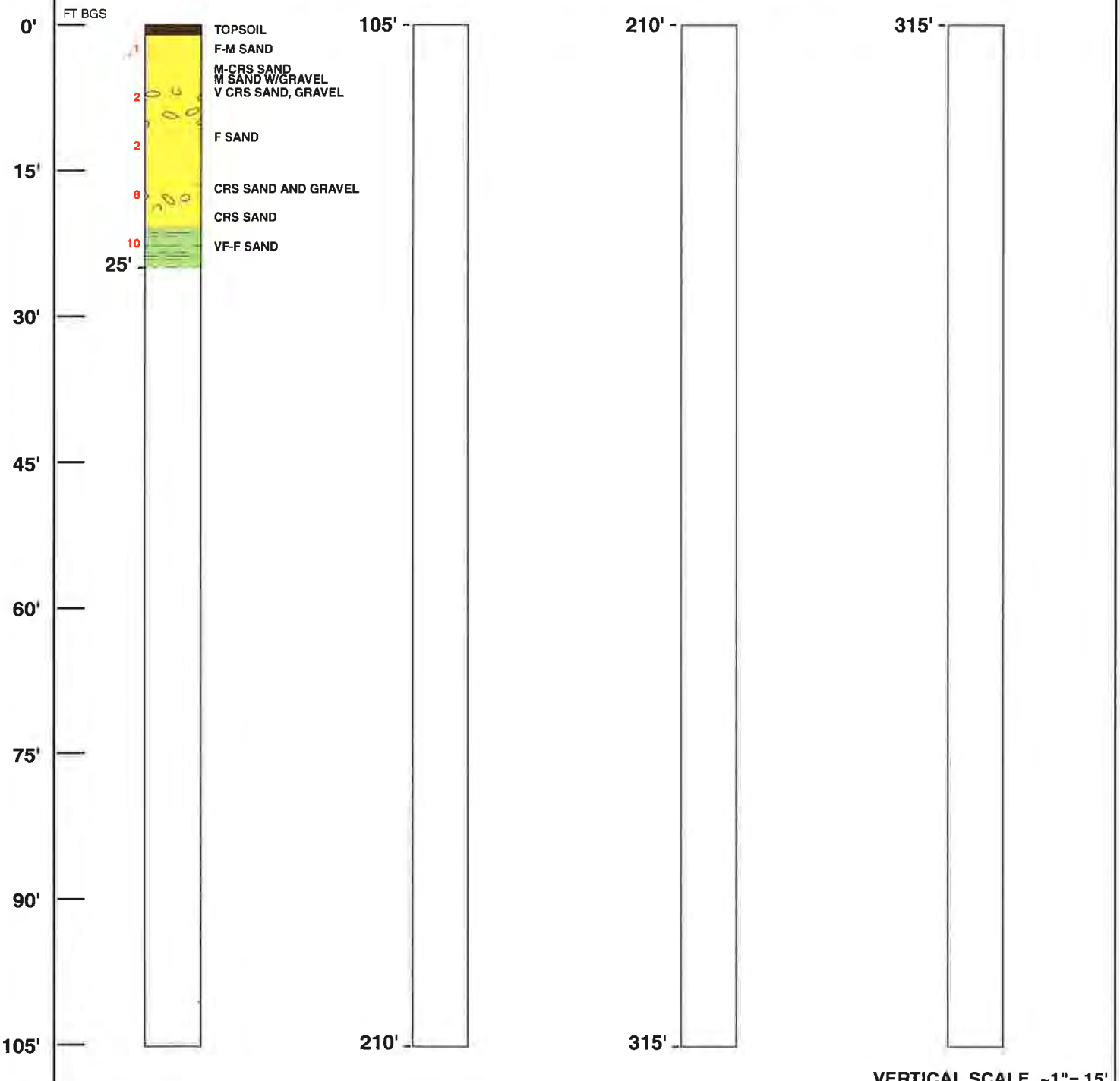
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSB-3A
PROJECT	FORD/KINGSFORD WI000637.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1128.59 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Ray Flynn	Continuous	Rotasonic Core Barrel	25 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Dale	Boart Longyear	Rotasonic	6/16/97



VERTICAL SCALE ~1"= 15'

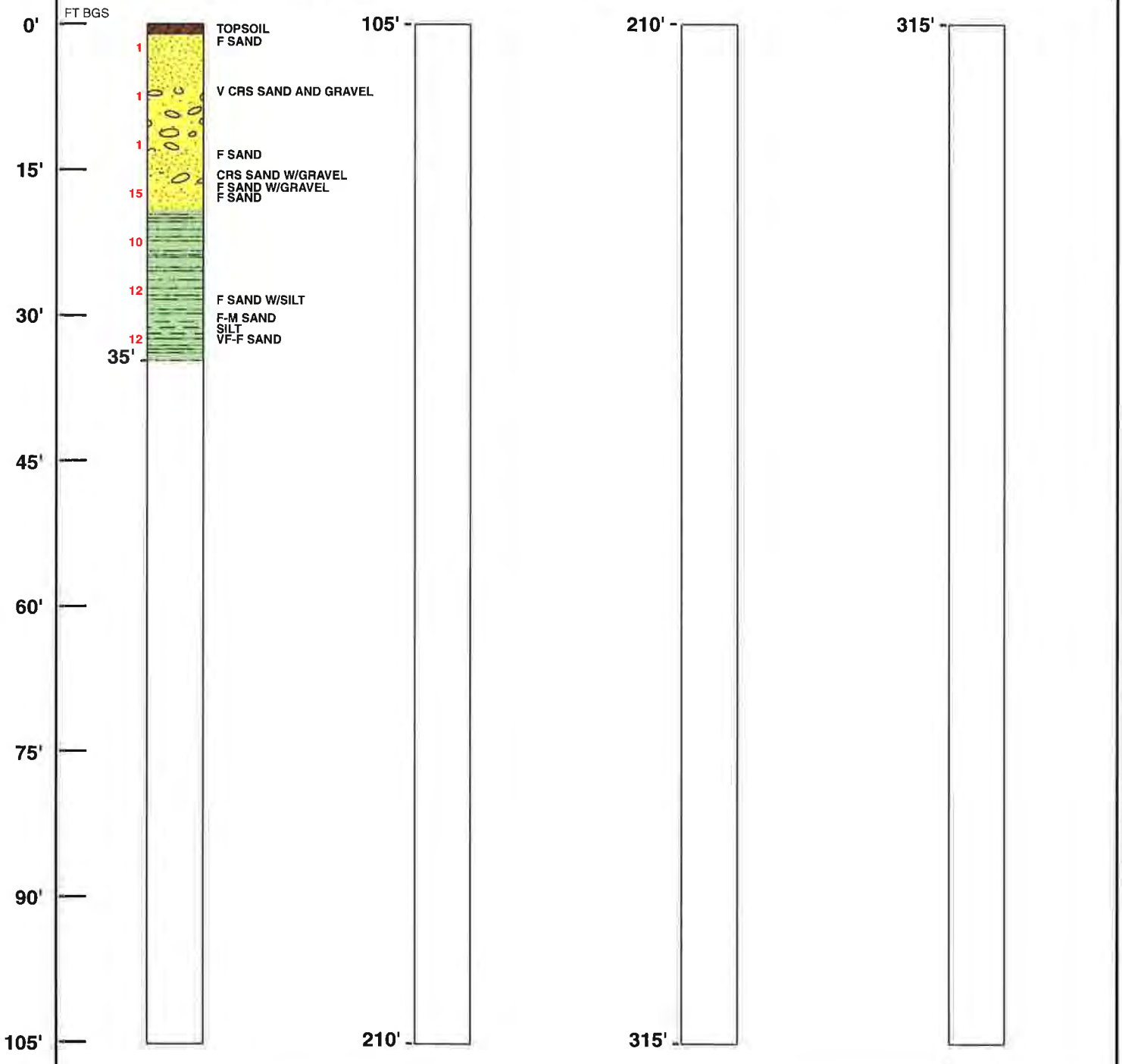
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-3B

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1129.01 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale	Boart Longyear	Rotasonic	6/16/97



VERTICAL SCALE ~1"= 15'

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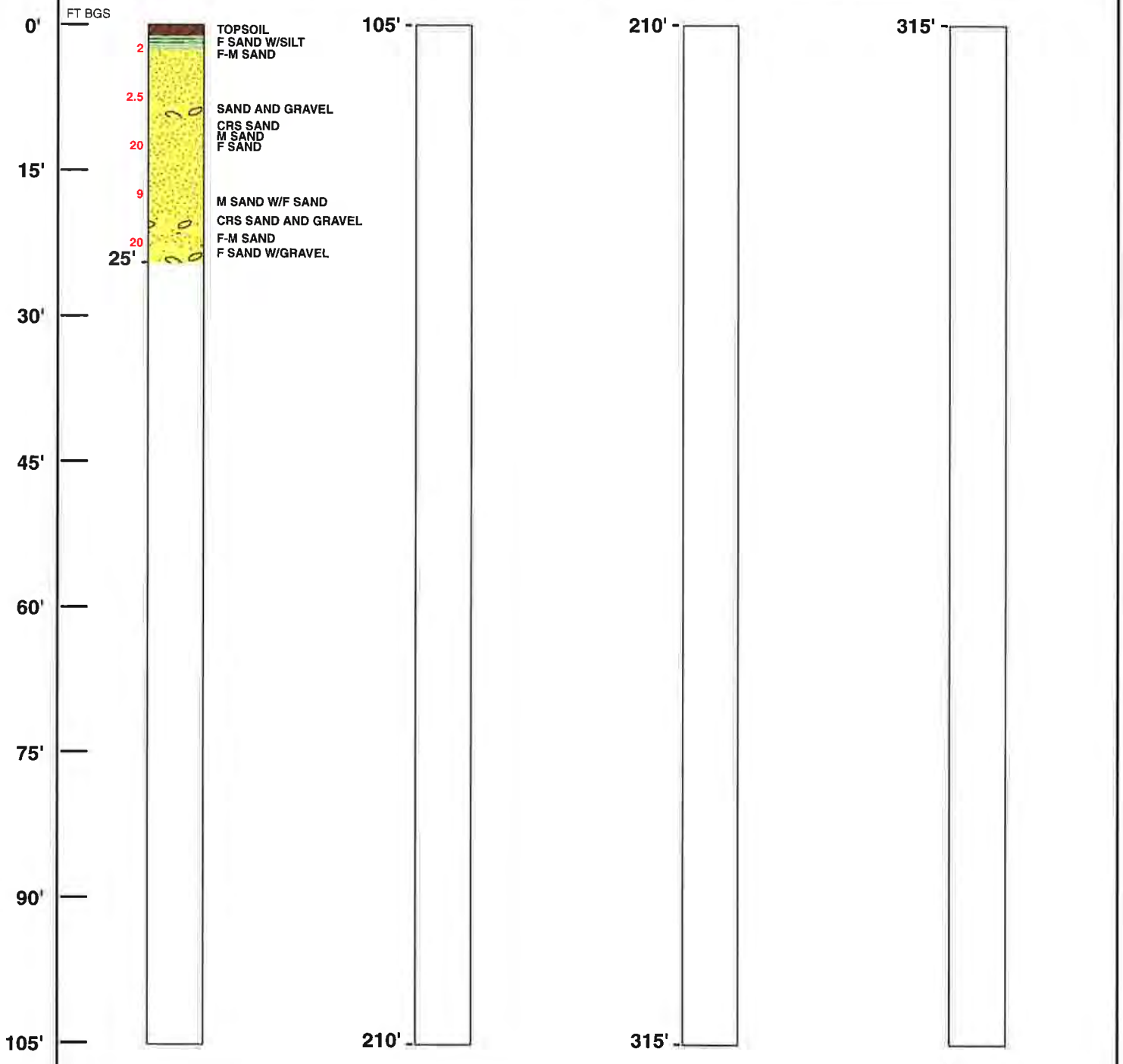
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-3C

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1129.99 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale	Boart Longyear	Rotasonic	6/16/97



VERTICAL SCALE ~1"= 15'

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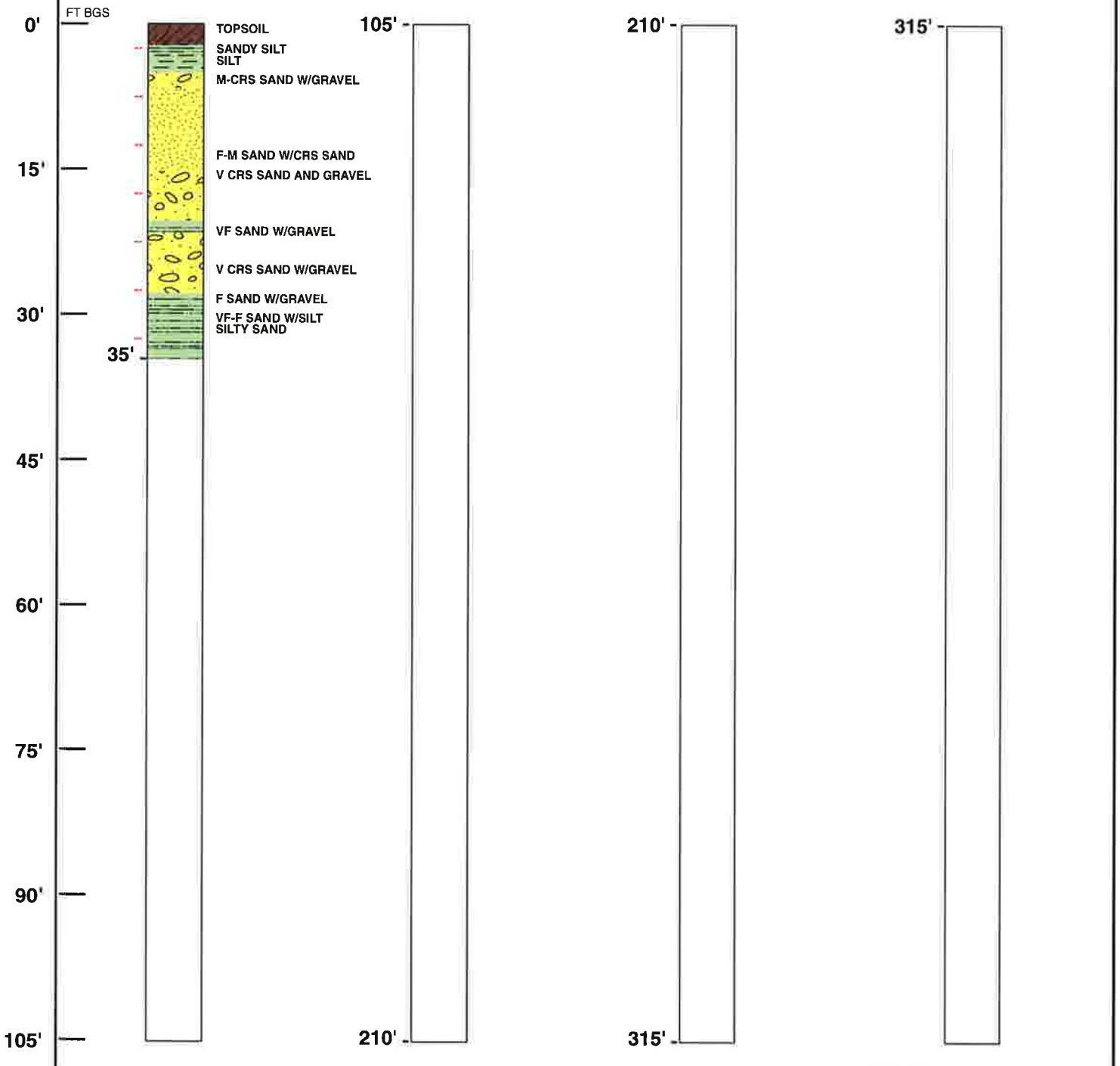
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-3D

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1127.31 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale	Boart Longyear	Rotasonic	6/16/97



VERTICAL SCALE ~1"= 15'

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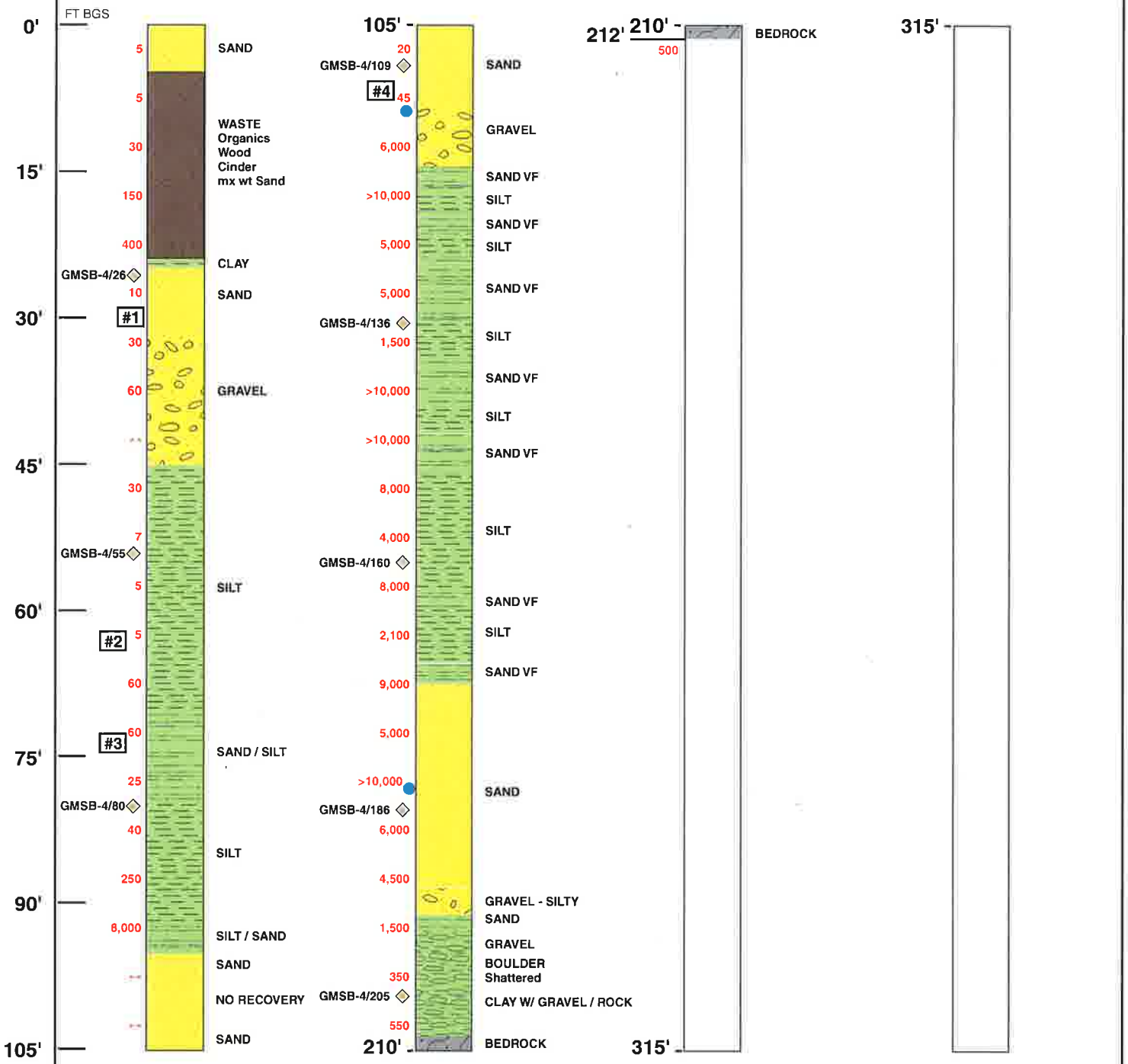
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-4

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.88 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Rotasonic Core Barrel	212 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale	Boart Longyear	Rotasonic	6/10/97



VERTICAL SCALE ~1"= 15'

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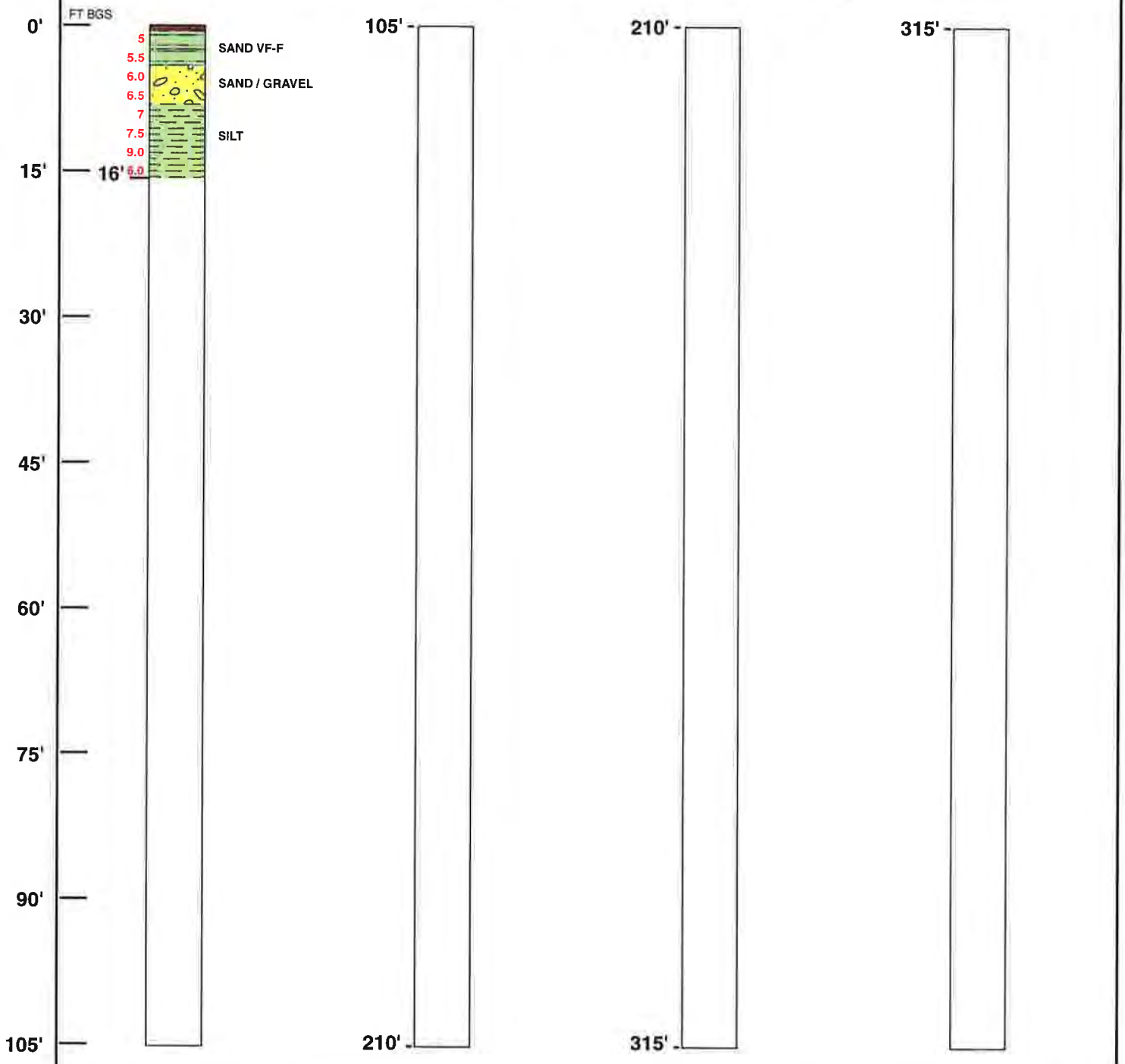
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-5

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1054.63 Feet MSL
GEOLOGIST B. Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE 2-inch by 2 foot Splitspoon	TOTAL DEPTH DRILLED 16 Feet BLS
DRILLER Dale	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 11/25/97



VERTICAL SCALE ~1"= 15'

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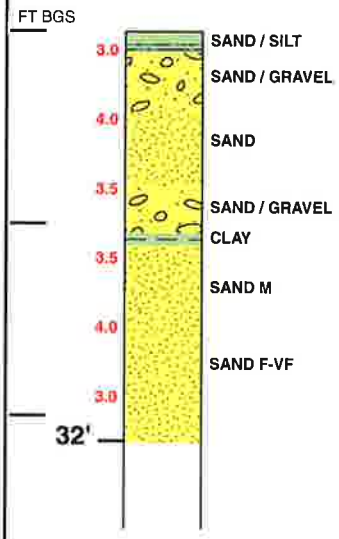
ARCADIS	BOREHOLE STRATIGRAPHIC LOG	OBSERVATION WELL NO. GMSB-6
		PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1114.58 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Splitspoon	32 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/7/98



VERTICAL SCALE ~1"= 15'

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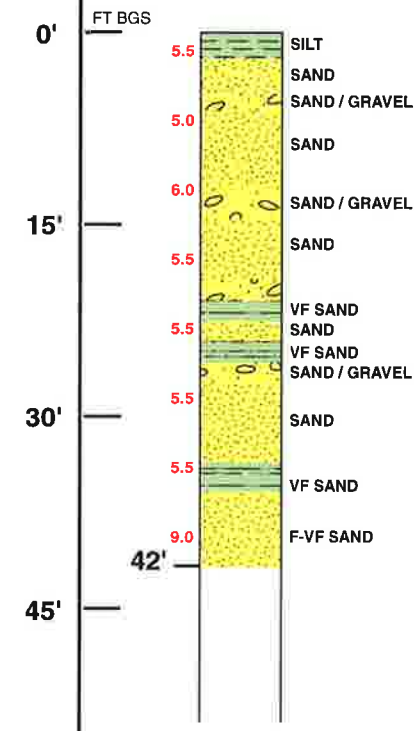
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-7

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1109.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	42 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike	Boart Longyear	Hollow Stem Auger	7/13/98



VERTICAL SCALE ~1"= 15'

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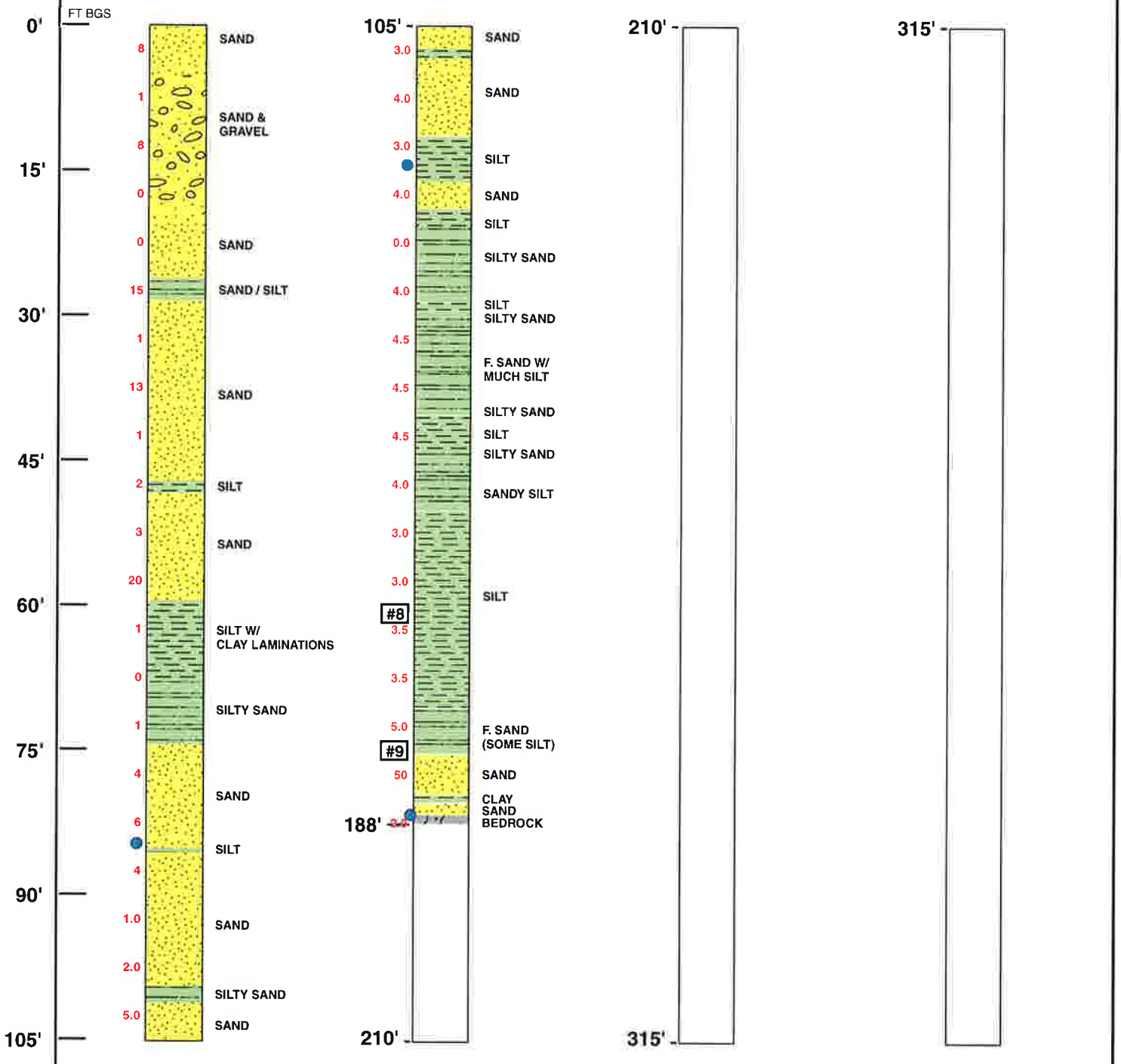
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-8

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1097.90 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / D. Hegrenes	Continuous	Rotasonic Core Barrel	188 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Roy	Boart Longyear	Rotasonic	9/11/97



VERTICAL SCALE ~1"= 15'

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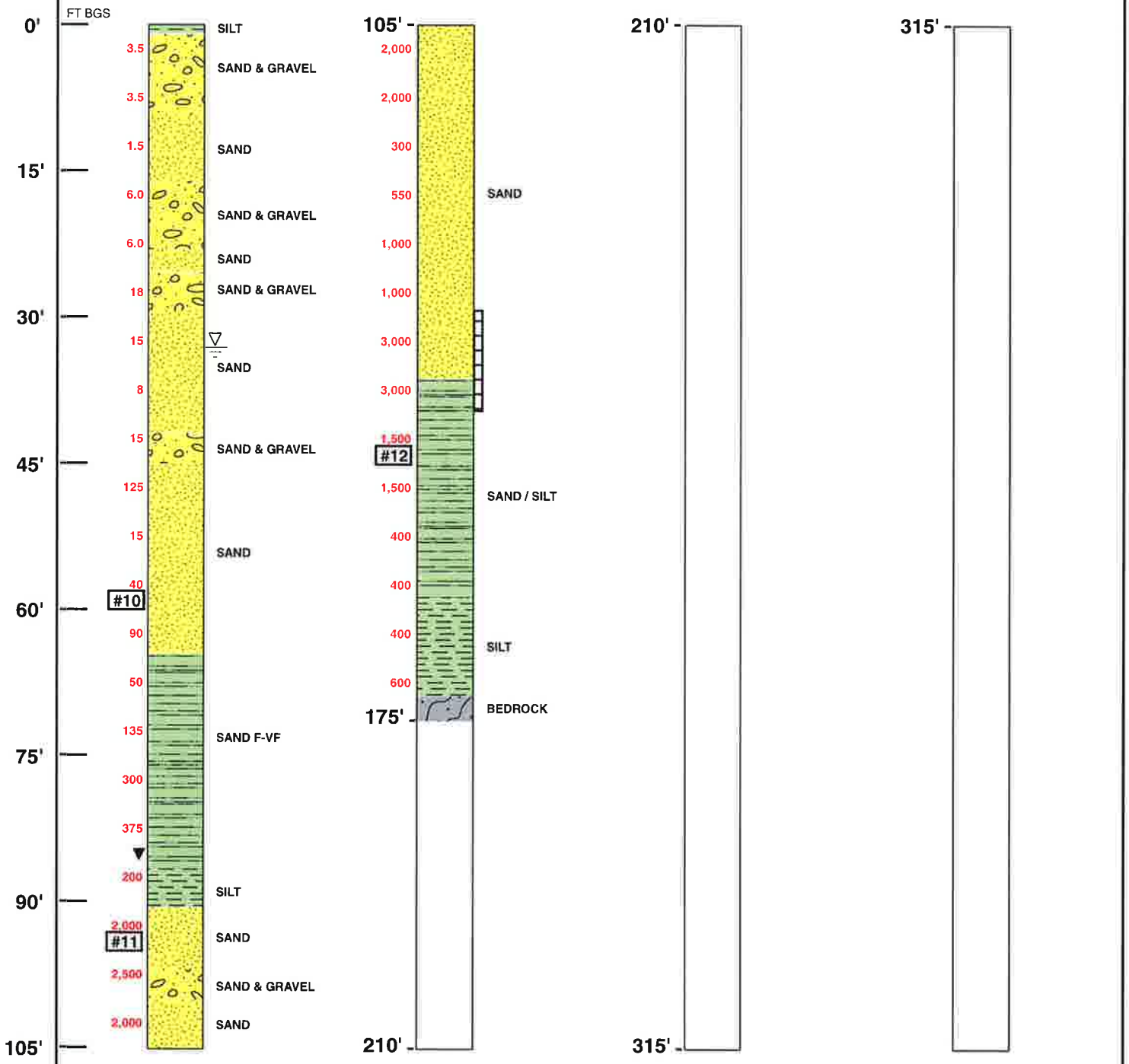
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-9 (GM-14)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1115.05 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans / P. Bartnik	Continuous	Rotasonic Core Barrel	175 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/13/97



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_9.AI

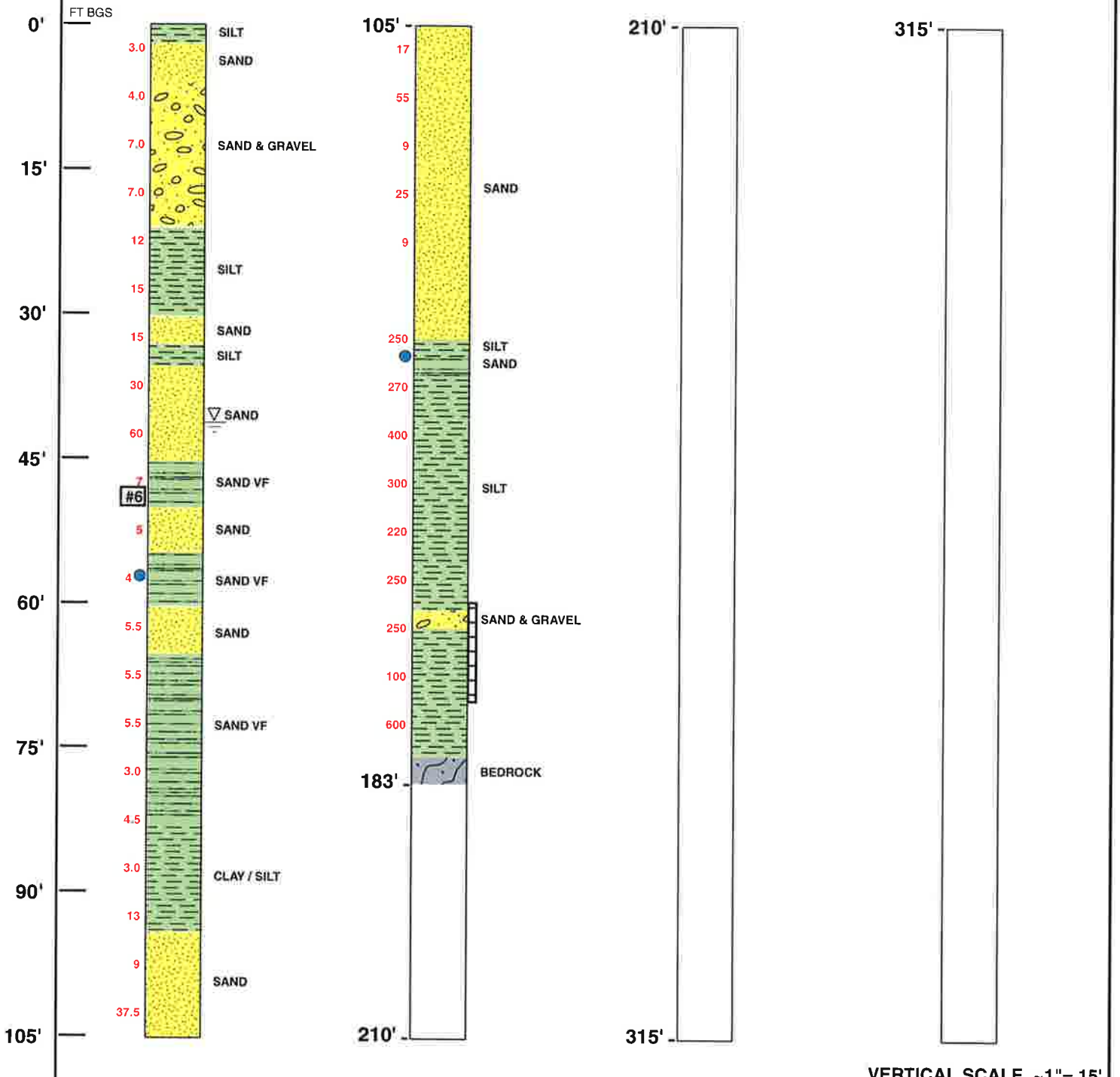
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-10 (GM-15)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1127.20 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans / P. Bartnik	Continuous	Rotasonic Core Barrel	183 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/11/97



10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_10.AI

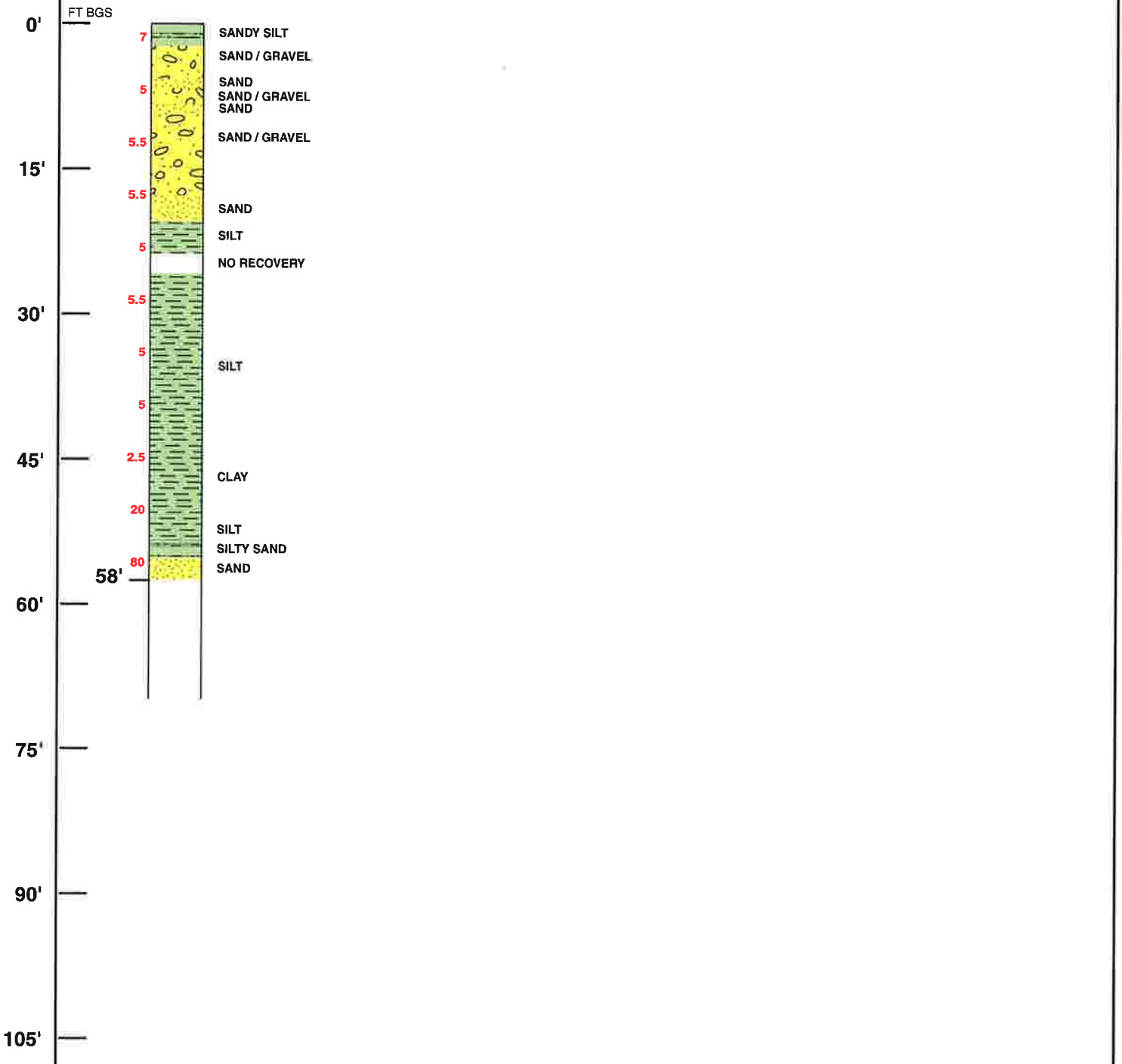
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-11

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1119.49 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 58 Feet BLS
DRILLER Mike	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 7/13/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_11.AI

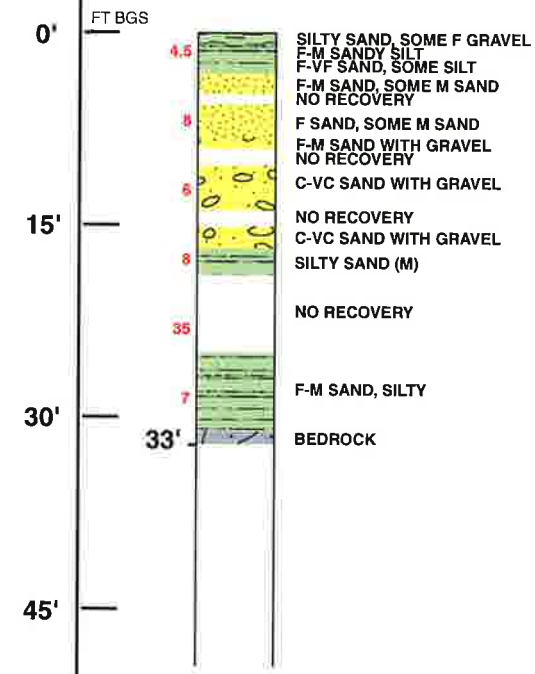
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-12

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1081.67 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	33 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	11/3/98



VERTICAL SCALE ~1"= 15'

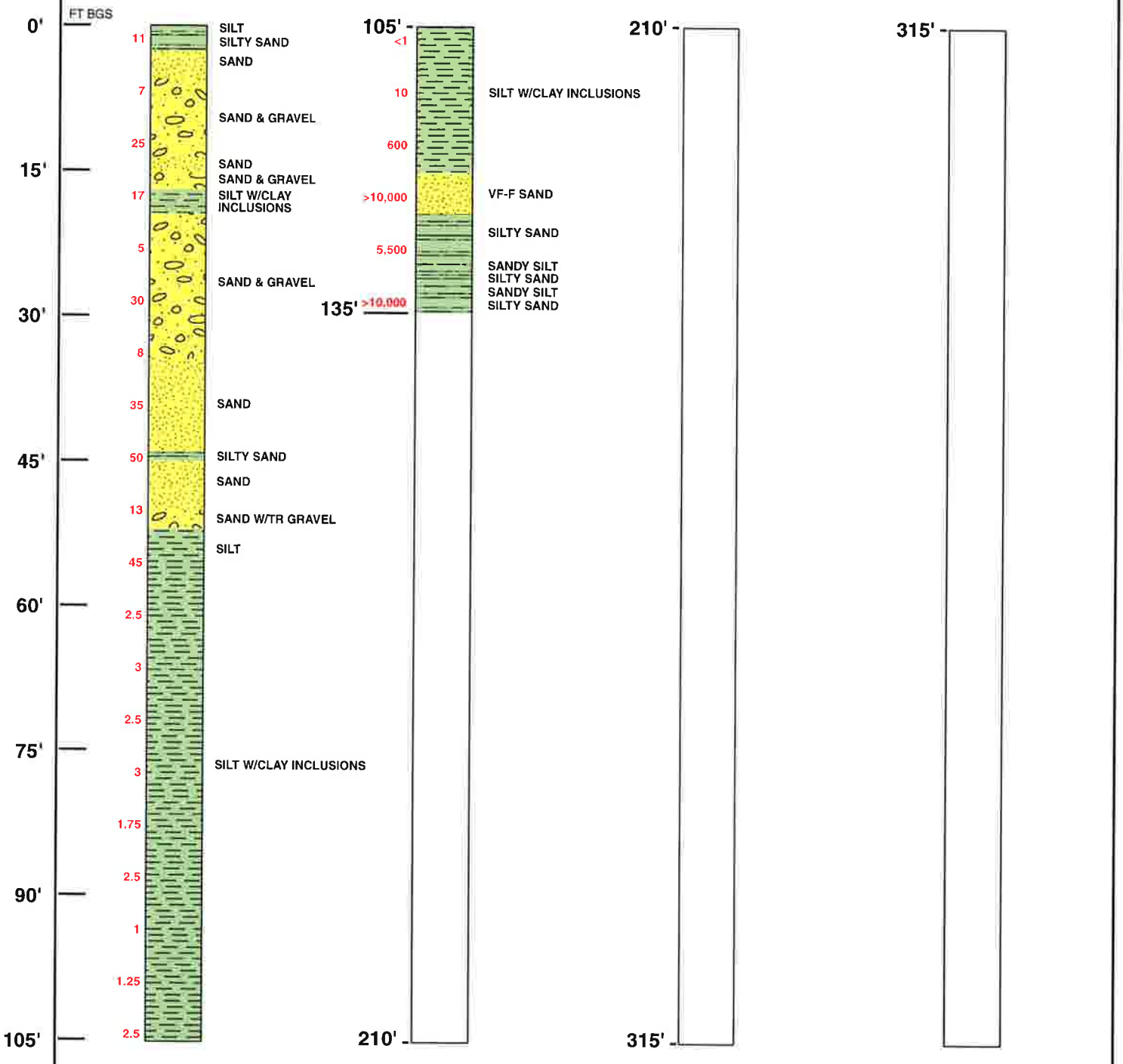
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-13

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1125.03 Feet MSL
GEOLOGIST Dan Hegrenes	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 135 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 8/21/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_13.AI

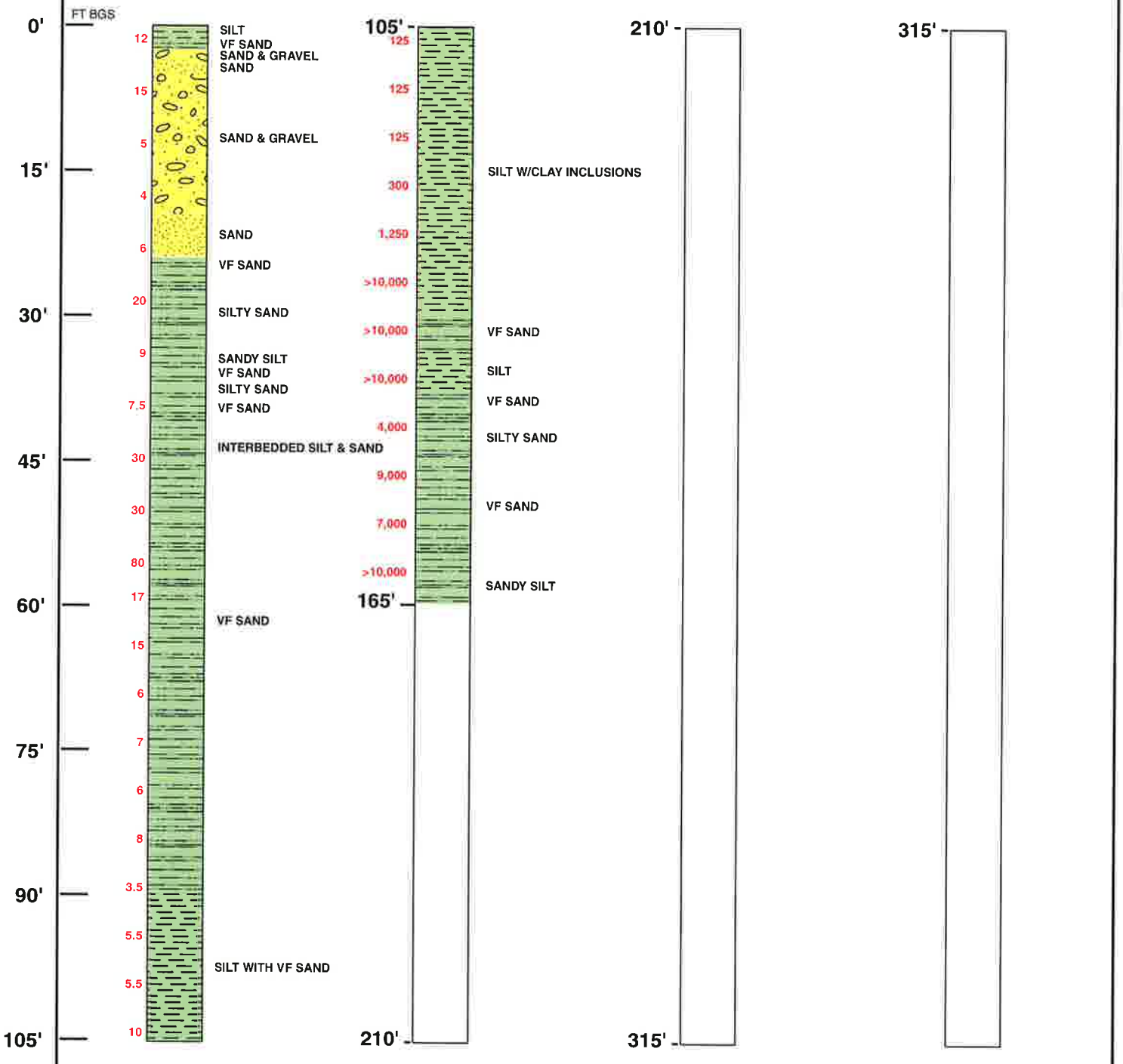
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-14

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1115.67 Feet MSL
GEOLOGIST Rob Reina	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 165 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 8/23/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_14.AI

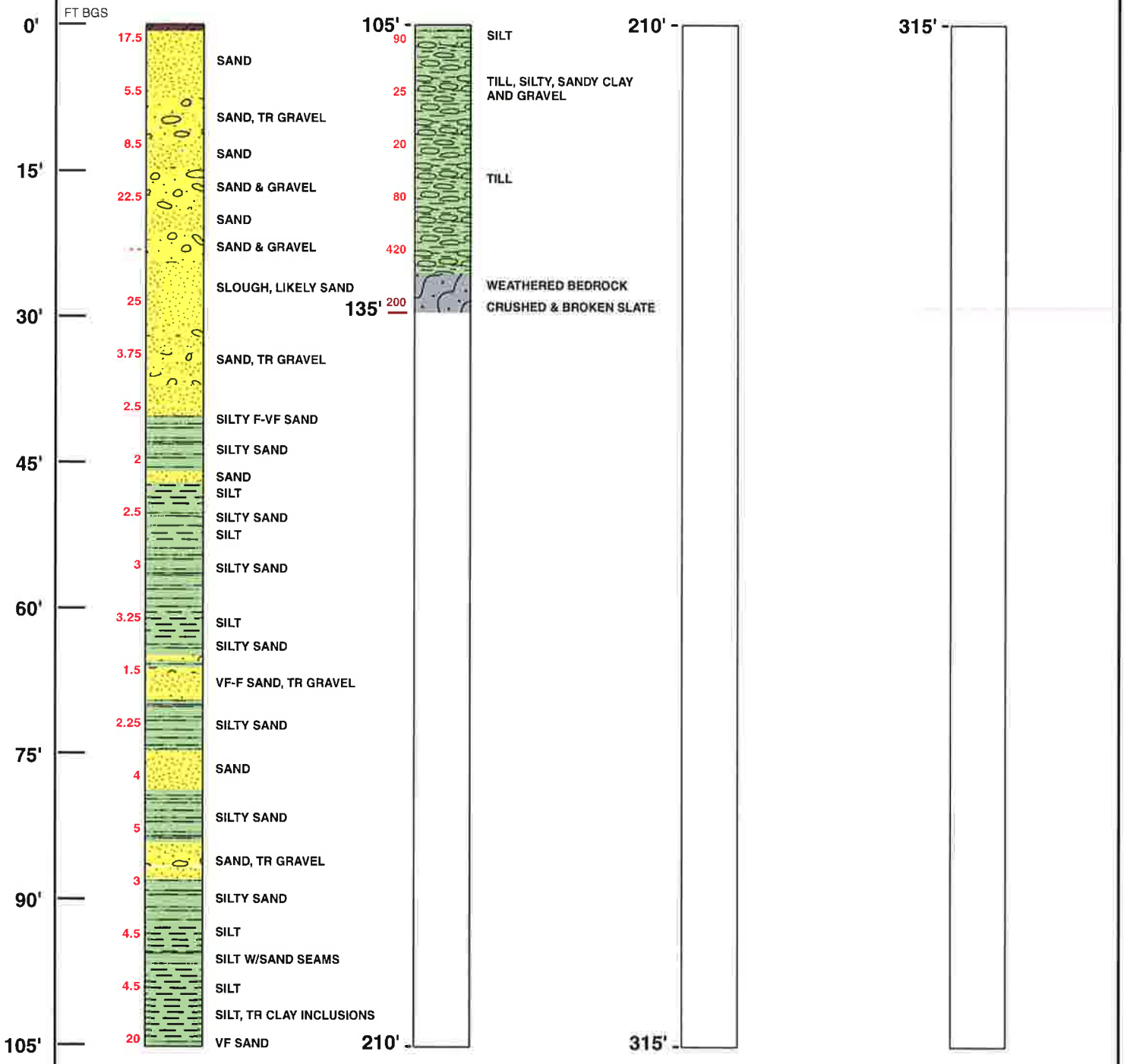
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-15

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1121.45 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 135 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 9/1/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_15.AI

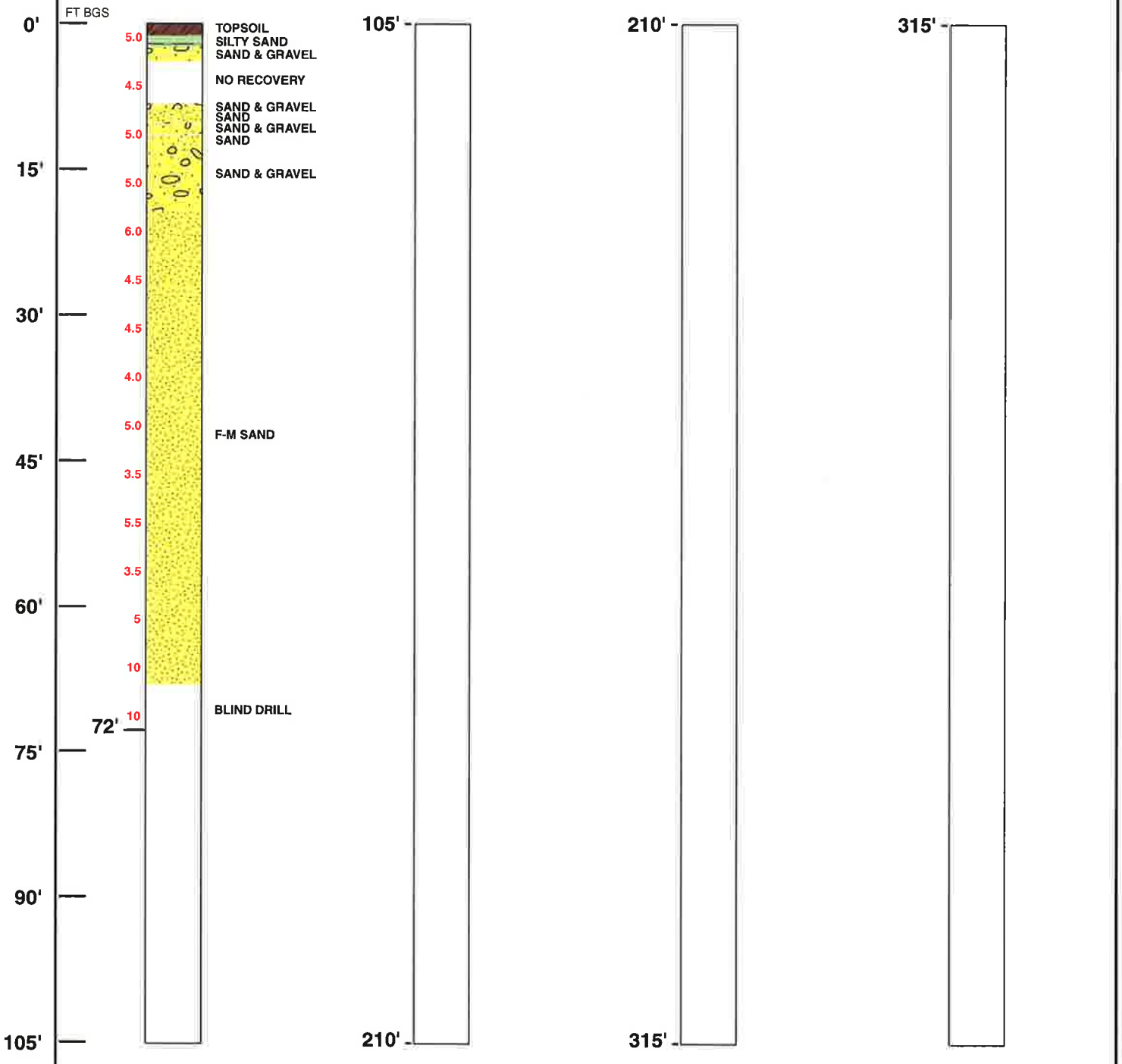
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-16

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1127.57 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	72 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/12/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_16.AI

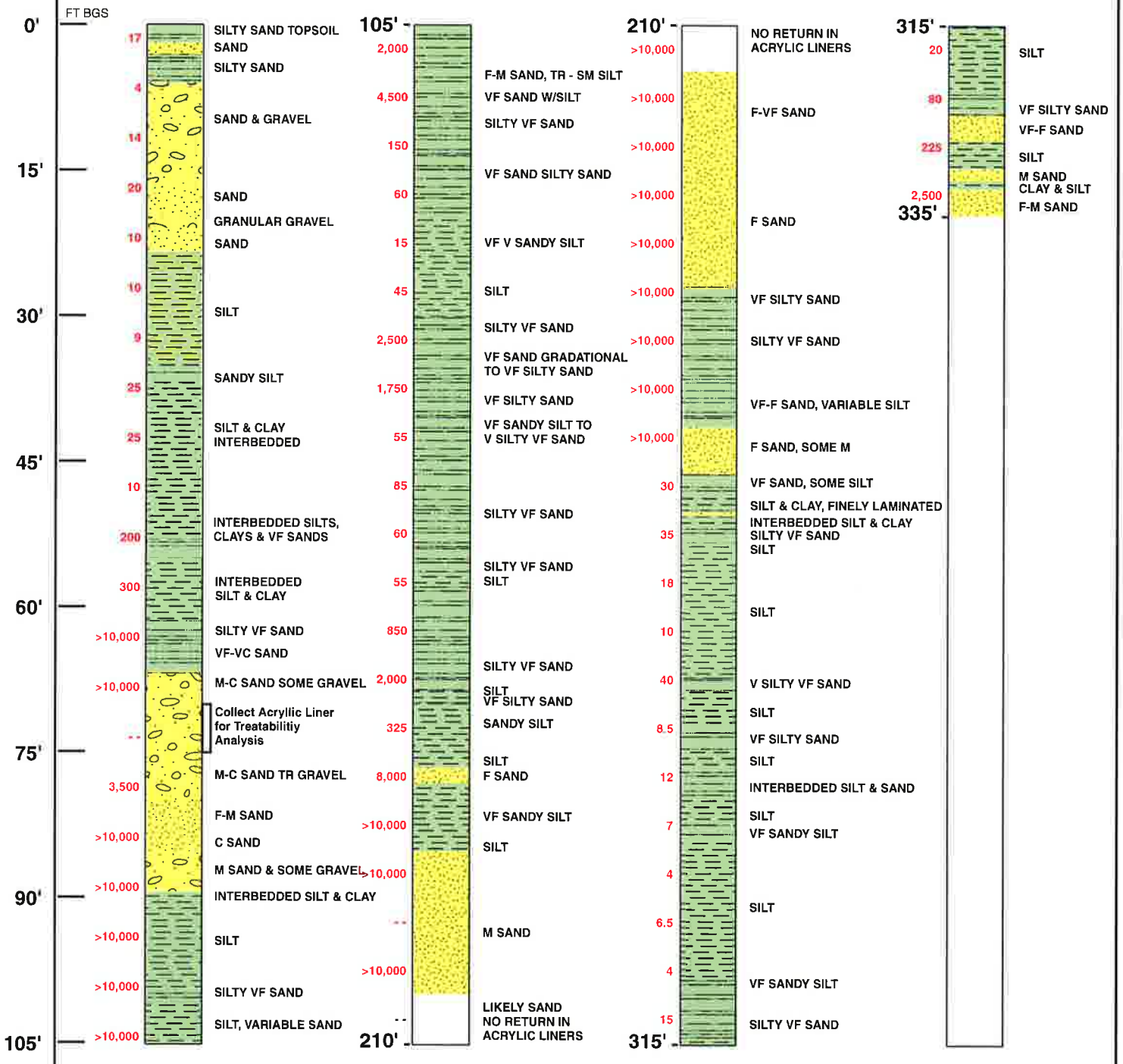
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-17

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1102.27 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	335 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/14/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_17.AI

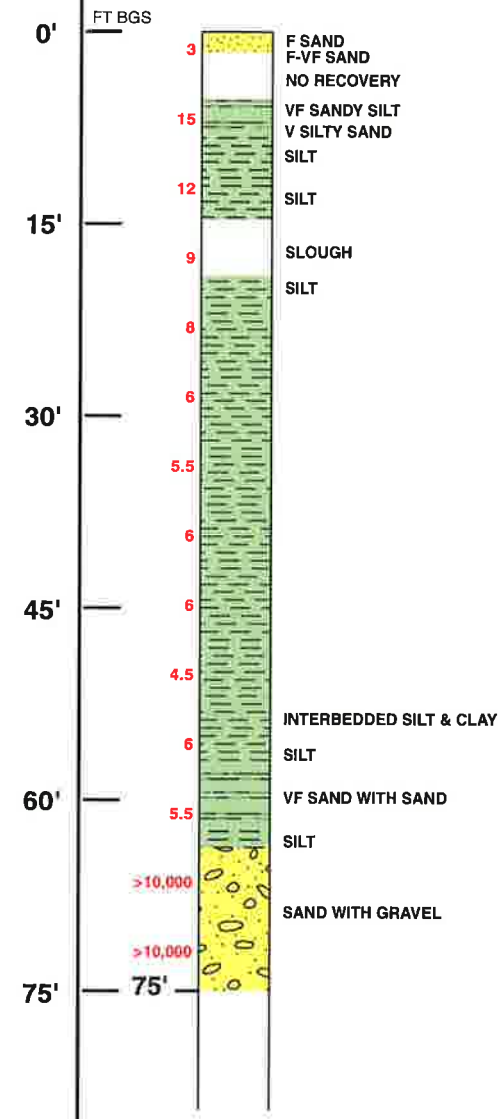
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-18

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1086.62 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 75 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 9/15/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_18.AI

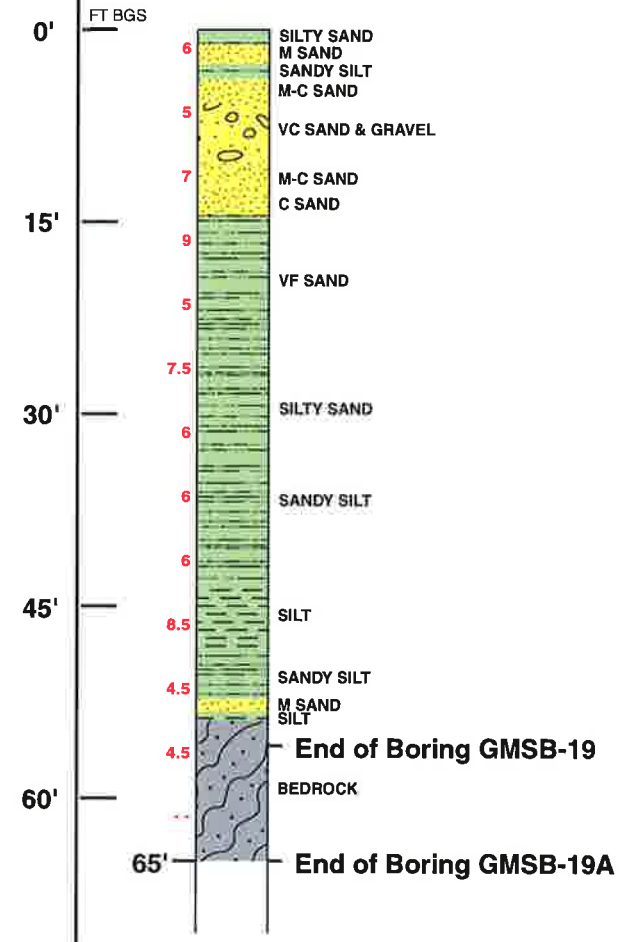
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-19 (19/19A)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1128.75 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon / Rotasonic Core Barrel	TOTAL DEPTH DRILLED 65 Feet BLS
DRILLER Dan / Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger / Rotasonic	DATE BORING COMPLETED 9/22/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_19.AI

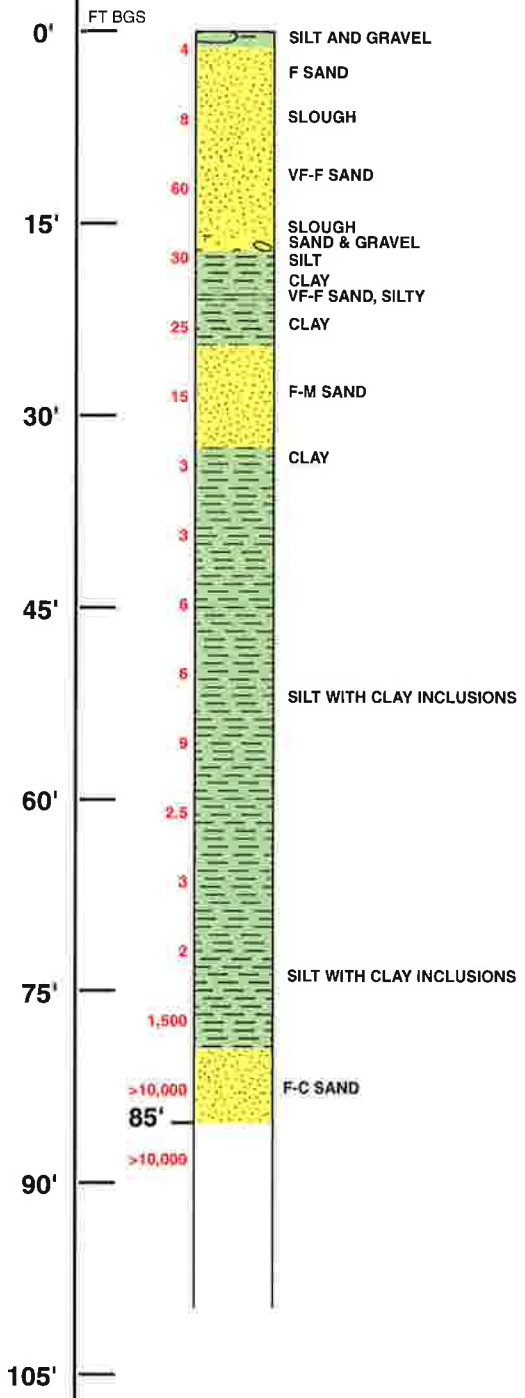
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-20

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1114.12 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Kevin Daleness	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/24/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_20.AI

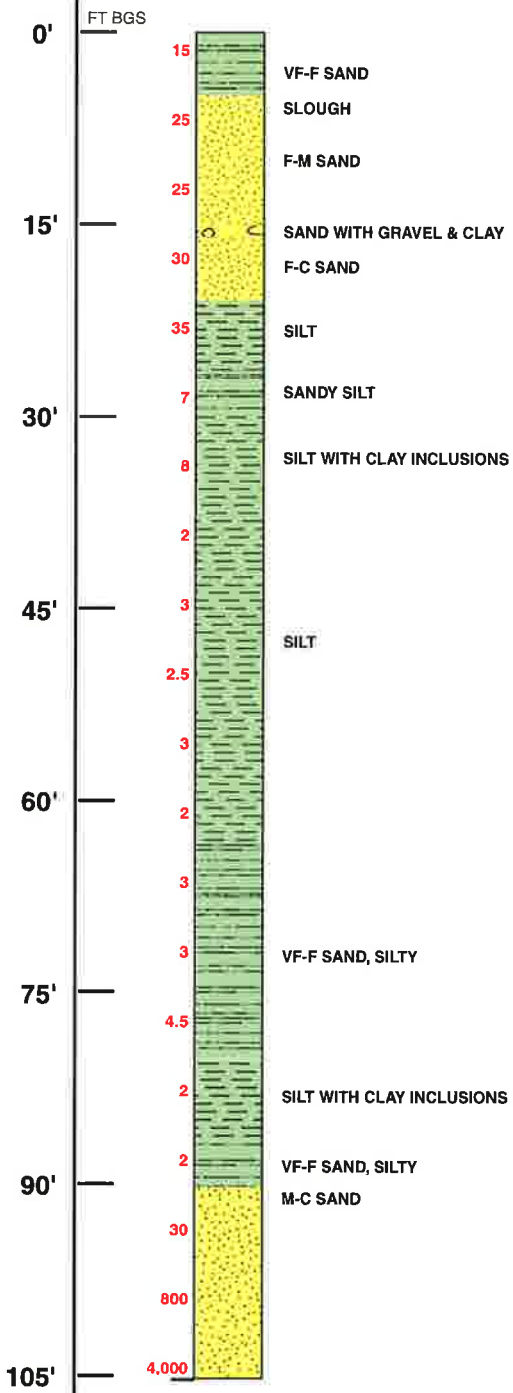
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-21

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1121.97 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 105 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 9/25/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_21.AI

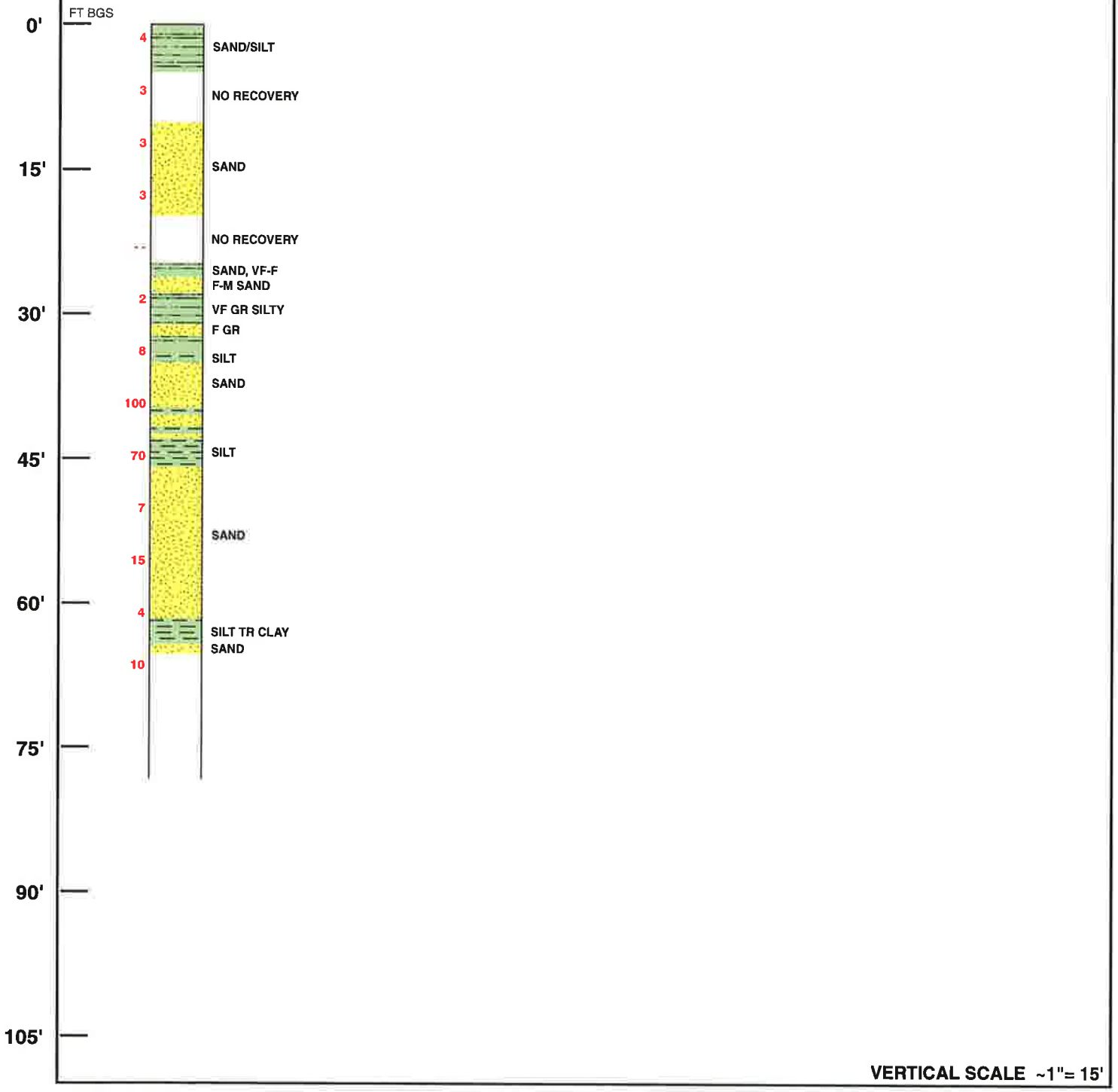
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-22

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.58 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	65 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/27/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_22.AI

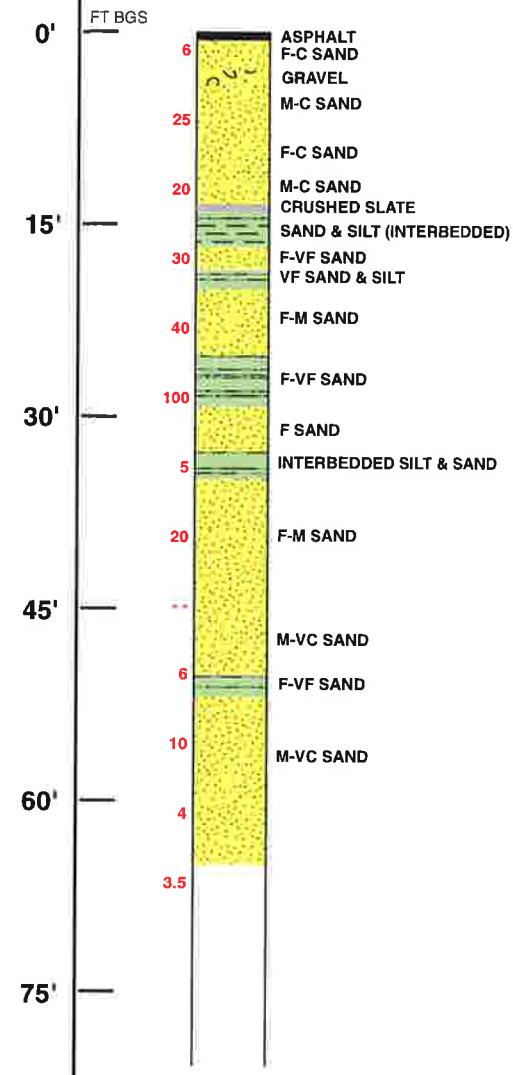
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-23

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1119.45 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 65 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 9/29/98



VERTICAL SCALE ~1"= 15'

10MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_23.AI

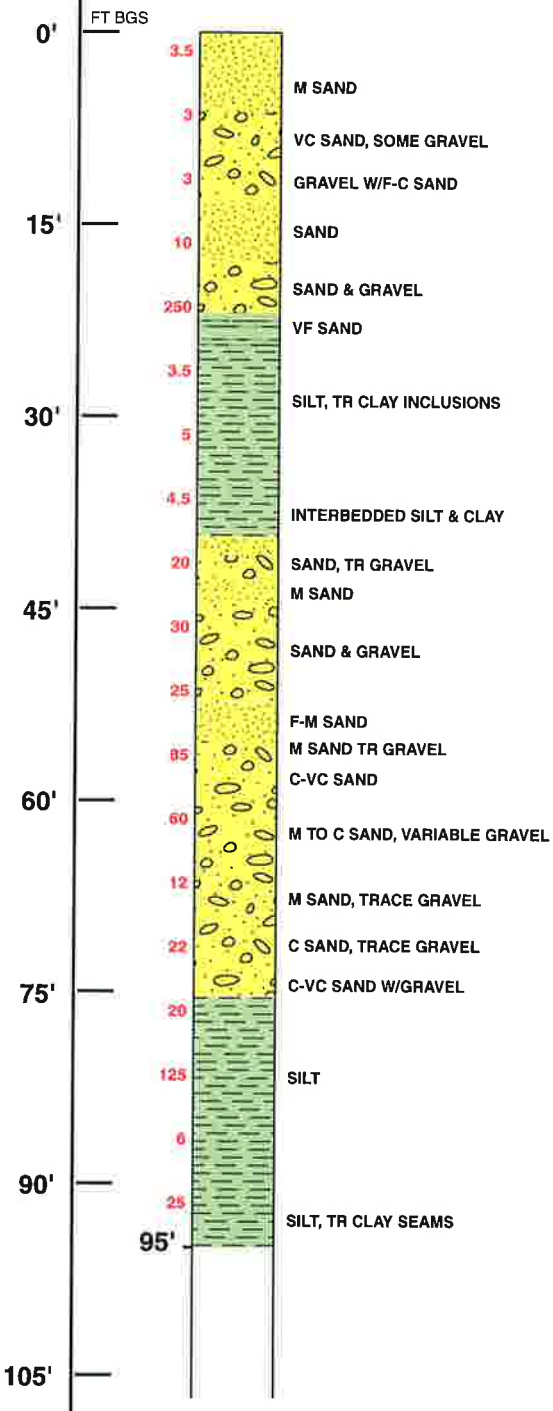
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-24

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1128.05 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 95 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/25/98



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_24.AI

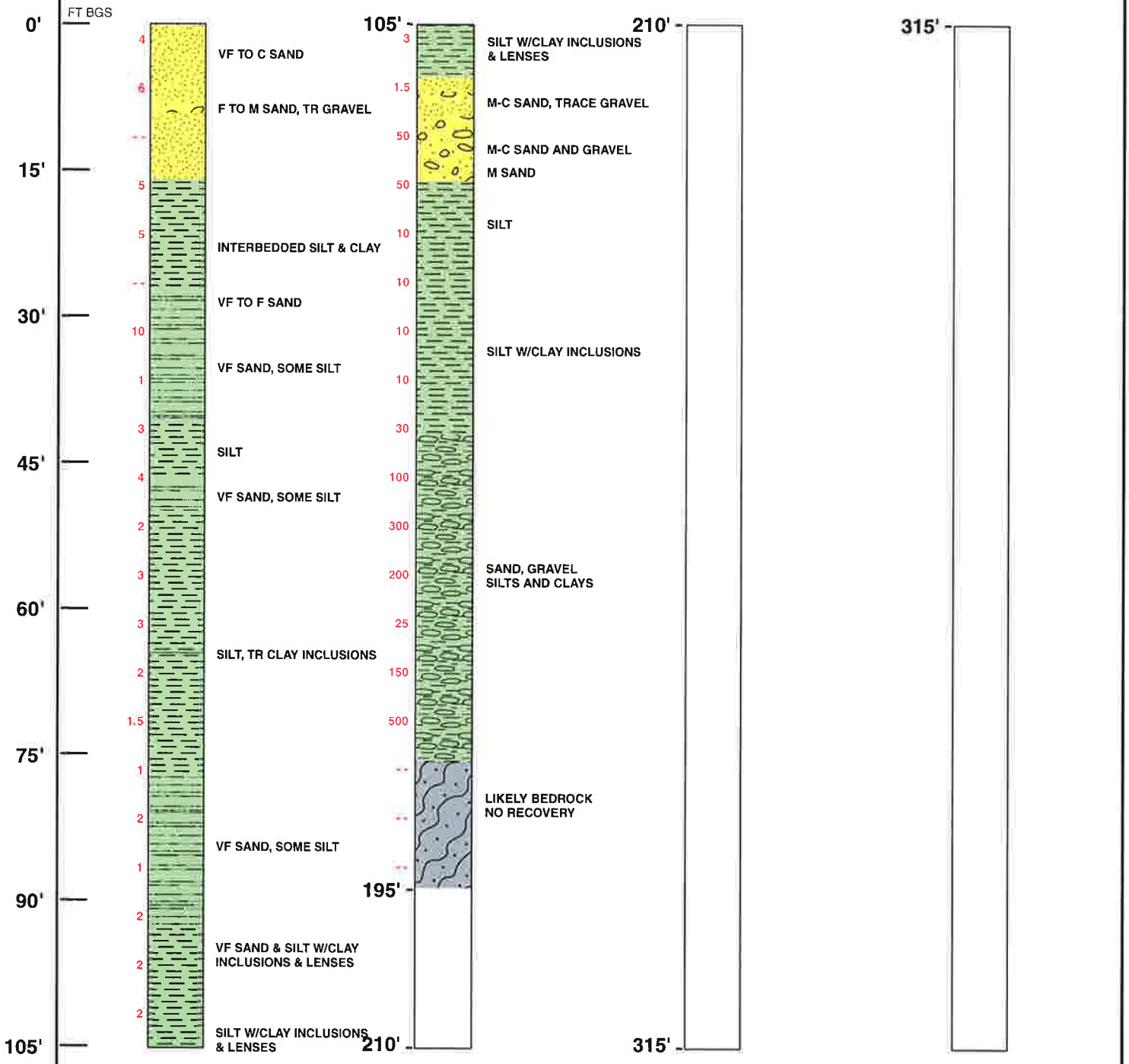
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-25

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1129.08 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 195 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 11/5/98



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_25.AI

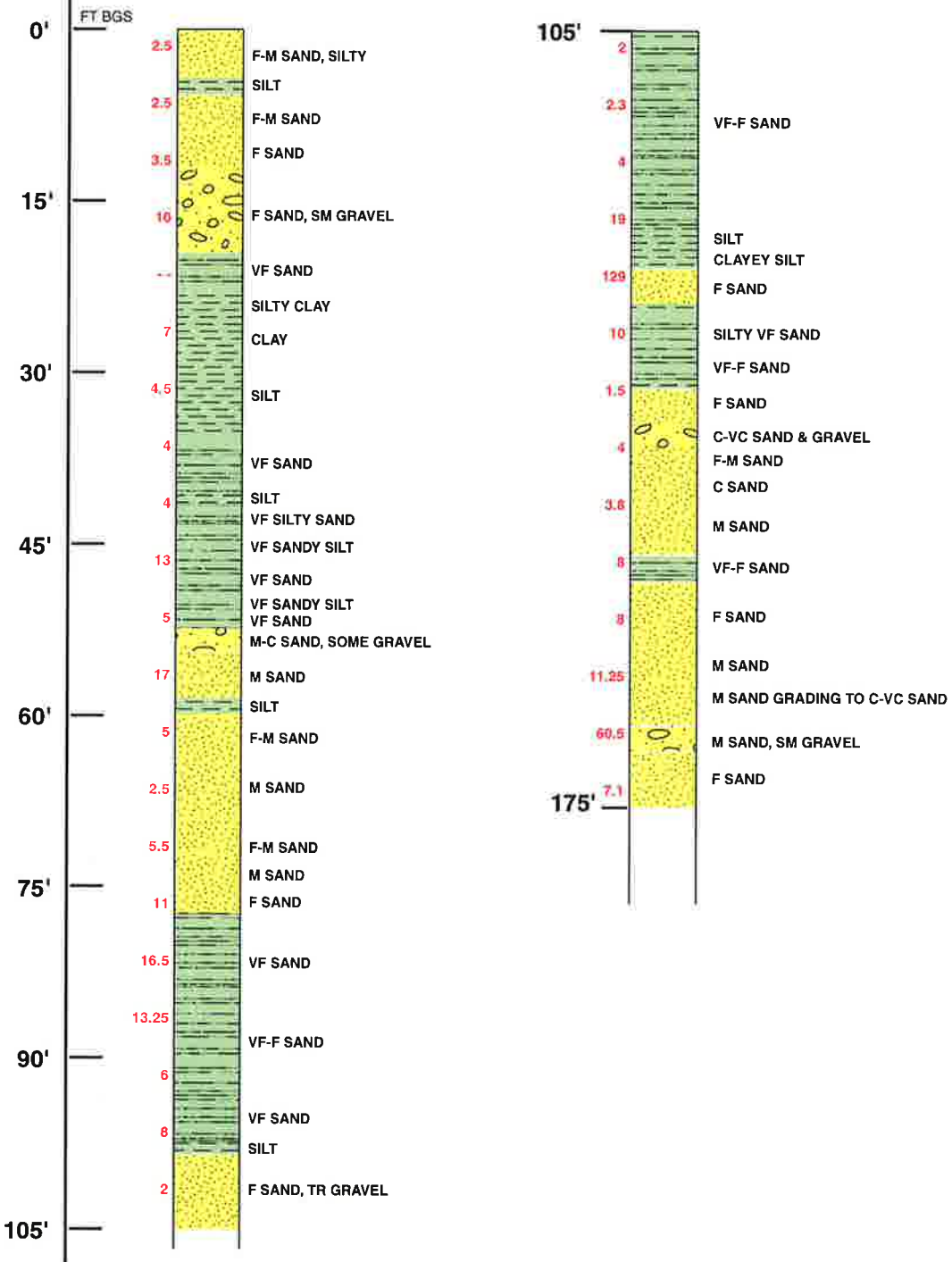
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-26

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1222.08 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 175 Feet BLS
DRILLER John	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 12/18/98



VERTICAL SCALE ~1"= 15'

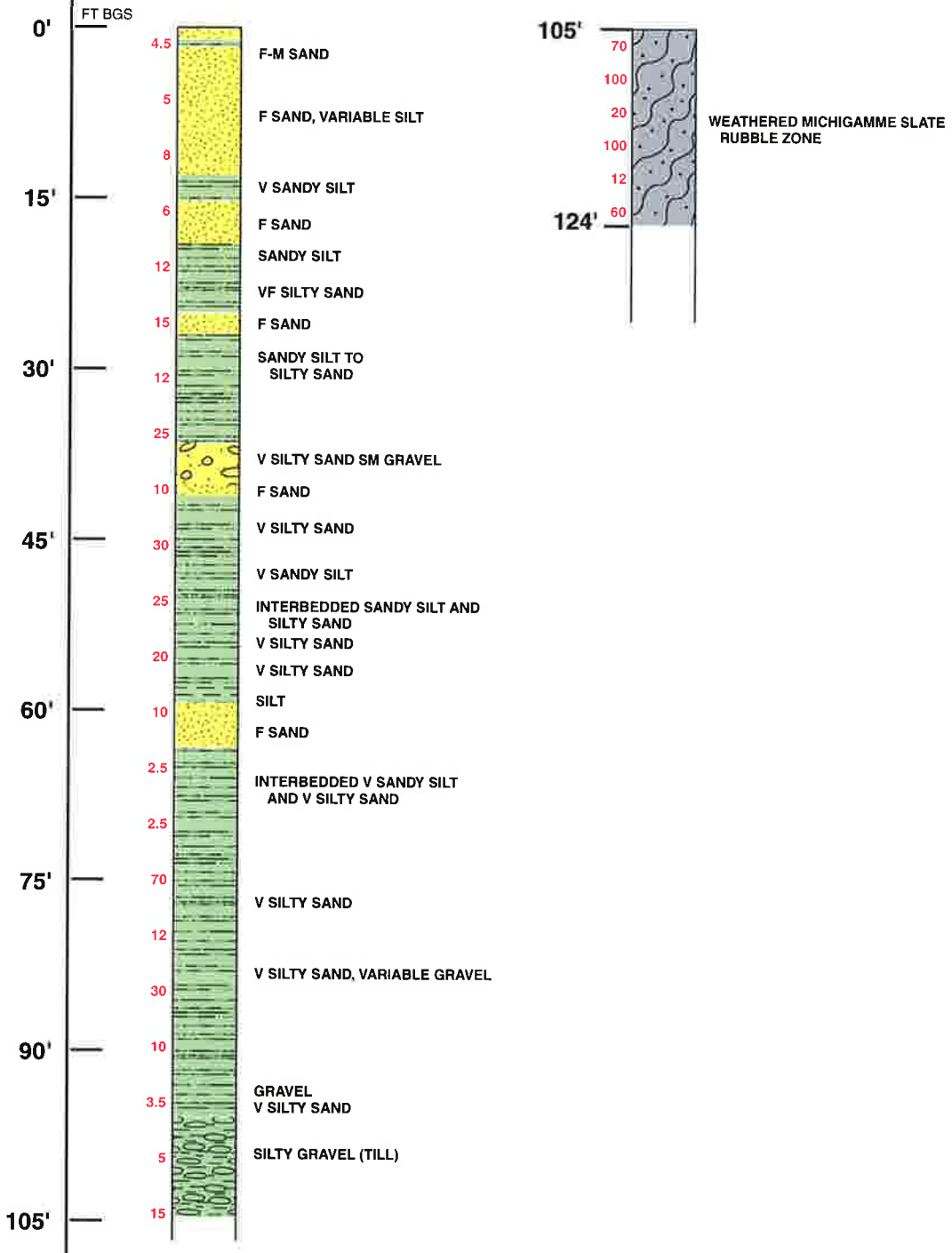
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-27

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1194.01 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 124 Feet BLS
DRILLER John	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 12/21/98



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_27.AI

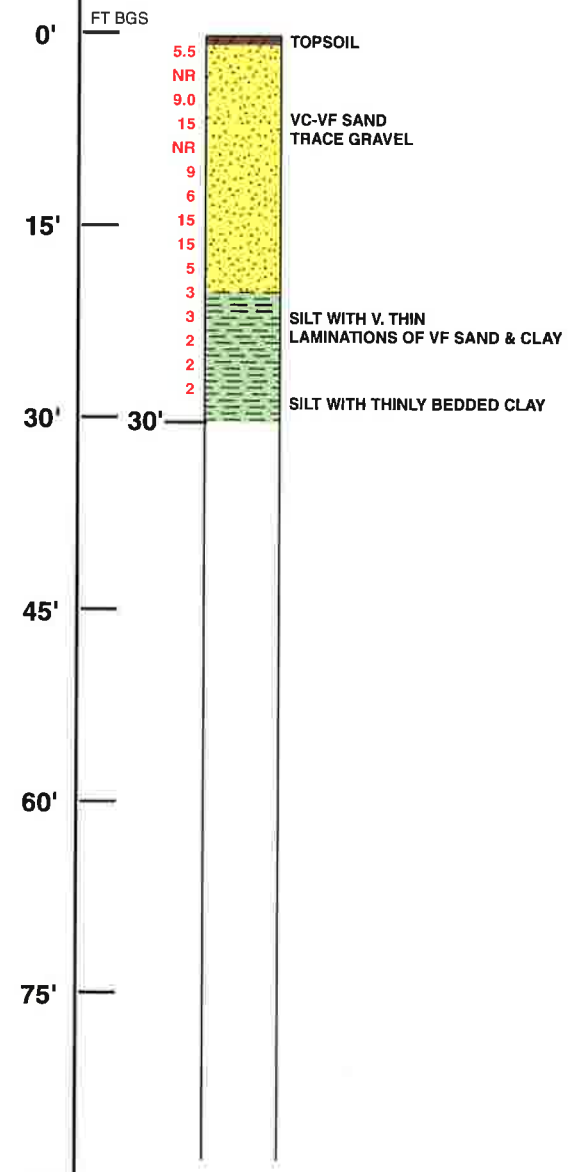
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-28

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.29 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_28.AI

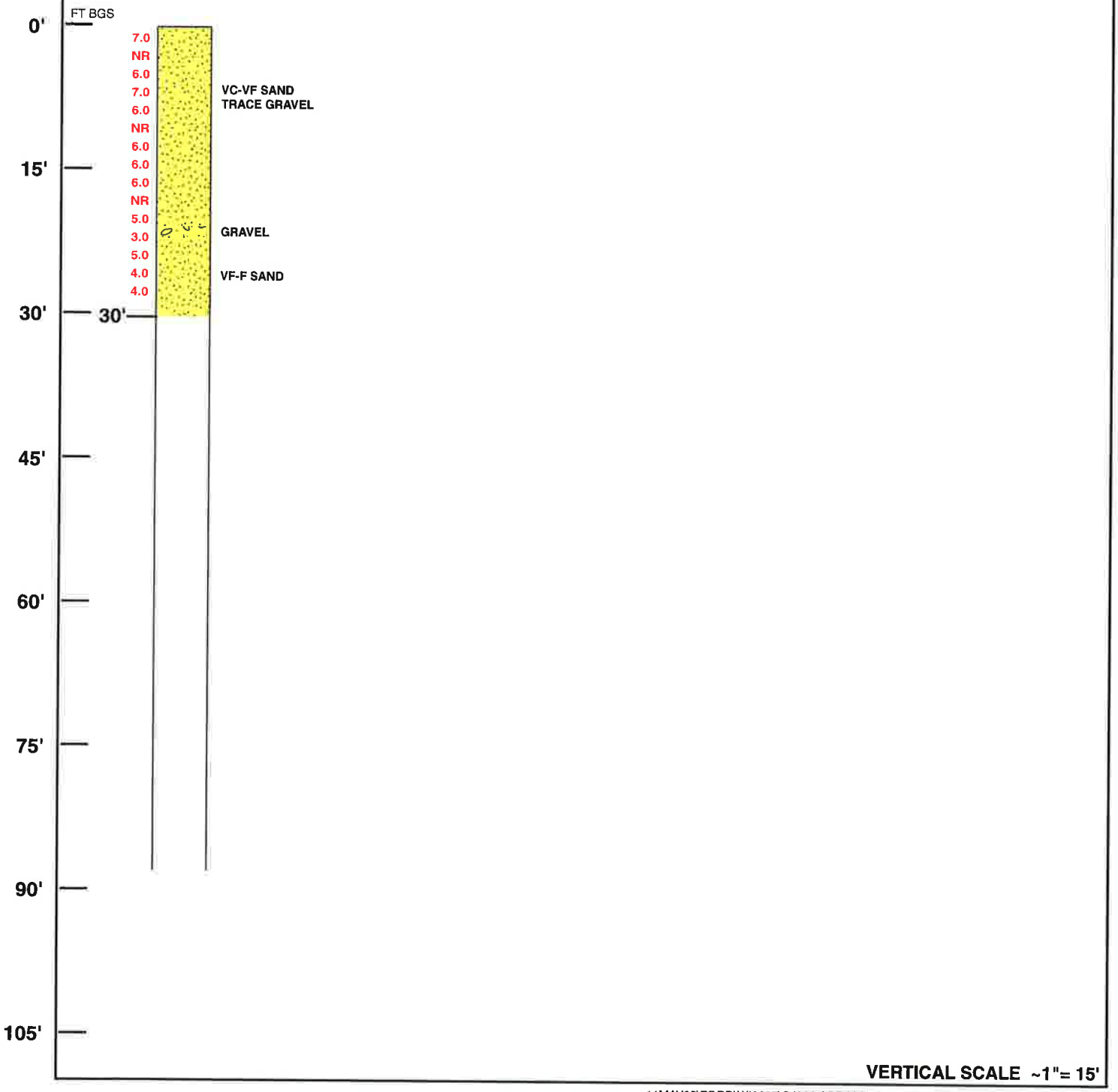
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-29

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1120.38 Feet MSL
GEOLOGIST Bill McCrackin	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 30 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 6/13/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_29.AI

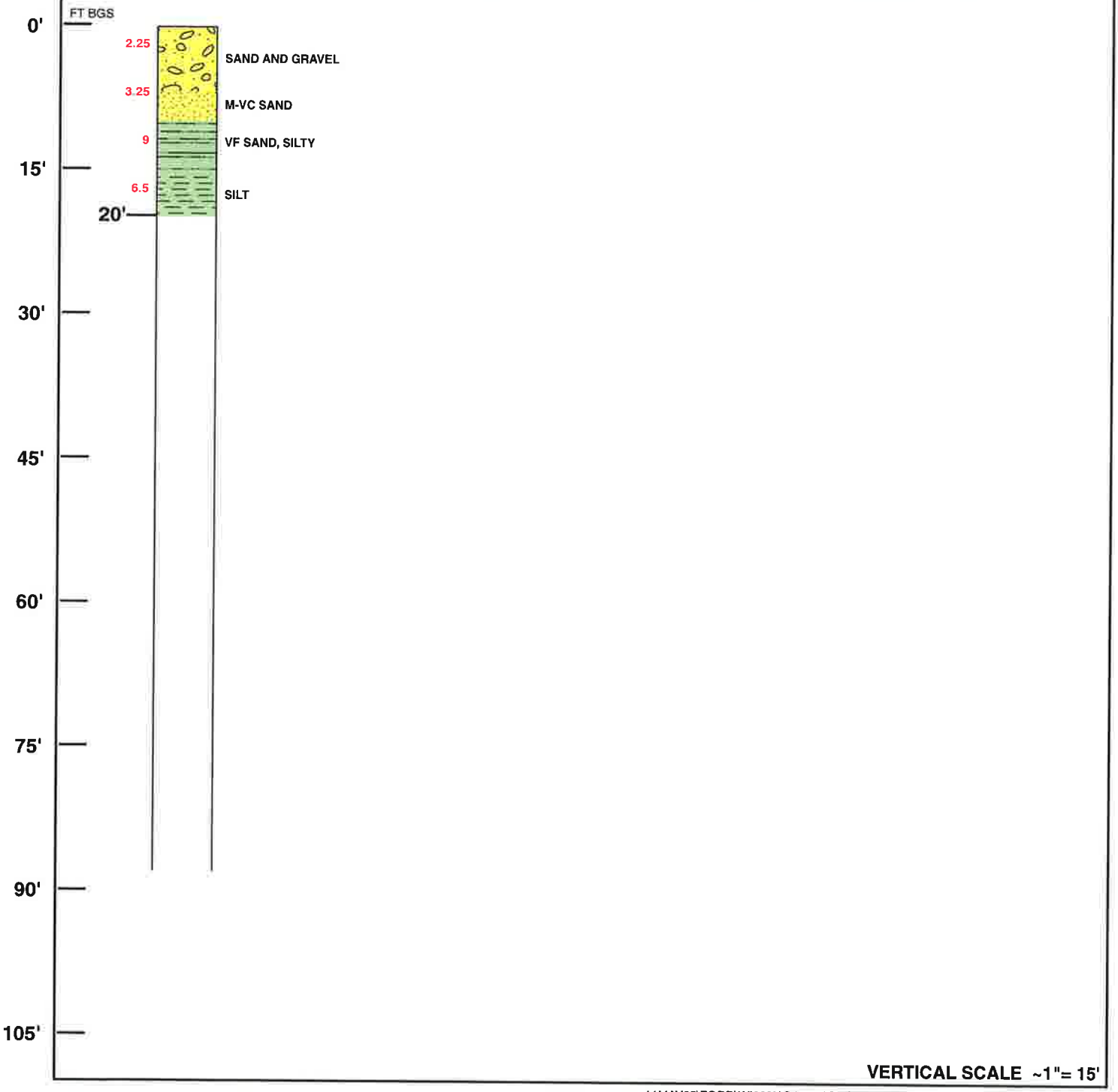
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-30

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.03 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 20 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/20/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_30.AI

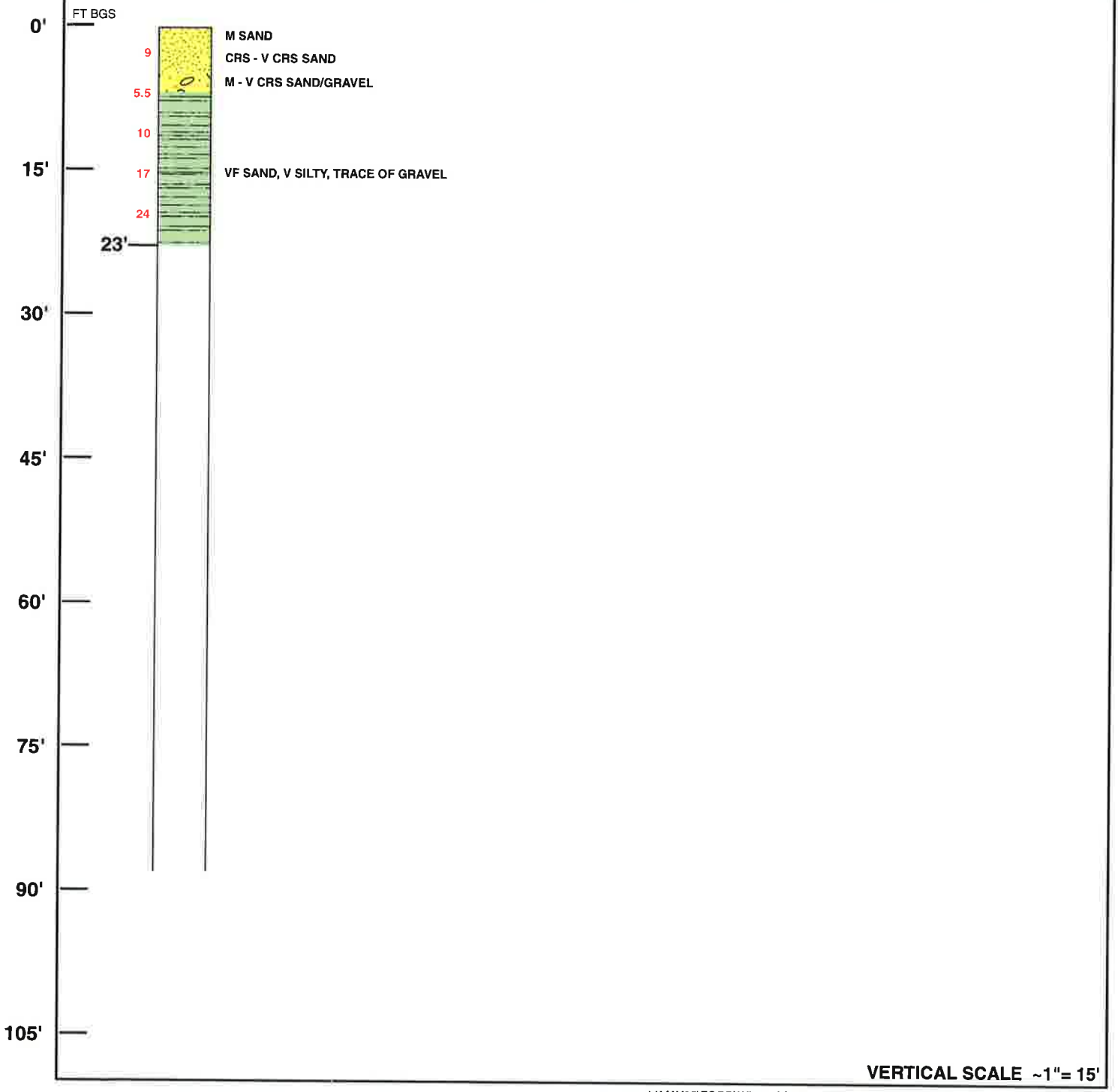
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-31

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.62 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 23 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/20/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_31.AI

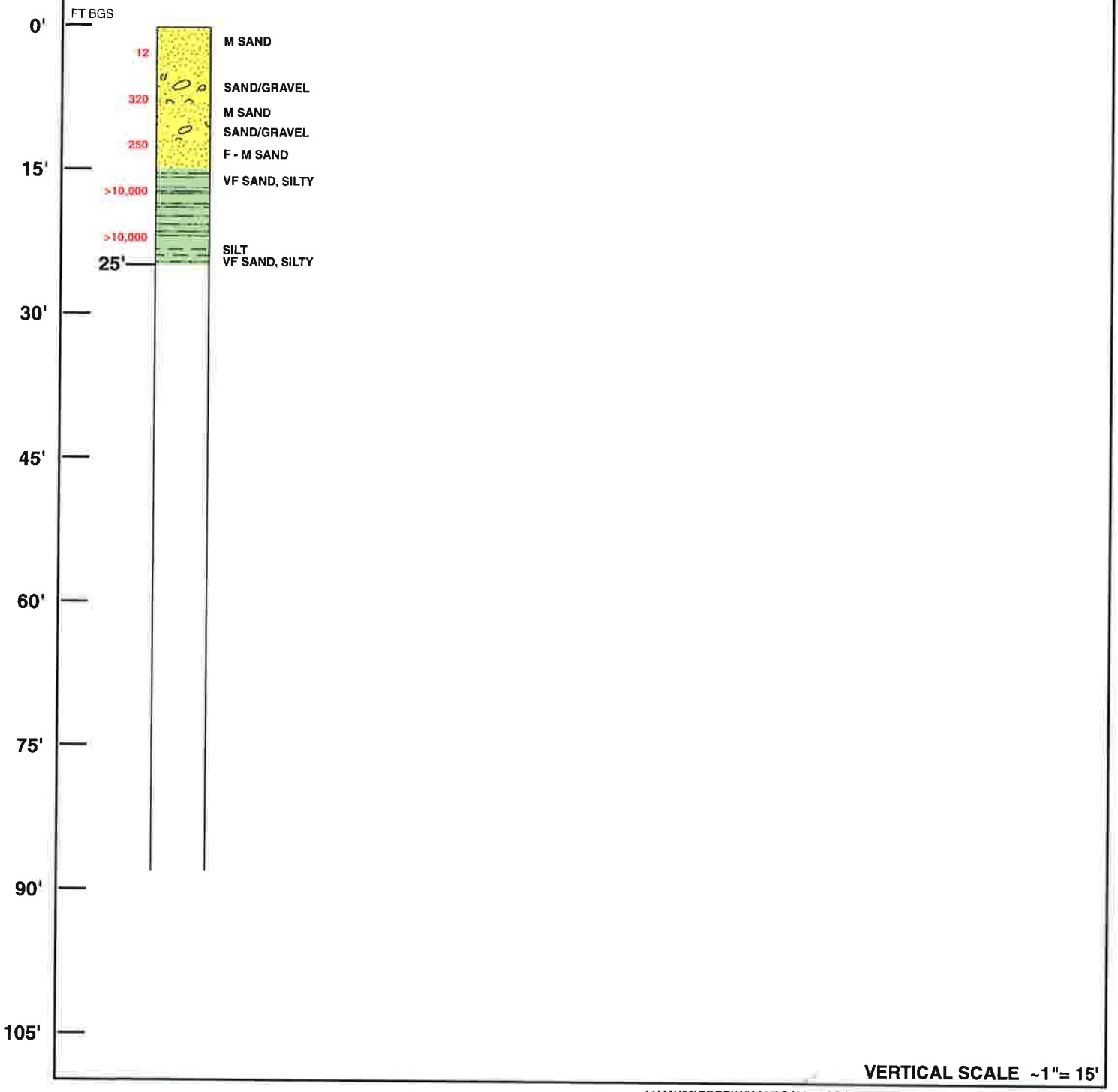
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-32

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.39 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 25 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/20/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_32.AI

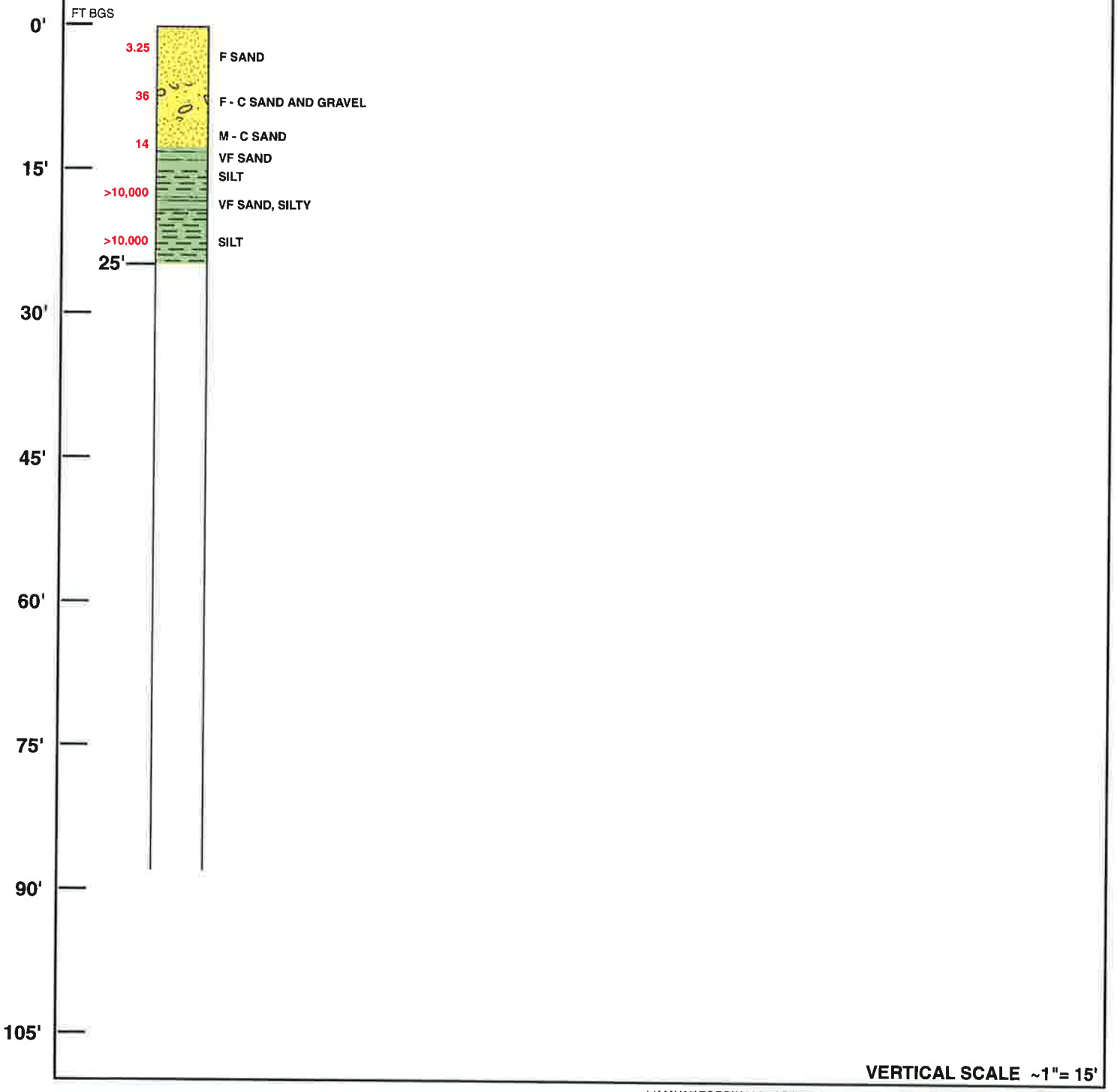
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-33

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.60 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 25 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/20/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_33.AI

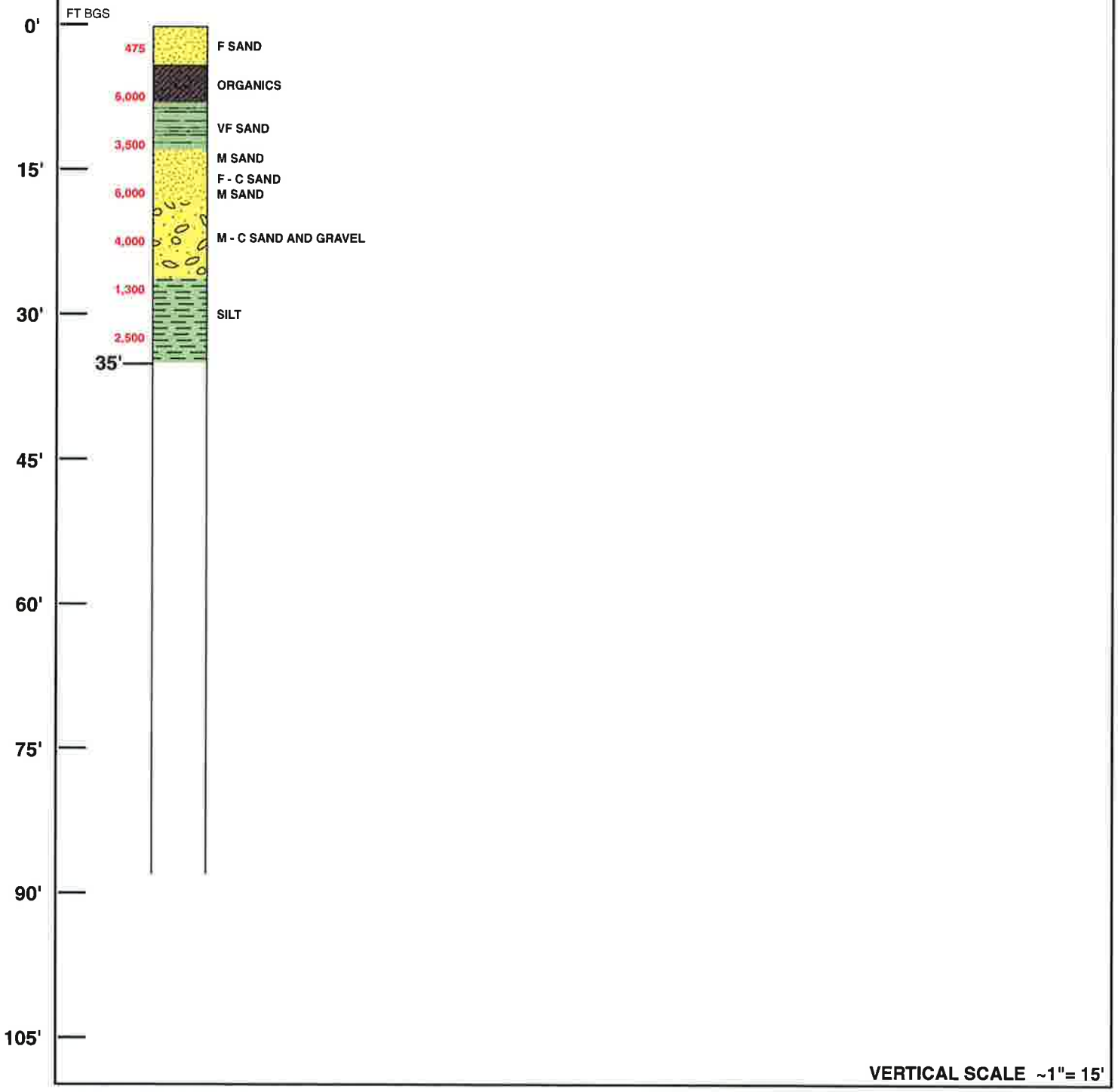
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-34

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.84 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gabe Steinagel	Boart Longyear	Rotasonic	10/20/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_34.AI

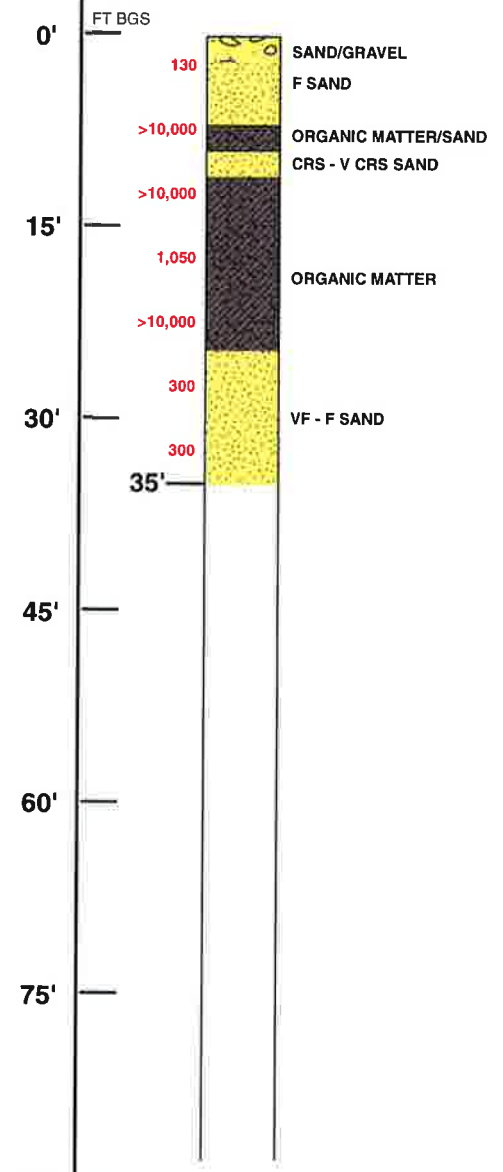
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-35

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.51 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 35 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/20/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_35.AI

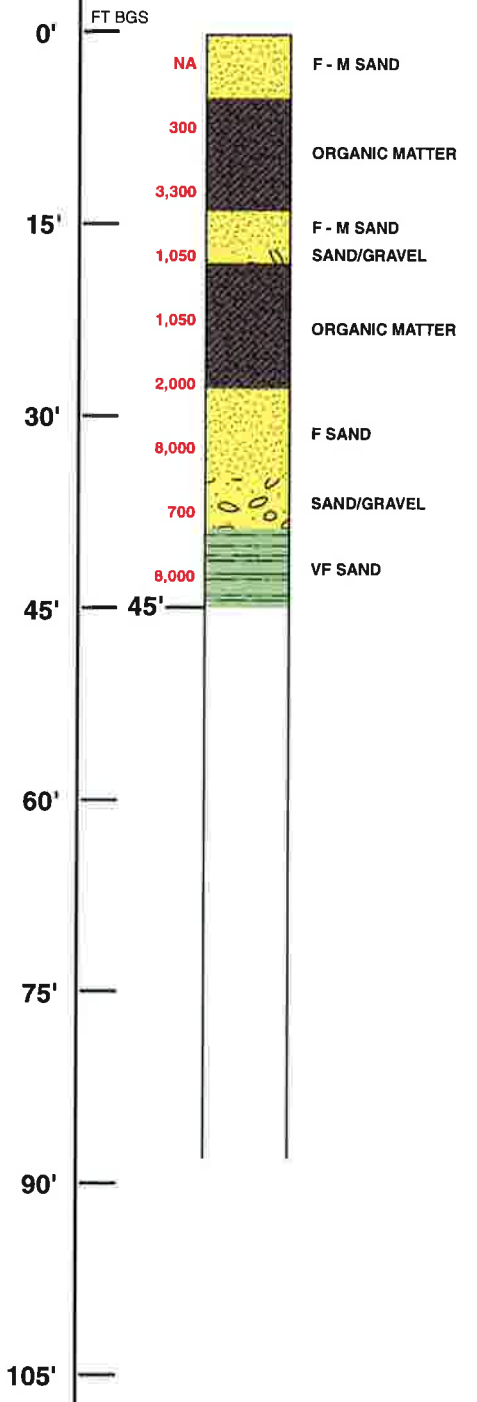
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-36

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.34 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gabe Steinagel	Boart Longyear	Rotasonic	10/20/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_36.AI

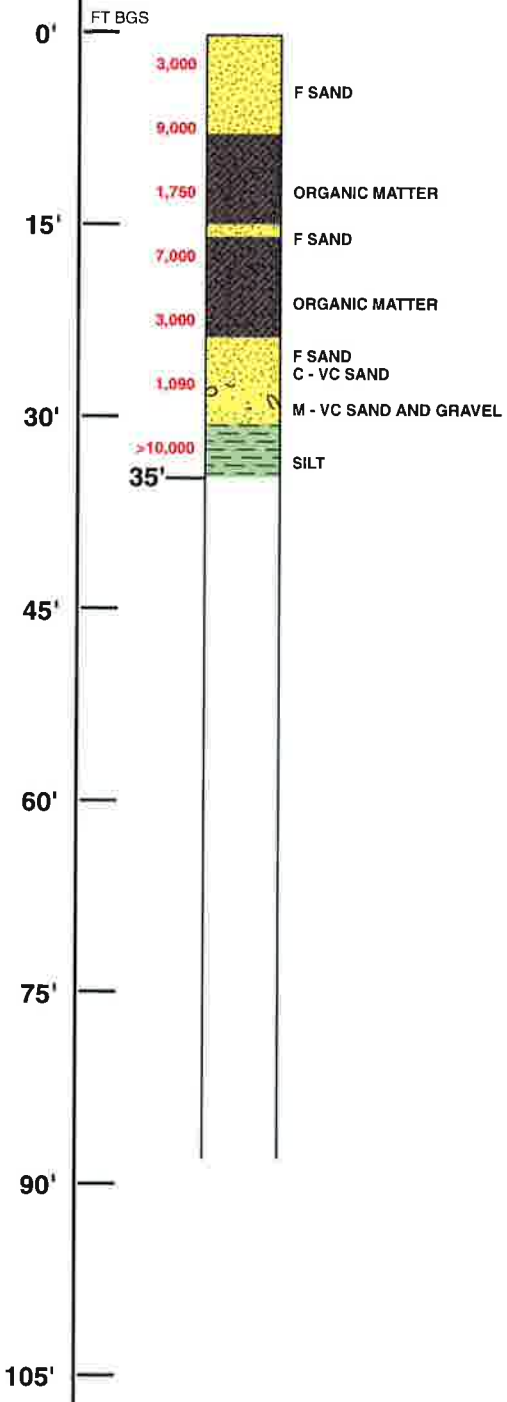
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-37

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.72 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 35 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/21/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_37.AI

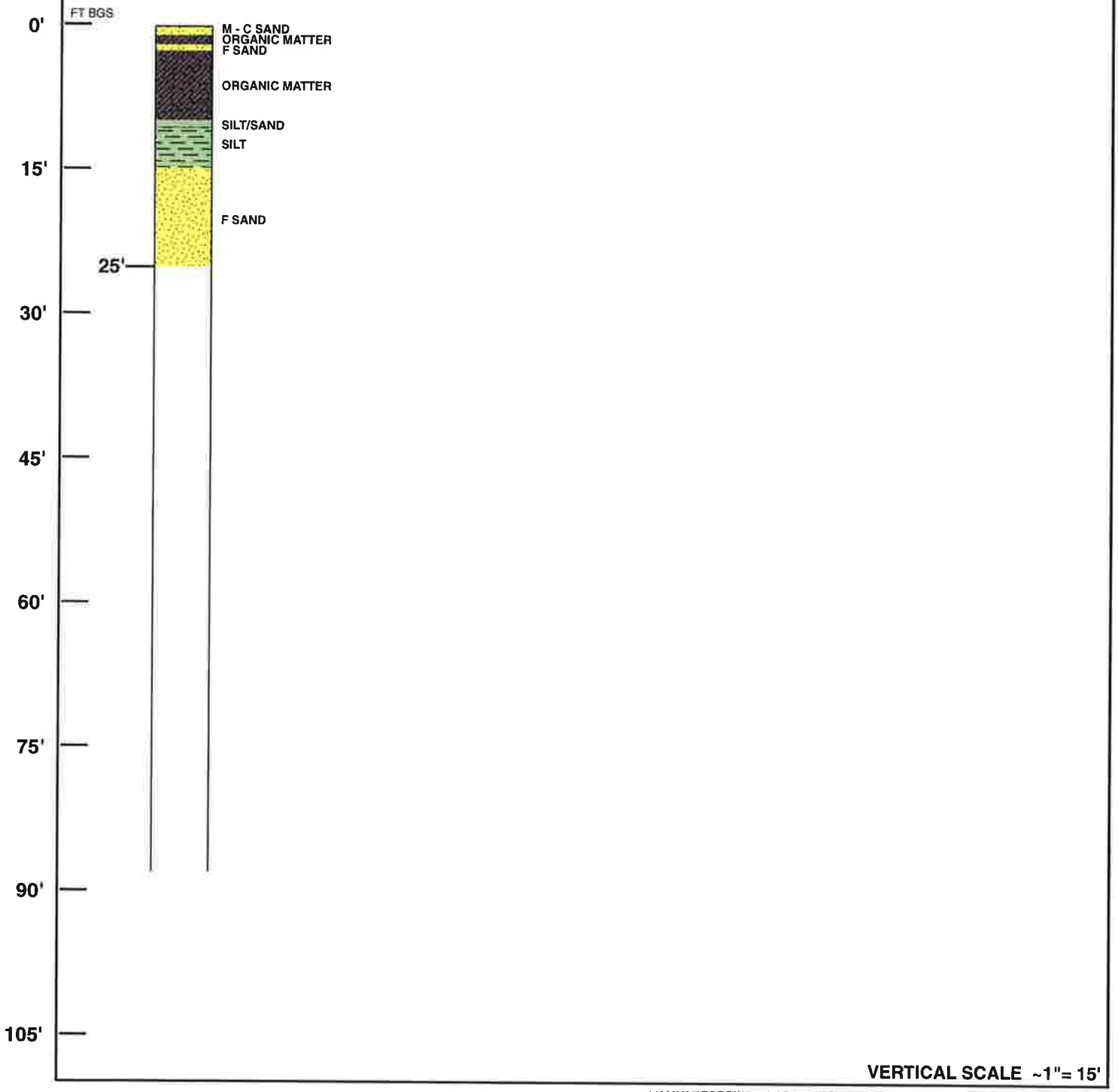
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-38

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.40 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gabe Steinagel	Boart Longyear	Rotasonic	10/21/99



VERTICAL SCALE ~1"= 15'

11MAY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_38.AI

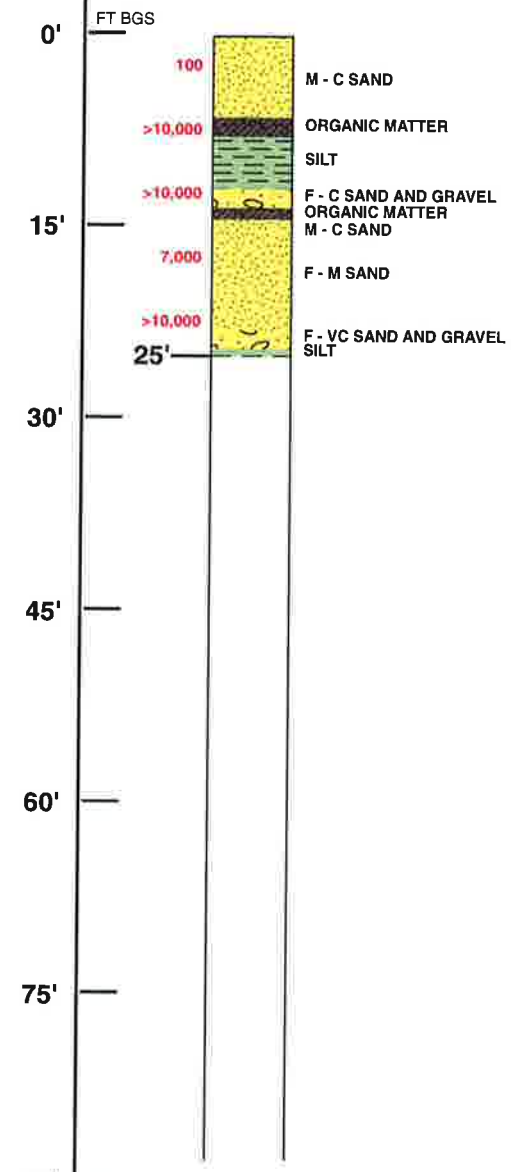
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-39

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.13 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gabe Steinagel	Boart Longyear	Rotasonic	10/21/99



VERTICAL SCALE ~1"= 15'

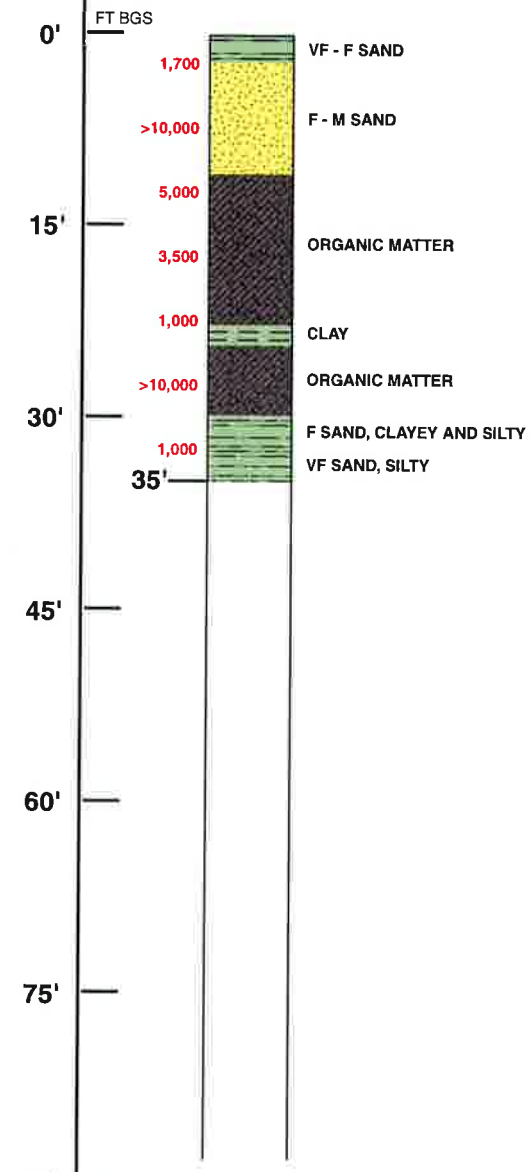
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-40

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.98 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 35 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/21/99



VERTICAL SCALE ~1"= 15'

29JUN\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_40.AI

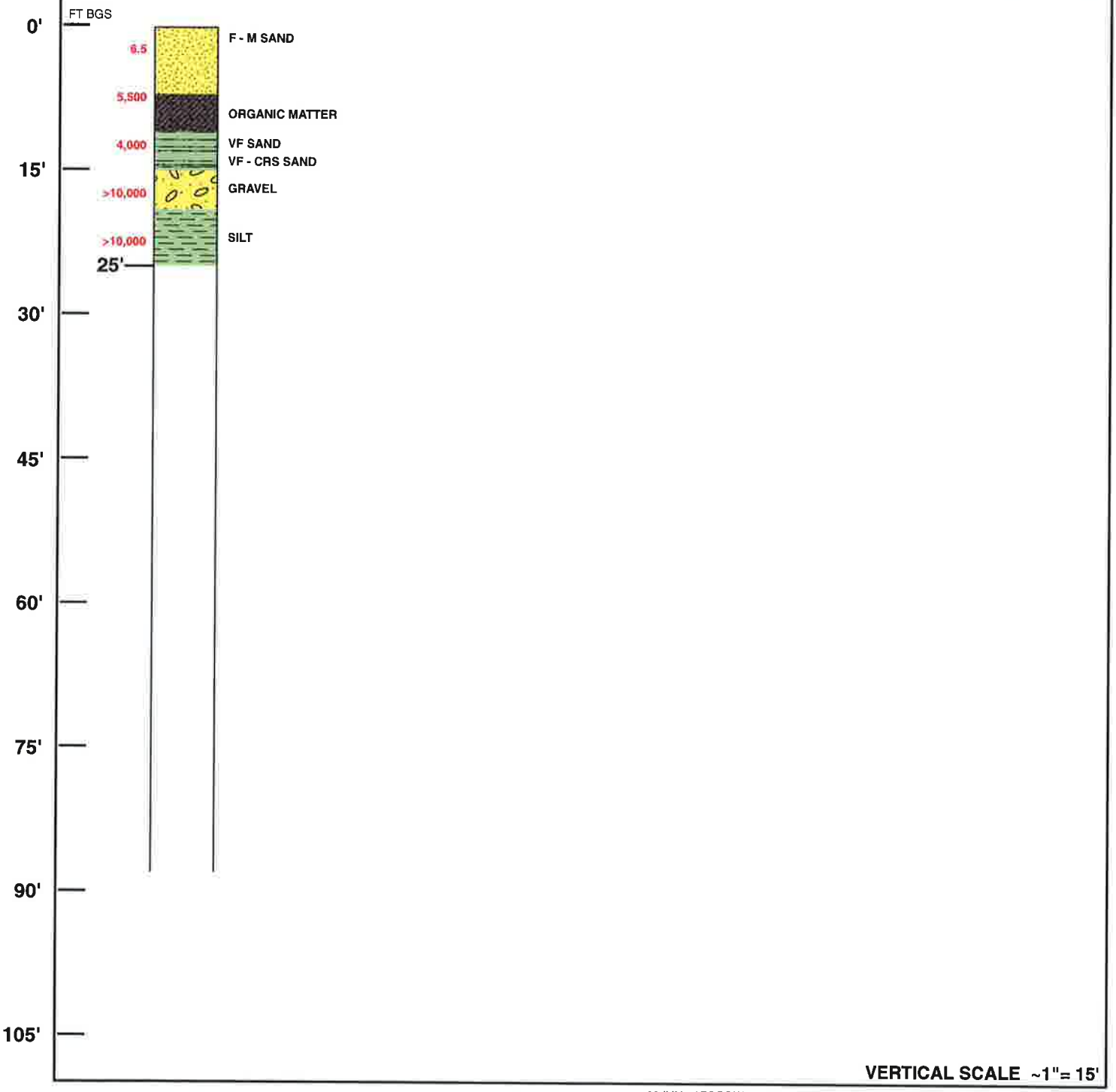
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-41

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1115.19 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 25 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/21/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_41.AI

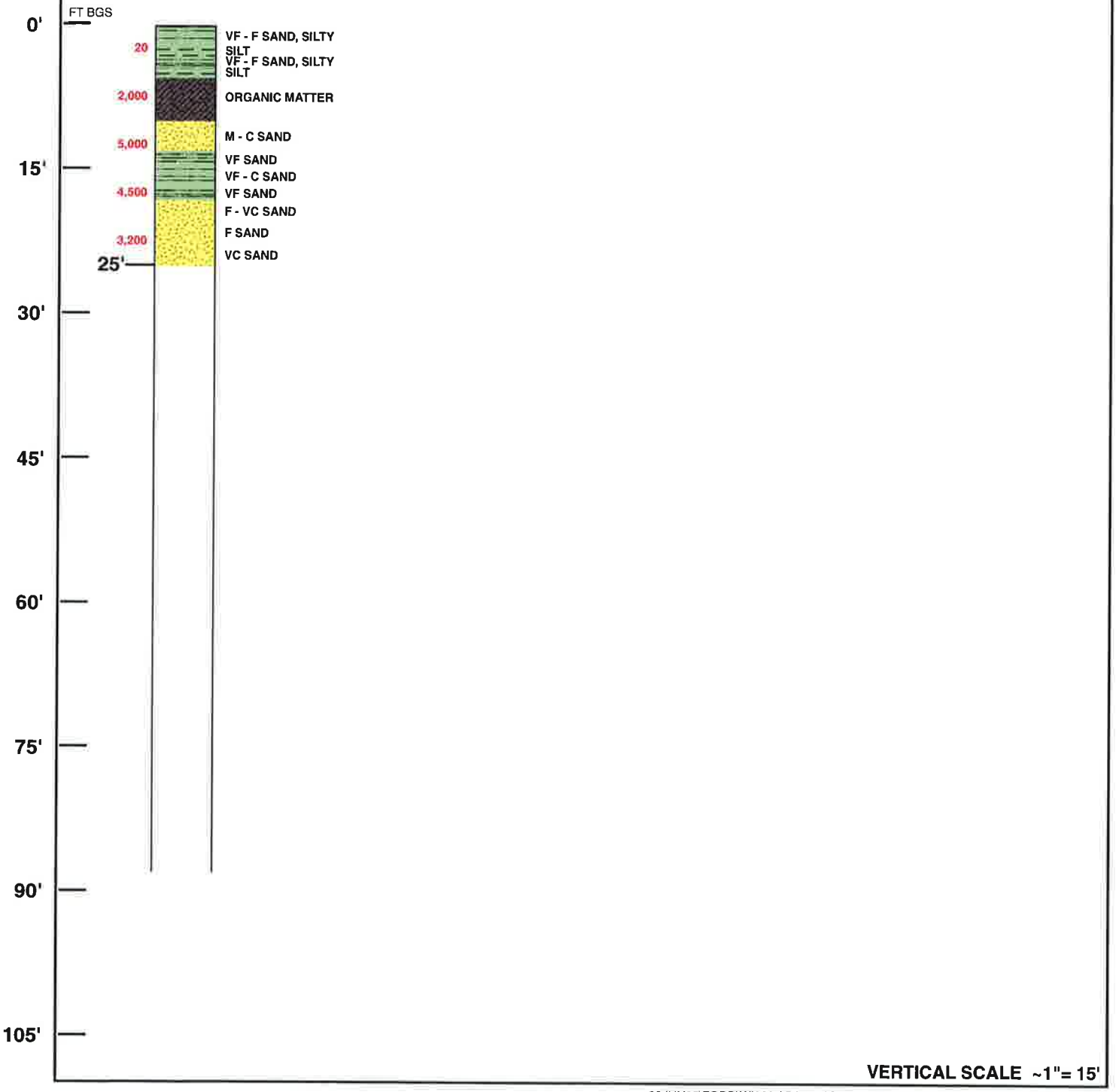
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-42

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.45 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gabe Steinagel	Boart Longyear	Rotasonic	10/21/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_42.AI

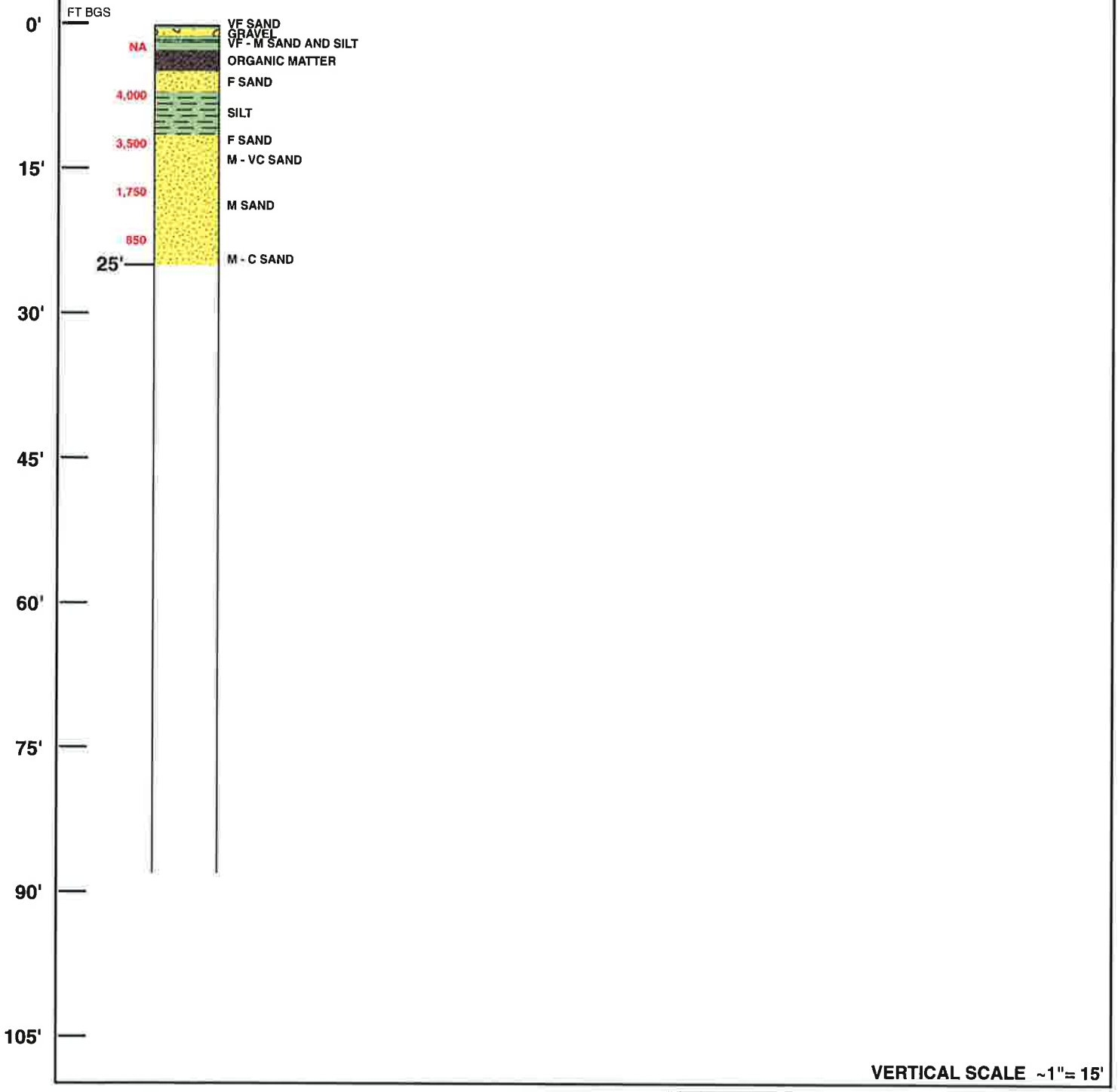
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-43

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.73 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 25 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/21/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_43.AI

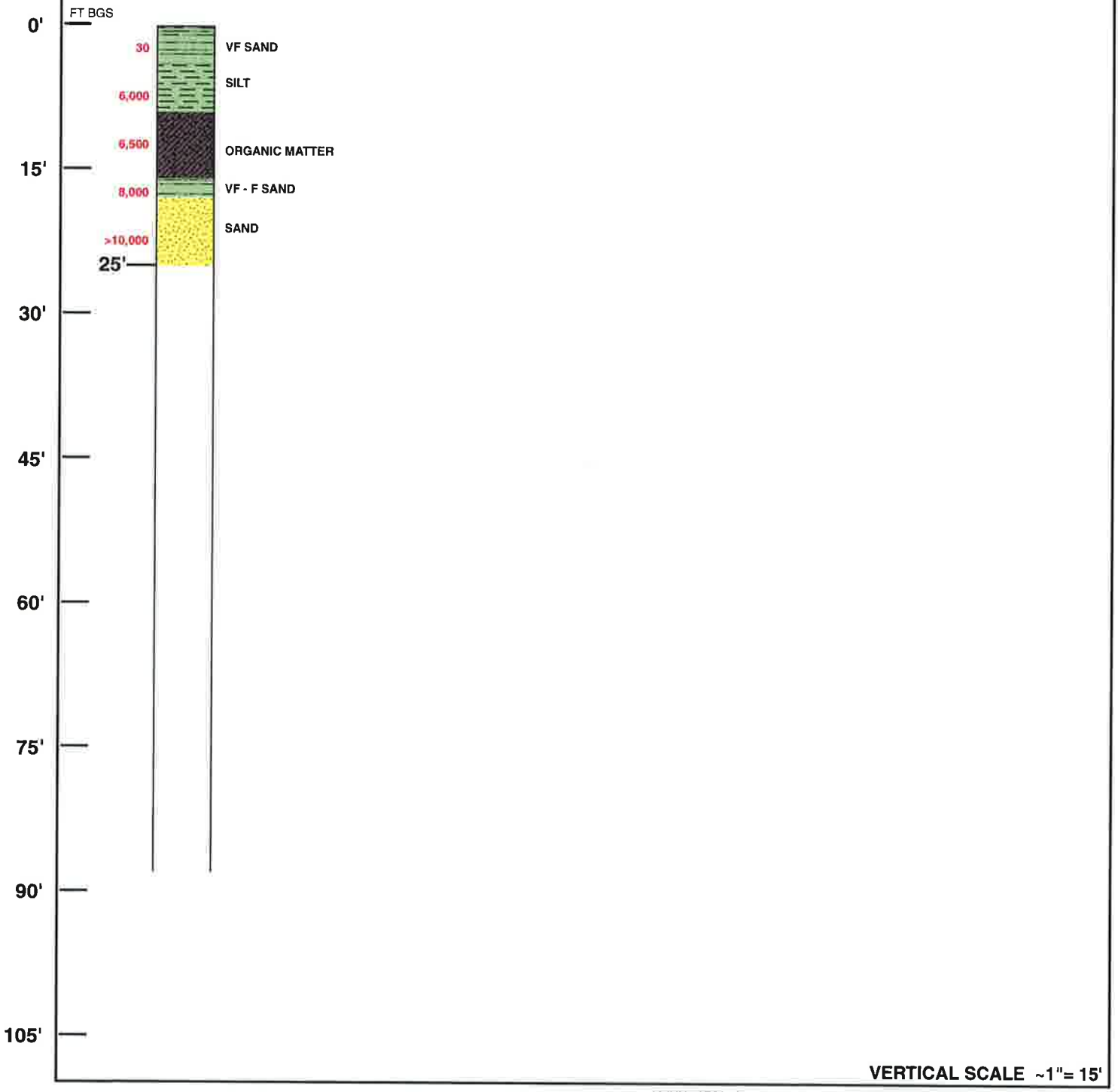
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-44

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.07 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gabe Steinagel	Boart Longyear	Rotasonic	10/21/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_44.AI

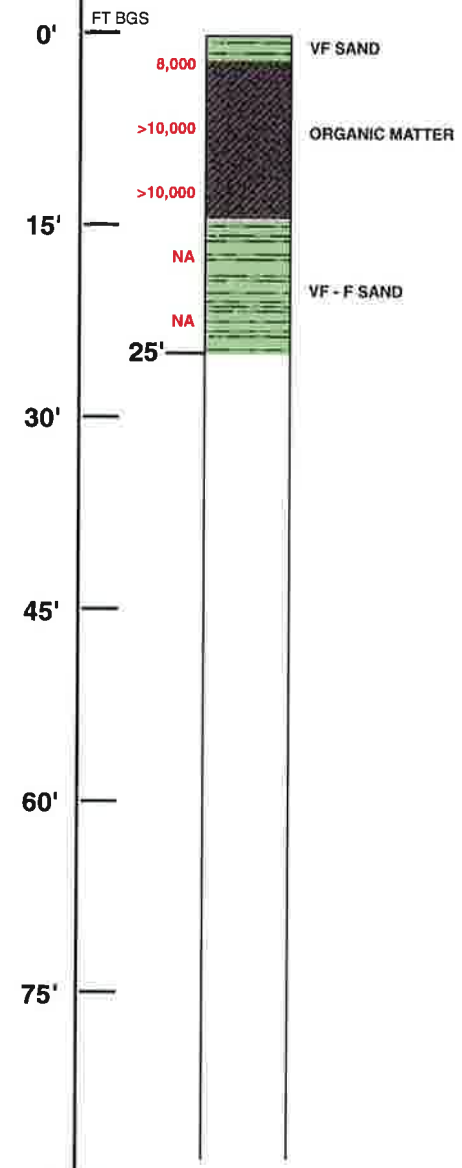
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-45

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.94 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 25 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/21/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_45.AI

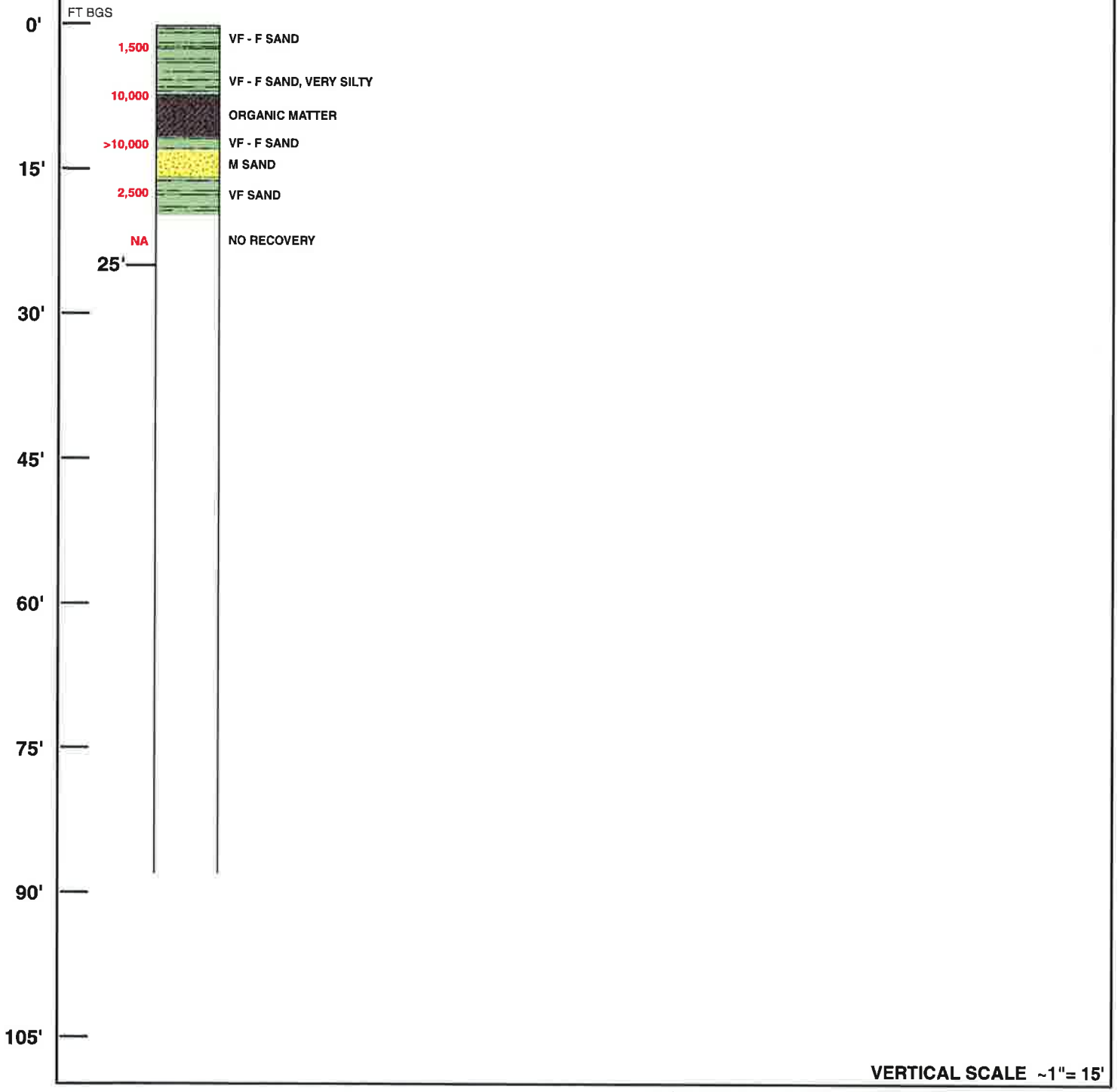
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-46

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.16 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 25 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/22/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_46.AI

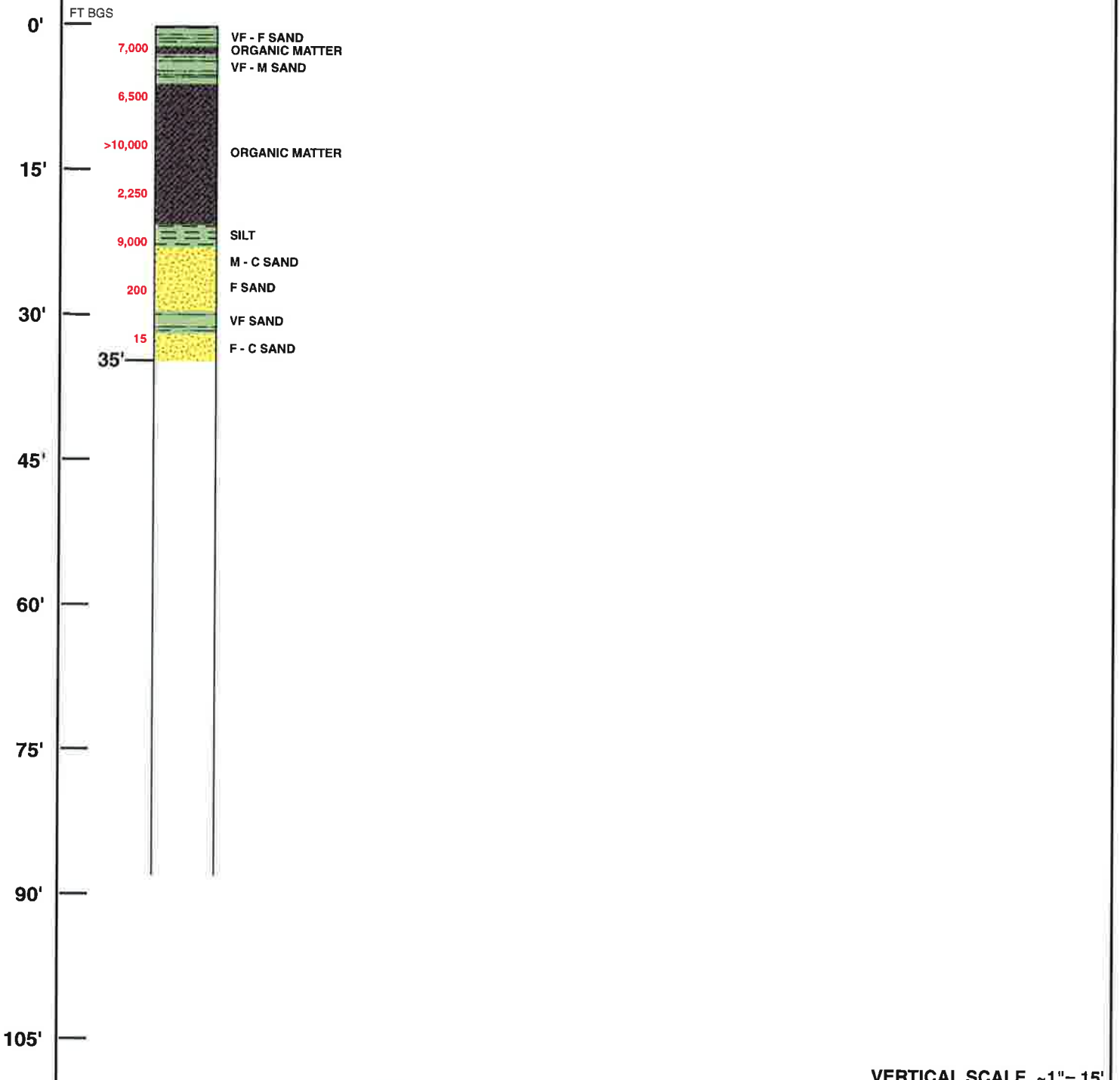
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-47

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.19 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 35 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/22/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_47.AI

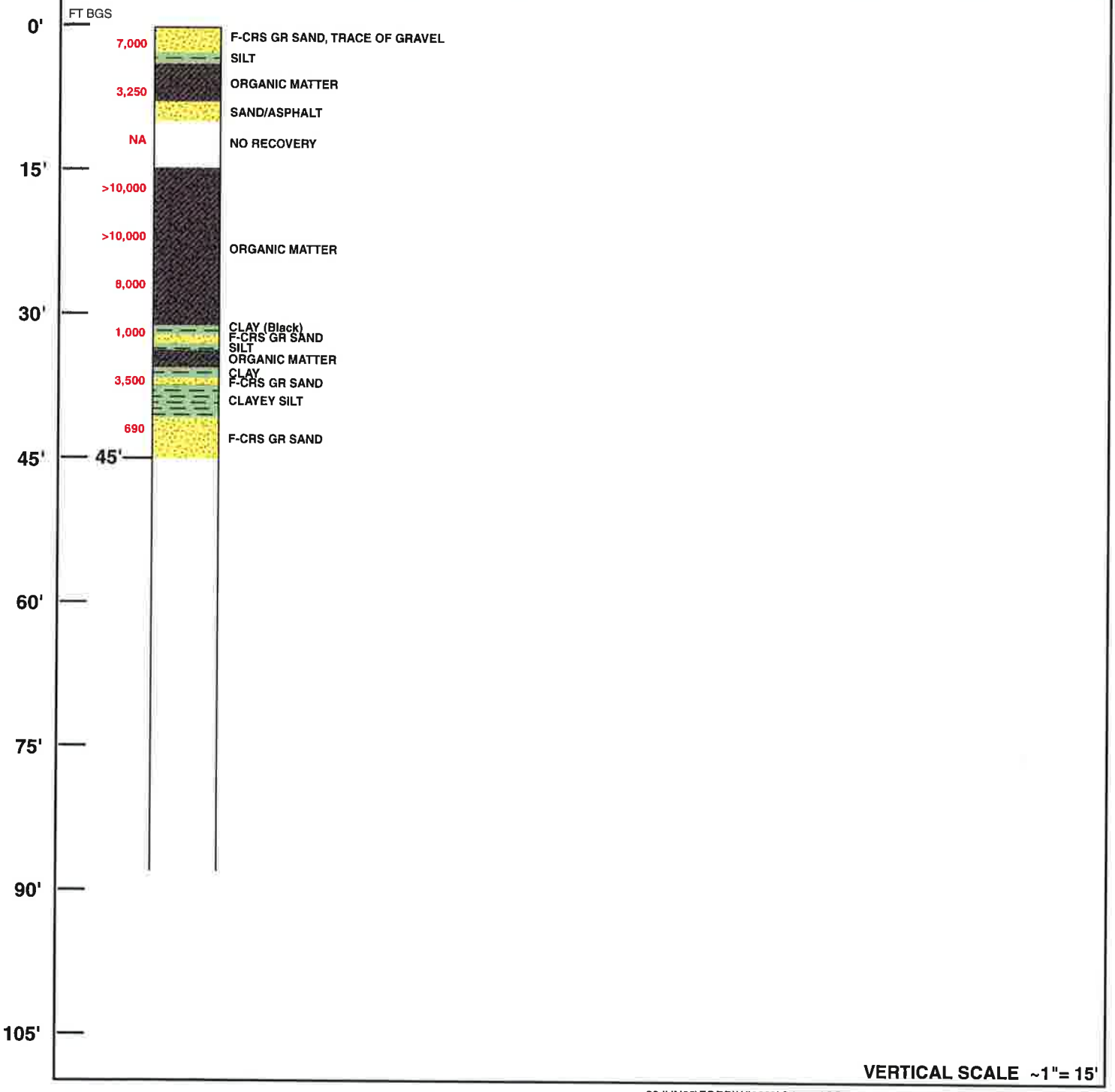
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-48

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.16 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 45 Feet BLS
DRILLER Gabe Steinagel	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/22/99



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_48.AI

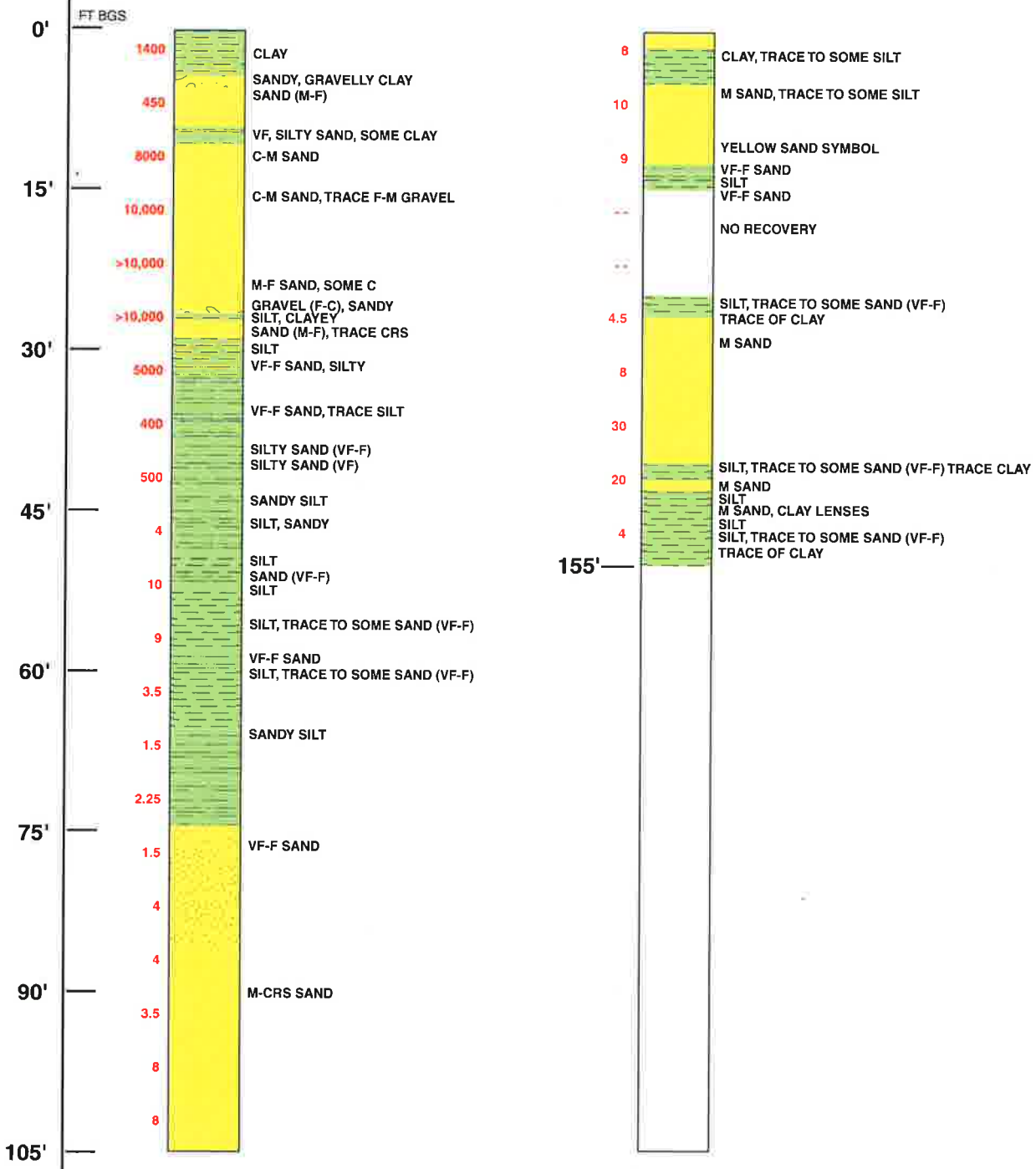
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-49

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1039.63 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	155 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hanson	Boart Longyear	Rotasonic	5/19/00



VERTICAL SCALE ~1"= 15'

18FEB09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_49.AI

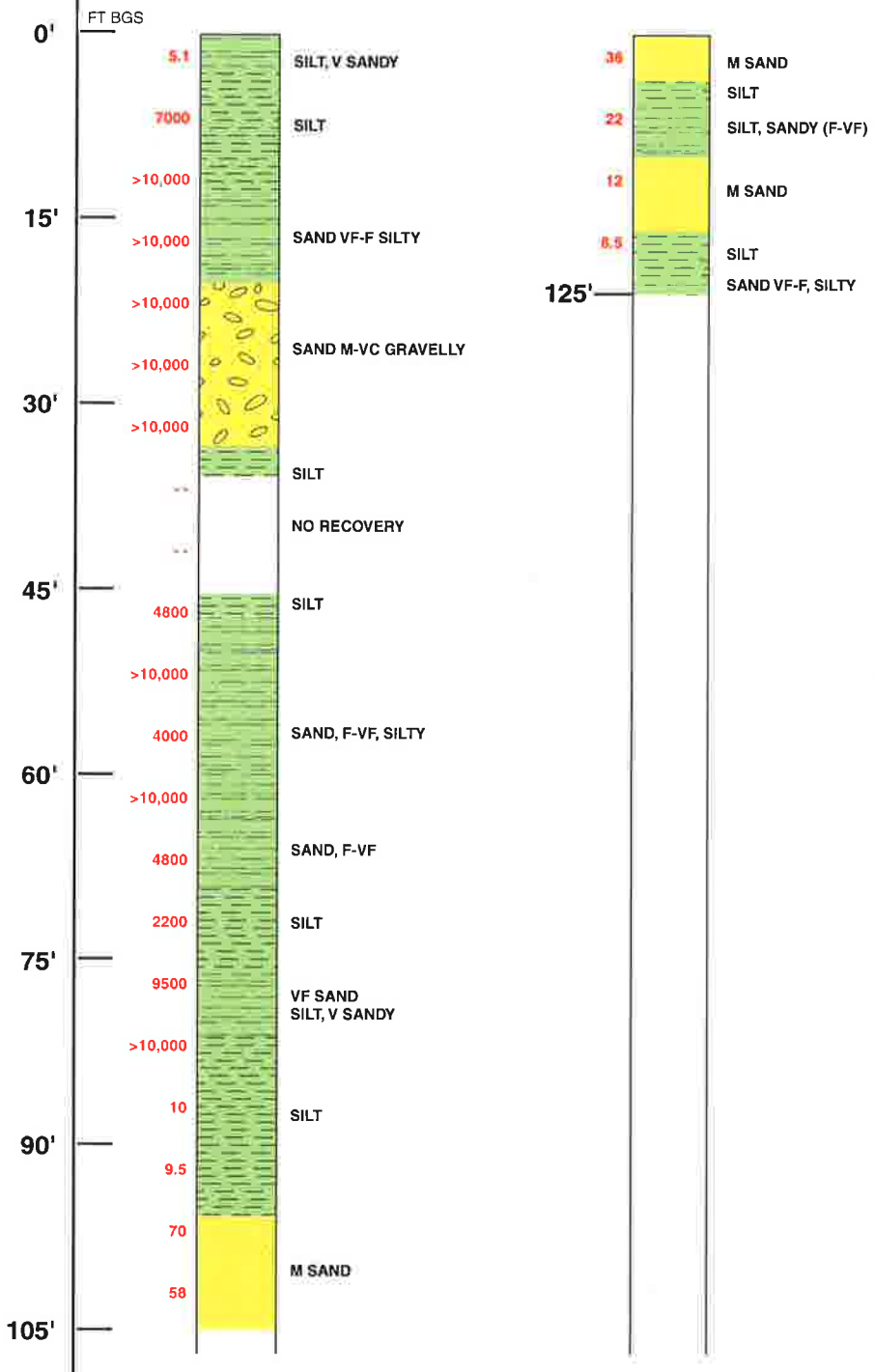
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-50

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.80 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	125 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hanson	Boart Longyear	Rotasonic	5/31/00



VERTICAL SCALE ~1"= 15'

18FEB09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_50.AI

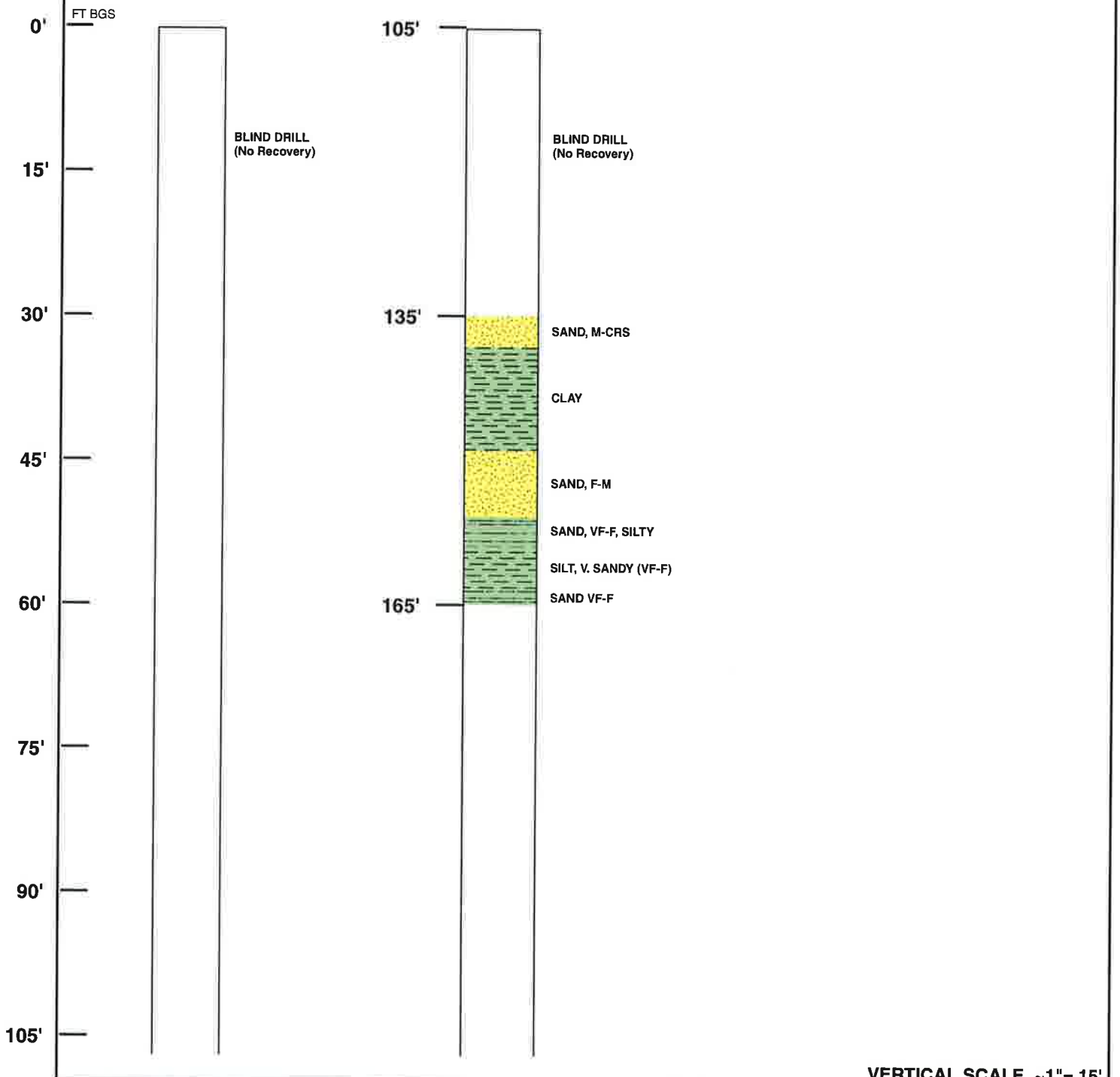
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-51

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1052.19 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL 135-165'	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 165 Feet BLS
DRILLER Mike Hansen	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/18/00



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_51.AI

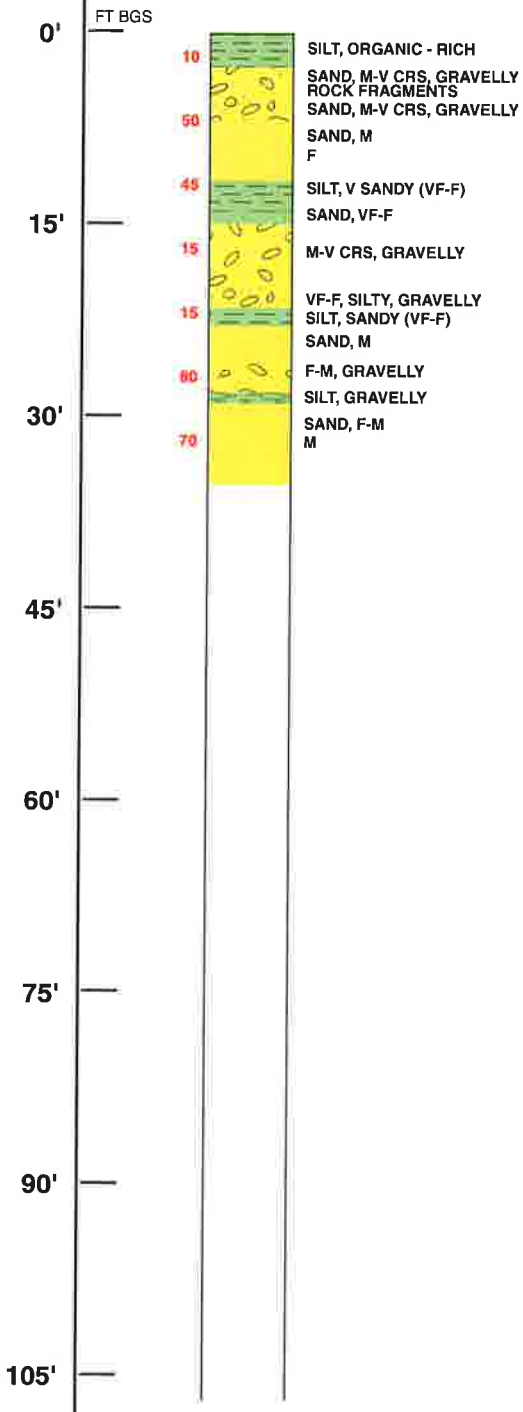
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-52

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1104 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hansen	Boart Longyear	Rotasonic	7/5/00



VERTICAL SCALE ~1"= 15'

30JUN\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_52.AI

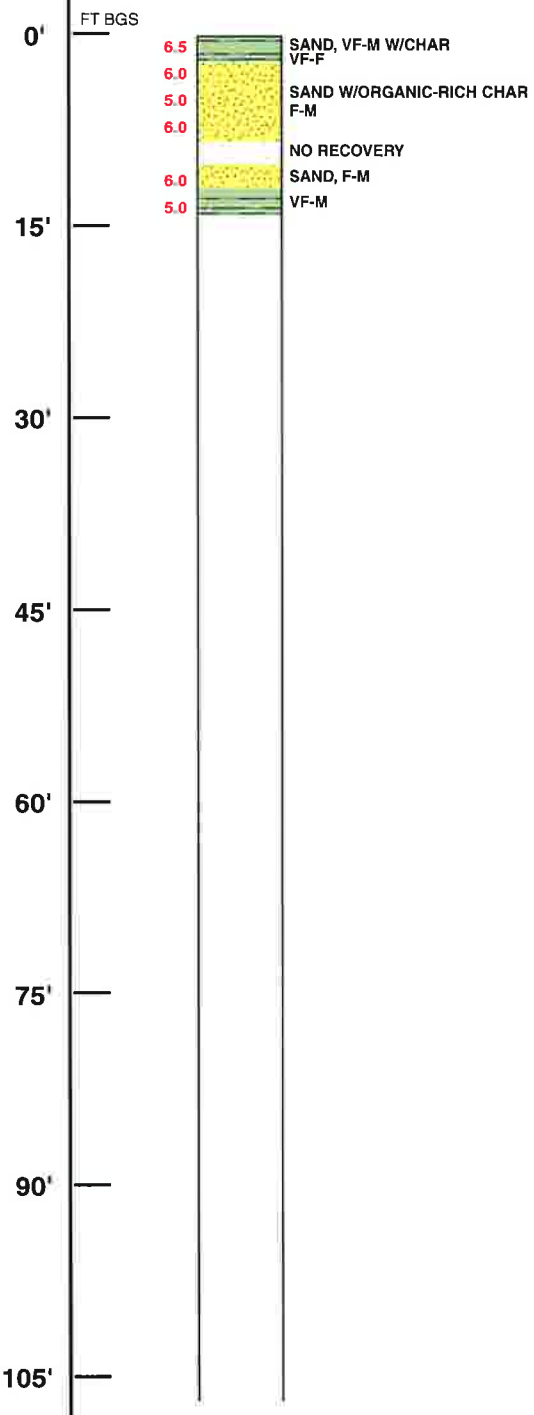
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-53

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1088.81 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hansen	Boart Longyear	Hollow Stem Auger	8/17/00



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_53.AI

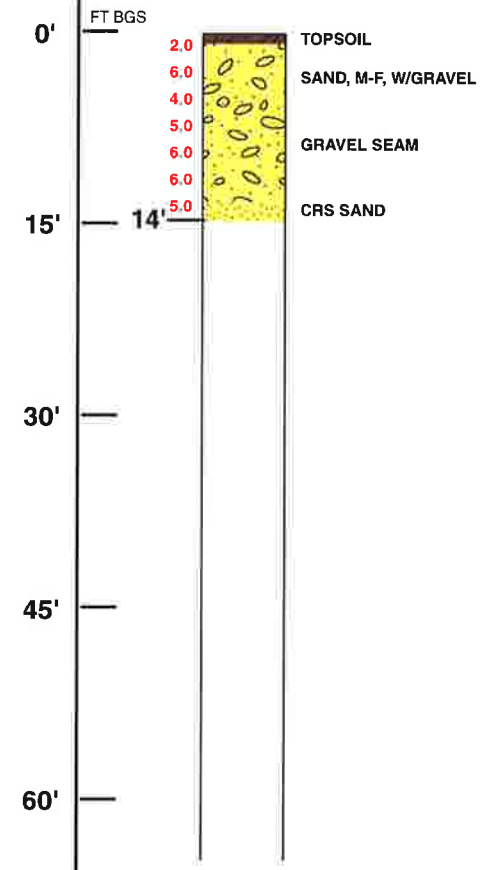
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-54

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1103.10 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzik	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/18/00



VERTICAL SCALE ~1"= 15'

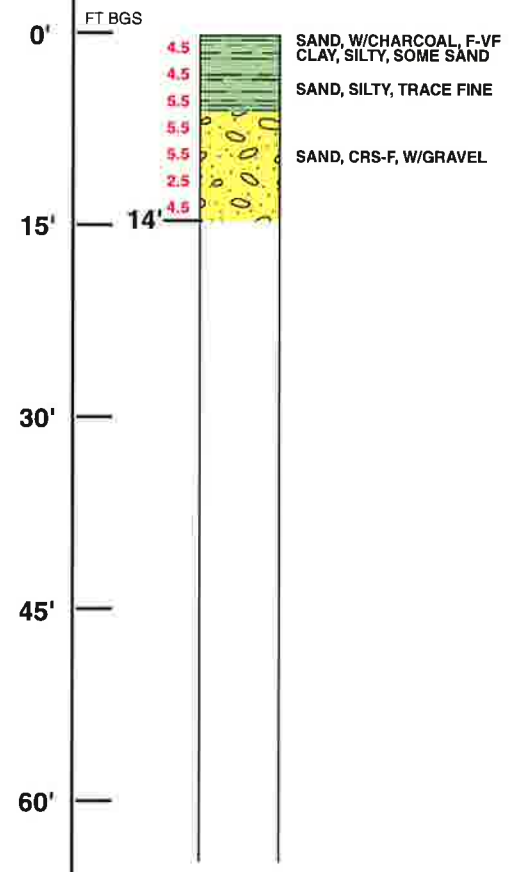
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-55

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1102.09 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/18/00



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_55.AI

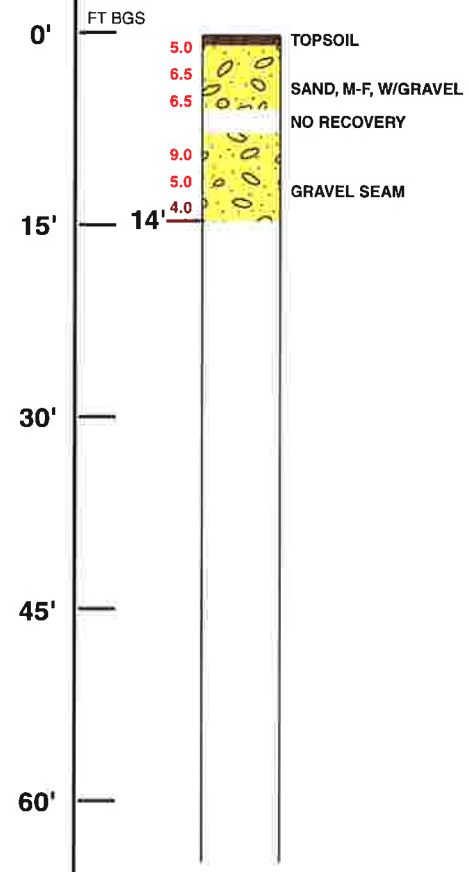
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-56

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1118.36 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/18/00



VERTICAL SCALE ~1"= 15'

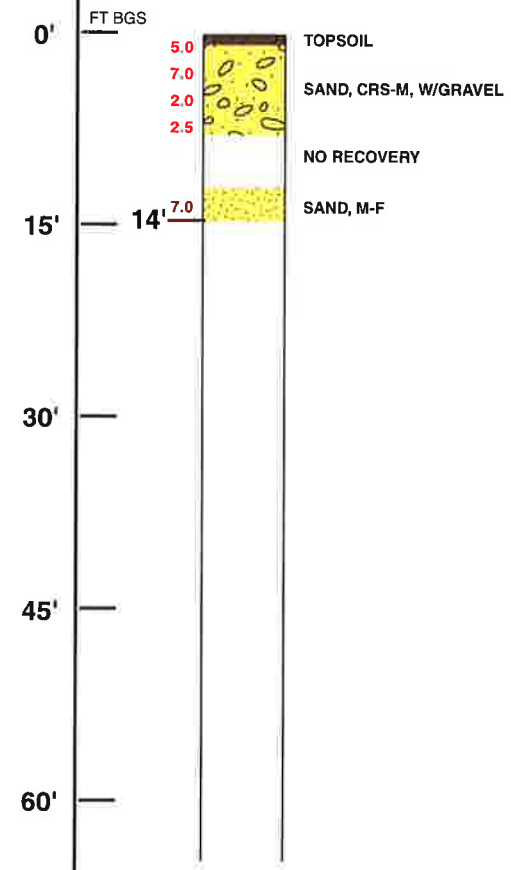
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-57

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.84 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/18/00



VERTICAL SCALE ~1"= 15'

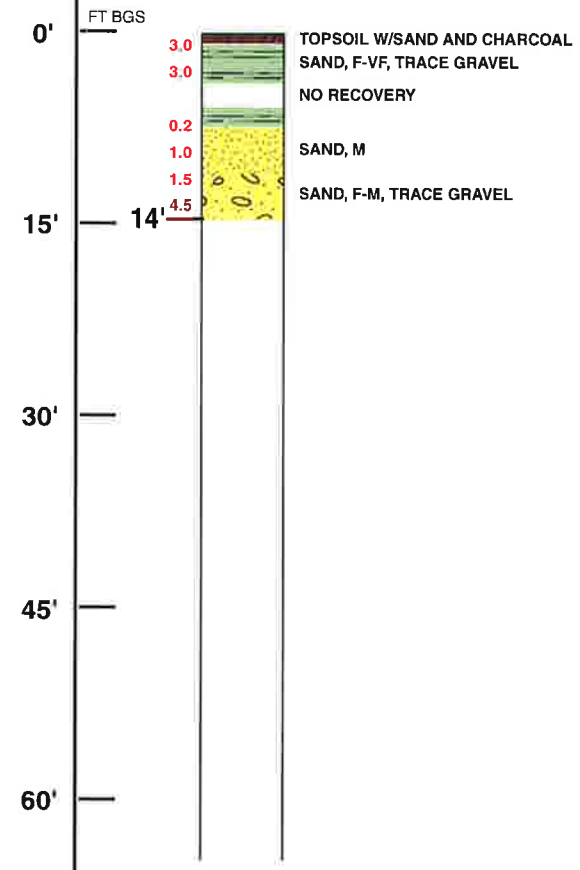
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-58

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1108.76 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/18/00



VERTICAL SCALE ~1"= 15'

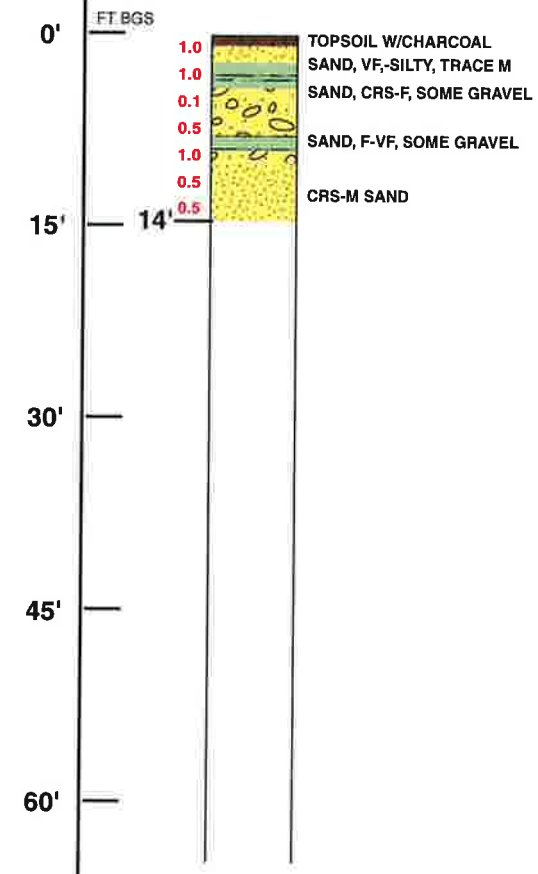
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-59

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1109.25 Feet MSL
GEOLOGIST Jeff Guzick	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 14 Feet BLS
DRILLER Mike Mueller	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/19/00



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_59.AI

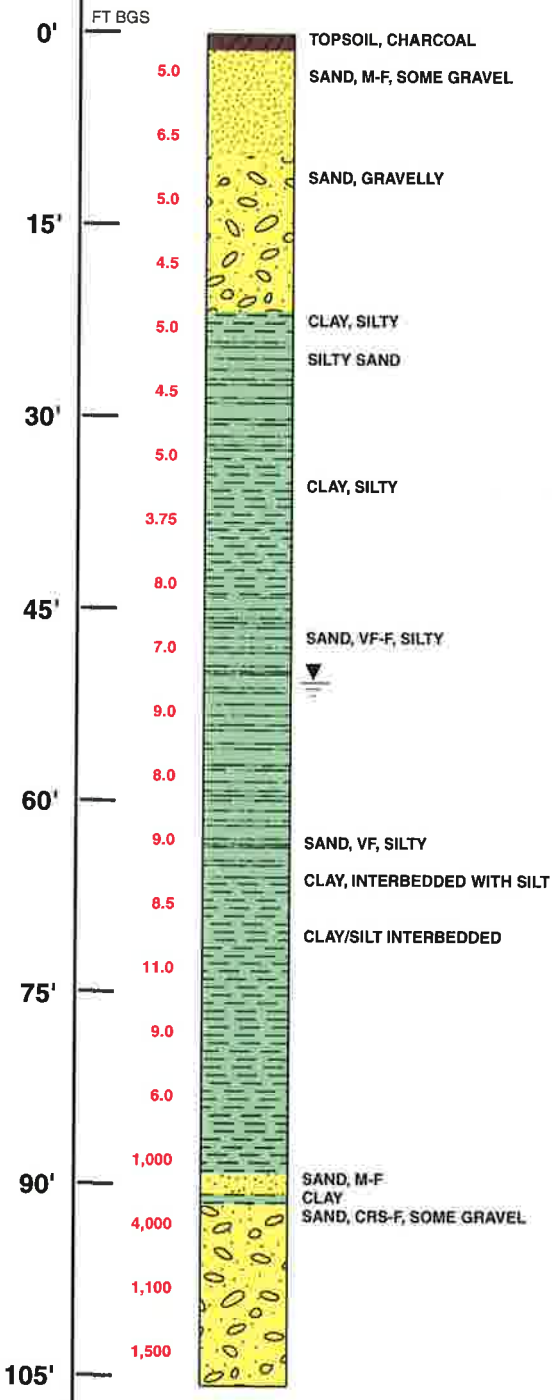
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-60

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1142.69 Feet MSL
GEOLOGIST Jeff Guzick	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 106 Feet BLS
DRILLER Mike Mueller	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/21/00



VERTICAL SCALE ~1"= 15'

24JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_60.AI

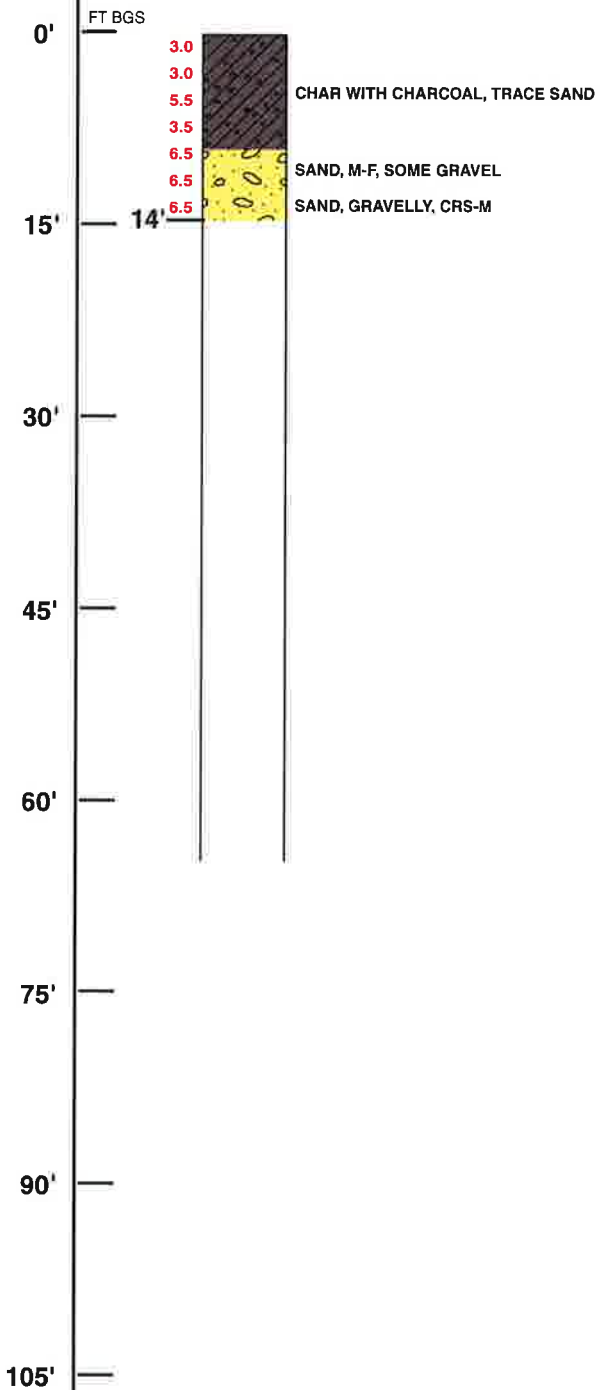
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-61

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1099.96 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/22/00



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_61.AI

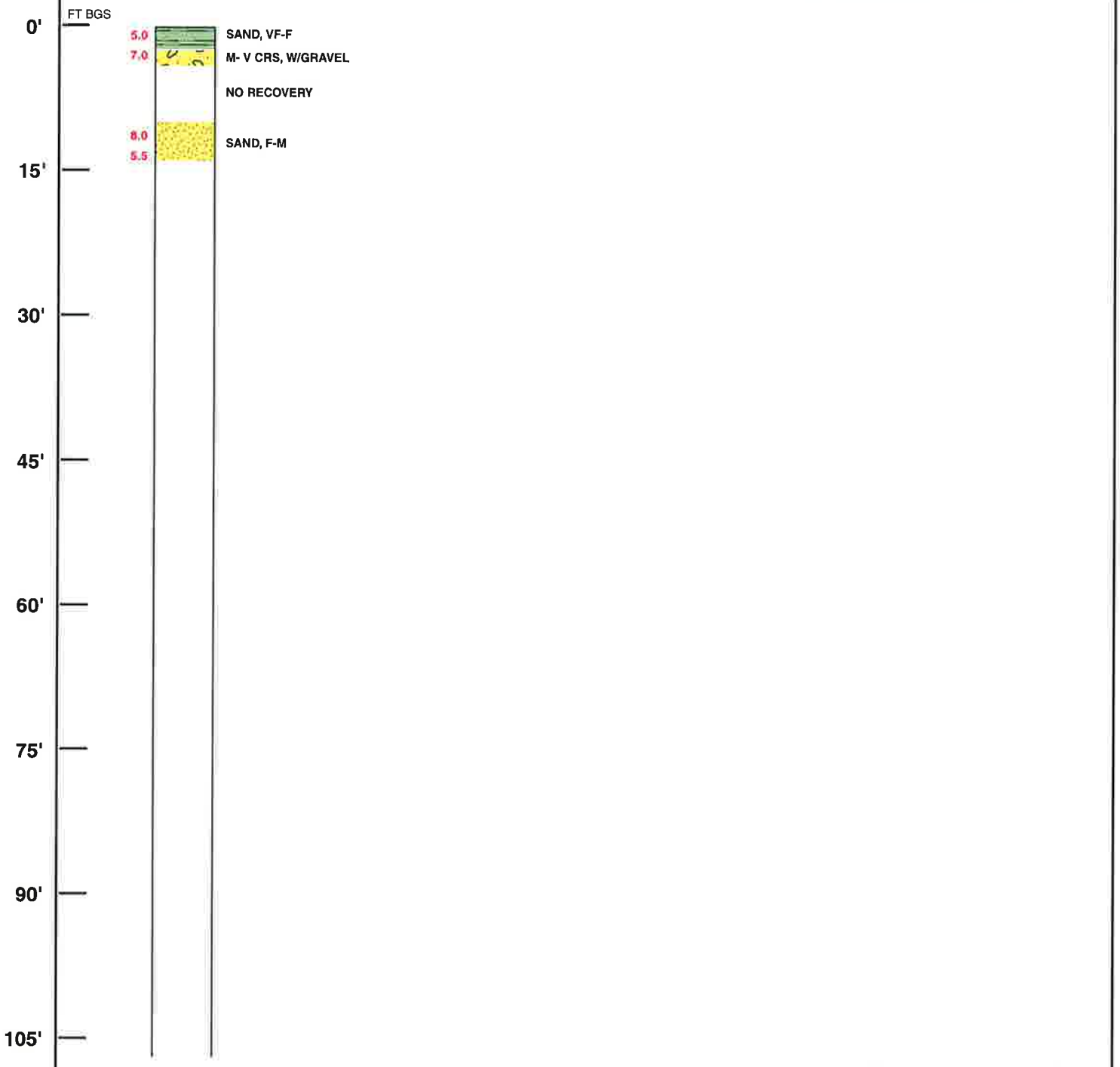
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-62

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1113.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/23/00



VERTICAL SCALE ~1"= 15'

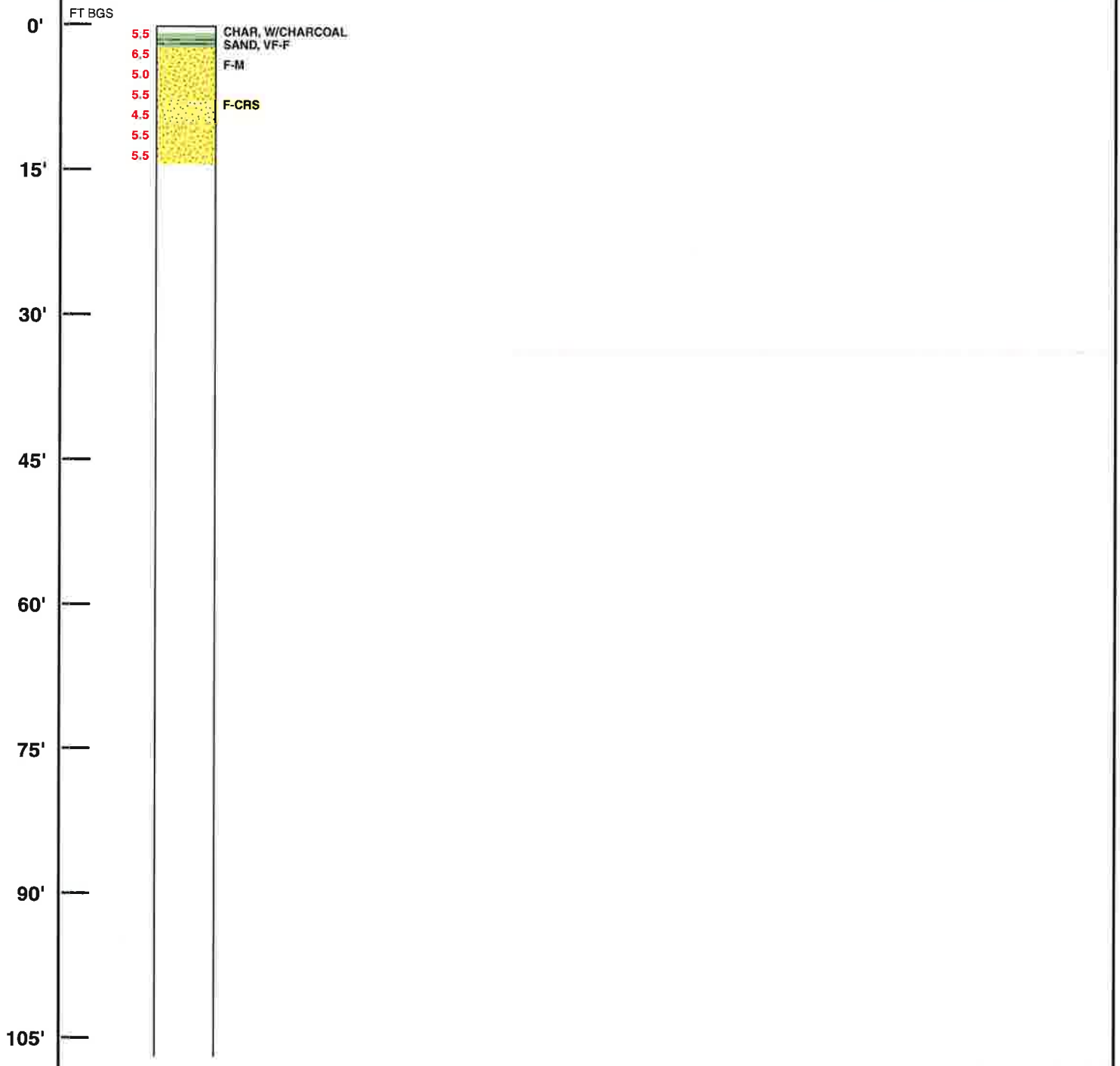
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-63

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1094.95 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/23/00



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_63.AI

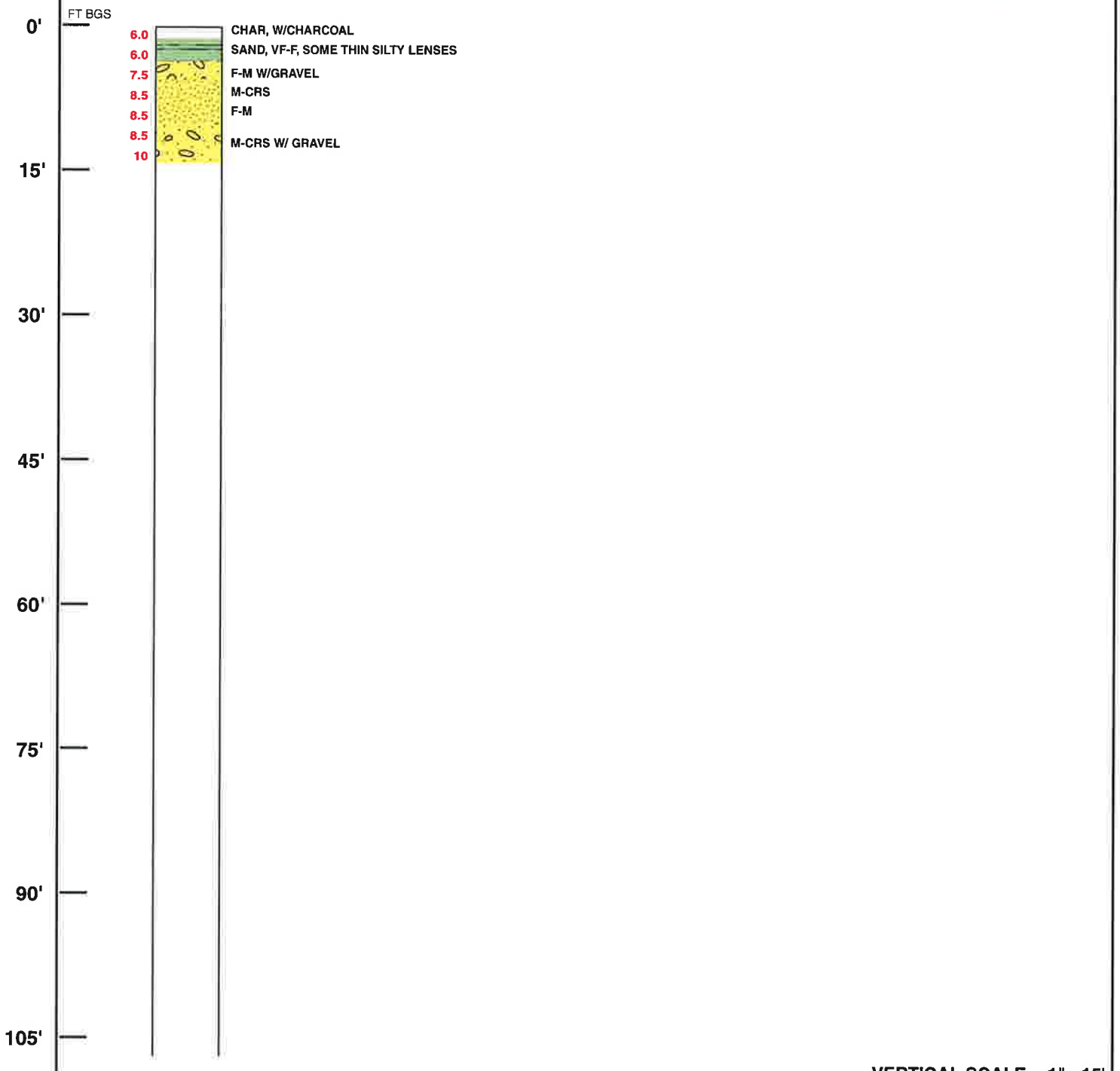
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-64

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1098.58 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	14 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/23/00



VERTICAL SCALE ~1"= 15'

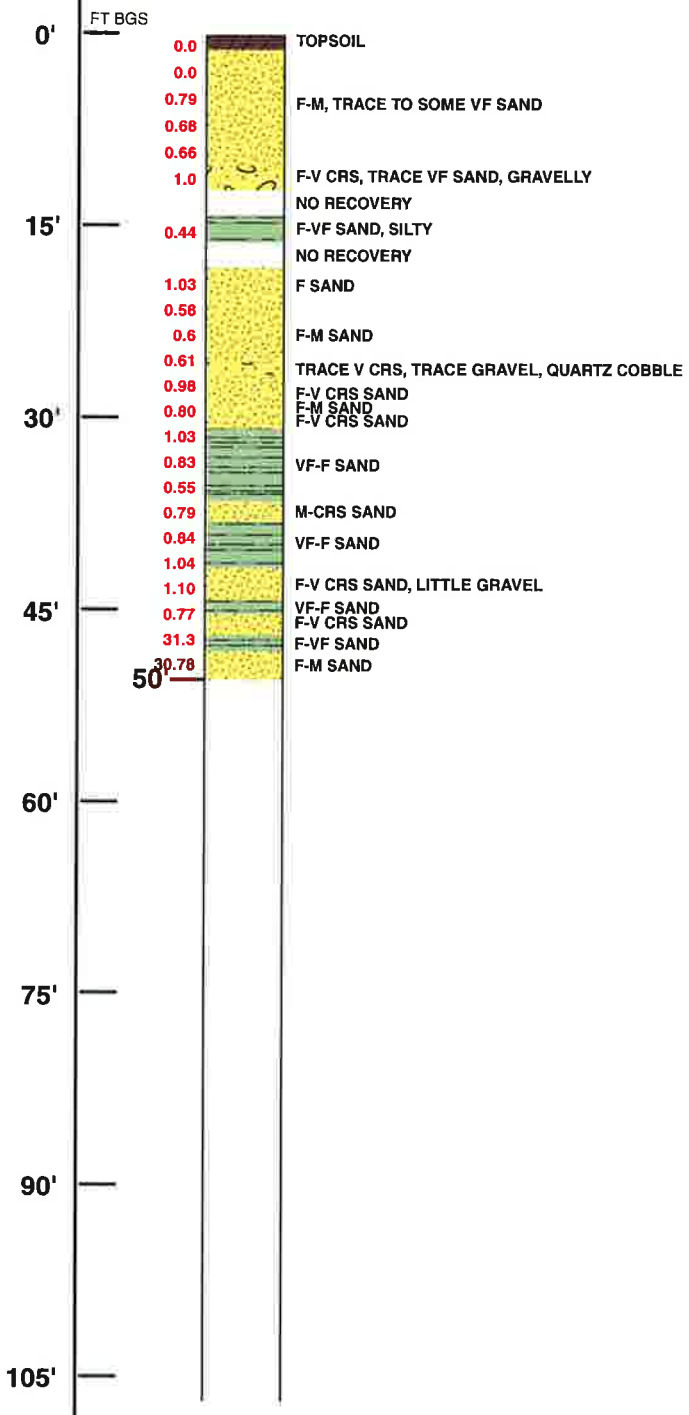
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-65

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1,119.90 Feet MSL
GEOLOGIST Veronica Brieno/ Pat Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 50 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 6/4/01



VERTICAL SCALE ~1"= 15'

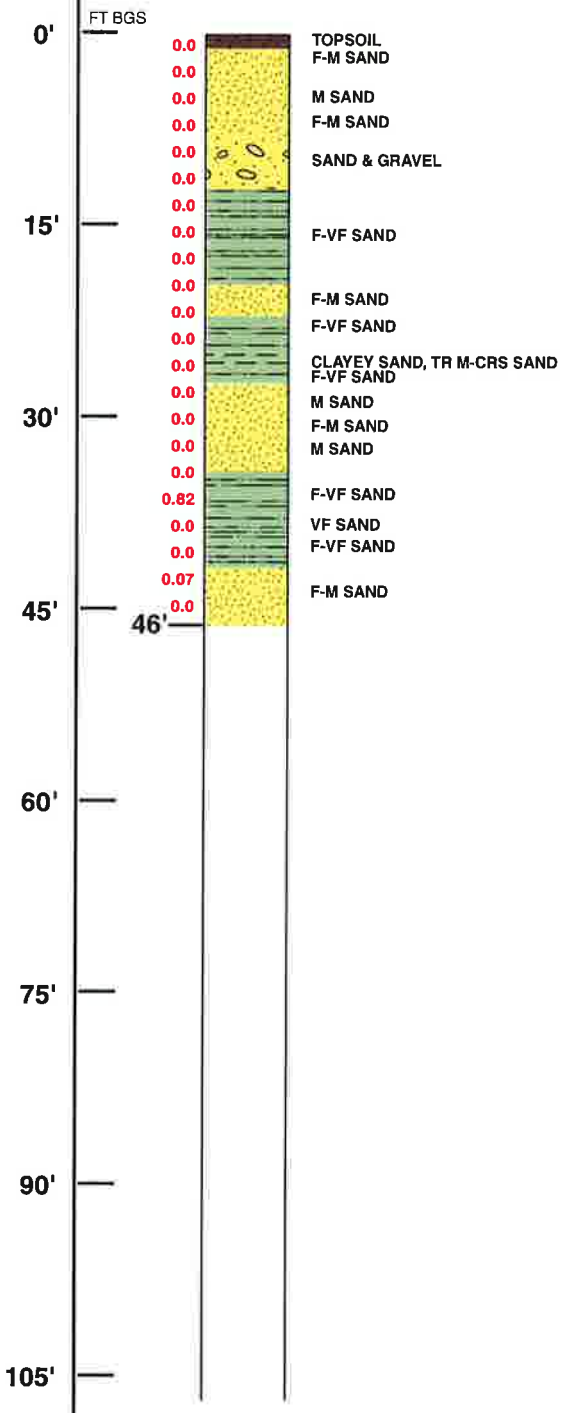
08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_65.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSB-66
PROJECT	FORD/KINGSFORD WI000860.0001

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1,119.49 Feet MSL
GEOLOGIST: Veronica Brieno	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Splitspoon	TOTAL DEPTH DRILLED: 46 Feet BLS
DRILLER: Jeff Flaminio	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Hollow Stem Auger	DATE BORING COMPLETED: 6/5/01



VERTICAL SCALE ~1"= 15'

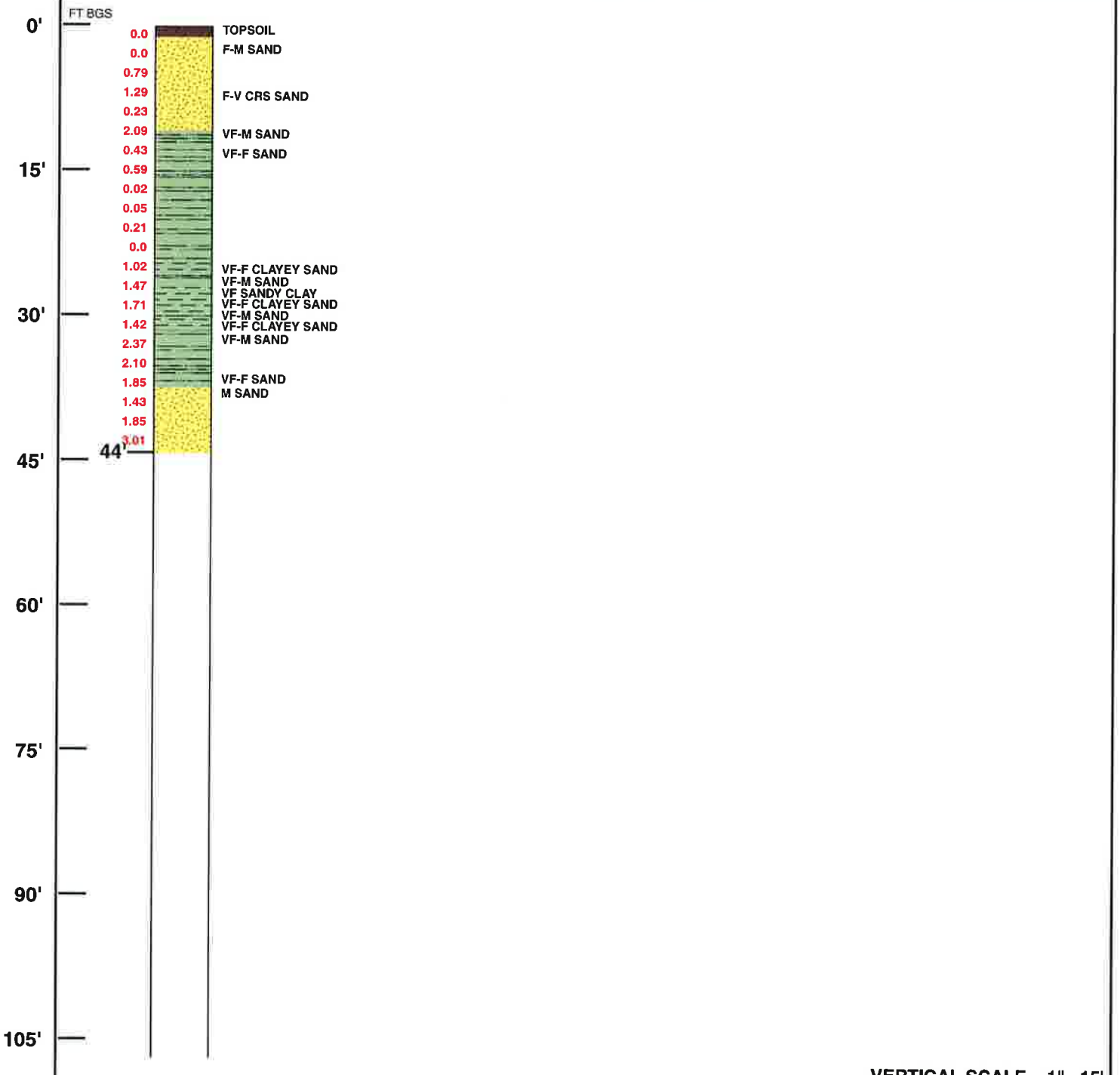
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-67

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1,119.59 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 44 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 6/6/01



VERTICAL SCALE ~1"= 15'

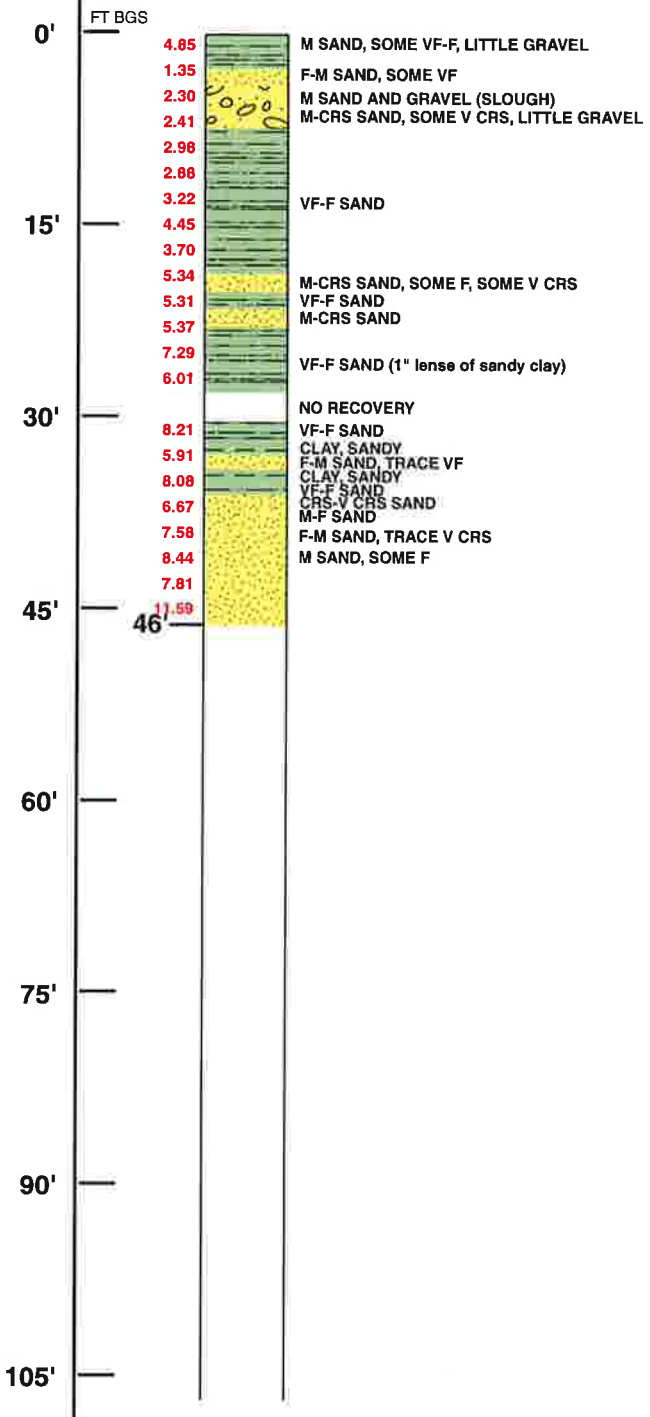
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-68

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,119.47 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Veronica Brieno	Continuous	Splitspoon	46 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	6/6/01



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_68.AI

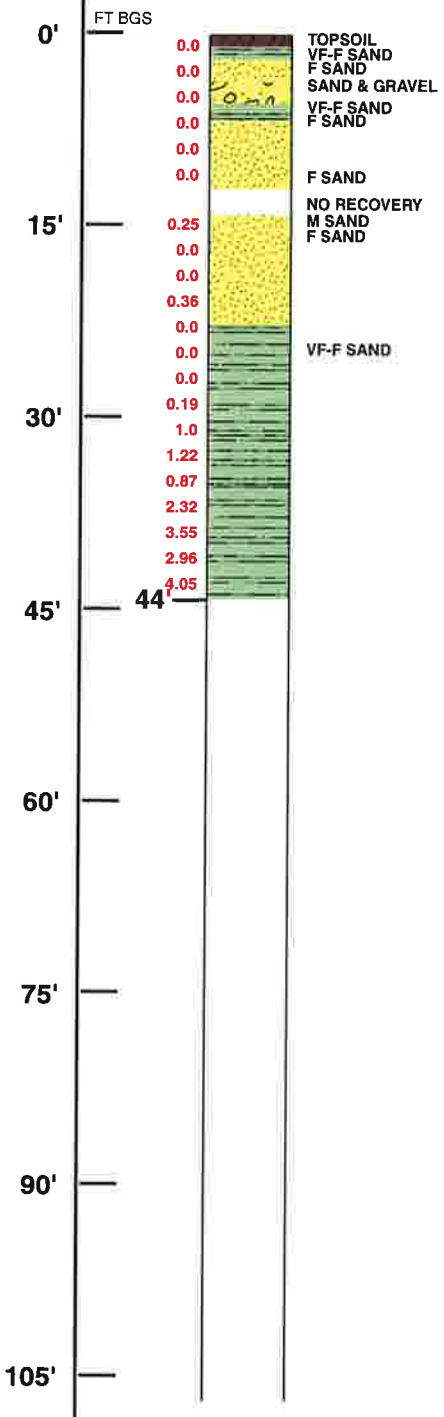
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-69

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,118.24 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Veronica Brieno	Continuous	Splitspoon	44 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	6/7/01



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_69.AI

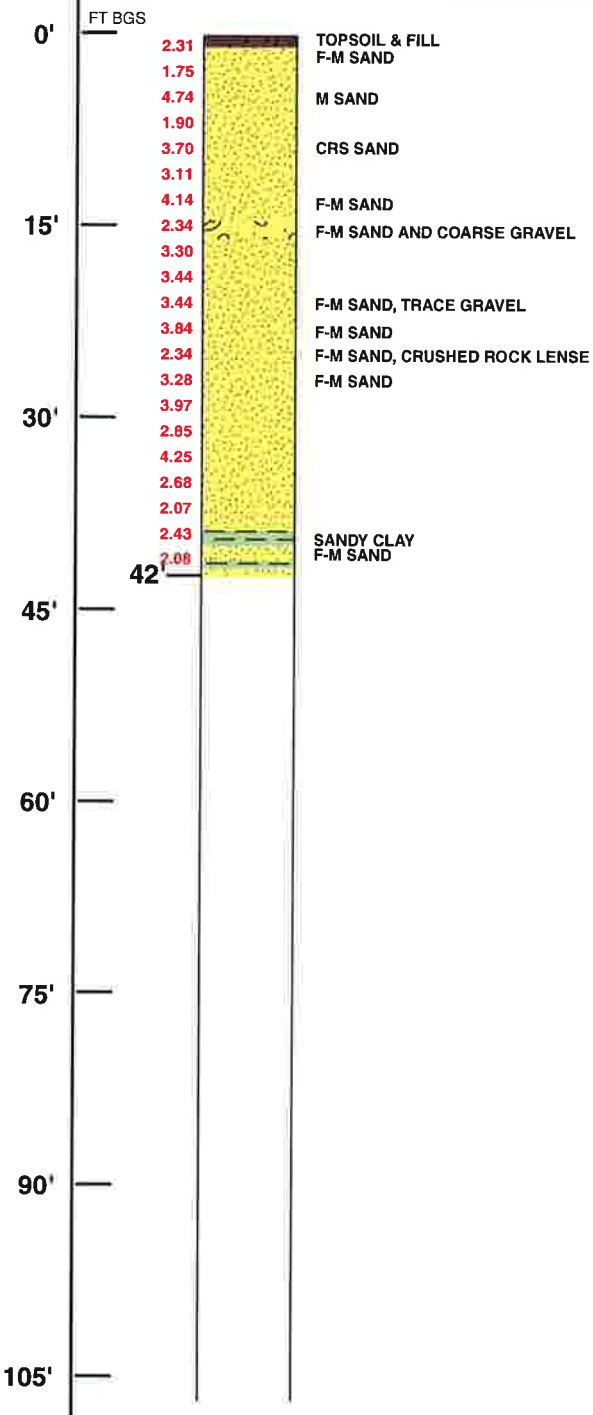
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-70

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1,116.68 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 42 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 6/7/01



VERTICAL SCALE ~1"= 15'

08JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_70.AI

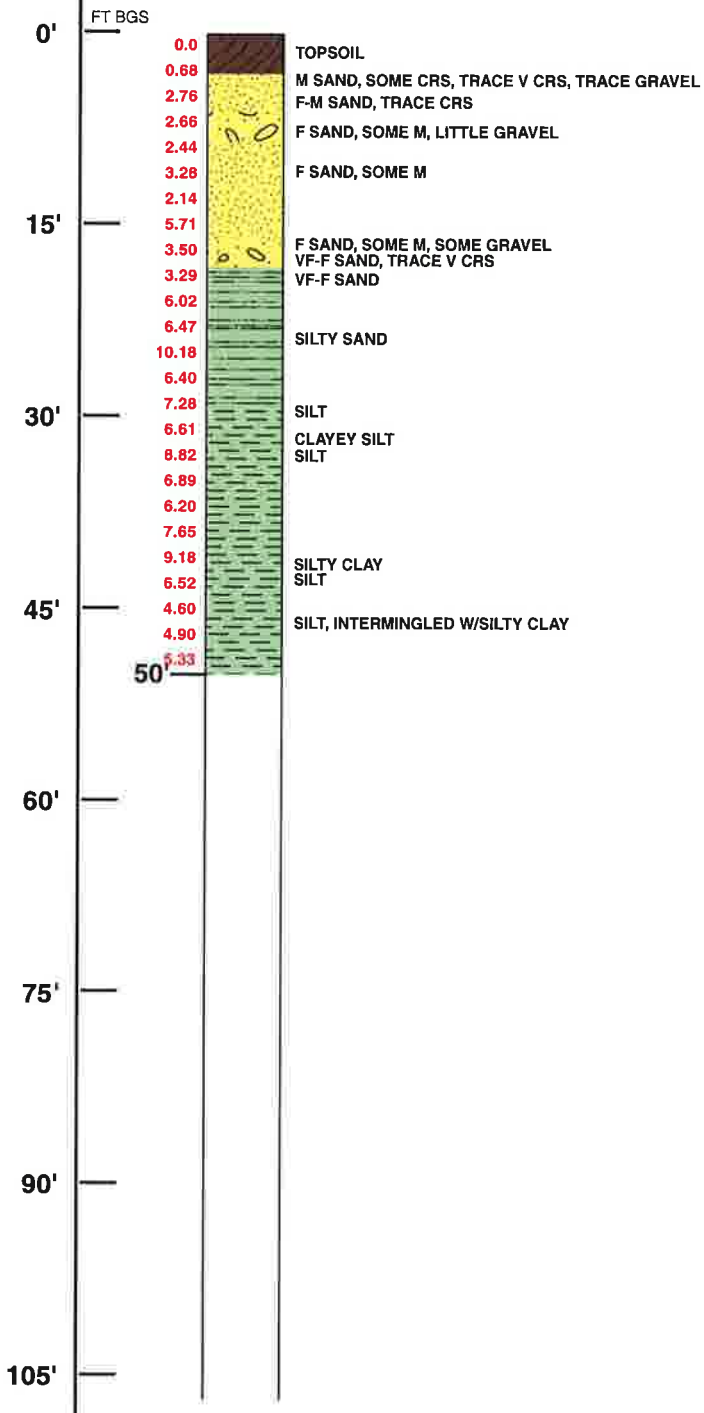
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-71

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,114.95 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Veronica Brieno	Continuous	Splitspoon	50 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	6/8/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_71.AI

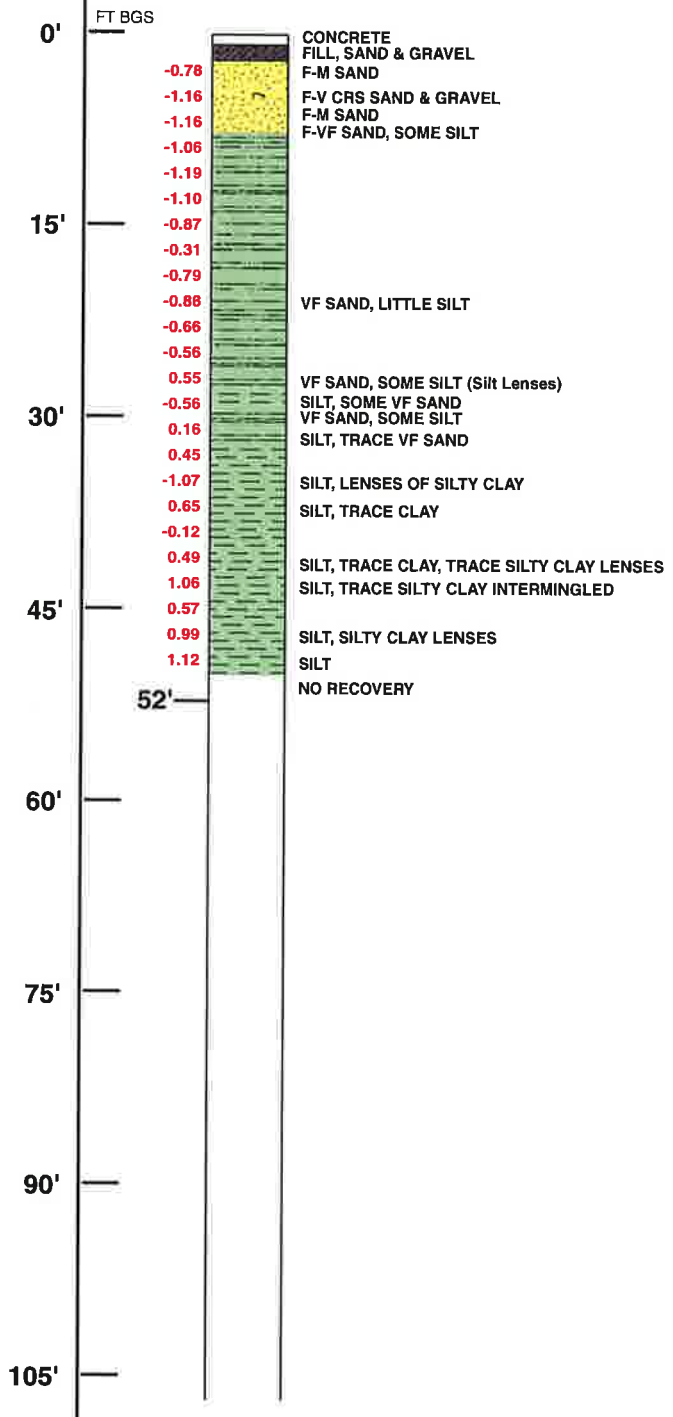
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-72

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,117.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Veronica Brieno	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jim	Boart Longyear	Hollow Stem Auger	6/11/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_72.AI

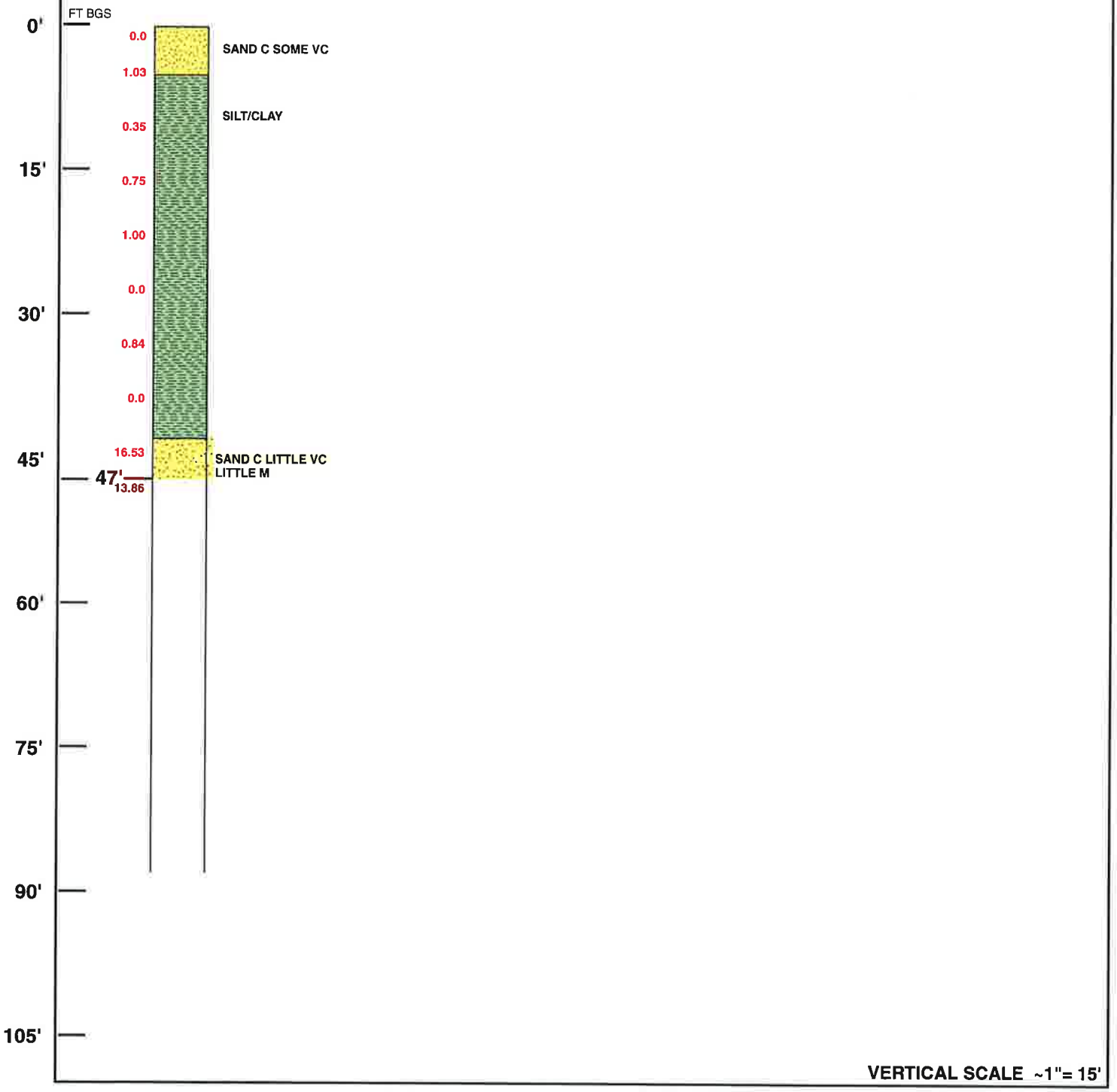
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-73

PROJECT FORD/KINGSFORD WI000975.0012

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.97 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL 5 Feet	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 47 Feet BLS
DRILLER Jim Berthold	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 6/12/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_73.AI

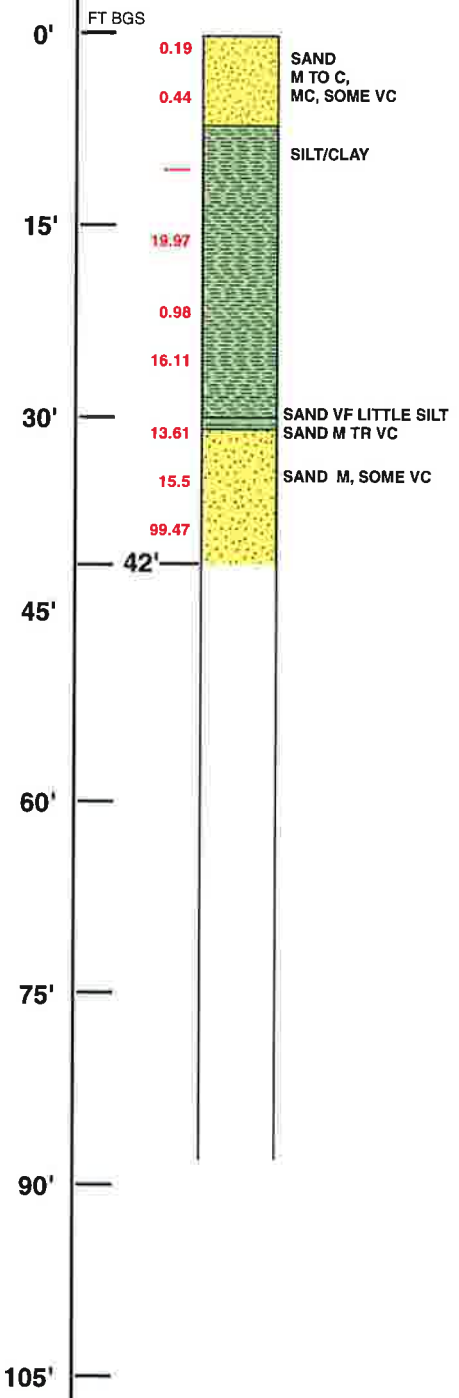
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-74

PROJECT FORD/KINGSFORD WI000975.0012

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.14 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Veronica Brieno	5 Feet	Splitspoon	42 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jim Berthold	Boart Longyear	Hollow Stem Auger	6/13/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_74.AI

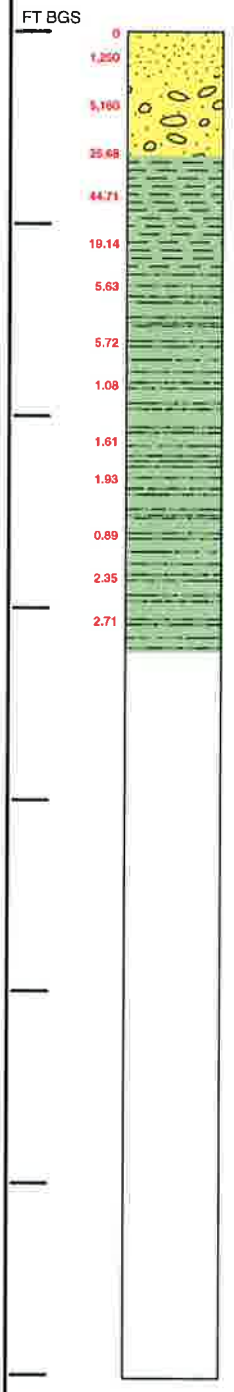
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-75

PROJECT FORD/KINGSFORD WI001075.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			_____ Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Keller	Continuous	None	65 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
_____	Boart Longyear	Hollow Stem Auger	9/4/01



F SAND, SOME TO ABUNDANT VF, SILTY

M-CRS SAND, GRAVELLY

SILT W/INTERBEDED CLAY LENSES
CLAY W/INTERBEDED SILT LAYERS

SILTY TO V SILTY SAND
INTERBEDED W/SANDY TO V SANDY SILT

VERTICAL SCALE ~1"= 20'

09JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_75.AI

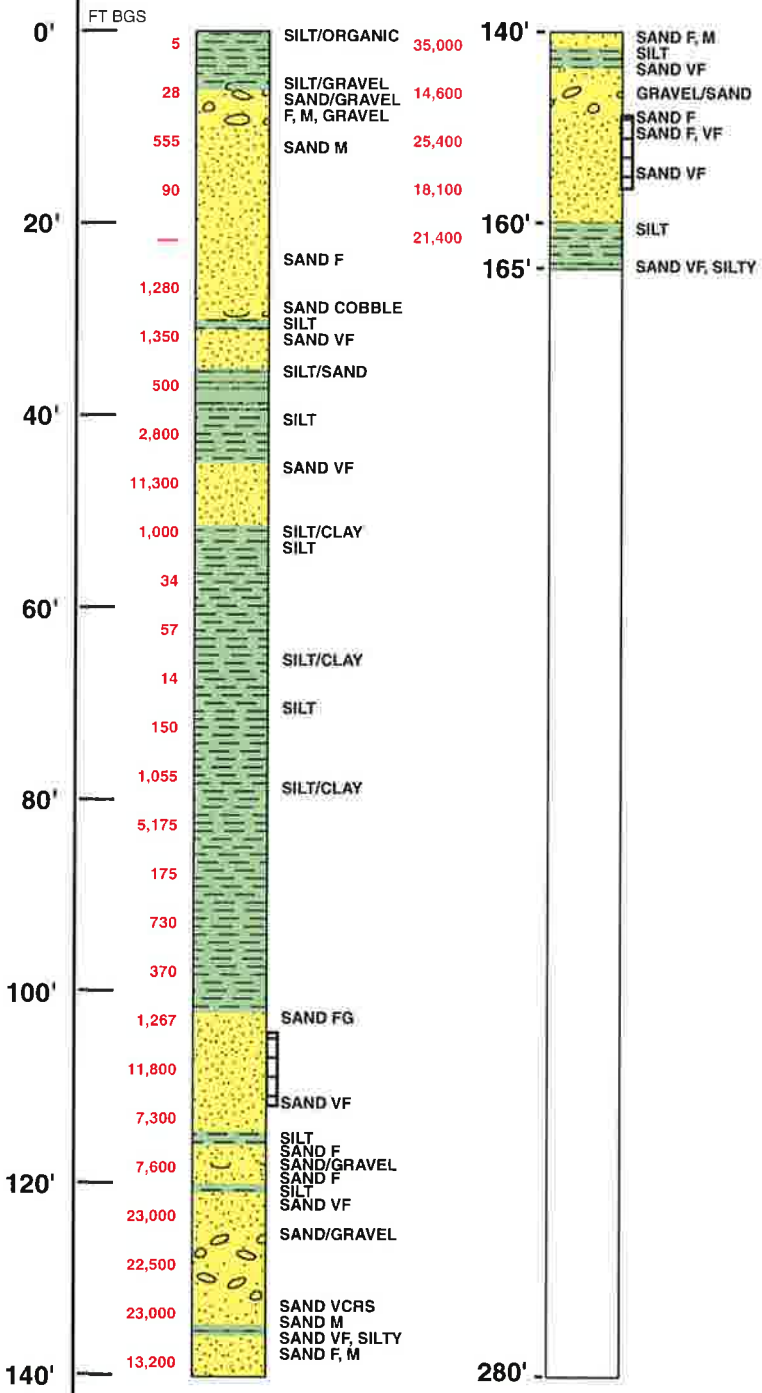
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-77

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1127.20 Feet MSL
GEOLOGIST B. Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 165 Feet BLS
DRILLER _____	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED _____



VERTICAL SCALE ~1"= 20'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_77.AI

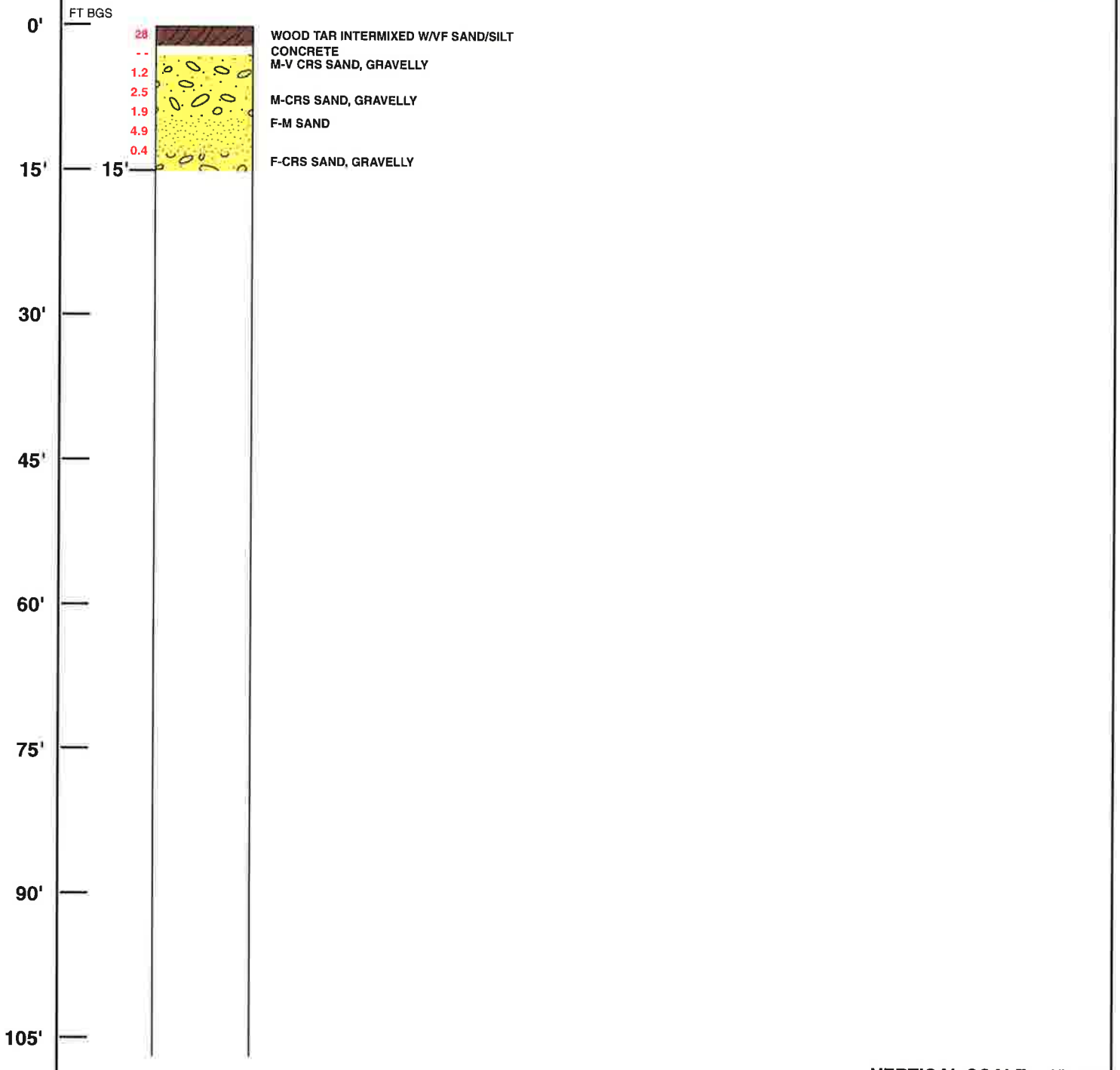
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-87

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.59 Feet MSL
GEOLOGIST Kevin Daleness & Pat Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 15 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 12/12/01



VERTICAL SCALE ~1"= 15'

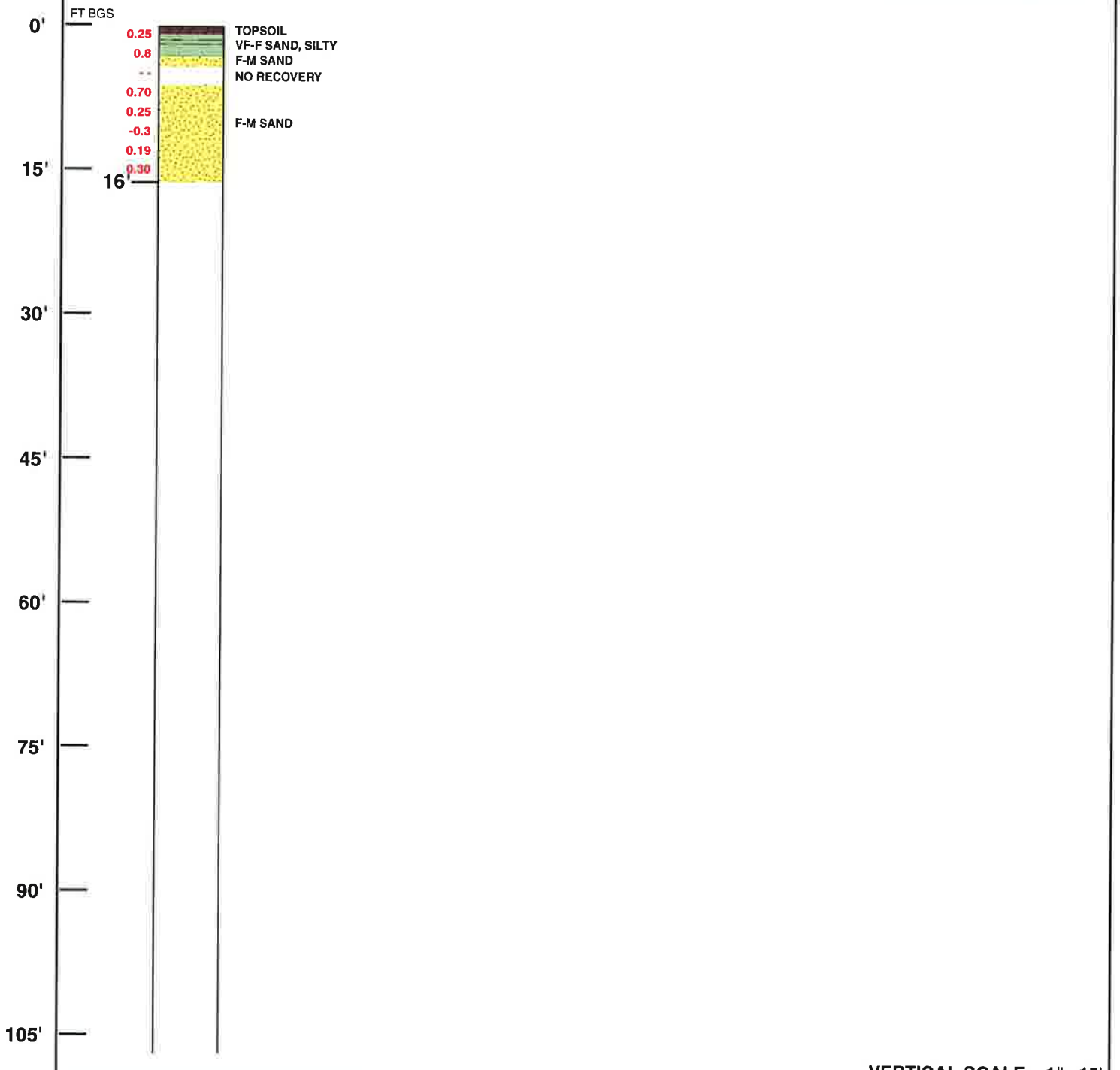
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-88

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.82 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Kevin Daleness	Continuous	Splitspoon	16 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	12/13/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_88.AI

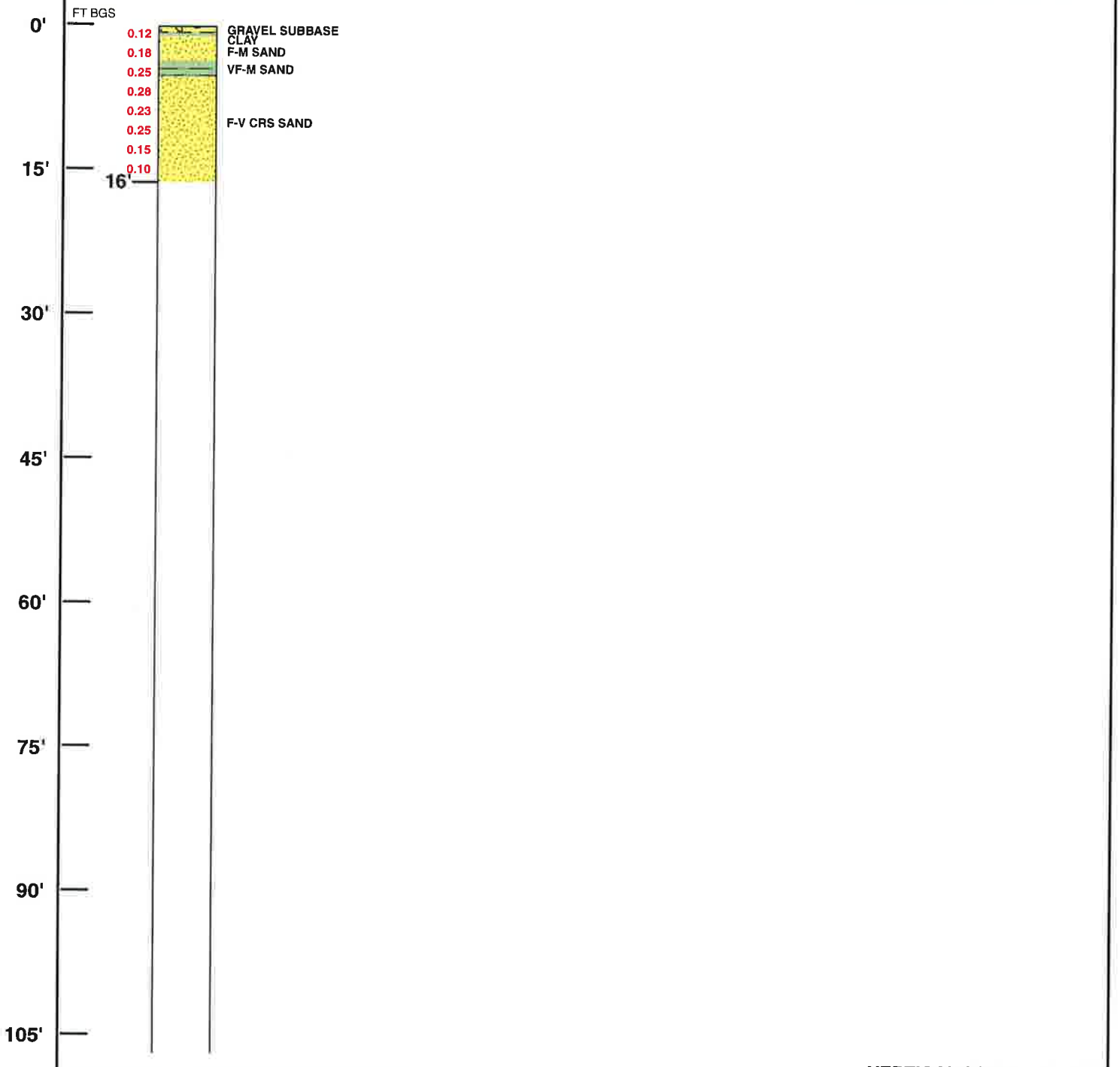
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-89

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.42 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 16 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 12/13/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_89.AI

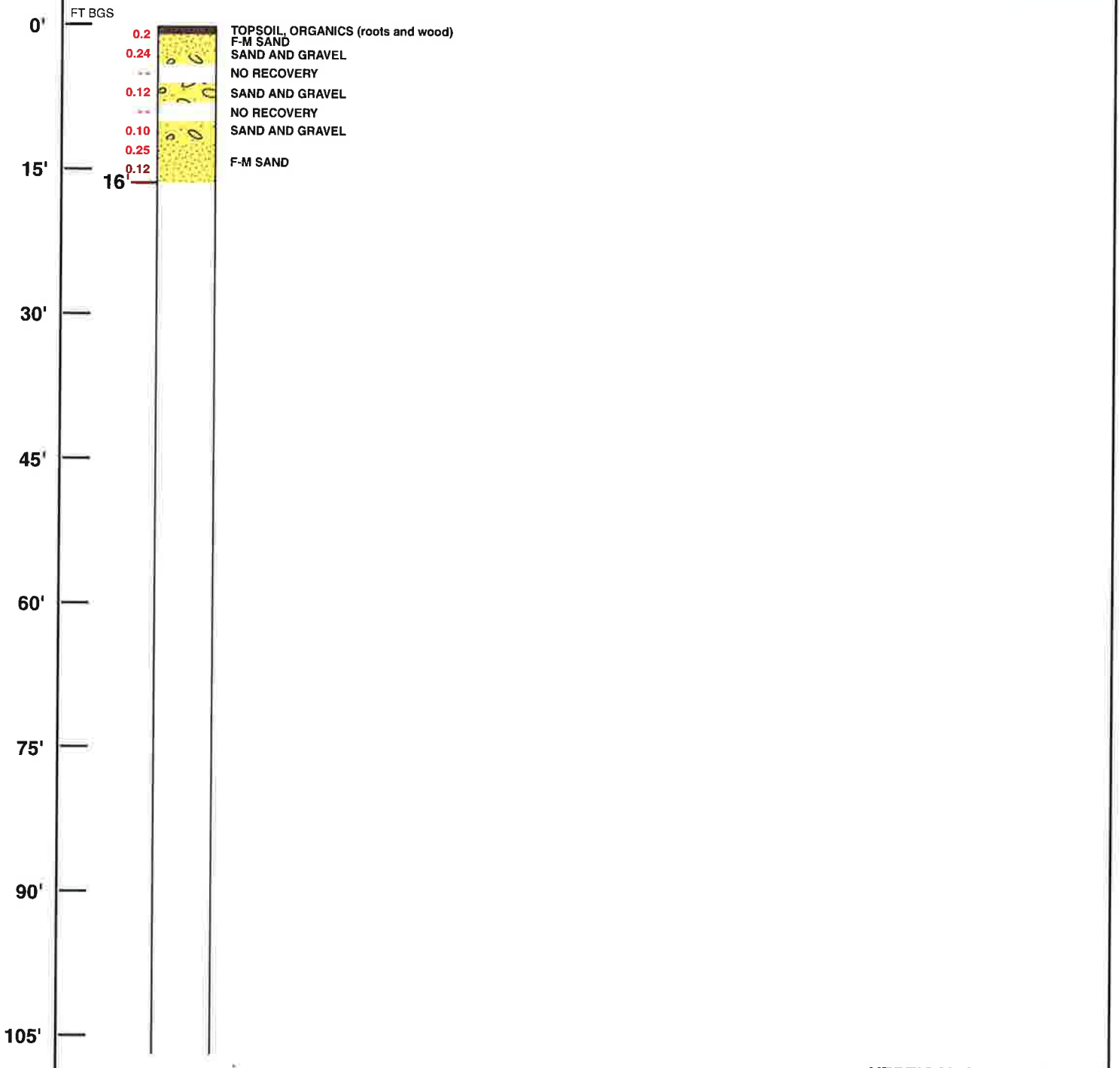
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-90

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1119.76 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 16 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 12/13/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_90.AI

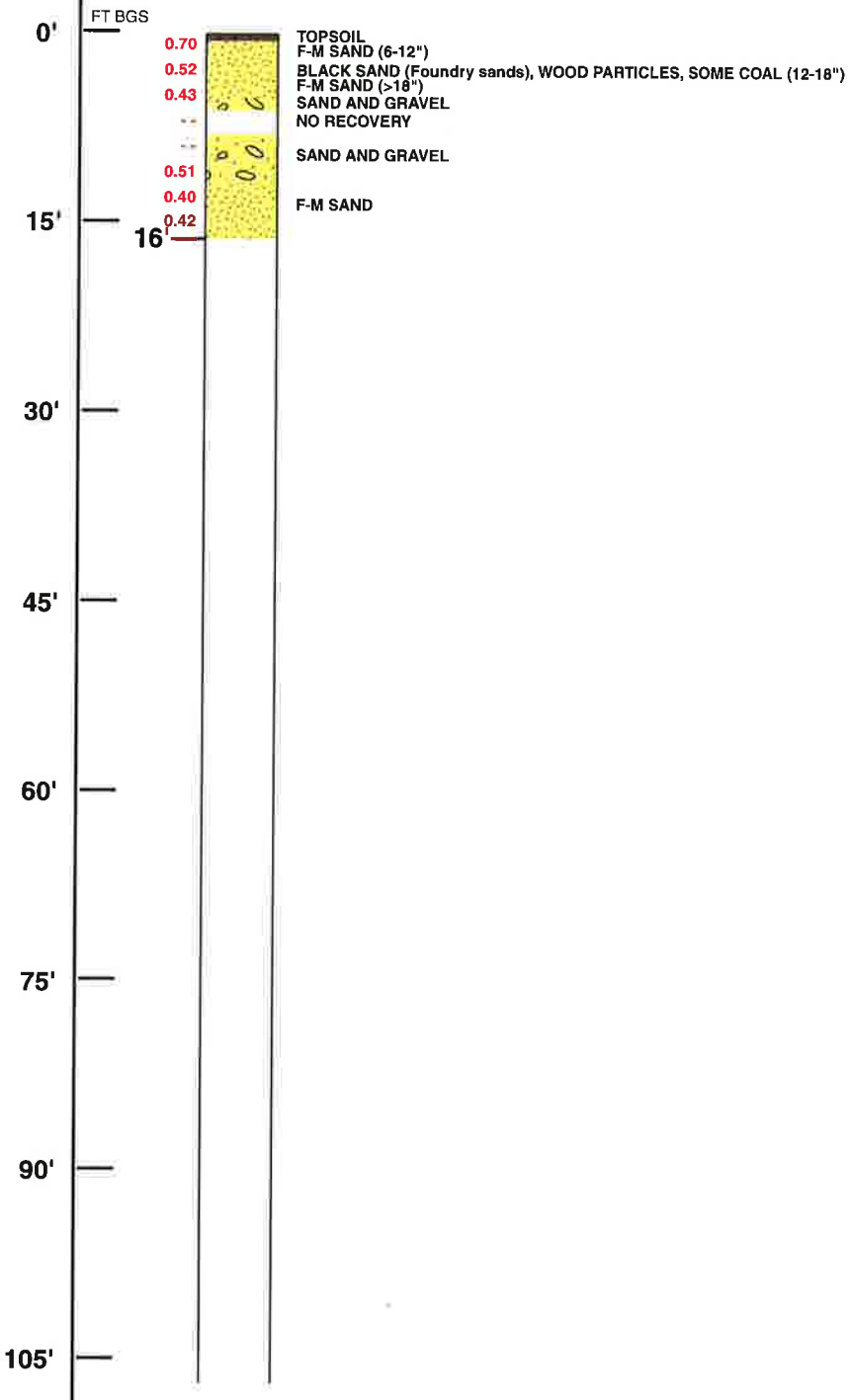
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-91

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1120.08 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 16 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 12/13/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_91.AI

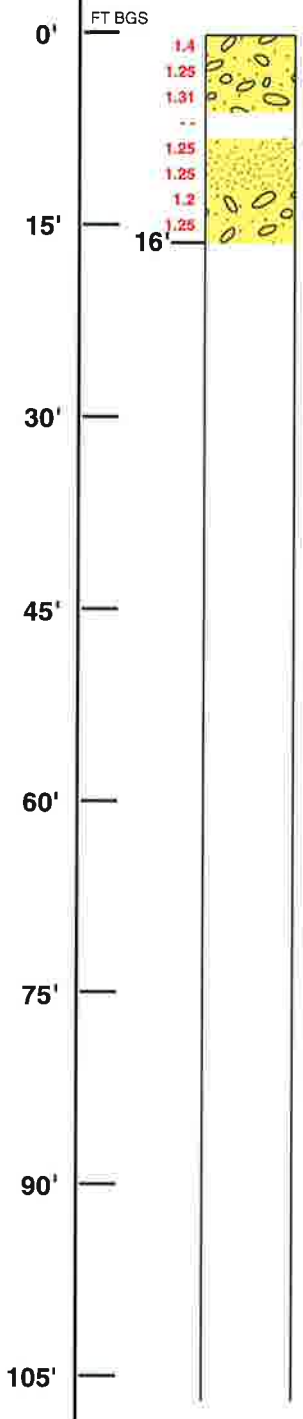
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-92

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,118.04 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Kevin Daleness	Continuous	Splitspoon	16 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	12/13/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ200\GRAPHICS\STRAT LOGS\DRAWING: GMSB_92.AI

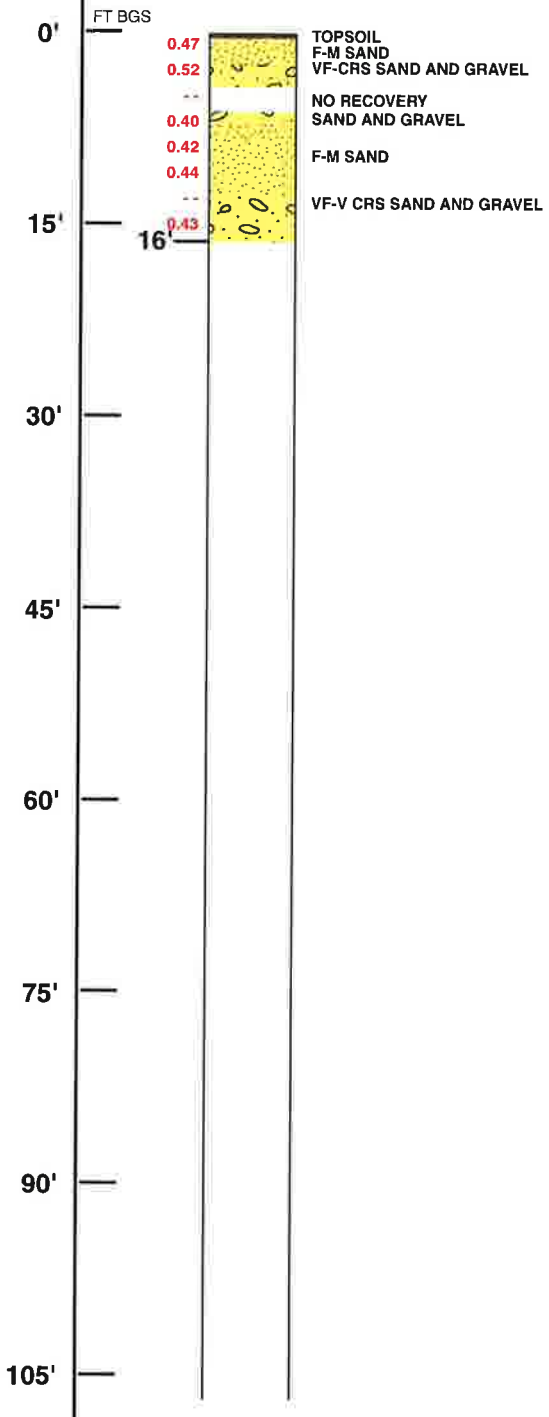
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-93

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.84 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 16 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 12/14/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_93.AI

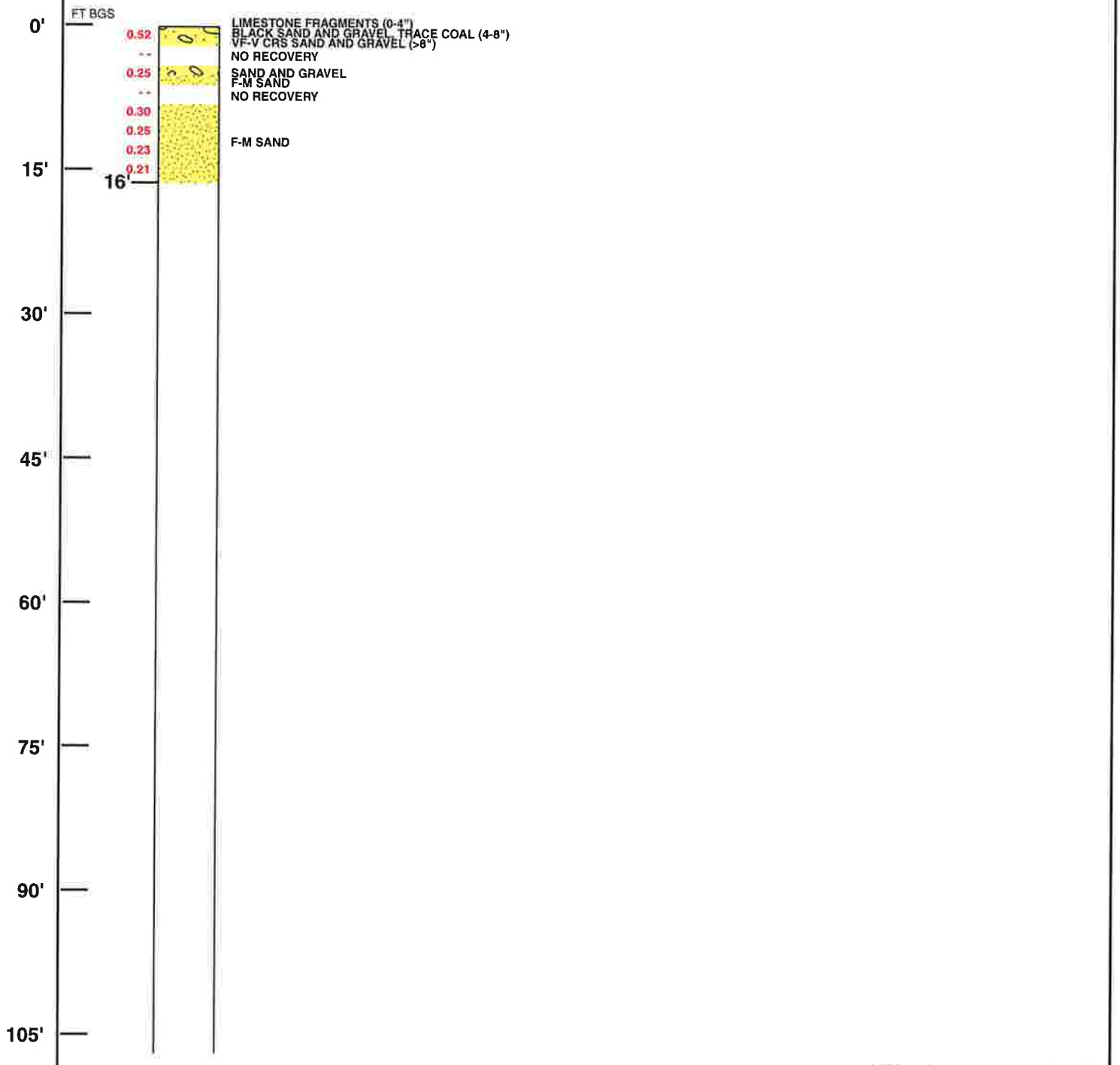
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-94

PROJECT FORD/KINGSFORD WI000925.0027

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.24 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Kevin Daleness	Continuous	Splitspoon	16 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	12/14/01



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_94.AI

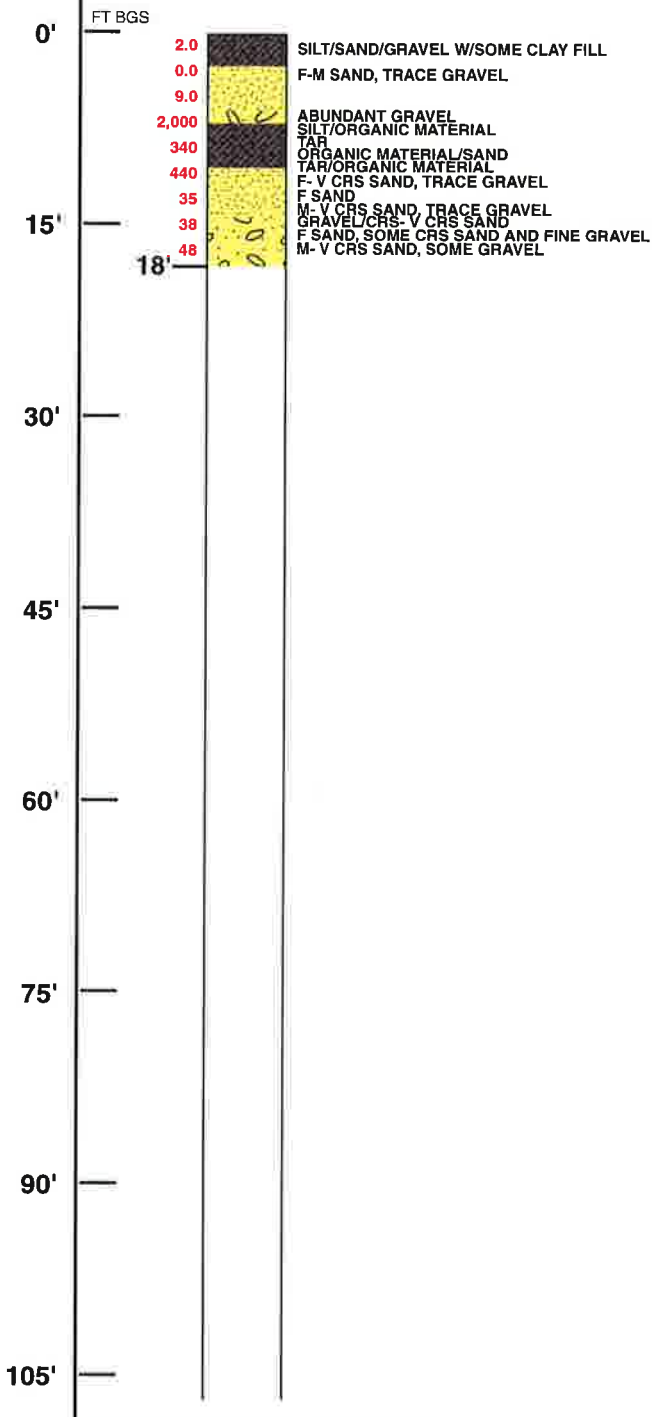
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-95

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1114.71 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	18 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/7/02



VERTICAL SCALE ~1"= 15'

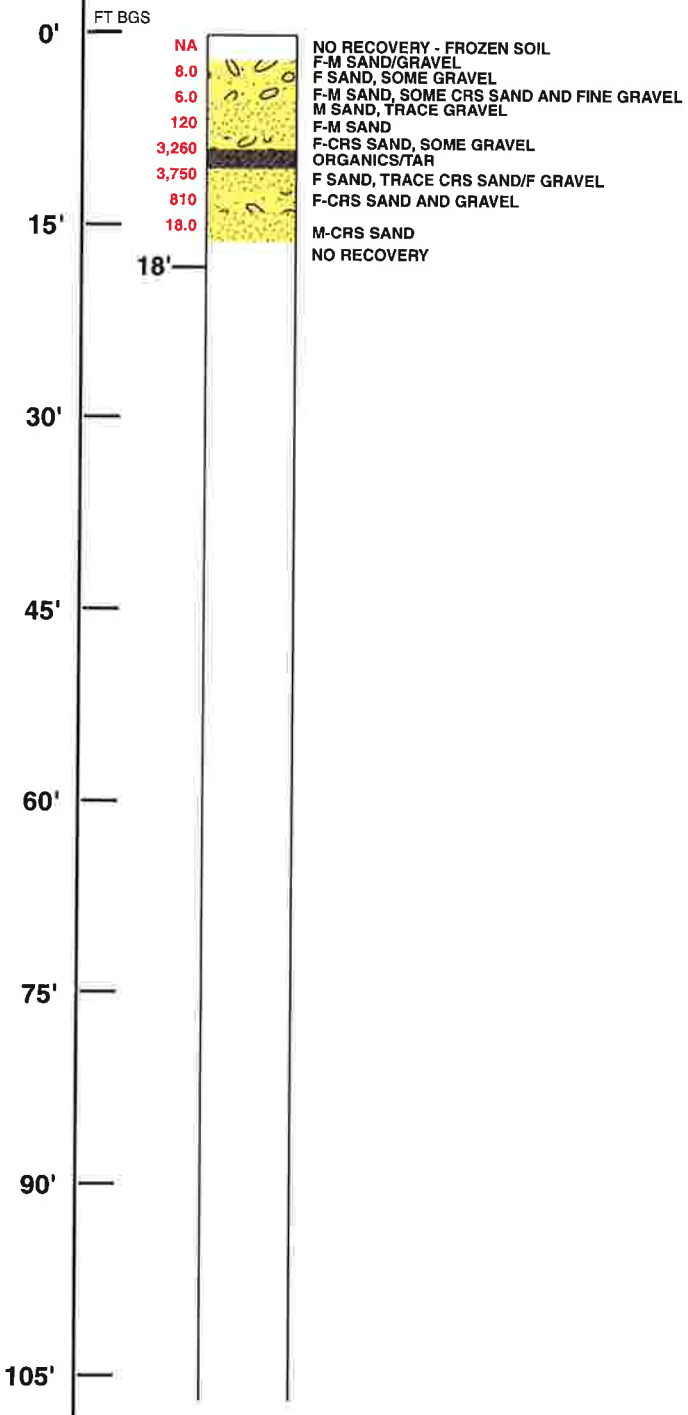
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-96

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.82 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	18 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/7/02



VERTICAL SCALE ~1"= 15'

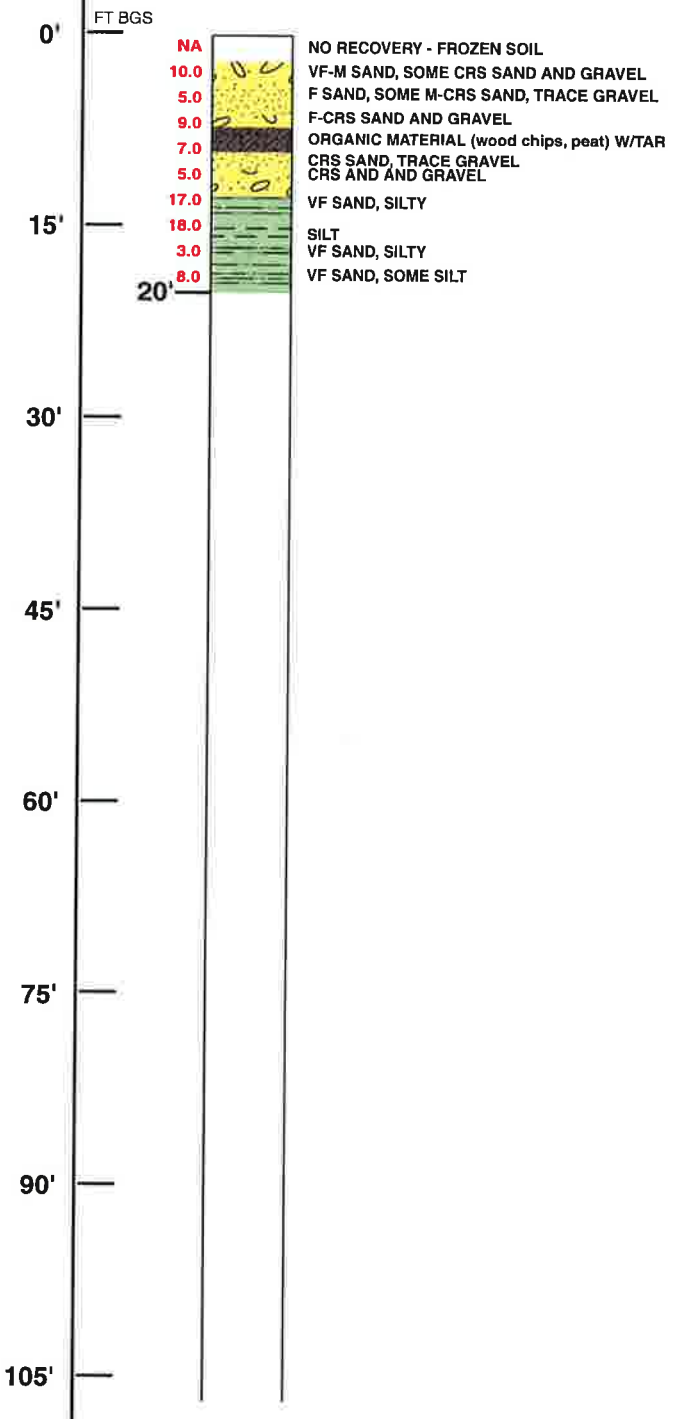
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-97

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.44 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/7/02



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_97.AI

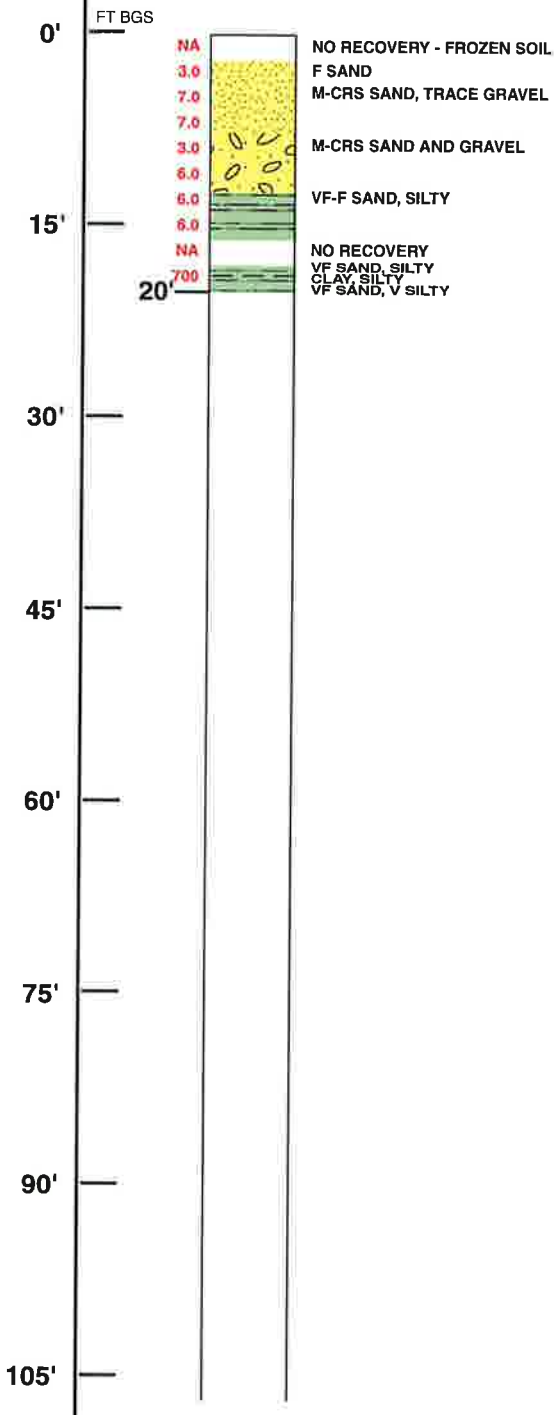
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-98

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.33 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/7/02



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_98.AI

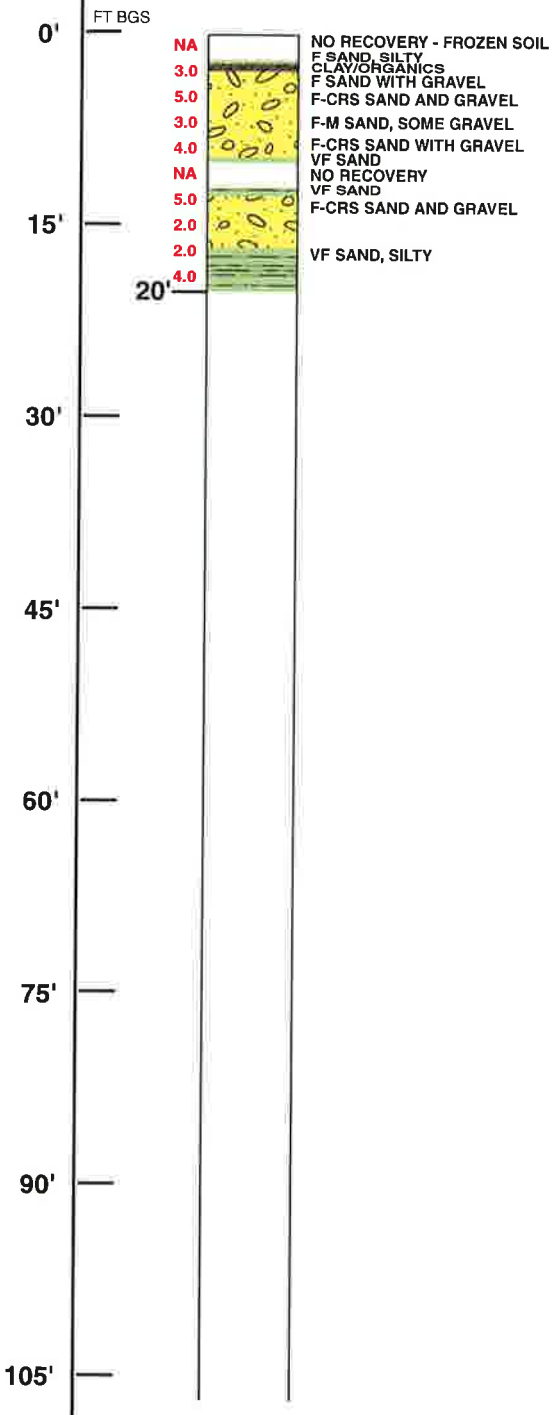
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-99

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.67 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/7/02



VERTICAL SCALE ~1"= 15'

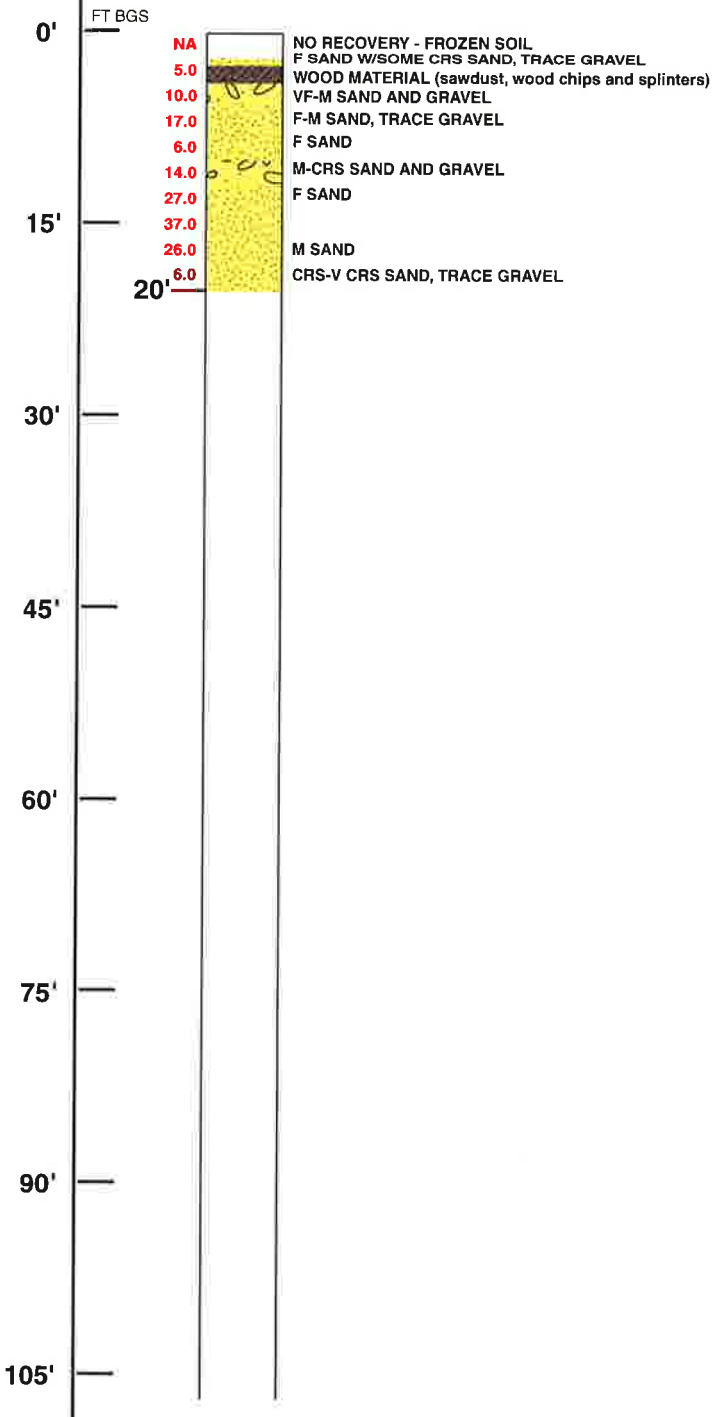
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-100

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1114.22 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/8/02



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_100.AI

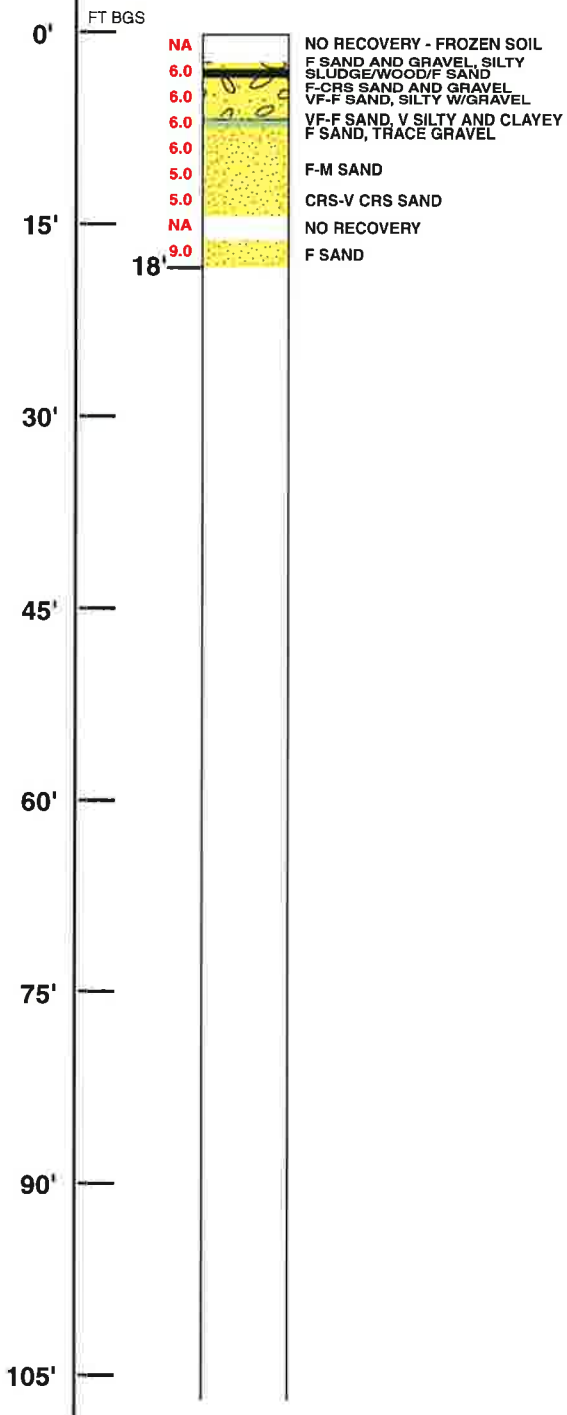
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-101

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1114.50 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	18 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/8/02



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_101.AI

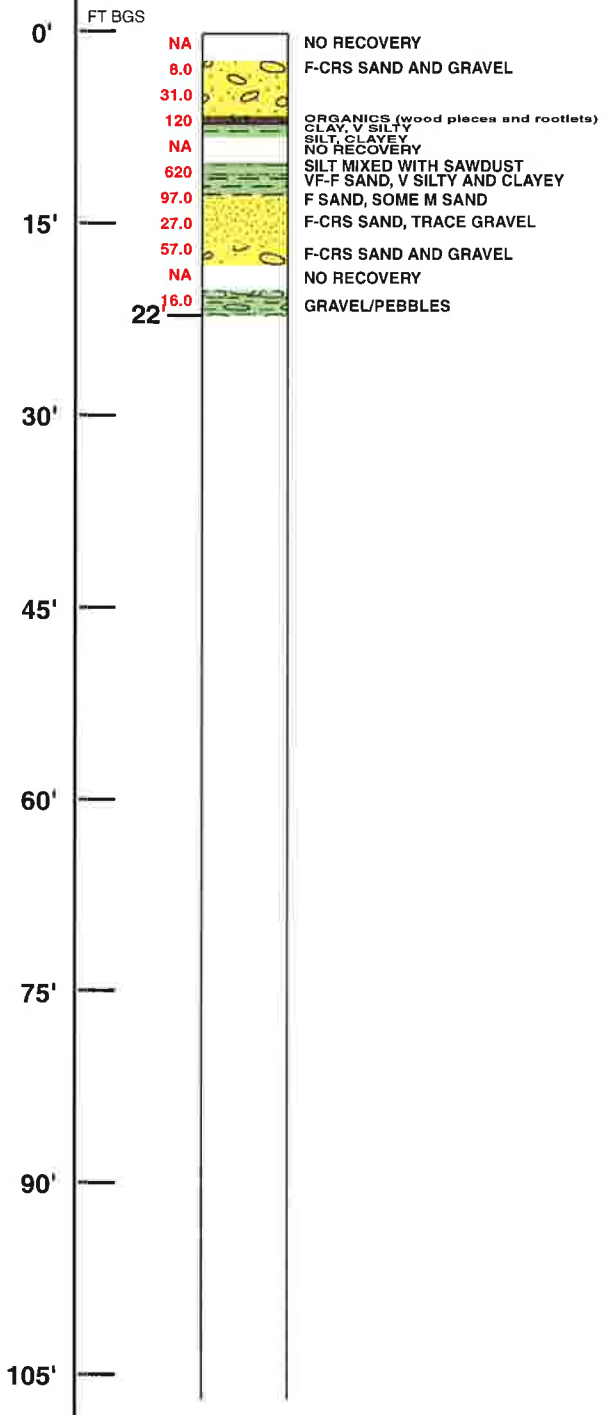
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-102

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1115.30 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	18 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/8/02



VERTICAL SCALE ~1"= 15'

11JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_102.AI

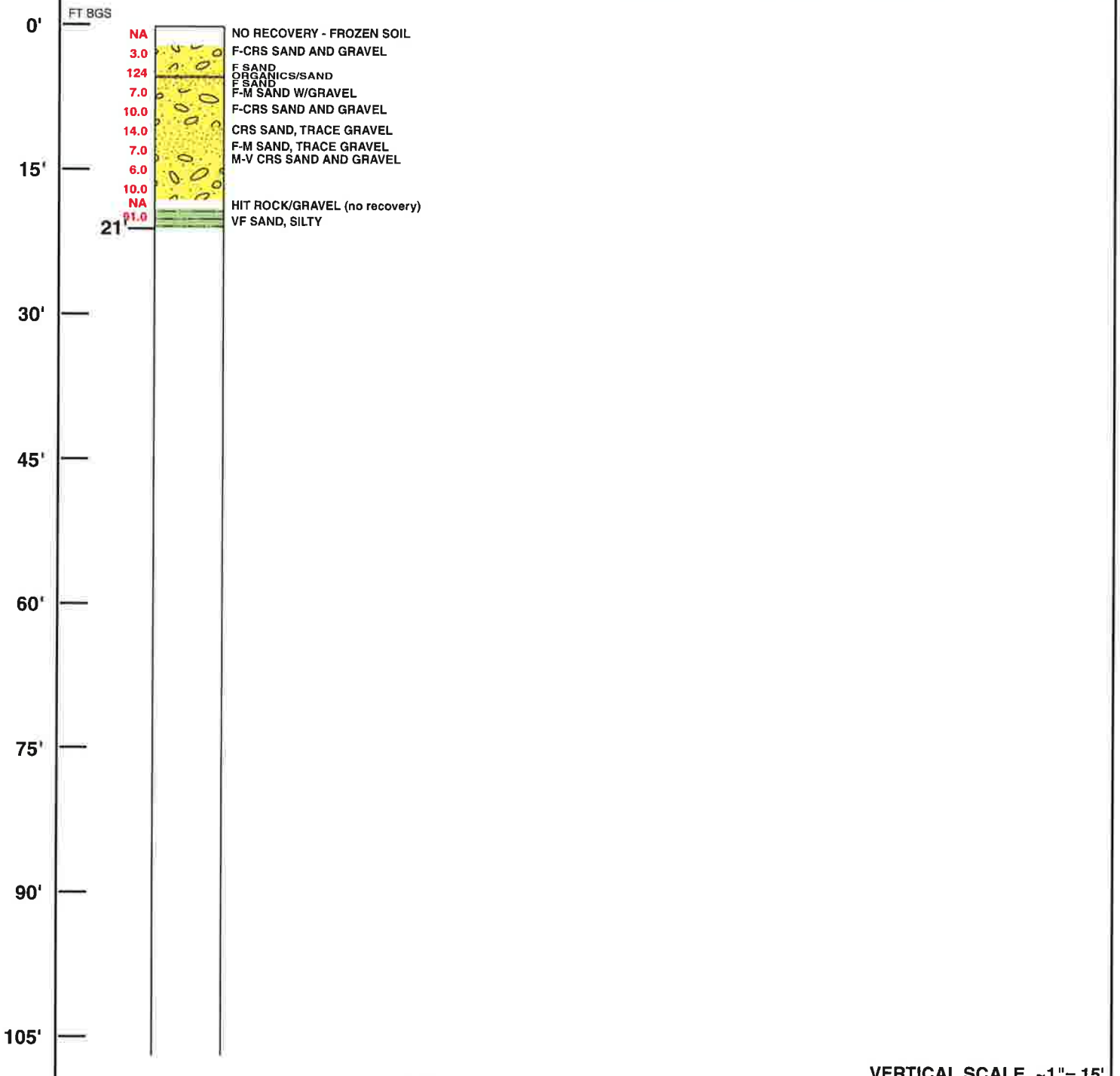
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-103

PROJECT FORD/KINGSFORD WI000950.0013

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.94 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	21 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	3/8/02



VERTICAL SCALE ~1"= 15'

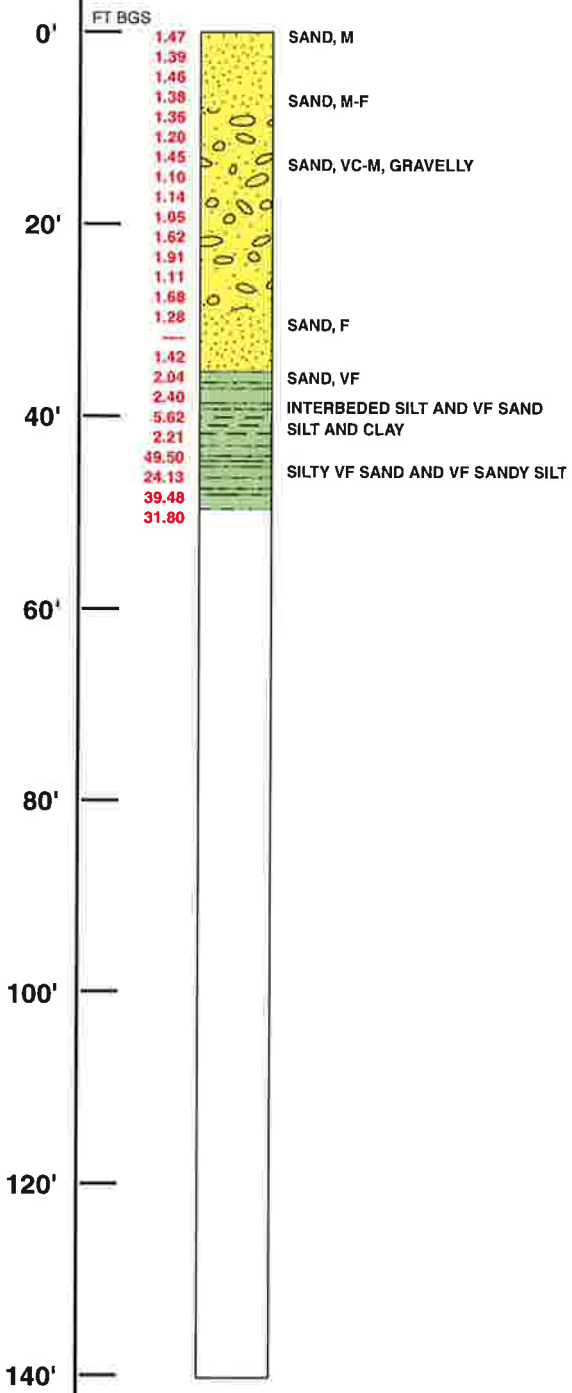
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-104

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1113.96 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	50 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul Dickinson	Boart Longyear	Hollow Stem Auger	05/13/03



VERTICAL SCALE ~1"= 20'

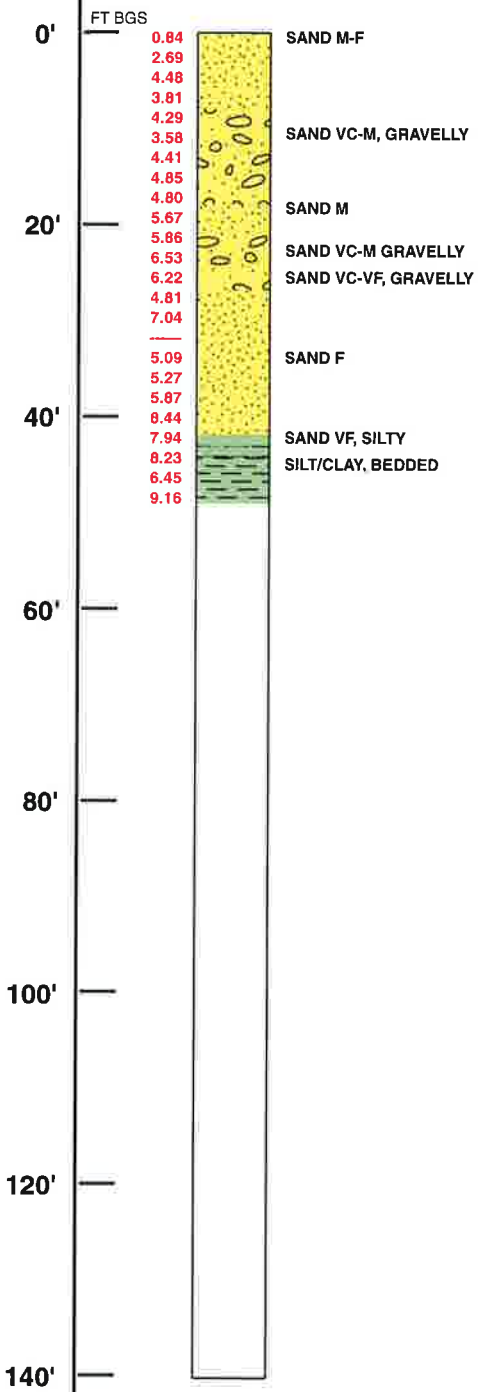
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-105

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1115.45 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	48 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul Dickinson	Boart Longyear	Hollow Stem Auger	05/14/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_105.AI

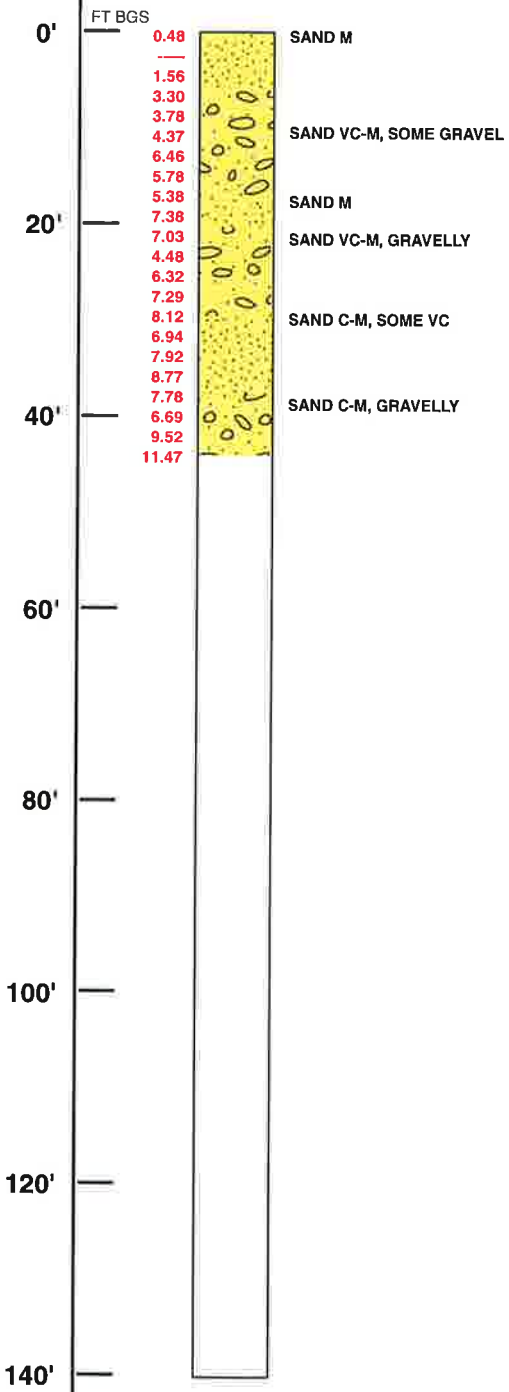
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-106

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1112.85 Feet MSL
GEOLOGIST P. Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 44 Feet BLS
DRILLER Paul Dickinson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 05/15/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_106.AI

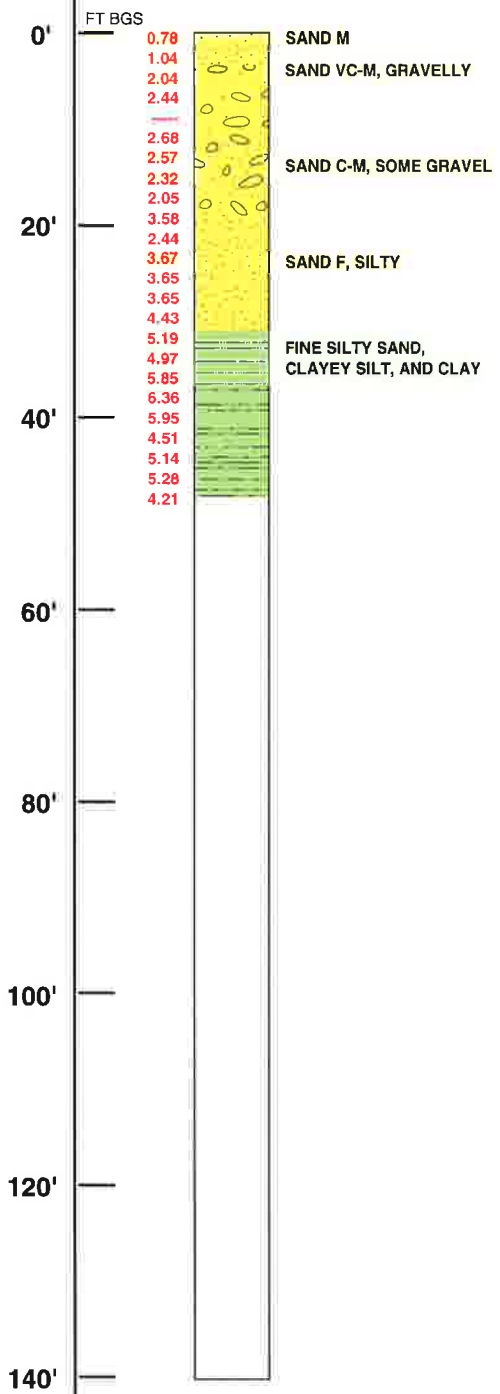
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-107

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1114.53 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	48 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul Dickinson	Boart Longyear	Hollow Stem Auger	05/19/03



VERTICAL SCALE ~1"= 20'

27JAN04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMSB_107.AI

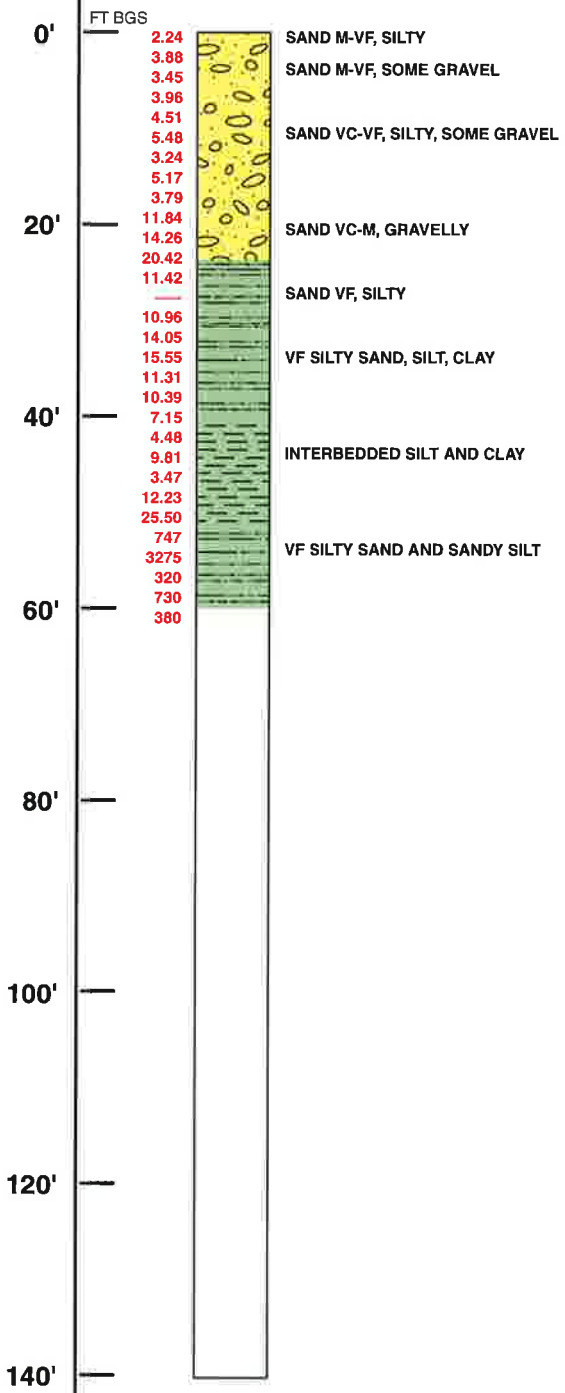
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-108

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.39 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	60 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul Dickinson	Boart Longyear	Hollow Stem Auger	05/20/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_108.AI

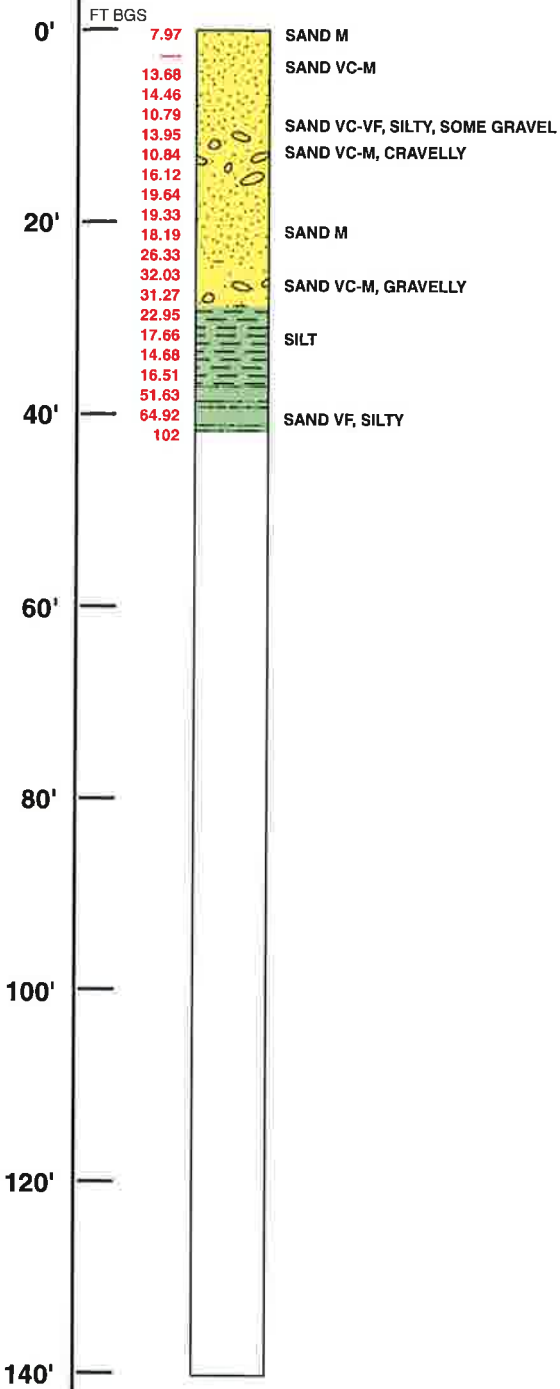
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-109

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1113.4 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	42 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul Dickinson	Boart Longyear	Hollow Stem Auger	05/21/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_109.AI

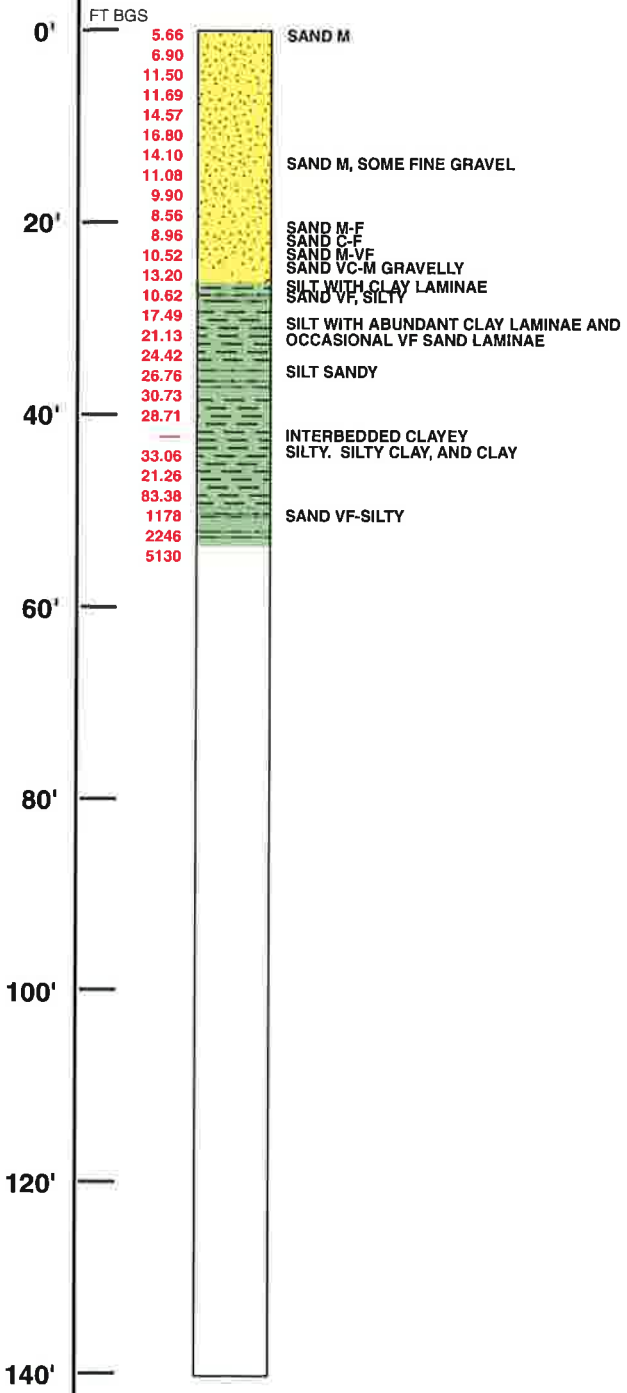
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-110

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.75 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	54 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul Dickinson	Boart Longyear	Hollow Stem Auger	05/22/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_110.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

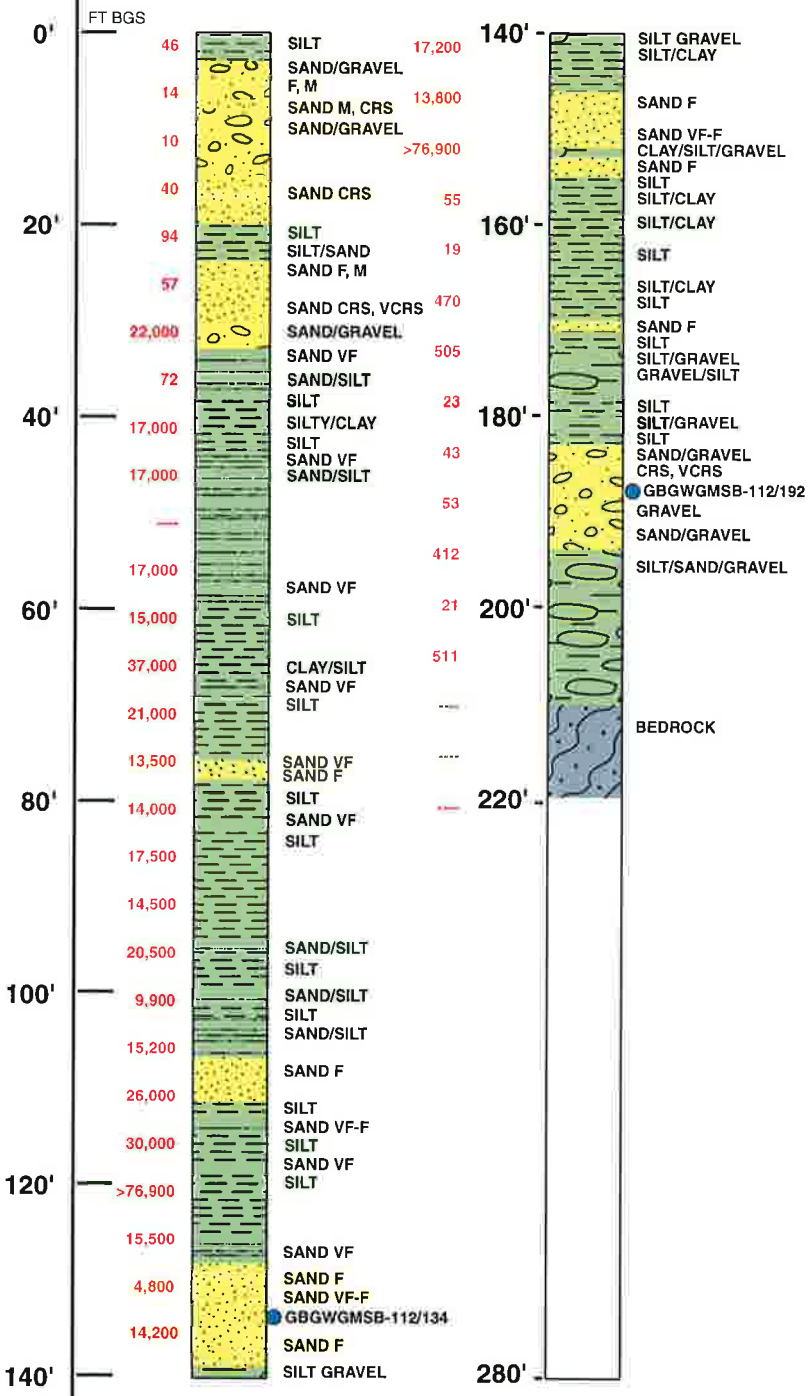
OBSERVATION WELL NO. GMSB-112

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1048.02 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
B. Evans	Continuous	Rotasonic Core Barrel	220 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Stacy	Boart Longyear	Rotasonic	09/03/03



VERTICAL SCALE ~1"= 20'

13JULY\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_112.AI

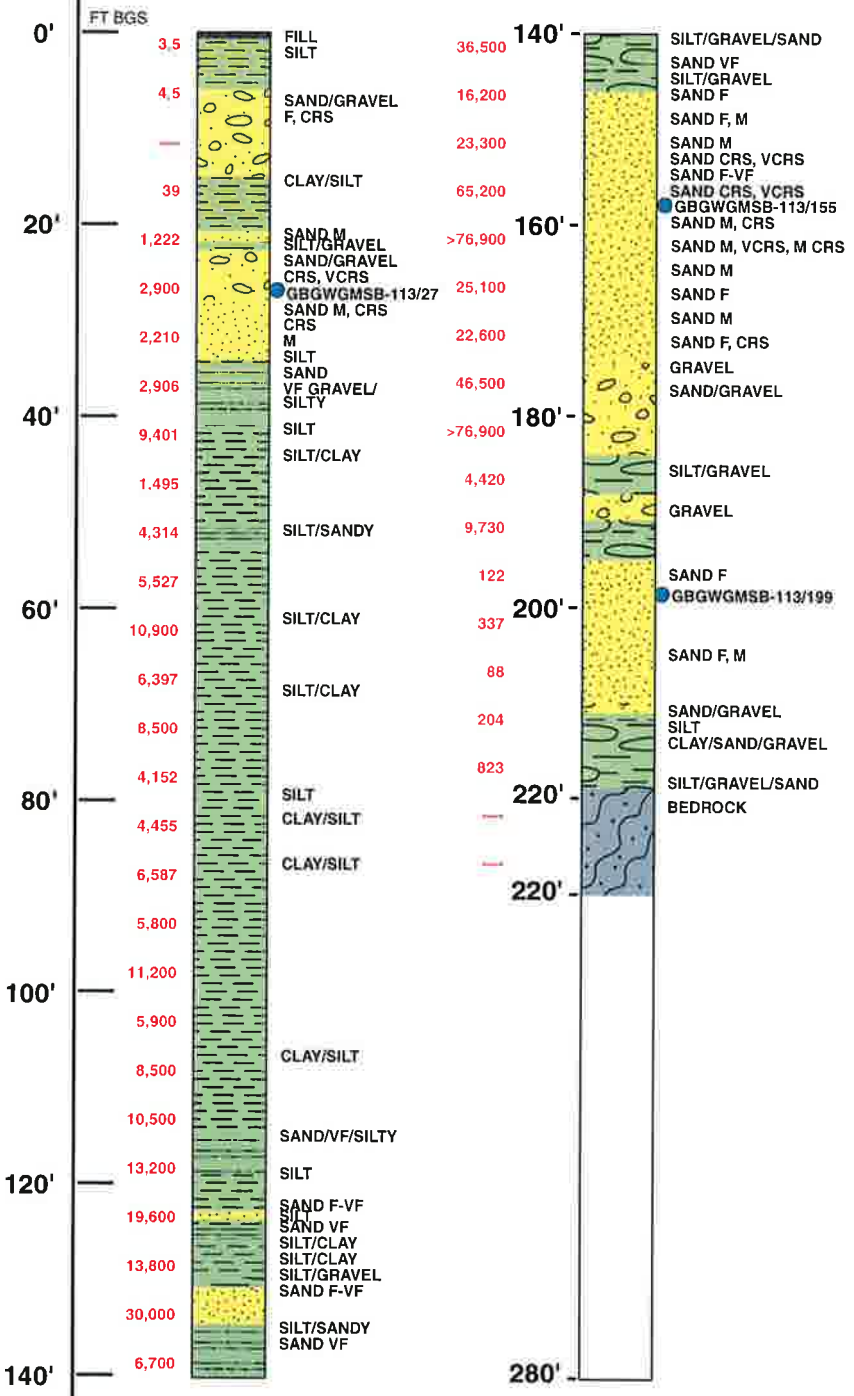
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-113

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.44 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	230 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Stacy	Boart Longyear	Rotasonic	09/05/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_113.AI

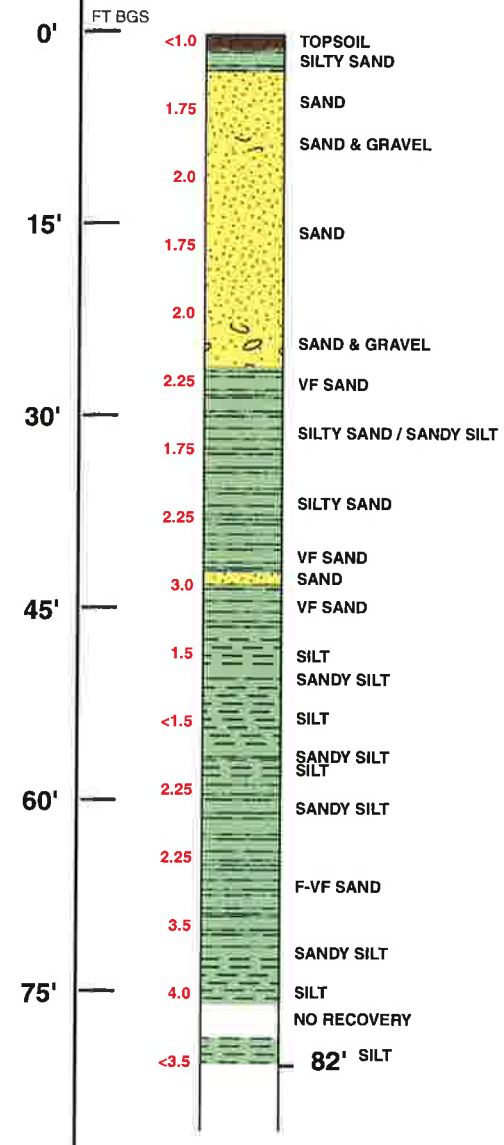
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-114

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1093.56 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	82 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	8/19/98



COMPLETION: HOLE ABANDONED ON AUGUST 18, 1998.

VERTICAL SCALE ~1"= 15'

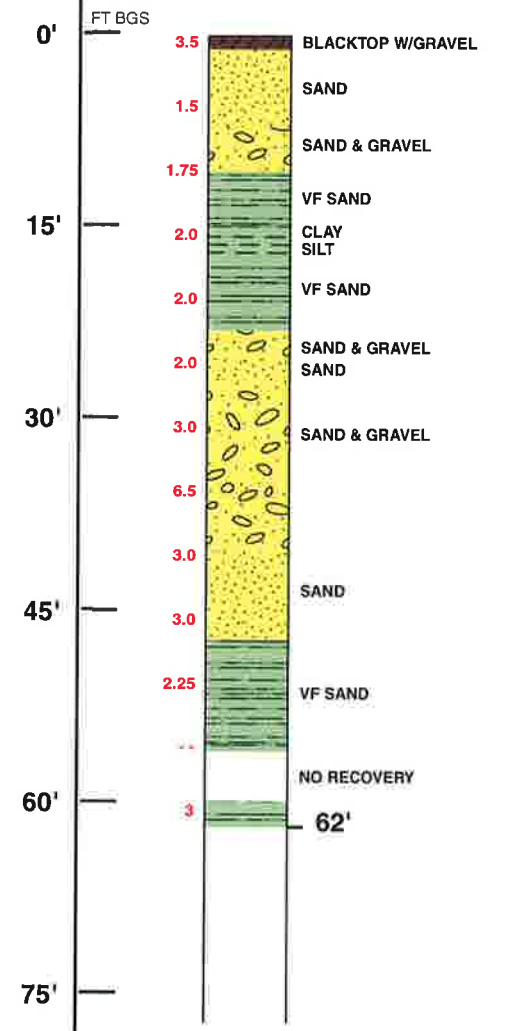
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-115

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1088.73 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	62 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	8/20/98



COMPLETION: HOLE ABANDONED ON AUGUST 20, 1998.

VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_115.AI

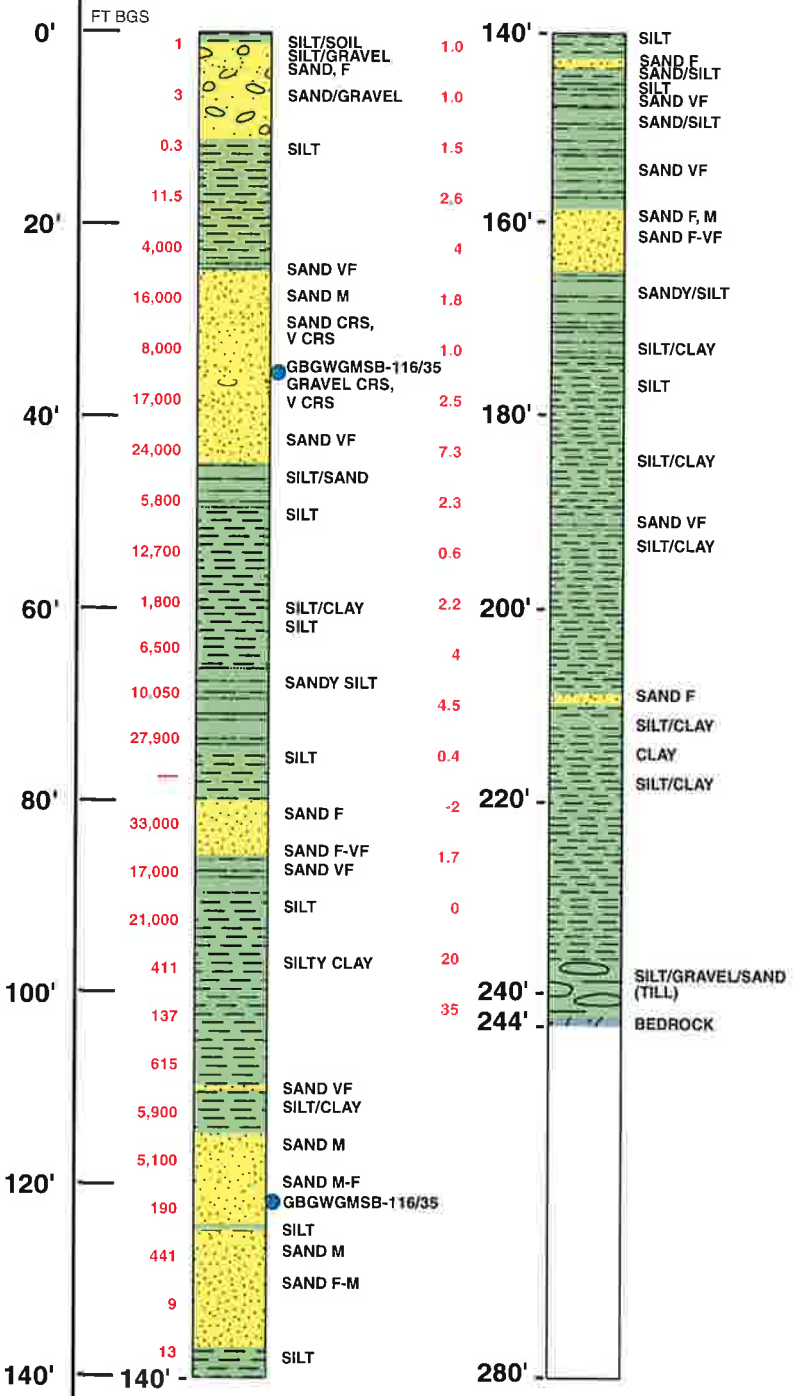
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-116

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1054.81 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	244 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Stacy	Boart Longyear	Rotasonic	08/13/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_116.AI

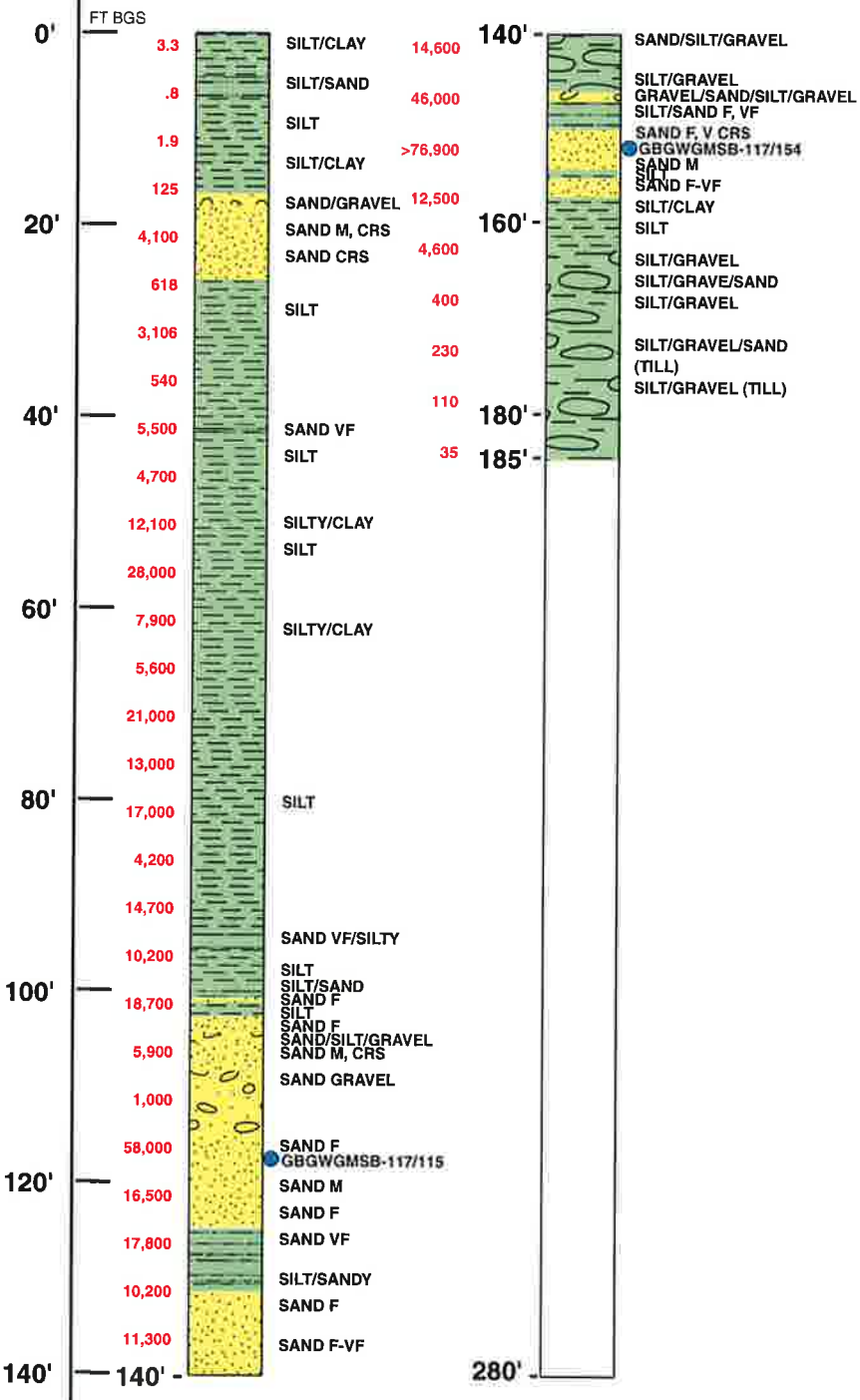
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-117

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	280 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Stacy	Boart Longyear	Rotasonic	08/15/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_117.AI

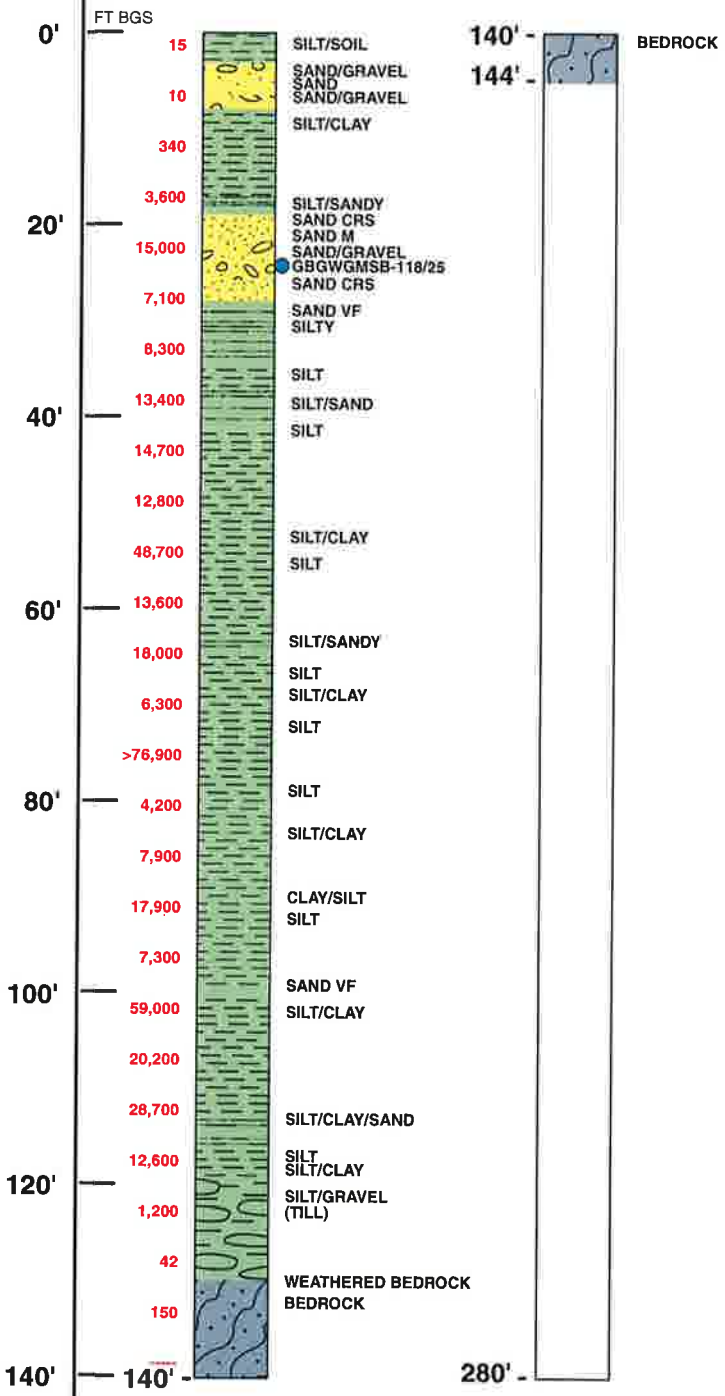
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-118

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1049.26 Feet MSL
GEOLOGIST B. Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 145 Feet BLS
DRILLER Stacy	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 08/16/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_118.AI

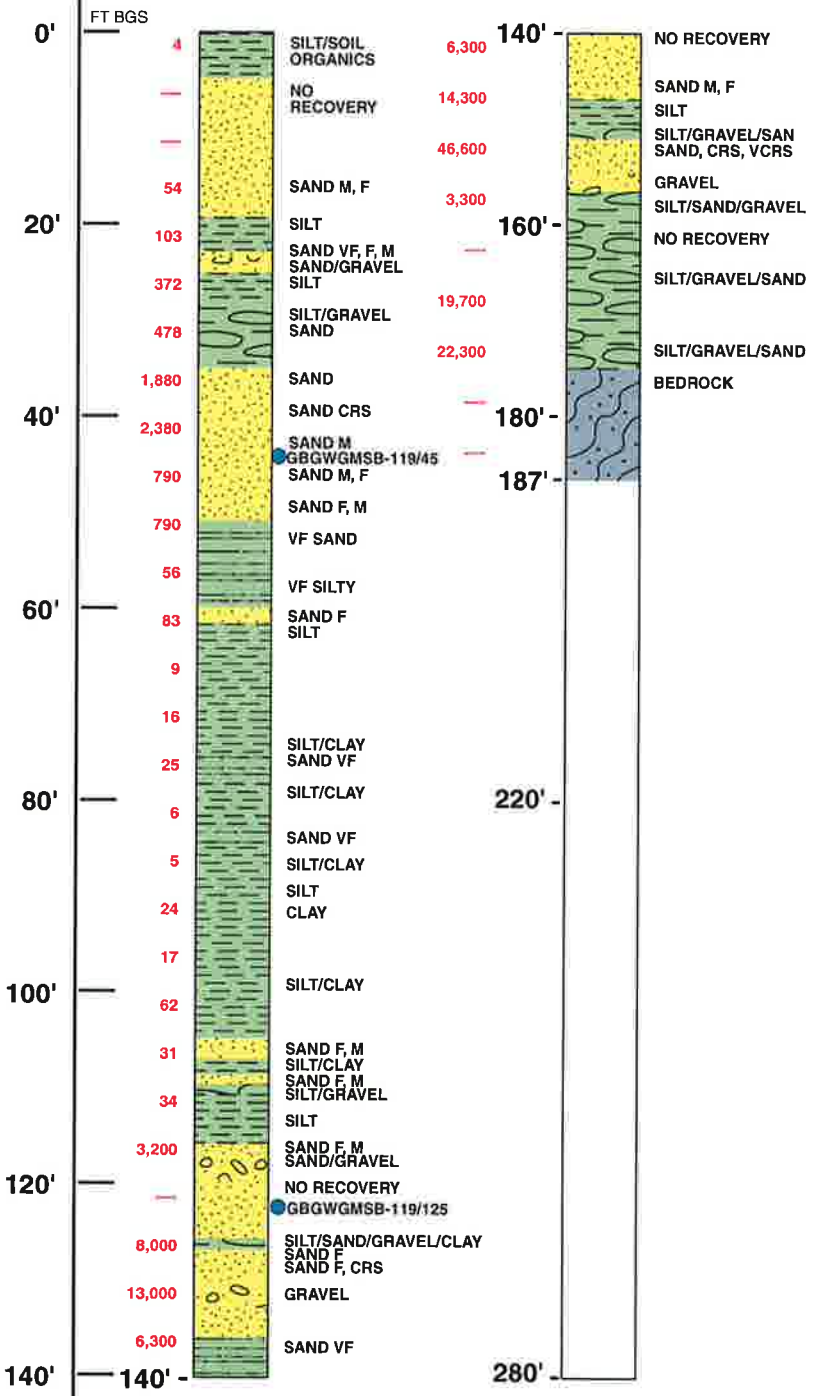
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-119

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1045.19 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	187 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Stacy	Boart Longyear	Rotasonic	08/18/03



VERTICAL SCALE ~1"= 20'

09JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_119.AI

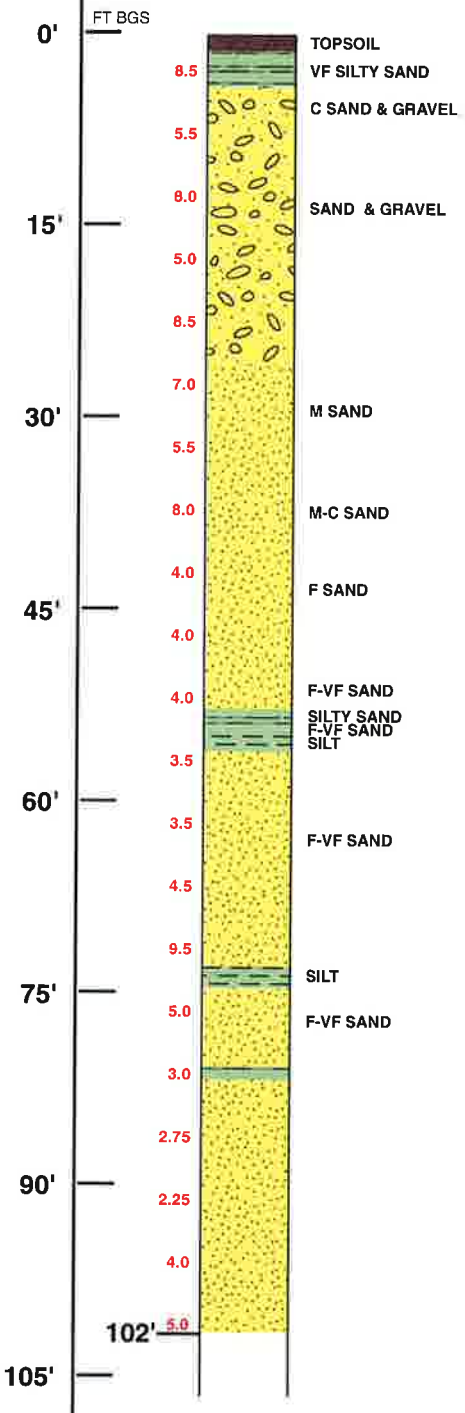
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-120

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1115.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	102 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/22/98



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_120.AI

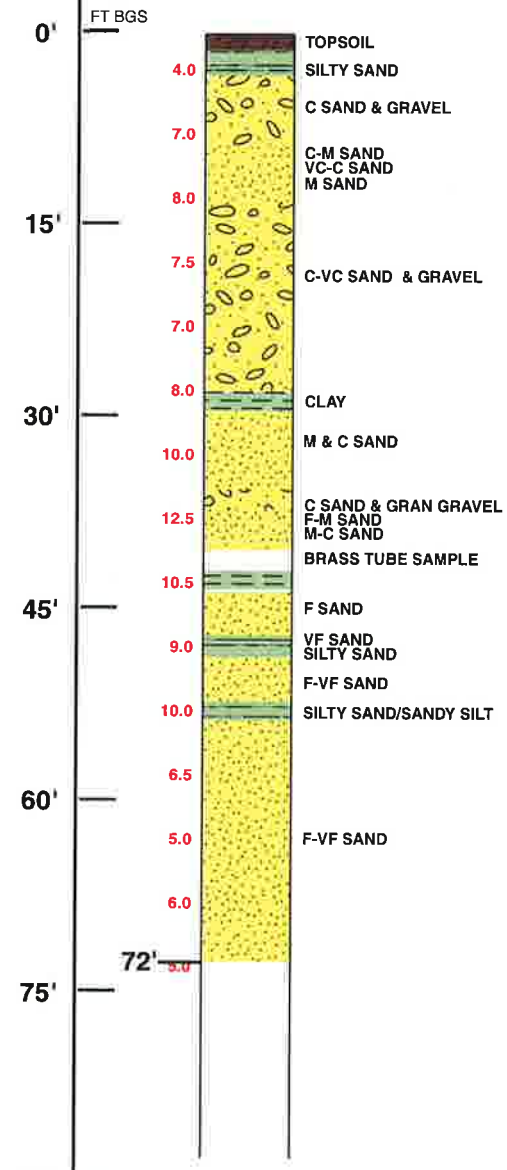
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-121

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.67 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	72 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/24/98



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_121.AI

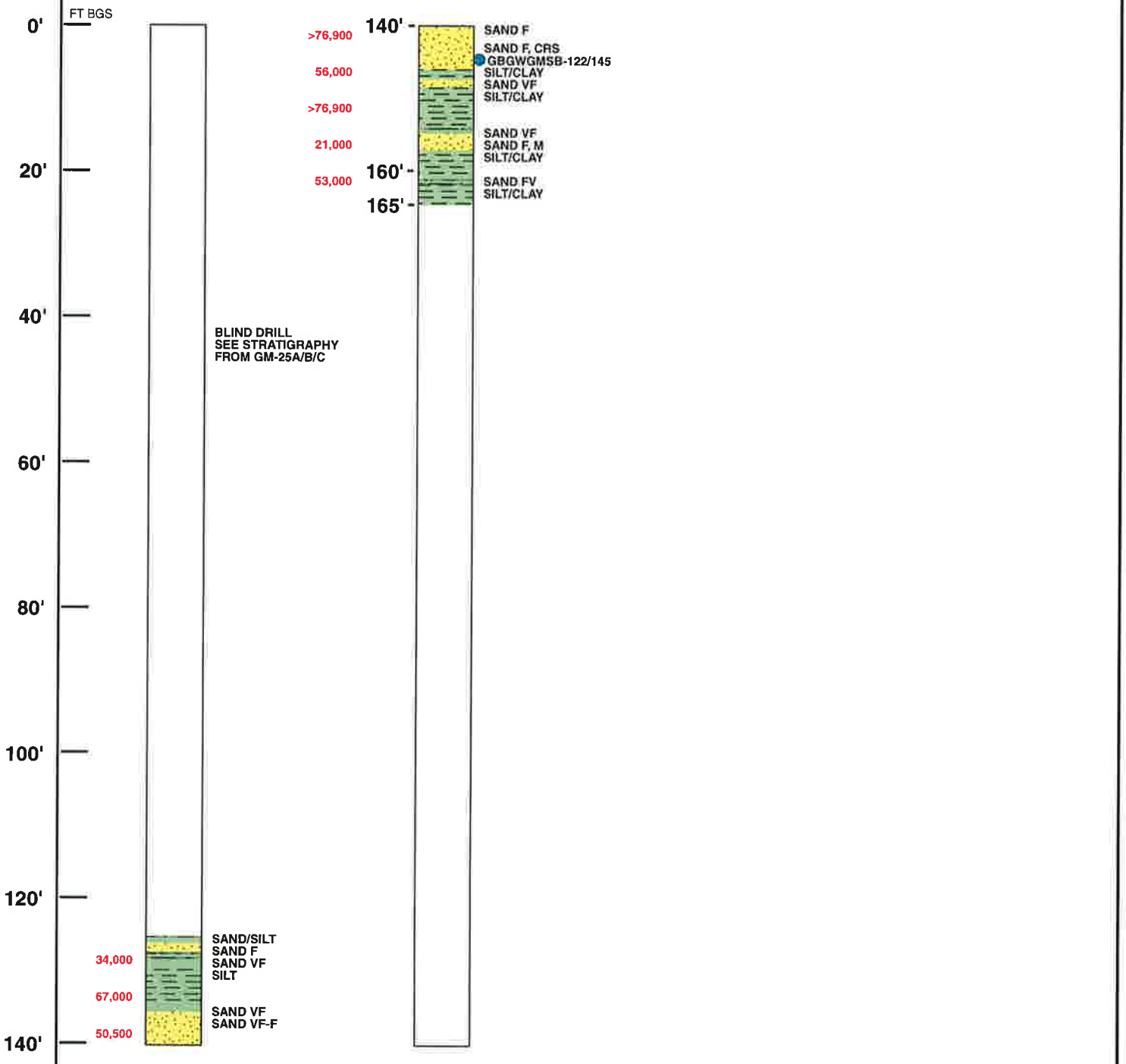
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-122

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1048.35 Feet MSL
GEOLOGIST B. Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 165 Feet BLS
DRILLER Stacy	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 09/08/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_122.AI

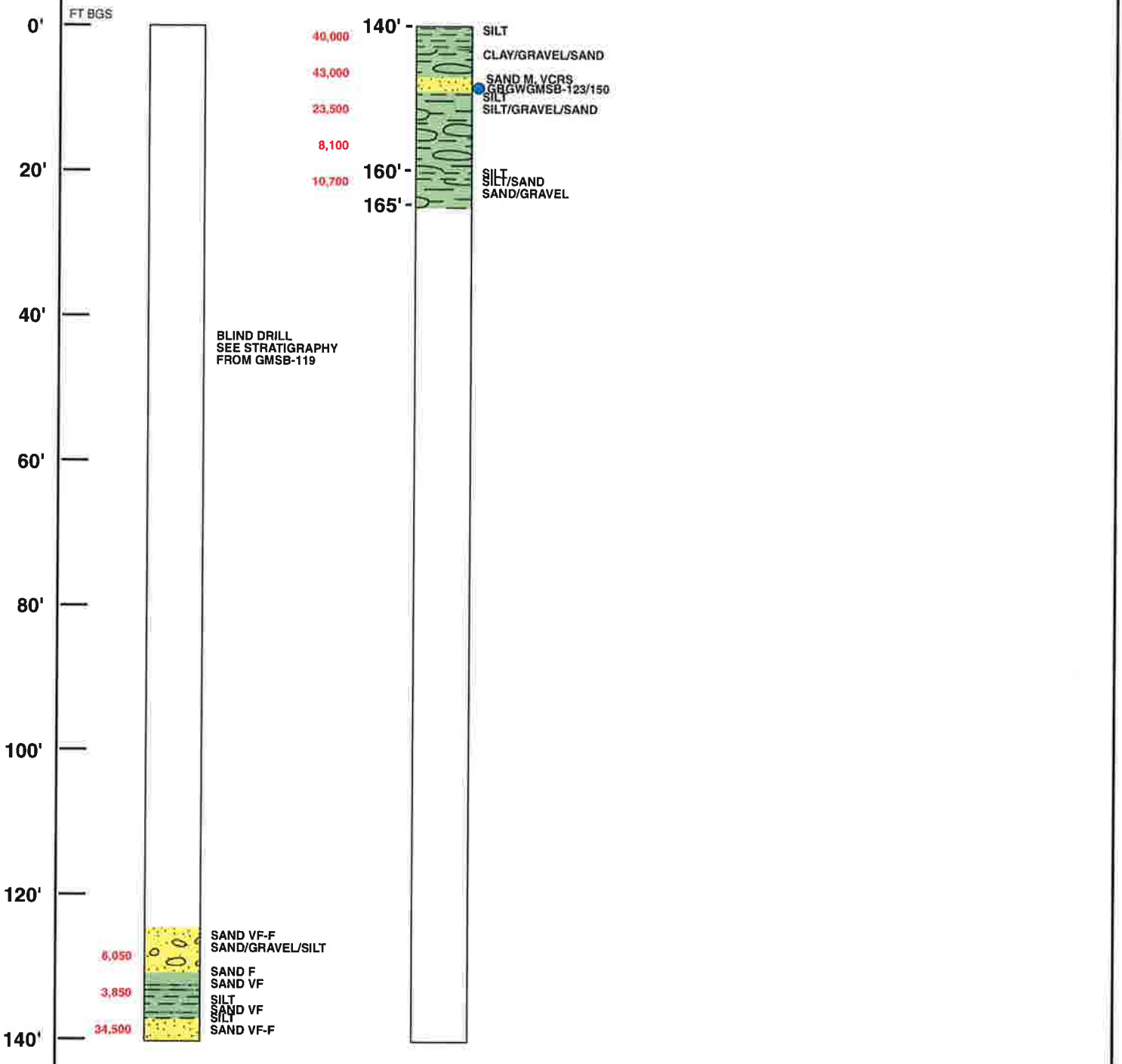
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-123

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1044.81 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	165 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Stacy	Boart Longyear	Rotasonic	09/09/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_123.AI

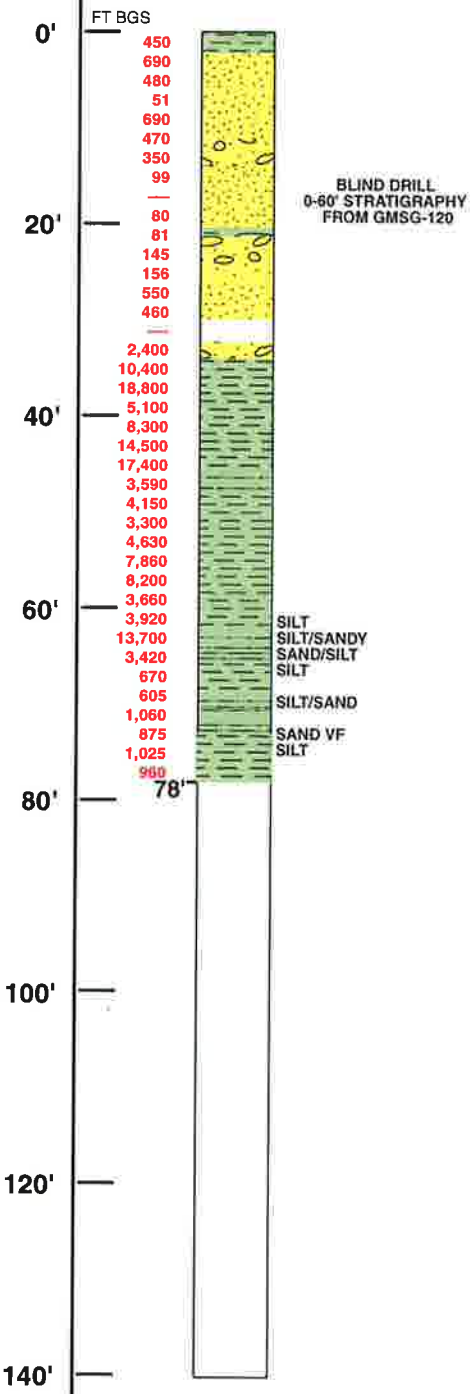
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-124

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1132.58 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous from 60 Feet	Splitspoon	78 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
J. Flaminio	Boart Longyear	Hollow Stem Auger	10/29/03



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_124.AI

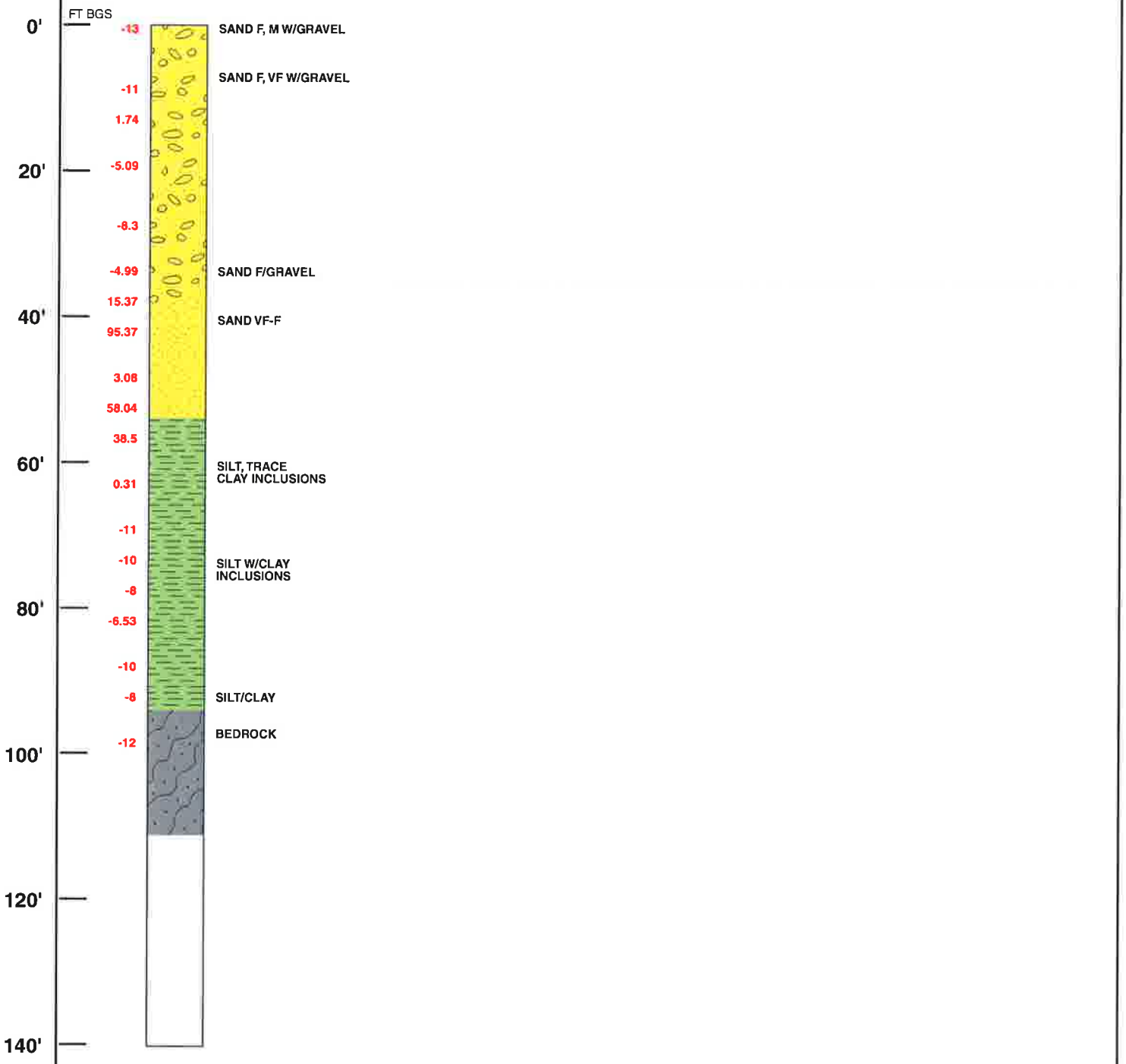
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-125

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1125.47 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotosonic Core Barrel	112 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Ray	Boart Longyear	Rotosonic	4/20/04



VERTICAL SCALE ~1"= 20'

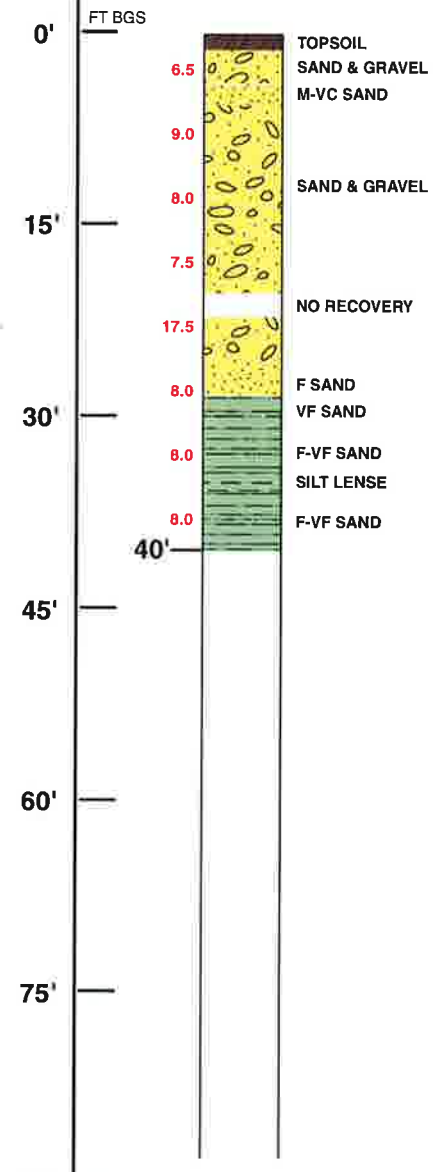
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-126

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1118.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	10/8/98



VERTICAL SCALE ~1"= 15'

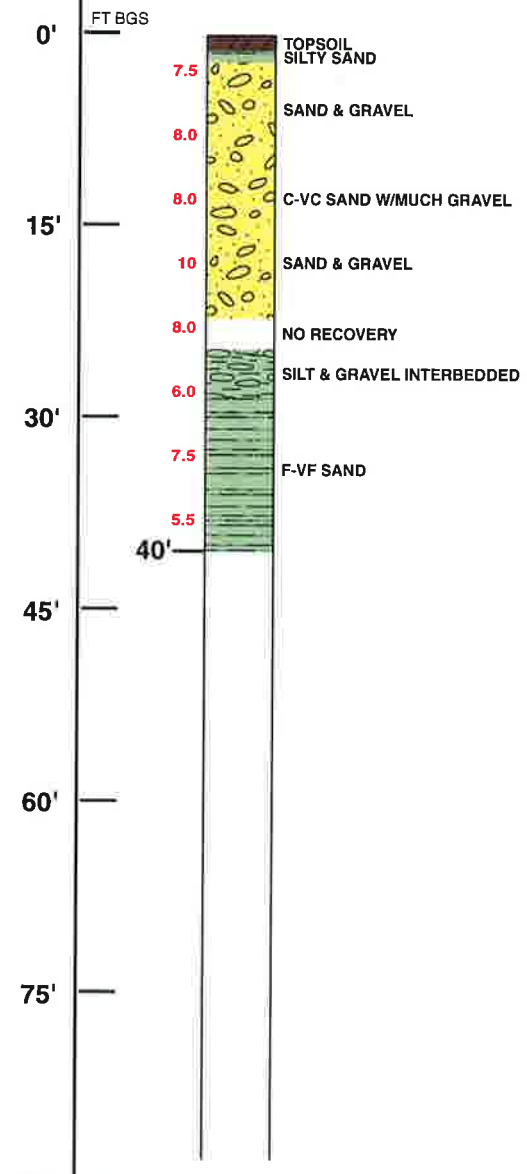
13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_126.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSB-127
PROJECT	FORD/KINGSFORD WI000675.0001

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1117.62 Feet MSL
GEOLOGIST: Ray Flynn	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Splitspoon	TOTAL DEPTH DRILLED: 40 Feet BLS
DRILLER: Dan	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Hollow Stem Auger	DATE BORING COMPLETED: 10/9/98



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_127.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-128

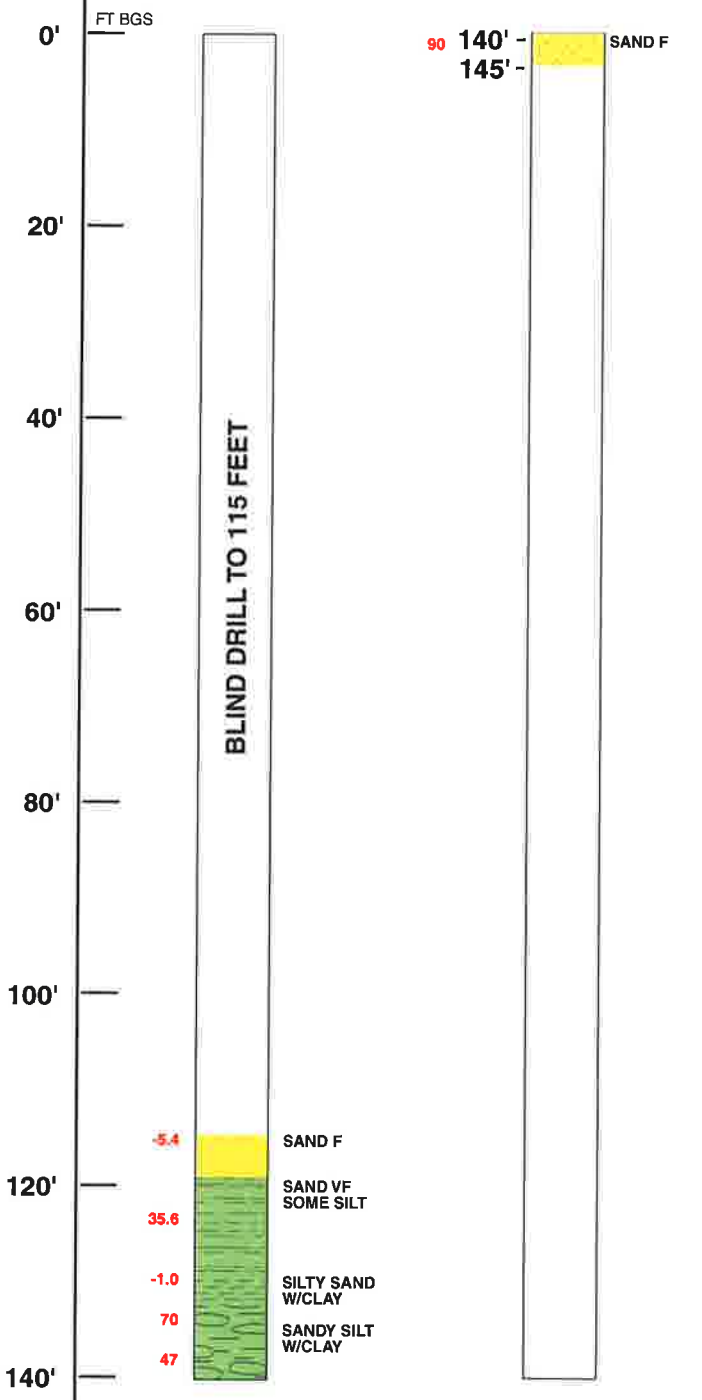
PROJECT FORD/KINGSFORD WI001075.0015

LOCATION
Kingsford, Michigan

LAND SURFACE ELEVATION
1120.72 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
P. Lenaker			145 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
			4/22/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_128.AI

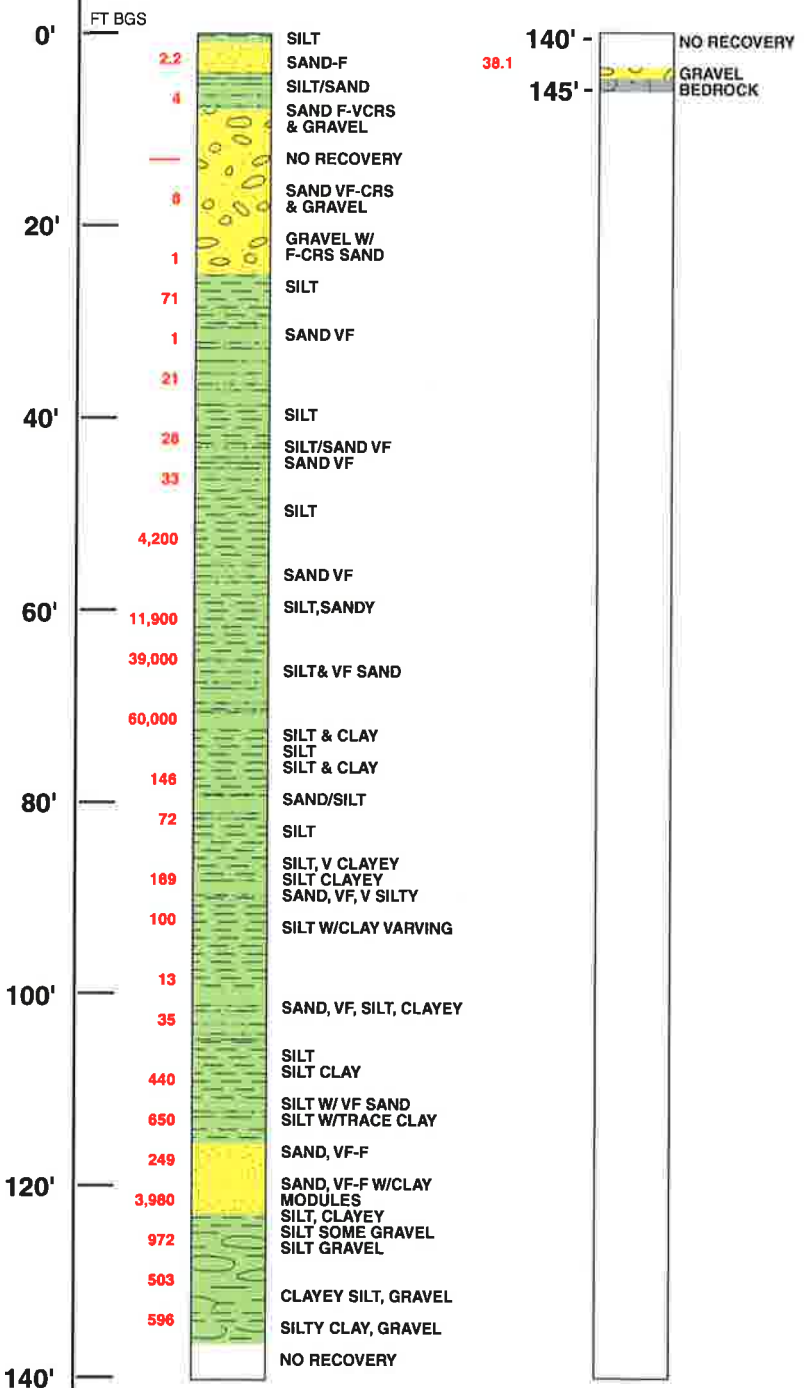
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-129

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1131.26 Feet MSL
GEOLOGIST P. Lenaker	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotosonic Corebarrel	TOTAL DEPTH DRILLED 145 Feet BLS
DRILLER Alvin Anderson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotosonic	DATE BORING COMPLETED 5/17/04



VERTICAL SCALE ~1"= 20'

18FEB09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_129.AI

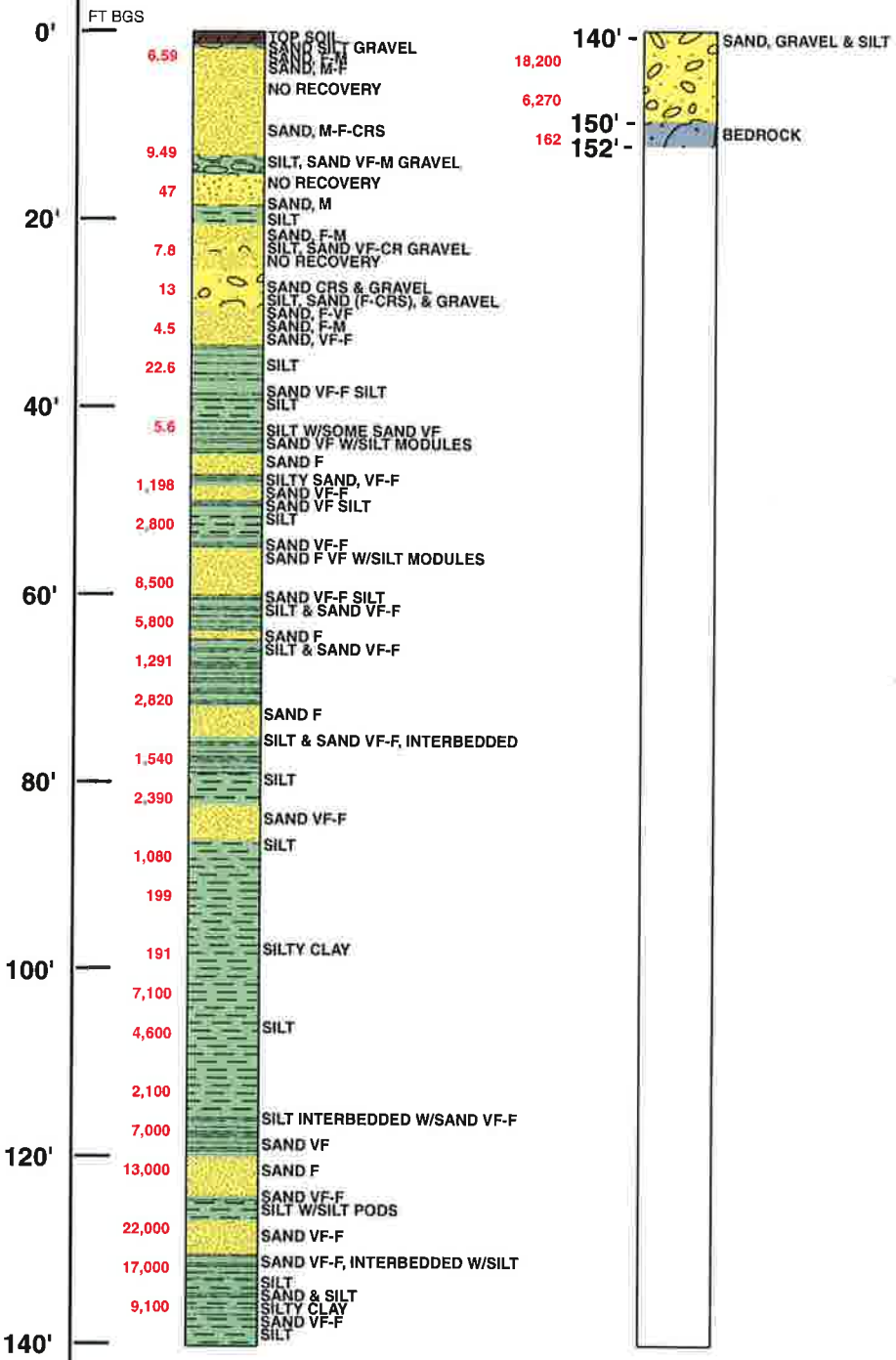
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-130

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1131.87 Feet MSL
GEOLOGIST L. Schmidt	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Corebarrel	TOTAL DEPTH DRILLED 152 Feet BLS
DRILLER Alvin Anderson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 5/18/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_130.AI

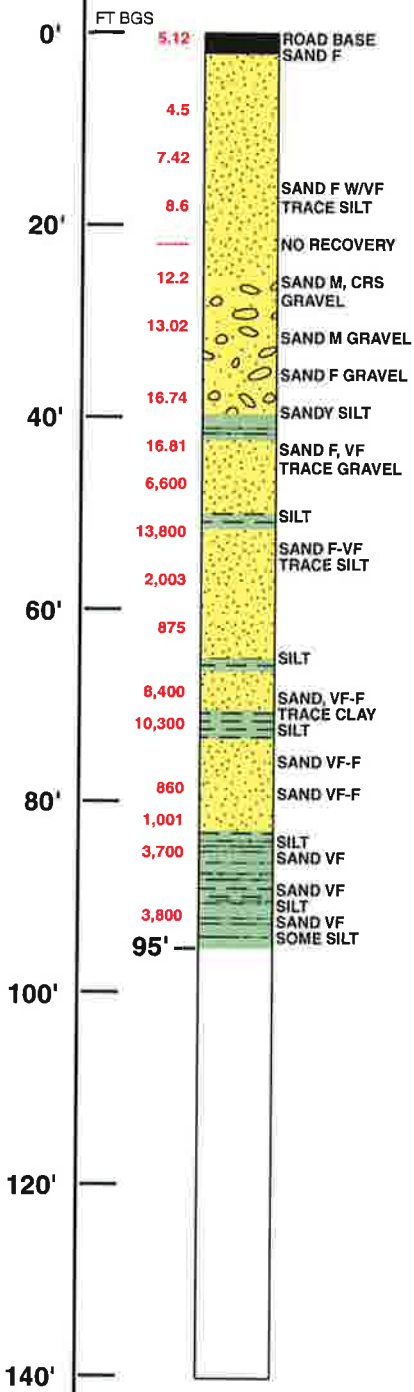
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-131

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1131.32 Feet MSL
GEOLOGIST P. Lenaker	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Corebarrel	TOTAL DEPTH DRILLED 95 Feet BLS
DRILLER Alvin Anderson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 5/18/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_131.AI

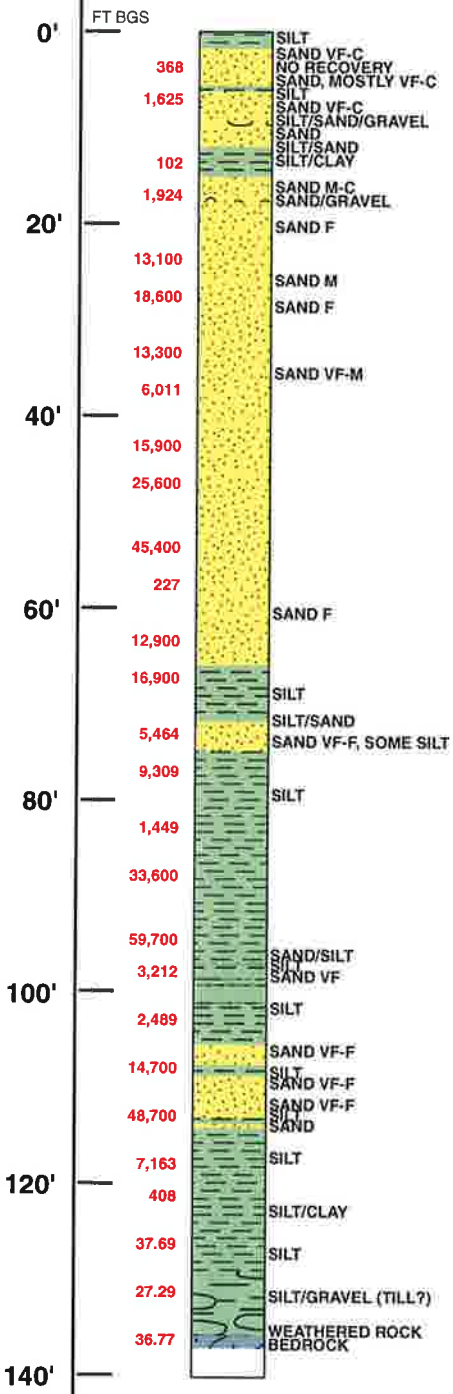
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-132

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,047.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy/T. Schoen	Continuous	Rotasonic Corebarrel	137 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	07/07/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_132.AI

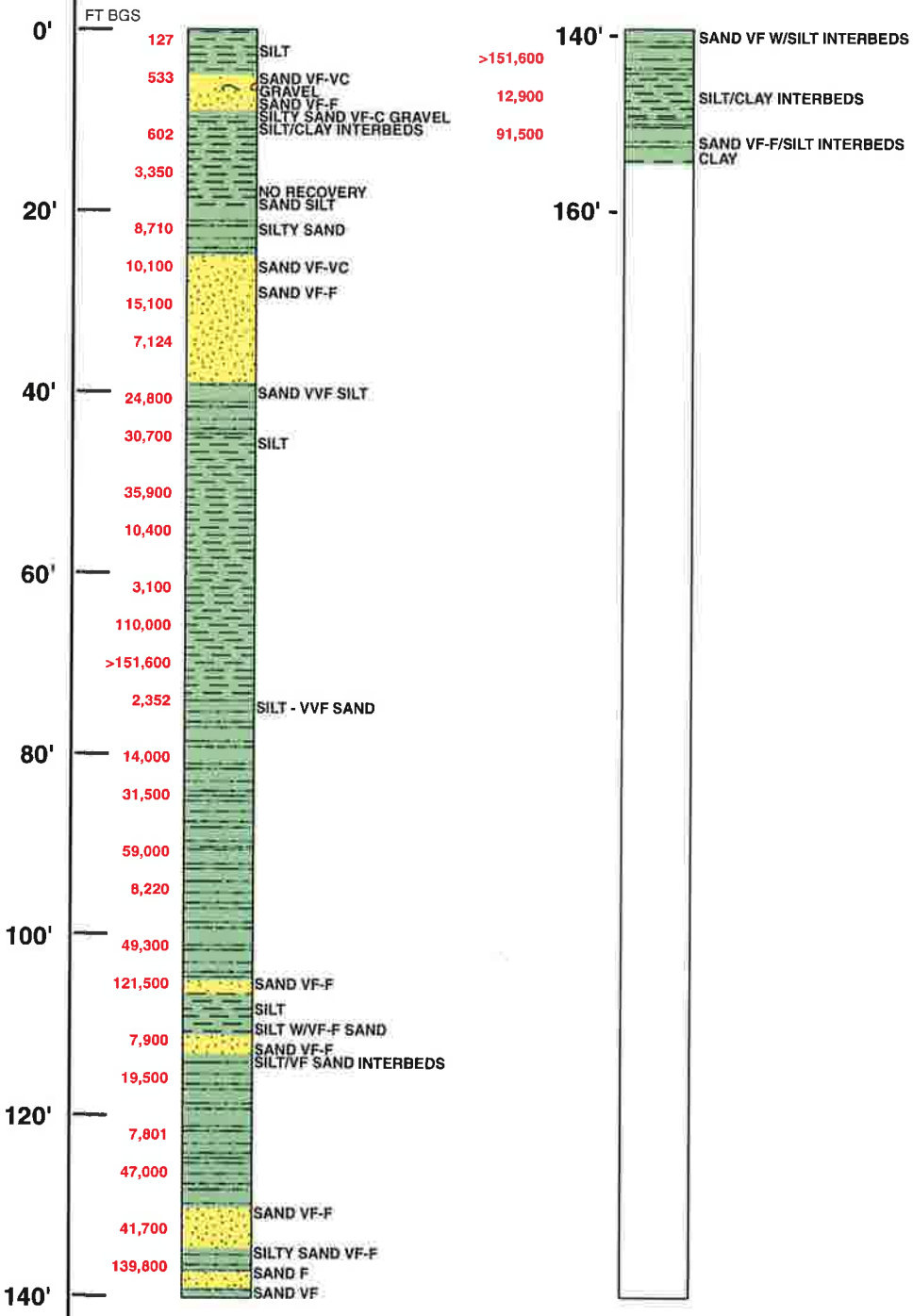
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-133

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.95 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	155 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	7/27/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_133.AI

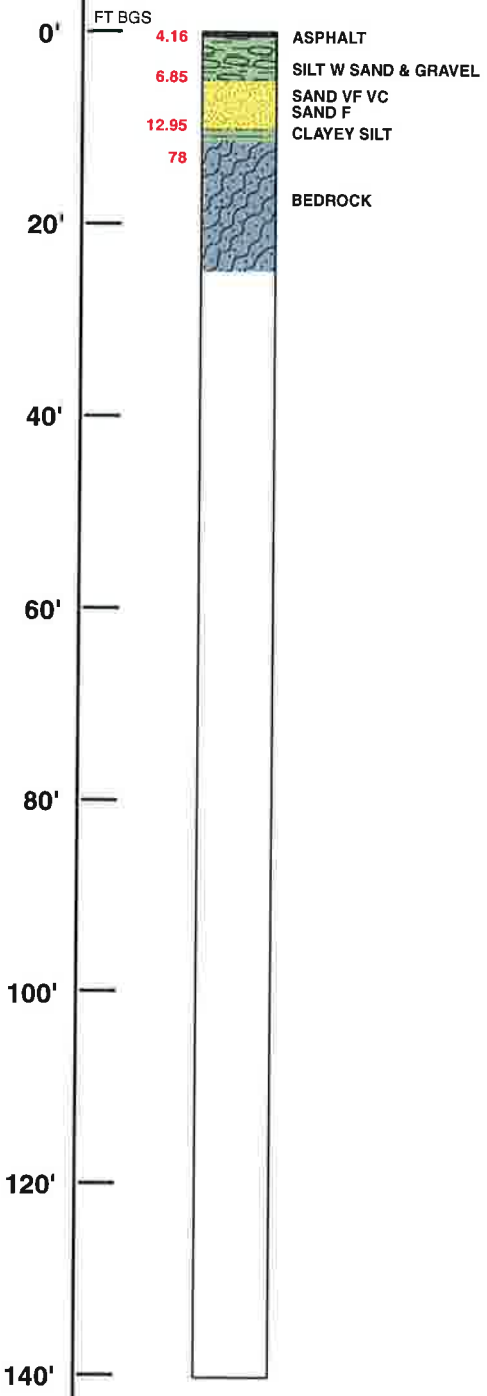
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-134

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1069.16 Feet MSL
GEOLOGIST A. Mumpy	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 25 Feet BLS
DRILLER Jason	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/06/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_134.AI

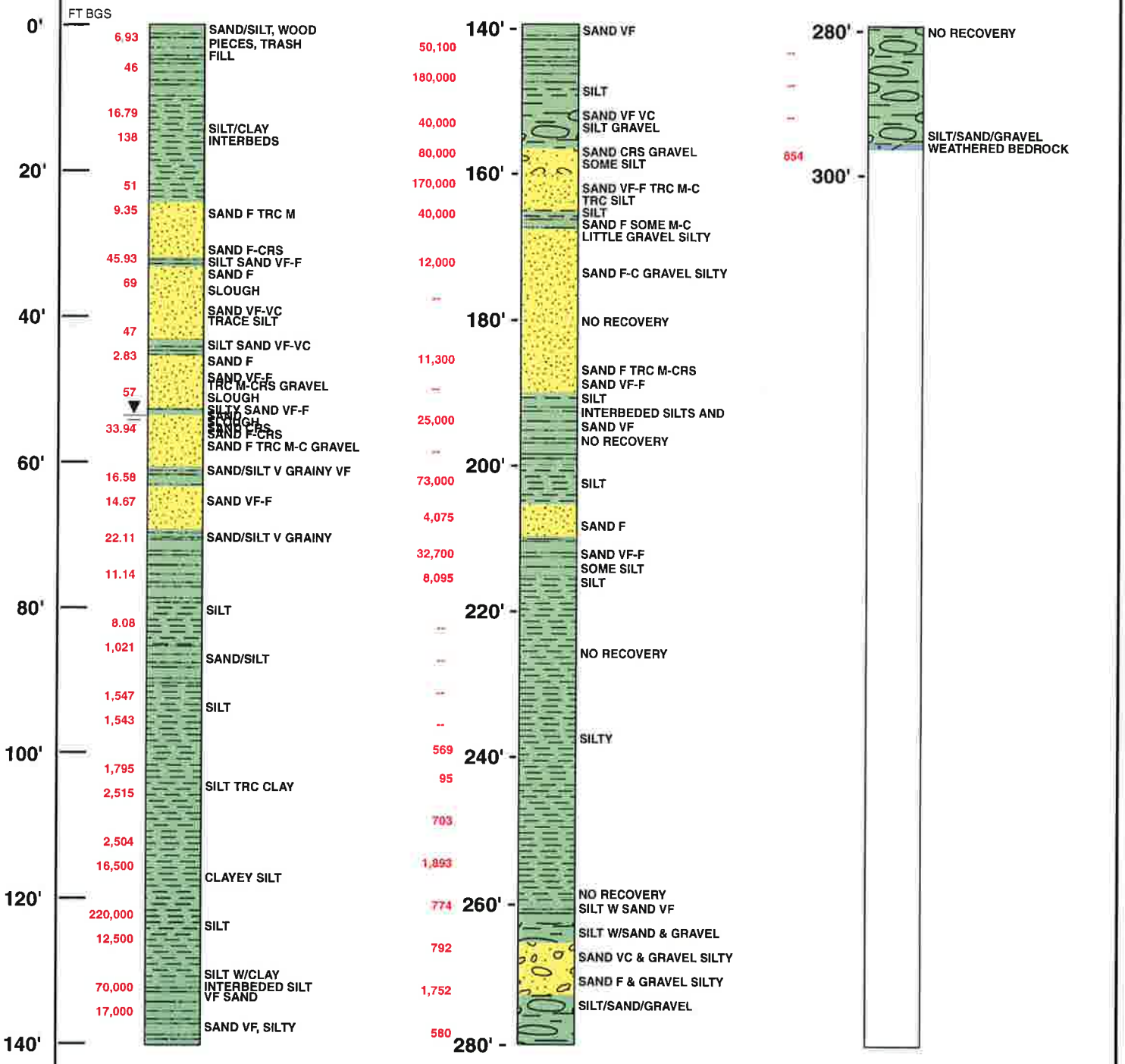
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-135

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1125.84 Feet MSL
GEOLOGIST A. Mumpy	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 295 Feet BLS
DRILLER Alvin Anderson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 8/9/04



VERTICAL SCALE ~1"= 20'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_135.AI

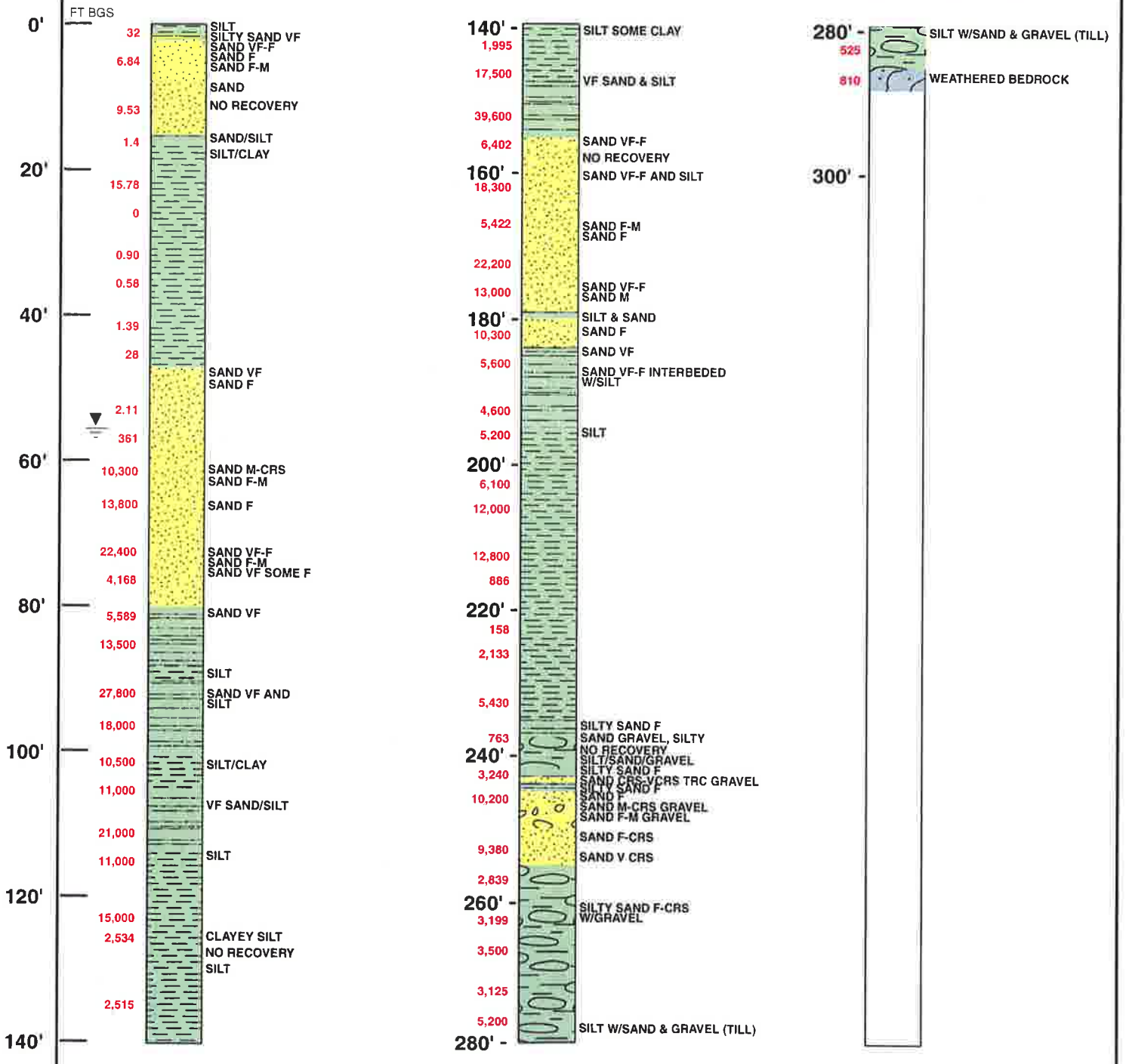
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-136

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1130.73 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	288 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	8/10/04



VERTICAL SCALE ~1"= 20'

29JUN05\FORD\WI0637\CJ2005GRAPHICS\STRAT LOGS\DRAWING: GMSB_136.AI

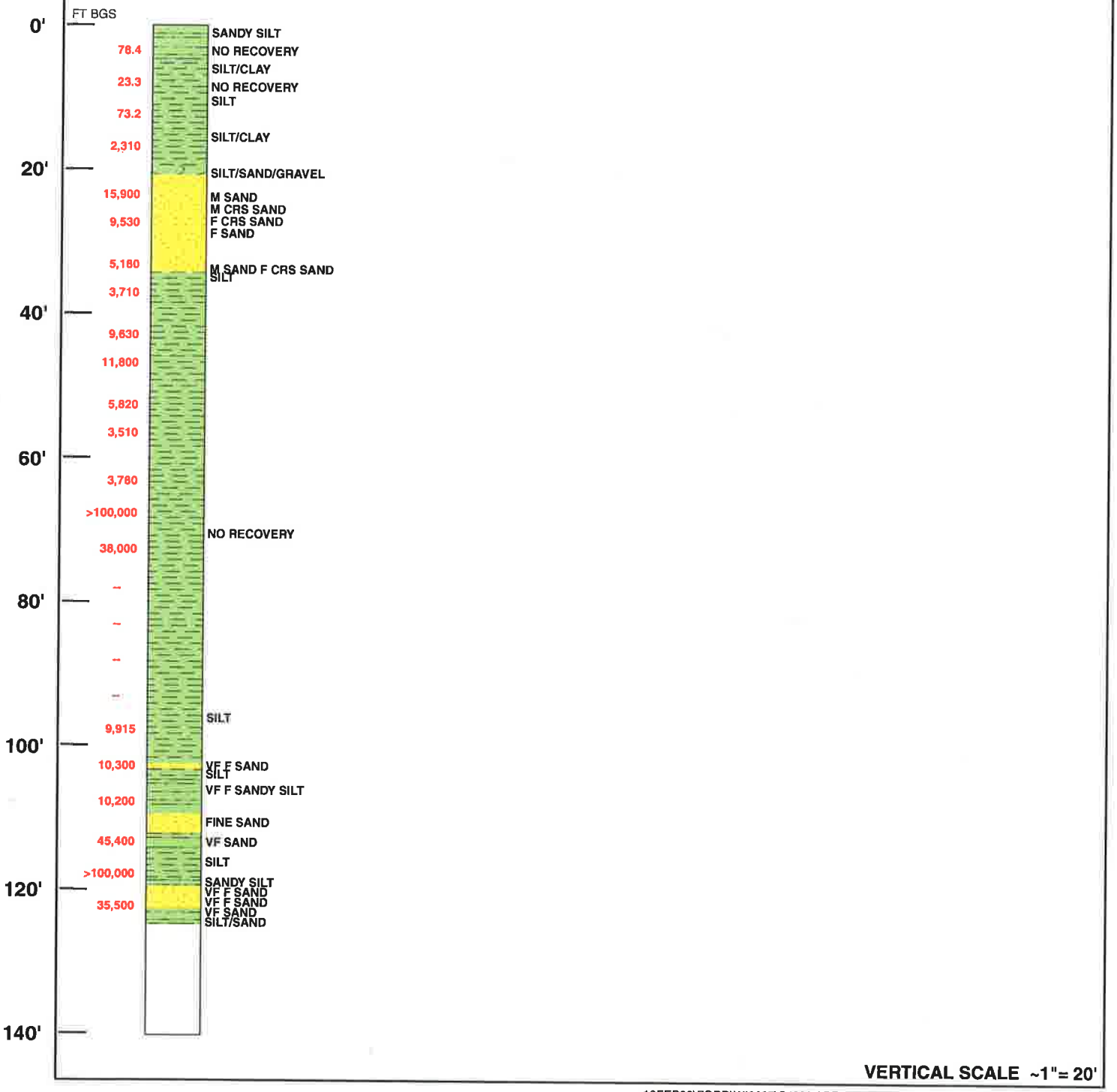
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-137

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1124.12 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	125 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	9/20/04



VERTICAL SCALE ~1"= 20'

18FEB09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_137.AI

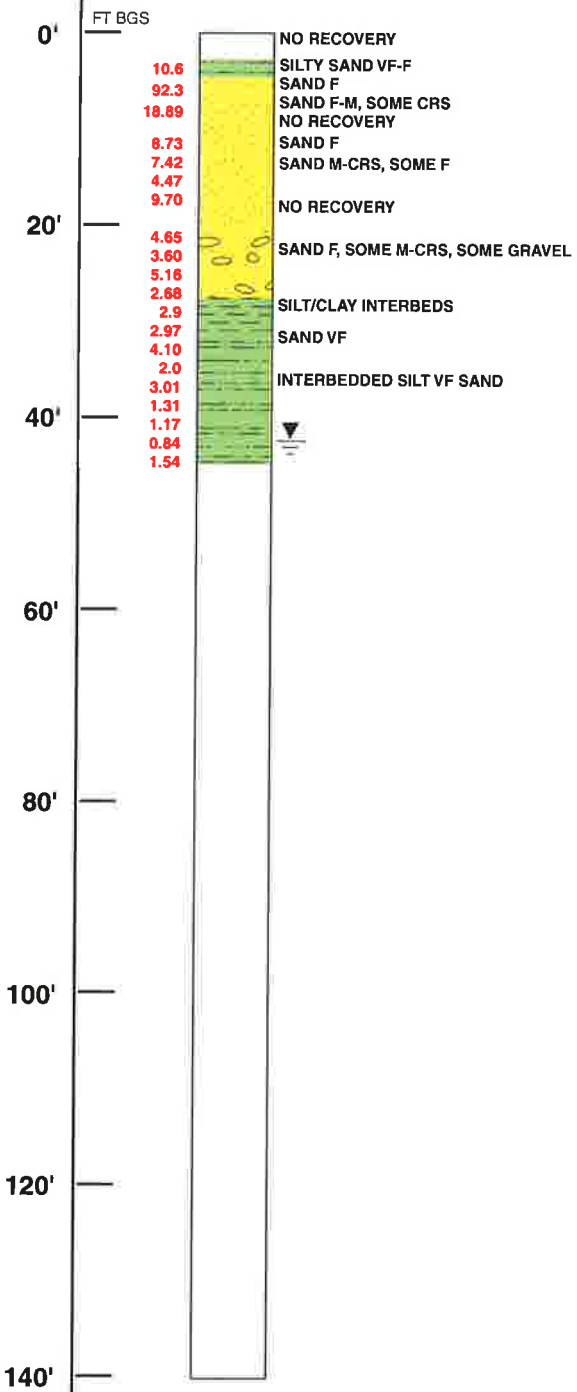
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-138

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.08 Feet MSL
GEOLOGIST A. Mumpy	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 46 Feet BLS
DRILLER _____	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/19/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_138.AI

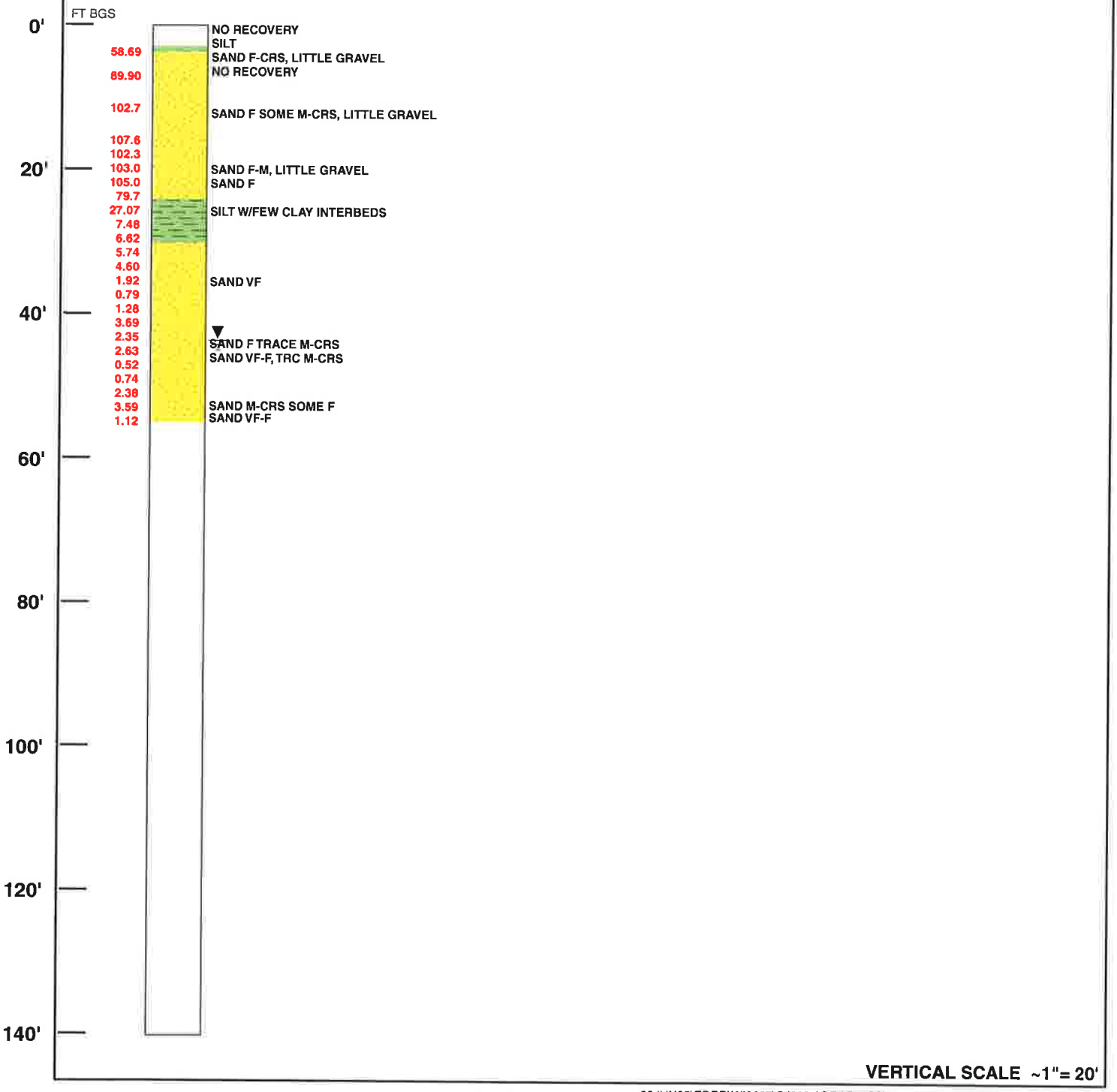
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-139

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.69 Feet MSL
GEOLOGIST A. Mumpy	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 46 Feet BLS
DRILLER Jeff	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/19/04



VERTICAL SCALE ~1"= 20'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_139.AI

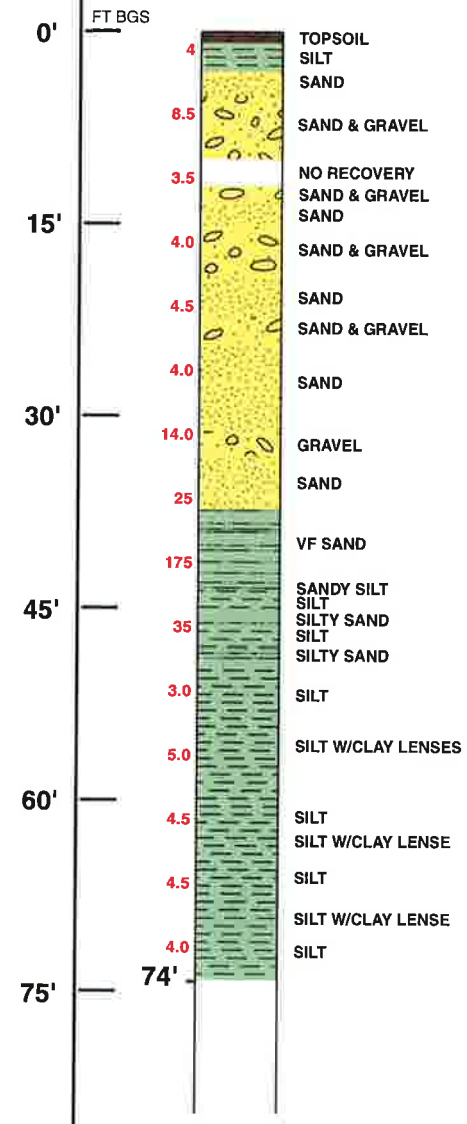
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-201

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1100.09 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 74 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 7/24/98



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_201.AI

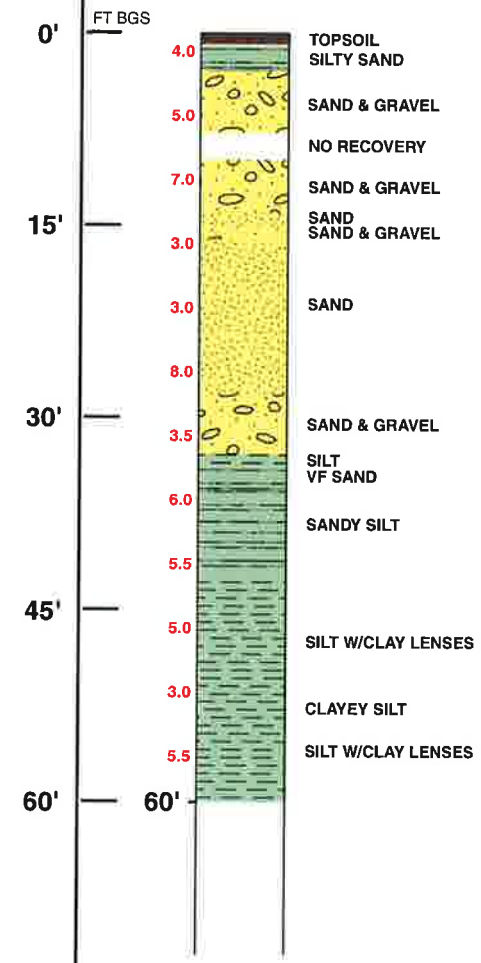
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-203

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1097.97 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	60 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/26/98



VERTICAL SCALE ~1"= 15'

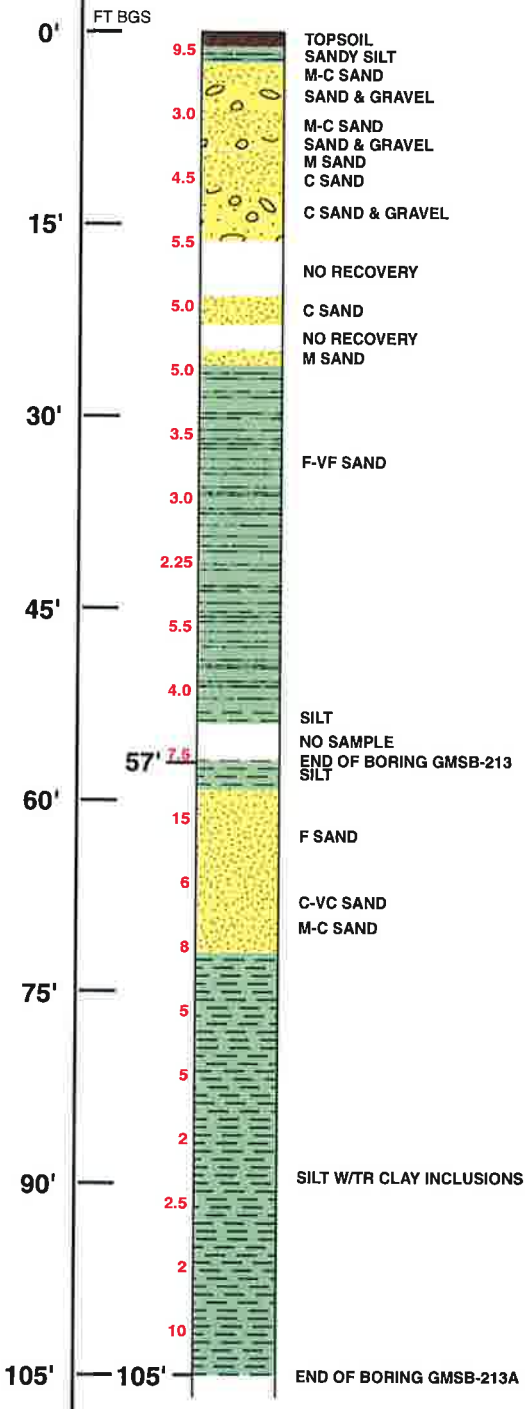
13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_203.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSB-213 (213/213A)
PROJECT	FORD/KINGSFORD WI000675.0001

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1096.80 Feet MSL
GEOLOGIST: Ray Flynn	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Splitspoon/ Rotasonic Core Barrel	TOTAL DEPTH DRILLED: 105 Feet BLS
DRILLER: Dan/Perry	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Hollow Stem Auger/ Rotasonic	DATE BORING COMPLETED: 9/8/98 / 9/22/98



NOTE: BOREHOLE ORIGINALLY DRILLED TO 57' ON 9/8/98 BY HOLLOW STEM AUGER. HOLE REDRILLED BY ROTASONIC ON 9/22/98. HOLE ABANDONED ON 9/22/98.

VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_213.AI

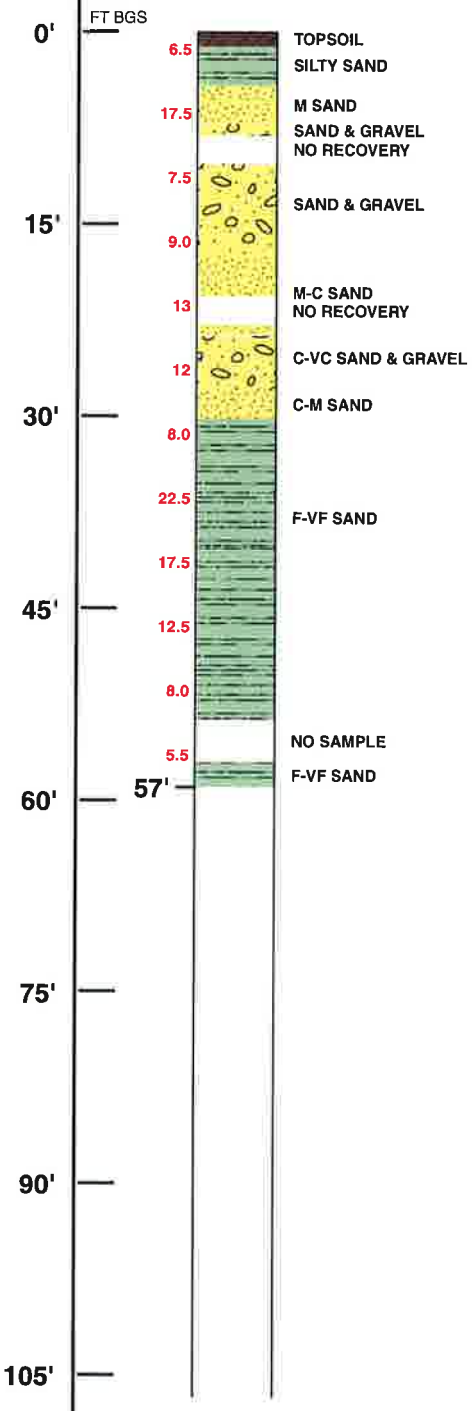
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSB-217

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1090.47 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	57 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/22/98



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSB_217.AI

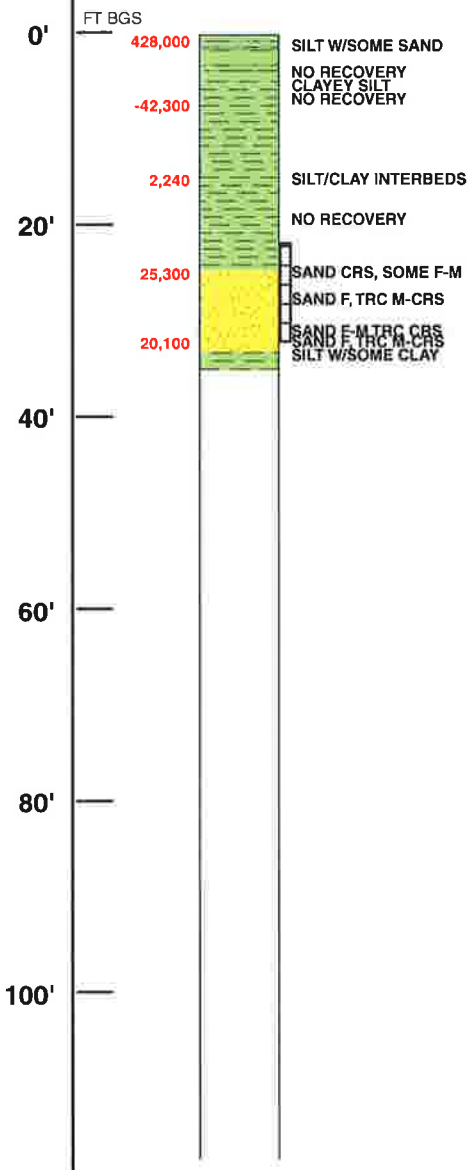
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-1

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.18 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/27/05



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_1.AI

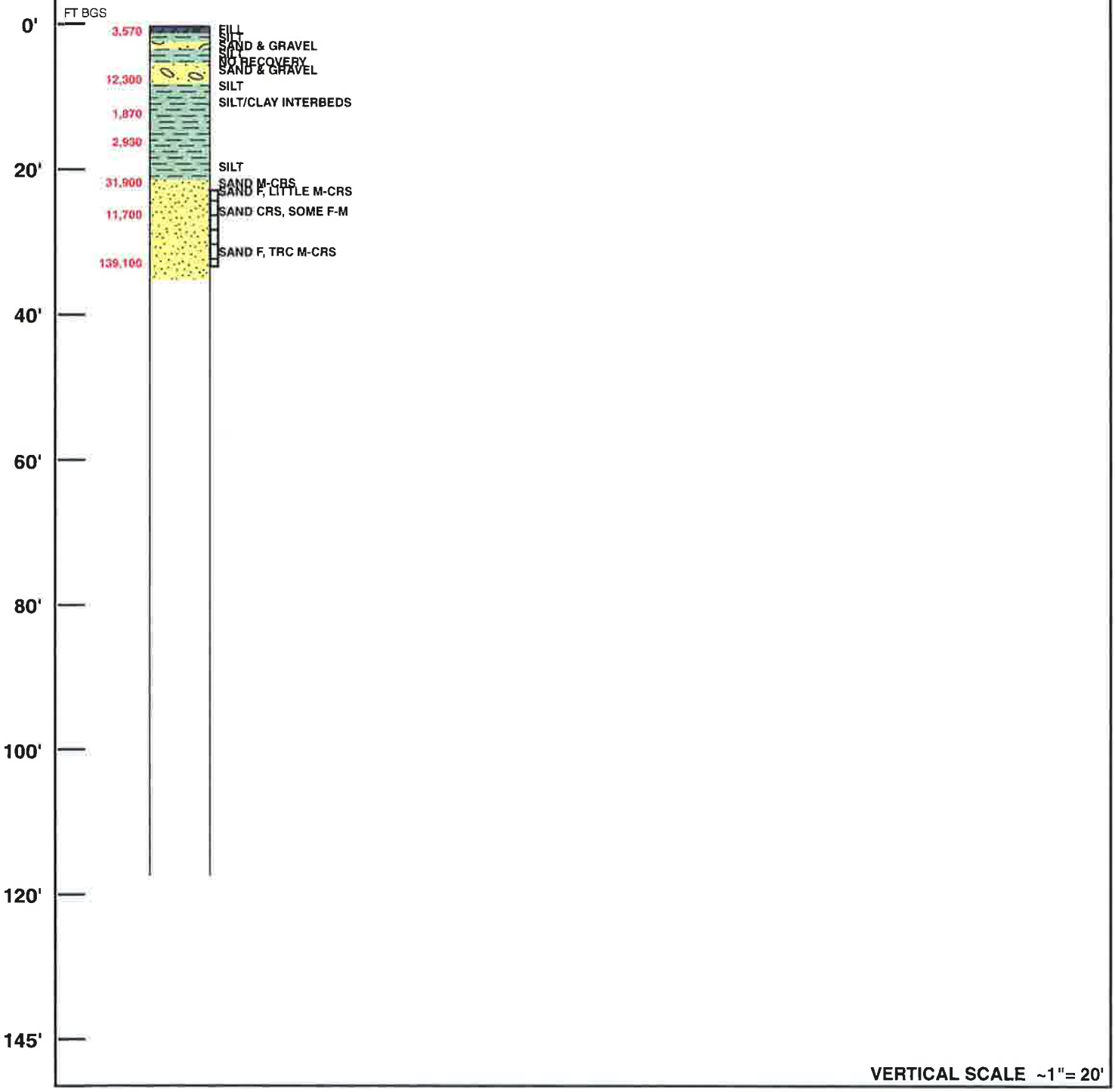
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-2

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.06 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/27/05



VERTICAL SCALE ~1"= 20'

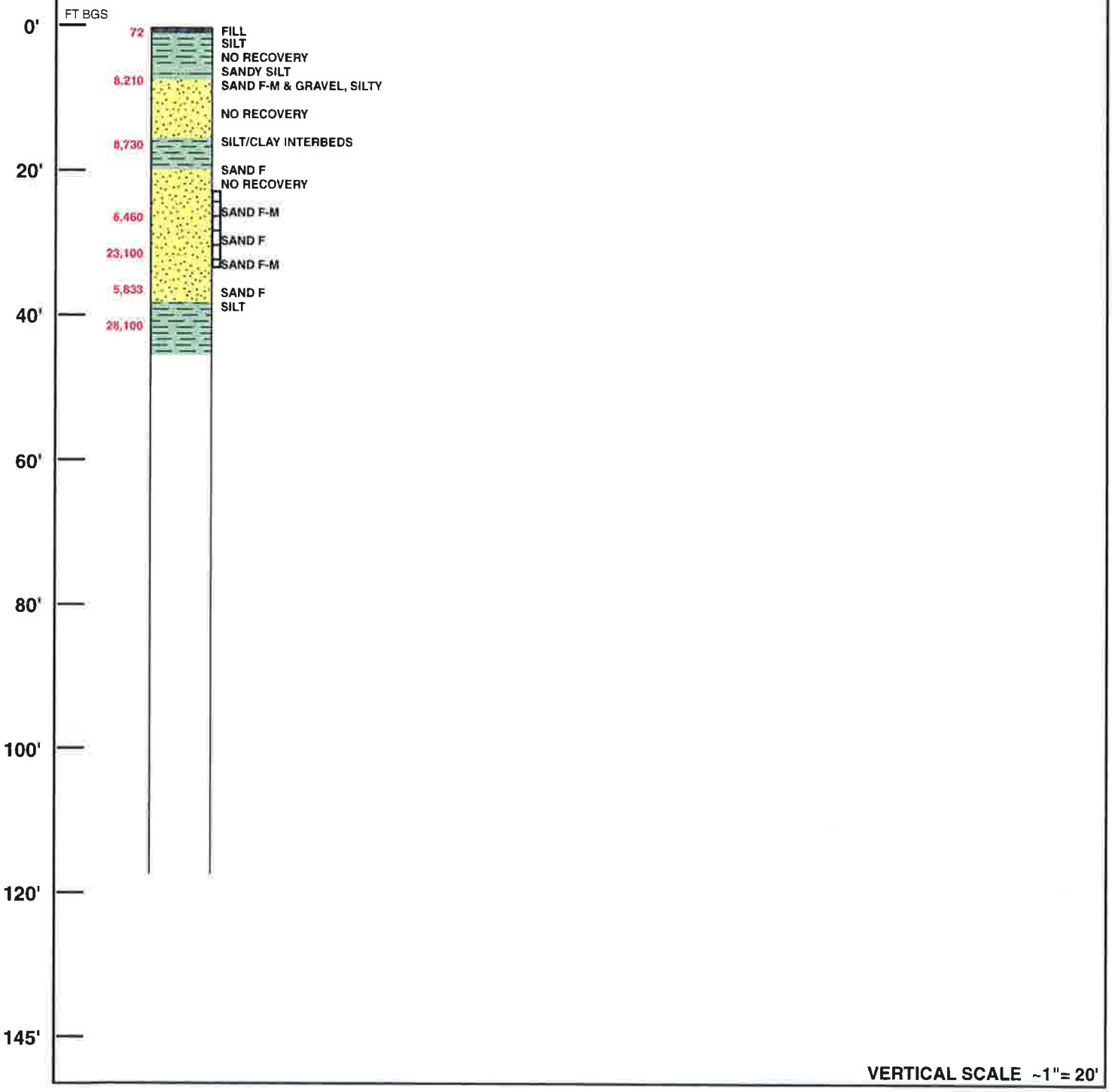
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-3

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.07 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/28/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_3.AI

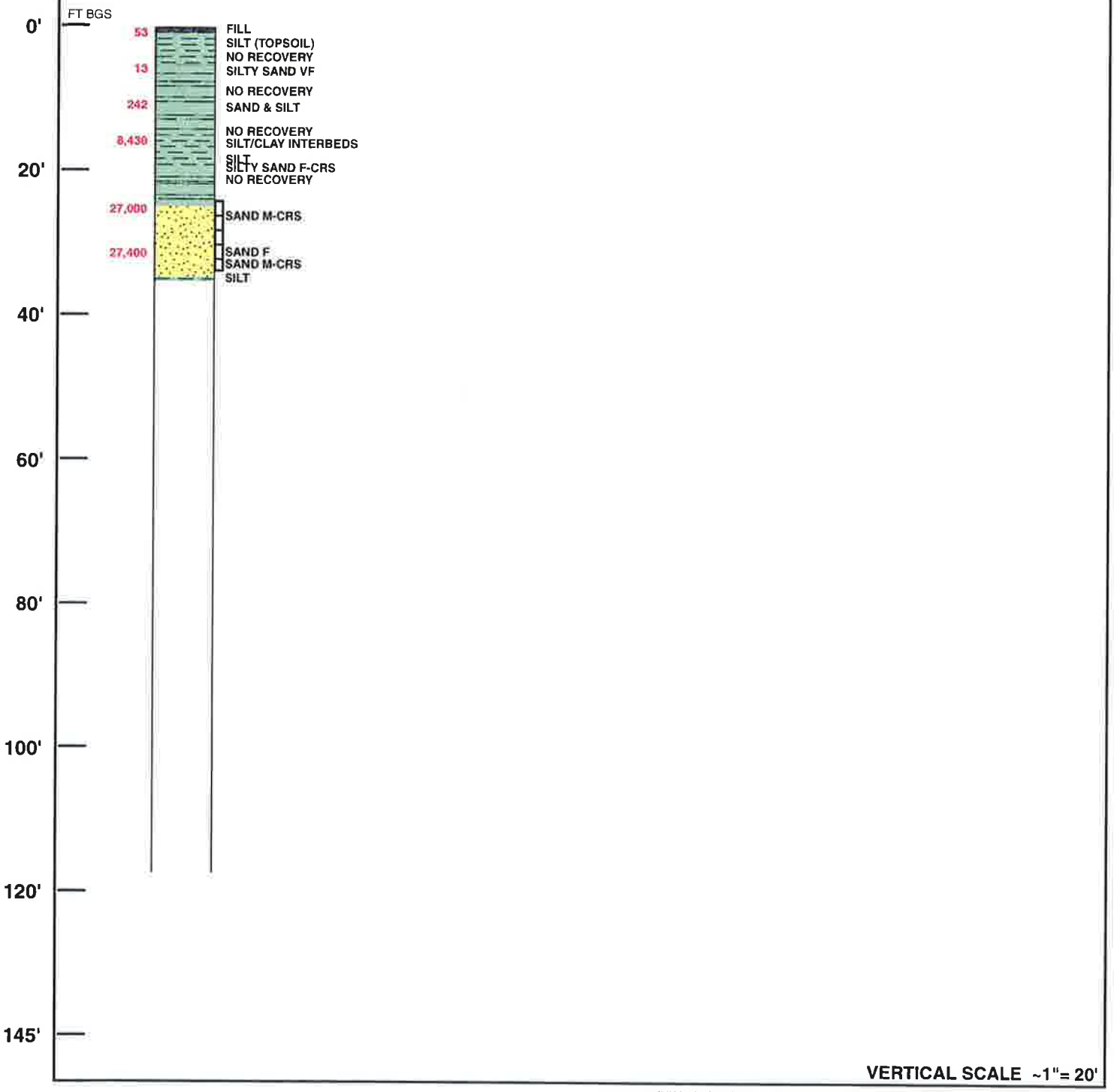
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-4

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.19 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/29/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_4.AI

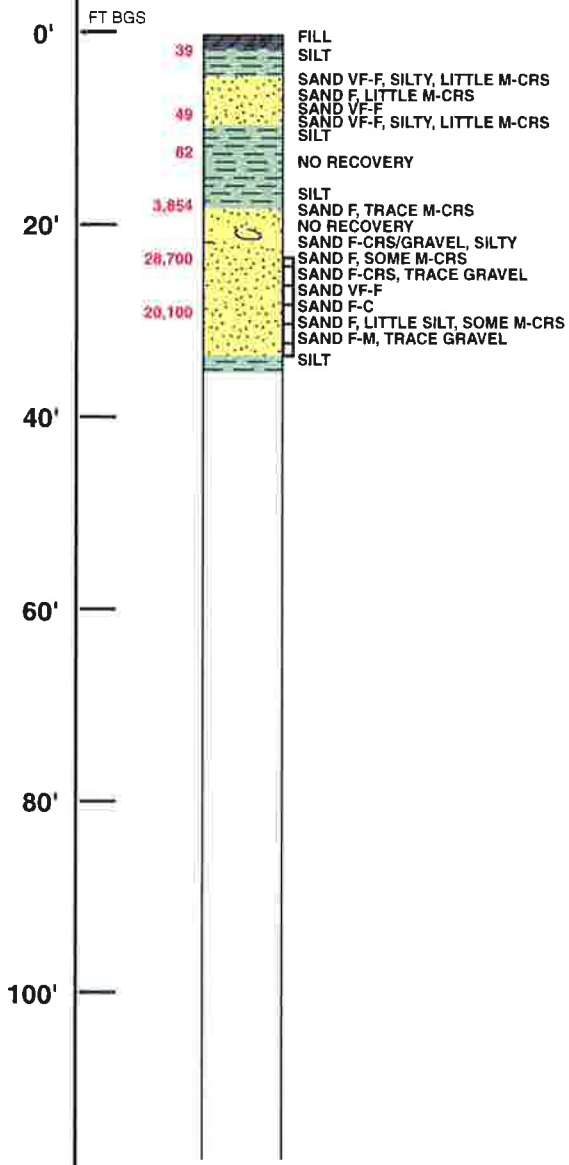
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-5

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.53 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/28/05



VERTICAL SCALE ~1"= 20'

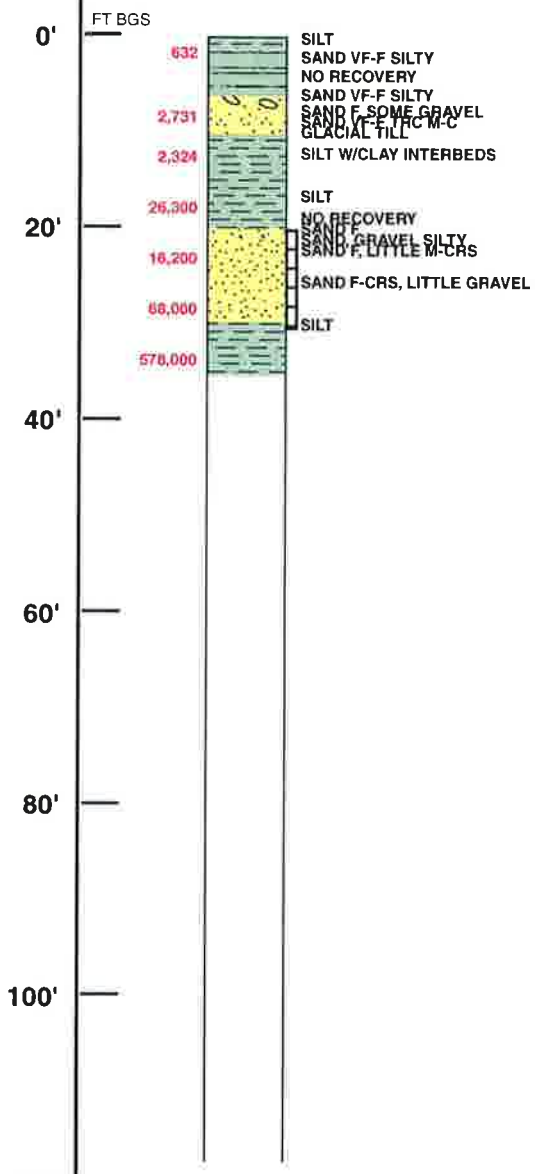
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-6

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.50 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/28/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_6.AI

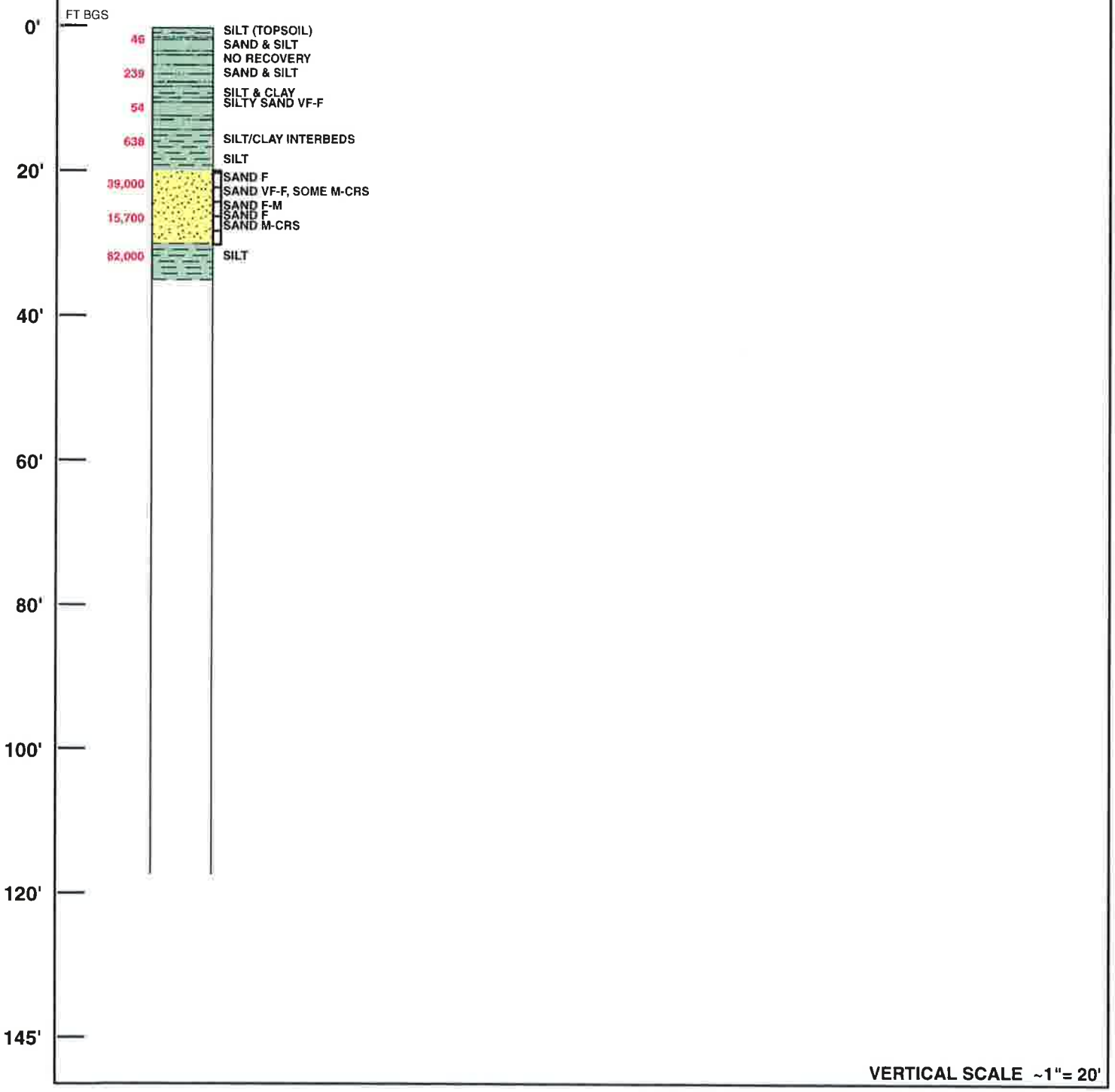
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-7

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/29/05



VERTICAL SCALE ~1"= 20'

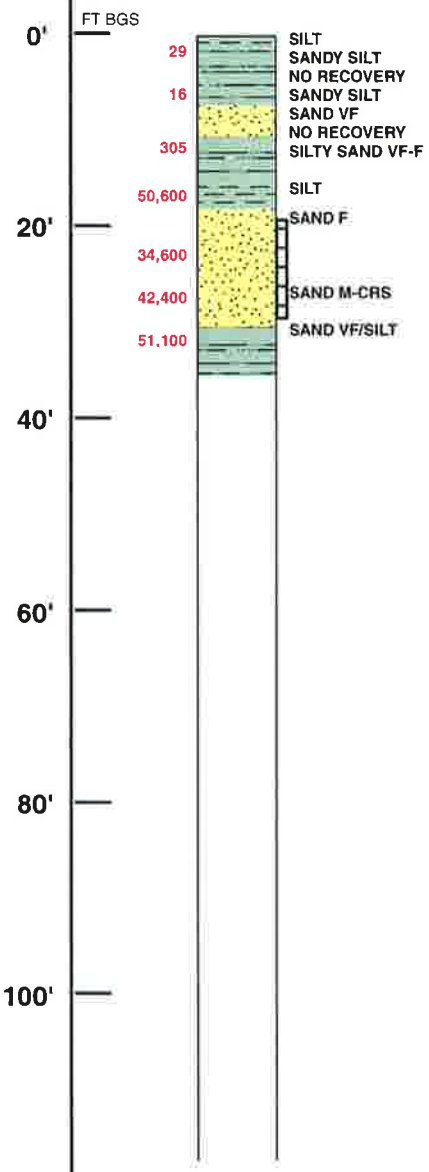
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-8

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.80 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/30/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_8.AI

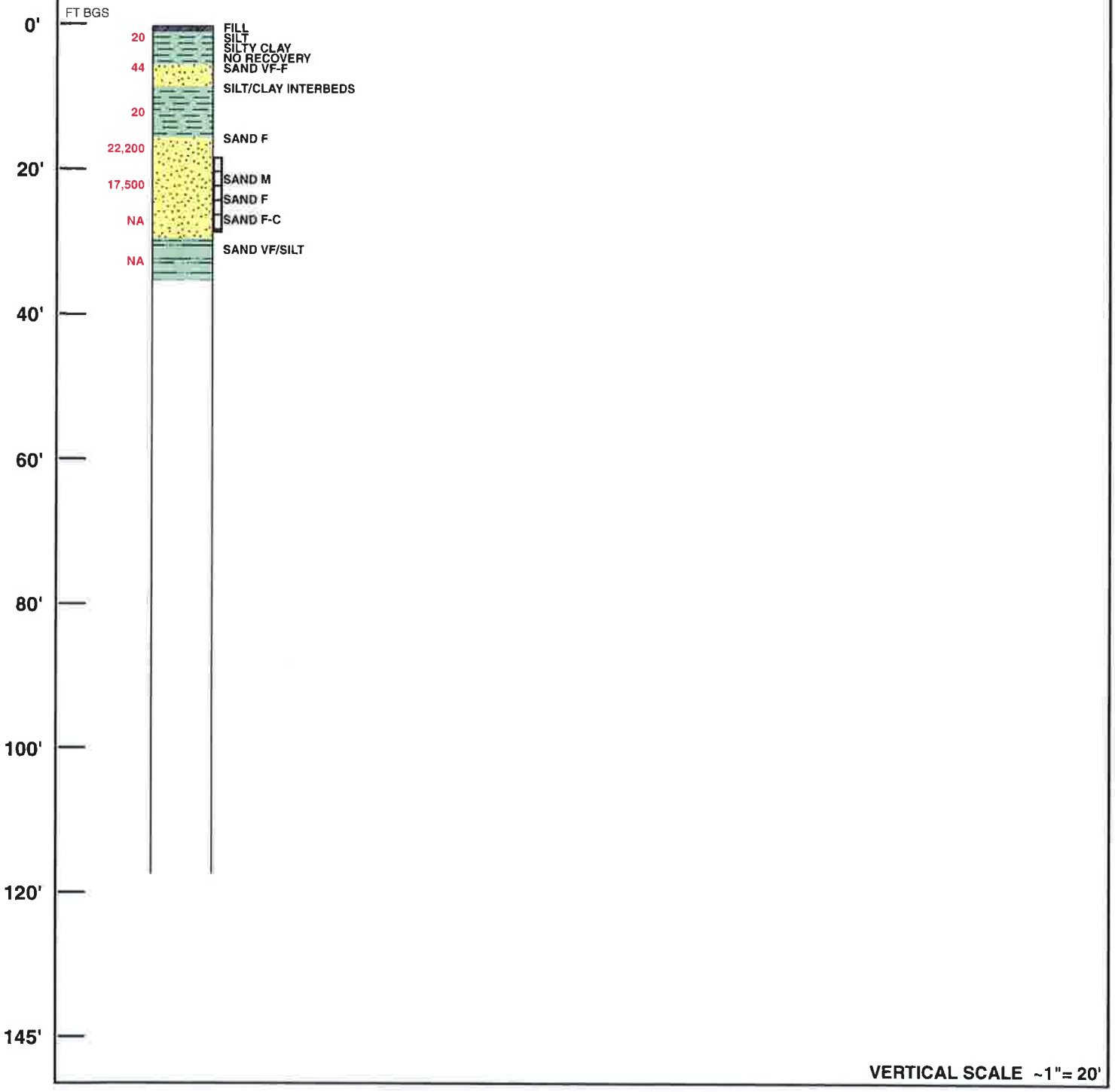
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-9

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.01 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/30/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_9.AI

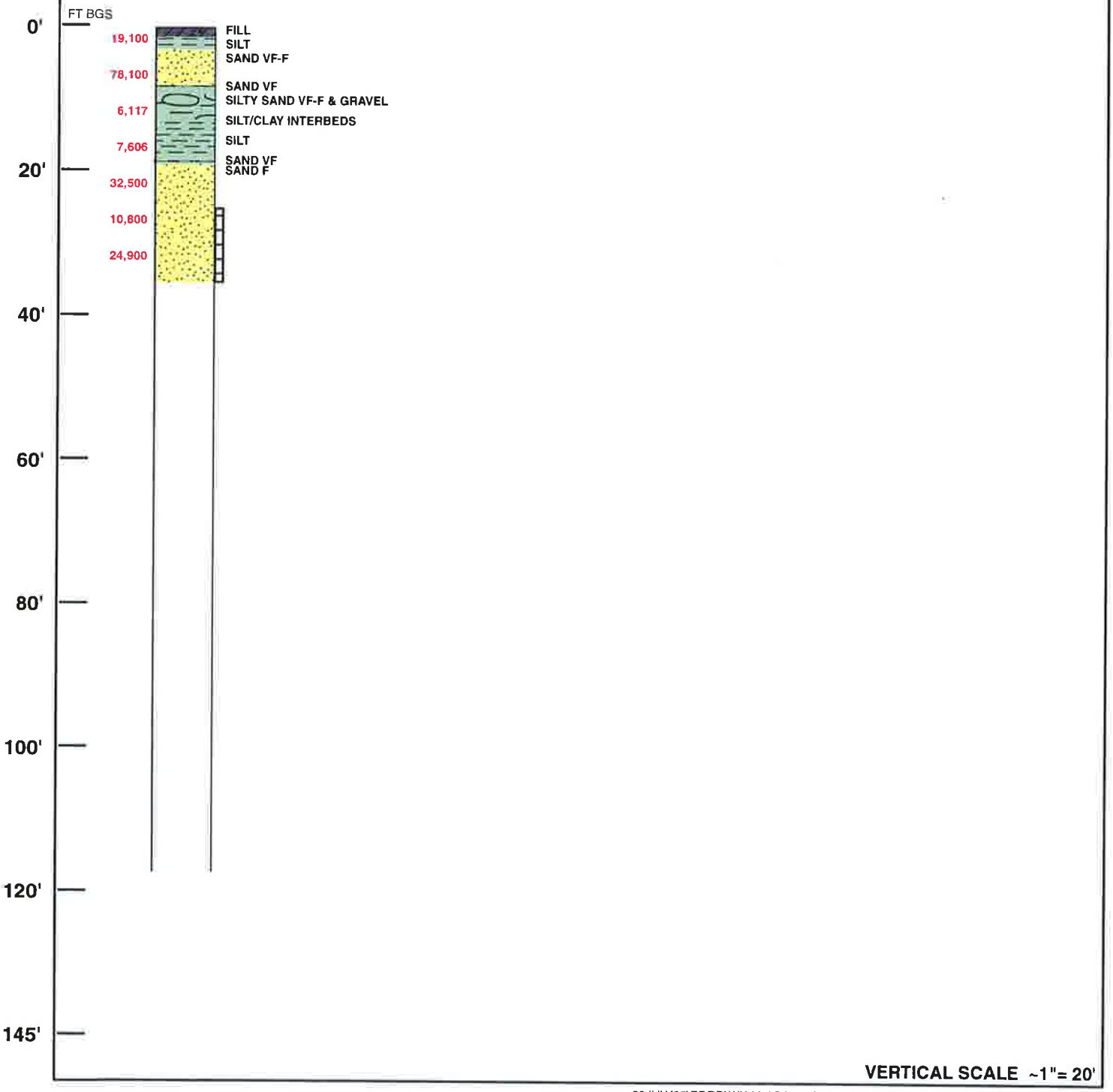
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-10

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.08 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/30/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_10.AI

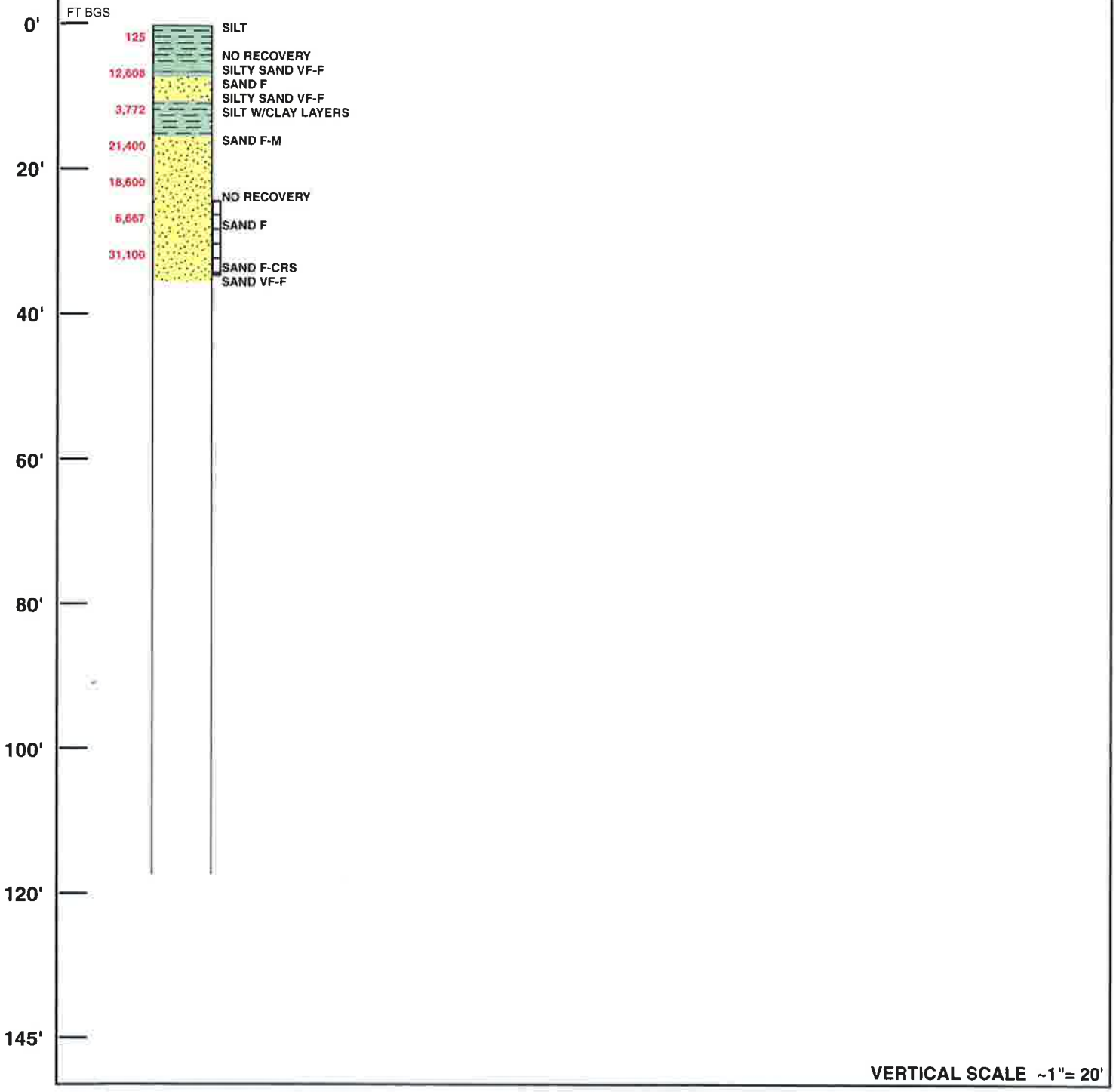
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-11

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.42 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/30/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_11.AI

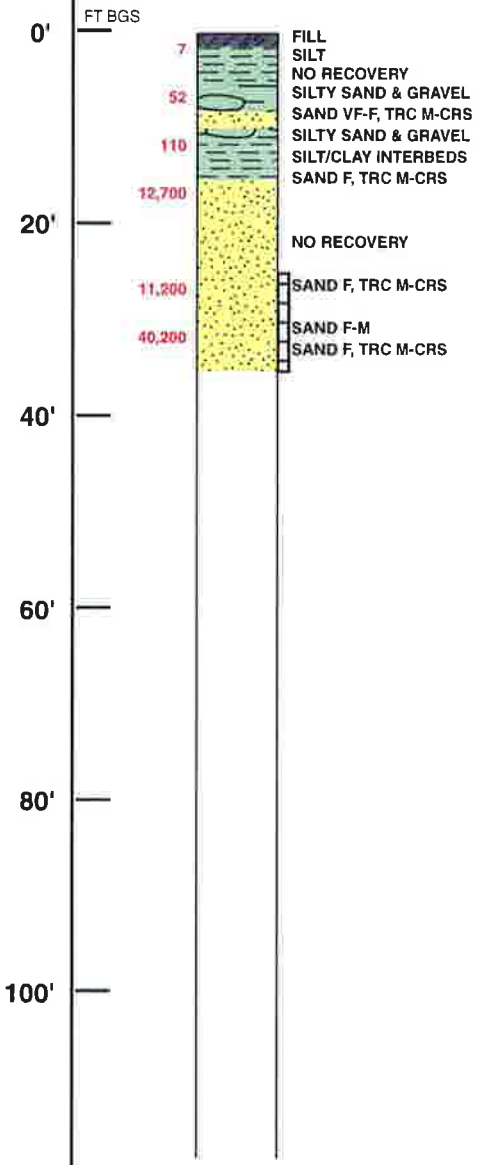
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-12

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.33 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/01/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_12.AI

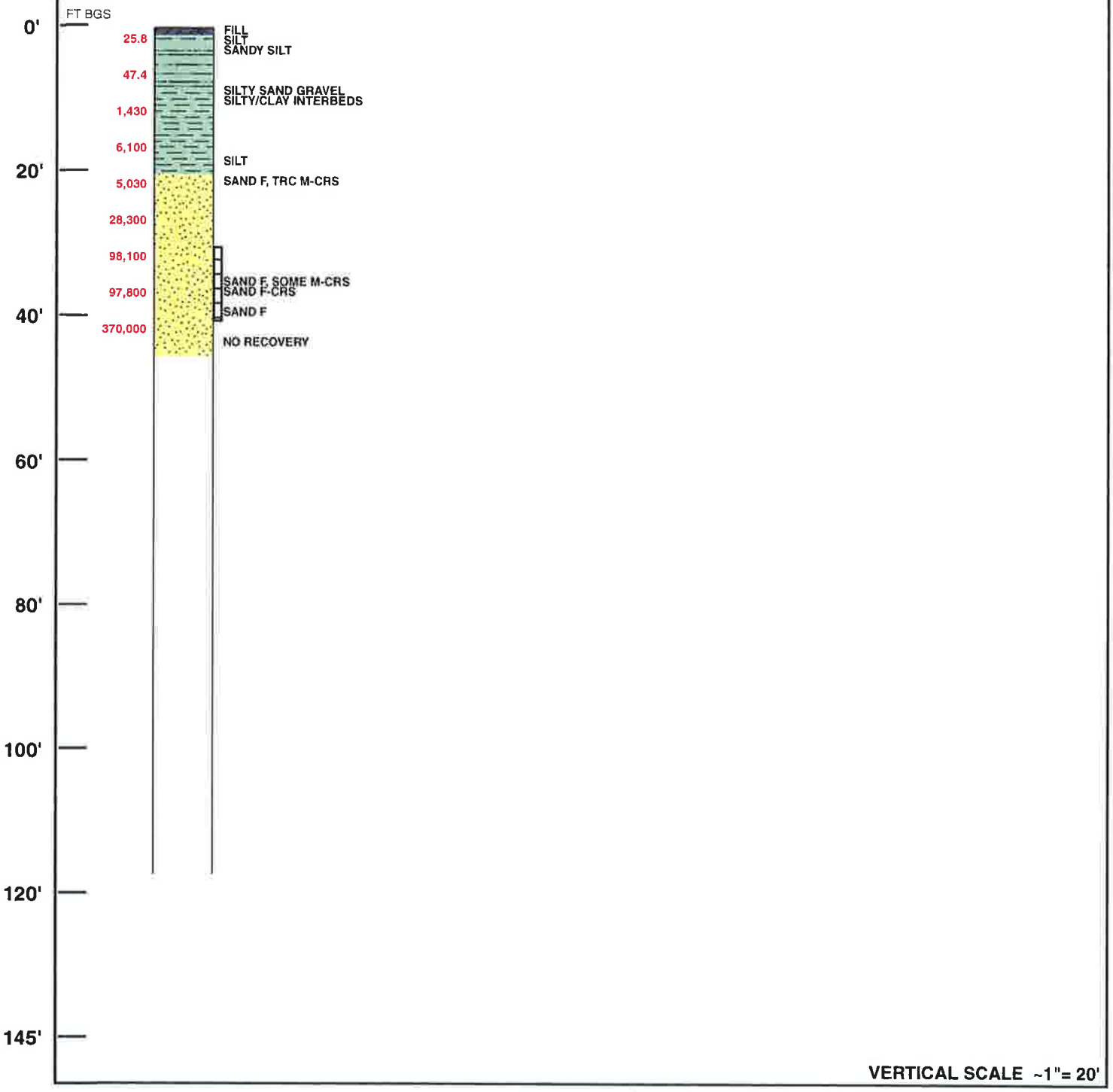
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-13

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1046.79 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/09/05



VERTICAL SCALE ~1"= 20'

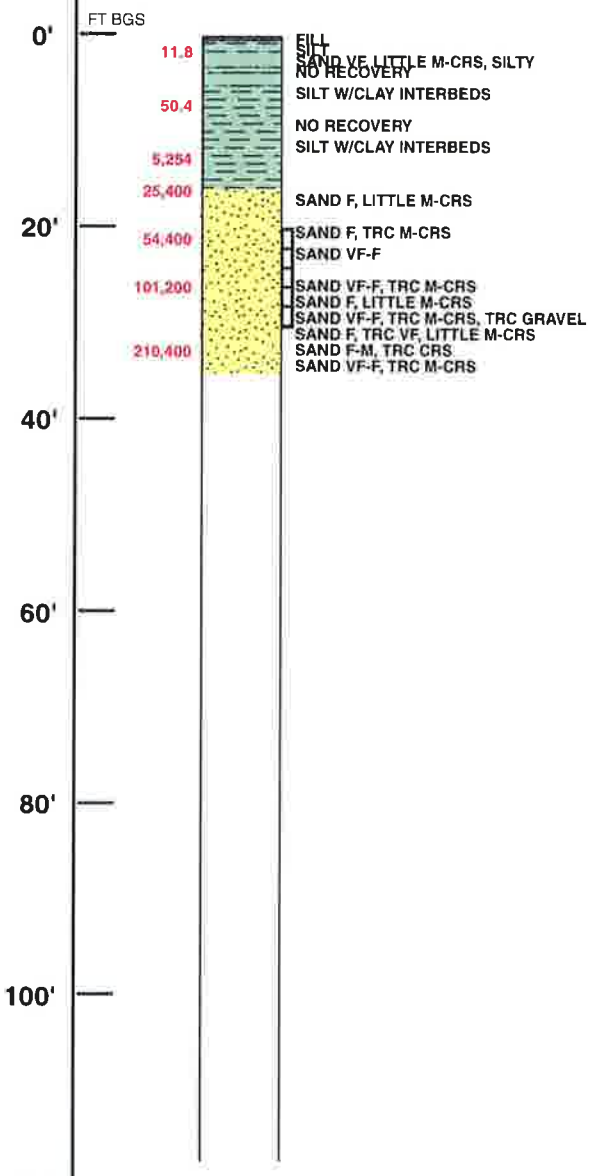
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-14

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1044.98 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/09/05



VERTICAL SCALE ~1"= 20'

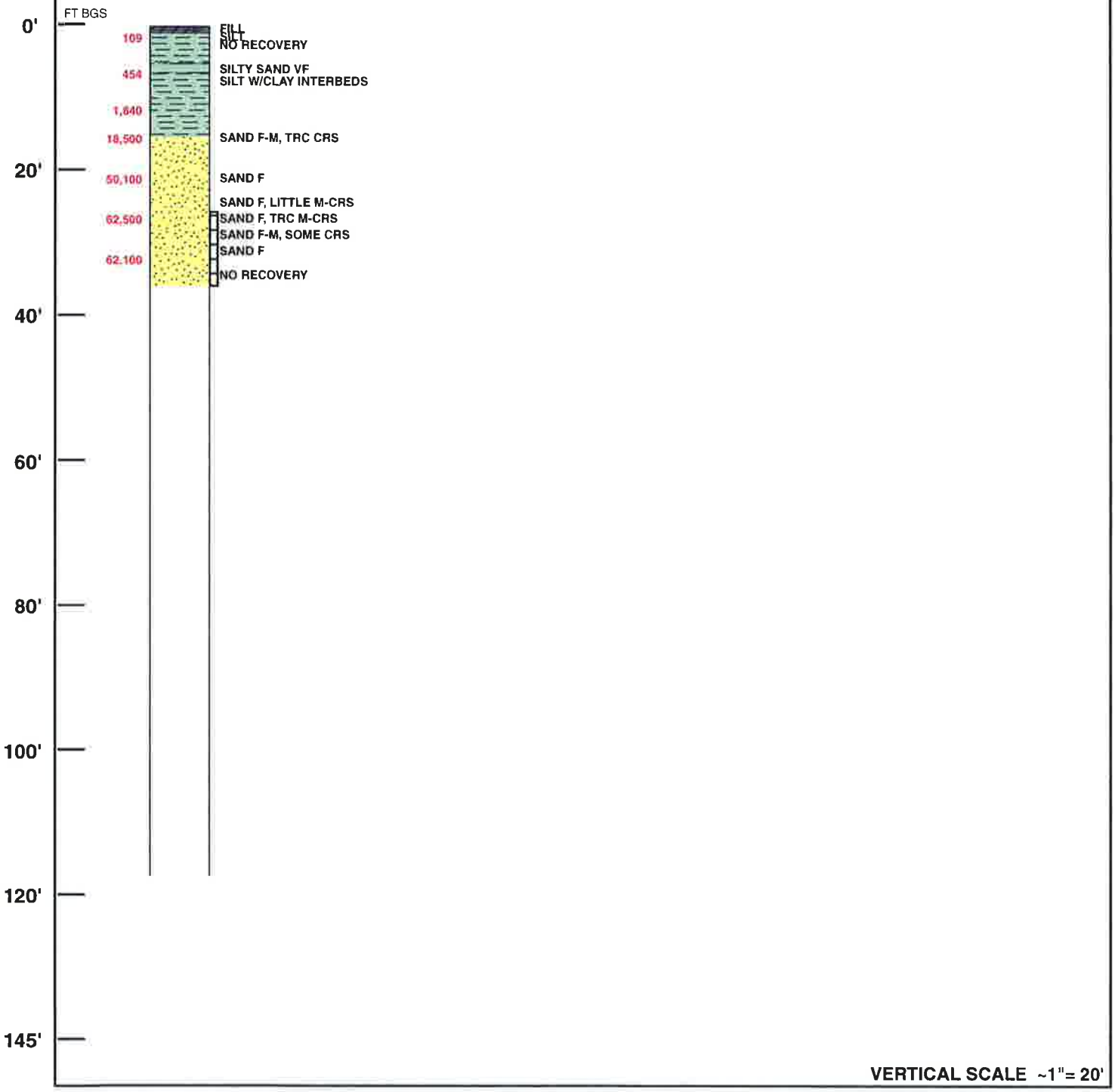
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-15

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1044.43 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/09/05



VERTICAL SCALE ~1"= 20'

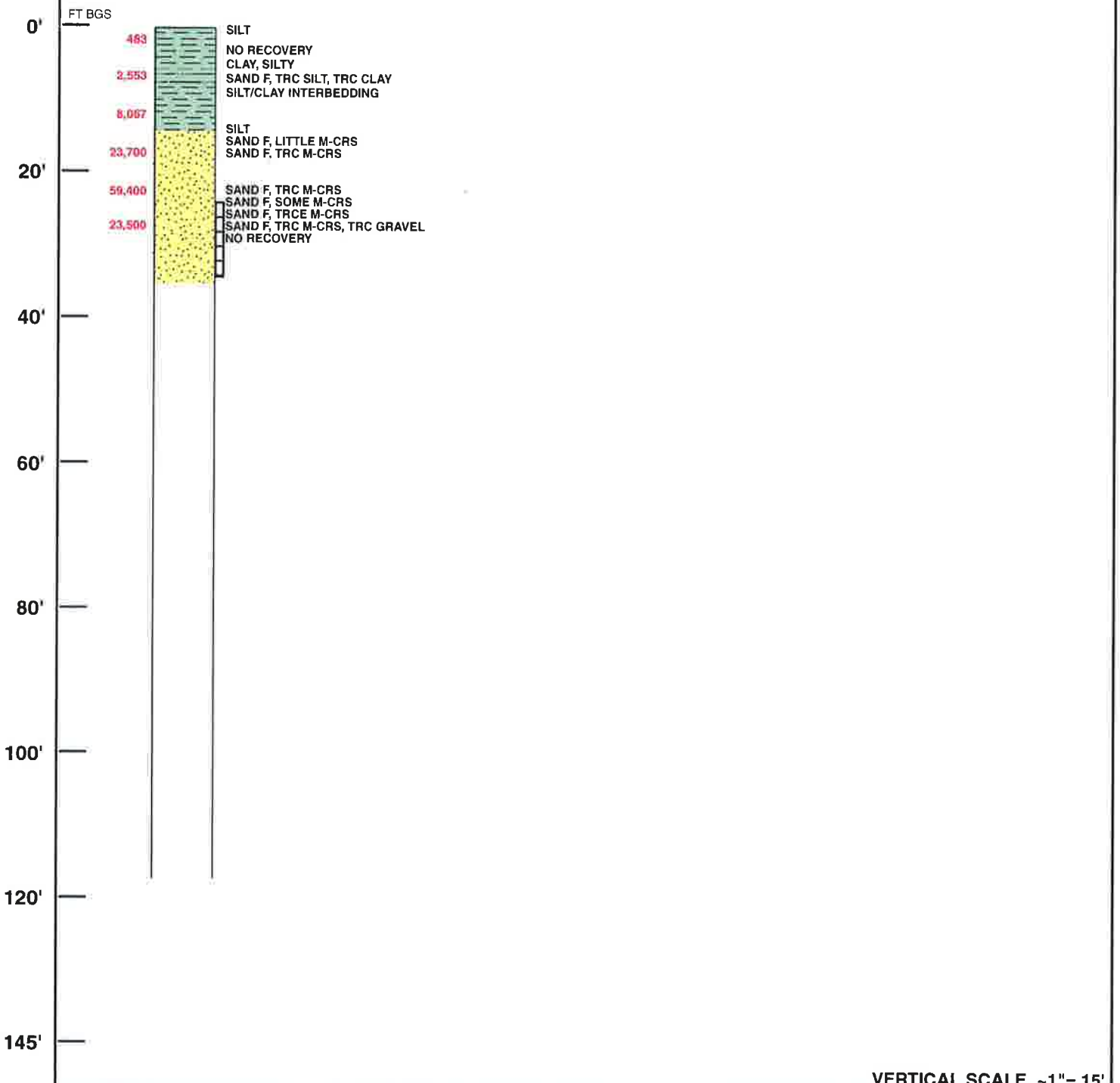
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-16

PROJECT FORD/KINGSFORD WI01095.0017

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.18 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/10/05



VERTICAL SCALE ~1"= 15'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_16.AI

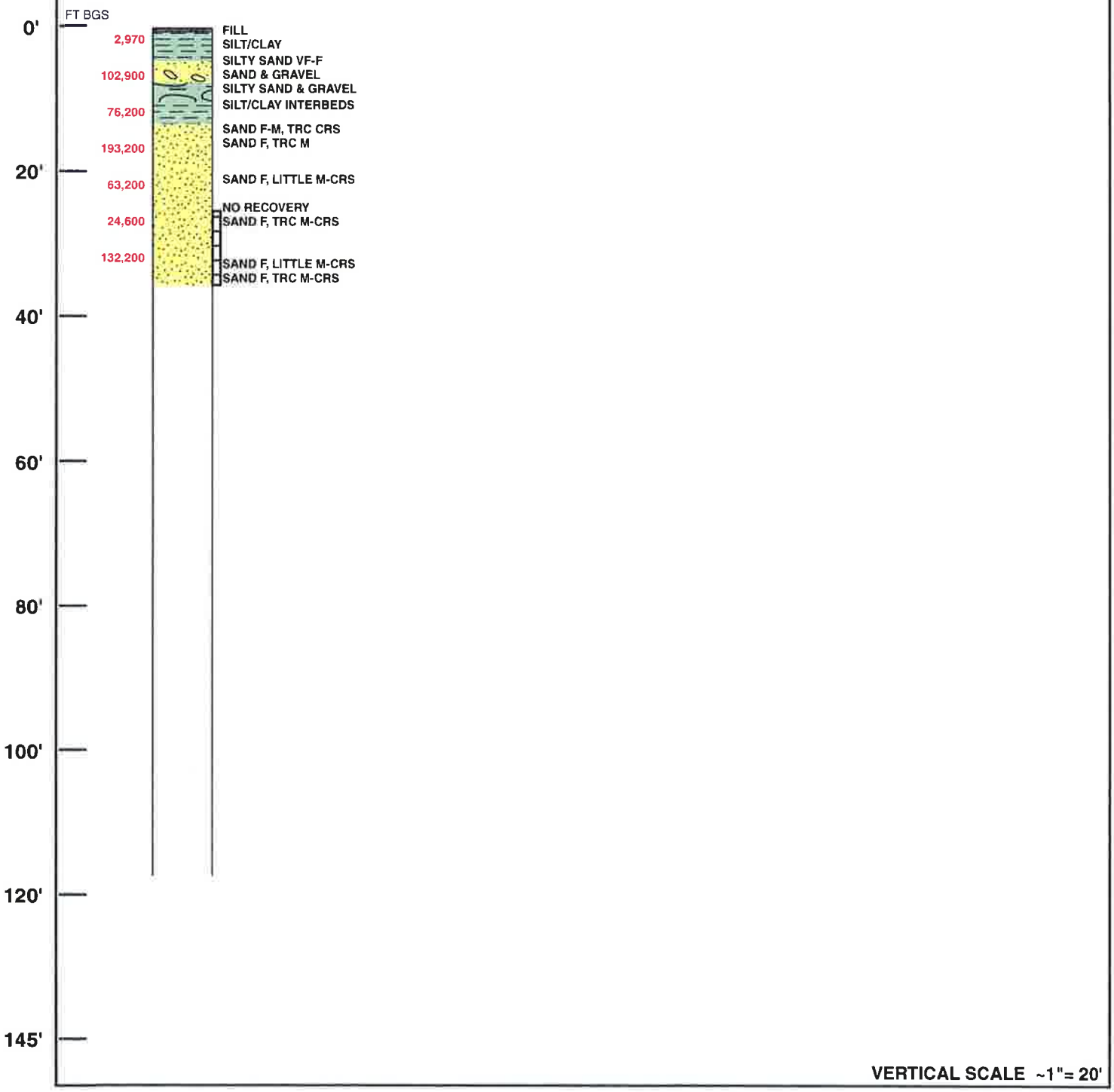
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-17

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.49 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/10/05



VERTICAL SCALE ~1"= 20'

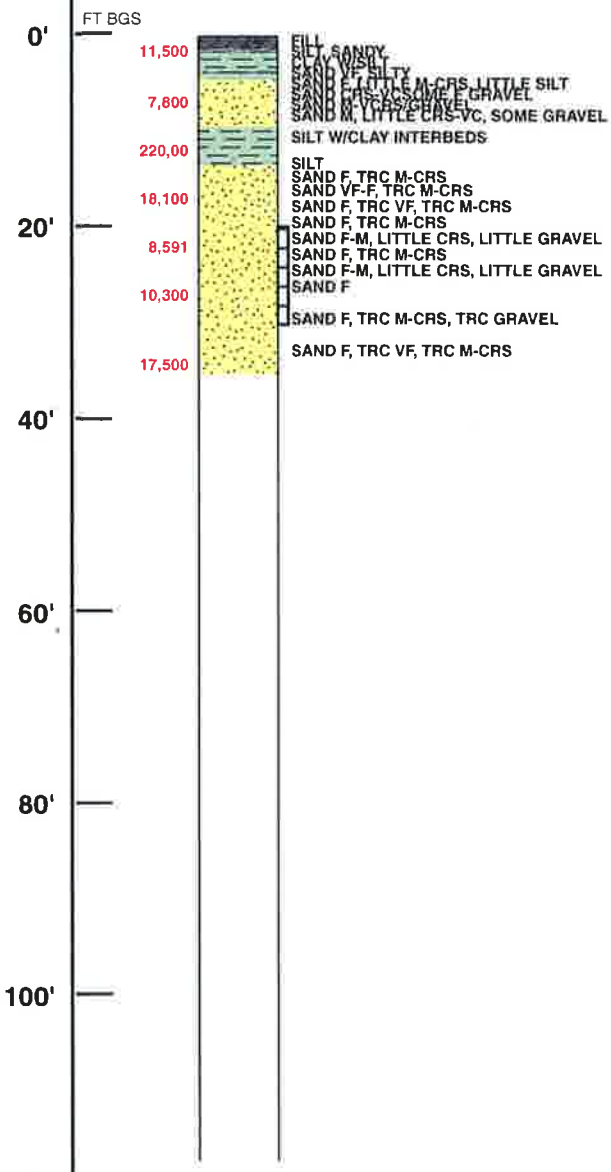
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-18

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1040.53 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/10/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_18.AI

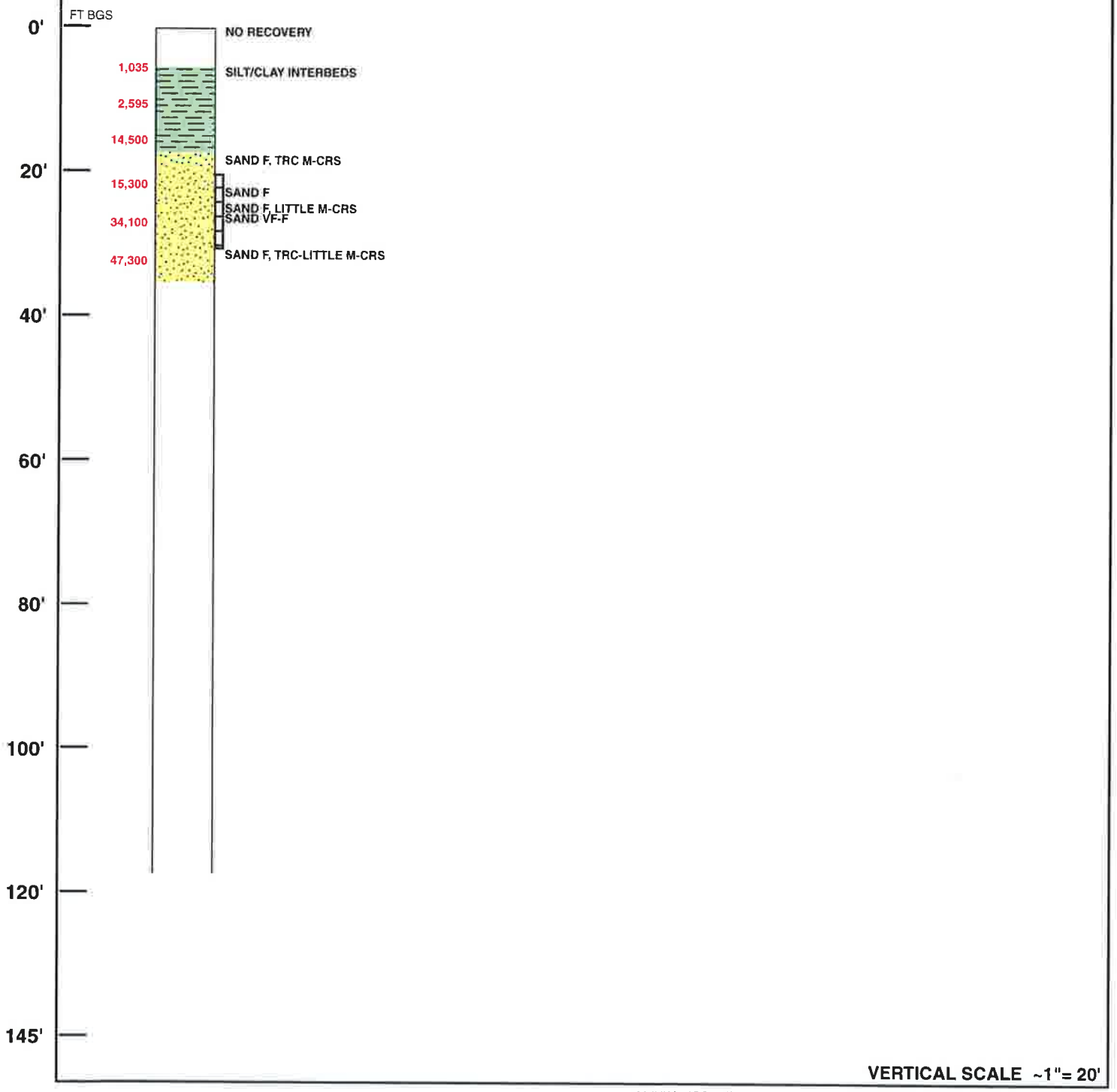
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-19

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.94 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/11/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_19.AI

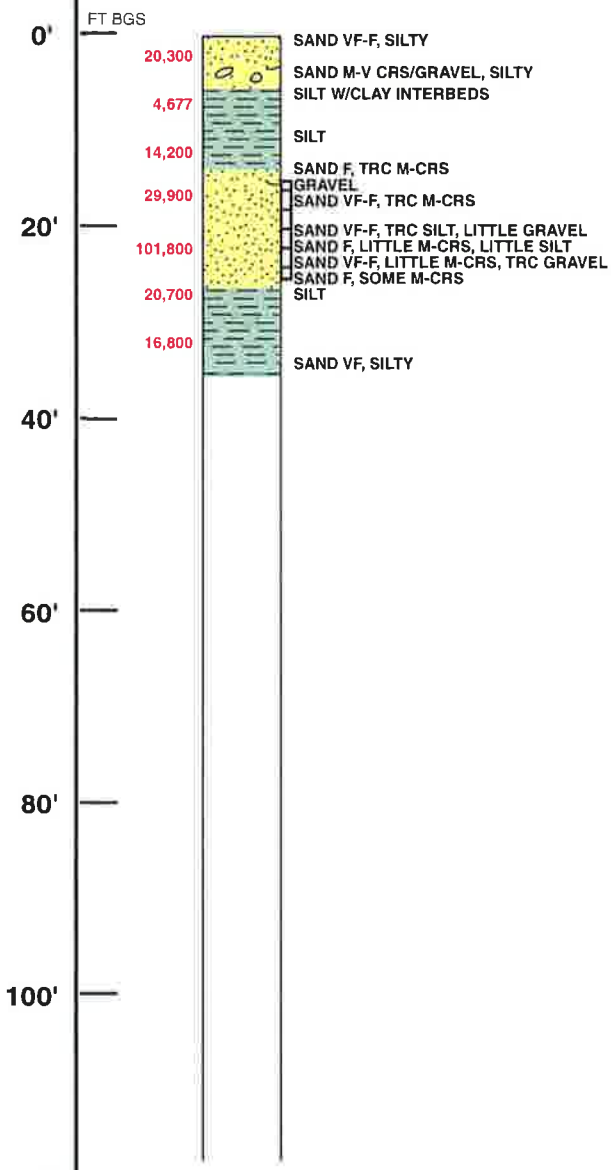
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-20

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1042.52 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/11/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_20.AI

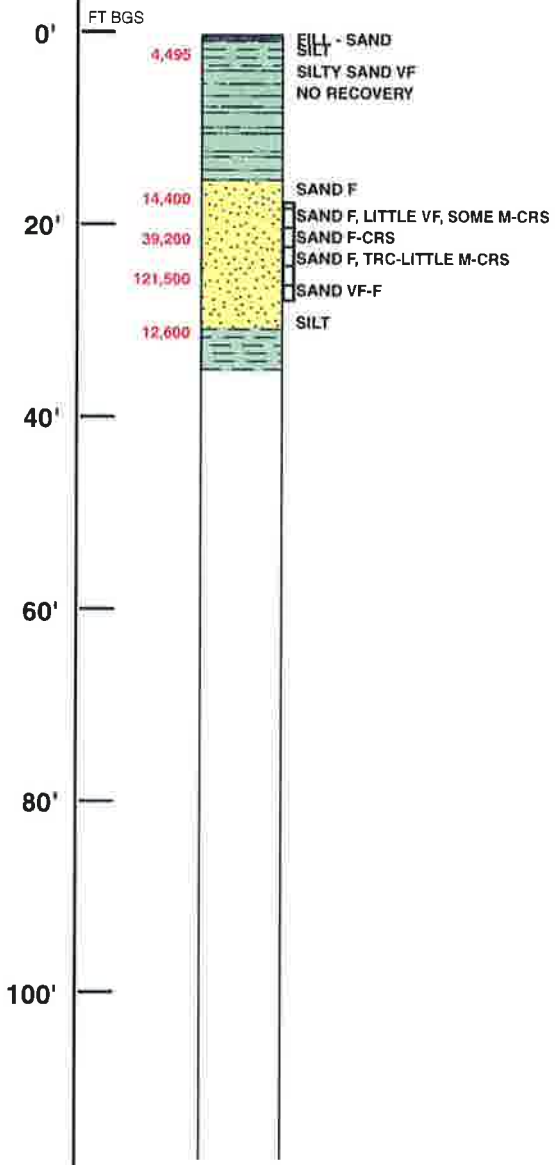
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-21

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/11/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_21.AI

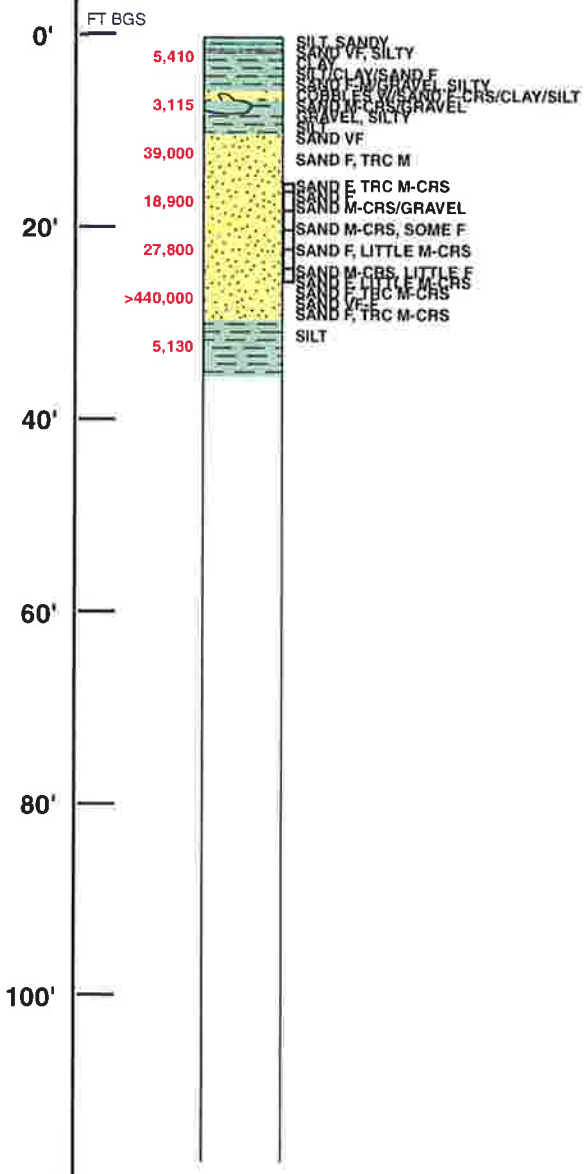
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-22

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1042.51 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/2/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_22.AI

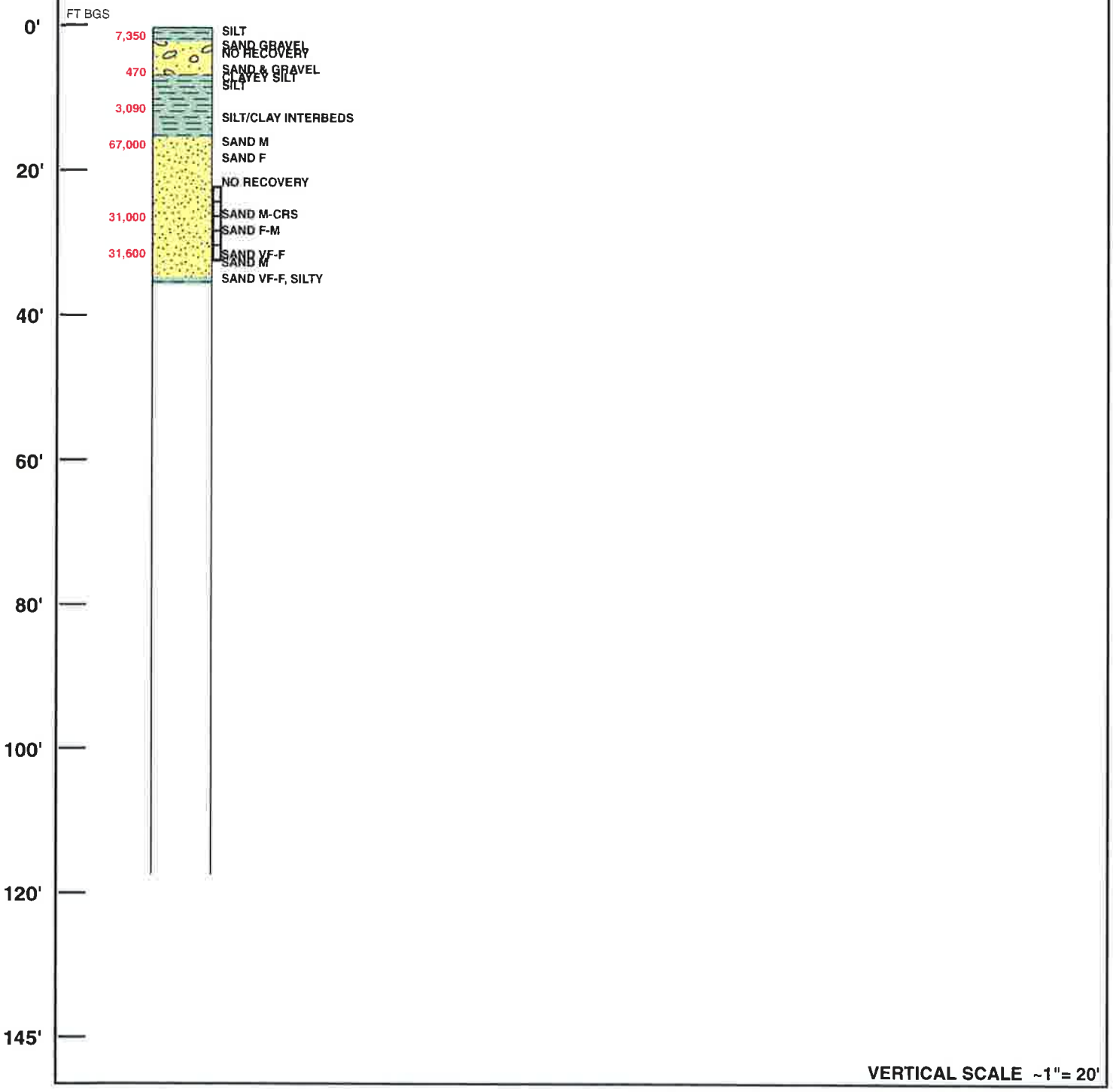
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-23

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.39 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/28/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_23.AI

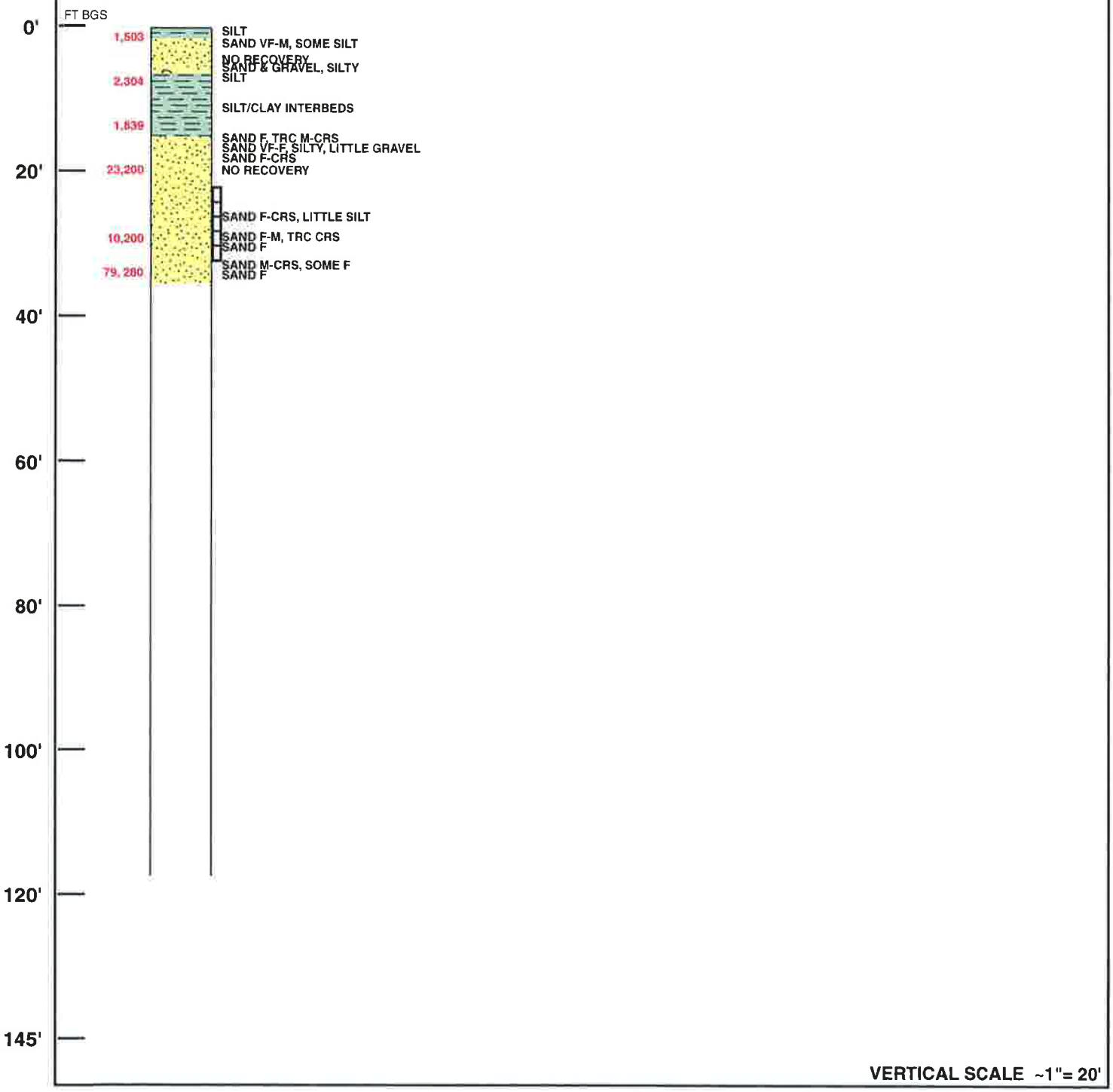
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-24

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.02 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/28/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_24.AI

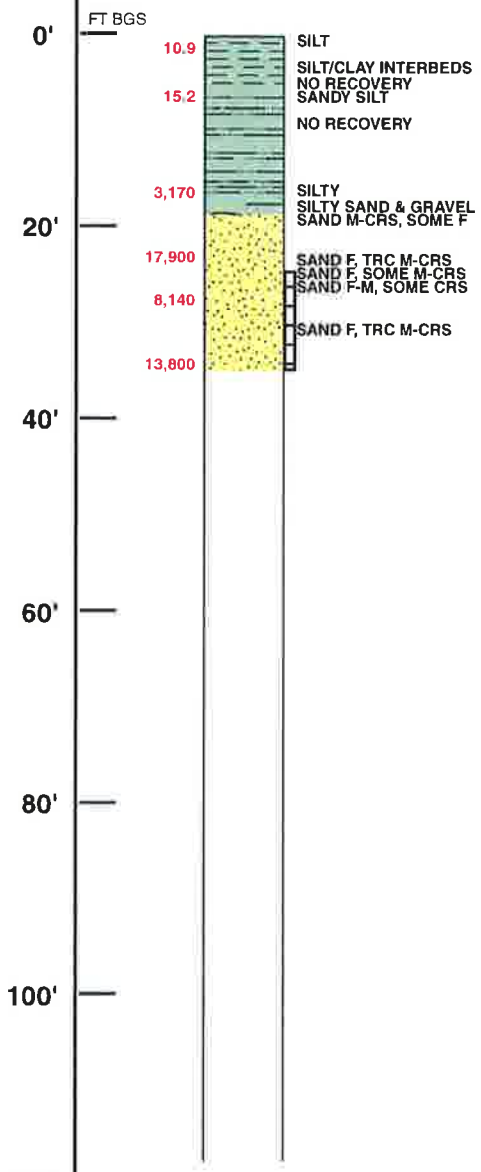
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-25

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.34 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/2/05



VERTICAL SCALE ~1"= 20'

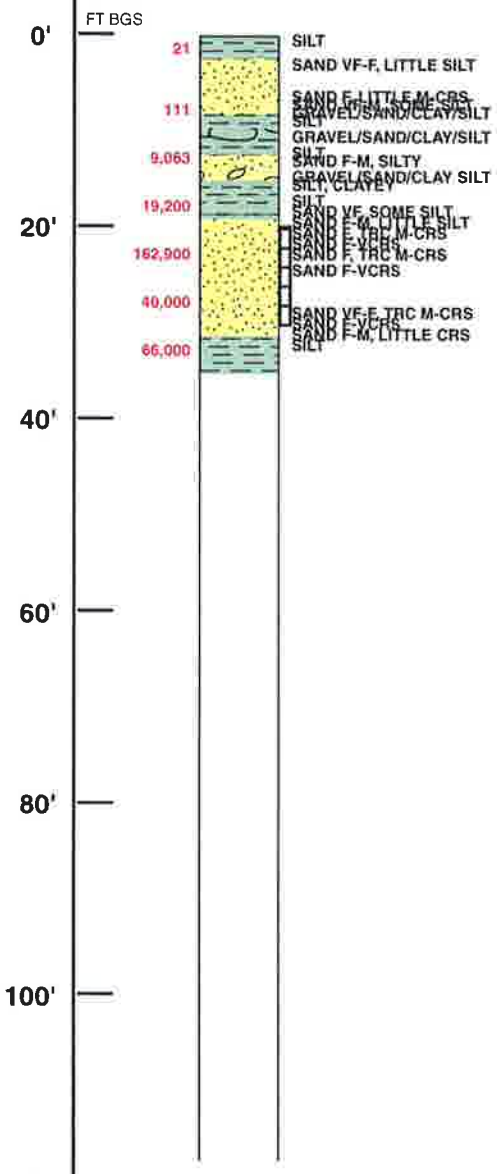
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-26

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.35 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/3/05



VERTICAL SCALE ~1"= 20'

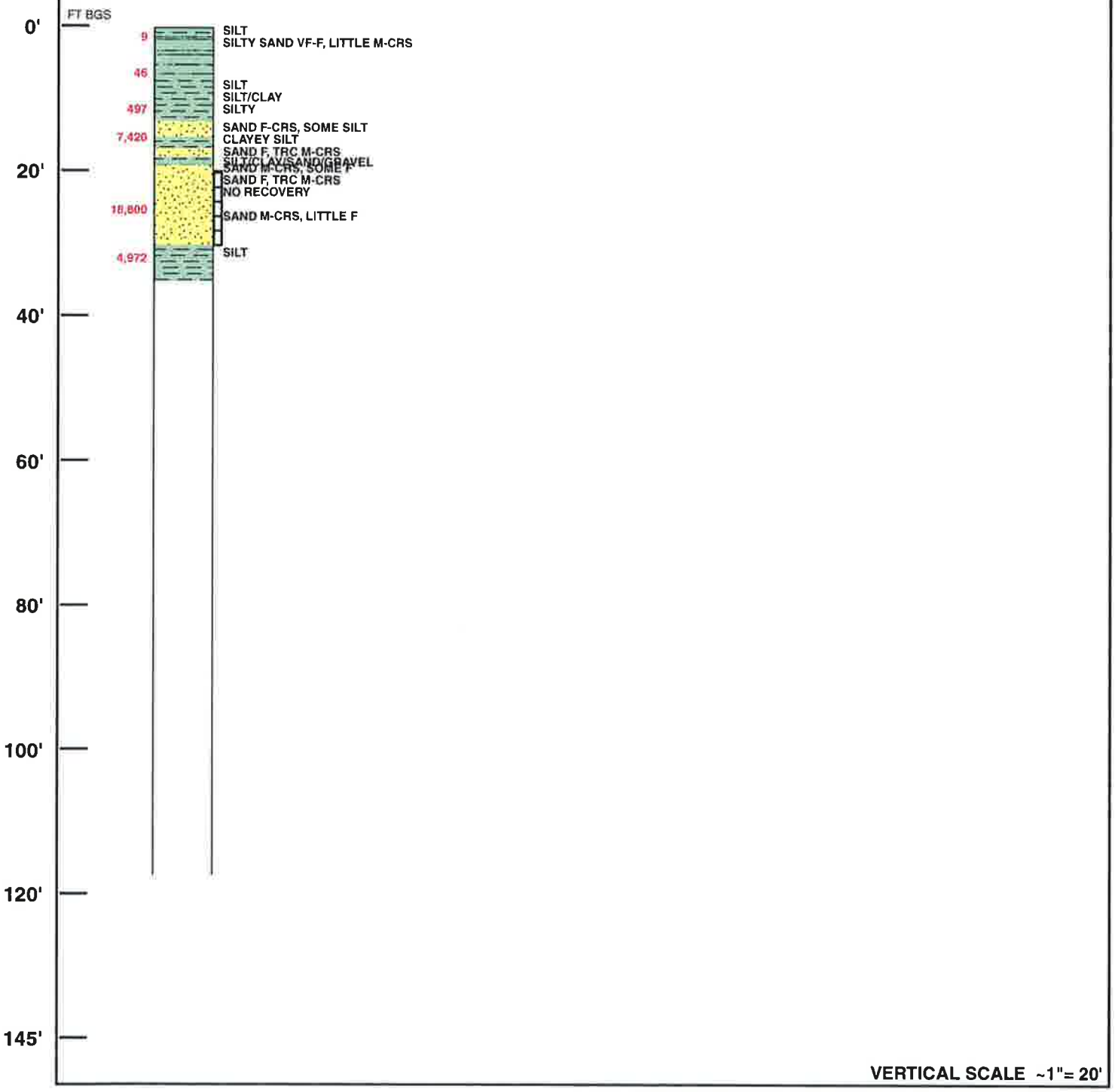
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-27

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.53 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/3/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_27.AI

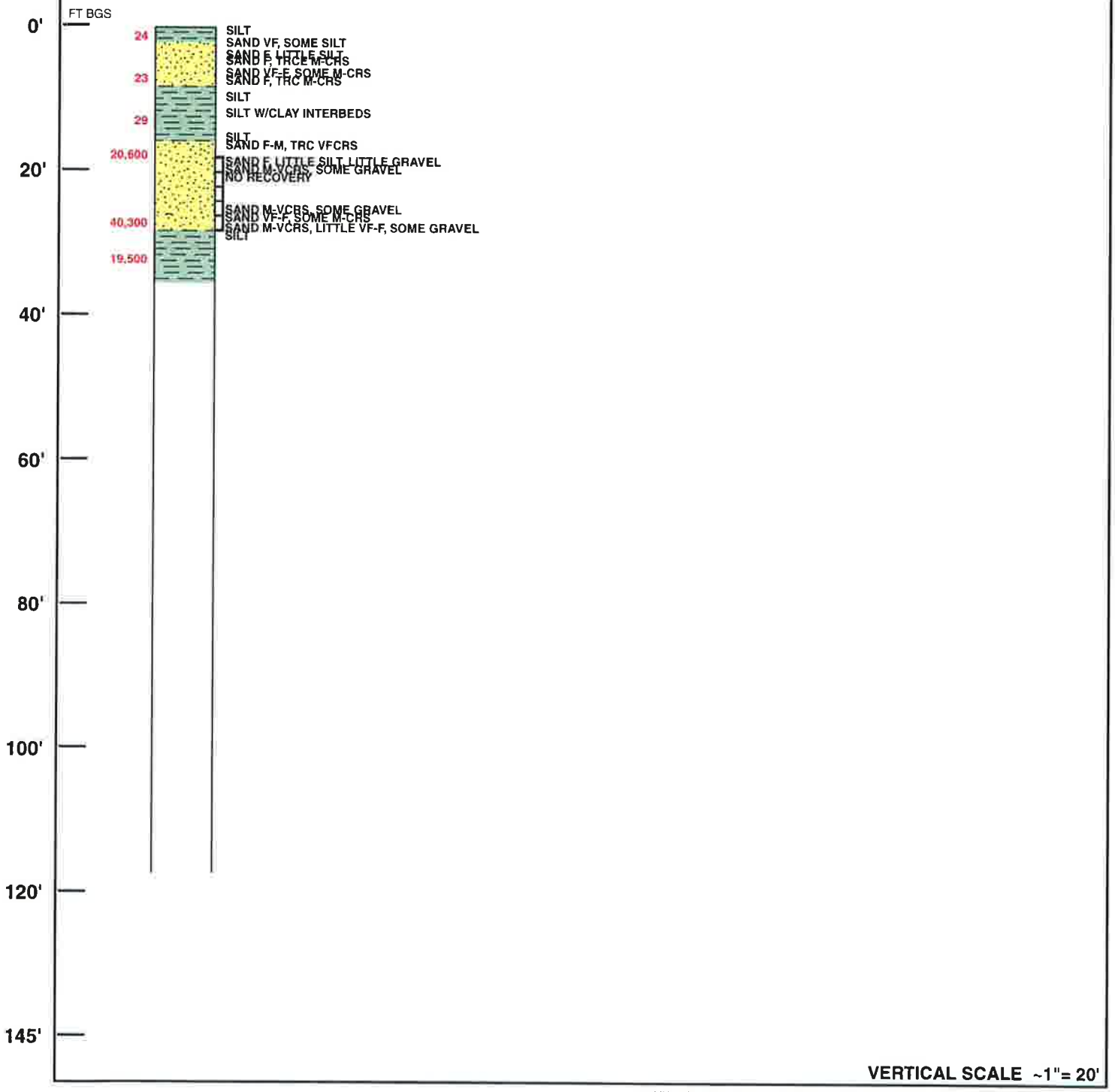
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-28

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.02 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/3/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_28.AI

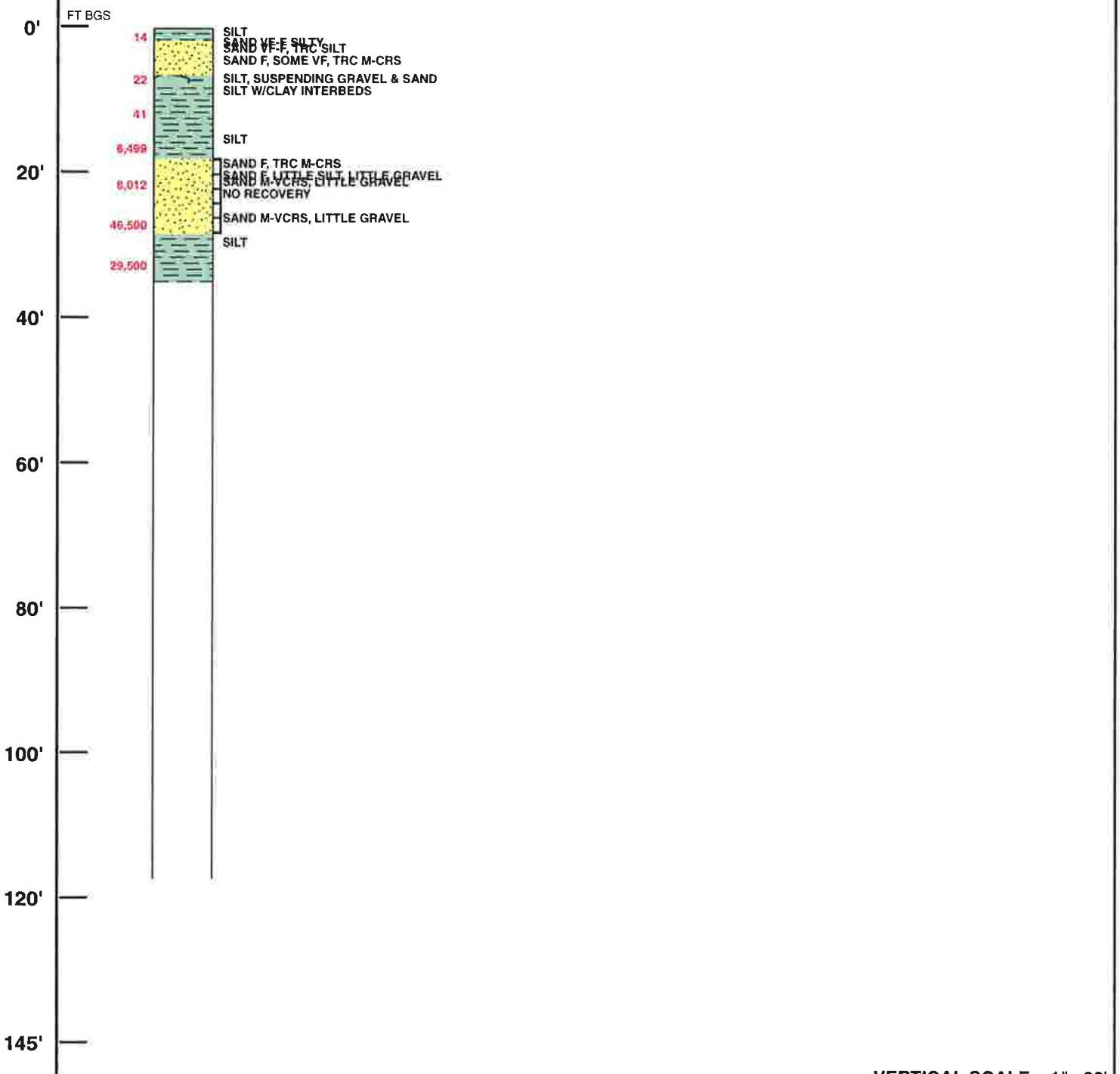
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-29

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.23 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/3/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_29.AI

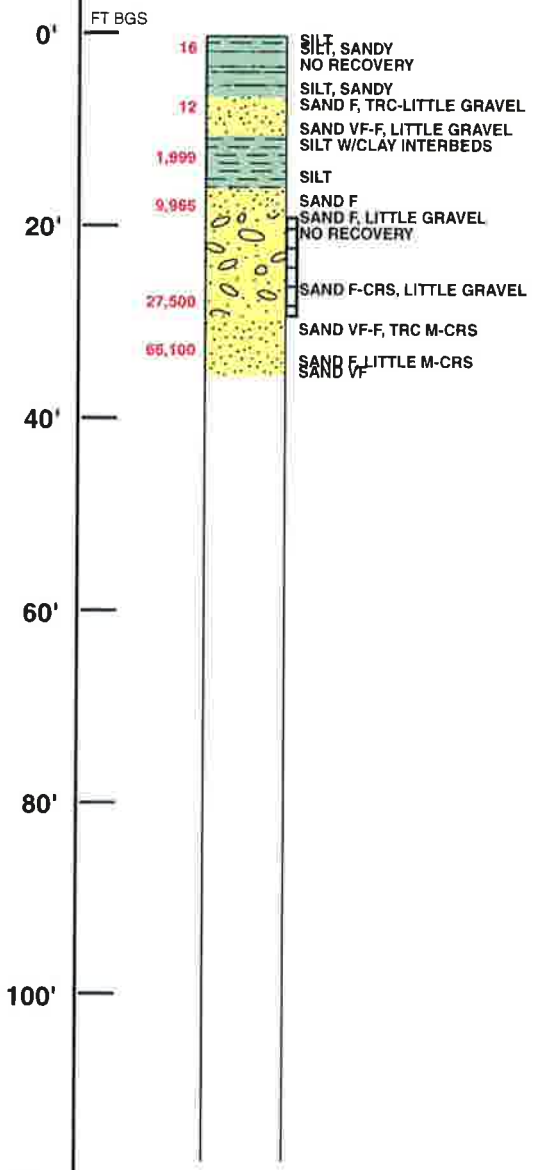
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-30

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.74 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/4/05



VERTICAL SCALE ~1"= 20'

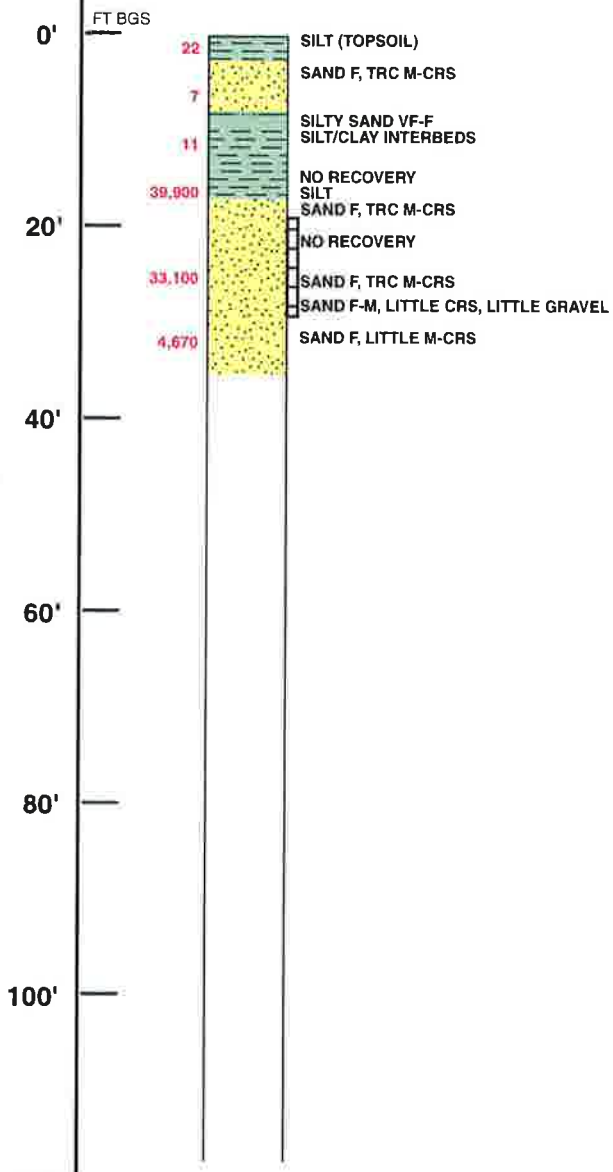
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-31

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.59 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/4/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_31.AI

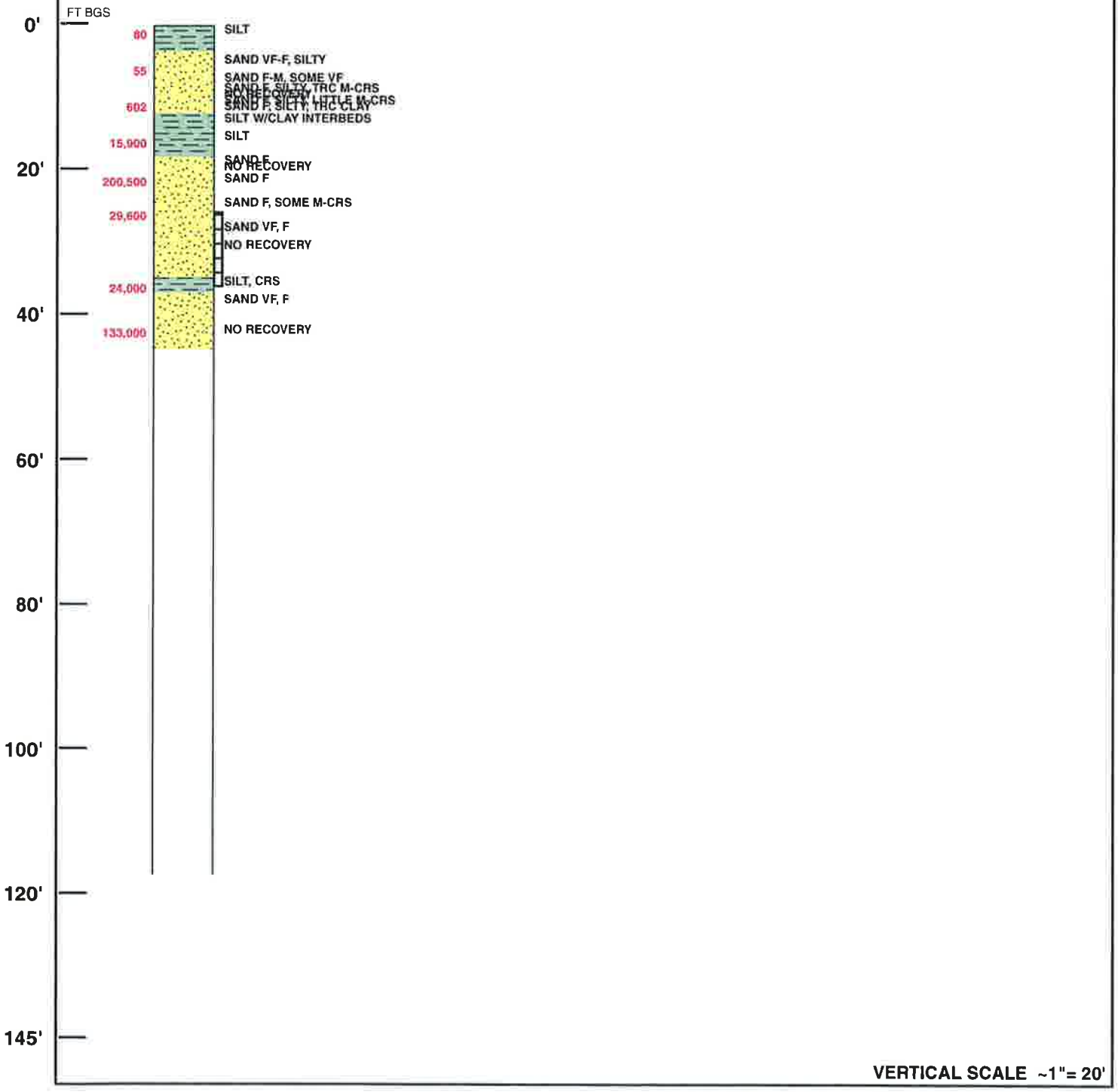
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-32

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.59 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/10/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_32.AI

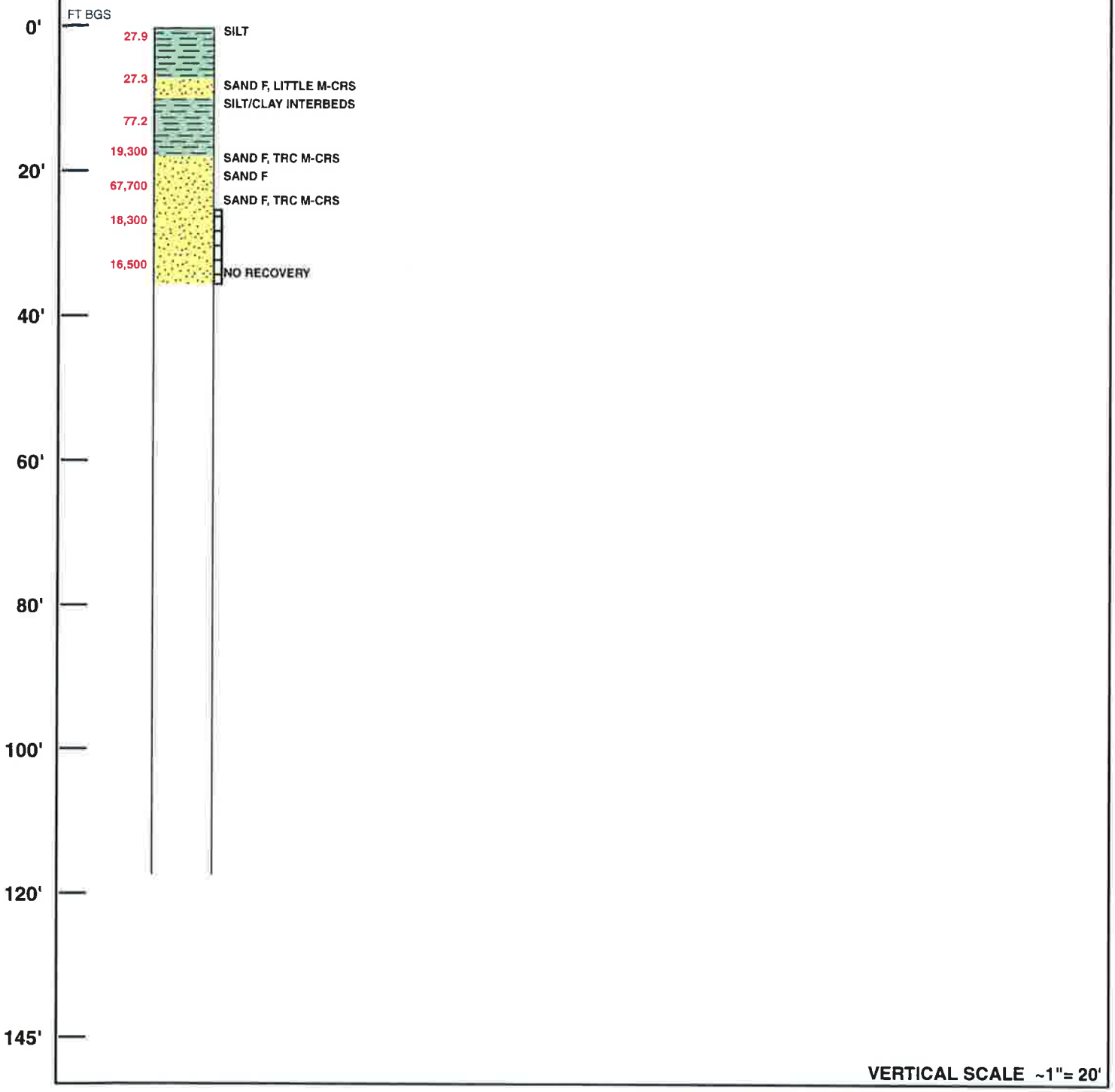
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-33

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.06 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/10/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_33.AI

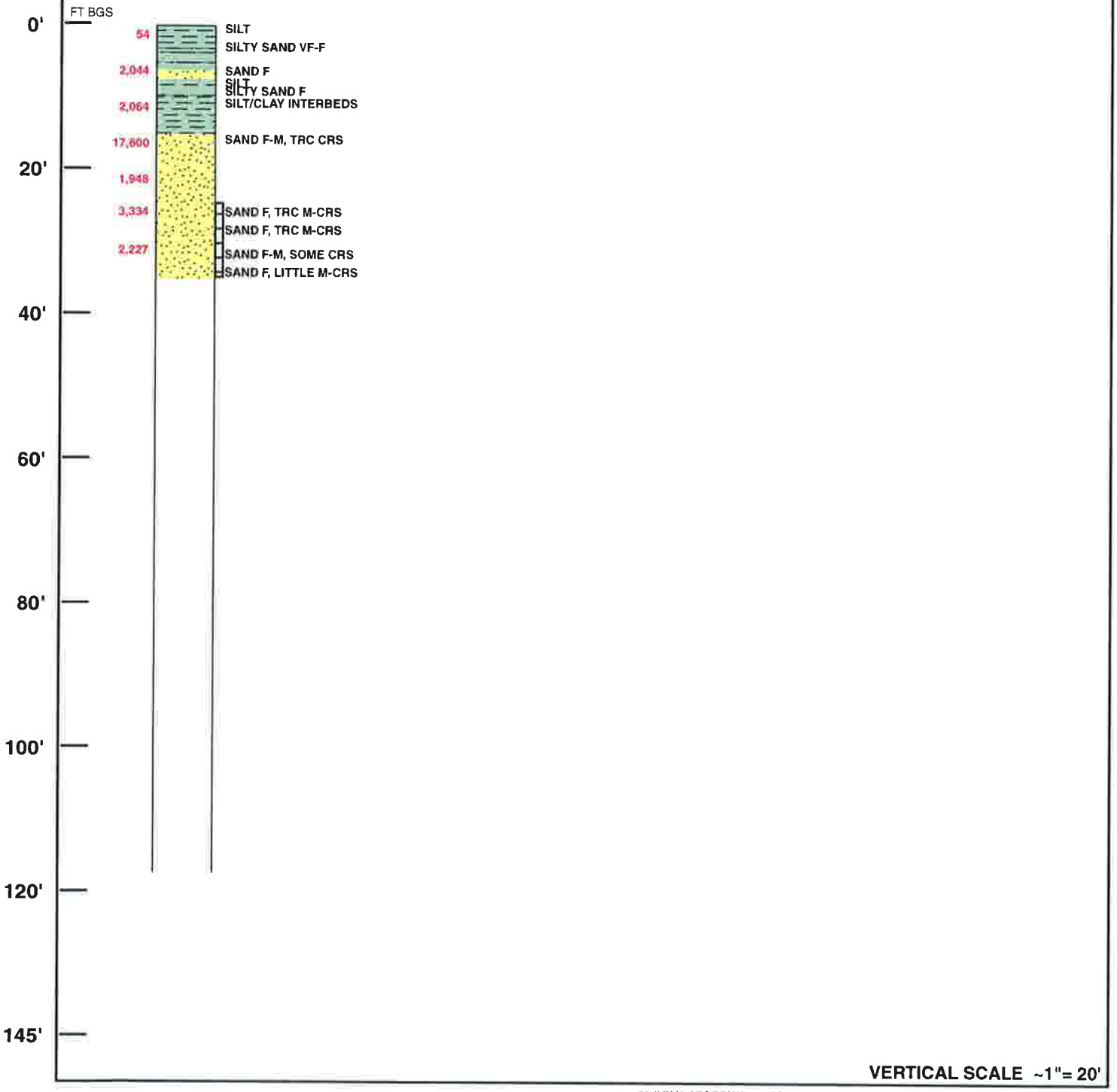
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-34

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.76 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/30/05



VERTICAL SCALE ~1"= 20'

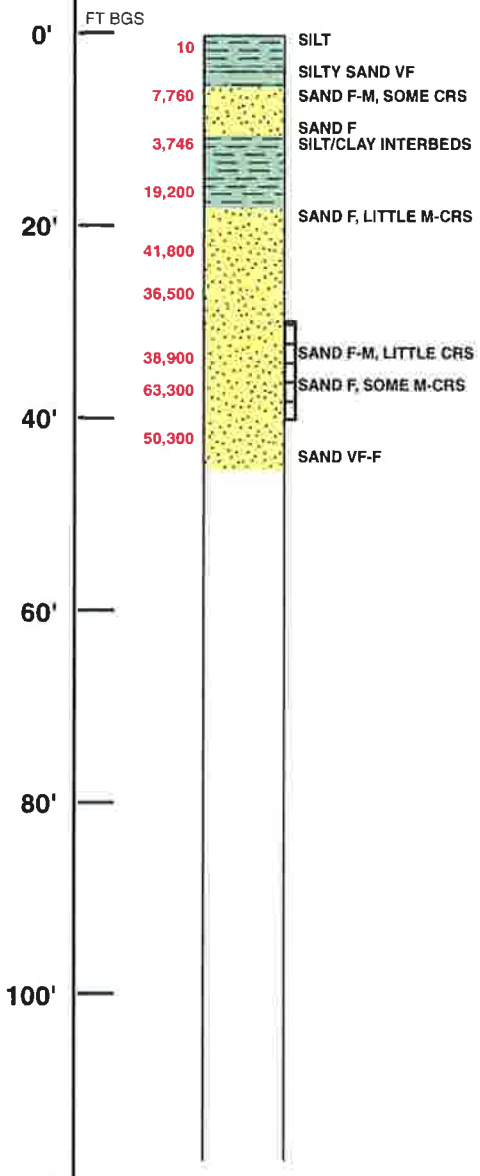
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-35

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1046.68 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/1/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_35.AI

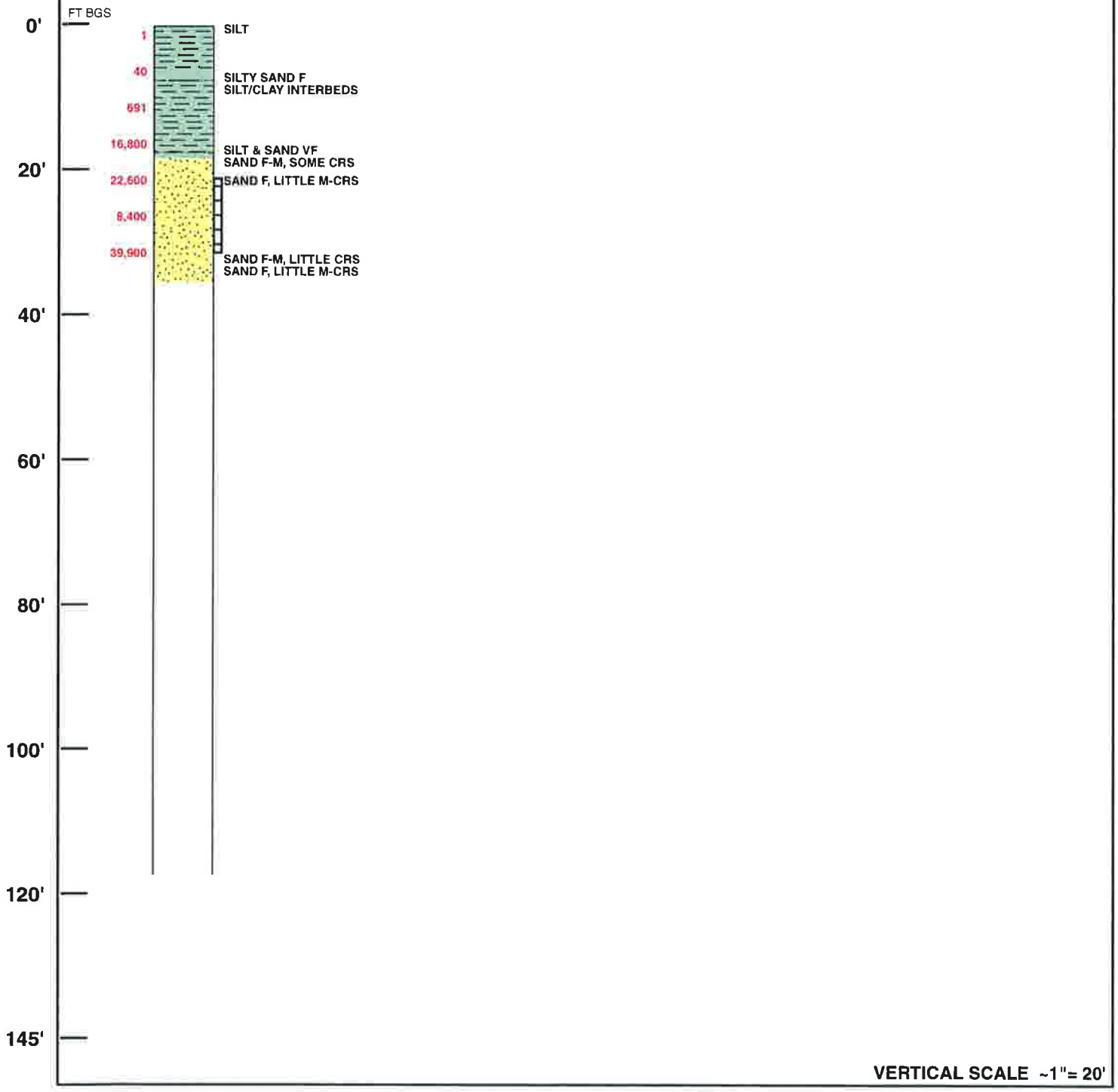
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-36

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1045.56 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/1/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_36.AI

ARCADIS

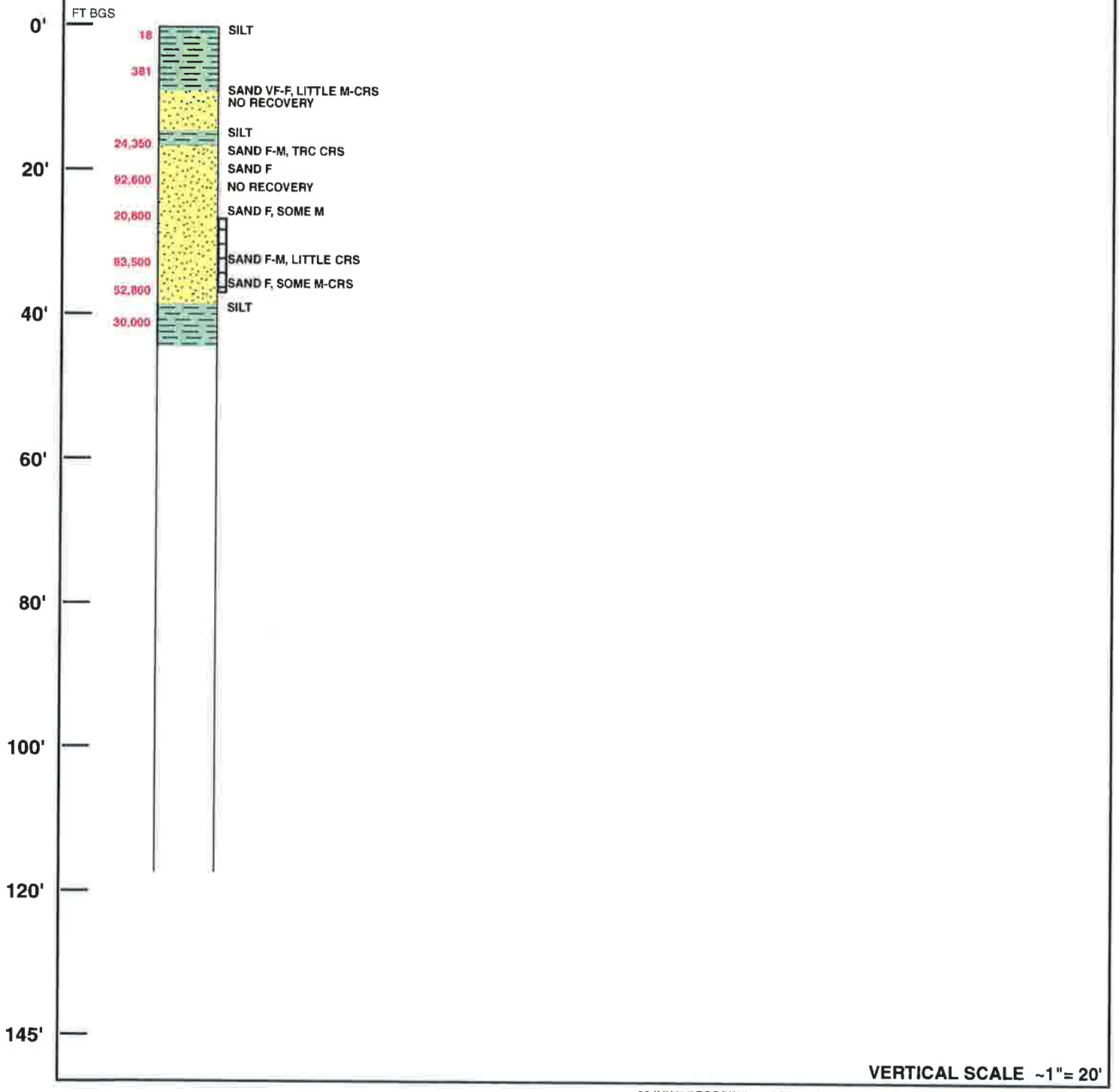
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMPZA-37
PROJECT	FORD/KINGSFORD WI01095.0023

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1045.83 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
A. Mumpy	Continuous	Rotasonic Core Barrel	45 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Jon Weeks	Boart Longyear	Rotasonic	5/1/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_37.AI

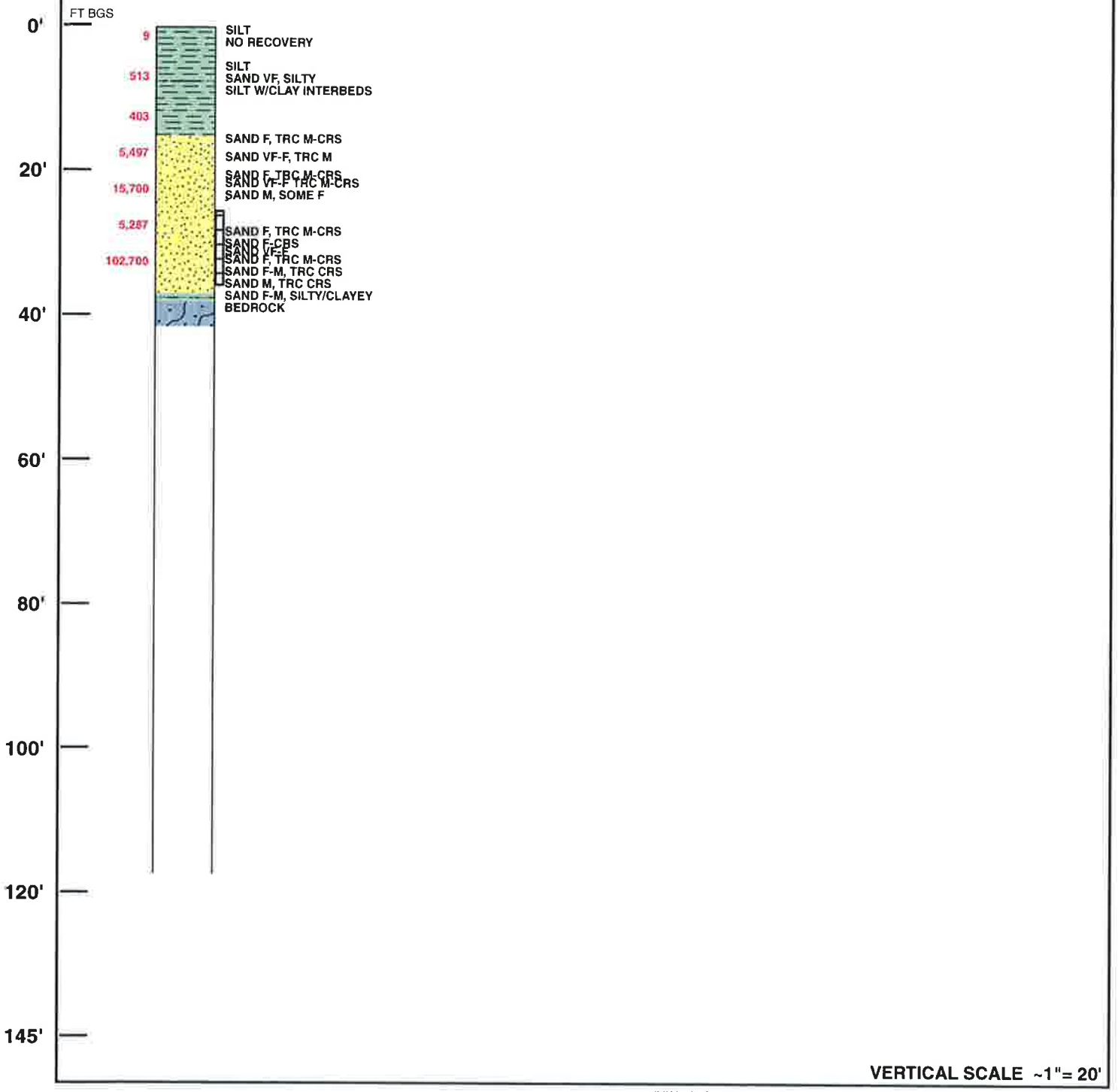
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-38

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1044.22 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	38.5 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/2/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_38.AI

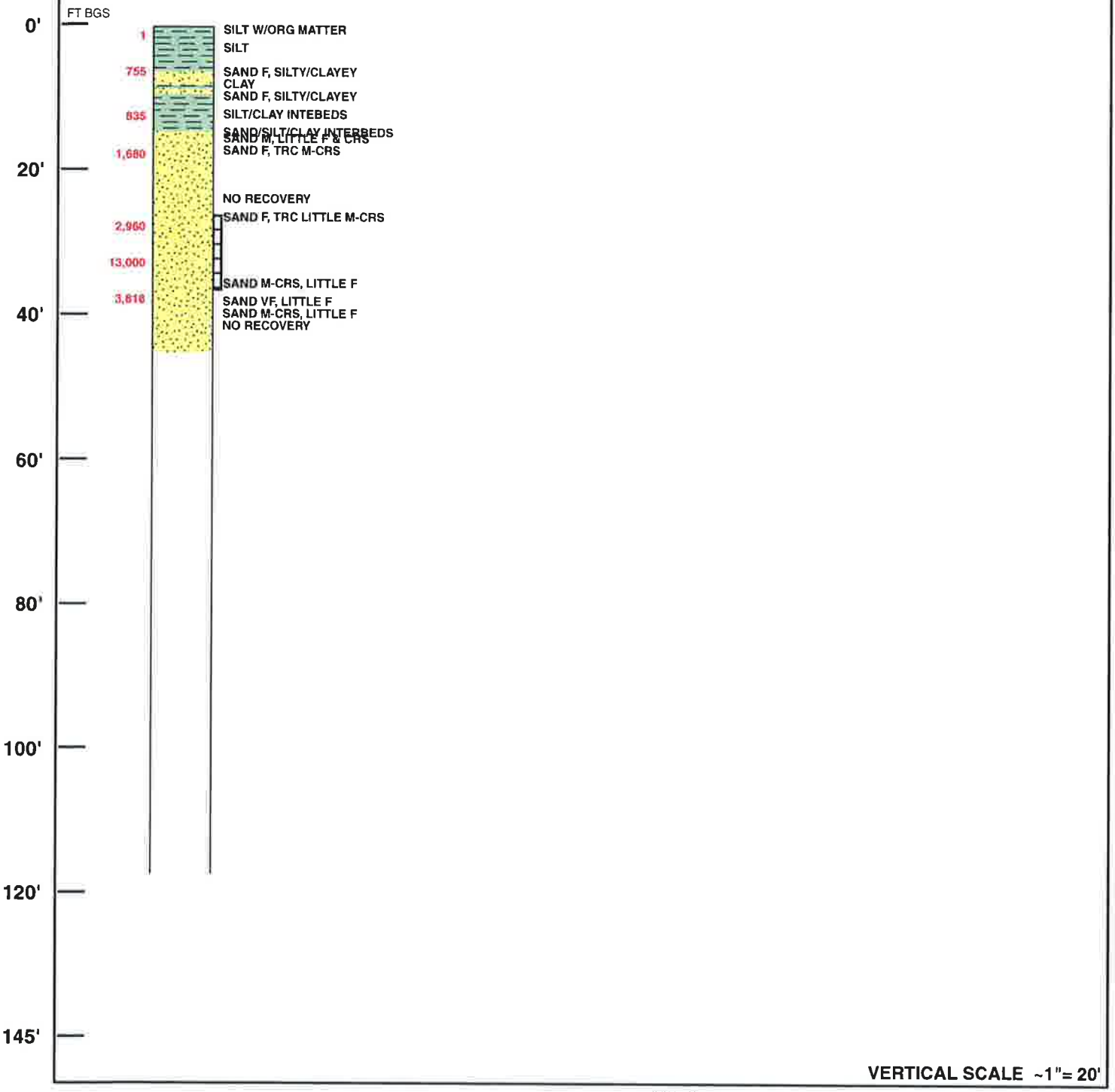
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-39

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1042.61 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/2/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_39.AI

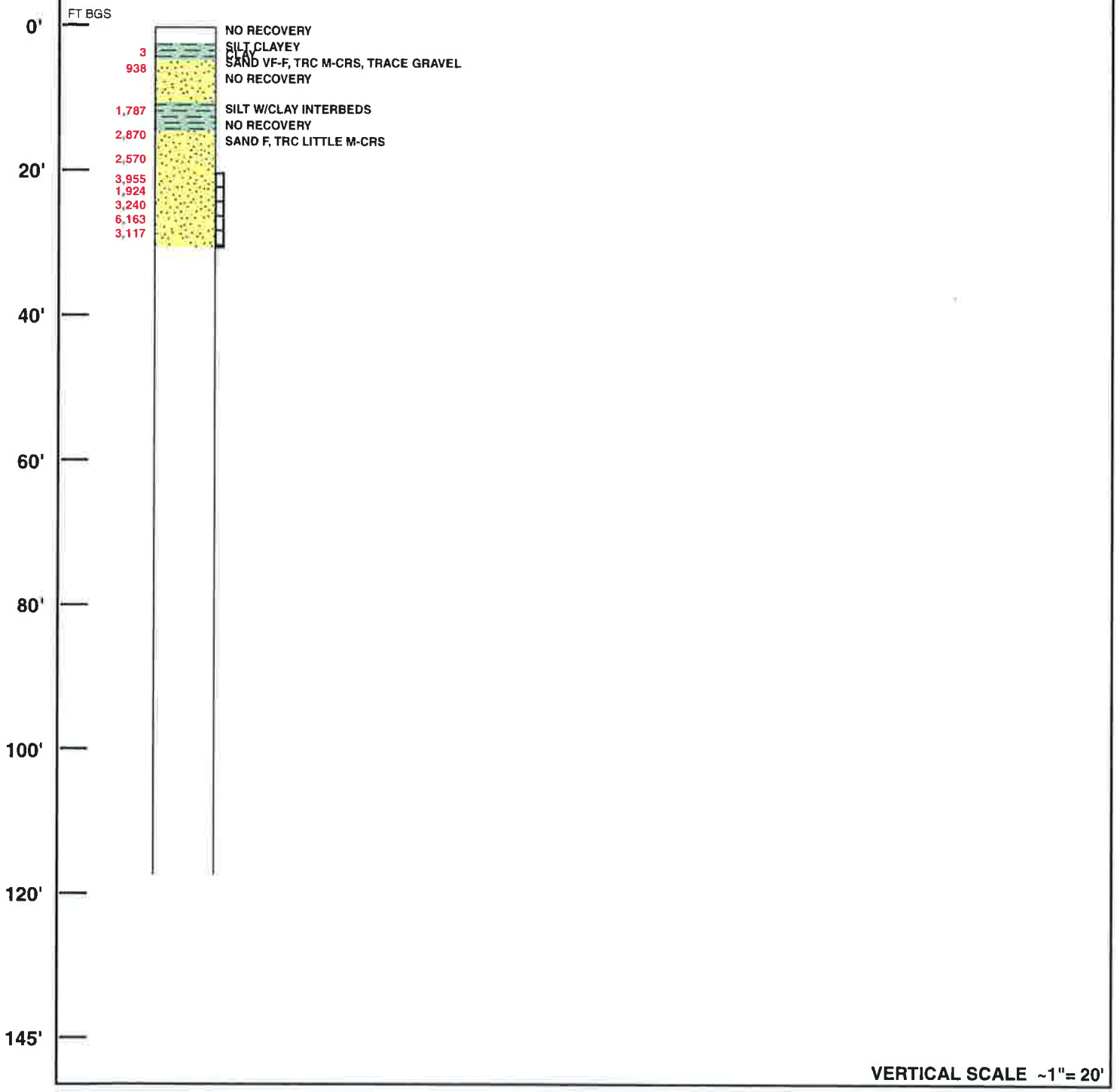
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-40

PROJECT FORD/KINGSFORD WI01095.0017

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.42 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/13/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_40.AI

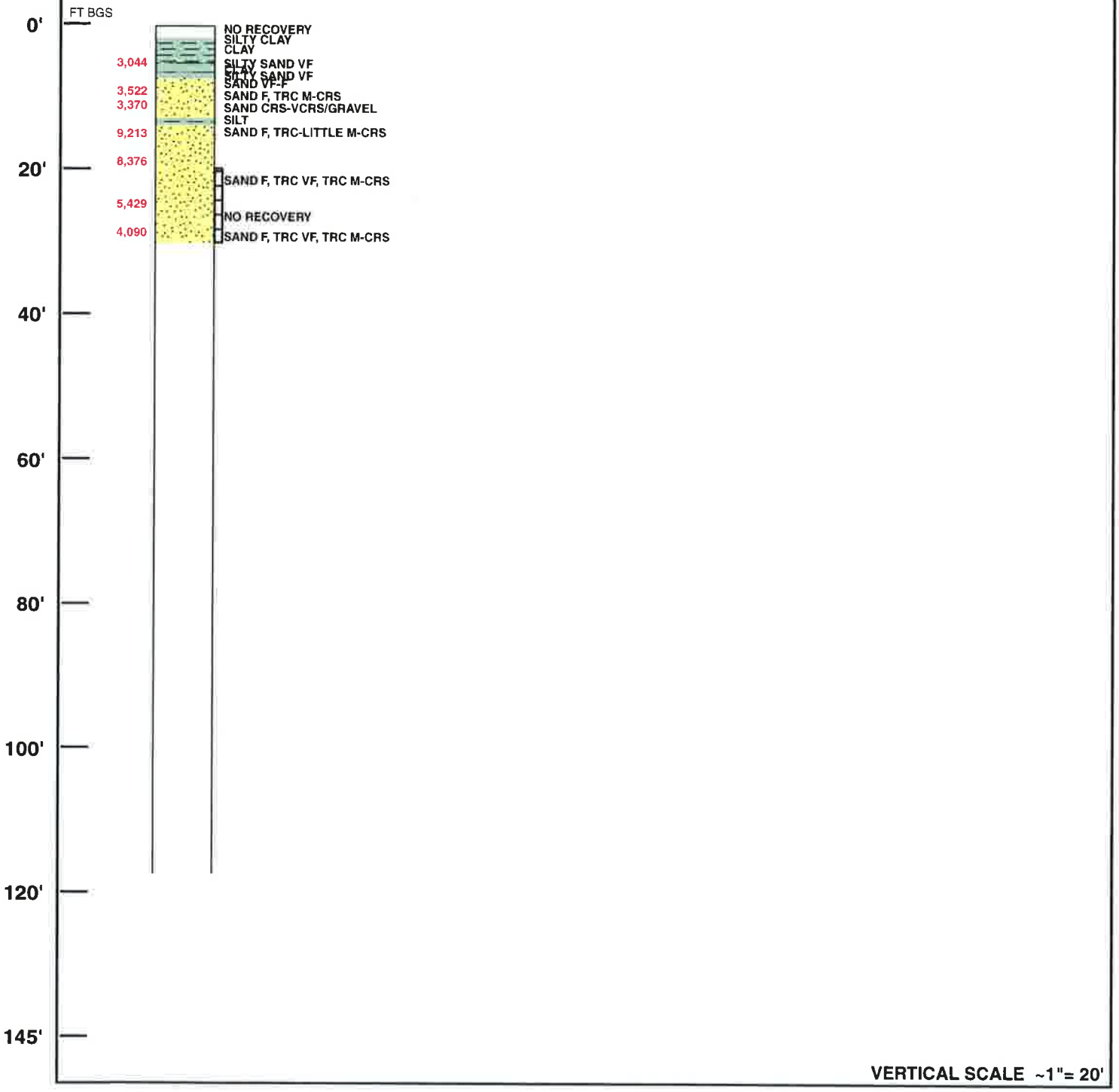
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-41

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1039.36 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/13/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_41.AI

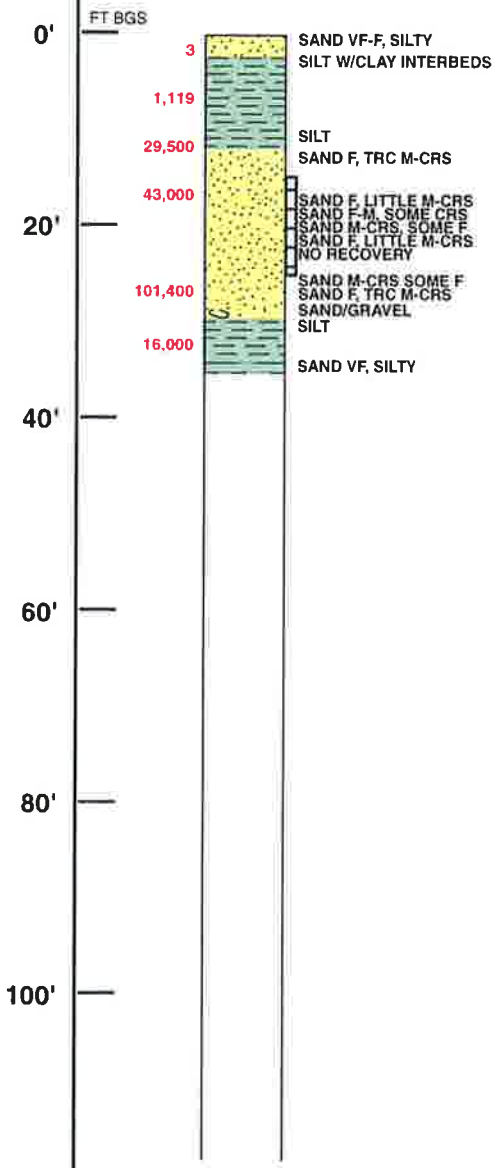
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZA-42

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1042.08 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	5/2/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZA_42.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

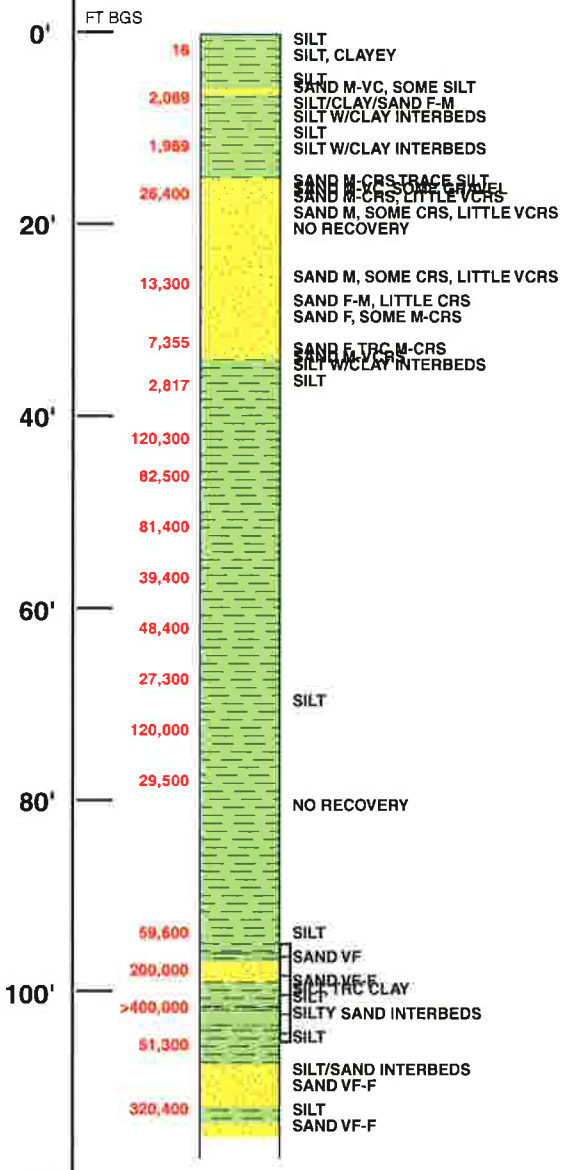
OBSERVATION WELL NO. GMPZB-1

PROJECT FORD/KINGSFORD WI01095.0023

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1054.47 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
J. Flater	Continuous	Rotasonic Core Barrel	115 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Jon Weeks	Boart Longyear	Rotasonic	5/11/05



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZB_1.AI

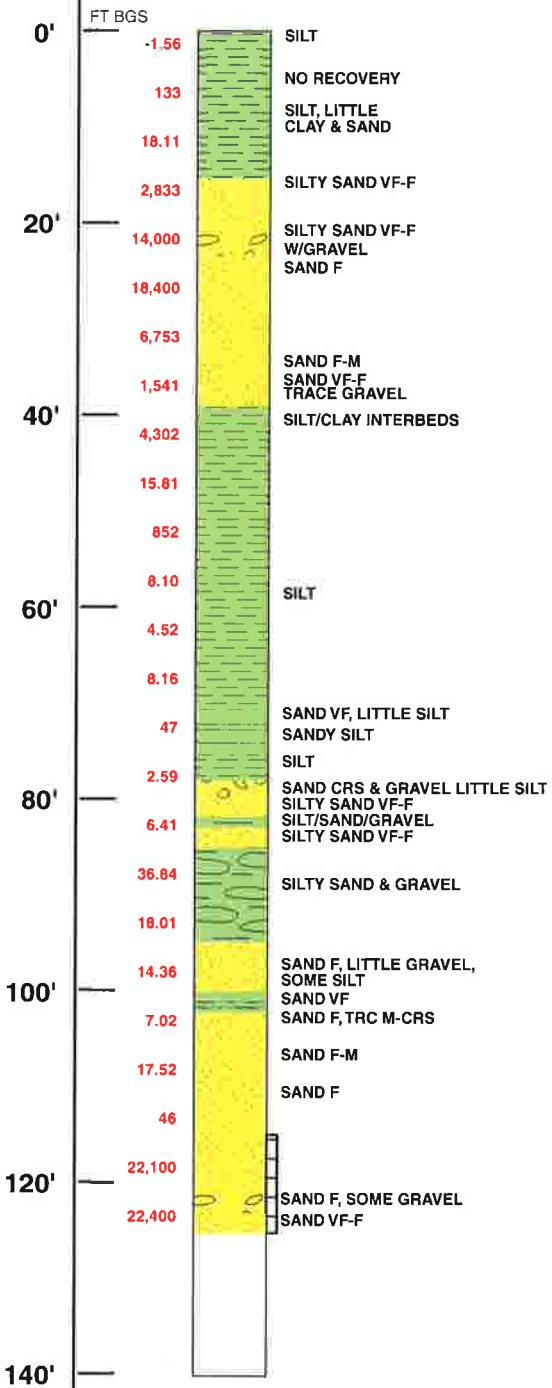
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-1

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1045.49 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	125 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	03/16/05



VERTICAL SCALE ~1" = 20'

15APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_1.AI

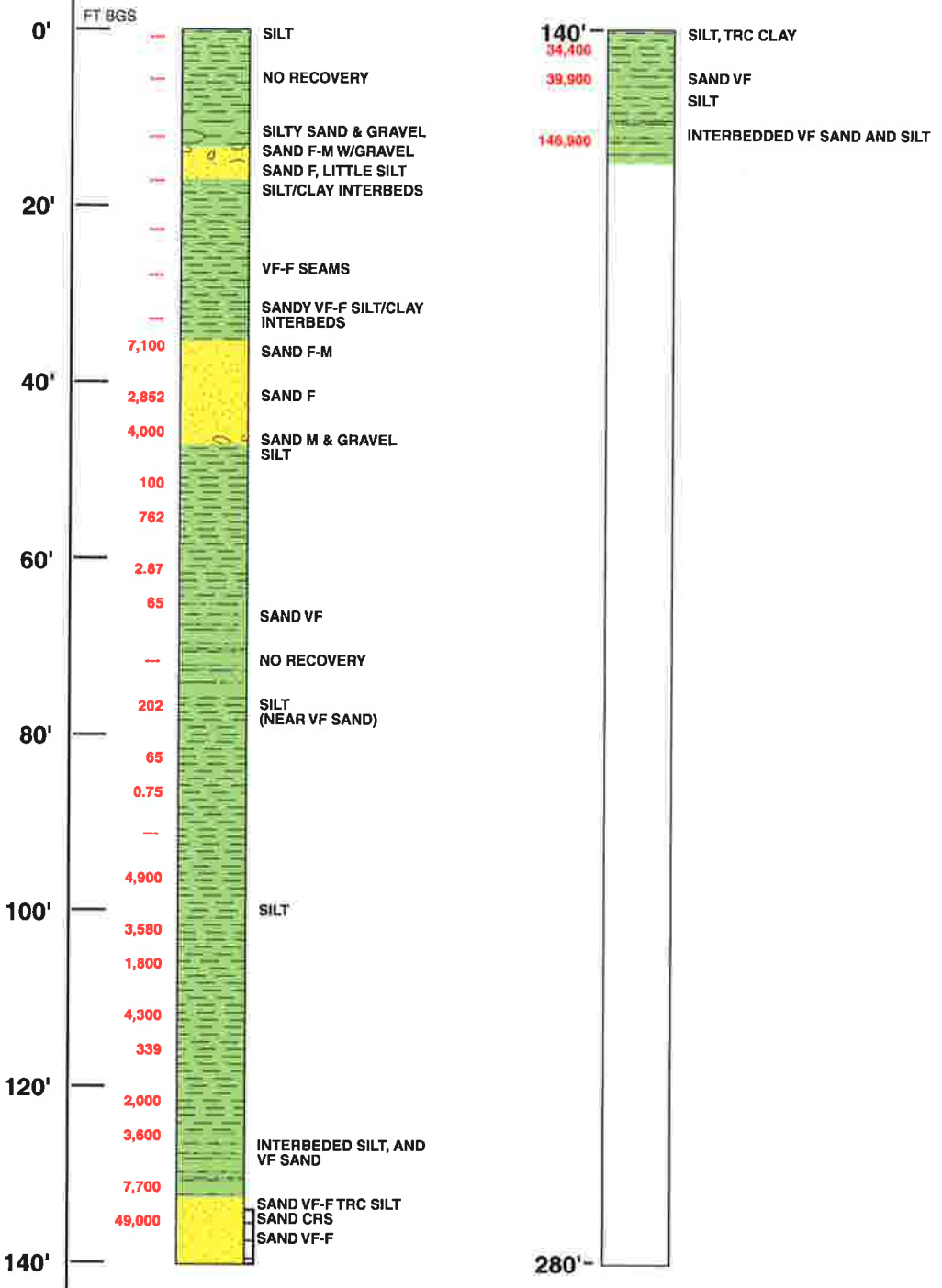
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-2

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.68 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
L. Schmidt	Continuous	Rotasonic Core Barrel	155 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	03/16/05



VERTICAL SCALE ~1"= 20'

15APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_2.AI

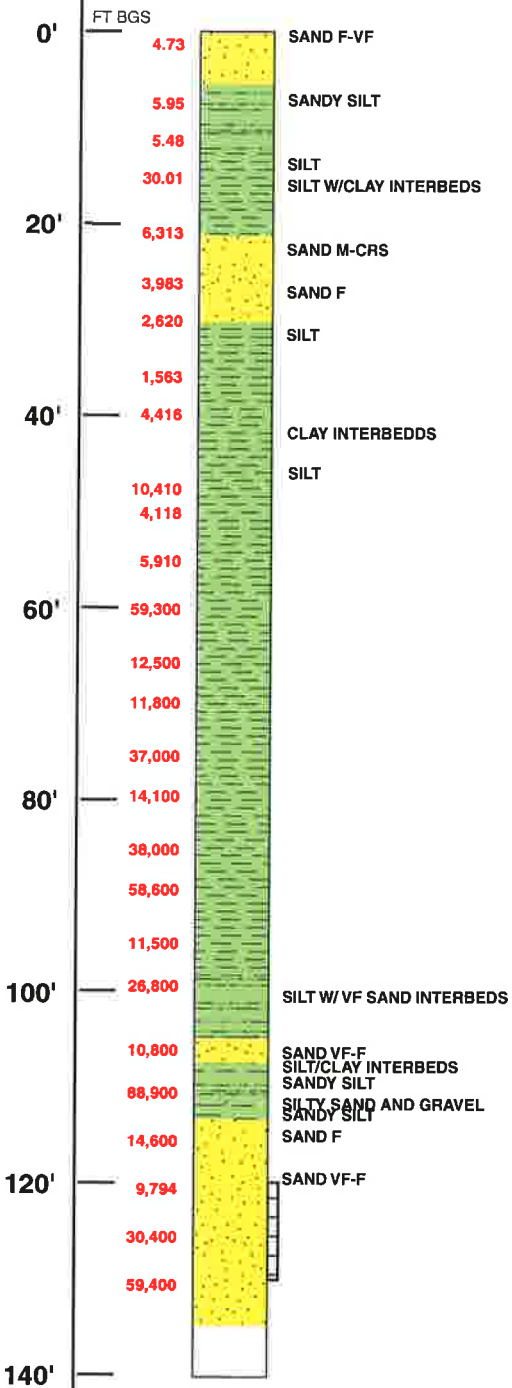
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-3

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1046.60 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
L. Schmidt	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	03/17/05



VERTICAL SCALE ~1"= 20'

18APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_3.AI

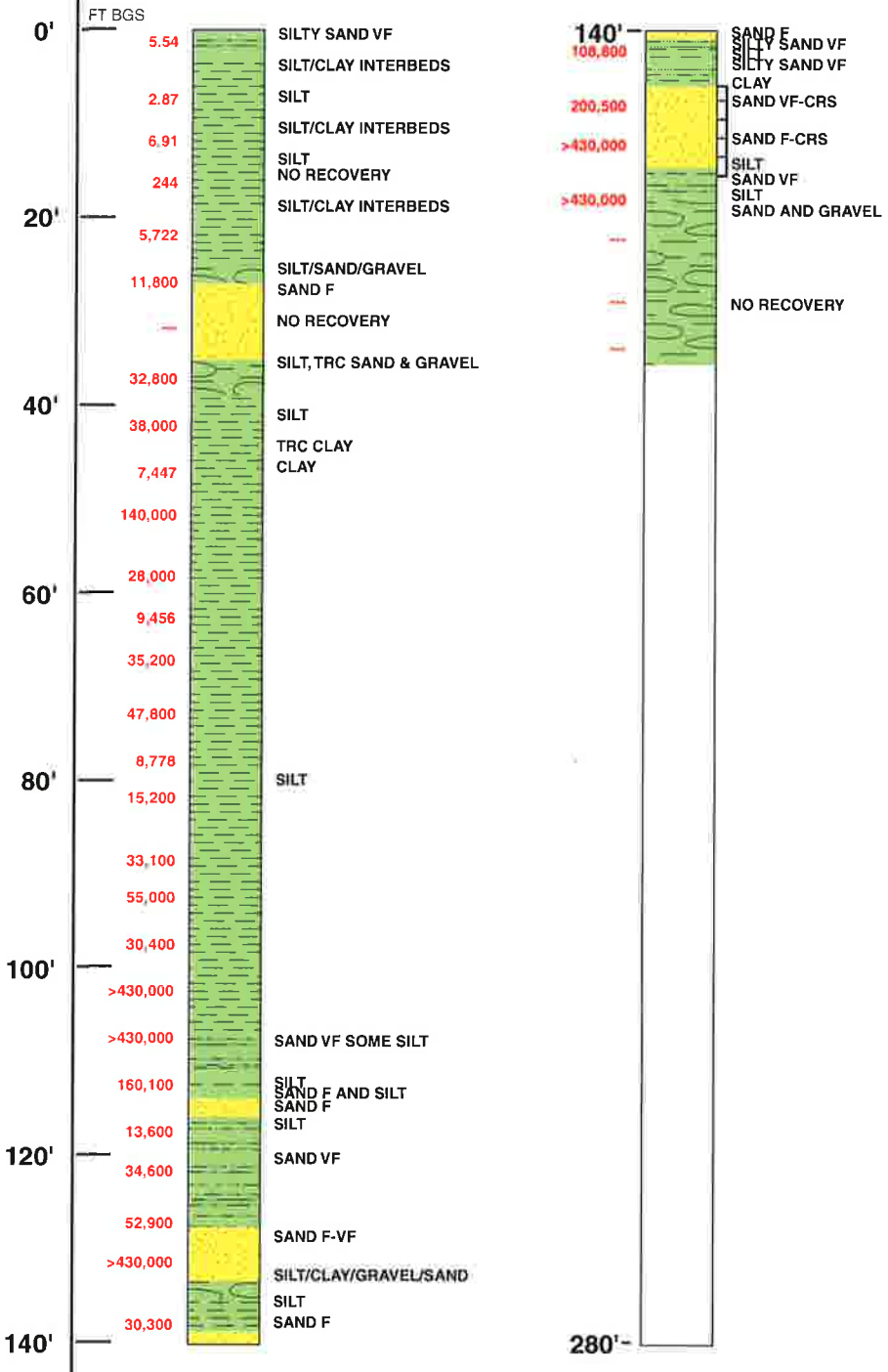
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-5

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1051.09 Feet MSL
GEOLOGIST L. Schmidt	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 175 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 03/18/05



VERTICAL SCALE ~1"= 20'

18APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_5 AI

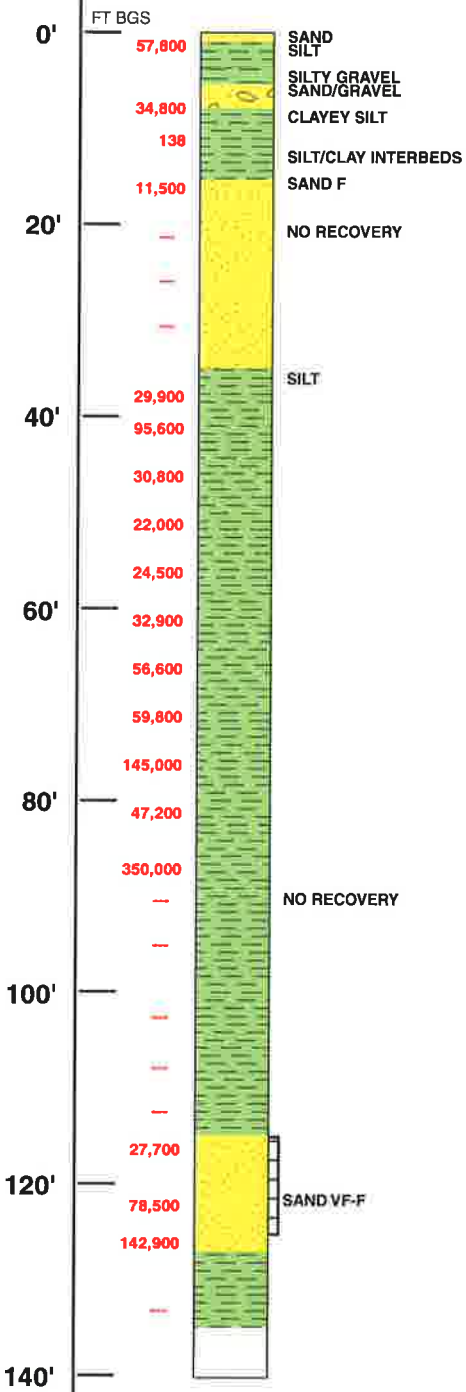
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-6

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.52 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
L. Schmidt	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	03/21/05



VERTICAL SCALE ~1"= 20'

18APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_6.AI

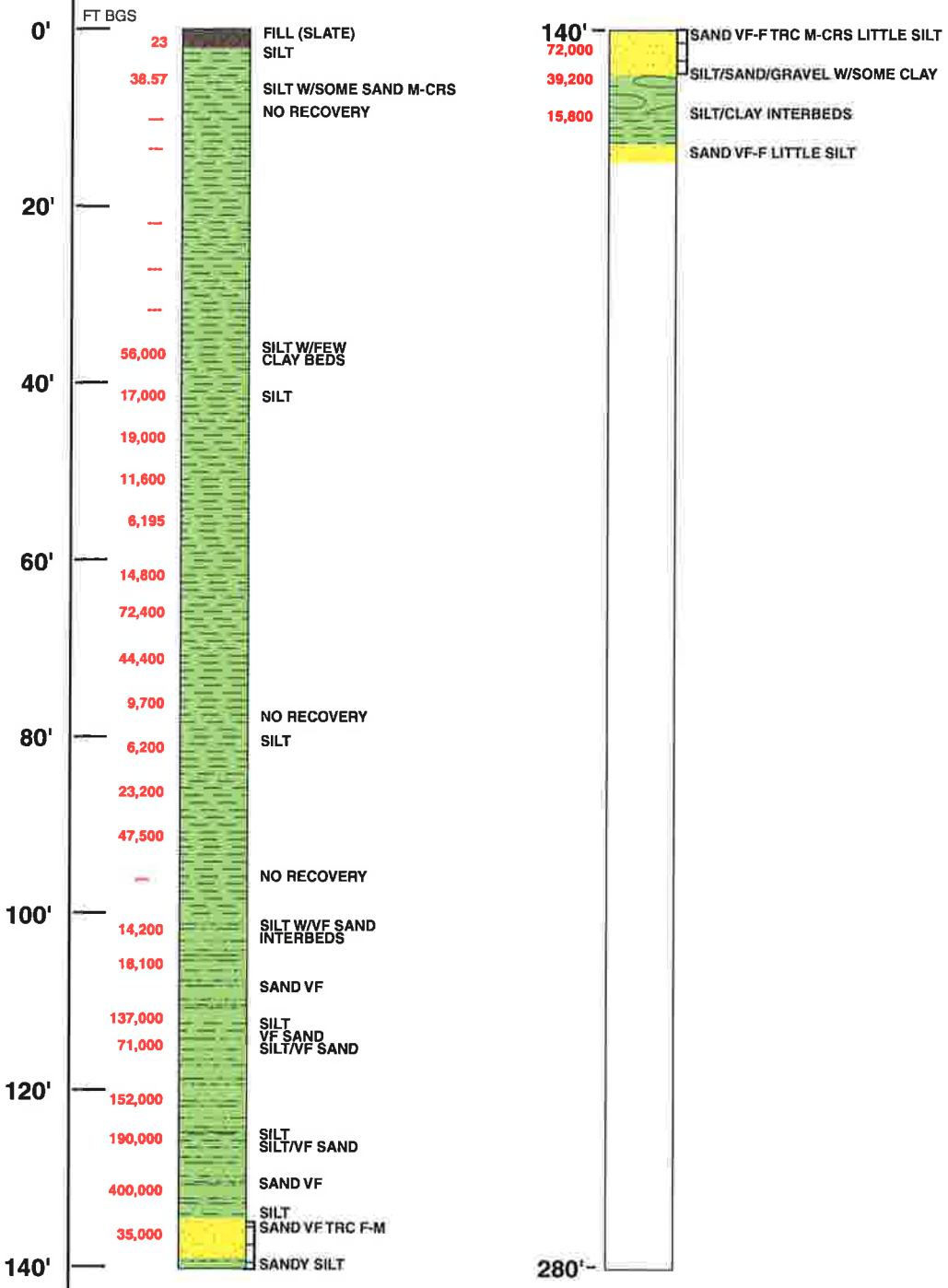
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-7

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.47 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	03/22/05



VERTICAL SCALE ~1"= 20'

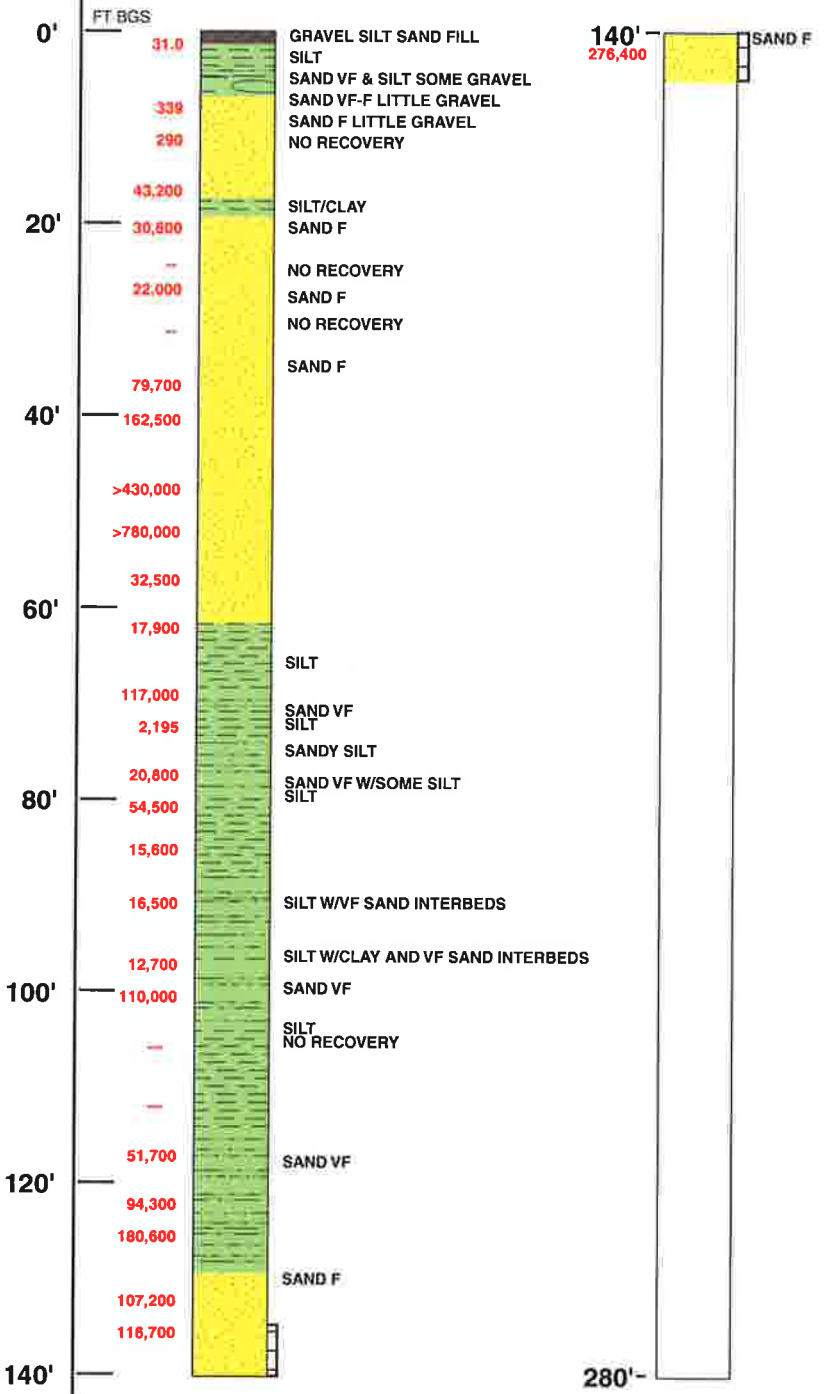
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-8

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1047.30 Feet MSL
GEOLOGIST L. Schmidt	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 145 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 03/22/05



VERTICAL SCALE ~1"= 20'

18APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_8.AI

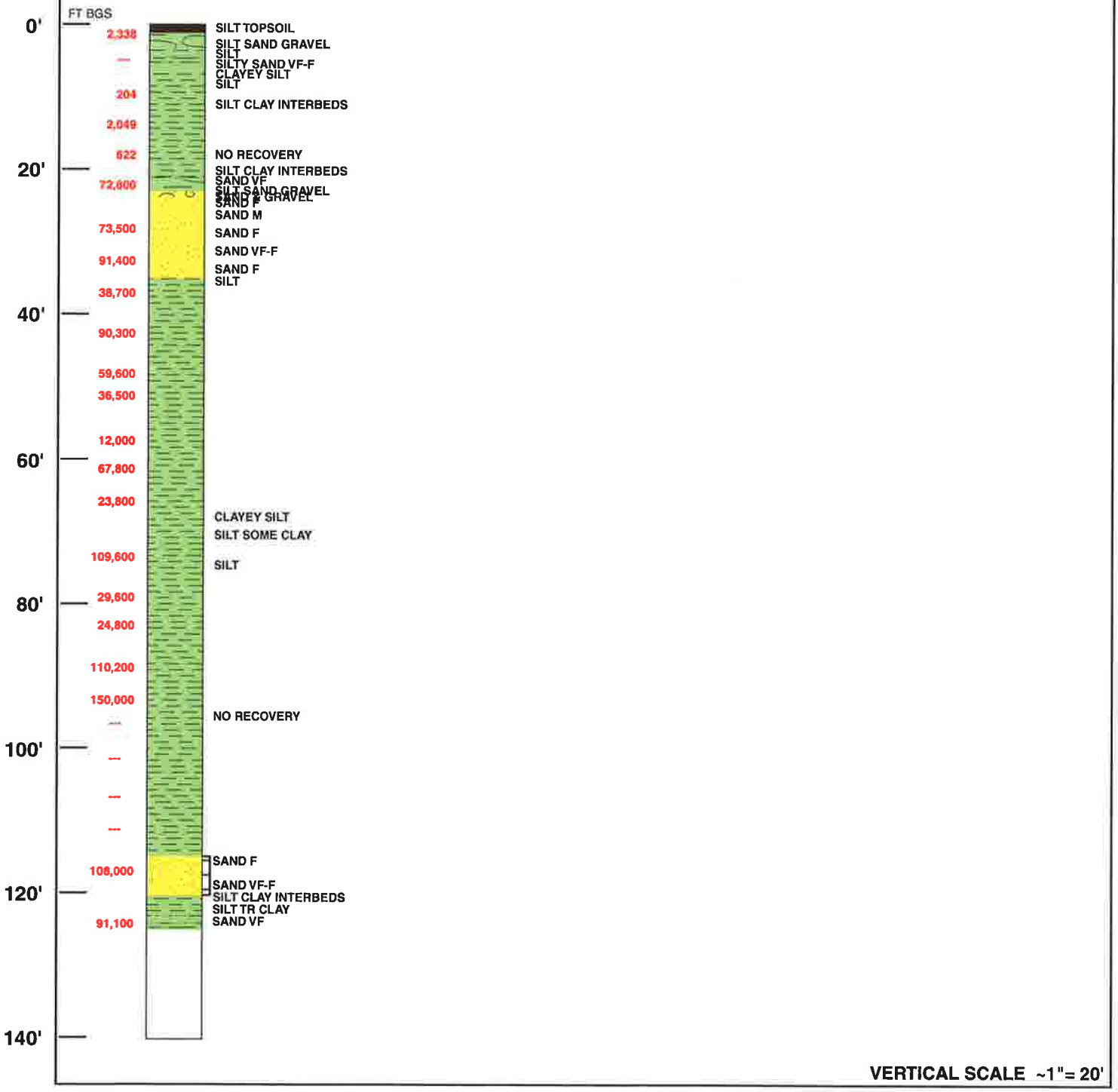
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-9

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1048.72 Feet MSL
GEOLOGIST L. Schmidt	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 125 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 03/20/05



VERTICAL SCALE ~1"= 20'

26APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_9 AI

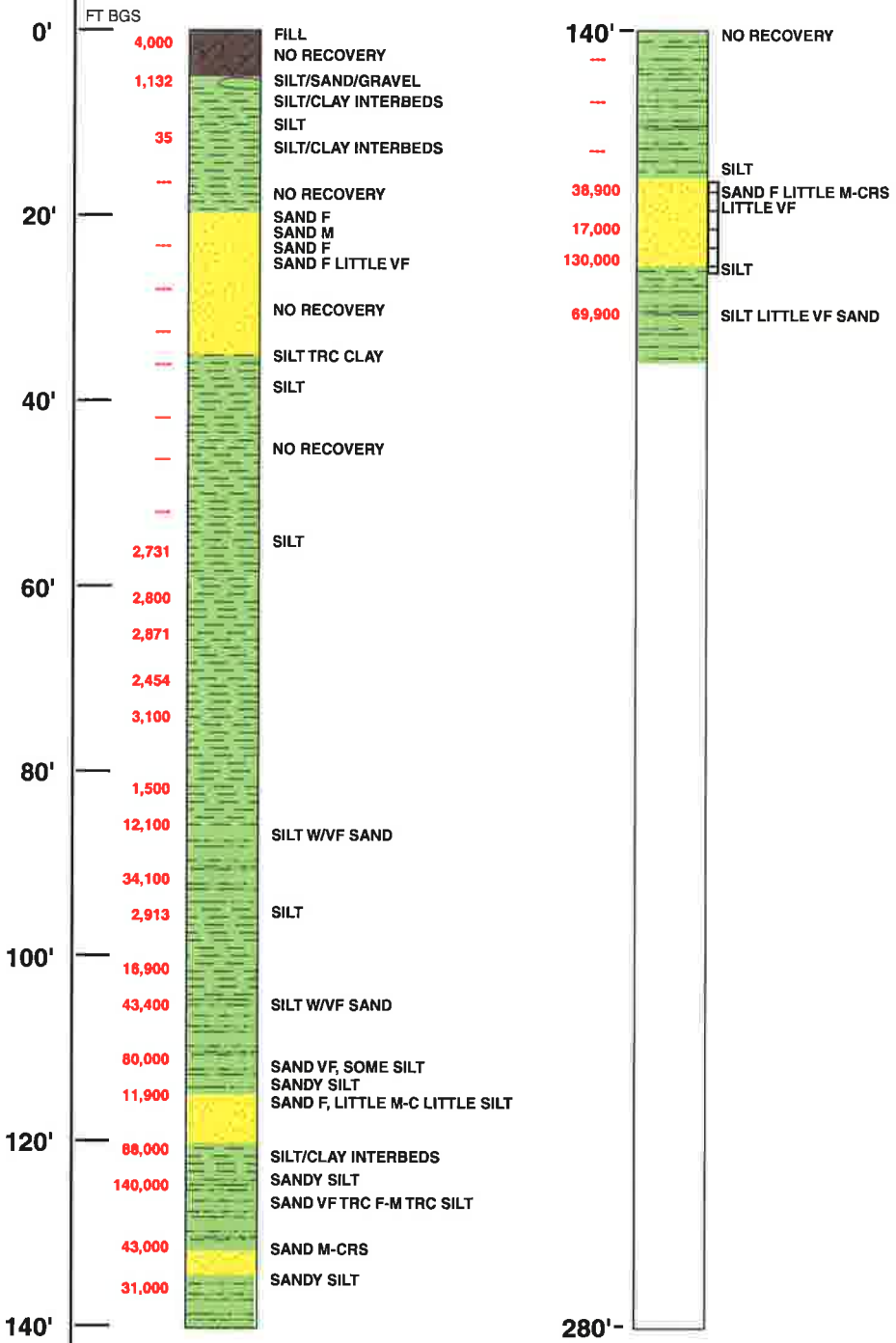
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-10

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.29 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	175 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	03/19/05



VERTICAL SCALE ~1"= 20'

26APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_10.AI

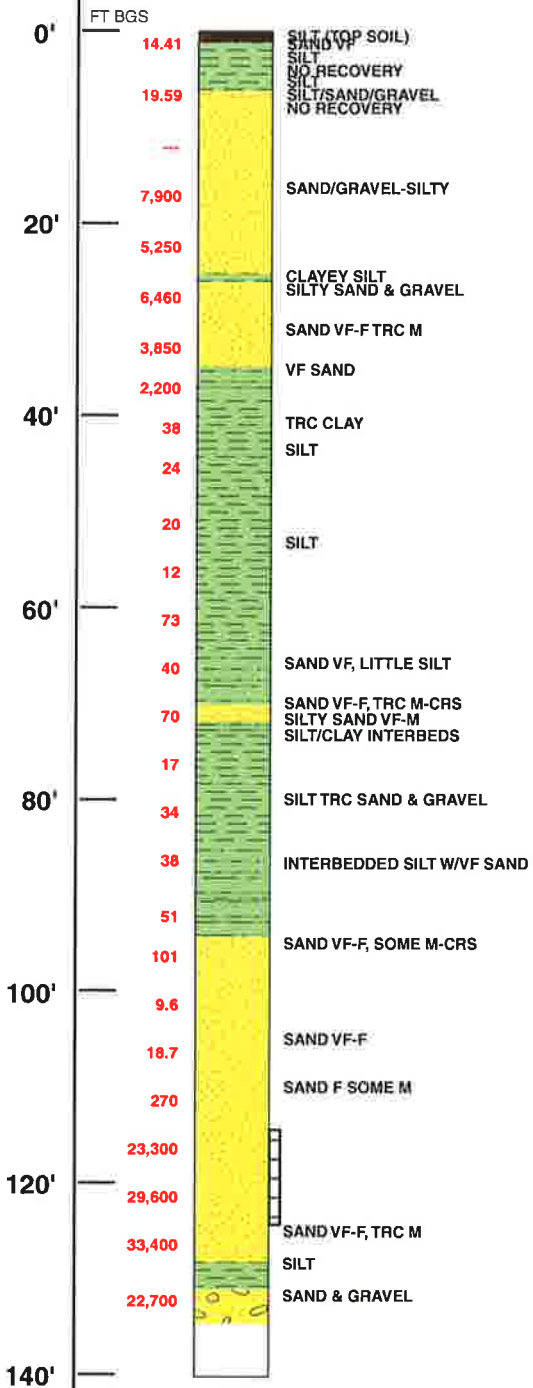
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-11

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1046.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	03/30/05



VERTICAL SCALE ~1"= 20'

26APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_11.AI

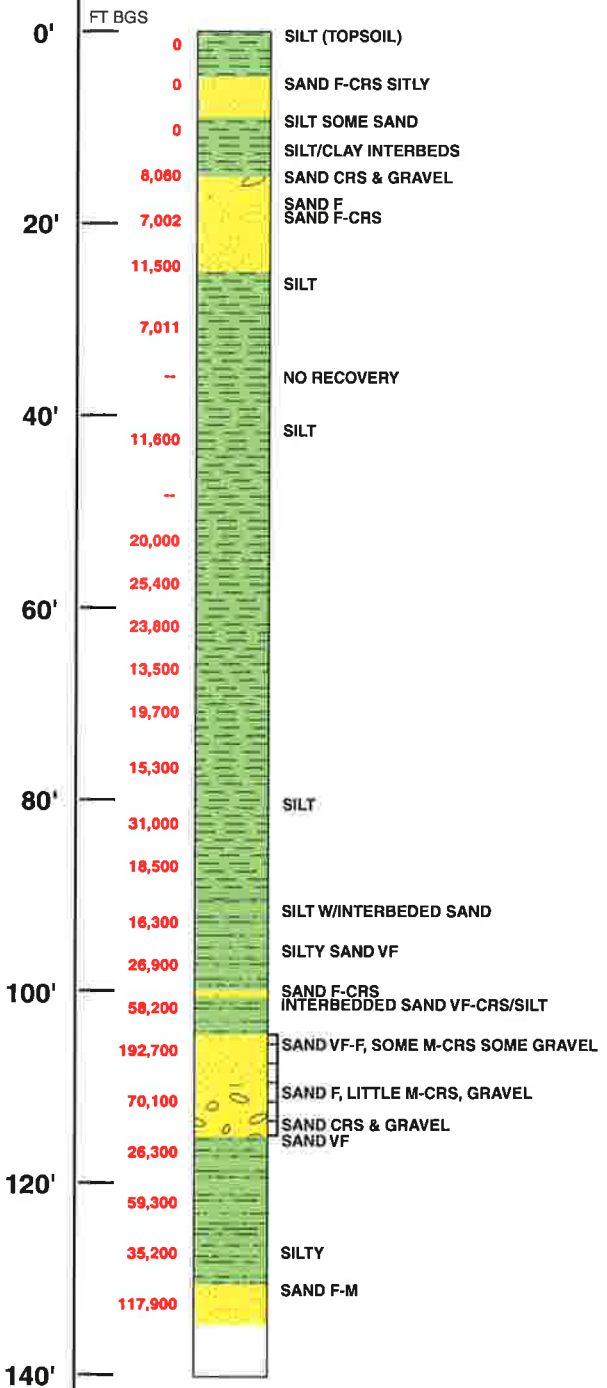
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-13

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1042.92 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	04/01/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_13.AI

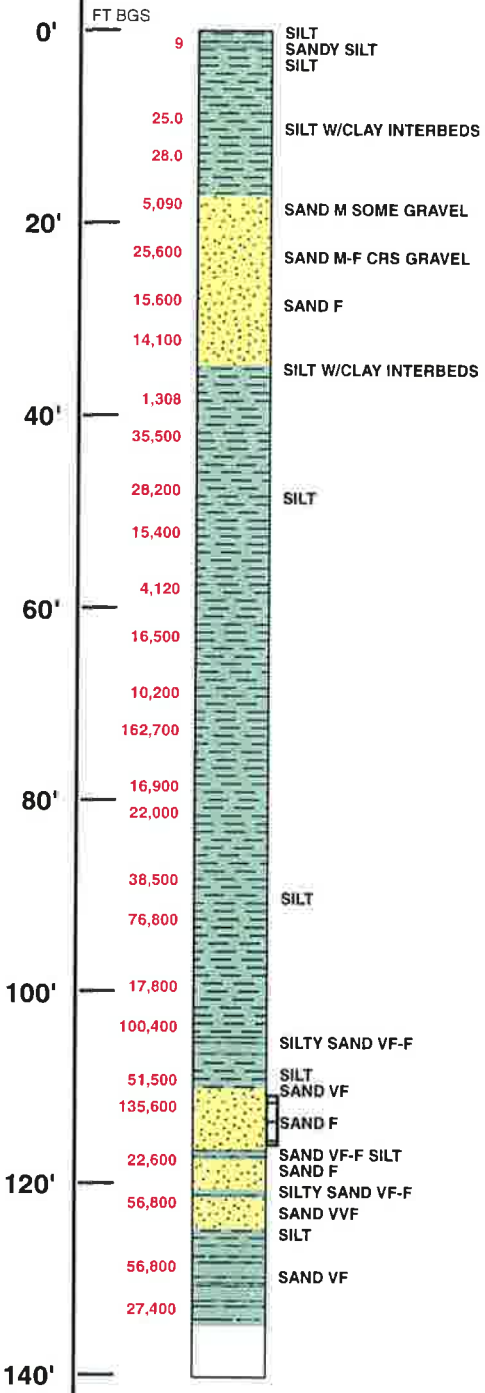
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-14

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.85 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	04/01/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_14.AI

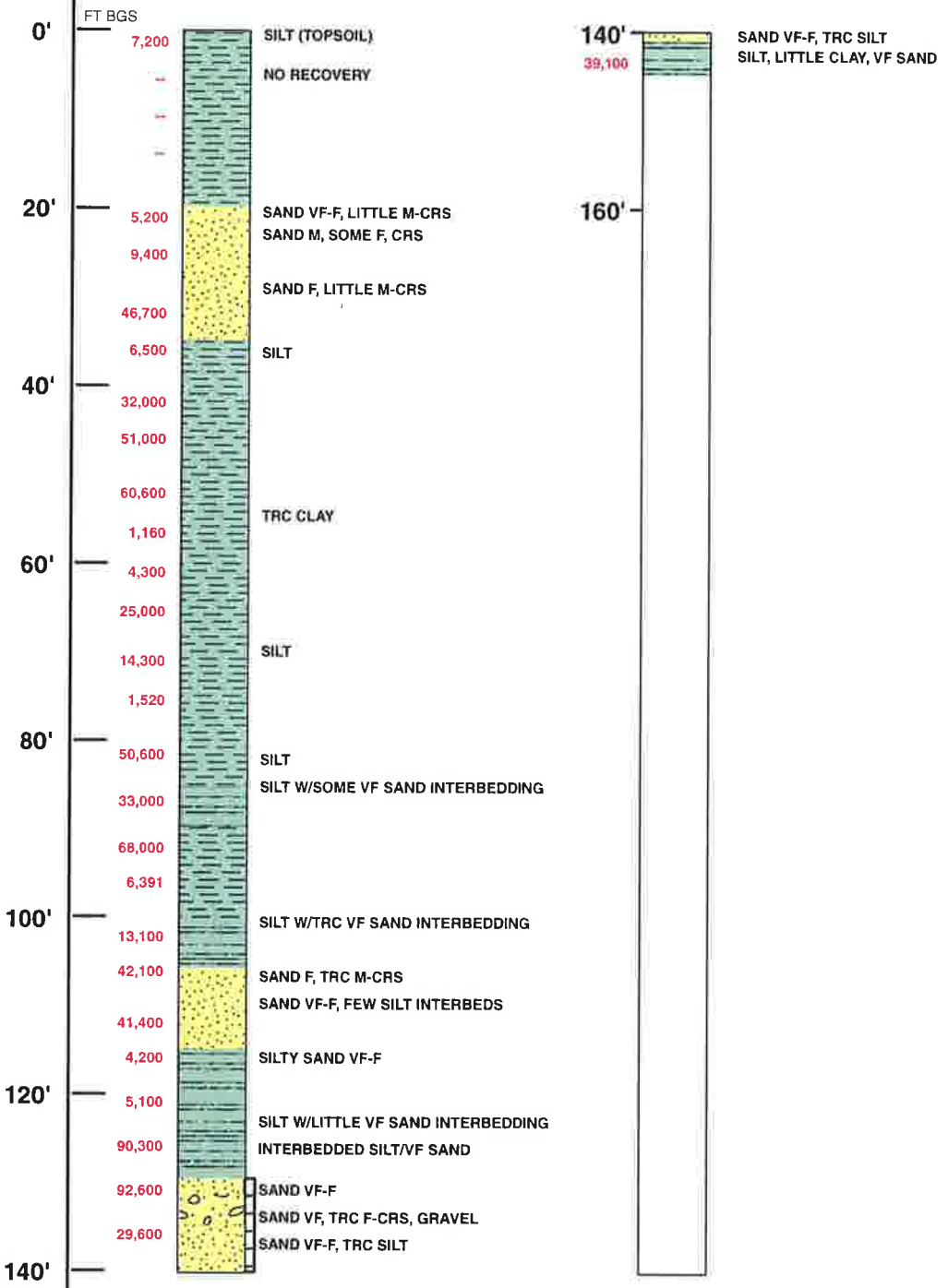
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-15

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.40 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	145 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	04/03/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_15.AI

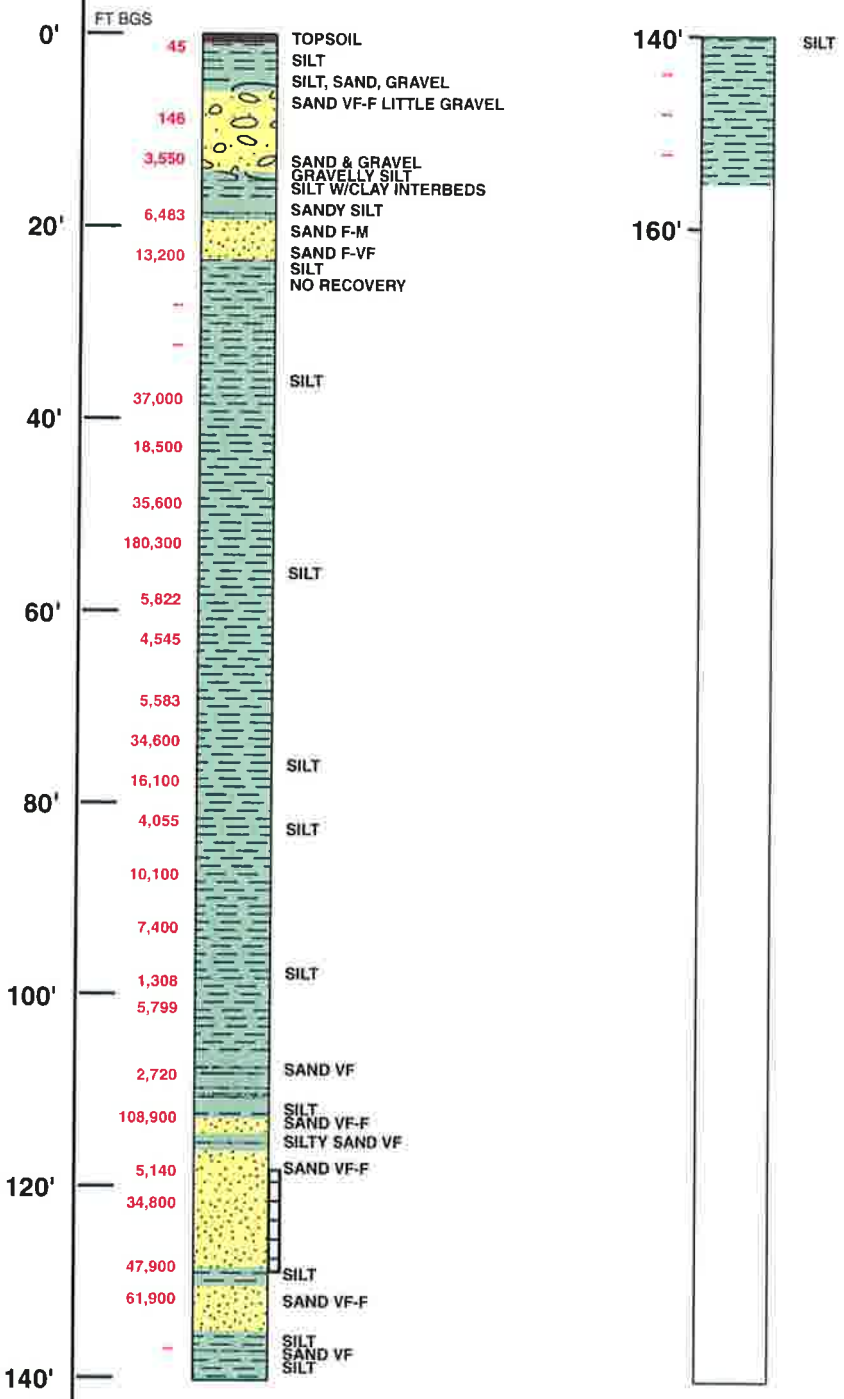
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-16

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.40 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
L. Schmidt	Continuous	Rotasonic Core Barrel	155 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	04/04/05



VERTICAL SCALE ~1"= 20'

20JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_16.AI

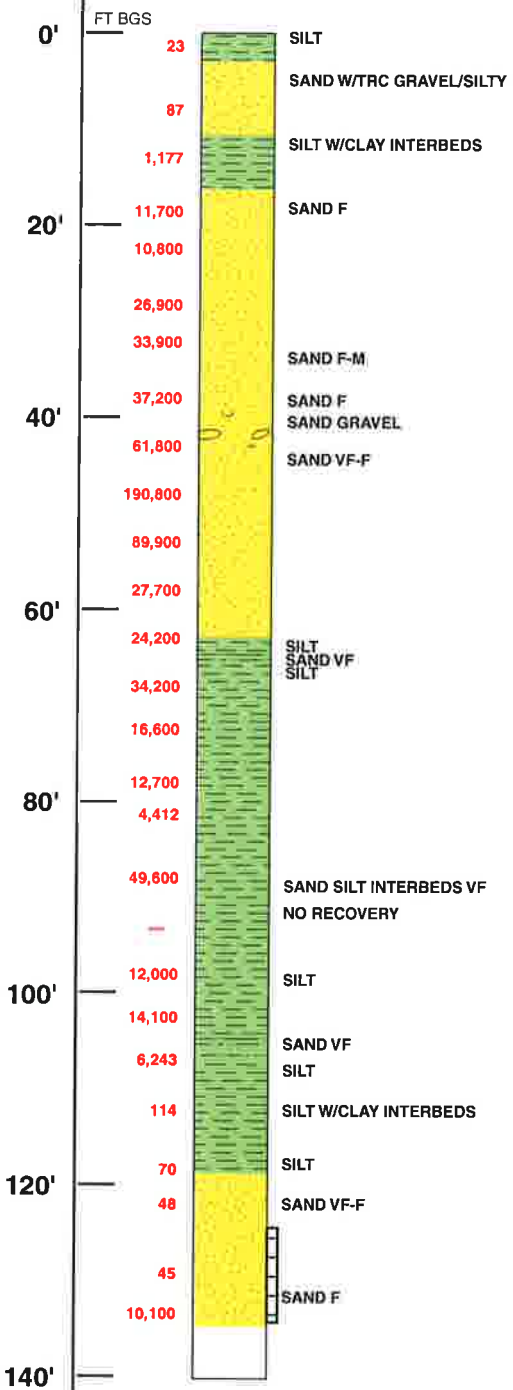
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZC-17

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1047.41 Feet MSL
GEOLOGIST L. Schmidt	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 135 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 03/29/05



VERTICAL SCALE ~1"= 20'

26APR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZC_17.AI

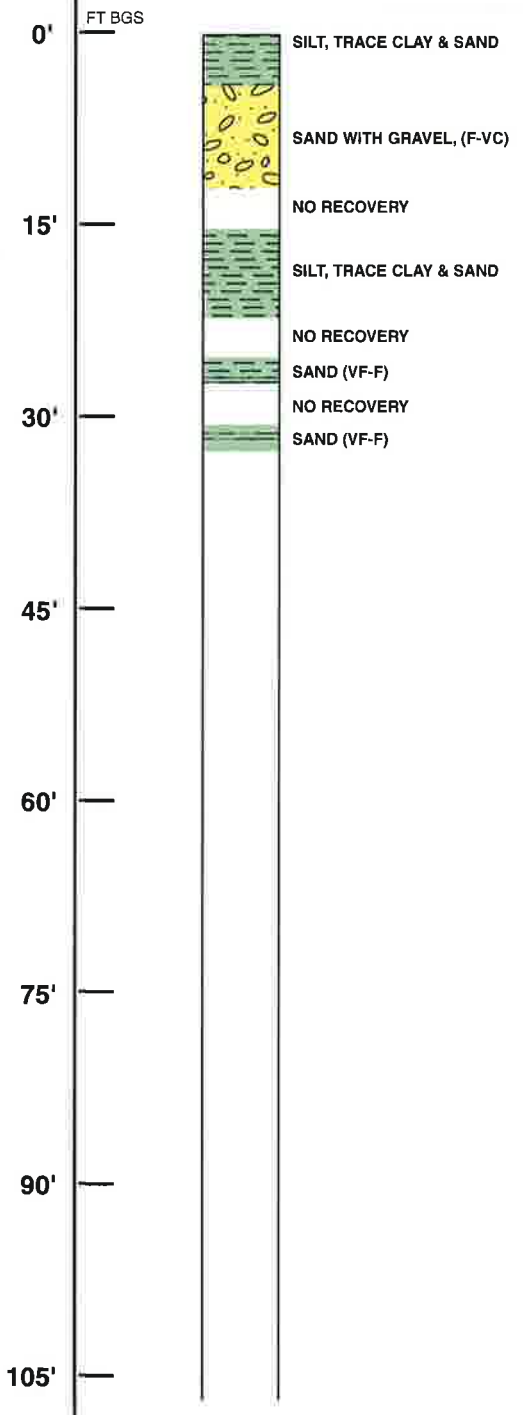
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-1

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1053.62 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill Schulz	Variable	Splitspoon, Shelby Tube	32 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Sean	Boart Longyear	Hollow Stem Auger	12/4/00



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_1.AI

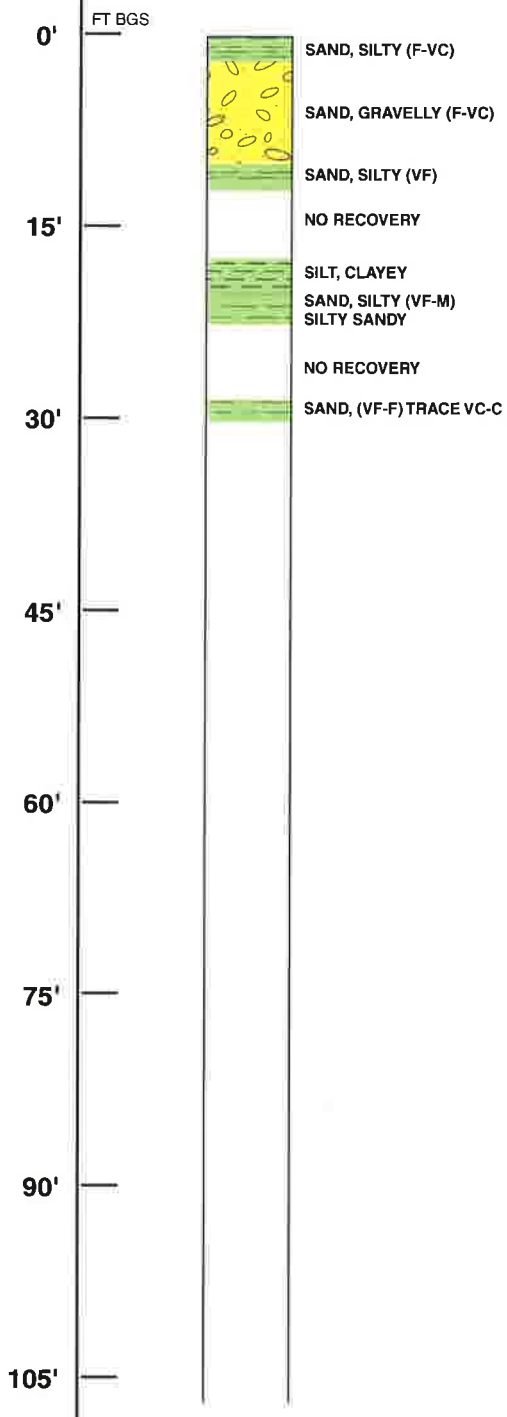
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-2

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1052.98 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill Schulz	Variable	Splitspoon, Shelby Tube	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Sean	Boart Longyear	Hollow Stem Auger	12/4/00



VERTICAL SCALE ~1"= 15'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_2.AI

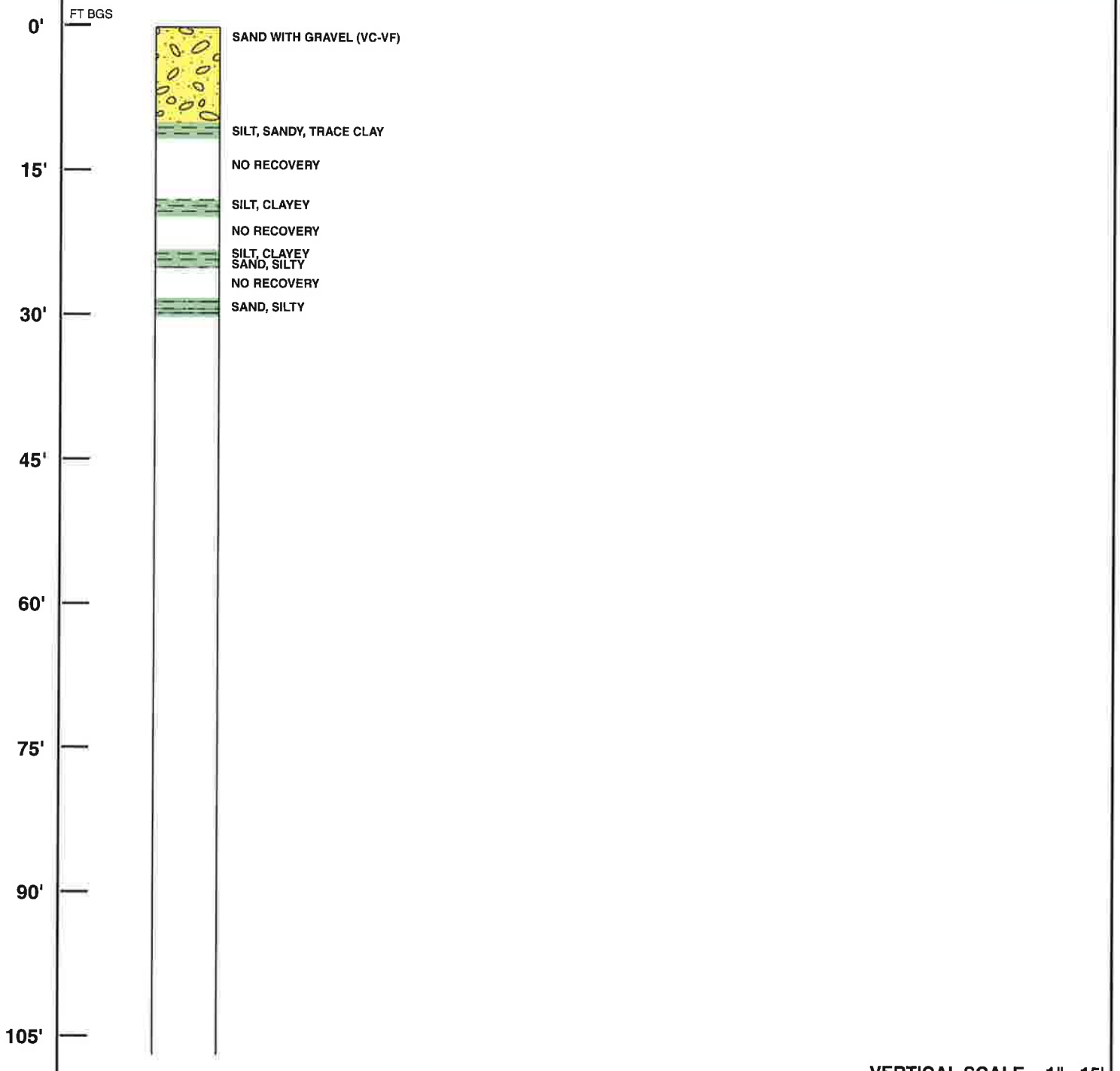
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-3

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1052.79 Feet MSL
GEOLOGIST Bill Schulz	SAMPLE INTERVAL Variable	SAMPLING DEVICE Splitspoon, Shelby Tube	TOTAL DEPTH DRILLED 30 Feet BLS
DRILLER Sean	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 12/5/00



VERTICAL SCALE ~1"= 15'

13JULY05\\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_3.AI

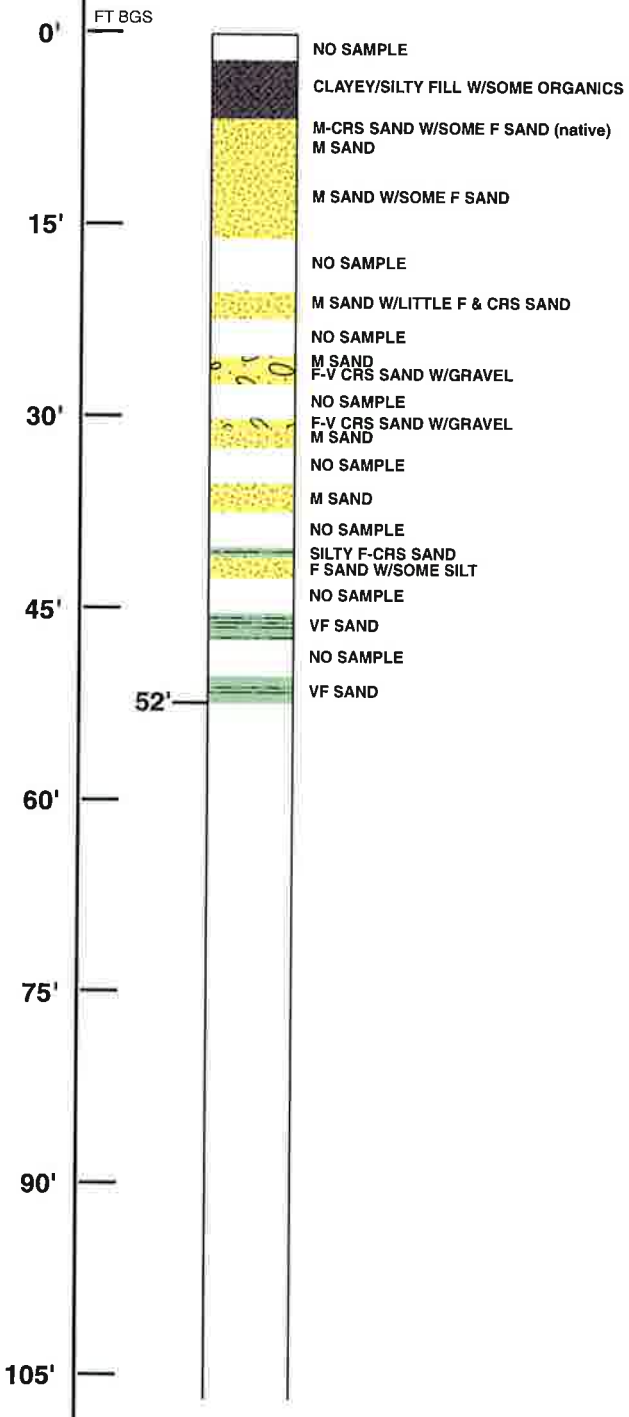
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-4

PROJECT FORD/KINGSFORD WI000950.0011

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1120.99 Feet MSL
GEOLOGIST B. Schulz	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 52 Feet BLS
DRILLER Jeff	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 3/12/02



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_4.AI

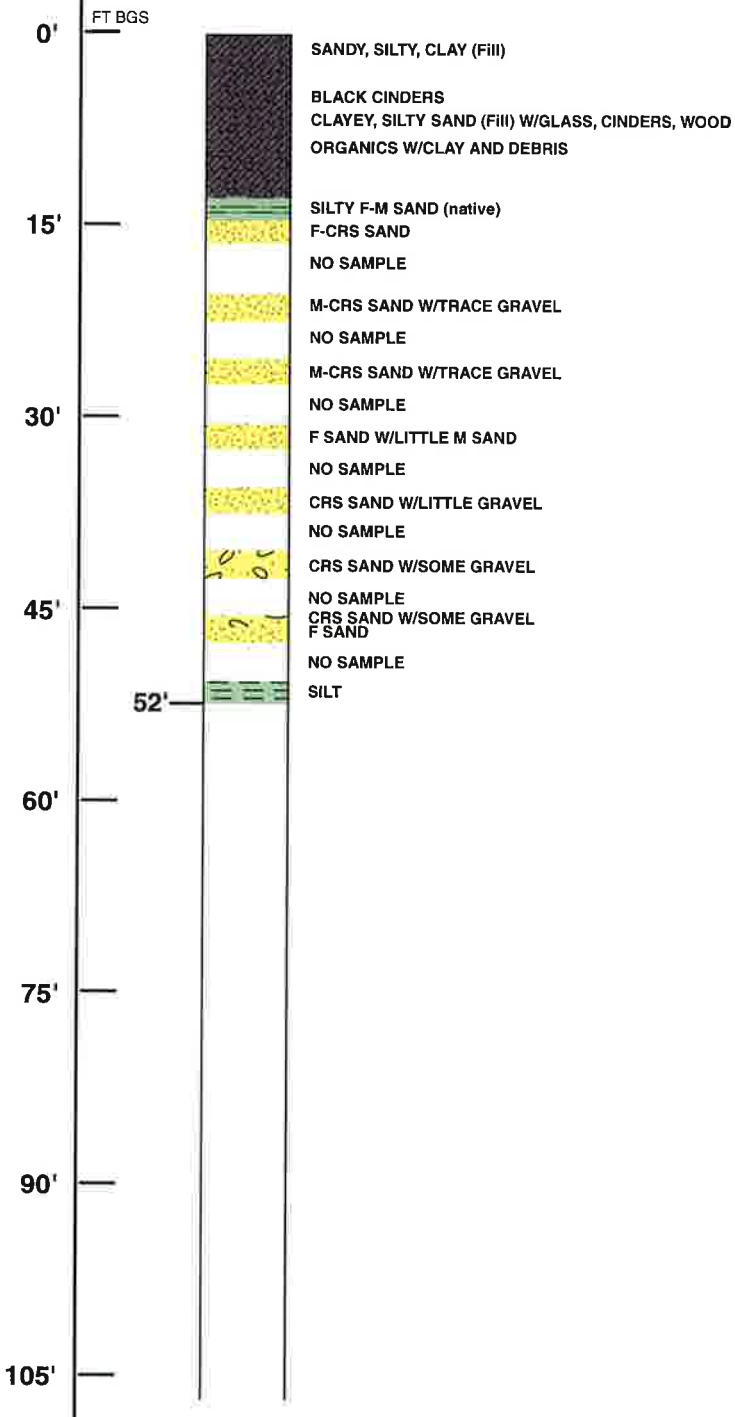
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-5

PROJECT FORD/KINGSFORD WI000950.0011

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.61 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Schulz	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff	Boart Longyear	Hollow Stem Auger	3/12/02



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_5.AI

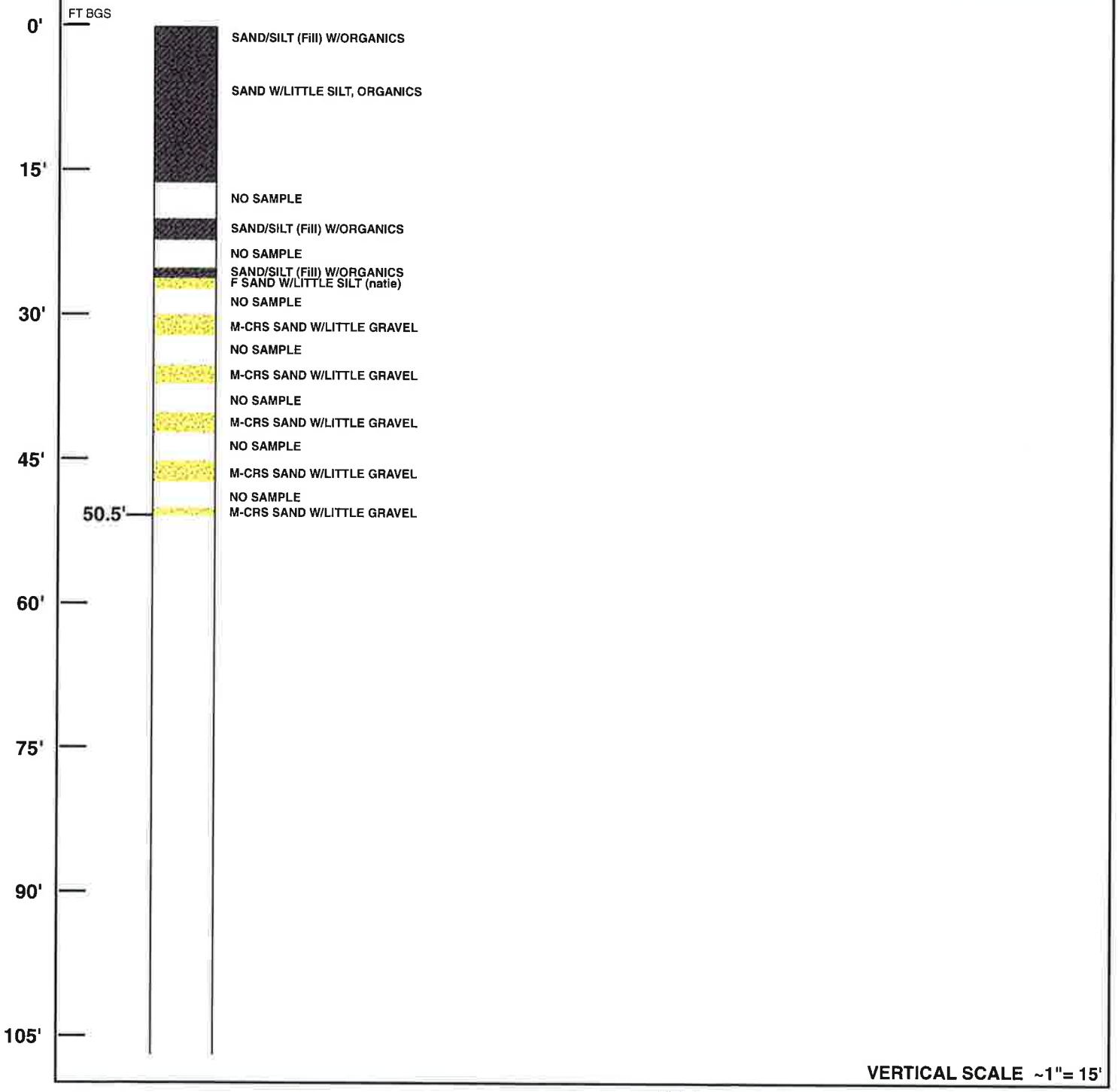
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-6

PROJECT FORD/KINGSFORD WI000950.0011

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1120.62 Feet MSL
GEOLOGIST B. Schulz	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 50.5 Feet BLS
DRILLER Jeff	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 3/13/02



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_6.AI

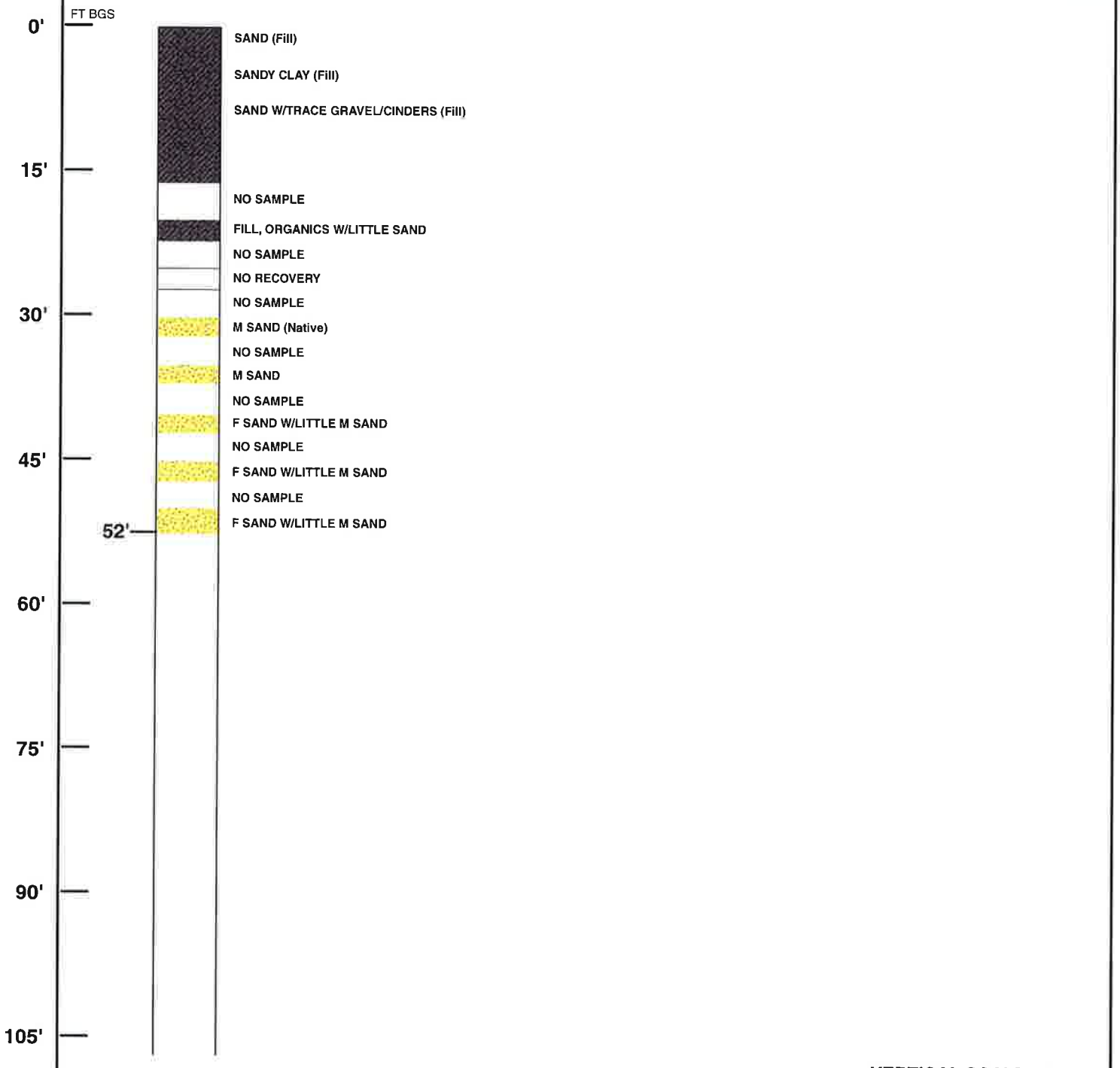
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-7

PROJECT FORD/KINGSFORD WI000950.0011

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.32 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Schulz	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff	Boart Longyear	Hollow Stem Auger	3/12/02



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_7.AI

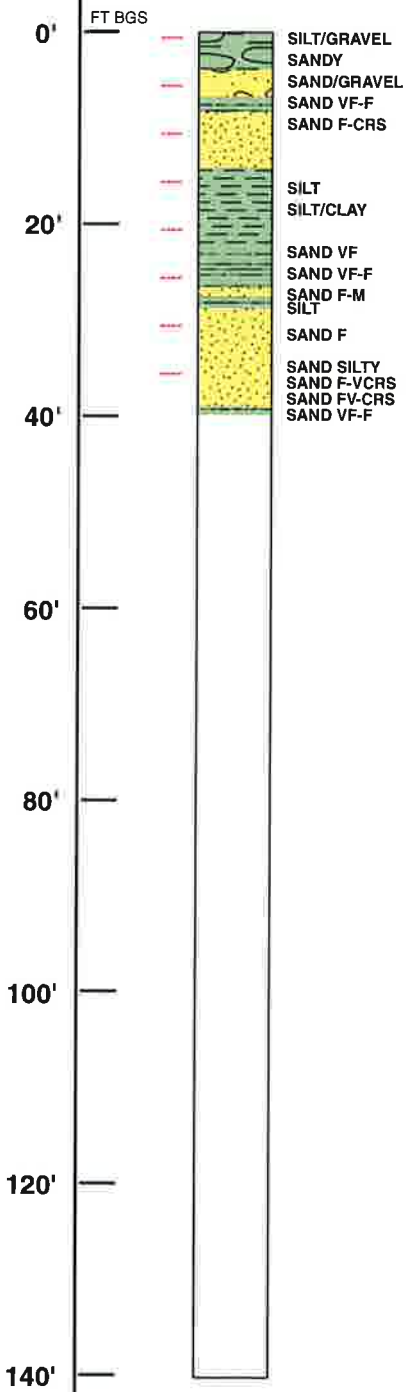
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-8

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,054.04 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans/A. Mumpy	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
M. Mueller	Boart Longyear	Hollow Stem Auger	01/06/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_8.AI

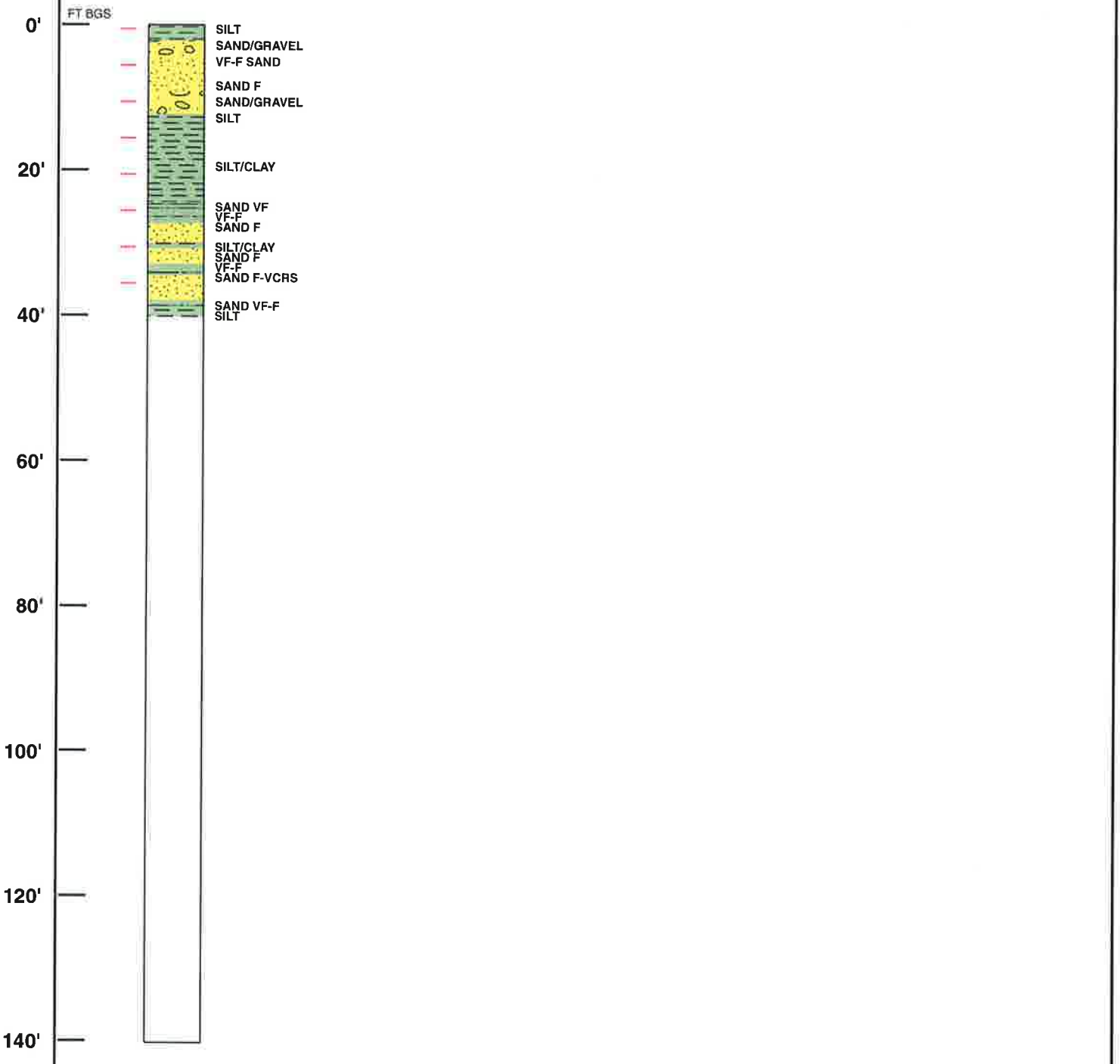
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-9

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,054.04 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans/A. Mumpy	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	01/07/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_9.AI

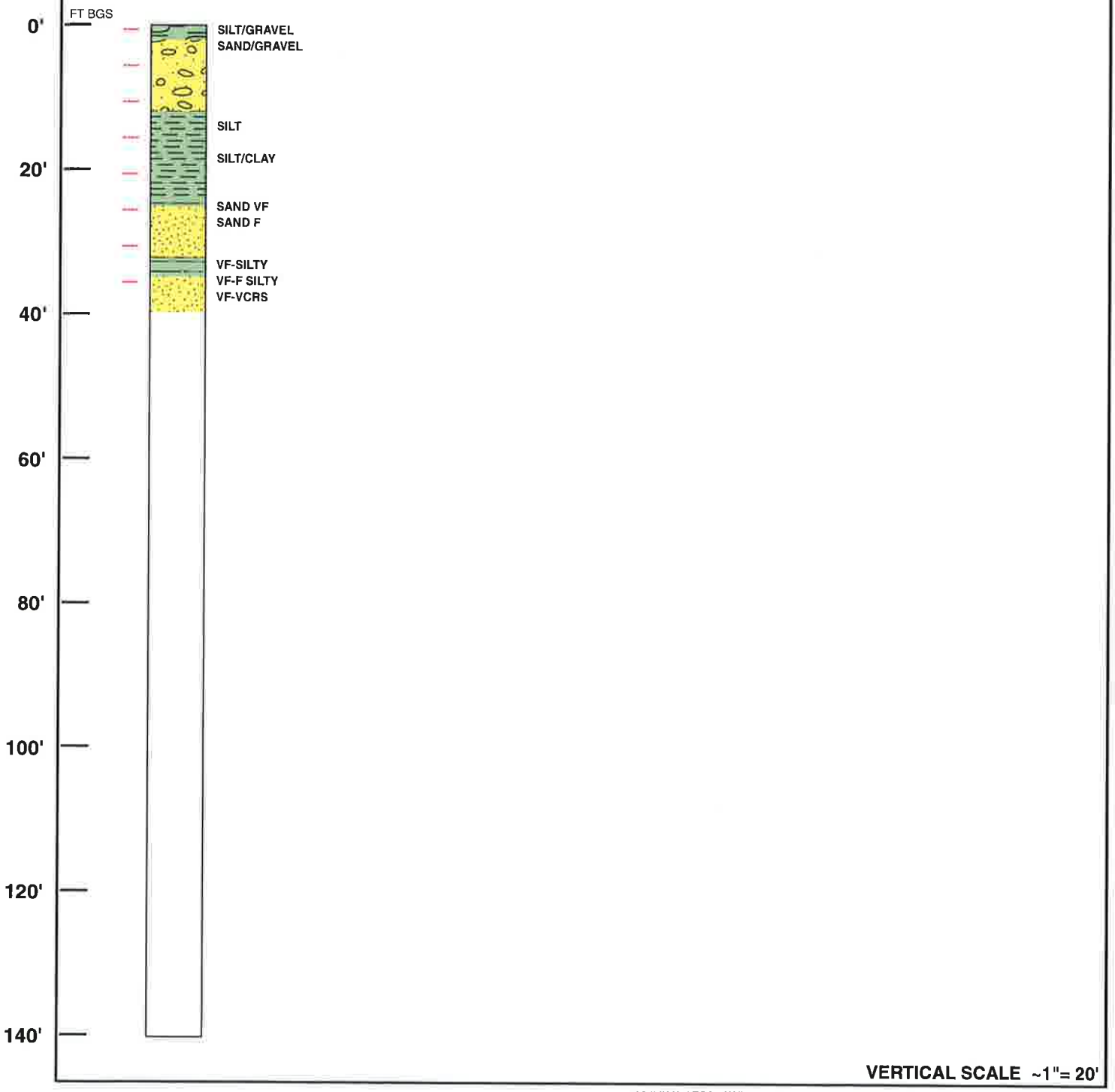
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-10

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,055.51 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans/A. Mumpy	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	01/07/04



VERTICAL SCALE ~1"= 20'

16JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_10.AI

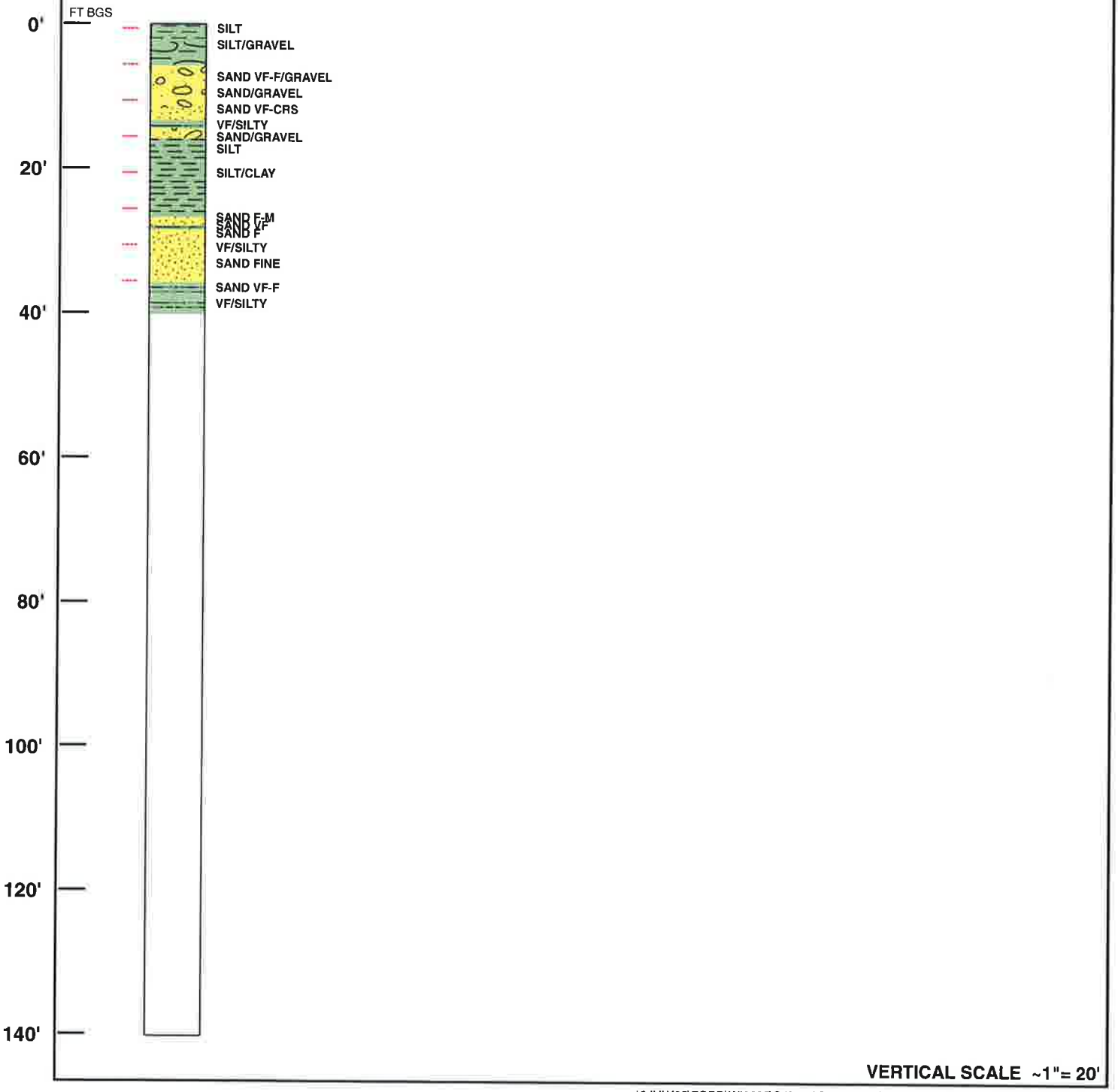
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-11

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1,057.41 Feet MSL
GEOLOGIST B. Evans/A. Mumpy	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 40 Feet BLS
DRILLER Mike Mueller	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 01/08/04



VERTICAL SCALE ~1"= 20'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_11.AI

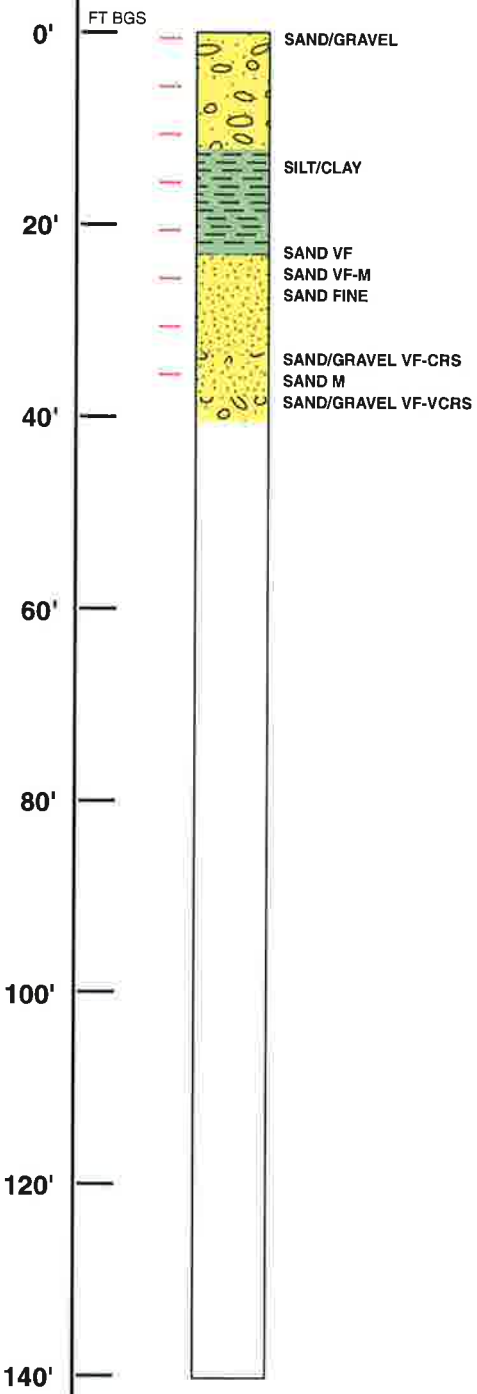
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. AGMGT-12

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,052.59 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans/A. Mumpy	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	01/08/04



VERTICAL SCALE ~1"= 20'

16JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: AGMGT_12.AI

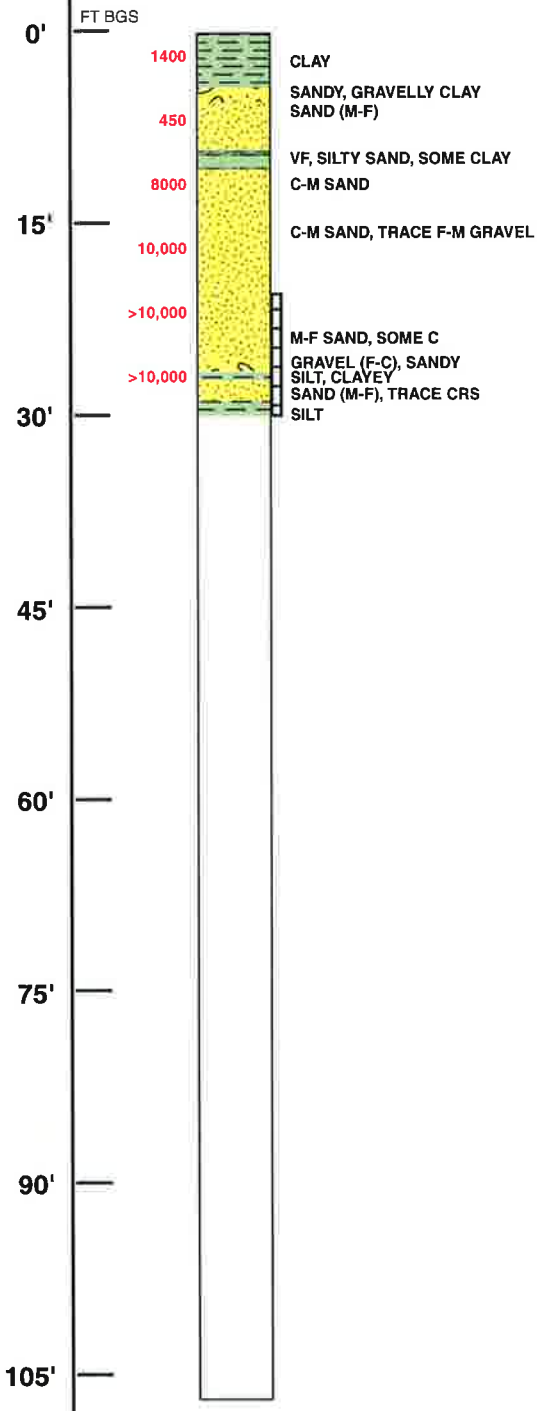
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEW-1

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1039.49 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hanson	Boart Longyear	Rotasonic	6/16/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMEW_1.AI

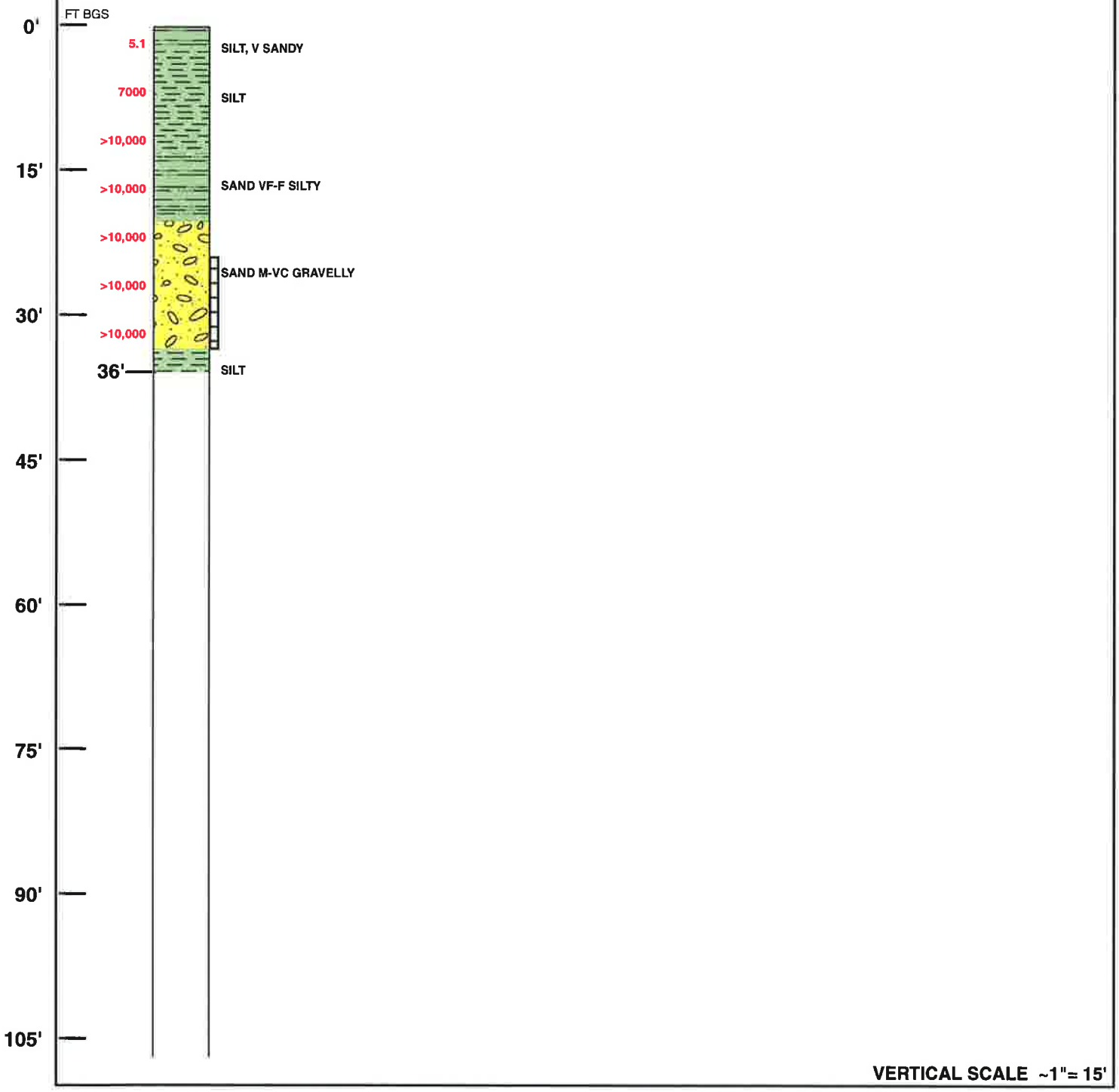
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEW-2

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.53 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	36 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hanson	Boart Longyear	Rotasonic	6/17/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMEW_2.AI

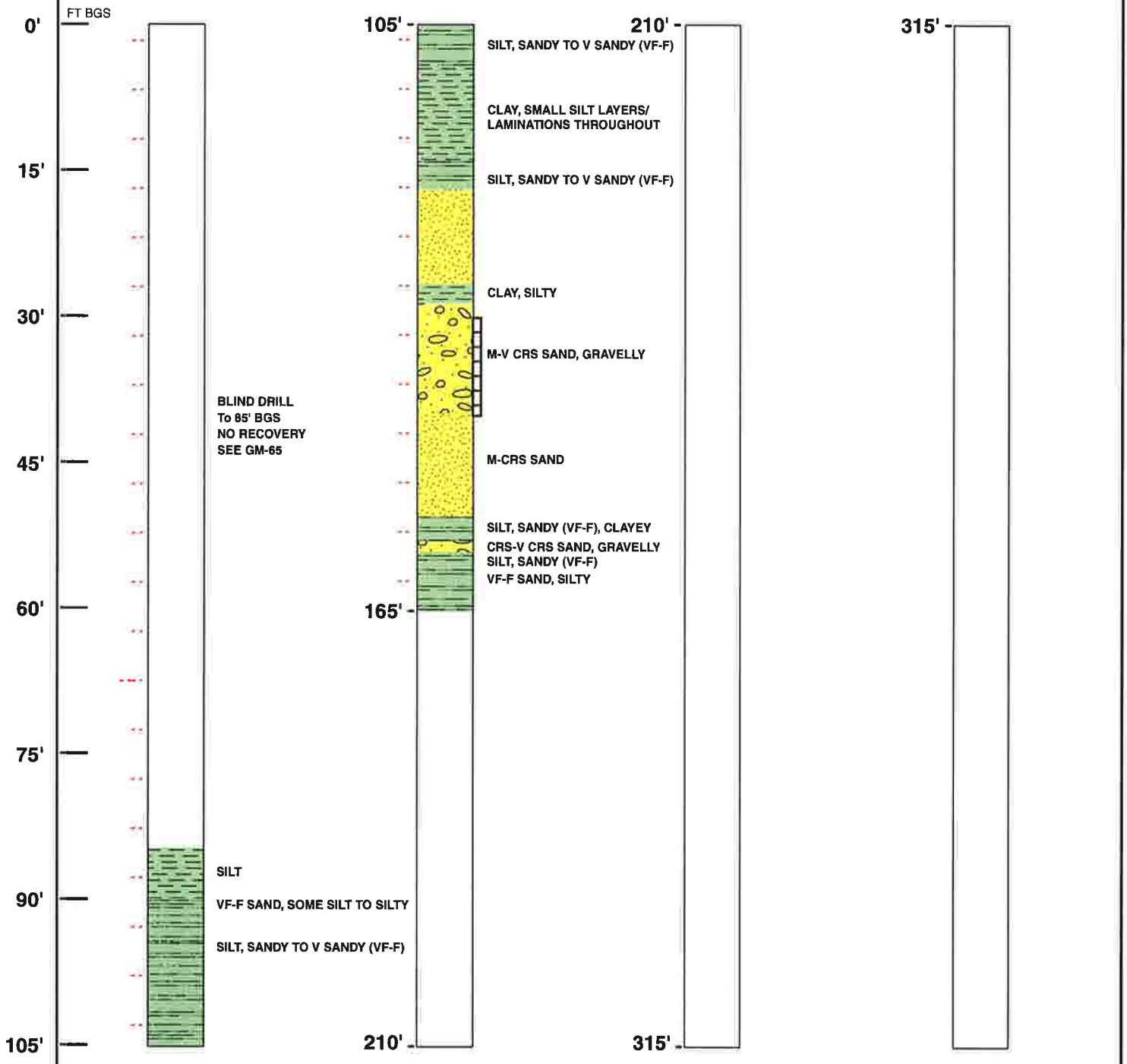
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEW-3

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1065.40 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	165 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hansen	Boart Longyear	Rotasonic	6/20/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMEW_3.AI

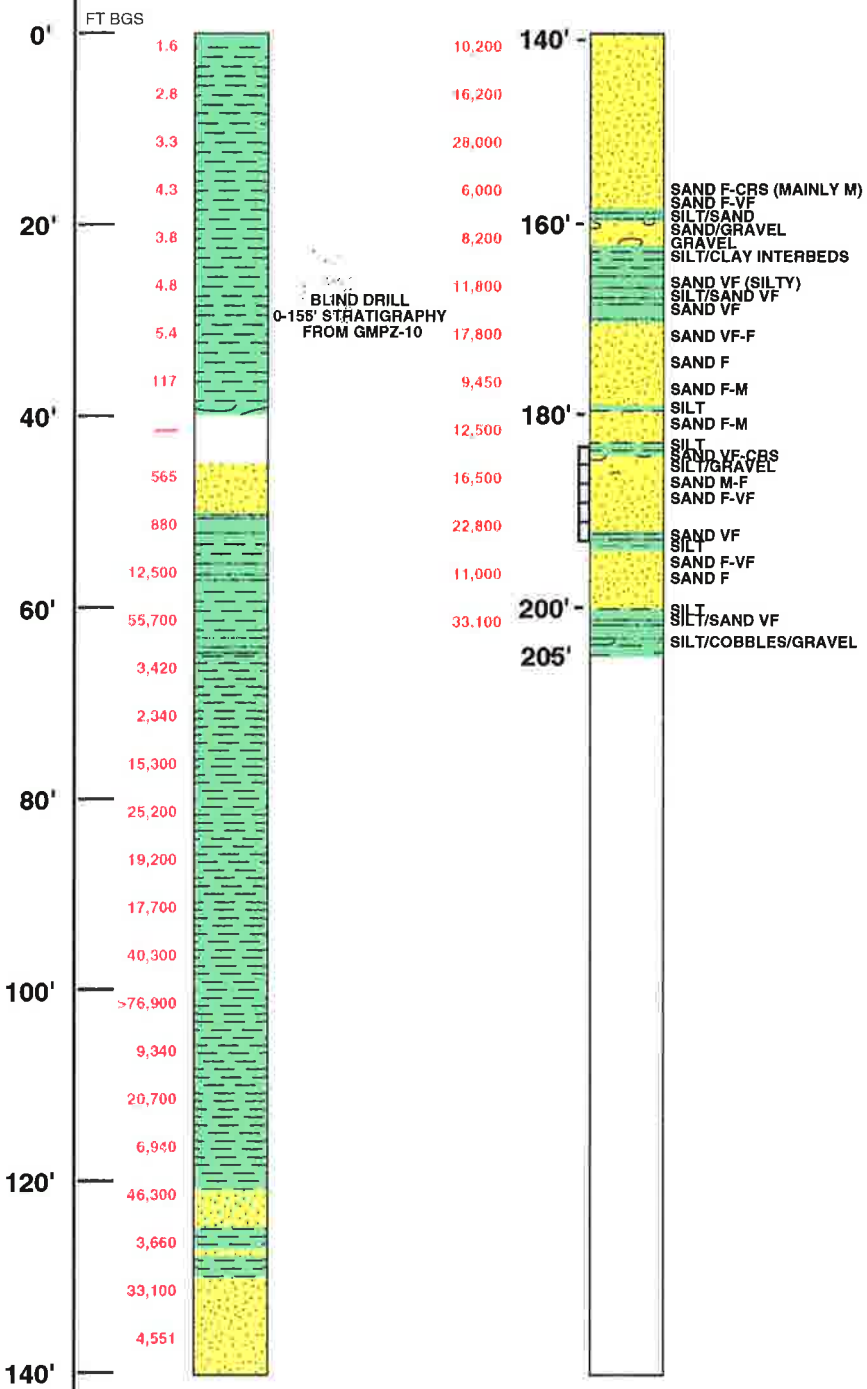
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEW-7

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1065.85 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	205 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Chris	Boart Longyear	Rotasonic	10/10/03



VERTICAL SCALE ~1" = 20'

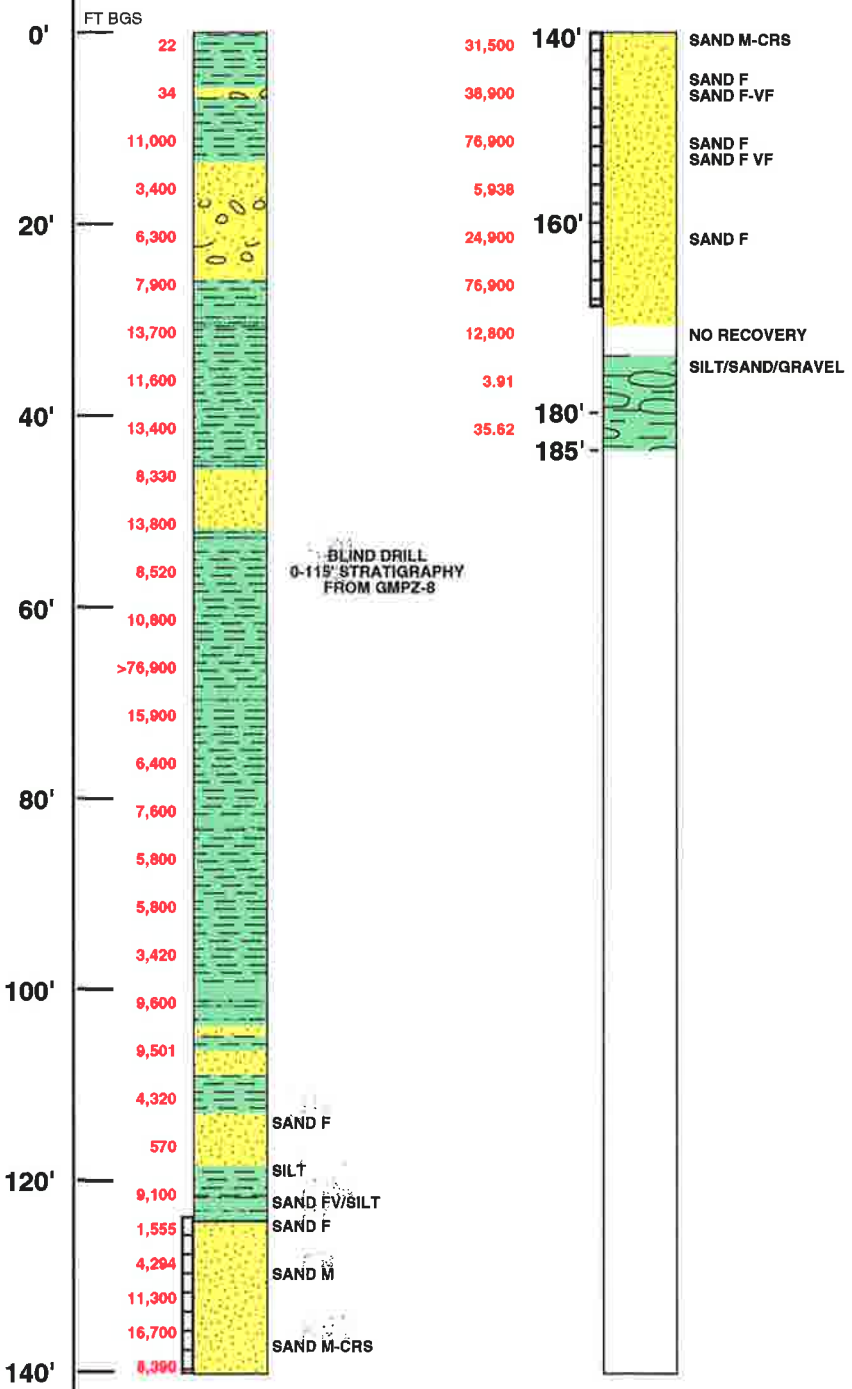
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEW-8

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1044.08 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	185 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Chris	Boart Longyear	Rotasonic	10/20/03



VERTICAL SCALE ~1" = 20'

26NOV03\FORD\WI0637\2003\GRAPHICS\DRAWING: GMEW_8.AI

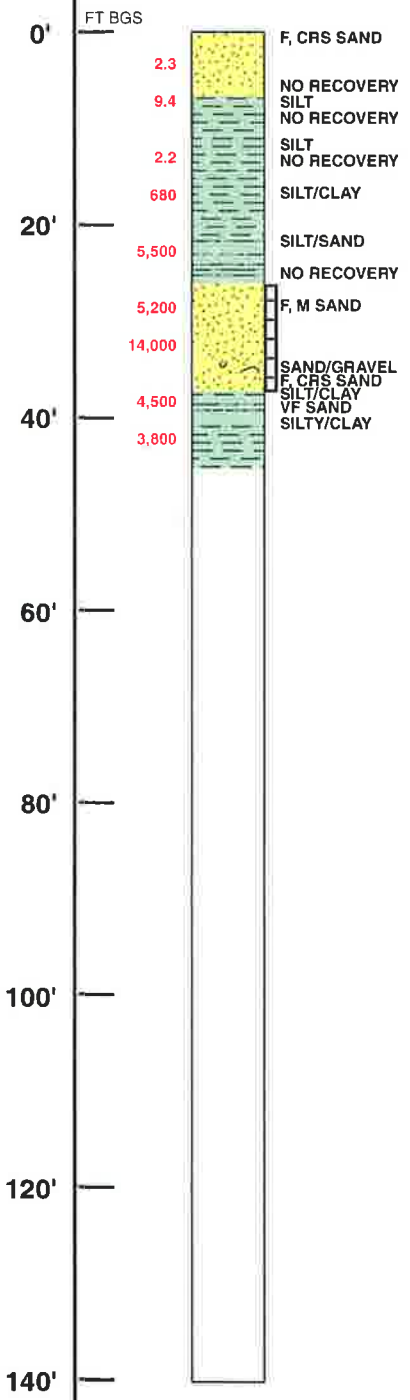
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-1

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,054.15 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	6/2/04



VERTICAL SCALE ~1"= 20'

28DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\\DRAWING: GMEWA_1.AI

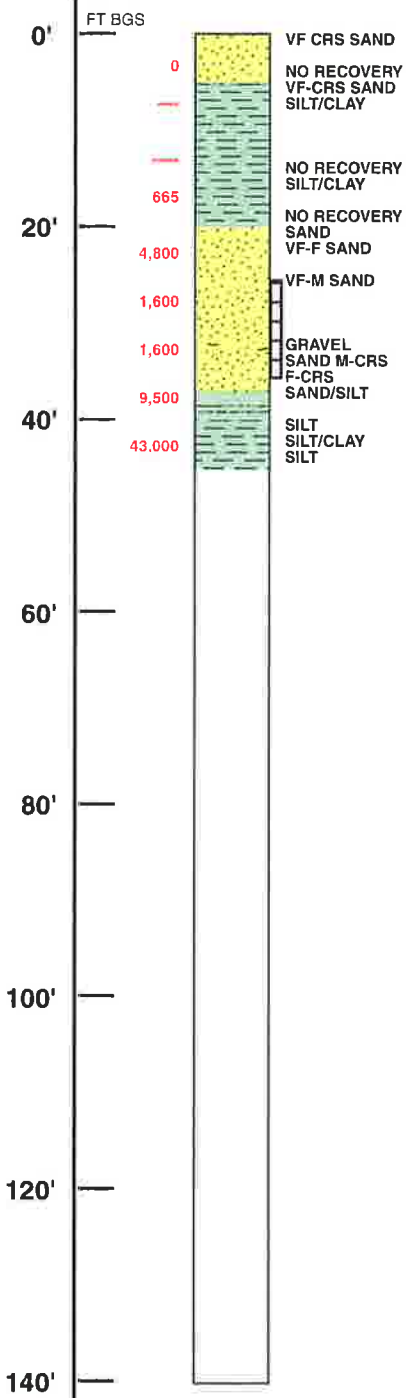
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-2

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,053.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	6/3/04



VERTICAL SCALE ~1"= 20'

28DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_2.AI

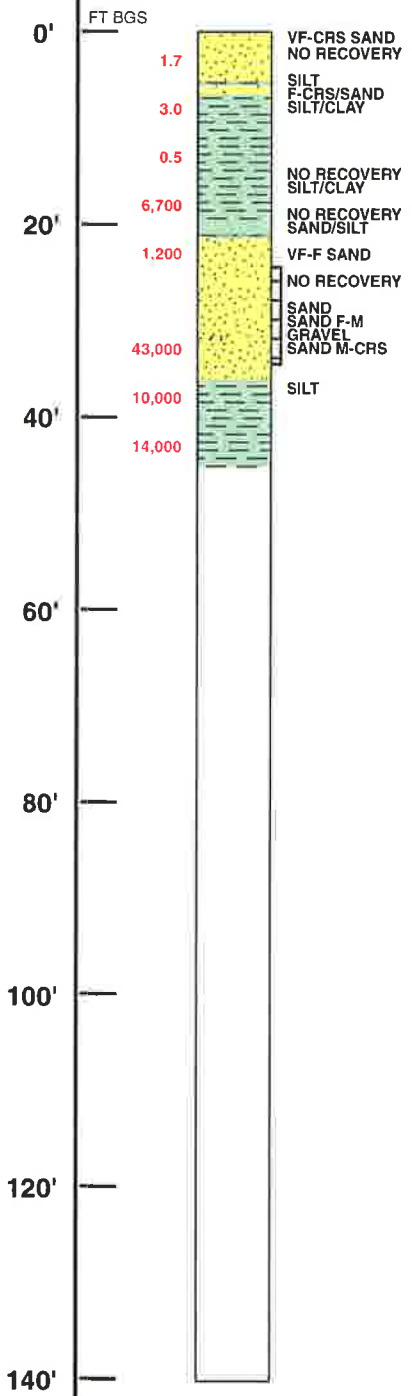
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-3

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,053.41 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	6/3/04



VERTICAL SCALE ~1" = 20'

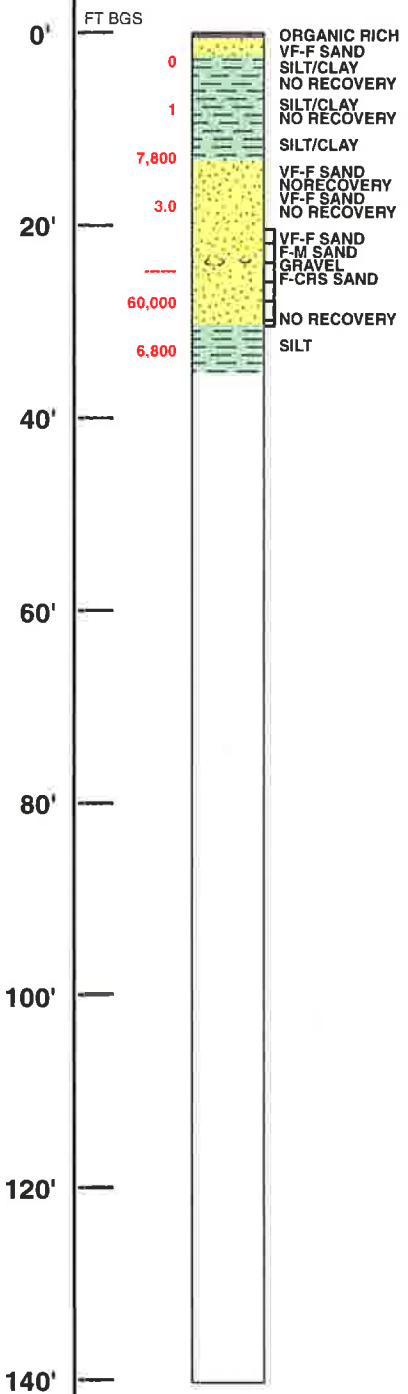
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-4

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.23 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen/J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
J. Weeks	Boart Longyear	Rotasonic	6/3/04



VERTICAL SCALE ~1"= 20'

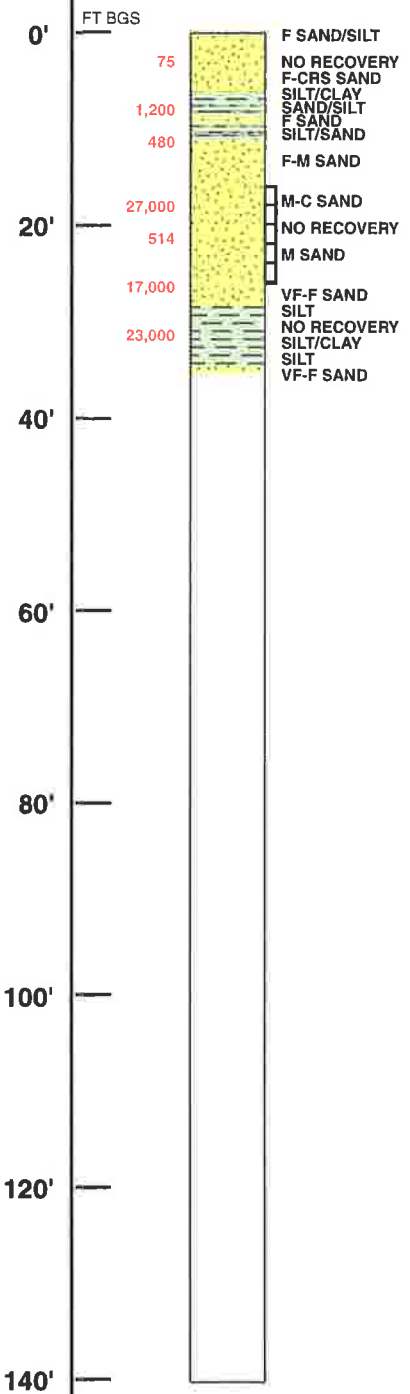
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-5

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,042.35 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	6/4/04



VERTICAL SCALE ~1"= 20'

12JAN05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_5.AI

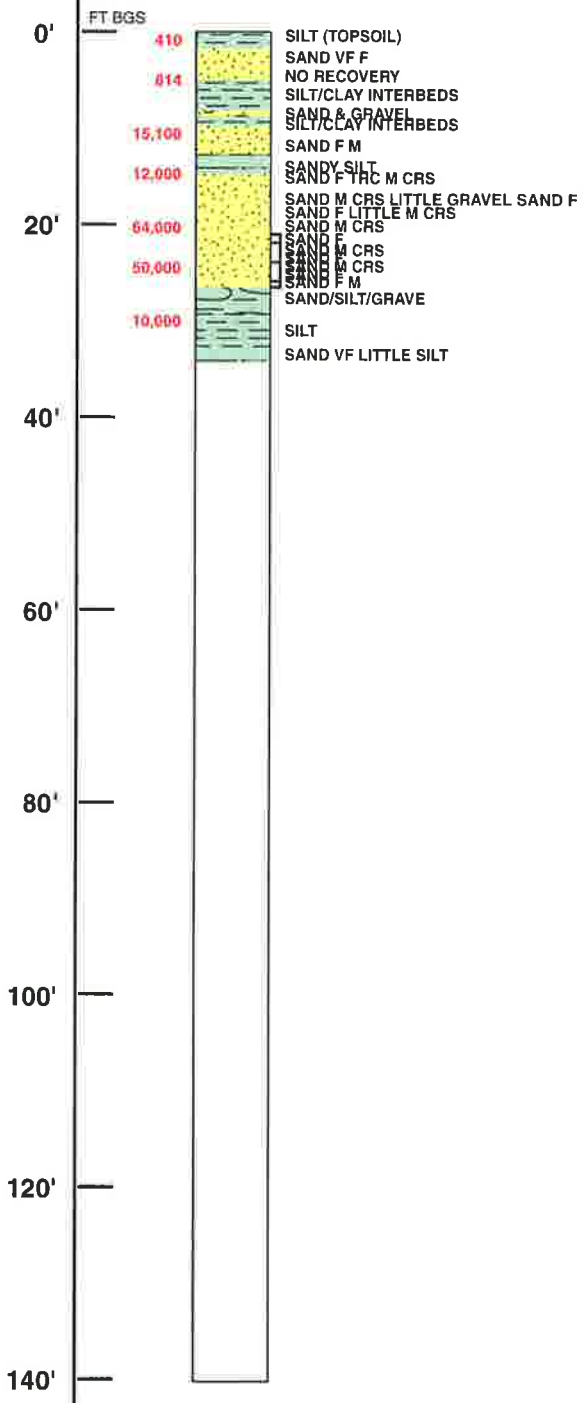
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-6

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.88 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	8/3/04



VERTICAL SCALE ~1"= 20'

28DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA-6.AI

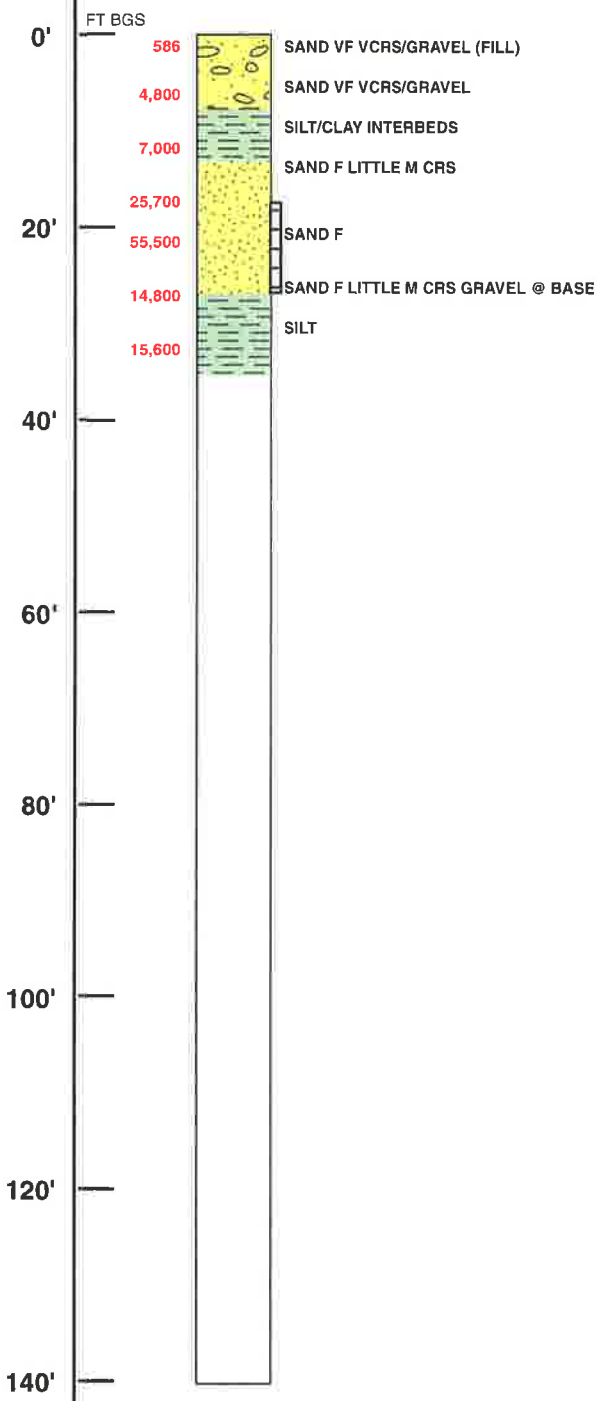
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-7

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1042.34 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	7/20/04



VERTICAL SCALE ~1"= 20'

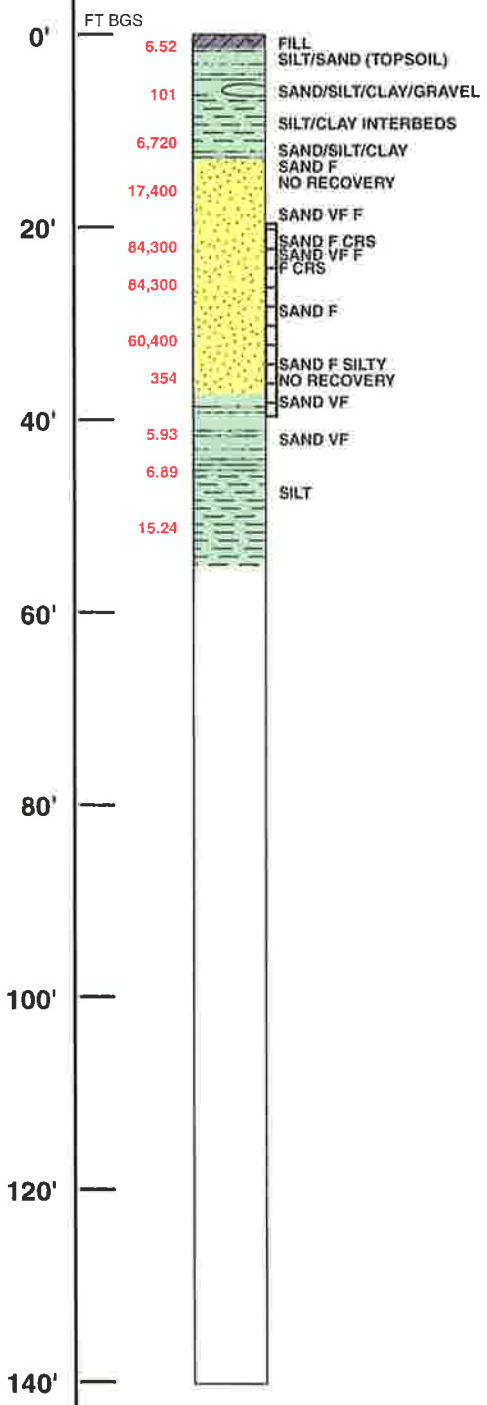
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-8

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.58 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	55 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	7/20/04



VERTICAL SCALE ~1"= 20'

26AUG04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\\DRAWING: GMEWA_8.AI

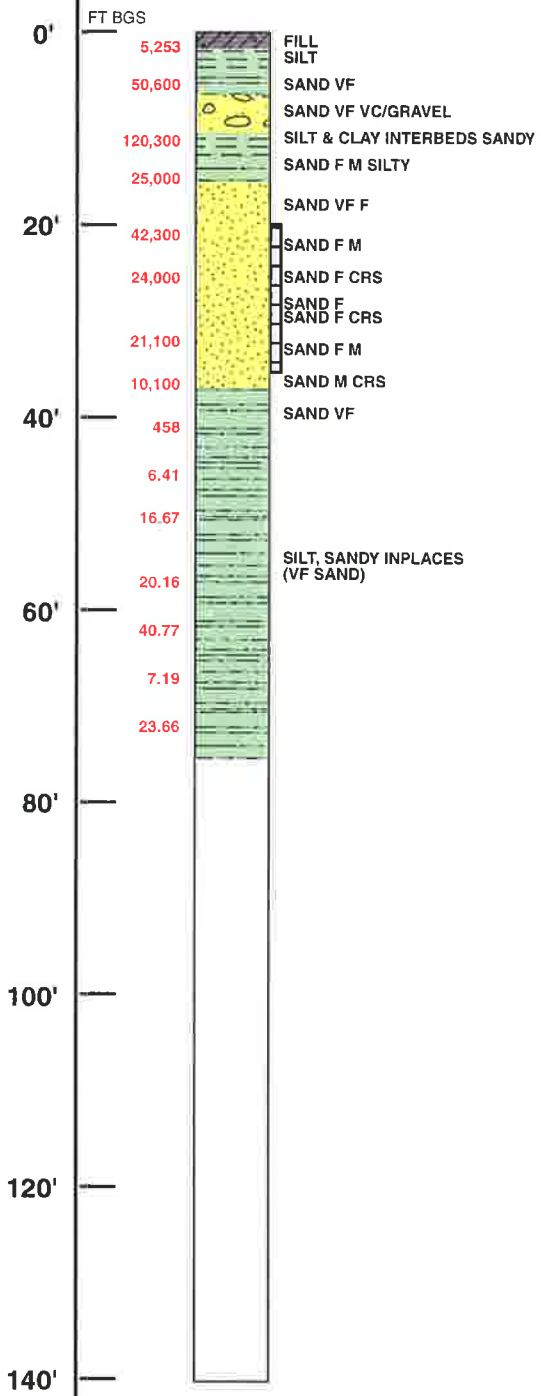
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-9

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1040.50 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	75 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	7/19/04



VERTICAL SCALE ~1"= 20'

26AUG04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\\DRAWING: GMEWA_9.AI

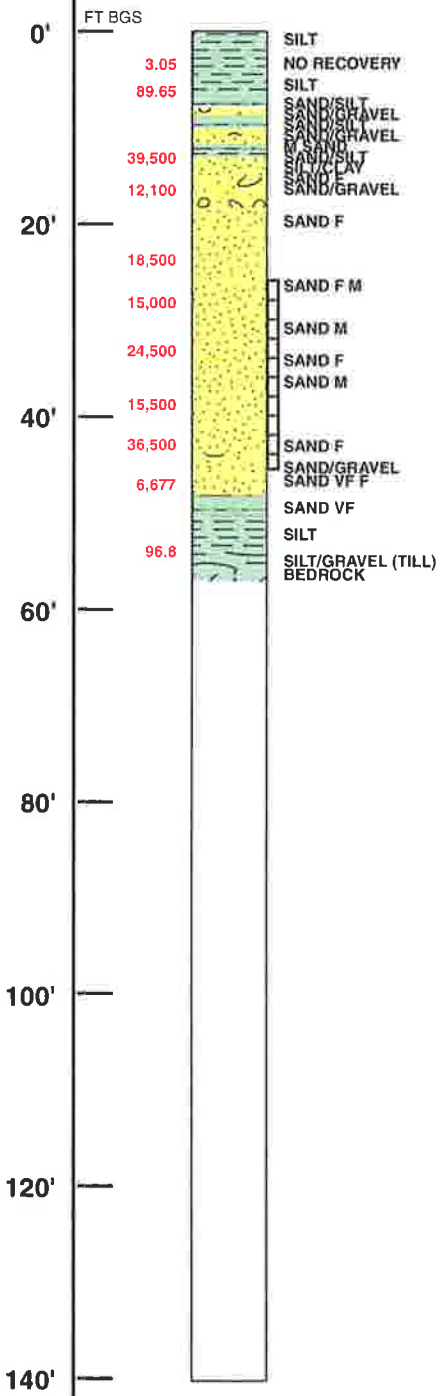
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-10

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.42 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	56 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	07/13/04



VERTICAL SCALE ~1"= 20'

28DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_10.AI

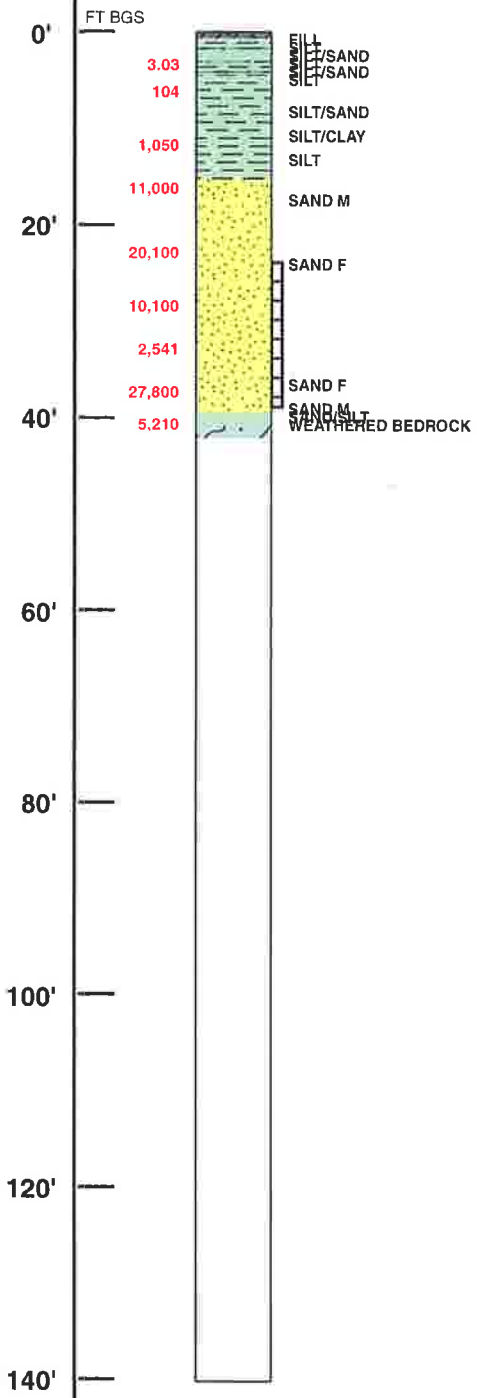
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-11

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1043.25 Feet MSL
GEOLOGIST T. Schoen	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 42 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 07/13/04



VERTICAL SCALE ~1"= 20'

28DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_11.AI

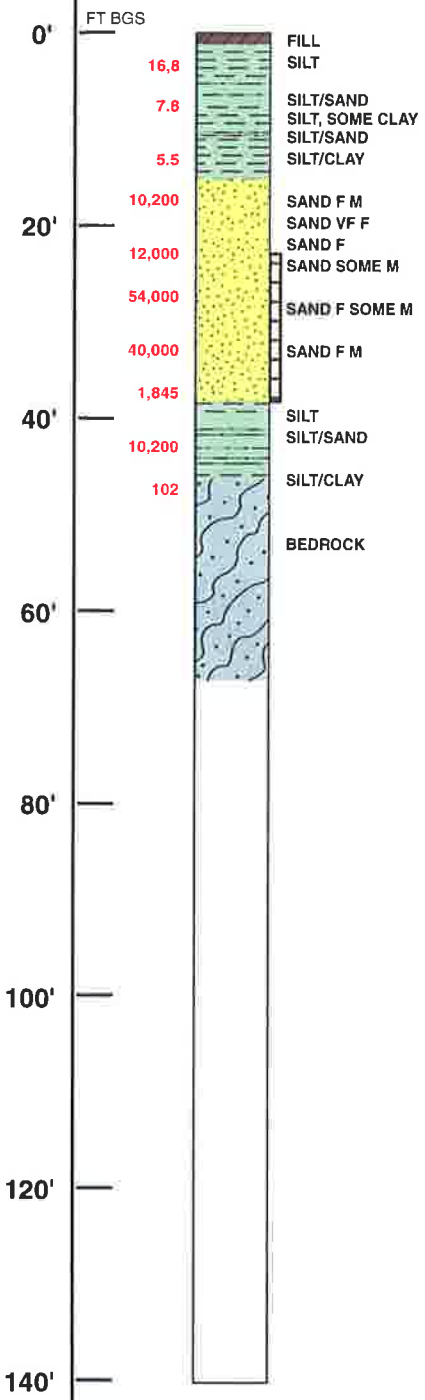
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-12

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1,044.34 Feet MSL
GEOLOGIST T. Schoen/A. Mumpy	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 67 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 07/12/04



VERTICAL SCALE ~1"= 20'

28DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_12.AI

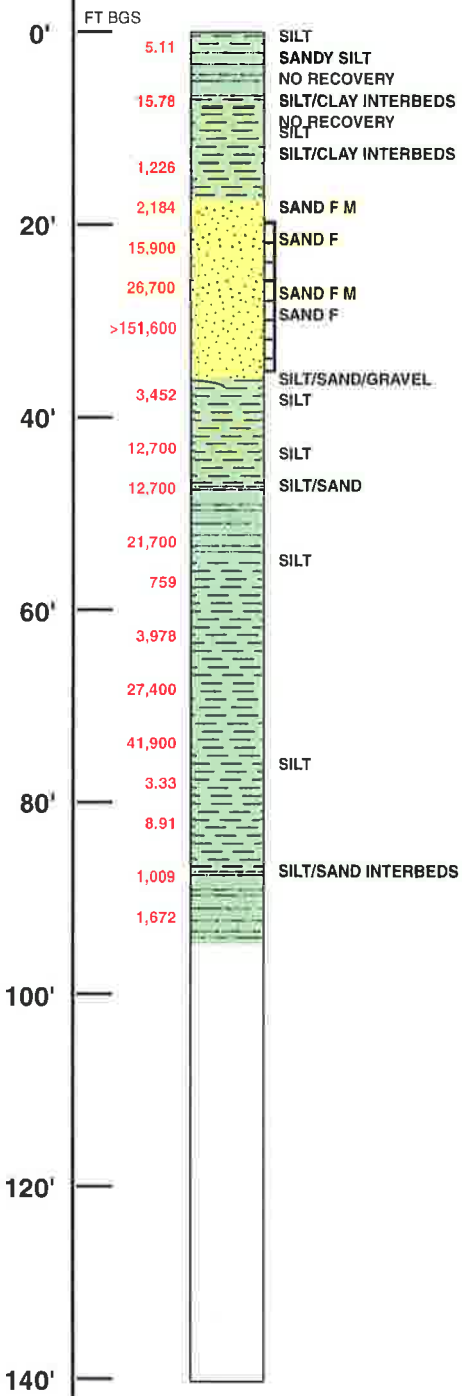
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-13

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1045.04 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	95 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	7/27/04



VERTICAL SCALE ~1"= 20'

24AUG04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_13.AI

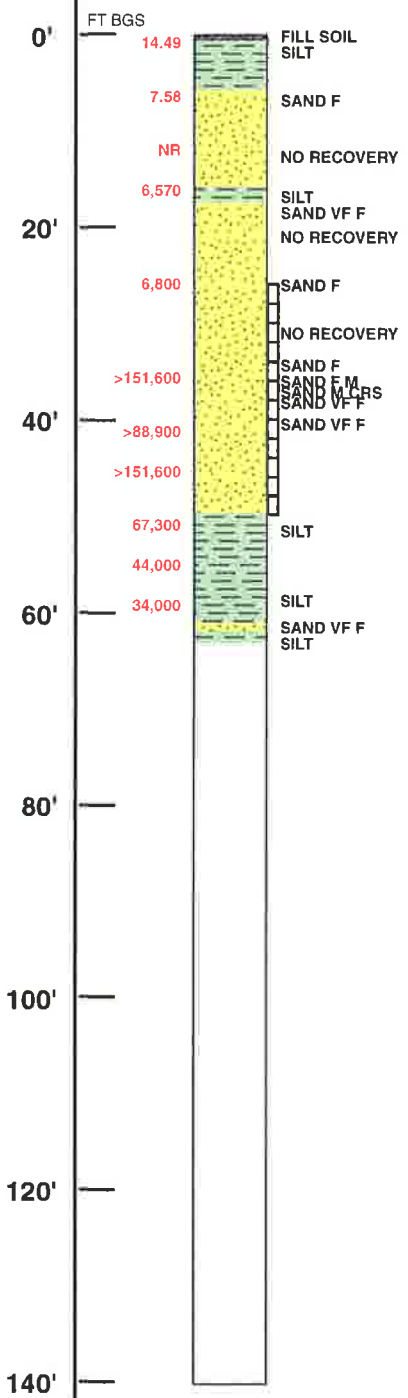
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-14

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.01 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	65 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	7/27/04



VERTICAL SCALE ~1"= 20'

26AUG04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA-14.AI

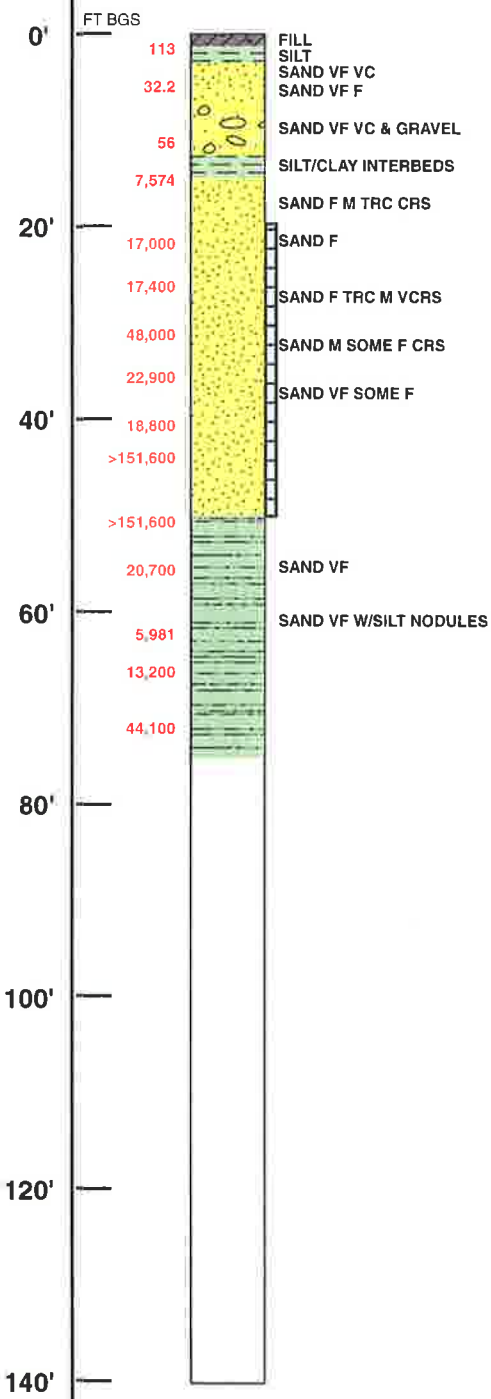
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-15

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.09 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	75 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	7/21/04



VERTICAL SCALE ~1"= 20'

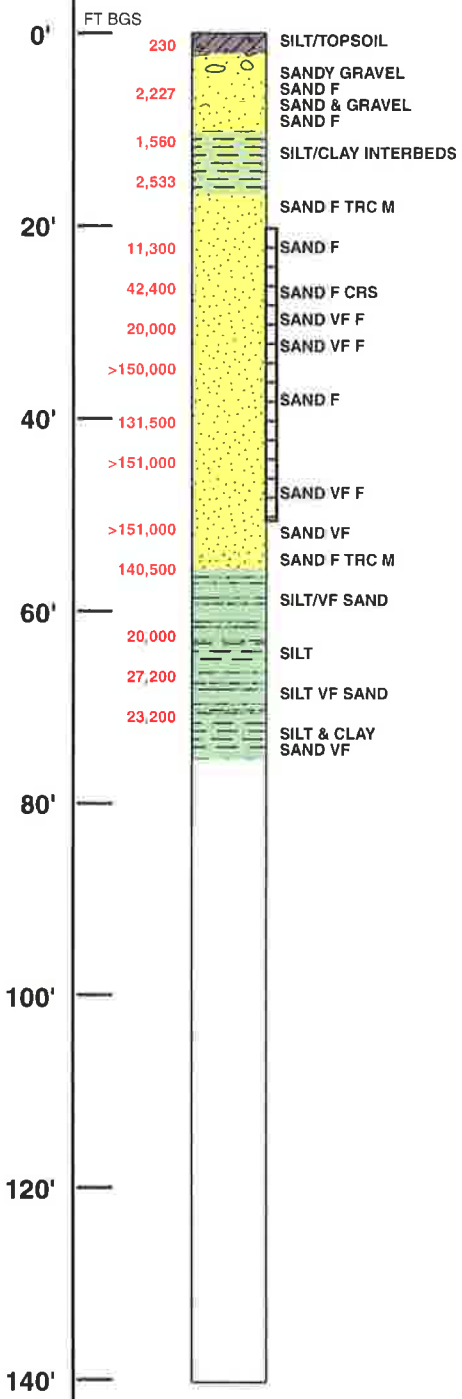
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-16

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.52 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	75 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	7/21/04



VERTICAL SCALE ~1"= 20'

26AUG04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\\DRAWING: GMEWA_16.AI

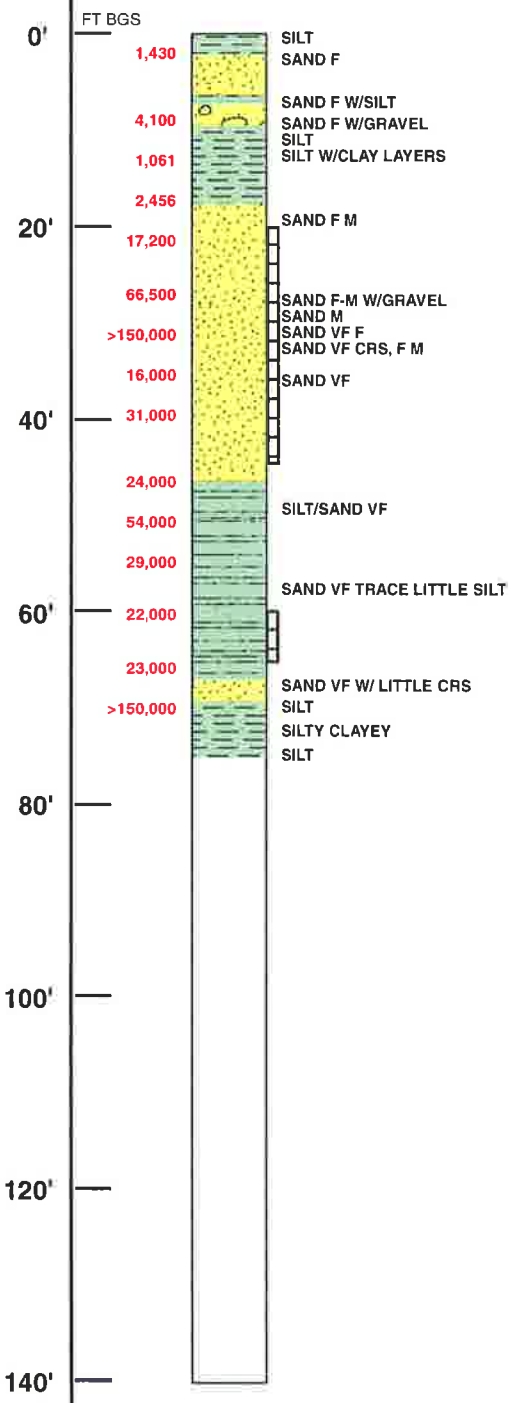
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-17

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,047.92 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	75 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/11/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_17.AI

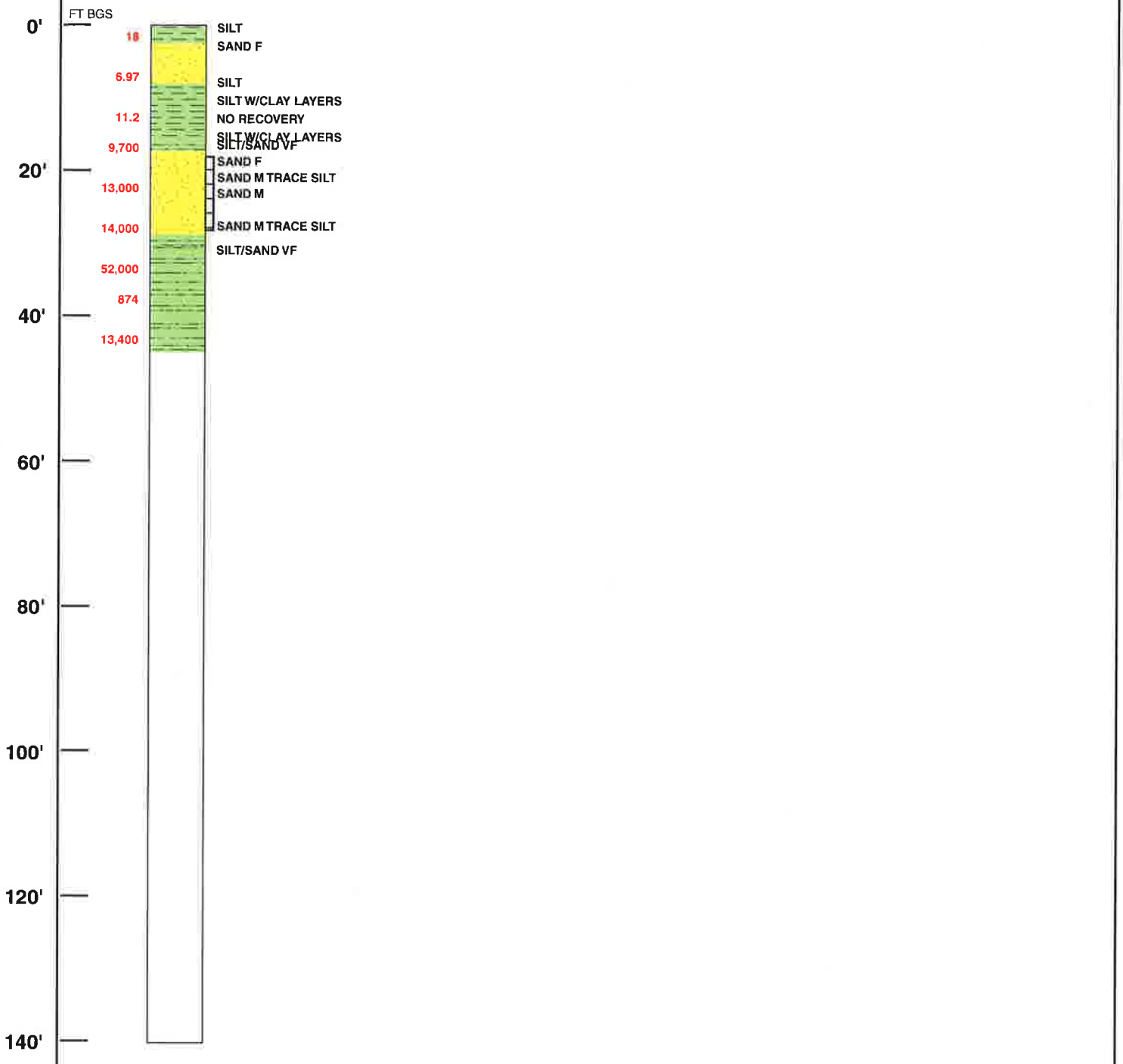
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-18

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/11/04



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_18.AI

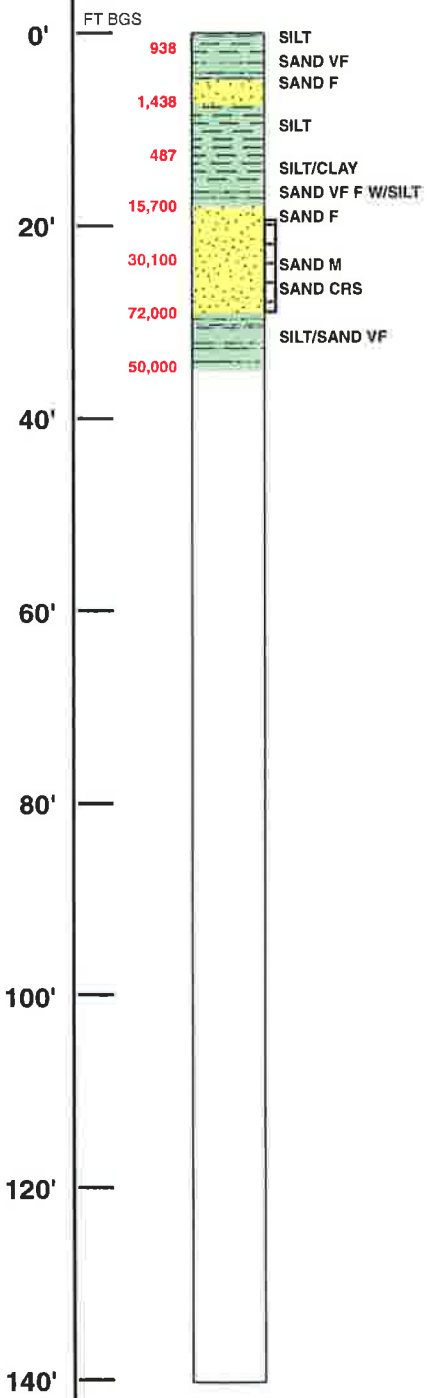
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-19

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,048.79 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/10/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_19.AI

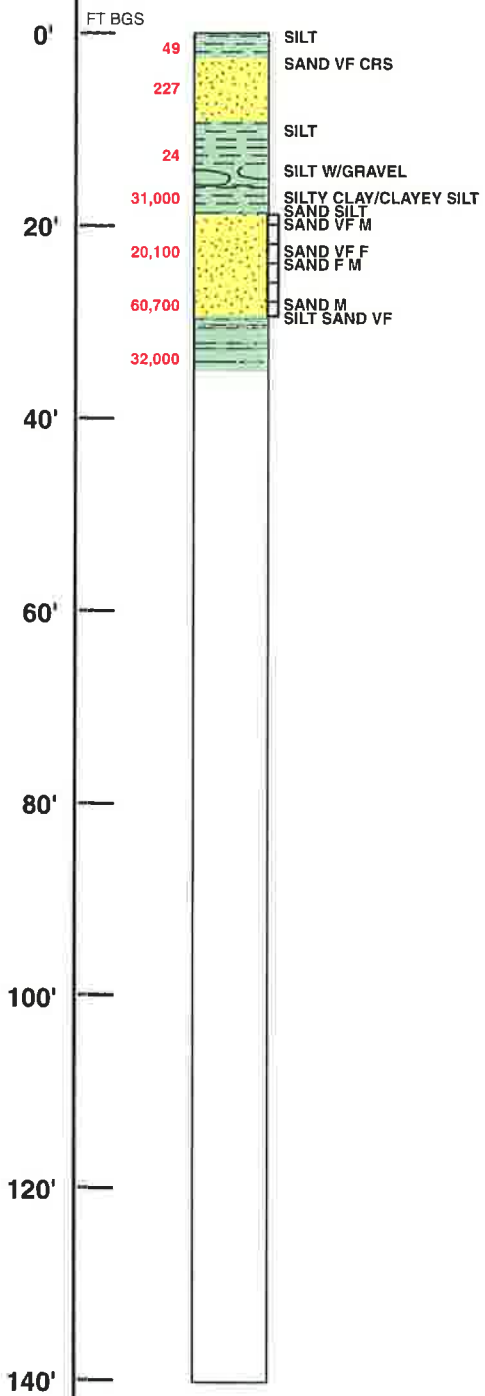
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-20

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,049.20 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/10/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_20.AI

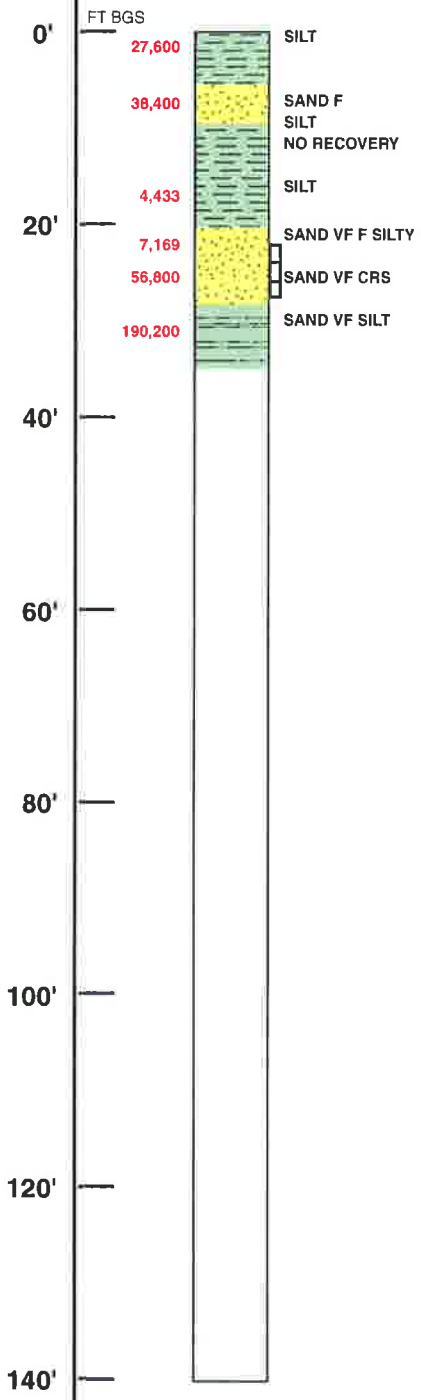
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-21

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,049.47 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/09/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_21.AI

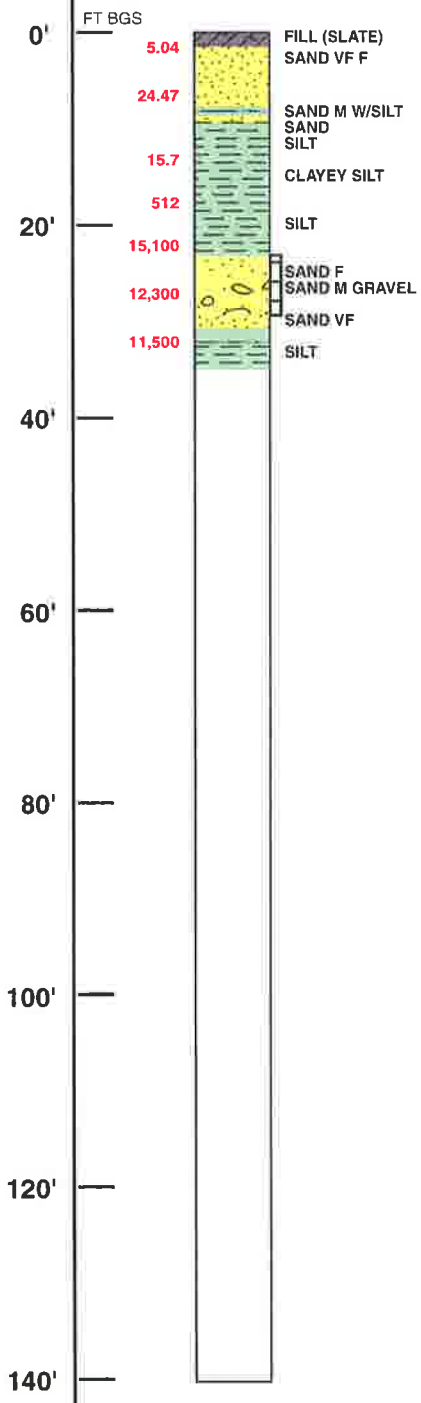
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-22

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,049.44 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/09/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_22.AI

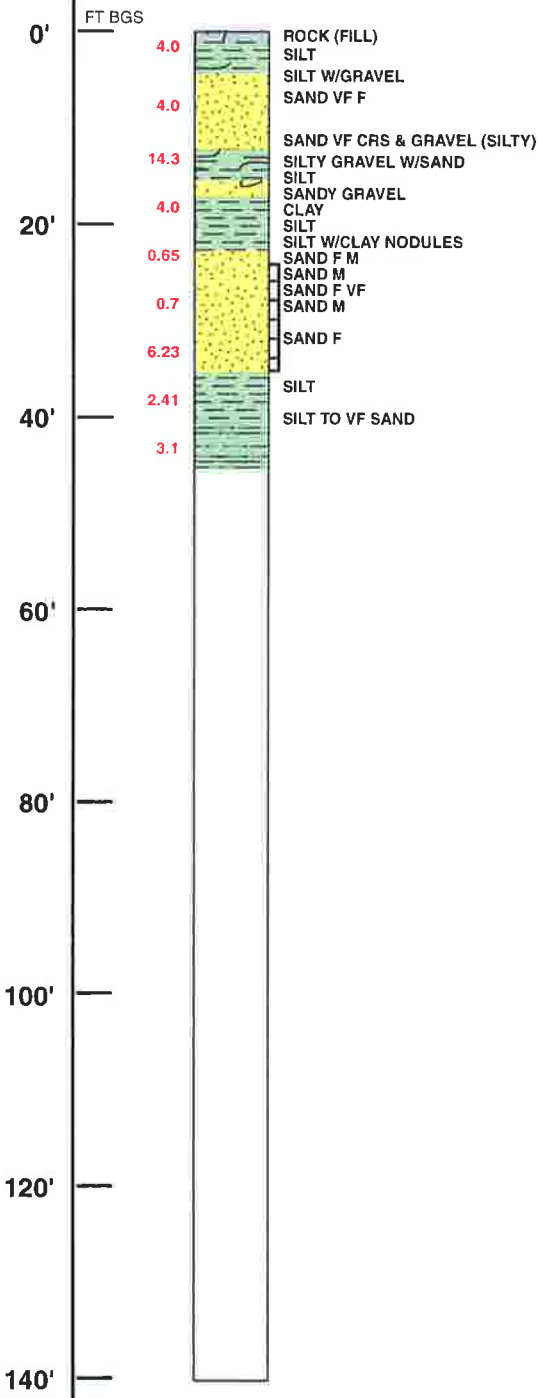
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-23

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,049.29 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/08/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_23.AI

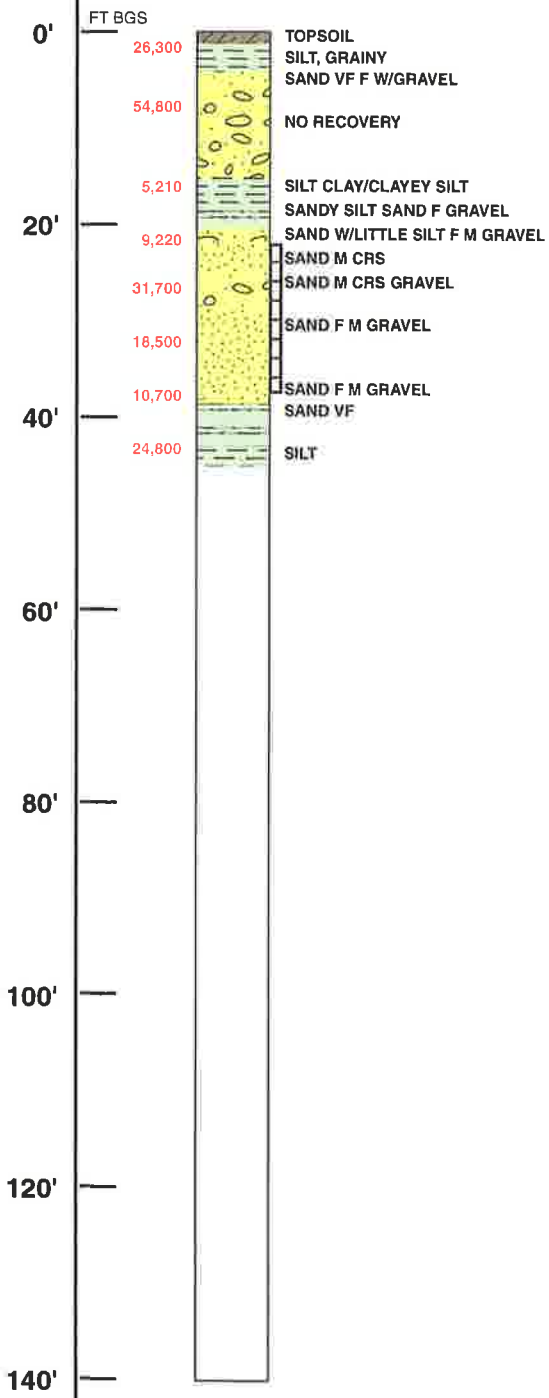
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-24

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,049.02 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker/A. Mumpy	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/07/04



VERTICAL SCALE ~1"= 20'

12JAN05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_24.AI

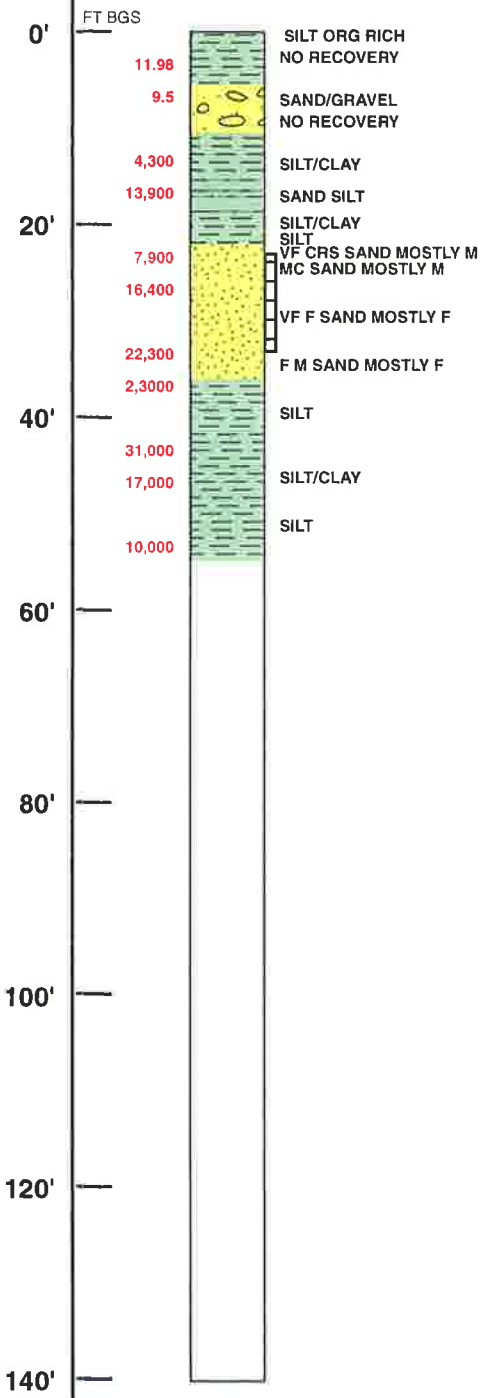
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-25

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,049.22 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen/J. Flater	Continuous	Rotasonic Core Barrel	55 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	07/01/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_25.AI

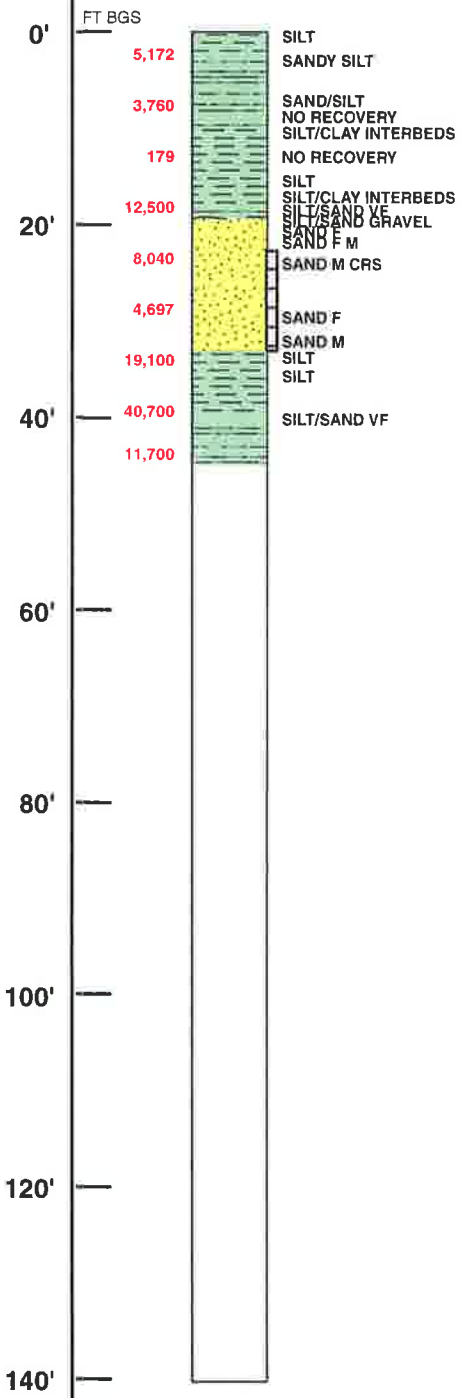
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-26

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.22 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	7/24/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_26.AI

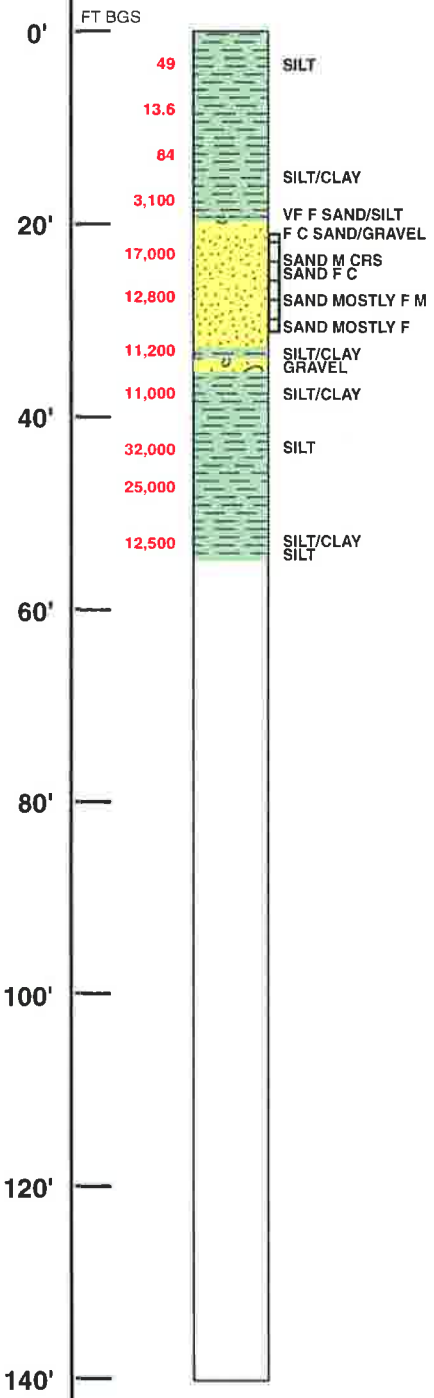
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-27

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.96 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	55 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	06/28/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_27.AI

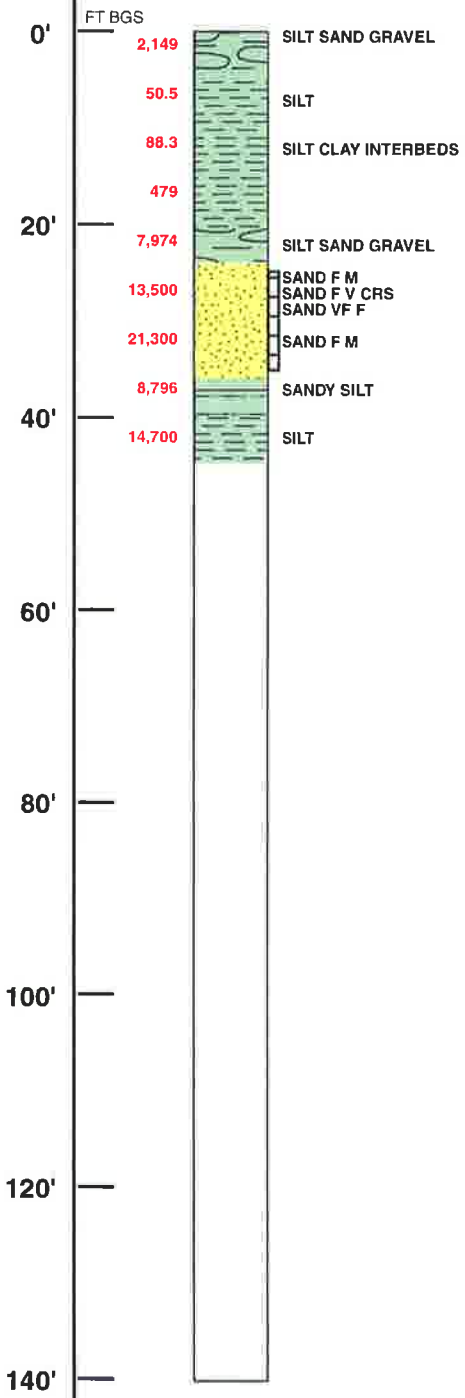
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-28

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.19 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy/P. Lenaker	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/01/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_28.AI

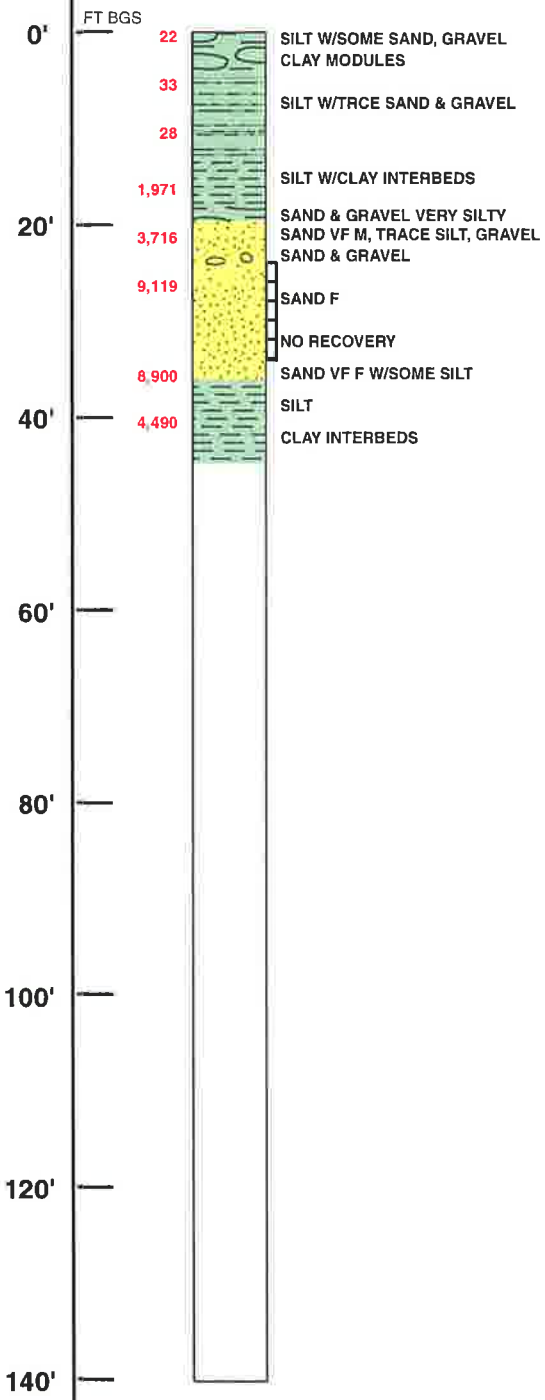
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-28A

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,049.74 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy/P. Lenaker	Continuous	Rotasonic Core Barrel	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	07/06/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWA_28A.AI

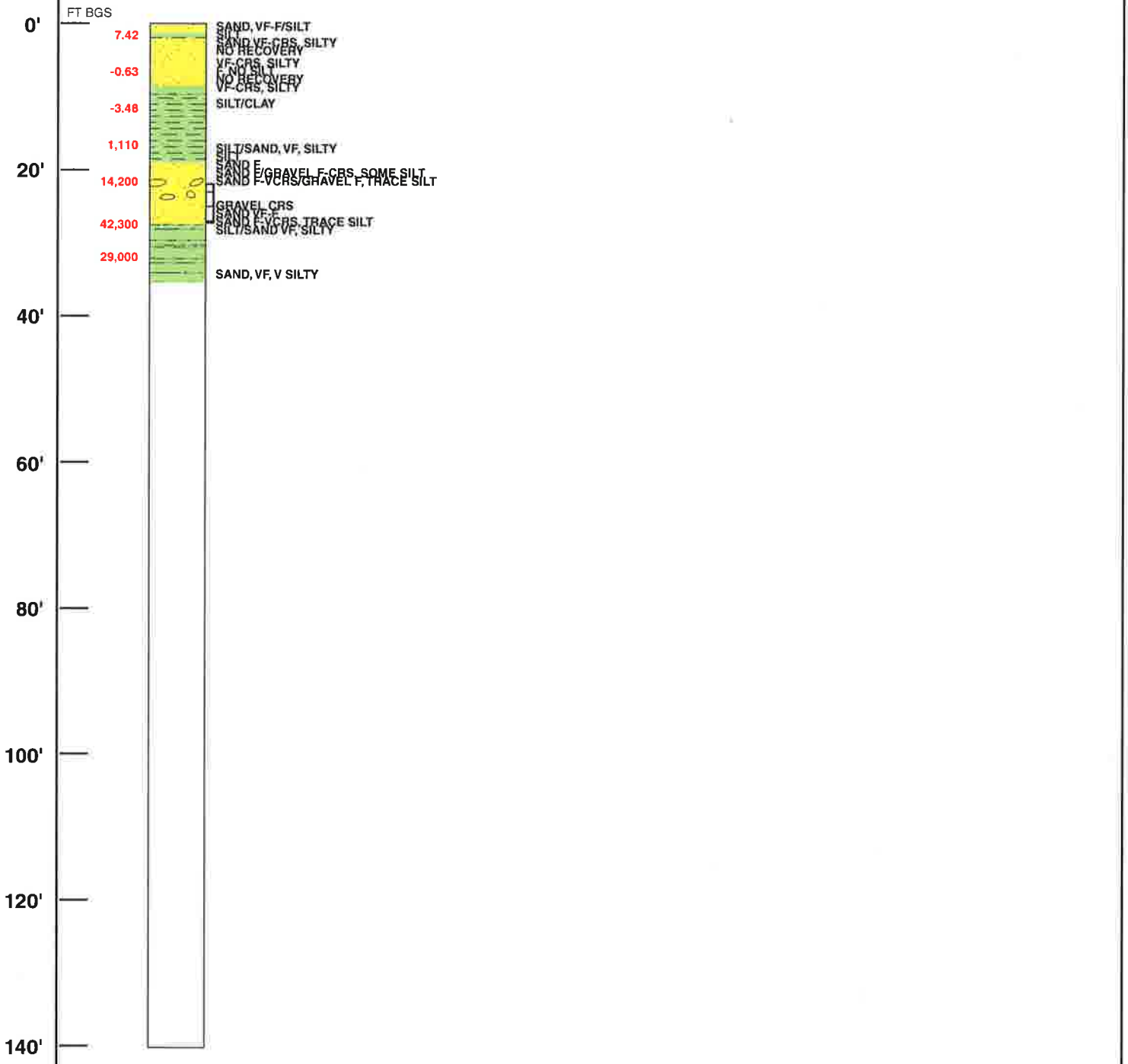
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-29

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.07 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/4/06



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMEWA-29.AI

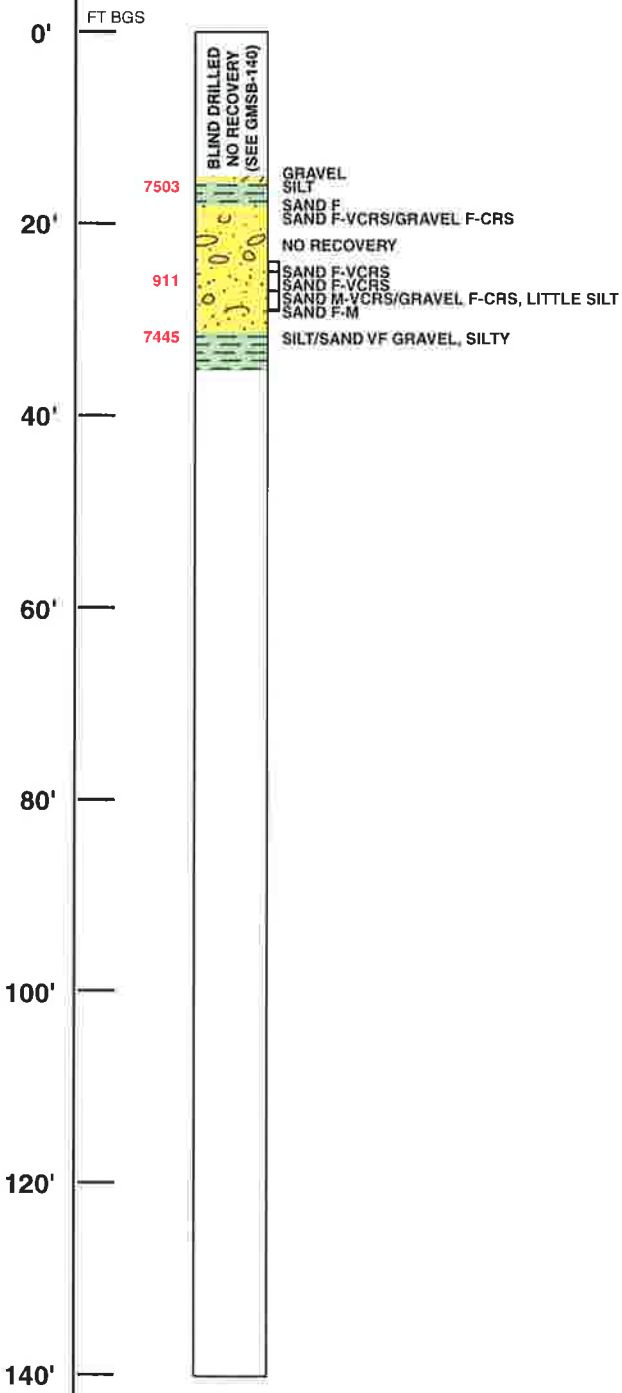
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWA-30

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.26 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/4/06



VERTICAL SCALE ~1"= 20'

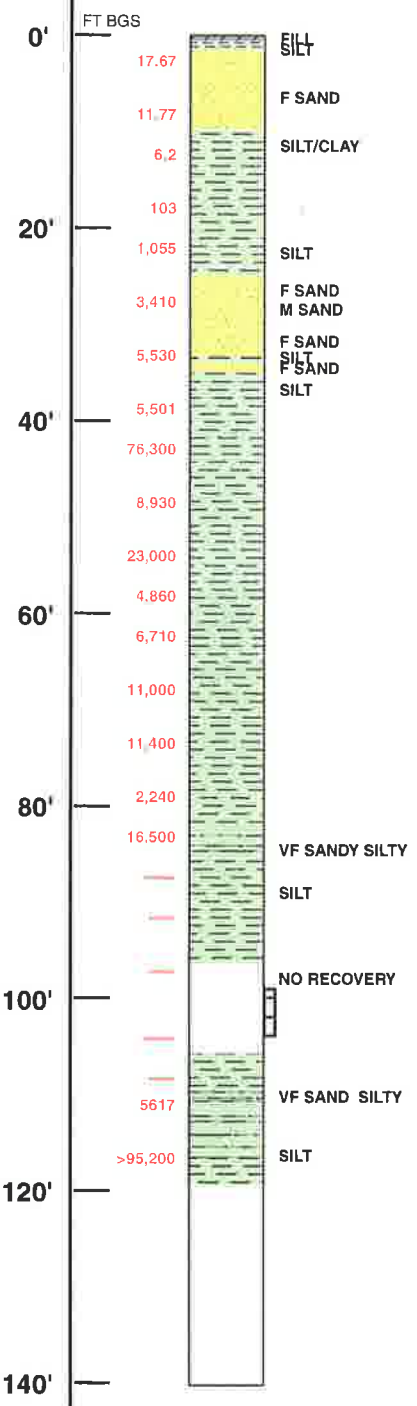
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWB-1

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. schoen	Continuous	Rotasonic Core Barrel	120 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
J. Weeks	Boart Longyear	Rotasonic	9/25/04



VERTICAL SCALE ~1"= 20'

13JAN05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMEWB_1.AI

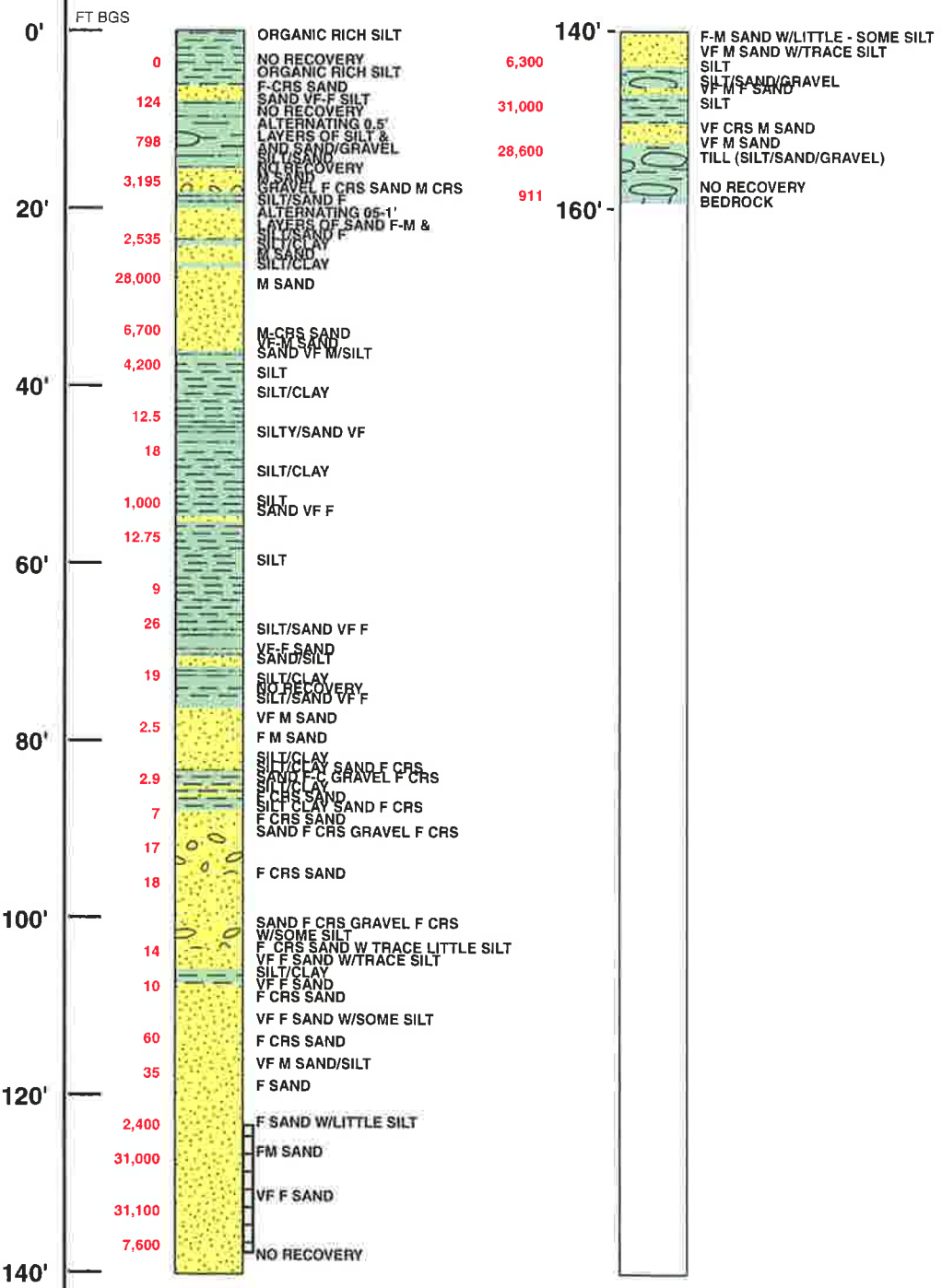
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-1

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1045.19 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	159 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	06/08/04



VERTICAL SCALE ~1"= 20'

19DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_1.AI

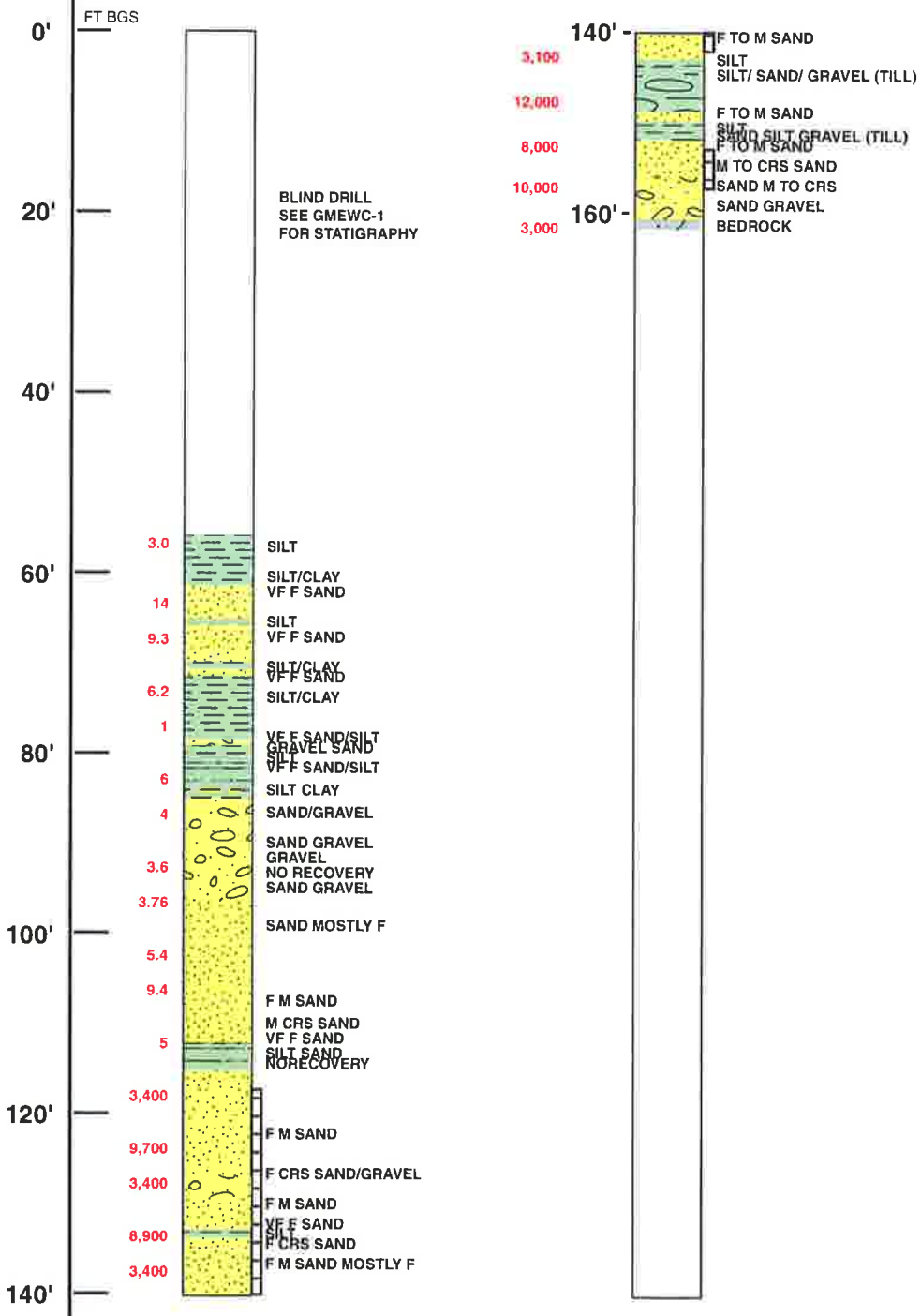
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-1A

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1,045.68 Feet MSL
GEOLOGIST: T. Schoen	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Rotasonic Core Barrel	TOTAL DEPTH DRILLED: 162 Feet BLS
DRILLER: Jon Weeks	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Rotasonic	DATE BORING COMPLETED: 06/17/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_1A.AI

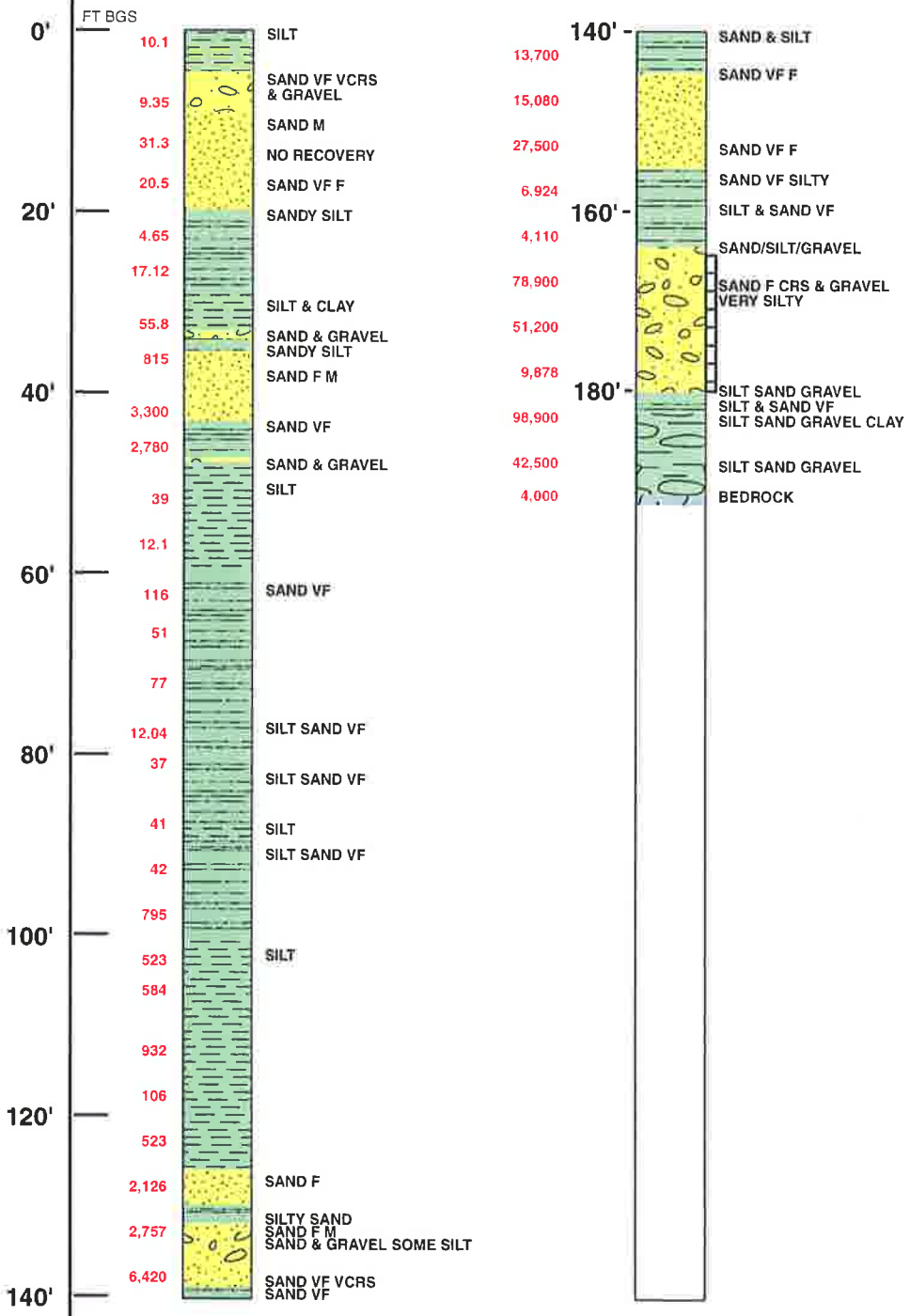
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-2

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.87 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	192 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Alvin Anderson	Boart Longyear	Rotasonic	06/17/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_2.AI

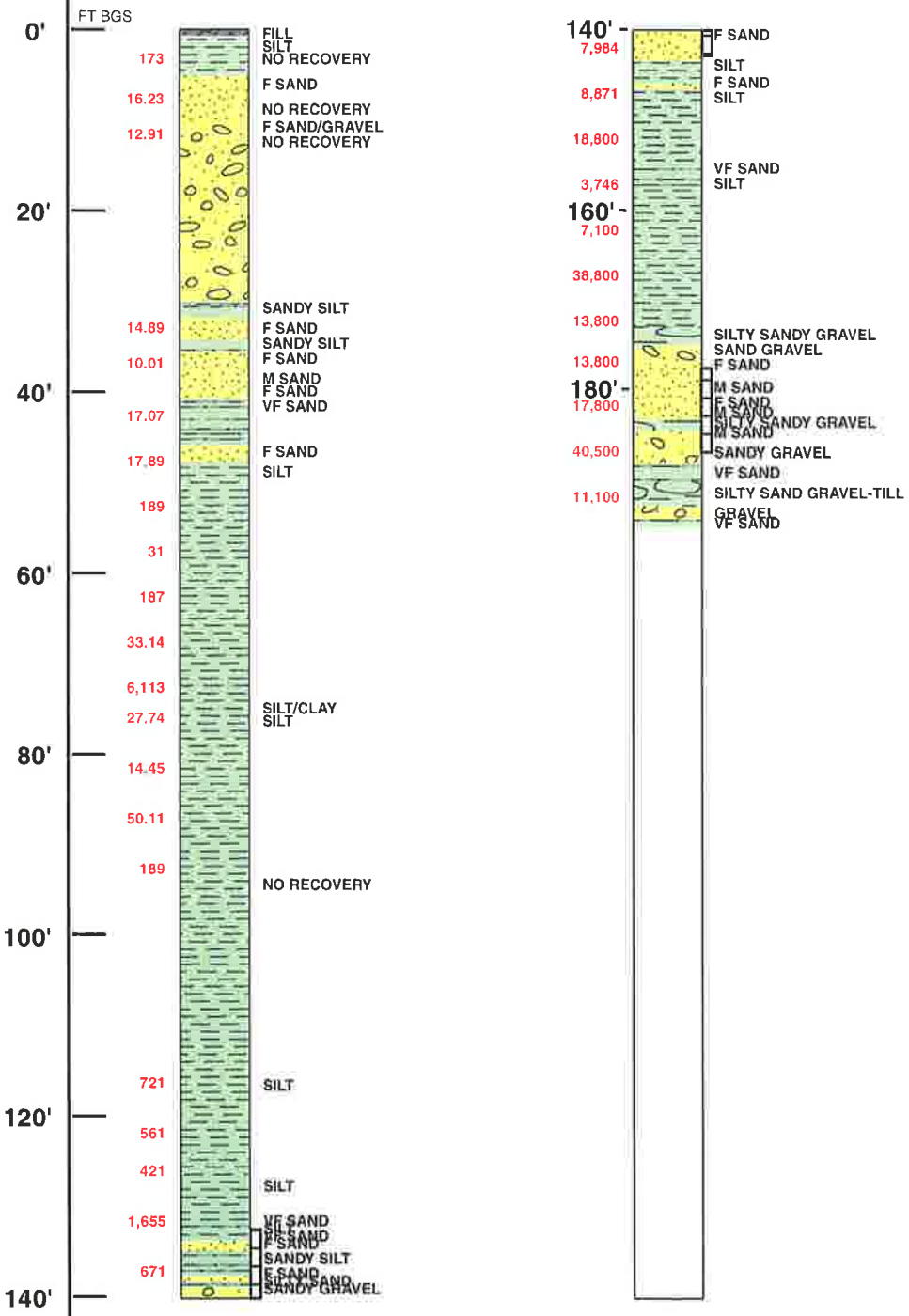
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-2A

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.77 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Toni Schoen	Continuous	Rotasonic Core Barrel	195 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	9/28/04



VERTICAL SCALE ~1"= 20'

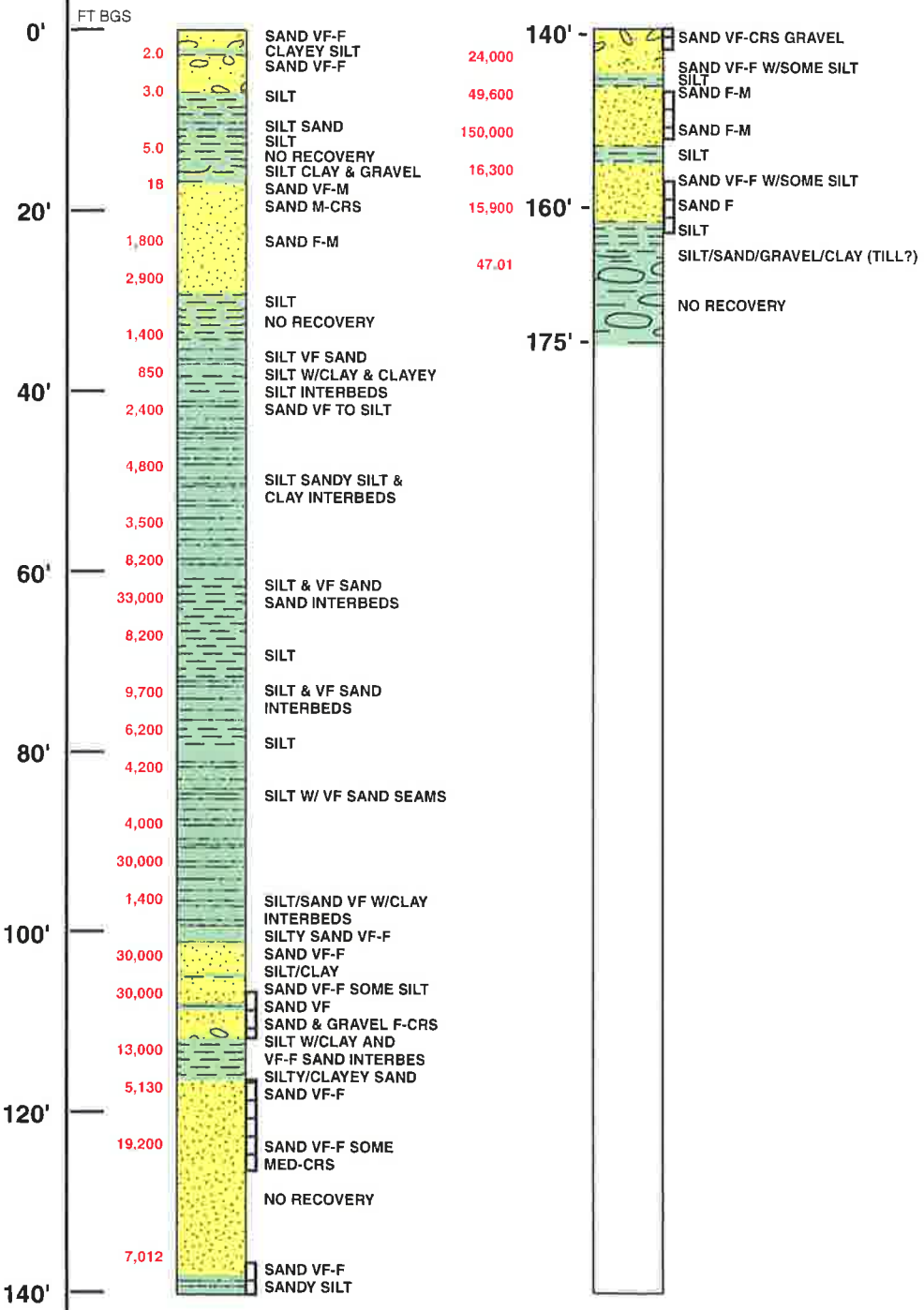
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-3

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1046.70 Feet MSL
GEOLOGIST: P. Lenaker	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Rotasonic Core Barrel	TOTAL DEPTH DRILLED: 175 Feet BLS
DRILLER: Alvin Anderson	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Rotasonic	DATE BORING COMPLETED: 6/14/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC-3.AI

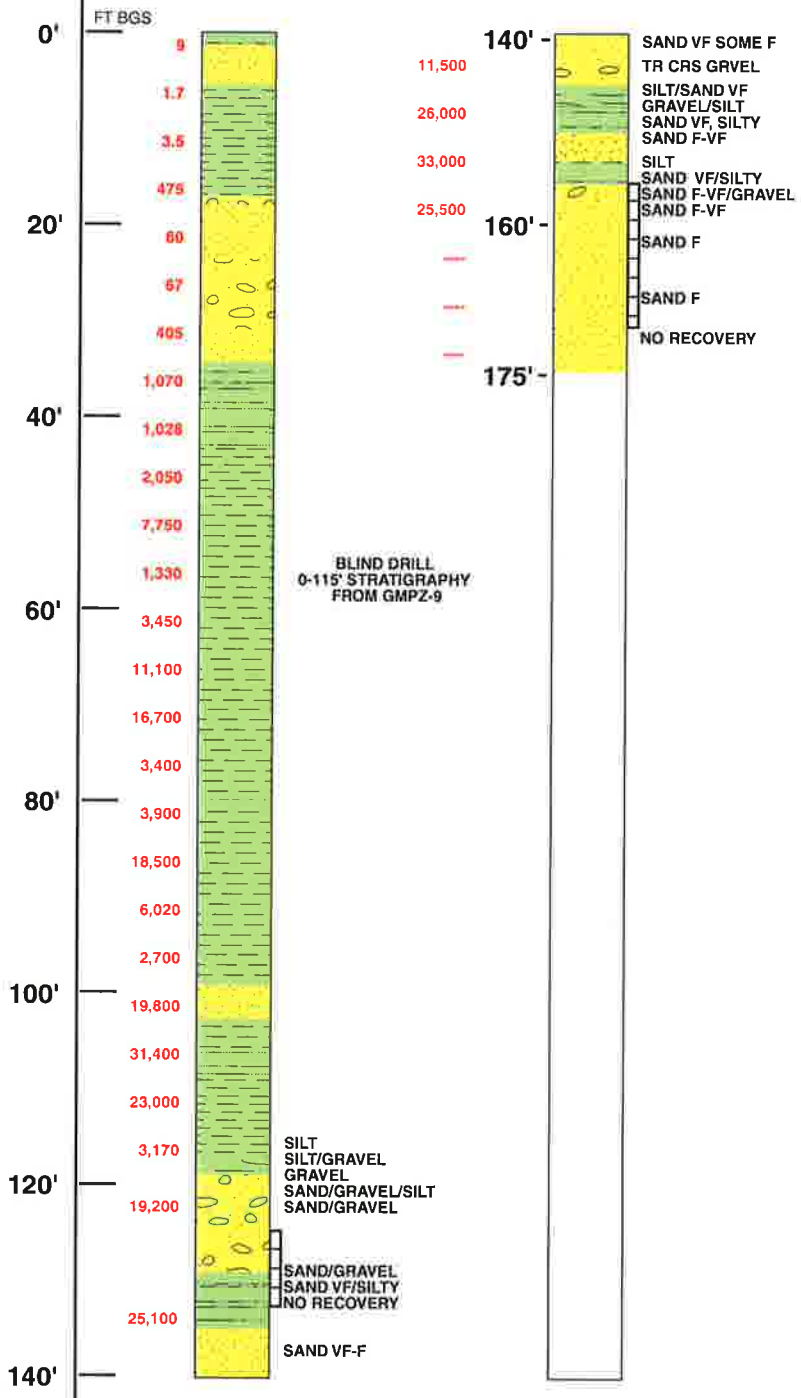
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-4 (GMEW-9)

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.34 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	175 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Chris	Boart Longyear	Rotasonic	10/22/03



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_4.AI

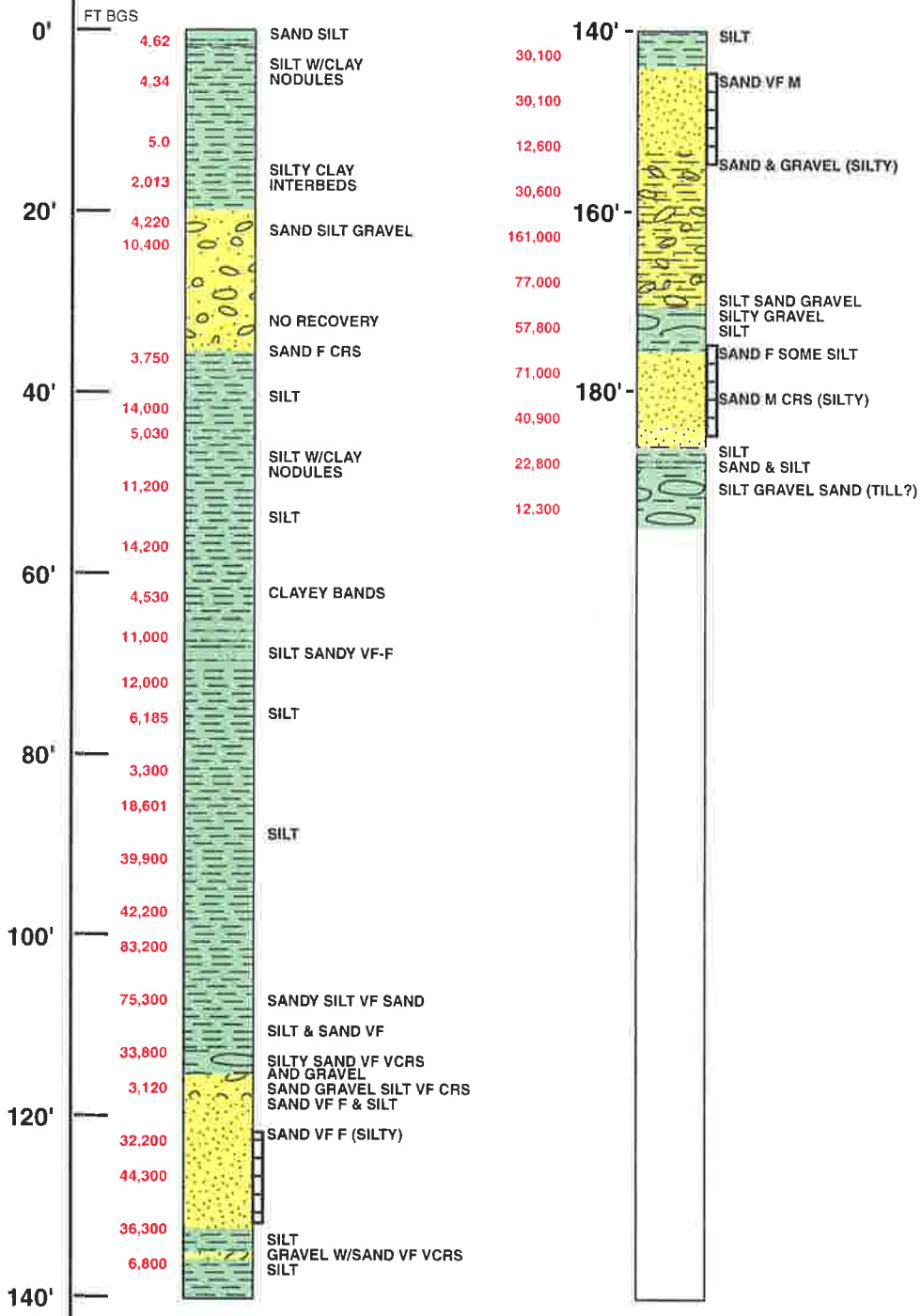
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-5

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1050.91 Feet MSL
GEOLOGIST: A. Mumpy	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Rotasonic Core Barrel	TOTAL DEPTH DRILLED: 195 Feet BLS
DRILLER: Alvin Anderson	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Rotasonic	DATE BORING COMPLETED: 06/21/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_5.AI

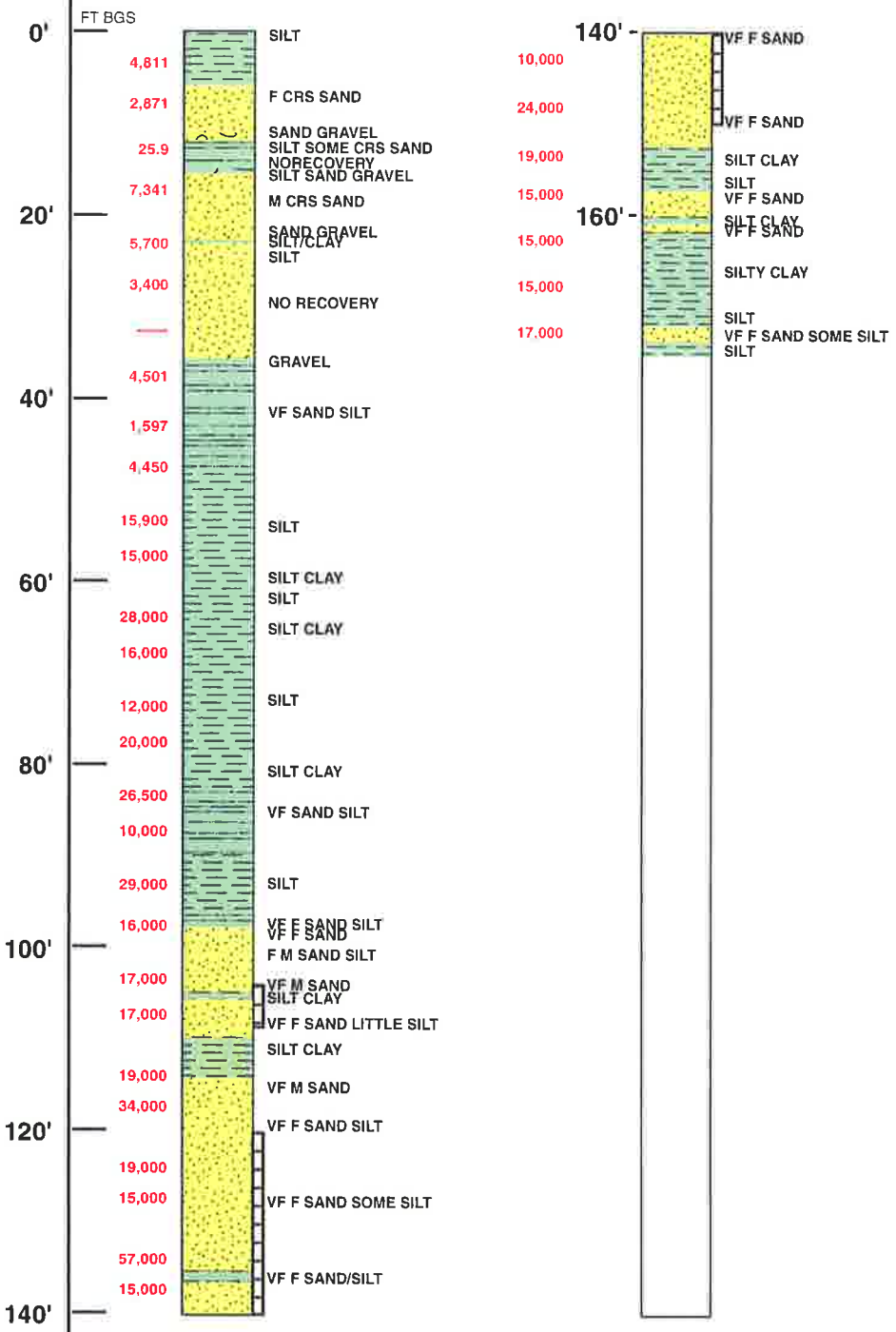
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-6

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1048.72 Feet MSL
GEOLOGIST T. Schoen	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 175 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 06/21/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_6.AI

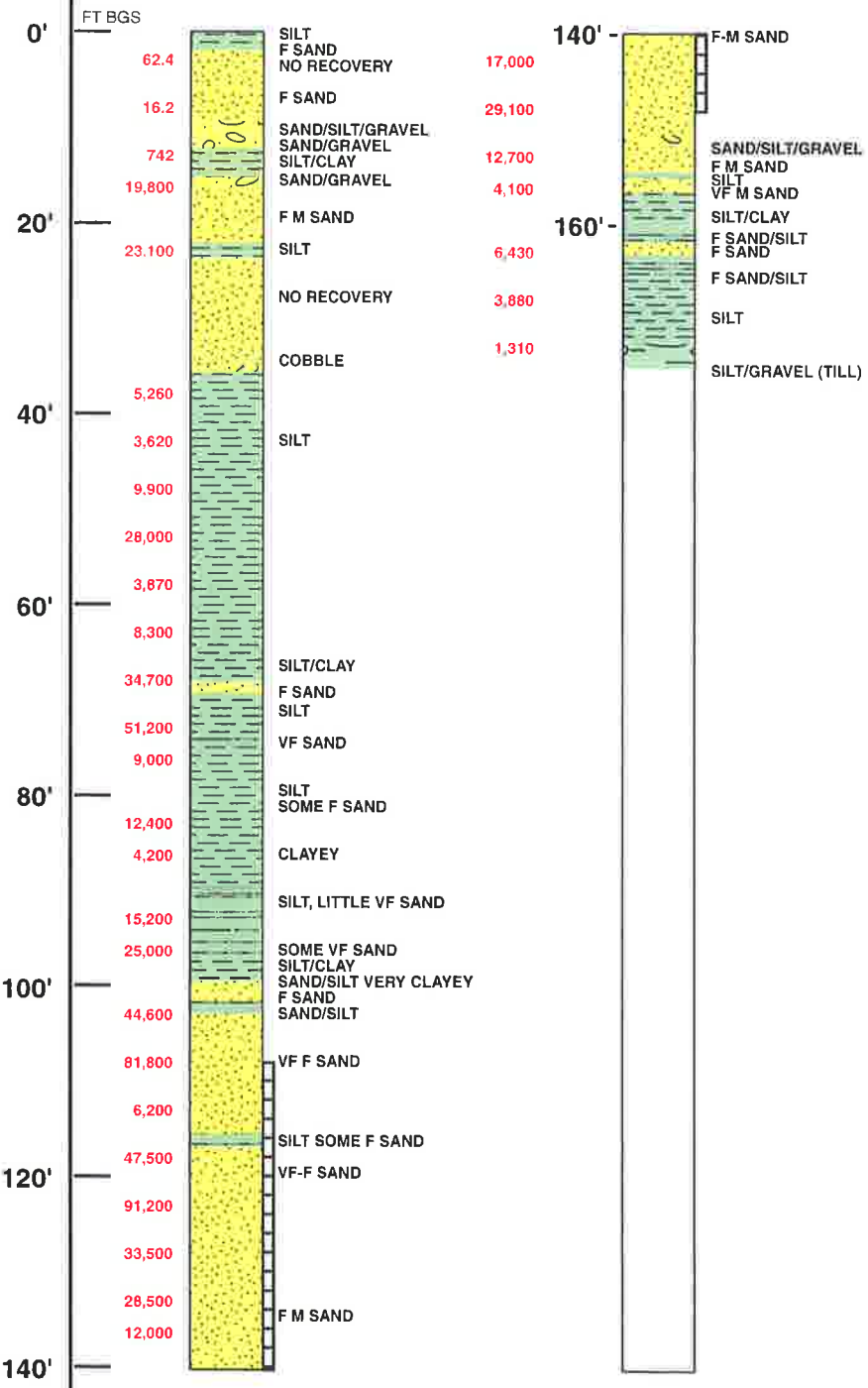
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-7

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1049.56 Feet MSL
GEOLOGIST T. Schoen	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 175 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/06/04



VERTICAL SCALE ~1"= 20'

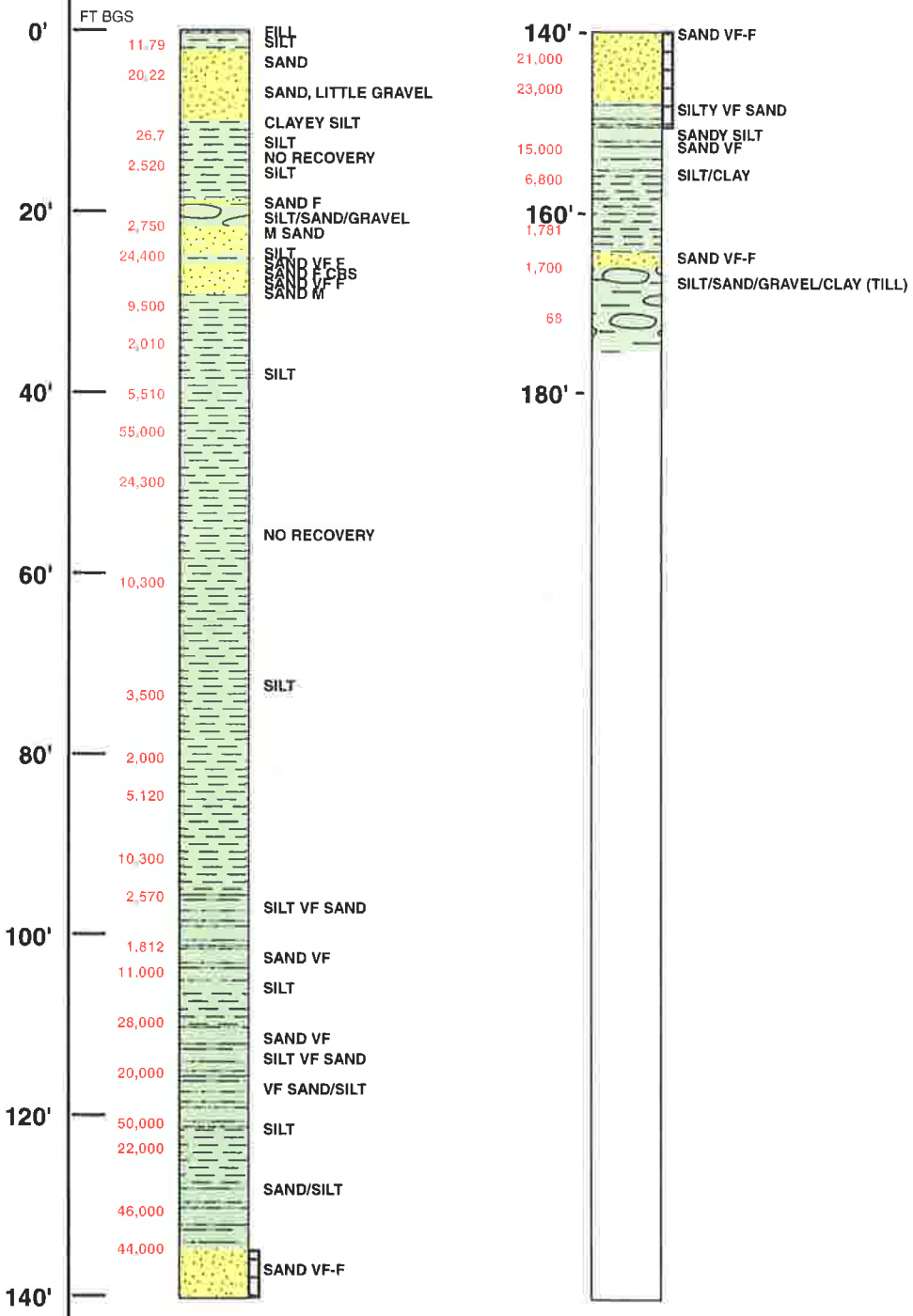
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-7A

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.54 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	175 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	9/23/04



VERTICAL SCALE ~1"= 20'

12JAN05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\\DRAWING: GMEWC_7A.AI

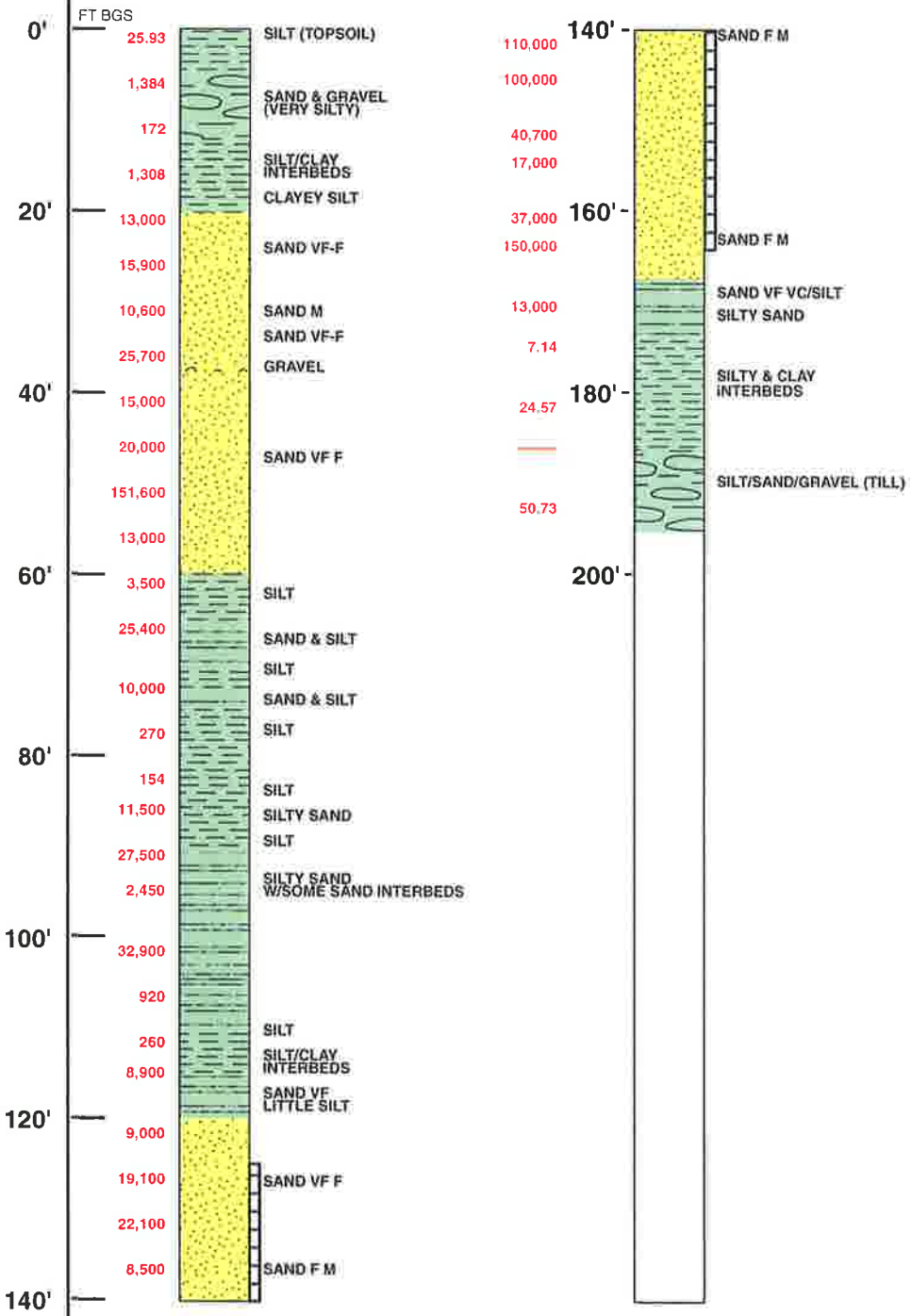
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-8

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,047.03 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	195 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	07/08/04



VERTICAL SCALE ~1"= 20'

29DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_8.AI

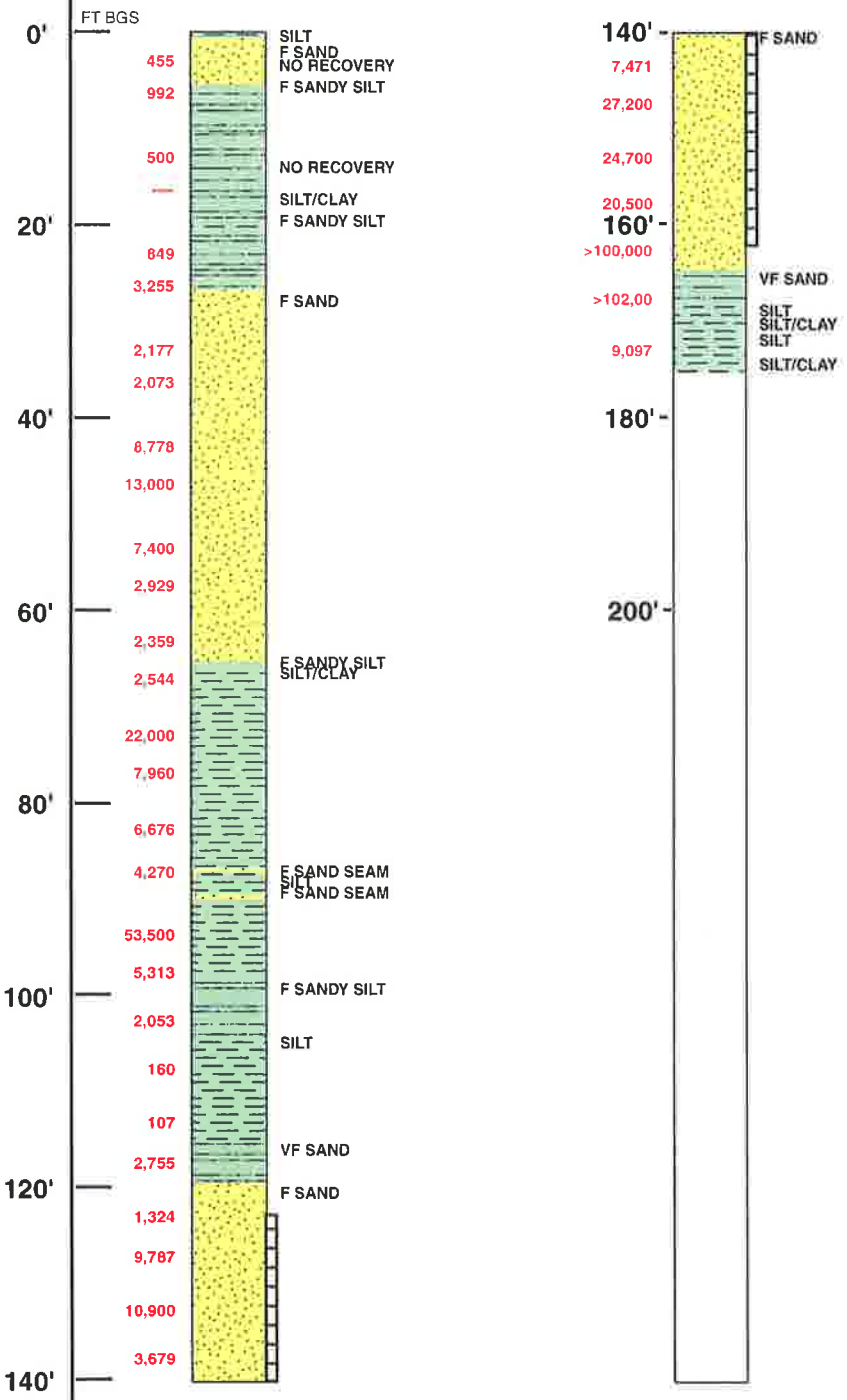
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-8A

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1047.30 Feet MSL
GEOLOGIST: Toni Schoen	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Rotasonic Core Barrel	TOTAL DEPTH DRILLED: 175 Feet BLS
DRILLER: Jon Weeks	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Rotasonic	DATE BORING COMPLETED: 9/21/04



VERTICAL SCALE ~1"= 20'

23DEC04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_8A.AI

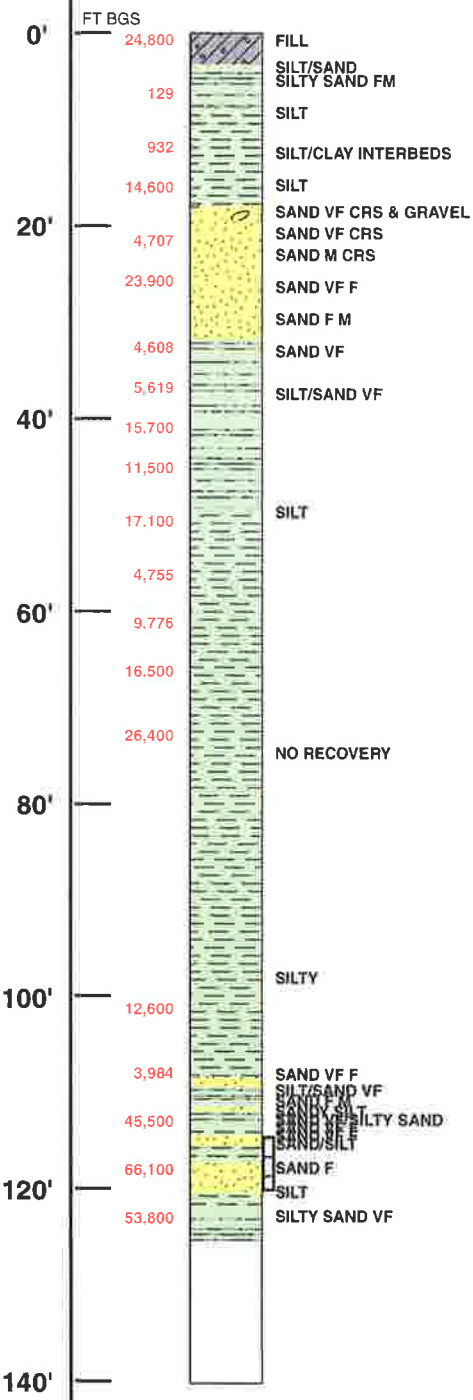
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-9

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1,048.75 Feet MSL
GEOLOGIST P. Lenaker	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 125 Feet BLS
DRILLER Jason	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/22/04



VERTICAL SCALE ~1"= 20'

13JAN05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_9.AI

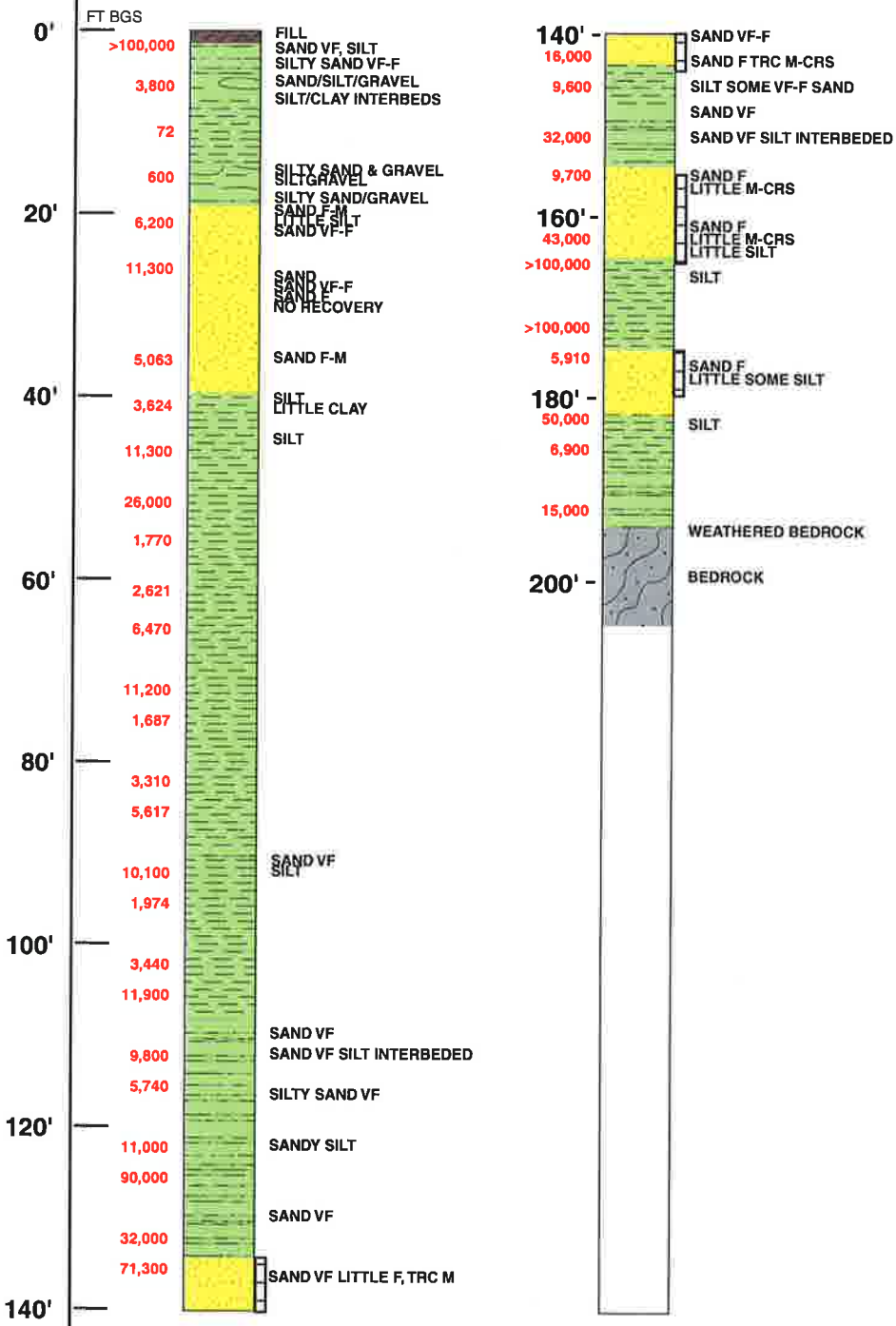
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-10

PROJECT FORD/KINGSFORD WI001075.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.35 Feet MSL
GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
A. Mumpy	Continuous	Rotasonic Core Barrel	205 Feet BLS
DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Jon Weeks	Boart Longyear	Rotasonic	9/27/04



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMEWC_10.AI

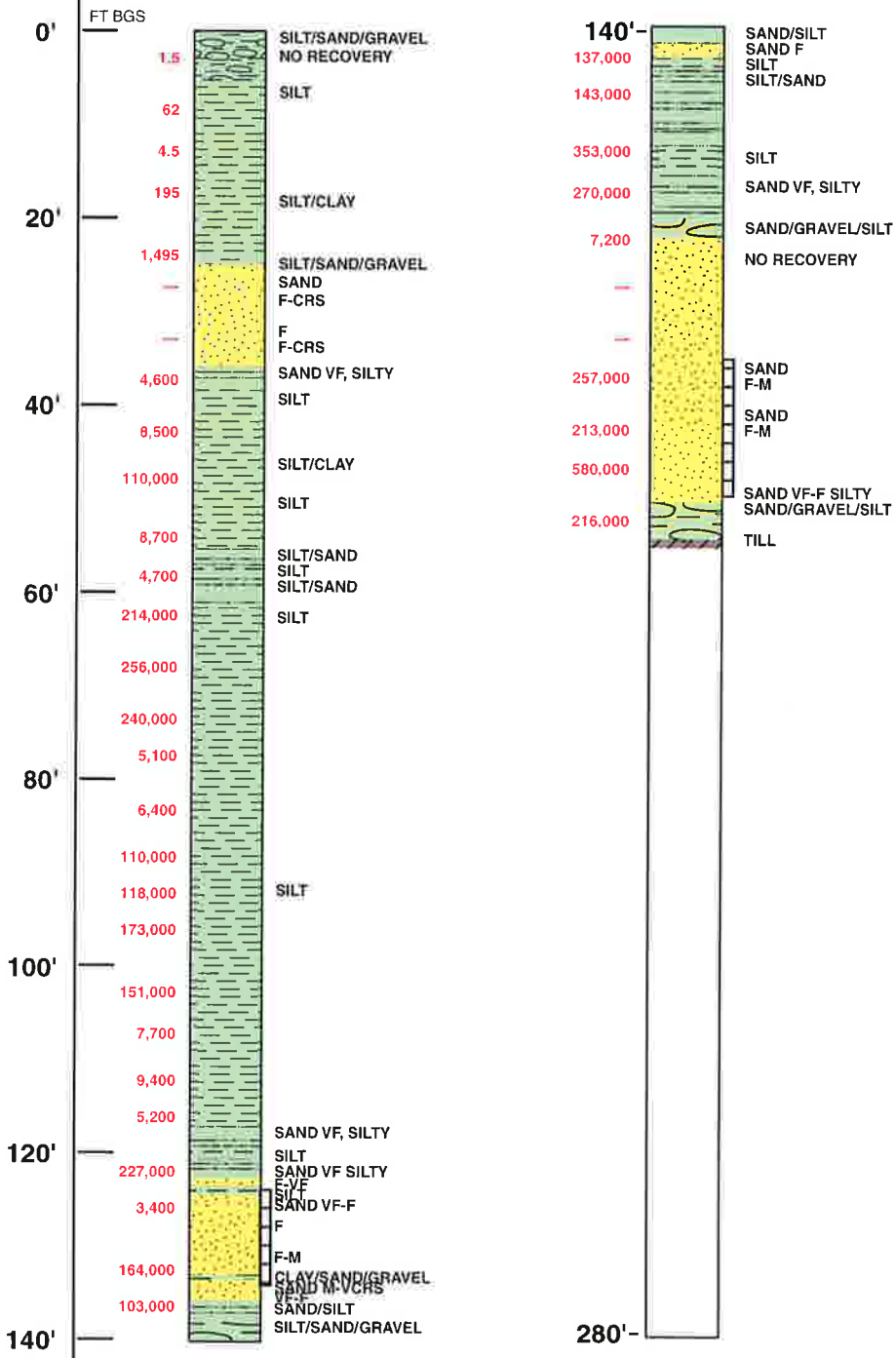
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-11

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1050.84 Feet MSL
GEOLOGIST J. Flater	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 195 Feet BLS
DRILLER Jon Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 3/28/06



VERTICAL SCALE ~1"= 20'

12JUL06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMEWC-11.AI

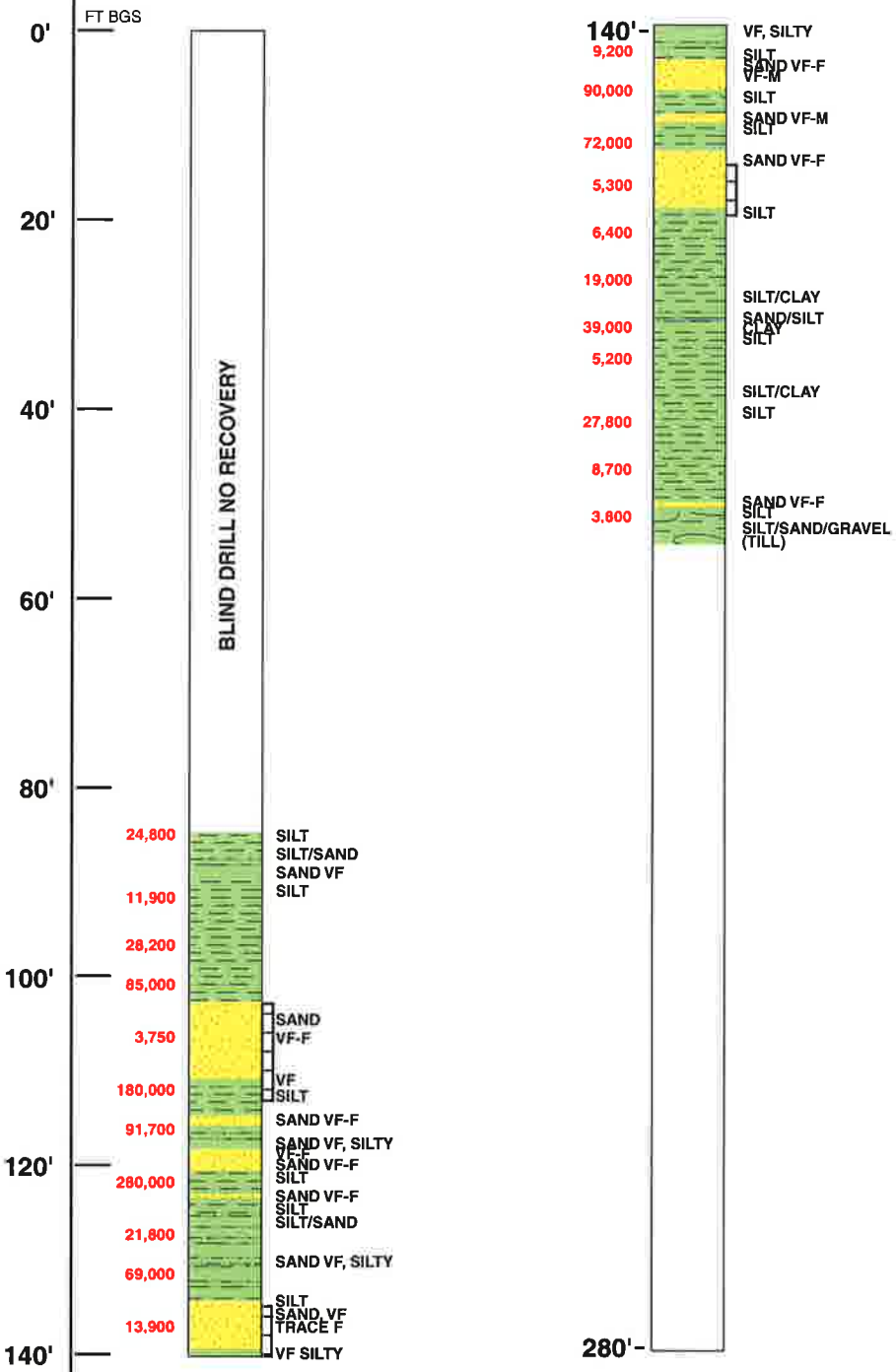
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-12

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.40 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	195 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	3/31/06



VERTICAL SCALE ~1"= 20'

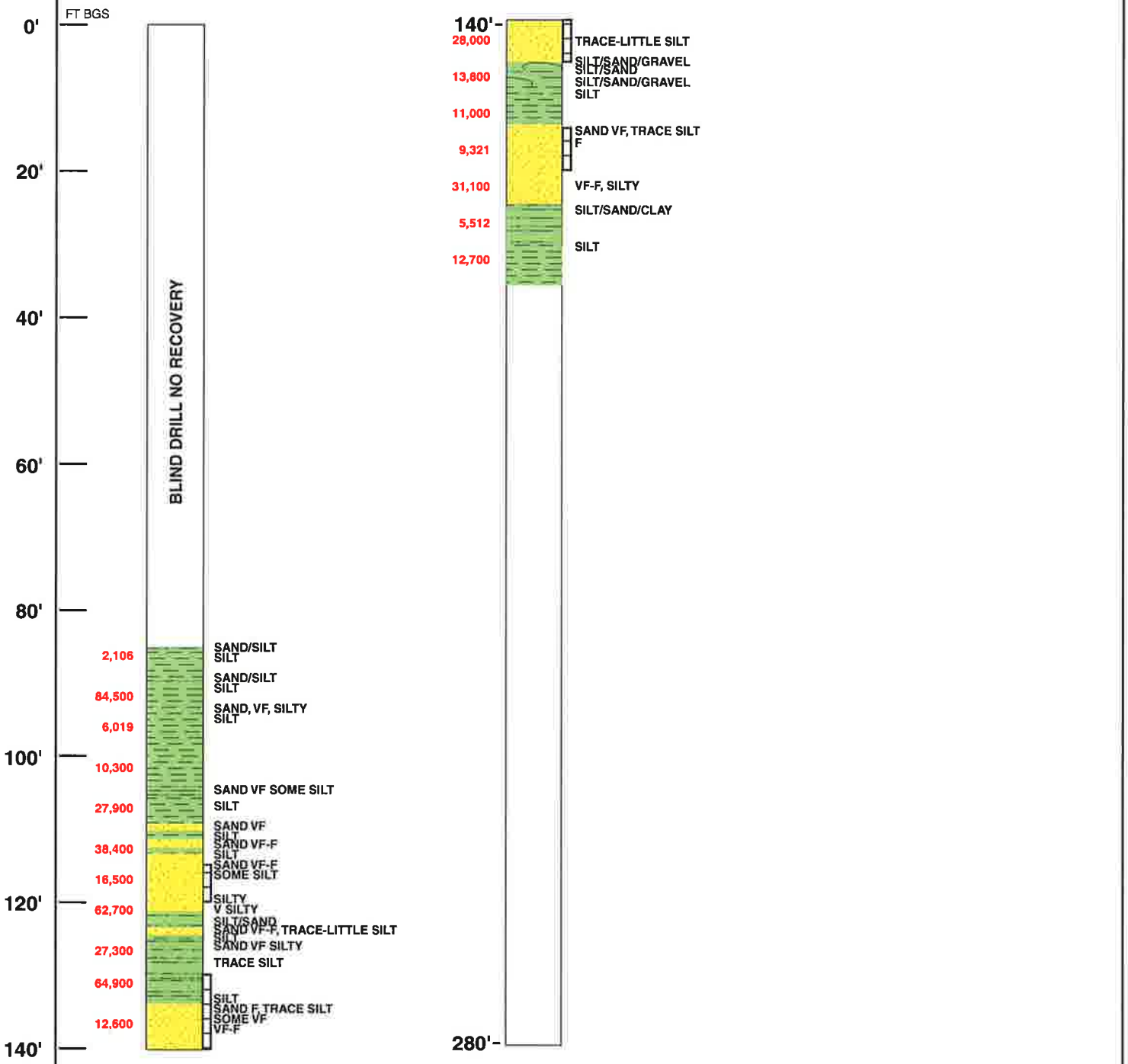
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMEWC-13

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1048.33 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	175 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	4/2/06



VERTICAL SCALE ~1"= 20'

20JUN06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMEWC-13.AI

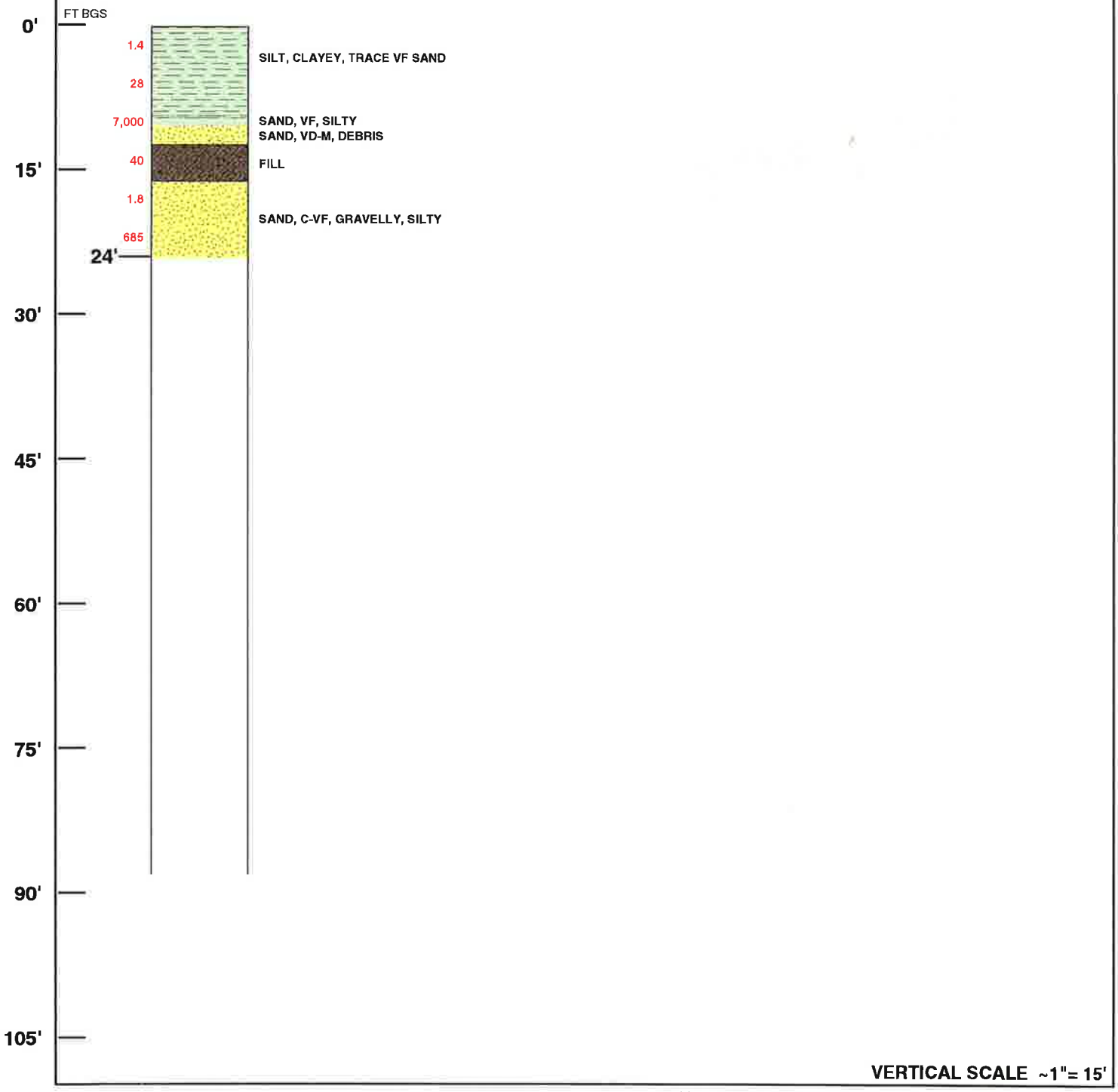
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-1

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.48 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Geoprobe Liner	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale Gouss	Giles	Geoprobe	12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_1.AI

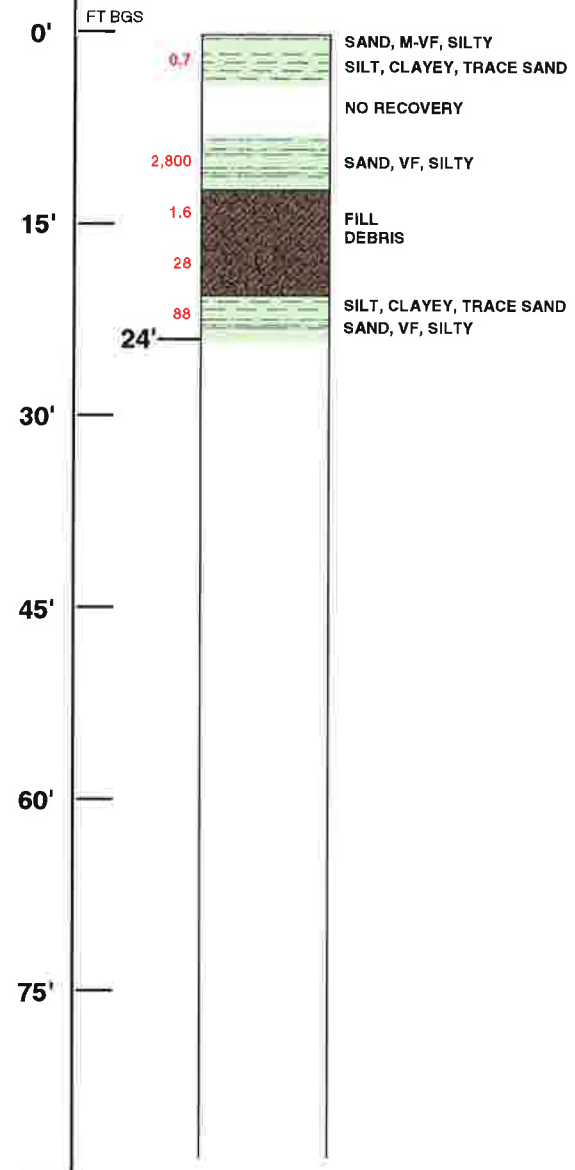
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-2

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.55 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Geoprobe Liner	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale Gouss	Giles	Geoprobe	12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_2.AI

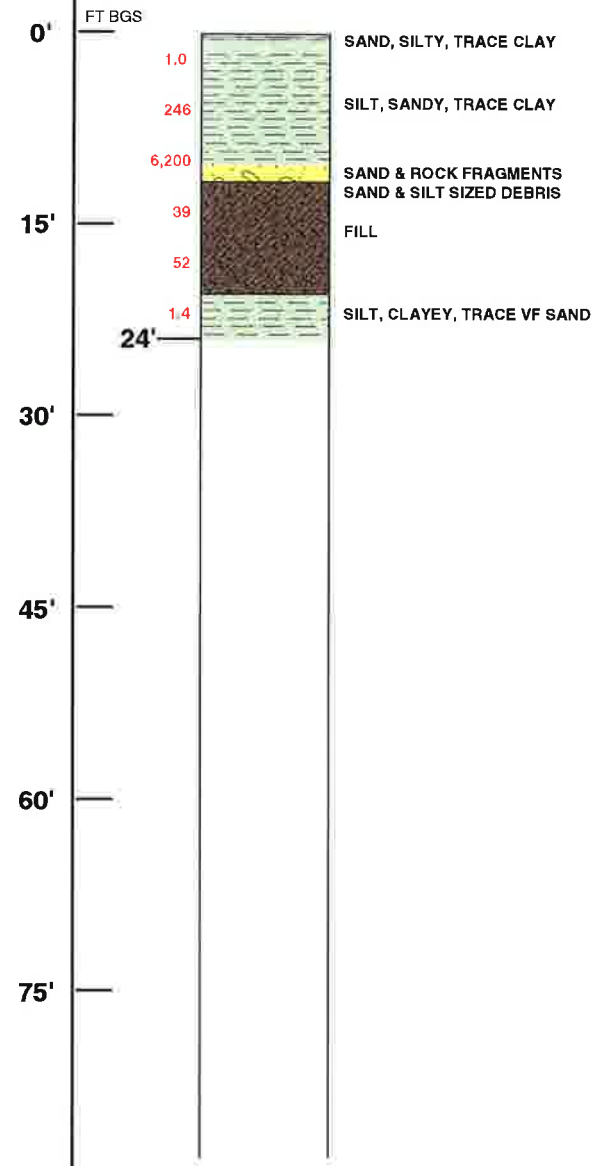
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-3

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.91 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Geoprobe Liner	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale Gouss	Giles	Geoprobe	12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_3.AI

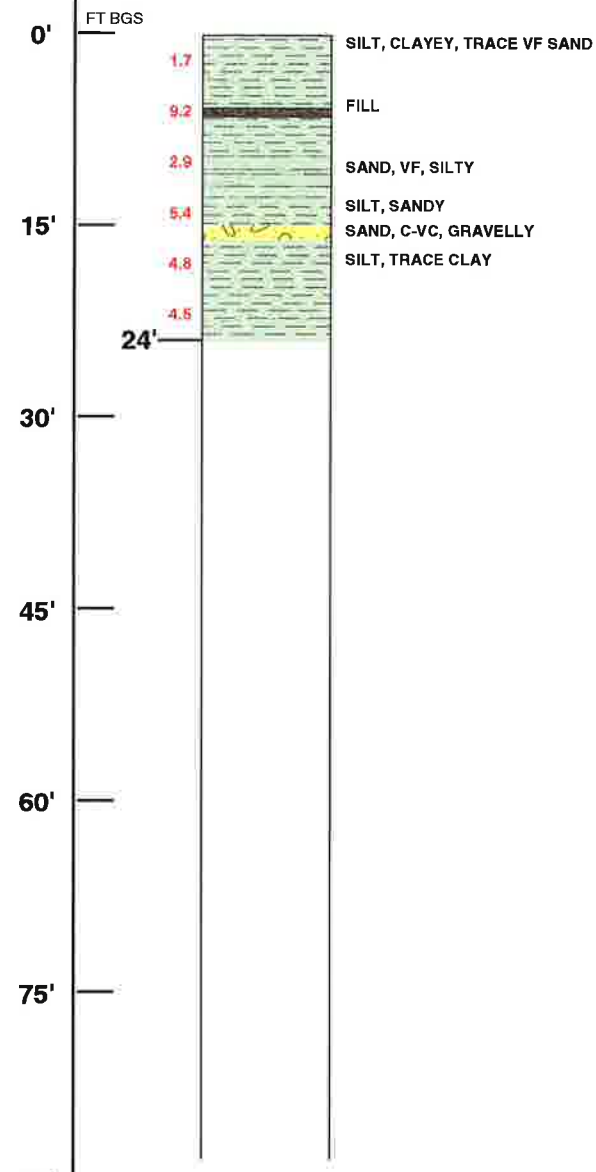
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-4

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1088.73 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Geoprobe Liner	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale Gouss	Giles	Geoprobe	12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_4.AI

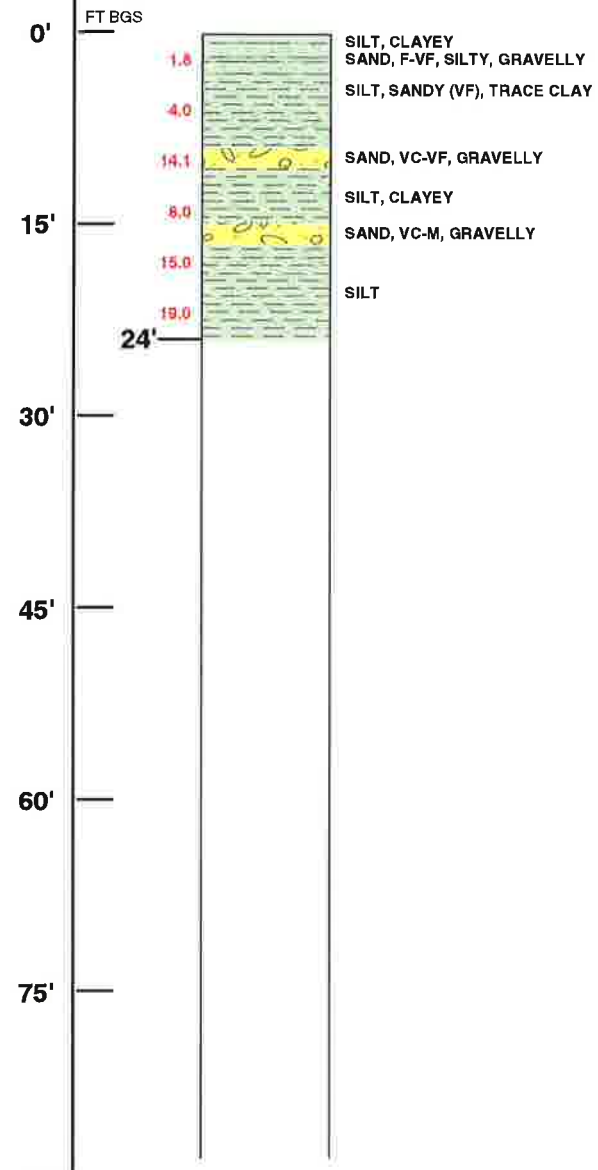
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-5

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1086.72 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Geoprobe Liner	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale Gouss	Giles	Geoprobe	12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_5.AI

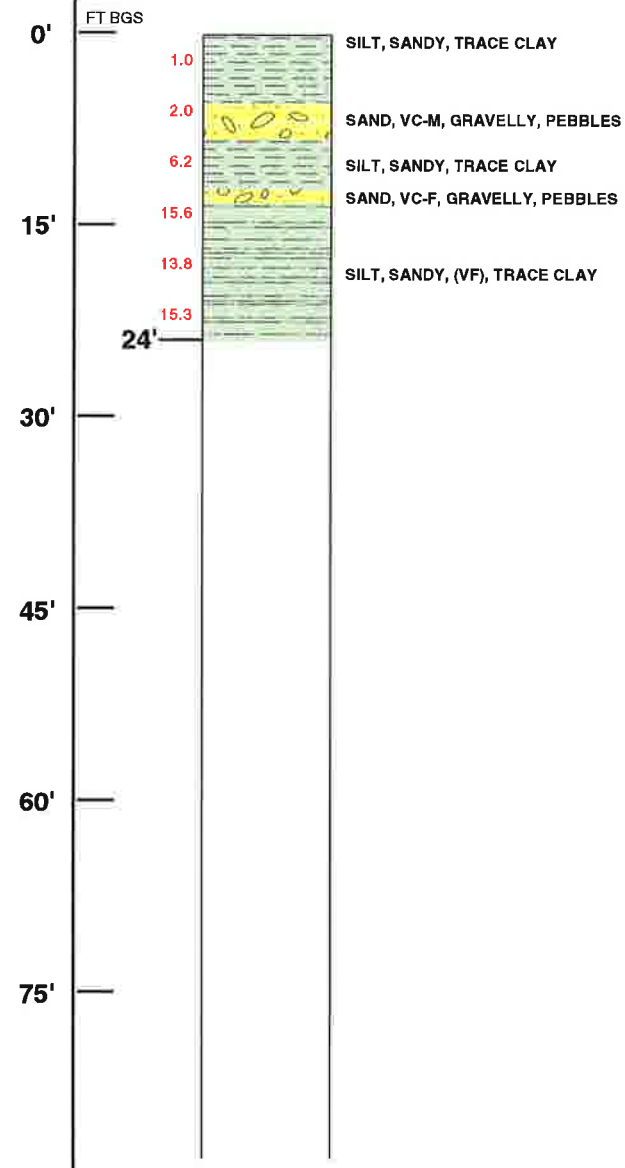
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-6

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1085.76 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Geoprobe Liner	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale Gouss	Giles	Geoprobe	12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_6.AI

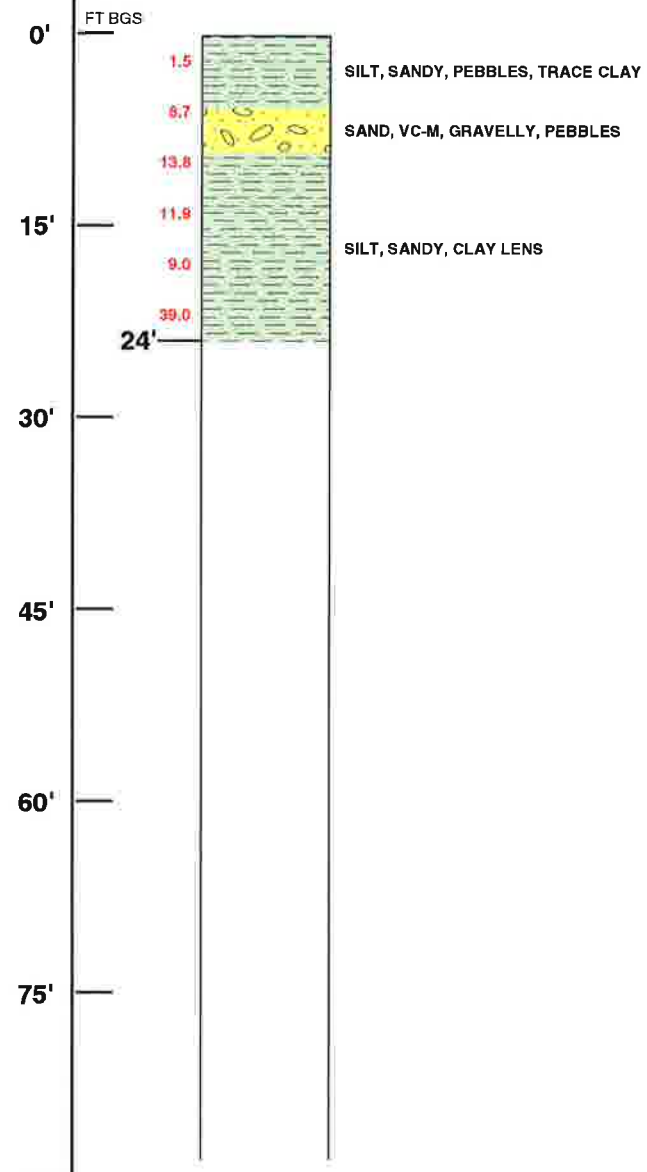
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-7

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1083.15 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Geoprobe Liner	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale Gouss	Giles	Geoprobe	12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_7.AI

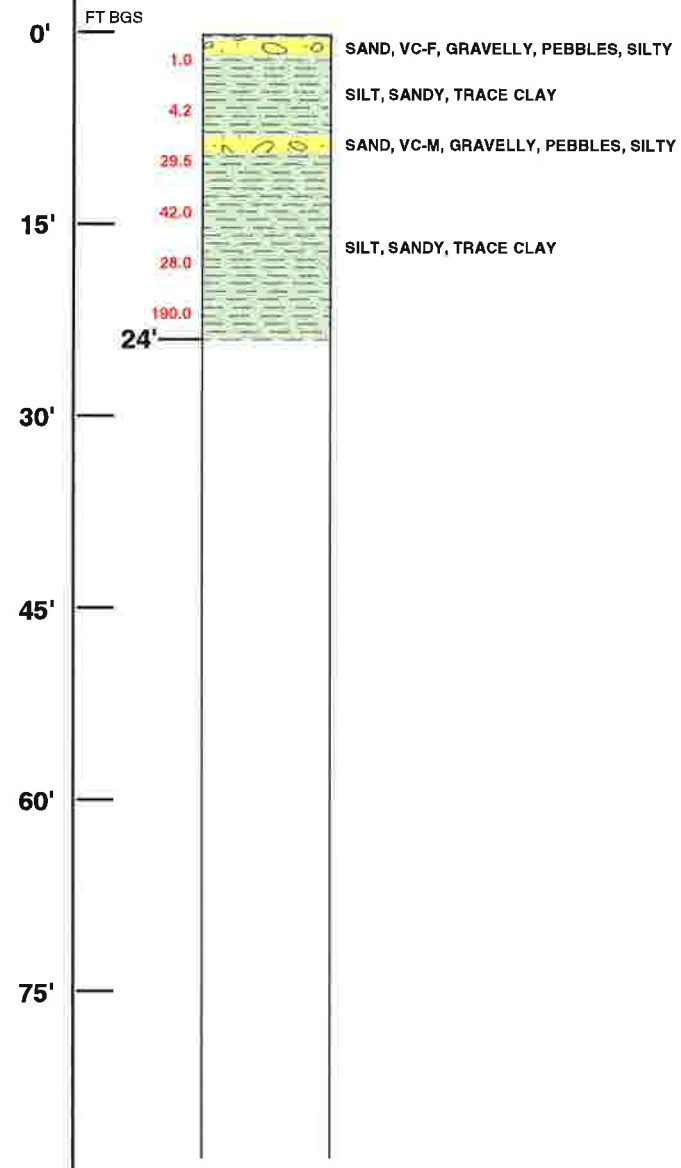
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-8

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1080.43 Feet MSL
GEOLOGIST Pat Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Geoprobe Liner	TOTAL DEPTH DRILLED 24 Feet BLS
DRILLER Dale Gouss	DRILLING CONTRACTOR Giles	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 12/12/00



VERTICAL SCALE ~1"= 15'

09FEB01\FORD\WI0637\KINGSFOR\GRAPHICS\POST600\DRAWING: GMGP_8.AI

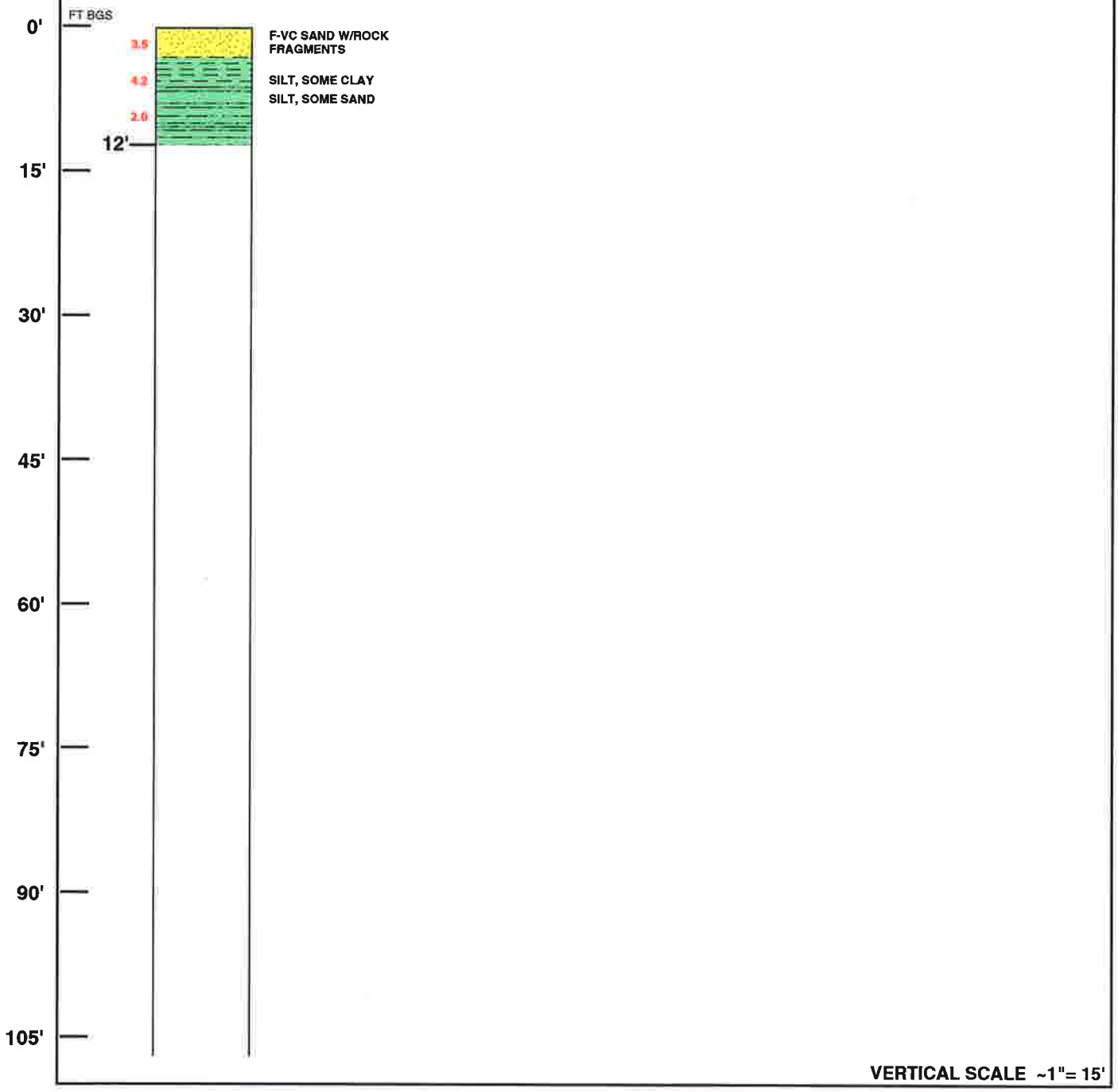
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-9

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1087.82 Feet MSL
GEOLOGIST Kevin Peterburs	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 12 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 3/29/01



VERTICAL SCALE ~1"= 15'

12AUG02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_9.AI

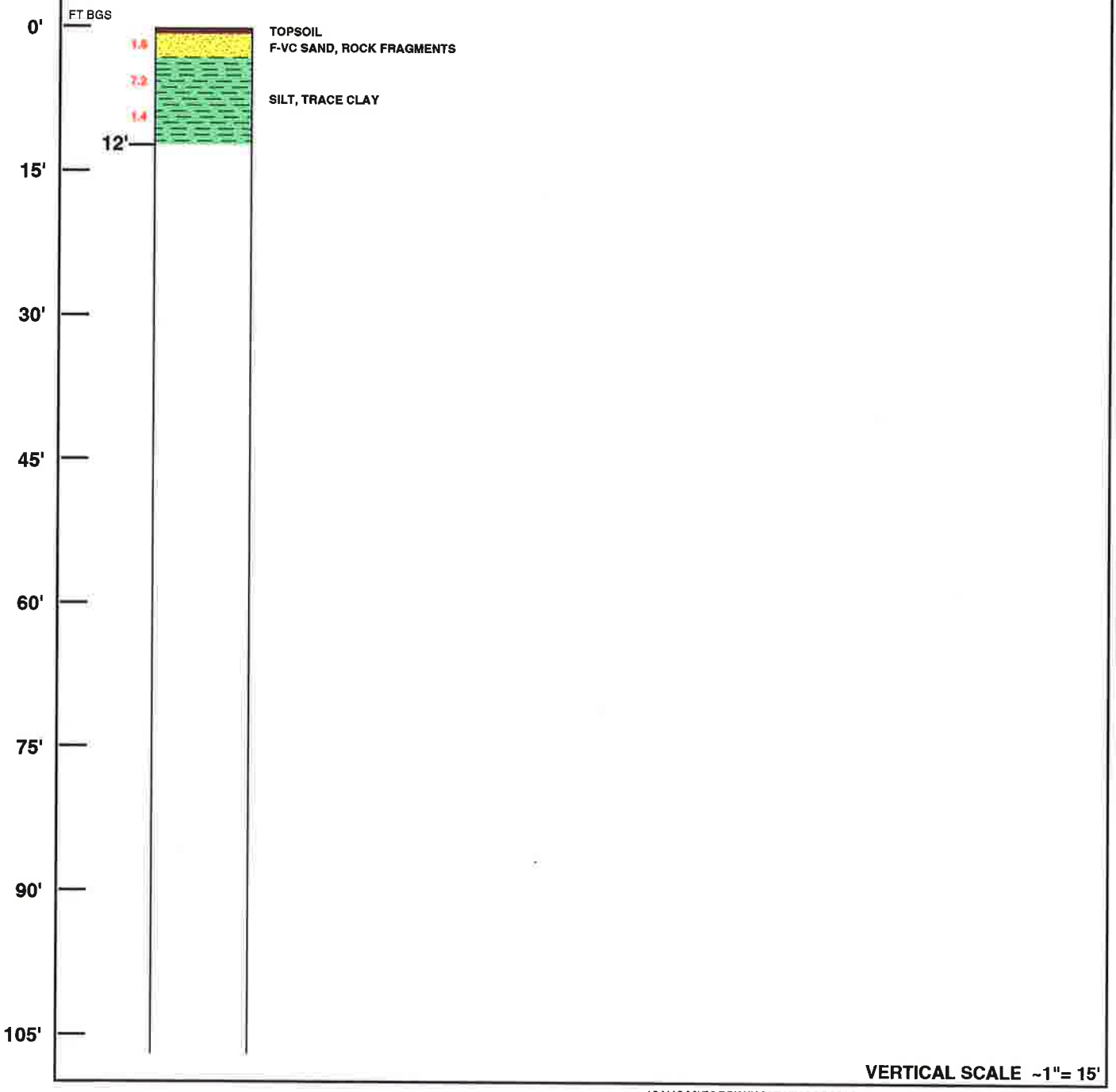
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-10

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1086.92 Feet MSL
GEOLOGIST Kevin Peterburs	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 12 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 3/29/01



VERTICAL SCALE ~1"= 15'

12AUG02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_10.AI

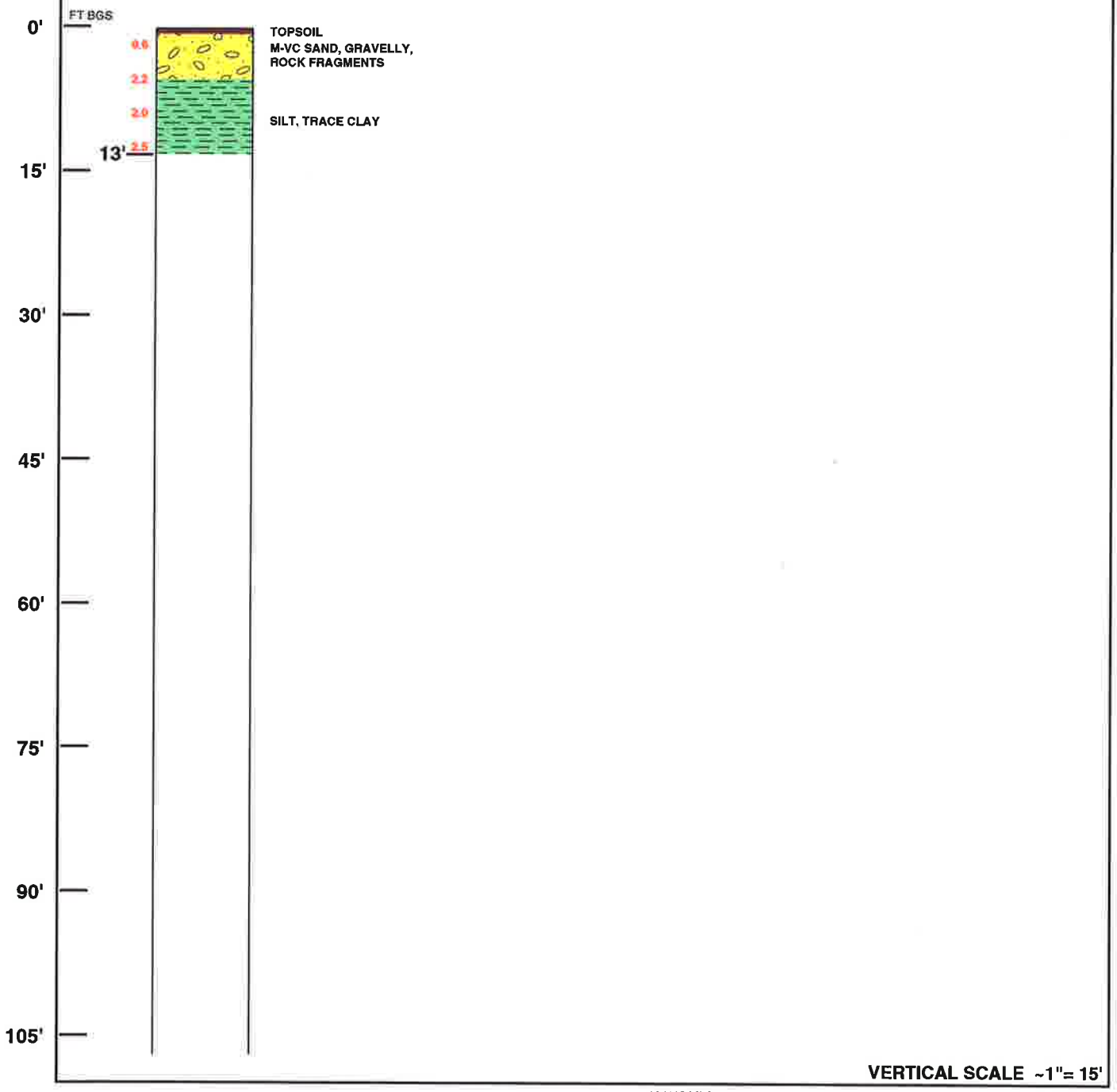
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-11

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1087.51 Feet MSL
GEOLOGIST Kevin Peterburs	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 13 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 3/29/01



VERTICAL SCALE ~1"= 15'

12AUG02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_11.AI

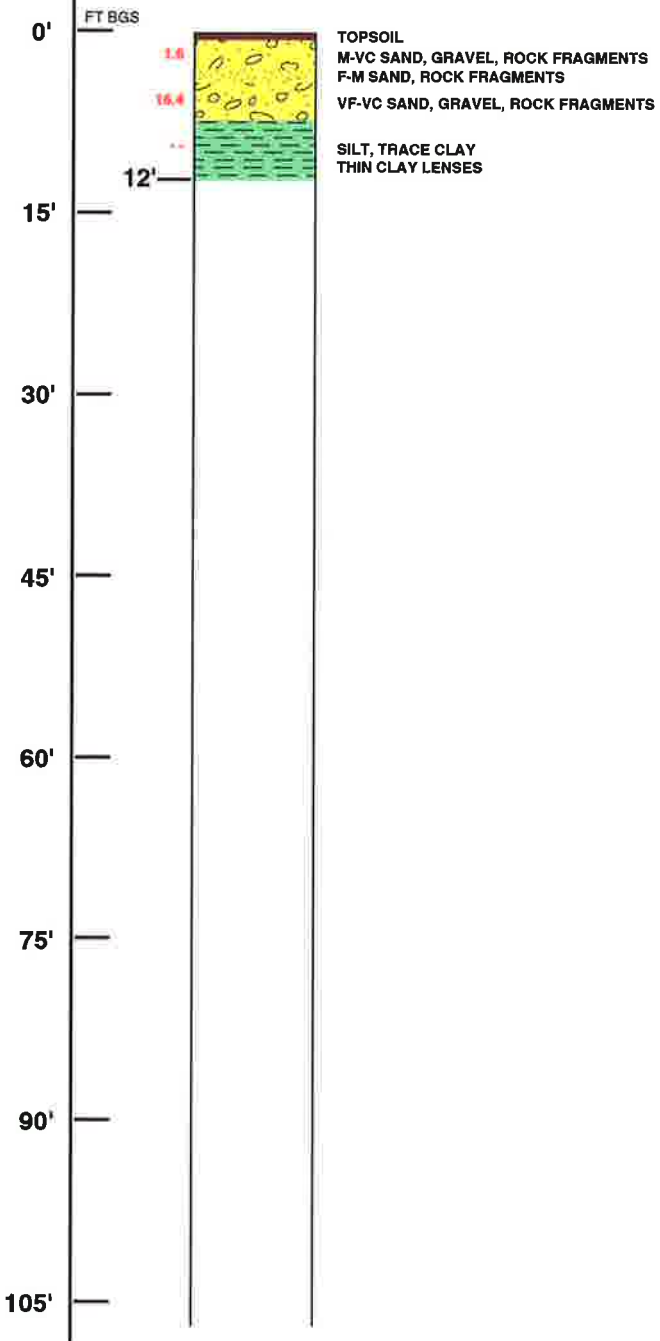
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-12

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.58 Feet MSL
GEOLOGIST Kevin Peterburs	**SAMPLE INTERVAL** Continuous	**SAMPLING DEVICE** Macrocore	**TOTAL DEPTH DRILLED** 12 Feet BLS
DRILLER Paul	**DRILLING CONTRACTOR** Giles Engineering	**DRILLING METHOD** Geoprobe	**DATE BORING COMPLETED** 3/29/01



VERTICAL SCALE ~1"= 15'

12AUG02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_12.AI

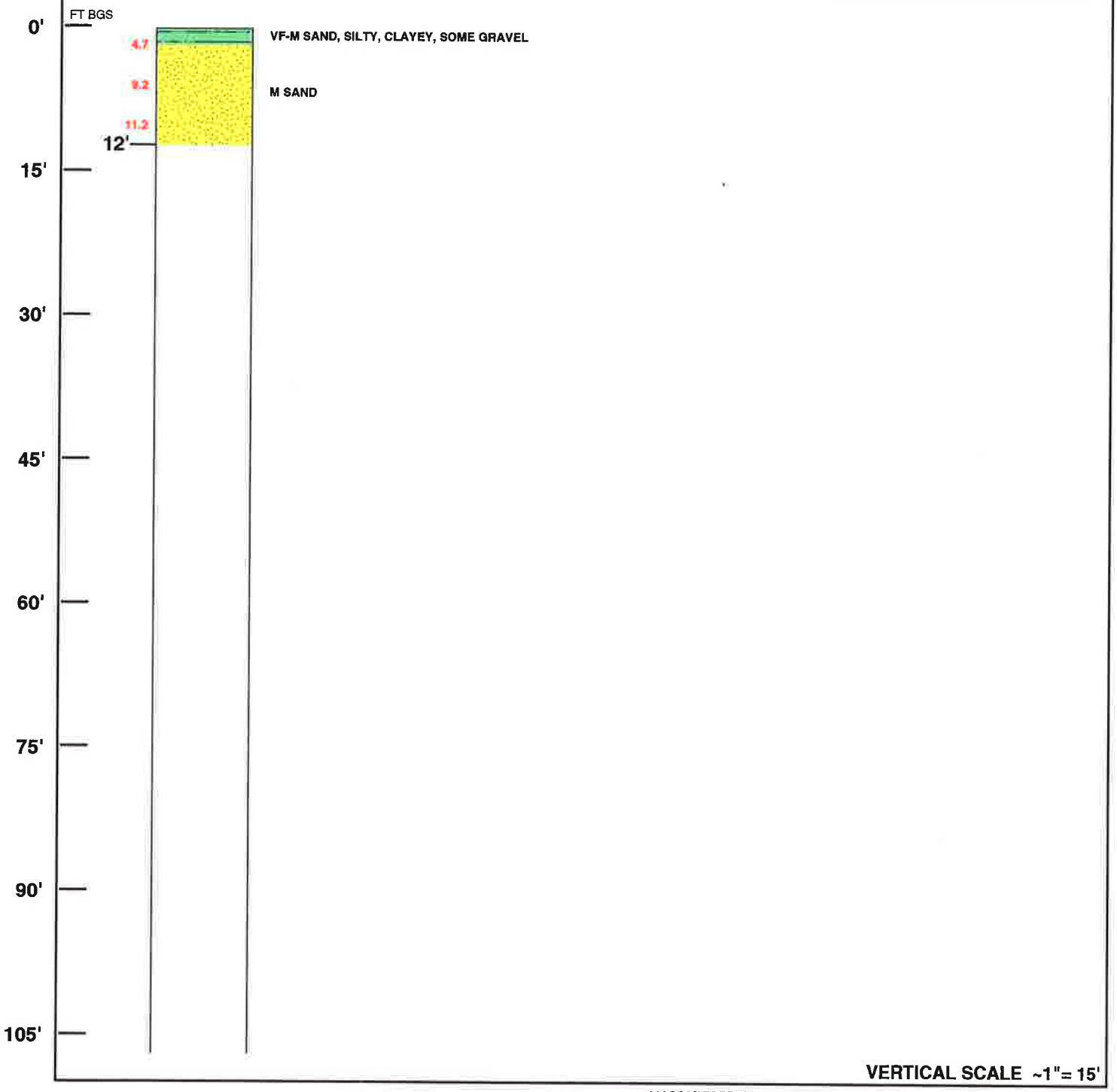
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-13

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.38 Feet MSL
GEOLOGIST Pat Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 12 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 3/31/01



VERTICAL SCALE ~1"= 15'

11APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_13.AI

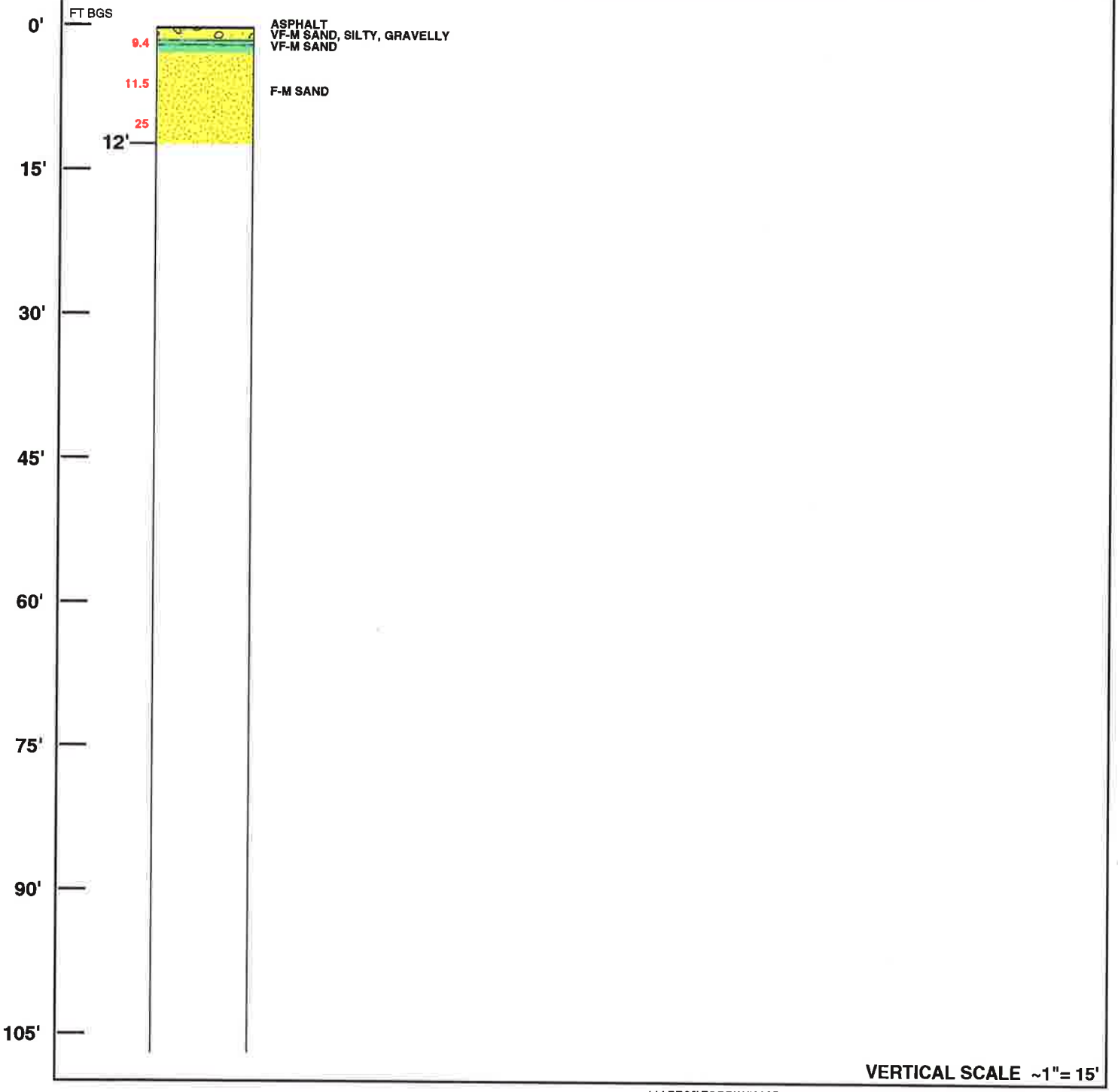
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-14

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.64 Feet MSL
GEOLOGIST Pat Bartnik	**SAMPLE INTERVAL** Continuous	**SAMPLING DEVICE** Macrocore	**TOTAL DEPTH DRILLED** 12 Feet BLS
DRILLER Paul	**DRILLING CONTRACTOR** Giles Engineering	**DRILLING METHOD** Geoprobe	**DATE BORING COMPLETED** 3/31/01



VERTICAL SCALE ~1"= 15'

11APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_14.AI

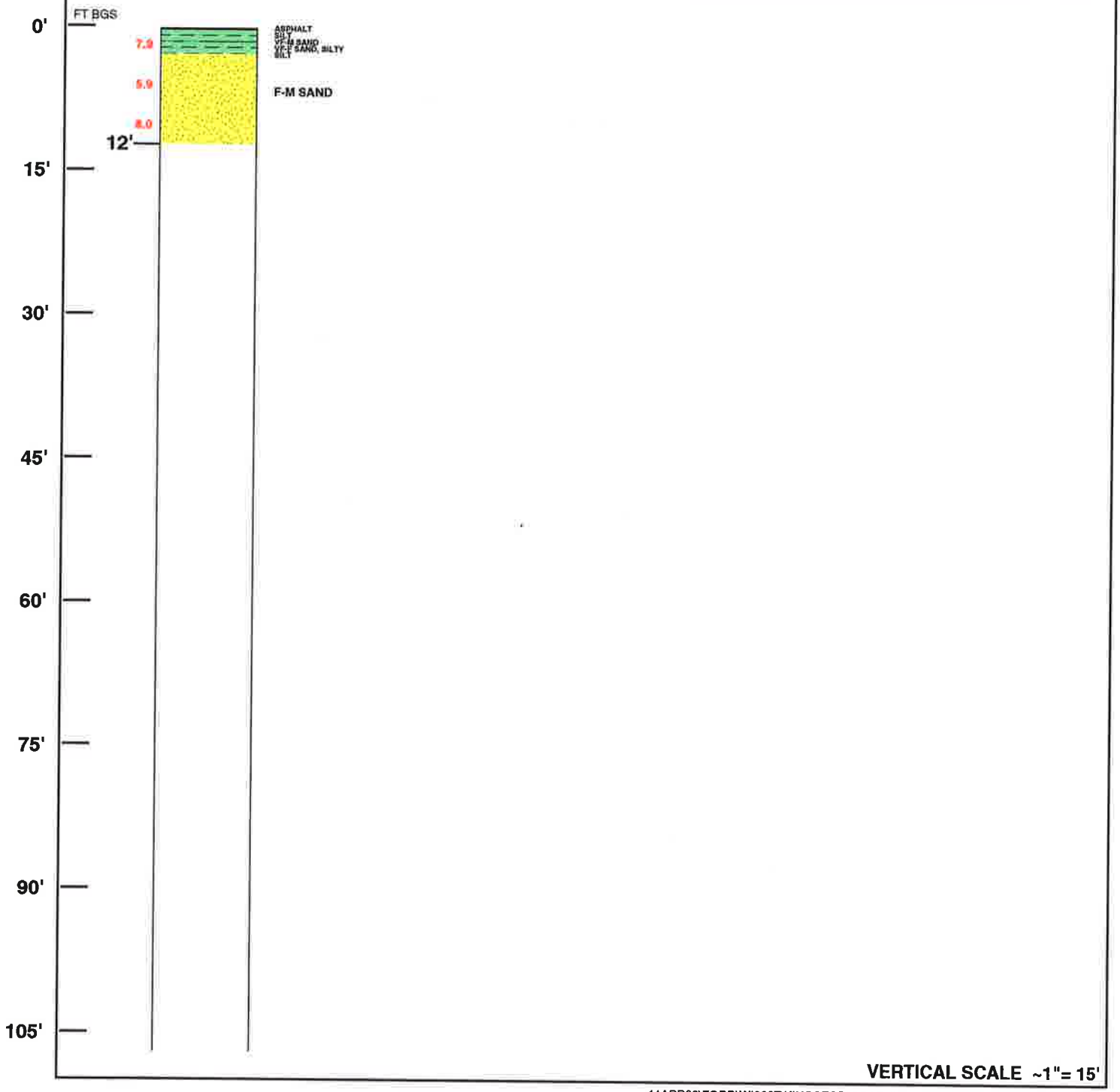
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-15

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.09 Feet MSL
GEOLOGIST Pat Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 12 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 3/31/01



VERTICAL SCALE ~1"= 15'

11APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_15.AI

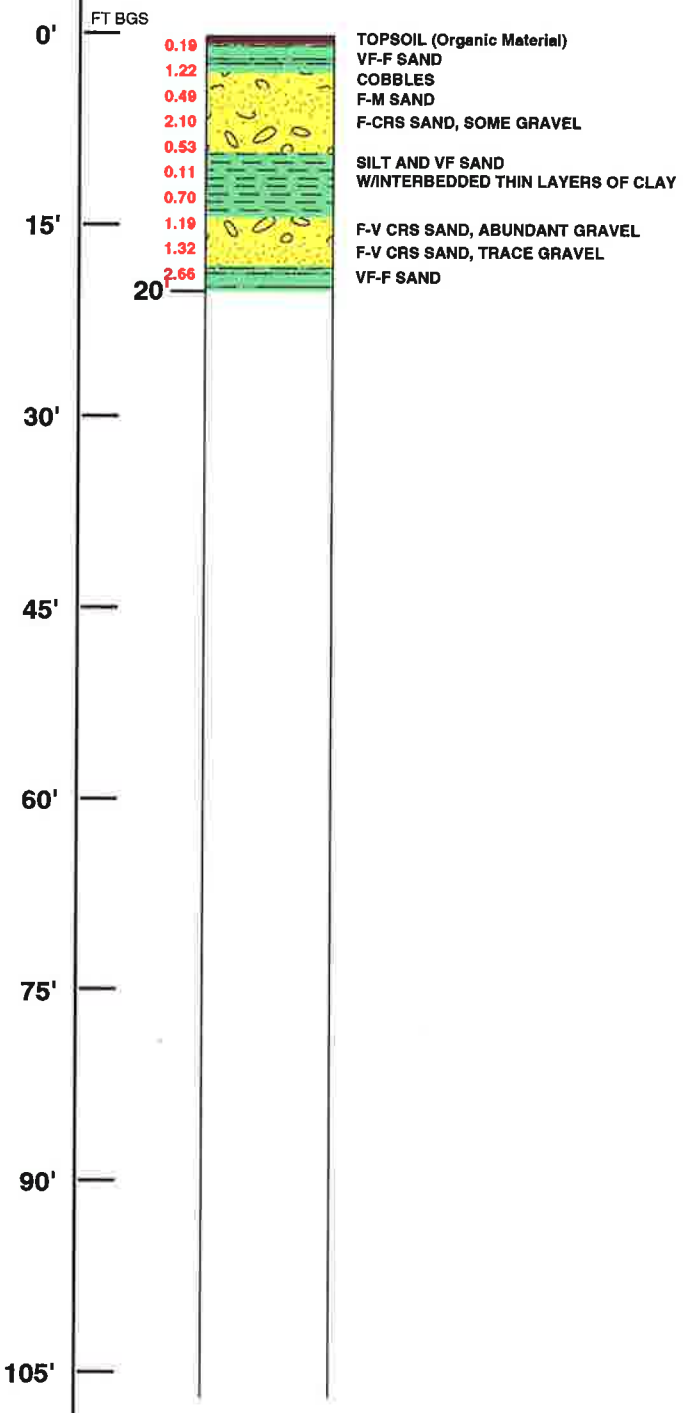
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-16

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.23 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Veronica Brieno	Continuous	Macrocore	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul	Giles Engineering	Geoprobe	4/4/02



VERTICAL SCALE ~1"= 15'

23APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_16.AI

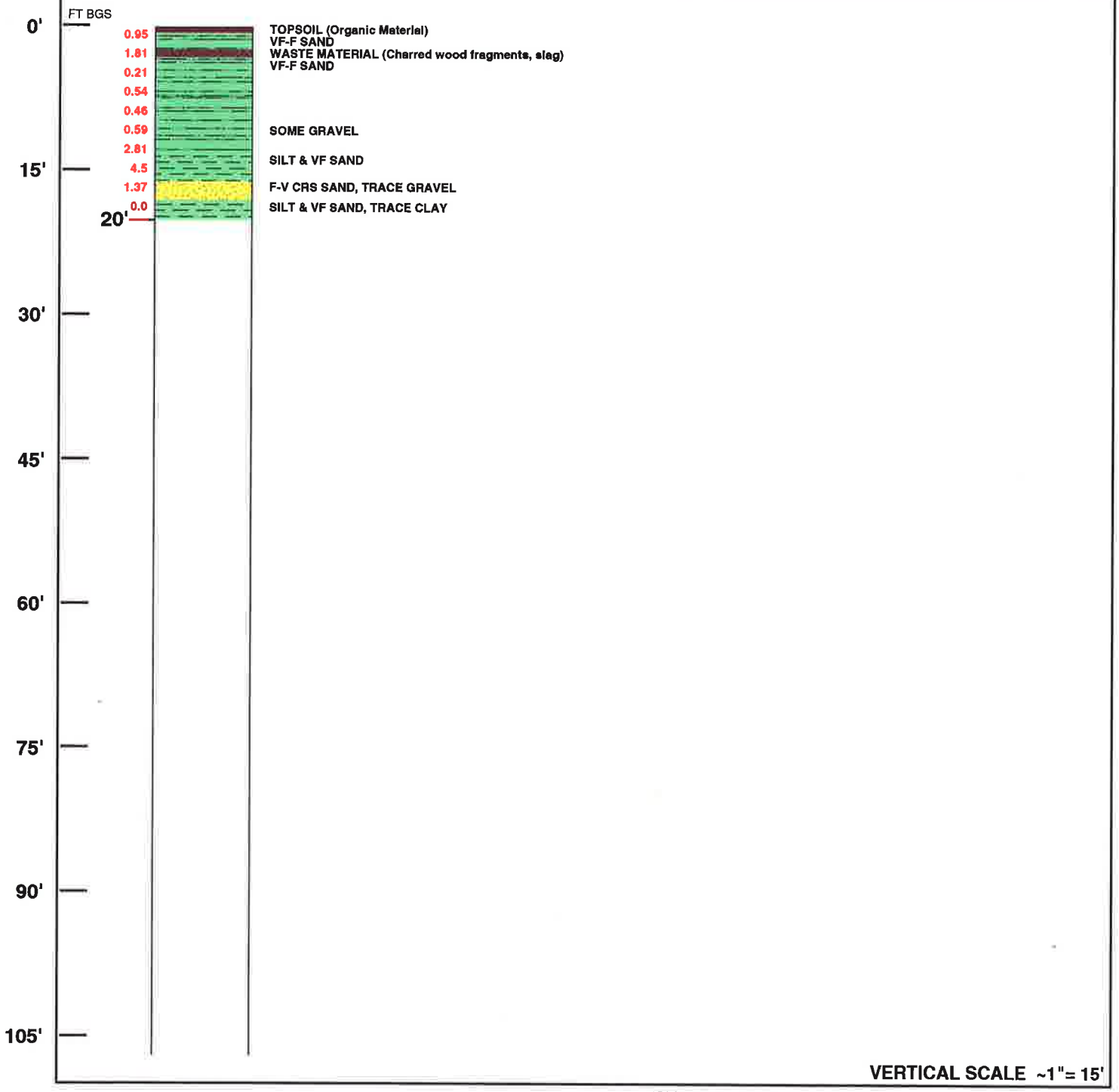
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-17

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1089.82 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 20 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 4/4/02



VERTICAL SCALE ~1"= 15'

15APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_17.AI

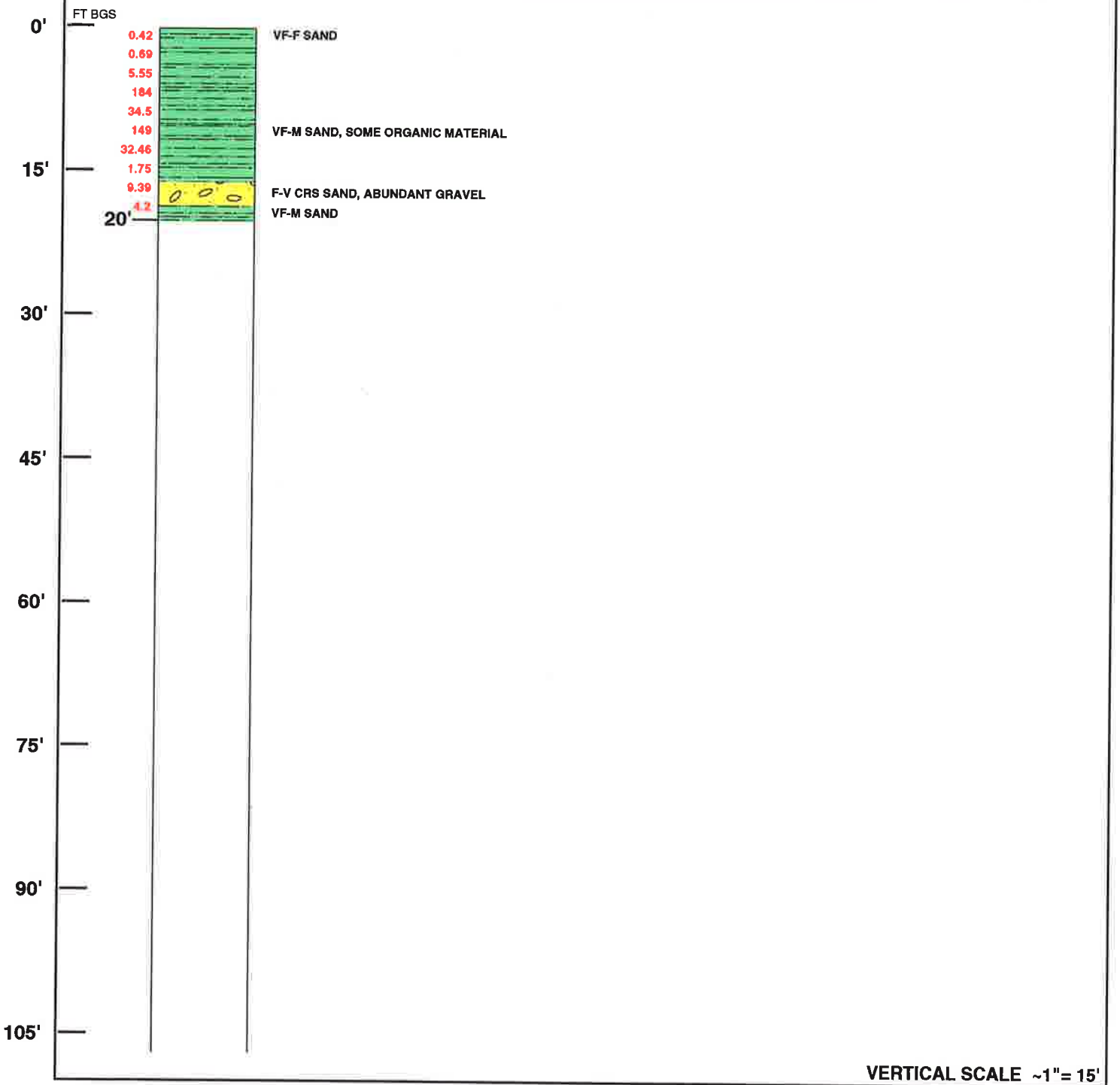
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-18

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1090.74 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 20 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 4/4/02



VERTICAL SCALE ~1"= 15'

15APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_18.AI

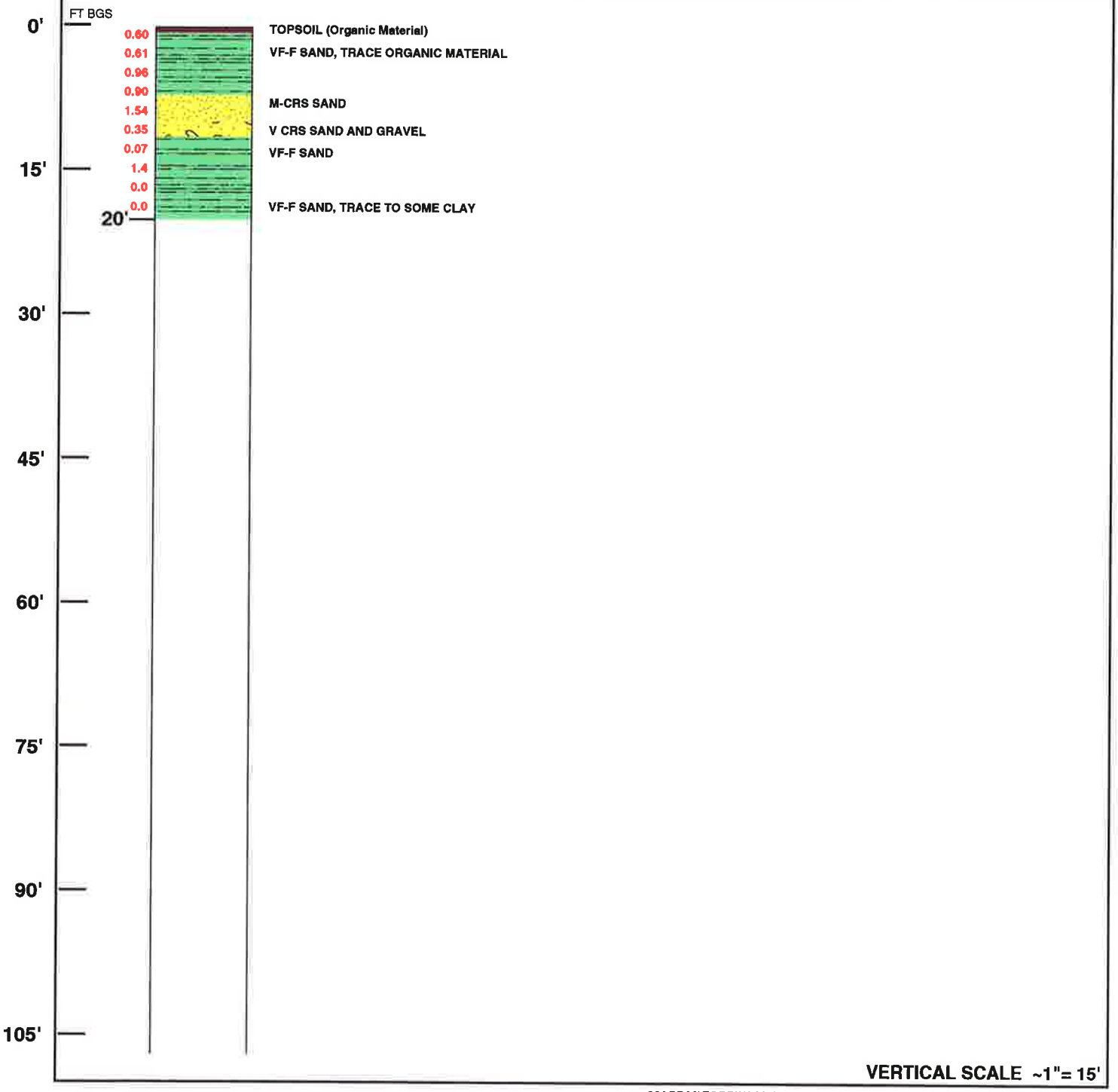
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-19

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1089.95 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 20 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 4/4/02



VERTICAL SCALE ~1"= 15'

23APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_19.AI

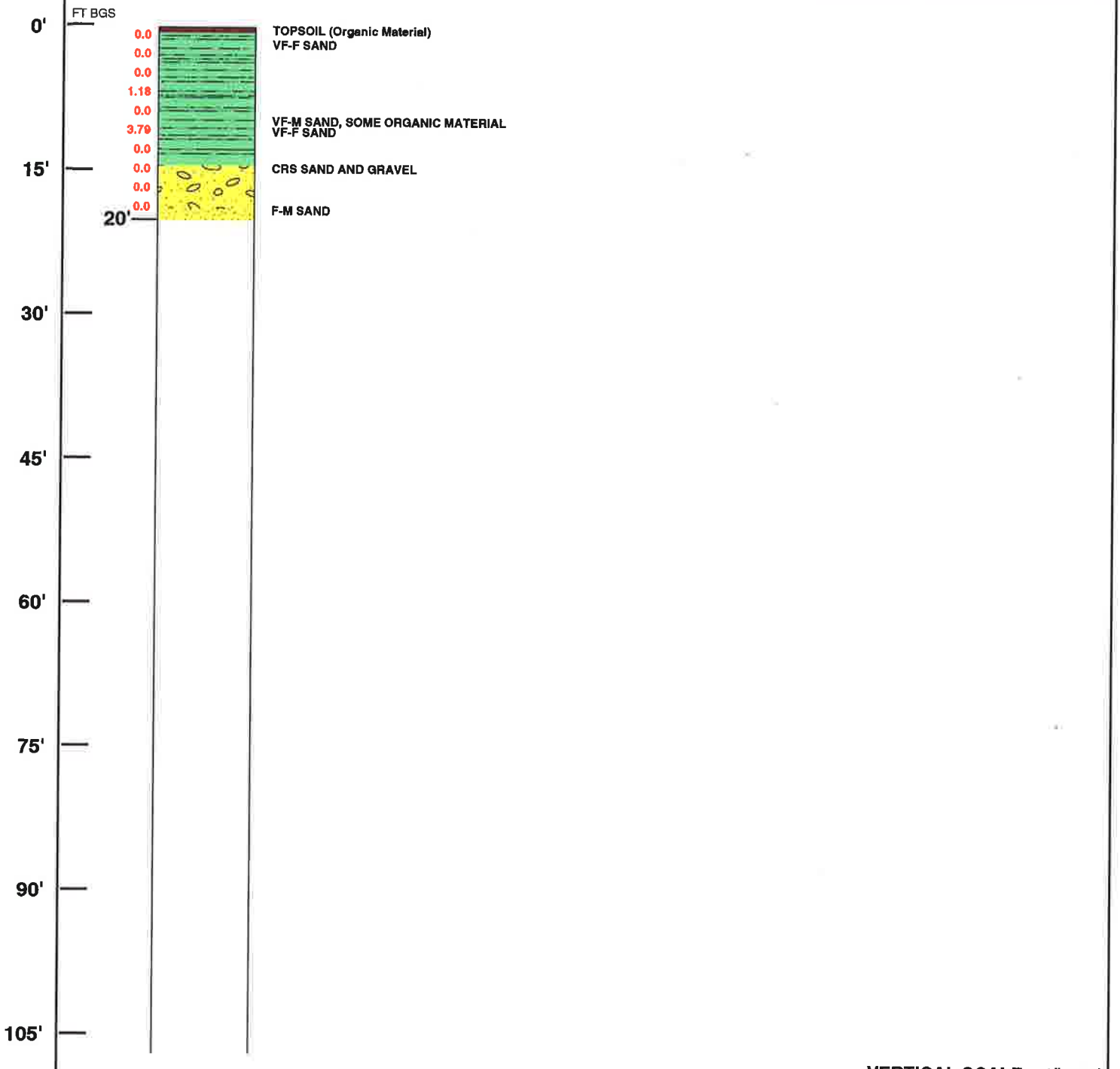
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-20

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1090.66 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 20 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 4/4/02



VERTICAL SCALE ~1"= 15'

23APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_20.AI

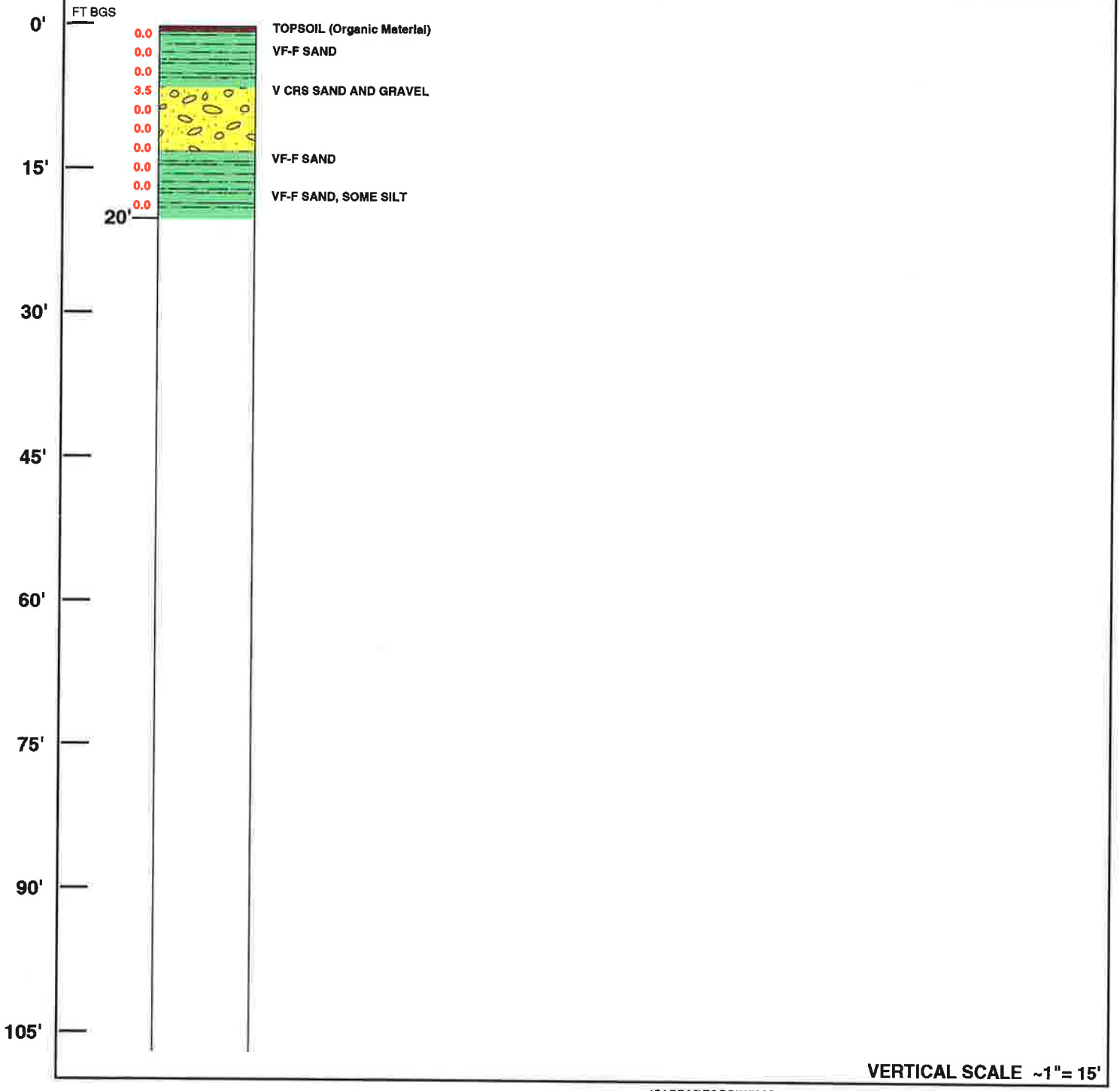
ARCADIS G&M

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMGP-21

PROJECT FORD/KINGSFORD WI000950.0002

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1089.39 Feet MSL
GEOLOGIST Veronica Brieno	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Macrocore	TOTAL DEPTH DRILLED 20 Feet BLS
DRILLER Paul	DRILLING CONTRACTOR Giles Engineering	DRILLING METHOD Geoprobe	DATE BORING COMPLETED 4/4/02



VERTICAL SCALE ~1"= 15'

15APR02\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMGP_21.AI

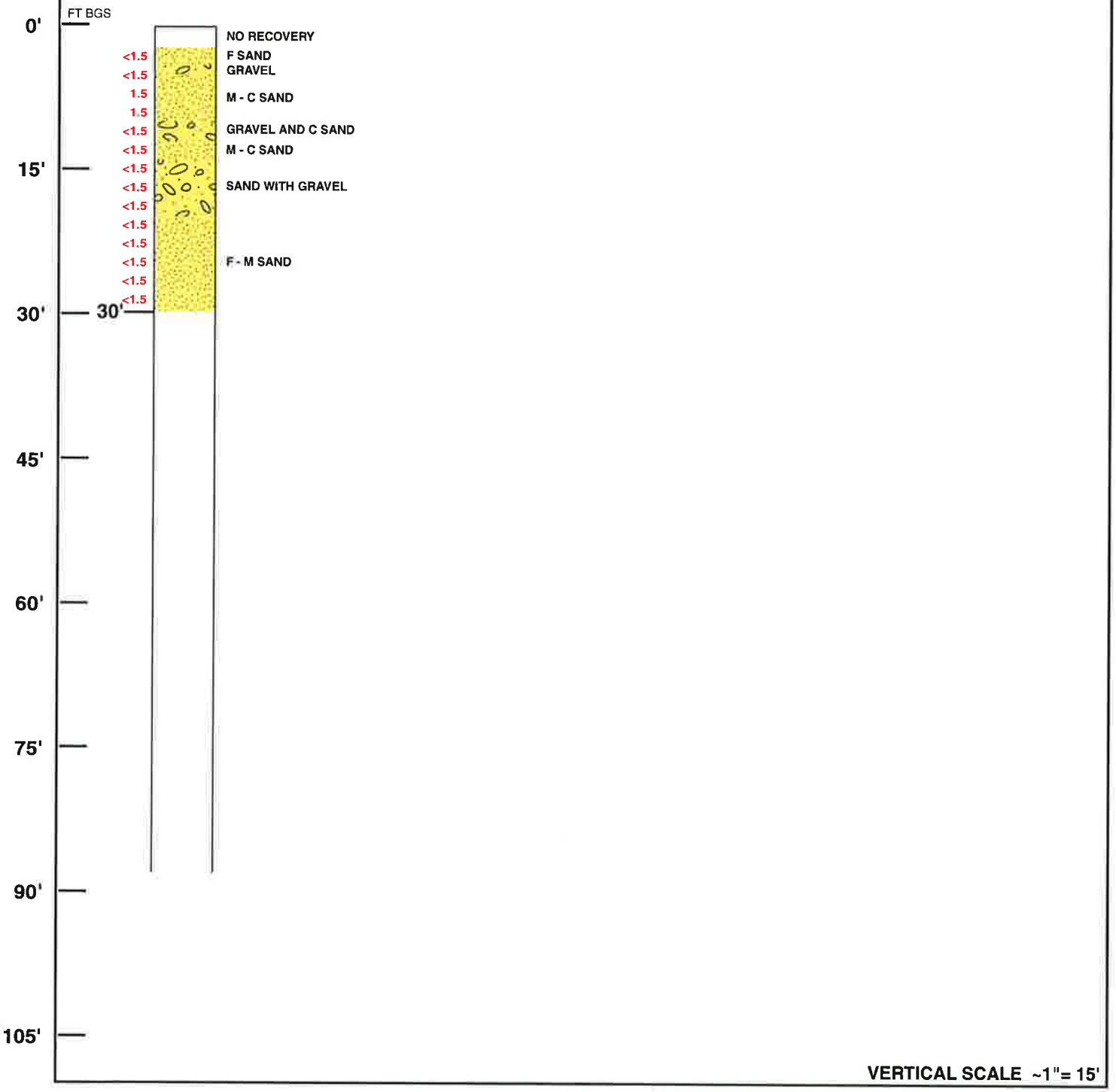
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMP-1

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1097 ft MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 30 Feet BLS
DRILLER Kevin	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Geoprobe (ESP)	DATE BORING COMPLETED 5/14/97



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMP_1.AI

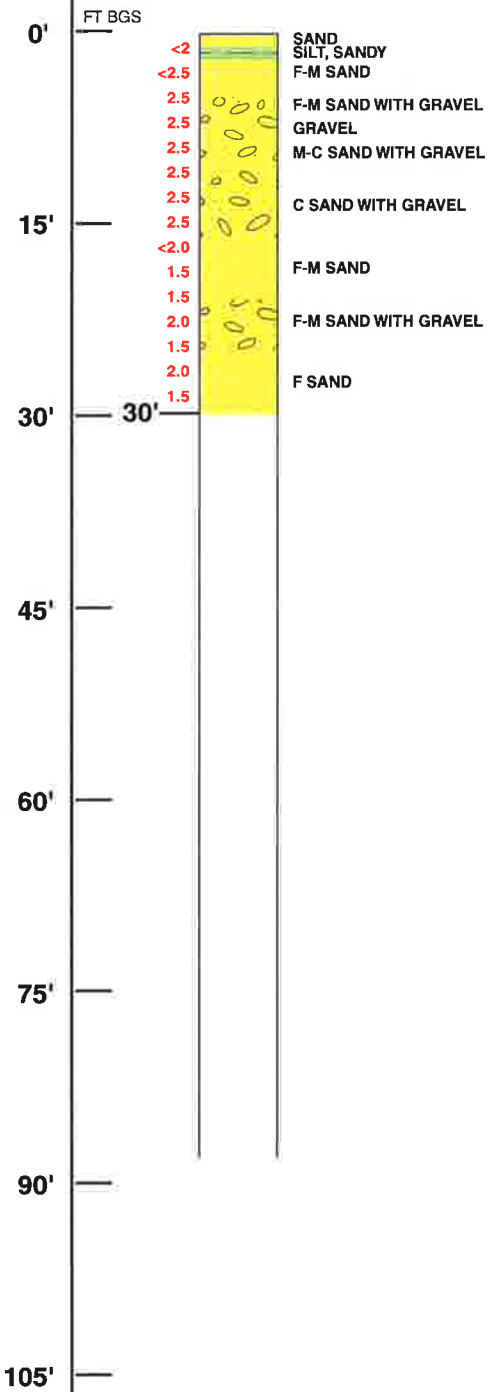
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMP-2

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Kevin	Boart Longyear	Geoprobe (ESP)	5/13/97



VERTICAL SCALE ~1"= 15'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMP_2.AI

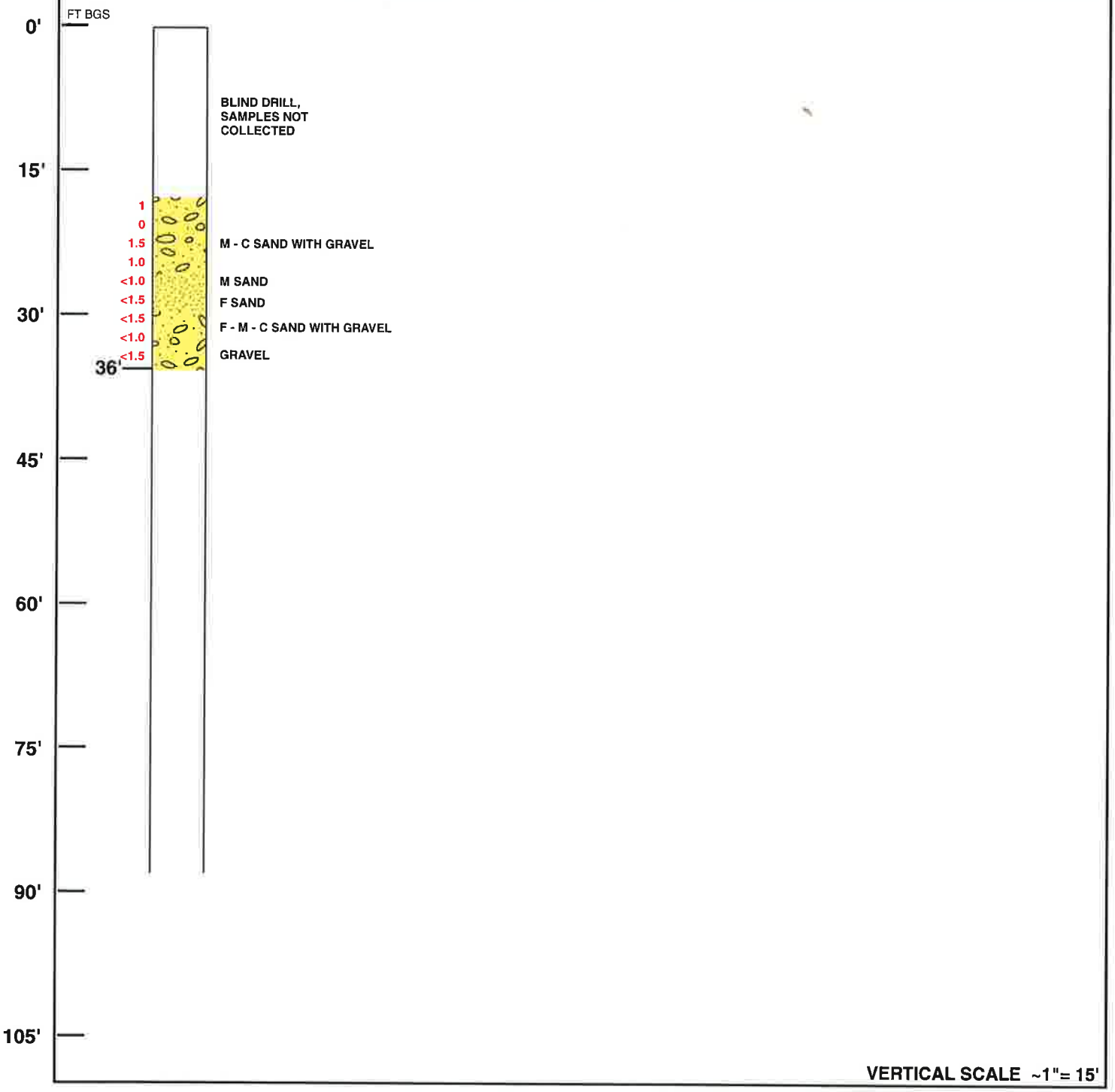
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMP-3

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1100 ft MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	36 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Kevin	Boart Longyear	Geoprobe (ESP)	5/13/97



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMP_3.AI

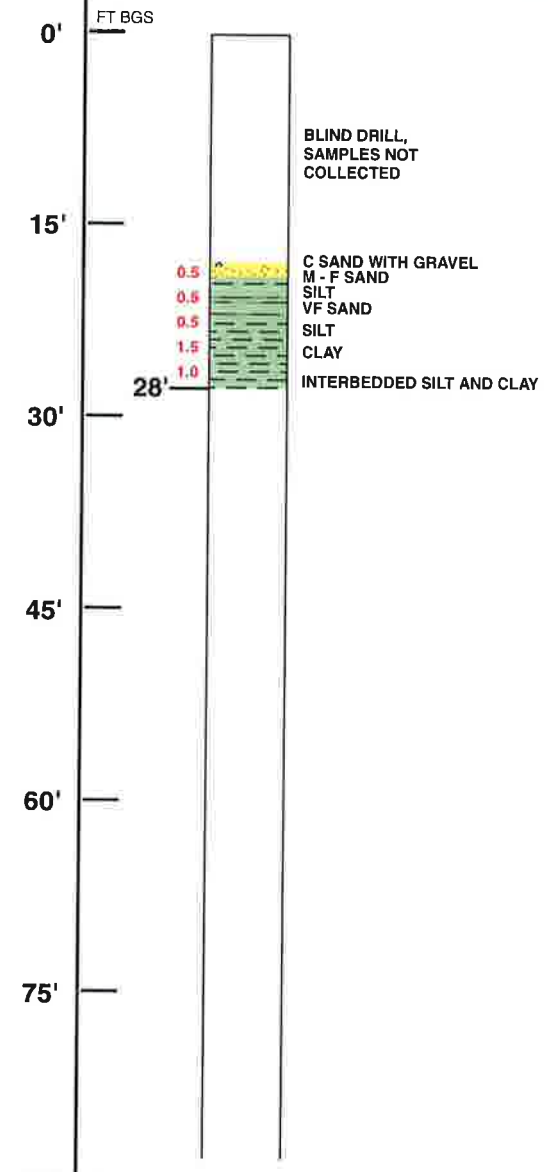
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMP-4

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1100 ft MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 28 Feet BLS
DRILLER Kevin	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Geoprobe (ESP)	DATE BORING COMPLETED 5/13/97



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMP_4.AI

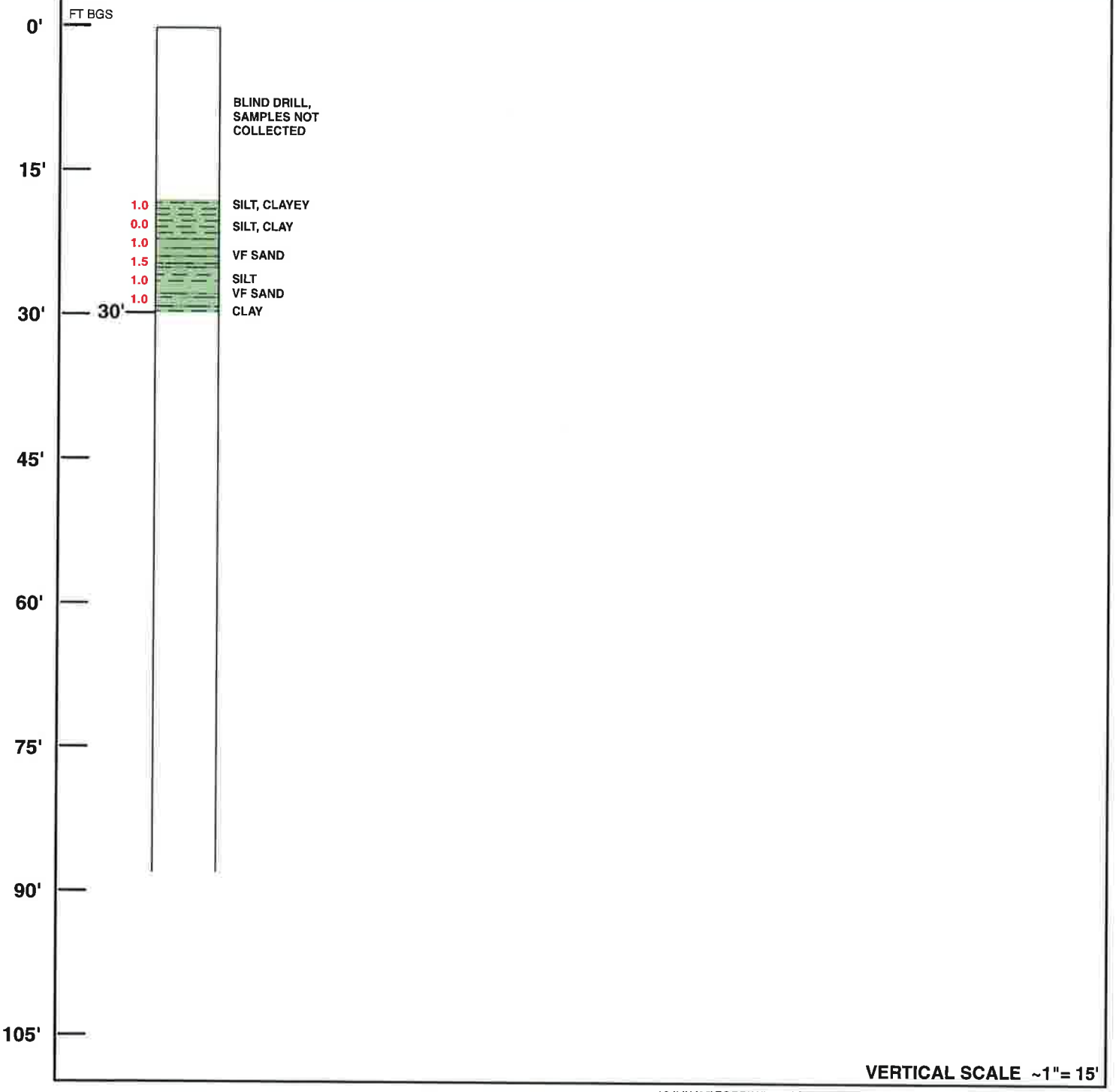
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMP-5

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1101 ft MSL
GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Ray Flynn	Continuous	Splitspoon	30 Feet BLS
DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Kevin	Boart Longyear	Geoprobe (ESP)	5/13/97



VERTICAL SCALE ~1"= 15'

13JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMP_5.AI

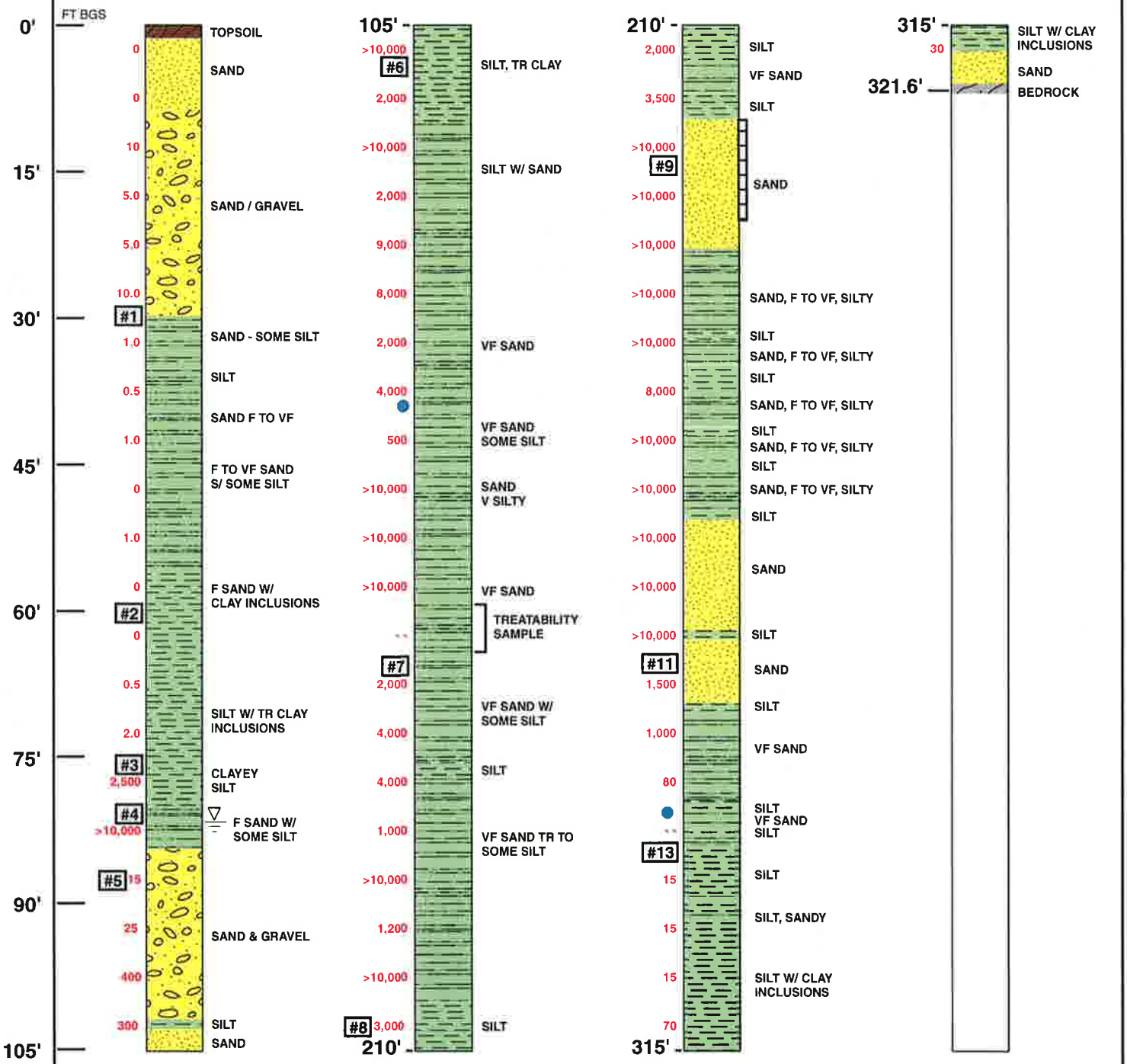
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-1

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1,121.79
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	321.6 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Dale	Boart Longyear	Rotasonic	5/15/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_1.AI

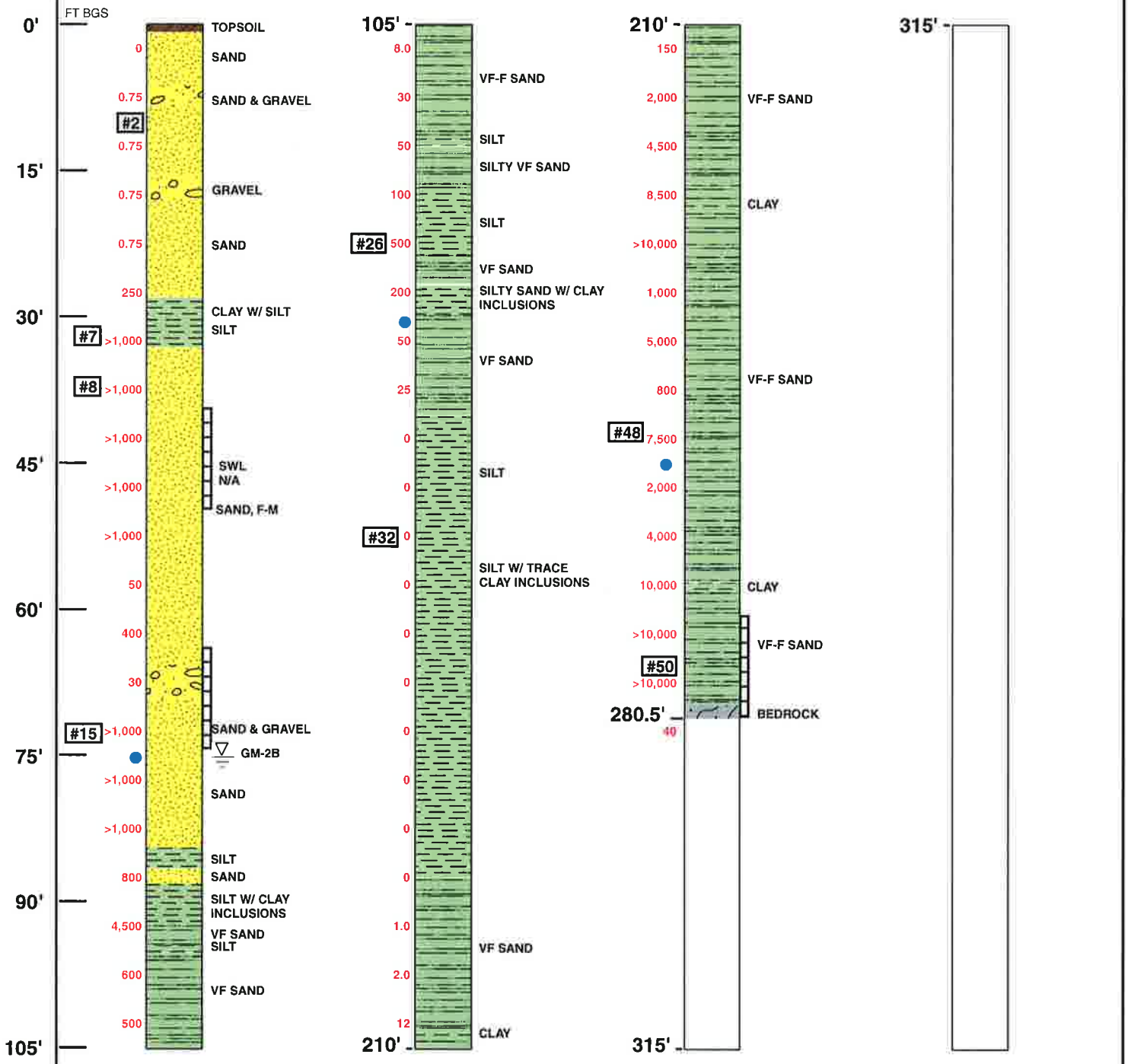
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-2 (A/B/C)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.36 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Rotasonic Core Barrel	280.5 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Bill	Boart Longyear	Rotasonic	5/6/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_2.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

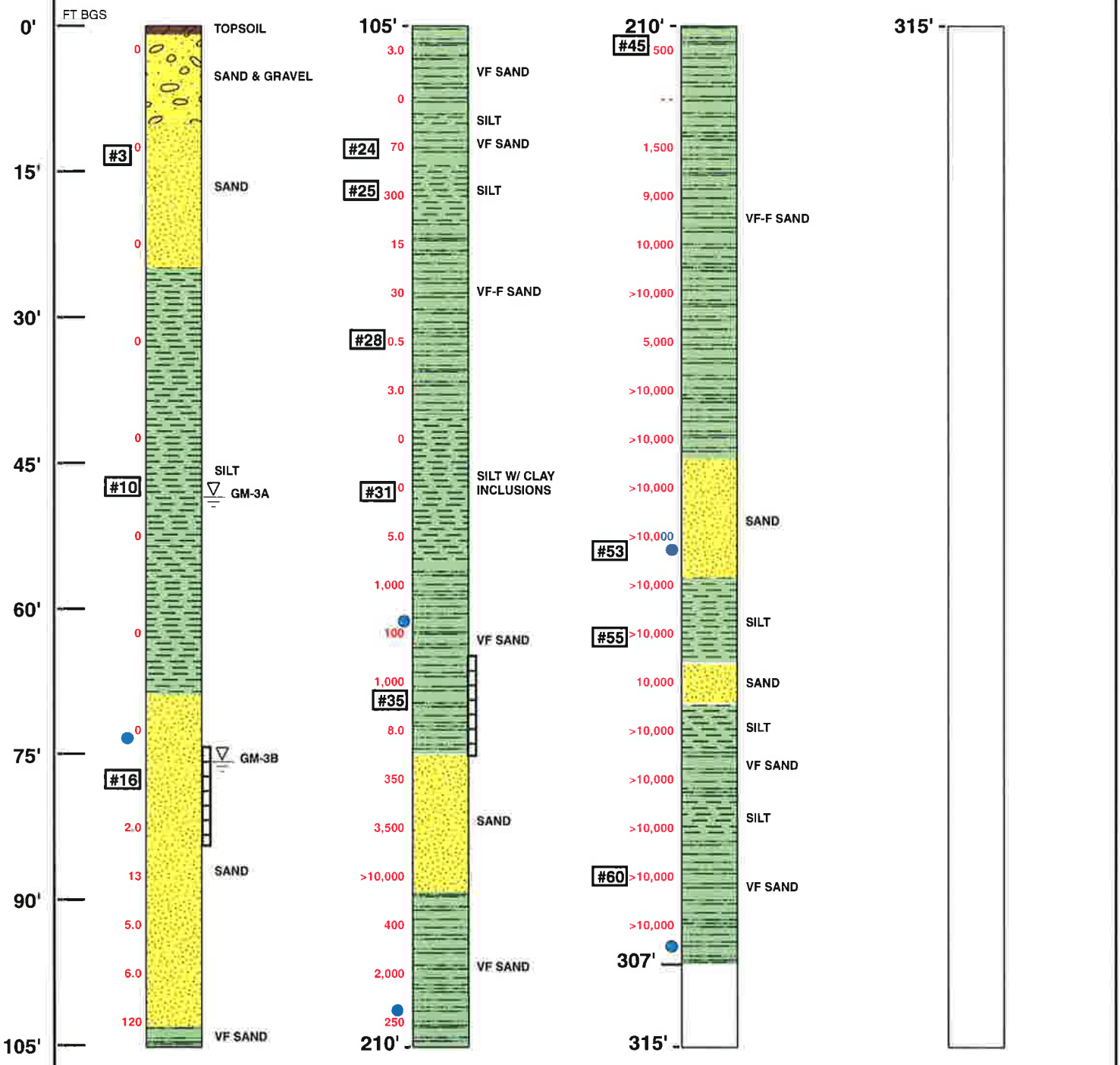
OBSERVATION WELL NO. GM-3 (A/B)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1119.61 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
B. Evans	Continuous	Rotasonic Core Barrel	307 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Dale	Boart Longyear	Rotasonic	5/3/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_3.AI

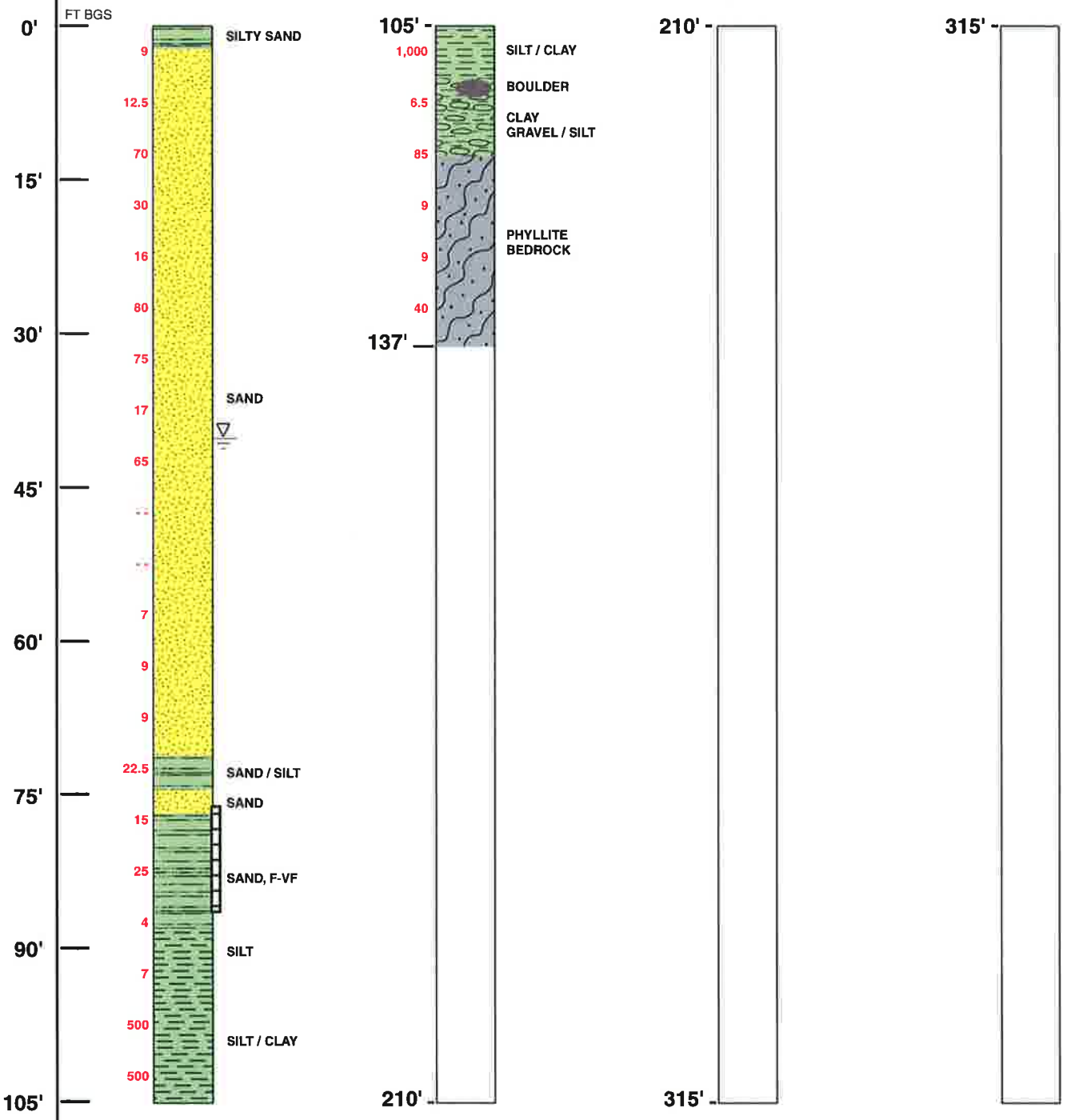
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-4

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1125.54 Feet MSL
GEOLOGIST P. Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 137 Feet BLS
DRILLER Kale	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/15/97



VERTICAL SCALE ~1"= 15'

22MAR05FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_4.AI

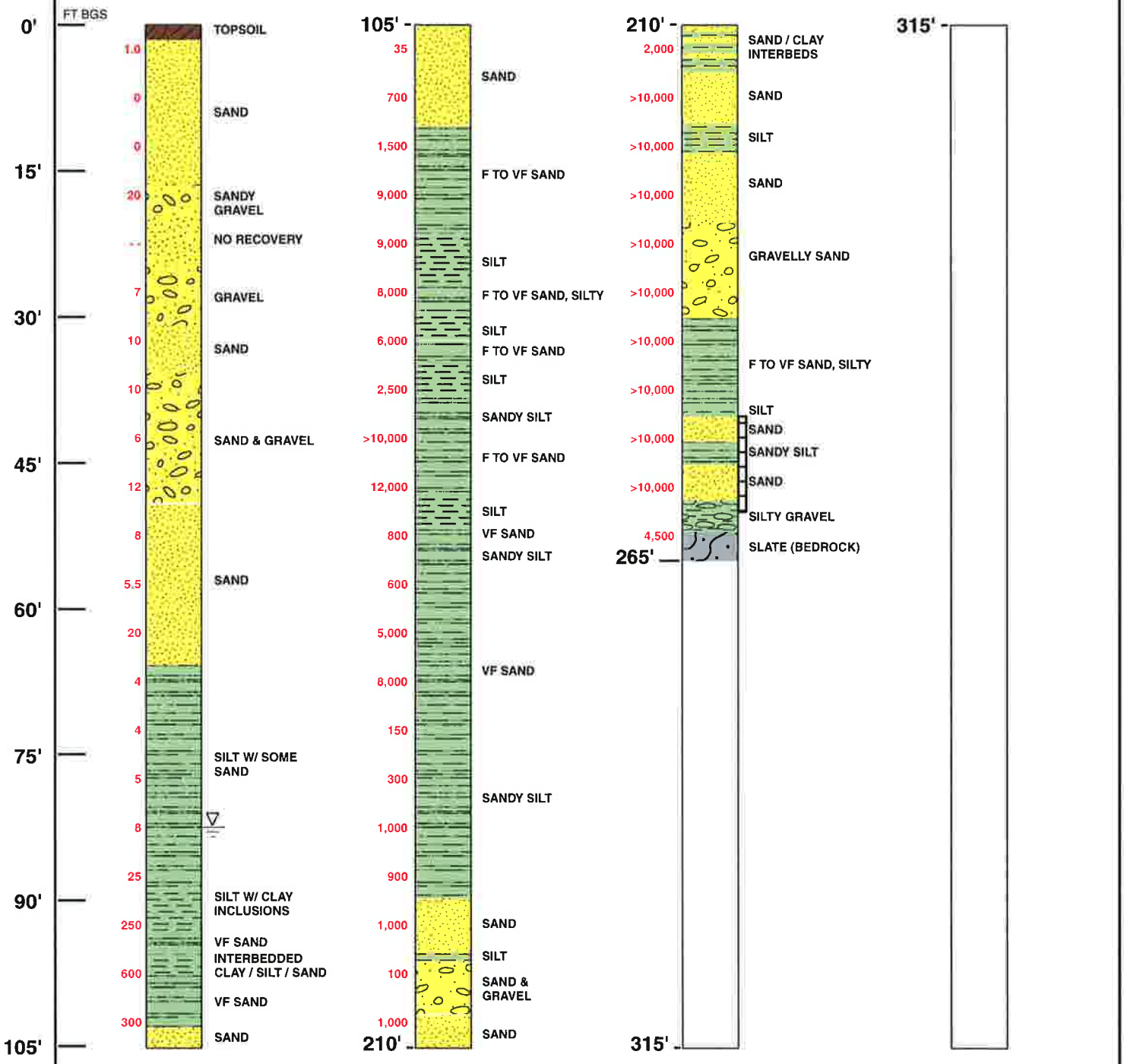
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-5

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1122.18
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / D. Hegrenes	Continuous	Rotasonic Core Barrel	265 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Dale	Boart Longyear	Rotasonic	6/14/97



VERTICAL SCALE ~1"= 15'

22MAR05FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_5.AI

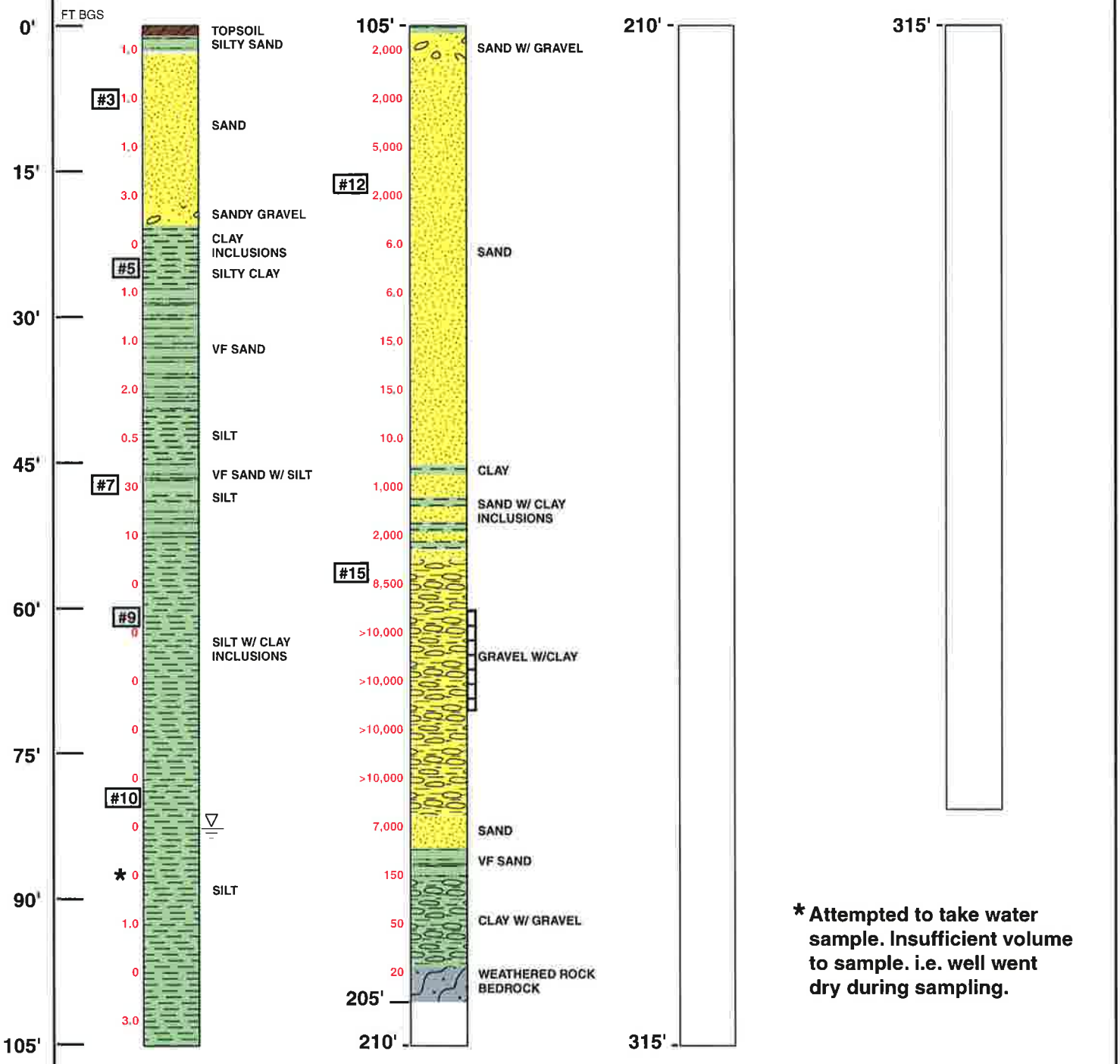
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-6

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1124.07
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / K. Daleness	Continuous	Rotasonic Core Barrel	205 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Bill	Boart Longyear	Rotasonic	5-14-97



* Attempted to take water sample. Insufficient volume to sample. i.e. well went dry during sampling.

VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_6.AI

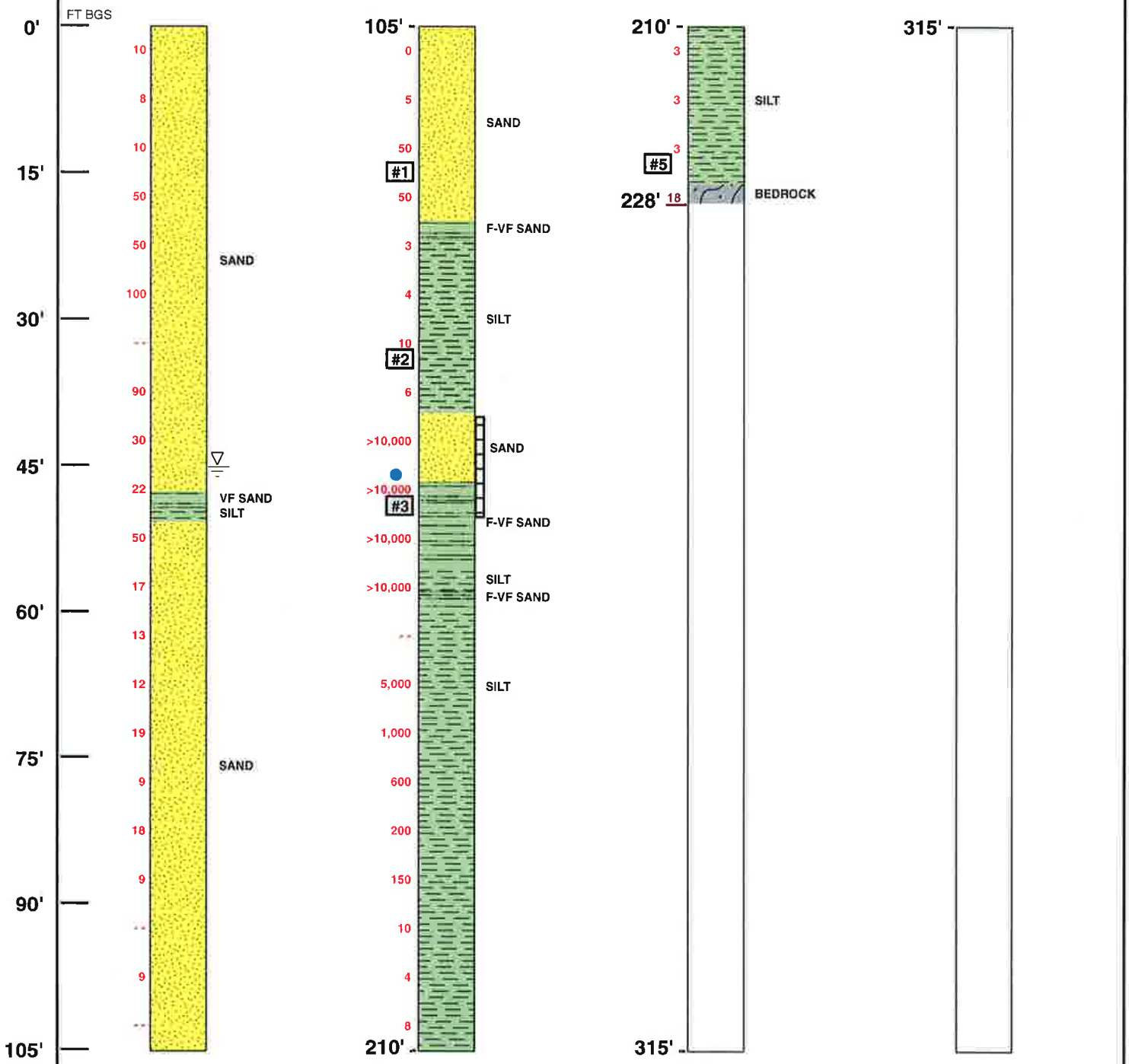
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-7

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1107.63 Feet MSL
GEOLOGIST B. Evans / P. Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 228 Feet BLS
DRILLER Kale	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/11/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_7.AI

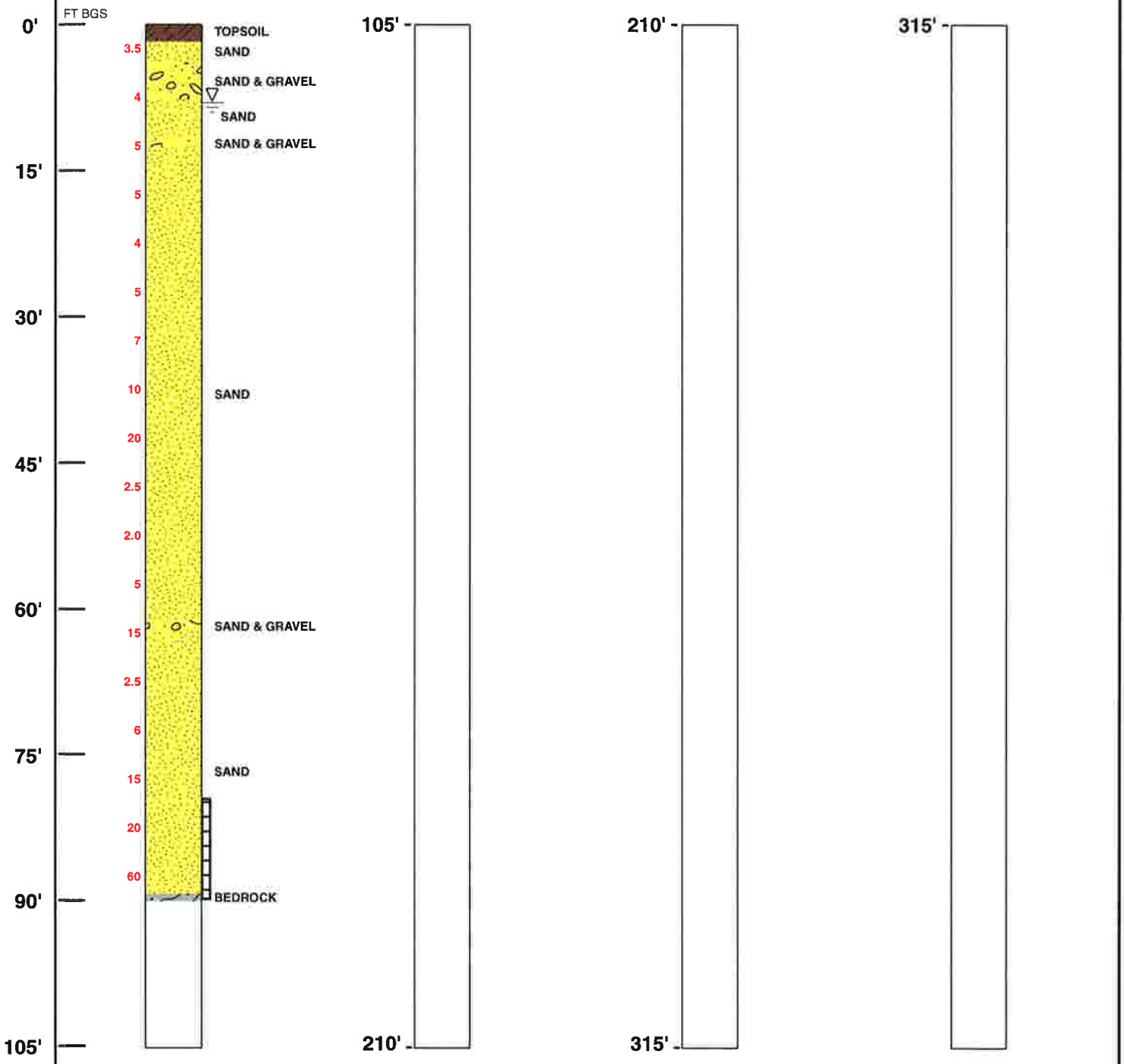
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-8

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.64 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans / D. Hegrenes	Continuous	Rotasonic Core Barrel	90 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dale	Boart Longyear	Rotasonic	6/25/97



VERTICAL SCALE ~1"= 15'

22MAR05FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_8.AI

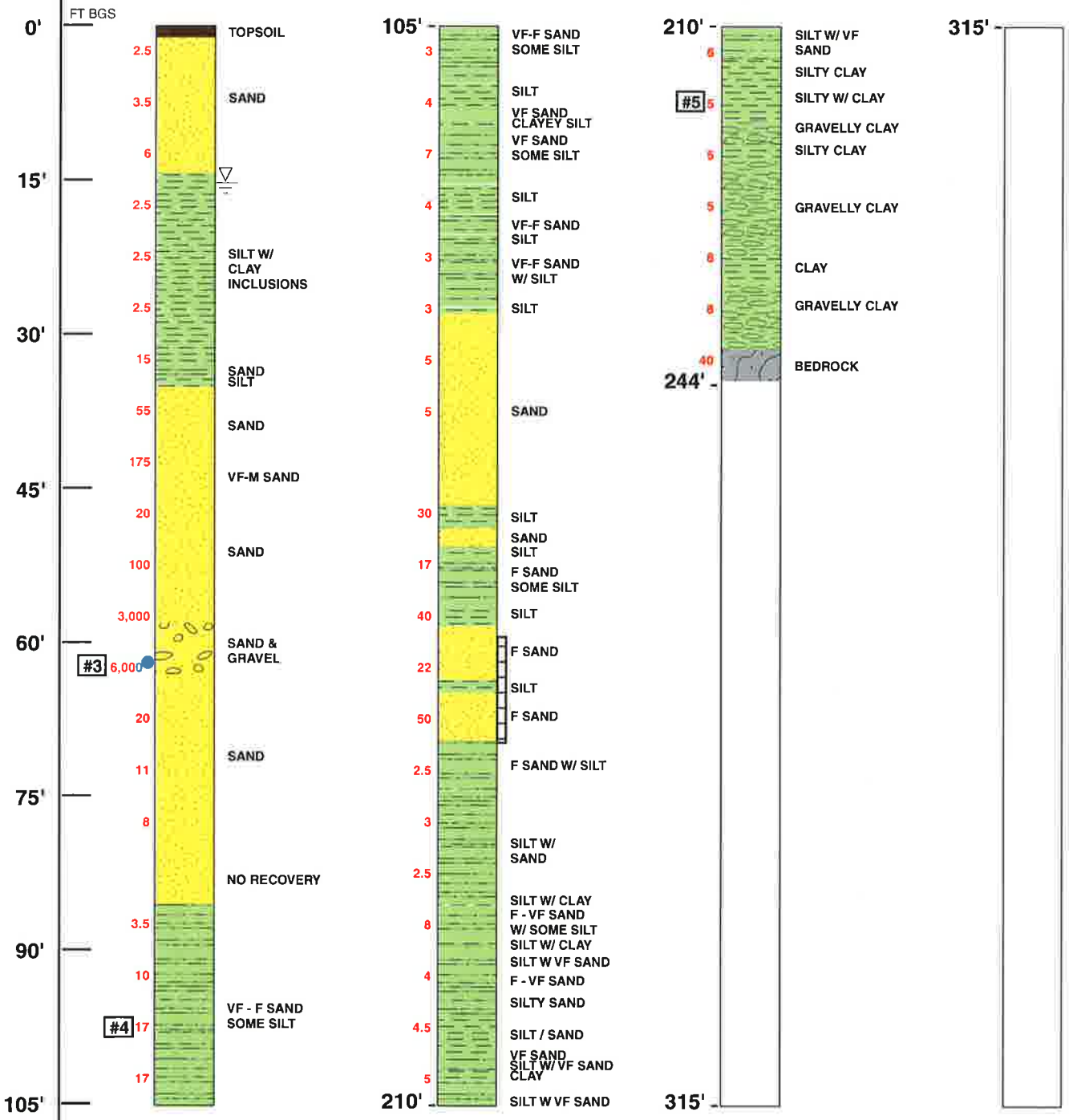
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-9

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1053.04 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell / D. Hegrenes	Continuous	Rotasonic Core Barrel	244 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Roy / Perry	Boart Longyear	Rotasonic	9-15-97



VERTICAL SCALE ~1"= 15'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_9.AI

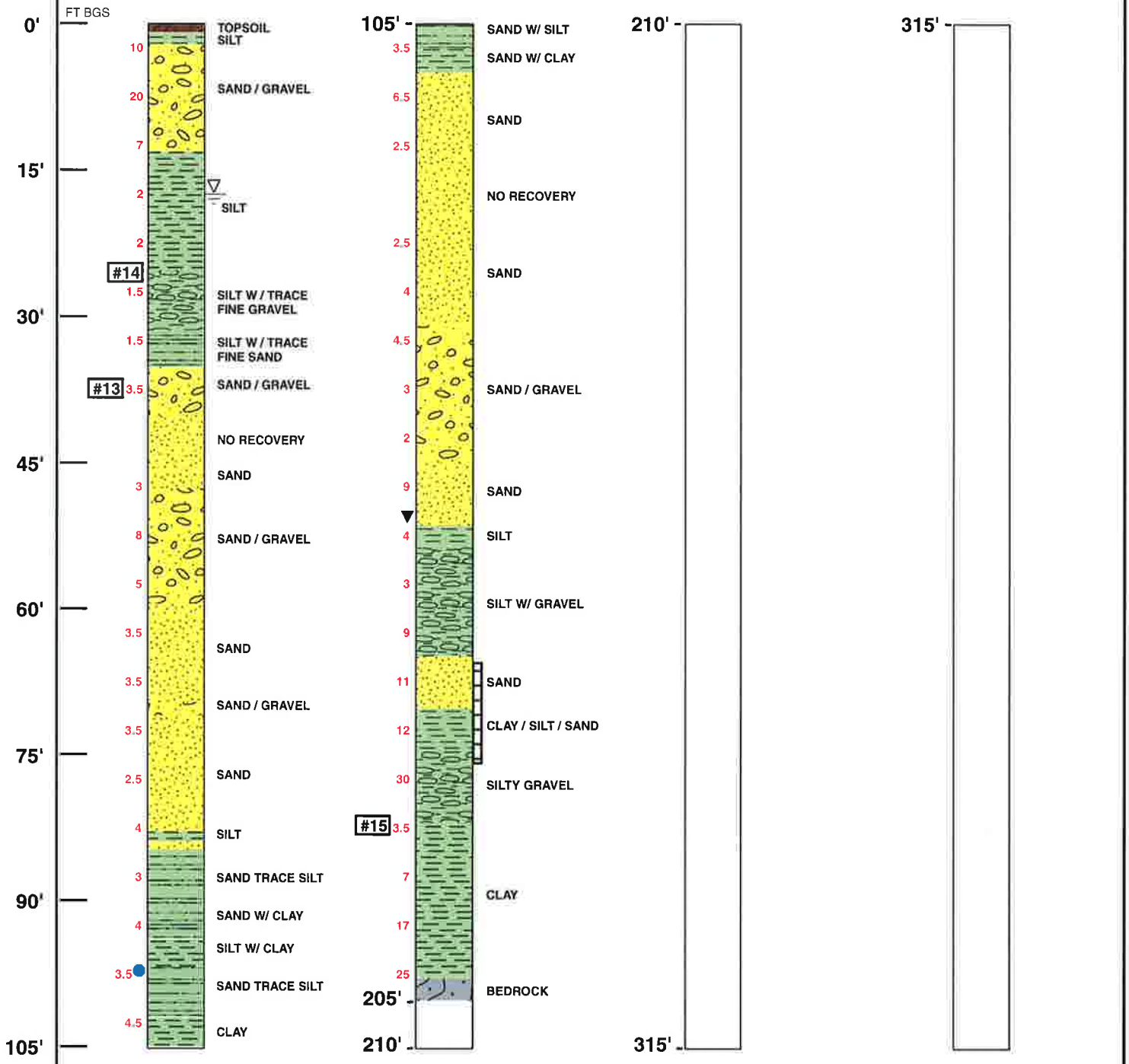
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-10

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1056.20 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik / D. Hegrenes	Continuous	Rotasonic Core Barrel	205 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Roy	Boart Longyear	Rotasonic	9/23/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_10.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

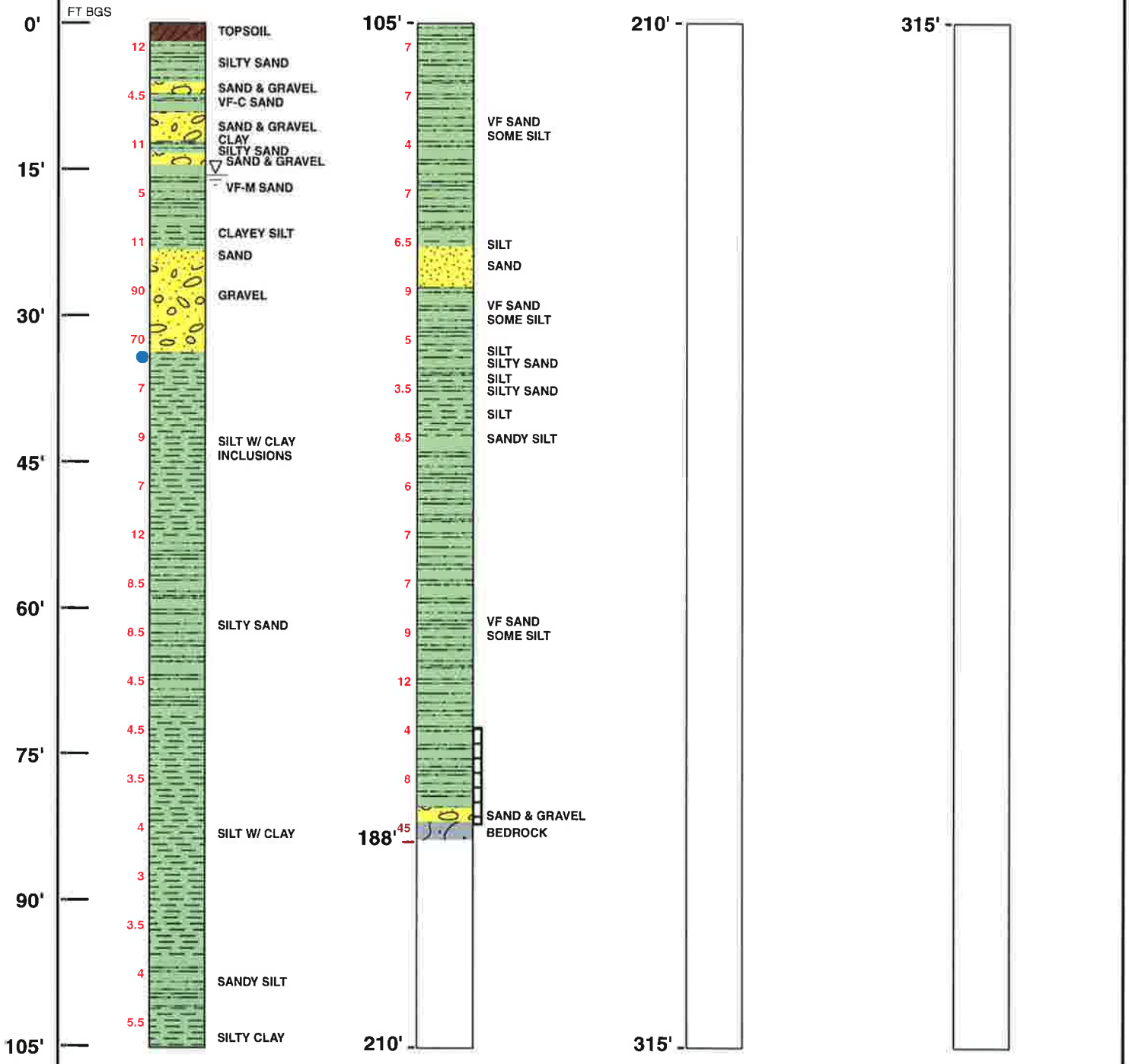
OBSERVATION WELL NO. GM-11

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1067.84 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
T. Powell / P. Bartnik	Continuous	Rotasonic Core Barrel	188 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Mike	Boart Longyear	Rotasonic	9/28/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_11.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

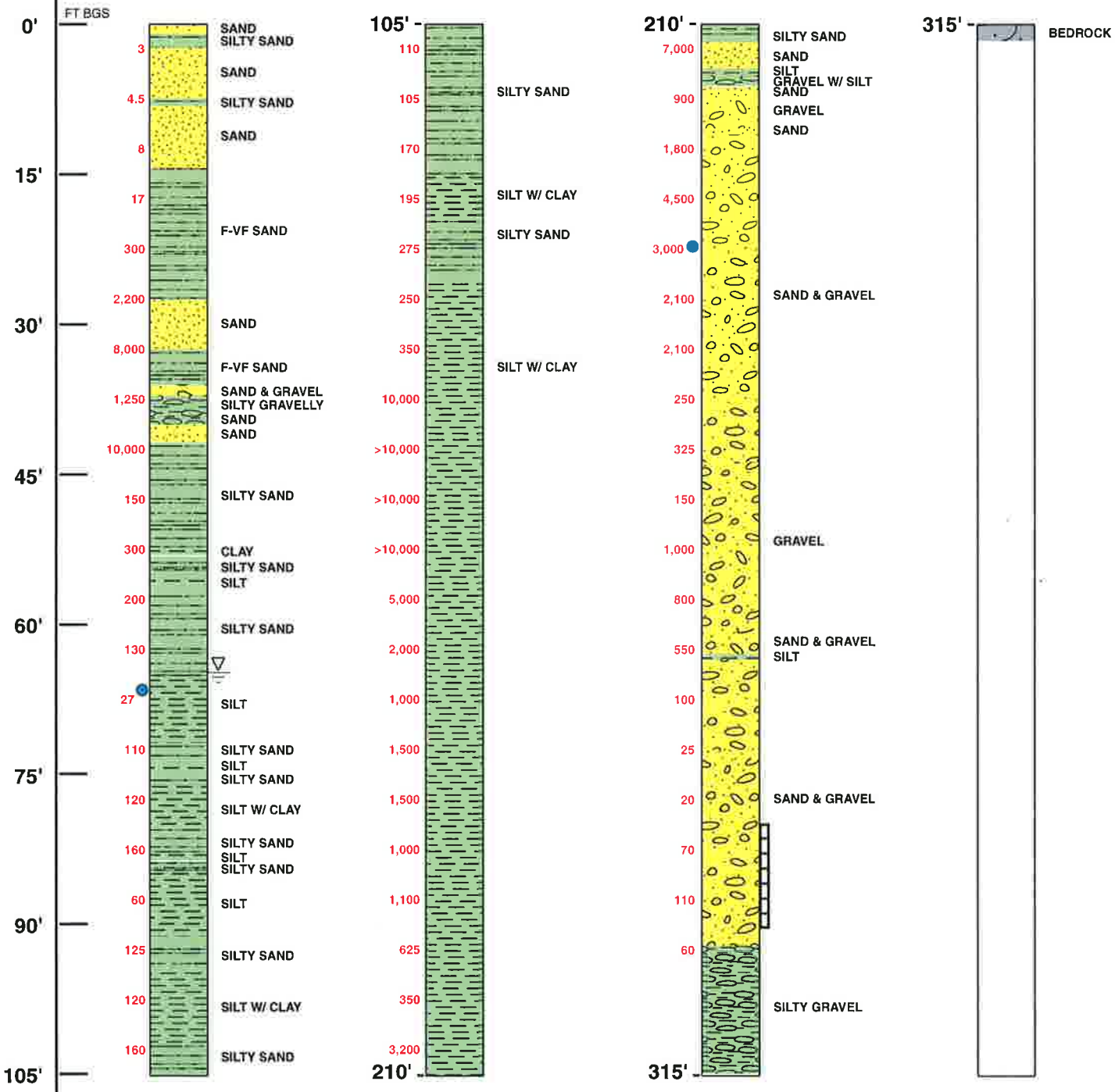
OBSERVATION WELL NO. GM-12

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1120.49 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
D. Hegrenes / P. Bartnik	Continuous	Rotasonic Core Barrel	315 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Dale	Boart Longyear	Rotasonic	10/9/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_12.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

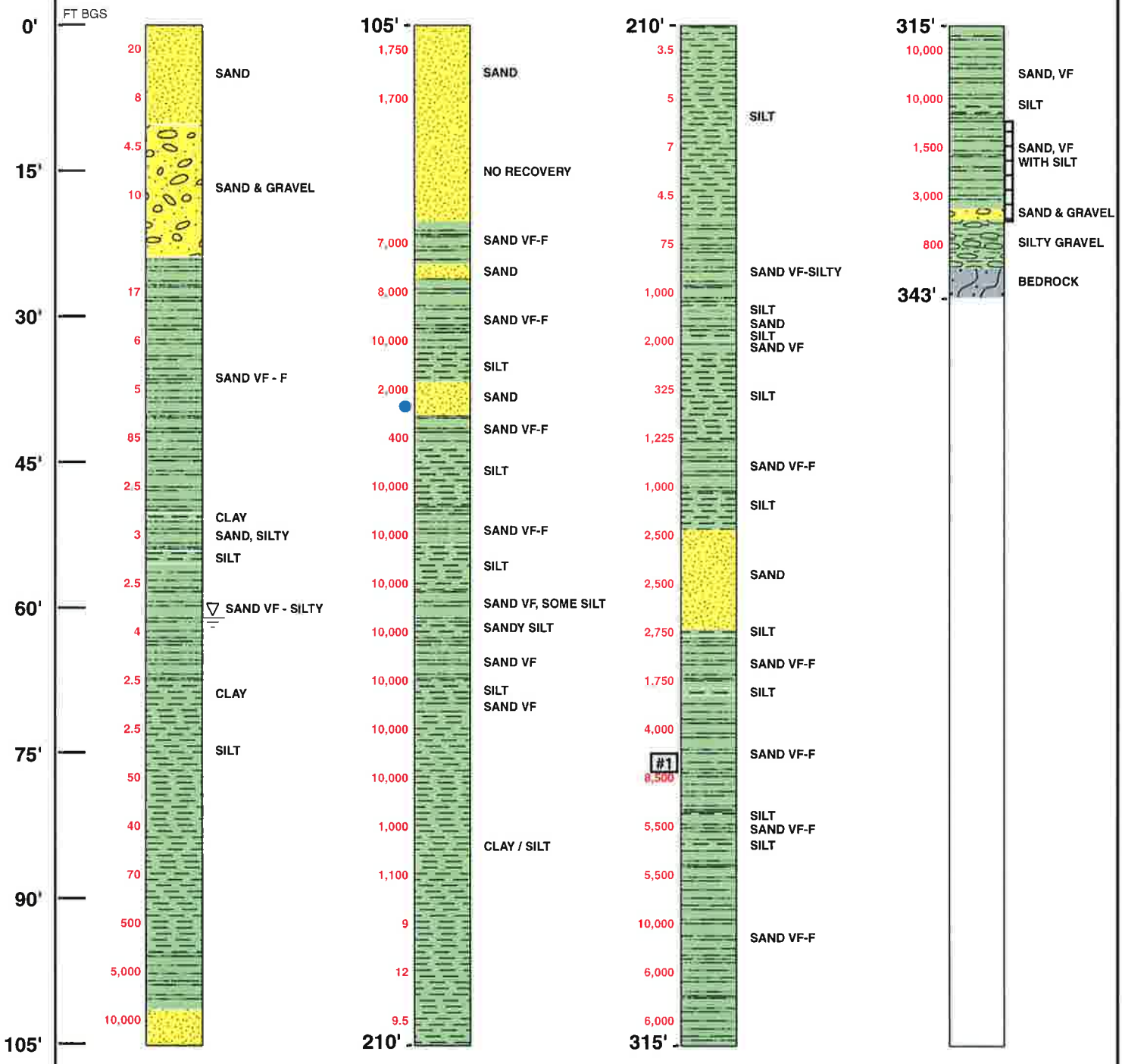
OBSERVATION WELL NO. GM-13

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1116.1 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
B. Evans / T. Powell	Continuous	Rotasonic Core Barrel	343 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Perry	Boart Longyear	Rotasonic	9/25/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_13.AI

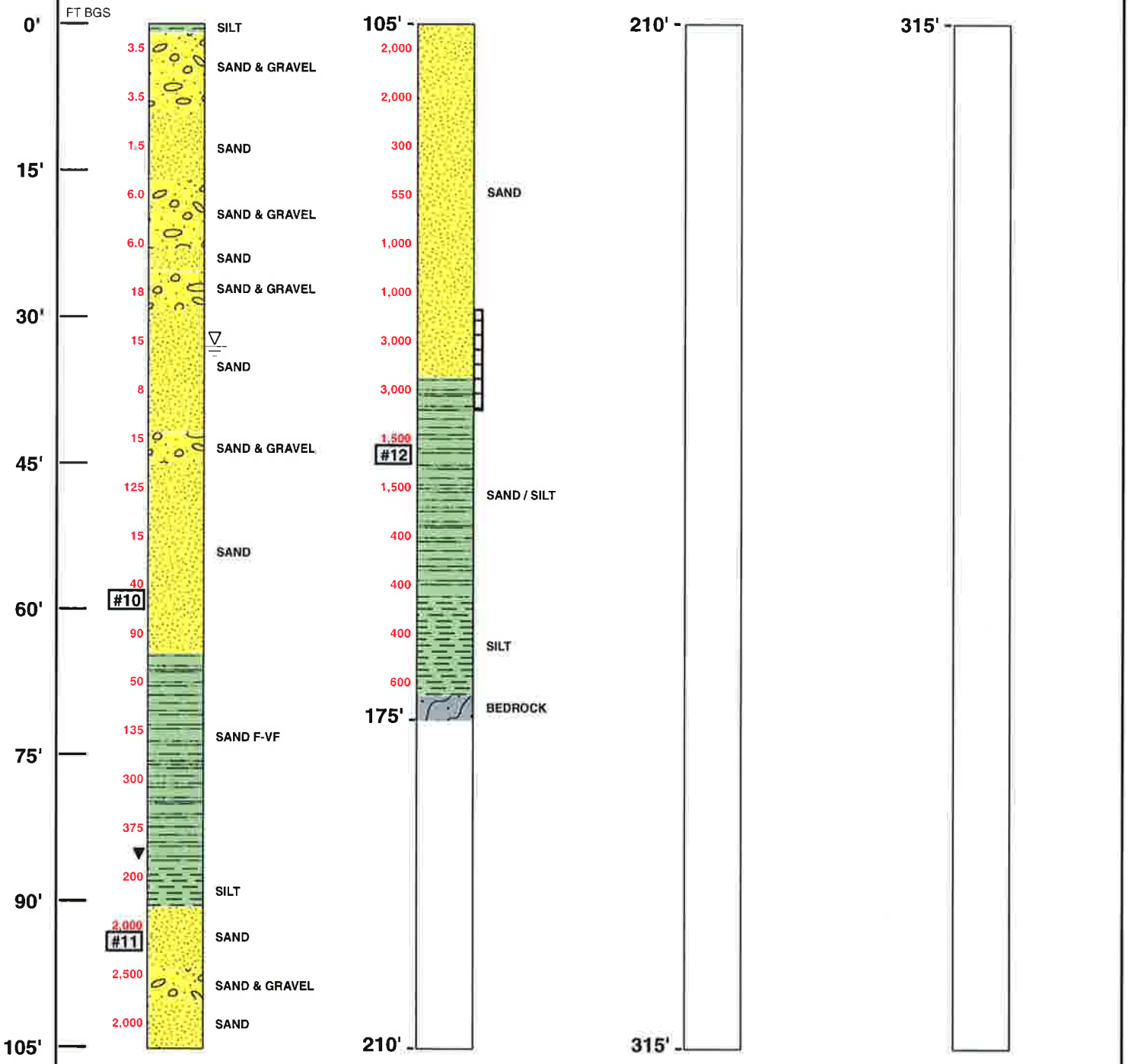
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-14 (GMSB-9)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1115.05 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans / P. Bartnik	Continuous	Rotasonic Core Barrel	175 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/13/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_14.AI

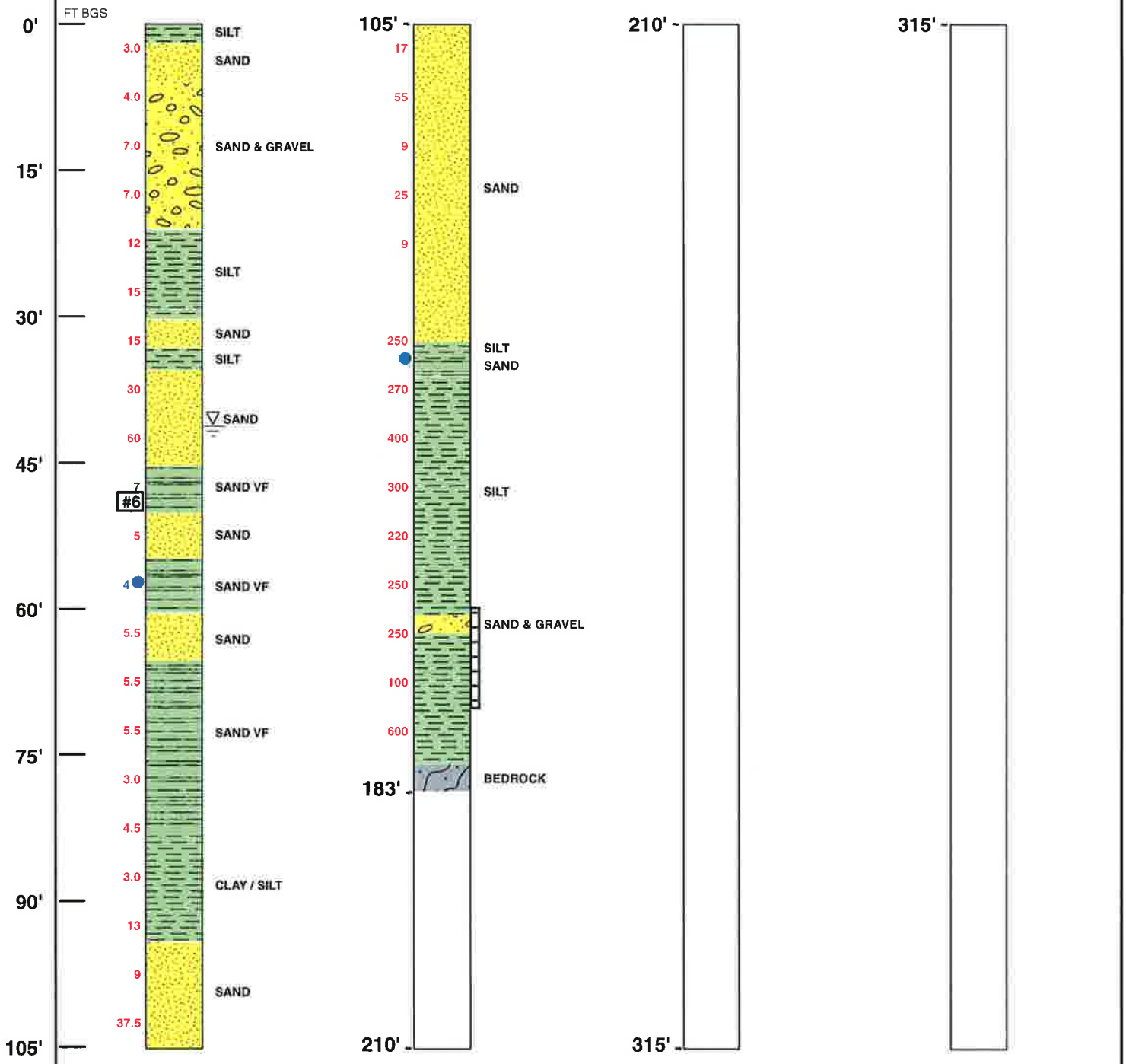
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-15 (GMSB-10)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1127.20 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans / P. Bartnik	Continuous	Rotasonic Core Barrel	183 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/11/97



VERTICAL SCALE ~1"= 15'

22MAR05FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_15.AI

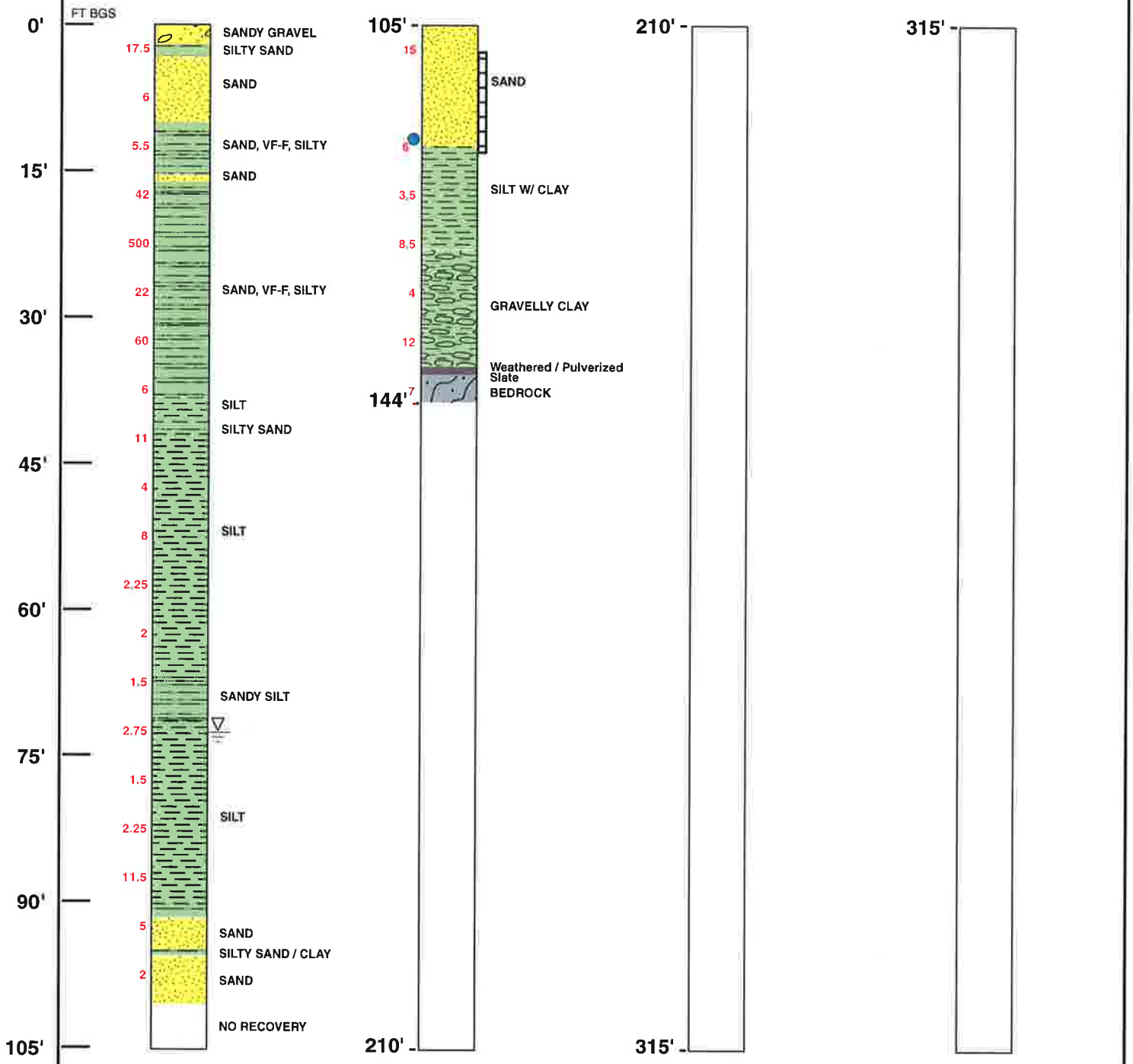
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-16

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1130.25 Feet MSL
GEOLOGIST T. Powell / R. Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 144 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/13/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_16.AI

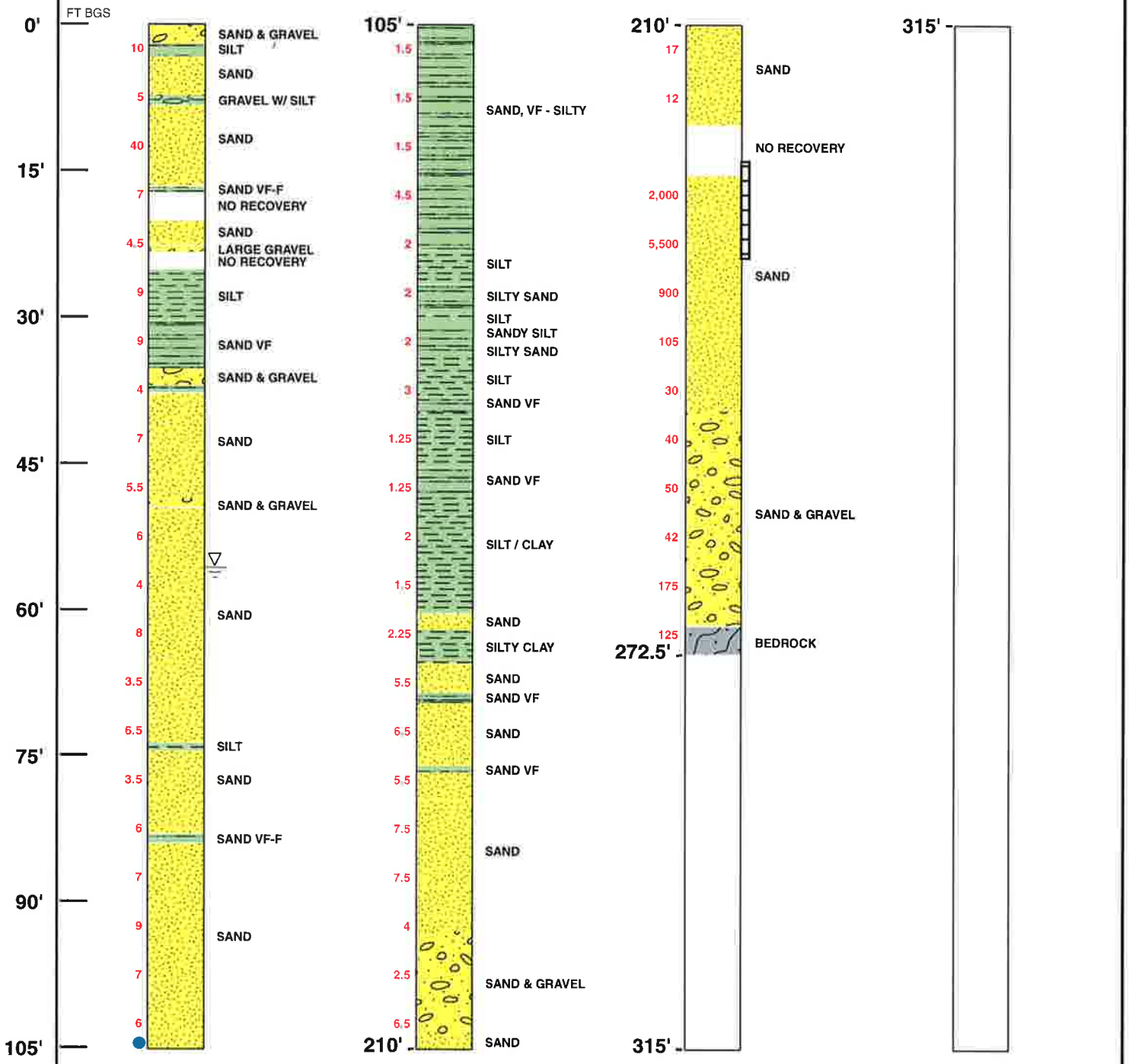
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-17

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1111.84 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Rotasonic Core Barrel	272.5 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	10/22/97



22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_17.AI

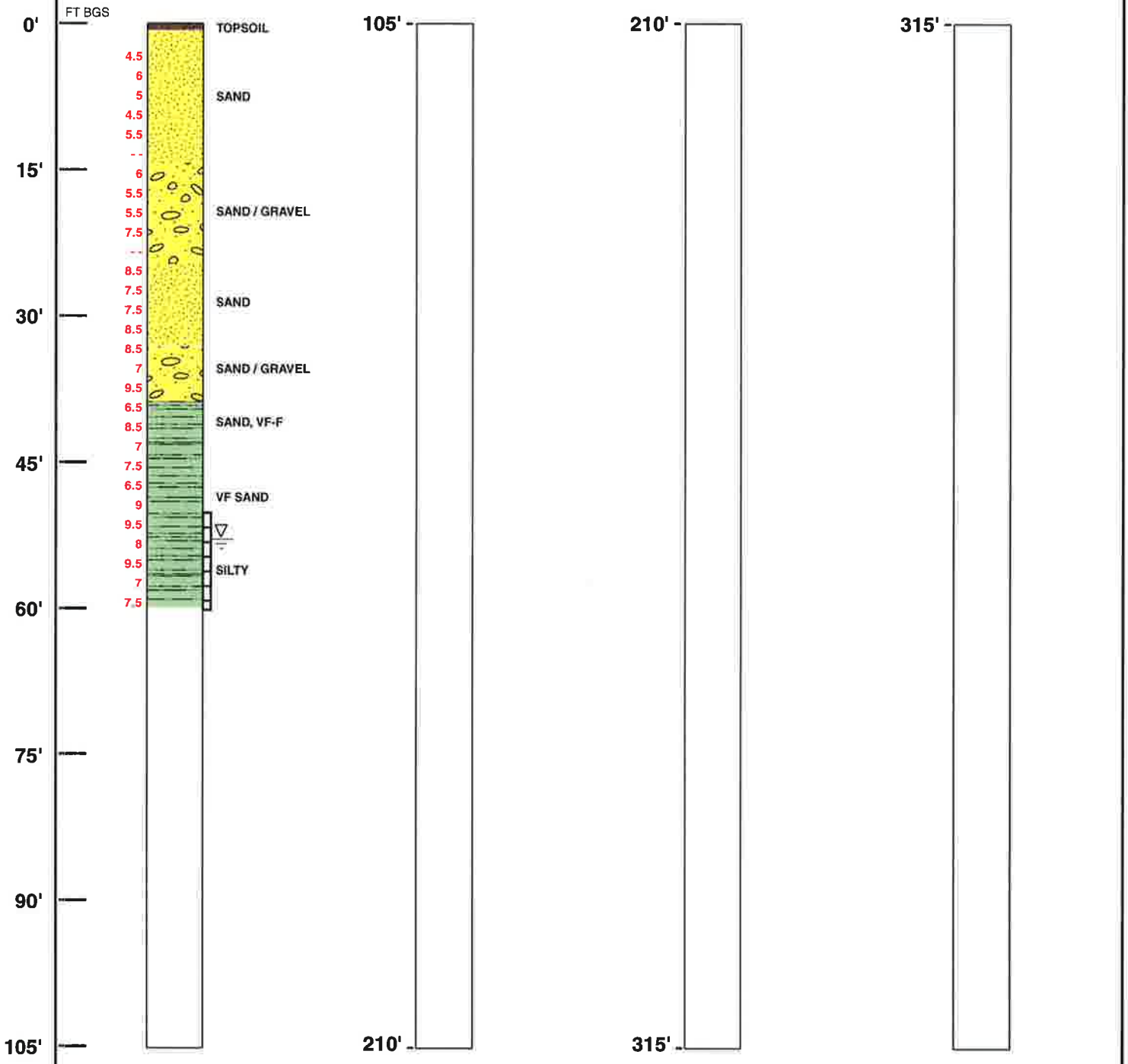
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-18

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.13 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	2" X 2' Splitspoon	60 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy	Boart Longyear	Hollow Stem Auger	11/24/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_18.AI

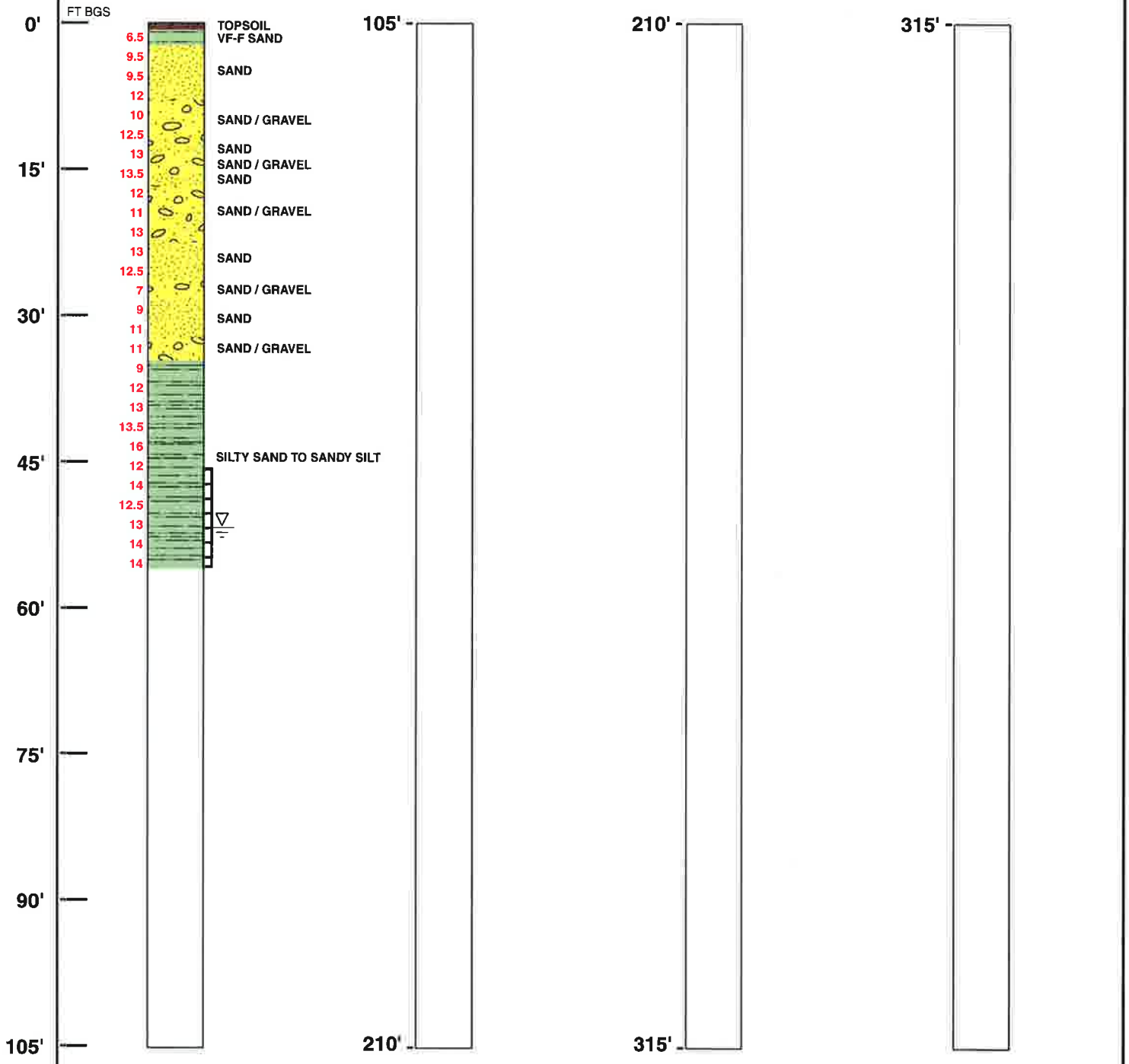
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-19

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.13 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	2" x 2' Splitspoon	57 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy	Boart Longyear	Hollow Stem Auger	11/25/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_19.AI

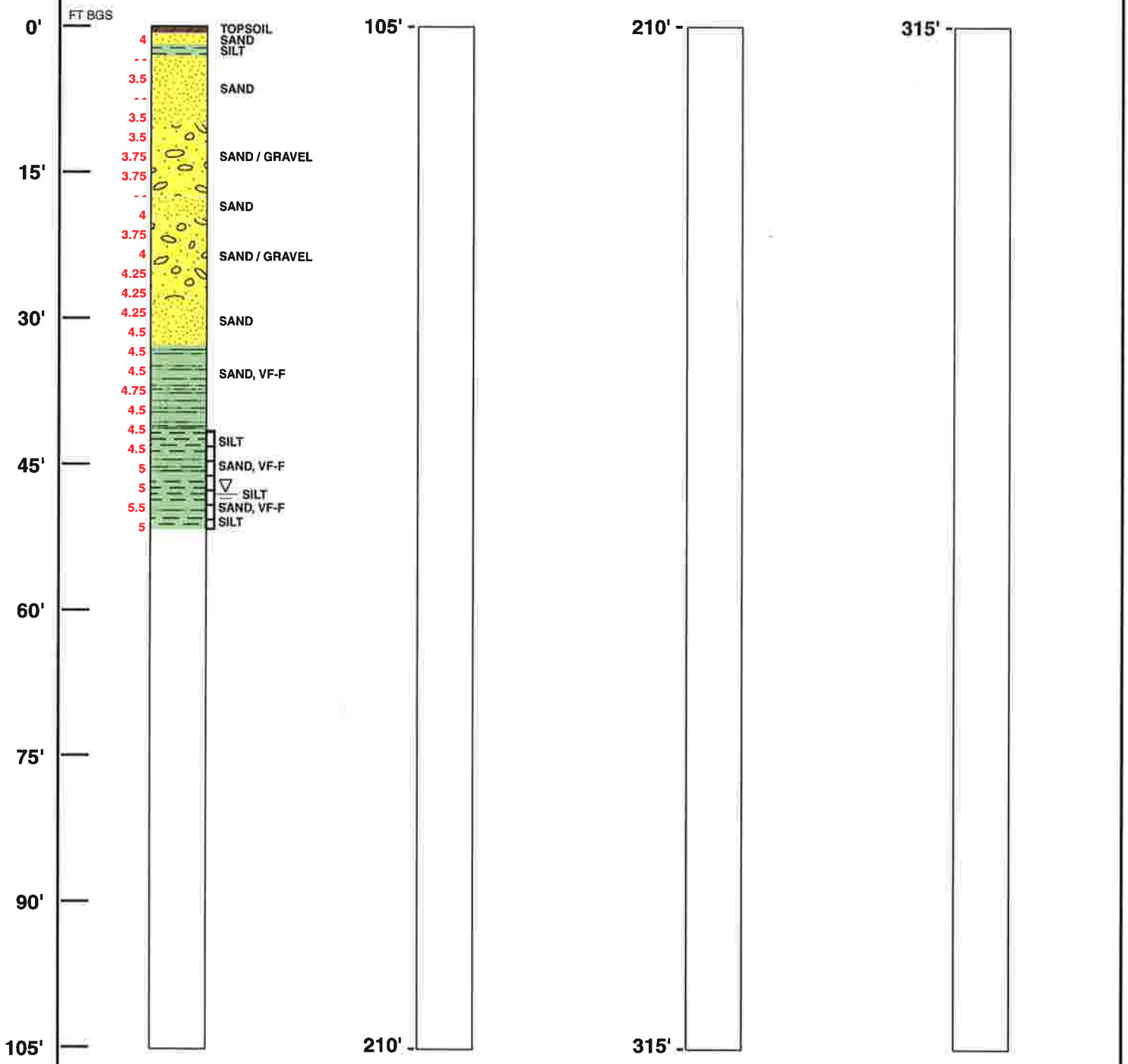
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-20

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1119.10 Feet MSL
GEOLOGIST T. Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE 2" x 2' Splitspoon	TOTAL DEPTH DRILLED 53 Feet BLS
DRILLER Randy	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 11/25/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_20.AI

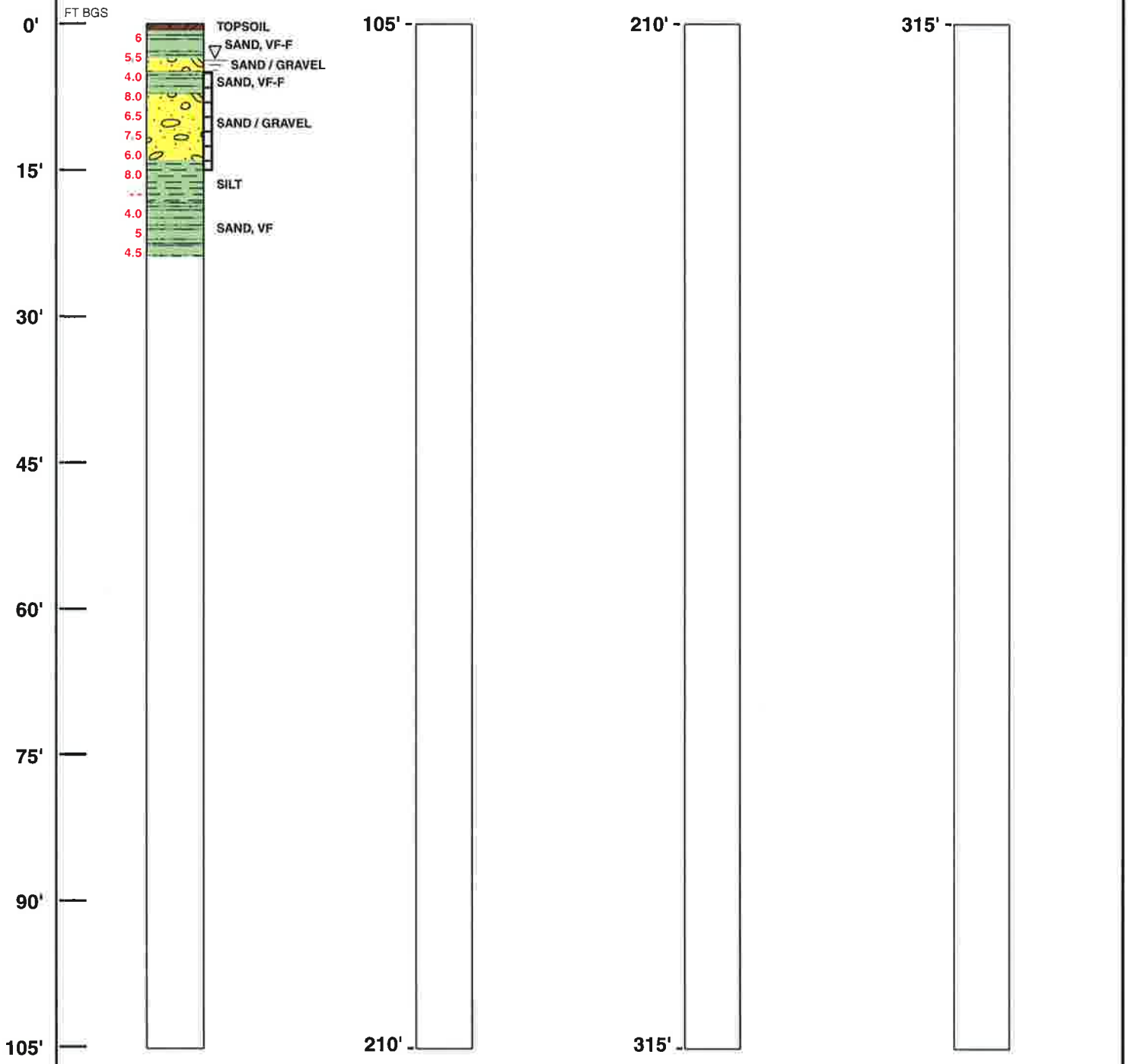
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-21

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1055.99 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	2" x 2' Splitspoon	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Pat	Boart Longyear	Hollow Stem Auger	11/24/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_21.AI

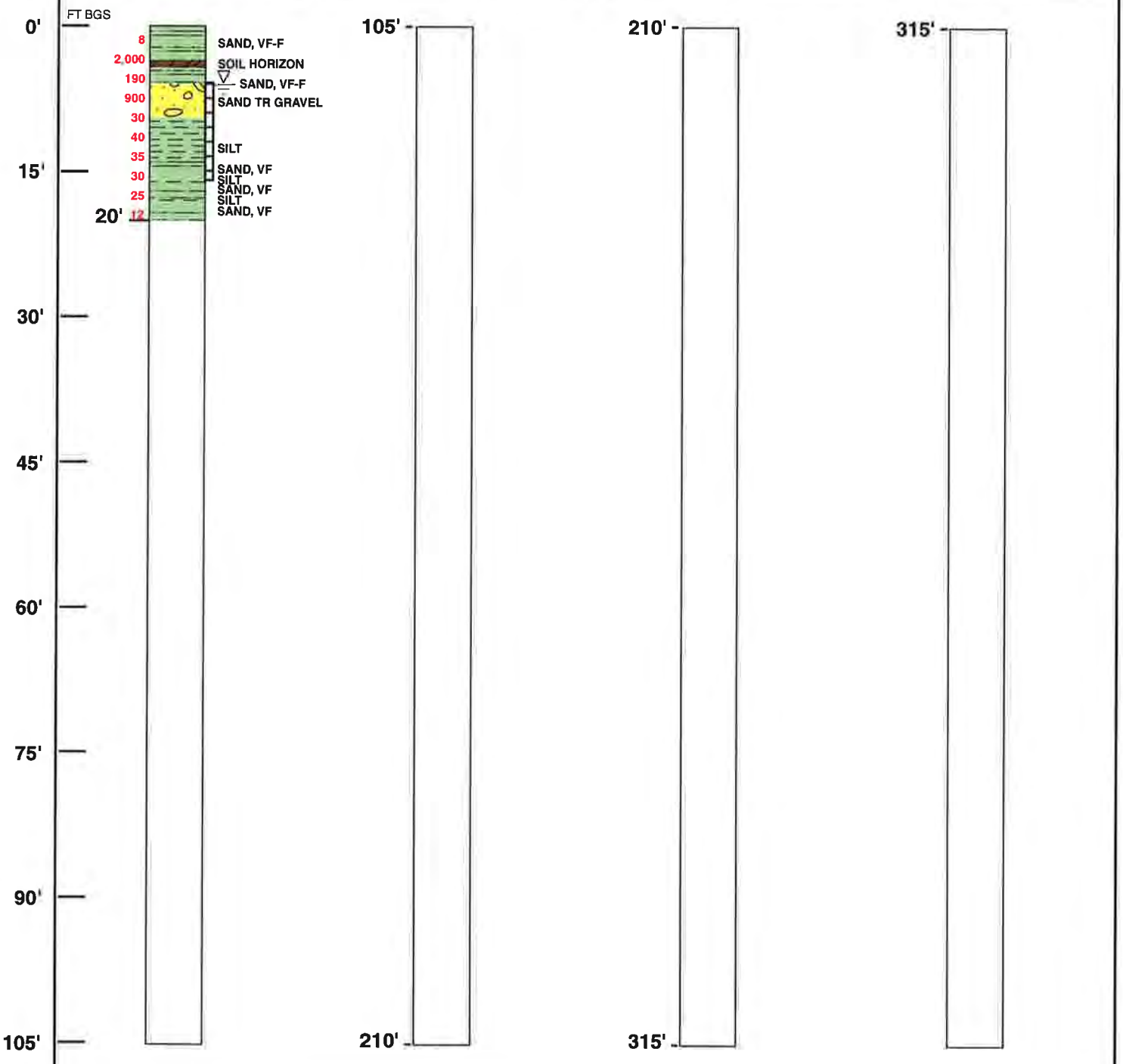
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-22

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1064.23 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	2" x 2' Splitspoon	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Pat	Boart Longyear	Hollow Stem Auger	11/25/97



VERTICAL SCALE ~1"= 15'

22MAR05\FORD\WI0637\CJ2005GRAPHICS\STRAT LOGS\DRAWING: GM_22.AI

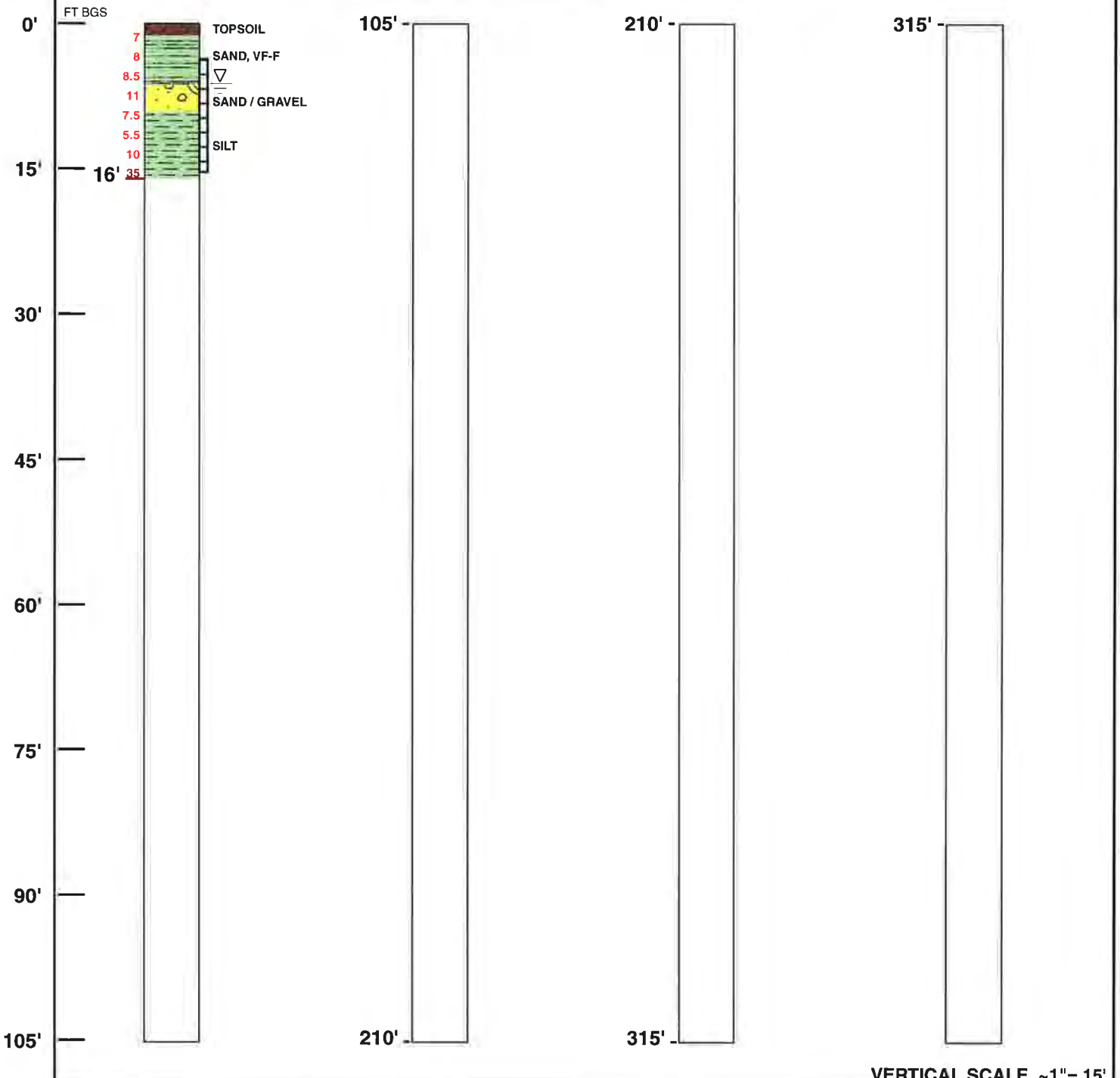
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-23

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1055.90 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	2" x 2' Splitspoon	16 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Pat	Boart Longyear	Hollow Stem Auger	11/26/97



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_23.AI

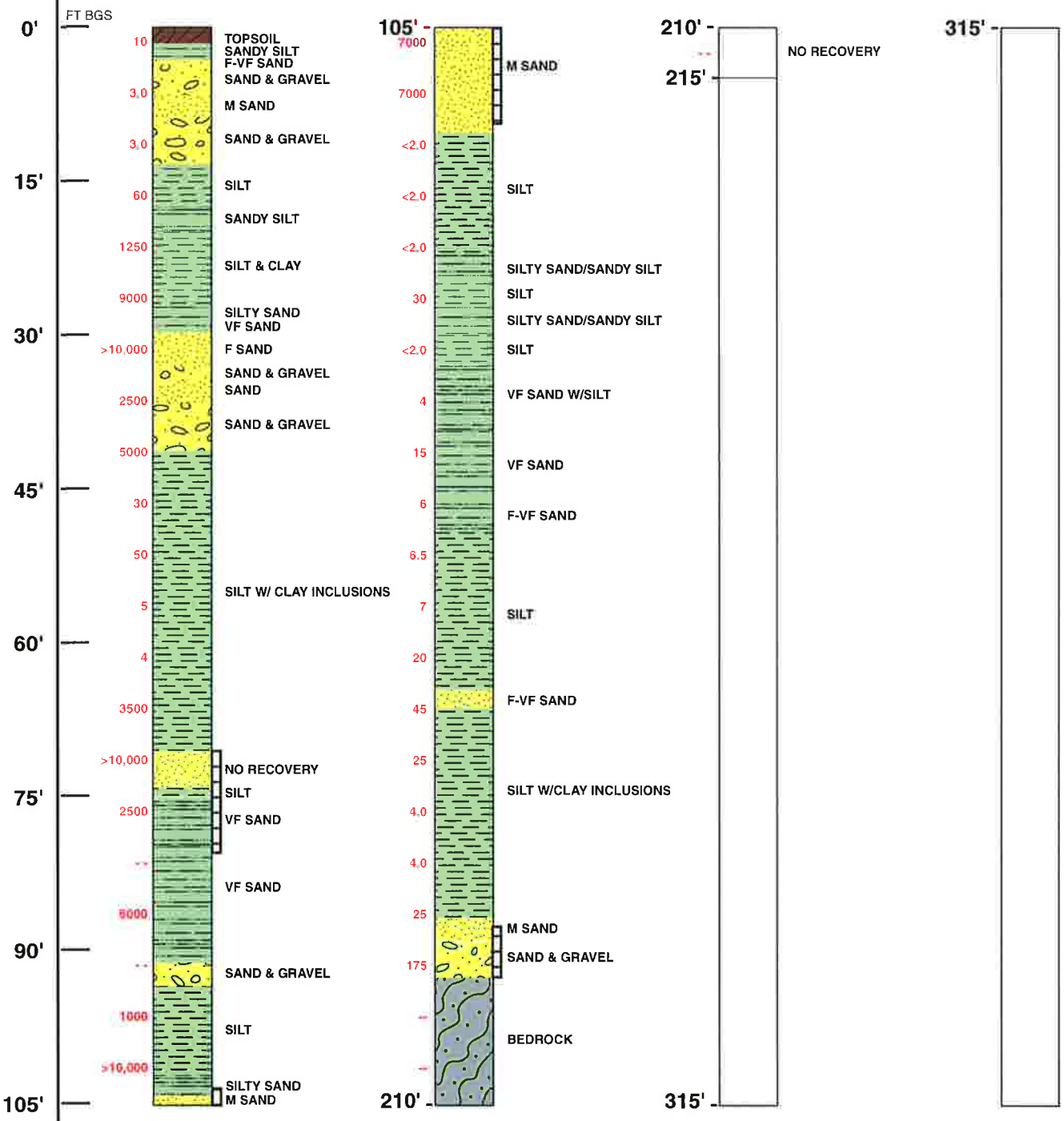
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-24 (A/B/C)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1099.22 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	215 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	10/22/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_24.AI

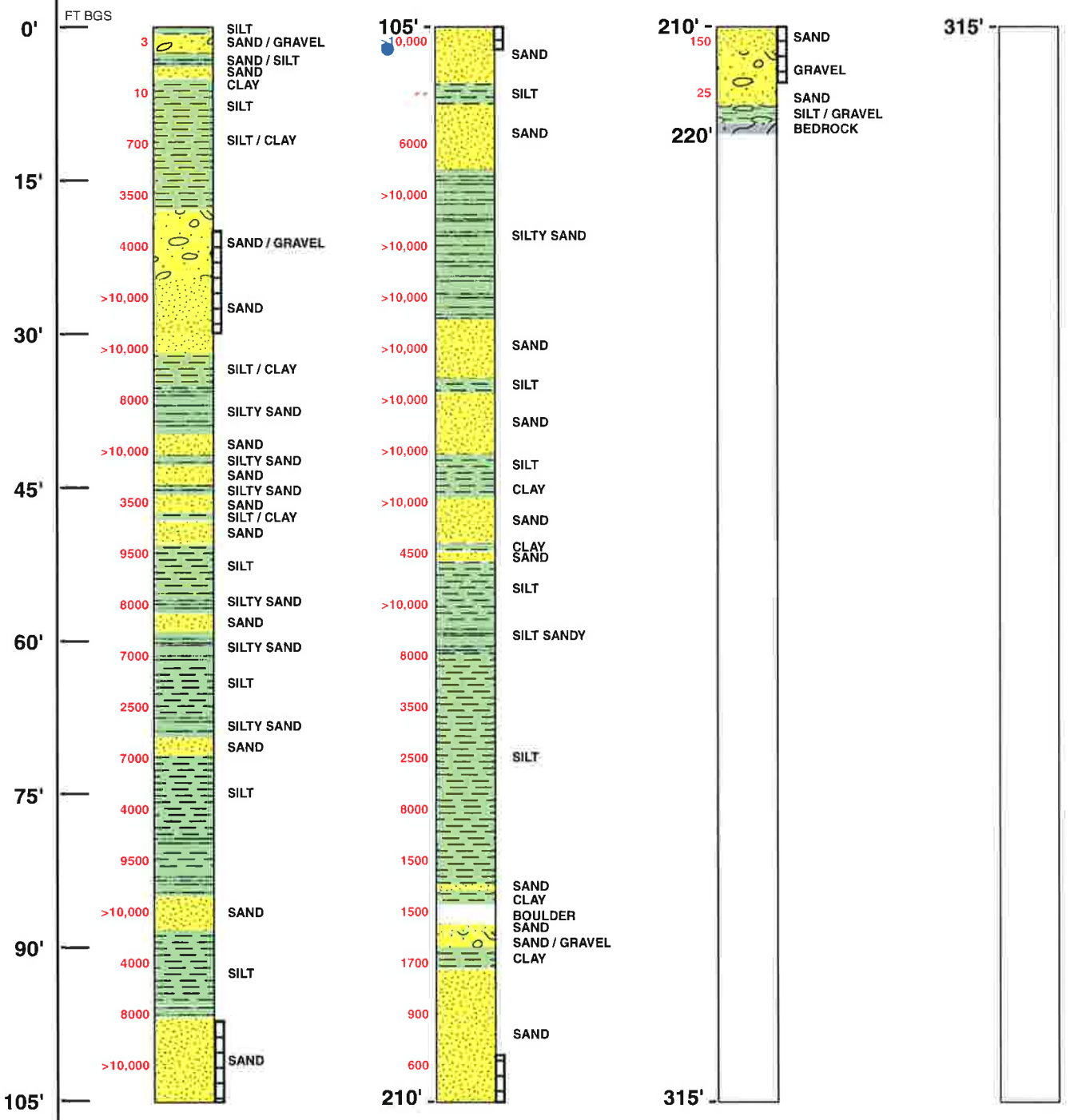
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-25 (A/B/C)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1047.94 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 220 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/10/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_25.AI

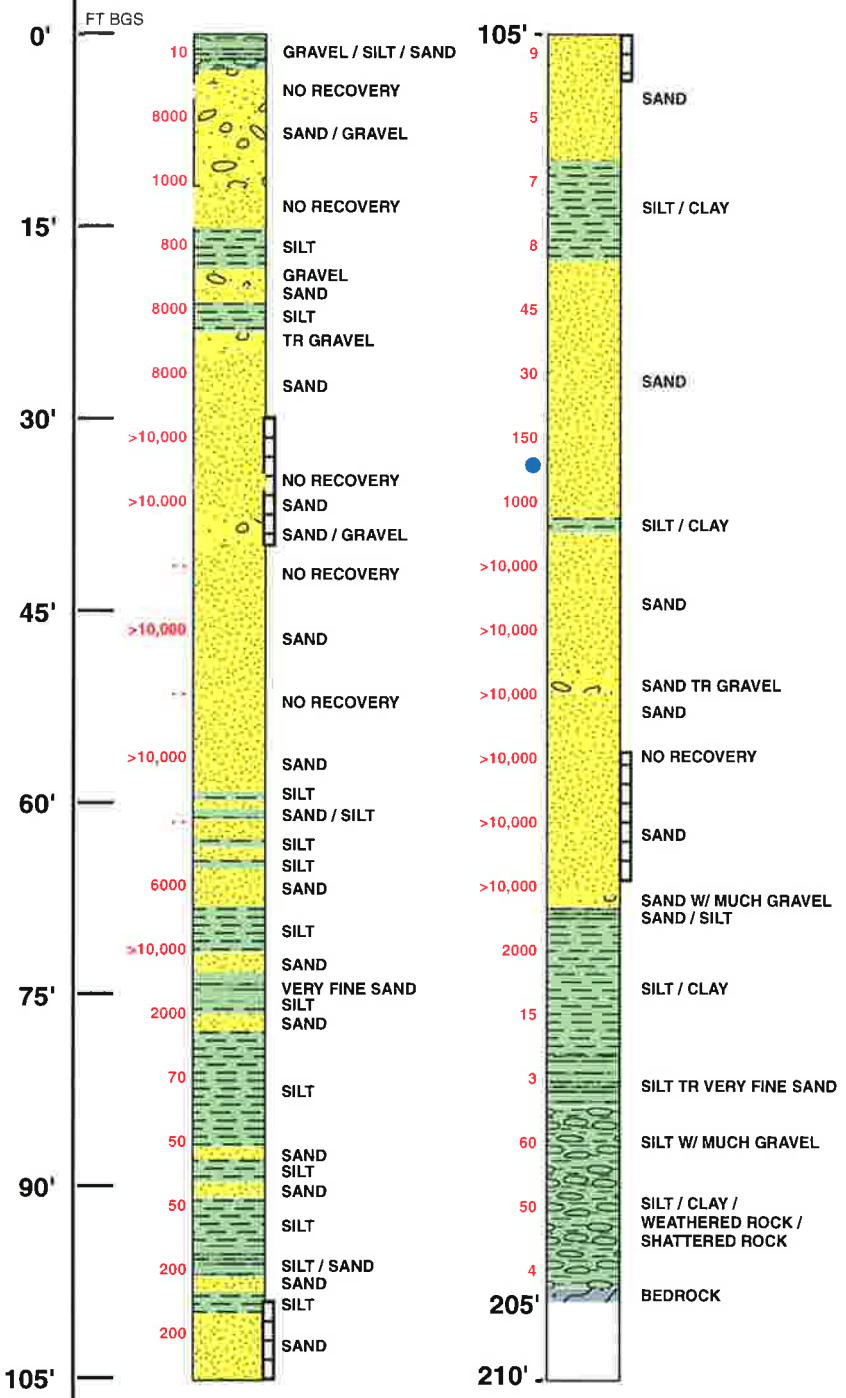
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-26 (A/B/C)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1047.27 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	205 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	6/17/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_26.AI

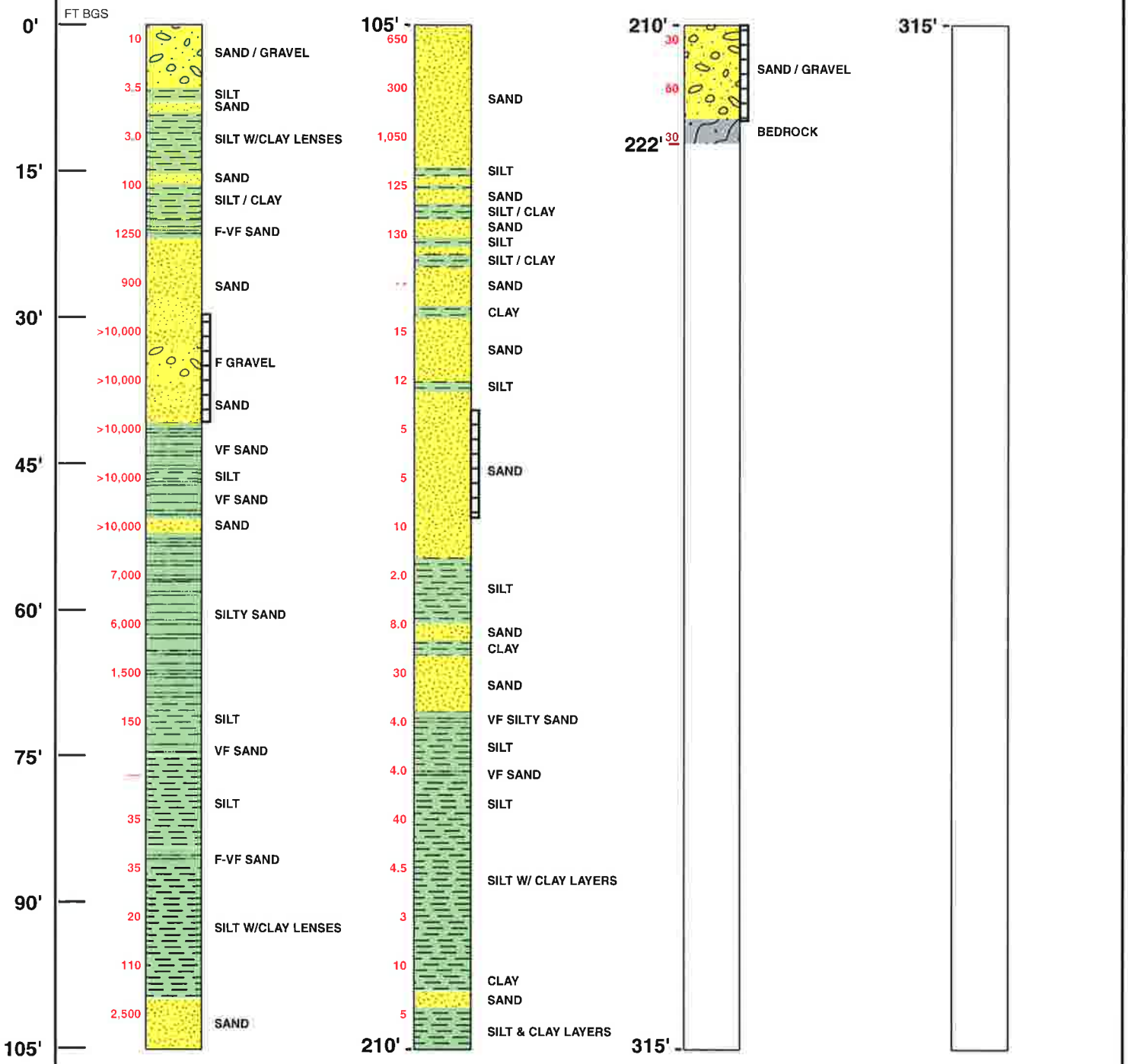
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-27 (A/B/C)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1052.53 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	222 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	6/29/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_27.AI

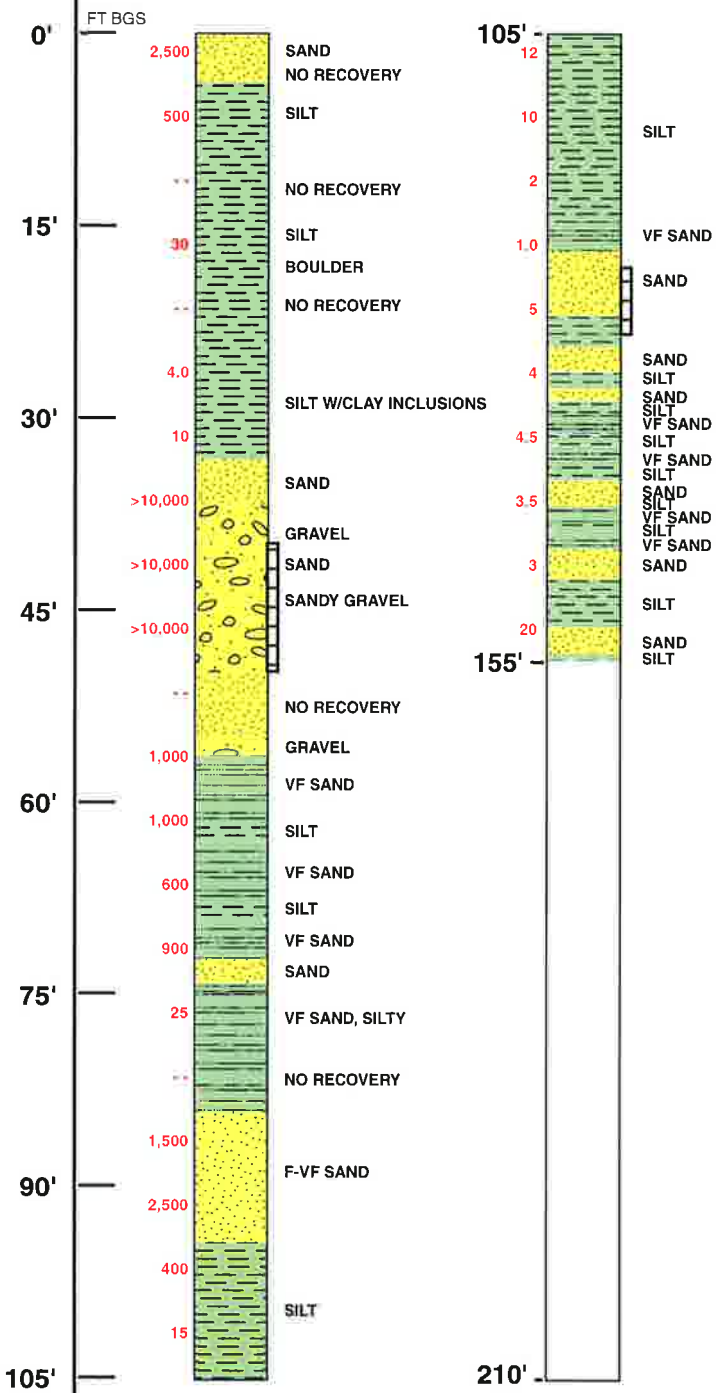
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-28 (A/B)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1061.85 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	155 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	6/29/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_28.AI

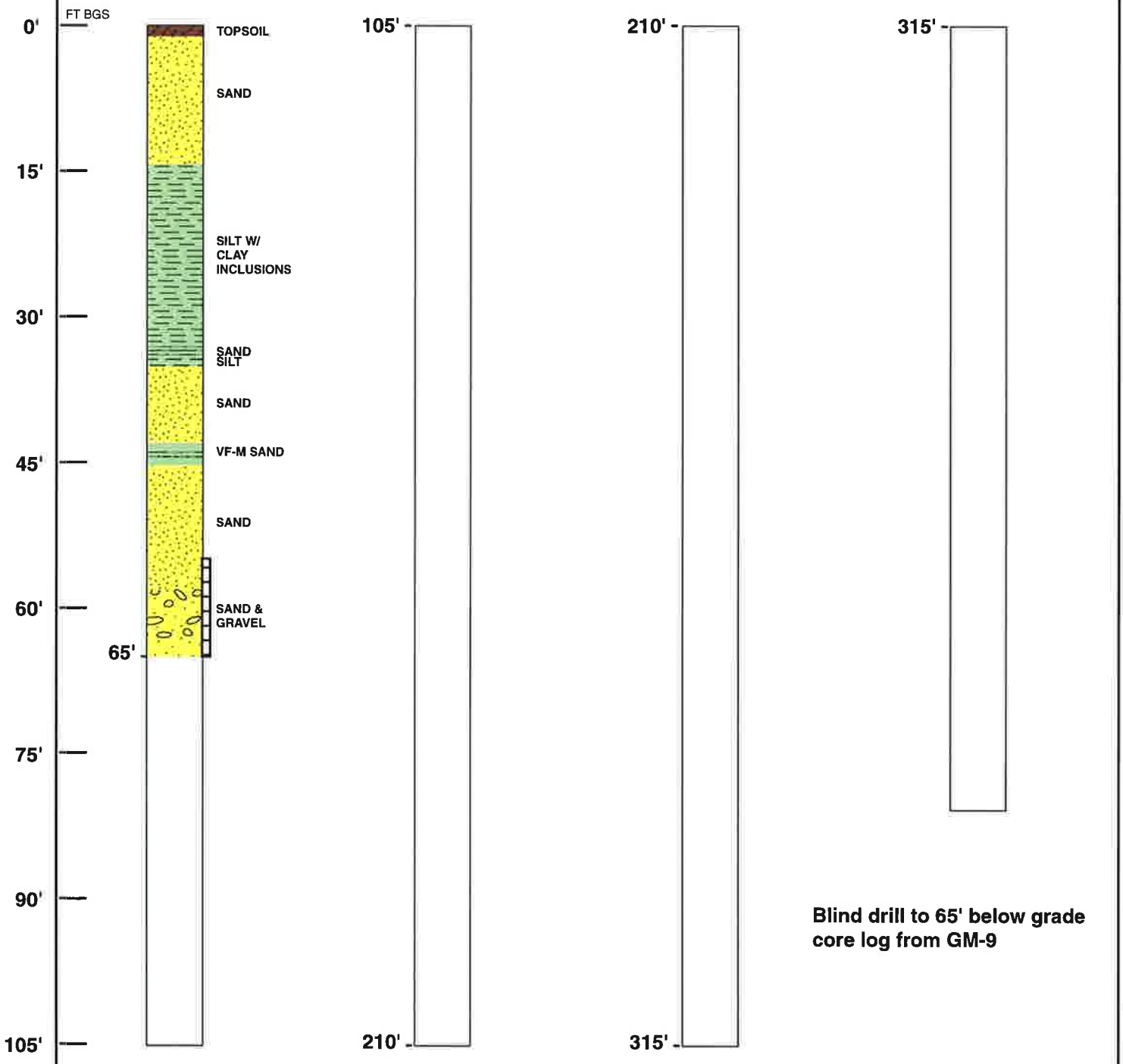
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-29

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1053.15 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	65 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	6/29/98



Blind drill to 65' below grade core log from GM-9

VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_29.AI

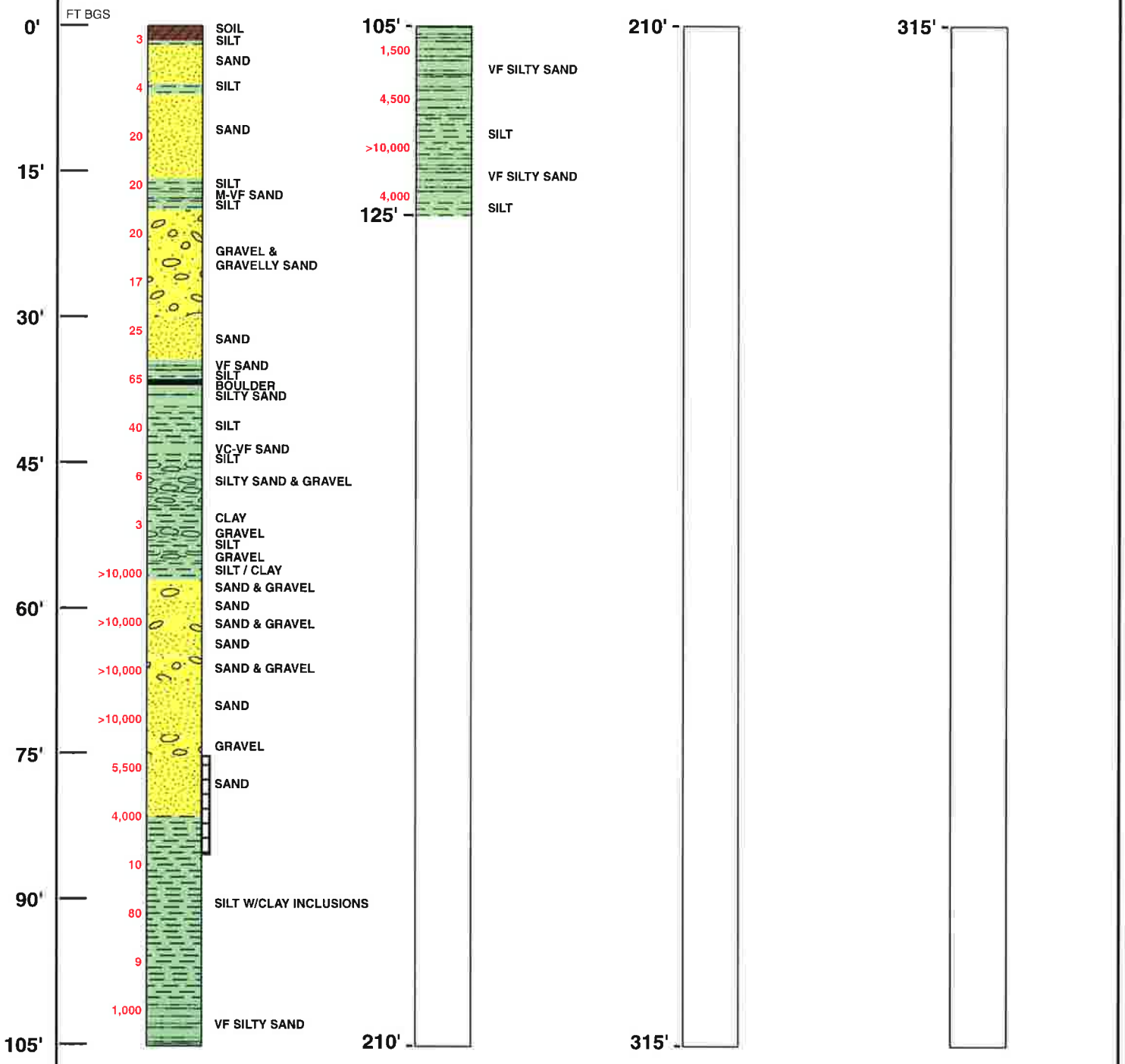
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-30

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.73 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Rotasonic Core Barrel	125 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	7/6/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_30.AI

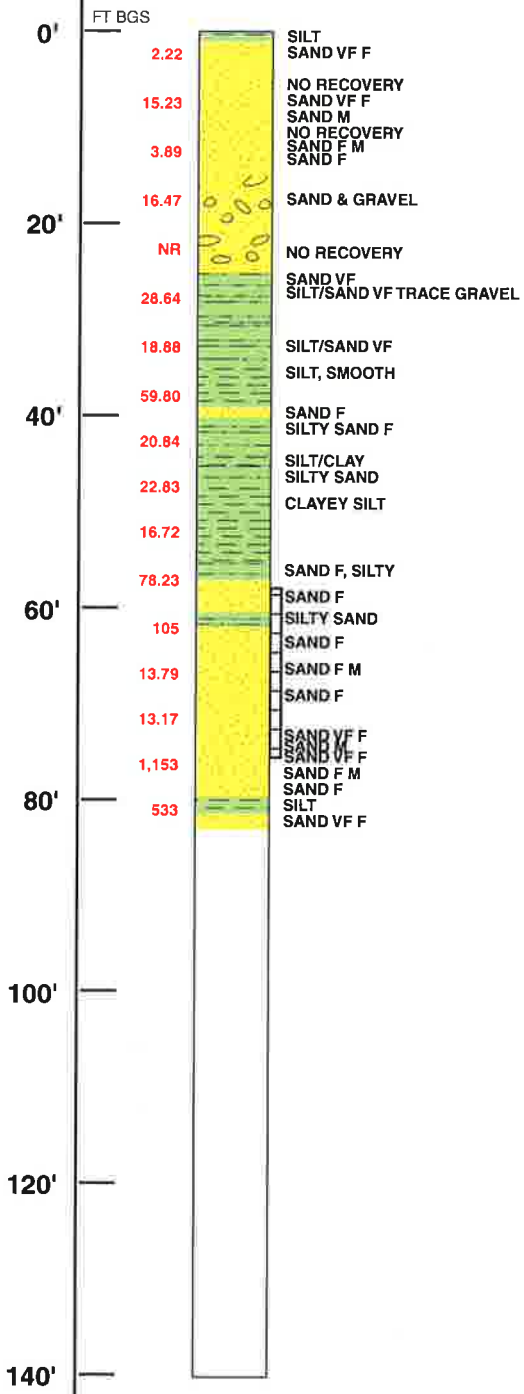
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-30A

PROJECT FORD/KINGSFORD WI001025.0022

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.65 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	83 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	7/24/04



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_30A.AI

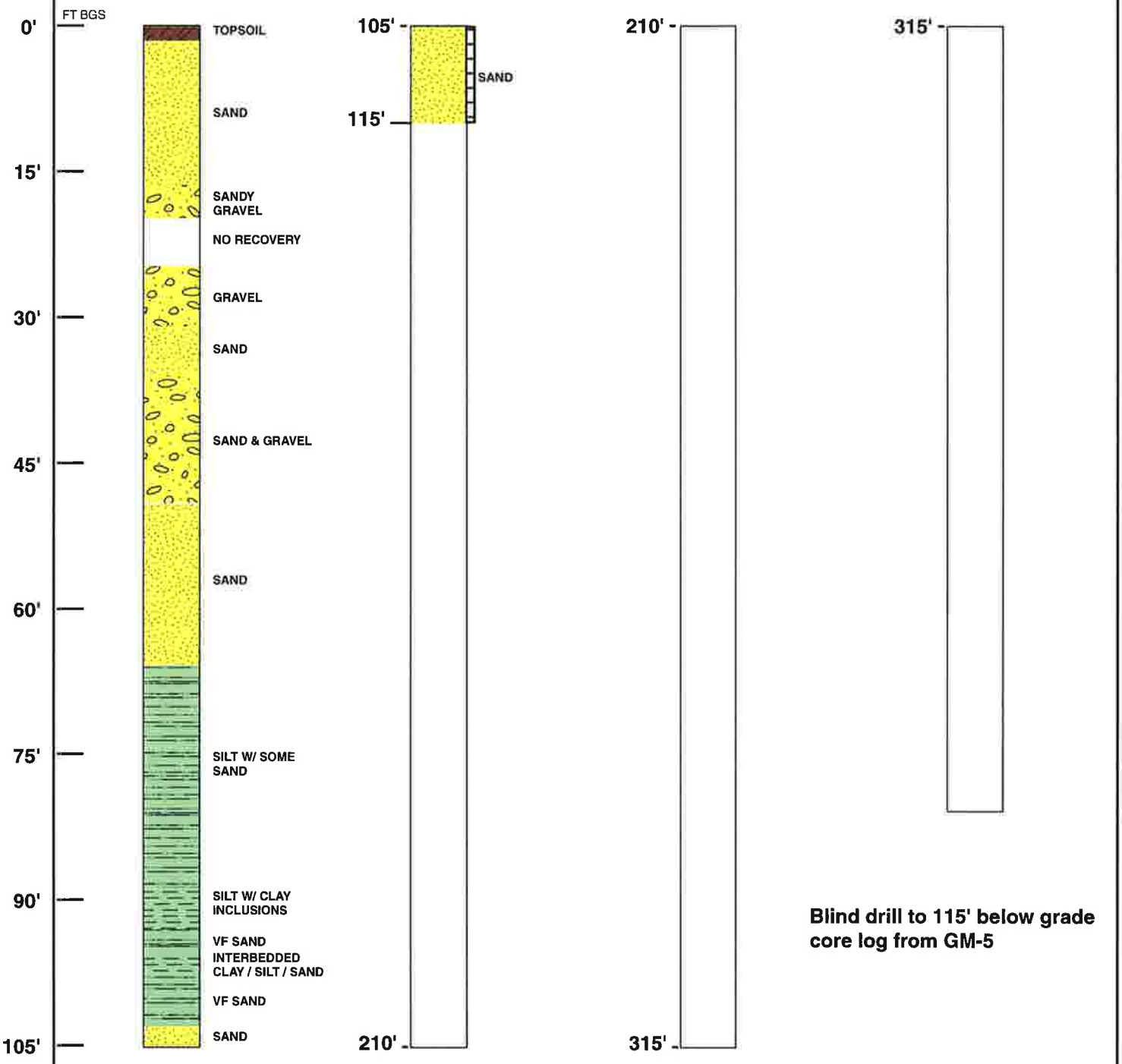
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-31

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.73 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Rotasonic Core Barrel	115 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	7/7/98



Blind drill to 115' below grade core log from GM-5

VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\KINGSFOR\GRAPHICS\STRAT LOGS\DRAWING: GM_31.AI

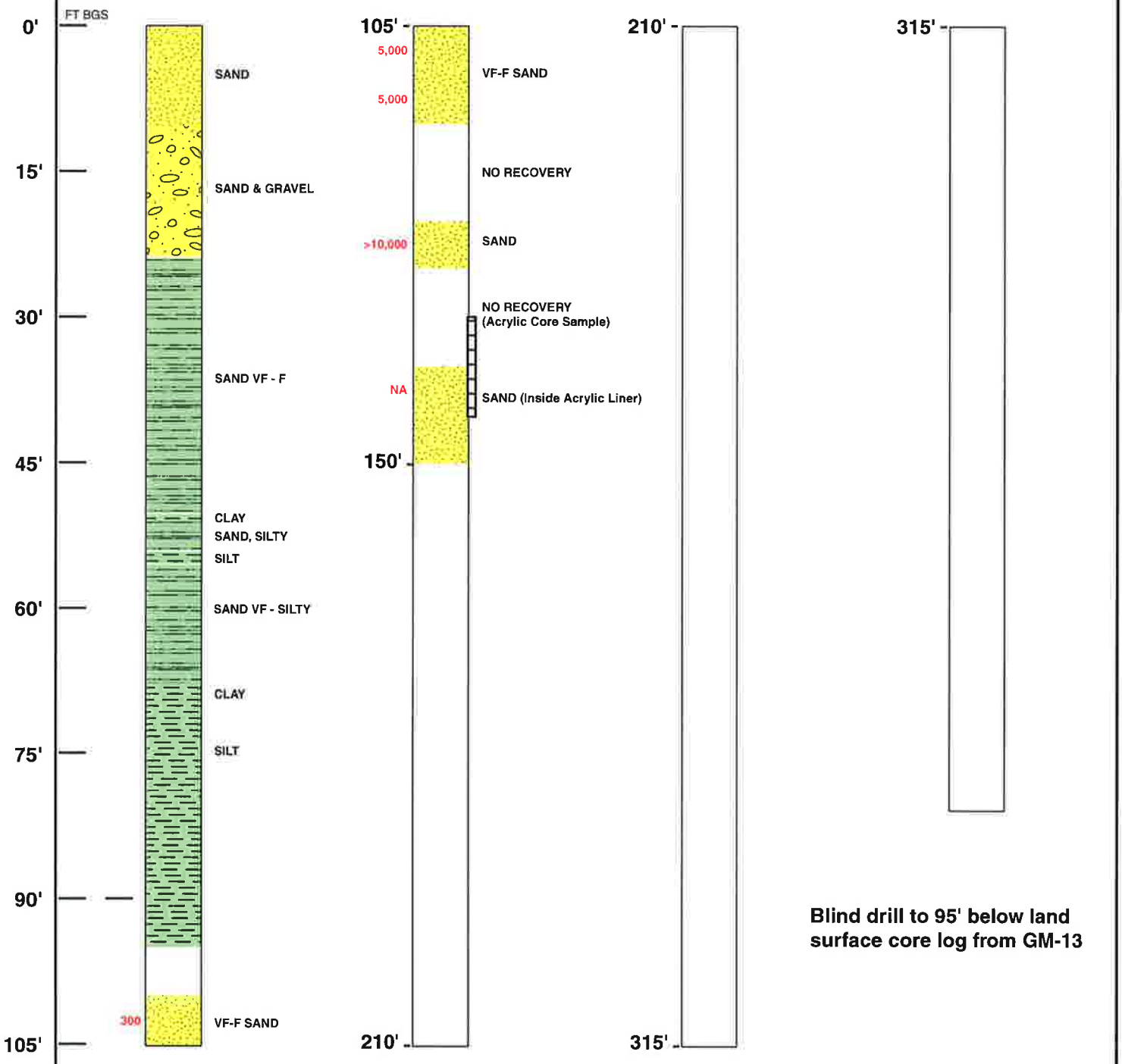
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-32

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1116.14 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 150 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/9/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_32.AI

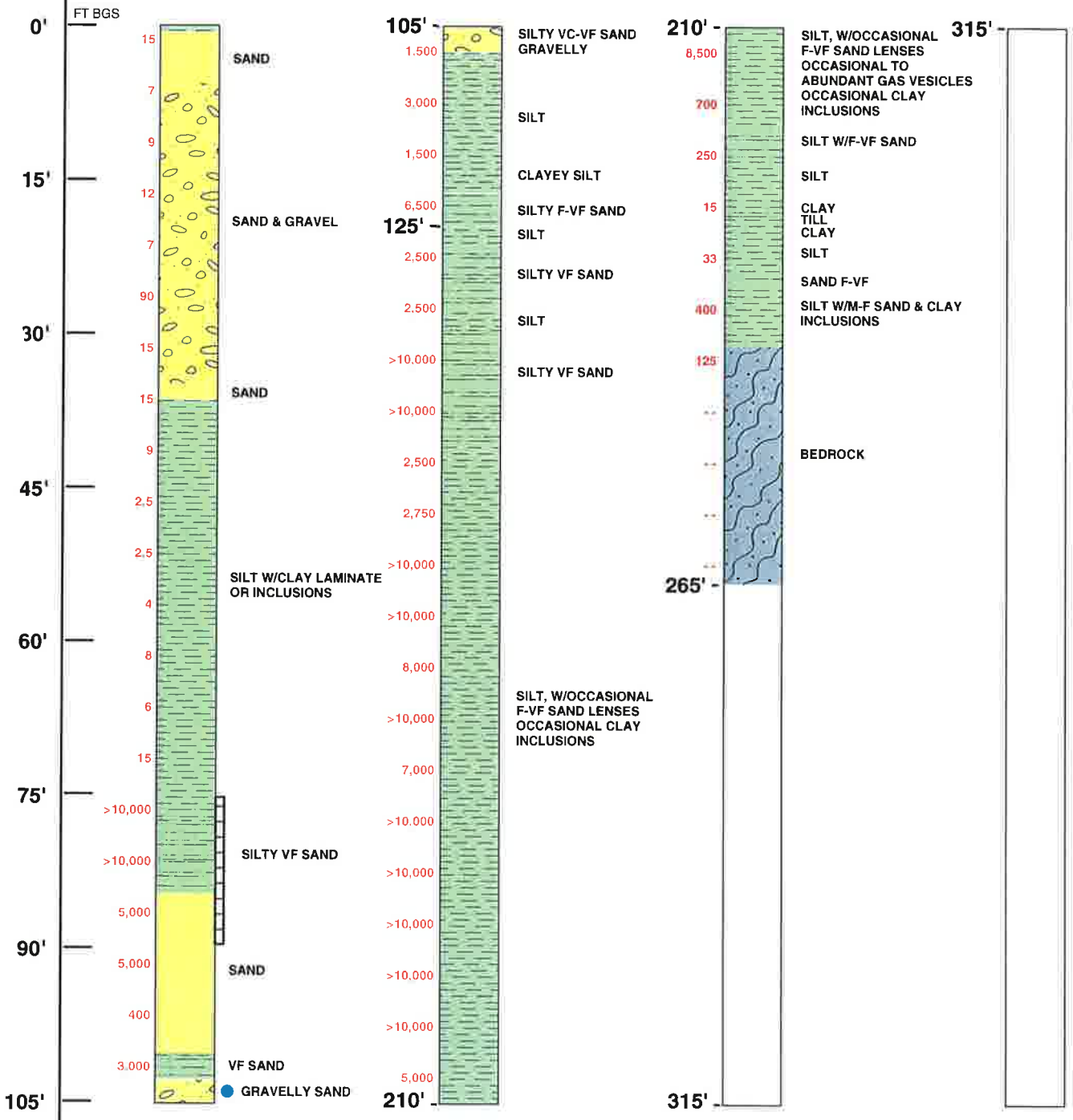
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-33

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.43 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	265 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	7/11/98



VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST798\DRAWING: GM_33.AI

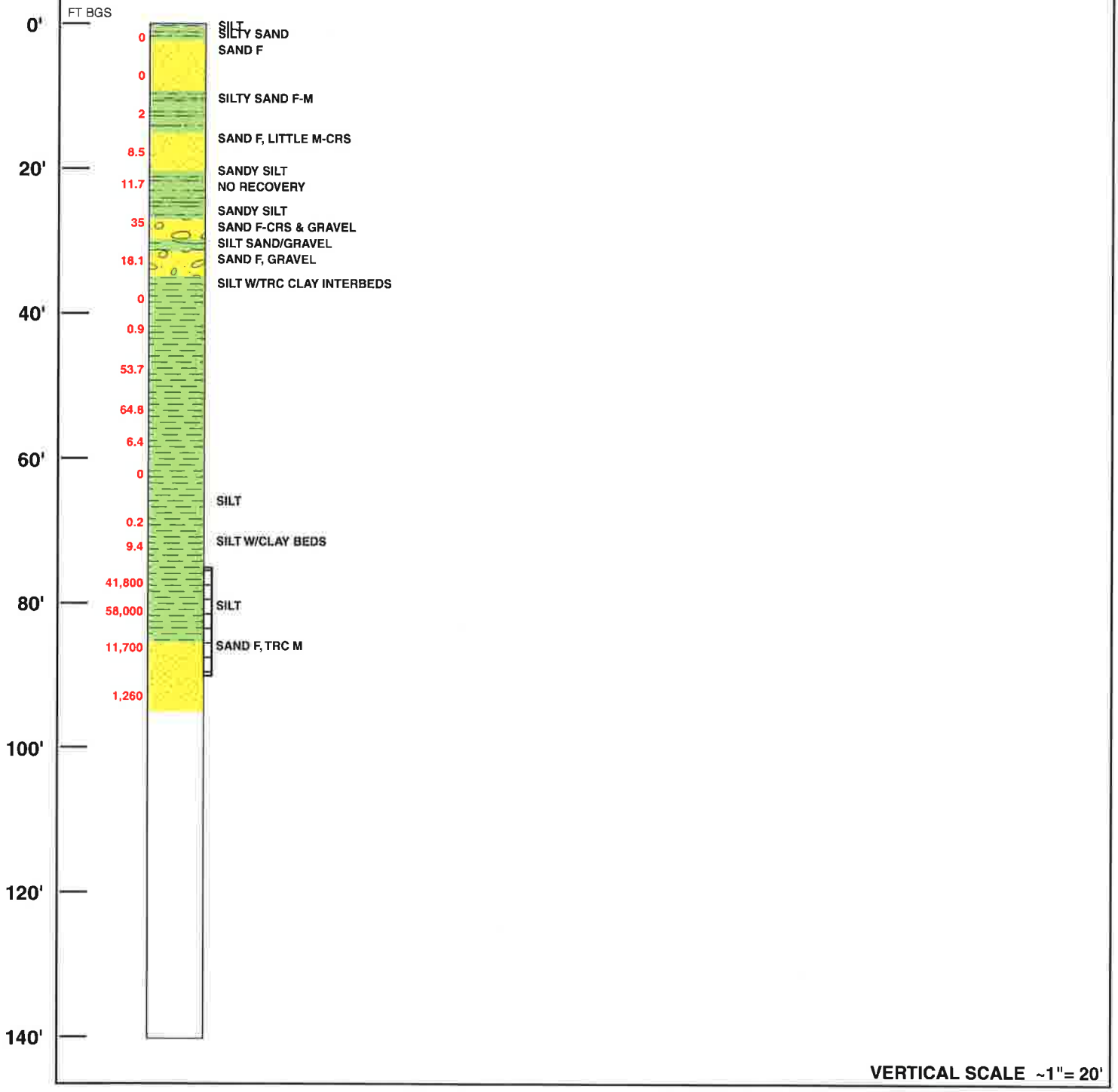
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-33R

PROJECT FORD/KINGSFORD WI001095.0023

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1119.33 Feet MSL
GEOLOGIST Andy Mumpy	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 95 Feet BLS
DRILLER _____	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/7/05



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_33R.AI

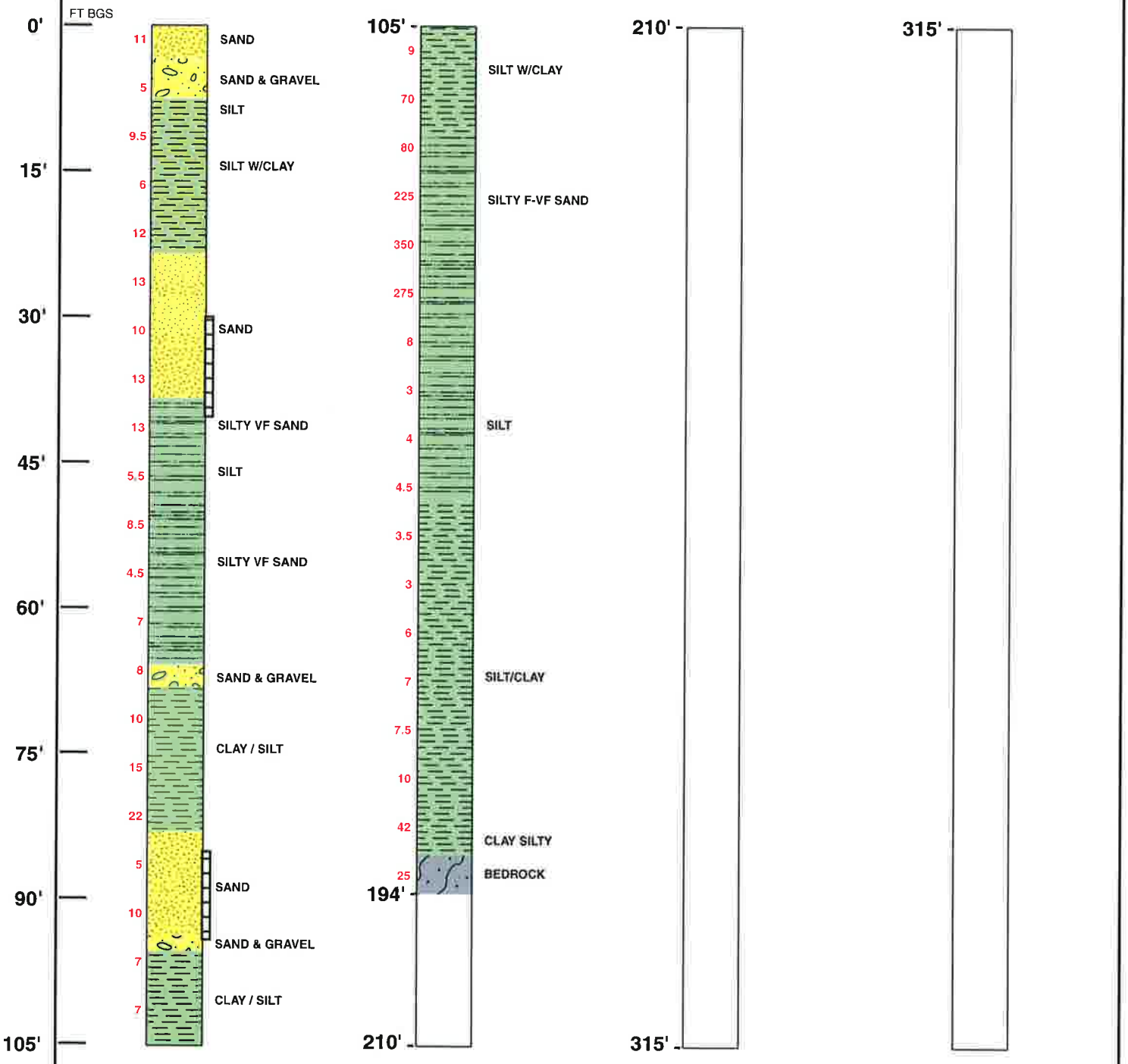
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-34 (A/B)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1088.01 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 194 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/14/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_34.AI

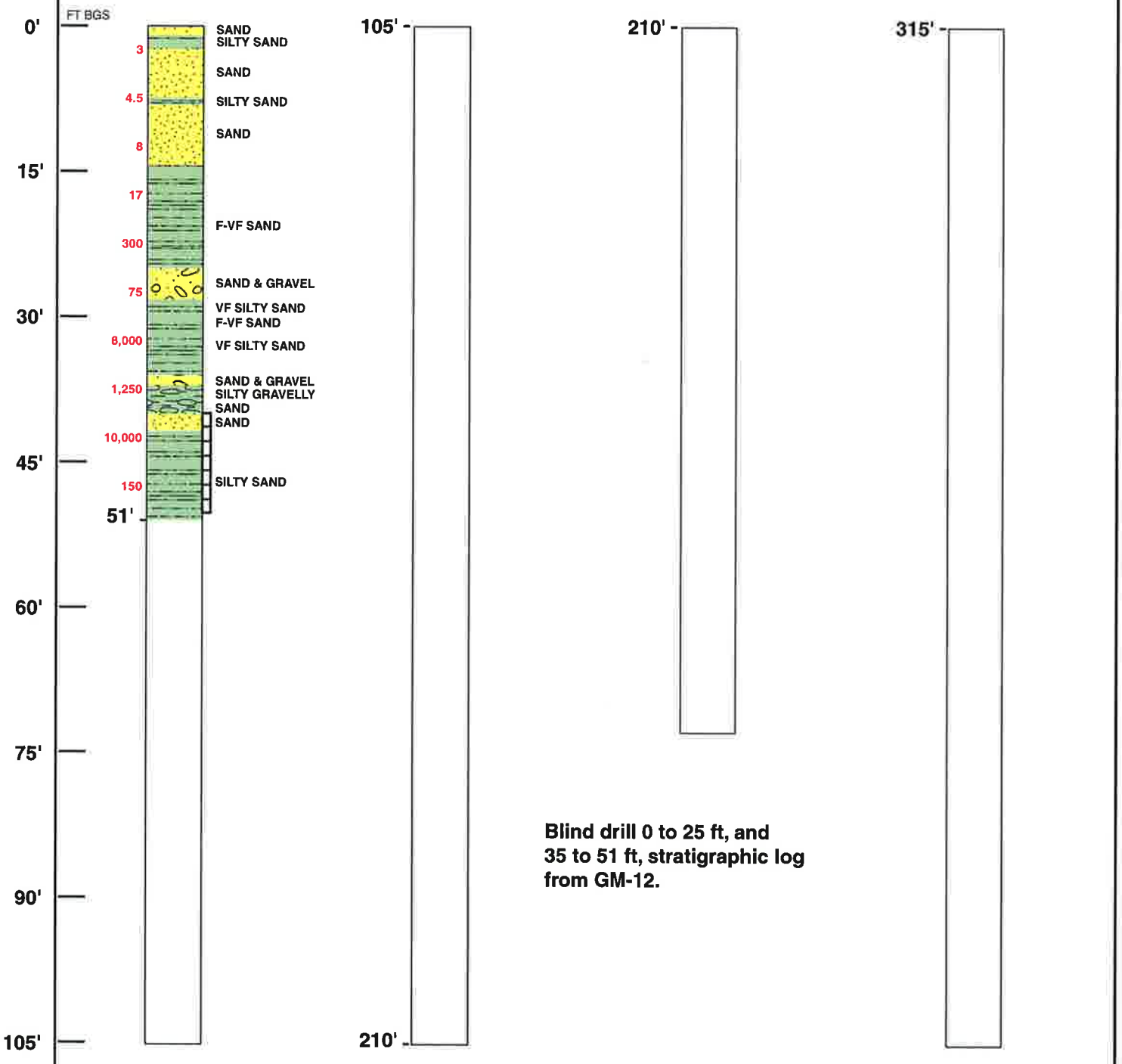
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-35

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.49 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	51 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	7/20/98



Blind drill 0 to 25 ft, and 35 to 51 ft, stratigraphic log from GM-12.

VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_35.AI

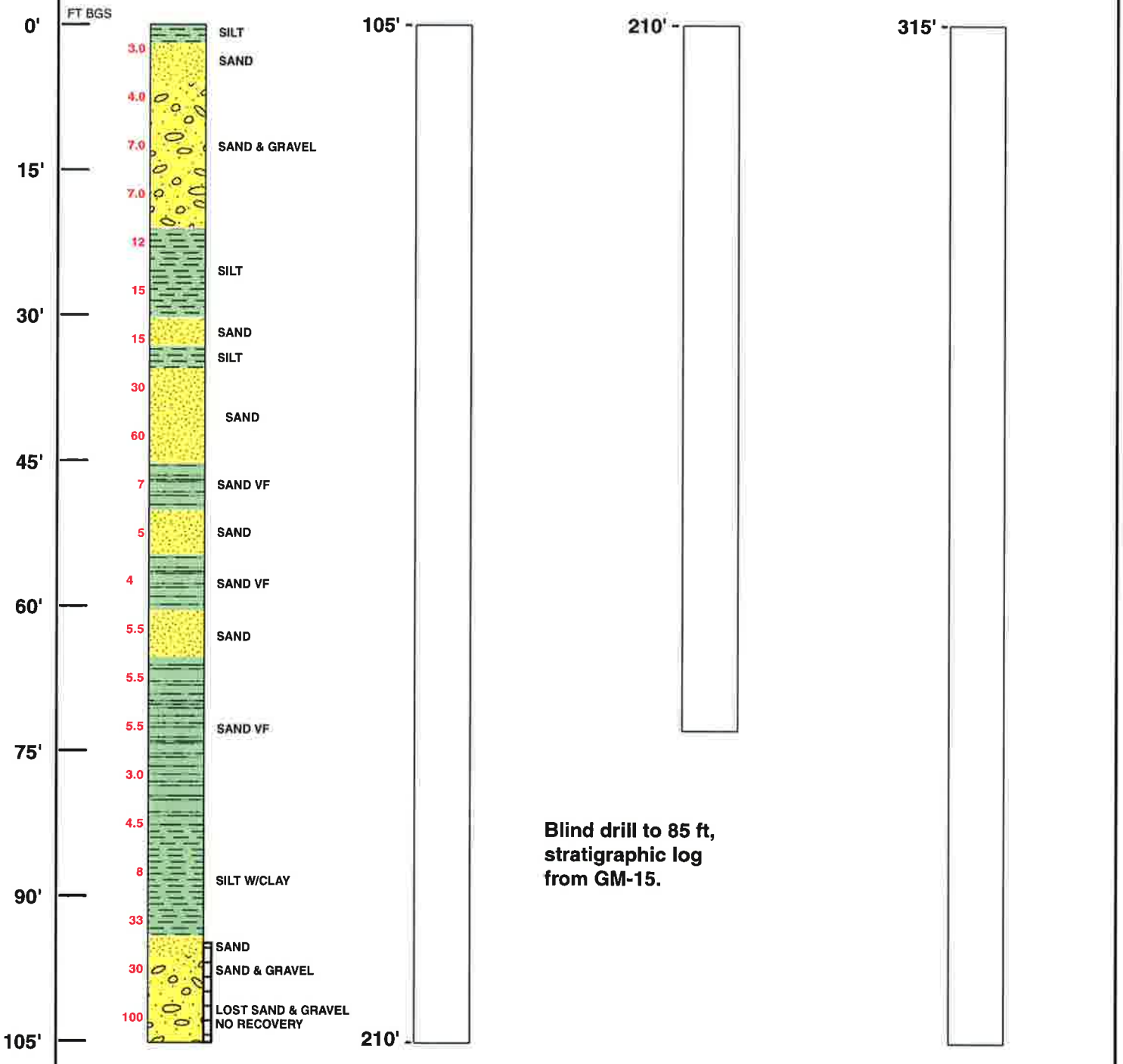
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-36

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1127.17 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 105 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/21/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_36.AI

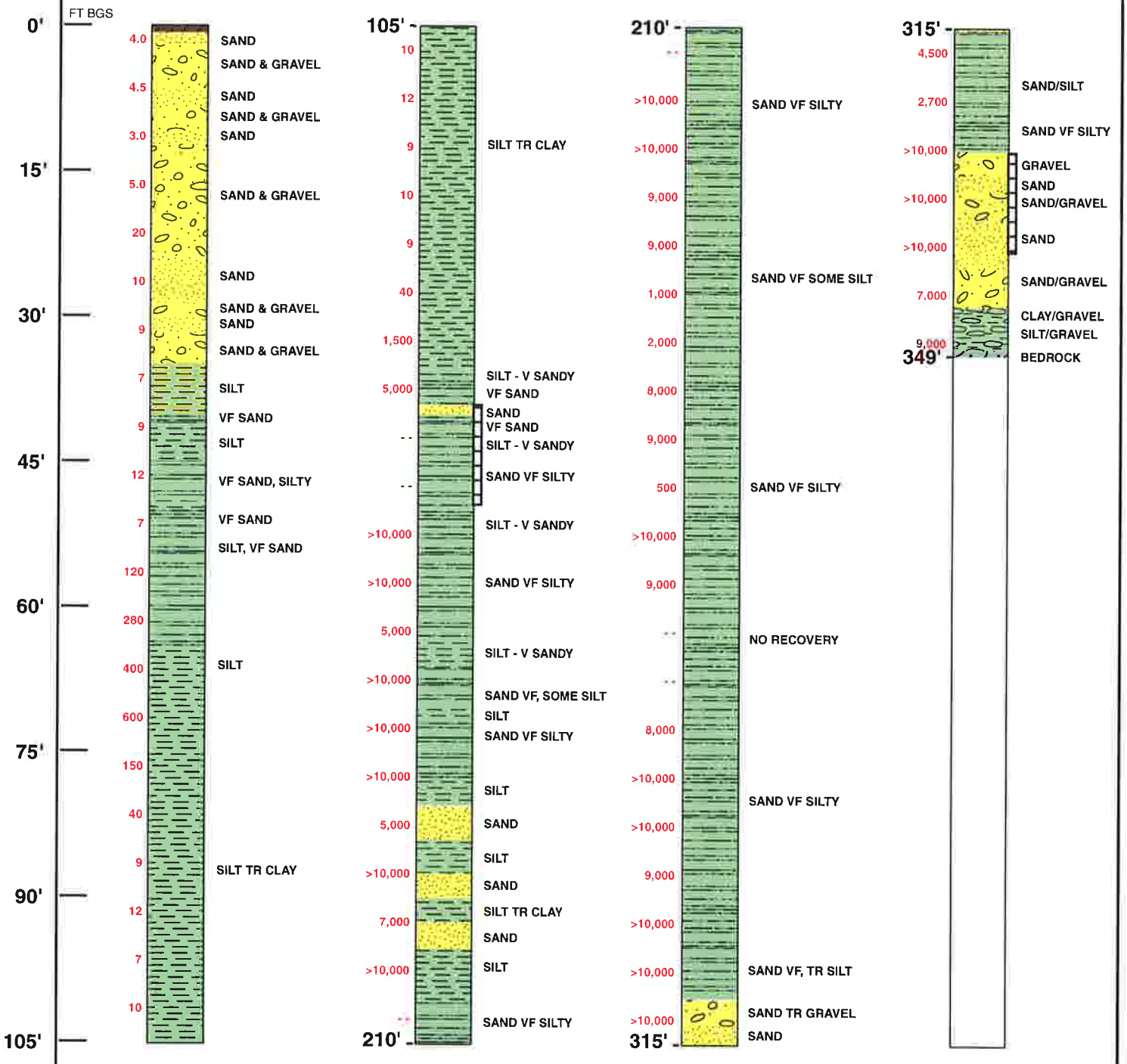
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-37 (A/B)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.29 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 349 Feet BLS
DRILLER Kale	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/25/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_37.AI

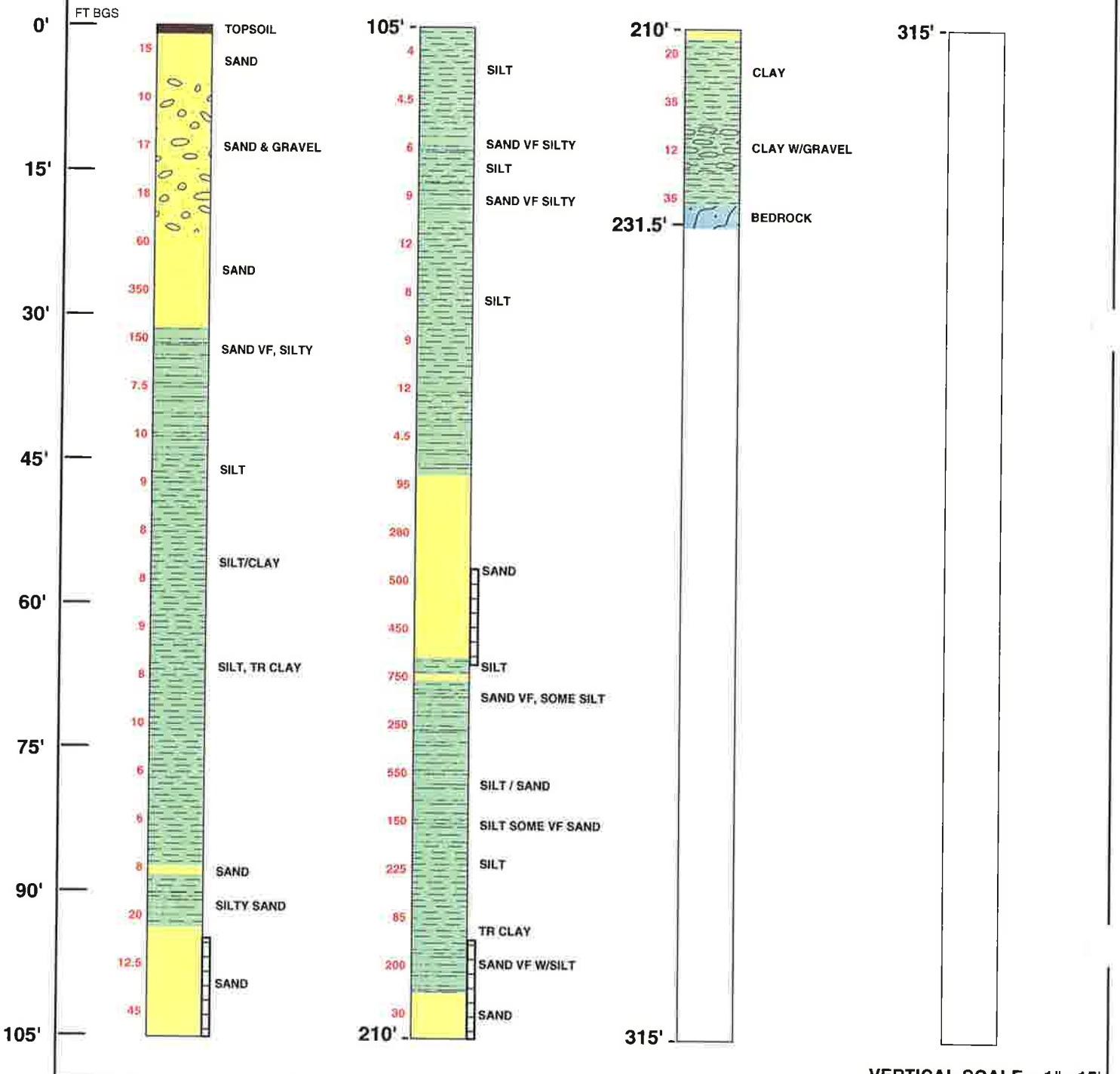
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-38 (A/B/C)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1097.29 Feet MSL
GEOLOGIST: Ted Powell	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Rotasonic Core Barrel	TOTAL DEPTH DRILLED: 231.5 Feet BLS
DRILLER: Perry	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Rotasonic	DATE BORING COMPLETED: 7/23/98



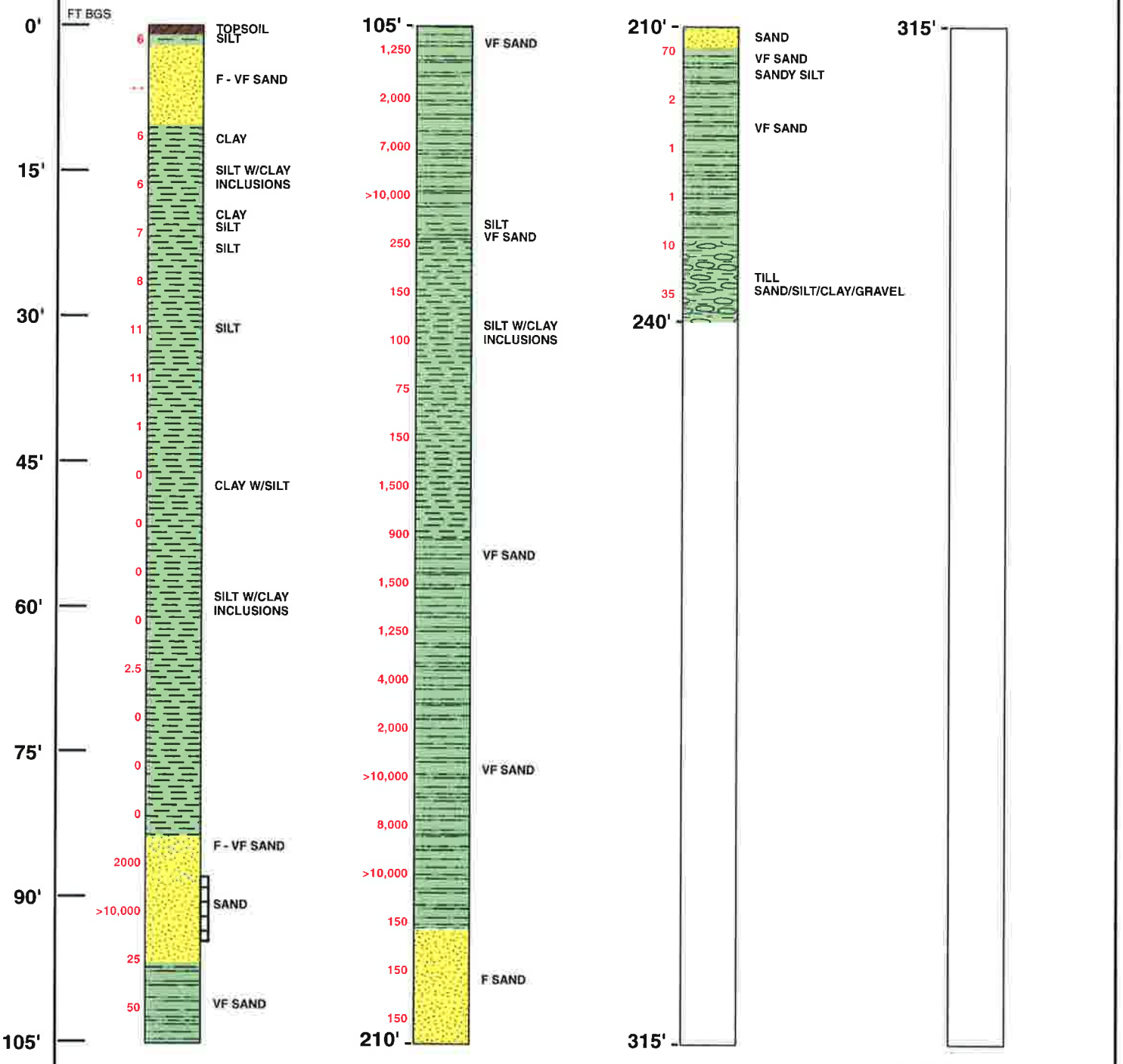
VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST798\DRAWING: GM_38A.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GM-39
PROJECT	FORD/KINGSFORD WI000675.0001
LOCATION	Kingsford, Michigan
LAND SURFACE ELEVATION	1087.29 Feet MSL
GEOLOGIST	Tim Jones
SAMPLE INTERVAL	Continuous
SAMPLING DEVICE	Rotasonic Core Barrel
TOTAL DEPTH DRILLED	240 Feet BLS
DRILLER	Perry
DRILLING CONTRACTOR	Boart Longyear
DRILLING METHOD	Rotasonic
DATE BORING COMPLETED	7/28/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_39.AI

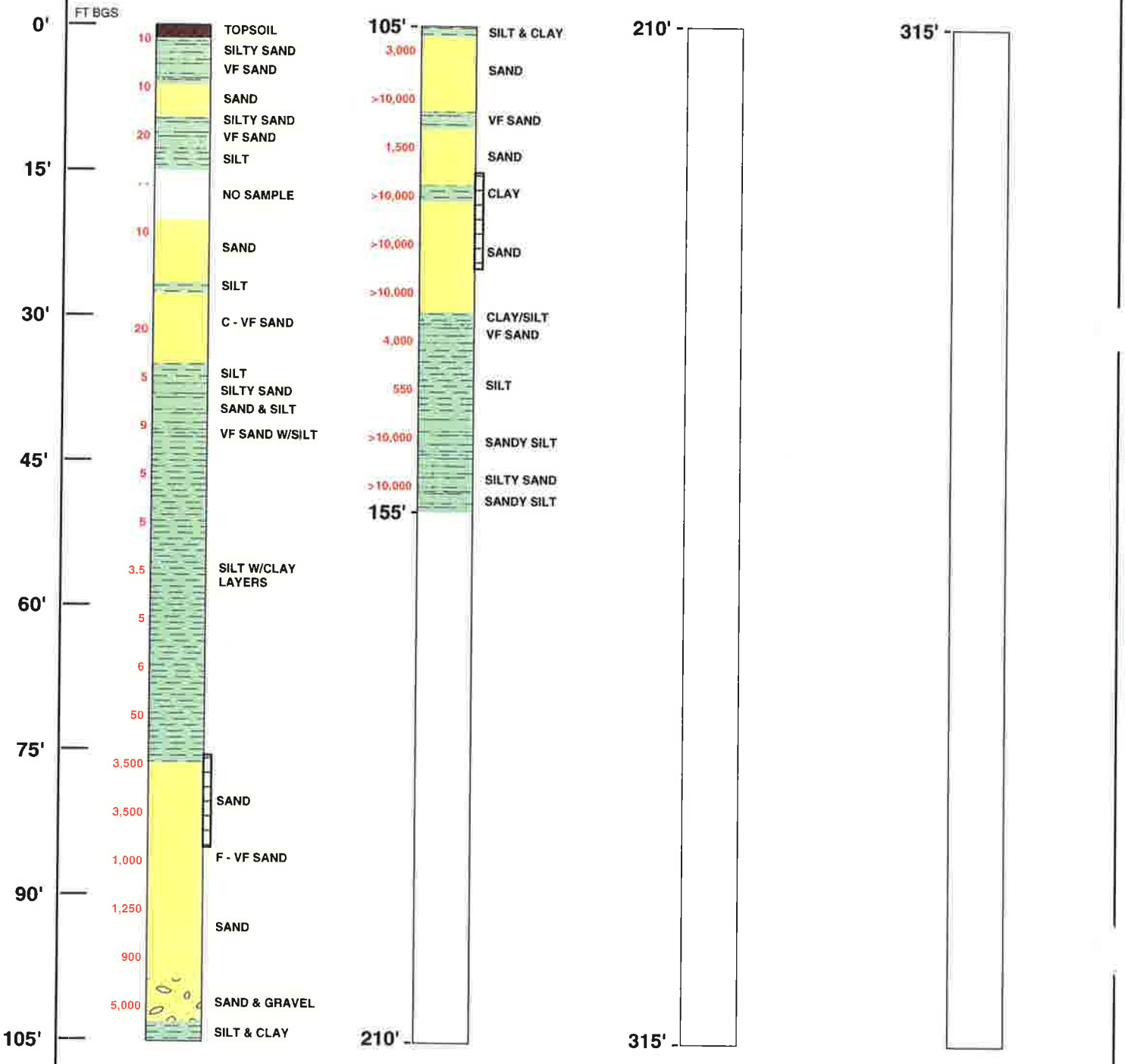
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-40 (A/B)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1115.15 Feet MSL
GEOLOGIST: Pat Bartnik	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Rotasonic Core Barrel	TOTAL DEPTH DRILLED: 155 Feet BLS
DRILLER: Perry	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Rotasonic	DATE BORING COMPLETED: 8/4/98



VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST798\DRAWING: GM_40A.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

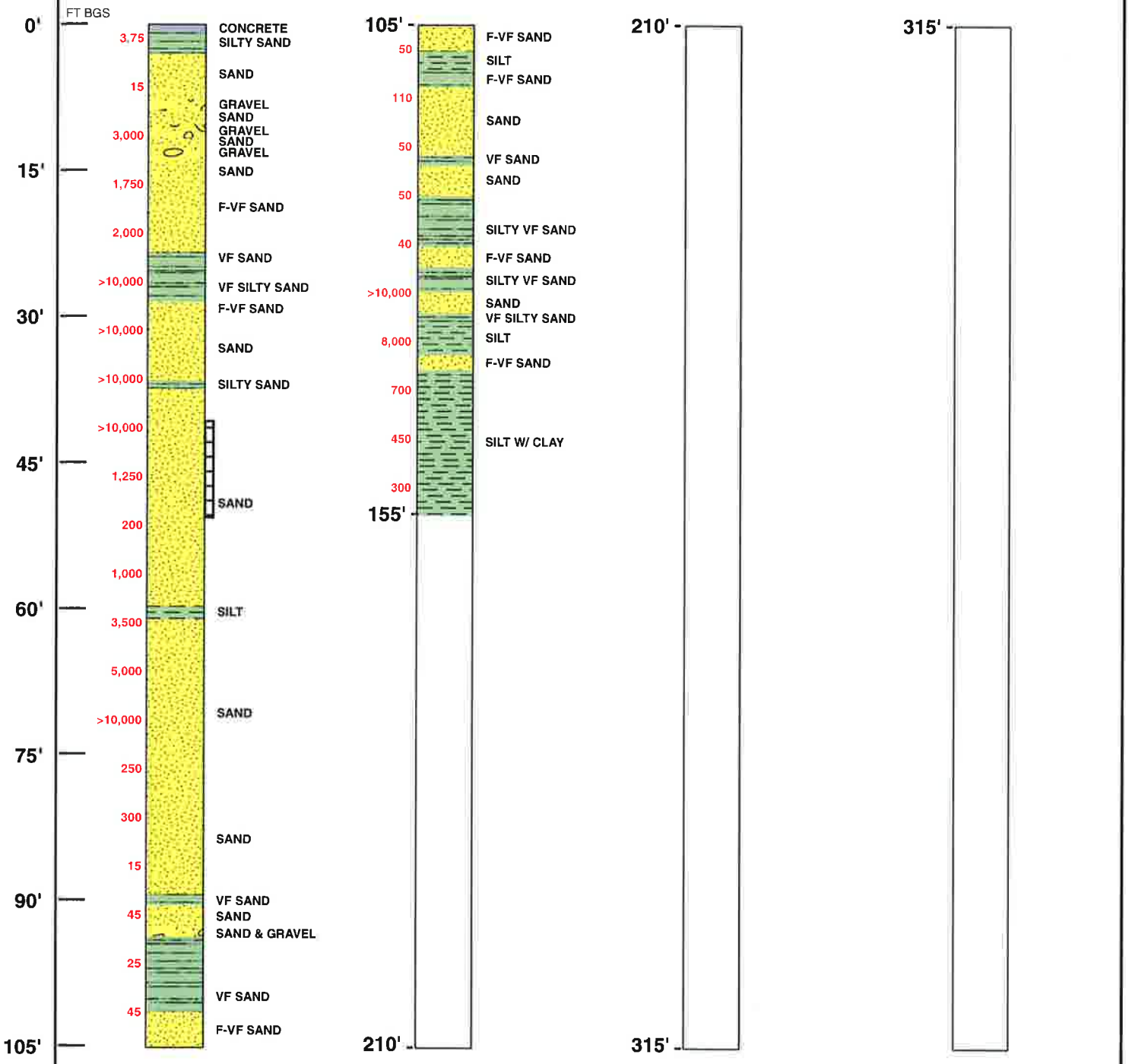
OBSERVATION WELL NO. GM-41

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1120.17 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Kevin Daleness	Continuous	Rotasonic Core Barrel	155 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Kale	Boart Longyear	Rotasonic	8/7/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_41.AI

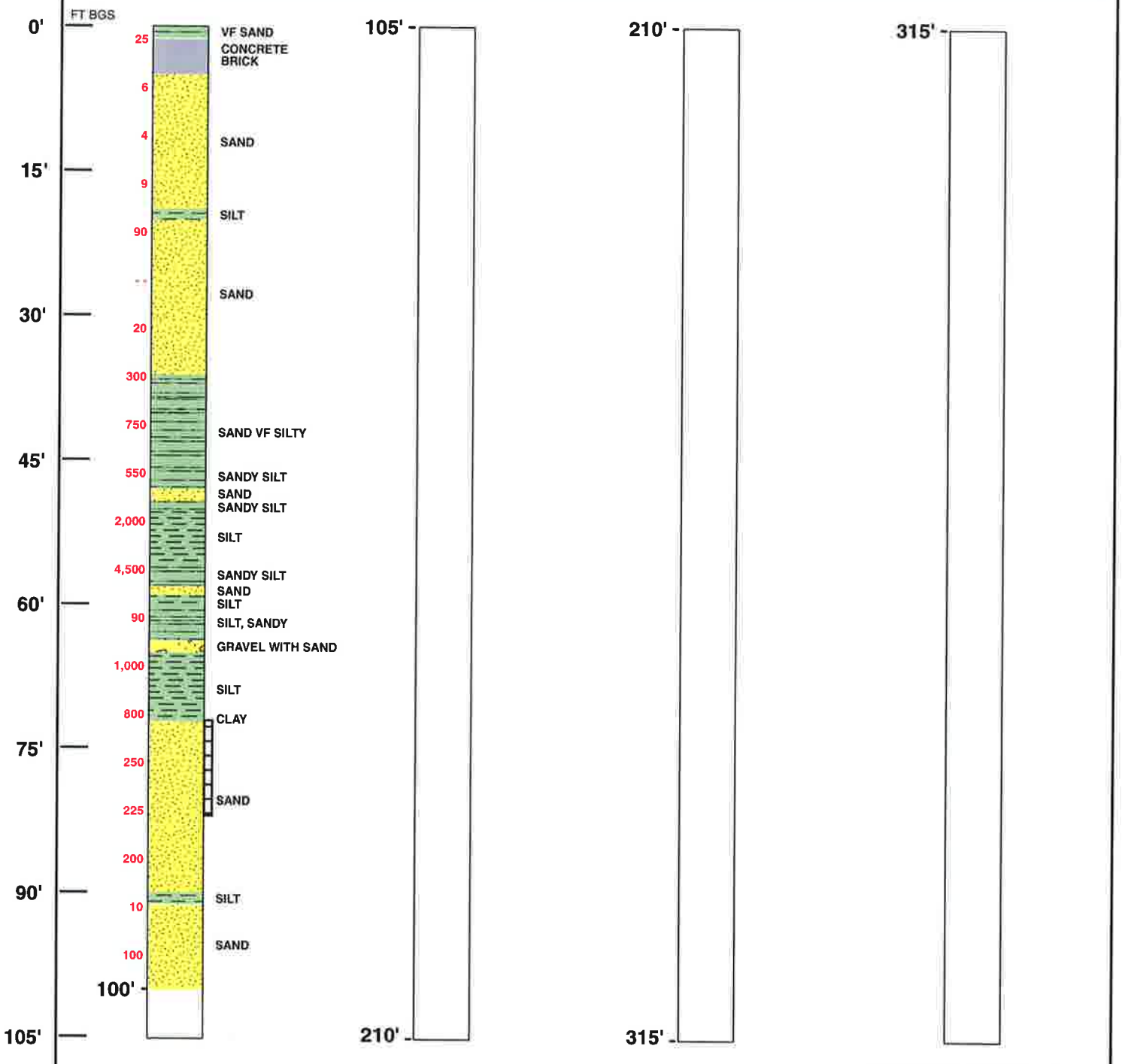
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-42

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1121.17 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 100 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 8/6/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_42.AI

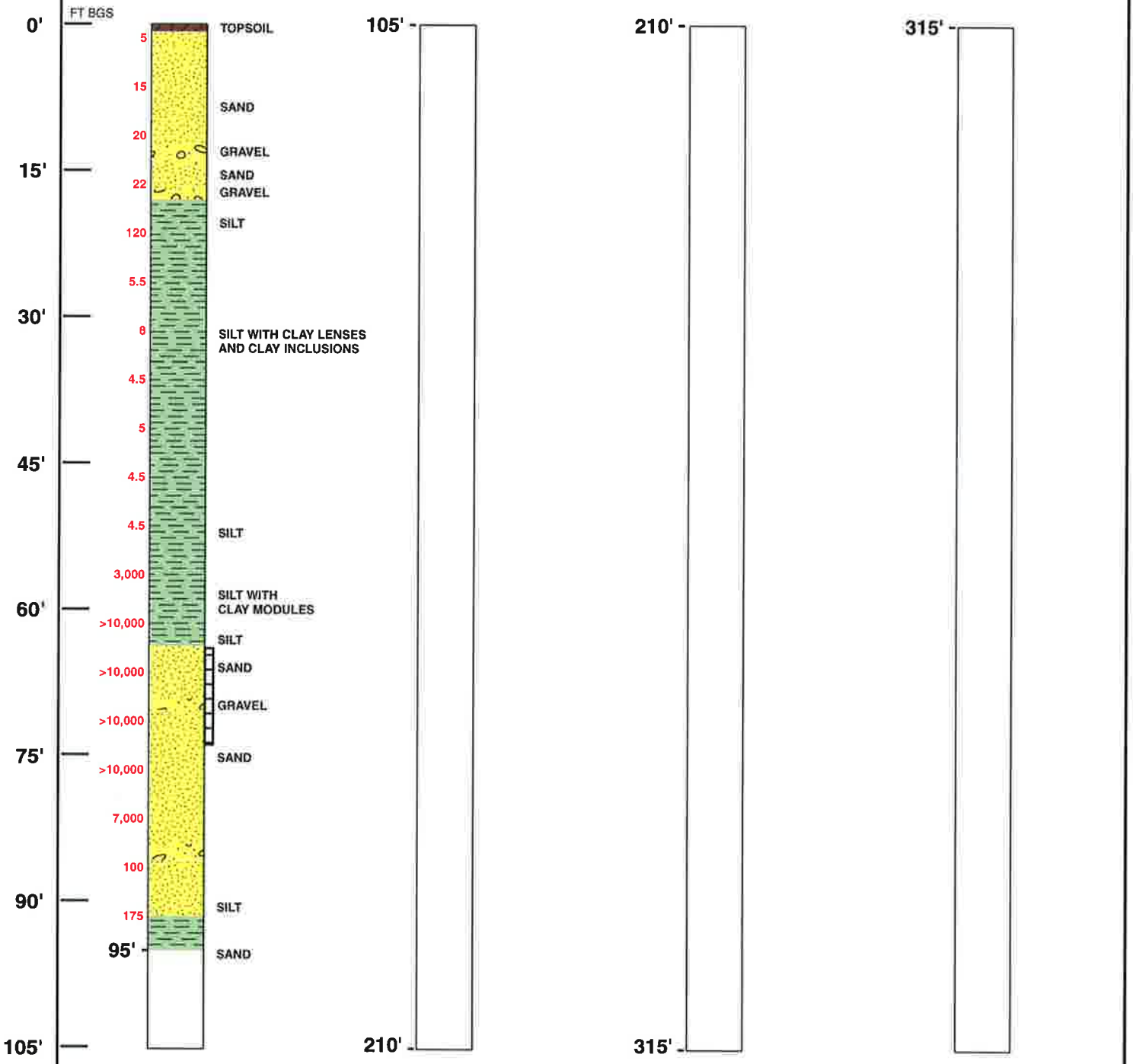
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-43

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1122.48 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 95 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 8/8/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_43.AI

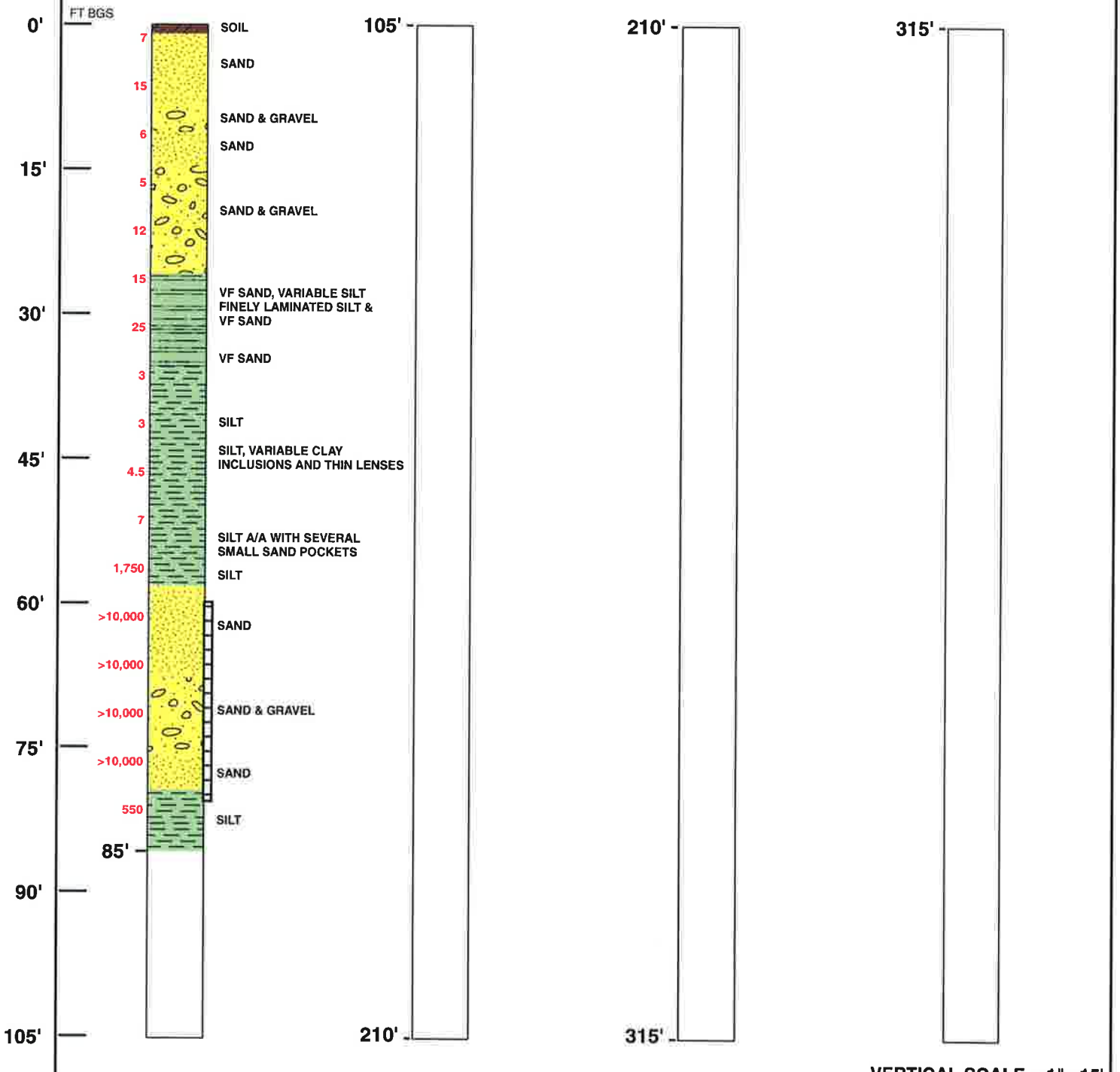
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-44

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1122.97 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	8/9/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_44.AI

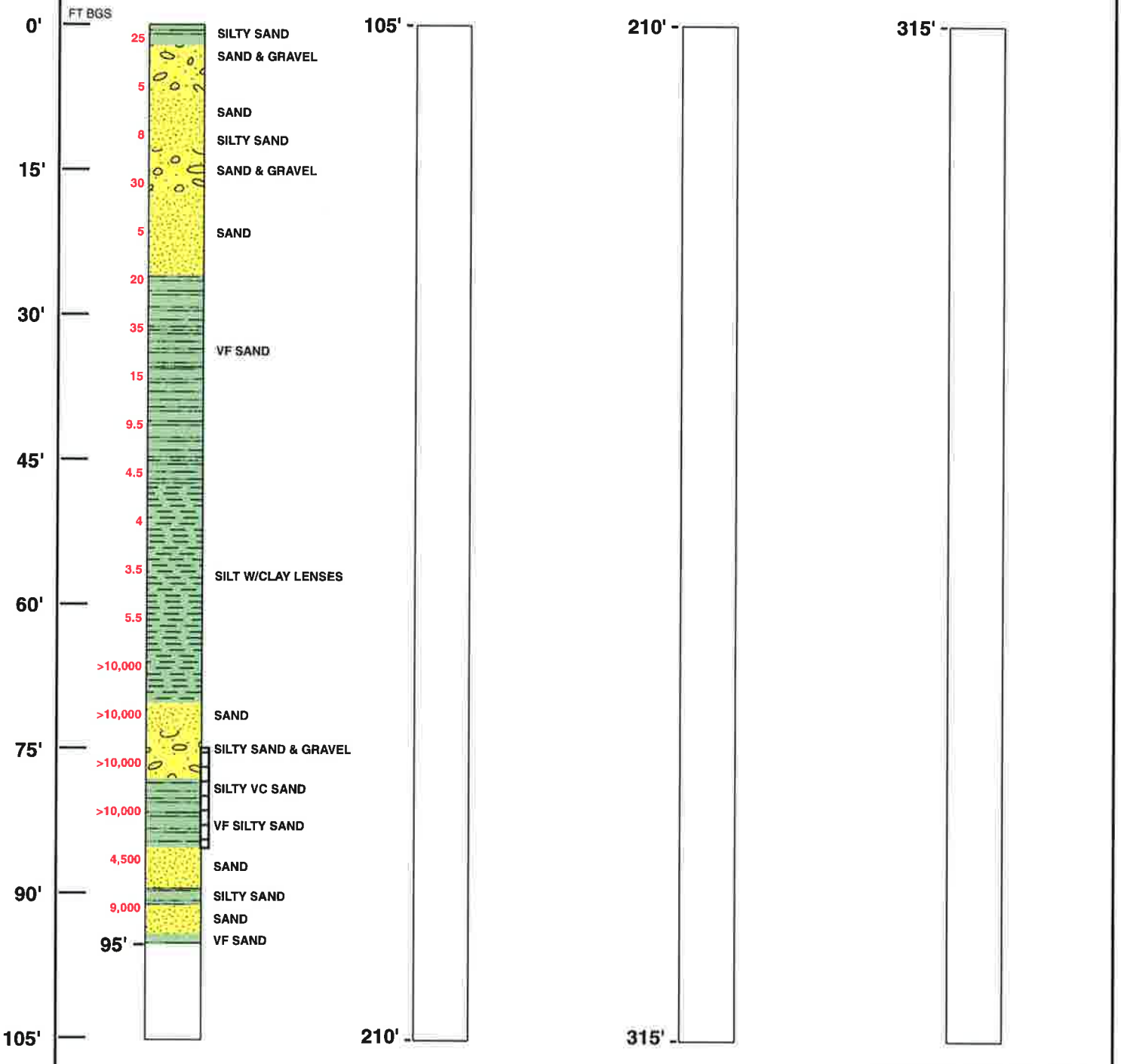
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-45

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1122.34 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 95 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 8/10/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_45.AI

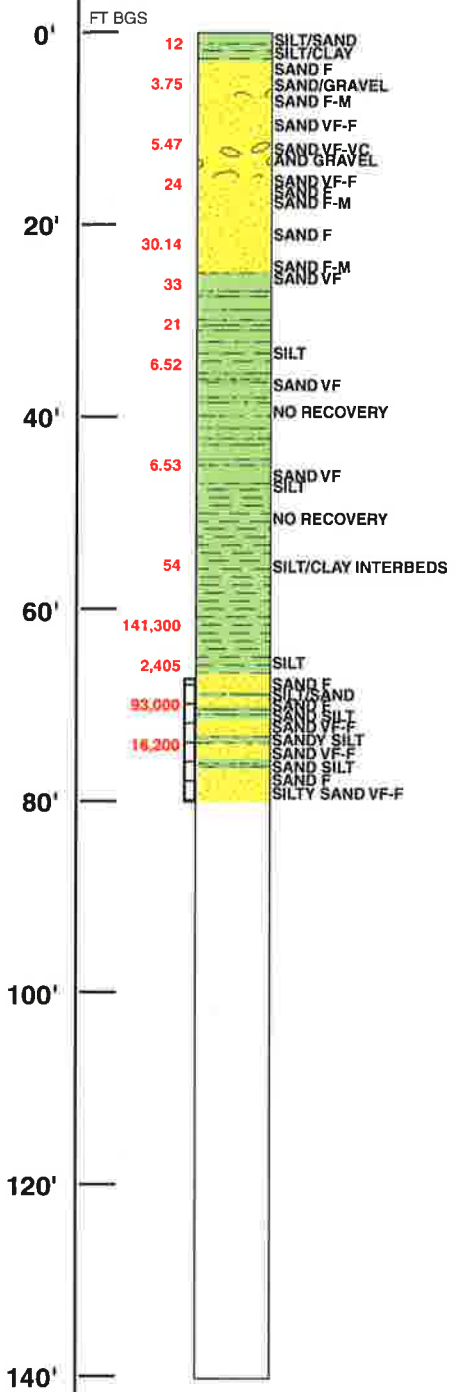
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-45A

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1122.94 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	7/26/04



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GM-45A.AI

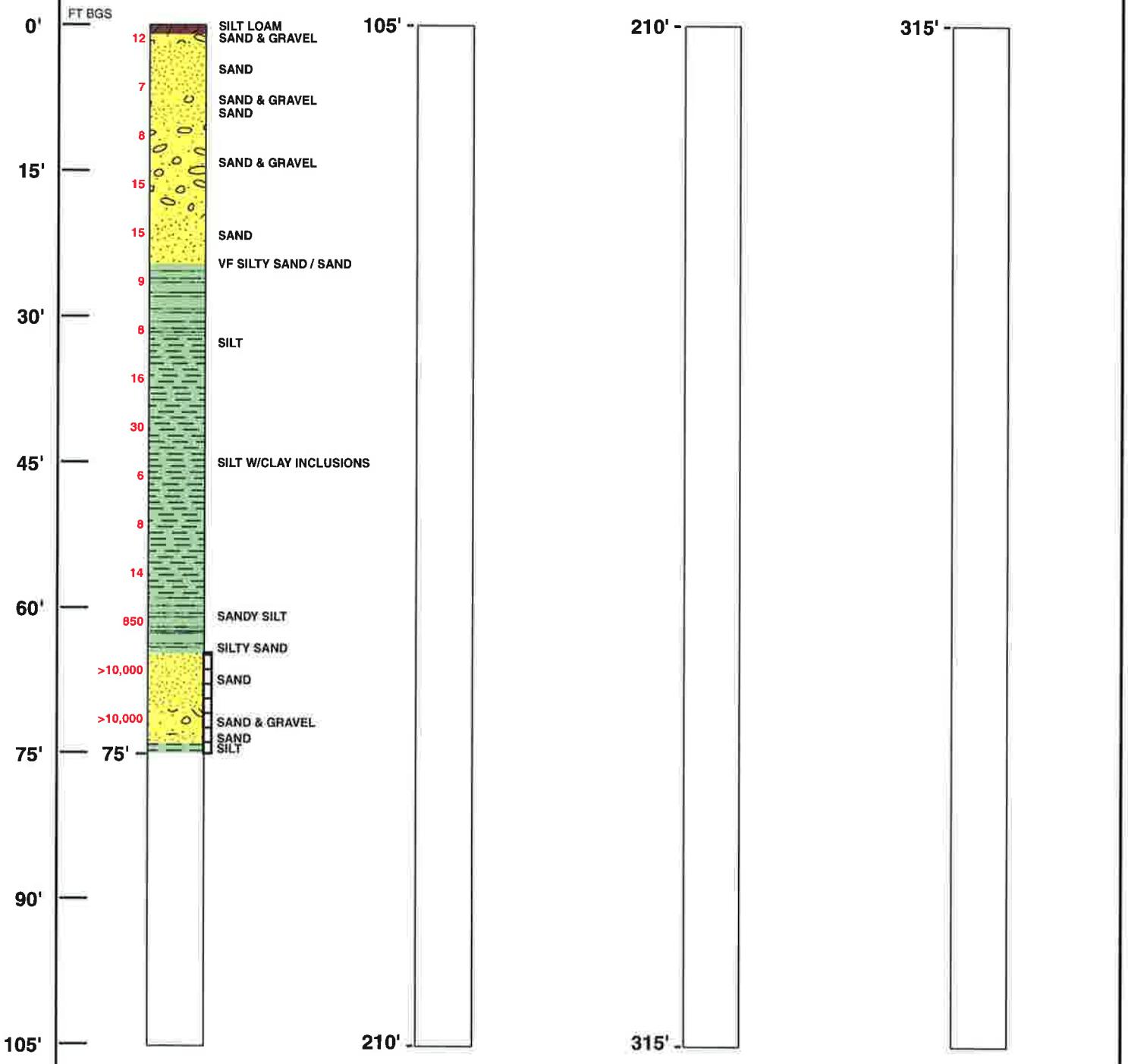
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-46

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1123.01 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	75 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	8/11/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_46.AI

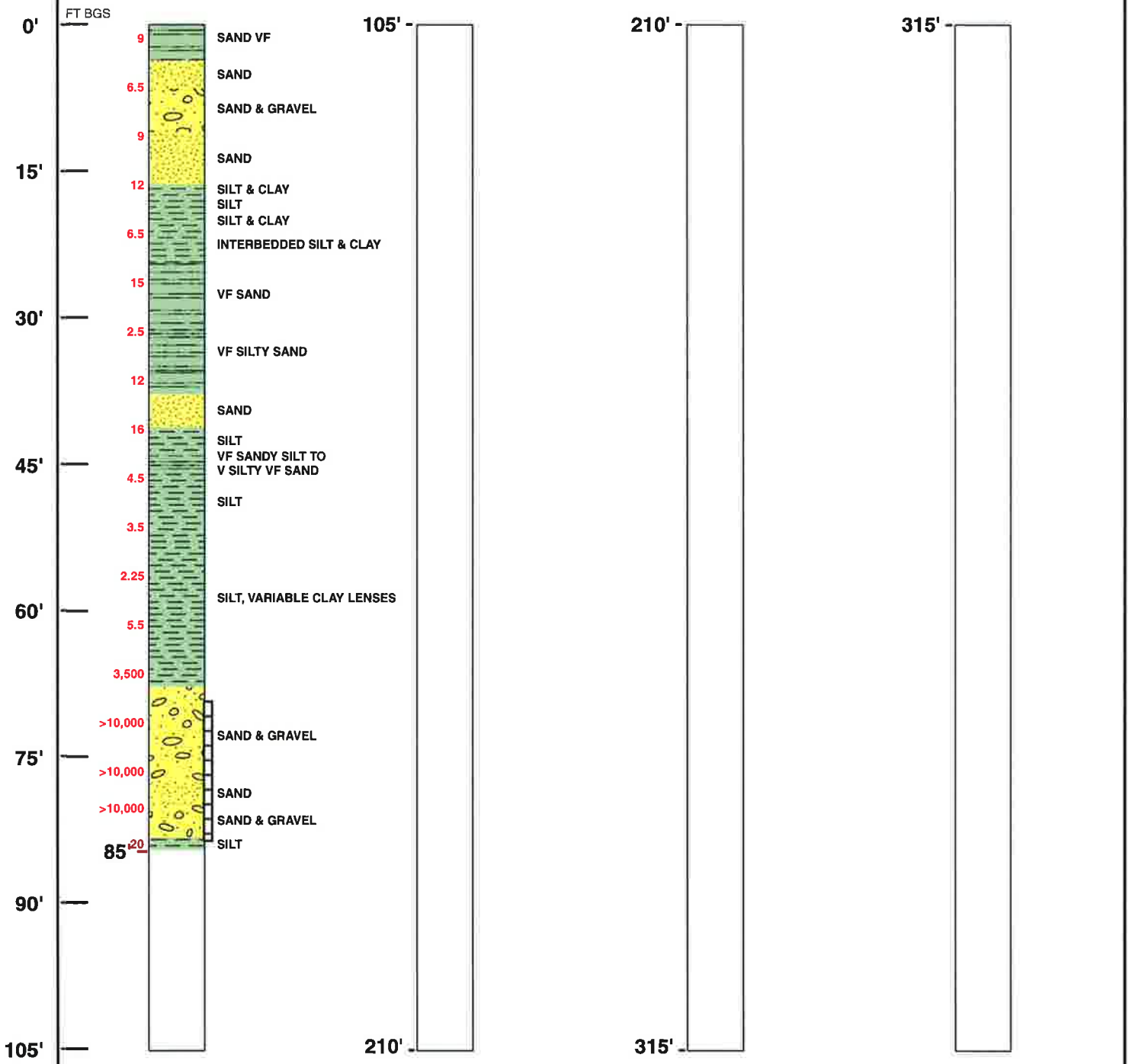
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-47

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1126.11 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	8/18/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_47.AI

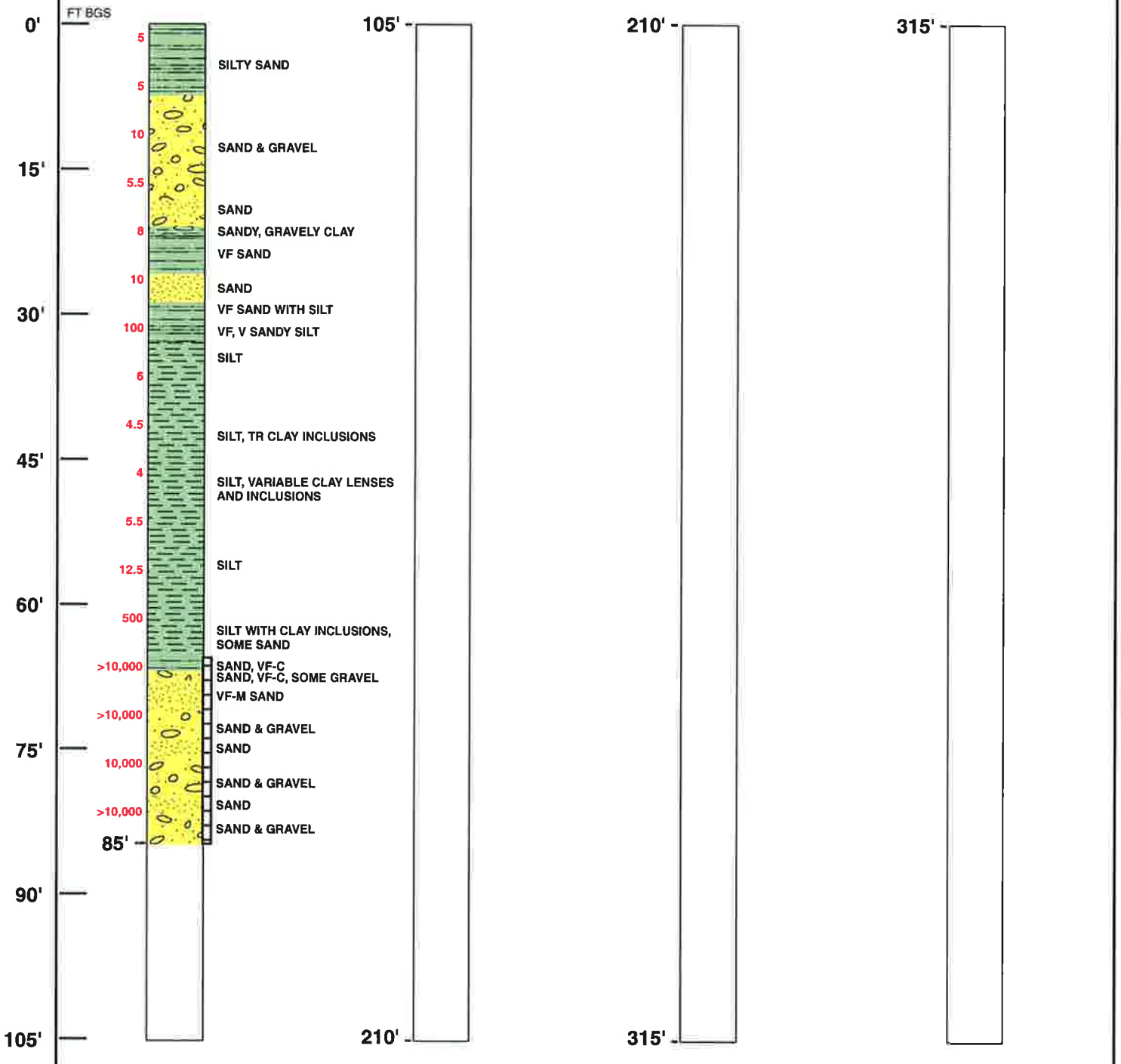
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-48

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1124.98 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	8/19/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_48.AI

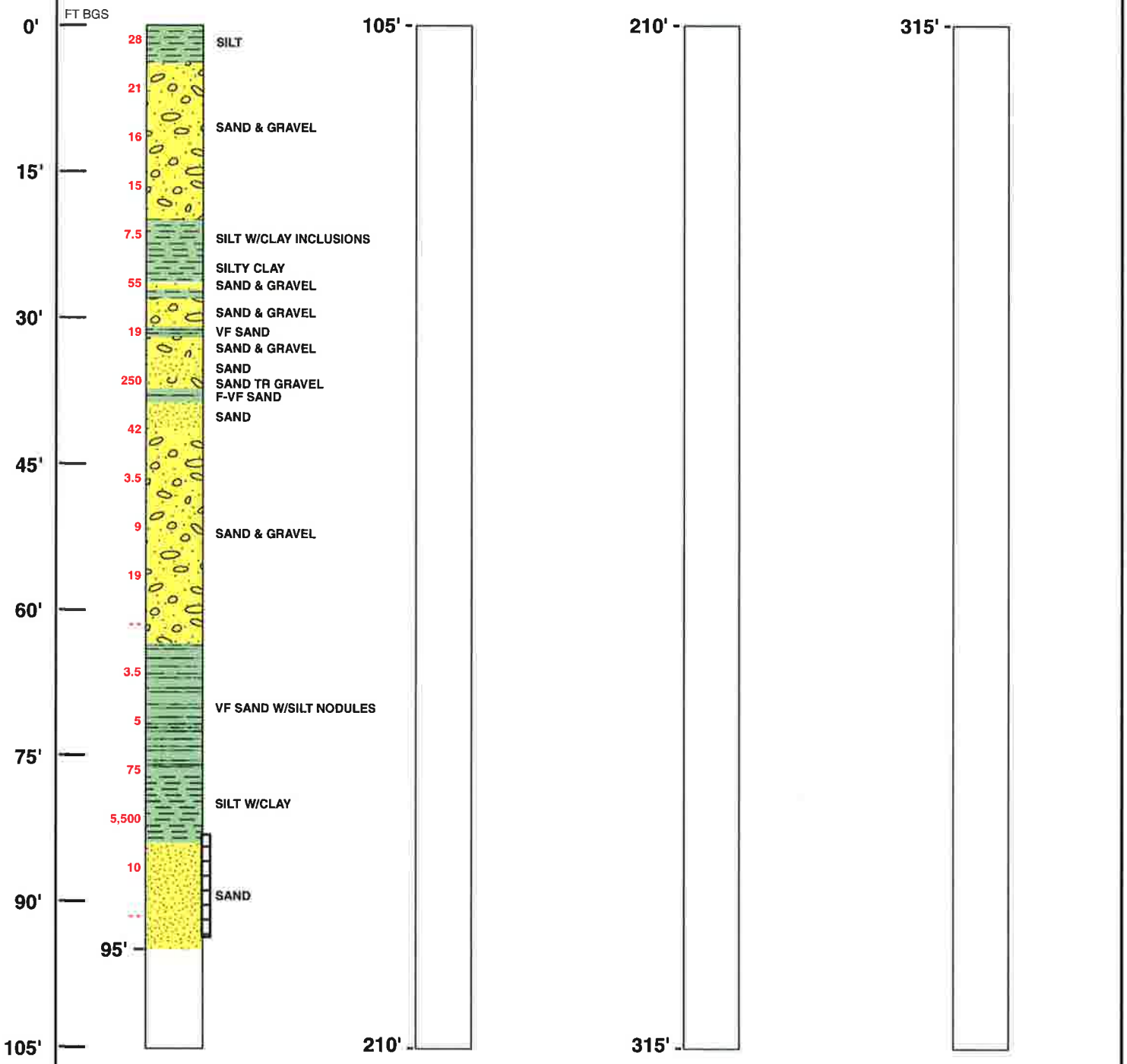
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-49

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	95 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	8/20/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_49.AI

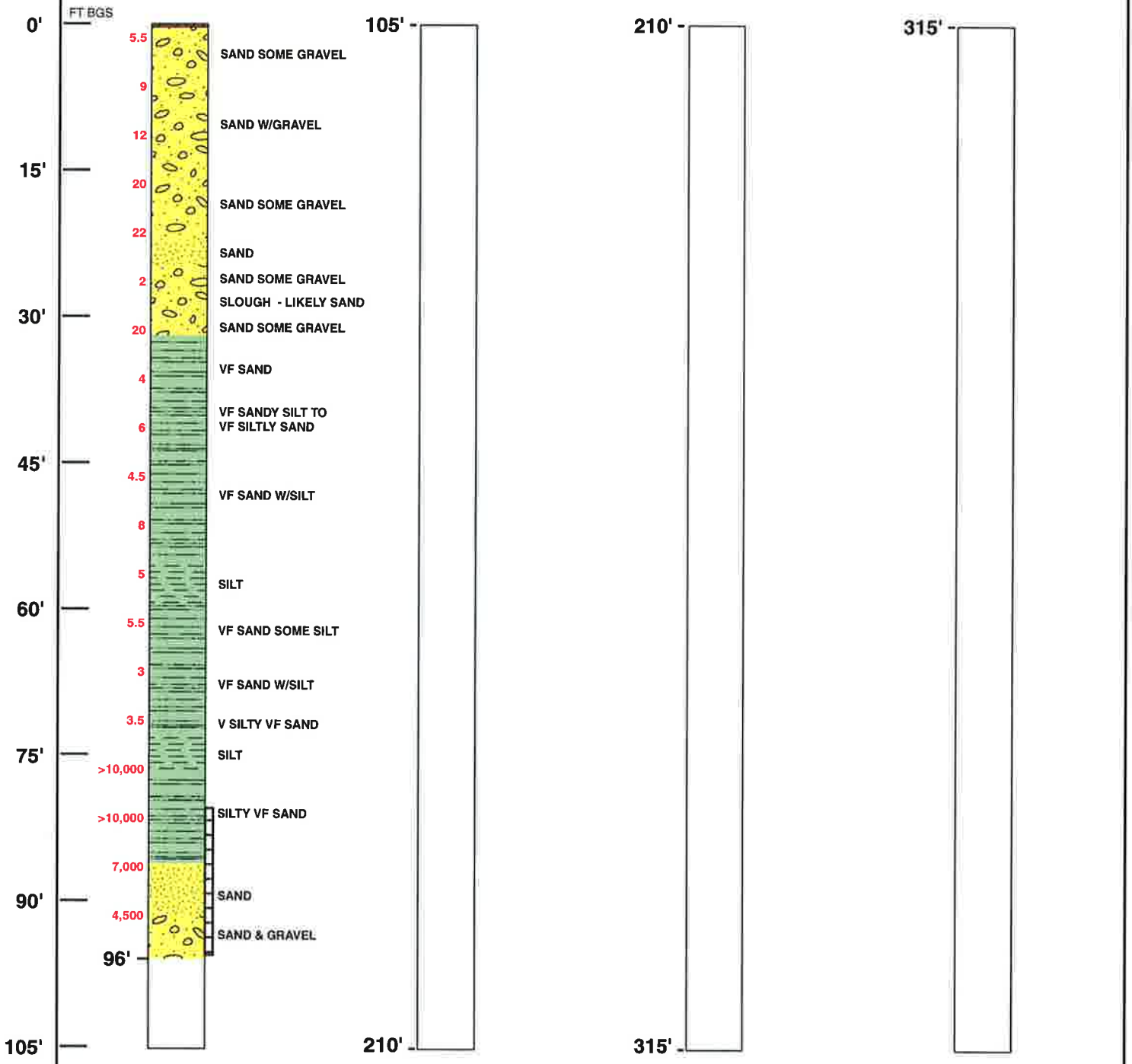
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-50

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.64 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	96 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	8/24/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_50.AI

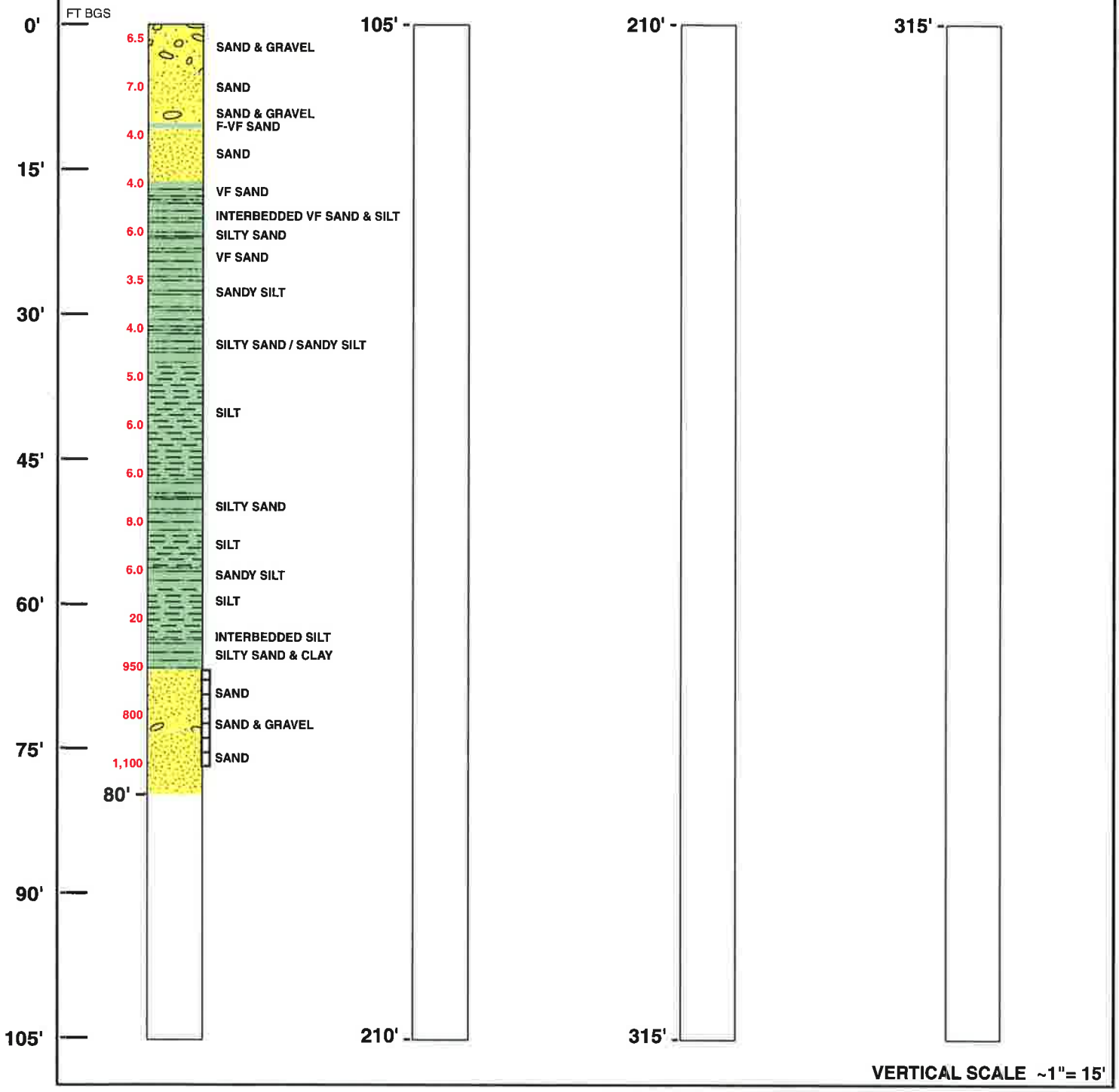
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-51

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1095.88 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 80 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 8/23/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_51.AI

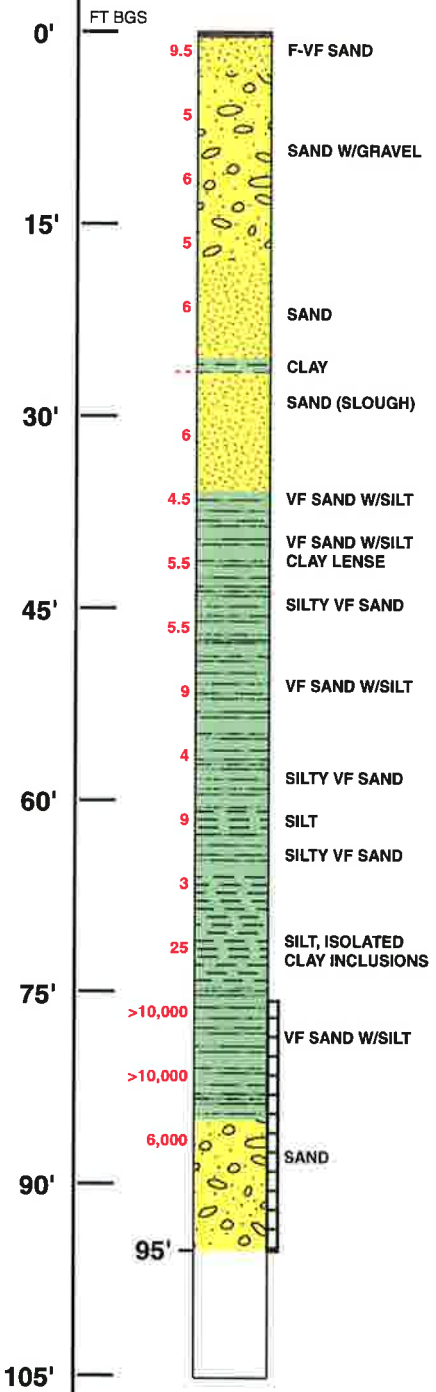
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-52

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.74 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	95 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	8/25/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_52.AI

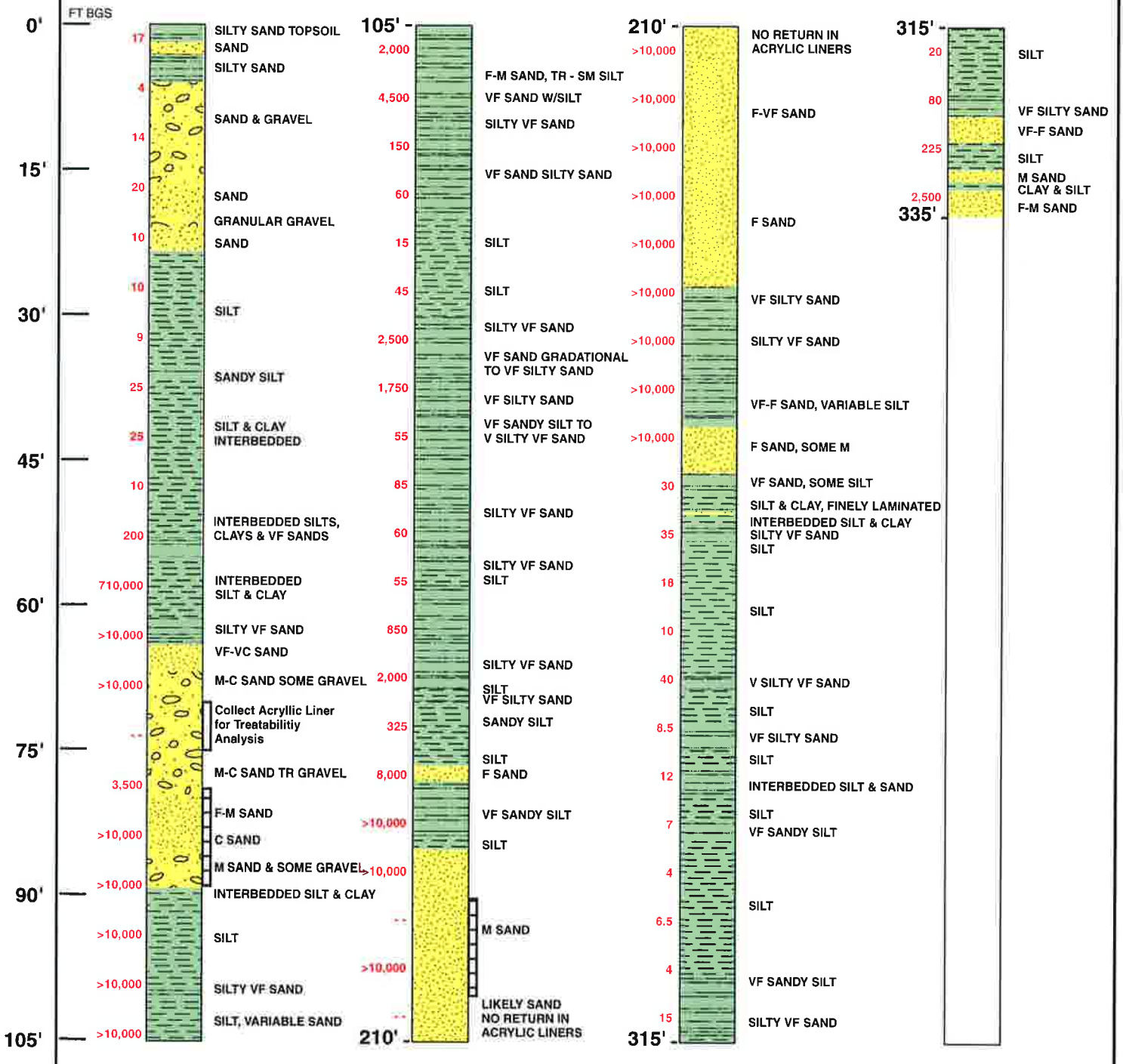
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-53 (A/B)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1103.83 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 335 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/13/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRATLOGS\DRAWING: GM_53.AI

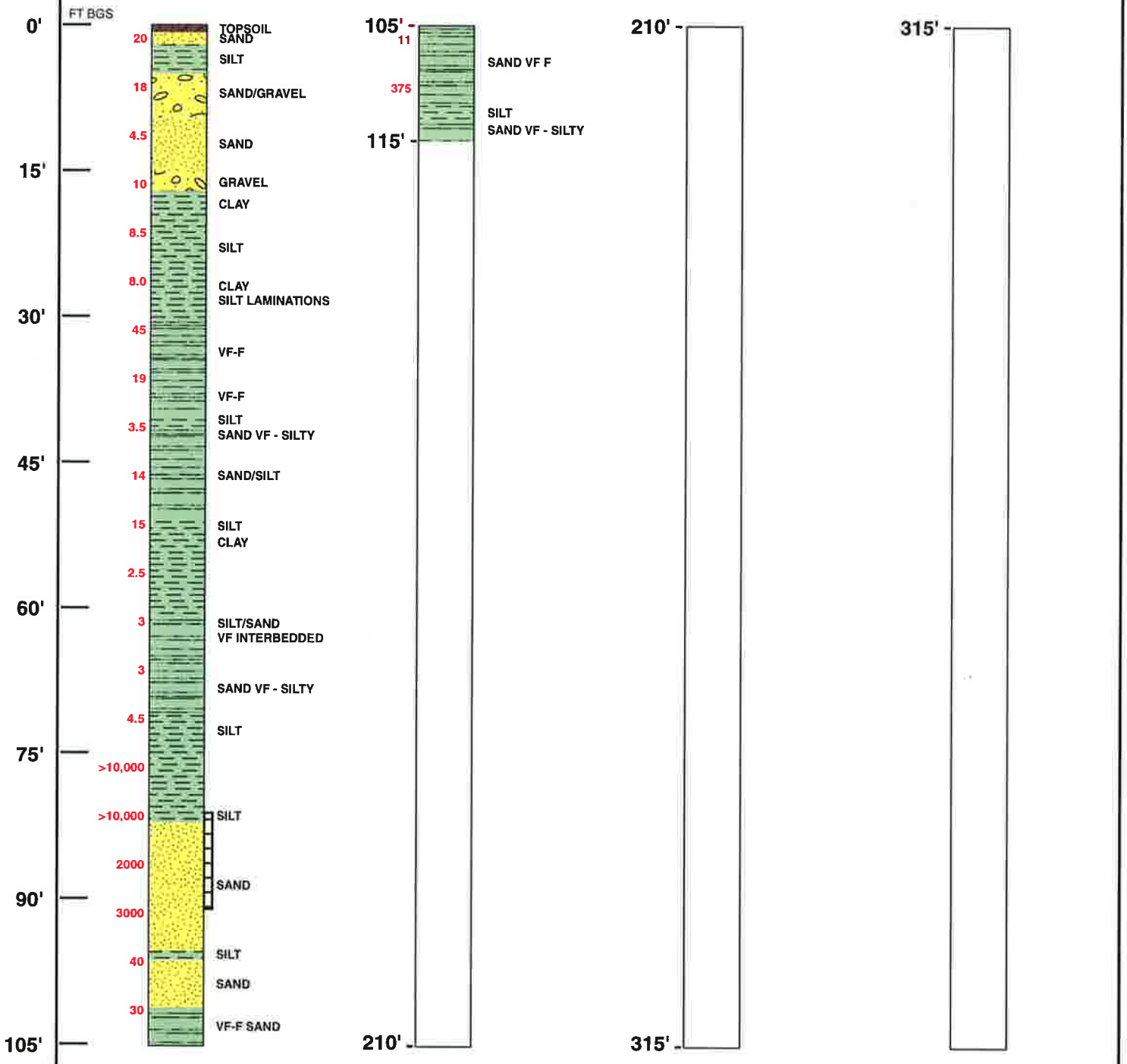
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-54

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1126.88 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 115 Feet BLS
DRILLER John Weeks	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 9/26/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_54.AI

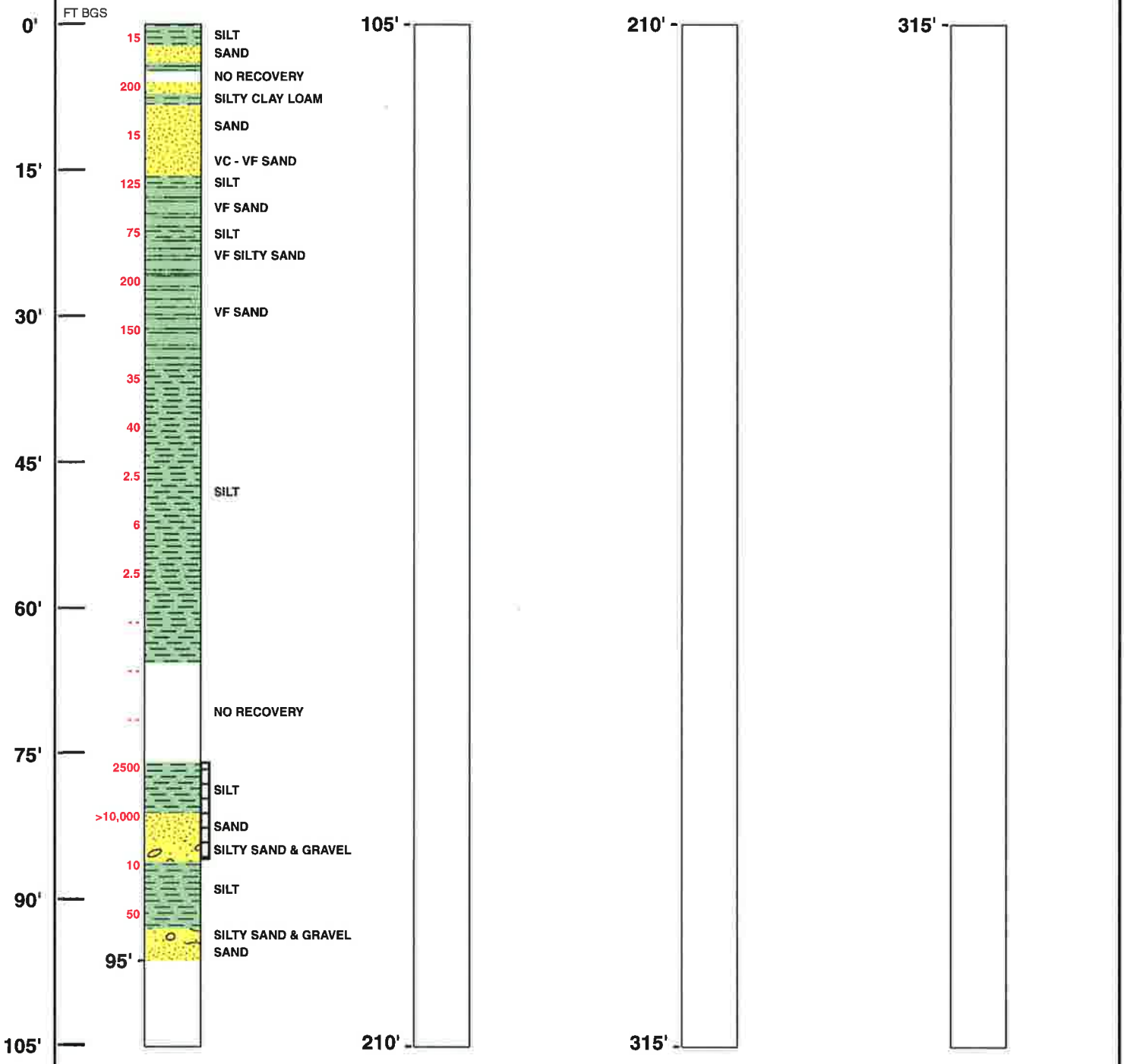
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-55

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1126.68 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Rotasonic Core Barrel	95 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/26/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_55.AI

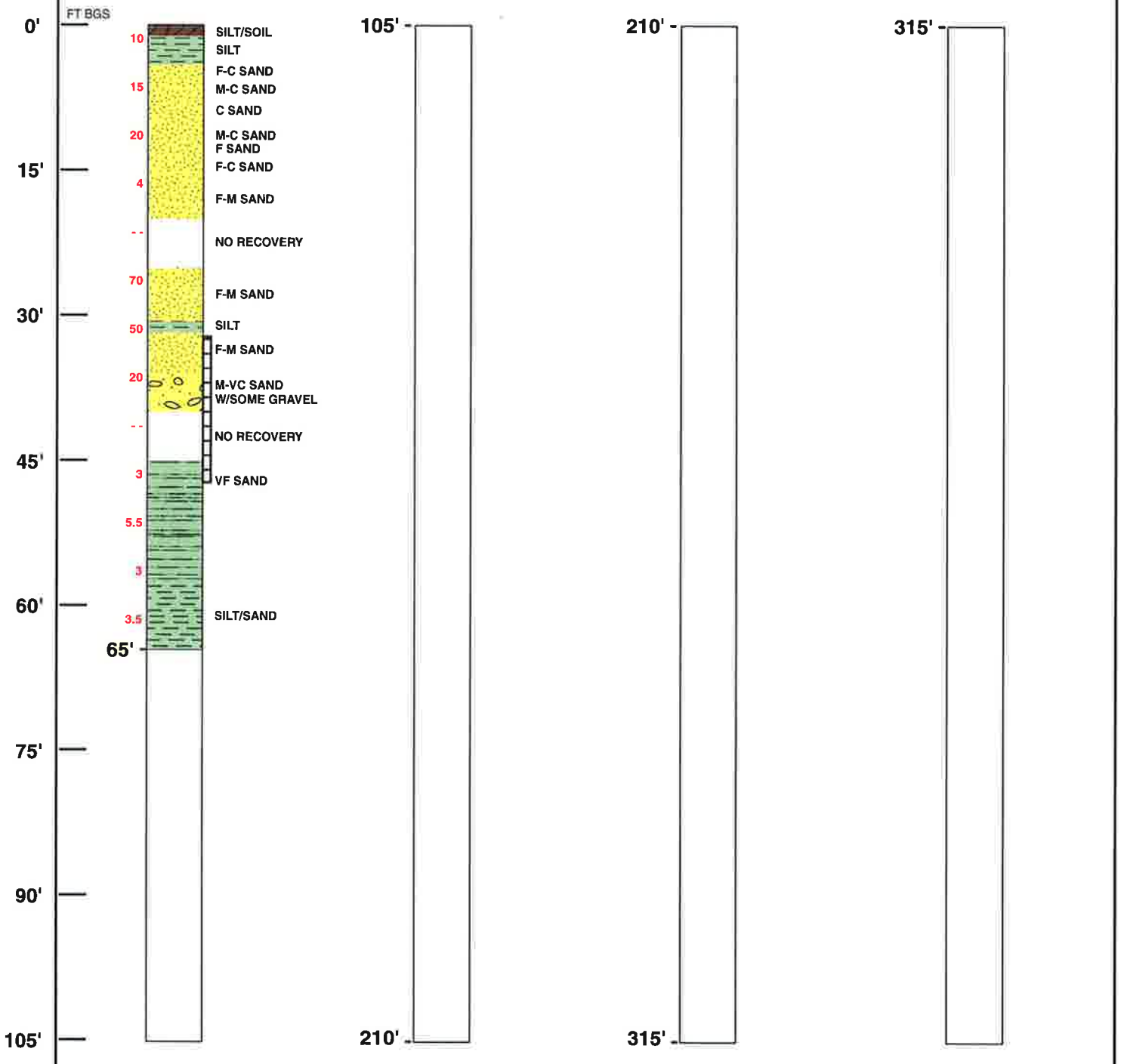
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-56

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1118.56 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Rotasonic Core Barrel	65 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	9/28/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_56.AI

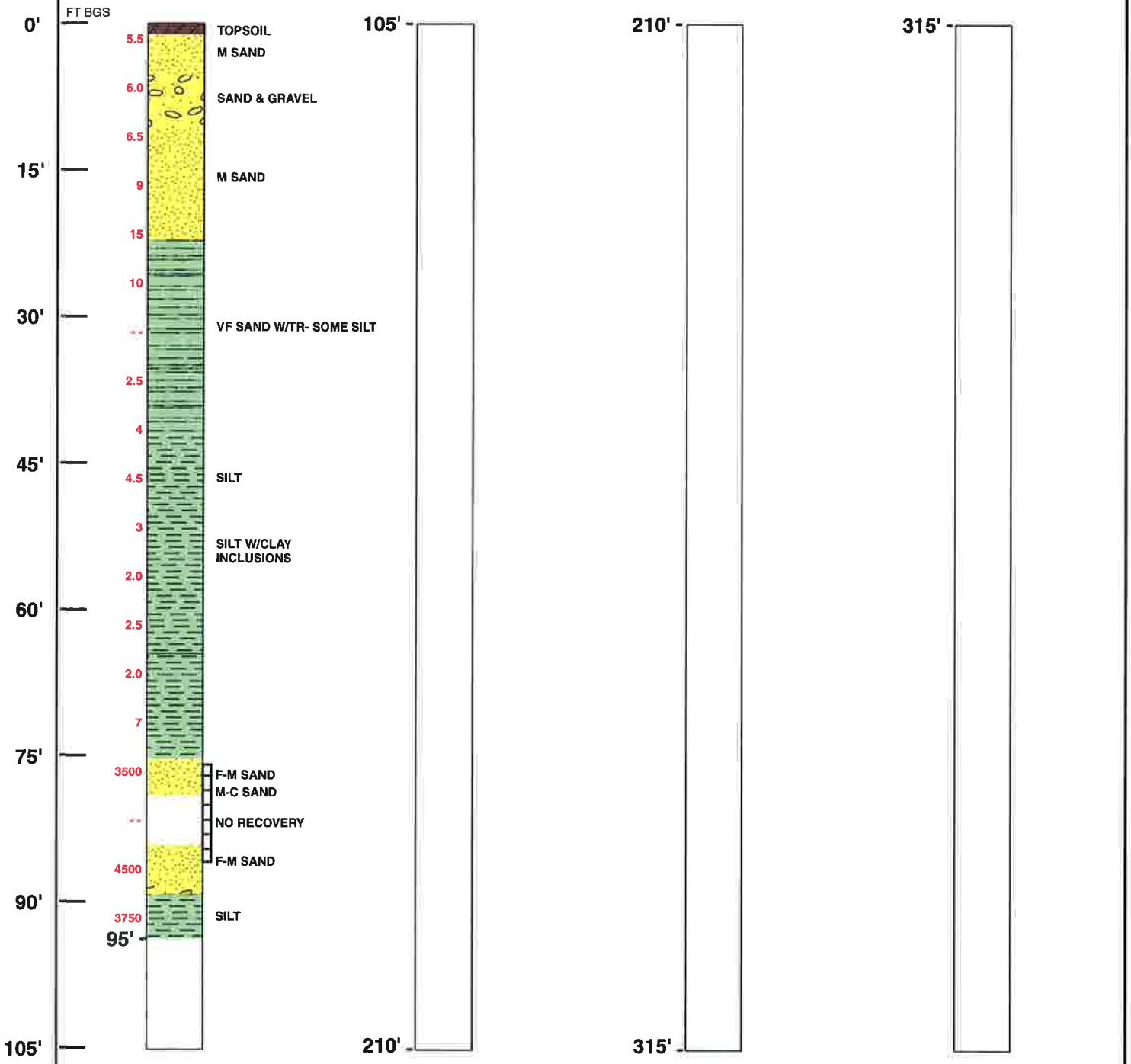
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-57

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1130.81 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 95 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/26/98



VERTICAL SCALE ~1"= 15'

20MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_57.AI

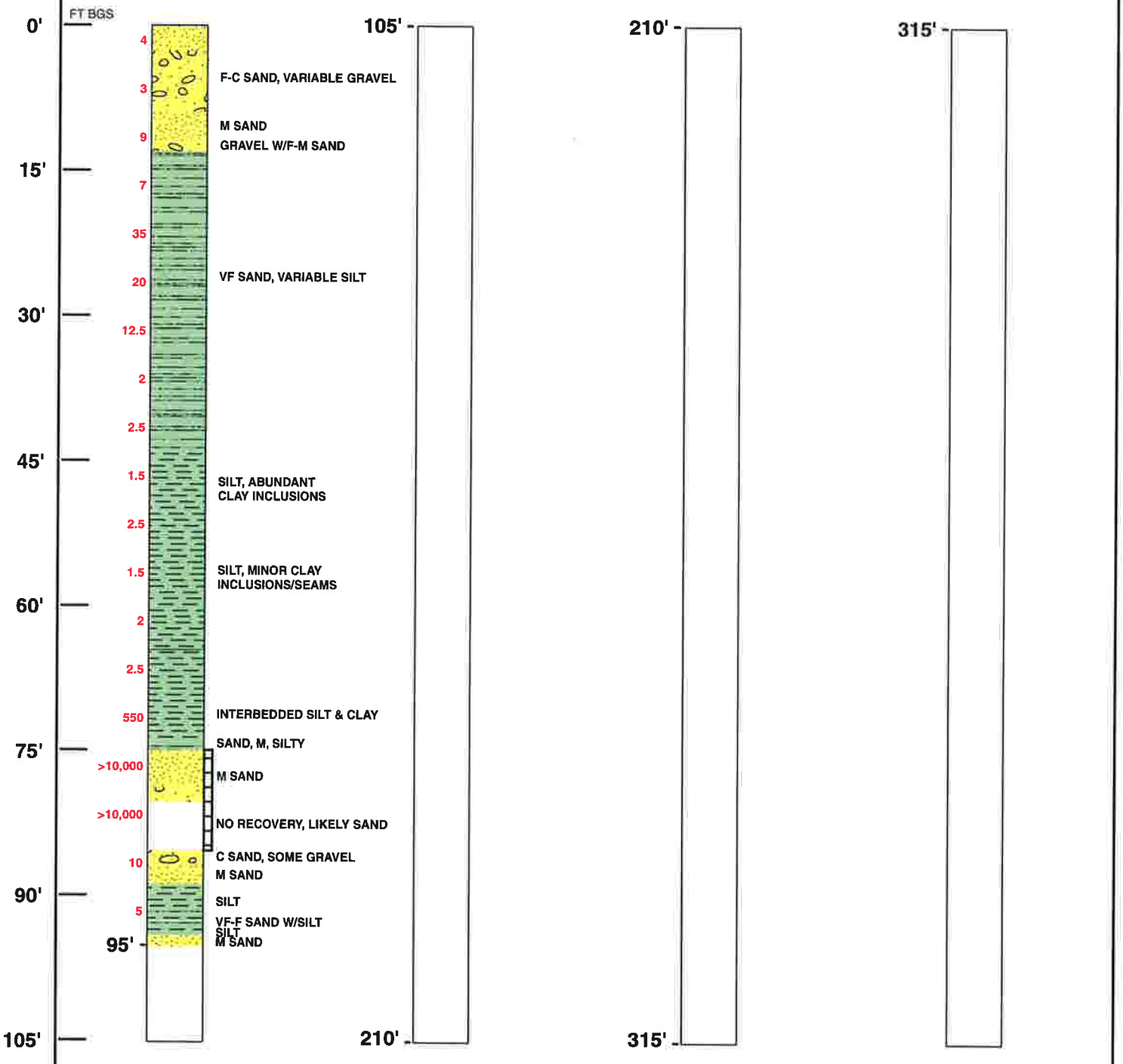
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-58

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1130.90 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 95 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 10/27/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GM_58.AI

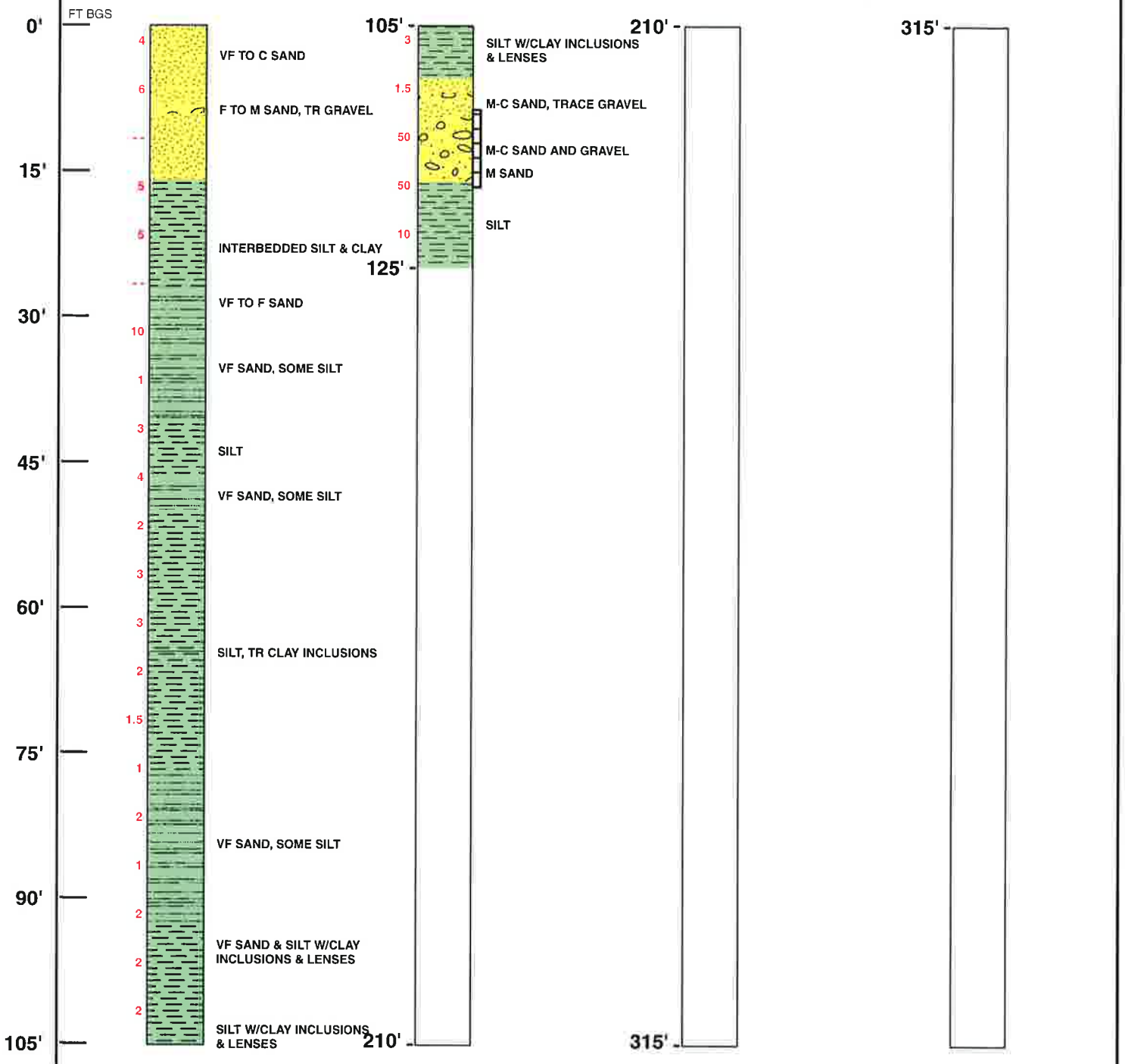
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-59

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1129.97 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Kevin Daleness	Continuous	Rotasonic Core Barrel	125 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	11/5/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_59.AI

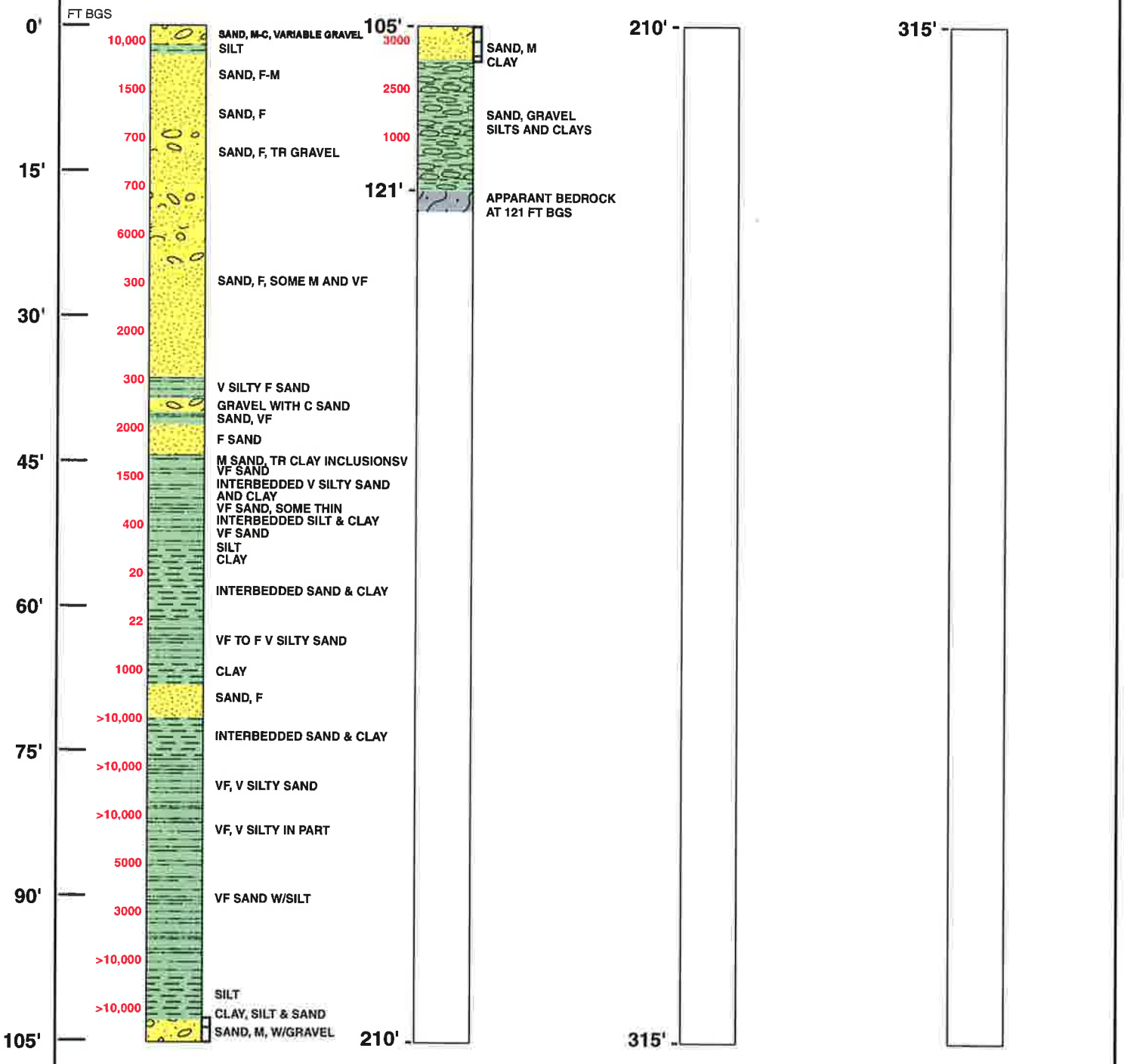
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-60

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1191.33 Feet MSL
GEOLOGIST Ted Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 121 Feet BLS
DRILLER Perry	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 11/8/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_60.AI

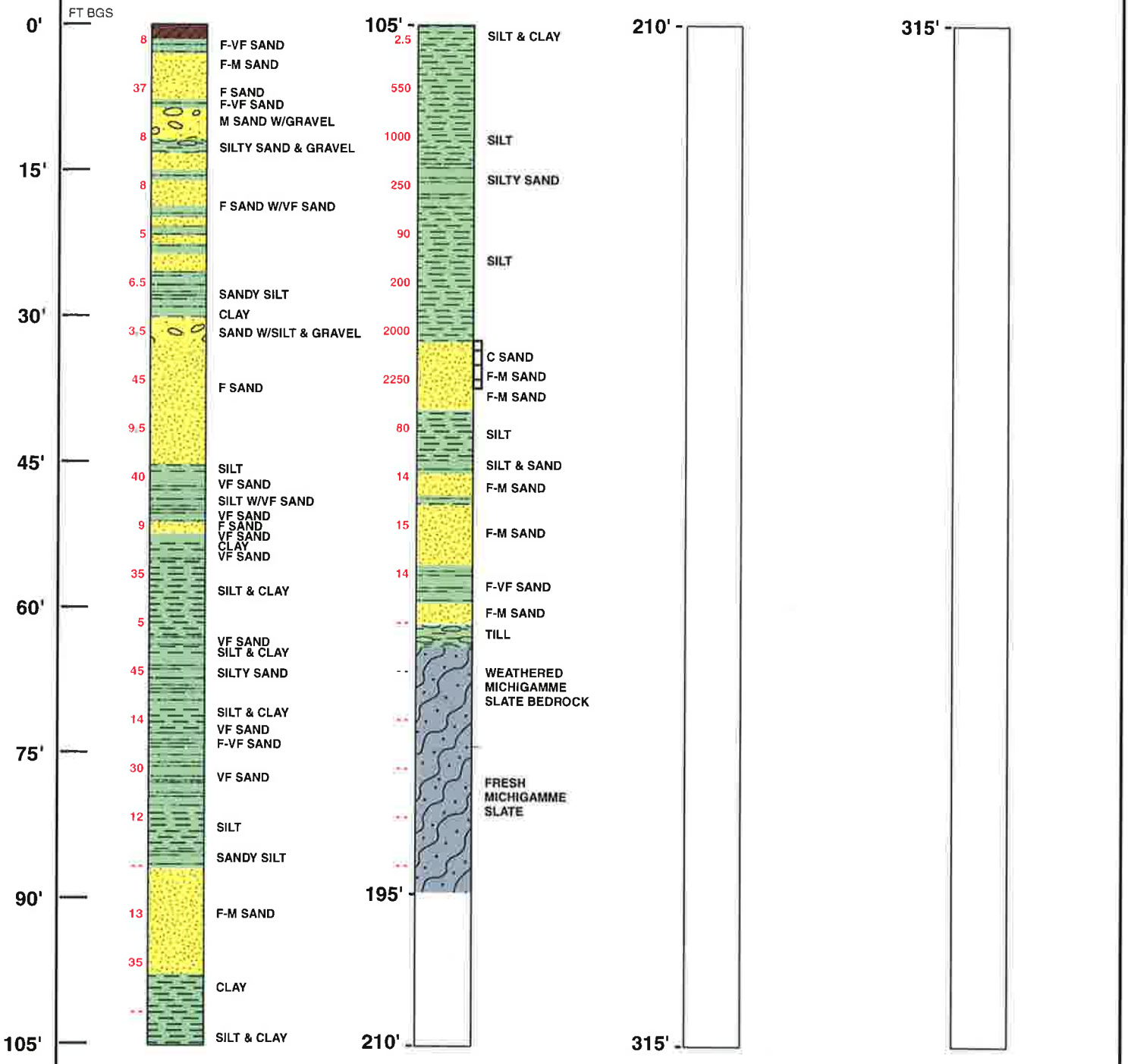
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-61

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1209.08 Feet MSL
GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Ted Powell	Continuous	Rotasonic Core Barrel	195 Feet BLS
DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
John	Boart Longyear	Rotasonic	12/16/98



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_61.AI

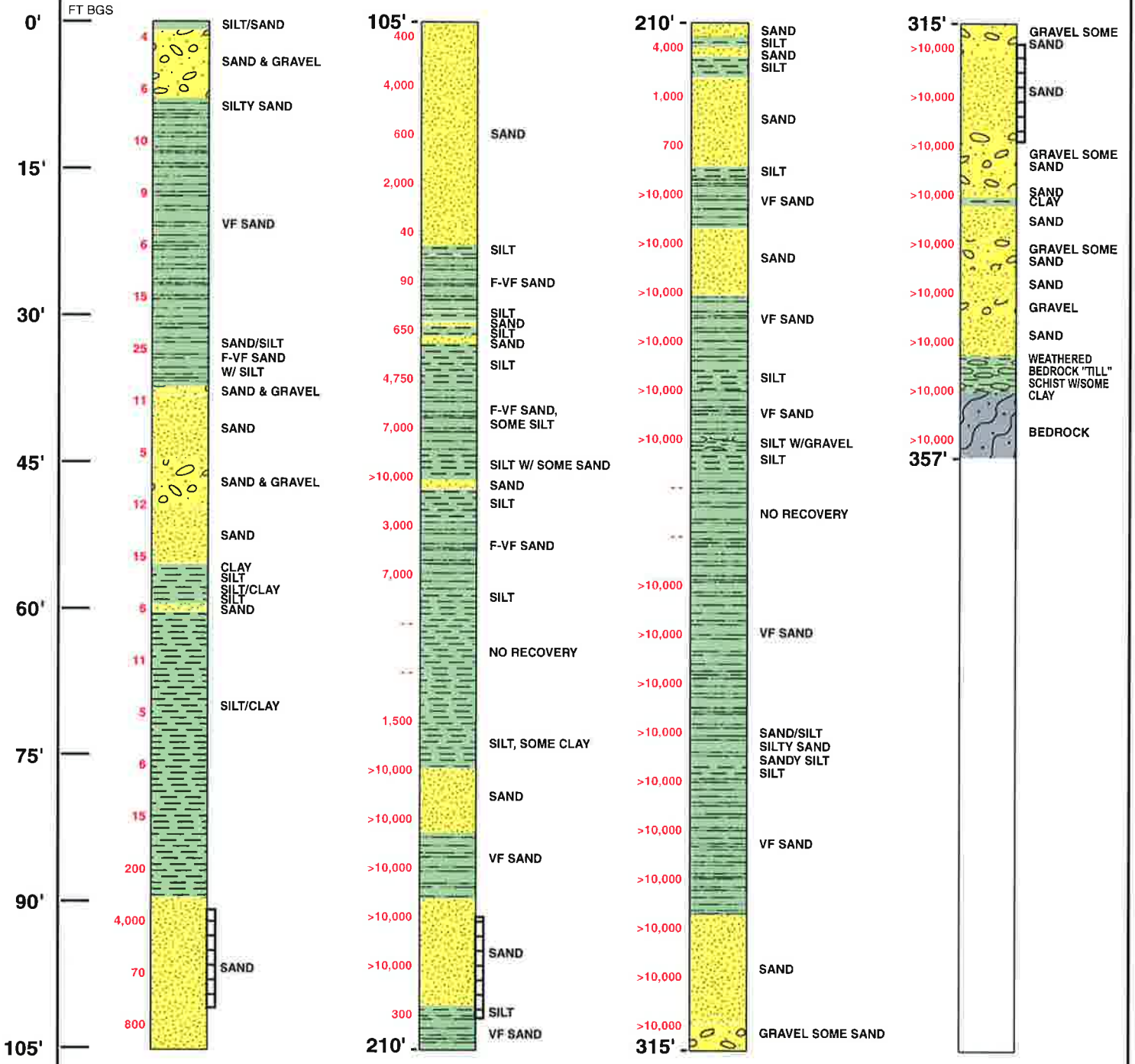
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-62 (A/B/C)

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1124.77 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 357 Feet BLS
DRILLER Gabe	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/14/99



VERTICAL SCALE ~1"= 15'

29MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_62.AI

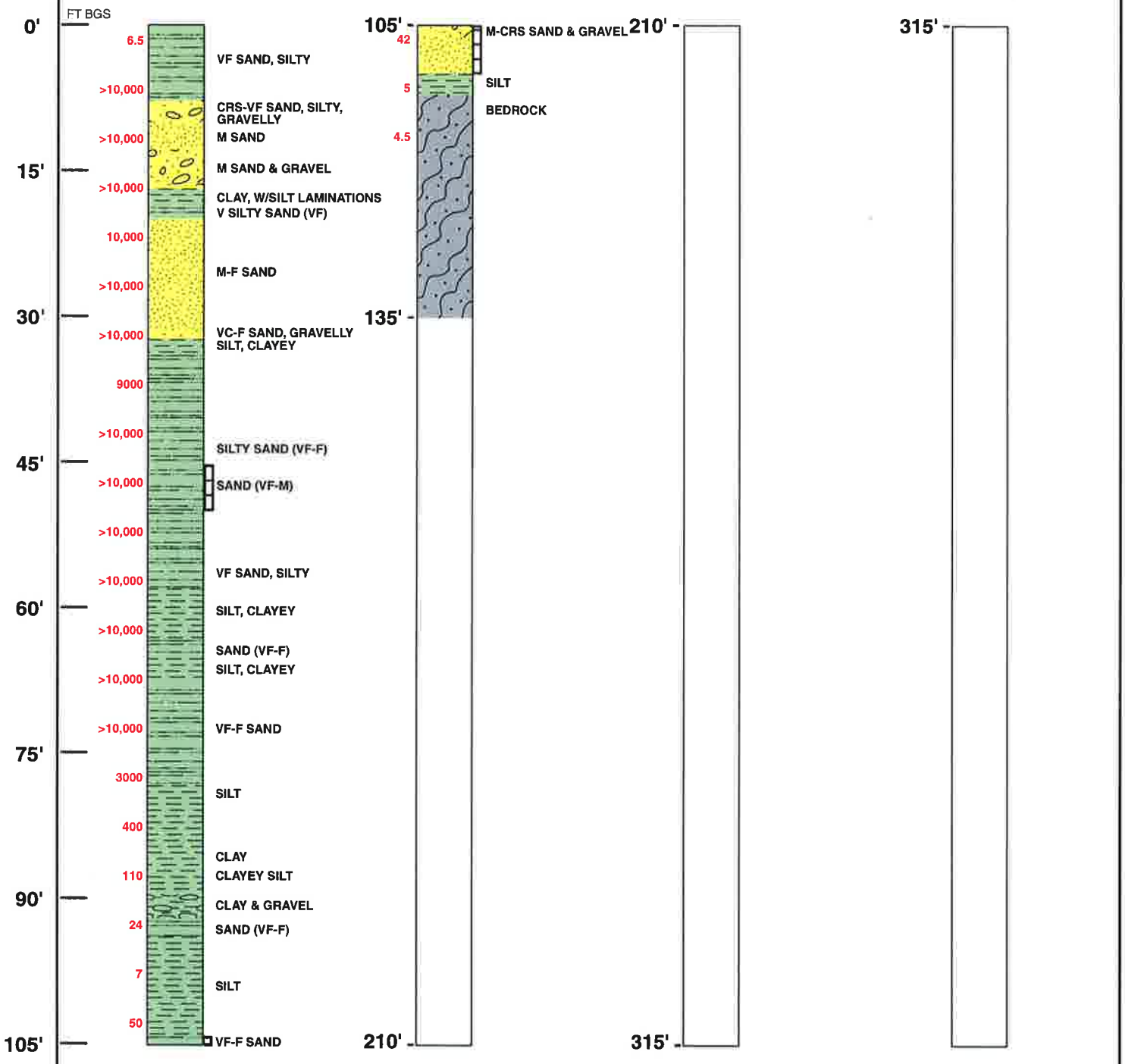
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-63 (A/B)

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.72 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hanson	Boart Longyear	Rotasonic	6/5/00



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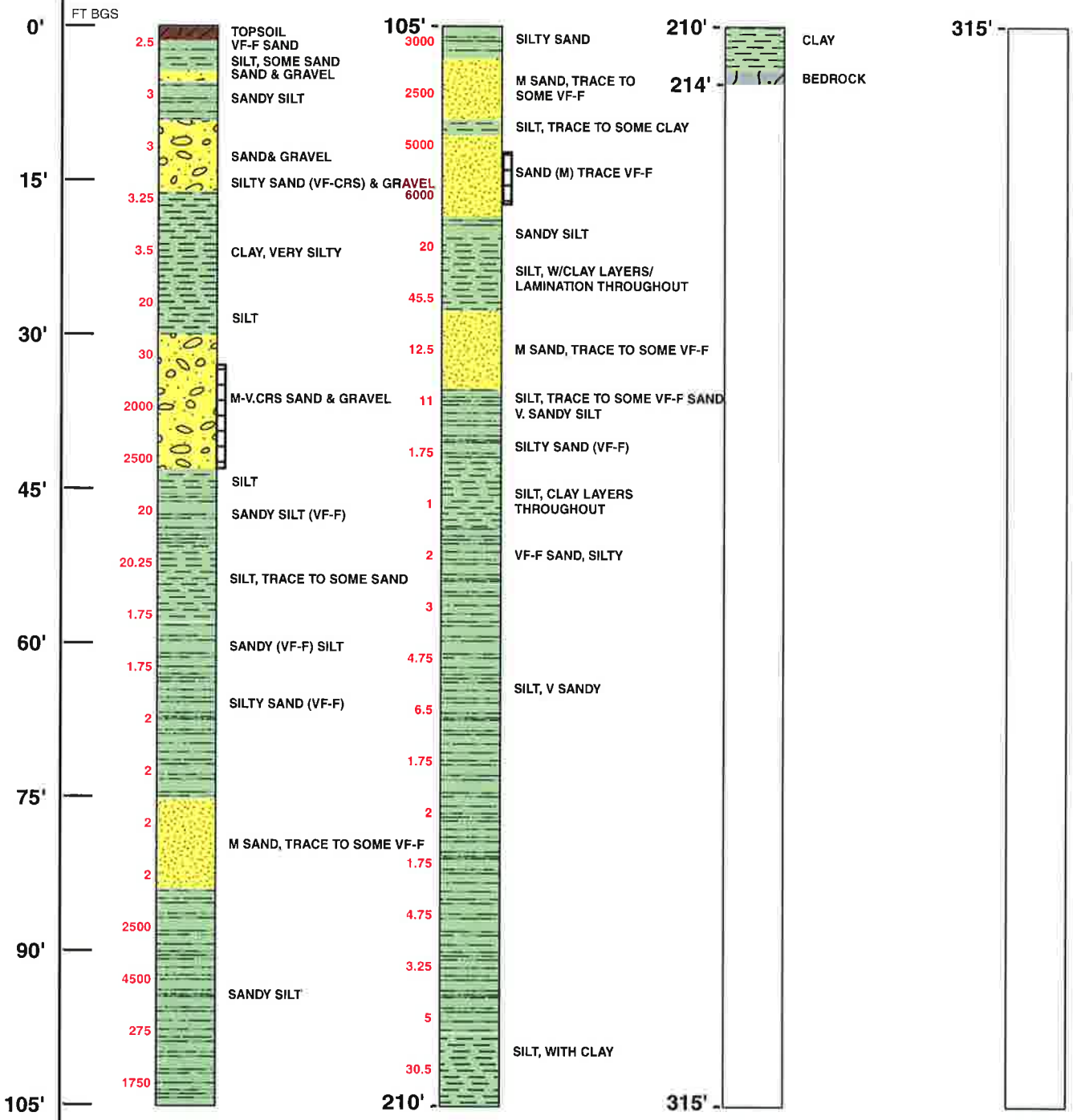
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-64 (A/B)

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1055.13 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 214 Feet BLS
DRILLER Mike Hanson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 5/24/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_64.AI

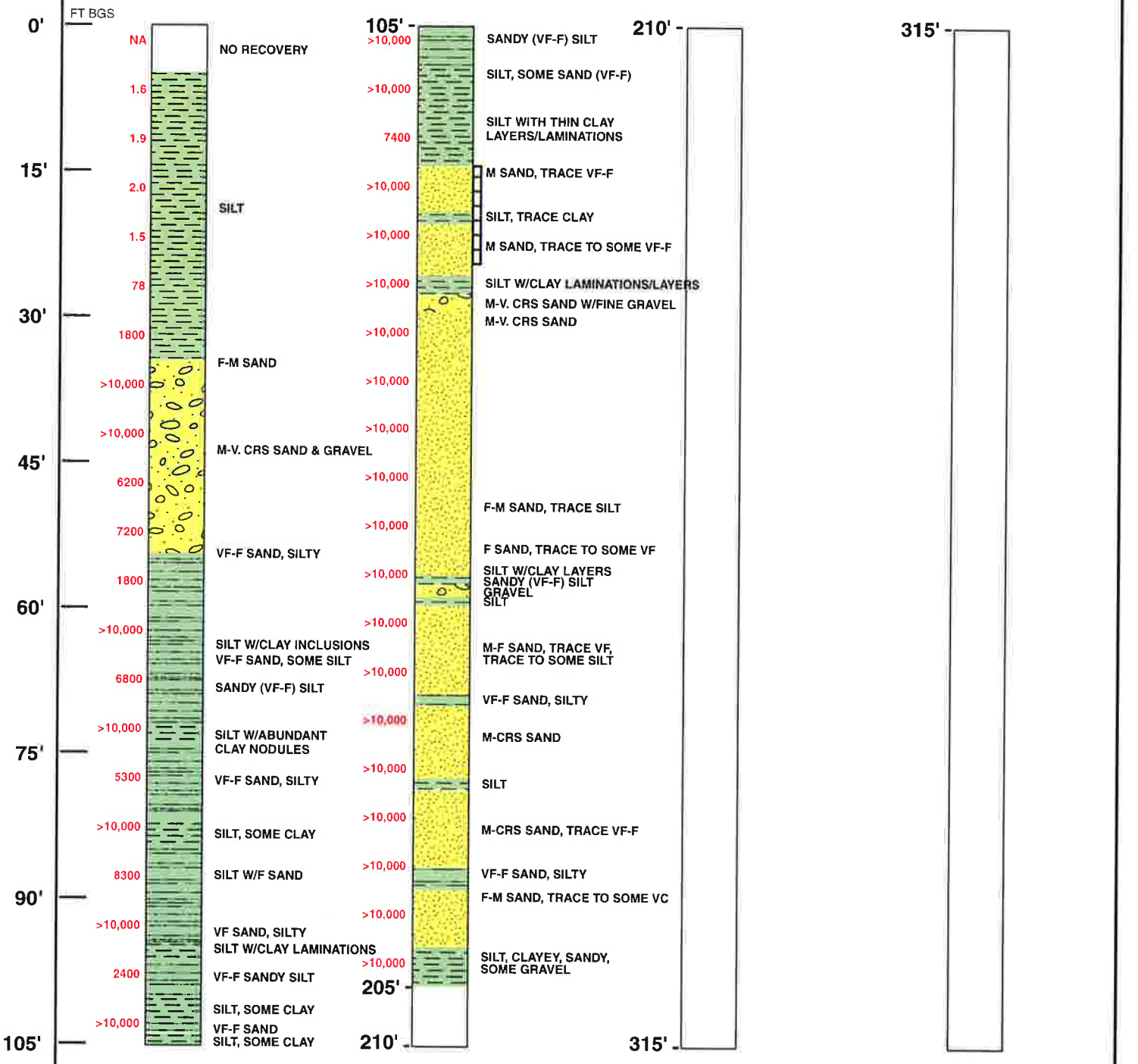
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-65

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1065.21 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 205 Feet BLS
DRILLER Mike Hanson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/7/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_65.AI

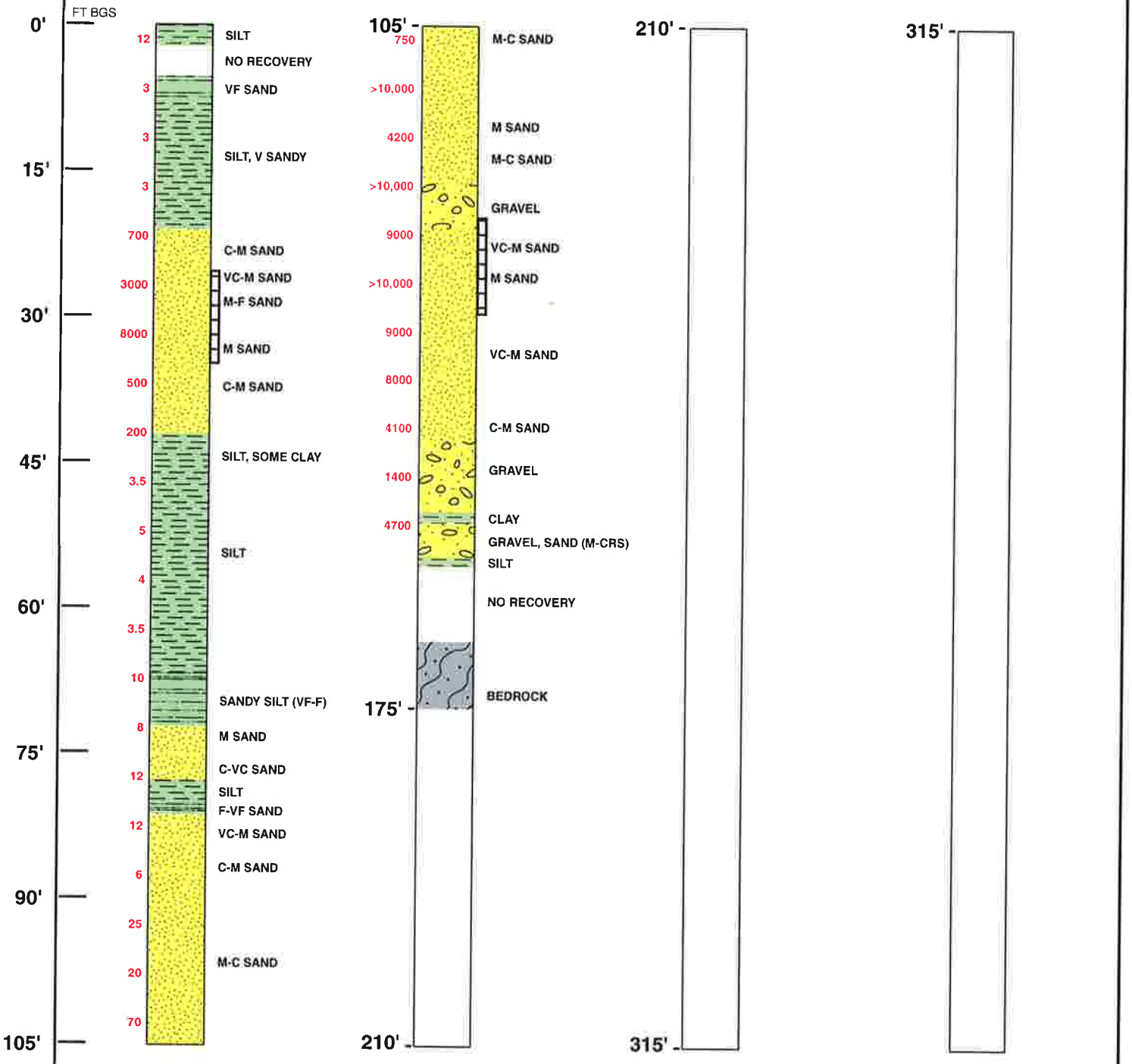
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-66 (A/B)

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1045.72 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 175 Feet BLS
DRILLER Mike Hanson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/5/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_66.AI

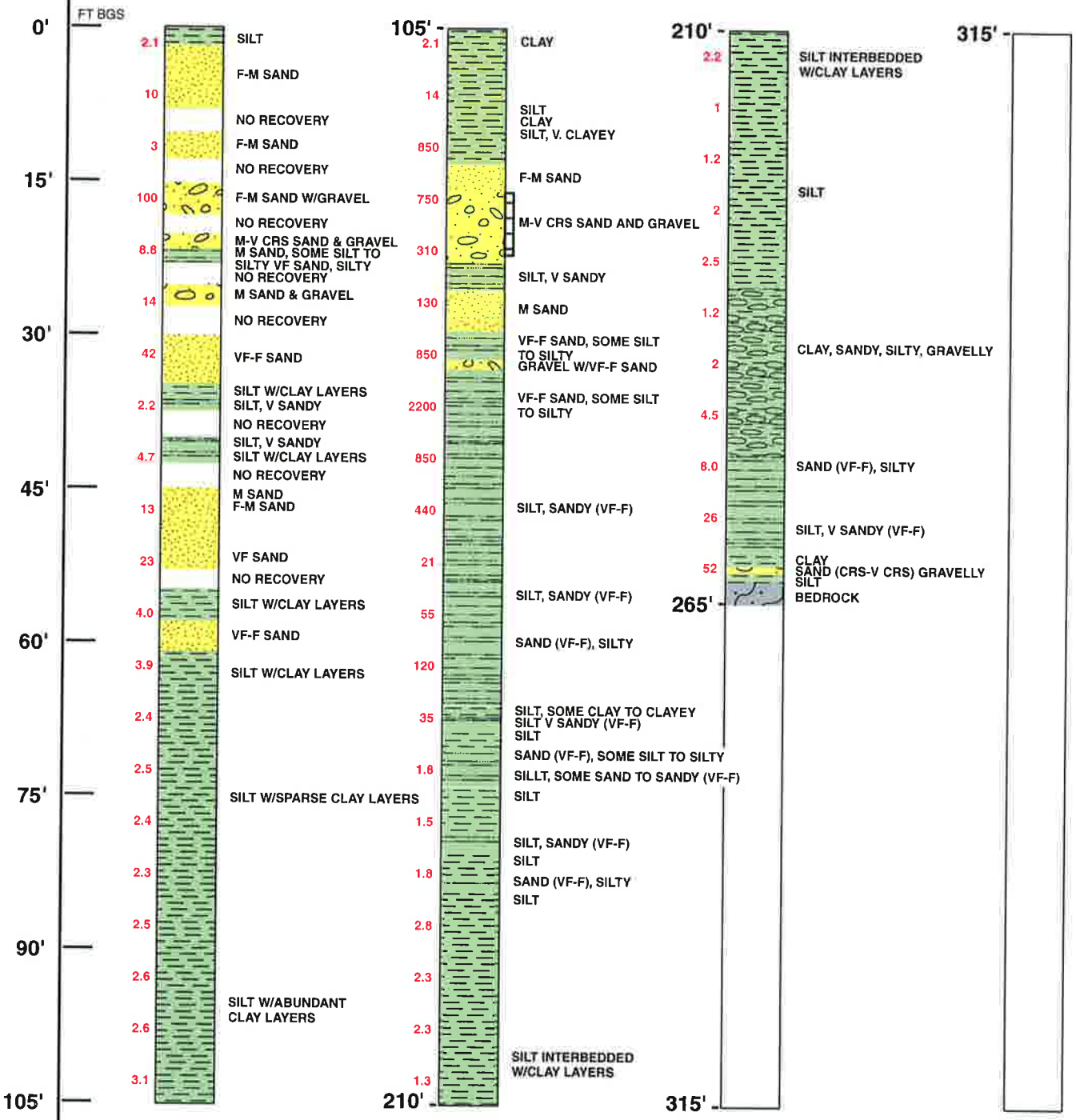
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-67

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1115.90 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 265 Feet BLS
DRILLER Mike Hansen	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 6/19/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_67.AI

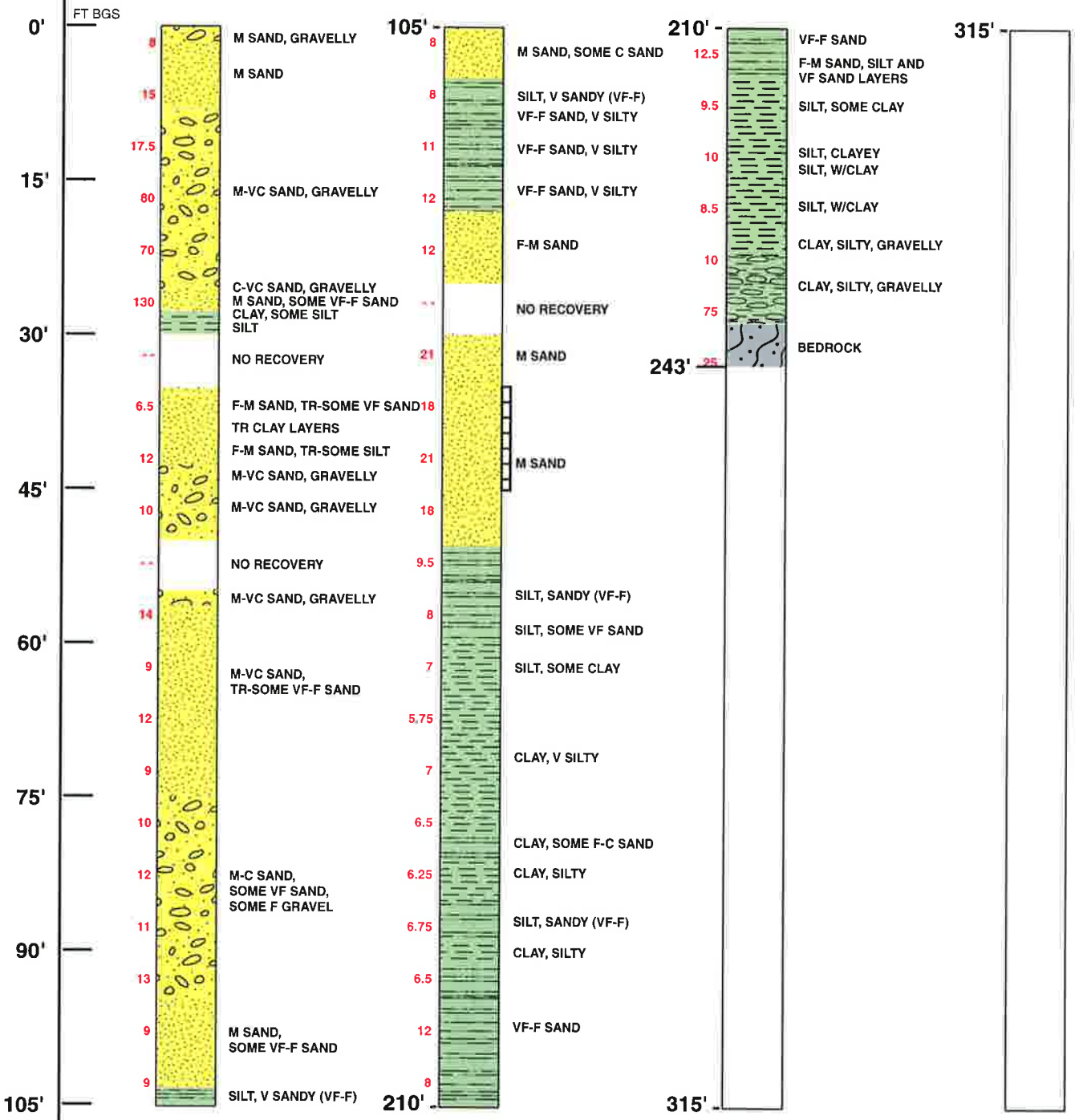
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-68

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1105.72 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 243 Feet BLS
DRILLER Mike Hansen	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/7/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_68.AI

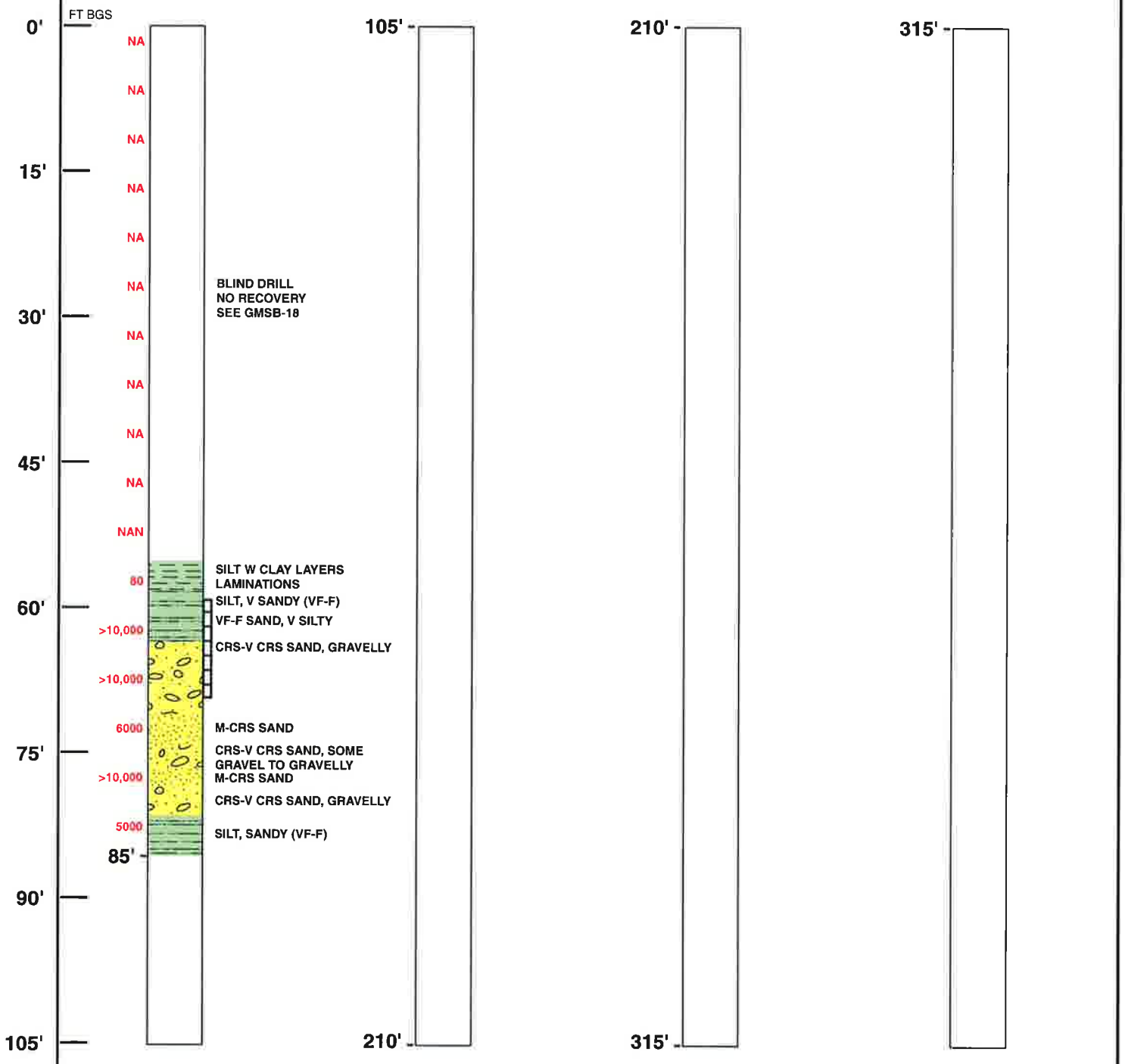
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-69

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1086.47 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 85 Feet BLS
DRILLER Mike Hansen	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/7/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_69.AI

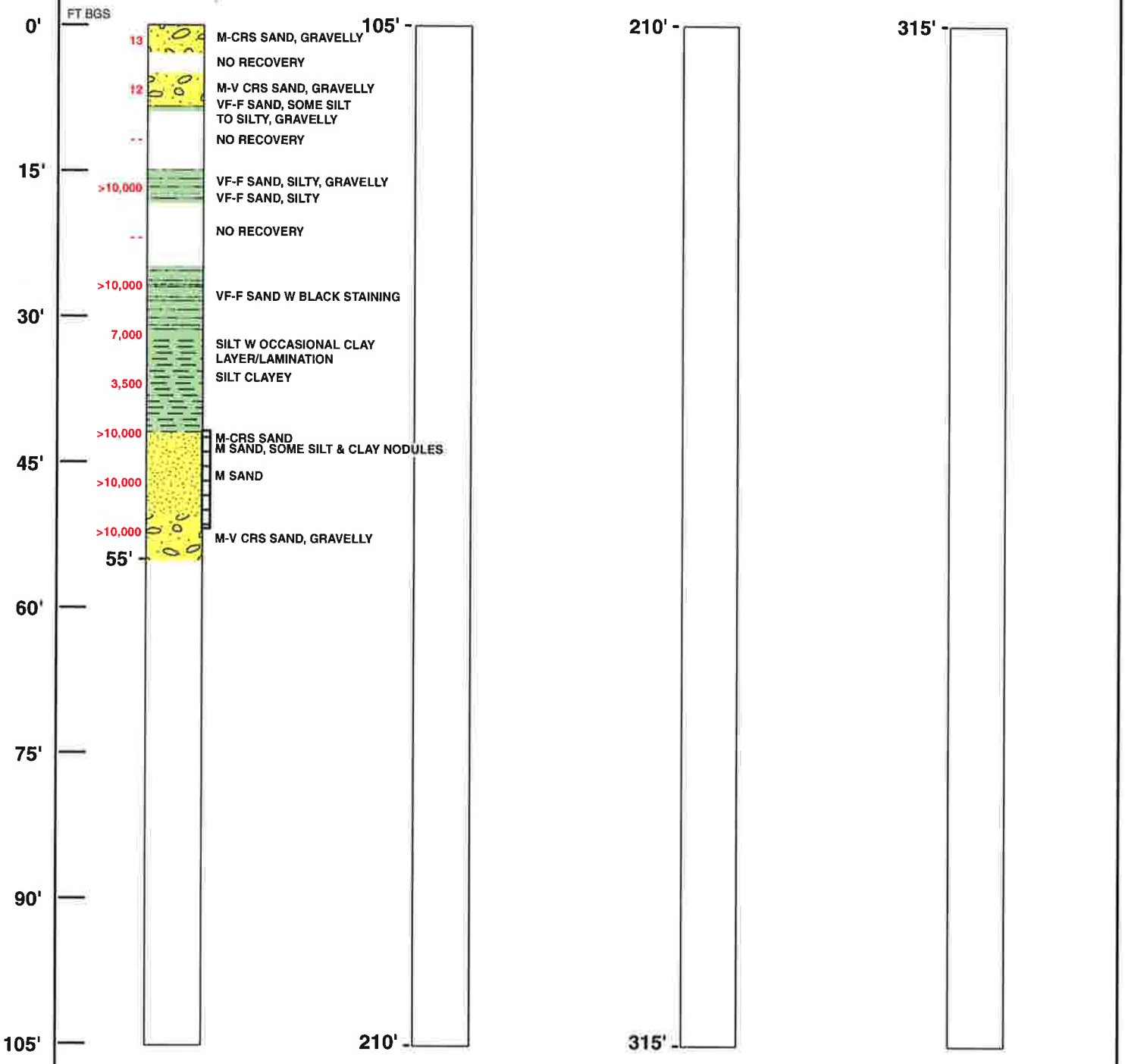
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-70

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.95 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Rotasonic Core Barrel	55 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hansen	Boart Longyear	Rotasonic	7/8/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_70.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

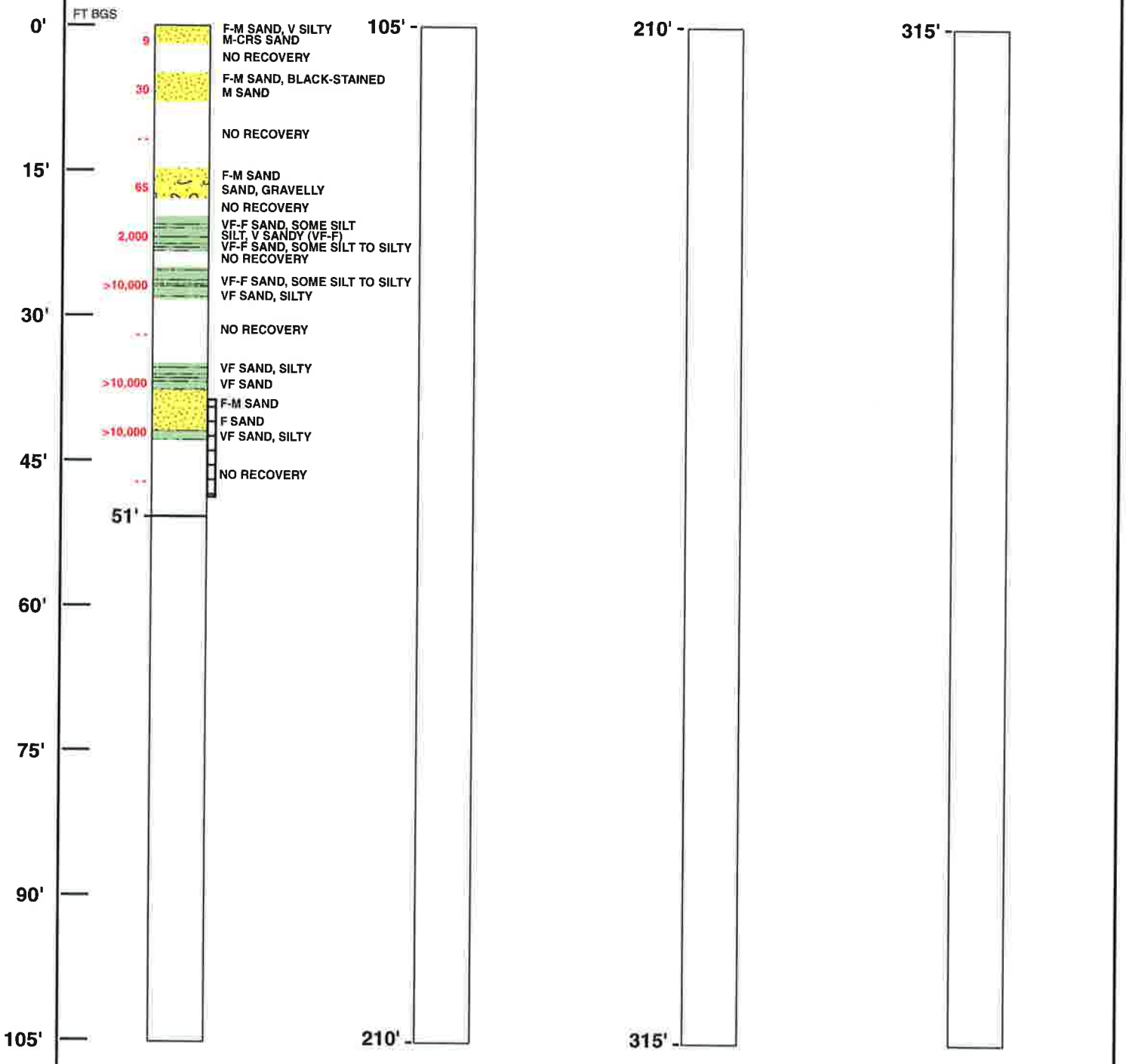
OBSERVATION WELL NO. GM-71

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1118.00 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
John Keller	Continuous	Rotasonic Core Barrel	51 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Mike Hansen	Boart Longyear	Rotasonic	7/9/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_71.AI

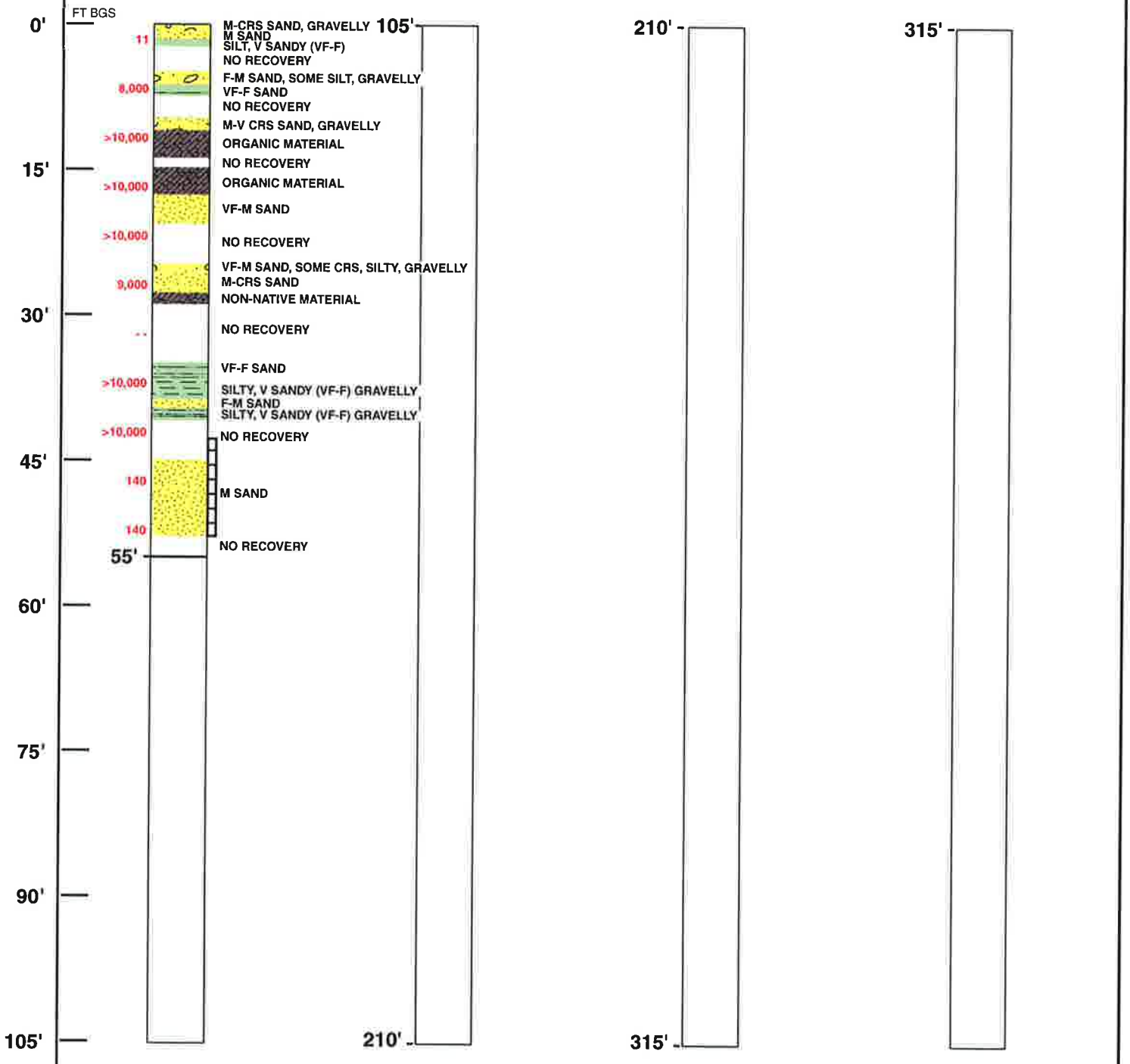
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-72

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.83 Feet MSL
GEOLOGIST John Keller	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 55 Feet BLS
DRILLER Mike Hansen	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 7/9/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_72.AI

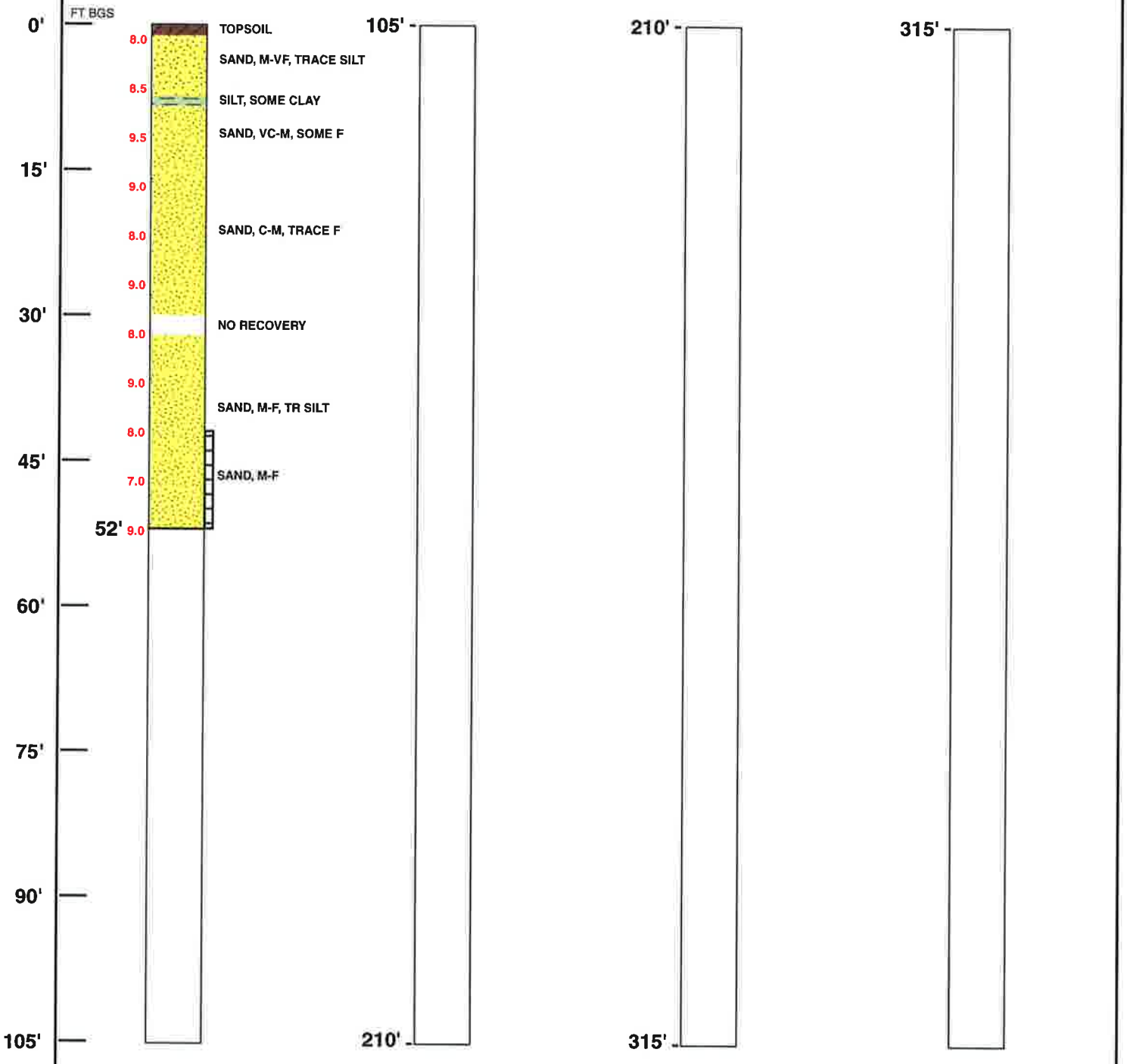
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-73

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1111.42 Feet MSL
GEOLOGIST Pat Bartnik	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 52 Feet BLS
DRILLER Mike Mueller	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/15/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_73.AI

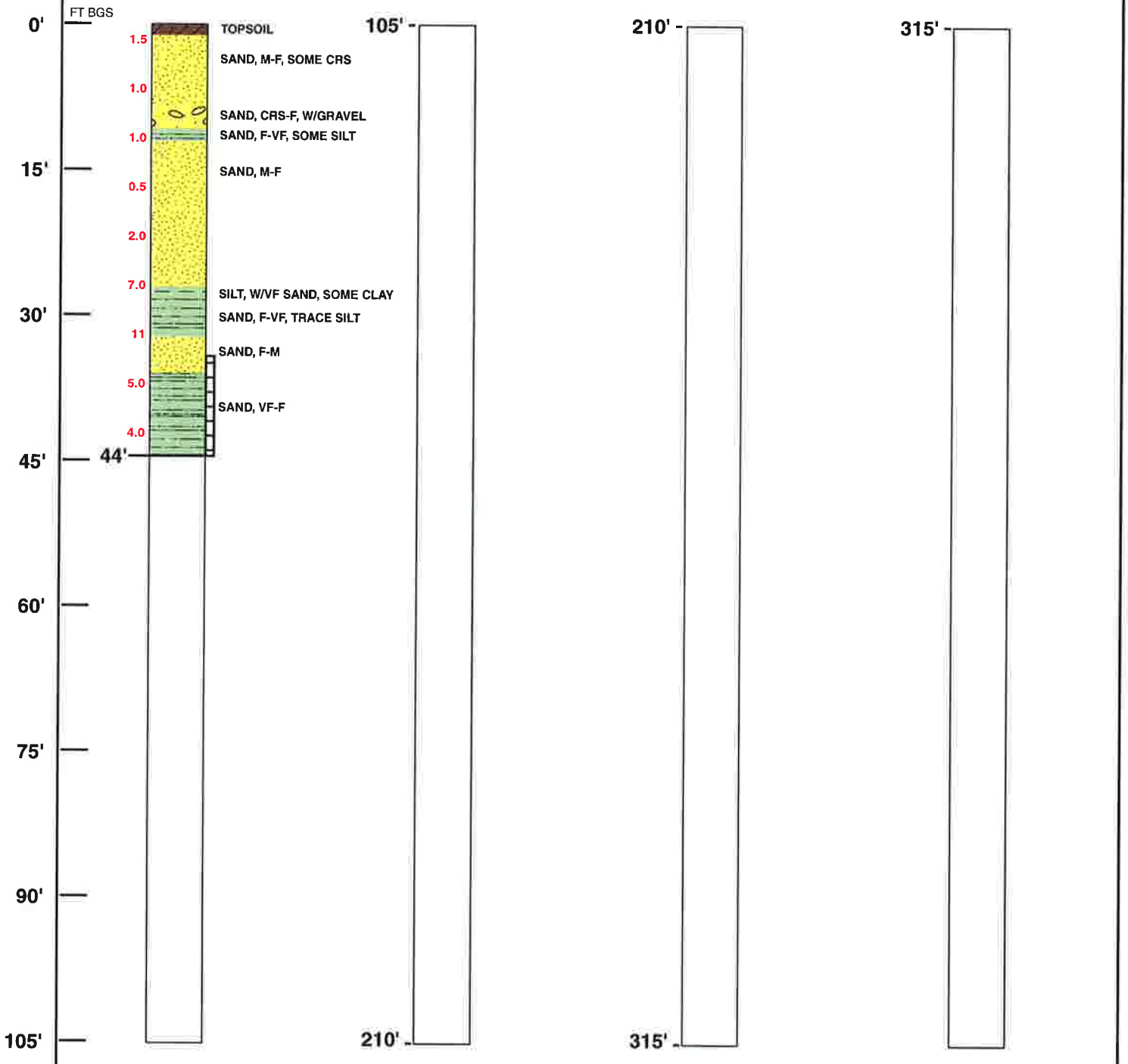
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-74

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1100.95 Feet MSL
GEOLOGIST Jeff Guzick	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 44 Feet BLS
DRILLER Mike Mueller	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/16/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_74.AI

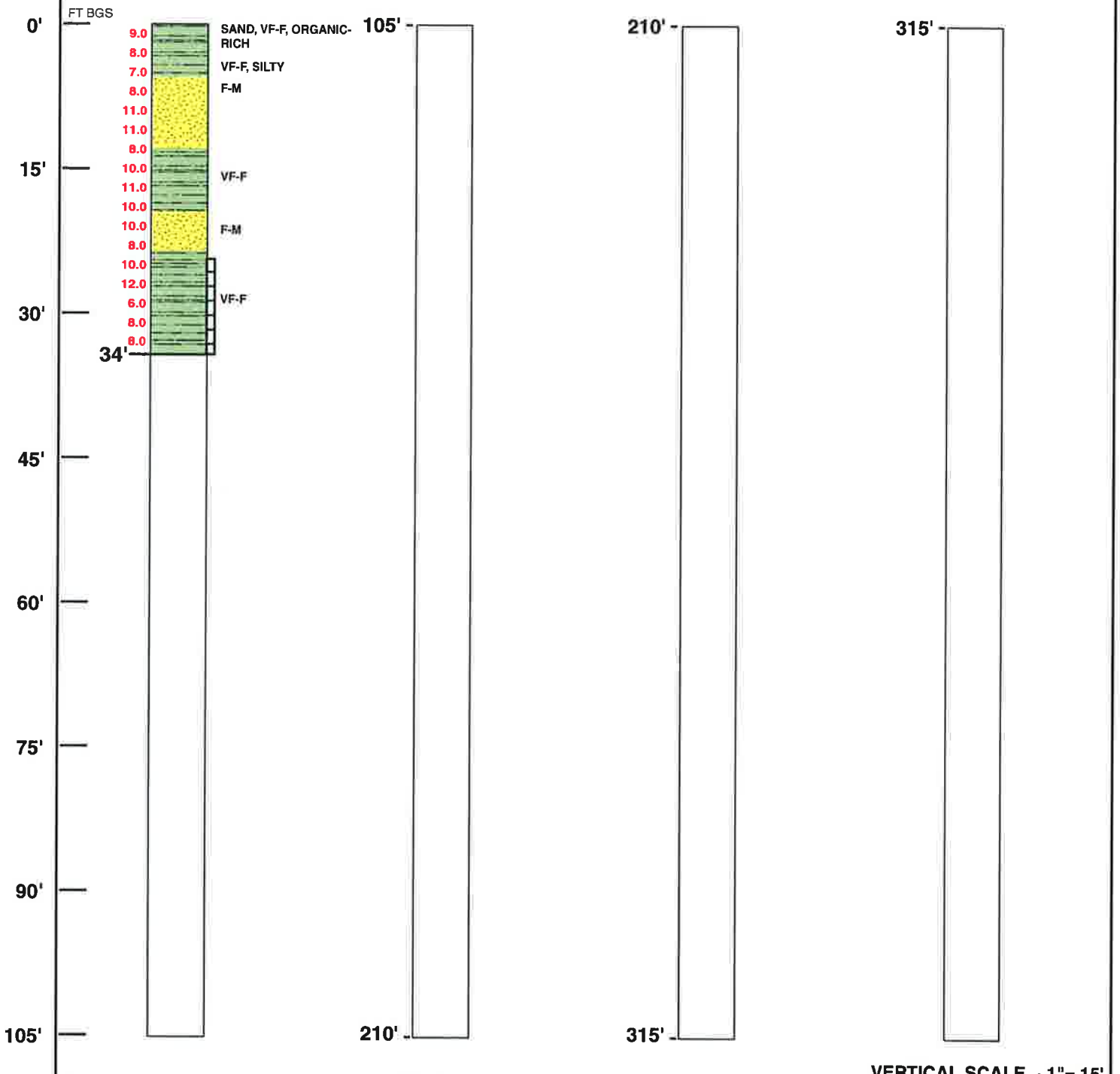
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-75

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.05 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Jeff Guzick	Continuous	Splitspoon	34 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Mueller	Boart Longyear	Hollow Stem Auger	8/17/00



VERTICAL SCALE ~1"= 15'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_75.AI

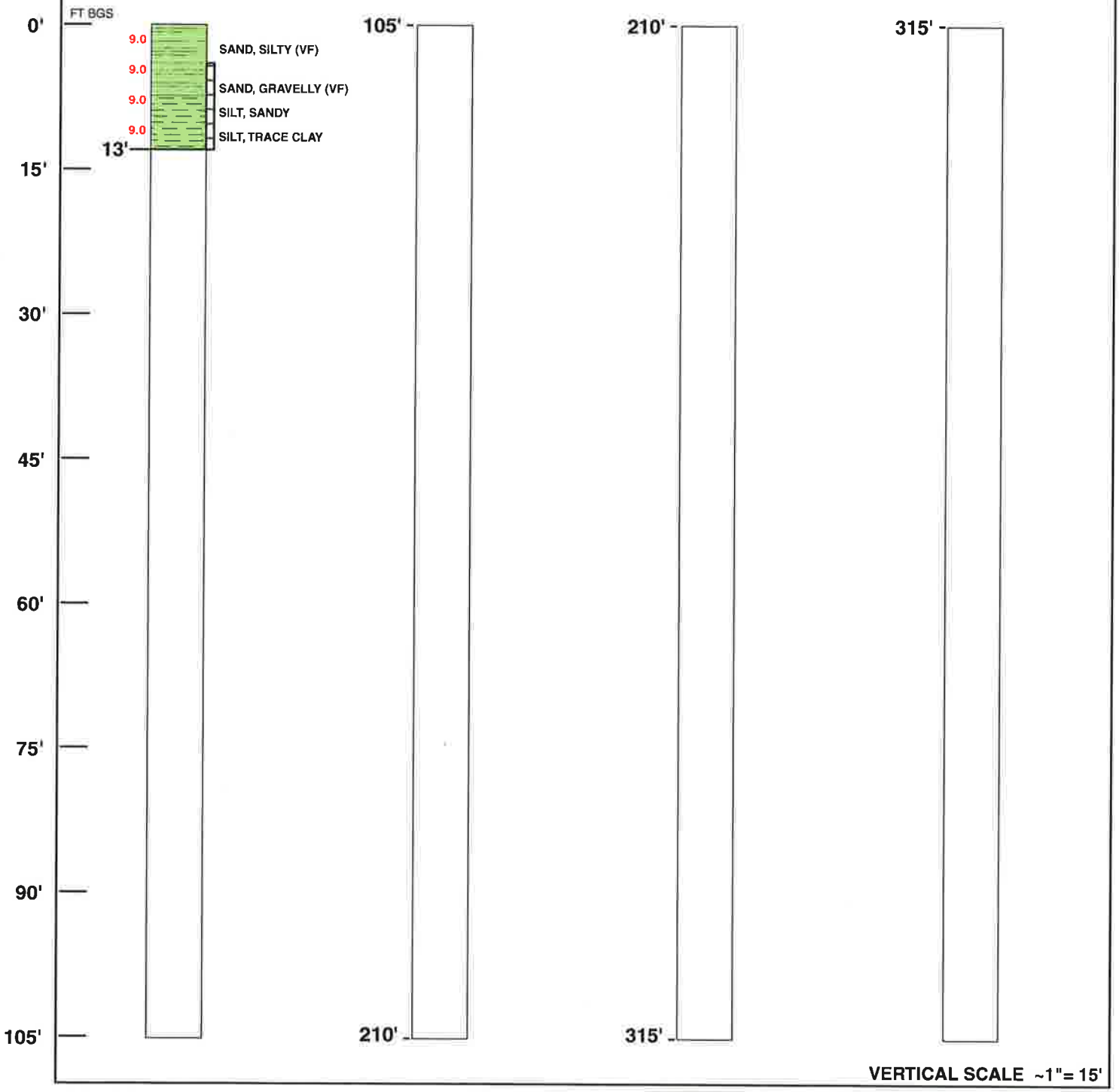
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-76

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1056.36 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill Schulz	Continuous	Splitspoon	13 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Sean	Boart Longyear	Hollow Stem Auger	12/5/00



VERTICAL SCALE ~1"= 15'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_76.AI

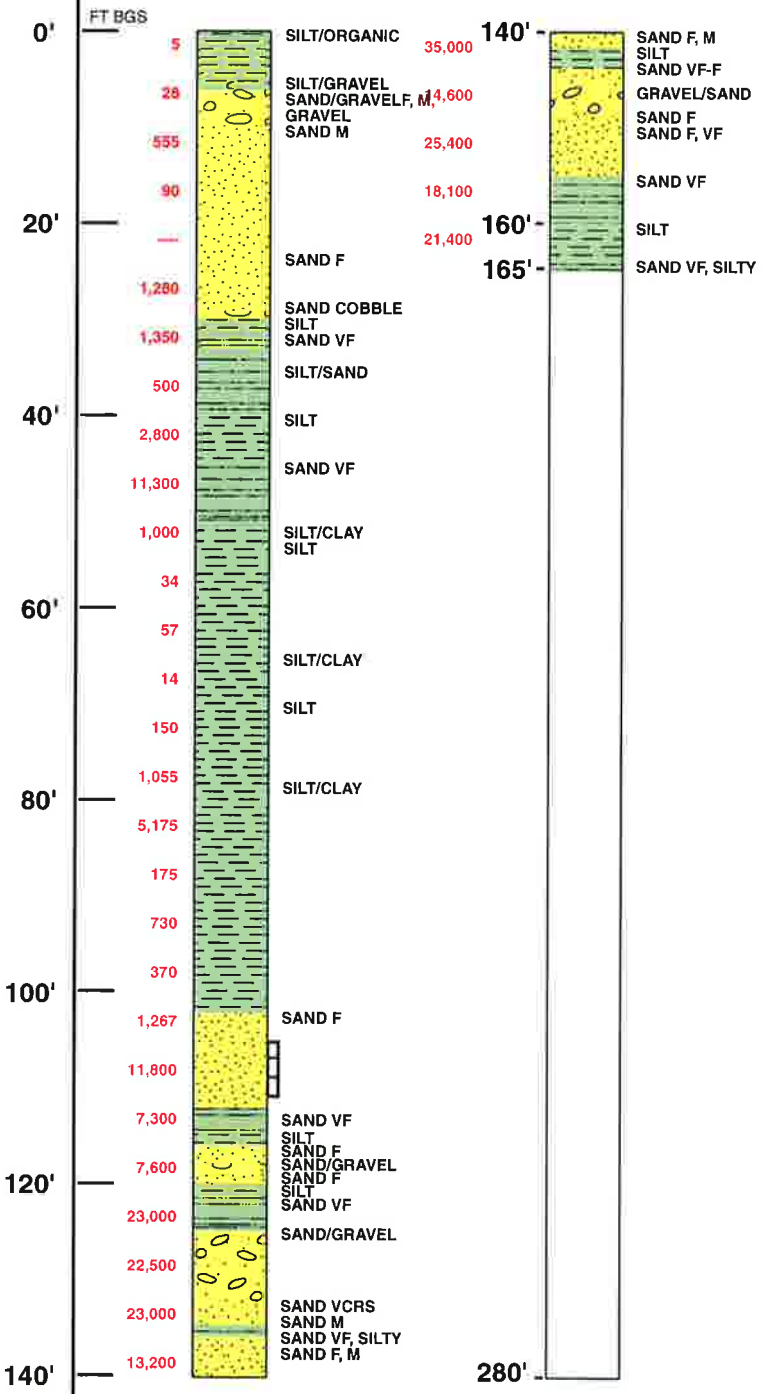
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-77

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1043.06 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	165 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Stacy	Boart Longyear	Rotasonic	09/08/03



VERTICAL SCALE ~1"= 20'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_77.AI

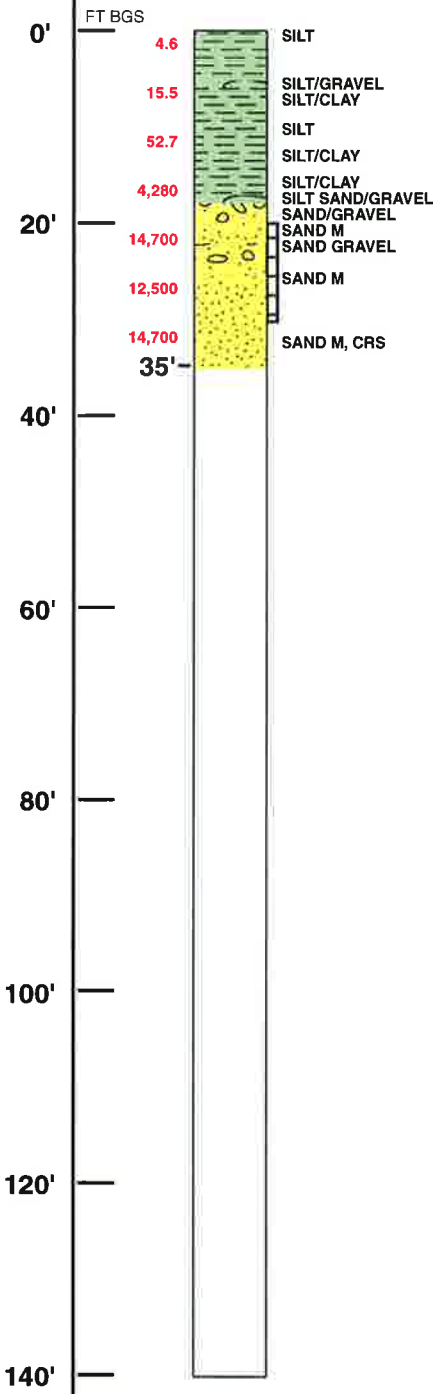
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-78

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1049.24 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	35 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Stacy	Boart Longyear	Rotasonic	09/10/03



VERTICAL SCALE ~1"= 20'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_78.AI

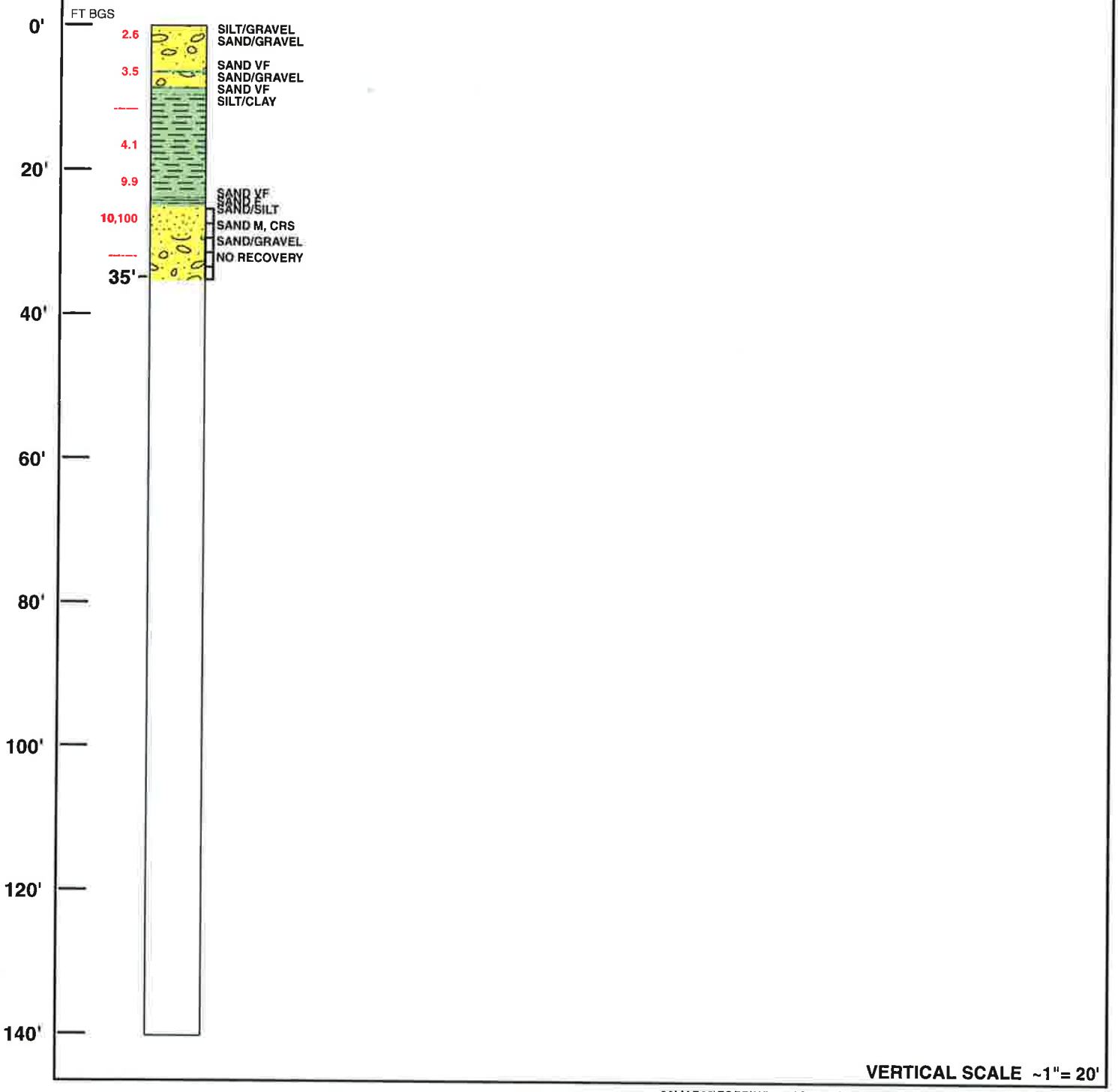
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-79

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1052.81 Feet MSL
GEOLOGIST B. Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 35 Feet BLS
DRILLER Stacy	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 09/10/03



VERTICAL SCALE ~1"= 20'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_79.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-80

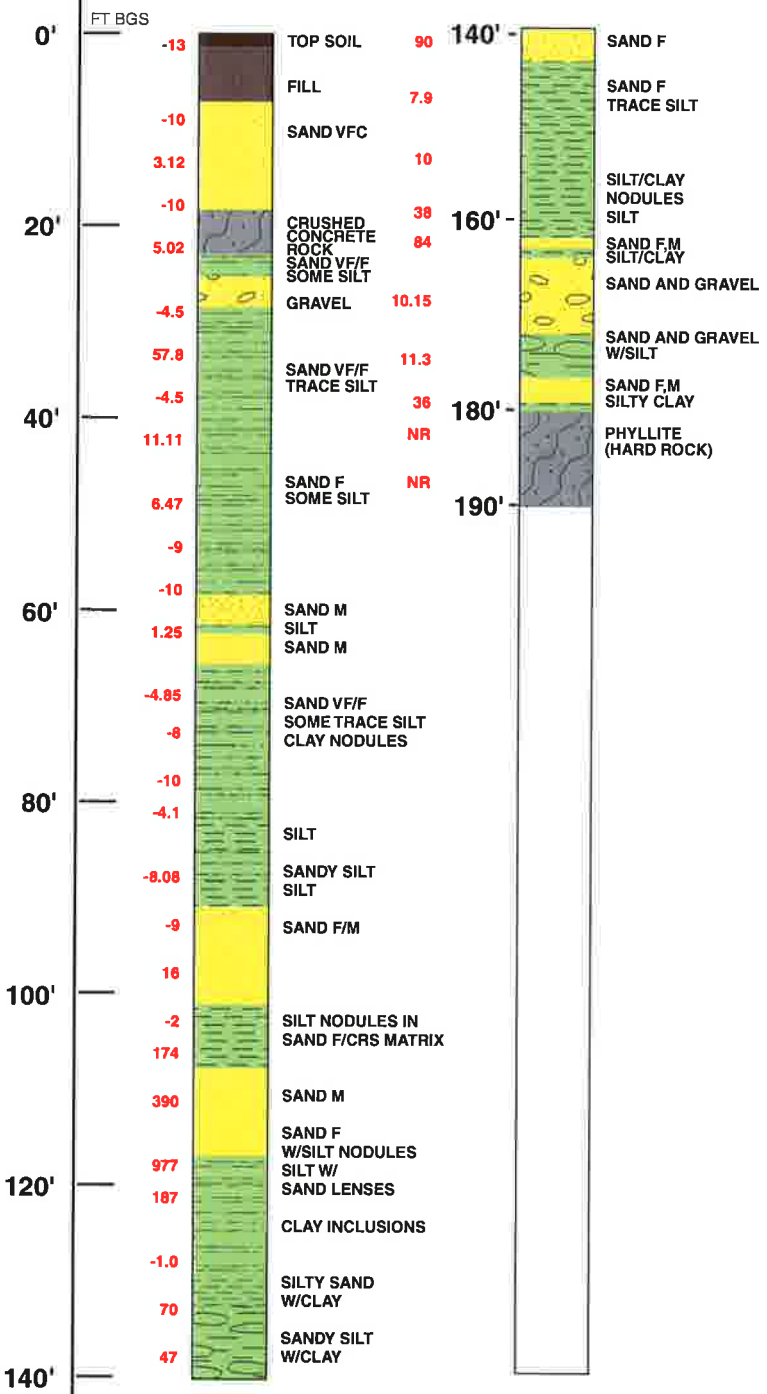
PROJECT FORD/KINGSFORD WI001075.0015

LOCATION
Kingsford, Michigan

LAND SURFACE ELEVATION
1120.75 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
P. Lenaker			190 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
			4/21/04



VERTICAL SCALE ~1"= 20'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_80.AI

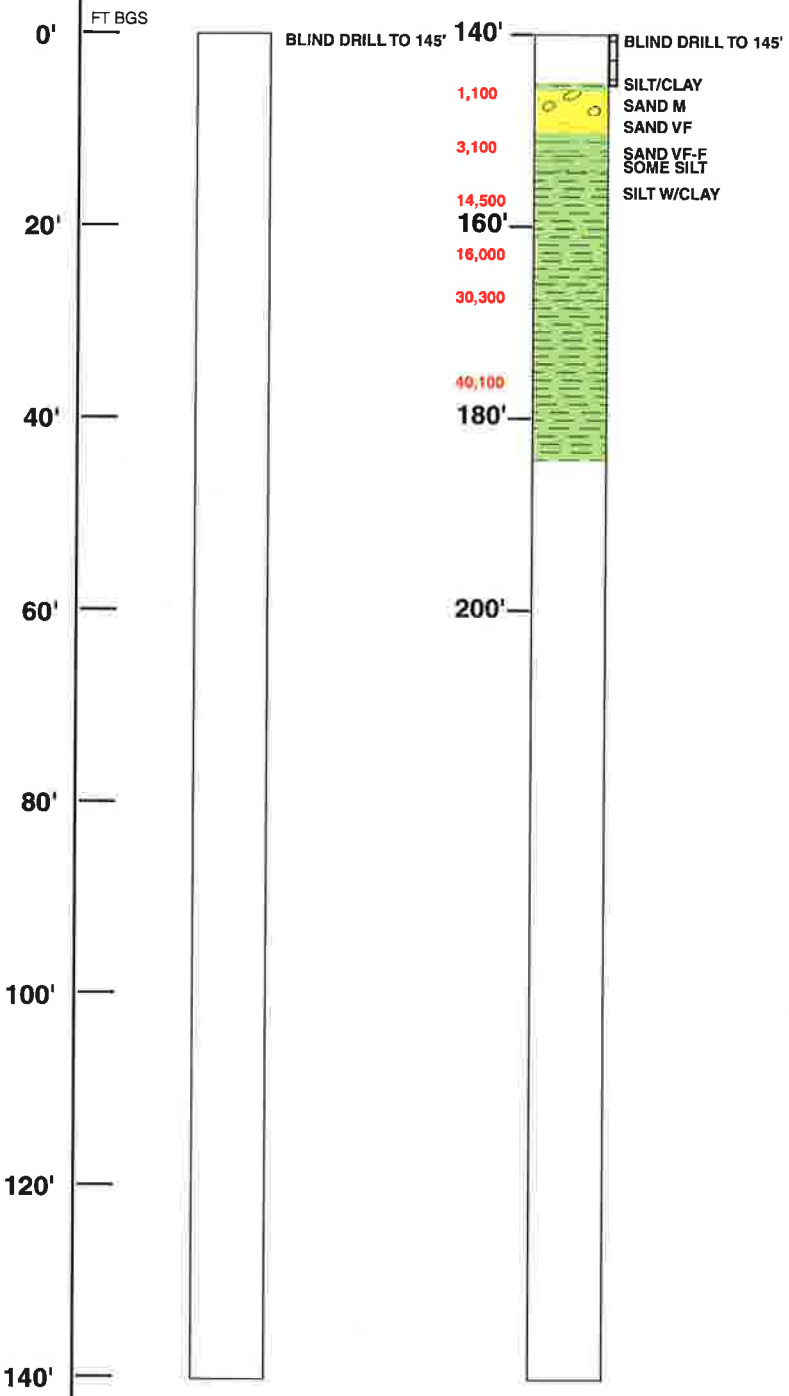
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-81A

PROJECT FORD/KINGSFORD WI001025.0003

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1110.84 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	185 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Bill	Boart Longyear	Rotasonic	5/26/04



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM-81A.AI

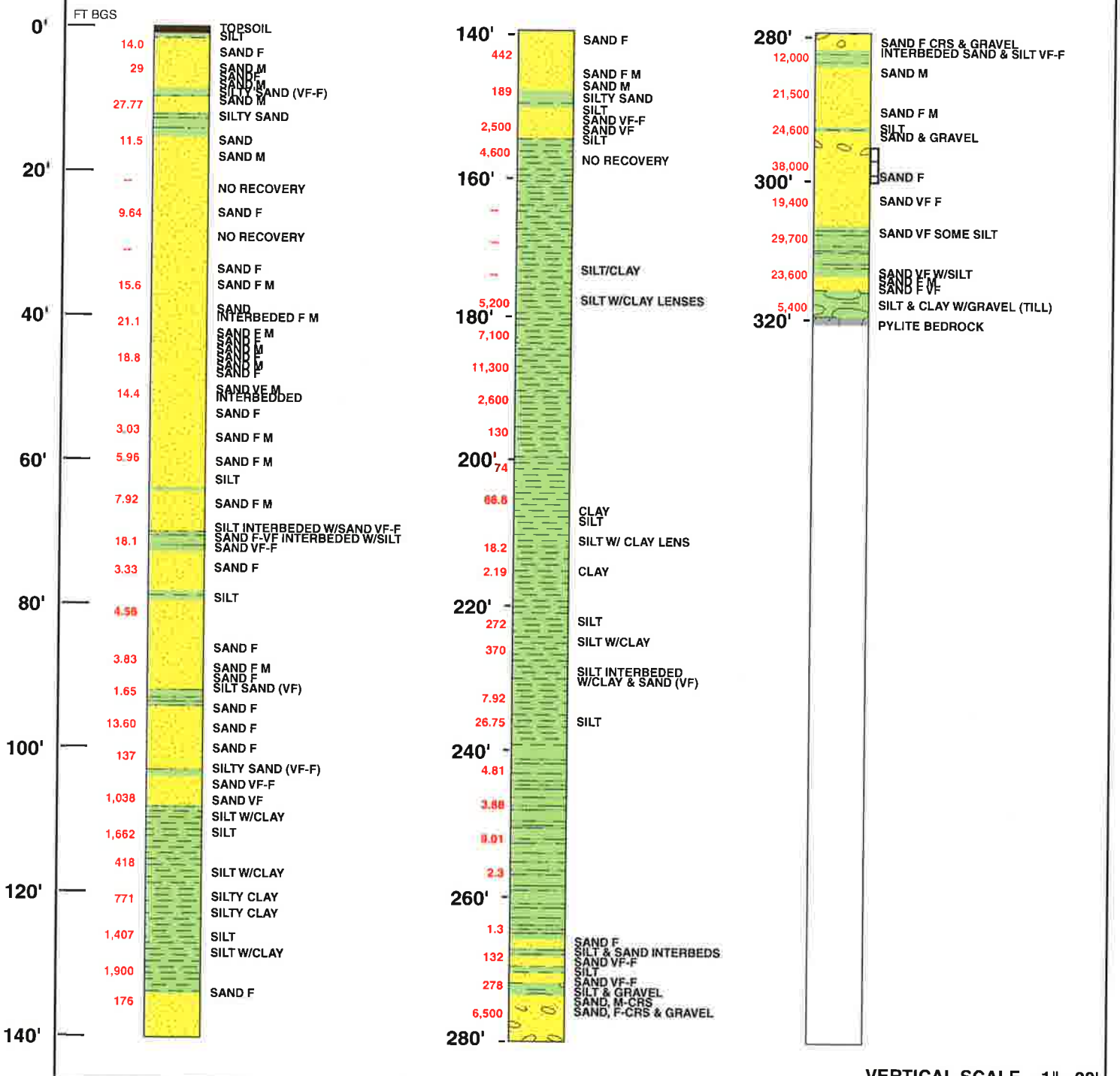
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-81B

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1111.32 Feet MSL
GEOLOGIST P. Lenaker	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Rotasonic Core Barrel	TOTAL DEPTH DRILLED 321 Feet BLS
DRILLER Alvin Anderson	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Rotasonic	DATE BORING COMPLETED 5/24/04



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_81B.AI

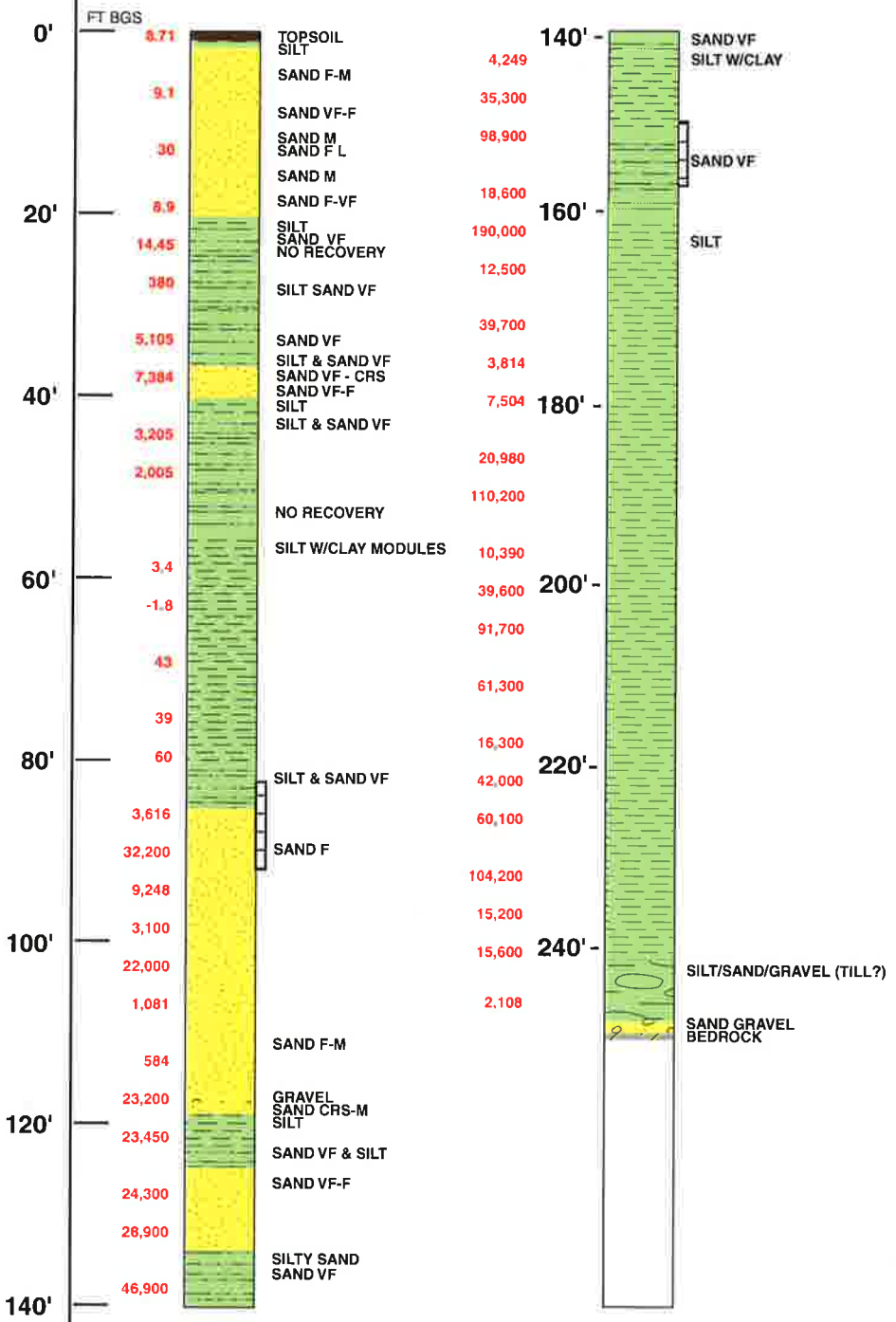
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-82A/B

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.86 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	250 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Bill Knight	Boart Longyear	Rotasonic	6/3/04



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_82AB.AI

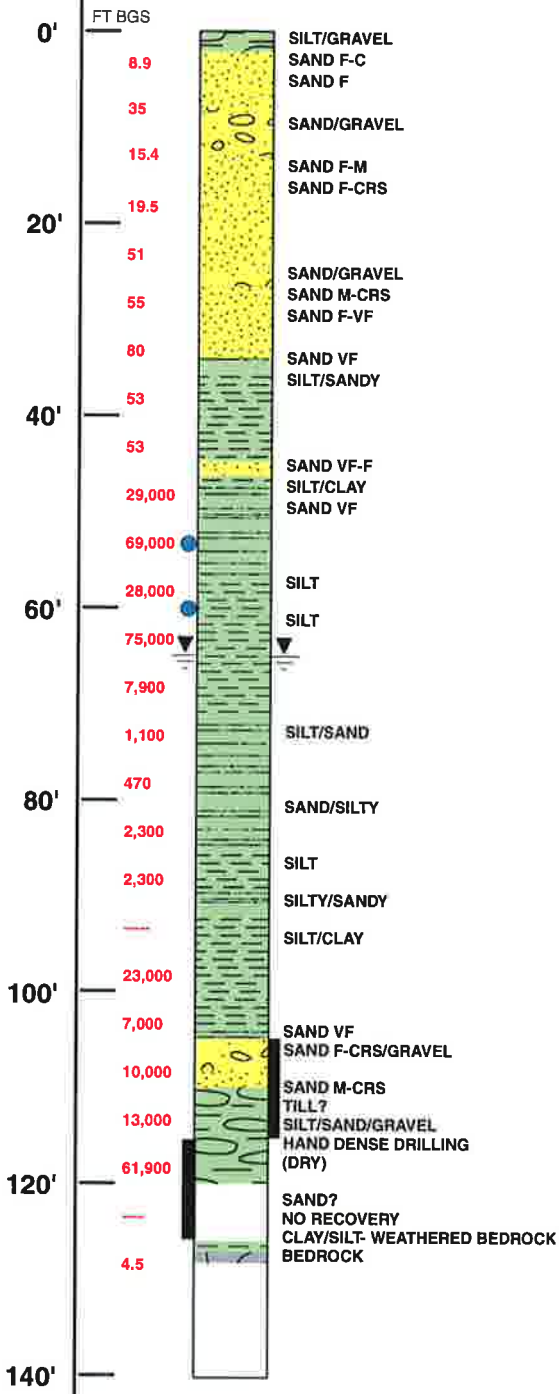
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-83

PROJECT FORD/KINGSFORD WI001025.0003

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1131.92 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen/B. Evans	Continuous	Rotasonic Corebarrel	128 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
John Weeks	Boart Longyear	Rotasonic	6/07/04



VERTICAL SCALE ~1"= 20'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_83.AI

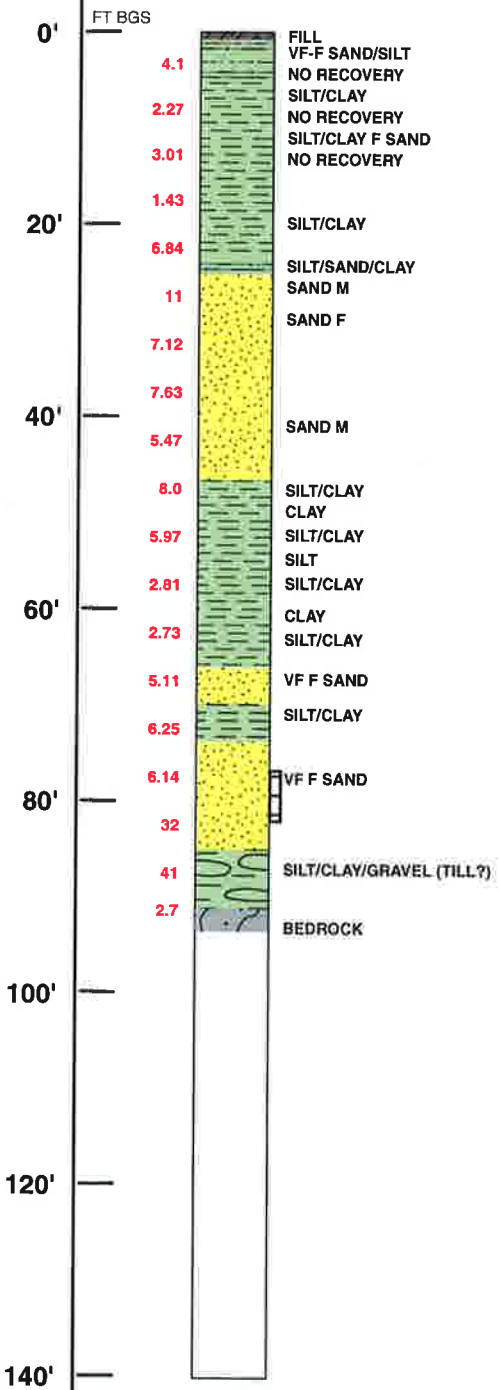
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-84

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1052.72 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	93 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	06/29/04



VERTICAL SCALE ~1"= 20'

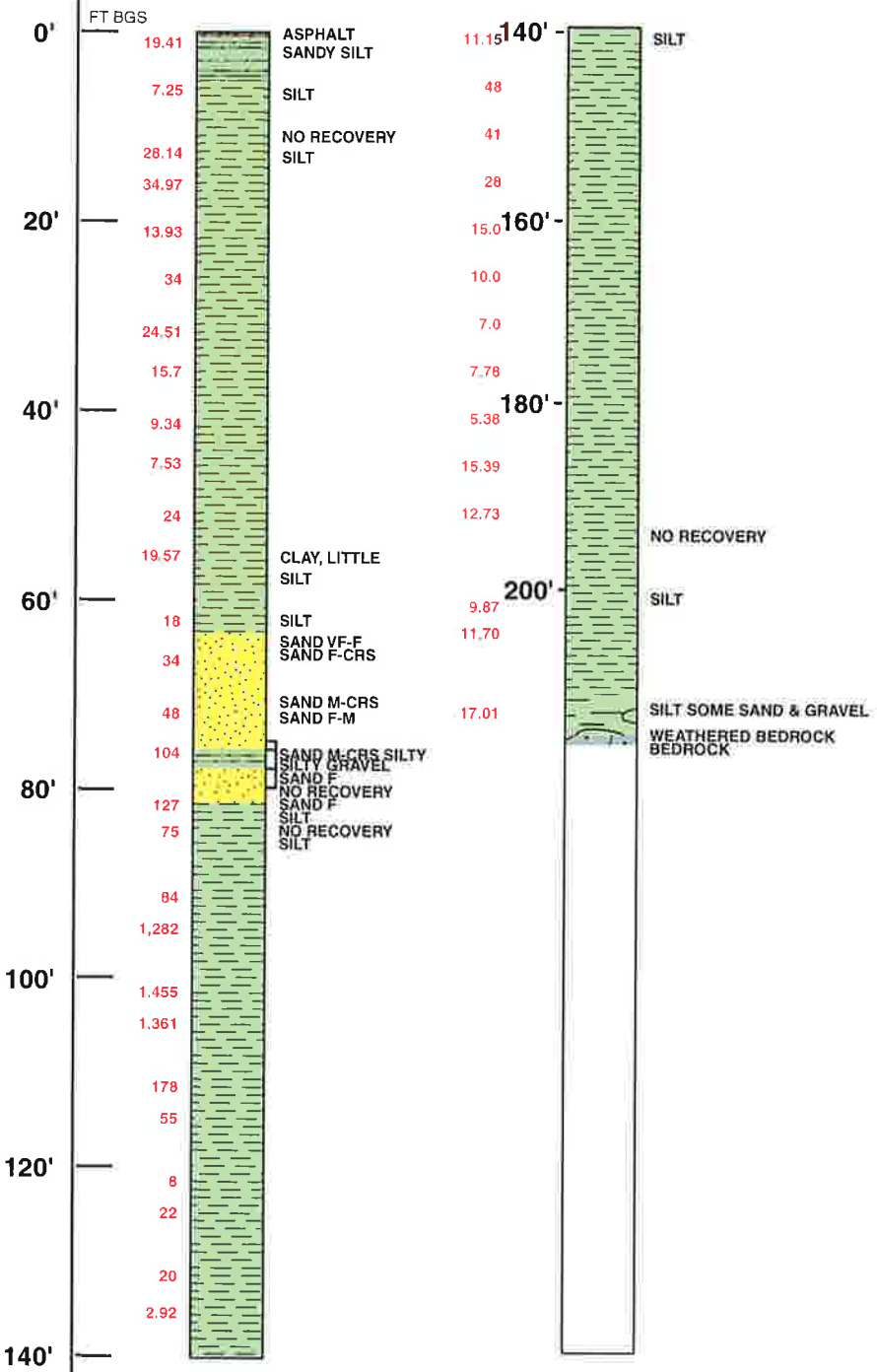
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-85

PROJECT FORD/KINGSFORD WI001075.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1070.49 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	215 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	8/06/04



VERTICAL SCALE ~1"= 20'

30MAR05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GM_85.AI

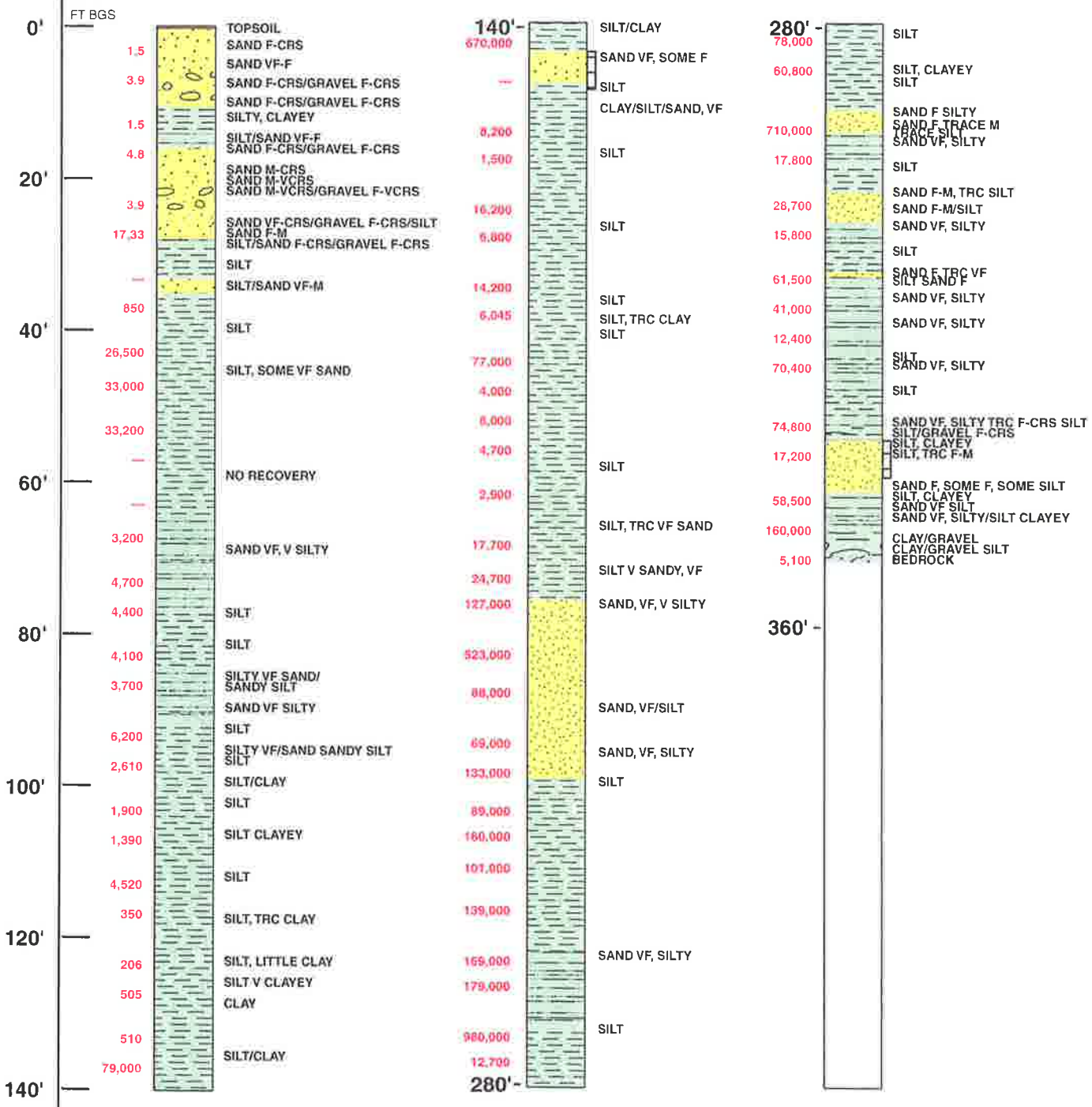
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-86 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1115.22 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	351 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hansen	Boart Longyear	Rotasonic	1/18/06 - 1/20/06



VERTICAL SCALE ~1"= 20'

14APR06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GM_86AB.AI

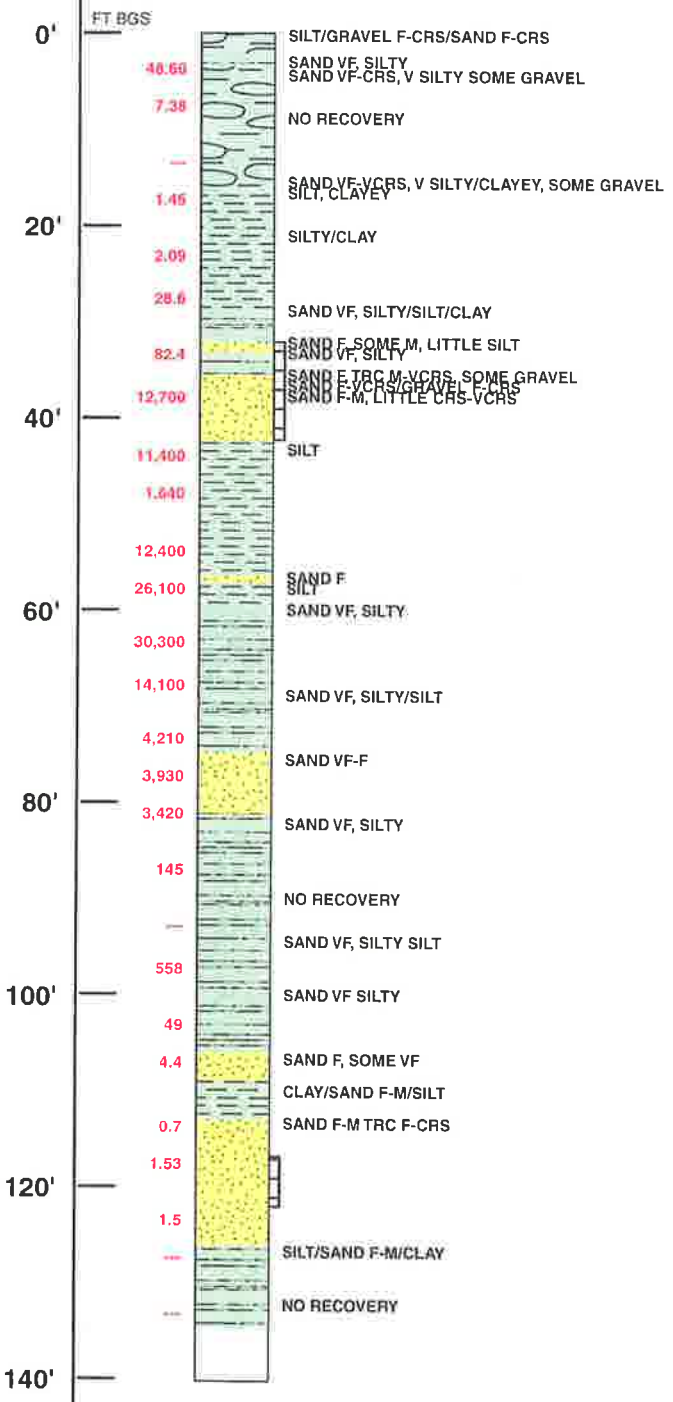
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-87 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1055.01 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Rotasonic Core Barrel	135 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike Hansen	Boart Longyear	Rotasonic	1/24/06



VERTICAL SCALE ~1"= 20'

14APR06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GM_87AB.AI

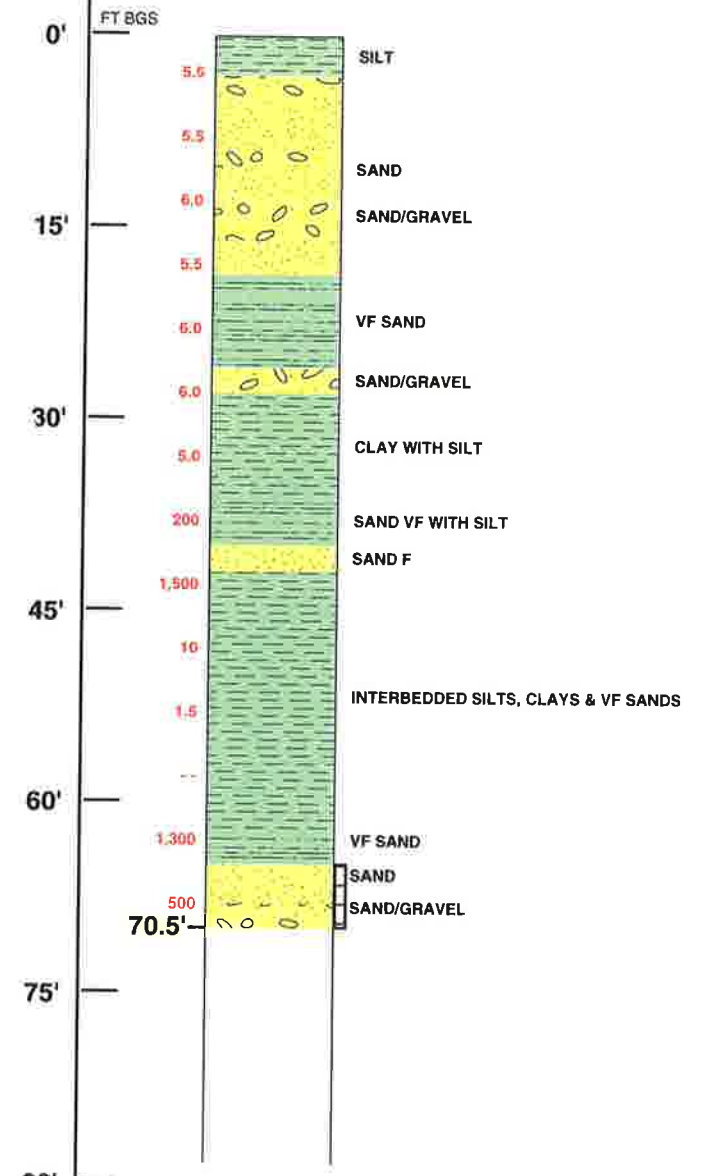
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-100

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1103.69 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 70.5 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 7/23/98



VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST798\DRAWING: GM_100.AI

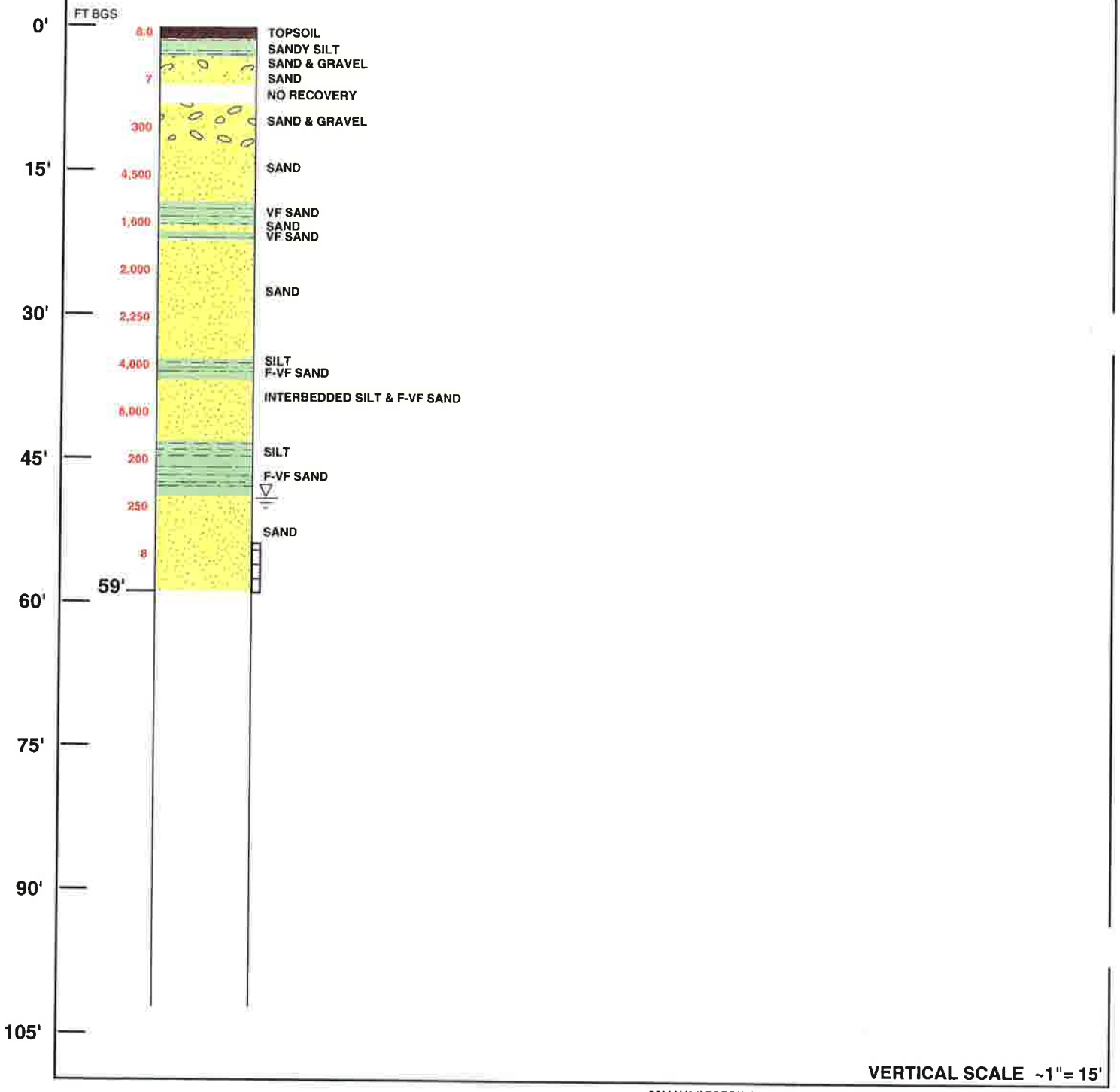
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GM-118D

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.64 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	59 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/10/98



VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST798\DRAWING: GM_118D.AI

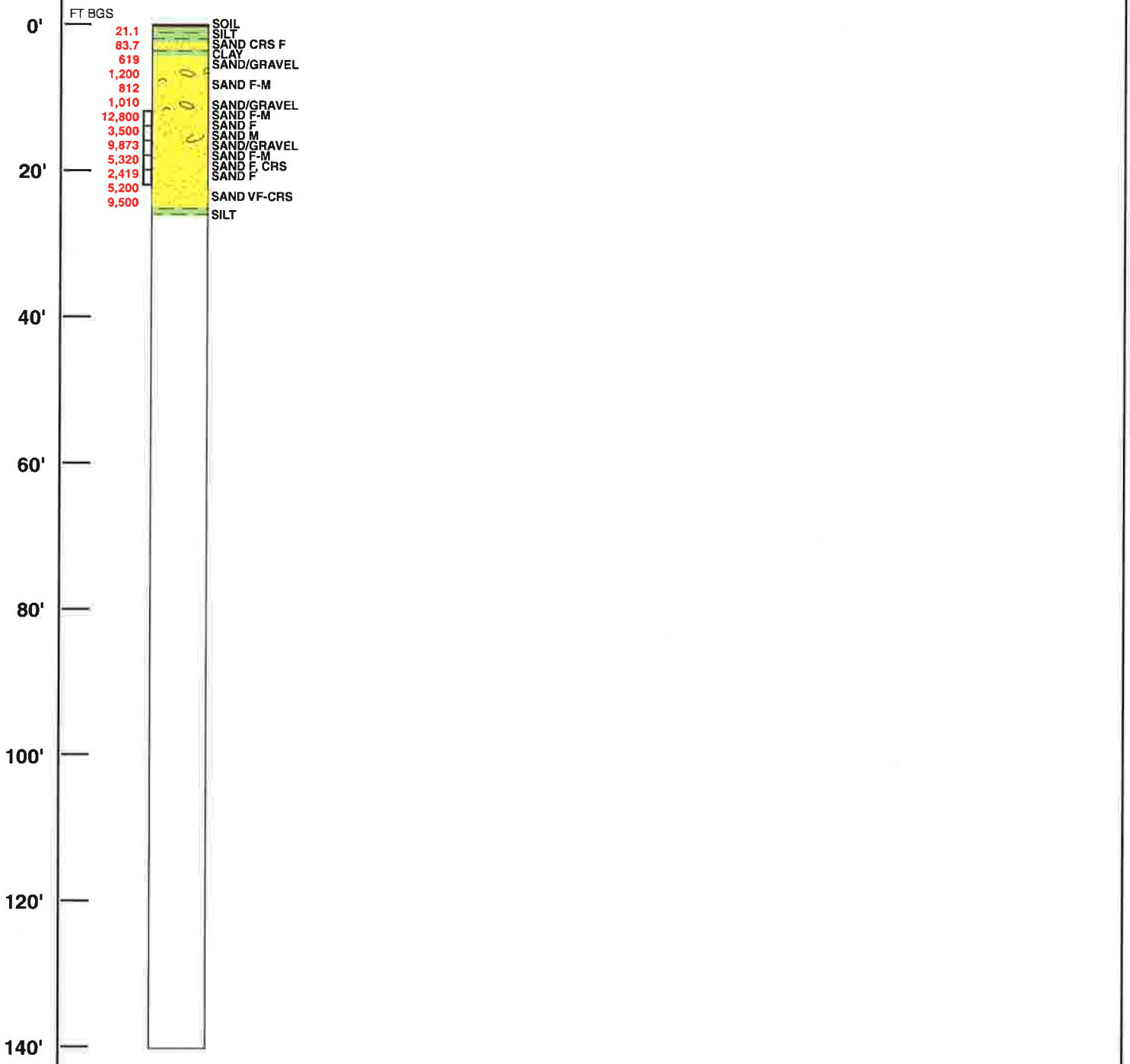
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMIM-1

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.73 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Paul Lenaker	Continuous	Splitspoon	26 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	10/27/03



VERTICAL SCALE ~1"= 20'

22DEC03\FORD\WI0637\2003\GRAPHICS\DRAWING: GMIM-1.AI

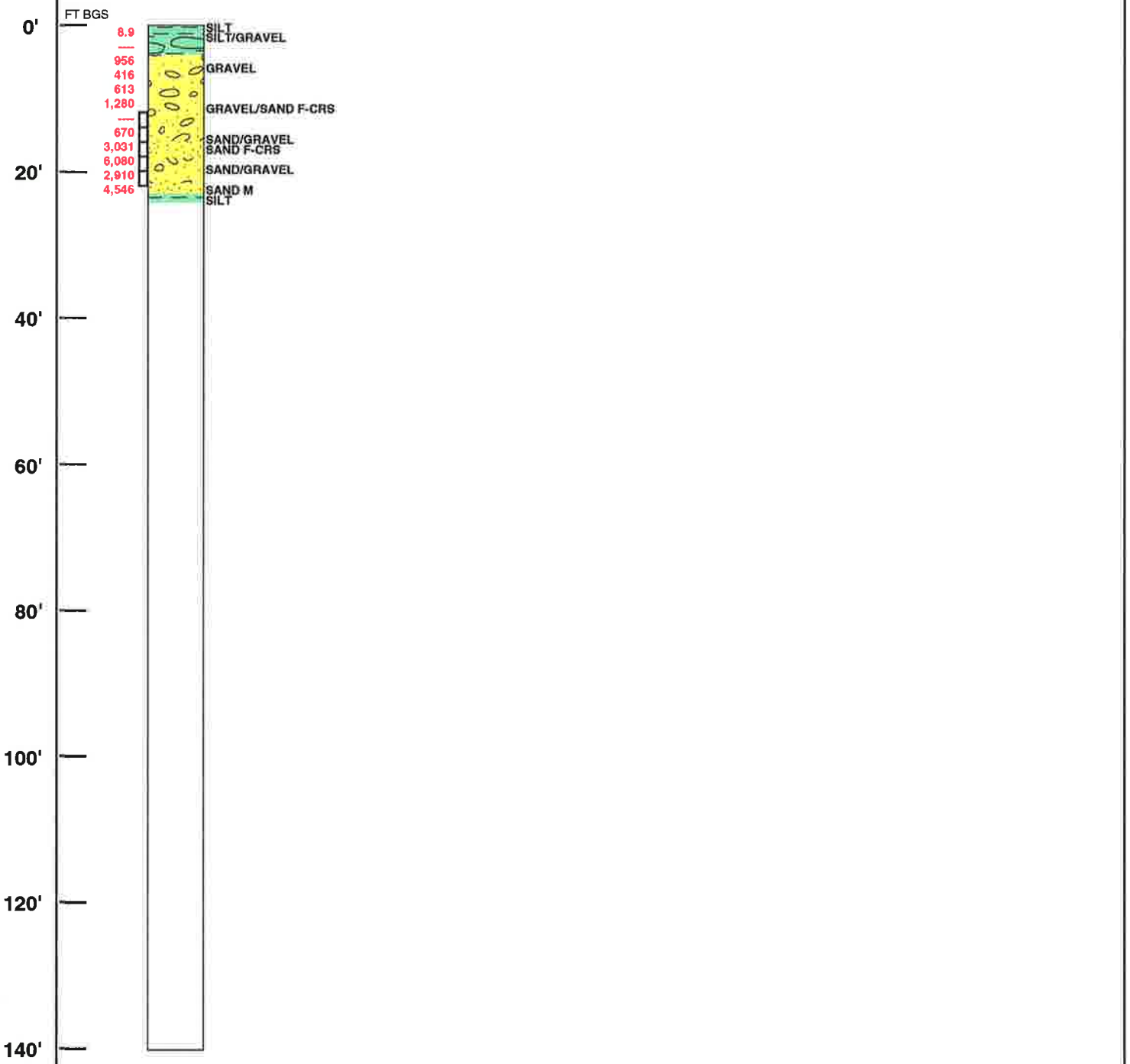
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMIM-2

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.73 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Paul Lenaker	Continuous	Splitspoon	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	10/27/03



VERTICAL SCALE ~1"= 20'

22DEC03\FORD\WI0637\2003\GRAPHICS\DRAWING: GMIM-2.AI

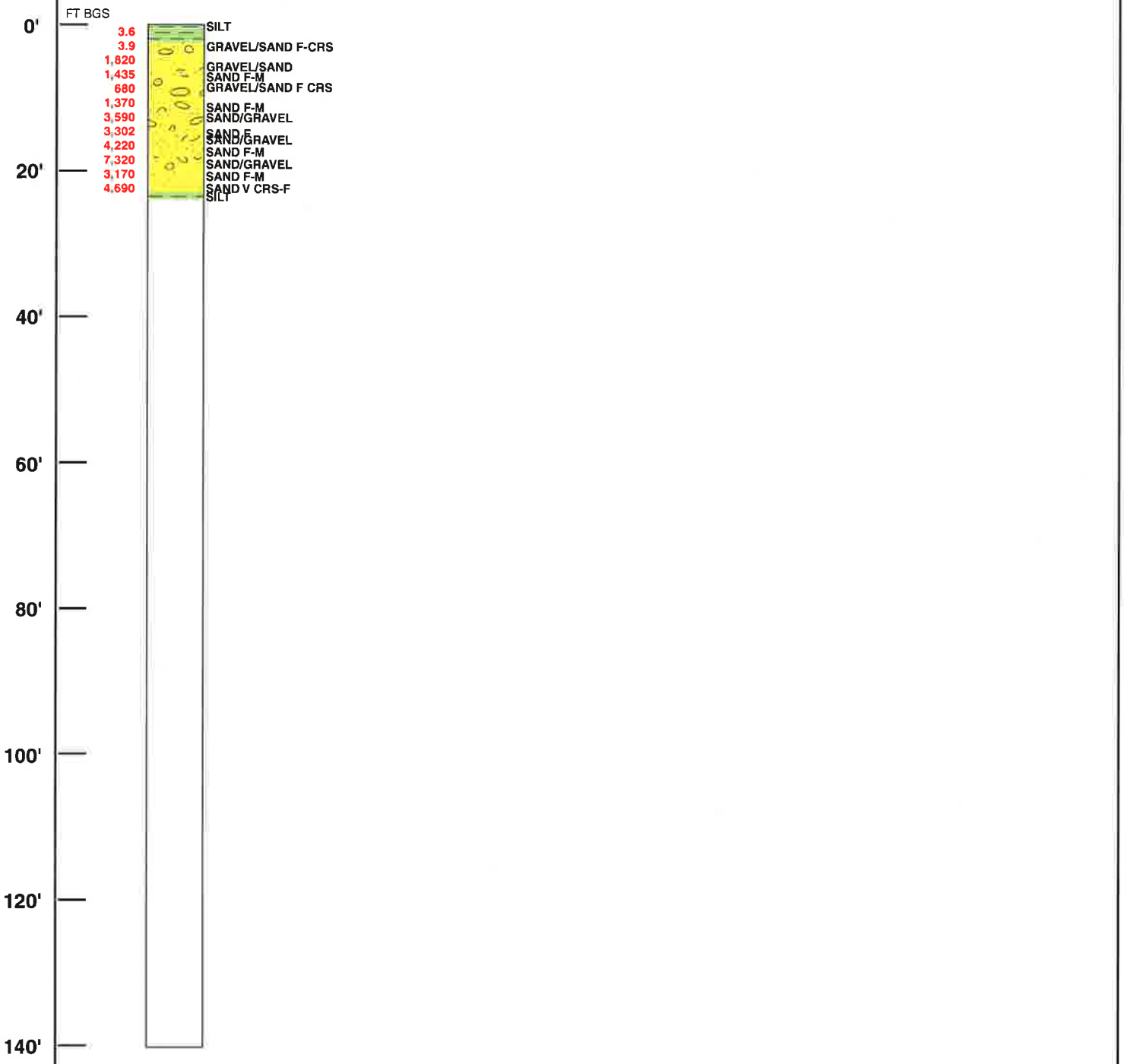
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMIM-3

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1042.15 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Paul Lenaker	Continuous	Splitspoon	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	10/27/03



VERTICAL SCALE ~1"= 20'

31MAR09\FORD\WI0637\2003\GRAPHICS\DRAWING: GMIM-3.AI

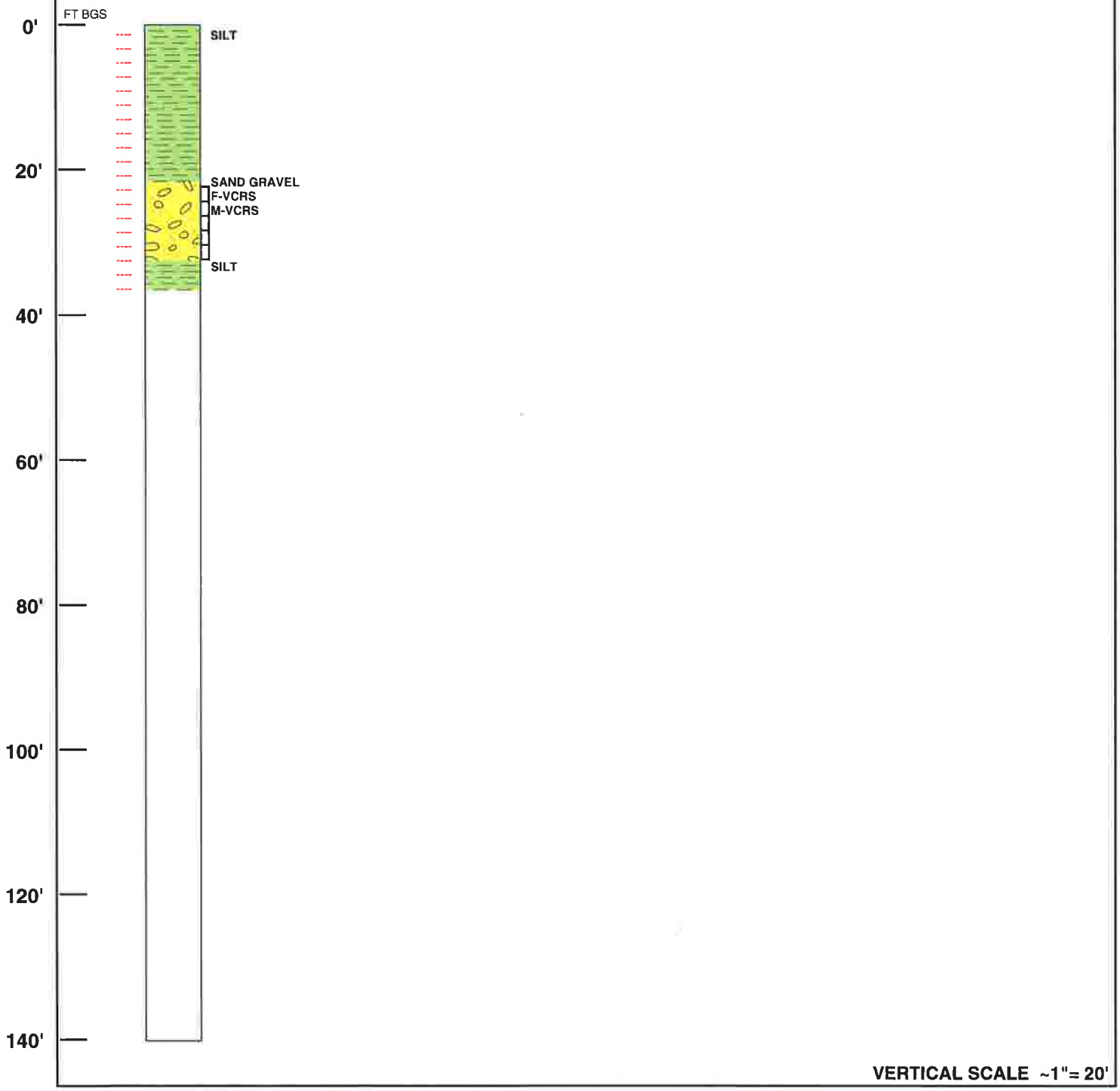
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZ-1

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1050.11 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Splitspoon	36 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Todd	Boart Longyear	Hollow Stem Auger	8/27/01



VERTICAL SCALE ~1"= 20'

26JAN04\FORD\WI0637\2004\GRAPHICS\STRAG LOGS\DRAWING: GMPZ-1.AI

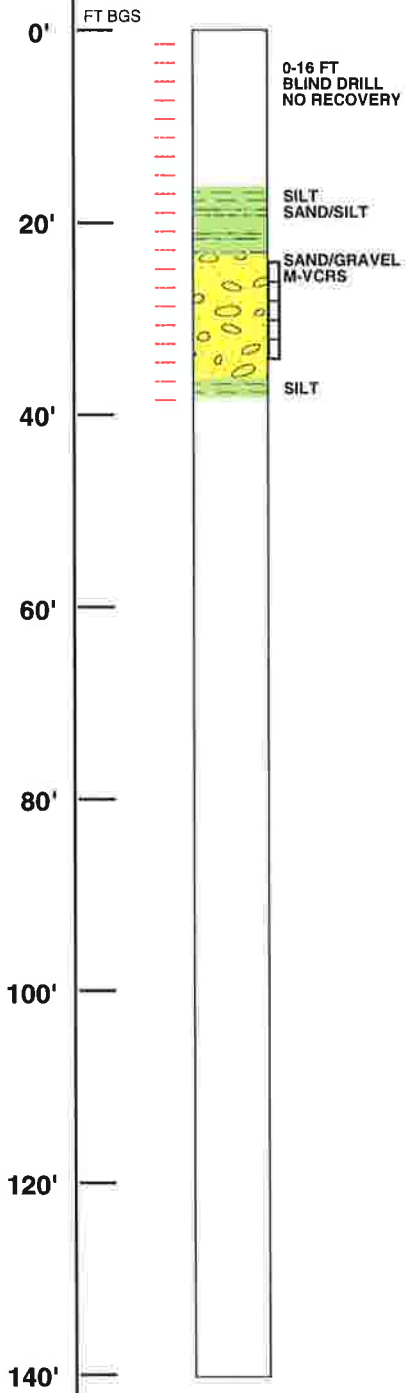
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZ-2

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1050.68 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Todd	Boart Longyear	Hollow Stem Auger	8/28/01



VERTICAL SCALE ~1"= 20'

24JAN04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMPZ-2.AI

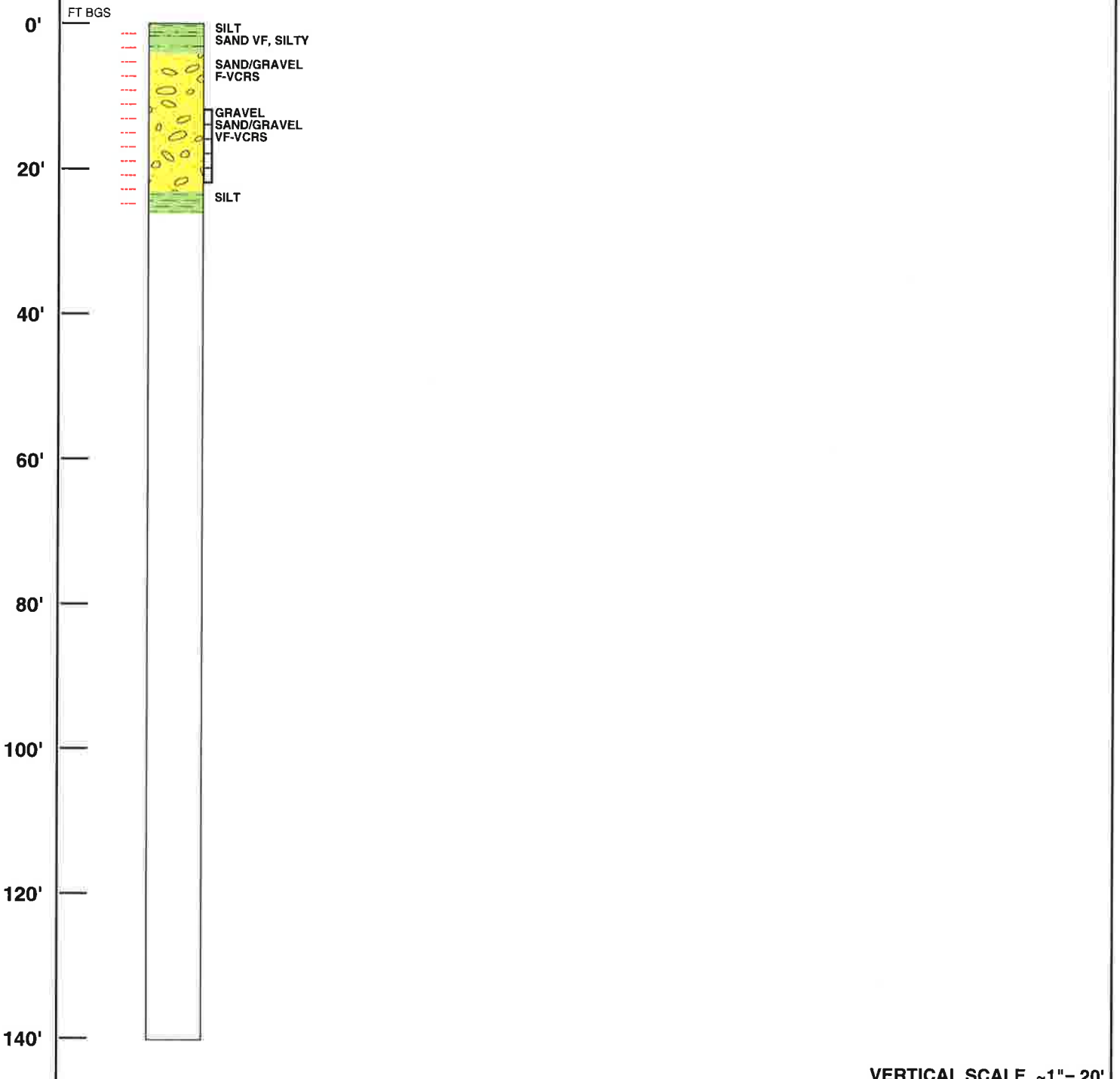
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZ-3

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1041.50 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
John Keller	Continuous	Splitspoon	26Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Todd	Boart Longyear	Hollow Stem Auger	8/27/01



VERTICAL SCALE ~1"= 20'

26JAN04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\\DRAWING: GMPZ-3.AI

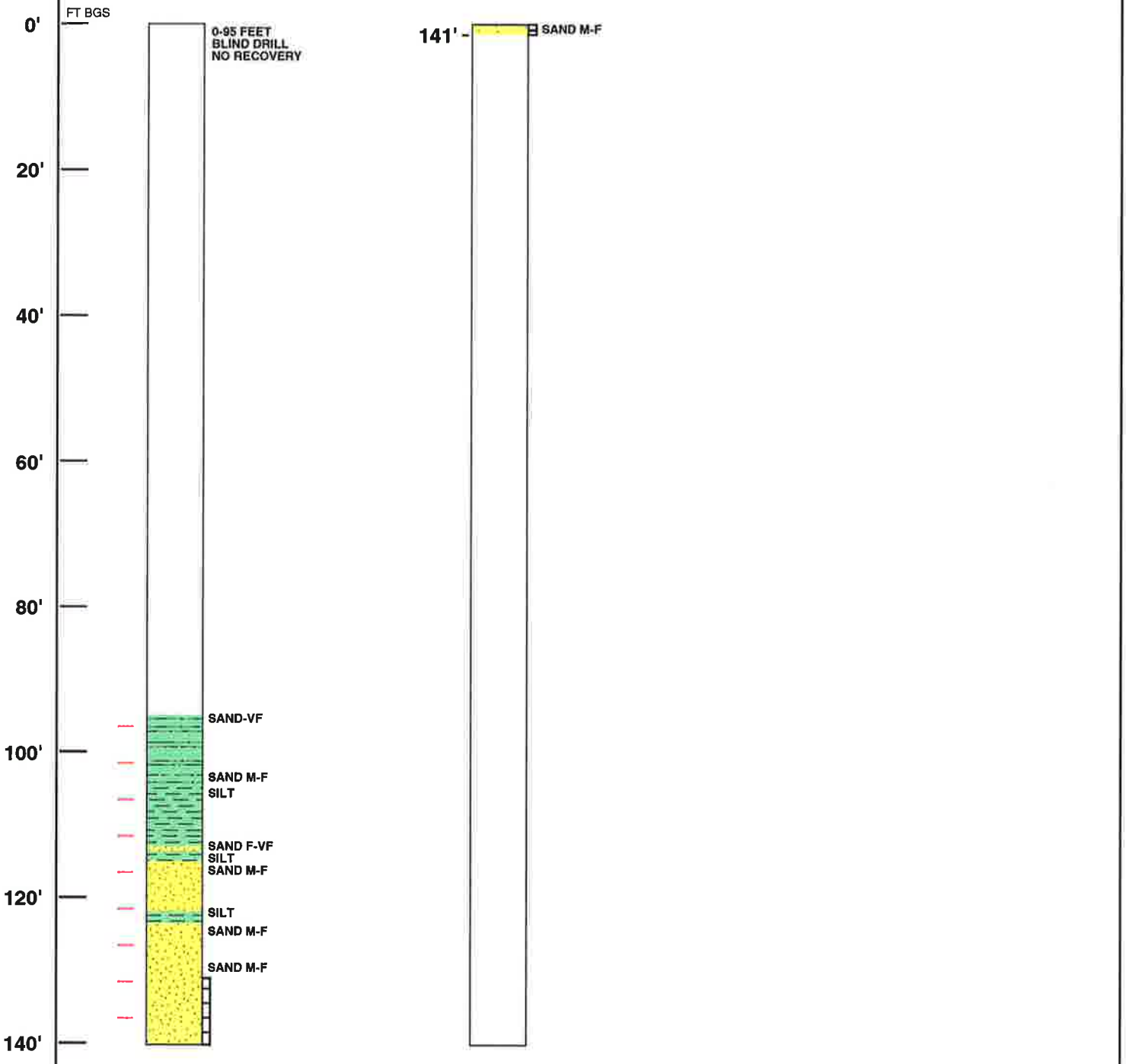
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZ-4

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1058.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. MacAdam	Continuous	Rotasonic Core Barrel	141 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
John Weeks	Boart Longyear	Rotasonic	09/7/03



VERTICAL SCALE ~1"= 20'

22DEC03\FORD\WI0637\2003\GRAPHICS\DRAWING: GMPZ_4.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

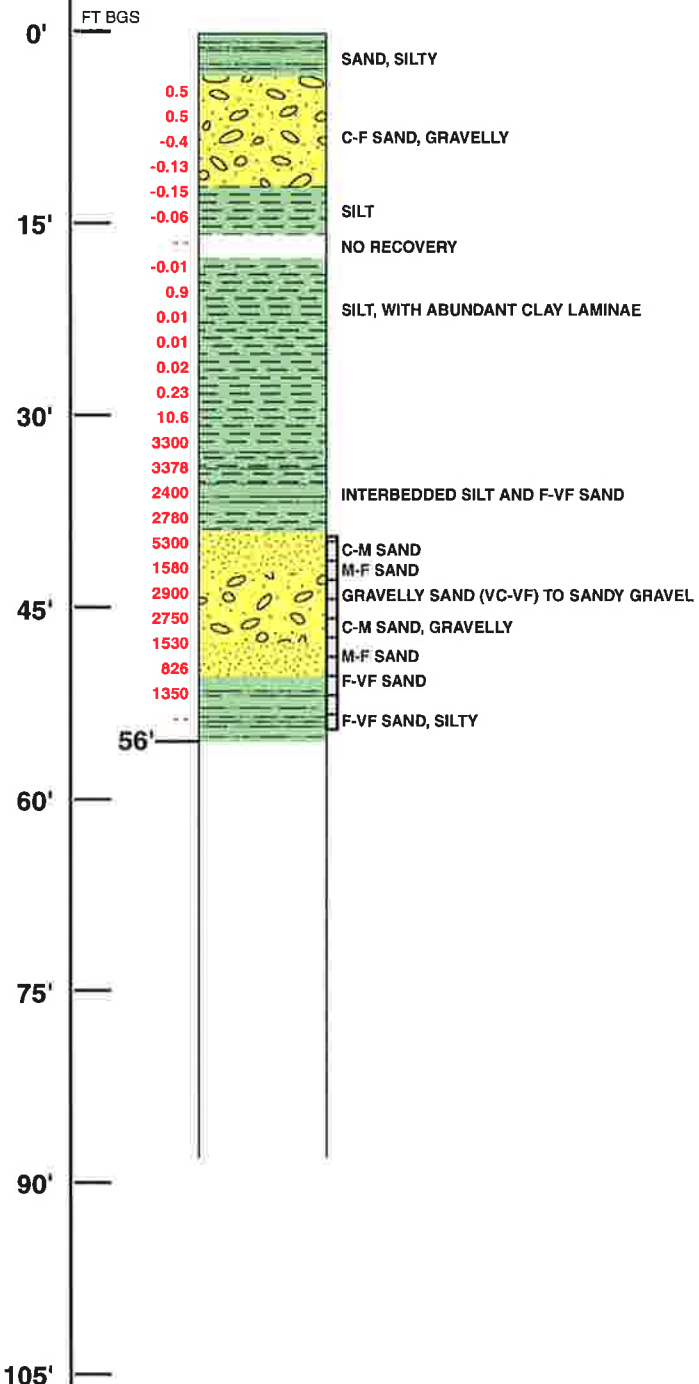
OBSERVATION WELL NO. GMPZ-5

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1,065.78 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Pat Bartnik	Continuous	Splitspoon	56 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Shawn	Boart Longyear	Hollow Stem Auger	6/10/02



VERTICAL SCALE ~1"= 15'

23JULY04\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMPZ_5.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

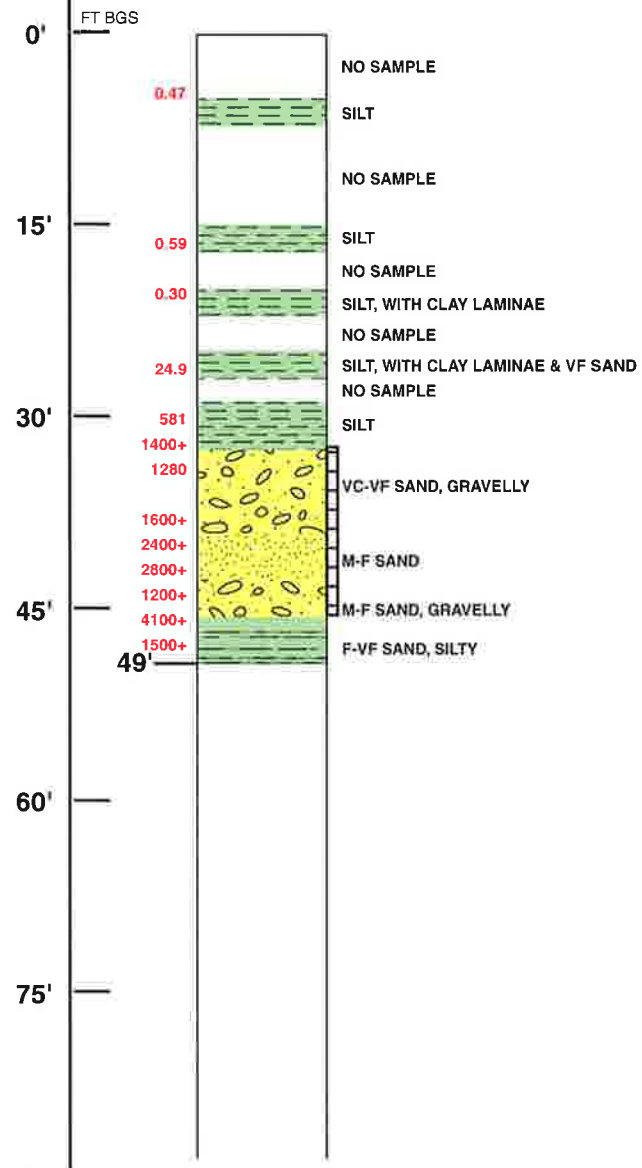
OBSERVATION WELL NO. GMPZ-6

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1,060.44 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Pat Bartnik	Continuous	Splitspoon	49 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Shawn	Boart Longyear	Hollow Stem Auger	6/11/02



VERTICAL SCALE ~1"= 15'

26JULY04\FORD\WI0637\KINGSFOR\GRAPHICS\POST302\DRAWING: GMPZ_6.AI

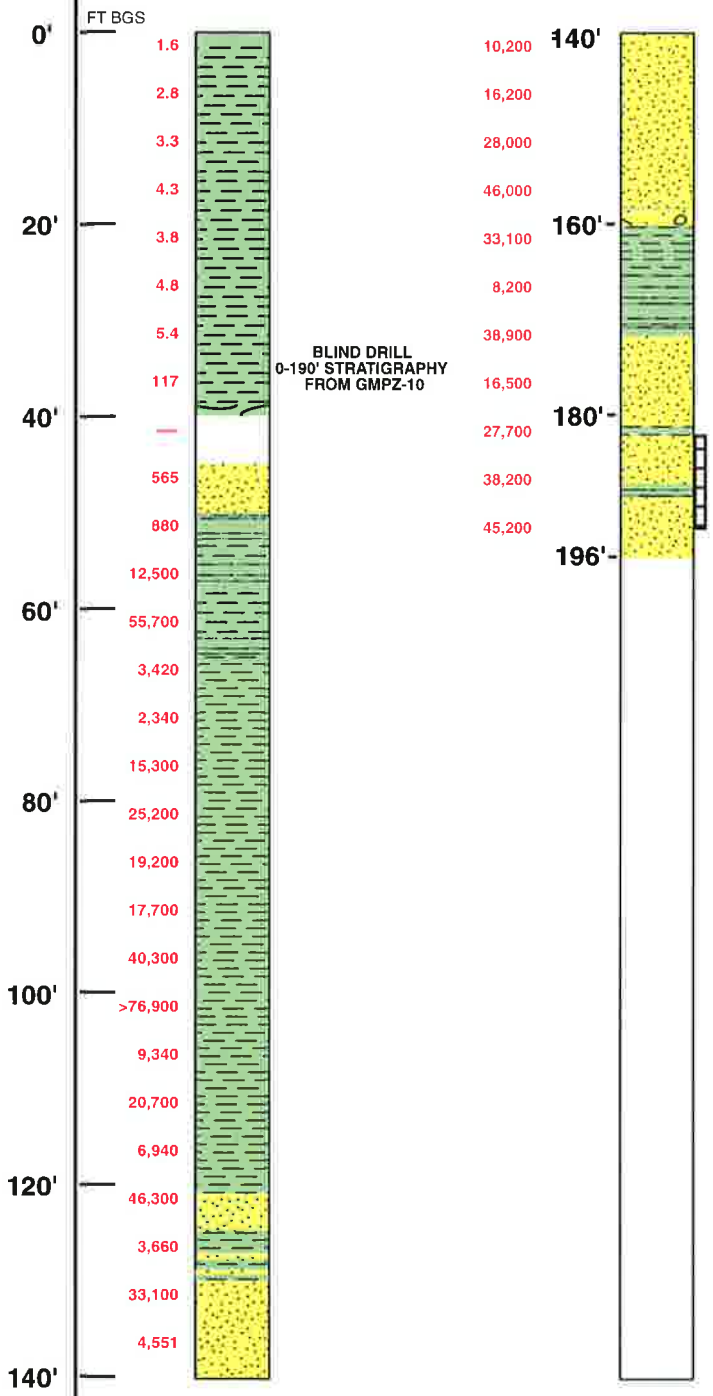
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZ-7

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1065.94 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	196 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Chris	Boart Longyear	Rotasonic	10/14/03



VERTICAL SCALE ~1"= 20'

09FEB05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMPZ_7.AI

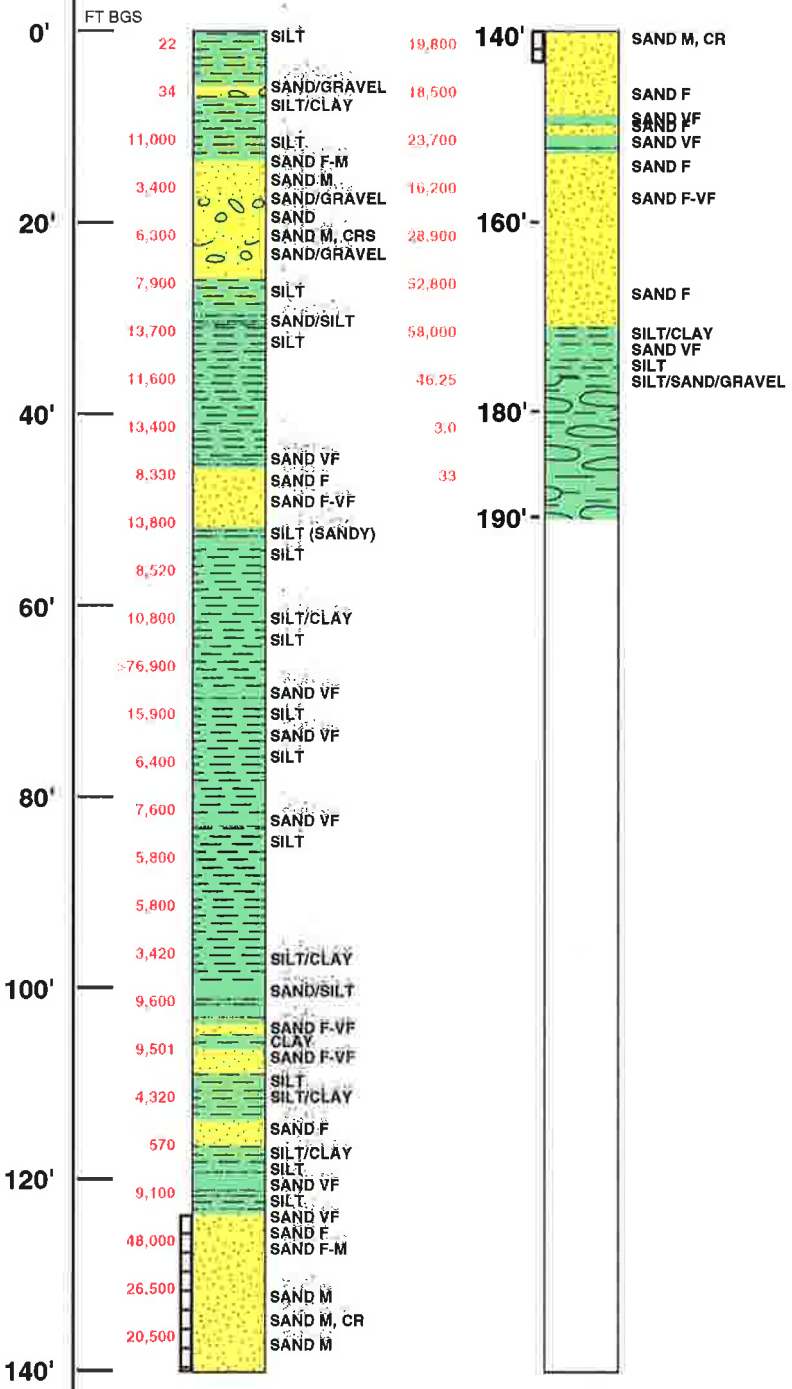
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZ-8

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1044.35 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	190 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Chris	Boart Longyear	Rotasonic	10/8/03



VERTICAL SCALE ~1"= 20'

26NOV03\FORD\WI0637\2003\GRAPHICS\DRAWING: GMPZ_8.AI

ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

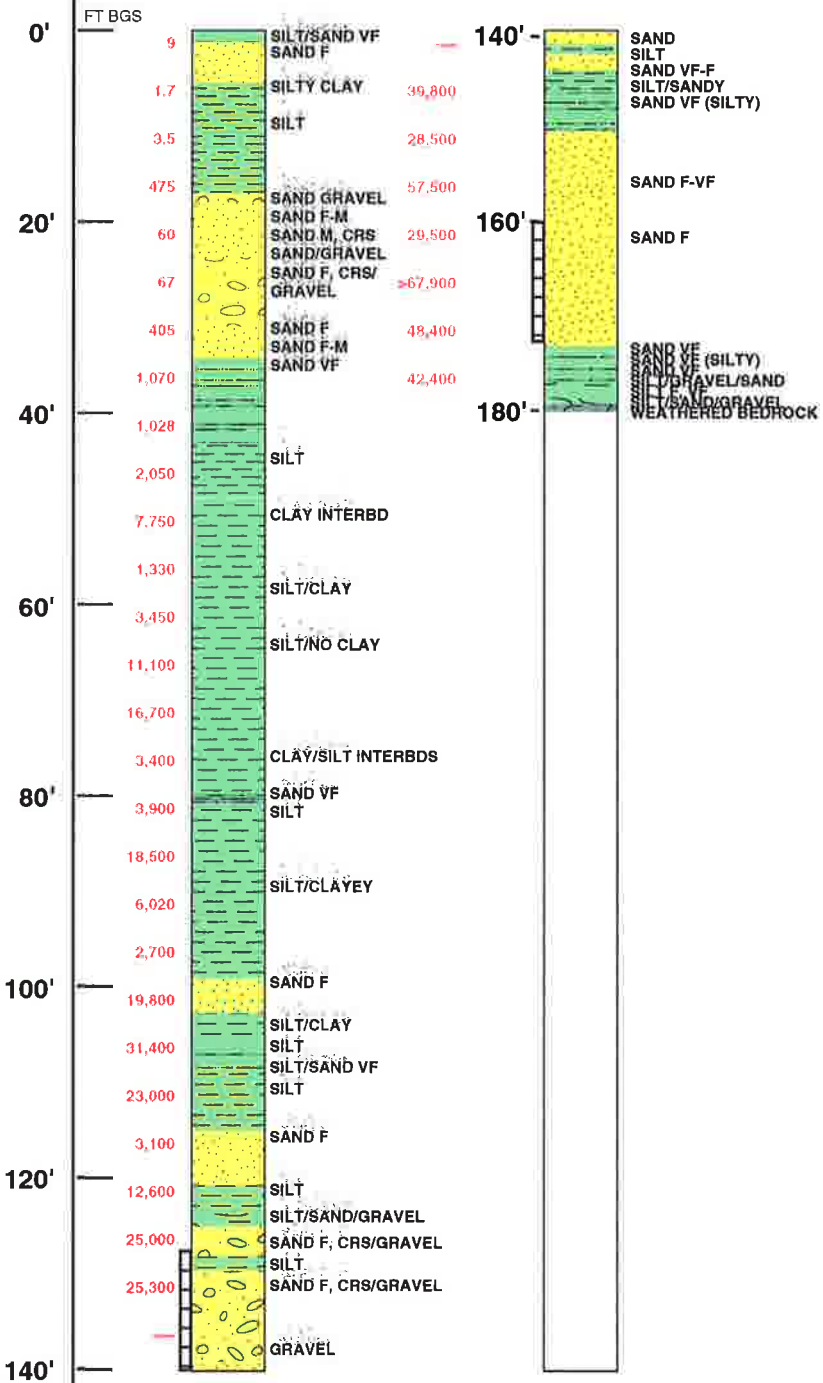
OBSERVATION WELL NO. GMPZ-9

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1048.31 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
P. Lenaker	Continuous	Rotasonic Core Barrel	180 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Chris	Boart Longyear	Rotasonic	10/14/03



VERTICAL SCALE ~1"= 20'

17NOV03\FORD\WI0637\2003\GRAPHICS\DRAWING: GMPZ-9.AI

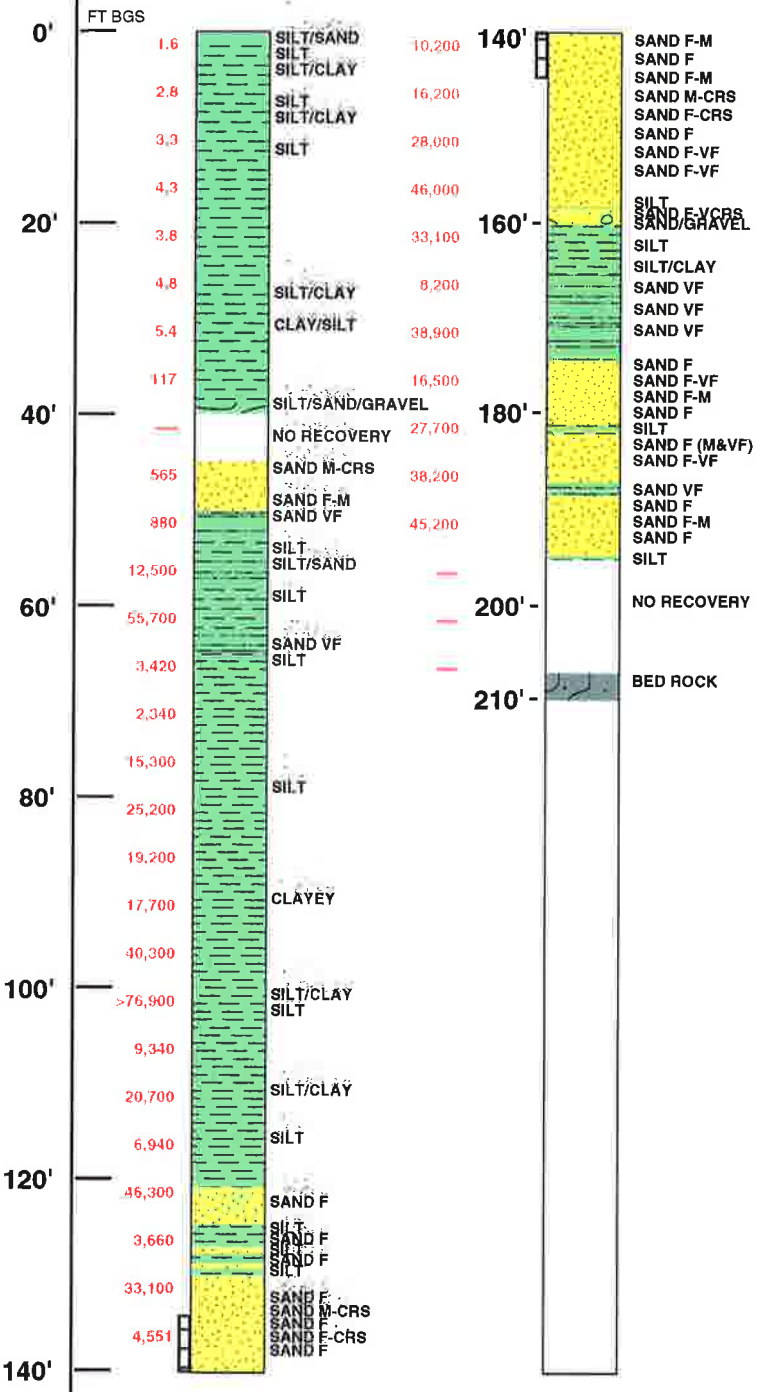
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMPZ-10

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1064.50 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Rotasonic Core Barrel	190 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Chris	Boart Longyear	Rotasonic	10/7/03



VERTICAL SCALE ~1"= 20'

18NOV03\FORD\WI0637\2003\GRAPHICS\DRAWING: GMPZ-10.AI

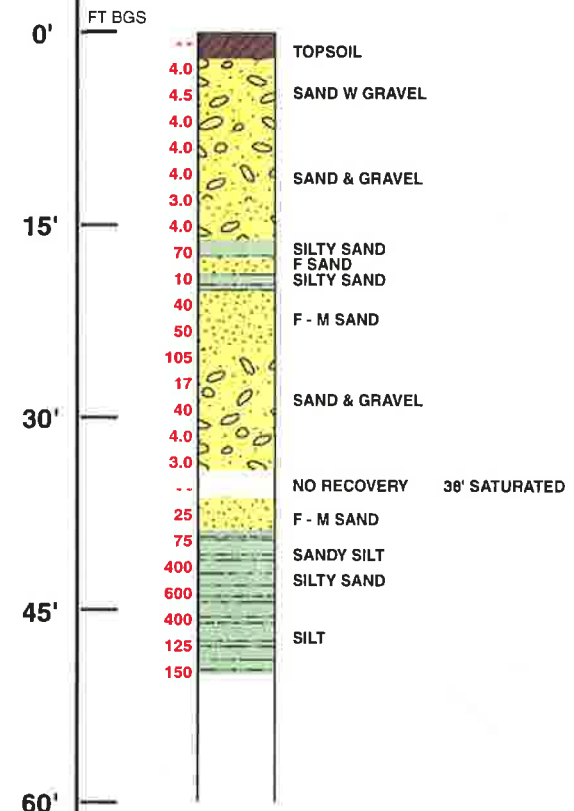
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-1

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1100.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / T. Jones	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Wayne	Boart Longyear	Hollow Stem Auger	10/7/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_01.AI

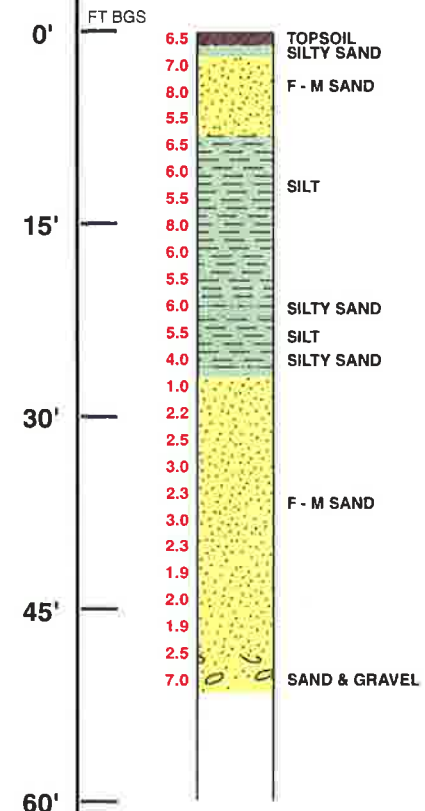
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-2

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1088.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / T. Jones	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Wayne	Boart Longyear	Hollow Stem Auguer	10/8/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_02.AI

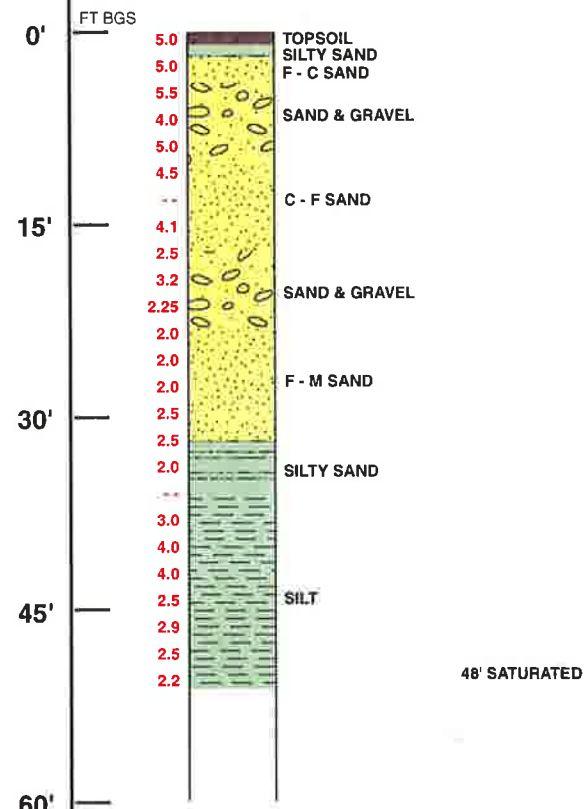
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-3

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1121.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / T. Jones	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Wayne	Boart Longyear	Hollow Stem Auger	10/9/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STAT LOGS\DRAWING: GPR_03.AI

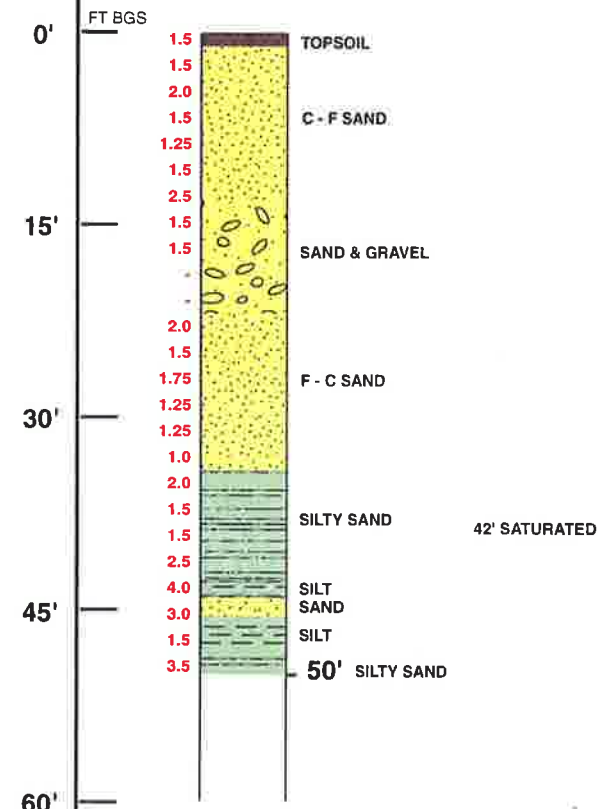
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-4

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1091 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / T. Jones	Continuous	Splitspoon	50 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Wayne	Boart Longyear	Hollow Stem Auger	10/9/97



VERTICAL SCALE ~1"= 15'

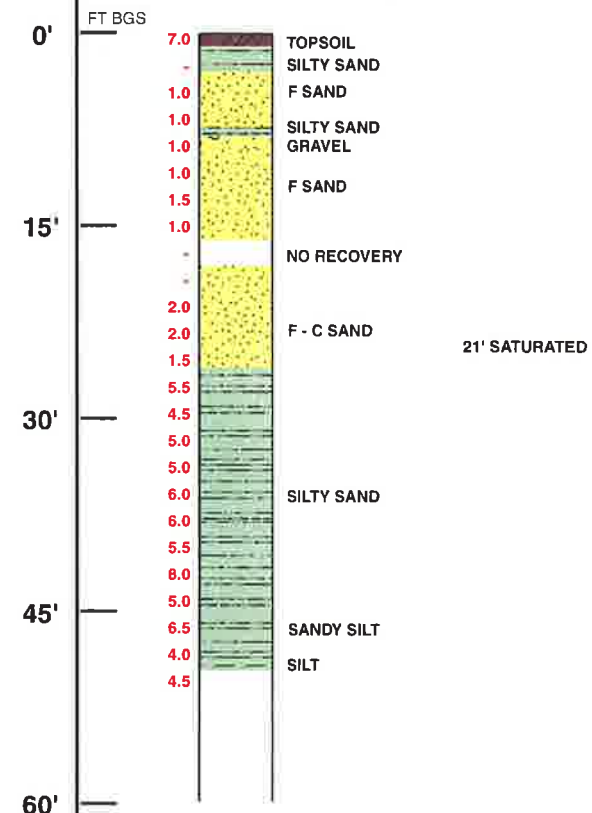
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-5

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1091 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / T. Jones	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
	Boart Longyear	Hollow Stem Auger	10/8/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOG\DRAWING: GPR_05.AI

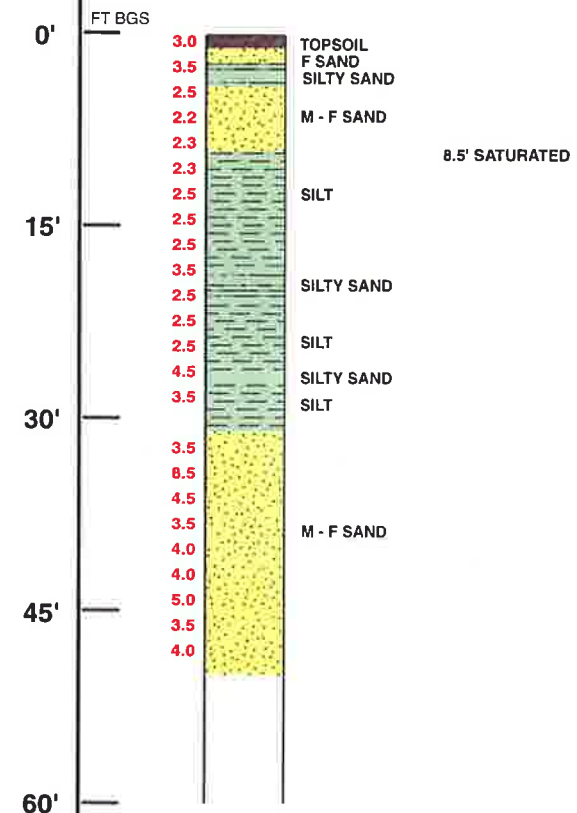
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-6

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1092 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn / T. Jones	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Wayne	Boart Longyear	Hollow Stem Auger	10/7/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_06.AI

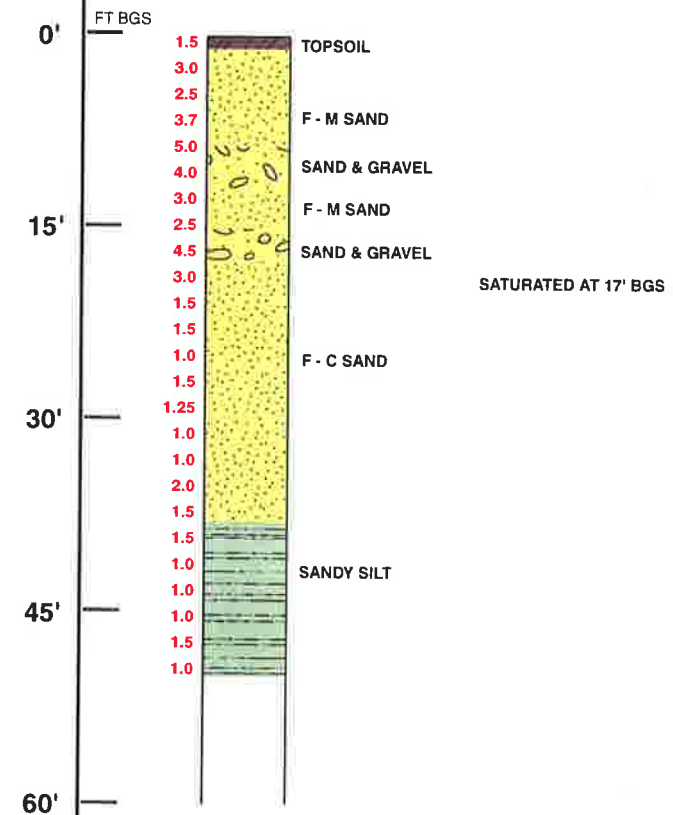
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-7

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION: Kingsford, Michigan			TOC ELEVATION: 1087 Feet MSL
GEOLOGIST: R. Flynn	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Splitspoon	TOTAL DEPTH DRILLED: 50 Feet BGS
DRILLER: Wayne	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Hollow Stem Auger	DATE WELL COMPLETED: 10/13/97



COMPLETION: HOLE ABANDONED WITH LIQUID GROUT TO 17 FEET BGS. HOLE PLUG USED TO INFILL HOLE TO SURFACE HYDRATED FROM SURFACE

VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_07.AI

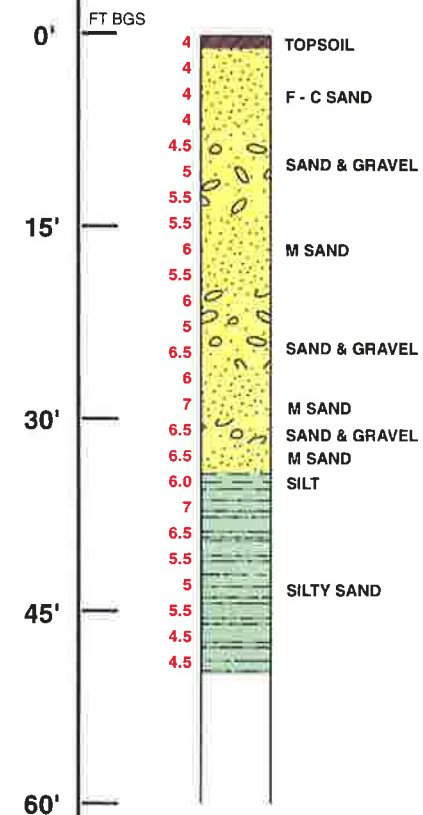
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-8

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1122.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Randy	Boart Longyear	Hollow Stem Auger	11/17/97



VERTICAL SCALE ~1"= 15'

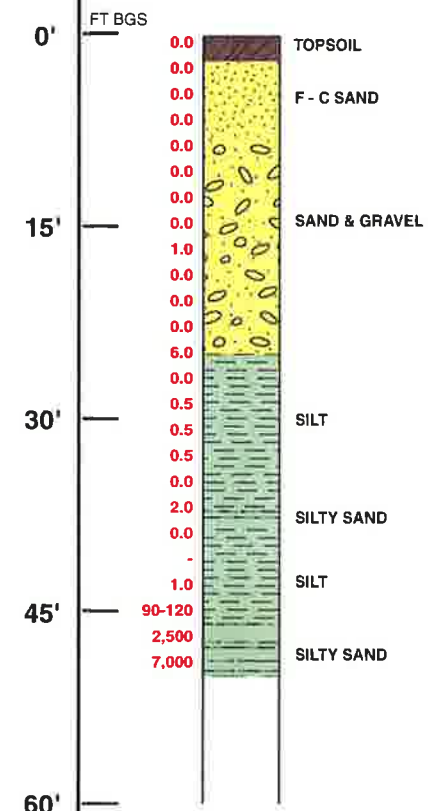
29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_08.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GPR-9
PROJECT	FORD/KINGSFORD WI000637.0001

LOCATION: Kingsford, Michigan			TOC ELEVATION: 1121 Feet MSL
GEOLOGIST: P. Bartnik	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Splitspoon	TOTAL DEPTH DRILLED: 50 Feet BGS
DRILLER: Bryan	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Hollow Stem Auger	DATE WELL COMPLETED: 11/17/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_09.AI

ARCADIS

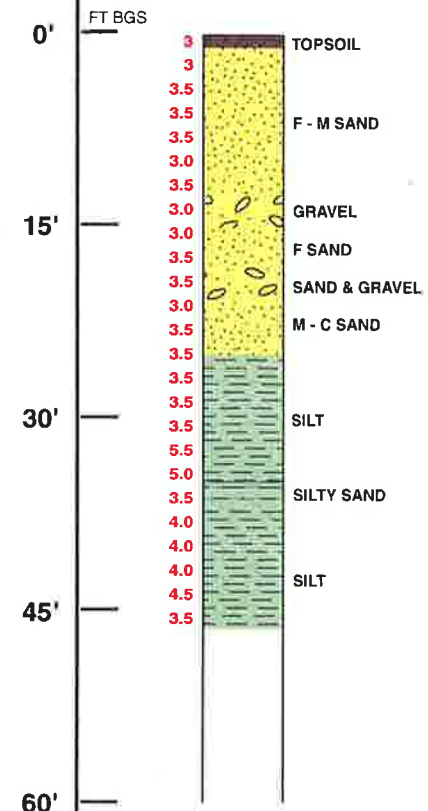
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GPR-10
PROJECT	FORD/KINGSFORD WI000637.0001

LOCATION	TOC ELEVATION
Kingsford, Michigan	1122.00 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
B. Evans	Continuous	Splitspoon	50 Feet BGS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE WELL COMPLETED
Bryan	Boart Longyear	Hollow Stem Auger	11/18/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_10.AI

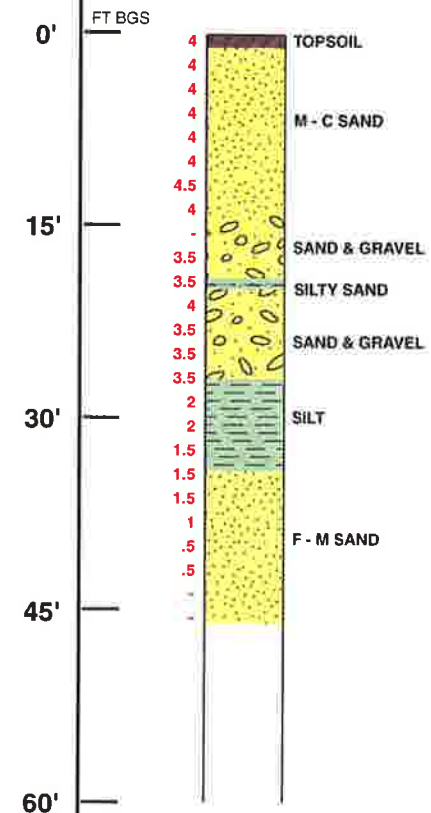
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-11

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1120.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Splitspoon	46 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Randy	Boart Longyear	Hollow Stem Auger	11/18/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_11.AI

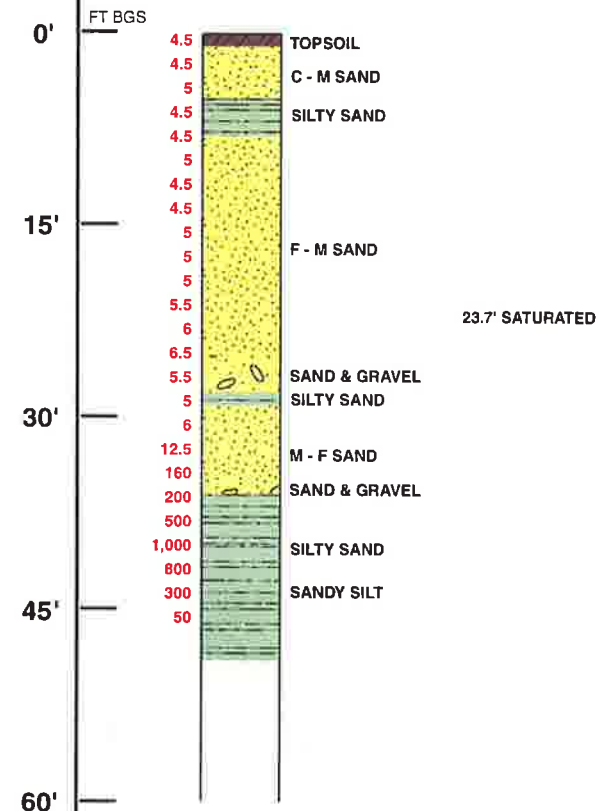
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-12

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1094.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Randy	Boart Longyear	Hollow Stem Auger	11/18/97



VERTICAL SCALE ~1"= 15'

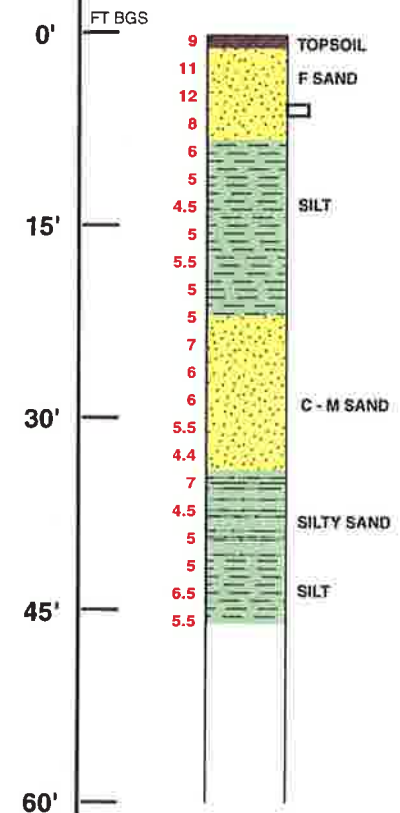
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-13 (GMSG-11)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1088.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	46 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Bryan	Boart Longyear	Hollow Stem Auger	11/18/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_13.AI

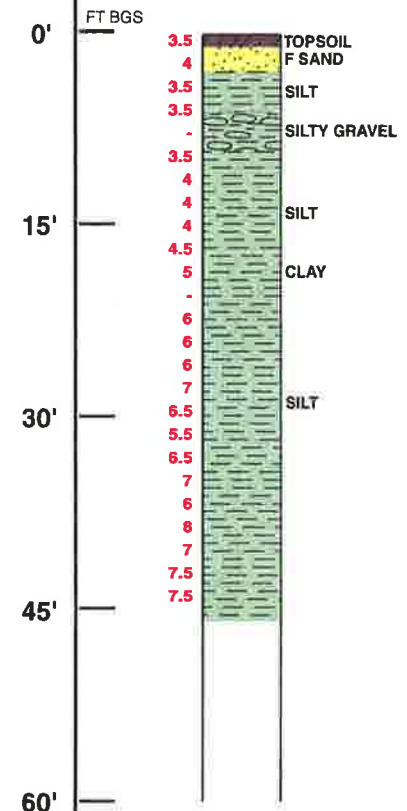
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-14

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1089 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Randy	Boart Longyear	Hollow Stem Auger	11/19/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_14.AI

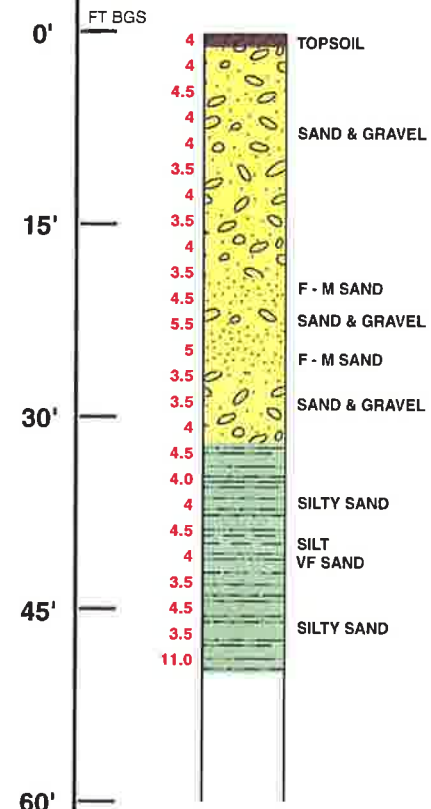
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-15

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1120.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Bryan	Boart Longyear	Hollow Stem Auger	11/19/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_15.AI

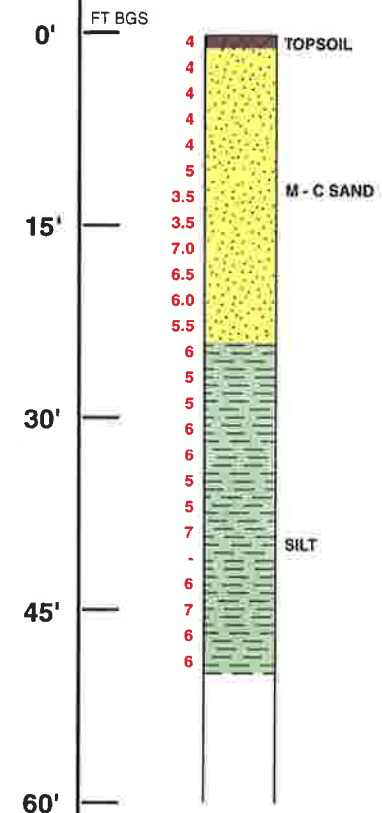
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-16

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1121.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Bryan	Boart Longyear	Hollow Stem Auger	11/19/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_16.AI

ARCADIS

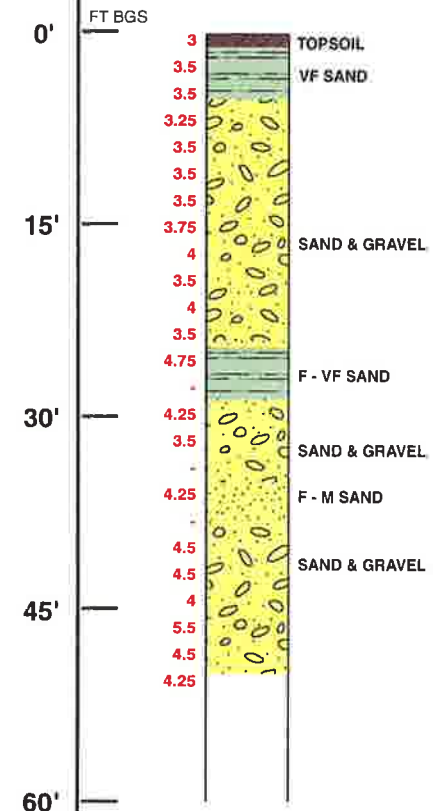
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GPR-17
PROJECT	FORD/KINGSFORD WI000637.0001

LOCATION	TOC ELEVATION
Kingsford, Michigan	1094.00 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
T. Powell	Continuous	Splitspoon	50 Feet BGS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE WELL COMPLETED
Randy	Boart Longyear	Hollow Stem Auger	11/19/97



VERTICAL SCALE ~1"= 15'

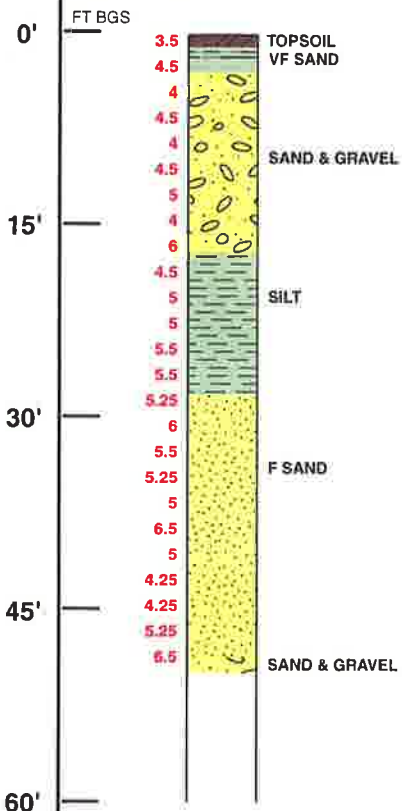
29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STAT LOGS\DRAWING: GPR_17.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GPR-18
PROJECT	FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1096.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Randy	Boart Longyear	Hollow stem Auger	11/20/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_18.AI

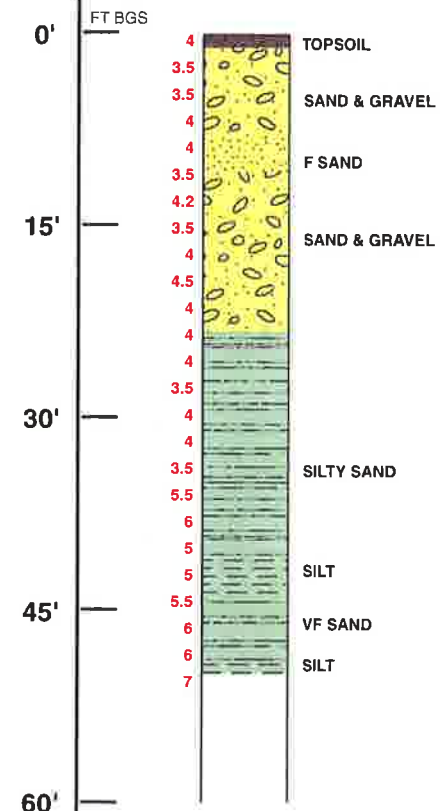
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-19

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1121.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Bryan	Boart Longyear	Hollow Stem Auger	11/20/97



VERTICAL SCALE ~1"= 20'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_19.AI

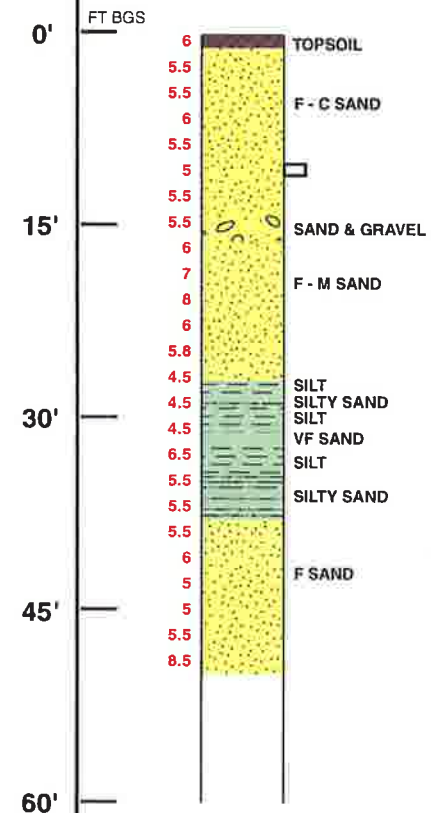
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-20 (GMSG-10)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1120.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Bryan	Boart Longyear	Hollow Stem Auger	11/20/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGDRAWING: GPR_20.AI

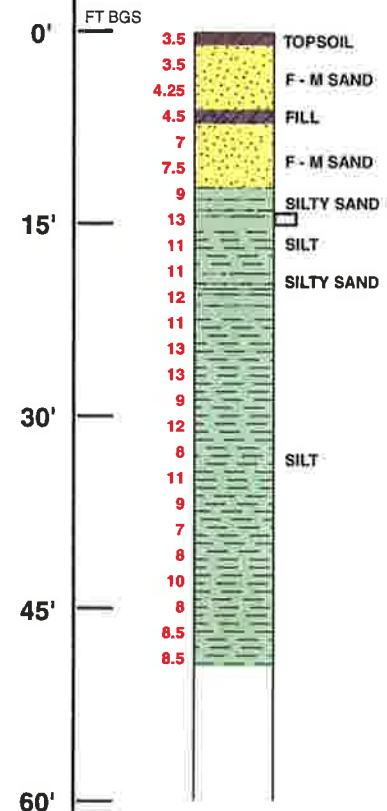
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GPR-21 (GMSG-9)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION Kingsford, Michigan			TOC ELEVATION 1092 Feet MSL
GEOLOGIST T. Powell	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 50 Feet BGS
DRILLER Randy	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE WELL COMPLETED 11/20/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GPR_21.AI

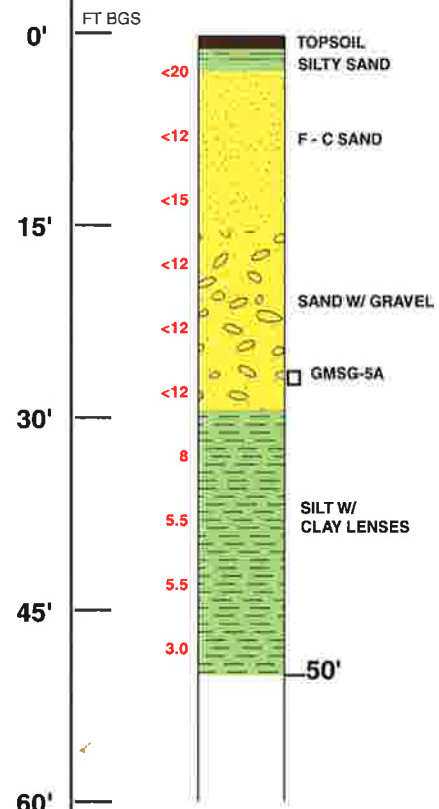
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-5

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.34 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn	Continuous	2" x 2' Splitspoon	50 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Ken	Boart Longyear	Hollow Stem Auger	9/16/97



VERTICAL SCALE ~1"= 15'

21JULY09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_5.AI

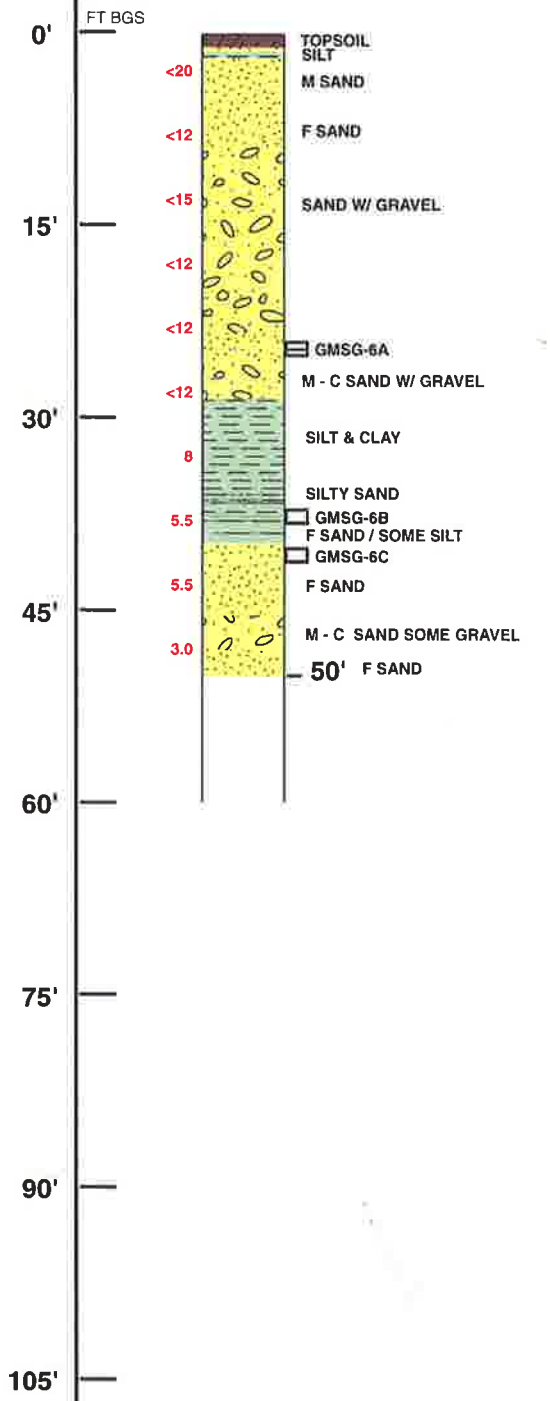
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-6A/B/C

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1120.53 ft MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn	Continuous	Rotasonic Core Barrel	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Roy	Boart Longyear	Rotasonic	9/24/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_6ABC.AI

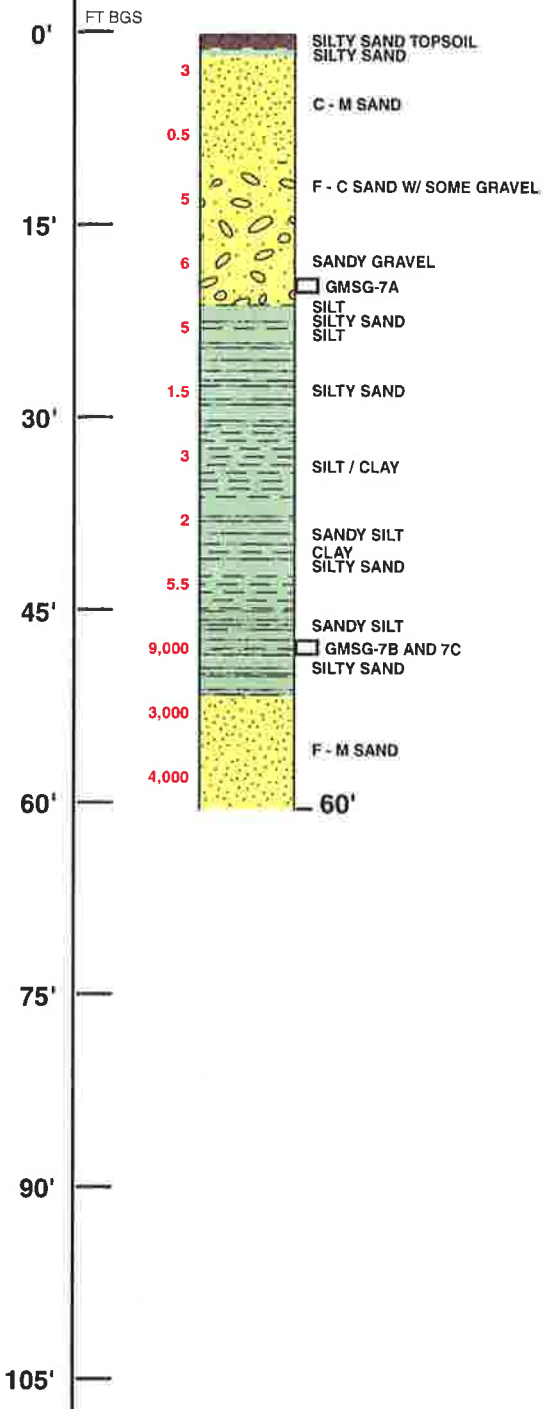
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-7A/B/C

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1120.14 ft MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn/P. Bartnik	Continuous	Rotasonic Core Barrel	60 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Roy	Boart Longyear	Rotasonic	9/26/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_7ABC.AI

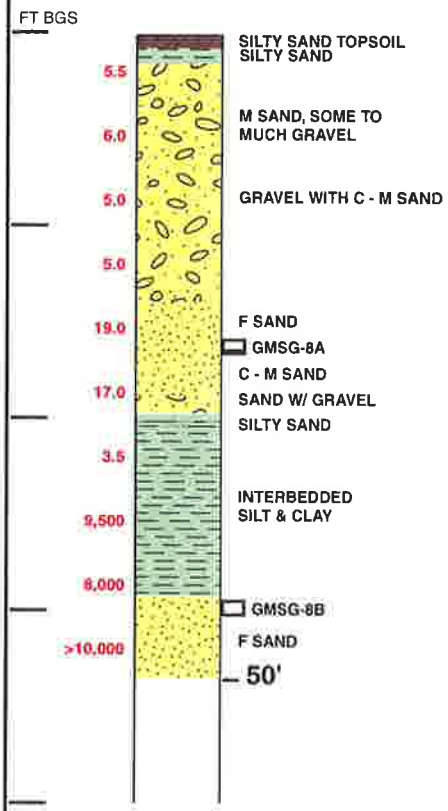
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-8A/B

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			TOC ELEVATION
Kingsford, Michigan			1122.08 ft MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Flynn	Continuous	Rotasonic Core Barrel	50 Feet BGS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE WELL COMPLETED**
Roy	Boart Longyear	Rotasonic	9/26/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_8AB.AI

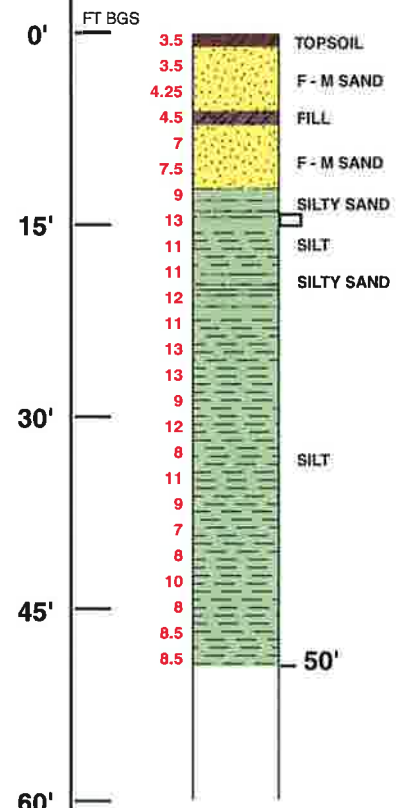
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-9 (GPR-21)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1092 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Powell	Continuous	Rotasonic Core Barrel	50 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
	Boart Longyear	Rotasonic	11/20/97



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_9.AI

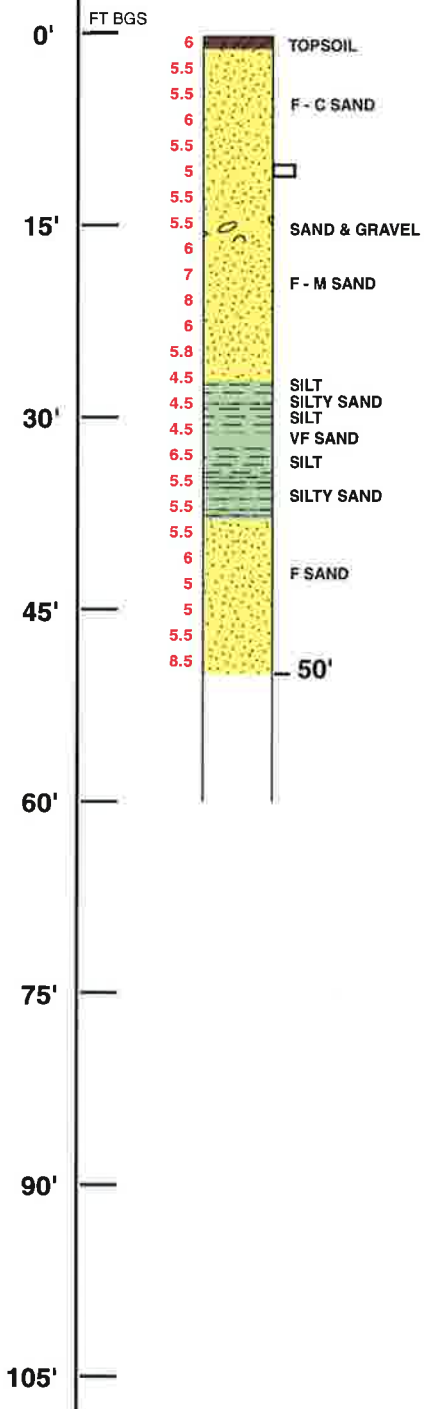
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-10 (GPR-20)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	50 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Bryan	Boart Longyear	Hollow Stem Auger	11/20/97



VERTICAL SCALE ~1"= 15'

29JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_10.AI

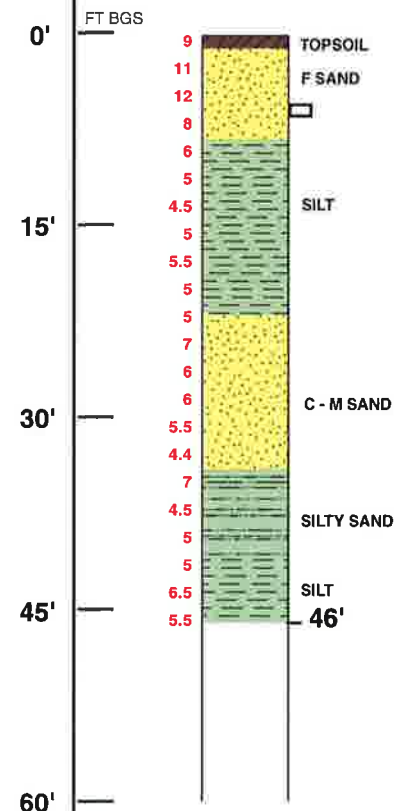
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-11 (GPR-13)

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1088 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Rotasonic Core Barrel	46 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
	Boart Longyear	Rotasonic	11/18/97



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_11.AI

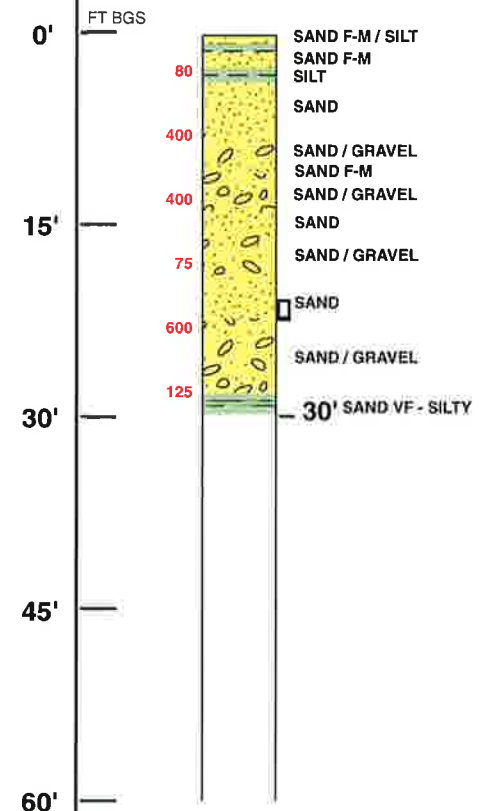
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-14

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.86 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Splitspoon	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/6/98



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_14.AI

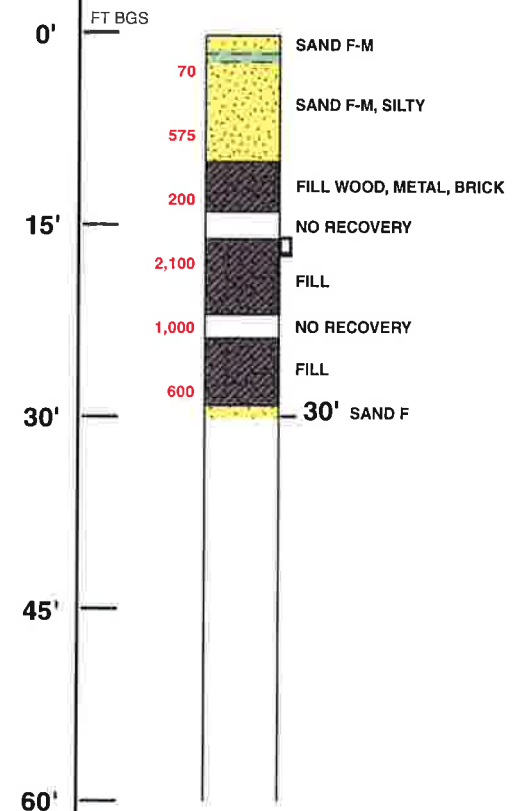
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-15

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.08 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Splitspoon	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/7/98



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_15.AI

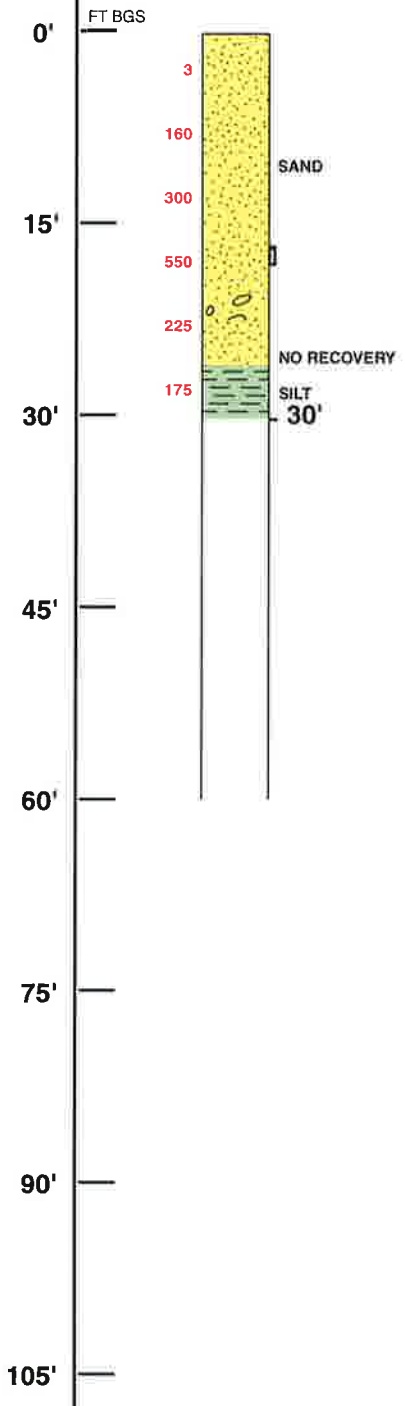
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-16

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.50 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Splitspoon	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/7/98



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_16.AI

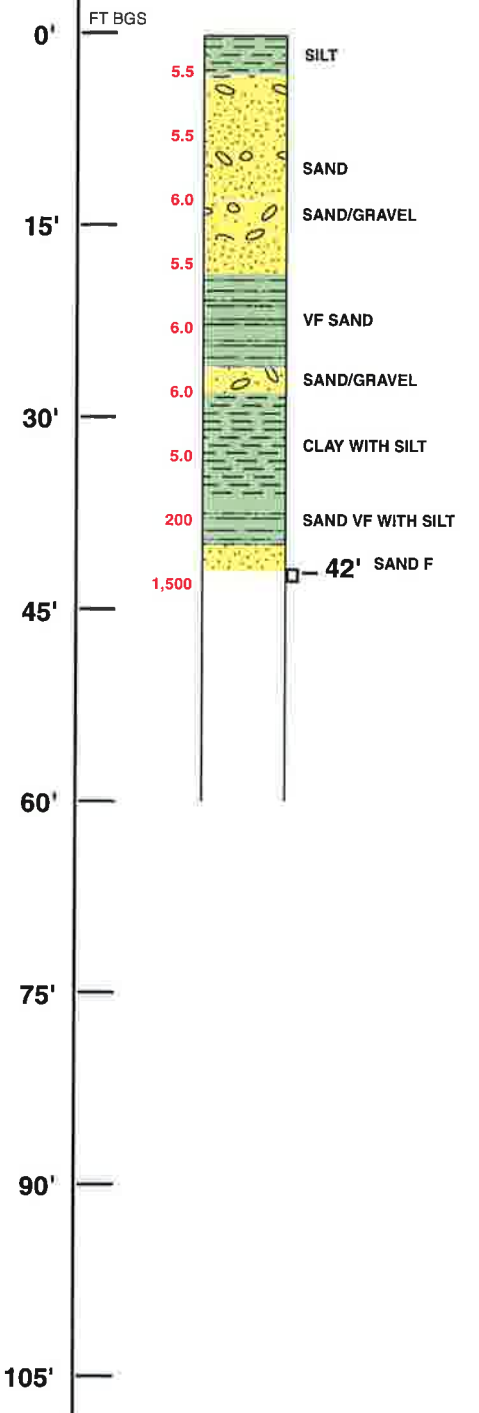
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-17

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.86 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	42 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike	Boart Longyear	Hollow Stem Auger	7/10/98



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_17.AI

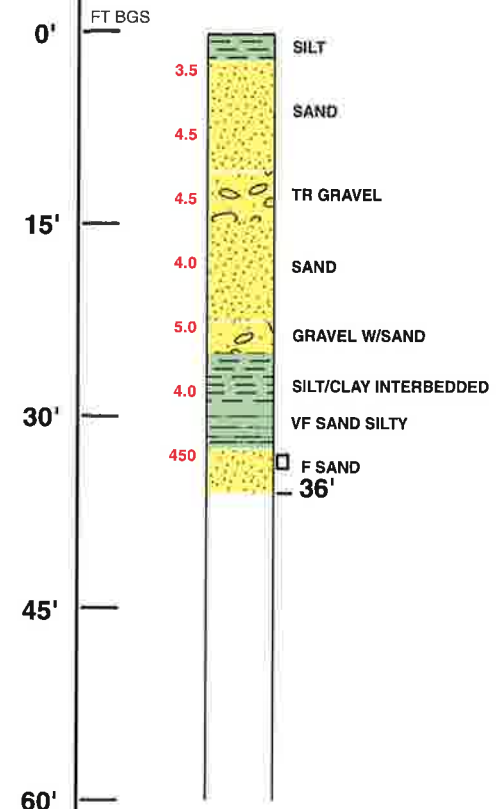
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-18

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.93 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Dan Hegrenes	Continuous	Splitspoon	36 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike	Boart Longyear	Hollow Stem Auger	7/11/98



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_18.AI

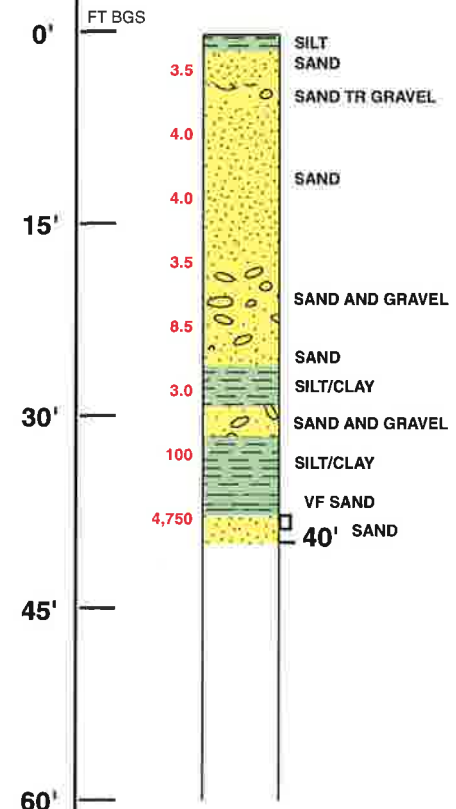
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-19

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.23 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Dan Hegrenes	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike	Boart Longyear	Hollow Stem Auger	7/12/98



VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST798\DRAWING: GMSG_19.AI

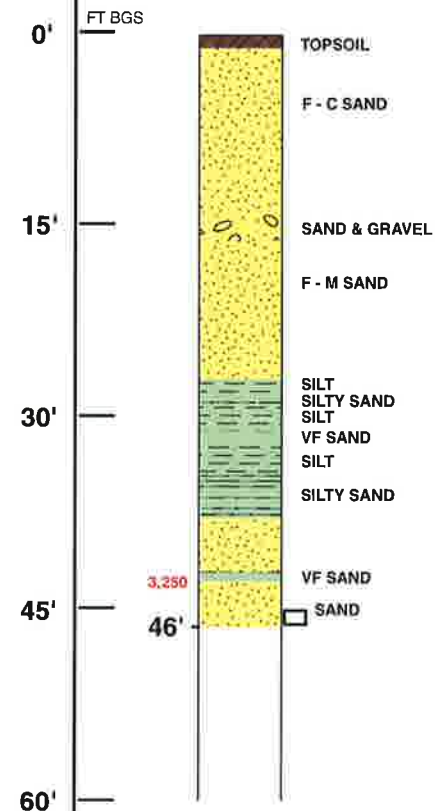
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-20

PROJECT FORD/KINGSFORD WI000637.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.93 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Dan Hegrenes	Continuous	Splitspoon	46 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike	Boart Longyear	Hollow Stem Auger	7/12/98



Blind drill to 42 ft, stratigraphic log from GMSG-8.

VERTICAL SCALE ~1"= 15'

14JULY\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_20.AI

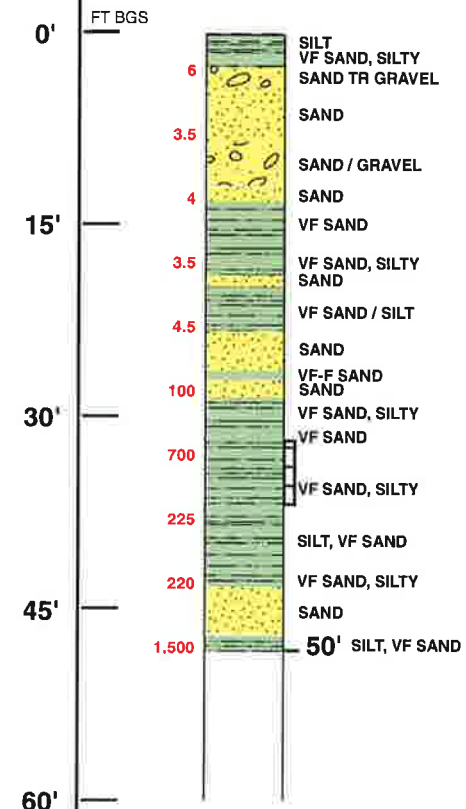
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-21

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1122 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Dan Hegrenes	Continuous	Splitspoon	50 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Mike	Boart Longyear	Hollow Stem Auger	7/14/98



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_21.AI

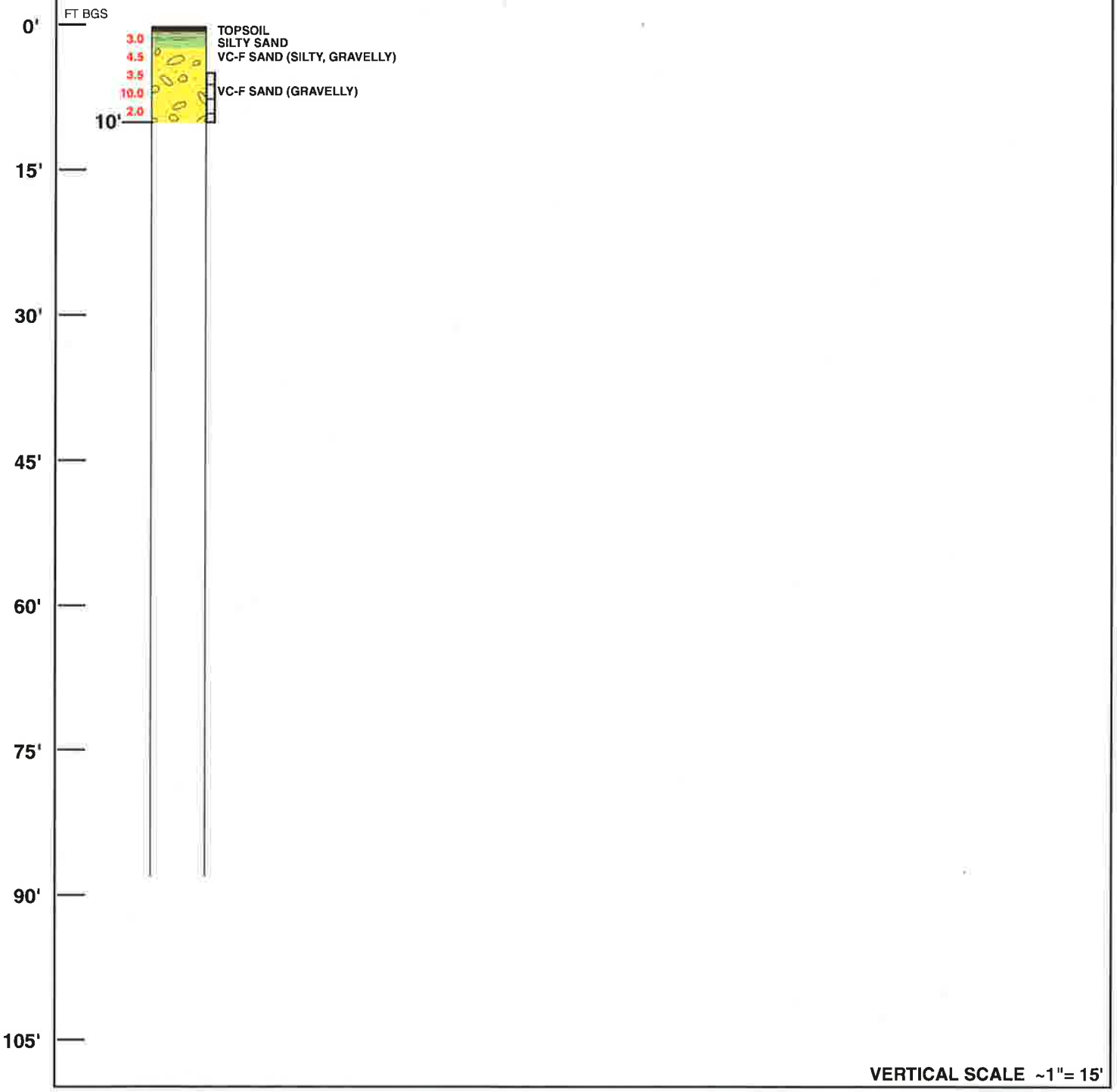
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSG-22
PROJECT	FORD/KINGSFORD WI000710.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1112.44 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/9/99



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_22.AI

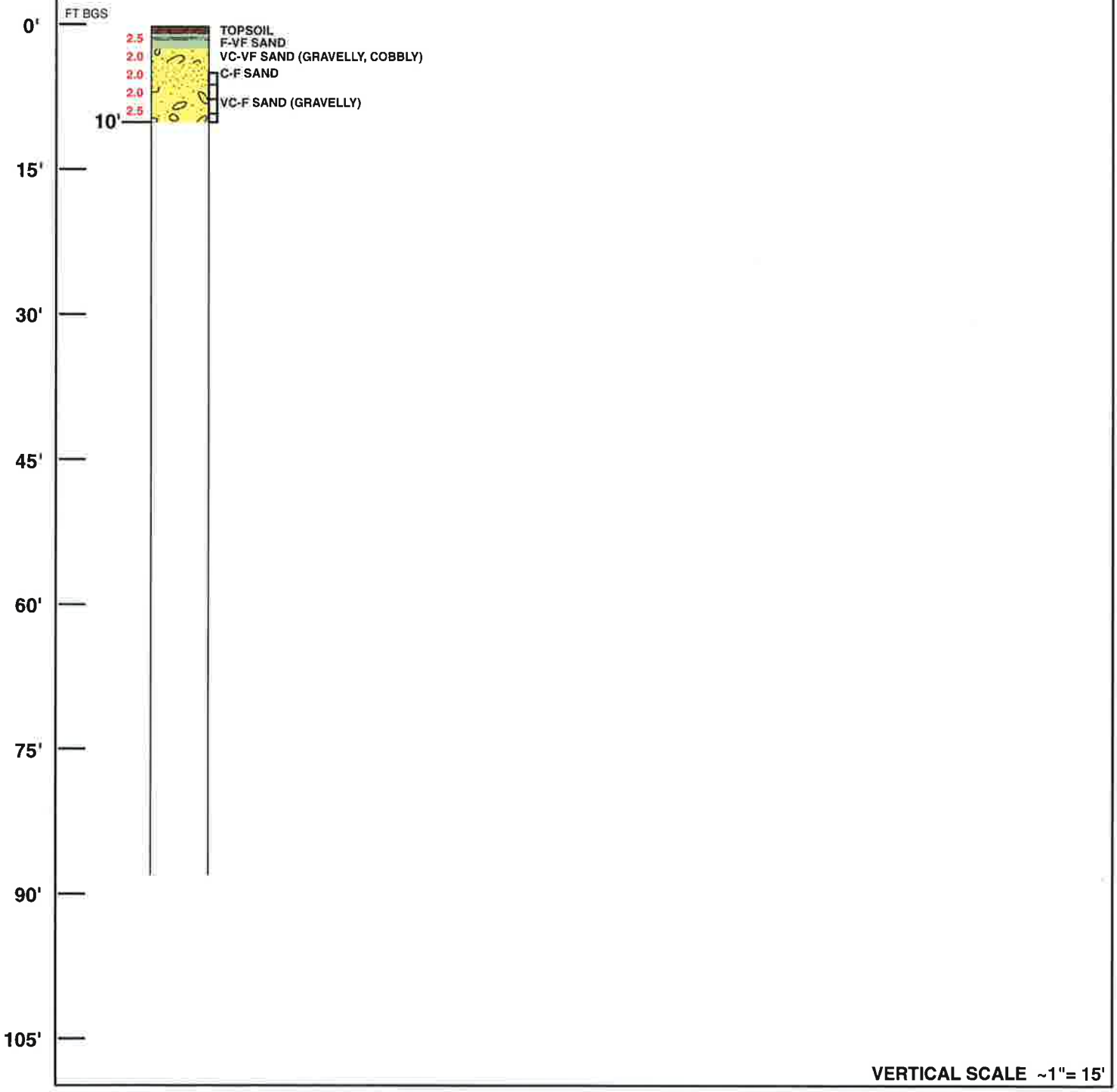
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-23

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1127.42 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/9/99



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_23.AI

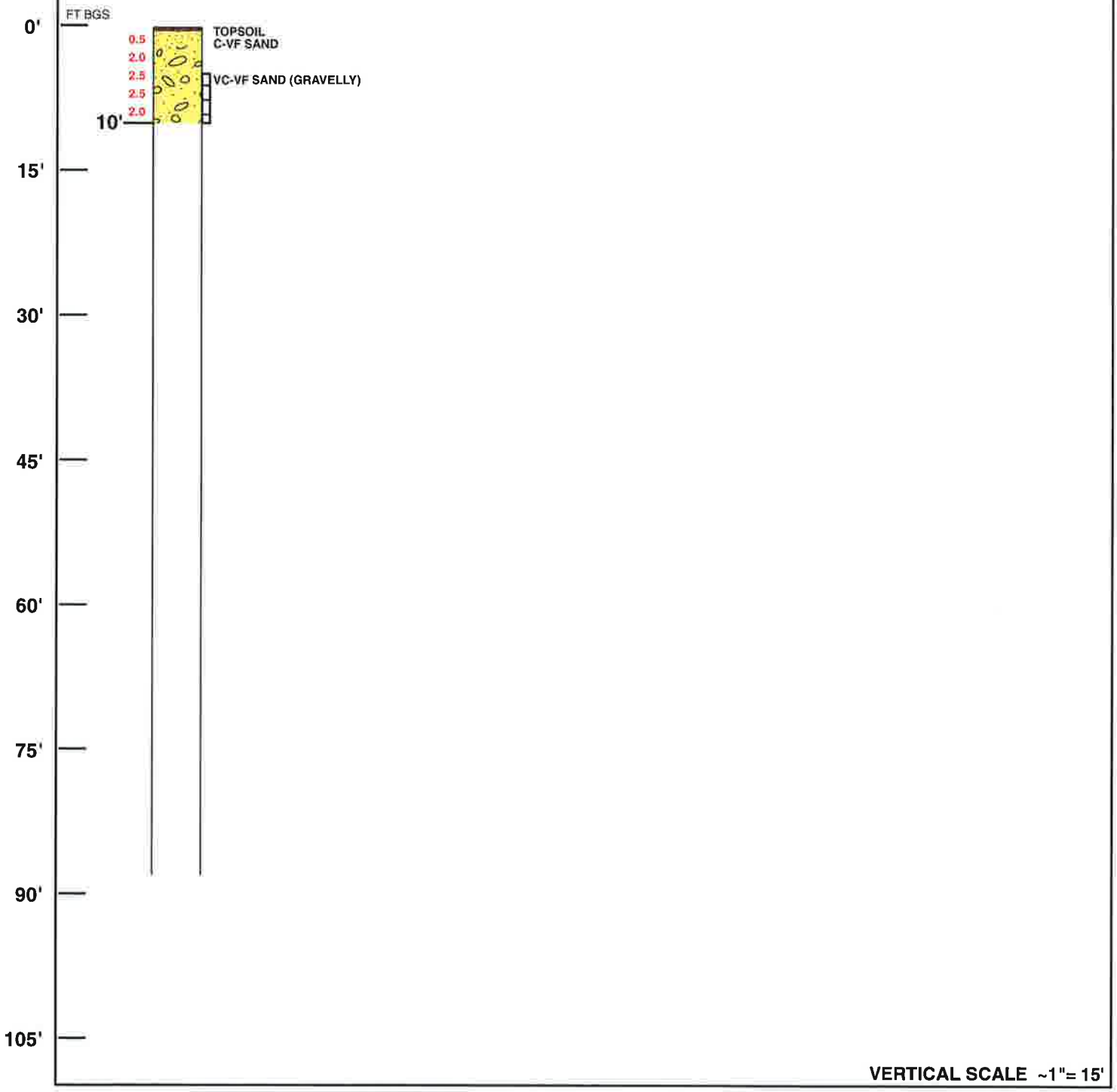
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-24

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1128.11 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/9/99



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_24.AI

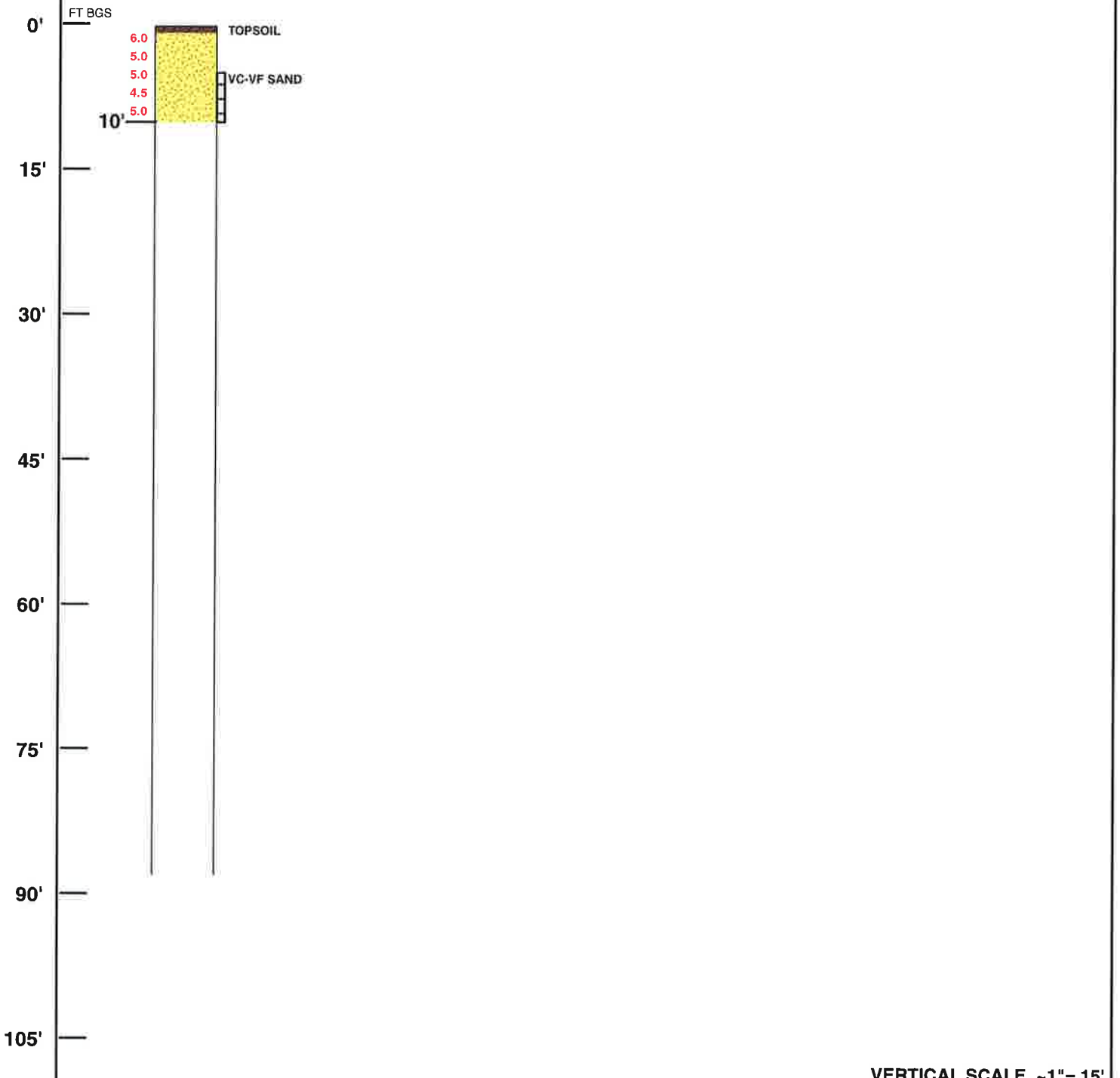
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-25

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1128.30 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/9/99



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_25.AI

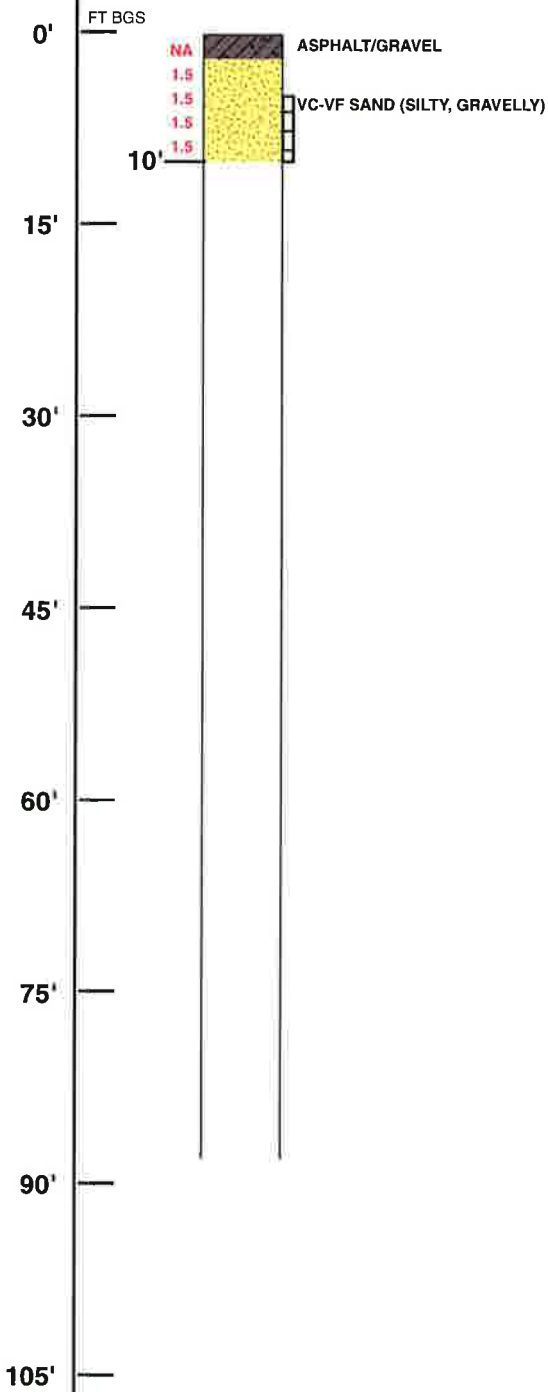
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-26

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1128.16 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_26.AI

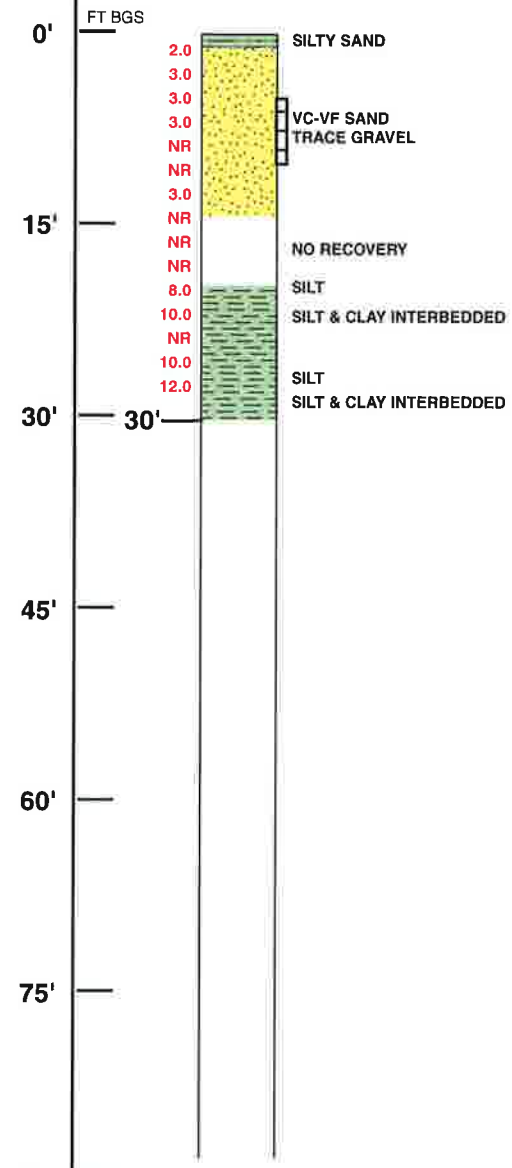
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-27

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1122.06 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/10/99



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_27.AI

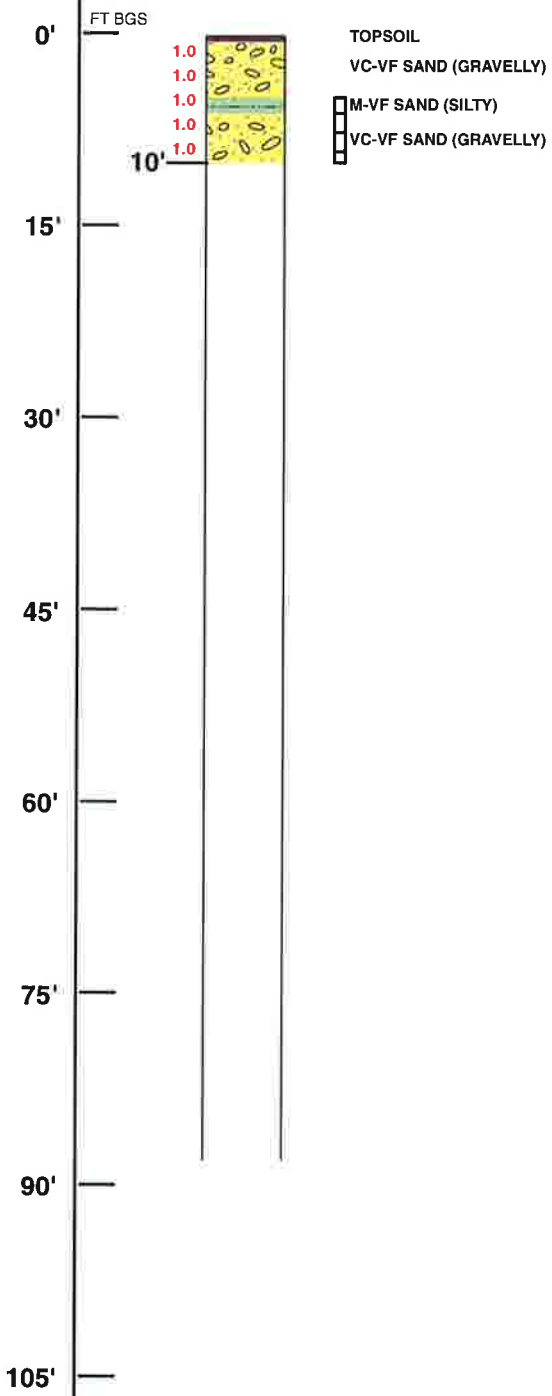
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-28

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1150.49 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99

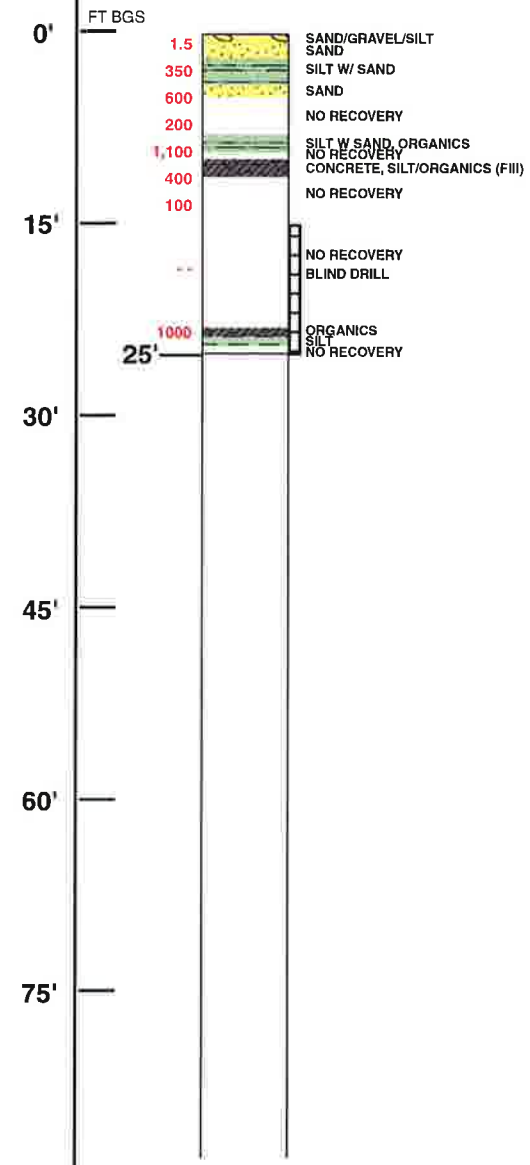


VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_28.AI

ARCADIS	BOREHOLE STRATIGRAPHIC LOG	OBSERVATION WELL NO. GMSG-29
		PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.63 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bruce Evans	Continuous	Splitspoon	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jeff Flaminio	Boart Longyear	Hollow Stem Auger	6/5/00



VERTICAL SCALE ~1"= 15'

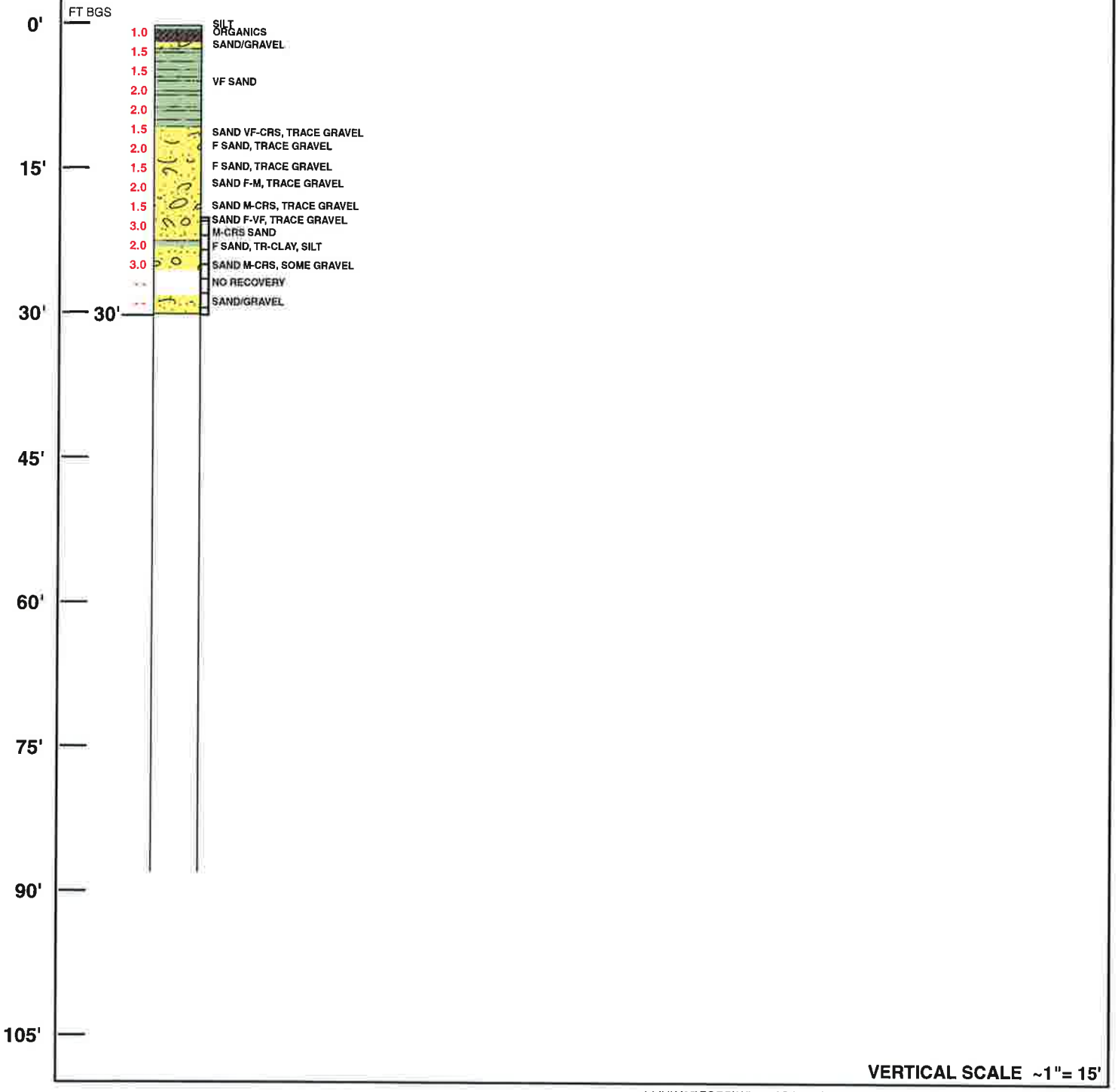
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-30

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1119.55 Feet MSL
GEOLOGIST Bruce Evans	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 30 Feet BLS
DRILLER Jeff Flaminio	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 6/5/00



VERTICAL SCALE ~1"= 15'

14JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_30.AI

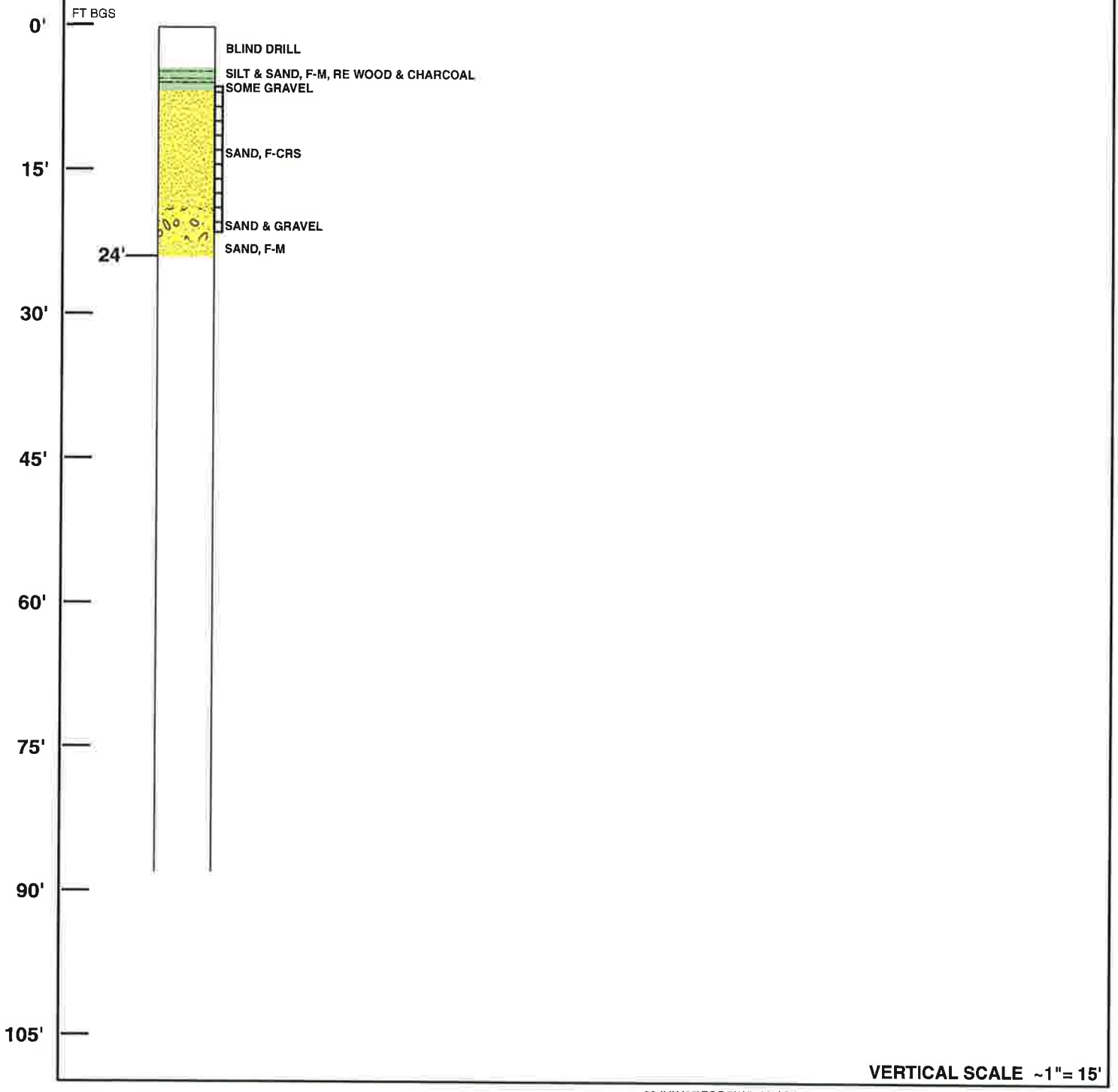
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-31

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1118.43 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Kevin Daleness	Continuous	Splitspoon	24 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy S.	Boart Longyear	Hollow Stem Auger	7/7/00



VERTICAL SCALE ~1"= 15'

28JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_31.AI

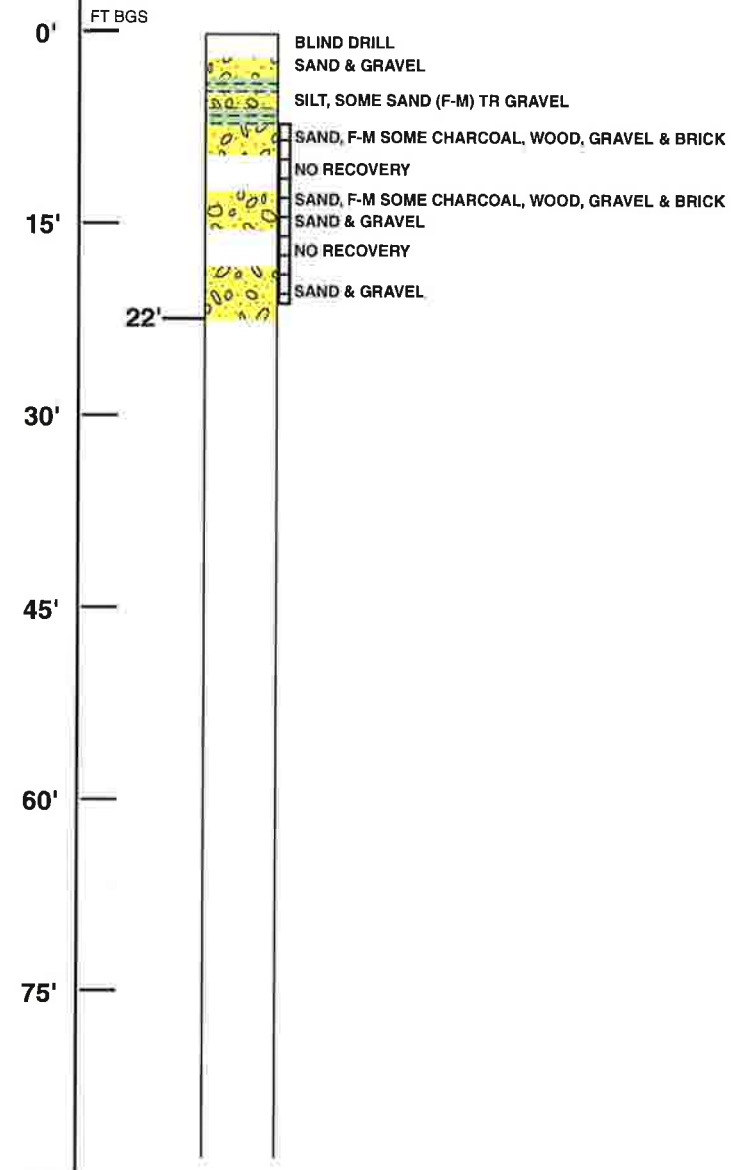
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-32

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1117.91 Feet MSL
GEOLOGIST Kevin Daleness	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 22 Feet BLS
DRILLER Randy S.	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 7/7/00



VERTICAL SCALE ~1"= 15'

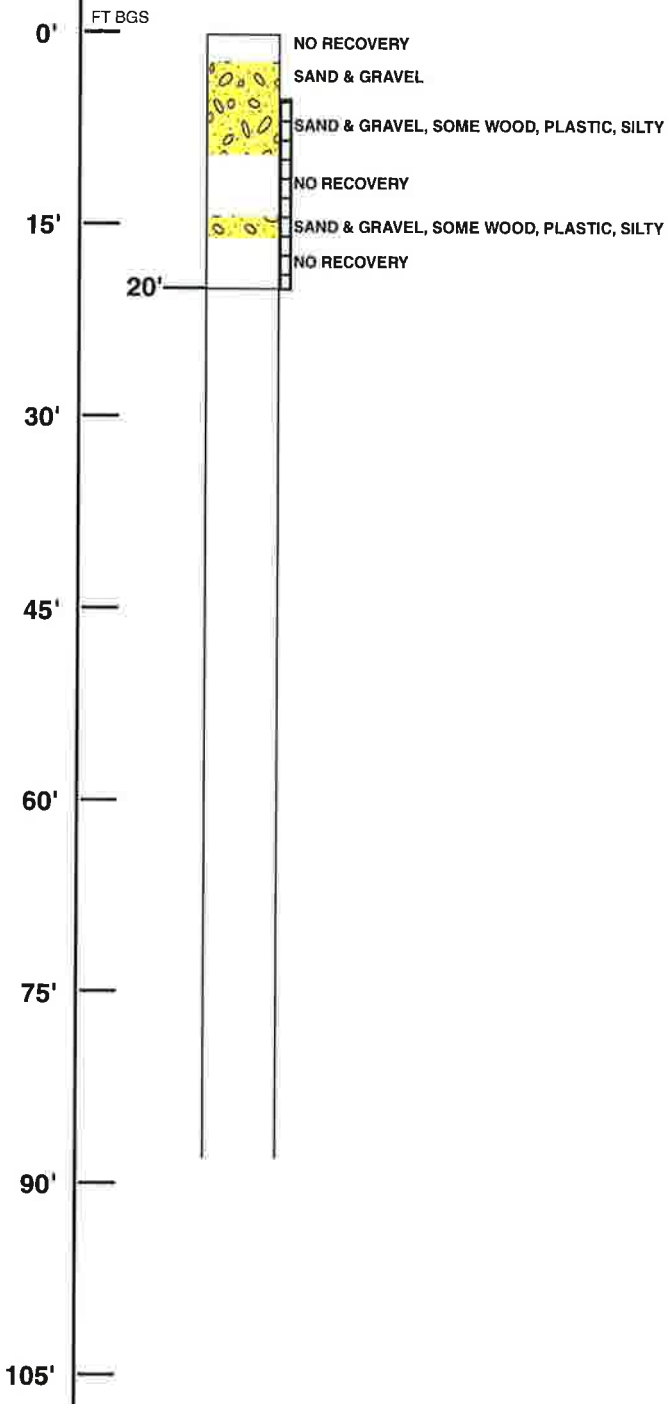
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-33

PROJECT FORD/KINGSFORD WI000804.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.02 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Kevin Daleness	Continuous	Splitspoon	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy S.	Boart Longyear	Hollow Stem Auger	7/8/00



VERTICAL SCALE ~1"= 15'

28JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_33.AI

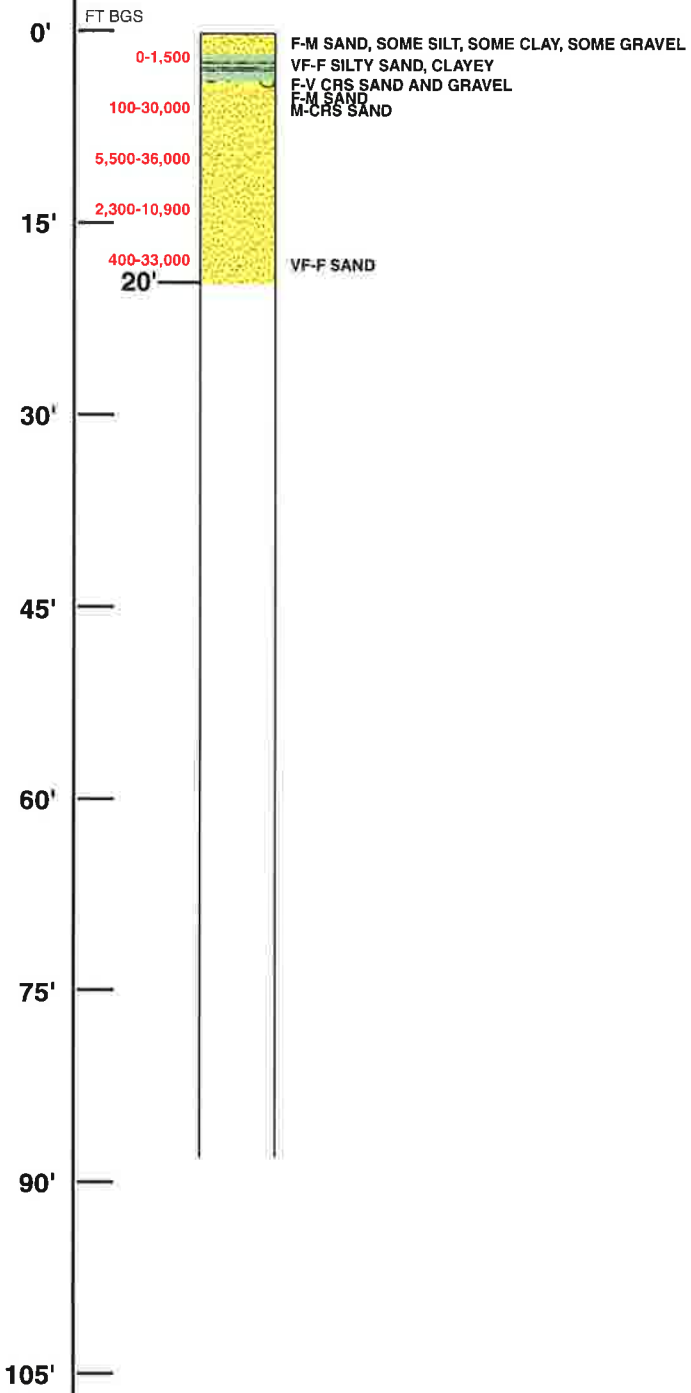
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-34

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,117.31 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Splitspoon	20 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul	Giles Engineering	Hollow Stem Auger	3/31/01



VERTICAL SCALE ~1"= 15'

28JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_34.AI

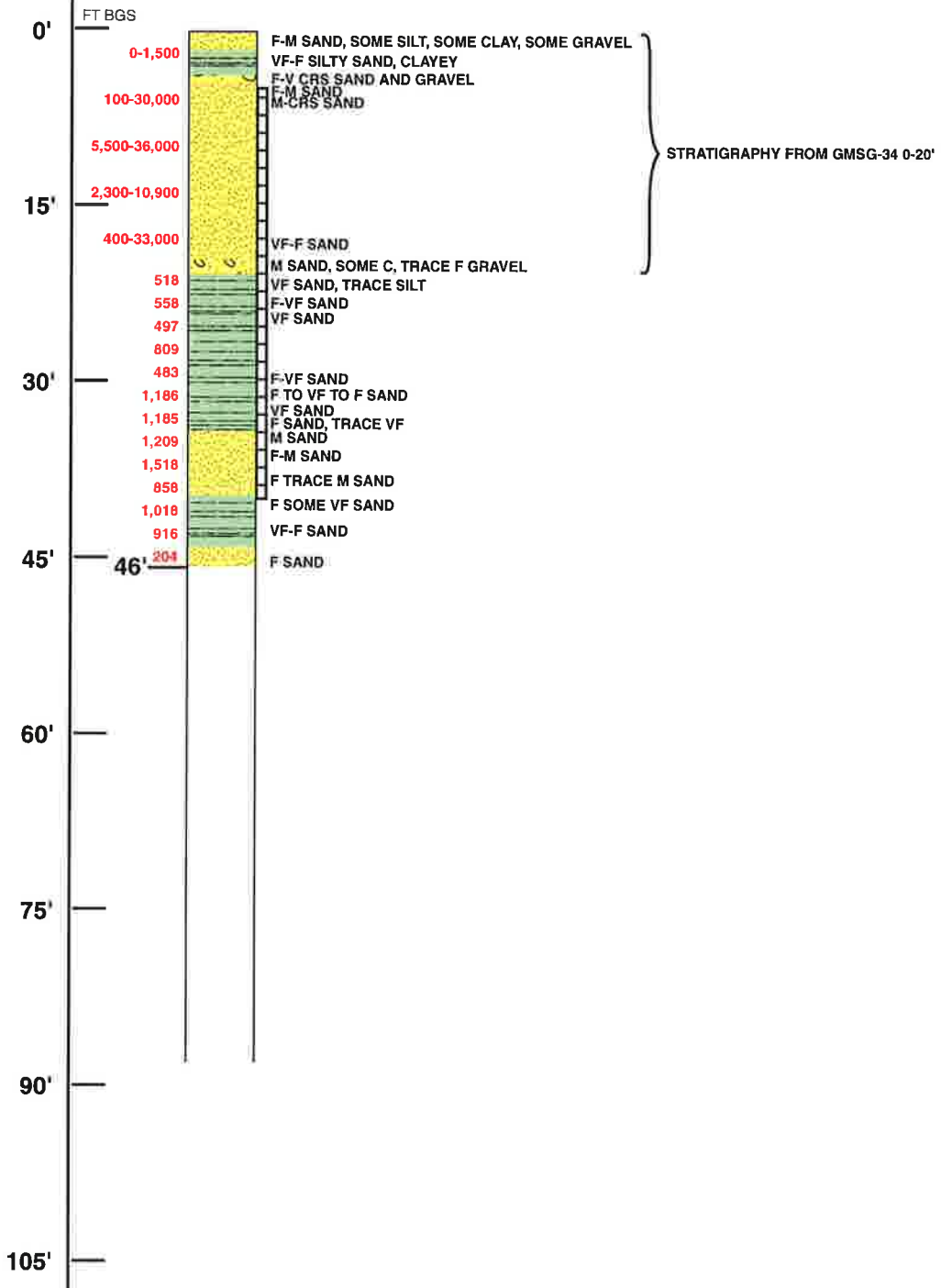
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-37

PROJECT FORD/KINGSFORD WI000860.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.29 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Veronica Brieno	Continuous	Splitspoon	46 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jim Berthold	Boart Longyear	Hollow Stem Auger	6/12/01



VERTICAL SCALE ~1"= 15'

28JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_37.AI

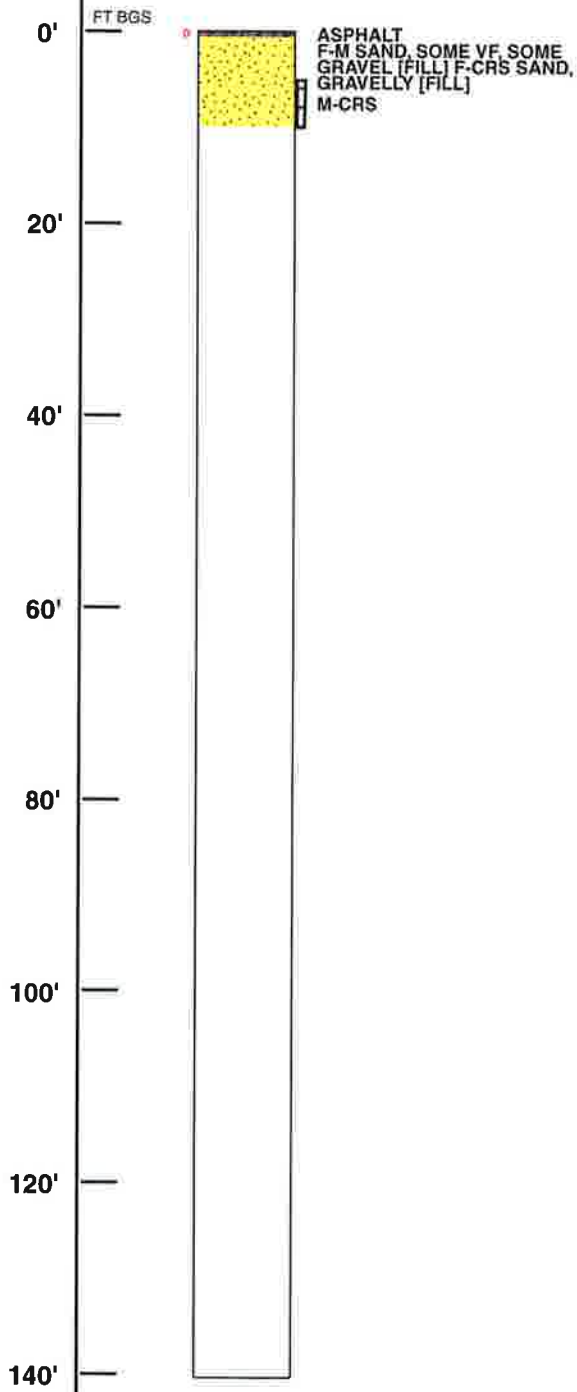
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-54

PROJECT FORD/KINGSFORD WI001075.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.09 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Keller	Continuous	None	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
_____	Boart Longyear	Hollow Stem Auger	8/28/01



VERTICAL SCALE ~1"= 20'

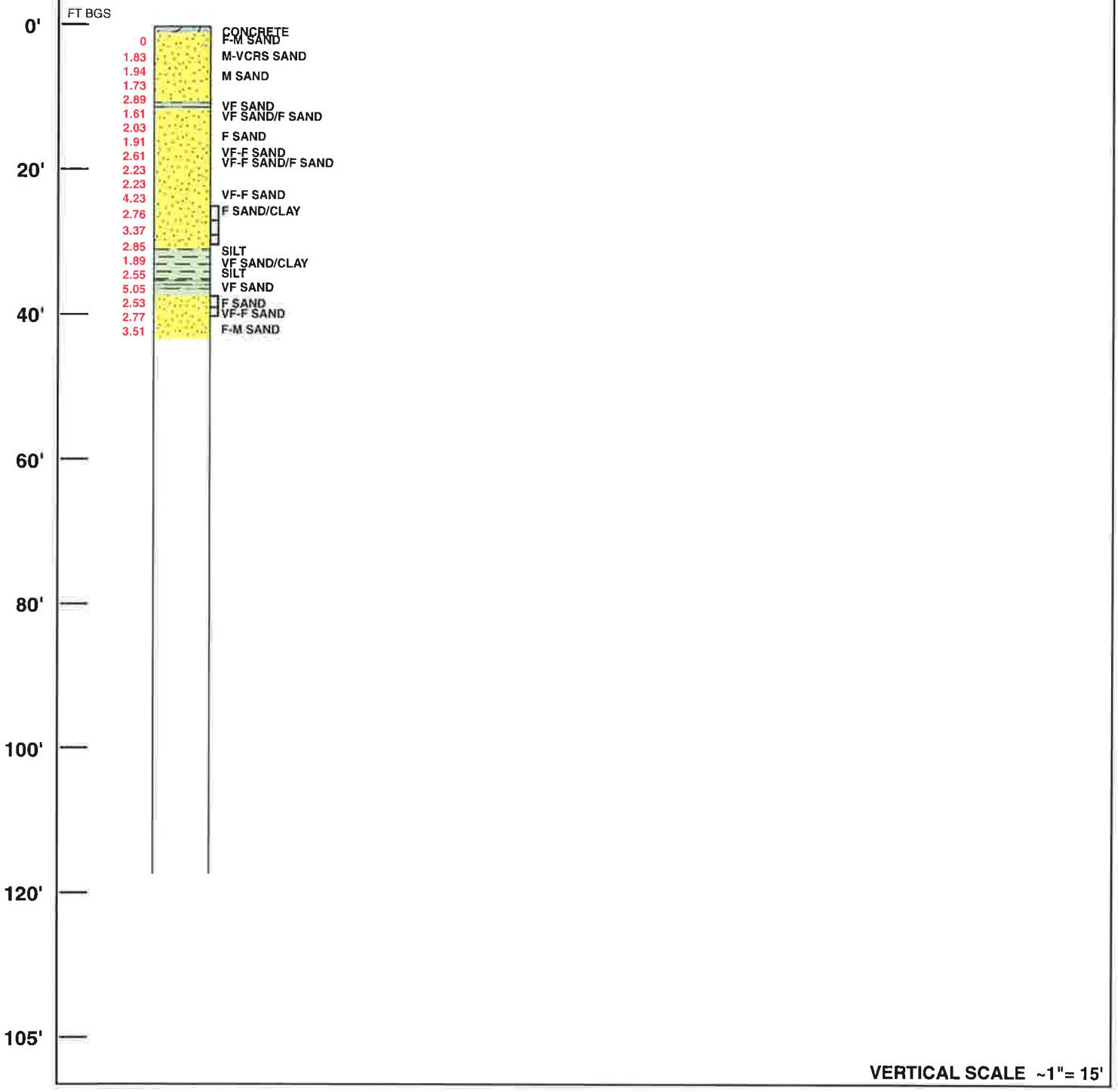
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-81 B/C

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.51 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	43 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/15/05



VERTICAL SCALE ~1"= 15'

28MAR06\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_81 BC.AI

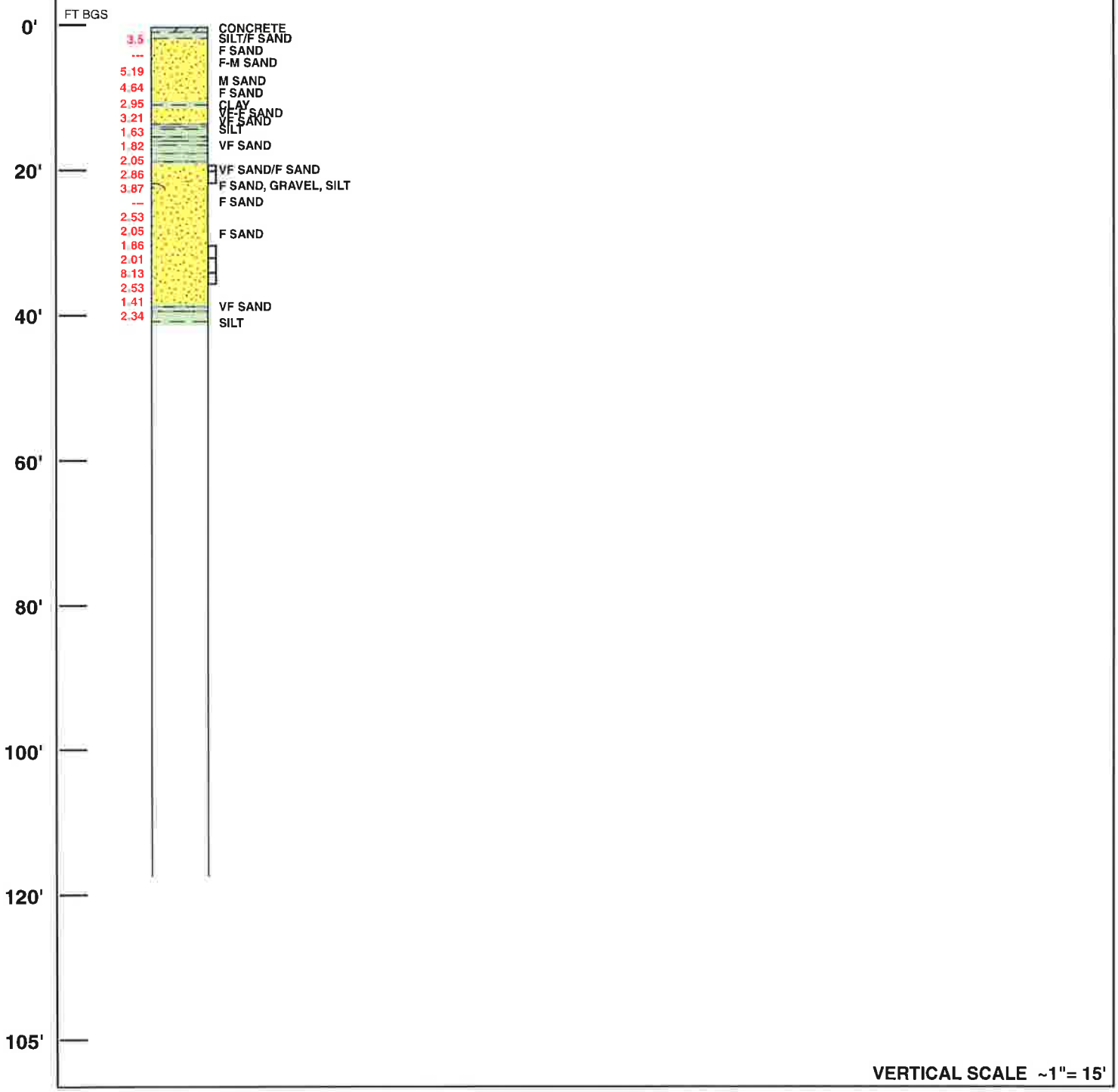
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-82 B/C

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.16 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	41 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/10/05



VERTICAL SCALE ~1"= 15'

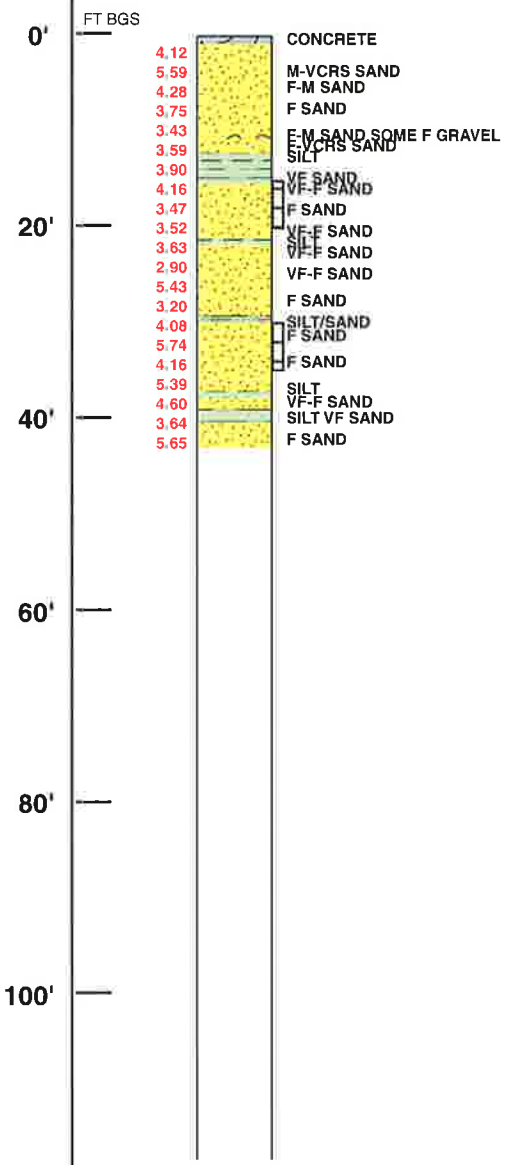
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-83 B/C

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1118.33 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	43 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/16/05



VERTICAL SCALE ~1"= 15'

28MAR06\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_83 BC.AI

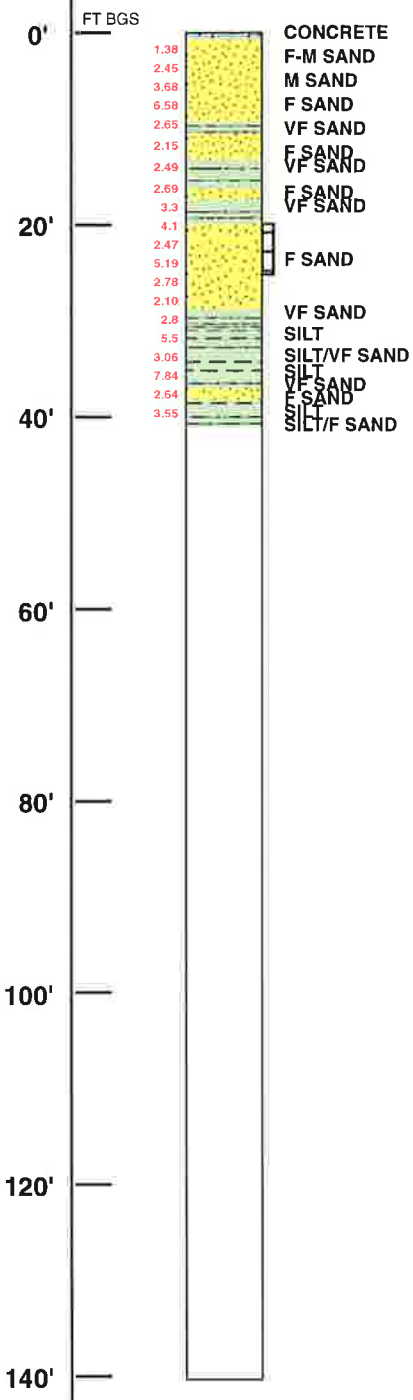
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-87B

PROJECT FORD/KINGSFORD WI001075.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.80 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	41 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/9/05



VERTICAL SCALE ~1"= 20'

28MAR06\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_87B.AI

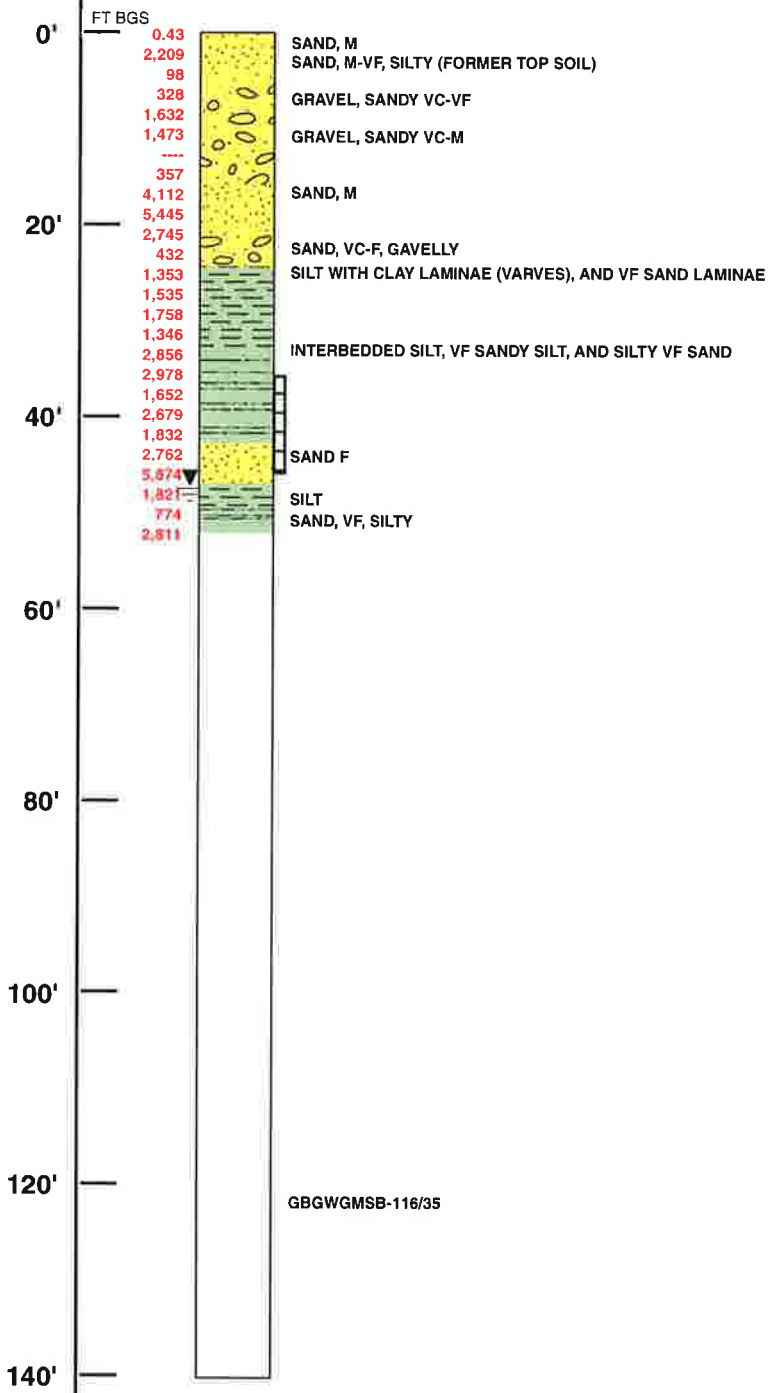
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-96

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1113.45 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Paul Dickinson	Boart Longyear	Hollow Stem Auger	05/16/03



VERTICAL SCALE ~1"= 20'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_96.AI

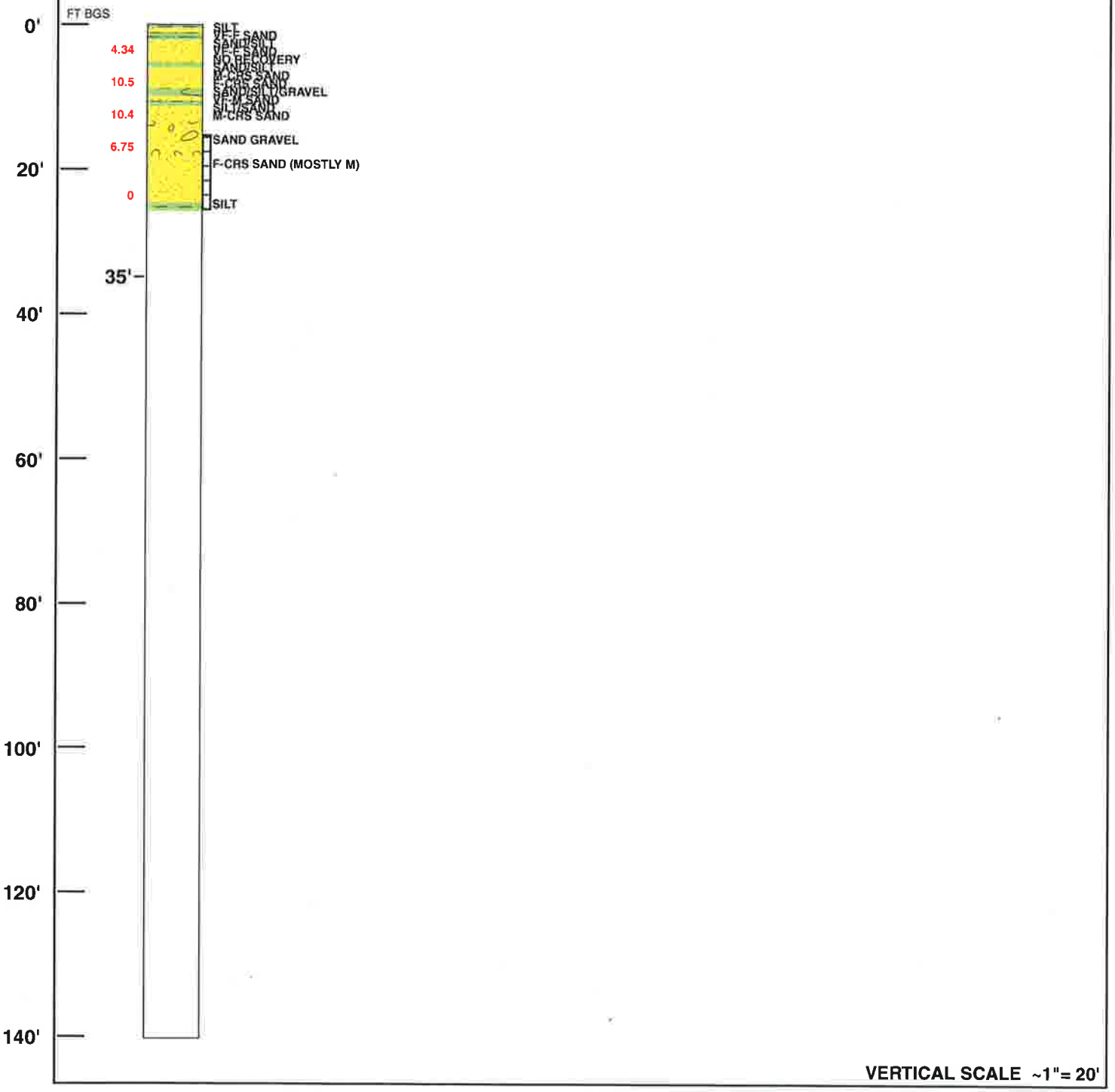
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-96A

PROJECT FORD/KINGSFORD WI001025.0023

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1113.22 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
T. Schoen	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jon Weeks	Boart Longyear	Rotasonic	06/19/04



VERTICAL SCALE ~1"= 20'

21JULY09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_96A.AI

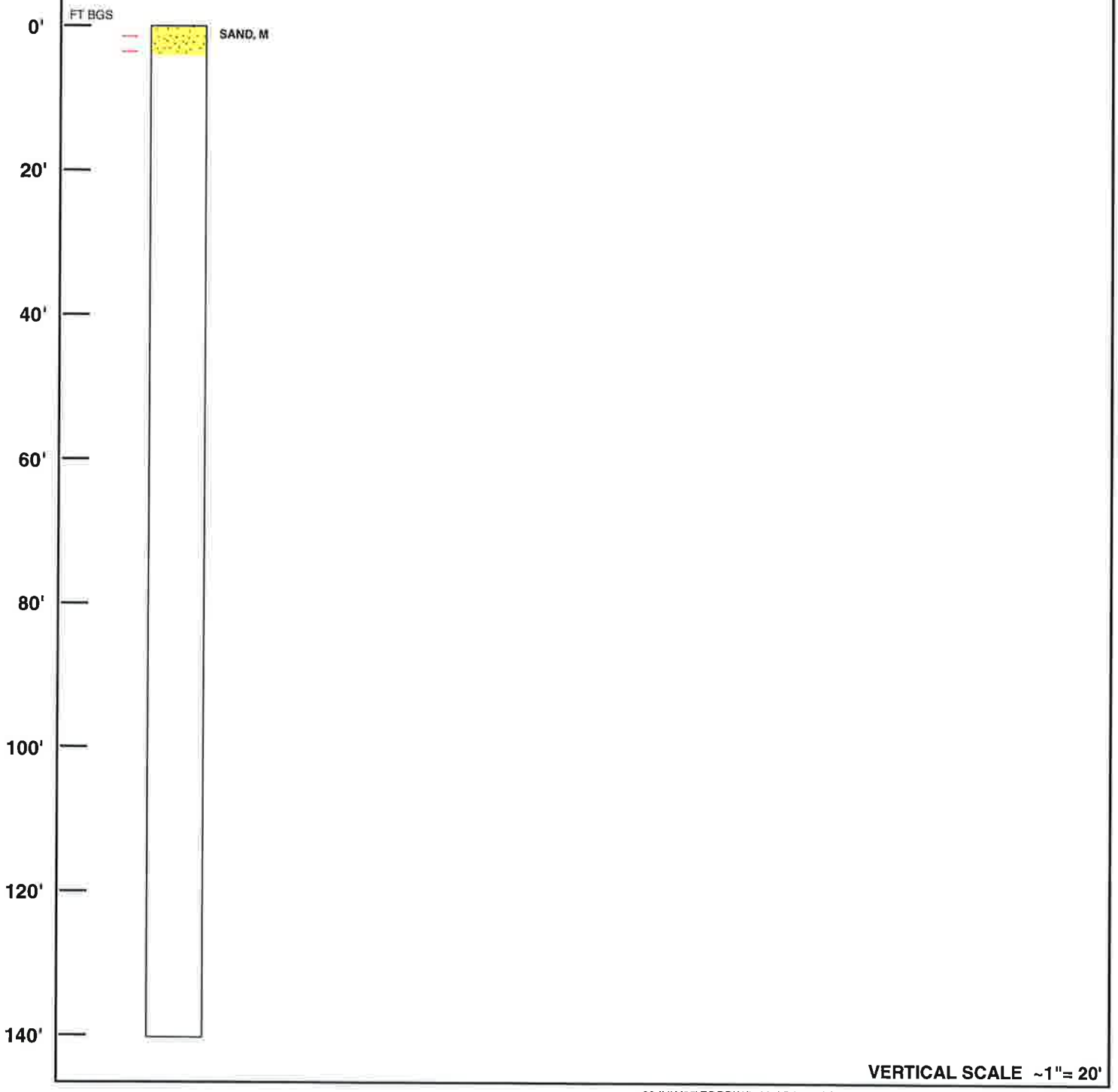
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-97

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.14 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Saari/D. Charette	Continuous	Auger Bucket	4 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
R. Saari/D. Charette	ARCADIS	Hand Auger	06/03/03



VERTICAL SCALE ~1"= 20'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_97.AI

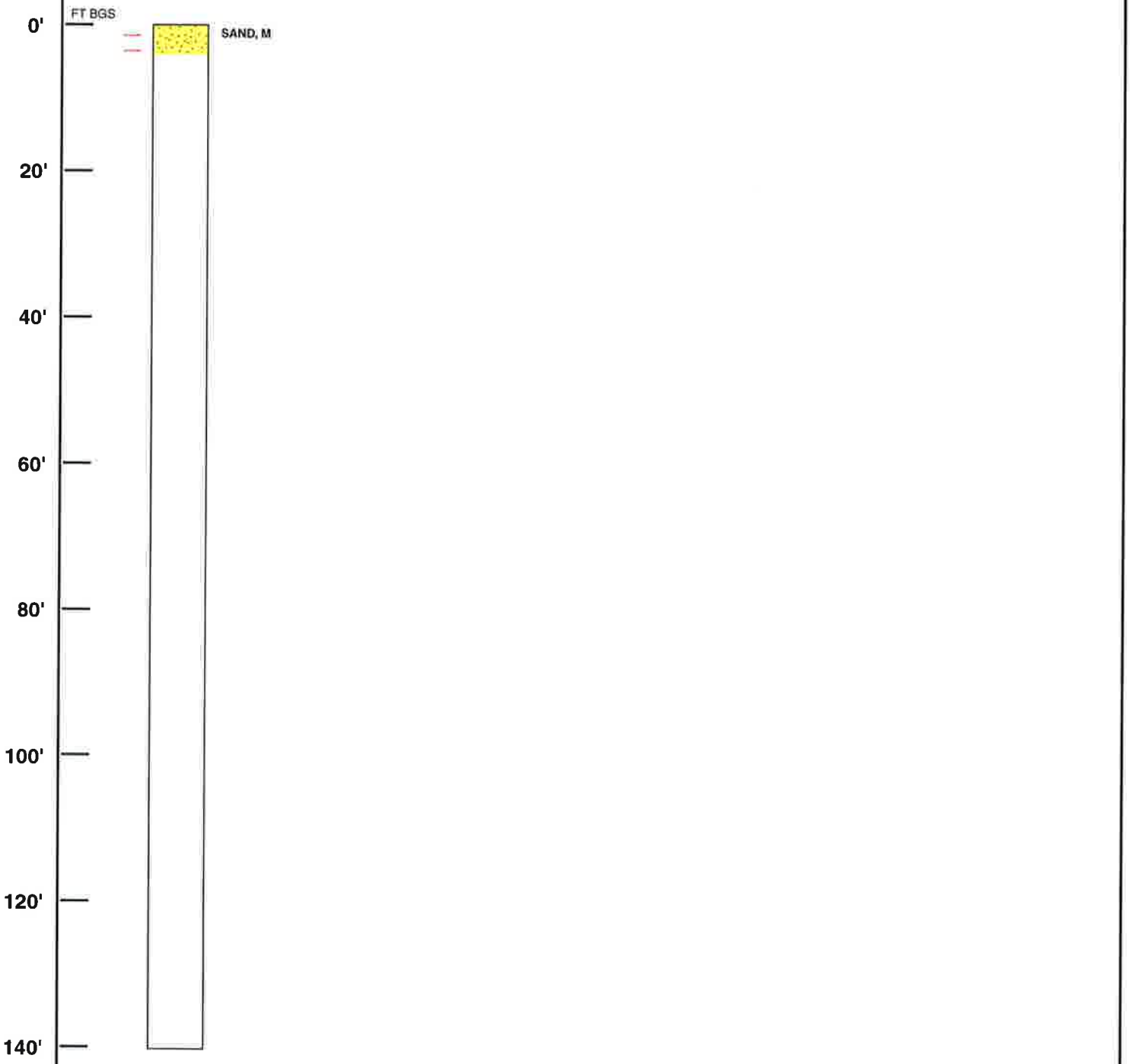
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-98

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1121.37 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Saari/D. Charette	Continuous	Auger Bucket	4 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
R. Saari/D. Charette	ARCADIS	Hand Auger	06/03/03



VERTICAL SCALE ~1"= 20'

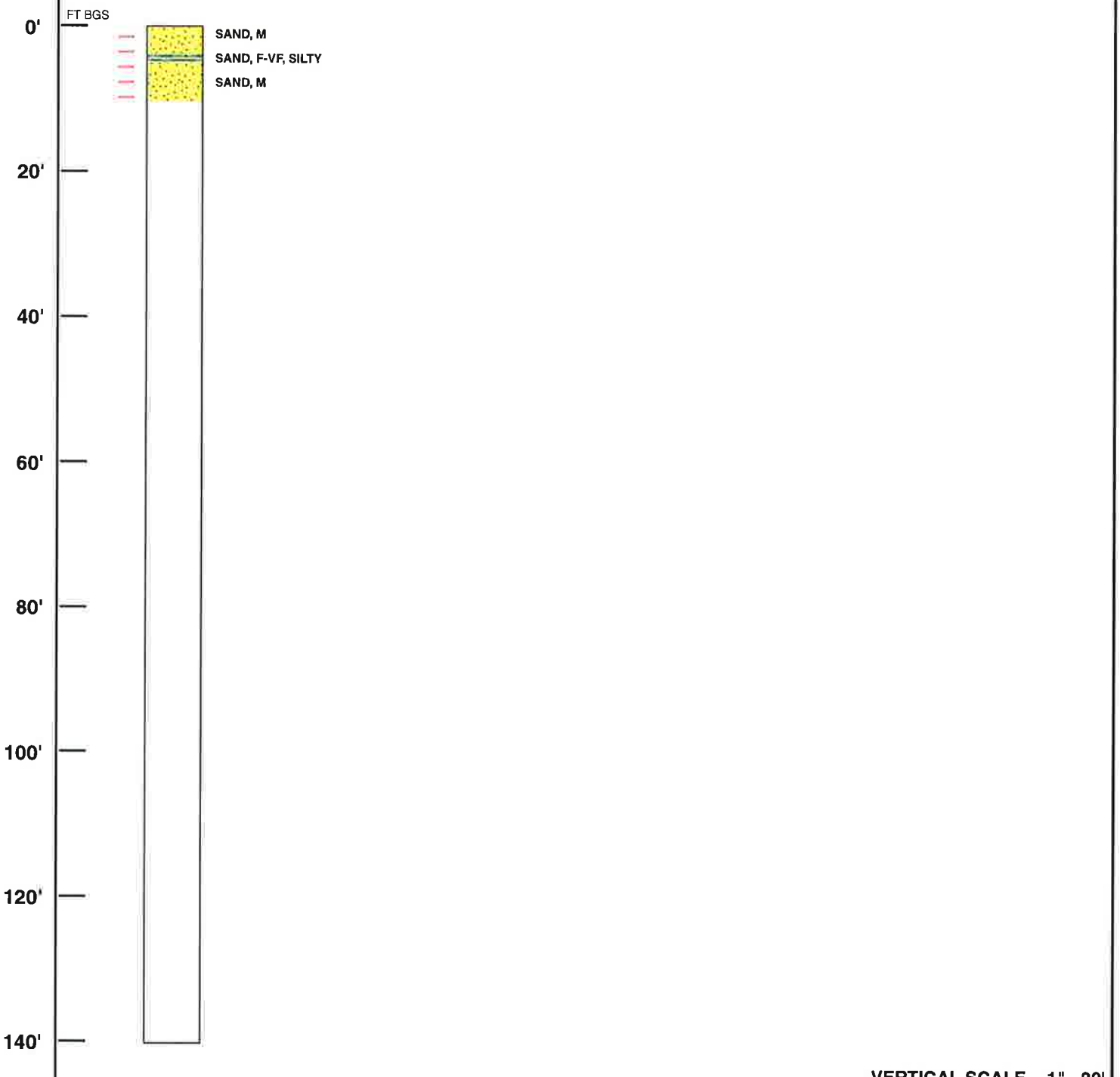
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-99

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1122.11 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Saari/D. Charette	Continuous	Auger Bucket	10.5 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
R. Saari/D. Charette	ARCADIS	Hand Auger	06/03/03



VERTICAL SCALE ~1"= 20'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_99.AI

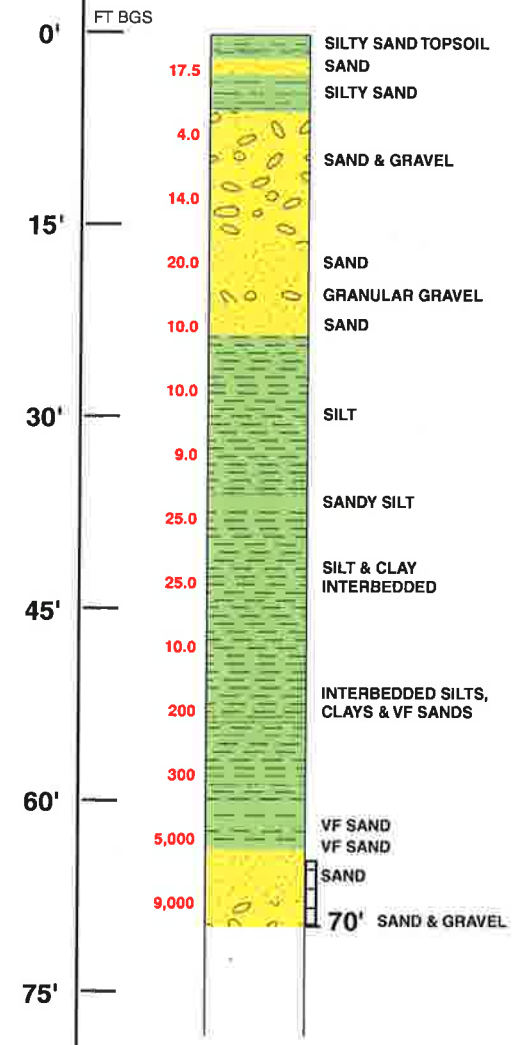
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-100

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1103.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	70 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/10/98



VERTICAL SCALE ~1"= 15'

21JULY09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_100.AI

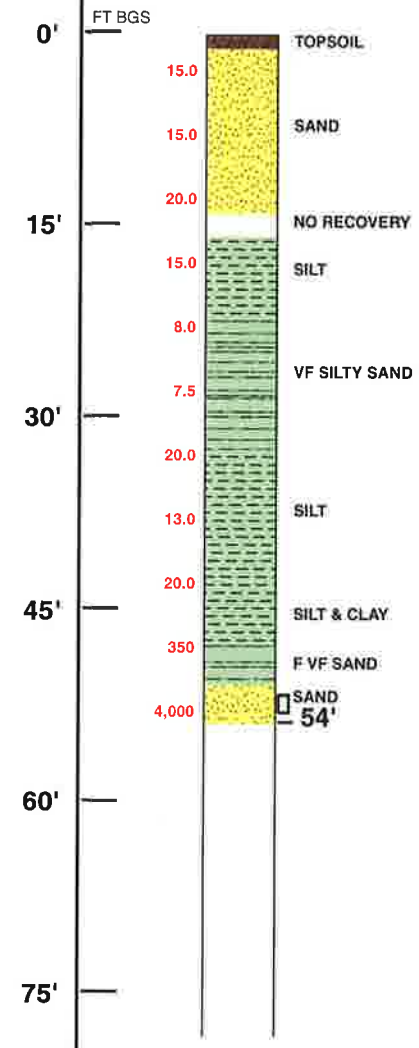
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-101

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1101.18 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	54 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/9/98



VERTICAL SCALE ~1"= 15'

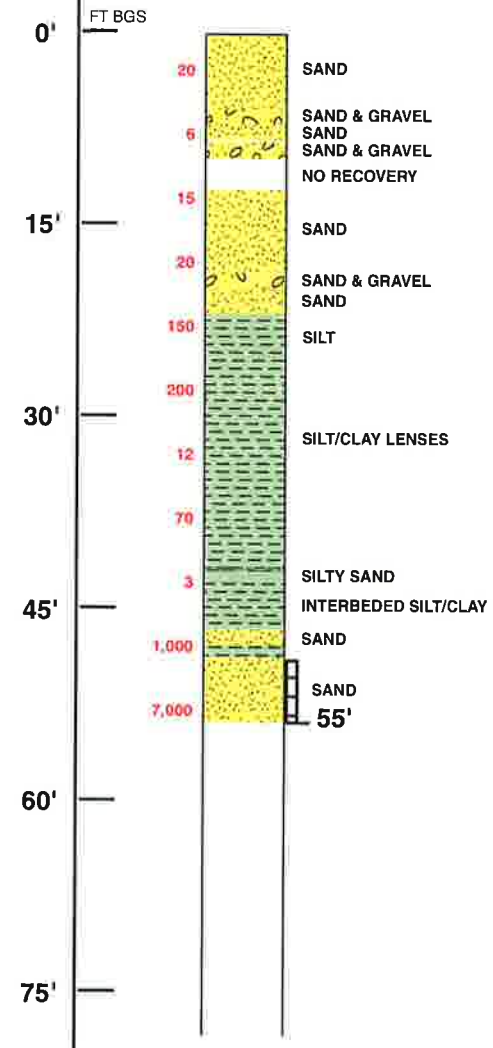
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-102

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1105.09 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	55 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/10/98



VERTICAL SCALE ~1"= 15'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_102.AI

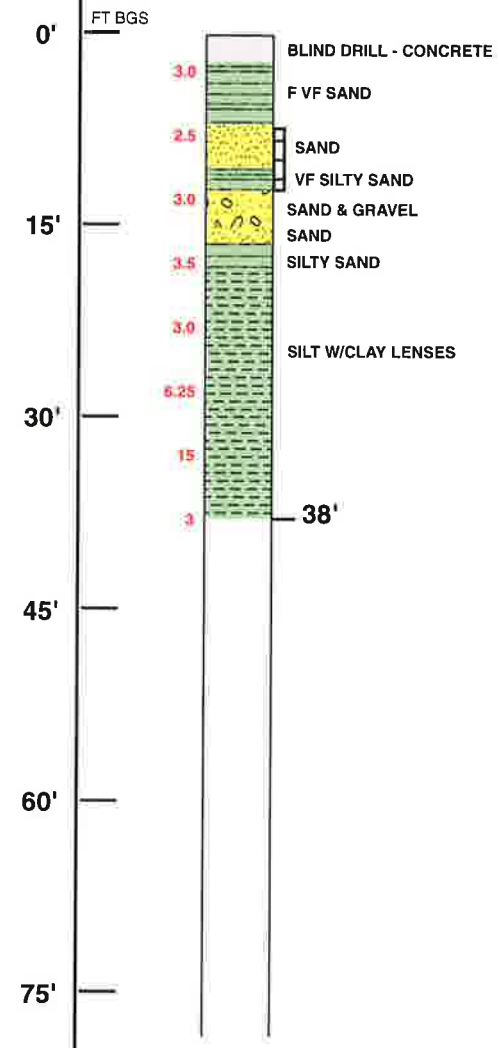
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-103

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1088.89 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/11/98



VERTICAL SCALE ~1"= 15'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_103.AI

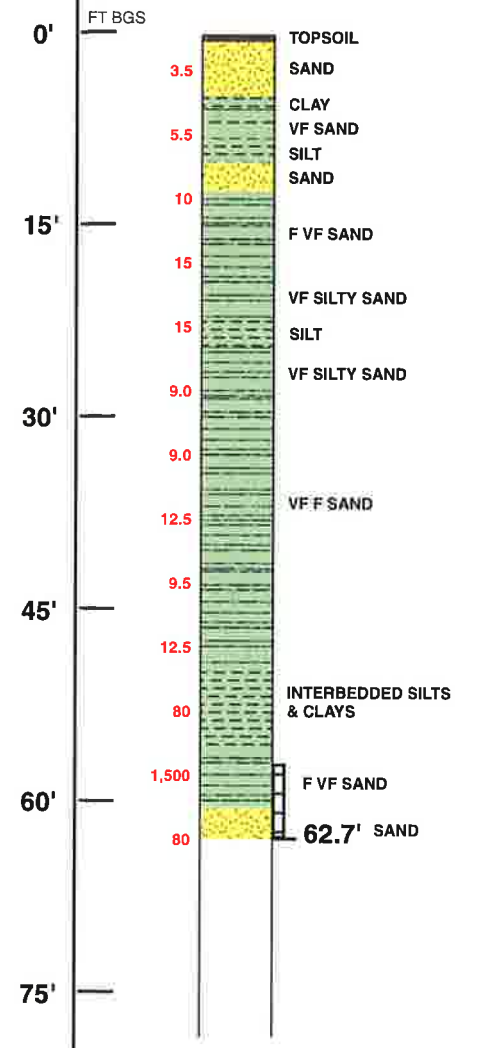
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-104

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1097.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	62.7 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/12/98



VERTICAL SCALE ~1"= 15'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_104.AI

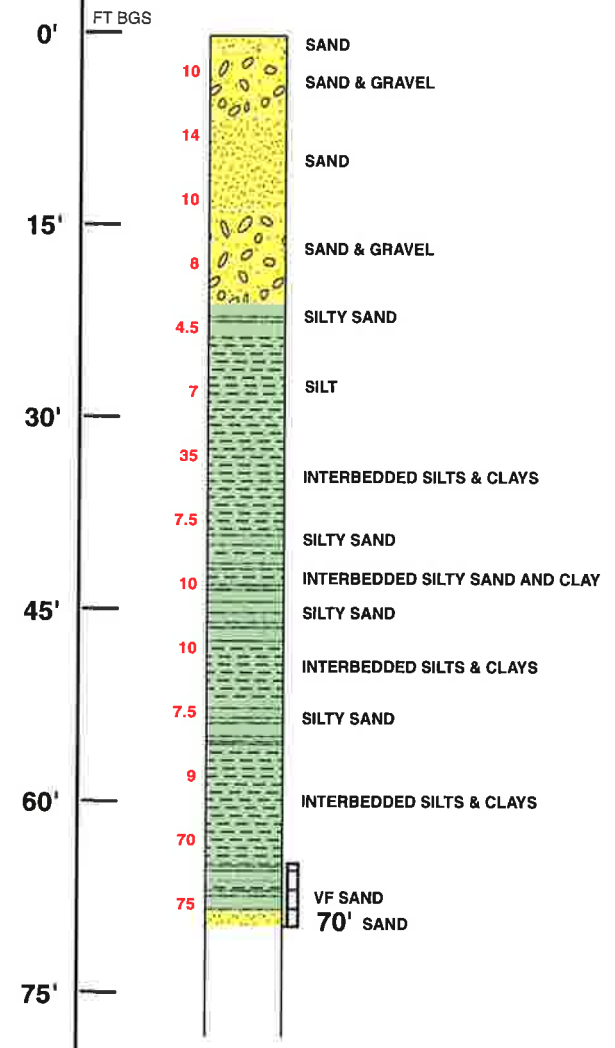
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-105

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1097.33 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 70 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 7/13/98



VERTICAL SCALE ~1"= 15'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_105.AI

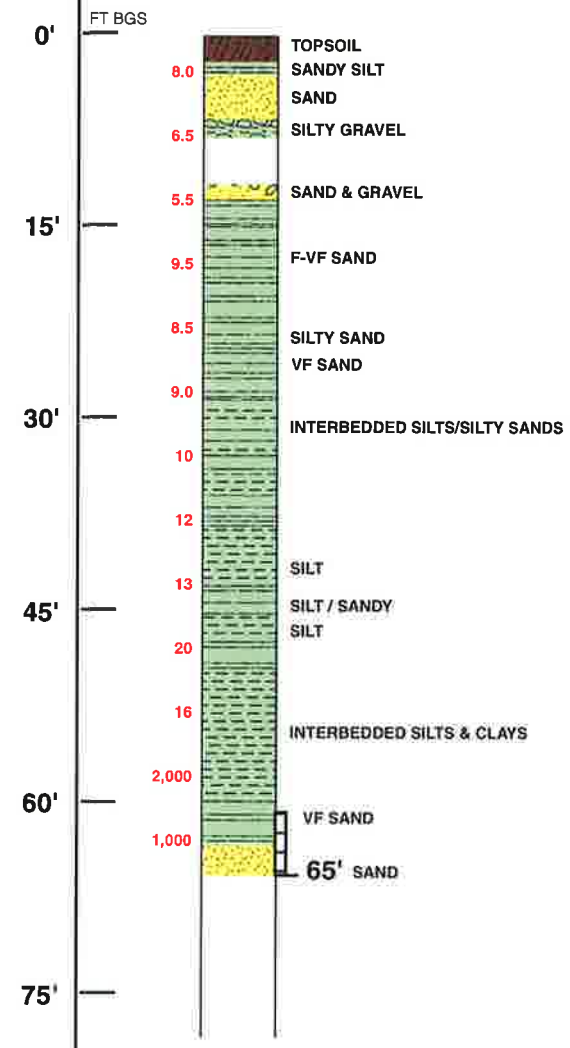
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-106

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1088.60 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	65 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/13/98



VERTICAL SCALE ~1"= 15'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_106.AI

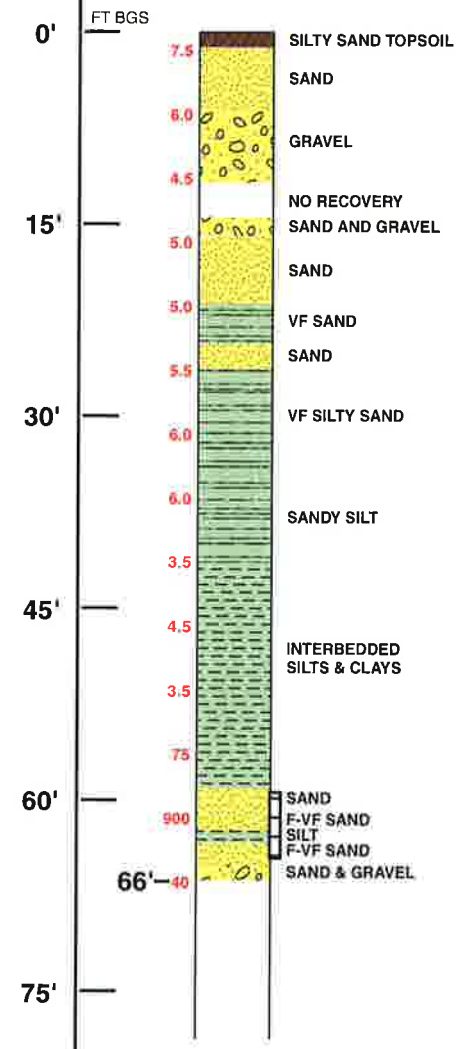
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-107

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1189.27 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	66 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/21/98



VERTICAL SCALE ~1"= 15'

29JULY05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_107.AI

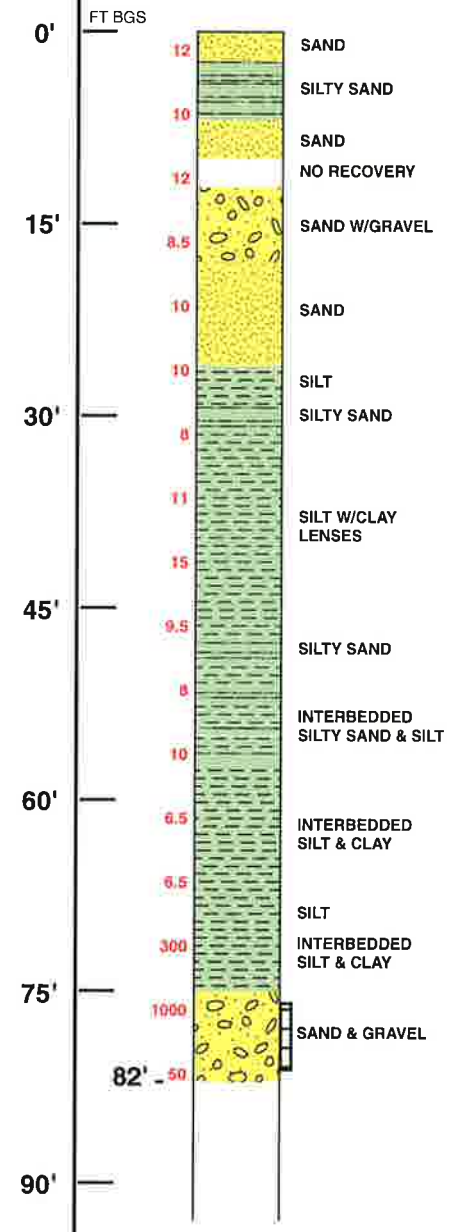
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-108

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1109.84 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	82 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/22/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_108.AI

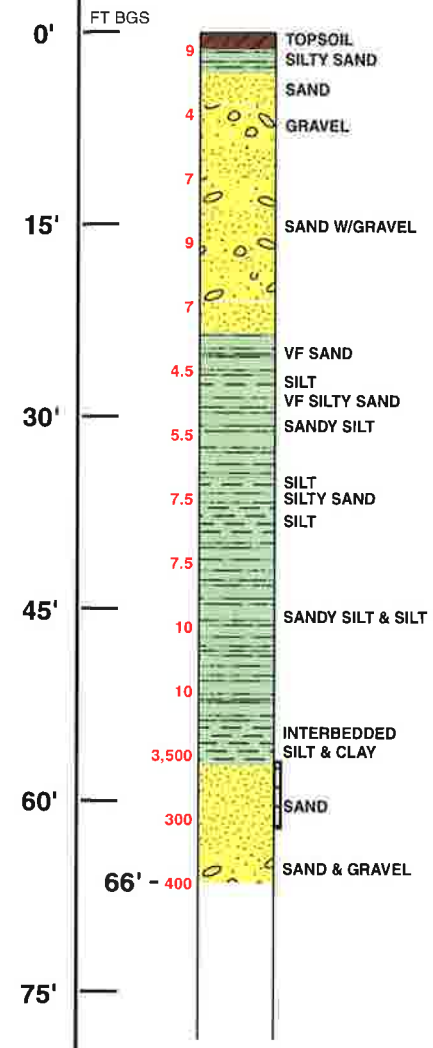
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-109

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.66 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	66 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/23/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_109.AI

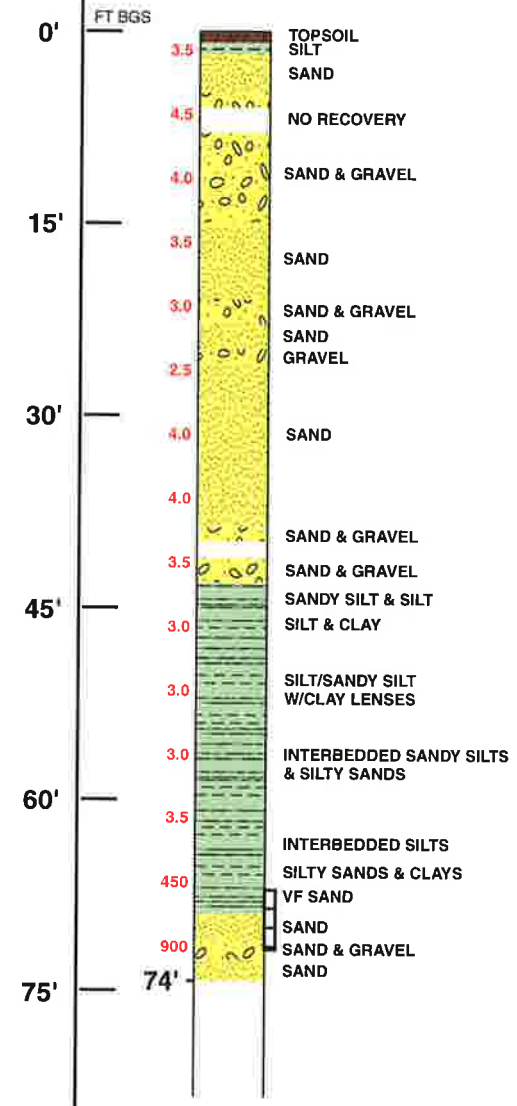
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-110

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1094.79 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 74 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/9/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_110.AI

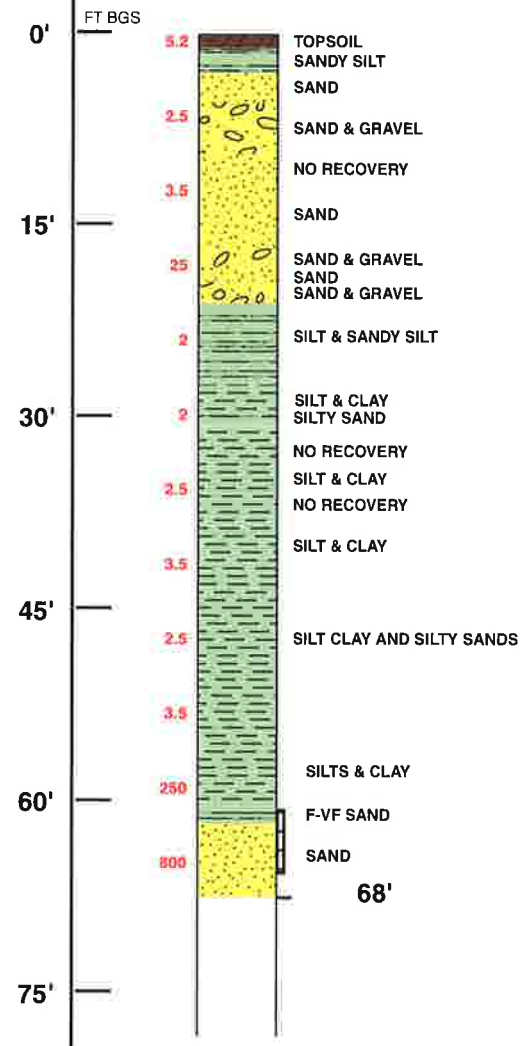
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-111

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1088.87 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	68 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	8/10/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_111.AI

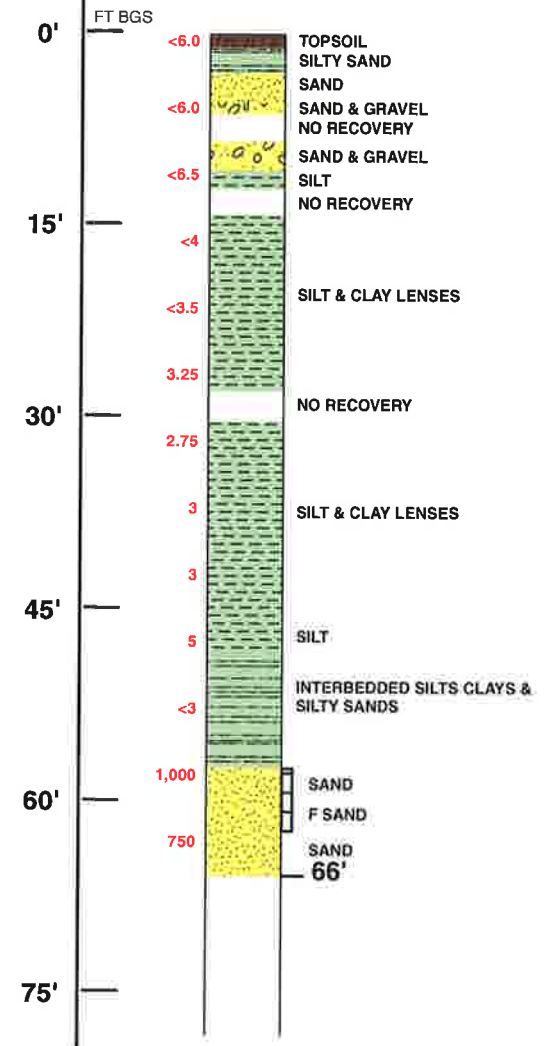
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-112

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.14 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	66 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	8/11/98



VERTICAL SCALE ~1"= 15'

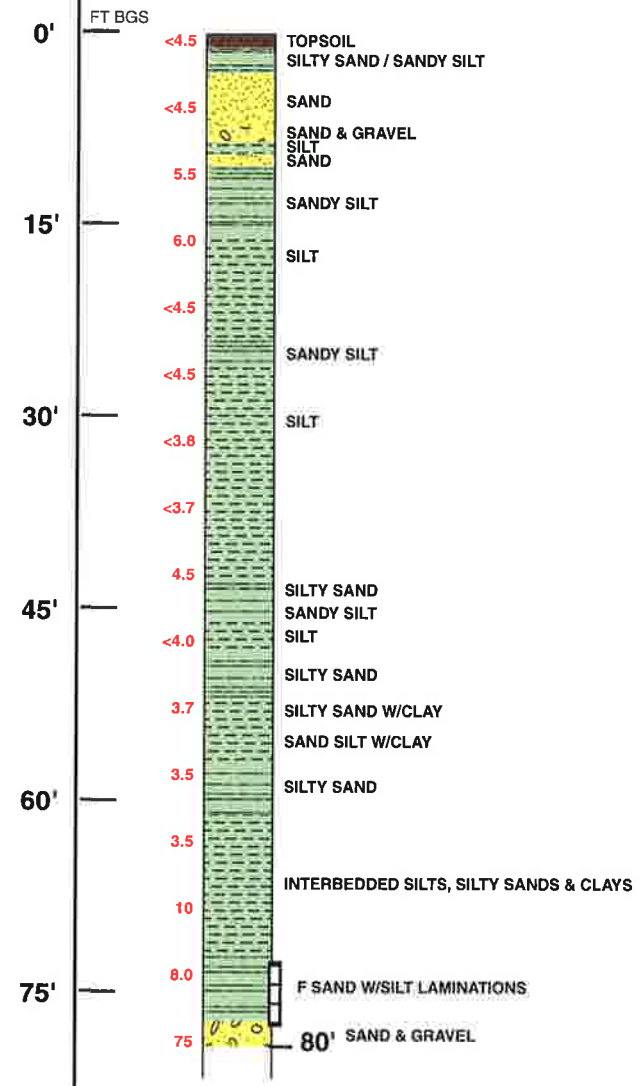
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-113

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1102.36 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	80 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	8/18/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_113.AI

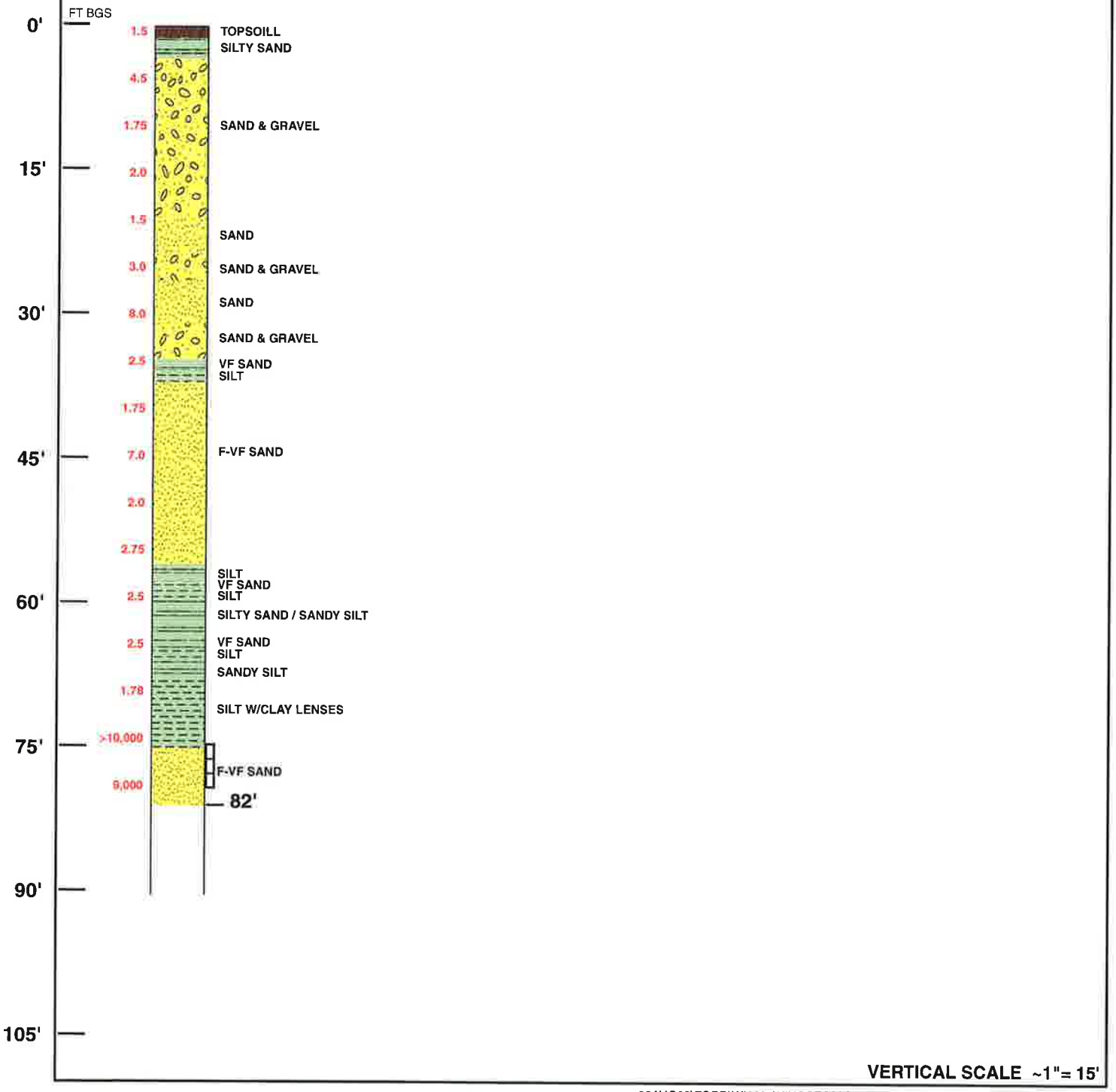
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-116

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1121.78 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 82 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/25/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\KINGSFOR\GRAPHICS\POST798\DRAWING: GMSG_116.AI

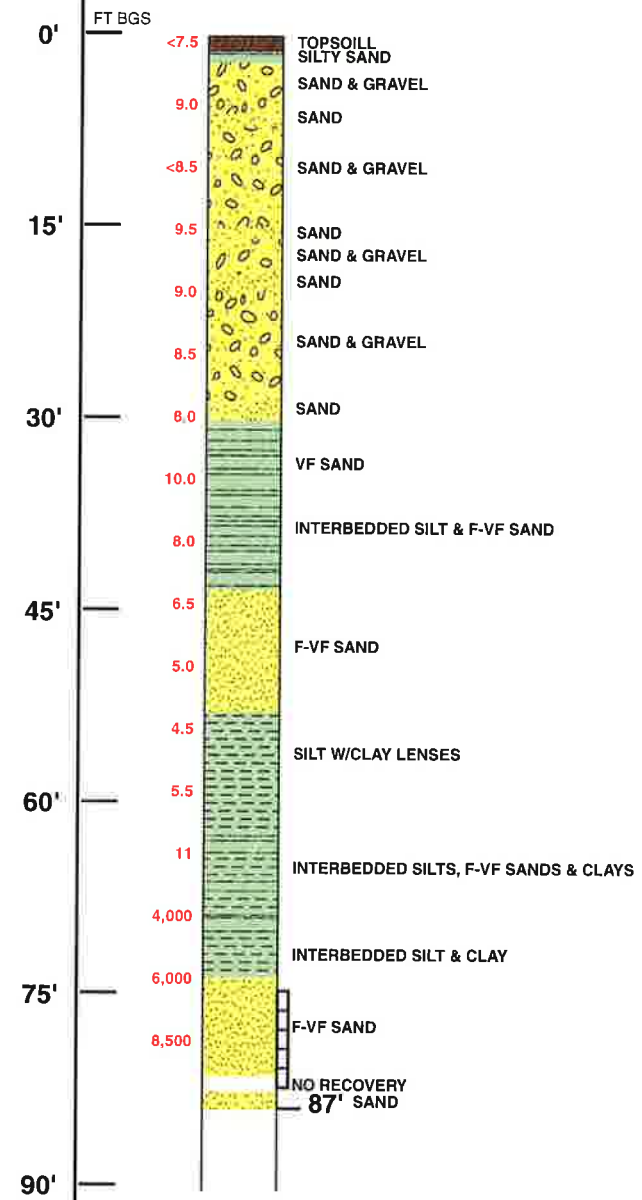
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-117

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1118.83 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 87 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 9/1/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_117.AI

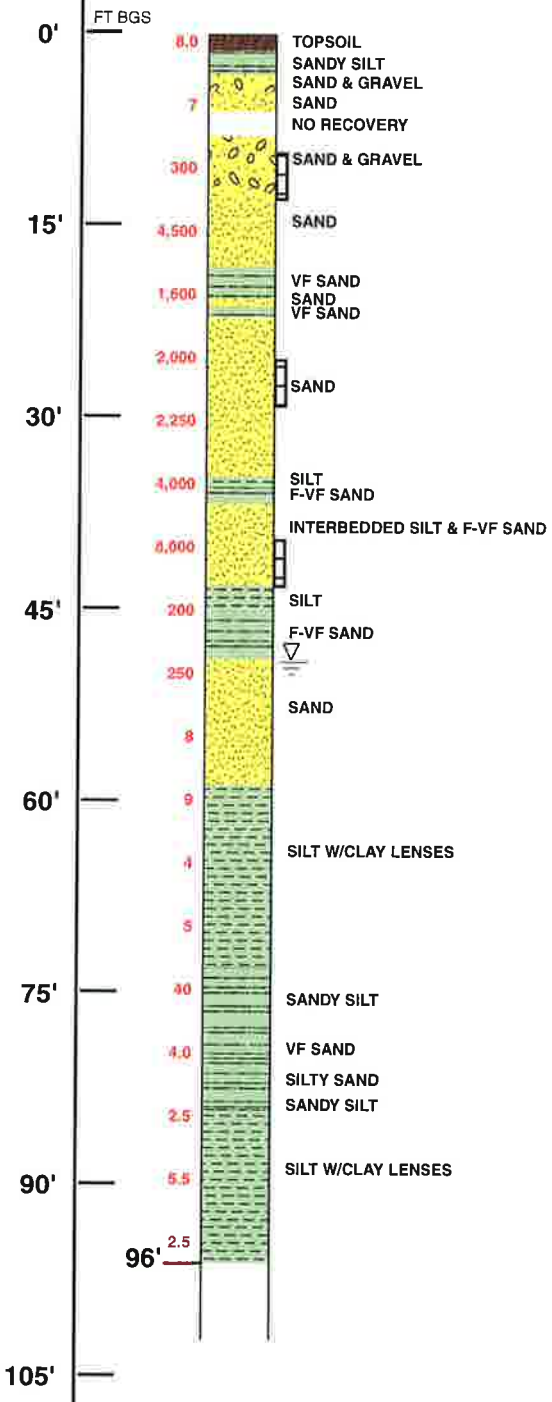
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-118 (A/B/C)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.25 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	96 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/10/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_118.AI

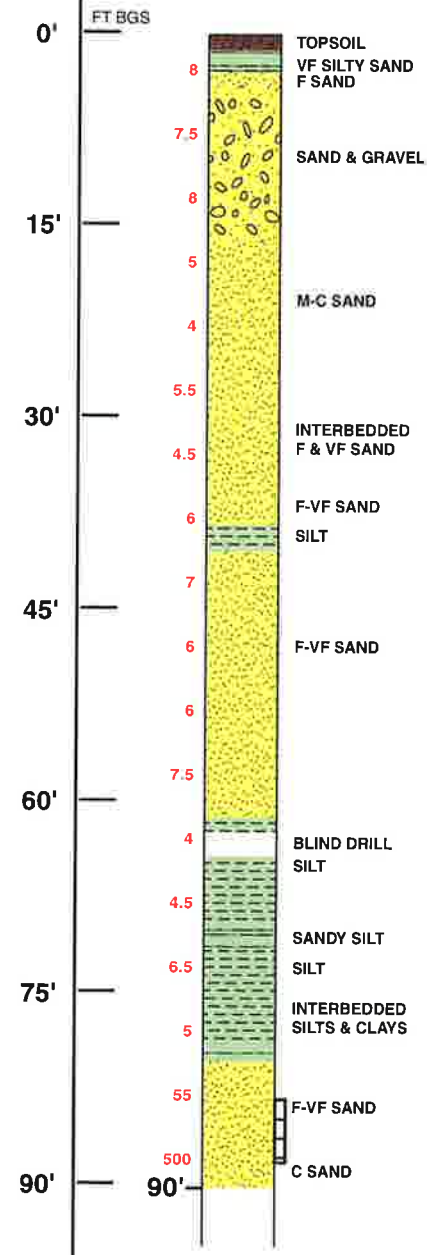
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-119

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1119.69 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 90 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 9/15/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_119.AI

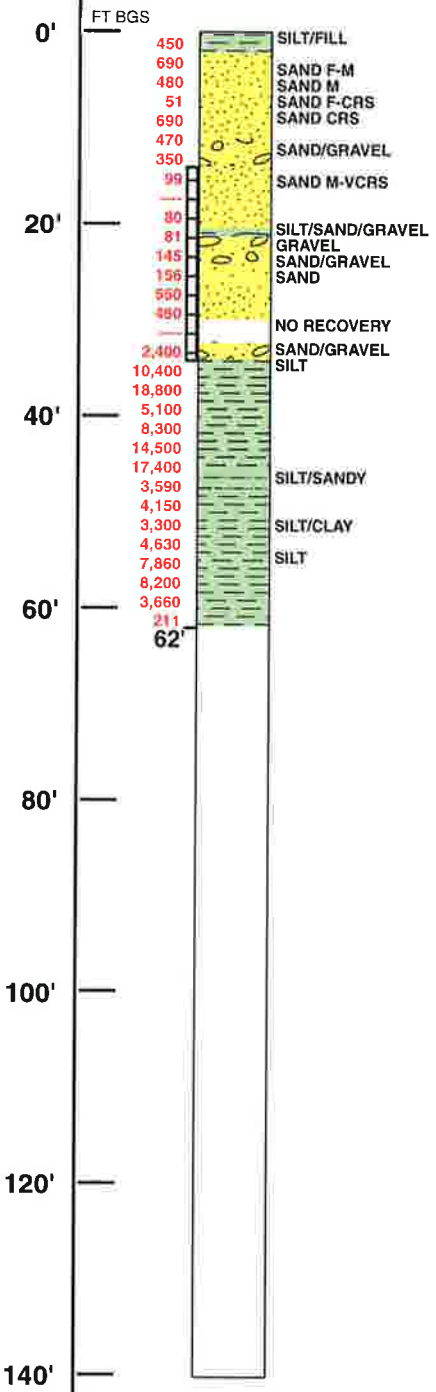
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-120

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1132.59 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	Splitspoon	62 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
J. Flaminio	Boart Longyear	Hollow Stem Auger	10/27/03



VERTICAL SCALE ~1"= 20'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_120.AI

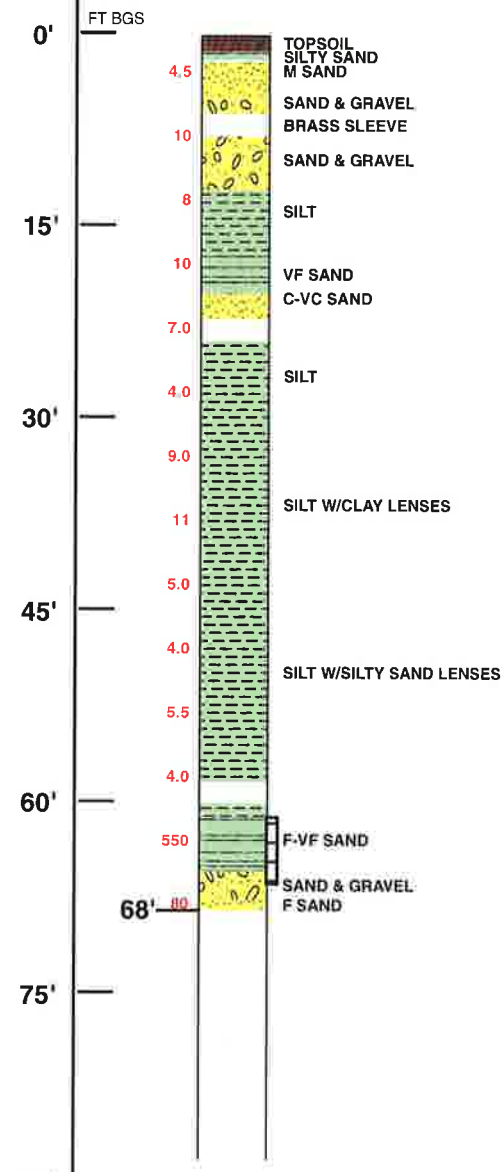
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-122

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1090.18 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 68 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 9/25/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_122.AI

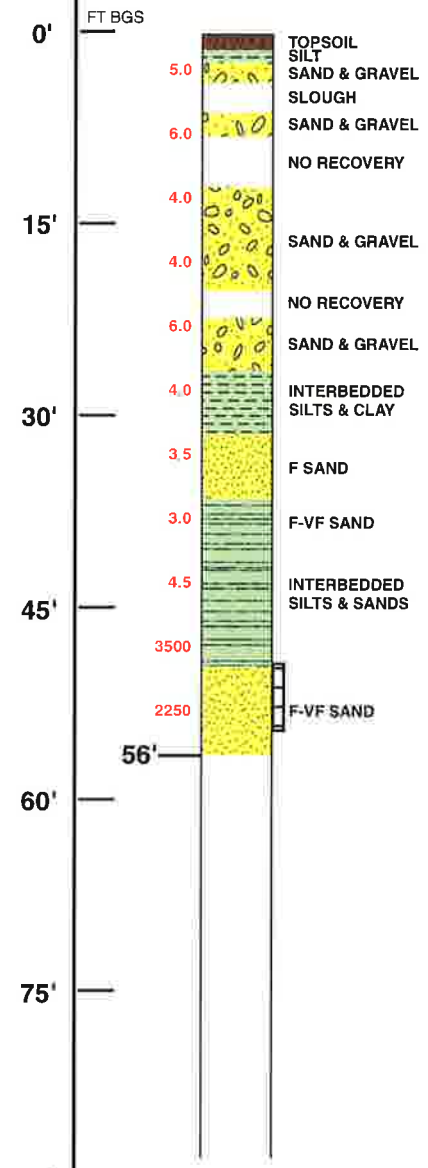
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-123

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.99 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	56 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/28/98



VERTICAL SCALE ~1"= 15'

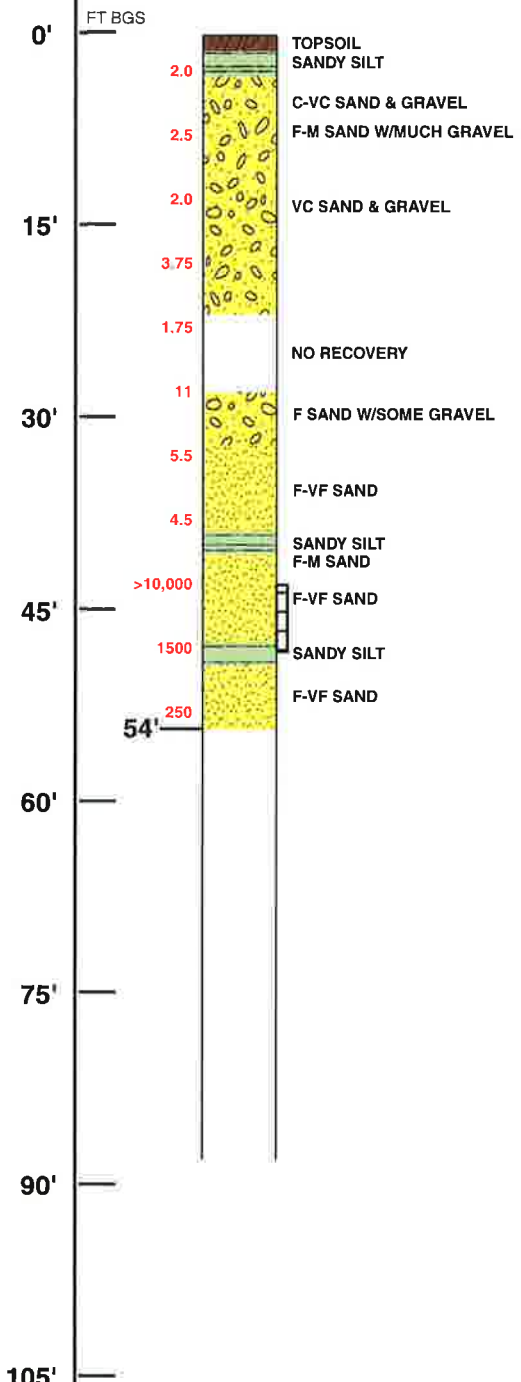
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-124

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.12 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	54 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/30/98



VERTICAL SCALE ~1"= 15'

02AUG05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_124.AI

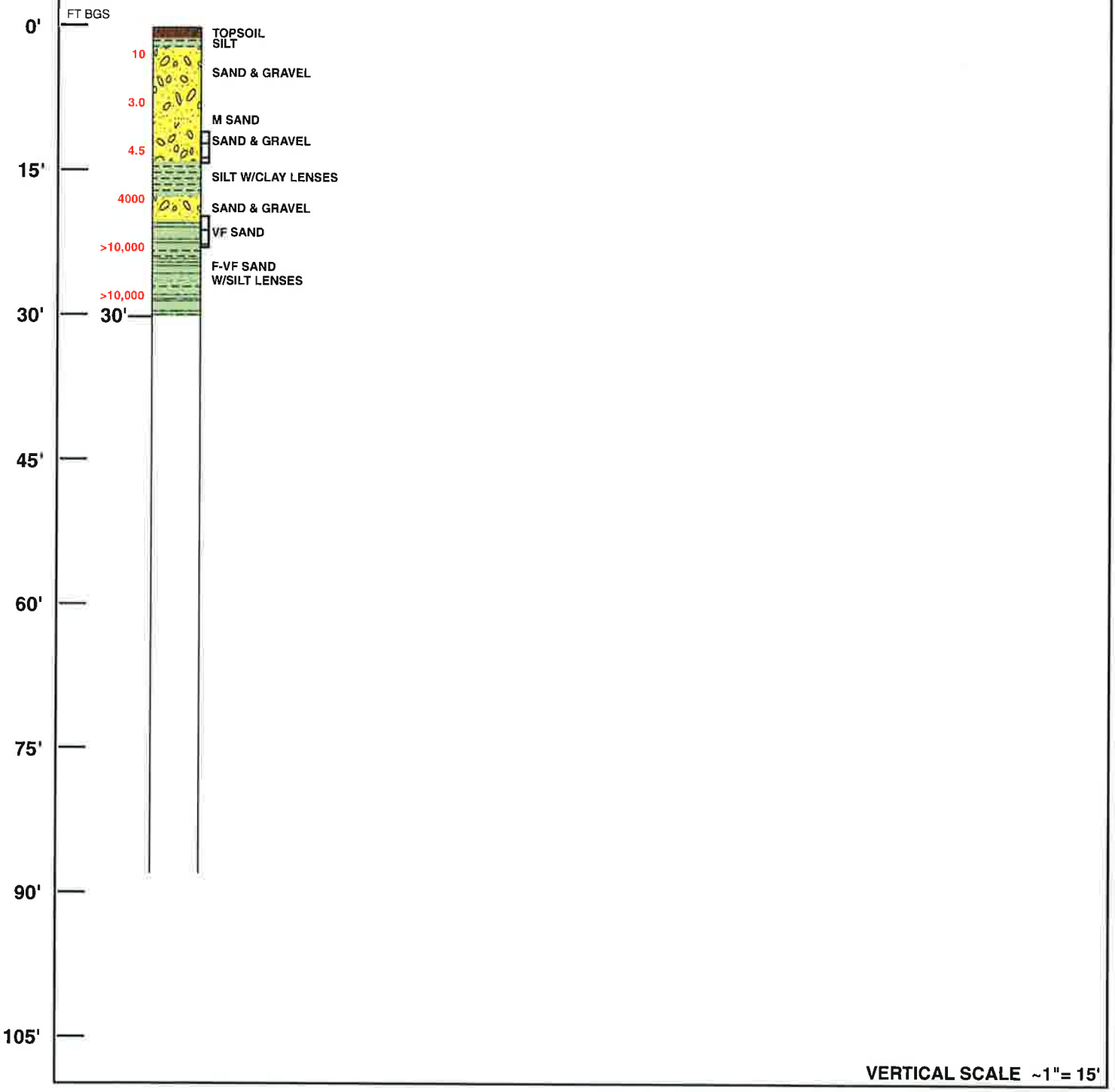
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-125 (A/B)

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1115.59 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	30 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	10/6/98



VERTICAL SCALE ~1"= 15'

25AUG05\FORD\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_125.AI

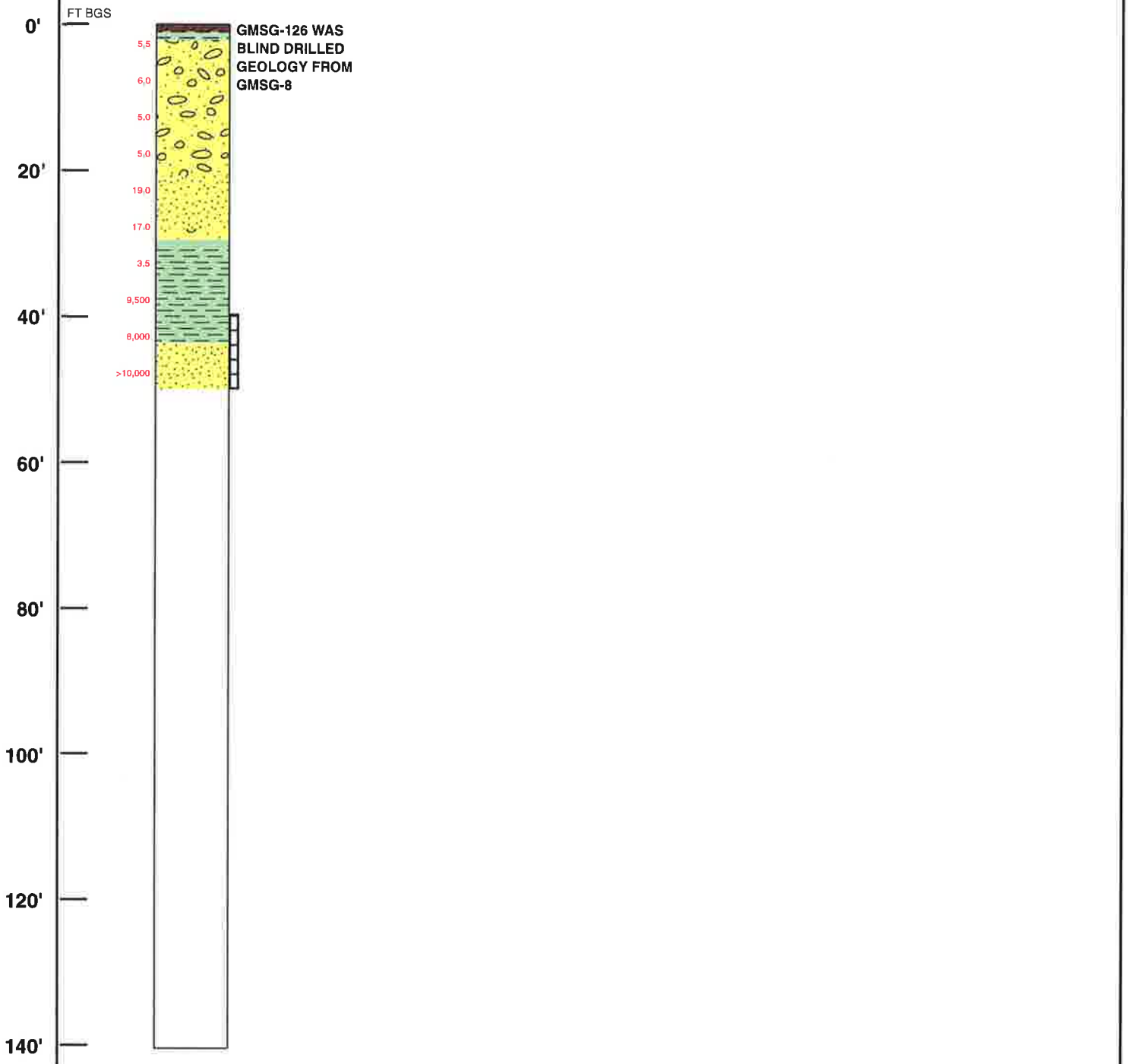
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-126

PROJECT FORD/KINGSFORD WI001075.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1122.05 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	None	49 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gary	Boart Longyear	Hollow Stem Auger	4/5/04



VERTICAL SCALE ~1"= 20'

17AUG04\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_126.AI

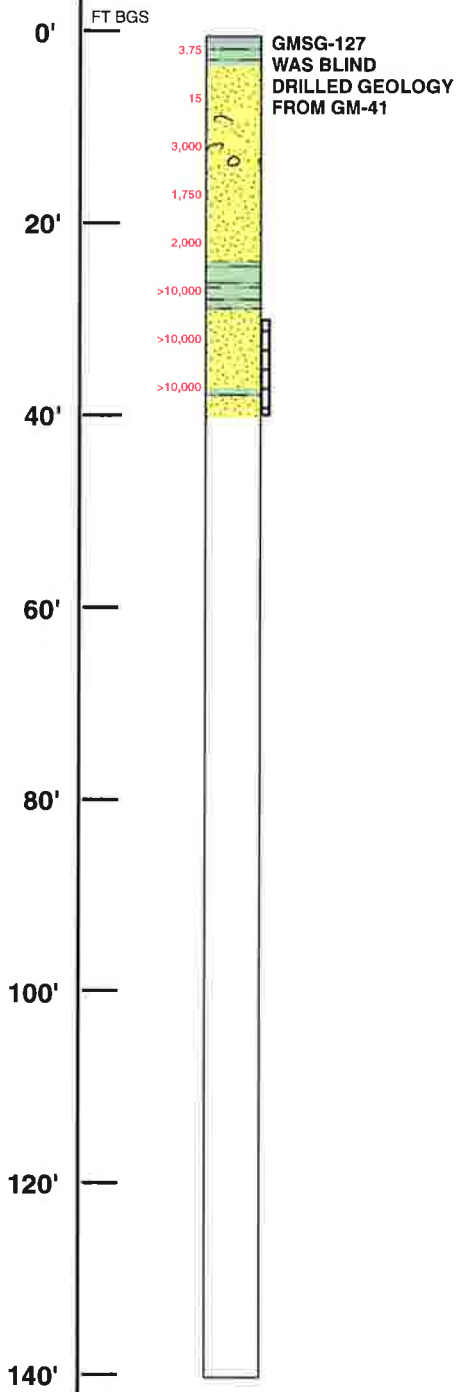
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-127

PROJECT FORD/KINGSFORD WI001075.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.13 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Lenaker	Continuous	None	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Gary	Boart Longyear	Hollow Stem Auger	4/5/04



VERTICAL SCALE ~1"= 20'

09FEB05\FORD\WI0637\2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_127.AI

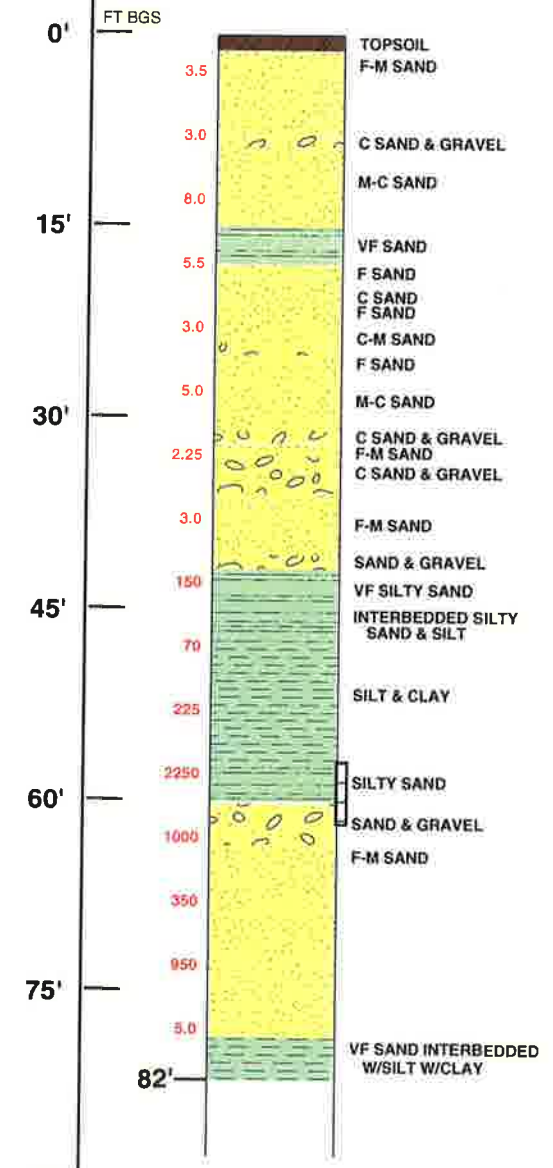
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-128

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1090.92 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	82 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	12/15/98



VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST199\DRAWING: GMSG_128.AI

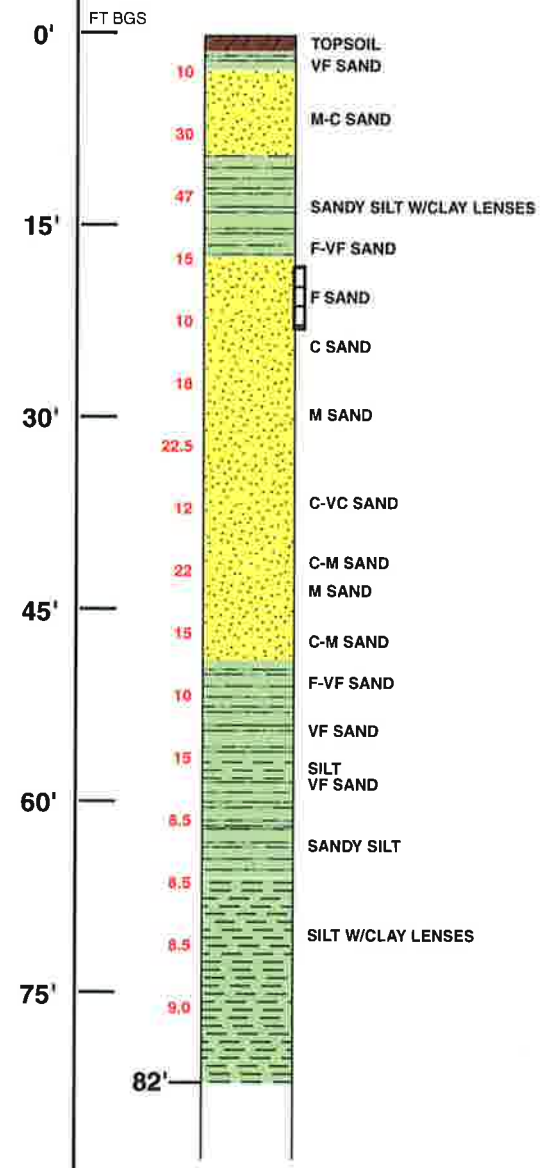
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-129

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1092.78 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 82 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 12/17/98



VERTICAL SCALE ~1"= 15'

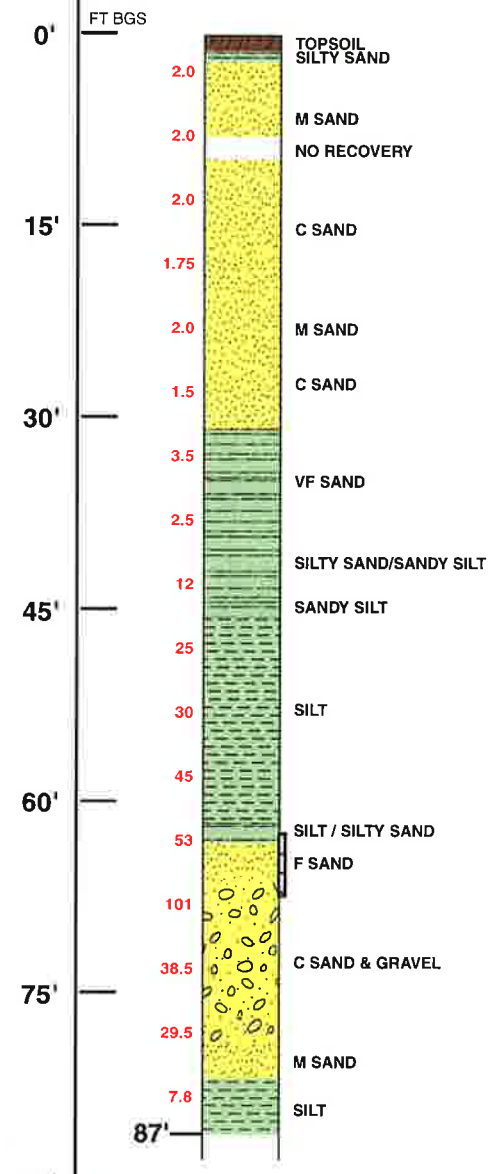
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-130

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1091.10 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	87 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	12/18/98



VERTICAL SCALE ~1"= 15'

14OCT05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_130.AI

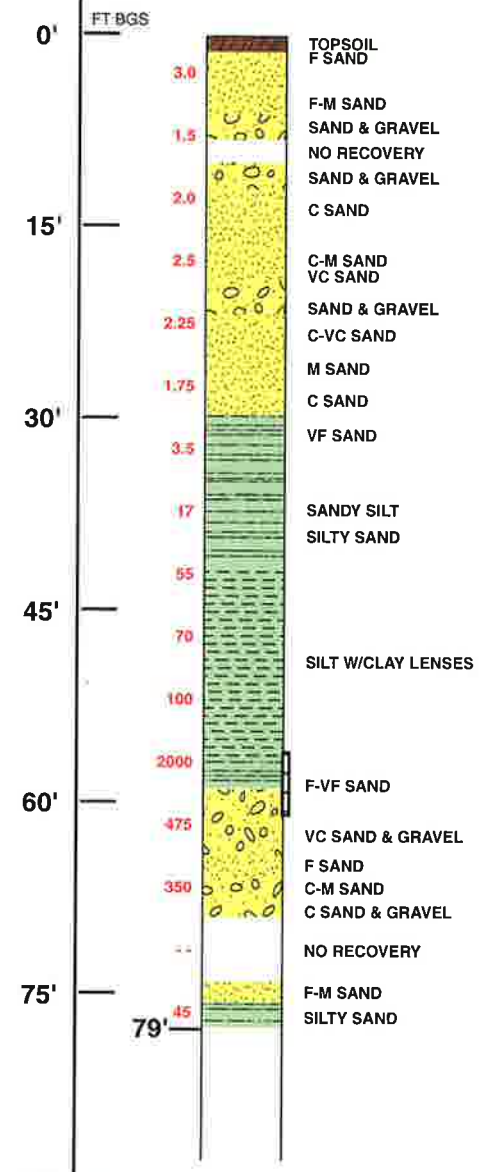
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-131

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1090.82 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	79 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	12/19/98



VERTICAL SCALE ~1"= 15'

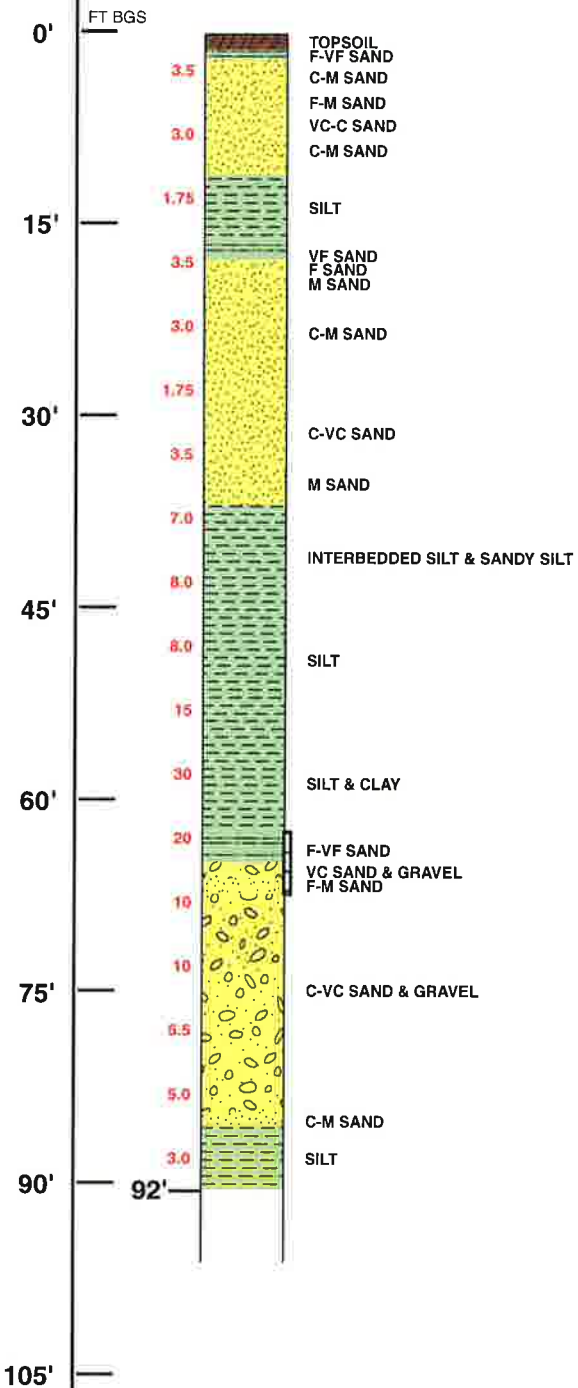
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-132

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1092.17 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	92 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	12/20/98



VERTICAL SCALE ~1"= 15'

14OCT05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_132.AI

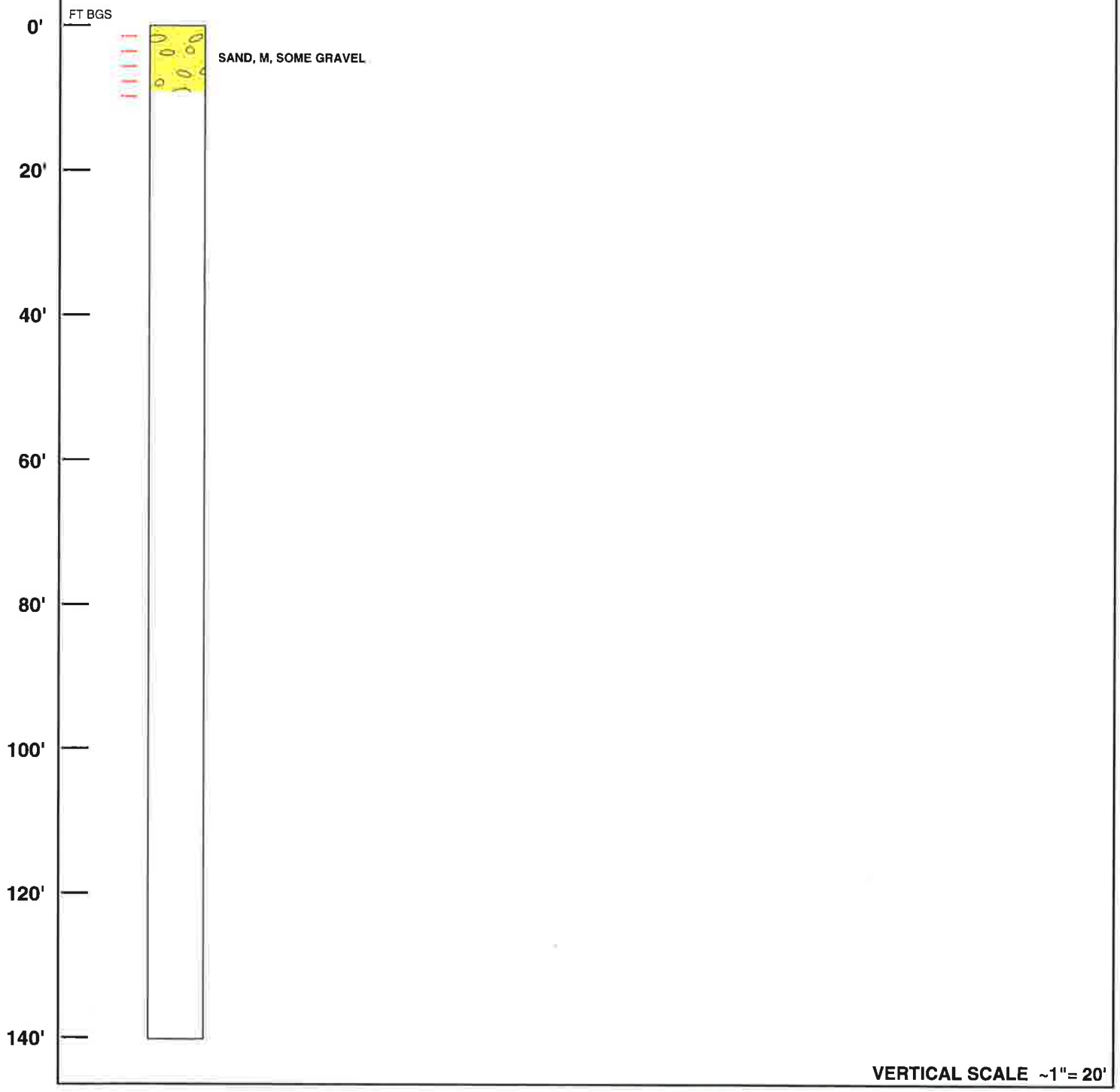
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-133

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.77 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
R. Saari/D. Charette	Continuous	Auger Bucket	9 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
R. Saari/D. Charette	ARCADIS	Hand Auger	06/03/03



VERTICAL SCALE ~1"= 20'

29JAN04\FORD\WI0637\2004\GRAPHICS\STRAT LOGS\DRAWING: GMSG_133.AI

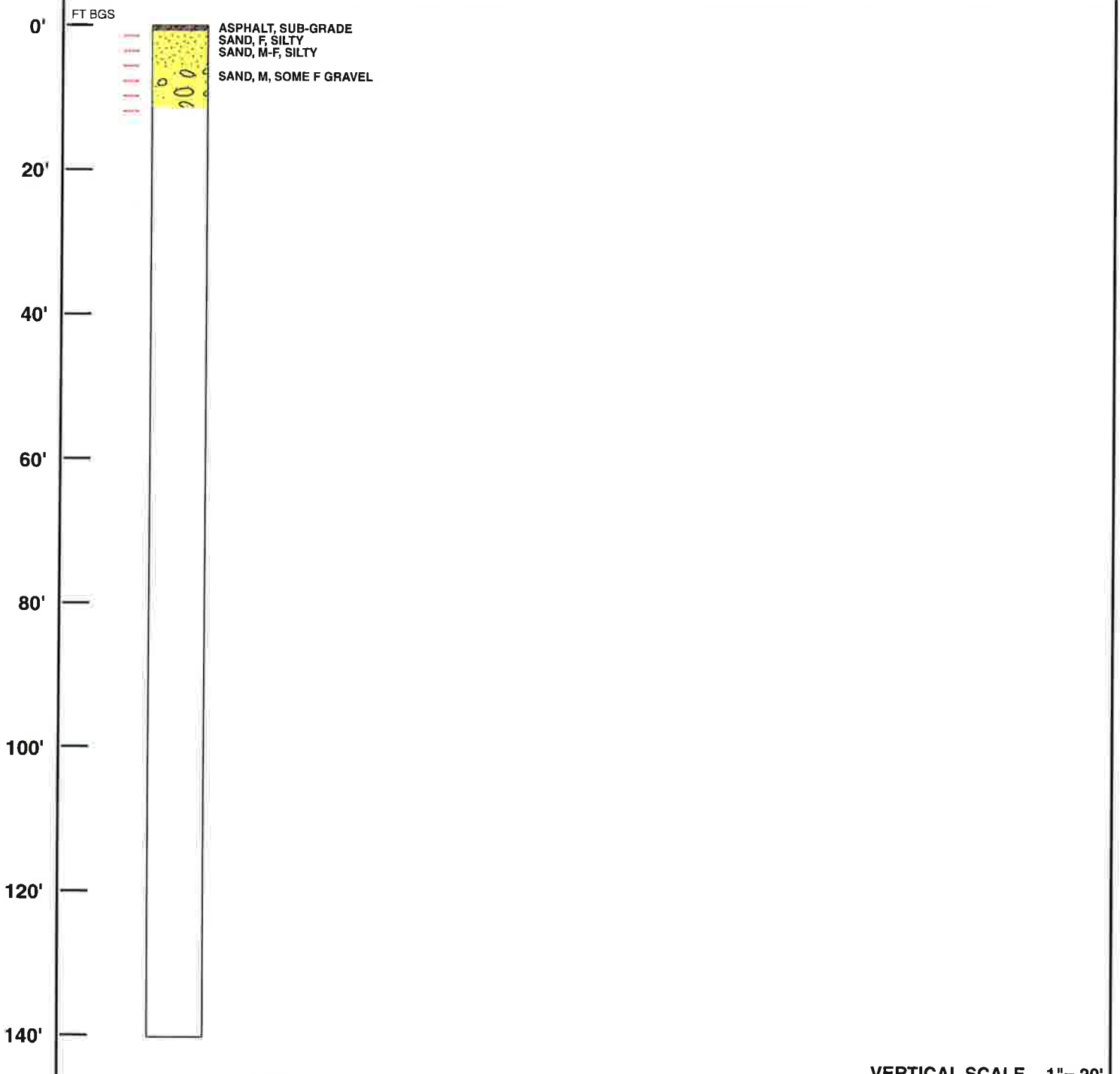
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-134

PROJECT FORD/KINGSFORD WI001025.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1,122.31 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
P. Bartnik	Continuous	Auger Bucket	11.33 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
P. Bartnik	ARCADIS	Hand Auger	06/12/03



VERTICAL SCALE ~1"= 20'

ARCADIS

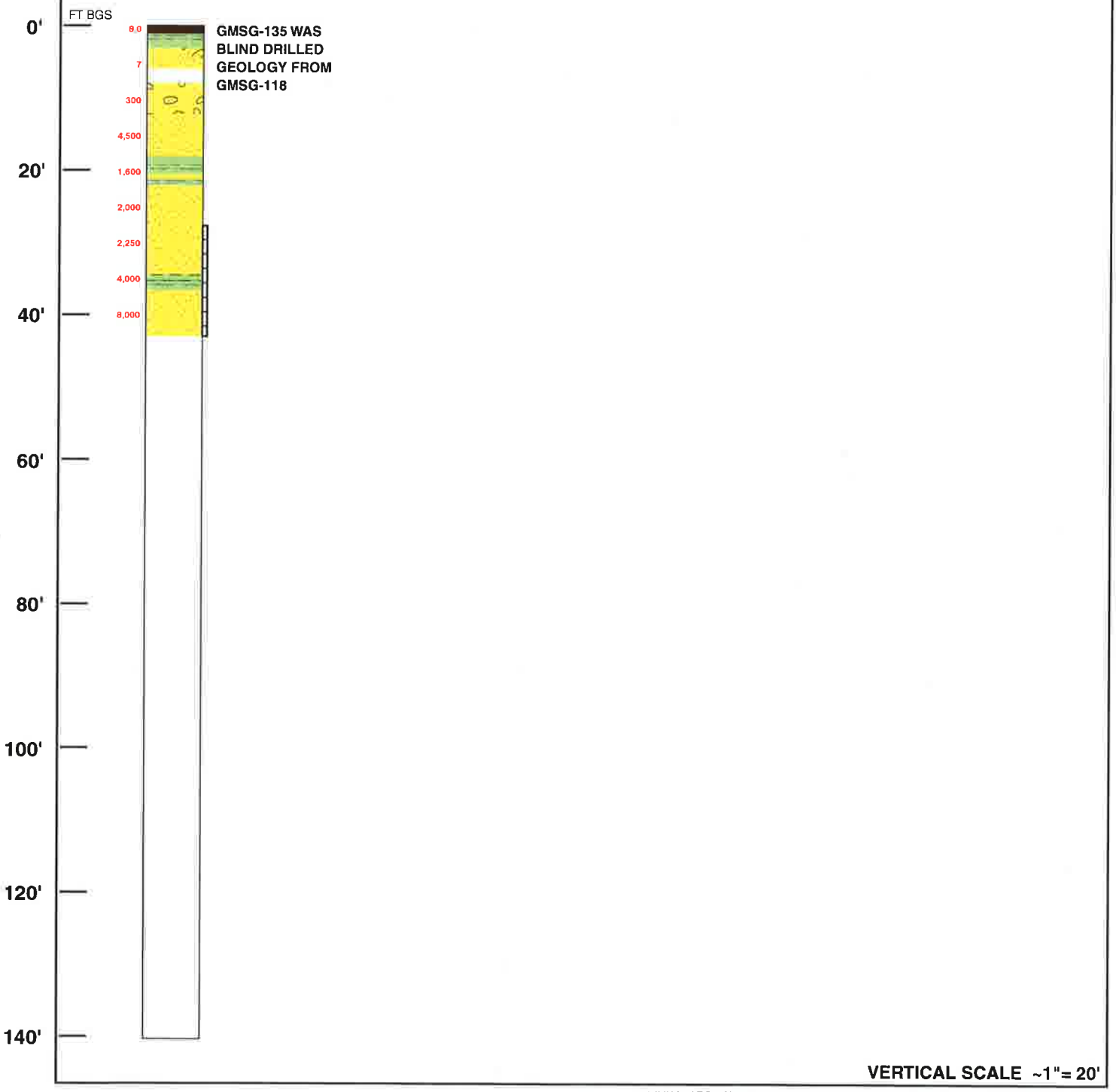
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSG-135
PROJECT	FORD/KINGSFORD WI001075.0033

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1116.49 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
P. Lenaker	Continuous	None	49 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Gary	Boart Longyear	Hollow Stem Auger	4/6/04



VERTICAL SCALE ~1"= 20'

21JULY09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_135.AI

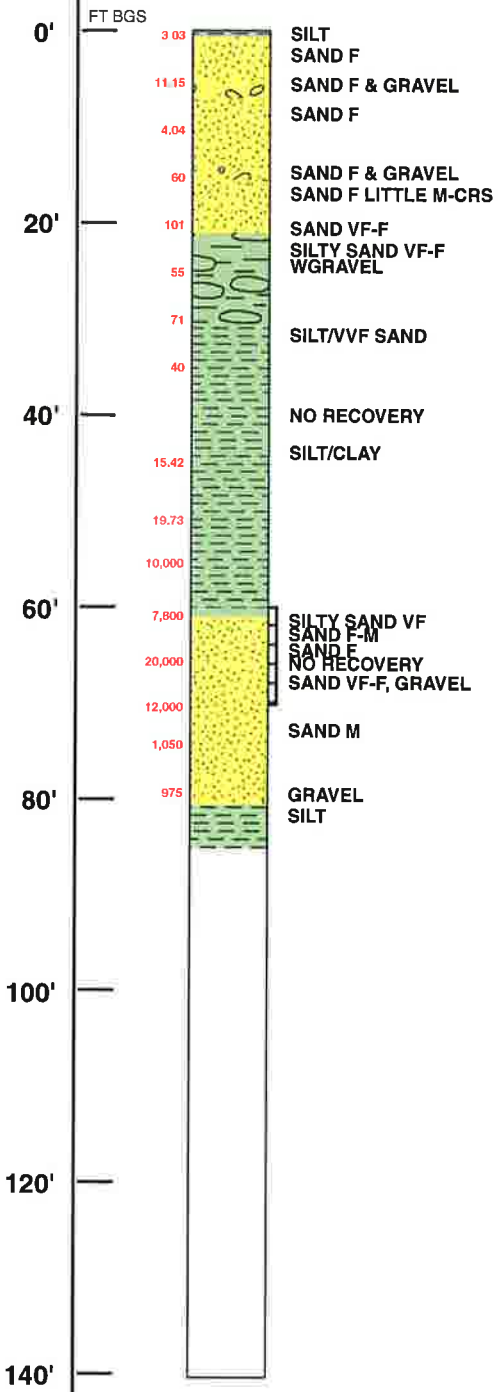
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-137

PROJECT FORD/KINGSFORD WI001075.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1124.38 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	8/3/04



VERTICAL SCALE ~1"= 20'

14OCT05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_137.AI

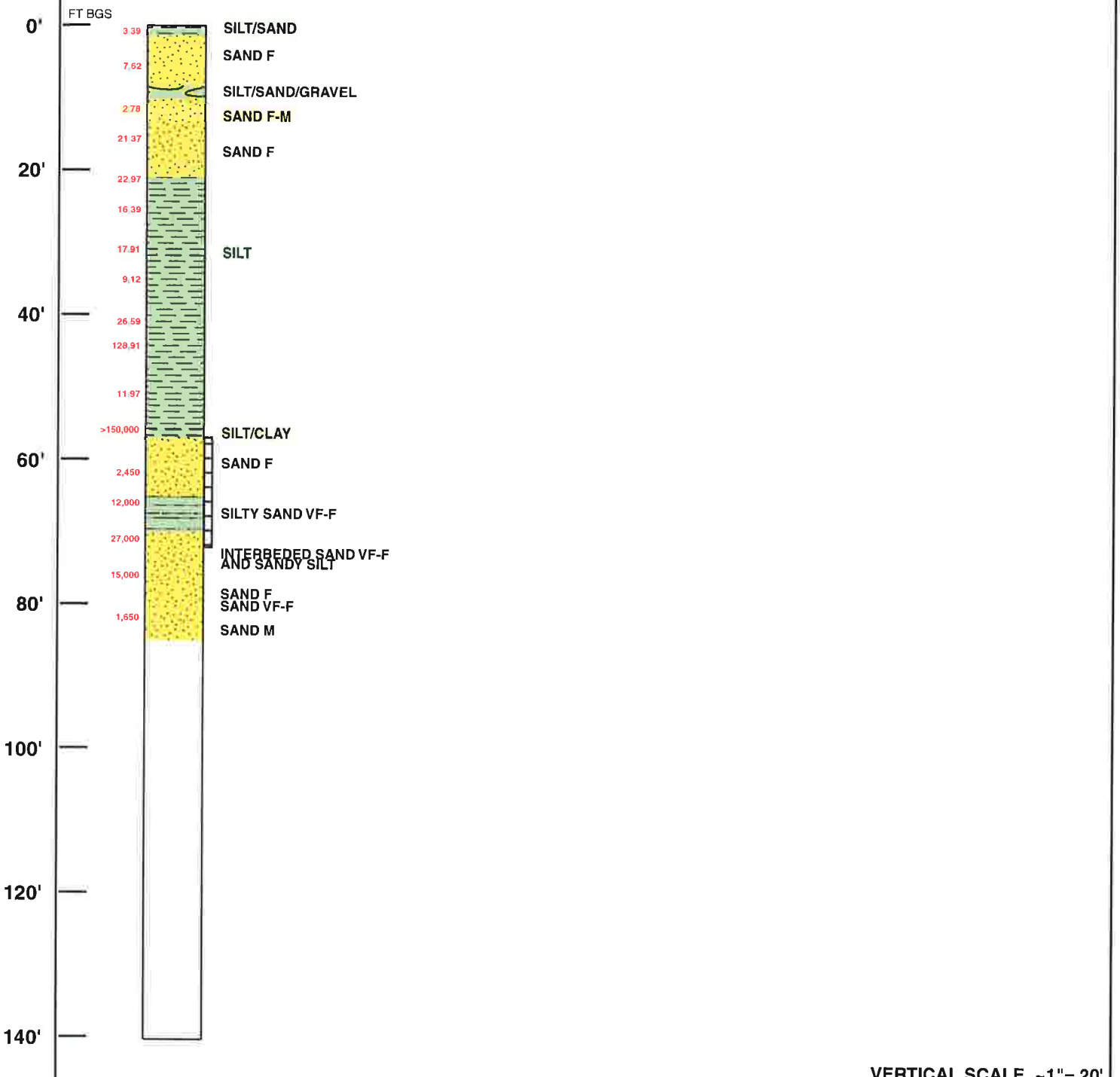
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-138

PROJECT FORD/KINGSFORD WI001075.0033

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1125.46 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
A. Mumpy	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Jason	Boart Longyear	Rotasonic	8/5/04



VERTICAL SCALE ~1"= 20'

09JUN05\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_138.AI

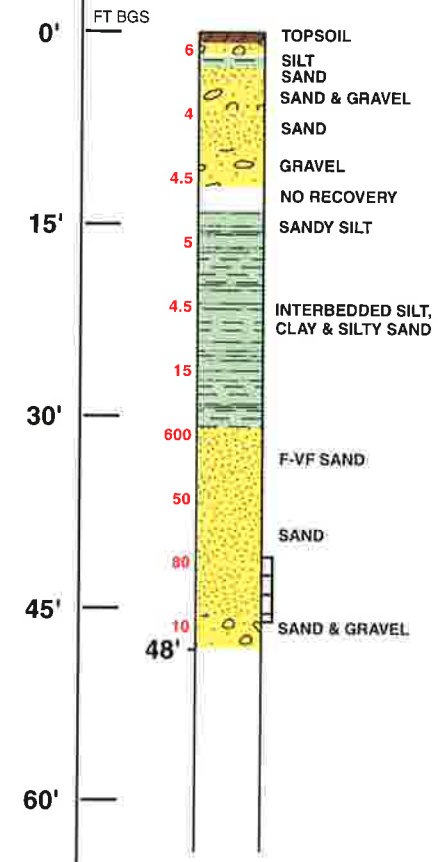
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-200

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1100.15 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	48 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/24/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_200.AI

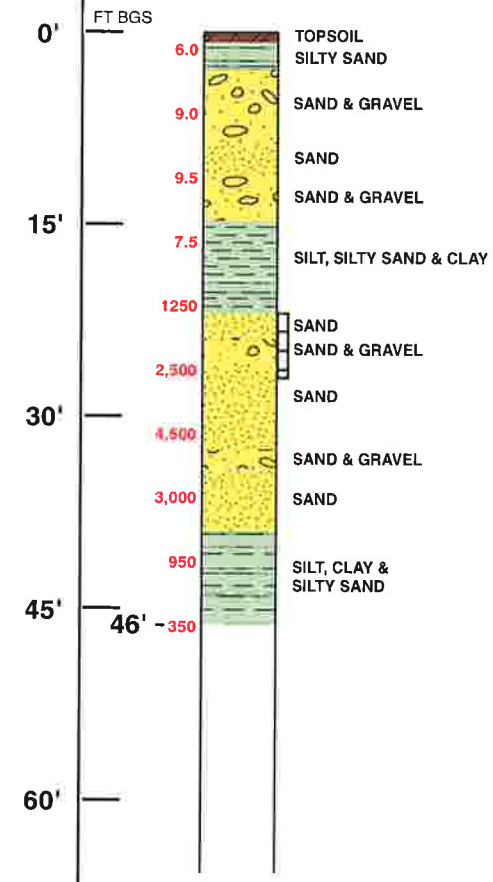
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-202

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1099.81 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	46 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/25/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_202.AI

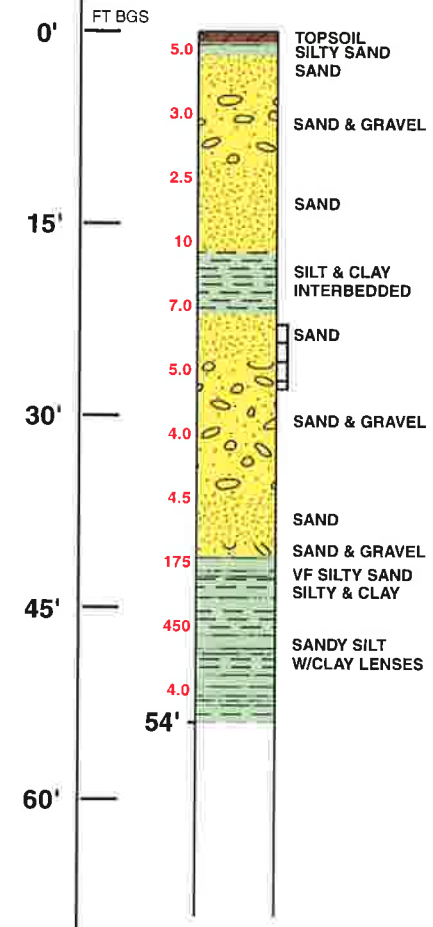
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-204

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1100.57 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	54 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/26/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_204.AI

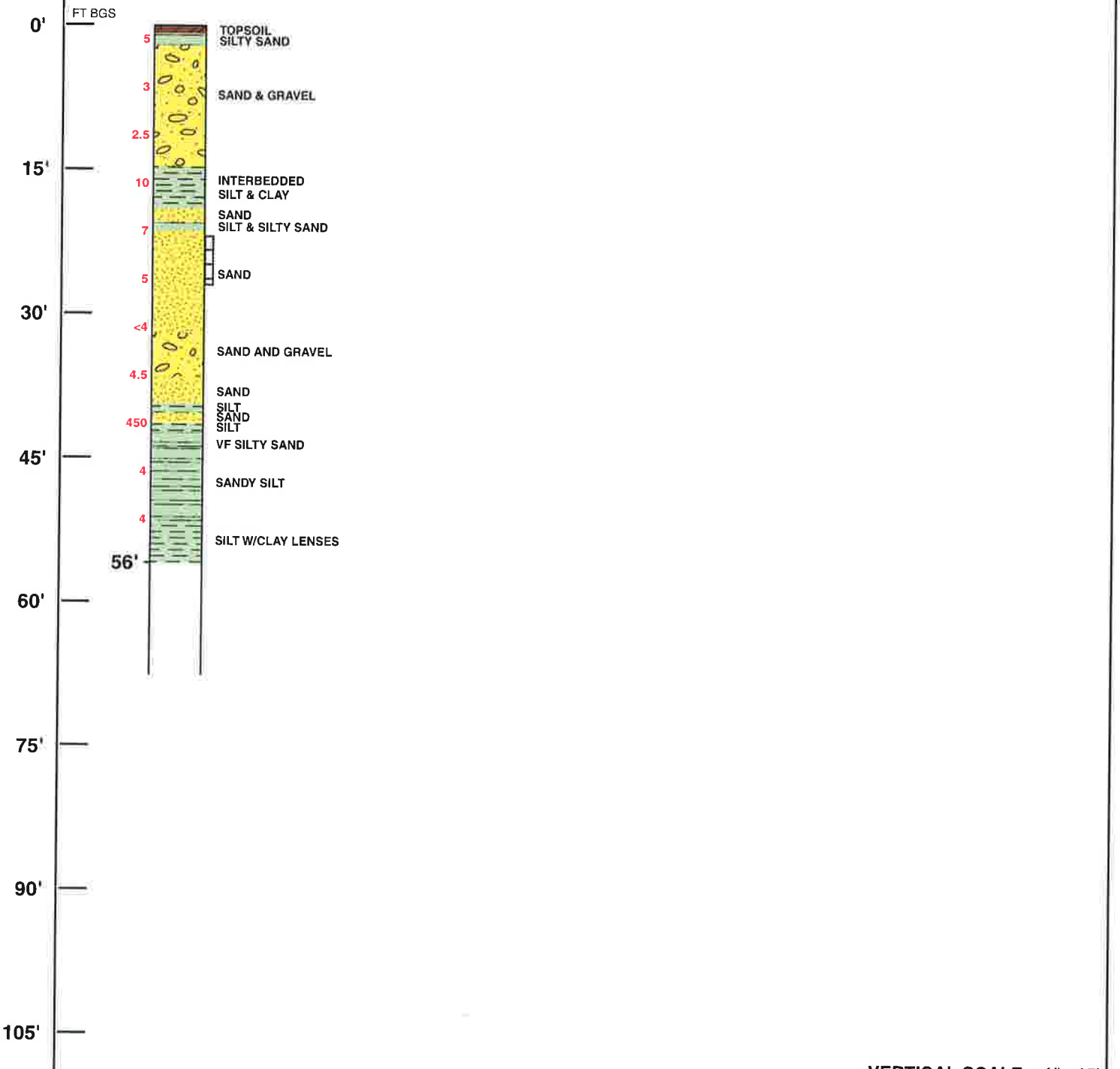
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-205

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1099.65 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	56 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	7/28/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_205.AI

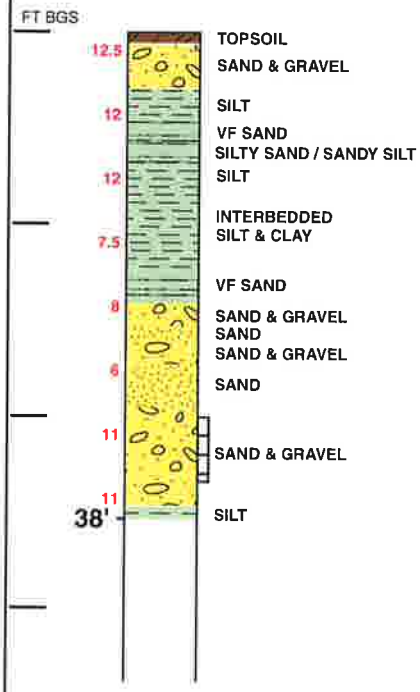
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-206

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1090.72 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 38 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 7/28/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_206.AI

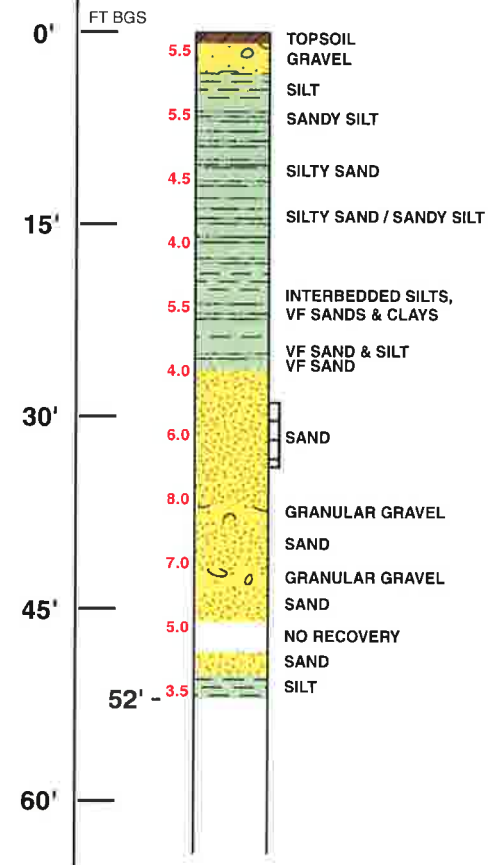
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-207

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1089.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	8/3/98



VERTICAL SCALE ~1"= 15'

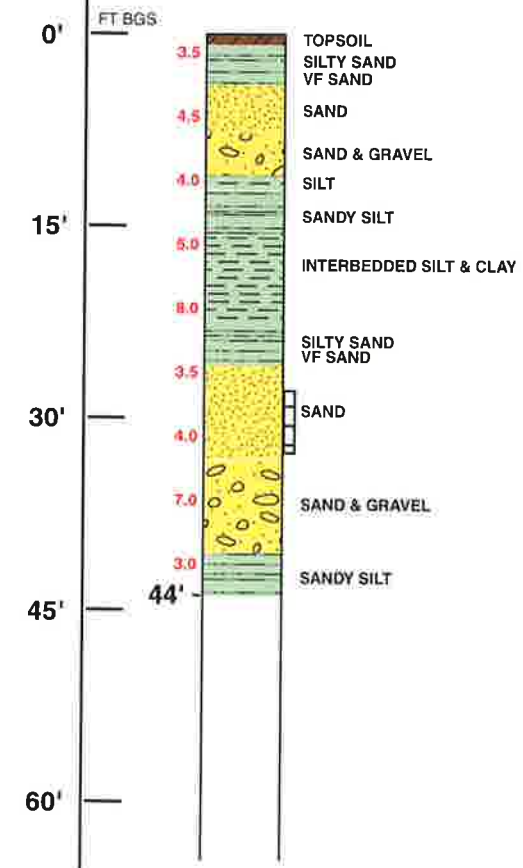
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-208

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1087.25 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 44 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/5/98



VERTICAL SCALE ~1"= 15'

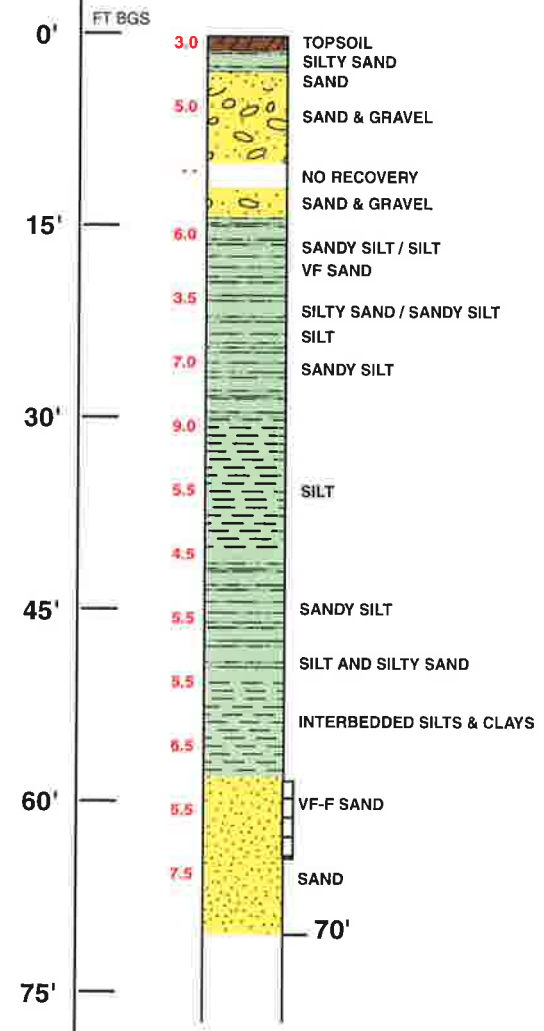
10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_208.AI

ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSG-209
PROJECT	FORD/KINGSFORD WI000675.0001

LOCATION: Kingsford, Michigan			LAND SURFACE ELEVATION: 1100.73 Feet MSL
GEOLOGIST: Ray Flynn	SAMPLE INTERVAL: Continuous	SAMPLING DEVICE: Splitspoon	TOTAL DEPTH DRILLED: 70 Feet BLS
DRILLER: Dan	DRILLING CONTRACTOR: Boart Longyear	DRILLING METHOD: Hollow Stem Auger	DATE BORING COMPLETED: 8/20/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_209.AI

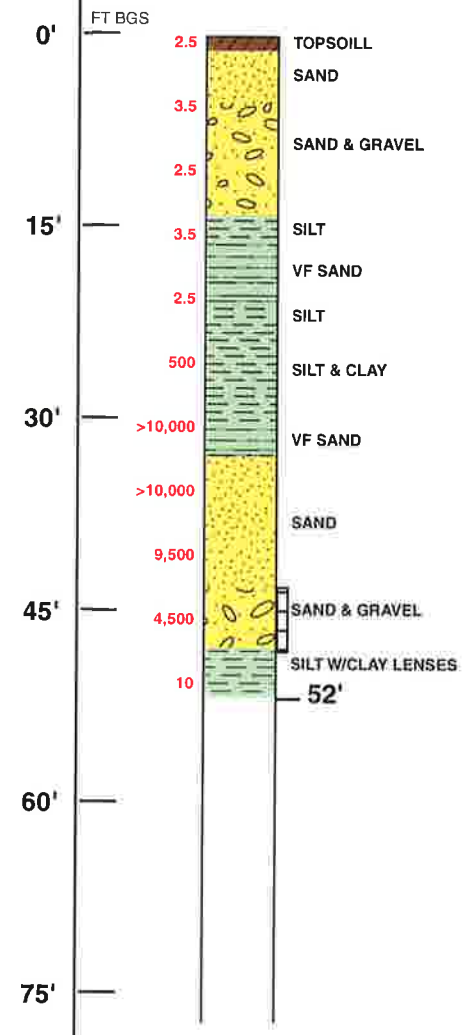
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-210

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1100.08 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	8/22/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_210.AI

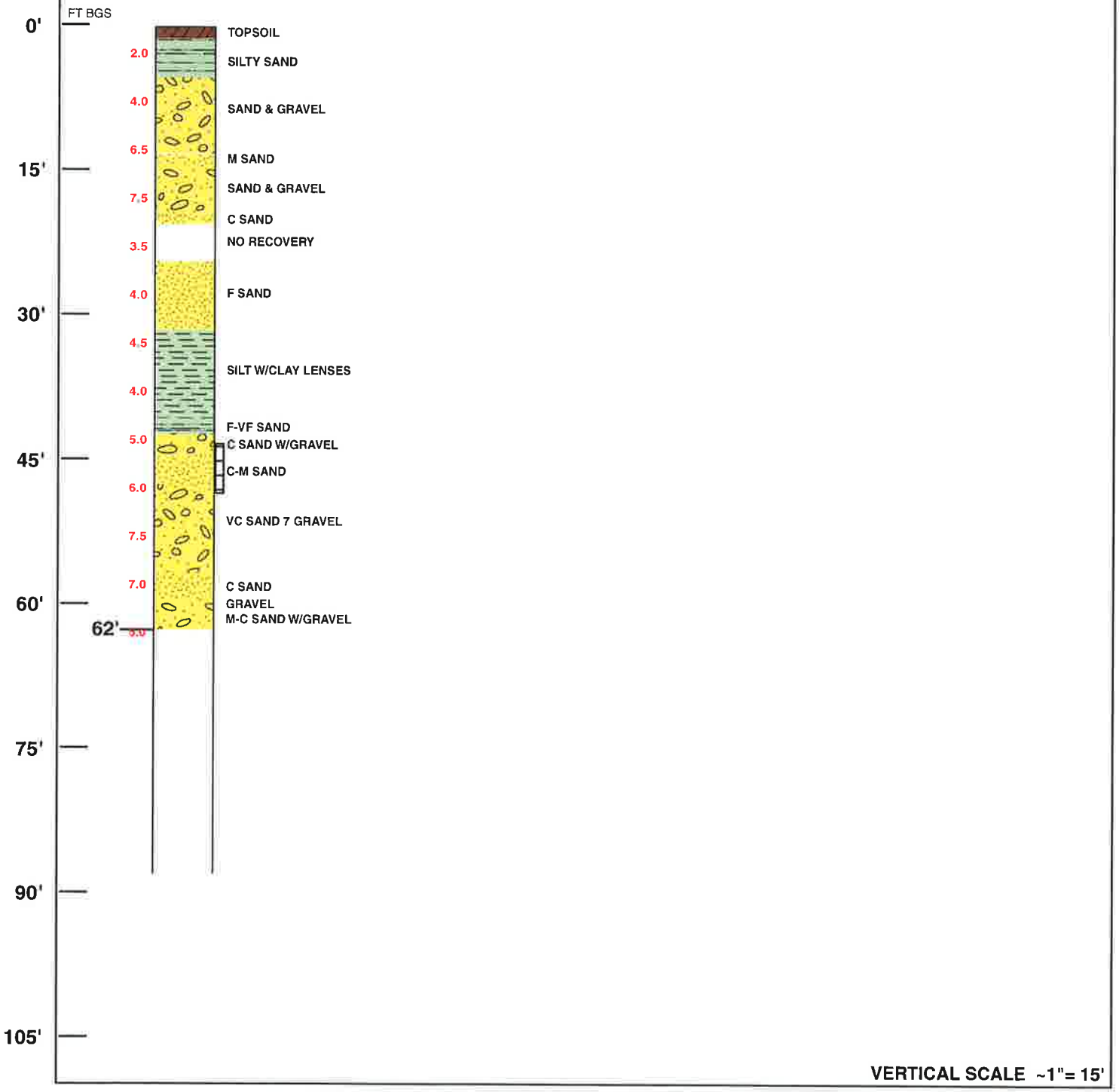
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-211

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1099.24 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 62 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 8/23/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_211.AI

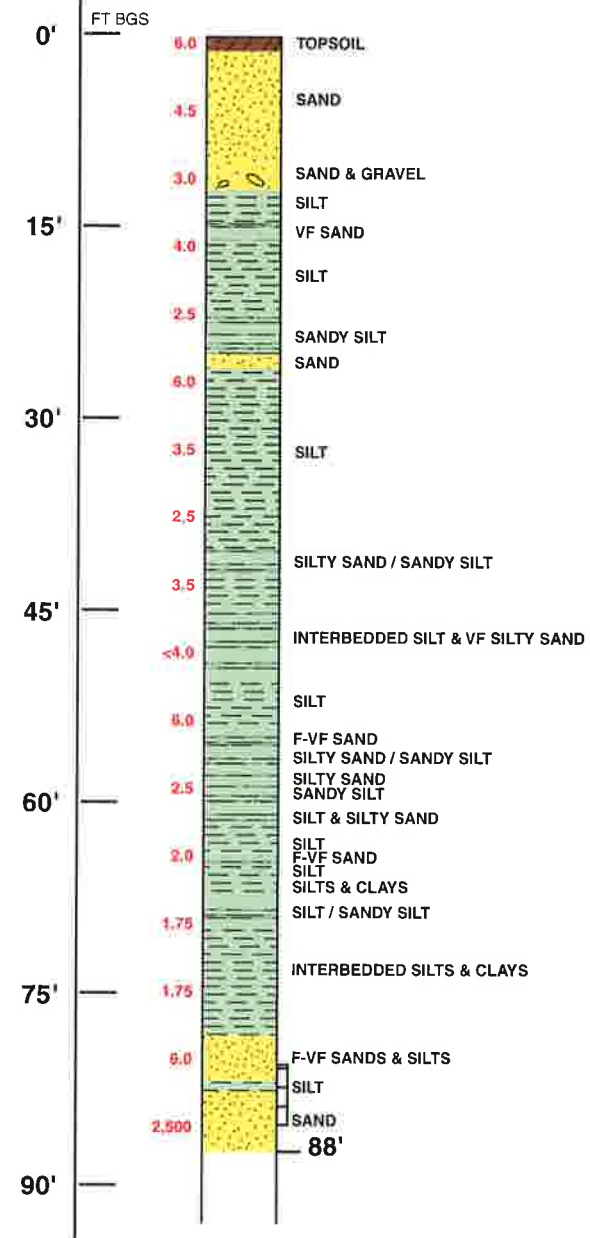
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-212

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1098.77 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 88 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 9/2/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_212.AI

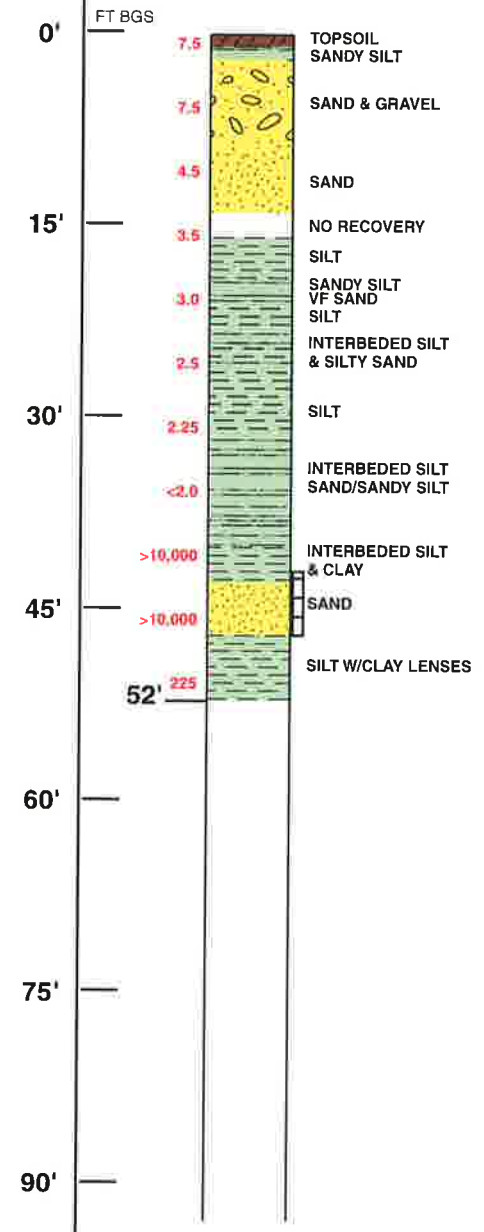
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-214

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1099.20 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ray Flynn	Continuous	Splitspoon	52 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	9/3/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_214.AI

ARCADIS

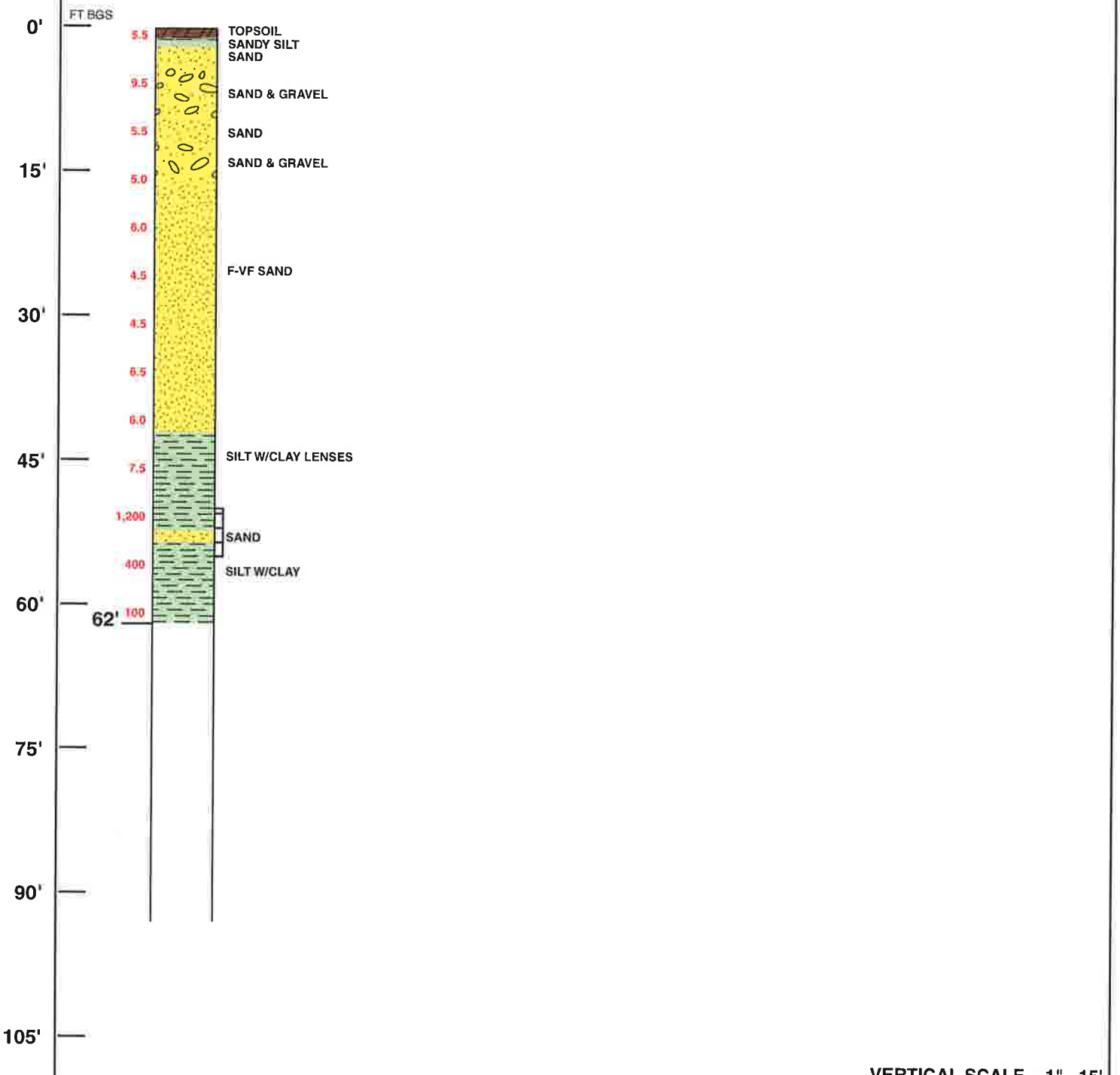
BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO.	GMSG-215
PROJECT	FORD/KINGSFORD WI000675.0001

LOCATION	LAND SURFACE ELEVATION
Kingsford, Michigan	1097.27 Feet MSL

GEOLOGIST	SAMPLE INTERVAL	SAMPLING DEVICE	TOTAL DEPTH DRILLED
Ray Flynn	Continuous	Splitspoon	62 Feet BLS

DRILLER	DRILLING CONTRACTOR	DRILLING METHOD	DATE BORING COMPLETED
Dan	Boart Longyear	Hollow Stem Auger	9/8/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_215.AI

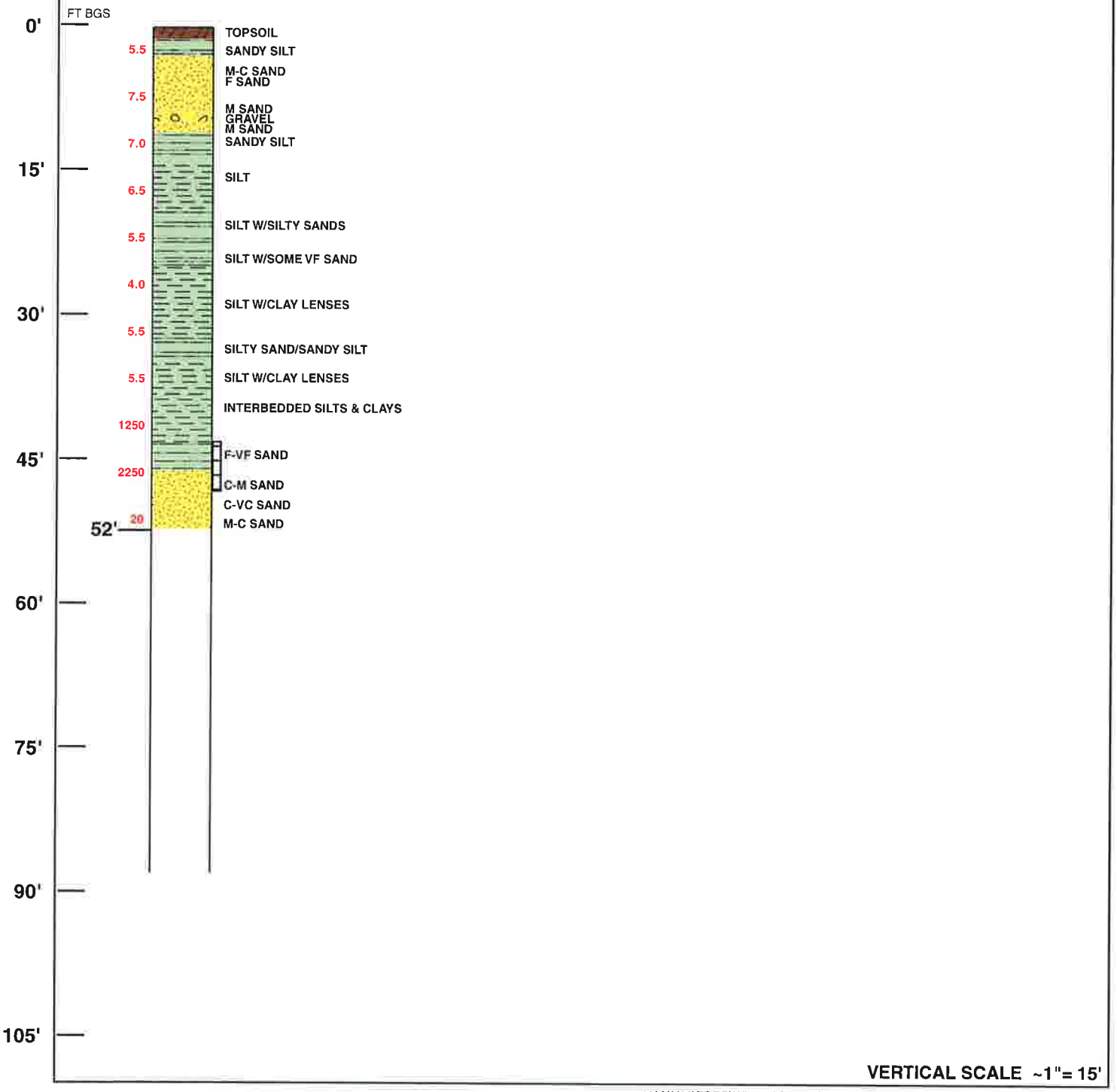
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-216

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1098.41 Feet MSL
GEOLOGIST Ray Flynn	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 52 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 9/21/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_216.AI

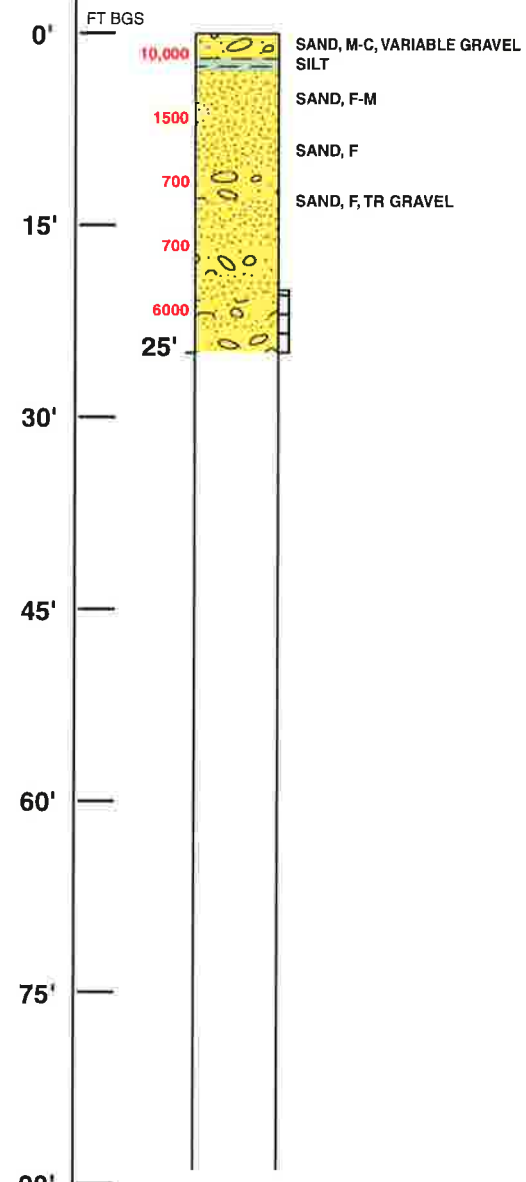
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-300

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1191.32 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	25 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	11/9/98



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_300.AI

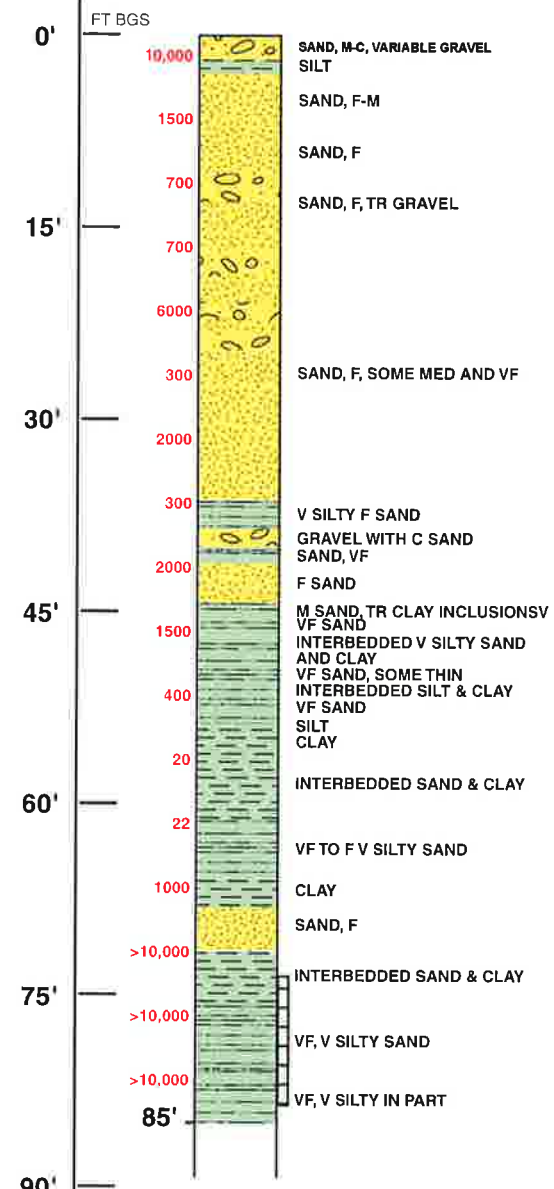
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-301

PROJECT FORD/KINGSFORD WI000675.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1191.36 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Ted Powell	Continuous	Rotasonic Core Barrel	85 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Perry	Boart Longyear	Rotasonic	12/19/98



VERTICAL SCALE ~1"= 15'

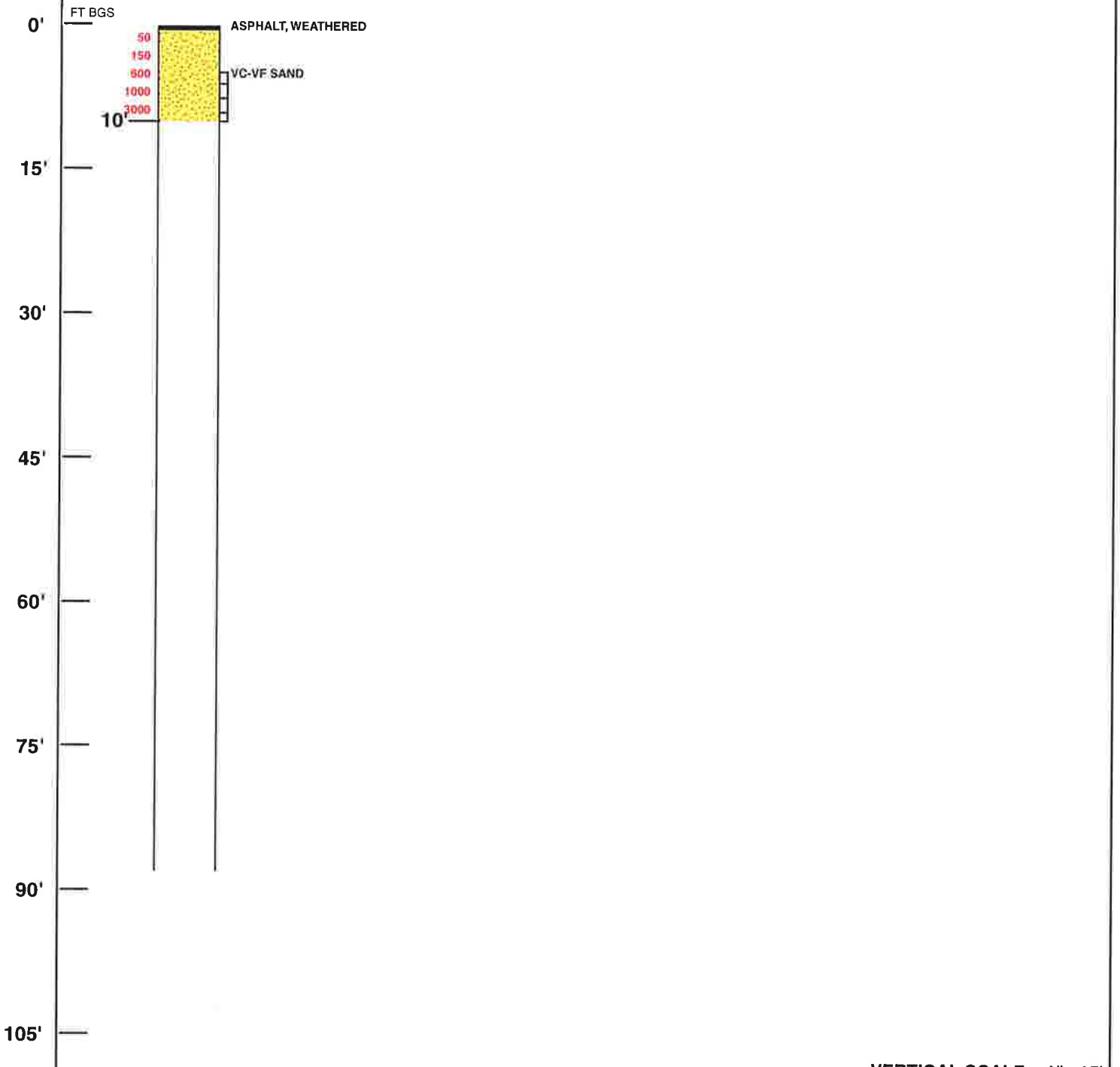
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-302

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1191.40 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_302.AI

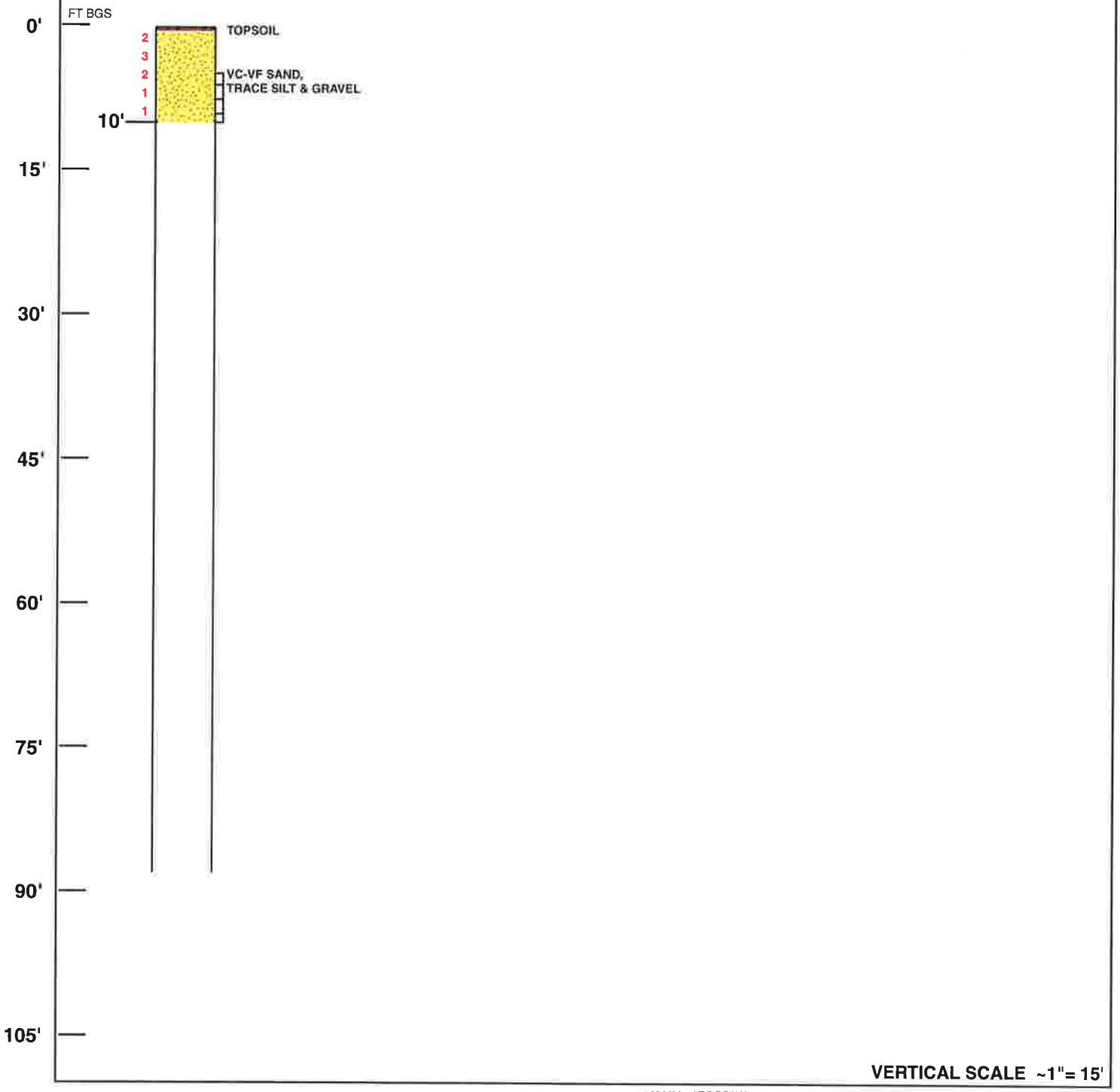
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-303

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION Kingsford, Michigan			LAND SURFACE ELEVATION 1192.23 Feet MSL
GEOLOGIST Bill McCrackin	SAMPLE INTERVAL Continuous	SAMPLING DEVICE Splitspoon	TOTAL DEPTH DRILLED 10 Feet BLS
DRILLER Dan	DRILLING CONTRACTOR Boart Longyear	DRILLING METHOD Hollow Stem Auger	DATE BORING COMPLETED 6/11/99



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_303.AI

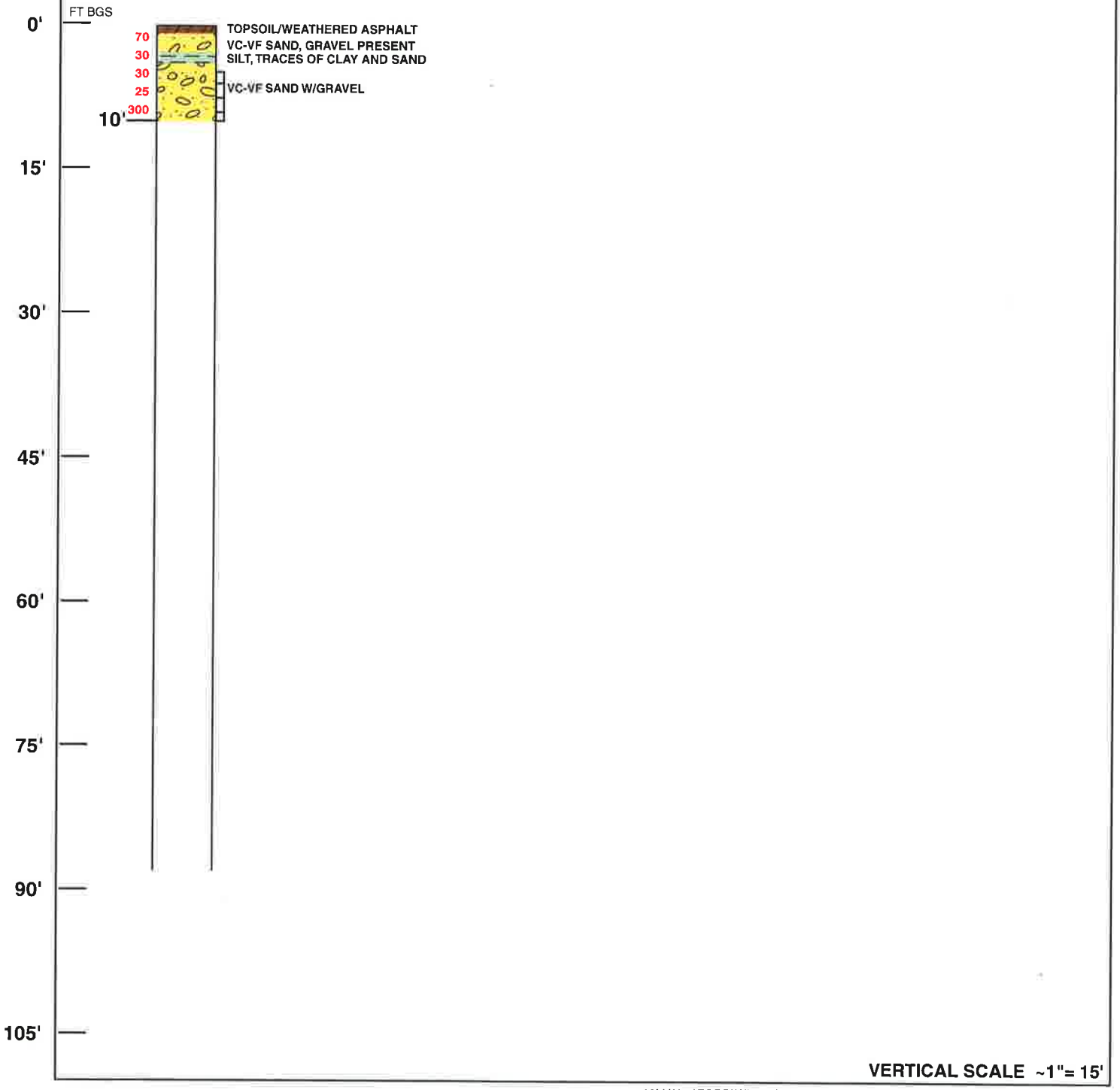
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-304

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1192.02 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_304.AI

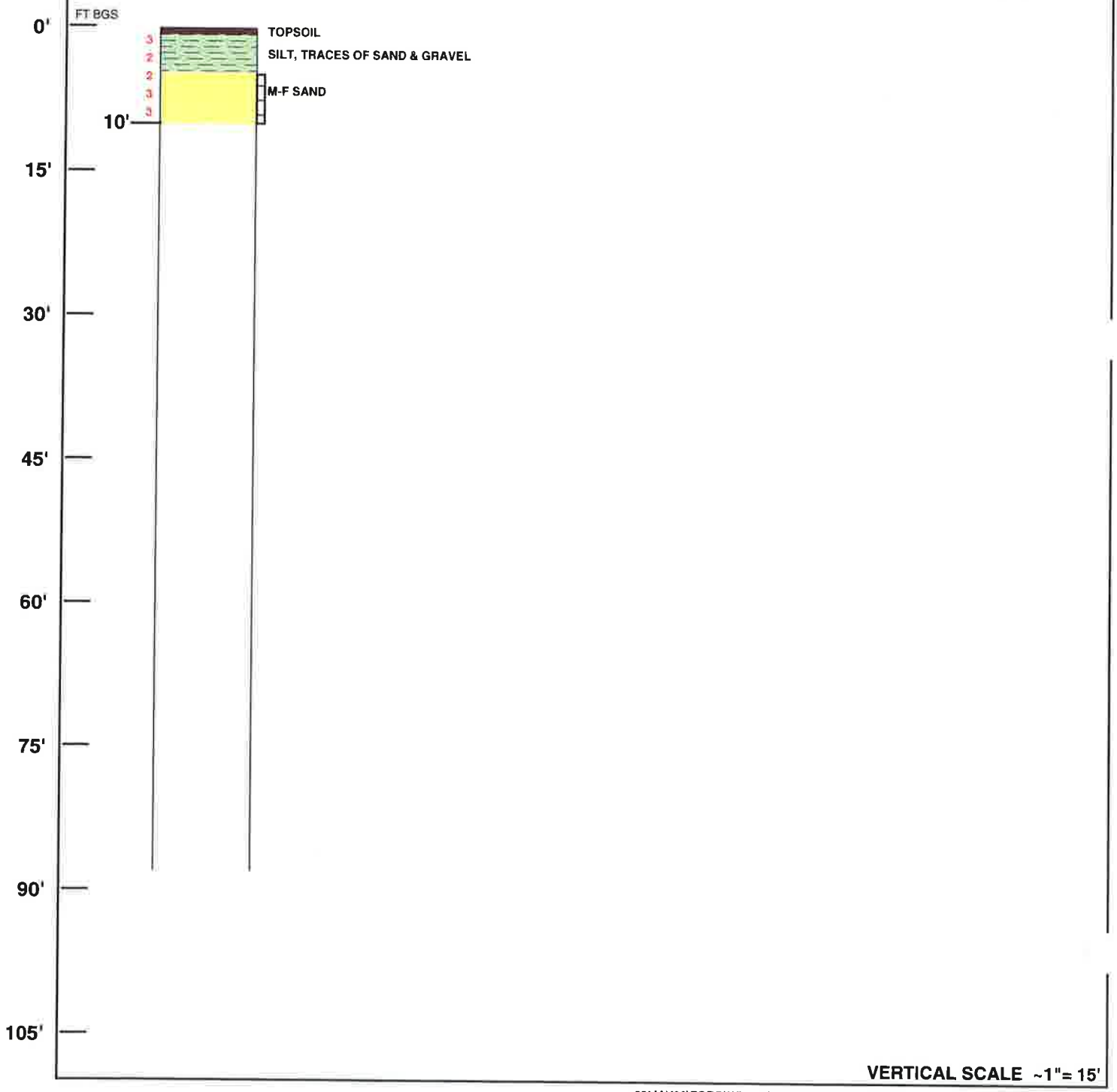
ARCADIS GERAGHTY & MILLER

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-305

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1201.10 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99



VERTICAL SCALE ~1"= 15'

22MAY00\FORD\WI0637\KINGSFOR\GRAPHICS\POST1099\DRAWING: GMSG_305.AI

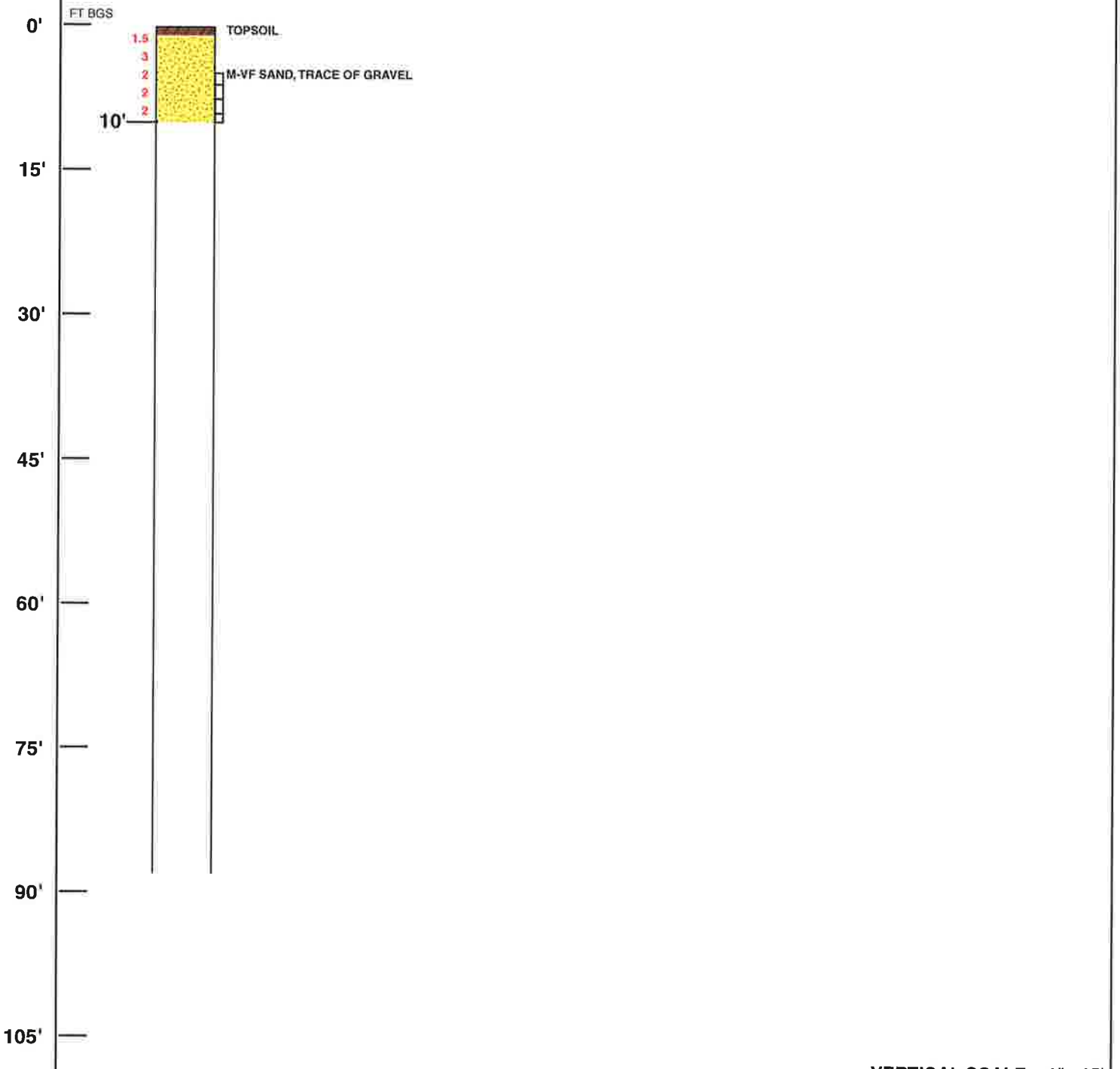
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-306

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1192.34 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_306.AI

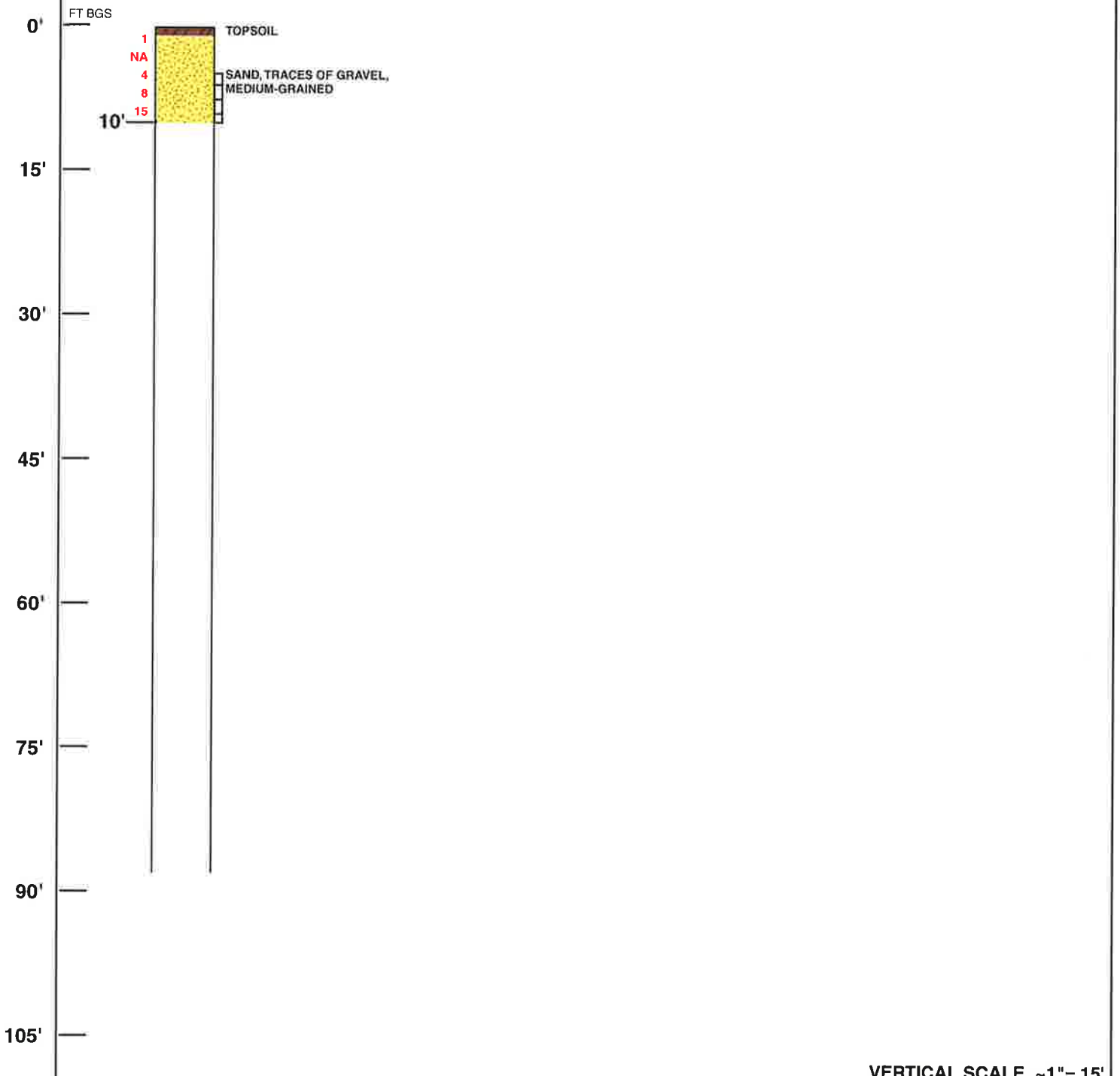
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-307

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1179.34 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Bill McCrackin	Continuous	Splitspoon	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dan	Boart Longyear	Hollow Stem Auger	6/11/99



VERTICAL SCALE ~1"= 15'

10MAY06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_307.AI

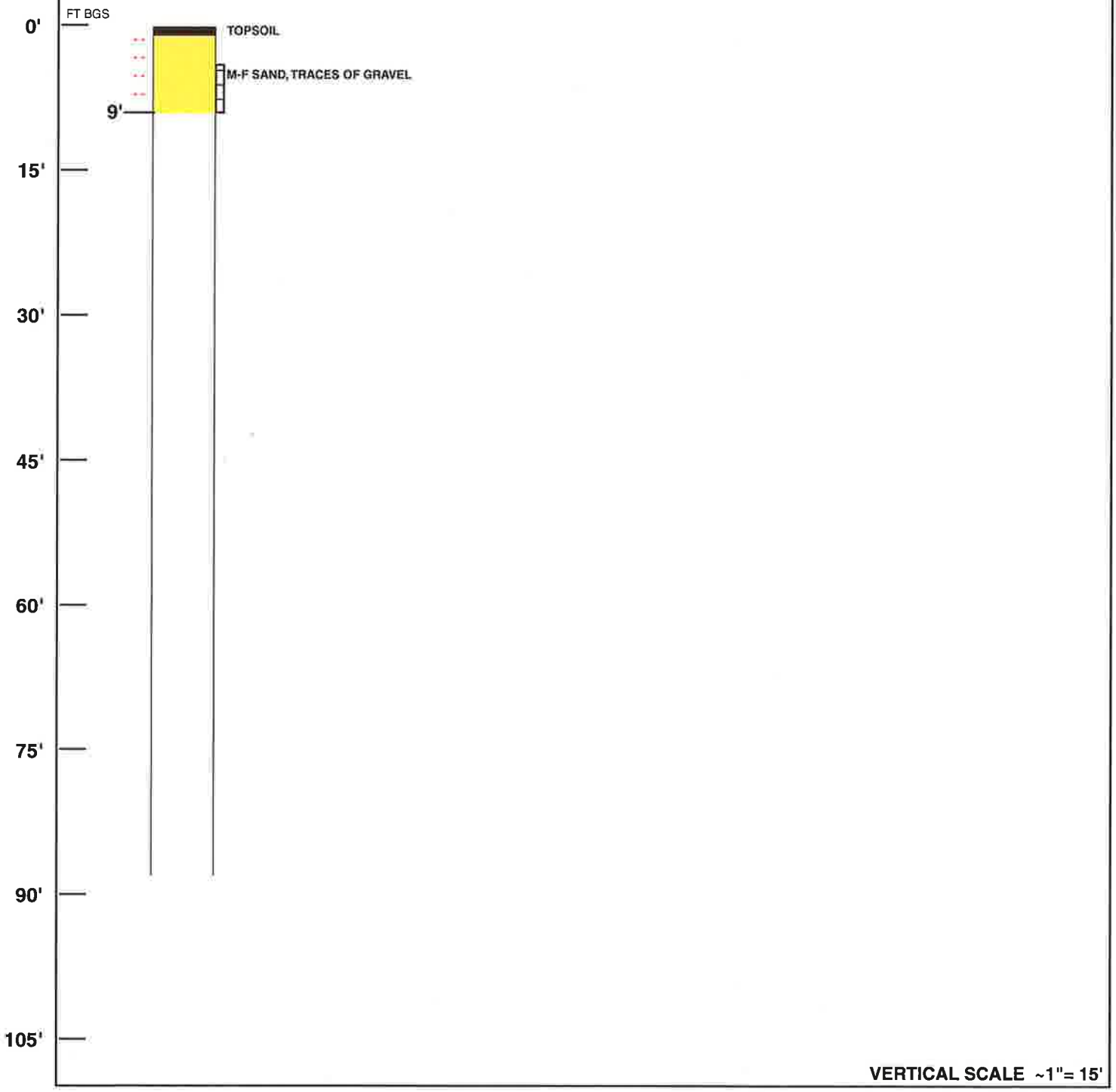
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-308

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1198.35 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Auger Bucket	9 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Pat	Arcadis	Hand Auger	7/9/99



VERTICAL SCALE ~1"= 15'

21JULY09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_308.AI

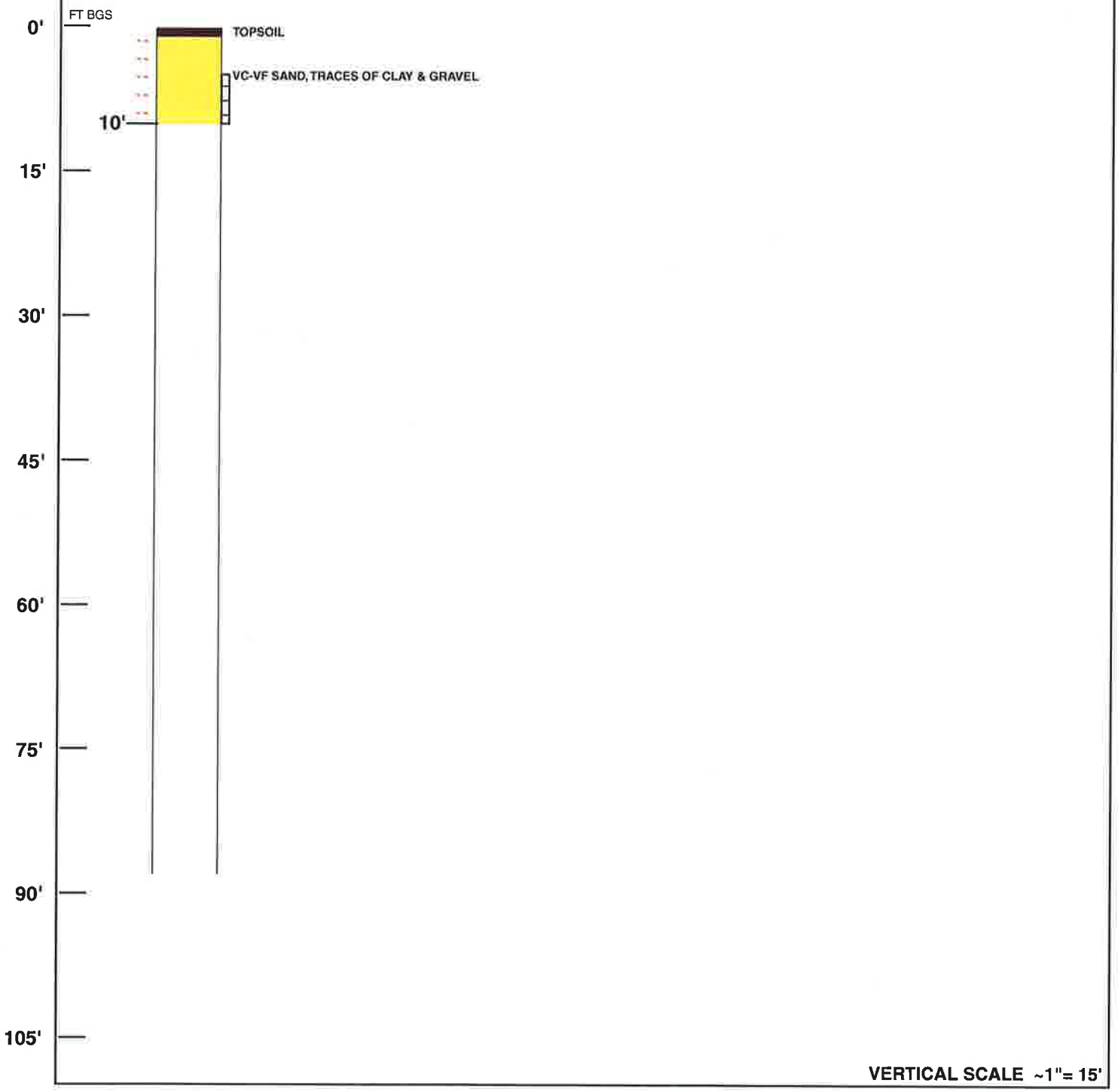
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-309

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1192.69 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Pat Bartnik	Continuous	Auger Bucket	10 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Pat	Arcadis	Hand Auger	7/24/99



VERTICAL SCALE ~1"= 15'

21JULY09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_309.AI

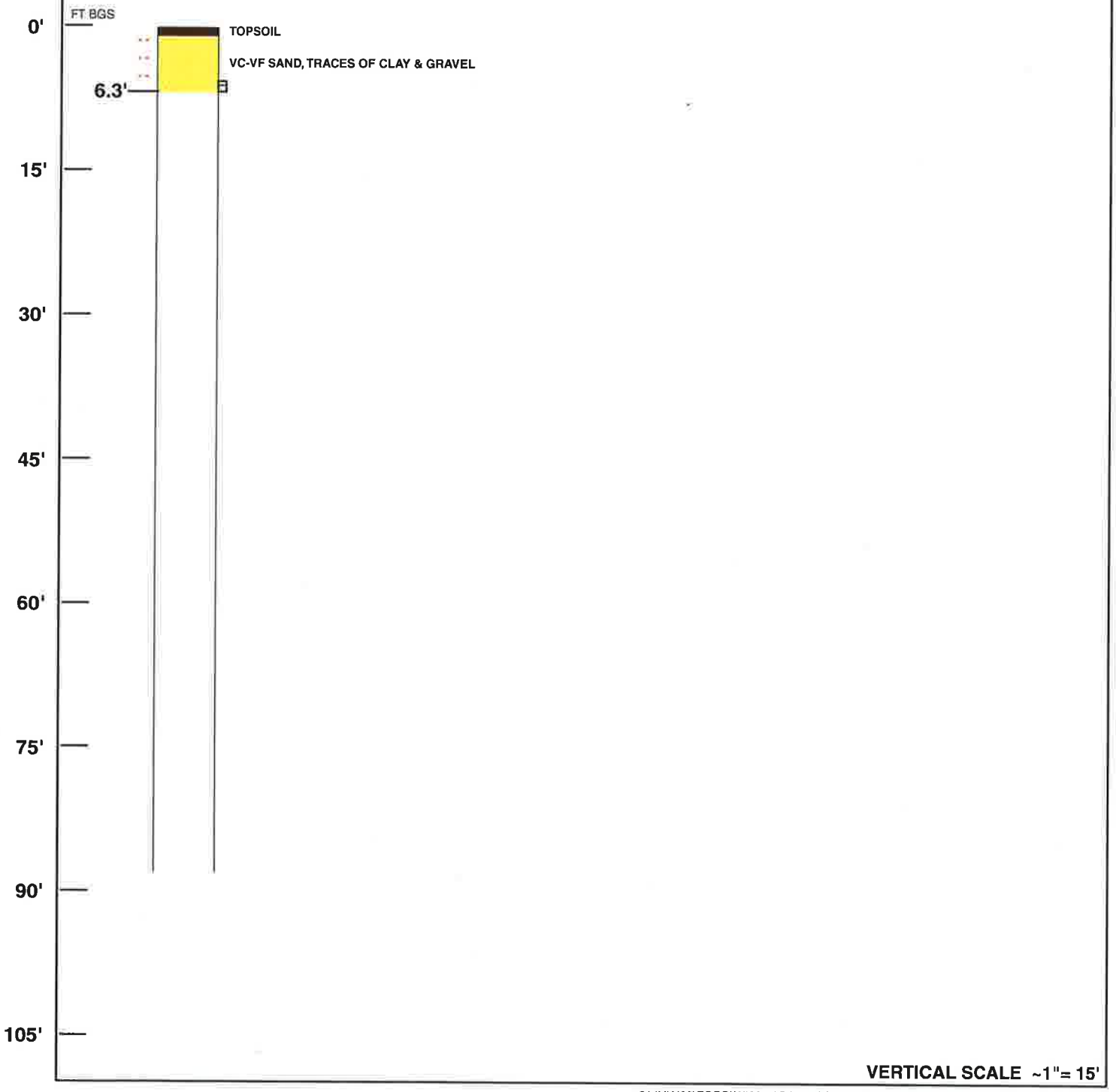
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-310

PROJECT FORD/KINGSFORD WI000710.0001

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1194.80 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
Dave Buser	Continuous	Auger Bucket	6.3 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Dave	Arcadis	Hand Auger	7/26/99



VERTICAL SCALE ~1"= 15'

21JULY09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG_310.AI

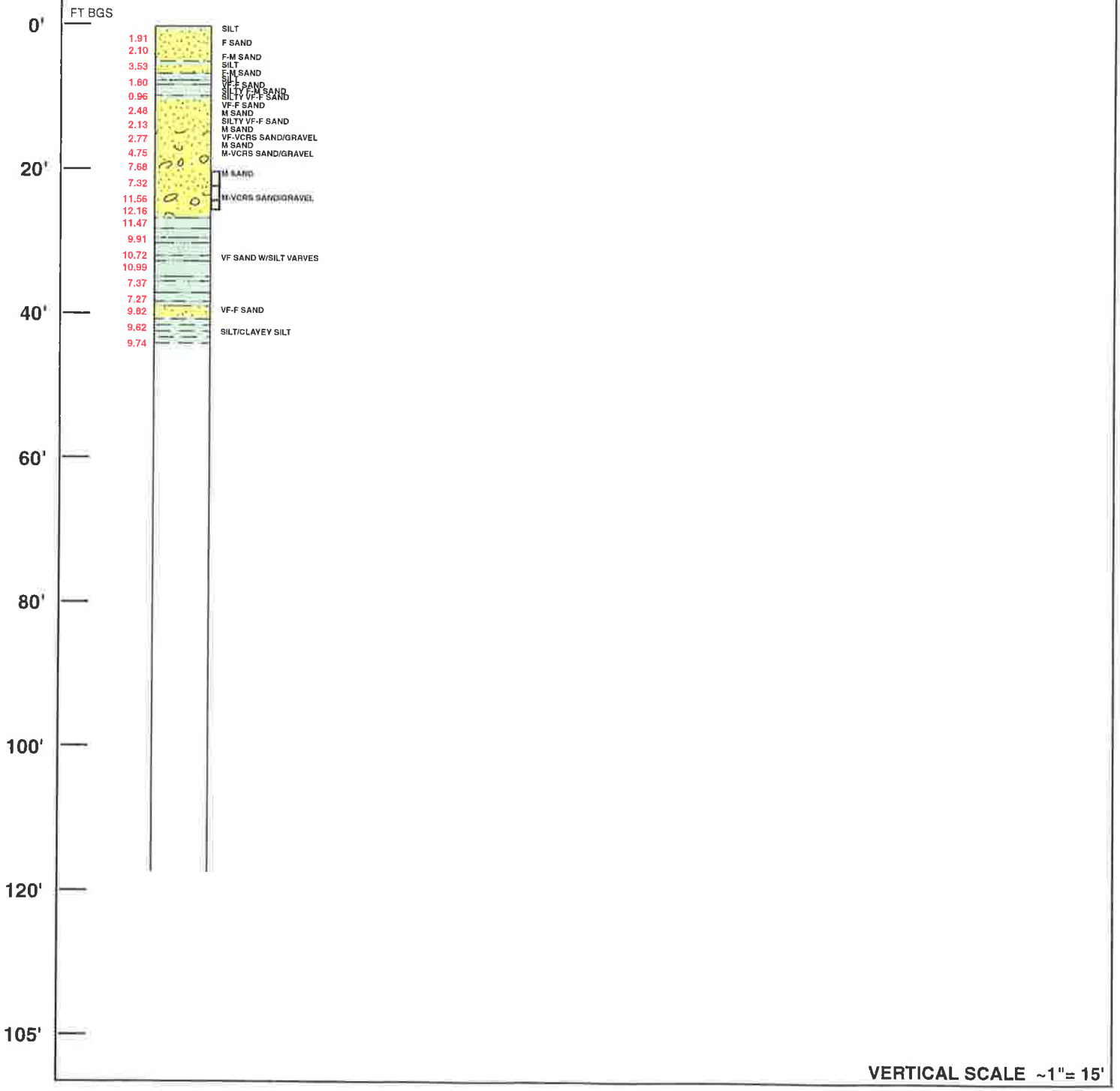
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-428 B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1126.42 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	44 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/18/05



VERTICAL SCALE ~1"= 15'

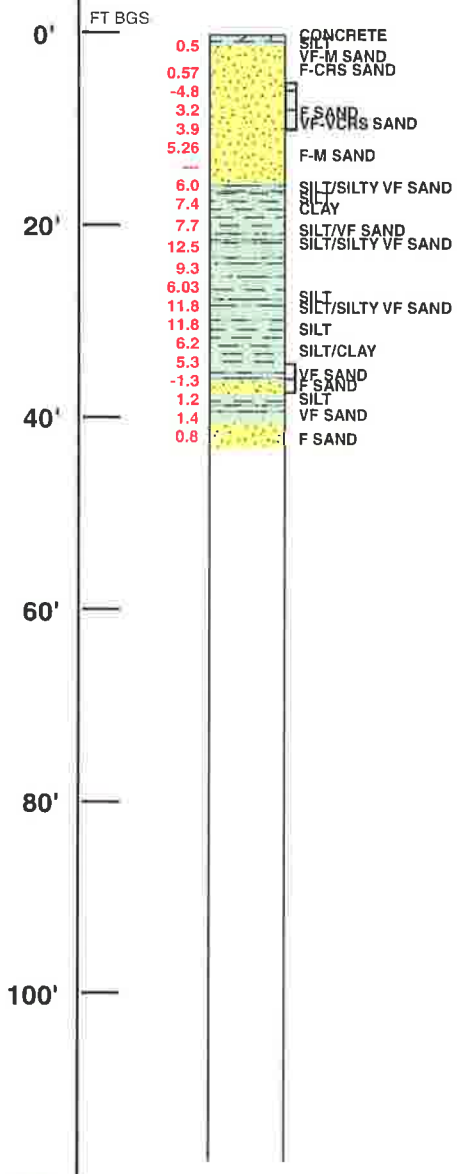
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-498 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1119.53 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	43 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/17/05



VERTICAL SCALE ~1"= 15'

14APR06\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_498 AB.AI

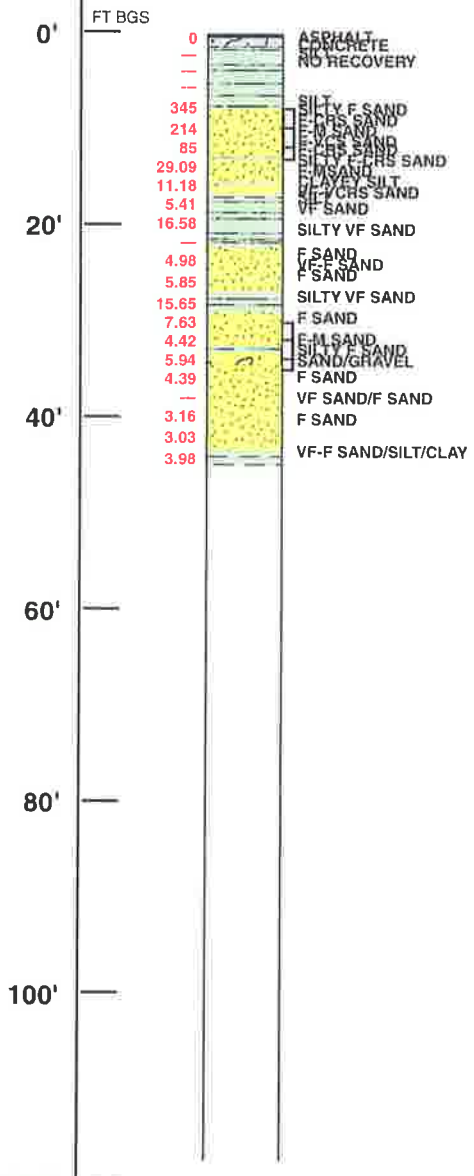
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-499 A/C

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.44 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	45 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/18/05



VERTICAL SCALE ~1"= 15'

14APR06\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_499 AC.AI

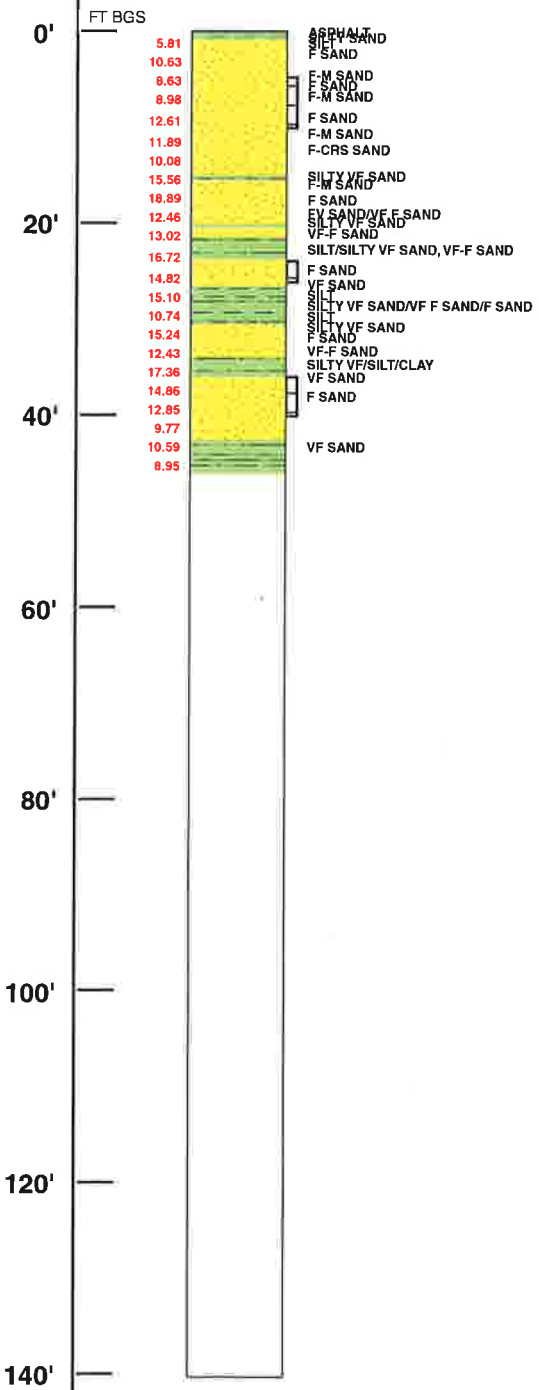
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-500 A/C

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.87 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	43 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/19/05



VERTICAL SCALE ~1"= 20'

21JULY09\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_500AC.AI

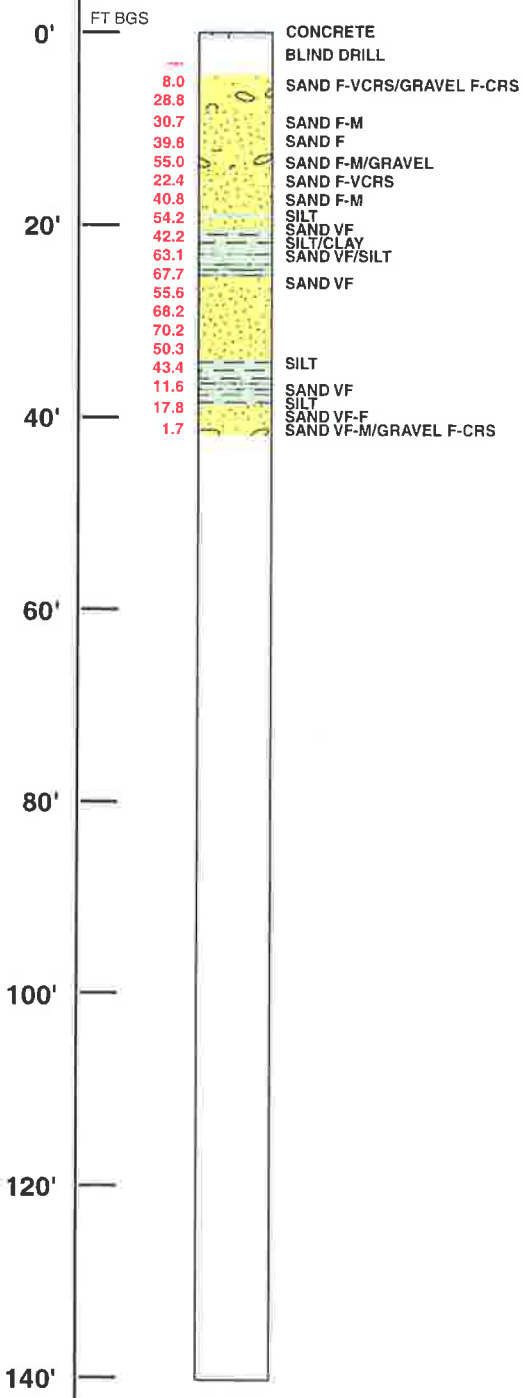
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-501 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.51 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	42 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	8/19/05



VERTICAL SCALE ~1"= 20'

14APR06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-501.AI

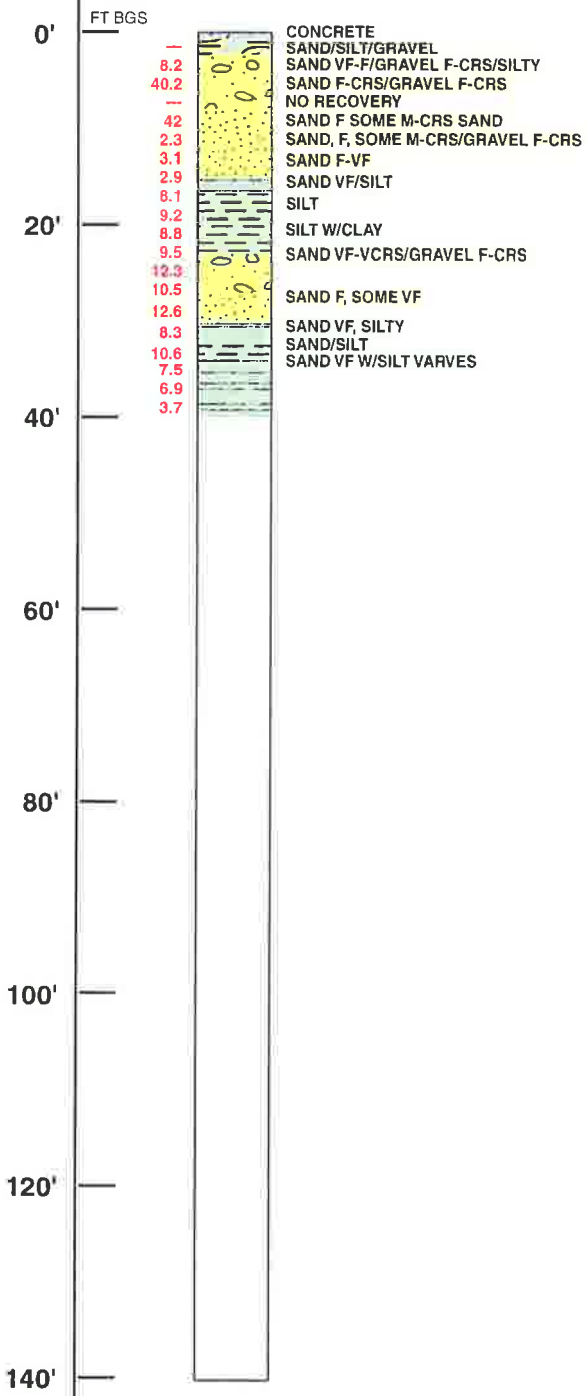
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-502 A/B/C

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1117.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	8/20/05 - 8/21/05



VERTICAL SCALE ~1"= 20'

14APR06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-502.AI

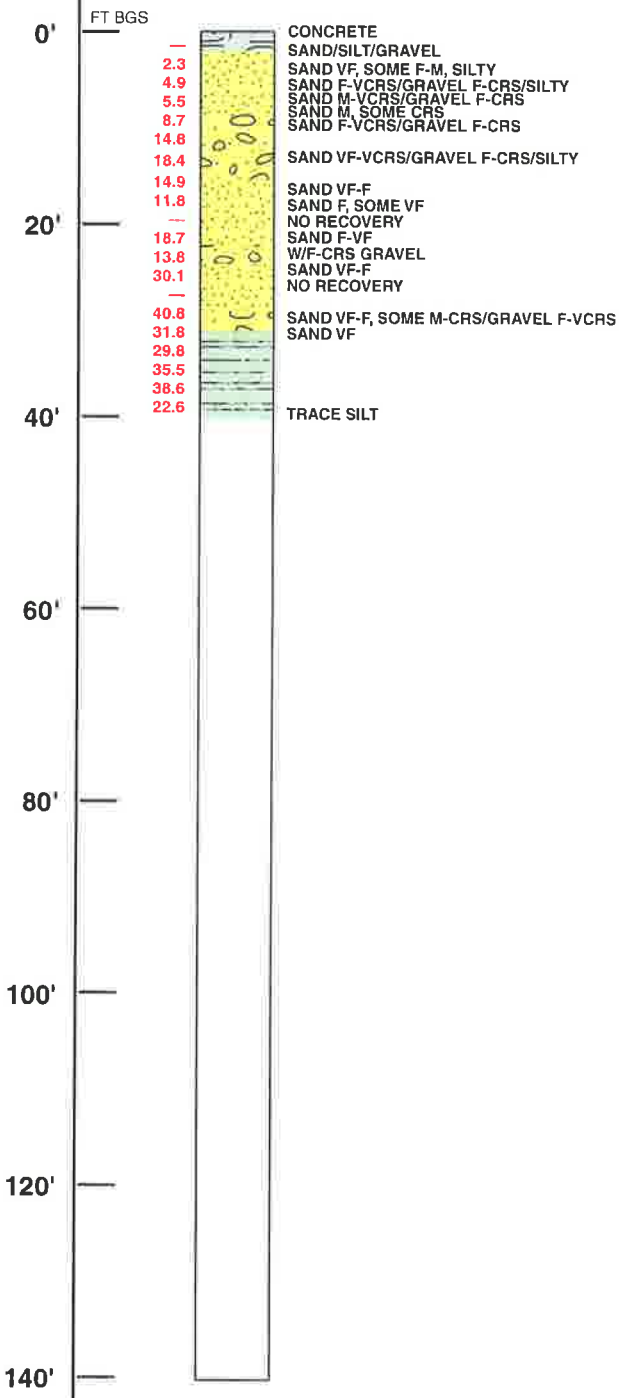
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-503 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.85 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	8/20/05 - 8/21/05



VERTICAL SCALE ~1"= 20'

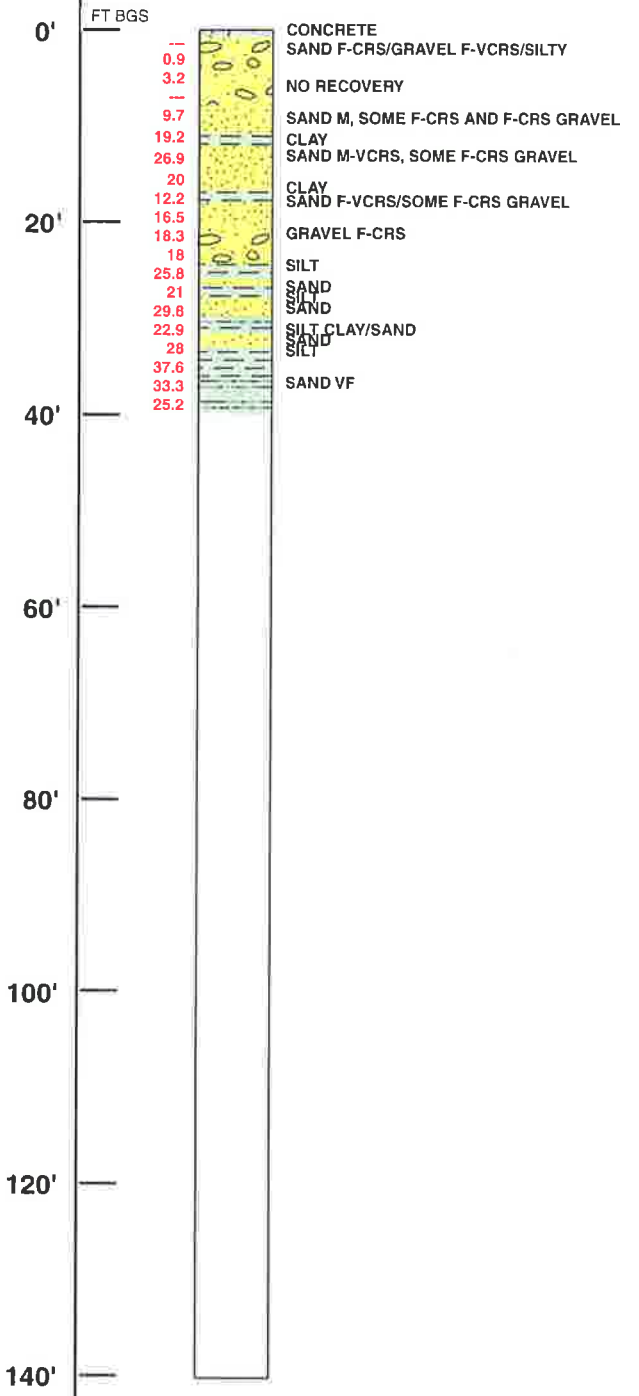
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-504 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.84 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
B. Evans	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	8/21/05



VERTICAL SCALE ~1"= 20'

14APR06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-504.AI

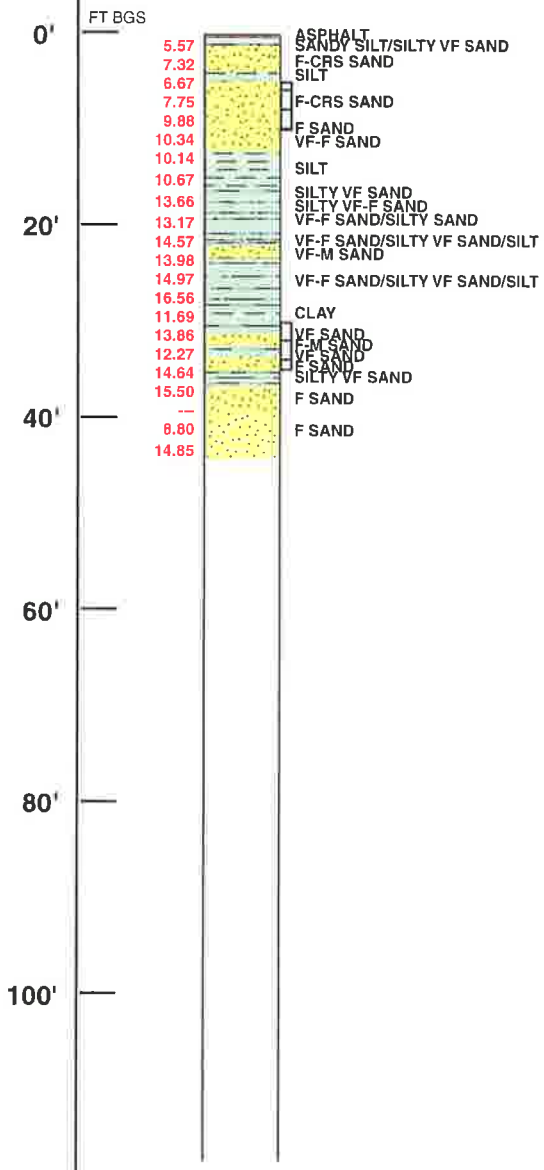
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-505 A/C

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1120.98 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	44 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Radke	Boart Longyear	Hollow Stem Auger	8/19/05



VERTICAL SCALE ~1"= 15'

14APR06\FORD\WI0637\CJ2005\GRAPHICS\STRAT LOGS\DRAWING: GMSG_505 AC.A

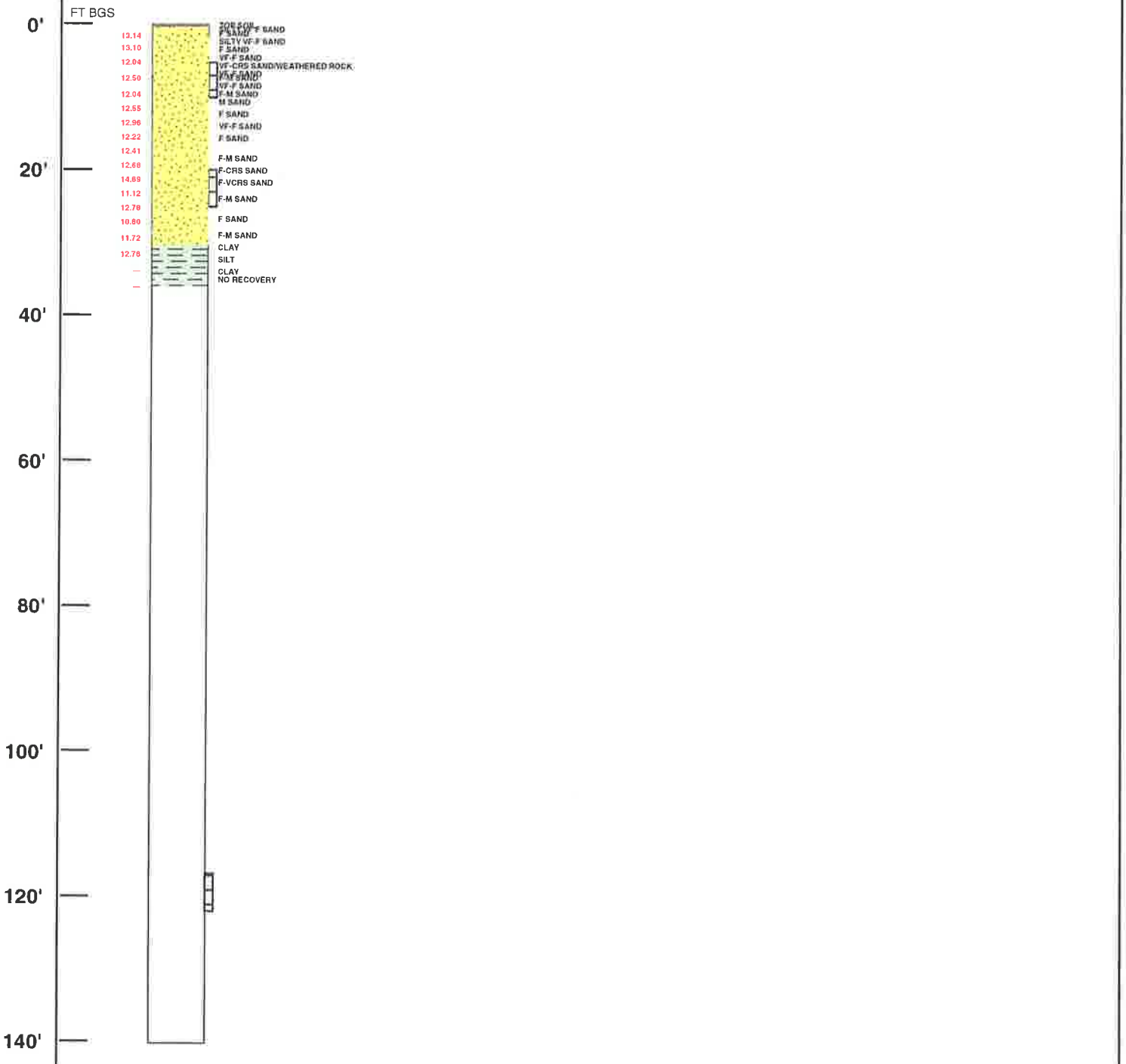
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-536 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1116.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	36 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	11/14/05



VERTICAL SCALE ~1"= 20'

14APR06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSB-536AB.AI

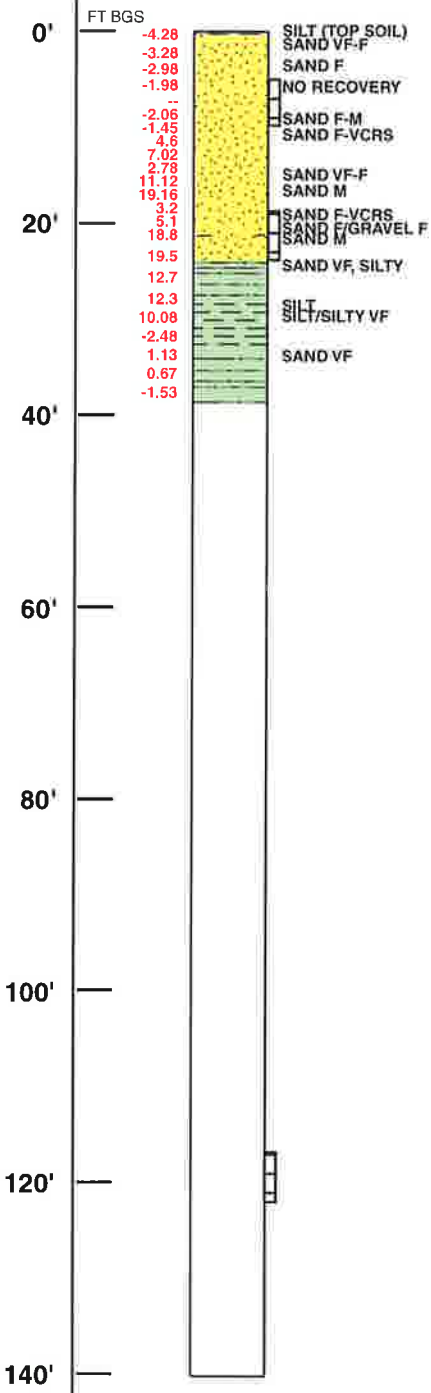
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-557 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1111.98 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	39 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Doug Lantagne	Coleman Engineering	Hollow Stem Auger	2/28/06



VERTICAL SCALE ~1"= 20'

31AUG06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-557AB.AI

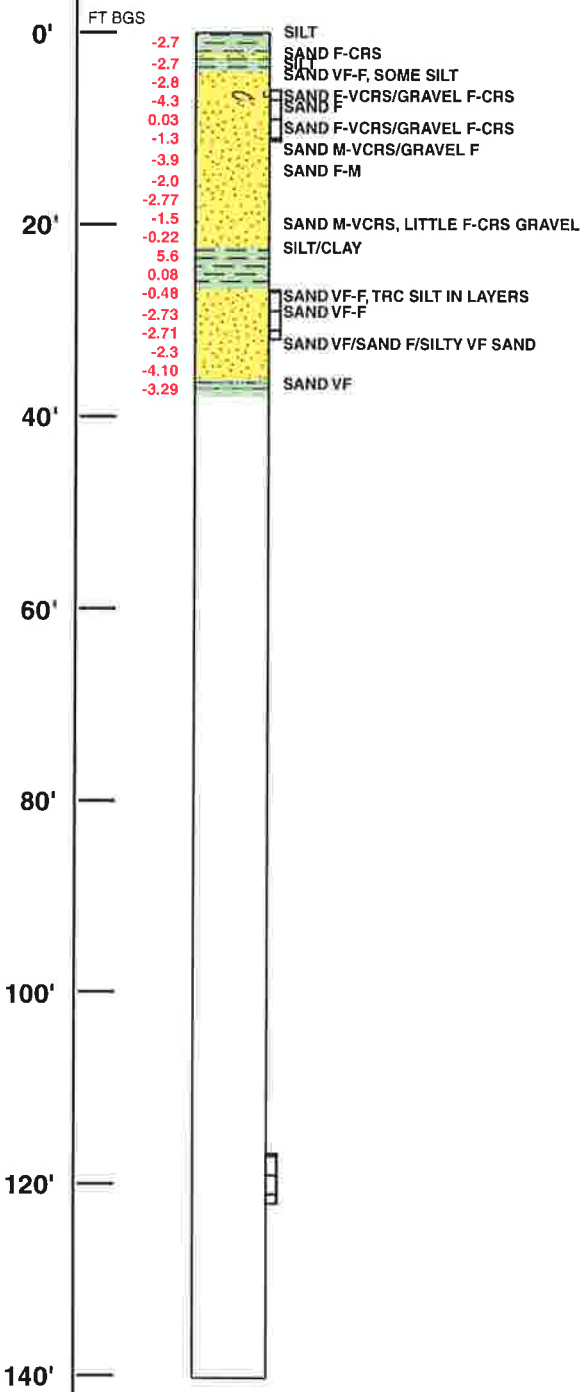
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-558 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.03 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Doug Lantagne	Coleman Engineering	Hollow Stem Auger	2/28/06



VERTICAL SCALE ~1"= 20'

12JUN07\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-558AB.AI

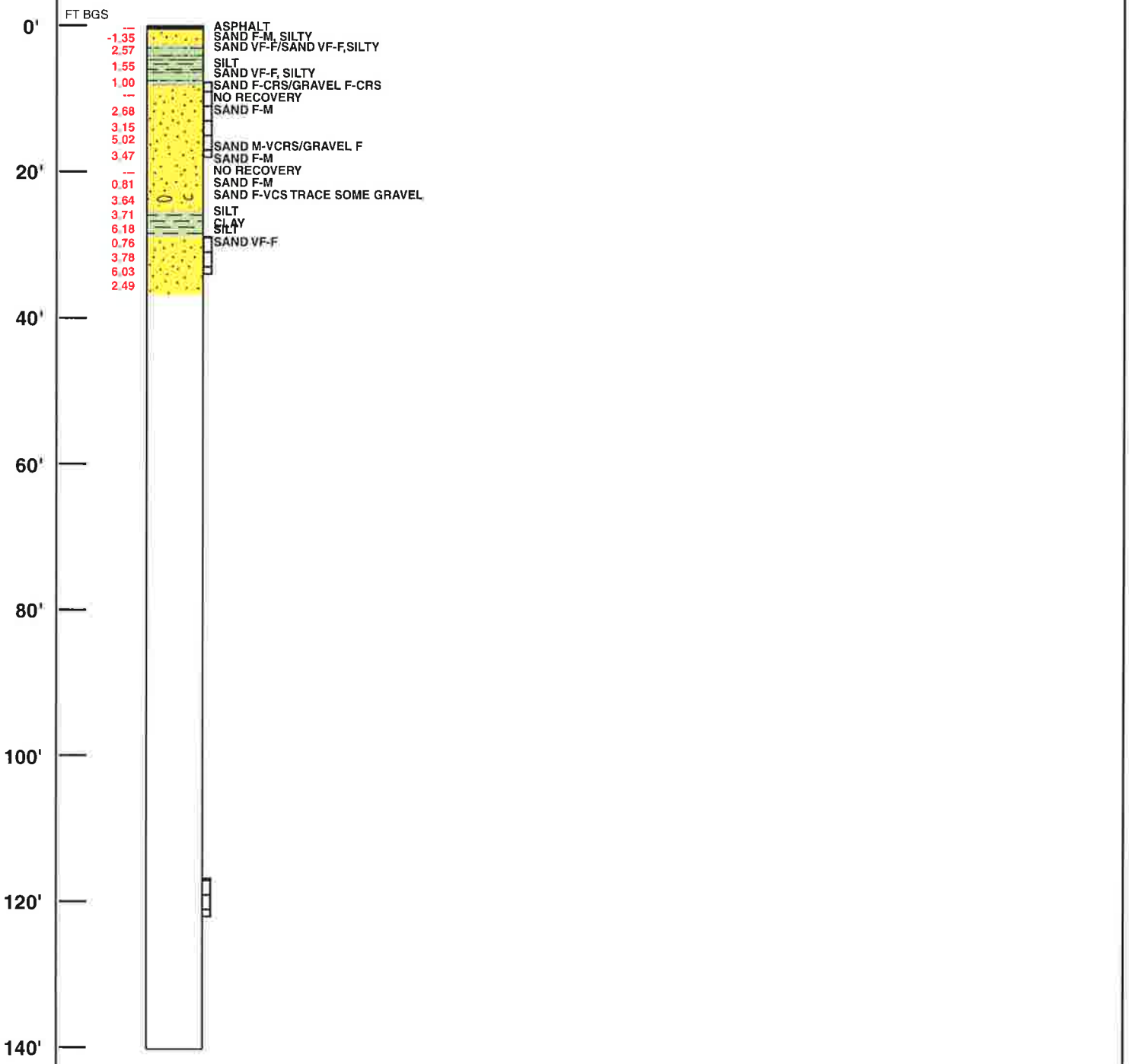
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-559 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1111.62 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	37 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Doug Lantagne	Coleman Engineering	Hollow Stem Auger	3/1/06



VERTICAL SCALE ~1"= 20'

31AUG06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-559AB.AI

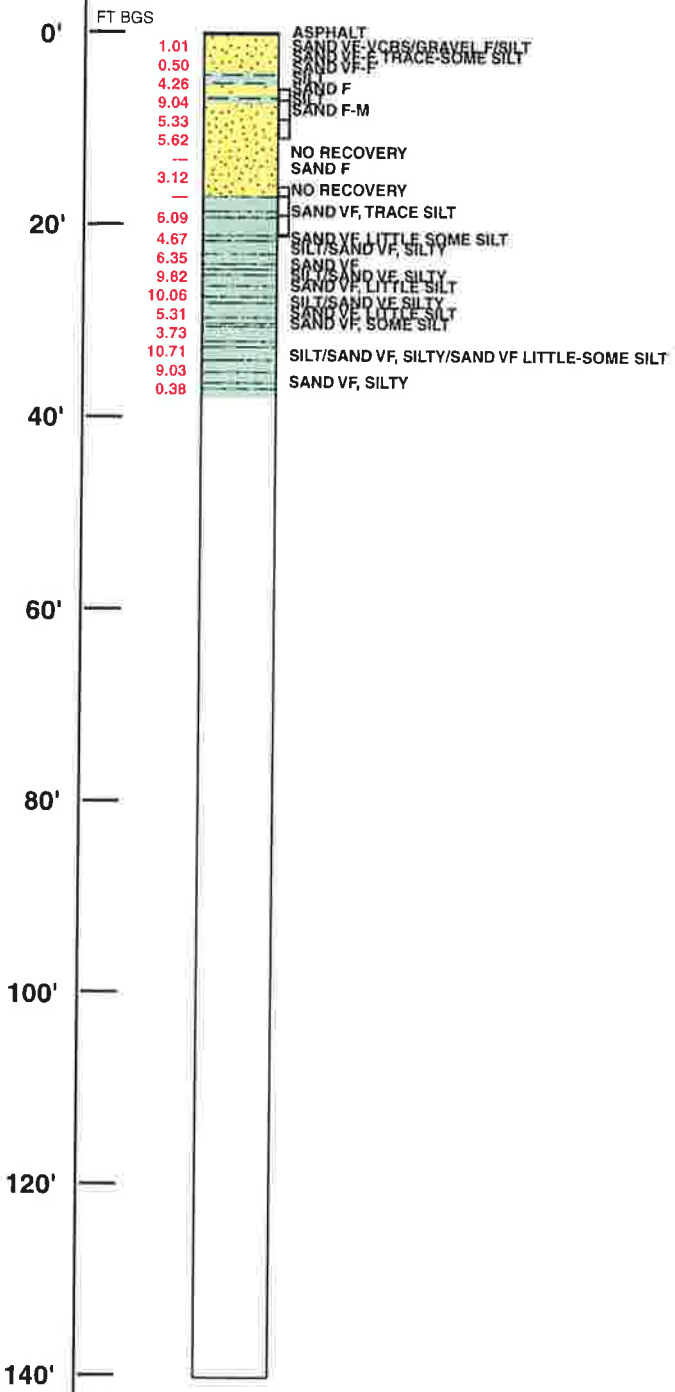
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-560 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.58 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	3/6/06



VERTICAL SCALE ~1"= 20'

20JUN06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-560AB.AI

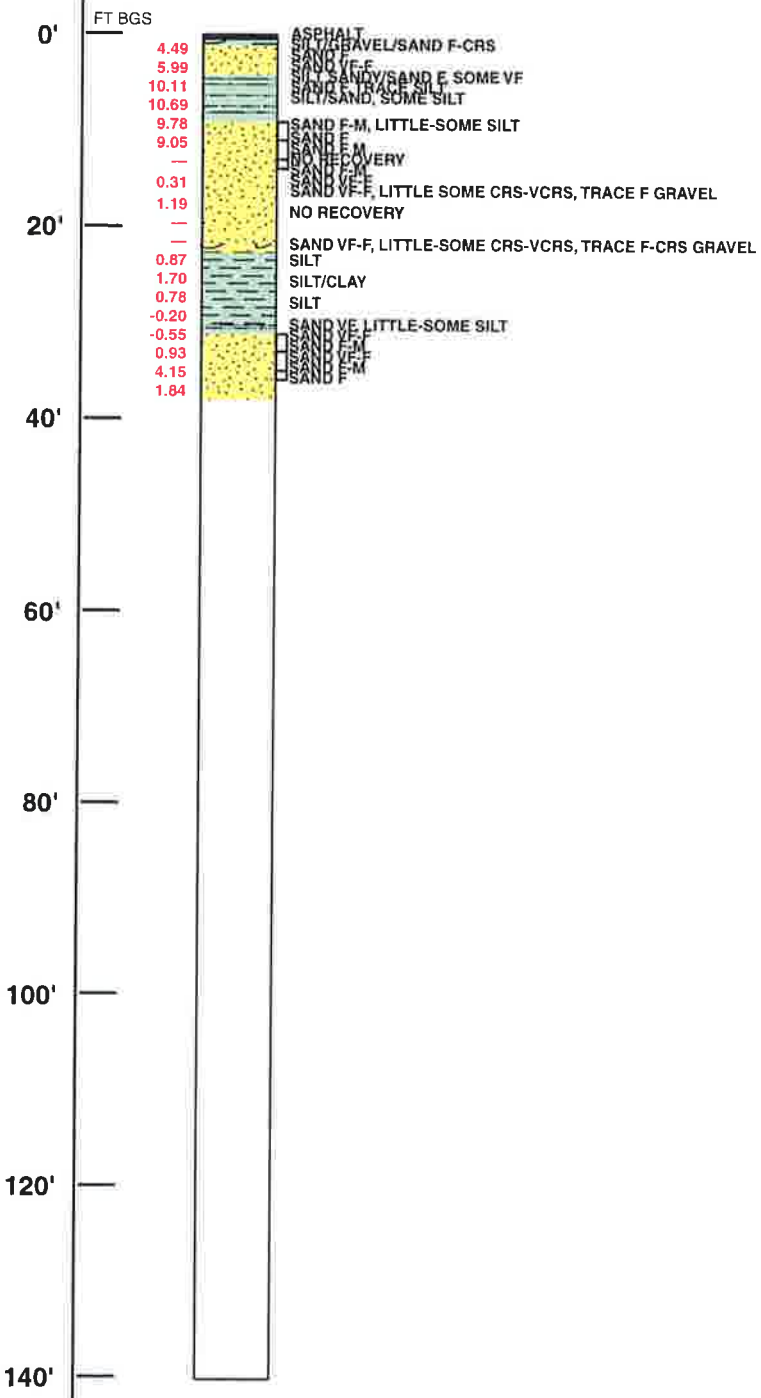
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-561 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.59 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	3/6/06



VERTICAL SCALE ~1"= 20'

20JUN06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-561AB.AI

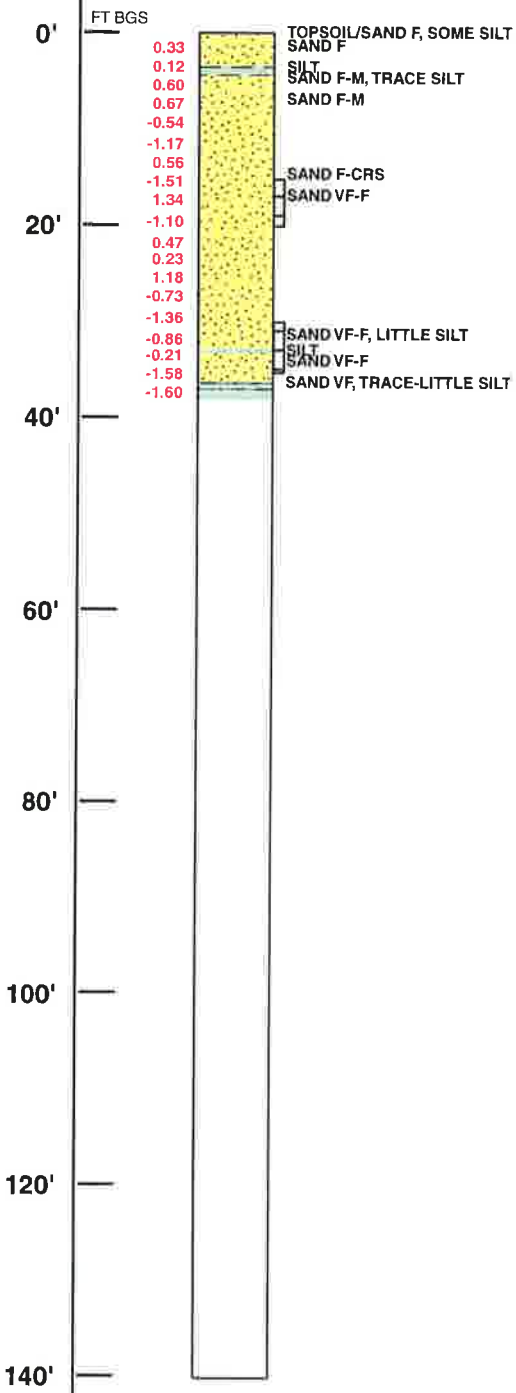
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-562 A/B

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.58 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	3/2/06



VERTICAL SCALE ~1"= 20'

20JUN06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-562AB.AI

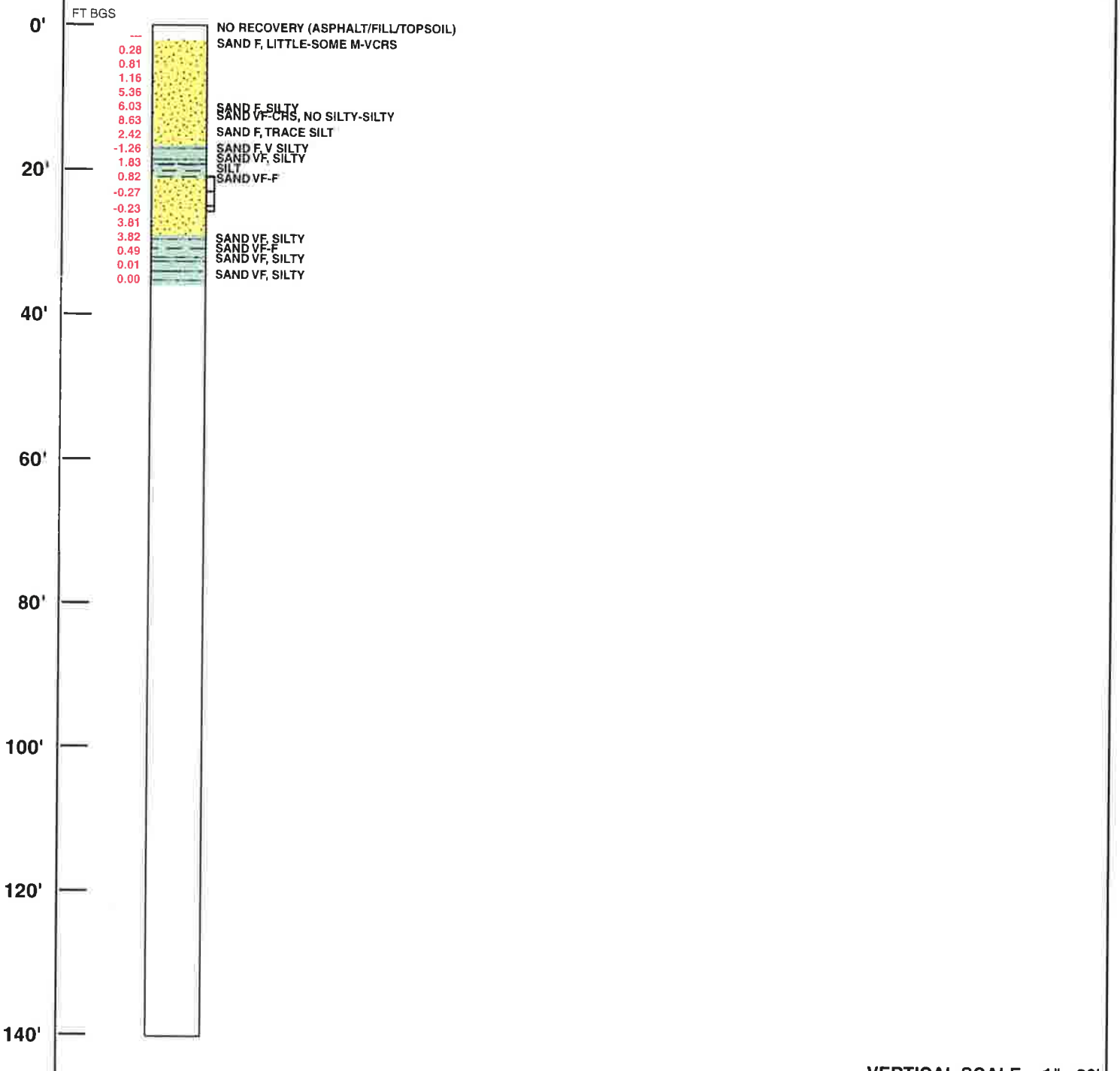
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-563

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.00 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	36 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	3/2/06



VERTICAL SCALE ~1"= 20'

20JUN06\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-563.AI

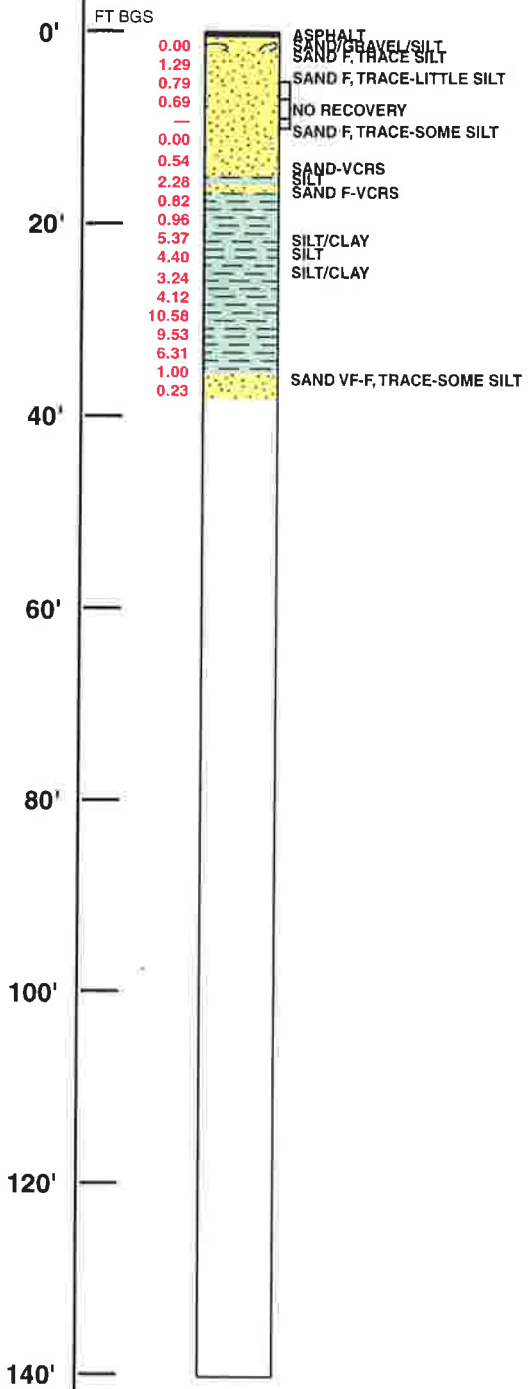
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-564

PROJECT FORD/KINGSFORD WI001095.0015

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1112.31 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	3/7/06



VERTICAL SCALE ~1"= 20'

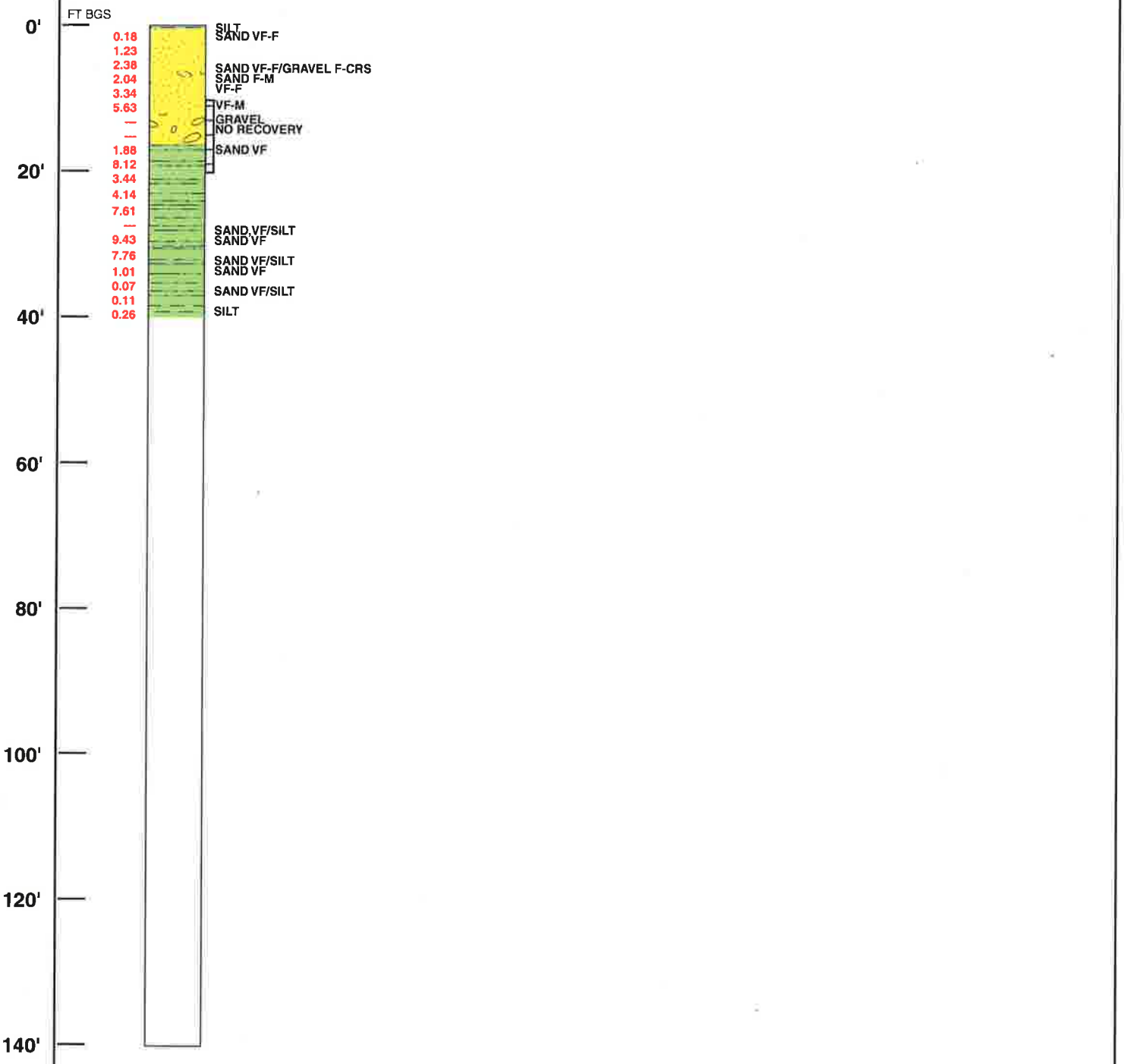
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-577

PROJECT FORD/KINGSFORD WI001095.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1113.71 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	40 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	5/15/06



VERTICAL SCALE ~1"= 20'

21JULY09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-577.AI

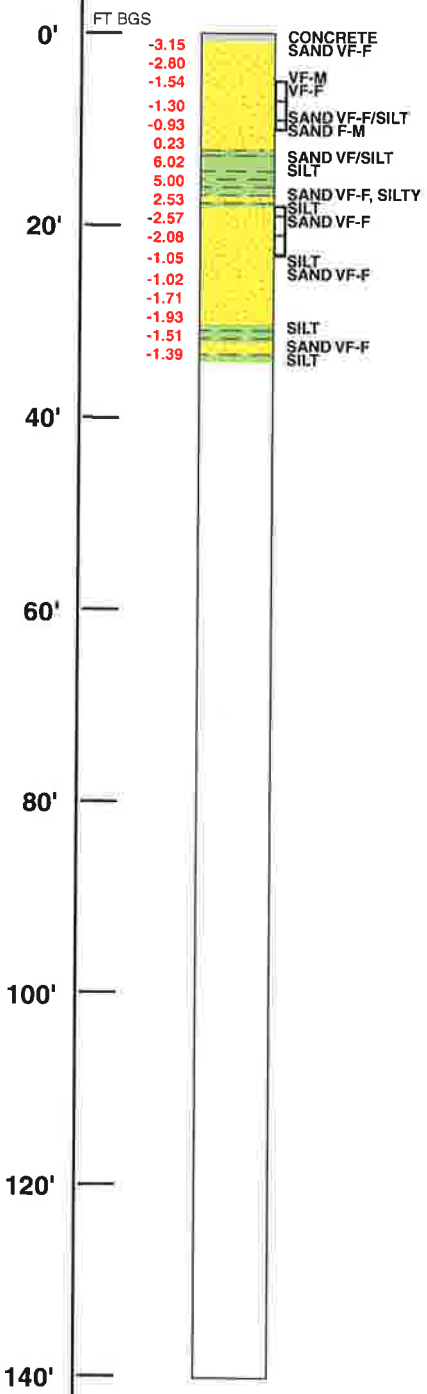
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-579 A/B

PROJECT FORD/KINGSFORD WI001095.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1107.44 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	34 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	5/18/06



VERTICAL SCALE ~1"= 20'

21JULY09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-579AB.AI

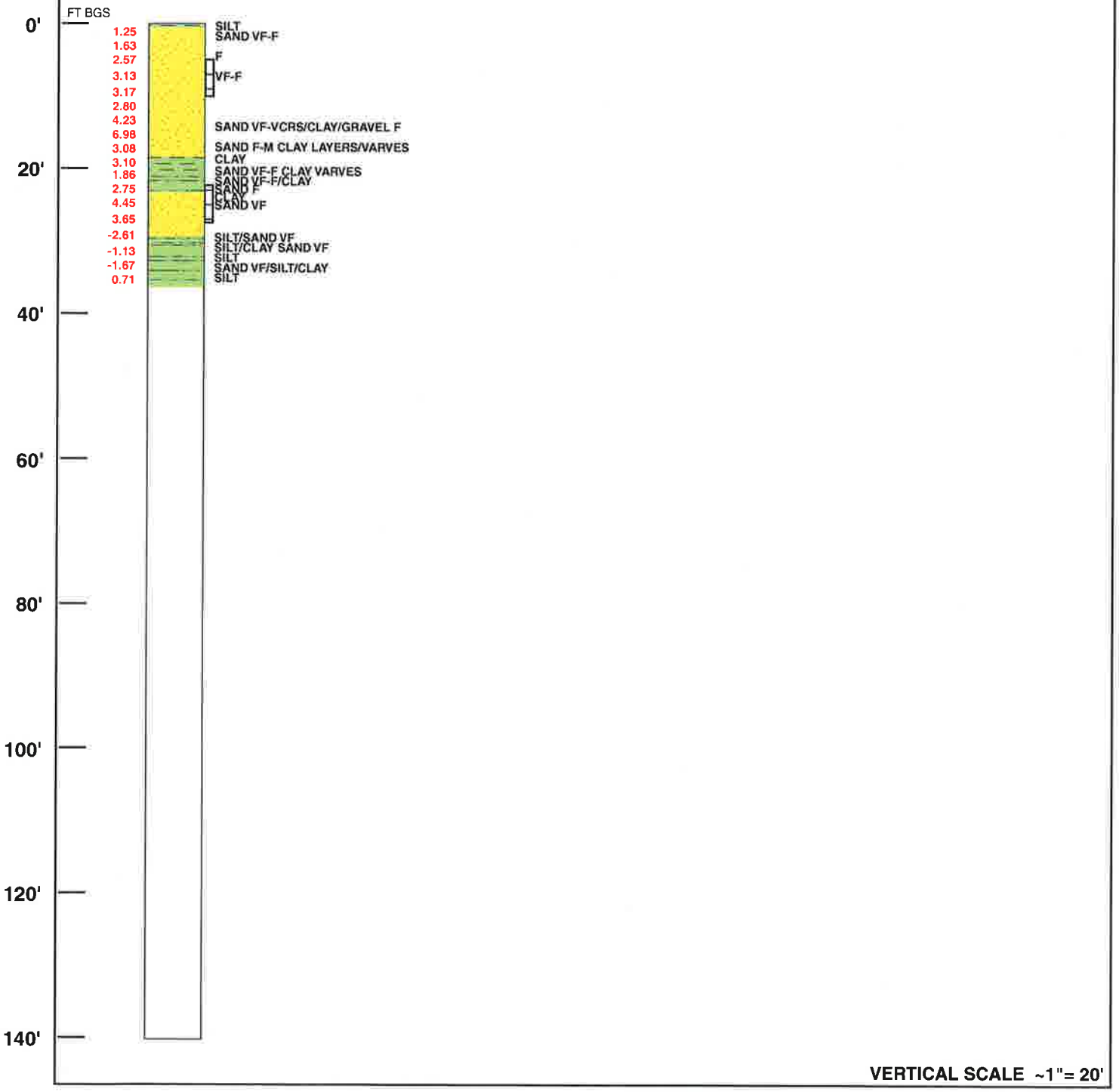
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-580 A/B

PROJECT FORD/KINGSFORD WI001095.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1111.01 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	36 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	5/17/06



VERTICAL SCALE ~1"= 20'

21JULY09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-580AB.AI

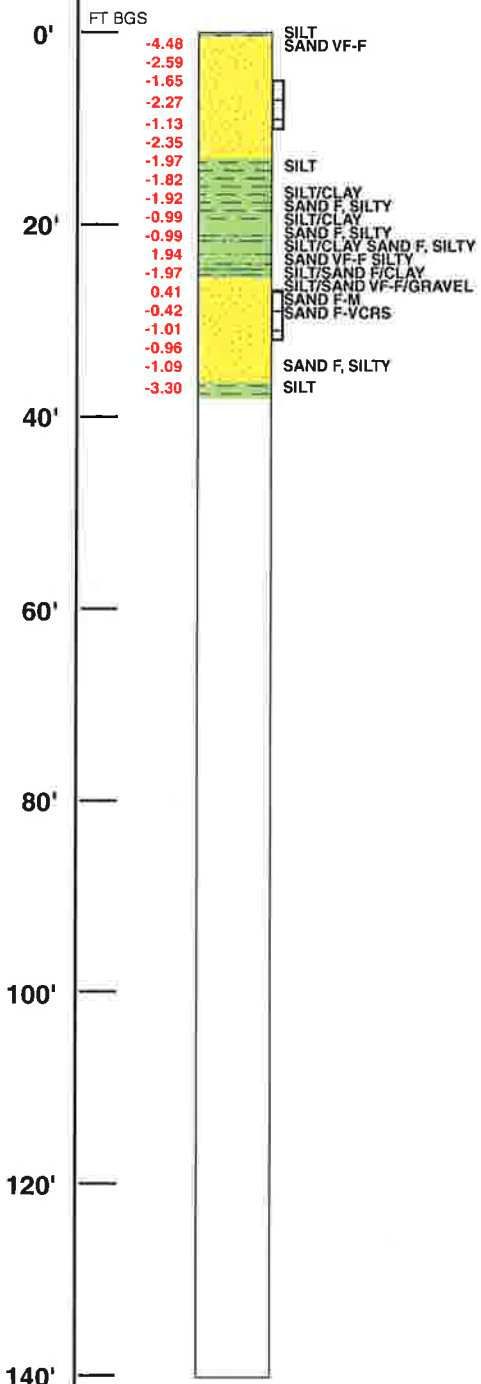
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-581 A/B

PROJECT FORD/KINGSFORD WI001095.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1110.79 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	___ Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	5/17/06



VERTICAL SCALE ~1"= 20'

21JUL09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-581AB.AI

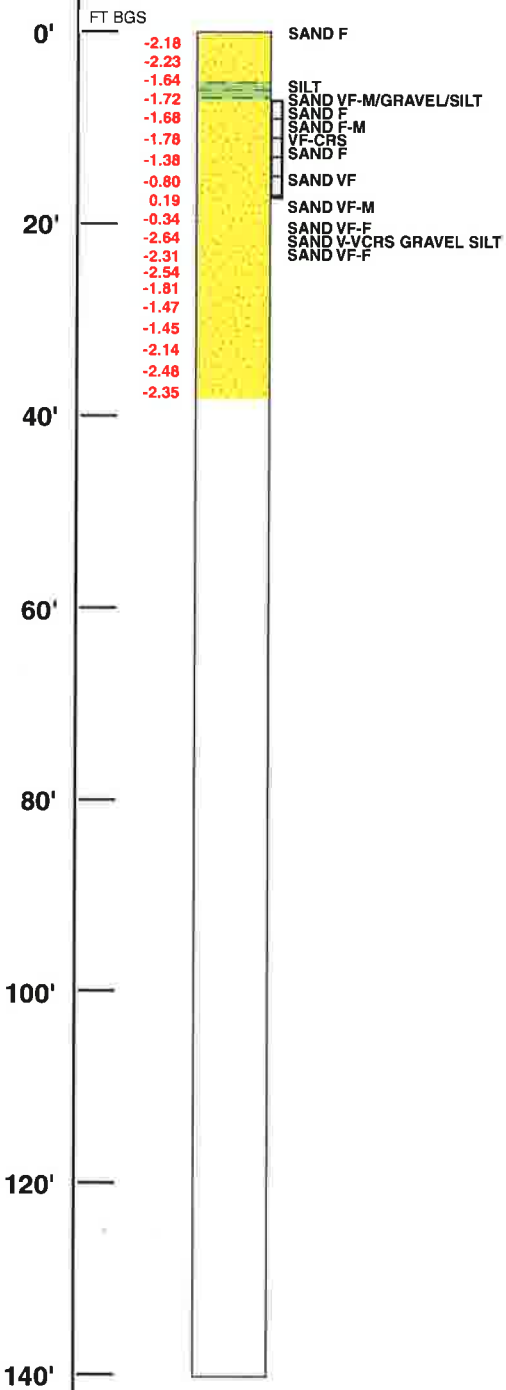
ARCADIS

BOREHOLE STRATIGRAPHIC LOG

OBSERVATION WELL NO. GMSG-583

PROJECT FORD/KINGSFORD WI001095.0002

LOCATION			LAND SURFACE ELEVATION
Kingsford, Michigan			1111.05 Feet MSL
GEOLOGIST	**SAMPLE INTERVAL**	**SAMPLING DEVICE**	**TOTAL DEPTH DRILLED**
J. Flater	Continuous	Splitspoon	38 Feet BLS
DRILLER	**DRILLING CONTRACTOR**	**DRILLING METHOD**	**DATE BORING COMPLETED**
Randy Ochs	Coleman Engineering	Hollow Stem Auger	5/19/06



VERTICAL SCALE ~1"= 20'

21JULY09\FORD\WI0637\CJ2006\GRAPHICS\STRAT LOGS\DRAWING: GMSG-583.AI

ARCADIS

Appendix C

Well and Soil Vapor Probe
Construction Forms

Because we care
100% recycled paper produced by wind power energy

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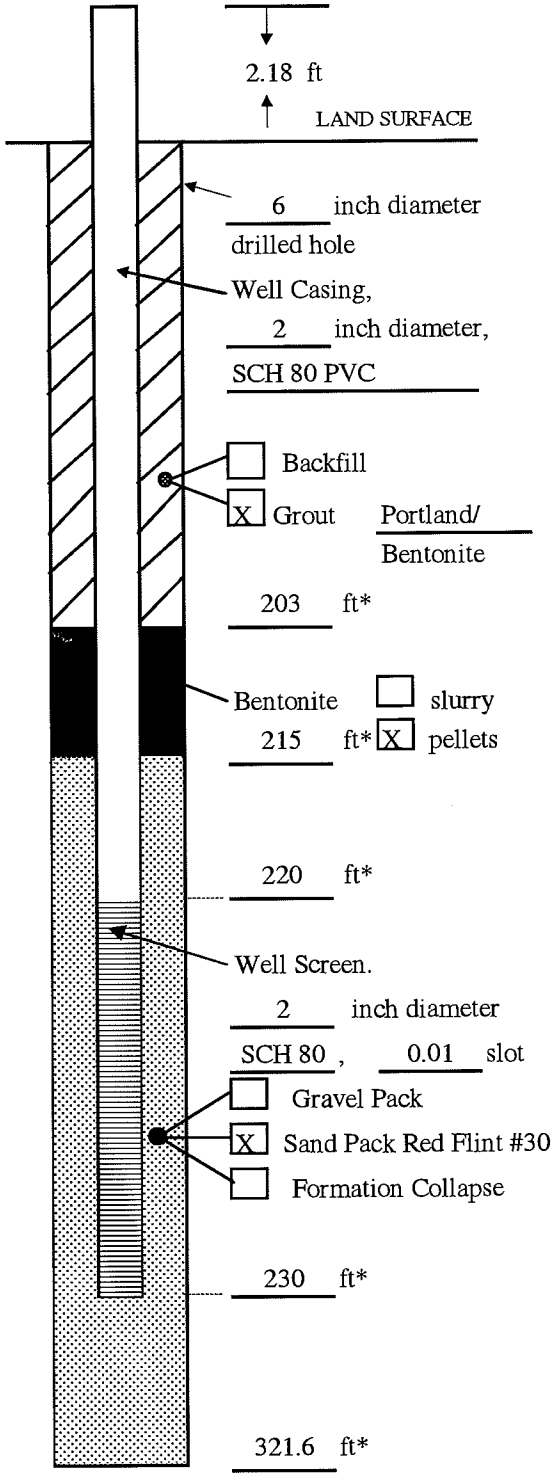
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	WI0637.001	Well	GM-1
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1121.79 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	5/16/97 to 5/17/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 5 steps from 0.57 to 3.34 gpm.

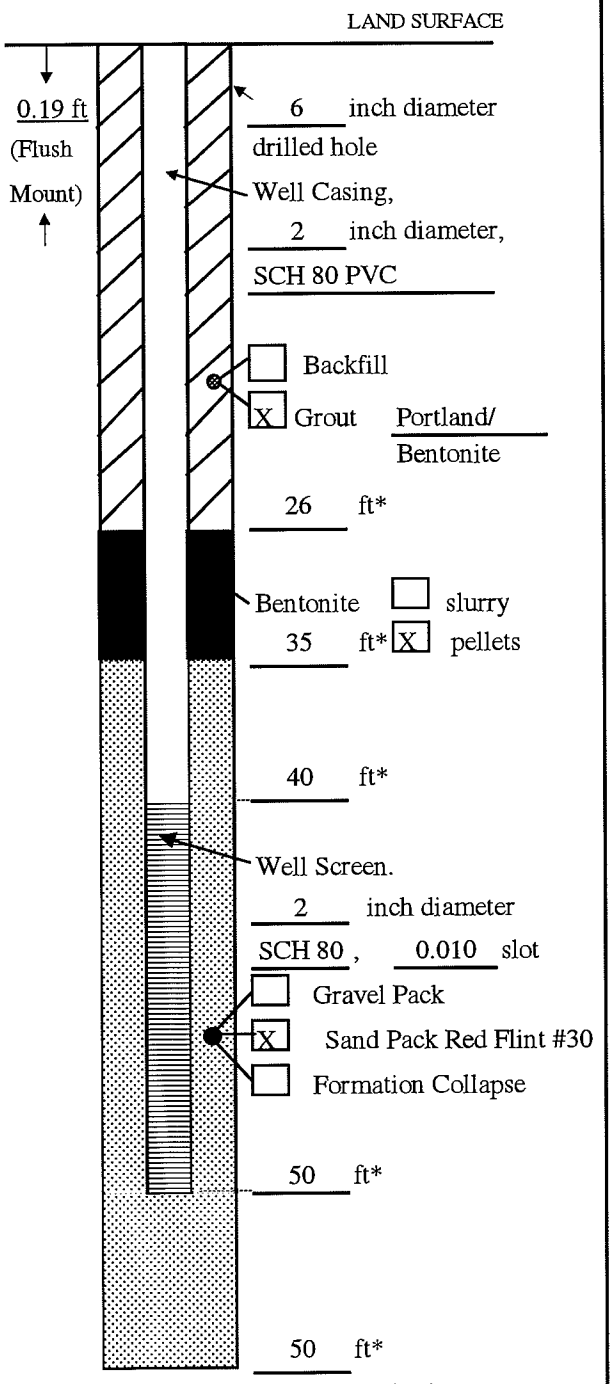
Water Removed During Development	Approx.140	gallons
Static Depth to Water	82.07 on 5/29/97	feet below M.P.
Pumping Depth to Water	108.27 at 3.34 gpm	feet below M.P.
Pump Duration	0.5 (/step) hours	(2.5 hrs total test)
Date	5/29/1997	
Specific Capacity	0.127 (max)	gpm/ft
Specific Capacity	0.118 (averaged)	gpm/ft
Well Purpose	Monitoring groundwater levels and water quality.	

Remarks Note, specific capacity of 0.118 determined from averaging the specific capacities of 5 x 20 min steps.
Groundwater sample taken for analysis on 6/24/97.

Prepared by R. Flynn/J. McCallion

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	WI0637.001	Well	GM-2A
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1121.3 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	5/7/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Baildown

Water Removed During Development		7	gallons
Static Depth to Water	49.56 on 5/28/97		feet below M.P.
Pumping Depth to Water			feet below M.P.
Pump Duration	hours		
Yield	gpm	Date	5/29/1997
Specific Capacity		gpm/ft	

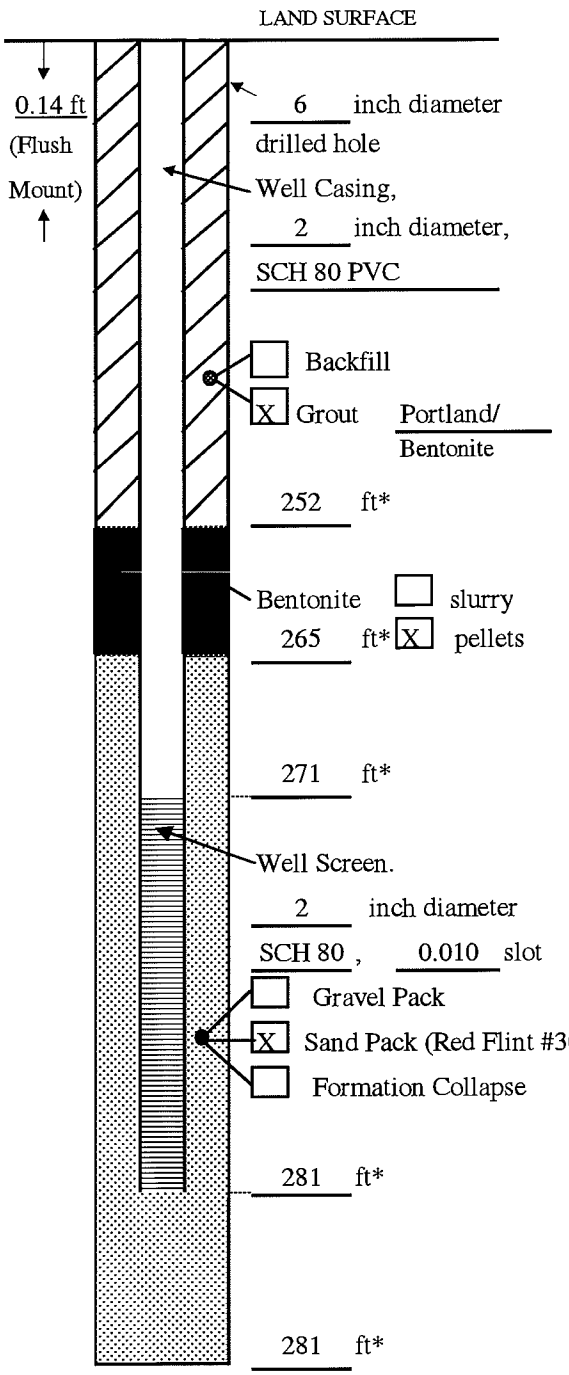
Well Purpose: Monitoring groundwater levels and groundwater quality.

Remarks: Purged 7 gallons from well.
Groundwater sample taken for analysis on 7/2/97.

Prepared by: D. Hegrenes/R. Flynn

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	WI0637.001	Well	GM-2B
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1121.33 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	5/6/97 to 5/7/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 3 steps from 1.2 - 4 gpm

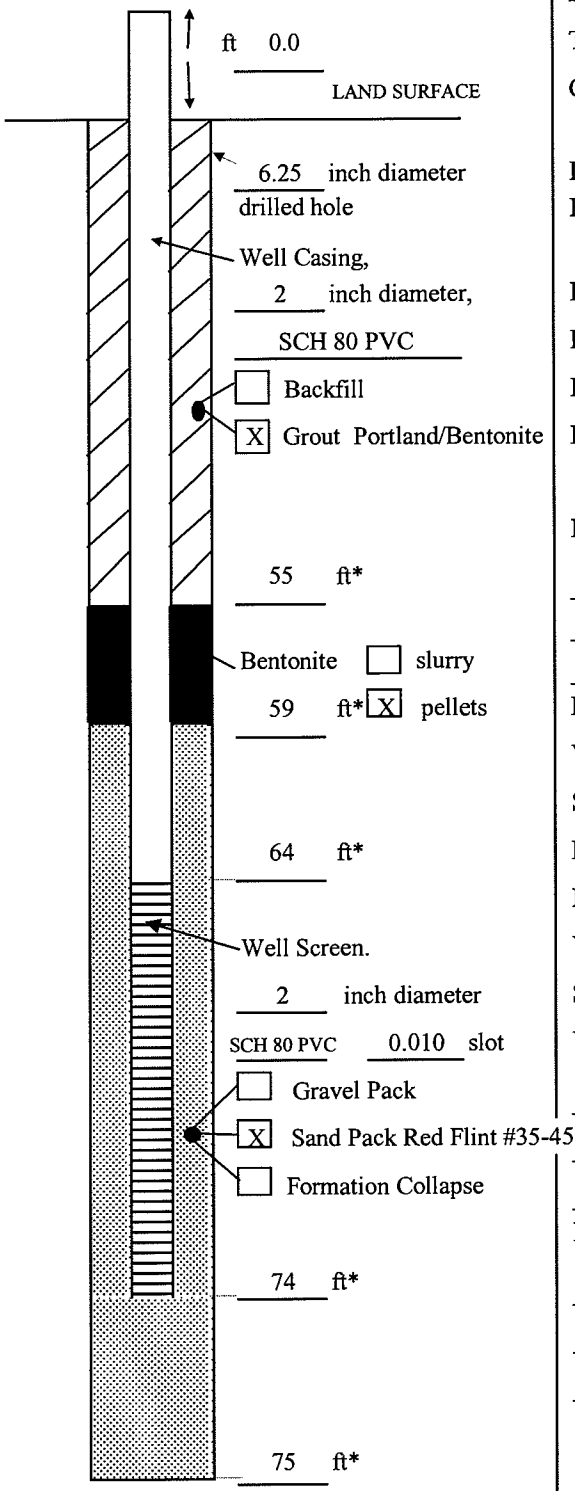
Water Removed During Development	Approx. 400		gallons
Static Depth to Water		73.33 on 5/28/97	feet below M.P.
Pumping Depth to Water		91.47 to 1.3 gpm	feet below M.P.
Pump Duration	3	hours	
Date	5/28/1997		
Specific Capacity	0.073	gpm/ft	
Well Purpose	Monitoring groundwater levels and groundwater quality.		

Remarks Note, specific capacity of 0.073 determined from averaging the specific capacites at two different pumping rates.
Groundwater sample taken for analysis on 6/26/97.

Prepared by R. Flynn/J. McCallion

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-2C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1121.36 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/8/98

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

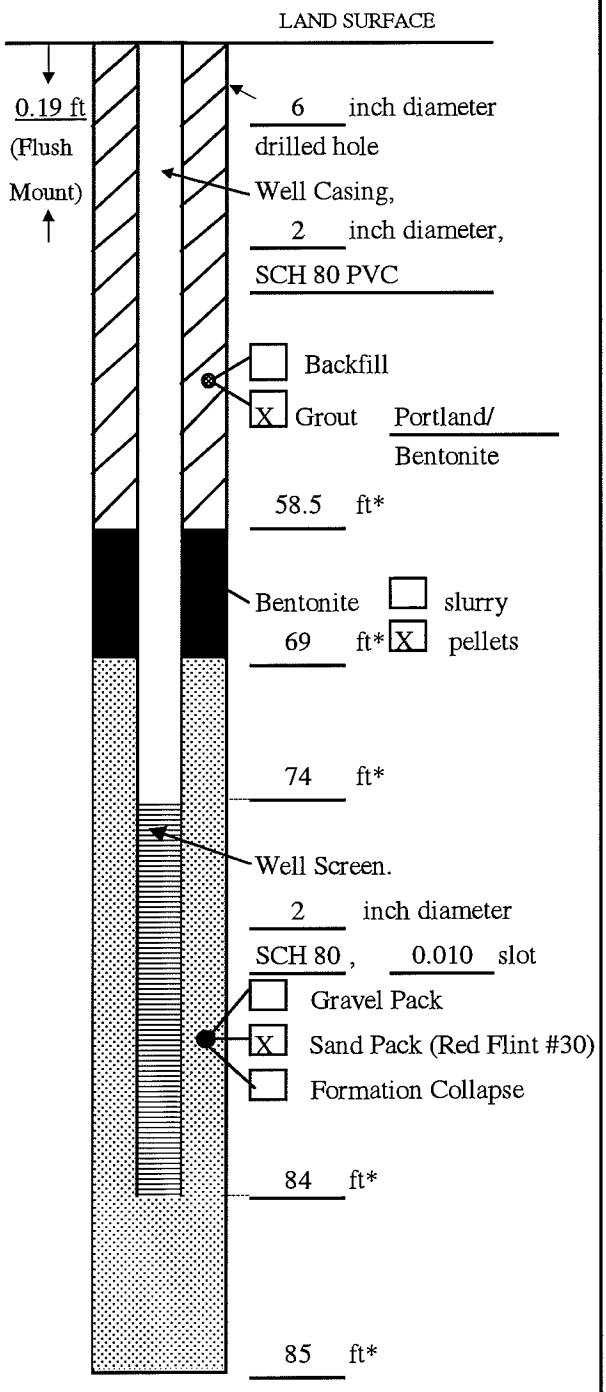
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Bill Jones

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	WI0637.001	Well	GM-3A
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1119.54 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	5/6/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 4 steps from 1.7 - 3.6 gpm

Water Removed During Development	Approx. 400	gallons
Static Depth to Water	47.22	feet below M.P.
Pumping Depth to Water	49.65 @ 3.6 gpm	feet below M.P.
Pump Duration	3 hours	
Date	5/29/1997	
Specific Capacity	2.237	gpm/ft

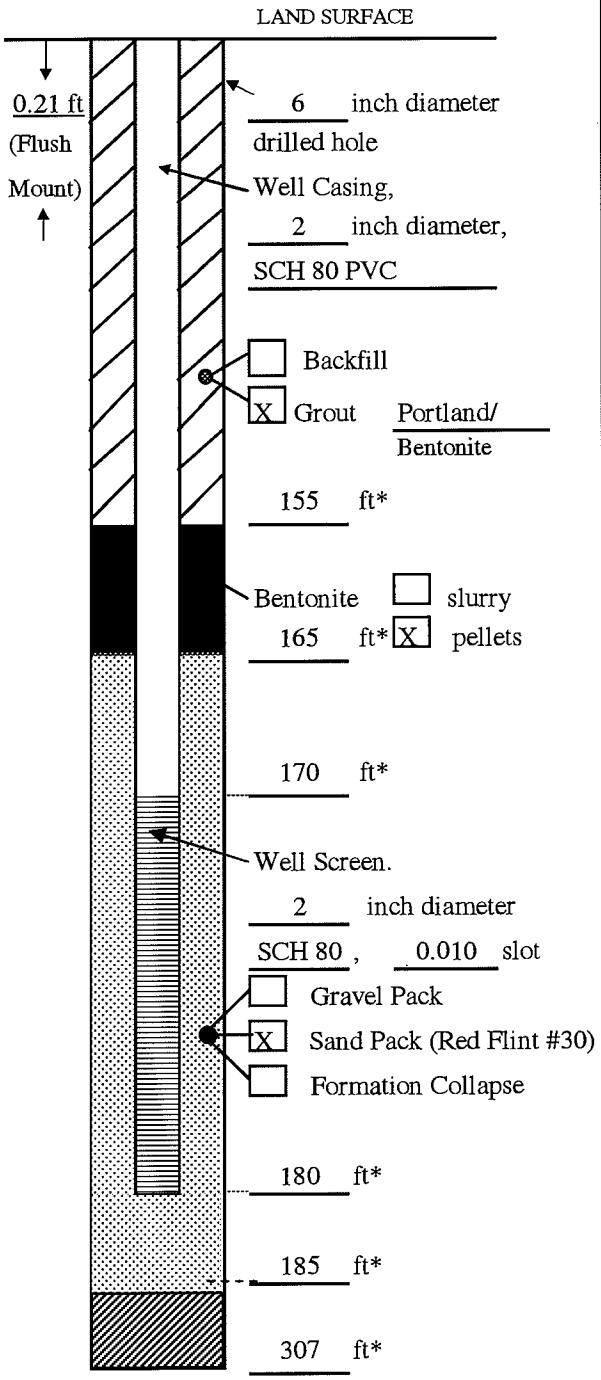
Well Purpose: Monitoring groundwater levels and groundwater quality.

Remarks: Note, specific capacity of 1.79 gpm determined from averaging the specific capacites of 4 x 20 min steps. Groundwater sample taken for analysis on 6/25/97.

Prepared by: D. Hegrenes/R. Flynn

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	WI0637.001	Well	GM-3B
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1119.61 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	5/4/97 to 5/5/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 2 steps from 2.6 to 3.8 gpm

Water Removed During Development		300	gallons
Static Depth to Water	74.90 on 7/9/97		feet below M.P.
Pumping Depth to Water	100.83 @ 3.8 gpm		feet below M.P.
Pump Duration	2 hours		
Yield	gpm	Date	7/9/1997
Specific Capacity	0.143	gpm/ft	

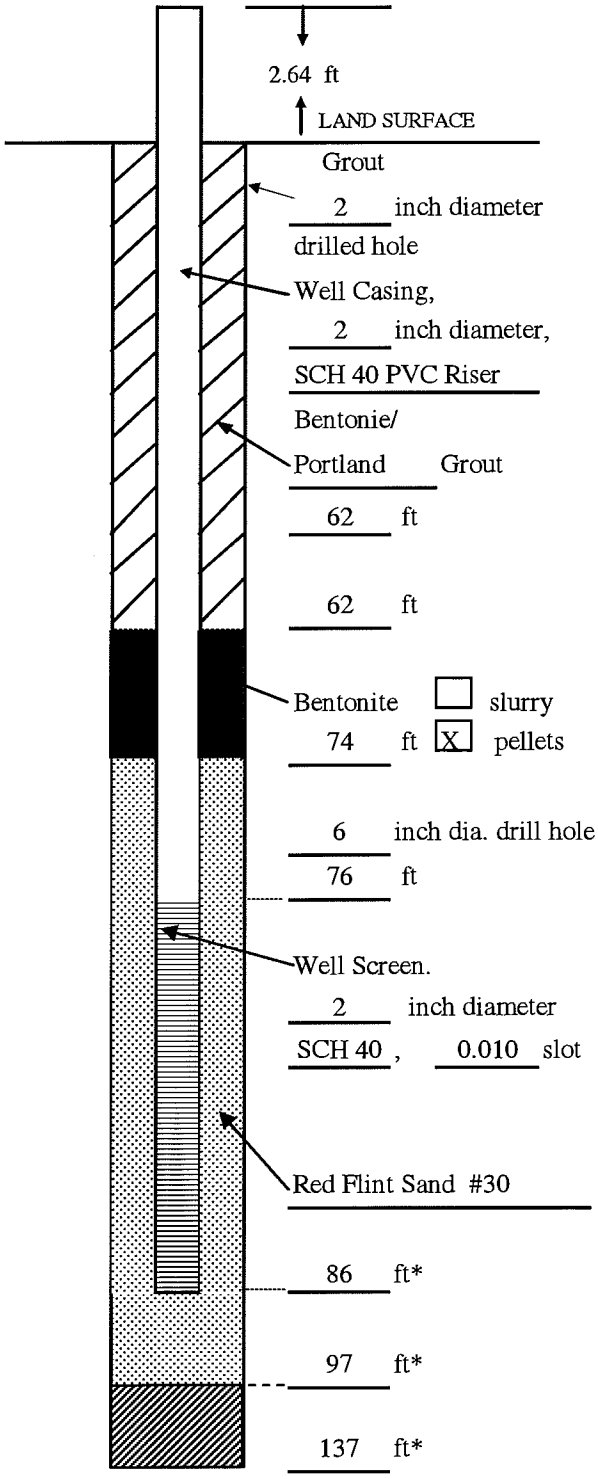
Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample taken for analysis on 6/25/97.

Prepared by: D. Hegrenes/R. Flynn

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-4
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1125.54 feet MSL
☒ Surveyed
☐ Estimated

Installation Date(s)	6/15/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.

Water Removed During Development	Approx. 200	gallons
Static Depth to Water	43.33 on 6/18/97	feet below M.P.
Pumping Depth to Water	76.31 @ 0.55 gpm	feet below M.P.
Pump Duration	3.5	hours
Date	6/18/1997	
Specific Capacity	0.017	gpm/ft

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater samples collected for anlaysis on 6/26/97.

Prepared by: D. Hegrenes/R. Flynn

GERAGHTY & MILLER, INC.
Environmental Services
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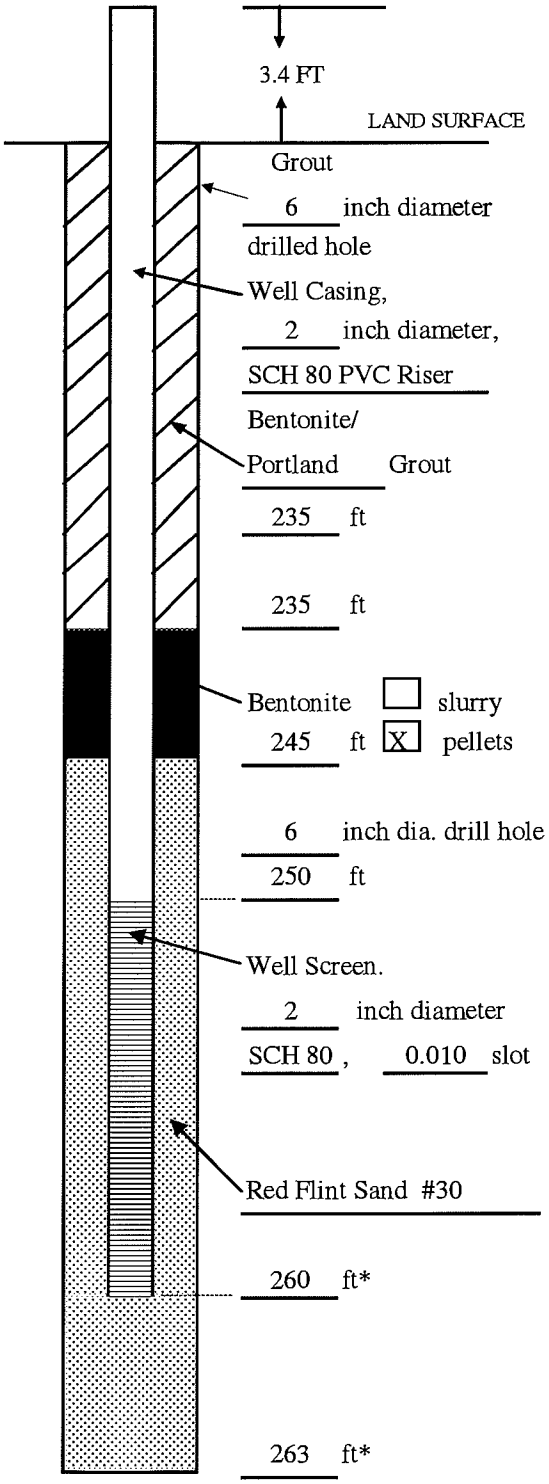
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-5
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1122.18
☒ Surveyed
☐ Estimated

Installation Date(s)	6/14/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 5 steps from 1 to 3 gpm.

Water Removed During Development	Approx. 220	gallons
Static Depth to Water	84.15 on 6/17/97	feet below M.P.
Pumping Depth to Water	103.51	feet below M.P.
Pump Duration	2.5 hours	
Date	6/17/1997	
Specific Capacity	0.239	gpm/ft

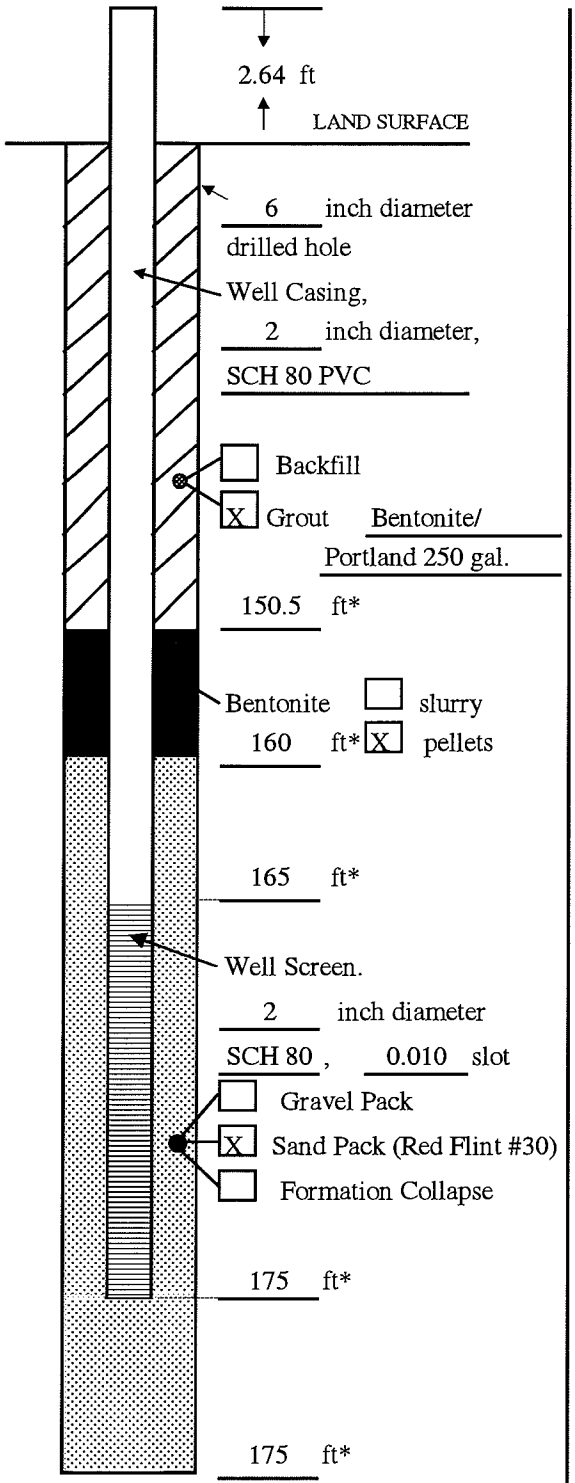
Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Note: specific capacity determined from averaging the specific capacities on 5 x 20 min steps. Groundwaer sample collected for analysis on 7/1/97.

Prepared by: D. Hegrenes/R. Flynn

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	WI0637.002	Well	GM-6
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1124.07 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	5/14/97 to 5/15/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 3 steps from 2 to 3.7 gpm

Water Removed During Development		194	gallons
Static Depth to Water		83.29 on 5/29/97	feet below M.P.
Pumping Depth to Water		91.37 @ 3.7 gpm	feet below M.P.
Pump Duration	1.5	hours	
Date	5/29/1997		
Specific Capacity	0.604	gpm/ft	

Well Purpose: Monitoring groundwater quality and groundwater levels.

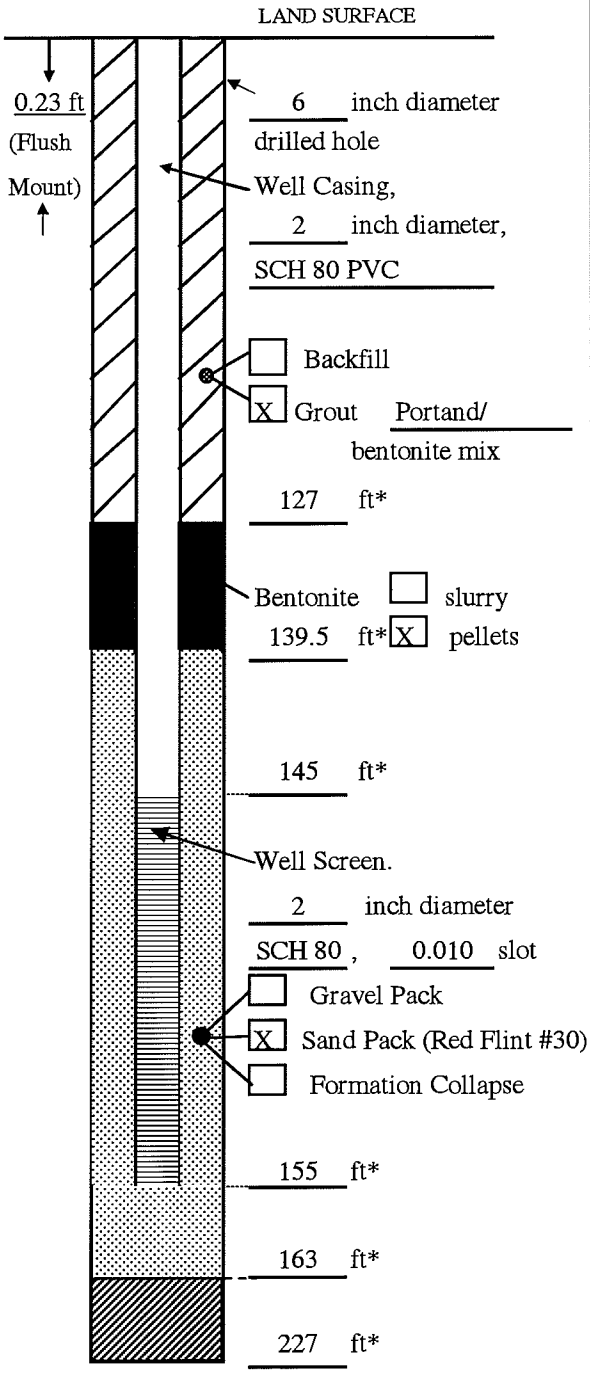
Remarks: Note: Specific capacity of 0.604 gpm/ft determined from averaging the specific capacities of 3 x 30 min tests. Groundwater sample taken for analysis on 6/28/97.

Prepared by: D. Hegrenes/R. Flynn

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

WELL CONSTRUCTION LOG

(FLUSH MOUNTED WELL)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	WI0637.001	Well	GM-7
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1107.63 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	6/11/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 5 steps from 0.8 to 3 gpm

Water Removed During Development	Approx. 270	gallons
Static Depth to Water	45.17 6/17/97	feet below M.P.
Pumping Depth to Water	80.32 @ 3.6 gpm	feet below M.P.
Pump Duration	2.5 hours	
Date	6/17/1997	
Specific Capacity	0.085	gpm/ft

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Note, specific capacity of 0.074 determined from averaging the specific capacities of 5 x 30 min tests.

Groundwater sample taken for analysis on 6/29/97.

Prepared by: D. Hegrenes/R. Flynn

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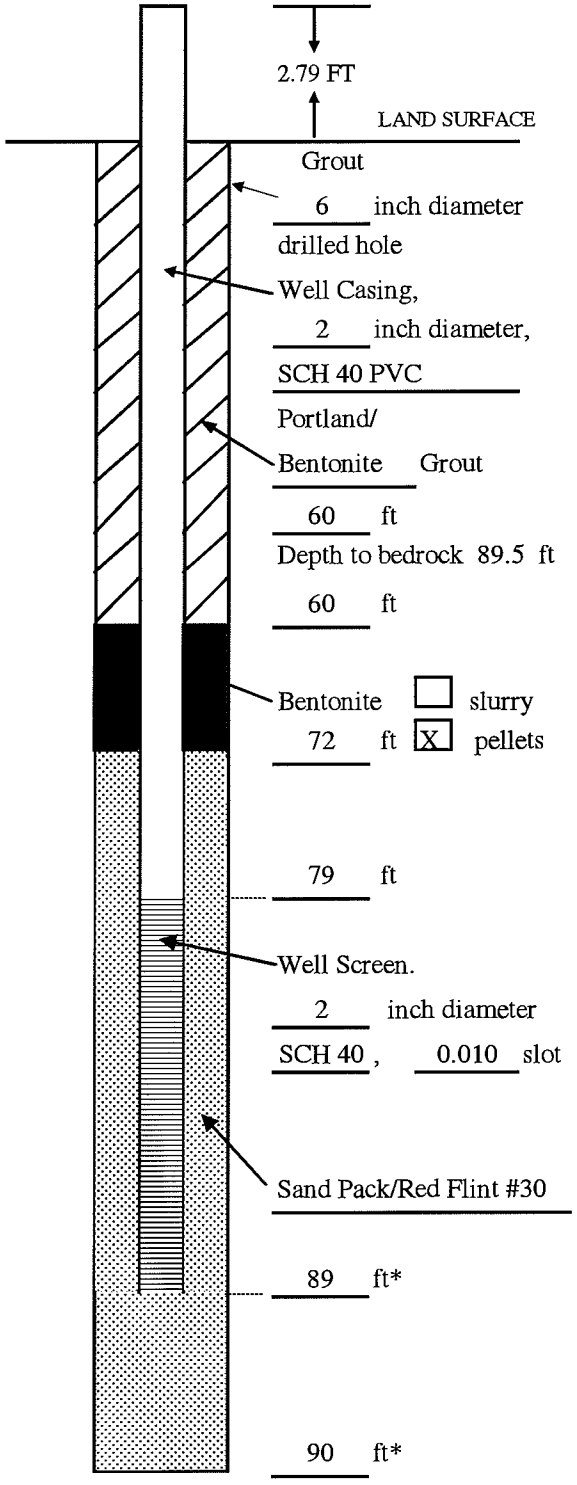
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-8
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1043.64 feet AMSL ☒ Surveyed ☐ Estimated

Installation Date(s)	6/25/97 to 6/26/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 4 steps from 1 to 2.78 gpm

Water Removed During Development	360	gallons
Static Depth to Water	10.86 on 6/27/977	feet below M.P.
Pumping Depth to Water	11.8 @ 2.78 gpm	feet below M.P.
Pump Duration	3.25 hours	
Date	6/27/1997	
Specific Capacity	2.875	gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks Note, specific capacity of 2.875 determined from averaging the specific capacities of 4 steps.
Groundwater sample taken for analysis on 6/30/97.

Prepared by D. Hegrenes/R. Flynn

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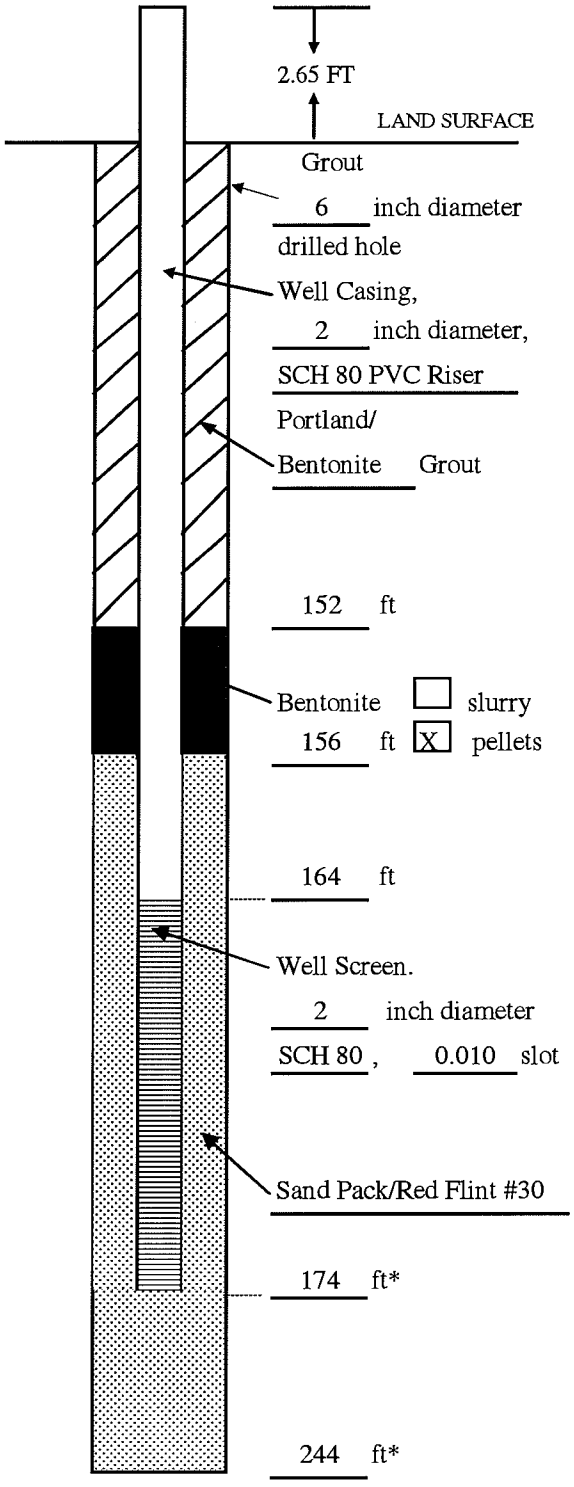
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-9
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1053.04 feet AMSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	9/15/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
Pumped in 4 steps from 1 to 2.5 gpm

Water Removed During Development	232	gallons
Static Depth to Water	17.75 on 9/30/97	feet below M.P.
Pumping Depth to Water	21.65 @ 2.5 gpm	feet below M.P.
Pump Duration	1.83 hours	
Date	9/30/1997	
Specific Capacity	0.64	gpm/ft @ 2.5 gpm

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/13/97.

Prepared by: D. Hegrenes

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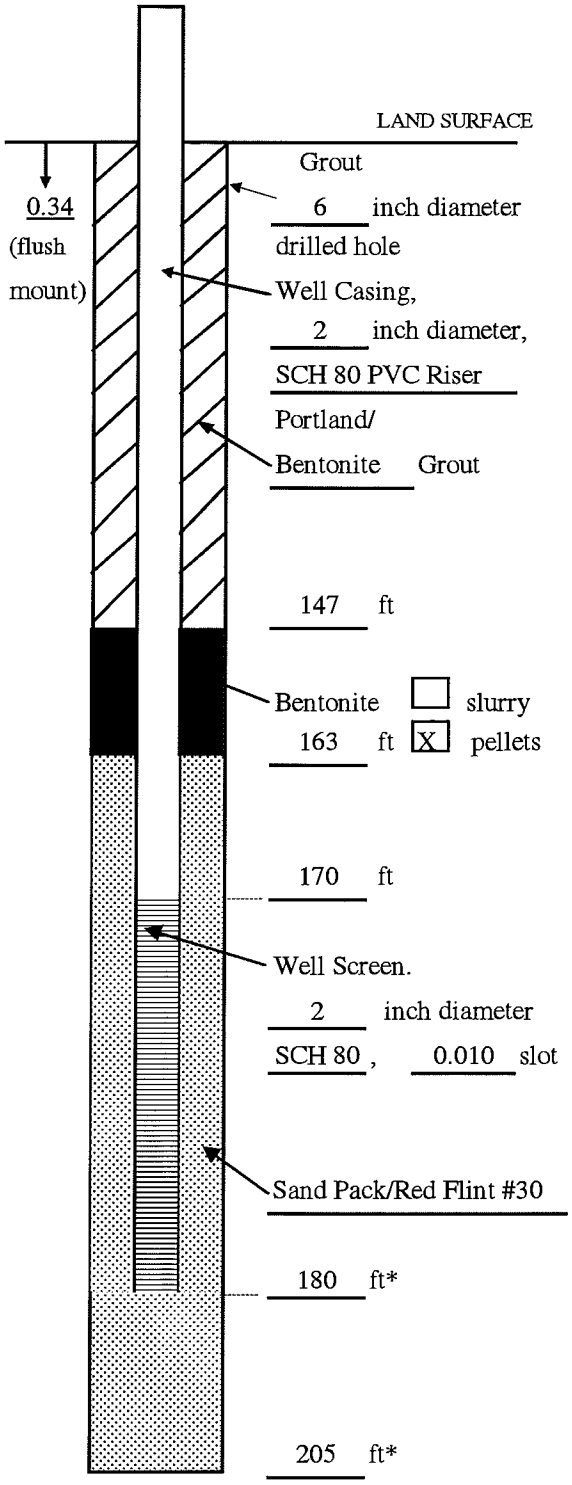
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-10
Town/City	Aurora		
County	Florence	State	Wisconsin

Land-Surface Elevation and Datum 1056.20 feet AMSL ☒ Surveyed ☐ Estimated

Installation Date(s)	9/16/97 and 9/24/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.

Water Removed During Development	500	gallons
Static Depth to Water	16.60 on 9/29/97	feet below M.P.
Pumping Depth to Water	21.31 @ 2.86 gpm	feet below M.P.
Pump Duration	4 hours	
Date	9/29/1997	
Specific Capacity	0.61	gpm/ft @ 2.85 gpm

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/14/97.

Prepared by: D. Hegrenes

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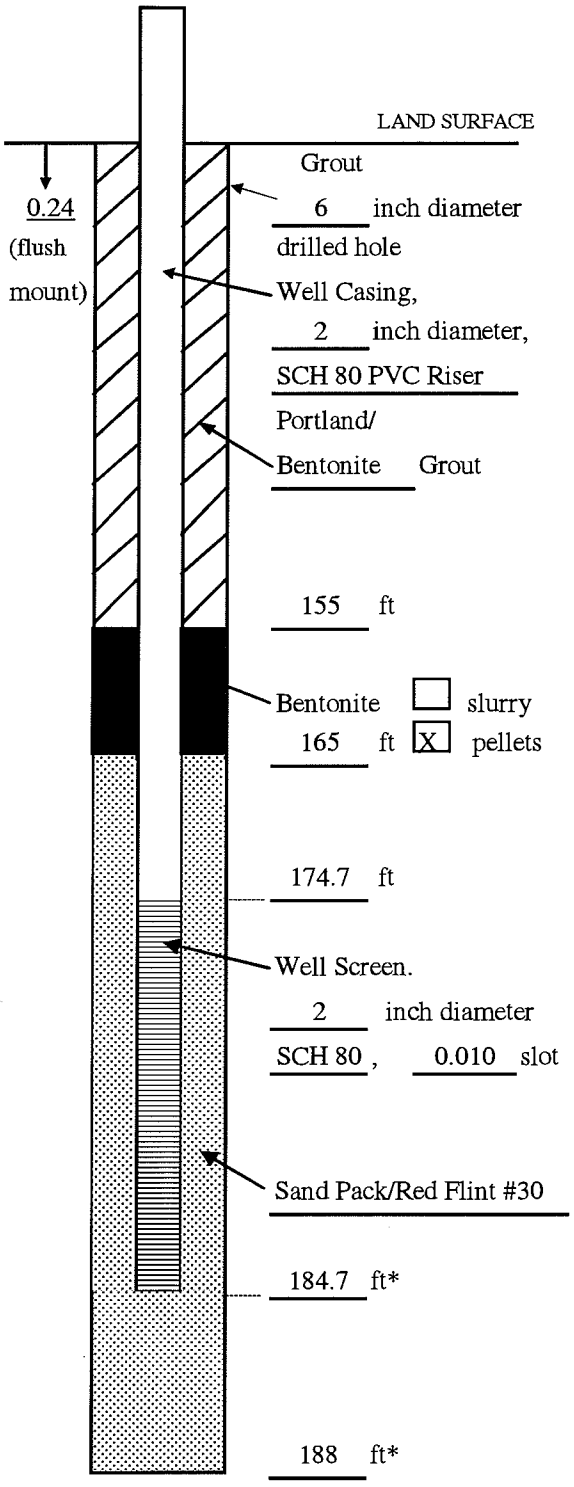
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-11
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1067.84 feet AMSL ☒ Surveyed ☐ Estimated

Installation Date(s)	9/27 97 to 9/29/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
10/1/1997

Water Removed During Development	290	gallons
Static Depth to Water	13.44 on 10/1/97	feet below M.P.
Pumping Depth to Water	21.62 @ 3.0 gpm	feet below M.P.
Pump Duration	2.5	hours
Date	10/1/1997	
Specific Capacity	0.37	gpm/ft @ 3.0 gpm

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/15/97.

Prepared by: D. Hegrenes

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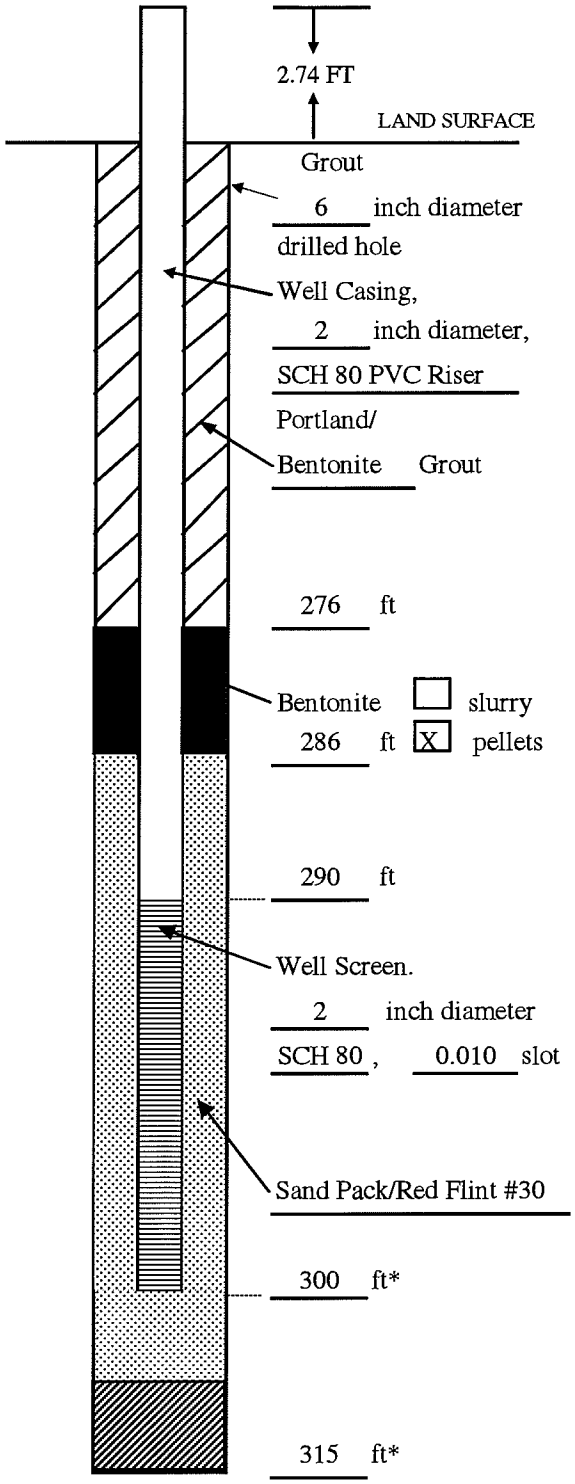
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-12
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1120.49 feet AMSL ☒ Surveyed ☐ Estimated

Installation Date(s)	9/30/97 to 10/10/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
10/12/97

Water Removed During Development		310	gallons
Static Depth to Water		67.07 on 10/12/97	feet below M.P.
Pumping Depth to Water		67.23 @ 2.2 gpm	feet below M.P.
Pump Duration	4	hours	
Date	10/12/1997		
Specific Capacity	13.15	gpm/ft @ 1.71 gpm	

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis 10/22/97.

Prepared by: D. Hegrenes

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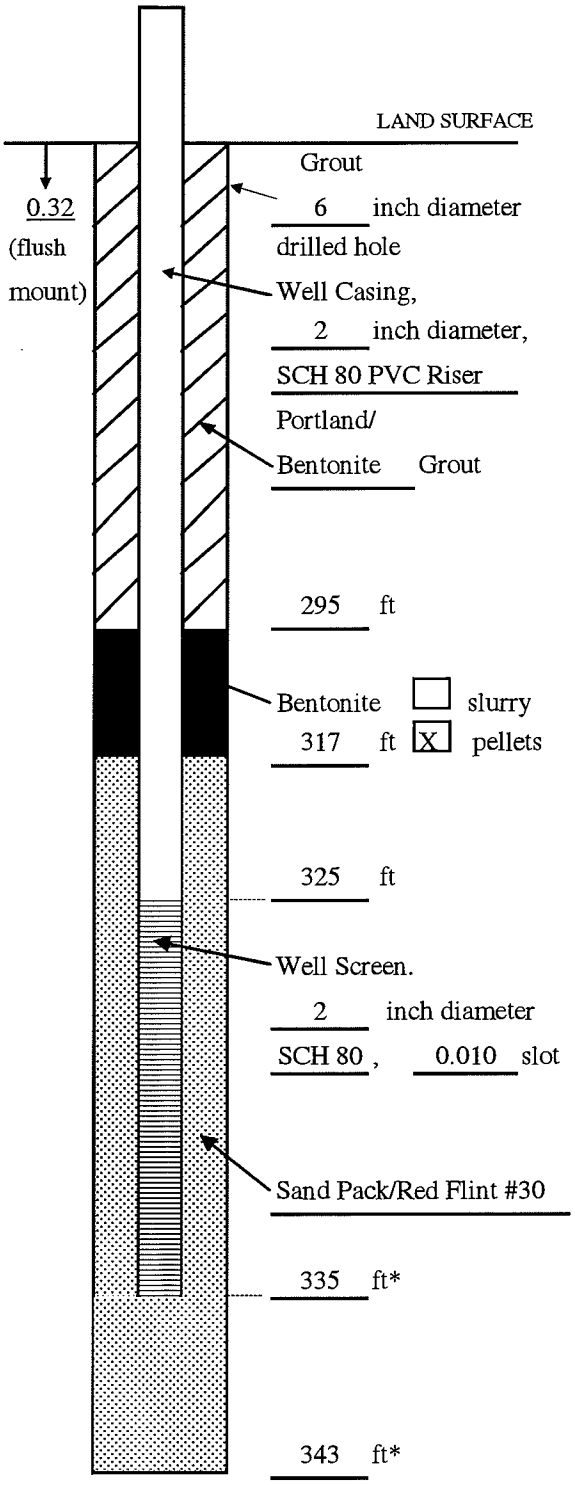
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-13
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1116.10 feet AMSL
☒ Surveyed ☐ Estimated

Installation Date(s)	9/17/97 to 9/26/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set at 300 feet. 10/06/97

Water Removed During Development		gallons
Static Depth to Water	61.06 on 10/6/97	feet below M.P.
Pumping Depth to Water	63.75 @ 2.0 gpm	feet below M.P.
Pump Duration	2.3 hours	
Date	10/6/1997	
Specific Capacity	0.74	gpm/ft @ 2.0 gpm

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/21/97.

Prepared by: D. Hegrenes

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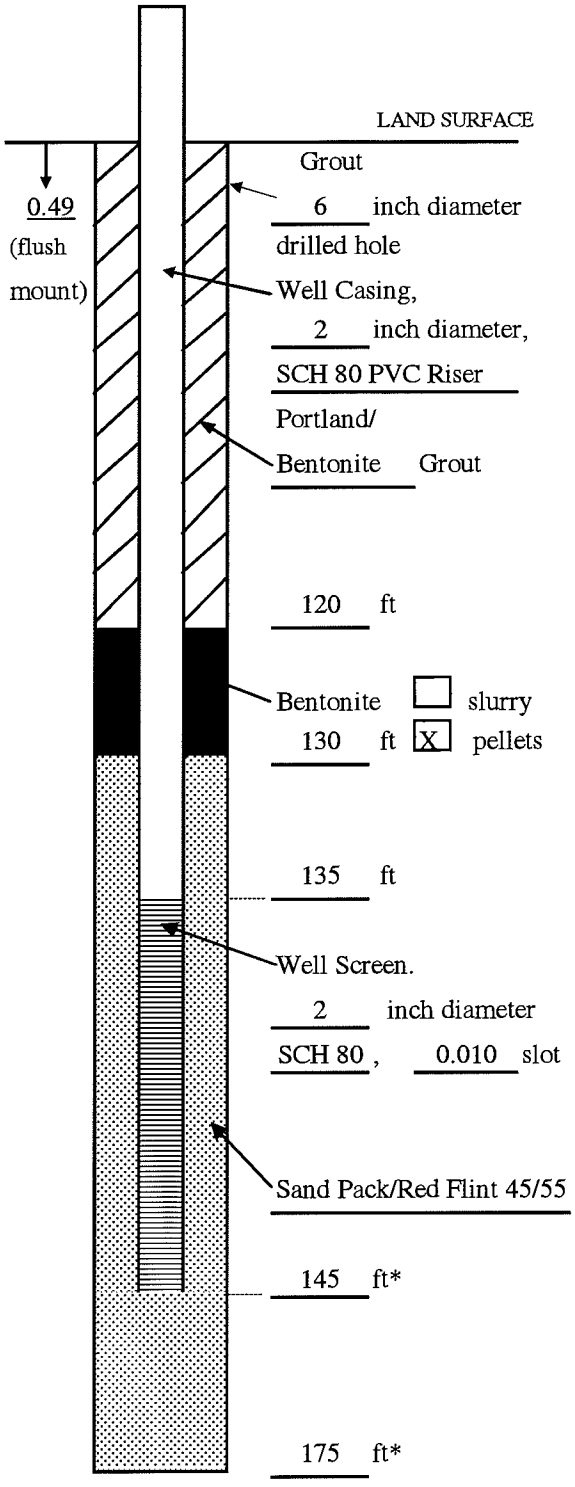
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-14
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1115.05 feet AMSL ☒ Surveyed ☐ Estimated

Installation Date(s)	9/12/97 to 9/14/97
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
9/27/1997

Water Removed During Development		gallons
Static Depth to Water	32.58 on 9/27/97	feet below M.P.
Pumping Depth to Water	33.54 @ 1.2 gpm	feet below M.P.
Pump Duration	2 hours	
Date	9/27/1997	
Specific Capacity	1.22	gpm/ft @ 1.54 gpm

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/21/97.
Static depth to water recorded from highest point on casing.

Prepared by: D. Hegrenes

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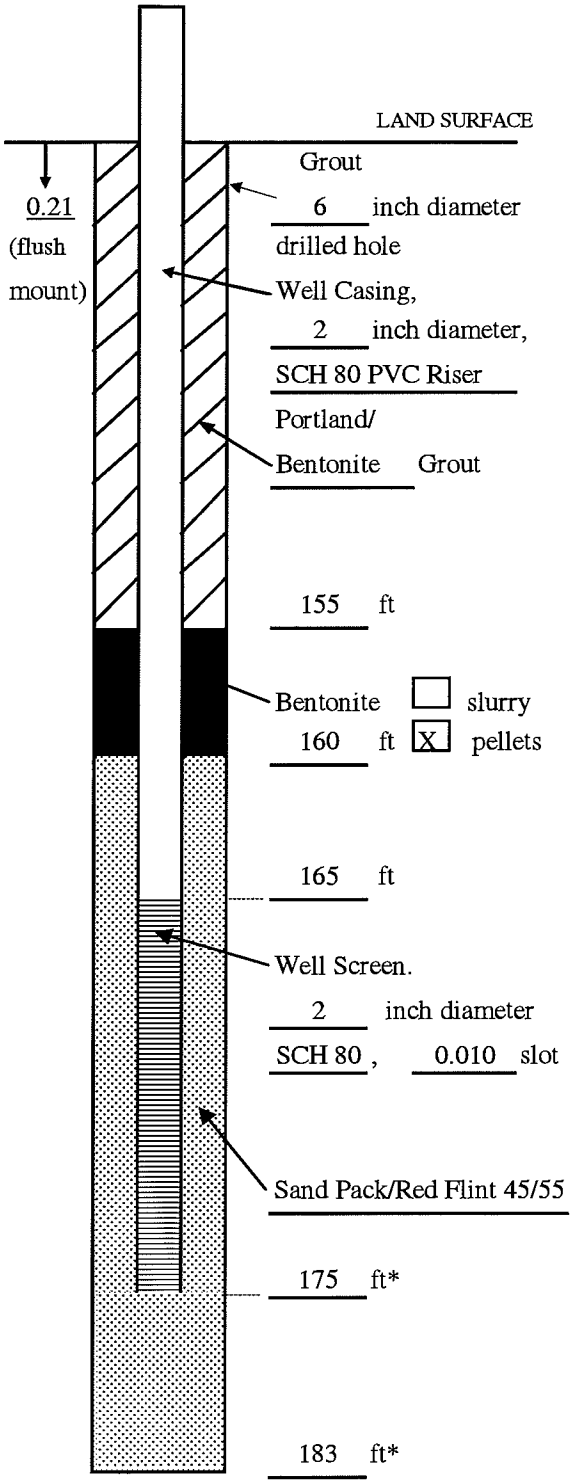
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-15
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1127.20 feet AMSL
☒ Surveyed
☐ Estimated

Installation Date(s)	9/9/97 to 9/11/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.

Water Removed During Development	30	gallons
Static Depth to Water	40.80 on 9/25/97	feet below M.P.
Pumping Depth to Water	96.6 @ 0.29 gpm	feet below M.P.
Pump Duration	1.6 hours	
Date	9/25/1997	
Specific Capacity	0.005	gpm/ft @ 0.29 gpm

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/20/97.

Prepared by: D. Hegrenes

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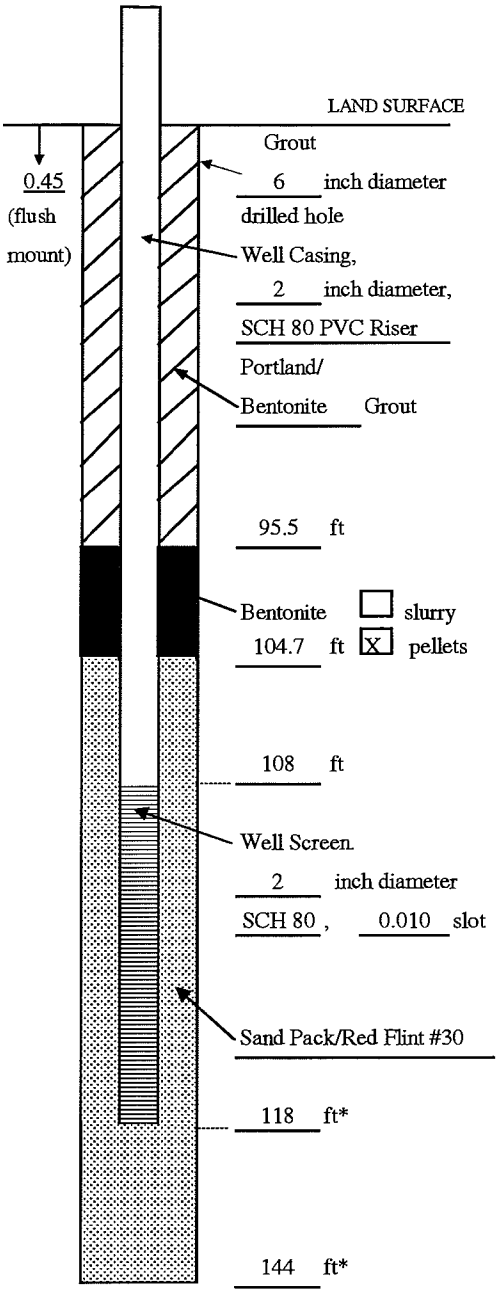
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-16
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1130.25 feet AMSL ☒ Surveyed ☐ Estimated

Installation Date(s)	10/11/97 to 10/13/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
10/20/1997

Water Removed During Development		280	gallons
Static Depth to Water		76.55 on 10/15/97	feet below M.P.
Pumping Depth to Water		76.72 @ 1.81 gpm	feet below M.P.
Pump Duration	2.5	hours	
Date	10/20/1997		
Specific Capacity	4.89	gpm/ft @ 1.81 gpm	

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/22/97.

Prepared by: D. Hegrenes

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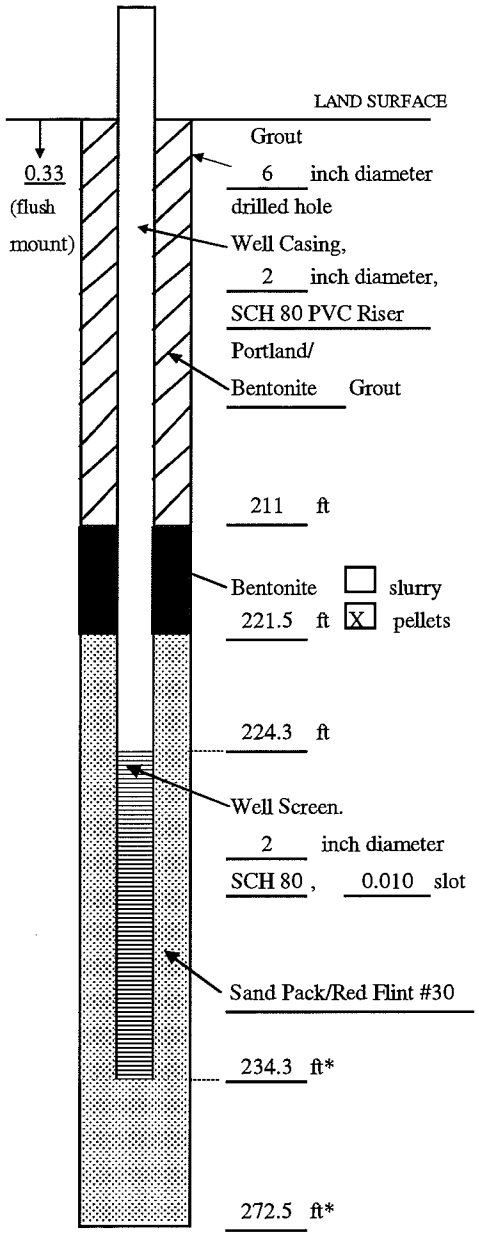
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



NOTE: Depths are relative to land surface

Project	WI0637.001	Well	GM-17
Town/City	Kingsford		
County	Dickinson	State	Michigan

Land-Surface Elevation and Datum 1111.84 feet AMSL ☒ Surveyed ☐ Estimated

Installation Date(s)	10/20/97 to 10/23/1997
Drilling Method	Rotasonic
Drilling Contractor	Boart Longyear
Drilling Fluid	Water

Development Technique(s) and Date(s).
Pumping with Rediflow submersible pump set against well screen.
10/25/1995

Water Removed During Development	600	gallons
Static Depth to Water	57.14 on 10/25/97	feet below M.P.
Pumping Depth to Water	64.66 @ 4.0 gpm	feet below M.P.
Pump Duration	2 hours	
Date	10/25/1997	
Specific Capacity	0.56 gpm/ft @ 4 gpm	

Well Purpose: Monitoring groundwater levels and water quality.

Remarks: Groundwater sample collected for analysis on 10/28/97.

Prepared by: D. Hegrenes

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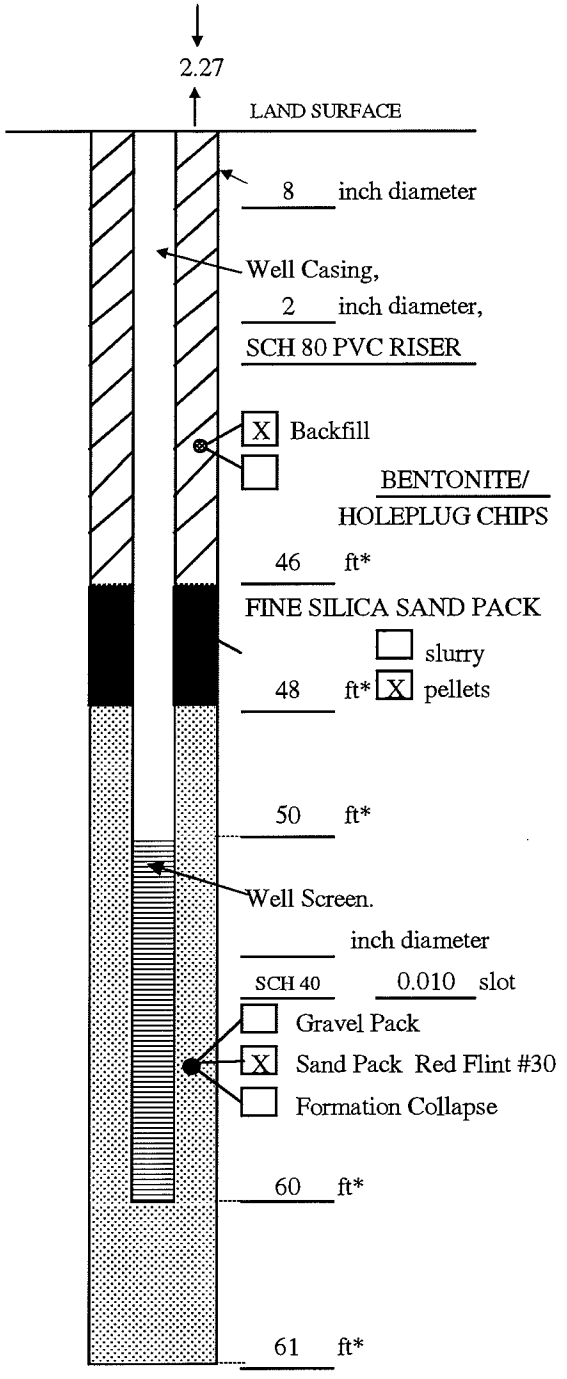
WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project FORD/WI0637.001 Well GM-18
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.13 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 11/24/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Development Technique(s) and Date(s).
PUMP WITH REDIFLOW SUBMERSIBLE PUMP SET AGAINST WELL WELL SCREEN

Water Removed During Development 130 gallons
Static Depth to Water 55.11 ON 12/1/97 feet below M.P.
Pumping Depth to Water 58.10 AT 2 GPM feet below M.P.
Pump Duration 1.8 hours
Date 2/1/97
Specific Capacity NA gpm/ft

Well Purpose MONITORING GROUNDWATER LEVELS AND WATER QUALITY.

Remarks GROUNDWATER SAMPLE COLLECTED FOR ANALYSIS ON 12/4/97.

Prepared by DAN HEGRENES

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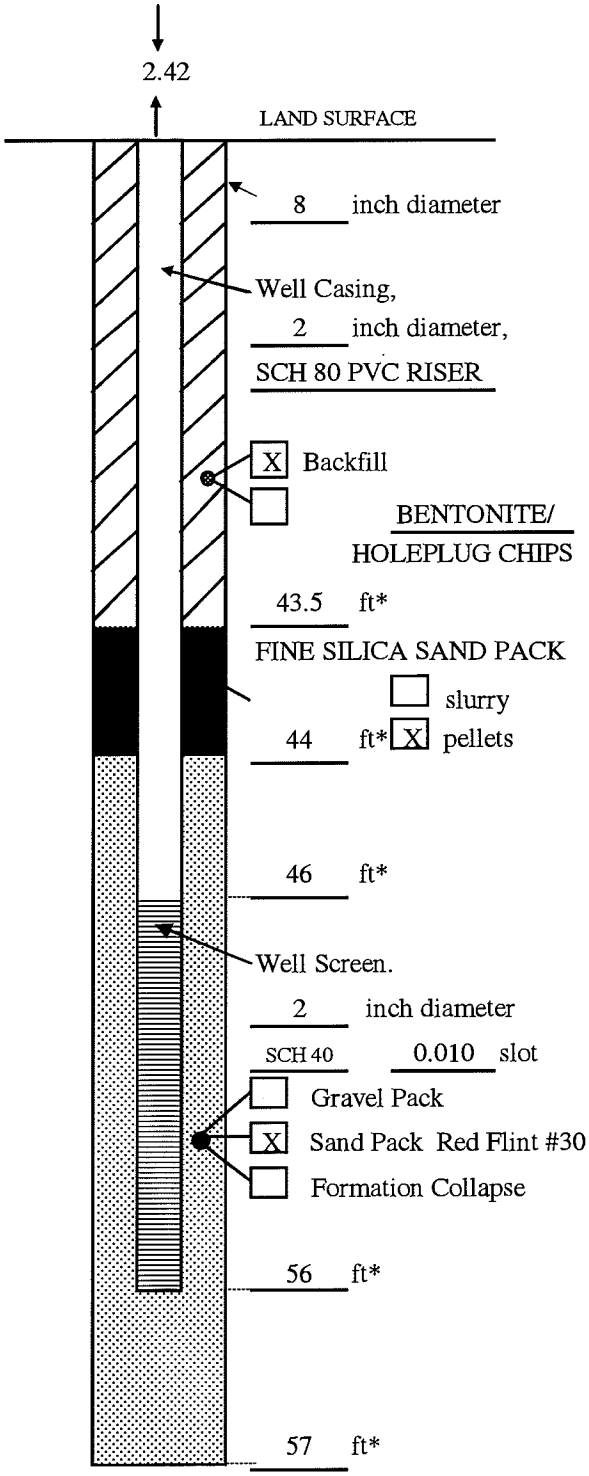
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	FORD/WI0637.001	Well	GM-19
Town/City	KINGSFORD		
County	DICKINSON	State	MICHIGAN

Land-Surface Elevation and Datum 1117.13 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 11/25/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Development Technique(s) and Date(s).
PUMP WITH REDIFLOW SUBMERSIBLE PUMP SET AGAINST WELL WELL SCREEN

Water Removed During Development 90 gallons
Static Depth to Water 53.79 on 12/1/97 feet below M.P.
Pumping Depth to Water PUMPED WELL DRY feet below M.P.
Pump Duration hours
Date
Specific Capacity gpm/ft

Well Purpose MONITORING GROUNDWATER LEVELS AND WATER QUALITY.

Remarks GROUNDWATER SAMPLE COLLECTED FOR ANALYSIS ON 12/4/97.

Prepared by DAN HEGRENES

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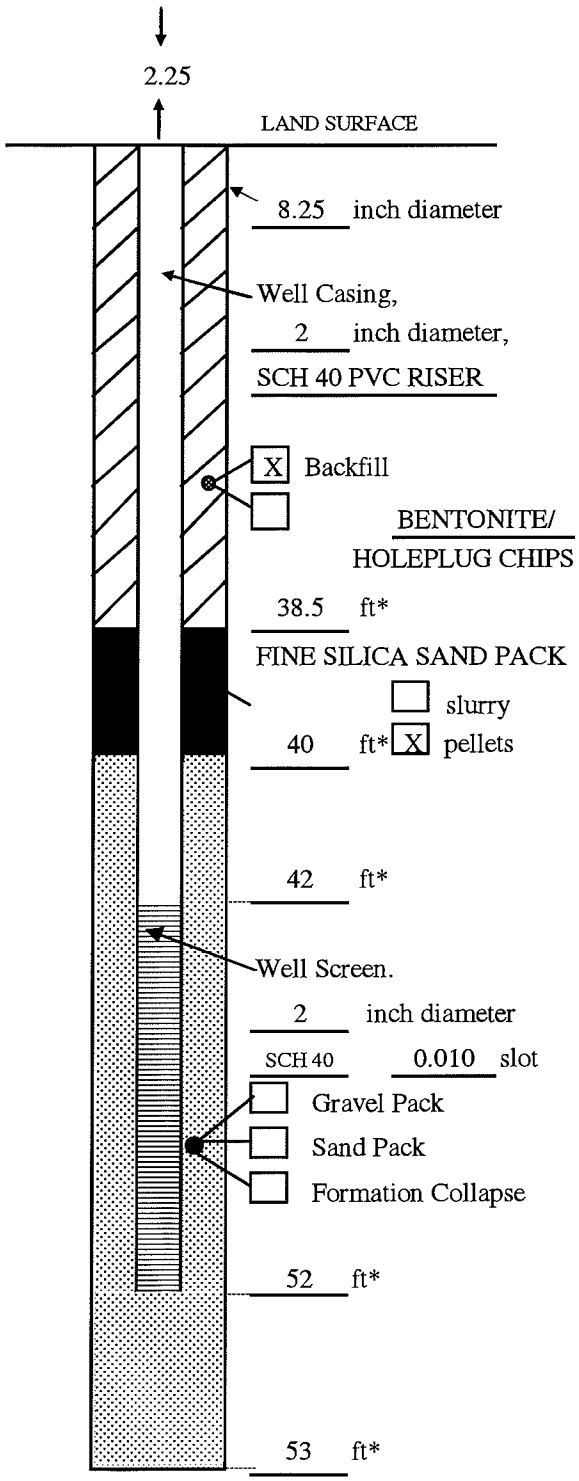
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	FORD/WI0637.001	Well	GM-20
Town/City	KINGSFORD		
County	DICKINSON	State	MICHIGAN

Land-Surface Elevation and Datum 1119.10 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s)	11/25/97
Drilling Method	HOLLOW STEM AUGER
Drilling Contractor	BOART LONGYEAR
Drilling Fluid	NONE

Development Technique(s) and Date(s).
PUMP WITH REDIFLOW SUBMERSIBLE PUMP SET AGAINST WELL WELL SCREEN

Water Removed During Development	60	gallons
Static Depth to Water	50.43 ON 12/2/97	feet below M.P.
Pumping Depth to Water	PUMPED WELL DRY	feet below M.P.
Pump Duration	hours	
Date		
Specific Capacity	gpm/ft	

Well Purpose MONITORING GROUNDWATER LEVELS AND WATER QUALITY.

Remarks GROUNDWATER SAMPLE COLLECTED FOR ANALYSIS ON 12/5/97.

Prepared by DAN HEGRENES

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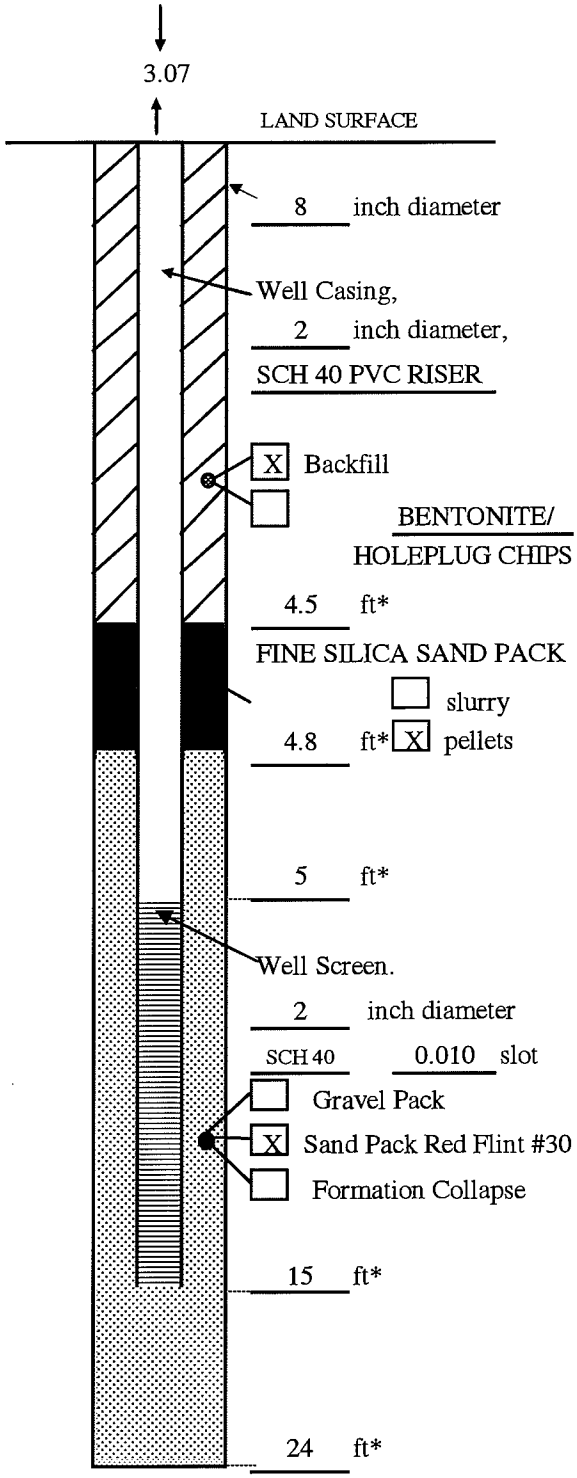
WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project FORD/WI0637.001 Well GM-21
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1055.99 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 11/24/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Development Technique(s) and Date(s).
PUMP WITH REDIFLOW SUBMERSIBLE PUMP SET AGAINST WELL WELL SCREEN

Water Removed During Development 75 gallons
Static Depth to Water 8.1' on 11/25/97 feet below M.P.
Pumping Depth to Water pumped dry feet below M.P.
Pump Duration 1¼ hours
Date 11/25/97
Specific Capacity NA gpm/ft

Well Purpose MONITORING GROUNDWATER LEVELS AND WATER QUALITY.

Remarks GROUNDWATER SAMPLE COLLECTED FOR ANALYSIS ON 12/3/97.

Prepared by DAN HEGRENES

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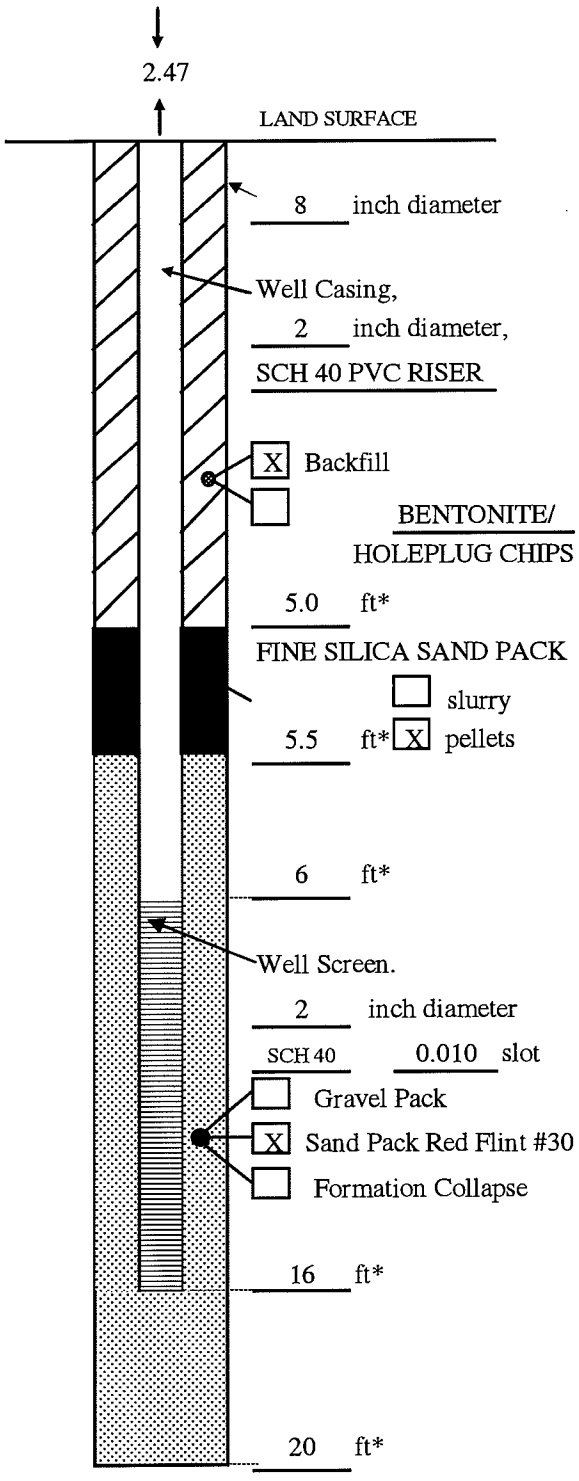
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project FORD/WI0637.001 Well GM-22
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1064.23 feet MSL
X Surveyed
☐ Estimated

Installation Date(s) 11/25/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Development Technique(s) and Date(s).
PUMP WITH REDIFLOW SUBMERSIBLE PUMP SET AGAINST WELL WELL SCREEN

Water Removed During Development 45 gallons
Static Depth to Water 8.28 on 12/2/297 feet below M.P.
Pumping Depth to Water PUMPED WELL DRY feet below M.P.
Pump Duration hours
Date 12/2/97
Specific Capacity gpm/ft

Well Purpose MONITORING GROUNDWATER LEVELS AND WATER QUALITY.

Remarks GROUNDWATER SAMPLE COLLECTED FOR ANALYSIS ON 12/5/97.

Prepared by DAN HEGRENES

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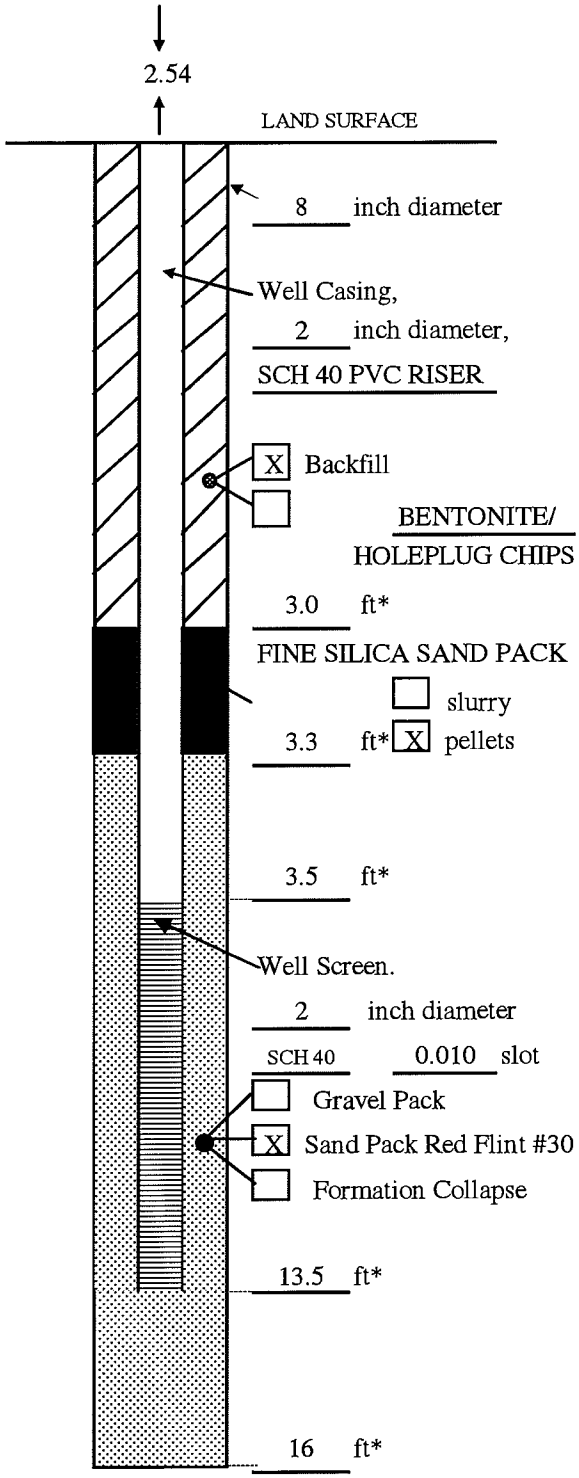
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project	FORD/WI0637.001	Well	GM-23
Town/City	KINGSFORD		
County	DICKINSON	State	MICHIGAN

Land-Surface Elevation and Datum 1055.90 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 11/26/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Development Technique(s) and Date(s).
PUMP WITH REDIFLOW SUBMERSIBLE PUMP SET AGAINST WELL WELL SCREEN

Water Removed During Development 40 gallons
Static Depth to Water 8.79 ON 12/1/97 feet below M.P.
Pumping Depth to Water PUMPED WELL DRY feet below M.P.
Pump Duration hours
Date 12/1/97
Specific Capacity gpm/ft

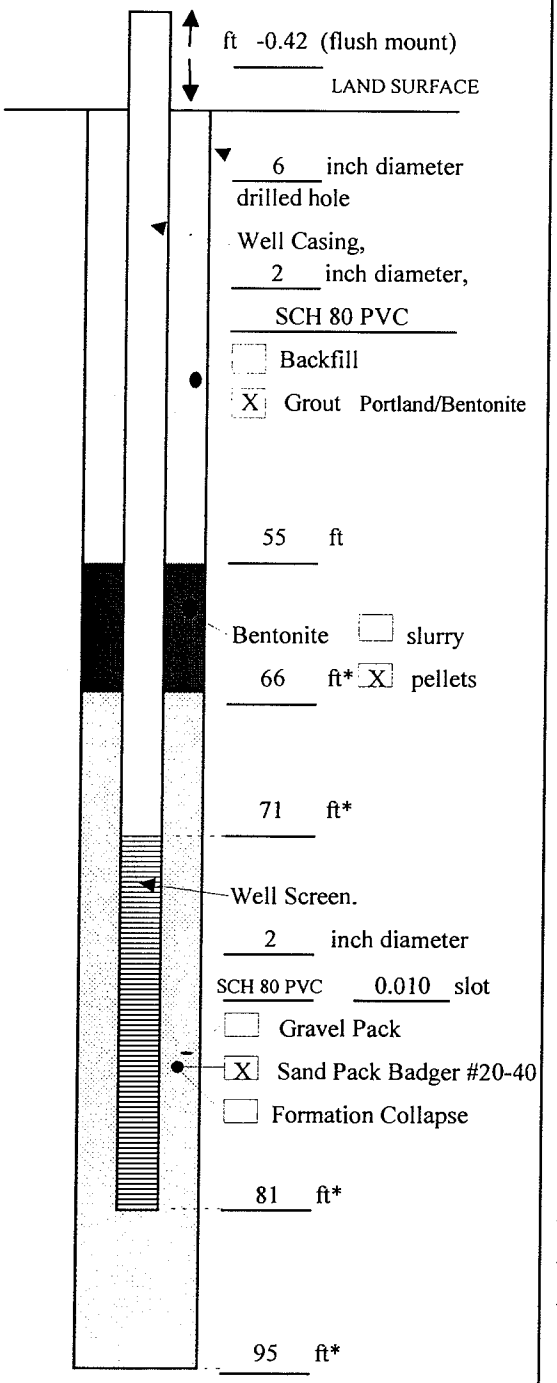
Well Purpose MONITORING GROUNDWATER LEVELS AND WATER QUALITY.

Remarks GROUNDWATER SAMPLE COLLECTED FOR ANALYSIS ON 12/3/97.

Prepared by DAN HEGRENES

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-24A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1099.38 feet
X Surveyed
Estimated

Installation Date(s) 10/24/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

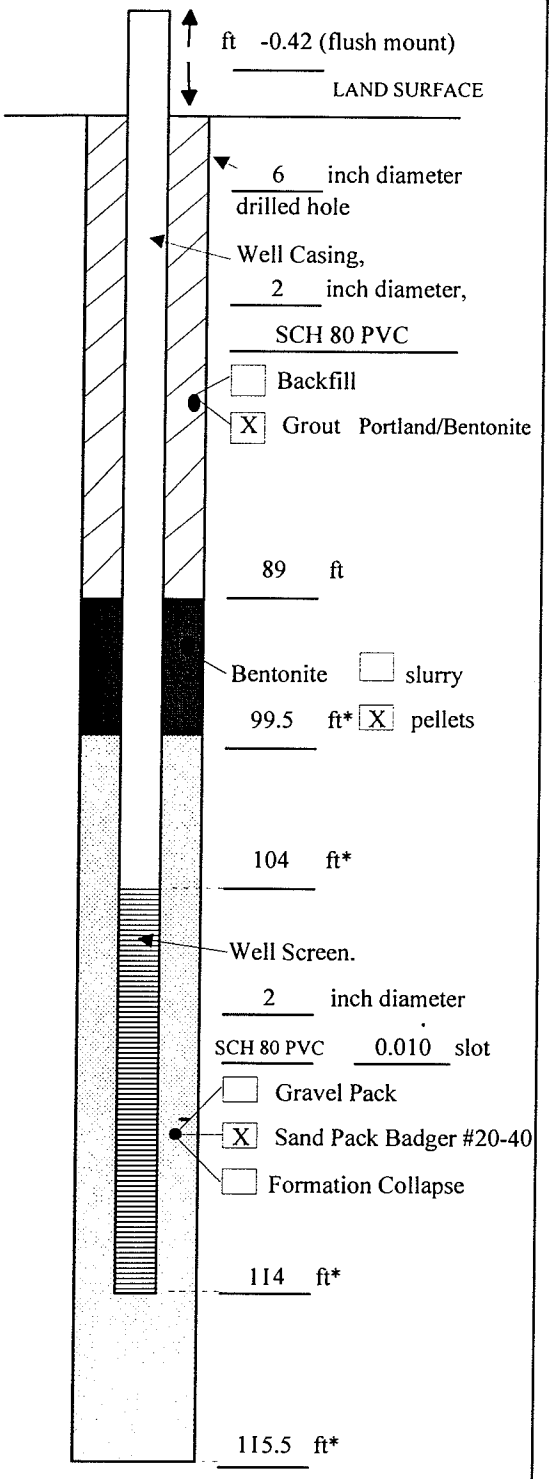
Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm24a.xls
12/14/99 8:32 AM

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-24B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1099.22 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/23/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

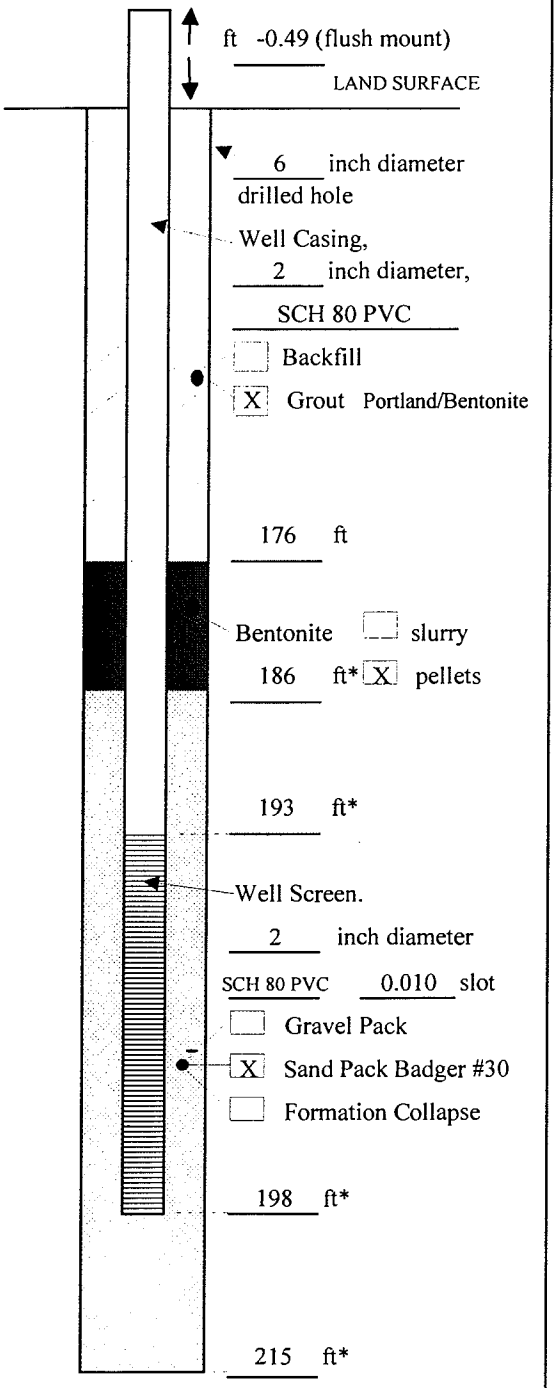
Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm24b.xls
12/7/99 5:14 PM

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-24C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1099.22 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/20/98 to 10/22/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 60.03 on 11/19/98 feet below M.P.

Pumping Depth to Water 72.38 at 0.29 gpm feet below M.P.

Pumping Duration 2.25 hours

Yield gpm Date 11/19/98

Specific Capacity gpm/ft

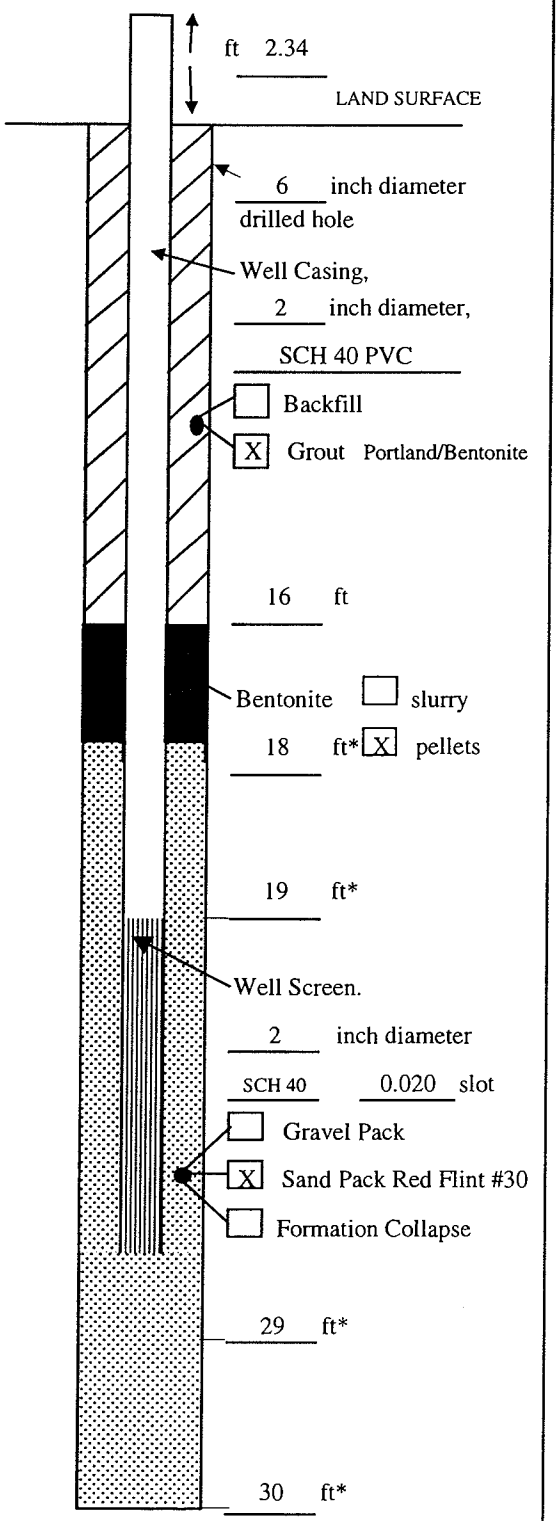
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-25A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.71 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/10/98 to 6/13/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water 12.69 on 7/20/98 feet below M.P.

Pumping Depth to Water 13.21 at 2.14 gpm feet below M.P.

Pumping Duration 1.67 hours

Yield _____ gpm Date 7/20/98

Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

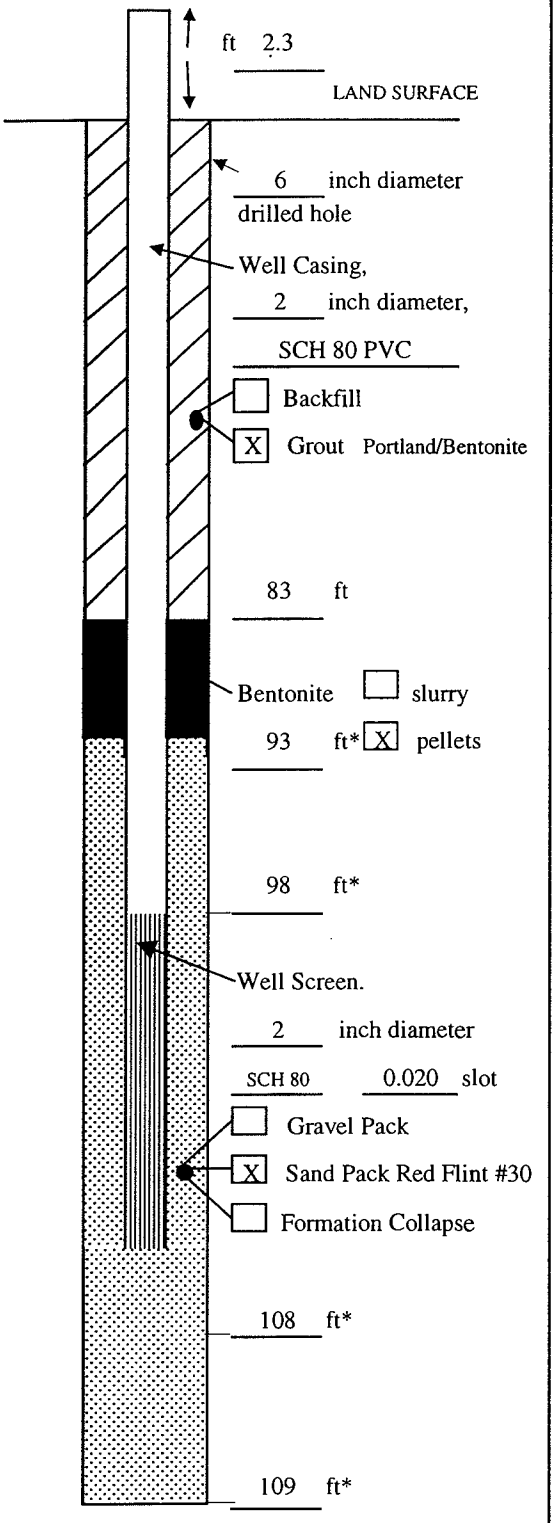
Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm25a.xls
2/26/2004 4:04 PM

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-25B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.85 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/10/98 to 6/13/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 125 gallons

Static Depth to Water 11.00 on 7/21/98 feet below M.P.

Pumping Depth to Water 16.35 at 1.62 gpm feet below M.P.

Pumping Duration 1.25 hours

Yield _____ gpm Date 7/21/98

Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm25b.xls
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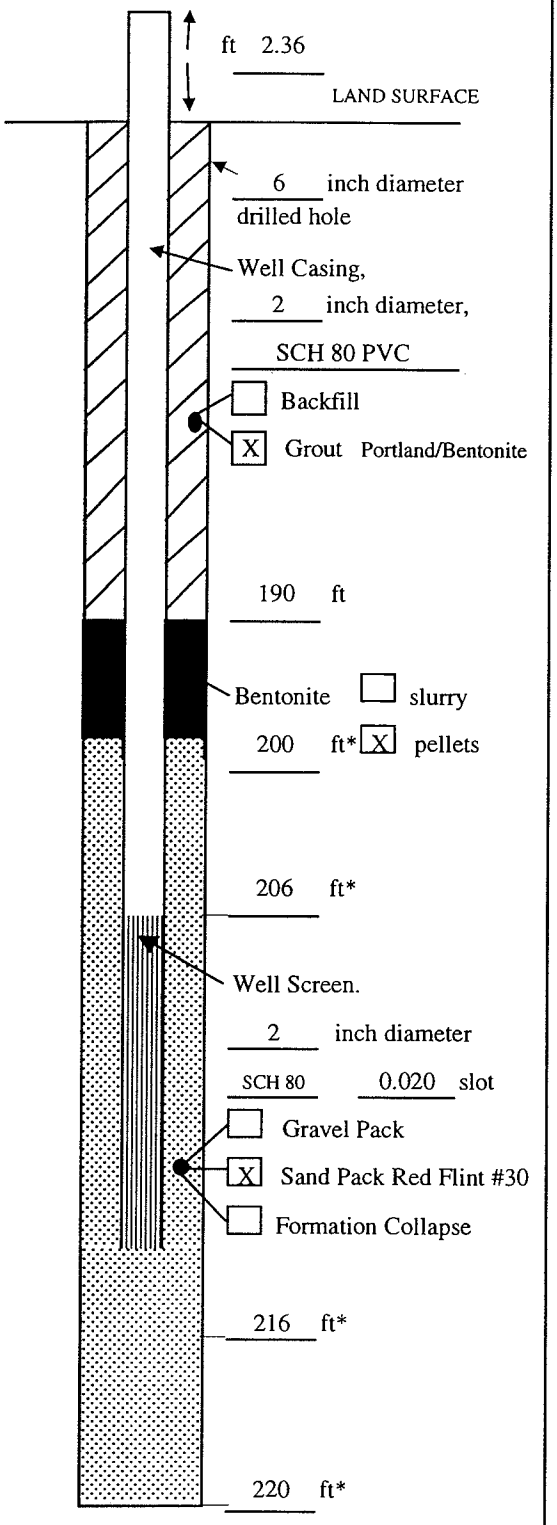
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-25C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.94 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/10/98 to 6/12/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 250 to 275 gallons

Static Depth to Water 10.75 on 6/23/98 feet below M.P.

Pumping Depth to Water 13.03 at 1.82 gpm feet below M.P.

Pumping Duration 1.25 hours

Yield _____ gpm Date 6/23/98

Specific Capacity _____ gpm/ft

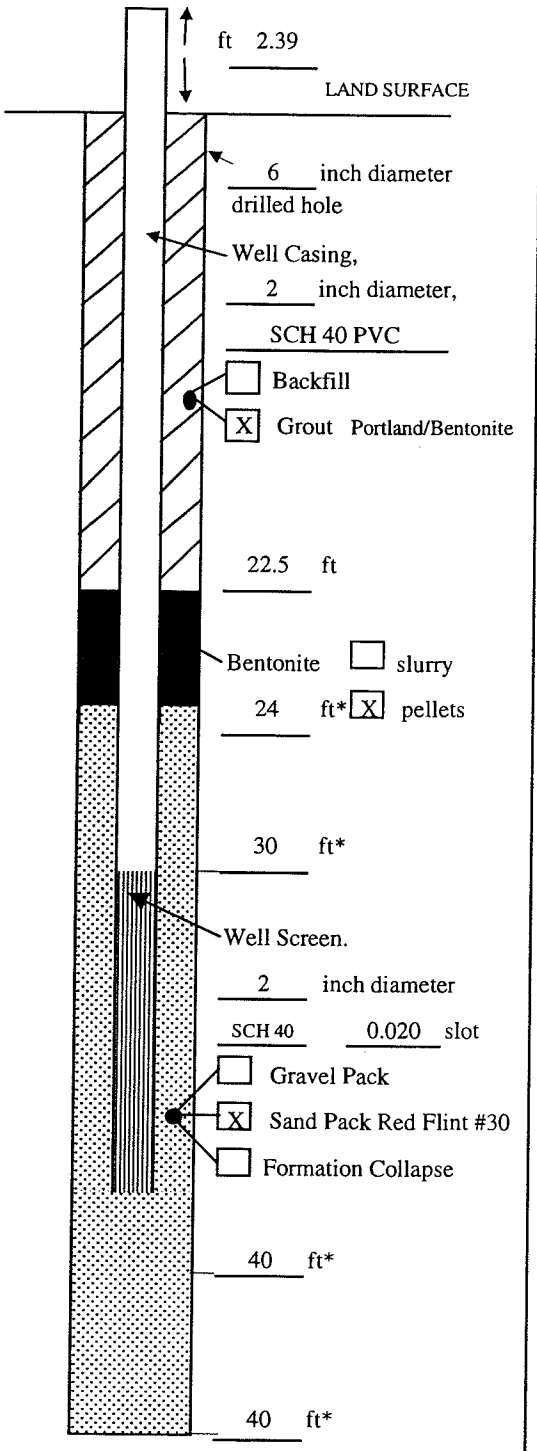
Well Purpose Monitoring groundwater levels and water quality.

Remarks The well was re-developed on 7/20/98.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-26A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.31 feet
X Surveyed
☐ Estimated

Installation Date(s) 6/23/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 200 gallons

Static Depth to Water 12.49 on 7/22/98 feet below M.P.

Pumping Depth to Water 12.74 at 1.82 gpm feet below M.P.

Pumping Duration 1.5 hours

Yield gpm Date 7/22/1998

Specific Capacity gpm/ft

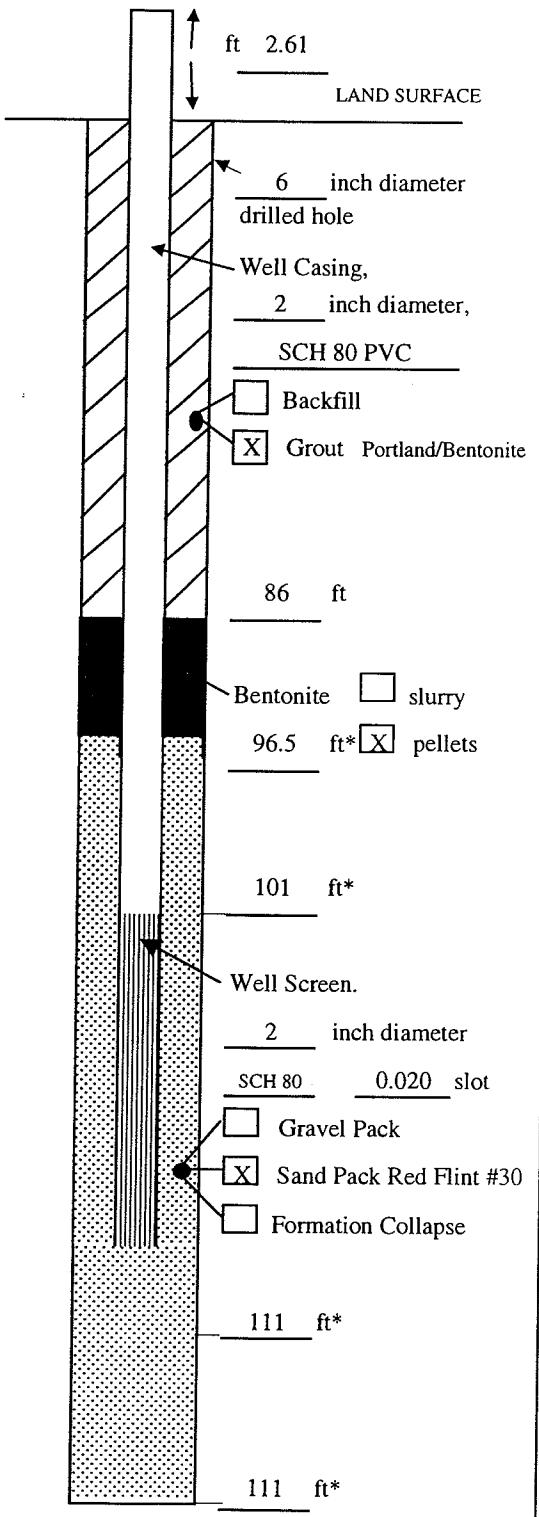
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-26B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.17 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/23/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 250 gallons

Static Depth to Water 12.11 on 7/22/98 feet below M.P.

Pumping Depth to Water 47.55 at 1.43 gpm feet below M.P.

Pumping Duration 1.67 hours

Yield gpm Date 7/22/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm26b.xls
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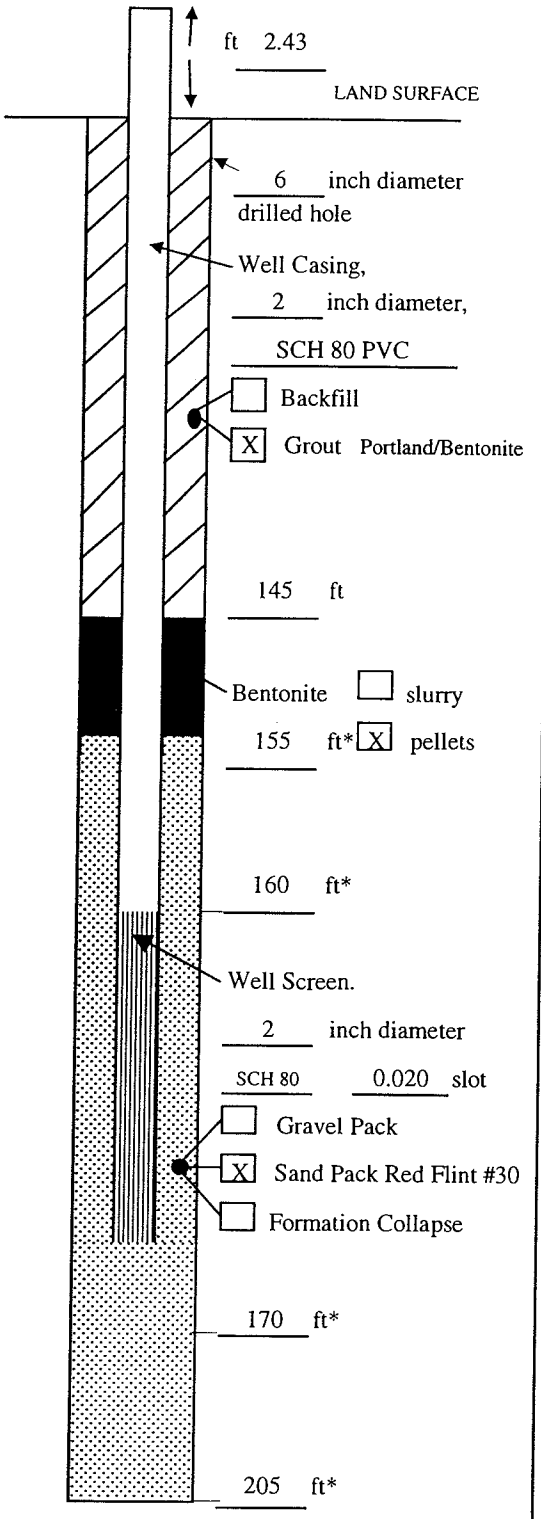
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-26C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.27 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/22/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 11.48 on 7/21/98 feet below M.P.

Pumping Depth to Water 12.51 at 2.22 gpm feet below M.P.

Pumping Duration 1.33 hours

Yield gpm Date 7/21/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

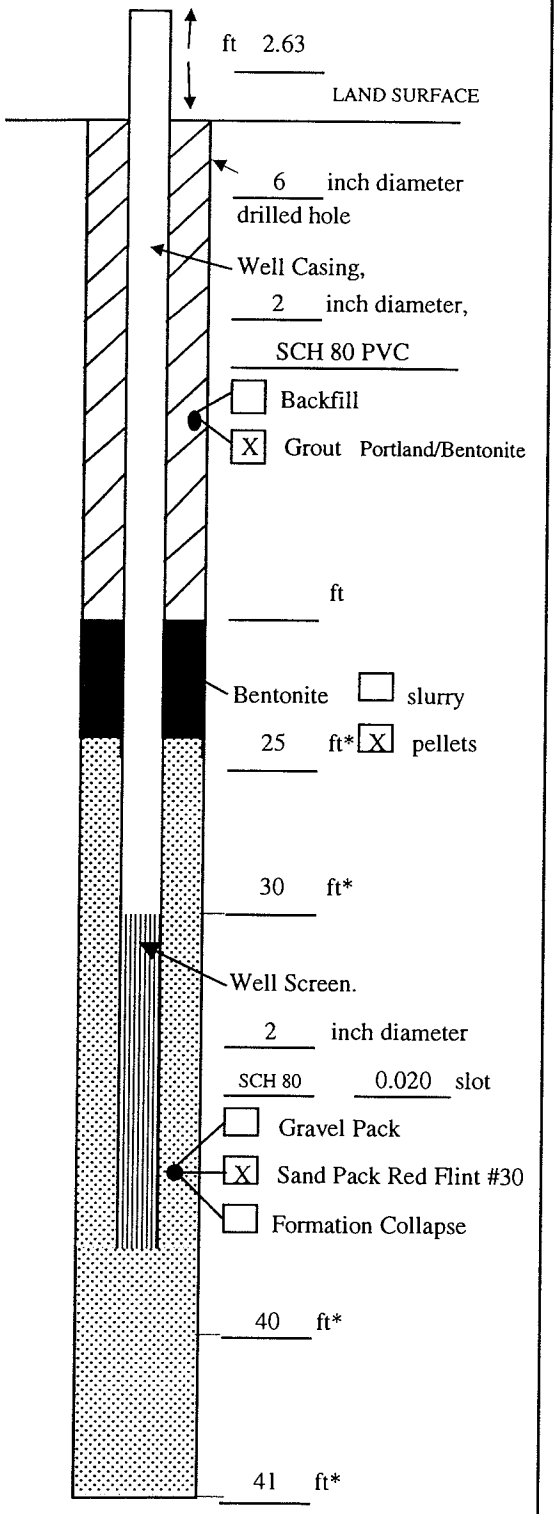
Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm26c.xls
2/26/2004 4:04 PM

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-27A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1052.45 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/27/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 230 gallons

Static Depth to Water 17.28 on 7/24/98 feet below M.P.

Pumping Depth to Water 17.73 at 1.88 gpm feet below M.P.

Pumping Duration 2.17 hours

Yield gpm Date 7/24/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

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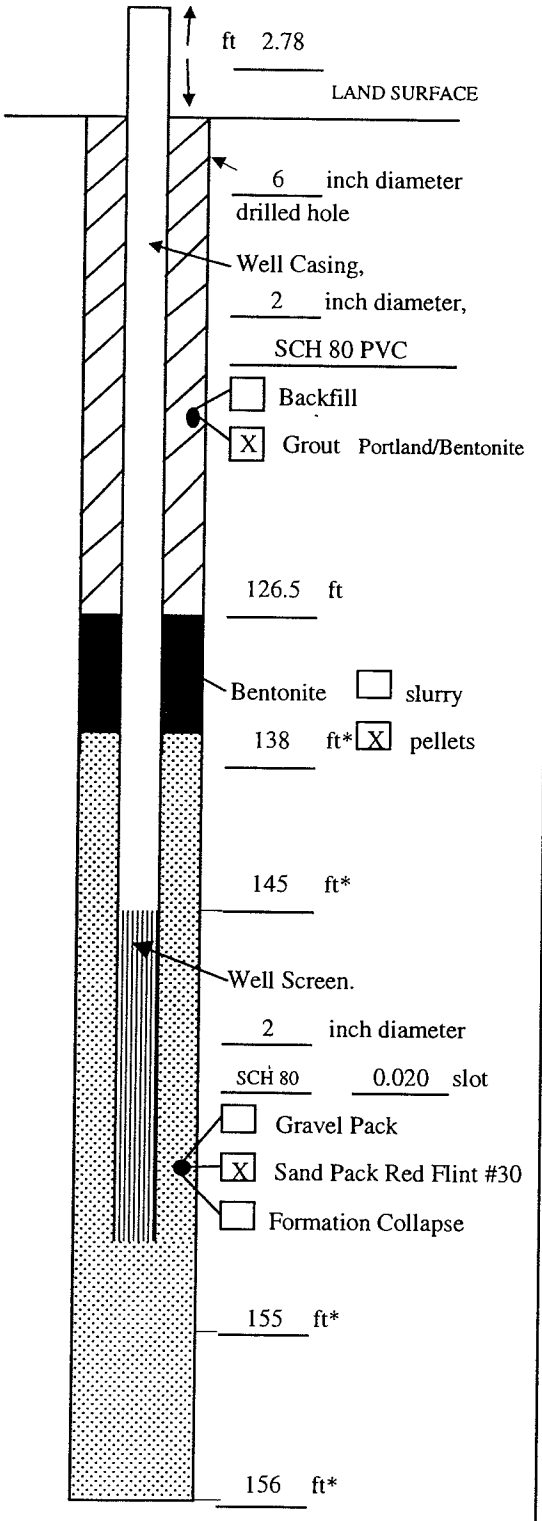
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-27B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1052.61 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/26/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 250 gallons

Static Depth to Water 17.06 on 7/23/98 feet below M.P.

Pumping Depth to Water 19.06 at 1.82 gpm feet below M.P.

Pumping Duration 2.25 hours

Yield gpm Date 7/23/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and groundwater quality.

Remarks

Prepared by John Keller

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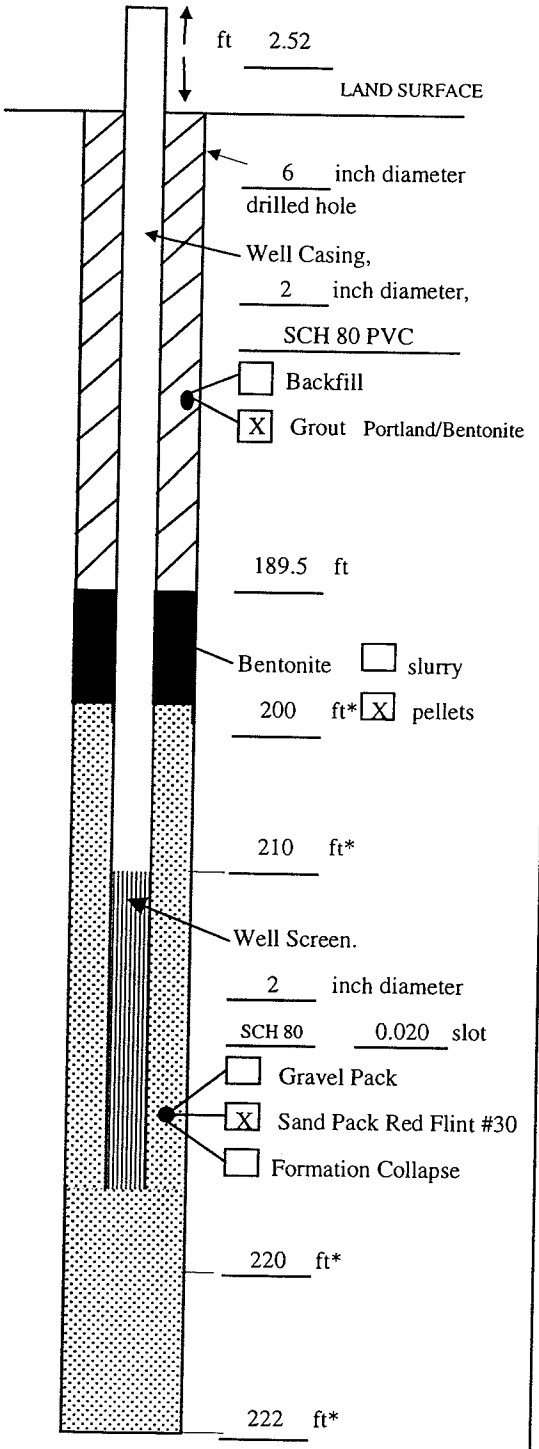
2/26/2004 4:05 PM

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-27C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1052.53 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/24/98 to 6/26/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 200 gallons

Static Depth to Water 16.70 on 7/23/98 feet below M.P.

Pumping Depth to Water 35.75 at 1.54 gpm feet below M.P.

Pumping Duration 2.25 hours

Yield gpm Date 7/23/1998

Specific Capacity gpm/ft

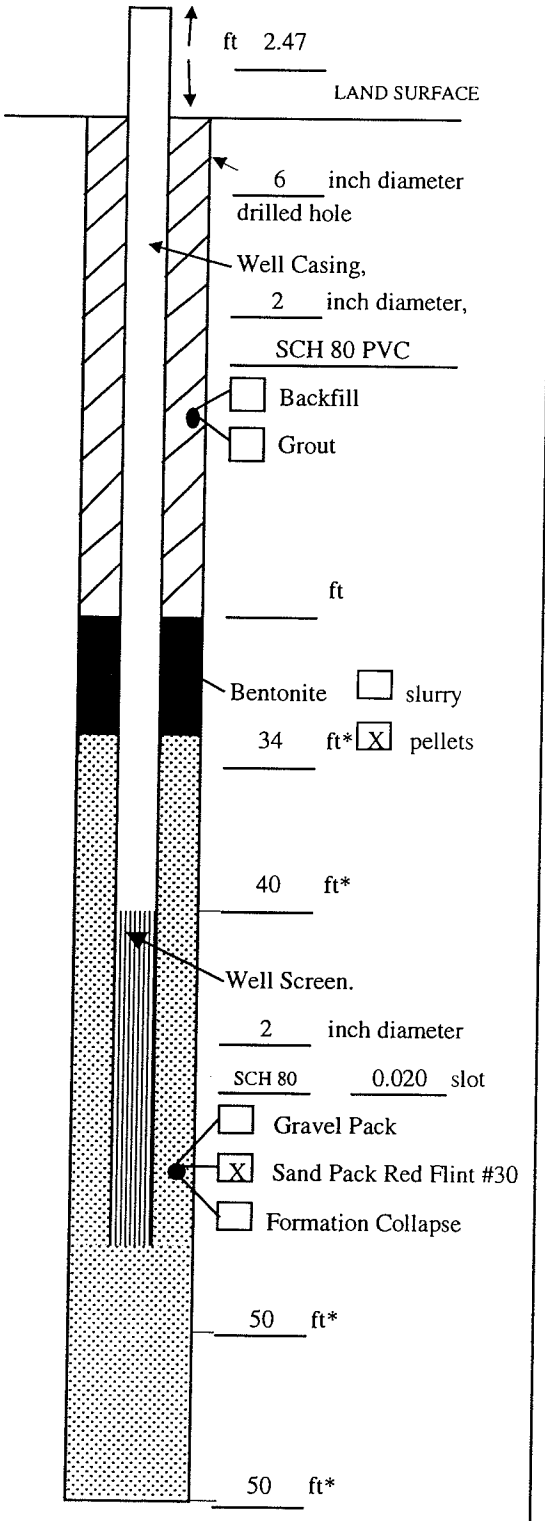
Well Purpose Monitoring groundwater levels and groundwater quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-28A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1062.08 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/29/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 225 gallons

Static Depth to Water 26.57 on 7/25/98 feet below M.P.

Pumping Depth to Water 26.80 at 1.76 gpm feet below M.P.

Pumping Duration 2.58 hours

Yield gpm Date 7/25/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm28a.xls
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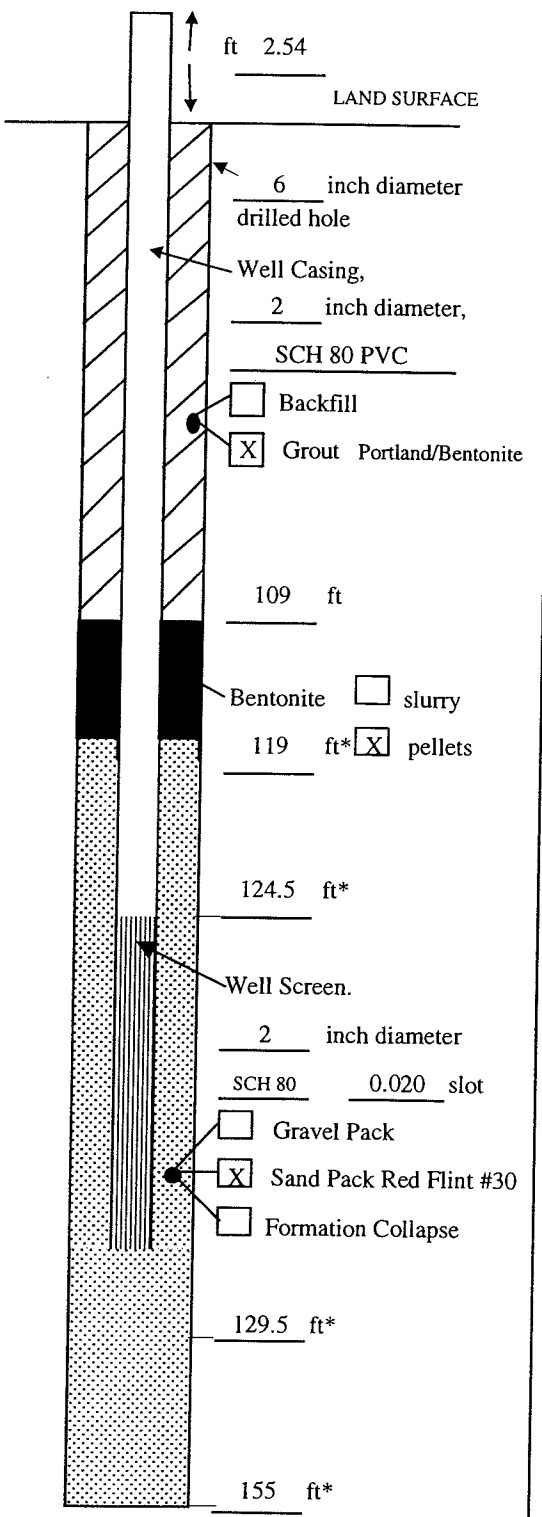
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-28B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1061.85 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/29/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 250 gallons

Static Depth to Water 26.60 on 7/25/98 feet below M.P.

Pumping Depth to Water 28.01 at 1.46 gpm feet below M.P.

Pumping Duration 2.25 hours

Yield gpm Date 7/25/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm28b.xls
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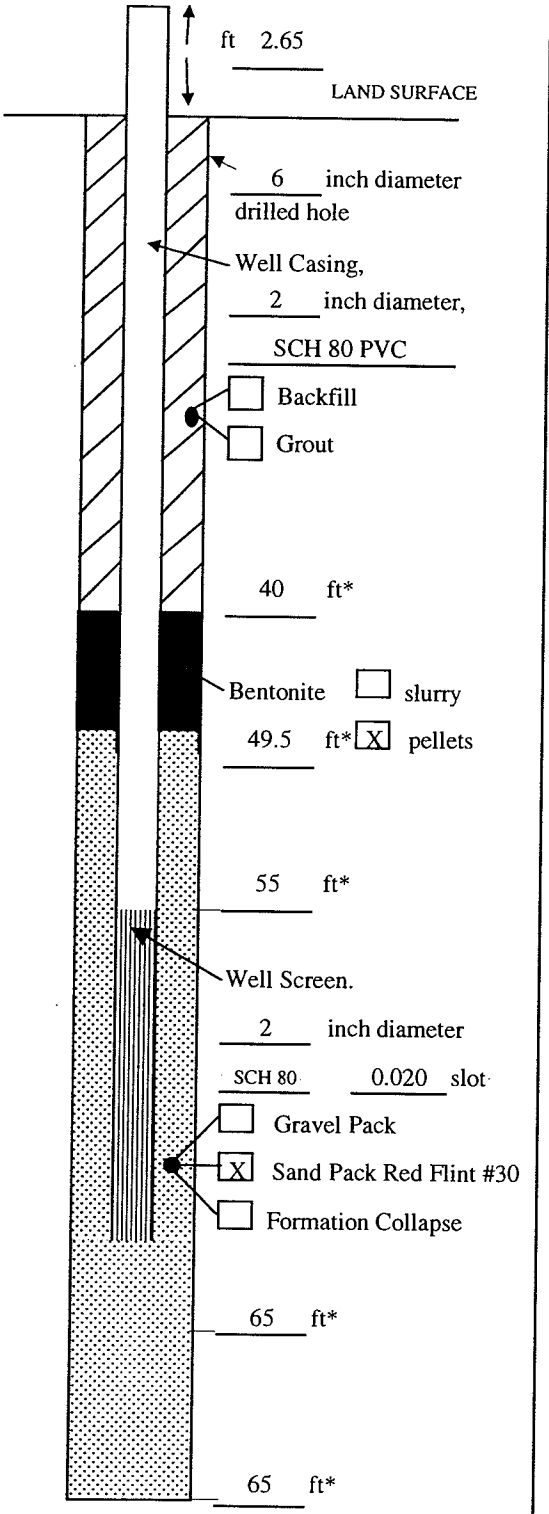
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-29

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1053.15 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/29/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 18.97 on 7/24/98 feet below M.P.

Pumping Depth to Water 19.14 at 1.88 gpm feet below M.P.

Pumping Duration 2.17 hours

Yield gpm Date 7/24/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

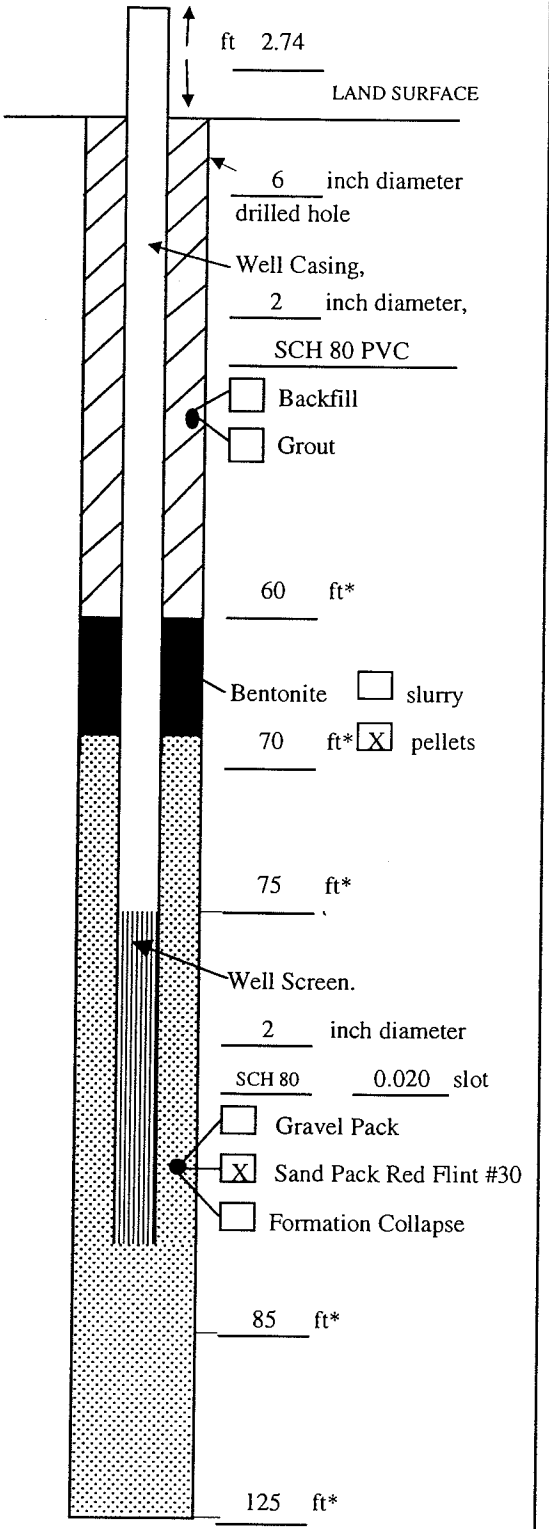
Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm29.xls
2/26/2004 4:06 PM

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-30

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.73 feet [X] Surveyed [ ] Estimated

Installation Date(s) 7/6/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 80.44 on 7/26/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 7/26/1998

Specific Capacity gpm/ft

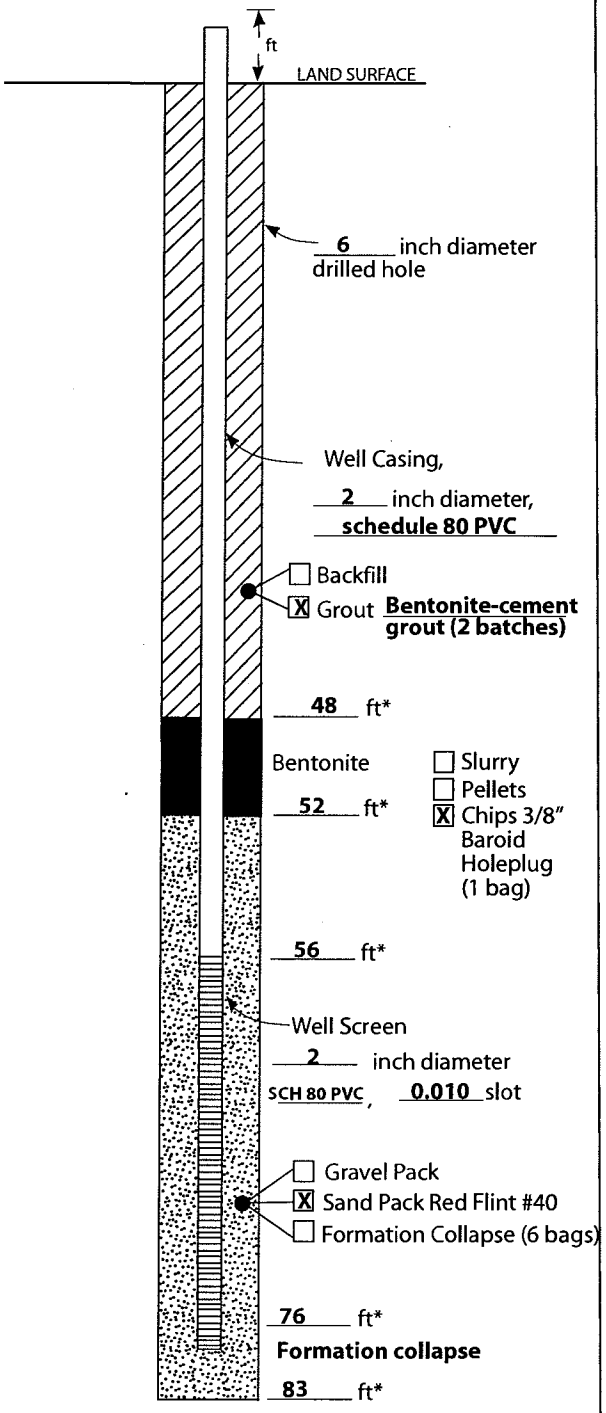
Well Purpose Monitoring groundwater levels and water quality.

Remarks Had problem with pump so was unable to obtain a pumping depth to water. Second attempt to develop well on 9/2/98 (S.W.L. = 80.46) bailed well dry (purged approximately 10 gallons). Well has been pumped dry two times and bailed dry once.

Prepared by John Keller

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-30A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation

and Datum **1121.99** feet ☒ surveyed

above mean sea level ☐ estimated

Installation Date(s) **7/25/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

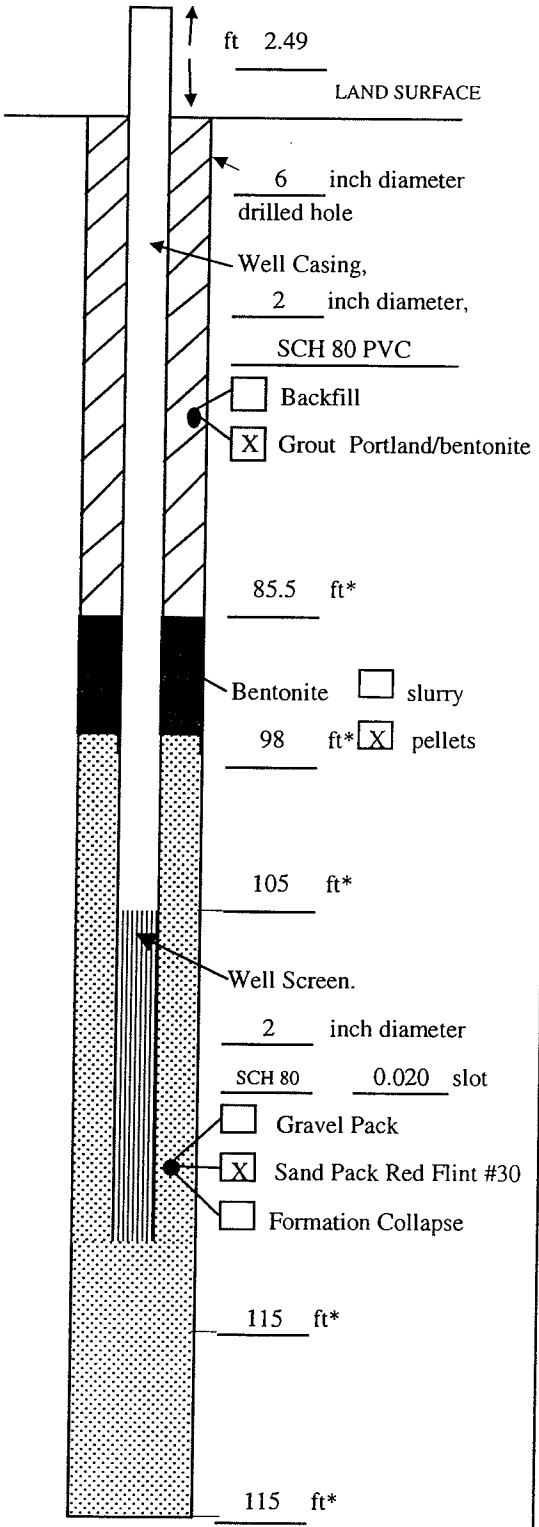
Well Purpose **SVE well**

Remarks **Grout mix = 3 (94 lb) bags Portland cement, 1 bag Baroid Aquagel, 35 gallons water**

Prepared by **Andy Mumpy**

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Project Ford/Kingsford Probe GM-31

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.73 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/7/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 225 gallons

Static Depth to Water 84.33 on 7/27/98 feet below M.P.

Pumping Depth to Water 84.57 at 1.58 gpm feet below M.P.

Pumping Duration 2.33 hours

Yield gpm Date 7/27/1998

Specific Capacity gpm/ft

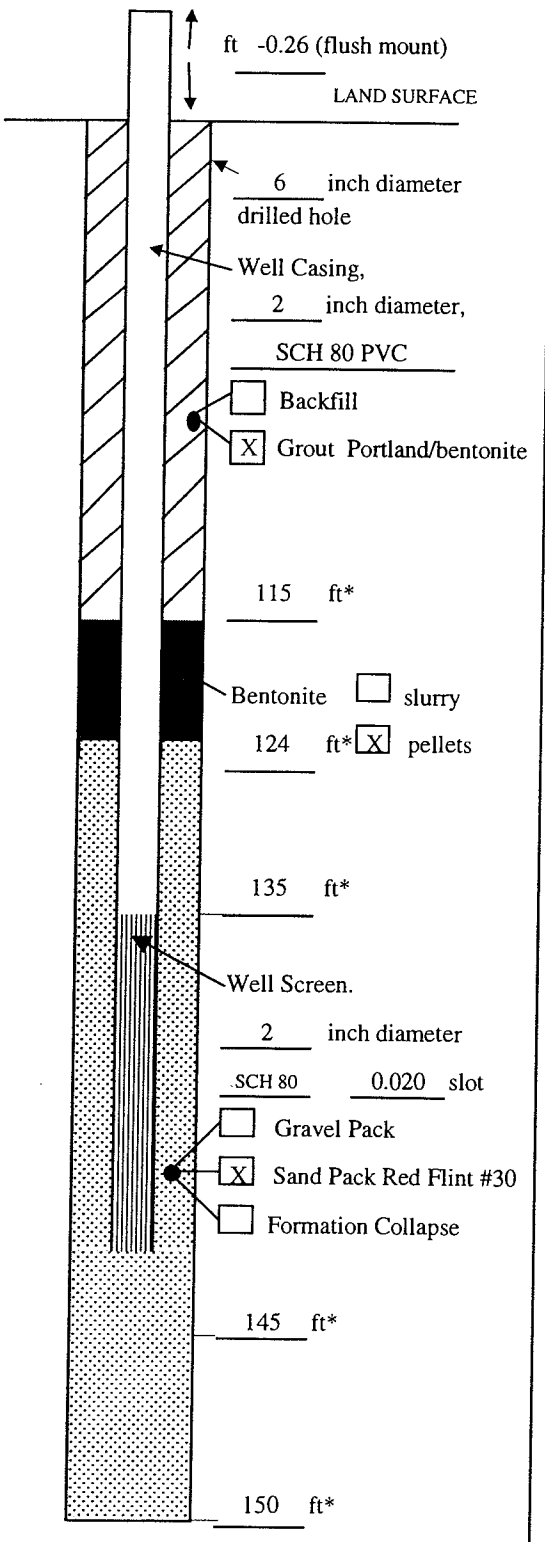
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-32

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.14 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/7/98 to 7/9/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 44.56 on 7/27/98 feet below M.P.

Pumping Depth to Water 45.98 at 1.76 gpm feet below M.P.

Pumping Duration 2.25 hours

Yield gpm Date 7/27/1998

Specific Capacity gpm/ft

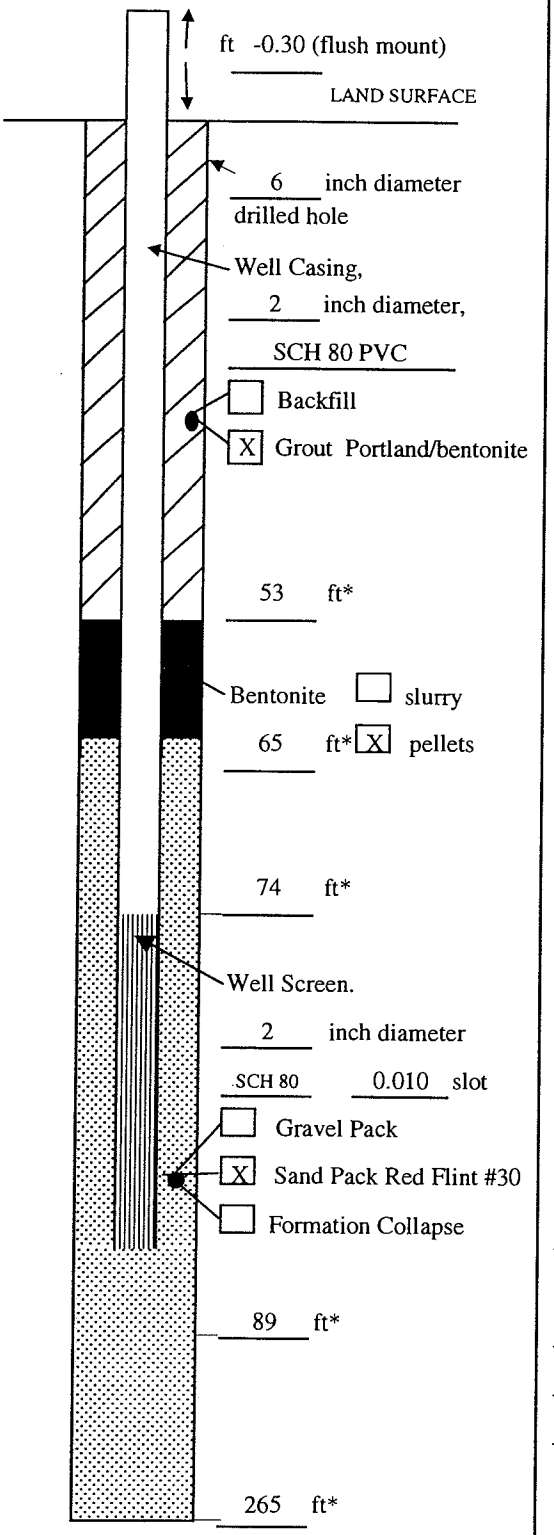
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-33

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1119.43 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/9/98 to 7/12/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 71.43 on 7/28/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 7/28/1998

Specific Capacity gpm/ft

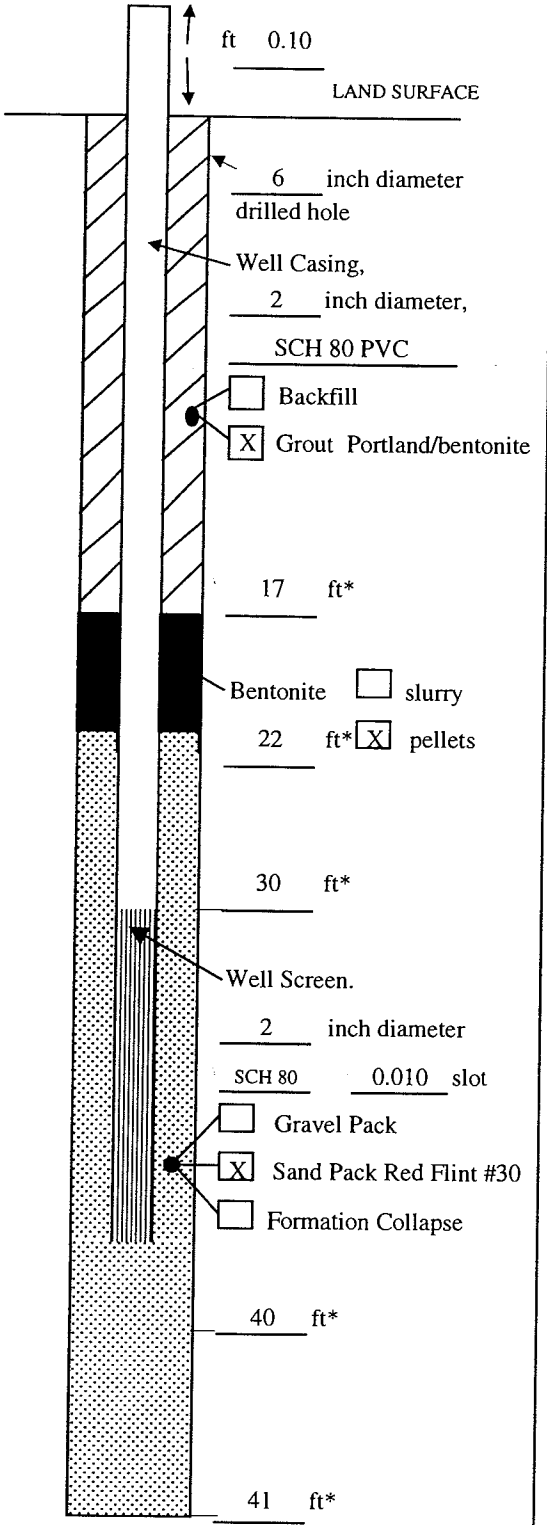
Well Purpose Monitoring groundwater levels and water quality.

Remarks Pumped well dry. Well was redeveloped on 9/25/98 (bailed approximately 7 gallons until it went dry).

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-34A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1088.08 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/15/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 250 gallons

Static Depth to Water 18.59 on 7/28/98 feet below M.P.

Pumping Depth to Water 18.93 at 1.88 gpm feet below M.P.

Pumping Duration 2.17 hours

Yield gpm Date 7/28/1998

Specific Capacity gpm/ft

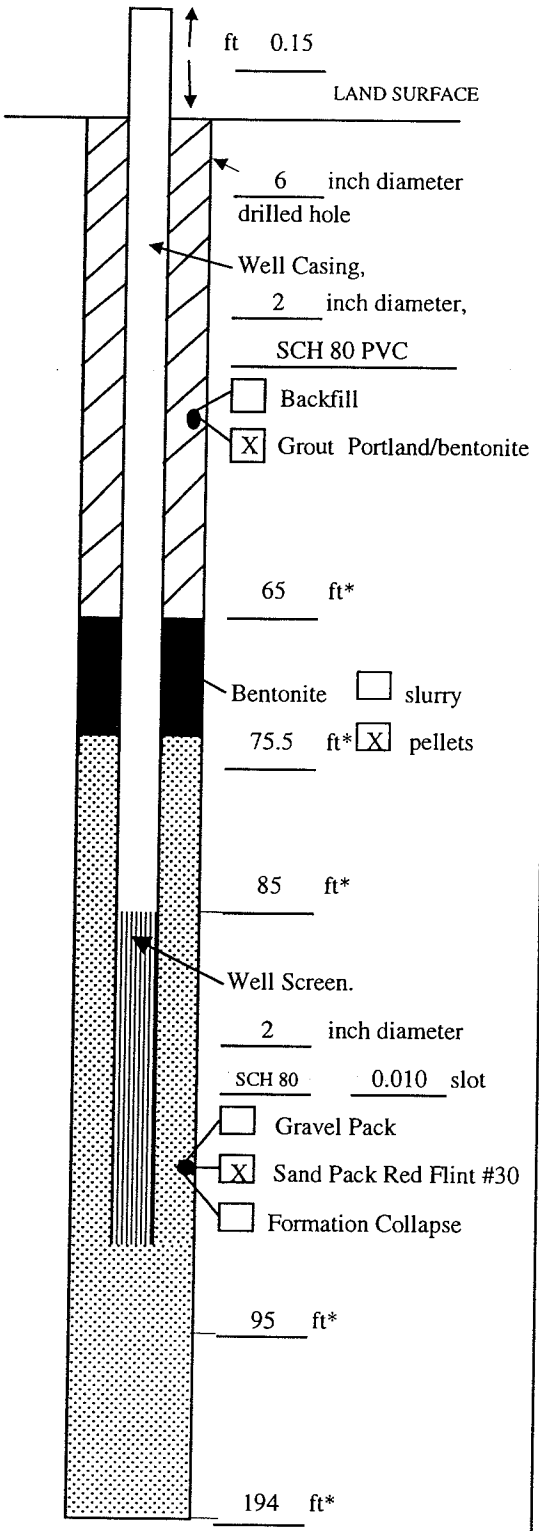
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-34B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1088.01 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/13/98 to 7/14/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 225 gallons

Static Depth to Water 43.30 on 7/28/98 feet below M.P.

Pumping Depth to Water 54.40 at 1.28 gpm feet below M.P.

Pumping Duration 2.42 hours

Yield gpm Date 7/28/1998

Specific Capacity gpm/ft

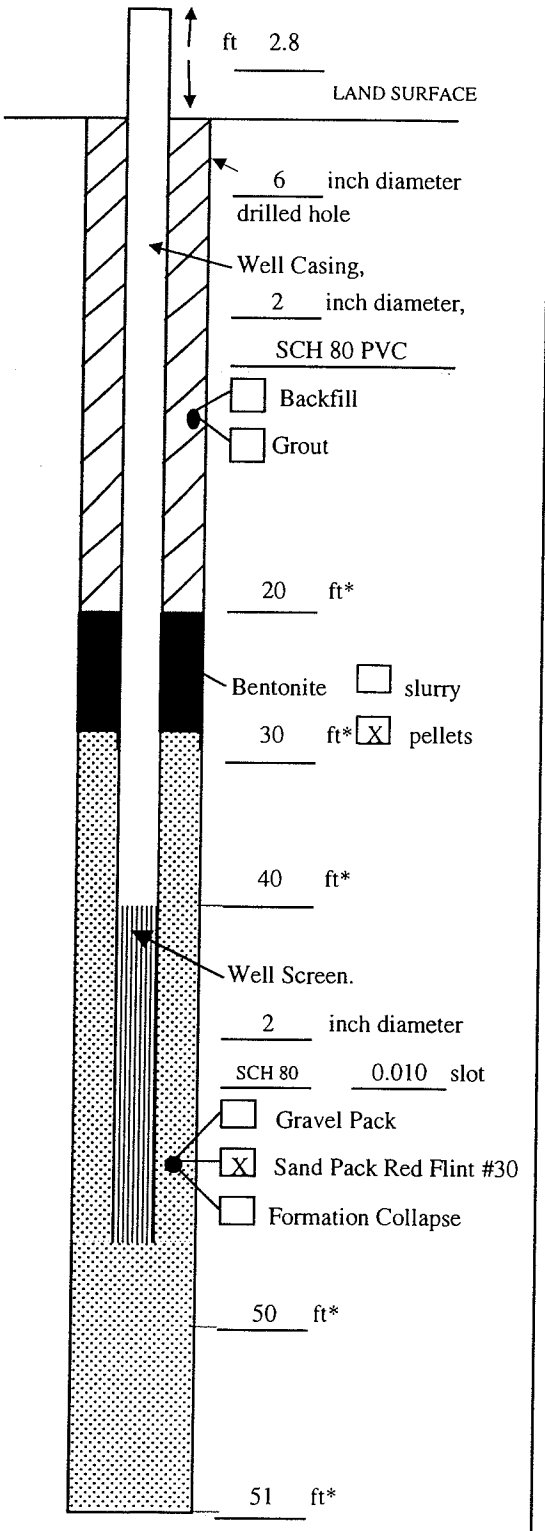
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-35

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.49 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/20/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen initially. Well is pumped dry so the well's development was finished using a bailer.

Fluid Loss During Drilling gallons

Water Removed During Development 20 gallons

Static Depth to Water 48.92 on 7/29/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 7/29/1998

Specific Capacity gpm/ft

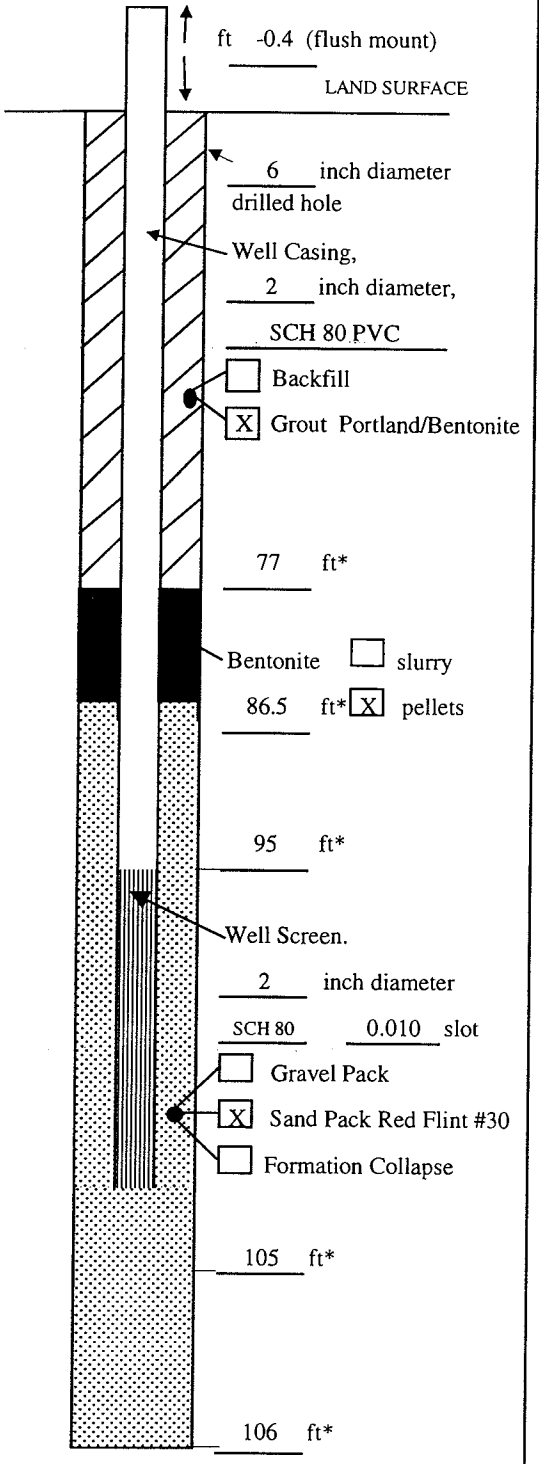
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-36

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1127.17 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/21/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 230 gallons

Static Depth to Water 39.68 on 8/5/98 feet below M.P.

Pumping Depth to Water 40.50 at 1.71 gpm feet below M.P.

Pumping Duration hours

Yield gpm Date 8/5/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

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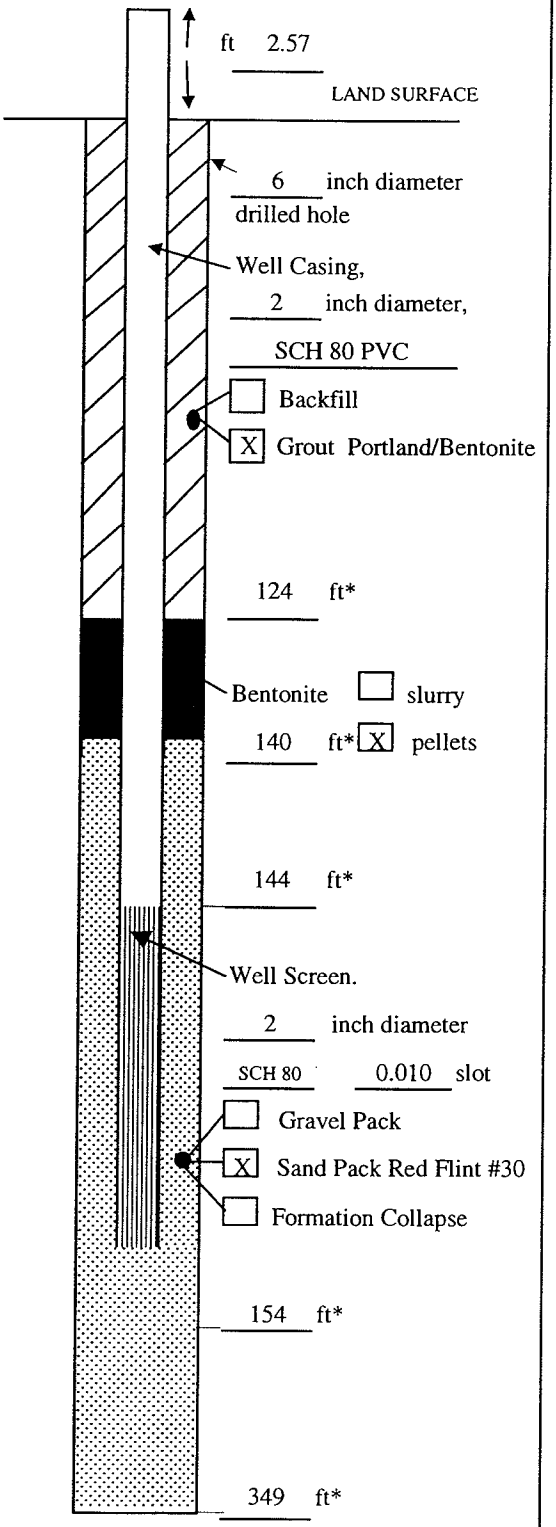
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-37A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.35 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/21/98 to 7/27/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen initially. Due to high silt content, the well's development was finished using a bailer.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 15 gallons

Static Depth to Water 73.37 on 8/7/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 8/7/1998

Specific Capacity gpm/ft

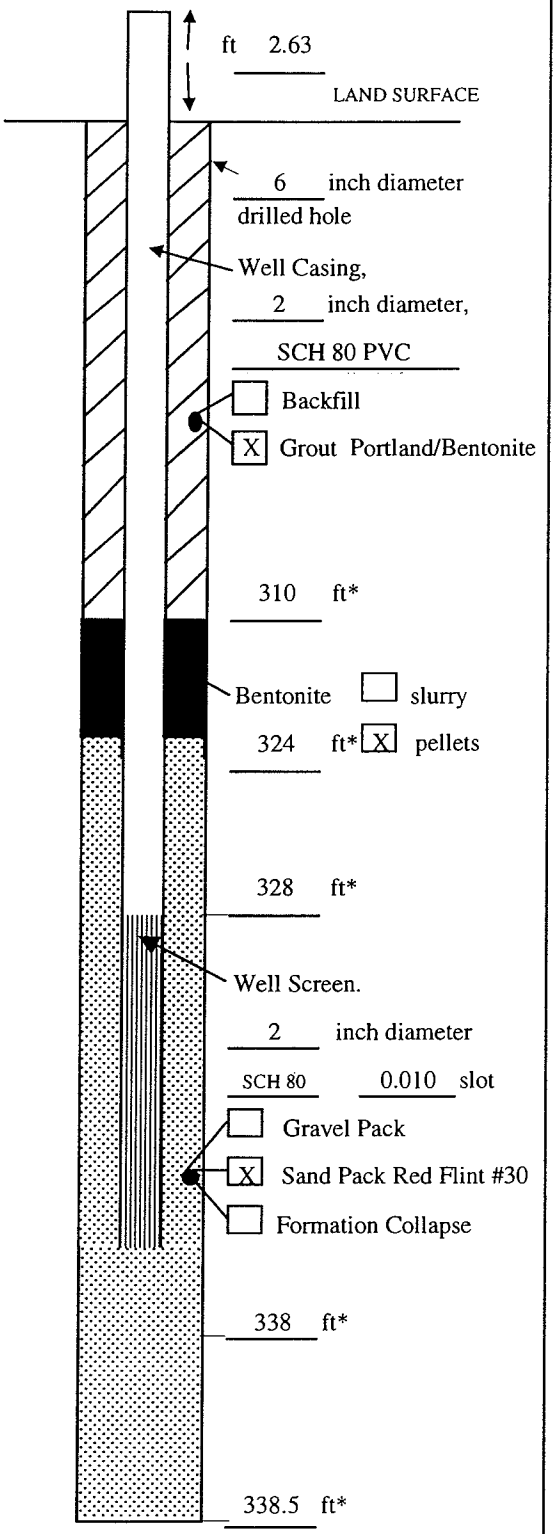
Well Purpose Monitoring groundwater levels and water quality.

Remarks Lost casing in borehole from 349 to 290 feet. Sealed in with bentonite chips up to 162 feet. Due to high silt content, pump became clogged several times during development.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

Project Ford/Kingsford Probe GM-37B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.29 feet
X Surveyed
☐ Estimated

Installation Date(s) 8/3/98 to 8/5/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 210 gallons

Static Depth to Water 72.56 on 8/7/98 feet below M.P.

Pumping Depth to Water 72.84 at 1.30 feet below M.P.

Pumping Duration 2.17 hours

Yield gpm Date 8/7/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

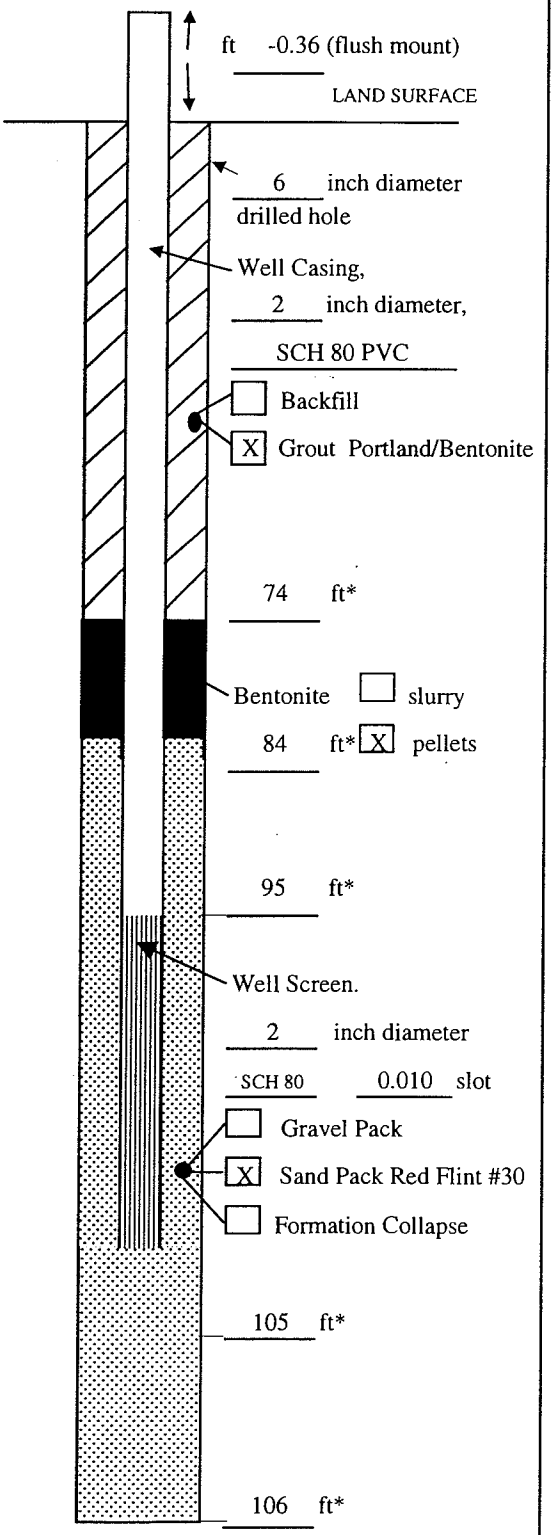
Remarks

Prepared by John Keller

Depth Below Land Surface (bls)

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-38A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1097.22 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/25/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 230 gallons

Static Depth to Water 55.90 on 8/5/98 feet below M.P.

Pumping Depth to Water 56.06 at 1.54 gpm feet below M.P.

Pumping Duration 2.17 hours

Yield gpm Date 8/5/1998

Specific Capacity gpm/ft

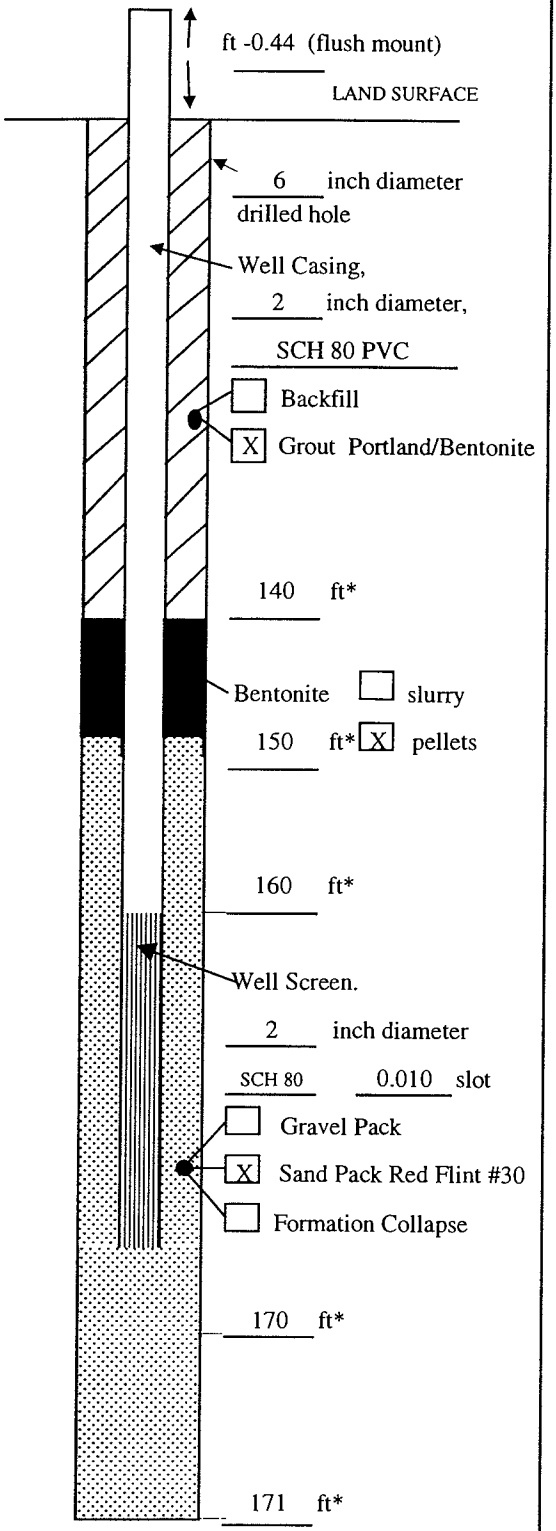
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Project Ford/Kingsford Probe GM-38B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1097.30 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/24/98 to 7/25/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 210 gallons

Static Depth to Water 54.30 or 8/6/98 feet below M.P.

Pumping Depth to Water 55.35 at 1.67 gpm feet below M.P.

Pumping Duration 2.42 hours

Yield gpm Date 8/6/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

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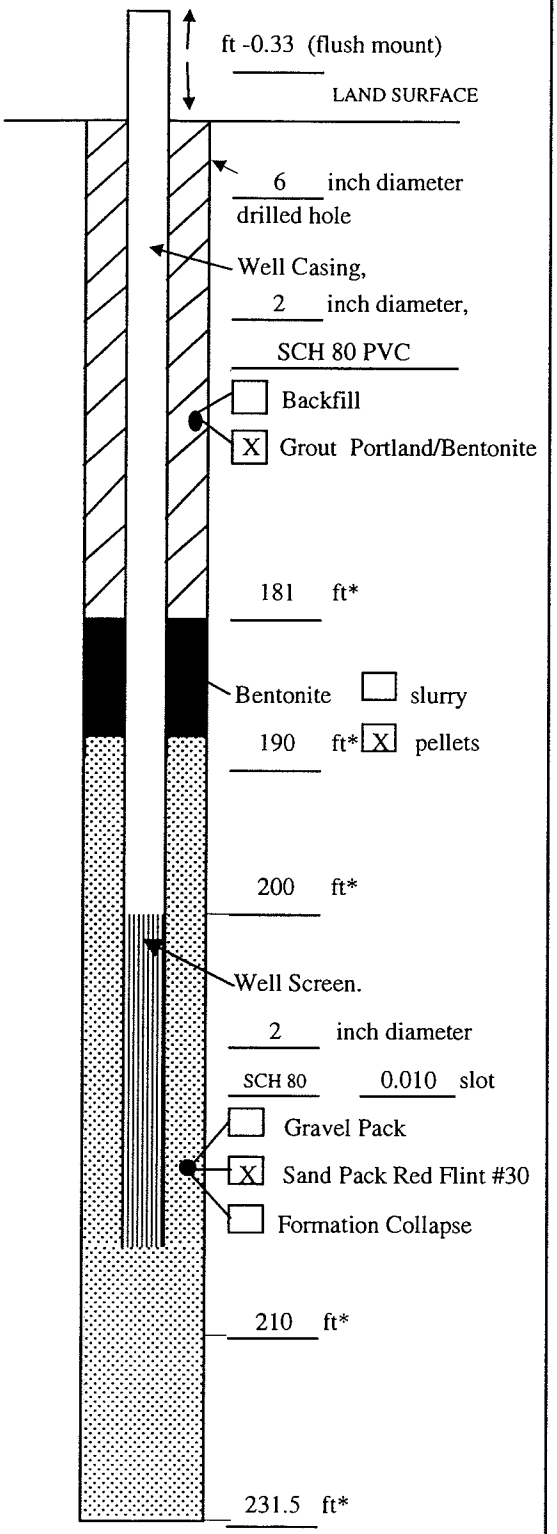
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Project Ford/Kingsford Probe GM-38C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1097.29 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/23/98 to 7/24/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 230 gallons

Static Depth to Water 54.48 on 8/6/98 feet below M.P.

Pumping Depth to Water 79.33 at 1.33 gpm feet below M.P.

Pumping Duration 3.0 hours

Yield gpm Date 8/6/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

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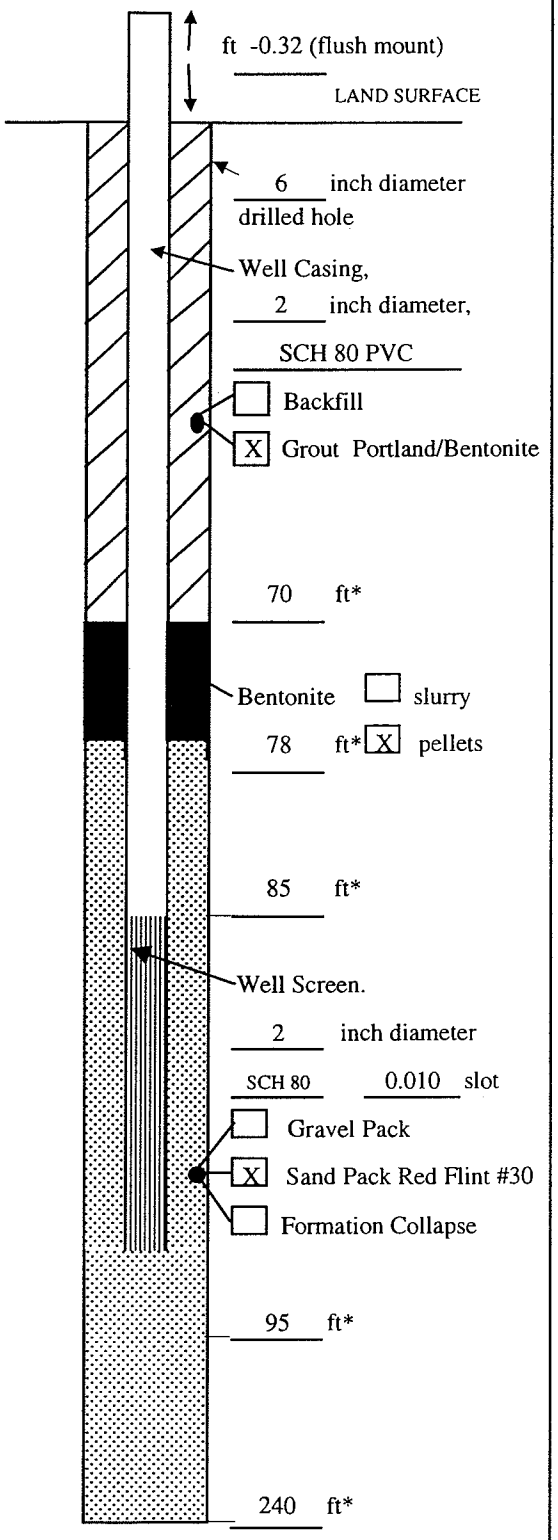
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-39

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1087.29 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/26/98 to 7/28/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 250 gallons

Static Depth to Water 42.96 on 8/8/98 feet below M.P.

Pumping Depth to Water 45.46 at 1.54 gpm feet below M.P.

Pumping Duration 3.08 hours

Yield gpm Date 8/8/1998

Specific Capacity gpm/ft

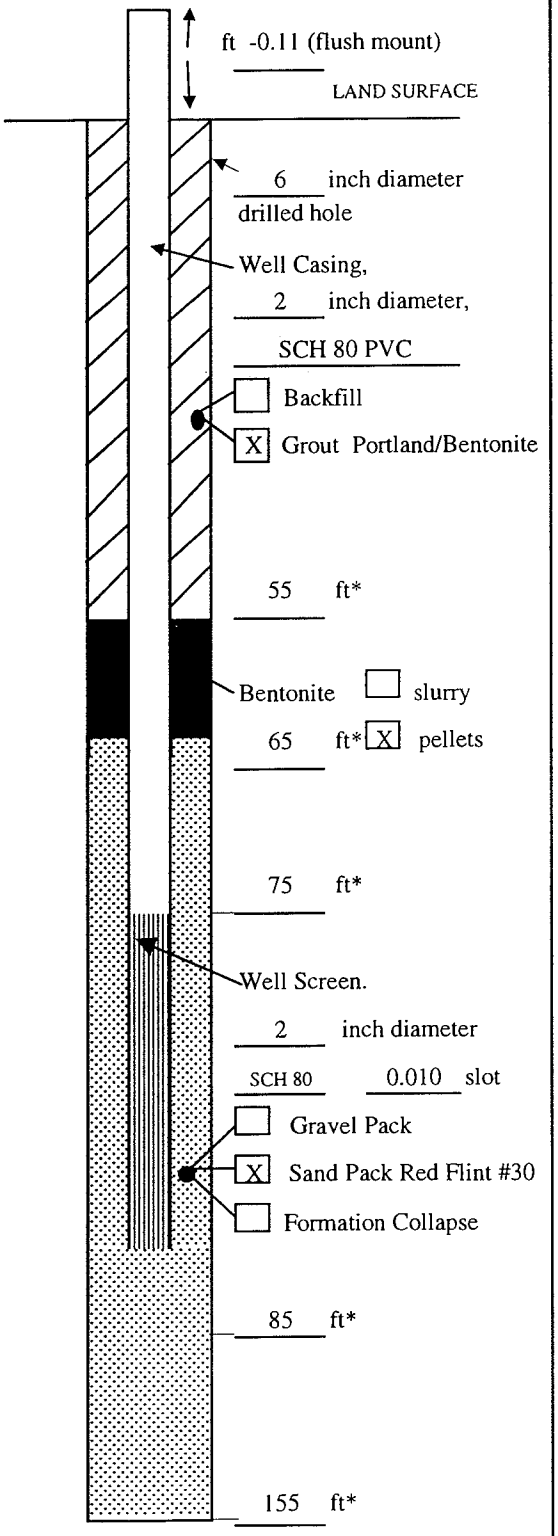
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-40A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1115.18 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/4/98 to 8/5/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 43.16 on 8/8/98 feet below M.P.

Pumping Depth to Water 45.06 at 1.43 gpm feet below M.P.

Pumping Duration hours

Yield gpm Date 8/8/1998

Specific Capacity gpm/ft

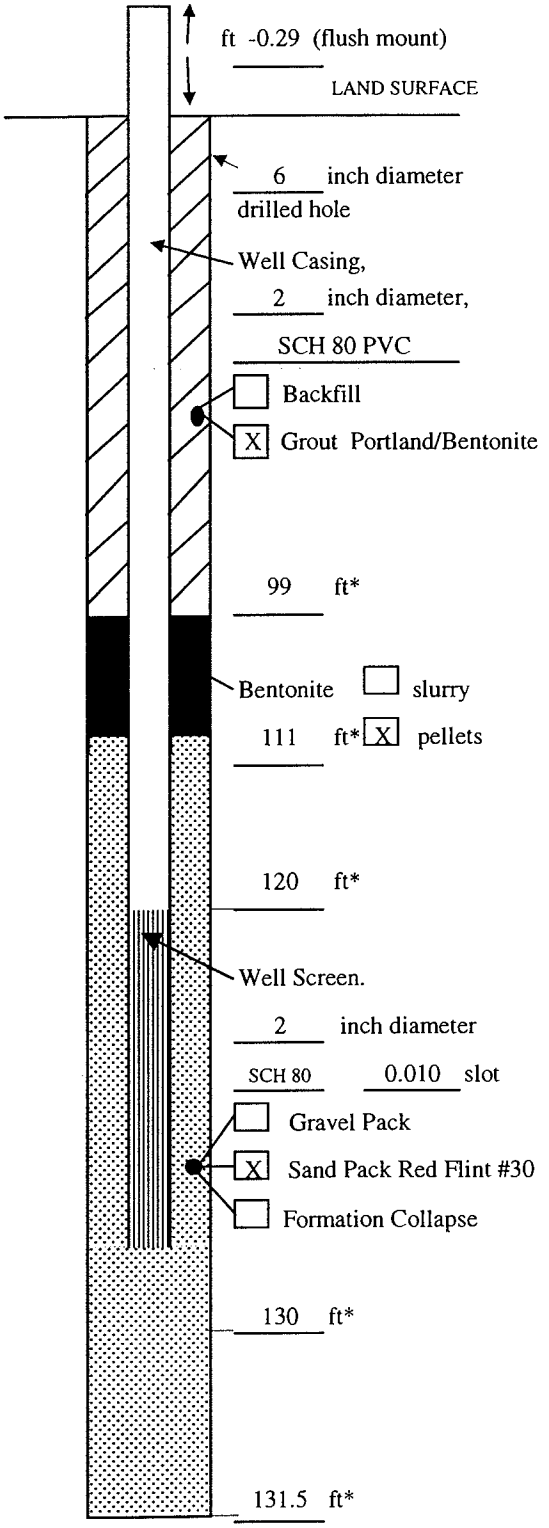
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-40B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1115.15 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/5/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 43.15 on 8/9/98 feet below M.P.

Pumping Depth to Water 44.12 at 1.43 gpm feet below M.P.

Pumping Duration 2.08 hours

Yield gpm Date 8/9/1998

Specific Capacity gpm/ft

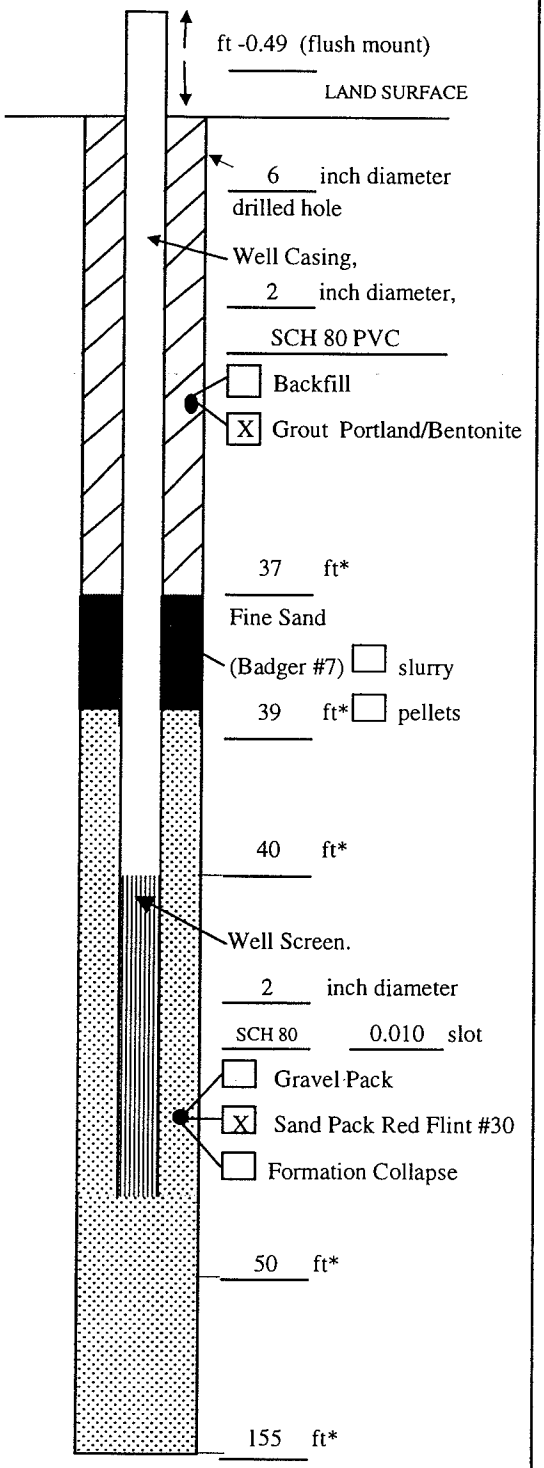
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-41

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.17 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/8/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen initially. Due to rapid drawdown, the well's development was finished using a bailer.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 25 gallons

Static Depth to Water 42.87 on 8/10/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 8/10/1998

Specific Capacity gpm/ft

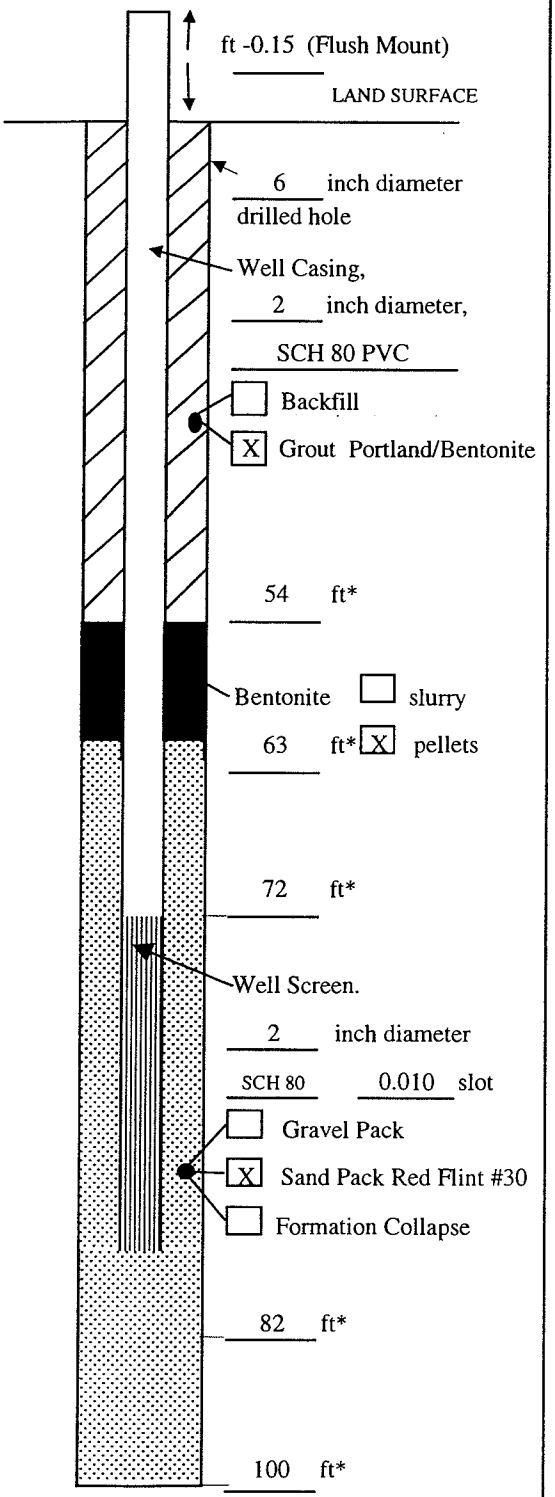
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-42

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.17 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/6/98 to 8/7/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 44.13 on 8/11/98 feet below M.P.

Pumping Depth to Water 45.71 at 1.28 gpm feet below M.P.

Pumping Duration 2.17 hours

Yield gpm Date 8/11/1998

Specific Capacity gpm/ft

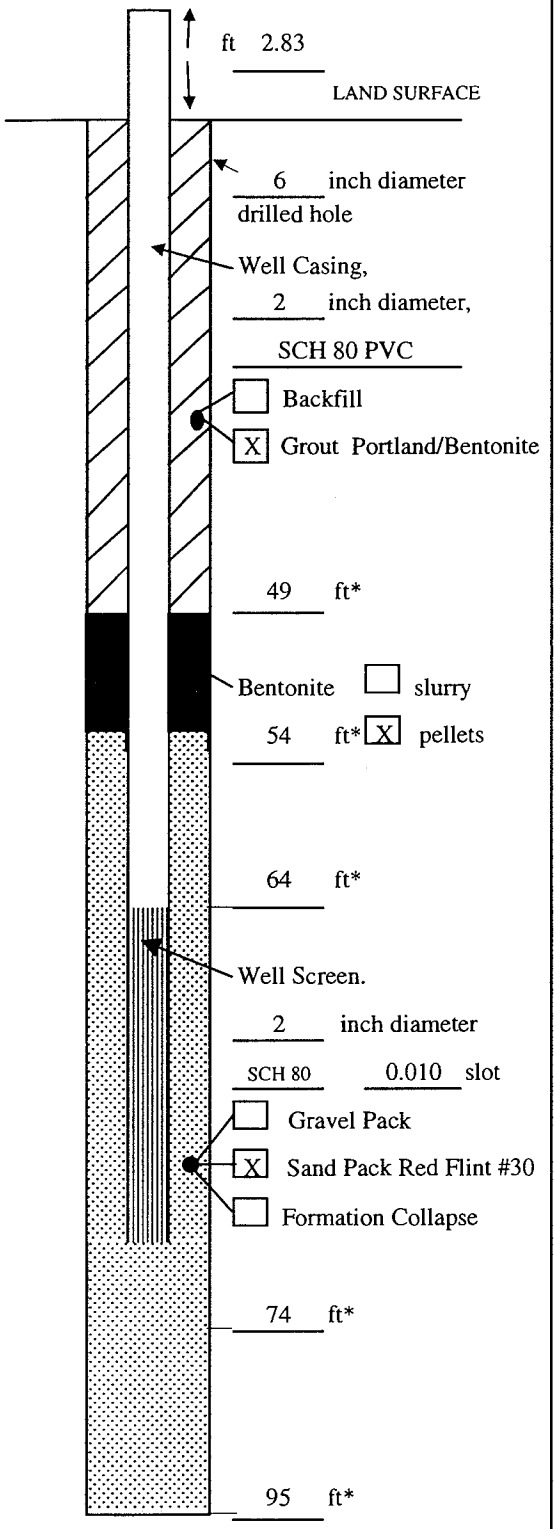
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-43

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.48 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/8/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Baildown (there was <1 foot of water in the well).

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 76.80 on 8/11/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 8/11/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks Well was redeveloped on 9/2/98 but no water was retrieved with bailer.

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm43.xls
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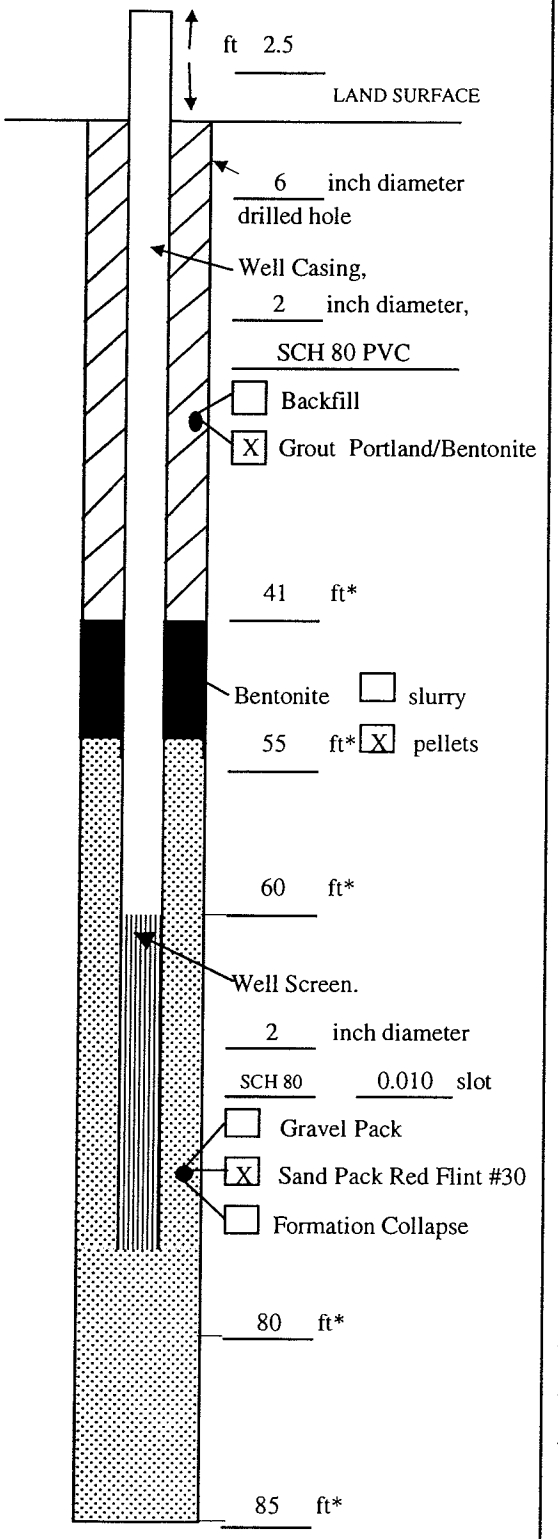
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-44

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.97 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/8/98 to 8/10/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Baildown (there was approximately 3.7 feet of water in the well).

Fluid Loss During Drilling gallons

Water Removed During Development 8 gallons

Static Depth to Water 80.25 on 8/11/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 8/11/1998

Specific Capacity gpm/ft

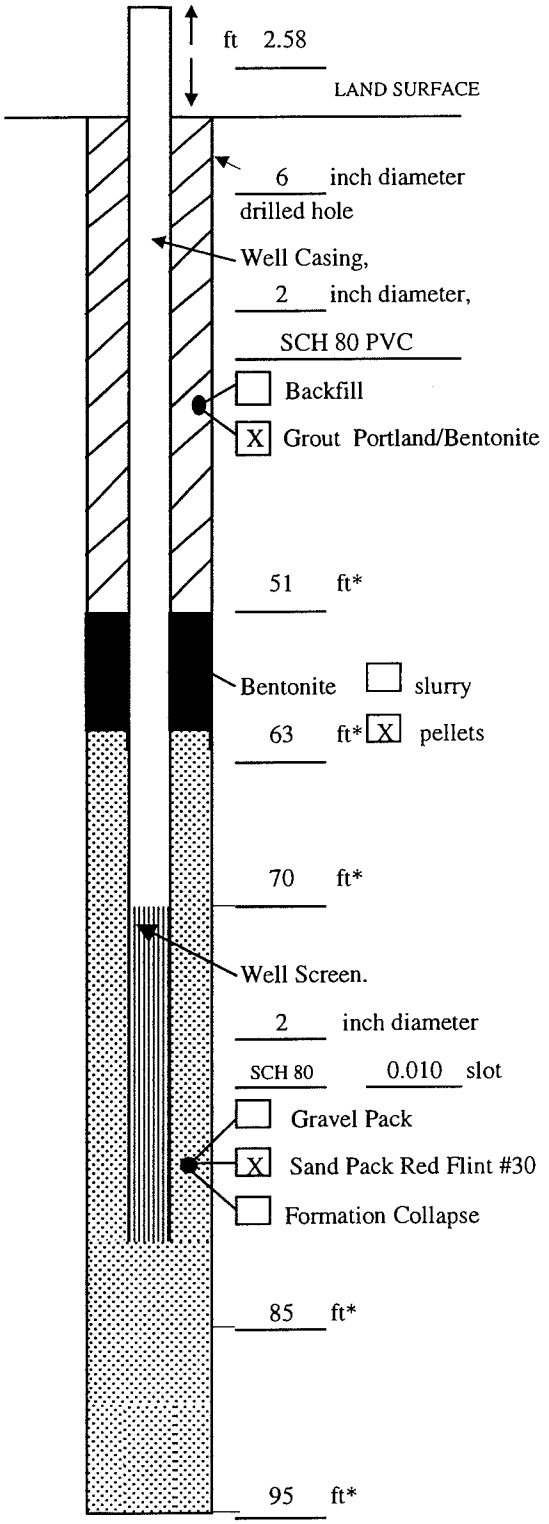
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-45

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.34 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/10/98 to 8/11/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Baildown

Fluid Loss During Drilling gallons

Water Removed During Development 5 gallons

Static Depth to Water 83.29 on 9/2/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 9/2/1998

Specific Capacity gpm/ft

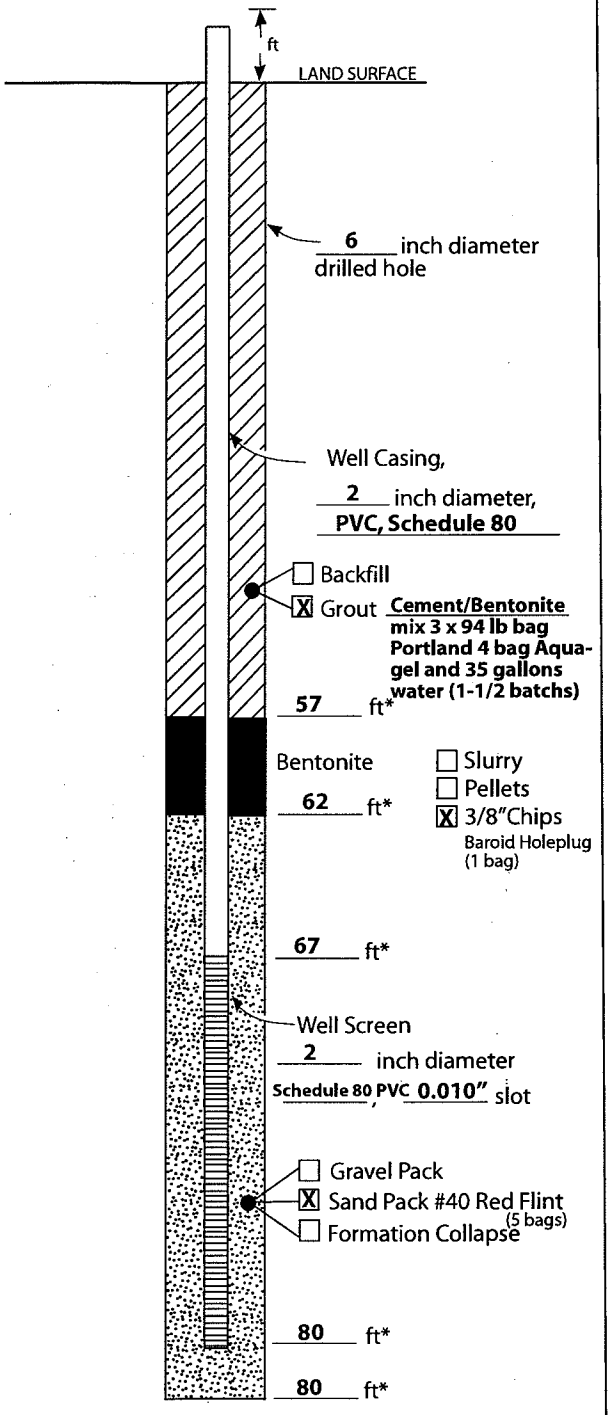
Well Purpose Monitoring groundwater levels and water quality.

Remarks Four gallons of water previously bailed on 8/28/98 for treatability water sampling.

Prepared by John Keller

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-45A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1122.94 feet**

and Datum _____ feet

above mean sea level

☒ surveyed

☐ estimated

Installation Date(s) **7/26/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

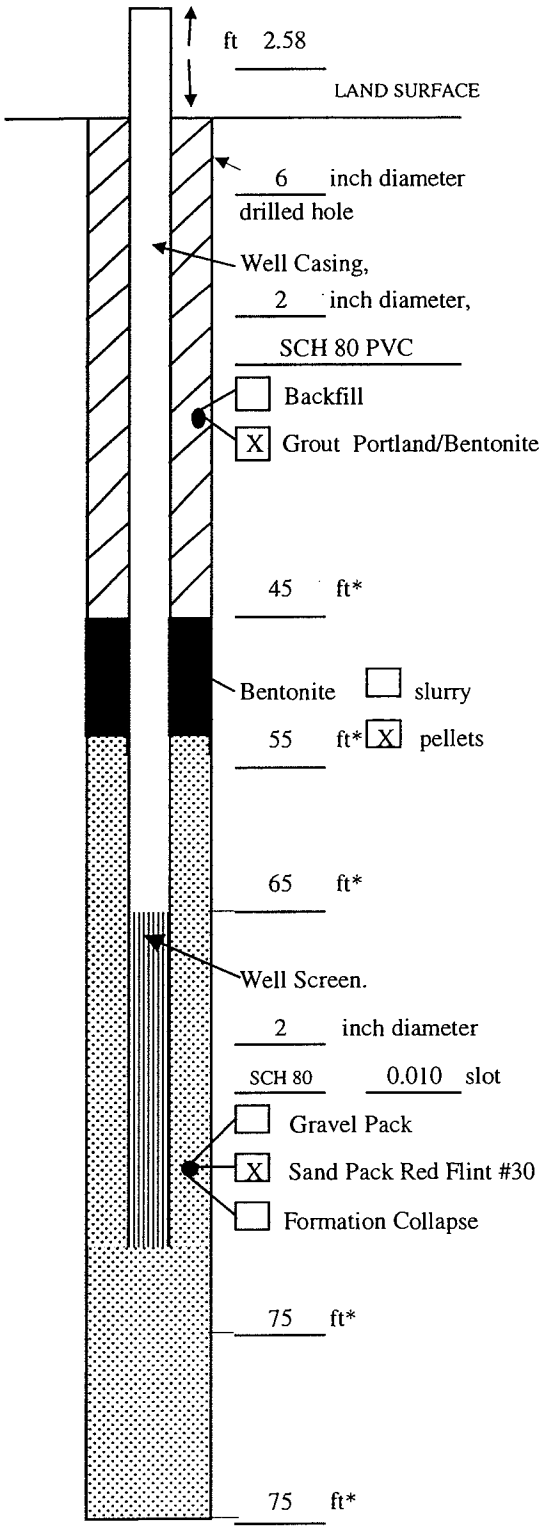
Well Purpose **Vapor probe**

Remarks _____

Prepared by **Paul Lenaker**

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-46

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1123.01 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/11/98 to 8/12/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Baildown

Fluid Loss During Drilling gallons

Water Removed During Development approximately 2.5 gallons

Static Depth to Water 71.75 on 9/2/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 9/2/1998

Specific Capacity gpm/ft

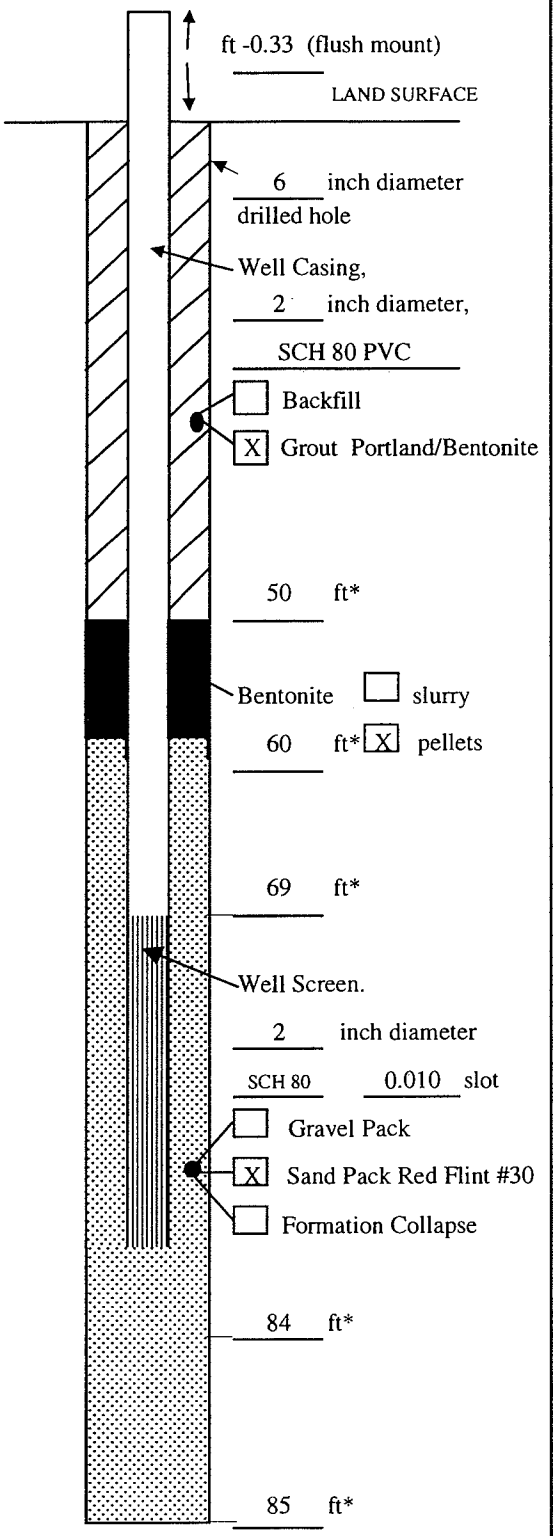
Well Purpose Monitoring groundwater levels and water quality.

Remarks Well was bailed dry. 3.5 gallons of water previously bailed on 8/20/98 for treatability water sampling.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-47

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.11 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/17/98 to 8/18/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Baildown

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 82.97 on 9/2/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 9/2/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks Well was bailed dry. 3.5 gallons of water previously bailed on 8/20/98 for treatability water sampling.

Prepared by John Keller

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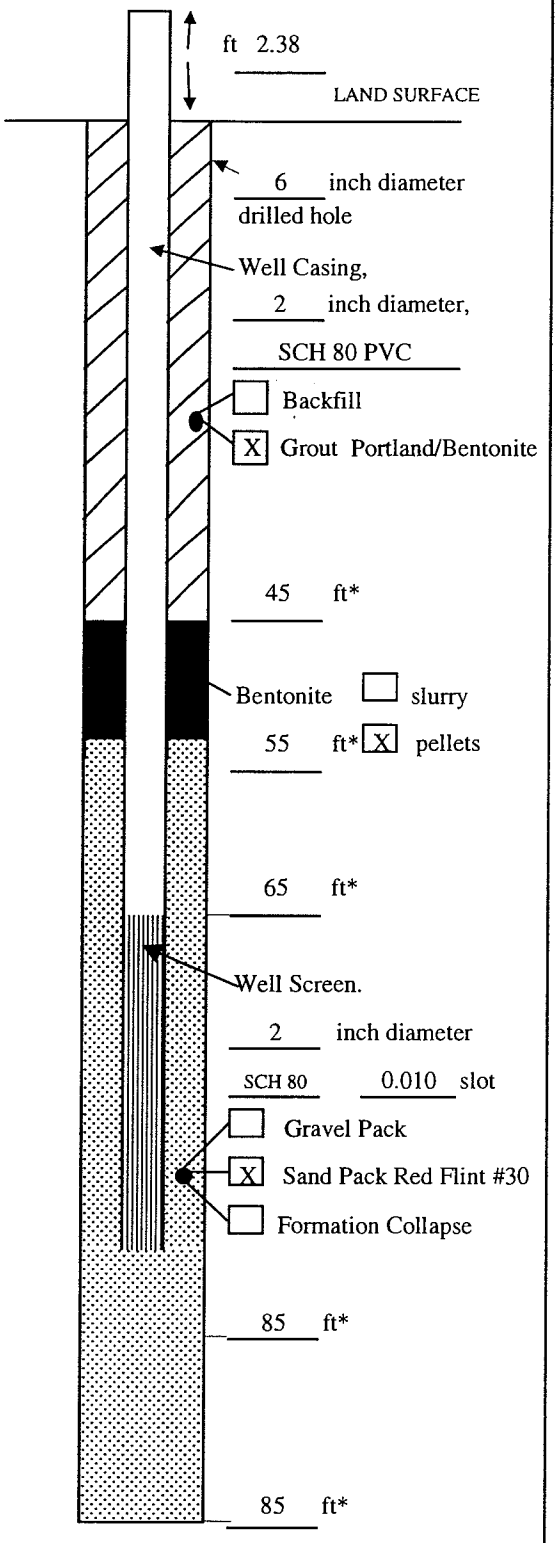
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-48

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1124.98 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/18/98 to 8/19/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Baildown

Fluid Loss During Drilling gallons

Water Removed During Development 5 gallons

Static Depth to Water 81.10 on 9/2/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 9/2/1998

Specific Capacity gpm/ft

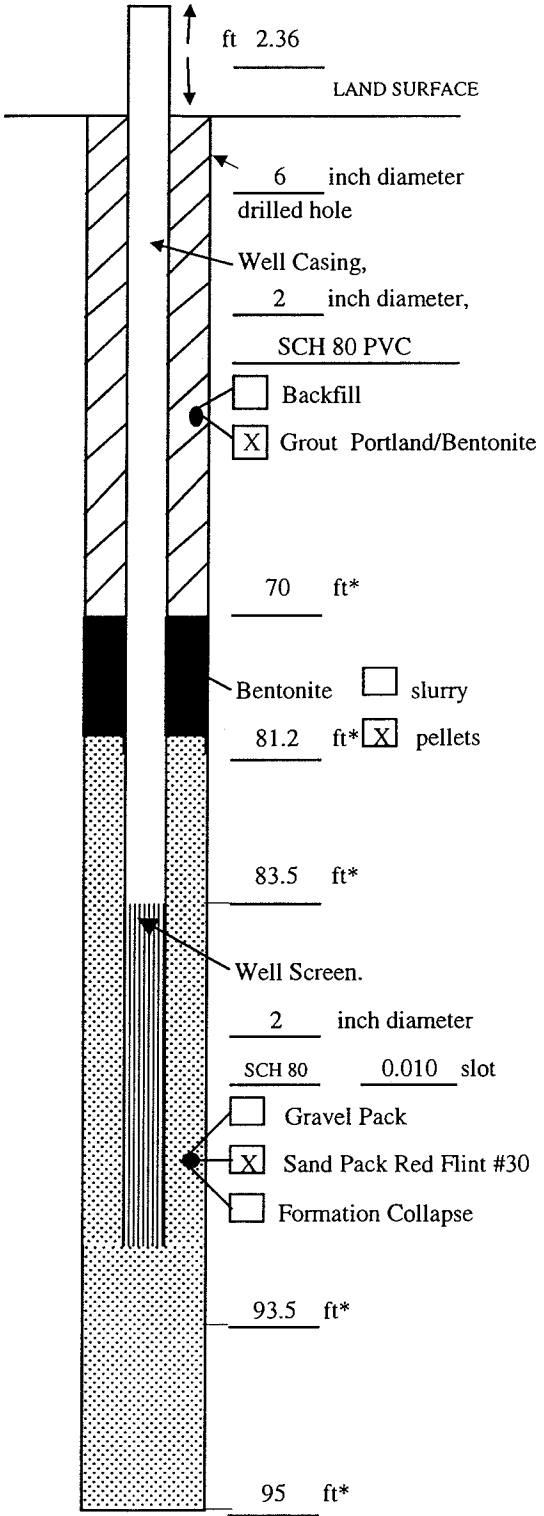
Well Purpose Monitoring groundwater levels and water quality.

Remarks Well was bailed dry. 4.8 gallons of water previously bailed on 8/20/98 for treatability water sampling.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-49

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.69 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/20/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 180 gallons

Static Depth to Water 80.26 on 9/2/98 feet below M.P.

Pumping Depth to Water 93.22 at 1.07 gpm feet below M.P.

Pumping Duration 1.83 hours

Yield gpm Date 9/2/1998

Specific Capacity gpm/ft

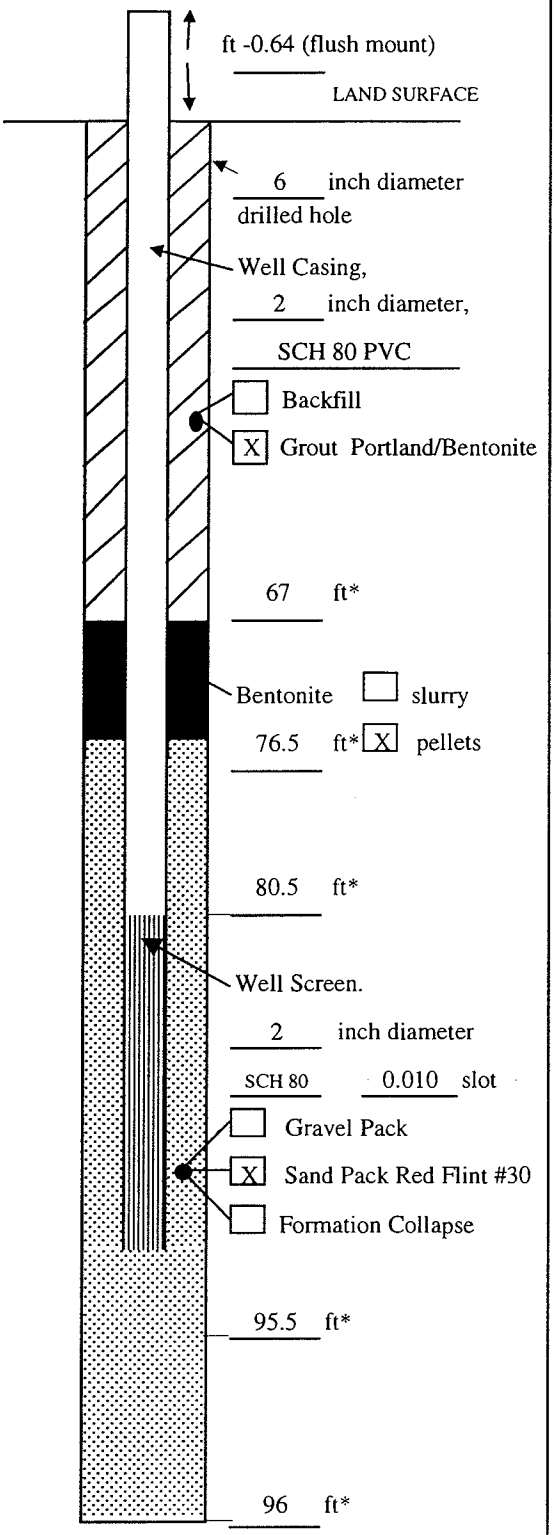
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-50

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.64 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/24/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 220 gallons

Static Depth to Water 78.10 on 8/31/98 feet below M.P.

Pumping Depth to Water 79.04 at 1.62 gpm feet below M.P.

Pumping Duration 3.0 hours

Yield gpm Date 8/31/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks Water level measurements difficult to obtain with bubbling.

Prepared by John Keller

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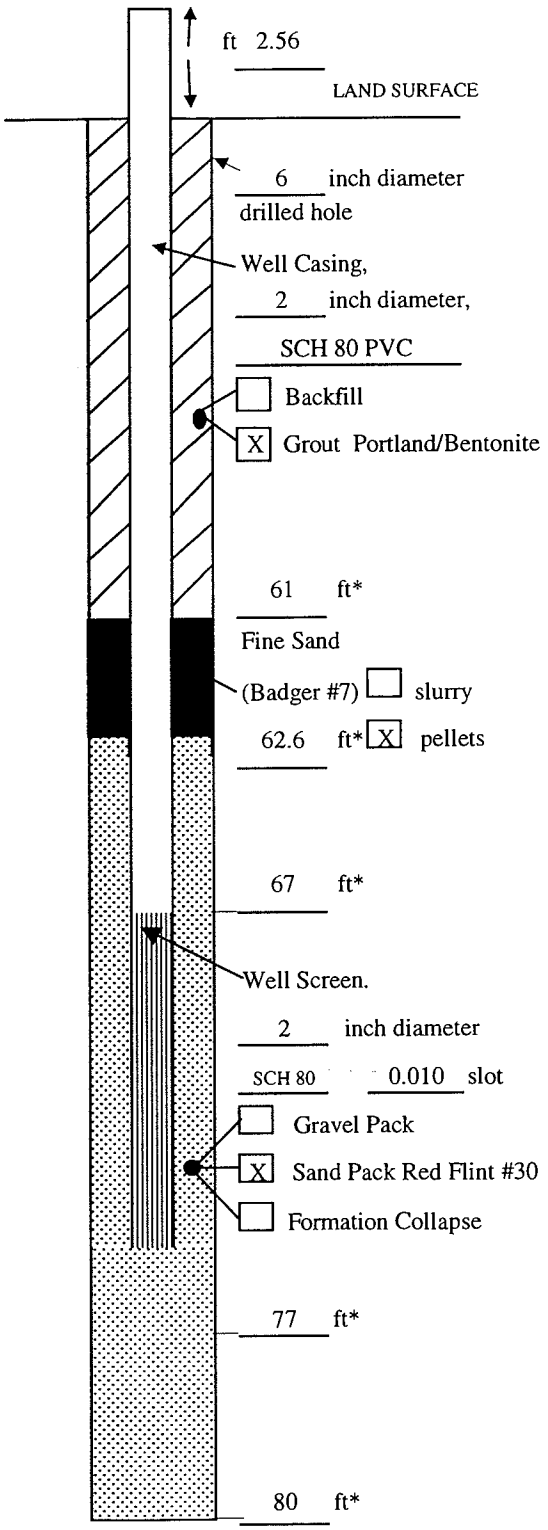
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-51

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1095.88 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/24/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 230 gallons

Static Depth to Water 57.30 on 9/1/98 feet below M.P.

Pumping Depth to Water 57.48 at 1.71 gpm feet below M.P.

Pumping Duration 2.17 hours

Yield gpm Date 9/1/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/wcl_gm51.xls
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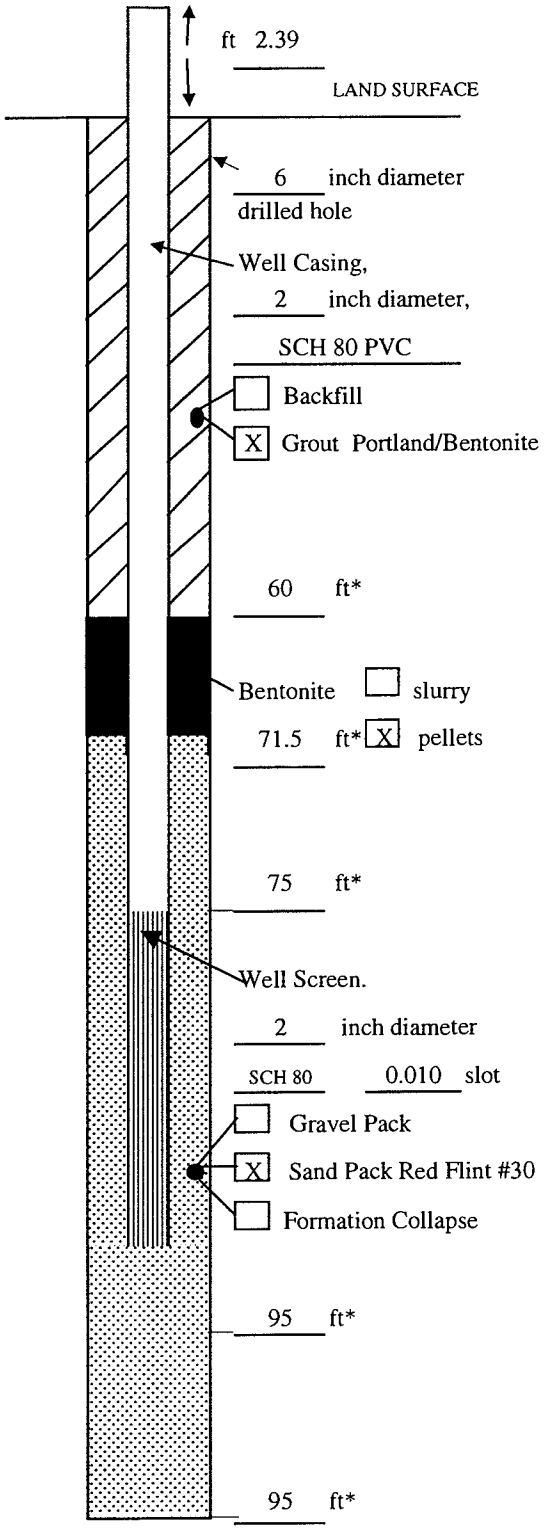
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-52

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1119.74 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/25/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 220 gallons

Static Depth to Water approximately 80 on 9/1/98 feet below M.P.

Pumping Depth to Water approximately 85 at 1.40 gpm feet below M.P.

Pumping Duration 2.33 hours

Yield gpm Date 9/1/1998

Specific Capacity gpm/ft

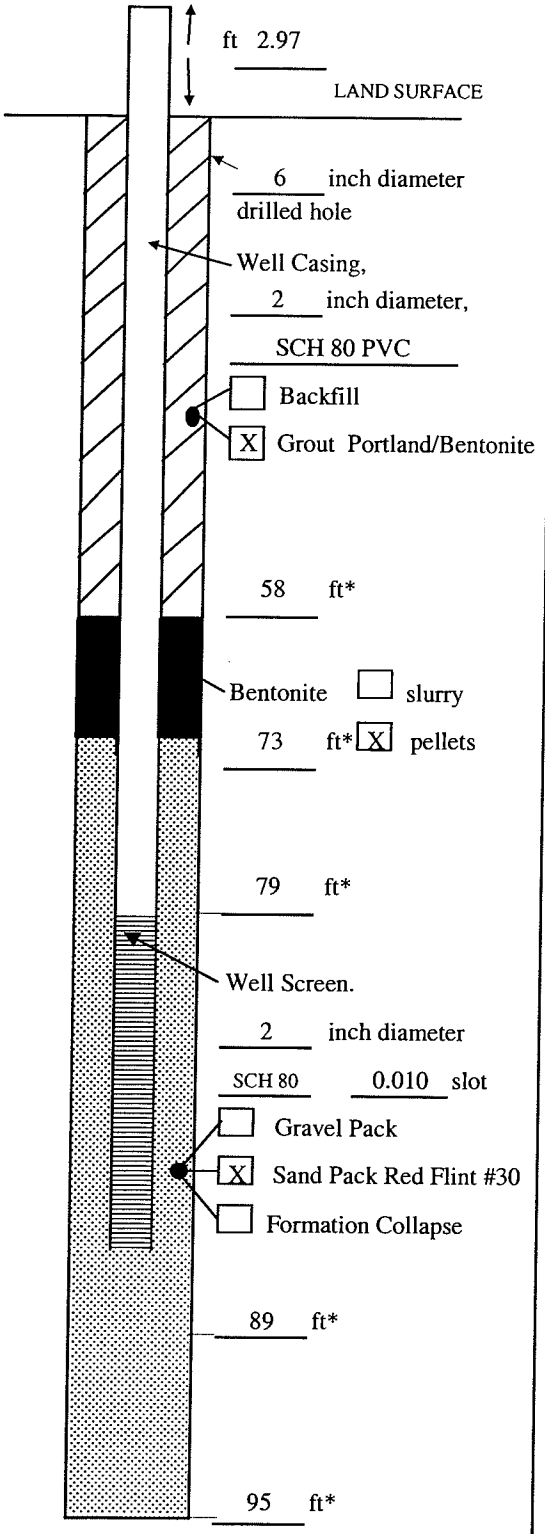
Well Purpose Monitoring groundwater levels and water quality.

Remarks Accurate water level measurements very difficult to obtain due to bubbling.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-53A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1103.76 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/14/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

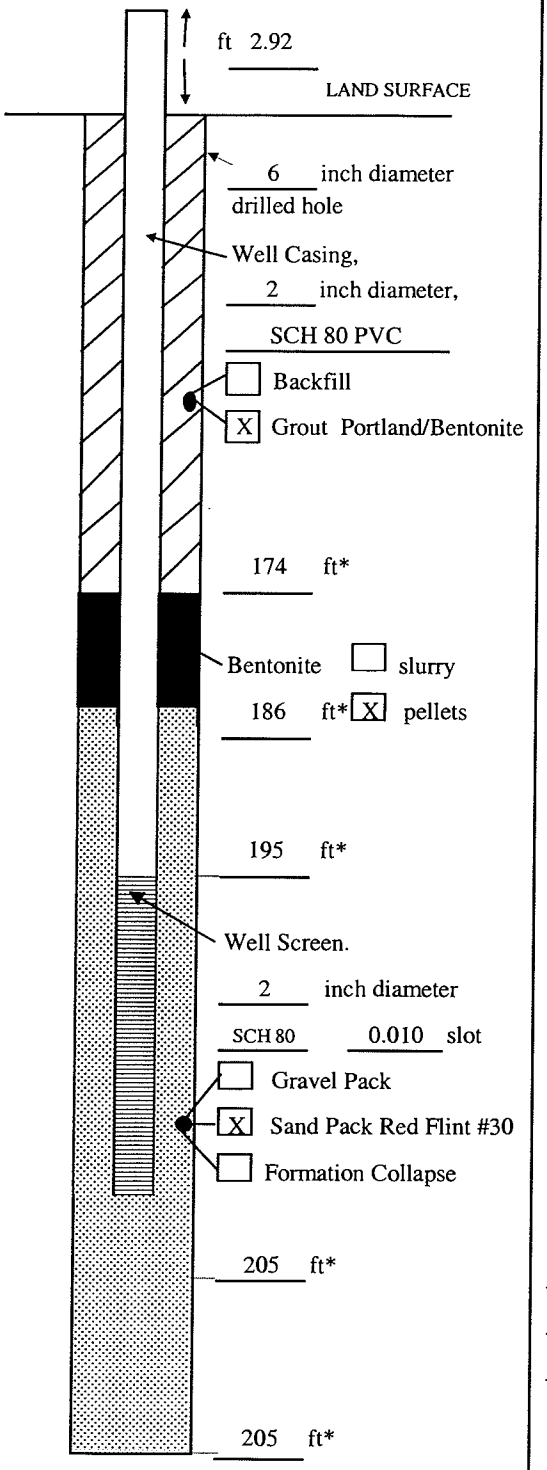
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-53B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1103.83 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/13/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

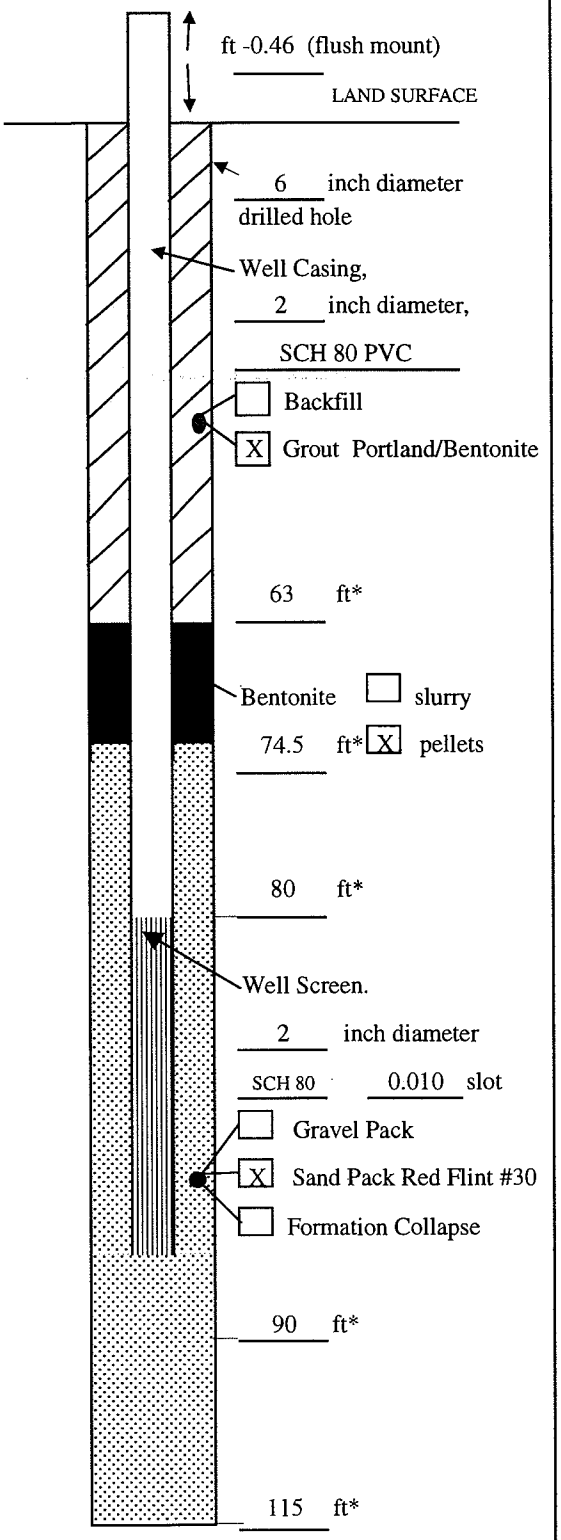
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-54

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.88 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/26/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Baildown

Fluid Loss During Drilling gallons

Water Removed During Development approximately 7 gallons

Static Depth to Water 61.9 on 9/28/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 9/28/98

Specific Capacity gpm/ft

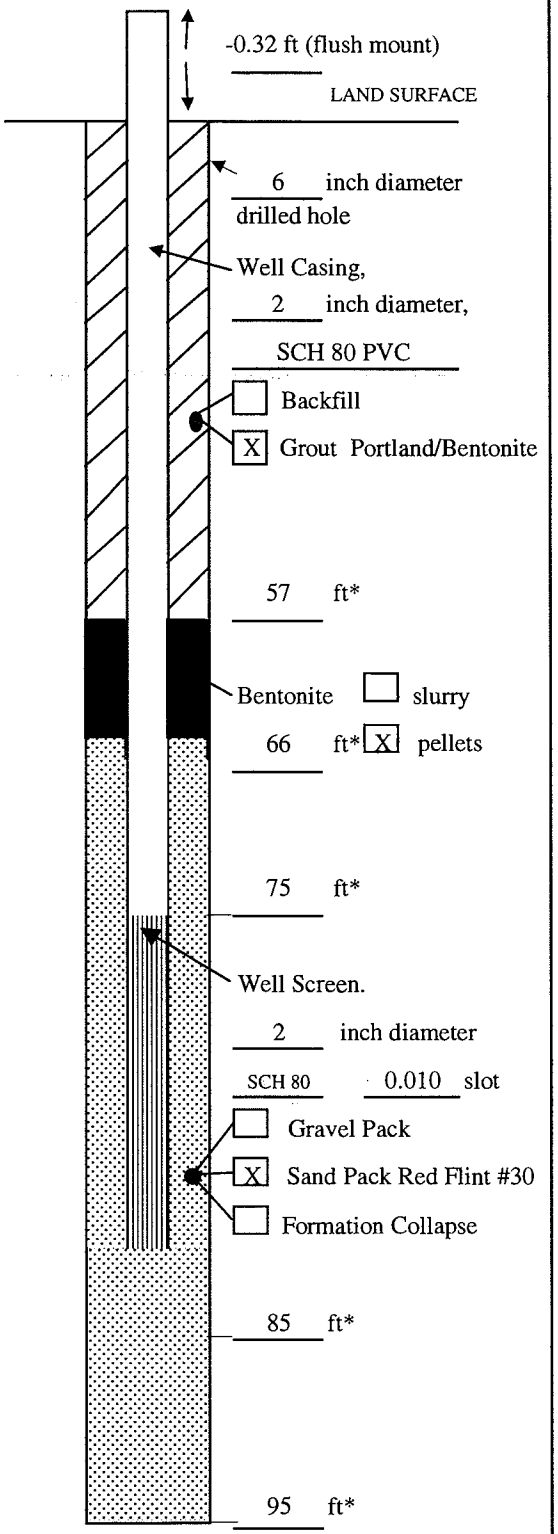
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-55

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.68 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/26/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Baildown

Fluid Loss During Drilling gallons

Water Removed During Development approximately 9 gallons

Static Depth to Water 75.47 on 9/28/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 9/28/98

Specific Capacity gpm/ft

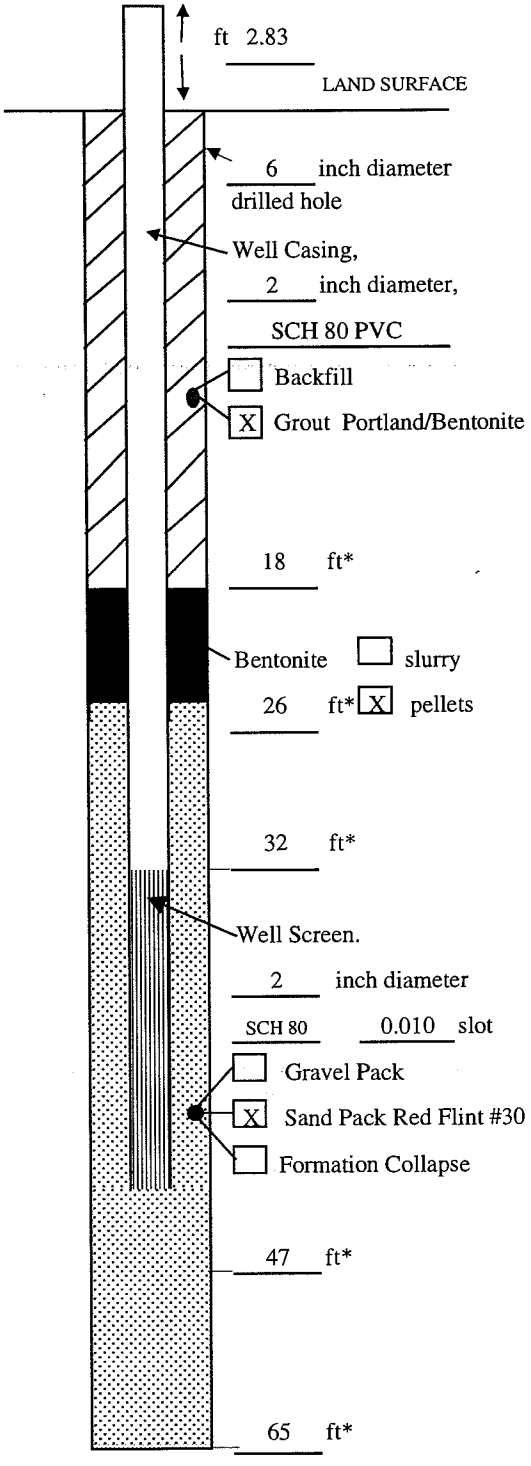
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-56

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1118.56 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/28/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Baildown

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 9/28/98

Specific Capacity gpm/ft

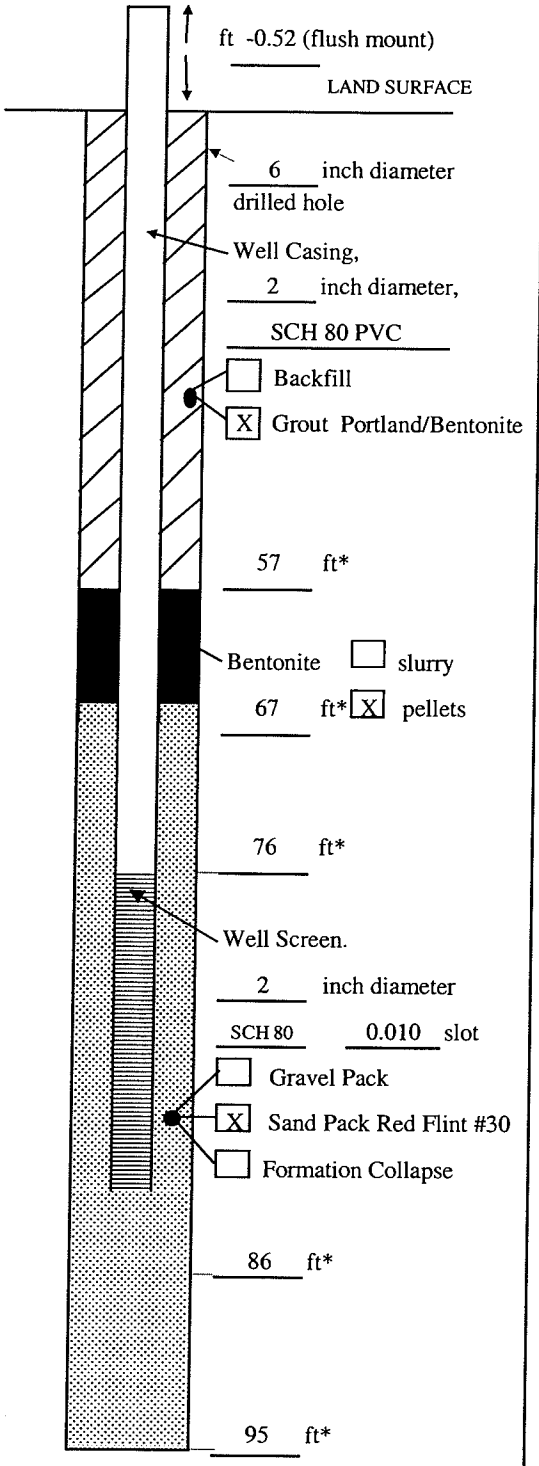
Well Purpose Monitoring groundwater levels and groundwater quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-57

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1130.81 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/26/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)
Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 45 gallons

Static Depth to Water 71.28 on 10/27/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 10/27/1998

Specific Capacity gpm/ft

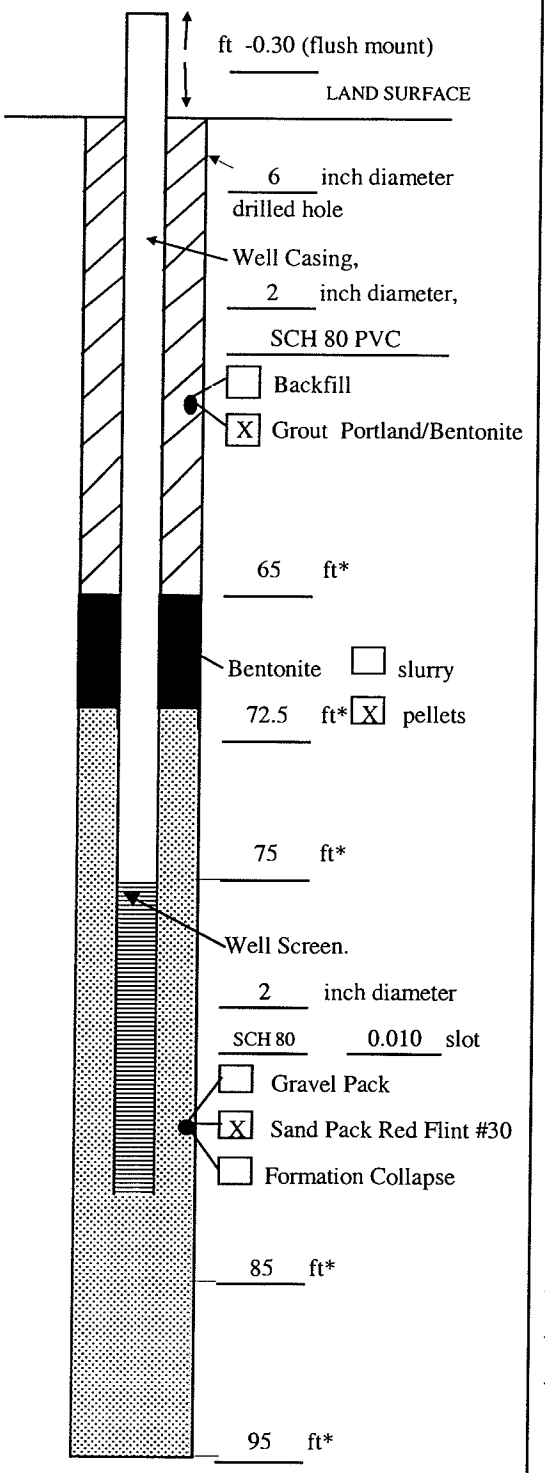
Well Purpose Monitoring groundwater levels and water quality.

Remarks Power surges cause pump to fail after approximately 45 gallons have been purged. Water is relatively clear.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-58

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1130.90 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/27/1998

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

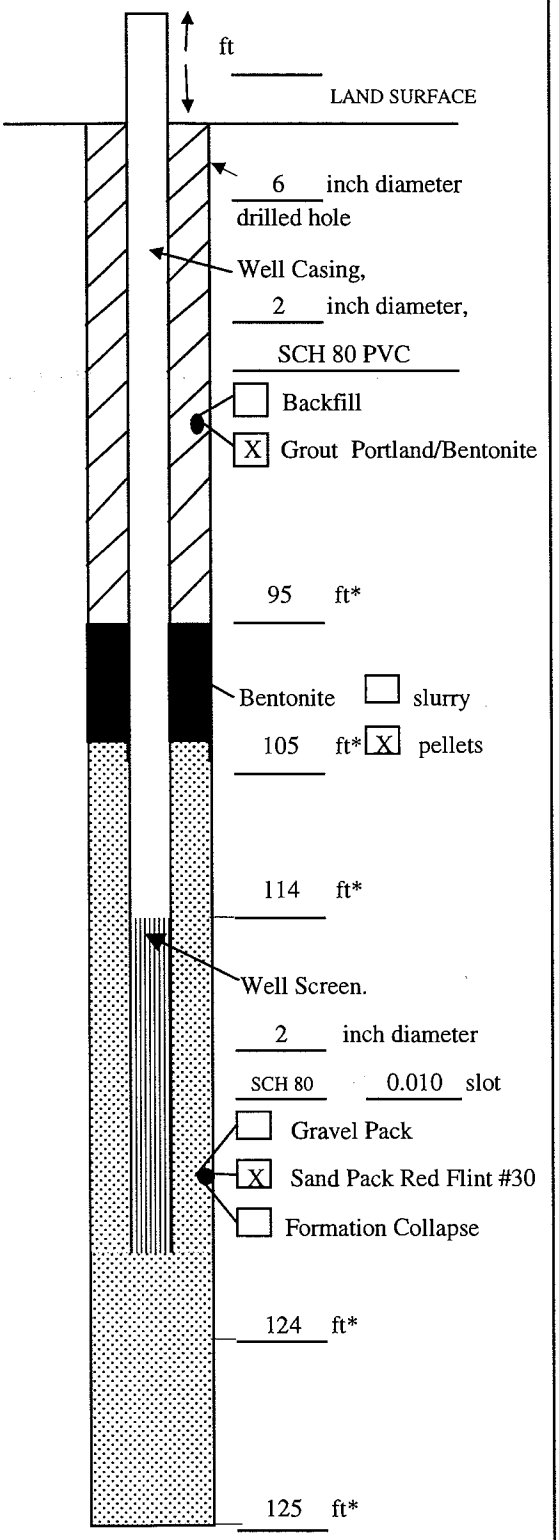
Well Purpose Monitoring groundwater levels and groundwater quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-59

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1129.97 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 11/4/98 to 11/7/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 110 gallons

Static Depth to Water 78.95 on 11/8/98 feet below M.P.

Pumping Depth to Water 79.12 at 1.11 gpm feet below M.P.

Pumping Duration 1.5 hours

Yield gpm Date 11/8/1998

Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and groundwater quality.

Remarks

Prepared by John Keller

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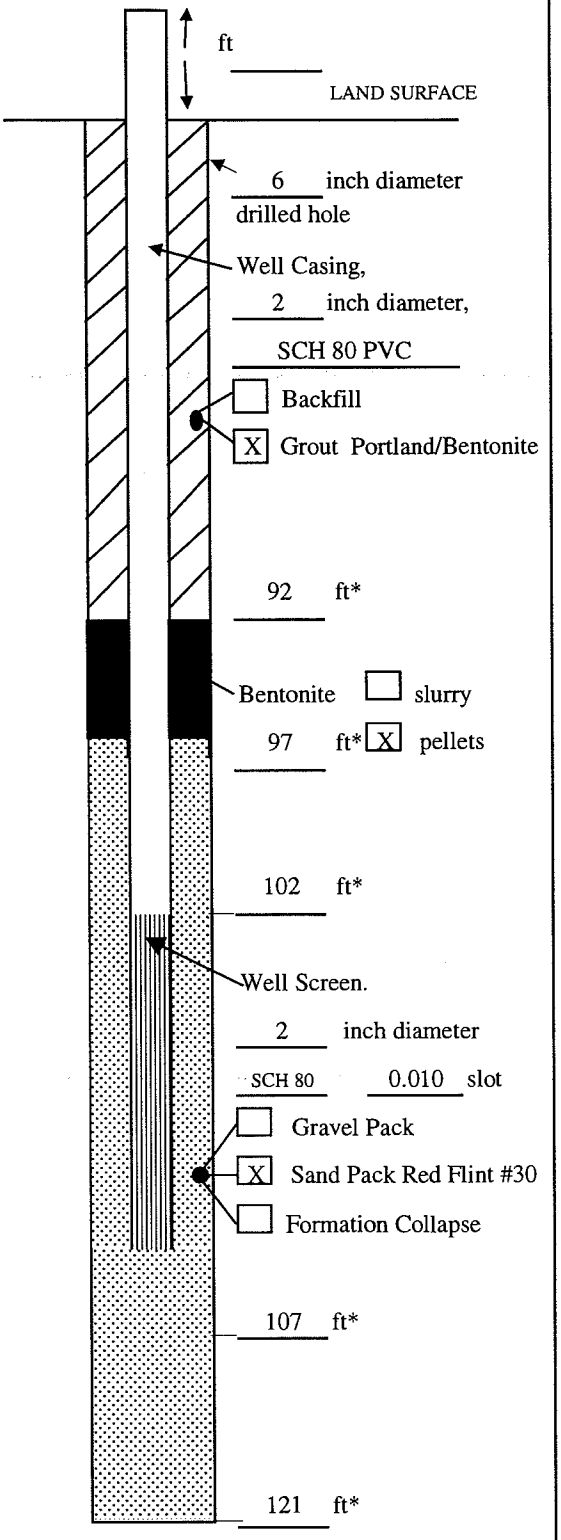
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-60

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1191.33 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 11/8/98 to 11/9/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen initially. Second attempt utilized bailer.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water 100.60 on 11/16/98 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 11/16/1998

Specific Capacity gpm/ft

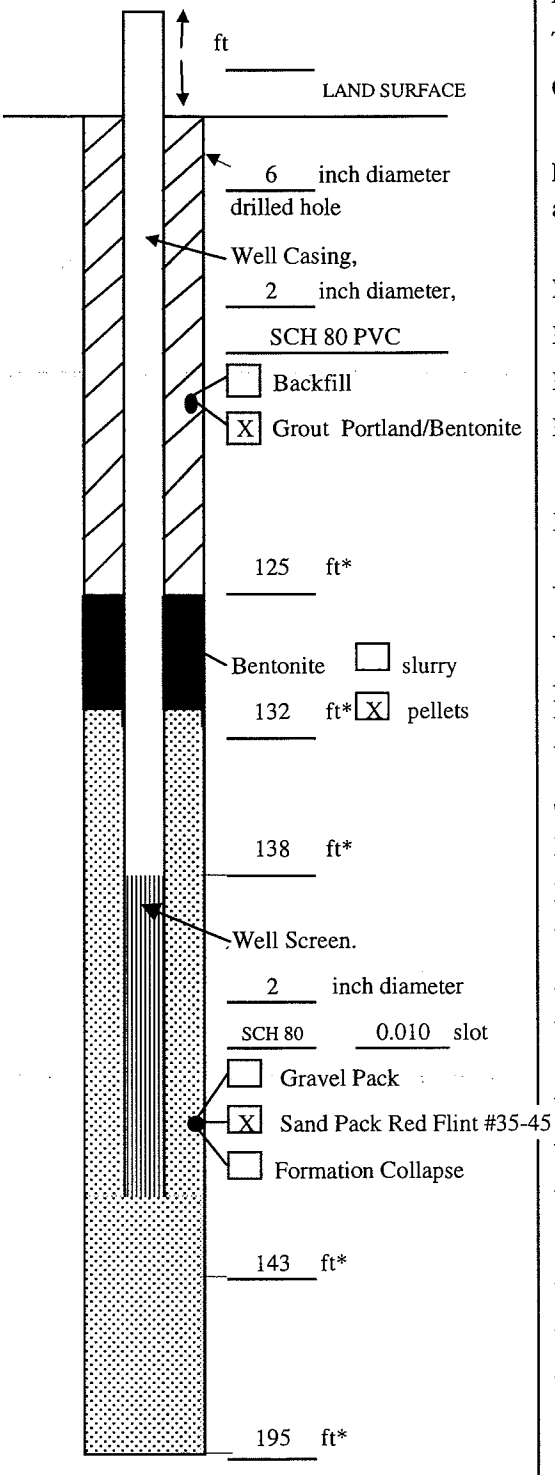
Well Purpose Monitoring groundwater levels and groundwater quality.

Remarks Pump overloaded while trying to develop well (no water purged). Well was redeveloped on 11/20/98 (S.W.L. = 102.40). Bailed approximately 8 gallons before bailing produced no results.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-61

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1209.08 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 12/15/98 to 12/16/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

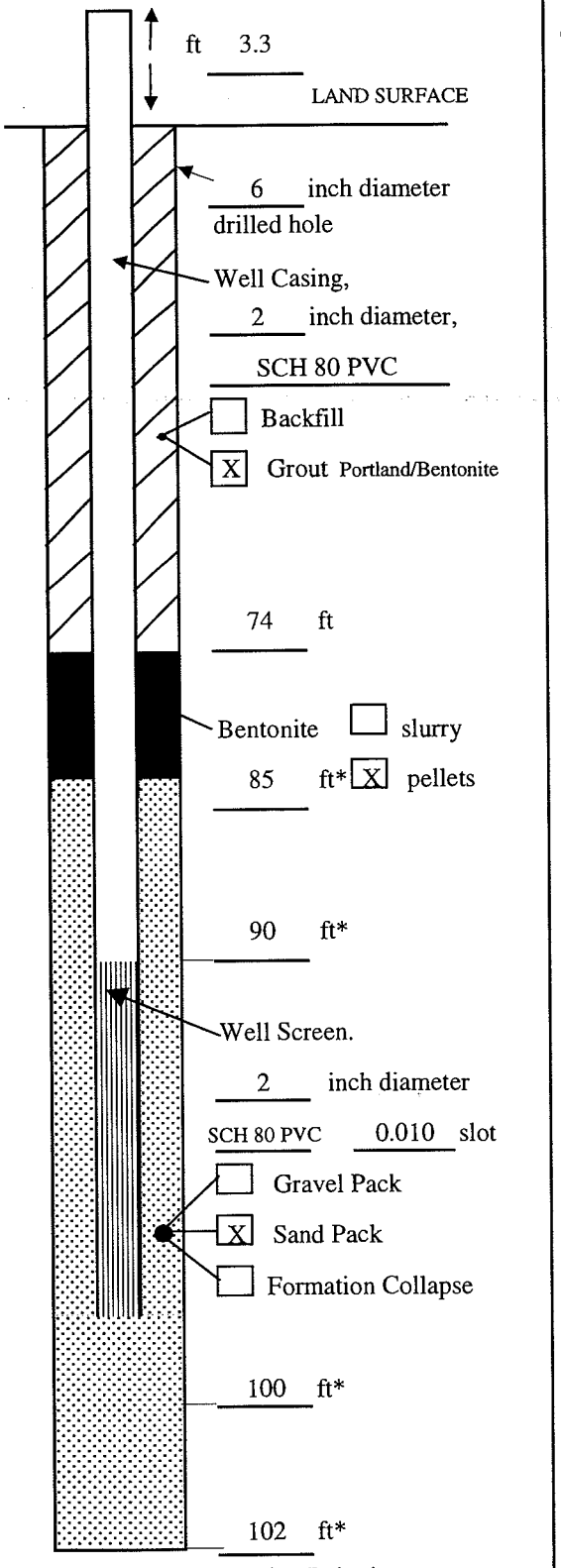
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-62A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1124.78 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/8/99 to 6/10/99

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

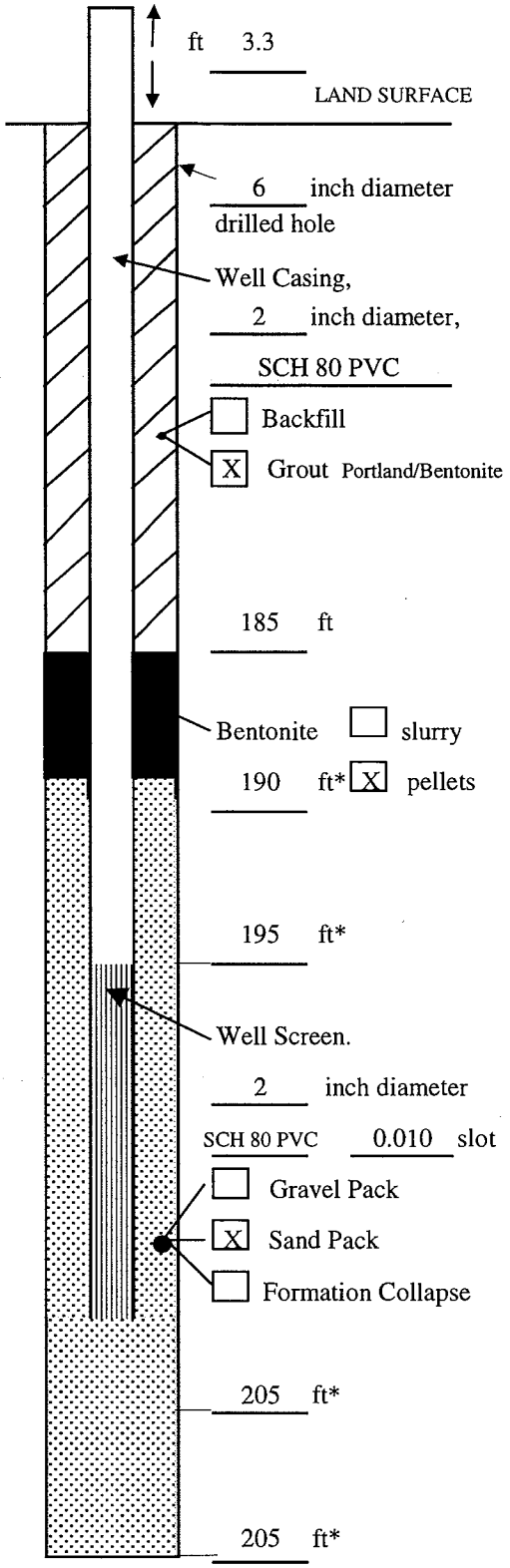
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-62B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1124.74 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/15/99 to 6/22/99

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Pump with Rediflow submersible pump set against well screen.

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

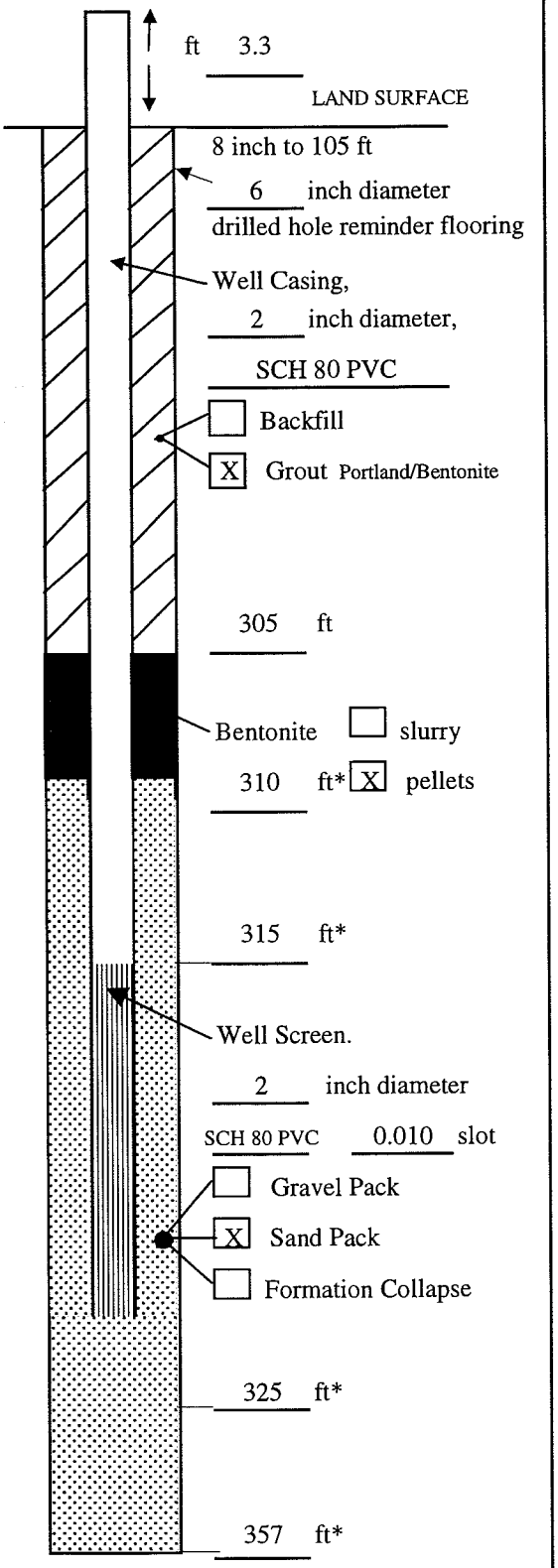
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-62C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1124.77 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99 to 6/15/99

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Bentonite slurry

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

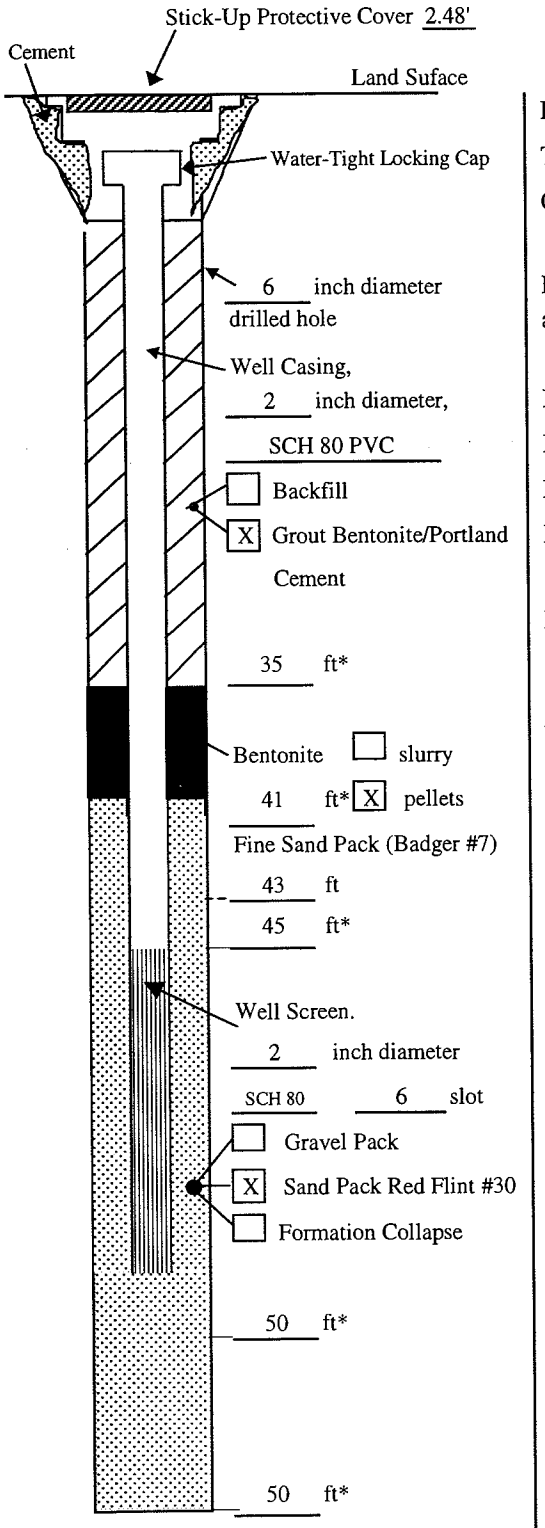
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-63A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1049.72 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 5/23/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 150 gallons

Static Depth to Water 14.58 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 1 hours

Yield _____ gpm Date 5/31/2000

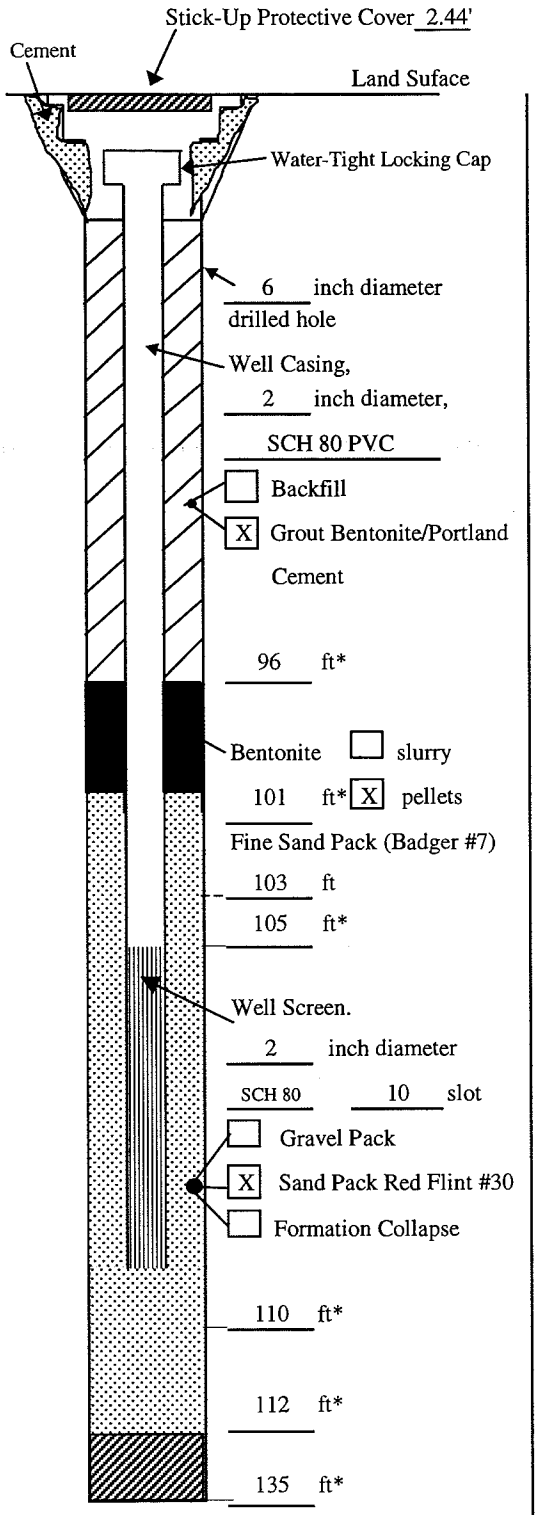
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks Water was slightly gray before development.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-63B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1049.72 feet [X] Surveyed [ ] Estimated

Installation Date(s) 5/17/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 250 gallons

Static Depth to Water 15.65 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 6 hours

Yield _____ gpm Date 5/31/2000

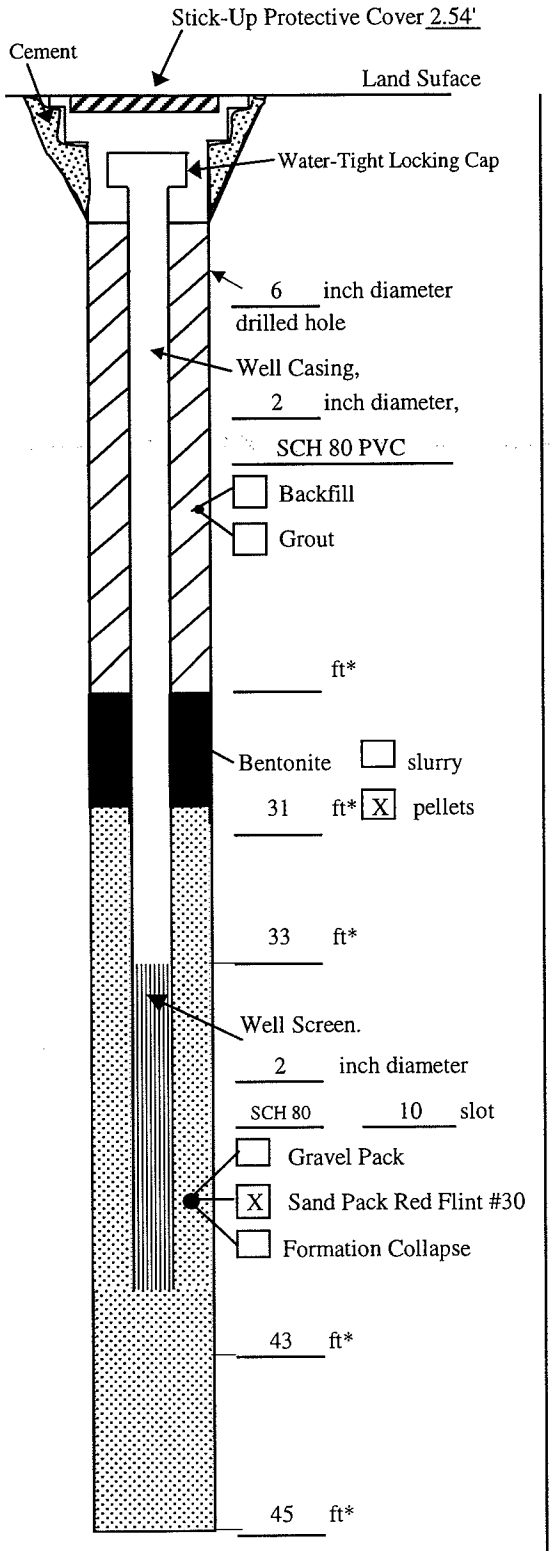
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks Depth to water (after development) 66.0' BTOC.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-64A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1054.73 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 5/30/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 175 gallons

Static Depth to Water 19.11 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 1.25 hours

Yield _____ gpm Date 6/1/2000

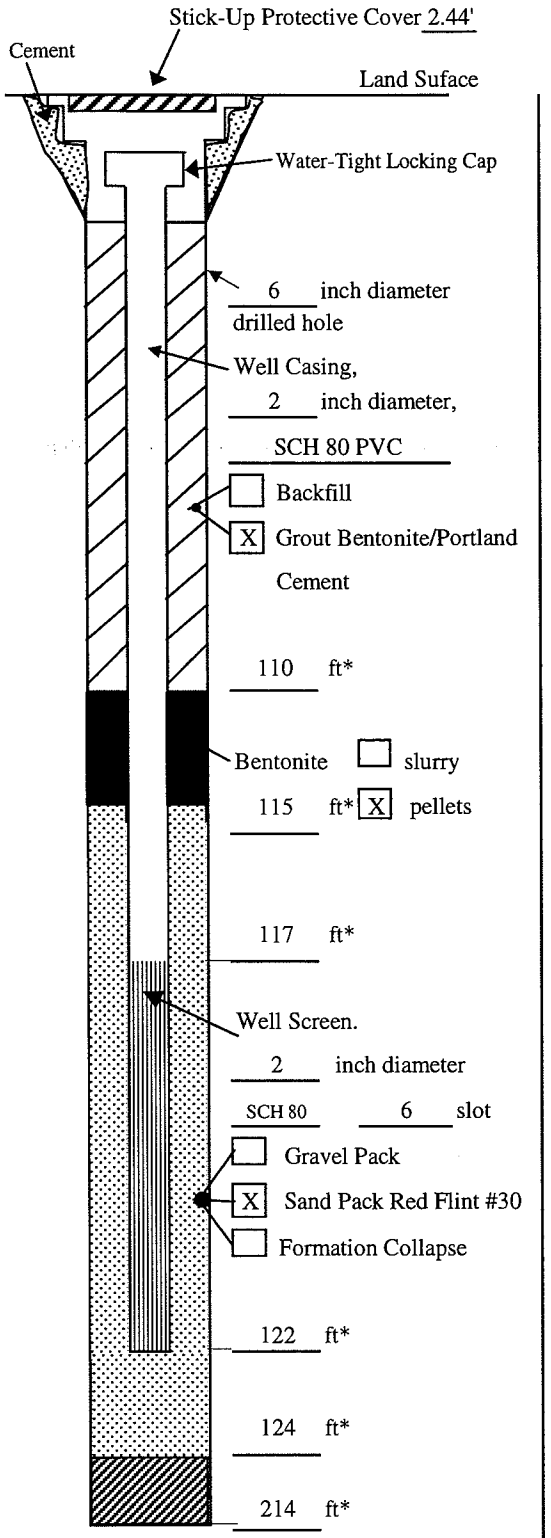
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-64B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1055.13 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 5/22/00 - 5/23/00

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 425 gallons

Static Depth to Water 19.57 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 5 hours

Yield _____ gpm Date 6/1/2000

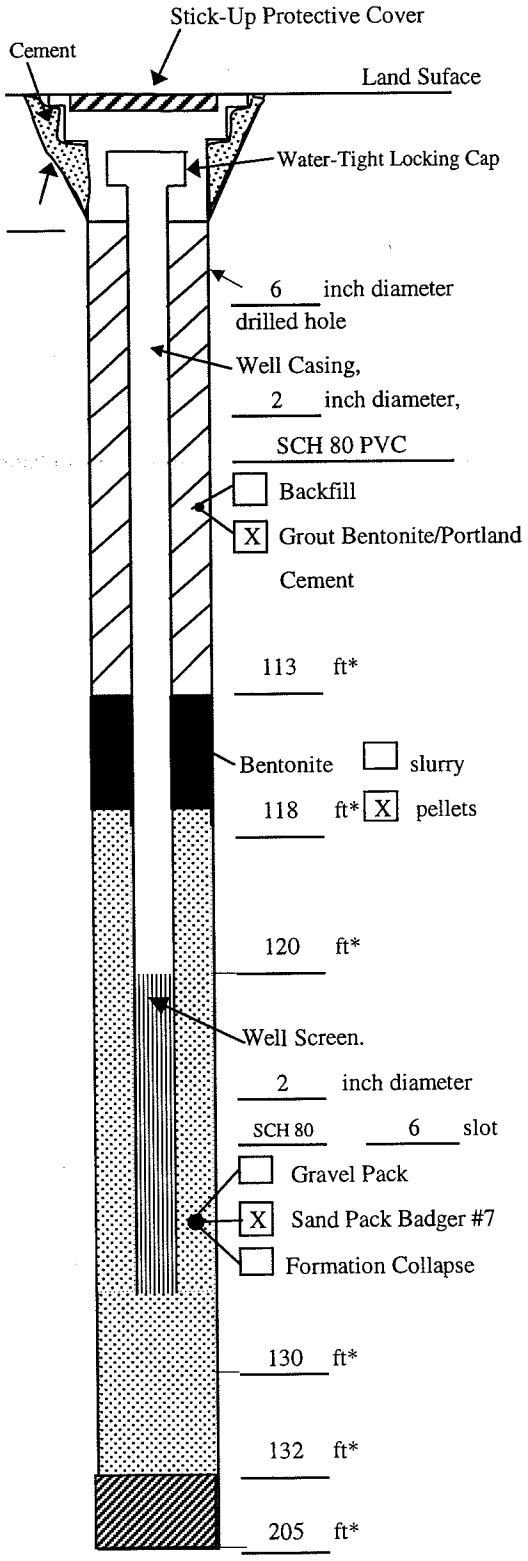
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks Depth to water (after development) = 44.38' BTOC.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-65

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1065.21 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/3/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

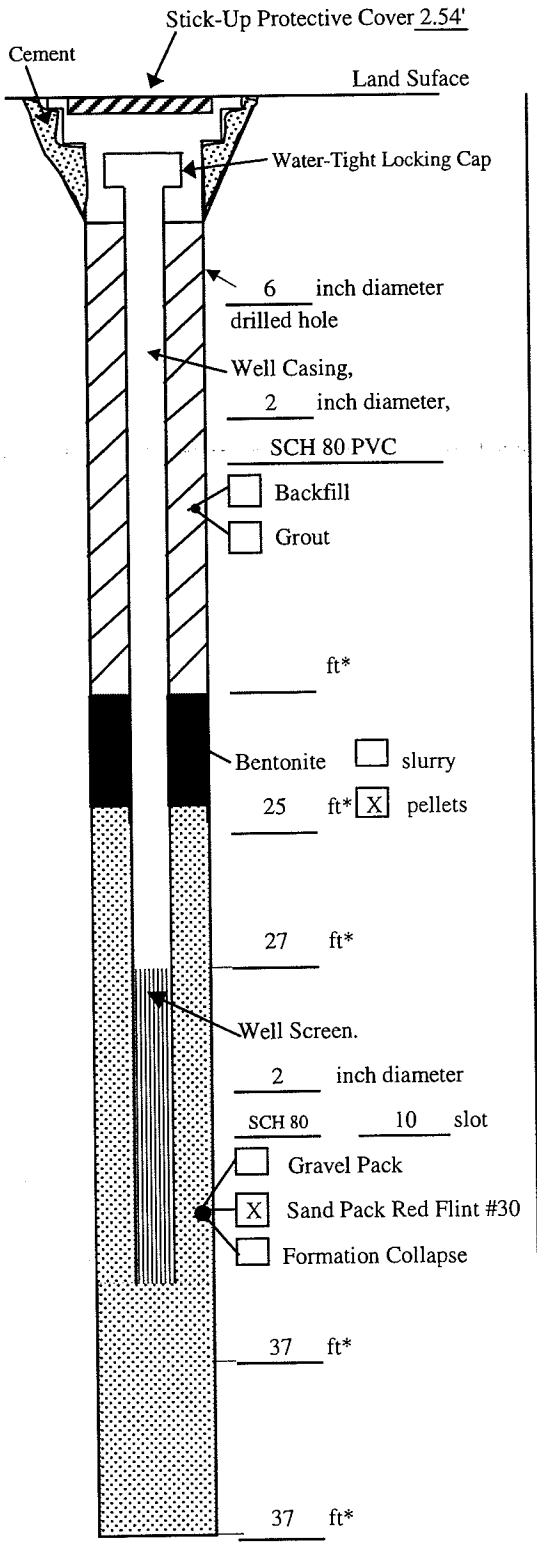
Specific Capacity _____ gpm/ft

Well Purpose _____

Remarks _____

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-66A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1045.70 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/6/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 400 gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 2 hours

Yield approximately 4 gpm Date 6/30/2000

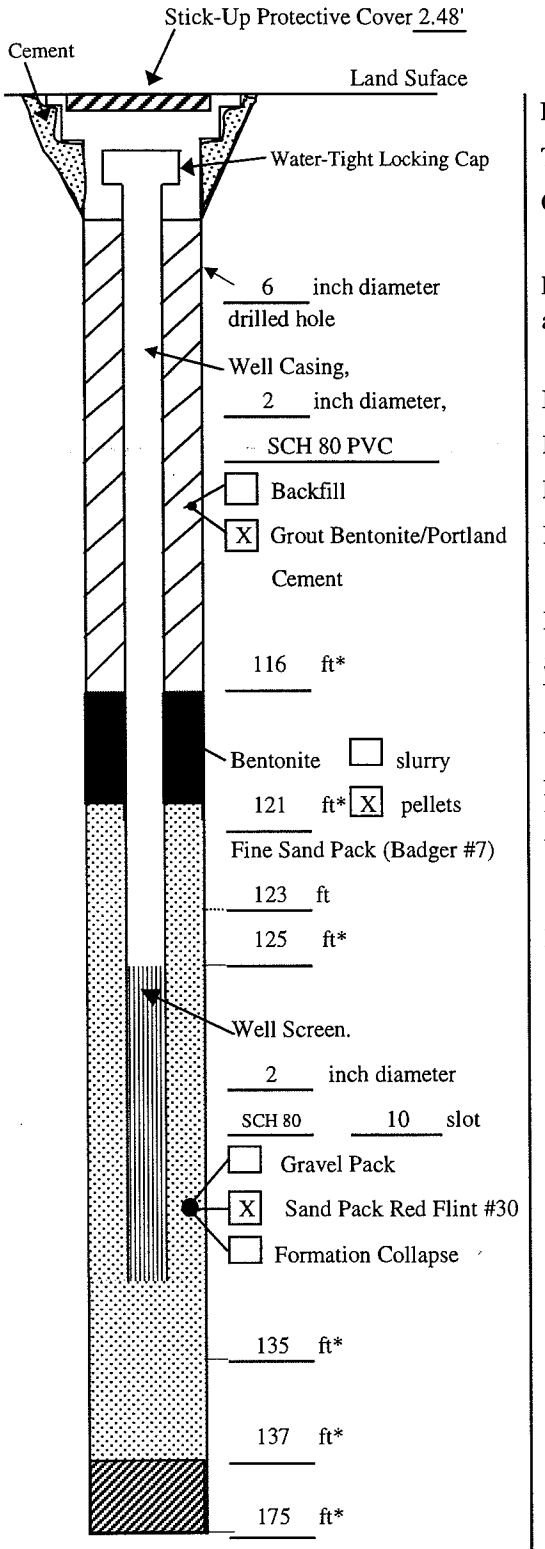
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-66B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1045.72 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/5/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 425 gallons

Static Depth to Water 7.61 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 2.5 hours

Yield approximately 3 gpm Date 6/30/2000

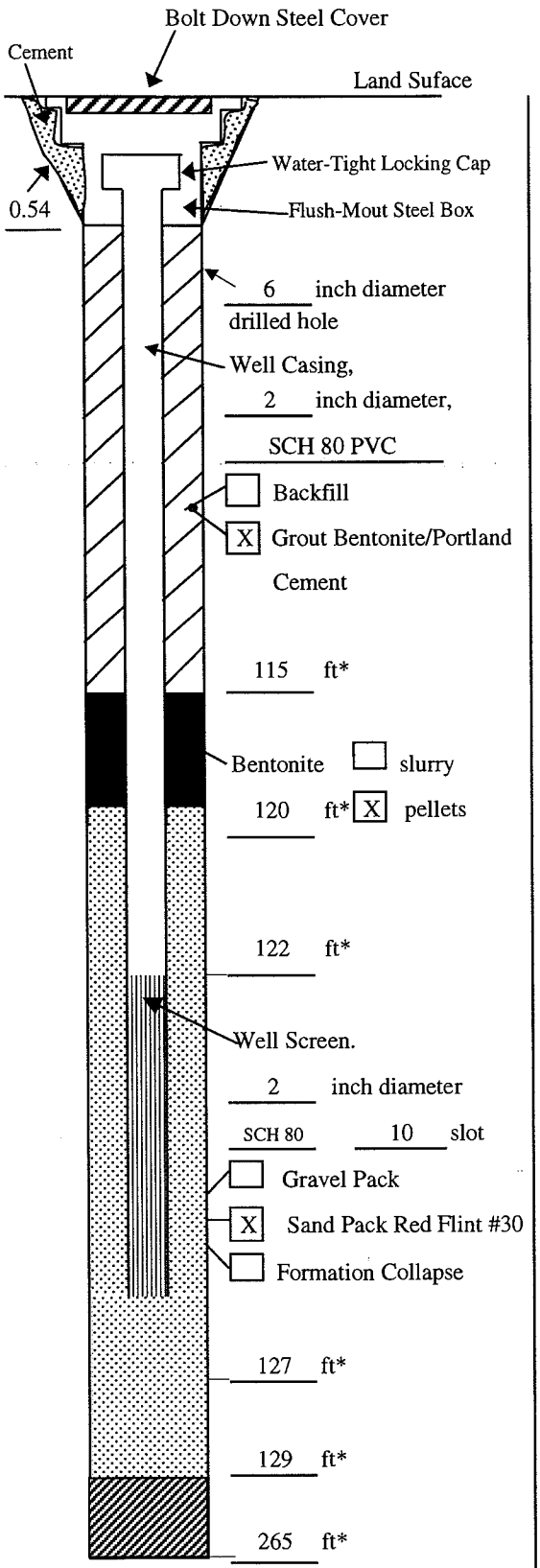
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-67

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1115.9 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/15/00 - 6/16/00

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 200 gallons

Static Depth to Water 63.0 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 4.5 hours

Yield _____ gpm Date 6/30/2000

Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

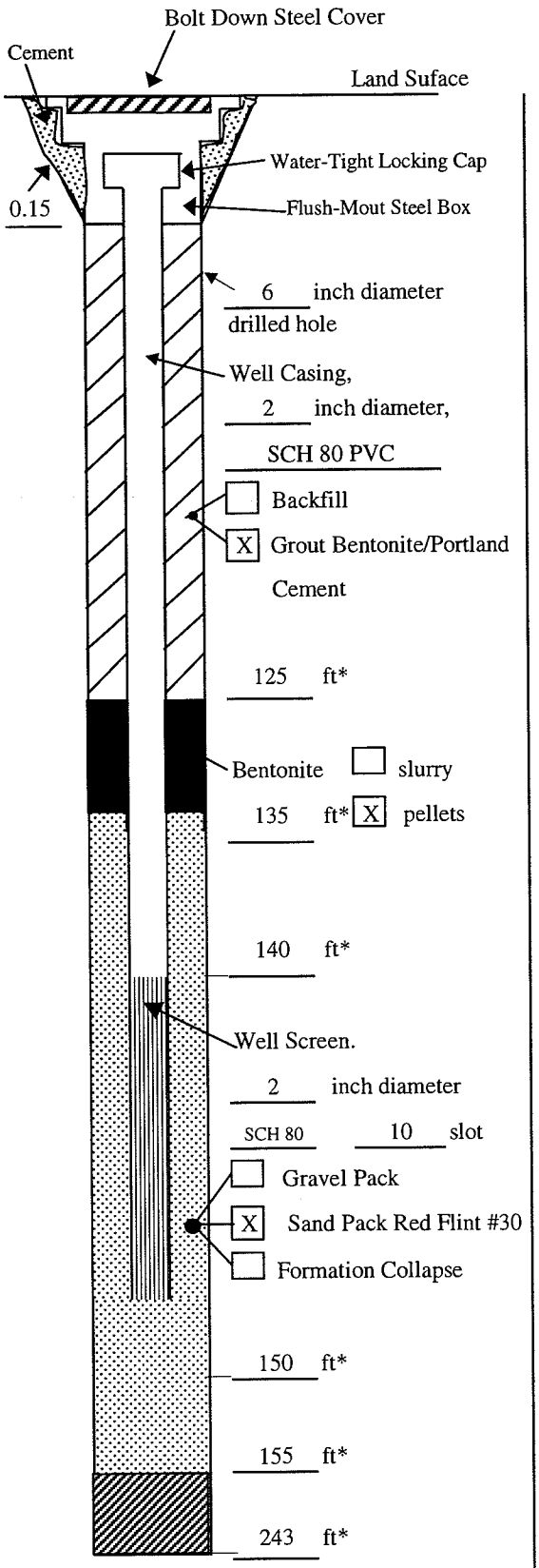
Remarks Depth to water (after development) = 70.0' BTOC.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG

(Flush Mounted Well)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-68

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1105.72 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/29/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
Surged well with 2" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 350 gallons

Static Depth to Water 37.35 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 2.5 hours

Yield _____ gpm Date 8/7/2000

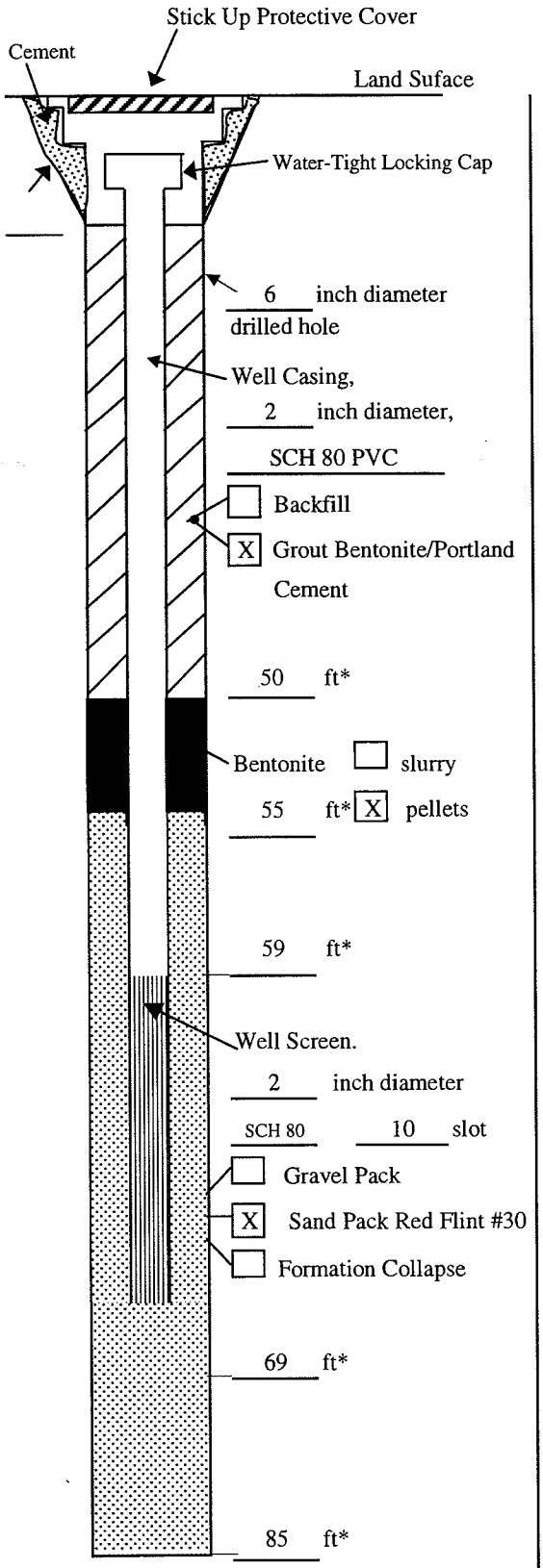
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-69

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1086.47 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/6/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surged well with 2" submersible pump initially finished developing well using a bailer.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 125 gallons

Static Depth to Water 48.38 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date 8/8/00 and 8/14/00

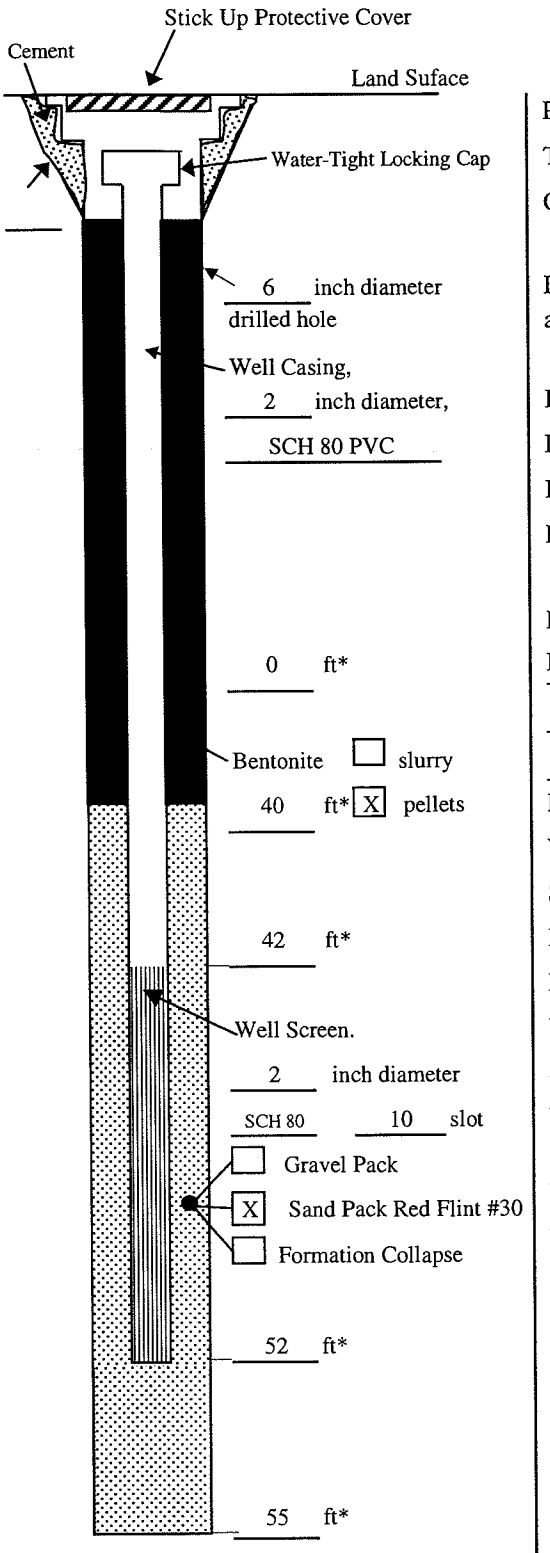
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-70

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.95 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 7/8/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Disposable PE bailer

Fluid Loss During Drilling gallons

Water Removed During Development approximately 16 gallons

Static Depth to Water 48.82 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 7/25/2000

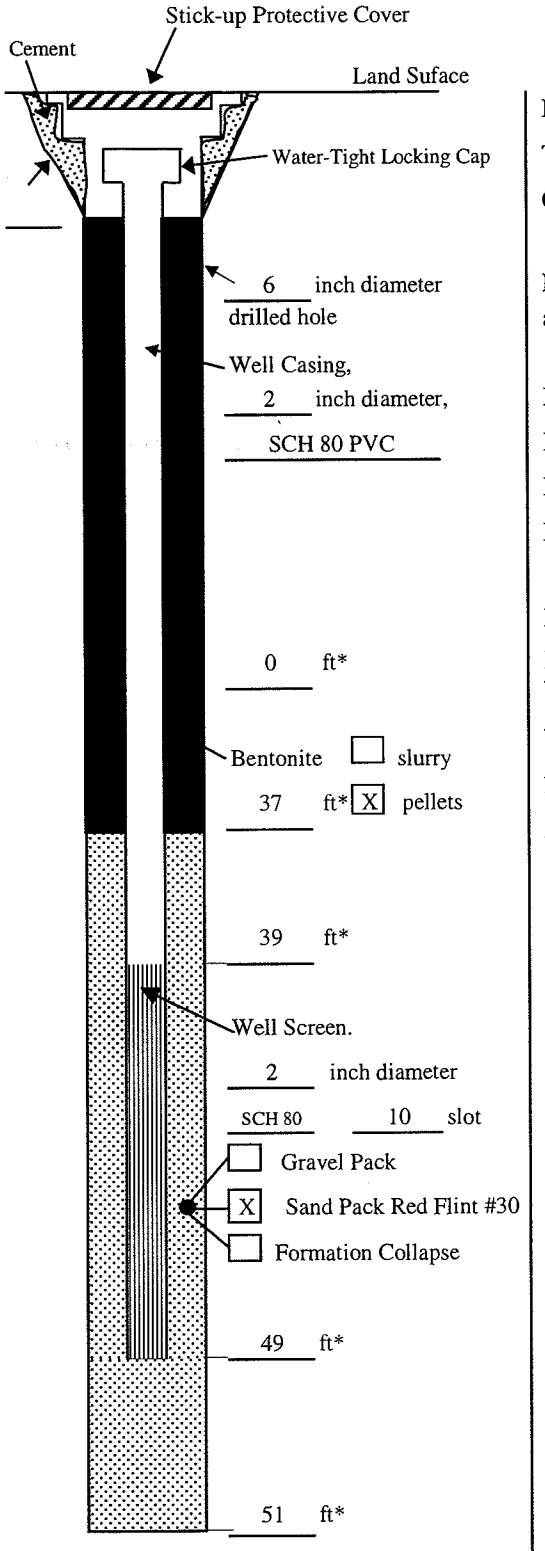
Specific Capacity gpm/ft

Well Purpose Monitoring groundwater levels and water quality

Remarks Water color initially a dark silty brown, as developed, water changed to a light grey with no odor.

Prepared by John Keller/Lauren Barker

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-71

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1118.00 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 7/9/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)
Disposable PE bailer

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 20 gallons

Static Depth to Water 1.07 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date 7/25/00

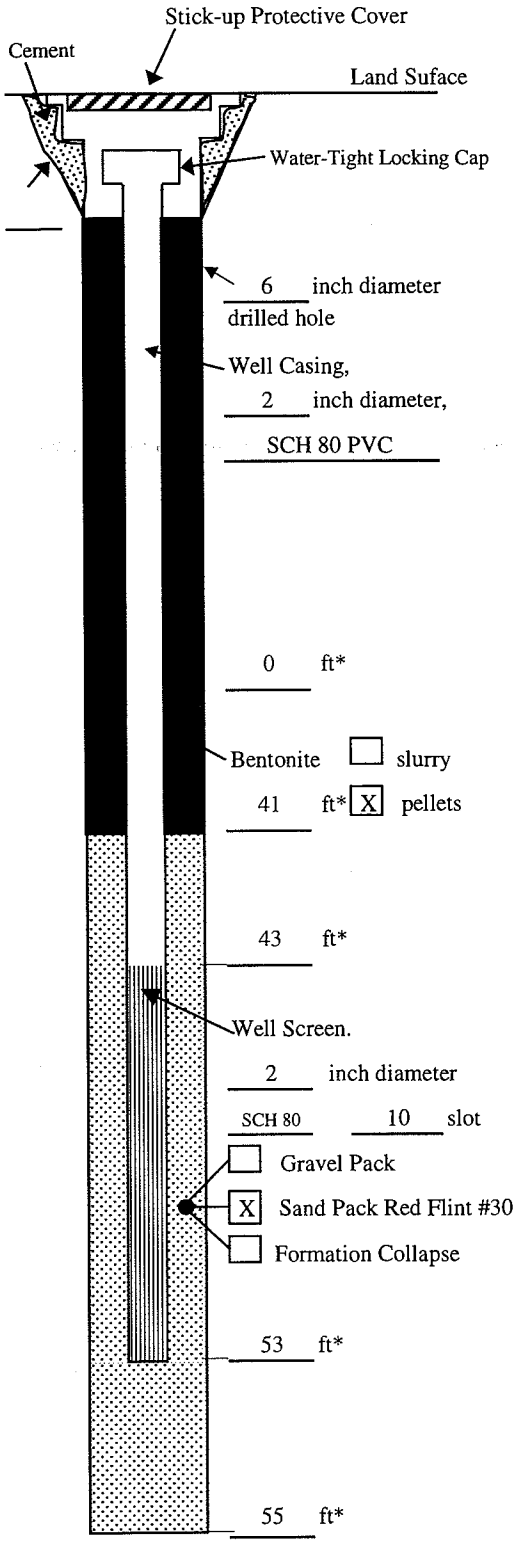
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality

Remarks Water color is a medium brown and silty, changed to a medium gray with silty particles and a mild odor.

Prepared by John Keller/Lauren Barker

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-72

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1118.83 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 7/9/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)
Disposable PE bailer

Fluid Loss During Drilling gallons

Water Removed During Development approximately 19 gallons

Static Depth to Water 43.81 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 7/25/00

Specific Capacity gpm/ft

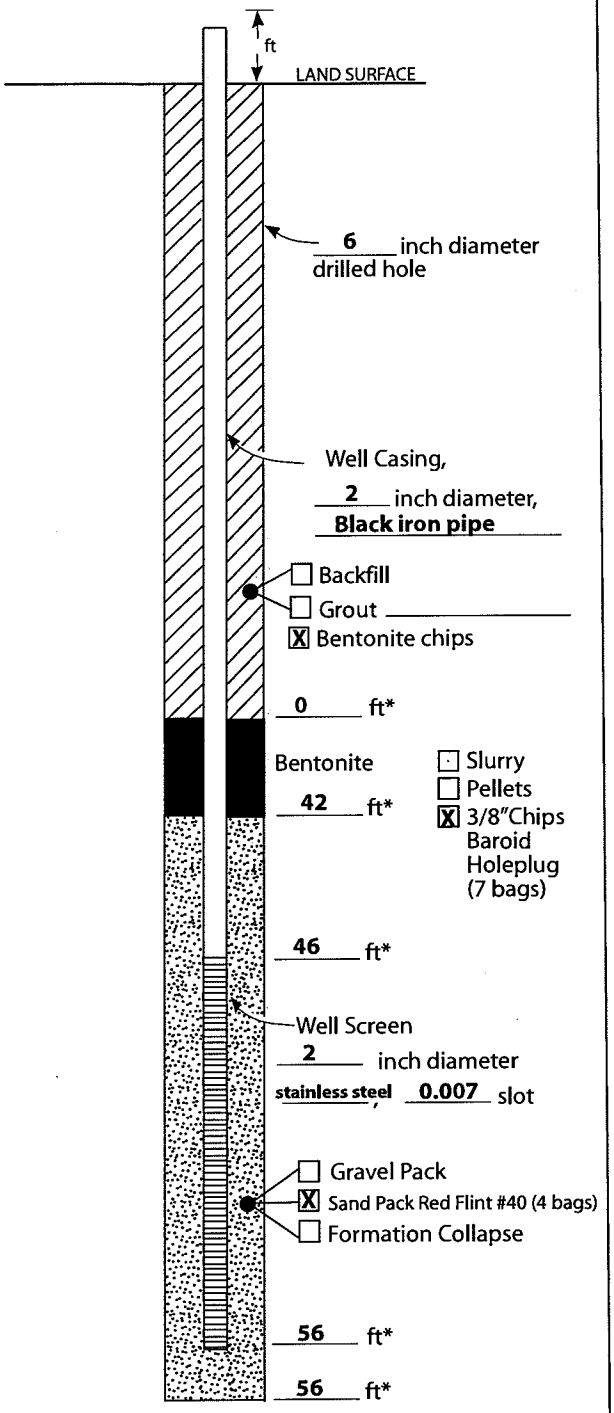
Well Purpose Monitoring groundwater levels and water quality.

Remarks Water color is brown and then turned dark grey to black with silt particles, foam, and odorous.

Prepared by John Keller/Lauren Barker

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-72A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1118.83** feet

and Datum **Mean** **Sea Level**

☒ surveyed
☐ estimated

Installation Date(s) **8/04/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

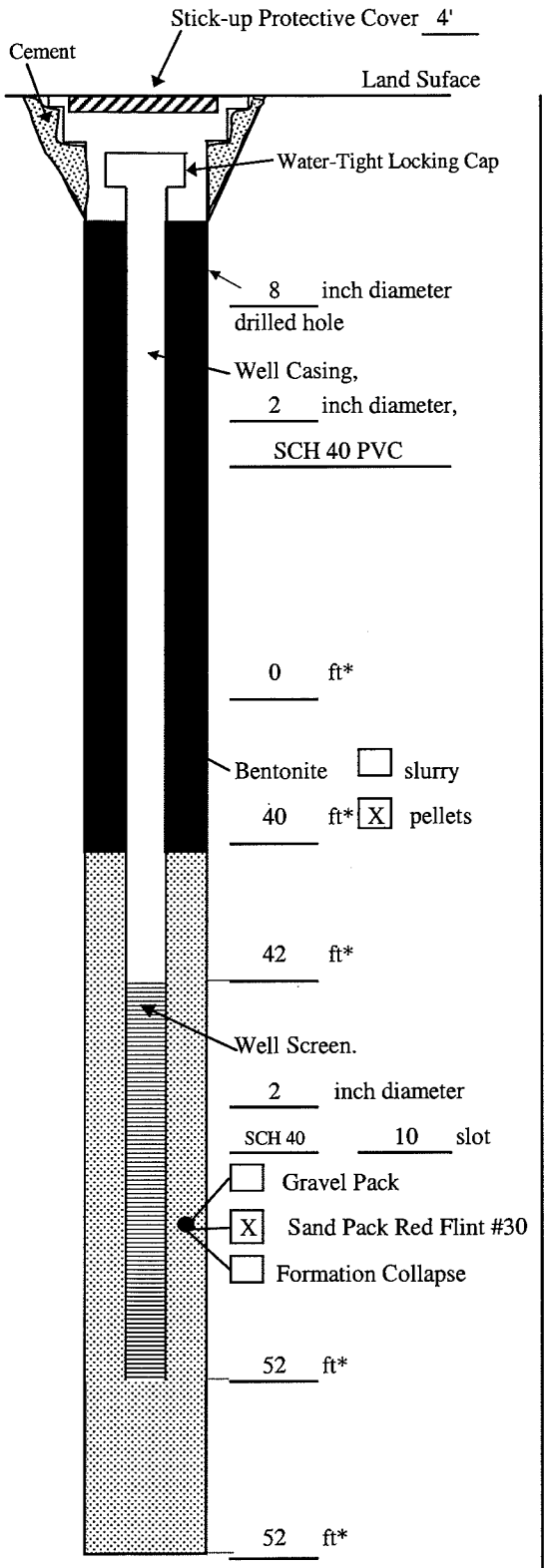
Specific Capacity _____ gpm/ft

Well Purpose **Replacement for GM-72 monitoring well.**

Remarks **Blind drill.**

Prepared by **Andy Mumpy**

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-73

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1111.42 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 8/15/2000

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Disposable PE bailer

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 20 gallons

Static Depth to Water 47.56 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date 8/17/00

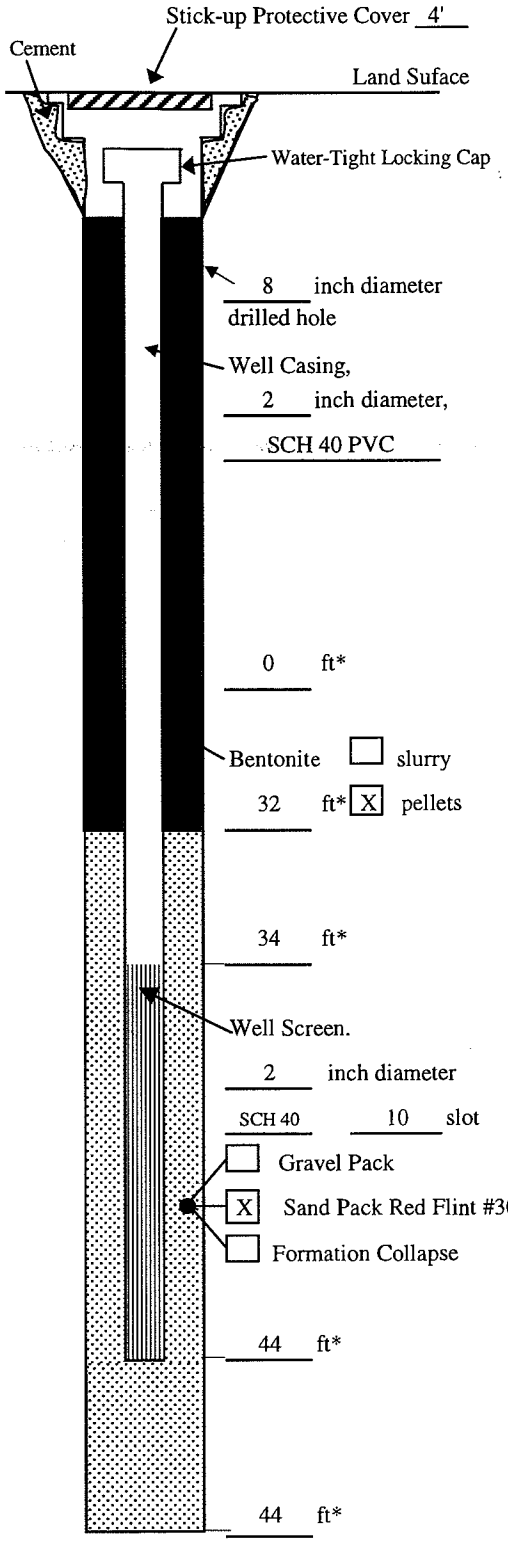
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Andrew Fiskness/John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-74

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1100.95 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 8/16/2000

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Disposable PE bailer

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 20 gallons

Static Depth to Water 37.60 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date 8/17/2000

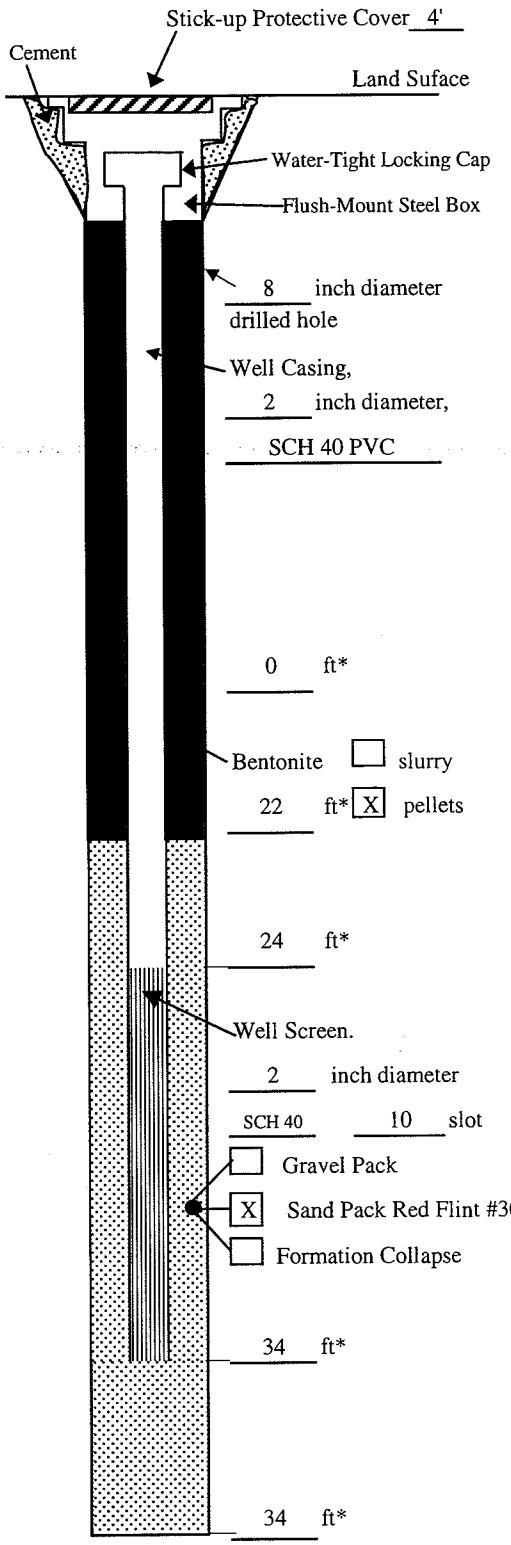
Specific Capacity _____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Andrew Fiskness/John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GM-75

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1089.05 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 8/17/2000

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Disposable PE bailer

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 20 gallons

Static Depth to Water 25.27 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date 8/17/2000

Specific Capacity _____ gpm/ft

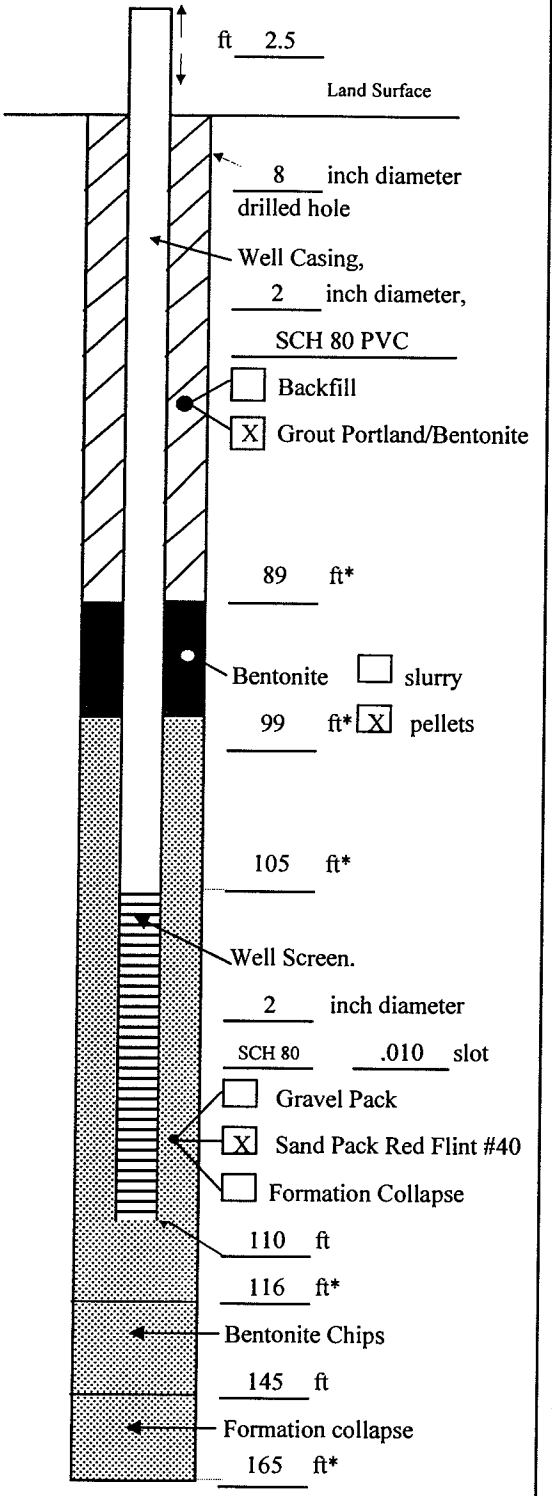
Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Andrew Fiskness/John Keller

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000975.0002 Probe GM-77

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1043.06 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 09/06/2003 - 09/07/2003

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
09/17/2003 - 09/19/2003
Bennett pump - whale pump - bailer

Fluid Loss During Drilling ____ gallons

Water Removed During Development approximately 180 gallons

Static Depth to Water 5.7 feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

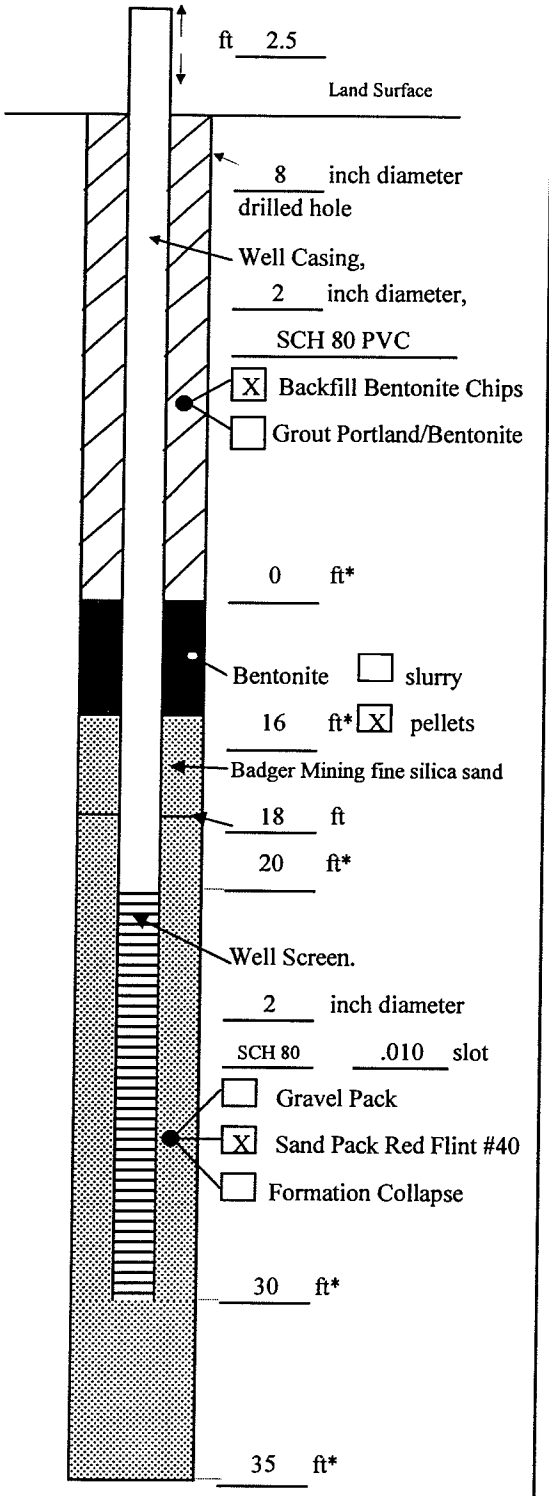
Well Purpose Monitoirng well

Remarks

Prepared by Bruce Evans

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000975.0002 Probe GM-78

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1049.24 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/09/03 - 9/10/03

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
09/11/2003 whale pump

Fluid Loss During Drilling ____ gallons

Water Removed During Development 80 gallons

Static Depth to Water 14.32 feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

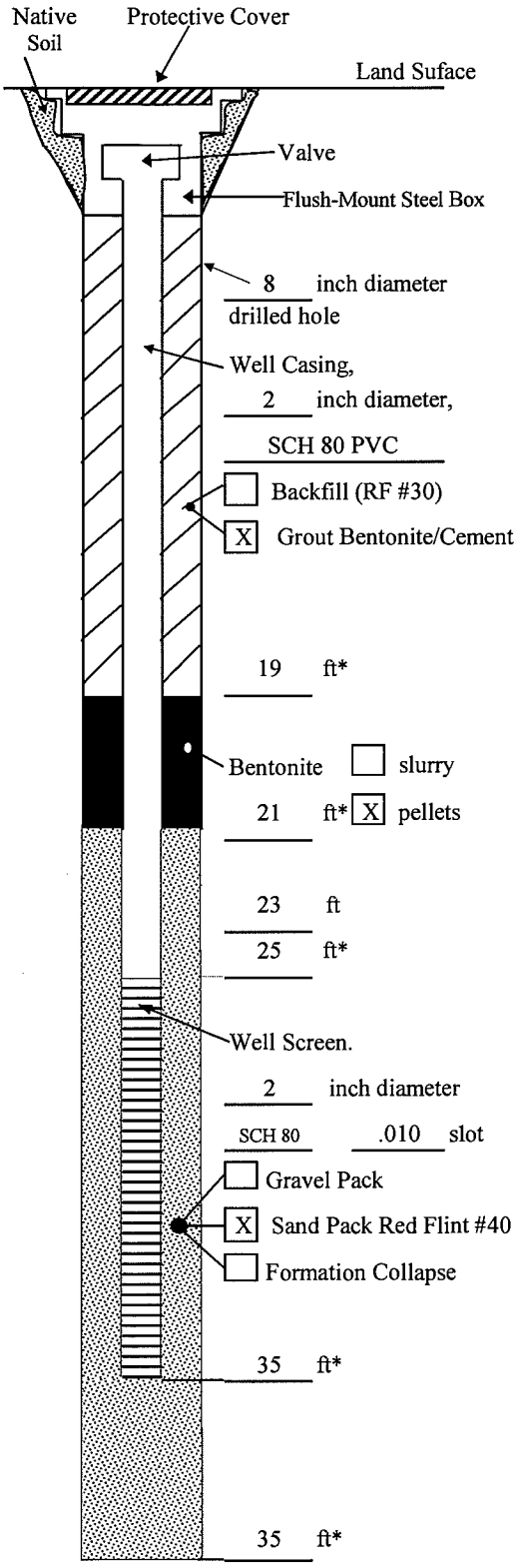
Specific Capacity ____ gpm/ft

Well Purpose Monitoring groundwater levels and water quality.

Remarks

Prepared by Bruce Evans

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI000975.0002 Probe GM-79

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1052.81 feet [X] Surveyed [ ] Estimated

Installation Date(s) 9/10/2003

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
09/12/03 - whale pump

Fluid Loss During Drilling gallons

Water Removed During Development 45 gallons

Static Depth to Water 35.18 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

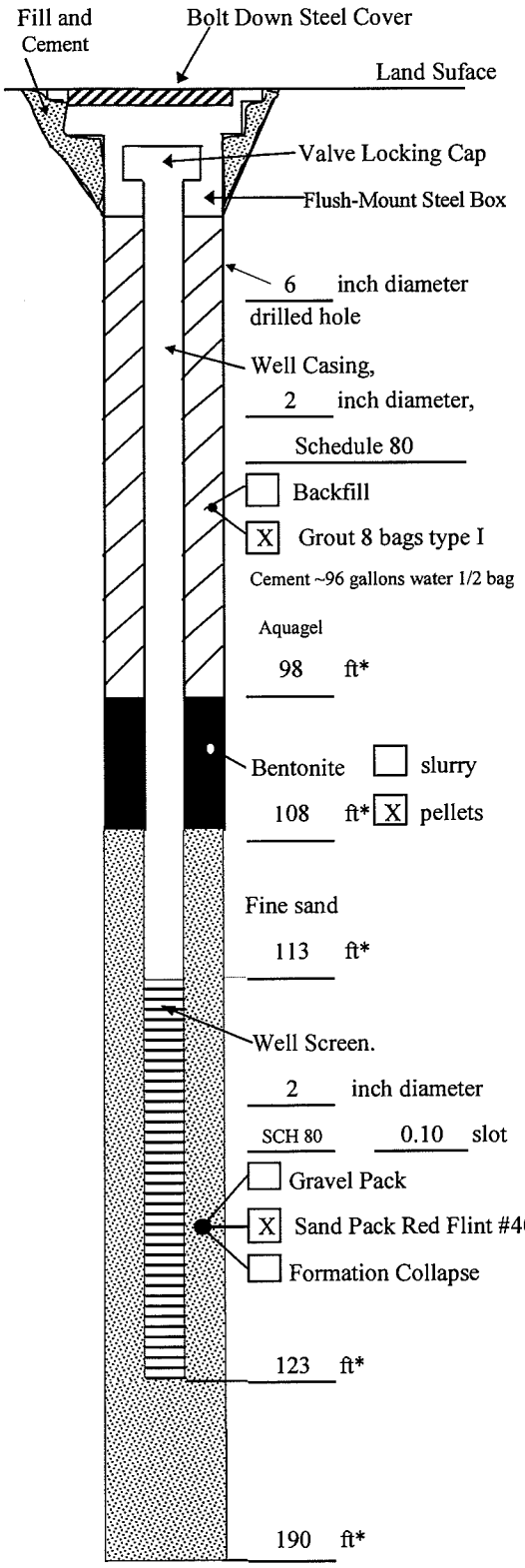
Specific Capacity gpm/ft

Well Purpose Monitoring well - water levels and quality

Remarks

Prepared by Bruce Evans

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GM-80

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.75 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s)

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

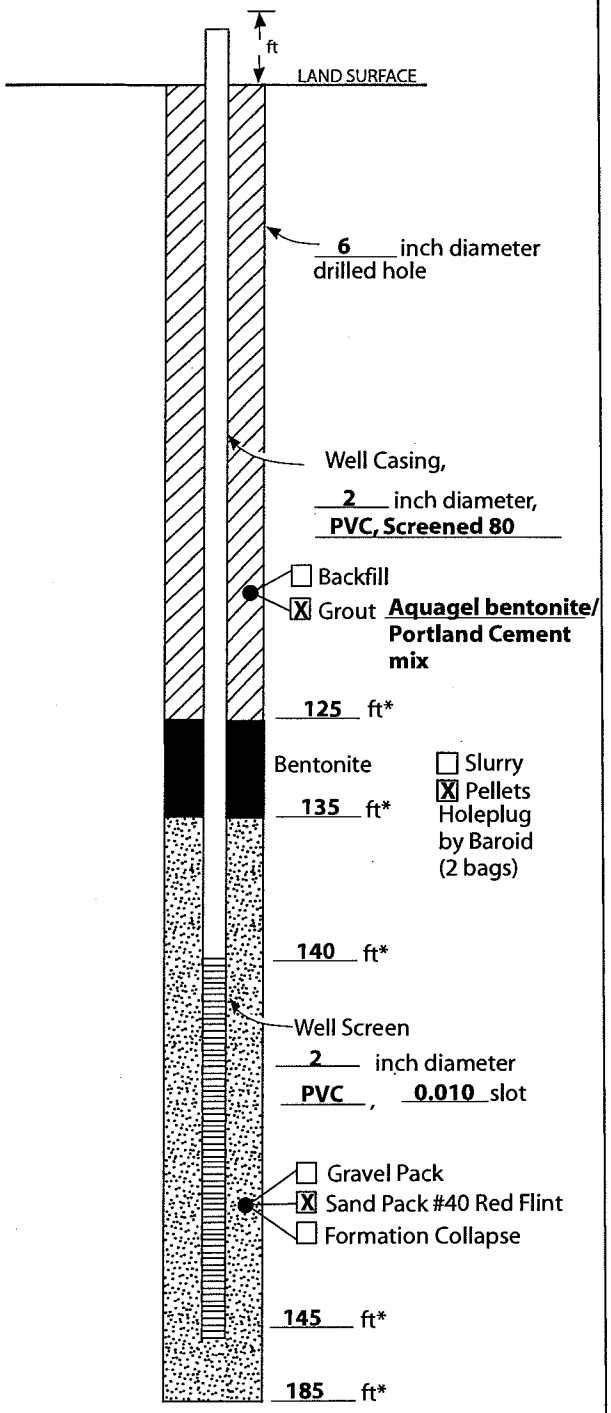
Well Purpose Dissolved methane.

Remarks

Prepared by Paul Lenaker

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-81A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1110.84** feet

and Datum _____ ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **5/25/04 - 5/26/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date **5/26/04**

Specific Capacity _____ gpm/ft

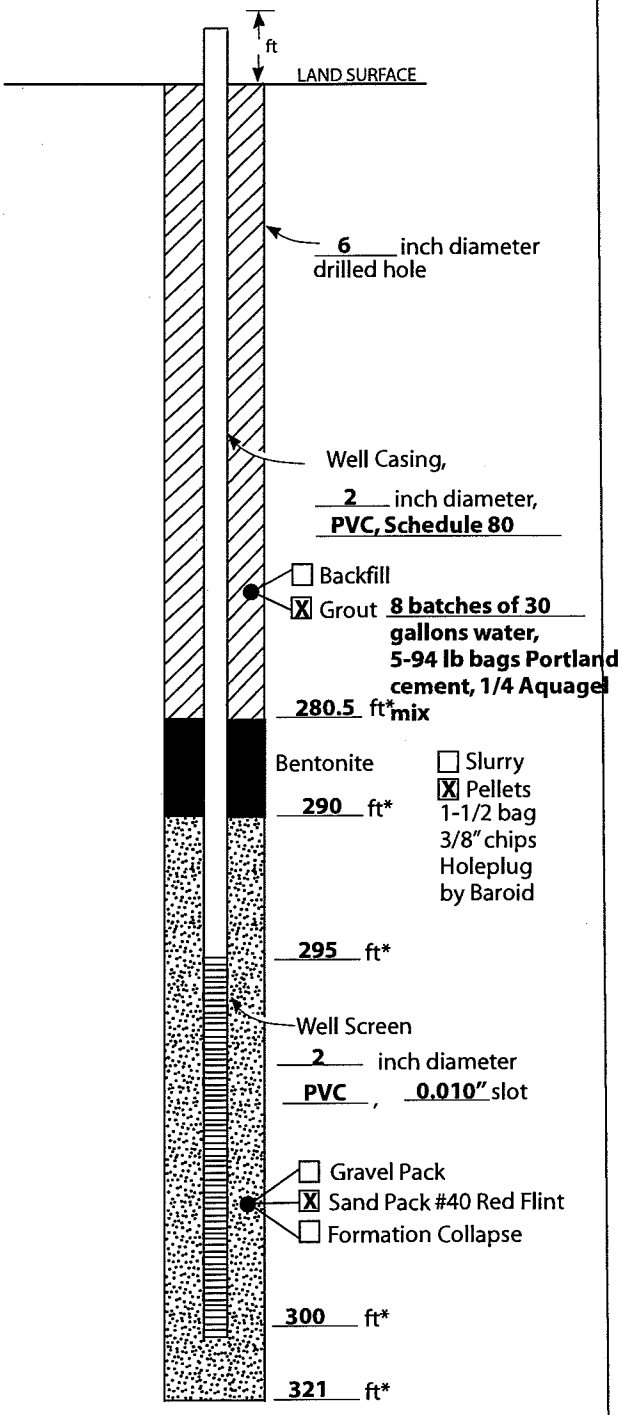
Well Purpose **RI monitoring well**

Remarks _____

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-81B**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **1115.60**

Land-Surface Elevation **1111.32** feet

and Datum _____ [X] surveyed

above mean sea level [ ] estimated

Installation Date(s) **5/20 - 5/25/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water/Bentonite Aquagel gold seal (to approximately 100').**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date **5/25/04**

Specific Capacity _____ gpm/ft

Well Purpose **RI monitoring well**

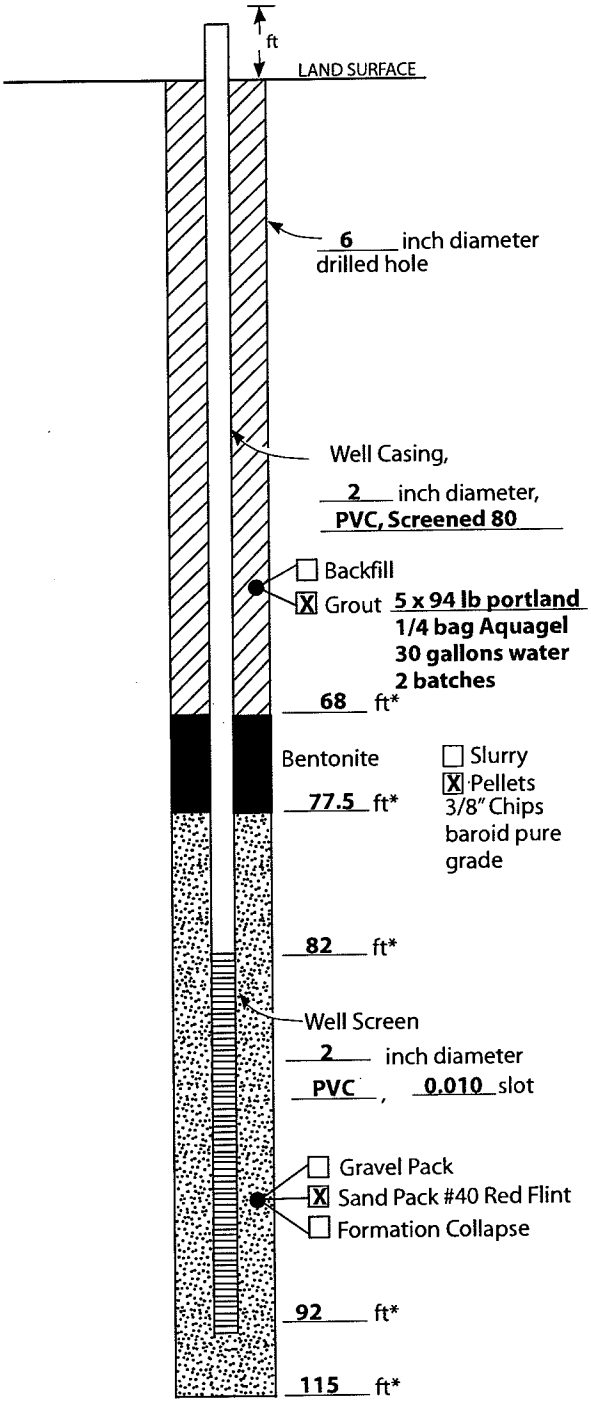
Remarks **Grout: 8 batches**

Prepared by **Paul Lenaker**

ford/wi0637/2004/graphic/logs/gm81b.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-82A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation

and Datum **1121.63** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **6/5-6/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date **6/7/04**

Specific Capacity _____ gpm/ft

Well Purpose **RI monitoring well**

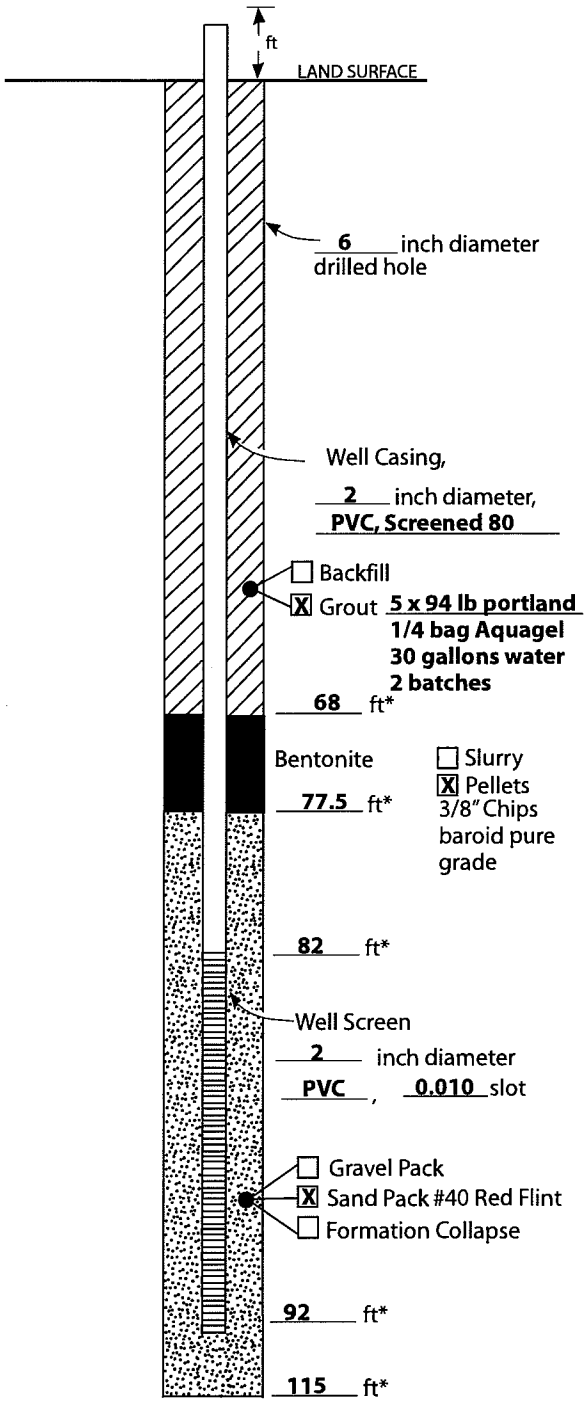
Remarks _____

Prepared by **Paul Lenaker**

ford/wi0637/2004/graphic/logs/gm82a.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-82A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation

and Datum **1122.33** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **6/5-6/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date **6/7/04**

Specific Capacity _____ gpm/ft

Well Purpose **RI monitoring well**

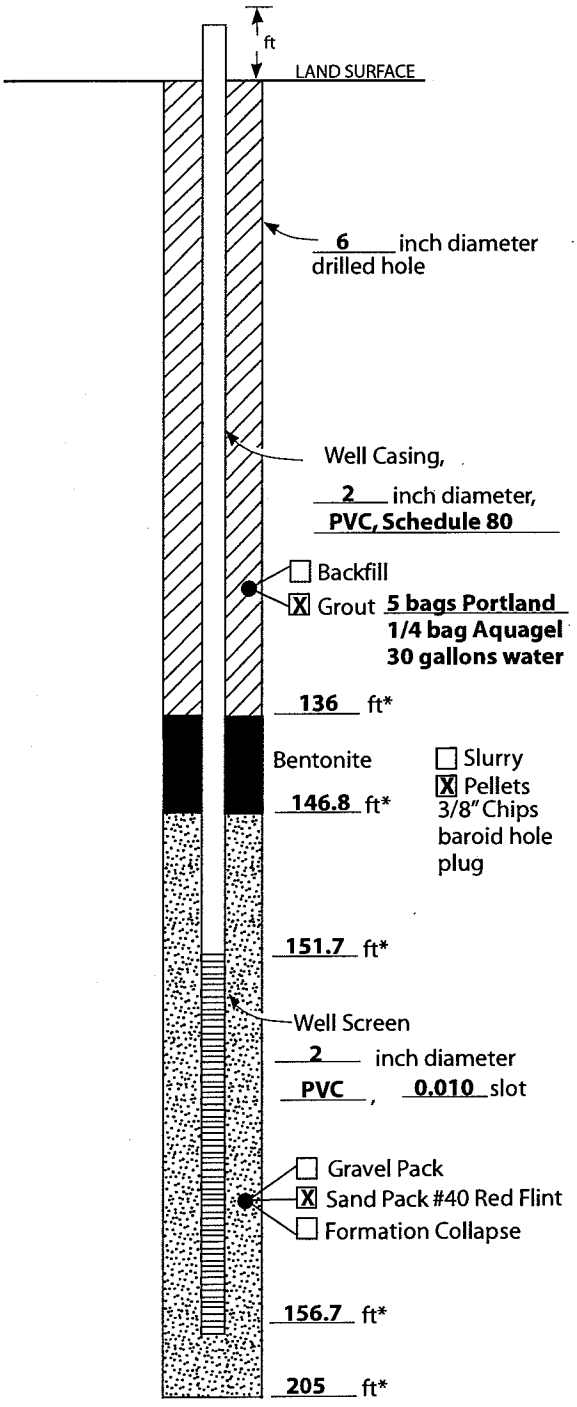
Remarks _____

Prepared by **Paul Lenaker**

ford/wi0637/2004/graphic/logs/gm82a.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-82B**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation

and Datum **1121.86** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **6/2-4/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water / water and Aqua gel**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date **6/9/04**

Specific Capacity _____ gpm/ft

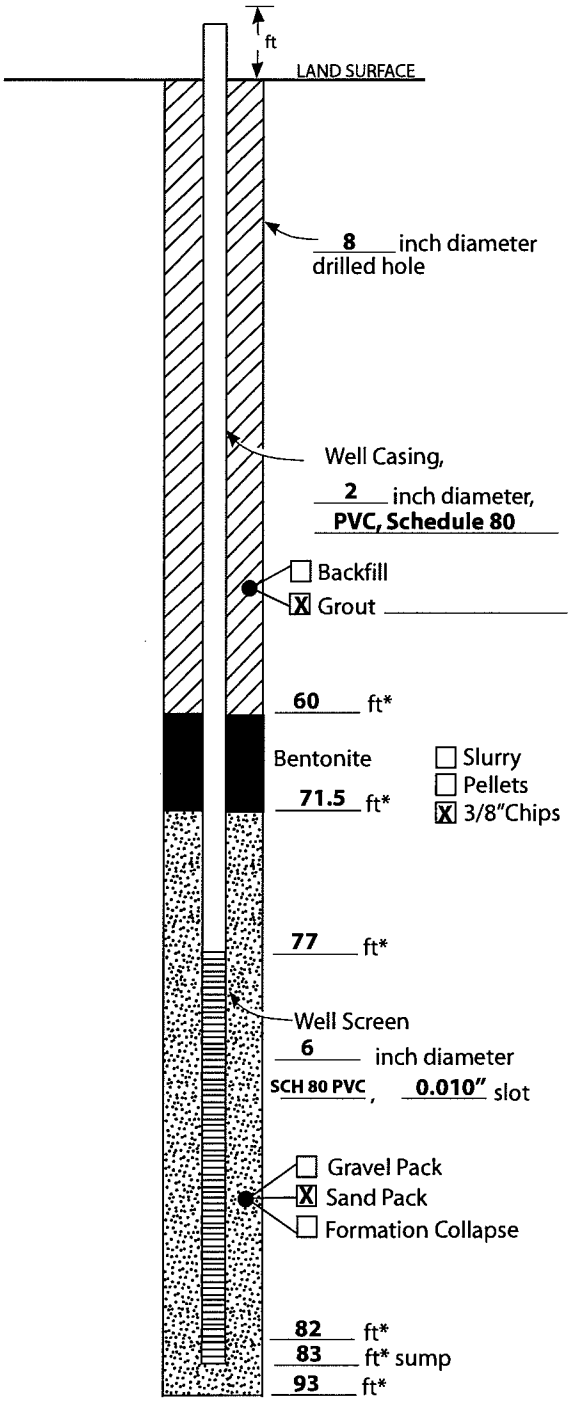
Well Purpose **RI monitoring well**

Remarks _____

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GM-84**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1052.72** feet

and Datum **Mean Sea Level** ☒ surveyed ☐ estimated

Installation Date(s) **6/29/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **500** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

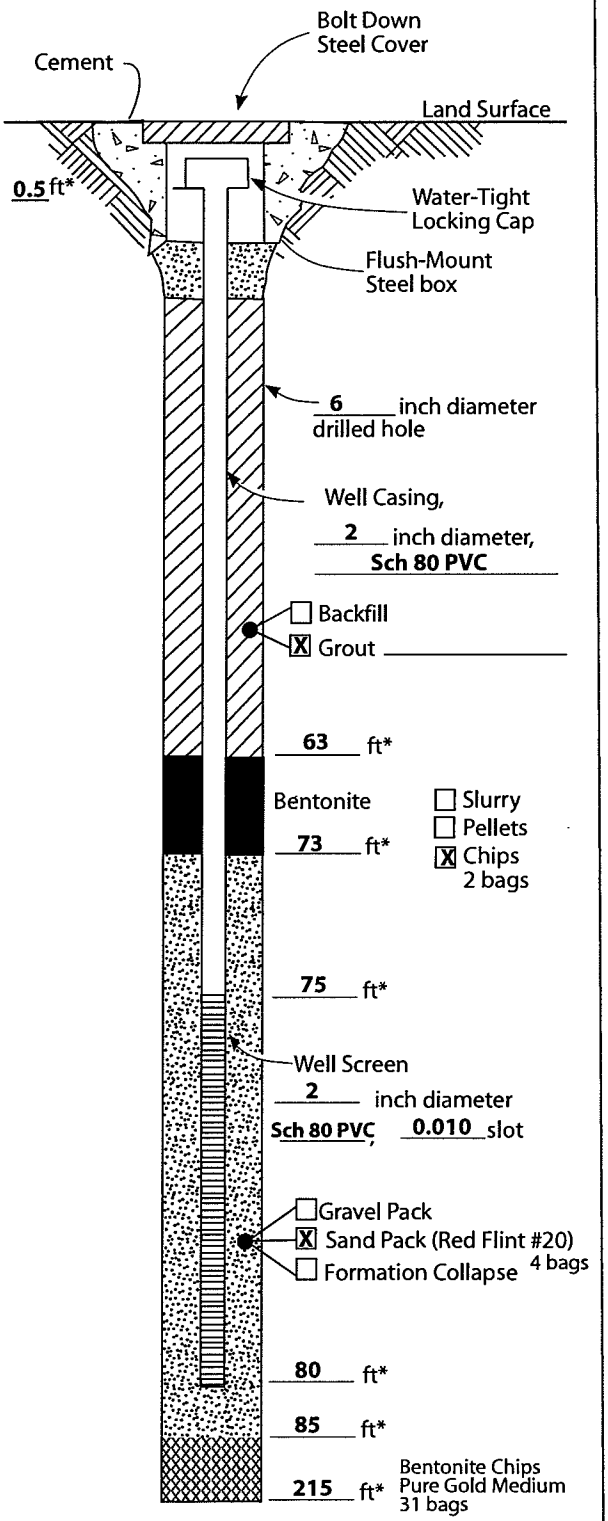
Specific Capacity _____ gpm/ft

Well Purpose **Monitoring well**

Remarks **5-foot schedule 80 PVC screen, continuous wrap, 0.010 inch slot made by Johnson Controls, Schedule 80 PVC riser made by Campbell Monoflex 5-50 pound bags Red Flint #40 filter pack sand, 2-50 pound bags Baroid coarse grade Wyoming bentonite (3/8" chips) seal, grout 1-94 pound bag Portland Cement, 1/3-50 pound bag Aquagel Gold Seal, 25 gallons water.**

Prepared by **Toni Schoen**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford WI000860.0001** Well **GM-85**

Town/City **Kingsford, Michigan**

County **Dickinson**

Permit No. _____

Land-Surface Elevation
and Datum **1070.49** feet ☒ surveyed ☐ estimated

Installation Date(s) **8/7/04**

Drilling Method **Rotasonic**

Drilling Contraactor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Speicif Capacity _____ gpm/ft

Well Purpose **RI monitoring well.**

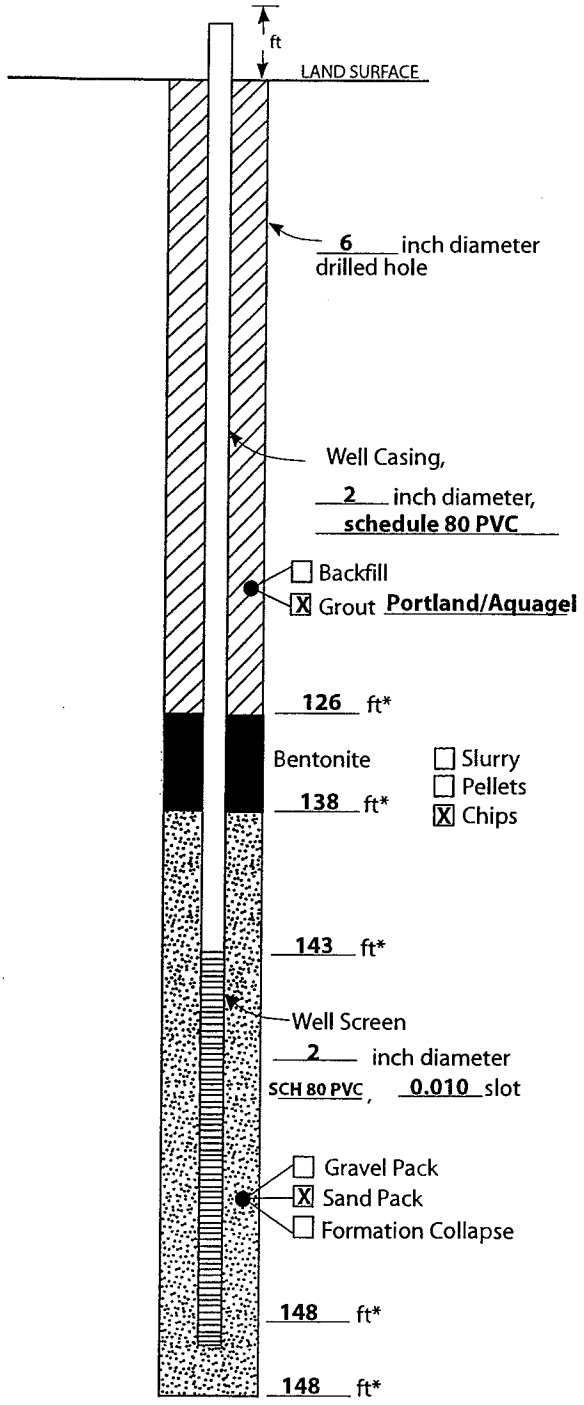
Remarks **Grout mixture is 3 (94 pounds) bags Portland Cement, 1 bag Baroid Aquagel, 35 gallon water used 1.5 batches. Drilled to bedrock at 215 feet, the plugged hole back to 85' with bentonite chips.**

Prepared by **Andy Mumpy**

ford/wi0637/2004/graphics/logs/gm85_flush.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GM-86A

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1115.22 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 1/21/06

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping/surging with 2" Grundfos 1/22/06 and 1/23/06

Fluid Loss During Drilling ~800 gallons

Water Removed During Development 275 gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

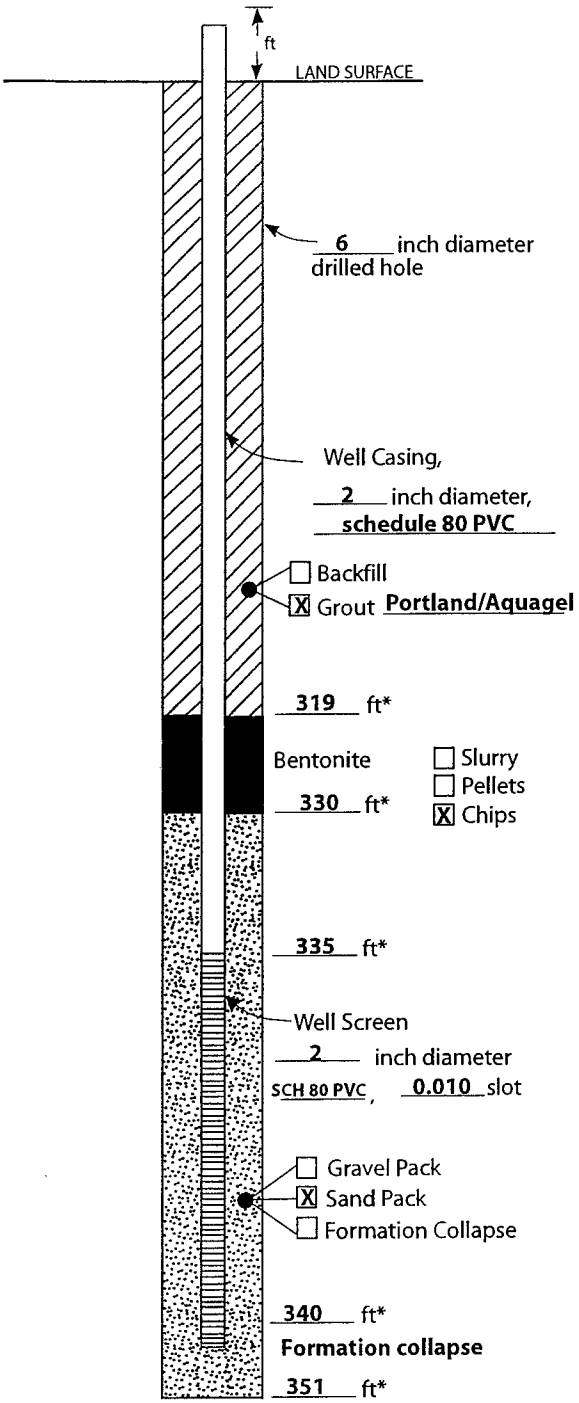
Well Purpose Monitoring Well (replacement for GM-37A).

Remarks Johnson Screen, sch 80, 2" PVC, slot 0.010, pointed end cap; riser sch 80 PVC, 2" filter pack: Red Flint #40 sand (5-50 lb bags); bentonite: Baroid Hole Plug 3/8" chips (3-50 lb bags); grout batch: St. Mary's Portland (4-94 lb bags), Aquagel Gold Seal (3/4-50 lb bag), 30-50 gallons water; four batches used; temporary pro-top; blind drilled according to sampling from GM-86B.

Prepared by Jill Flater

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GM-86B

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1114.97 feet ☒ surveyed

Datum Mean Sea Level ☐ estimated

Installation Date(s) 1/19/06 - 1/20/06

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping/surging with 2" Grundfos

Fluid Loss During Drilling ~3,000 gallons

Water Removed During Development 175 gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

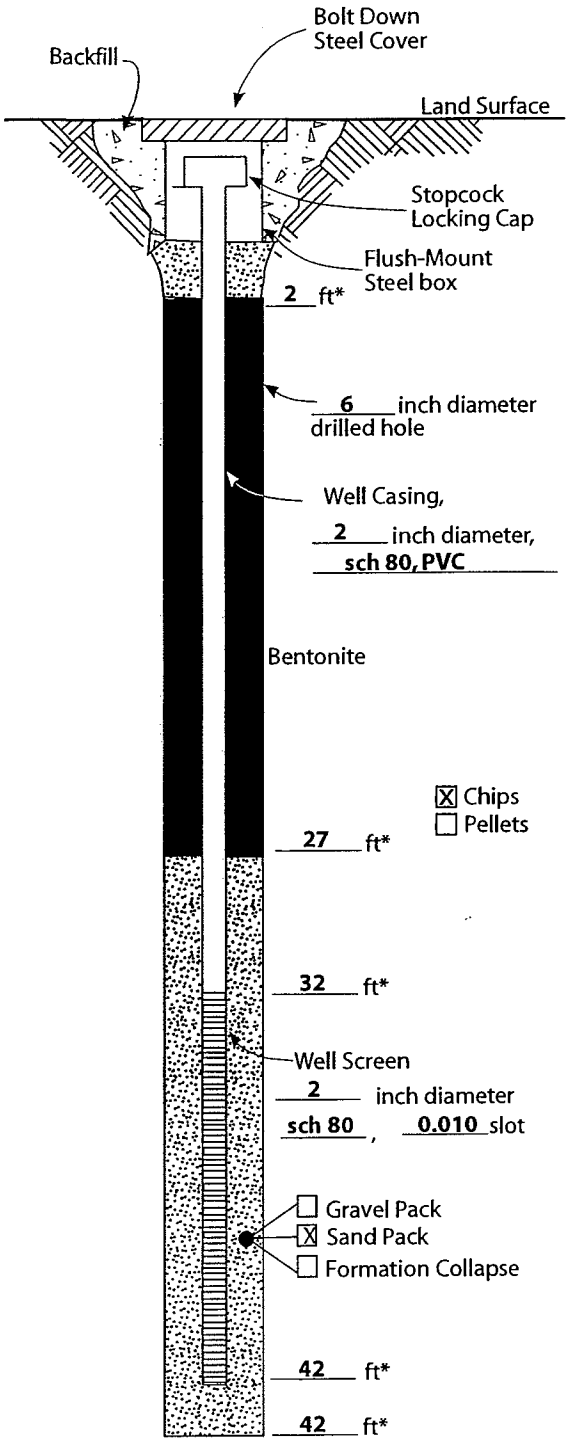
Specific Capacity _____ gpm/ft

Well Purpose Monitoring Well (replacement for GM-37B).

Remarks Johnson Screen, sch 80, 2" PVC, slot 0.010, pointed end cap; riser sch 80 2" PVC, filter pack: Red Flint #40 sand (3-50 lb bags); bentonite: Baroid Hole Plug 3/8" chips (2-50 lb bags); grout batch: St. Mary's Portland (4-94 lb bags), Aquagel Gold Seal (3/4-50 lb bag), 30-50 gallons water; nine batches used; temporary pro-top.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gm87a-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GM-87A**

Town/City **Kingsford, Michigan**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1054.92 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **1/25/06**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear (driller M. Hansen)**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **~200** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

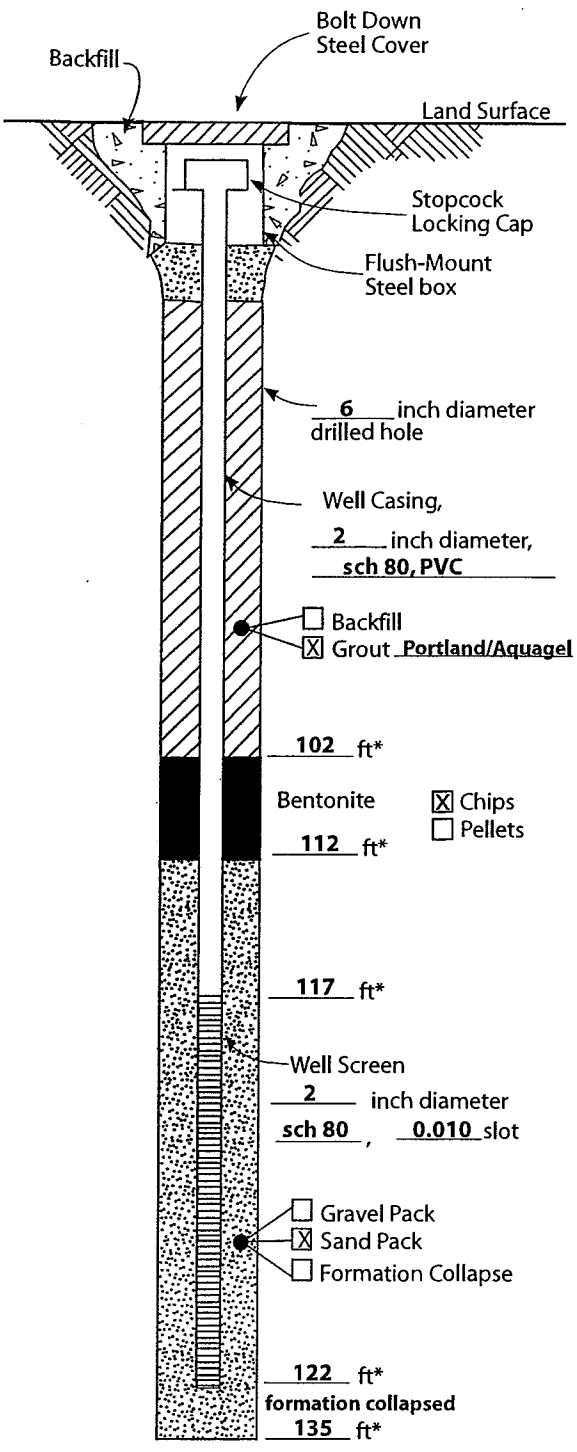
Specific Capacity _____ gpm/ft

Well Purpose **Monitoring Well (replacment for GM-64A)**

Remarks **Johnson screen, sch 80, 2" PVC, slot 0.010; riser: sch 80, 2" PVC; sand point cap; filter pack: Red Flint #40 sand (3-50 lb bags); bentonite: Baroid Hole Plug, 3/8" chips (5-50 lb bags); blind drilled according to sampling from GM-87B.**

Prepared by **Jill Flater**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project Ford/Kingsford WI001095.0002 Well GM-87B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation

1055.01 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 1/24/06

Drilling Method Rotasonic

Drilling Contractor Boart Longyear (driller M. Hansen)

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling ~1,000 gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose Monitoring Well (replacment for GM-64B)

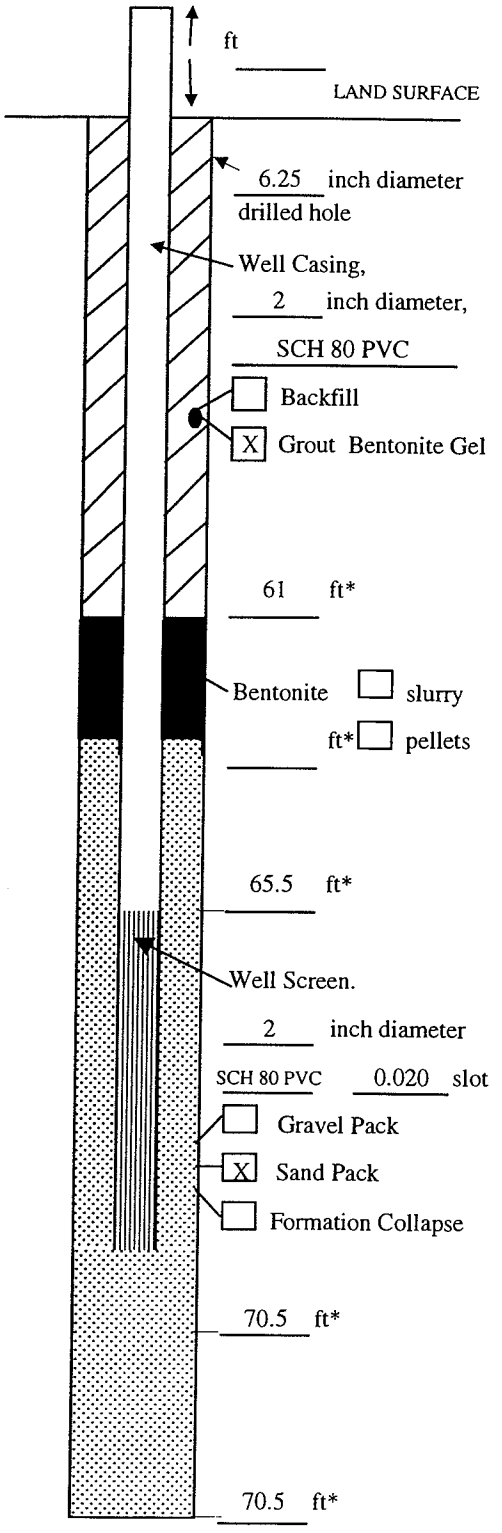
Remarks Johnson screen, sch 80, 2" PVC, slot 0.010; sand point cap; riser: sch 80, 2" PVC; filter pack: Red Flint #40 sand (3-50 lb bags); bentonite: Baroid Hole Plug, 3/8" chips (2-50 lb bags); grout batch: St. Mary's Portland (4-94 lb bags), Aquagel Gold Seal (3/4-50 lb bag), 30-50 gallons water; 2 batches used.

Prepared by Jill Flater

ford/wi0637/2006/graphics/logs/gm87b-wcl.ai

ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-100

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1103.69 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/23/99

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose _____

Remarks _____

Prepared by Bill Jones

ford/wi0637/datamngt/tables/wcl_gm100.xls
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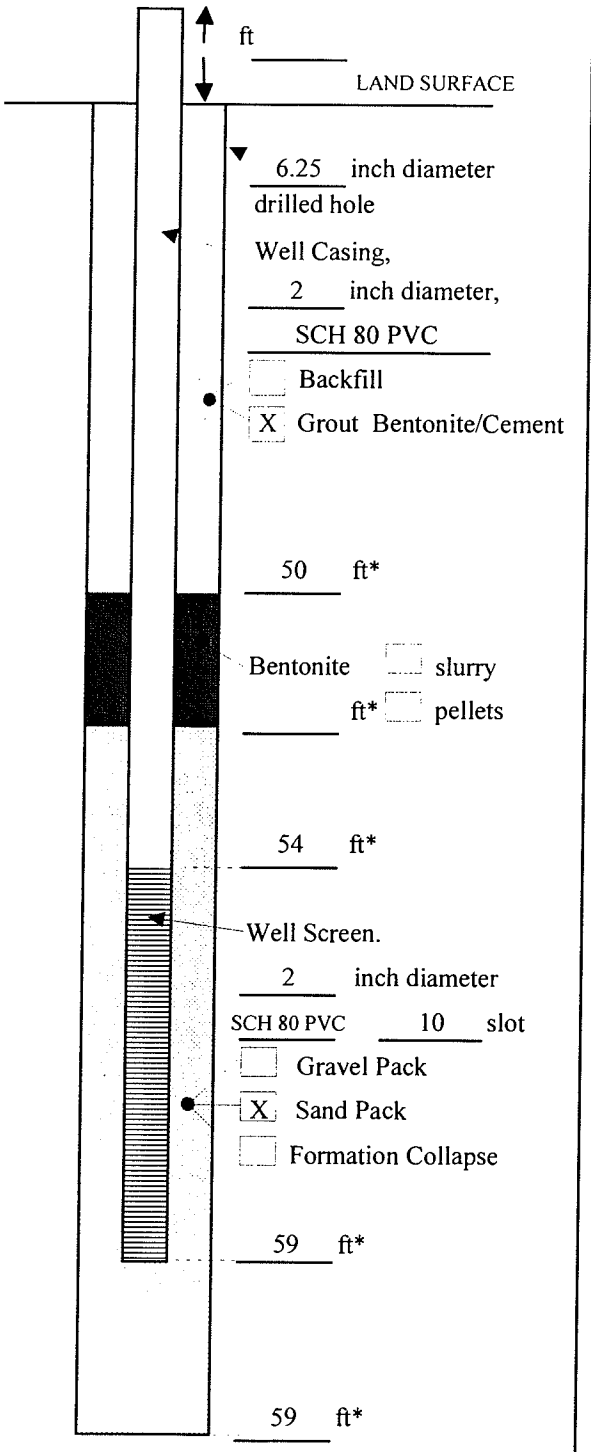
ARCADIS GERAGHTY & MILLER

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GM-118D

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1116.64 feet
X Surveyed
Estimated

Installation Date(s) 9/9/98 to 9/10/98

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose _____

Remarks _____

Prepared by Bill Jones

ford/wi0637/datamngt/tables/wcl_gm118d.xls
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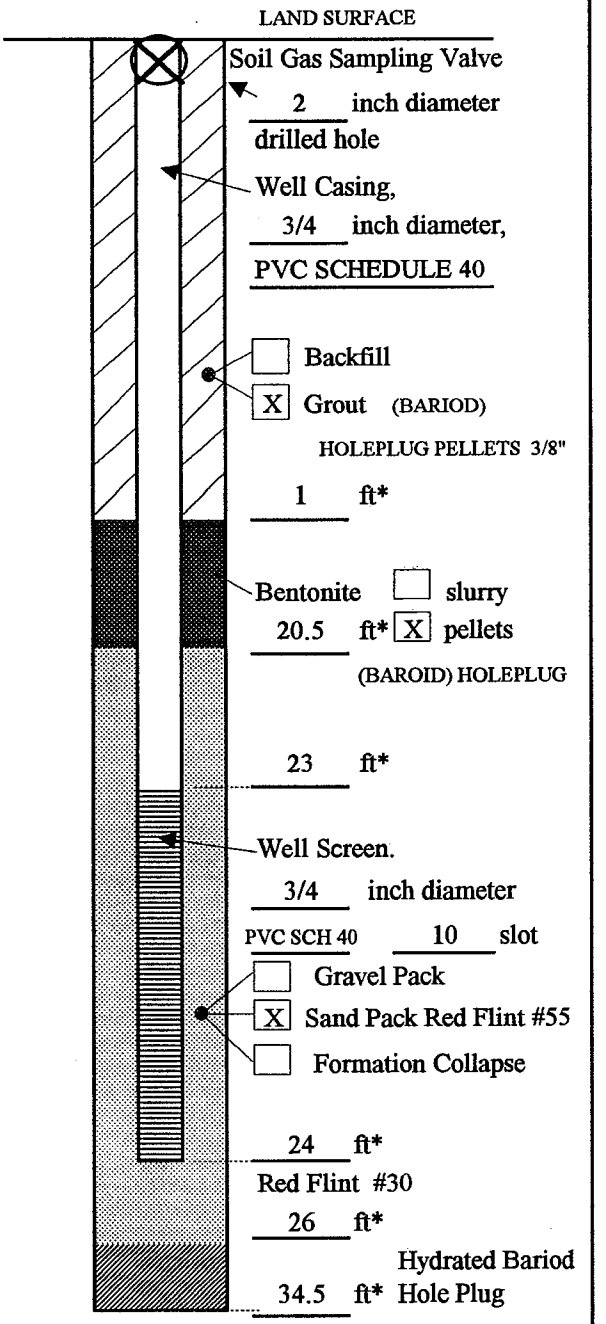
GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-1
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.59 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/11/97
Drilling Method ENVIRONMENTAL SOIL PROBE
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks RED FLINT FILTER SAND # 30 USED BETWEEN 26 FEET AND 24 FEET BLS. RED FLINT FILTER SAND #55 USED FROM 24 FEET TO 20.5 FEET BLS. BAROID HOLE PLUG PELLETS USED BETWEEN 20.5 FEET AND 1 FOOT BLS. PELLETS WERE HYDRATED FROM SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
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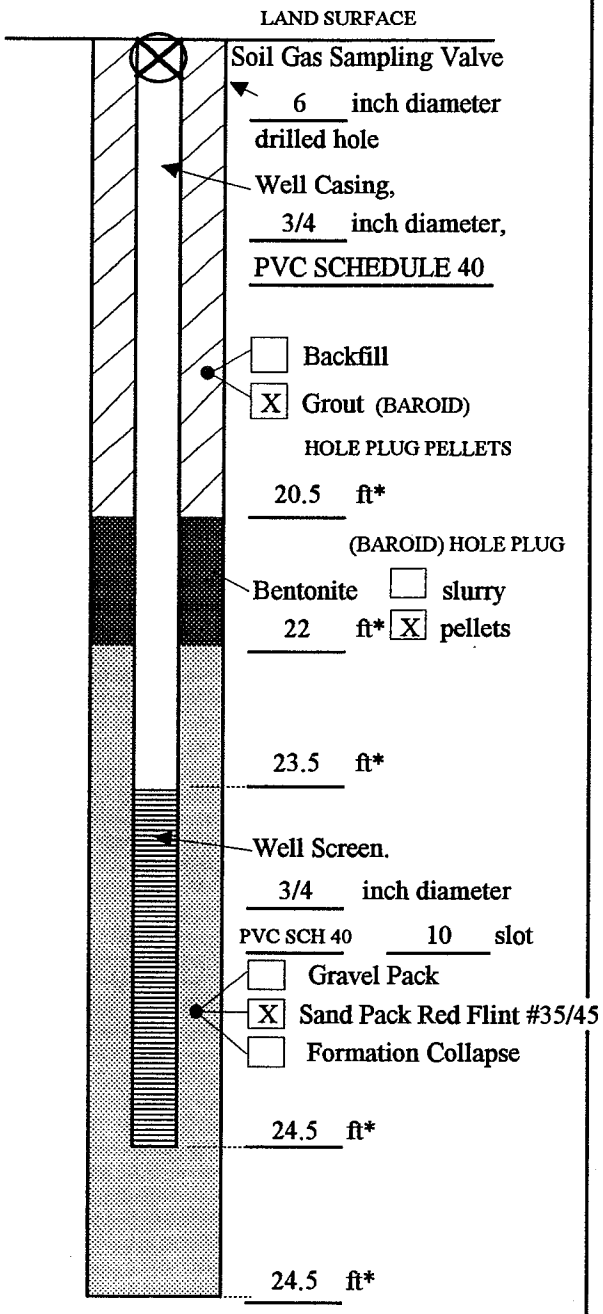
SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-2A
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.56 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/12/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

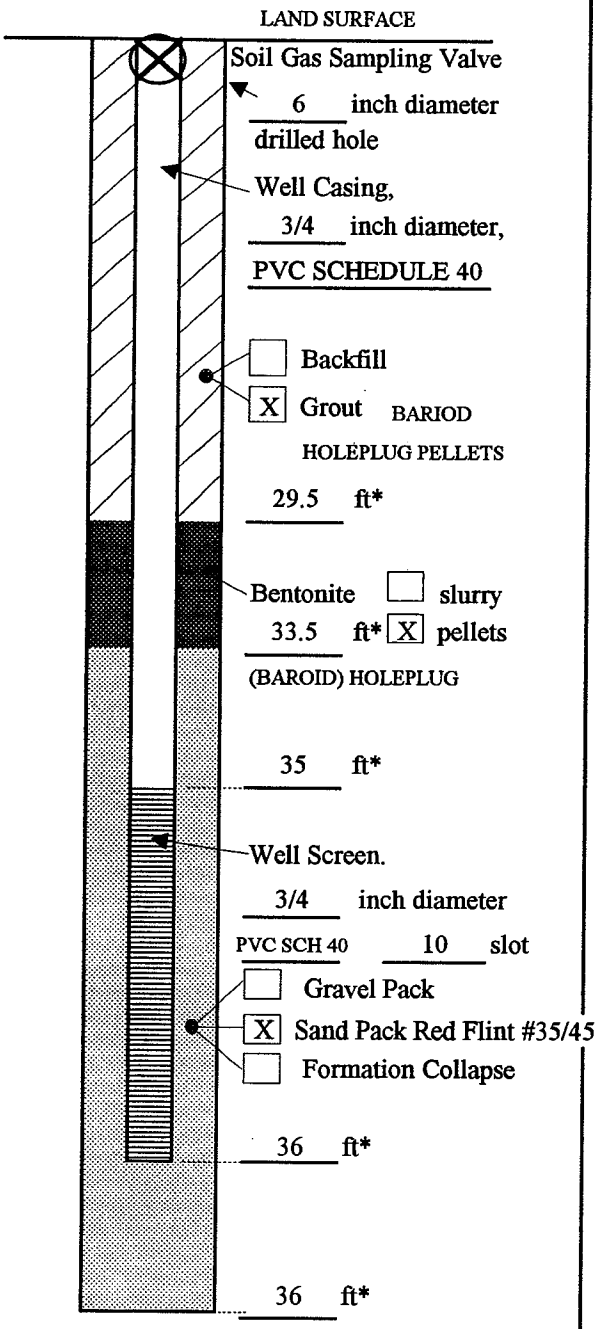
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLEPLUG PELLETS HYDRATED 22 FEET AT 1 FOOT BLS. BAROID PELLETS HYDRATED AT 20.5 FEET BLS. AND FROM GROUND SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-2B
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.64 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/12/97
Drilling Method HOLLOW STEM AUGER/ENVIRONMENTAL SOIL PROBE
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

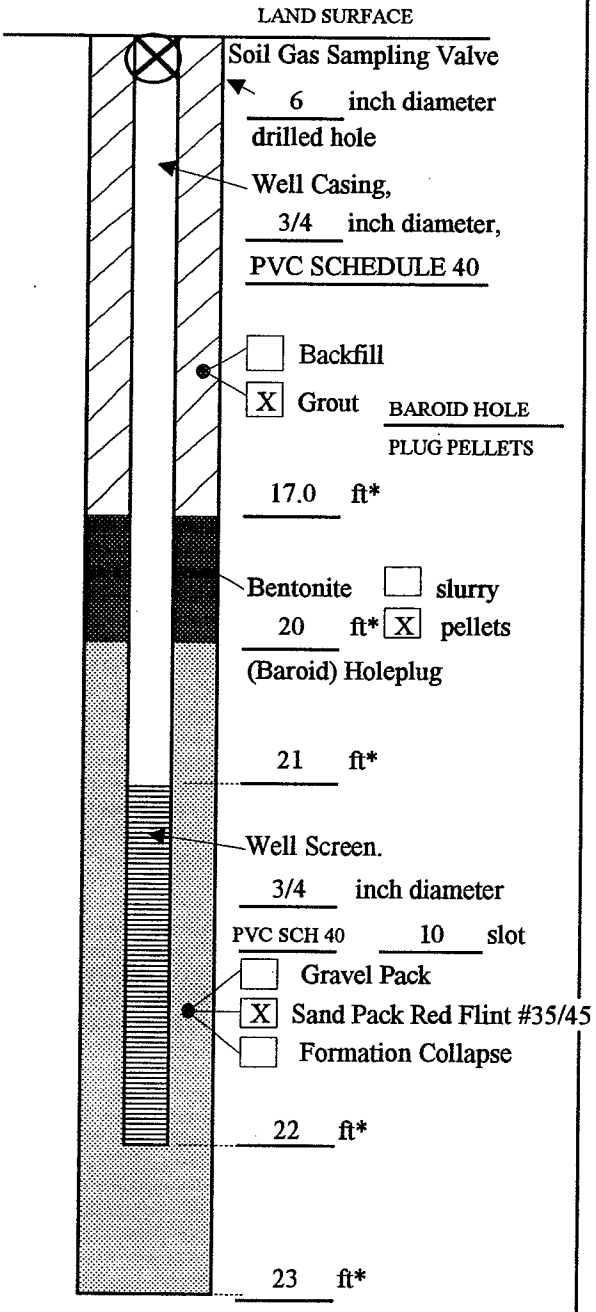
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks FORMATION COLLAPSE/SLOUGH BETWEEN 29.5 FEET AND 26 FEET BLS. BAROID HOLE PLUG PELLETS ON 26 FEET AND 1 FOOT BLS. BAROID PELLETS HYDRATED AT 22 FEET BGS AND FROM GROUND SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-3A
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.73 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/13/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

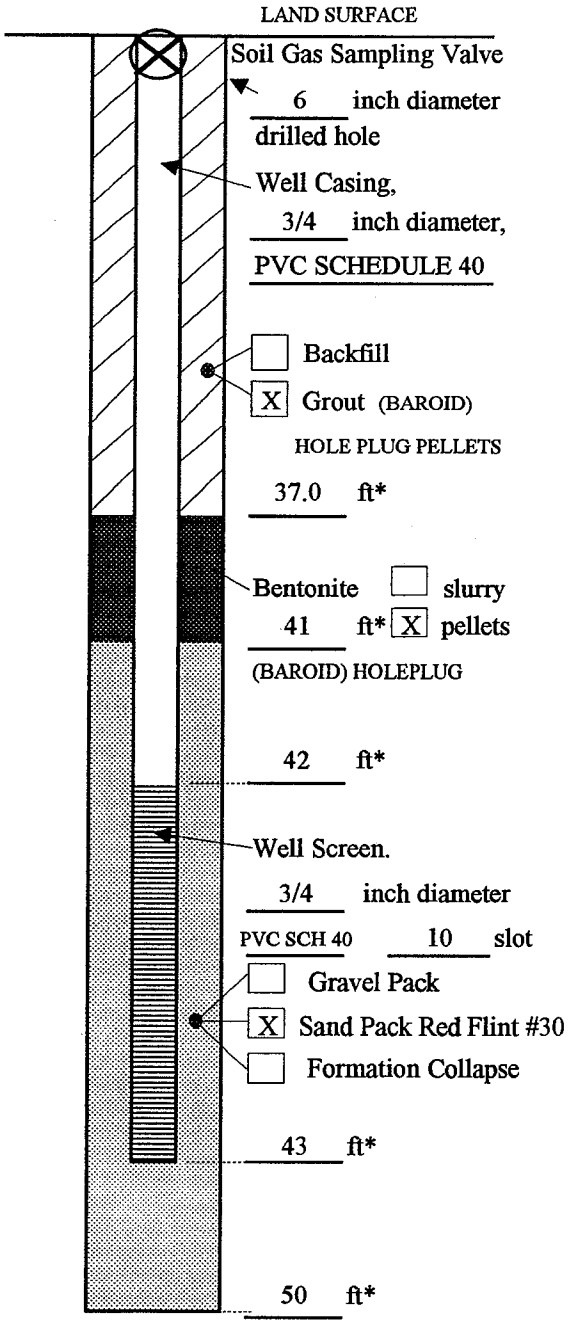
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION.

Remarks BAROID HOLEPLUG PELLETS ON 20 FEET AND 1 FOOT BLS. BAROID PELLETS HYDRATED AT 17 FEET BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-3B
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.68 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/16/97
Drilling Method HOLLOW STEM AUGER/ENVIRONMENTAL SOIL PROBE
Drilling Contractor BOART LONGYEAR

Drilling Fluid NONE

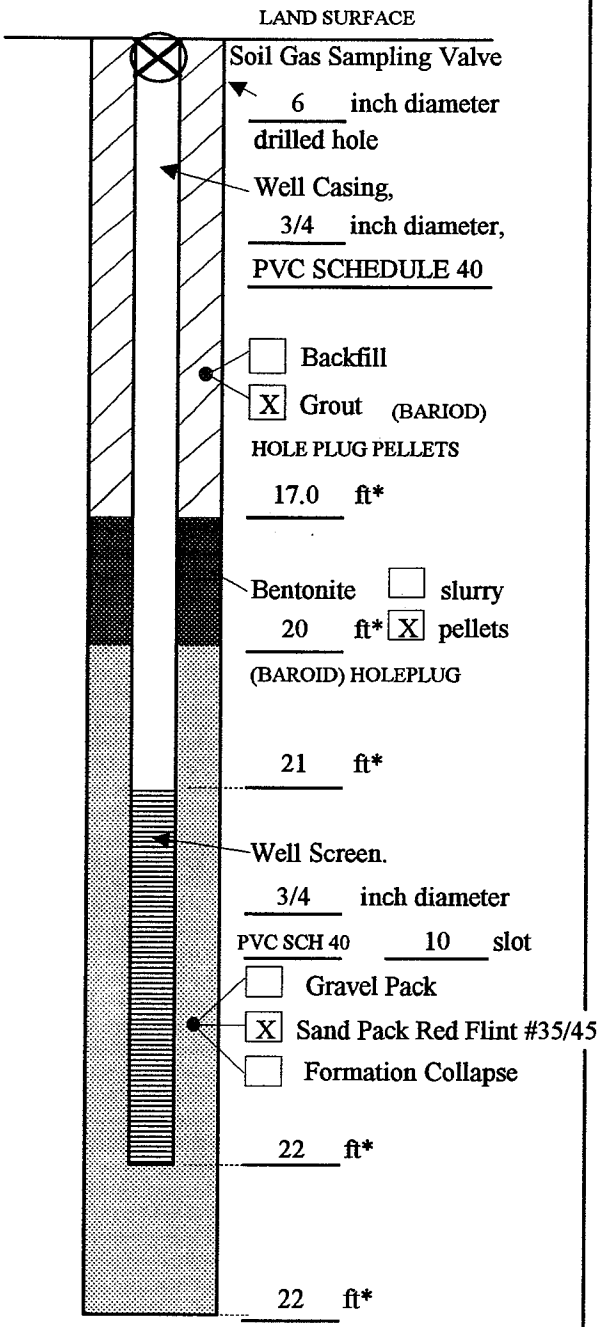
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BENTONITE (BAROID) HOLEPLUG PELLETS BETWEEN 41 FEET AND 1 FOOT BLS. BAROID PELLETS HYDRATED AT 37 FEET AND 22½ FEET BLS FROM SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-4A
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.33 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/13/97
Drilling Method HOLLOW STEM AUGER/ENVIRONMENTAL SOIL PROBE
Drilling Contractor BOART LONGYEAR

Drilling Fluid NONE

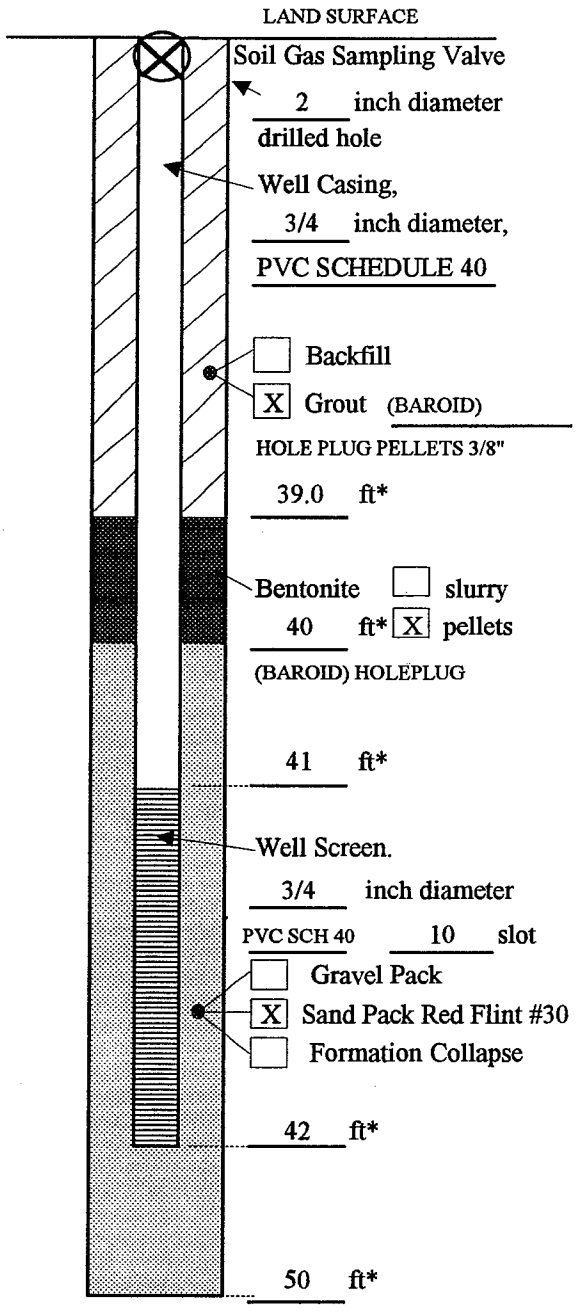
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks HYDRATED BAROID HOLE PLUG PELLETS BETWEEN 20 FEET AND 1 FOOT BGS. PELLETS HYDRATD AT 17 FEET BLS AND FROM GROUND SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-4B
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.30 feet MSL
X Surveyed
☐ Estimated

Installation Date(s) 9/15/97
Drilling Method ENVIRONMENTAL SOIL PROBE
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLE PLUG PELLETS BETWEEN 40 FEET AND 1 FOOT BLS. BAROID PELLETS HYDATED AT 35 FEET, 24 FEET AND 21 FEET BLS. AND FROM GROUND SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

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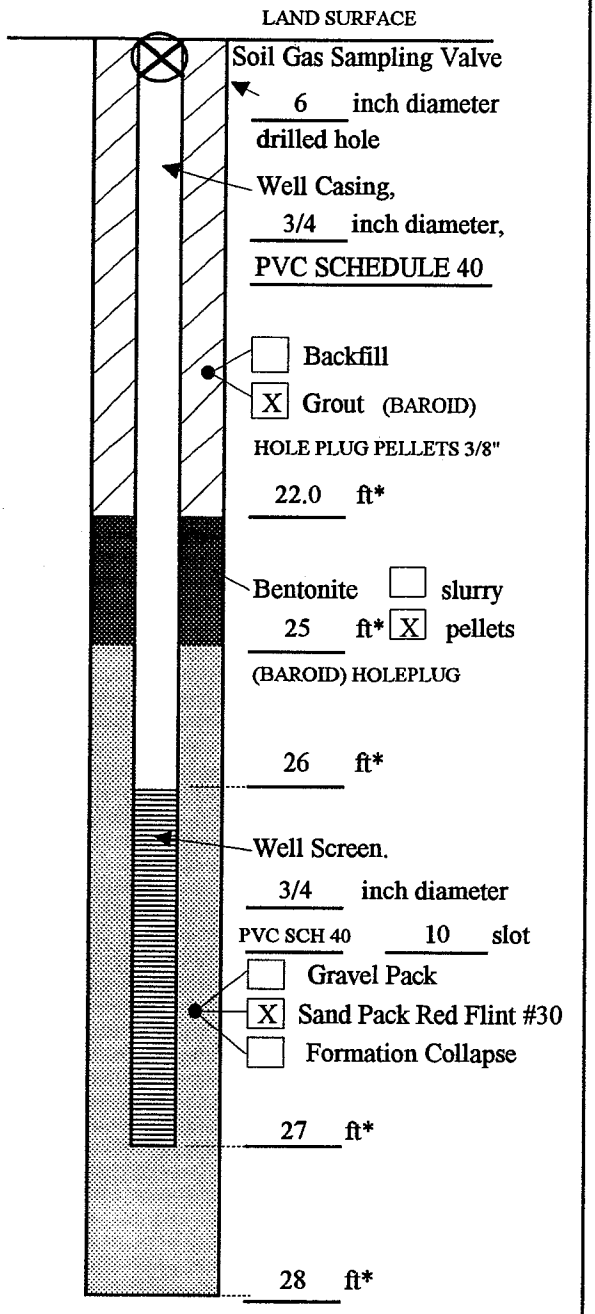
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-5
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1121.34 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/16/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLE PLUG PELLETS (3/8") BETWEEN 25 FEET AND 1 FOOT BLS. BAROID PELLETS HYDRATED AT 22 FEET BLS.

Prepared by DAN HEGRENES/RAY FLYNN

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Environmental Services
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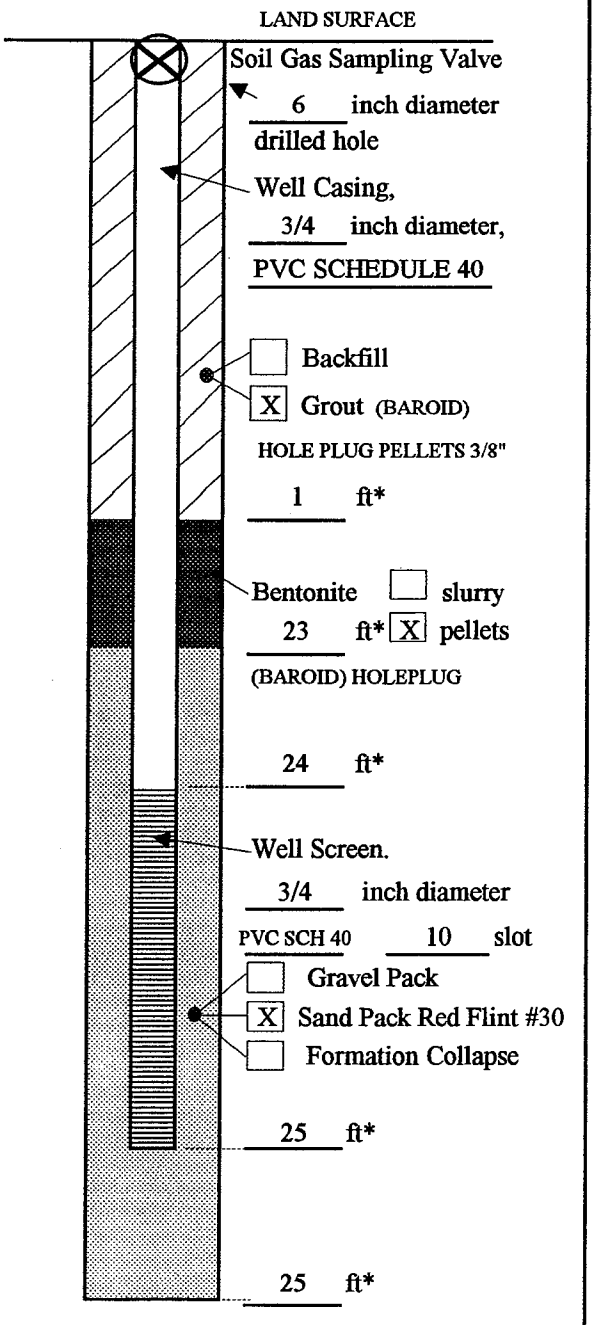
SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-6A
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.5 feet MSL
☒ Surveyed
☐ Estimated

Installation Date(s) 9/24/97
Drilling Method ROTASONIC
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks

Prepared by DAN HEGRENES/RAY FYLNN

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Environmental Services
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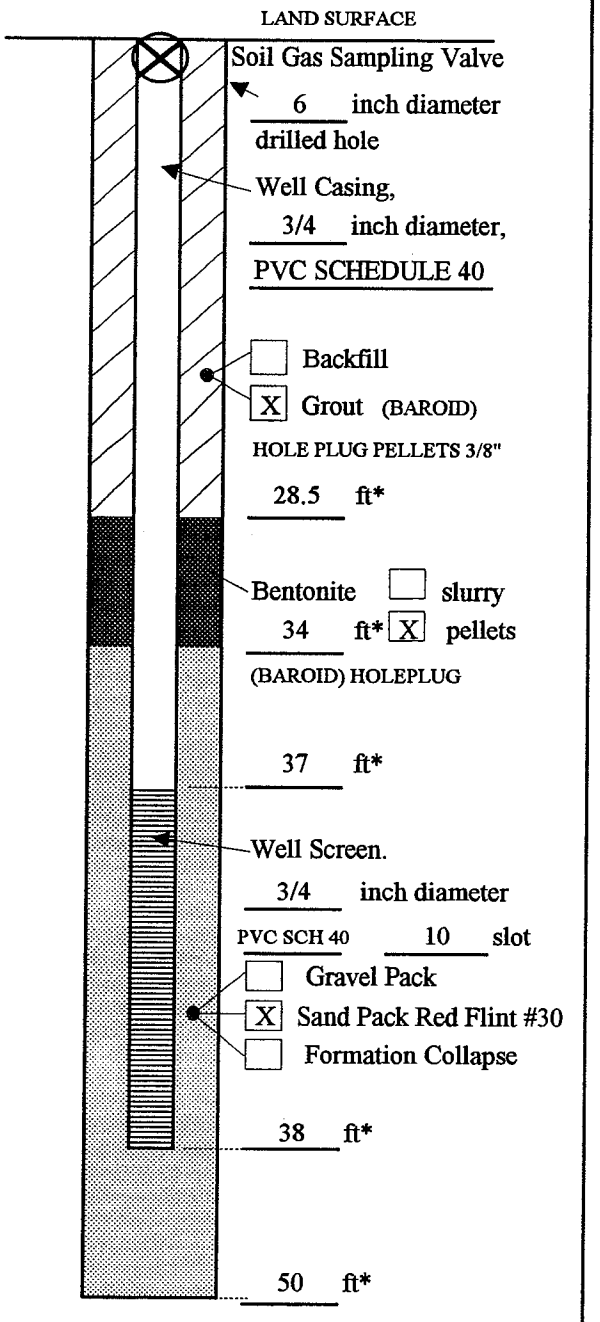
SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-6B
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.53 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/24/97
Drilling Method ROTASONIC
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

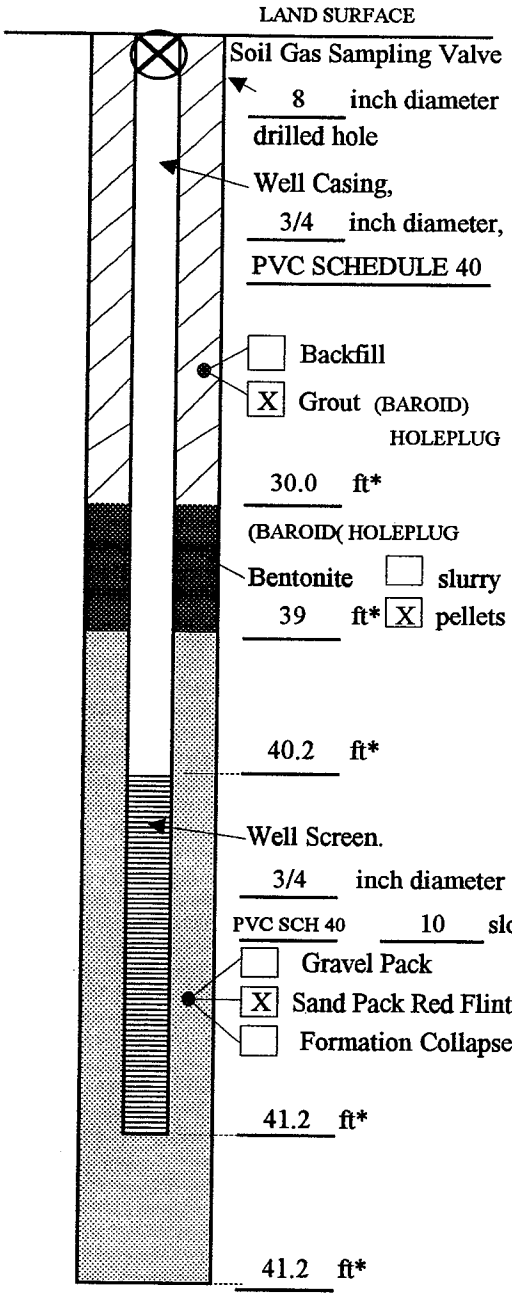
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLE PLUG PELLETS (3/8") BETWEEN 34 FEET AND 1 FOOT BLS. BAROID PELLETS HYDRATED AT 28.5 FEET AT 13 FEET BLS. FORMATION COLLAPSE BETWEEN 38 FEET AND 50 FEET BLS AND FROM GROUND SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-6C
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.5 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/28/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

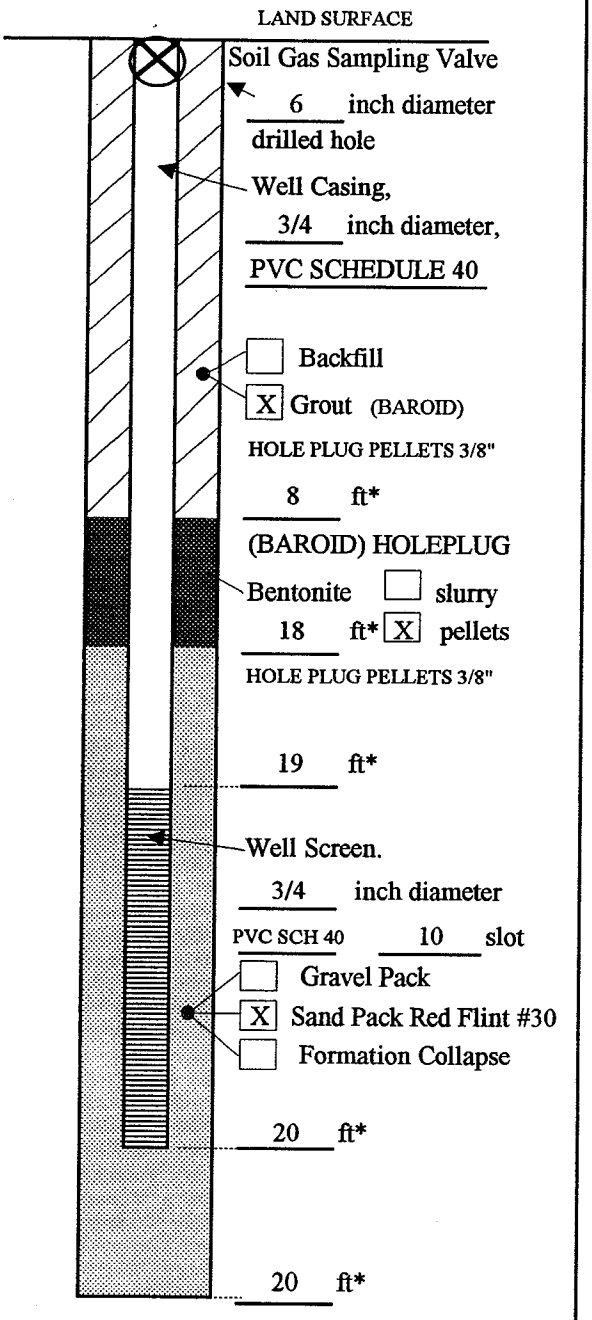
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks FORMATION COLLAPSE BETWEN 30 FEET AND 19.5 FEET BLS. HYDATED BAROID HOLEPLUG AT 19.5 AND FROM 1 FOOT BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-7A
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.28 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/26/97
Drilling Method ROTASONIC
Drilling Contractor BOART LONGYEAR
Drilling Fluid WATER

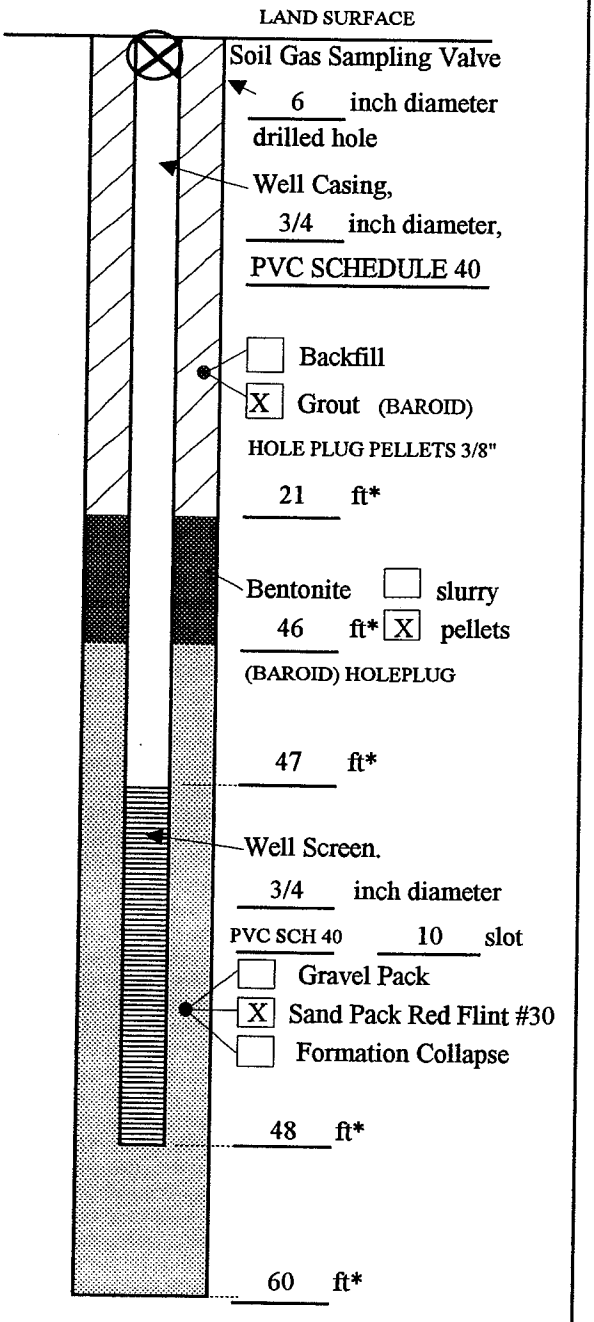
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLE PLUG PELLETS (3/8") BETWEEN 18 FEET AND 1 FOOT BLS. BAROID PELLETS HYDRATED AT 8 FEET BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-7B
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.14 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/26/97
Drilling Method ROTASONIC
Drilling Contractor BOART LONGYEAR
Drilling Fluid WATER

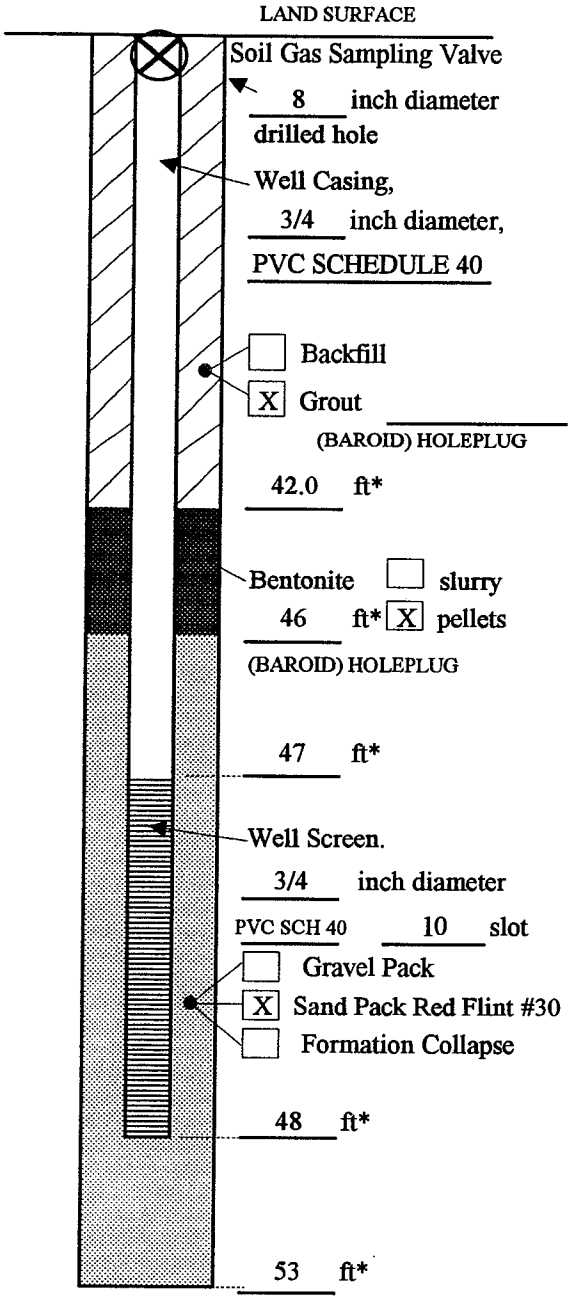
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLE PLUG PELLETS (3/8") BETWEEN 46 FEET AND 1 FOOT BLS. BARIOD PELLETS HYDRATED AT 21 FEET BLS. FORMATION COLLAPSE BETWEEN 60 FEET AND 49 FEET BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-7C
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.24 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/28/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

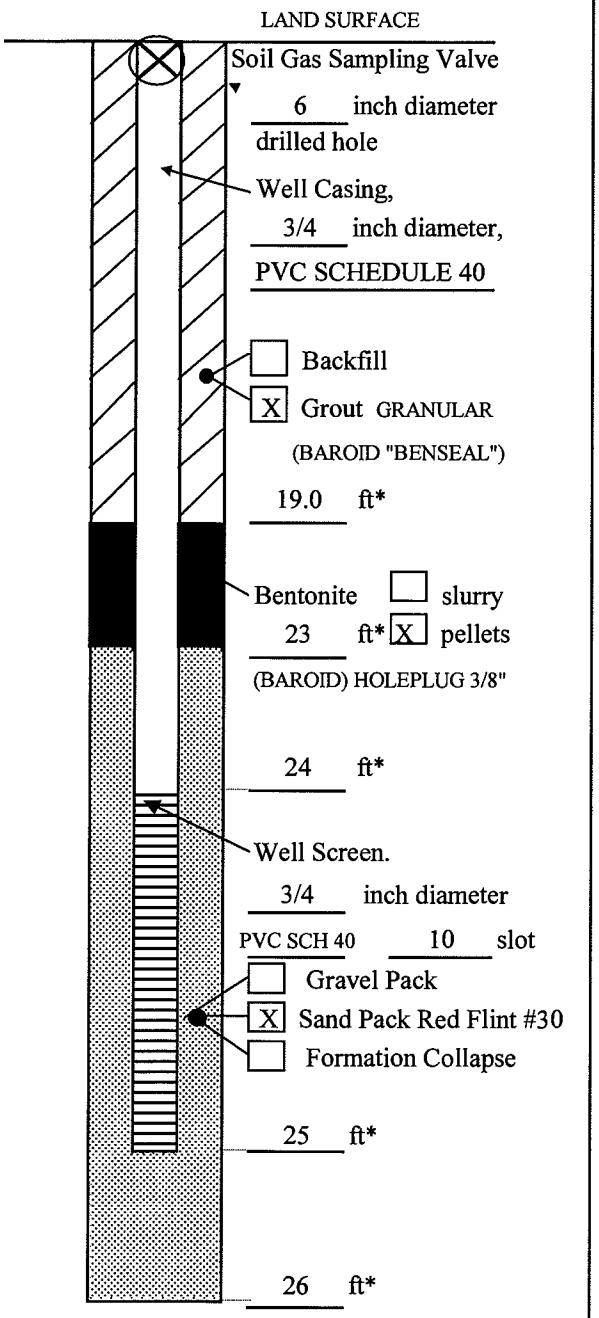
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks HYDRATED BAROID HOLE PLUG AT 42 FEET AND FROM 1 FOOT BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-8A
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1122.07 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/26/97
Drilling Method ROTASONIC
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

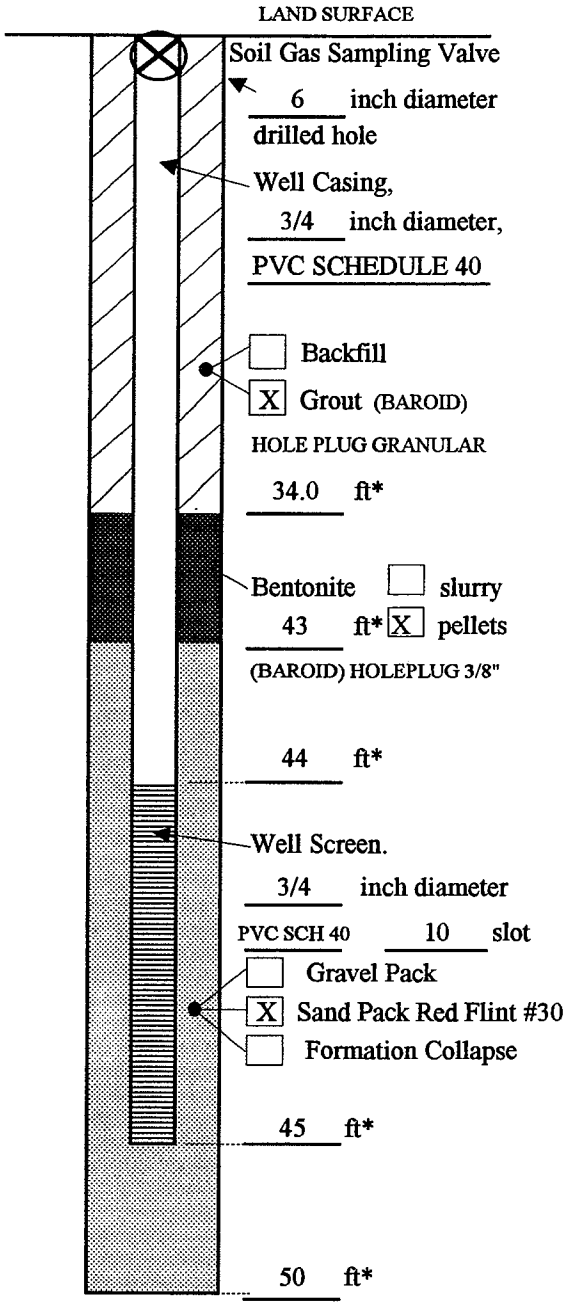
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks HYDRATED GRANULAR "BENSEAL" AT 19 FEET AND FROM 1 FOOT BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-8B
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1122.08 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/26/97
Drilling Method ROTASONIC
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

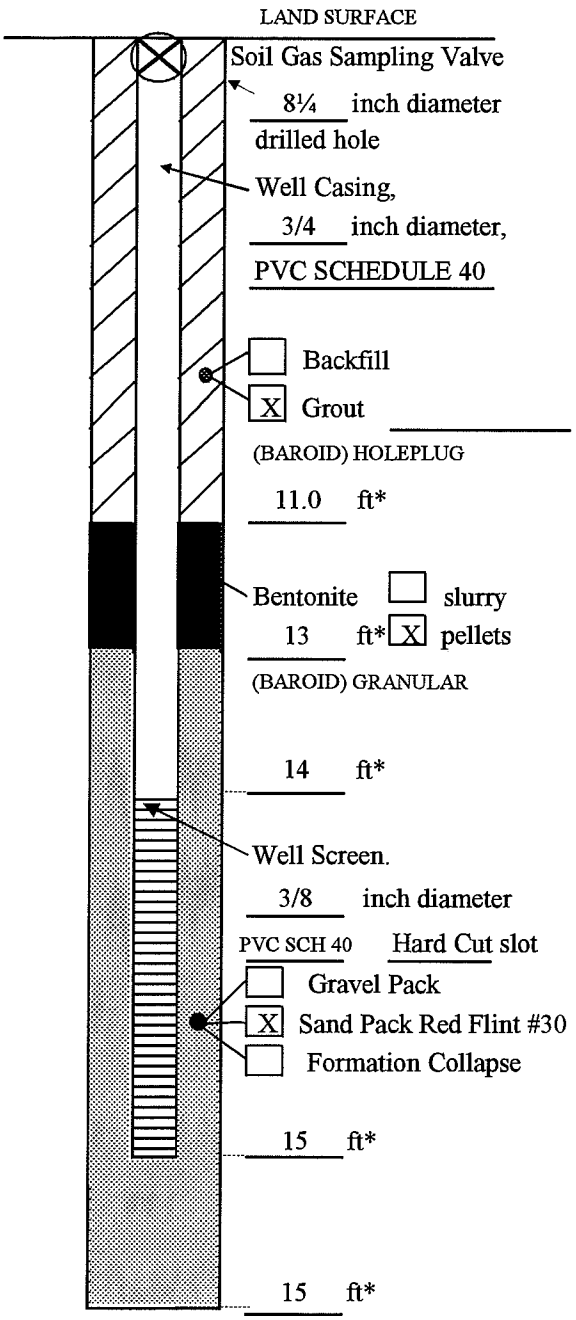
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks HYDRATED GRANULAR "BENSEAL" A 34 FOOT AND FROM 1 FOOT BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-9
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1092.00 feet MSL
☐ Surveyed
☒ Estimated

Installation Date(s) 11/26/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

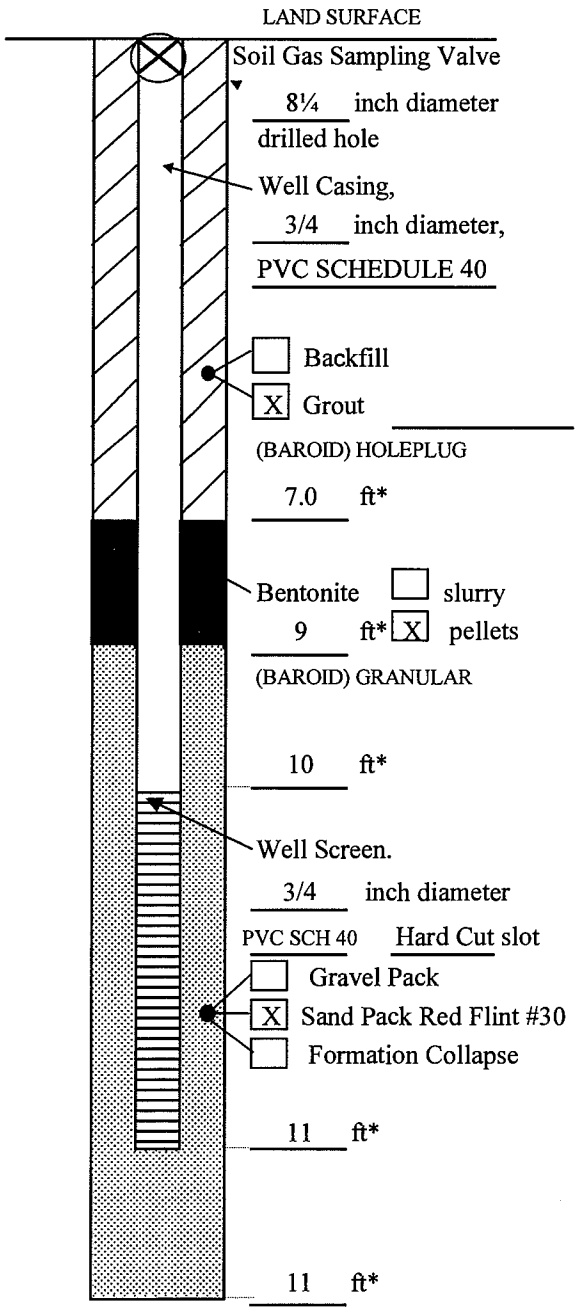
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLEL PLUG AT 11 FEET AND FROM 2.5 FEET BLS. TOP SOIL 2.5 TO 1 FOOT BGS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-10
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1120.00 feet MSL
☐ Surveyed
☒ Estimated

Installation Date(s) 11/26/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

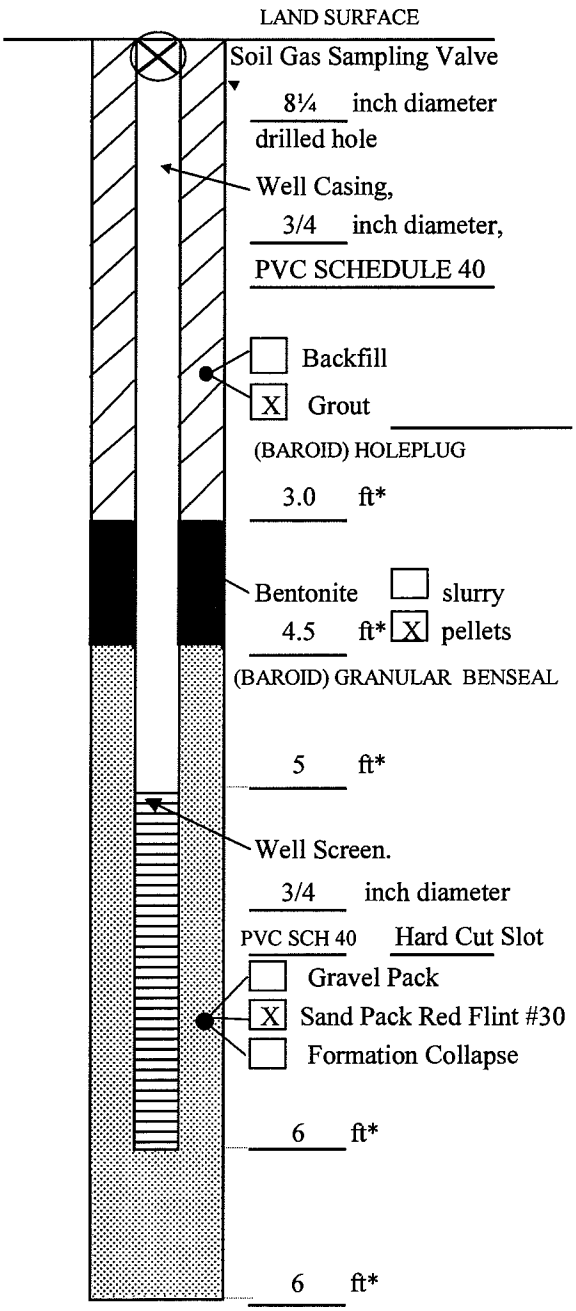
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLE PLUG HYDRATD AT 7 FEET AND FROM 2.5 FEET BLS. TOP SOIL FROM 2.5 FEET TO 1 FOOT BLS.

Prepared by DAN HEGRENES/RAY FLYNN

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij company

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project FORD/WI0637.001 Probe GMSG-11
Town/City KINGSFORD
County DICKINSON State MICHIGAN

Land-Surface Elevation and Datum 1088.00 feet MSL
☐ Surveyed
☒ Estimated

Installation Date(s) 11/26/97
Drilling Method HOLLOW STEM AUGER
Drilling Contractor BOART LONGYEAR
Drilling Fluid NONE

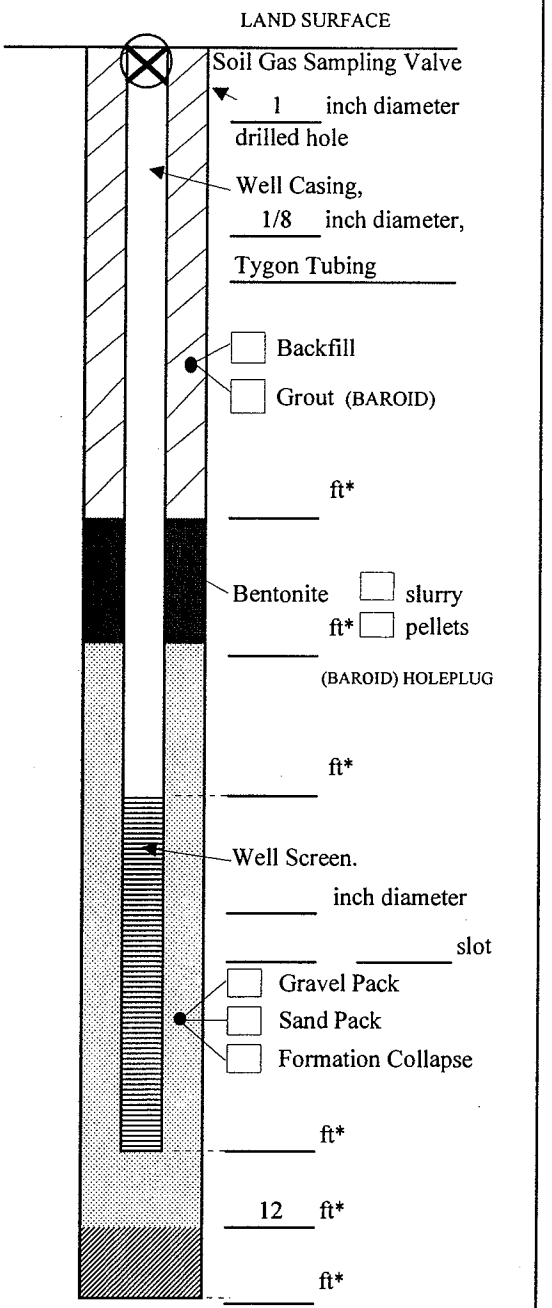
Probe Purpose MONITORING SOIL GAS PRESSURE AND COMPOSITION

Remarks BAROID HOLE PLUG FROM 3 FEET TO 2 FEET BLS. TOP SOIL FROM 2 FEET BLS TO GROUND SURFACE.

Prepared by DAN HEGRENES/RAY FLYNN

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-12

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.47 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 4/23/98

Drilling Method AMS Push Probe

Drilling Contractor AMS

Drilling Fluid None

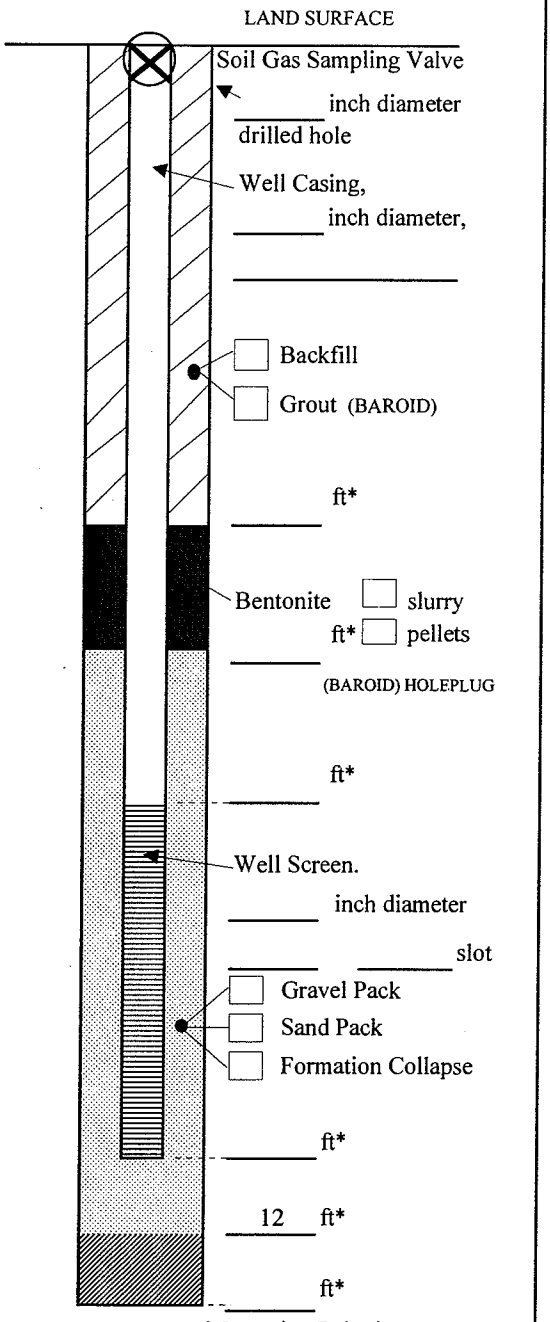
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Gas probe is Tygon tubing to bottom of borehole. Formation allowed to collapse around tubing. No well screen.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-13

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.48 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 4/23/98

Drilling Method AMS Push Probe

Drilling Contractor AMS

Drilling Fluid None

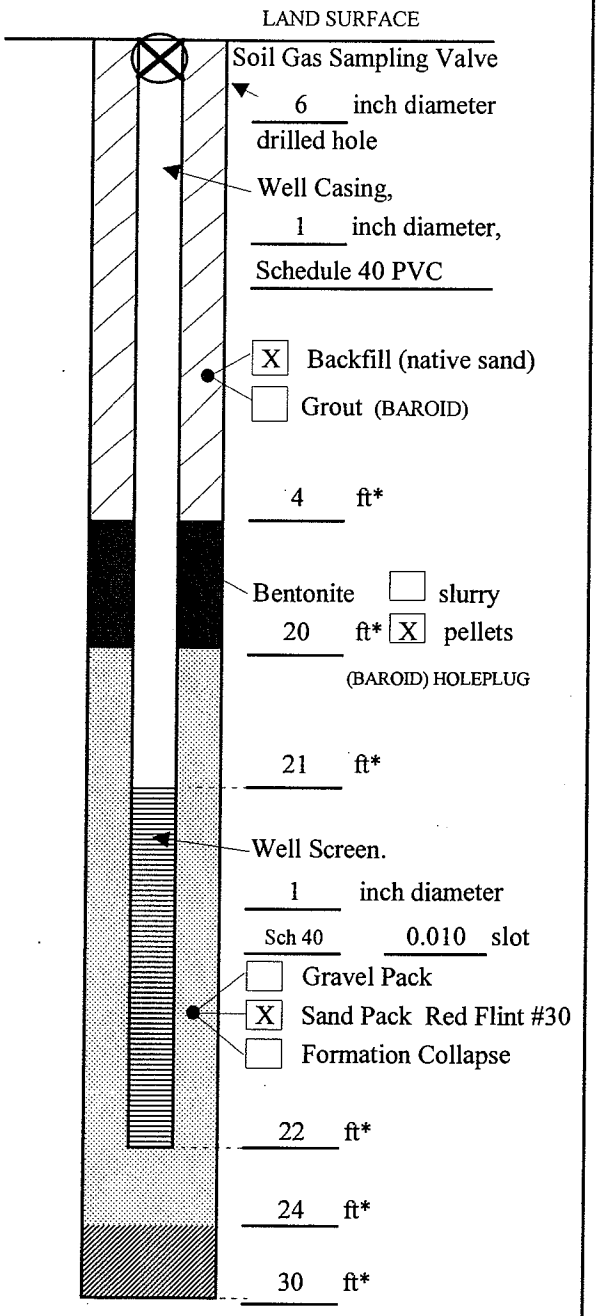
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Gas probe is Tygon tubing to bottom of borehole. Formation allowed to collapse around tubing. No well screen.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-14

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1112.86 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/6/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

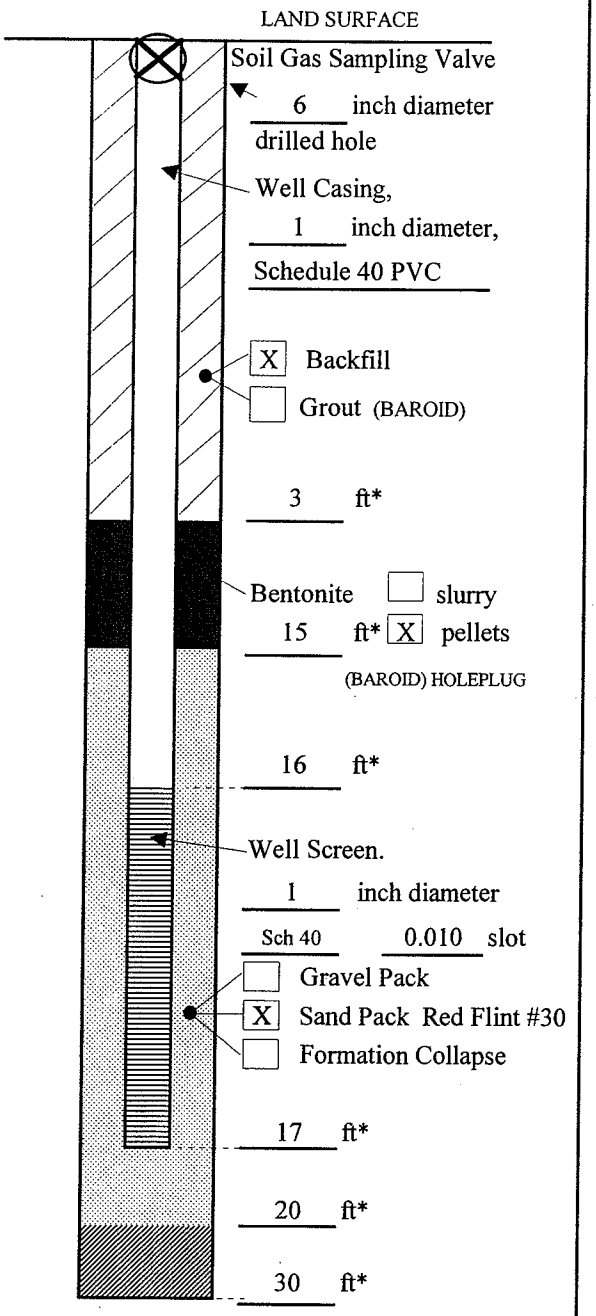
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Baroid holeplug pellets hydrated 20 feet bls.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-15

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.08 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/7/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

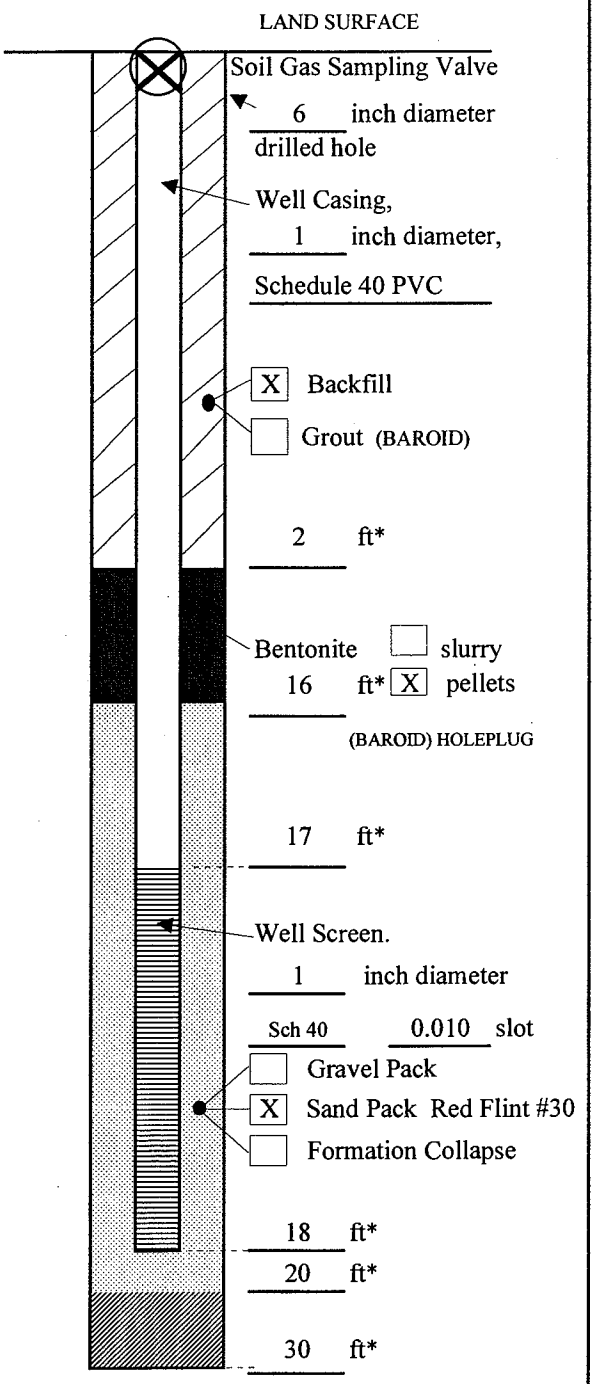
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-16

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.50 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/7/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

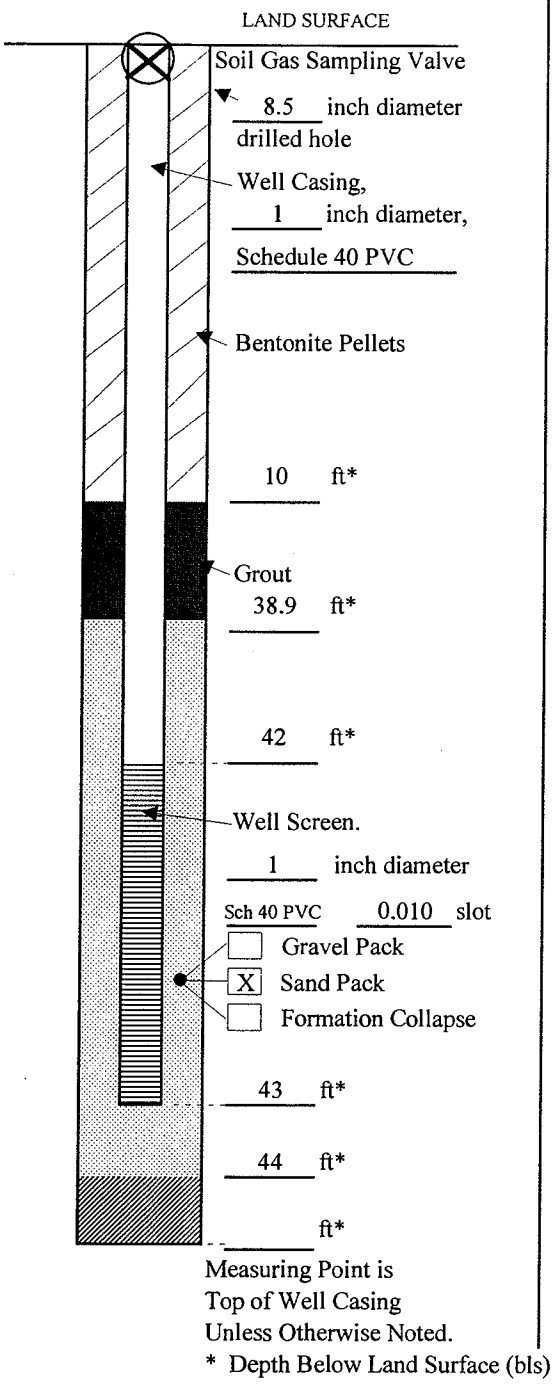
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Project Ford/Kingsford Probe GMSG-17

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1120.86 feet MSL

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/10/98 to 7/11/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

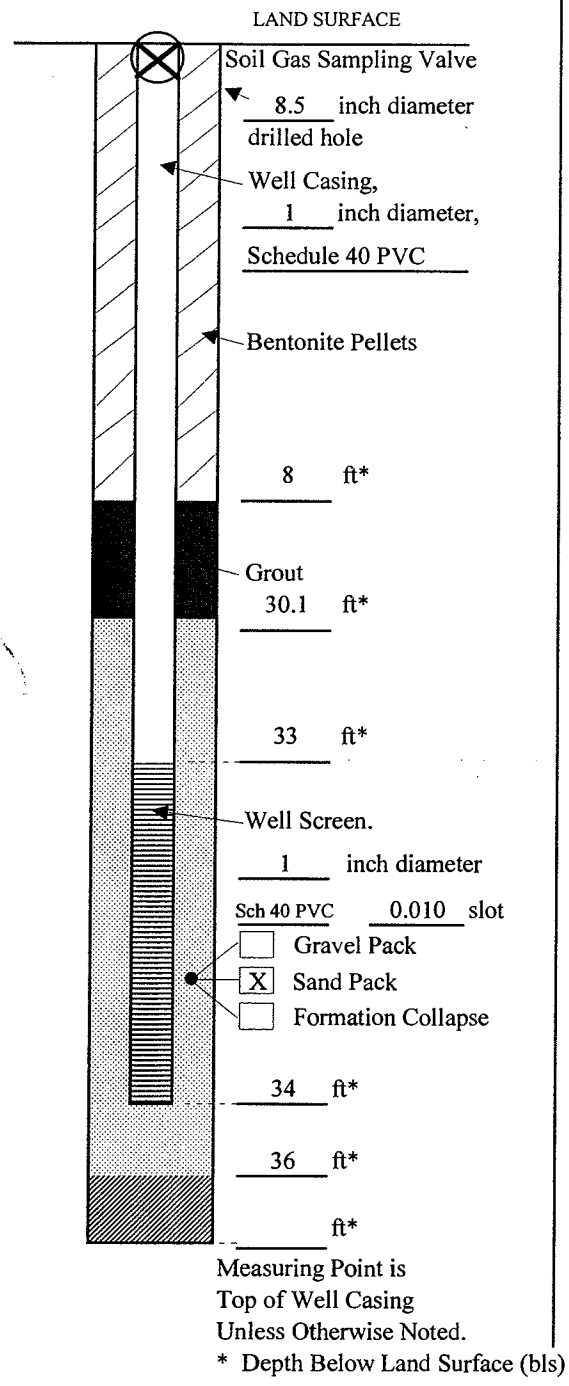
Probe Purpose Monitoring soil gas pressure and composition

Remarks Grout: CETCO Pure Gold Gel. Bentonite pellets extend to 2 ft bls.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-18

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1121.93 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/11/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

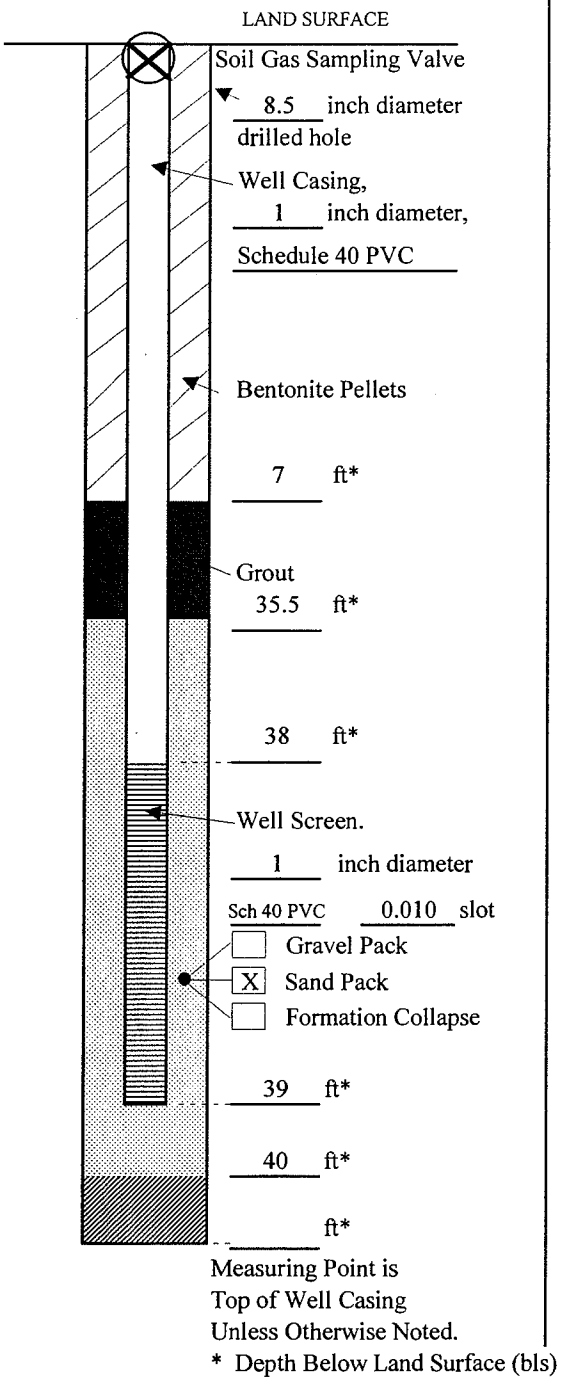
Probe Purpose Monitoring soil gas pressure and composition

Remarks Grout: CETCO Pure Gold Gel. Bentonite pellets extend to 1.5 ft bls.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-19

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1121.23 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/11/98 to 7/12/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

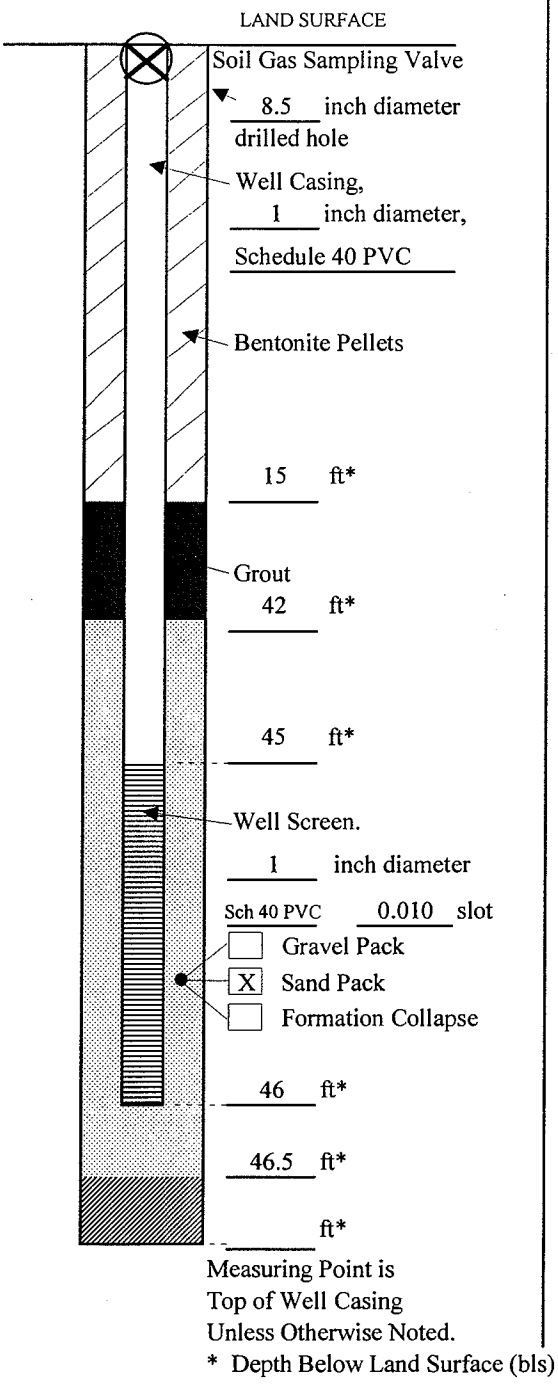
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite pellets extend to 3 ft bls.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-20

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1121.93 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/12/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

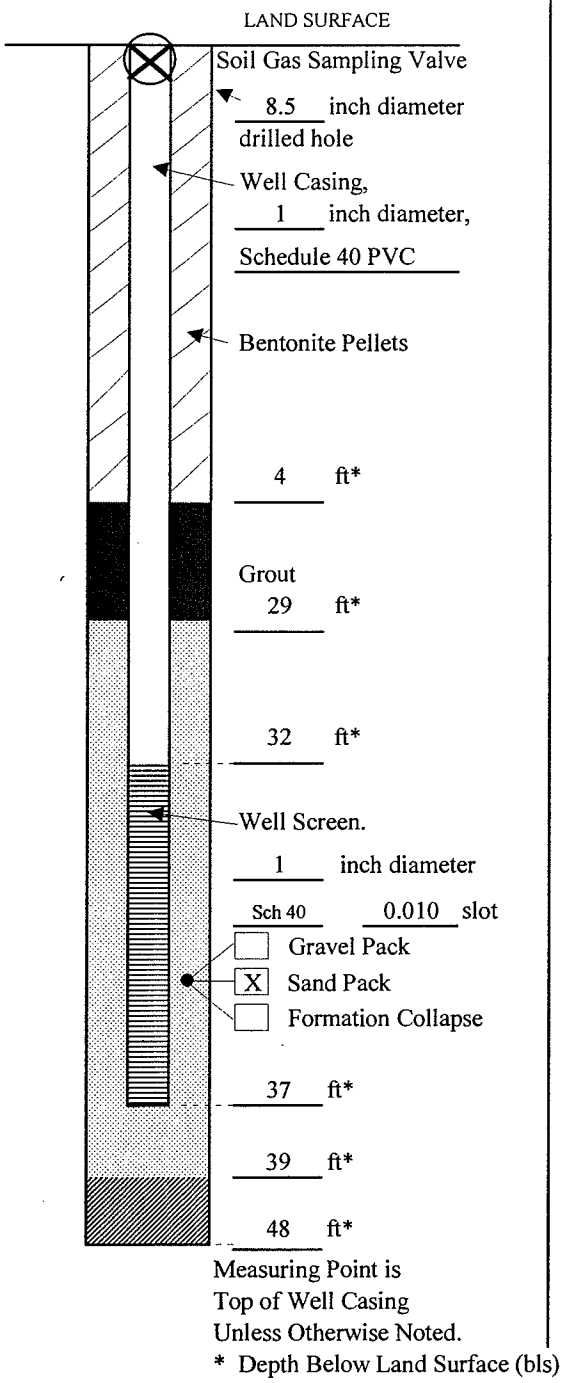
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite pellets extend to 2 ft bls.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Project Ford/Kingsford Probe GMSG-21

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1122 feet MSL ☐ Surveyed ☒ Estimated

Installation Date(s) 7/14/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

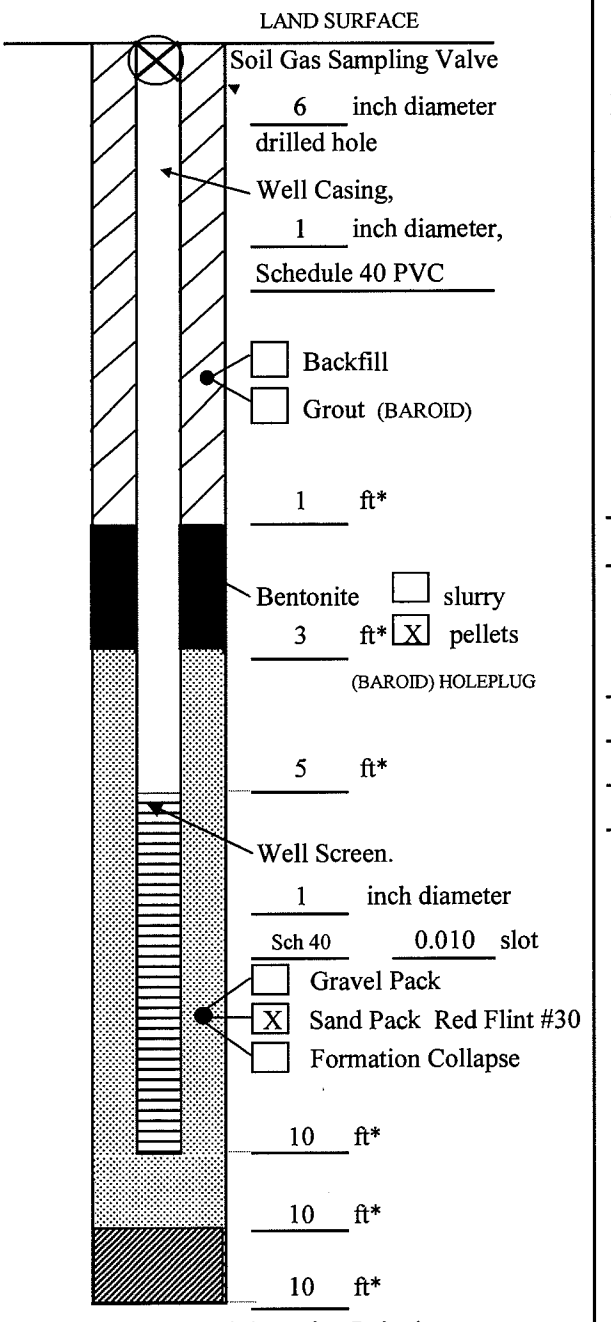
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite pellets extend to 1 ft bls.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Project Ford/Kingsford Probe GMSG-22

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1112.44 feet MSL

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/9/1999

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ford/wi0637/datamngt/tables/sgpgmsg22.xls
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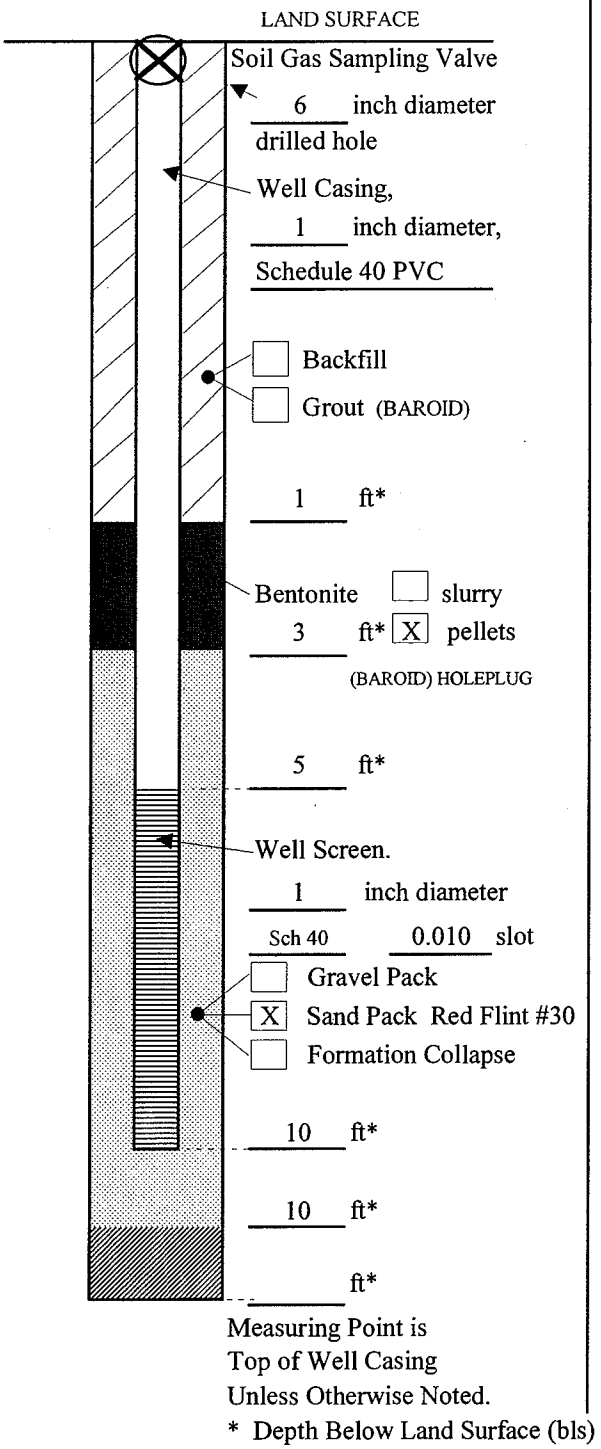
ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-23

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1127.42 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/9/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

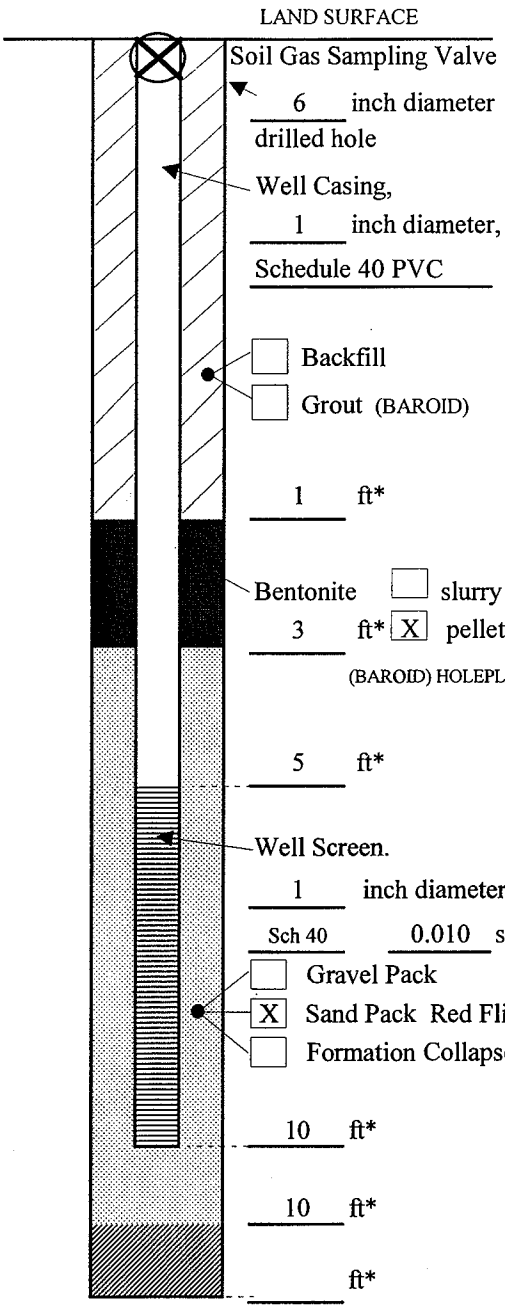
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-24

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1128.11 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/9/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

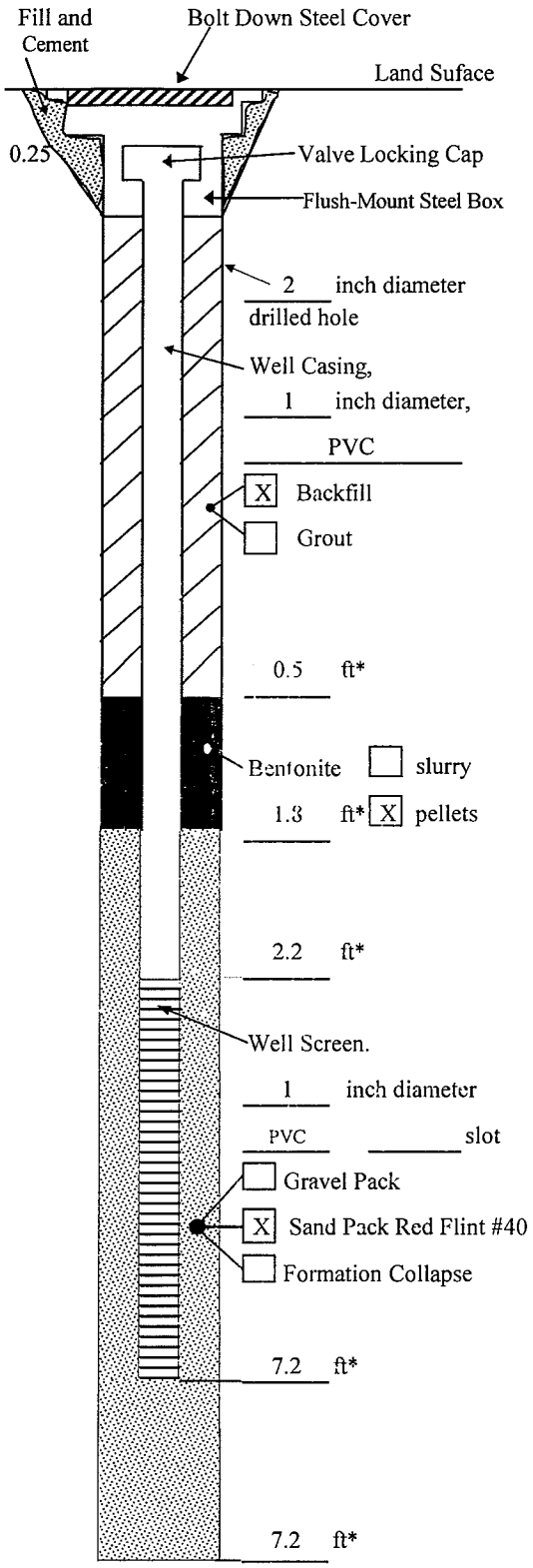
Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-24R

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1128.35 feet Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 4/17/04

Drilling Method Hand Auger

Drilling Contractor None - Paul Lenaker

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

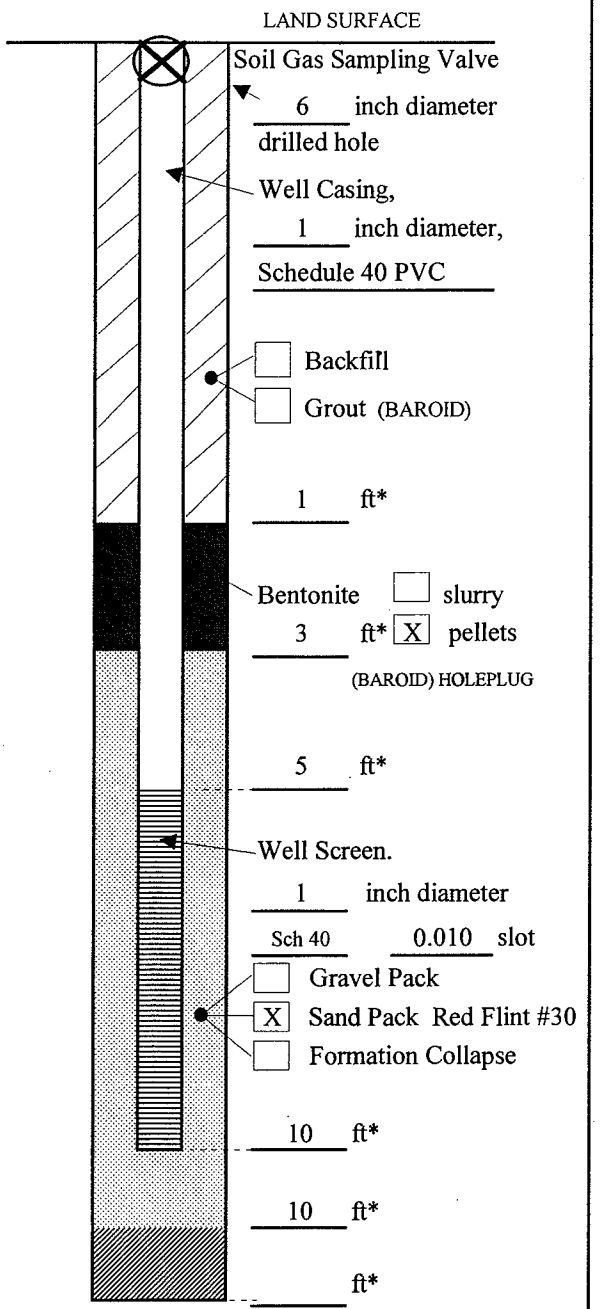
Well Purpose CMDP Soil vapor monitoring probe.

Remarks 4'2" from south building wall. 7'5" from west building wall.

Prepared by Paul Lenaker

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-25

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1128.30 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/9/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

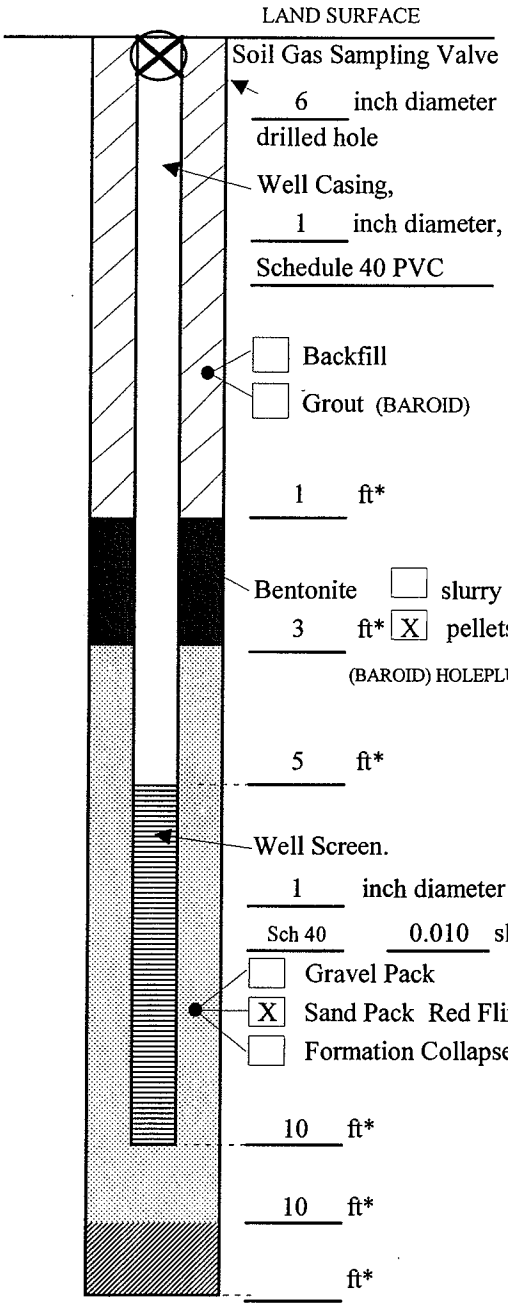
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-26

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1128.16 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

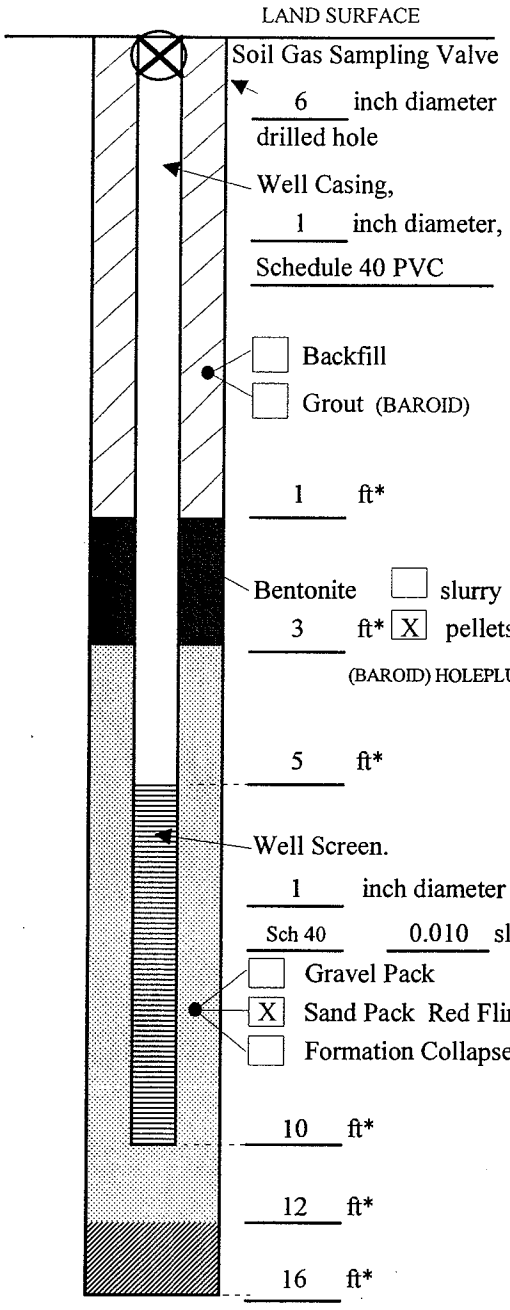
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-27

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.06 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/10/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

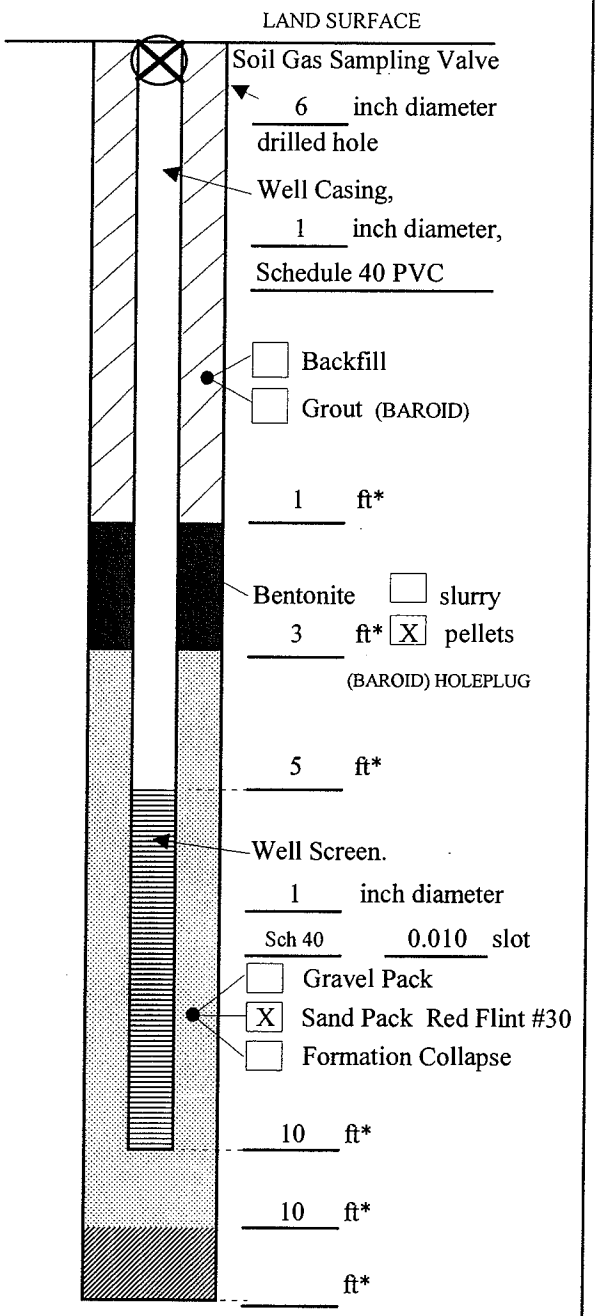
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-28

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1150.49 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

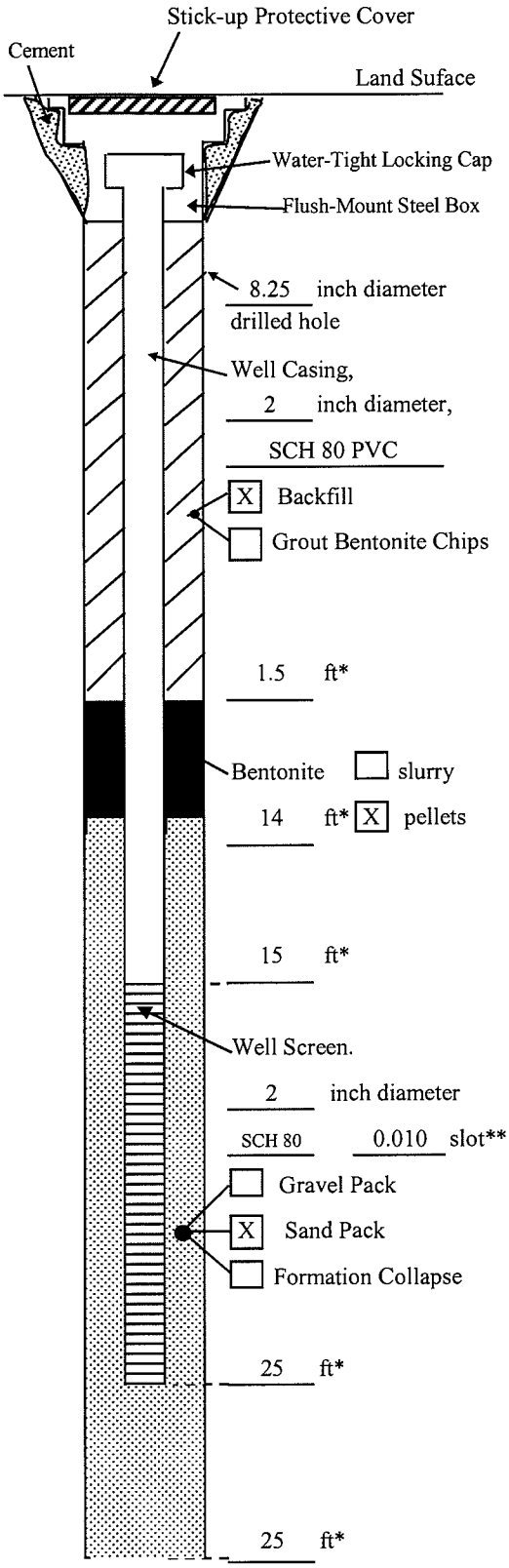
Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GMSG-29

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.63 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/5/2000

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling None gallons

Water Removed During Development None gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

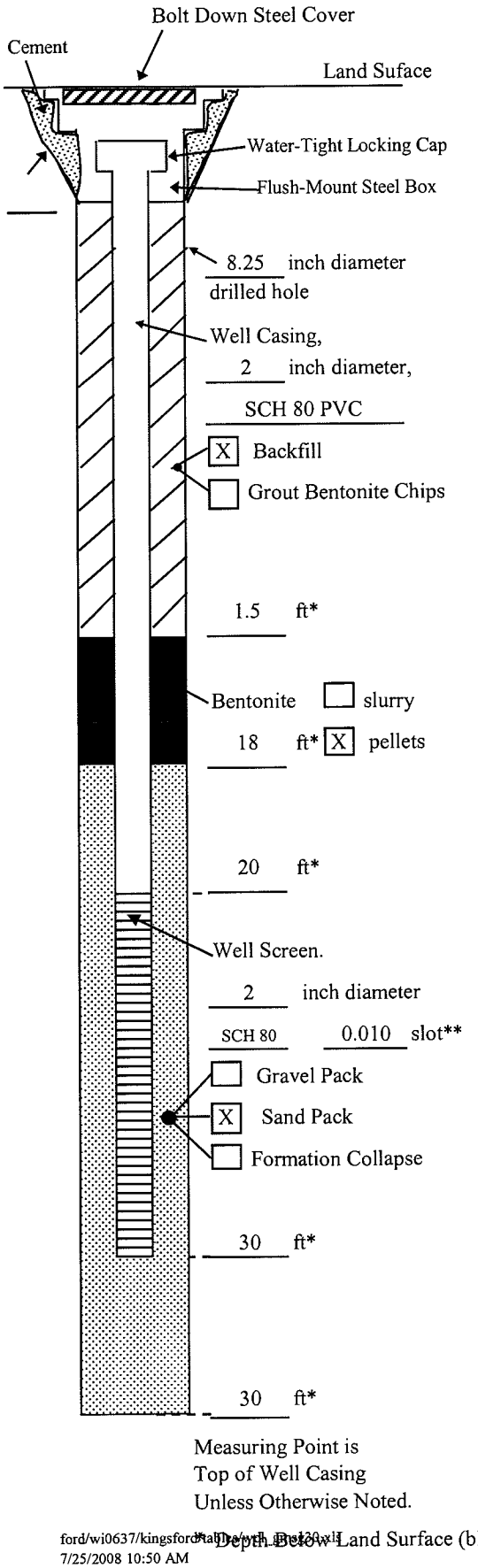
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Kevin L. Daleness

ARCADIS GERAGHTY & MILLER



WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GMSG-30

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1119.55 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/5/2000

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling None gallons

Water Removed During Development None gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

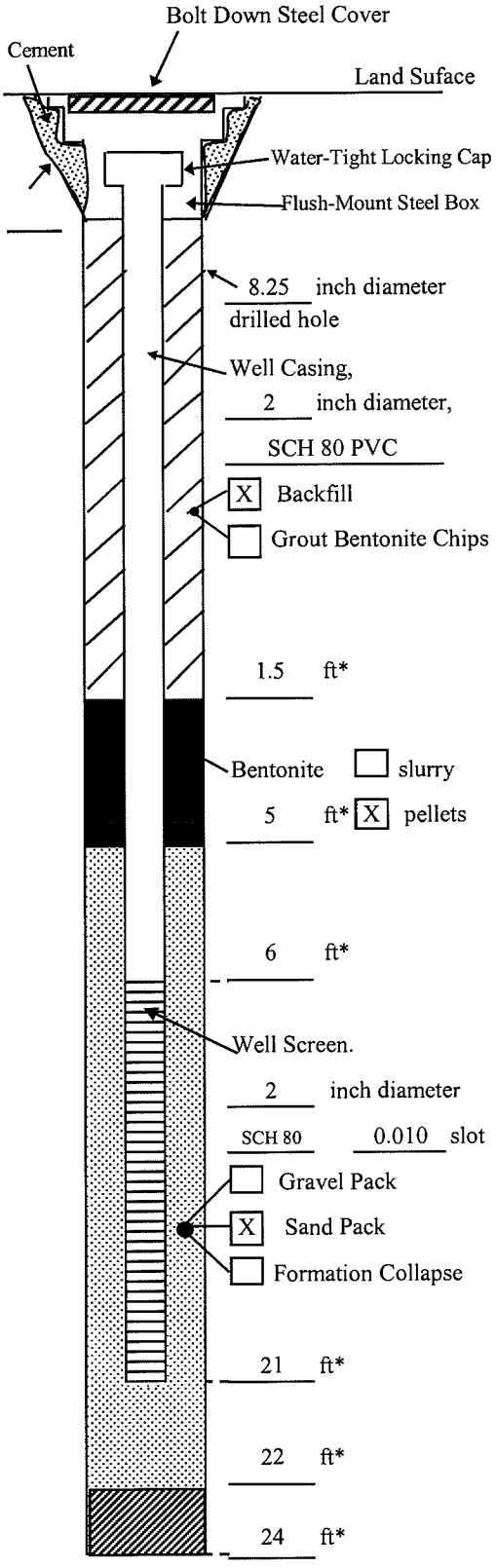
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Kevin L. Daleness

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GMSG-31

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1118.43 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/7/2000

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling None gallons

Water Removed During Development None gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

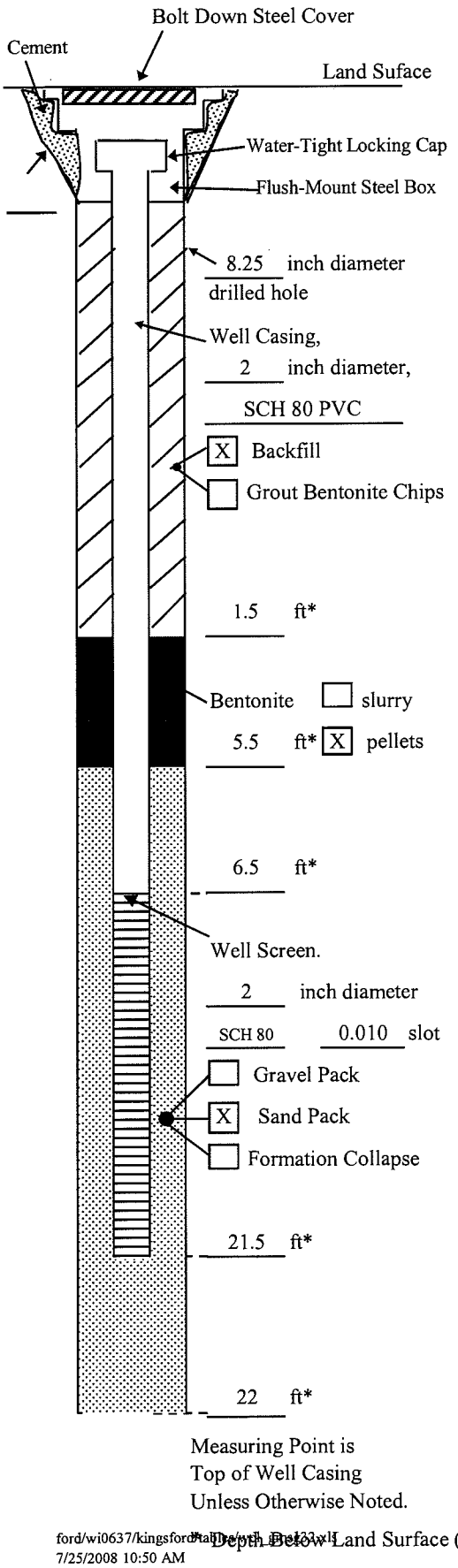
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Kevin L. Daleness

ford/wi0637/kingsford/tables/wcl_gmsg31.xls
7/25/2008 10:50 AM

ARCADIS GERAGHTY & MILLER



WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GMSG-32

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.91 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/7/2000

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling None gallons

Water Removed During Development None gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

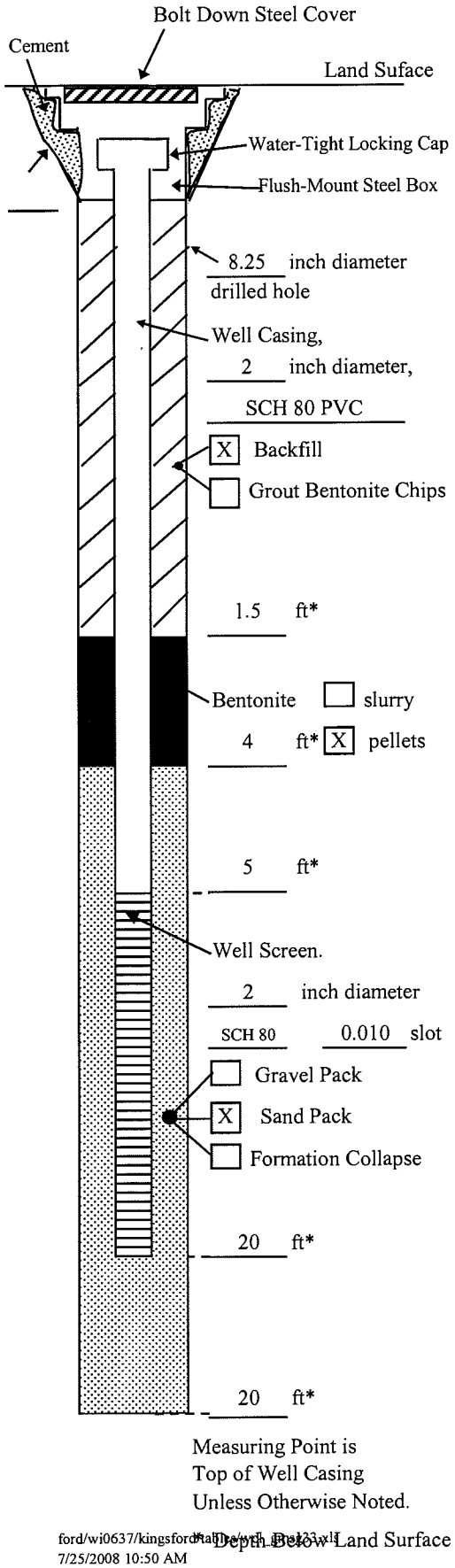
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Kevin L. Daleness

ARCADIS GERAGHTY & MILLER



WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GMSG-33

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.02 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/7/2000

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling None gallons

Water Removed During Development None gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

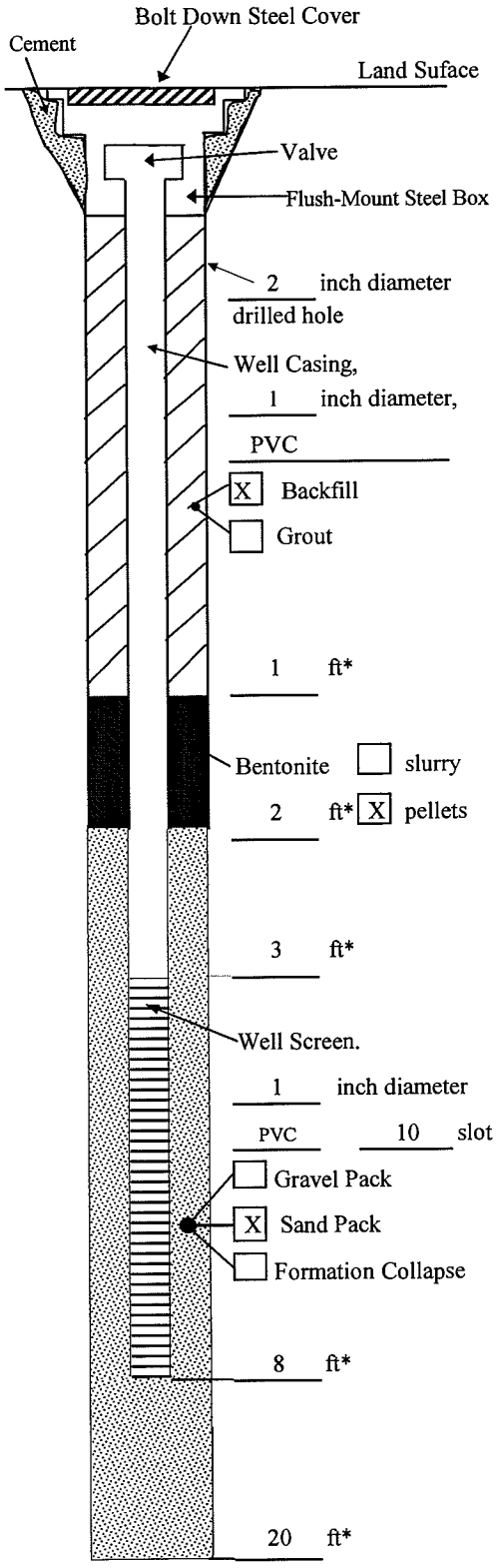
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Kevin L. Daleness

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI000975.0002 Probe GMSG-34

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation and Datum 1117.31 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 3/31/2001

Drilling Method Geoprobe

Drilling Contractor Giles

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling NA gallons

Water Removed During Development NA gallons

Static Depth to Water NA feet below M.P.

Pumping Depth to Water NA feet below M.P.

Pumping Duration NA hours

Yield NA gpm Date NA

Specific Capacity NA gpm/ft

Well Purpose Soil vapor probe.

Remarks

Prepared by Pat Bartnik

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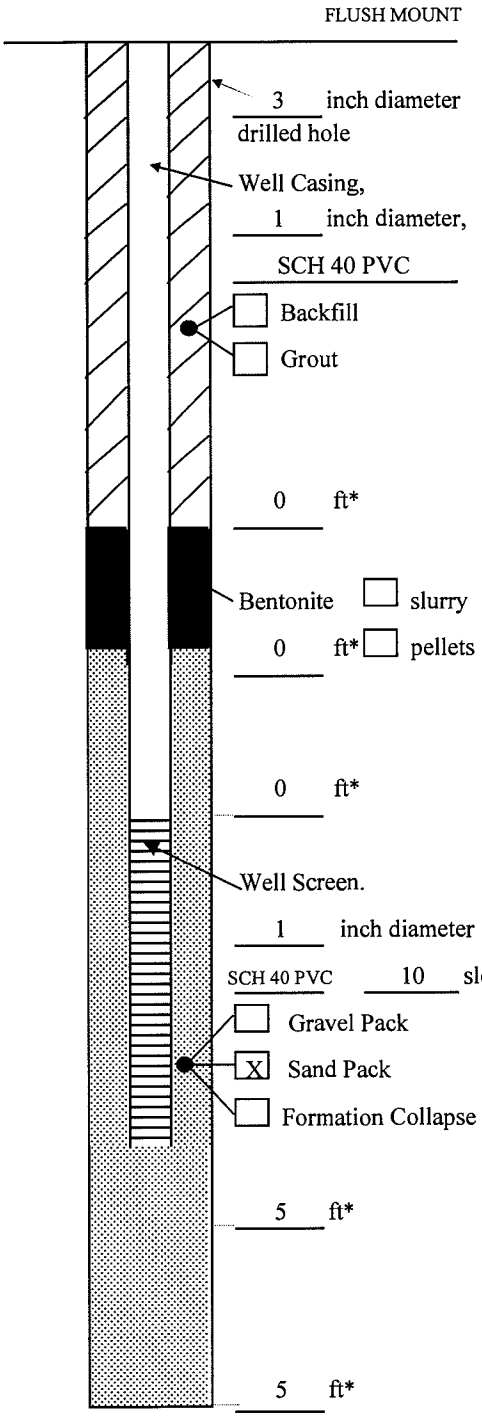
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000975.0002 Probe GMSG-35

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1127.48 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 5/4/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

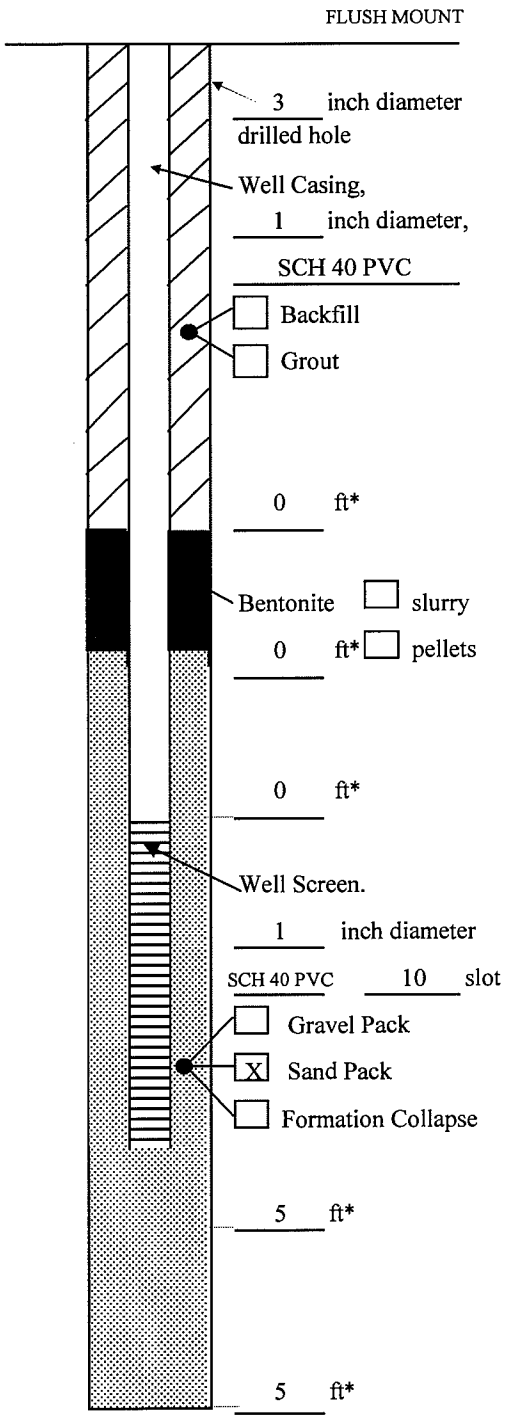
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)

Project Ford/Kingsford WI000975.0002 Probe GMSG-36

Town/City Kingsford

County Dickinson State Michigan



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Land-Surface Elevation 1127.52 feet
Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 5/4/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

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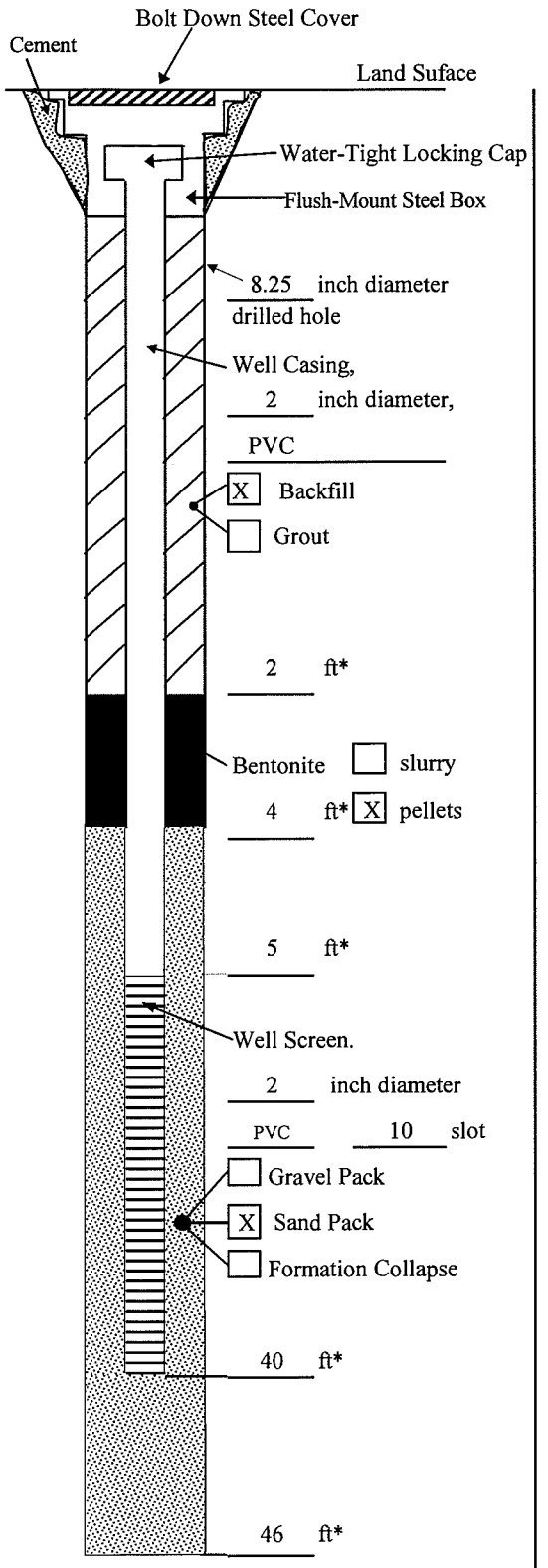
ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI000975.0002 Probe GMSG-37

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation 1117.29 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 6/12/2001

Drilling Method Hollow-Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling NA gallons

Water Removed During Development NA gallons

Static Depth to Water NA feet below M.P.

Pumping Depth to Water NA feet below M.P.

Pumping Duration NA hours

Yield NA gpm Date NA

Specific Capacity NA gpm/ft

Well Purpose Soil vapor probe and soil vapor extraction well

Remarks

Prepared by Pat Bartnik

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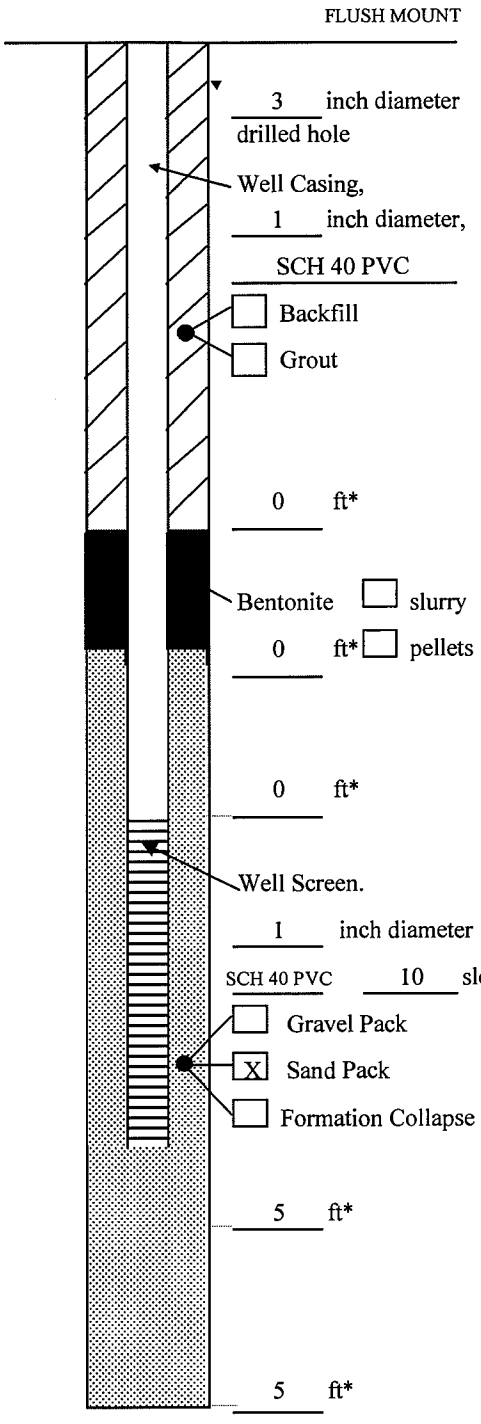
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000975.0002 Probe GMSG-38

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1125.31 feet
Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/20/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

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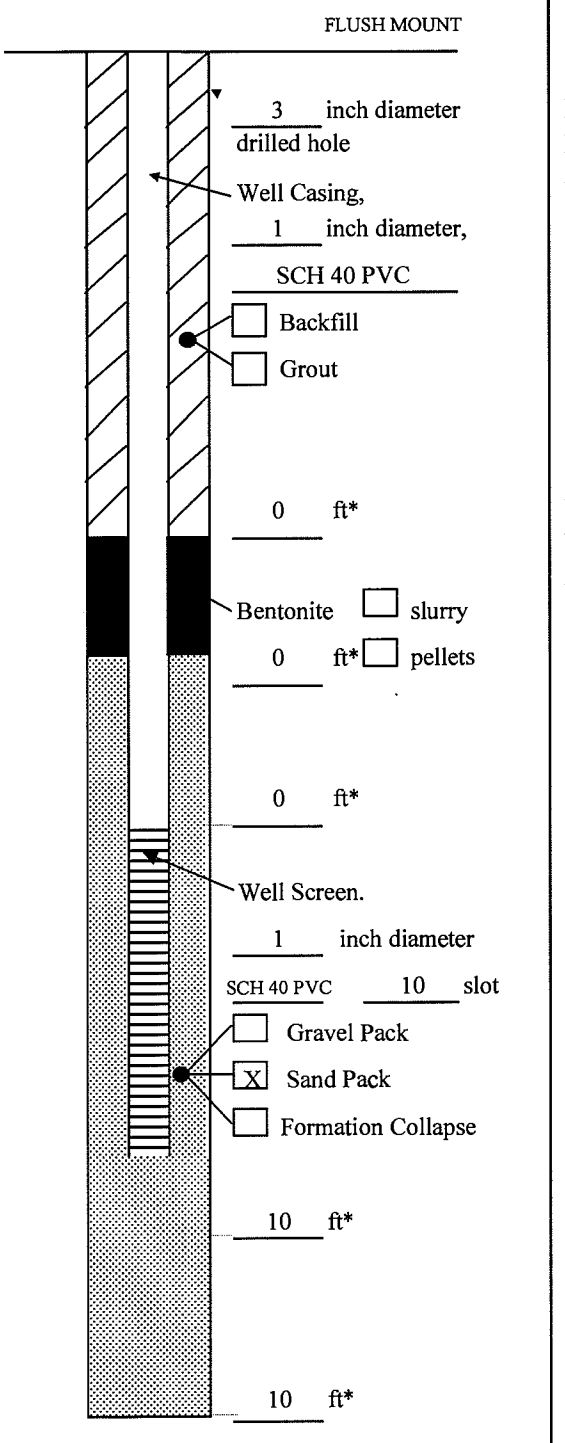
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Project Ford/Kingsford WI000975.0002 Probe GMSG-39

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1115.71 feet Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/20/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

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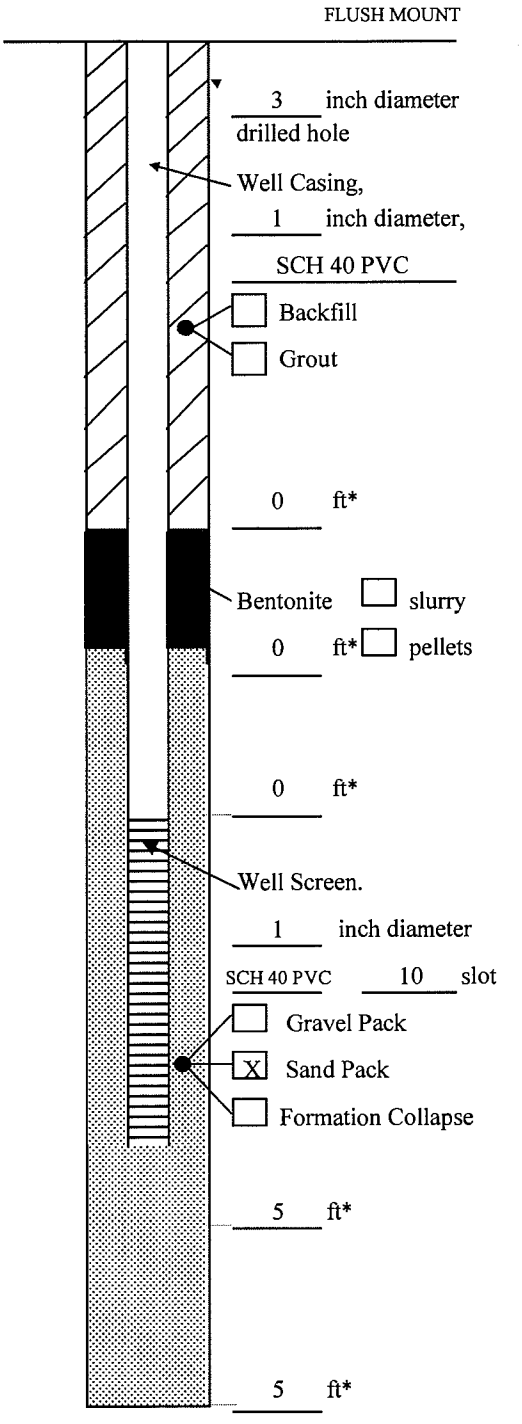
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000975.0002 Probe GMSG-40

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1116.05 feet
Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/20/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

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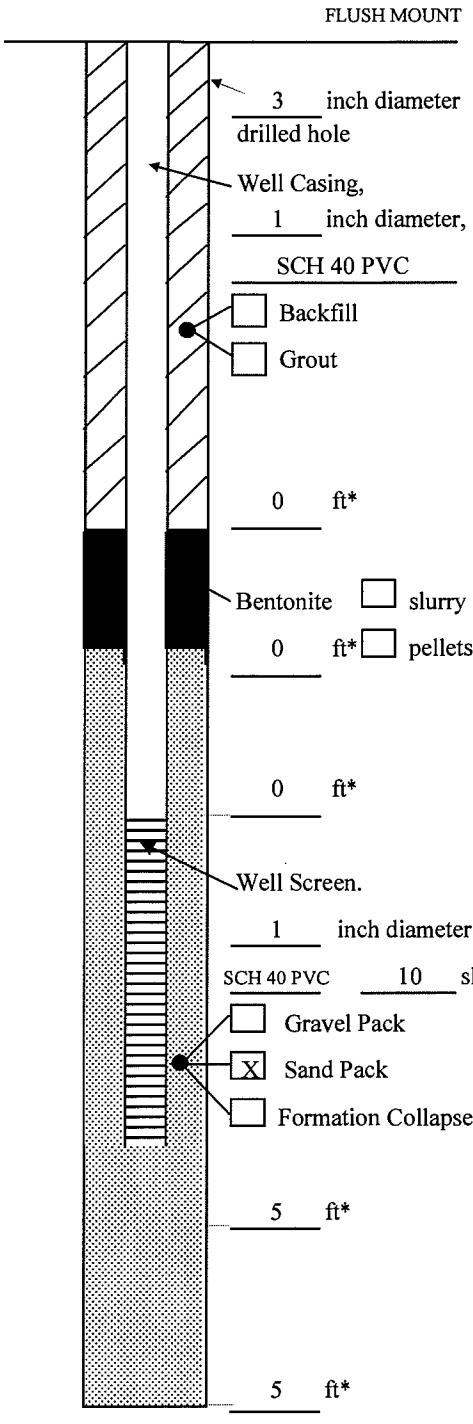
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Project Ford/Kingsford WI000975.0002 Probe GMSG-41

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1116.09 feet Mean Sea Level

[X] Surveyed [ ] Estimated

Installation Date(s) 7/20/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

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1/31/2005 7:37 AM

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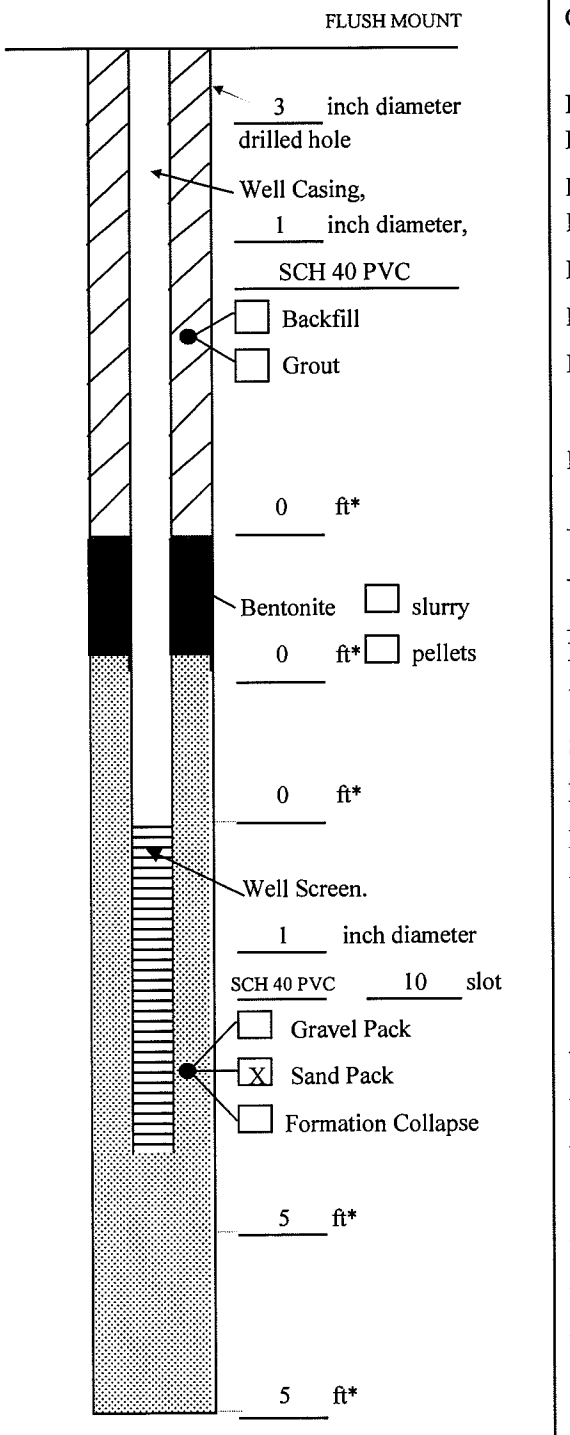
WELL CONSTRUCTION LOG
(UNCONSOLIDATED)

Project Ford/Kingsford WI000975.0002 Probe GMSG-42

Town/City Kingsford

County Dickinson State Michigan



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Land-Surface Elevation 1127.82 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 7/20/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

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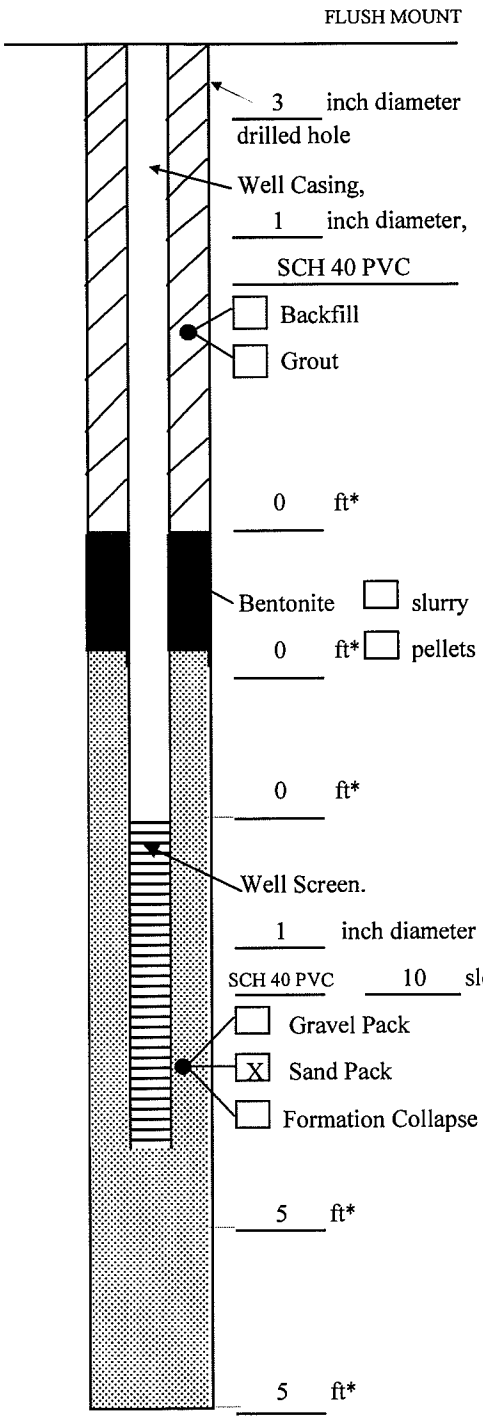
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)

Project Ford/Kingsford WI000975.0002 Probe GMSG-43

Town/City Kingsford

County Dickinson State Michigan



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Land-Surface Elevation 1111.42 feet
Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/23/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

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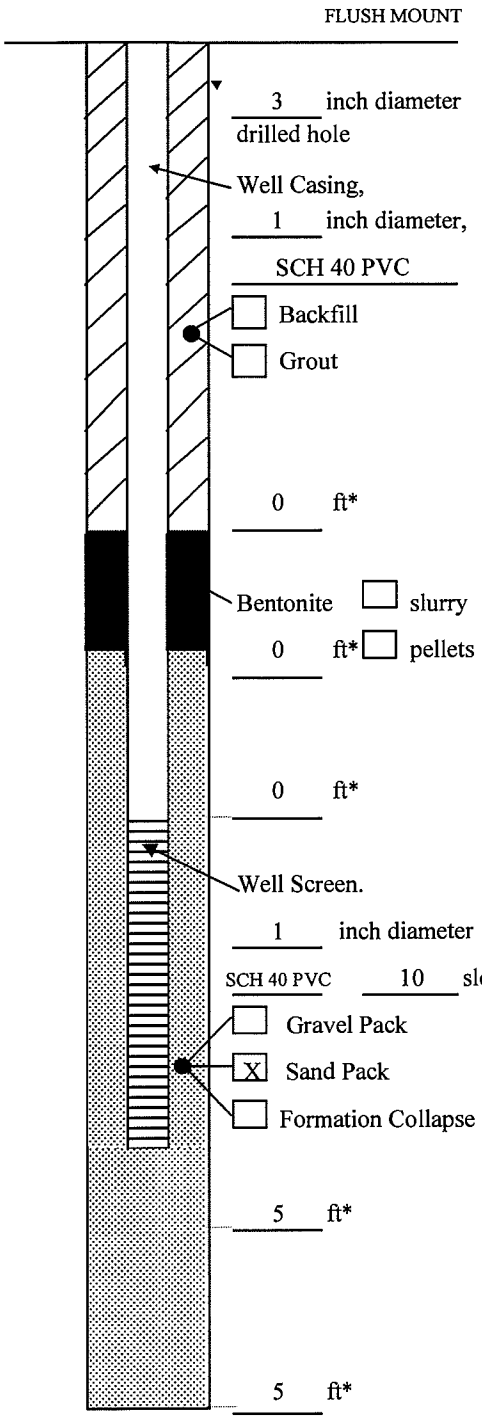
1/31/2005 7:38 AM

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000975.0002 Probe GMSG-44

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1111.11 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 7/23/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

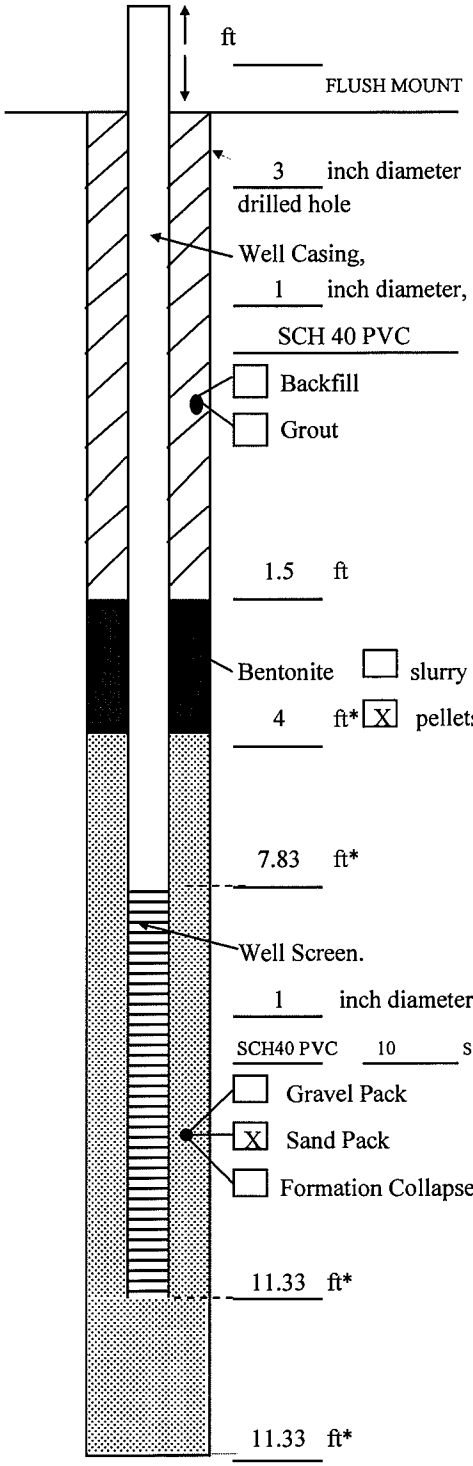
Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-45

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1115.28 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 2/12/02

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks Replacement probe for original probe.

Prepared by Paul Lenaker/Jason Dowling

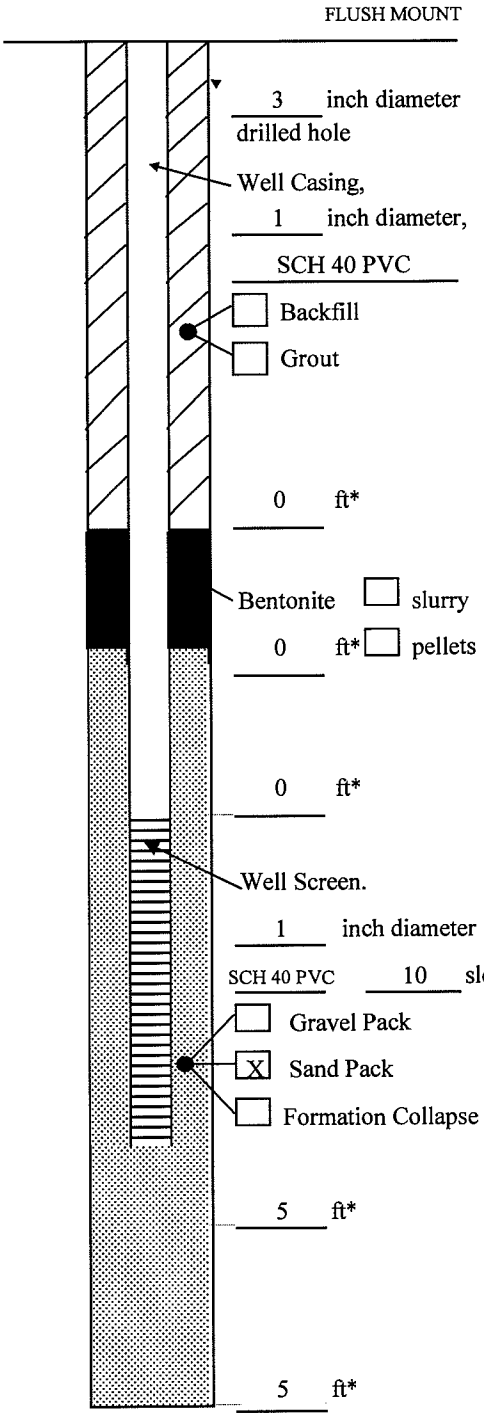
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)

Project Ford/Kingsford WI000975.0002 Probe GMSG-46

Town/City Kingsford

County Dickinson State Michigan



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Land-Surface Elevation and Datum 1112.84 feet Mean Sea Level
[X] Surveyed [ ] Estimated

Installation Date(s) 7/23/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

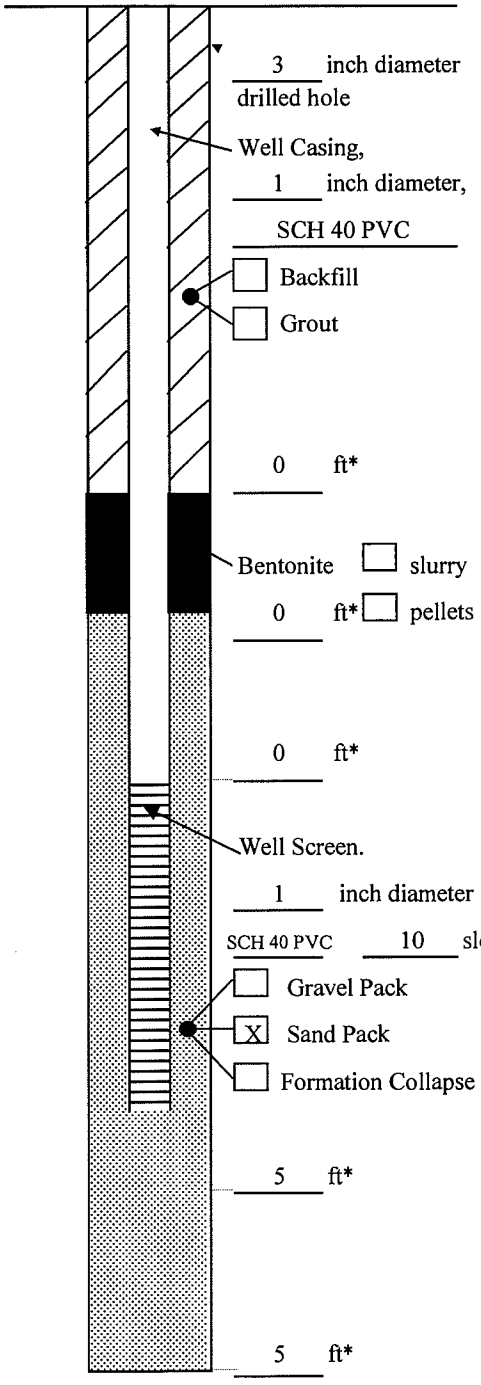
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)

Project Ford/Kingsford WI000975.0002 Probe GMSG-47

Town/City Kingsford

County Dickinson State Michigan



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Land-Surface Elevation and Datum 1123.68 feet Mean Sea Level
[X] Surveyed [ ] Estimated

Installation Date(s) 7/23/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

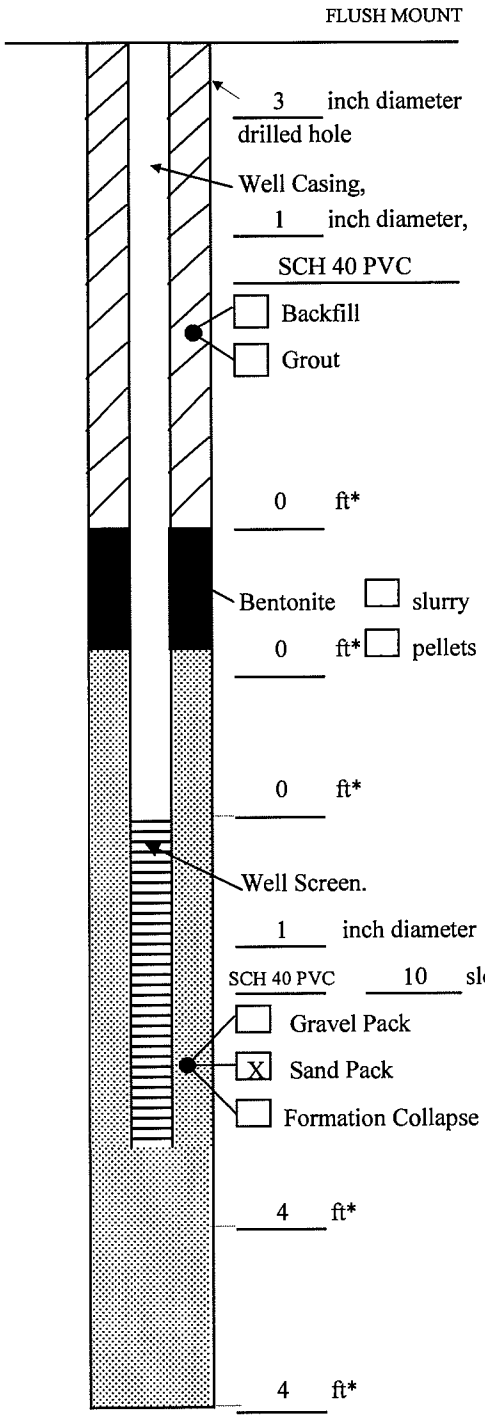
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)

Project Ford/Kingsford WI000975.0002 Probe GMSG-48

Town/City Kingsford

County Dickinson State Michigan



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Land-Surface Elevation and Datum 1113.96 feet
[X] Surveyed [ ] Estimated
Mean Sea Level

Installation Date(s) 7/24/2001

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

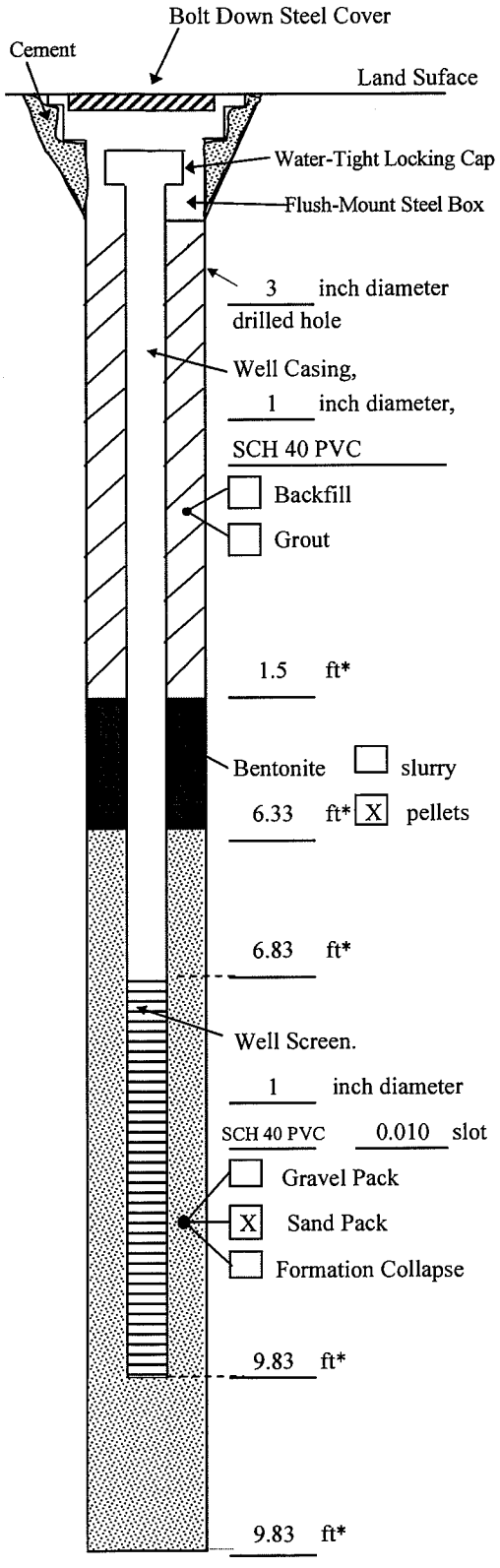
Specific Capacity ____ gpm/ft

Well Purpose Soil Vapor Monitoring.

Remarks

Prepared by John Keller

ARCADIS



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford WI000925.0002 Probe GMSG-49

Town/City Kingsford

County Dickinson State Michigan

Mean Sea Level

Land-Surface Elevation and Datum 1111.06 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 2/12/02

Drilling Method Hand Auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks Replacement probe for original probe.

Prepared by Paul Lenaker/Jason Dowling

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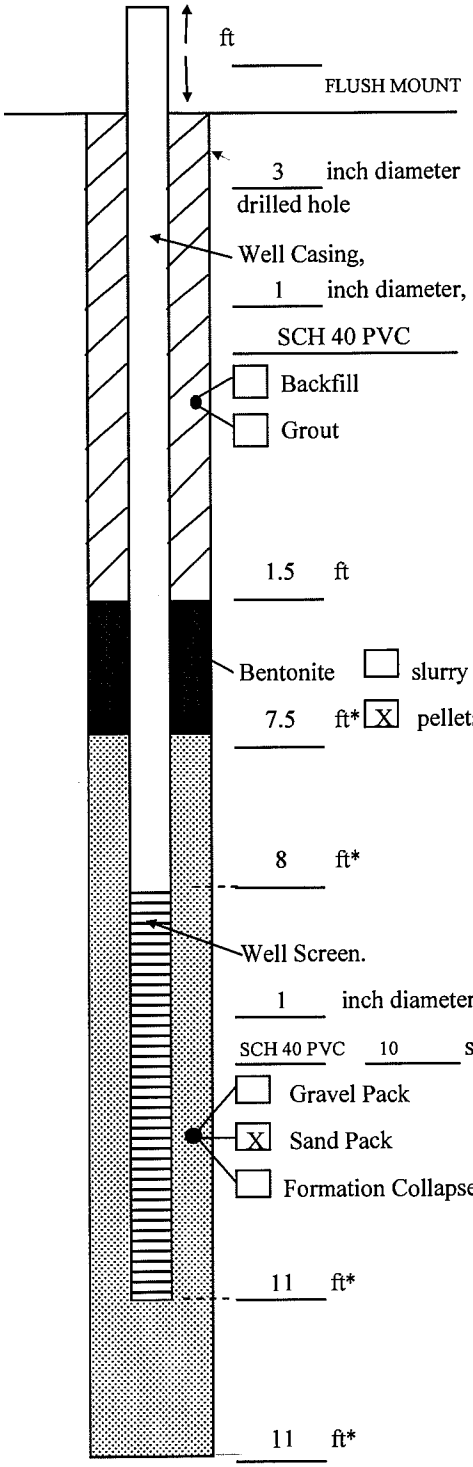
ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-50

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1111.92 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 2/11/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

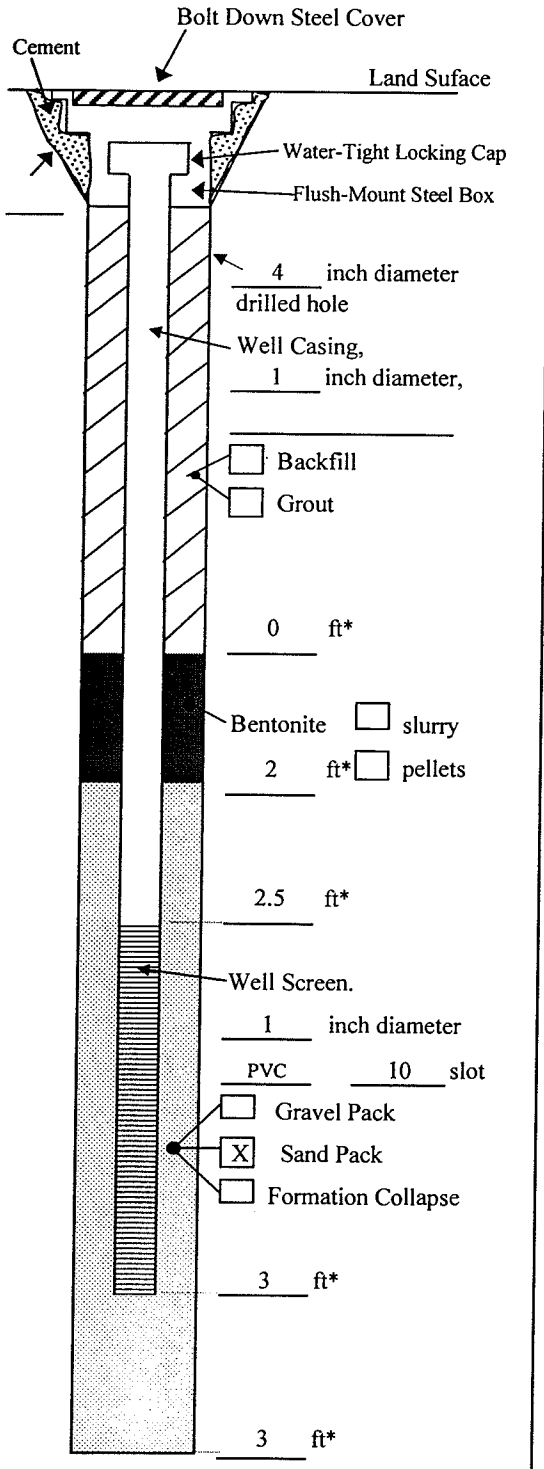
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks Replacement probe for original probe.

Prepared by Paul Lenaker/Jason Dowling

ARCADIS G&M, Inc.



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000860.0002 Probe GMSG-51

Town/City Brooks Aviation, Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum _____ feet ☐ Surveyed ☐ Estimated

Installation Date(s) 8/15/01

Drilling Method Hand Auger and Motor Auger

Drilling Contractor ARCADIS G&M, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

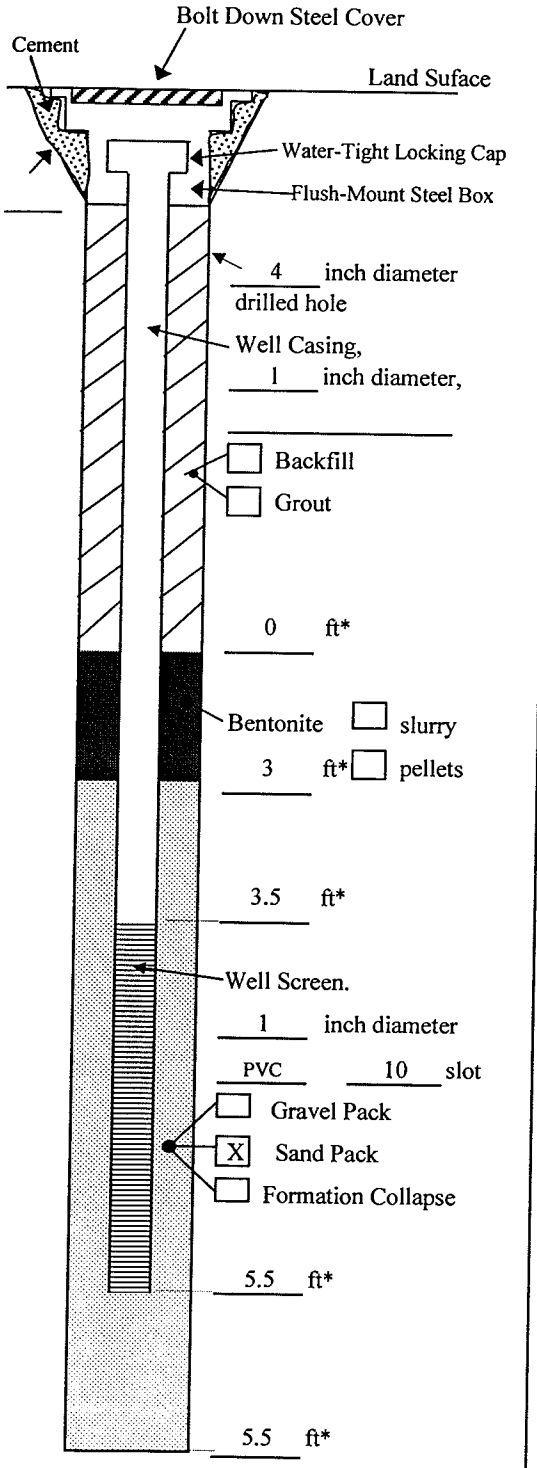
Specific Capacity _____ gpm/ft

Well Purpose Soil vapor monitoring well.

Remarks

Prepared by Stephen Vasas

ARCADIS G&M, Inc.



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000860.0002 Probe GMSG-52

Town/City Brooks Aviation, Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum _____ feet ☐ Surveyed ☐ Estimated

Installation Date(s) 8/15/01

Drilling Method Motor Auger

Drilling Contractor ARCADIS G&M, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

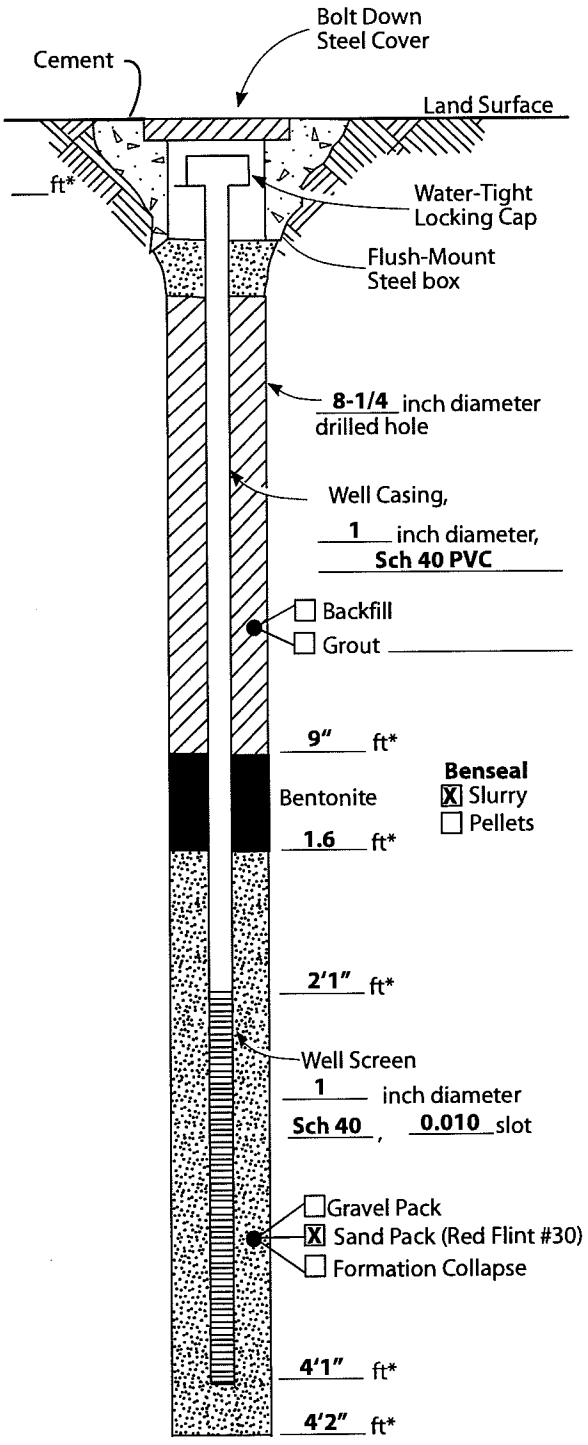
Specific Capacity _____ gpm/ft

Well Purpose Soil vapor monitoring well.

Remarks

Prepared by Stephen Vasas

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg53.ai

Project **Ford/Kingsford WI000860.0001** Well **GMSG-53**

Town/City **Kingsford, Michigan**

County **Dickinson**

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed ☐ estimated

_____

Installation Date(s) **8/17/01**

Drilling Method **Hollow Stem Auger**

Drilling Contraactor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

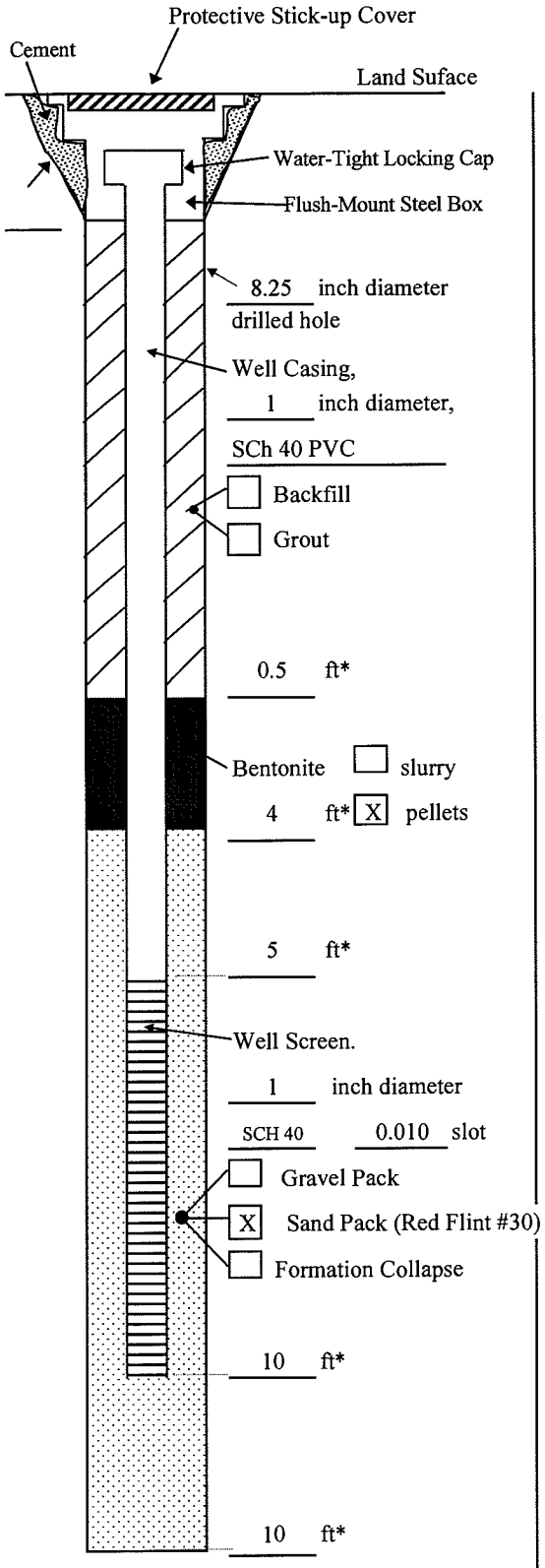
Speicif Capacity _____ gpm/ft

Well Purpose _____

Remarks _____

Prepared by **John Keller**

ARCADIS G&M, Inc.



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000860.0002 Probe GMSG-54

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1112.09 feet Mean Sea Level ☐ Surveyed ☐ Estimated

Installation Date(s) 8/28/01

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

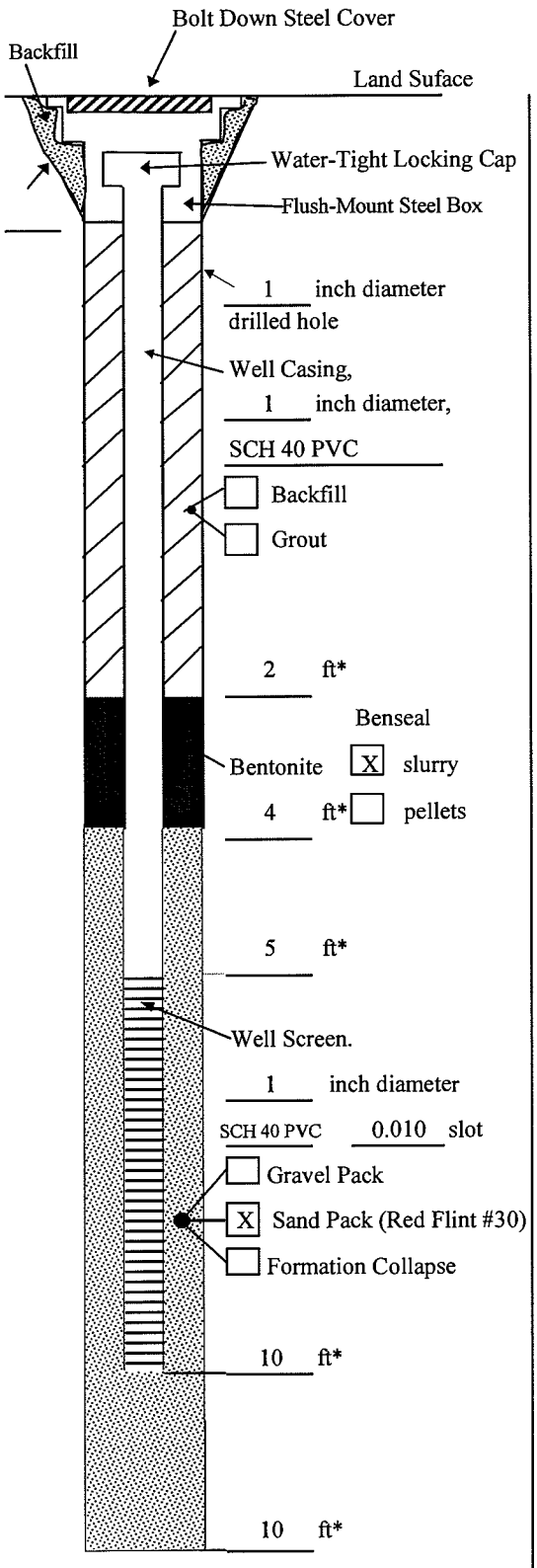
Well Purpose

Remarks

Prepared by John Keller

G:\Aproject\FORD\WI0637\KINGSFOR\TABLES\wclGMSG54
1/31/2005 7:51 AM

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI000975.0002 Probe GMSG-55

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1121.79 feet [X] Surveyed [ ] Estimated

Mean Sea Level

Installation Date(s) 8/30/01

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

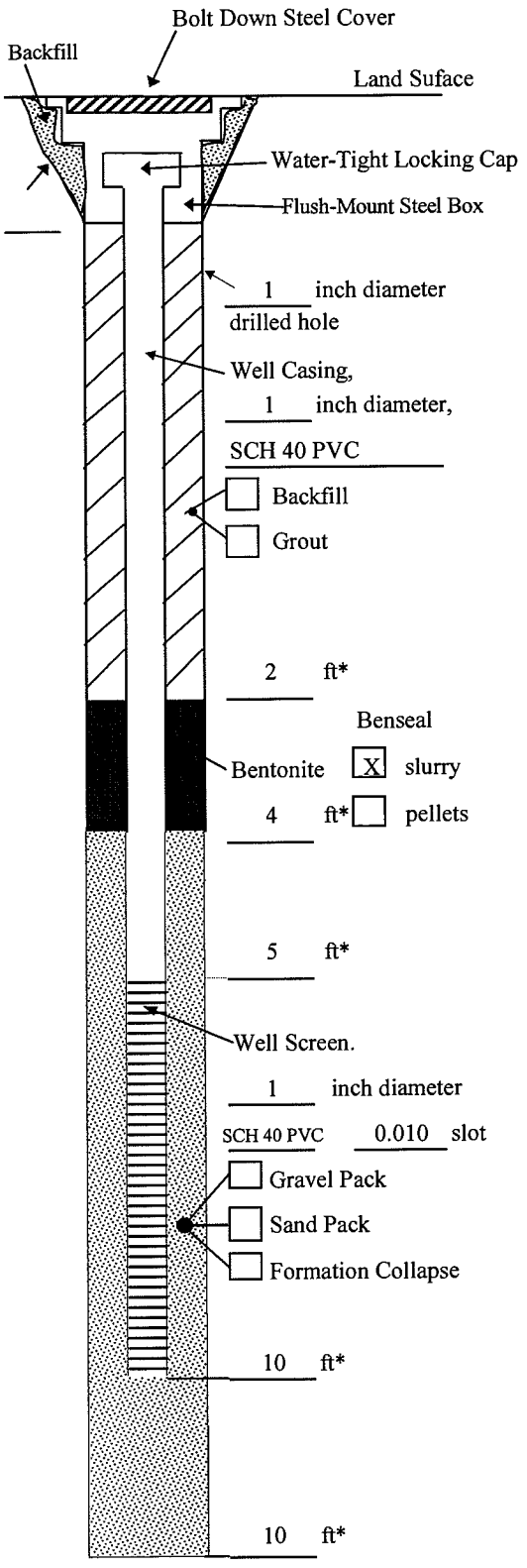
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by John Keller

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI000975.0002 Probe GMSG-56

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1121.82 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 8/30/01

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

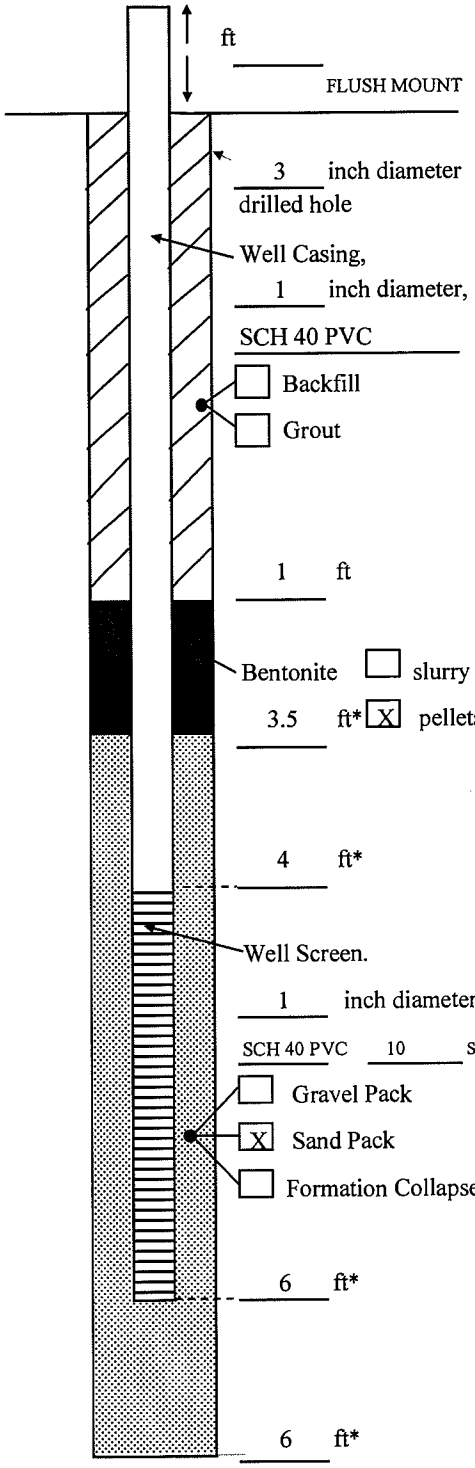
Well Purpose Soil vapor monitoring.

Remarks

Prepared by John Keller

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-57

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1124.69 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 2/8/02

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

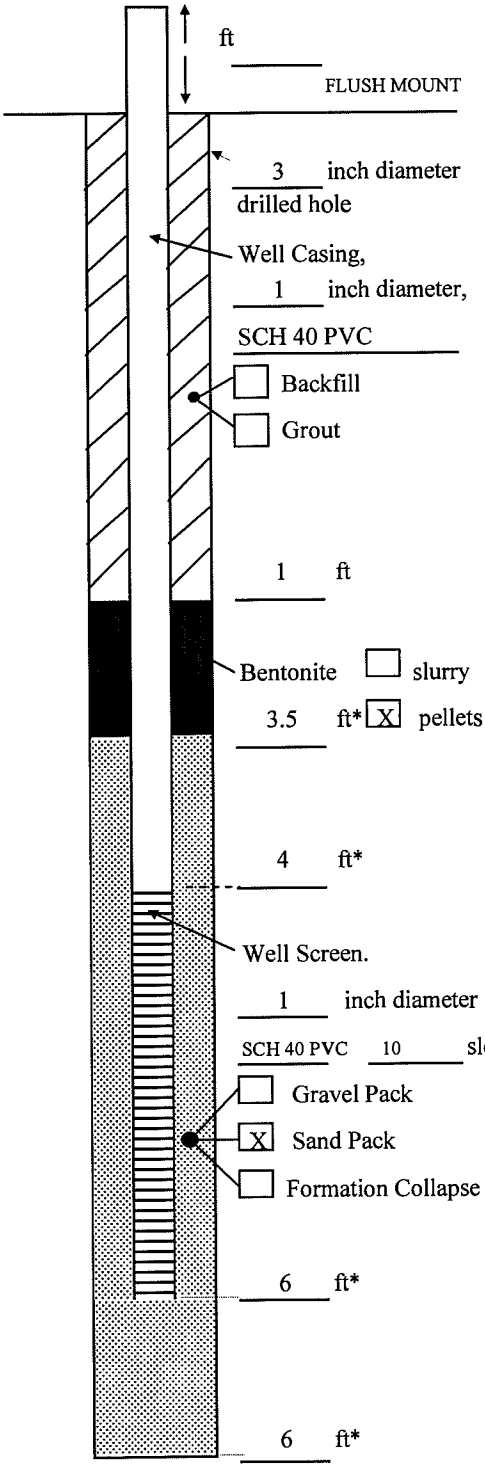
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Paul Lenaker/Jason Dowling/Pat Bartnik

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-58

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1125.03 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 2/8/02

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

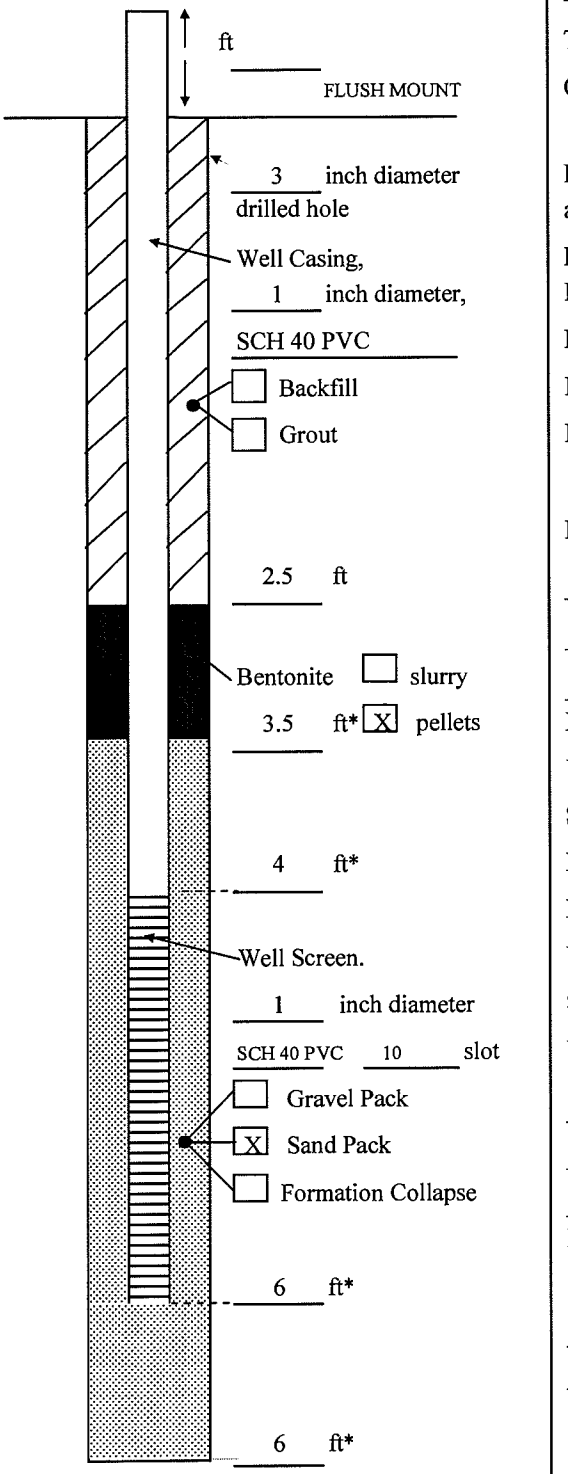
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Paul Lenaker/Jason Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-59

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.19 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 2/8/02

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

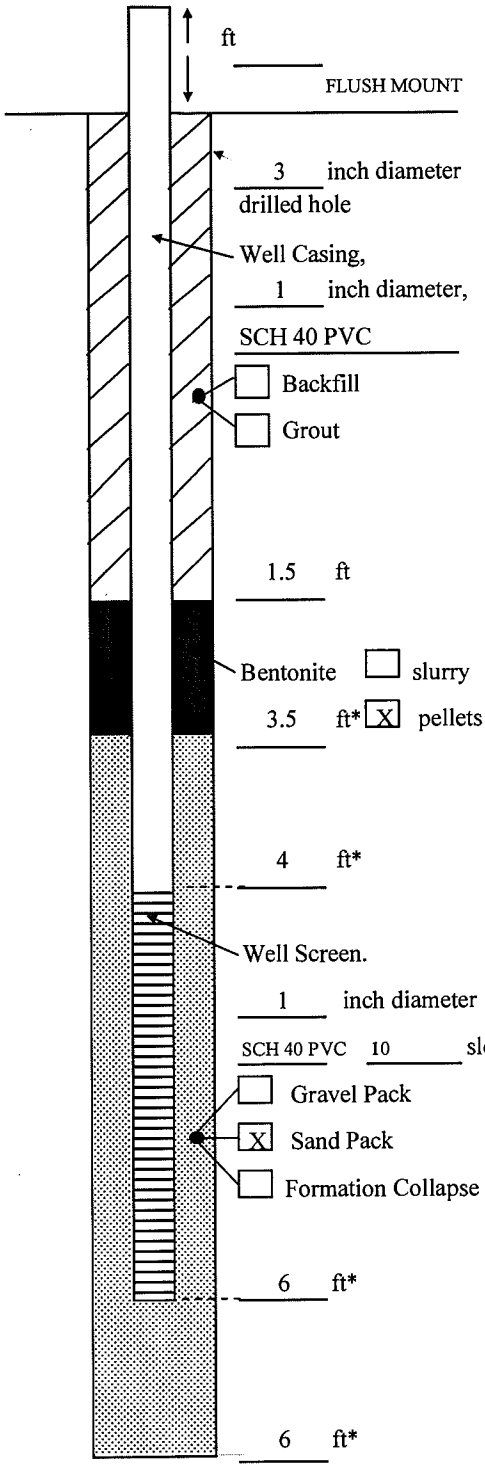
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Paul Lenaker/Jason Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-60

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1127.12 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 2/8/02

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

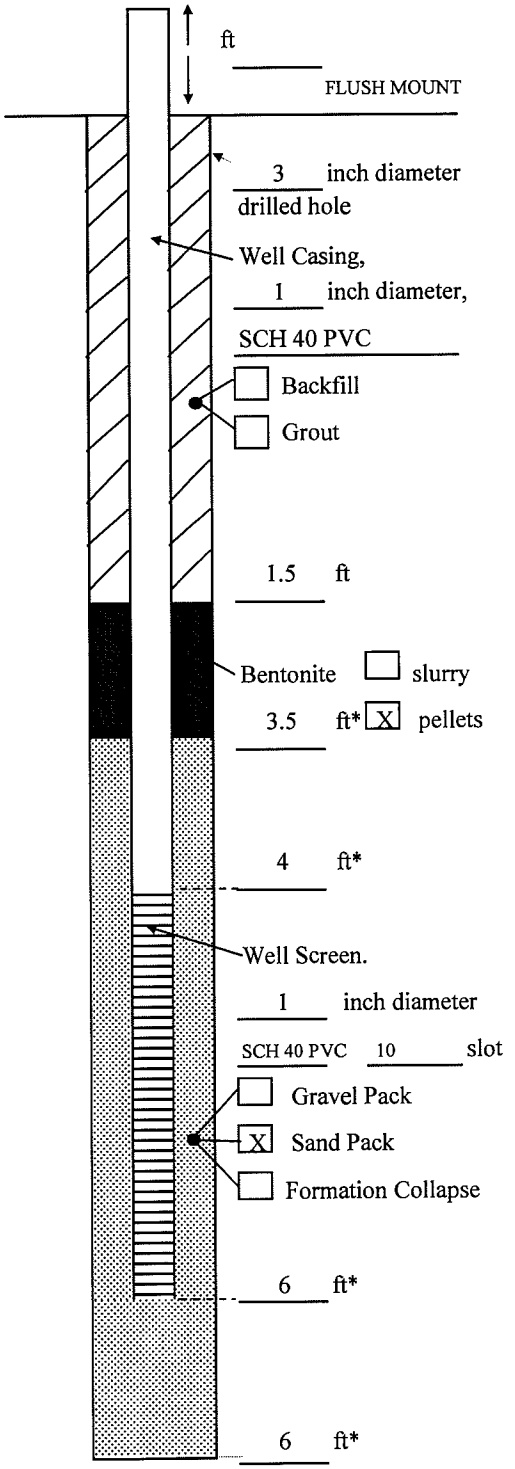
Remarks

Prepared by Paul Lenaker/Jason Dowling

ARCADIS

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-61

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1123.00 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 2/9/02

Drilling Method Hand Auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

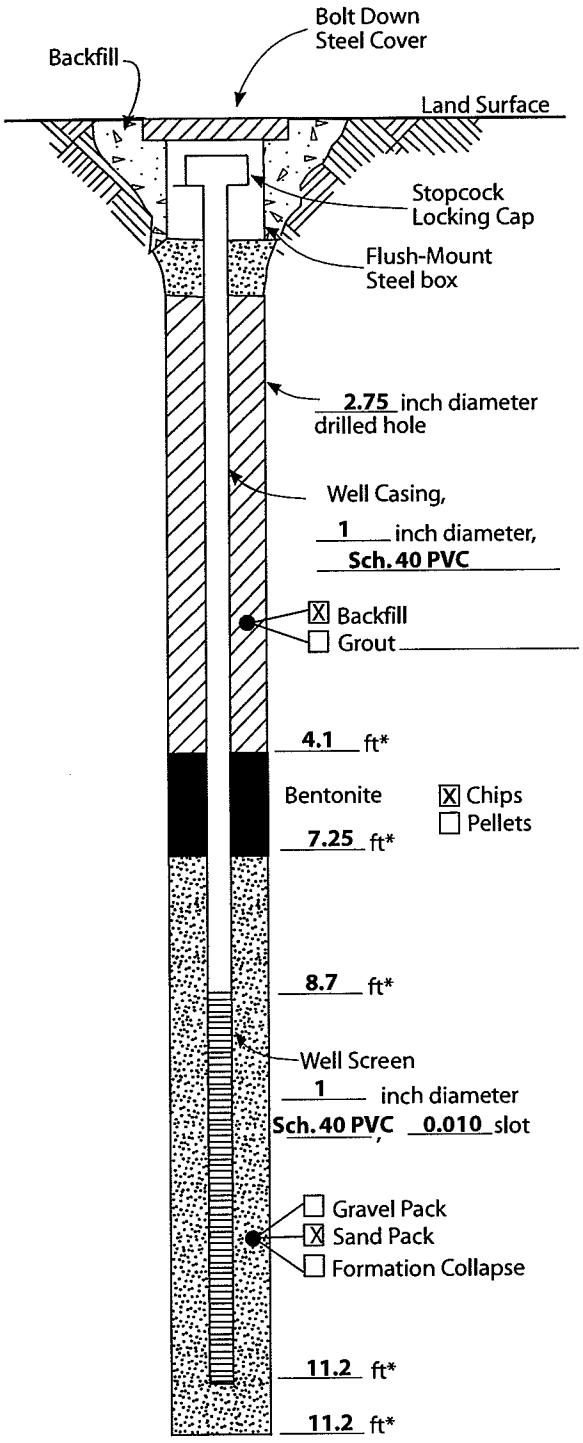
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jason Dowling

ford/wi0637/datamngt/tables/wcl_gmsg61.xls
1/31/2005 7:57 AM

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project Ford/Kingsford WI001095.0002 Well GMSG-61R

Town/City Kingsford - NLJ

County Dickinson

Permit No. NA

Land-Surface Elevation

1123 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/17/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

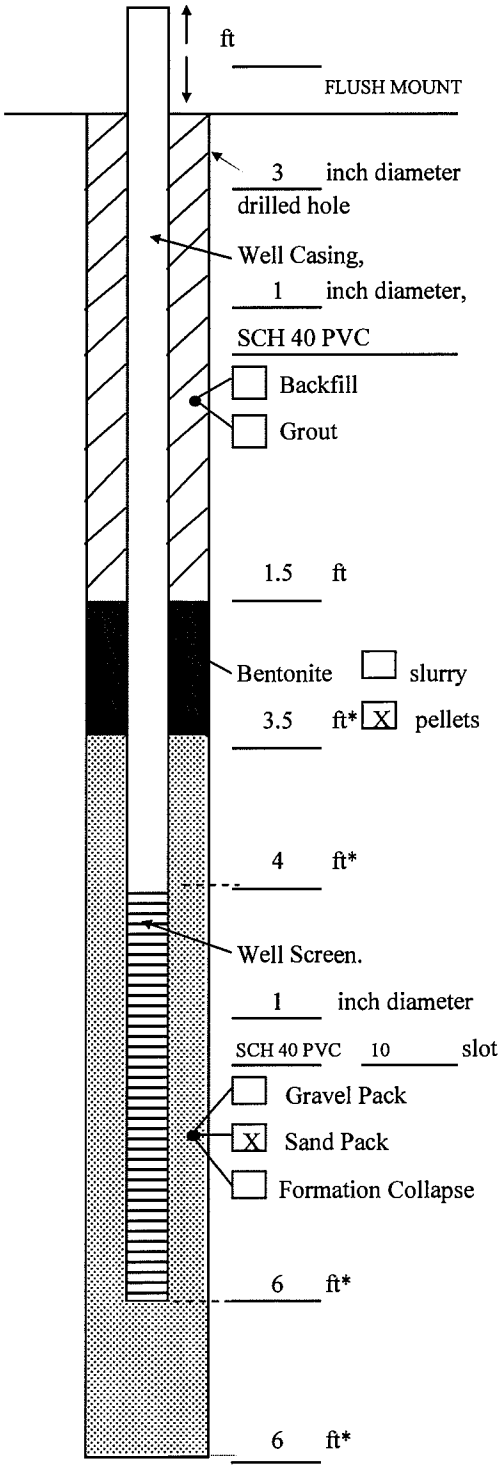
Remarks

Prepared by J. Evans

ford/wi0637/2006/graphics/logs/gmsg61r-wcl.ai

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-62

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1123.22 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 2/9/02

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

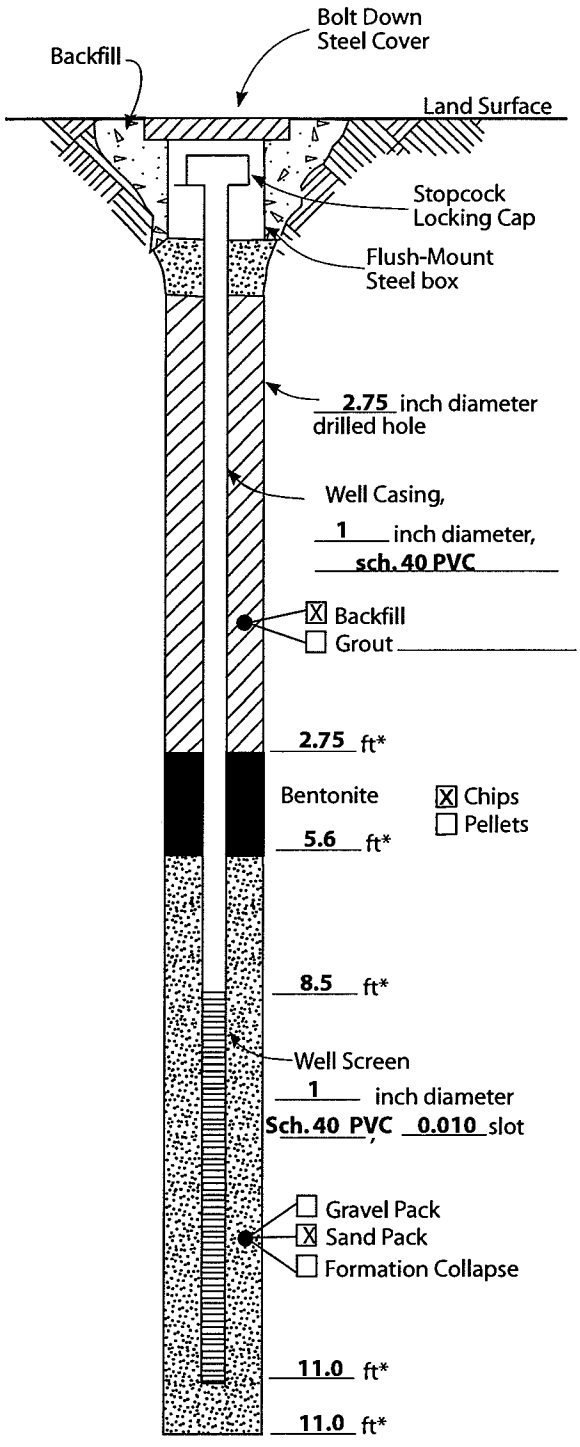
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Paul Lenaker/Jason Dowling

ford/wi0637/datamngt/tables/wcl_gmsg62.xls
1/31/2005 7:58 AM

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-62R**

Town/City **Kingsford - NLJ**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1123.22 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/10/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

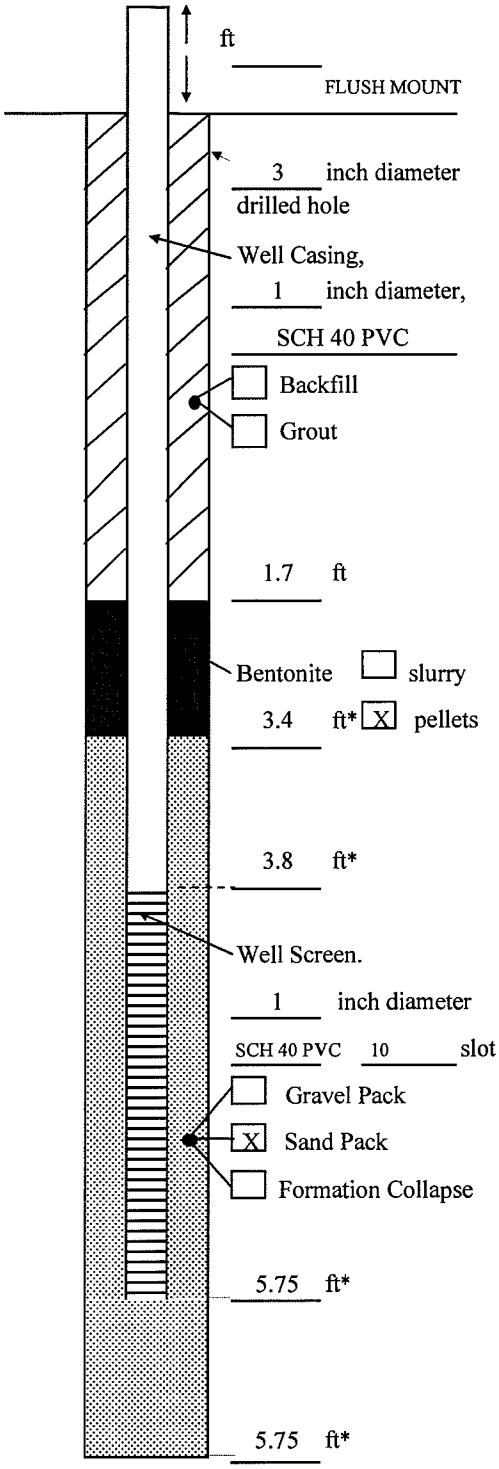
Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg62R-wcl.ai

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-63

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1127.76 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 2/9/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

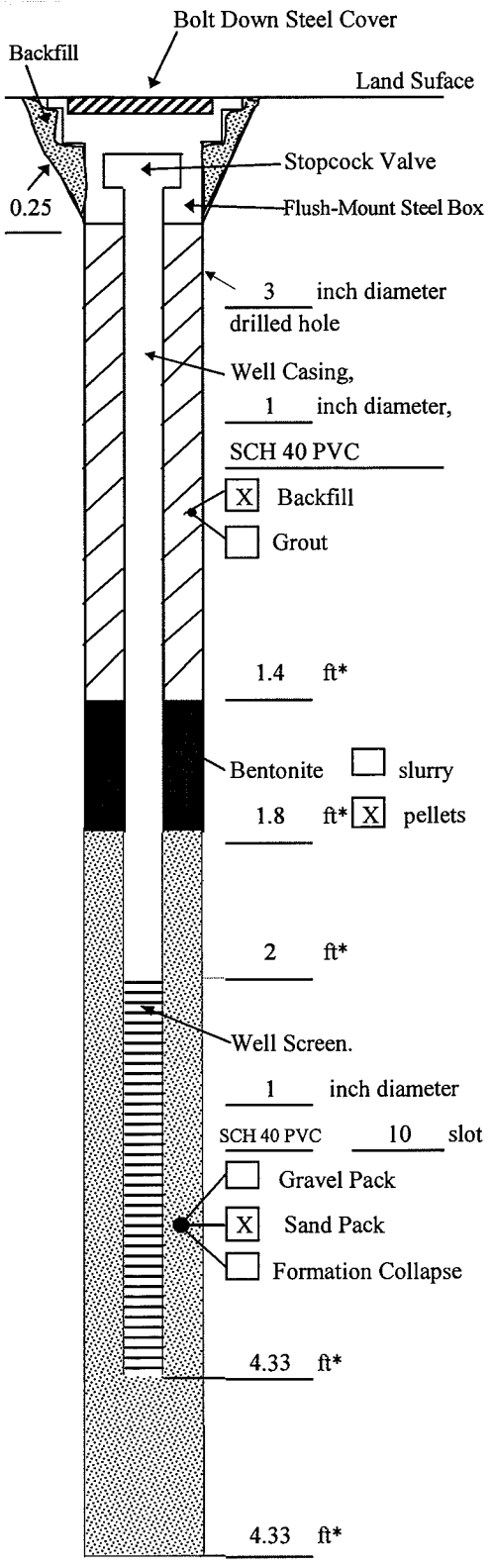
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jason Dowling

ford/wi0637/datamngt/tables/wcl_gmsg63.xls
1/31/2005 7:58 AM

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000975.0002 Probe GMSG-64

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1128.44 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/19/02

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

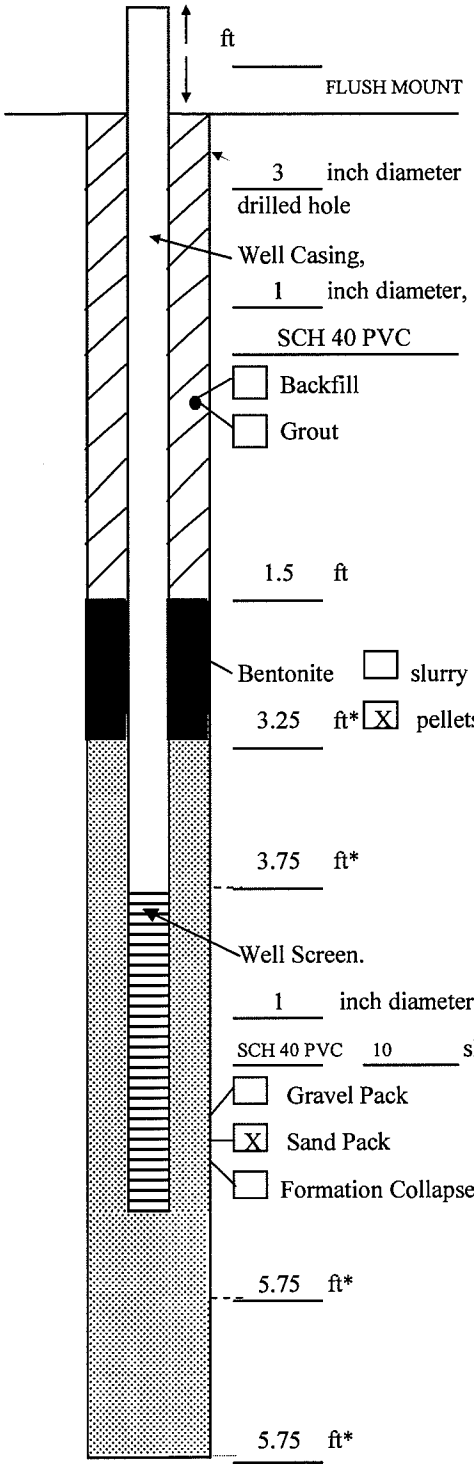
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Pat Bartnik

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-65

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.36 feet Mean Sea Level
[X] Surveyed
[ ] Estimated

Installation Date(s) 2/10/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

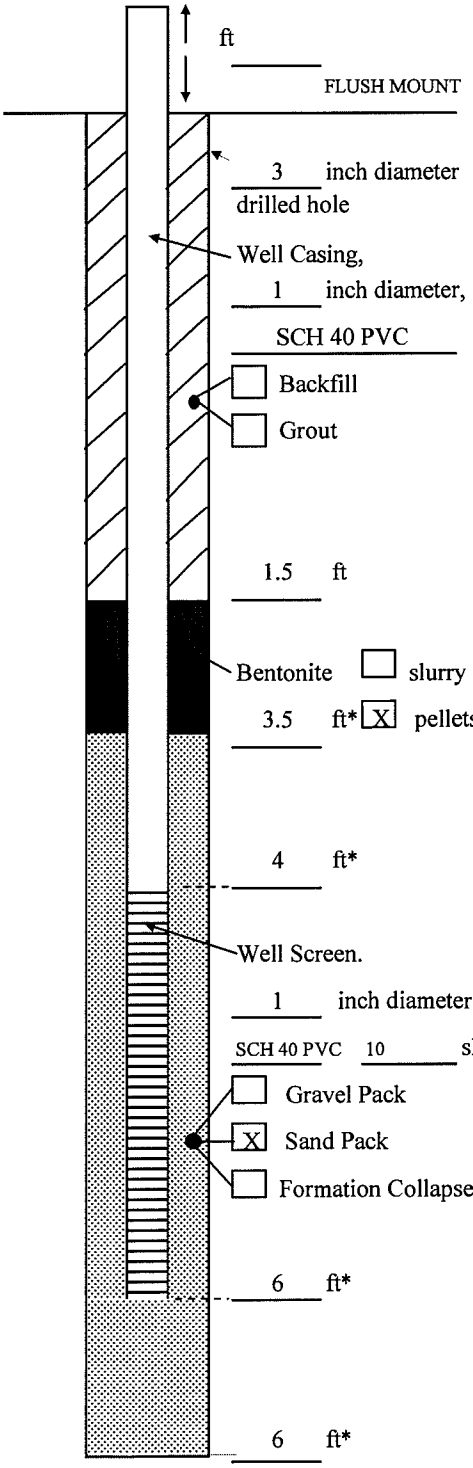
Remarks

Prepared by Paul Lenaker/Jason Dowling

ARCADIS

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-66

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1124.44 feet Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 2/10/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

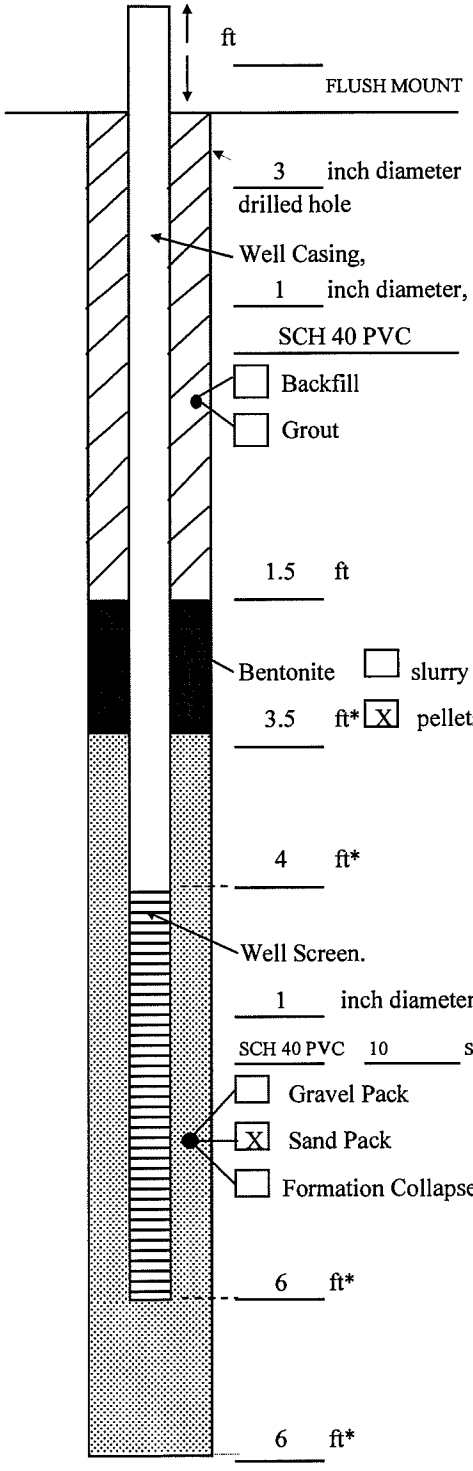
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Paul Lenaker/Jason Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-67

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.08 feet Mean Sea Level
[X] Surveyed
[ ] Estimated

Installation Date(s) 2/11/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

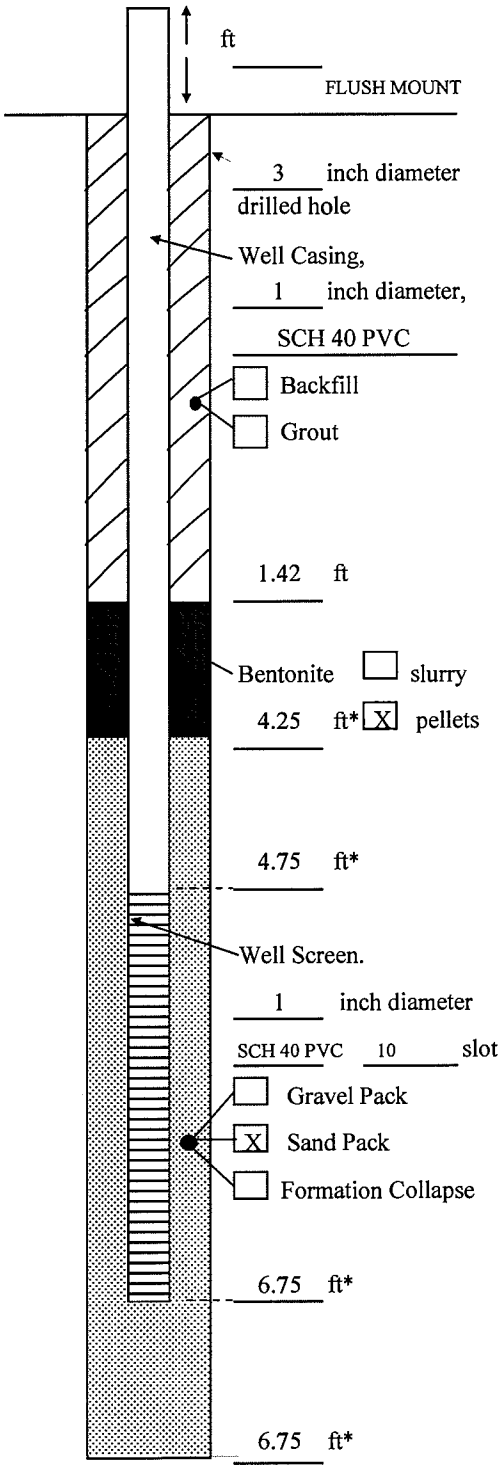
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Paul Lenaker/Jason Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0002 Probe GMSG-68

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.09 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 2/11/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

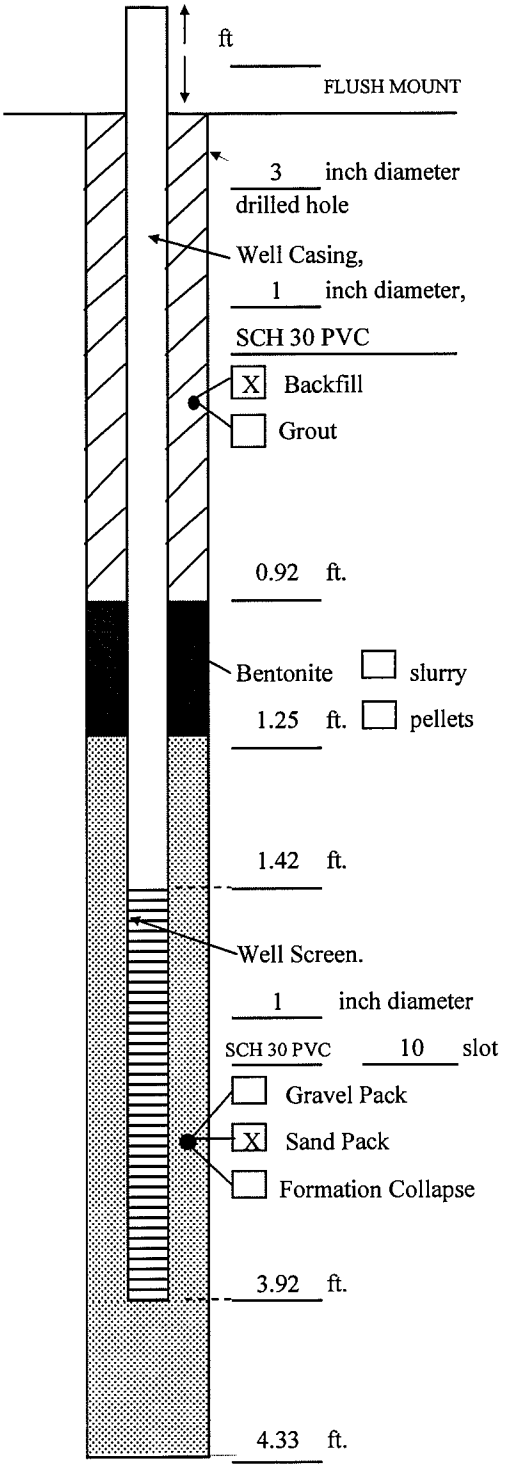
Remarks

Prepared by Paul Lenaker/Jason Dowling

ford/wi0637/datamngt/tables/wcl_gmsg68.xls
1/31/2005 8:01 AM

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ford/Kingsford WI000950.0002 Probe GMSG-69

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.37 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 6/7/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

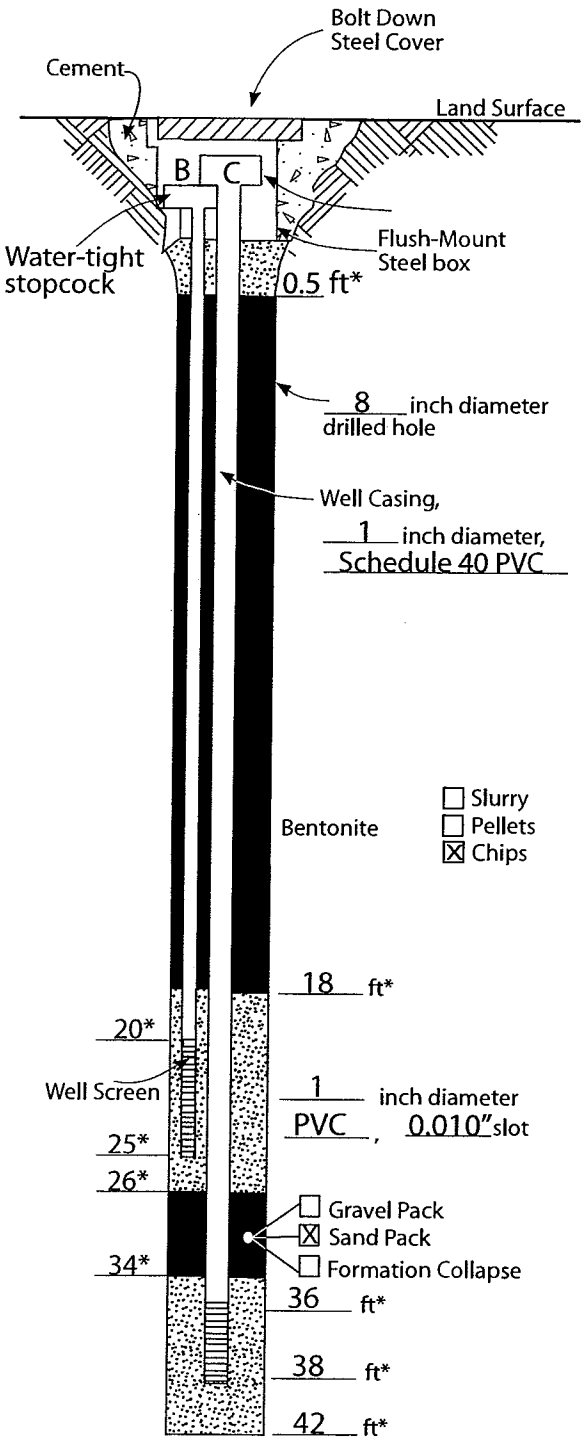
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Pat Bartnik

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg69bc-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-69 B/C

Town/City Kingsford

County Dickinson

Permit No. NA

Land-Surface Elevation 1114.88 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/2/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

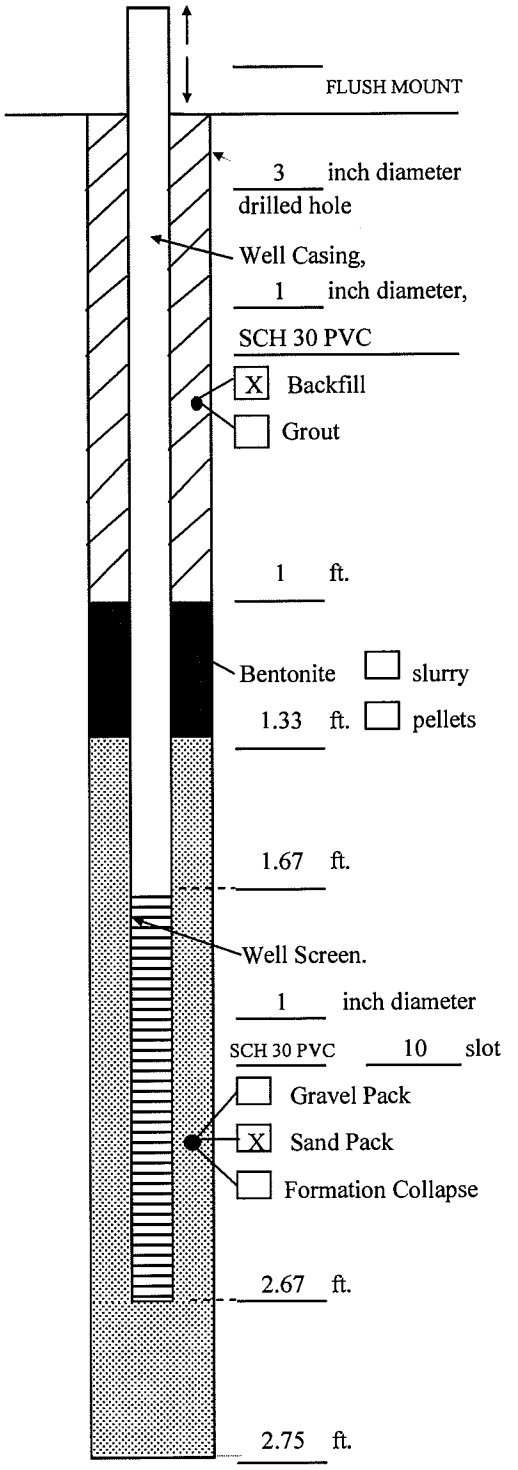
Well Purpose Commercial Soil Vapor Probe

Remarks Screens: 20-25' and 36-38' Schedule 40 PVC, 0.010" slot, flat push bottom cap, filter pack: Red Flint #40 coarse sand, 34-42' filter pack 7-50 lb bas, 18-26' 5-50 lb bags. Seal: Baroid 3/8" bentonite chips, 26-34'. 4-50 lb bags, 7 gallons water 1-18' 8-50 lb bags and 12 gallons water. Gallons water (used 5 gallons/2' bentonite chips)

Prepared by Toni Schoen

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ford/Kingsford WI000950.0002 Probe GMSG-70

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.12 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 6/7/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

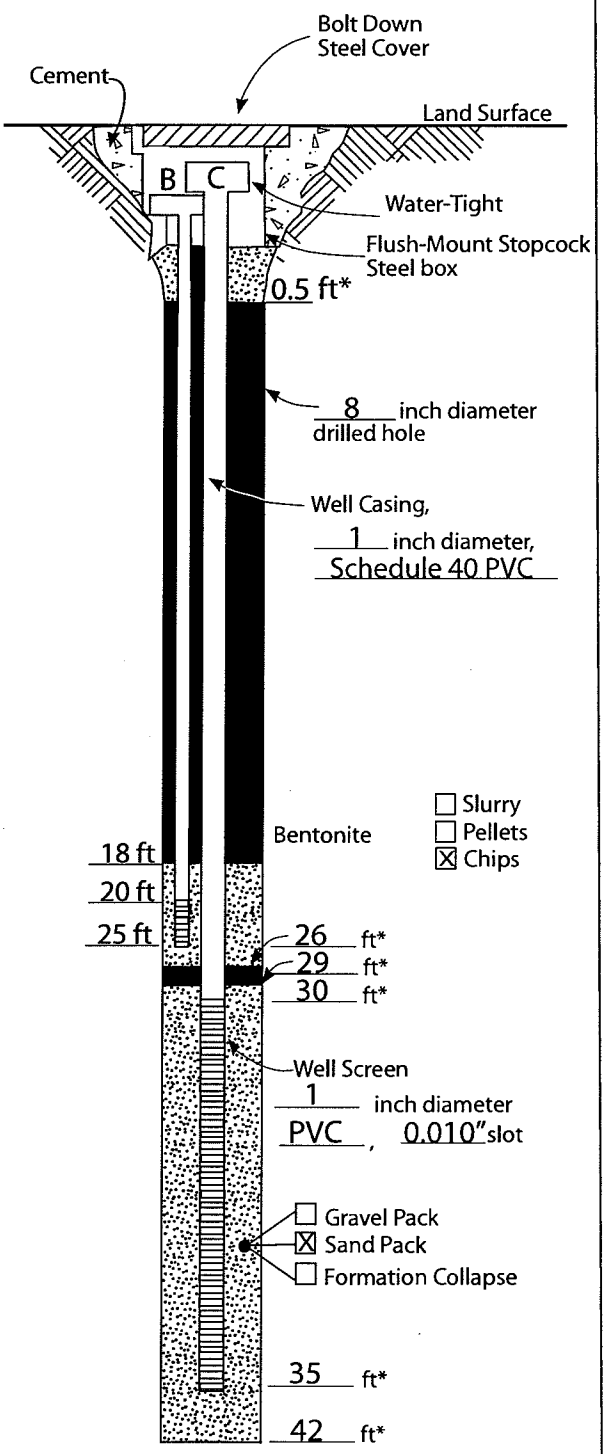
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Pat Bartnik

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg70bc-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-70 B/C

Town/City Kingsford

County Dickinson

Permit No. NA

Land-Surface Elevation 1114.36 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/2/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

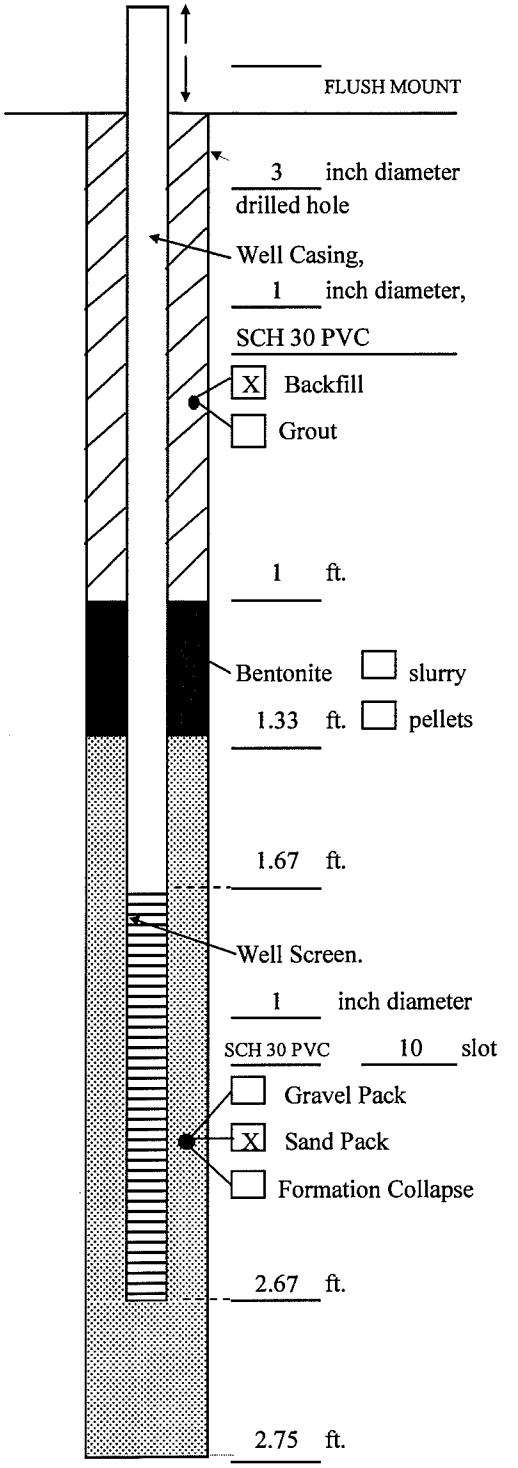
Well Purpose Commerical Soil Vapor Probe

Remarks Screens: 20-25' and 30-35'. Red Flint #40 filter pack 29-42' 6-50 lb bags, 18-26' 5-50 lb bags, Baroid 3/8" bentonite chips, 26-29' 1.5-50 lb bags, 0.5-18' 8-50 lb bags, 30 gallons water (5 gallons/2' chips)

Prepared by Toni Schoen

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ford/Kingsford WI000950.0002 Probe GMSG-71

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.39 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 6/7/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

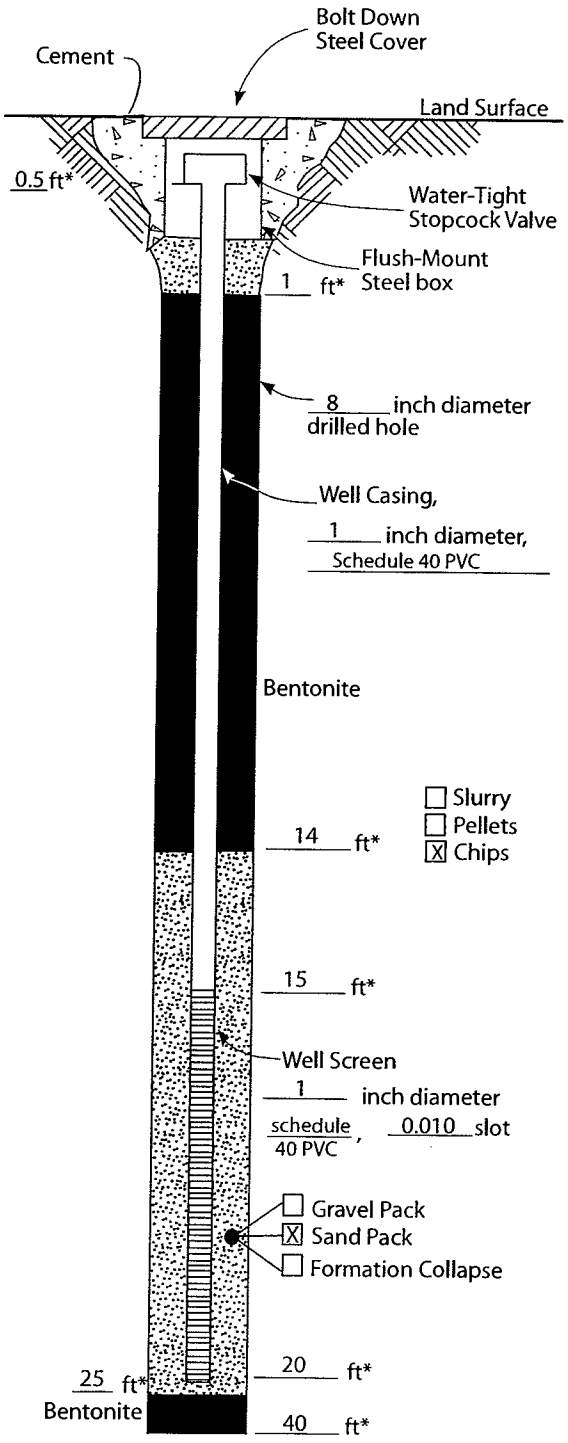
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Pat Bartnik

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg71b.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-71B

Town/City Kingsford, Michgian - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.74 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/7/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

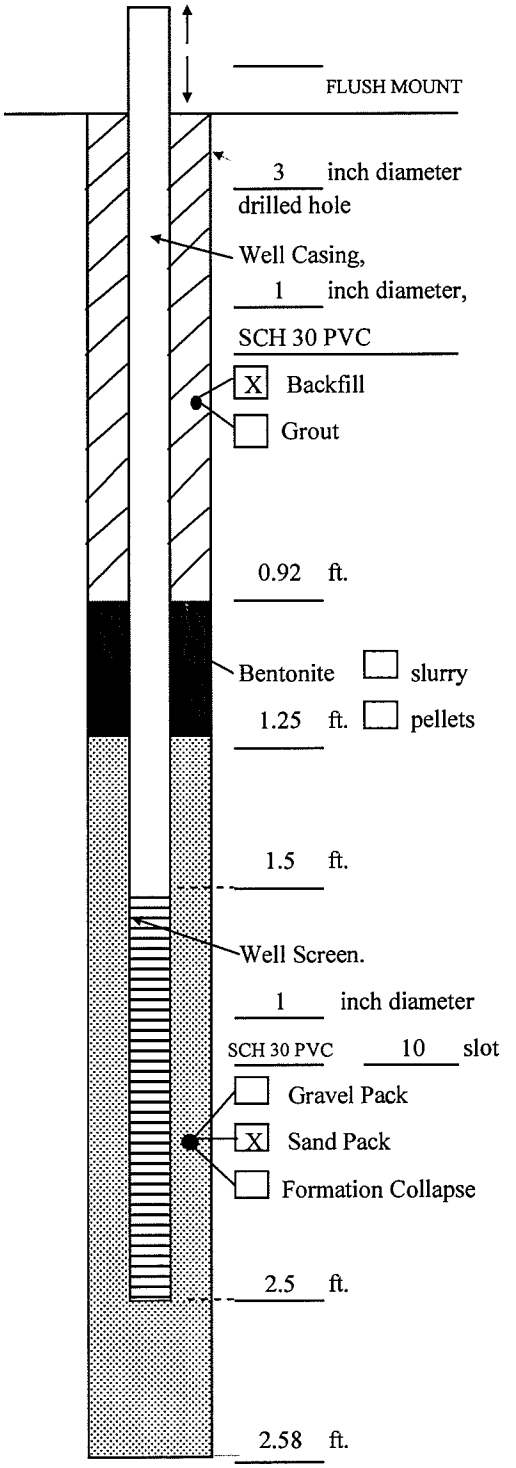
Well Purpose Commerical Soil Vapor Probe

Remarks Screen: Longyear 1" Schedule 40 PVC, 0.010" slot, factory cut, flat bottom end cap, stopcock valve. Red flint #40 coarse sand filter pack: 14-25' 6-50 lb bags, Baroid 3/8" bentonite chips: 40-25', 6.5-50 lb bags hydrafed with formation water, 1-14' 7-50 lb bags and 12 gallon water

Prepared by Toni Schoen

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ford/Kingsford WI000950.0002 Probe GMSG-72

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.00 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 6/7/2002

Drilling Method Hand auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

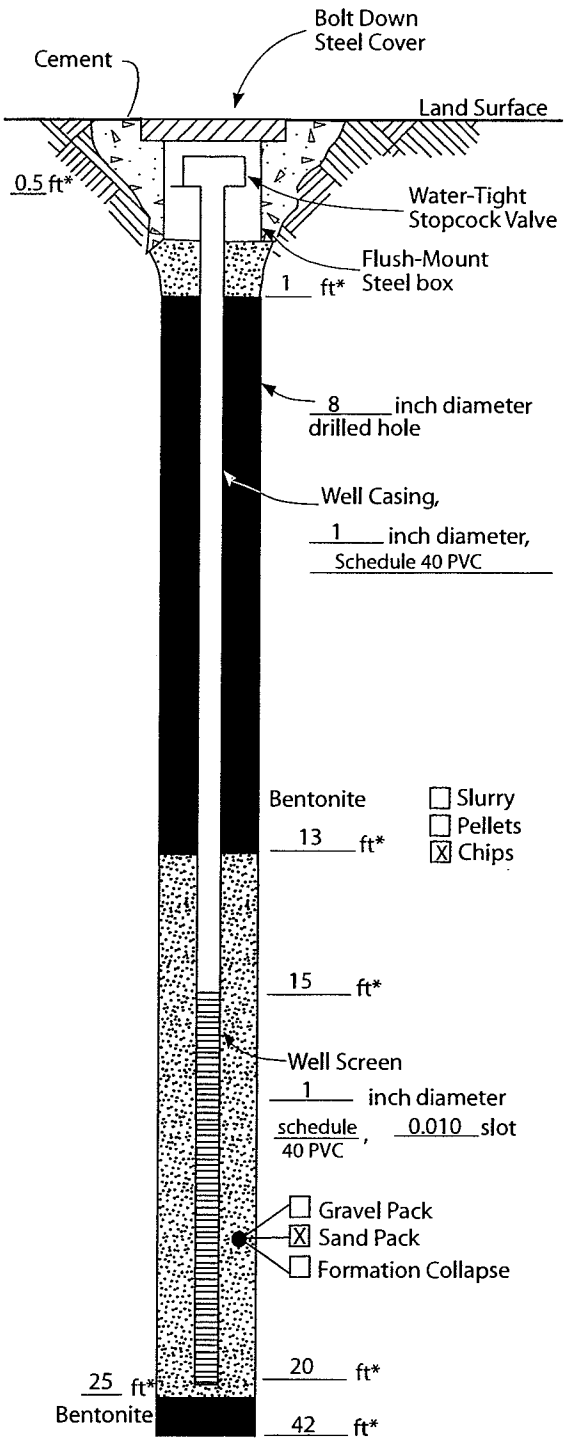
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Pat Bartnik

ford/wi0637/datamngt/tables/wcl_gmsg72.xls
1/31/2005 8:23 AM

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg72b.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-72B

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.30 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/8/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

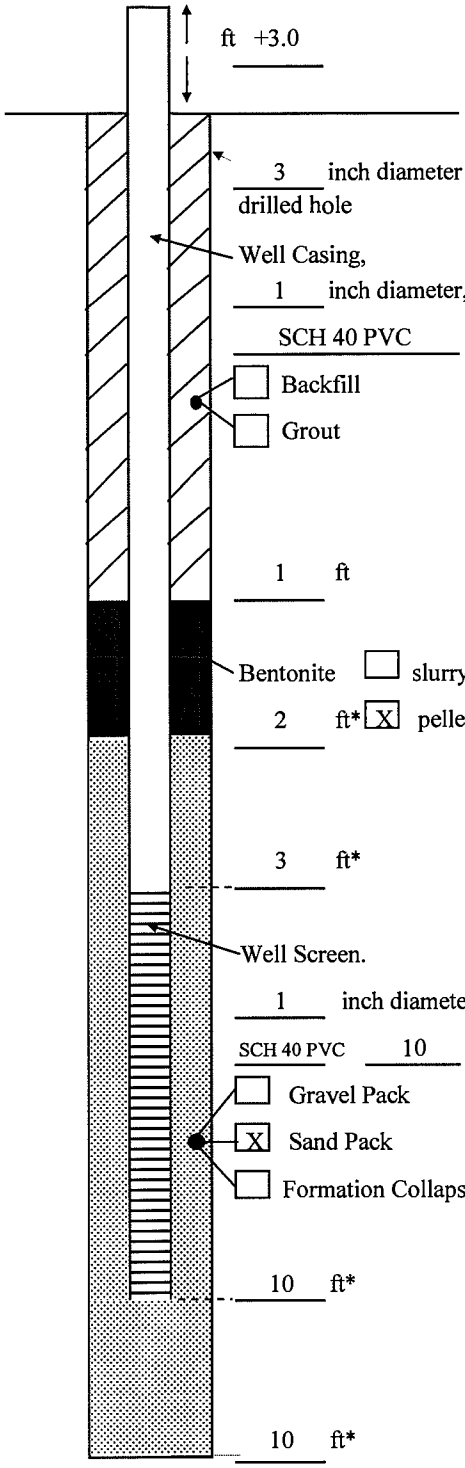
Well Purpose Commerical Soil Vapor Probe

Remarks Screen: Longyear 1" Schedule 40 PVC, 0.010" slotted, factory cut, flat bottom cap, stopcock valve. Red flint #40 coarse sand filter pack: 13-25' 6-50 lb bags, Baroid 3/8" bentonite chips: 25-42', 7-50 lb bags and 20 gallons water, 1-13' 5-50 lb bags and 10 gallons water.

Prepared by Toni Schoen

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-73

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1115.24 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/9/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

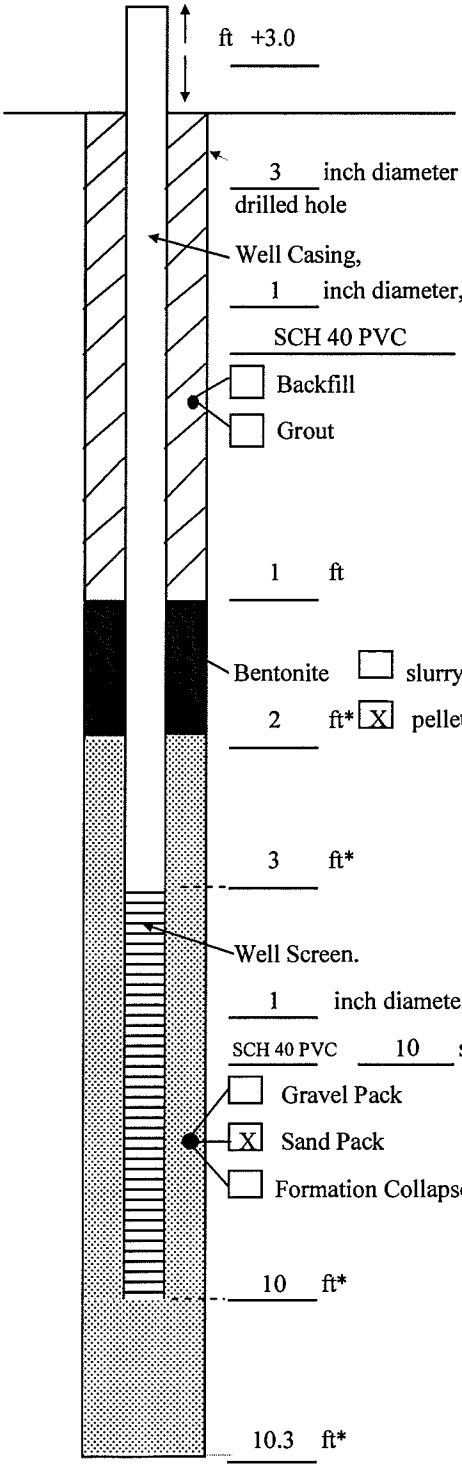
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-74

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.22 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/9/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

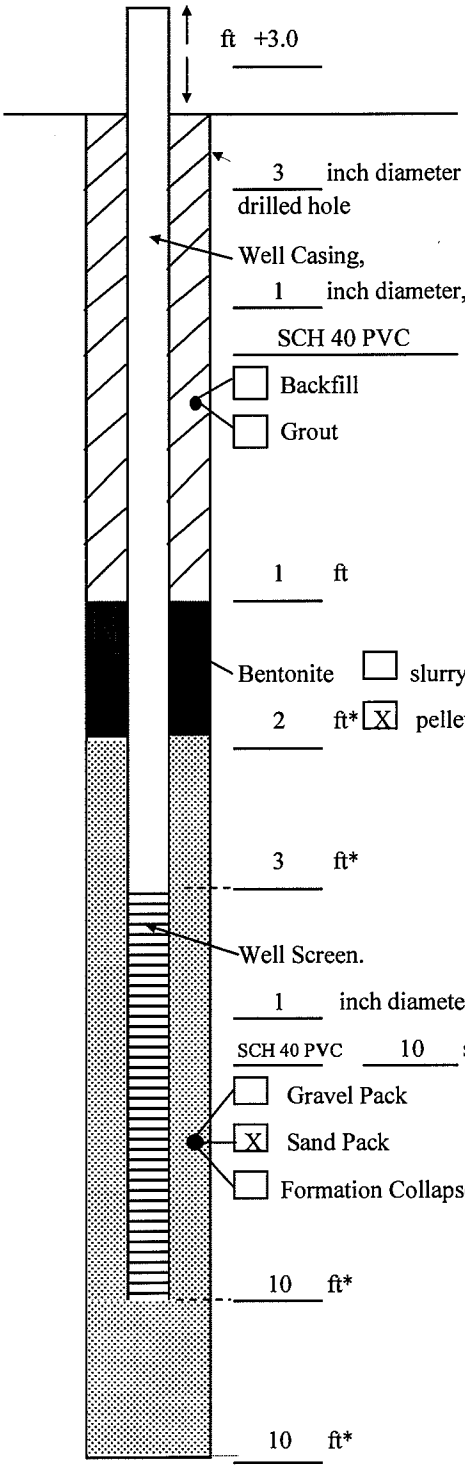
Remarks

Prepared by Jake Dowling

ford/wi0637/datamngt/tables/wcl_gmsg74.xls
1/31/2005 8:24 AM

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-75

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1119.63 feet Mean Sea Level
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/9/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

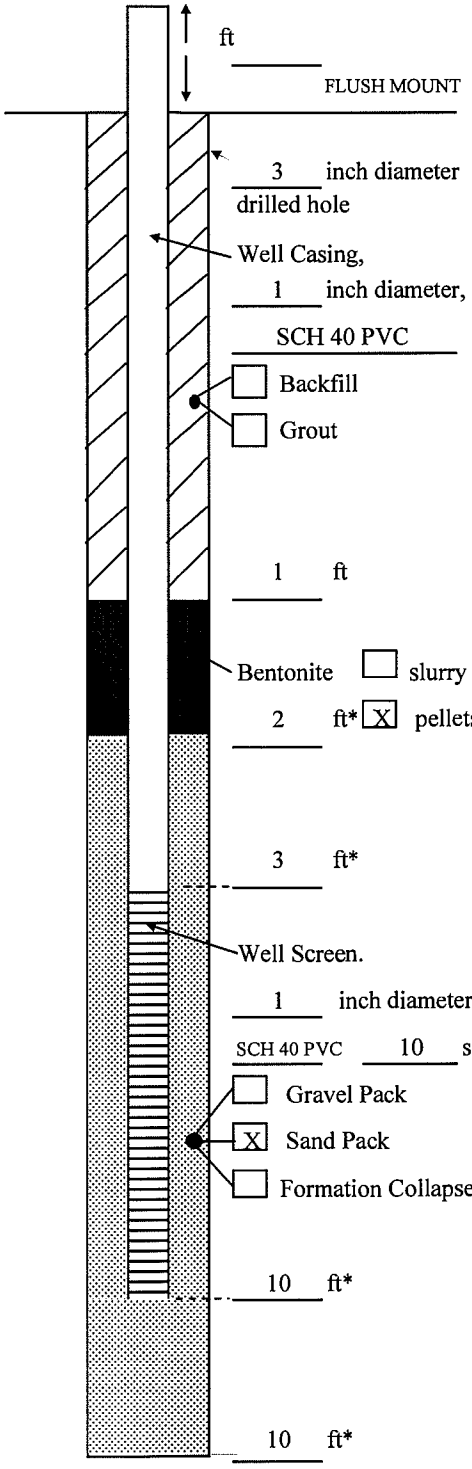
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-76

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1123.22 feet Mean Sea Level
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/9/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

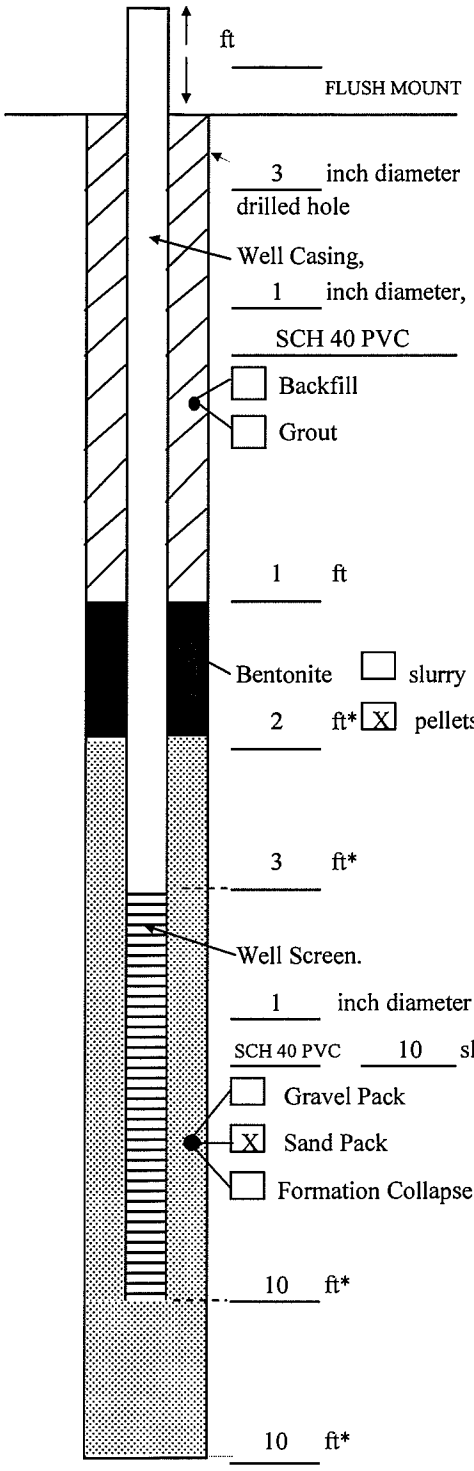
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-77

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.82 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

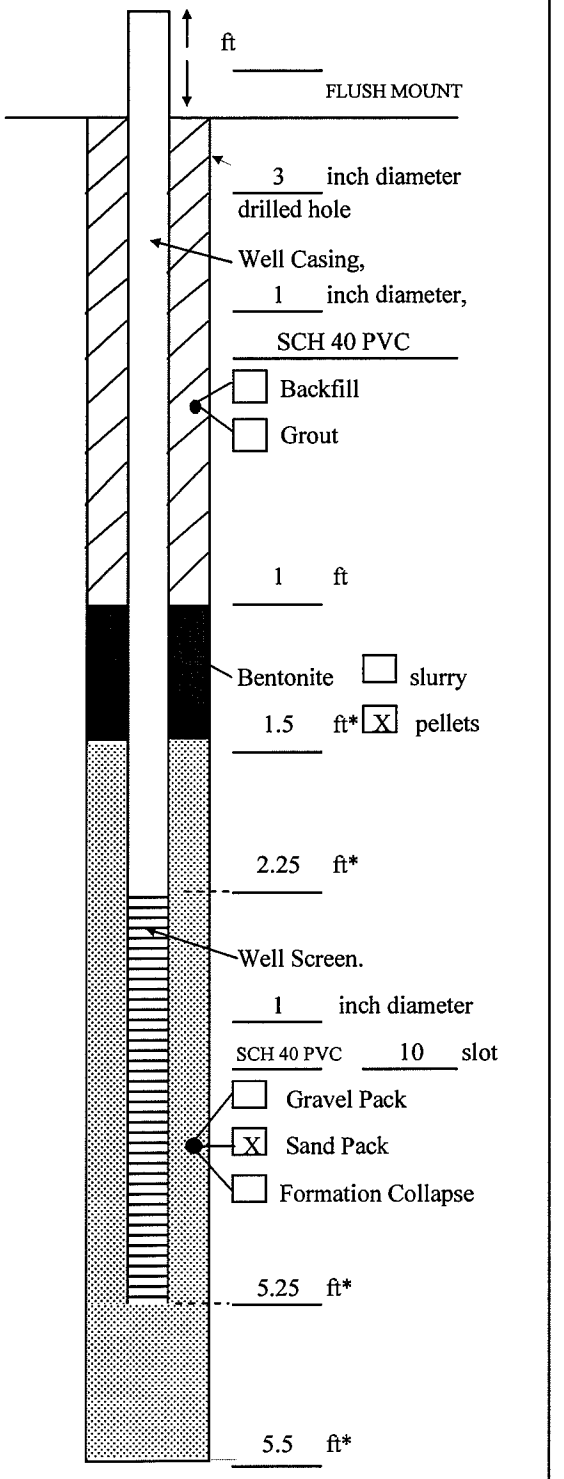
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-78

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1127.63 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

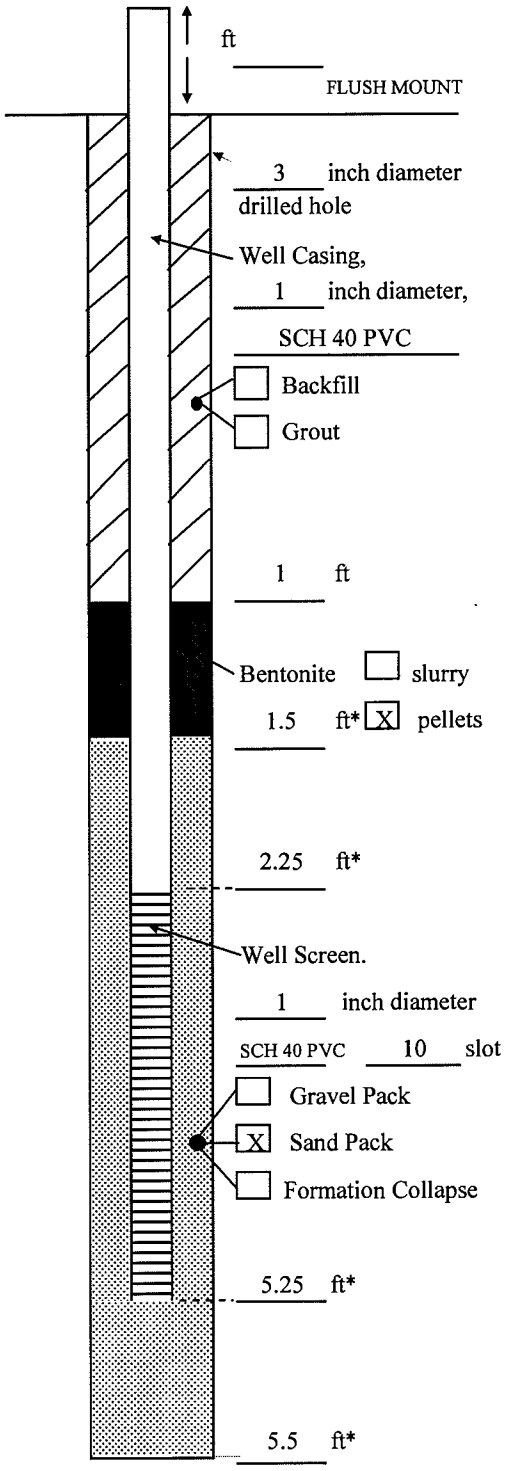
Prepared by Jake Dowling

ford/wi0637/datamngt/tables/wcl_gmsg78.xls
1/31/2005 8:26 AM

ARCADIS

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-79

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.31 feet [X] Surveyed [ ] Estimated

Mean Sea Level

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

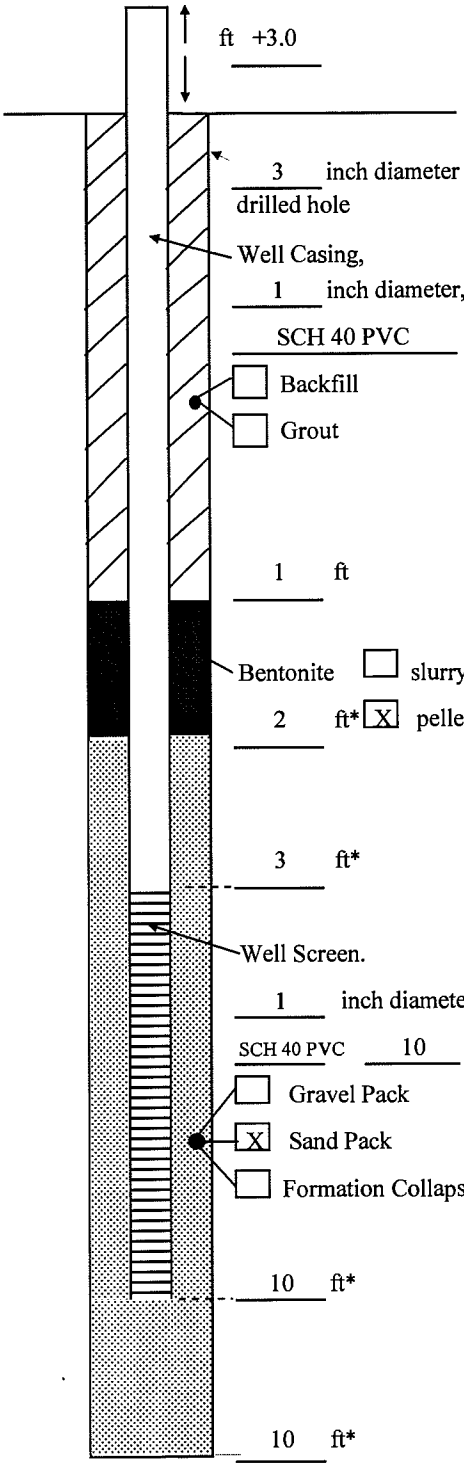
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-80

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.18 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

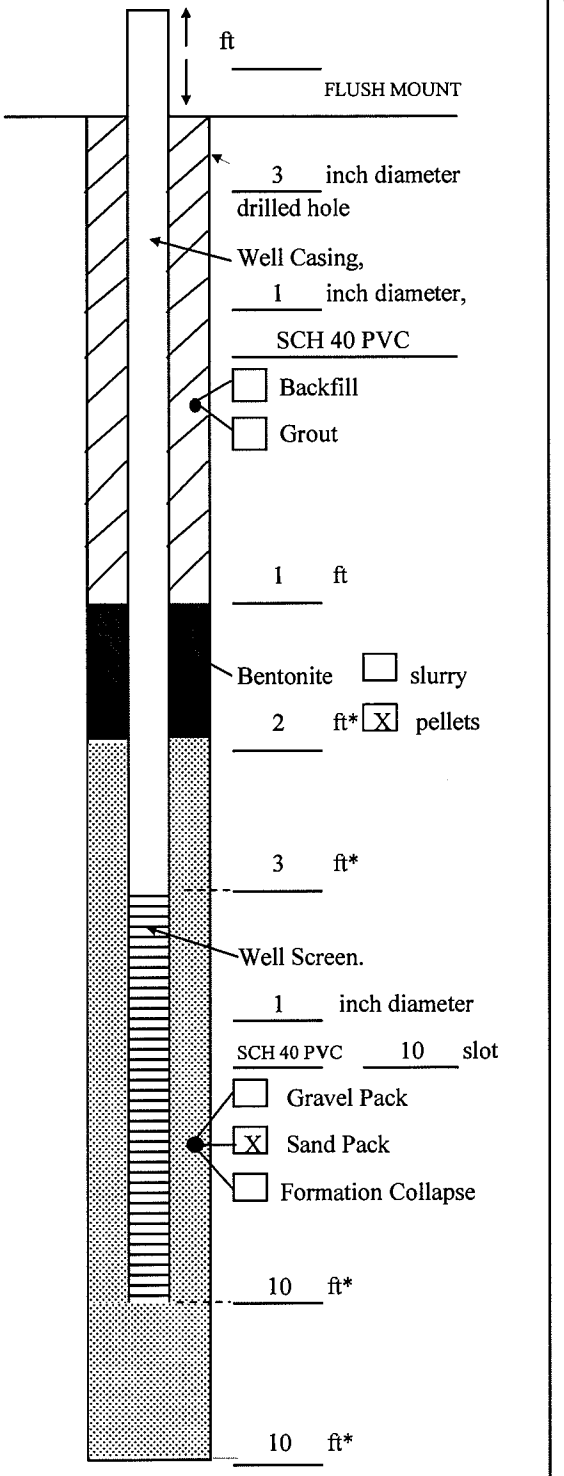
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-81

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1119.60 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

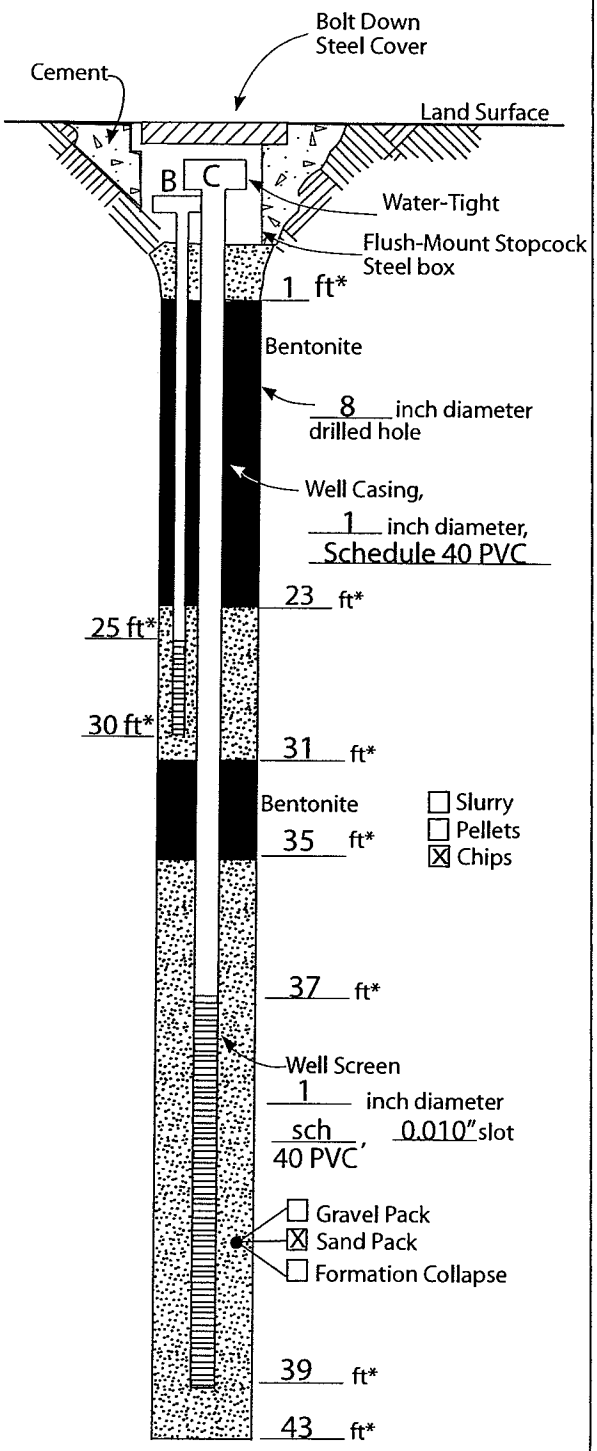
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg81bc-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-81 B/C

Town/City Kingsford

County Dickinson

Permit No. NA

Land-Surface Elevation 1119.51 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/15/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

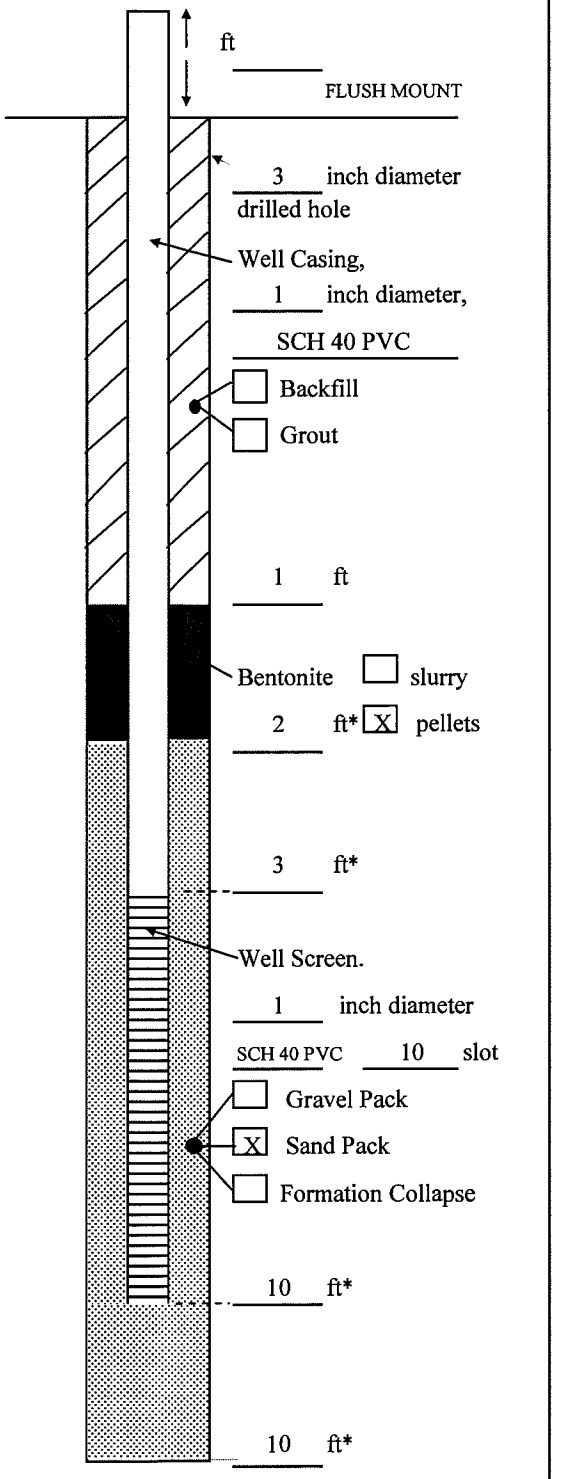
Well Purpose Commerical Soil Vapor Probes

Remarks Screens: Longyear 1" sch PVC, slot 0.010, factory cut, flat bottom caps, stopcock valve. Filter pack: Red Flint #40 coarse sand (43-35) 3-50 lb bags, (31-23) 4-50 lb bags; bentonite: Baroid Hole Plug 3/8" chips (35-31) 1-3/4-50 lb bags and 5 gallons water (23-1) 9-50 lb bags and 16 gallons water.

Prepared by Jill Flater

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-82

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.13 feet Mean Sea Level
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

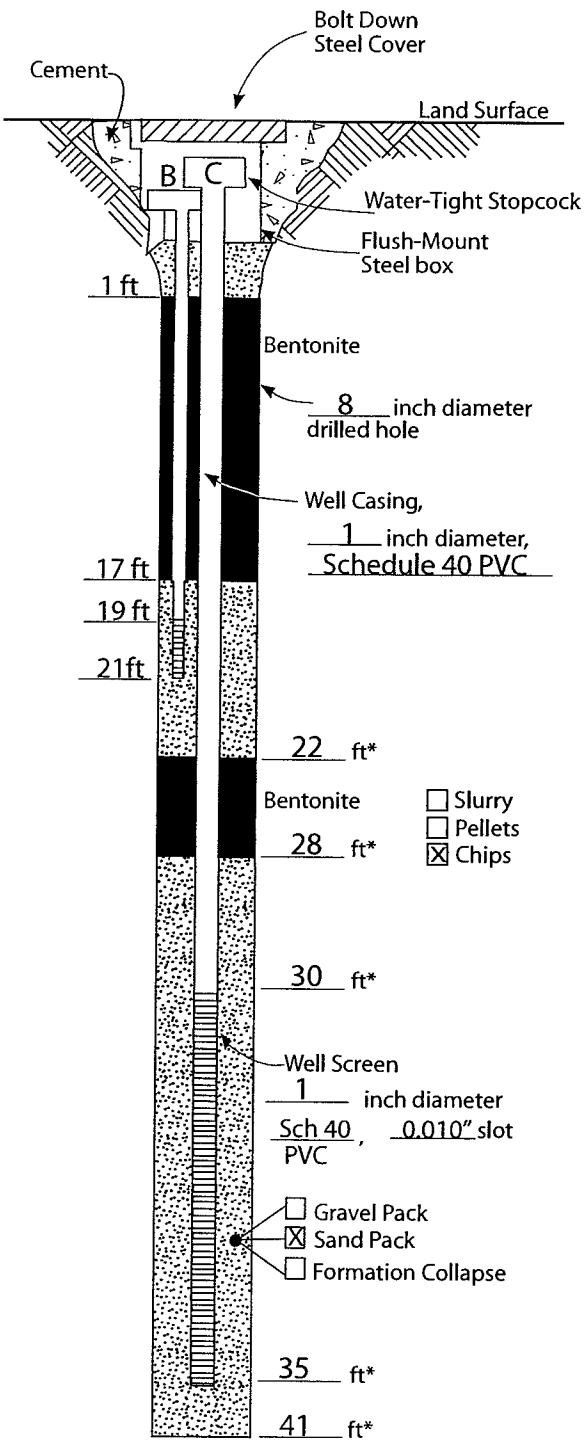
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg82bc-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-82 B/C

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1117.16 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/10/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)
NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

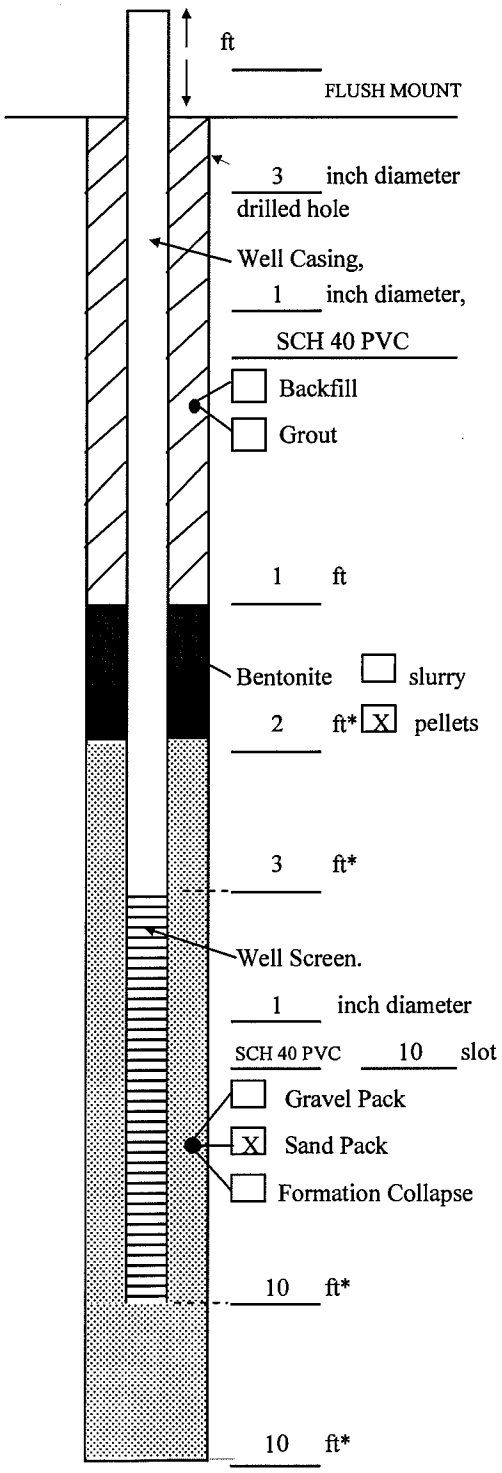
Well Purpose Commercial Soil Vapor Probes

Remarks Screen: Longyear 1" Schedule 40 PVC, 0.010" slot, factory cut, flat bottom end caps, stopcock valve. Red Flint #40 coarse sand, filter pack: 28-41' 6-50 lb bags, 17-21' 2.5-50 lb bags Baroid 3/8" bentonite chips: 22-28' 3-50 lb bags and 6 gallons water, 1-17' 7-50 lb bags and 15 gallons water.

Prepared by Toni Schoen

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-83

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1118.64 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

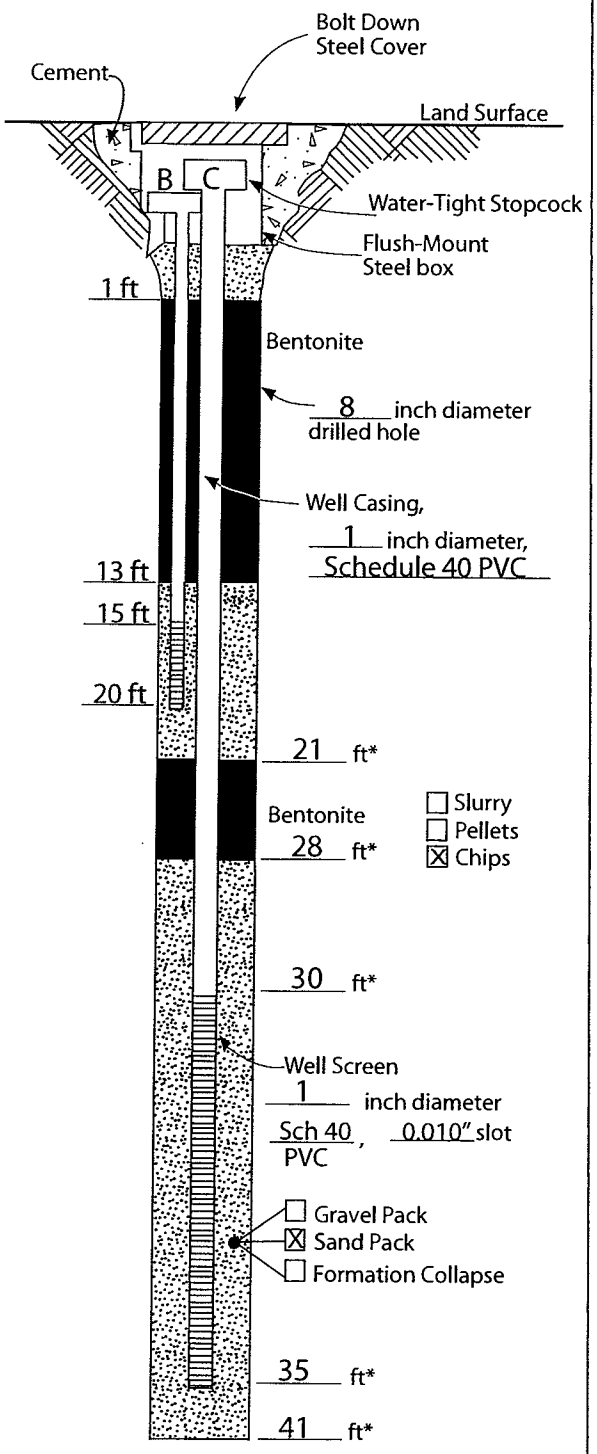
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg83bc-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-83 B/C

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1118.33 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/16/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

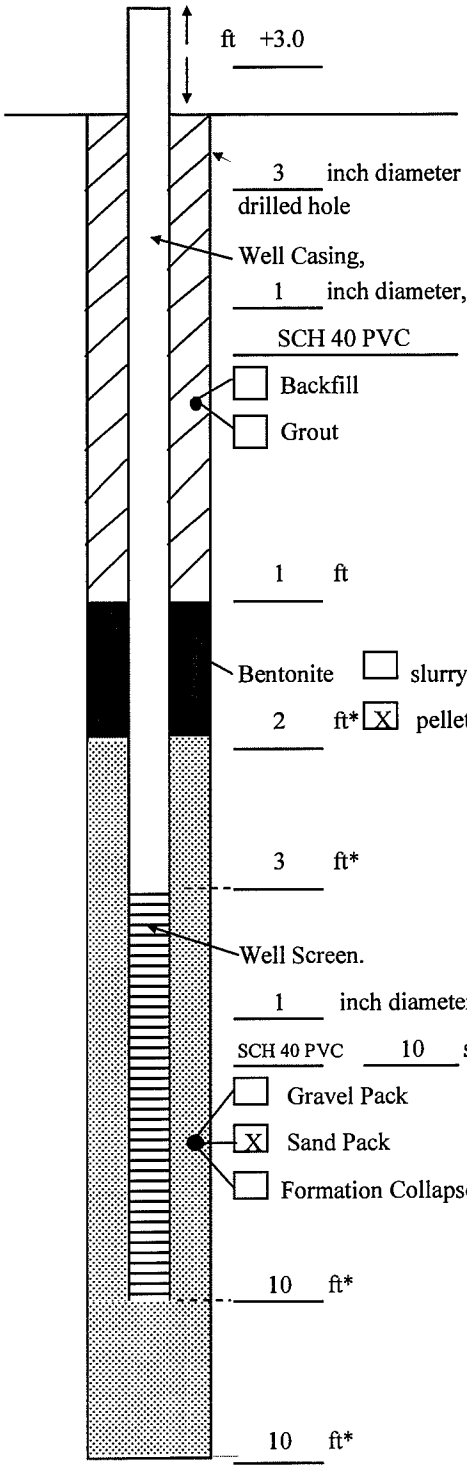
Well Purpose Commercial Soil Vapor Probes

Remarks Screens: Longyear 1" Schedule 40, 0.010" slot, factory cut, flat bottom caps, stopcock valve screened: 15-20' and 30-35'; filter pack: Red Flint #40 coarse sand, (28-43) 4-50 lb bags (21-13) 4-50 lb bags; bentonite: Hole Plug Baroid 3/8" chips (28-21) 4-50 lb bags 8 gallons, (13-1) 6-50 lb bags 9 gallons.

Prepared by Jill Flater

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-84

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1119.97 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 7/10/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

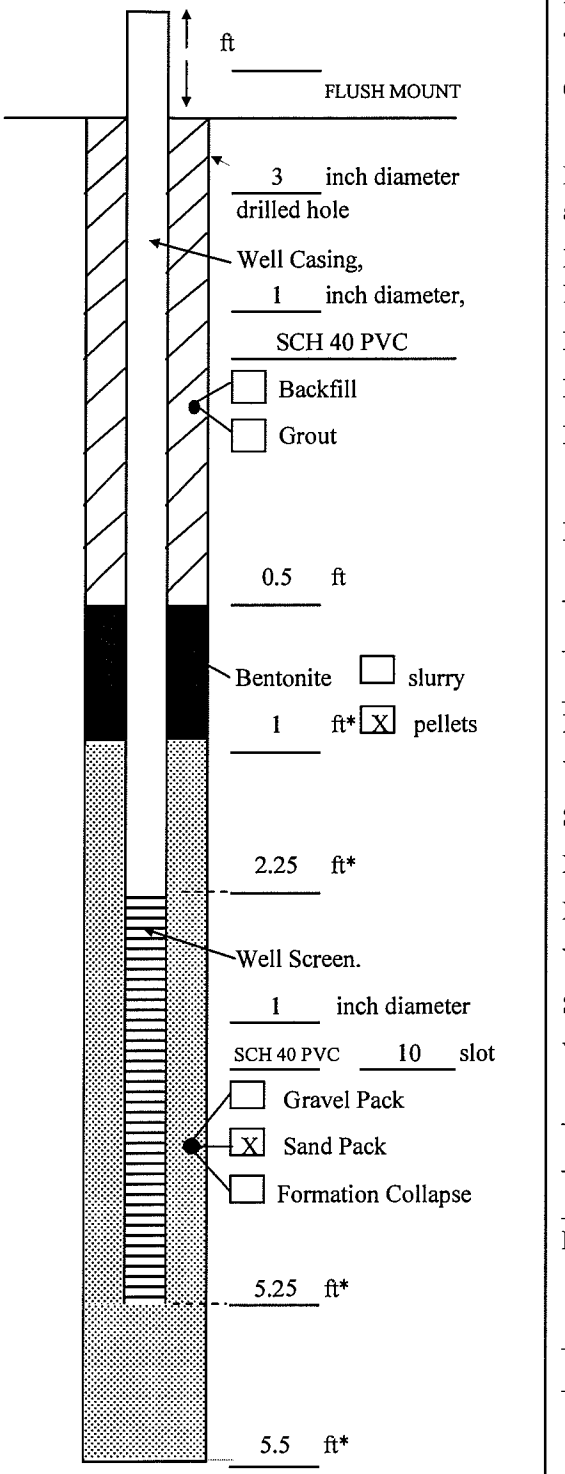
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-85

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.52 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/11/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

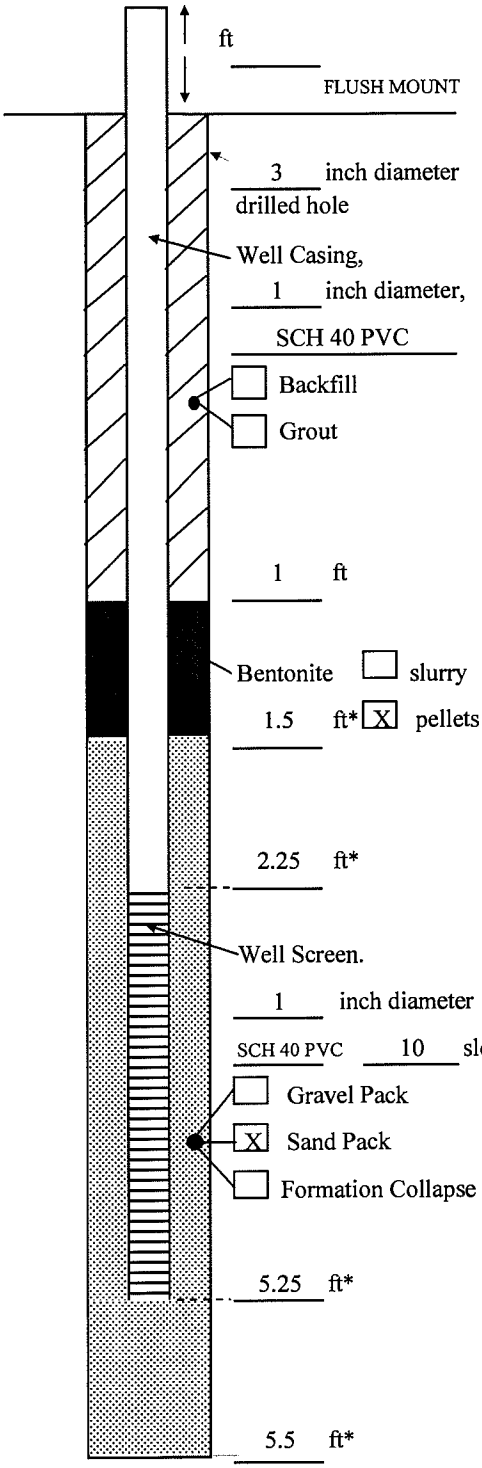
Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-86

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.55 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 7/11/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

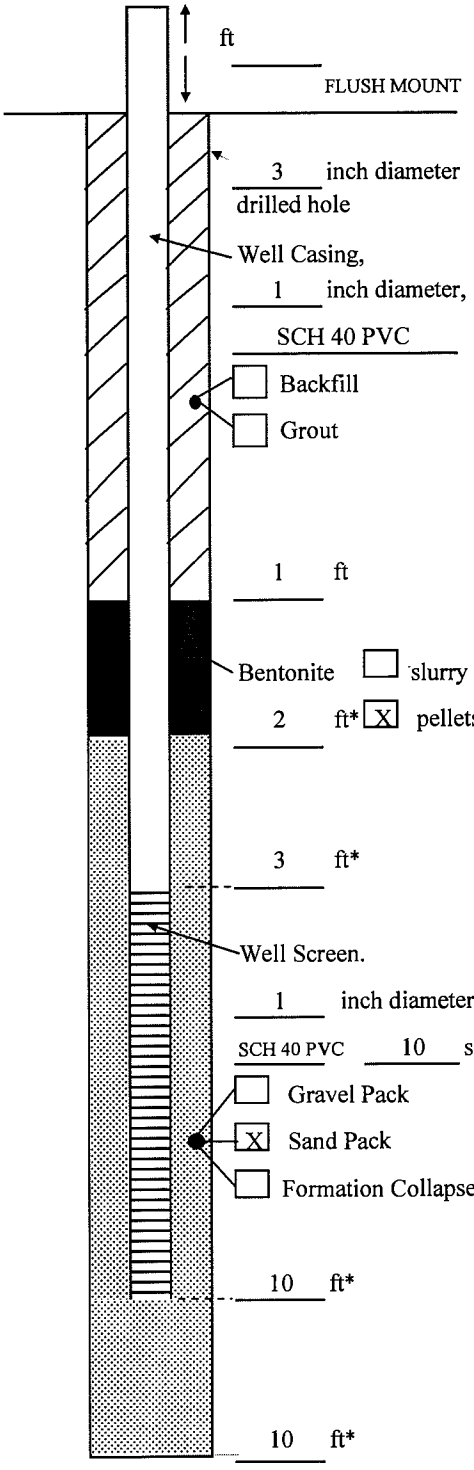
Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-87

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.78 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 7/11/2002

Drilling Method Solid stem auger

Drilling Contractor Kleiman

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

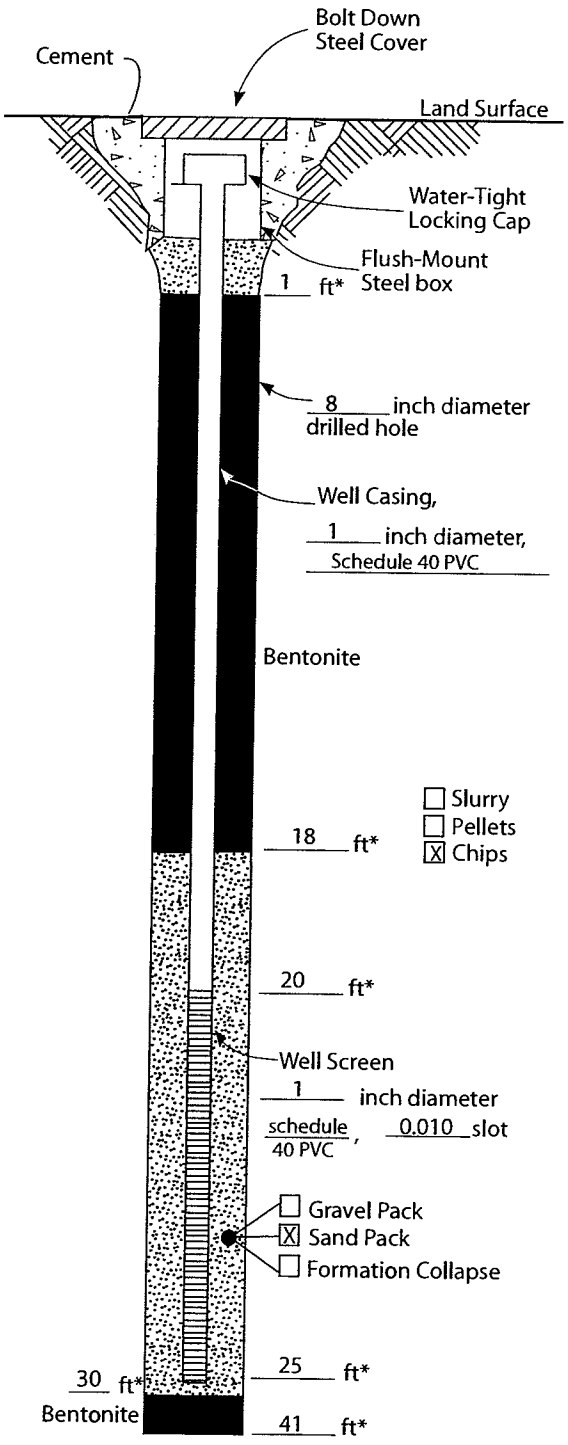
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg87b.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-87B

Town/City Kingsford, Michigan - Northwoods

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.80 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/10/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

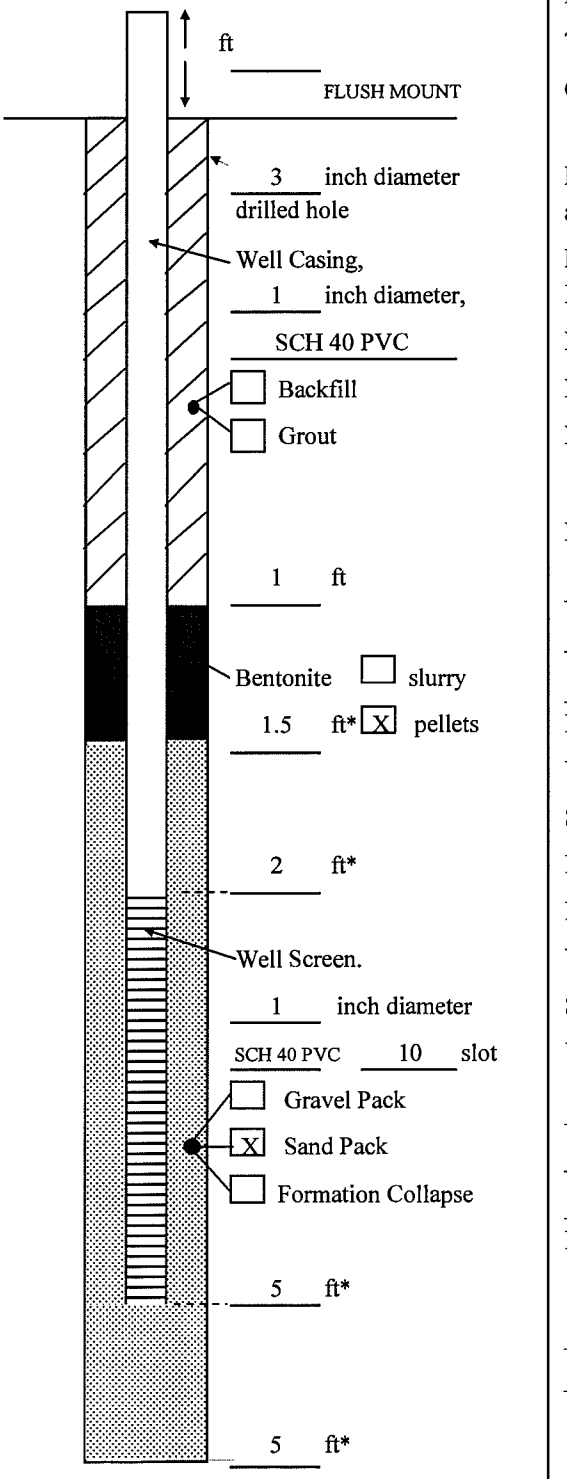
Well Purpose Commercial Soil Vapor Probes

Remarks Screen: Longyear 1" Schedule 40 PVC, 0.010" slotted, factory cut, flat bottom cap, stopcock valve. Red flint #40 coarse sand filter pack: 18-30' 6-50 lb bags, Baroid 3/8" bentonite chips: 30-41' 4.5-50 lb bags and 5 gallons water, 1-18' 7.5-50 lb bags and 10 gallons water.

Prepared by Toni Schoen

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-88

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1133.35 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 7/13/2002

Drilling Method Hand Auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

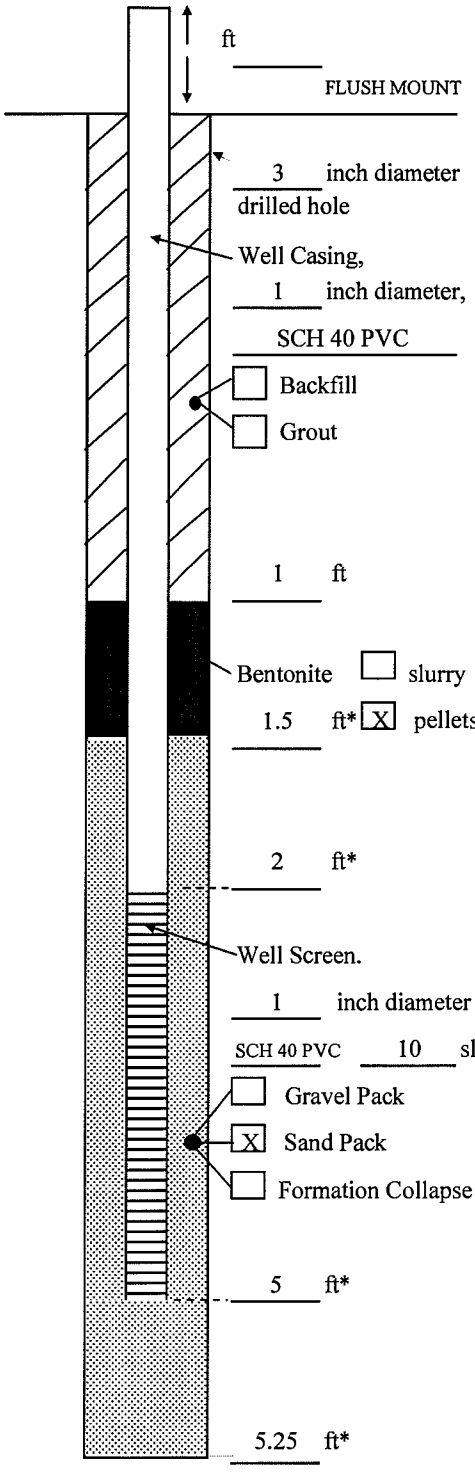
Remarks

Prepared by Jake Dowling

ARCADIS

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI000925.0001 Probe GMSG-89

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1134.33 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 7/13/2002

Drilling Method Hand Auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

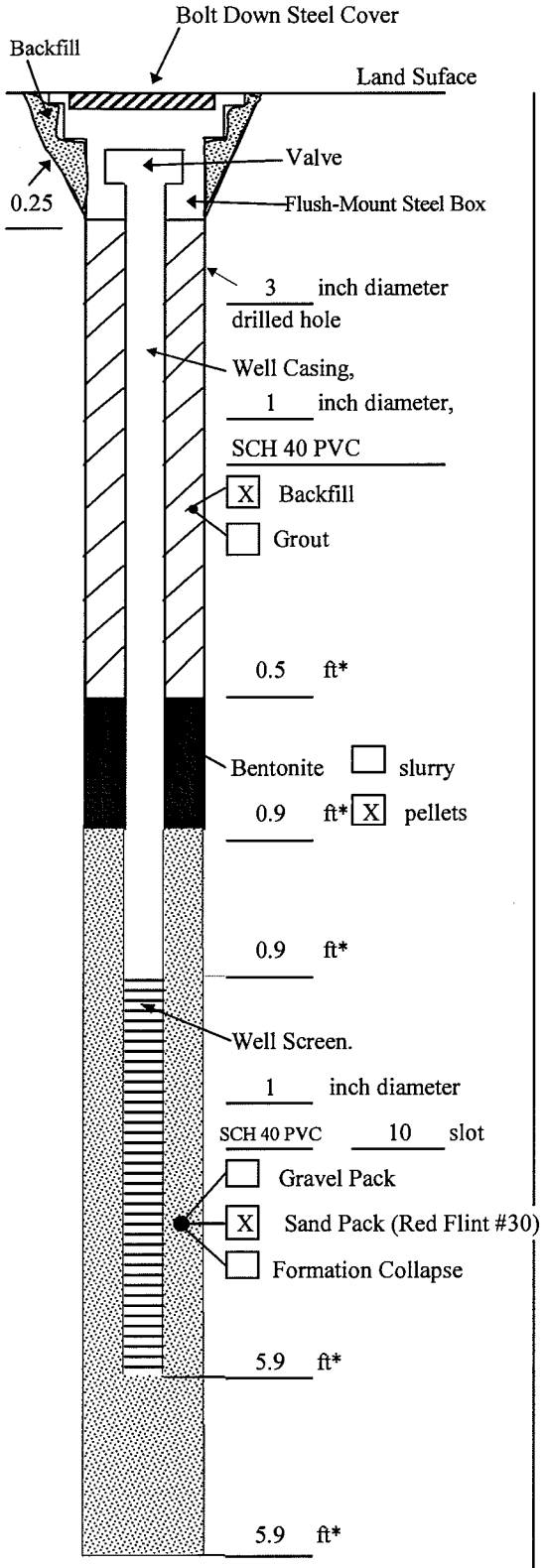
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Jake Dowling

ARCADIS



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000975.0003 Probe GMSG-90

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.91 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 9/10/2002

Drilling Method Hand Auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

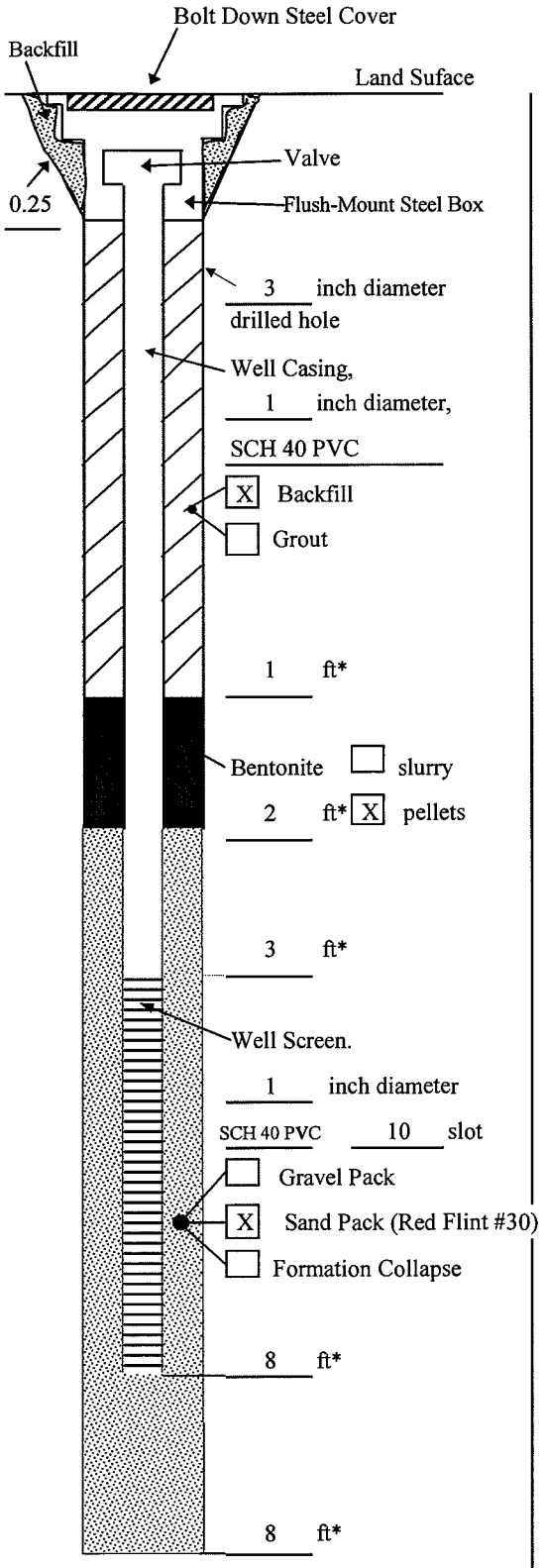
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks Installed at Werner Electric for the commerical MDEP.

Prepared by Pat Bartnik

ARCADIS



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000975.0003 Probe GMSG-91

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1115.14 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 9/10/02

Drilling Method Hand Auger

Drilling Contractor

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring

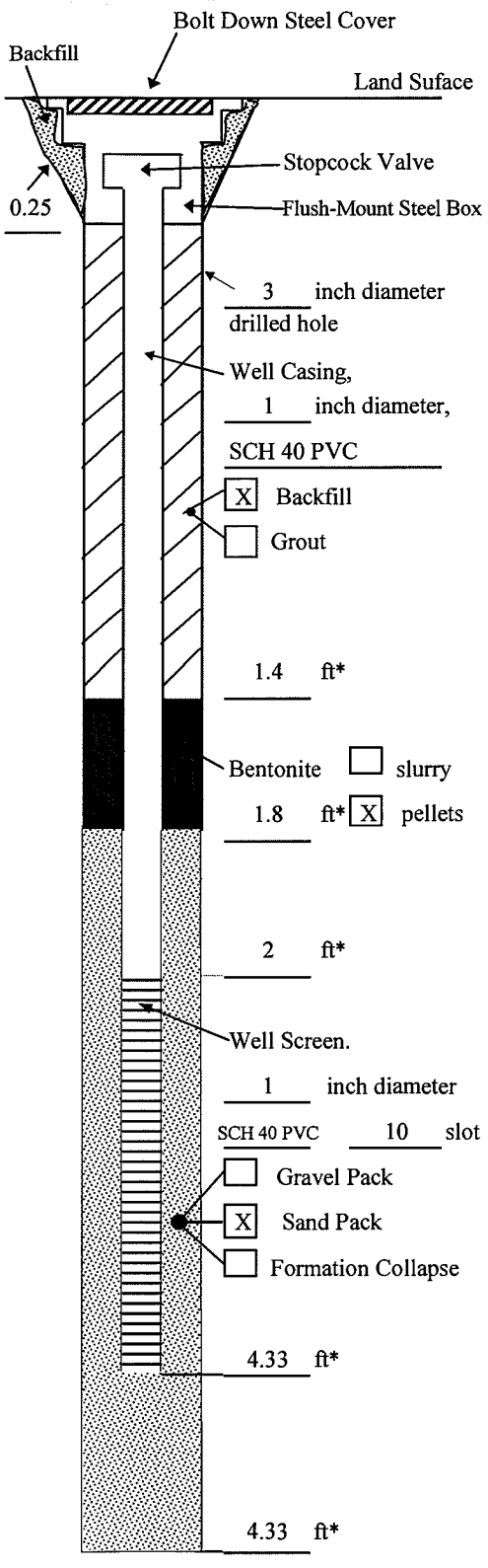
Remarks Installed at Werner Electric for the commerical MDEP.

Prepared by Pat Bartnik

ARCADIS

WELL CONSTRUCTION LOG

(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project WI000975.0002 Probe GMSG-92

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1128.59 feet [X] Surveyed [ ] Estimated

Mean Sea Level

Installation Date(s) 10/19/02

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

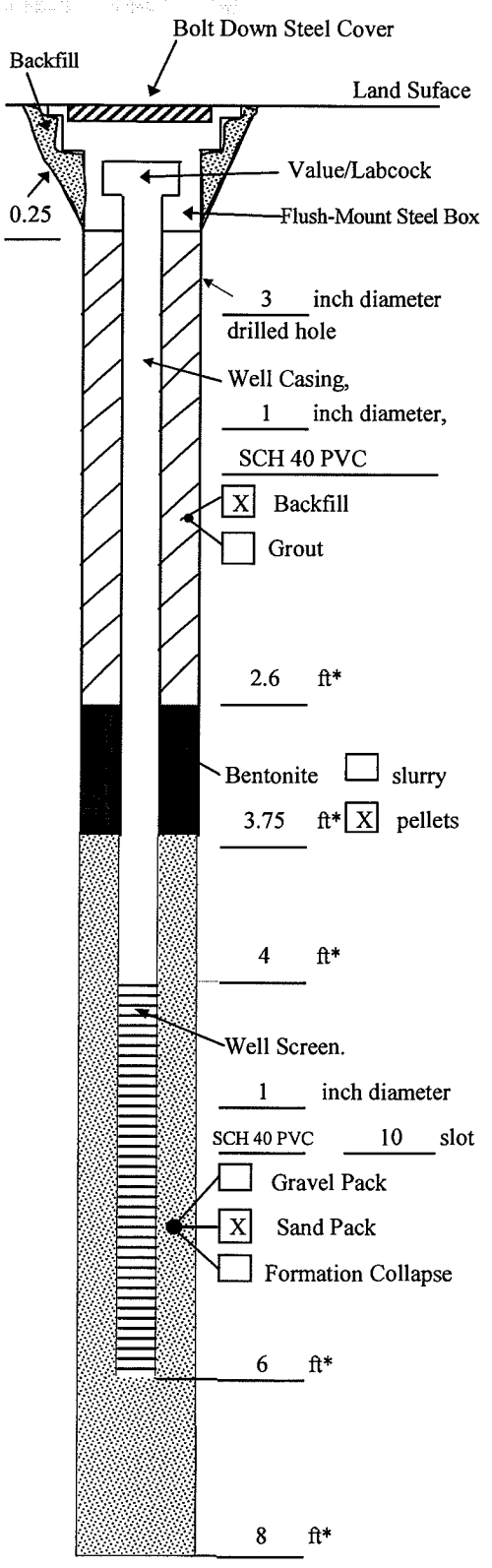
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Pat Bartnik

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000975.0002 Probe GMSG-93

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1118.48 feet [X] Surveyed [ ] Estimated

Mean Sea Level

Installation Date(s) 11/11/02

Drilling Method Hand Auger/Driven

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

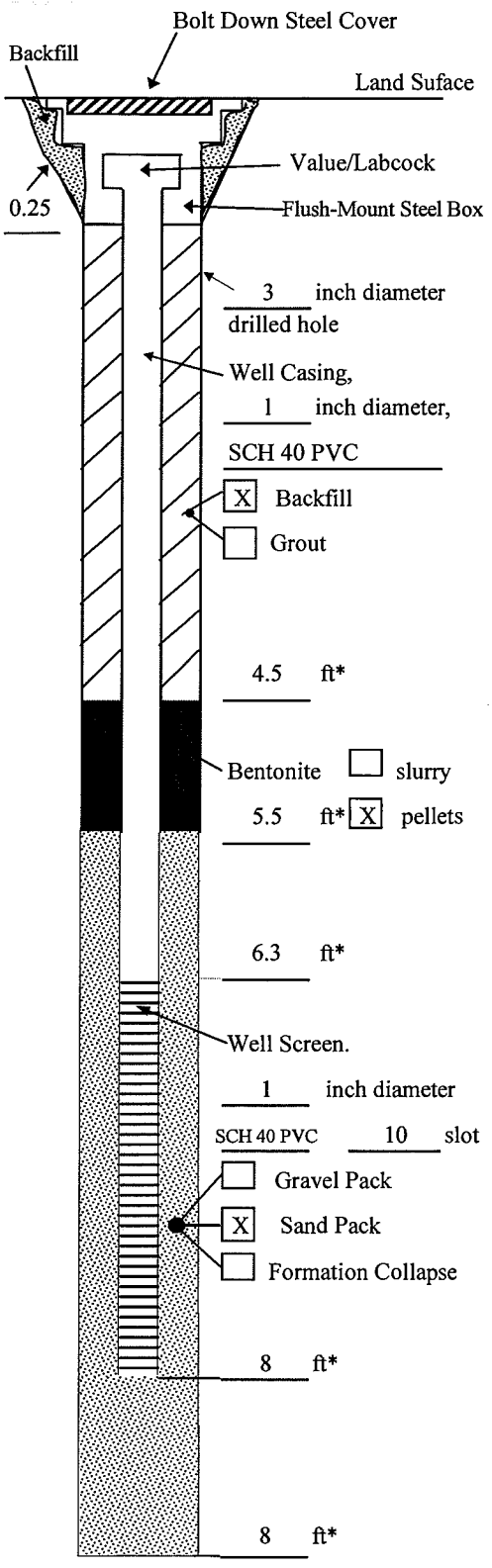
Prepared by Pat Bartnik

G:\Aproject\FORD\WI0637\KINGSFOR\TABLES\wcl_fmw_gmsg93
1/31/2005 8:37 AM

ARCADIS

WELL CONSTRUCTION LOG

(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project WI000975.0002 Probe GMSG-94

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1132.16 feet [X] Surveyed [ ] Estimated

Mean Sea Level

Installation Date(s) 11/18/02

Drilling Method Hand Auger/Driven

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

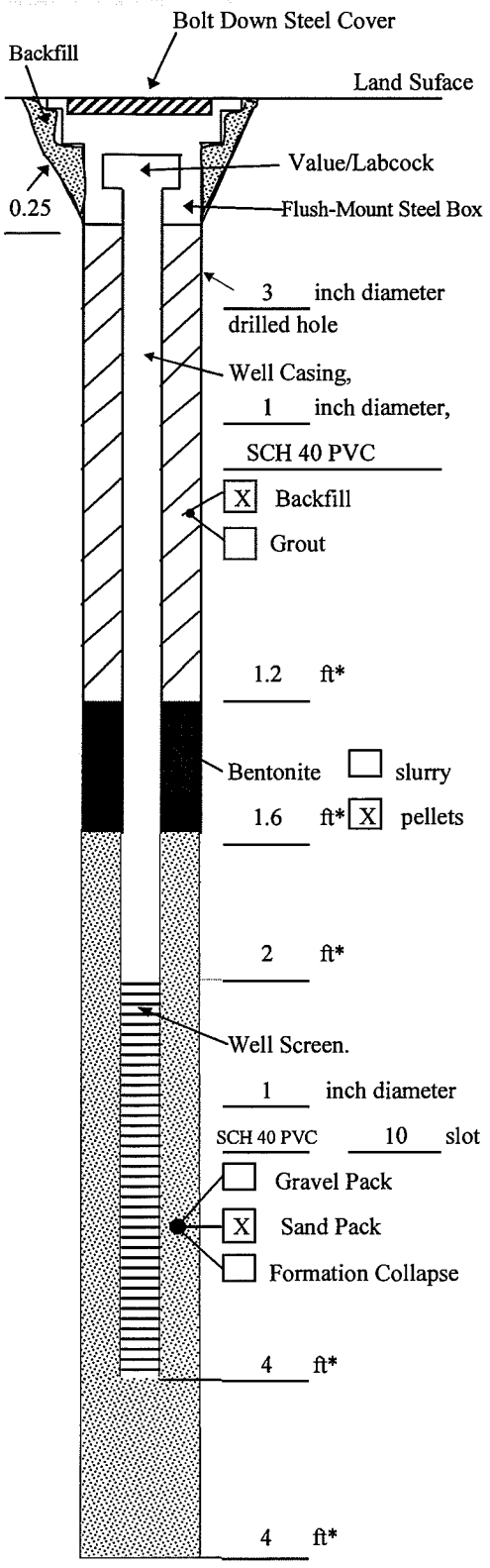
Remarks

Prepared by Pat Bartnik

ARCADIS

WELL CONSTRUCTION LOG

(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project WI000975.0002 Probe GMSG-95

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1132.29 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 11/18/02

Drilling Method Hand Auger/Driven

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring.

Remarks

Prepared by Pat Bartnik

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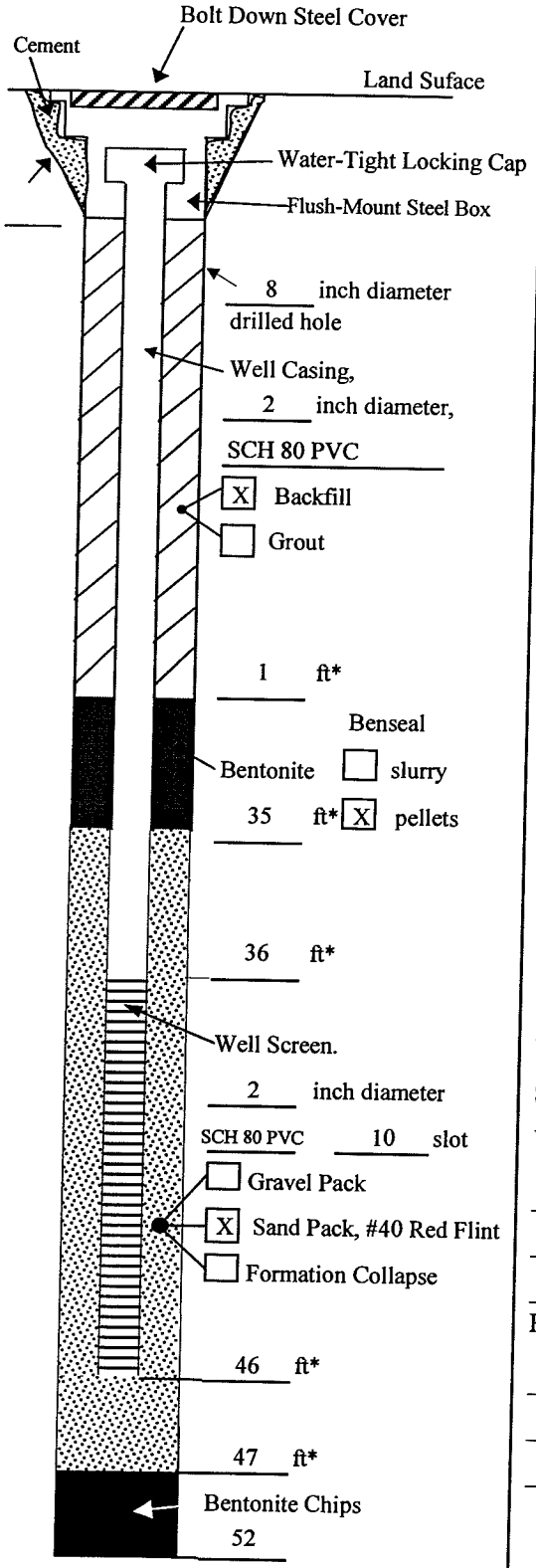
1/31/2005 8:37 AM

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0005 Probe GMSG-96

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1113.45 feet Mean Sea Level

[X] Surveyed [ ] Estimated

Installation Date(s) 5/16/03

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

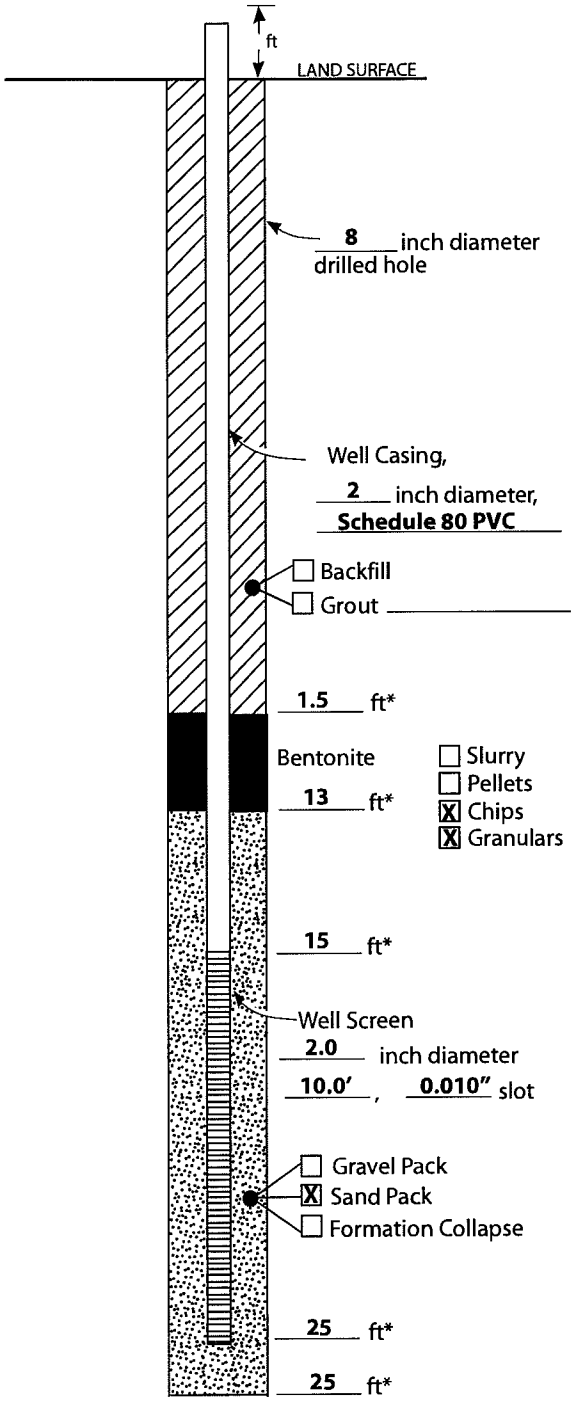
Well Purpose Soil vapor probe - Lodal Park

Remarks

Prepared by Pat Bartnik

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMSG-96A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation

and Datum **1113.22** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **6/19/04**

Drilling Method **Rotosonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

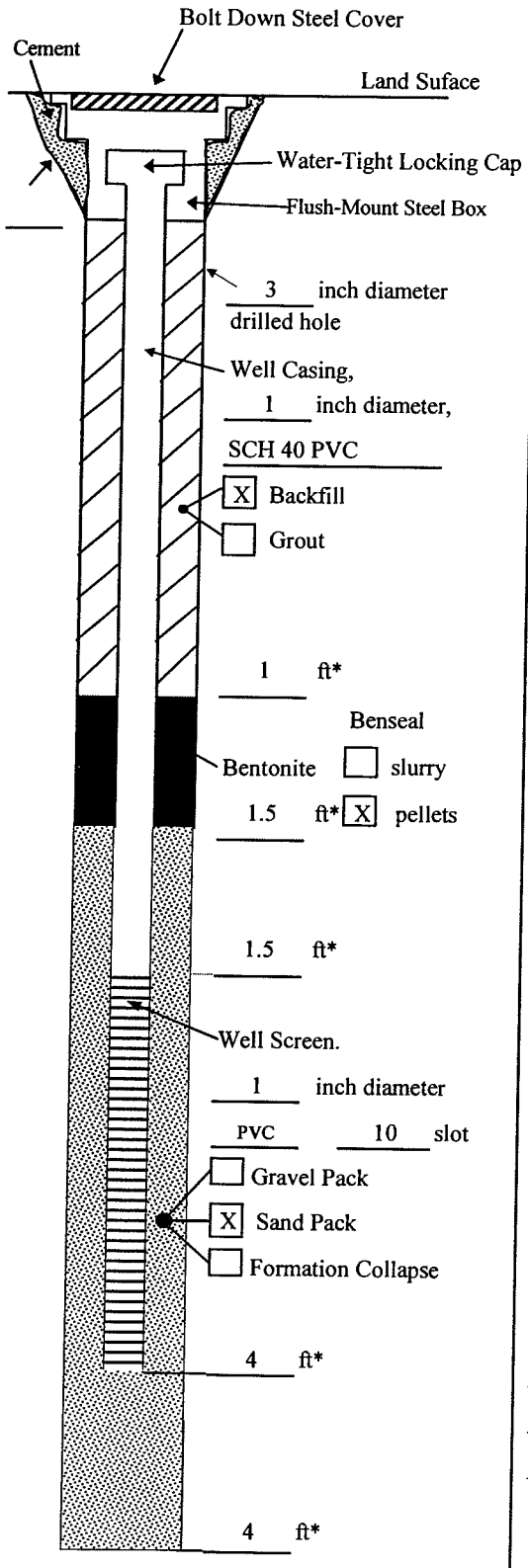
Specific Capacity _____ gpm/ft

Well Purpose **Soil vent**

Remarks **10-foot, 0.010 inch slot, factory cut screen, made by Diedrich, Schedule 80 PVC riser made by Diedrich, threaded bottom cap, filter pack: Red Flint #40, 3-50 lb bags sand; seal: Baroid bentonite 3/8" chips 3-50 lb bag and 1-50 lb bag graulars; hydrated.**

Prepared by **Trica Nelson**

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI000975.0002 Probe GMSG-97

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1121.14 feet Mean Sea Level

[X] Surveyed [ ] Estimated

Installation Date(s) 6/3/03

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

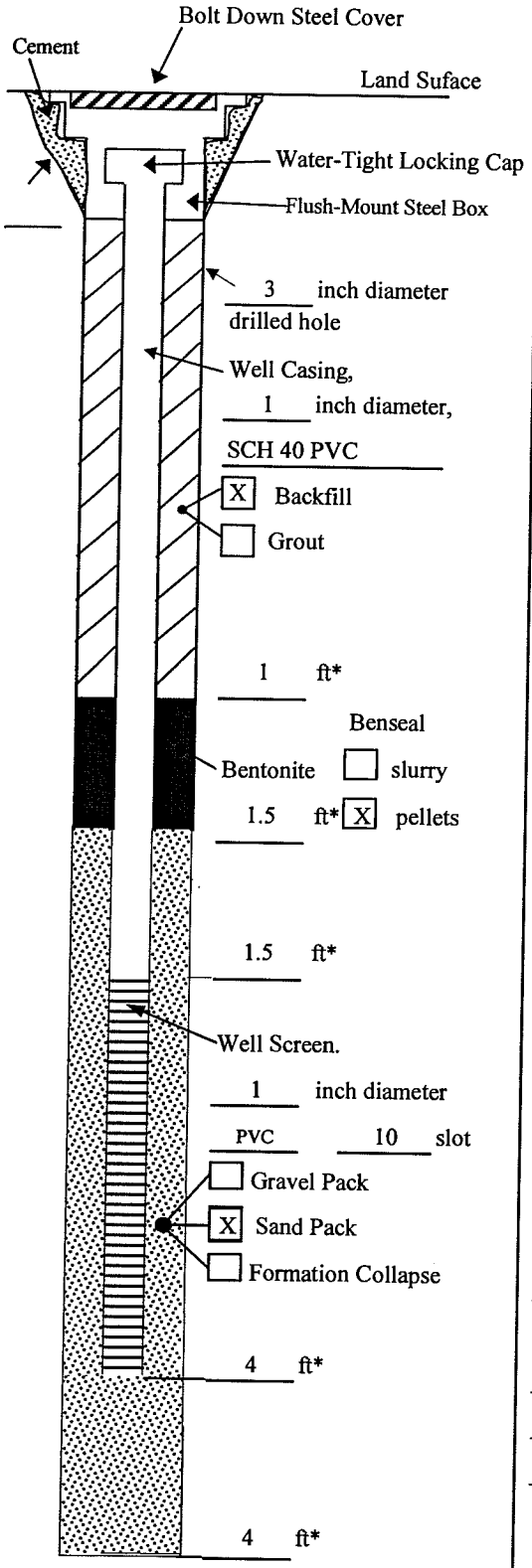
Specific Capacity gpm/ft

Well Purpose Vapor Monitoring - Commerical MDEP.

Remarks

Prepared by Rachael Saari

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-98

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1121.37 feet Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/3/03

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 6/3/03

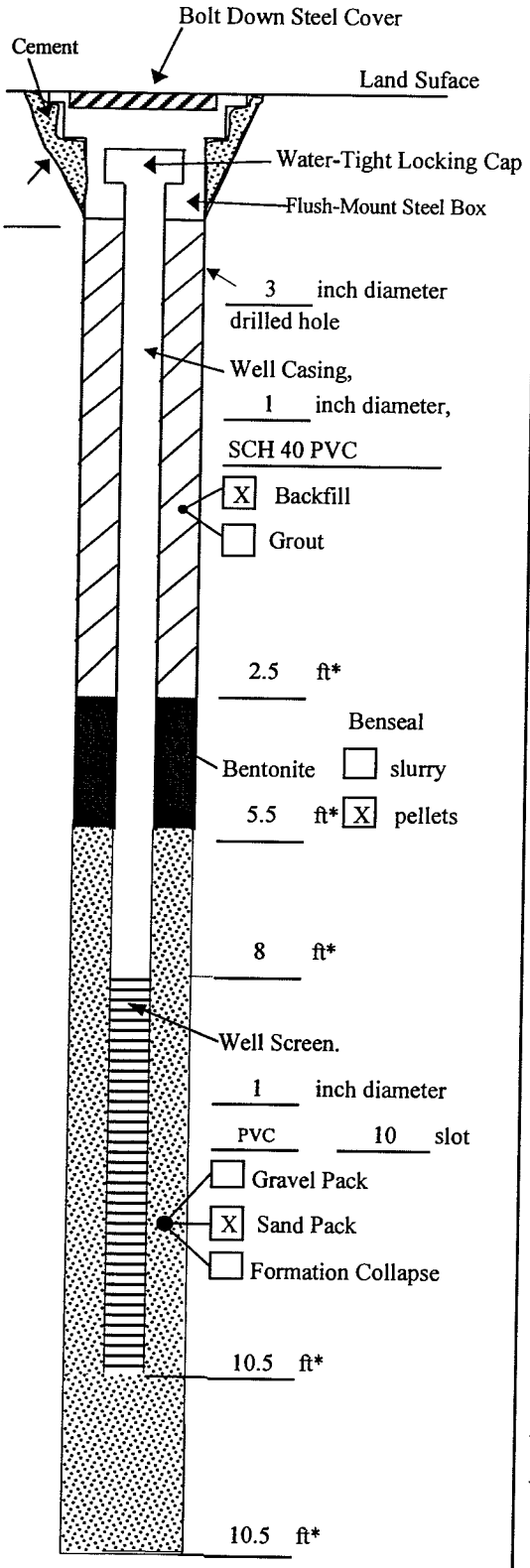
Specific Capacity gpm/ft

Well Purpose Vapor Monitoring - Commerical MDEP.

Remarks

Prepared by Rachael Saari

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-99

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1122.11 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 6/3/03

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

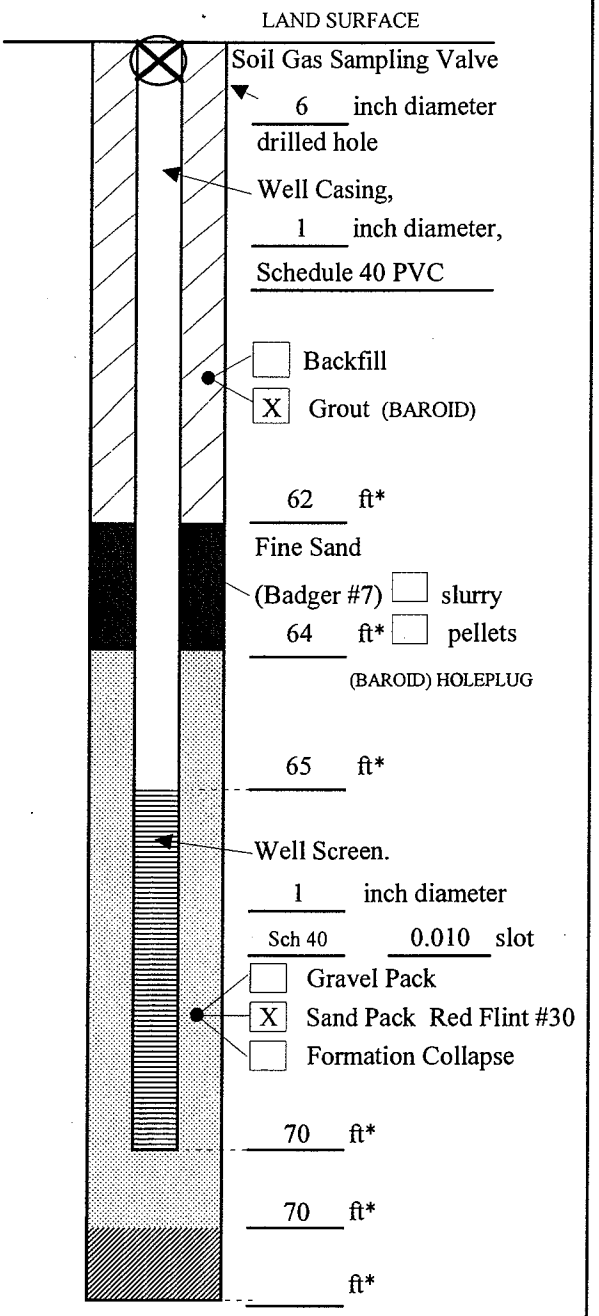
Well Purpose Vapor Monitoring - Commerical MDEP.

Remarks

Prepared by Rachael Saari

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-100

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1103.69 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/10/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

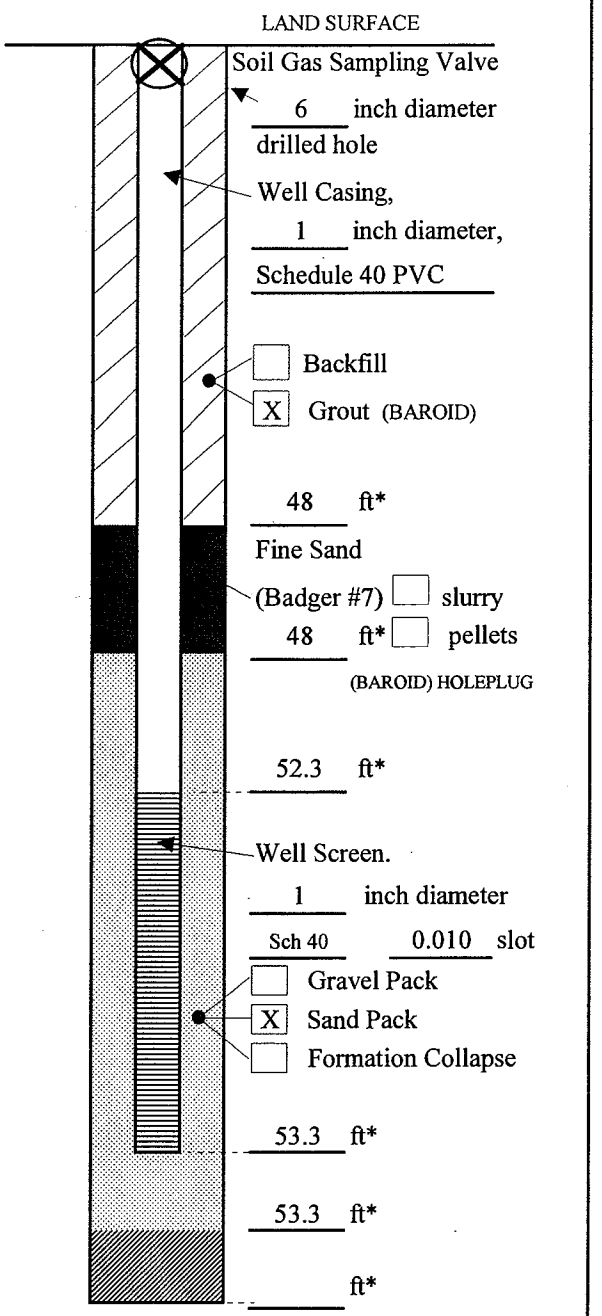
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-101

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1101.18 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/9/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

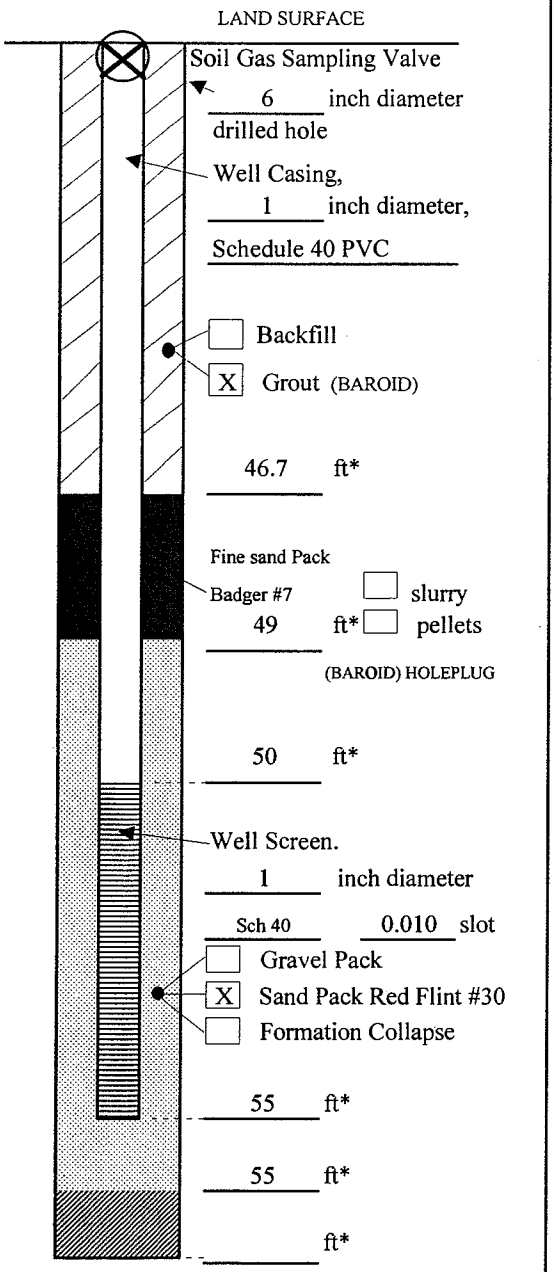
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite holeplug pellets placed on top of the Baroid Grout layer (6 feet bls to land surface).

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-102

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1105.09 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/10/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

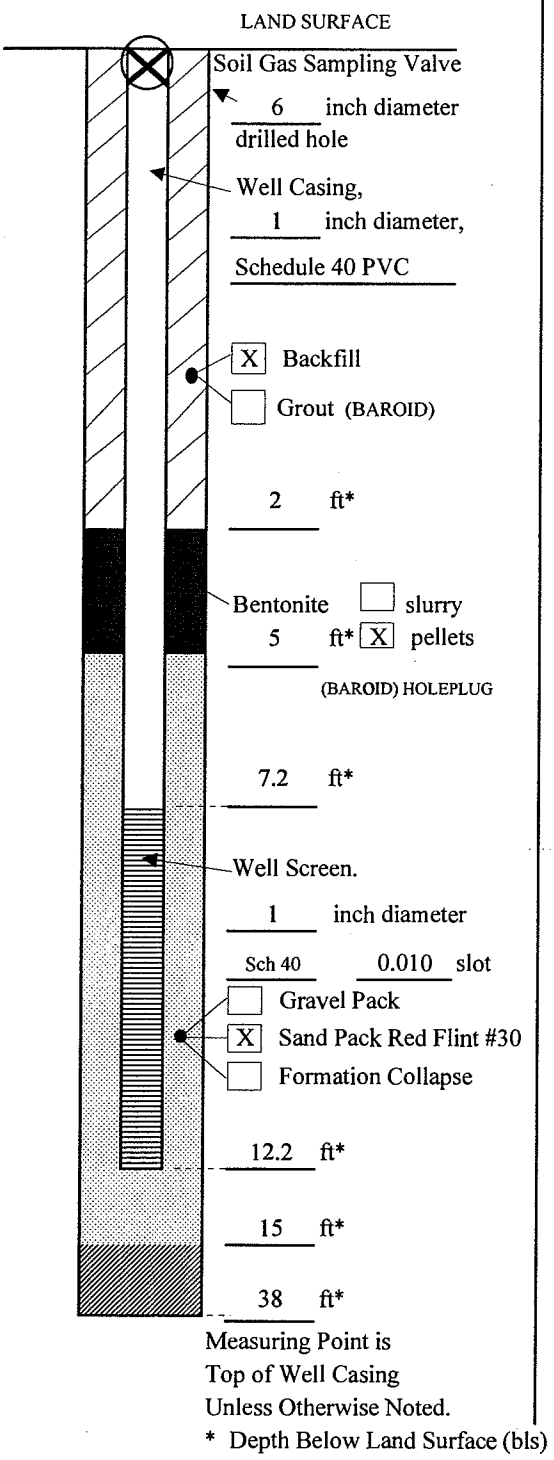
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite holeplug pellets placed on top of the Baroid Grout layer (1.5 feet bls to land surface).

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-103

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1088.89 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/11/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

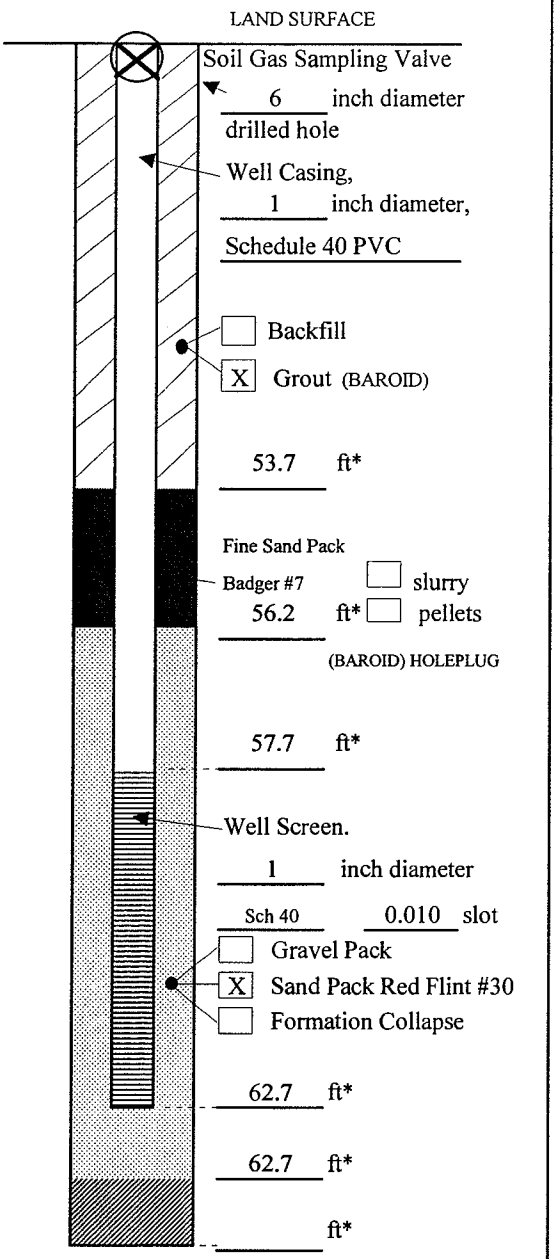
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Fine sand layer (Badger #7) from 6.9 feet to 5 feet bls.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-104

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1097.69 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/12/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

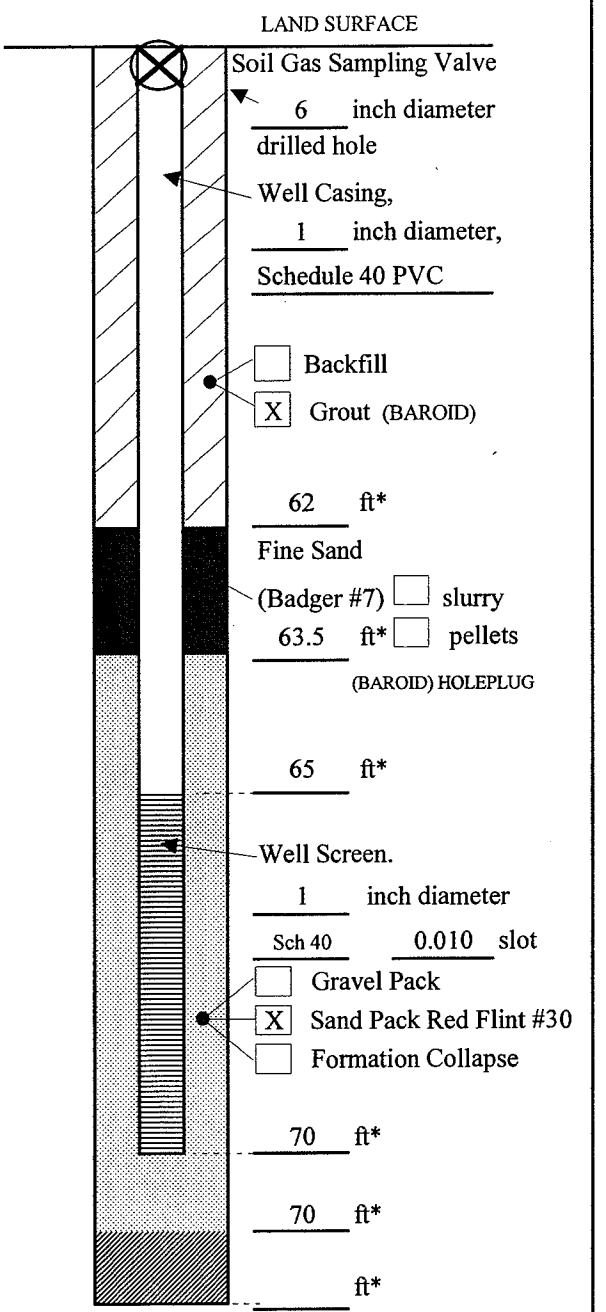
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-105

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1097.33 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/13/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

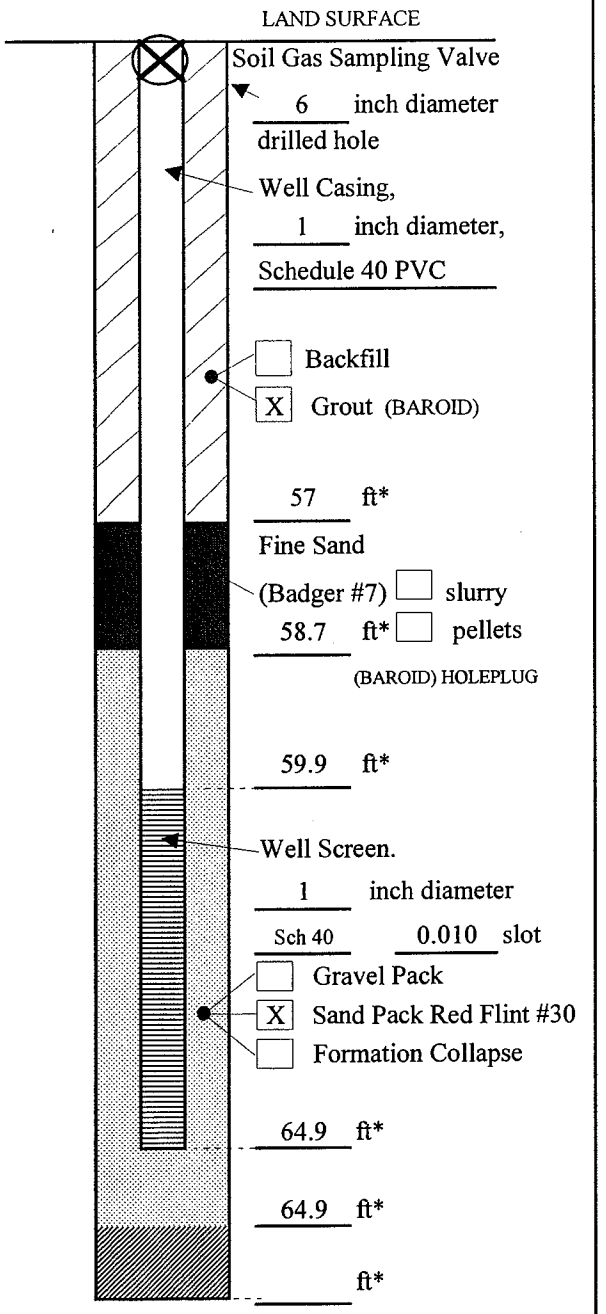
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-106

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1088.60 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/14/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

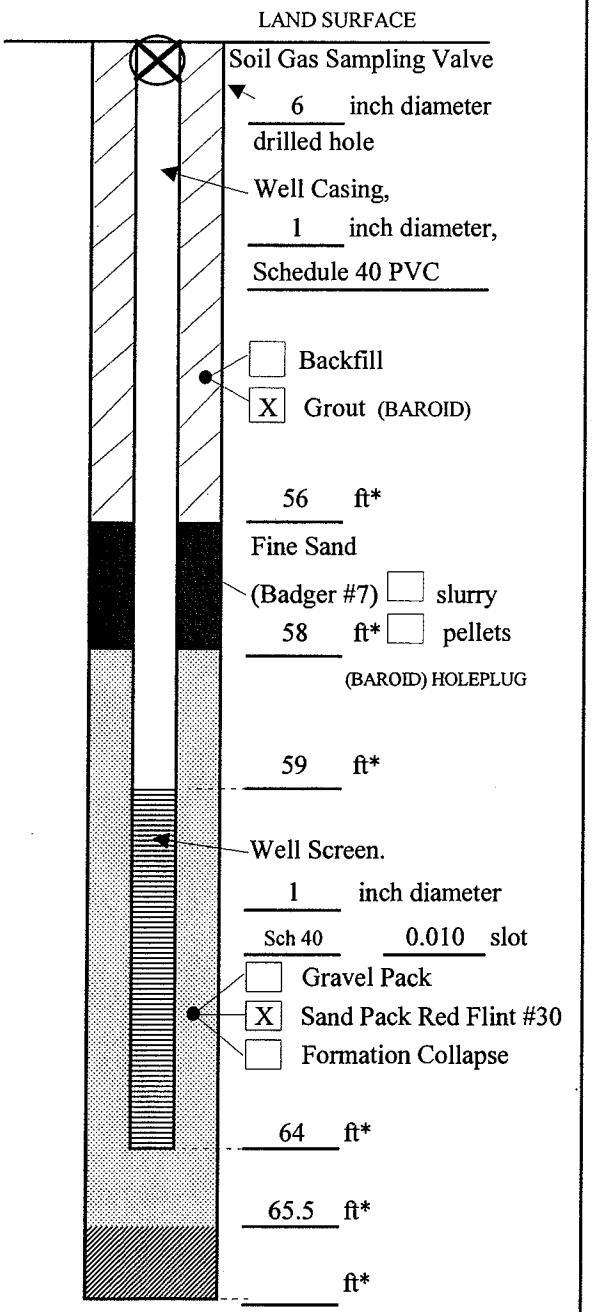
Probe Purpose Monitoring soil gas pressure and composition.

Remarks During installation, gurgling noise heard in well.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-107

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1089.27 feet MSL

[X] Surveyed
[ ] Estimated

Installation Date(s) 7/20/98 to 7/21/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

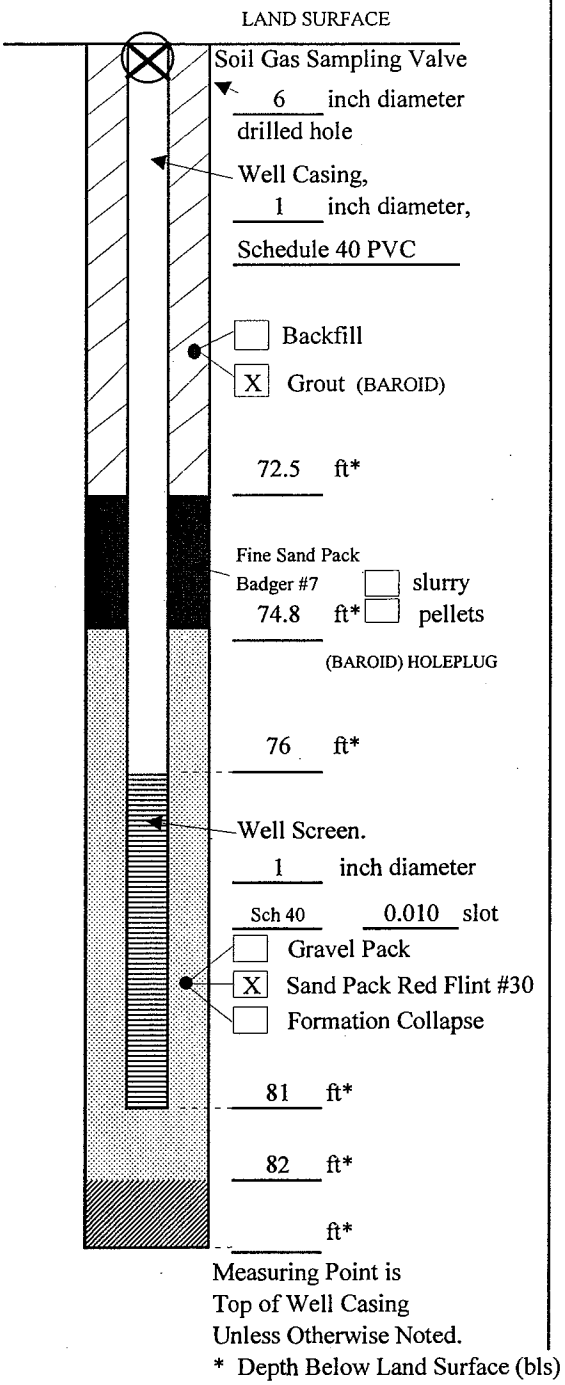
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-108

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1109.84 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/21/98 to 7/22/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

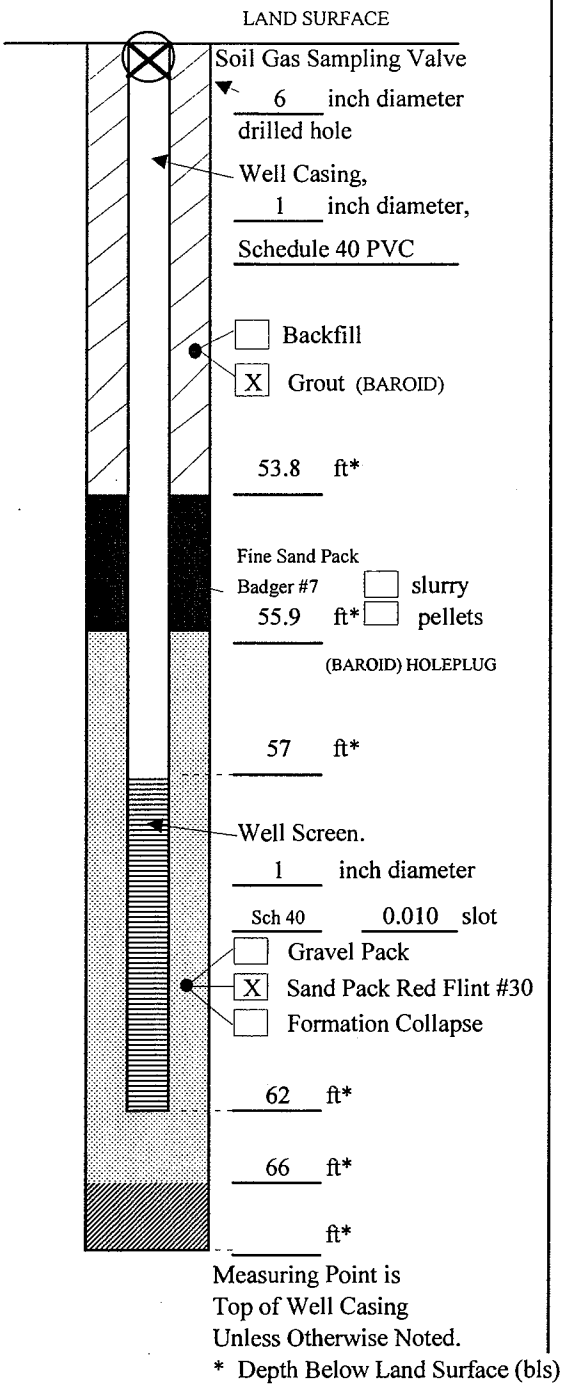
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-109

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1089.66 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/22/98 to 7/23/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

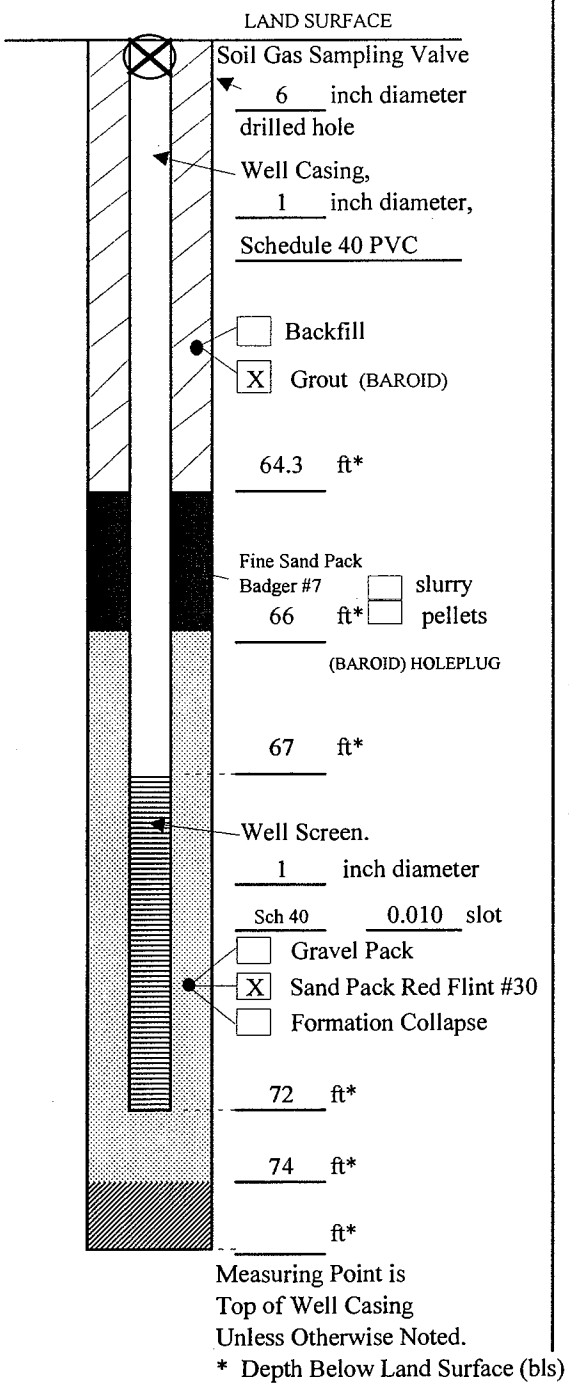
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-110

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1094.79 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/9/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

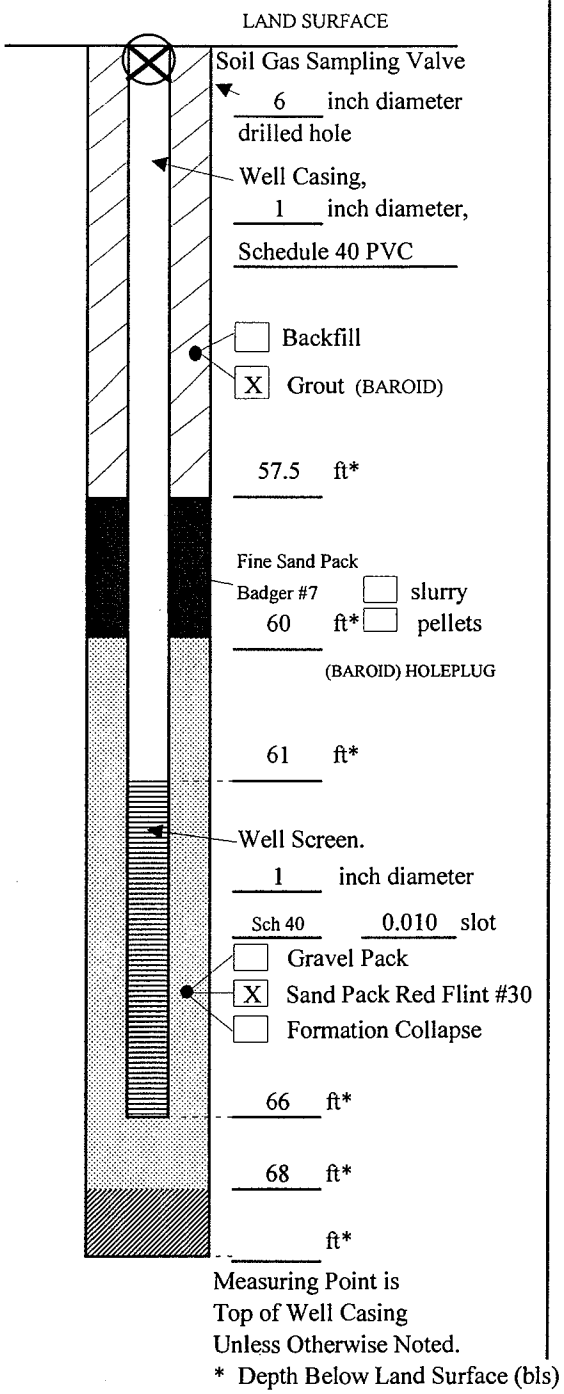
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-111

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1088.87 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/10/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

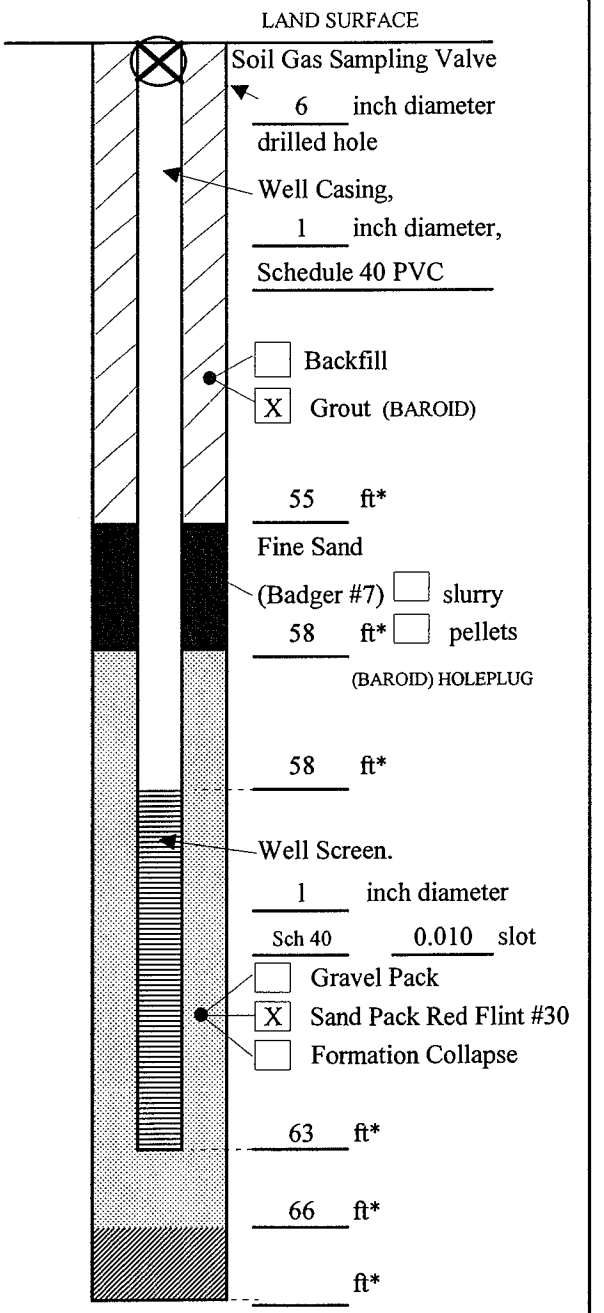
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-112

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1089.14 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/11/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

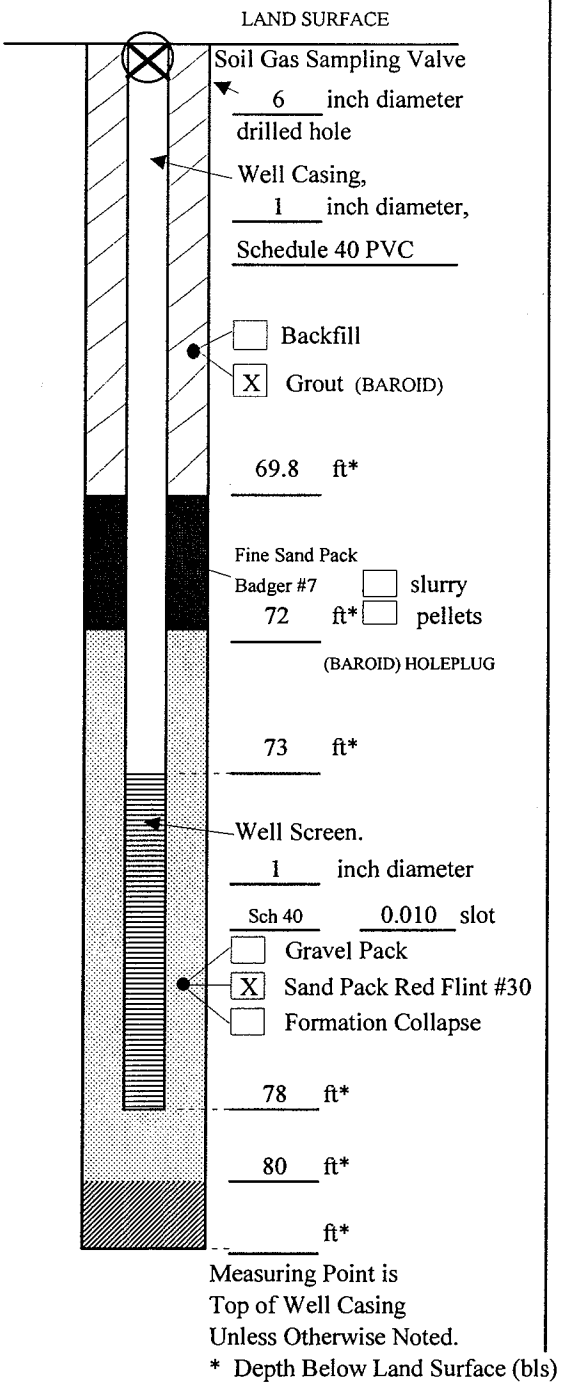
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-113

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1102.36 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/17/98 to 8/18/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

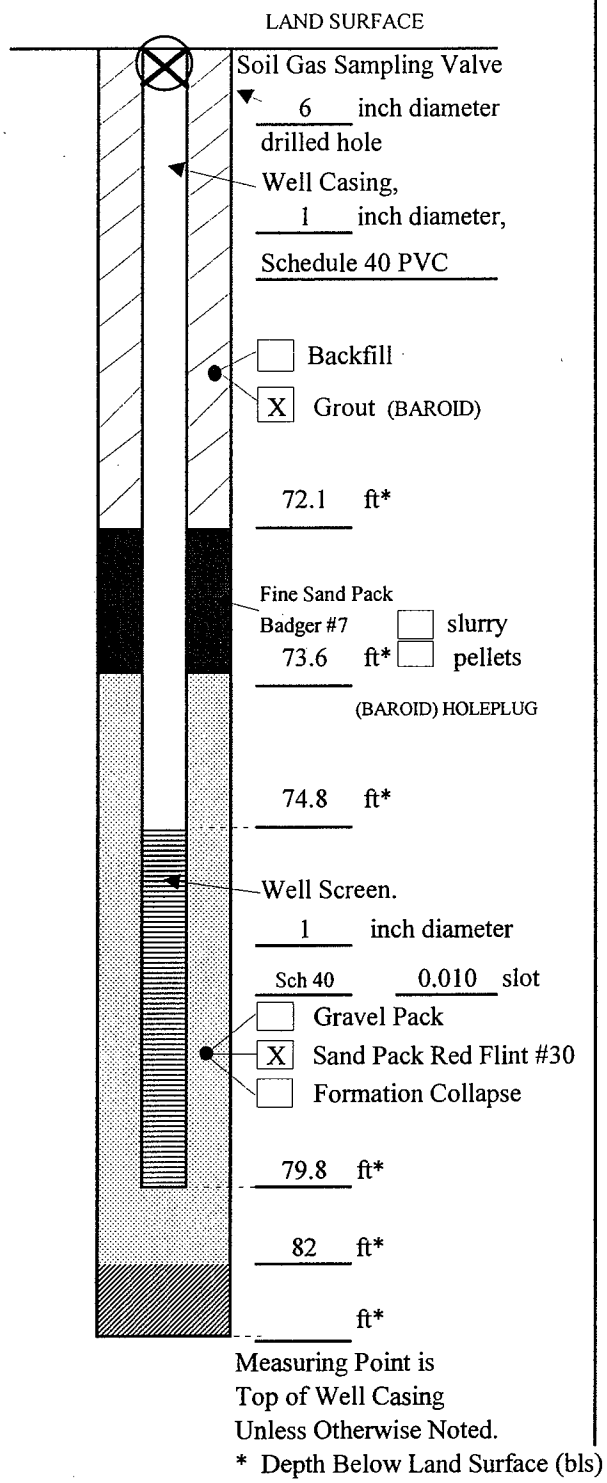
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-116

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.78 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/25/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

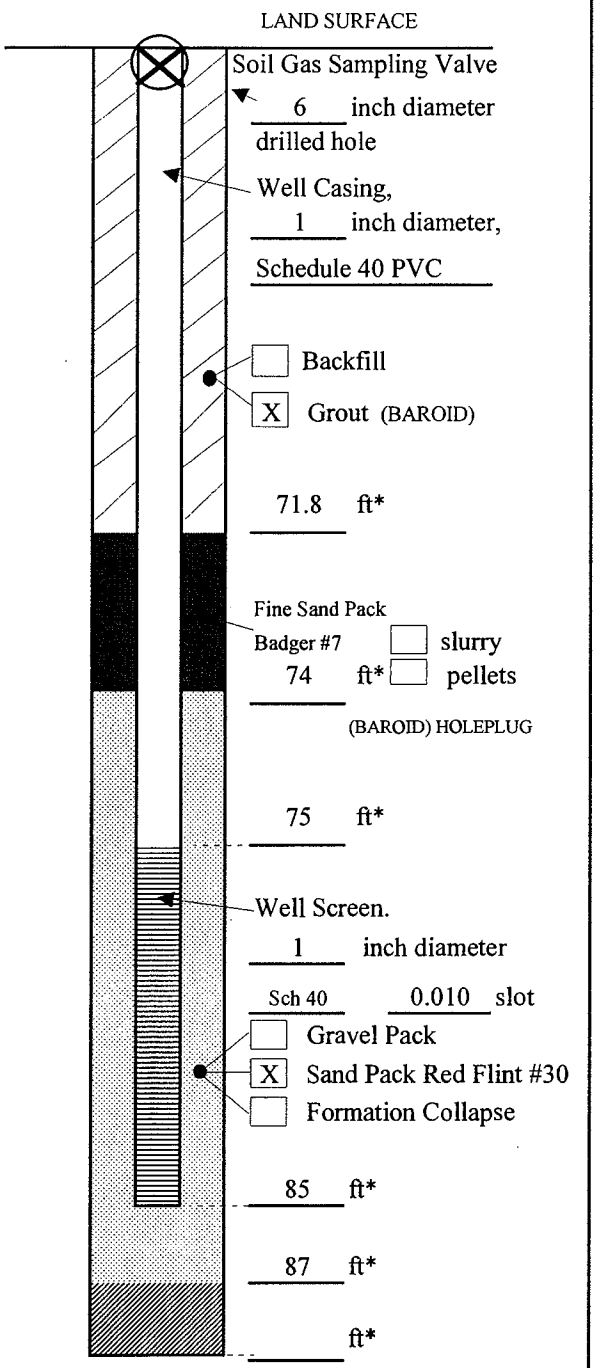
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-117

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1118.83 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/31/98 to 9/1/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

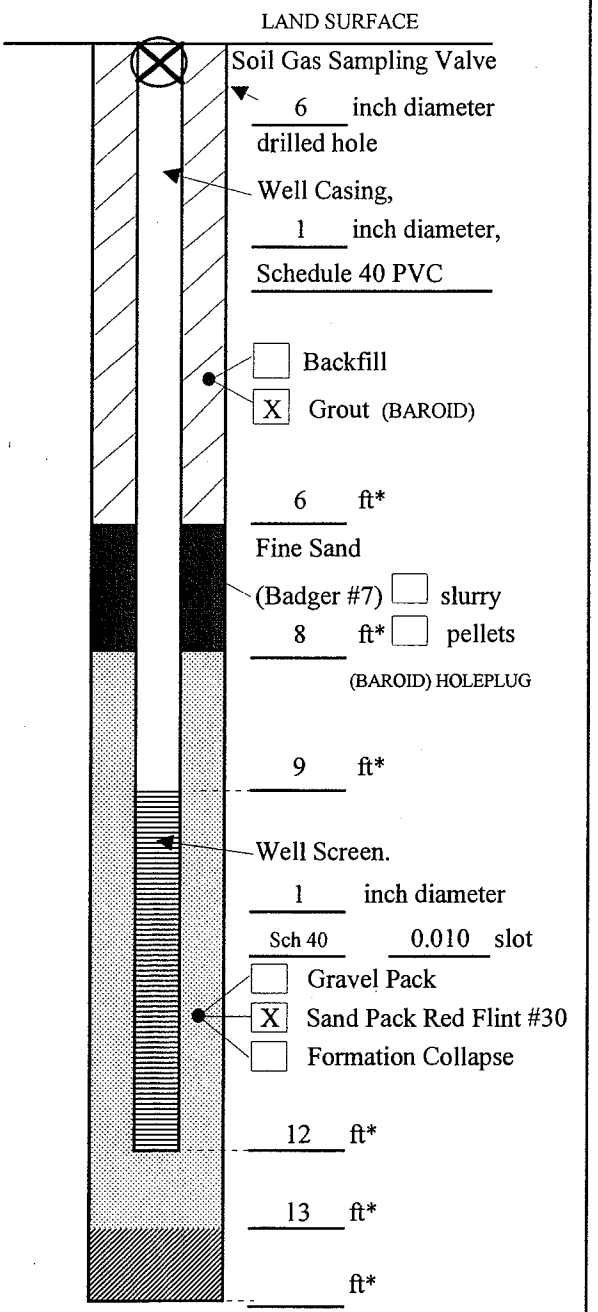
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-118A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.60 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/11/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

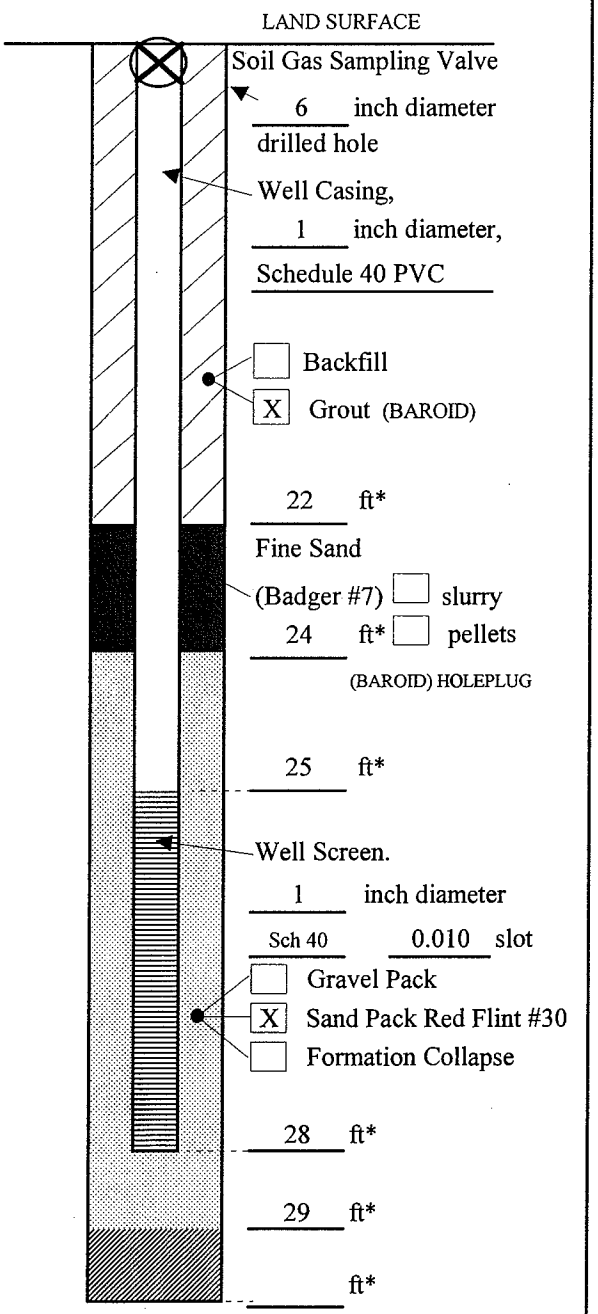
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-118B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.58 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/11/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

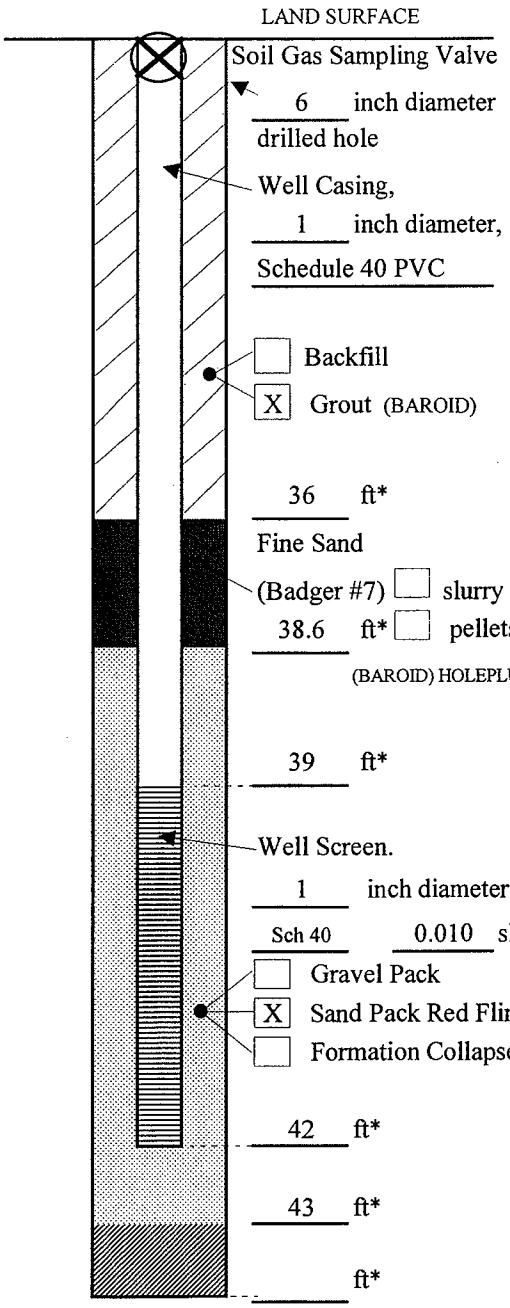
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-118C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.25 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/11/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

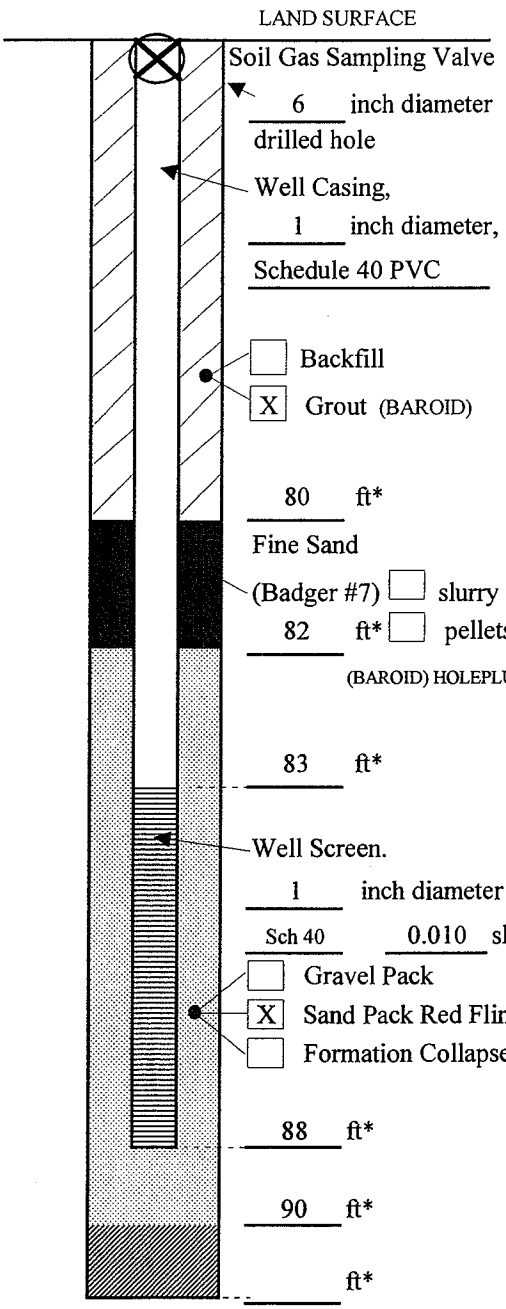
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-119

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1119.69 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/15/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

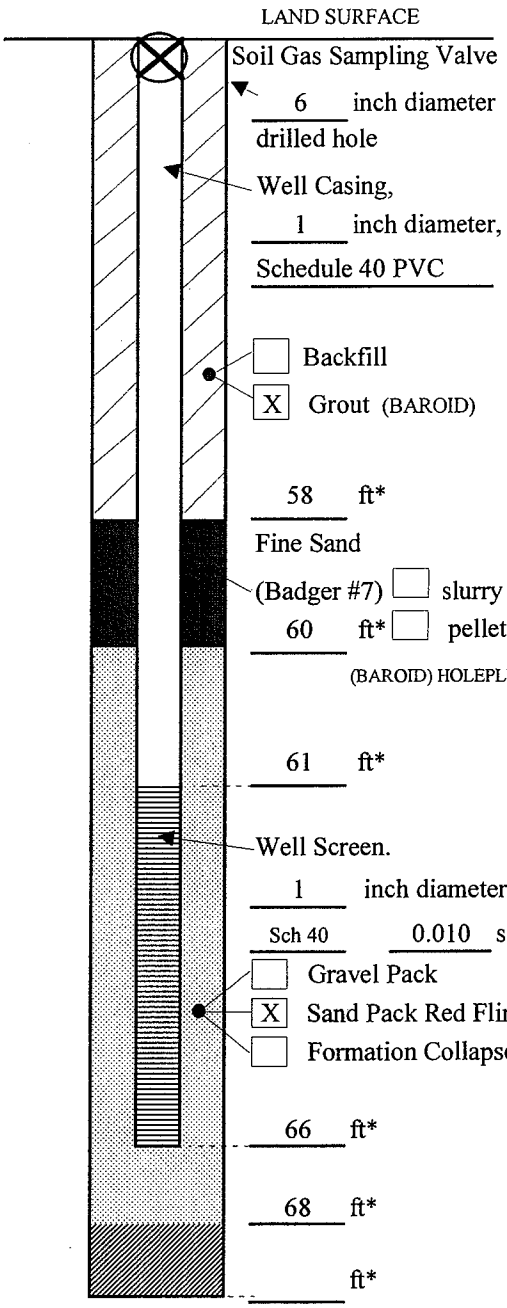
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-122

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1090.18 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/24/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

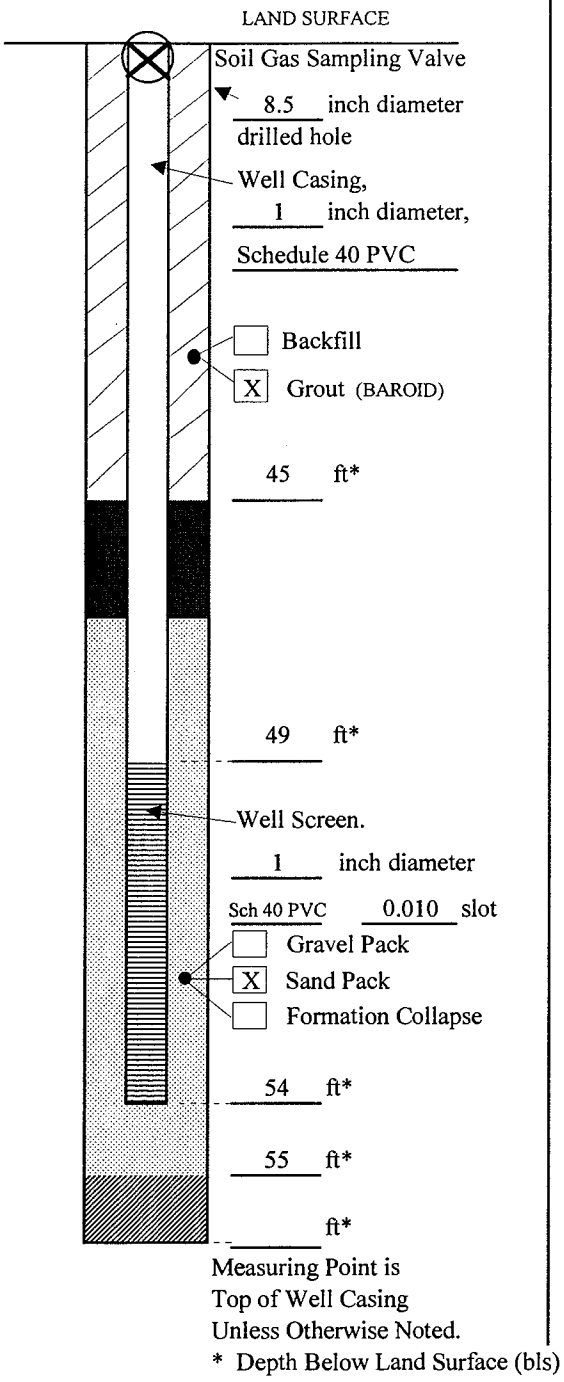
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-123

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1117.99 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/6/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

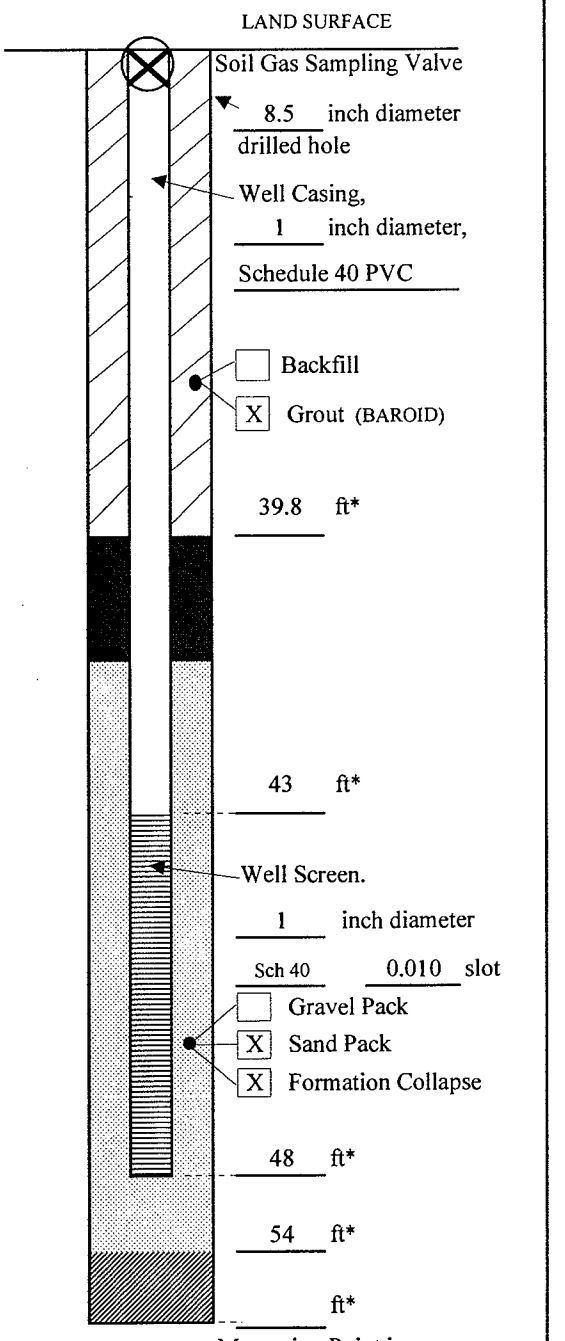
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Grout: Bentonite/Water Slurry

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-124

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1117.12 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/30/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

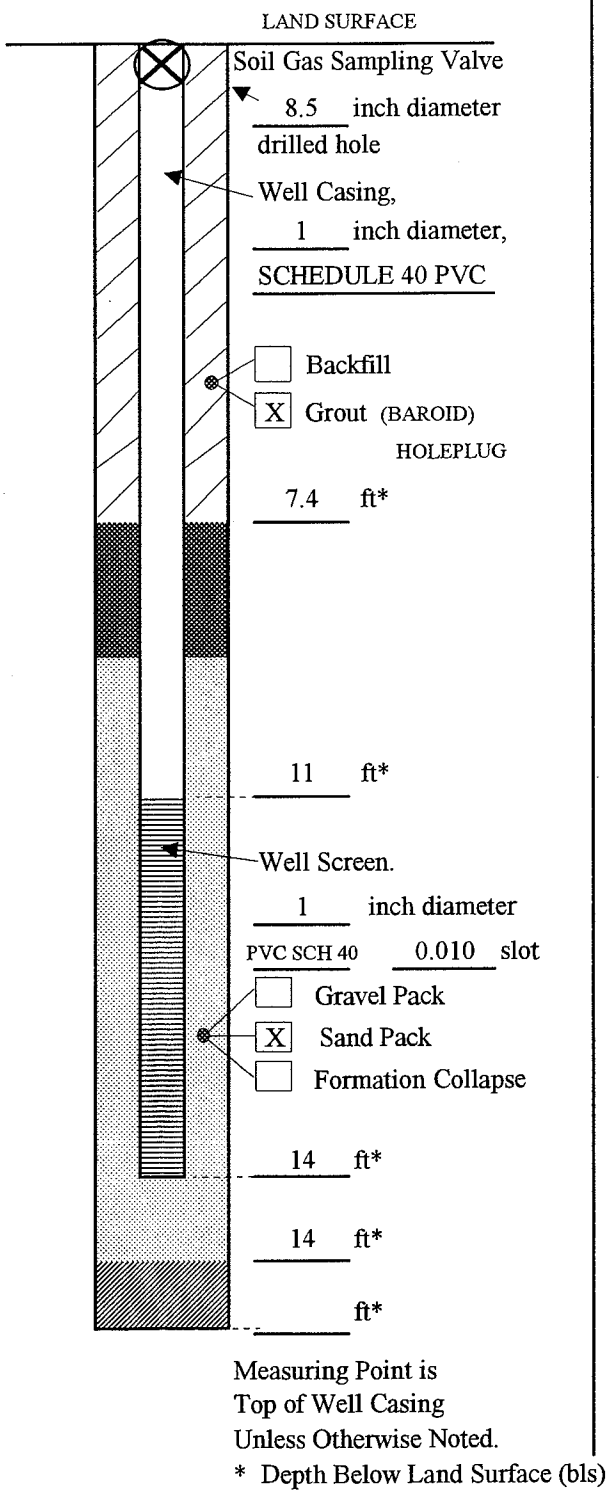
Probe Purpose Soil Gas Monitoring

Remarks Grout: Bentonite/Water Slurry

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/WI0637.001 Probe GMSG-125A

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1115.63 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/7/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

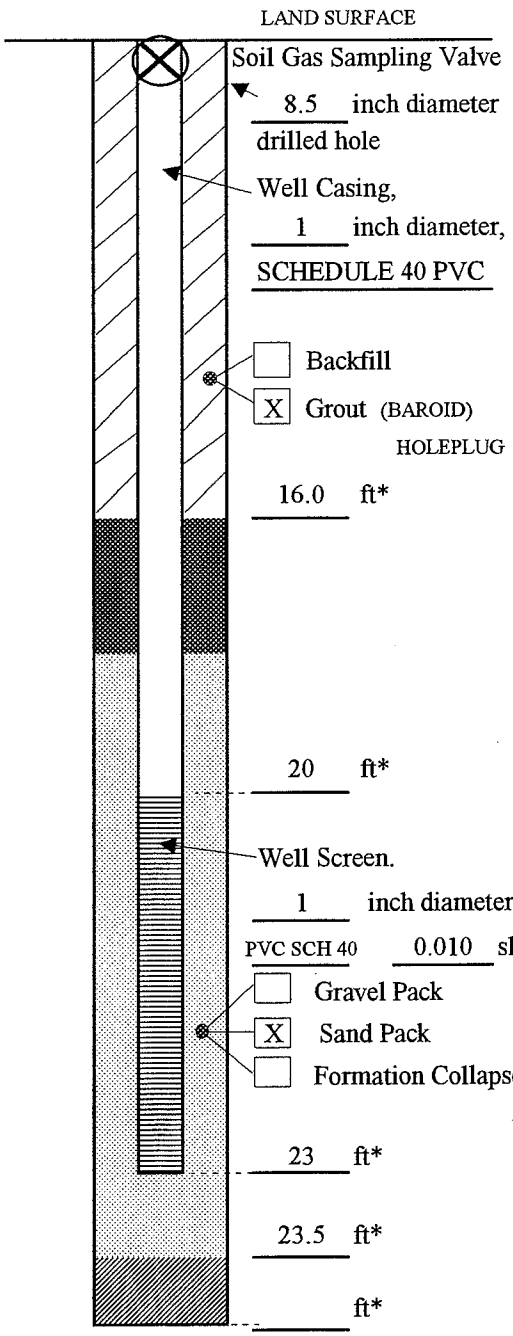
Probe Purpose Soil Gas Monitoring

Remarks Grout: Bentonite/Water Slurry

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/WI0637.001 Probe GMSG-125B

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation
1115.59 feet MSL

[X] Surveyed
[ ] Estimated

Installation Date(s) 10/7/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Probe Purpose Soil Gas Monitoring

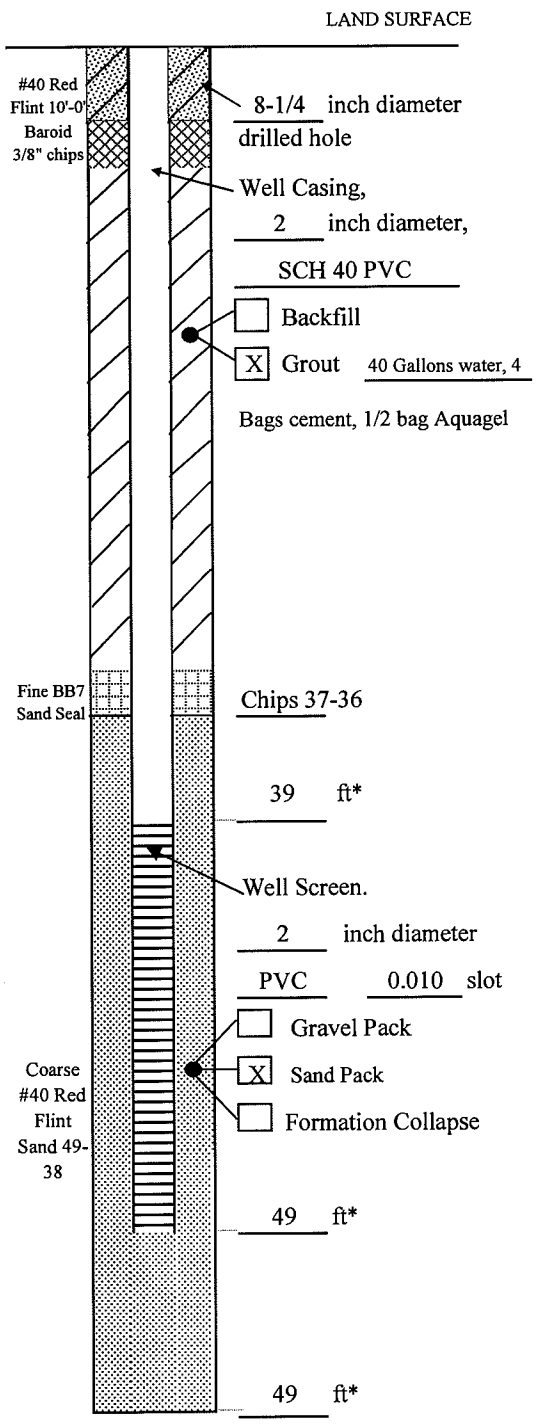
Remarks Grout: Bentonite/Water Slurry

Prepared by Bill Jones

ARCADIS

WELL CONSTRUCTION LOG

(FLUSH MOUNT)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMSG-126

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.05 feet [X] Surveyed [ ] Estimated

Mean Sea Level

Installation Date(s) 4/5/04

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water Below Screen feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

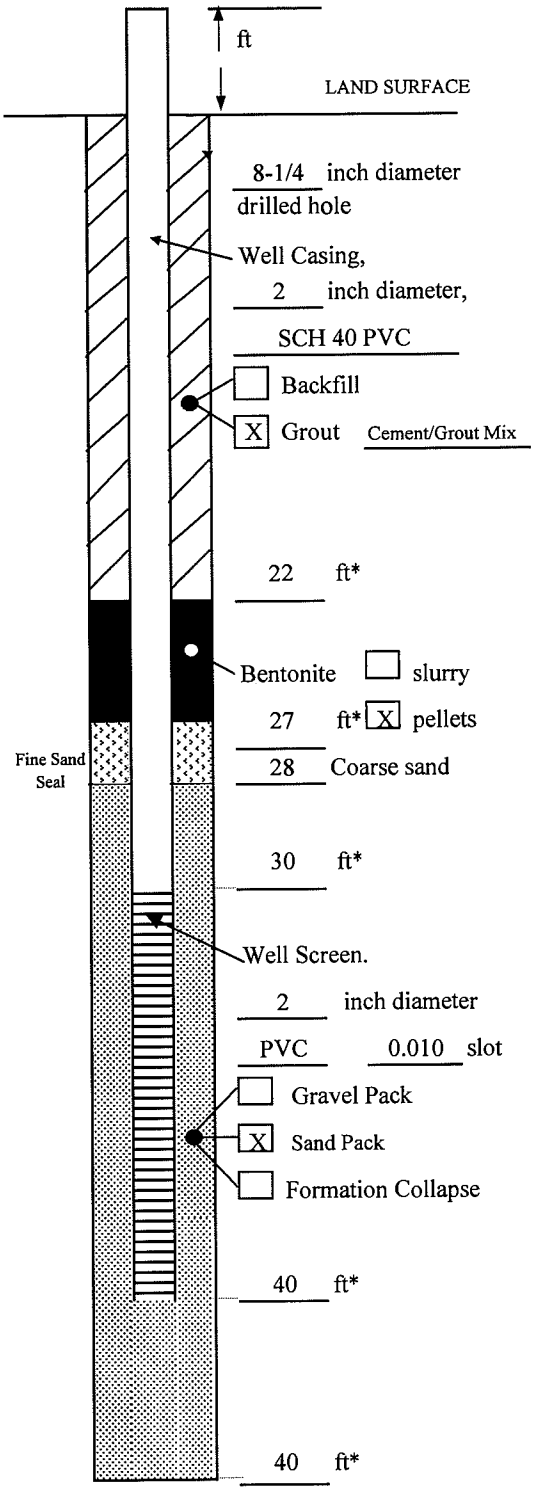
Well Purpose Vapor extraction.

Remarks

Prepared by Paul Lenaker

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMSG-127

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.13 feet
X Surveyed
☐ Estimated

Mean Sea Level

Installation Date(s) 4/5/04

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water Below Screen feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

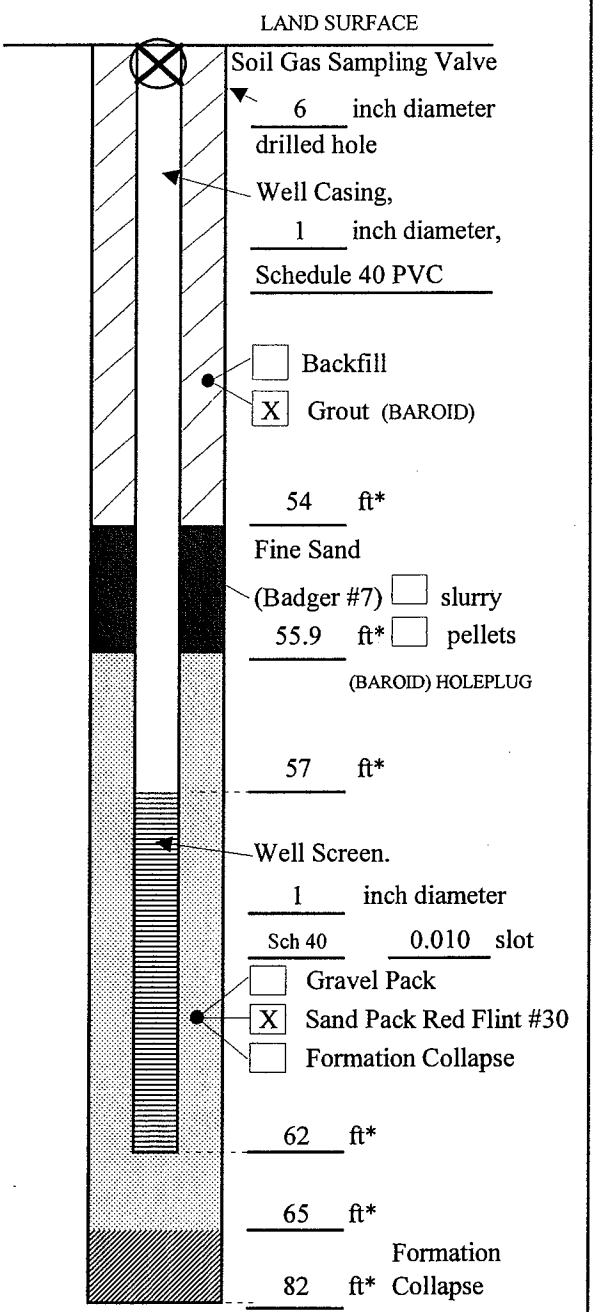
Well Purpose Vapor extraction.

Remarks

Prepared by Paul Lenaker

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-128

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1090.92 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 12/16/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

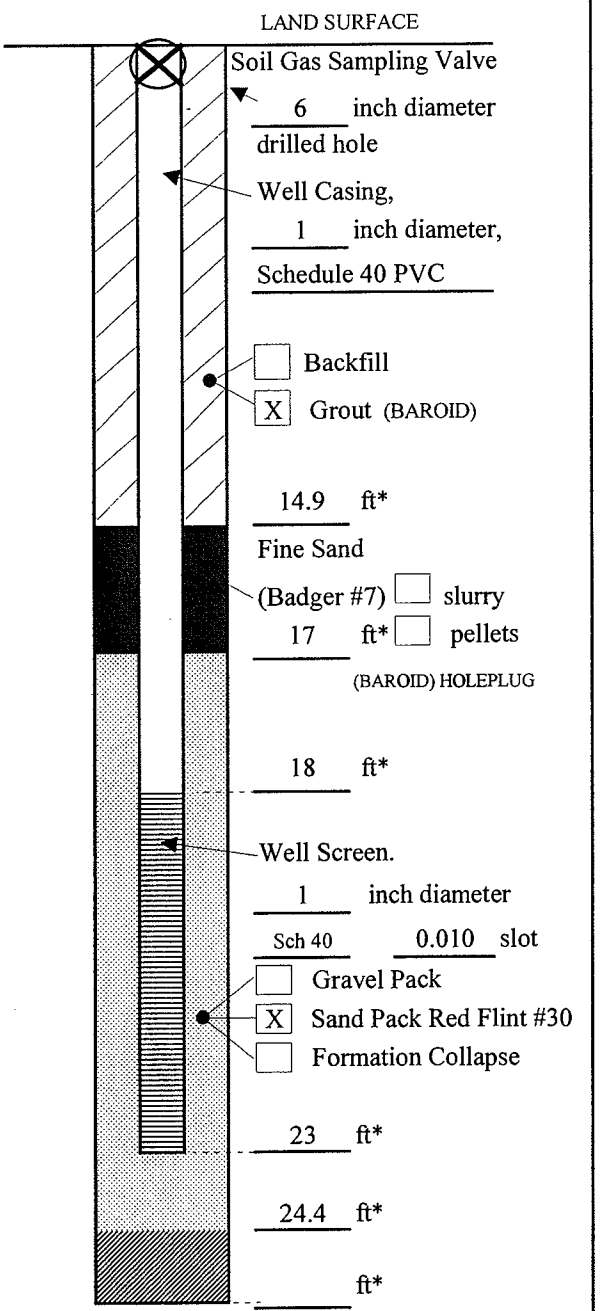
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-129

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1092.78 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 12/17/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

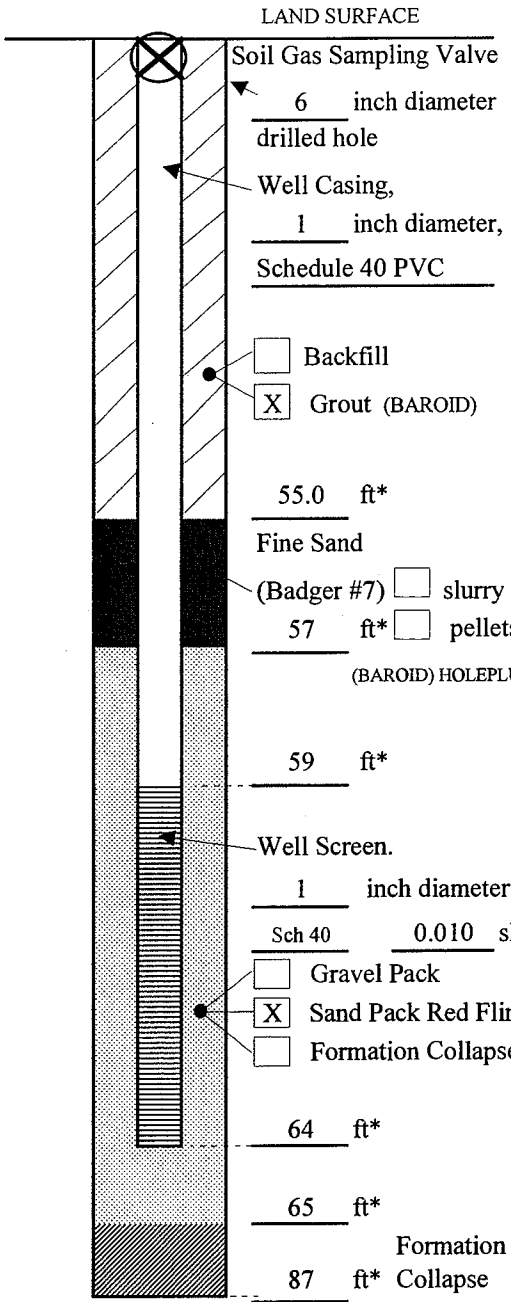
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-130

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1091.10 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 12/18/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

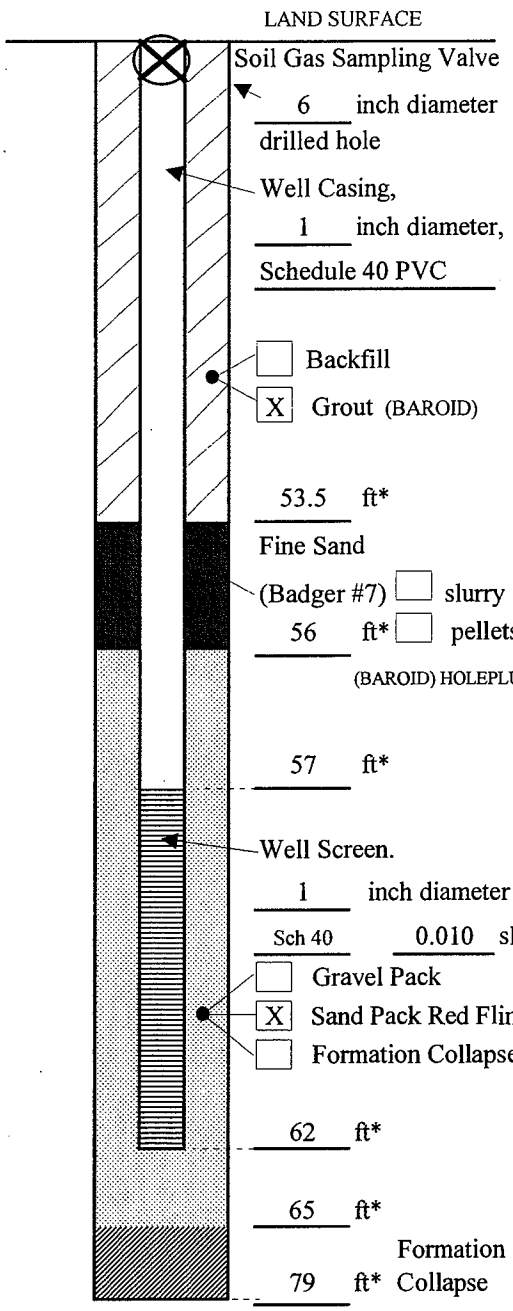
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-131

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1090.82 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 12/19/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

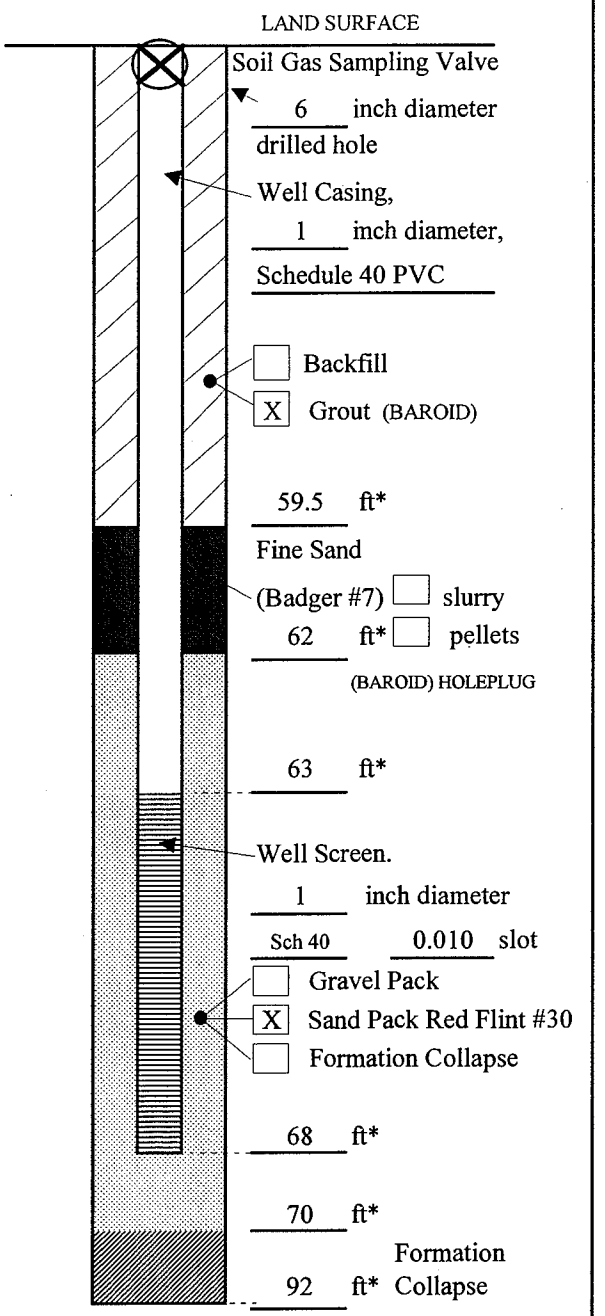
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-132

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1092.17 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 12/20/98 to 12/21/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

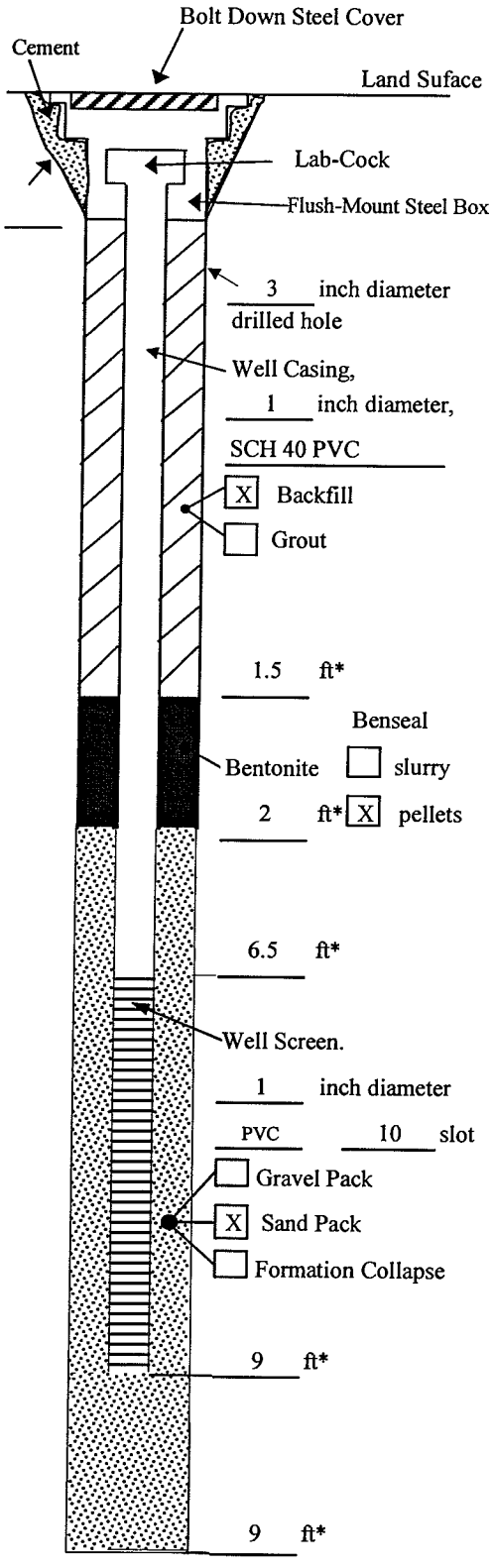
Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-133

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1112.77 feet Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/3/03

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 6/3/03

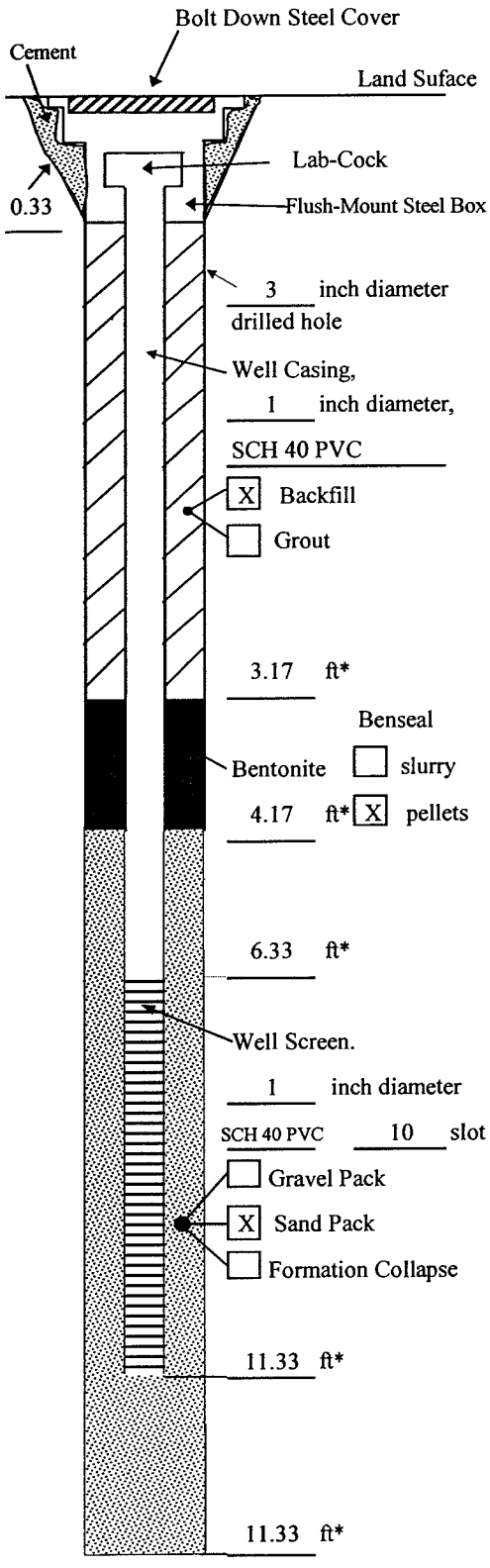
Specific Capacity gpm/ft

Well Purpose Vapor Monitoirng - Commerical MDEP

Remarks

Prepared by Rachael Saari

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-134

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation and Datum 1122.31 feet Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 6/12/03

Drilling Method Hand Auger

Drilling Contractor None

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 6/3/03

Specific Capacity gpm/ft

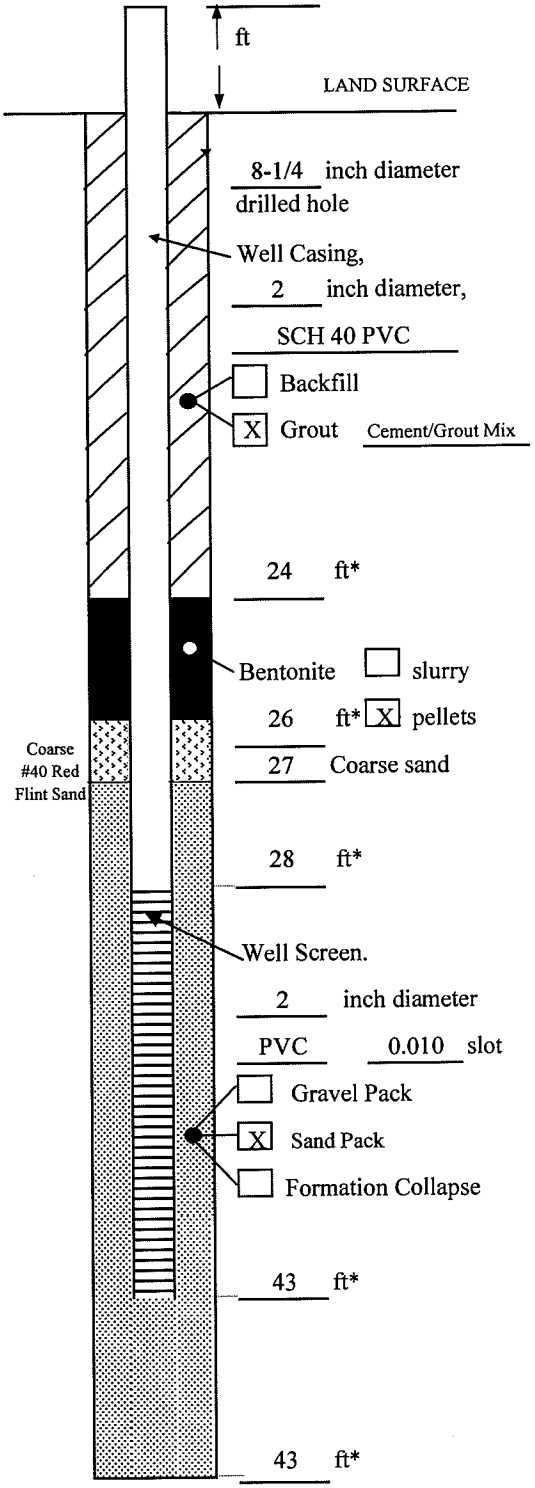
Well Purpose Commerical MDP Soil-Vapor Probe.

Remarks

Prepared by Rachael Saari

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMSG-135

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.49 feet
X Surveyed
☐ Estimated
Mean Sea Level

Installation Date(s) 4/6/04

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water Below Screen feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Vapor extraction.

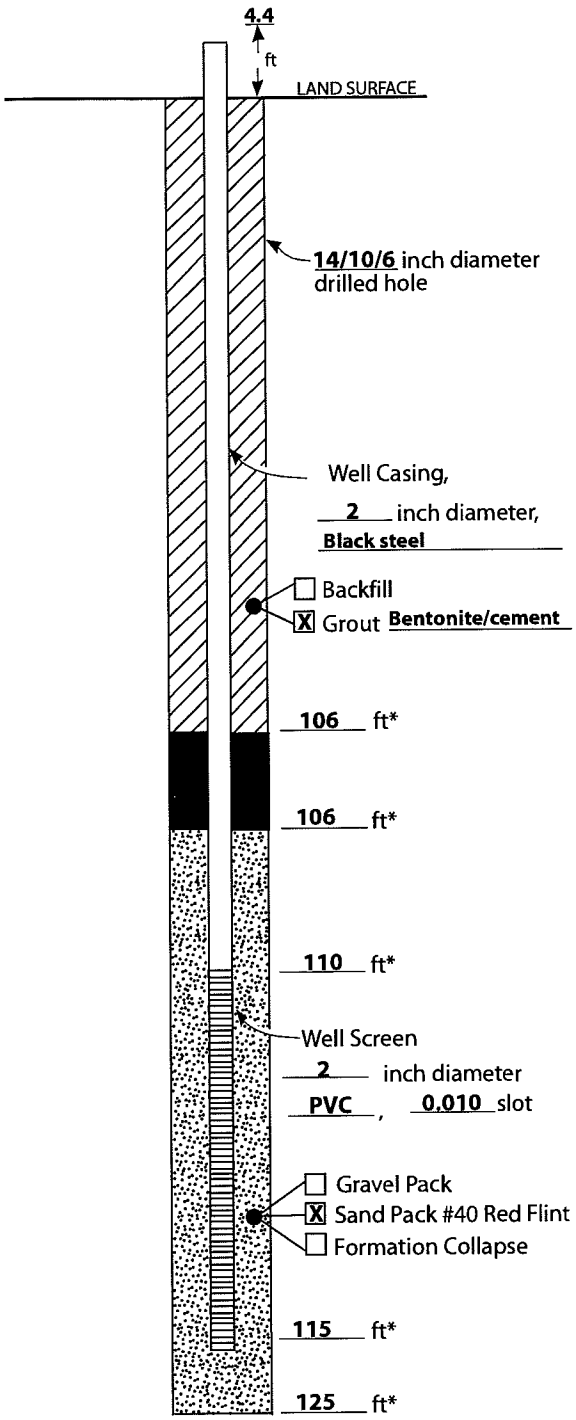
Remarks

Prepared by Paul Lenaker

G:\Aproject\FORD\WI0637\2004\tables\wcl_gmsg135
1/31/2005 8:08 AM

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMSG-136**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation

and Datum **1132.23** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **6/23/04 - 6/26/04**

Drilling Method **Mud Rotary**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Bentonite Mud/Revert Mud**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Methane venting for GM-83.**

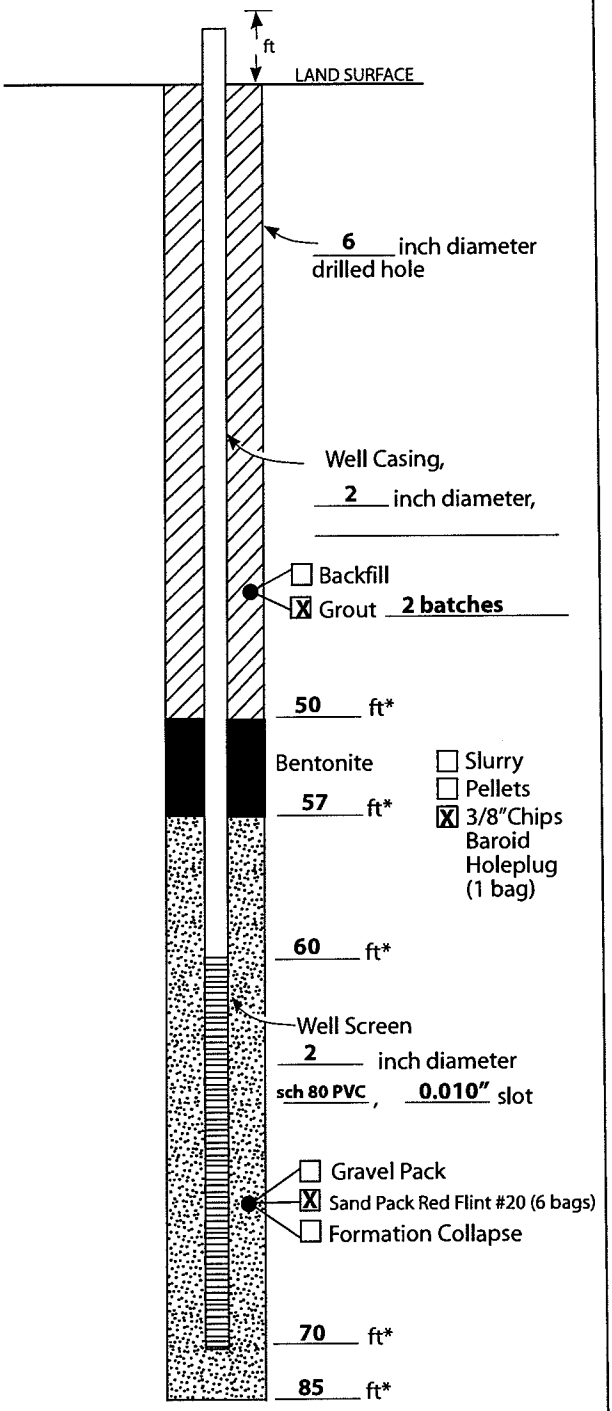
Remarks **10" casing set to 69.5 feet. 6" casing set to 110 feet. 5' prepacked well screen riser pipe black steel.**

Prepared by **Bruce Evans**

ford/wi0637/2004/graphic/logs/gmsg136.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMSG-137

Town/City Kingsford

County Dickinson State Michigan

Permit No. _____

Land-Surface Elevation 1124.38 feet

and Datum _____ feet ☒ surveyed ☐ estimated

Installation Date(s) 8/04/04

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

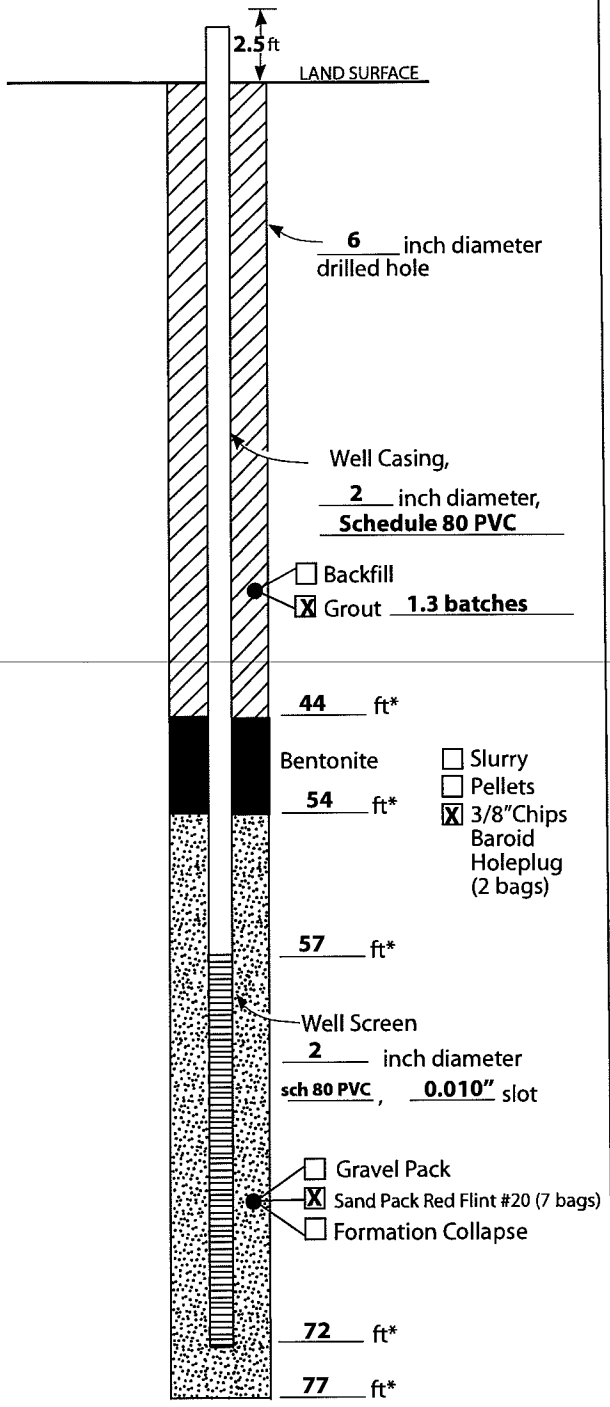
Well Purpose Vapor probe

Remarks Grout mixture is 3 bags Portland cement, 1/4 bag Baroid Aquagel, 35 gallons water.

Prepared by Andy Mumpy

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMSG-138**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1125.46** feet

and Datum _____ feet ☒ surveyed ☐ estimated

Mean Sea Level

Installation Date(s) **8/05/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

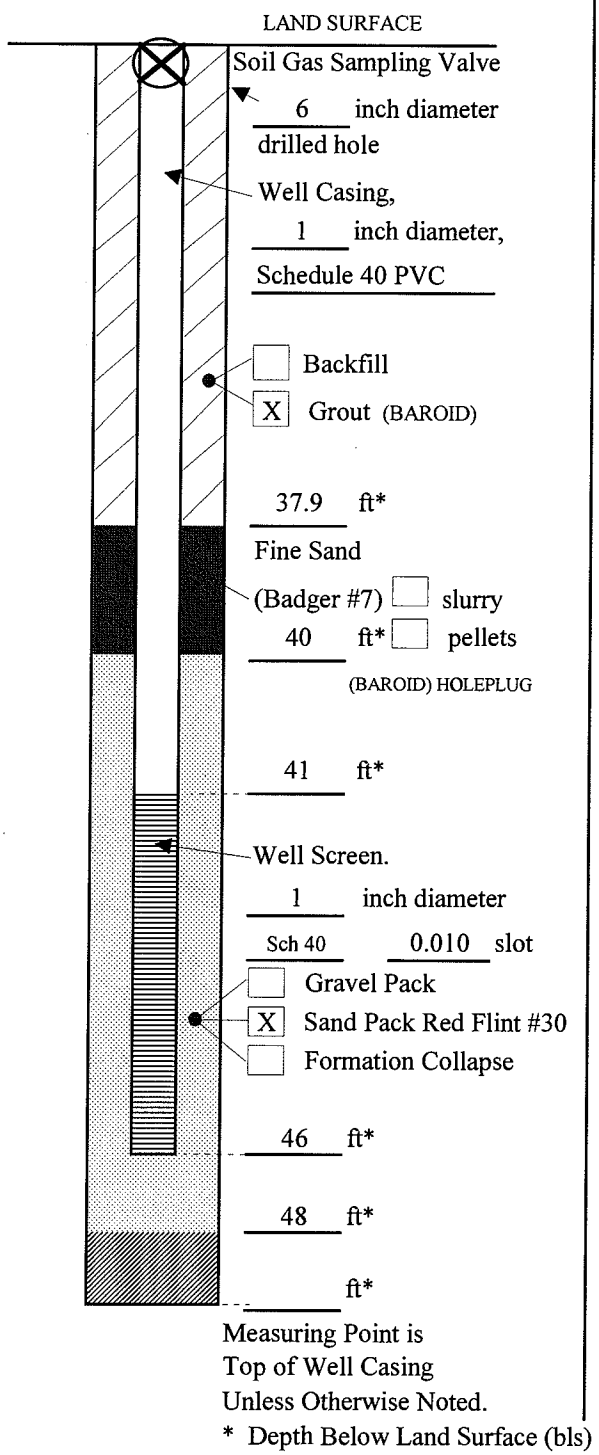
Well Purpose **Vapor probe**

Remarks **Grout mixture is 3 (94 pound) bags Portland cement, 1bag Baroid Aquagel, 35 gallons water.**

Prepared by **Andy Mumpy**

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-200

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1100.15 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/24/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

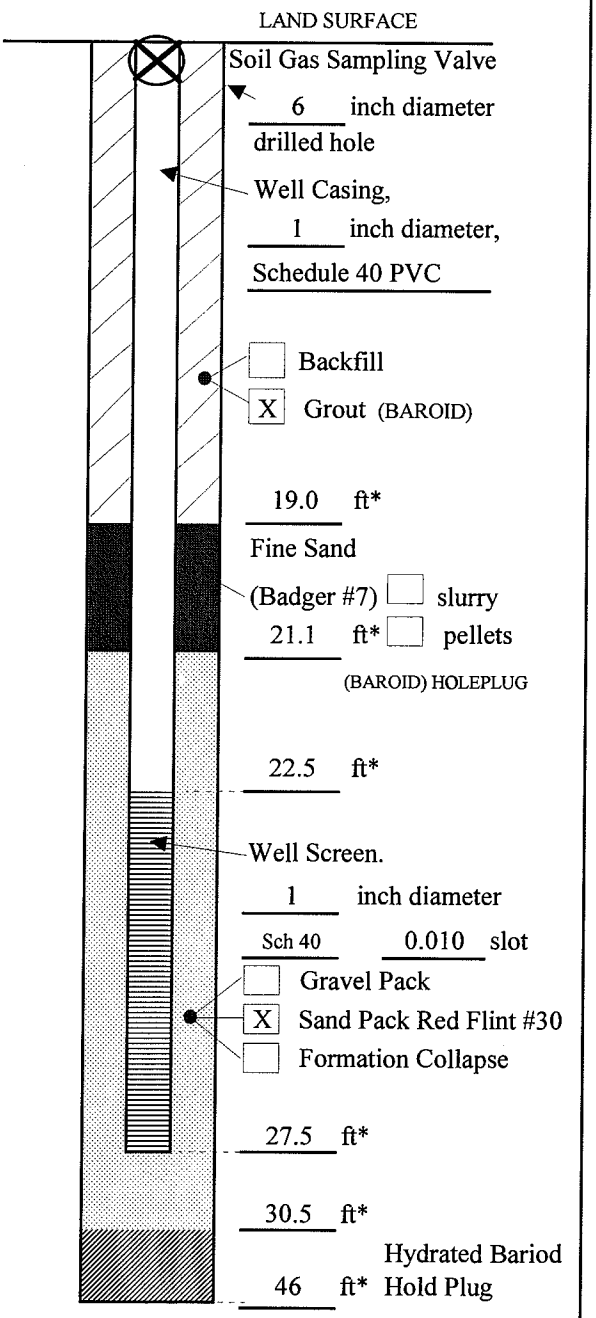
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-202

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1099.81 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/25/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

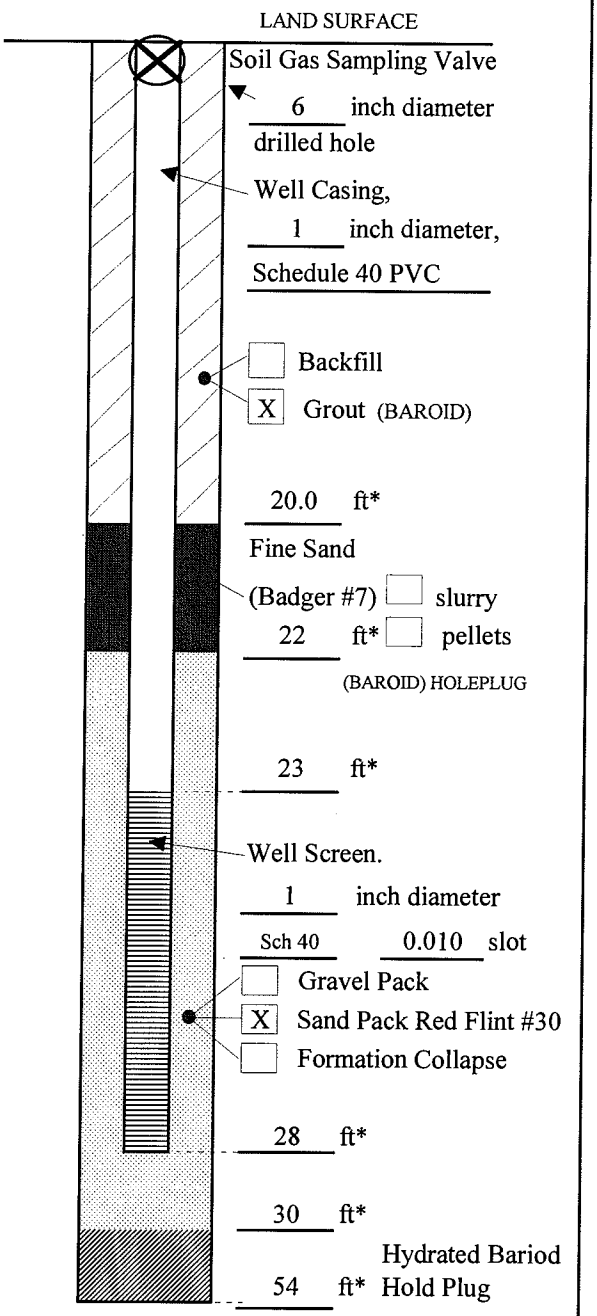
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-204

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1100.57 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/27/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

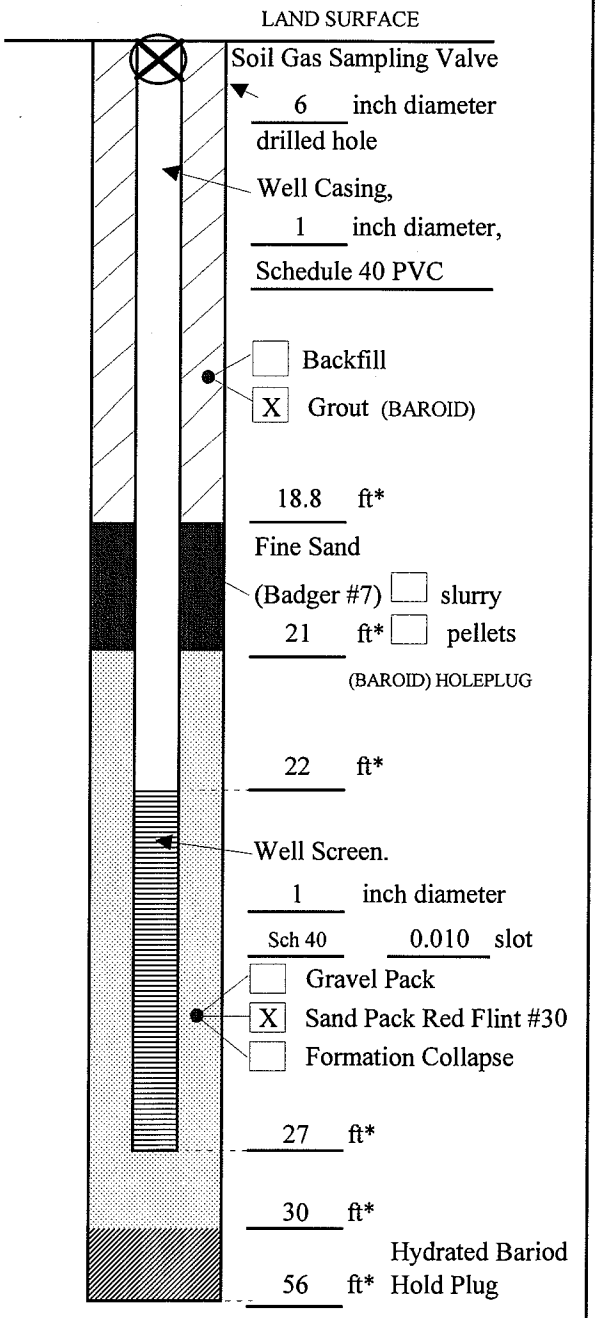
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Baroid holeplug pellets hydrated at 30 feet.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-205

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1099.65 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/28/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

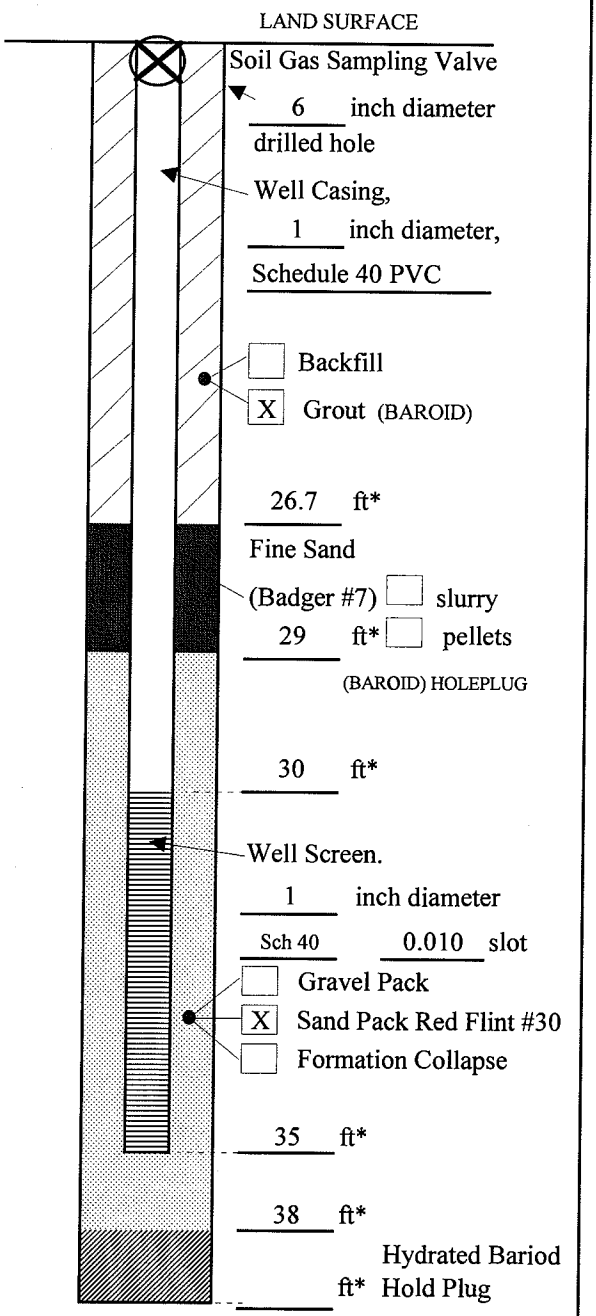
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-206

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1090.72 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/28/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

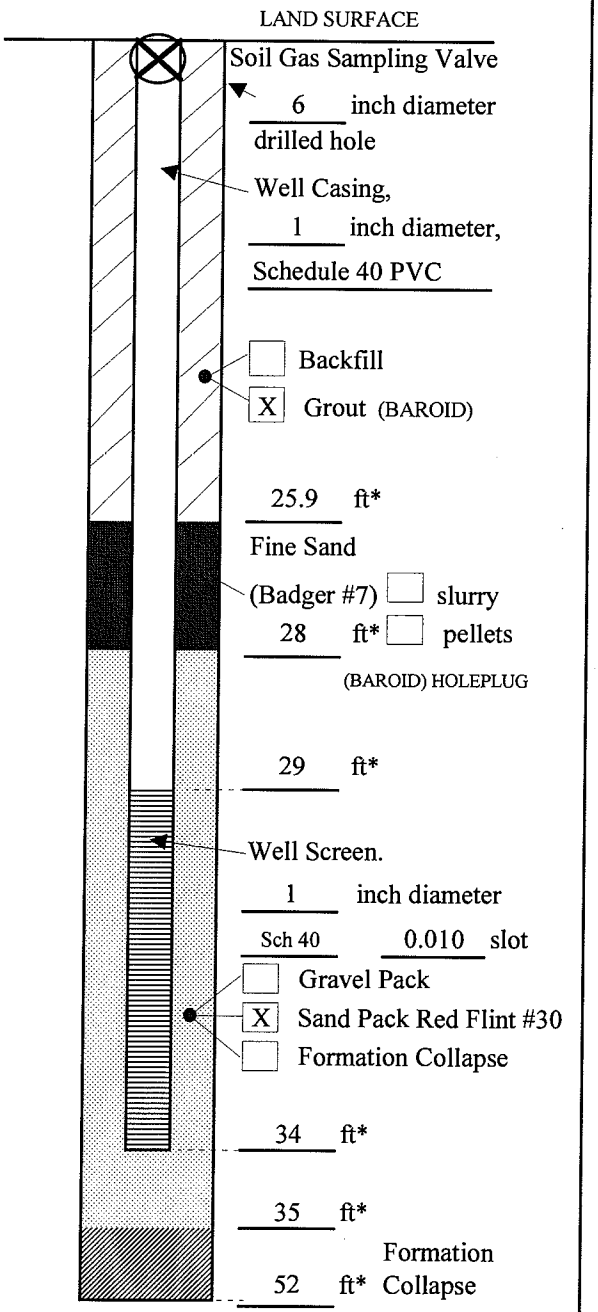
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-207

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1089.69 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/3/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

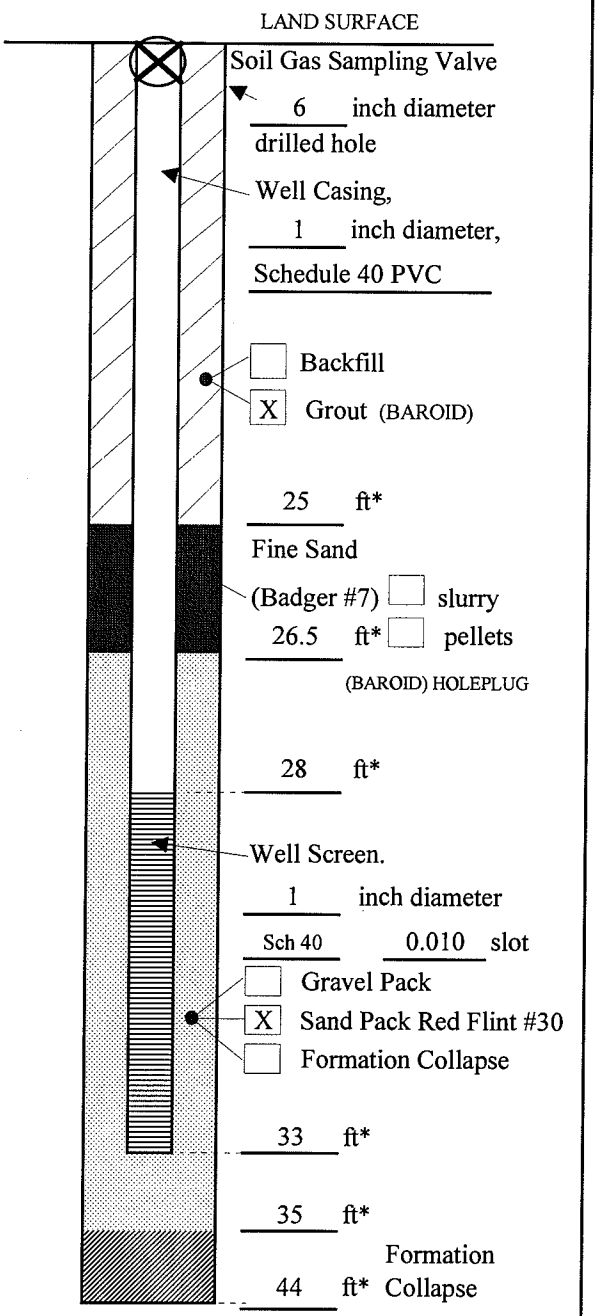
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-208

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1087.25 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/5/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

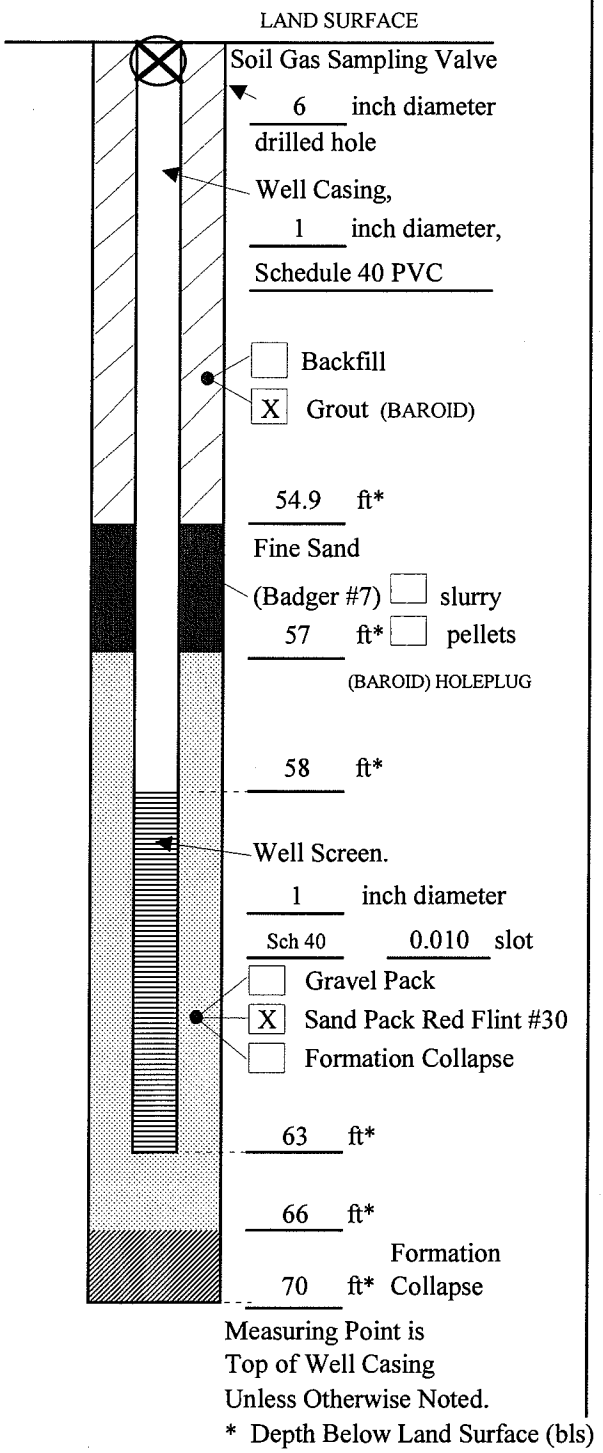
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Project Ford/Kingsford Probe GMSG-209

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1100.73 feet MSL
X Surveyed
Estimated

Installation Date(s) 8/5/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

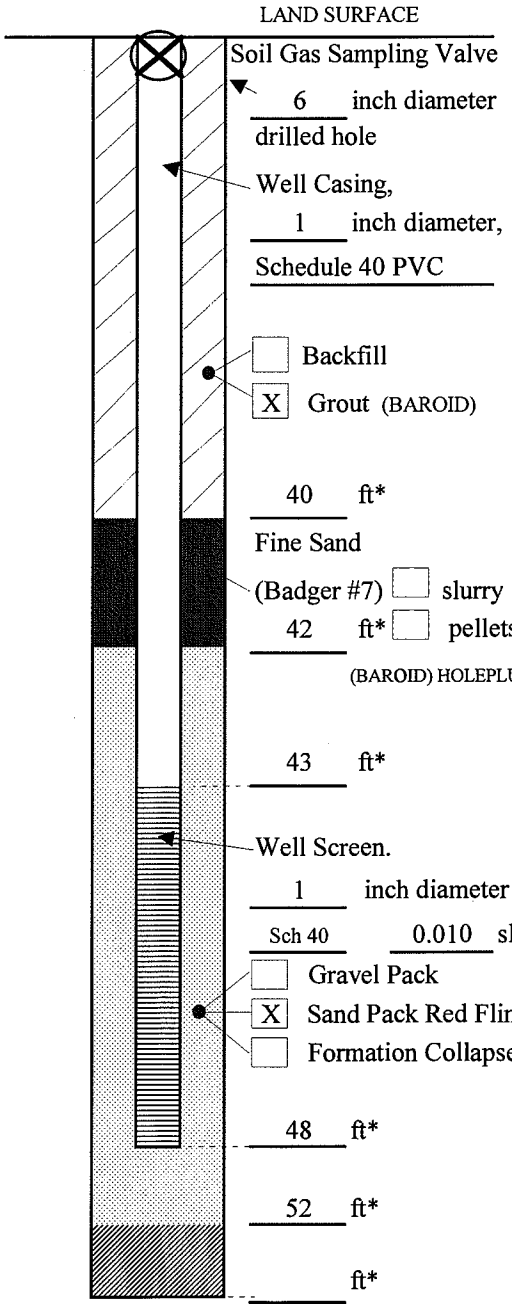
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-210

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1100.08 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/22/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

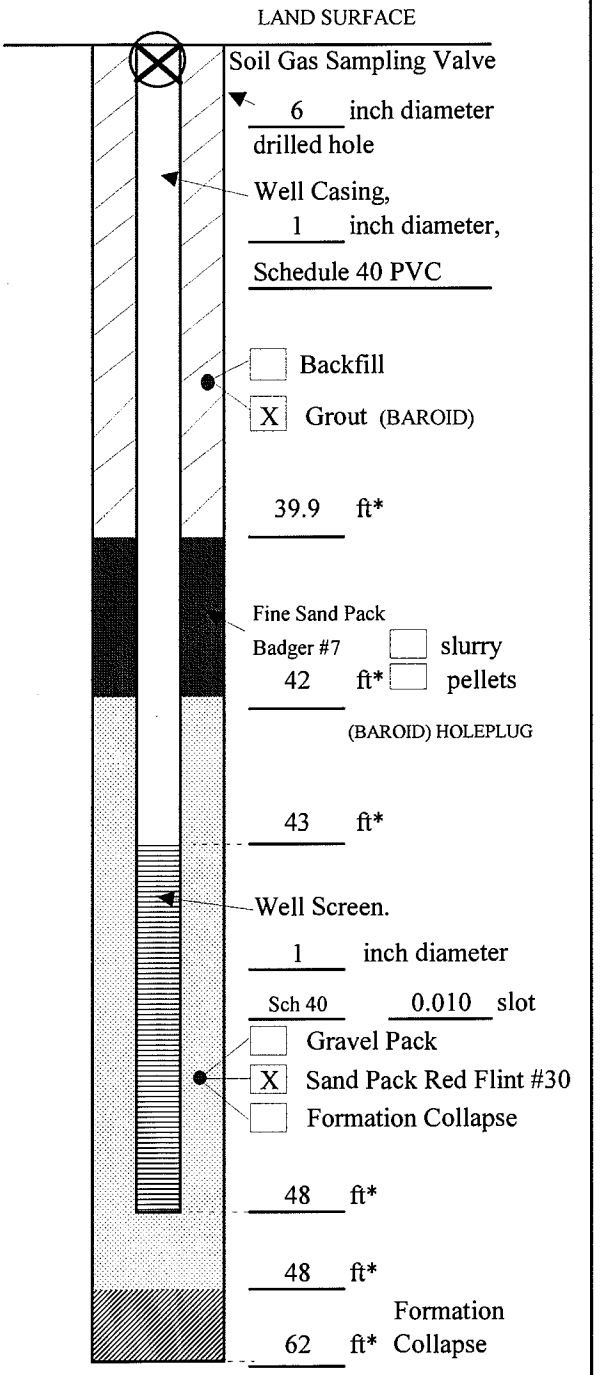
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-211

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1099.24 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 8/22/98 to 08/23/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

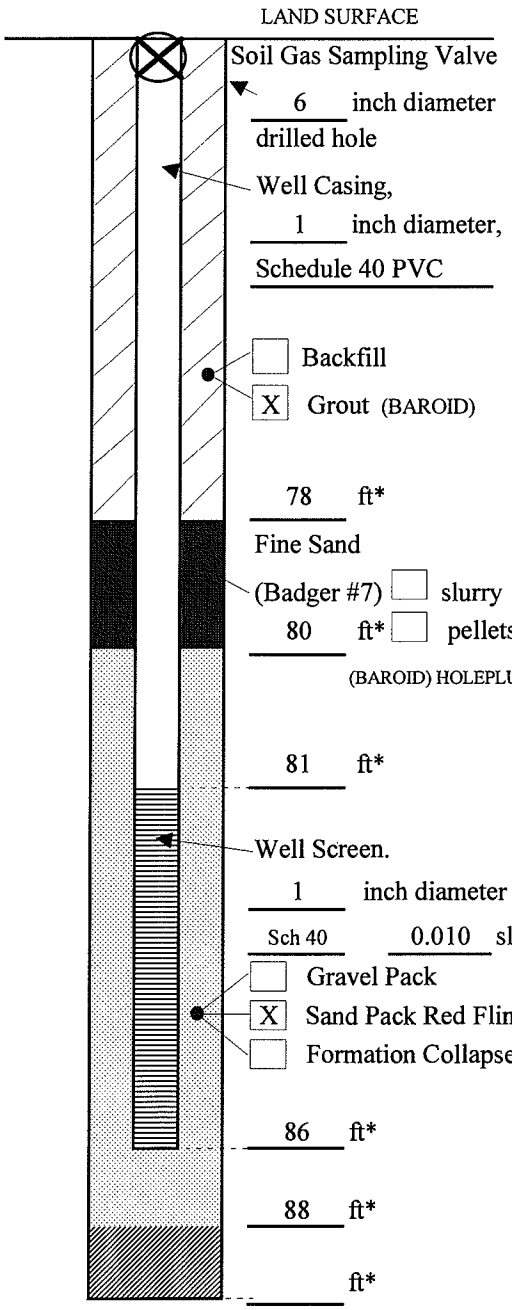
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-212

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1098.77 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/2/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG

Project Ford/Kingsford Probe GMSG-214

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1099.20 feet MSL

[X] Surveyed
[ ] Estimated

Installation Date(s) 9/3/98

Drilling Method Hollow Stem Auger

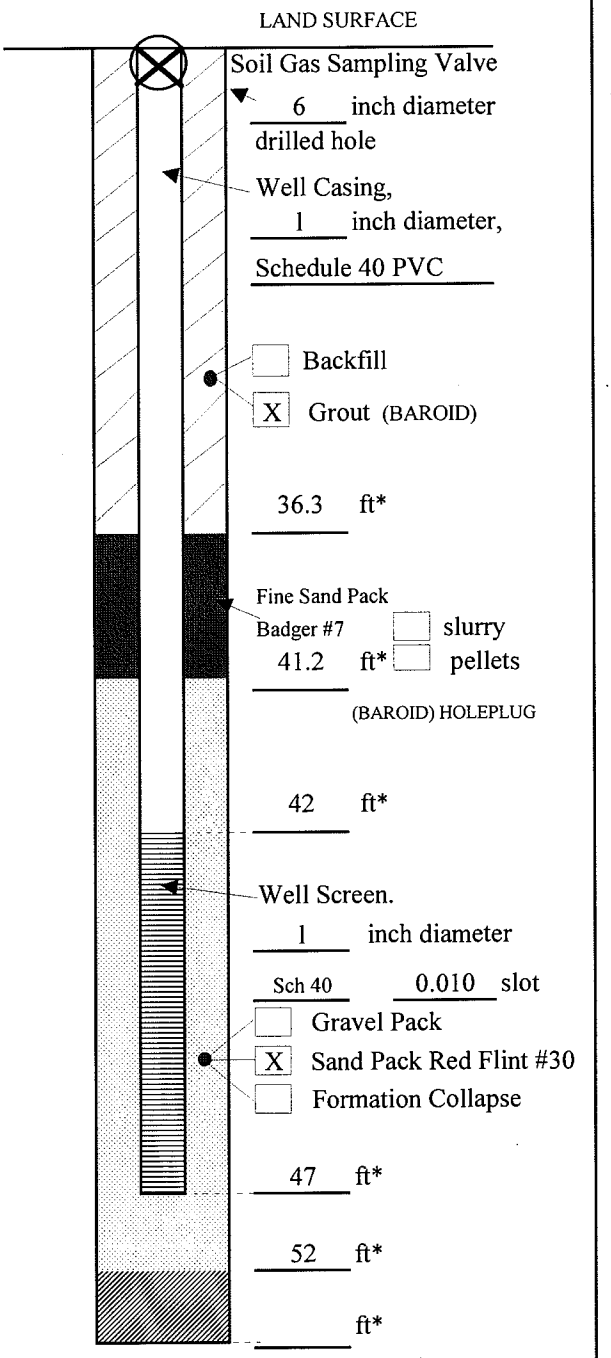
Drilling Contractor Boart Longyear

Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

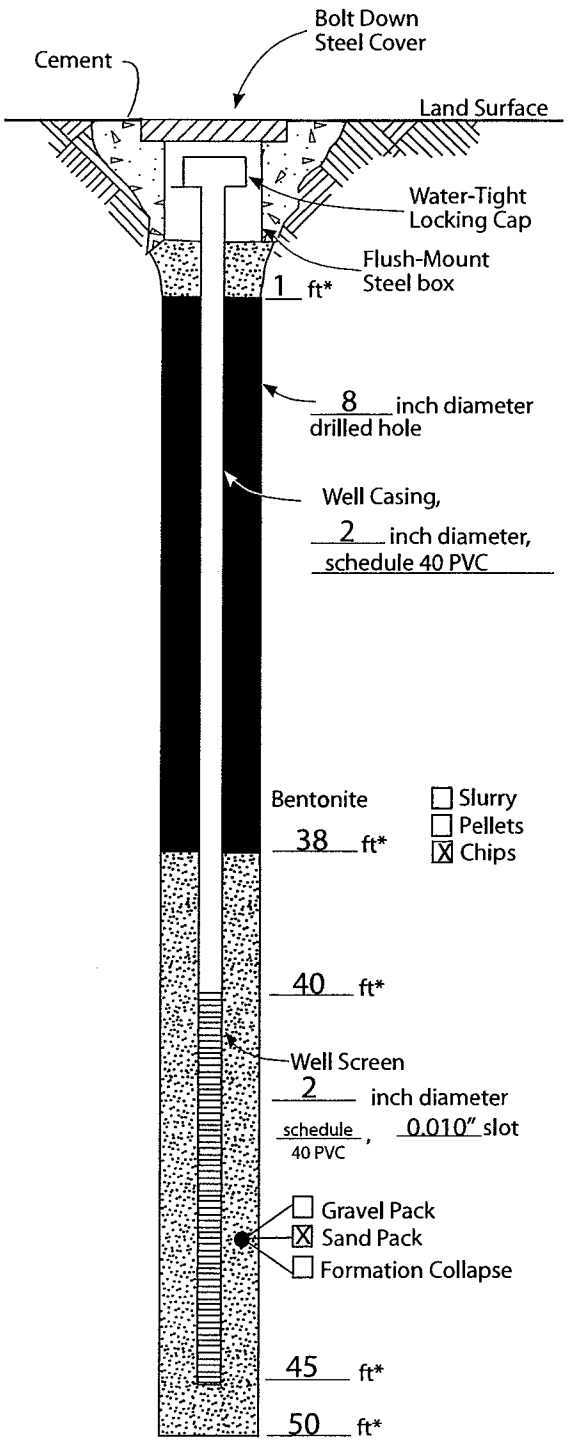
Remarks

Prepared by John Keller



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg214r-wcl.ai

Well Construction Log

(Flush Mounted Well)

Project Ford/Kingsford WI0010950002 Well GMSG-214R

Town/City Kingsford (SVE East of Emmet System)

County Dickinson

Permit No. NA

Land-Surface Elevation 1099.13 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/1/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

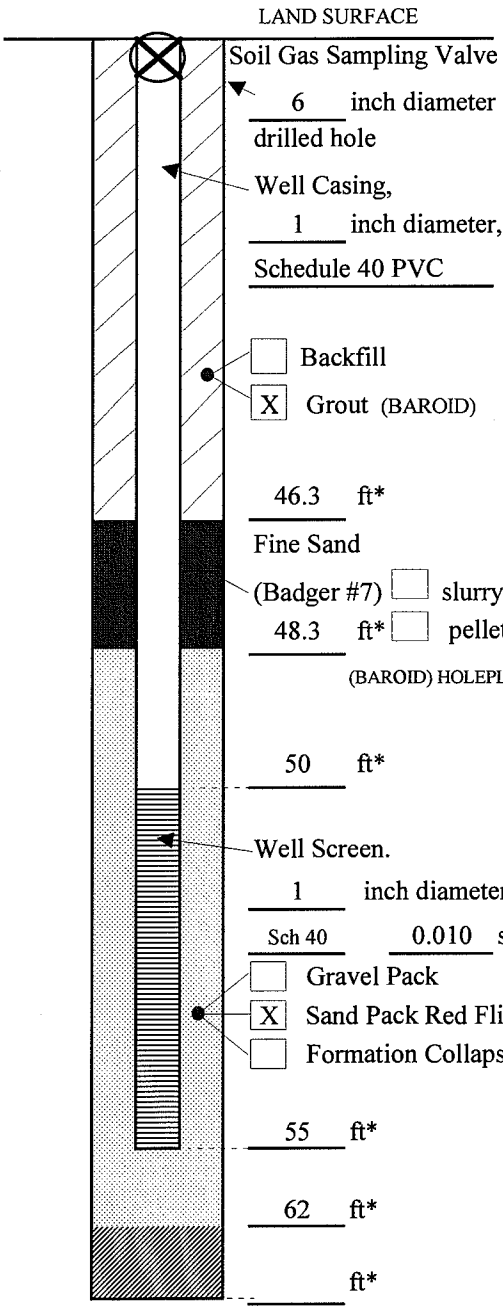
Well Purpose SVE Extraction Point East of Emmet

Remarks Red Flint #40 coarse sand filter pack 6.5-50 lb bags, Baroid bentonite hole plug (3/8" chips) 16-50 lb bags, 40 gallons water to hydrate bentonite Longyear PVC riser/ screen, sand point bottom cap.

Prepared by Toni Schoen

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-215

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1097.27 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/8/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

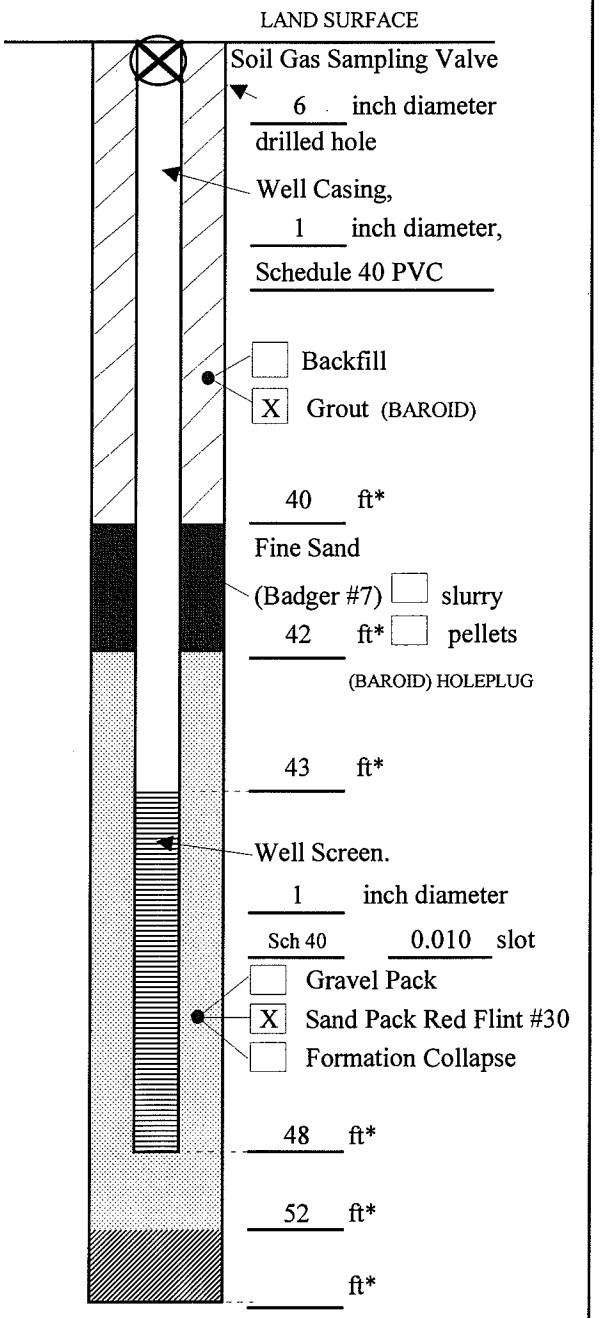
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-216

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1098.41 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 9/21/98

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

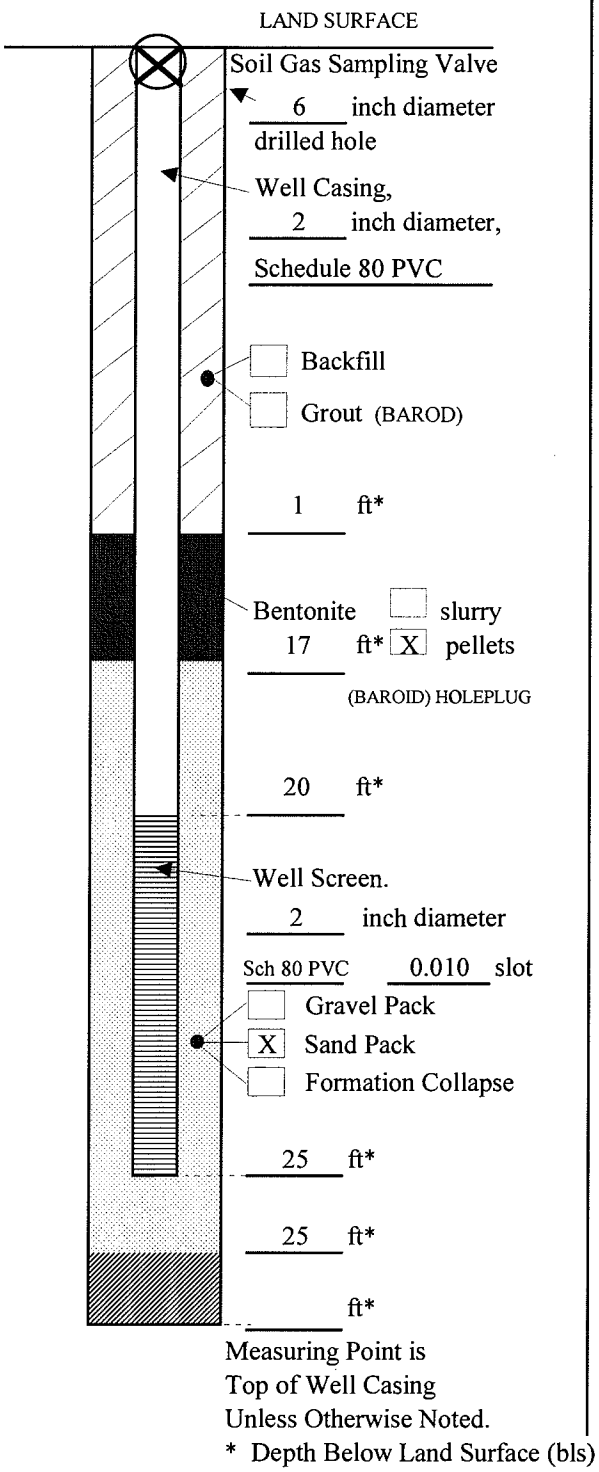
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-300

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1191.32 feet MSL
X Surveyed
☐ Estimated

Installation Date(s) 11/9/98

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG

Project Ford/Kingsford Probe GMSG-301

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1191.36 feet MSL [X] Surveyed [ ] Estimated

Installation Date(s) 12/20/98

Drilling Method Rotasonic

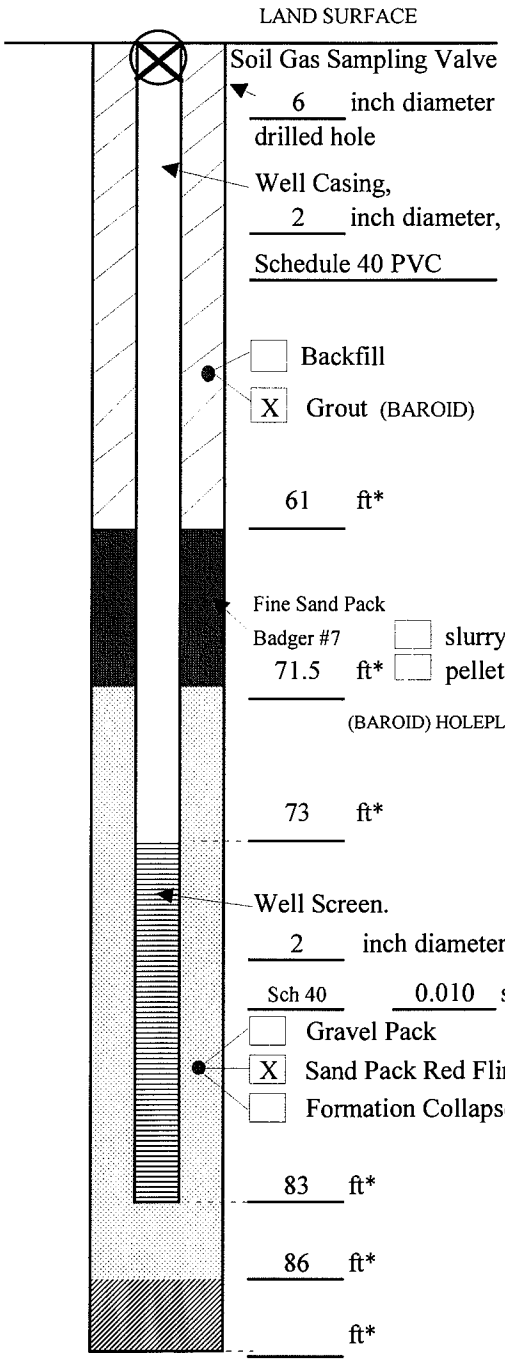
Drilling Contractor Boart Longyear

Drilling Fluid

Probe Purpose Monitoring soil gas pressure and composition.

Remarks Hole diameter 6 inch down to 65 feet. Hole diameter 4 inches 65 to 86 feet (only cored with core barrel).

Prepared by John Keller

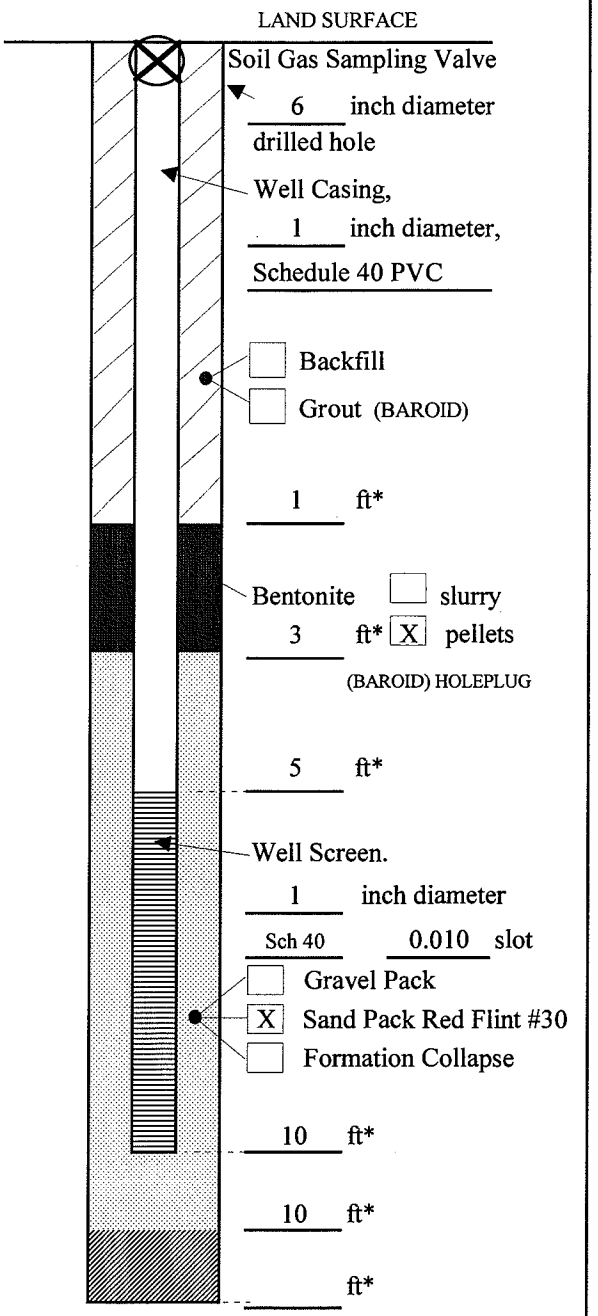


Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-302

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1191.40 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

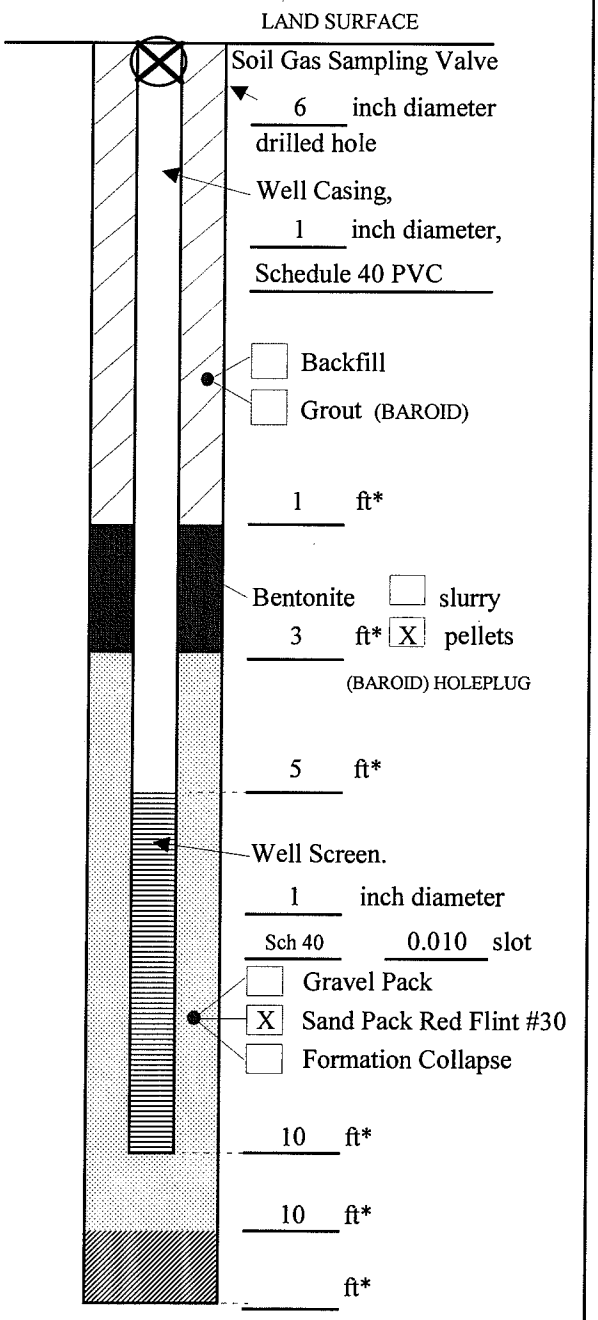
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-303

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1192.23 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

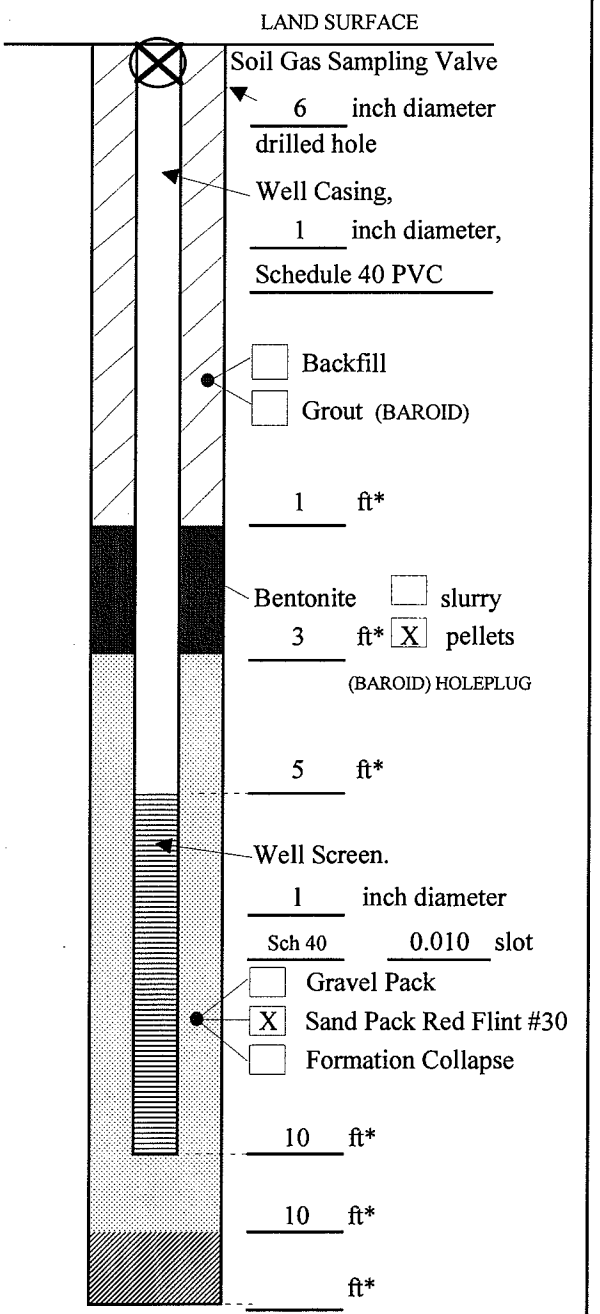
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-304

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1192.02 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

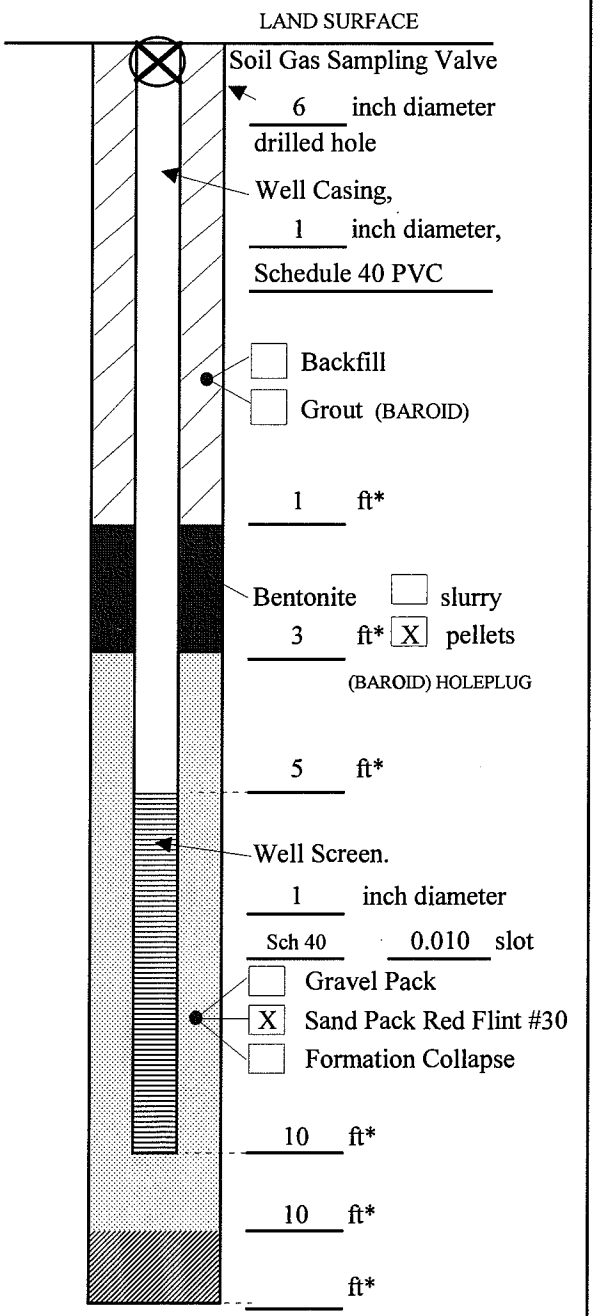
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-305

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1201.10 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

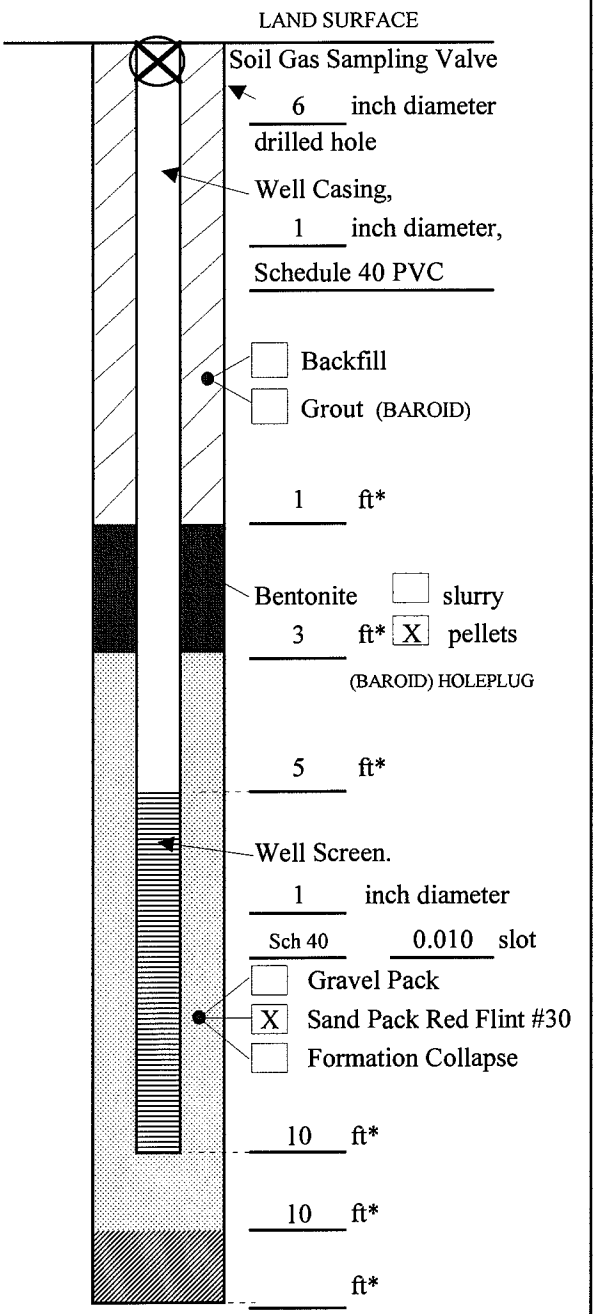
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-306

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1192.34 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

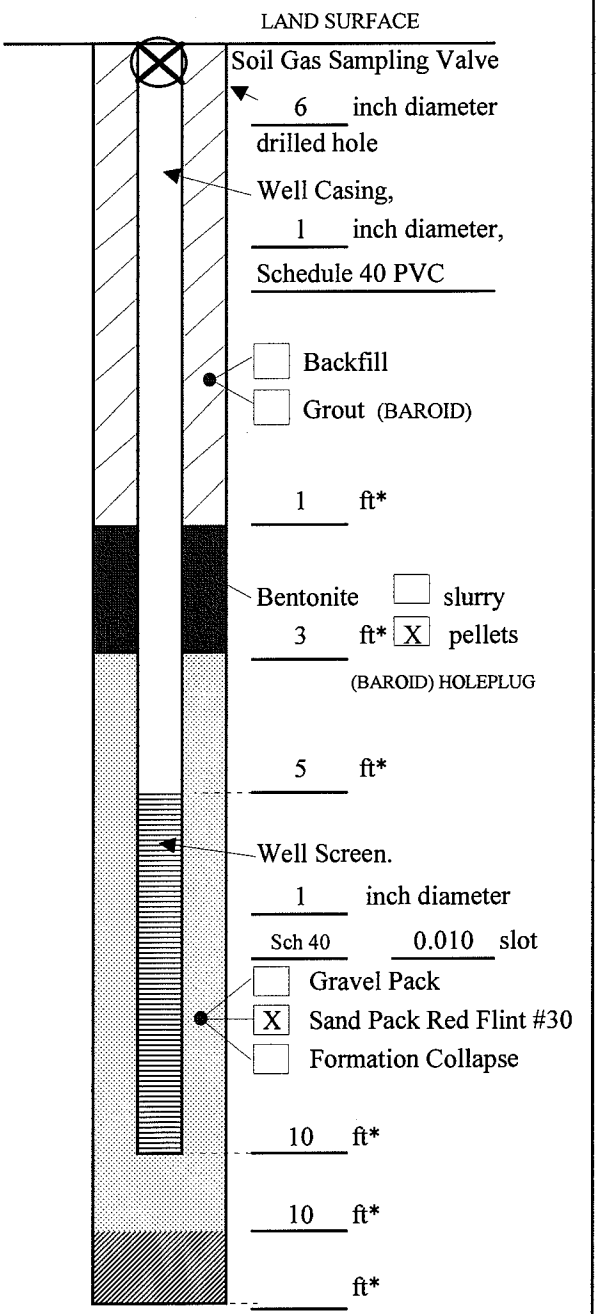
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-307

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1179.34 feet MSL
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/11/99

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

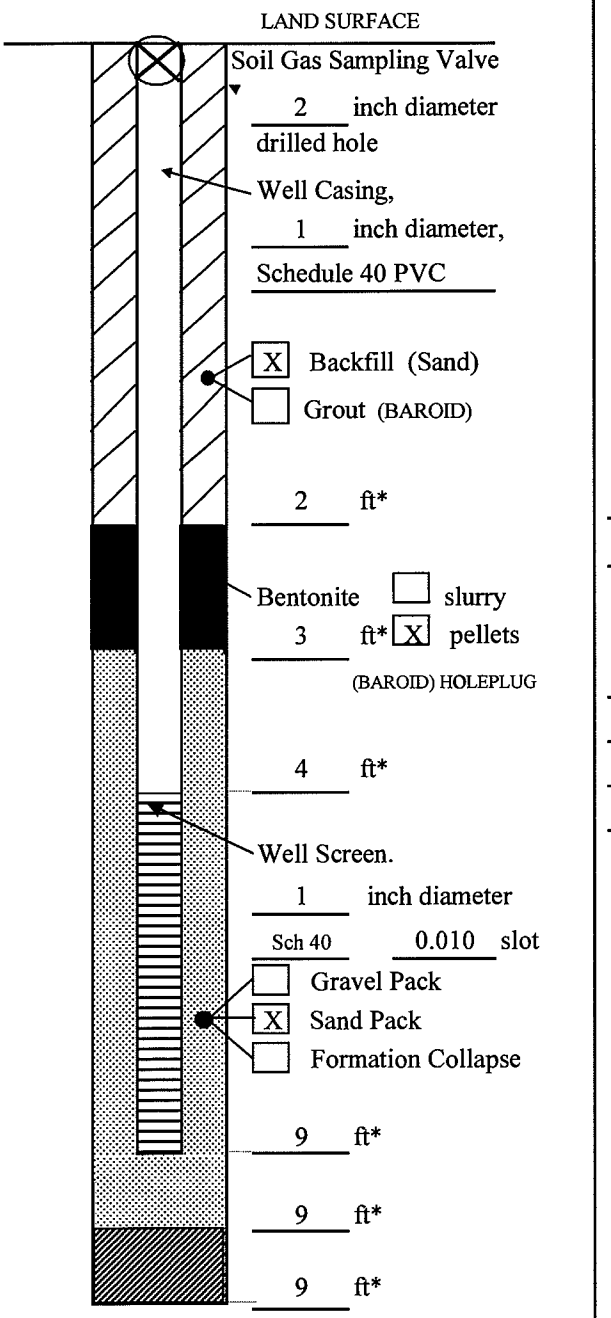
Probe Purpose Monitoring soil gas pressure and composition.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-308

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1198.35 feet MSL ☐ Surveyed ☐ Estimated

Installation Date(s) 7/9/1999

Drilling Method Hand Auger

Drilling Contractor

Drilling Fluid None

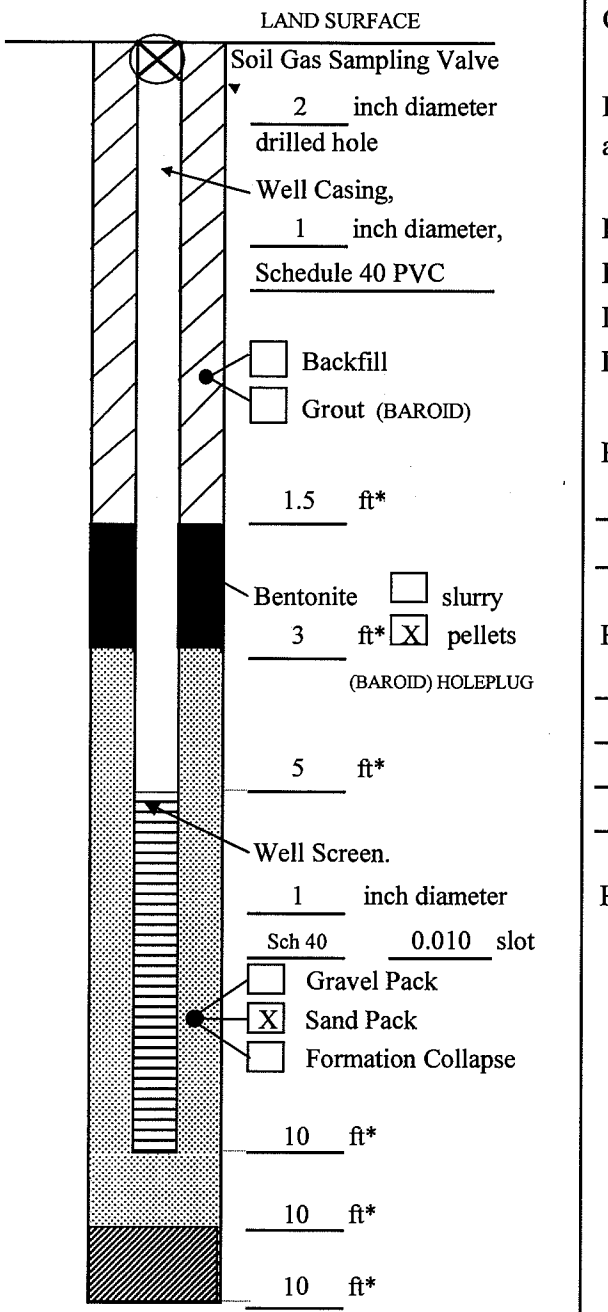
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite pellets hydrated.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-309
Town/City Kingsford
County Dickinson State Michigan

Land-Surface Elevation and Datum 1192.69 feet MSL ☐ Surveyed ☐ Estimated

Installation Date(s) 7/24/99
Drilling Method Hand Auger
Drilling Contractor
Drilling Fluid None

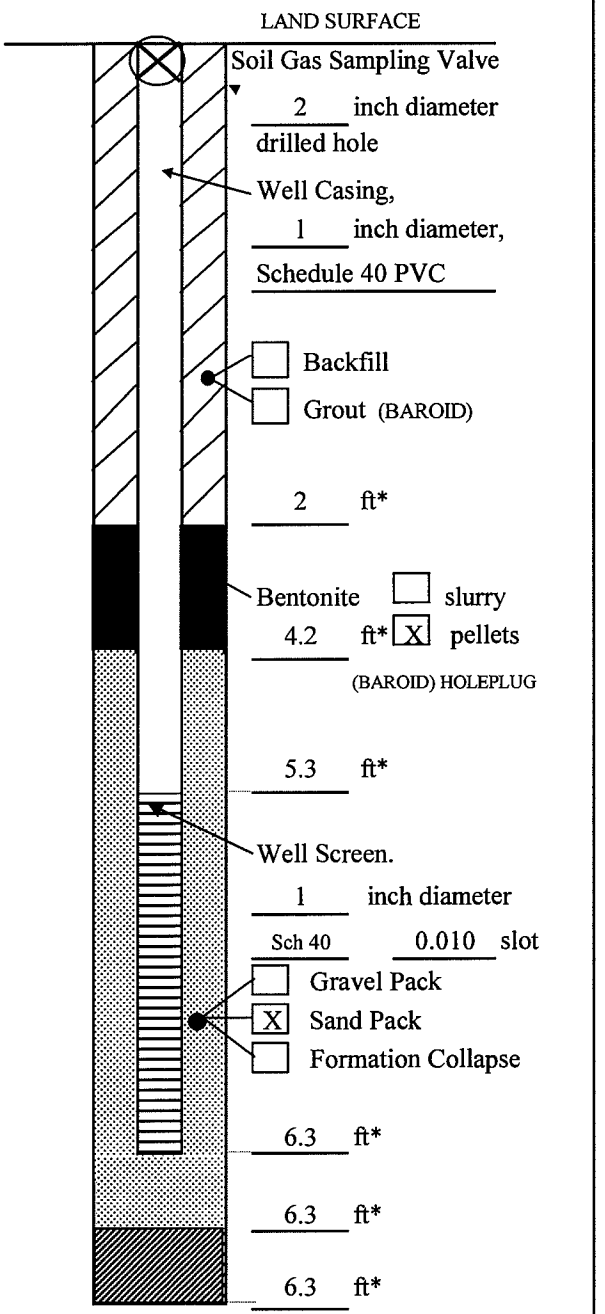
Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite pellets hydrated.

Prepared by Bill Jones

ARCADIS GERAGHTY & MILLER

SOIL GAS PROBE CONSTRUCTION LOG



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMSG-310
Town/City Kingsford
County Dickinson State Michigan

Land-Surface Elevation and Datum 1194.80 feet MSL ☐ Surveyed ☐ Estimated

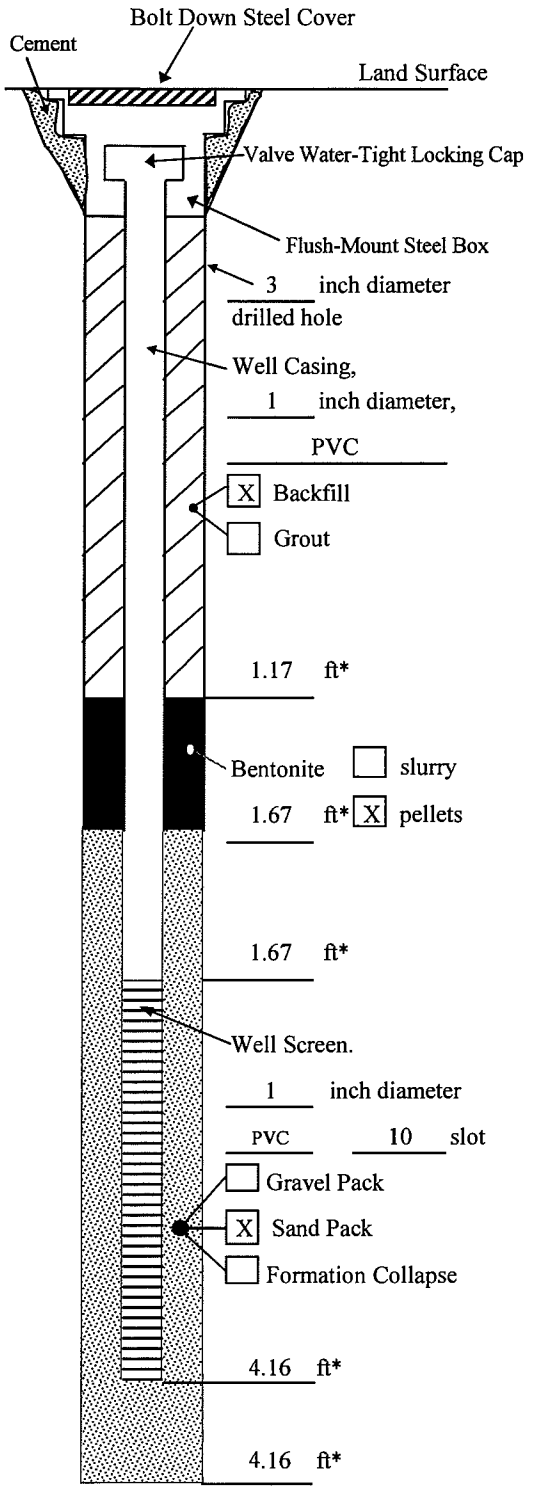
Installation Date(s) 7/26/99
Drilling Method Hand Auger
Drilling Contractor
Drilling Fluid None

Probe Purpose Monitoring soil gas pressure and composition.

Remarks Bentonite pellets hydrated.

Prepared by Bill Jones

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-401

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.56 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/8/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

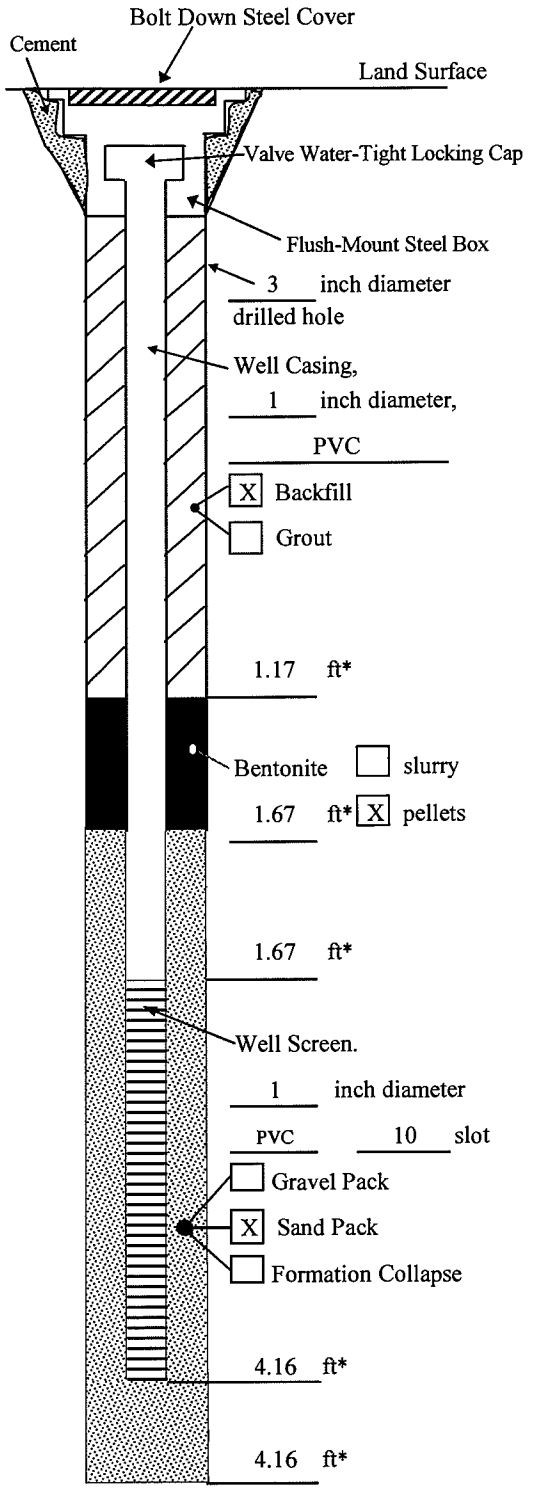
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks 1500 West Breen Extreme Fitness

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-402

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1120.86 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/8/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

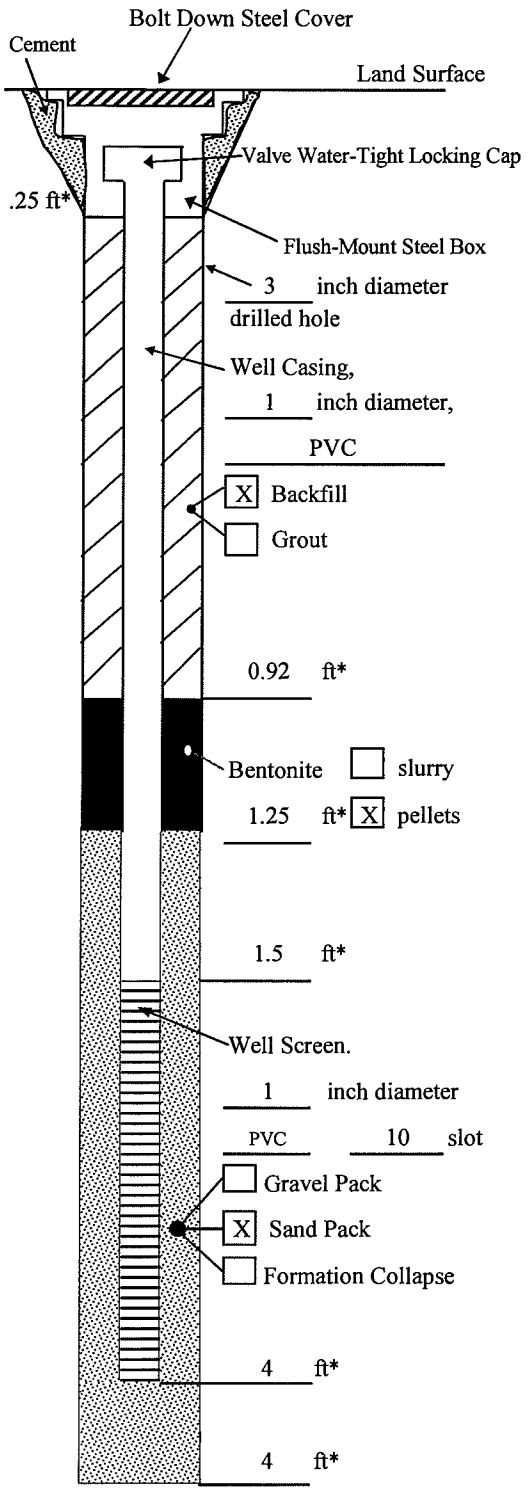
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks 1500 West Breen Extreme Fitness

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-403

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.79 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/8/2003

Drilling Method Hand Auger

Drilling Contractor None - Dennis Charette

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

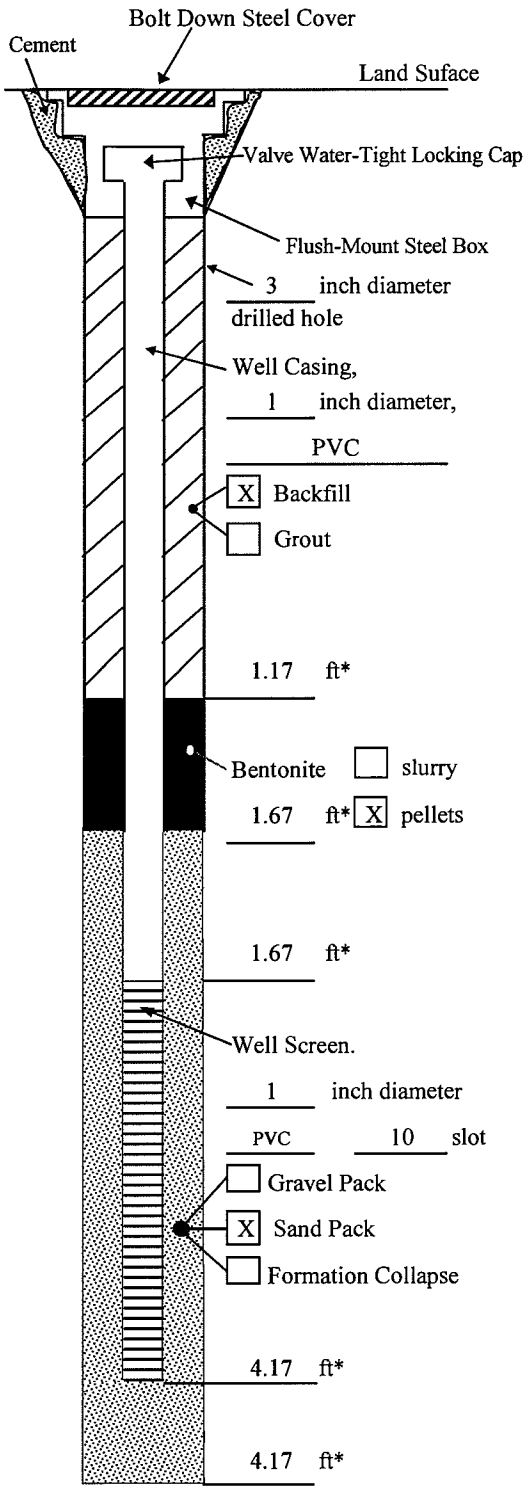
Specific Capacity gpm/ft

Well Purpose Soil vapor monitoring probe for CMDP.

Remarks 1220 W. Breen Pauls' Car Care.

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-404

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1109.98 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 10/8/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg/Dennis Charette

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

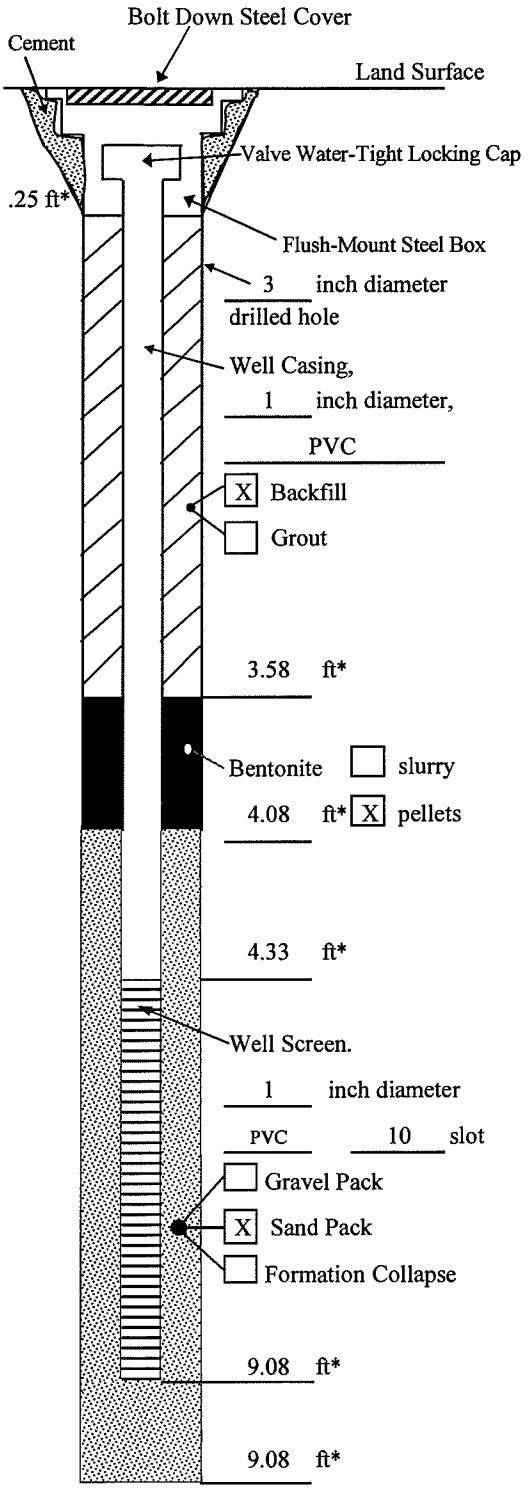
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-60 Salon Solutions

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-405

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1118.88 feet Mean Sea Level
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/8/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

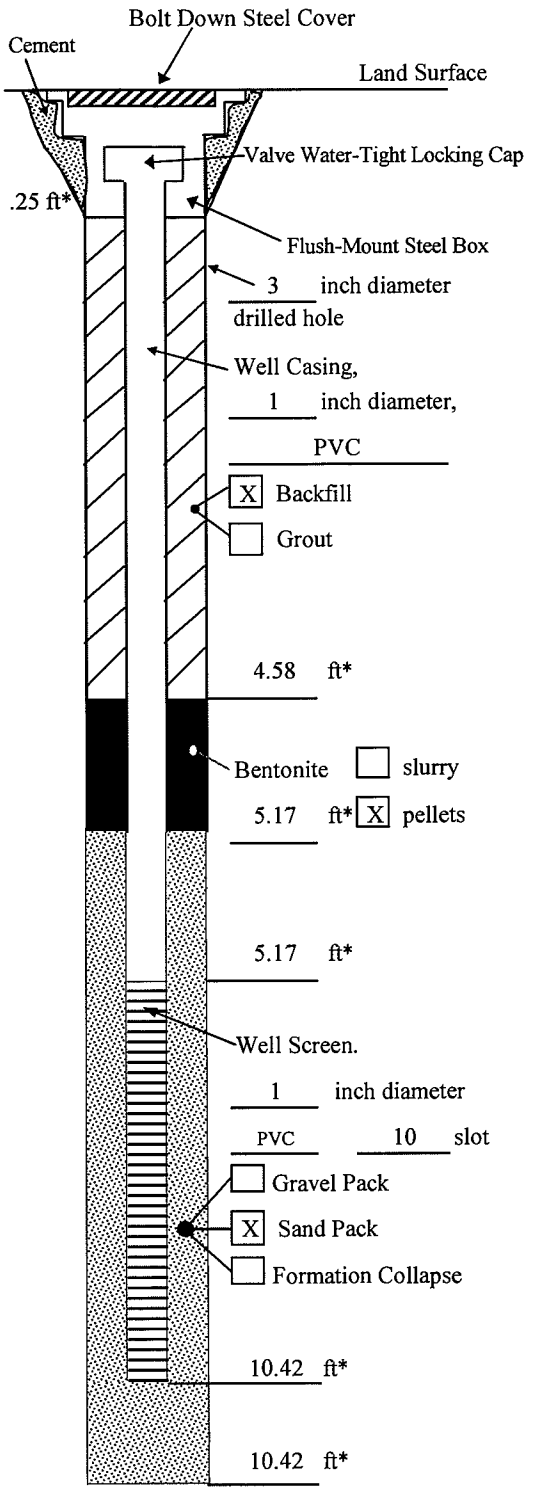
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks 1101 W. Breen Controls Supply

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-406

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.82 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/8/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

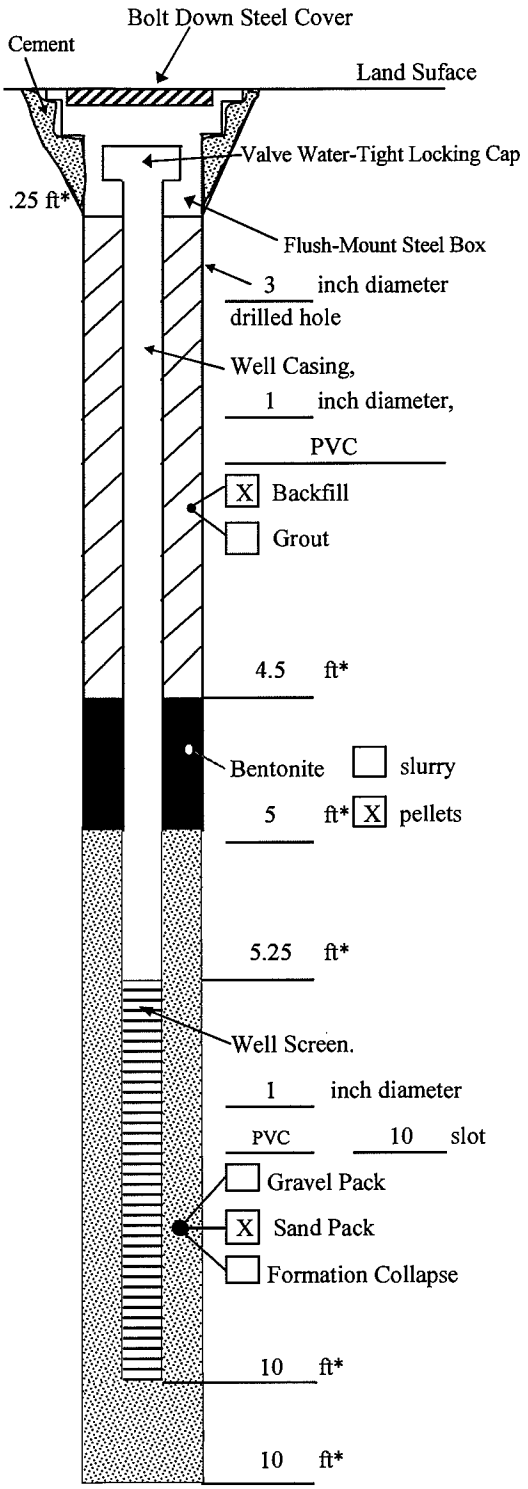
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks Vetrans Center East Side

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-407

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.94 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/8/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

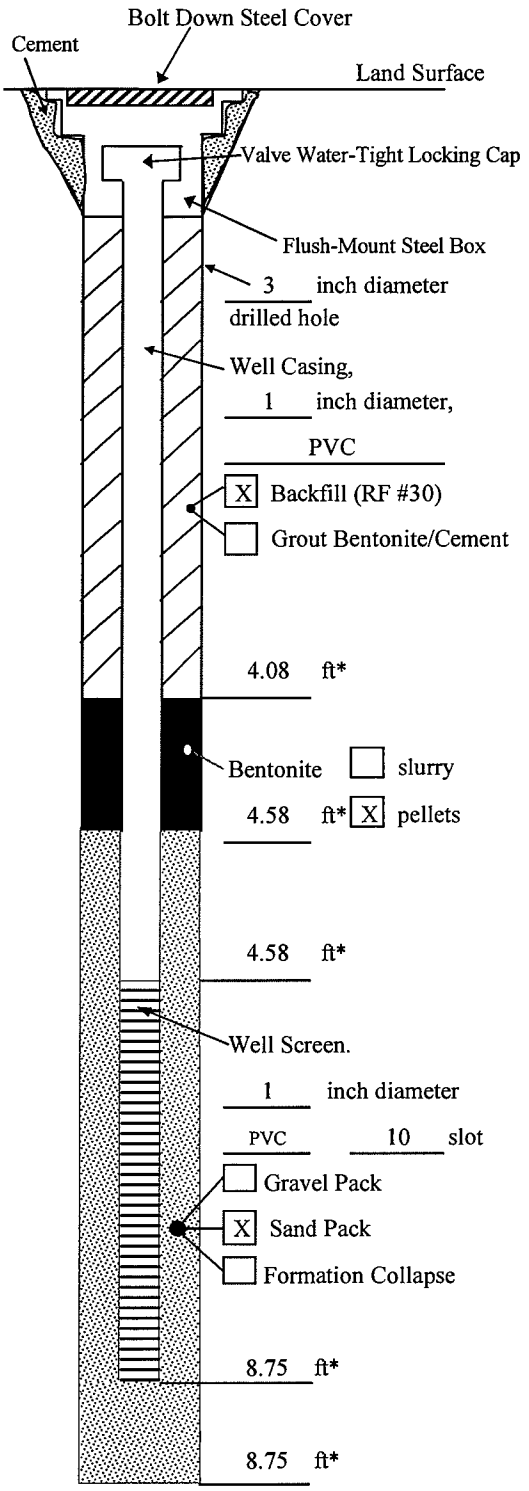
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks 1212 W. Breen Pasty King - West Side

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-408

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.78 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

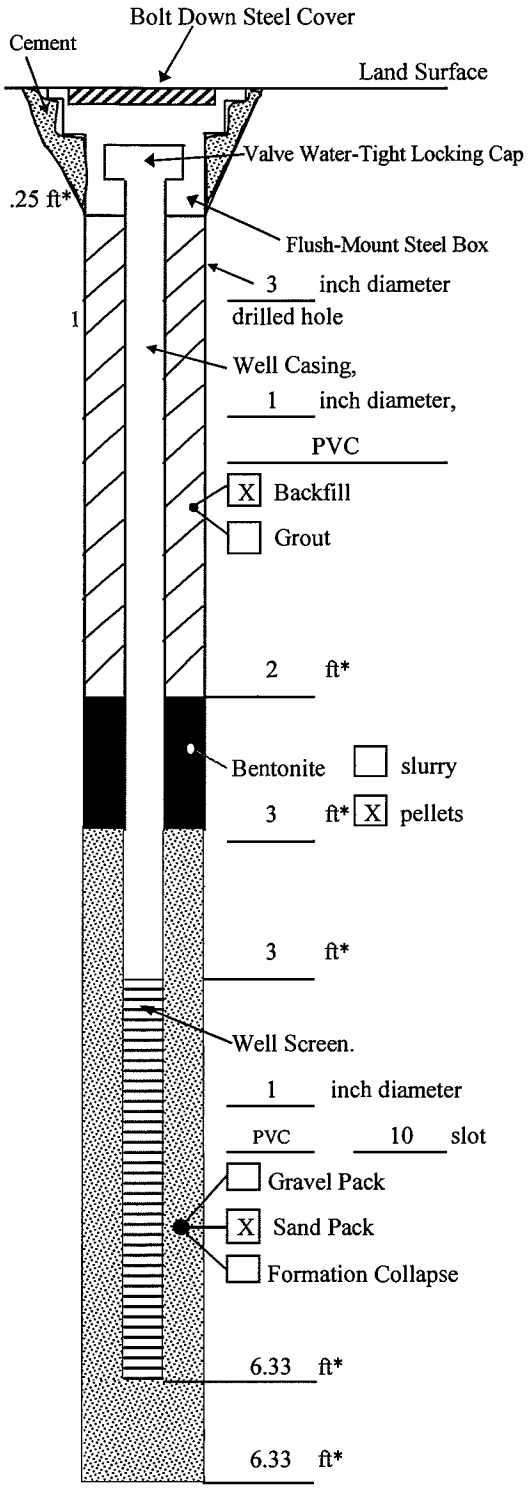
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe

Remarks C-64 MBM Office

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-409

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1123.32 feet [X] Surveyed [ ] Estimated

Mean Sea Level

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

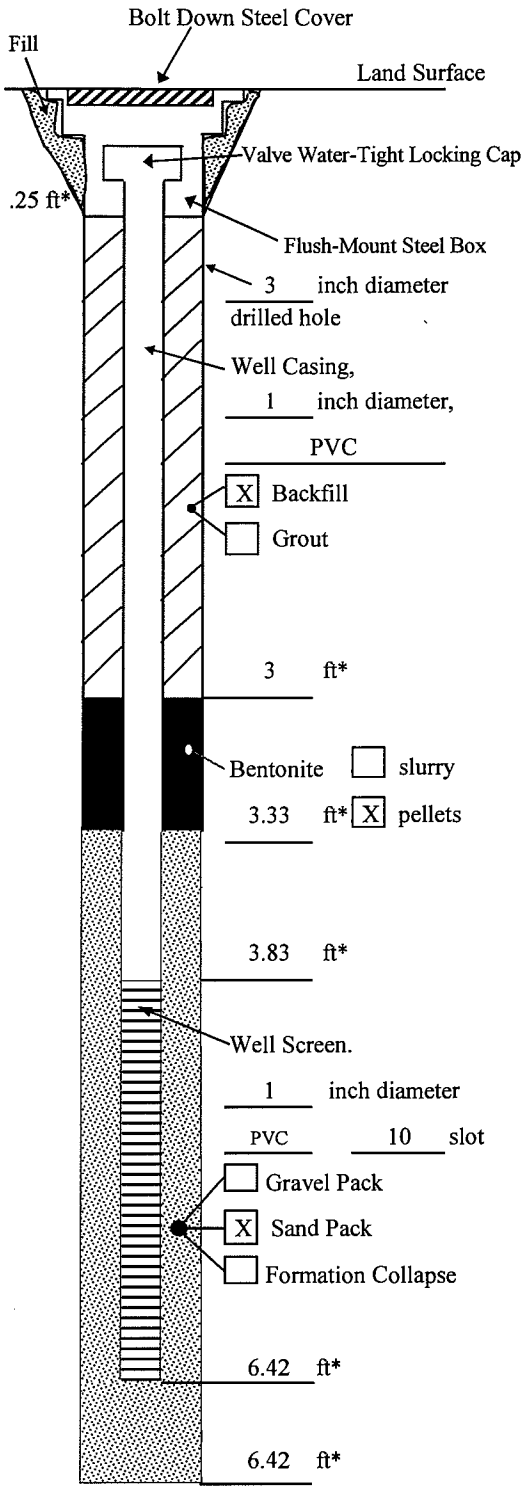
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks Balsam Street Church, probe is 9'7" from the base of the window. 6'4" from ground level southside.

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-410

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1122.86 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

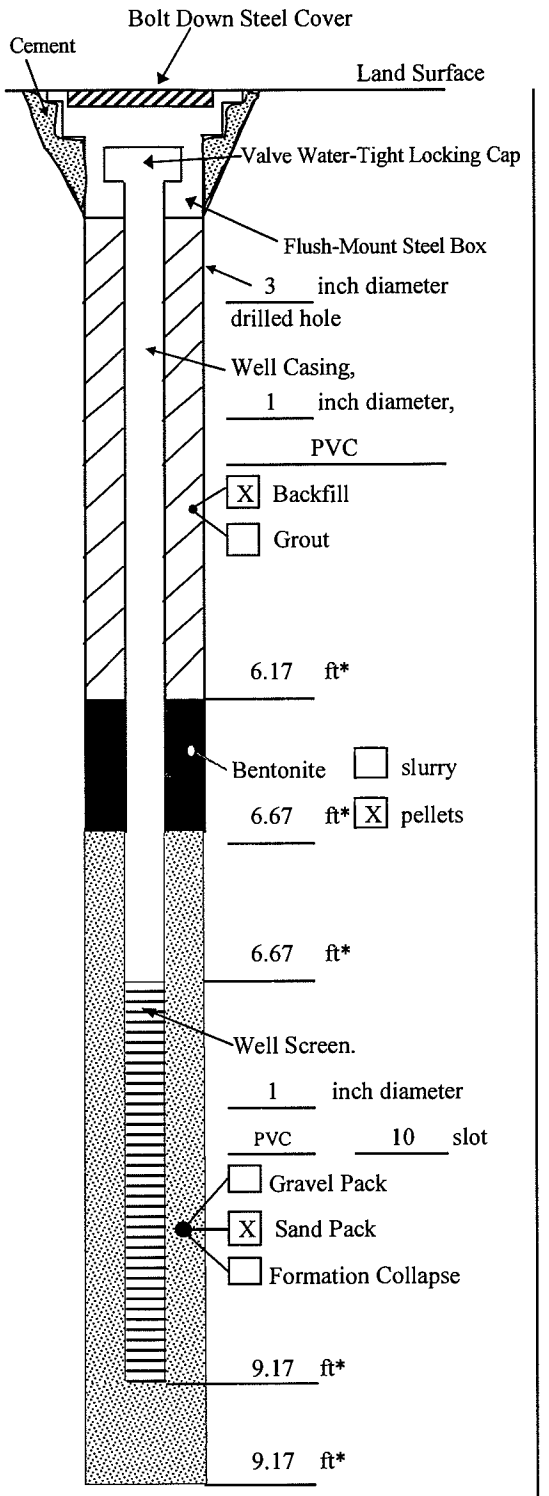
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks Balsam Street Church, northside probe is 9'4" from top of the window 6'4" from ground level.

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-411

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.45 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

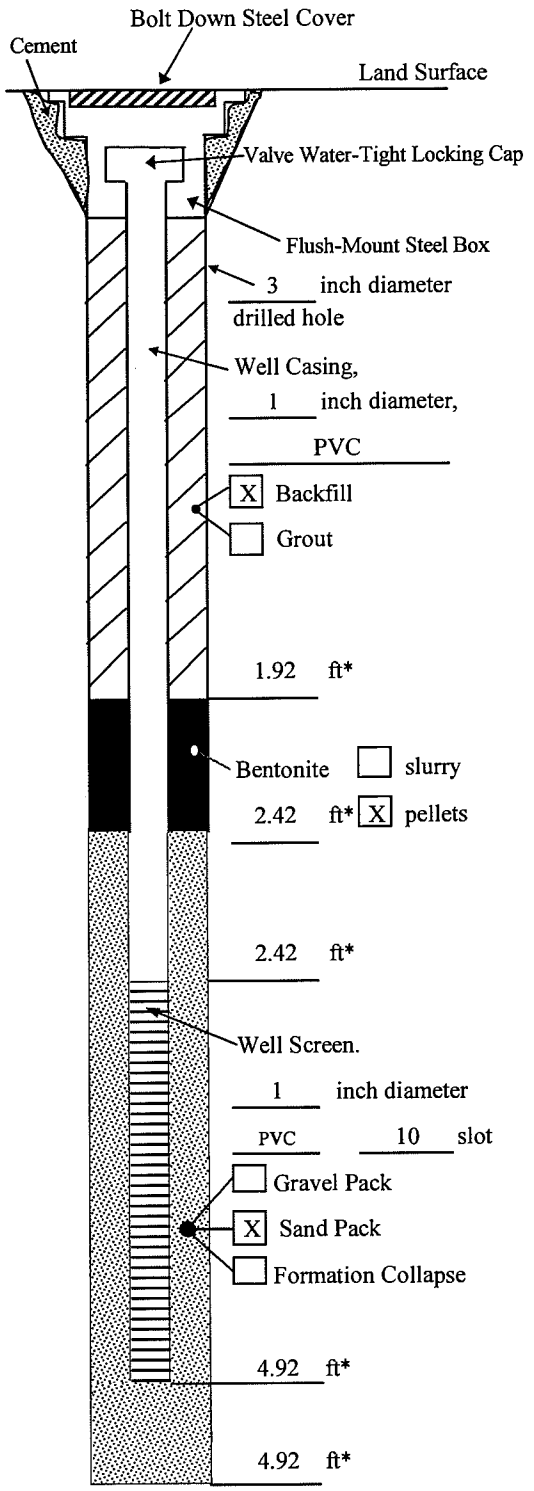
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-49 United Graphic Sign

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-412

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1121.66 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

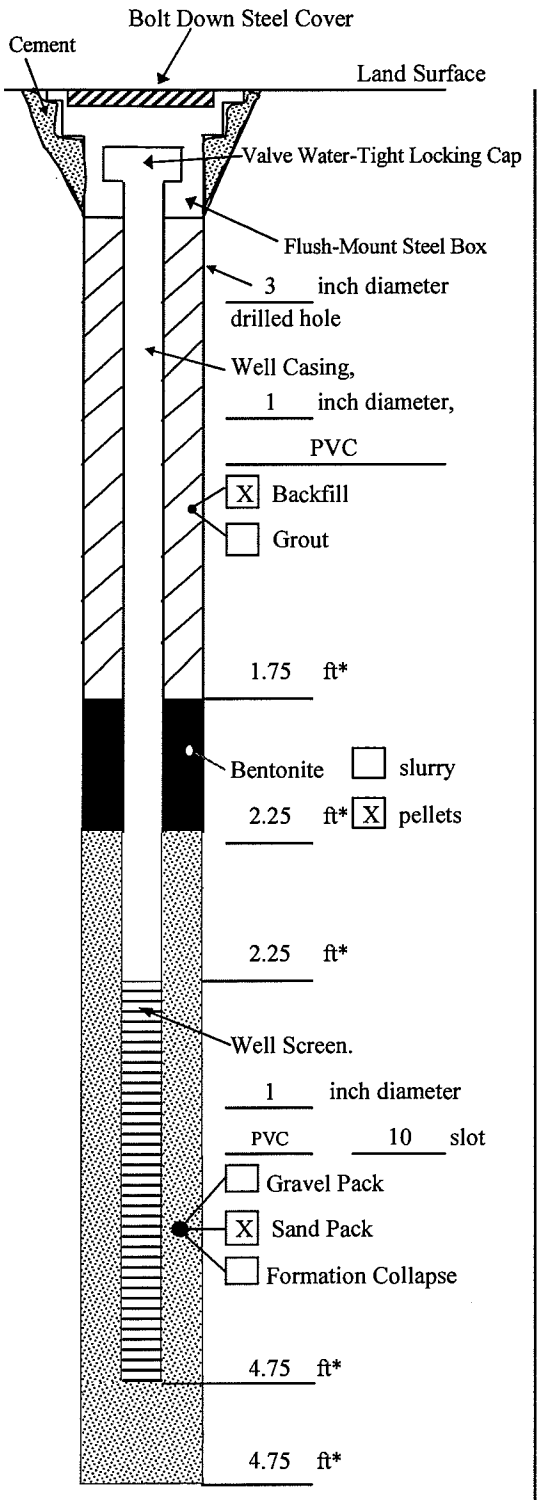
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-49 United Graphic and Sign

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-413

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.53 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

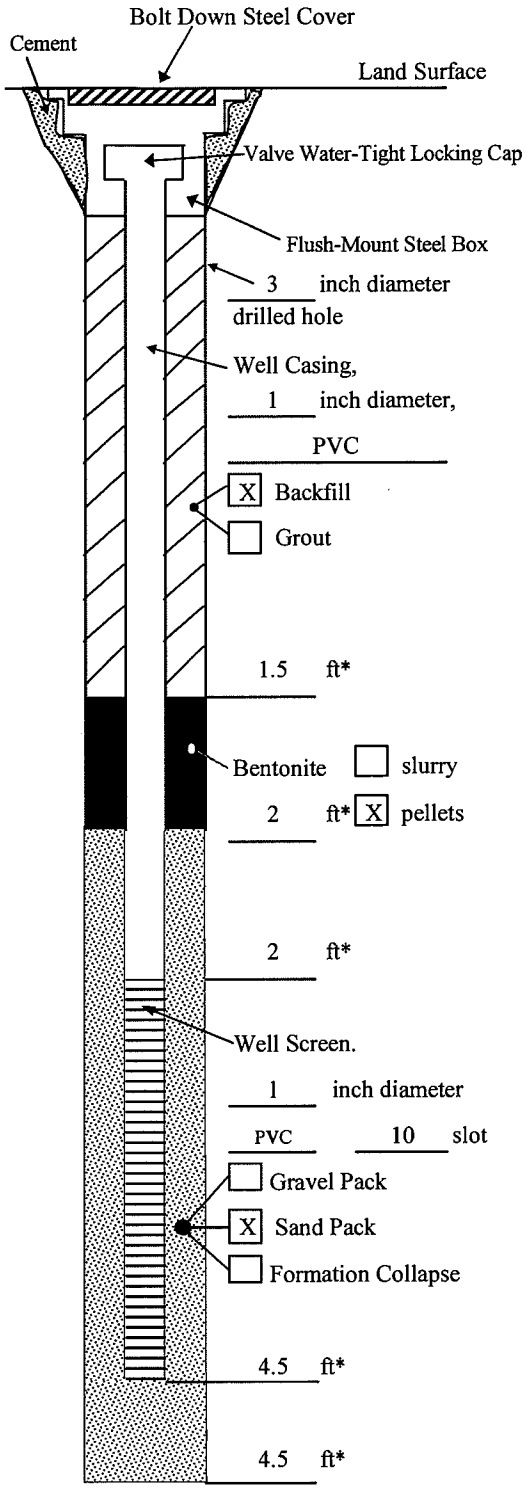
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-54 Rice Juice

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-414

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1114.22 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

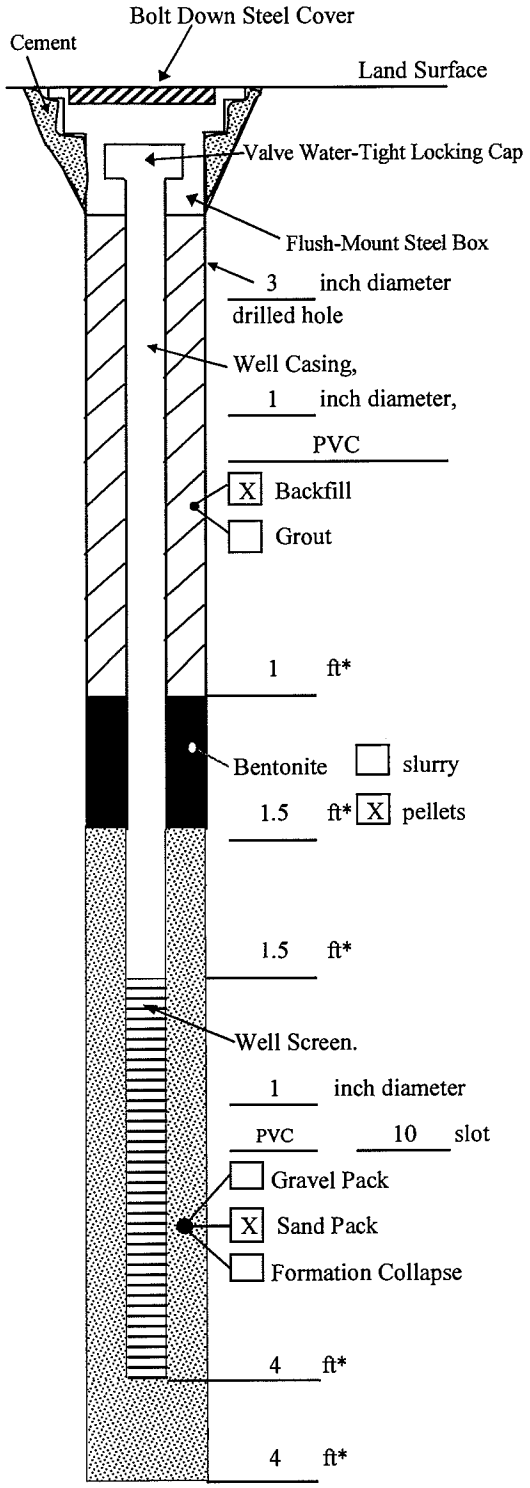
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-54 Rice Juice

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-415

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1113.04 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

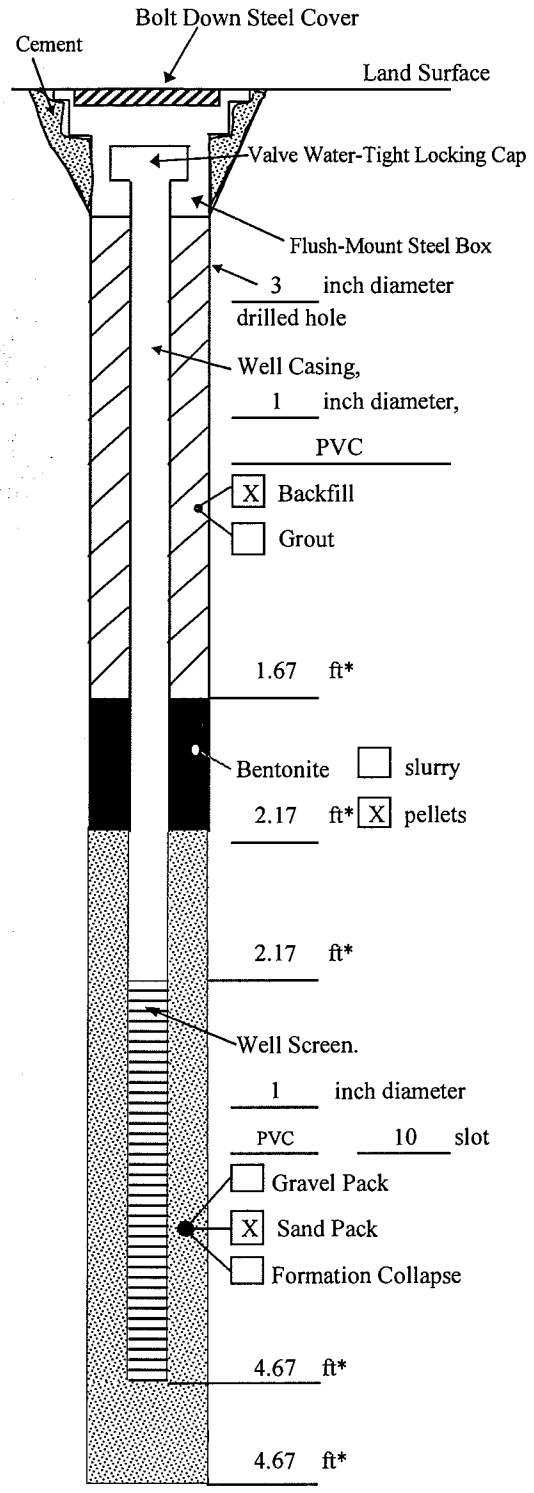
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-50 Larson Custom Counter

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-416

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1116.44 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2003

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

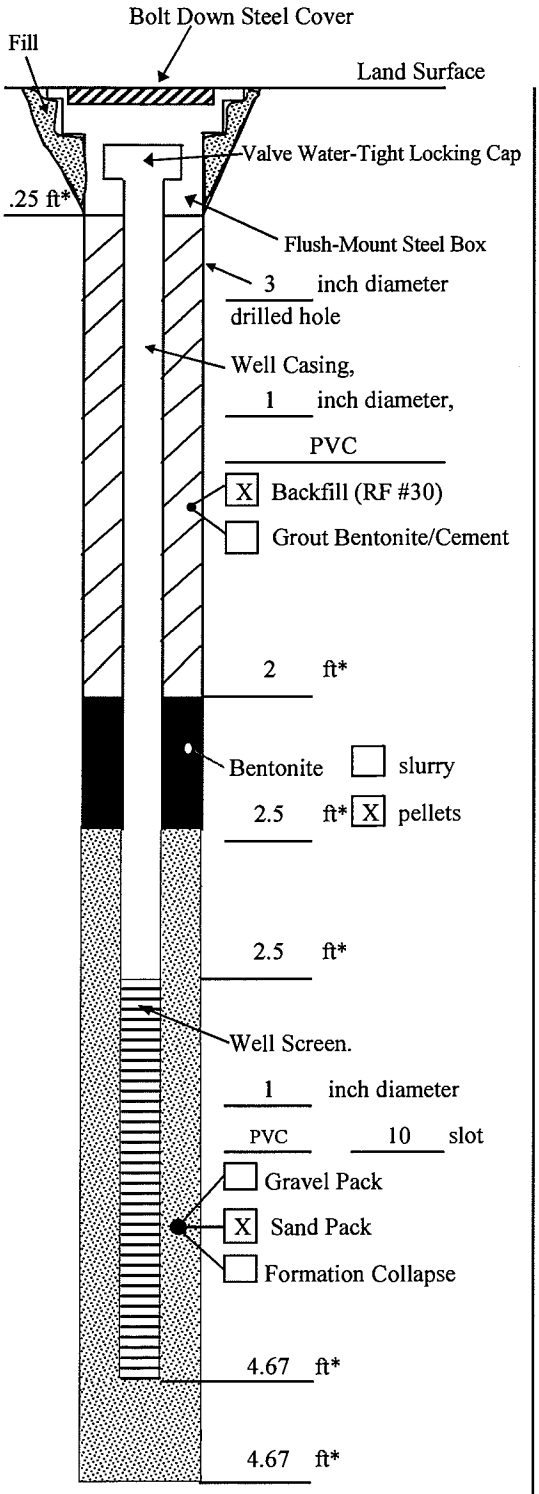
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-51 Skinner Trucking

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-417

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1132.98 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/10/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

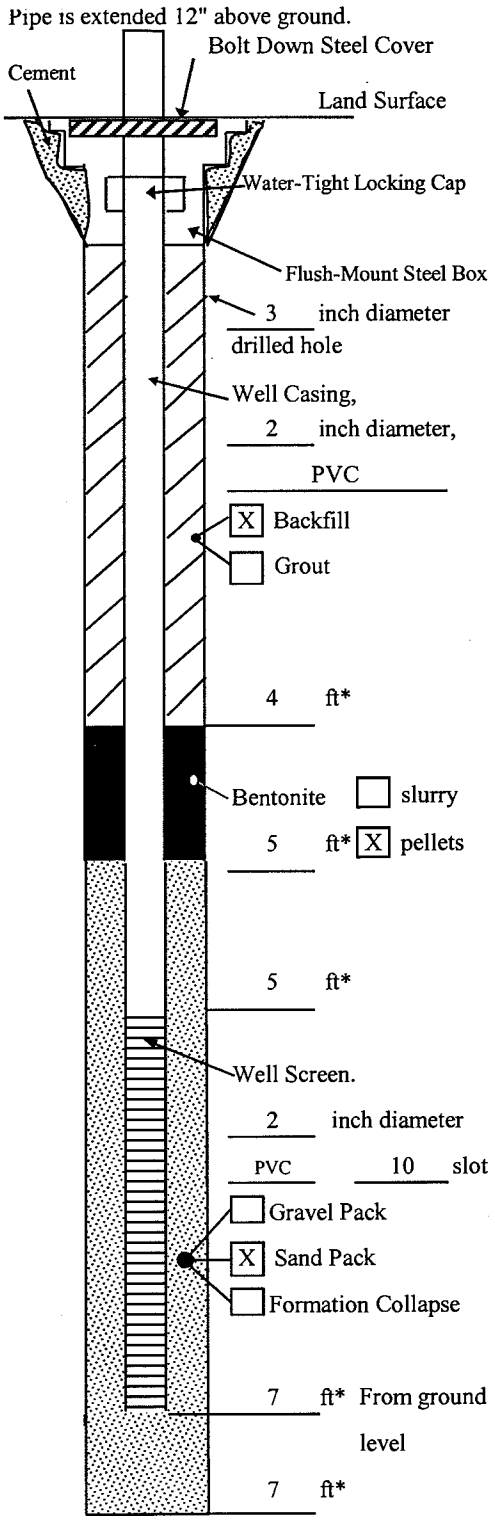
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks Universal plumbing C-63.

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0033 Probe GMSG-417B

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1132.98 feet ☐ Surveyed ☐ Estimated

Installation Date(s) 10/17/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

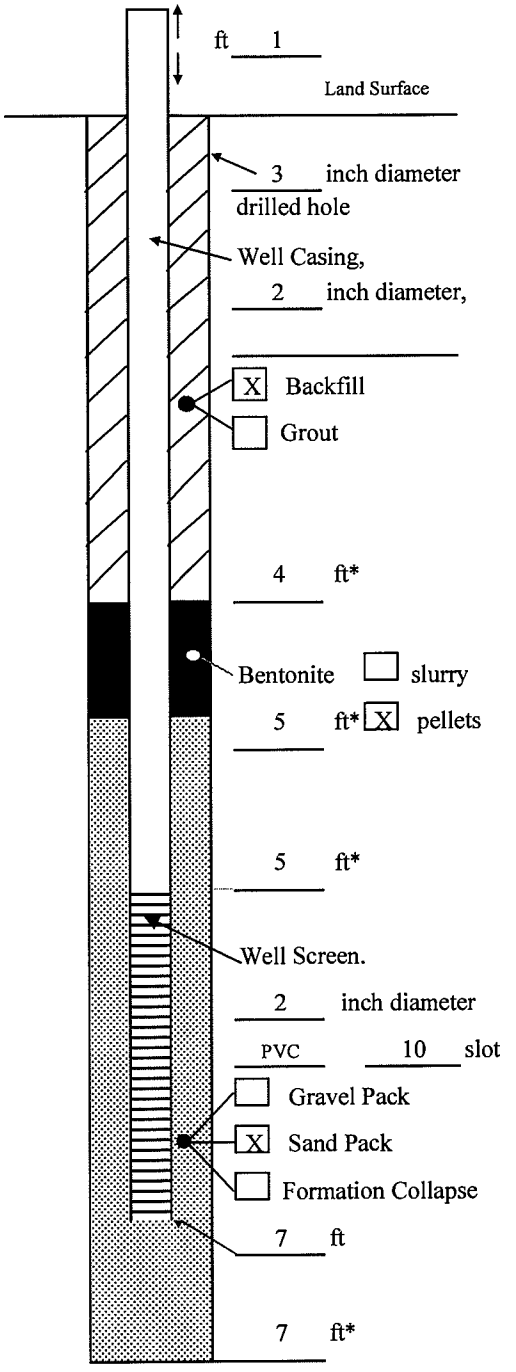
Well Purpose 2" SVE

Remarks Universal Plumbing DEQ Chris Austin observed.

Prepared by Dennis Charette

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMSG-417C

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1132.32 feet
Mean Sea Level

X Surveyed
☐ Estimated

Installation Date(s) 10/21/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid N/A

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

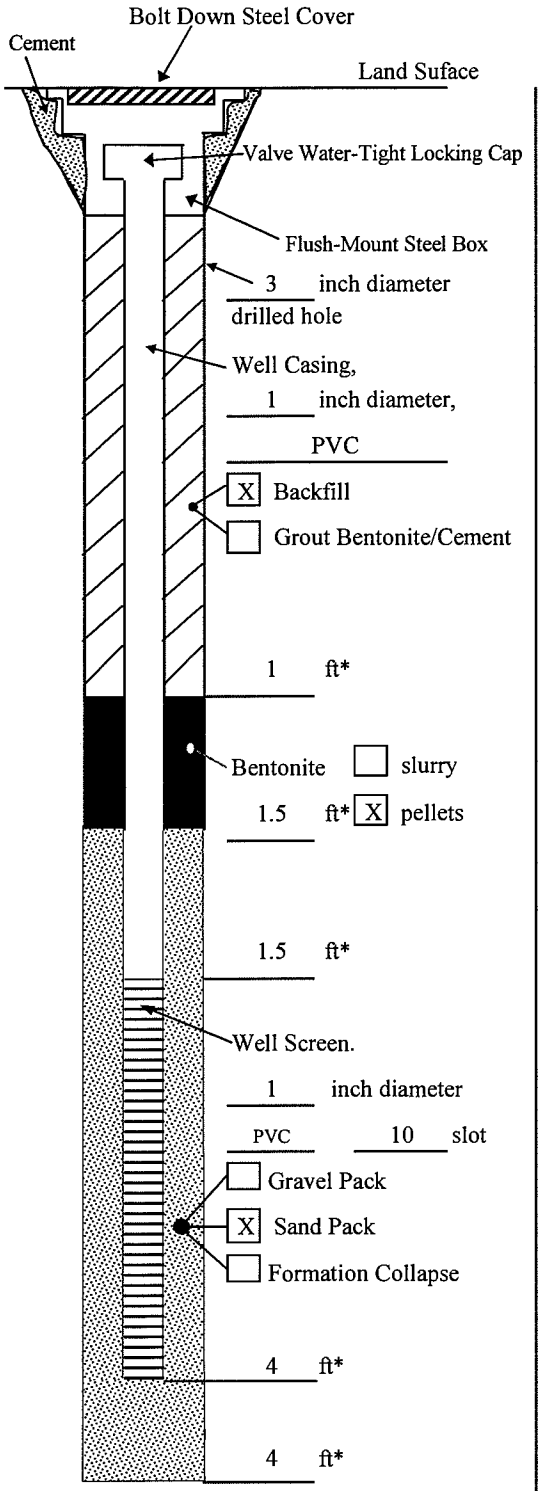
Specific Capacity _____ gpm/ft

Well Purpose 2" SVE

Remarks Universal Plumbing

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-418

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1131.80 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/21/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

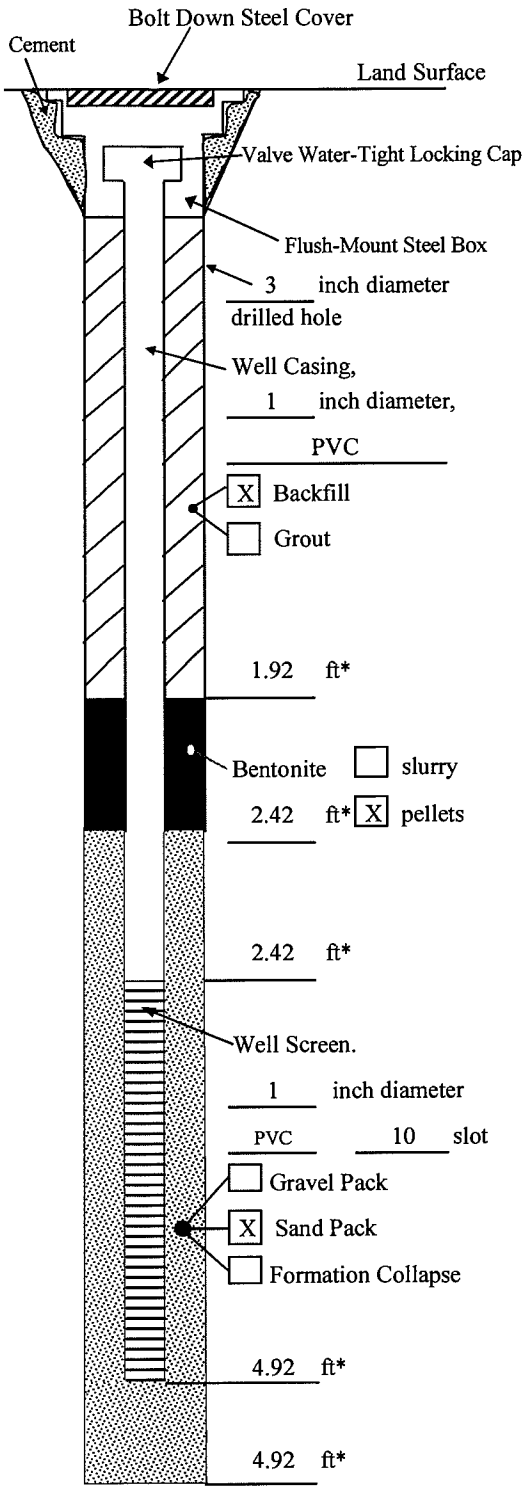
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-61 Public Safety

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-419

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1132.71 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/15/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

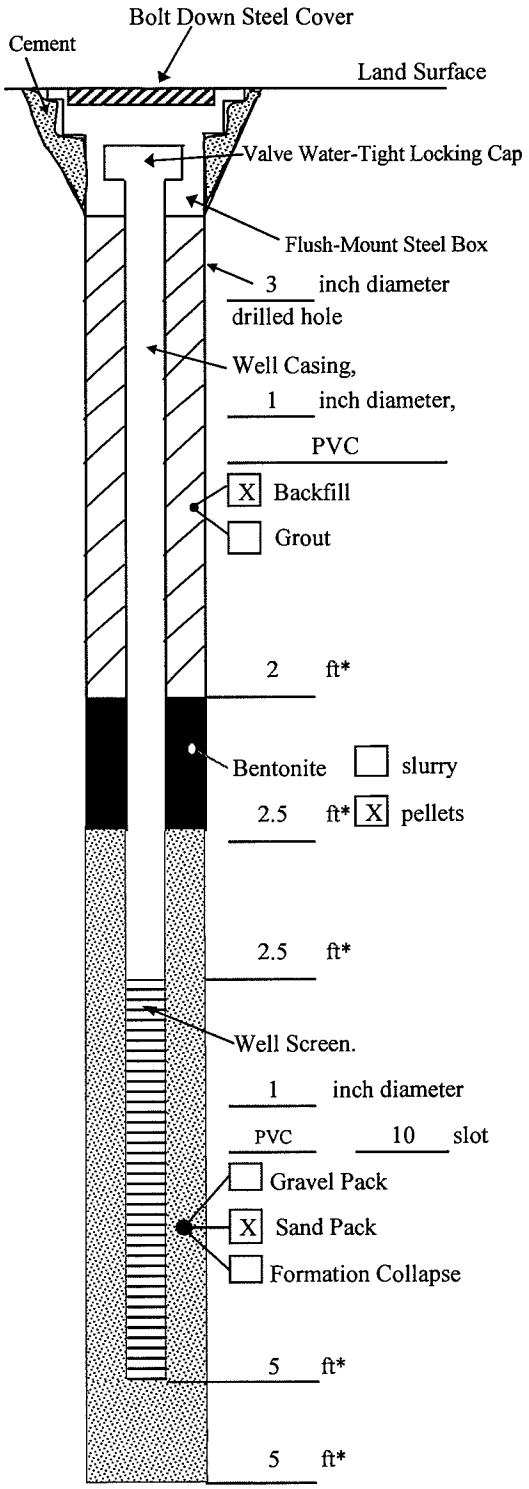
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-23 Julies Top Hat

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-420

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1132.00 feet Mean Sea Level

[X] Surveyed
[ ] Estimated

Installation Date(s) 10/10/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

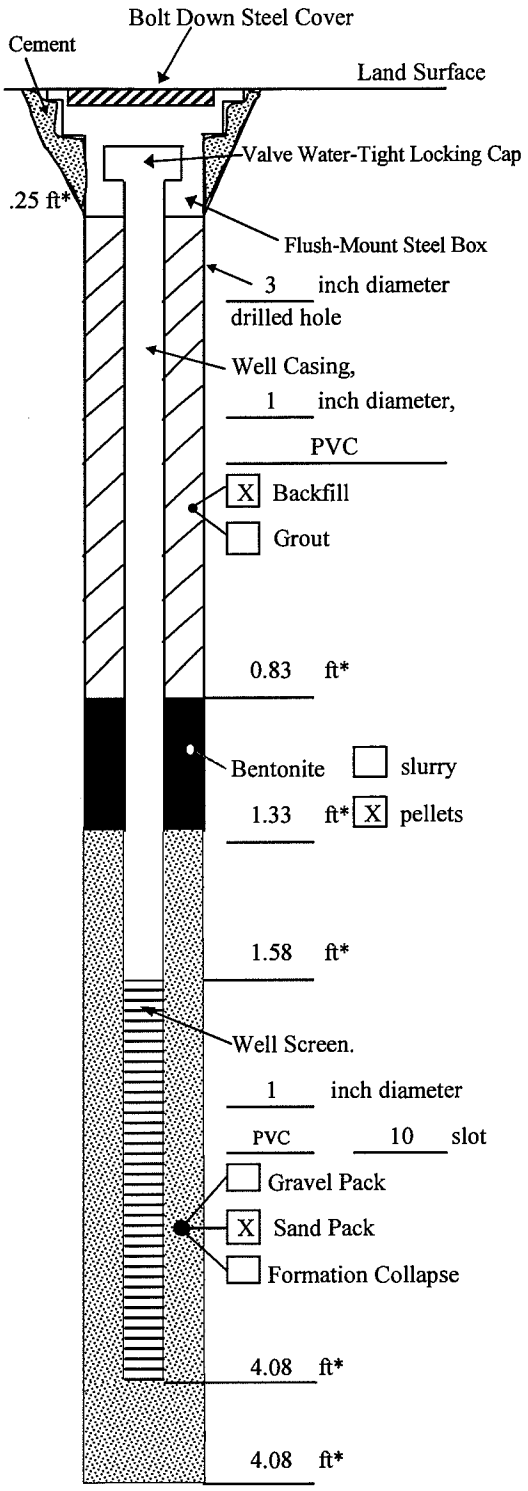
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-59 Kingdom Hall

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-421

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.89 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/10/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

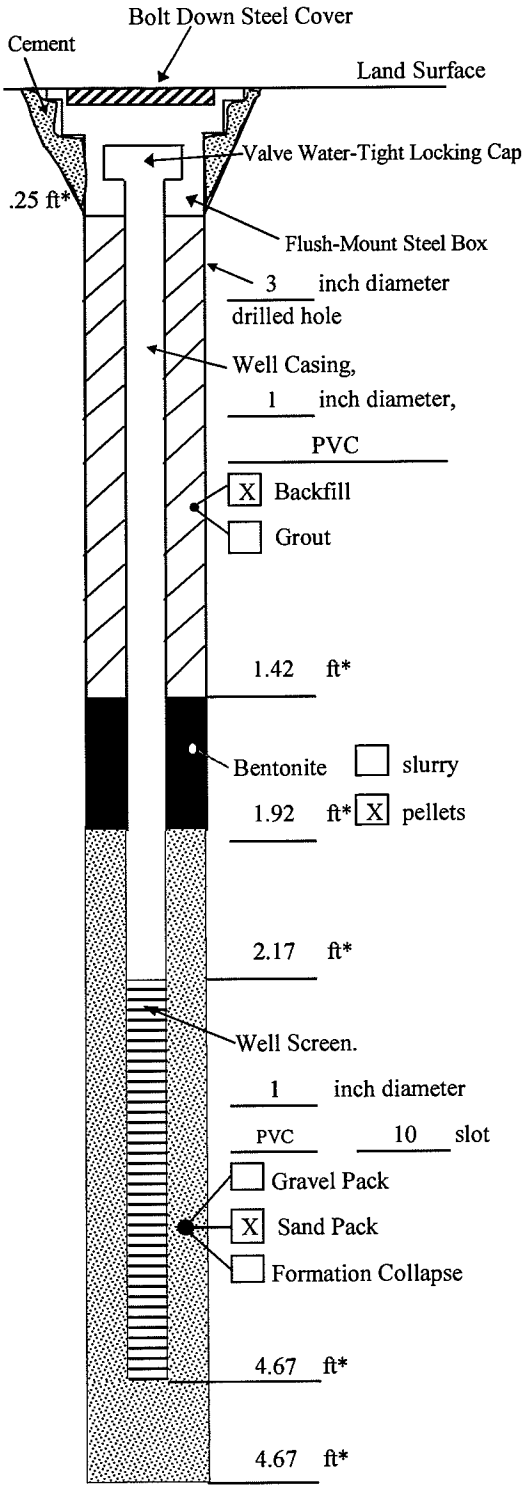
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks Grace Baptist Church North Side

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-422

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1127.04 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/10/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

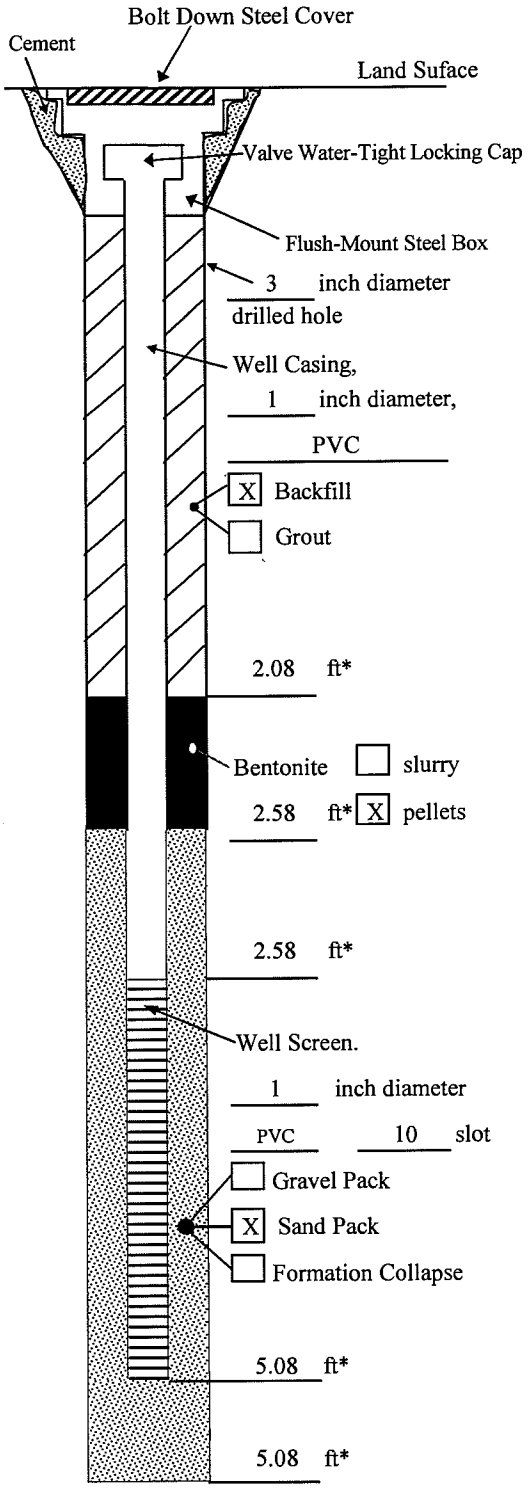
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor monitoring probe.

Remarks Grace Baptist Church East Side

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-423

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1125.44 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 10/22/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

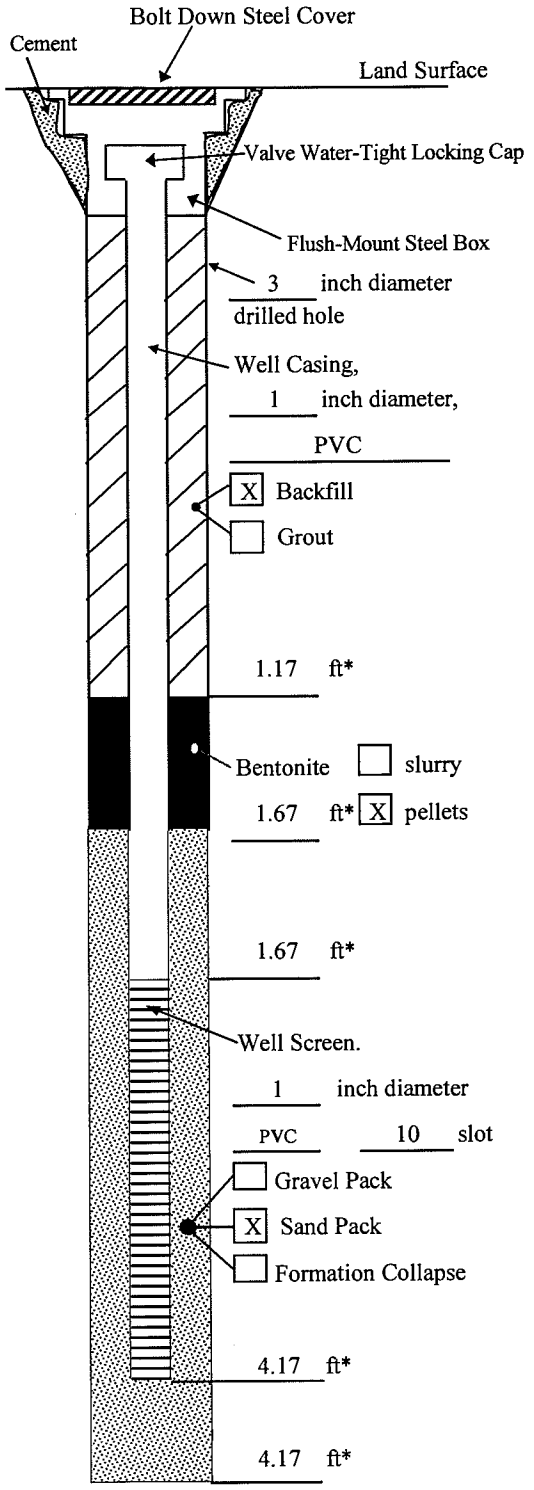
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-58 Donnas Dance

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-424

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1125.85 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/24/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

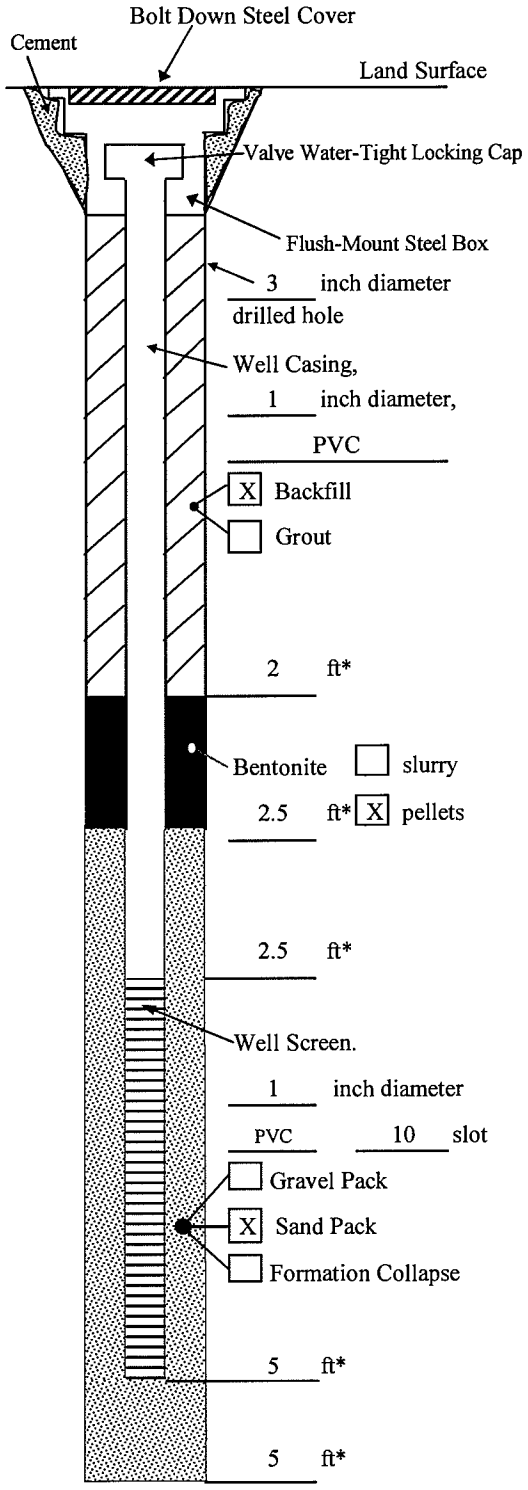
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe, UP Travel and Rec.

Remarks C-57

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-425

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.11 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/24/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

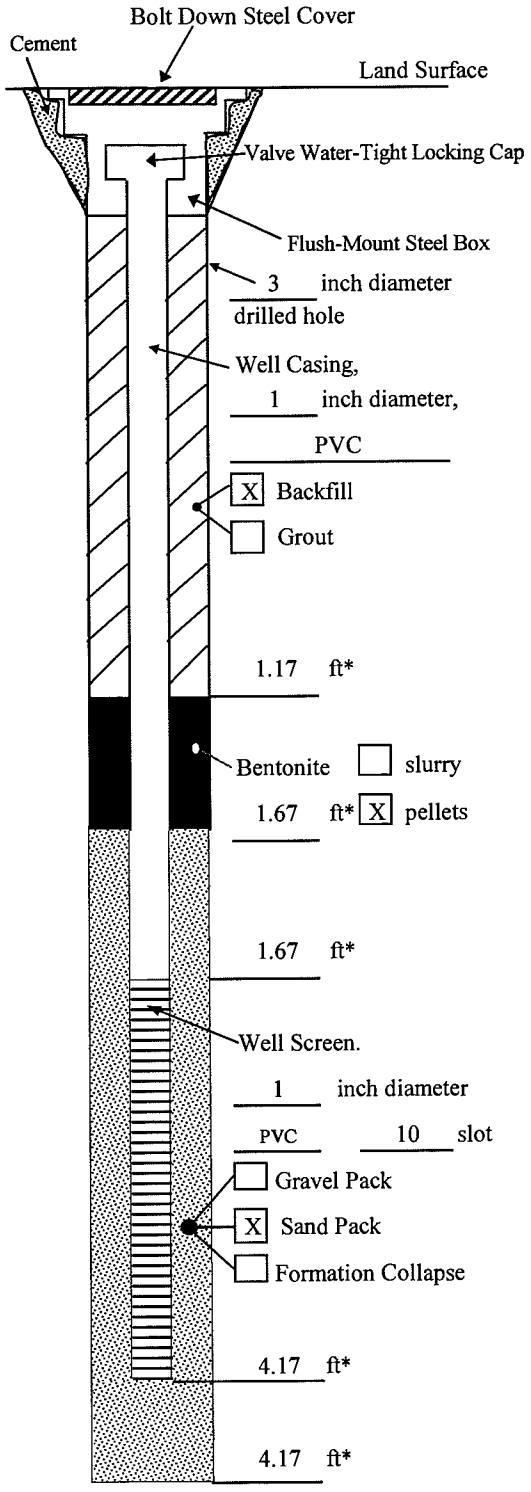
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-57 UP Travel and Rec

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-426

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.53 feet
[X] Surveyed
[ ] Estimated
Mean Sea Level

Installation Date(s) 10/22/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

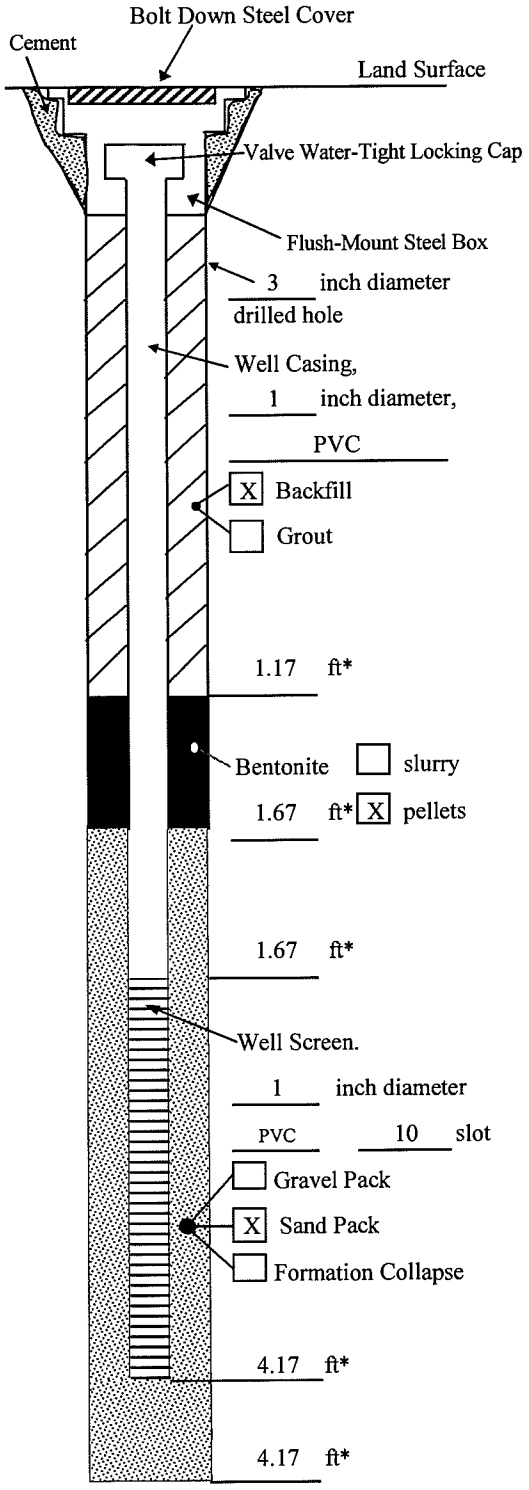
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks IDG C-56

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-427

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.53 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 10/22/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

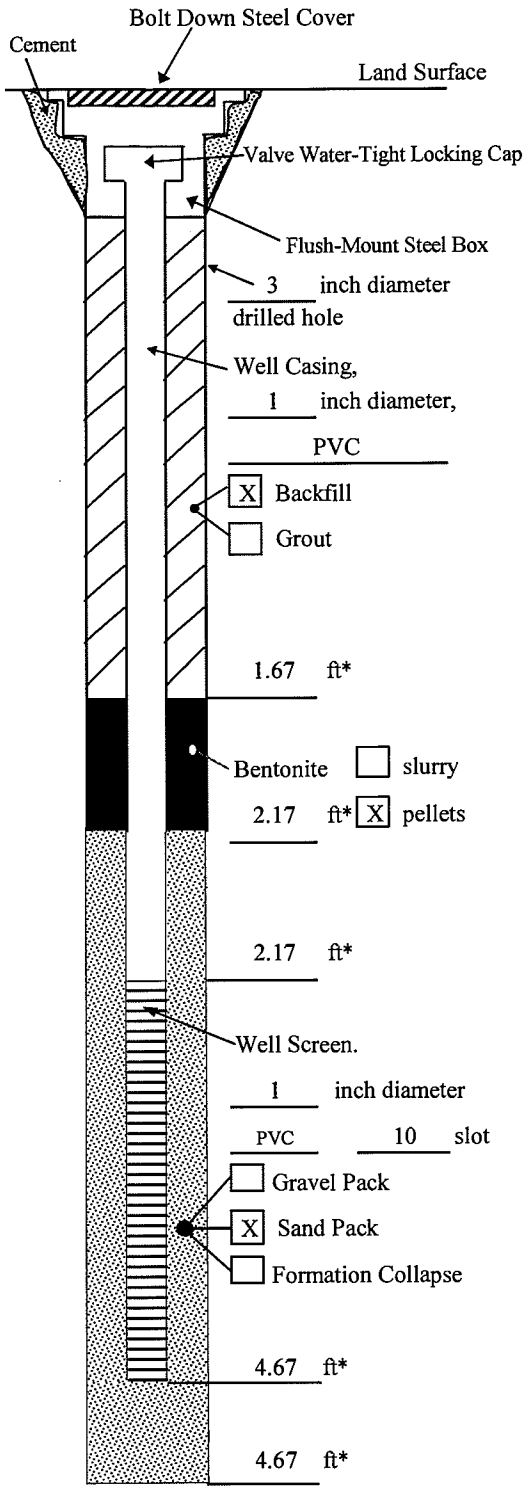
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-56 IDG

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-428

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1126.58 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/15/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

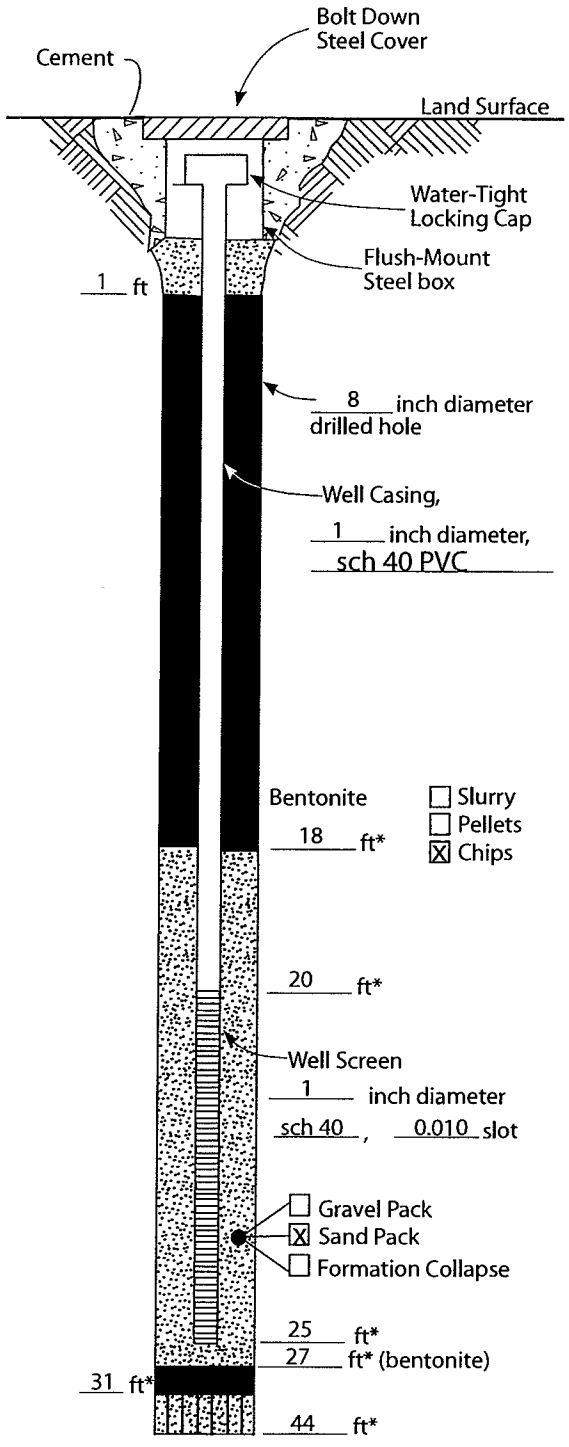
Yield gpm Date

Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-55 Maranatha Messengers

Prepared by Dennis Charette



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg428b.ai

Well Construction Log
(Flush Mounted Well)

Project Ford/Kingsford WI001095.0002 Well GMSG-428B

Town/City Kingsford - Maranatha Messengers

County Dickinson

Permit No. NA

Land-Surface Elevation

1126.42 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/18/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration _____ hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

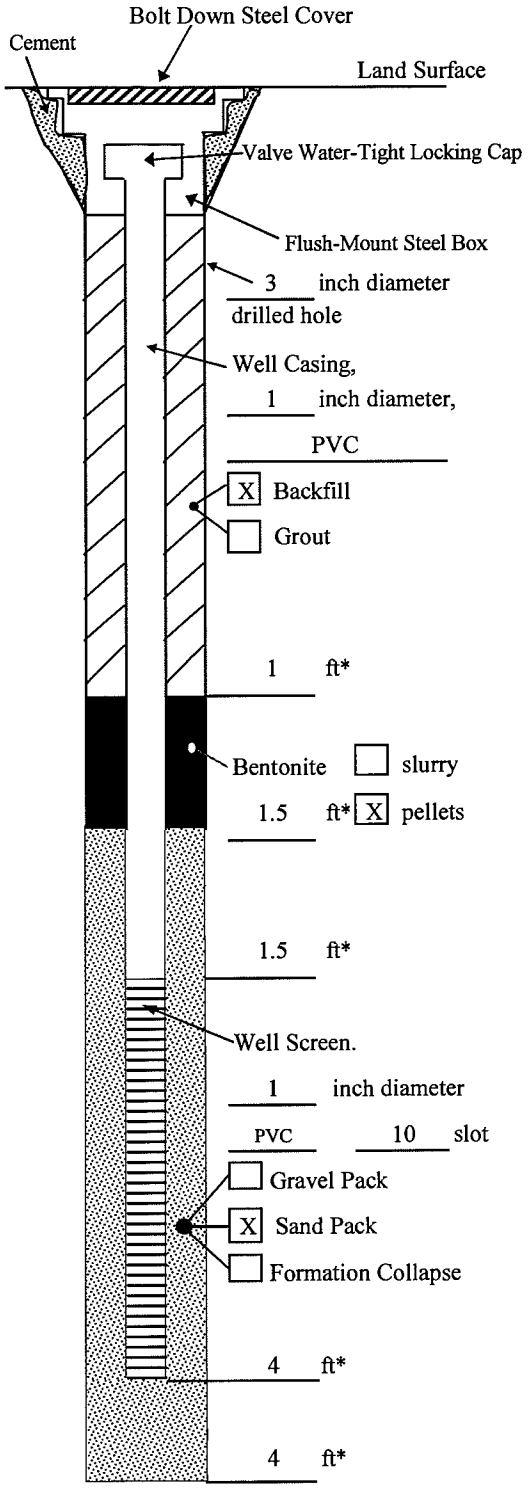
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil vapor probe

Remarks Screen/riser: Longyear 1" sch 40 PVC, slot 0.010, factory cut, flat bottom cap, stopcock value; filter pack: Red Flint #40 coarse sand, (27-18) 9-50 lb bags; bentonite: Baroid Hole Plug 3/8" chips (31-27) 8-50 lb bags + 10 gallons water, (18-1), 8-50 lb bags + 10 gallons water; (44-31) native soil.

Prepared by Jill Flater

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-429

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1117.89 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/31/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

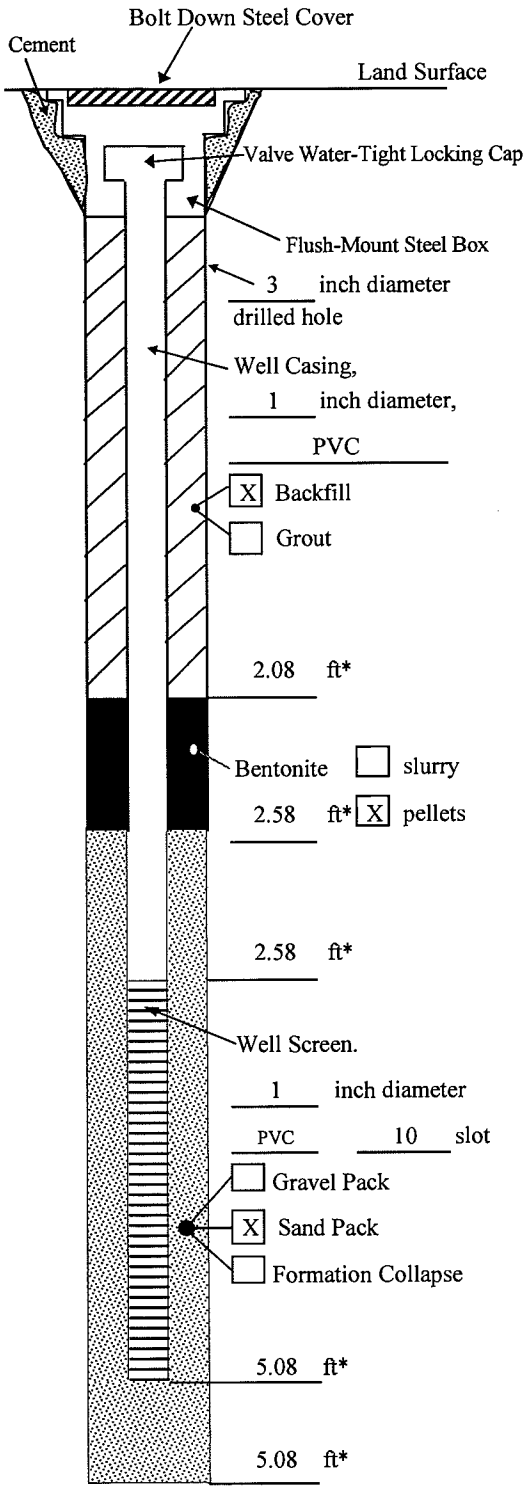
Specific Capacity gpm/ft

Well Purpose CMDP soil vapor probe.

Remarks C-53 Trico

Prepared by Dennis Charette

ARCADIS



Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/WI001025.0002 Probe GMSG-430

Town/City Kingsford, Michigan

County Dickinson State Michigan

Land-Surface Elevation and Datum 1115.70 feet Mean Sea Level [X] Surveyed [ ] Estimated

Installation Date(s) 10/31/03

Drilling Method Hand Auger

Drilling Contractor None - Tony Mathweg

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

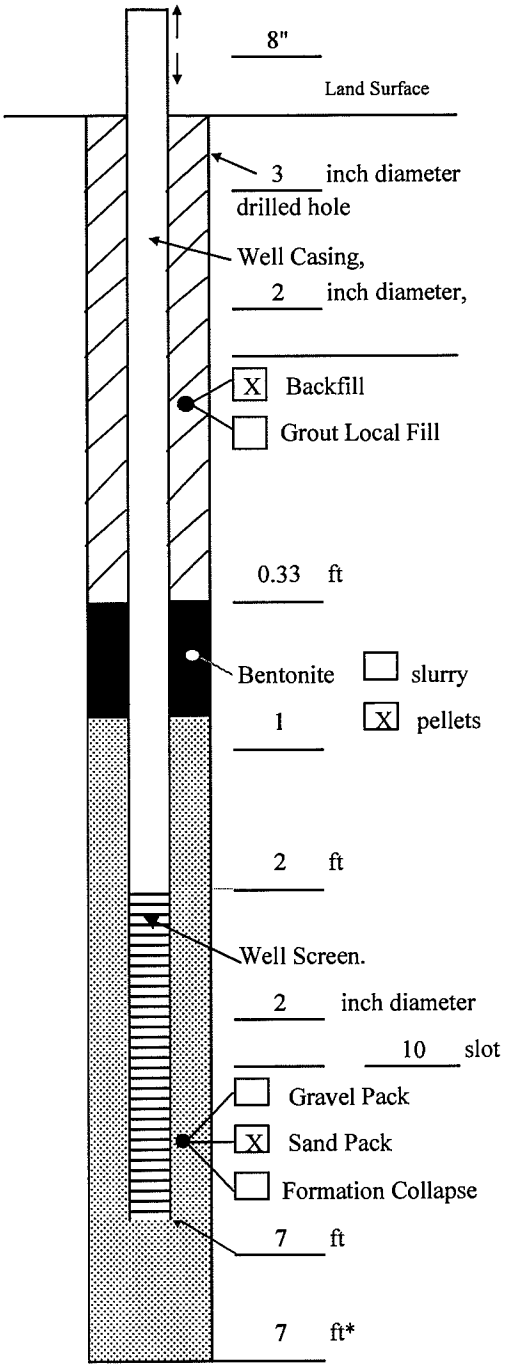
Well Purpose CMDP soil vapor probe.

Remarks C-53 Trico

Prepared by Dennis Charette

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Project Ford/Kingsford WI001025.0033 Probe GMSG-431

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1133.00 feet
[X] Surveyed
[ ] Estimated

Mean Sea Level

Installation Date(s) 10/28/03 11:00:00 AM

Drilling Method Hand Auger

Drilling Contractor None - Dennis Charette

Drilling Fluid N/A

Development Technique(s) and Date(s)

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

Well Purpose Vapor probe extraction well.

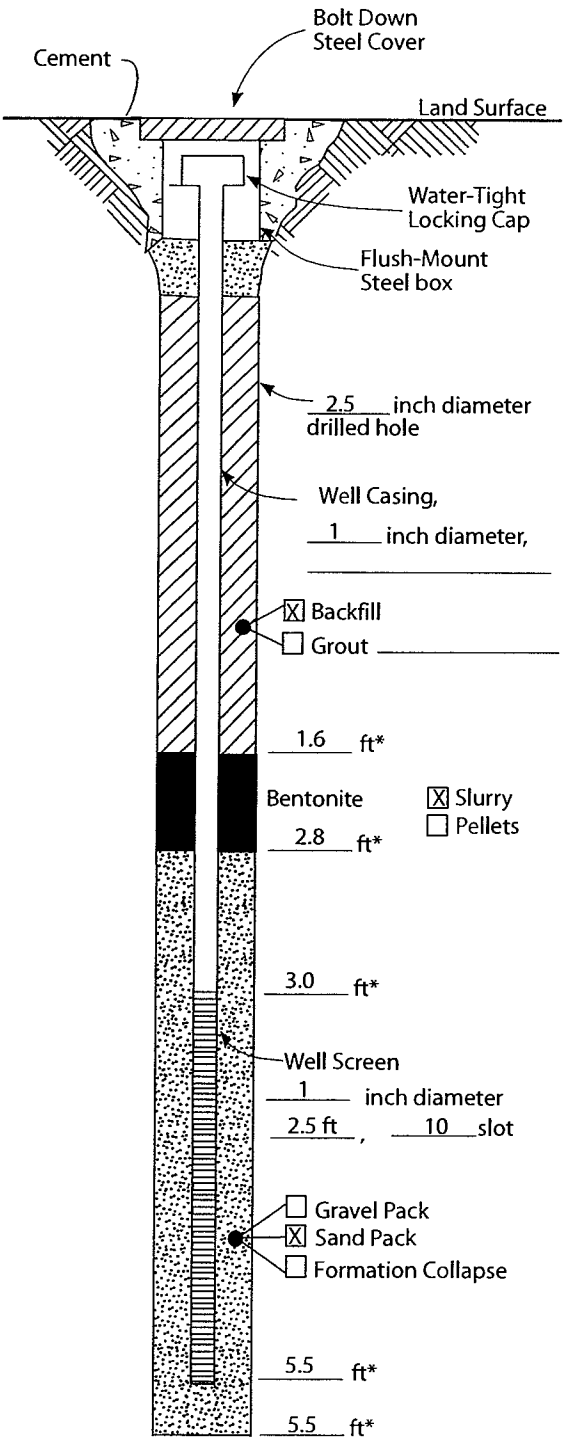
Remarks C-63 Universal Plumbing.

Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

Prepared by Dennis Charette

* Depth Below Land Surface (bls)

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg459.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-459

Town/City Kingsford - 2000 N. Plye Drive, Woodland School

County Dickinson

Permit No. NA

Land-Surface Elevation

1127.65 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 7/7/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

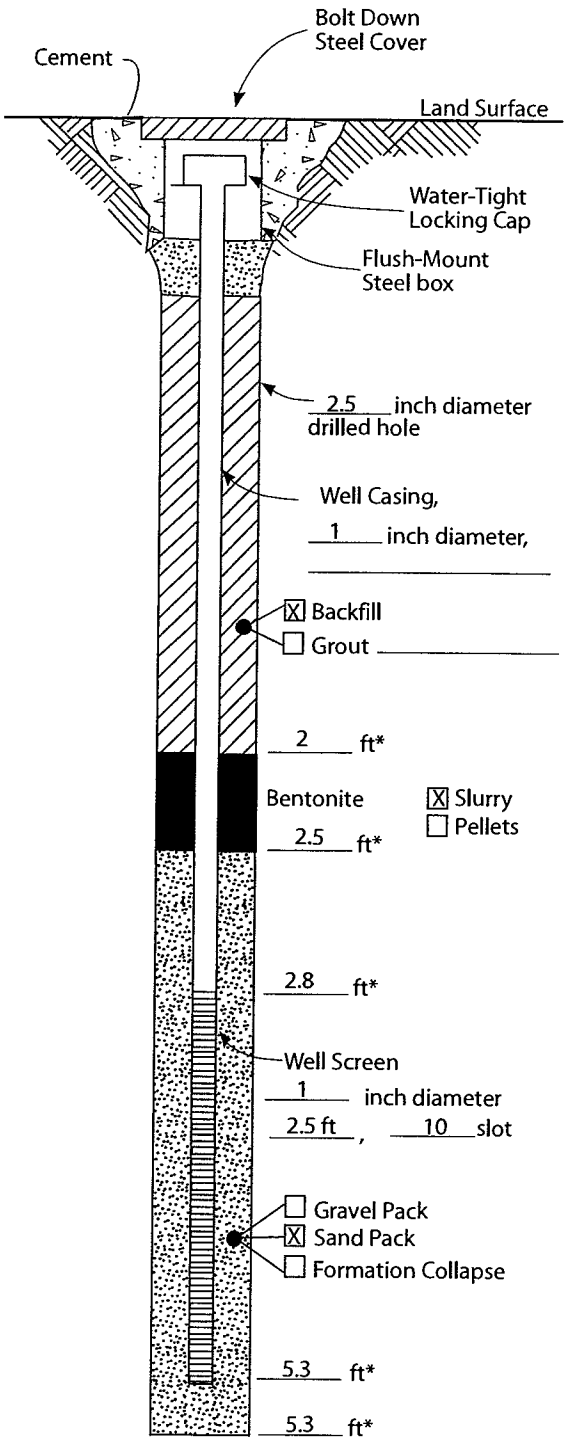
Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG/GJM



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg460.ai

Well Construction Log

(Flush Mounted Well)

Project Ford/Kingsford WI001095.0002 Well GMSG-460

Town/City Kingsford - 2000 N. Plye Drive, Woodland School

County Dickinson

Permit No. NA

Land-Surface Elevation

1127.73 feet [X] surveyed [ ] estimated

Datum Mean sea level

Installation Date(s) 7/7/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

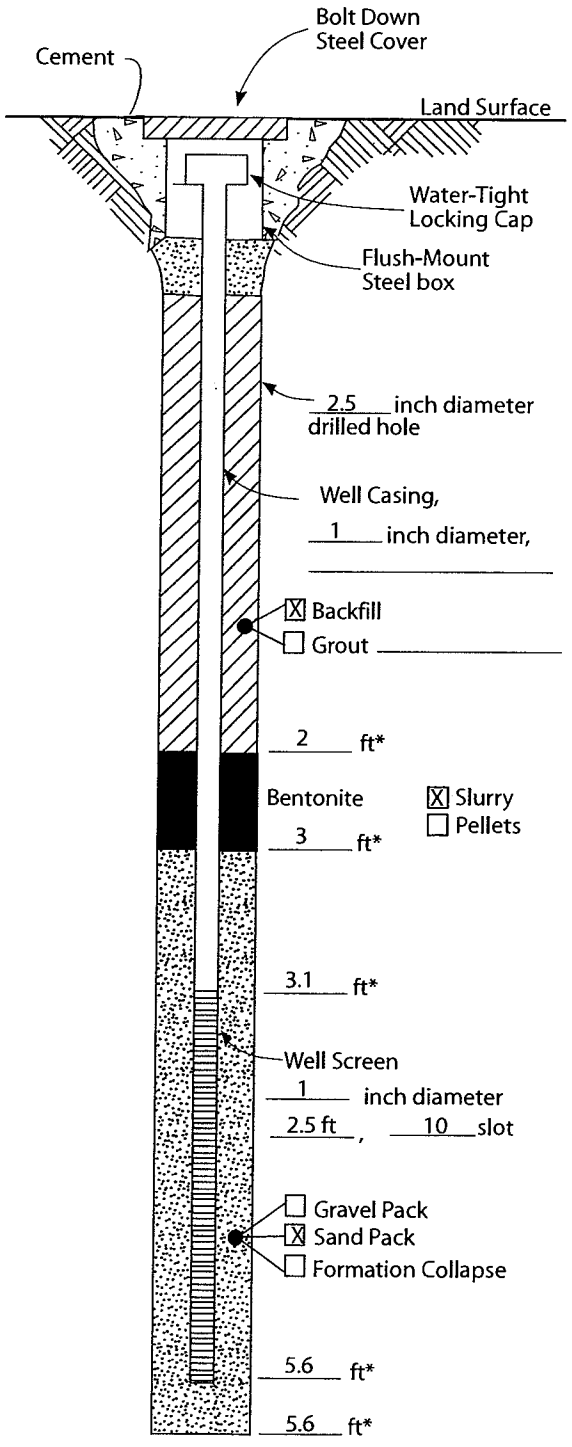
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG/GJM

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg461.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-461

Town/City Kingsford - 2000 N. Plye Drive, Woodland School

County Dickinson

Permit No. NA

Land-Surface Elevation

1127.90 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 7/7/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration _____ hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

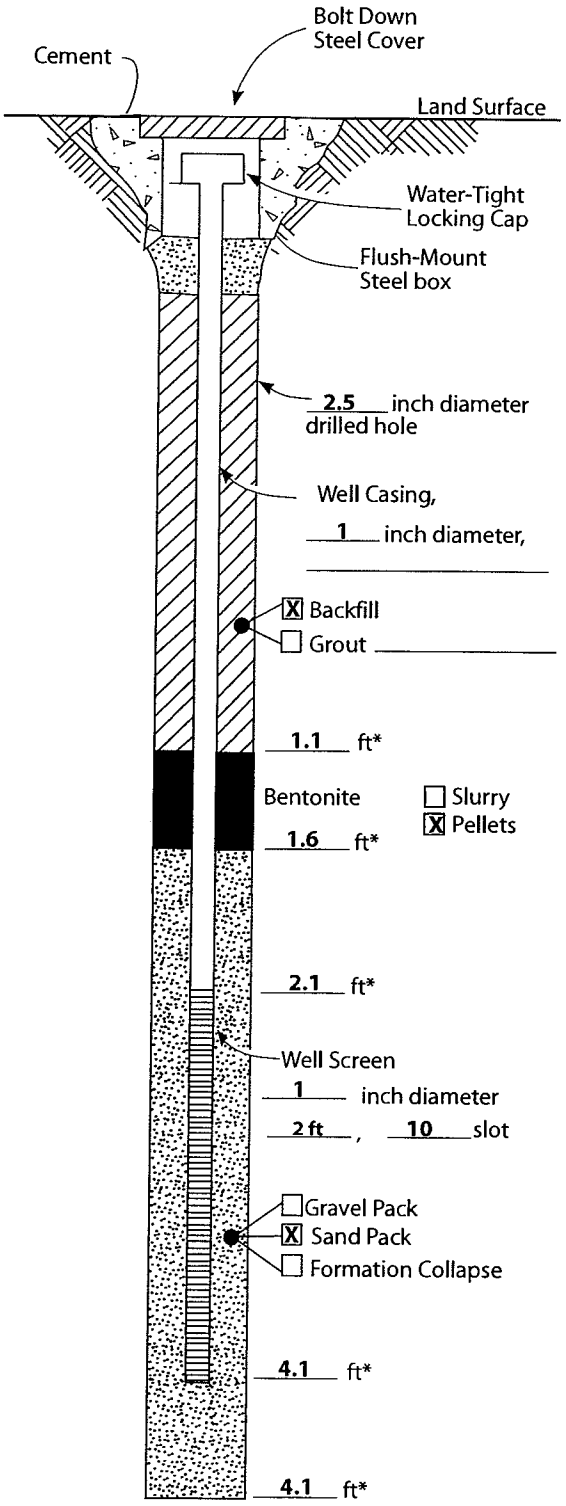
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG/GJM

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg462_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-462**

Town/City **Kingsford, Michigan - 2000 W. Pyle Drive - Woodland Elementary**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1127.84 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **7/8/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

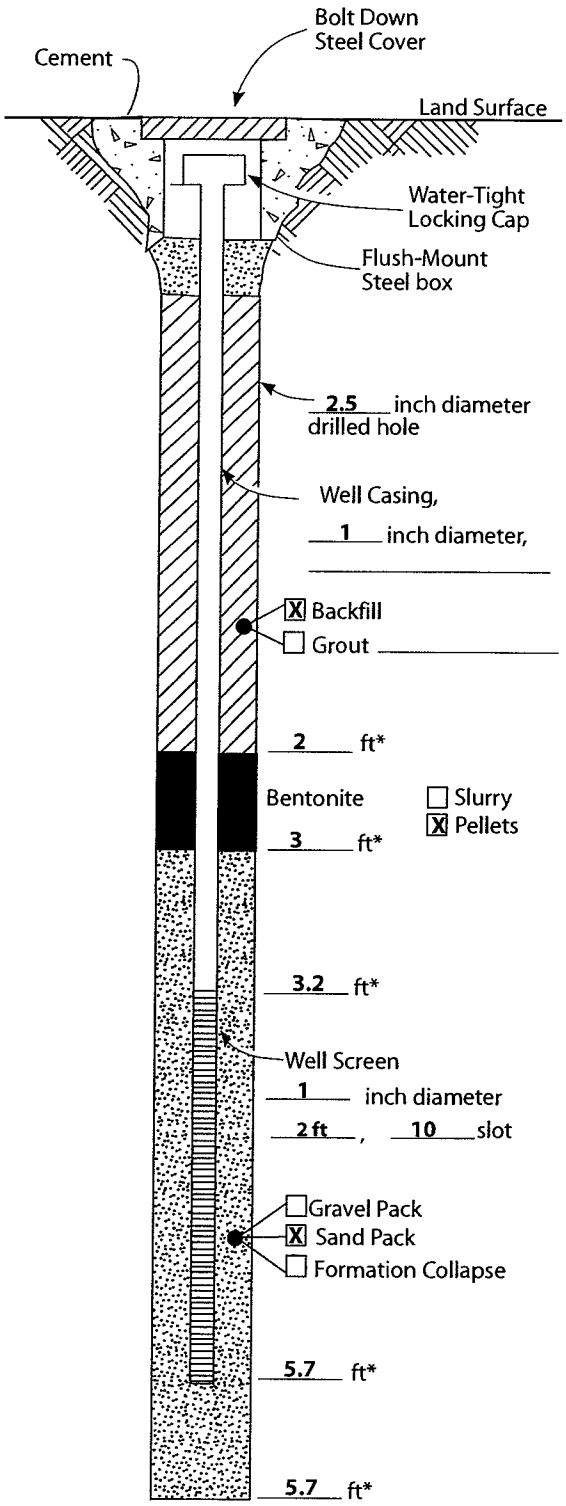
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg463_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-463**

Town/City **Kingsford, Michigan - 2000 W. Pyle Drive - Woodland Elementary**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1128.21 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **7/8/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

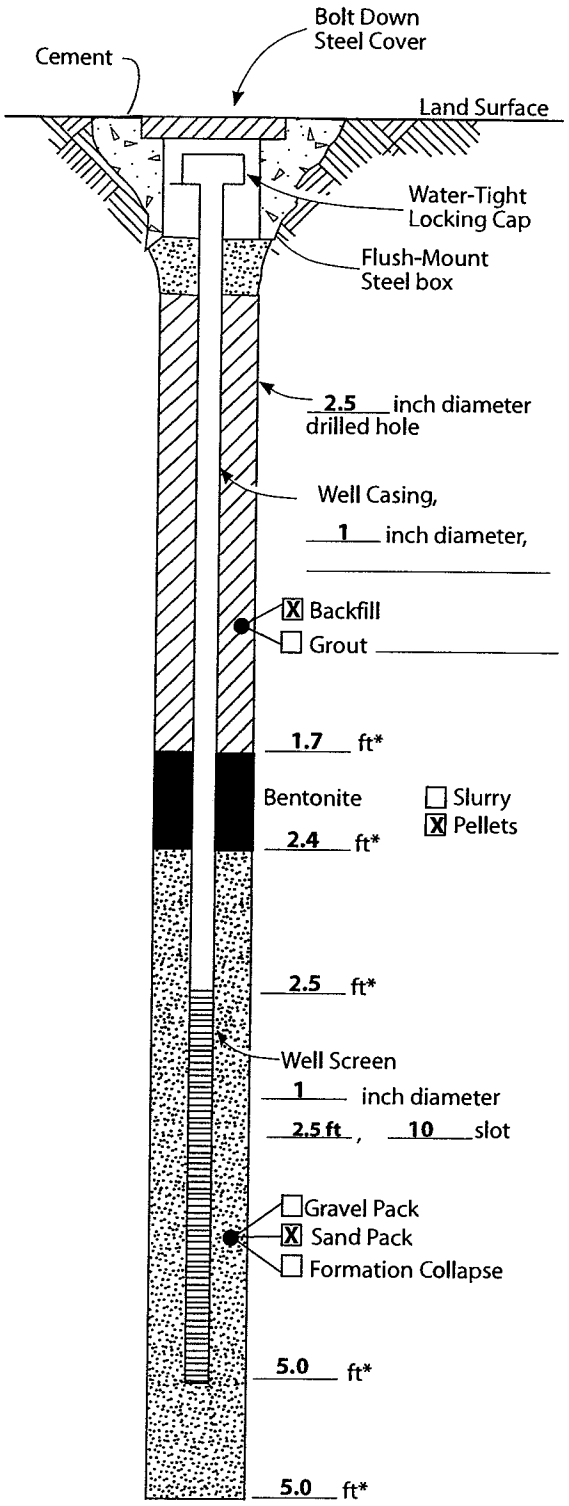
Specific Capacity -- gpm/ft

Well Purpose **Commercial soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg464_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-464**

Town/City **Kingsford, Michigan - 2000 W. Pyle Drive - Woodland Elementary**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1127.93 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/8/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

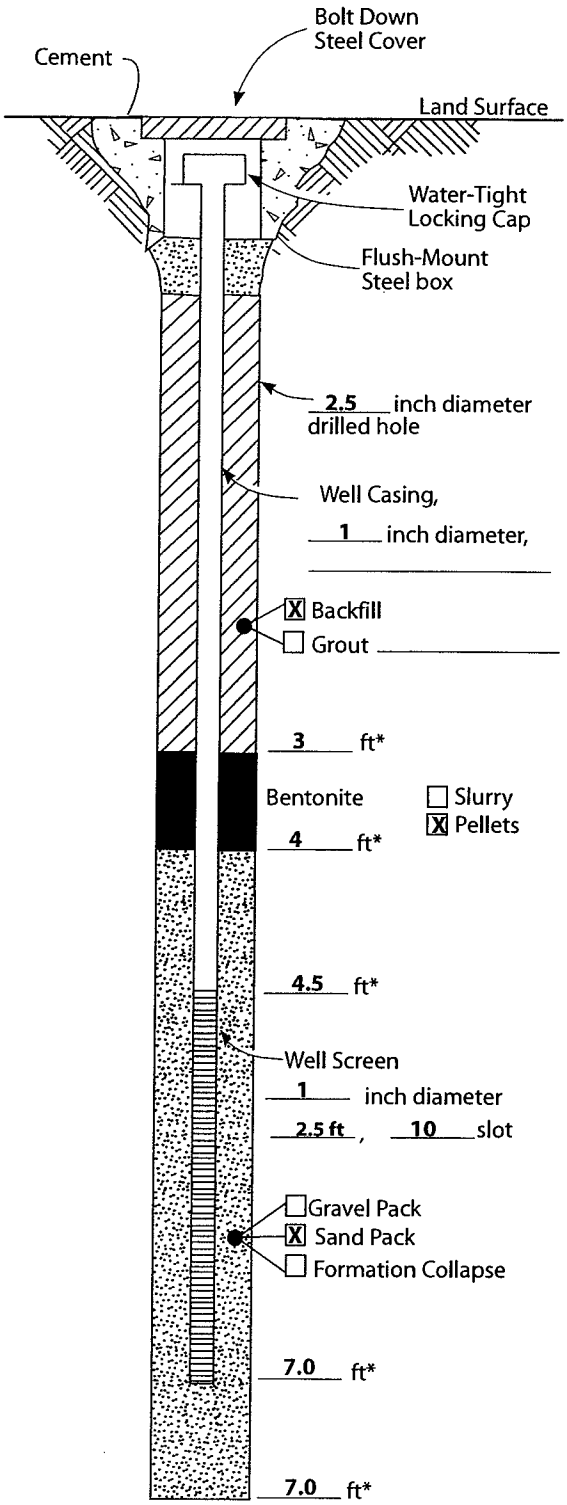
Specific Capacity -- gpm/ft

Well Purpose **Commercial soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-465**

Town/City **Kingsford, Michigan - 908 Sagola - Martyrs Chruch**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1111.10 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/11/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

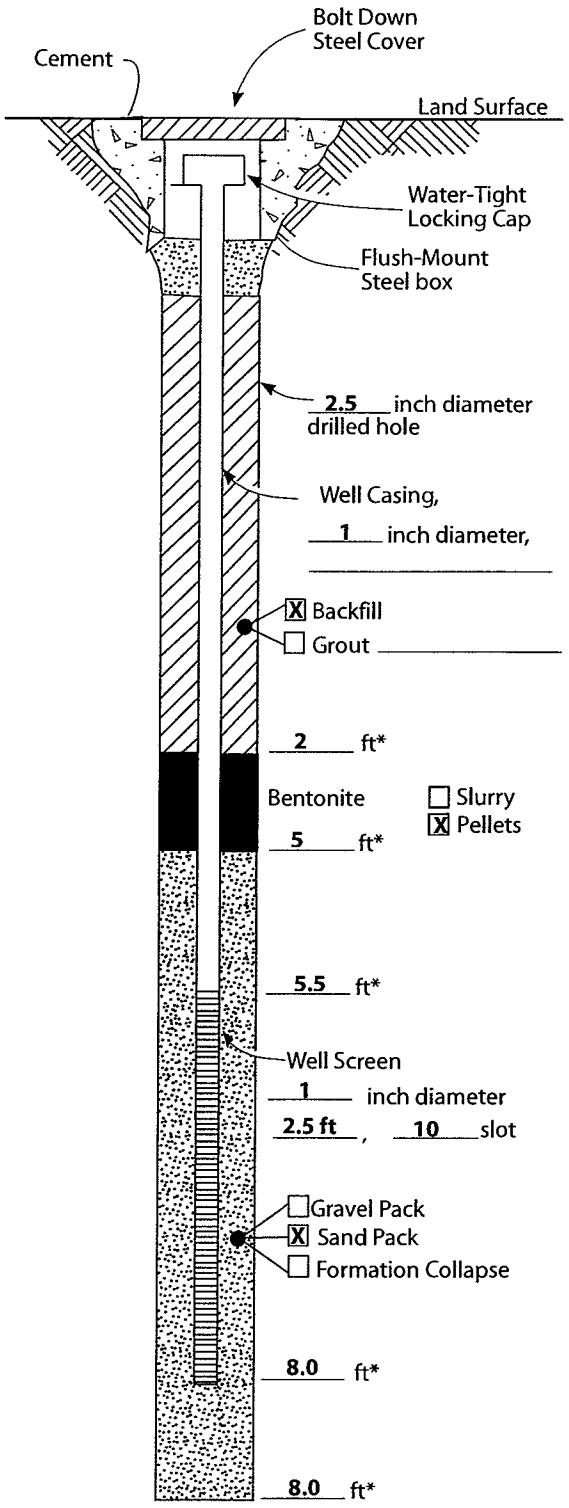
Well Purpose **Commercial soil vapor probe**

Remarks

Prepared by **RJG/GJM**

ford/wi0637/2004/graphics/logs/gmsg465_flush.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg466_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-466**

Town/City **Kingsford, Michigan - 910 Sagola - American Chruch**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1111.11 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/12/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

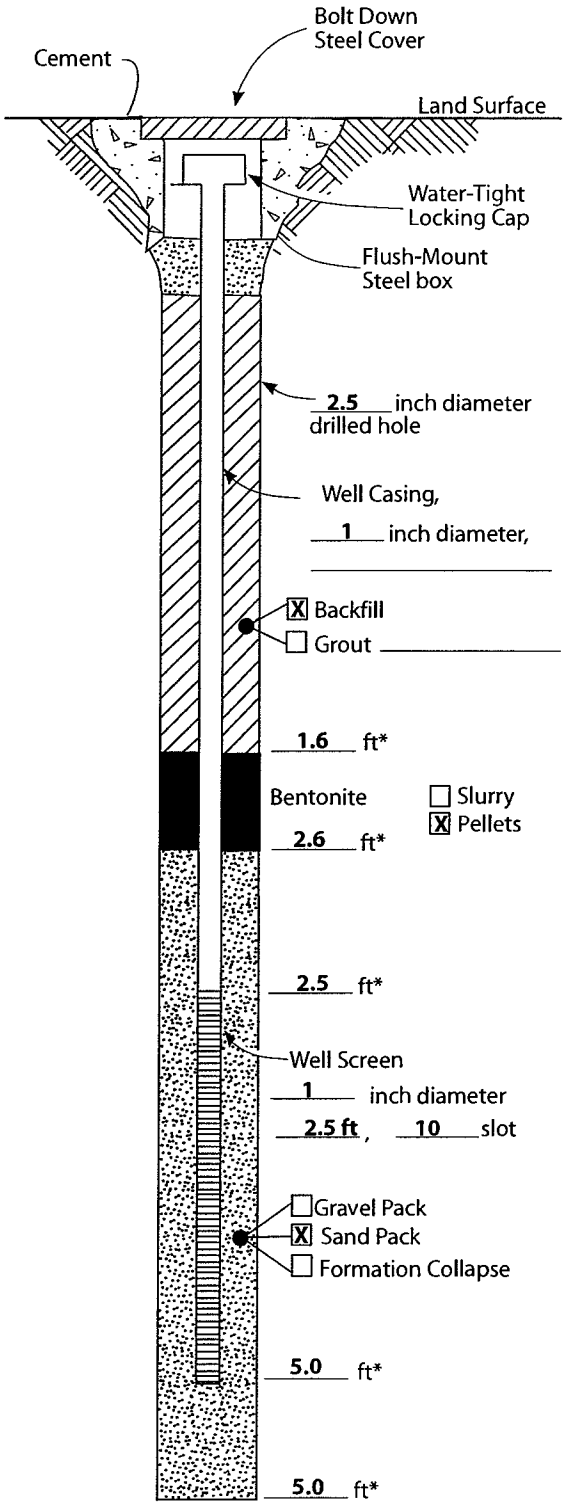
Specific Capacity -- gpm/ft

Well Purpose **Commercial soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-467**

Town/City **Kingsford, Michigan - Noel's Mini-Storage**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1132.42 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/13/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

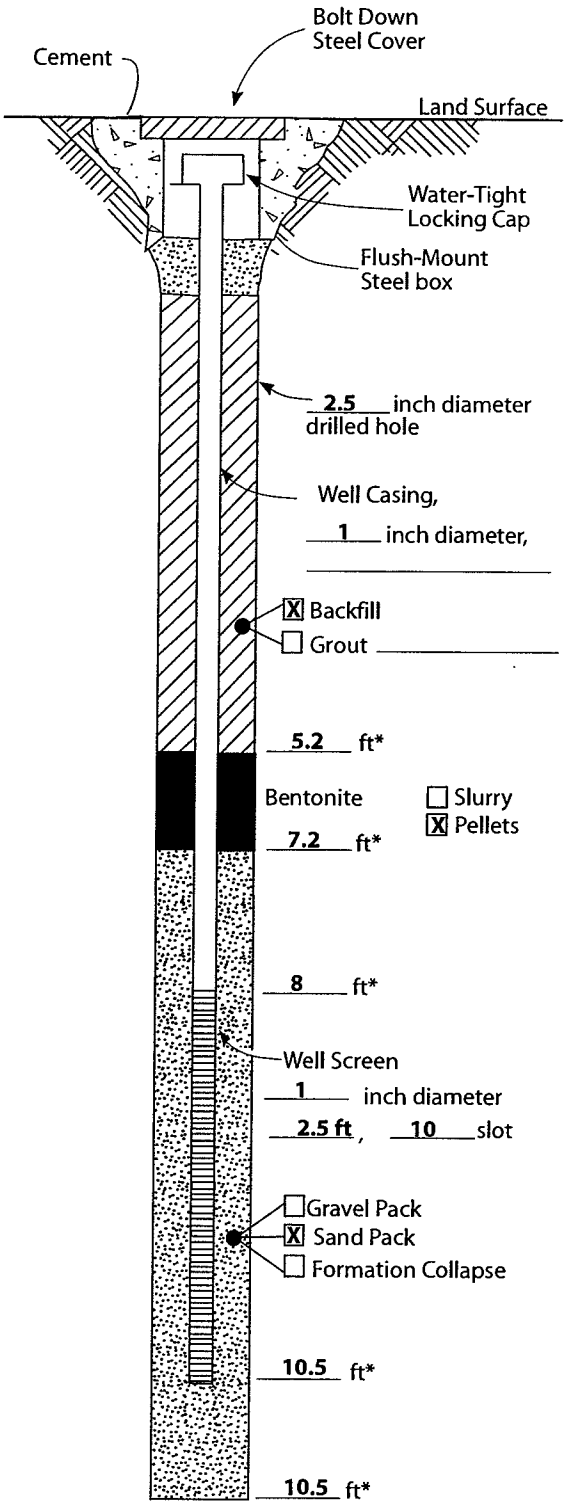
Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

ford/wi0637/2004/graphics/logs/gmsg467_flush.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg468_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-468**

Town/City **Kingsford, Michigan - 906 Sagola, American Martyrs School**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1113.55 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/14/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

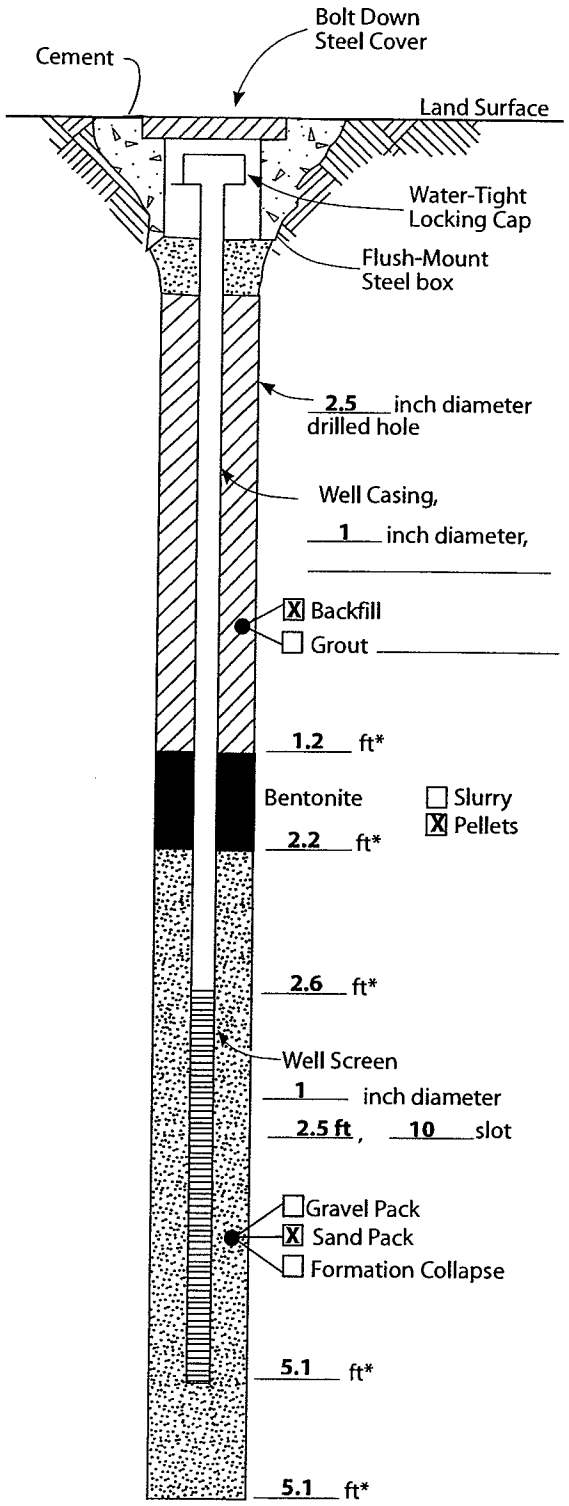
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-469**

Town/City **Kingsford, Michigan - Becon Ambulance**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1132.44 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/14/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

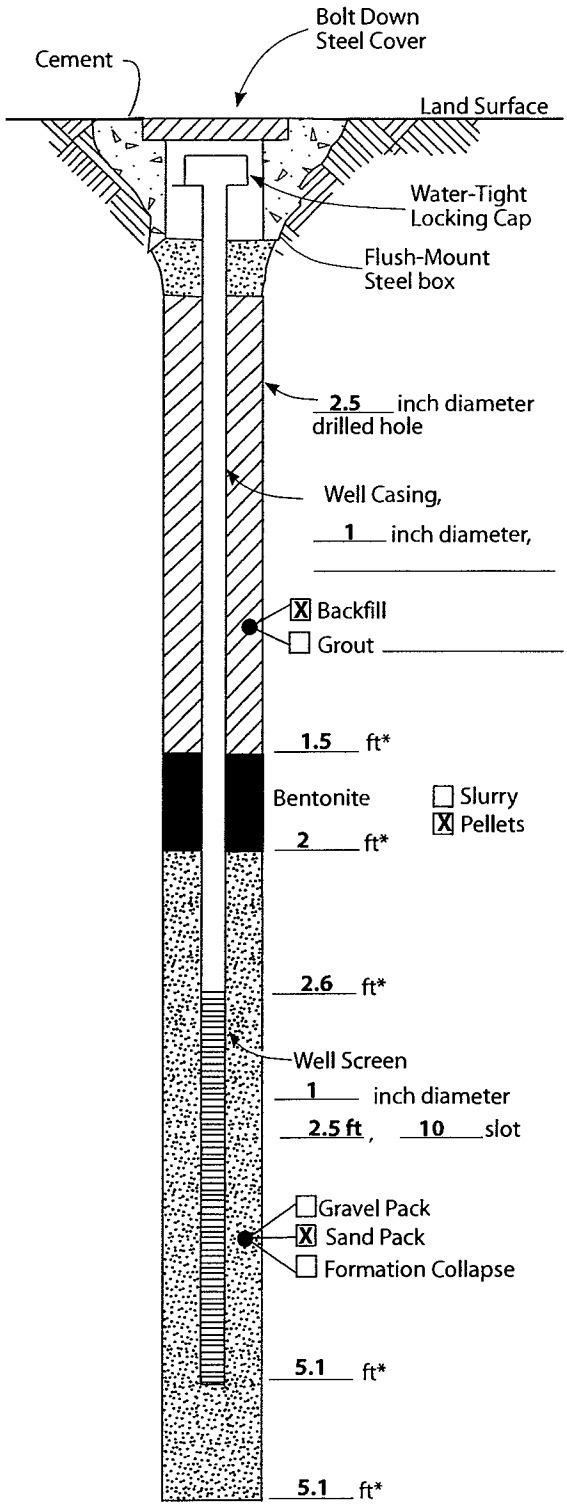
Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

ford/wi0637/2004/graphics/logs/gmsg469_flush.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg470_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-470**

Town/City **Kingsford, Michigan - Noel's Storage 1491 Pyle Drive West #4**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1131.32 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/15/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

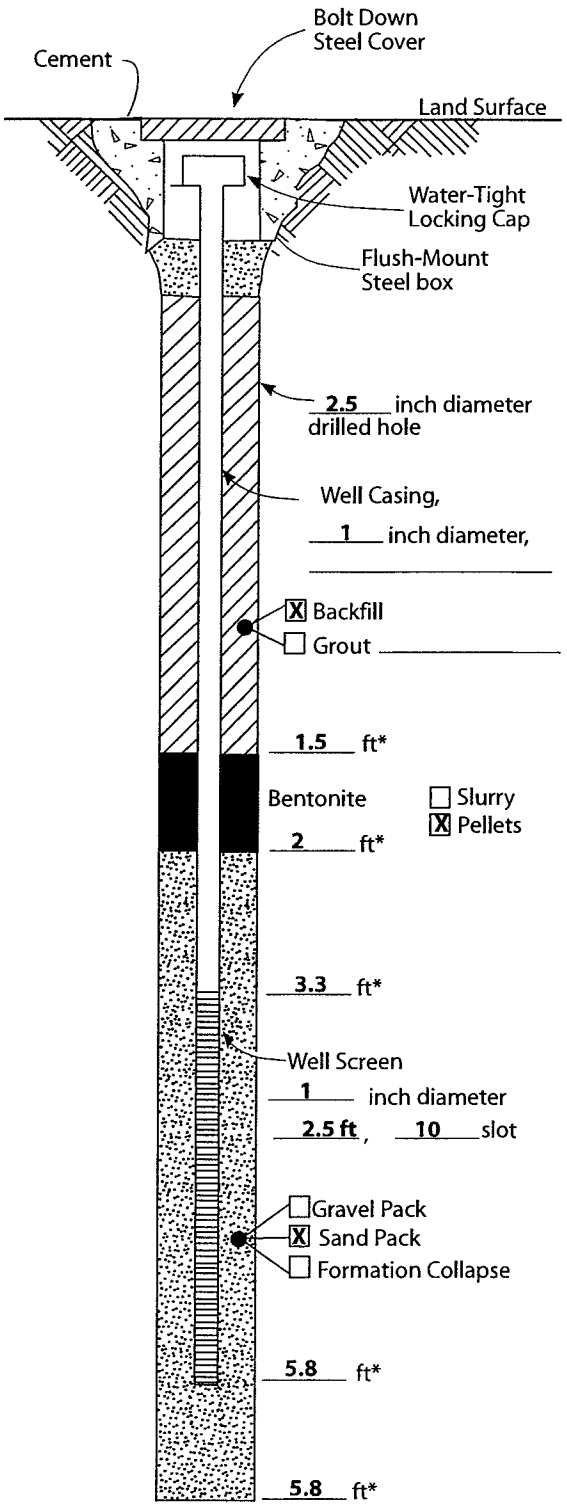
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg471_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-471**

Town/City **Kingsford, Michigan - Noel's Storage 1491 Pyle Drive West #3**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1131.34 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/15/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

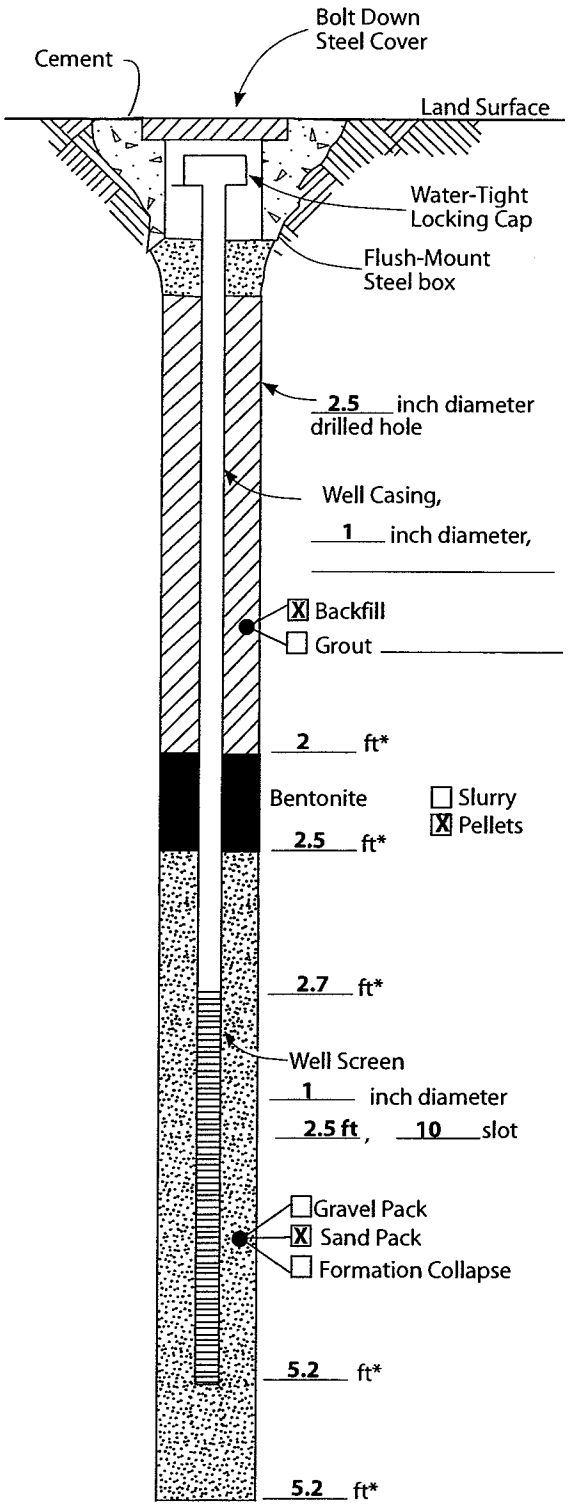
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-472**

Town/City **Kingsford, Michigan - Noel's Storage 1491 Pyle Drive East#2**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1130.90 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/15/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

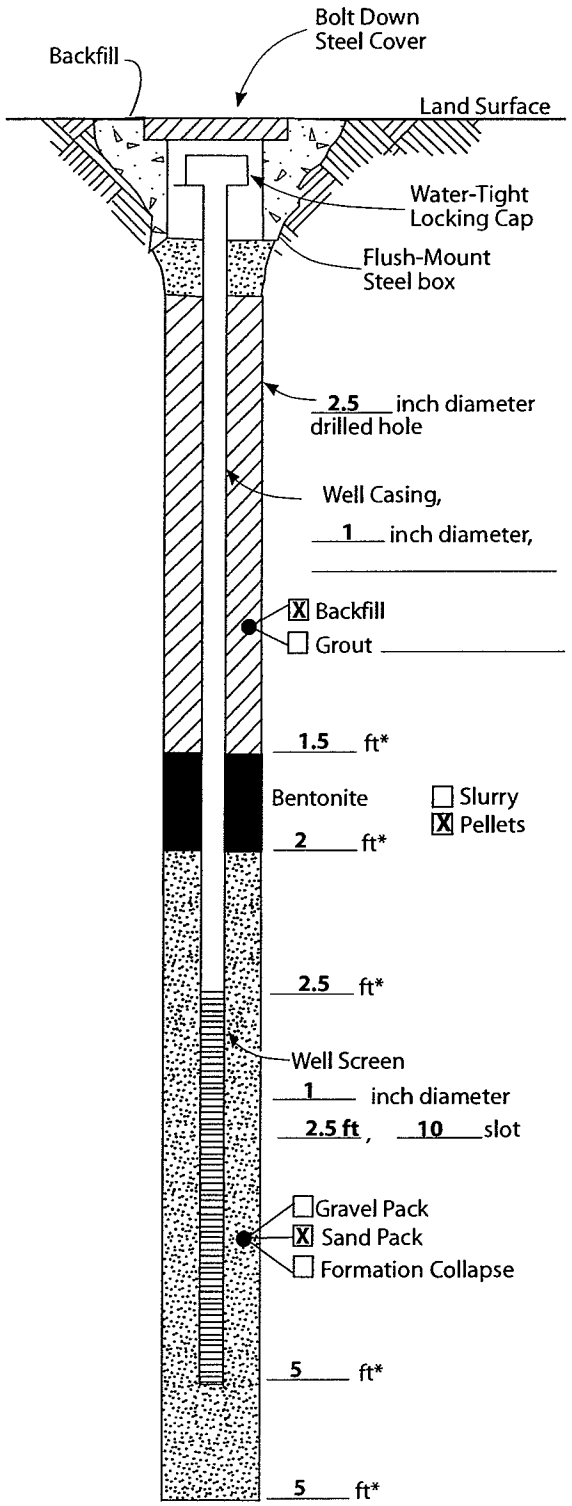
Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

ford/wi0637/2004/graphics/logs/gmsg472_flush.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-473**

Town/City **Kingsford, Michigan - Noel's Storage 1491 Pyle Drive West #4**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1131.32 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/18/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

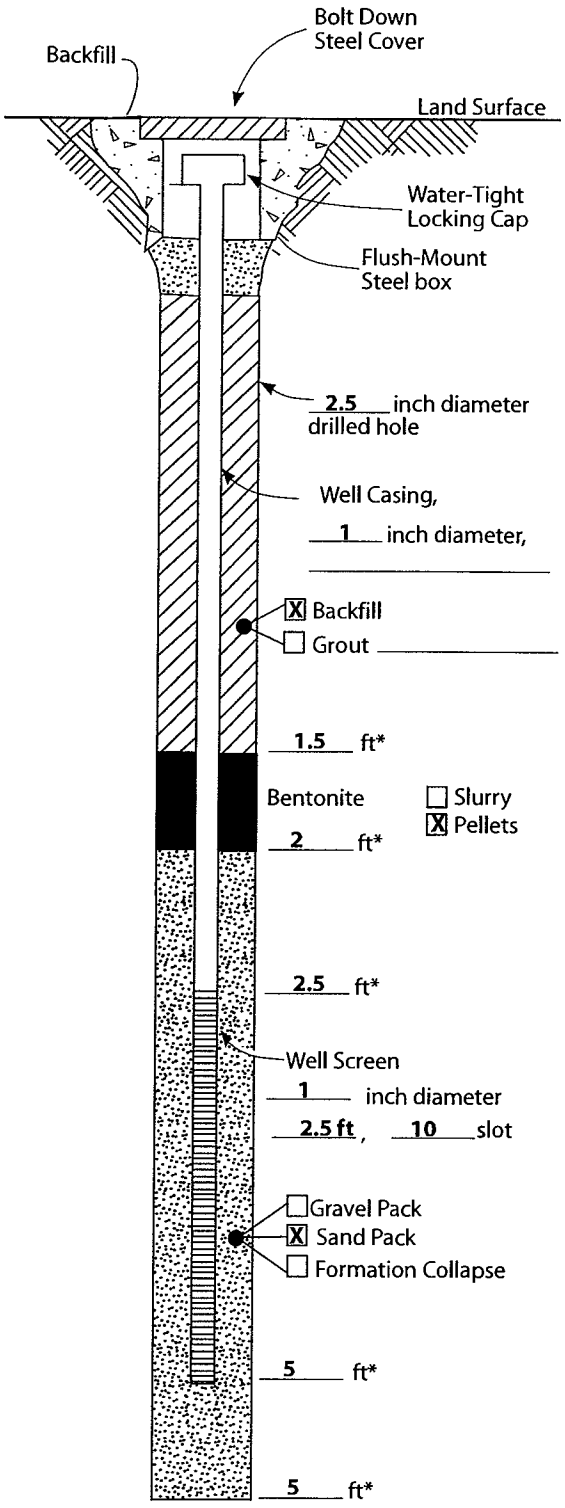
Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

ford/wi0637/2004/graphics/logs/gmsg473_flush.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg474_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-474**

Town/City **Kingsford, Michigan - Noel's Storage 1491 Pyle Drive Center #3**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1131.44 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/18/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

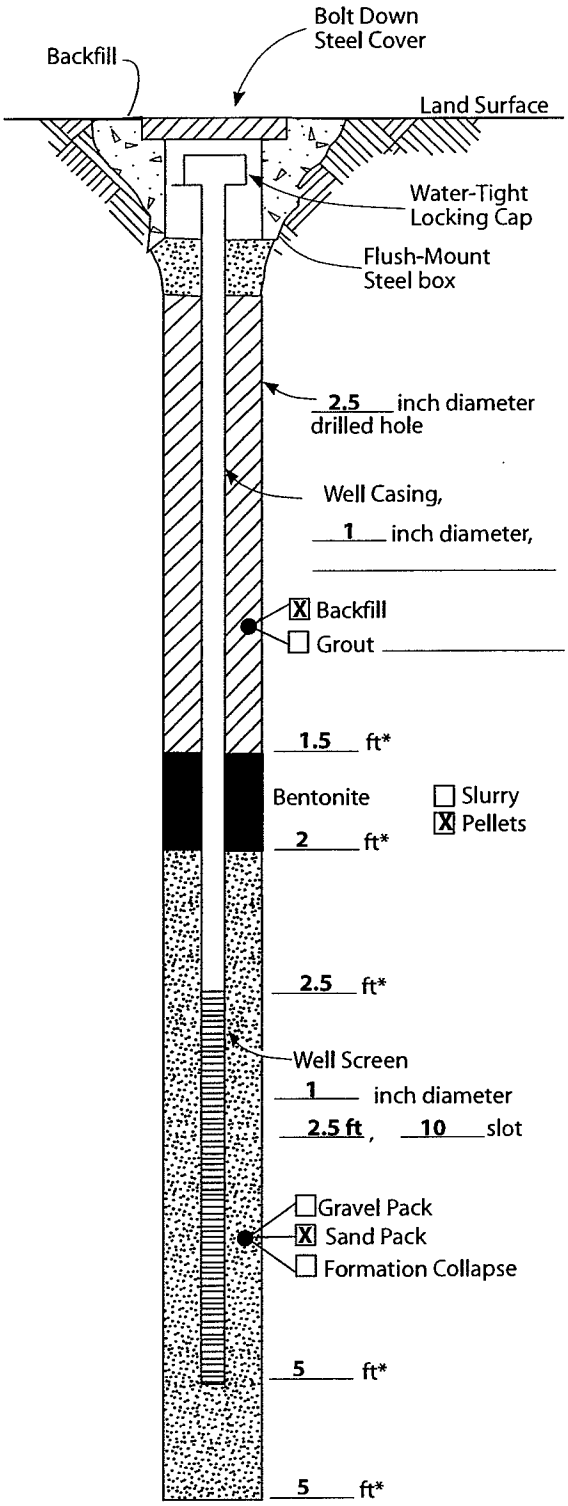
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg475_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-475**

Town/City **Kingsford, Michigan - Noel's Storage 1491 Pyle Drive East #2**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1130.94 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/18/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

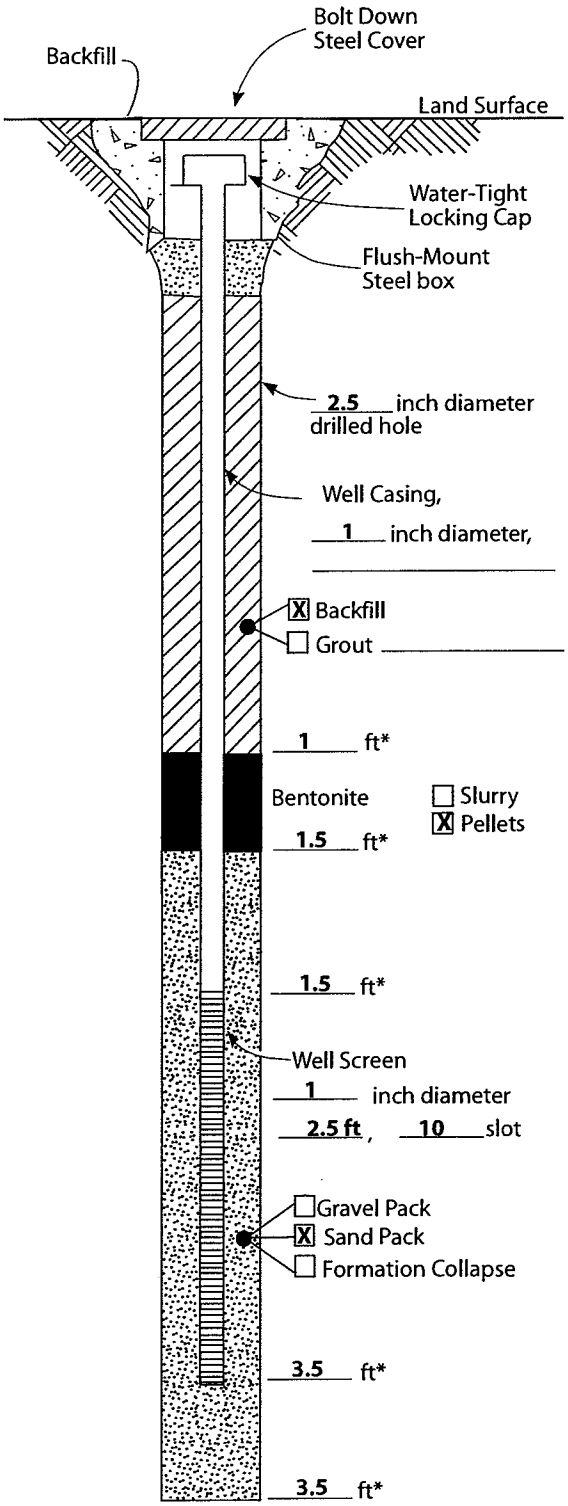
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg476_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-476**

Town/City **Kingsford, Michigan - Werner Electric, 1400 W. Breitung Avenue**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1115.25 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/19/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

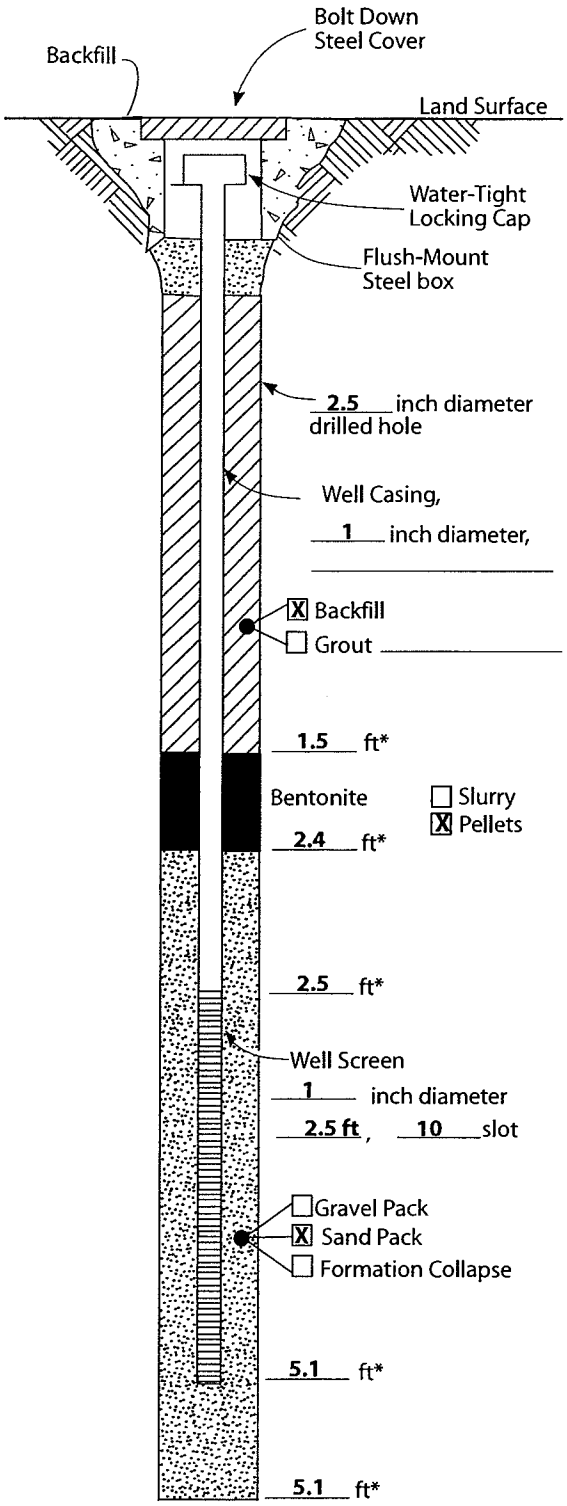
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg477_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-477**

Town/City **Kingsford, Michigan - Werner Electric, 1400 W. Breitung Avenue**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1115.03 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/19/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

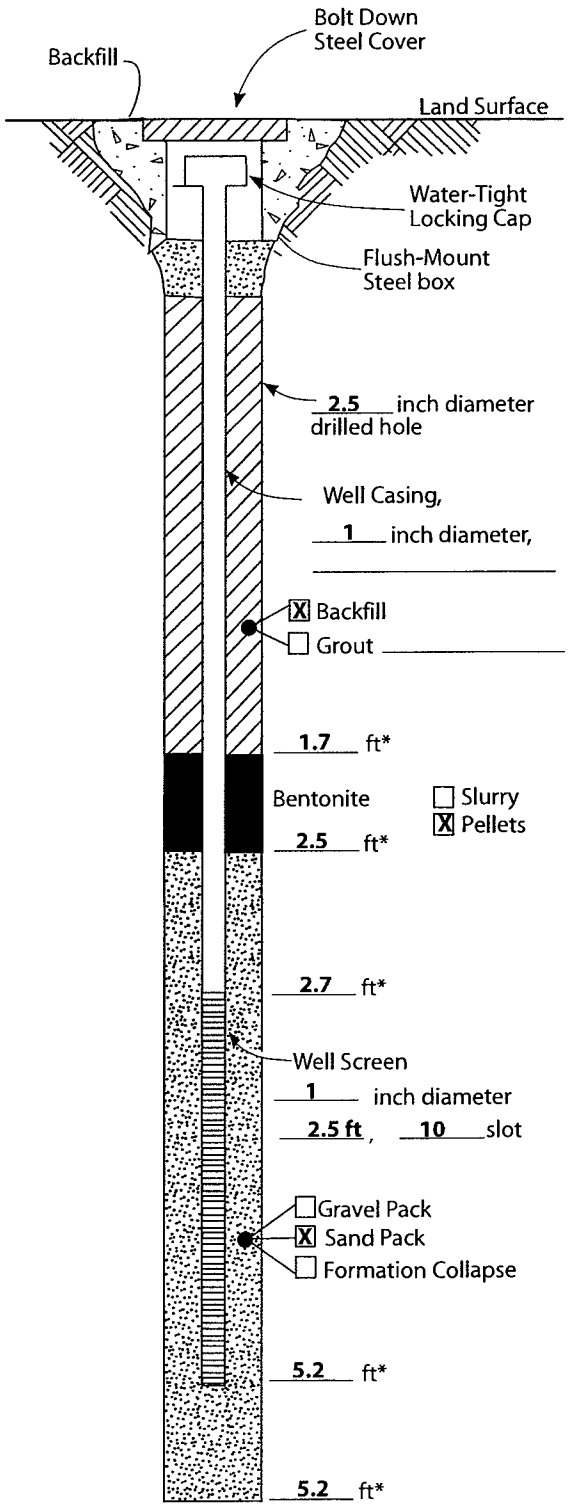
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2004/graphics/logs/gmsg478_flush.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-478**

Town/City **Kingsford, Michigan - Noel's Mini Storage, 1491 Pyle Drive, #1**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1132.26 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/19/05**

Drilling Method **Hand Auger**

Drilling Contraactor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

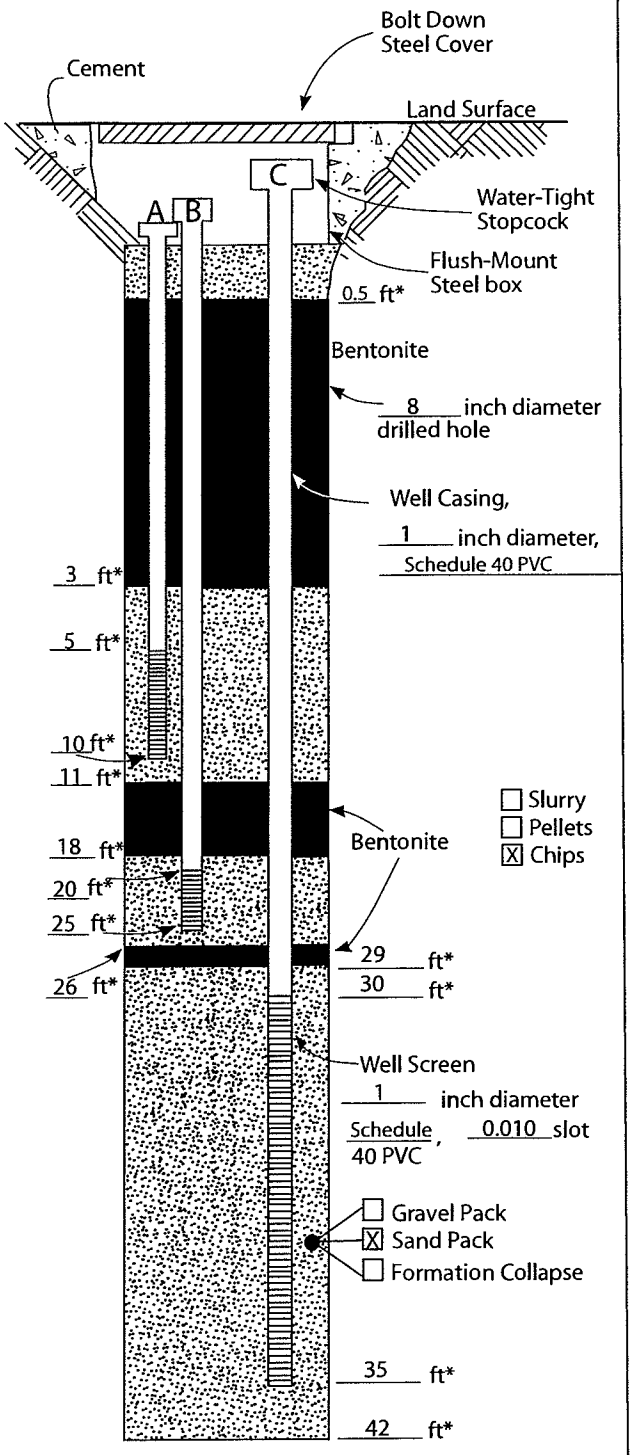
Specific Capacity -- gpm/ft

Well Purpose **Commerical soil vapor probe**

Remarks

Prepared by **RJG/GJM**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg479abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-479 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.58 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/3/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

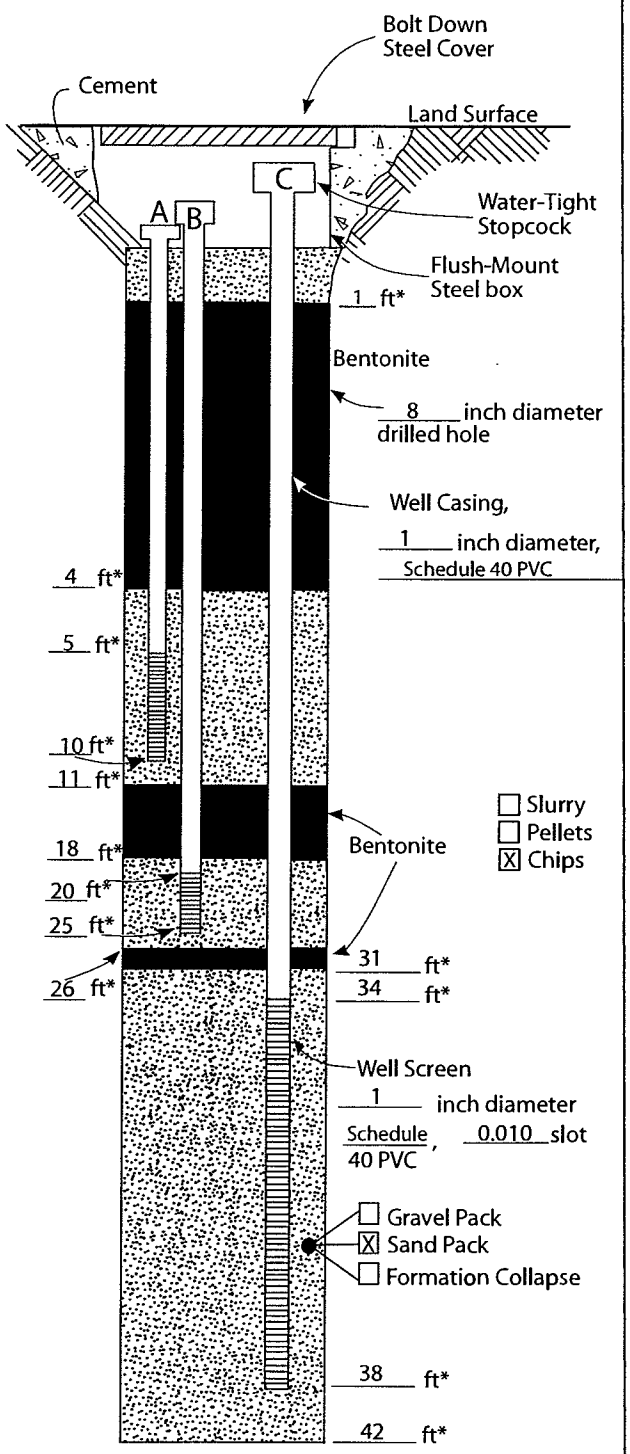
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screens: 5-10', 20-25', 30-35' - Schedule 40 PVC, 0.010" slot. Red Flint #40 coarse sand filter pack: 29-42' 6-50 lb bags, 18-26' 5-50 lb bags, 3-11' 5-50 lb bags Baroid 3/8" bentonite chips: 26-29' 1.5-50 lb bags and 10 gallons water, 11-18' 3.25-50 lb bags and 10 gallons water, 0.5-3' 1.75-50 lb bags and 10 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg480abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-480 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1115.10 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/6/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

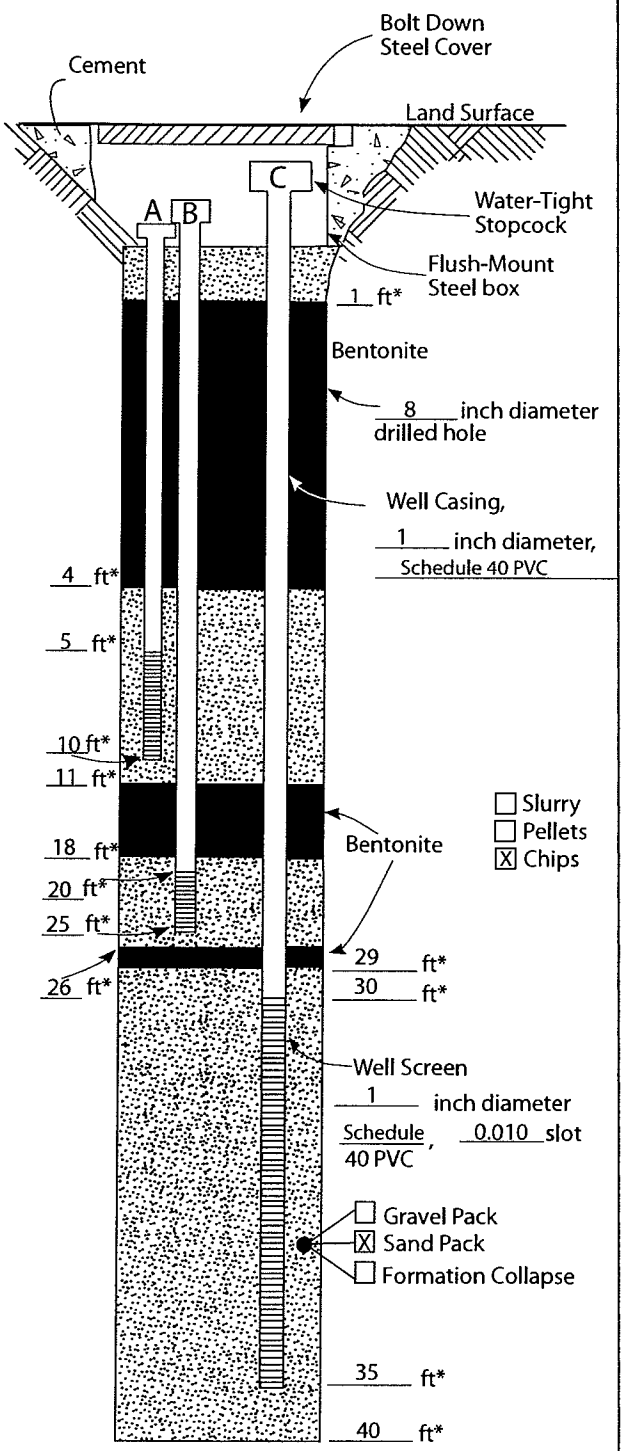
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screen/Riser: Longyear Schedule 40 PVC, 0.010" slotted, factory cut, flat bottom caps, screened 5-10', 20-25', and 34-38'. Red Flint #40 coarse sand filter pack: 31-42' 5-50 lb bags, 18-20' 4-50 lb bags, 4-11' 4-50 lb bags. Baroid 3/8" bentonite chips: 26-31' 2-50 lb bags and 5 gallons water, 11-18' 3.25-50 lb bags 6 gallons water, 1-4' 2-50 lb bag and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg481abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-481 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.99 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/5/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

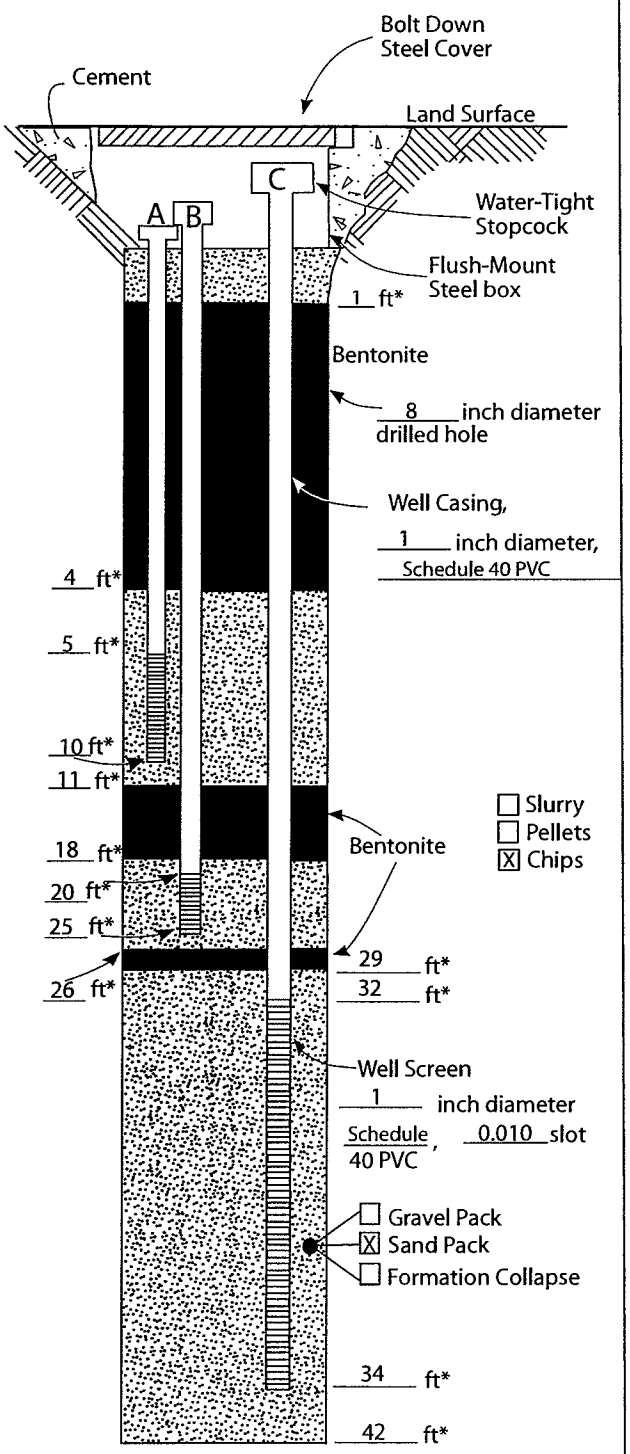
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screen/Riser: Longyear Schedule 40 PVC, 0.010" slotted, flat bottom caps. Red Flint #40 coarse sand filter pack: 29-40' 5-50 lb bags, 18-26' 4-50 lb bags, 4-11' 4-50 lb bags. Baroid 3/8" bentonite chips: 26-29' 1.5-50 lb bags and 5 gallons water, 11-18' 1.75-50 lb bags and 5 gallons water, and 1-4' 1.5-50 lb bags and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg482abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-482 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.55 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/5/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

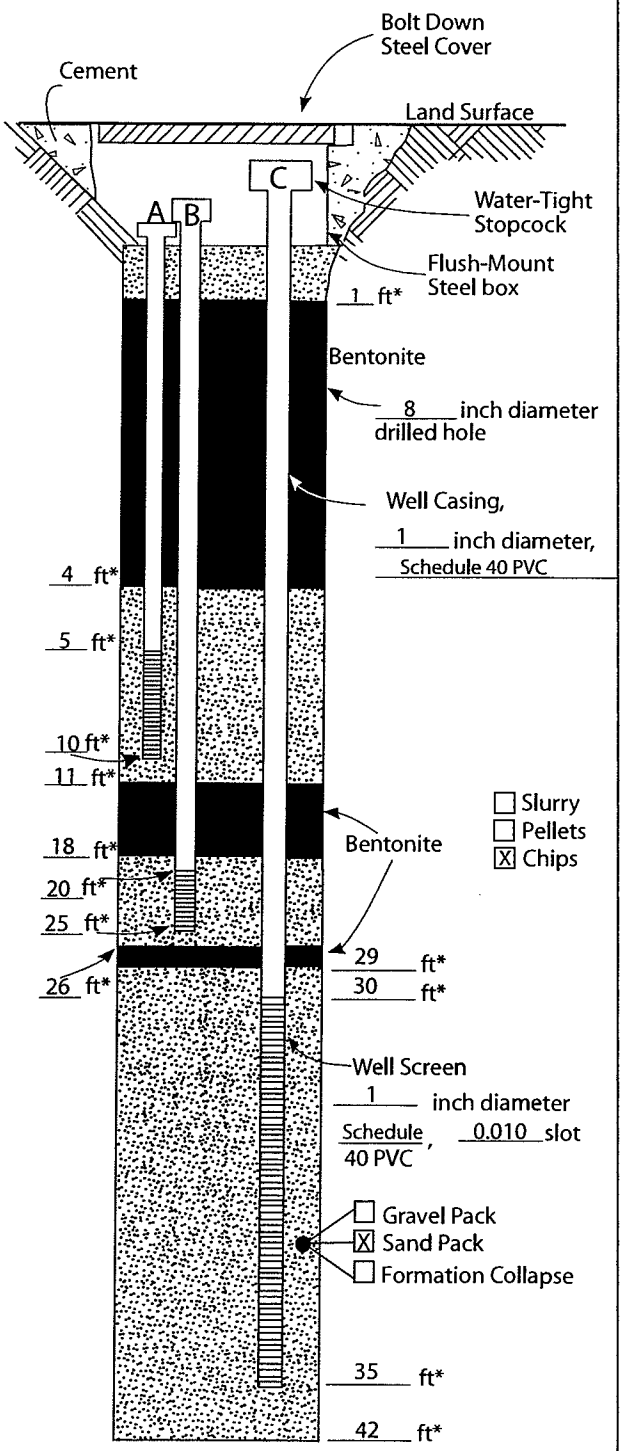
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/Riser: Longyear Schedule 40 PVC, 0.010" slotted, factory cut, flat bottom caps. Screenis: 5-10', 20-25', 32-34'. Red Flint #40 coarse sand filter pack: 30-42' 6-50 lb bags, 18-26' 4-50 lb bags, 4-11' 4-50 lb bags. Baroid 3/8" bentonite chips: 26-30' 2-50 lb bags and 5 gallons water, 11-18' 3.5-50 lb bags and 7 gallons water, 1-4' 1.5-50 lb bags and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg483abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-483 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.46 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/6/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

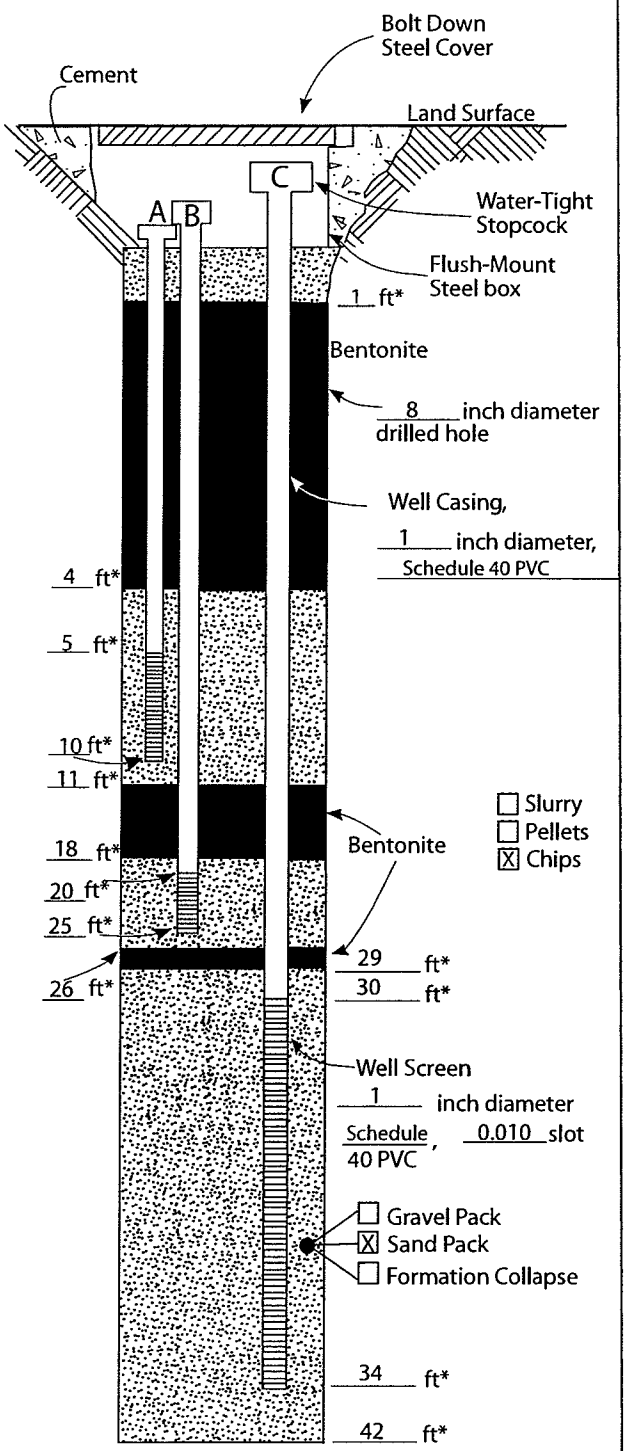
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screen: Longyear 1" Schedule 40 PVC, 0.010"slotted, factory cut, flat bottom caps, stopcock valves. Red Flint #40 coarse sand filter pack: 29-42' 6-50 lb bags, 18-26' 4-50 lb bags, 4-11' 3.5-50 lb bags. Baroid 3/8" bentonite chips: 26-29', 1.5-50 lb bags and 5 gallons water, 11-18' 3-50 lb bag sand 6 gallons water, 1-4' 1.5-50 lb bags and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg484abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-484 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.72 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/7/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

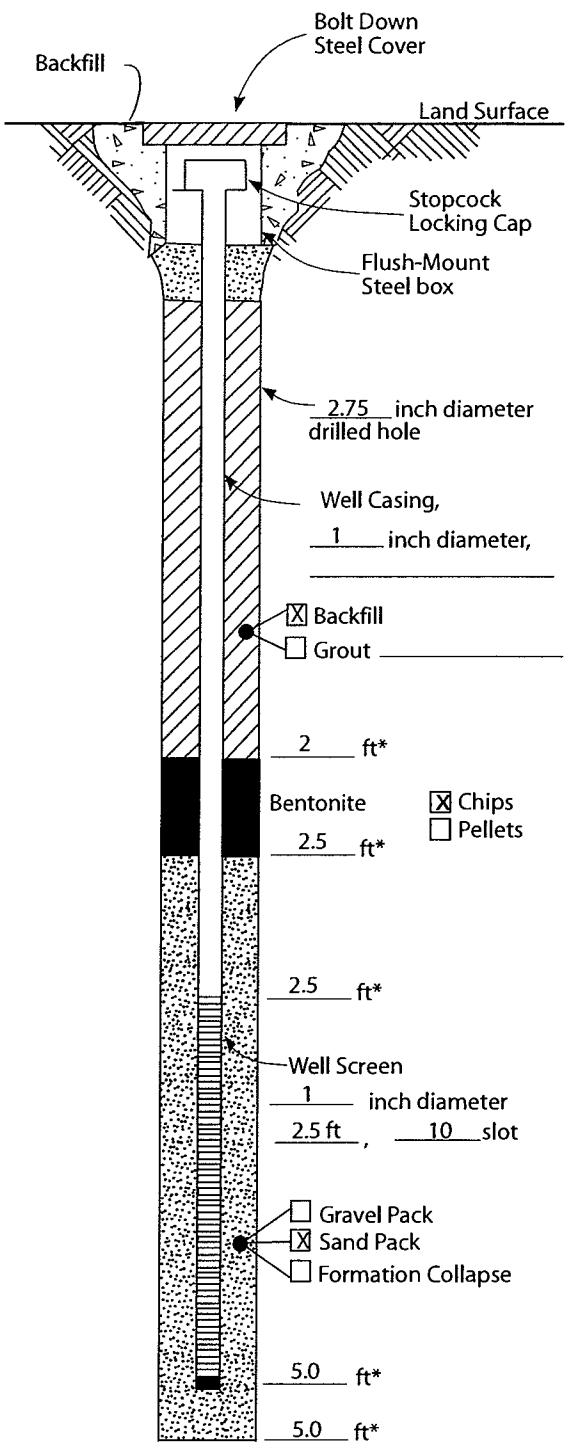
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screen: Longyear 1" Schedule 40 PVC, 0.010"slotted, factory cut, flat bottom end caps, stopcock valves. Red Flint #40 coarse sand filter pack: 29-42' 5-50 lb bags, 18-26' 4-50 lb bags, 4-11' 4-50 lb bags. Baroid 3/8" bentonite chips: 26-29', 1.5-50 lb bags and 5 gallons water, 11-18' 3.5-50 lb bag and 5 gallons water, 1-4' 1.75-50 lb bags and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg485.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-485

Town/City Kingsford - 1395 Plye Drive, Kodiak Mini Storage

County Dickinson

Permit No. NA

Land-Surface Elevation

1128.88 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/10/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

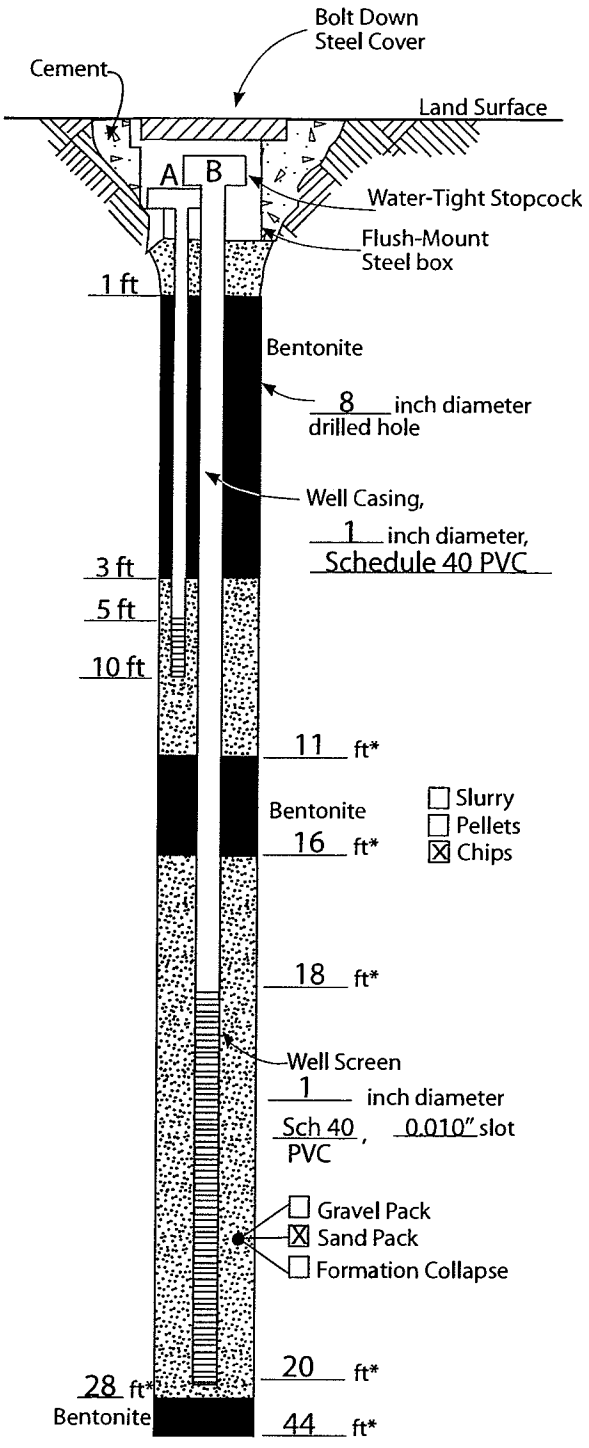
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg486ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-486 A/B

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation _____ Feet

1114.12 ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/3/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

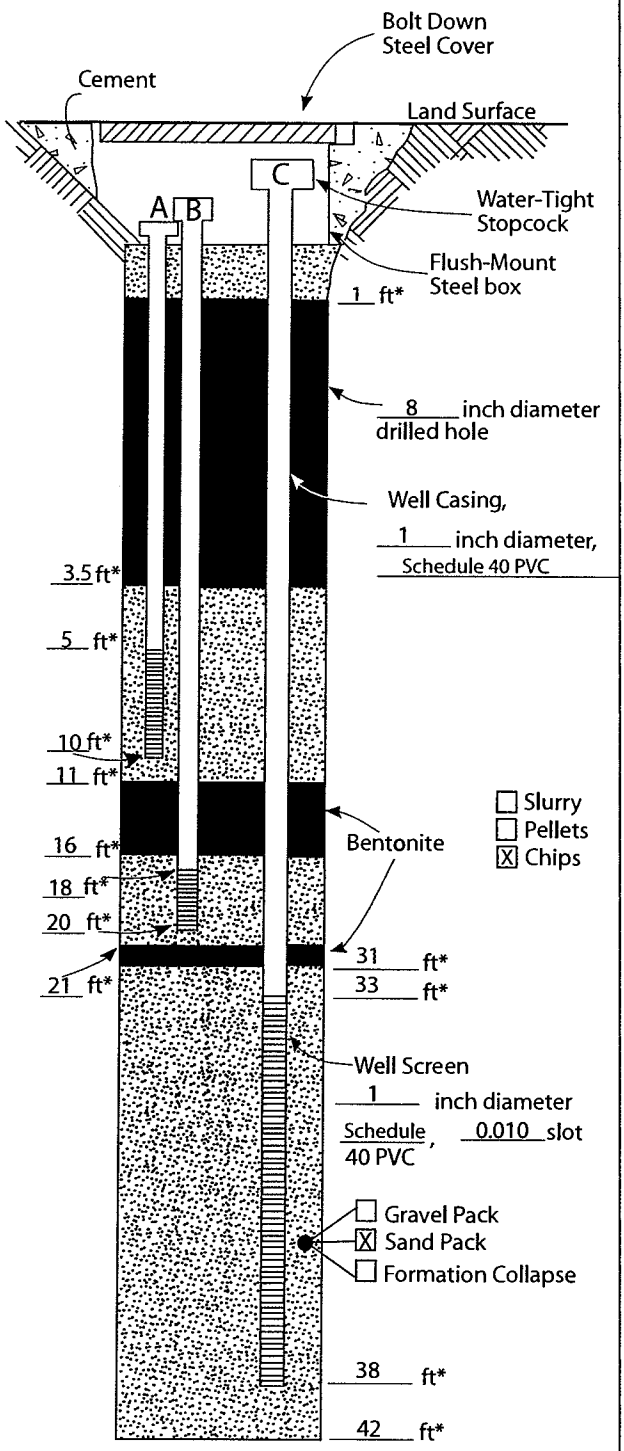
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screens/Riser: Longyear Schedule 40 PVC, 0.010" slot, flat bottom caps, screened 5-10' and 18-20'. Red Flint #40 coarse sand, filter pack: 16-28' 5-50 lb bags, 3-11' 4-50 lb bags. Baroid 3/8" bentonite chips: 28-44' 9-50 lb bags and 15 gallons water, 11-16' 2.5-50 lb bags and 10 gallons water, and 1-3' 2.5-50 lb bags and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg487abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-487 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.66 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/4/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

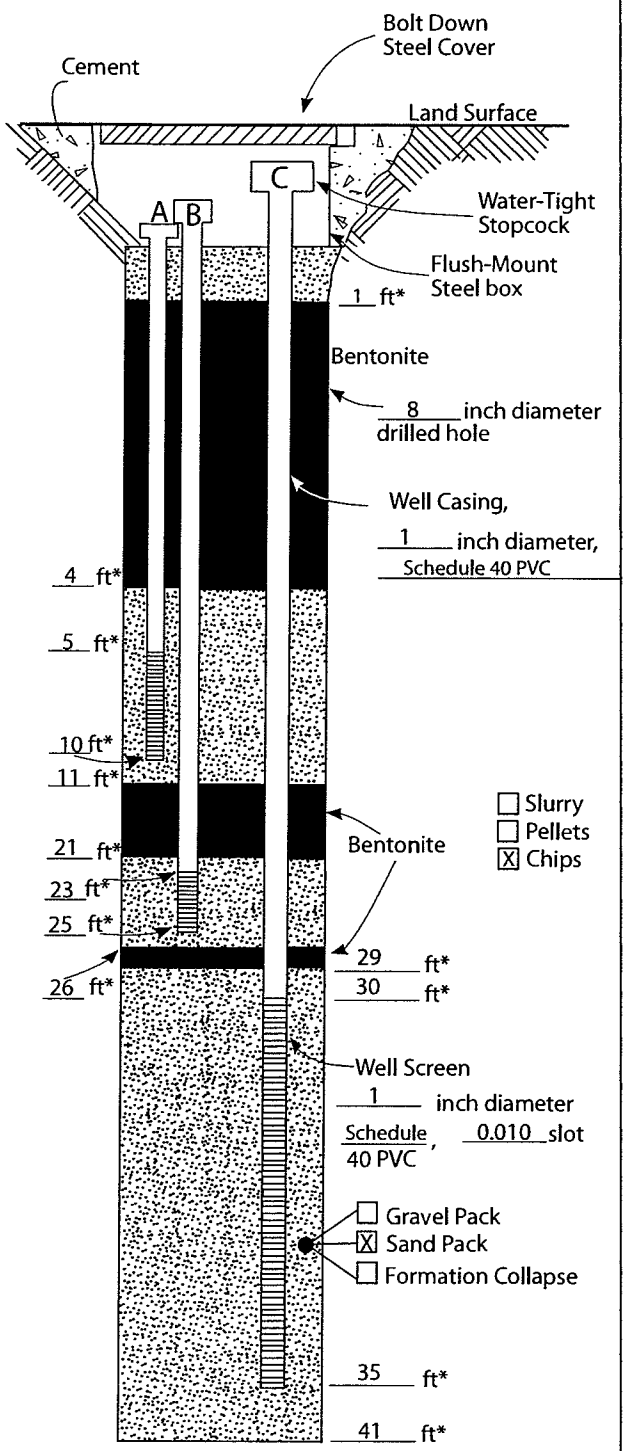
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screens/Riser: Schedule 40 PVC, 0.010"slotted by Longyear, screens 5-10', 18-20', and 33-38', flat bottom end caps. Red Flint #40 coarse sand filter pack: 31-42' 6-50 lb bags, 16-21' 2.5-50 lb bgas, 3.5-11' 4-50 bags. Baroid 3/8" bentonite chips 21-31' 5-50 lb bags 12 gallons water, 11-16' 2.25-50 lb bags 10 gallons water, and 1-3' 1.25-50 lb bags and 4 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg488abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-488 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.82 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/8/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

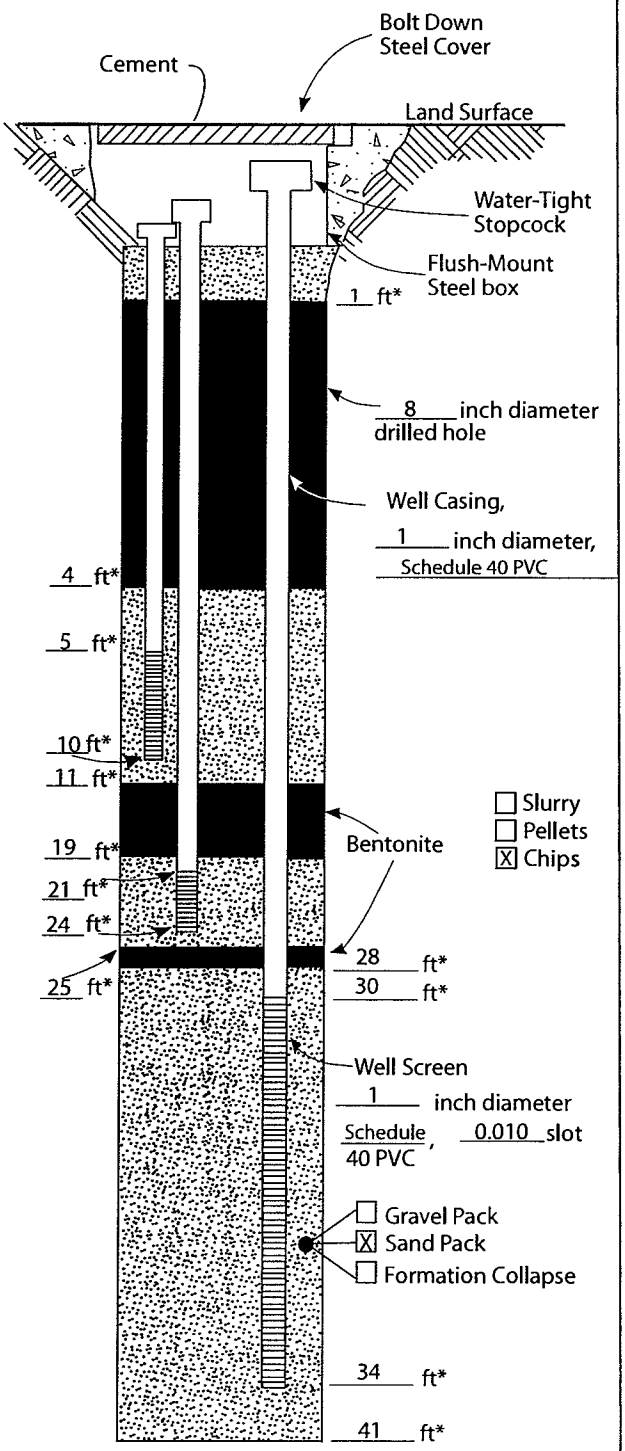
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Screen: Longyear 1" Schedule 40 PVC, 0.010"slotted, factory cut, flat bottom caps, stopcock valves. Red Flint #40 coarse sand filter pack: 29-41' 5-50 lb bags, 21-26' 3-50 lb bags, 4-11' 4-50 lb bags. Baroid 3/8" bentonite chips: 26-29' 1.25-50 lb bags and 5 gallons water, 11-21' 5-50 lb bags and 10 gallons water, and 1-4' 1.5-50 lb bags and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg489abc.ai

Project WI001095.0002 Well GMSG-489 A/B/C

Town/City Kingsford, Michigan - Northwoods

County Dickinson

Permit No. _____

Land-Surface Elevation and Datum 1117.34 feet ☒ surveyed ☐ estimated

Installation Date(s) 8/9/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

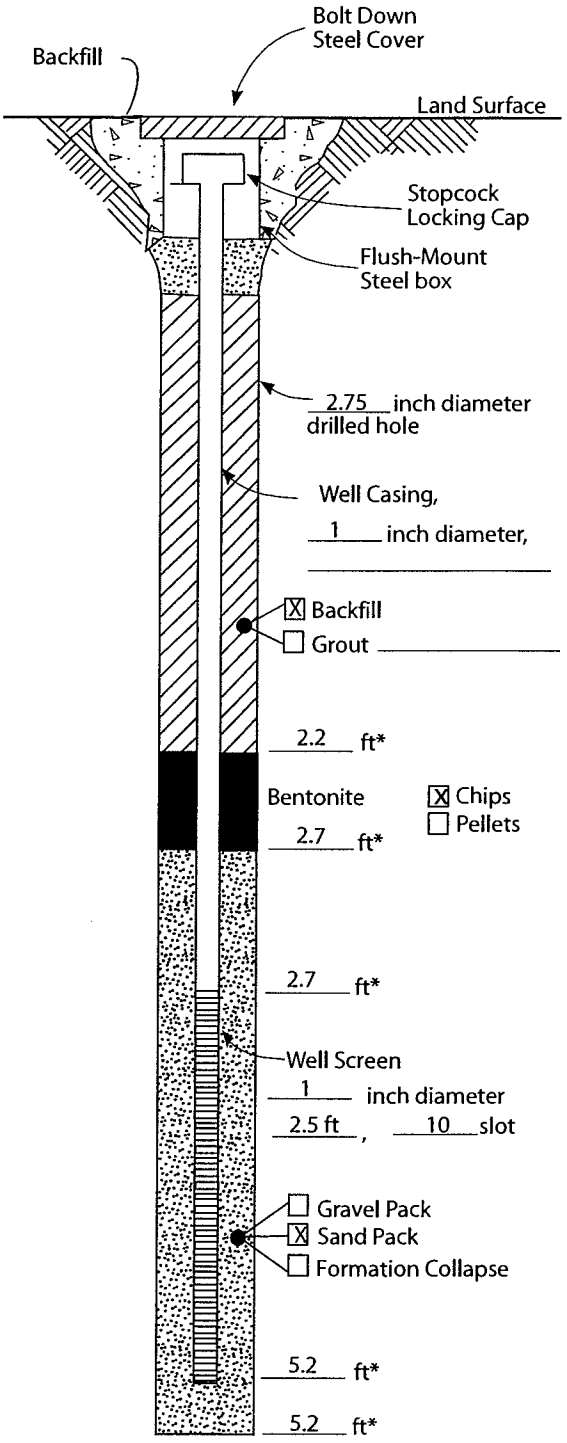
Specific Capacity _____ gpm/ft

Well Purpose Vapor extraction

Remarks Screens: Longyear 1" Schedule 40 PVC, 0.010"slot, factory cut, flat bottom end caps, stopcock valves. Red Flint #40 coarse sand filter pack: 28-41' 6-50 lb bags, 19-25' 3-50 lb bags, 4-11' 3.5-50 lb bags. Baroid 3/8" bentonite chips: 25-28' 1.75-50 lb bags and 5 gallons water, 11-19' 3.25-50 lb bags and 7 gallons water, and 1-4' 1.5-50 lb bags and 5 gallons water.

Prepared by Toni Schoen

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg490.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-490

Town/City Kingsford - 1395 Plye Drive, Kodiak Mini Storage

County Dickinson

Permit No. NA

Land-Surface Elevation

1129.00 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/10/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

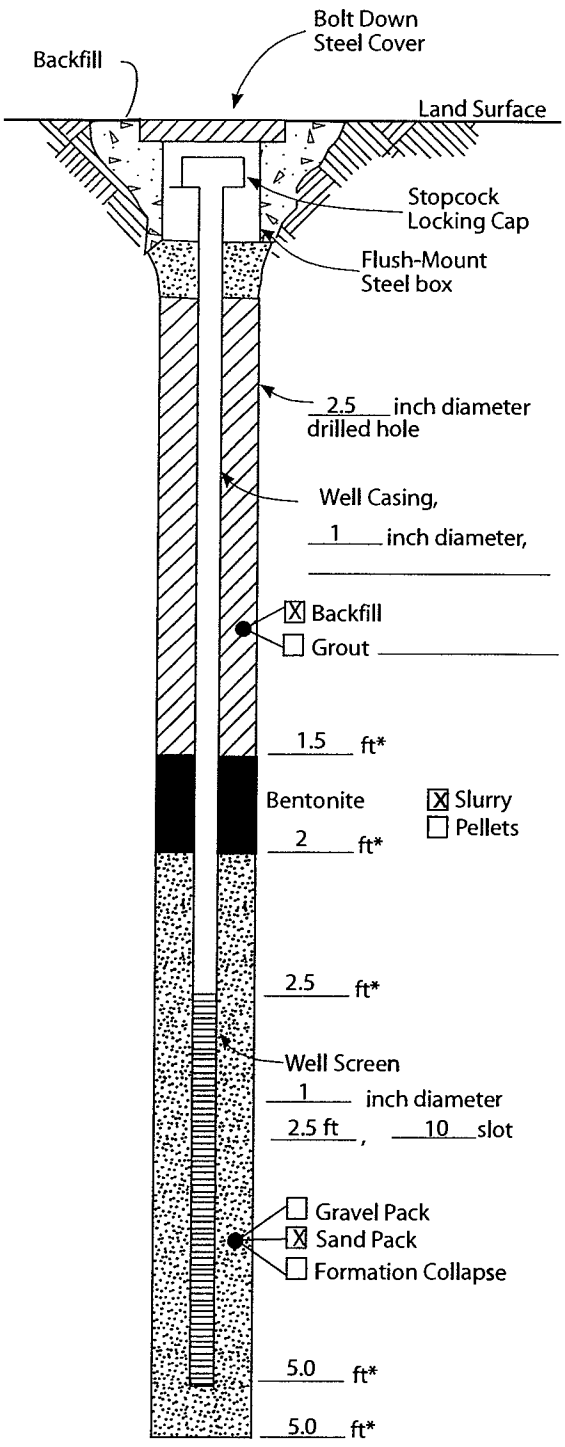
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg491.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-491

Town/City Kingsford - 1395 Plye Drive, Kodiak Mini Storage

County Dickinson

Permit No. NA

Land-Surface Elevation

1129.15 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/4/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

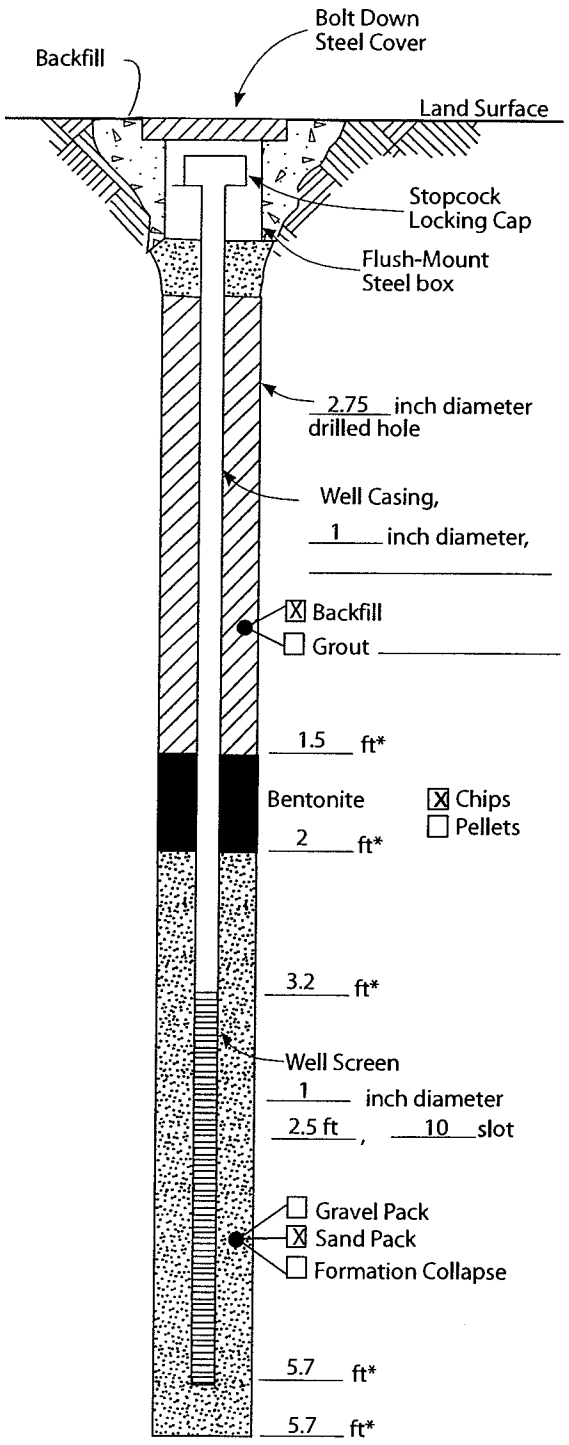
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg492.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-492

Town/City Kingsford - 1395 Plye Drive, Kodiak Mini Storage

County Dickinson

Permit No. NA

Land-Surface Elevation

1129.00 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/10/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

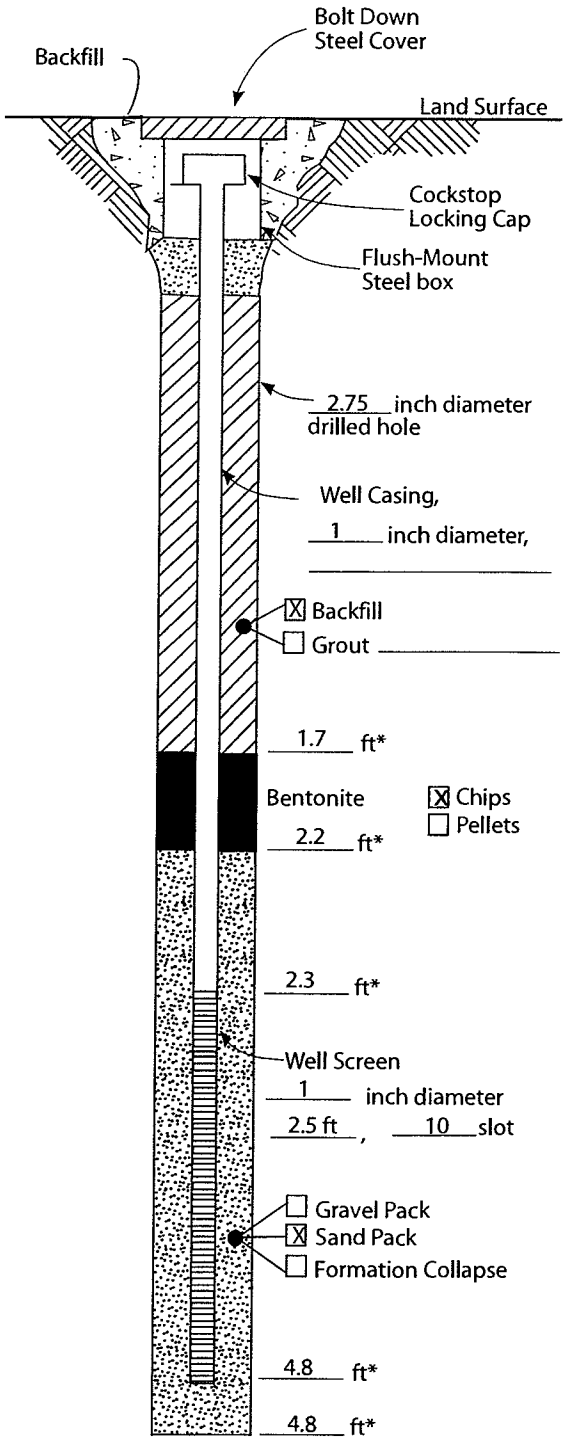
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg493.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-493

Town/City Kingsford - 1395 Plye Drive, Kodiak Mini Storage

County Dickinson

Permit No. NA

Land-Surface Elevation

1129.04 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/10/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

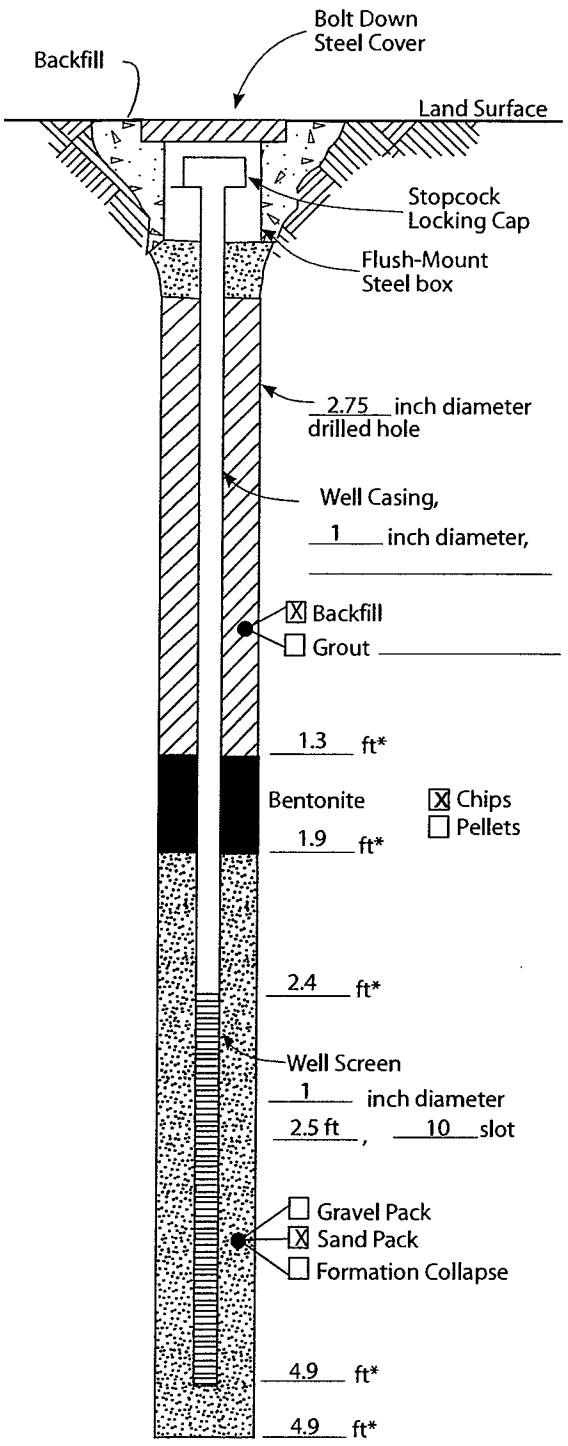
Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg494.ai

Well Construction Log

(Flush Mounted Well)

Project Ford/Kingsford WI001095.0002 Well GMSG-494

Town/City Kingsford - Bianco's Fitness 601 Westwood

County Dickinson

Permit No. NA

Land-Surface Elevation

1128.68 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/10/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

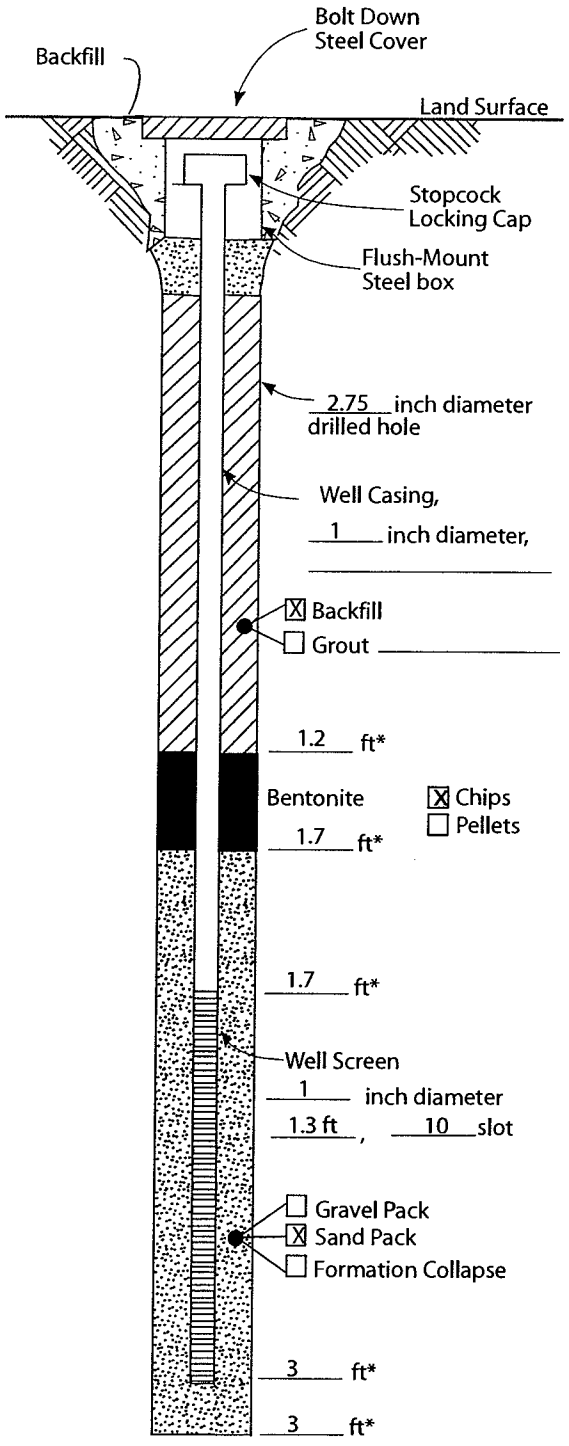
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by RJG

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg495.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-495

Town/City Kingsford - Bianco's Fitness 601 Westwood

County Dickinson

Permit No. NA

Land-Surface Elevation

1128.50 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/18/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

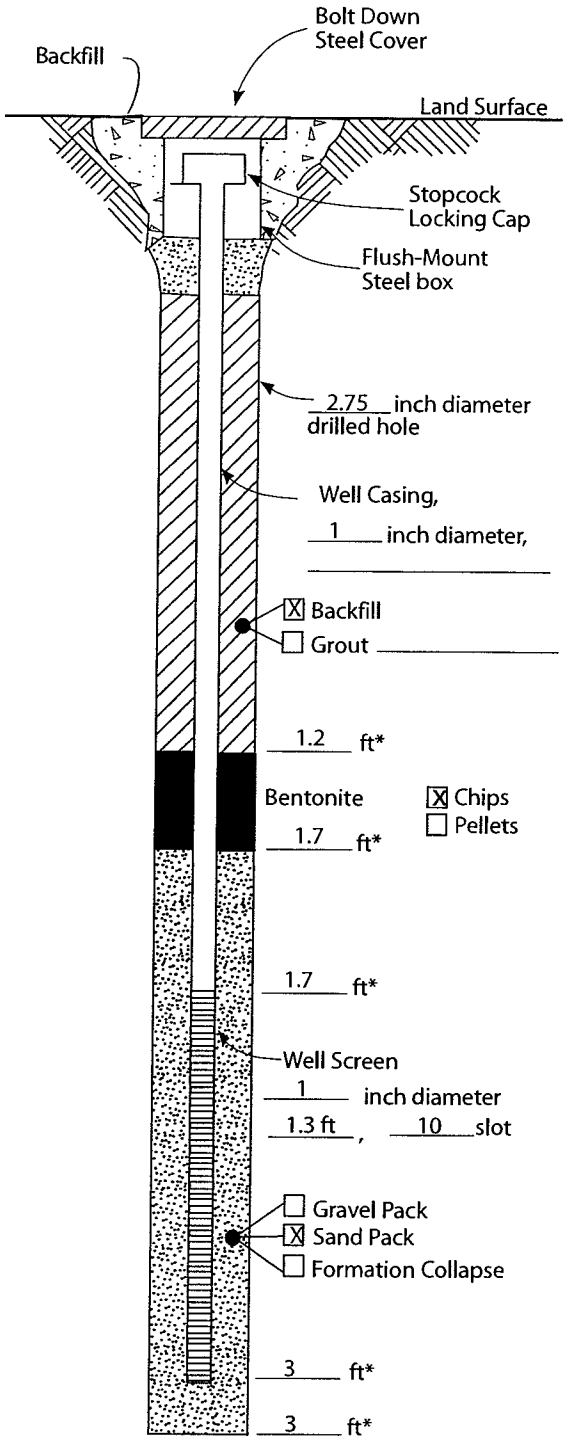
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Probe length is 32" from stopcock tip to bottom. Building slab goes down 2' screen covers a foot below that.

Prepared by RJG

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg496.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-496

Town/City Kingsford - Bianco's Fitness 601 Westwood

County Dickinson

Permit No. NA

Land-Surface Elevation

1128.66 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/18/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

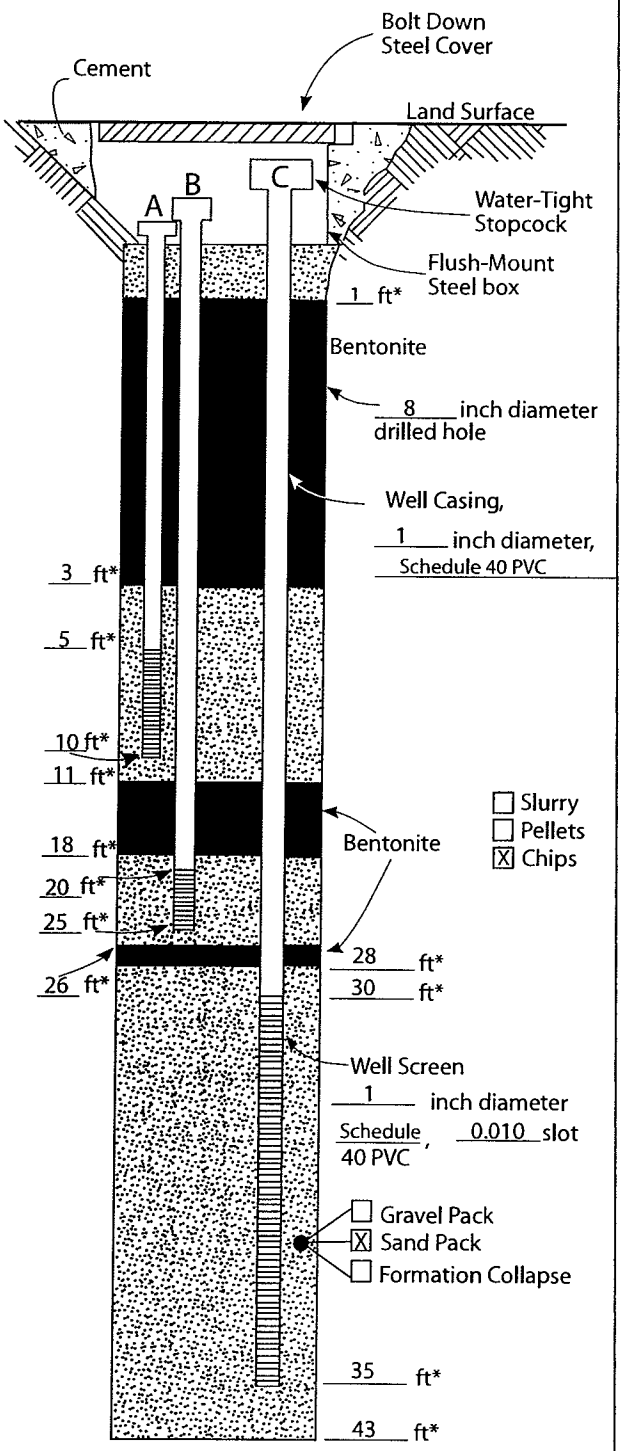
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Probe length is 31" from stopcock tip to bottom. Building slab (2' deep) screen covers a foot below.

Prepared by RJG

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg497abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-497 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation

1118.86 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/16/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

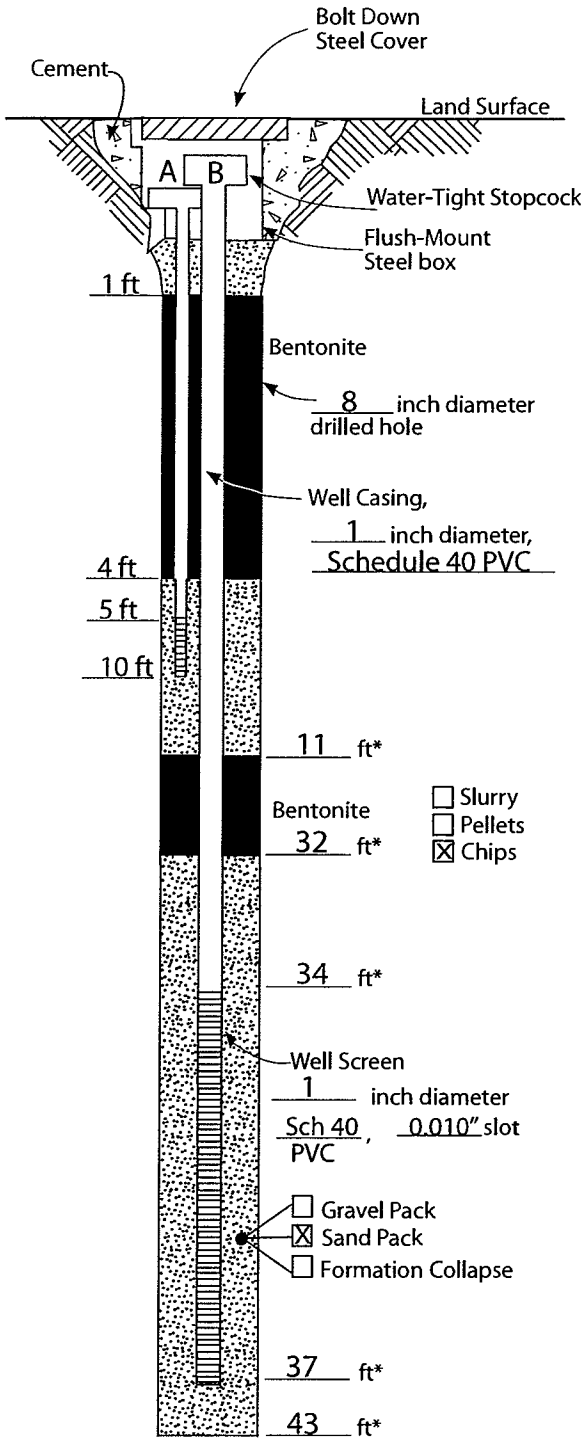
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probes

Remarks Screens: Longyear 1" sch 40 PVC, 0.010" slot, factory cut, flat bottom caps, stopcock value: Screened 10-5', 25-20', 35-30'., filter pack: Red Flint #40 coarse sand filter, 43-28' 6-50 lb bags, 26-18' 4-50 lb bags, 11-3' 4-50 lb bags; bentonite: Baroid Hole plug 3/8" chips, 28-26 1-50 lb bags and 5 gallons water, 18-11' 3-1/2-50 lb bag and 7 gallons water.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg498ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-498 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1119.53 Feet

☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/17/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

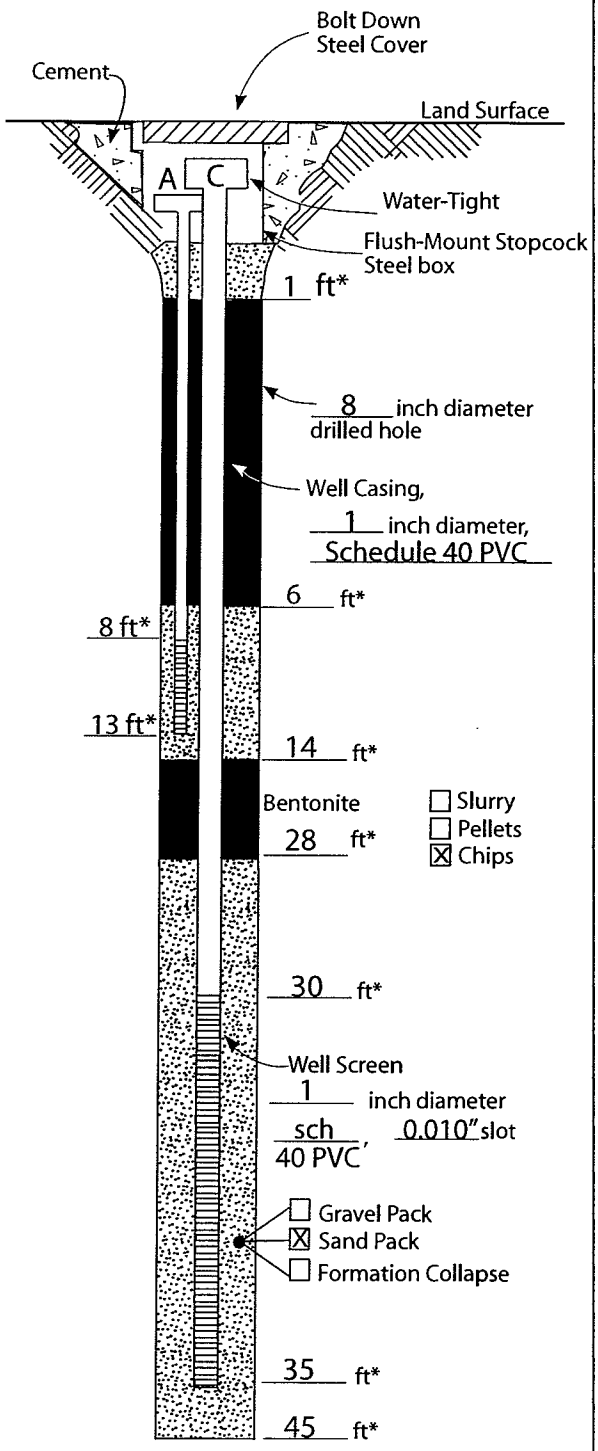
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probes

Remarks Screens: Longyear 1" Schedule 40 PVC, 0.010" slot, factory cut, flat bottom caps, stopcock valve. Screened: 34-37, 5-10 ft, filter pack #40 Red Flint coarse silica sand, Bentonite seal Baroid hole plug 3/8" Wyoming grade chips, 11.5 bags chips, 9 bags sand.

Prepared by Bruce Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg499ac-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-499 A/C

Town/City Kingsford

County Dickinson

Permit No. NA

Land-Surface Elevation 1120.44 Feet

☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/18/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

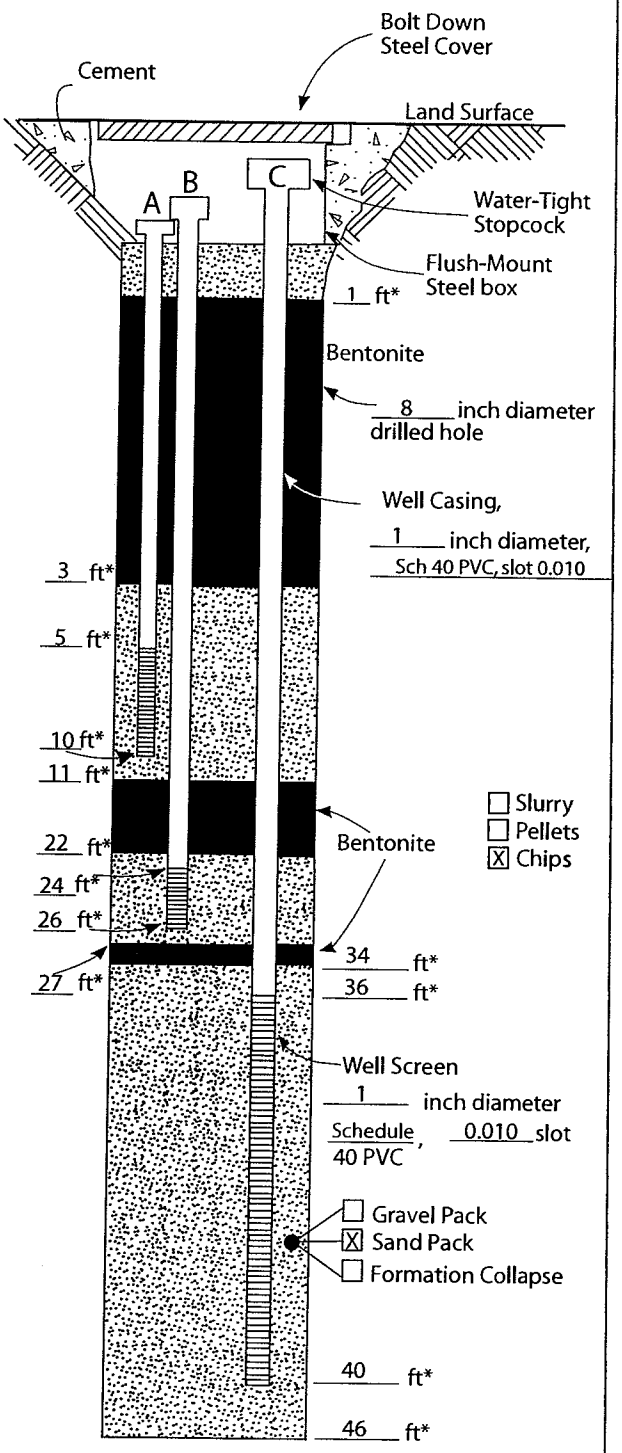
Specific Capacity -- gpm/ft

Well Purpose Commericial Soil Vapor Probes

Remarks Screens: Longyear 1" sch 40 PVC, slot 0.010, factory cut, flat bottom caps, stopcock, valve filter pack: Red Flint #40 coarse sand (6-14) 4-50 lb bags, (28-45) 6-50 lb bags; bentonite: Baroid Hole Plug 3/8" chips (1-6) 2.5-50 lb bags and 6 gallons water (14-28) 7-50 lb bags and 10 gallons water.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg500abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-500 A/B/C

Town/City Kingsford, Michigan - Khoury's

County Dickinson

Permit No. NA

Land-Surface Elevation 1120.87 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/19/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

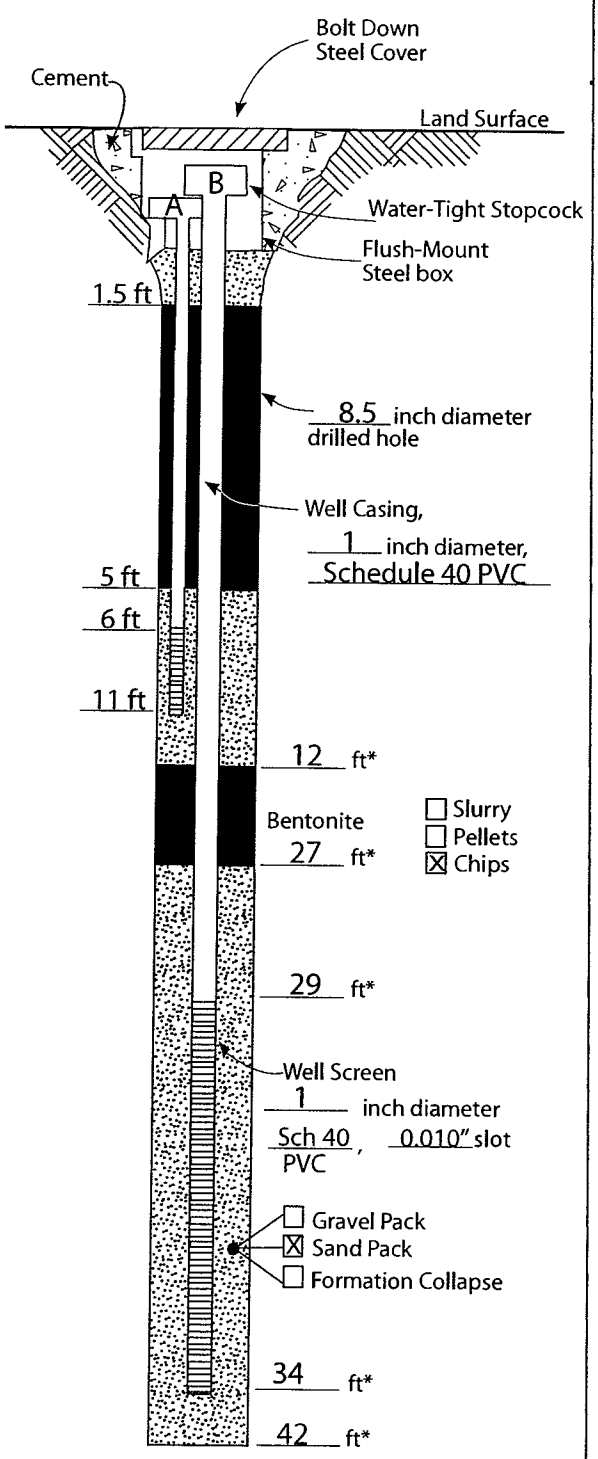
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probes

Remarks Screens: Longyear 1" sch 40 PVC, 0.010" slot, factory cut, flat bottom caps, stopcock value; filter pack: Red Flint #40 coarse sand (46-34) 6-50 lb bags, (27-22) 4-50 lb bags, (11-3) 4-50 lb bags; bentonite: Baroid Hole Plug 3/8" chips (34-27) 4-50 lb bags and 6 gallons water (22-11) 6-50 lb bags and 10 gallons water, (3-1) 1-50 lb bag and 5 gallons water.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg501ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-501 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1117.51 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/19/05

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

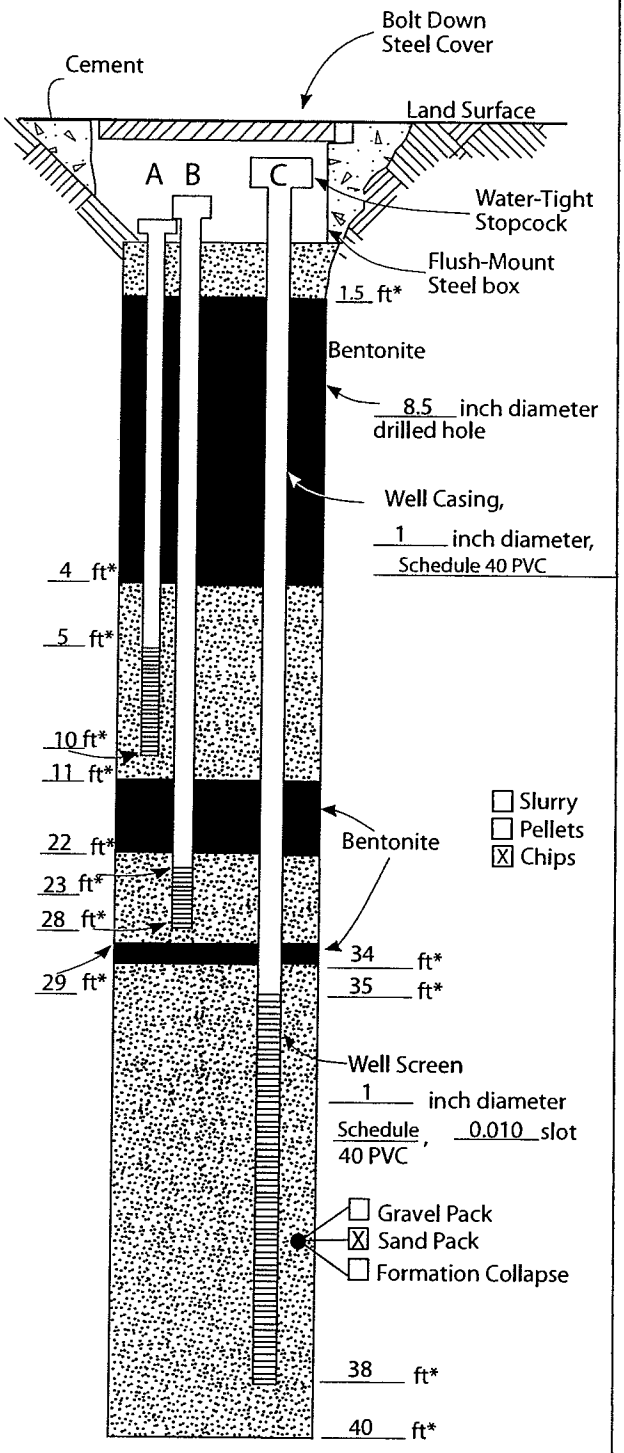
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by Bruce Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg502abc.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-502 A/B/C

Town/City Kingsford, Michigan - Inside Northwoods Building

County Dickinson

Permit No. NA

Land-Surface Elevation

1117.00 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/21/05

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

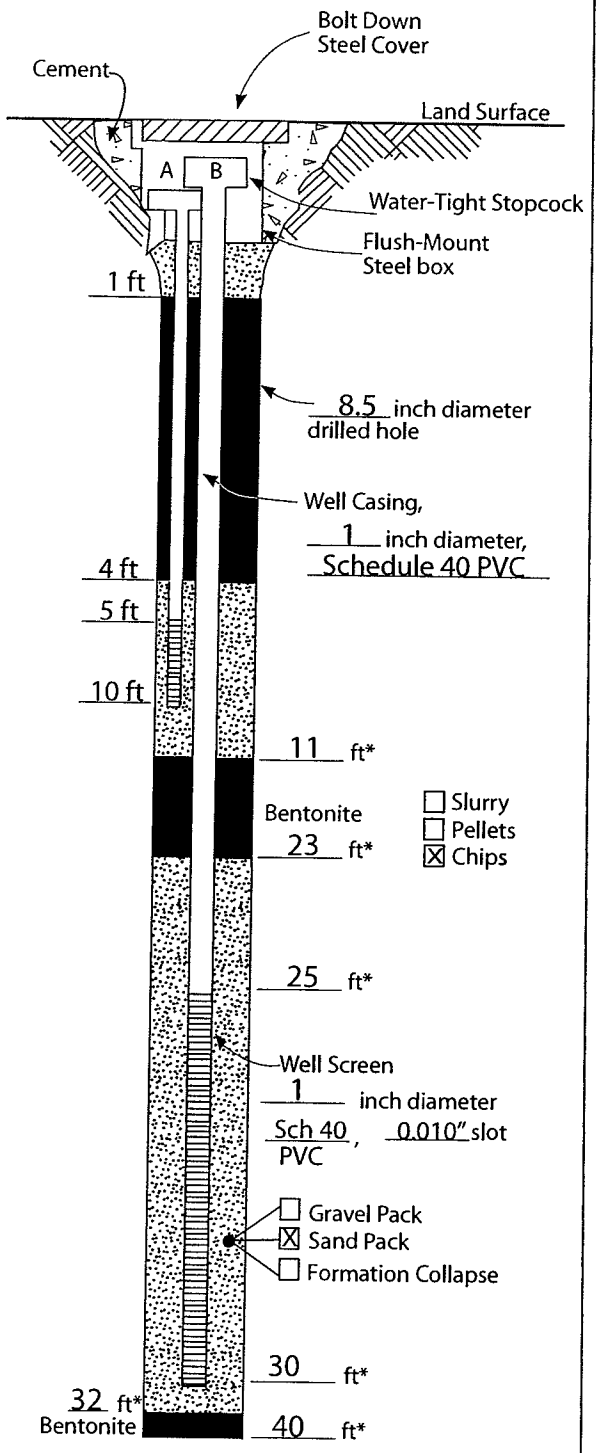
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probes

Remarks Filter pack sand - Flat Rock Bagging silica sand - 50 lb bags: Bentonite seal - Baroid holeplug 3/8" coarse chips, 50 lb bags. Filter pack sand: 34-40' 1.5 bag, 22-29 ft 3.5 bag, 11-4 ft 3.5 bag. Bentonite Chips: 34-29' 2 bags, 22-11 ft 4.5 bags, 4-1.5 ft 1.5 bags.

Prepared by Bruce Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg503ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-503 A/B

Town/City Kingsford, Michigan Inside Northwoods Building

County Dickinson

Permit No. NA

Land-Surface Elevation 1116.85 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/20/05

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

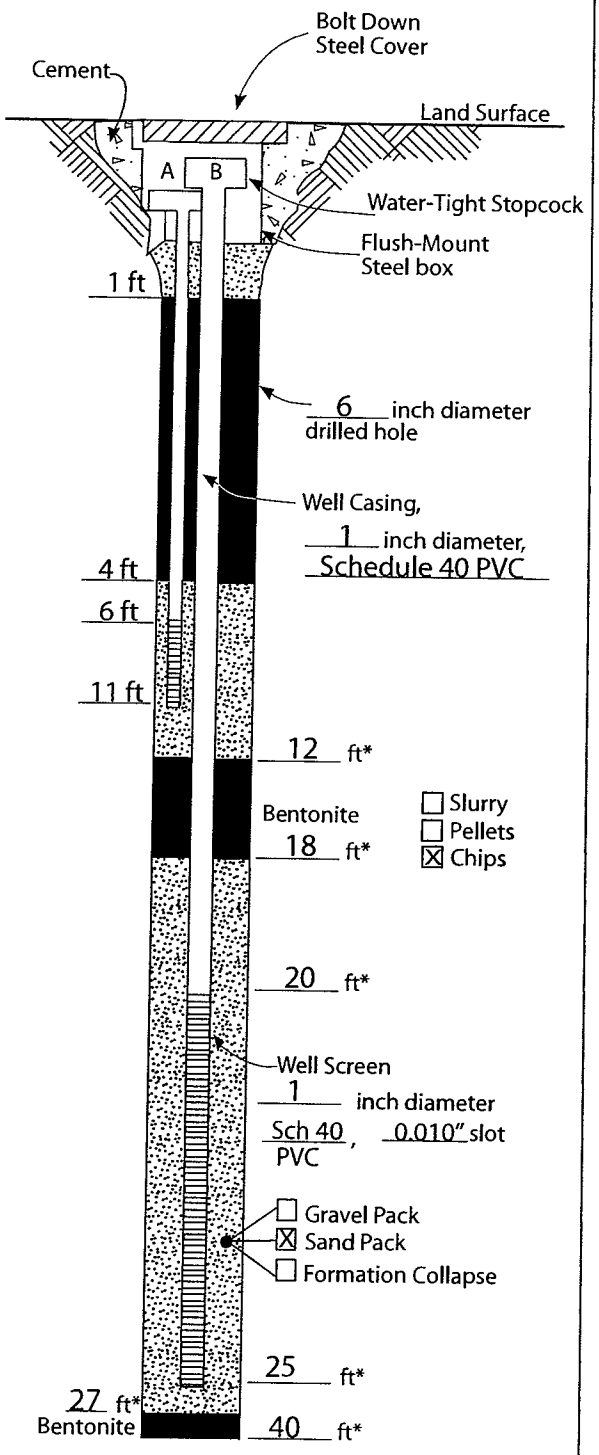
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Filter pack sand coarse silica sand, Flat Rock Bagging, 50 lb bags: Bentonite seal, Baroid holeplug 3/8" coarse Wyoming grade Bentonite chips, 50 lb bags 40-32 ft 2 bags Bentonite, 32-23' 4.5 bags sand, 23-11 ft 5 bags bentonite, 11-4 ft 4.5 bags sand, 4-1.5' bag bentonite.

Prepared by Bruce Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg504ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-504 A/B

Town/City Kingsford, Michigan Inside Northwoods Building

County Dickinson

Permit No. NA

Land-Surface Elevation 1116.84 Feet

☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/21/05 - 8/22/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

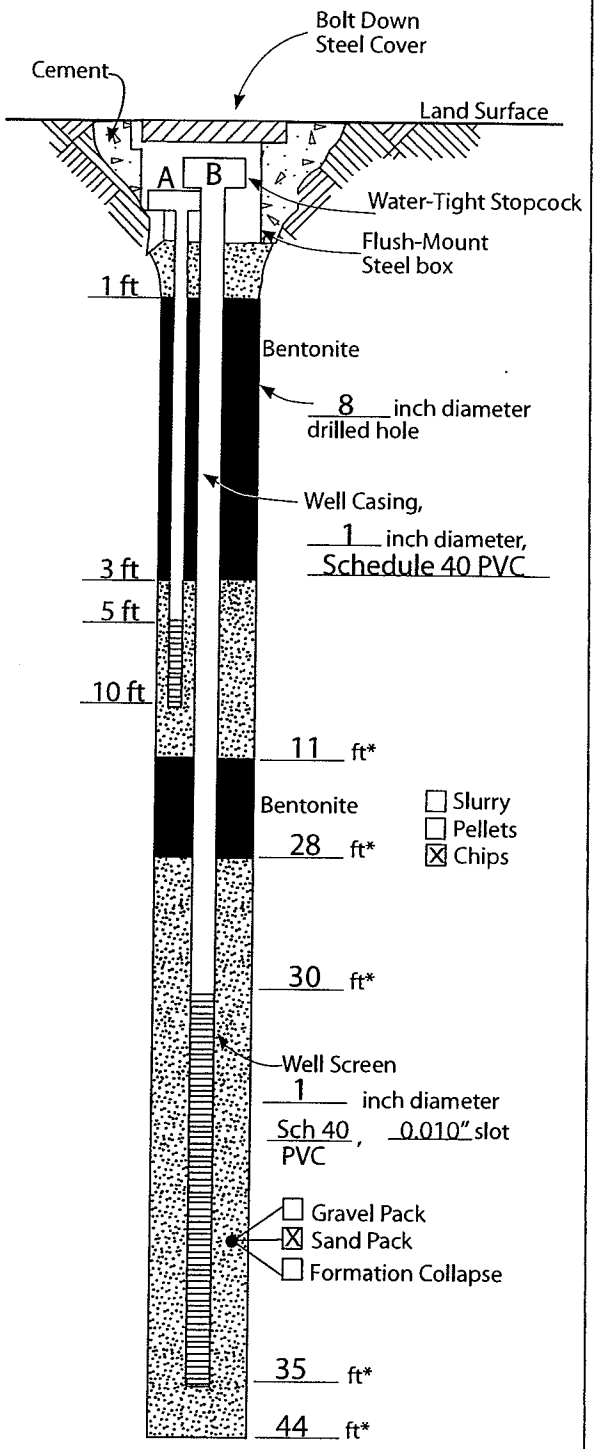
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen: 1" sch 40 PVC, slot 0.010, stopcock valve - 25-20' and 11-6', filterpack: Flat rock coarse sand 27-28, 12-4'; bentonite: Baroid hole plug 3/8" chips, 40-27', 18-12', 4-1'.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg505ac-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-505 A/C

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1120.98 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/19/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

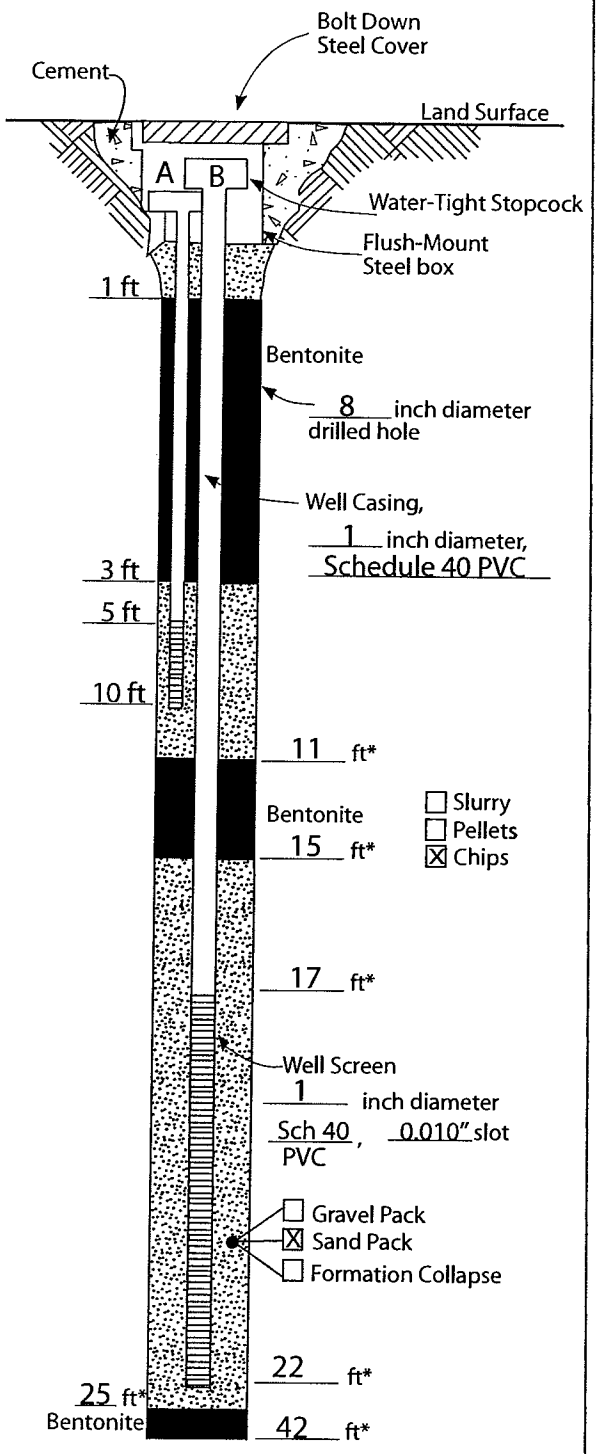
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probes

Remarks Screens: Longyear 1" PVC Schedule 40, 0.010" slot, factory cut, flat bottom caps, stopcock valve; filter pack: Red Flint #40 coarse sand, (44-28) 7-50 lb bags, (11-3) 4-50 lb bags; Bentonite: Baroid Hole Plug 3/8" chips (28-11) 8-50 lb bags and 10 gallons water, (3-1) 1-1/2-50 lb bags and 5 gallons water.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg506ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-506 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1126.40 Feet

☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 8/20/05

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

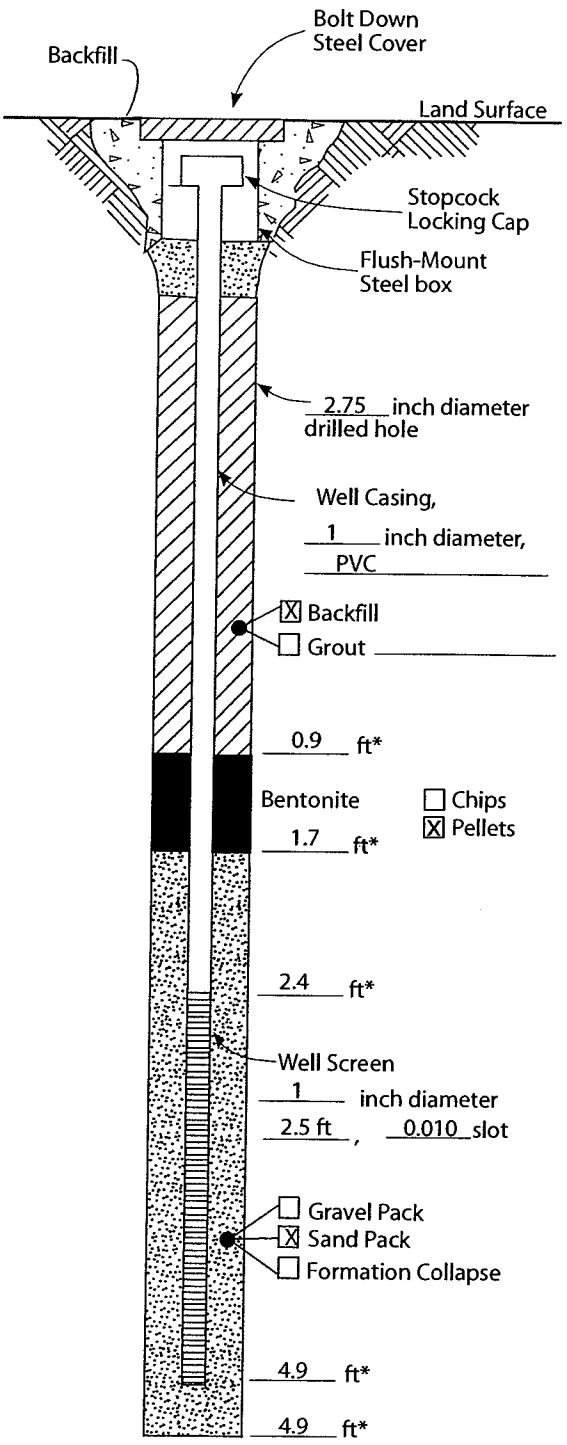
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probes

Remarks Screens: Longyear 1" PVC Schedule 40, 0.010" slot, factory cut, flat bottom caps, stopcock valve; filter pack: Red Flint #40 coarse sand, (25-15) 5-50 lb bags, (11-3) 5-50 lb bags; Bentonite: Baroid Hole Plug 3/8" chips (42-25) 7-50 lb bags and 10 gallons water, (15-11) 2.5-50 lb bags and 5 gallons water (3-1) 1.25-50 lb bags and 5 gallons water.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg507-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-507

Town/City Kingsford - Kingdom Hall

County Dickinson

Permit No. NA

Land-Surface Elevation

1132.17 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 9/7/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

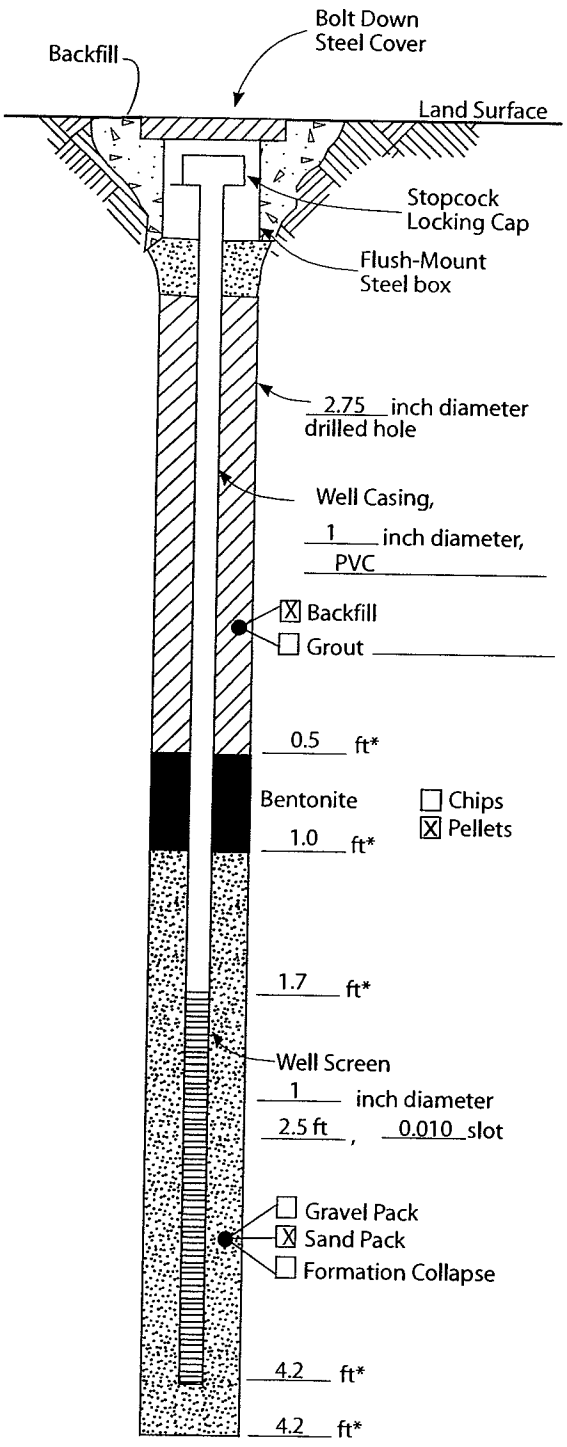
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Soil gas monitoring is located on the east side of the building in landscaping rock. It is south of the main entrance inthe corner about 12" from north and east brick walls, in front of large rock, behind spirea bushes.

Prepared by Tricka Nelson

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg508-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-508

Town/City Kingsford - Kingdom Hall

County Dickinson

Permit No. NA

Land-Surface Elevation

1132.12 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 9/12/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

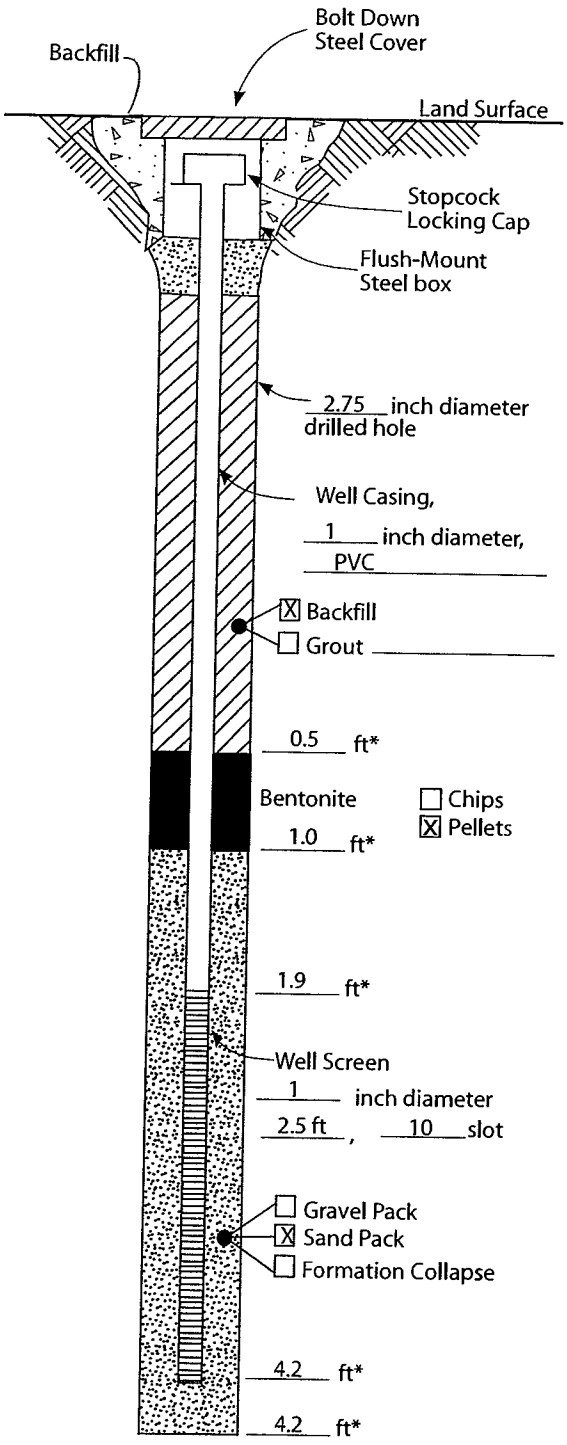
Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks GMSG-508 is located on the west side of the building next to the northern section of side in the middle and is 1.5 feet away from the building

Prepared by Tricka Nelson



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg509-wcl.ai

Well Construction Log
(Flush Mounted Well)

Project Ford/Kingsford WI001095.0002 Well GMSG-509

Town/City Kingsford - Kingdom Hall

County Dickinson

Permit No. NA

Land-Surface Elevation

1132.22 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 9/12/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

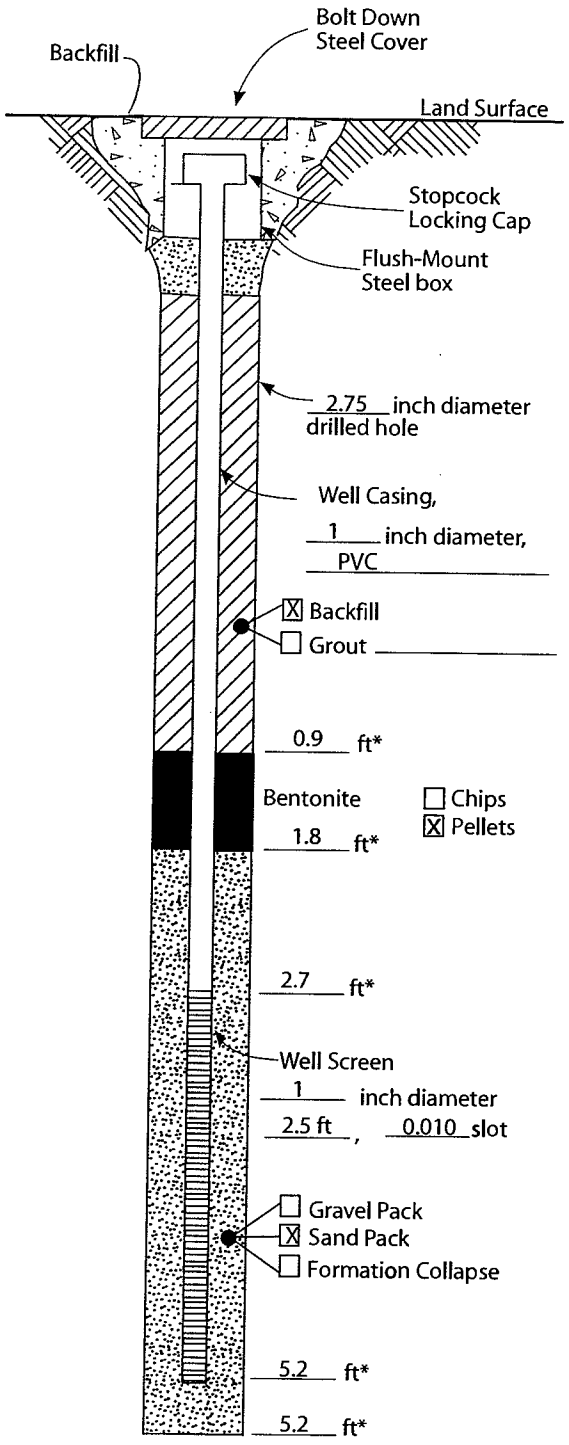
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks GMSB-509 is located on the north side of the building; about 38' from northwest corner in landscaping rock behind two large rocks. It is about 1' away from the building along siding edge.

Prepared by Tricka Nelson

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg510-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-510

Town/City Kingsford - Balsam Street Church

County Dickinson

Permit No. NA

Land-Surface Elevation

1122.57 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 9/12/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

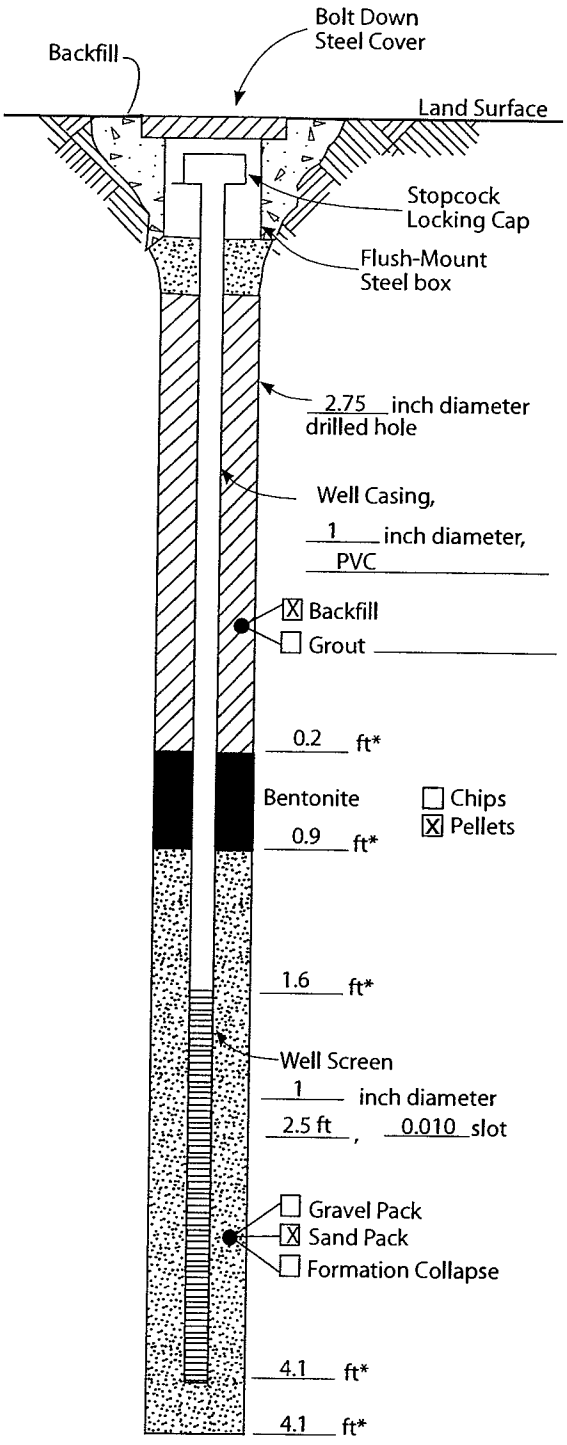
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks GMSG-510 is located on the west side of the building about in the middle under an window and is next to the Mugo pines.

Prepared by Tricka Nelson

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg511-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-511

Town/City Kingsford - Balsam Street Church

County Dickinson

Permit No. NA

Land-Surface Elevation

1126.87 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 9/13/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

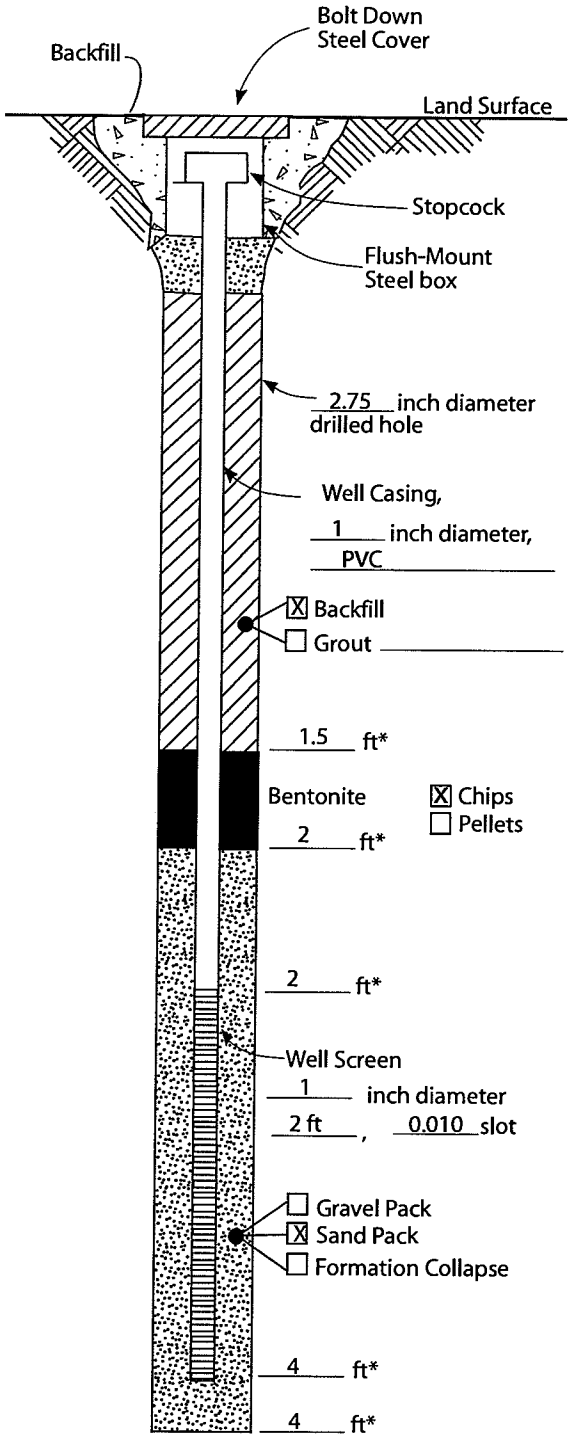
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks GMSG-511 is located on the west side of the building in the very northern corner, about 1' away from the building.

Prepared by Tricka Nelson

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg512-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-512

Town/City Kingsford - Grace Baptist Church -1295 Pyle Drive

County Dickinson

Permit No. NA

Land-Surface Elevation

1126.45 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 10/12/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

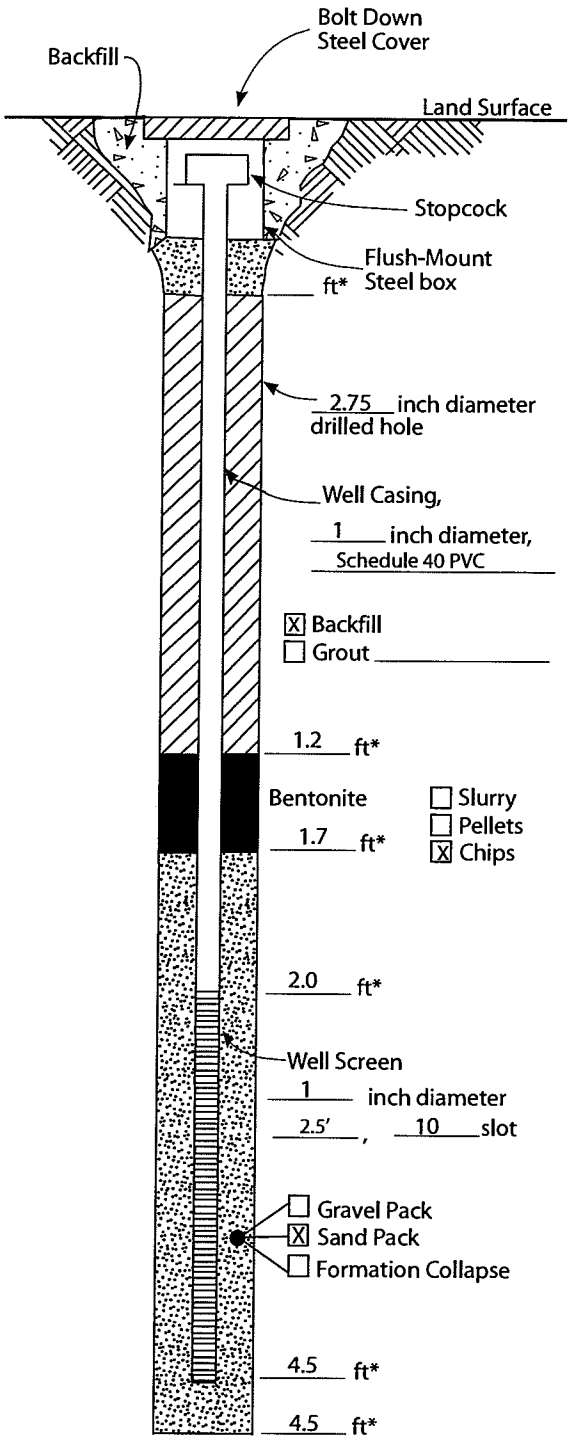
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by JM/KW

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg513.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-513

Town/City Kingsford, Michigan - Grace Baptist Church

County Dickinson

Permit No. NA

Land-Surface Elevation

1124.42 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/26/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

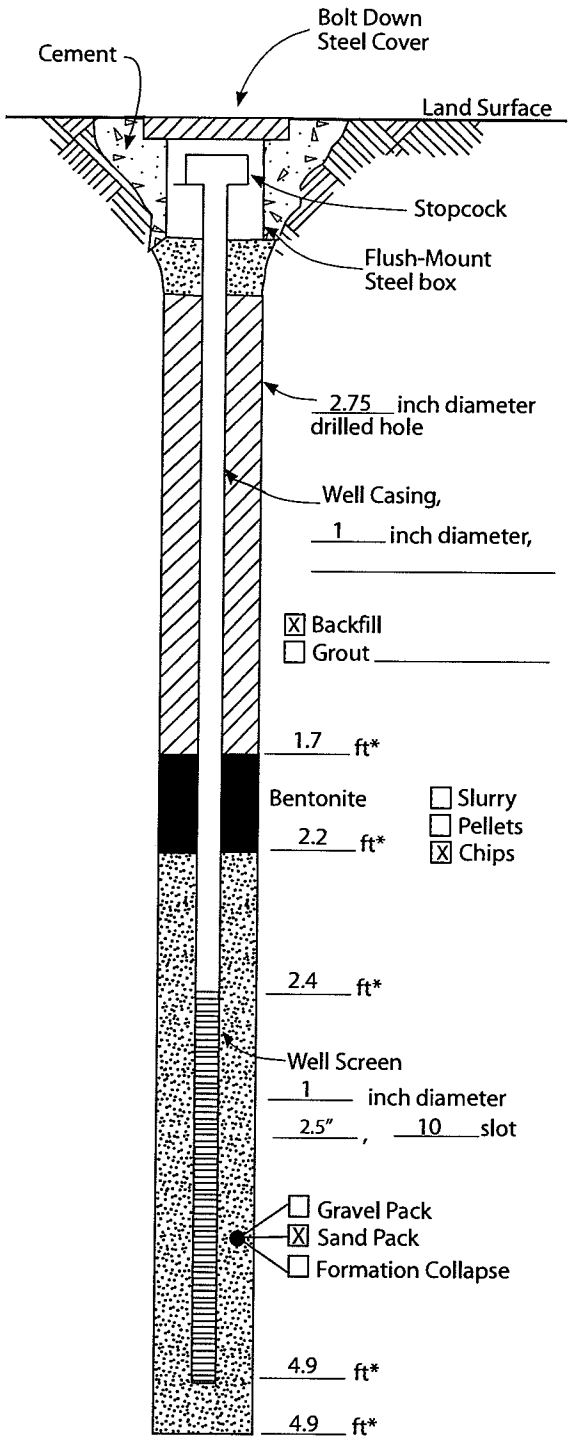
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on southside of building. 11'3" from southeast corner of wheelchair ramp and 1 foot from ramp to middle of well casing.

Prepared by C. Anderson/K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg514.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-514

Town/City Kingsford, Michigan - Balsam St. Church - 3245 Balsam

County Dickinson

Permit No. NA

Land-Surface Elevation

1120.27 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 10/26/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

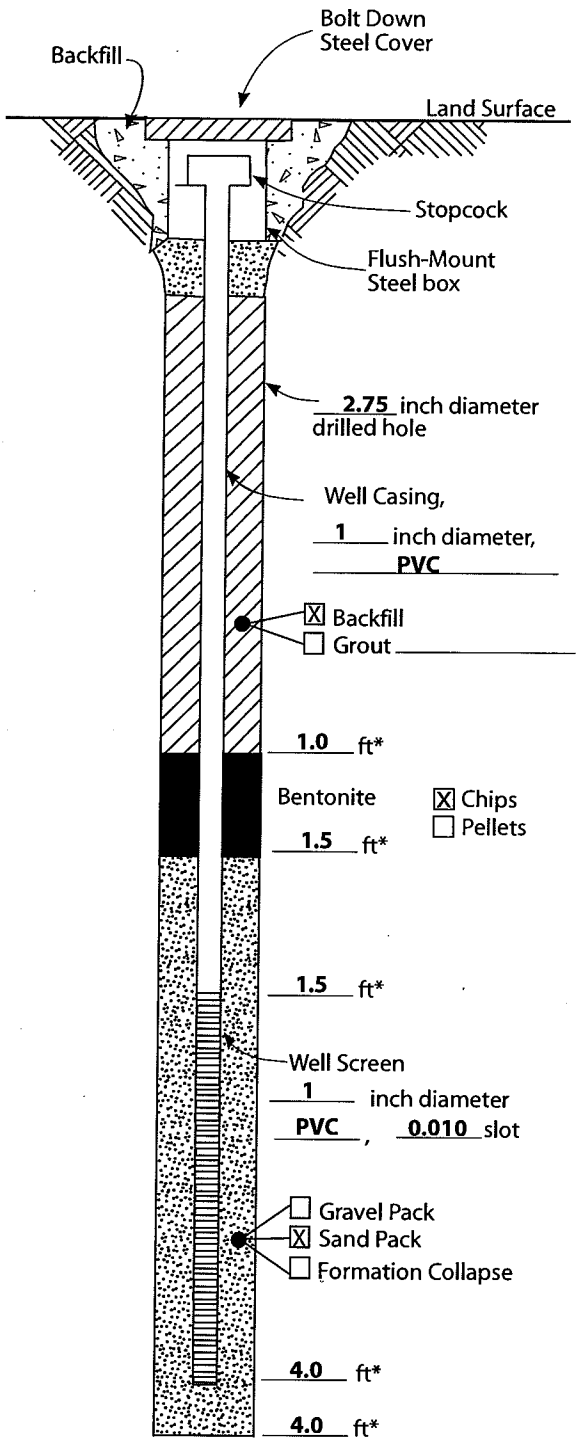
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on westside of building under middle window above wheelchair ramp, in between handicapped signs. 10" out from wall to middle of well casing.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-515**

Town/City **Kingsford/Larson's Custom Counters**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1113.3 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **4/20/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity ____ gpm/ft Date ____

Specific Capacity ____ gpm/ft

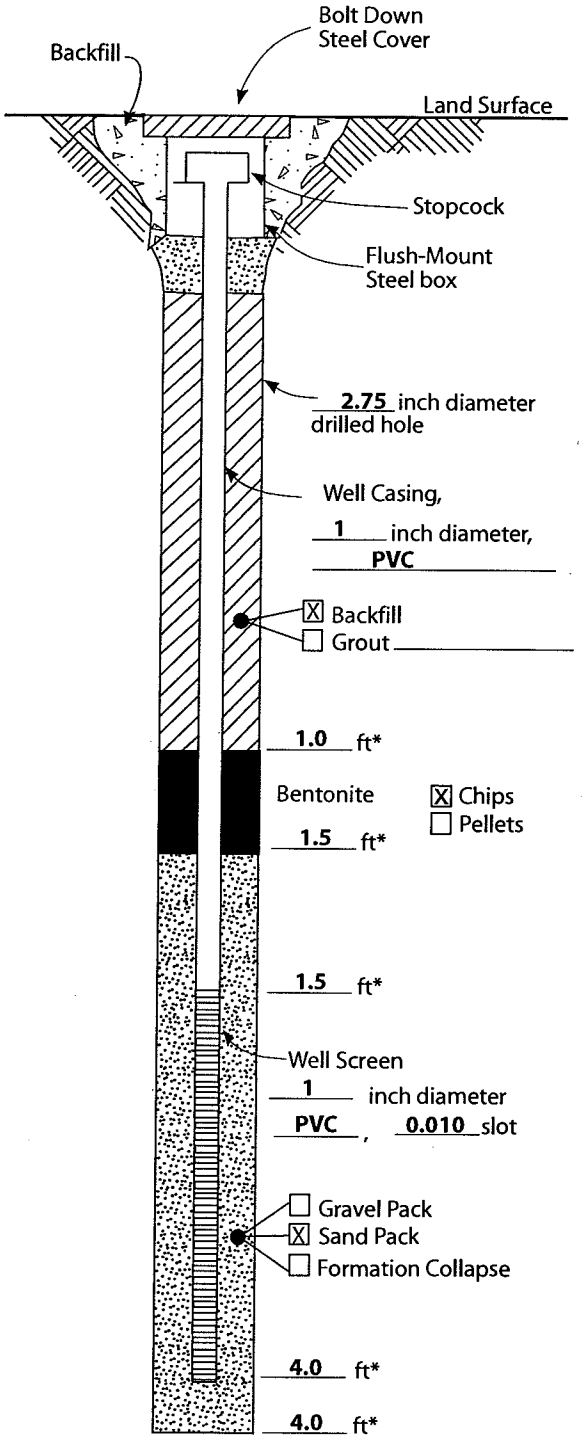
Well Purpose **Commercial Soil Vapor Probe**

Remarks **Well is located on the northside under the peak, 22" out.**

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg515-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg516-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-516**

Town/City **Kingsford/Larson's Custom Counters**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1113.1 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **4/20/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity ____ gpm/ft Date ____

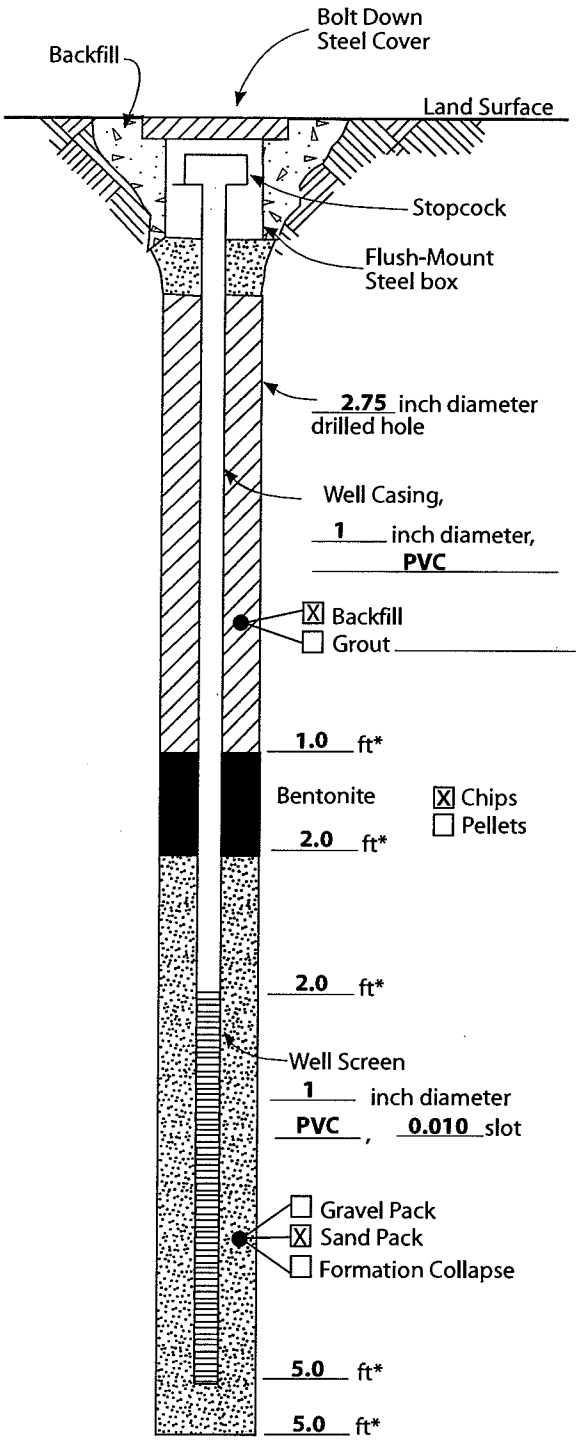
Specific Capacity ____ gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks **Well is located on the northside under the peak, 22" out.**

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg517-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-517**

Town/City **Kingsford/Larson's Custom Counters**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1113.2 feet [X] surveyed [ ] estimated

Datum **Mean sea level**

Installation Date(s) **4/27/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

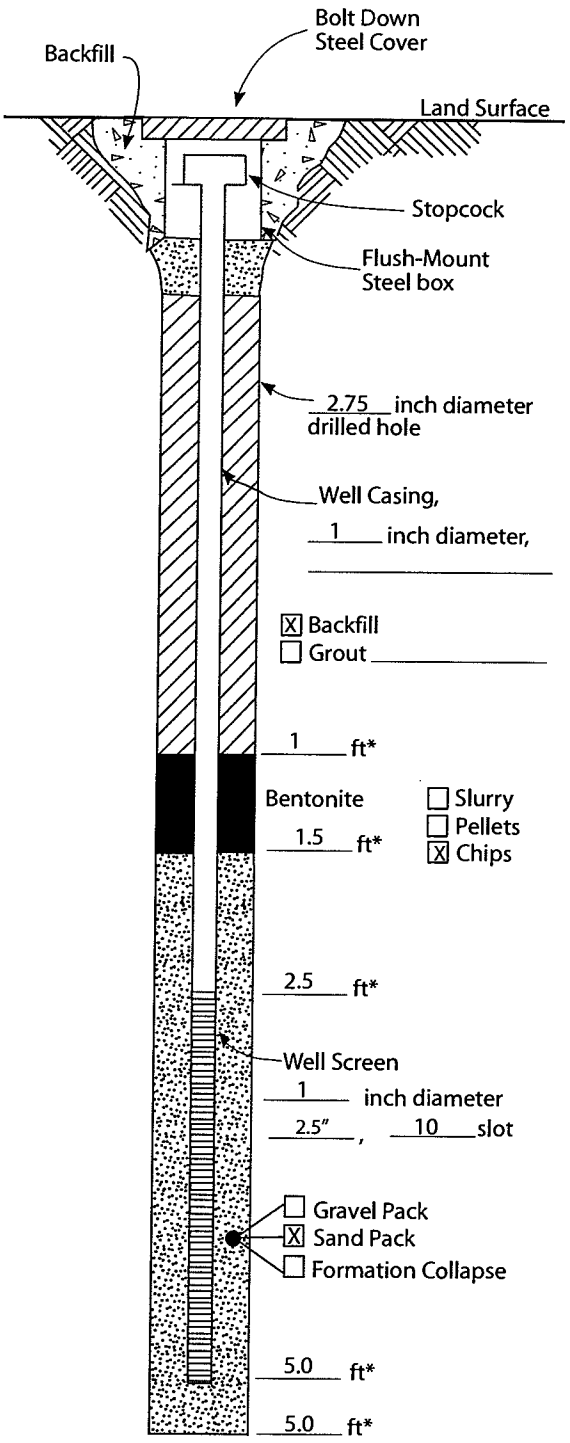
Specific Capacity ____ gpm/ft Date ____

Specific Capacity ____ gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks **Well is located on south side, 10' from southwest corner, 19" out.**

Prepared by **K. Waldbillig**



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg518.ai

Well Construction Log
(Flush Mounted Well)

Project Ford/Kingsford WI001095.0002 Well GMSG-518

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1115.6 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

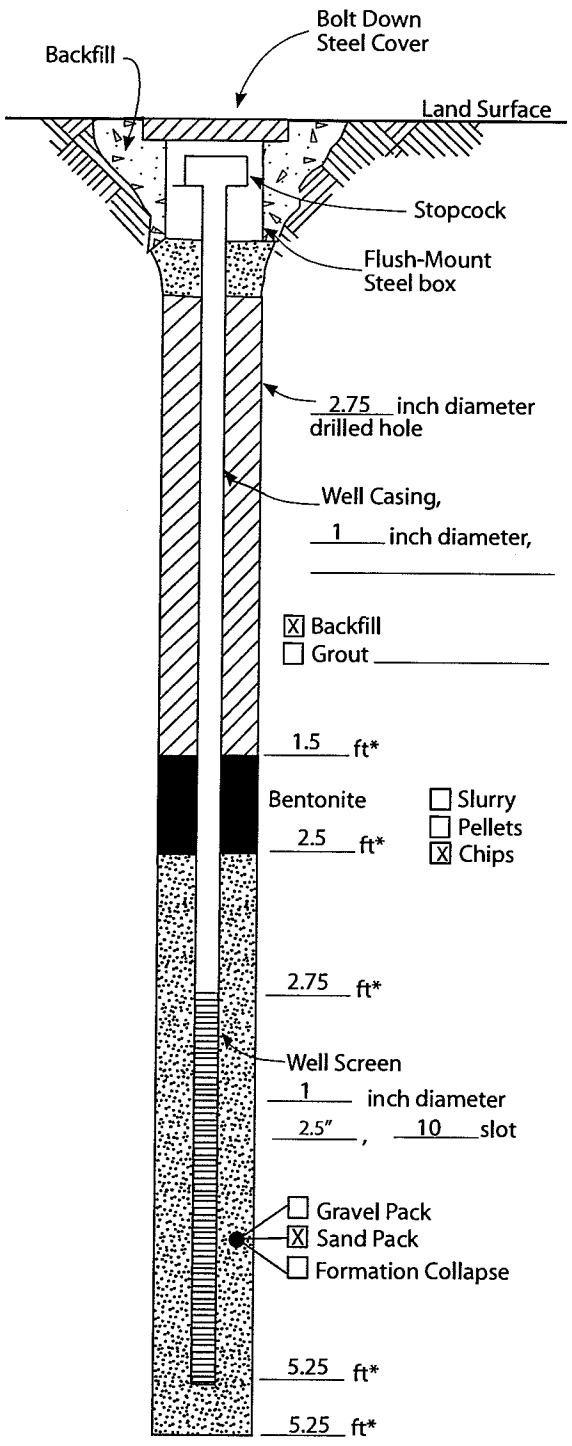
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on east side of metal maintenance buildng, 13'5" from yellow fence post, 1'2" from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg519.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-519

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1115.47 feet ☒ surveyed

Datum Mean Sea Level ☐ estimated

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

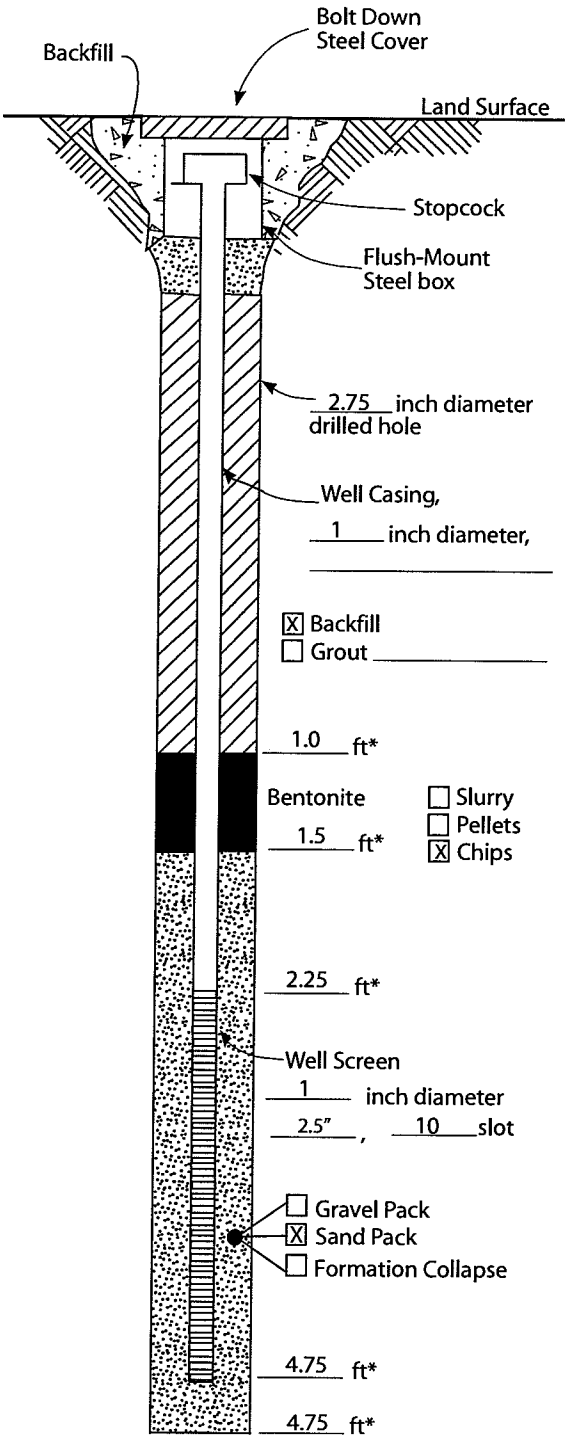
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on northside of metal maintenance building, 3'1" east of overhead garage door, 1' from buidling.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg520.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-520

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1115.63 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

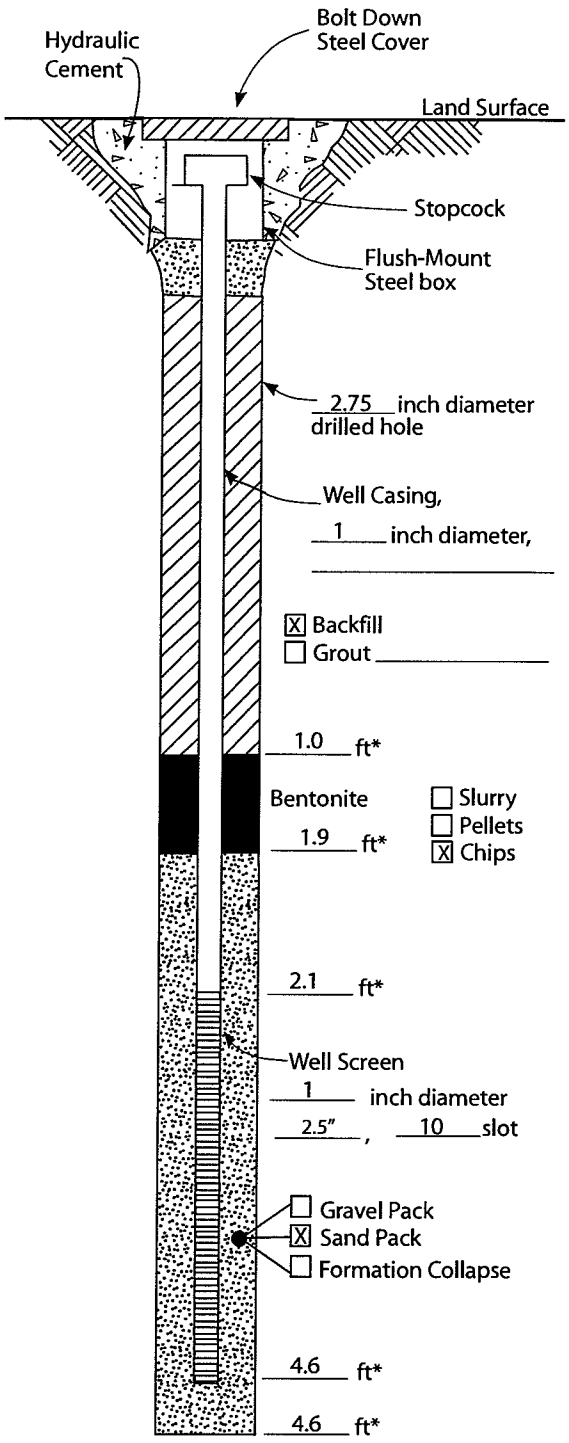
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on westside of metal maintenance building, directly below left edge of vent near top of the building, 1'3" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg521.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-521

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1115.41 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/3/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

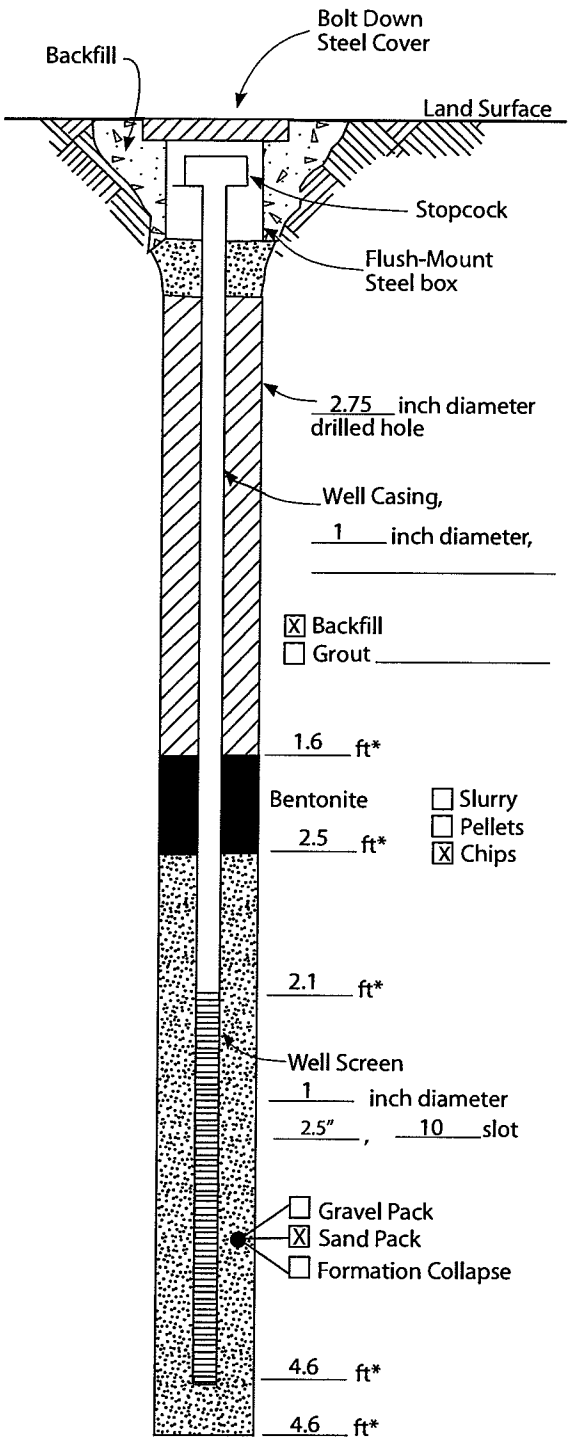
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg522.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-522

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.04 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

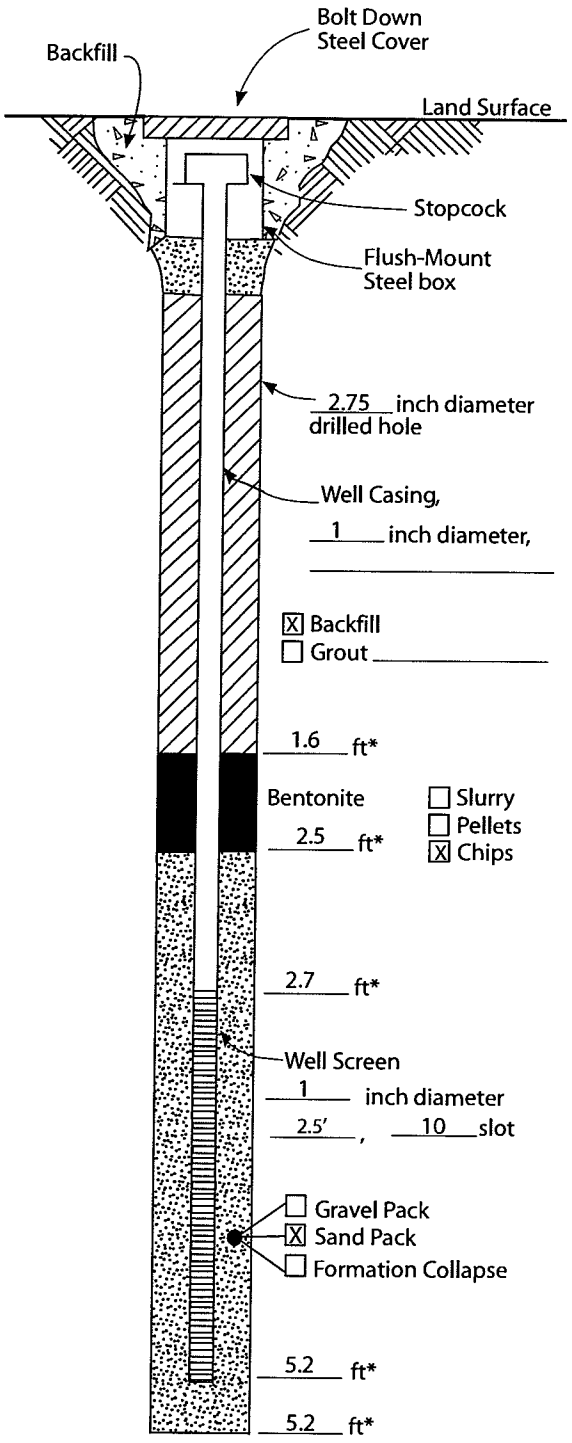
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on westside of main building, across from metal maintenance building, approximately 26' from first door after yellow fence, 1.5' from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg523.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-523

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1115.68 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

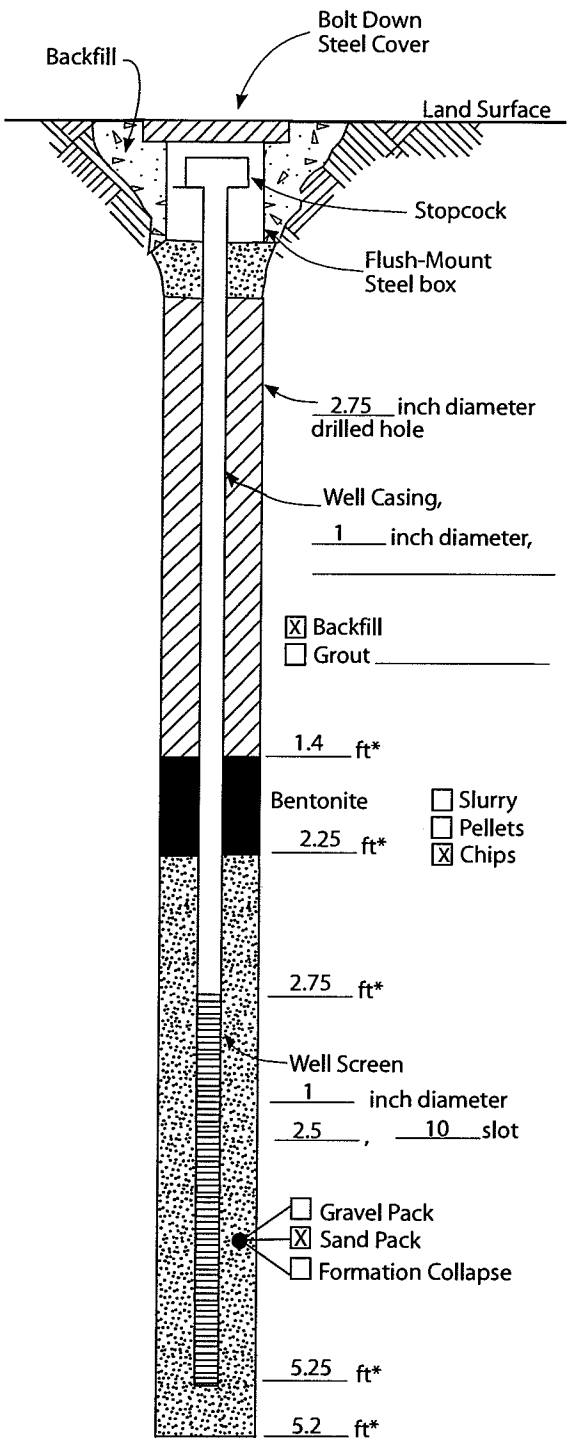
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on southwest corner of office in juniper shrubs, 2'2" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg524.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-524

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.24 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

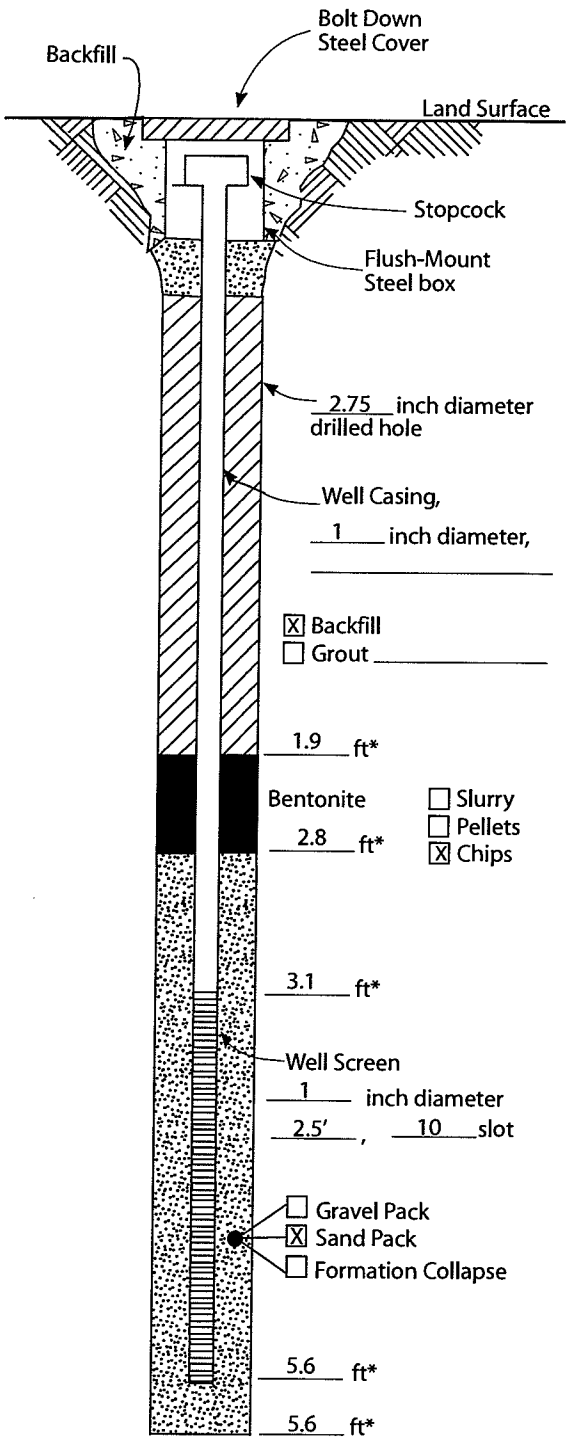
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on westside of main building, approximatley 25 feet from fan vent near top of building, nearly directly across from second post (north to south) post in shed T4, 1'9" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg525.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-525

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.19 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

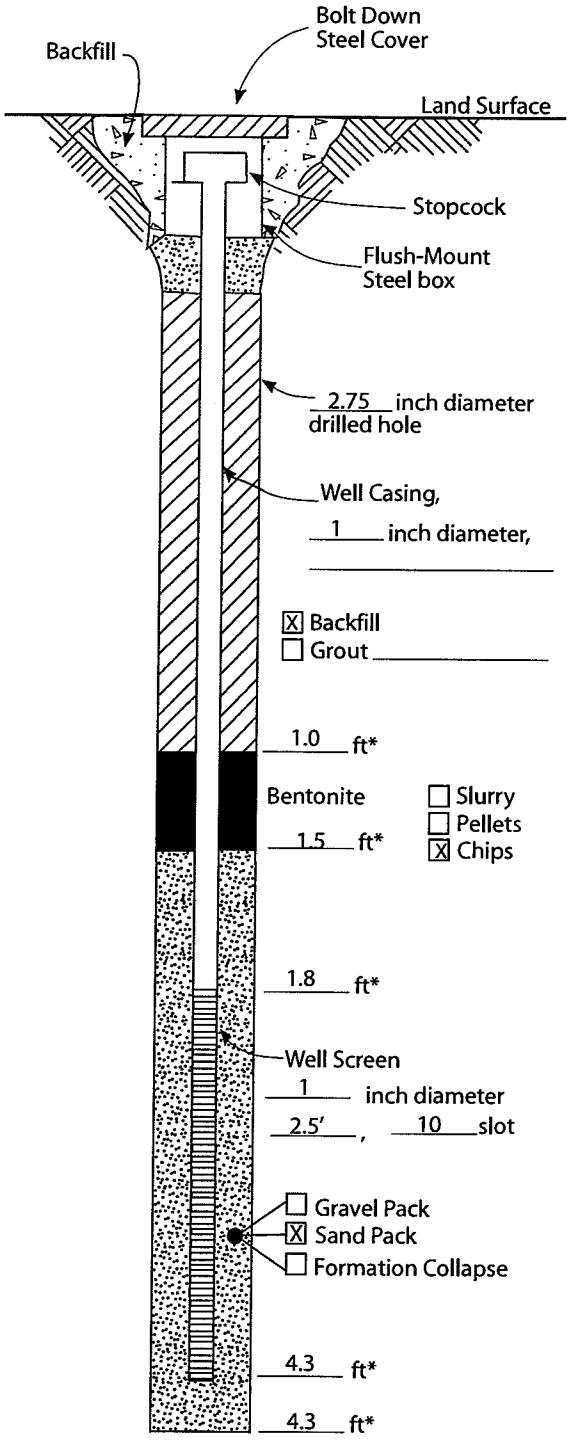
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on east side of main building, 1'6" from fence (north) and 1'3" from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg526.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-526

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.15 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

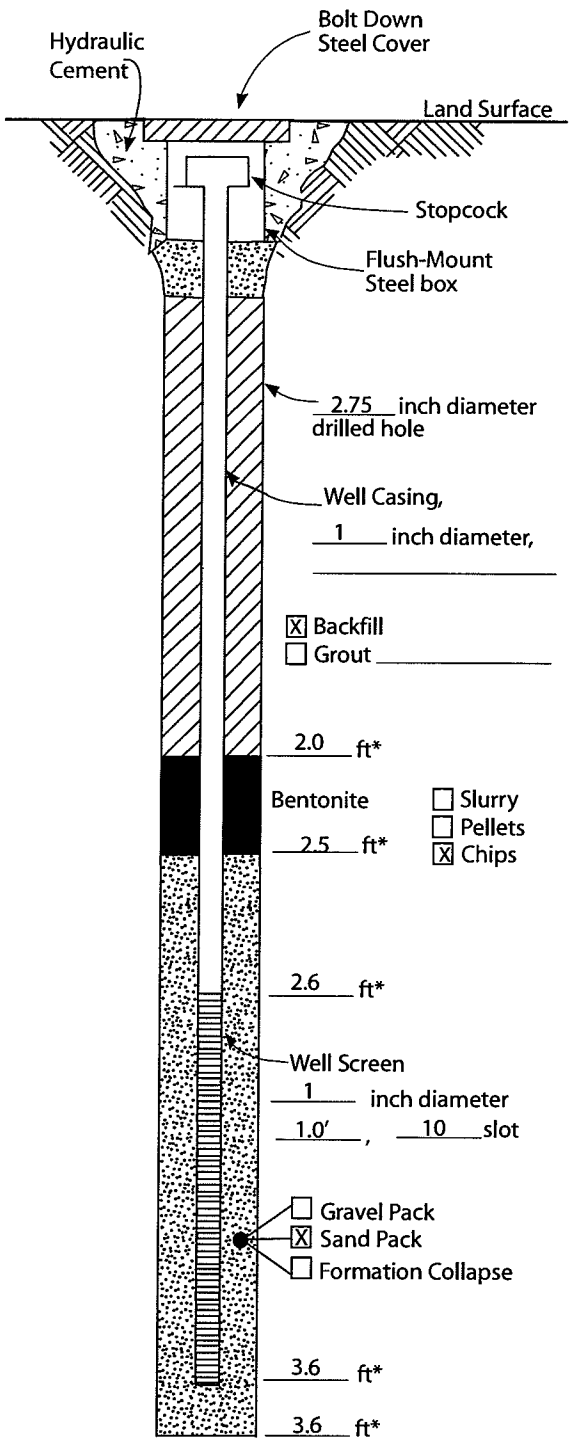
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on east side of main building, 4'7" south of large overhead garage door, 1'7" from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg527.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-527

Town/City Kingsford, Michigan - Dickinson Homes

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.06 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/1/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

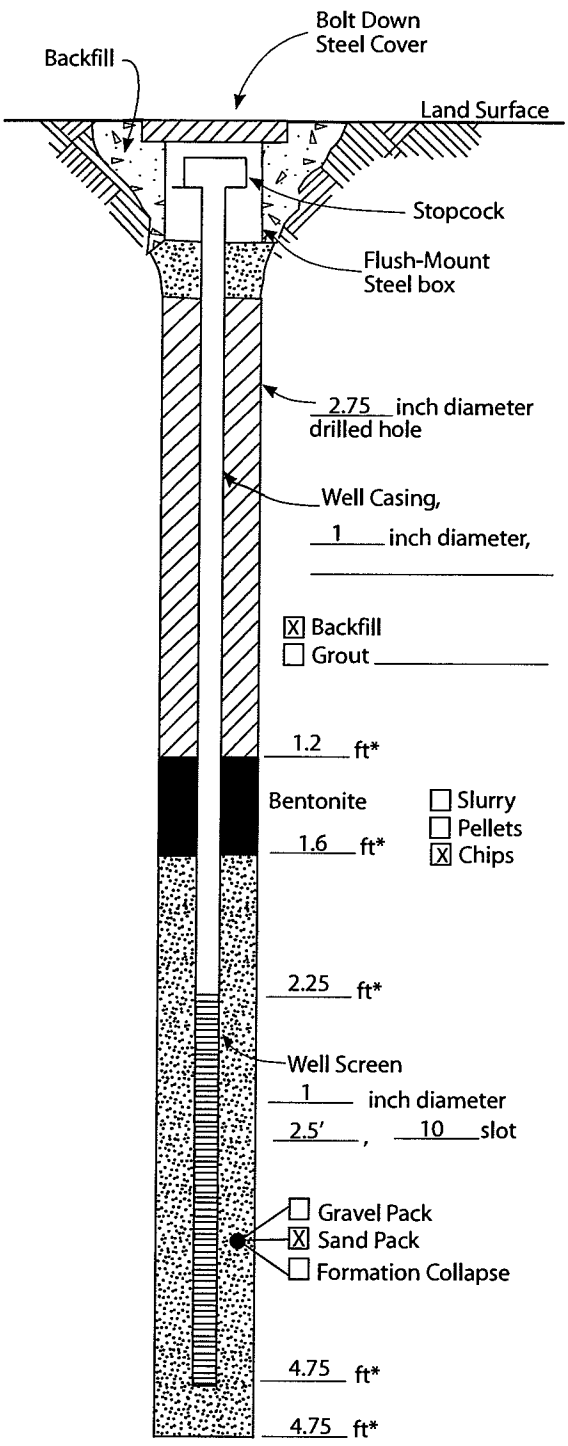
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg528.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-528

Town/City Kingsford, Michigan - Waltco - 440 N. Balsam

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.6 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/28/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

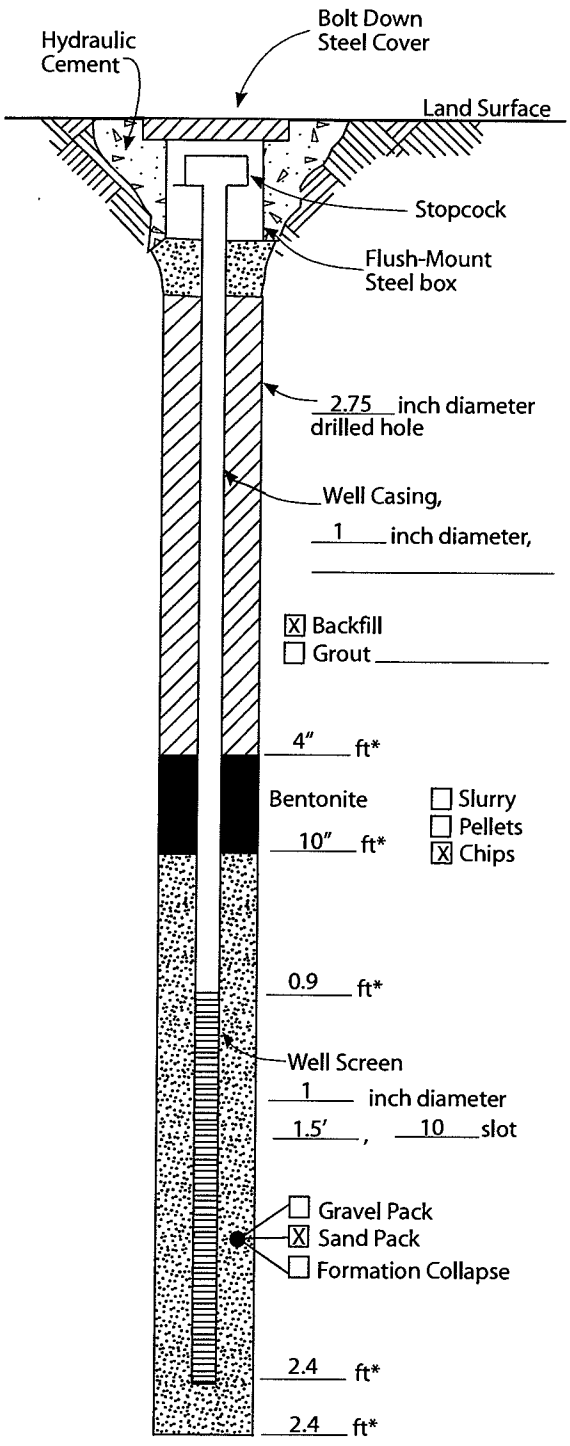
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on west side of the building, 15'10" from main entrance door (south) 1' out from the wall.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg529.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-529

Town/City Kingsford, Michigan - Waltco - 440 N. Balsam

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.33 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/28/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

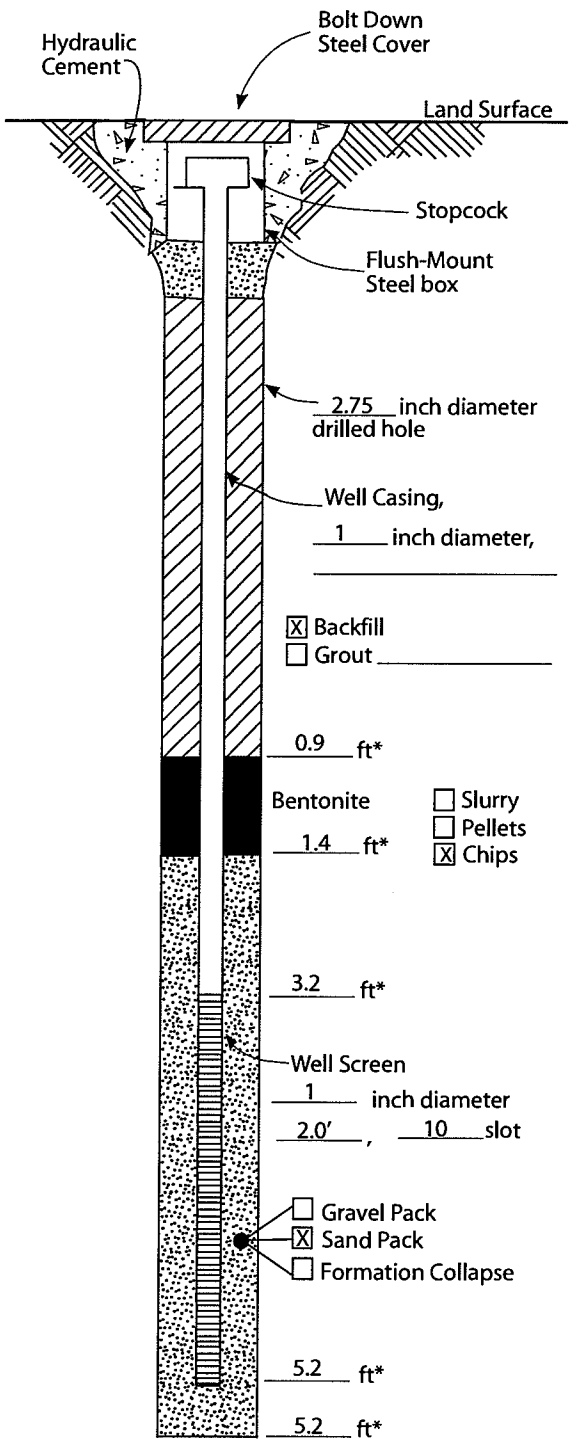
Well Purpose Commerical Soil Vapor Probe

Remarks Probe was only inserted into a 2.4' augered hole, the sand was extrembly rocky.

* Well is located on northside of the building near the over-head garage door. 7'2" west of garage door, 1' 3.5" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg530.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-530

Town/City Kingsford, Michigan - Waltco - 440 N. Balsam Street

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.34 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/28/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

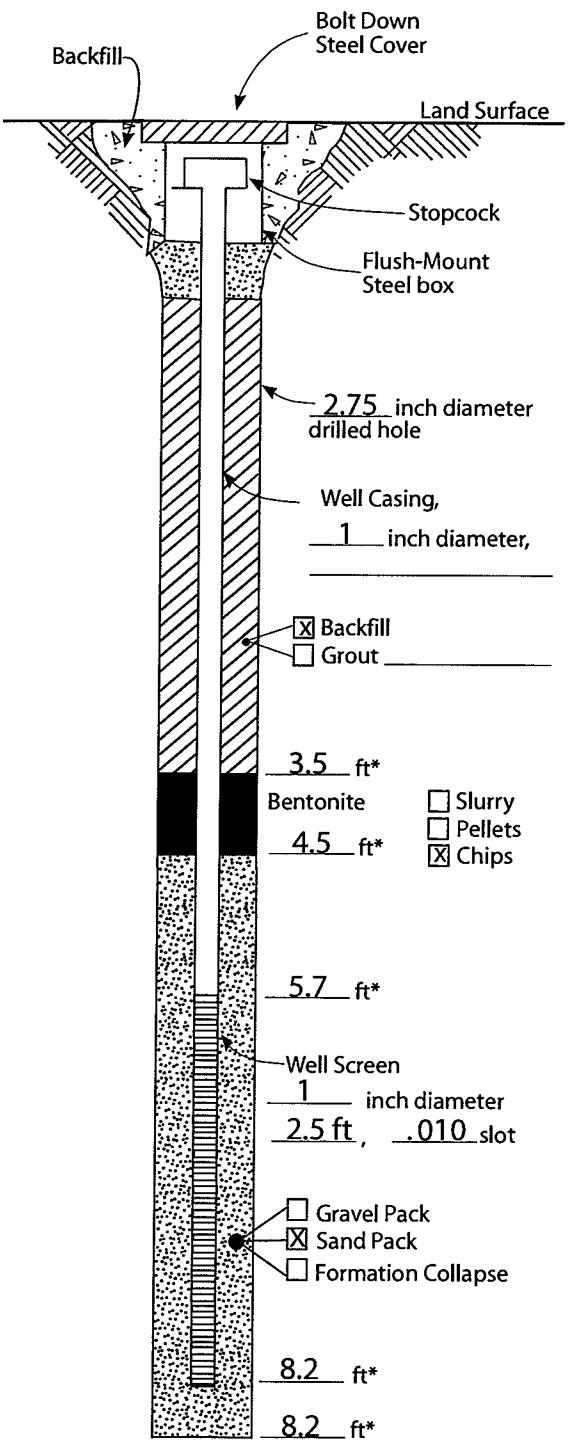
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on southside of building near employee door and overhead garage door, 6'1" from garage door (west) 1'4" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg531-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-531

Town/City Kingsford - MBM Office - Breen Avenue

County Dickinson

Permit No. NA

Land-Surface Elevation 1121.85 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/16/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

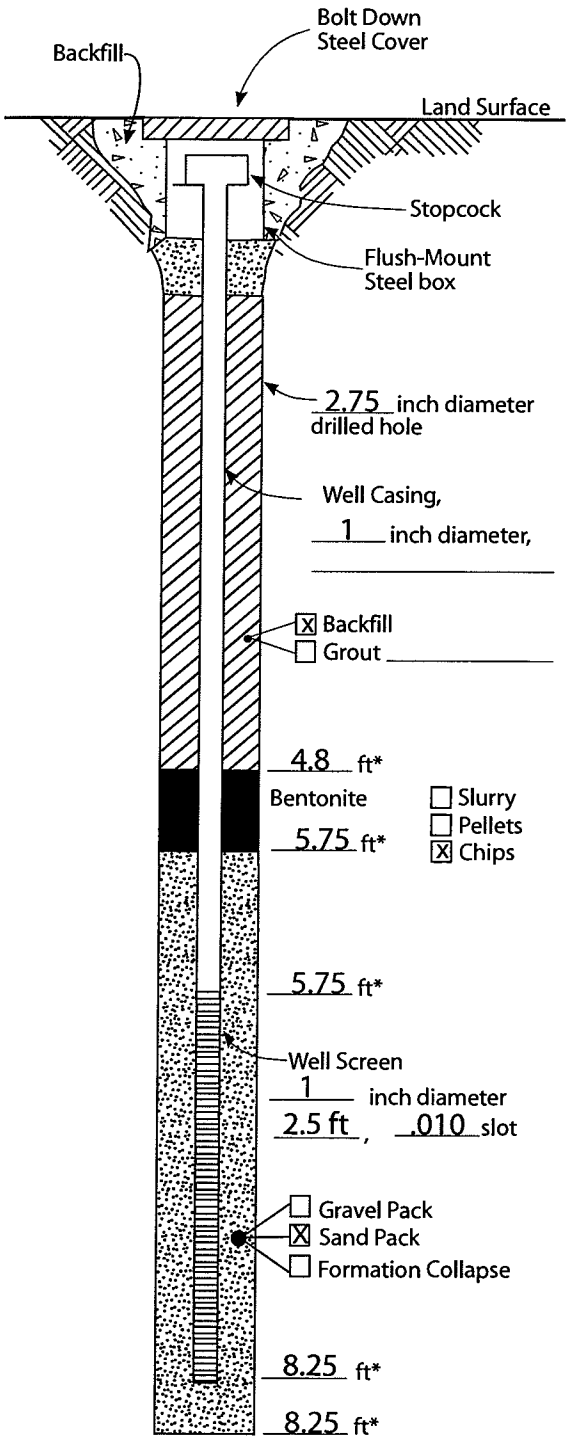
Specific Capacity -- gpm/ft

Well Purpose Commerical soil vapor probe.

Remarks Well is located on southside of the building, west of entrance stairs.

Prepared by K. Walbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg532-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-532

Town/City Kingsford - MBM Office - Breen Avenue

County Dickinson

Permit No. NA

Land-Surface Elevation 1121.87 Feet

☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/16/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

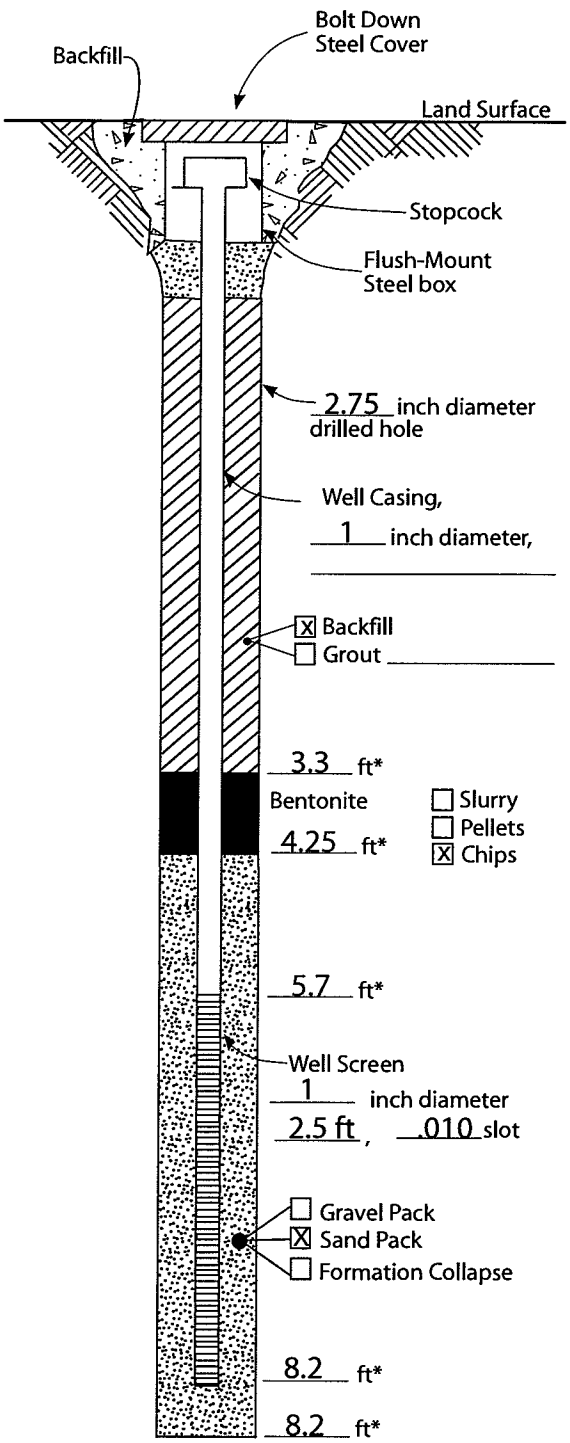
Specific Capacity -- gpm/ft

Well Purpose Commerical soil vapor probe.

Remarks Well is located on east side of the building, north of air conditioner in yard.

Prepared by K. Walbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg533-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-533

Town/City Kingsford - MBM Office - Breen Avenue

County Dickinson

Permit No. NA

Land-Surface Elevation 1121.94 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/16/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

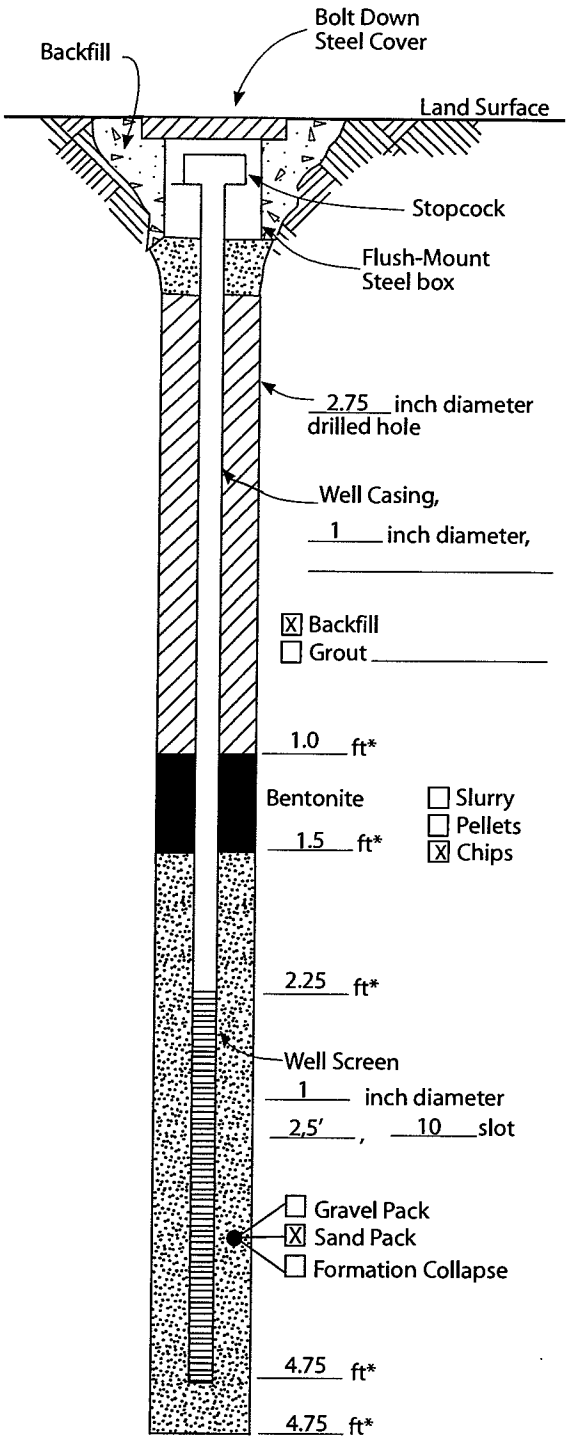
Specific Capacity -- gpm/ft

Well Purpose Commerical soil vapor probe.

Remarks Well is located on north side of the building, near alley, under furthest window to west.

Prepared by K. Walbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg534.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-534

Town/City Kingsford, Michigan - MBM Storage - 721 N. Balsam Street

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.73 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/27/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

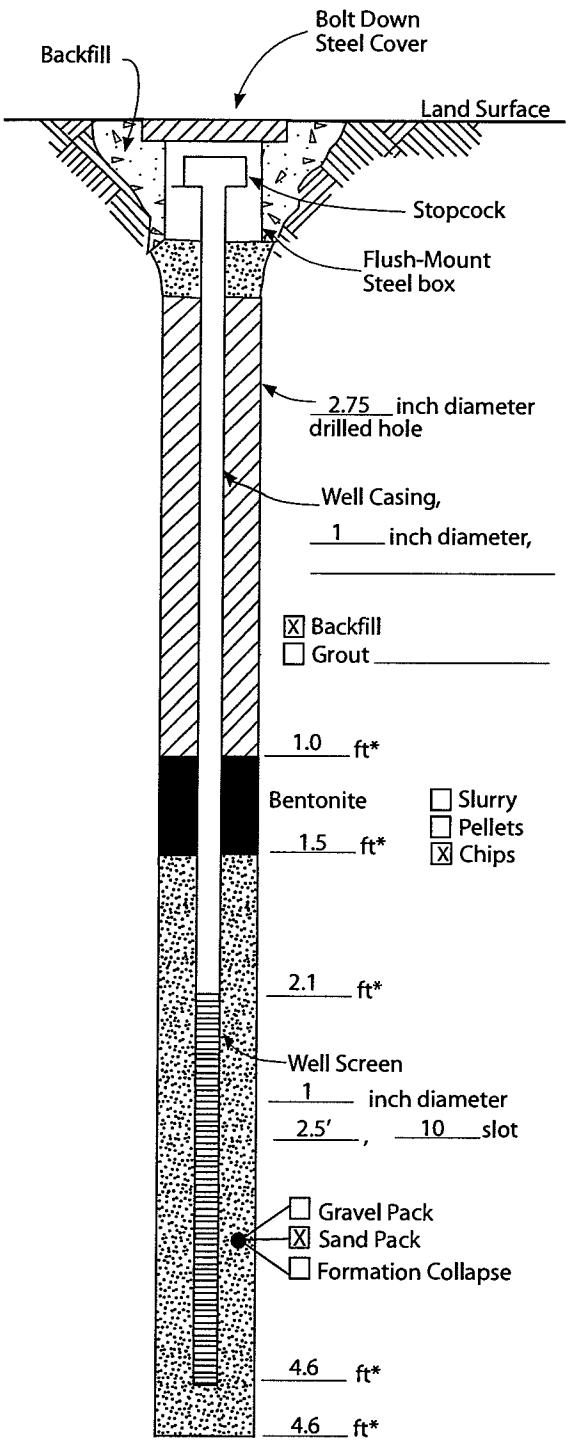
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on southside of building, 2'6" west from overhead garage door. 1'11" out from buidling to middle at well casing.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg535.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-535

Town/City Kingsford, Michigan - MBM Storage - 721 N. Balsam Street

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.65 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 10/27/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

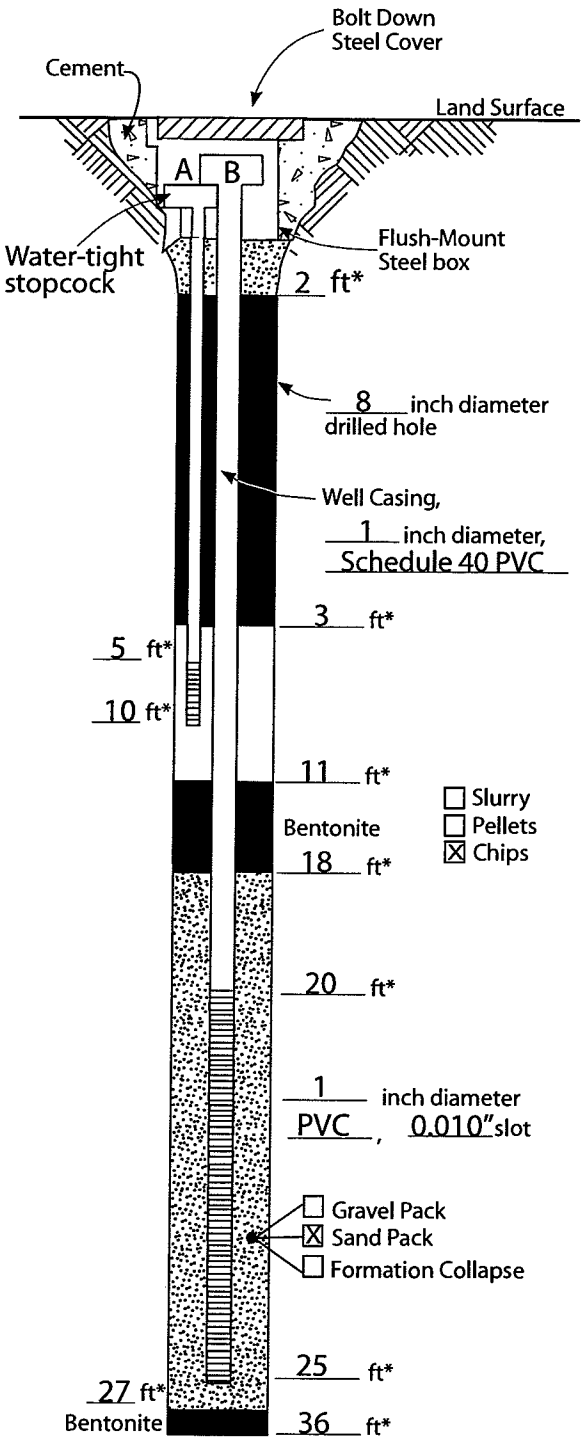
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on northside of building, 10' west from overhead garage door. 1'8" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg536ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-536 A/B

Town/City Kingsford - (Dickinson Homes)

County Dickinson

Permit No. NA

Land-Surface Elevation 1116 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/11/05

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

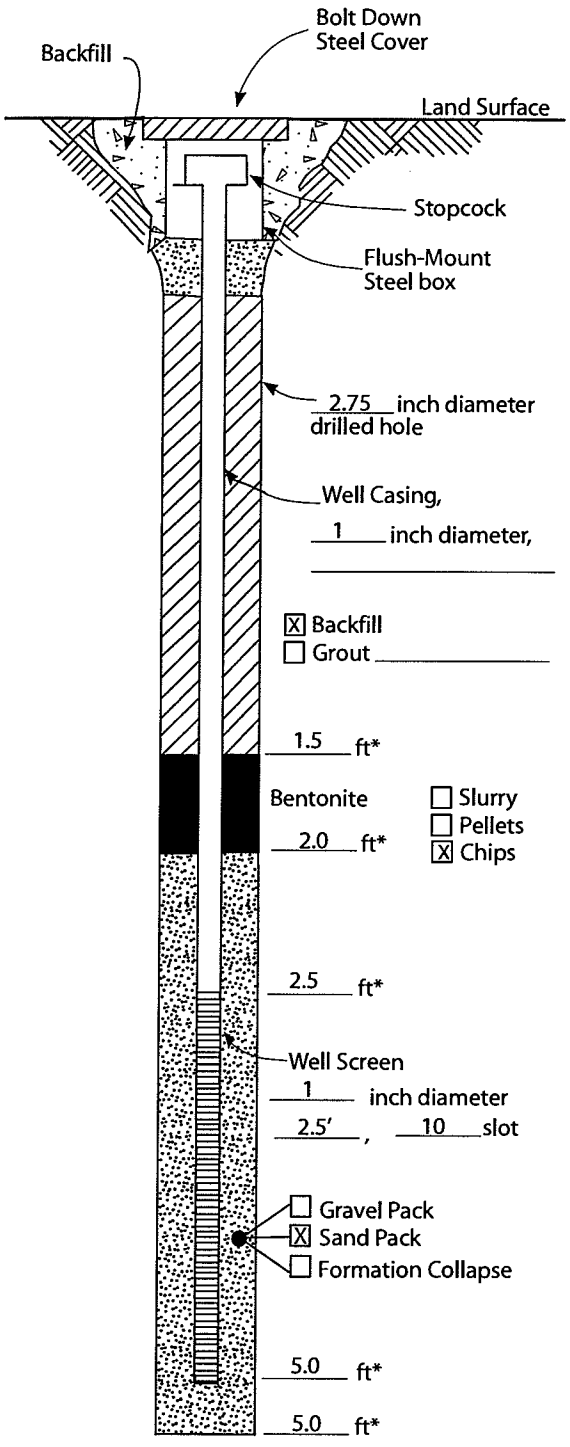
Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe (nested)

Remarks Screen/riser: 1" sch 40, slot 0.010", pointed bottom cap, stopcock valve on top, filter pack: Flat rock bagging filter sand 50 lbs bags (27-18')-8.5 bags, (11-3') 7 bags; bentonite: Enviroplug medium Wyo-Ben, Inc. (36-27') <1-50 pound bag, (18-11') 1/2-50 lb bag, (3-2') approximately 1/8 50 lb bag.

Prepared by Jill Flater



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg537.ai

Well Construction Log
(Flush Mounted Well)

Project Ford/Kingsford WI001095.0002 Well GMSG-537

Town/City Kingsford, Michigan - MBM Truck Rental - 1300 W. Breitung

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.85 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/26/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

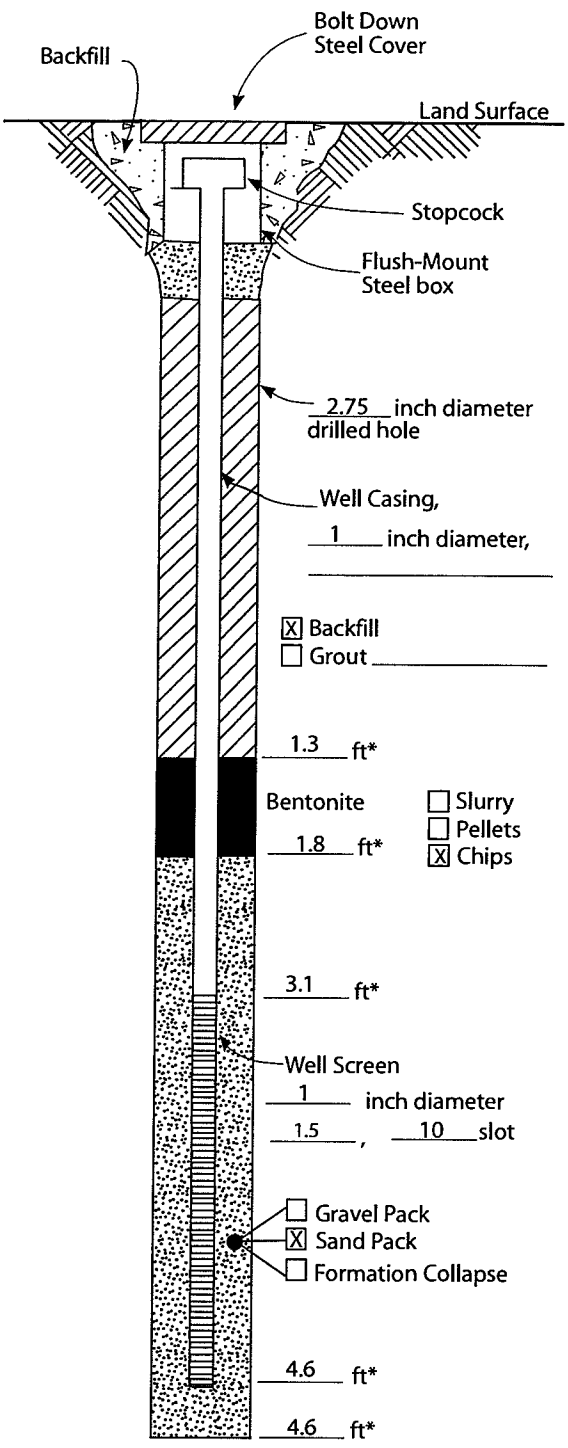
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on northside of the building, 4'4" from overhead garage and 11" out from the building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg538.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-538

Town/City Kingsford, Michigan - MBM Truck Rental

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.53 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/27/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

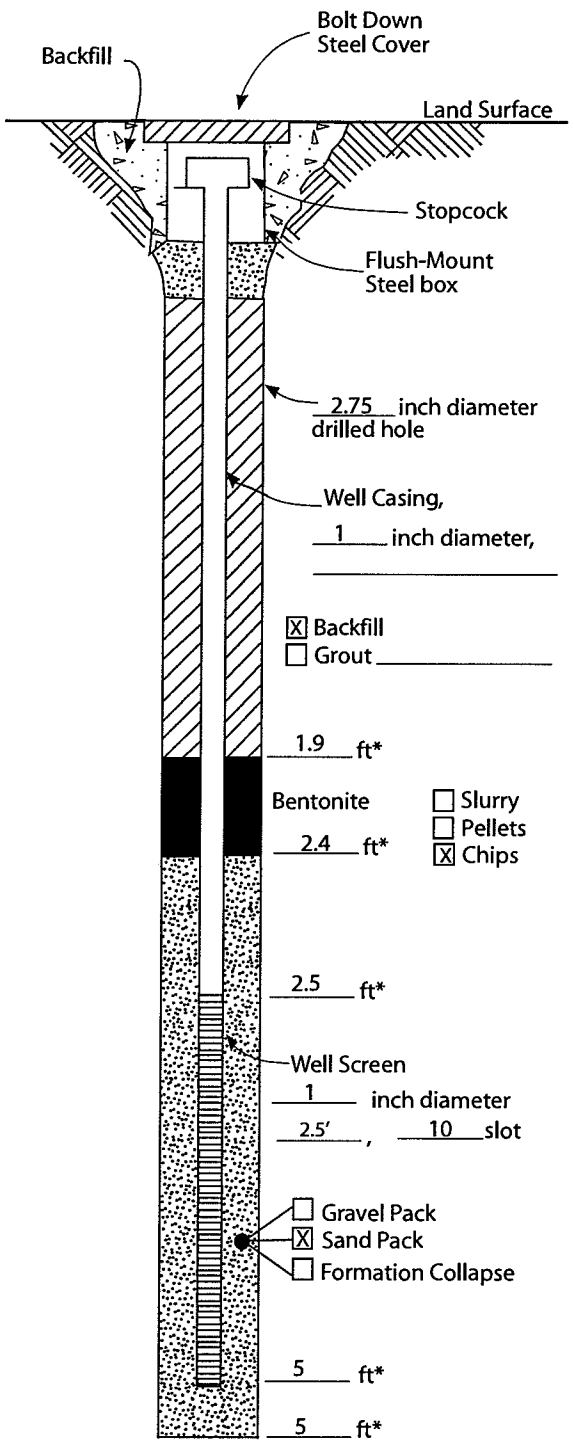
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located 1'4" from middle electric outlet on westside of the building. 2'1" out from the building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg539.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-539

Town/City Kingsford, Michigan - MBM Truck Rental

County Dickinson

Permit No. NA

Land-Surface Elevation

1117.09 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 10/27/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

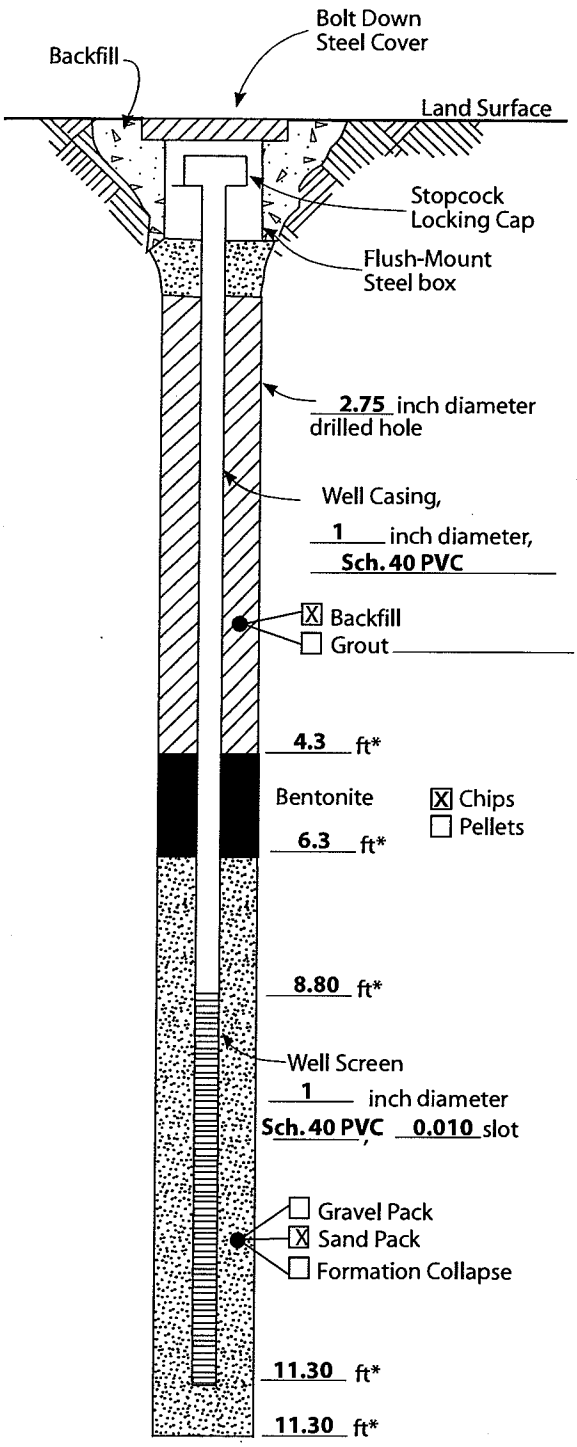
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks Well is located on southside of the building 2'1" west of overhead garage door, 15" out from building to middle of well casing.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg540-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-540**

Town/City **Kingsford - NLJ**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1123.1 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/10/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

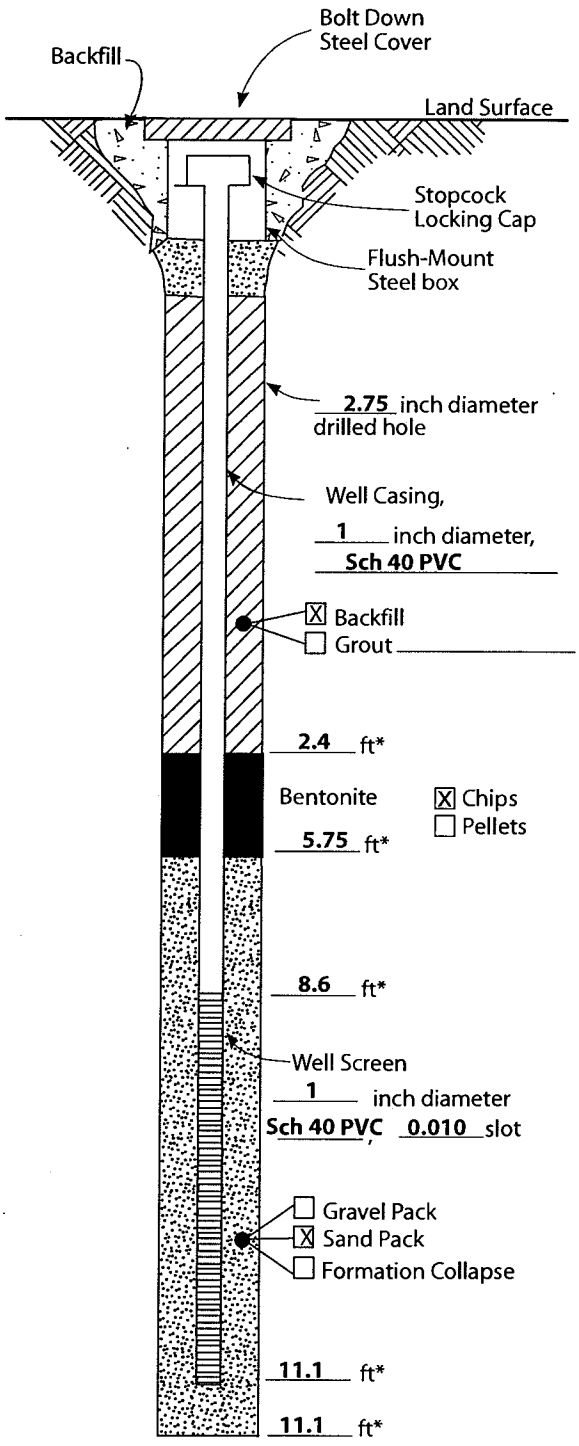
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg541-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-541**

Town/City **Kingsford - NLJ**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1122.3 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/15/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

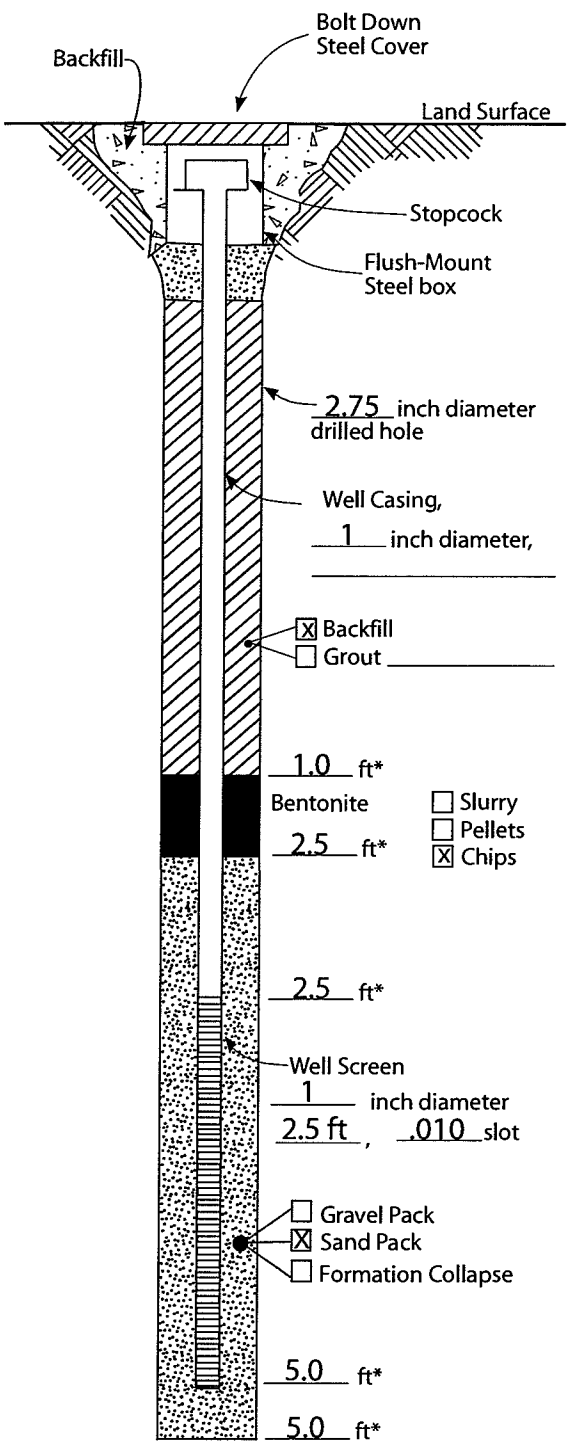
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg542-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-542

Town/City Kingsford - Julie's Top Hat Studio

County Dickinson

Permit No. NA

Land-Surface Elevation 1133.22 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/15/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

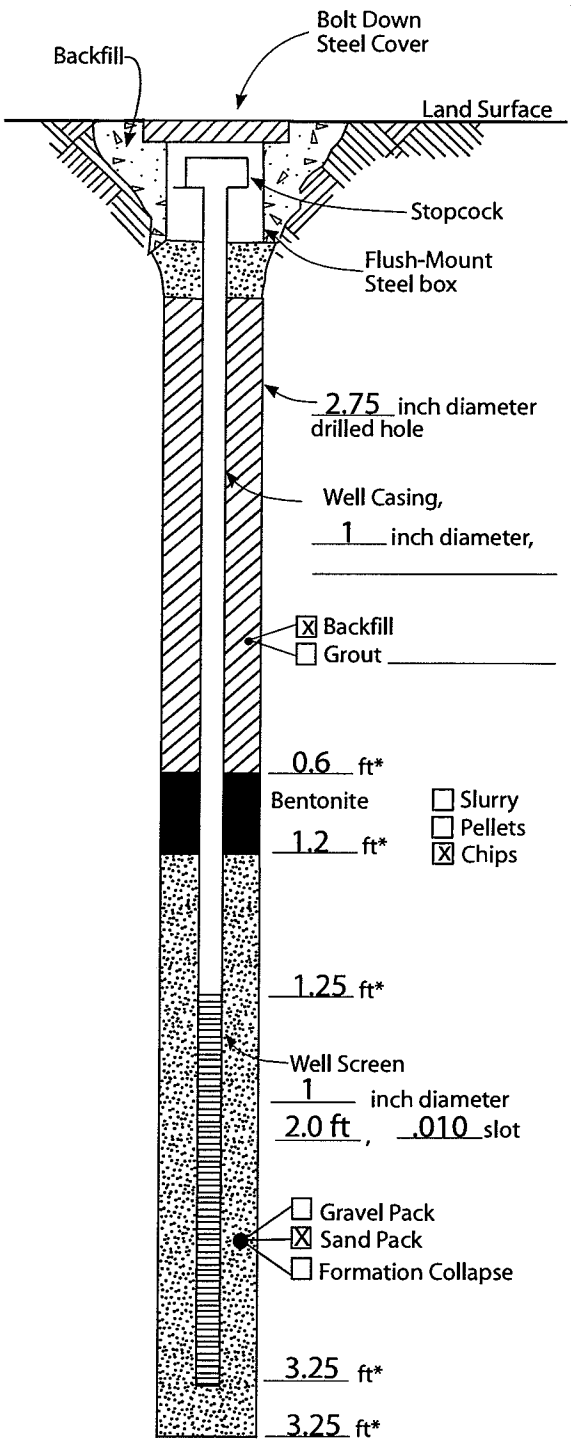
Specific Capacity -- gpm/ft

Well Purpose Commerical soil vapor probe.

Remarks Well is located on north side of the building, below Julie's Top Hat Studio sign, towards west side.

Prepared by K. Walbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg543-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-543

Town/City Kingsford - Julie's Top Hat Studio

County Dickinson

Permit No. NA

Land-Surface Elevation 1132.74 Feet

☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/15/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

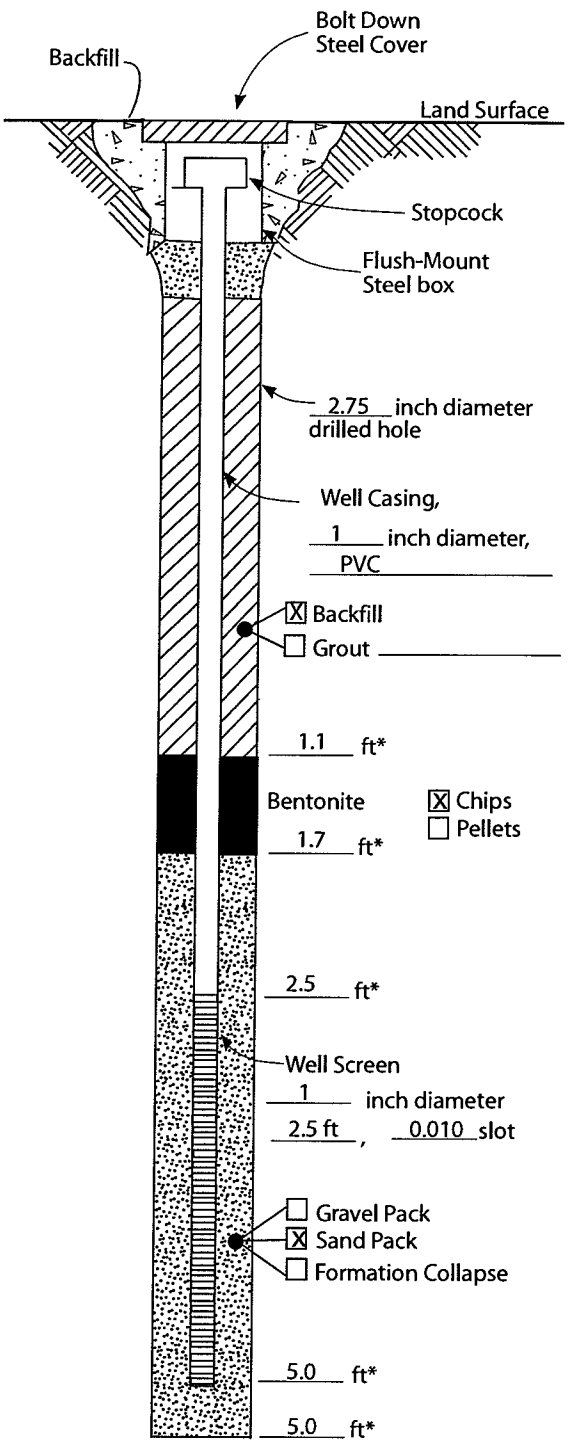
Specific Capacity -- gpm/ft

Well Purpose Commerical soil vapor probe.

Remarks Well is located on east side of the building, behind small Choke Cherry tree.

Prepared by K. Walbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg543r-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-543R

Town/City Kingsford - Julie's Top Hat Studio

County Dickinson

Permit No. NA

Land-Surface Elevation

1132.74 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/29/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

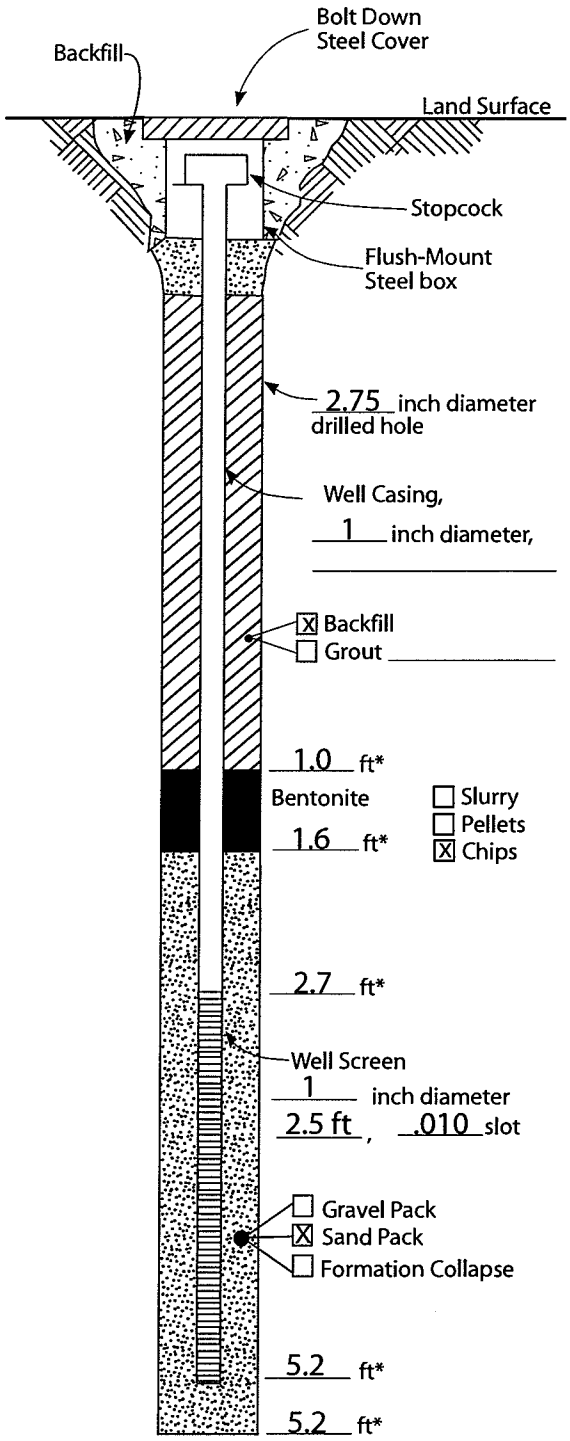
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on east side of building 14'2" from north side of door, 1'9" out from building. Note: Replacement of GMSG-543 because last SVP was not deep enough.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg544-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-544

Town/City Kingsford - Julie's Top Hat Studio

County Dickinson

Permit No. NA

Land-Surface Elevation 1132.96 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 11/15/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

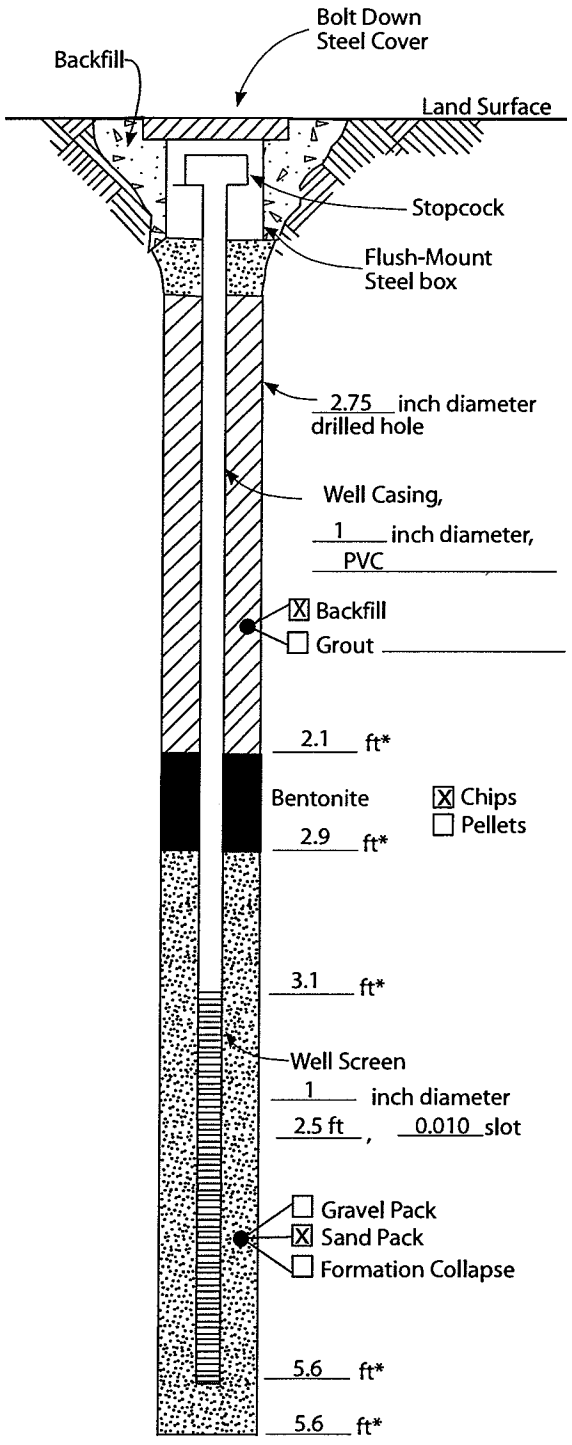
Specific Capacity -- gpm/ft

Well Purpose Commerical soil vapor probe.

Remarks Well is located on west side of building.

Prepared by K. Walbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg545-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-545

Town/City Kingsford - Superiorland Contracting

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.81 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/17/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

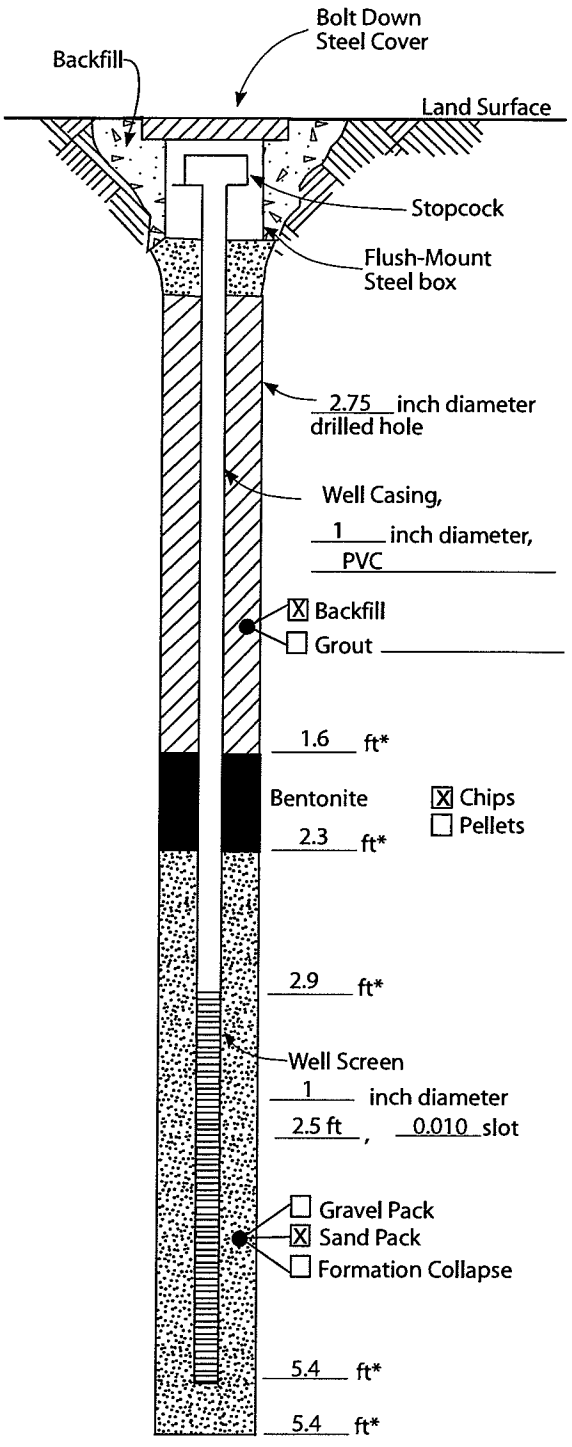
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on west side of building directly below middle of windows, about 12" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg546-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-546

Town/City Kingsford - Superiorland Contracting

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.97 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/17/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

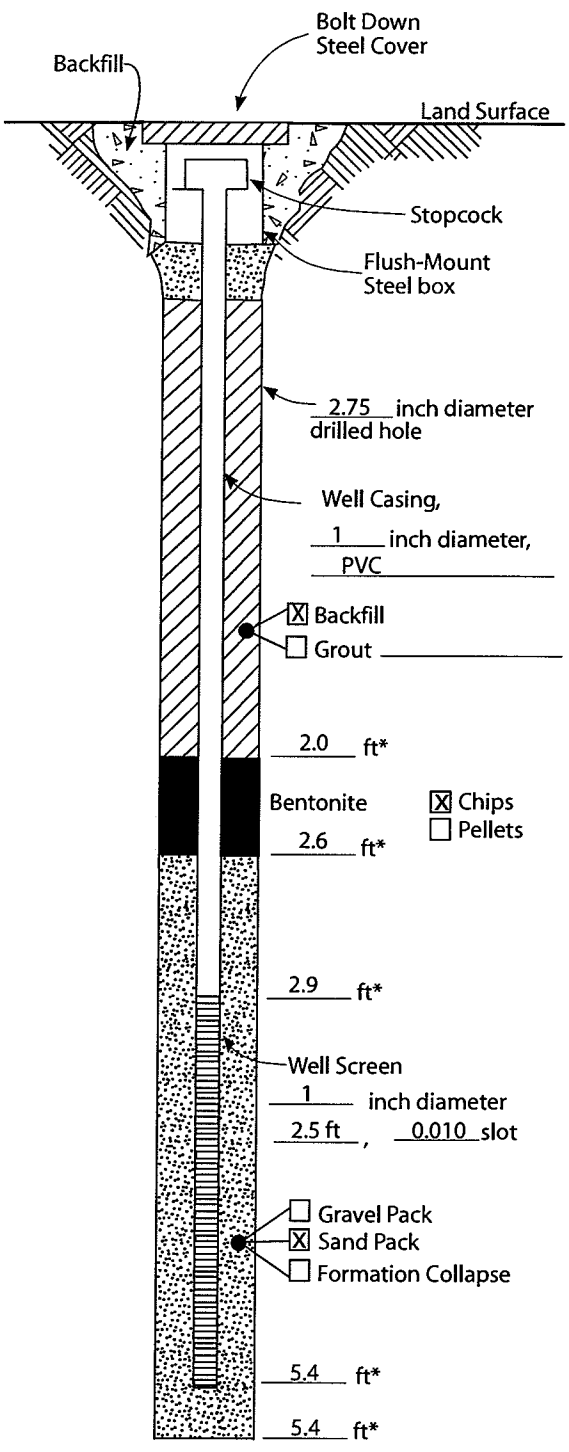
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on northside of building east of garage door.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg547-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-547

Town/City Kingsford - Superiorland Contracting

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.94 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 12/2/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

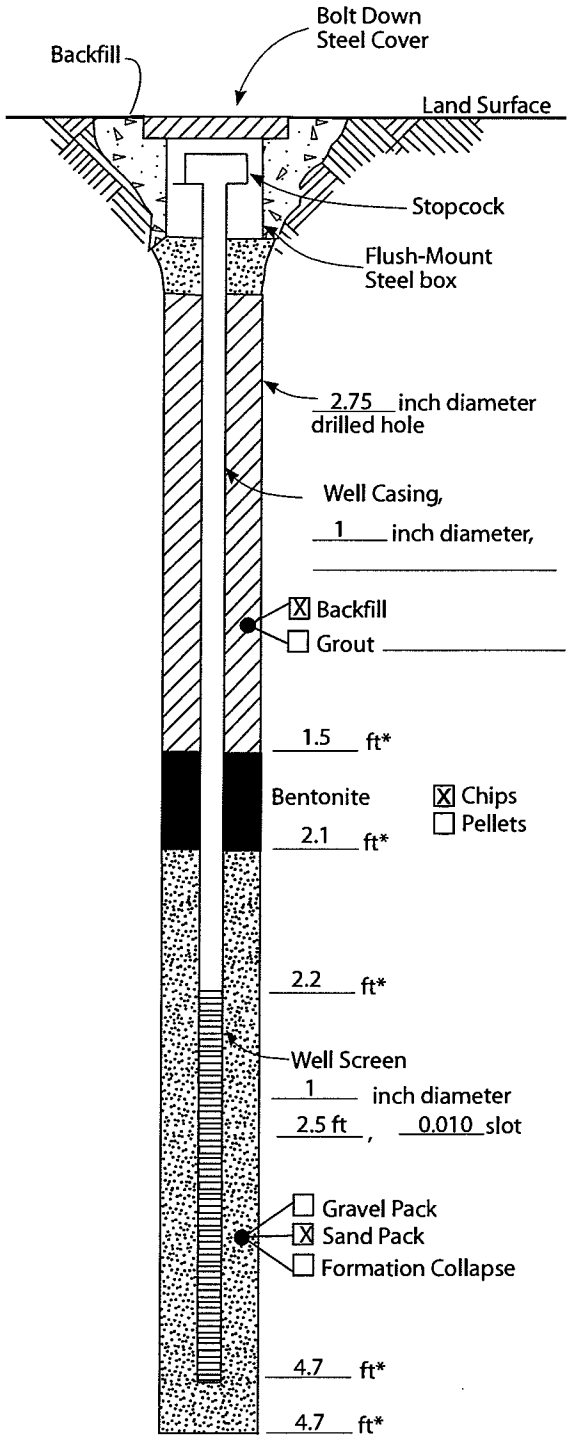
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg548-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-548

Town/City Kingsford - KPSD

County Dickinson

Permit No. NA

Land-Surface Elevation

1131.49 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/18/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

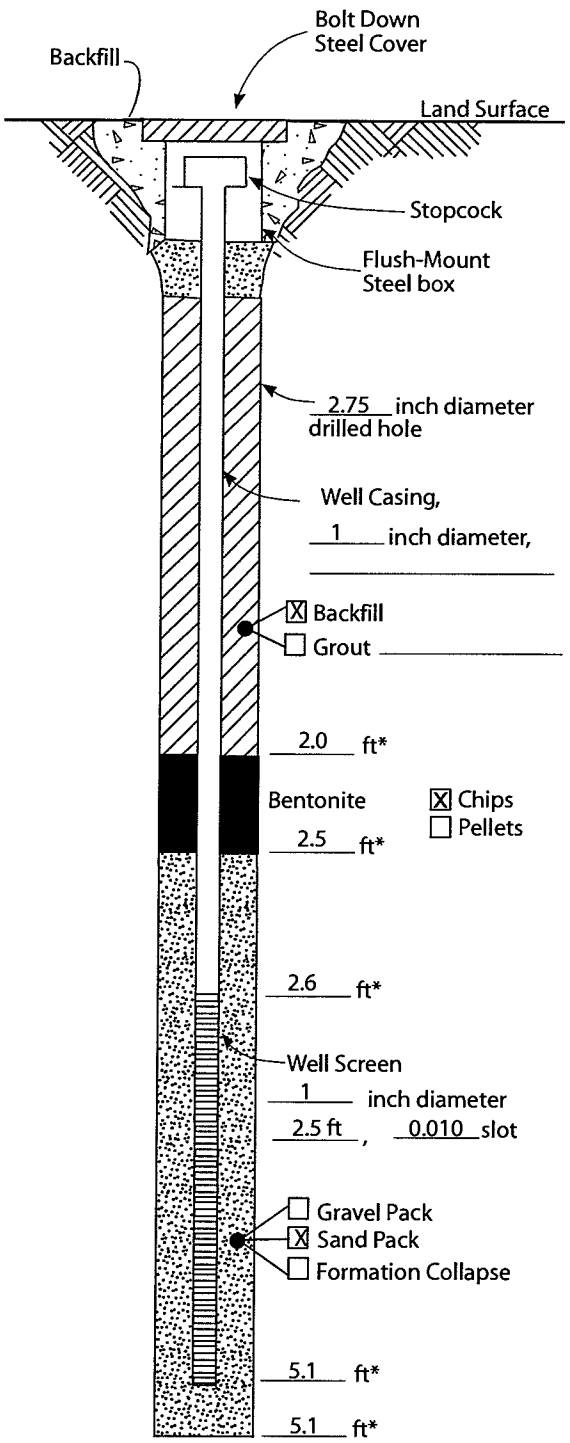
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on southside of building (against entry way wall in landscaping) 26" out from wall, 7'1" from south east corner of entry way.

Prepared by K.Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg549-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-549

Town/City Kingsford - KPSD

County Dickinson

Permit No. NA

Land-Surface Elevation

1131.36 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/18/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

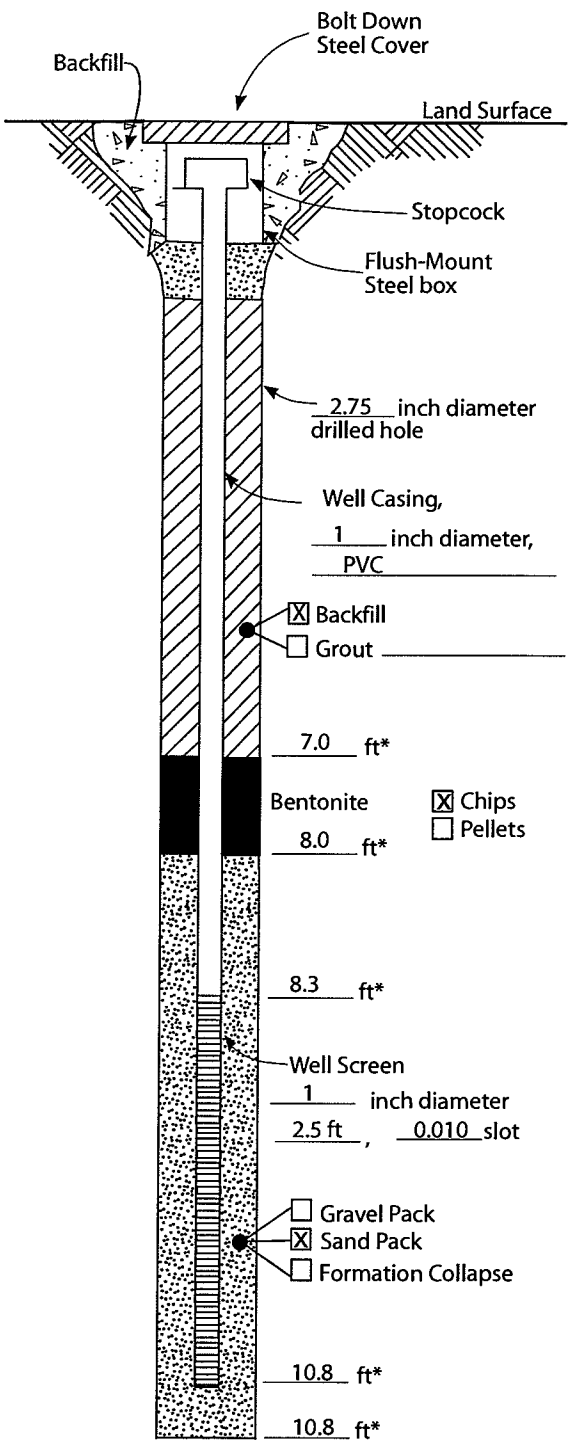
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on west side of building, in area with natural gas meter in corner of landscaping.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg550-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-550

Town/City Kingsford - KPSD (Kingsford Public Safety)

County Dickinson

Permit No. NA

Land-Surface Elevation

1135.88 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/28/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

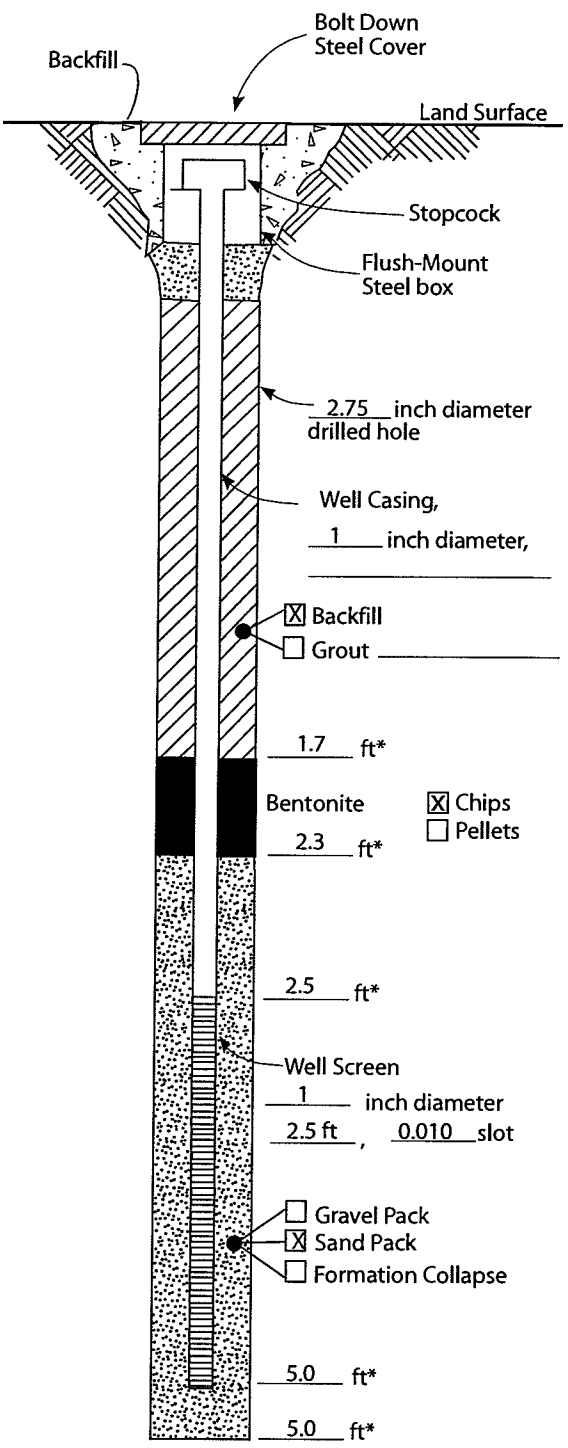
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg551-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-551

Town/City Kingsford - Neurology Asso.

County Dickinson

Permit No. NA

Land-Surface Elevation

1125.1 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/21/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

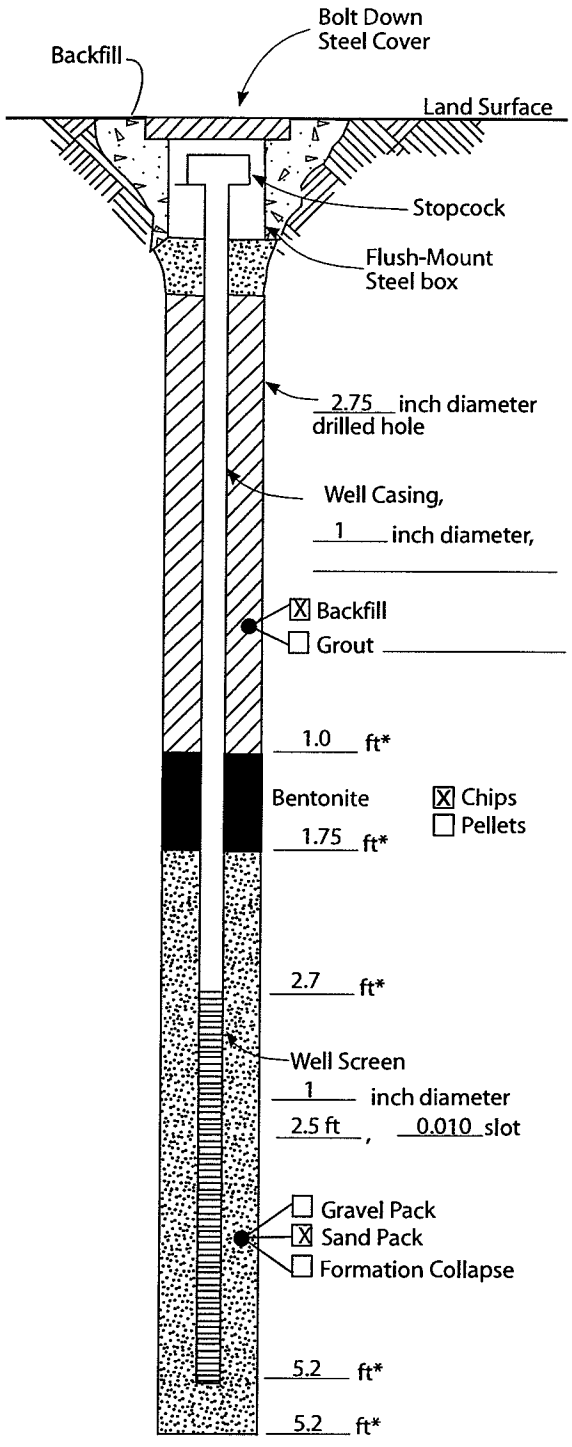
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on northeast corner in landscaping.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg552-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-552

Town/City Kingsford - Neurology Asso.

County Dickinson

Permit No. NA

Land-Surface Elevation

1125.11 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/21/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

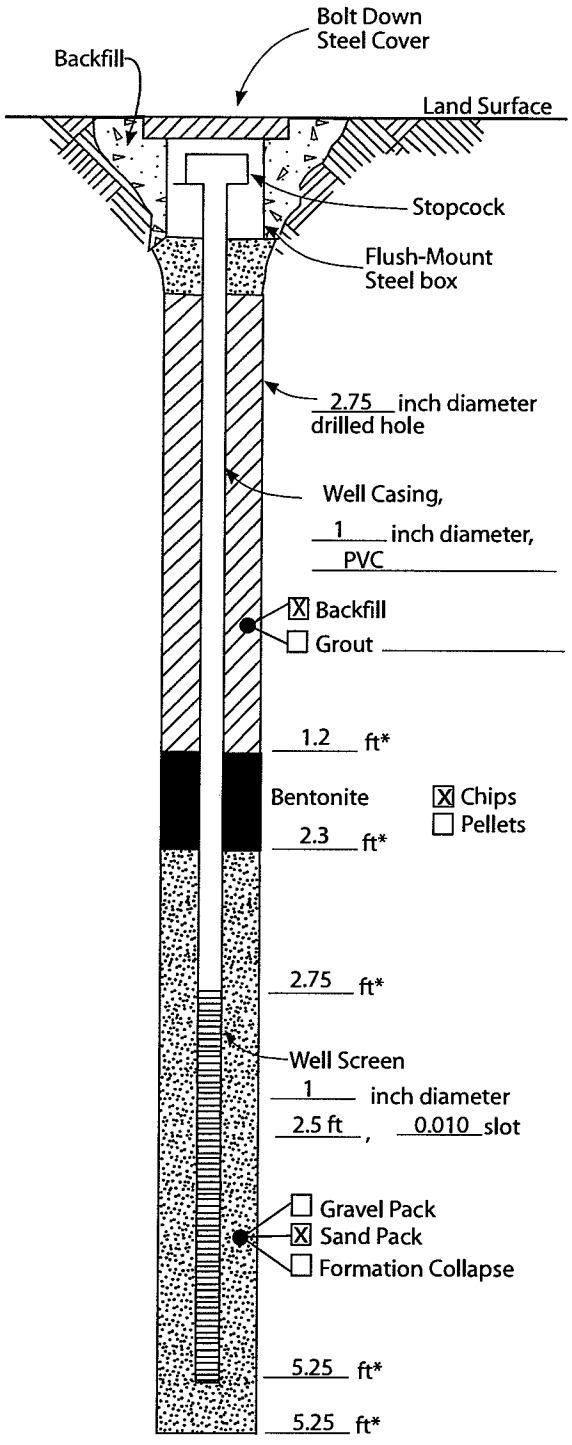
Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on westside of building under middle window in first window set from north.

Prepared by K. Waldbillig



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg553-wcl.ai

Well Construction Log
(Flush Mounted Well)

Project Ford/Kingsford WI001095.0002 Well GMSG-553

Town/City Kingsford - Extreme Fitness

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.43 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/29/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

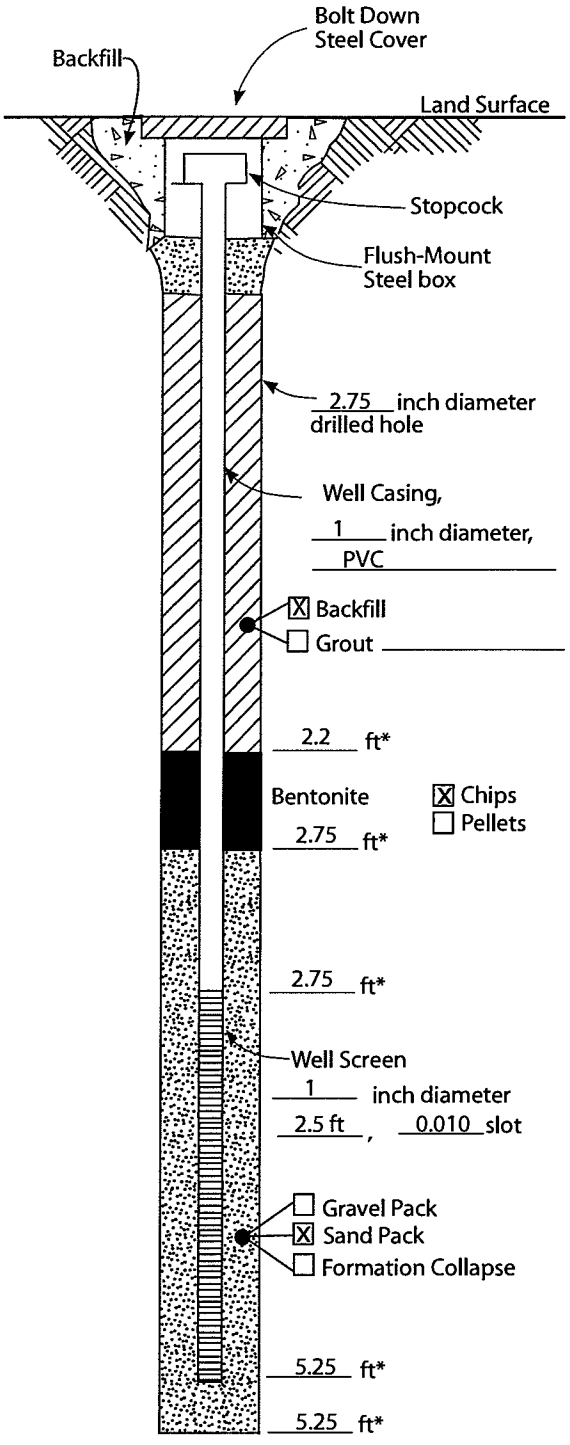
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on west side of building, directly in line with southside of first window from south, 4'10" from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg554-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-554

Town/City Kingsford - Extreme Fitness

County Dickinson

Permit No. NA

Land-Surface Elevation

1121.06 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 11/29/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

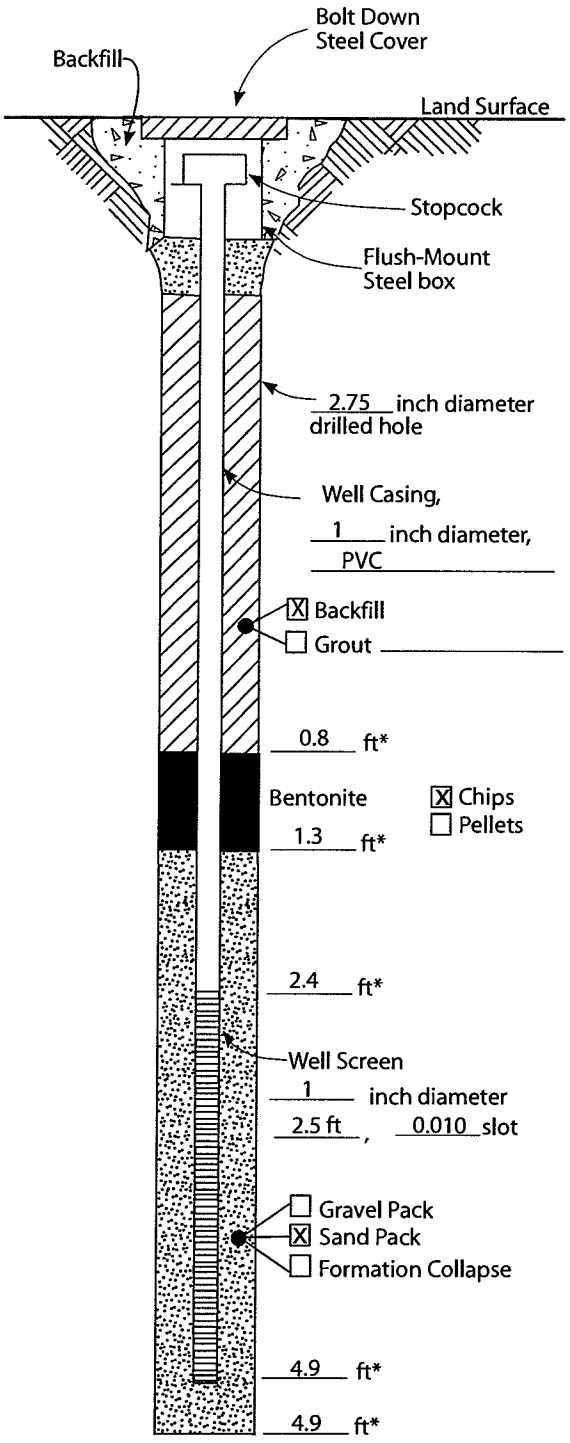
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks Well is located on east side of building, 38" from northeast corner of building, 13" out from building.

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2005/graphics/logs/gmsg555-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-555

Town/City Kingsford - Rice Juice

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.79 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 12/2/05

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

NA

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

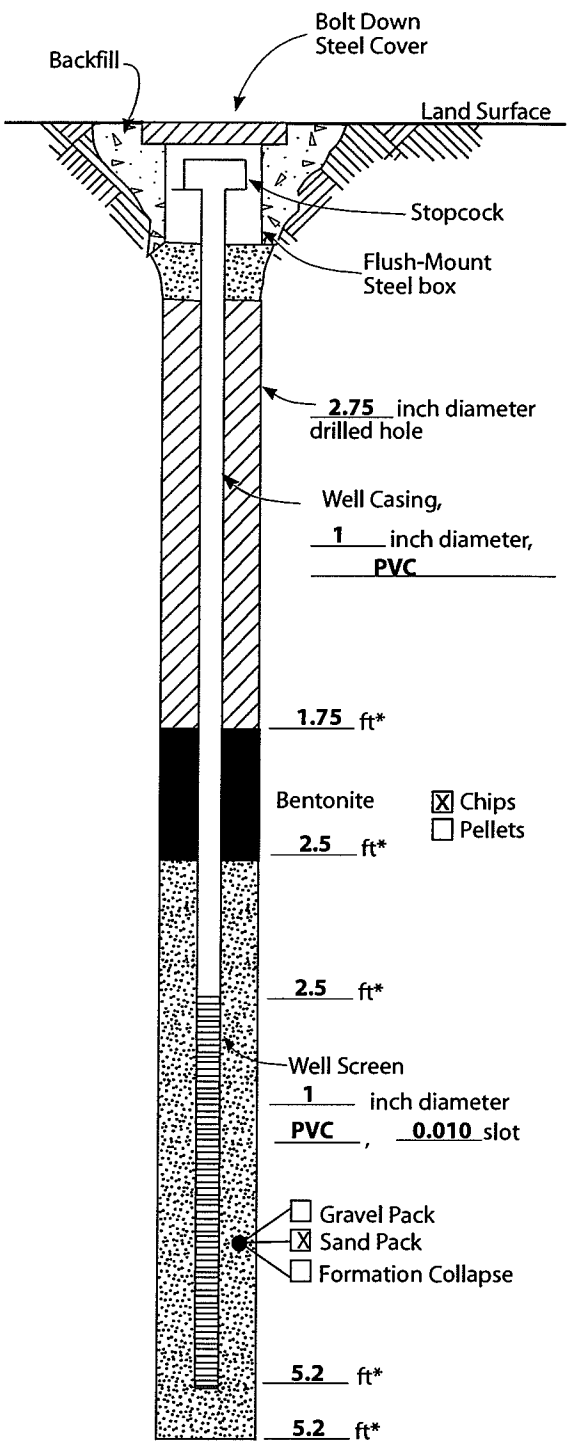
Specific Capacity -- gpm/ft

Well Purpose Commercial soil vapor probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project Ford/Kingsford WI001095.0002 Well GMSG-556

Town/City Kingsford, Michigan - Rice Juice Company

County Dickinson

Permit No. NA

Land-Surface Elevation

1114.8 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 5/26/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

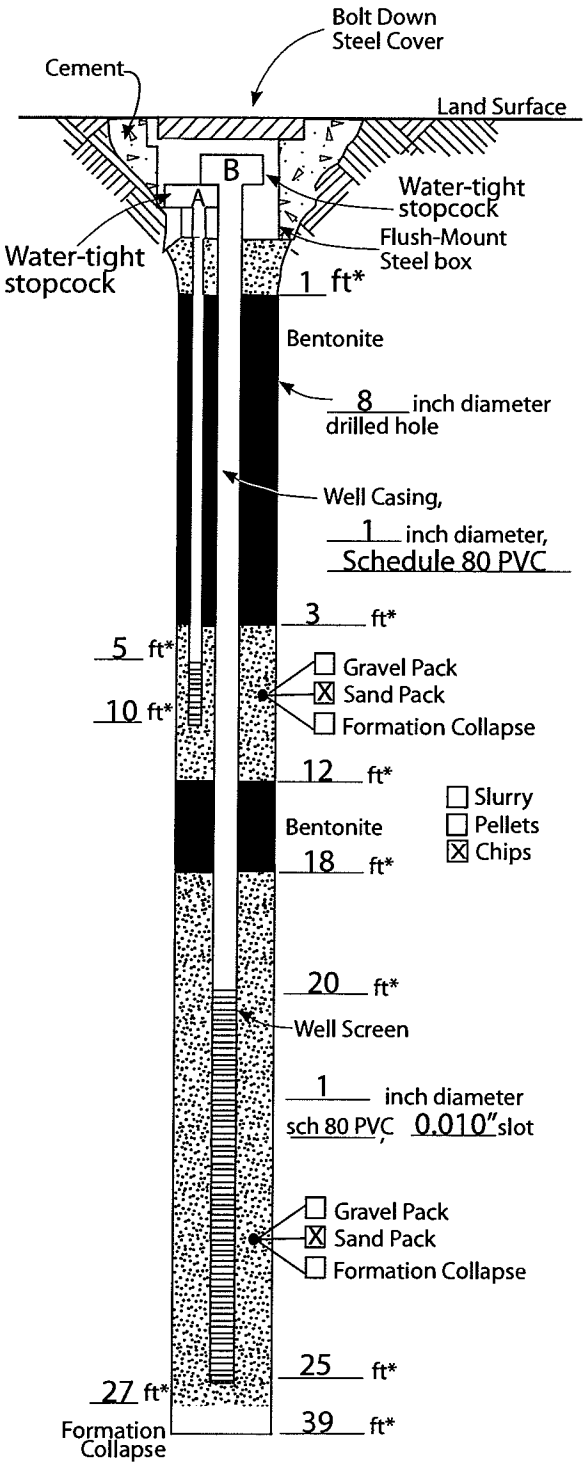
Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by J.Waldbillig

ford/wi0637/2006/graphics/logs/gmsg556-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg557ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-557 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1111.98 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 2/27/06 - 2/28/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling None gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

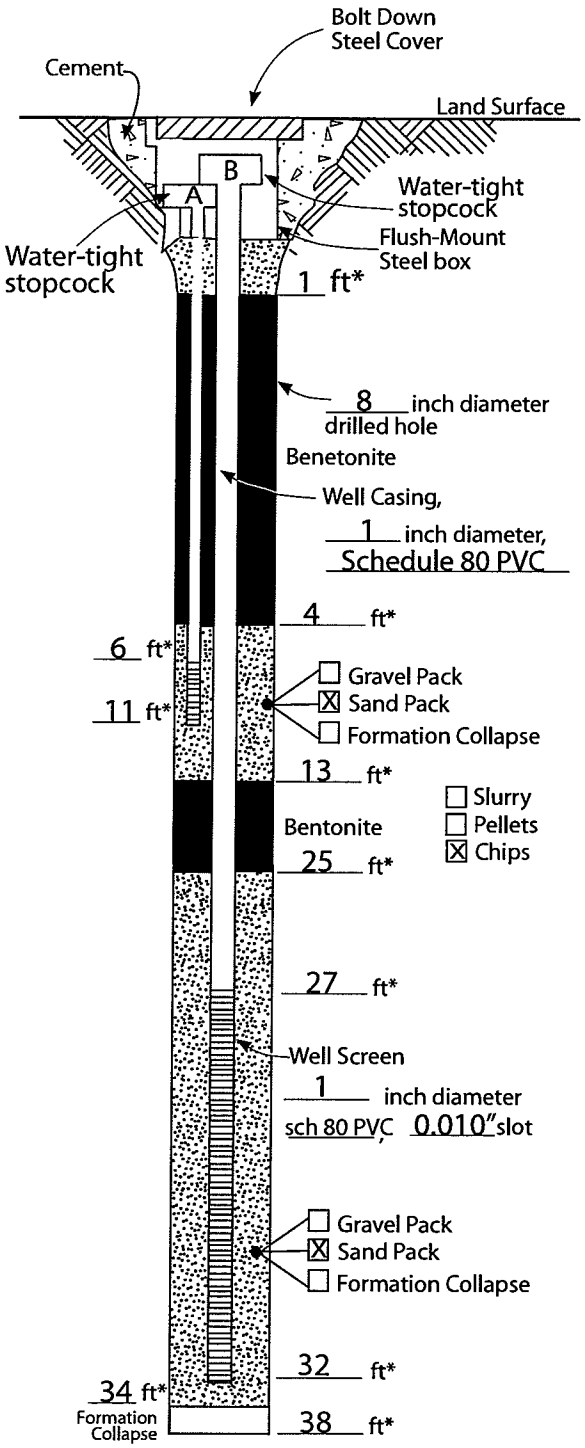
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap; filter pack: Flat Rock Bagging, 50 lb bags; bentonite: Enviroplug, medium, Wyo-Ben Inc., 50 lbs bags; sand: 27-18' (6 bags), 12-3' (6 bags); bentonite: 39-27' (5 bags), 18-12' (3 bags), 3-1' (3 bags); stopcock valve, no glue used.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of
Well Casing Unless Otherwise
Notes

*Depth Below
Land Surface

ford/wi0637/2006/graphics/logs/gmsg558ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-558 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1112.03 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 2/28/06 - 3/1/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

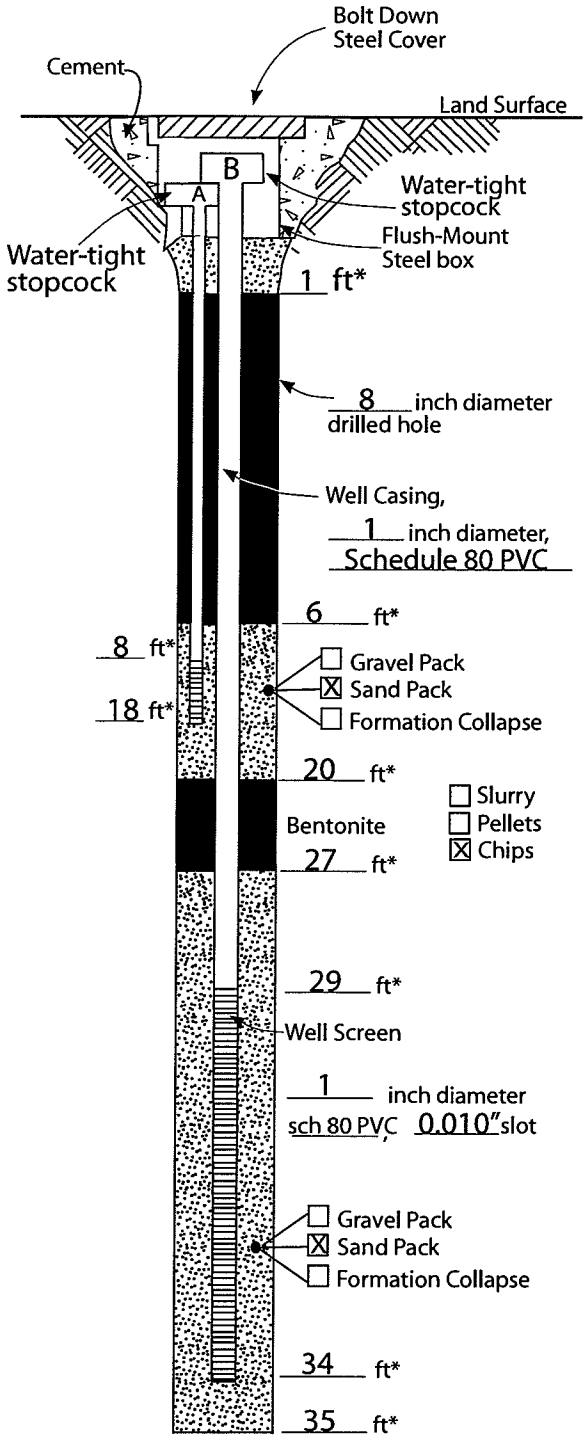
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap; filter pack: Flat Rock Bagging, 50 lb bags; 34-25' (6.5 bags), 13-4' (6 bags), bentonite: Enviroplug, medium Wyo-Ben Inc., 50 lb bags, 38-34' (1.5 bags), 25-13' (5 bags), 4-1' (1.5 bags); stopcock valve, no glue used.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg559ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-559 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1111.62 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 3/1/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

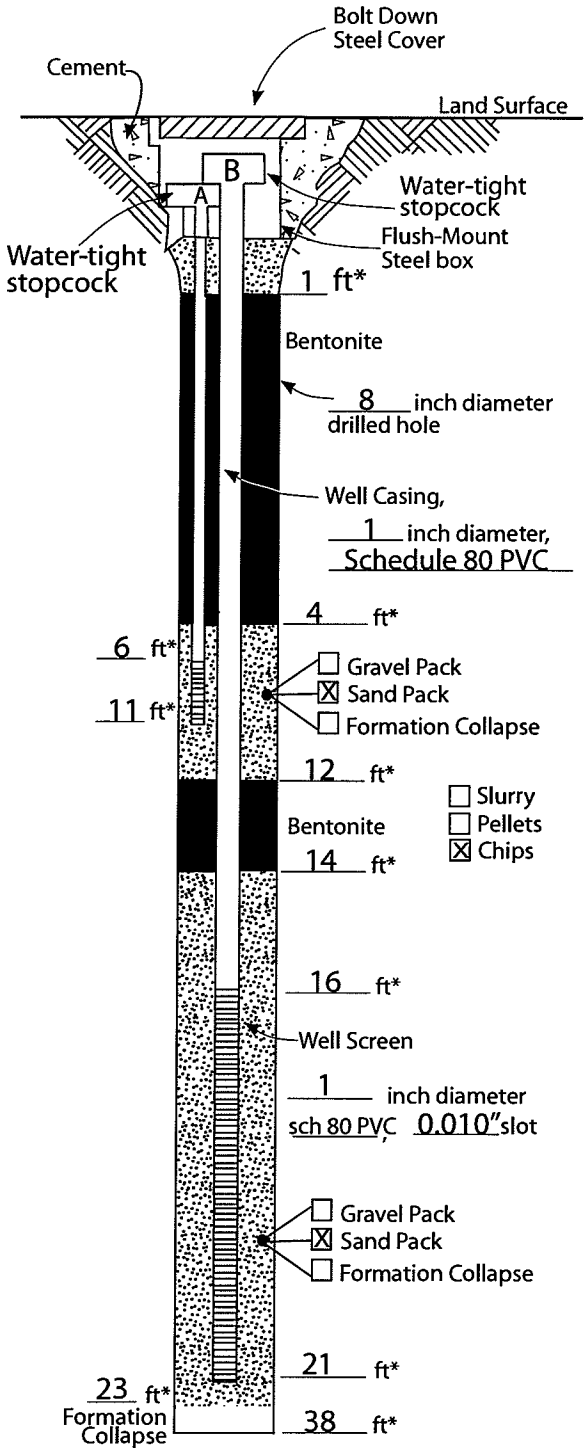
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap; filter pack: Flat Rock Bagging, 50 lb bags; 35-27' (4.5 bags), 20-6' (7.5 bags); bentonite: Enviroplug, medium Wyo-Ben Inc., 50 lb bags, 27-20' (3.5 bags), 6-1' (1.5 bags); stopcock valve, no glue used.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg560ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-560 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1112.58 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 3/6/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

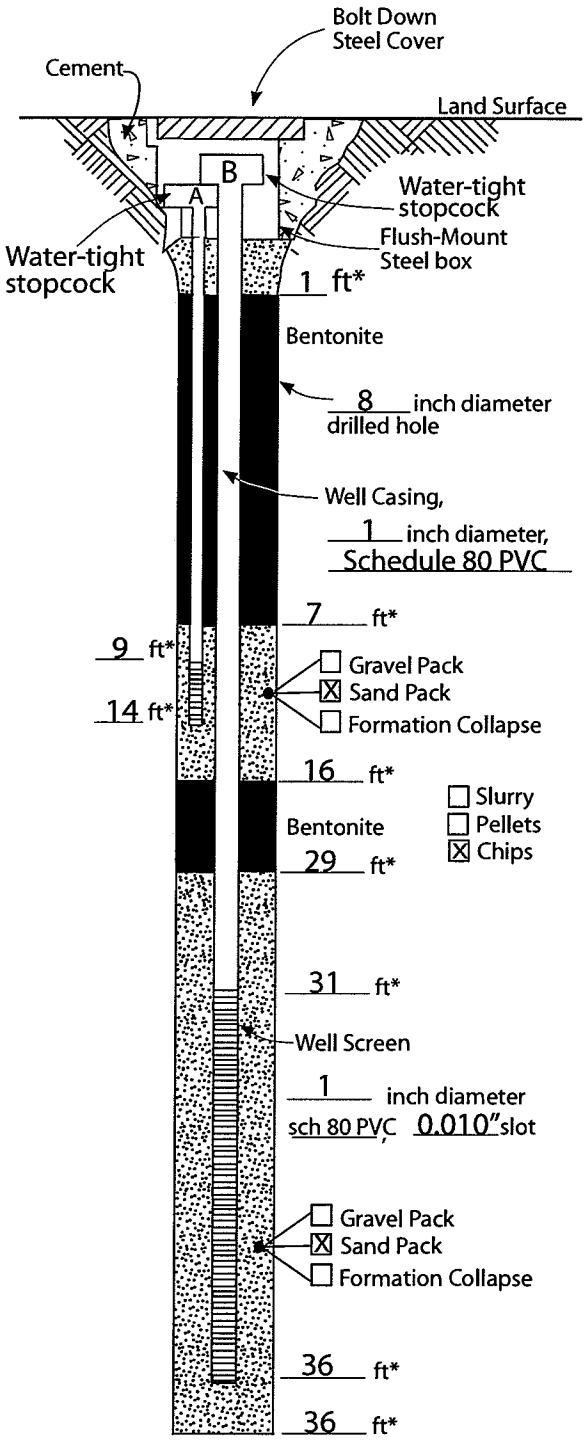
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap; filter pack: Flat Rock Bagging, 50 lb bags; 23-14' (5 bags), 12-4' (5 bags); bentonite: Enviroplug, medium Wyo-Ben Inc., 50 lb bags, 38-23' (6 bags), 14-12' (3/4 bag), 4-1' 2 bags); stopcock valve, no glue used.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg561ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-561 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1112.59 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 3/6/06 - 3/7/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

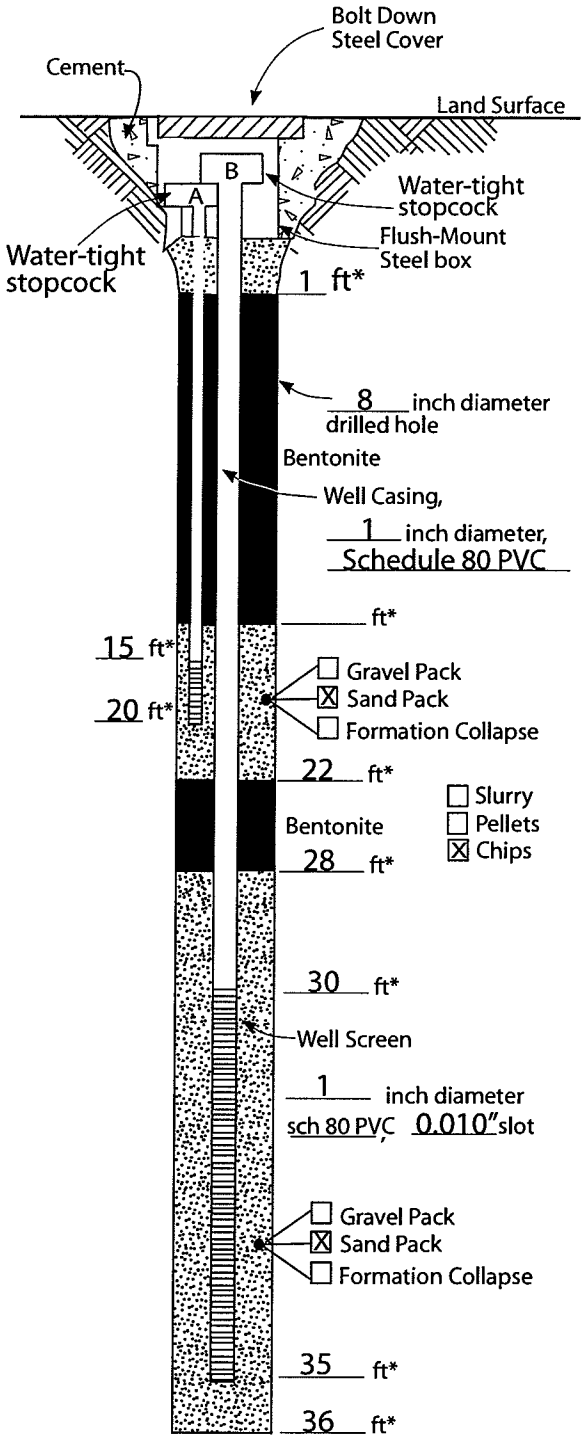
Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap; filter pack: Flat Rock Bagging, 50 lb bags; 36-29' (6 bags), 16-7' (6 bags); bentonite: Enviroplug, medium Wyo-Ben Inc., 50 lb bags, 29-16' (4 bags), 7-1' (2 bags), stopcock valve, no glue used.

Prepared by Jill Flater



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg562ab-wcl.ai

Well Construction Log

(Flush Mounted Well)

Project Ford/Kingsford WI0010950002 Well GMSG-562 A/B

Town/City Kingsford, Michigan

County Dickinson

Permit No. NA

Land-Surface Elevation 1112.58 Feet

☒ surveyed

☐ estimated

Datum Mean Sea Level

Installation Date(s) 3/2/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

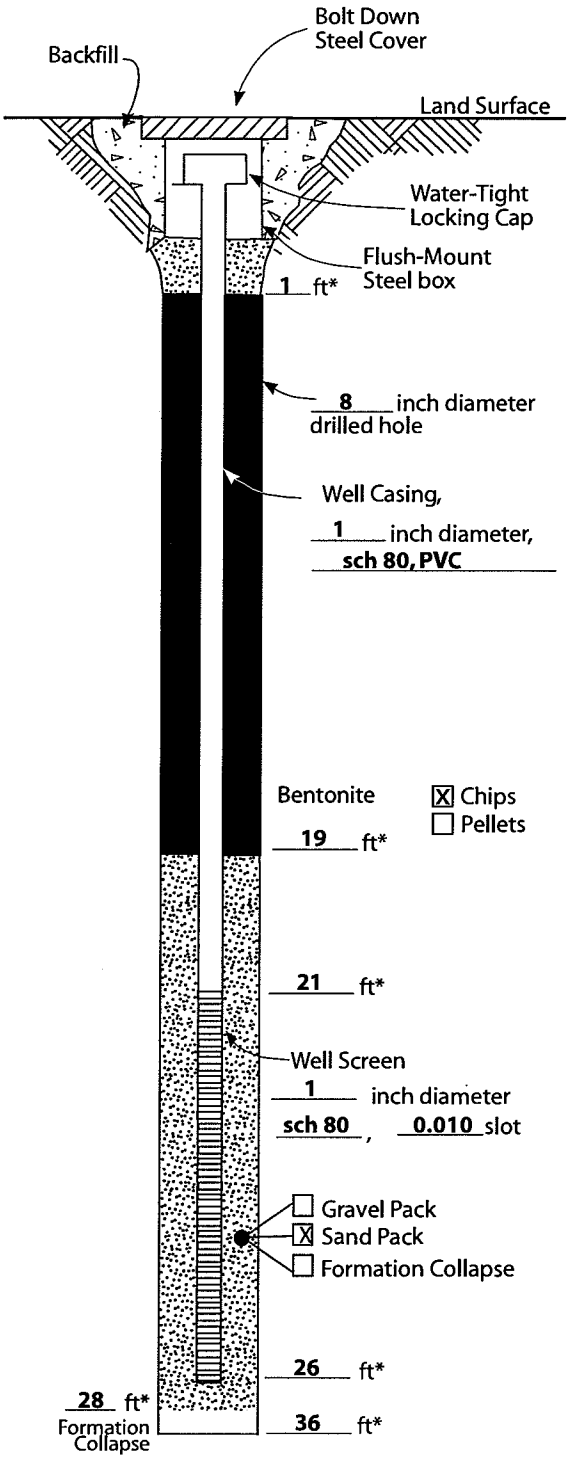
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap; stopcock value; filter pack: Flat Rock Bagging, 50 lb bags, 36-28' (4.5 bags), 22-13' (5 bags); bentonite: Enviroplug, medium, Wyo-Ben Inc., 50 lb bags, 28-22' (2.5 bags), 13-1' (4.5 bags); no glue used.

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg563-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-563**

Town/City **Kingsford, Michigan**

County **Dickinson**

Permit No. _____

Land-Surface Elevation

1112 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **3/1/06 - 3/2/06**

Drilling Method **Hollow Stem Auger**

Drilling Contractor **Coleman Engineering Company**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

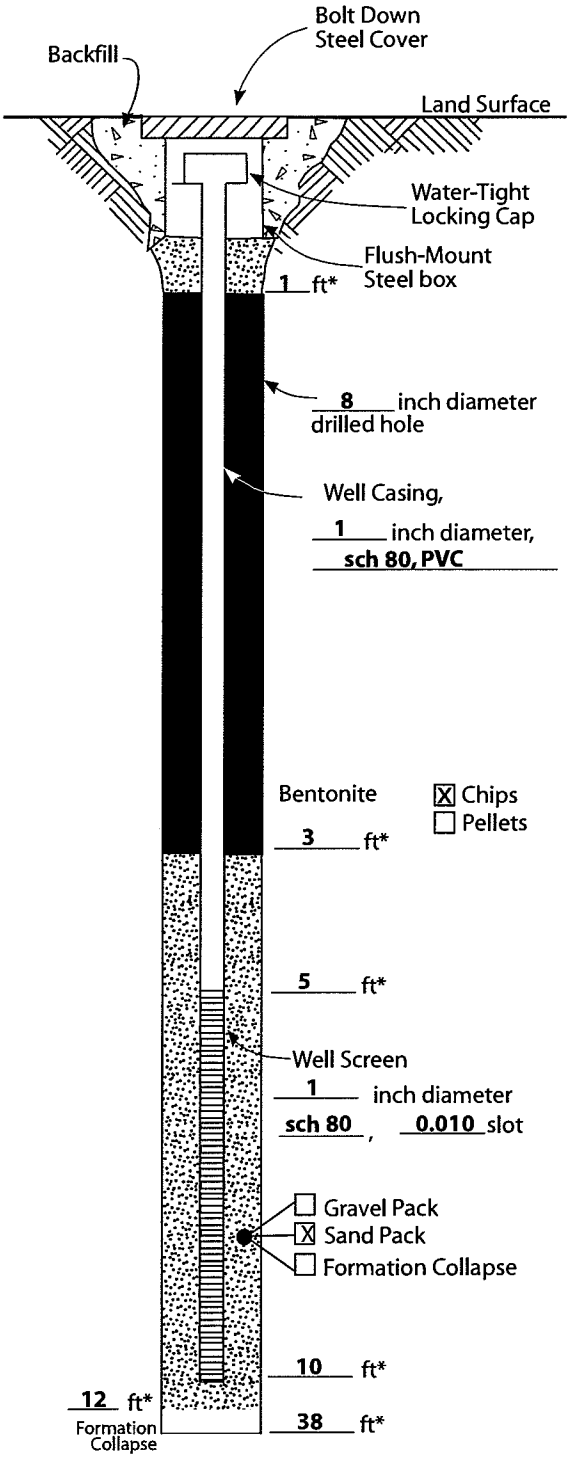
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks **Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap, stopcock value; filter pack: Flat Rock Bagging, 50 lb bags, 28-19' (5 bags); bentonite: Enviroplug, medium, Wyo-Ben, Inc., 50 lb bags, 36-28' (1.5 bags), 19-1' (9.5 bags); no glue used.**

Prepared by **Jill Flater**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg564-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-564**

Town/City **Kingsford, Michigan**

County **Dickinson**

Permit No. _____

Land-Surface Elevation

1112.31 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **3/7/06**

Drilling Method **Hollow Stem Auger**

Drilling Contractor **Coleman Engineering Company**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

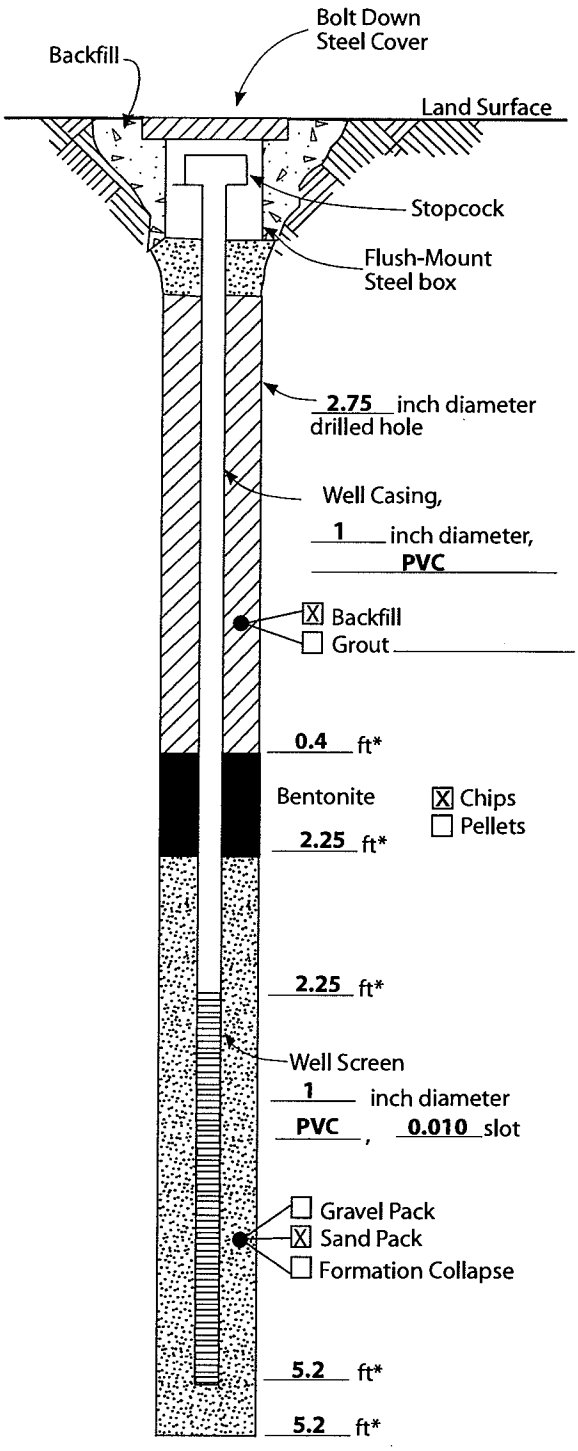
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks **Screen/riser: Big Foot, sch 80, 1" PVC, slot 0.010, flat bottom cap, stopcock value; filter pack: Flat Rock Bagging, 50 lb bags, 12-3' (6 bags); bentonite: Enviroplug, medium, Wyo-Ben, Inc., 50 lb bags, 38-12' (6.5 bags), 3-1' (1.5 bags); no glue used.**

Prepared by **Jill Flater**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg565-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-565**

Town/City **Kingsford/Independent Hair Cutters**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1118.48 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **4/27/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

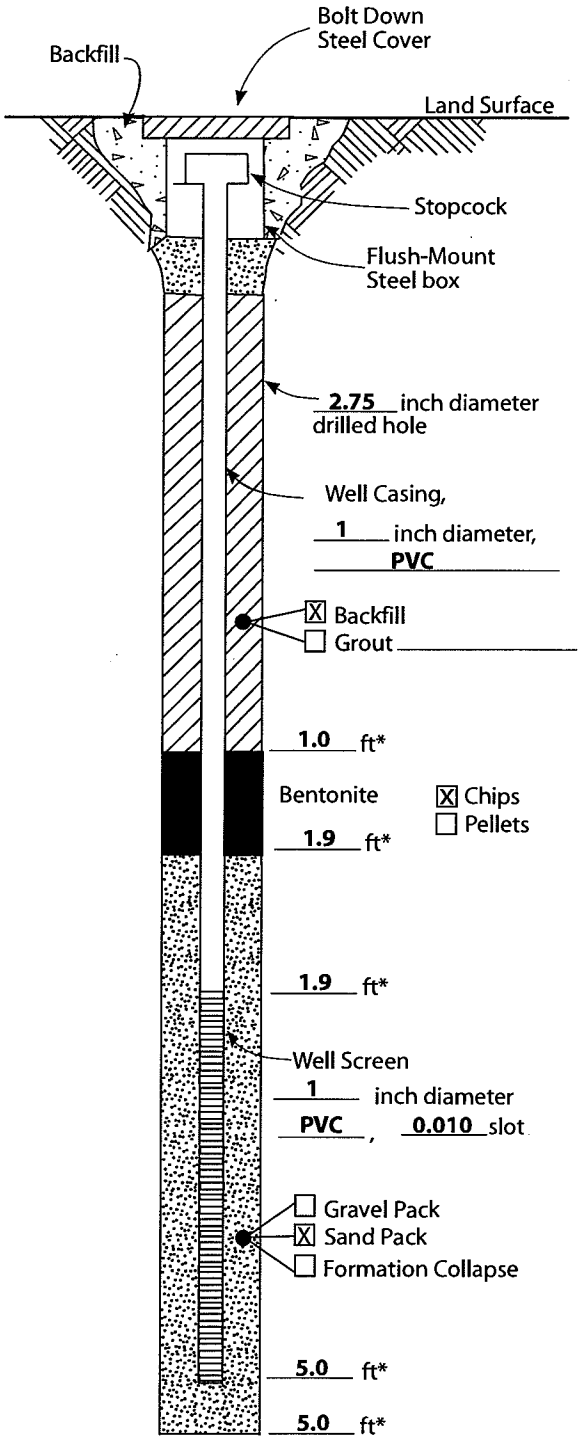
Specific Capacity _____ gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks **Well is located on east side of the building, 13' from northeast corner, 2' out from the building.**

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg566-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-566**

Town/City **Kingsford/Independent Hair Cutters**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1118.65 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **4/27/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

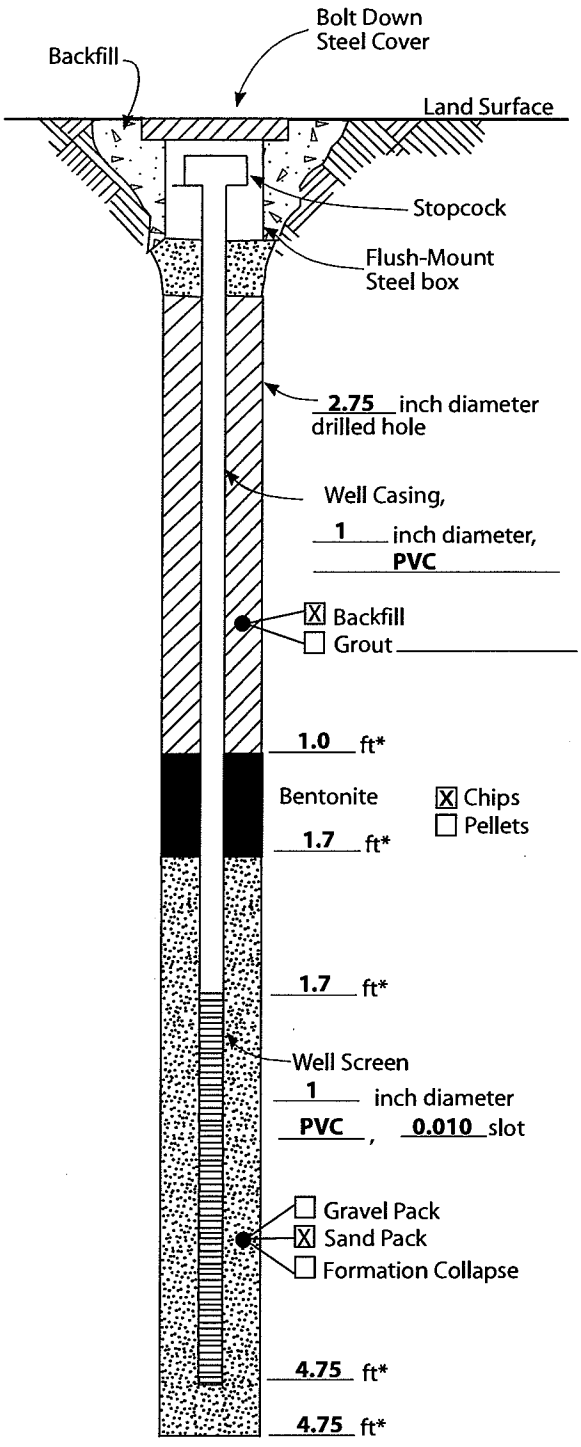
Specific Capacity _____ gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks **Well is located on north side of the building, 13' 10" from northeast corner, 15" out.**

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-567**

Town/City **Kingsford/Independent Hair Cutters**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1118.69 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **4/27/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

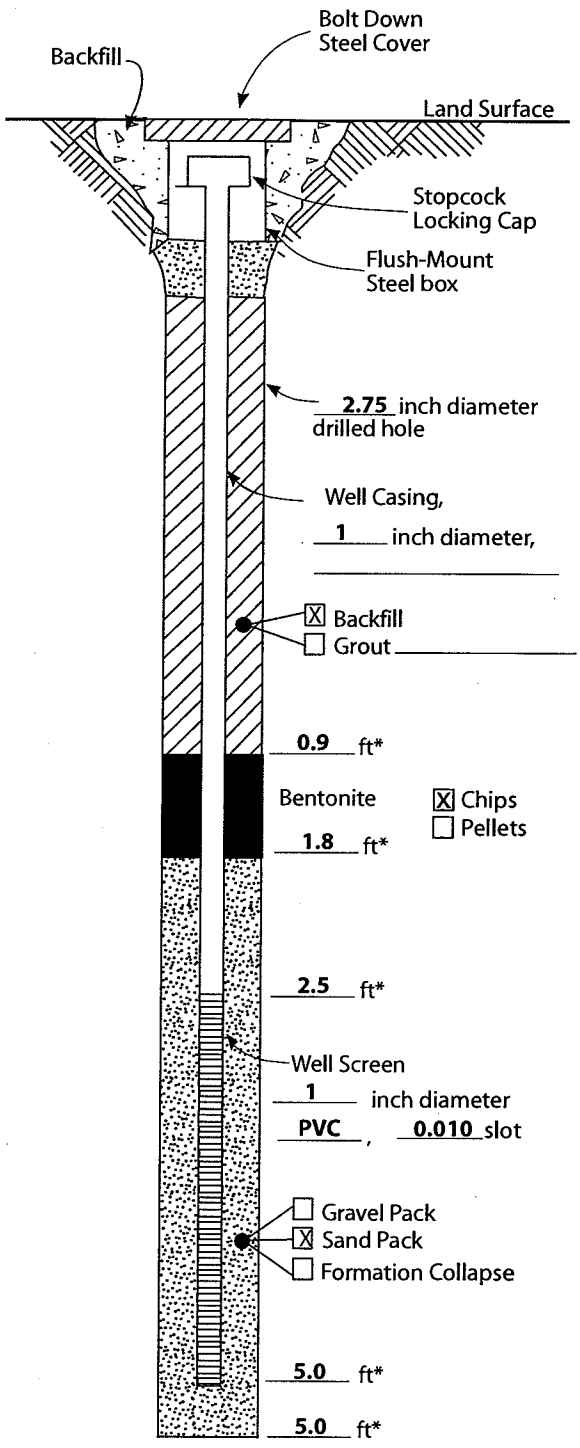
Well Purpose **Commercial Soil Vapor Probe**

Remarks **Well is located on west side of the building, 13' 2" from northwest corner, 23" from building.**

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg567-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg568-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-568**

Town/City **Kingsford/Church of Jesus Christ Latter Day Saints**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1131.83 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/5/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity gpm/ft Date

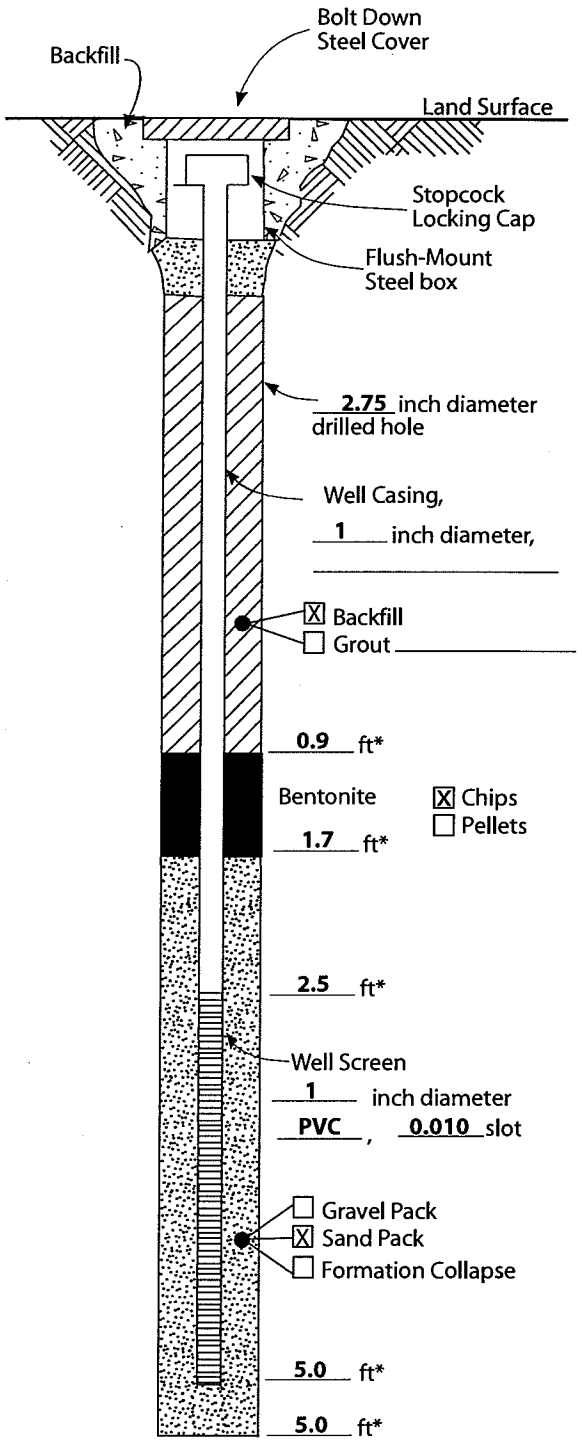
Specific Capacity gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg569-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-569

Town/City Kingsford/Church of Jesus Christ Latter Day Saints

County Dickinson

Permit No. NA

Land-Surface Elevation

1131.57 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 5/5/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity gpm/ft Date

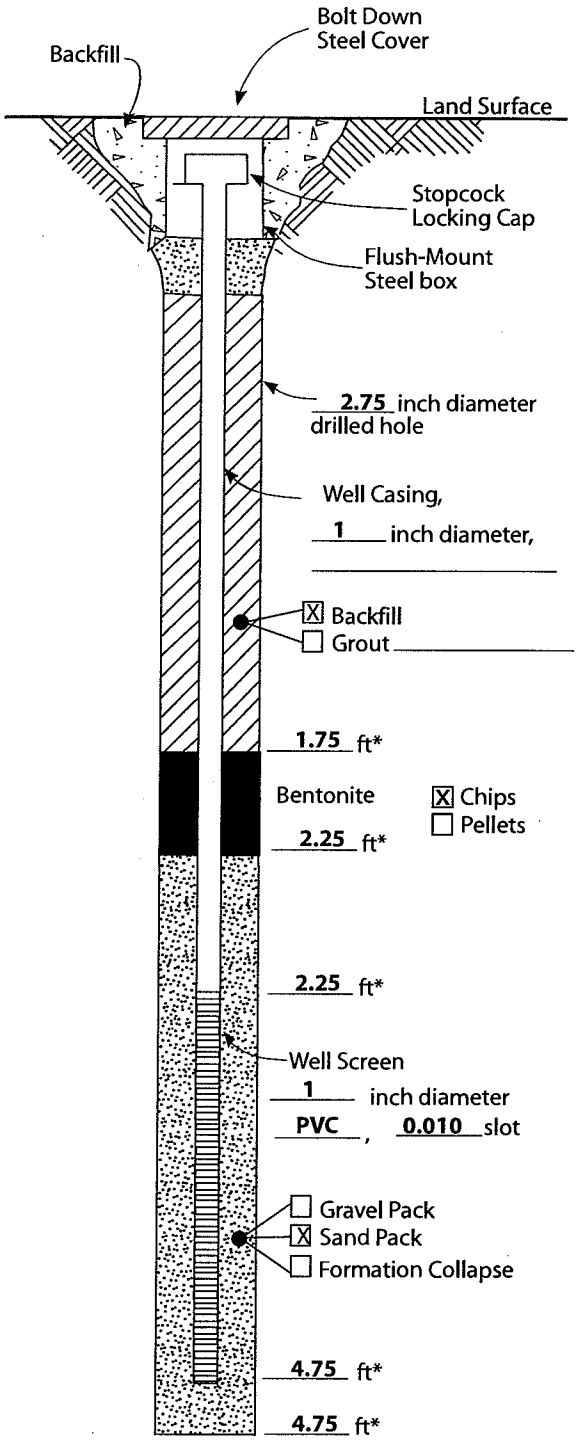
Specific Capacity gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg570-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-570**

Town/City **Kingsford/Church of Jesus Christ Latter Day Saints**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1131.75 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/5/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

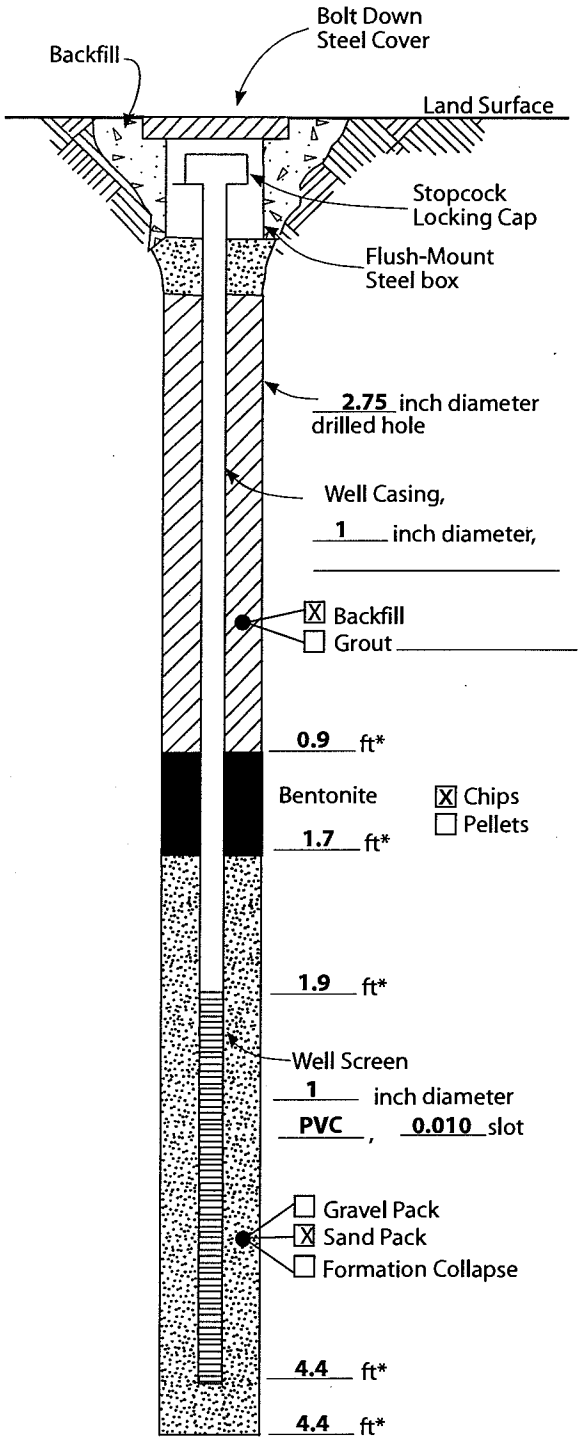
Specific Capacity _____ gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-571**

Town/City **Kingsford/Church of Jesus Christ Latter Day Saints**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1131.56 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/8/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

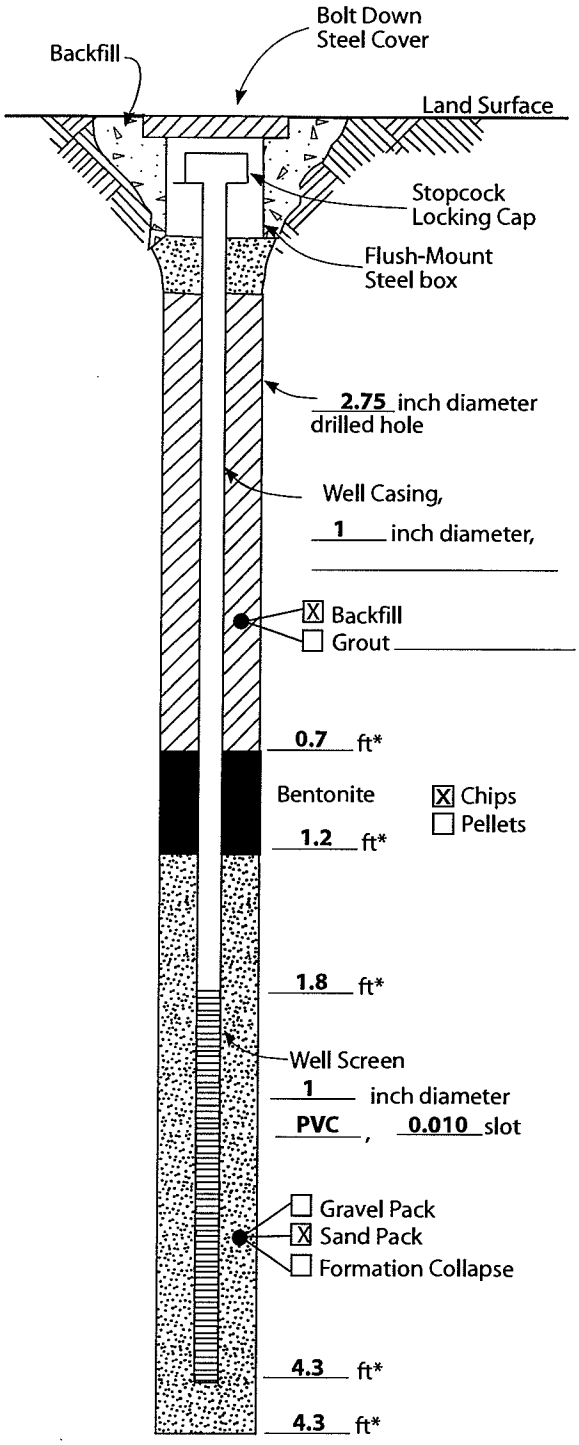
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg571-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-572**

Town/City **Kingsford/Trico Opportunities**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1117.57 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/8/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity ____ gpm/ft Date ____

Specific Capacity ____ gpm/ft

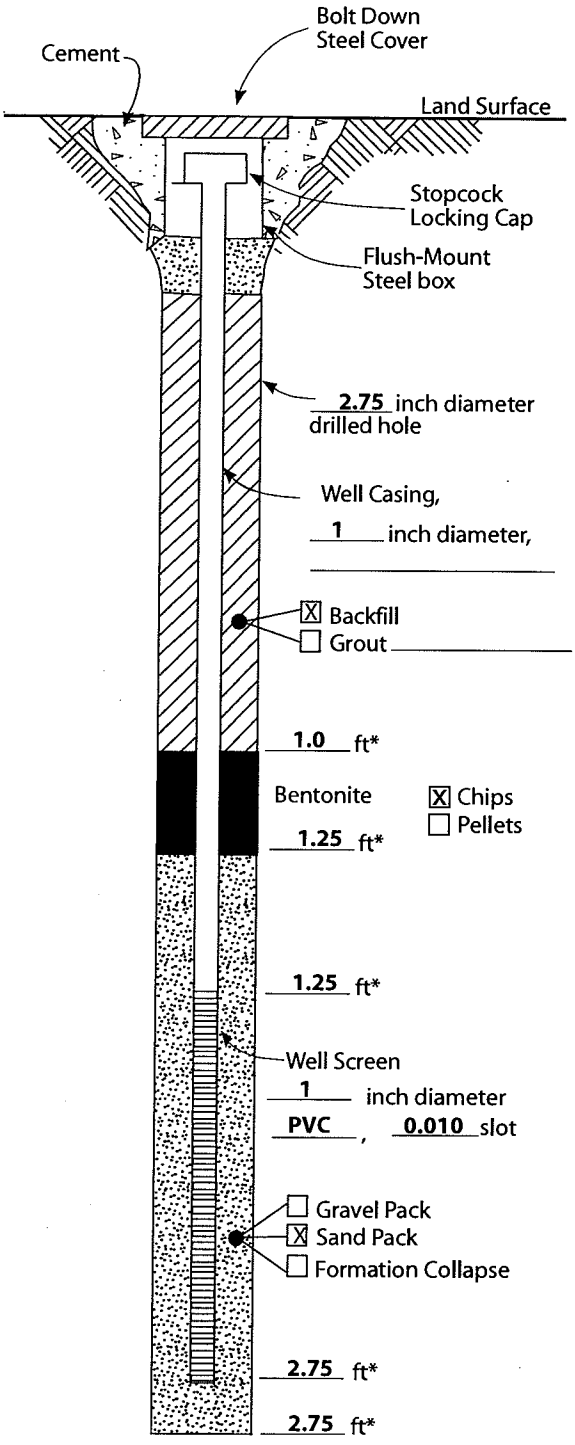
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg572-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg573-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-573

Town/City Kingsford/Trico Opportunities

County Dickinson

Permit No. NA

Land-Surface Elevation

1117.89 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 5/10/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity ____ gpm/ft Date ____

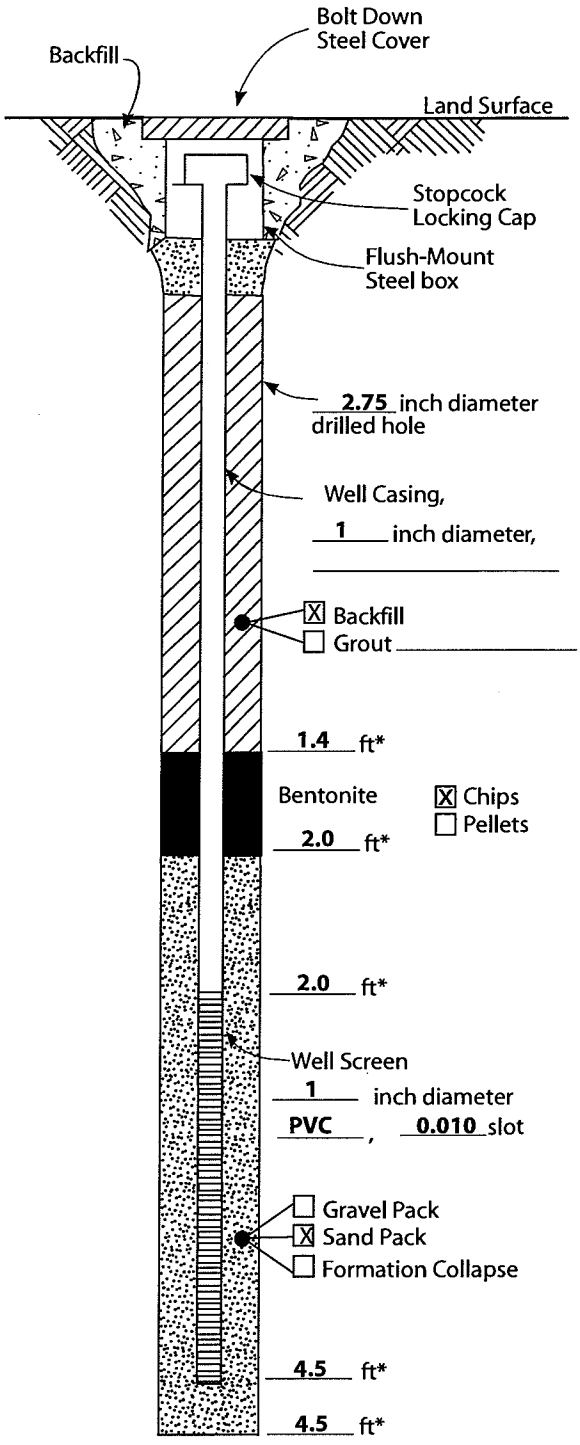
Specific Capacity ____ gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg574-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-574**

Town/City **Kingsford/Harvey Pattern Works**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1123.22 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/18/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

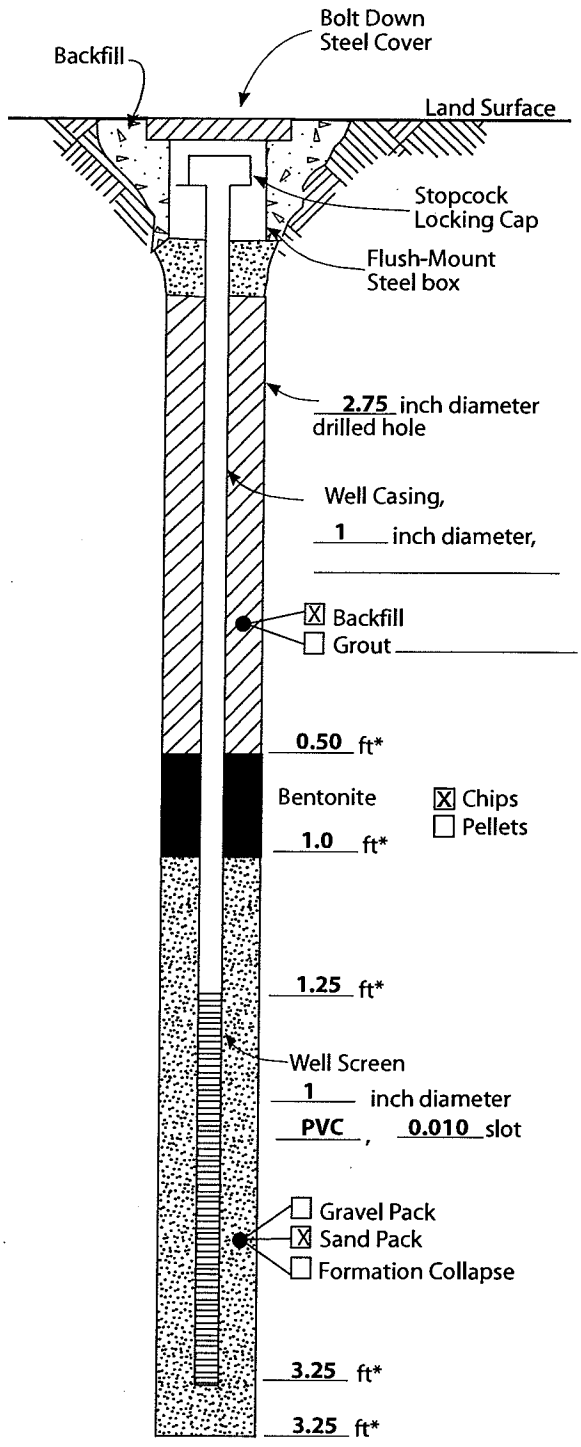
Specific Capacity _____ gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **K.Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-575**

Town/City **Kingsford/Harvey Pattern Works**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1123.98 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/18/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling – gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water – feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity ____ gpm/ft Date ____

Specific Capacity ____ gpm/ft

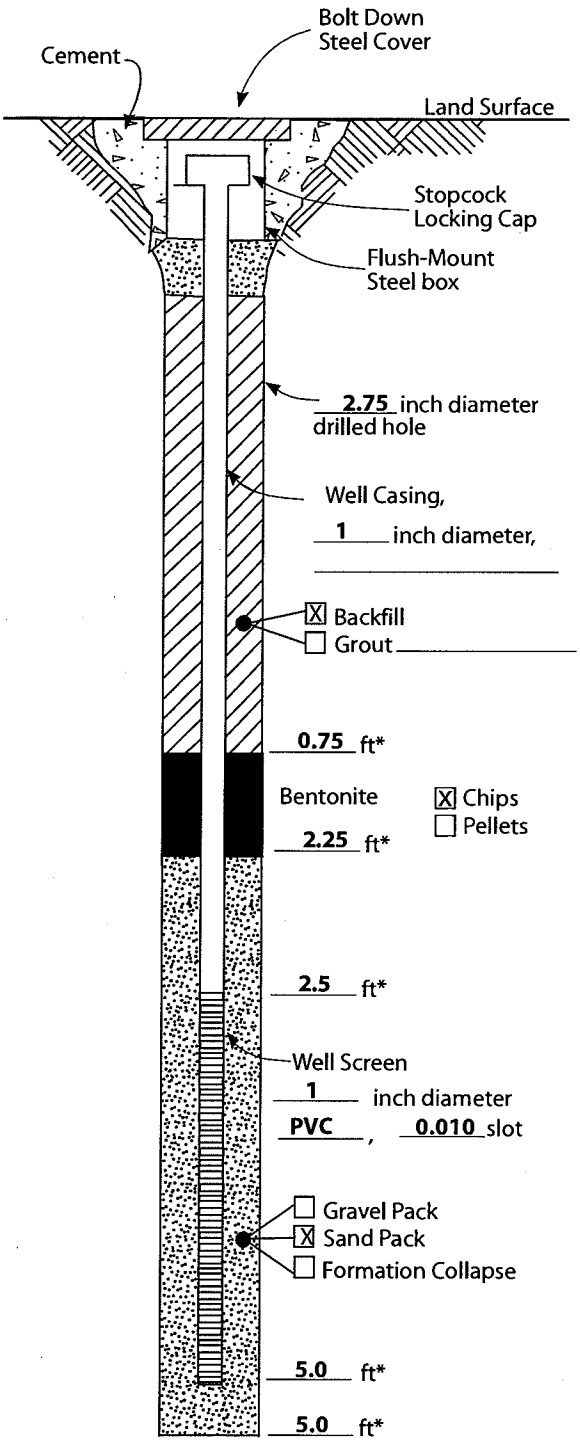
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg575-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-576**

Town/City **Kingsford/Harvey Pattern Works**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.29 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/19/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

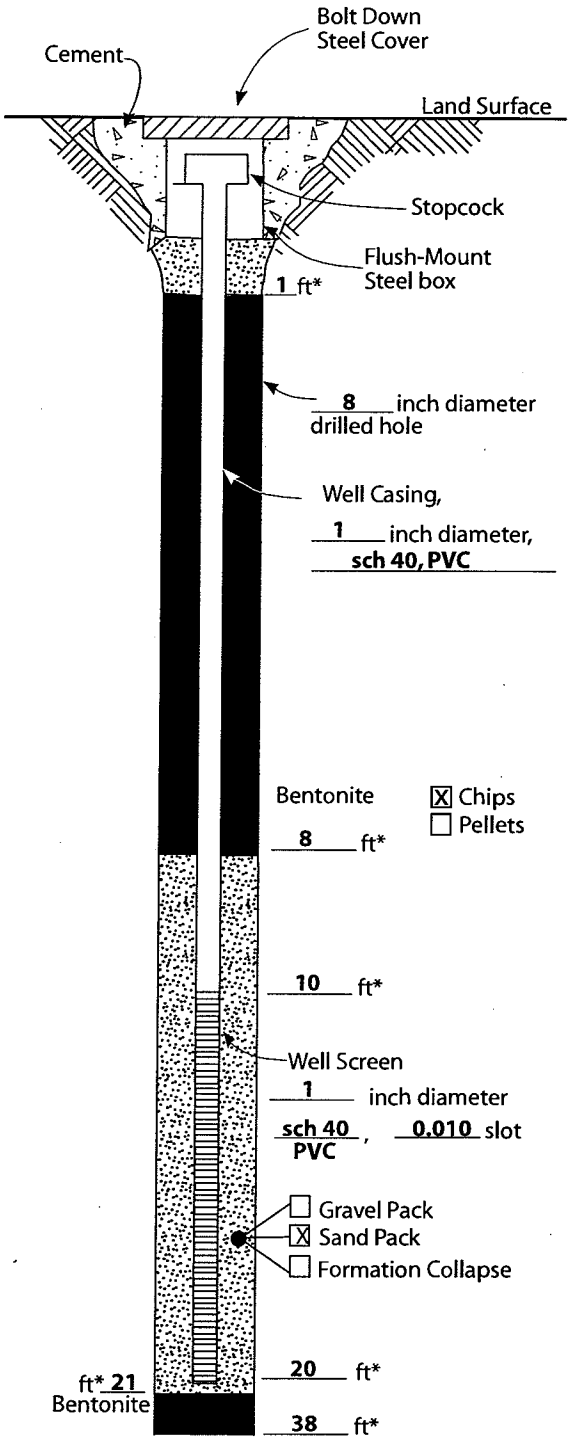
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg576-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg577-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-577**

Town/City **Kingsford, Michigan - Post Office**

County **Dickinson**

Permit No. _____

Land-Surface Elevation

1113.71 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/15/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

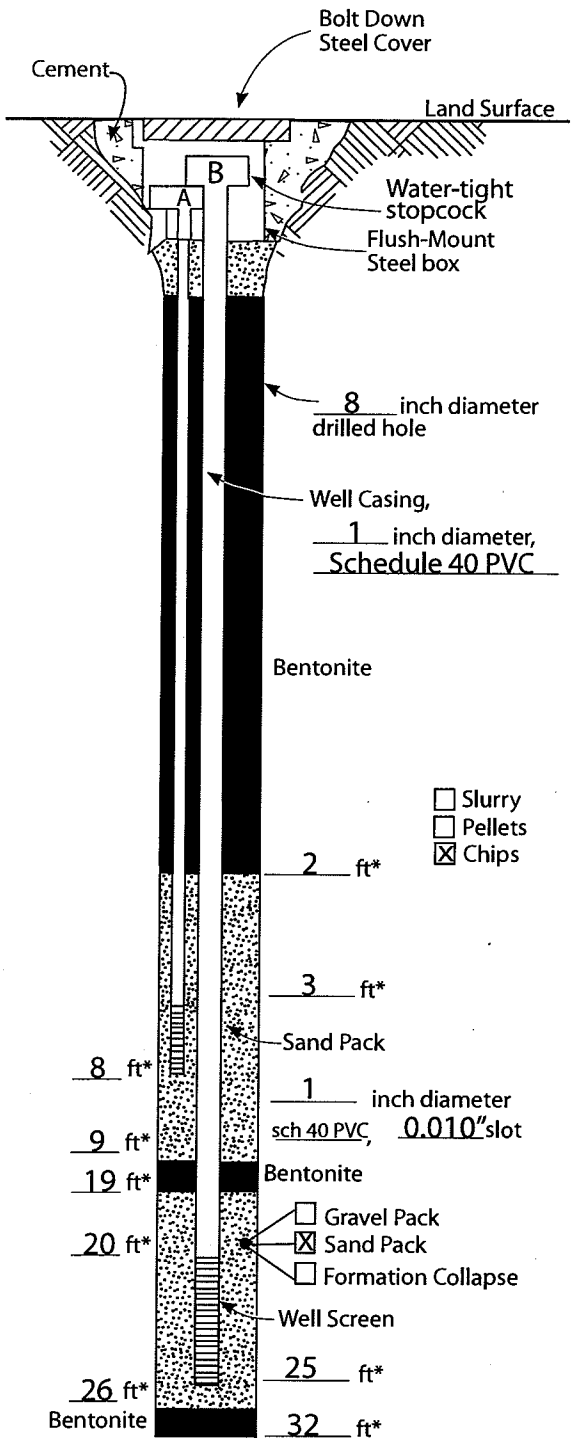
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks **Screen: Johnson, 1" PVC, sch40, slot 0.010; casing: Johnson 1" PVC, sch40, pointed end cap; fitler pack: K&E well gravel, 50 lb bags, from 21 to 8' - 9 bags; bentonite: Enviroplug, medium, 50 lb bags, from 38 to 21' - 6 bags, from 8 to 1' - 3 bags.**

Prepared by **Jill Flater**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg578ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-578 A/B

Town/City Kingsford, Michigan - Post Office

County Dickinson

Permit No. NA

Land-Surface Elevation _____ Feet

1107.09 ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 5/19/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

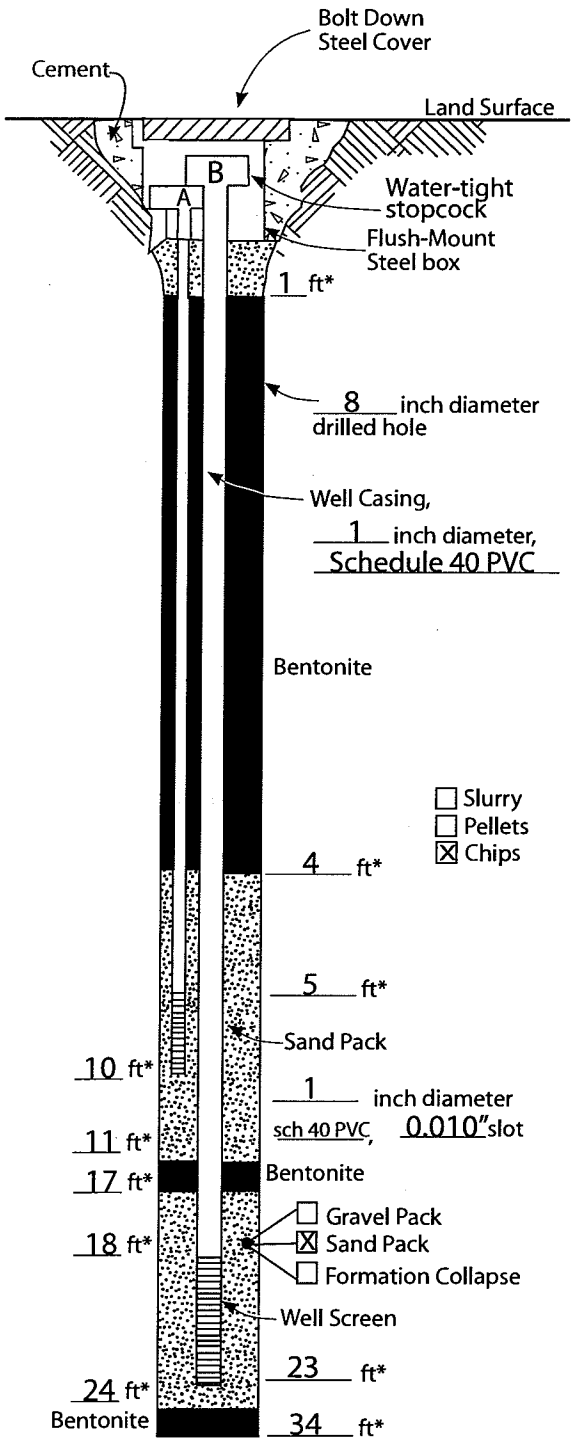
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/casing: Johnson, 1" PVC, sch 40, slot 0.010, sand cap; filter pack: K&E well gravel, 50 lb bags, from 26 to 19' 4 bags from 9 to 2' - 4 bags; bentonite: Enviroplug, medium 50 lb bags, 32 to 26' - 2.5 bags, 19 to 9' - 4 bags, 2 to 1' - 0.5 bags

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg579ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-579 A/B

Town/City Kingsford, Michigan - Post Office

County Dickinson

Permit No. NA

Land-Surface Elevation 1107.44 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 5/18/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

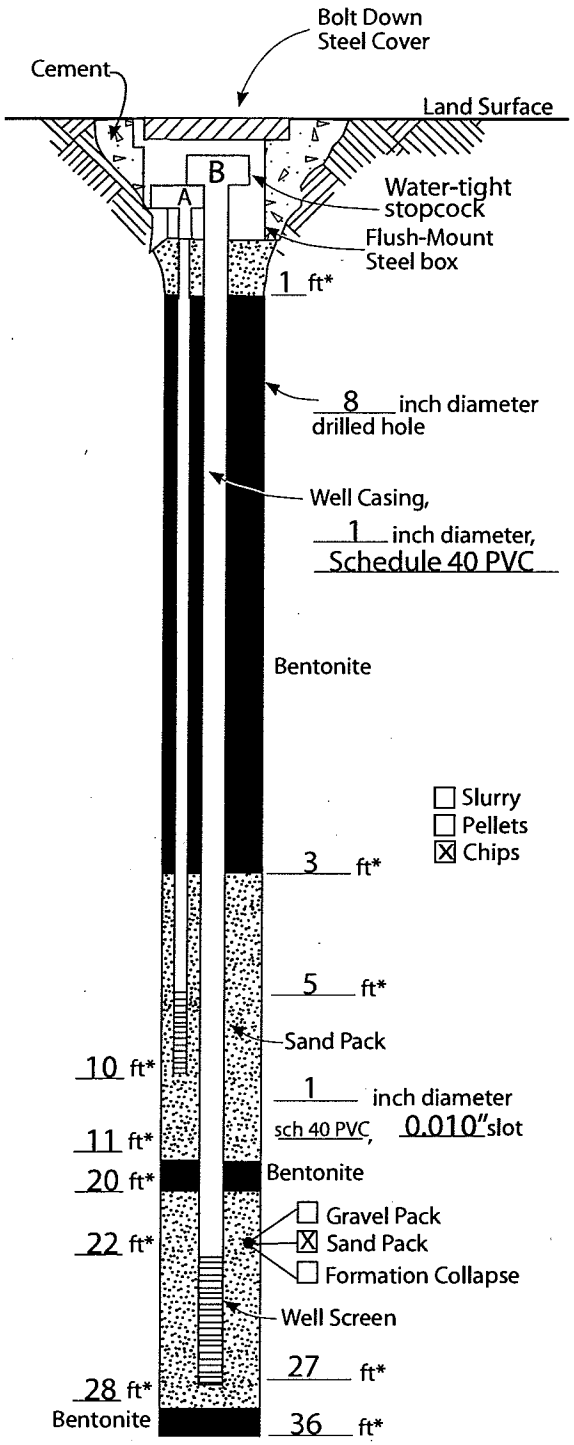
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/casing: Johnson, 1" PVC, sch 40, slot 0.010, sand cap; filter pack: K&E well gravel, 50 lb bags, from 24 to 17' 4 bags from 11 to 4' - 4 bags; bentonite: Enviroplug, medium 50 lb bags, 34 to 24' - 4.5 bags, 17 to 11' - 2.5 bags, 4 to 1' - 1 bags

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg580ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-580 A/B

Town/City Kingsford, Michigan - Post Office

County Dickinson

Permit No. NA

Land-Surface Elevation 1111.01 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 5/17/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

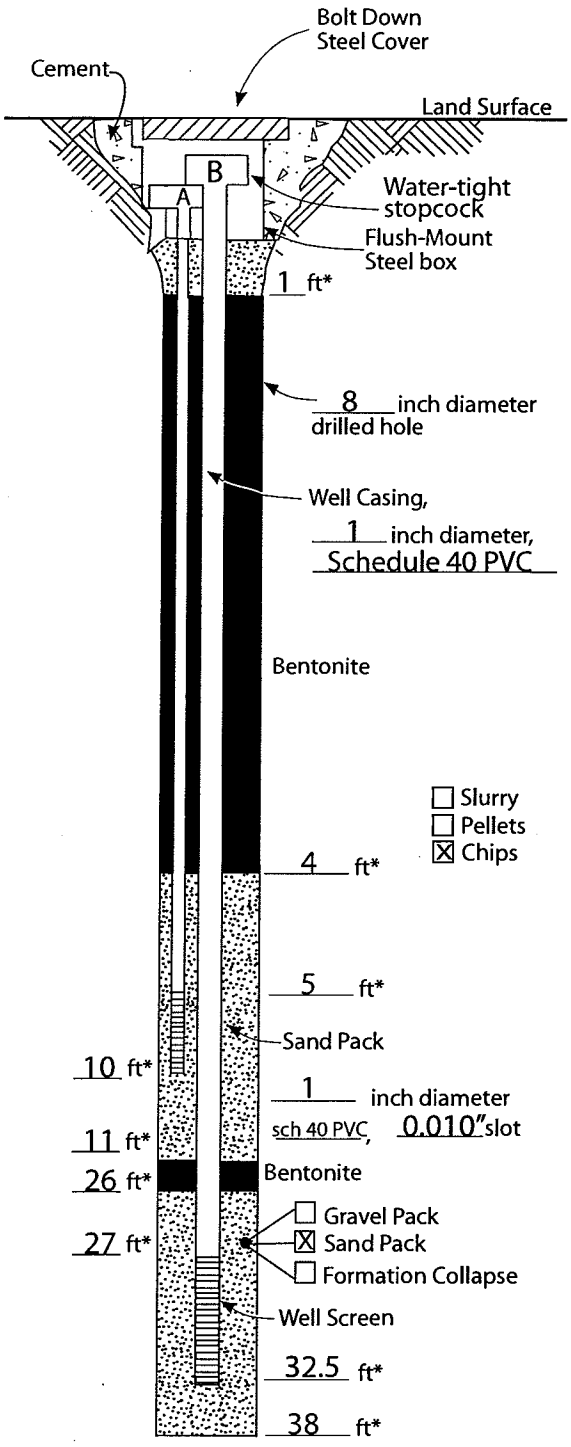
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/casing: Johnson, 1" PVC, sch 40, slot 0.010, sand cap; filter pack: K&E well gravel, 50 lb bags, from 28 to 20' 8.5 bags from 11 to 3' - 8.5 bags; bentonite: Enviroplug, medium 50 lb bags, 36 to 28' - 8.5 bags, 20 to 11' - 9.5 bags, 3 to 1' - 2 bags

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg581ab-wcl.ai

Project Ford/Kingsford WI0010950002 Well GMSG-581 A/B

Town/City Kingsford, Michigan - Post Office

County Dickinson

Permit No. NA

Land-Surface Elevation 1110.79 Feet

☒ surveyed
☐ estimated

Datum Mean Sea Level

Installation Date(s) 5/17/06

Drilling Method Hollow Stem Auger

Drilling Contractor Coleman Engineering Company

Drilling Fluid None

Development Technique(s) and Date(s)
None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

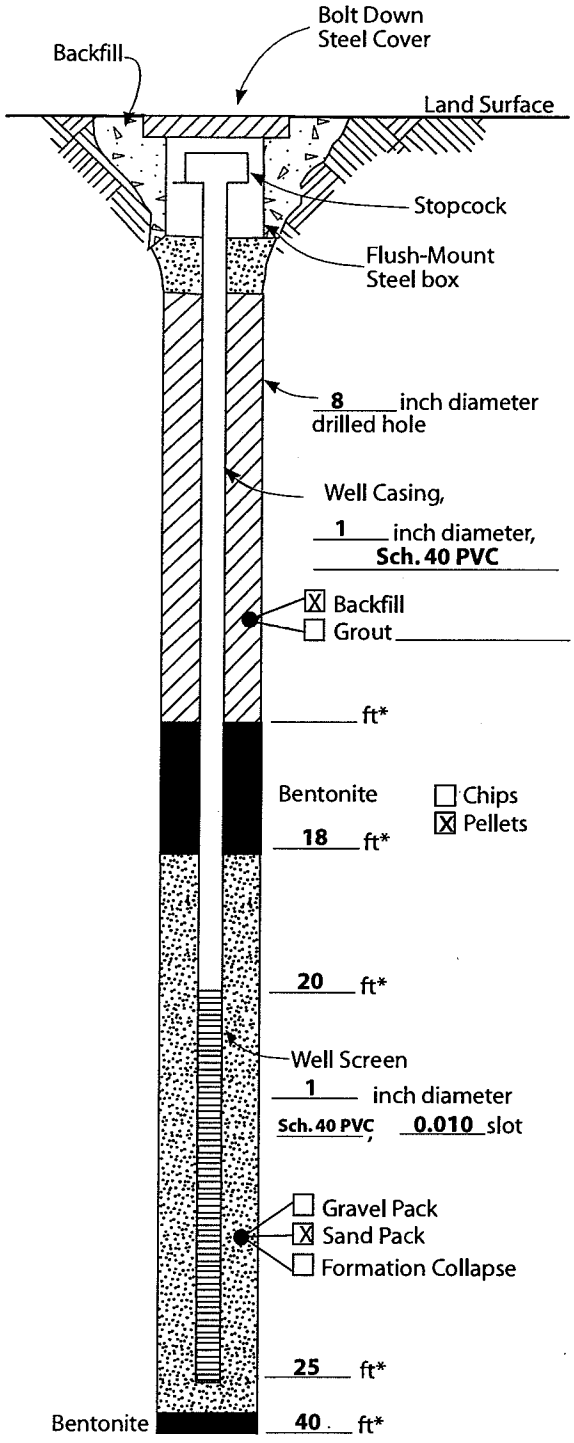
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks Screen/casing: Johnson pointed end cap screens 1" PVC sch 40 slot 0.010; casing: Johnson 1" sch 40 PVC; filter pack: K&E Gravel, 50 bags from (4-11') - 5 bags; (26-32.5) - 4 bags; bentonite: Enviroplug medium 50 lb bag (4-1' 1 bag), 32.5 - 38' 2 bags)

Prepared by Jill Flater

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg582-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-582**

Town/City **Kingsford, Michigan - Post Office**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1110.9 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/4/06**

Drilling Method **Hollow Stem Auger**

Drilling Contractor **Giles**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

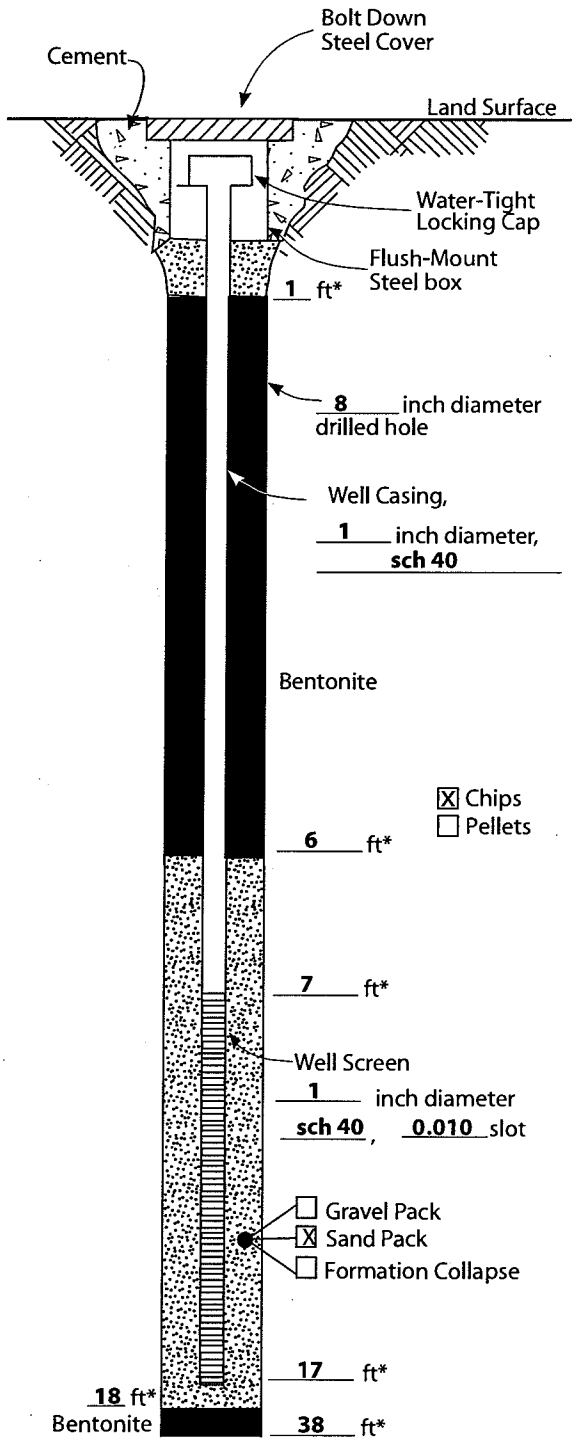
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **Erik Wright**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg583-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-583**

Town/City **Kingsford, Michigan - Post Office**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1111.05 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/19/06**

Drilling Method **Hollow Stem Auger**

Drilling Contractor **Coleman Engineering**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

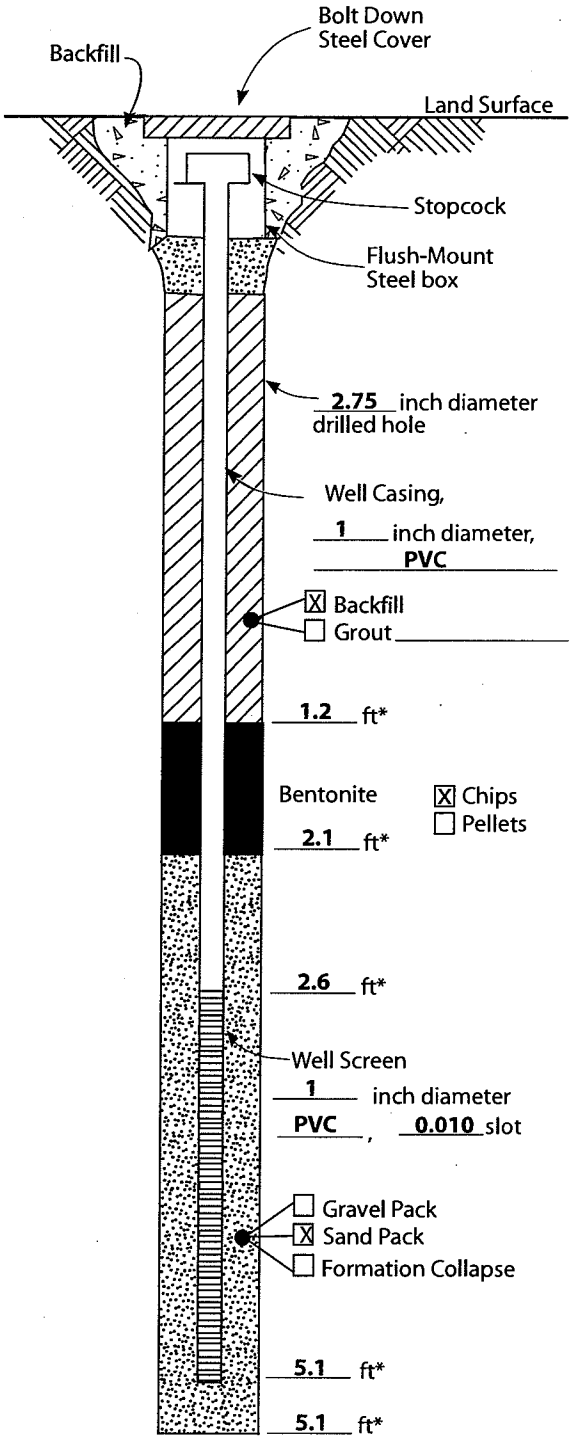
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks **Screen/casing: Johnson 1" PVC, sch 40, slot 0.010, sand cap; filter pack: K&E gravel (well), 50 lb bags, 18 to 6' - 6 bags; bentonite: Enviroplug, medium, 50 lb bags, 38 to 18' - 10 bags, 6 to 1' - 2.5 bags.**

Prepared by **Jill Flater**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg584-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-584

Town/City Kingsford, Michigan - IDG

County Dickinson

Permit No. NA

Land-Surface Elevation

1126.95 feet [X] surveyed [ ] estimated

Datum Mean sea level

Installation Date(s) 5/23/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

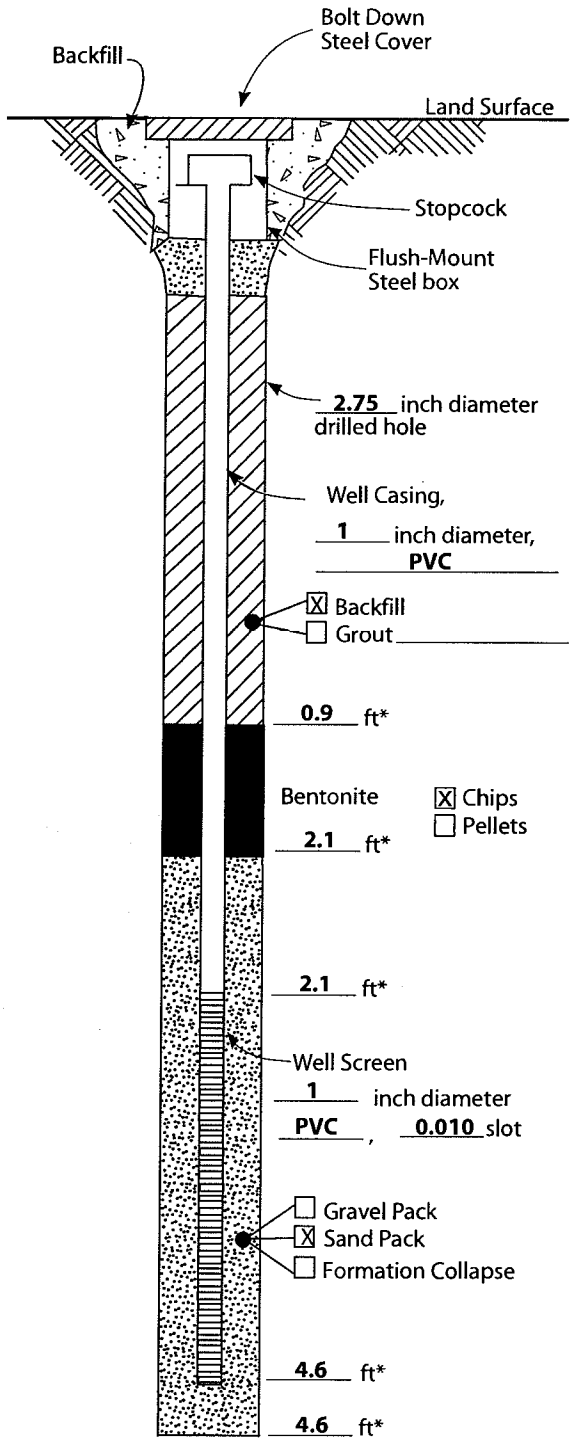
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by J. Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg585-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-585**

Town/City **Kingsford, Michigan - IDG**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1117.19 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/23/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

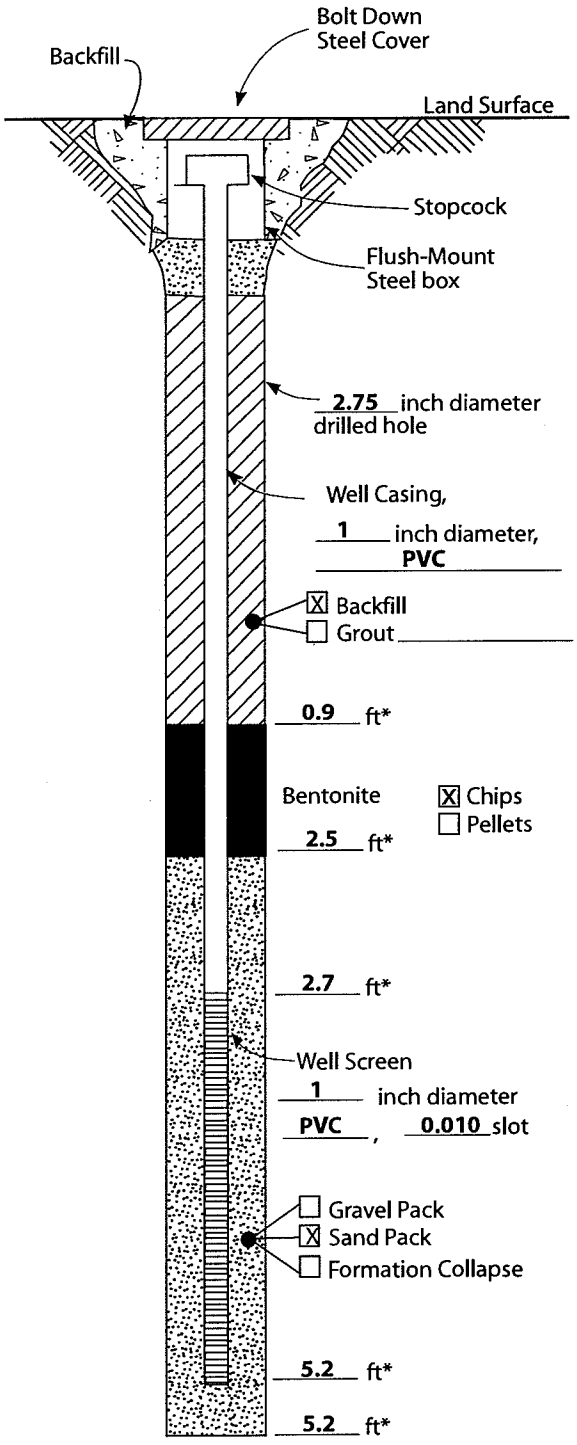
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg586-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-586**

Town/City **Kingsford, Michigan - UP Travel and Rec.**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1123.83 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/23/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

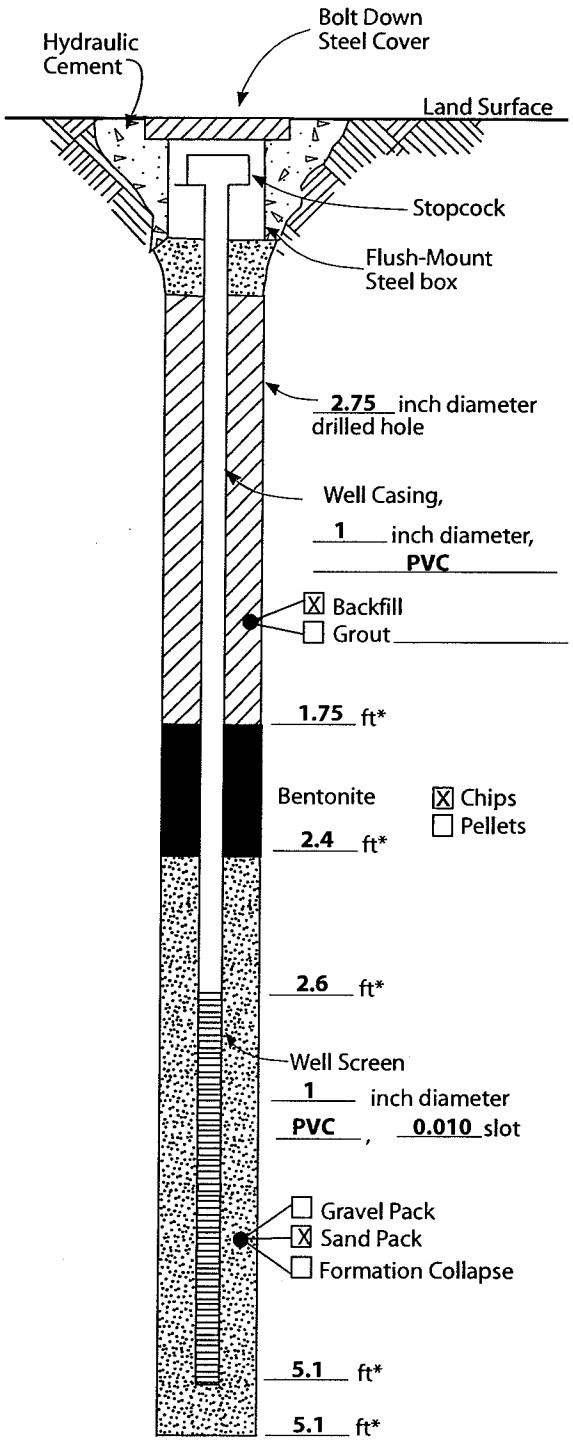
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-587**

Town/City **Kingsford, Michigan - U.P. Travel and Rec**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1124.90 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/30/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

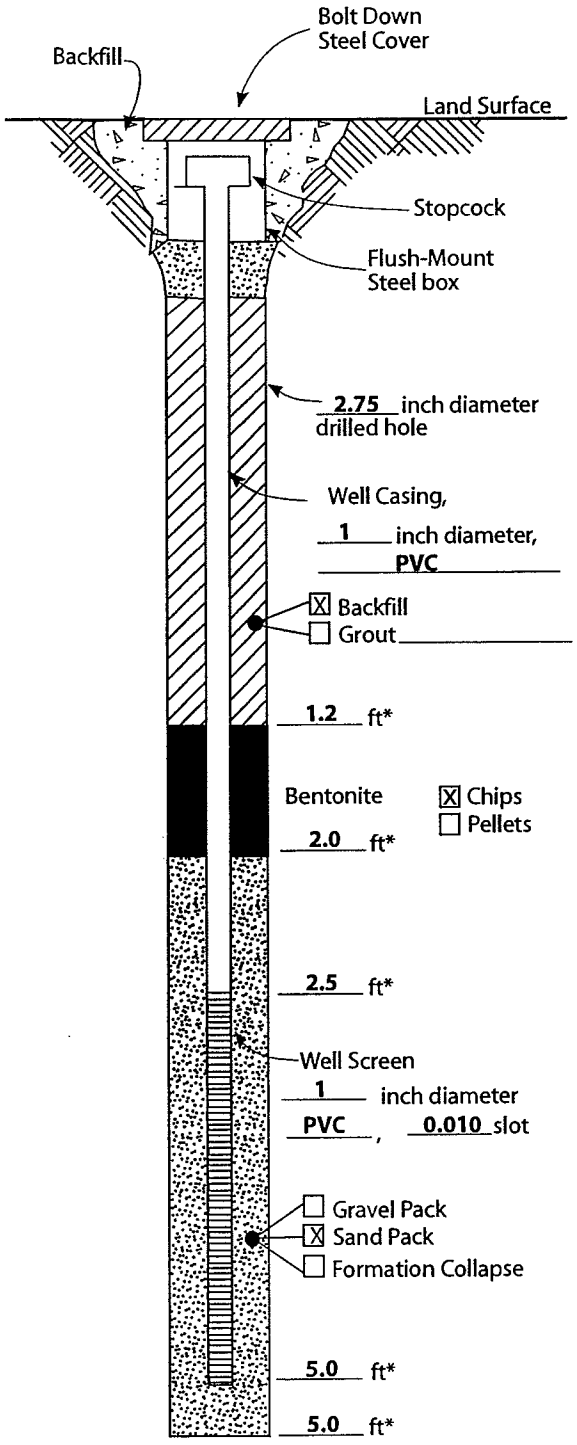
Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg587-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg588-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-588

Town/City Kingsford, Michigan - Donna's School of Dance

County Dickinson

Permit No. NA

Land-Surface Elevation 1123.85 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 5/23/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

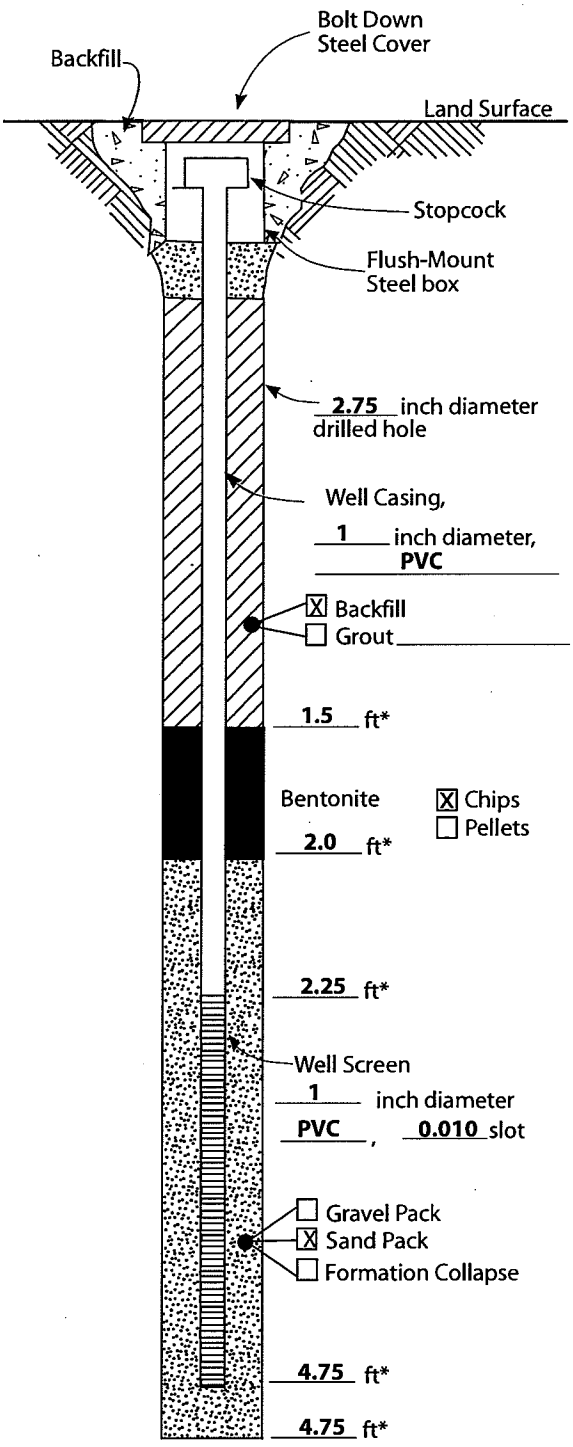
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg589-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-589

Town/City Kingsford, Michigan - Donna's School of Dance

County Dickinson

Permit No. NA

Land-Surface Elevation

1125.30 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 5/23/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

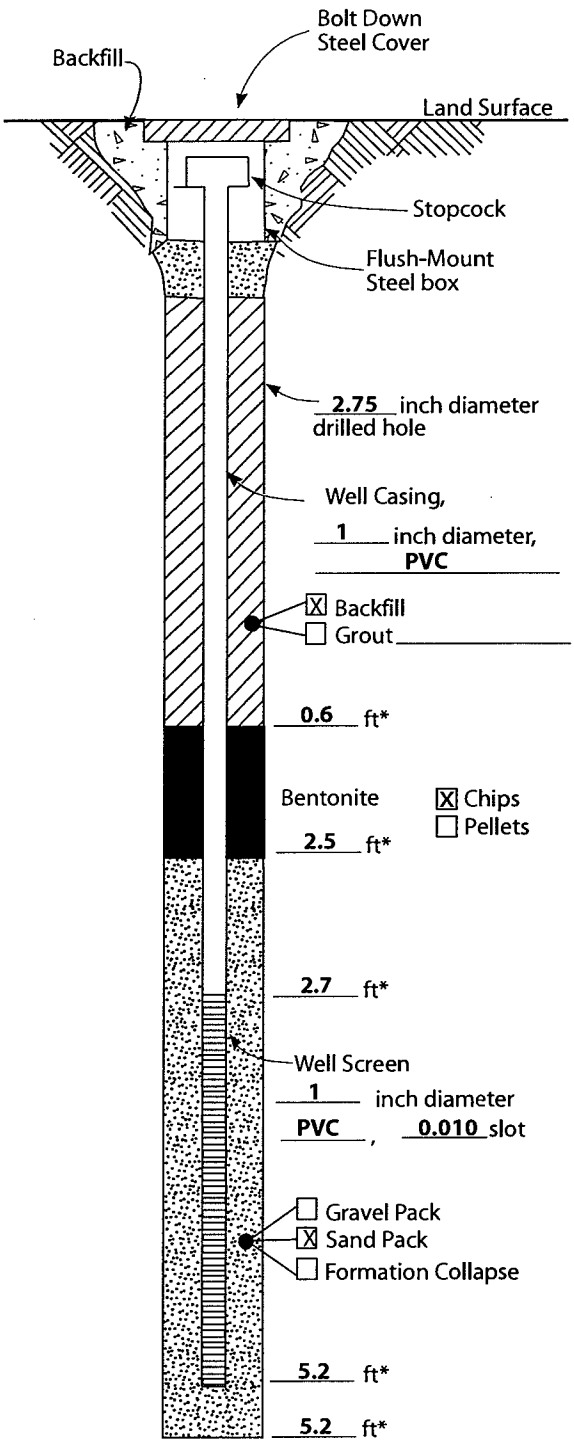
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by K. Waldbillig

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg590-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-590

Town/City Kingsford, Michigan - Donna's School of Dance

County Dickinson

Permit No. NA

Land-Surface Elevation

1125.09 feet [X] surveyed [ ] estimated

Datum Mean sea level

Installation Date(s) 5/24/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

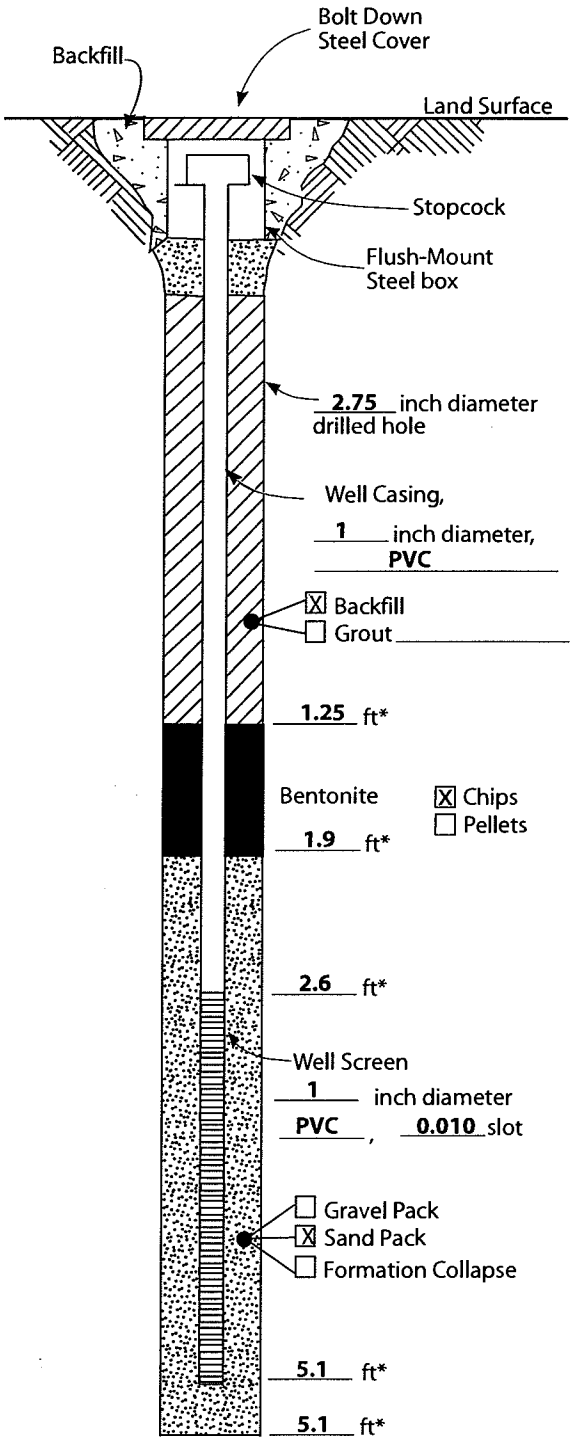
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by J. Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg591-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-591**

Town/City **Kingsford, Michigan - Controls Supply**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1120.1 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/30/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

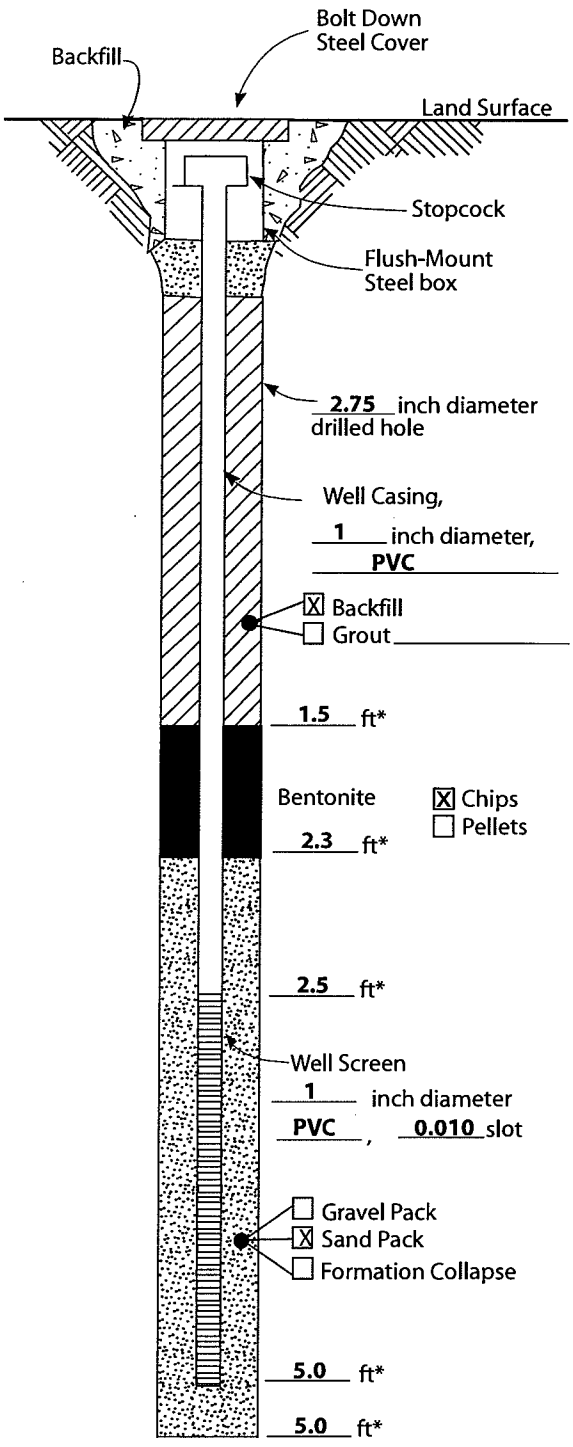
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-592**

Town/City **Kingsford, Michigan - Controls Supply**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1120.40 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/31/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

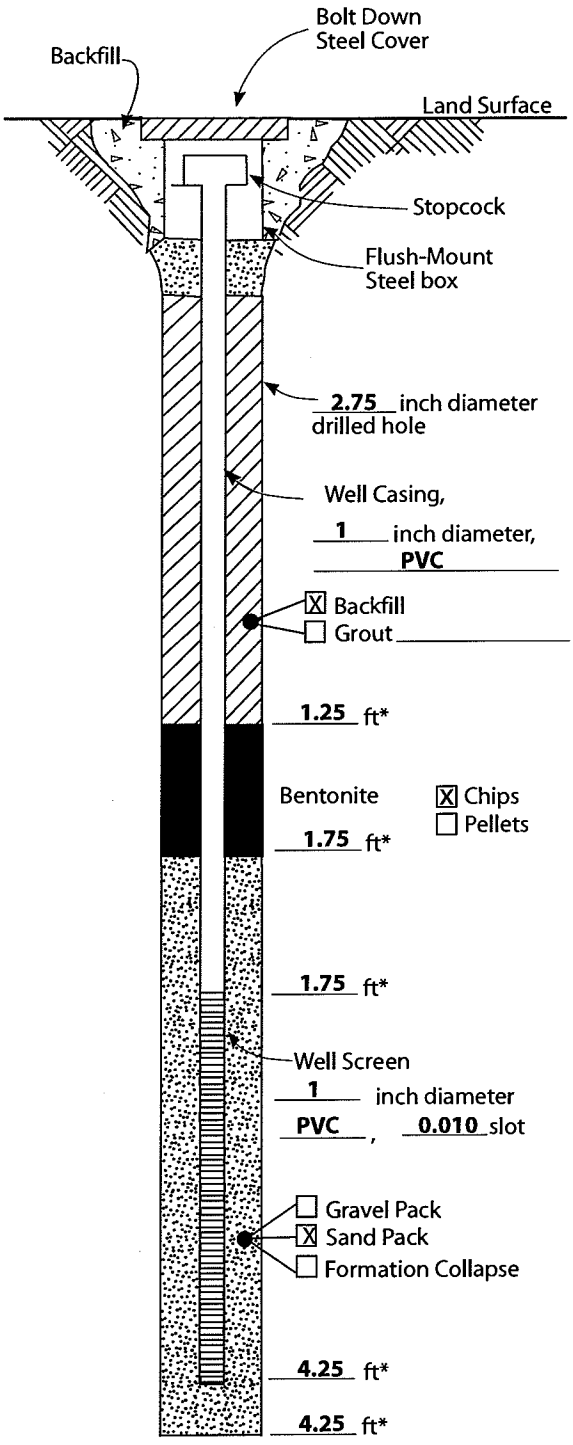
Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg592-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg593-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-593**

Town/City **Kingsford, Michigan - Controls Supply**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1119.4 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **5/31/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

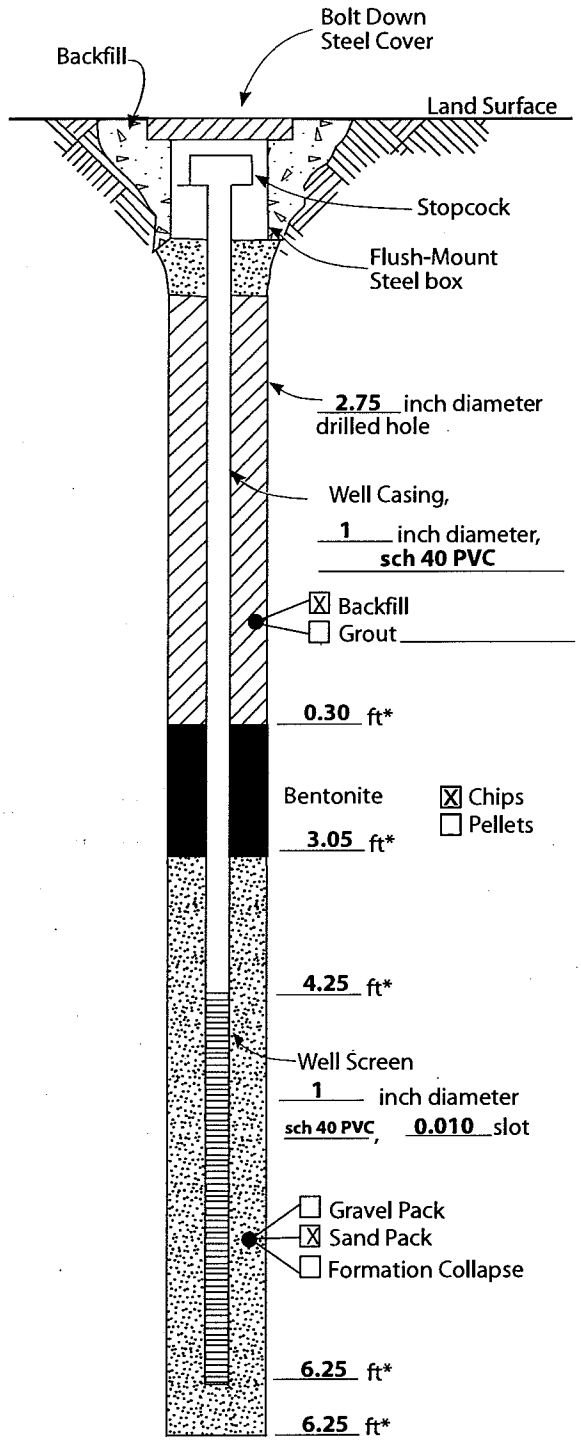
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg594-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-594**

Town/City **Kingsford, Michigan - Salon Solutions**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1110.0 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/07/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

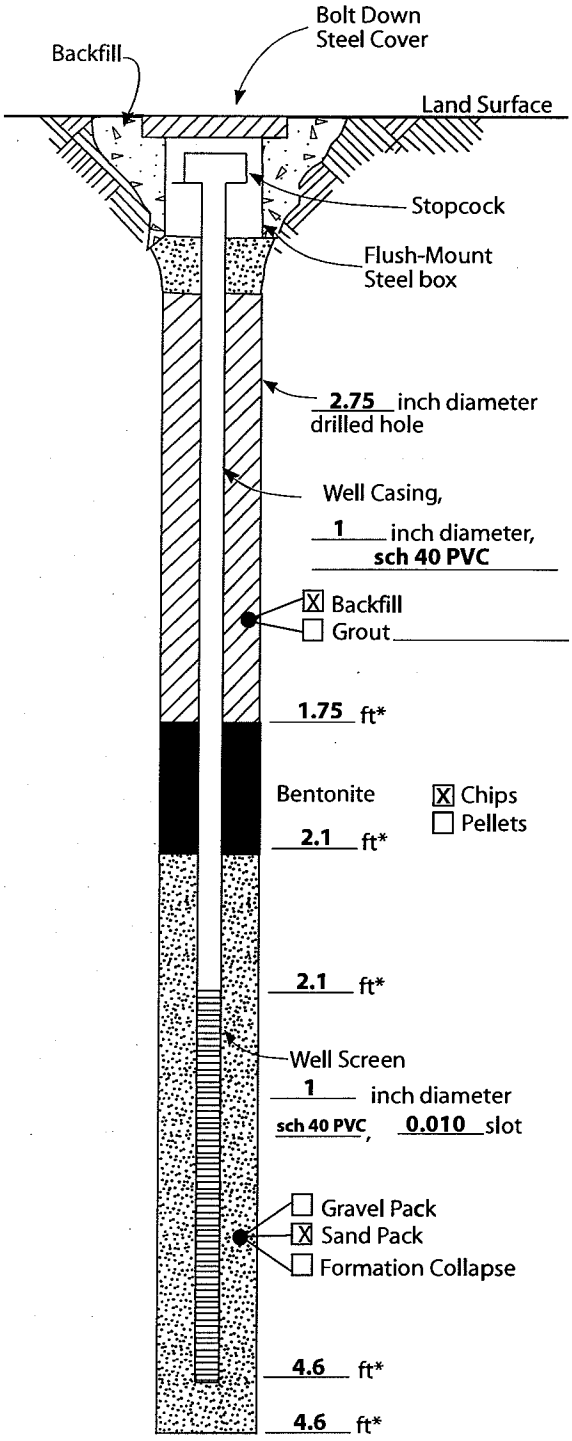
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg595-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-595**

Town/City **Kingsford, Michigan - Salon Solutions**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1109.6 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/08/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

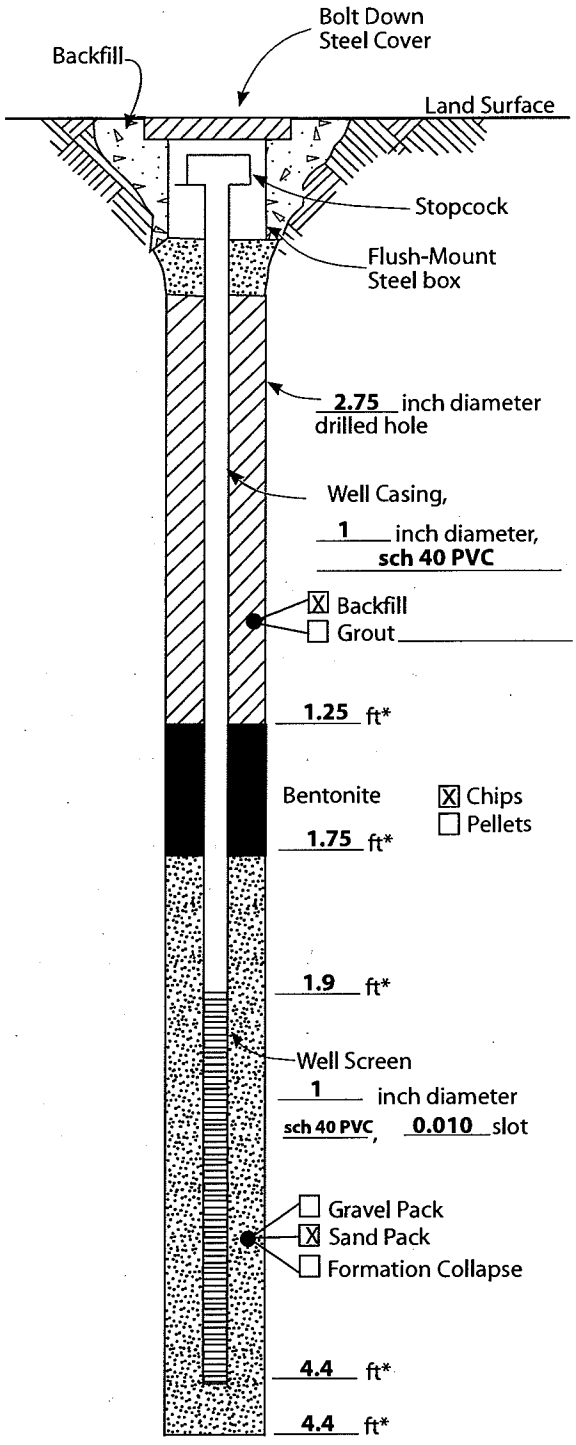
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbilhg**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg596-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-596**

Town/City **Kingsford, Michigan - Salon Solutions**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1110.5 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/08/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

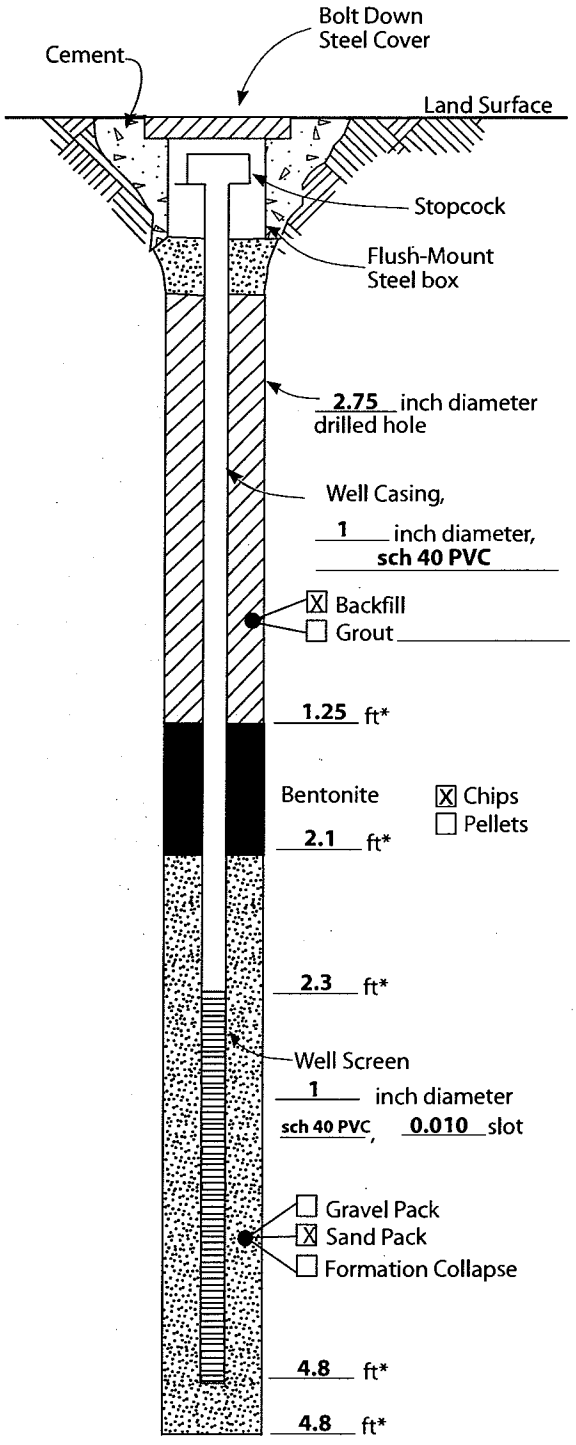
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg597-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-597**

Town/City **Kingsford, Michigan - Van Ert Electric**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/12/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

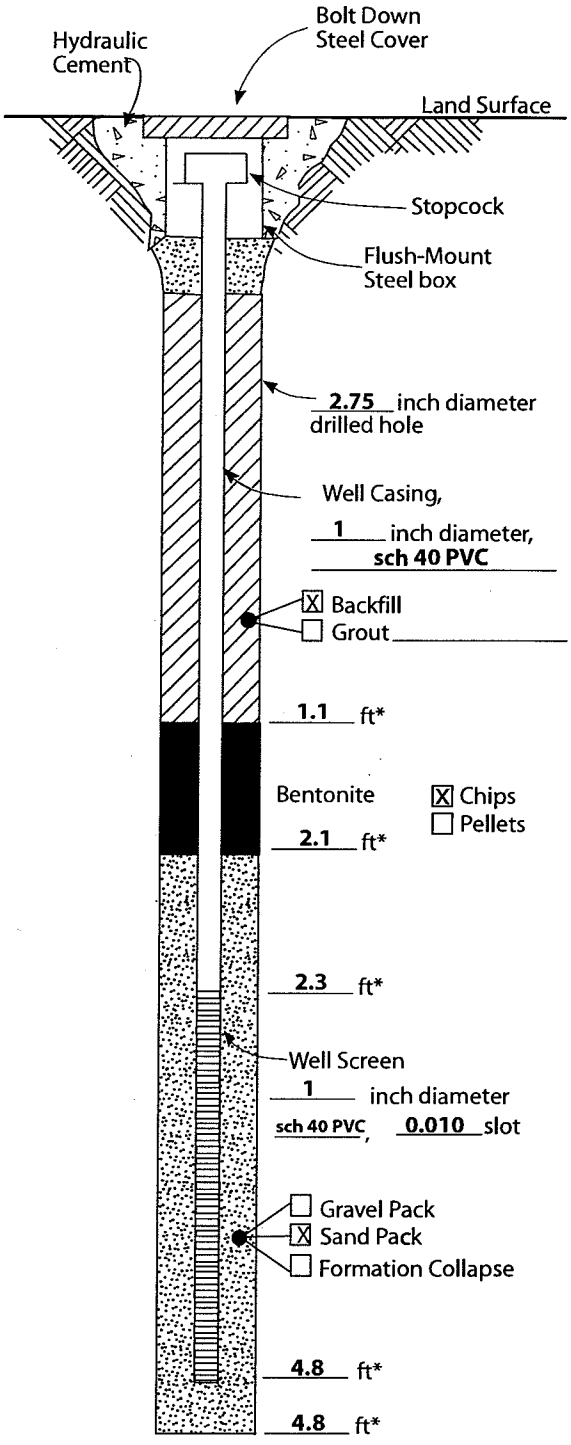
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-598**

Town/City **Kingsford, Michigan - Van Ert Electric**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.9 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/12/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

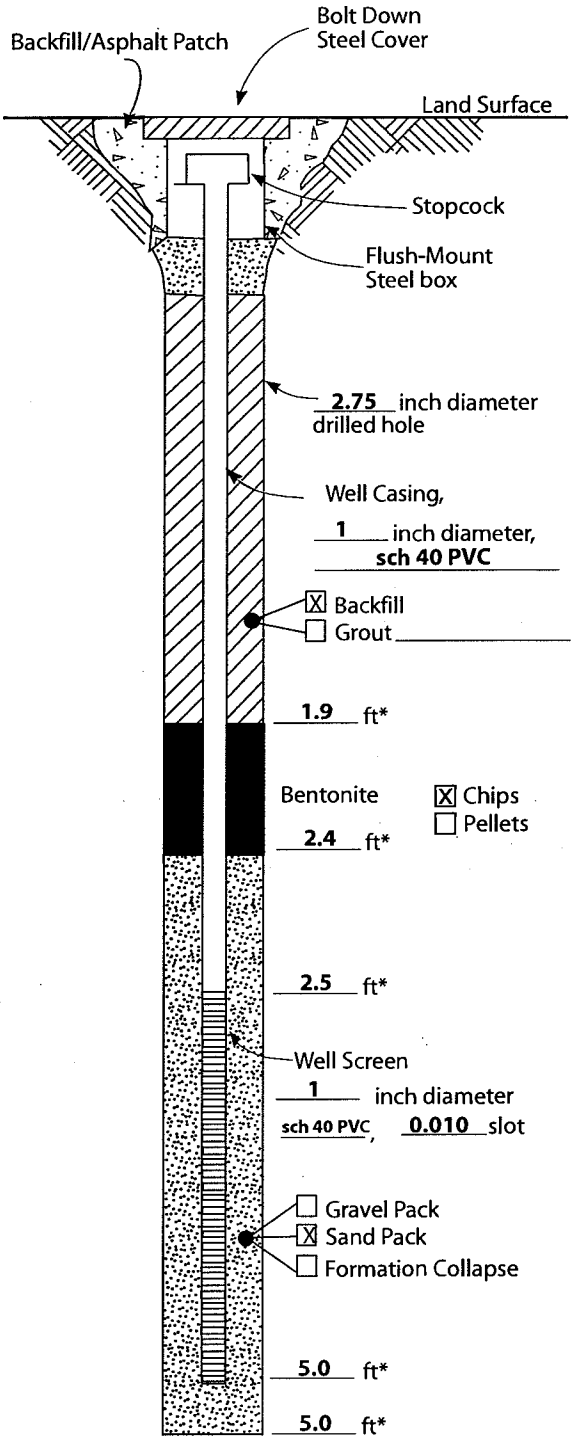
Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg598-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg600-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-600**

Town/City **Kingsford, Michigan - Broach & Tool**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1116.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/13/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

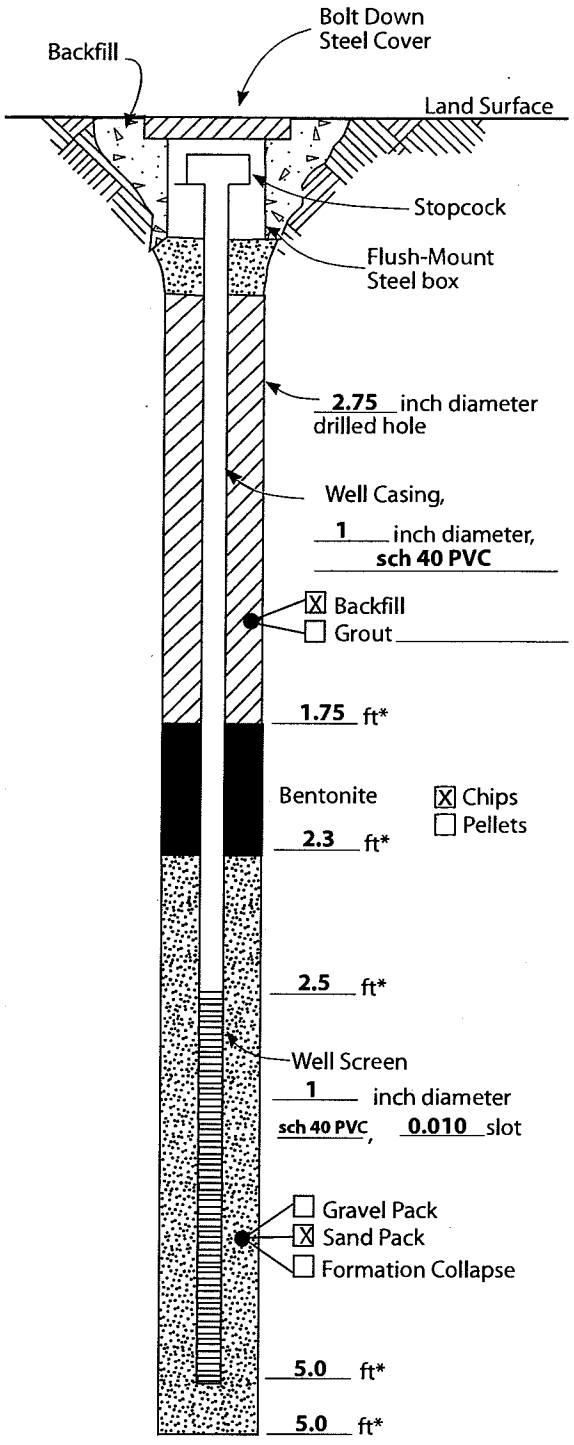
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg601-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-601**

Town/City **Kingsford, Michigan - Broach & Tool**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1116.7 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/14/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

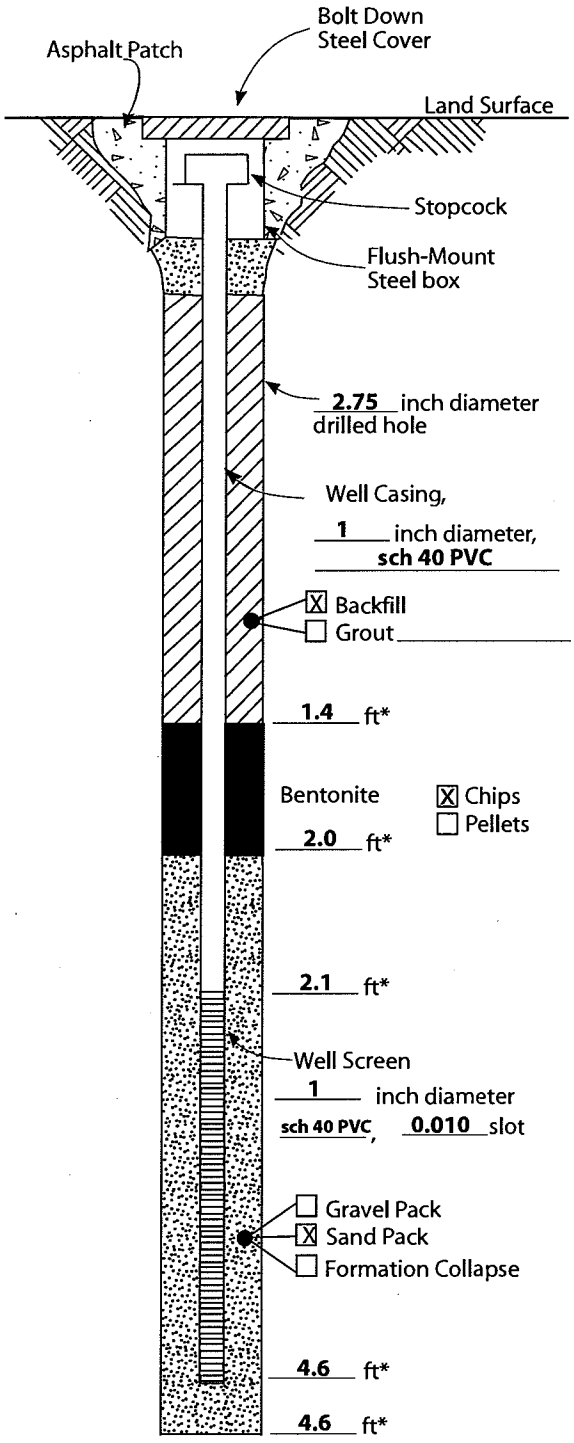
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-602**

Town/City **Kingsford, Michigan - Broach & Tool**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1115.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/14/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

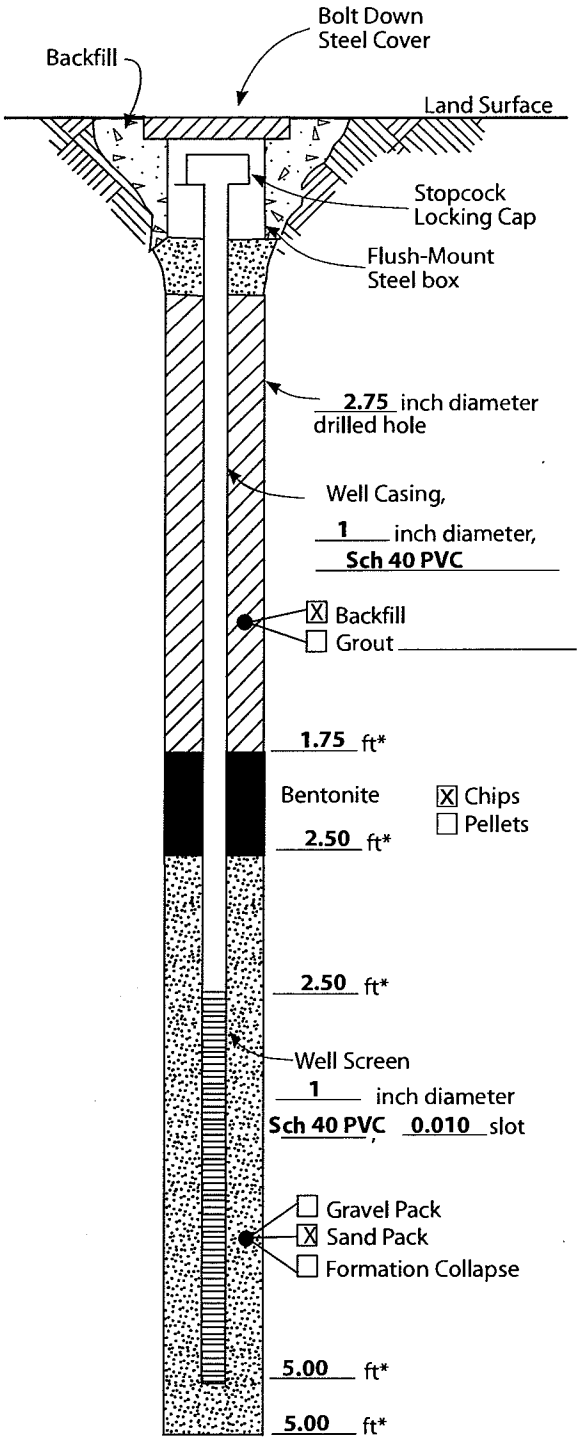
Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg602-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-603**

Town/City **Kingsford - Kingsford Broache & Tool**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1116.0 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/21/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

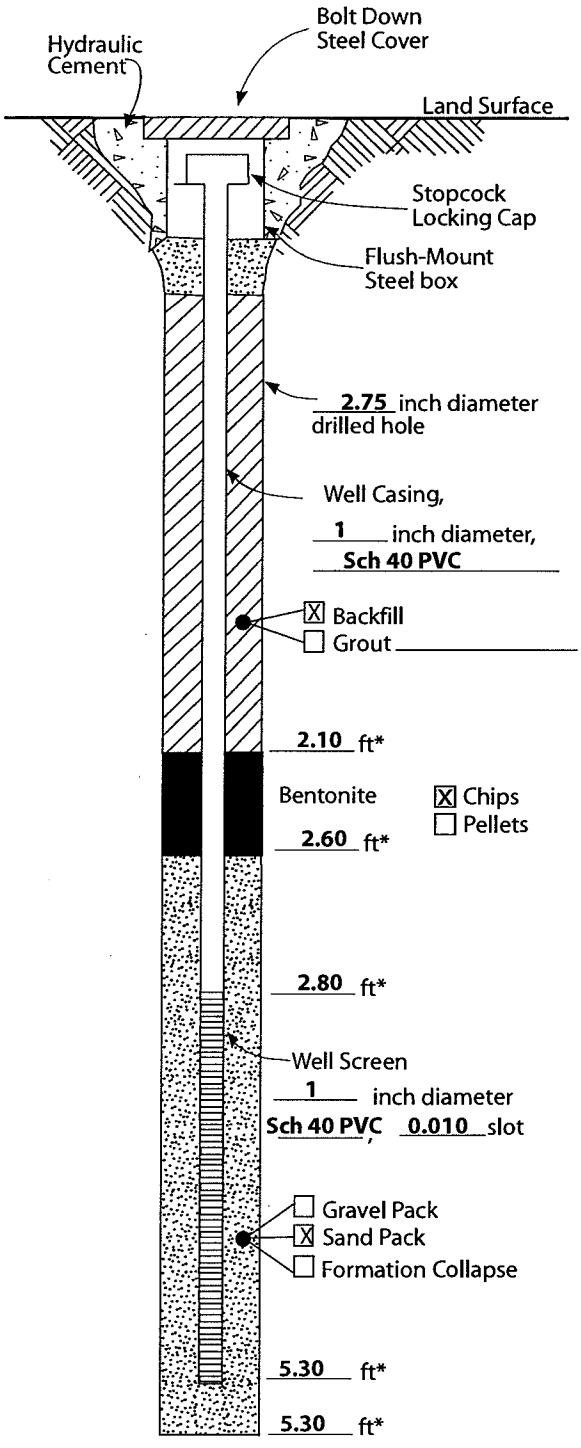
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg603-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-604**

Town/City **Kingsford - Kingsford Broache & Tool**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1116.7 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/20/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

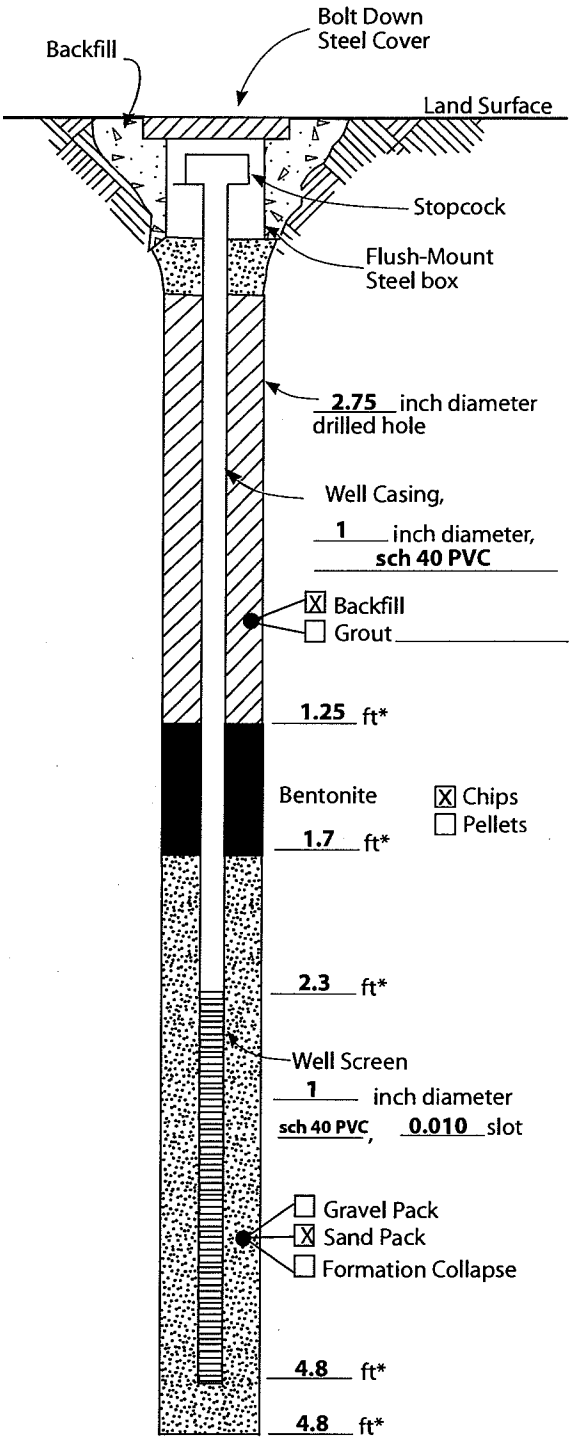
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg604-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg605-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-605

Town/City Kingsford, Michigan - Kingsford Medical

County Dickinson

Permit No. NA

Land-Surface Elevation

1113.1 feet [X] surveyed [ ] estimated

Datum Mean sea level

Installation Date(s) 06/18/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

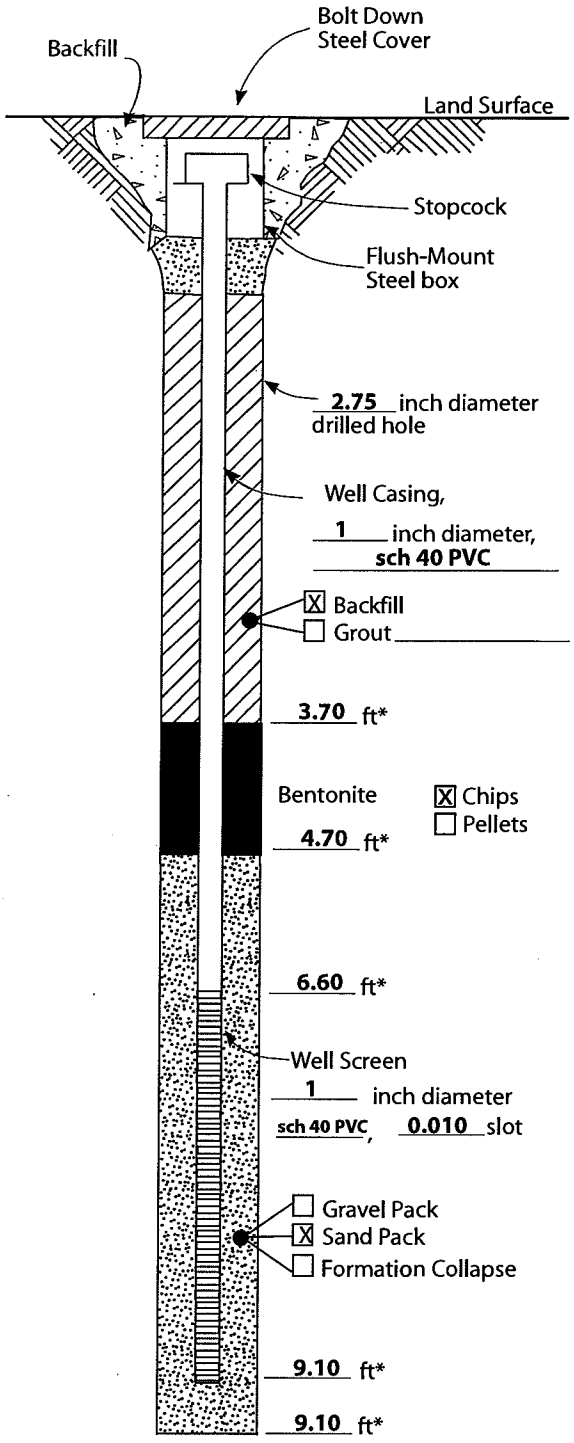
Specific Capacity -- gpm/ft

Well Purpose Commerical Soil Vapor Probe

Remarks

Prepared by J. Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg606-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-606**

Town/City **Kingsford, Michigan - Kingsford Medical**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1111.5 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/20/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

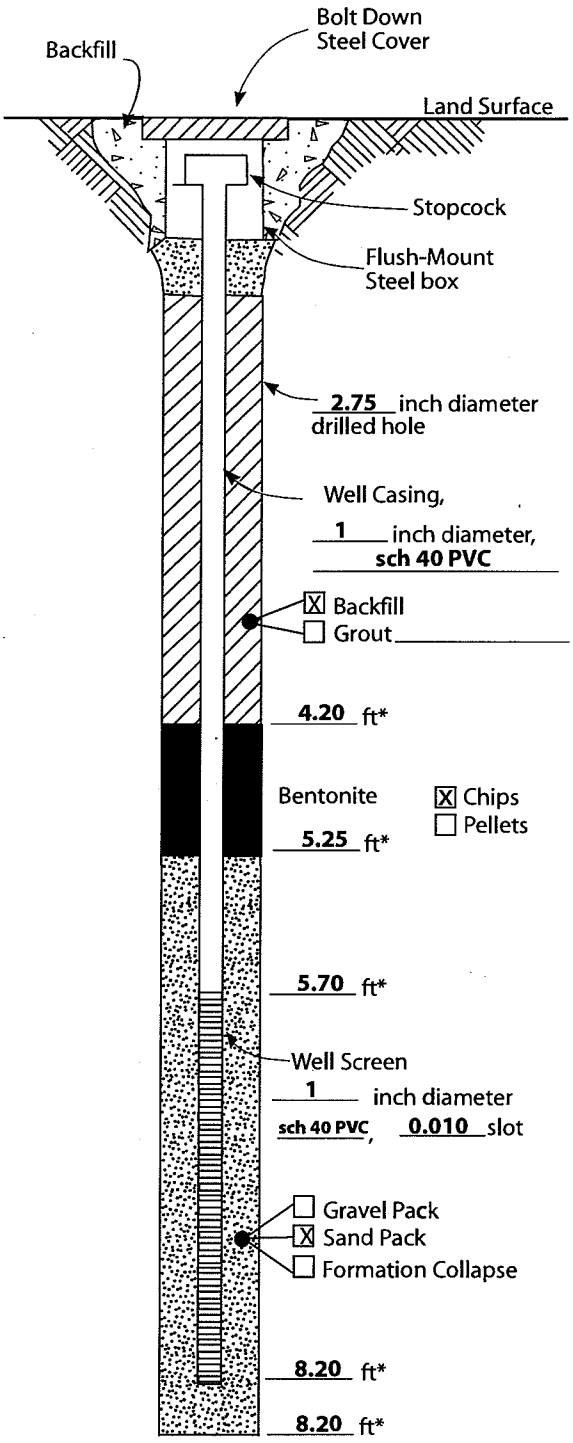
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg607-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-607**

Town/City **Kingsford, Michigan - Kingsford Medical**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1112.1 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **06/19/06 to 6/21/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

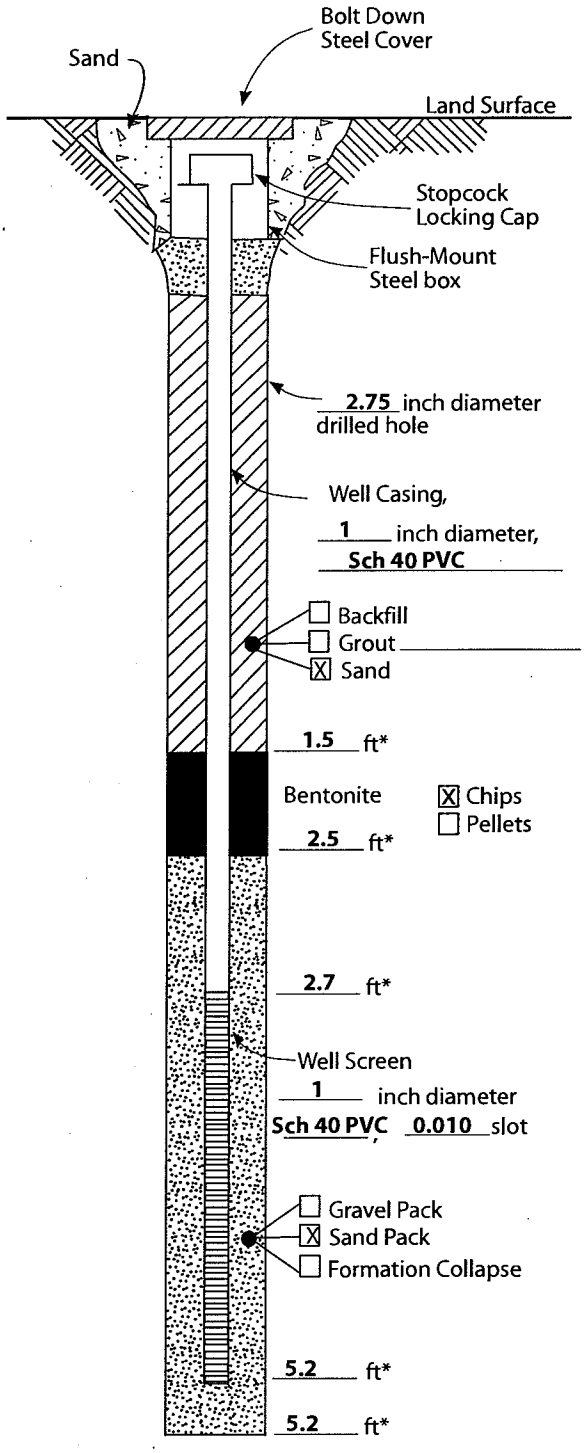
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-608**

Town/City **Kingsford - Pauls Car Care**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1122.1 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/25/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

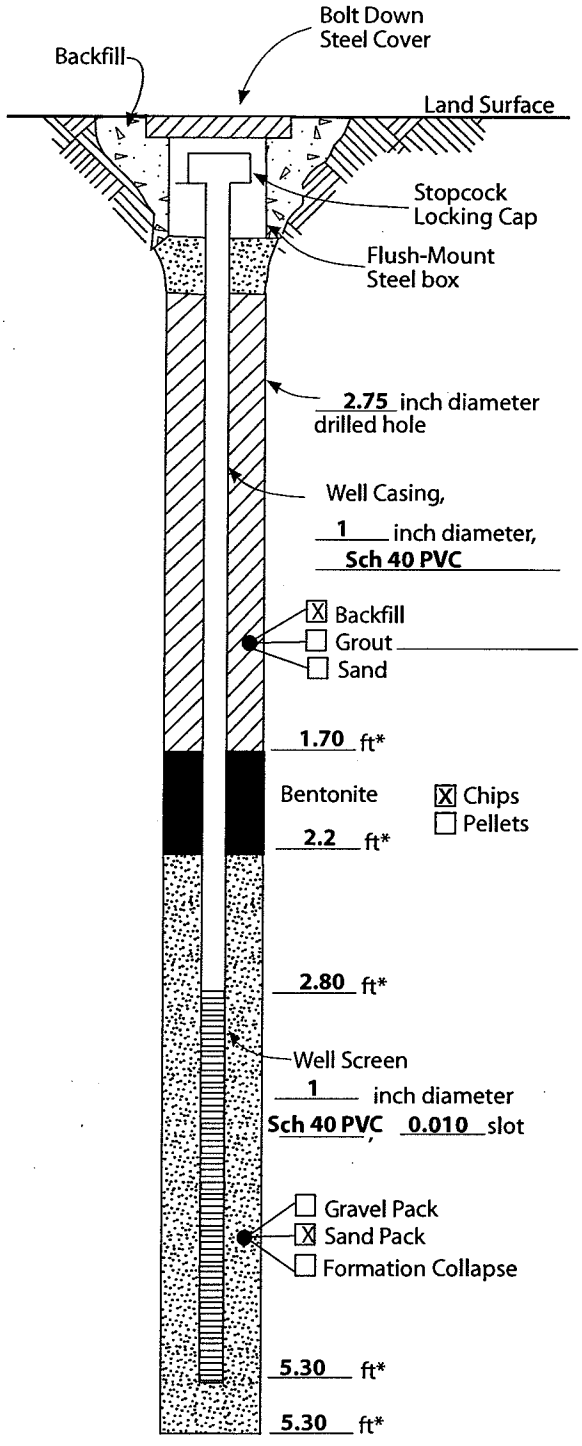
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg608-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project Ford/Kingsford WI001095.0002 Well GMSG-609

Town/City Kingsford - Pauls Car Care

County Dickinson

Permit No. NA

Land-Surface Elevation

1122.8 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 7/25/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

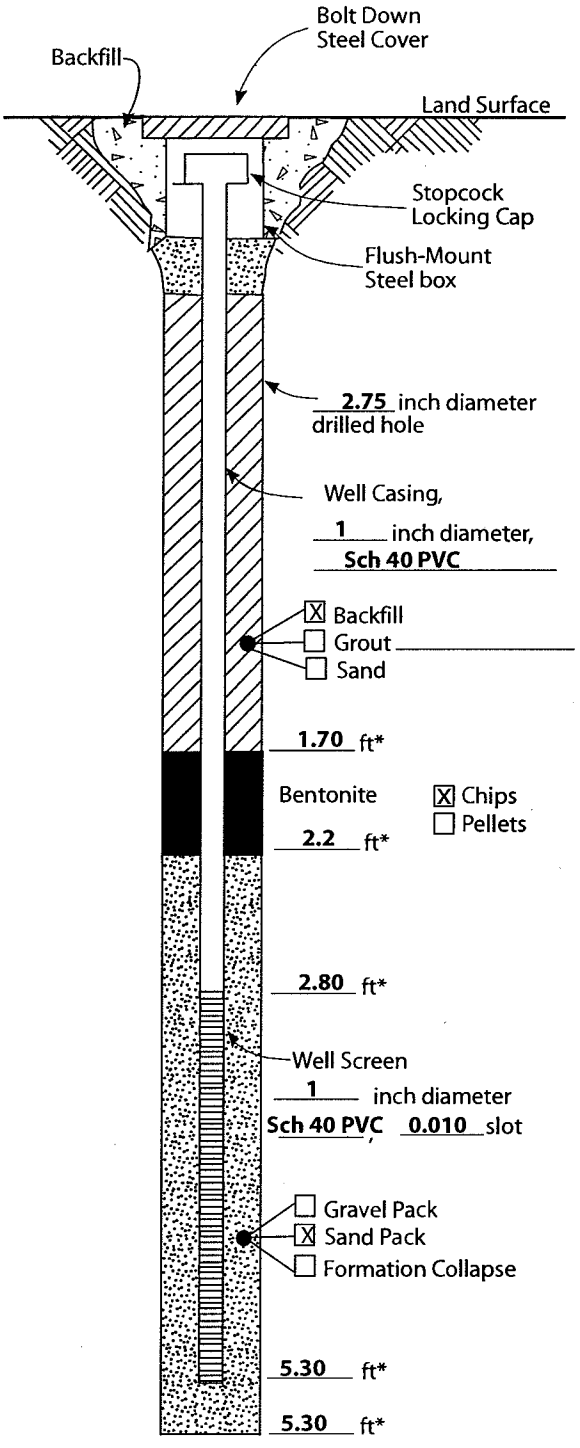
Well Purpose Install Commercial Soil Vapor Probe

Remarks

Prepared by J. Evans

ford/wi0637/2006/graphics/logs/gmsg609-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg609-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-610**

Town/City **Kingsford - Pauls Car Care**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/25/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

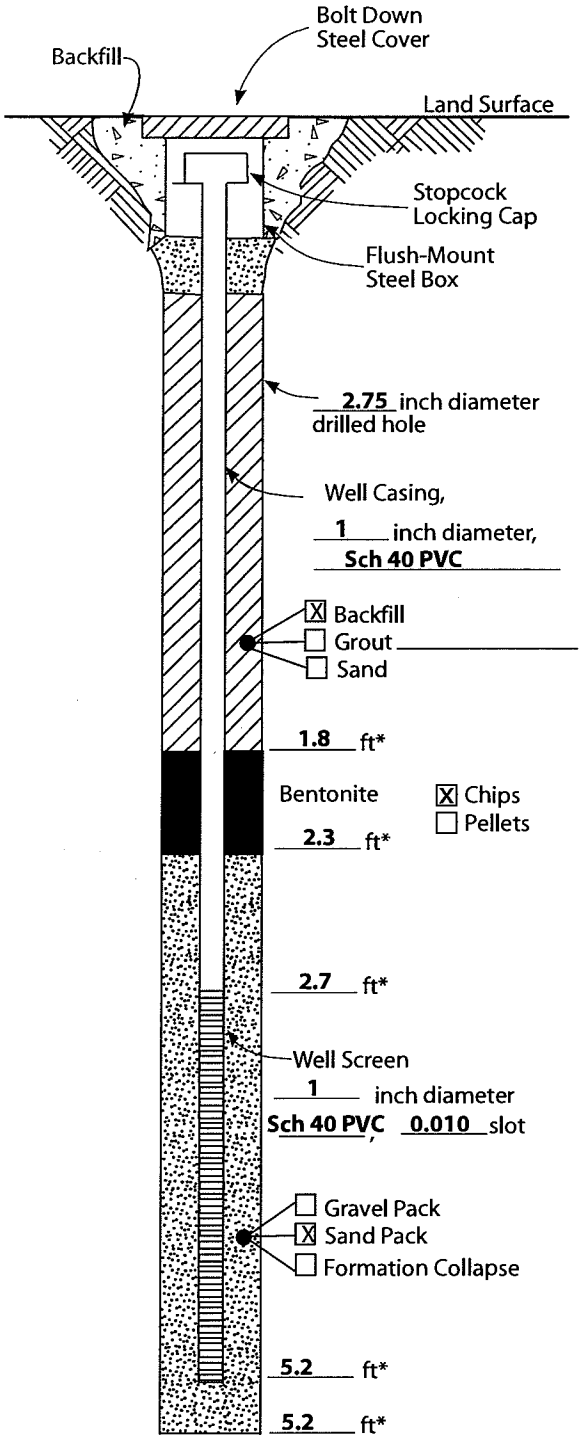
Specific Capacity -- gpm/ft

Well Purpose **Install Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg611-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-611

Town/City Kingsford - Brooks Storage

County Dickinson

Permit No. NA

Land-Surface Elevation

1108.8 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 7/26/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

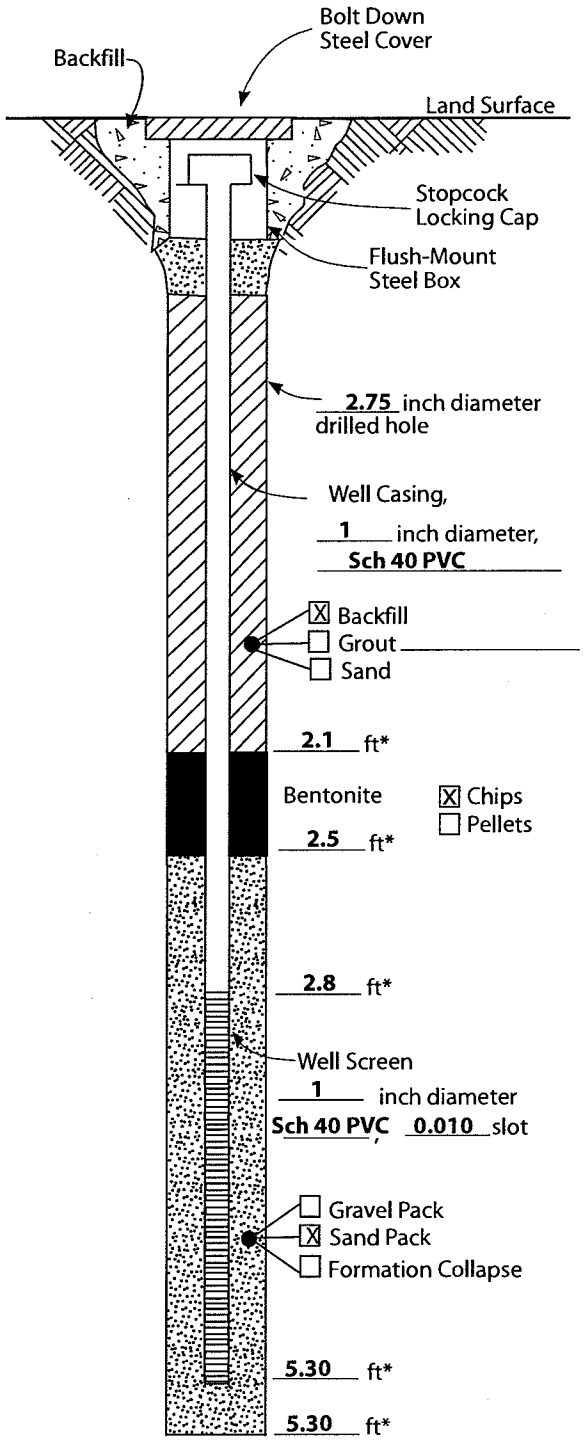
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by J. Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg612-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-612**

Town/City **Kingsford - Brooks Storage**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1106.9 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/26/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

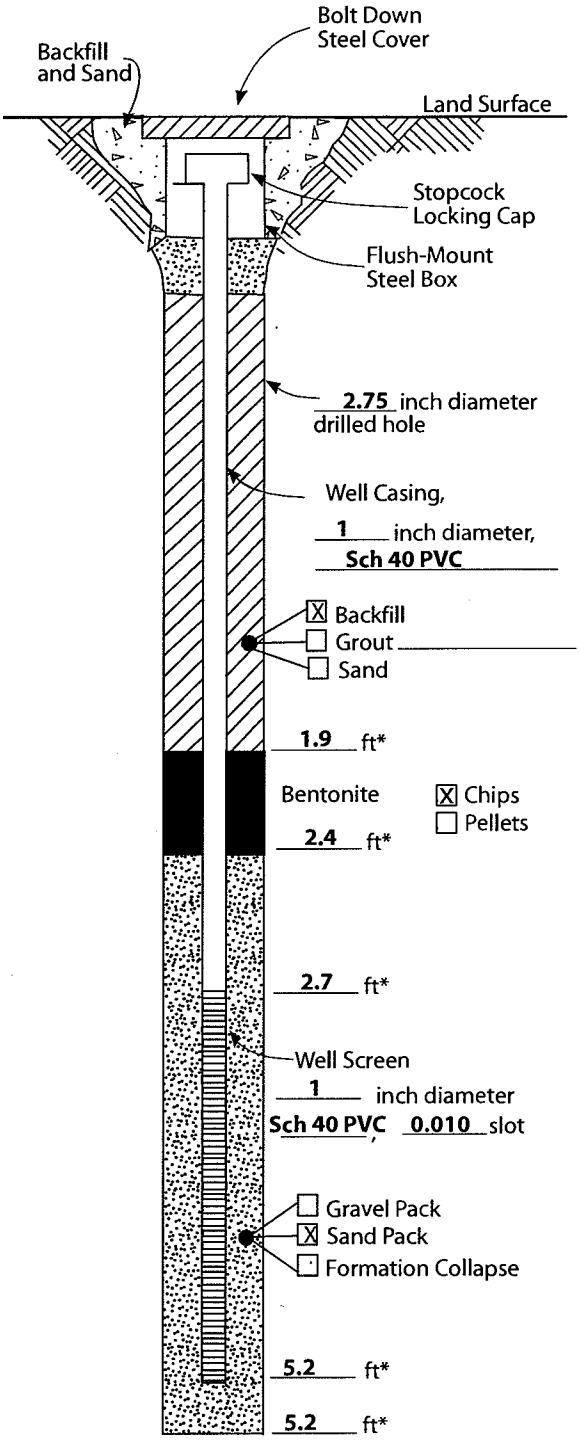
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-613**

Town/City **Kingsford - Brooks Storage**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1106.7 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/27/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

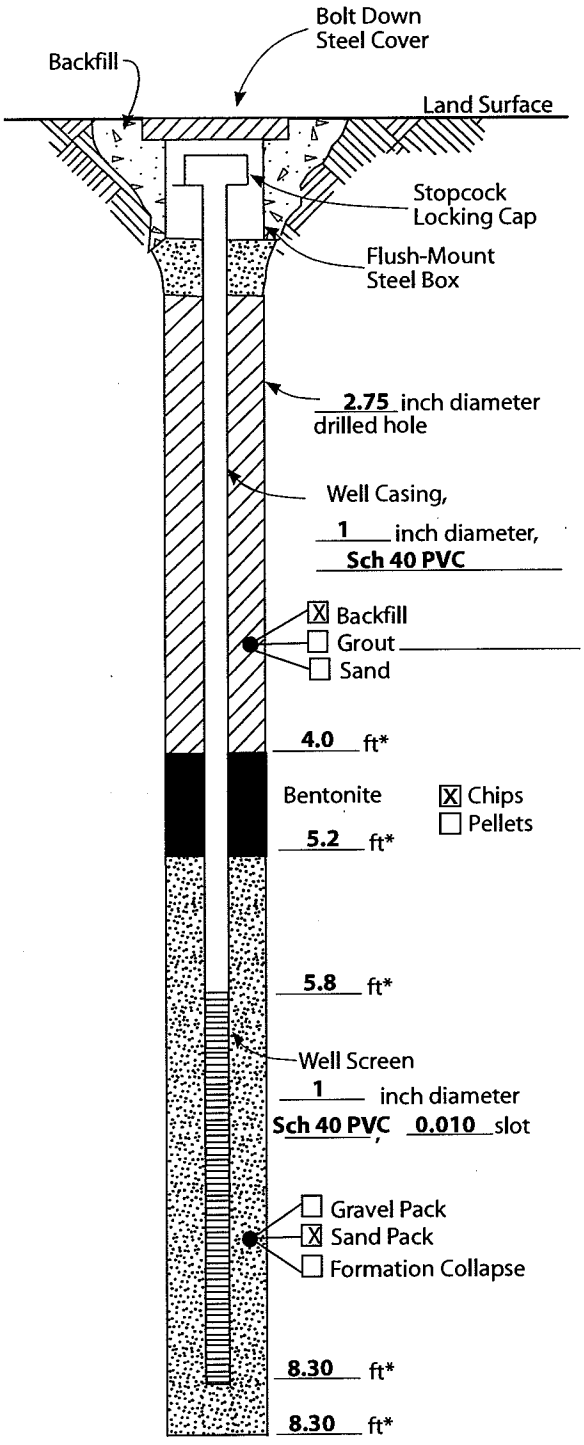
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg613-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-614**

Town/City **Kingsford - Brooks Storage**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1108 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/26/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

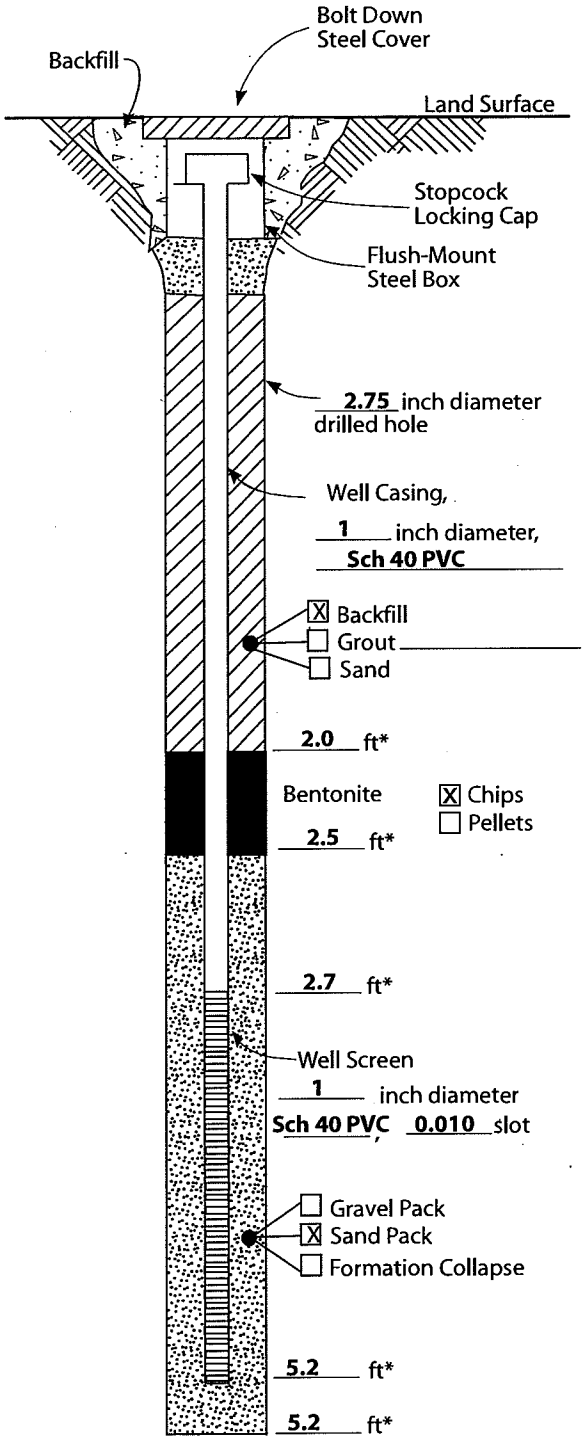
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg614-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg615-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-615

Town/City Kingsford - U.P. Electric/Wittock

County Dickinson

Permit No. NA

Land-Surface Elevation

1117.1 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 7/28/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

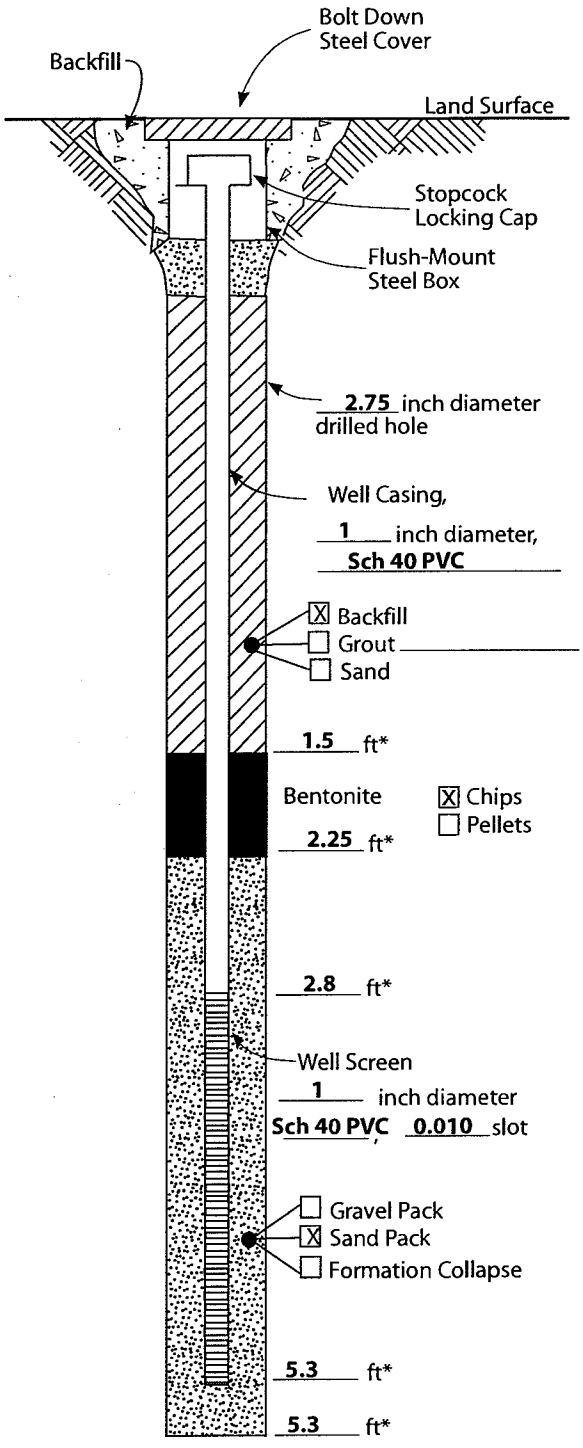
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by J. Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-616**

Town/City **Kingsford - U.P. Electric/Wittock**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1115.4 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **7/31/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

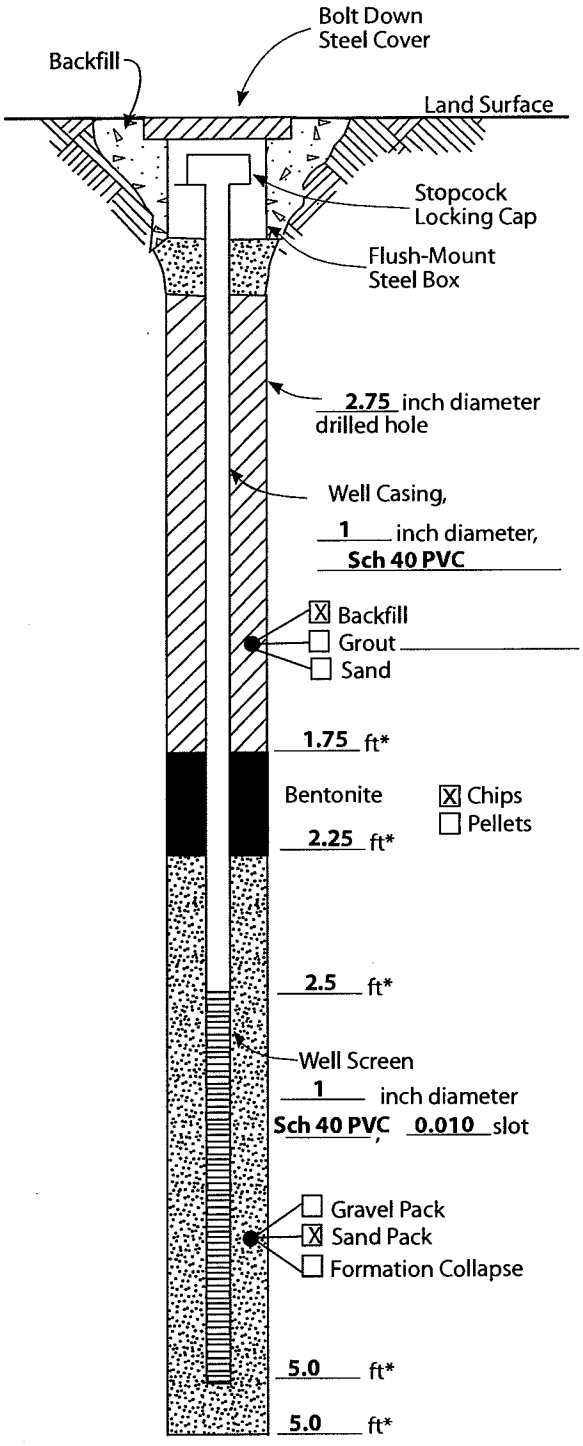
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg616-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg617-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-617

Town/City Kingsford - U.P. Electric/Wittock

County Dickinson

Permit No. NA

Land-Surface Elevation

1116.2 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 7/31/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

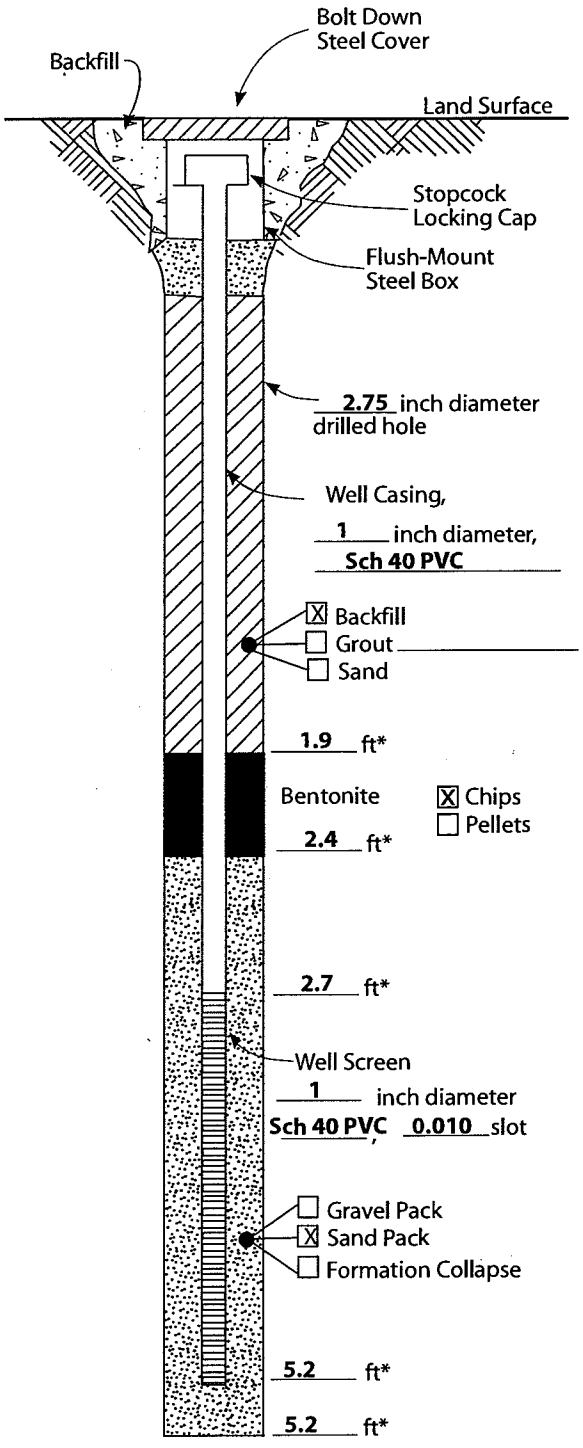
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by J. Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg618-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-618

Town/City Kingsford - U.P. Electric/Wittock

County Dickinson

Permit No. NA

Land-Surface Elevation

1115.5 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/1/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

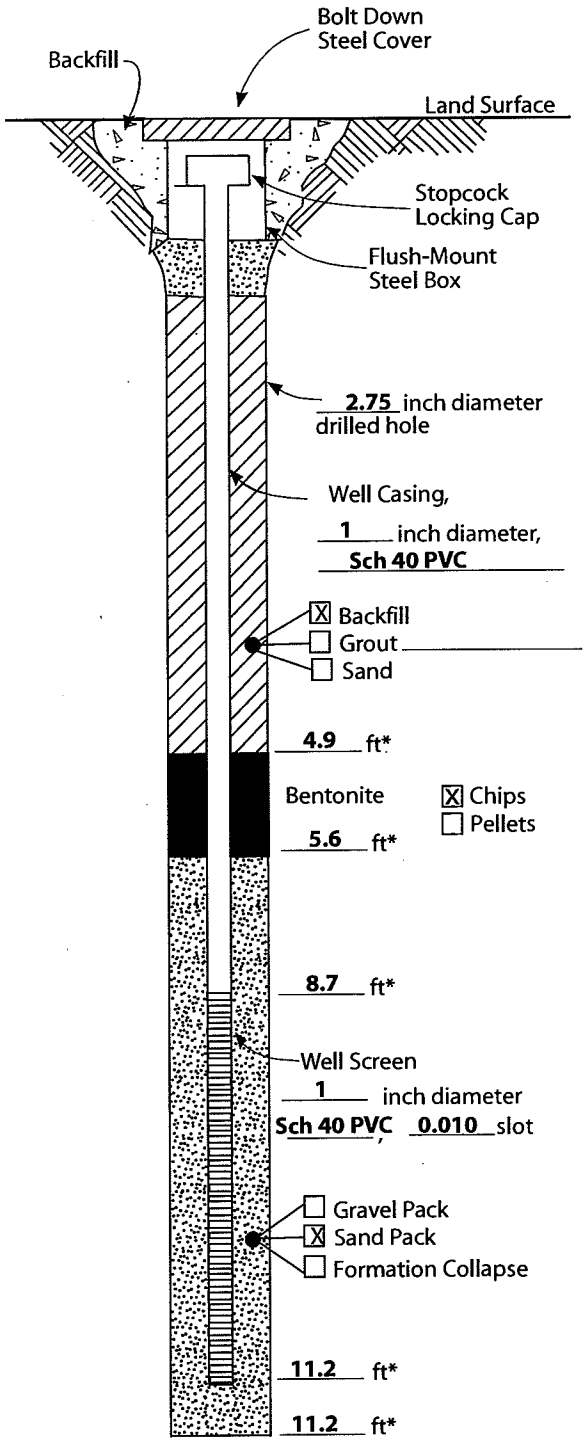
Specific Capacity -- gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by J. Evans

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-619**

Town/City **Kingsford - Veterans Center**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1115.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/2/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

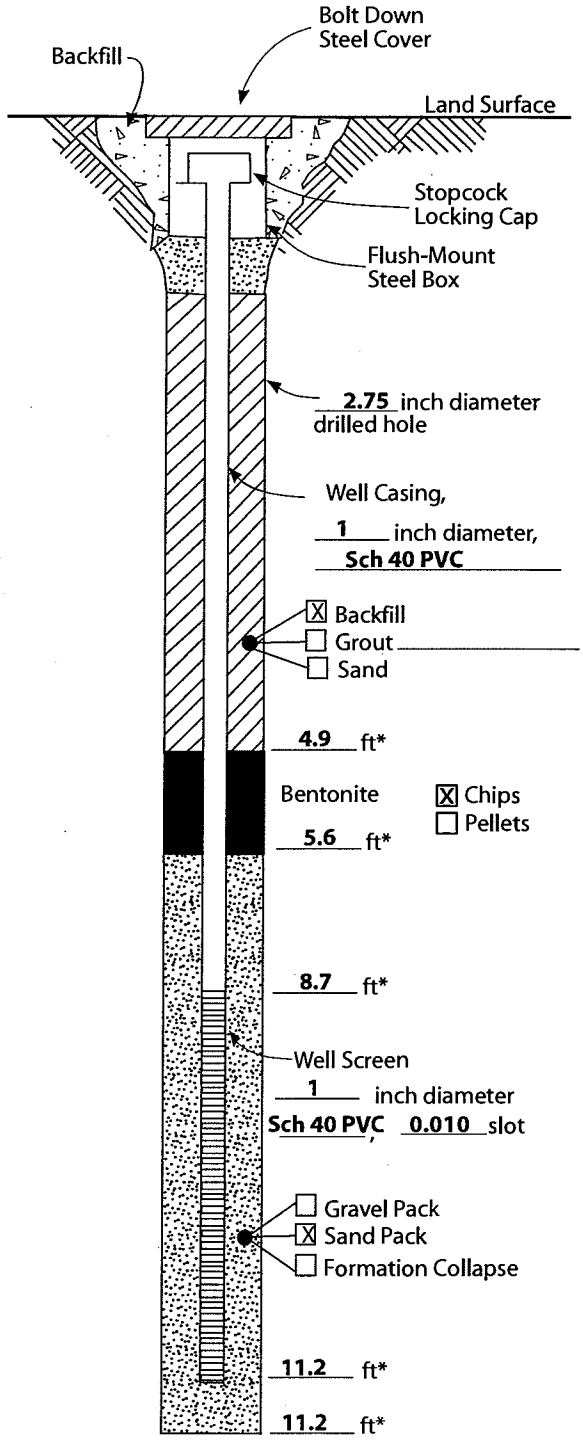
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg620-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project Ford/Kingsford WI001095.0002 Well GMSG-620

Town/City Kingsford - Veterans Center

County Dickinson

Permit No. NA

Land-Surface Elevation

1122.1 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 8/2/06

Drilling Method Hand Auger

Drilling Contractor ARCADIS

Drilling Fluid N/A

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

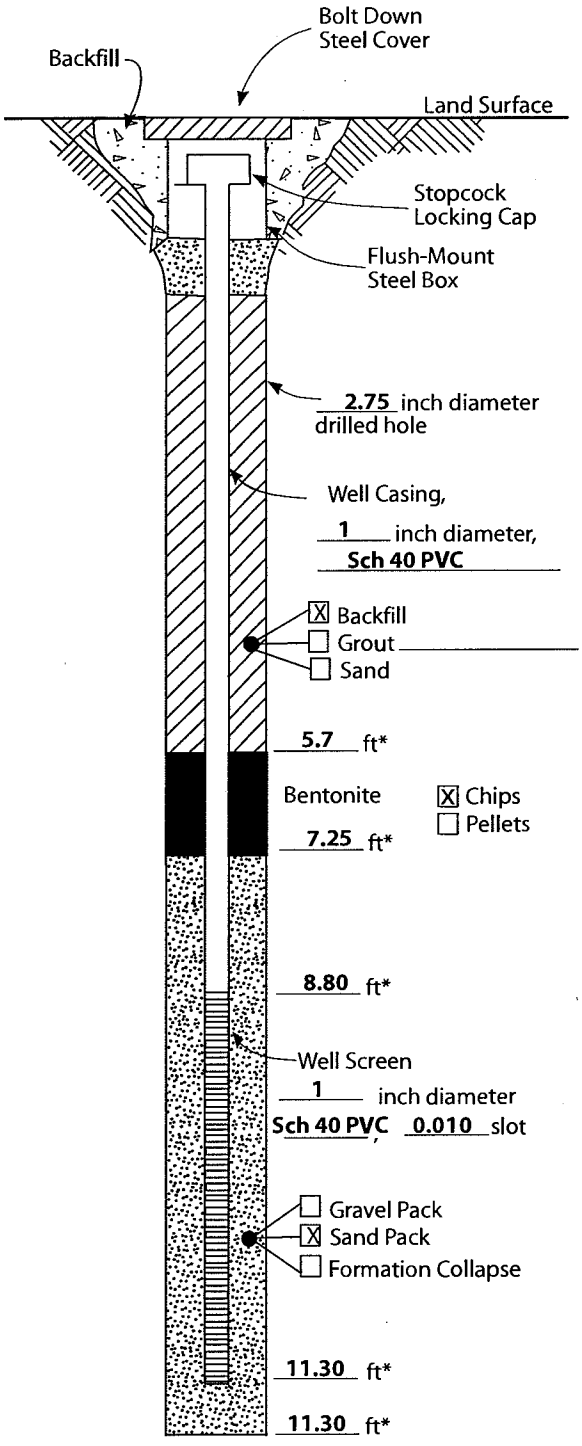
Well Purpose Commercial Soil Vapor Probe

Remarks

Prepared by J. Evans

ford/wi0637/2006/graphics/logs/gmsg620-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg621-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-621**

Town/City **Kingsford - Veterans Center**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.9 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/3/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

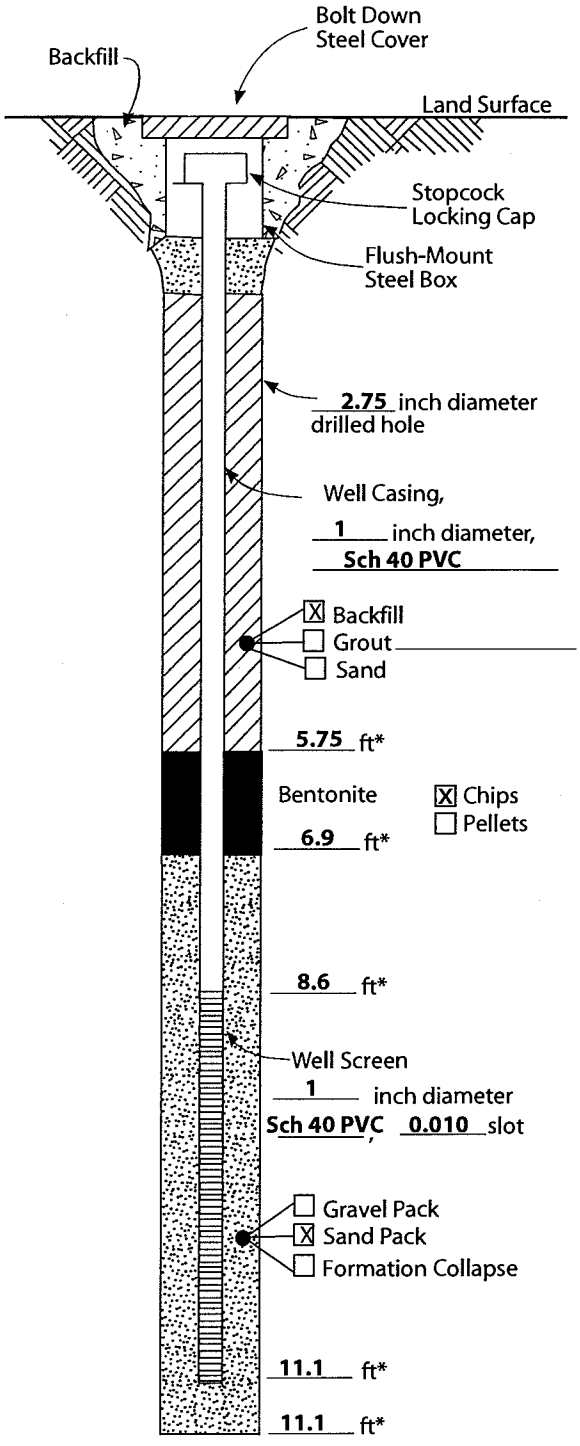
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg622-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-622**

Town/City **Kingsford - Veterans Center**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1122.2 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/3/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

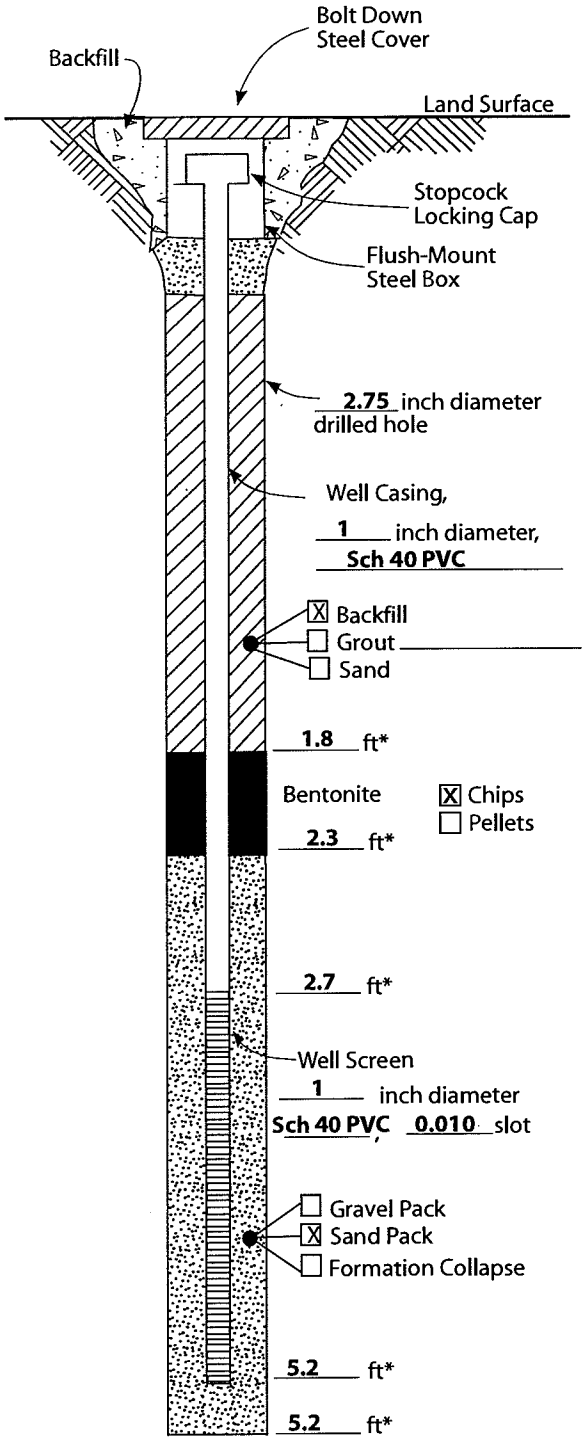
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-623**

Town/City **Kingsford - Quality Kitchens**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.7 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/7/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

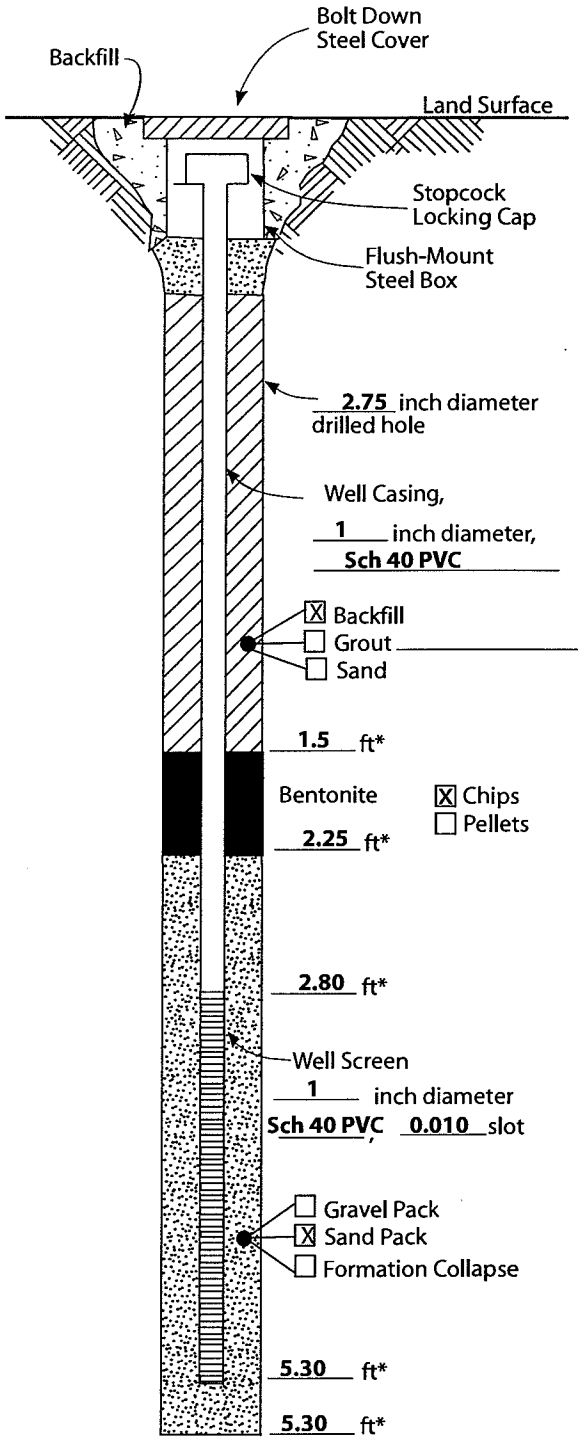
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg623-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg624-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-624**

Town/City **Kingsford - Quality Kitchens**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.7 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/8/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

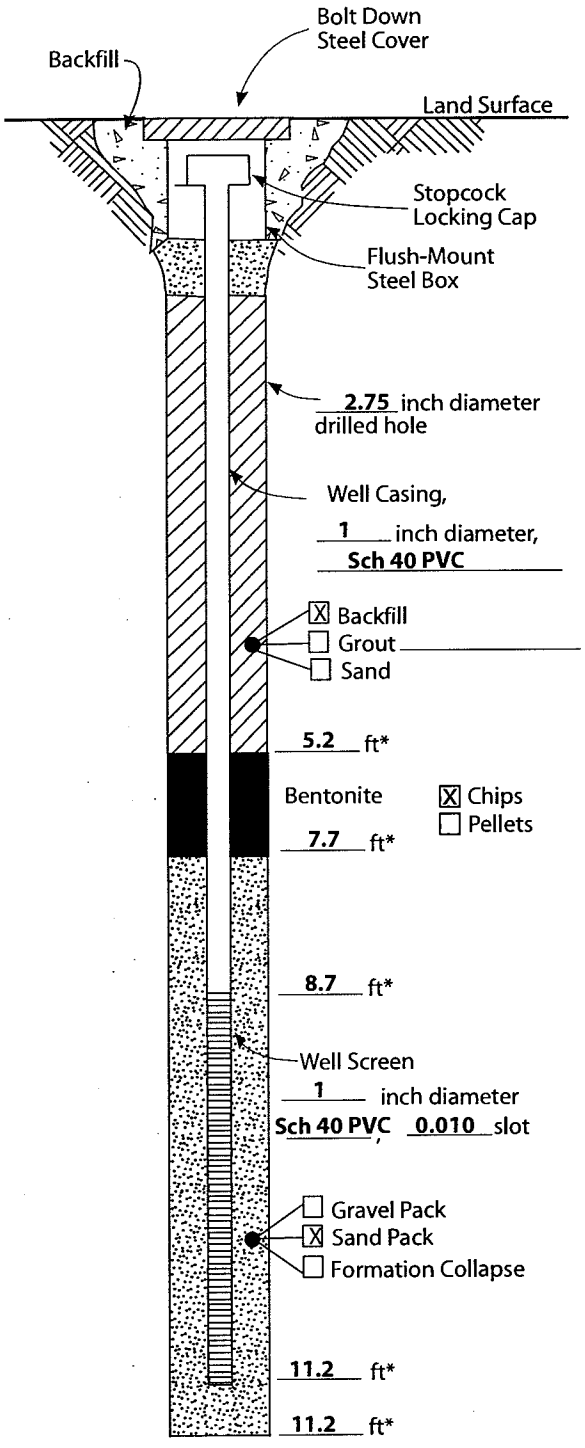
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-625**

Town/City **Kingsford - Quality Kitchens**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/8/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

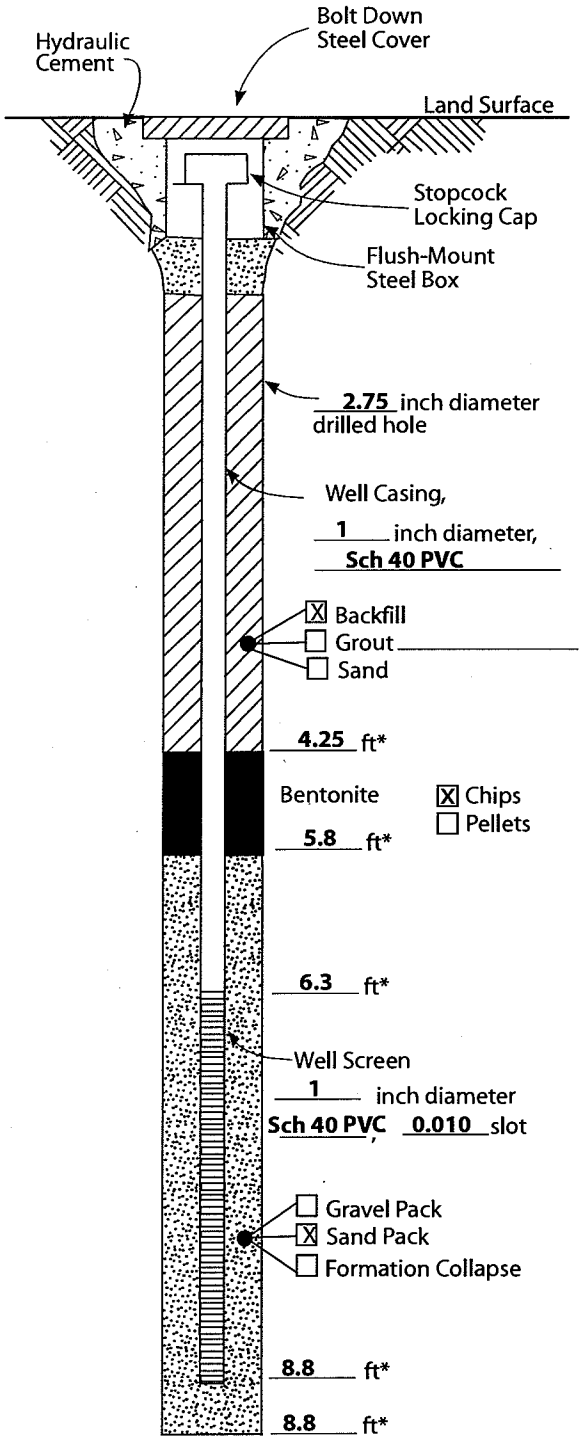
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg625-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-626**

Town/City **Kingsford - Buckhorn**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.3 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/21/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

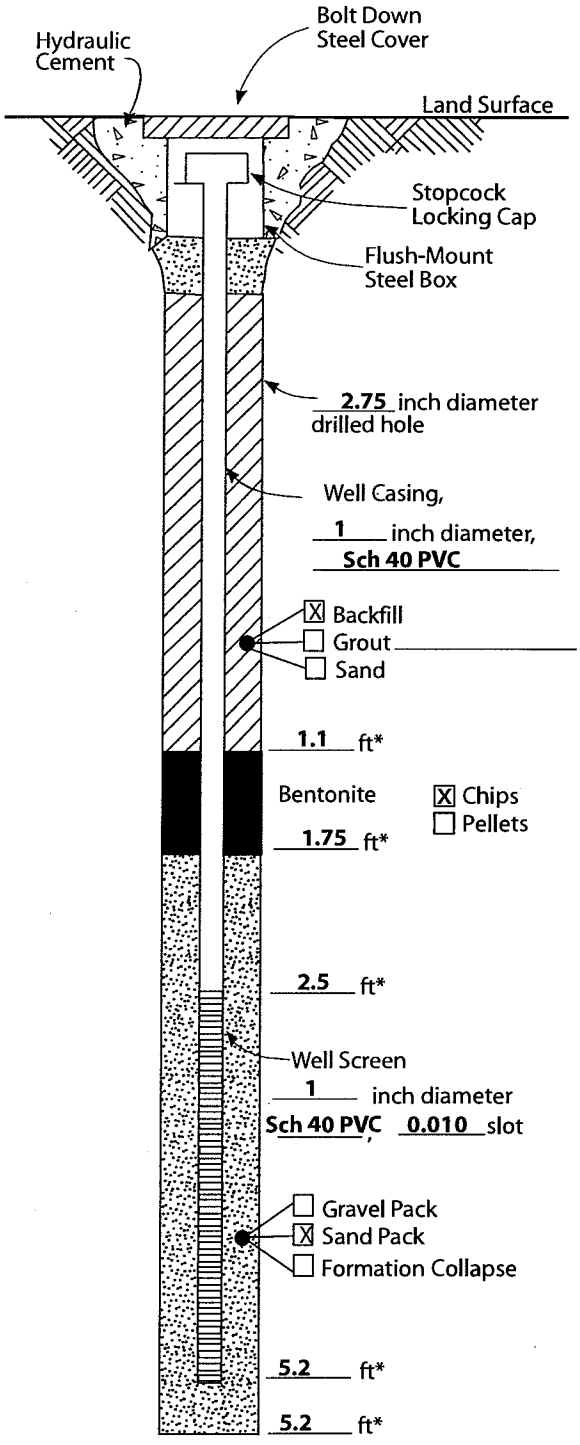
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg626-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg627-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-627**

Town/City **Kingsford - Buckhorn**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1122.4 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/21/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

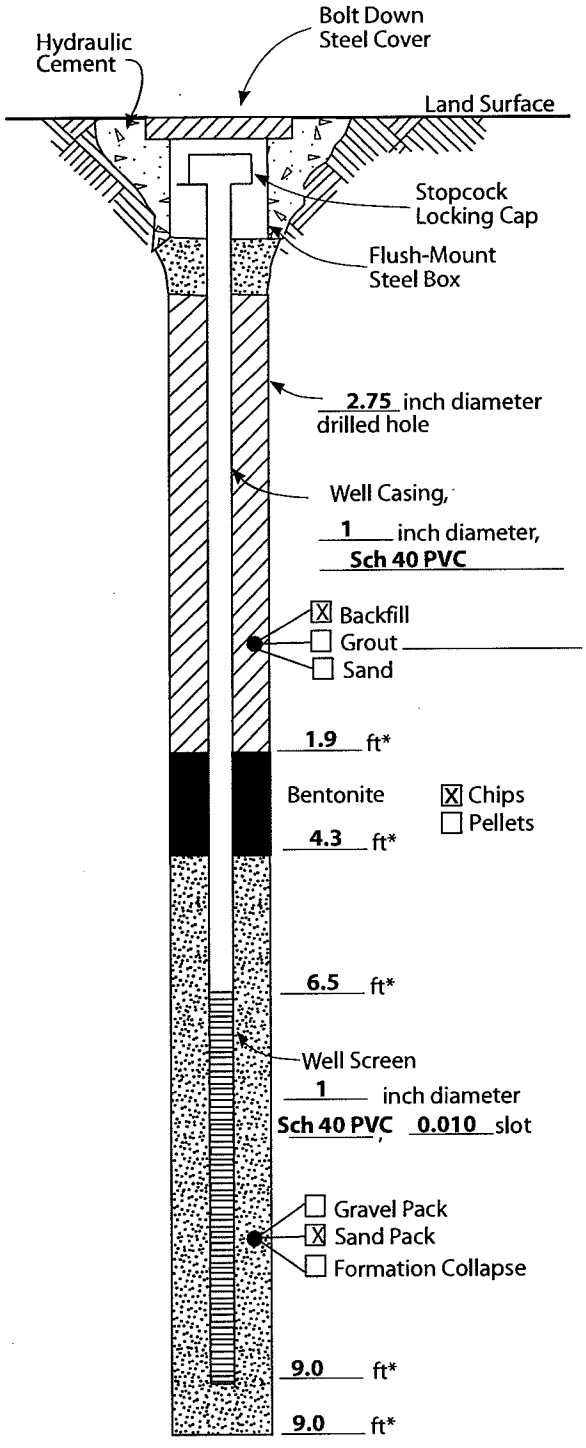
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-628**

Town/City **Kingsford - Buckhorn**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **8/21/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **N/A**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

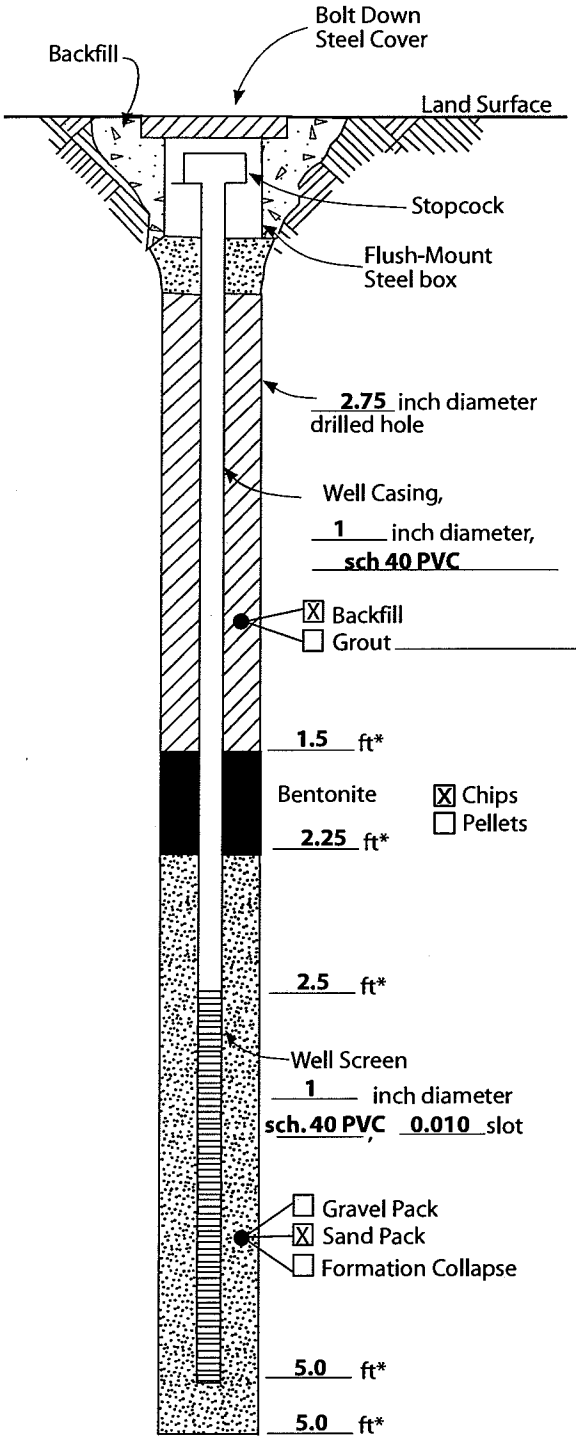
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg628-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg629-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-629**

Town/City **Kingsford/Kodiak Storage #2**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1129.1 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **9/4/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

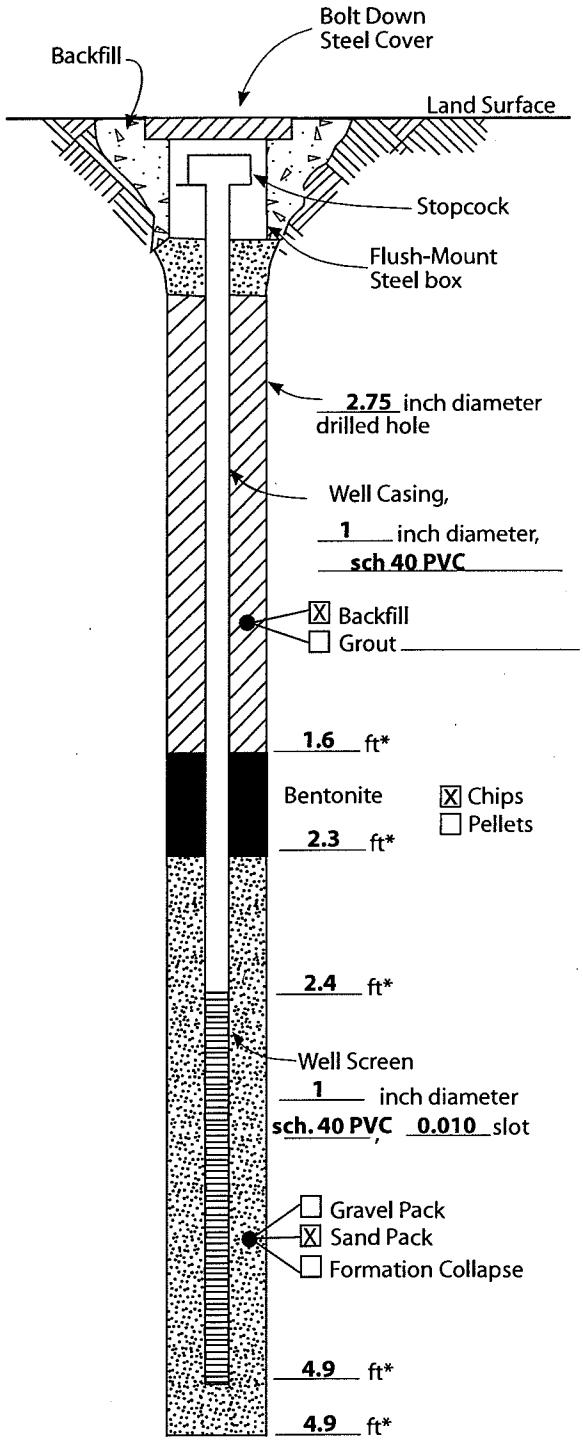
Specific Capacity -- gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-630**

Town/City **Kingsford/Kodiak Storage #2**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1129 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **9/4/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

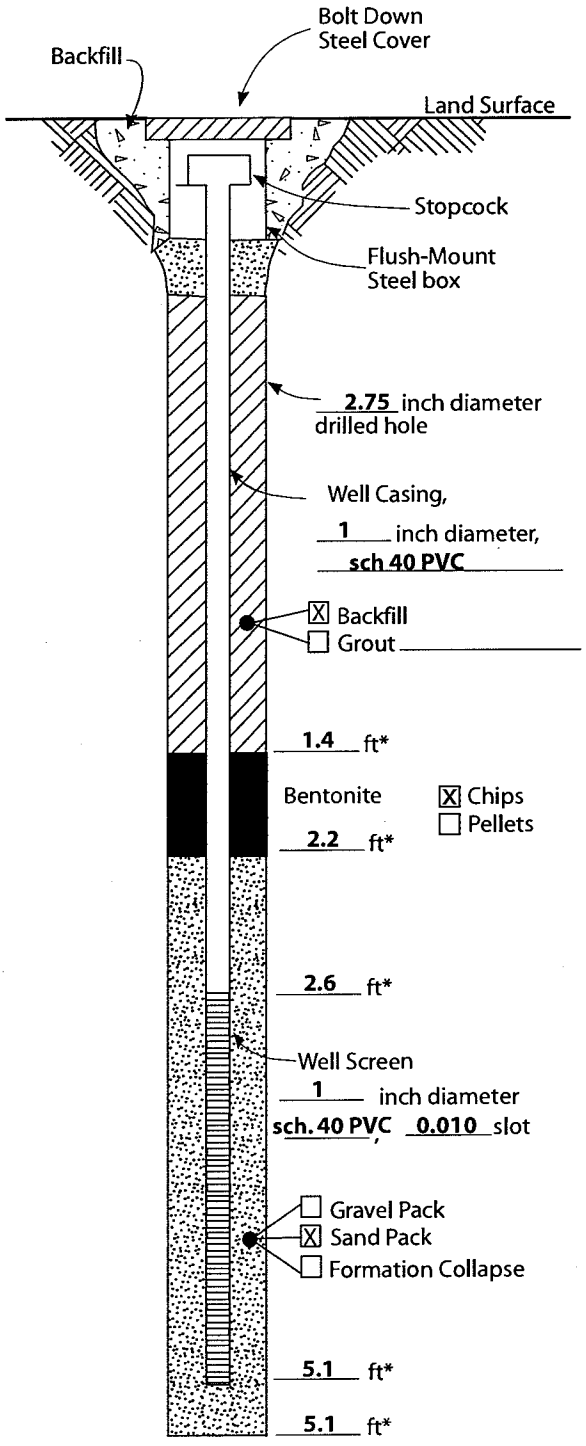
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg630-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-631**

Town/City **Kingsford/Kodiak Storage #2**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1128.9 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **9/4/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

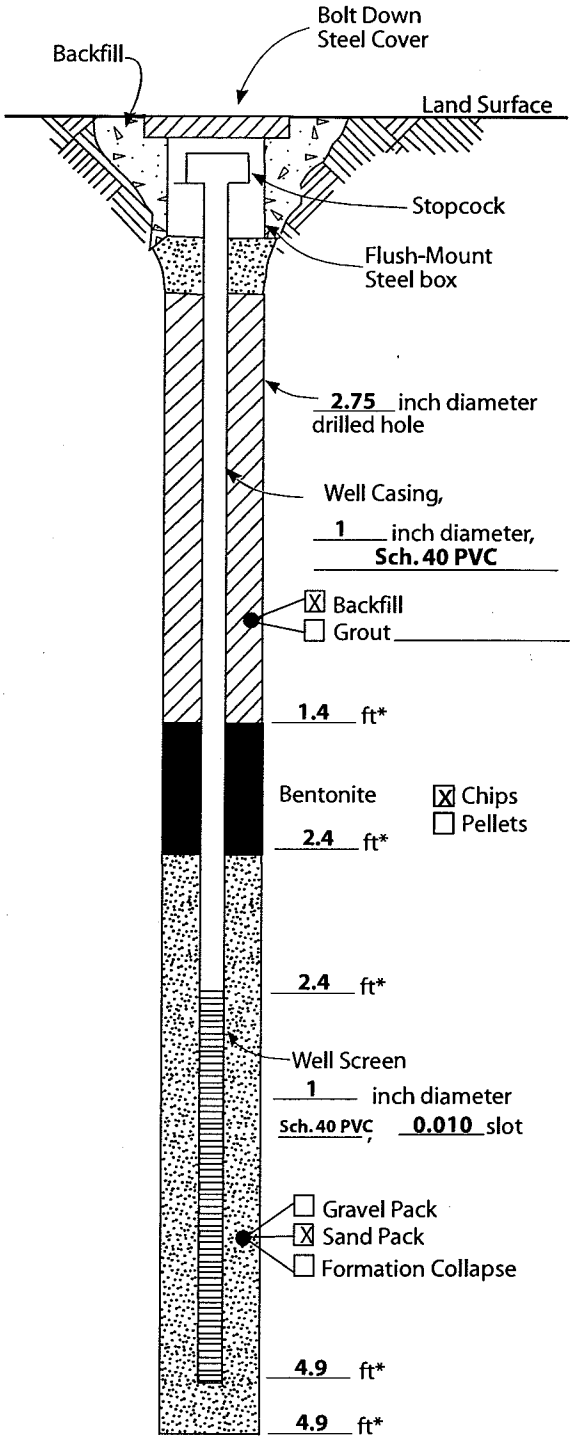
Well Purpose **Commercial Soil Vapor Probe**

Remarks

Prepared by **J. Evans**

ford/wi0637/2006/graphics/logs/gmsg631-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg582-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-632**

Town/City **Kingsford, Michigan - Kodiak Stoage (New)**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1128.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **9/28/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

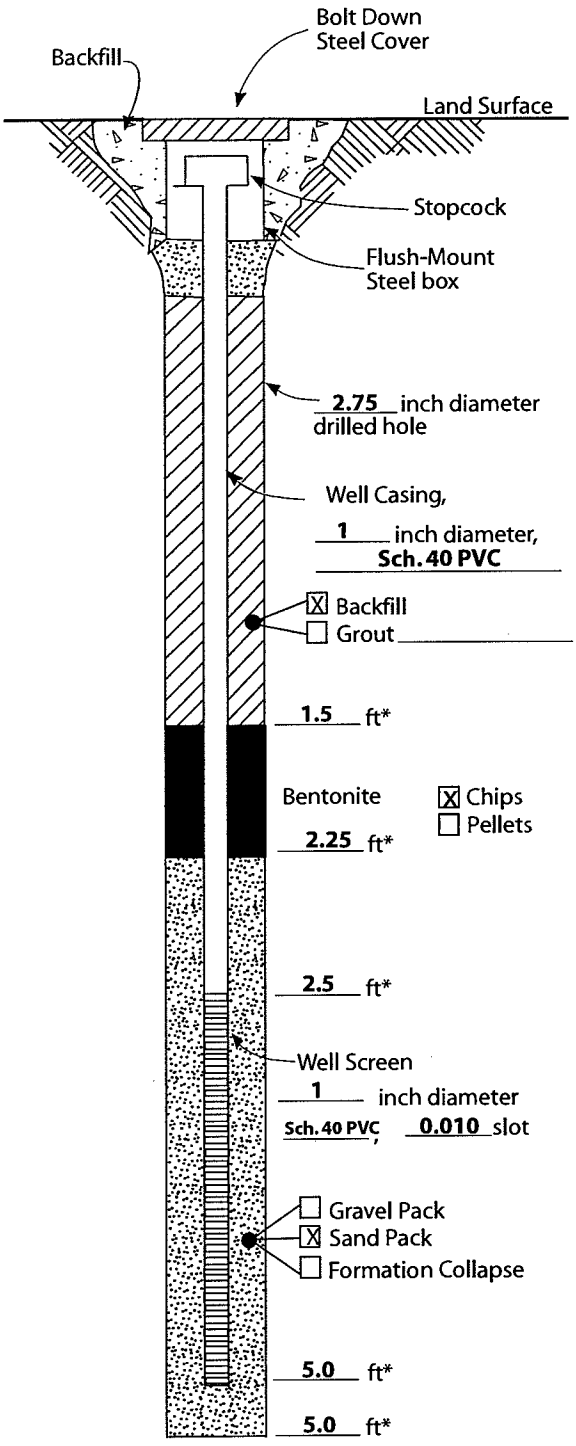
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-633**

Town/City **Kingsford, Michigan - Kodiak Stoage (New)**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1129 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **9/28/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

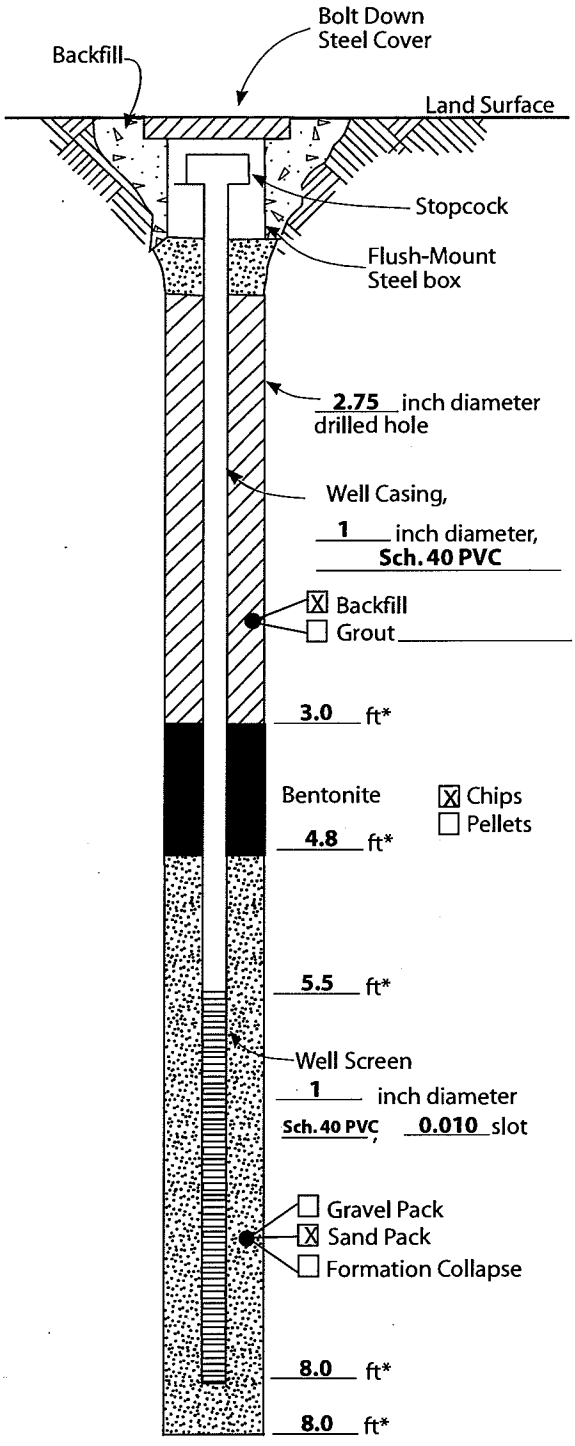
Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg633-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg634-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-634**

Town/City **Kingsford, Michigan - Great Beginnings Daycare**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1122.6 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/4/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

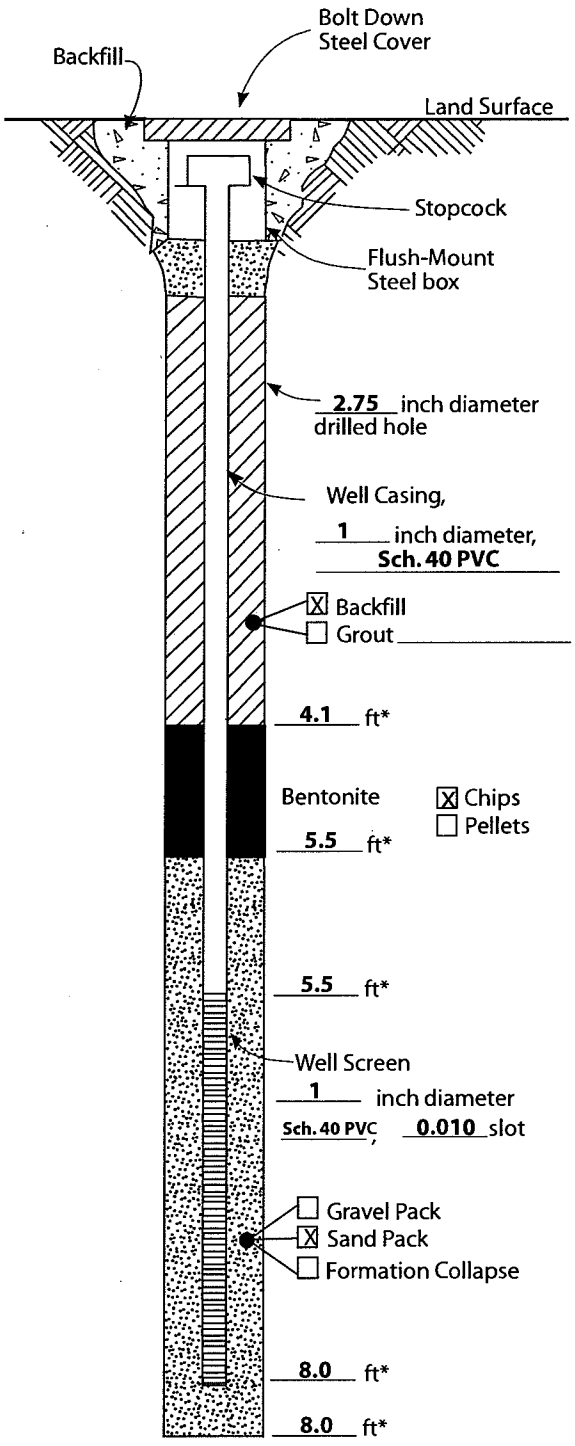
Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg635-wcl.ai

Well Construction Log

(Flush Mounted Well)

Project **Ford/Kingsford WI001095.0002** Well **GMSG-635**

Town/City **Kingsford, Michigan - Great Beginnings Daycare**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1122.7 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/4/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

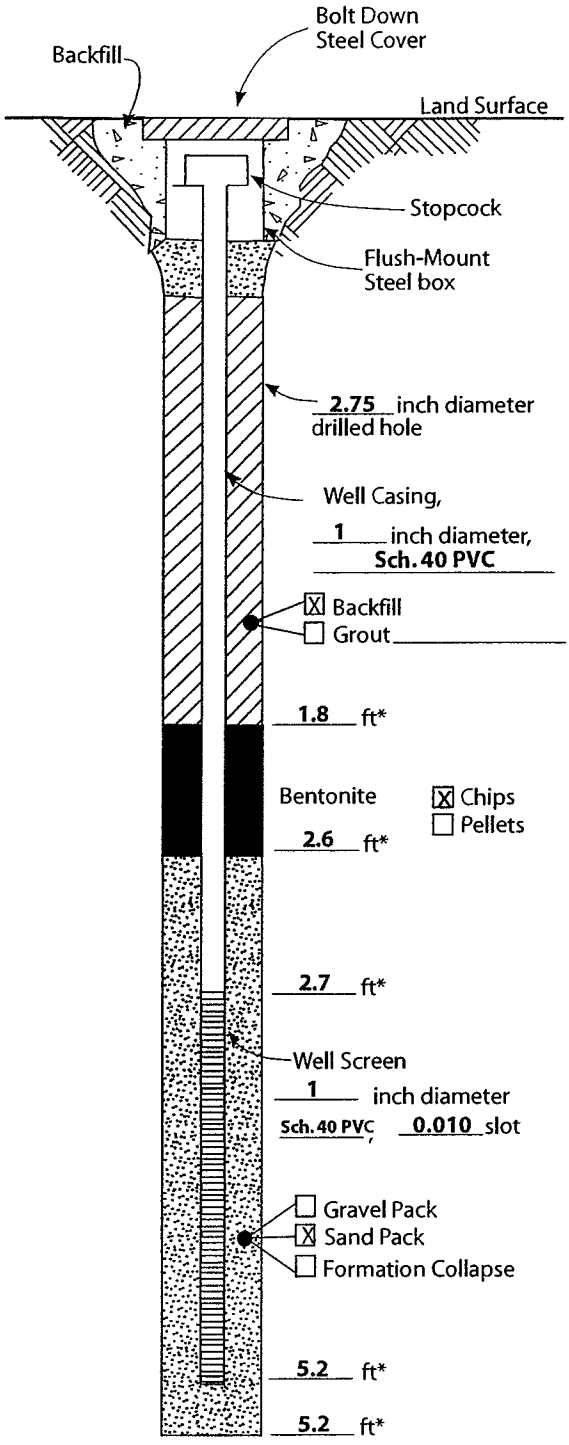
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg636-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-636**

Town/City **Kingsford, Michigan - Great Beginnings Daycare**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation 1122.5 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/4/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

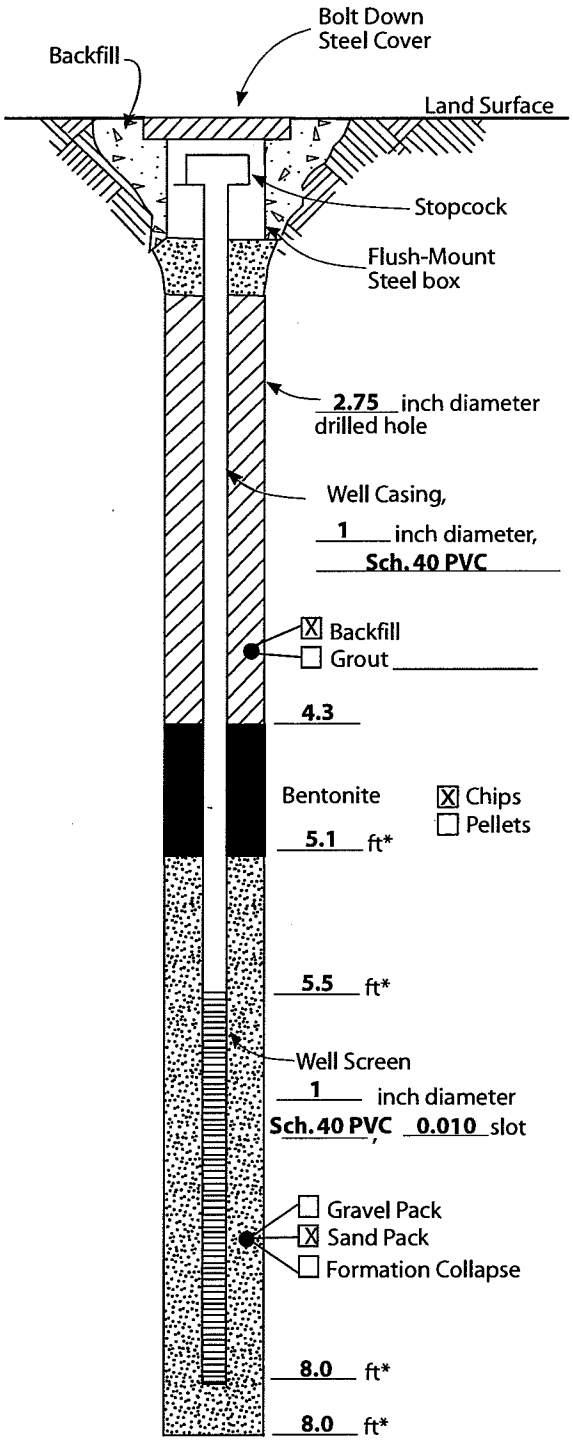
Specific Capacity -- gpm/ft

Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-637**

Town/City **Kingsford, Michigan - Great Beginnings Daycare**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1122.5 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/4/06**

Drilling Method **Hand Auger**

Drilling Contractor **ARCADIS**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity -- gpm/ft Date --

Specific Capacity -- gpm/ft

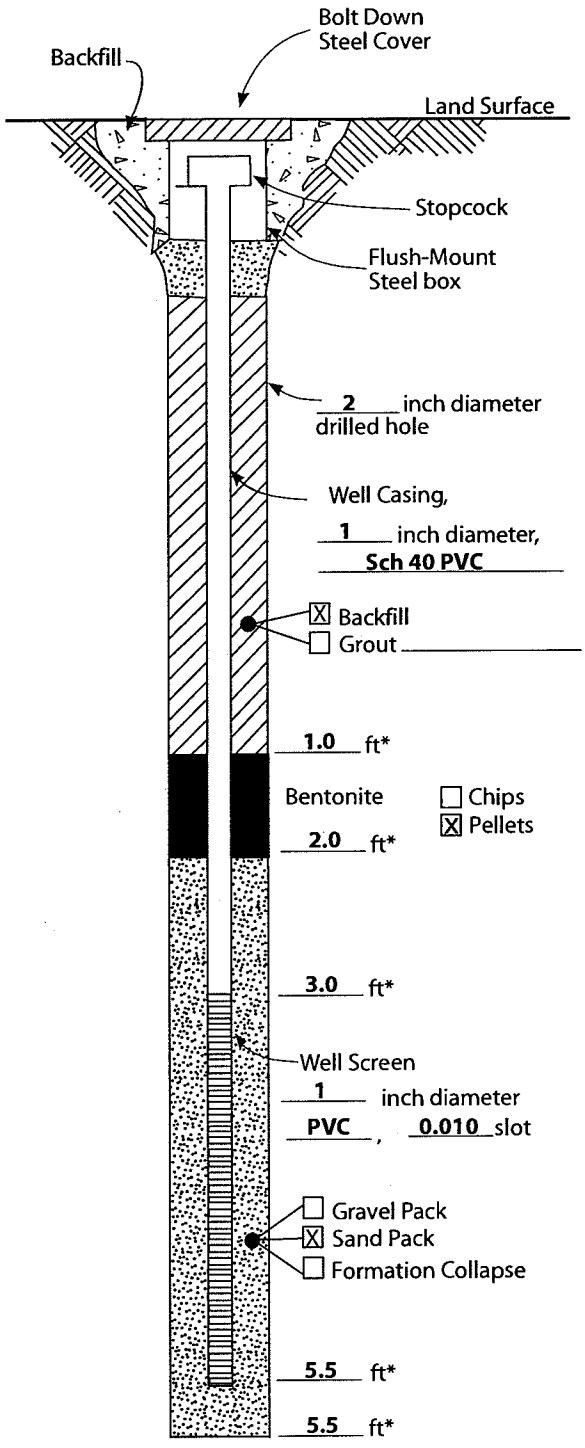
Well Purpose **Commerical Soil Vapor Probe**

Remarks

Prepared by **J.Waldbillig**

ford/wi0637/2006/graphics/logs/gmsg637-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-638**

Town/City **Kingsford - Zams**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1120.2 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/18/06**

Drilling Method **Geoprobe**

Drilling Contractor **Coleman Engineering**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

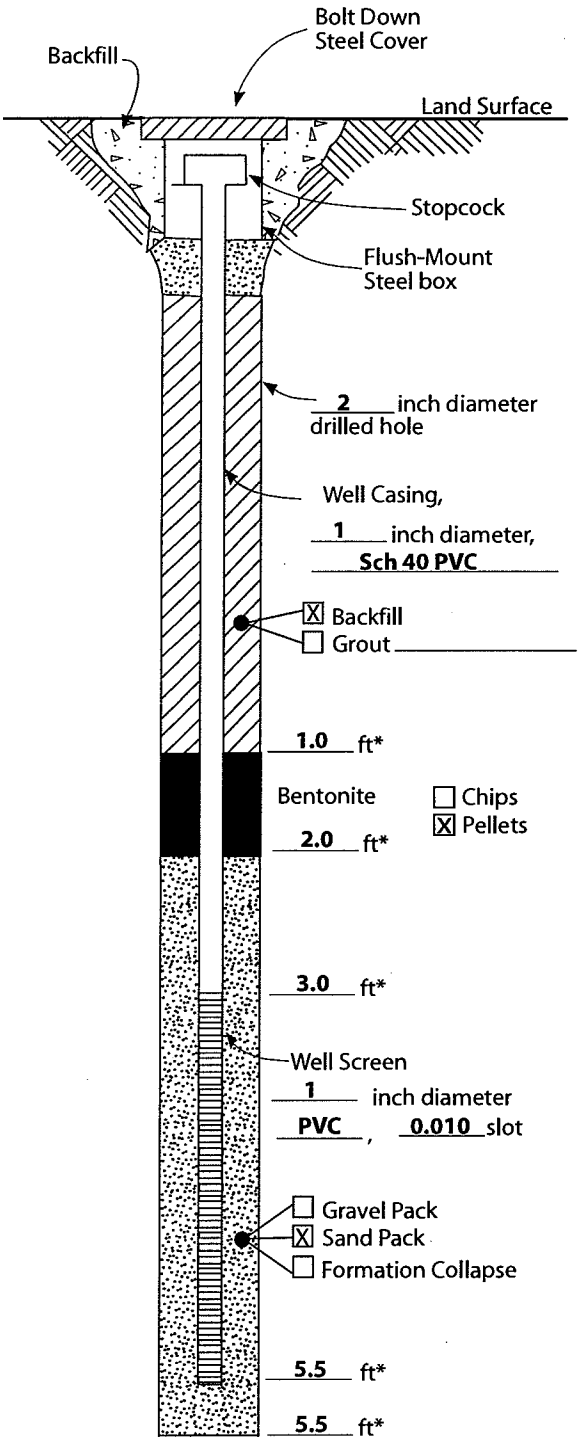
Well Purpose **Commercial Soil Vapor Probe**

Remarks **3.5' east of window, 7.5' south of building, next to dying bushes.**

Prepared by **TLNK**

ford/wi0637/2006/graphics/logs/gmsg638-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg639-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-639

Town/City Kingsford - Zams

County Dickinson

Permit No. NA

Land-Surface Elevation

1120.3 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 10/18/06

Drilling Method Geoprobe

Drilling Contractor Coleman Engineering

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity ____ gpm/ft Date ____

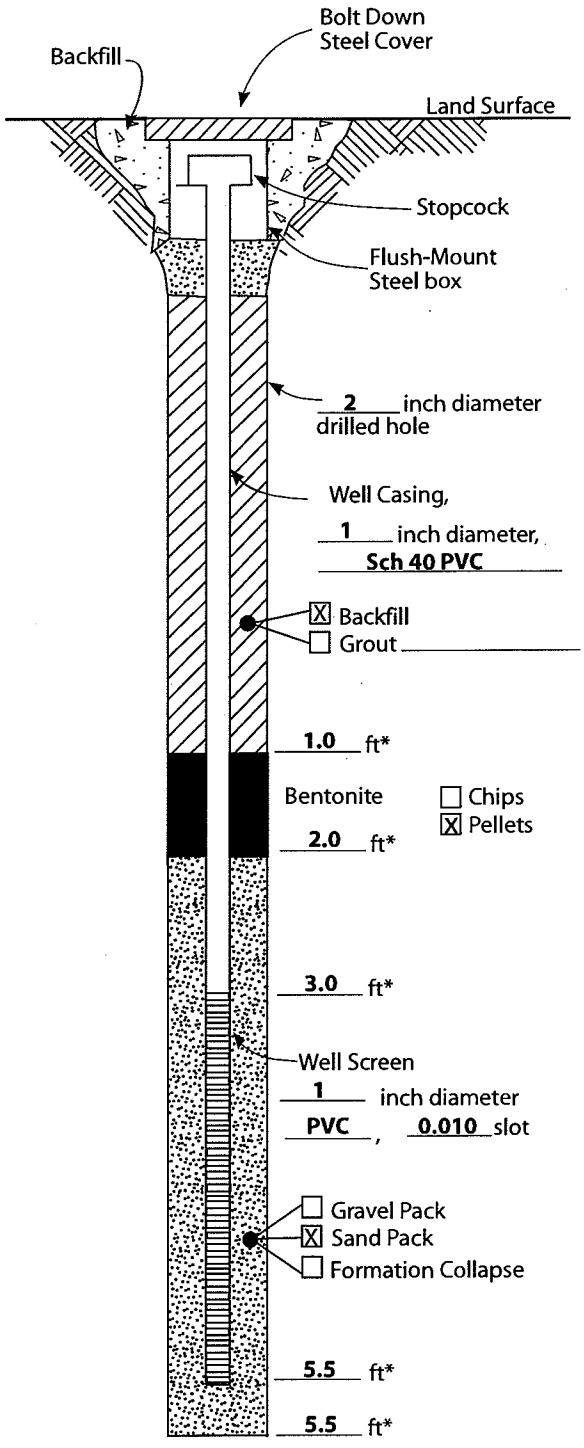
Specific Capacity ____ gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks 3.8' east of building, 4th and 5th bay doors in between them

Prepared by TLNK

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-640**

Town/City **Kingsford - Zams**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1120.2 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/18/06**

Drilling Method **Geoprobe**

Drilling Contractor **Coleman Engineering**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

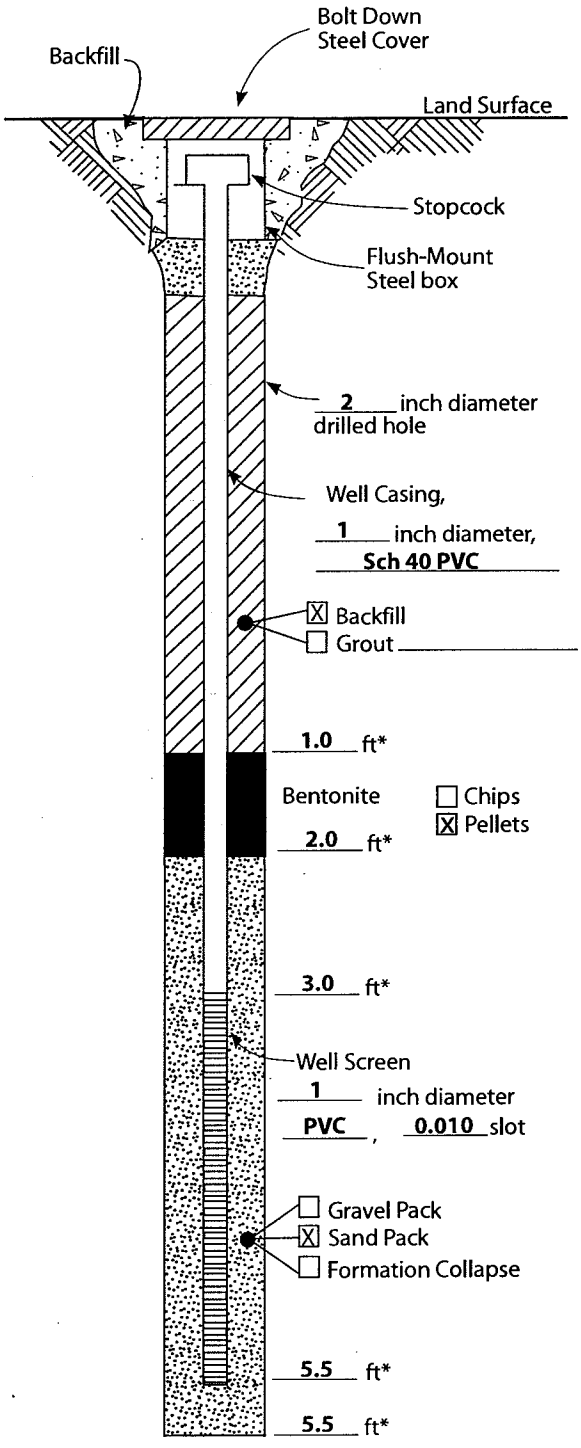
Well Purpose **Commercial Soil Vapor Probe**

Remarks **2.0' north of building, 2.5' east of VCS pipe**

Prepared by **TLNK**

ford/wi0637/2006/graphics/logs/gmsg640-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-641**

Town/City **Kingsford - Zams**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1119.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/18/06**

Drilling Method **Geoprobe**

Drilling Contractor **Coleman Engineering**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

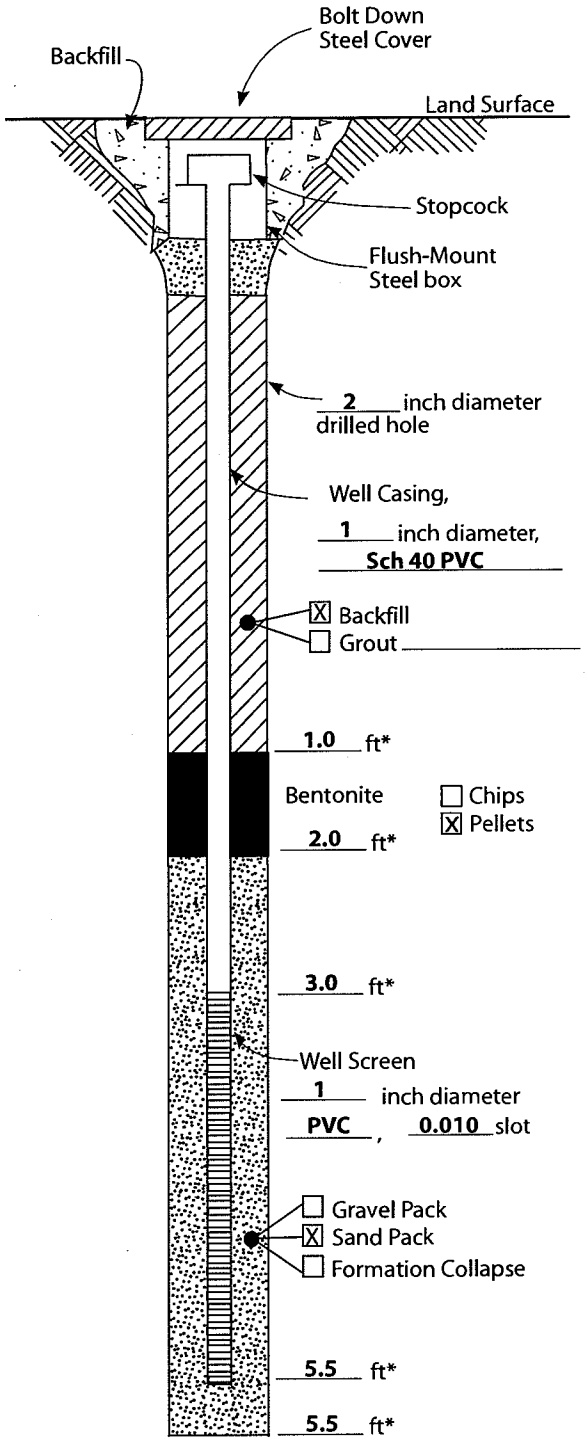
Well Purpose **Commercial Soil Vapor Probe**

Remarks **4.9-5.0' north of building, off edge of far wet window, east edge of window by column seperator.**

Prepared by **TLNK**

ford/wi0637/2006/graphics/logs/gmsg641-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg642-wcl.ai

Project Ford/Kingsford WI001095.0002 Well GMSG-642

Town/City Kingsford - Zams

County Dickinson

Permit No. NA

Land-Surface Elevation

1120.4 feet ☒ surveyed ☐ estimated

Datum Mean sea level

Installation Date(s) 10/18/06

Drilling Method Geoprobe

Drilling Contractor Coleman Engineering

Drilling Fluid None

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

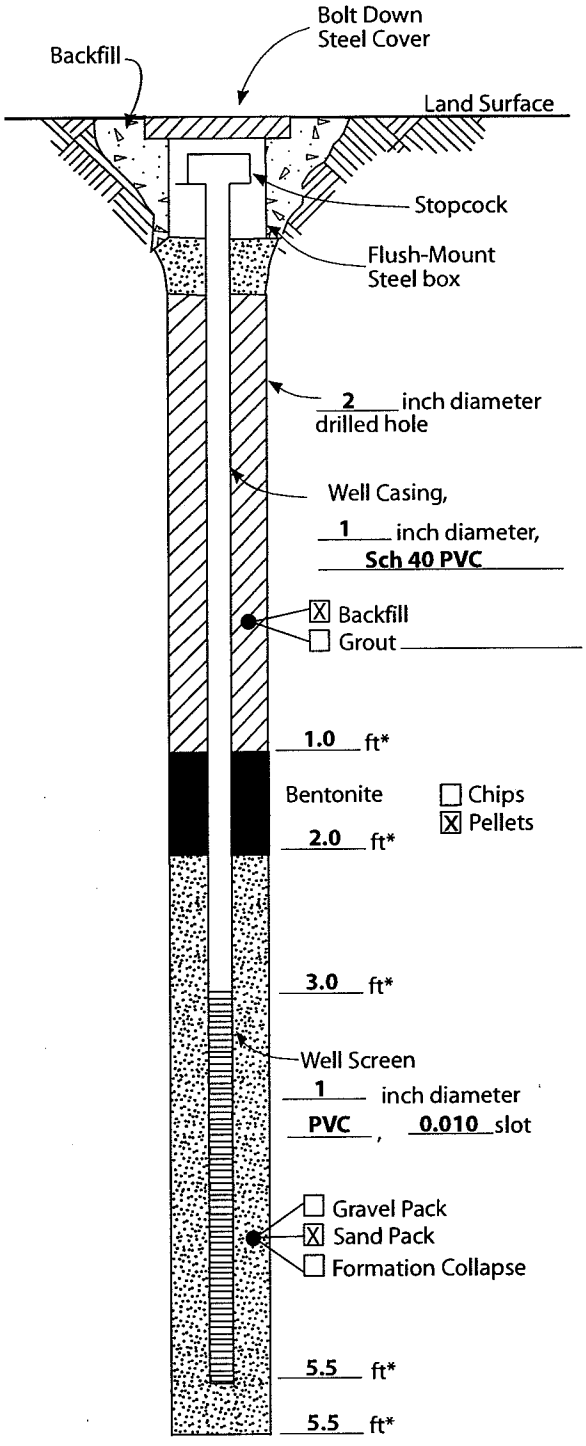
Specific Capacity _____ gpm/ft

Well Purpose Commercial Soil Vapor Probe

Remarks 3.6' west of building, middle of 3rd window working from west to east.

Prepared by TLNK

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-643**

Town/City **Kingsford - GAD**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1121 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/18/06**

Drilling Method **Geoprobe**

Drilling Contractor **Coleman Engineering**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

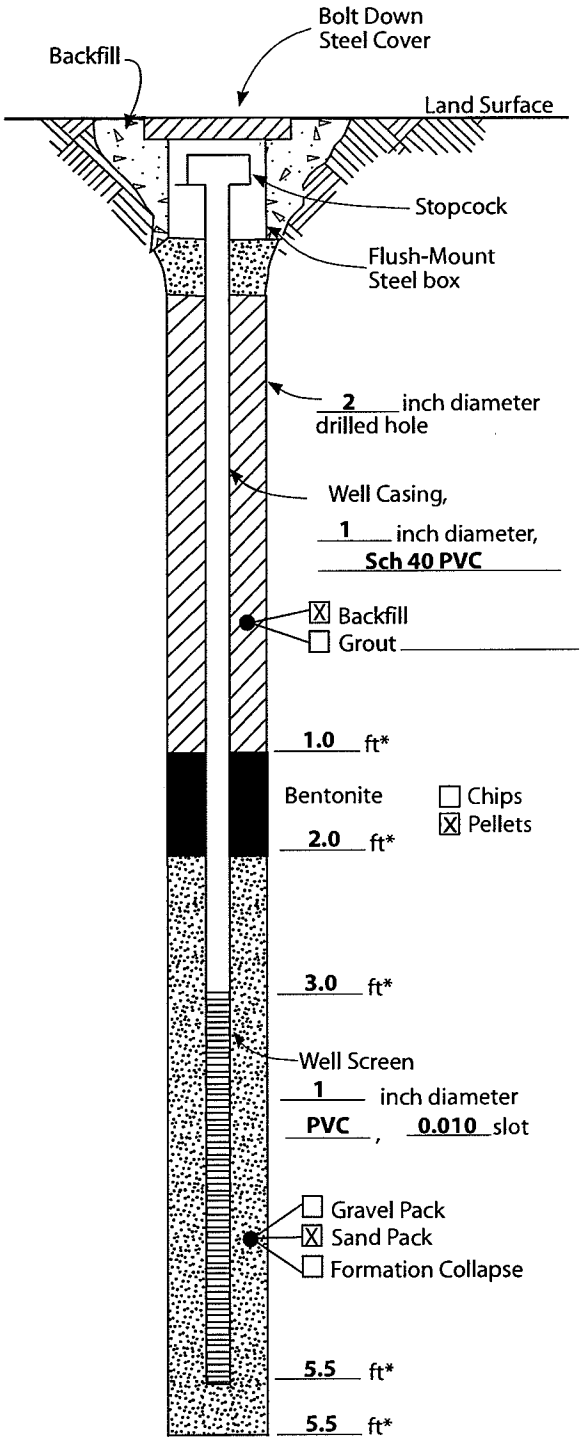
Well Purpose **Commercial Soil Vapor Probe**

Remarks **3.9' north of edge of door, 3' west of building.**

Prepared by **TLNK**

ford/wi0637/2006/graphics/logs/gmsg643-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford WI001095.0002** Well **GMSG-644**

Town/City **Kingsford - GAD**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1120.8 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/18/06**

Drilling Method **Geoprobe**

Drilling Contractor **Coleman Engineering**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

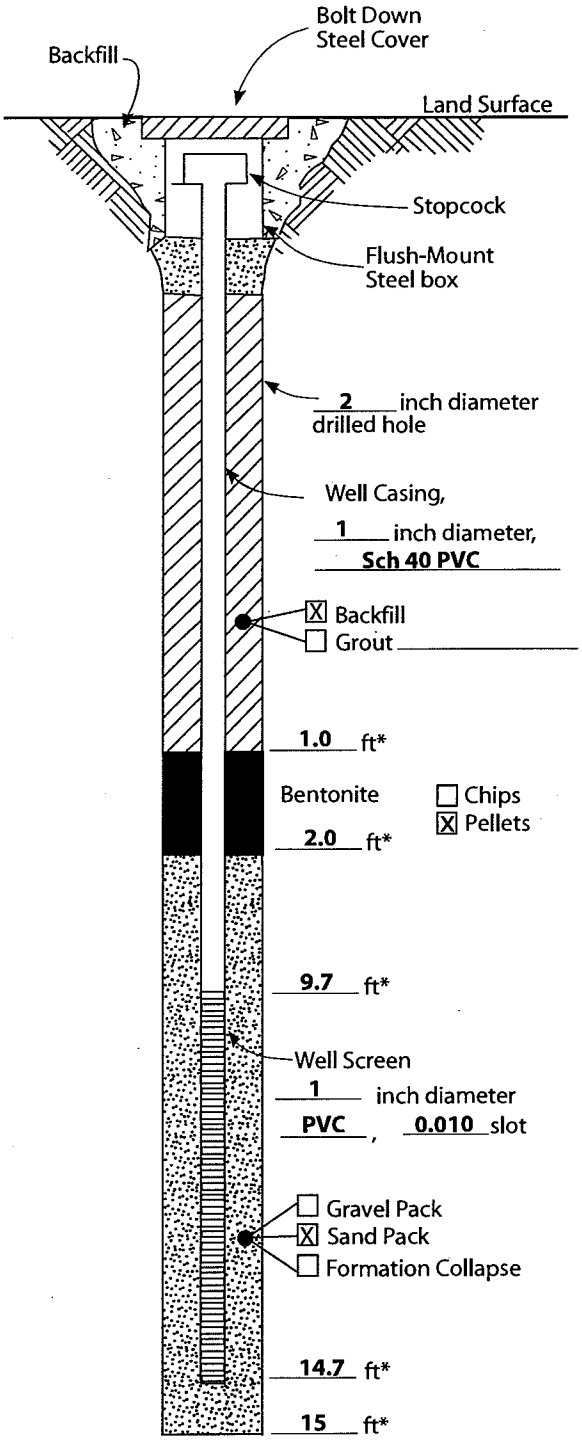
Well Purpose **Commercial Soil Vapor Probe**

Remarks **2.5' east of building, 11.5' north of overhead door.**

Prepared by **TLNK**

ford/wi0637/2006/graphics/logs/gmsg644-wcl.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmsg645-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMSG-645**

Town/City **Kingsford - GAD**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1120.2 feet ☒ surveyed ☐ estimated

Datum **Mean sea level**

Installation Date(s) **10/18/06**

Drilling Method **Geoprobe**

Drilling Contractor **Coleman Engineering**

Drilling Fluid **None**

Development Technique(s) and Date(s)

None

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

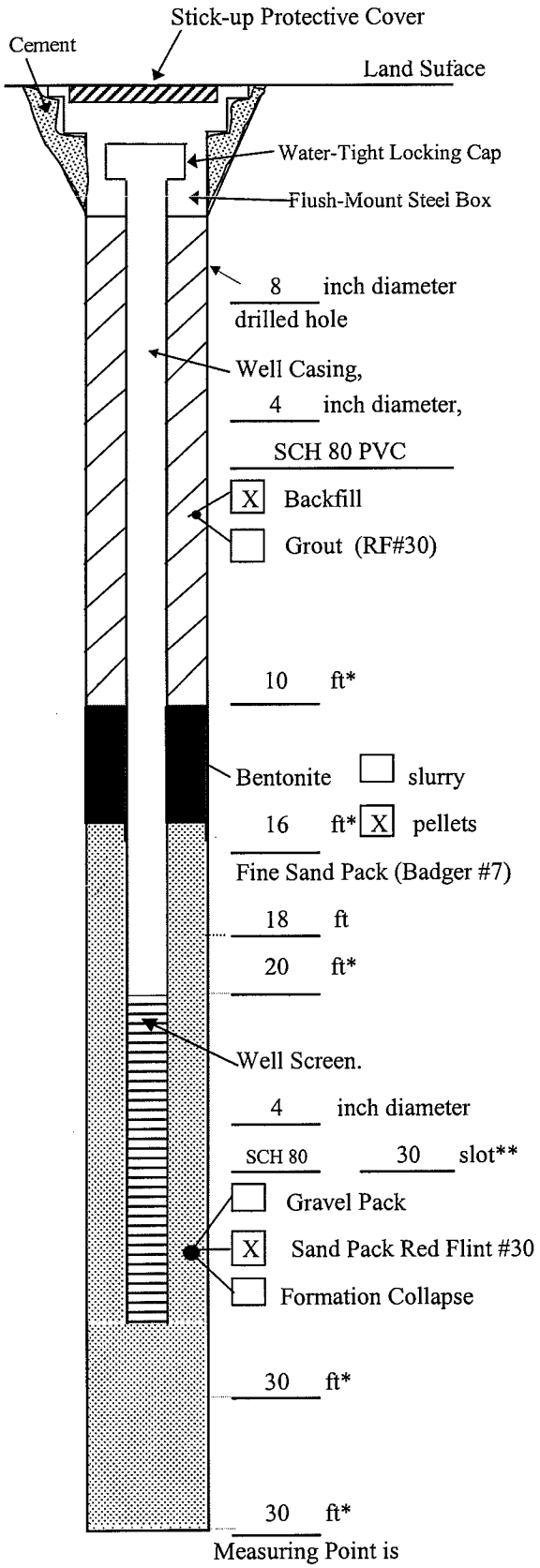
Specific Capacity _____ gpm/ft

Well Purpose **Commercial Soil Vapor Probe**

Remarks **1.9' west of building out from furthest south "Company Vehicles Only" sign.**

Prepared by **TLNK**

ARCADIS GERAGHTY & MILLER



WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/Kingsford Probe GMEW-1

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1039.49 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/16/2000

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
Surge well with 3" submersible pump.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 2,950 gallons

Static Depth to Water 2.0 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration 8 hours

Yield approximately 10 gpm Date 6/26/00 - 6/27/00

Specific Capacity gpm/ft

Well Purpose Extraction well.

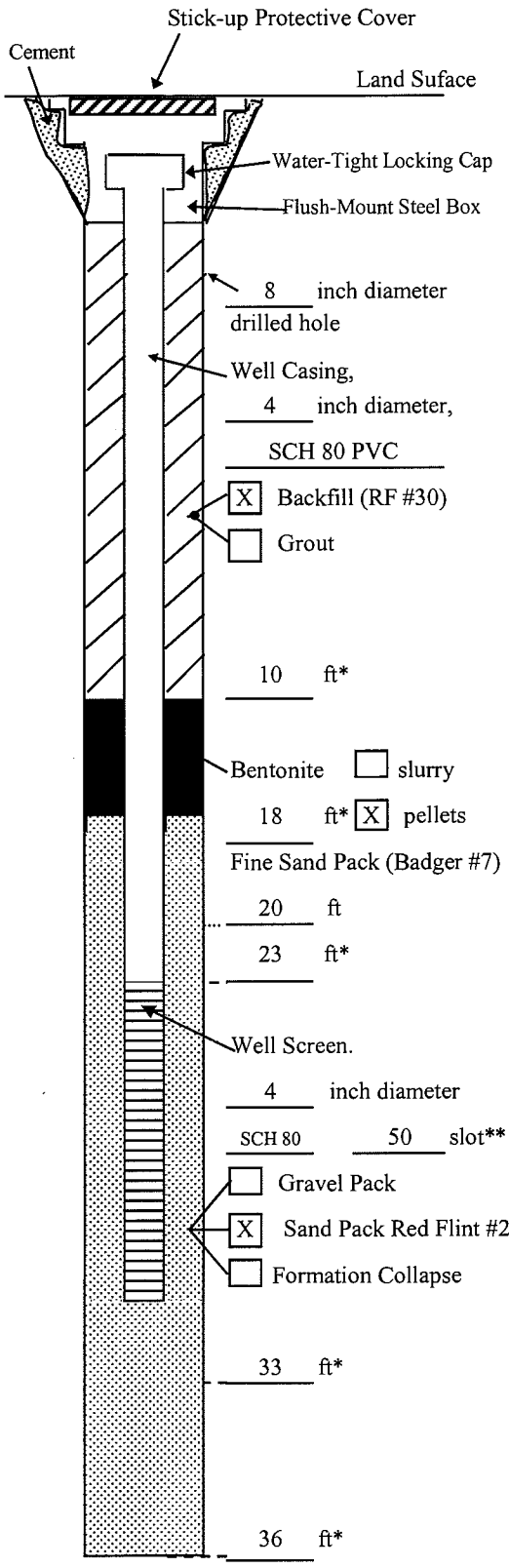
Remarks

Prepared by John Keller

* Depth Below Land Surface (bls)

** V-wire wrapped PVC

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

** V-wire wrapped PVC

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GMEW-2

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1049.53 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/17/2000

Drilling Method Hollow stem auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 3" submersible pump.

Fluid Loss During Drilling _____ gallons

Water Removed During Development approximately 4,250 gallons

Static Depth to Water 11.20 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 12 hours

Yield approximately 10 gpm Date 6/28/00 - 6/29/00

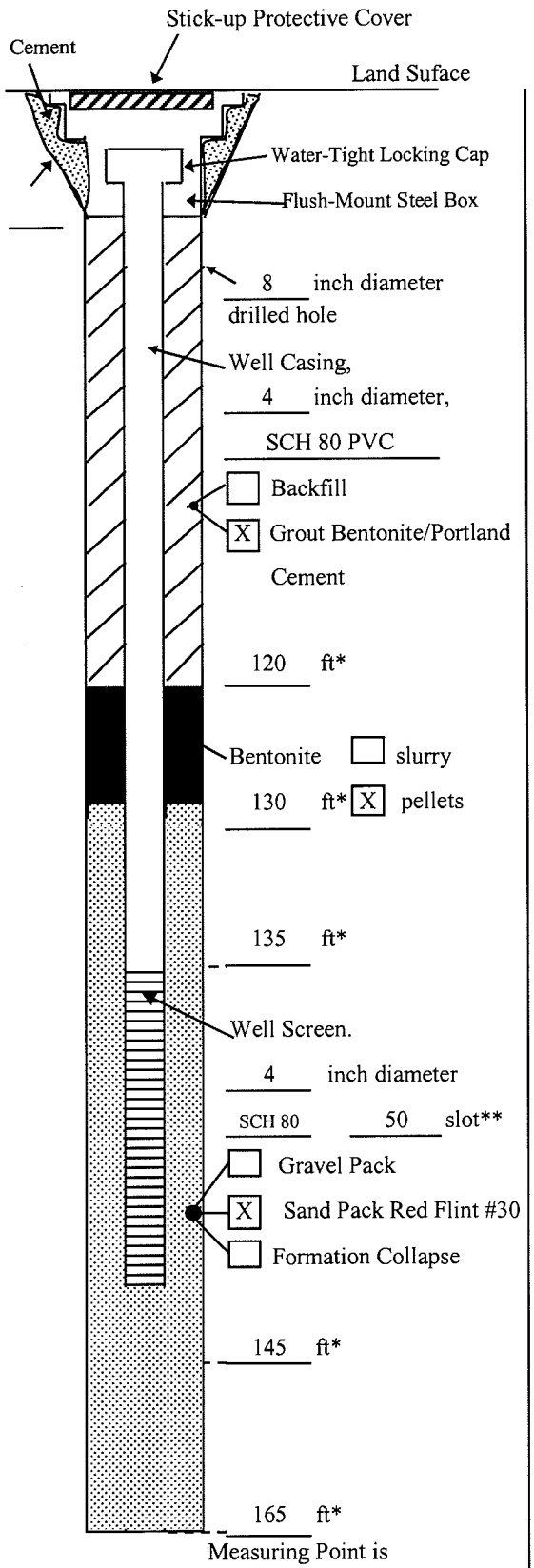
Specific Capacity _____ gpm/ft

Well Purpose Extraction well.

Remarks

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



* Depth Below Land Surface (bls)

** V-wire wrapped PVC

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project Ford/Kingsford Probe GMEW-3

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1065.40 feet [X] Surveyed [ ] Estimated

Installation Date(s) 6/26/00 - 6/27/00

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Surge well with 3" submersible pump.

Fluid Loss During Drilling gallons

Water Removed During Development approximately 800 gallons

Static Depth to Water 19.9 feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 7/20/00 - 7/21/00

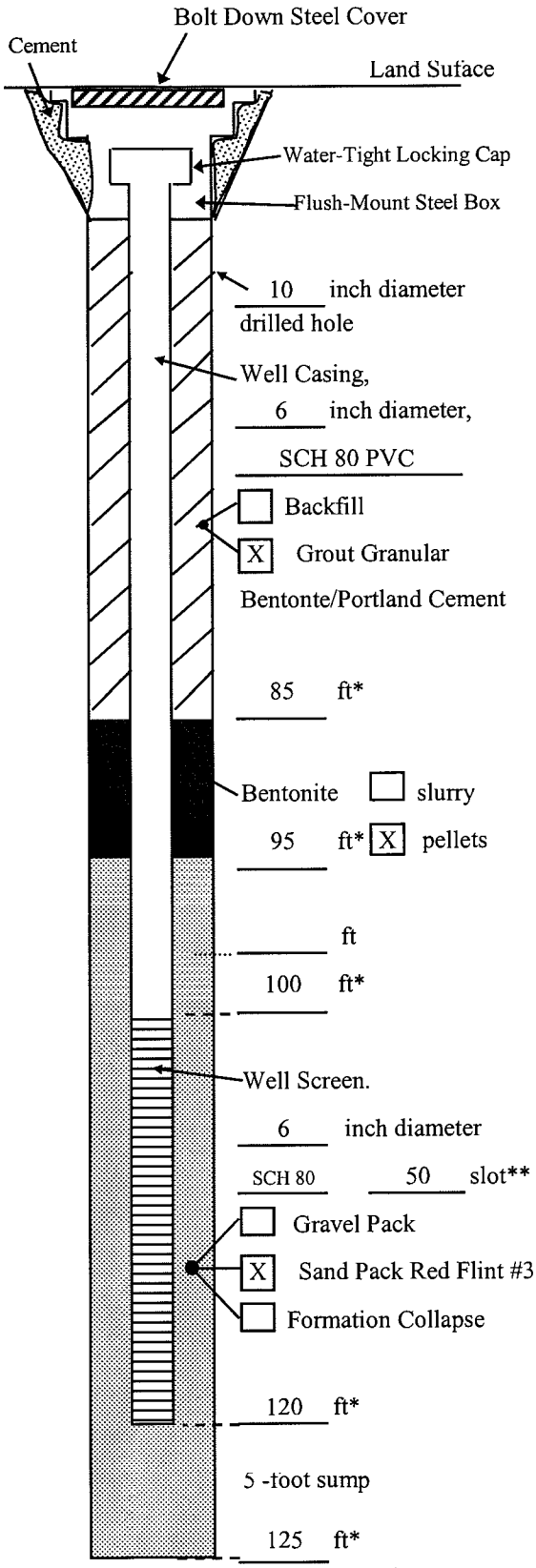
Specific Capacity gpm/ft

Well Purpose Extraction well.

Remarks Attempted to pump well at approximately 30 gpm initially but well went dry. Pump well at approximately 5 gpm but again well goes dry. Therefore developed well by pumping it dry and then letting it recharge many times.

Prepared by John Keller

ARCADIS GERAGHTY & MILLER



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG
(Flush Mounted Well)

Project Ford/Kingsford Well GMEW-4

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.77 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 1/07/02 - 1/10/02

Drilling Method Mud Rotary

Drilling Contractor Boart Longyear

Drilling Fluid Mud (Aquagel purge gold bentonite mixed with water)

Development Technique(s) and Date(s)
Water jetting and air lifting 1/15/02-1/31/02

Fluid Loss During Drilling ____ gallons

Water Removed During Development 48,625 gallons

Static Depth to Water 12.11 feet below M.P.

Pumping Depth to Water 25.52 feet below M.P.

Pumping Duration 1.5 hours

Yield 10 gpm Date 1/25/02

Specific Capacity 0.75 gpm/ft

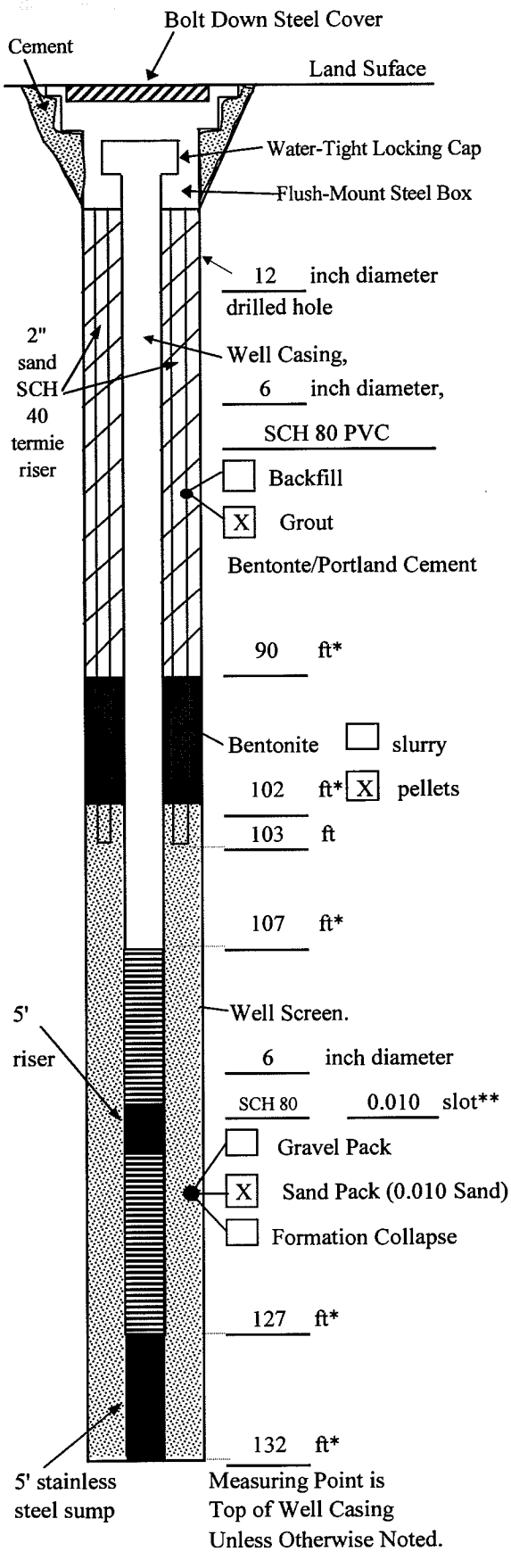
Well Purpose Groundwater Extraction Well

Remarks

Prepared by John Keller

ARCADIS

WELL CONSTRUCTION LOG
(Flush Mounted Well)



* Depth Below Land Surface (bls)

Project Ford/Kingsford Well GMEW-4R

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1047.5 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 7/16/02 to 7/18/02

Drilling Method Mud Rotary

Drilling Contractor Boart Longyear

Drilling Fluid Mud (Quik Gel Bentonite with water)

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

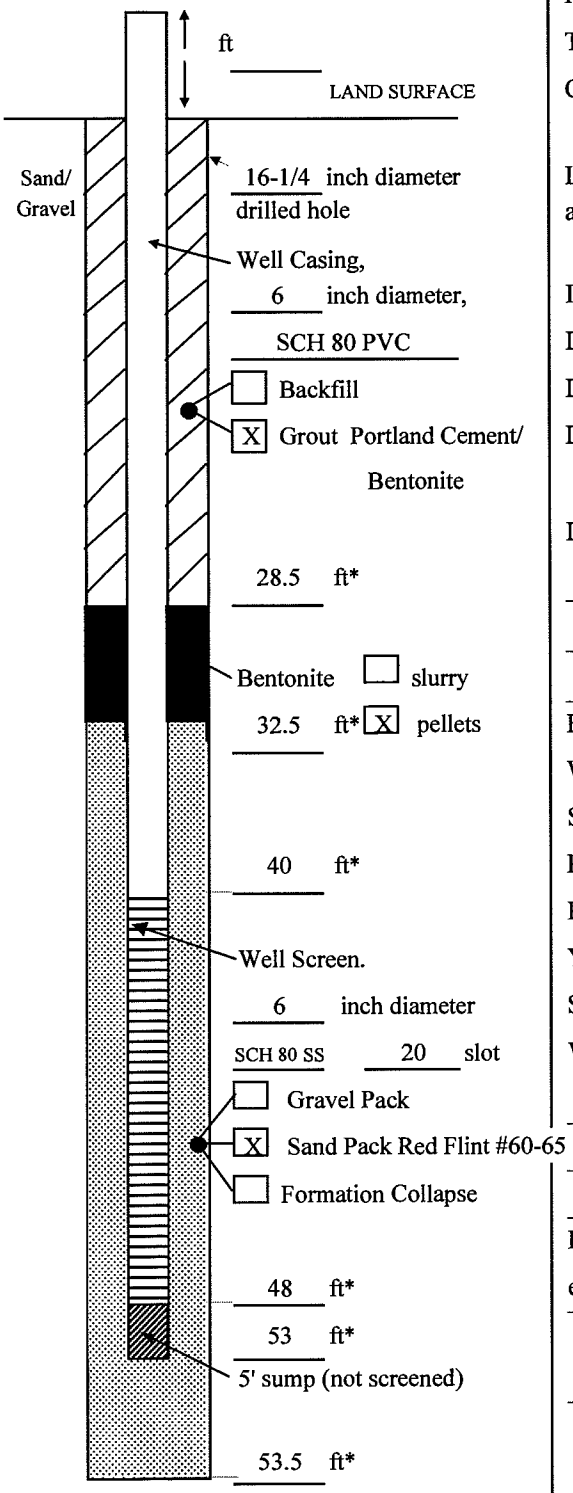
Well Purpose Extraction well.

Remarks

Prepared by John Keller

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMEW-5

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1066.13 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/24/02 - 6/28/02

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling 750 gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

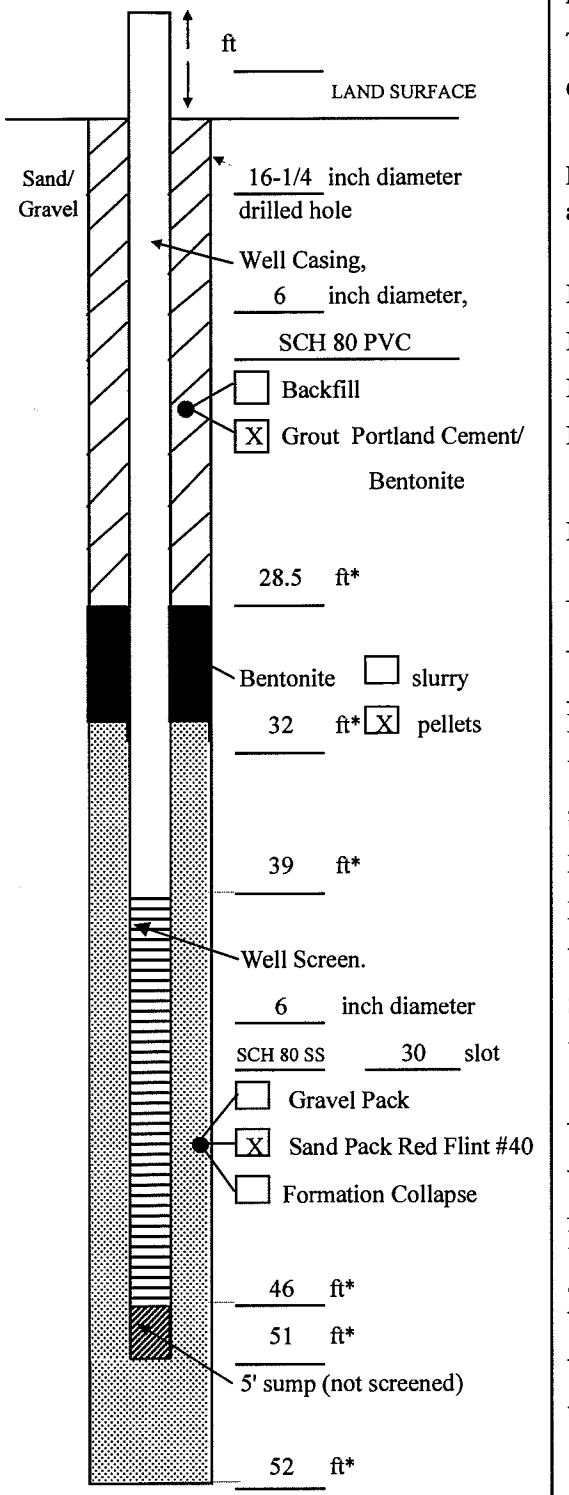
Well Purpose Extraction well.

Remarks Two 2-inch sand tremie pipes were placed on either side of the extraction well down to 39 feet bls.

Prepared by Andrew Fiskness

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford Probe GMEW-6

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1060.43 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 6/25/02 - 6/27/02

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling 900 gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Extraction well.

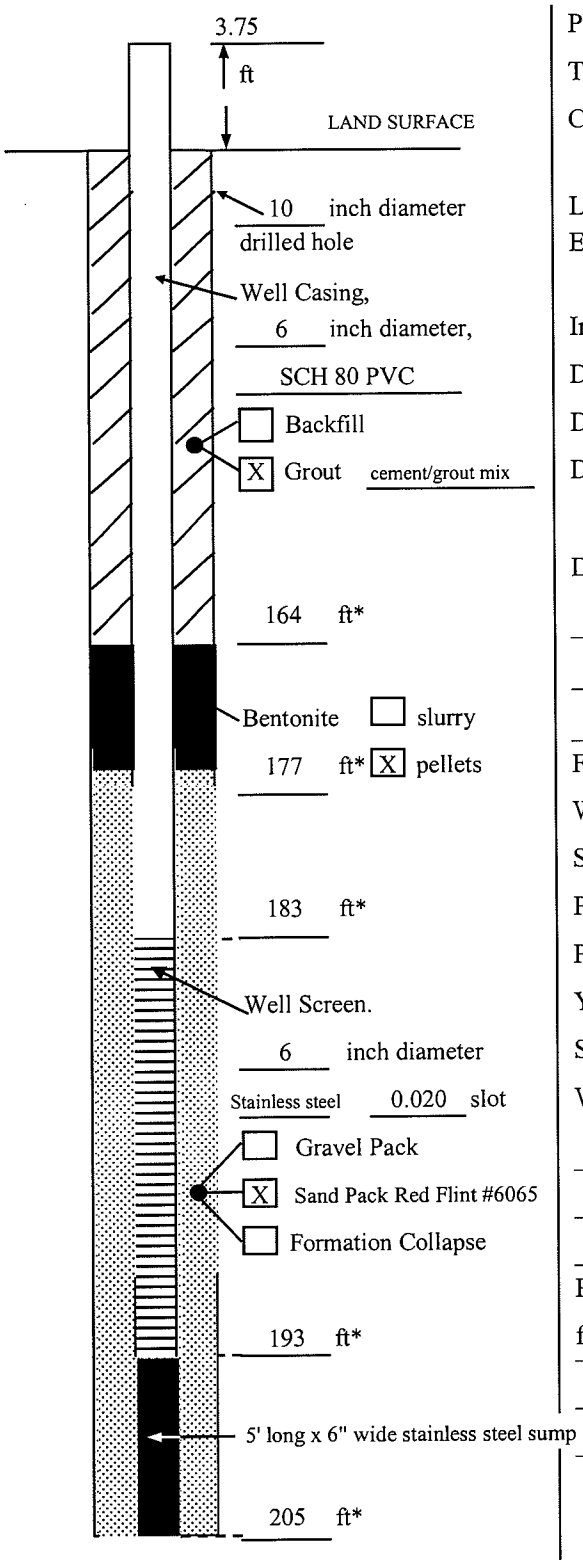
Remarks Two 2-inch sand tremie pipes were placed on either side of the extraction well down to 38 feet bls.

Prepared by Andrew Fiskness

ARCADIS

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMEW-7

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1065.85 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 10/09/03

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water and water (mud) mud = Aquagel Goldseal powdered benonite

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

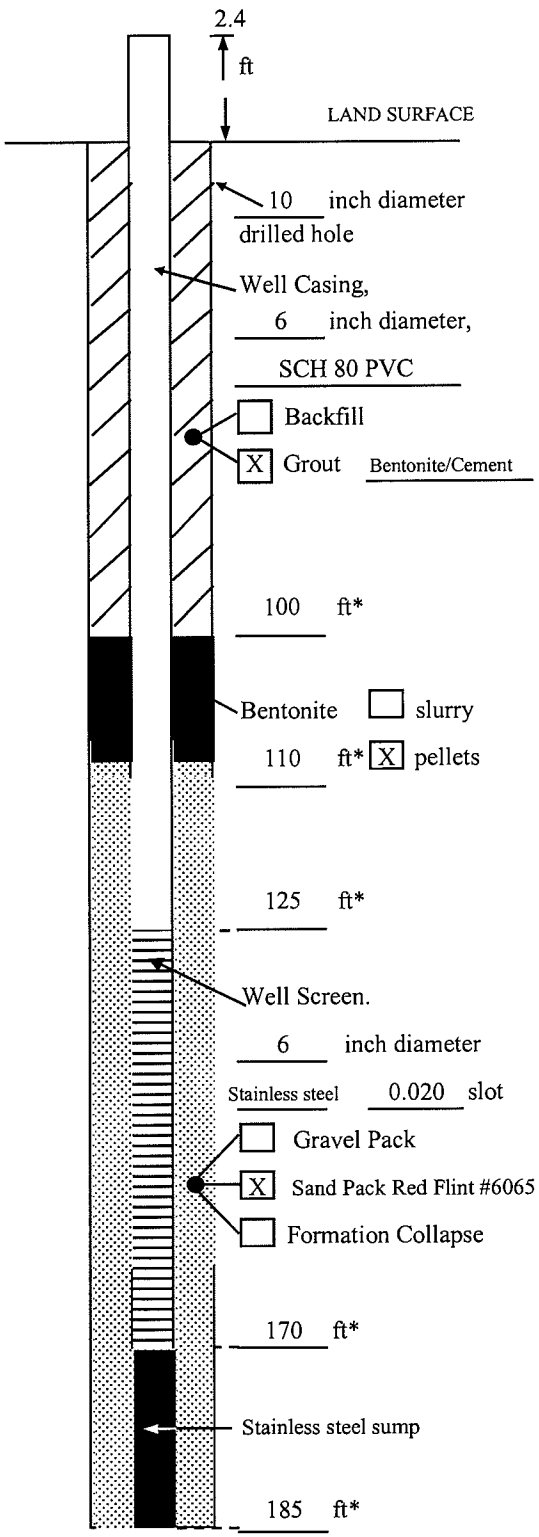
Well Purpose Extraction well

Remarks Borehole drilled to 205' with 8" casing but to 198' w/10" casing, from 205-198' formation collapse prior to installing sump/screen.

Prepared by Paul Lenaker

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMEW-8

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1044.08 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/20/03

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water/Aquagel mud

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date 10/27/2003

Specific Capacity gpm/ft

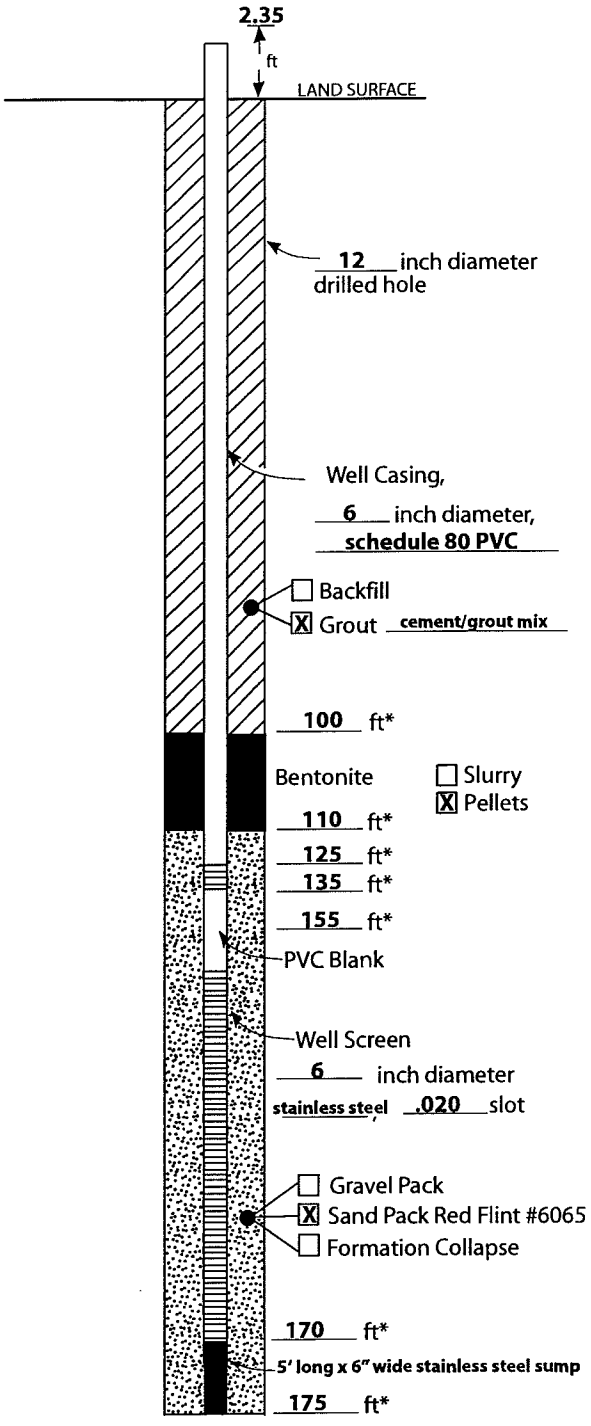
Well Purpose Extraction well

Remarks

Prepared by Paul Lenaker

ARCADIS

Well Construction Log
(UNCONSOLDIATED)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Kingsford** Well **GMEW-9**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation and Datum **1048.91** feet

[X] surveyed

[ ] estimated

Installation Date(s) **10/23-10/25/03**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

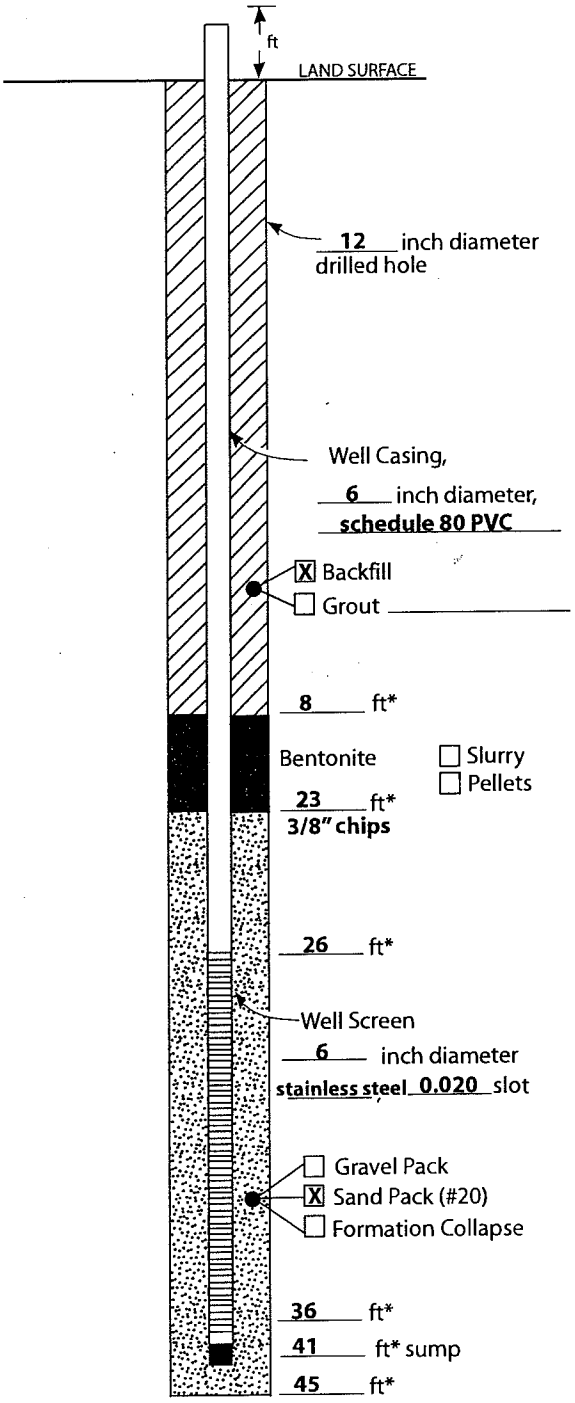
Well Purpose **extraction well**

Remarks **Bentonite: Wyoming grade 3/8" chips.**

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-1**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1054.15** feet

and Datum **Mean Sea Level** feet [X] surveyed [ ] estimated

Installation Date(s) **6/2/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water from Kingsford Department Public Works Building**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **1,000** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

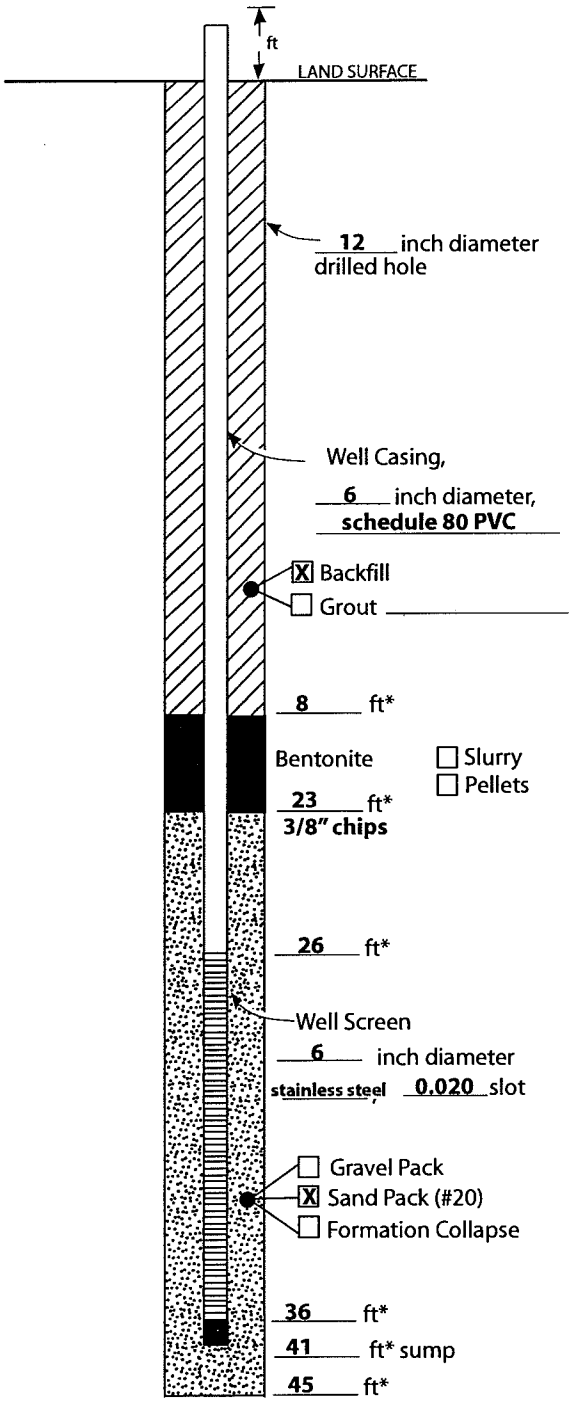
Well Purpose **extraction well**

Remarks **5' stainless steel sump, stabilizer at base - Johnson Controls; 10' long, 6-inch diameter, 0.020 slot stainless steel screen, continuous wrap - Johnson Controls; Schedule 80 PVC riser-Campbell Monofex, Red Flint #20/6065 filter pack sand, Baroid Holeplug coarse grade Wyoming bentonite, 3/8" chips. Filter pack 16-50 lb bags; bentonite 6-50 lb bags.**

Prepared by **Toni Schoen**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMEWA-2

Town/City Kingsford

County Dickinson State Michigan

Permit No. _____

Land-Surface Elevation 1053.69 feet

and Datum Mean Sea Level feet [X] surveyed [ ] estimated

Installation Date(s) 6/3/04

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water from Kingsford Department Public Works Building

Development Technique(s) and Date(s)

Fluid Loss During Drilling 800 gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose extraction well

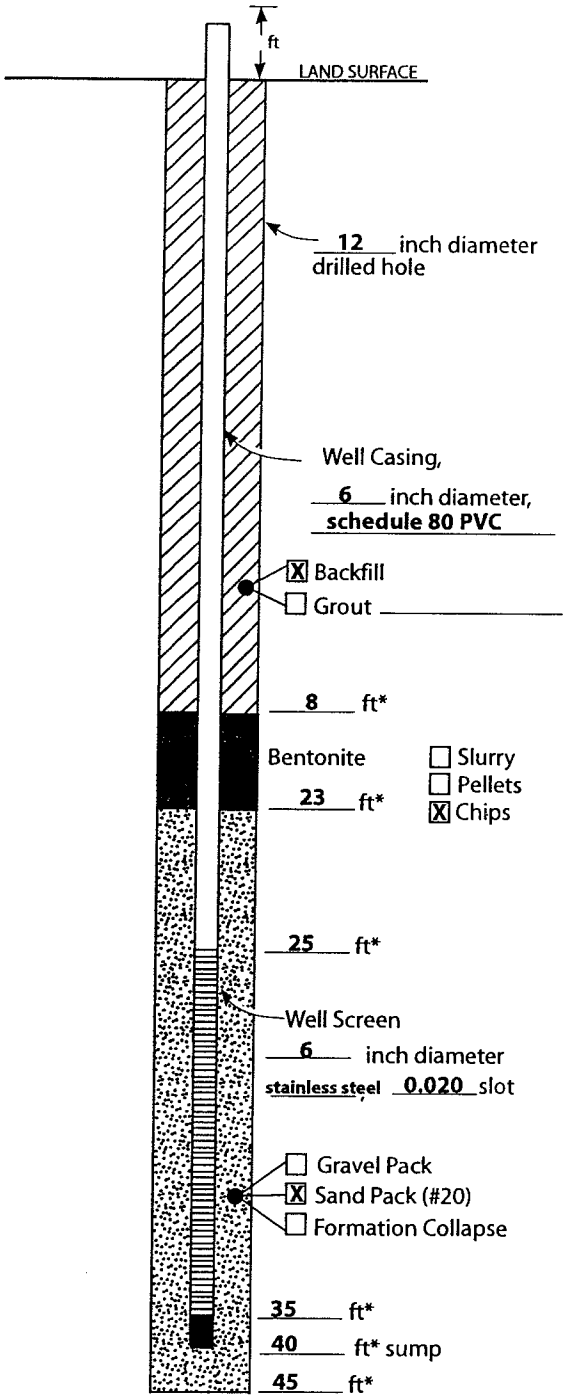
Remarks 5' stainless steel sump, stabilzer at base - Johnson Controls; 10' long, 6-inch diameter, 0.020 slot stainless steel screen, continuous wrap - Johnson Controls; Schedule 80 PVC riser-Campbell Monoflex, Red Flint #20/6065 filter pack sand, Baroid Holeplug coarse grade Wyoming bentonite, 3/8" chips. Filter pack 13-50 lb bags; bentonite 7-50 lb bags.

Prepared by Toni Schoen

ford/wi0637/2004/graphic/logs/gmewa2.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-3**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1053.41** feet

and Datum **Mean Sea Level** feet

☒ surveyed

☐ estimated

Installation Date(s) **6/3/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water from Kingsford Department Public Works Building**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **800** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **extraction well**

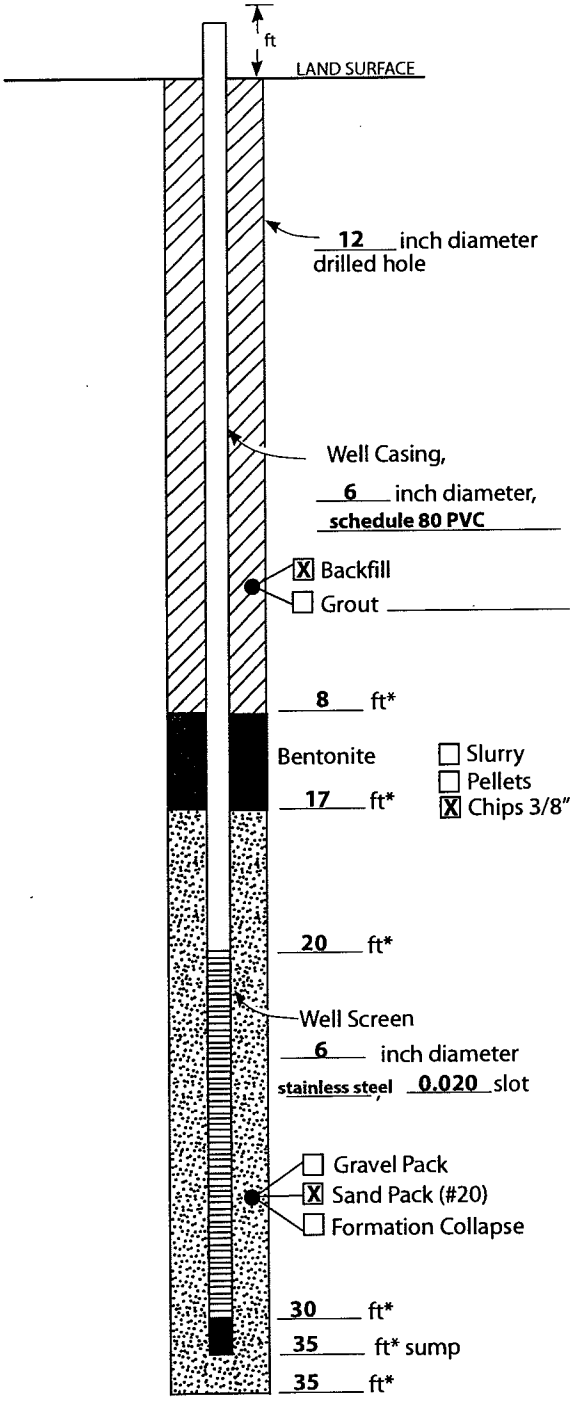
Remarks **5' stainless steel sump stabilizer at base - Johnson Controls; 10' long, 6-inch diameter, 0.020 slot stainless steel screen, continuous wrap - Johnson Controls; Schedule 80 PVC riser-Campbell Monoflex, Red Flint #20/6065 filter pack sand, Baroid Holeplug coarse grade Wyoming bentonite, 3/8" chips. Filter pack 15-50 lb bags; bentonite 6-50 lb bags.**

Prepared by **Toni Schoen**

ford/wi0637/2004/graphic/logs/gmewa3.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-4**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.23** feet

and Datum **Mean Sea Level** feet ☒ surveyed ☐ estimated

Installation Date(s) **6/4/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **700** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

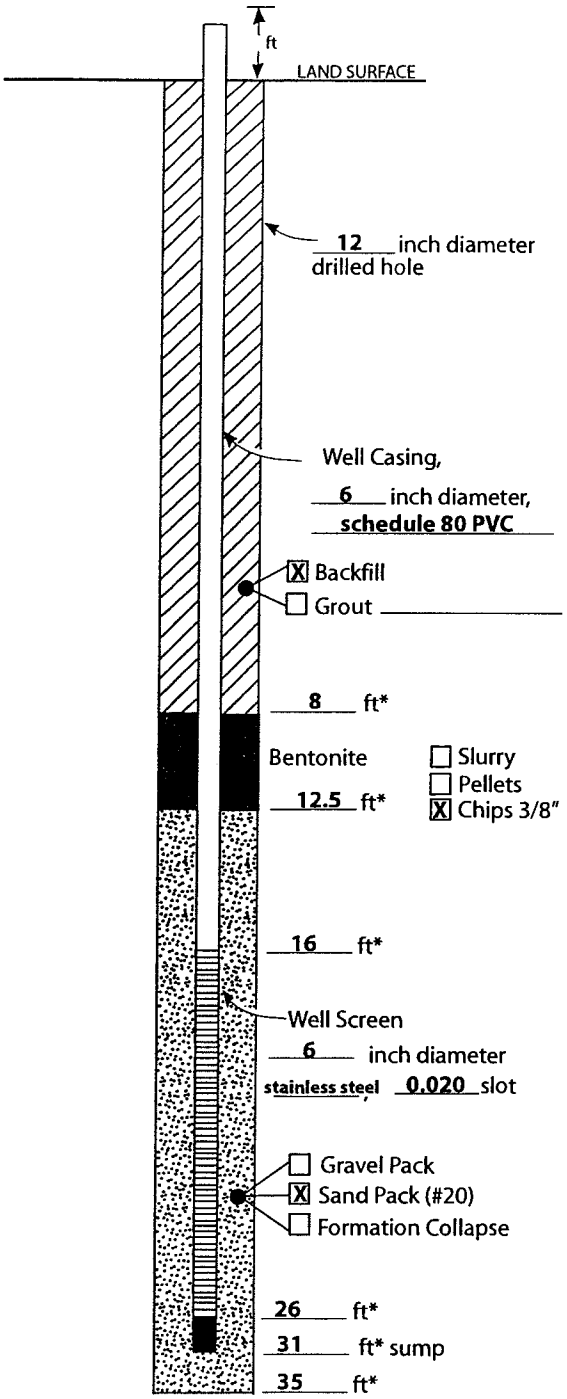
Well Purpose **extraction well**

Remarks **5' stainless steel sump, stabilizer at base - Johnson Controls; 10' long, 6-inch diameter, 0.020 slot; continuous wrap screen stainless steel; Johnson Controls, Schedule 80 PVC riser-Campbell Monoflex, Red Flint #20/6065 filter pack sand, 13-50 lb bags; Baroid Holeplug coarse grade Wyoming bentonite 3/8" chips 4-50 lb bags.**

Prepared by **Jill Flater**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-5**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1042.35** feet

and Datum **Mean Sea Level** feet [X] surveyed [ ] estimated

Installation Date(s) **6/4/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **600** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **extraction well**

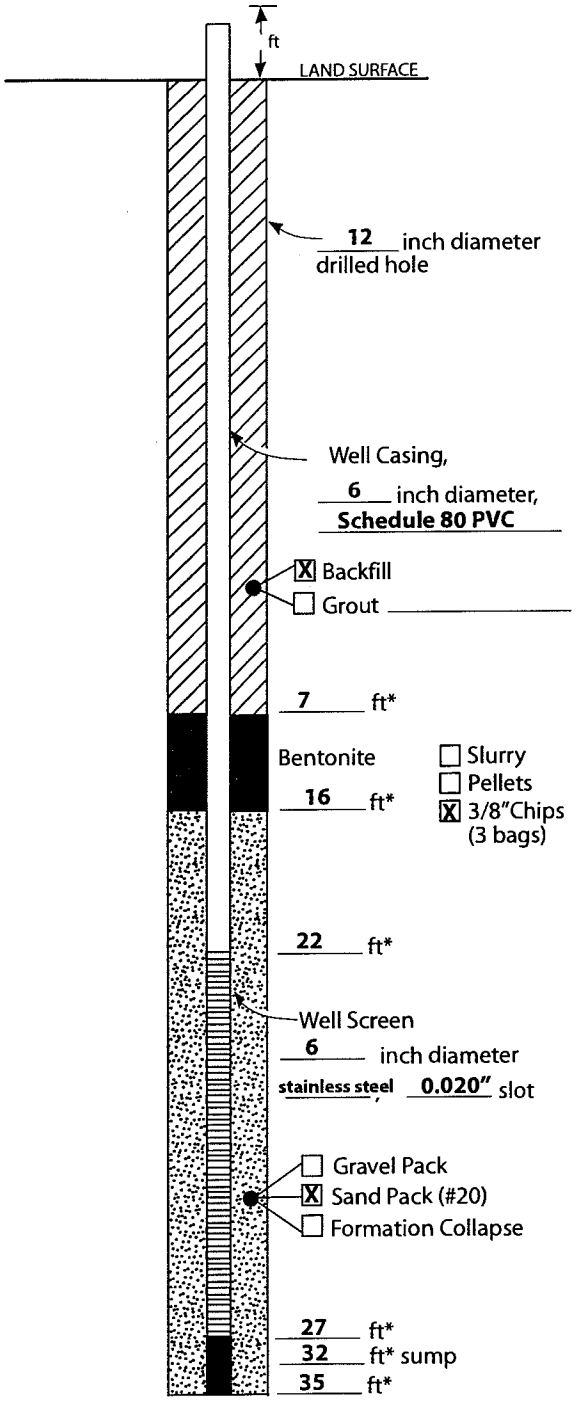
Remarks **5' stainless steel sump, stabilizer at base - Johnson Controls; 10' long, 0.020 slot; continuous wrap screen stainless steel-Johnson Controls; Schedule 80 PVC riser-Campbell Monoflex, Red Flint #20/6065 filter pack sand, 13-50 lb bags; Baroid Holeplug coarse grade Wyoming bentonite, 3/8" chips 2-50 lb bags**

Prepared by **Jill Flater**

ford/wi0637/2004/graphic/logs/gmewa5.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-6**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1043.88** feet

and Datum **Mean Sea Level** feet [X] surveyed [ ] estimated

Installation Date(s) **8/03/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

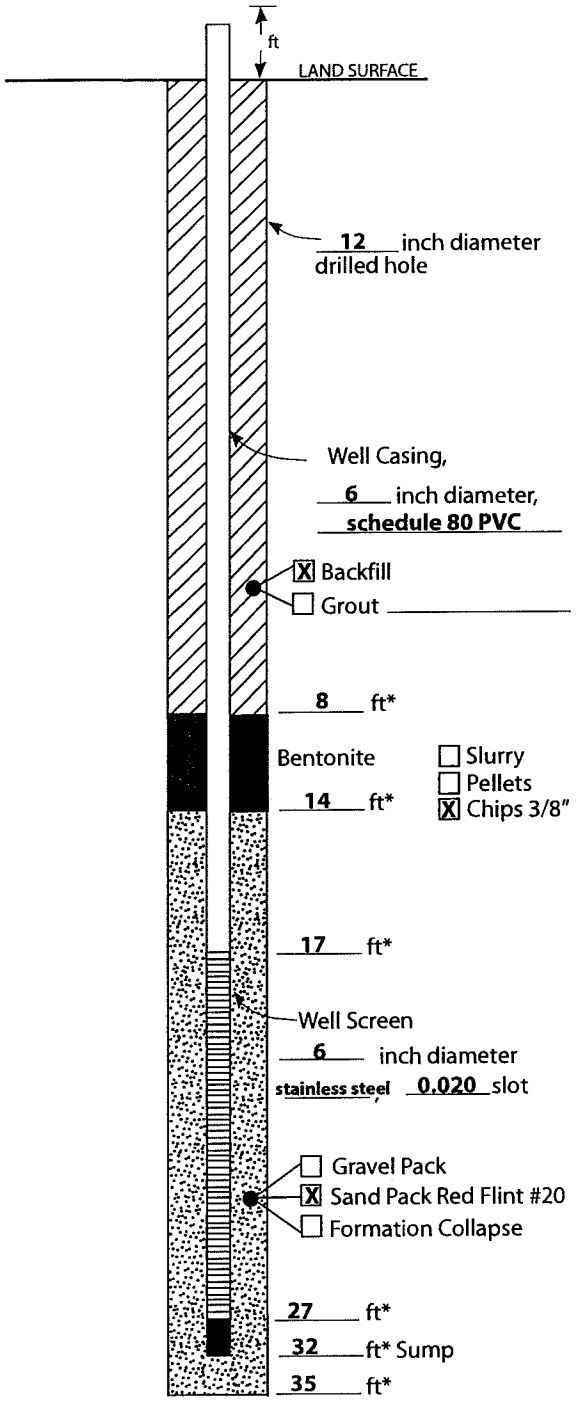
Well Purpose **Extraction well**

Remarks **Baroid 3/8" bentonite chips, red flint #20 filter pack sand (13 bags).**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMEWA-7

Town/City Kingsford

County Dickinson State Michigan

Permit No. _____

Land-Surface Elevation 1042.34 feet and Datum Mean Sea Level

X surveyed
☐ estimated

Installation Date(s) 7/20/04

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

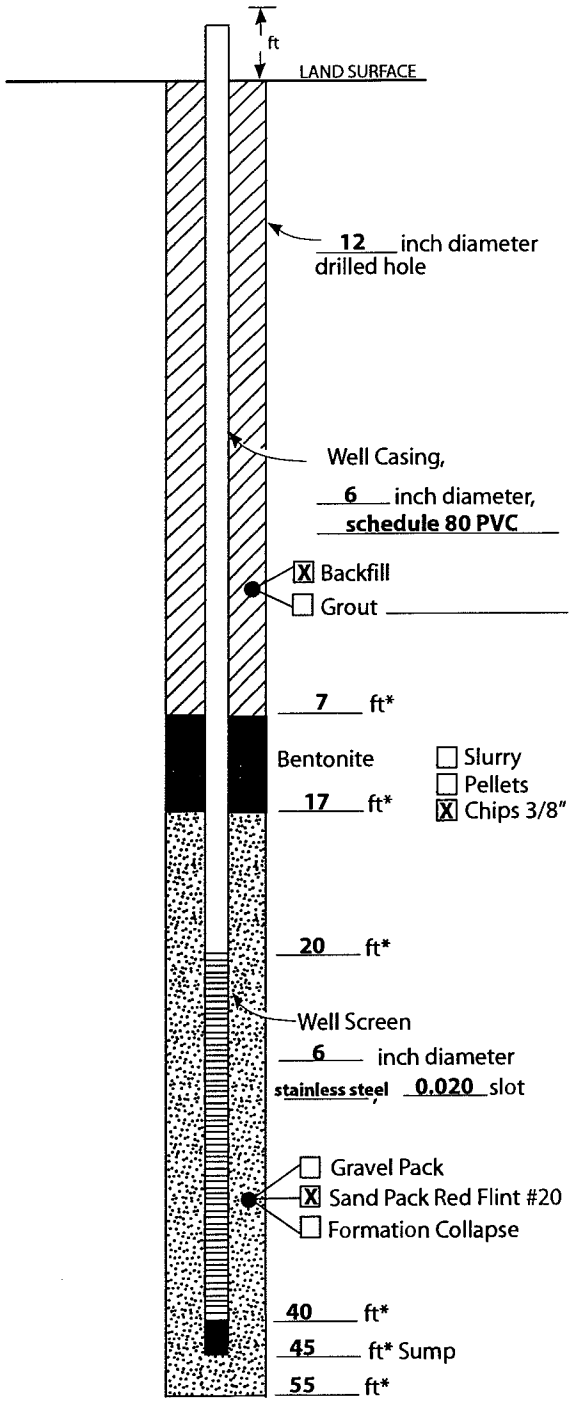
Well Purpose extraction well

Remarks _____

Prepared by Andy Mumpy

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-8**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1041.58** feet

and Datum **Mean Sea Level**

[X] surveyed

[ ] estimated

Installation Date(s) **7/20/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **extraction well**

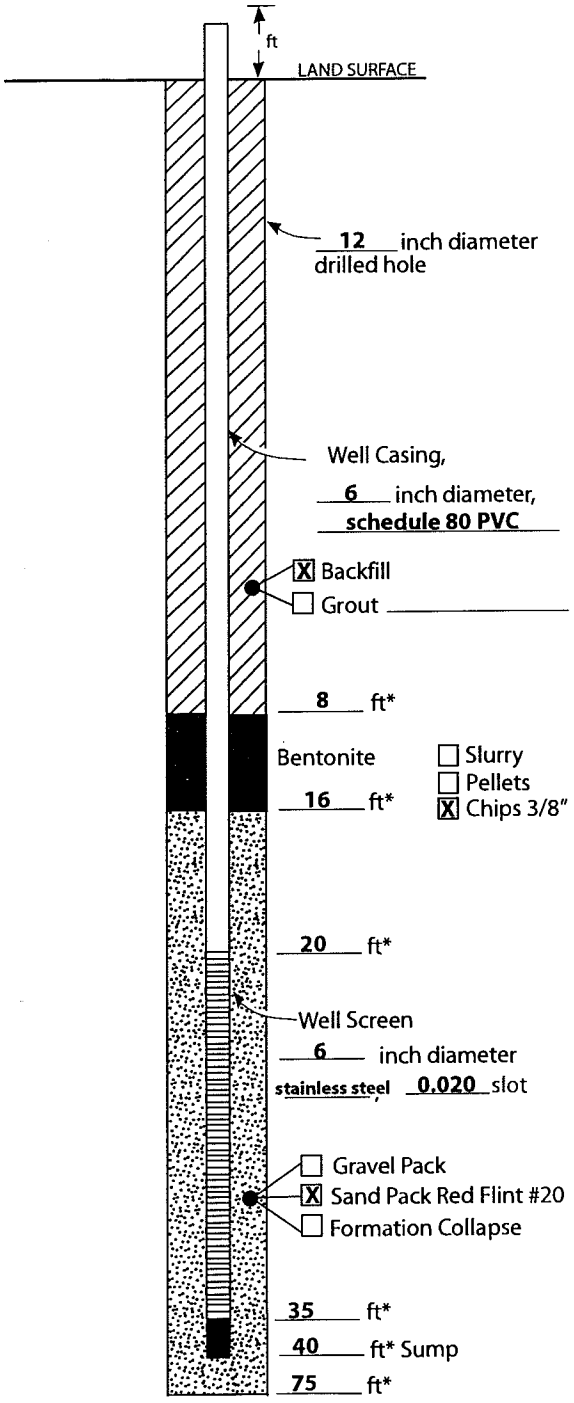
Remarks _____

Prepared by **Andy Mumpy**

ford/wi0637/2004/graphic/logs/gmewa9.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-9**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1040.50** feet

and Datum **Mean Sea Level**

[X] surveyed

[ ] estimated

Installation Date(s) **7/19/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

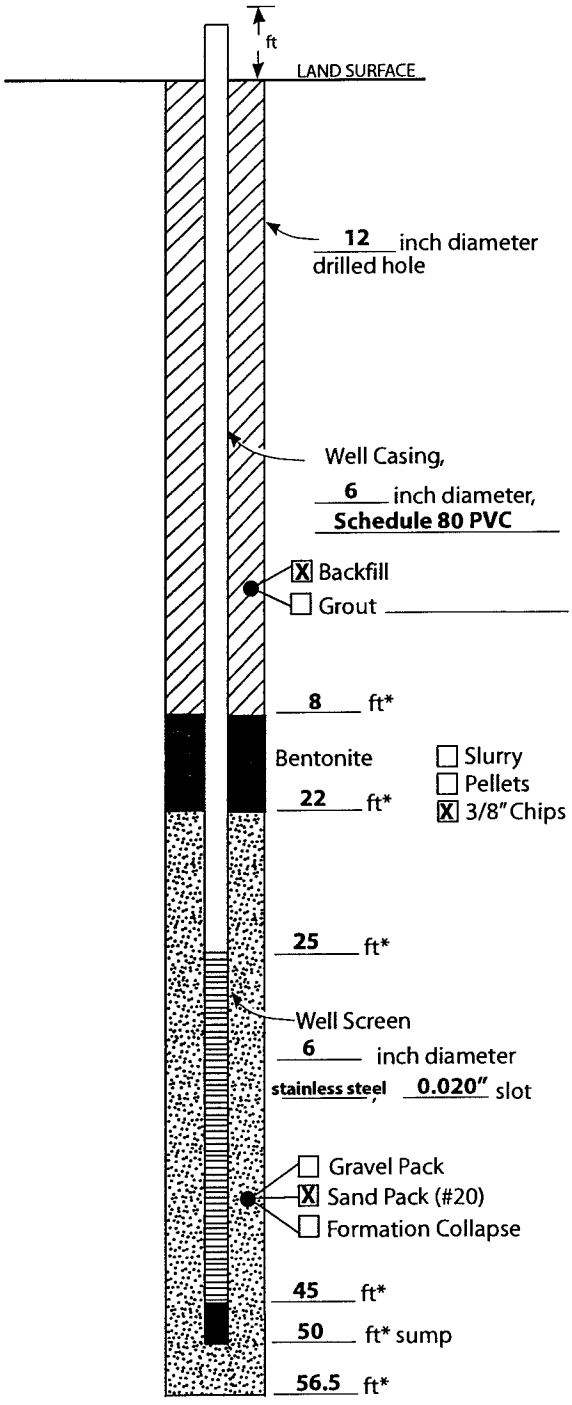
Well Purpose **extraction well**

Remarks _____

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-10**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1041.42** feet

and Datum **Mean Sea Level** feet [X] surveyed [ ] estimated

Installation Date(s) **7/13/04 - 7/14/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

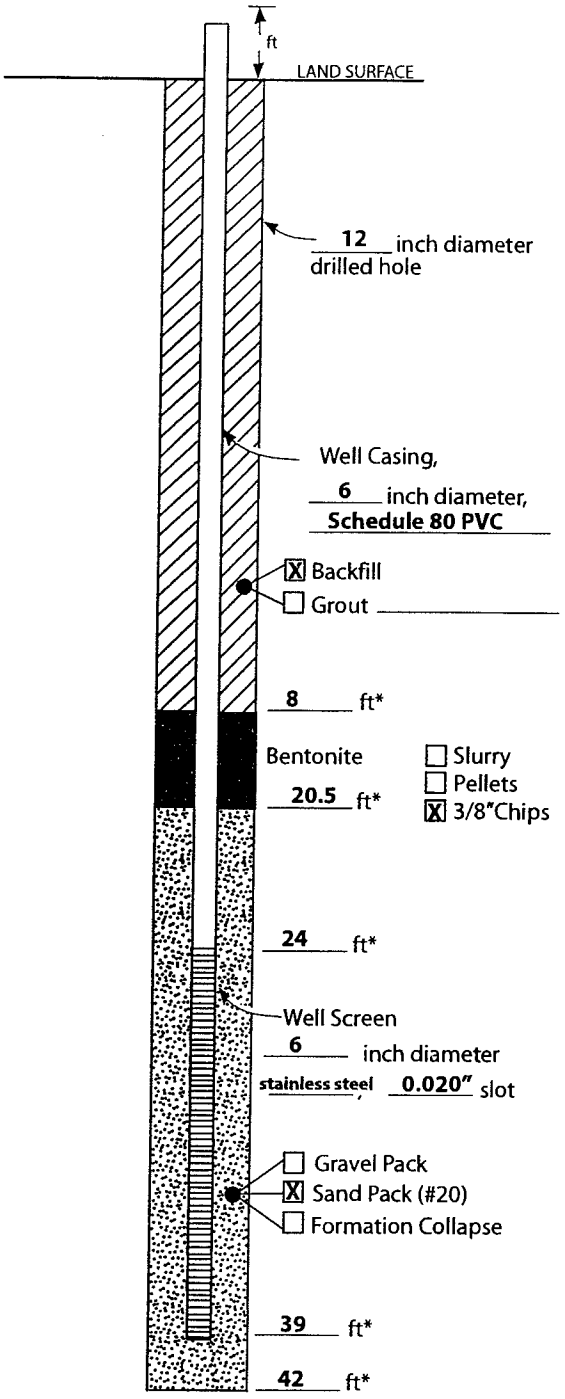
Well Purpose **Extraction well**

Remarks **5-foot stainless steel sump with stabilizer at base made by Johnson Controls, 20-foot stainless steel, continuous wrap, 0.020 inch slot screen made by Johnson Controls, Schedule 80 PVC riser made by Campbell Monoflex, 20-50 pound Red Flint #20/6065 filter pack sand, 5-50 pound bags Baroid coarse grade Wyoming bentonite (3/8" chips).**

Prepared by **Toni Schoen**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-11**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1043.25** feet

and Datum **Mean Sea Level** feet [X] surveyed [ ] estimated

Installation Date(s) **7/13/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **600** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

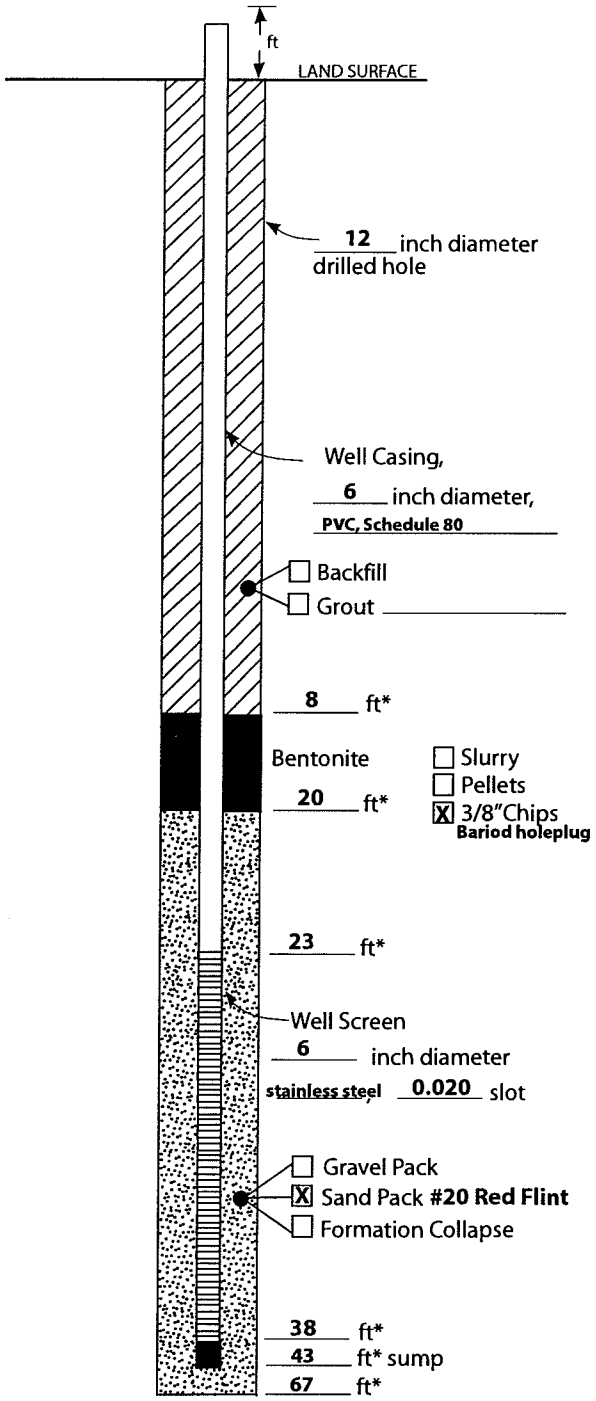
Well Purpose **Extraction well**

Remarks **15-foot stainless steel screen, continuous wrap, 0.020 inch slot made by Johnson Controls, Schedule 80 PVC riser made by Campbell Monoflex 12-50 pound bags Red Flint #20/6065 filter pack, 5-50 pound bags Baroid coarse grade Wyoming bentonite (3/8" chips).**

Prepared by **Toni Schoen**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-12**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1044.34** feet

and Datum **Mean Sea Level** feet ☒ surveyed ☐ estimated

Installation Date(s) **7/12/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Extraction well**

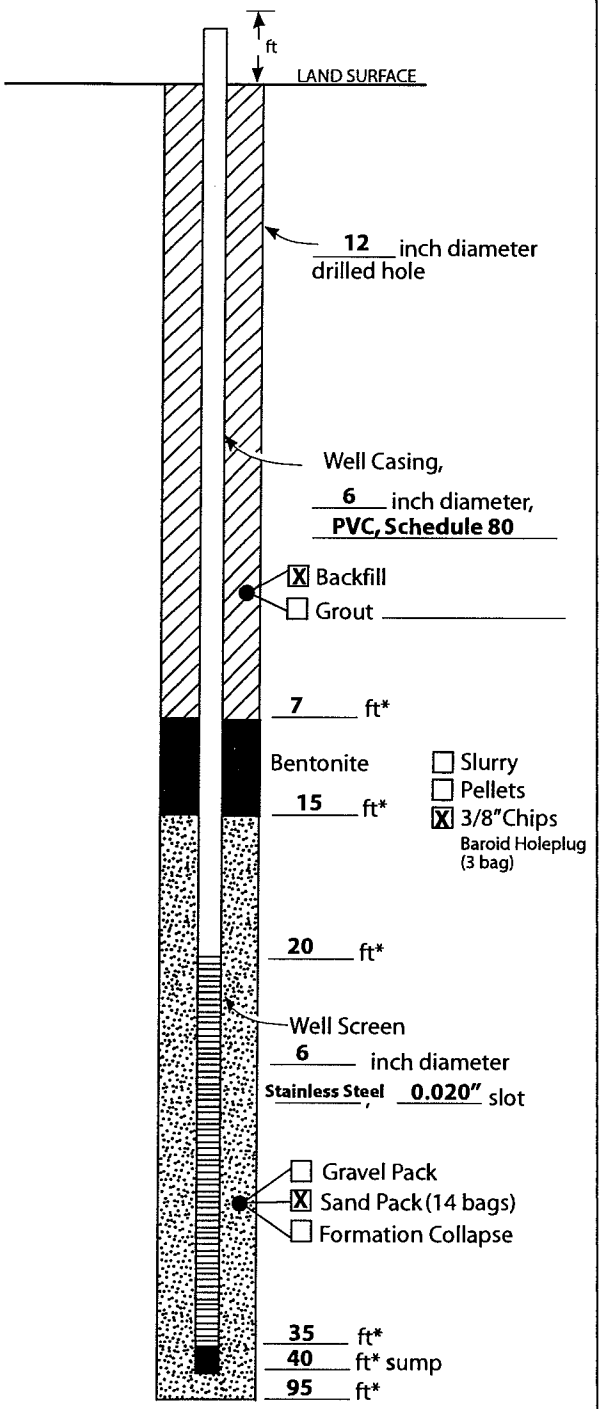
Remarks _____

Prepared by **Andy Mumpy**

ford/wi0637/2004/graphics/logs/gmewa-12.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-13**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1045.04** feet

and Datum **Mean Sea Level** feet

☒ surveyed

☐ estimated

Installation Date(s) **7/25/04 - 7/27/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

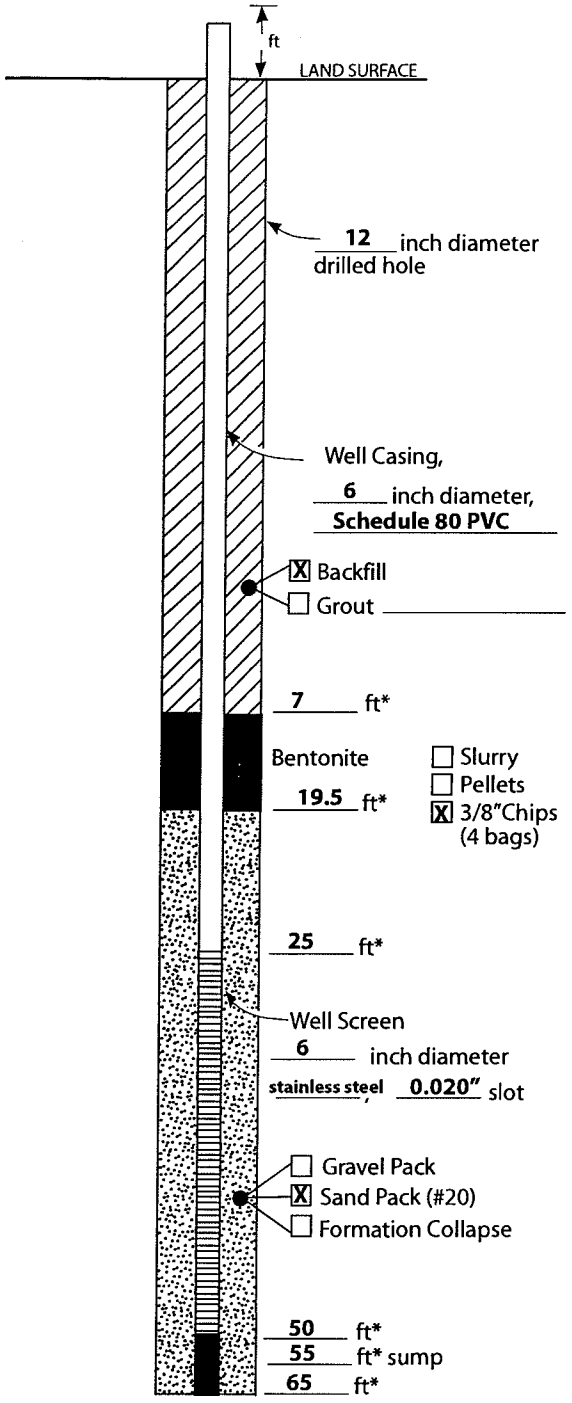
Well Purpose **Extraction well**

Remarks **Baroid 3/8" bentonite chips, Red Flint #20 filter pack (14 bags).**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-14**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1047.01** feet

and Datum **Mean Sea Level** feet

[X] surveyed

[ ] estimated

Installation Date(s) **7/27/04 - 8/02/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

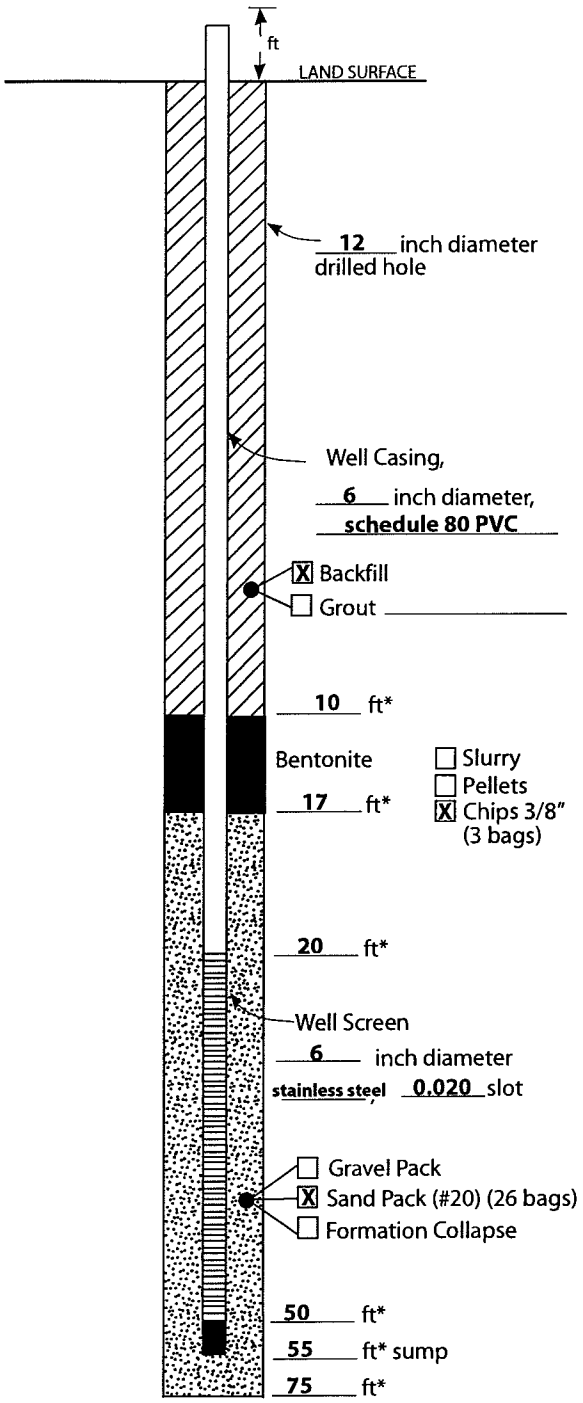
Well Purpose **Extraction well**

Remarks **Baroid 3/8" bentonite chips, red flint #20 filter pack (25 bags).**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-15**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1047.09** feet

and Datum **Mean Sea Level** feet [X] surveyed [ ] estimated

Installation Date(s) **7/21/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **extraction well**

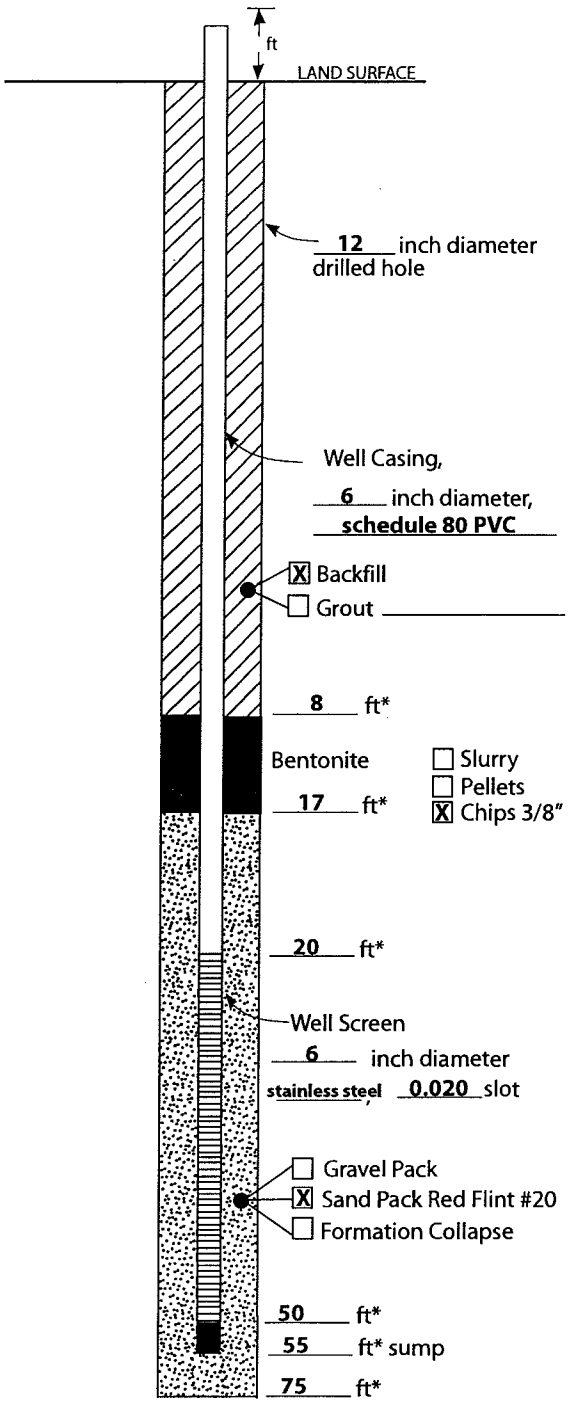
Remarks **Baroid 3/8" bentonite chips, Red Flint #20 filter pack sand (26 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/2004/graphic/logs/gmewa15.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-16**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1047.52** feet

and Datum **Mean Sea Level**

[X] surveyed
[ ] estimated

Installation Date(s) **7/21/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **extraction well**

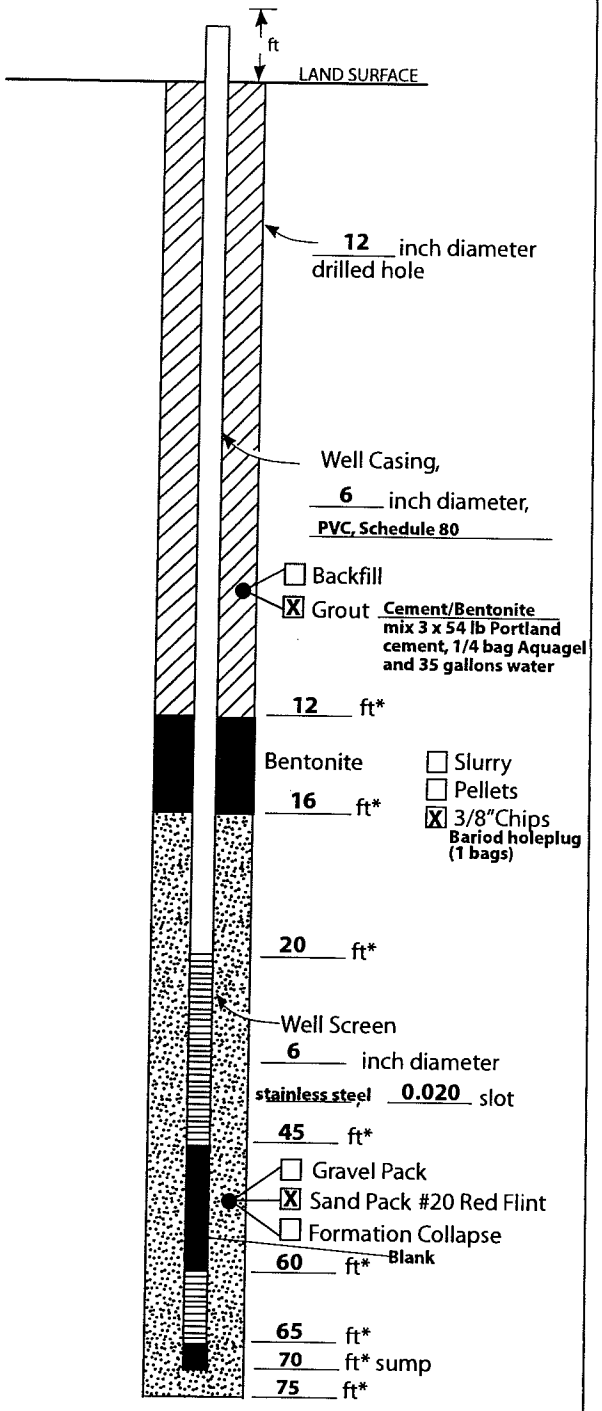
Remarks _____

Prepared by **Andy Mumpy**

ford/wi0637/2004/graphic/logs/gmewa16.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-17**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1047.92** feet

and Datum **Mean Sea Level** feet

☒ surveyed
☐ estimated

Installation Date(s) **7/12/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Extraction well**

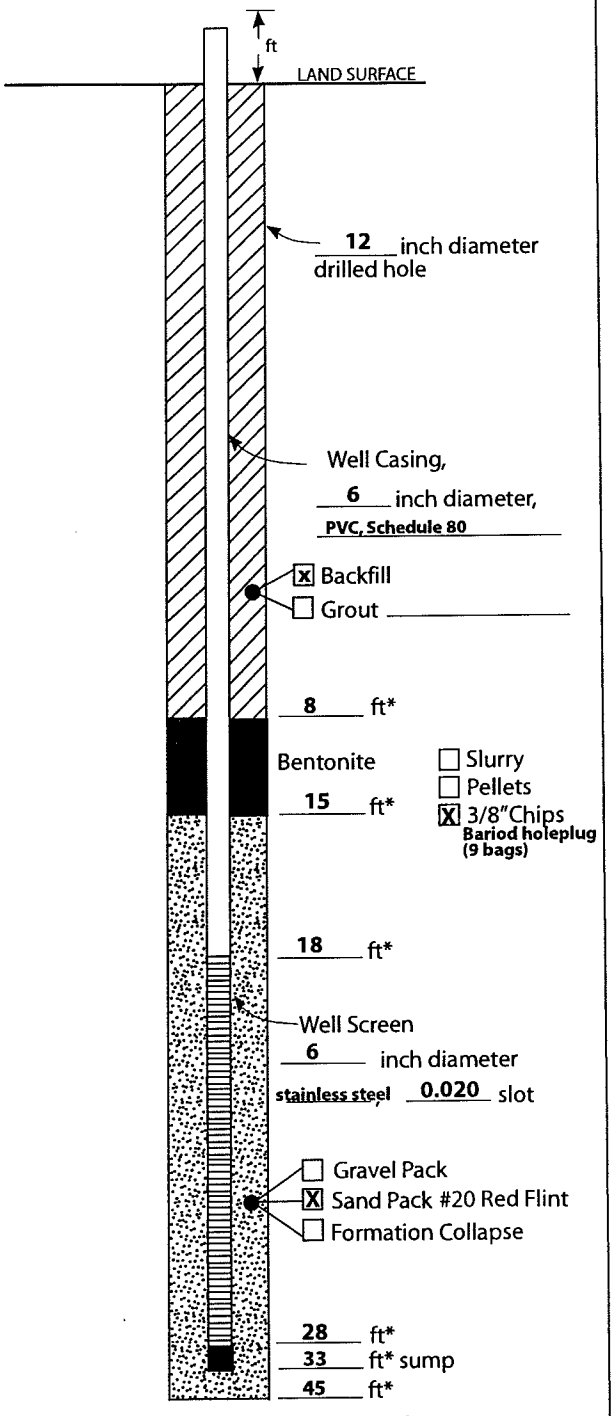
Remarks _____

Prepared by **Paul Lenaker**

ford/wi0637/2004/graphics/logs/gmewa-17.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-18**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1048.00** feet

and Datum **Mean Sea Level** feet ☒ surveyed ☐ estimated

Installation Date(s) **7/11/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Extraction well**

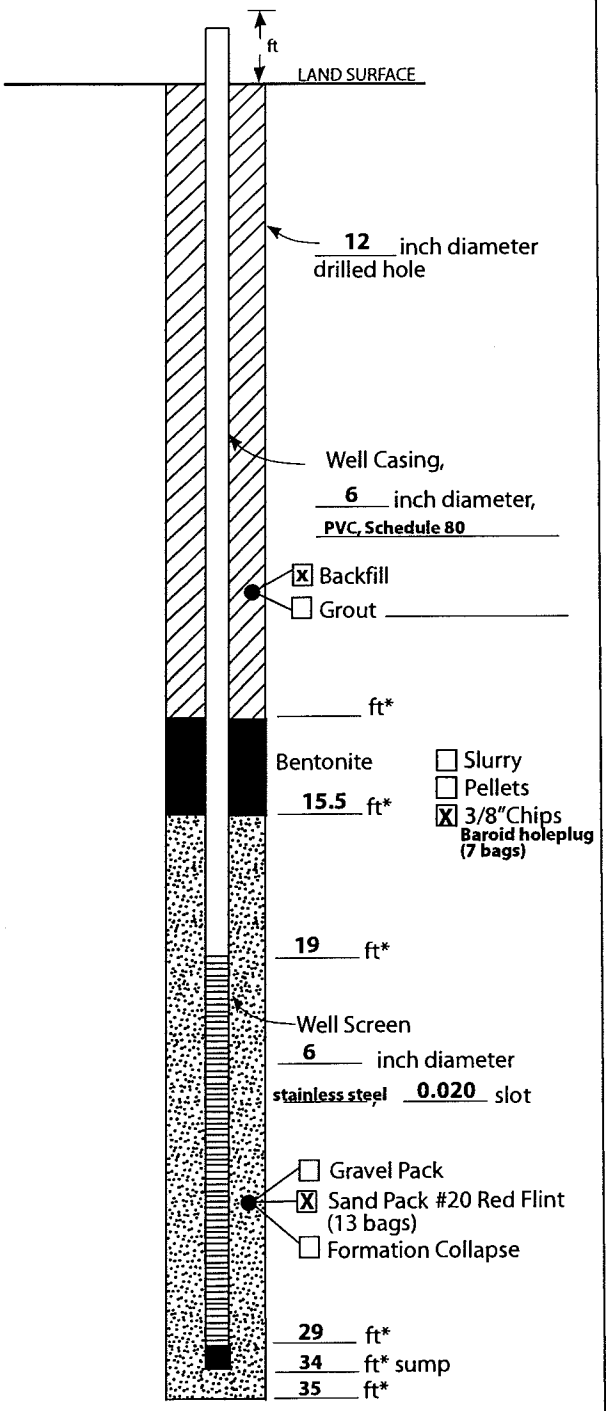
Remarks _____

Prepared by **Paul Lenaker**

ford/wi0637/2004/graphics/logs/gmewa-18.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-19**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1048.79** feet

and Datum **Mean Sea Level** feet [X] surveyed

[ ] estimated

Installation Date(s) **7/10/04 - 7/11/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Extraction well**

Remarks _____

Prepared by **Paul Lenaker**

ford/wi0637/2004/graphics/logs/gmewa-19.ai

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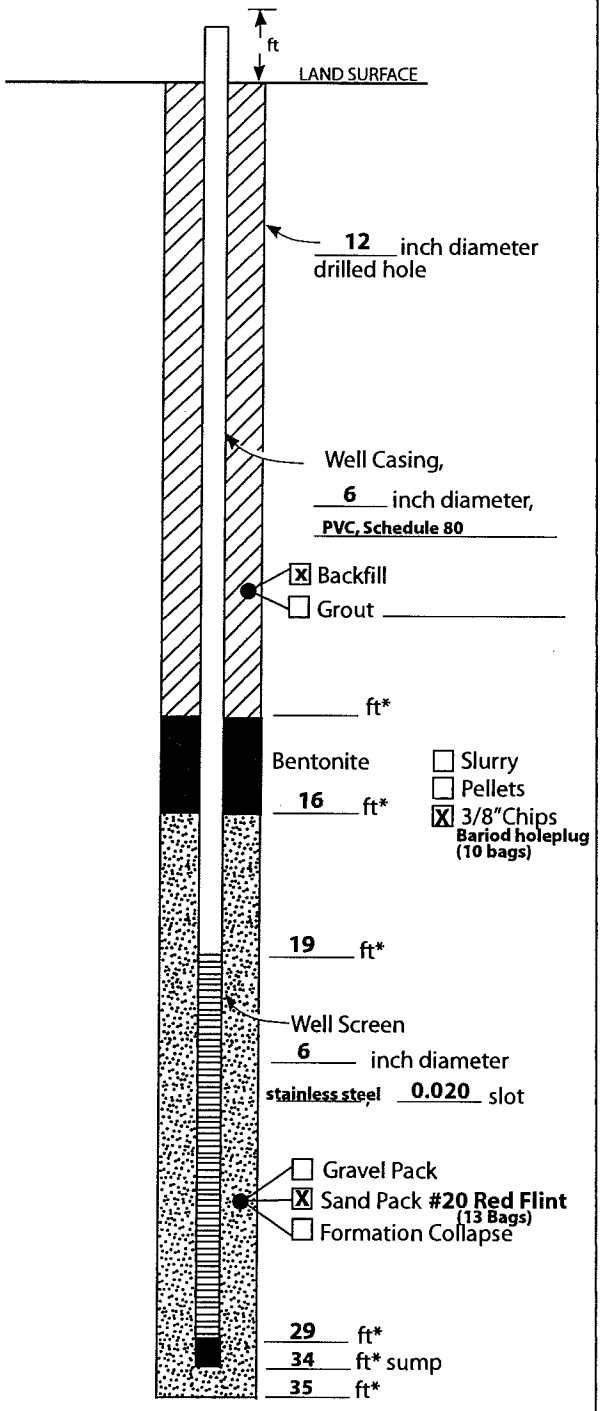
Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-20**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.20** feet

and Datum **Mean Sea Level** feet ☒ surveyed

_____ ☐ estimated

Installation Date(s) **7/10/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

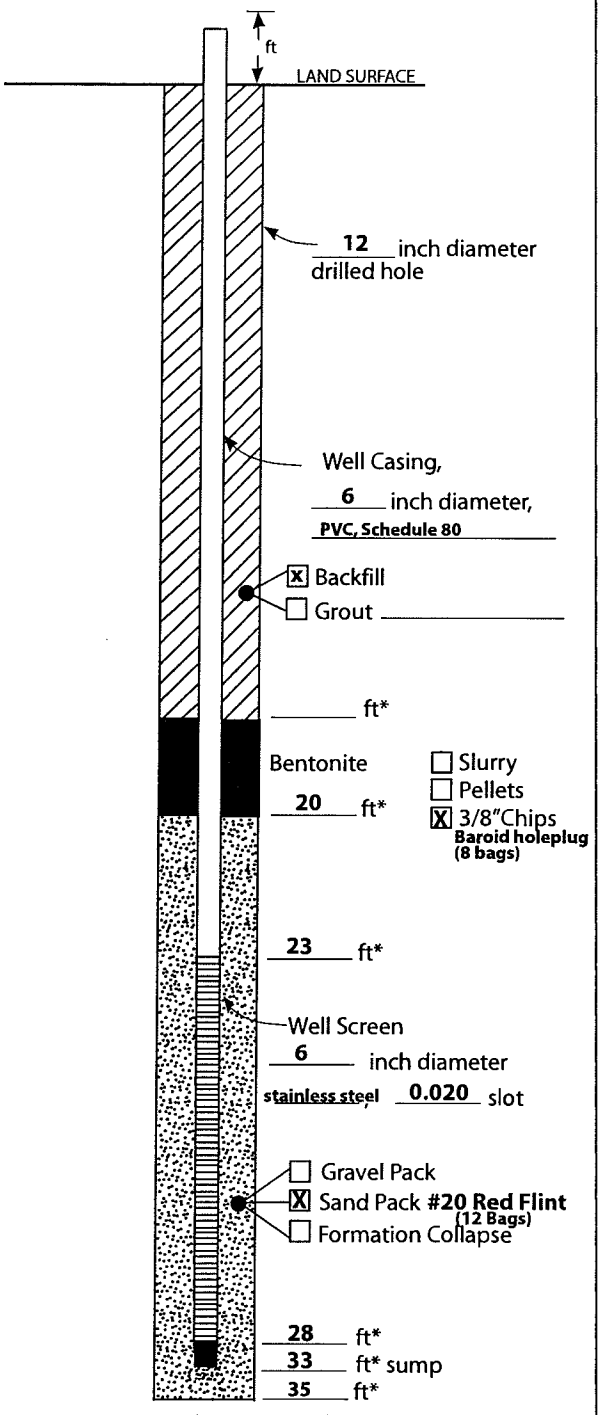
Well Purpose **Extraction well**

Remarks _____

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-21**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.47** feet

and Datum **Mean Sea Level** feet ☒ surveyed ☐ estimated

Installation Date(s) **7/9 - 7/10/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

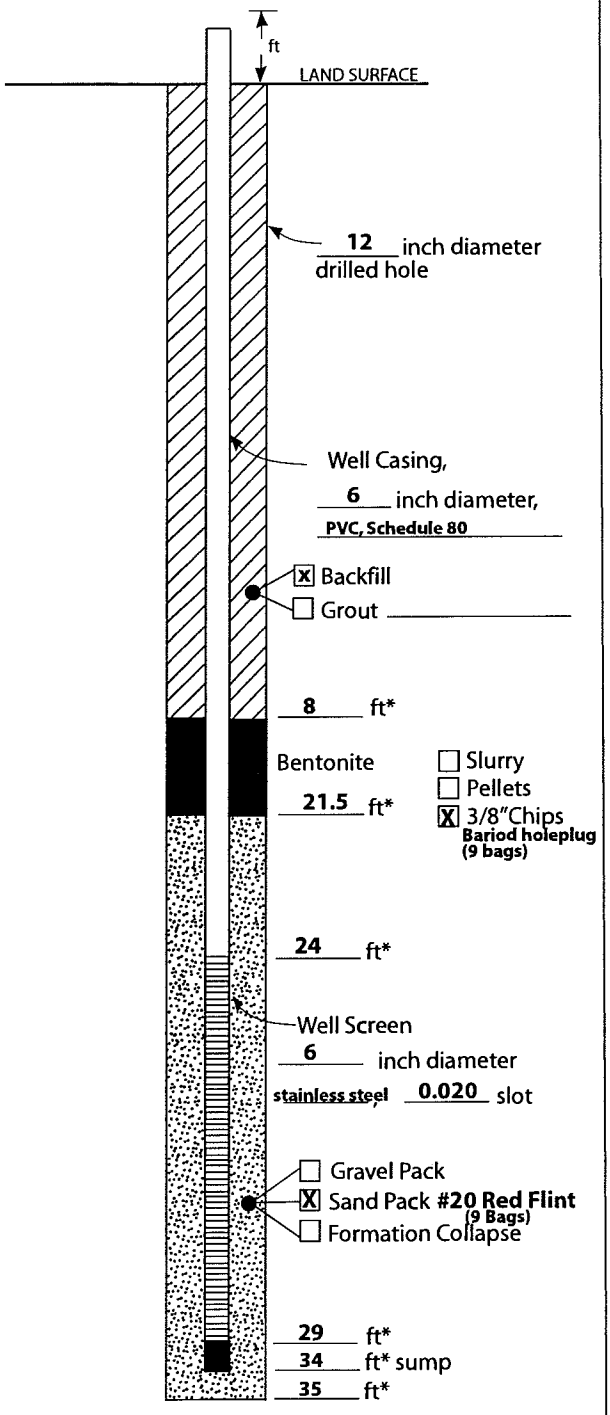
Well Purpose **Extraction well**

Remarks _____

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-22**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.44** feet

and Datum **Mean Sea Level** feet

X surveyed

☐ estimated

Installation Date(s) **7/9/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

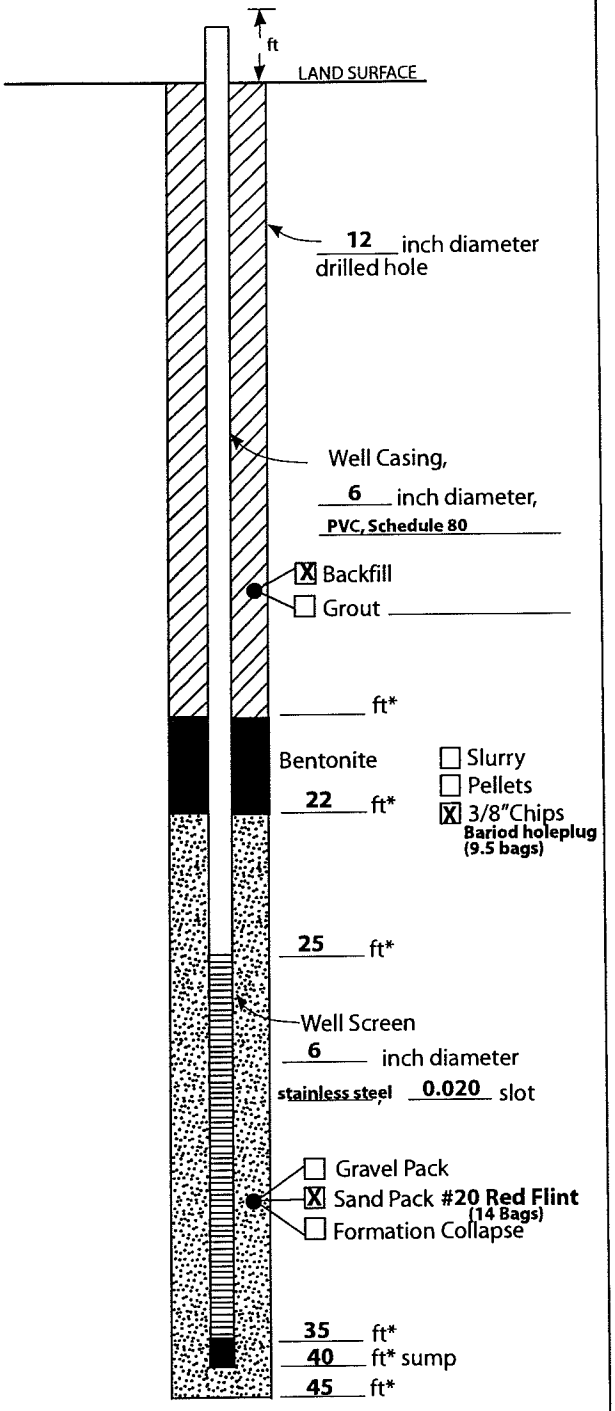
Well Purpose **Extraction well**

Remarks _____

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-23**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.29** feet

and Datum **Mean Sea Level** feet

X surveyed

☐ estimated

Installation Date(s) **7/8/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

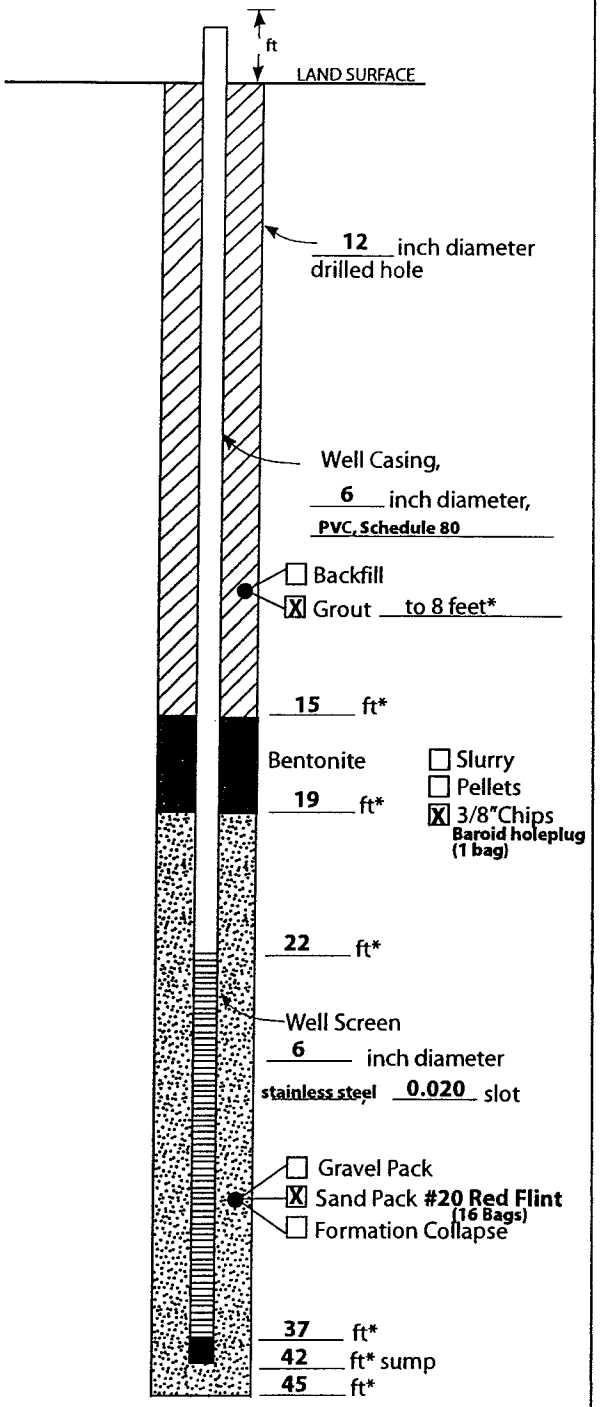
Well Purpose **Extraction well**

Remarks _____

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-24**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.02** feet

and Datum **Mean Sea Level** feet

☒ surveyed

☐ estimated

Installation Date(s) **7/7/04, 7/8/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

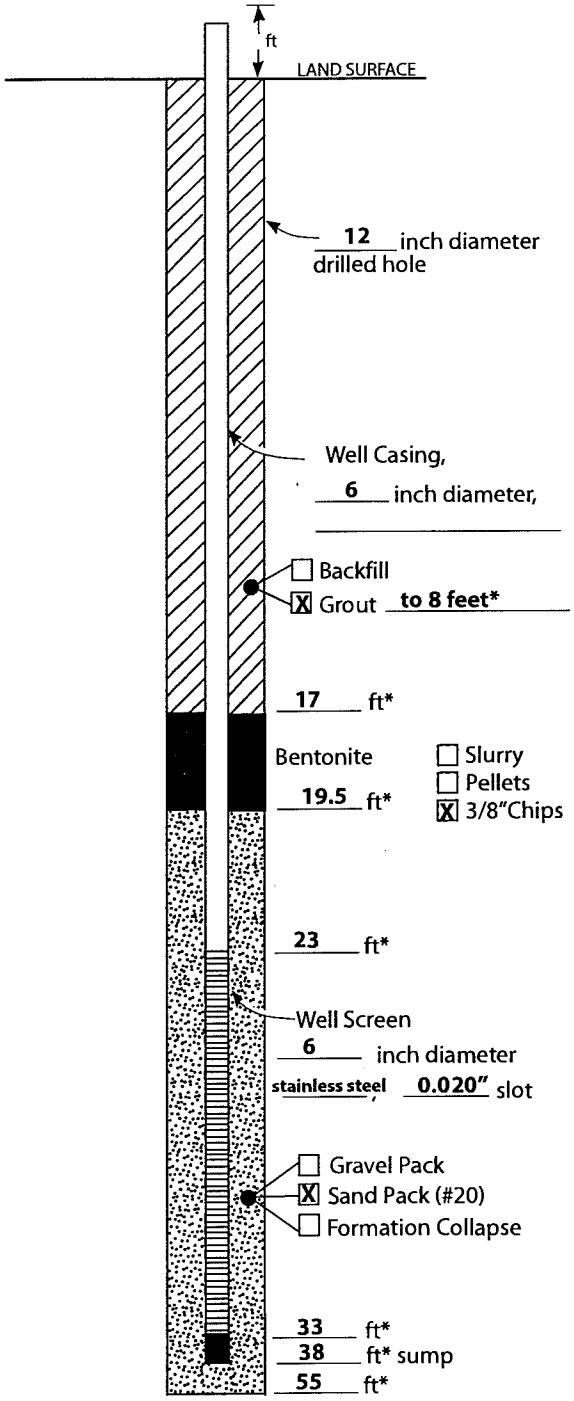
Well Purpose **Extraction well**

Remarks **Grout: 1 batch (3 bags x 94 pounds Portland, 1/4 bag Aquagel, 35 gallons water).**

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-25**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.22** feet

and Datum **Mean Sea Level** feet

☒ surveyed
☐ estimated

Installation Date(s) **6/30/04 - 7/01/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **500** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

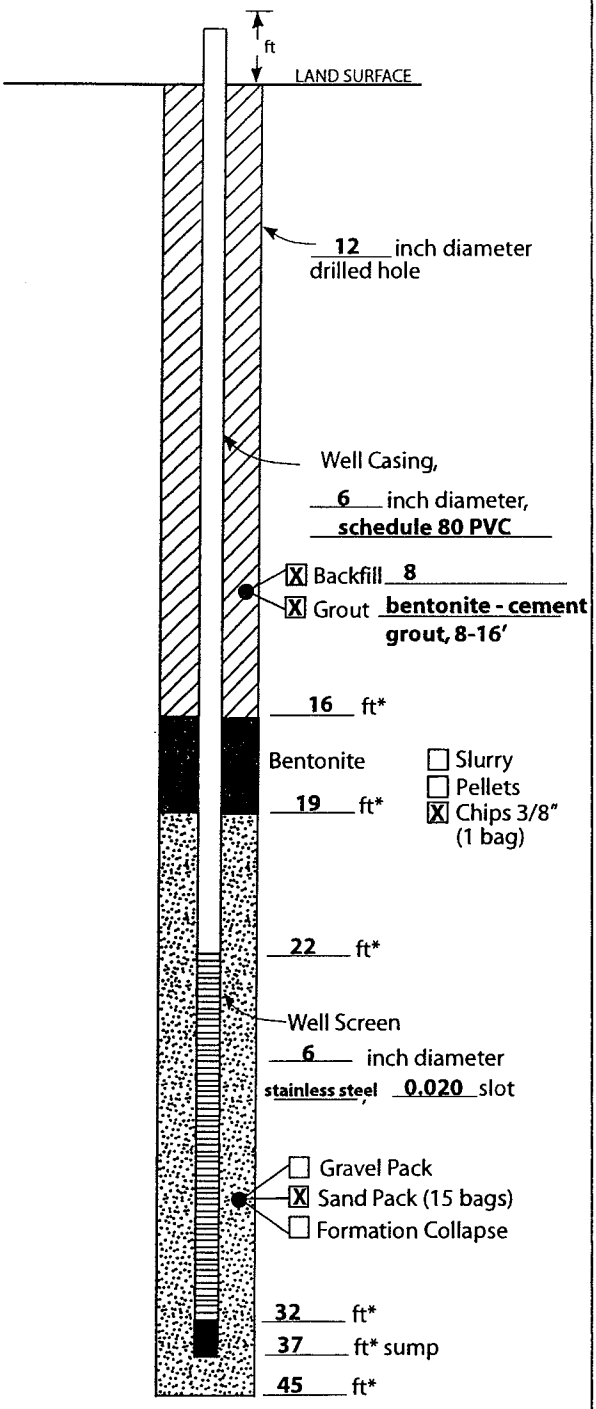
Well Purpose **Extraction well**

Remarks **5-foot stainless steel sump made by Johnson Controls, stabilizer at base, 10-foot stainless steel, continuous wrap, 0.020 inch slot of screen made by Johnson Controls, Schedule 80 PVC riser made by Campbell Monoflex 15-50 pound bags Red Flint #230/6065 filter pack sand, 1-50 pound bag Baroid coarse grade Wyoming bentonite (3/8" chips) seal, grout 1-94 pound bag Portland Cement, 1/4-50 pound bag Aquagel Gold Seal, 10 gallons water.**

Prepared by **Toni Schoen**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-26**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation

and Datum **1049.22** feet [X] surveyed

Mean Sea Level [ ] estimated

Installation Date(s) **7/24/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

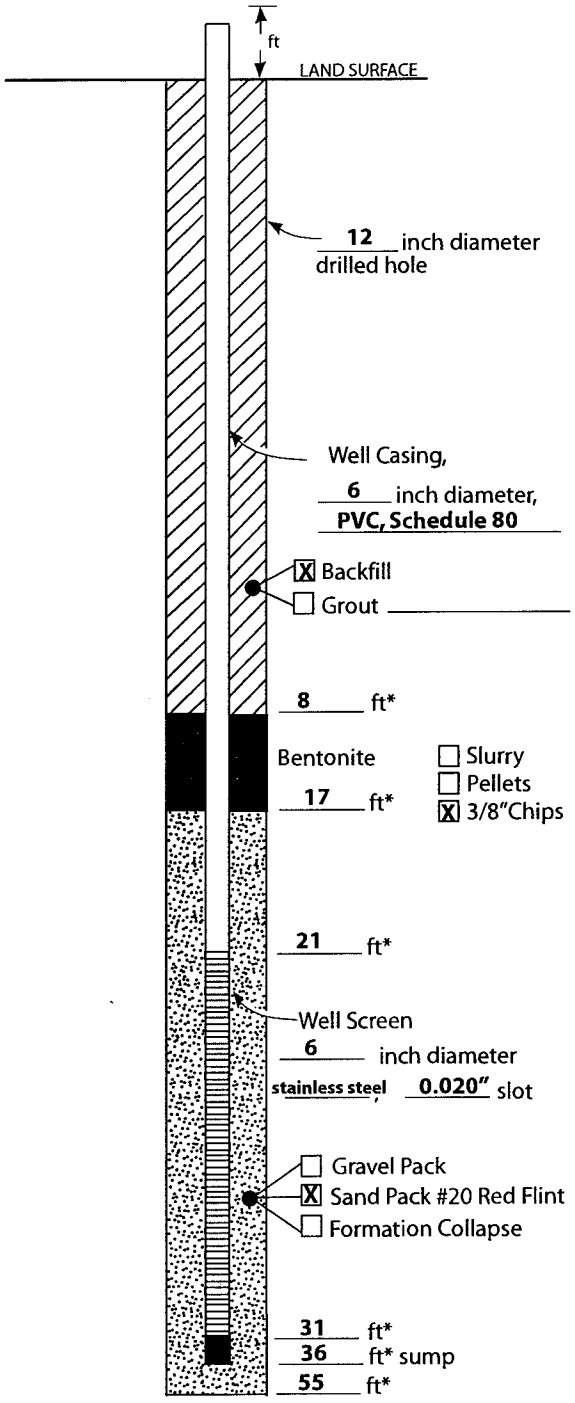
Well Purpose **Extraction well**

Remarks **Red Flint #20 filter pack sand, Baroid 3/8" chips bentonite, Grout bentonite cement: 3 x 94 pounds bags Portland cement, 1 x 50 pound bag Baroid Aquagel, 35 gallons of water**

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-27**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1048.96** feet

and Datum **Mean Sea Level** feet

X surveyed

☐ estimated

Installation Date(s) **6/28/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **500** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

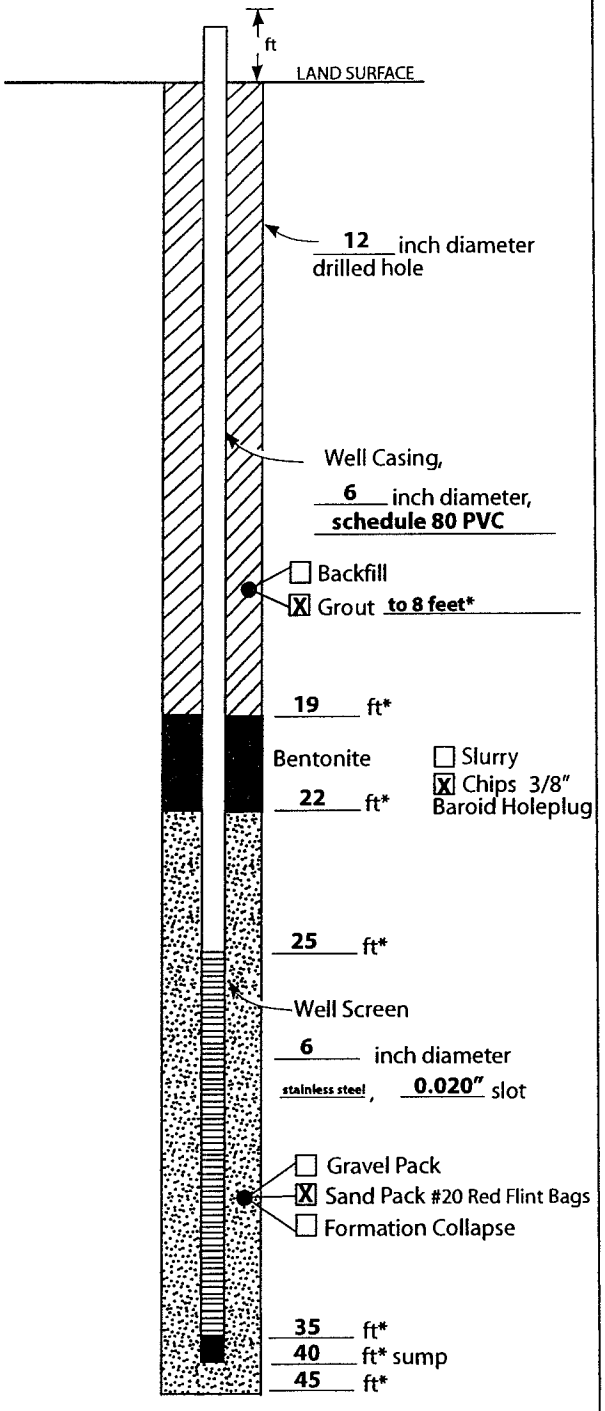
Well Purpose **Extraction well**

Remarks **5-foot stainless steel sump made by Johnson Controls, stabilizer at base, 10-foot stainless steel screen, continuous wrap, 0.020 inch slot made by Johnson Controls, Schedule 80 PVC riser made by Campbell Monofex, 15-50 pound bags Red Flint #20/6065 filter pack sand, 4-50 pound bags Baroid coarse grade Wyoming bentonite (3/8" chips).**

Prepared by **Toni Schoen**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-28**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.19** feet

and Datum **Mean Sea Level** feet

[X] surveyed

[ ] estimated

Installation Date(s) **7/1/04 - 7/2/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

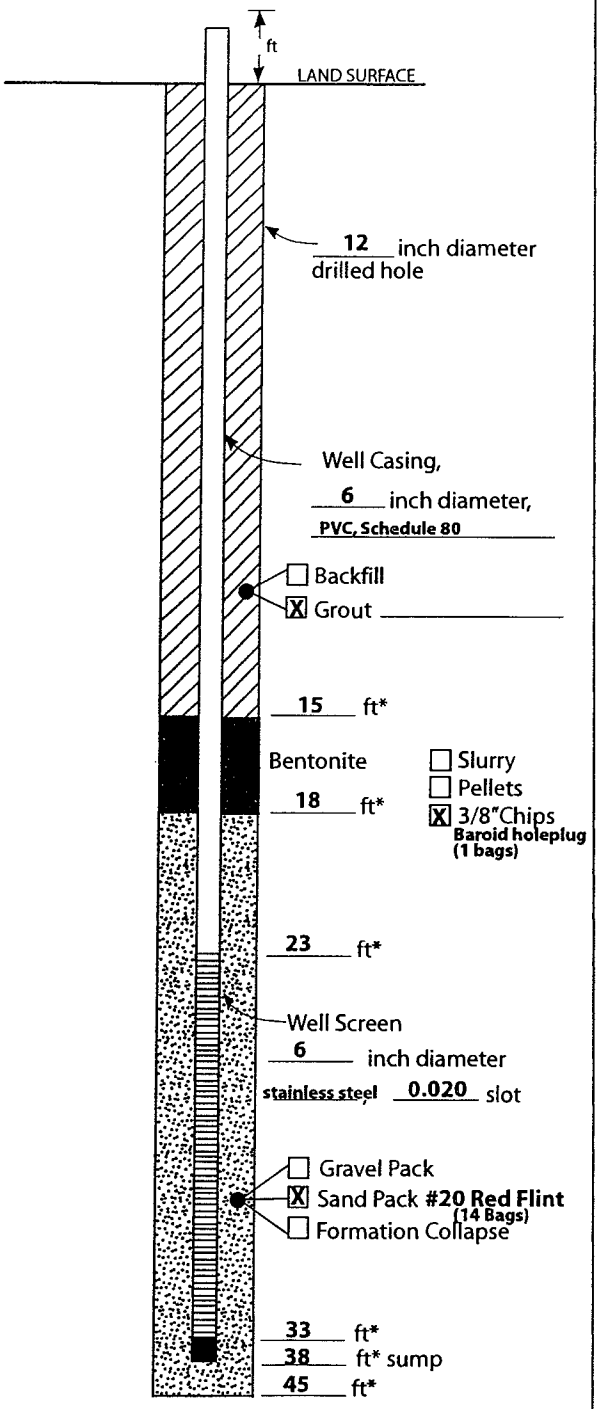
Well Purpose **Extraction well**

Remarks **Grout: 1 batch = 3 bags Portland cement by Quikrete, 1 bag Baroid Aquagel, 35 gallons water.**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWA-28A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.74** feet

and Datum **Mean Sea Level** feet

[X] surveyed

[ ] estimated

Installation Date(s) **7/16/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid _____

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

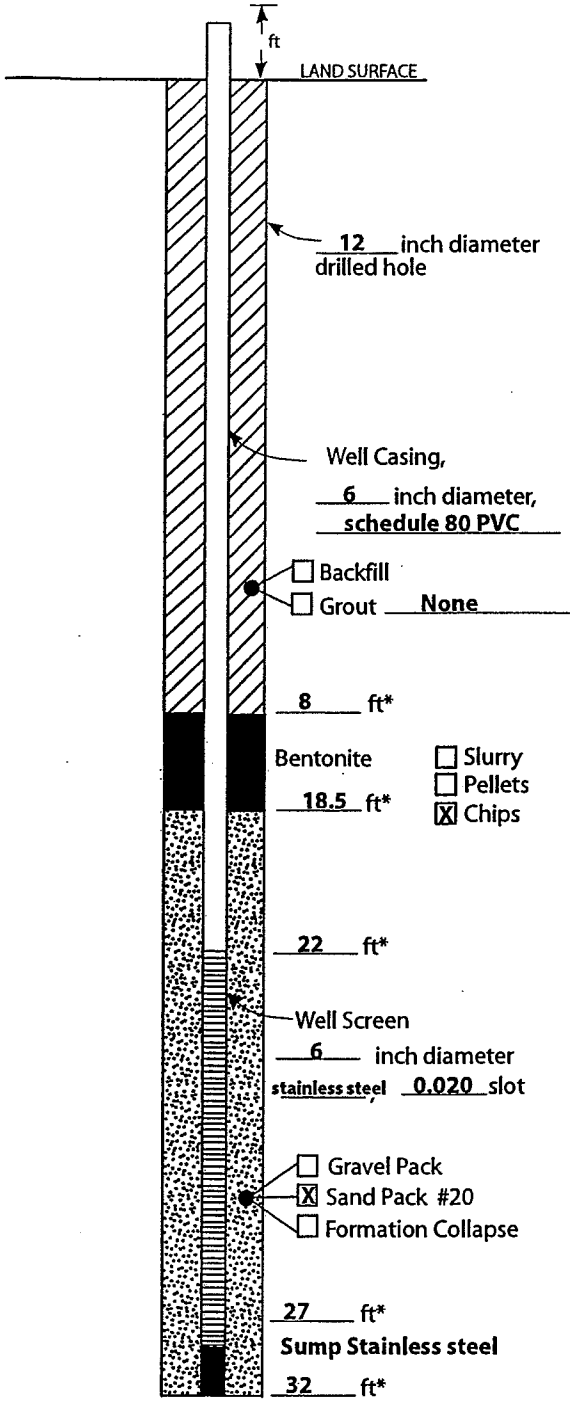
Well Purpose **Extraction well**

Remarks **Grout: cement (3 x 94 pounds bag Portland Cement) and 1/4 bag Aquagel, and 35 gallons water. 33-38' stainless steel, 6" diameter sump.**

Prepared by **Paul Lenaker**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950027 Well GMEWA-29

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1049.07 feet ☒ surveyed

Datum Mean Sea Level ☐ estimated

Installation Date(s) 4/4/06

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

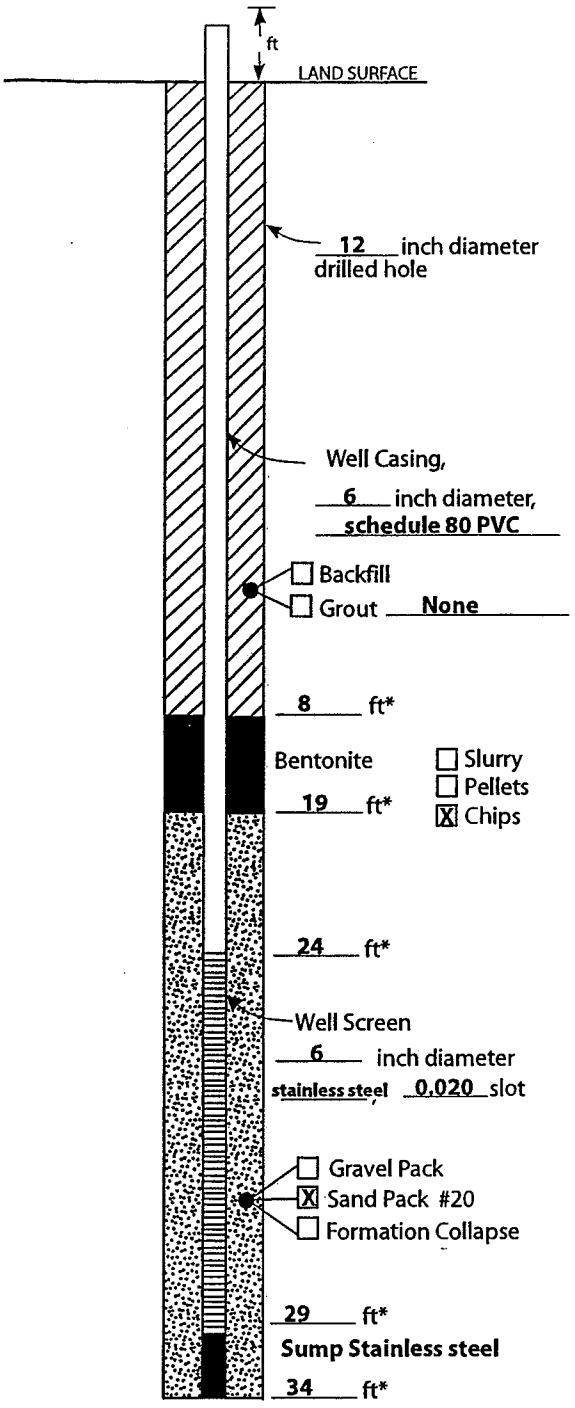
Well Purpose Groundwater extractin well.

Remarks Well screen Johnson stainless steel wire wrapped high yield, 0.020 slot, stainless steel 5' sump, casing 6" sch 80 PVC, filter pack #20 red flint silica sand (50 lb bags) 32-18.5' 10 bags; bentonite seal, Baroid hole plug 3/8" chips (50 lb bags) 18.5-8' 4.5 bags; no grout.

Prepared by Jill Flater

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950027 Well GMEWA-30

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1049.26 feet ☒ surveyed

Datum Mean Sea Level ☐ estimated

Installation Date(s) 4/4/06

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

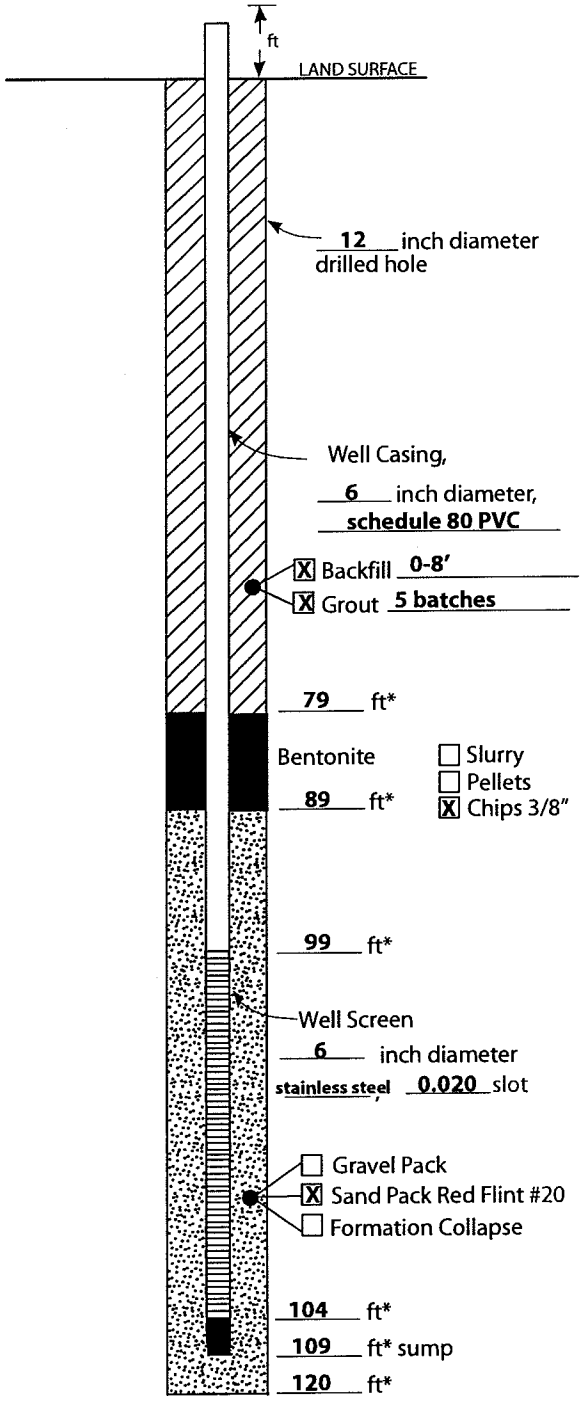
Well Purpose Groundwater extraction well.

Remarks Well screen Johnson stainless steel wire wrapped high yield, 0.020 slot, stainless steel 5' sump, casing 6" sch 80 PVC, filter pack #20 red flint silica sand (50 lb bags) 34-19' 11 bags; bentonite seal, Baroid hole plug 3/8" chips (50 lb bags) 19-8' 5 bags; no grout.

Prepared by Jill Flater

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWB-1**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.17** feet
and Datum **Above Mean Sea Level**

☒ surveyed
☐ estimated

Installation Date(s) **9/25/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **1,000** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **extraction well**

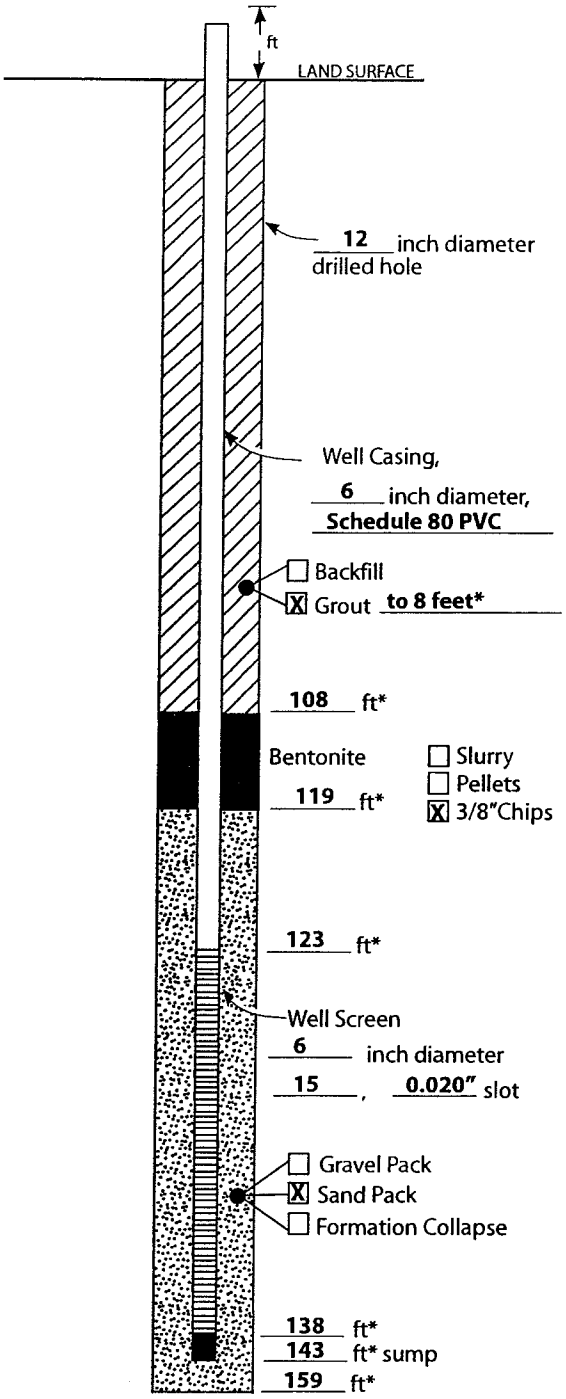
Remarks **Johnson sump and screen, stabilizer at the base, 5-foot screen stainless steel, 0.020-inch slot, stainless steel sump, 10-50 lb bags Red Flint #20 filter pack sand, 5-50 lb bags Baroid holeplug coarse grade WY bentonite 3/8" chips, grout 5 batch = 15-94 lb bags Portland Cement, 5-50 lb bags Aquagel Seal, and 175 gallons of water**

Prepared by **Toni Schoen**

ford/wi0637/2004/graphic/logs/gmewb1_1.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-1**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1045.19** feet

and Datum **Mean Sea Level** feet ☒ surveyed ☐ estimated

Installation Date(s) **6/7/04 - 6/16/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water and mud**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **1000** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

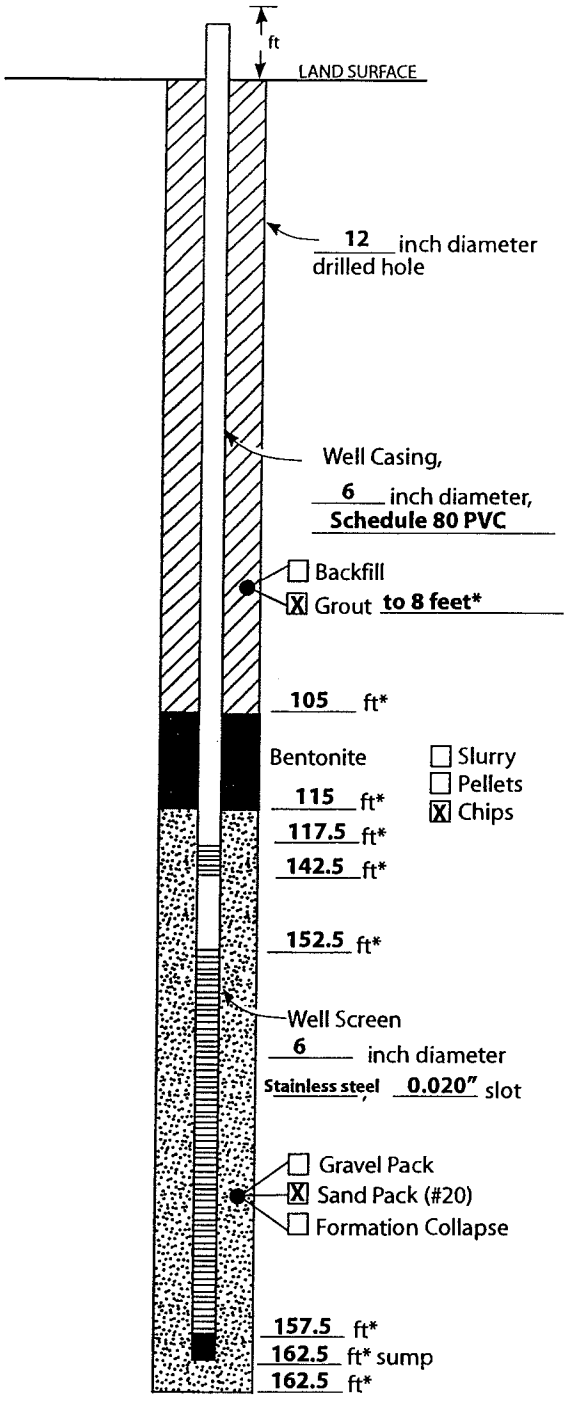
Well Purpose **Extraction well**

Remarks **159-145' formation collapsed; 145-143' filter pack; 5' stainless steel sump, 6" diameter, flat bottom Johnson Controls; 15' screen, continuous wrap, 6" diameter, Johnson Controls, filter pack - Red Flint #20 sand 21-50 lb bags; bentonite Baroid Holeplug, 3/8" chips, 4-50 lb bags, grout ratio: 3-94 lb bags Portland cement, 1-50 lb bag Aquagel Gold Seal, 25 gallons water, total: 24-94 lb Portand bags, 8-50 lb Aquagel bags; stabilizer at base of sump.**

Prepared by **Jill Flater**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMEWC-1A

Town/City Kingsford

County Dickinson State Michigan

Permit No. _____

Land-Surface Elevation 1045.68 feet

and Datum Mean Sea Level feet ☒ surveyed ☐ estimated

Installation Date(s) 6/17/04 - 6/19/04

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water and mud (9-50 lb bags Aquagel Gold Seal used)

Development Technique(s) and Date(s)

Fluid Loss During Drilling 1200 gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

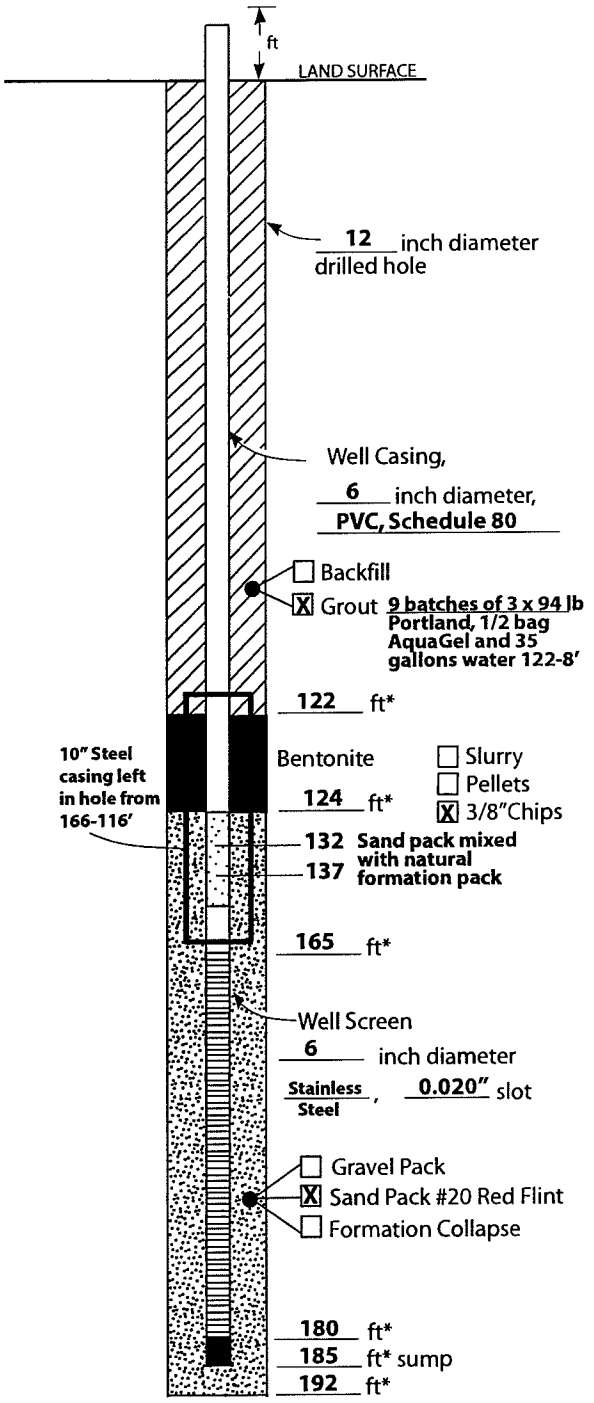
Well Purpose Extraction well

Remarks 5' stainless steel sump, stabilizer at base, made by Johnson Controls; 5-foot stainless steel screen from 157.5-152.5 feet and 25-foot stainless steel screen from 142.5-117.5 feet. Screens are 0.020 slot, continuous wrap. Filter pack: Red Flint #20/6065, 40-50 lb bags; Bentonite seal: Baroid Holeplug coarse grade Wyoming bentonite 3/8" chips, 4-50 lb bags. Grout 18-94 lb bags Portland Cement, 6-50 lb bags Aquagel GoldSeal Screens: made by Johnson Controls, Riser: Schedule 80 PVC made by Campbell Monoflex

Prepared by Toni Schoen

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMEWC-2

Town/City Kingsford

County Dickinson State Michigan

Permit No.

Land-Surface Elevation 1043.87 feet

and Datum Mean Sea Level feet [X] surveyed [ ] estimated

Installation Date(s) 6/17/04 - 6/20/04

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water/Aquagel

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm

Specific Capacity gpm/ft Date

Specific Capacity gpm/ft

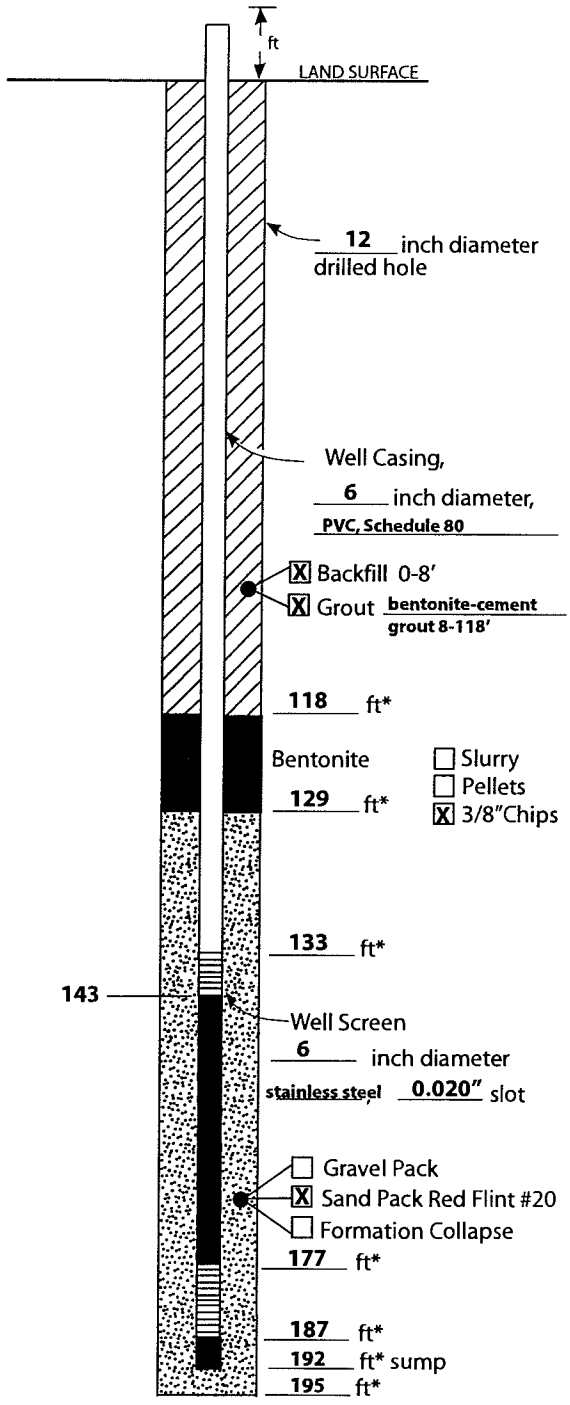
Well Purpose

Remarks Extraction well

Prepared by Paul Lenaker

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-2A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1043.77** feet

and Datum **Above Mean Sea Level**

☒ surveyed

☐ estimated

Installation Date(s) **9/28/04 through 10/5/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **1,000** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Extraction well**

Remarks **Screens 133-143' and 177-187' made of 6-inch stainless steel, 0.020" slot, Johnson made. Sump is 6-inch stainless steel made by Johnson. Riser and blank is Schedule 80 PVC, Red Flint #20 filter pack sand from 129-143' and 173-192' (34-50 lb bags), bentonite seal from 148-173' and 118-129' (15-50 lb bags Baroid holepulg coarse grade WY 3/8" chip bentonite). Grout: 8 batches = 24-94 lb bag Portland cement, 8-50 lb bags Aquagel seal, 280 gallons water.**

Prepared by **Toni Schoen**

ford/wi0637/2004/graphics/logs/gmewc2a.ai

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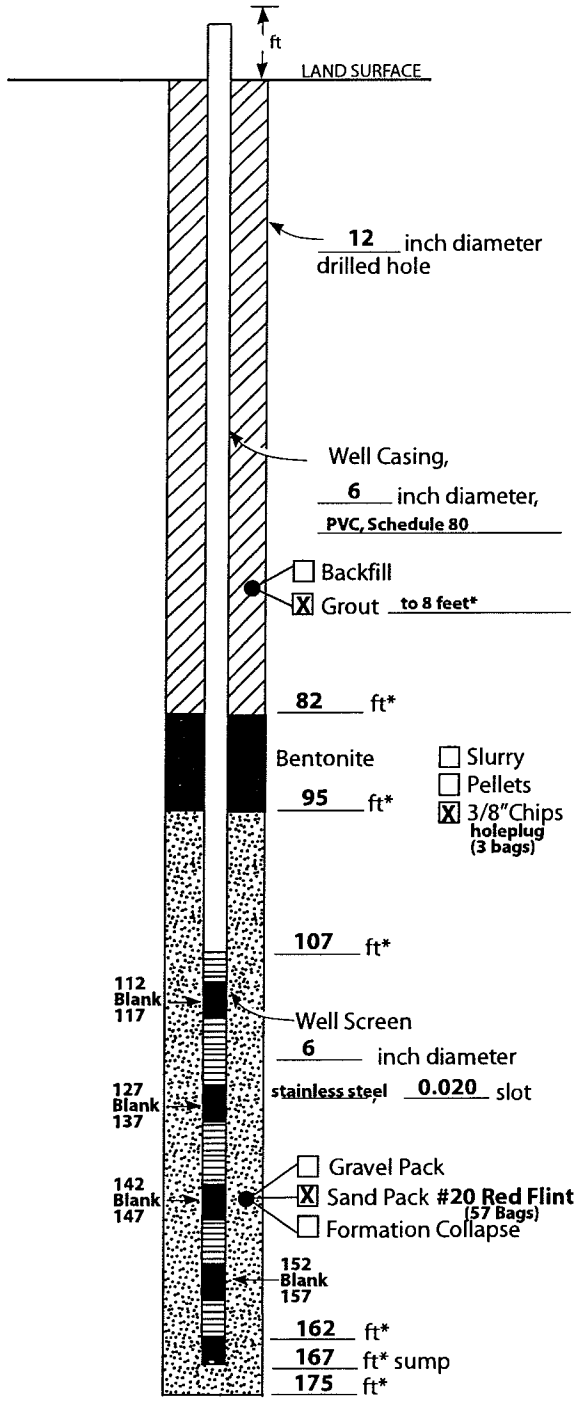
Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-3**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1046.70** feet

and Datum **Mean Sea Level** feet

[X] surveyed

[ ] estimated

Installation Date(s) **6/16/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water/Aquagel by Baroid**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

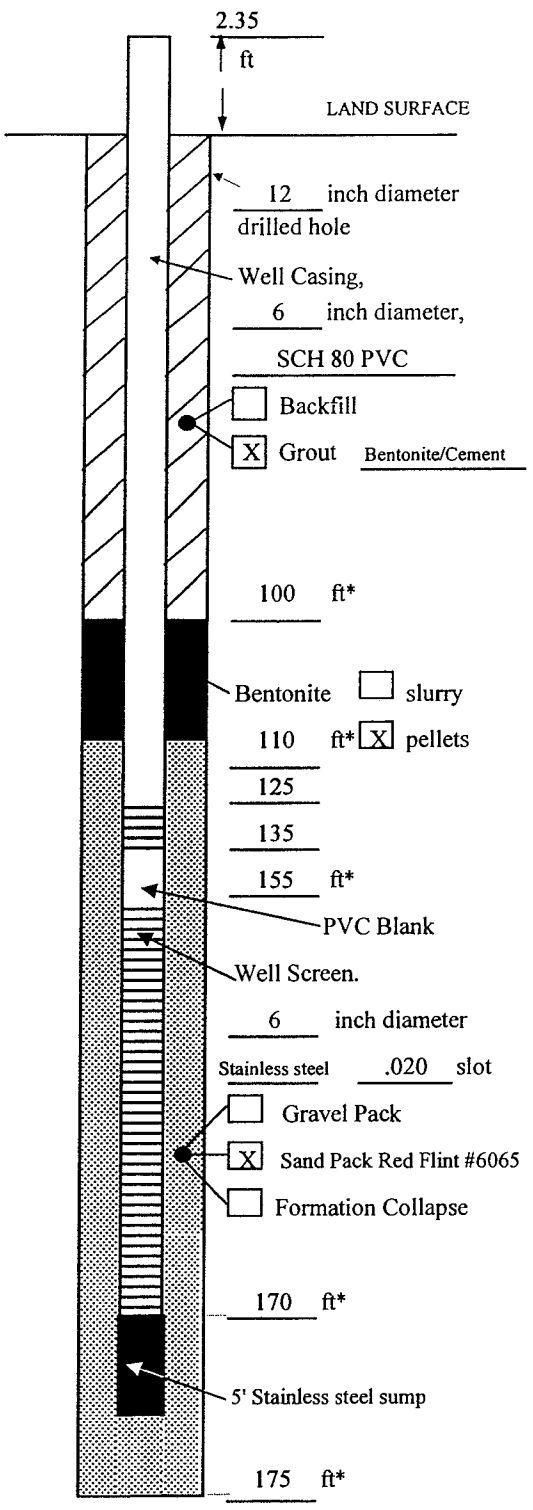
Well Purpose **Extraction well**

Remarks **Screened intervals are 162-157', 152-147', 142-137', 127-117', and 112-107' (see sketch). Grout: 4 batches of 3 x 94 pounds Portland and 1 bag (50 pounds) Aquagel.**

Prepared by **Paul Lenaker/Andy Mumpy**

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Well GMEWC-4 (GMEW-9)

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1048.34 feet
[X] Surveyed
[ ] Estimated
Mean sea level

Installation Date(s) 10/22/03

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

Well Purpose Extraction well

Remarks

Prepared by Bruce Evans

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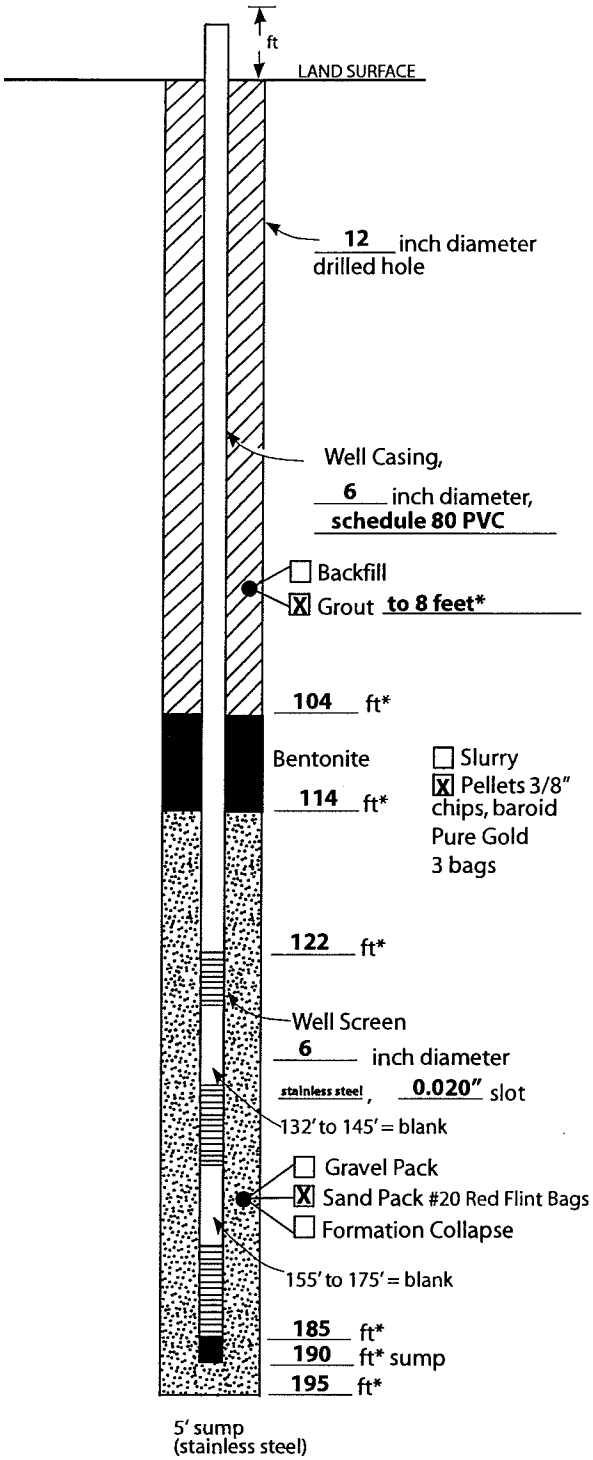
1/12/2005 7:20 AM

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-5**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1050.91** feet

and Datum **Mean Sea Level** feet [X] surveyed [ ] estimated

Installation Date(s) **6/30/04 - 7/1/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water and Aquagel by Baroid**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

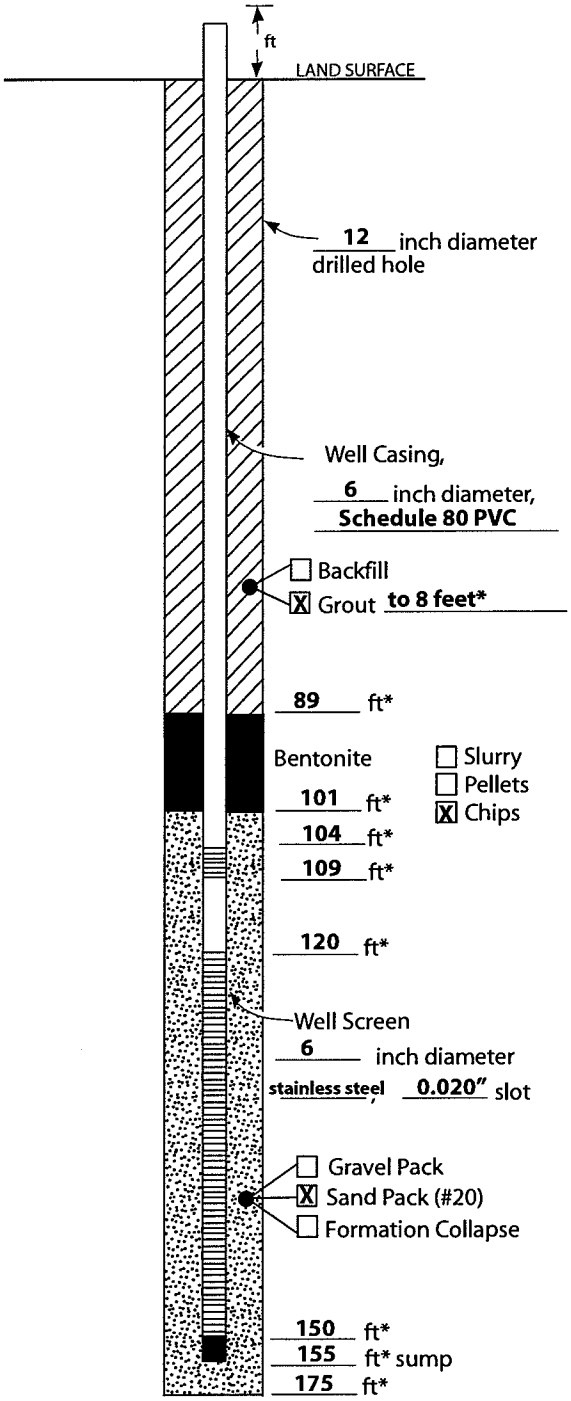
Well Purpose **Extraction well**

Remarks **Screened intervals are 122-132', 145-155' and 175-185'. Grout: 3 bags Portland, 1 bag Aquagel, 35-gallons water = mixture 8.5 batches.**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-6**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1048.72** feet

and Datum **Mean Sea Level** feet

[X] surveyed
[ ] estimated

Installation Date(s) **6/20/04 - 6/22/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water and mud**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **1,300** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

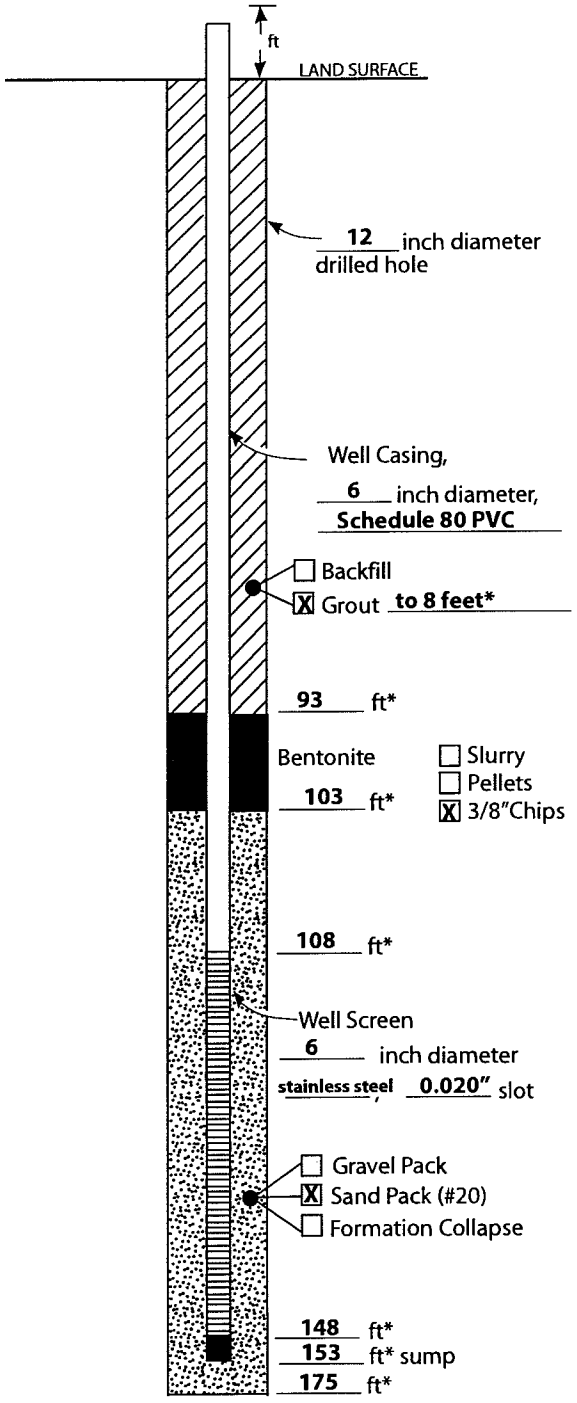
Well Purpose **Extraction well**

Remarks **5' stainless steel sump, stabilizer at base; 30' and 5' stainless steel screens, 0.020 slot, continuous wrap made by Johnson Controls; riser; Schedule 80 PVC made by Campbell Monofex, filter pack: Red Flint #20/6065, 41-50 lb bags; Bentonite: Baroid 3/8" chips, 4.5-50 lb bags; Grout: 21-94 lb bags Portland, 7-50 lb bags Aquagel Gold Seal**

Prepared by **Toni Schoen**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMEWC-7

Town/City Kingsford

County Dickinson State Michigan

Permit No. _____

Land-Surface Elevation 1049.56 feet

and Datum Mean Sea Level feet

[X] surveyed

[ ] estimated

Installation Date(s) 7/01/04 - 7/06/04

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling 1,000 gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

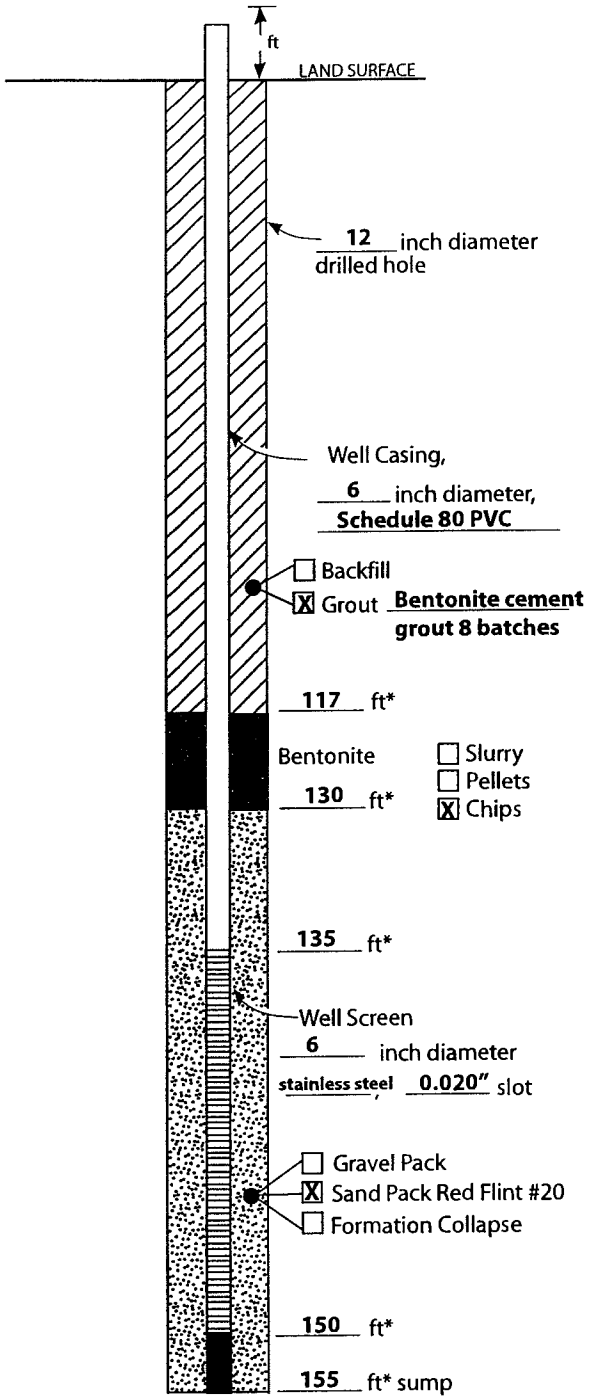
Well Purpose Extraction well

Remarks 5-foot stainless steel sump made by Johnson Controls, stabilizer at base, 40-foot stainless steel, continuous wrap, 0.020 inch slot of screen made by Johnson Controls, Schedule 80 PVC riser made by Campbell Monoflex, 38-50 pound bags Red Flint #20/6065 filter pack sand, 4-50 pound bags Baroid coarse grade Wyoming bentonite (3/8" chips) seal, grout 18-94 pound bag Portland Cement, 6-50 pound bags Aquagel Gold Seal, 150 gallons water.

Prepared by Toni Schoen

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMEWC-7A

Town/City Kingsford

County Dickinson State Michigan

Permit No. _____

Land-Surface Elevation 1049.54 feet

and Datum mean sea level feet [X] surveyed [ ] estimated

Installation Date(s) 9/24/04

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose Extraction well

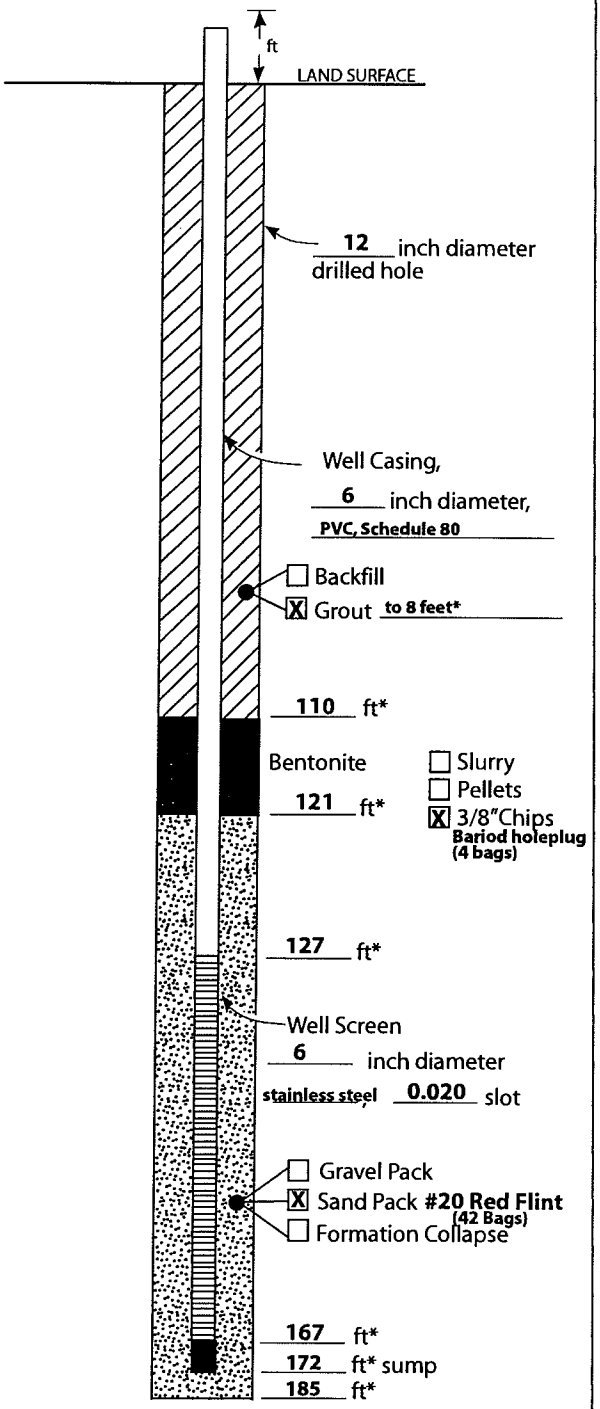
Remarks Grout mixture = 3 (94 pounds) bags Portland Cement, 1 bag Baoid Aquagel, 35 gallon water, 15 bags filter pack sand, 7 bags bentonite.

Prepared by Andy Mumpy

ford/wl0637/2004/graphics/logs/gmewc7a.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



6" diameter stainless steel sump 167-172'

Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-8**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1047.03** feet

and Datum **Mean Sea Level** feet ☒ surveyed ☐ estimated

Installation Date(s) **7/9/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water, water and Aquagel**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

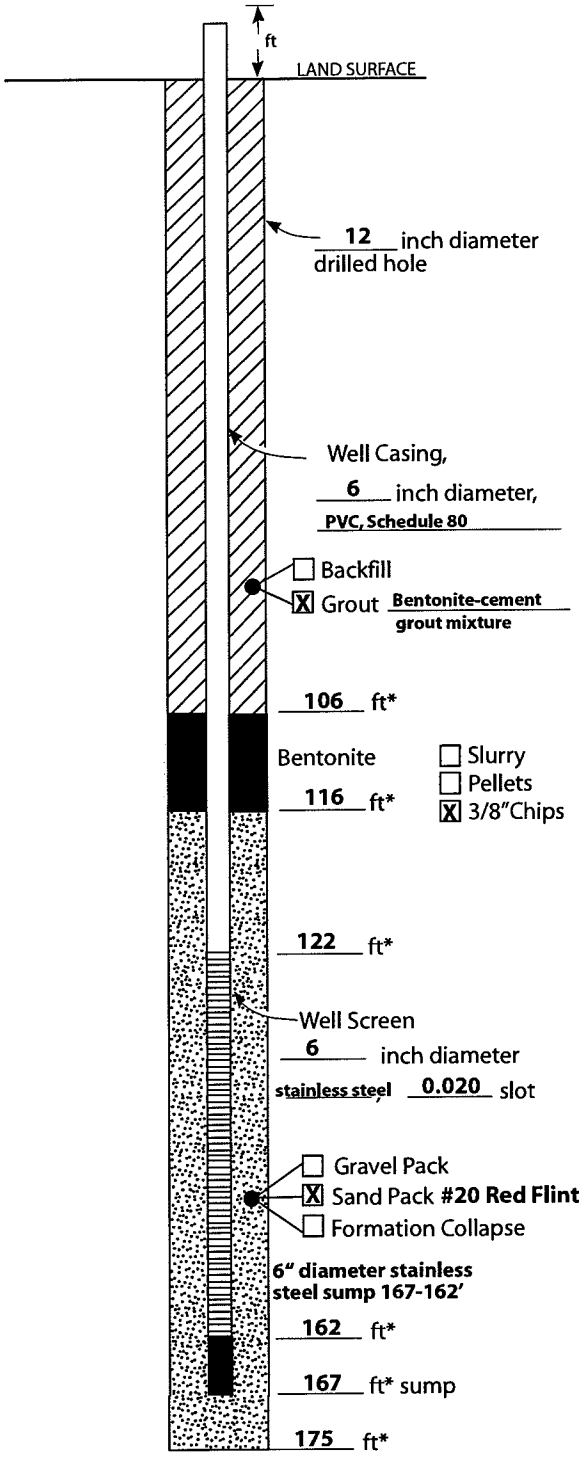
Well Purpose **Extraction well**

Remarks **Grout: 3 bags Portland Cement + approximately 1/2 to 3/4 bag Aquagel gold seal, 35 gallon water = 1 batch. Used 8 batches.**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-8A**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1047.30** feet

and Datum **Mean Sea Level** feet ☒ surveyed ☐ estimated

Installation Date(s) **9/21/04 to 9/22/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

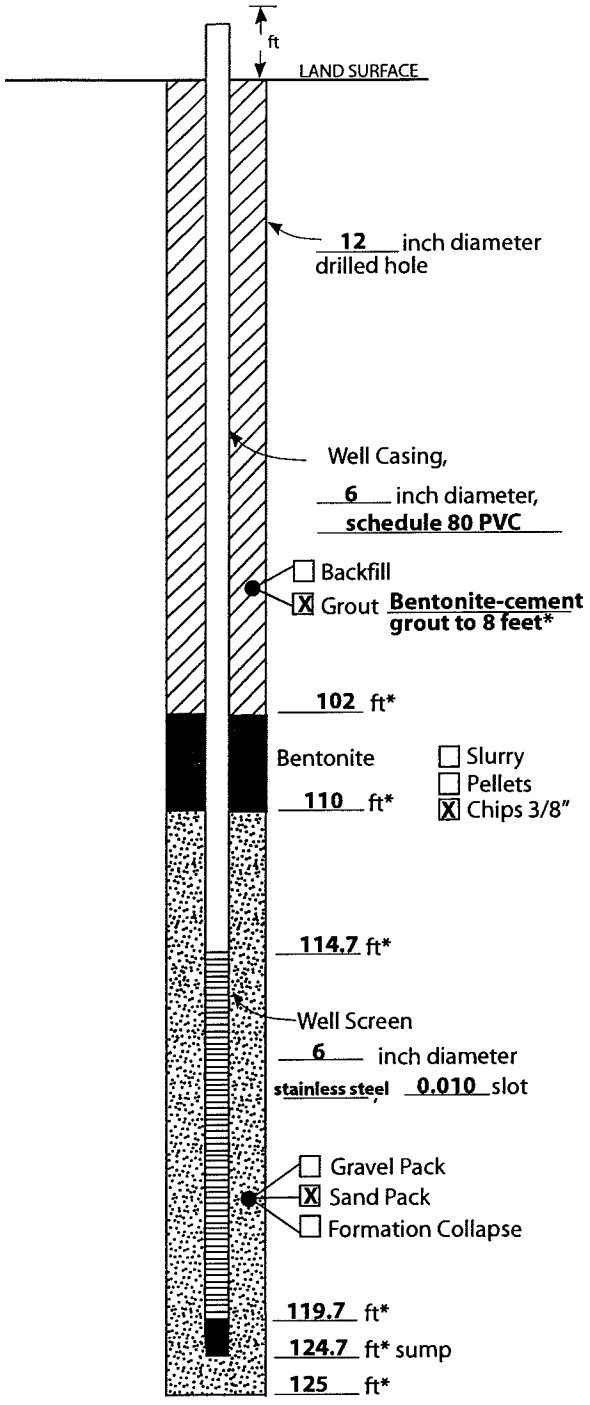
Well Purpose **Extraction well**

Remarks **Grout mixture = 3 (94 pounds) bags, Portland cement, 1 (50 pounds) bag Baroid Aquagel, approximately 35 gallons water, used 6 batches.**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Kingsford Well GMEWC-9

Town/City Kingsford

County Dickinson State Michigan

Permit No. _____

Land-Surface Elevation 1048.75 feet

and Datum Mean Sea Level

[X] surveyed

[ ] estimated

Installation Date(s) 7/23/04

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose extraction well

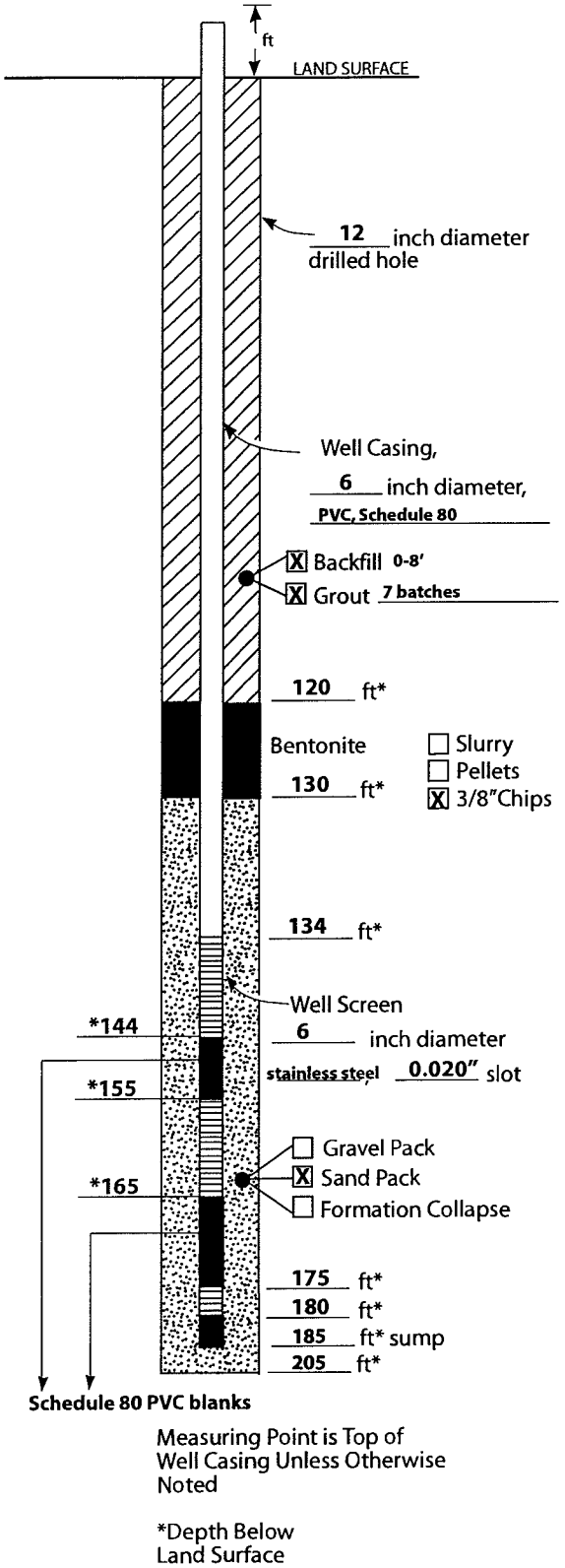
Remarks Grout mix is 3 bags Portland cement, 1/4 bag Aquagel, 35 gallons water used 7 batches.

Prepared by Andy Mumpy

ford/wi0637/2004/graphic/logs/gmewc9.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMEWC-10**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1049.35** feet

and Datum **Above Mean Sea Level**

☒ surveyed

☐ estimated

Installation Date(s) **9/26/04 through 9/28/04**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Extraction well**

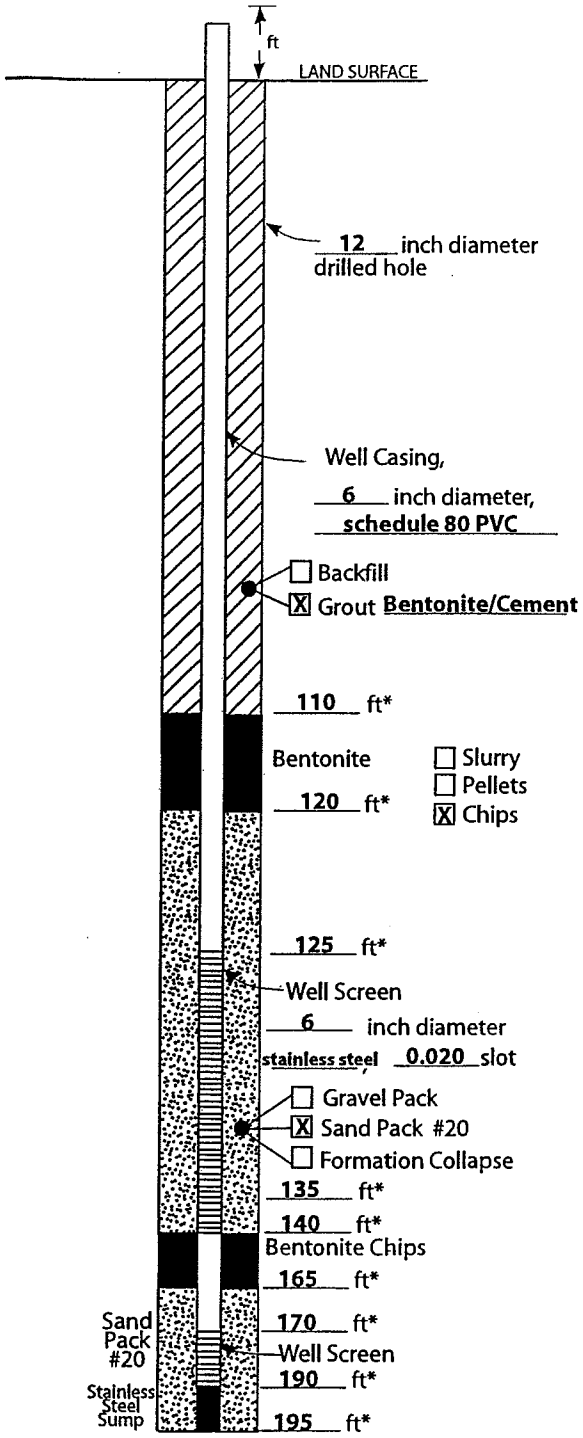
Remarks **Riser: Schedule 80 PVC, Screens: 134-144', 155-165', and 175-180' (6-inch, stainless steel, 0.020" slot, made by Johnson), 5-foot stainless steel sump made by Johnson, seal: 5-50 lb bags Baroid holeplug coarse grade WY bentonite 3/8" chips, Fiter pack: 46-50 lb bags Red Flint #20, Grout: 7 batches = 21-94 lb bags Portland Cement, 7-50 lb bags Aquagel benseal, and 245 gallons of water.**

Prepared by **Toni Schoen**

ford/wi0637/2004/graphics/logs/gmewc10.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950027** Well **GMEWC-11**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1050.84 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **3/28/06 to 3/30/06**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

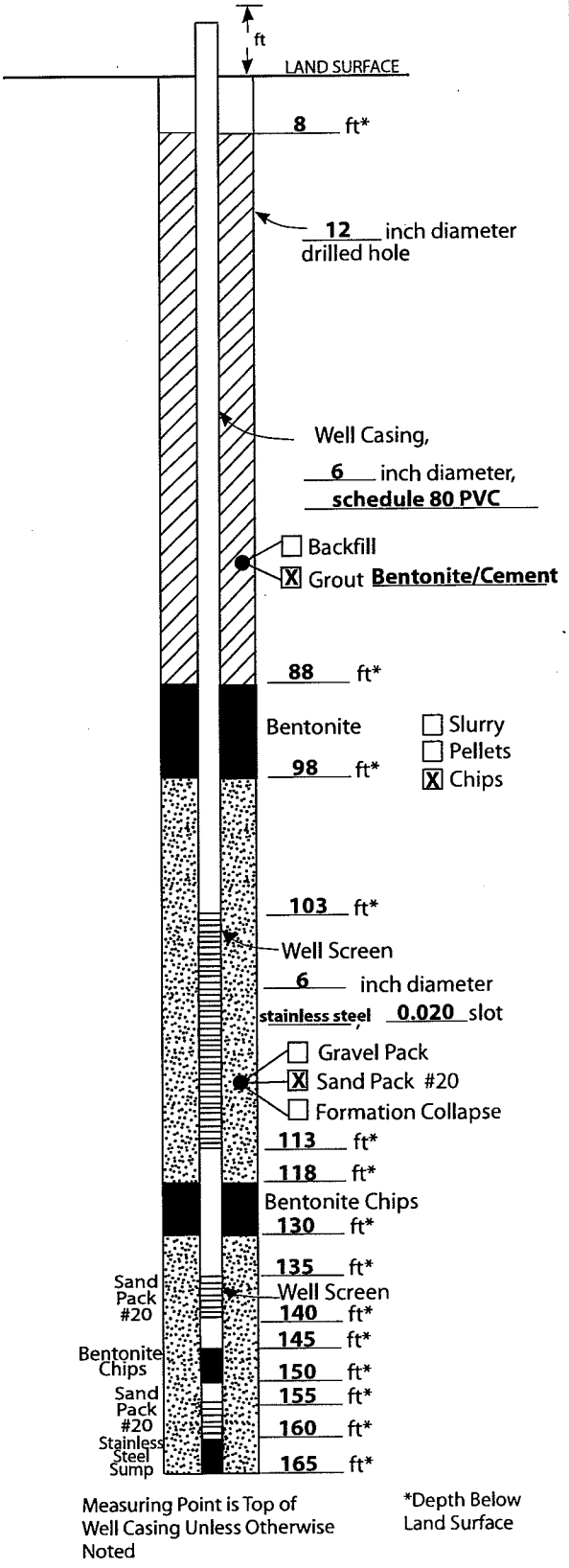
Well Purpose **Groundwater system extraction well.**

Remarks **Well screen Johnson stainless steel wire wrapped high yield, 0.020 slot, stainless steel 5' sump, casing 6" sch 80 PVC, filter pack sand #20 red flint silica sand (50 lb bags) 195-165' 23 bags; 140-120' 16 bags, bentonite seal, Baroid hole plug 3/8" chips (50 lb bags) 165-140' 10 bags; grout 350 gallons, 28 bags Portland cement 94 lb bags, 3.5 bags Bentonite gel 50 lb bags.**

Prepared by **Bruce Evans**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Project Ford/Kingsford - WI0010950027 Well GMEWC-12

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1048.40 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 3/30/06 to 4/1/06

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose Groundwater extraction well.

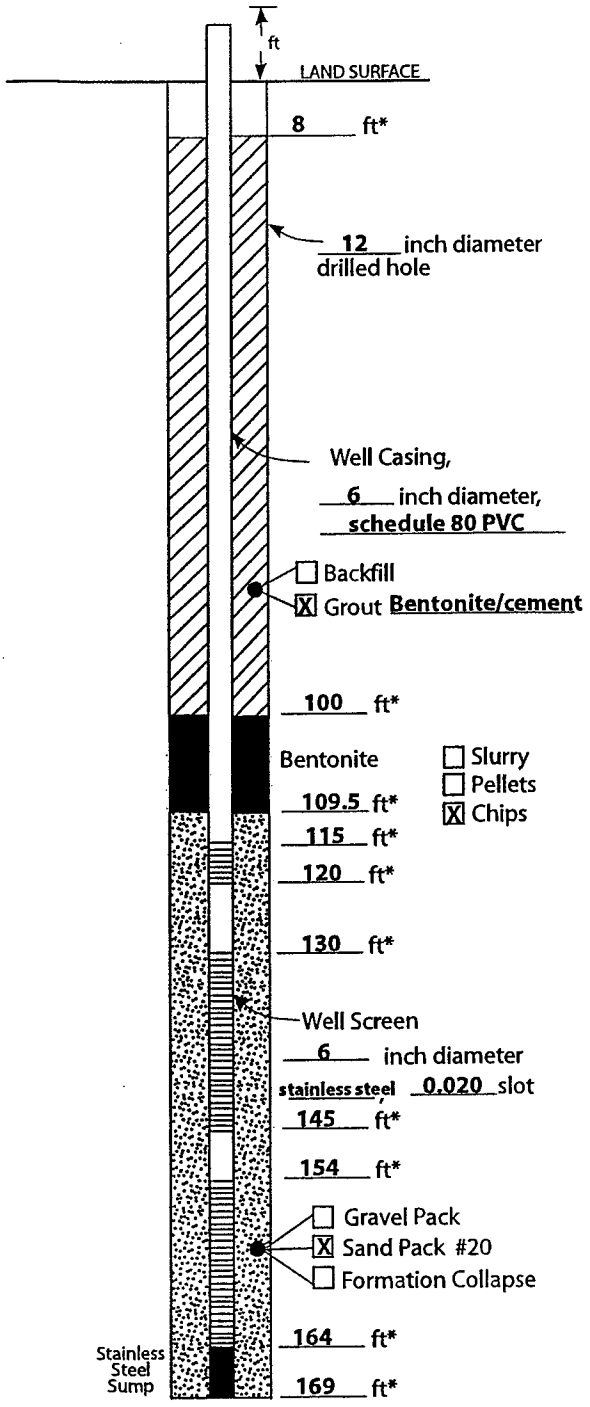
Remarks Well screen Johnson stainless steel wire wrapped high yield, 0.020 slot, stainless steel 5' sump, casing 6" sch 80 PVC, filter pack sand #20 red flint silica sand (50 lb bags) 165-150' 13 bags; 145-130' 12 bags, 118-98' 19 bags; bentonite seal, Baroid hole plug 3/8" chips (50 lb bags) 150-145' 2 bags; 130-118' 5 bags, 98-88' 4 bags; grout 350 gallons, 30 bags Portland cement 94 lb bags, 6 bags Bentonite gel 50 lb bags.

Prepared by Jill Flater

ford/wi0637/2006/graphic/logs/gmewc12-constr.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950027 Well GMEWC-13

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1048.33 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 4/1/06 - 4/3/06

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

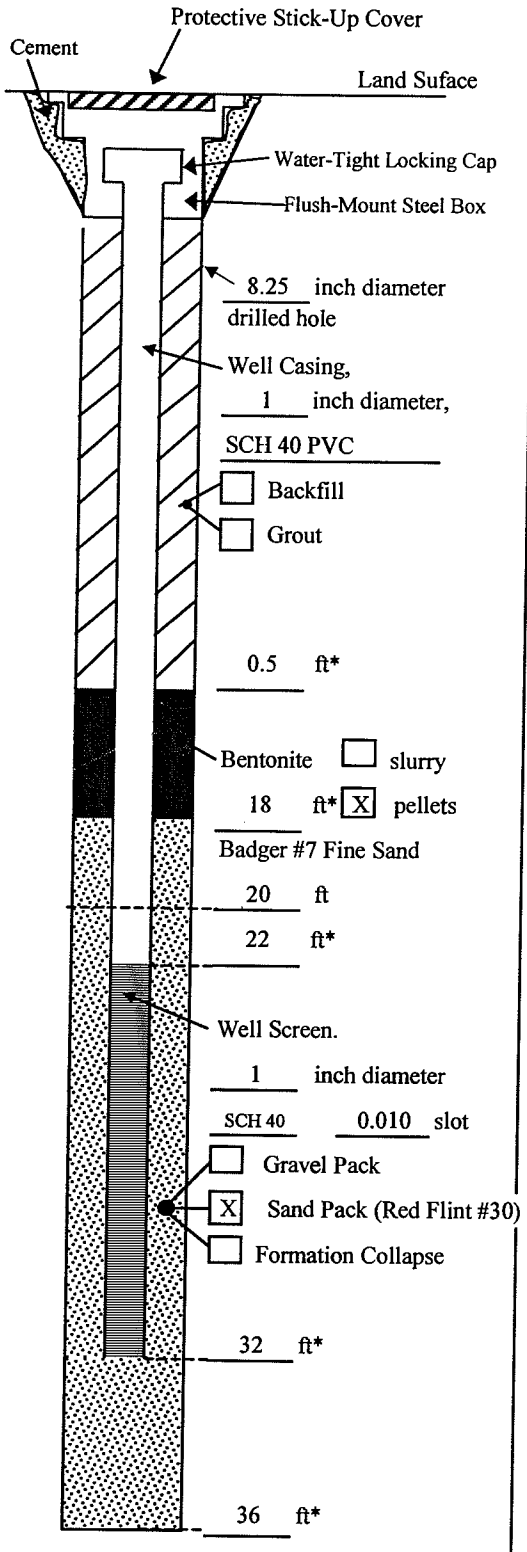
Specific Capacity _____ gpm/ft

Well Purpose Groundwater extraction well.

Remarks Well screen Johnson stainless steel wire wrapped high yield, 0.020 slot, stainless steel 5' sump, casing 6" sch 80 PVC, filter pack #20 red flint silica sand (50 lb bags) 169-109.5' 54 bags; bentonite seal, Baroid hole plug 3/8" chips (50 lb bags) 109.5-100' 4 bags; grout 6 batches, 24-94 lb bags Portland cement, 4-50 lb bags Aquagel bentonite seal.

Prepared by Jill Flater

ARCADIS



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000925.0002 Probe GMPZ-1

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1050.11 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 08/27/01

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

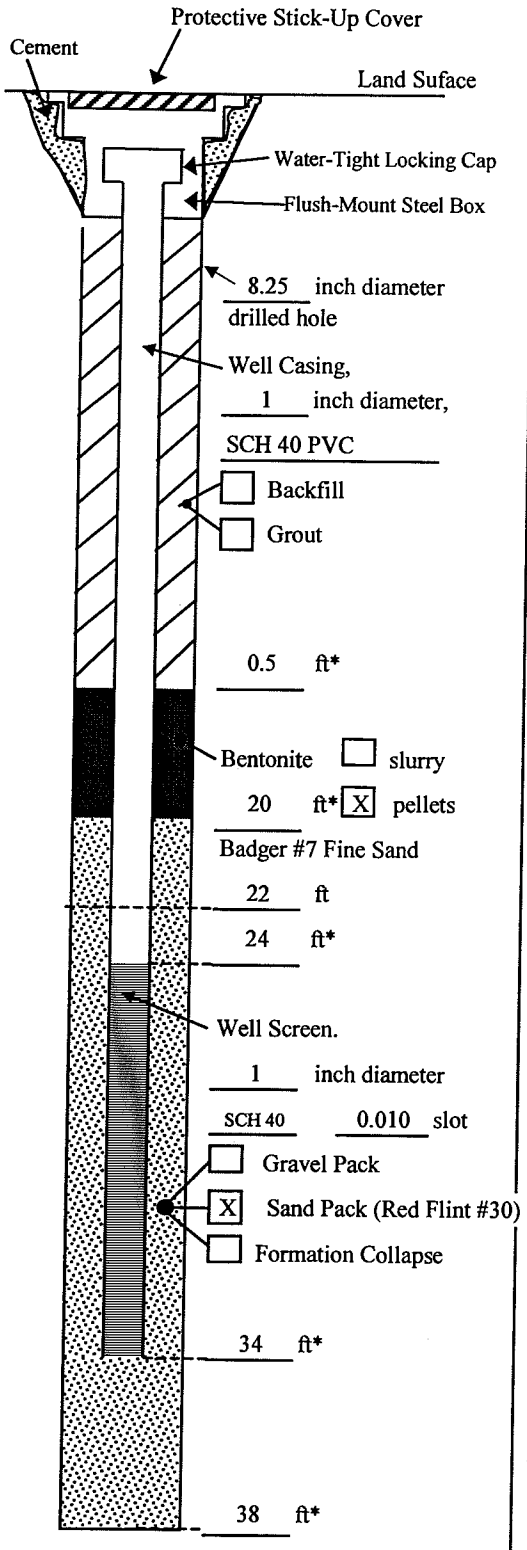
Specific Capacity gpm/ft

Well Purpose

Remarks

Prepared by John Keller

ARCADIS



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000925.0002 Probe GMPZ-2

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1050.68 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 08/28/01

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

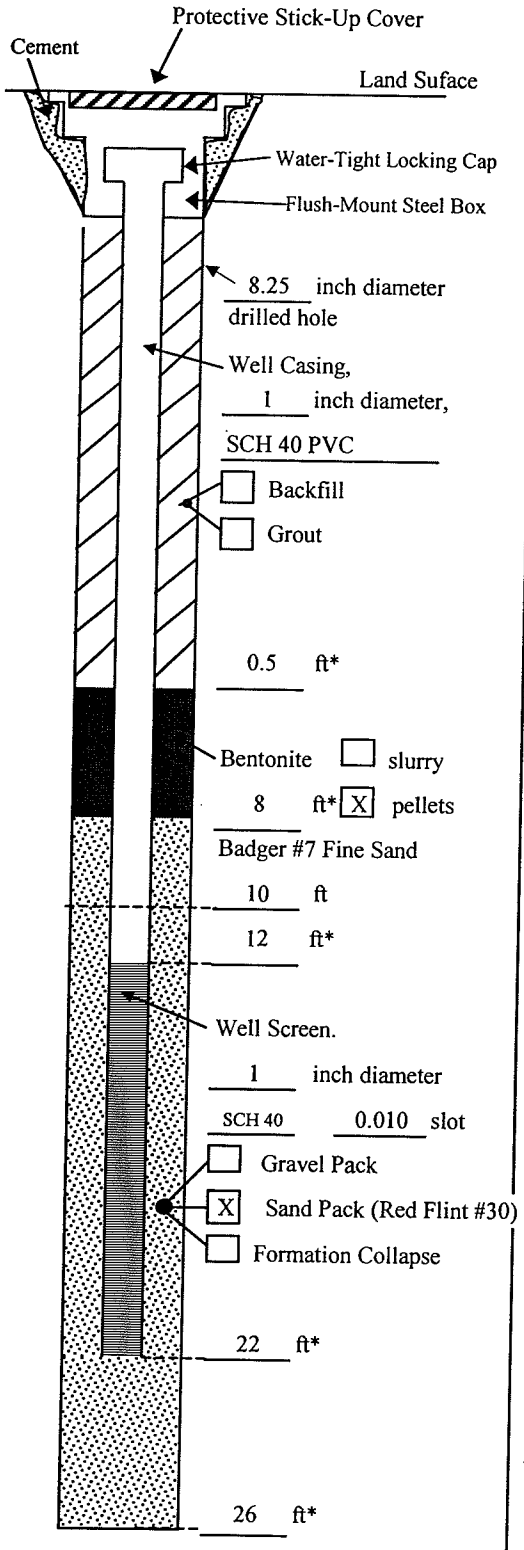
Well Purpose

Remarks

Prepared by John Keller

ford/wi0637/kingsford/tables/wcl_gmpz2.xls
04/11/02 3:16 PM

ARCADIS



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000925.0002 Probe GMPZ-3

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1041.5 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 08/27/01

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

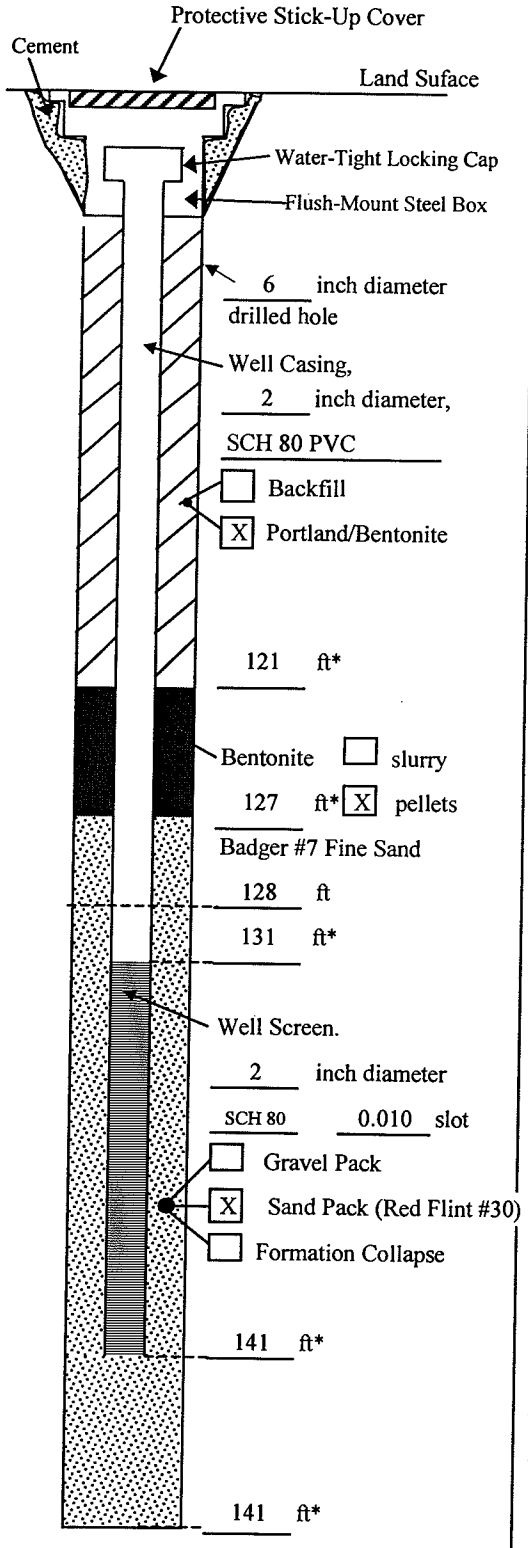
Specific Capacity gpm/ft

Well Purpose

Remarks

Prepared by John Keller

ARCADIS



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

WELL CONSTRUCTION LOG

(Flush Mounted Well)

Project WI000925.0002 Probe GMPZ-4

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1058.17 feet

[X] Surveyed
[ ] Estimated

Installation Date(s) 09/07/01

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

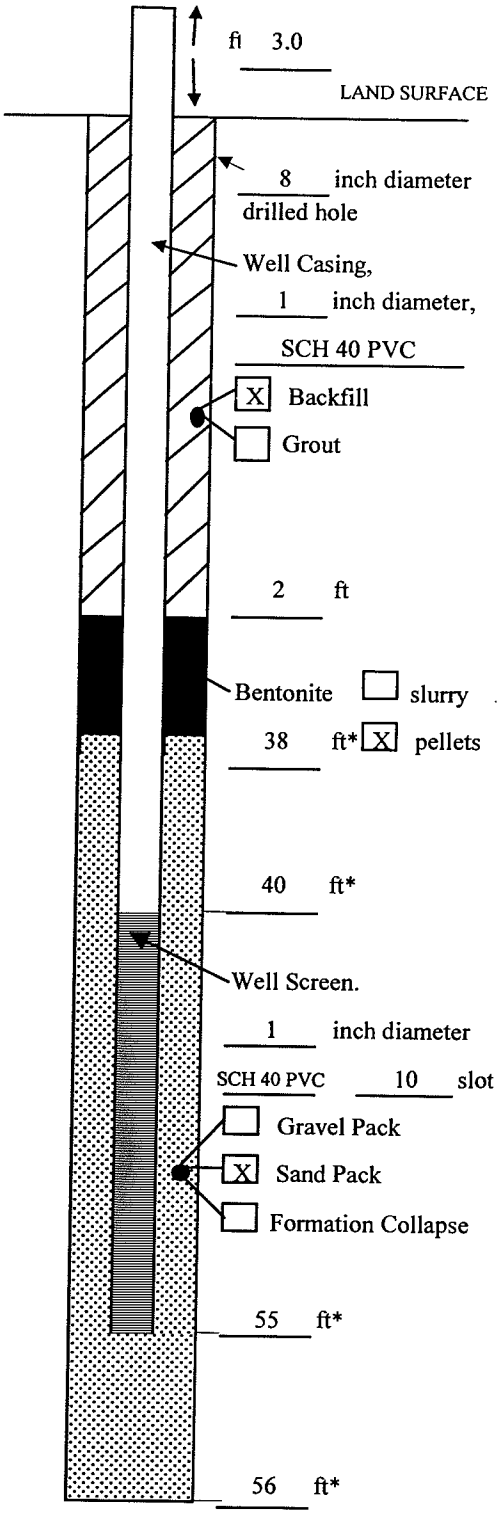
Well Purpose

Remarks

Prepared by John Keller

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project WI000950.0001 Probe GMPZ-5

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1065.78 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 06/10/02

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
Surging 6/13-14/2002

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water 29.71 feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity NA gpm/ft

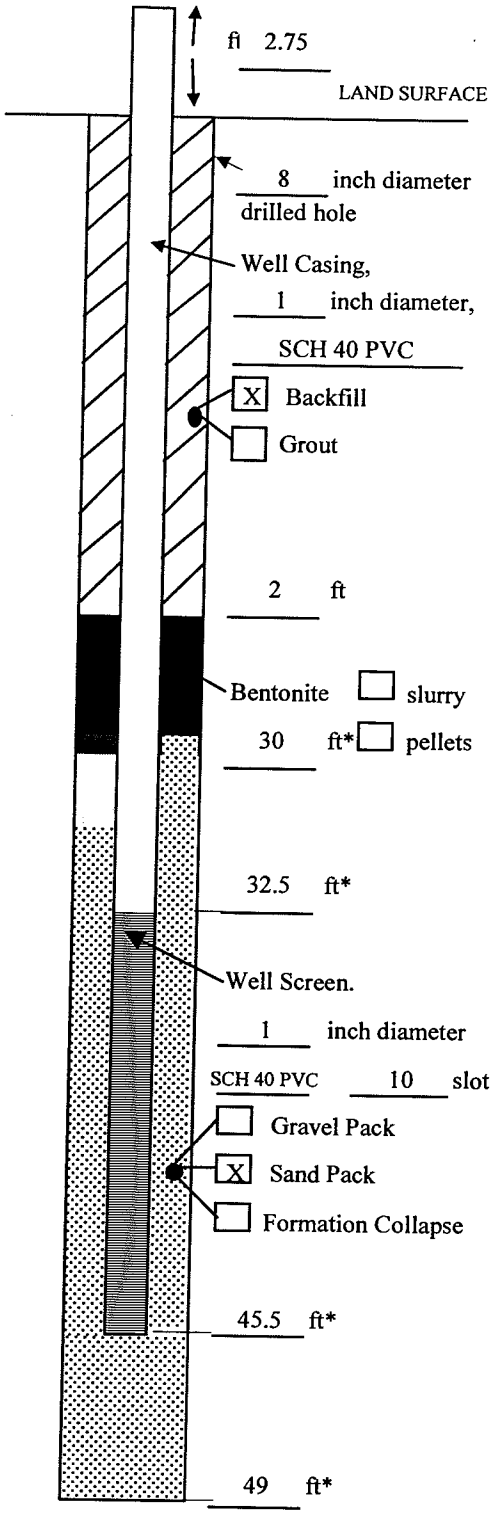
Well Purpose Observation well for GMEW-5.

Remarks

Prepared by Pat Bartnik

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project WI000950.0001 Probe GMPZ-6

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation and Datum 1060.44 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 06/11/02

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)
Surging 6/13-14/2002

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water 24.42 feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

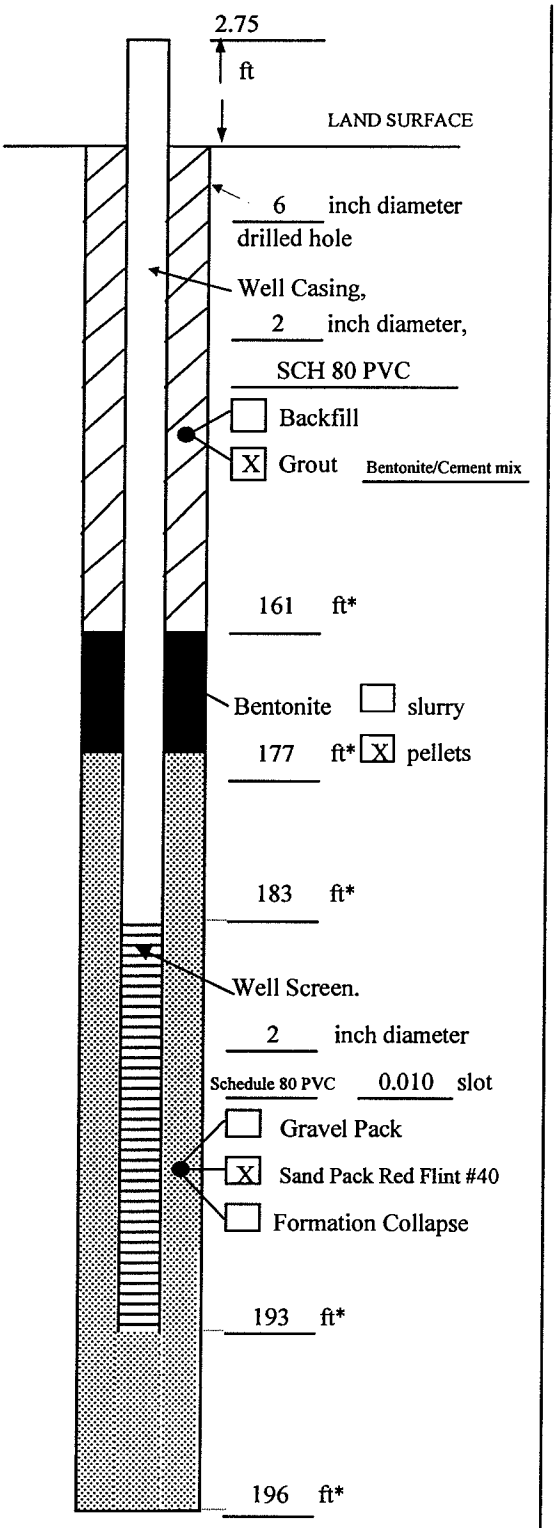
Well Purpose Observation well for GMEW-6.

Remarks

Prepared by Pat Bartnik

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMPZ-7

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1065.94 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/9/03 to 10/10/03

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling ____ gallons

Water Removed During Development ____ gallons

Static Depth to Water ____ feet below M.P.

Pumping Depth to Water ____ feet below M.P.

Pumping Duration ____ hours

Yield ____ gpm Date ____

Specific Capacity ____ gpm/ft

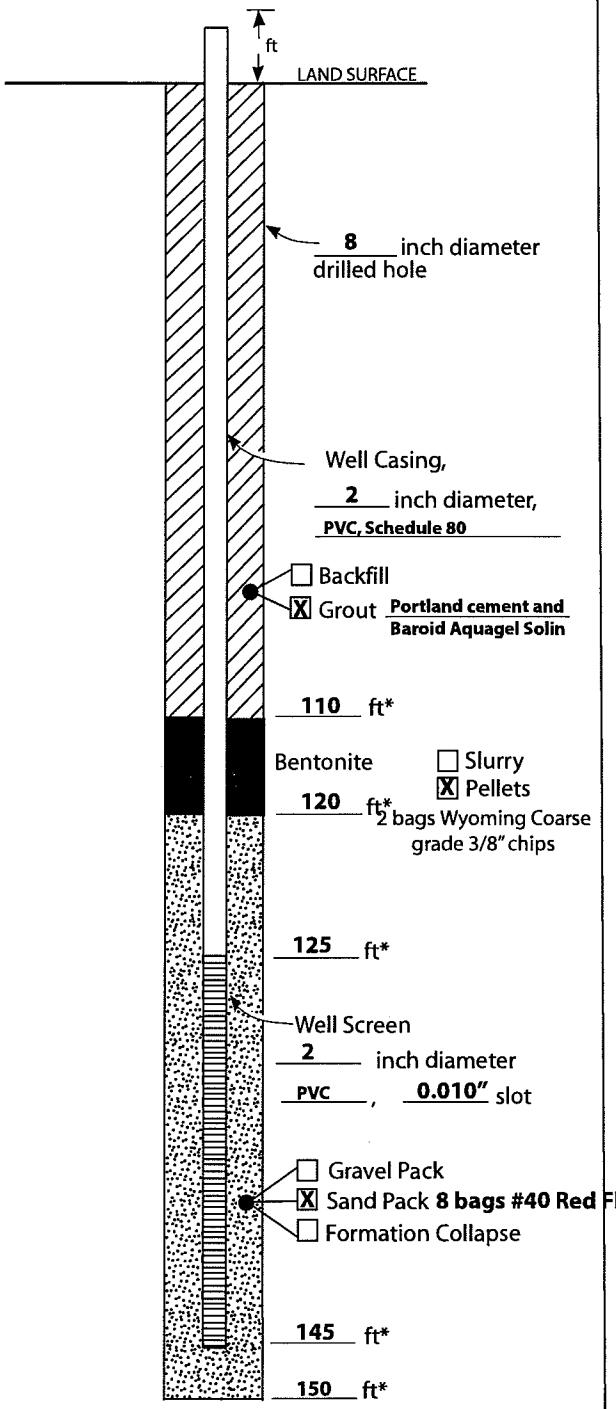
Well Purpose Observation well

Remarks

Prepared by Paul Lenaker

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Kingsford** Well **GMPZ-8**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. _____

Land-Surface Elevation **1044.35** feet

and Datum _____ feet ☐ surveyed

above mean sea level ☒ estimated

Installation Date(s) **8, 9 October 2003**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Observation well**

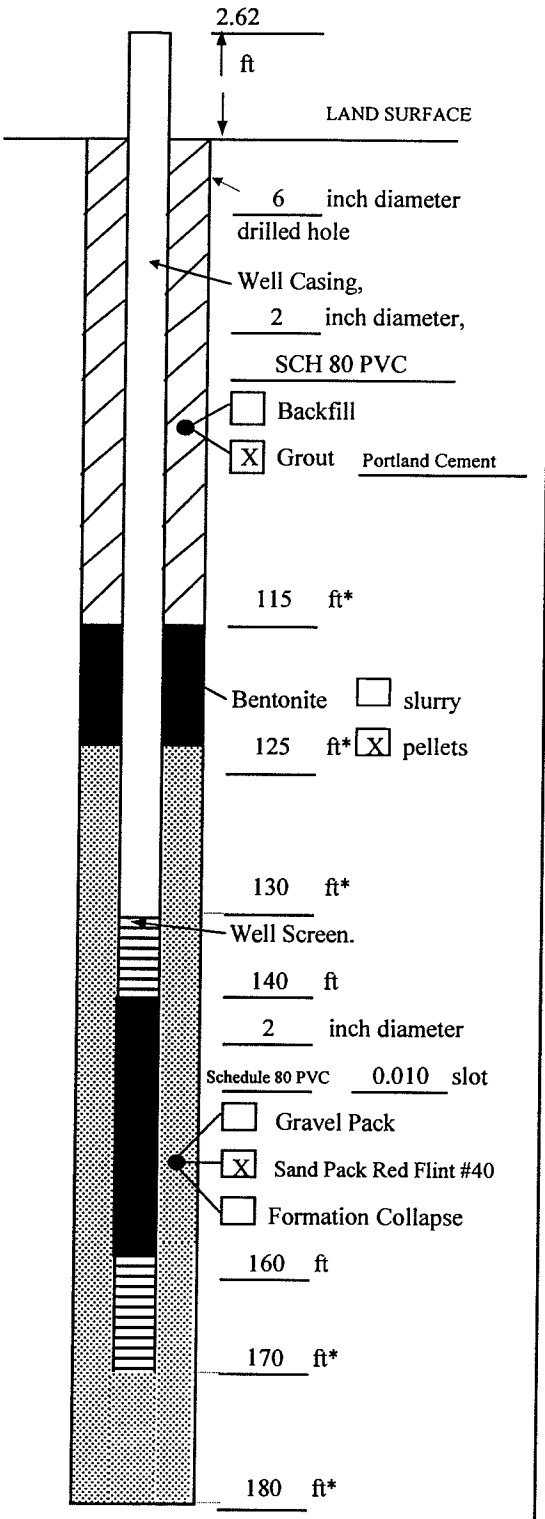
Remarks **Total depth drilled = 190 feet formation collapsed up to approximately 150 feet before well construction.**

Prepared by **Paul Lenaker**

ford/wi0637/2004/graphics/logs/gmpz8.ai

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMPZ-9

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1048.31 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/14/03

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

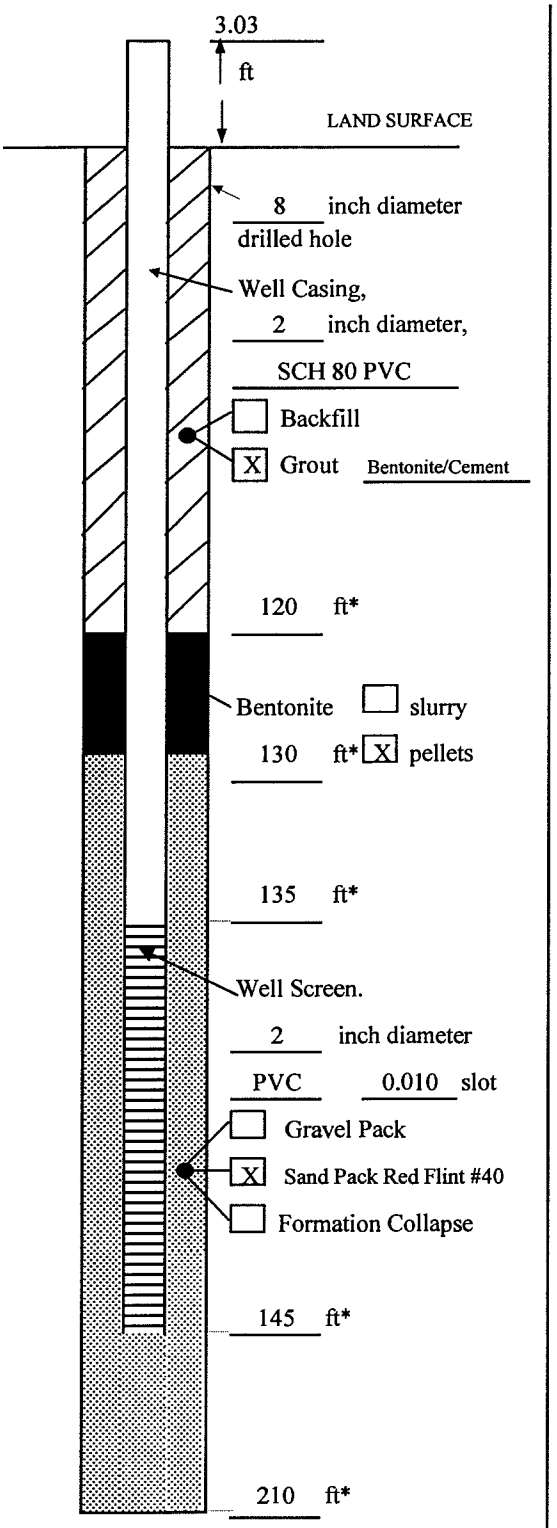
Well Purpose Observation well

Remarks Well screened in 2 discrete intervals from 120-130' and from 160-170'.

Prepared by Paul Lenaker

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMPZ-10

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1064.50 feet [X] Surveyed [ ] Estimated

Installation Date(s) 6, 7 October 2003

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

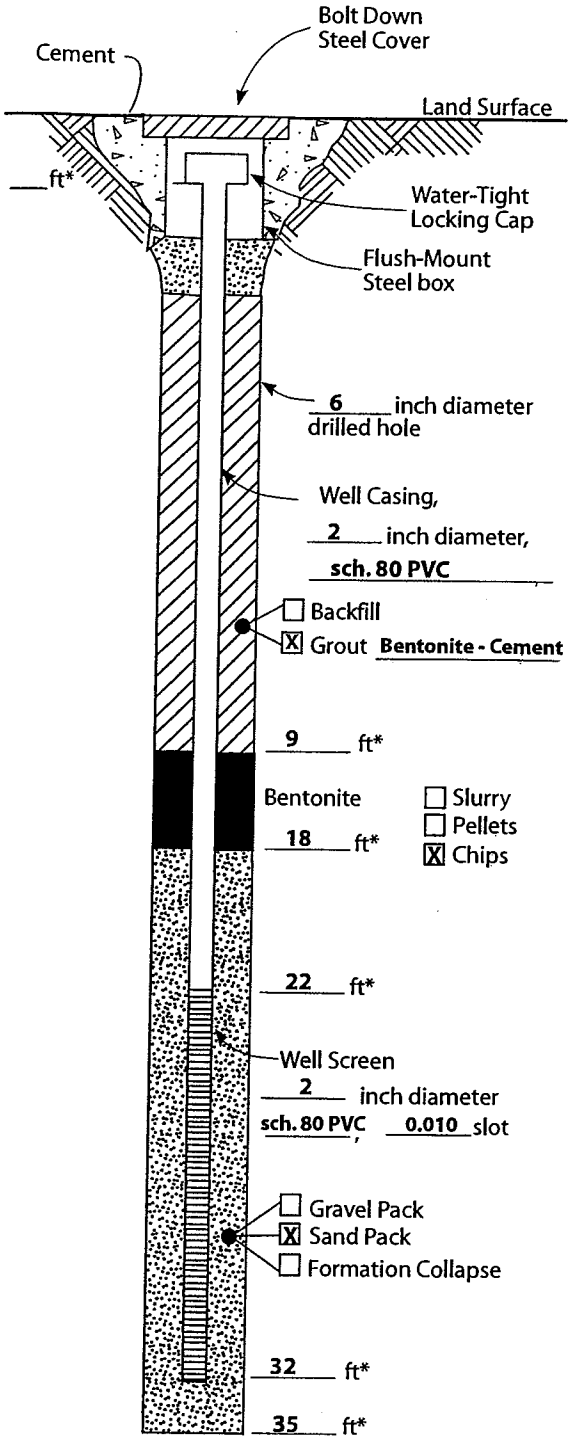
Specific Capacity _____ gpm/ft

Well Purpose Observation well

Remarks Borehole driven to 210 feet, when casing was pulled to 105 feet, borehole collapsed to 151-152 feet.

Prepared by Paul Lenaker

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-1**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.18 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/27/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

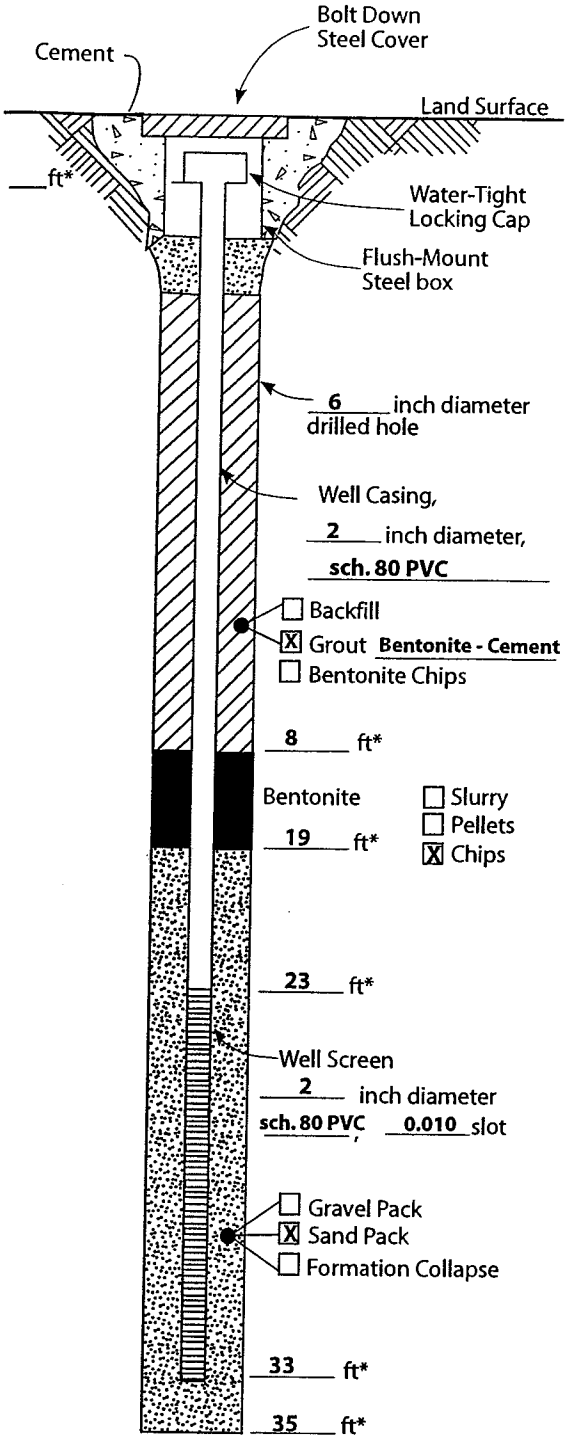
Well Purpose **Piezometer adjacent to GMEWA-26.**

Remarks **Grout Mixture: 3-94 lb. bags Portland cement, 1-50 lb bag. Baroid Aquagel Goldseal, approximately 30 gallons water. Used 1batch. Filter Pack Sand = red flint #40 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza1.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-2**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.06 feet [X] surveyed [ ] estimated

Datum **Mean Sea Level**

Installation Date(s) **4/27/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

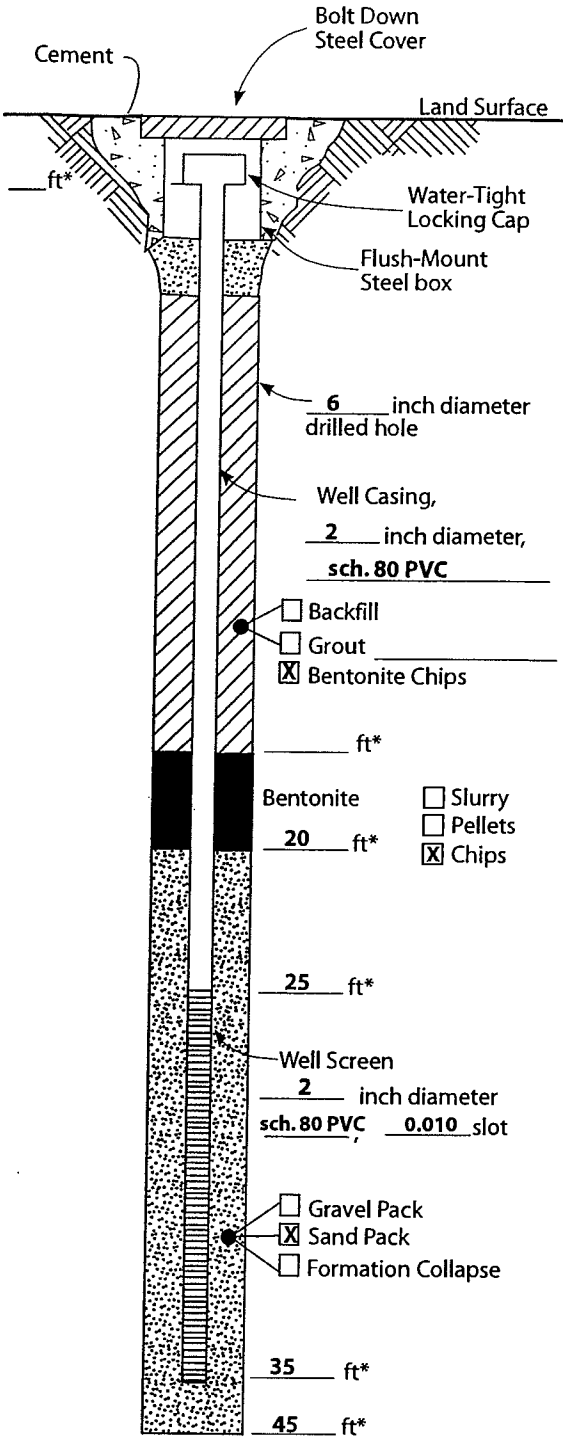
Well Purpose **Piezometer adjacent to GMEWA-25.**

Remarks **Grout Mixture: 3-94 lb. bags Portland cement, 1-50 lb bag. Baroid Aquagel Goldseal, approximately 30 gallons water. Used 1 batch. Filter Pack Sand = red flint #40 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza2.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-3**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.07 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/28/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

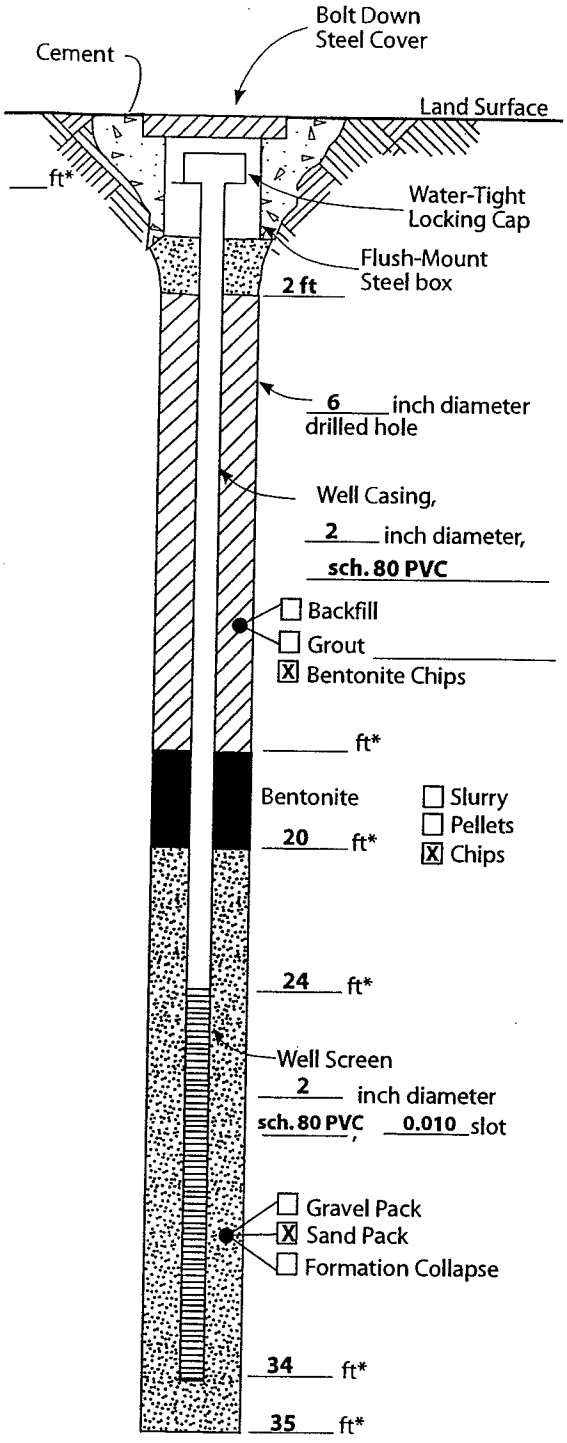
Well Purpose **Piezometer adjacent to GMEWA-24.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza3.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingford - WI0010950023** Well **GMPZA-4**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.19 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/29/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

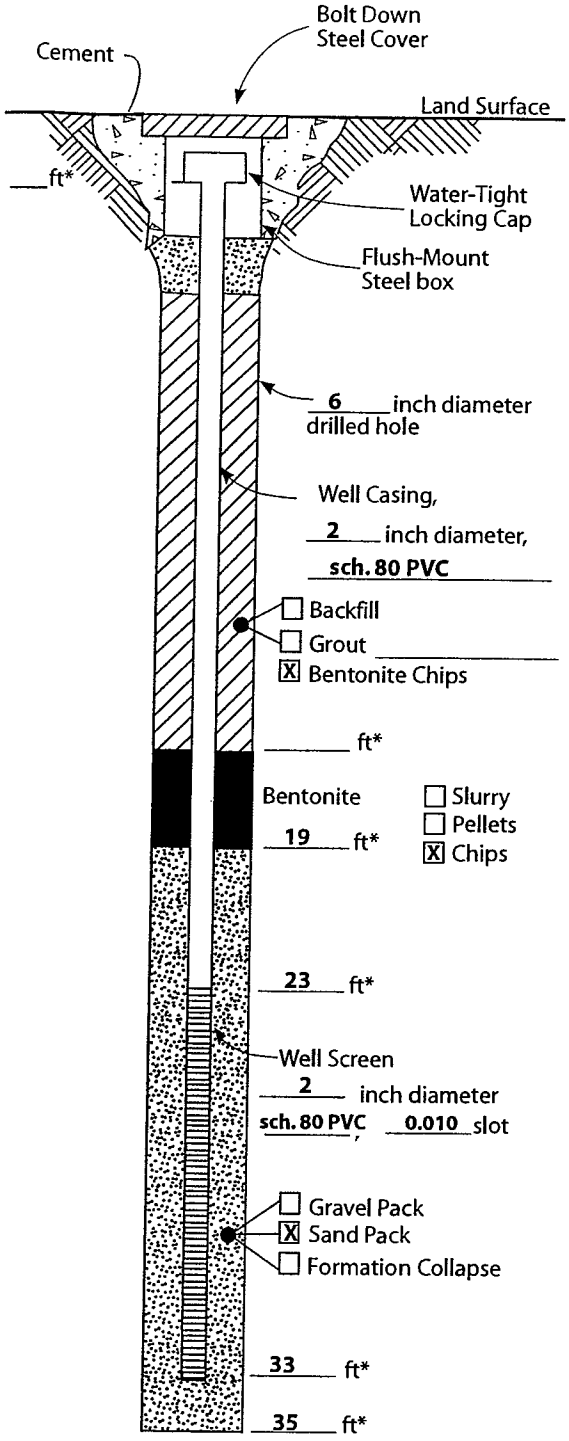
Well Purpose **Piezometer adjacent to GMEWA-23.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza4.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-5**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.53 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/29/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

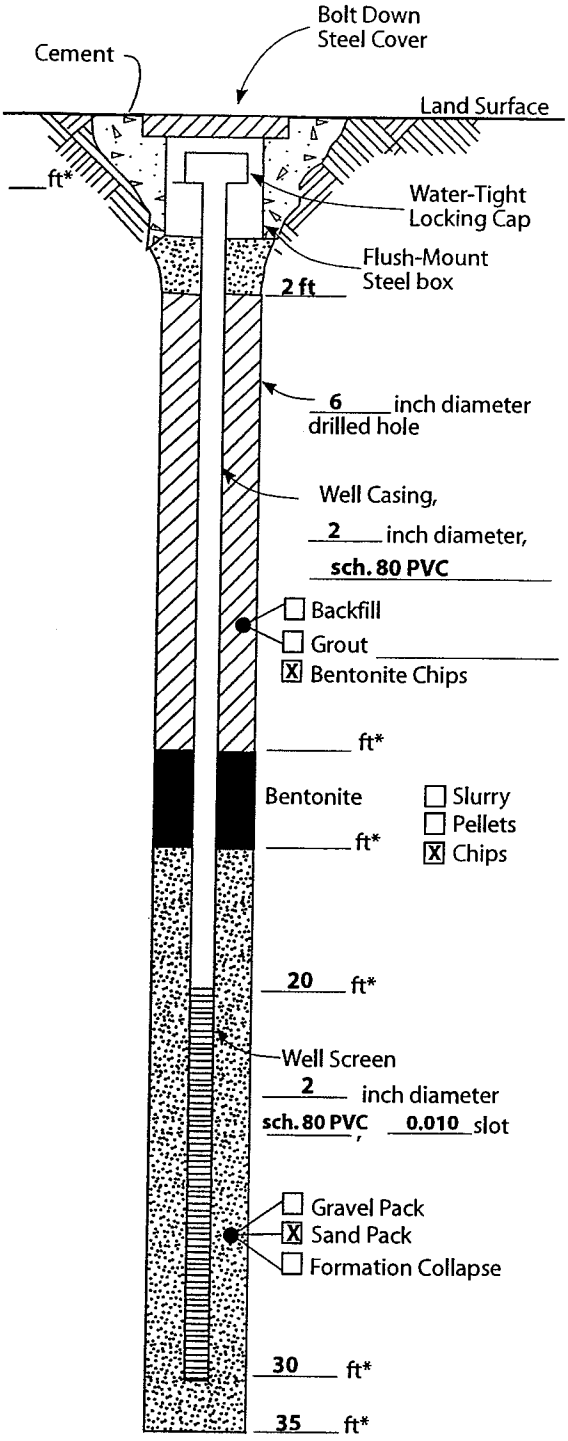
Well Purpose **Piezometer adjacent to GMEWA-22.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza5.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingford - WI0010950023** Well **GMPZA-6**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.5 feet [X] surveyed

Datum **Mean Sea Level** [ ] estimated

Installation Date(s) **4/29/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

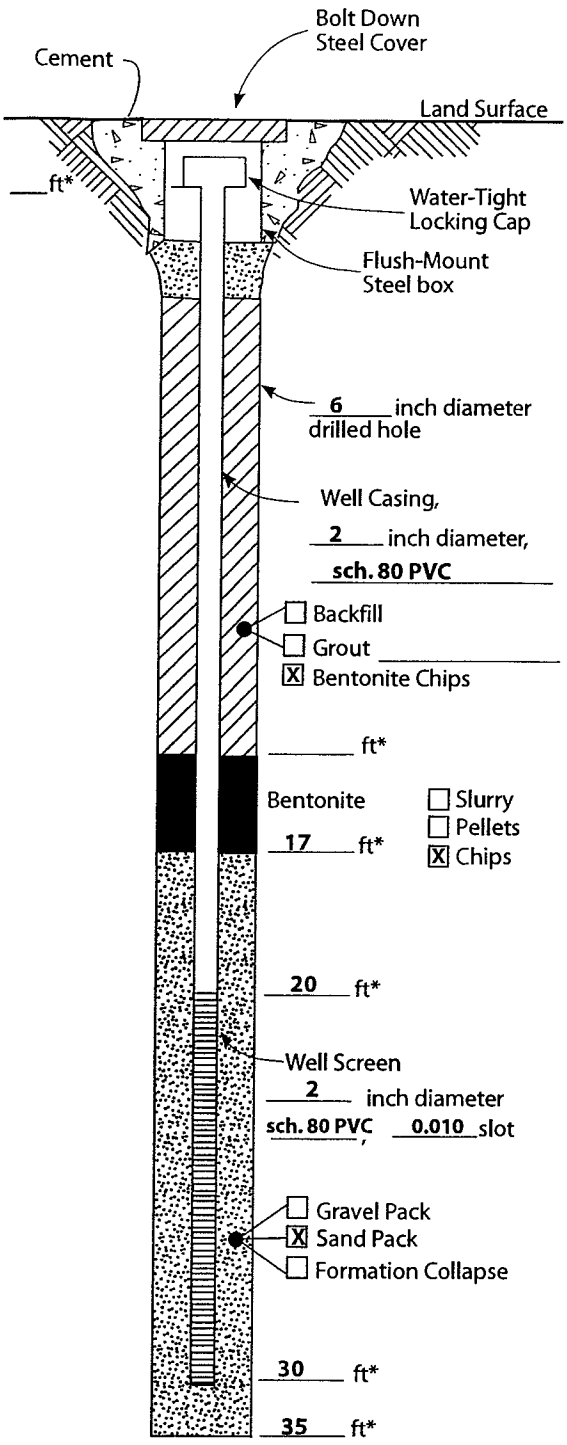
Well Purpose **Piezometer adjacent to GMEWA-21.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza6.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-7**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1149.17 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/29/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

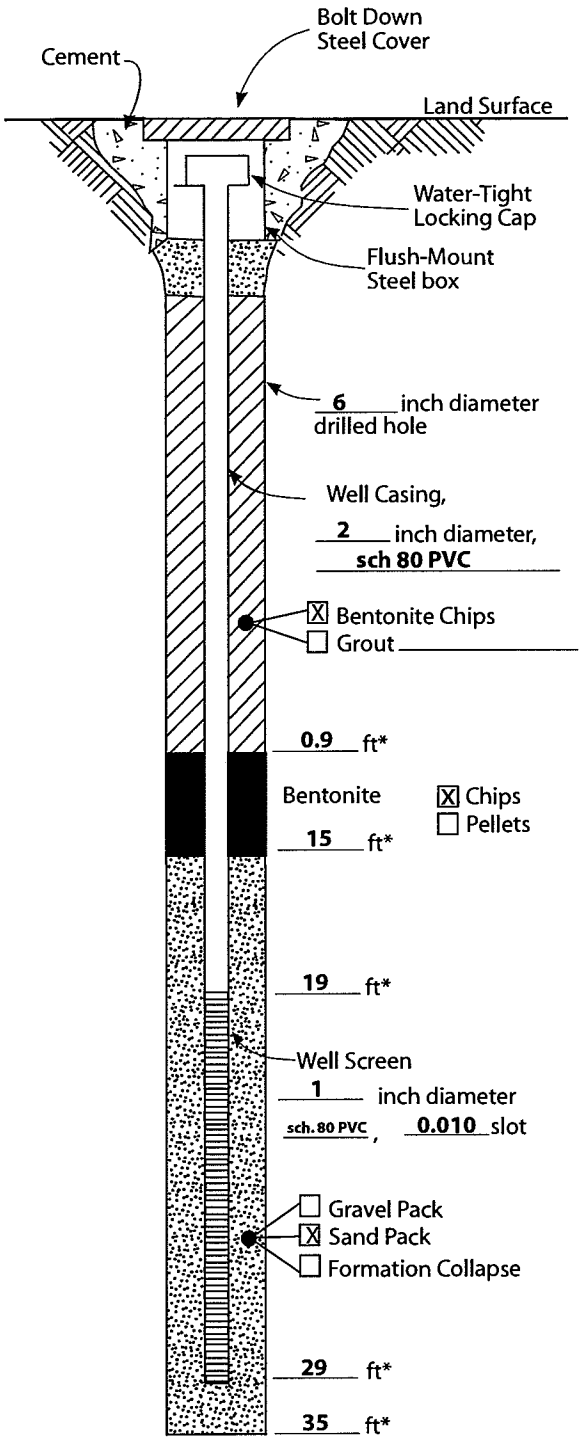
Well Purpose **Piezometer adjacent to GMEWA-20.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza7.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

ford/wi0637/2006/graphics/logs/gmpza8-wcl.ai

Project **Ford/Kingsford WI001095.0002** Well **GMPZA-8**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1048.8 feet [X] surveyed [ ] estimated

Datum **Mean sea level**

Installation Date(s) **4/30/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling -- gallons

Water Removed During Development -- gallons

Static Depth to Water -- feet below M.P.

Pumping Depth to Water -- feet below M.P.

Pumping Duration -- hours

Yield -- gpm

Specific Capacity _____ gpm/ft Date _____

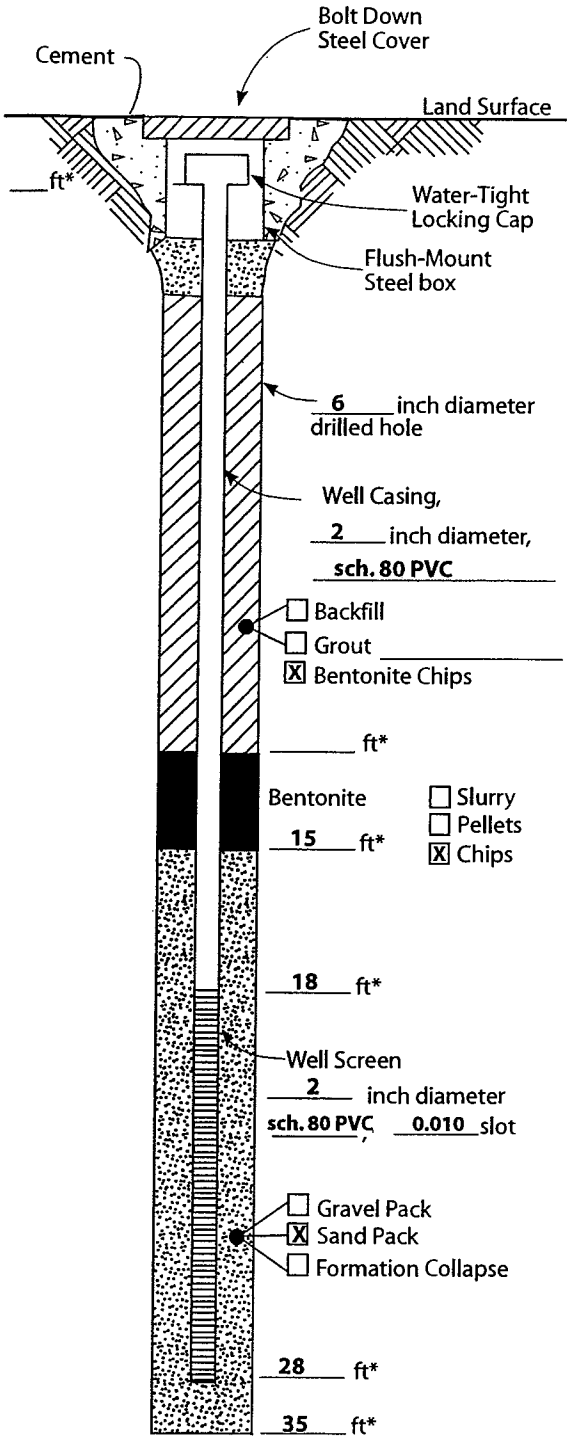
Specific Capacity _____ gpm/ft

Well Purpose **Piezometer adjacent o GMEWA-19.**

Remarks **Filter pack sand = Red Flint #20 (3 bags) bentonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **K. Waldbillig**

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-9**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1048.01 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/30/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

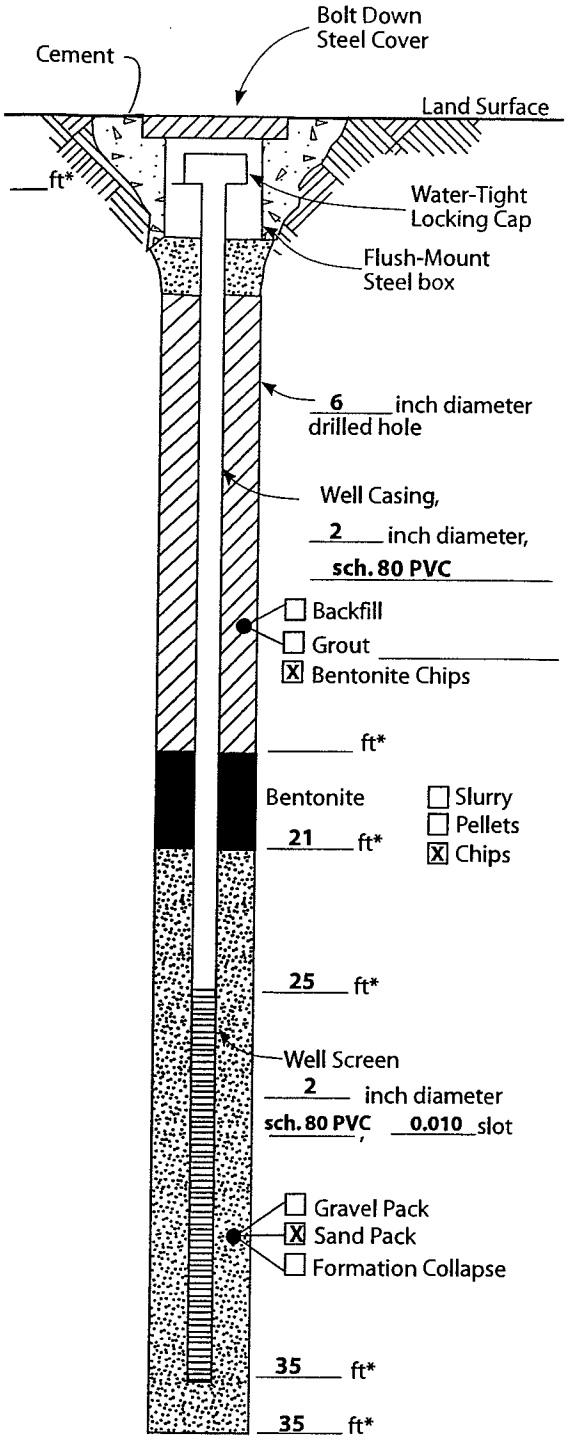
Well Purpose **Piezometer adjacent to GMEWA-18.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza9.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-10**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1048.08 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/30/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

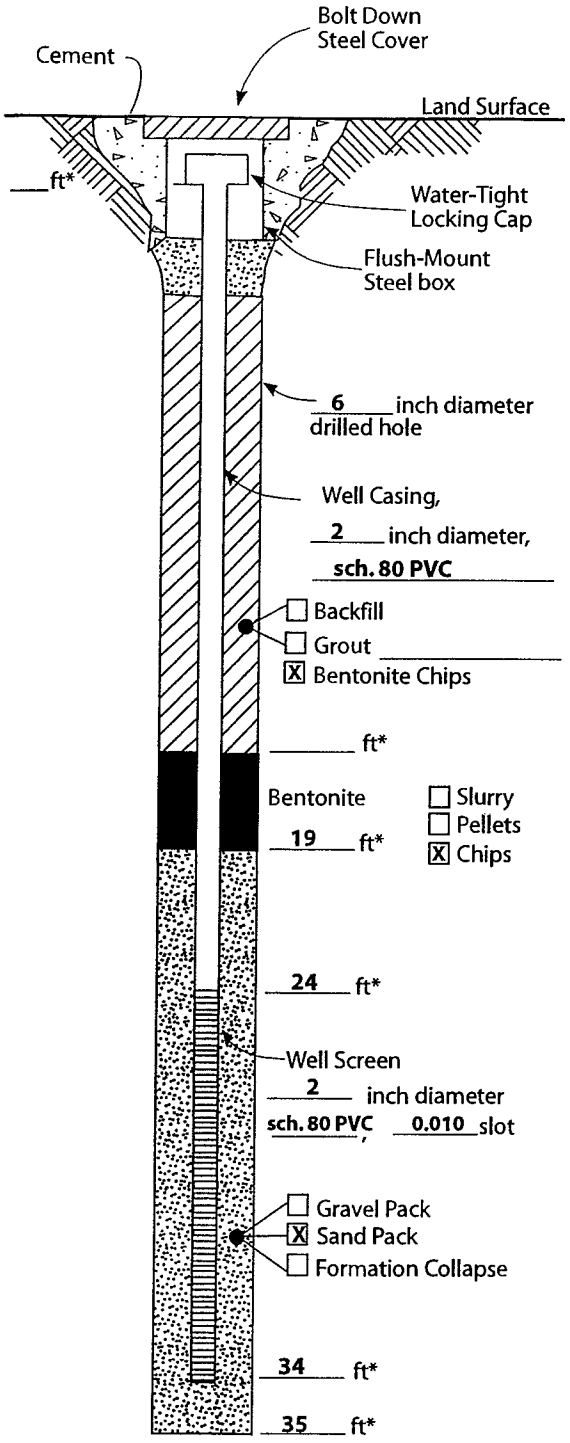
Well Purpose **Piezometer adjacent to GMEWA-17.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza10.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of
Well Casing Unless Otherwise
Notes

*Depth Below
Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-11**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1047.42 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/30/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

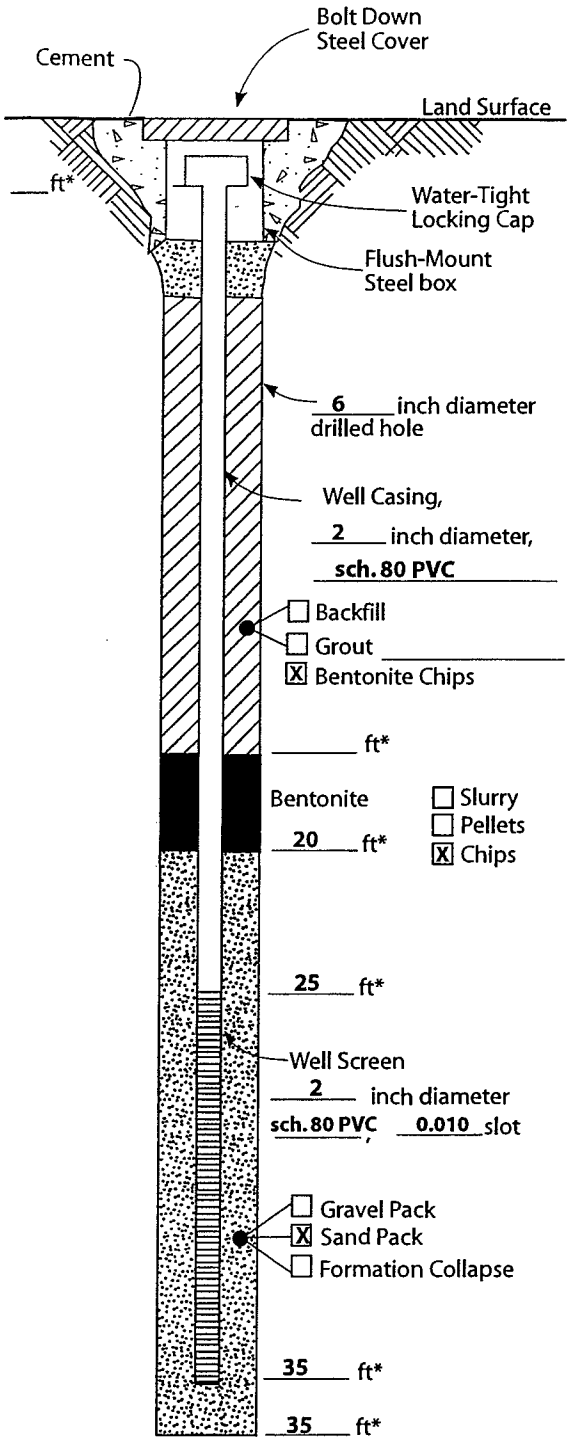
Well Purpose **Piezometer adjacent to GMEWA-16.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza11.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-12**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1047.33 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/1/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

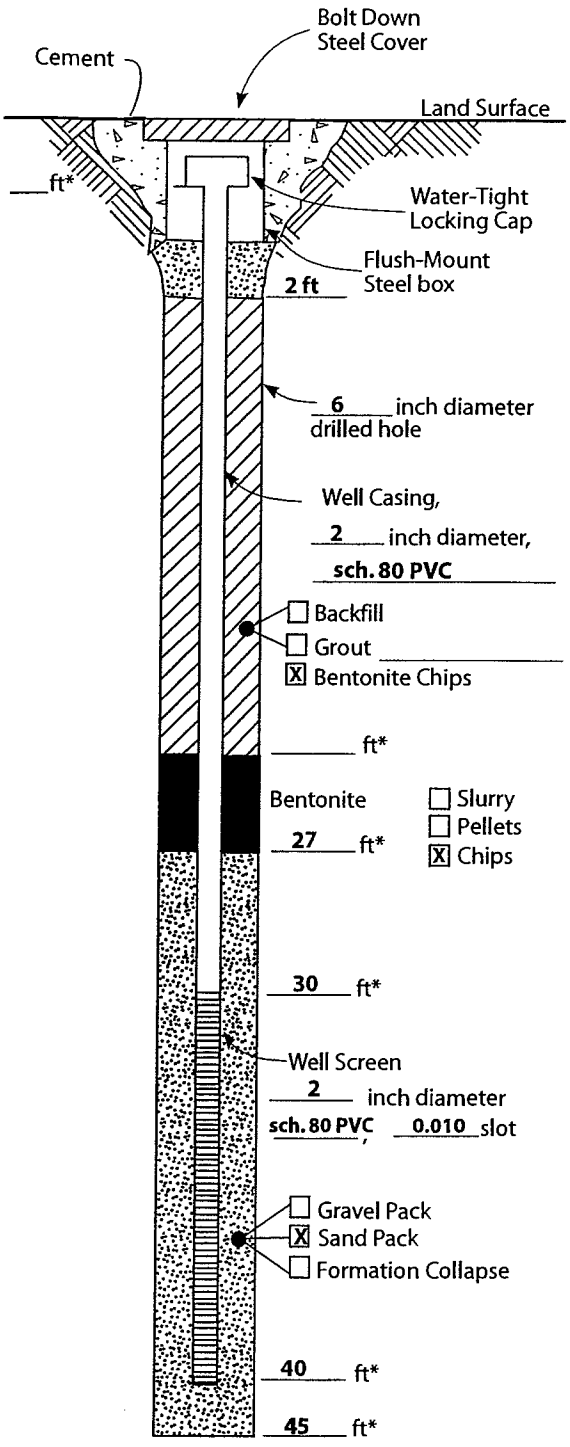
Well Purpose **Piezometer adjacent to GMEWA-15.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza12.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI001950023** Well **GMPZA-13**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1046.79 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/9/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

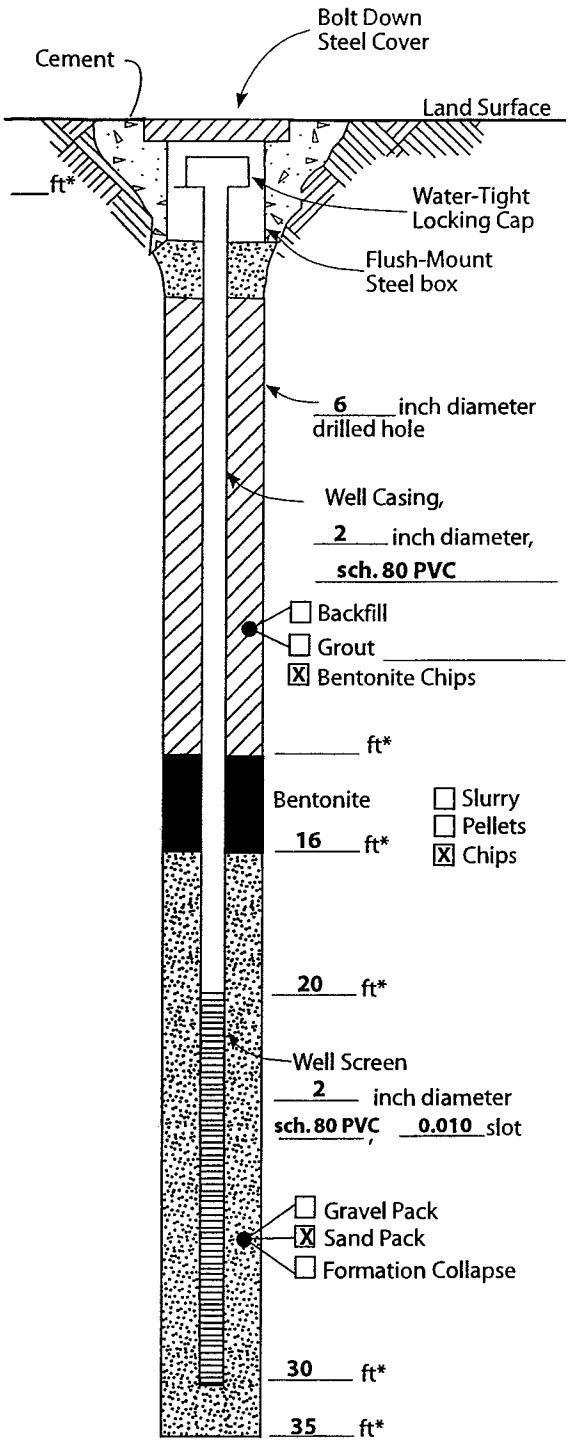
Well Purpose **Piezometer adjacent to GMEWA-14.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza13.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-14**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

and Datum **1044.98** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **5/9/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

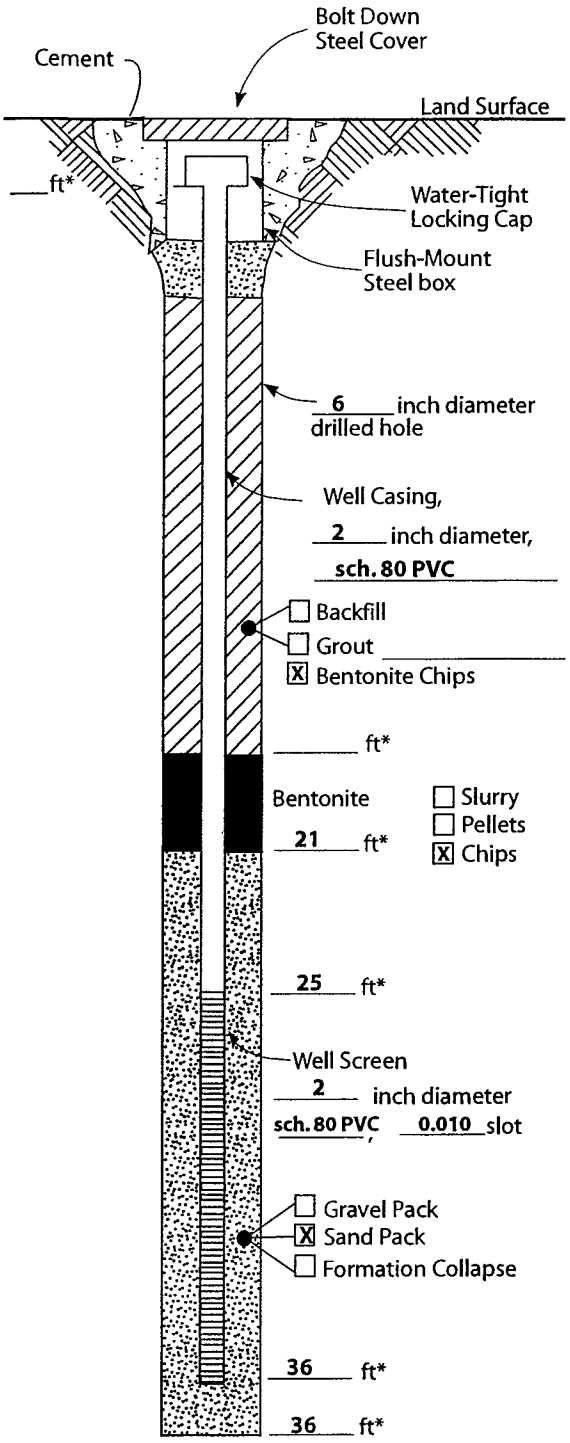
Well Purpose **Piezometer adjacent to GMEWA-13.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza14.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-15**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation
and Datum **1044.43** feet ☒ surveyed
Mean Sea Level ☐ estimated

Installation Date(s) **5/9/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

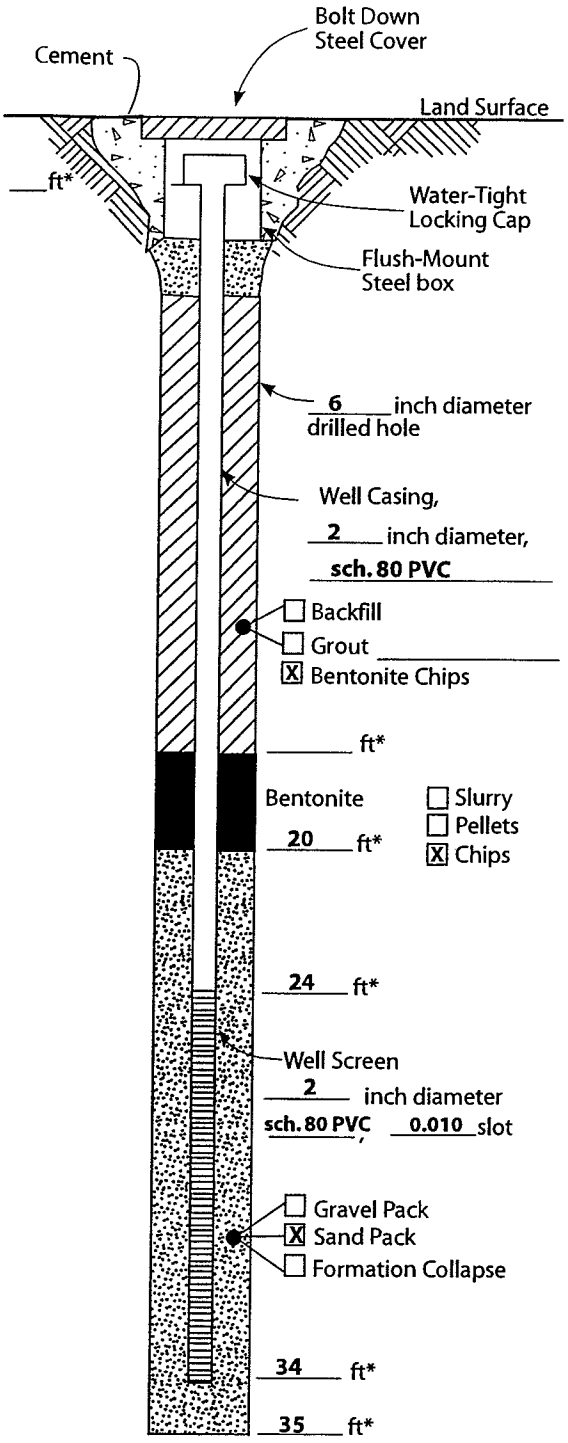
Well Purpose **Piezometer adjacent to GMEWA-12.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (3 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ 2005/graphics/logs/gmpza15.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-16**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1043.18 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/10/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

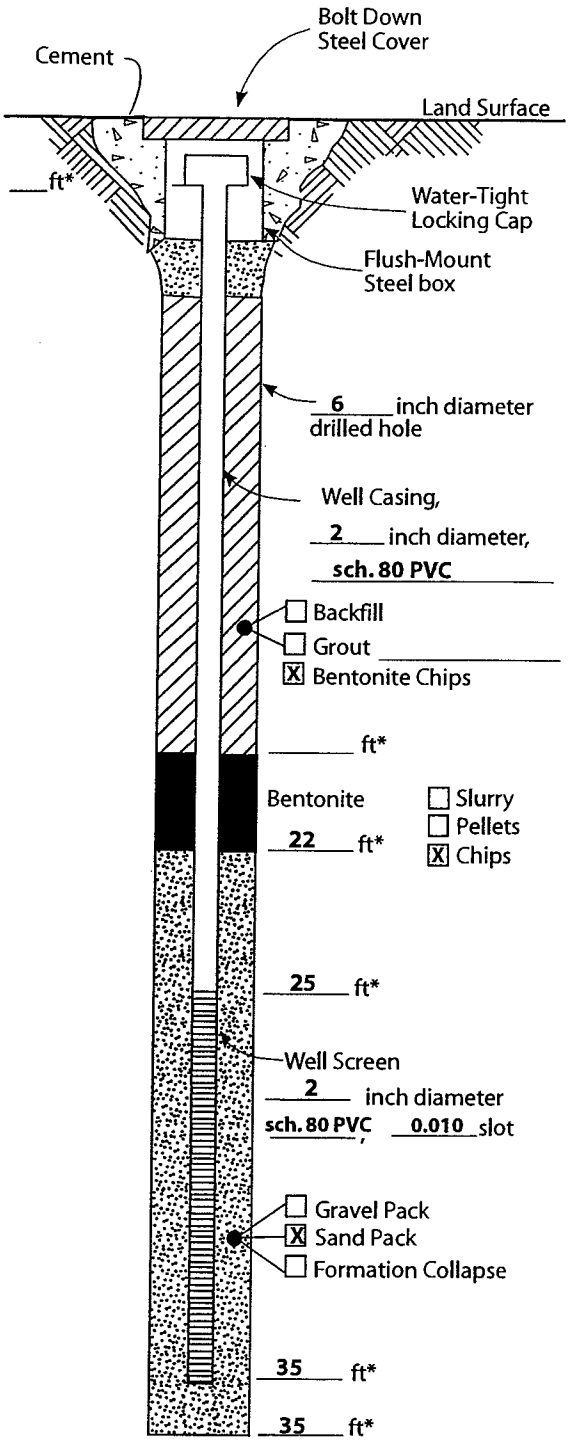
Well Purpose **Piezometer adjacent to GMEWA-11.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza16.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-17**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1041.49 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/10/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

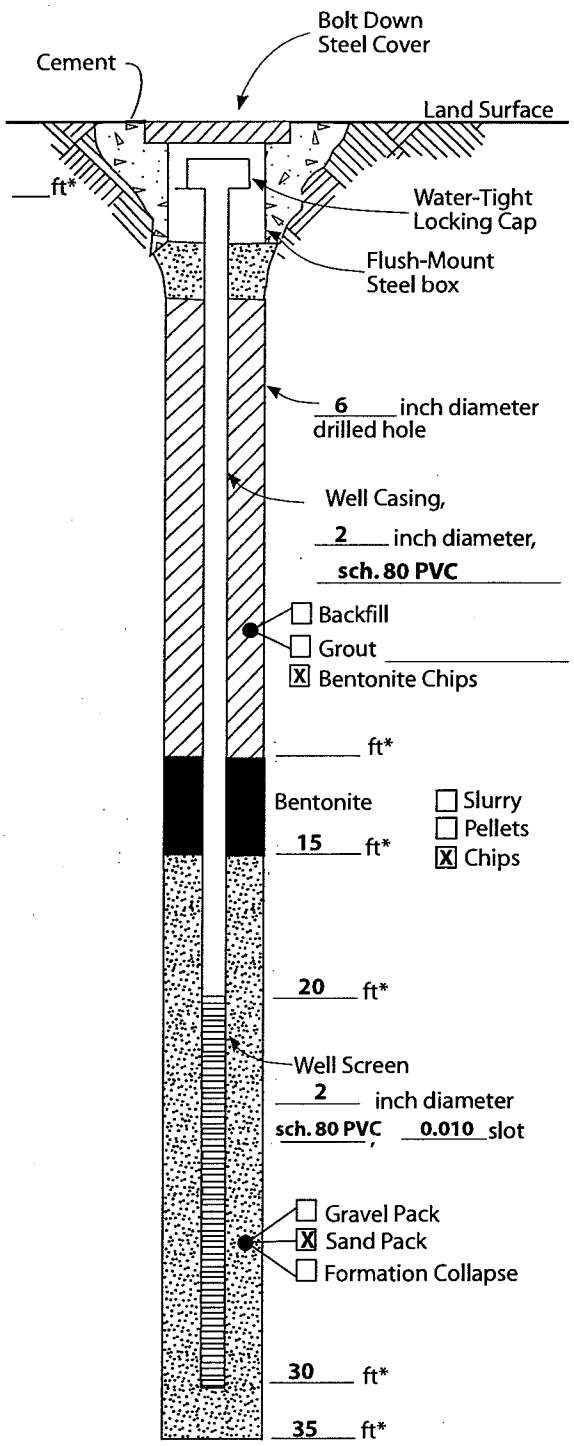
Well Purpose **Piezometer adjacent to GMEWA-10.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (3 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza17.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-18**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1040.53 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/10/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

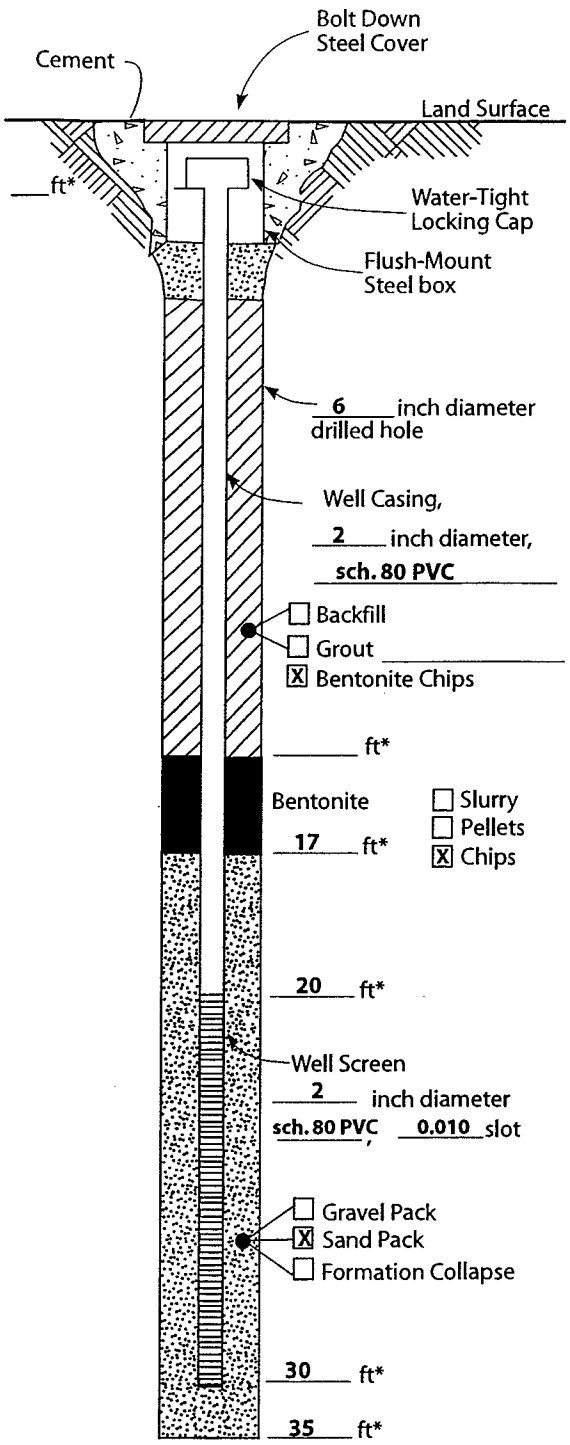
Well Purpose **Piezometer adjacent to GMEWA-9.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza18.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-19**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1041.94 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/11/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

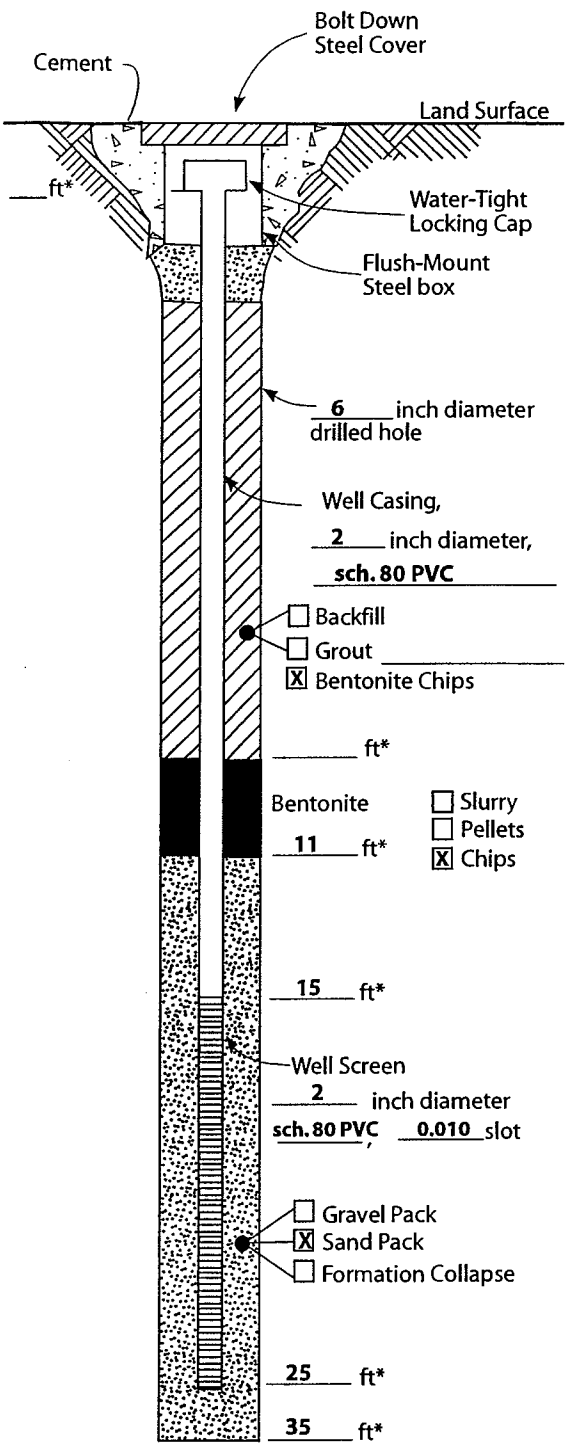
Well Purpose **Piezometer adjacent to GMEWA-8.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza19.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-20**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1042.52 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/11/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

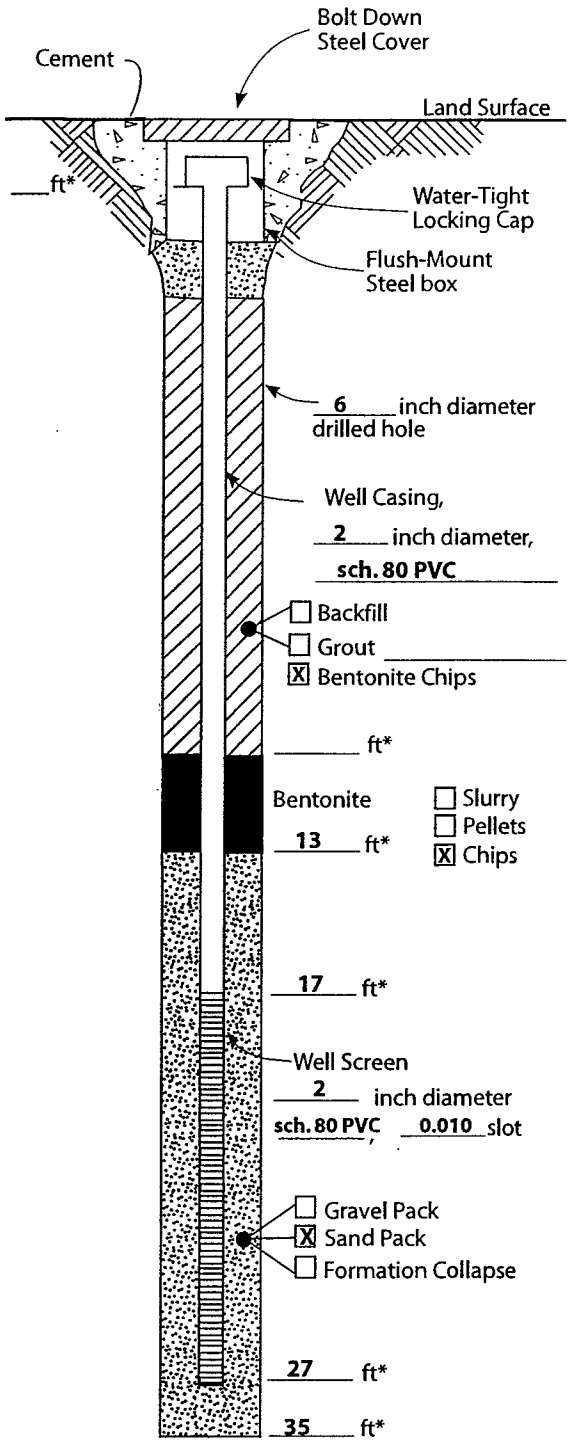
Well Purpose **Piezometer adjacent to GMEWA-7.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza20.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-21**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

and Datum **1043.69** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **5/11/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

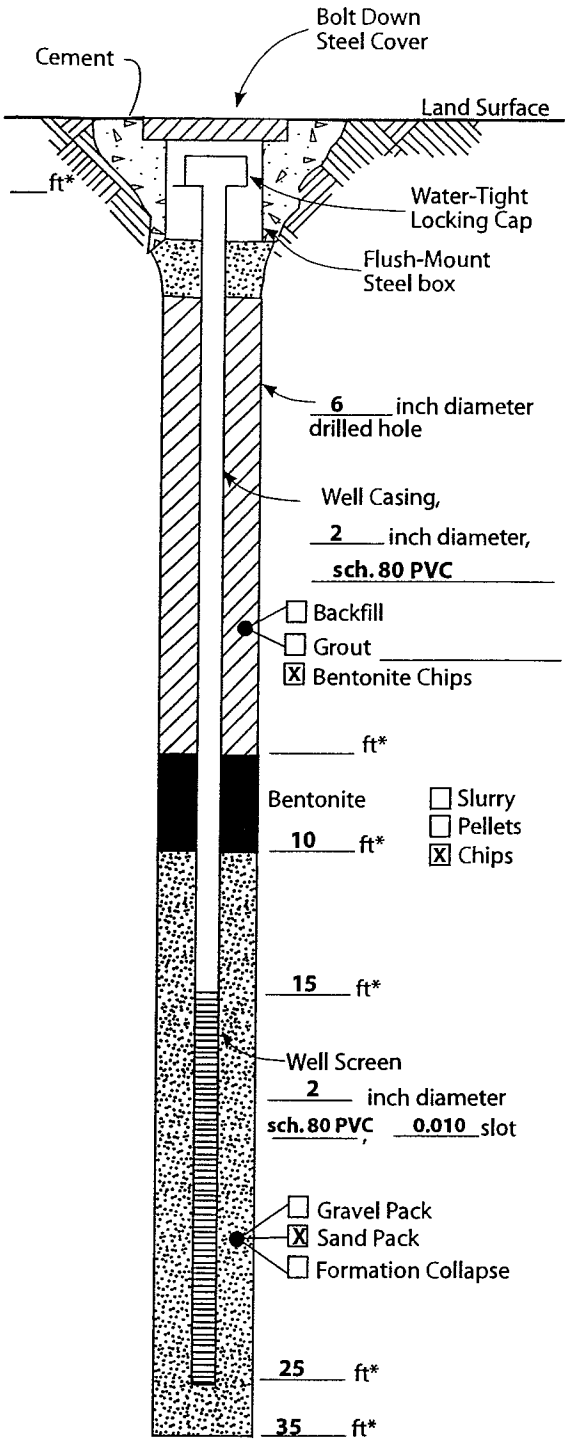
Well Purpose **Piezometer adjacent to GMEWA-6.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza21.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-22**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

and Datum **1042.51** feet ☒ surveyed

Mean Sea Level ☐ estimated

Installation Date(s) **5/2/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

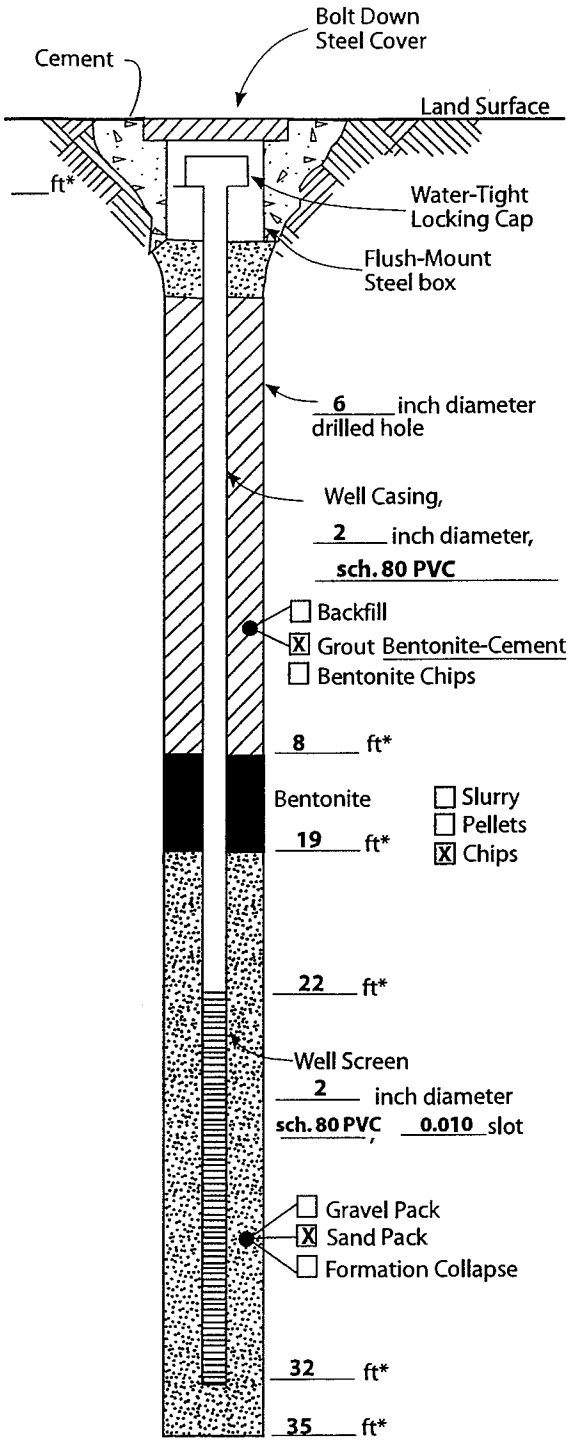
Well Purpose **Piezometer adjacent to GMEWA-5.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Benonite Seal = Baroid Holeplug 3/8" chips (3 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza22.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-23**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.39 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/28/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

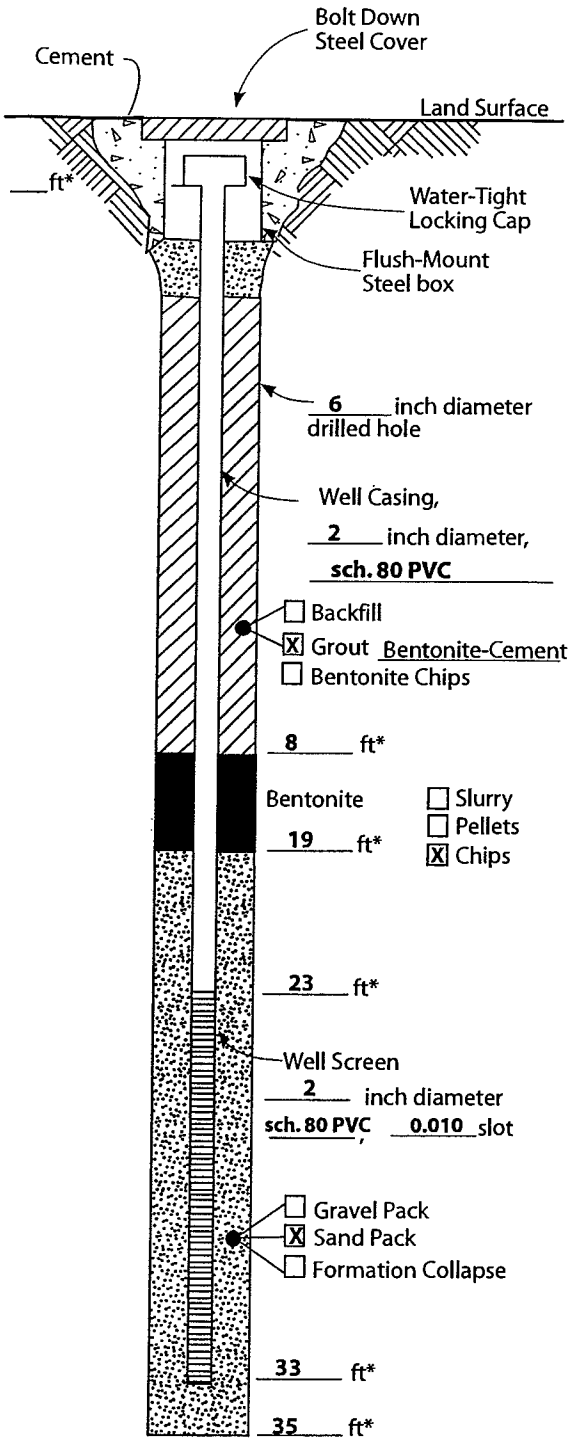
Well Purpose **Downgradient piezometer for GMEWA-26.**

Remarks **Grout Mixture: 3-94 lb bags Portland Cement, 1-50 lb. bag Baroid Aquagel Goldseal, approximately 30 gallons water, used 1 batch, Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza23.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-24**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.02 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/28/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

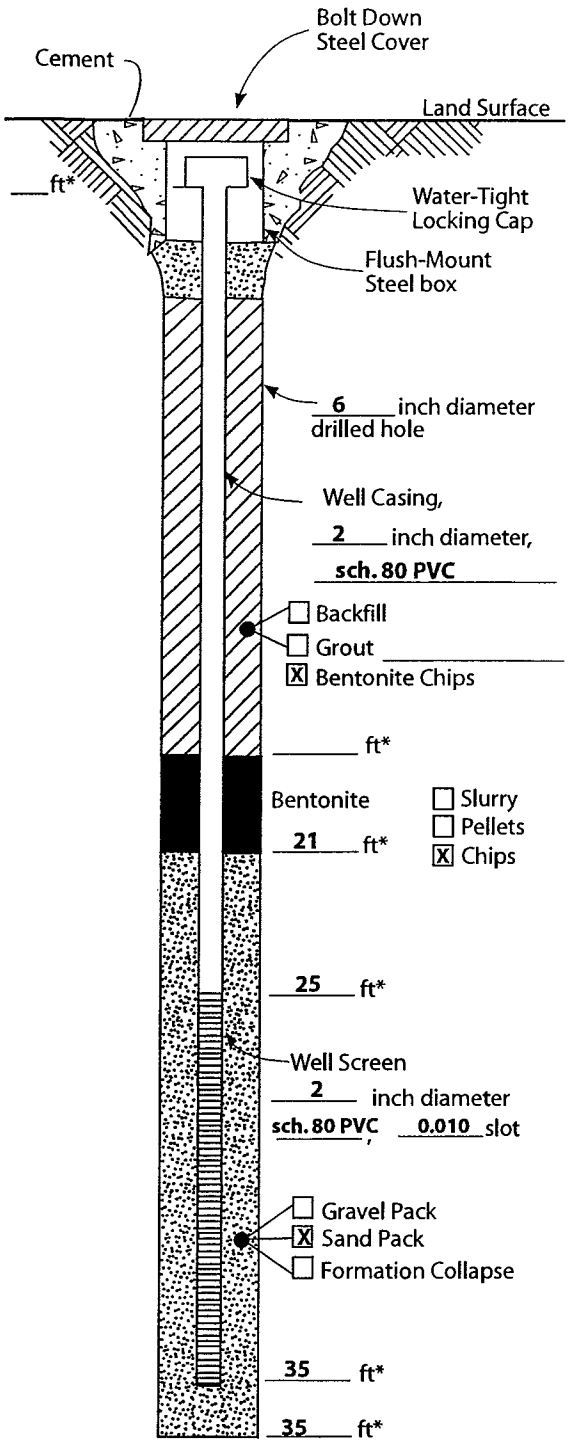
Well Purpose **Downgradiant piezometer for GMEWA-25.**

Remarks **Grout Mixture: 3-94 lb bags Portland Cement, 1-50 lb. bag Baroid Aquagel Goldseal, approximately 30 gallons water, used <1 batch, Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (2 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza24.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-25**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.34 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/2/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Downgradient piezometer for GMEWA-24.**

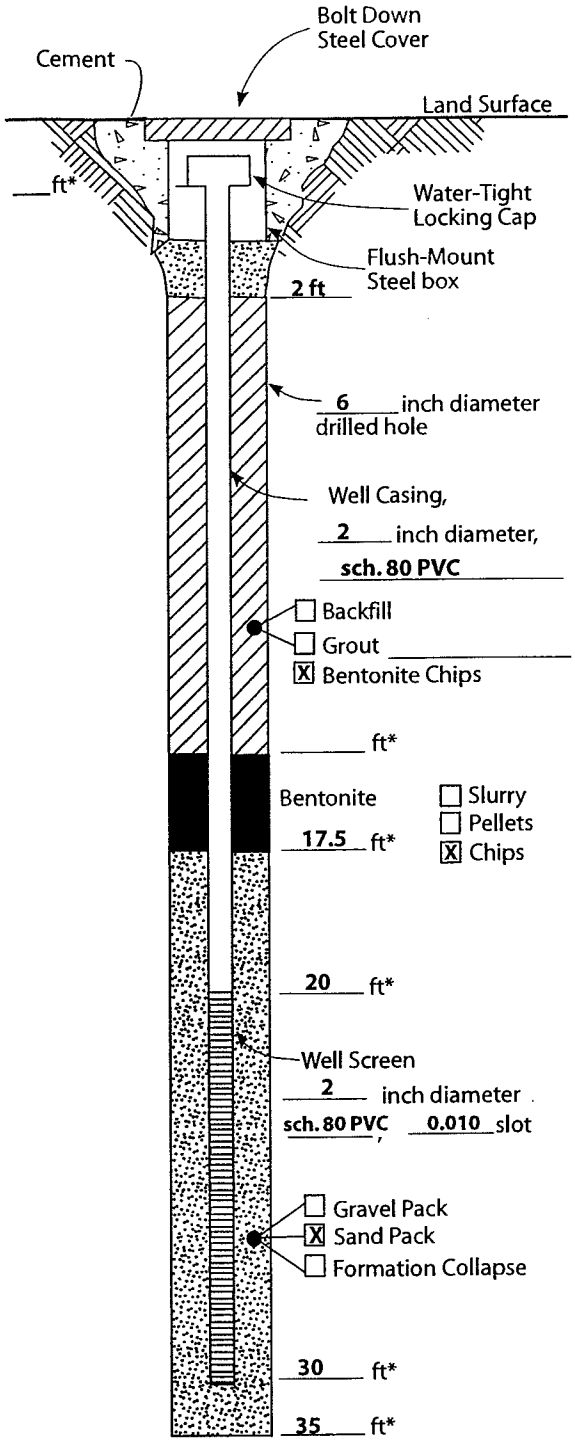
Remarks **Filter Pack Sand = Red Flint #20 (4 bags)**

Bentonite Seal = Baroid Holeplug 3/8" chips (3 bags).

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza25.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-26**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.35 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/3/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Piezometer adjacent to GMEWA-23.**

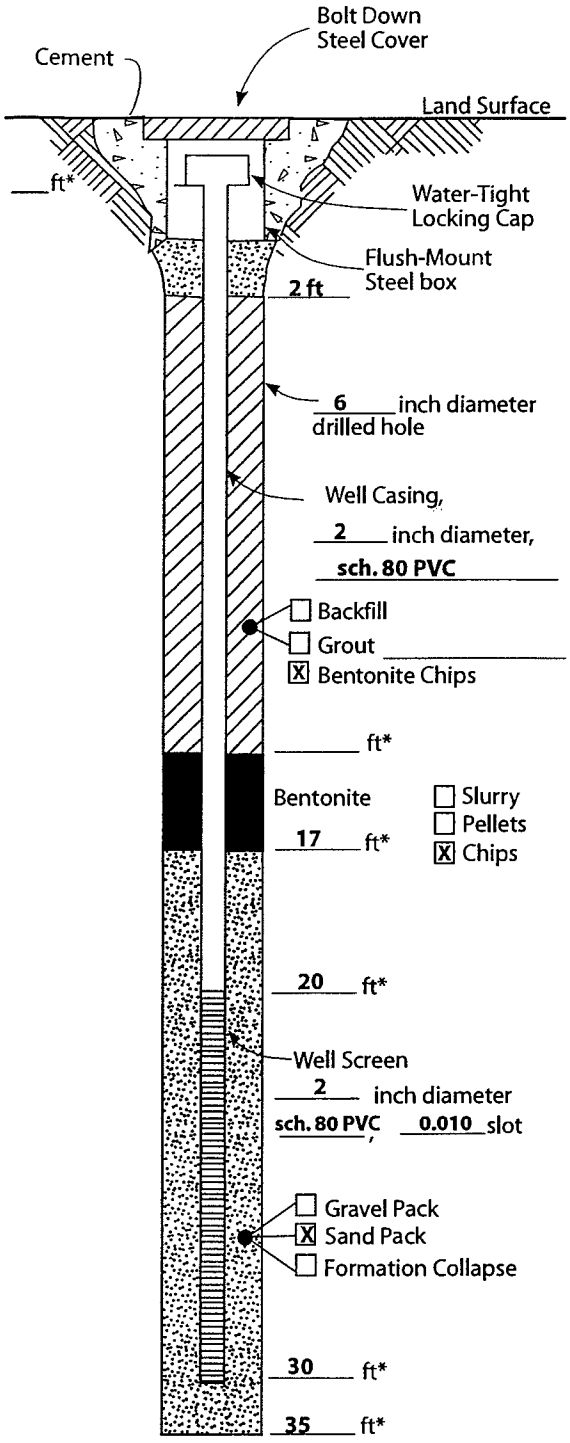
Remarks **Filter Pack Sand = Red Flint #20 (3 bags)**

Bentonite Seal = Baroid Holeplug 3/8" chips (5.5 bags).

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza26.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-27**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.53 feet [X] surveyed [ ] estimated

Datum **Mean Sea Level**

Installation Date(s) **5/3/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

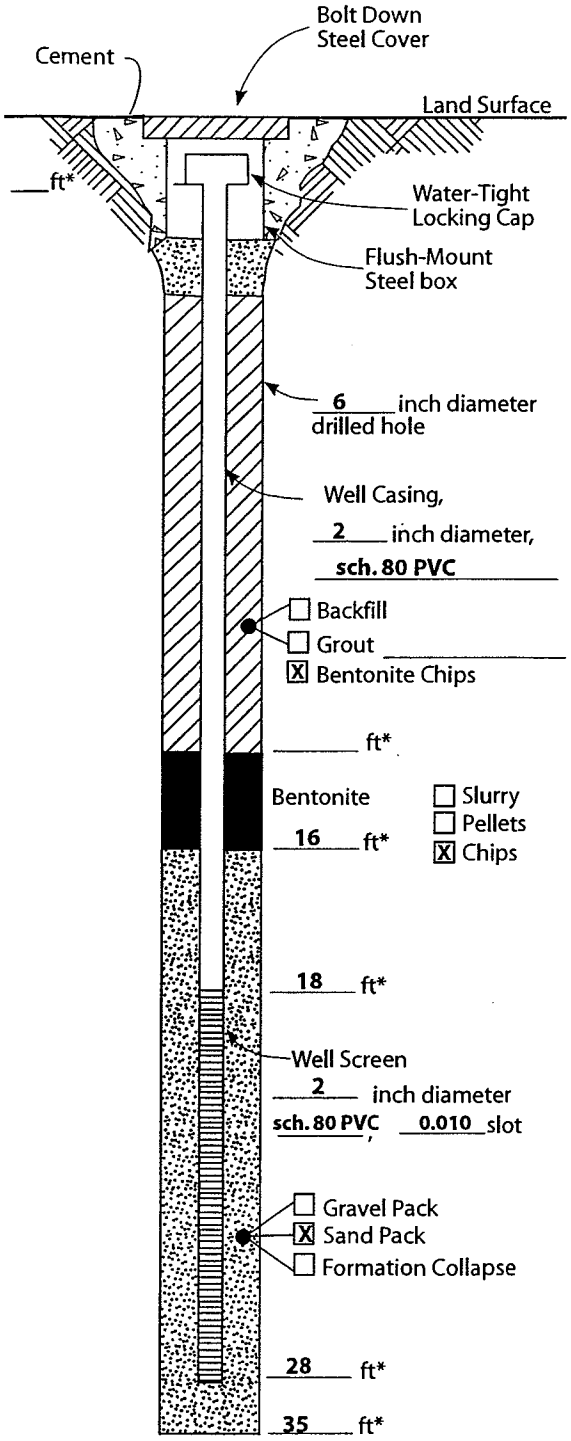
Well Purpose **Downgradient piezometer for GMEWA-22.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (3.5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza27.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-28**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.02 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/3/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

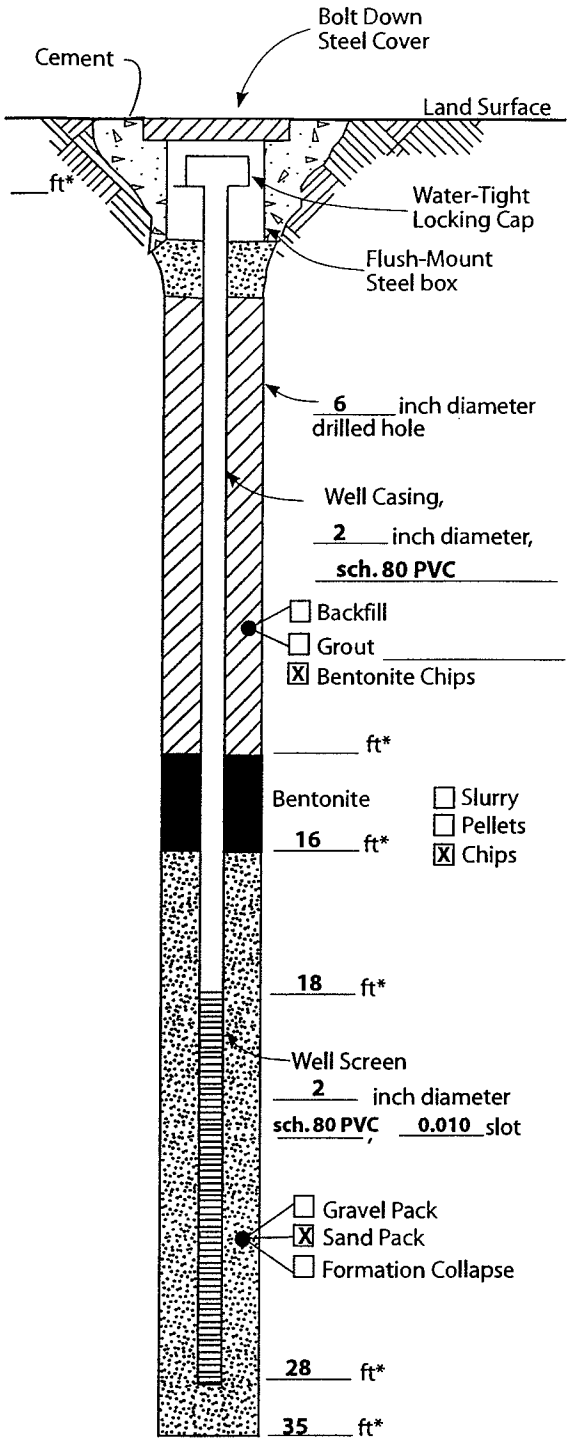
Well Purpose **Downgradient piezometer for GMEWA-21.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza28.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-29**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1049.23 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/3/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

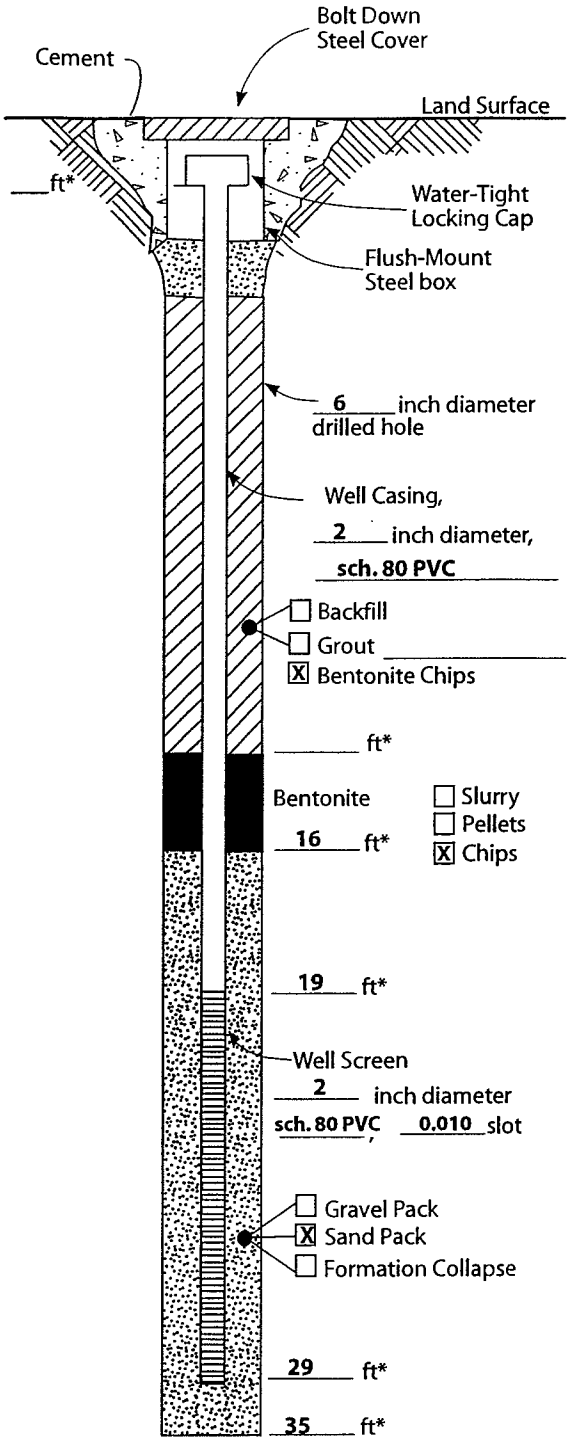
Well Purpose **Downgradient piezometer for GMEWA-20.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza29.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-30**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1048.74 feet ☒ surveyed

Datum **Mean Sea Level** ☐ estimated

Installation Date(s) **5/4/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

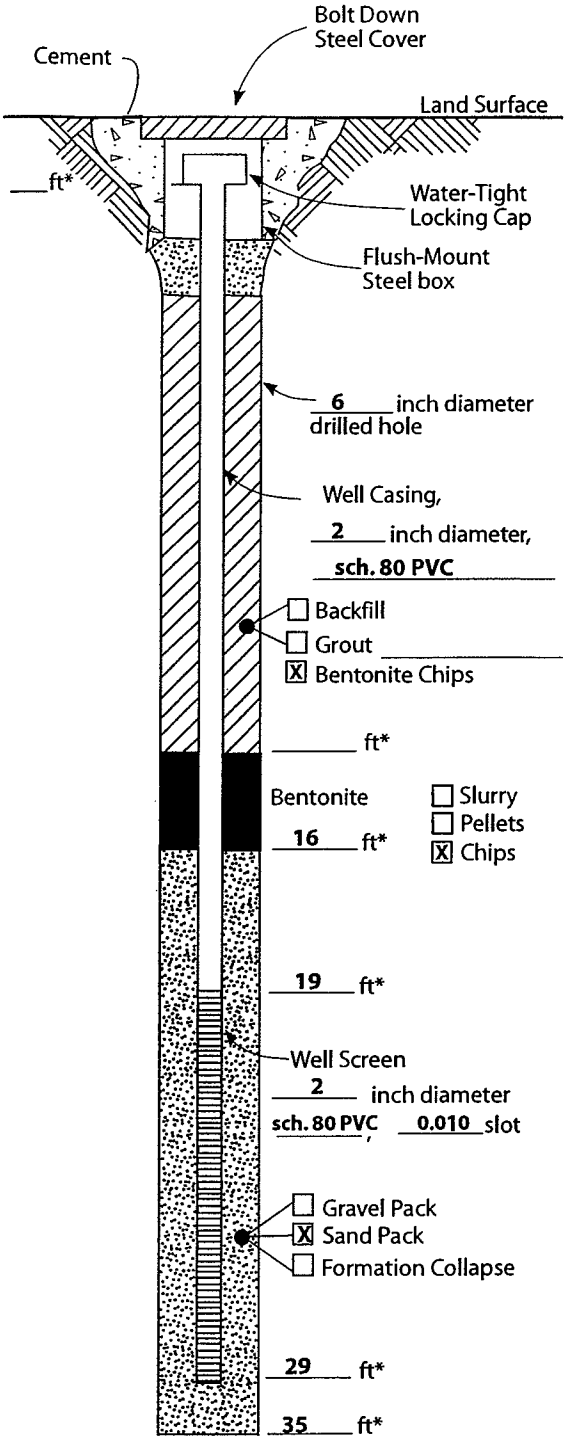
Well Purpose **Downgradient piezometer for GMEWA-19.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza30.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-31**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1048.59 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/4/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

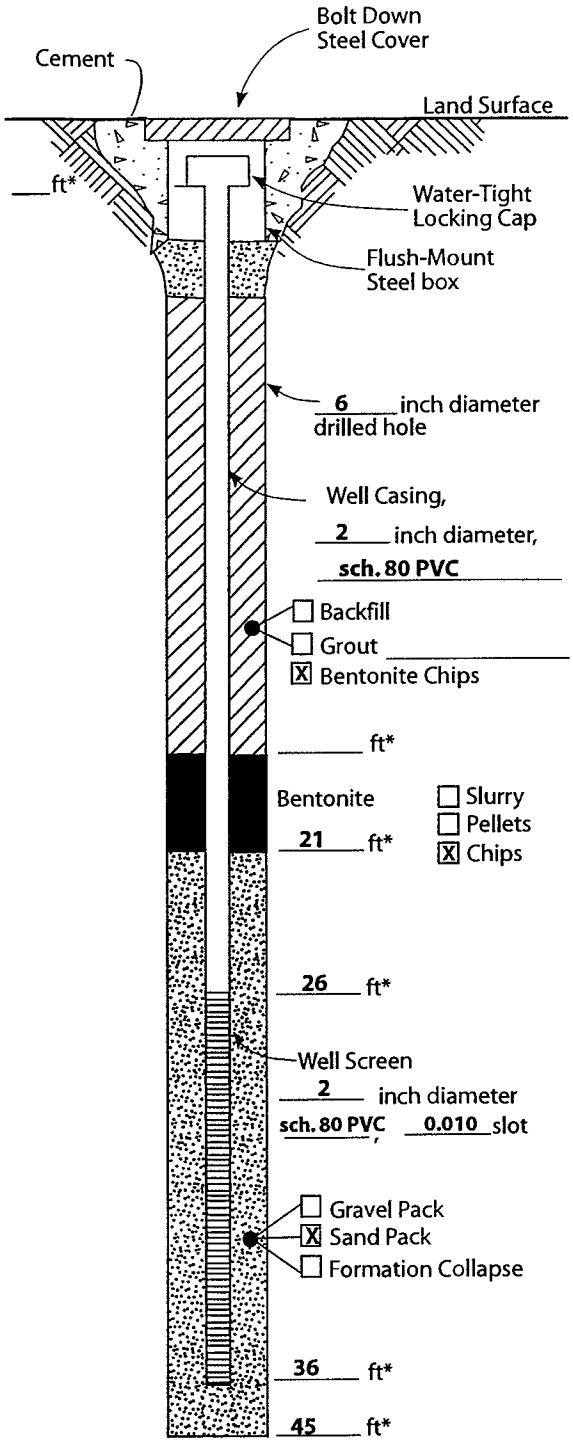
Well Purpose **Downgradient piezometer for GMEWA-18.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza31.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-32**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1048.59 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/10/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

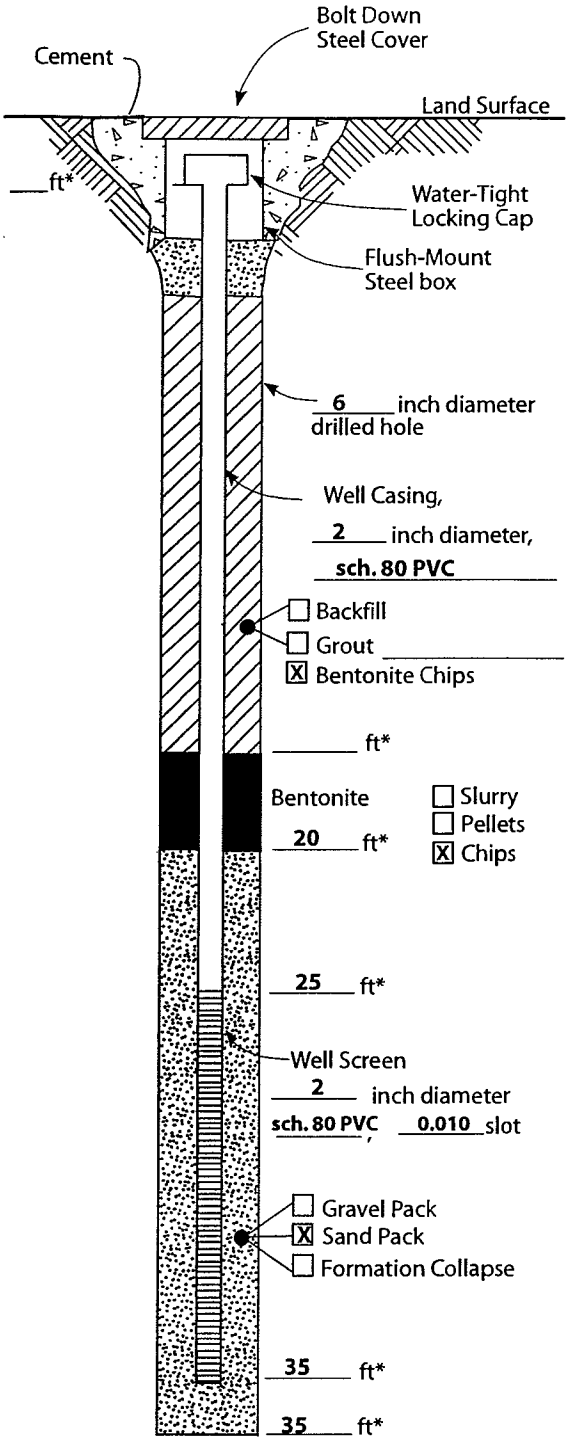
Well Purpose **Downgradient piezometer for GMEWA-17.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza32.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-33**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1048.06 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/10/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

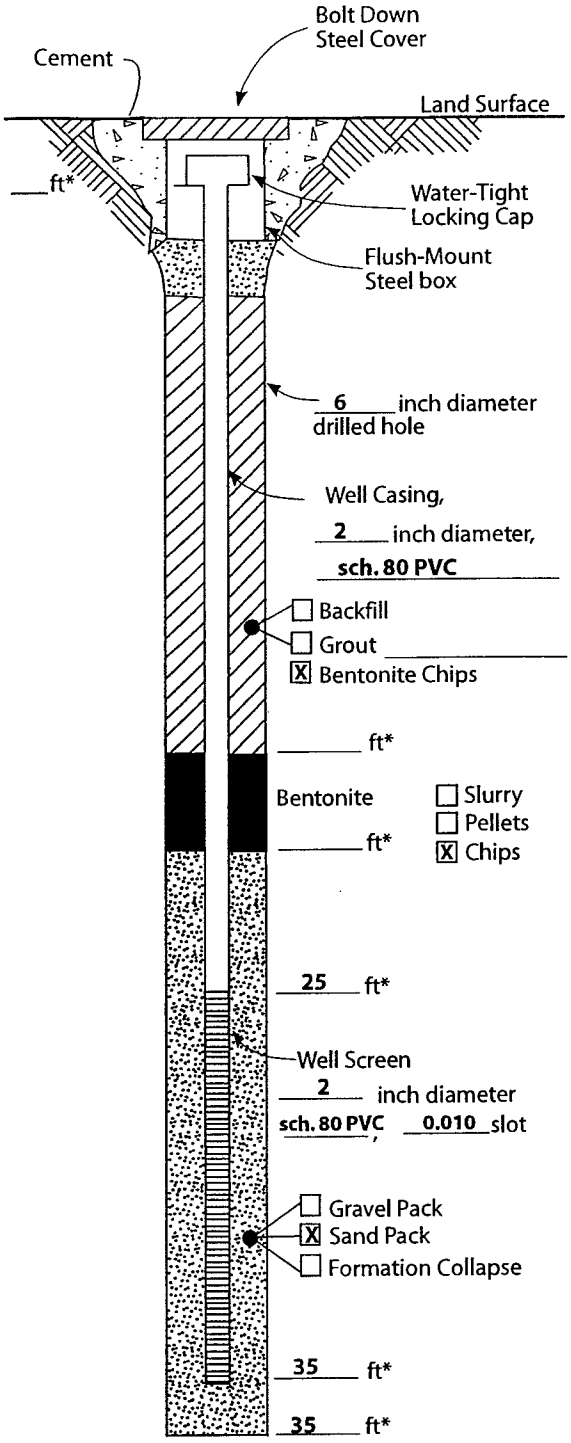
Well Purpose **Downgradient piezometer for GMEWA-16.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4.5 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza33.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-34**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1047.76 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/30/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

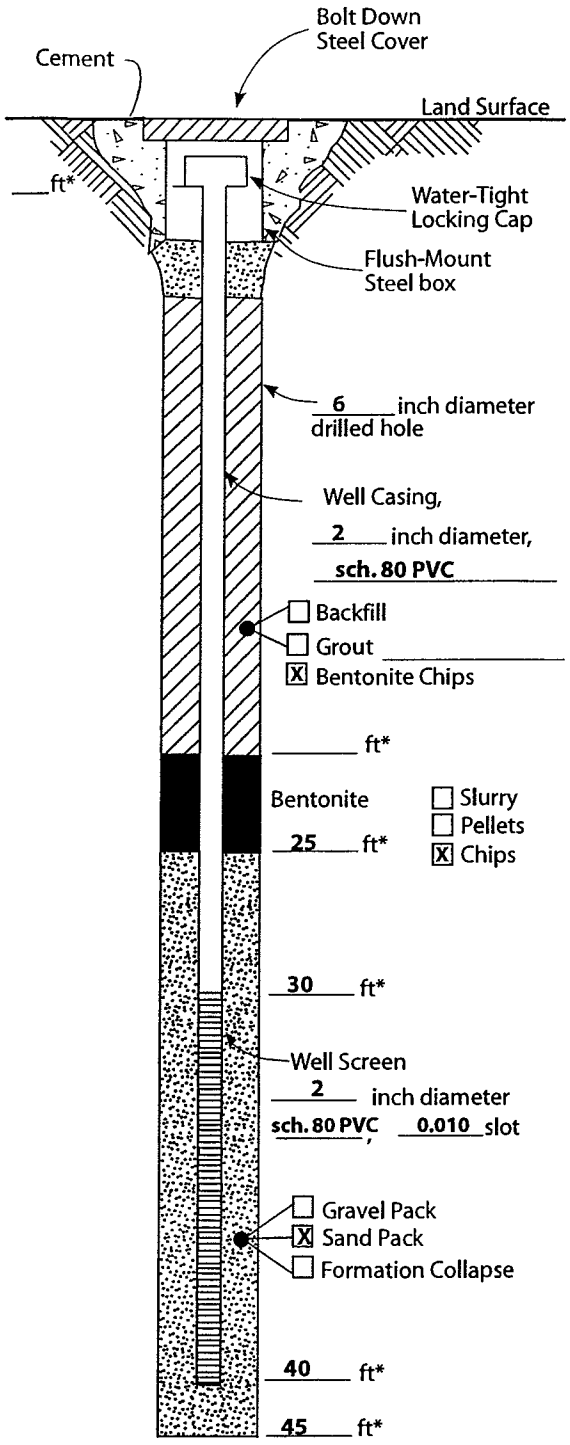
Well Purpose **Downgradient piezometer for GMEWA-15.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza34.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-35**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1046.68 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/1/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

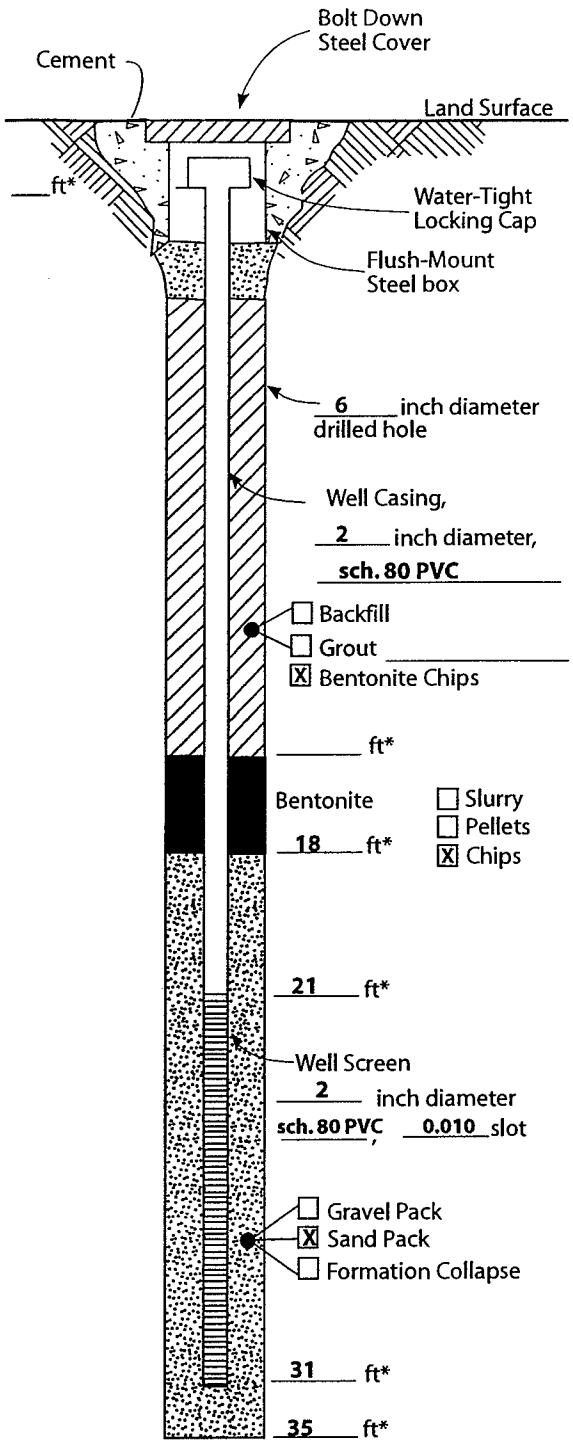
Well Purpose **Downgradient piezometer for GMEWA-14.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (6 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza35.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-36**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1045.56 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/1/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

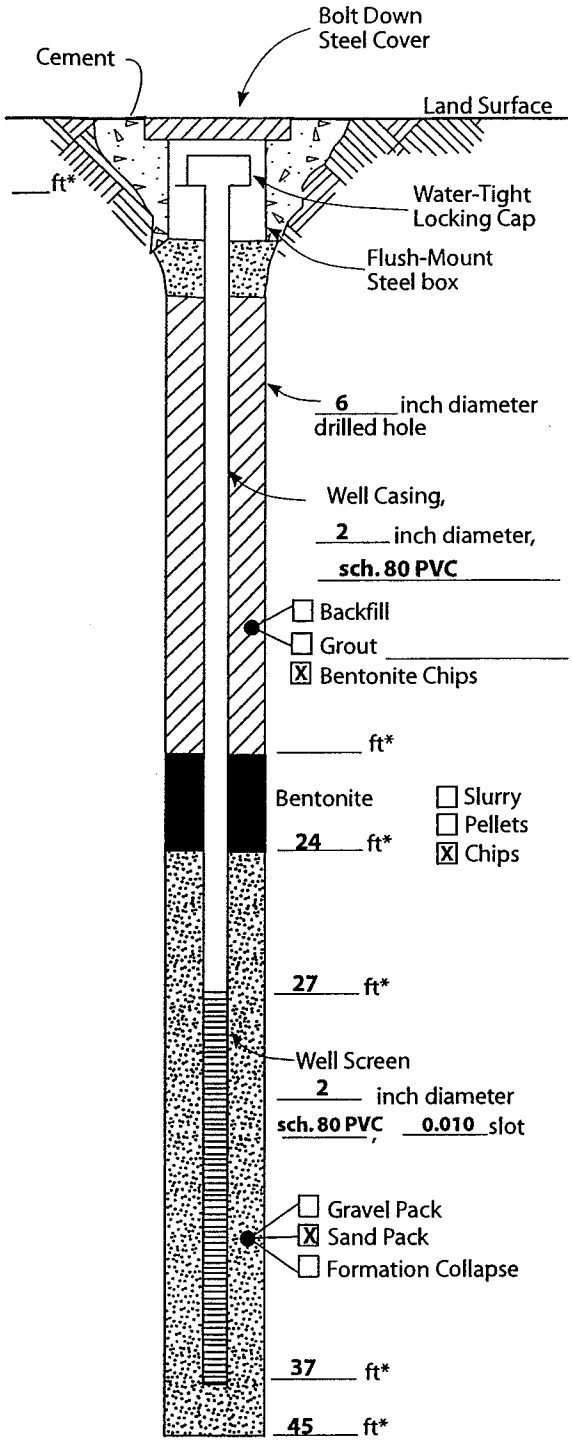
Well Purpose **Downgradient piezometer for GMEWA-13.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza36.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-37**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1045.83 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/1/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

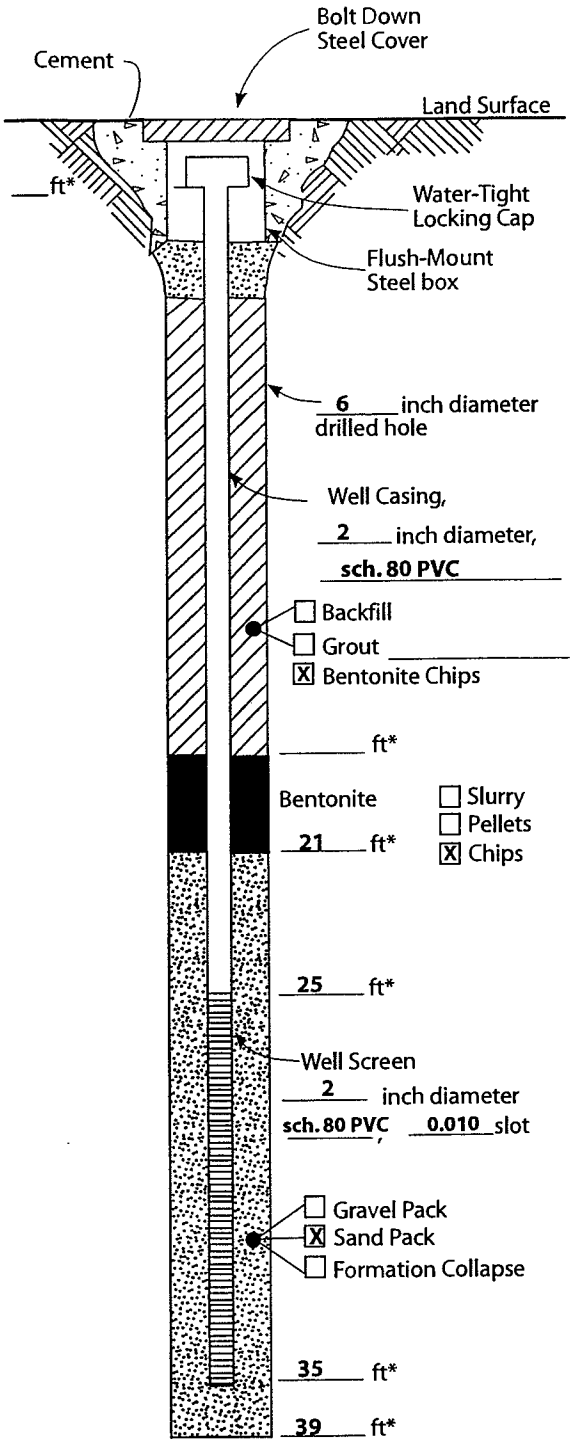
Well Purpose **Downgradient piezometer for GMEWA-12.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza37.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-38**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1044.22 feet [X] surveyed [ ] estimated

Datum **Mean Sea Level**

Installation Date(s) **5/2/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

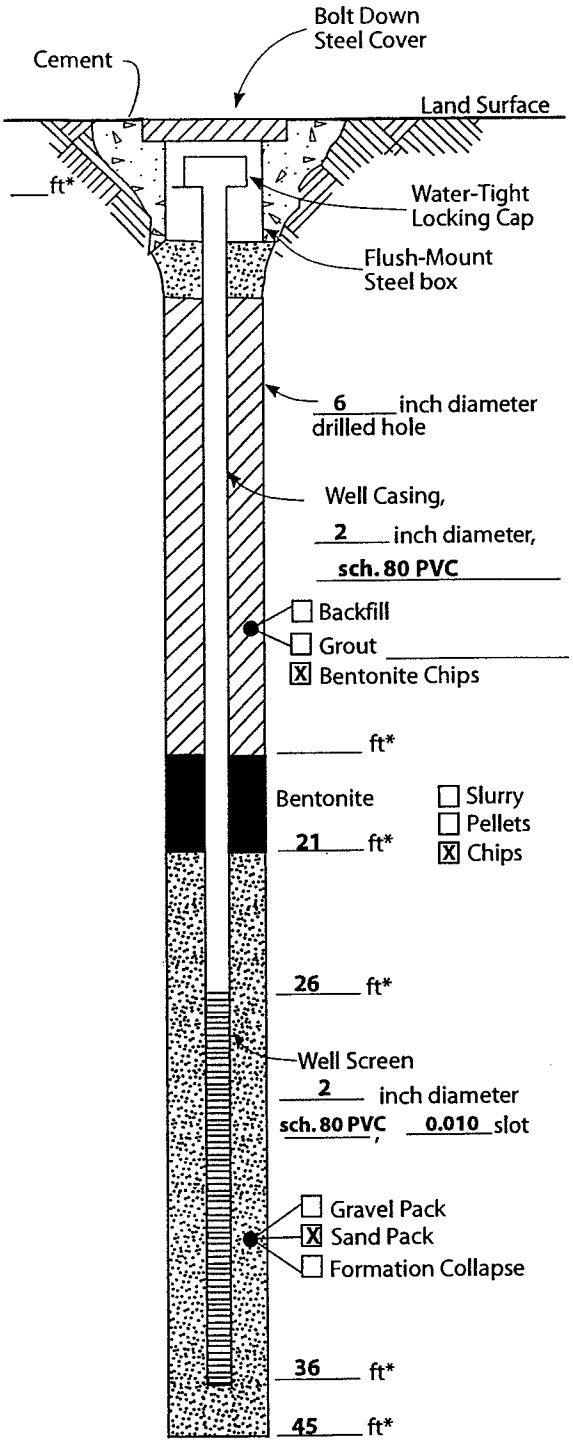
Well Purpose **Downgradient piezometer for GMEWA-11.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza38.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-39**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1042.61 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/2/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

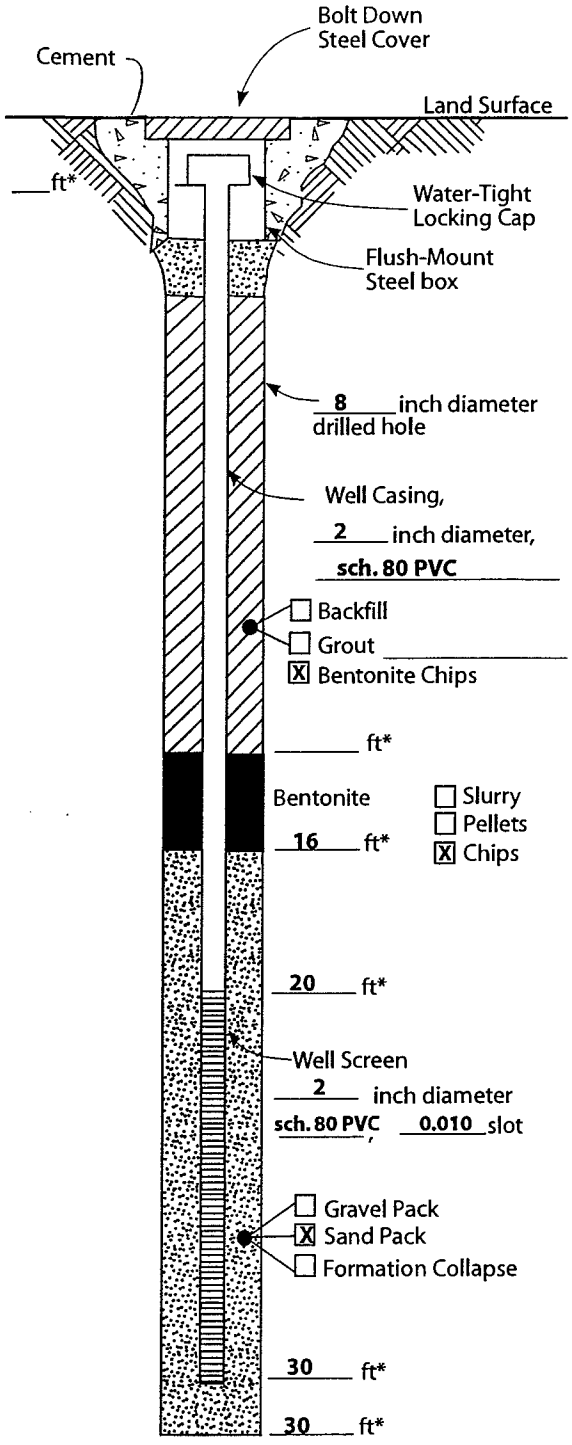
Well Purpose **Downgradient piezometer for GMEWA-10.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (5 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza39.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-40**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1041.42 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/13/05**

Drilling Method **Hollow Stem Auger**

Drilling Contractor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

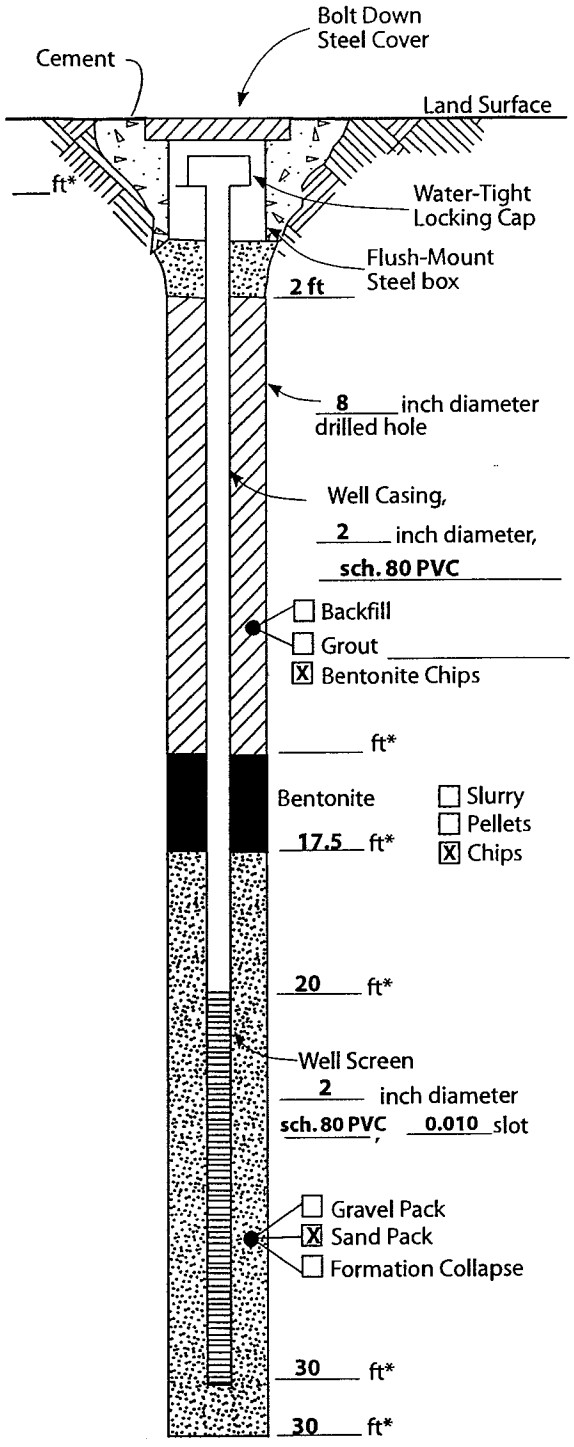
Well Purpose **Downgradient piezometer for GMEWA-9.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (3 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza40.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-41**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1039.36 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/12/05**

Drilling Method **Hollow Stem Auger**

Drilling Contractor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

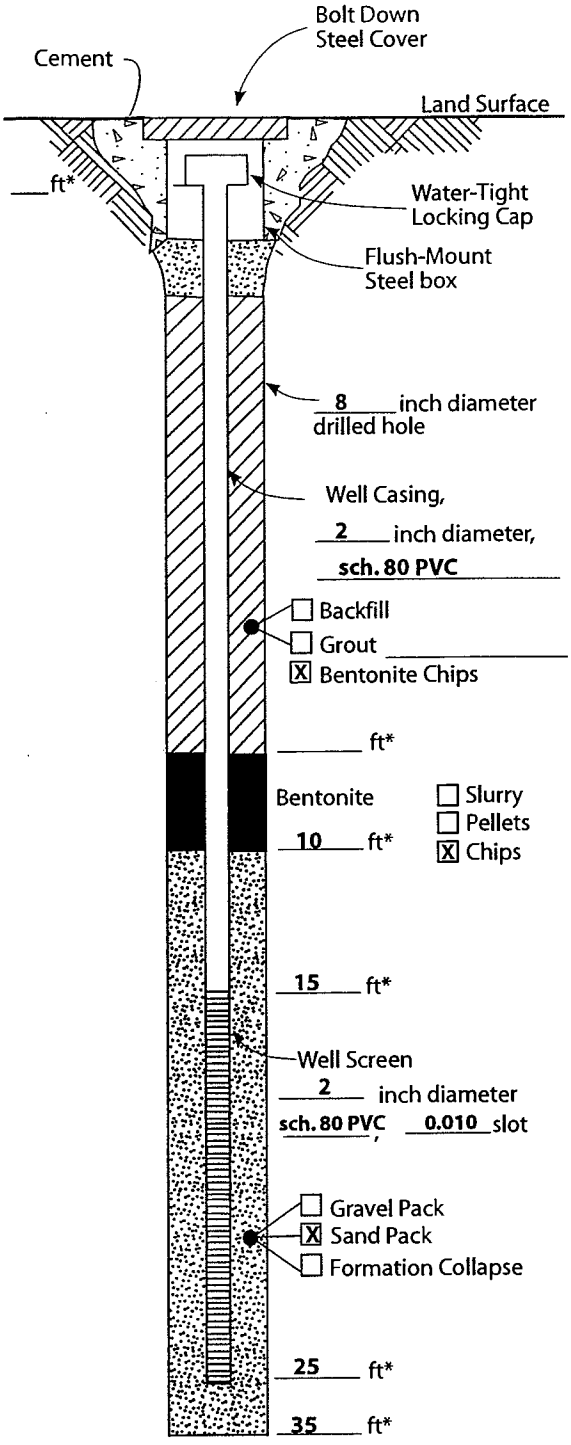
Well Purpose **Downgradient piezometer for GMEWA-8.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (3 bags).**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpza41.ai

Well Construction Log
(Flush Mounted Well)



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZA-42**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1042.08 feet [X] surveyed [ ] estimated

Datum **Mean Sea Level**

Installation Date(s) **5/2/05**

Drilling Method **Hollow Stem Auger**

Drilling Contractor **Boart Longyear**

Drilling Fluid **None**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

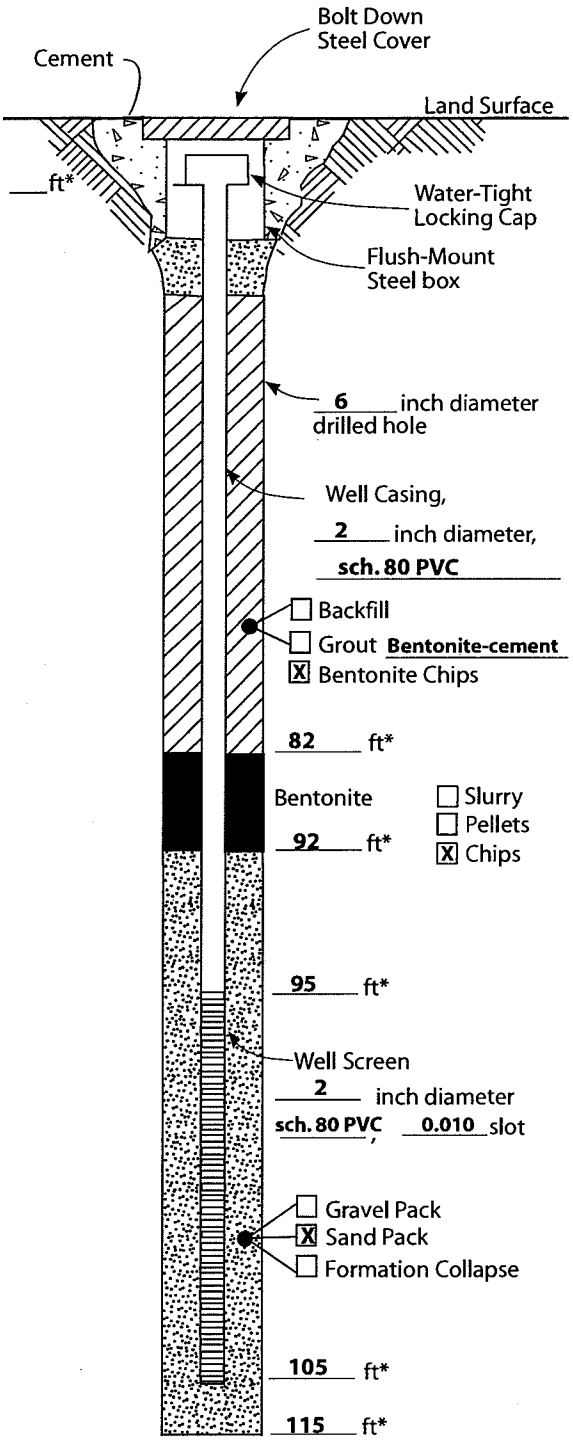
Specific Capacity _____ gpm/ft

Well Purpose **Downgradient piezometer for GMEWA-5, GMEWA-6.**

Remarks **Filter Pack Sand = Red Flint #20 (3 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (4 bags).**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpza42.ai



Measuring Point is Top of Well Casing Unless Otherwise Notes

*Depth Below Land Surface

Well Construction Log
(Flush Mounted Well)

Project **Ford/Kingsford - WI0010950023** Well **GMPZB-1**

Town/City **Kingsford**

County **Dickinson**

Permit No. **NA**

Land-Surface Elevation

1054.47 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **5/12/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Downgradient piezometer for GMEWB-1.**

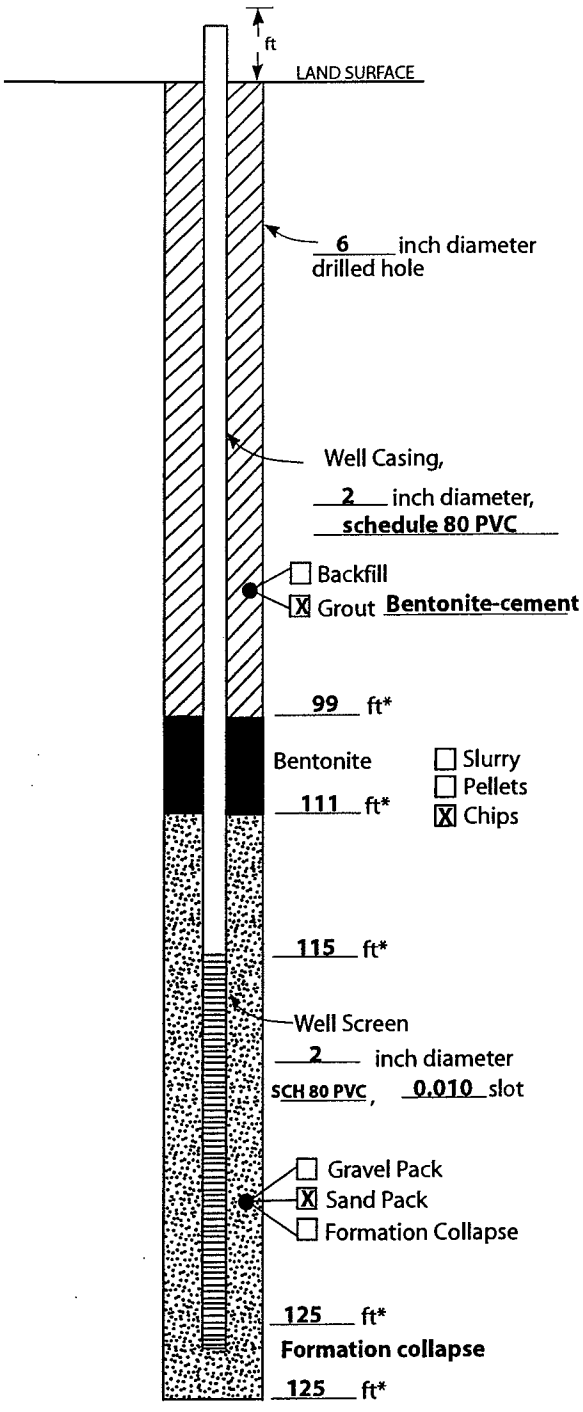
Remarks **Filter Pack Sand = Red Flint #20 (3.5 bags) Bentonite Seal = Baroid Holeplug 3/8" chips (2 bags). Added additional 6 bags bentonite to top off well after grout settled. Grout mix is 3-94 lb. bags Portland cement 1-50 lb. bag Baroid Aquagel, approximately 30 gallons water per batch, used 2 batches.**

Prepared by **Jill Flater**

ford/wi0637/CJ2005/graphics/logs/gmpzb1.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-1**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1045.49 feet [X] surveyed [ ] estimated

Datum **Mean Sea Level**

Installation Date(s) **3/16/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

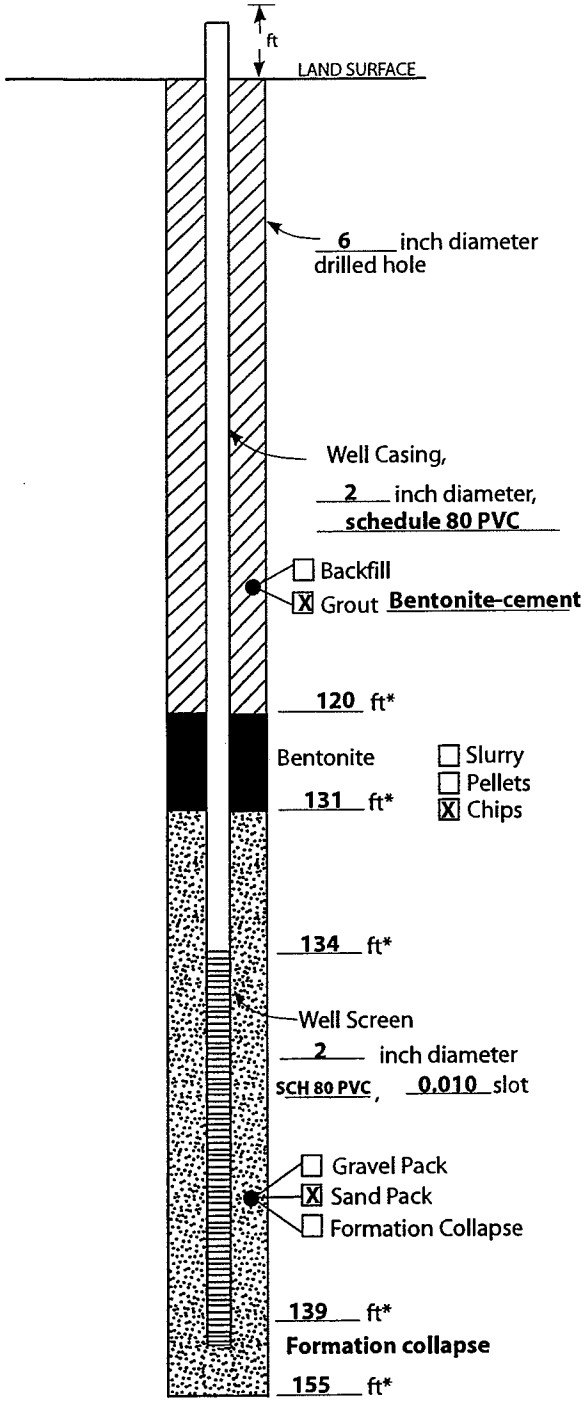
Well Purpose **Piezometer for Extraction Wells GMEWC-1, GMEWC-1A**

Remarks **Filter pack is red flint #40, Bentonite is Baroid 3/8" Holeplug chips, Grout mixture is 3 - 94 lb bags Portland cement, 1 - 50 lb bag Baroid Aquagel Gold Seal, approximately 30 gallons water**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950023 Well GMPZC-2

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1043.68 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 3/16/05 to 3/17/05

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose Piezometer for GMEWC-2A, GMEWC-2

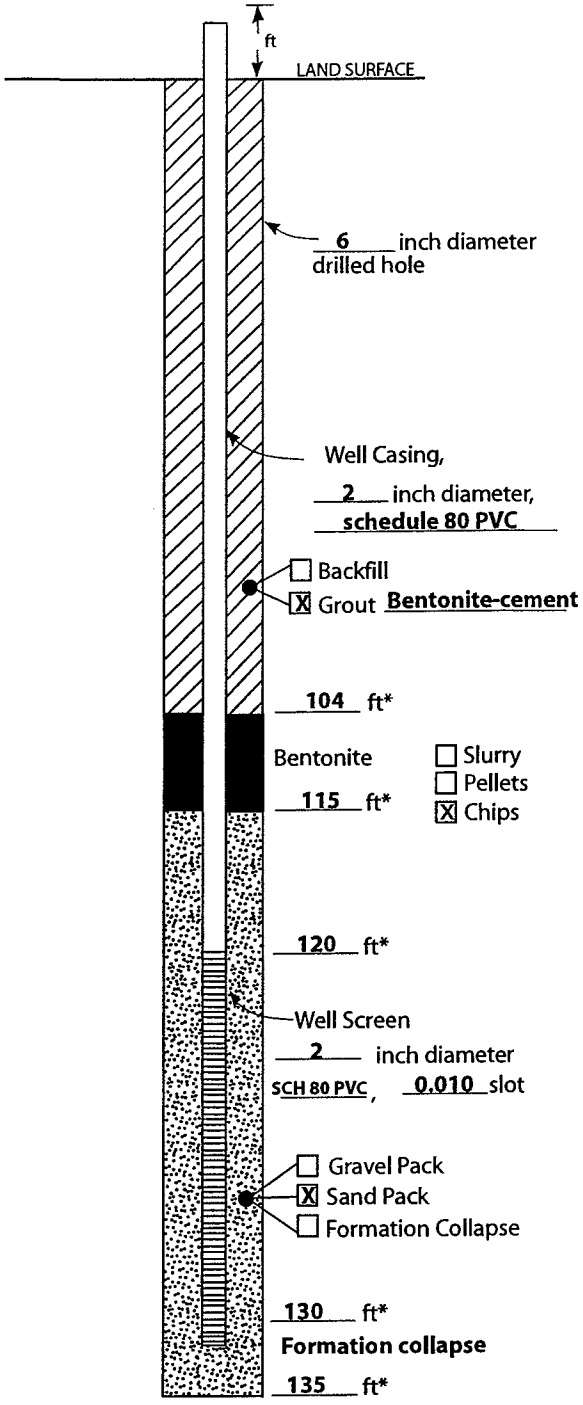
Remarks Filter pack sand is red flint #40, Bentonite is Baroid 3/8" Holeplug, Grout mixture = 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aquagel Gold Seal, approximately 30 gallons water

Prepared by Andy Mumpy

ford/wi0637/2005/graphic/logs/gmpzc2.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-3**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1046.6 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **3/17/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

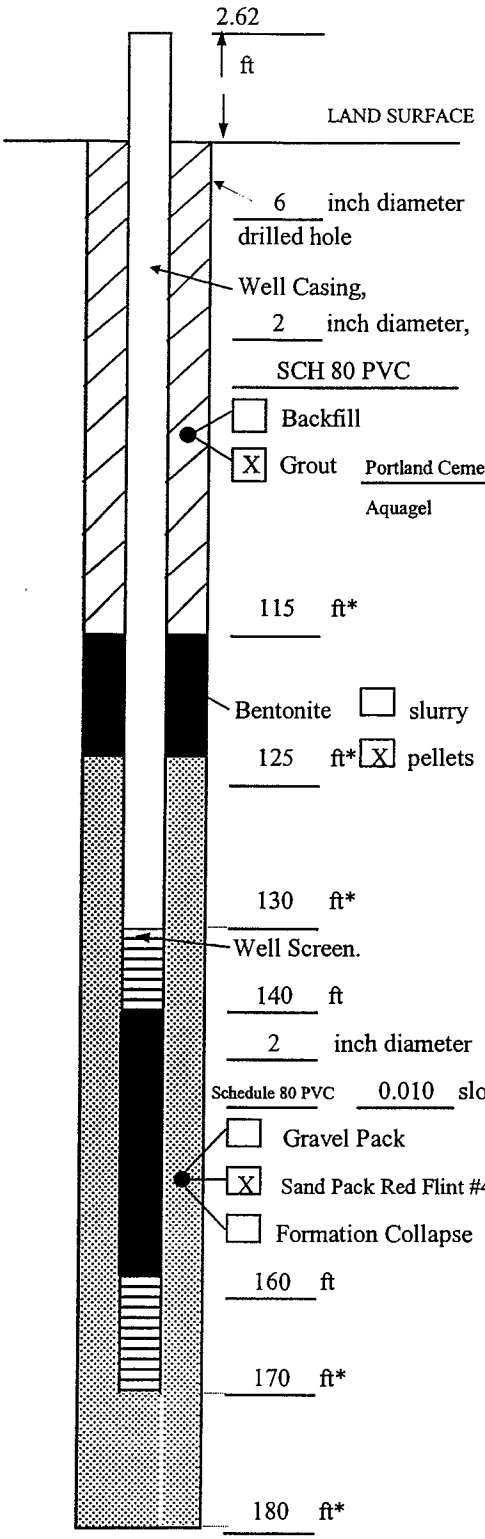
Well Purpose **Piezometer for GMEWC-3**

Remarks **Filter pack sand red flint #40, Bentonite Baroid Holeplug 3/8" chips, grout mixture: 3-94 lb bags Portland cement, 1 bag Baroid Aquagel Gold Seal, approximately 30 gallons water.**

Prepared by **Andy Mumpy**

ARCADIS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface (bls)

Project Ford/Kingsford WI001025.0033 Probe GMPZC- 4 (GMPZ-9)

Town/City Kingsford

County Dickinson State Michigan

Land-Surface Elevation 1048.31 feet
[X] Surveyed
[ ] Estimated

Installation Date(s) 10/14/03

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration hours

Yield gpm Date

Specific Capacity gpm/ft

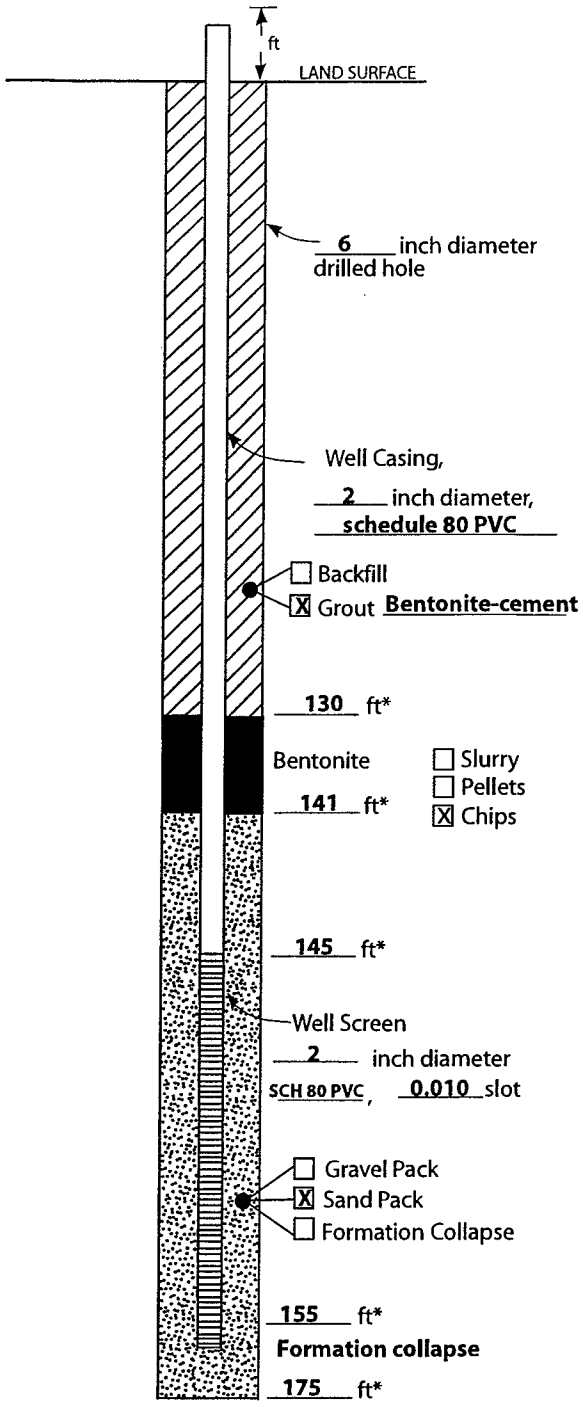
Well Purpose Observation well

Remarks Well screened in 2 discrete intervals from 120-130' and from 160-170'; bentonite: Wyoming coarse grade 3/8" chips (1.5 bags).

Prepared by Paul Lenaker

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-5**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1051.09 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **3/18/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Piezometer for GMEWC-5**

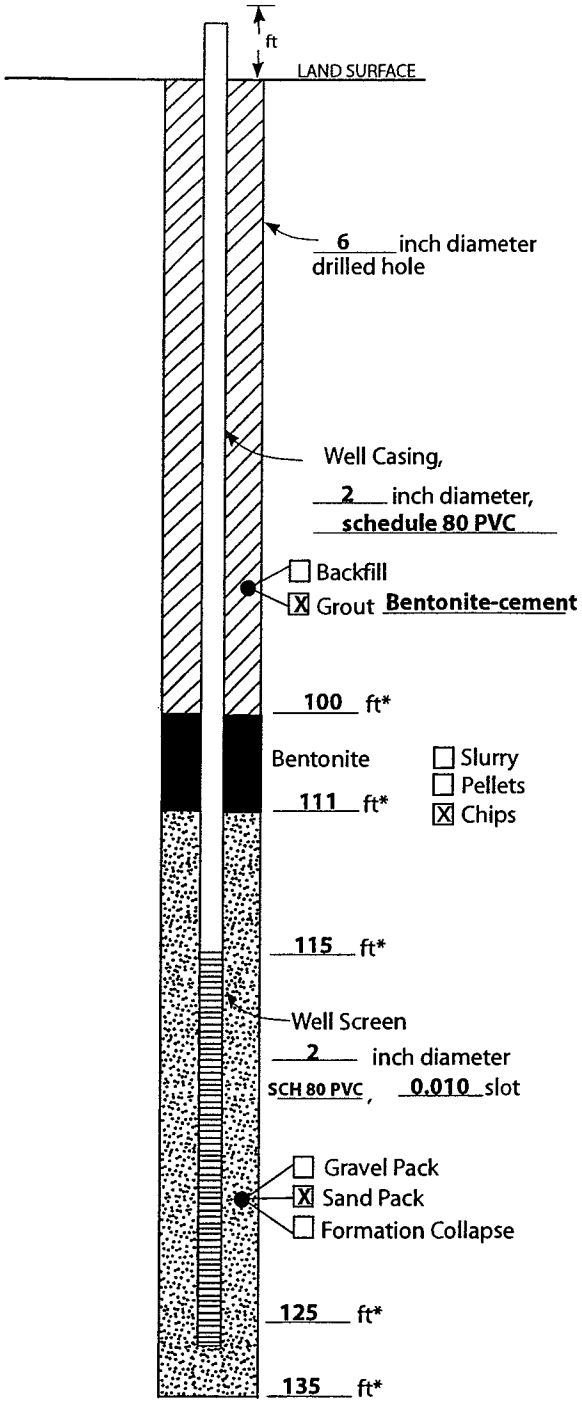
Remarks **Filter pack sand red flint #40 (4 bags), bentonite seal Baroid Holeplug 3/8" chips (2 bags), grout mixture is 3-94 lb bags Portland cement, 1 bag Baroid Aquagel, approximately 30 gallons water.**

Prepared by **Andy Mumpy**

ford/wi0637/2005/graphic/logs/gmpzc5.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-6**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1048.52 feet [X] surveyed [ ] estimated

Datum **Mean Sea Level**

Installation Date(s) **3/21/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

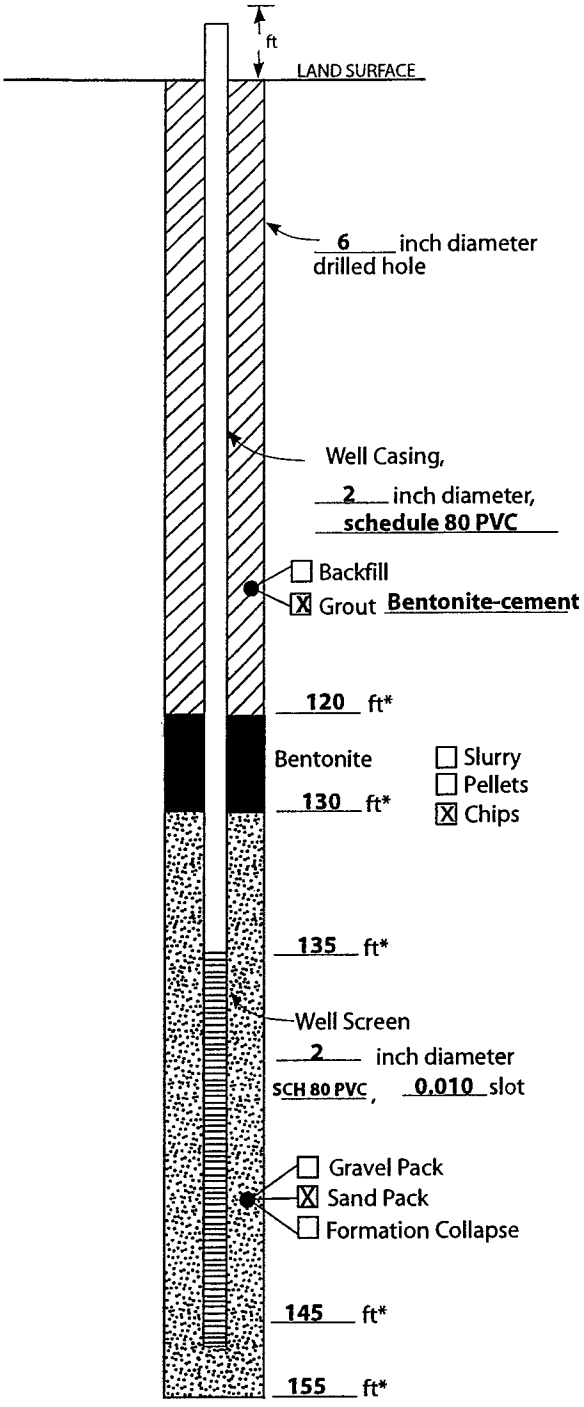
Well Purpose **Piezometer for GMEWC-6**

Remarks **Filter pack sand red flint #40 (5 bags), bentonite seal Baroid Holeplug 3/8" chips (2 bags), grout mixture = 3-94 lb bags Portland cement, 1-50 pound bag Baroid Aquagel Gold Seal, approximately 30 gallons water.**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI001950023** Well **GMPZC-7**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1049.47 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **3/22/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

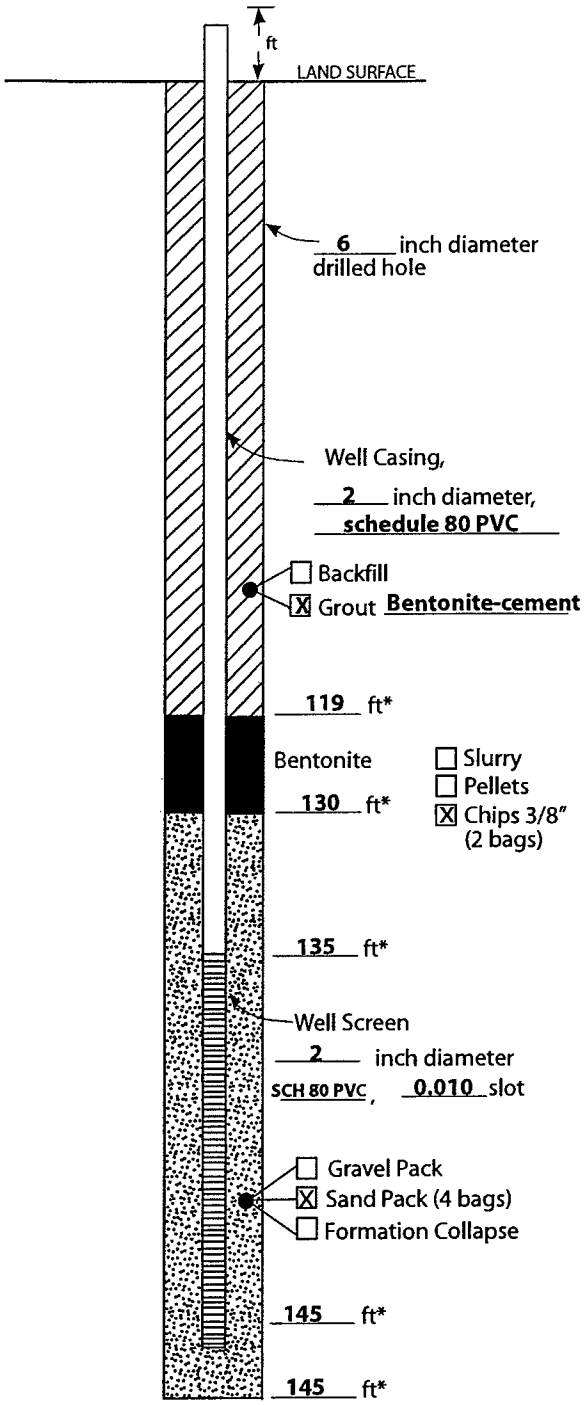
Well Purpose **Piezometer for GMEWC-7, GMEWC-7A**

Remarks **Filter pack sand red flint #40 (4 bags), bentonite seal Baroid Holeplug 3/8" chips (2 bags), grout mixture = 3-94 lb bags Portland cement, 1-50 pound bag Baroid Aquagel Gold Seal, approximately 30 gallons water.**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-8**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1047.3 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **3/22/05 - 3/23/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

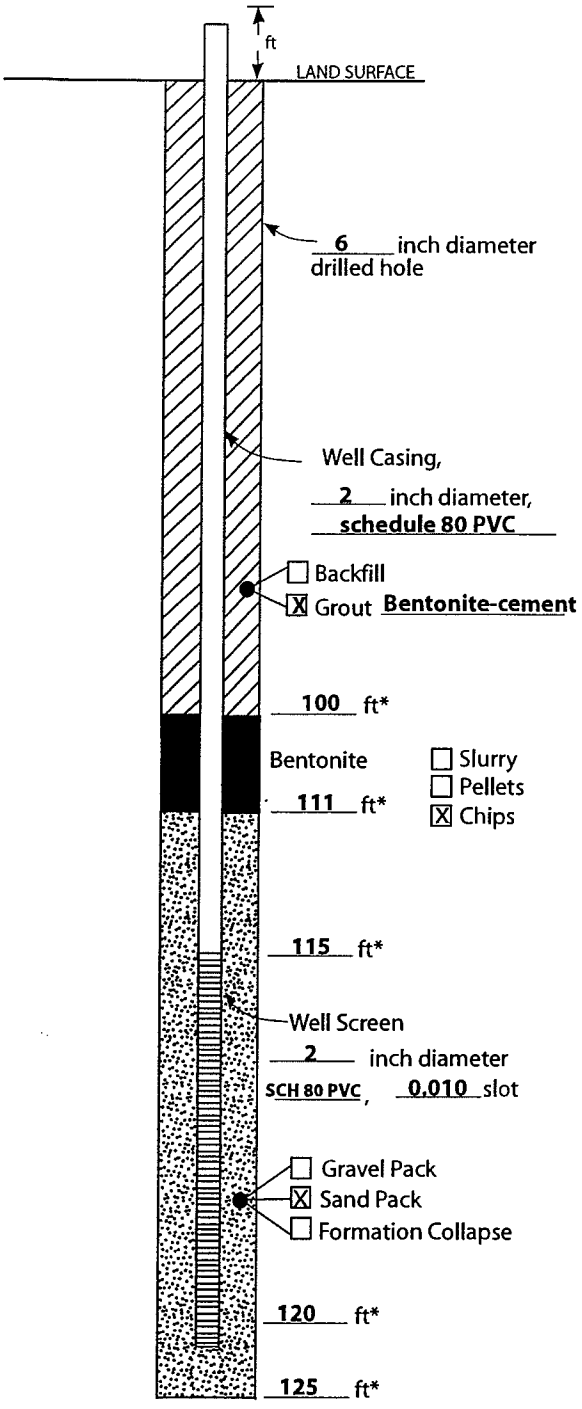
Well Purpose **Monitoring**

Remarks **Bentonite seal = Baroid Holeplug 3/8" chips; filter pack sand = red flint #40, ground mixture batch = approximately 3-94 pound bags Portland cement, plus approximately 1 baroid aquagel Gold Seal, plus approximately 30 gallons water, 3 batches Grout used.**

Prepared by **Lori Schmidt**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950023 Well GMPZC-9

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1048.73 feet ☒ surveyed ☐ estimated

Datum Mean Sea Level

Installation Date(s) 3/20/05

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

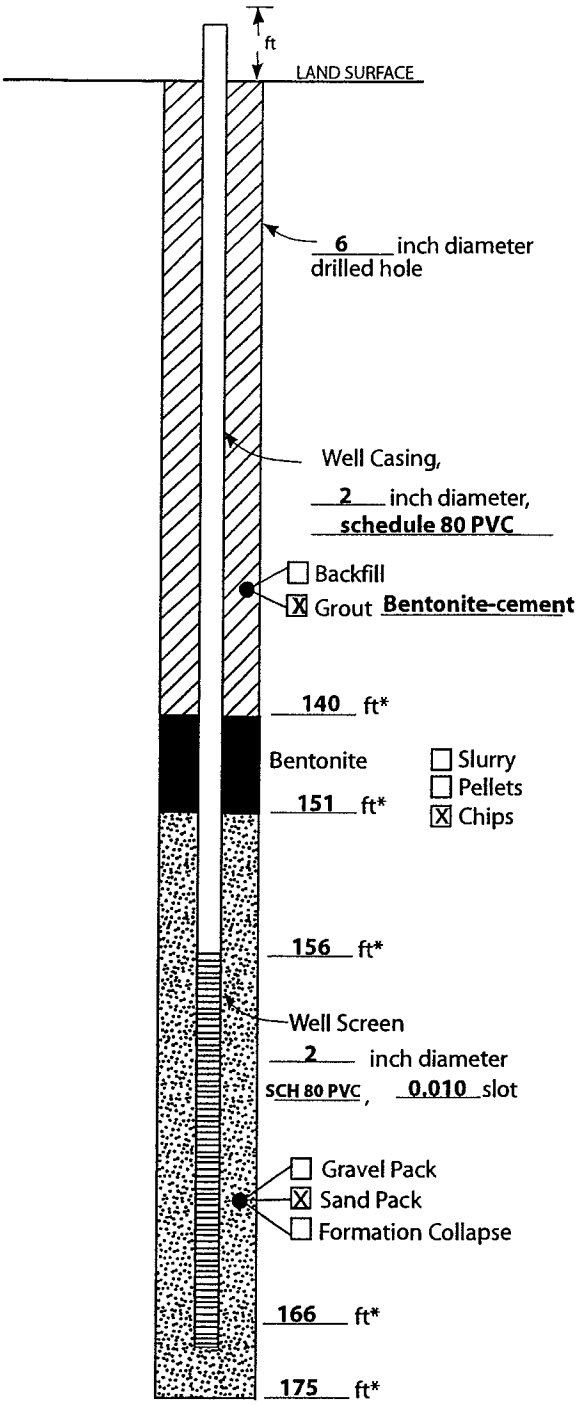
Well Purpose Piezometer for GMEWC-9.

Remarks Filter pack sand red flint #40 - 3 bags, bentonite seal Baroid Holeplug 3/8" chips - 2 bags, Grout mixture: 3-94 pound bags Portland cement, 1-50 pound bag Baroid Aquagel Gold Seal, approximately 30 gallons water, 3 batches used.

Prepared by Andy Mumpy

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950023 Well GMPZC-10

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1049.29 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 3/19/05

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose Piezometer for GMEWC-10.

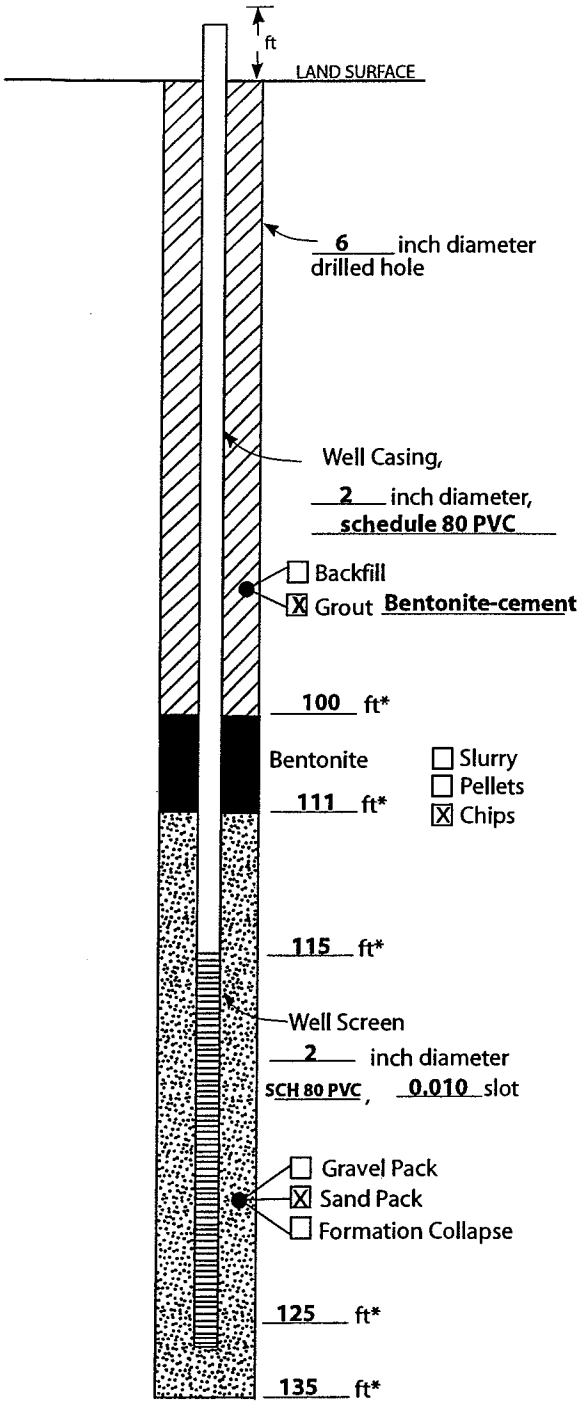
Remarks Batch of Grout = 3 x 94 pounds bags Portland cement by Quikrete and approximately 1 bag Baroid Aquagel Gold Seal plus approximately 30 gallons water, used 3 batches, Bentonite = Baroid HolePlug 3/8" chips (2 bags used) Filter Pack = sand red flint #40 (4 bags used).

Prepared by Lori Schmidt

ford/wi0637/2005/graphic/logs/gmpzc10.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950023 Well GMPZC-11

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1046.17 feet ☒ surveyed

Datum Mean Sea Level ☐ estimated

Installation Date(s) 3/19/05

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

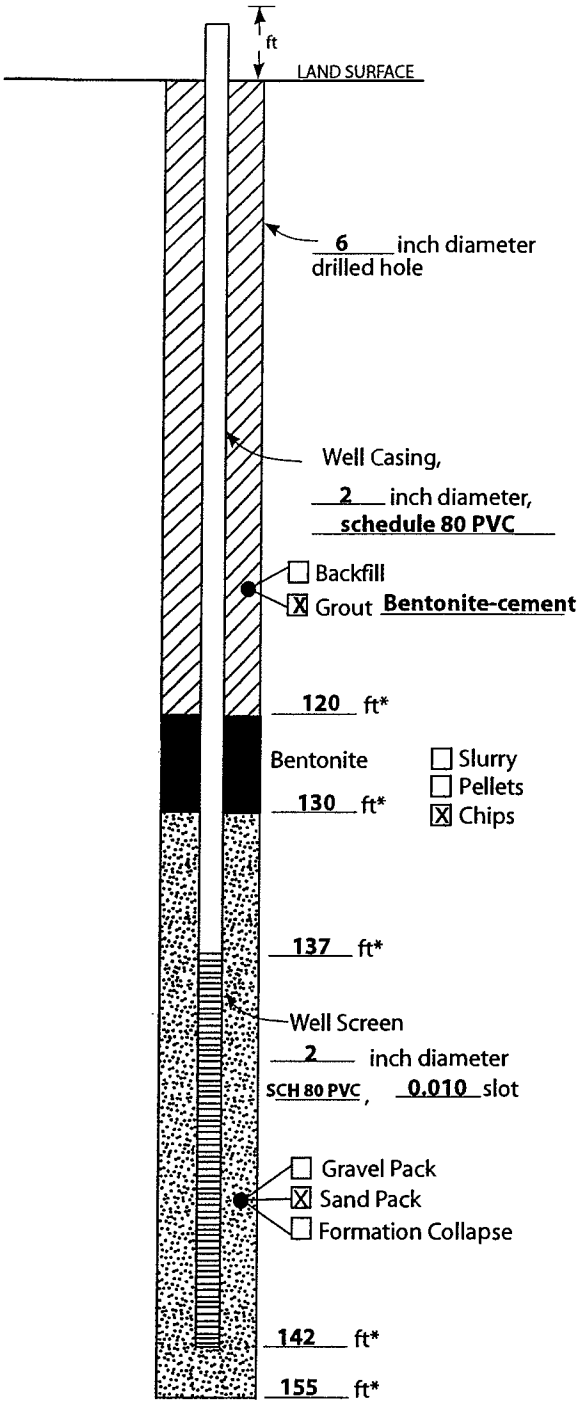
Well Purpose Downgradient piezometer for GMEWC-1, GMEWC-1A.

Remarks Filter Pack Sand: Red flint #30 - 4 bags. Bentonite Seal: Baroid Holeplug 3/8" chips - 2 bags. Grout mixture is 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aqual Gold Seal, approxiamtely 30 gallons water per batch. Cut riser at gorudn sruface for flush mounting.

Prepared by Lori Schmidt

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-12**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1043.03 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **3/31/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Downgradient piezometer for GMEWC-2, GMEWC-2A.**

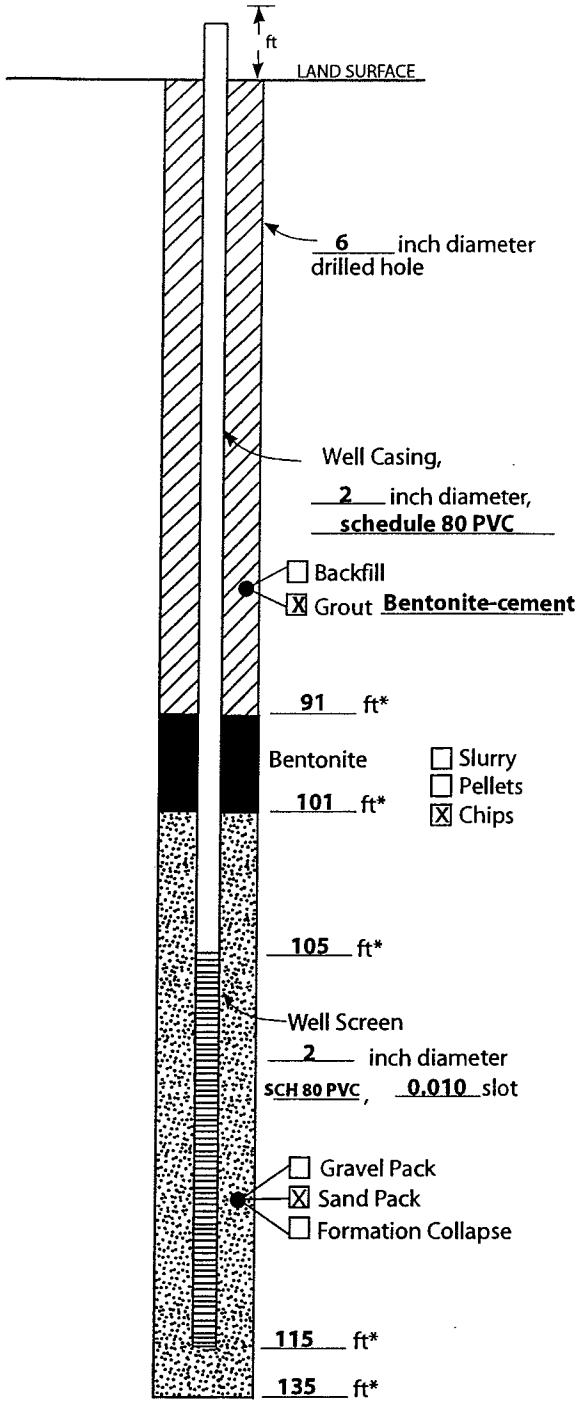
Remarks **Filter Pack Sand: Red flint #40 - 4 bags. Bentonite Seal: Baroid Holeplug 3/8" chips. Grout mixture is 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aqual Gold Seal, approximately 30 gallons water per batch.**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpzc12.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010930023** Well **GMPZC-13**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1042.92 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/1/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Downgradient piezometer for GMEWC-3.**

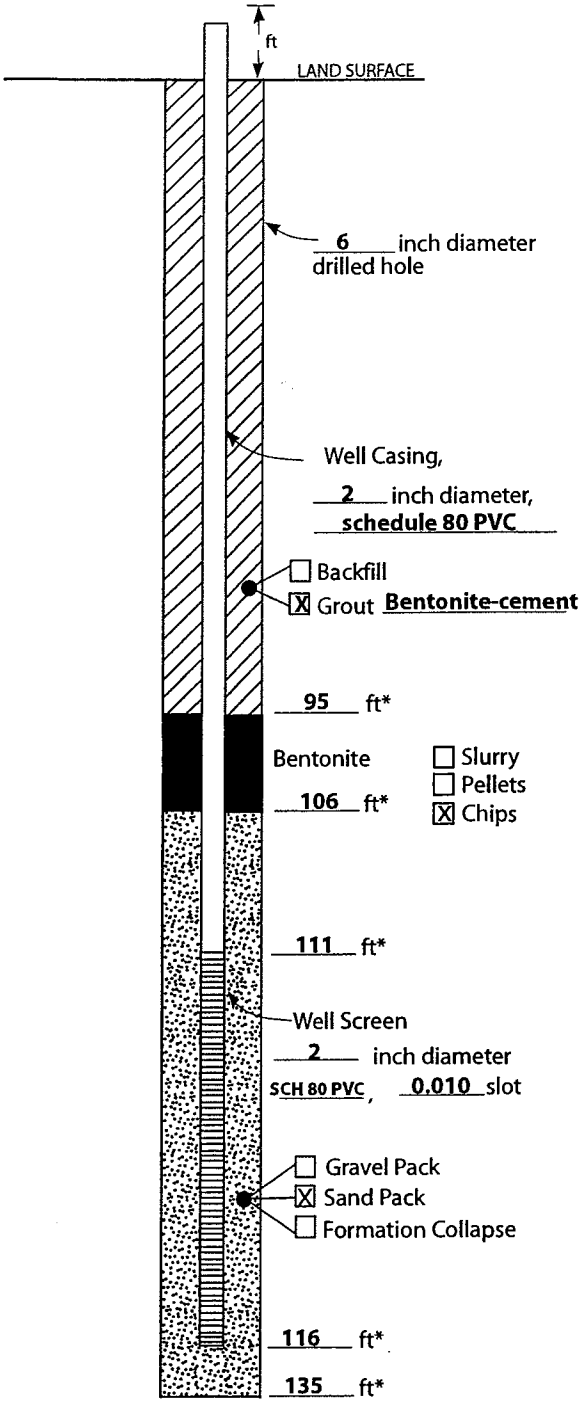
Remarks **Filter Pack Sand: Red flint #40 - 4 bags. Bentonite Seal: Baroid Holeplug 3/8" chips 2 bags. Grout mixture is 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aqual Gold Seal, approximately 30 gallons water per batch.**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpzc13.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project Ford/Kingsford - WI0010950023 Well GMPZC-14

Town/City Kingsford

County Dickinson State Michigan

Permit No. NA

Land-Surface Elevation

1047.85 feet [X] surveyed [ ] estimated

Datum Mean Sea Level

Installation Date(s) 4/2/05

Drilling Method Rotasonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose Downgradient piezometer for GMEWC-6.

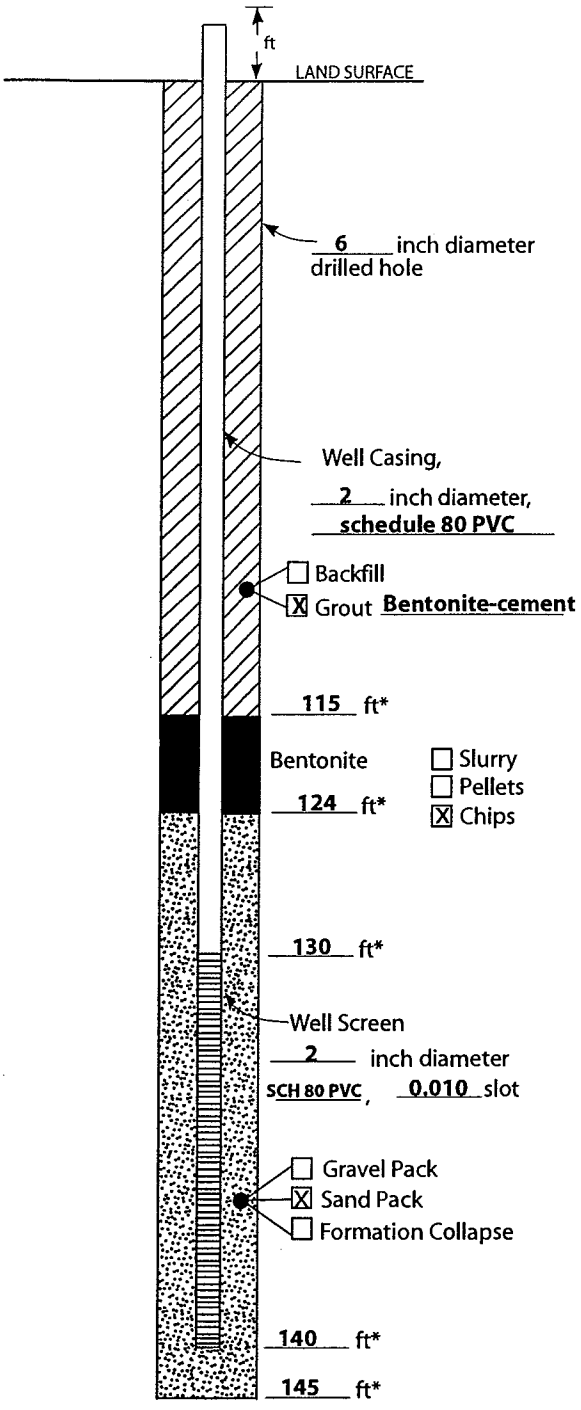
Remarks Filter Pack Sand: Red flint #40 - 3 bags. Bentonite Seal: Baroid Holeplug 3/8" chips 2 bags. Grout mixture is 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aqual Gold Seal, approximately 30 gallons water per batch.

Prepared by Andy Mumpy

ford/wi0637/CJ2005/graphics/logs/gmpzc14.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-15**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1049.4 feet ☐ surveyed

Datum **Mean Sea Level** ☐ estimated

Installation Date(s) **4/3/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Downgradient piezometer for GMEWC-6.**

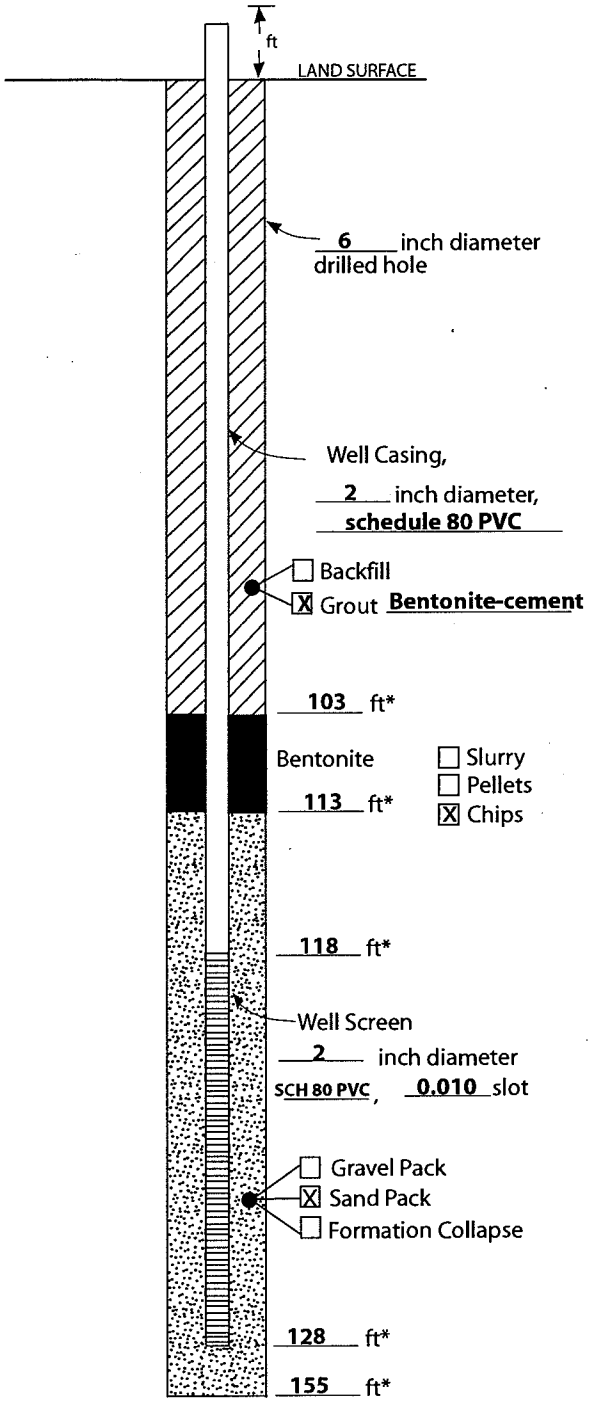
Remarks **Filter Pack Sand: Red flint #40 - 4 bags. Bentonite Seal: Baroid Holeplug 3/8" chips 2 bags. Grout mixture is 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aqual Gold Seal, approximately 30 gallons water per batch.**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpzc15.ai

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-16**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1049.4 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **4/4/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

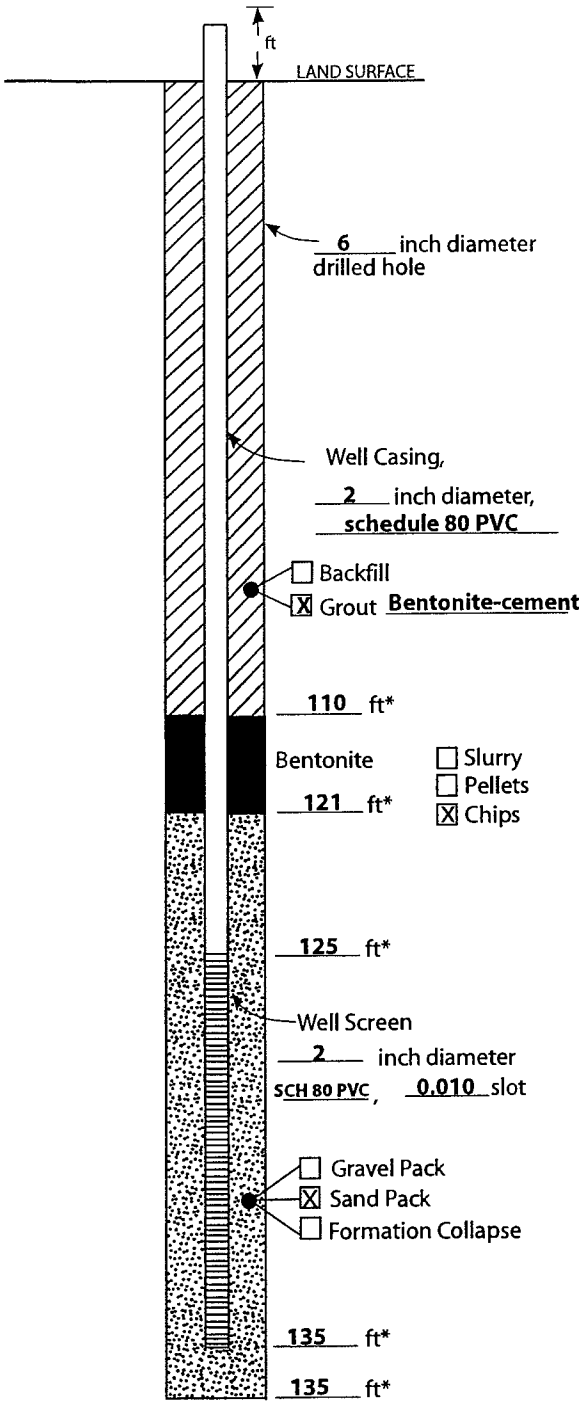
Well Purpose **Downgradient piezometer for GMEWC-7, GMEWC-7A.**

Remarks **Filter Pack Sand: Red flint #40 - 4 bags. Bentonite Seal: Baroid Holeplug 3/8" chips 2 bags. Grout mixture is 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aqual Gold Seal, approximately 30 gallons water per batch.**

Prepared by **Andy Mumpy**

ARCADIS

Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950023** Well **GMPZC-17**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1047.41 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **3/29/05**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Downgradient piezometer for GMEWC-8, GMEWC-8A.**

Remarks **Filter Pack Sand: Red flint #40 - 4 bags. Bentonite Seal: Baroid Holeplug 3/8" chips - 2 bags. Grout mixture is 3 - 94 lb. bags Portland cement, 1 - 50 lb bag Baroid Aqual Gold Seal, approximately 30 gallons water per batch.**

Prepared by **Andy Mumpy**

ford/wi0637/CJ2005/graphics/logs/gmpzc17.ai

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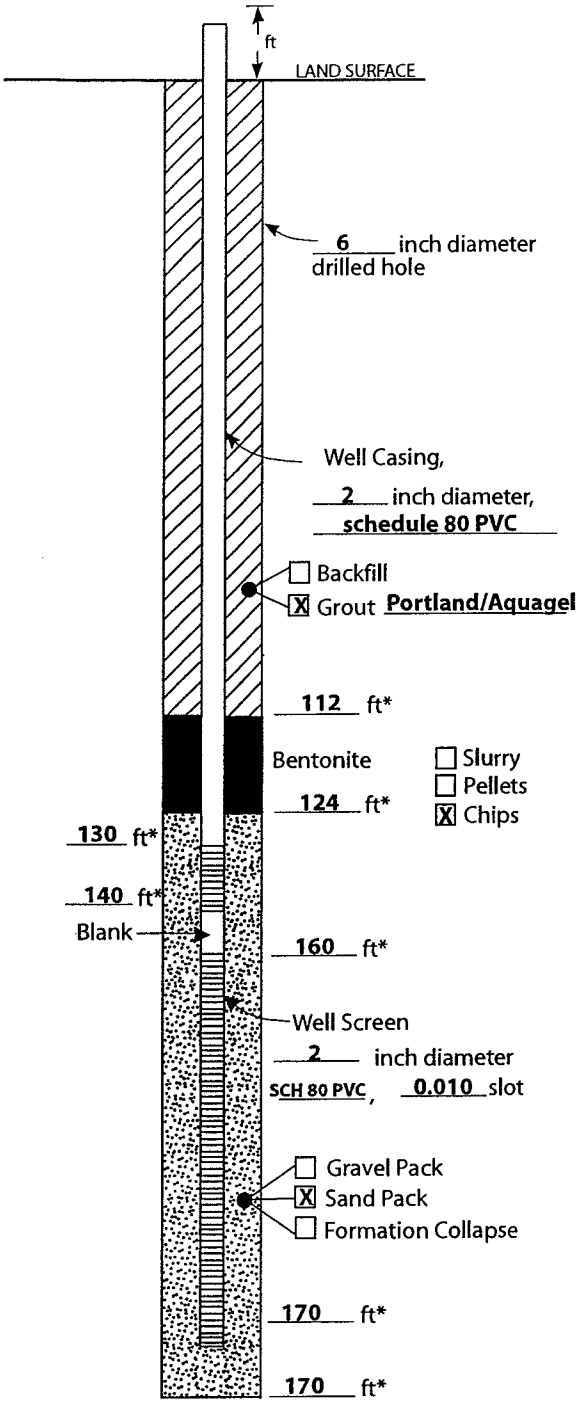
Well Construction Log
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted

*Depth Below Land Surface

Project **Ford/Kingsford - WI0010950027** Well **GMPZC-18**

Town/City **Kingsford**

County **Dickinson** State **Michigan**

Permit No. **NA**

Land-Surface Elevation

1047.46 feet ☒ surveyed ☐ estimated

Datum **Mean Sea Level**

Installation Date(s) **1/23/06**

Drilling Method **Rotasonic**

Drilling Contractor **Boart Longyear**

Drilling Fluid **Water**

Development Technique(s) and Date(s)

Fluid Loss During Drilling **~ 500** gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Specific Capacity _____ gpm/ft Date _____

Specific Capacity _____ gpm/ft

Well Purpose **Adjacent piezometer to GMEWC-4 (replacement for GMPZC-4).**

Remarks **Johnson Screen, sch 80, 2" PVC, slot 0.010, pointed end cap; riser sch 80, 2" PVC, filter pack: Red Flint #40 sand (11-50 lb bags); bentonite: Baroid Hole Plug 3/8" chips (2-50 lb bags); grout batch: St. Mary's Portland (4-94 lb bags), Aquagel Gold Seal (3/4-50 lb bag), 30-50 gallons water; two batches used; blind drilled according to sampling from GMPZC-4 (previously named GMPZ-9).**

Prepared by **Jill Flater**

ford/wi0637/2006/graphic/logs/gmpzc18-constr.ai

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Appendix D

Specific Capacity Test Calculations

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Appendix D

Specific Capacity Test Calculations

Specific capacity tests were performed in conjunction with the well development activities for select monitoring wells (Table E-1). The monitoring wells were pumped using a Grundfos 2-inch submersible pump and water level measurements were taken with a Solinst water level meter. The pumping rate, in units of gallons per minute, was determined by estimating the time it took to fill up a one-gallon plastic jug. The duration of the tests depended on the amount of fine material that had collected in the well and ranged from just over an hour to five and a half hours (See Table E-2). The wells were pumped until ten well volumes were purged or until water quality was acceptable, and then the wells were allowed to recharge until the water level recovered to approximately 90% of the original static water level (See Table E-3).

Specific capacity tests were also performed in conjunction with aquifer pump tests performed on two extraction wells, GMEW-1 and GMEW-2, in August of 2000. The pump tests were performed with a Grundfos 3-inch submersible pump. Water level measurements were recorded using pressure transducers approximately 1-2 feet above the bottom of the well and all measurements were downloaded to hermit dataloggers. A simultaneous flow meter was installed a few feet away from the extraction well to measure the flow rate and a cumulative meter was installed to check the accuracy of the readings. These aquifer pump tests lasted six hours and were composed of three steps with incremental increases in pumping rates for each step.

The purpose of the specific capacity tests was to determine the hydraulic properties of the deposits beneath the study area. Well responses to pumping were analyzed to estimate the specific capacity of the monitoring wells and the resultant transmissivity and hydraulic conductivity of the deposits surrounding the well screen.

Transmissivity can be calculated using specific capacity data from a fully penetrating well by applying the Theis equation. The Theis equation is written as follows:

$$s = \frac{Q}{4\pi T} W(u)$$

$$u = \frac{r^2 S}{4Tt}$$

where,

s = drawdown of a fully penetrating well, in feet,
Q = discharge rate, in ft^3/day,
T = transmissivity, in ft^2/day,
$W(u)$ = Theis well function (an exponential integral),

penetrating. Partial-penetration curves from page 250 of *Groundwater and Wells* (Driscoll, 1986) based on the Kozeny (1933) correction equation were used for this purpose.

For each well, the percentage of the aquifer thickness that was penetrated by the well screen was computed and, using this parameter, the partial-penetration curves were used to determine a partial-penetration factor, which is the ratio of the observed to theoretical specific capacity. Then, the observed specific capacity was divided by the partial-penetration factor to obtain the theoretical specific capacity of a fully penetrating well.

Table E-1 shows the input parameters used and the results of the calculations for the wells that were analyzed. For each well, the last (highest) pumping rate was used in the calculations. The duration of pumping at that particular rate was used as the pumping time in the equation. Thus, the previous pumping at lower rates prior to the final rate was ignored in the transmissivity calculations. A borehole radius of 0.25-feet was used in the partial penetration correction and in the calculations. An assumed storage coefficient of 0.0005 was used in the calculation, typical for confined conditions such as those observed at the site.

The aquifer thickness and screen length values shown in Table E-1 were determined from logs of the wells. These parameters were used to determine the partial-penetration correction factors and corrected specific capacity values shown in the table. Then the Cooper-Jacob equation was solved using an iterative procedure to produce the transmissivity values shown. Finally, the computed transmissivity was divided by the formation thickness to determine a representative hydraulic conductivity value for each zone.

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Table D-1. Results from Specific Capacity Tests and Calculated Hydraulic Conductivities, Ford/KingsfordSite, Kingsford, Michigan.

Well	Screened Interval (Ft BTOC)	Deposit Thickness (Feet)	Drawdown (Feet)	Discharge (GPM)	Specific Capacity (GPM/ft)	Corrected Transmissivity (Ft^2/Day)	Hydraulic Conductivity (cm/sec)	Lithology Well Completed In
Unit 1								
GMEW-1	23-33	18	1.742	35	20.09	6097.18	1.19E-01	Fine to Medium Sand, some Gravel
GMEW-2	20-30	12	0.959	25	26.07	7168.04	2.11E-01	Sand and Gravel
GM-1	220-230	10	26.2	3.34	0.13	26.3	9.28E-04	Very Fine to Medium Sand
GM-3A	74-84	11	2.43	3.6	1.48	831	2.67E-02	Fine to Medium Sand
GM-5	250-260	6	19.36	3	0.15	32.48	1.91E-03	Fine to Medium Sand
GM-6	165-175	27	8.08	3.7	0.46	214	2.80E-03	Clay and Gravel
GM-7	145-155	15	35.15	3	0.09	21.22	4.99E-04	Very Fine to Coarse Sand
GM-8	80-90	81.93	0.94	2.78	2.96	4822	2.08E-02	Fine to Medium Sand
GM-9	164-174	18.5	3.9	2.5	0.64	261	4.98E-03	Fine Sand
GM-10	170-180	5	4.65	2.85	0.61	14.2	1.00E-03	Medium Sand
GM-12	290-300	46.5	0.13	1.71	13.15	12880	9.77E-02	Sand and Gravel
GM-14	135-145	67.5	1.22	1.54	1.26	1347	7.04E-03	Fine to Medium Sand
GM-16	108-118	22	0.37	1.81	4.89	2155	3.46E-02	Fine to Medium Sand
GM-17	224-234	100	7.19	4	0.56	1008	3.56E-03	Medium to Coarse Sand
GM-25A	19-29	14	0.52	2.14	4.12	891.05	2.25E-02	Sand and Gravel
GM-25B	98-108	14	5.35	1.62	0.30	51.66	1.32E-03	Fine to Medium Sand
GM-25C	206-216	18	1.5	1.82	1.21	264.11	5.20E-03	Fine to Medium Sand
GM-26A	30-40	37	0.25	1.82	7.28	3846.98	3.67E-02	Medium to Coarse Sand
GM-26C	160-170	50	1.03	2.22	2.16	1387.64	9.83E-03	Fine Sand
GM-27A	30-40	20	0.45	1.88	4.18	1198.38	2.12E-02	Sand and Gravel
GM-27B	145-155	17	1.98	1.76	0.89	190.53	3.97E-03	Fine Sand
GM-27C	210-220	10	19.54	1.54	0.08	11.85	4.25E-04	Fine Sand and Gravel
GM-28A	40-50	20	0.23	1.76	7.65	2293.72	4.04E-02	Sand and Gravel
GM-28B	124.5-129.5	6	1.41	1.46	1.04	202.46	1.19E-02	Fine to Medium Sand
GM-29	55-65	50	0.17	1.88	11.06	8396.29	5.94E-02	Sand and Gravel

Footnotes on Page 3.

Table D-1. Results from Specific Capacity Tests and Calculated Hydraulic Conductivities, Ford/KingsfordSite, Kingsford, Michigan.

Well	Screened Interval (Ft BTOC)	Deposit Thickness (Feet)	Drawdown (Feet)	Discharge (GPM)	Specific Capacity (GPM/ft)	Corrected Transmissivity (Ft^2/Day)	Hydraulic Conductivity (cm/sec)	Lithology Well Completed In
Unit 1 (continued)								
GM-31	105-115	23	0.2	1.58	7.90	2129.52	3.27E-02	Medium Sand
GM-32	135-145	60	1.25	1.76	1.41	1195.89	7.03E-03	Fine Sand
GM-34A	30-40	15	0.43	1.88	4.37	1039.22	2.44E-02	Fine to Coarse Sand
GM-34B	85-95	12	3.73	1.28	0.34	59.66	1.75E-03	Coarse Sand and Gravel
GM-36	95-105	10	0.81	1.71	2.11	433.36	1.53E-02	Sand and Gravel
GM-37B	328-338	15	0.2	1.3	6.50	1591.17	3.74E-02	Sand and Gravel
GM-38A	95-105	10	0.3	1.54	5.13	1129.08	3.98E-02	Medium to Coarse Sand
GM-38B	160-170	20	1.05	1.67	1.59	423.24	7.47E-03	Fine Sand
GM-39	85-95	13	2.37	1.54	0.65	126.13	3.42E-03	Fine to Coarse Sand
GM-40A	75-85	26	0.07	1.33	19.00	7772.41	1.05E-01	Fine to Medium Sand
GM-40B	120-130	18	0.93	1.43	1.54	376.28	7.37E-03	Fine Sand
GM-42	72-82	17	1.12	1.28	1.14	259.31	5.38E-03	Fine to Coarse Sand
GM-50	80.5-95.5	10	0.84	1.46	1.74	351.23	1.24E-02	Fine Sand to Sand and Gravel
GM-51	67-77	13	0.18	1.71	9.50	2283.47	6.20E-02	Fine to Coarse Sand
Unit 2								
GM-2B	271-281	57	18.14	1.3	0.07	6.36	3.94E-05	Very Fine to Fine Sand
GM-3B	170-180	10	26.55	3.8	0.14	29.12	1.03E-03	Very Fine to Fine Sand
GM-4	76-86	2	32.98	0.55	0.02	2.87	5.07E-04	Very Fine to Fine Sand
GM-11	175-185	18.5	8.18	3	0.37	118	2.25E-03	Very Fine to Fine Sand
GM-13	325-335	52	2.69	2	0.74	703	4.77E-03	Very Fine Sand to Gravel
GM-15	165-175	2	55.8	0.29	0.005	0.79	1.39E-04	Very Fine Sand and Coarse Sand
GM-26B	101-111	15	35.28	1.43	0.04	5.85	1.42E-04	Very Fine to Fine Sand
GM-33	74-89	15	4.41	0.52	0.12	17.11	4.02E-04	Silty to Very Fine Sand
GM-38C	200-210	8	24.79	1.33	0.05	7.70	3.39E-04	Very Fine to Medium Sand

Footnotes on Page 3.

Table D-1. Results from Specific Capacity Tests and Calculated Hydraulic Conductivities, Ford/KingsfordSite, Kingsford, Michigan.

Unit 3

No wells completed in this unit.

Unit 1	Unit 1 relates to the unit of the 3D geologic model characteristic of sand and gravel.
Unit 2	Unit 2 relates to the unit of the 3D geologic model characteristic of very fine sand to sandy silt.
Unit 3	Unit 3 relates to the unit of the 3D geologic model characteristic of silt and clay.
Note:	Volume and Discharge measured at end of step with highest discharge rate.
cm/sec	Centimeters per second.
FT BTOC	Feet below top of casing.
Ft^2/Day	Square feet per day.
GPM	Gallons per minute.
GPM/ft	Gallons per minute per foot of drawdown.

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-1	5/29/1997	14:43	0:00	0.00	82.07	0.00
S.W.L.=82.07'		14:50	0:07	0.57	87.76	5.69
		15:00	0:17	0.57	88.11	6.04
		15:13	0:30	0.57	88.01	5.94
		15:23	0:40	1.48	94.74	12.67
		15:37	0:54	1.48	94.75	12.68
		15:43	1:00	1.48	94.97	12.90
		15:58	1:15	2.15	99.48	17.41
		16:13	1:30	2.15	99.49	17.42
		16:28	1:45	2.78	103.70	21.63
		16:43	2:00	2.78	104.50	22.43
		16:58	2:15	3.34	108.15	26.08
		17:13	2:30	3.34	108.27	26.20
GM-2B	5/28/1997	9:24	0:02	1.17	NA	NA
S.W.L.=73.33'		9:38	0:14	1.20	89.40	16.07
		10:35	1:11	1.30	91.47	18.14
		11:45	2:21	4.00	113.98	40.65
		12:57	3:33	1.20	89.26	15.93
GM-3A	5/29/1997	11:07	0:00	0.00	47.22	0.00
S.W.L.=47.22'		11:08	0:01	1.70	48.05	0.83
		11:15	0:08	1.70	48.14	0.92
		11:20	0:13	1.70	48.10	0.88
		11:30	0:23	1.70	48.28	1.06
		11:35	0:28	1.70	NA	NA
		11:40	0:33	1.70	48.04	0.82
		11:47	0:40	3.40	48.68	1.46
		11:50	0:43	3.40	48.70	1.48
		11:53	0:46	3.40	48.04	0.82
		11:58	0:51	3.40	48.30	1.08
		12:05	0:58	3.60	49.23	2.01
		12:10	1:03	3.60	49.21	1.99
		12:15	1:08	3.60	49.21	1.99
		12:17	1:10	1.75	48.30	1.08
		12:20	1:13	1.75	48.30	1.08
		12:25	1:18	1.75	48.28	1.06
		12:30	1:23	1.75	48.04	0.82
		12:35	1:28	3.60	48.68	1.46
		12:40	1:33	3.60	48.68	1.46
		12:45	1:38	1.80	48.00	0.78

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-3A	5/29/1997	12:51	1:44	1.80	48.18	0.96
S.W.L.=47.22'		12:54	1:47	1.80	48.20	0.98
(continued)		13:00	1:53	1.80	48.20	0.98
		13:05	1:58	1.80	48.16	0.94
GM-3B	5/29/1997	15:30	0:00	0.00	74.28	0.00
S.W.L.=74.28'		15:50	0:20	2.60	NA	NA
		16:00	0:30	2.60	92.07	17.79
		16:10	0:40	2.60	92.26	17.98
		16:20	0:50	2.60	92.20	17.92
		16:30	1:00	2.60	92.20	17.92
		16:40	1:10	2.60	92.40	18.12
		16:50	1:20	3.80	92.72	18.44
		17:00	1:30	3.80	NA	NA
		17:15	1:45	3.80	100.83	26.55
		17:20	1:50	2.60	90.84	16.56
		17:40	2:10	3.20	NA	NA
GM-4	6/18/1997	8:34	0:00	0.67	43.33	0.00
S.W.L.=43.33'		8:59	0:25	NA	76.00	32.67
		9:05	0:31	1.00	71.52	28.19
		9:15	0:41	0.55	76.15	32.82
		9:25	0:51	0.50	75.75	32.42
		9:35	1:01	0.55	76.02	32.69
		9:45	1:11	0.55	76.16	32.83
		9:55	1:21	NA	76.31	32.98
		9:56	1:22	0.00	NA	NA
		9:59	1:25	NA	NA	NA
		10:15	1:41	0.50	73.10	29.77
		10:25	1:51	0.50	73.24	29.91
		10:35	2:01	0.51	72.89	29.56
		10:45	2:11	0.51	73.45	30.12
		10:55	2:21	0.50	73.40	30.07
		10:56	2:22	1.00	NA	NA
		11:05	2:31	1.00	78.00	34.67
		11:12	2:38	0.00	NA	NA
		11:13	2:39	0.00	NA	NA
		11:20	2:46	NA	75.95	32.62
		11:23	2:49	NA	75.95	32.62
		11:24	2:50	0.00	NA	NA
		11:27	2:53	NA	76.14	32.81
		11:30	2:56	0.57	77.50	34.17
		11:45	3:11	0.57	NA	NA

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-4	6/18/1997	11:55	3:21	NA	75.86	32.53
S.W.L.=43.33'		12:10	3:36	0.67	74.60	31.27
(continued)		12:25	3:51	0.00	71.56	28.23
		12:40	4:06	0.50	71.72	28.39
		12:55	4:21	0.53	72.33	29.00
		13:10	4:36	0.51	72.37	29.04
		13:25	4:51	0.51	72.90	29.57
		13:40	5:06	0.55	73.06	29.73
		13:55	5:21	0.56	72.72	29.39
		14:10	5:36	0.55	73.77	30.44
GM-5	6/17/1997	13:55	0:00	0.00	84.15	0.00
S.W.L.=84.15'		14:02	0:07	1.66	NA	NA
		14:05	0:10	1.00	87.76	3.61
		14:15	0:20	1.00	87.71	3.56
		14:25	0:30	1.00	87.58	3.43
		14:35	0:40	1.60	89.50	5.35
		14:45	0:50	1.60	89.59	5.44
		14:55	1:00	1.60	89.52	5.37
		15:05	1:10	2.00	91.75	7.60
		15:15	1:20	2.00	91.97	7.82
		15:25	1:30	2.00	91.98	7.83
		15:35	1:40	2.50	97.21	13.06
		15:45	1:50	2.50	98.15	14.00
		15:55	2:00	2.50	97.08	12.93
		16:05	2:10	3.00	102.11	17.96
		16:15	2:20	3.00	102.46	18.31
		16:25	2:30	3.00	103.51	19.36
		16:30	2:35	3.20	NA	NA
		16:32	2:37	3.20	NA	NA
		16:35	2:40	3.20	102.50	18.35
GM-6	5/29/1997	10:45	0:00	0.00	81.70	0.00
S.W.L.=81.70'		10:55	0:10	1.00	84.90	3.20
		11:05	0:20	2.00	84.75	3.05
		11:15	0:30	2.00	84.70	3.00
		11:30	0:45	2.00	84.72	3.02
		11:45	1:00	3.00	85.83	4.13
		12:00	1:15	3.00	86.04	4.34
		12:15	1:30	3.70	88.47	6.77
		12:30	1:45	3.70	89.78	8.08

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-7	6/17/1997	9:31	0:00	0.80	55.64	10.49
S.W.L.=45.15'		9:40	0:09	0.80	56.53	11.38
		9:50	0:19	0.80	58.00	12.85
		10:00	0:29	0.80	58.14	12.99
		10:10	0:39	1.20	62.54	17.39
		10:20	0:49	1.20	62.64	17.49
		10:30	0:59	1.20	62.58	17.43
		10:40	1:09	1.90	67.92	22.77
		10:50	1:19	1.90	68.12	22.97
		11:00	1:29	1.90	68.10	22.95
		11:10	1:39	2.10	73.65	28.50
		11:20	1:49	2.10	74.23	29.08
		11:30	1:59	2.10	74.08	28.93
		11:40	2:09	3.00	79.74	34.59
		11:50	2:19	3.00	80.16	35.01
		12:00	2:29	3.00	80.30	35.15
GM-8	6/27/1997	8:00	0:00	0.00	10.86	0.00
S.W.L.=10.86'		8:05	0:05	1.17	11.25	0.39
		8:20	0:20	1.07	11.24	0.38
		8:35	0:35	1.10	11.26	0.40
		8:50	0:50	1.04	11.23	0.37
		8:57	0:57	1.80	11.49	0.63
		9:05	1:05	1.87	NA	NA
		9:20	1:20	1.80	11.51	0.65
		9:25	1:25	1.87	11.53	0.67
		9:35	1:35	1.94	11.55	0.69
		9:40	1:40	2.62	11.81	0.95
		9:50	1:50	2.70	11.84	0.98
		9:55	1:55	NA	11.79	0.93
		10:11	2:11	2.78	11.80	0.94
		10:25	2:25	NA	11.80	0.94
		10:30	2:35	1.07	11.21	0.35
		10:50	2:50	1.00	11.19	0.33
		11:05	3:05	1.00	11.20	0.34
		11:20	3:20	1.00	11.20	0.34
GM-9	9/30/1997	13:15	0:00	1.08	19.66	1.91
S.W.L.=17.75'		13:25	0:10	1.08	19.70	1.95
		13:35	0:20	1.08	19.71	1.96
		13:45	0:30	1.95	20.34	2.59
		13:55	0:40	1.95	20.40	2.65
		14:05	0:50	1.95	20.41	2.66

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-9	9/30/1997	14:15	1:00	2.20	21.20	3.45
S.W.L.=17.75'		14:25	1:10	2.20	21.22	3.47
(continued)		14:35	1:20	2.20	21.14	3.39
		14:45	1:30	2.50	21.73	3.98
		14:55	1:40	2.50	21.62	3.87
		15:05	1:50	2.50	21.65	3.90
GM-10	9/29/1997	12:34	0:00	0.00	16.64	-0.02
S.W.L.=16.66'		12:38	0:04	0.85	17.9	1.24
		12:46	0:12	0.86	17.88	1.22
		12:50	0:16	0.82	17.87	1.21
		13:00	0:26	0.87	17.98	1.32
		13:10	0:36	NA	17.9	1.24
		13:15	0:41	0.00	16.77	0.11
		14:15	1:41	0.92	NA	NA
		14:32	1:58	1.05	19.27	2.61
		14:42	2:08	1.11	18.35	1.69
		14:52	2:18	1.11	18.4	1.74
		15:02	2:28	1.11	18.41	1.75
		15:12	2:38	1.11	18.45	1.79
		15:18	2:44	NA	18.48	1.82
		15:24	2:50	2.00	19.81	3.15
		15:34	3:00	2.00	19.9	3.24
		15:44	3:10	2.00	19.93	3.27
		15:54	3:20	2.00	19.97	3.31
		16:06	3:32	2.86	21.01	4.35
		16:16	3:42	2.86	21.24	4.58
		16:26	3:52	2.86	21.28	4.62
		16:36	4:02	2.86	21.31	4.65
		16:54	4:20	3.53	22.49	5.83
		17:04	4:30	3.53	22.60	5.94
		17:14	4:40	3.53	22.70	6.04
		17:24	4:50	3.53	22.72	6.06
		17:34	5:00	3.53	22.75	6.09
GM-11	10/1/1997	8:50	0:00	1.00	13.45	0.01
S.W.L.=13.44'		9:00	0:10	1.05	16.34	2.90
		9:10	0:20	0.92	16.10	2.66
		9:20	0:30	NA	15.80	2.36
		10:00	1:10	NA	13.02	-0.42
		10:10	1:20	1.25	16.47	3.03
		10:20	1:30	1.25	16.54	3.10
		10:30	1:40	1.25	16.60	3.16

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.
Grundfos pump specs: Redi-Flow 2
Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-11	10/1/1997	10:40	1:50	2.00	18.60	5.16
S.W.L.=13.44'		10:50	2:00	2.00	18.69	5.25
(continued)		11:00	2:10	2.00	18.66	5.22
		11:10	2:20	2.40	20.28	6.84
		11:20	2:30	2.40	20.14	6.70
		11:30	2:40	2.40	20.16	6.72
		11:40	2:50	3.00	21.50	8.06
		11:50	3:00	3.00	21.58	8.14
		12:00	3:10	3.00	21.62	8.18
GM-12	10/12/1997	12:56	0:00	NA	NA	NA
S.W.L.=67.07'		13:10	0:14	0.28	67.08	0.01
		13:14	0:18	0.32	67.08	0.01
		13:18	0:22	0.39	NA	NA
		13:22	0:26	0.36	67.08	0.01
		13:25	0:29	0.36	NA	NA
		13:29	0:33	0.39	67.09	0.02
		13:45	0:49	0.36	67.08	0.01
		13:59	1:03	1.13	67.13	0.06
		14:02	1:06	1.20	67.15	0.08
		14:15	1:19	1.20	67.15	0.08
		14:30	1:34	1.18	67.15	0.08
		14:45	1:49	1.20	67.15	0.08
		14:46	1:50	1.71	67.19	0.12
		15:05	2:09	1.71	67.2	0.13
		15:35	2:39	2.22	67.25	0.18
		15:50	2:54	2.22	67.24	0.17
		16:05	3:09	2.22	67.23	0.16
		16:20	3:24	2.22	67.23	0.16
		16:26	3:30	NA	NA	NA
GM-13	10/6/1997	16:10	0:00	1.43	61.07	0.01
S.W.L.=61.06'		16:20	0:10	1.43	61.75	0.69
		16:30	0:20	1.40	61.73	0.67
		16:40	0:30	1.33	61.7	0.64
		16:52	0:42	1.11	62.38	1.32
		16:55	0:45	NA	NA	NA
		16:58	0:48	NA	NA	NA
		17:05	0:55	1.13	62.43	1.37
		17:15	1:05	1.11	62.42	1.36
		17:25	1:15	1.13	62.44	1.38
		17:35	1:25	1.54	63.05	1.99
		17:45	1:35	1.58	63.08	2.02

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-13	10/6/1997	17:55	1:45	1.58	63.08	2.02
S.W.L.=61.06'		18:05	1:55	2.00	63.75	2.69
(continued)		18:15	2:05	2.00	63.75	2.69
		18:25	2:15	2.00	63.75	2.69
GM-14	9/27/1997	14:25	0:00	0.00	32.60	0.00
S.W.L.=32.60'		14:30	0:05	1.43	33.75	1.15
		14:40	0:15	1.43	33.76	1.16
		14:50	0:25	1.46	33.68	1.08
		15:00	0:35	1.62	33.68	1.08
		15:10	0:45	1.66	33.92	1.32
		15:20	0:55	1.50	33.77	1.17
		15:30	1:05	1.54	33.80	1.20
		15:35	1:10	NA	33.54	0.94
		15:44	1:19	1.33	33.68	1.08
		15:50	1:25	0.70	33.13	0.53
		16:00	1:35	0.70	33.14	0.54
		16:05	1:40	0.50	32.94	0.34
		16:25	2:00	0.10	32.70	0.10
GM-15	9/25/1997	16:35	0:00	0.33	61.50	20.70
S.W.L.=40.80'		16:40	0:05	0.29	NA	NA
		16:43	0:08	NA	NA	NA
		16:46	0:11	0.31	NA	NA
		16:47	0:12	NA	75.20	34.40
		16:50	0:15	0.36	80.90	40.10
		16:51	0:16	NA	NA	NA
		16:59	0:24	0.29	86.50	45.70
		17:04	0:29	0.28	88.90	48.10
		17:13	0:38	0.29	92.30	51.50
		17:23	0:48	0.29	96.60	55.80
		17:38	1:03	0.29	NA	NA
		17:45	1:10	0.30	NA	NA
GM-16	10/20/1997	16:35	0:00	NA	NA	NA
S.W.L.=76.35'		16:45	0:10	1.94	77.03	0.68
		16:55	0:20	1.94	77.04	0.69
		17:05	0:30	1.88	76.94	0.59
		17:15	0:40	1.88	76.92	0.57
		17:26	0:51	1.88	76.92	0.57
		17:35	1:00	1.88	76.88	0.53
		17:45	1:10	1.88	76.84	0.49
		18:00	1:25	1.72	76.8	0.45

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-16	10/20/1997	18:15	1:40	1.81	76.78	0.43
S.W.L.=76.35'		18:30	1:55	1.81	76.72	0.37
(continued)		18:45	2:10	NA	NA	NA
		19:00	2:25	1.88	NA	NA
GM-17	10/25/1997	10:17	0:00	0.98	60.31	3.17
S.W.L.=57.14		10:30	0:13	1.11	60.23	3.09
		10:32	0:15	0.91	59.49	2.35
		10:35	0:18	1.05	59.85	2.71
		10:47	0:30	1.03	59.8	2.66
		10:48	0:31	2.07	62.3	5.16
		10:54	0:37	2.07	62.02	4.88
		11:03	0:46	2.07	61.87	4.73
		11:17	1:00	2.07	61.8	4.66
		11:19	1:02	2.86	63.05	5.91
		11:32	1:15	2.86	62.76	5.62
		11:47	1:30	2.73	62.65	5.51
		11:48	1:31	4.00	64.66	7.52
		12:03	1:46	4.00	64.33	7.19
GM-24C	11/19/1998	14:30	0:00	0.00	60.03	0.00
S.W.L.=60.03'		14:45	0:15	0.32	69.06	9.03
		14:50	0:20	0.53	69.70	9.67
		15:00	0:30	0.40	71.15	11.12
		15:15	0:45	0.32	72.32	12.29
		15:30	1:00	0.29	72.14	12.11
		15:45	1:15	0.33	71.80	11.77
		16:00	1:30	0.32	72.19	12.16
		16:15	1:45	0.32	72.50	12.47
		16:30	2:00	0.33	72.25	12.22
		16:45	2:15	0.32	72.60	12.57
		17:00	2:30	0.29	72.38	12.35
GM-25A	7/20/1998	17:15	0:00	0.00	12.73	0.04
S.W.L.=12.69'		17:21	0:06	0.52	12.83	0.14
		17:25	0:10	0.50	12.83	0.14
		17:30	0:15	0.45	12.81	0.12
		17:35	0:20	0.40	12.81	0.12
		17:40	0:25	0.36	12.80	0.11
		17:45	0:30	0.32	12.78	0.09
		17:46	0:31	0.72	12.88	0.19
		17:50	0:35	0.72	12.88	0.19
		17:55	0:40	0.72	12.88	0.19

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-25A	7/20/1998	18:00	0:45	0.72	12.88	0.19
S.W.L.=12.69'		18:05	0:50	0.72	12.88	0.19
(continued)		18:10	0:55	0.72	12.88	0.19
		18:15	1:00	1.25	13.00	0.31
		18:20	1:05	1.25	13.00	0.31
		18:25	1:10	1.25	13.01	0.32
		18:30	1:15	1.71	13.13	0.44
		18:35	1:20	1.71	13.13	0.44
		18:40	1:25	1.71	13.13	0.44
		18:45	1:30	2.14	13.21	0.52
		18:50	1:35	2.14	13.21	0.52
		18:55	1:40	2.14	13.21	0.52
GM-25B	7/21/1998	8:30	0:00	0.37	11.75	0.75
S.W.L.=11.00'		8:35	0:05	0.86	13.70	2.70
		8:40	0:10	0.90	13.87	2.87
		8:45	0:15	0.90	13.84	2.84
		8:50	0:20	0.90	13.92	2.92
		8:55	0:25	0.90	13.87	2.87
		9:00	0:30	0.90	13.85	2.85
		9:05	0:35	1.22	14.96	3.96
		9:10	0:40	1.22	14.95	3.95
		9:15	0:45	1.22	14.96	3.96
		9:20	0:50	1.40	15.52	4.52
		9:25	0:55	1.40	15.54	4.54
		9:30	1:00	1.40	15.53	4.53
		9:35	1:05	1.62	16.31	5.31
		9:40	1:10	1.62	16.30	5.30
		9:45	1:15	1.62	16.35	5.35
GM-25C	6/23/1998	12:54	0:00	0.00	10.75	0.00
S.W.L.=10.75'		13:00	0:06	0.49	11.37	0.62
		13:07	0:13	0.92	NA	NA
		13:10	0:16	0.92	11.90	1.15
		13:20	0:26	0.92	11.96	1.21
		13:30	0:36	0.92	11.98	1.23
		13:40	0:46	0.90	11.86	1.11
		13:45	0:51	0.90	11.90	1.15
		13:55	1:01	0.91	12.00	1.25
		14:05	1:11	0.90	11.95	1.20
		14:15	1:21	0.90	11.93	1.18
		14:17	1:23	1.28	12.41	1.66
		14:25	1:31	1.28	12.46	1.71

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.
Grundfos pump specs: Redi-Flow 2
Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-25C	6/23/1998	14:35	1:41	1.28	12.53	1.78
S.W.L.=10.75'		14:45	1:51	1.28	12.53	1.78
(continued)		14:55	2:01	1.28	12.55	1.80
		15:00	2:06	1.71	13.02	2.27
		15:05	2:11	1.71	13.07	2.32
		15:15	2:21	1.71	13.13	2.38
		15:25	2:31	1.71	13.16	2.41
		15:28	2:34	2.22	NA	NA
		15:35	2:41	2.22	13.81	3.06
		15:45	2:51	2.22	13.86	3.11
		15:51	2:57	2.22	13.89	3.14
GM-26A	7/22/1998	13:13	0:00	0.83	NA	NA
S.W.L.=12.49'		13:15	0:02	0.87	NA	NA
		13:17	0:04	0.72	NA	NA
		13:19	0:06	0.82	12.60	0.11
		13:21	0:08	0.82	12.60	0.11
		13:25	0:12	0.83	12.61	0.12
		13:35	0:22	0.83	12.61	0.12
		13:45	0:32	0.85	12.61	0.12
		13:55	0:42	1.13	12.65	0.16
		14:05	0:52	1.13	12.65	0.16
		14:15	1:02	1.50	12.69	0.20
		14:20	1:07	1.50	12.70	0.21
		14:25	1:12	1.50	12.70	0.21
		14:30	1:17	1.82	12.73	0.24
		14:35	1:22	1.82	12.73	0.24
		14:40	1:27	1.82	12.74	0.25
		14:45	1:32	1.82	12.74	0.25
GM-26B	7/22/1998	8:07	0:00	0.86	12.11	0.00
S.W.L.=12.11'		8:10	0:03	0.59	23.42	11.31
		8:12	0:05	0.52	NA	NA
		8:15	0:08	0.46	25.81	13.70
		8:18	0:11	0.82	30.34	18.23
		8:20	0:13	0.71	31.24	19.13
		8:23	0:16	0.73	31.00	18.89
		8:25	0:18	0.71	30.99	18.88
		8:30	0:23	0.72	31.31	19.20
		8:35	0:28	0.72	31.40	19.29
		8:40	0:33	0.71	31.54	19.43
		8:45	0:38	0.71	31.51	19.40
		8:50	0:43	1.05	36.99	24.88

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-26B	7/22/1998	8:55	0:48	1.03	38.16	26.05
S.W.L.=12.11'		9:00	0:53	1.03	38.26	26.15
(continued)		9:05	0:58	1.28	41.73	29.62
		9:10	1:03	1.28	43.00	30.89
		9:15	1:08	1.28	43.49	31.38
		9:20	1:13	1.43	46.70	34.59
		9:25	1:18	1.43	47.09	34.98
		9:30	1:23	1.43	47.17	35.06
		9:35	1:28	1.43	47.39	35.28
GM-26C	7/21/1998	15:00	0:00	0.51	11.71	0.23
S.W.L.=11.48'		15:05	0:05	0.50	11.71	0.23
		15:10	0:10	0.48	11.71	0.23
		15:12	0:12	0.68	11.79	0.31
		15:15	0:15	0.65	11.78	0.30
		15:17	0:17	0.65	11.78	0.30
		15:20	0:20	0.64	11.78	0.30
		15:25	0:25	0.67	11.78	0.30
		15:30	0:30	0.67	11.78	0.30
		15:35	0:35	0.67	11.78	0.30
		15:40	0:40	1.00	12.03	0.55
		15:45	0:45	1.02	12.04	0.56
		15:50	0:50	1.03	12.04	0.56
		15:55	0:55	1.71	12.28	0.80
		16:00	1:00	1.62	12.28	0.80
		16:05	1:05	1.71	12.29	0.81
		16:10	1:10	2.40	12.51	1.03
		16:15	1:15	2.31	12.51	1.03
		16:20	1:20	2.22	12.51	1.03
GM-27A	7/24/1998	8:10	0:00	0.67	16.45	-0.83
S.W.L.=17.28'		8:12	0:02	0.65	17.42	0.14
		8:14	0:04	0.63	17.44	0.16
		8:16	0:06	0.74	17.46	0.18
		8:18	0:08	0.74	17.46	0.18
		8:20	0:10	0.73	17.46	0.18
		8:30	0:20	0.73	17.45	0.17
		8:40	0:30	0.73	17.45	0.17
		8:50	0:40	0.73	17.45	0.17
		9:00	0:50	1.18	17.58	0.30
		9:10	1:00	1.18	17.58	0.30
		9:20	1:10	1.18	17.58	0.30
		9:30	1:20	1.54	17.67	0.39

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.
Grundfos pump specs: Redi-Flow 2
Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-27A	7/24/1998	9:40	1:30	1.54	17.68	0.40
S.W.L.=17.28'		9:50	1:40	1.54	17.68	0.40
(continued)		10:00	1:50	1.88	17.75	0.47
		10:10	2:00	1.88	17.74	0.46
		10:20	2:10	1.88	17.73	0.45
GM-27B	7/23/1998	13:43	0:00	0.83	17.93	0.87
S.W.L.=17.06'		13:44	0:01	0.83	17.93	0.87
		13:45	0:02	0.81	17.93	0.87
		13:48	0:05	0.78	17.94	0.88
		13:53	0:10	0.86	17.98	0.92
		13:55	0:12	0.85	17.98	0.92
		14:00	0:17	0.83	17.96	0.90
		14:10	0:27	0.81	17.96	0.90
		14:20	0:37	0.81	17.95	0.89
		14:30	0:47	0.80	17.95	0.89
		14:40	0:57	1.15	18.31	1.25
		14:50	1:07	1.15	18.31	1.25
		15:00	1:17	1.15	18.31	1.25
		15:10	1:27	1.54	18.68	1.62
		15:20	1:37	1.50	18.69	1.63
		15:30	1:47	1.50	18.69	1.63
		15:40	1:57	1.82	19.02	1.96
		15:50	2:07	1.76	19.04	1.98
		16:00	2:17	1.82	19.06	2.00
GM-27C	7/23/1998	8:30	0:00	0.77	22.58	6.37
S.W.L.=16.21'		8:33	0:03	0.78	23.40	7.19
		8:35	0:05	0.80	23.83	7.62
		8:37	0:07	0.79	23.89	7.68
		8:40	0:10	0.79	24.04	7.83
		8:45	0:15	0.79	24.12	7.91
		8:55	0:25	0.79	24.06	7.85
		9:05	0:35	0.78	24.03	7.82
		9:15	0:45	0.78	23.92	7.71
		9:25	0:55	1.09	27.28	11.07
		9:35	1:05	1.07	27.55	11.34
		9:45	1:15	1.07	27.57	11.36
		9:55	1:25	1.30	30.40	14.19
		10:05	1:35	1.30	30.63	14.42
		10:15	1:45	1.30	30.76	14.55
		10:25	1:55	1.54	35.00	18.79
		10:35	2:05	1.54	35.51	19.30
		10:45	2:15	1.54	35.75	19.54

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-28A	7/28/1998	8:02	0:00	0.37	26.65	0.08
S.W.L.=26.57'		8:05	0:03	0.38	26.64	0.07
		8:08	0:06	0.39	26.64	0.07
		8:11	0:09	0.38	26.64	0.07
		8:15	0:13	0.37	26.64	0.07
		8:25	0:23	0.42	26.65	0.08
		8:35	0:33	0.41	26.64	0.07
		8:45	0:43	0.39	26.64	0.07
		8:55	0:53	0.44	26.65	0.08
		9:05	1:03	0.95	26.71	0.14
		9:15	1:13	0.95	26.71	0.14
		9:25	1:23	0.95	26.71	0.14
		9:35	1:33	0.95	26.71	0.14
		9:45	1:43	1.36	26.75	0.18
		9:55	1:53	1.36	26.75	0.18
		10:05	2:03	1.36	26.76	0.19
		10:15	2:13	1.76	26.79	0.22
		10:25	2:23	1.76	26.80	0.23
		10:35	2:33	1.76	26.80	0.23
GM-28B	7/25/1998	13:30	0:00	0.00	26.60	0.00
S.W.L.=26.60'		13:32	0:02	0.54	27.12	0.52
		13:34	0:04	0.53	27.11	0.51
		13:36	0:06	0.41	27.22	0.62
		13:38	0:08	0.41	27.24	0.64
		13:40	0:10	0.41	27.25	0.65
		13:45	0:15	0.41	27.26	0.66
		13:55	0:25	0.41	27.29	0.69
		14:05	0:35	0.41	27.28	0.68
		14:15	0:45	0.41	27.28	0.68
		14:25	0:55	0.97	27.55	0.95
		14:35	1:05	0.97	27.51	0.91
		14:45	1:15	0.97	27.51	0.39
		14:55	1:25	1.30	27.85	1.25
		15:05	1:35	1.30	27.83	1.23
		15:15	1:45	1.28	27.83	1.23
		15:25	1:55	1.58	28.06	1.46
		15:35	2:05	1.50	28.03	1.43
		15:45	2:15	1.46	28.01	1.41

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-29	7/24/1998	13:22	0:00	0.85	19.06	0.09
S.W.L.=18.97'		13:25	0:03	0.76	19.06	0.09
		13:27	0:05	0.74	19.06	0.09
		13:30	0:08	0.72	19.06	0.09
		13:40	0:18	0.73	19.05	0.08
		13:50	0:28	0.73	19.05	0.08
		14:00	0:38	0.73	19.05	0.08
		14:10	0:48	1.11	19.07	0.10
		14:20	0:58	1.11	19.07	0.10
		14:30	1:08	1.11	19.07	0.10
		14:40	1:18	1.50	19.10	0.13
		14:50	1:28	1.54	19.10	0.13
		15:00	1:38	1.54	19.10	0.13
		15:10	1:48	1.88	19.14	0.17
		15:20	1:58	1.94	19.14	0.17
		15:30	2:08	1.88	19.14	0.17
GM-31	7/27/1998	8:39	0:00	0.00	84.29	-0.04
S.W.L.=84.33'		8:43	0:04	0.00	84.32	-0.01
		8:46	0:07	0.00	84.46	0.13
		8:48	0:09	0.72	84.42	0.09
		8:51	0:12	0.71	84.42	0.09
		8:55	0:16	0.69	84.42	0.09
		9:00	0:21	0.71	84.42	0.09
		9:10	0:31	0.72	84.43	0.10
		9:20	0:41	0.73	84.43	0.10
		9:30	0:51	0.71	84.43	0.10
		9:40	1:01	1.03	84.48	0.15
		9:50	1:11	1.03	84.48	0.15
		10:00	1:21	1.03	84.49	0.16
		10:10	1:31	1.36	84.53	0.20
		10:20	1:41	1.33	84.53	0.20
		10:30	1:51	1.33	84.53	0.20
		10:40	2:01	1.58	84.57	0.24
		10:50	2:11	1.58	84.57	0.24
		11:00	2:21	1.58	84.57	0.24
GM-32	7/27/1998	13:45	0:00	0.00	44.50	-0.06
S.W.L.=44.56'		13:47	0:02	0.51	44.92	0.36
		13:50	0:05	0.52	44.92	0.36
		13:55	0:10	0.51	44.93	0.37
		14:00	0:15	0.50	44.92	0.36
		14:10	0:25	0.51	44.93	0.37

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.
Grundfos pump specs: Redi-Flow 2
Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-32	7/27/1998	14:20	0:35	0.40	44.92	0.36
S.W.L.=44.56'		14:30	0:45	0.40	44.86	0.30
(continued)		14:40	0:55	1.30	45.55	0.99
		14:50	1:05	1.30	45.58	1.02
		15:00	1:15	1.30	45.59	1.03
		15:10	1:25	1.58	45.79	1.23
		15:20	1:35	1.58	45.80	1.24
		15:30	1:45	1.58	45.81	1.25
		15:40	1:55	1.76	45.97	1.41
		15:50	2:05	1.76	45.98	1.42
		16:00	2:15	1.76	45.98	1.42
GM-33	7/28/1998	8:10	0:00	0.00	75.33	3.90
S.W.L.=71.43'		8:12	0:02	0.83	81.31	9.88
		8:14	0:04	0.52	86.02	14.59
		8:16	0:06	0.00	88.00	16.57
		8:20	0:10	0.00	76.01	4.58
GM-34A	7/28/1998	9:32	0:00	0.69	18.74	0.15
S.W.L.=18.59'		9:34	0:02	0.78	18.74	0.15
		9:36	0:04	0.78	18.74	0.15
		9:40	0:08	0.78	18.74	0.15
		9:50	0:18	0.78	18.74	0.15
		10:00	0:28	0.78	18.74	0.15
		10:10	0:38	0.77	18.74	0.15
		10:20	0:48	1.15	18.81	0.22
		10:30	0:58	1.15	18.81	0.22
		10:40	1:08	1.15	18.80	0.21
		10:50	1:18	1.46	18.87	0.28
		11:00	1:28	1.46	18.87	0.28
		11:10	1:38	1.46	18.87	0.28
		11:20	1:48	1.88	18.93	0.34
		11:30	1:58	1.88	18.93	0.34
		11:40	2:08	1.88	18.93	0.34
GM-34B	7/28/1998	13:30	0:00	0.00	43.30	0.00
S.W.L.=43.30'		13:40	0:10	0.32	48.75	5.45
		13:42	0:12	NA	49.00	5.70
		13:45	0:15	0.31	48.95	5.65
		13:48	0:18	0.58	50.25	6.95
		13:50	0:20	0.57	50.41	7.11
		13:55	0:25	0.57	50.45	7.15
		14:05	0:35	0.59	50.66	7.36

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-34B	7/28/1998	14:15	0:45	0.59	50.87	7.57
S.W.L.=43.30'		14:25	0:55	0.60	50.92	7.62
(continued)		14:35	1:05	0.83	52.01	8.71
		14:45	1:15	0.85	52.13	8.83
		14:55	1:25	0.83	52.19	8.89
		15:05	1:35	1.05	53.28	9.98
		15:15	1:45	1.05	53.34	10.04
		15:25	1:55	1.05	53.43	10.13
		15:35	2:05	1.25	54.27	10.97
		15:45	2:15	1.28	54.35	11.05
		15:55	2:25	1.28	54.40	11.10
GM-36	8/5/1998	9:08	0:00	0.66	40.02	0.34
S.W.L.=39.68'		9:11	0:03	0.67	40.02	0.34
		9:13	0:05	0.67	40.02	0.34
		9:15	0:07	0.67	40.05	0.37
		9:25	0:17	0.67	40.04	0.36
		9:35	0:27	0.67	40.04	0.36
		9:45	0:37	0.67	40.04	0.36
		9:55	0:47	1.07	40.21	0.53
		10:05	0:57	1.07	40.21	0.53
		10:15	1:07	1.07	40.21	0.53
		10:25	1:17	1.40	40.35	0.67
		10:35	1:27	1.40	40.36	0.68
		10:45	1:37	1.40	40.37	0.69
		10:55	1:47	1.71	40.50	0.82
		11:05	1:57	1.71	40.50	0.82
		11:15	2:07	1.71	40.50	0.82
GM-37B	8/7/1998	14:12	0:00	0.62	72.68	0.12
S.W.L.=72.56'		14:16	0:04	0.62	72.68	0.12
		14:20	0:08	0.62	72.68	0.12
		14:30	0:18	0.62	72.67	0.11
		14:40	0:28	0.63	72.67	0.11
		14:50	0:38	0.63	72.67	0.11
		15:00	0:48	0.86	72.74	0.18
		15:10	0:58	0.86	72.74	0.18
		15:20	1:08	0.86	72.74	0.18
		15:30	1:18	1.03	72.79	0.23
		15:40	1:28	1.03	72.79	0.23
		15:50	1:38	1.03	72.79	0.23
		16:00	1:48	1.30	72.84	0.28
		16:10	1:58	1.30	72.85	0.29
		16:20	2:08	1.30	72.84	0.28

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-38A	8/5/1998	14:10	0:00	0.67	55.98	0.08
S.W.L.=55.90'		14:12	0:02	0.56	55.98	0.08
		14:15	0:05	0.73	56.00	0.10
		14:17	0:07	0.73	56.00	0.10
		14:20	0:10	0.73	56.00	0.10
		14:30	0:20	0.72	56.00	0.10
		14:40	0:30	0.73	56.00	0.10
		14:50	0:40	0.73	56.00	0.10
		15:00	0:50	1.03	56.03	0.13
		15:10	1:00	1.03	56.03	0.13
		15:20	1:10	1.03	56.03	0.13
		15:30	1:20	1.28	56.04	0.14
		15:40	1:30	1.28	56.04	0.14
		15:50	1:40	1.28	56.04	0.14
		16:00	1:50	1.54	56.06	0.16
		16:10	2:00	1.54	56.06	0.16
		16:20	2:10	1.54	56.06	0.16
GM-38B	8/6/1998	8:44	0:00	0.39	54.64	0.34
S.W.L.=54.30'		8:46	0:02	0.39	54.61	0.31
		8:50	0:06	0.39	54.60	0.30
		8:55	0:11	0.39	54.60	0.30
		9:00	0:16	0.39	54.58	0.28
		9:10	0:26	0.70	54.77	0.47
		9:20	0:36	0.70	54.77	0.47
		9:30	0:46	0.70	54.77	0.47
		9:40	0:56	0.70	54.77	0.47
		9:50	1:06	1.09	55.00	0.70
		10:00	1:16	1.09	55.00	0.70
		10:10	1:26	1.09	55.00	0.70
		10:20	1:36	1.43	55.19	0.89
		10:30	1:46	1.43	55.20	0.90
		10:40	1:56	1.43	55.19	0.89
		10:50	2:06	1.67	55.34	1.04
		11:00	2:16	1.67	55.36	1.06
		11:10	2:26	1.67	55.35	1.05
GM-38C	8/6/1998	14:08	0:00	0.44	66.02	11.54
S.W.L.=54.48'		14:11	0:03	0.72	66.10	11.62
		14:13	0:05	0.71	66.85	12.37
		14:15	0:07	0.69	67.00	12.52
		14:17	0:09	0.80	67.71	13.23
		14:20	0:12	0.80	68.39	13.91

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-38C	8/6/1998	14:30	0:22	0.77	68.80	14.32
S.W.L.=54.48'		14:40	0:32	0.78	69.05	14.57
(continued)		14:50	0:42	0.78	69.11	14.63
		15:00	0:52	0.78	69.17	14.69
		15:10	1:02	0.78	69.18	14.70
		15:20	1:12	1.05	72.71	18.23
		15:30	1:22	1.02	73.76	19.28
		15:40	1:32	1.02	73.89	19.41
		15:50	1:42	1.03	73.98	19.50
		16:00	1:52	1.18	74.68	20.20
		16:10	2:02	1.15	76.41	21.93
		16:20	2:12	1.15	76.28	21.80
		16:30	2:22	1.15	76.28	21.80
		16:39	2:31	NA	76.43	21.95
		16:40	2:32	1.36	77.25	22.77
		16:50	2:42	1.33	79.30	24.82
		17:00	2:52	1.33	79.30	24.82
		17:10	3:02	1.33	79.30	24.82
GM-39	8/8/1998	8:35	0:00	0.78	44.24	1.28
S.W.L.=42.96'		8:40	0:05	0.81	44.28	1.32
		9:40	1:05	0.64	44.00	1.04
		9:45	1:10	0.64	43.97	1.01
		9:50	1:15	0.64	43.97	1.01
		10:00	1:25	0.64	43.96	1.00
		10:10	1:35	0.65	43.97	1.01
		10:20	1:45	0.64	43.97	1.01
		10:30	1:55	0.98	44.50	1.54
		10:40	2:05	0.98	44.48	1.52
		10:50	2:15	0.98	44.51	1.55
		11:00	2:25	1.28	45.00	2.04
		11:10	2:35	1.28	45.00	2.04
		11:20	2:45	1.28	45.00	2.04
		11:30	2:55	1.54	45.46	2.50
		11:40	3:05	1.54	45.46	2.50
		11:50	3:15	1.54	45.46	2.50
GM-40A	8/8/1998	14:30	0:00	0.48	43.91	0.75
S.W.L.=43.16'		14:34	0:04	0.48	43.87	0.71
		14:44	0:14	0.46	43.85	0.69
		14:57	0:27	0.71	44.15	0.99
		15:00	0:30	0.71	44.15	0.99
		15:05	0:35	0.71	44.15	0.99

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-40A	8/8/1998	15:15	0:45	0.71	44.16	1.00
S.W.L.=43.16'		15:25	0:55	0.71	44.15	0.99
(continued)		15:35	1:05	0.71	44.17	1.01
		15:45	1:15	0.95	44.46	1.30
		15:55	1:25	0.95	44.46	1.30
		16:05	1:35	0.95	44.46	1.30
		16:15	1:45	1.25	44.84	1.68
		16:25	1:55	1.25	44.84	1.68
		16:35	2:05	1.25	44.84	1.68
		16:45	2:15	1.43	45.06	1.90
		16:55	2:25	1.43	45.06	1.90
		17:05	2:35	1.43	45.06	1.90
GM-40B	8/9/1998	8:55	0:00	1.03	43.86	0.71
S.W.L.=43.15'		8:58	0:03	1.03	43.86	0.71
		9:00	0:05	1.03	43.86	0.71
		9:10	0:15	1.03	43.86	0.71
		9:20	0:25	1.03	43.86	0.71
		9:30	0:35	1.03	43.86	0.71
		9:40	0:45	1.15	43.95	0.80
		9:50	0:55	1.15	43.95	0.80
		10:00	1:05	1.15	43.95	0.80
		10:10	1:15	1.25	44.04	0.89
		10:20	1:25	1.25	44.04	0.89
		10:30	1:35	1.25	44.04	0.89
		10:40	1:45	1.43	44.15	1.00
		10:50	1:55	1.43	44.12	0.97
		11:00	2:05	1.43	44.12	0.97
GM-42	8/11/1998	8:52	0:00	0.65	45.06	0.93
S.W.L.=44.13'		8:55	0:03	0.65	45.04	0.91
		8:58	0:06	0.65	45.02	0.89
		9:00	0:08	0.65	45.02	0.89
		9:10	0:18	0.65	44.99	0.86
		9:20	0:28	0.65	44.99	0.86
		9:30	0:38	0.65	44.99	0.86
		9:40	0:48	0.90	45.17	1.04
		9:50	0:58	0.90	45.21	1.08
		10:00	1:08	0.90	45.22	1.09
		10:10	1:18	1.07	45.40	1.27
		10:20	1:28	1.07	45.43	1.30

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-42	8/11/1998	10:30	1:38	1.07	45.45	1.32
S.W.L.=44.13'		10:40	1:48	1.28	45.62	1.49
(continued)		10:50	1:58	1.28	45.68	1.55
		11:00	2:08	1.28	45.71	1.58
GM-49	9/2/1998	14:48	0:00	0.71	NA	NA
S.W.L.=80.26'		14:51	0:03	0.73	NA	NA
		14:55	0:07	0.71	87.54	7.28
		15:00	0:12	0.75	87.65	7.39
		15:05	0:17	0.71	87.65	7.39
		15:10	0:22	0.75	87.74	7.48
		15:15	0:27	0.75	87.76	7.50
		15:20	0:32	0.75	87.80	7.54
		15:30	0:42	0.71	87.66	7.40
		15:40	0:52	0.95	89.30	9.04
		15:50	1:02	0.94	89.48	9.22
		16:00	1:12	0.92	89.60	9.34
		16:10	1:22	1.07	92.32	12.06
		16:20	1:32	1.07	92.78	12.52
		16:30	1:42	1.07	93.22	12.96
		16:40	2:02	0.00	89.00	8.74
GM-50	8/31/1998	15:15	0:00	0.00	75.00	-3.10
S.W.L.=~78.1'		15:18	0:03	0.00	75.00	-3.10
		15:19	0:04	0.00	75.50	-2.60
		15:25	0:10	0.90	75.60	-2.50
		15:30	0:15	0.92	NA	NA
		15:35	0:20	0.94	77.50	-0.60
		15:40	0:25	0.95	76.00	-2.10
		16:15	1:00	1.02	77.90	-0.20
		16:25	1:10	1.02	78.05	-0.05
		16:35	1:20	1.02	78.30	0.20
		16:45	1:30	1.02	78.30	0.20
		16:55	1:40	1.25	78.65	0.55
		17:05	1:50	1.25	78.65	0.55
		17:15	2:00	1.25	78.65	0.55
		17:25	2:10	1.43	78.88	0.78
		17:35	2:20	1.46	79.00	0.90
		17:45	2:30	1.46	78.88	0.78
		17:55	2:40	1.62	79.04	0.94
		18:05	2:50	1.62	79.04	0.94
		18:15	3:00	1.62	79.04	0.94

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-51	9/1/1998	8:44	0:00	0.79	57.30	0.00
S.W.L=57.30'		8:47	0:03	0.80	57.39	0.09
		8:50	0:06	0.81	57.39	0.09
		8:53	0:09	0.81	57.39	0.09
		8:55	0:11	0.81	57.39	0.09
		9:05	0:21	0.81	57.39	0.09
		9:15	0:31	0.81	57.39	0.09
		9:25	0:41	0.81	57.39	0.09
		9:35	0:51	1.05	57.41	0.11
		9:45	1:01	1.05	57.41	0.11
		9:55	1:11	1.05	57.41	0.11
		10:05	1:21	1.33	57.45	0.15
		10:15	1:31	1.33	57.45	0.15
		10:25	1:41	1.33	57.45	0.15
		10:35	1:51	1.71	57.49	0.19
		10:45	2:01	1.71	57.48	0.18
		10:55	2:11	1.71	57.48	0.18
GM-52	9/1/1998	13:52	0:00	0.48	NA	NA
S.W.L.=~80'		13:55	0:03	0.47	NA	NA
		13:58	0:06	0.69	NA	NA
		14:00	0:08	0.67	NA	NA
		14:05	0:13	0.68	84.40	4.40
		14:07	0:15	0.68	NA	NA
		14:10	0:18	0.68	84.40	4.40
		14:20	0:28	0.68	84.00	4.00
		14:30	0:38	0.68	84.00	4.00
		14:40	0:48	0.68	84.00	4.00
		14:50	0:58	0.88	85.00	5.00
		15:00	1:08	0.91	86.00	6.00
		15:10	1:18	0.94	86.00	6.00
		15:20	1:28	1.20	86.00	6.00
		15:30	1:38	1.20	86.00	6.00
		15:40	1:48	1.20	86.00	6.00
		15:50	1:58	1.40	86.00	6.00
		16:00	2:08	1.40	85.00	5.00
		16:10	2:18	1.40	85.00	5.00

NOTE: All water levels are approximations

Table D-2. Well Development Pumping Data, Ford/Kingsford Site, Kingsford, Michigan

Well Development step tests conducted with a Grundfos pump.

Grundfos pump specs: Redi-Flow 2

Control box (blue box) specs: BMI/MPI - 230V

Well	Date	Time	Elapsed Time (Hr:mm)	Discharge (GPM)	Water Level (Ft BTOC)	Drawdown (Feet)
GM-59	11/8/1998	9:00	0:00	0.00	79.12	0.17
S.W.L.=78.95'		9:15	0:15	1.11	79.12	0.17
		9:30	0:30	1.11	79.12	0.17
		9:45	0:45	1.11	79.12	0.17
		10:00	1:00	1.11	79.18	0.23
		10:15	1:15	1.11	79.12	0.17
		10:30	1:30	1.11	79.12	0.17

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-1	0.50	92.15	10.08
	1.30	86.40	4.33
	1.50	85.64	3.57
	3.00	82.80	0.73
	4.00	82.30	0.23
	5.00	82.12	0.05
	14.00	82.03	-0.04
GM-2B	0.00	116.80	43.47
	0.17	110.44	37.11
	0.25	107.70	34.37
	0.33	104.30	30.97
	0.42	103.60	30.27
	0.50	102.40	29.07
	0.58	101.30	27.97
	0.67	99.10	25.77
	0.75	98.90	25.57
	0.83	97.70	24.37
	0.92	97.50	24.17
	1.00	96.40	23.07
	1.17	94.80	21.47
	1.33	93.50	20.17
	1.50	91.20	17.87
	1.67	90.90	17.57
	2.00	88.60	15.27
	2.33	86.70	13.37
	2.67	84.00	10.67
	3.00	83.60	10.27
	3.50	81.70	8.37
	4.00	80.40	7.07
	4.50	79.20	5.87
	5.00	77.00	3.67
	6.00	76.70	3.37
	7.00	75.70	2.37
	8.00	74.60	1.27
GM-3A	0.00	49.02	1.80
	0.08	48.20	0.98
	0.17	NA	NA
	0.25	47.80	0.58
	0.33	47.90	0.68
	0.42	47.20	-0.02
	0.50	NA	NA
	0.58	47.20	-0.02
	0.67	47.20	-0.02
	0.75	47.20	-0.02

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-3A (continued)	0.83	47.24	0.02
	0.92	47.22	0.00
	1.00	47.22	0.00
	1.17	47.24	0.02
	1.33	47.22	0.00
GM-3B	0.00	102.04	27.76
	0.08	96.00	21.72
	0.17	94.30	20.02
	0.25	90.00	15.72
	0.33	87.30	13.02
	0.42	NA	NA
	0.50	84.30	10.02
	0.58	83.00	8.72
	0.67	81.80	7.52
	0.75	NA	NA
	0.83	82.50	8.22
	0.92	81.20	6.92
	1.00	81.00	6.72
	1.17	79.50	5.22
	1.33	78.70	4.42
	1.50	78.10	3.82
	1.67	77.70	3.42
	1.83	77.05	2.77
	2.00	76.65	2.37
	2.25	76.15	1.87
	2.50	75.70	1.32
	2.75	75.40	1.12
	3.00	75.10	0.82
	3.50	74.70	0.42
	4.00	74.48	0.20
	4.50	74.32	0.04
	5.00	74.23	-0.05
	5.50	74.16	-0.12
	6.00	74.14	-0.14
	6.50	74.10	-0.18
	7.00	74.09	-0.19
	7.50	74.08	-0.20
	8.00	74.08	-0.20
	8.50	74.08	-0.20
	8.75	74.08	-0.20
	9.00	74.07	-0.21
	9.50	74.07	-0.21
	10.00	74.07	-0.21

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-4	0.00	72.90	29.57
	0.08	71.00	27.67
	0.17	70.00	26.67
	0.25	69.30	25.97
	0.33	67.60	24.27
	0.42	66.30	22.97
	0.50	65.20	21.87
	0.58	64.22	20.89
	0.67	63.80	20.47
	0.75	62.50	19.17
	0.83	61.70	18.37
	0.92	61.70	18.37
	1.00	61.60	18.27
	1.17	61.00	17.67
	1.33	60.95	17.62
	1.50	60.60	17.27
	1.67	60.28	16.95
	1.83	59.95	16.62
	2.00	59.60	16.27
	2.33	59.00	15.67
	2.67	58.40	15.07
	3.00	57.82	14.49
	3.50	57.00	13.67
	4.00	56.15	12.82
	4.50	55.40	12.07
	5.00	54.68	11.35
	6.00	53.34	10.01
	7.00	52.10	8.77
	8.00	51.02	7.69
	9.00	50.00	6.67
	10.00	49.12	5.79
	11.00	48.30	4.97
	12.00	47.65	4.32
	13.00	47.00	3.67
	14.00	46.43	3.10
	15.00	45.93	2.60
	16.00	45.50	2.17
	17.00	45.10	1.77
	18.00	44.75	1.42
	19.00	44.44	1.11
	20.00	44.20	0.87
	21.00	43.90	0.57
	22.00	43.75	0.42
	23.00	43.55	0.22
	24.00	43.40	0.07
	25.00	43.25	-0.08

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-5	0.00	103.05	18.90
	0.17	96.00	11.85
	0.33	91.50	7.35
	0.50	89.00	4.85
	0.67	87.72	3.57
	0.83	86.80	2.65
	1.00	86.20	2.05
	1.17	85.75	1.60
	1.33	85.30	1.15
	1.50	85.00	0.85
	1.67	84.76	0.61
	1.83	84.50	0.35
	2.00	84.40	0.25
	2.17	84.28	0.13
	2.33	84.16	0.01
	2.50	84.08	-0.07
	2.67	84.02	-0.13
	2.83	83.99	-0.16
	3.00	83.95	-0.20
	3.17	83.90	-0.25
	3.33	83.90	-0.25
	3.50	83.88	-0.27
	3.67	83.87	-0.28
	3.83	83.85	-0.30
	4.00	83.84	-0.31
	4.17	83.84	-0.31
	4.33	83.84	-0.31
	4.50	83.84	-0.31
	4.67	83.84	-0.31
	5.17	83.85	-0.30
	5.67	83.90	-0.25
	6.17	83.96	-0.19
	6.67	84.03	-0.12
	7.17	84.08	-0.07
	7.67	84.15	0.00
	8.17	84.20	0.05
	8.67	84.25	0.10
	9.17	84.30	0.15
	9.67	84.30	0.15
	10.17	84.29	0.14
	10.67	84.30	0.15
GM-6	1.00	83.31	1.61
	6.00	83.25	1.55
	13.00	83.24	1.54

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-7	0.17	74.10	28.95
	0.42	65.27	20.12
	0.67	61.20	16.05
	0.88	58.64	13.49
	1.25	55.19	10.04
	1.50	53.28	8.13
	1.75	52.00	6.85
	2.00	50.76	5.61
	2.25	49.73	4.58
	2.42	49.03	3.88
	2.75	48.18	3.03
	3.00	47.72	2.57
	3.25	47.16	2.01
	3.50	46.83	1.68
	4.00	46.31	1.16
	4.25	46.09	0.94
	4.50	45.95	0.80
	4.75	45.84	0.69
	5.00	45.72	0.57
	6.00	45.49	0.34
	7.00	45.38	0.23
	8.00	45.33	0.18
	9.00	45.30	0.15
	10.00	45.29	0.14
	12.00	45.27	0.12
	14.00	45.26	0.11
	16.00	45.24	0.09
	25.00	45.15	0.00
GM-8	0.00	11.87	1.01
	0.08	11.68	0.82
	0.17	10.95	0.09
	0.25	10.90	0.04
	0.33	10.90	0.04
	0.42	10.87	0.01
	0.50	10.87	0.01
	0.58	10.88	0.02
	0.67	10.86	0.00
	0.75	10.87	0.01
	0.83	10.86	0.00
	0.92	10.86	0.00
	1.00	10.86	0.00
	1.17	10.86	0.00
	1.33	10.86	0.00
	1.50	10.86	0.00

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-8	1.67	10.86	0.00
(continued)	1.83	10.86	0.00
	2.00	10.86	0.00
GM-9	0.50	18.12	0.37
	1.00	17.88	0.13
	1.50	17.83	0.08
	2.00	17.82	0.07
	3.00	17.80	0.05
	4.00	17.79	0.04
	5.00	17.78	0.03
	6.00	17.77	0.02
	7.00	17.76	0.01
	8.00	17.76	0.01
	9.00	17.75	0.00
	10.00	17.75	0.00
GM-10	0.08	20.70	4.04
	0.17	19.66	3.00
	0.33	18.90	2.24
	0.50	18.60	1.94
	0.58	18.37	1.71
	0.67	18.30	1.64
	0.83	18.20	1.54
	0.92	18.15	1.49
	1.00	18.10	1.44
	1.17	18.04	1.38
	1.33	17.96	1.30
	1.50	17.92	1.26
	1.67	17.88	1.22
	1.83	17.83	1.17
	2.00	17.81	1.15
	2.33	17.74	1.08
	2.67	17.70	1.04
	3.00	17.66	1.00
	3.50	17.59	0.93
	4.00	17.55	0.89
	4.50	17.51	0.85
	5.00	17.47	0.81
	5.50	17.43	0.77
	6.00	17.40	0.74
	7.00	17.35	0.69
	8.00	17.30	0.64
	9.00	17.26	0.60
	10.00	17.23	0.57
	11.00	17.19	0.53

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-10 (continued)	12.00	17.17	0.51
	13.00	17.14	0.48
	14.00	17.12	0.46
	15.00	17.10	0.44
	17.00	17.06	0.40
	19.00	17.03	0.37
	21.00	17.00	0.34
	23.00	16.97	0.31
	25.00	16.95	0.29
	27.00	16.93	0.27
	30.00	16.91	0.25
GM-11	0.50	15.30	1.86
	1.00	13.95	0.51
	1.50	13.69	0.25
	2.00	13.60	0.16
	2.50	13.55	0.11
	3.00	13.54	0.10
	4.00	13.51	0.07
	5.00	13.50	0.06
	6.00	13.48	0.04
	7.00	13.47	0.03
	8.00	13.46	0.02
	9.00	13.45	0.01
	10.00	13.45	0.01
GM-12	0.00	67.22	0.15
	0.08	67.07	0.00
	0.17	67.00	-0.07
	0.25	67.03	-0.04
	0.33	67.05	-0.02
	0.42	67.04	-0.03
	0.50	67.04	-0.03
	0.58	67.04	-0.03
	0.67	67.05	-0.02
	0.75	67.04	-0.03
	0.83	67.04	-0.03
	1.00	67.04	-0.03
	1.17	67.04	-0.03
	1.33	67.04	-0.03
	1.50	67.04	-0.03
	1.67	67.04	-0.03
	1.83	67.04	-0.03
	2.00	67.04	-0.03

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-15	1.50	96.66	55.86
	1.75	96.20	55.40
	2.00	95.60	54.80
	2.50	94.65	53.85
	3.25	93.15	52.35
	4.00	92.12	51.32
	4.50	91.30	50.50
	5.00	90.57	49.77
	6.00	89.15	48.35
	7.00	87.62	46.82
	8.00	86.20	45.40
	9.00	84.88	44.08
	10.00	83.67	42.87
	12.00	81.09	40.29
	14.00	78.70	37.90
	16.00	76.45	35.65
	18.00	74.42	33.62
	20.00	72.45	31.65
	25.00	68.80	28.00
	30.00	64.14	23.34
	35.00	60.75	19.95
	40.00	57.80	17.00
	45.00	55.20	14.40
	50.00	53.15	12.35
GM-17	0.00	64.23	7.09
	0.17	59.00	1.86
	0.25	58.35	1.21
	0.33	57.60	0.46
	0.42	57.40	0.26
	0.50	57.34	0.20
	0.58	57.22	0.08
	0.67	57.20	0.06
	0.75	57.18	0.04
	0.83	57.18	0.04
	0.92	57.17	0.03
	1.00	57.17	0.03
	1.50	57.17	0.03
	1.67	57.17	0.03
	1.83	57.17	0.03
	2.00	57.17	0.03
GM-25A	0.00	13.21	0.52
	0.17	12.74	0.05
	0.50	12.71	0.02
	0.67	12.70	0.01

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-25A (continued)	0.83	12.70	0.01
	1.00	12.69	0.00
	1.17	12.69	0.00
	1.33	12.69	0.00
	1.50	12.69	0.00
	1.67	12.69	0.00
	1.83	12.69	0.00
	2.00	12.69	0.00
	3.00	12.69	0.00
	4.00	12.69	0.00
	5.00	12.69	0.00
GM-25B	2.00	10.90	-0.10
	3.00	11.05	0.05
	5.00	11.15	0.15
GM-25C	0.00	13.89	3.14
	0.17	12.90	2.15
	0.33	11.70	0.95
	0.50	11.51	0.76
	0.67	11.43	0.68
	0.83	11.38	0.63
	1.00	11.36	0.61
	1.17	11.34	0.59
	1.33	11.32	0.57
	1.50	11.31	0.56
	1.67	11.29	0.54
	1.83	11.28	0.53
	2.00	11.27	0.52
	3.00	NA	NA
	4.00	11.20	0.45
	5.00	11.16	0.41
	6.00	11.13	0.38
	7.00	11.11	0.36
	8.00	11.08	0.33
	9.00	11.06	0.31
	10.00	11.04	0.29
GM-26A	0.00	12.72	0.23
	0.17	12.53	0.04
	0.33	12.52	0.03
	0.50	12.51	0.02
	0.67	12.51	0.02
	0.83	12.51	0.02
	1.00	12.51	0.02
	1.17	12.51	0.02

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-26A (continued)	1.33	12.51	0.02
	1.50	12.51	0.02
	1.67	12.51	0.02
	1.83	12.51	0.02
	2.00	12.51	0.02
	2.17	12.51	0.02
	2.33	12.51	0.02
	2.50	12.51	0.02
	2.67	12.50	0.01
	2.83	12.50	0.01
	3.00	12.50	0.01
	4.00	12.50	0.01
	5.00	12.50	0.01
GM-26B	0.00	46.81	34.70
	0.17	44.32	32.21
	0.33	41.31	29.20
	0.50	39.22	27.11
	0.67	37.63	25.52
	0.83	35.95	23.84
	1.00	34.31	22.20
	1.17	32.74	20.63
	1.33	31.23	19.12
	1.50	29.85	17.74
	1.67	28.51	16.40
	1.83	27.32	15.21
	2.00	26.10	13.99
	3.00	20.62	8.51
	4.00	17.20	5.09
	5.00	15.30	3.19
	6.00	14.36	2.25
	7.00	13.79	1.68
	8.00	13.43	1.32
	9.00	13.09	0.98
	10.00	12.88	0.77
	11.00	12.71	0.60
GM-26C	0.00	11.48	0.00
	0.33	11.51	0.03
	0.50	11.51	0.03
	0.67	11.51	0.03
	0.83	11.50	0.02
	1.00	11.50	0.02
	1.17	11.50	0.02
	1.33	11.50	0.02
	1.50	11.50	0.02
	1.67	11.50	0.02

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-26C (continued)	1.83	11.50	0.02
	2.00	11.50	0.02
	3.00	11.50	0.02
	4.00	11.50	0.02
GM-27A	0.00	17.60	0.32
	0.17	17.31	0.03
	0.33	17.28	0.00
	0.50	17.27	-0.01
	0.67	17.27	-0.01
	0.83	17.27	-0.01
	1.00	17.27	-0.01
	1.17	17.27	-0.01
	1.33	17.27	-0.01
	1.50	17.27	-0.01
	1.67	17.27	-0.01
	1.83	17.27	-0.01
	2.00	17.27	-0.01
GM-27B	0.00	18.63	1.57
	0.17	17.69	0.63
	0.33	17.09	0.03
	0.50	17.02	-0.04
	0.67	17.02	-0.04
	0.83	17.02	-0.04
	1.00	17.02	-0.04
	1.17	17.02	-0.04
	1.33	17.02	-0.04
	1.50	17.02	-0.04
	1.67	17.02	-0.04
	1.83	17.01	-0.05
	2.00	17.01	-0.05
	2.17	17.01	-0.05
	2.33	17.01	-0.05
	2.50	17.01	-0.05
	2.67	17.01	-0.05
	2.83	17.01	-0.05
	3.00	17.01	-0.05
GM-27C	0.00	36.26	20.05
	0.17	34.15	17.94
	0.33	32.25	16.04
	0.50	30.80	14.59
	0.67	29.62	13.41
	0.83	28.35	12.14
	1.00	27.26	11.05

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-27C (continued)	1.17	26.18	9.97
	1.33	25.24	9.03
	1.50	24.44	8.23
	1.67	23.67	7.46
	1.83	23.01	6.80
	2.00	22.34	6.13
	2.17	21.81	5.60
	2.33	21.32	5.11
	2.50	20.89	4.68
	2.67	20.43	4.22
	2.83	20.05	3.84
	3.00	19.73	3.52
	4.00	18.35	2.14
	5.00	17.58	1.37
	6.00	17.14	0.93
	7.00	16.90	0.69
	8.00	16.79	0.58
	9.00	16.70	0.49
	10.00	16.66	0.45
	11.00	16.63	0.42
	12.00	16.61	0.40
GM-28A	0.00	26.77	0.20
	0.17	26.6	0.03
	0.33	26.6	0.03
	0.50	26.59	0.02
	0.67	26.59	0.02
	0.83	26.59	0.02
	1.00	26.59	0.02
	1.17	26.59	0.02
	1.33	26.59	0.02
	1.50	26.59	0.02
	1.67	26.59	0.02
	1.83	26.59	0.02
	2.00	26.59	0.02
GM-28B	0.00	27.83	1.23
	0.17	27.11	0.51
	0.33	26.77	0.17
	0.50	26.71	0.11
	0.67	26.7	0.10
	0.83	26.68	0.08
	1.00	26.67	0.07
	1.17	26.66	0.06
	1.33	26.66	0.06
	1.50	26.66	0.06

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-28B (continued)	1.67	26.66	0.06
	1.83	26.66	0.06
	2.00	26.66	0.06
	2.17	26.65	0.05
	2.33	26.65	0.05
	2.50	26.64	0.04
	2.67	26.64	0.04
	2.83	26.64	0.04
	3.00	26.64	0.04
GM-29	0.00	19.15	0.18
	0.17	19.01	0.04
	0.33	18.99	0.02
	0.50	18.99	0.02
	0.67	18.98	0.01
	0.83	18.98	0.01
	1.00	18.98	0.01
	1.17	18.98	0.01
	1.33	18.98	0.01
	1.50	18.98	0.01
	1.67	18.98	0.01
	1.83	18.98	0.01
	2.00	18.98	0.01
GM-32	0.00	45.8	1.24
	0.17	44.65	0.09
	0.33	44.46	-0.10
	0.50	44.55	-0.01
	0.67	44.58	0.02
	0.83	44.58	0.02
	1.00	44.58	0.02
	1.17	44.57	0.01
	1.33	44.57	0.01
	1.50	44.57	0.01
	1.67	44.56	0.00
	1.83	44.56	0.00
	2.00	44.56	0.00
	3.00	44.55	-0.01
	4.00	44.55	-0.01
GM-33	0.00	88.25	16.82
	0.17	87.07	15.64
	0.33	85.65	14.22
	0.50	85.59	14.16
	0.67	85.55	14.12
	0.83	85.5	14.07

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-33 (continued)	1.00	85.46	14.03
	1.17	85.4	13.97
	1.33	85.37	13.94
	1.50	85.33	13.90
	1.67	85.3	13.87
	1.83	85.26	13.83
	2.00	85.24	13.81
	3.00	85.07	13.64
	4.00	84.95	13.52
	5.00	84.81	13.38
	6.00	84.7	13.27
	7.00	84.59	13.16
	8.00	84.49	13.06
	9.00	84.39	12.96
	10.00	84.29	12.86
	15.00	83.84	12.41
GM-34A	0.00	18.98	0.39
	0.17	18.55	-0.04
	0.33	18.54	-0.05
	0.50	18.54	-0.05
	0.67	18.54	-0.05
	0.83	18.54	-0.05
	1.00	18.54	-0.05
	1.17	18.55	-0.04
	1.33	18.55	-0.04
	1.50	18.55	-0.04
	1.67	18.55	-0.04
	1.83	18.55	-0.04
	2.00	18.55	-0.04
GM-34B	0.00	49.73	6.43
	0.17	47.71	4.41
	0.33	46.56	3.26
	0.83	46.01	2.71
	4.00	46.00	2.70
	5.00	46.00	2.70
	6.00	46.00	2.70
GM-36	0.00	40.5	0.82
	0.17	39.48	-0.20
	0.33	39.68	0.00
	0.50	39.68	0.00
	0.67	39.68	0.00
	0.83	39.68	0.00
	1.00	39.68	0.00
	1.17	39.68	0.00

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-36	1.33	39.68	0.00
(continued)	1.50	39.68	0.00
	1.67	39.68	0.00
	1.83	39.68	0.00
	2.00	39.69	0.01
	3.00	39.69	0.01
GM-37B	0.00	72.85	0.29
	0.17	72.53	-0.03
	0.33	72.65	0.09
	0.50	72.65	0.09
	0.67	72.66	0.10
	0.83	72.66	0.10
	1.00	72.65	0.09
	1.17	72.65	0.09
	1.33	72.65	0.09
	1.50	72.65	0.09
	1.67	72.65	0.09
	1.83	72.65	0.09
	2.00	72.65	0.09
GM-38A	0.00	56.06	0.16
	0.17	55.75	-0.15
	0.33	55.77	-0.13
	0.50	55.76	-0.14
	0.67	55.76	-0.14
	0.83	55.76	-0.14
	1.00	55.76	-0.14
	1.17	55.76	-0.14
	1.33	55.76	-0.14
	1.50	55.76	-0.14
	1.67	55.76	-0.14
	1.83	55.76	-0.14
	2.00	55.76	-0.14
GM-38B	0.00	55.36	1.33
	0.17	54.25	-0.05
	0.33	54.21	-0.09
	0.50	54.30	0.00
	0.67	54.30	0.00
	0.83	54.31	0.01
	1.00	54.31	0.01
	1.17	54.31	0.01
	1.33	54.31	0.01
	1.50	54.31	0.01

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-38B (continued)	1.67	54.31	0.01
	1.83	54.31	0.01
	2.00	54.31	0.01
GM-38C	0.00	79.35	24.87
	0.17	76.57	22.09
	0.33	73.35	18.87
	0.50	71.14	16.66
	0.67	69.56	15.08
	0.83	68.13	13.65
	1.00	66.96	12.48
	1.17	65.72	11.24
	1.33	64.49	10.01
	1.50	63.46	8.98
	1.67	62.5	8.02
	1.83	61.56	7.08
	2.00	60.79	6.31
	2.17	60.03	5.55
	2.33	59.3	4.82
	2.50	58.58	4.10
	2.67	57.97	3.49
	2.83	57.43	2.95
	3.00	56.94	2.46
	4.00	54.09	-0.39
	5.00	53.98	-0.50
	6.00	54.32	-0.16
	7.00	54.47	-0.01
	8.00	54.54	0.06
	9.00	54.56	0.08
	10.00	54.56	0.08
GM-39	0.00	45.46	2.50
	0.17	43.7	0.74
	0.33	43.01	0.05
	0.50	43.06	0.10
	0.67	43.07	0.11
	0.83	43.08	0.12
	1.00	43.08	0.12
	1.17	43.08	0.12
	1.33	43.09	0.13
	1.50	43.09	0.13
	1.67	43.09	0.13
	1.83	43.09	0.13
	2.00	43.09	0.13
	3.00	43.09	0.13

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-40A	0.00	43.35	0.19
	0.17	43.2	0.04
	0.33	43.25	0.09
	0.50	43.27	0.11
	0.67	43.28	0.12
	0.83	43.28	0.12
	1.00	43.28	0.12
	1.17	43.28	0.12
	1.33	43.28	0.12
	1.50	43.28	0.12
	1.67	43.28	0.12
	1.83	43.28	0.12
	2.00	43.28	0.12
	3.00	43.28	0.12
	4.00	43.28	0.12
	5.00	43.28	0.12
GM-40B	0.00	44.13	0.98
	0.17	42.99	-0.16
	0.33	43.13	-0.02
	0.50	43.25	0.10
	0.67	43.25	0.10
	0.83	43.25	0.10
	1.00	43.24	0.09
	1.17	43.24	0.09
	1.33	43.23	0.08
	1.50	43.23	0.08
	1.67	43.22	0.07
	1.83	43.22	0.07
	2.00	43.22	0.07
	3.00	43.21	0.06
	4.00	43.21	0.06
	5.00	43.20	0.05
	6.00	43.20	0.05
	7.00	43.20	0.05
	8.00	43.20	0.05
GM-42	0.00	45.73	1.60
	0.17	44.99	0.86
	0.33	44.98	0.85
	0.50	44.9	0.77
	0.67	44.85	0.72
	0.83	44.82	0.69
	1.00	44.79	0.66
	1.17	44.76	0.63
	1.33	44.74	0.61

Table D-3. Recovery Raw Data, Ford/Kingsford Site, Kingsford, Michigan

Well	Elapsed Time (mins)	Water Level (Ft BTOC)	Residual Drawdown (Ft BTOC)
GM-42	1.50	44.72	0.59
(continued)	1.67	44.71	0.58
	1.83	44.69	0.56
	2.00	44.68	0.55
	3.00	44.64	0.51
	4.00	44.62	0.49
	5.00	44.6	0.47
	6.00	44.6	0.47
	7.00	44.62	0.49
	8.00	44.62	0.49
	9.00	44.62	0.49
	10.00	44.61	0.48
GM-50	0.00	79.04	0.94
	0.17	78.08	-0.02
	0.33	78.1	0.00
	0.50	78.1	0.00
	0.67	78.16	0.06
	0.83	78.4	0.30
	1.00	78.22	0.12
	1.17	78.28	0.18
	1.33	78.28	0.18
	1.50	78.28	0.18
	1.67	78.2	0.10
	1.83	78.2	0.10
GM-51	0.00	57.20	-0.10
	0.17	57.30	0.00
	0.33	57.30	0.00
	0.50	57.30	0.00
	0.67	57.30	0.00
	0.83	57.30	0.00
	1.00	57.30	0.00

ARCADIS

Appendix E

Geophysical Report

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First Submittal of the

Presentation of the Results for the Geophysical Surveys Conducted

at the

Easton Estates Site
Kingsford, Michigan

for

ARCADIS Geraghty & Miller
Milwaukee, Wisconsin

by

Fromm Applied Technology
Mequon, Wisconsin

February 28, 1998

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Appendix A: Easton Estates Site-- GPR Records

Appendix B: Easton Estates Site--Seismic Reflection Records

(Appendices A and B are not provided with this submittal.)

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INTRODUCTION

During the period of July 20 through November 2, 1997, electromagnetic, ground penetrating radar (GPR), and seismic reflection surveys were conducted at the Easton Estates site located in Kingsford, Michigan. The GPR survey was intended to characterize the unsaturated overburden while the seismic reflection survey was expected to characterize the depth to bedrock. An electromagnetic (EM31) survey, conducted in July, was used to evaluate if the surface conductivities were appropriate for conducting a GPR survey. As part of the investigation a boring program was established. To supplement the boring program, a non-intrusive geophysical program was developed to assist in characterizing the overburden and depth to bedrock.

INSTRUMENTATION

The electromagnetic survey implemented Geonics' EM31 terrain conductivity system. The EM31 system was operated in both the vertical and horizontal dipole modes. Apparent conductivity and inphase measurements were electronically stored on an attached data logger. The GPR survey implemented a pulse EKKO IV ground penetrating radar system manufactured by Sensors & Software, Inc. Acquisition, field output, and data storage are achieved through the use of a laptop computer. Antennas ranged from 50 to 200 MHz.

The seismic reflection survey utilized a Geometerics 48 channel instantaneous floating point (IFP) seismograph, a Bison Elastic Wave Generator (EWG) pulled by a Ford 1710 diesel tractor, Mark 40 Hz geophones connected to cables with swamp connectors and 10 foot take-out spacings. The reflection data is processed on Eavesdropper software licensed by the Kansas Geological Survey (KGS).

METHODOLOGY

Ground control was established by tying station locations along a geophysical line to cultural features. These features include streets, places (e.g., the park, wastewater treatment facility, and wells), and geographic descriptions (e.g., bottom of hill, middle of slope, top of hill, on grass, on asphalt). A base map for the site is presented in **Figure 1: Easton Estates Site--Geophysical Investigation.**

The preliminary EM31 data were acquired from the northwest end of Test 1, along Grant from Sagoloa to approximately 200 feet north of Breitung, and along the north side of Breitung from approximately Grant to LoDAL Park Road. Figure 1 shows the placement of the GPR and seismic reflection lines. With the exception of the seismic reflection lines, GPR data was acquired along each of the dark black lines. The seismic reflection lines are labeled Menominee River Line, East-West Line, Balsam 1 Line, and Balsam 2 Line.

The GPR surveys digitally recorded data along transect lines and with parameters consistent with the manufactures recommendations. Since data was collected with several different nominal frequencies the distance between stations varied. Though the targets are spatially large a relatively small spacing between stations is implemented in an effort to avoid spatial aliasing. An approximately 3 to 4 foot step size (station spacing), a 1000 volt pulser voltage, a 128 stack record, and a reflection survey mode is utilized for each transect line. The nominal frequency varied from 50 to 200 Megahertz. Spacing between coils for the 50 Megahertz acquisition is approximately 7.5 feet, for the 100 Megahertz acquisition is approximately 3.75 to 4 feet, and for the 200 Megahertz acquisition is

approximately 2 feet. Each trace consists of a 500 nanoseconds total time window. This record length is theoretically long enough to obtain events in excess of approximately 100 feet deep, assuming an average velocity 0.492 feet per nanosecond. However, reflections from depths much in excess of 40 feet were not anticipated. The survey parameters were selected on the basis of the guidelines provided by the manufacture and Annan and Cosway (1992).

The geometry and recording parameters for the seismic reflection survey were based on a comparison of boring logs and walkouts from two test sites. A walkout consists of setting out a geophone array and acquiring data with shot points located at the first geophone and at distances from the first geophone in increments equal to the length of the geophone array. The end result, after the successive records are joined together, is a large panel showing the relationship of seismic events in time verses distance away or offset from the source. The first walkout was conducted near boring GMSB-1 and the second walkout was conducted near boring GM-4. At GMSB-1, bedrock is expected at a depth of approximately 290 feet with the upper 50 feet unsaturated. In contrast, the bedrock at GM-4 is shallow and expected at a depth of approximately 120 feet with the upper 60 feet unsaturated. At the mobile processing center, models were generated from the results of the boring logs and from a range of interval velocities. While coherent events were observed in both walkouts and correlated well with the models, it was apparent that a continuous reflection across an entire set of 24 traces was unlikely for lines with very shallow bedrock and very deep bedrock. In other words, the geometry ideal for recording a reflection from shallow bedrock would not be ideal for the deepest bedrock. Hence, the selected geometry attempted to maximize the recording of reflected energy from moderate depths and minimized the number of traces not recording reflected energy from very shallow and very deep bedrock. In addition, the spacing of the geophones attempted to

maximize the available recordable normal moveout, which maximizes the stacking or signal to noise capabilities of the common depth point method. On the basis of discussion about the walkouts in the field with others, an end on 12 fold common depth point (CDP) survey was designed with a minimum offset of 140 feet and a geophone spacing of 7 feet. Five hundred millisecond records were recorded at a sample rate of .5 milliseconds. The field filters were set fairly wide with a band pass of 25 to 250 Hz and a 60Hz notch filter. Each trace consists of a single geophone, often with stacks ranging from 4 to 8 shots. Results were not significantly enhanced by stacking more than 8 shots. Each shot was generated by the EWG with shot stations spaced 7 feet apart. After the seismic data was acquired it was reformatted for processing with the KGS software. A spectral analysis was evaluated. Data was then filtered with a bandpass of 25-150 Megahertz, edited, muted, CDP sorted, and corrected for surface statics. A velocity scan was then completed on the sorted and corrected data. From the velocity scan, a set of stacking velocities were chosen to process the results. A filtered and automatic gain controlled (AGC) CDP stacked section was generated from the selected stacking velocities. The four stacked sections are created from a total of approximately 2625 field records or approximately 5350 CDP locations.

Geophysical Assumptions

In a geophysical site characterization as the one performed at the Easton Estates site, it was understood from the beginning that no one method would clearly answer all the questions about the site. If certain assumptions were made and held true, each method of investigation should yield desirable results. On the basis of the EM31 results, there was a high level of confidence that the GPR would penetrate deep enough to characterize the unsaturated overburden, assuming minimal cultural interference (i.e. buildings, fencing,

and demolition debris) and attenuation. With the exception of areas where the meter readings appeared to be artificially elevated by the presence of nearby cultural interference, the apparent soil conductivities were typically below 3 millimhos per meter. As a rough estimate, the depth of penetration is approximately equal to 35 divided by the soil conductivity in millimhos per meter. Hence, soil conductivities of 2 to 3 millimhos per meter are expected to yield depths of penetration of approximately 11.5 to 17.5 meters or 37 to 57 feet. Once the depth of penetration is established, it is assumed that a detectable dielectric and/or conductivity contrast exists between units of interest. These detectable contrasts in electrical properties reflect the electromagnetic energy. Hence, these units must be thick enough to produce an interpretable reflection. The most rigorous assumptions are that the transmitted electromagnetic energy propagated at a relatively constant velocity and was able to reach the receiver after being reflected off the desired target. In general, reflected energy is increasingly attenuated and the velocity decreased by an increase in the electrical conductivities. The depth of an interpreted event is then calculated from the measured time and an assumed velocity.

The assumptions made for the GPR survey closely parallel assumptions made for the seismic reflection survey. First of all, it is assumed that coherent energy is transmitted down to the bedrock and returned to a geophone, along a reasonable geometric path. Where reflections in a GPR survey are generated by variations in the electrical properties, reflections in a seismic survey are generated by variations in the mechanical properties. In both cases, the end result is measuring the time for a wave to propagate to a reflector at depth and return to the surface. The depth of the interpreted event is then calculated from the measured time and an assumed velocity.

PRESENTATION OF RESULTS

On July 20, a limited EM31 survey was conducted to determine if the soil conductivities were conducive for a GPR survey. As discussed in the Geophysical Assumption, the apparent conductivities are generally below 3 millimhos per meter. These relatively low conductivity values suggested that a GPR survey should yield desirable results. Starting on August 6, a series of tests were conducted with 50 and 100 Megahertz antennas. After the first session, it appeared the 50 Megahertz results lacked the detail provided by the 100 Megahertz antenna. Typically, the depth of penetration for the 50 Megahertz results would be greater; however, the 100 Megahertz response often yielded reflections from travel times in excess of 160 nanoseconds. Thus during the second session, starting October 29, 1997, a series of GPR lines with 100, and 200 Megahertz antennas were conducted. The 200 Megahertz antenna was tested to determine if greater detail could be achieved without the loss of penetration. The results of these surveys are included in **Appendix A: Easton Estates Site -- GPR Records**. Continuous records were supplied to ARCADIS Geraghty & Miller for their use. While the stations across the top of the plot approximate distance, the station setting was reset to 0, if a new file was opened to continue the line. The plots are attached in sequential order.

During the period from September 15 through September 2, four seismic reflection lines were acquired. The results of the reflection survey are included in **Appendix B: Easton Estates Site -- Seismic Reflection Lines.** As the velocity of the unconsolidated material varies laterally across a line, the position of a reflection may also vary.

Ground Penetrating Radar

Two areas were designated for conducting test lines, as shown in Figure 1. The 50, 100, and 200 Megahertz GPR lines, conducted at Test 1, started at the west edge of Garfield, followed the entrance into the staging area, and ended on the west side of the pit. The 50 and 100 Megahertz GPR lines conducted at Test 2 started on the west edge of Garfield, followed the top of the north edge of the pit past well GM1, and then headed north on a gravel road. These lines ended at the southern edge of Breitung. These two areas were chosen because wells were placed along the lines and little cultural interference was expected.

In viewing the GPR figures, or other radar results contained in this report, it should be noted that the depth scale is a relative scale. Transit time of the radar pulse is the accurately measured quantity and conversion to depth requires an assumption of the electromagnetic propagation velocity. Propagation velocities were not measured. The velocity of 0.492 feet per nanosecond is an estimate.

As expected, an increase in resolution is observed as the antenna frequencies increase. In addition, the amount of the reflected energy decreases as the antenna frequencies increase, which is also expected. A comparison of the results for lines 5KGMT1/TEST LINE1, 1KGMT1/TEST LINE1, and 2KGMT1/TEST 1 all indicate a strong coherent reflection at approximately 90 nanoseconds at the start of the line. This event is clearly followed to approximately the middle of each line, where the drop in elevation is seen at the top of the record. The reflection appears at approximately 60 nanoseconds. From this location towards the west the reflection becomes more difficult to follow. However, it is interpreted to dip towards the west and eventually level off at approximately 80

nanoseconds. Unlike the results for 2KGMT1/TEST 1, the lower frequency 5KGMT1/TEST LINE 1 and 1KGMT1/TEST LINE1 results yielded reflected energy after 125 nanoseconds. The source of the deeper reflected energy from approximately 150 nanoseconds is unknown.

A comparison of the results for 5KGMT2/TEST LINE 2 and 1KGMT2/ TEST LINE 2, yielded nearly identical results. In both cases, returned energy is recorded throughout the record. 1KGMT2/TEST LINE 2 starts with a reflection at approximately 150 nanoseconds near station 0, continues across the line and ends up at approximately 100 nanoseconds near station 1000. This event is difficult to observe, but even more difficult to follow on line 5KGMT2/TEST LINE2.

While the 50 Megahertz antenna yielded greater depths of penetration, the 200 Megahertz antenna yielded the greatest resolution. At the time of the survey it was agreed, the 100 Megahertz provided the best compromise between penetration and resolution. This is supported by data collected along Beech. The 200 Megahertz record, BEECH 200 Megahertz, provides good definition, when energy is returned. However, the continuity of the deeper reflector north of Emmet is clearly better in the 100 Megahertz record, BEECH. On the basis of these comparisons, the majority of the GPR data collected during the second session was acquired with the 100 Megahertz antenna. A list of the acquired GPR lines, which includes the antenna frequency, are presented at the beginning of Appendix A.

The quality of the GPR data is easily tested by two simple observations. First of all, the data should be repeatable. And secondly, lines conducted perpendicular to each other should yield the same results at their intersection. This intersection of lines is called a tie

point. A comparison of all the GPR records at the tie points, yielded a very high correspondence. Major discrepancies were not apparent. Observed minor variations were often explained by cultural interference, which was associated with an intersection of two streets. In addition to the repeatability demonstrated in the test results, portions of 100 Megahertz data collected along Breen intentionally overlapped. Though the data collected along 1KGMC/BREEN was acquired from west to east and the data collected along BREEN was acquired from east to west, the area between Beech and the alley west of Beech was repeated. Along 1KGMC/BREEN station 2075 is near the alley and station 2225 ends at Beech. In contrast, along BREEN station 1690 is near Beech and station 1870 ends at the alley. The results at these two locations are mirrored images and correlate very well. The portion of record along 1KGMC/BREEN from 1925 to 2070 correlates well with cultural interference generated by utilities. Since no other area along the street was available to acquire data without interference, the GPR line was conducted down the center of the street up to station 2020. From station 2020 to 2070 the line systematically veered off towards the south, near GM2. This test provided a clear indication of the response from a utility (water main) at this site and an estimate of the distance from a buried utility that interference would be encountered.

The interpretation of ground penetrating radar is somewhat subjective and unique interpretations are generally not possible. There are fairly consistent events seen across many of the GPR lines. The 100 Megahertz data collected along line BEECH is a fairly good example of the results acquired. Often the region south of the "hill," seen between stations 0 and 450, yielded either poorly defined reflections or reflections shallower in time, then above the hill. The reflections below the hill are typically less than 100 nanoseconds. The deepest basal reflection observed north of the hill, between stations 650 and 1985, often ranged between 100 and 150 nanoseconds. In many areas north of the hill,

one or more shallower reflections may be observed. Many of the intersections experienced a loss of record while crossing an intersection. A good example of this is observed at station 1325, the center of Breen.

Seismic Reflection Survey

After the walkouts were completed, data were collected starting at the north end of Balsam. The first shot station is labeled 101 and the end of the line is labeled 635, Figure 1. Because of traffic, data could not be collected across Breitung. Hence, the southern portion of Balsam was shot as a separate line. The line started at station 2101 and ended near station 2400. After Balsam 1 and Balsam 2 Lines were completed, the Menominee River Line was acquired from the northwest, station 1101, towards the southeast and ended near station 2400. The East-West Line was the last line shot. It started at Westwood, station 1101, and ended short of Balsam, station 1470. The stations discussed so far represent stations marked in the field for shooting and recording the seismic data. Reflection data that is reduced to a stack is annotated with CDP labels across the top of the section, 1/2 of a CDP station number represents the field station number from where the reflected event is projected to occur along the line. Laterally distances are measured from the beginning of a line. Depths to ground level, saturation, or bedrock, as provided by the test borings, have been converted to depths from a reference datum to eliminate the effects of surface relief. For Balsam 1 Line, Balsam 2 Line, and the East-West Line depths are measured from a datum of 1150 feet. For the Menominee River Line depths are measured from a datum of 1065 feet. The thickness of the unsaturated zone may play a crucial role in determining the depth to bedrock. These data were provided by ARCADIS Geraghty & Miller.

REFERENCES

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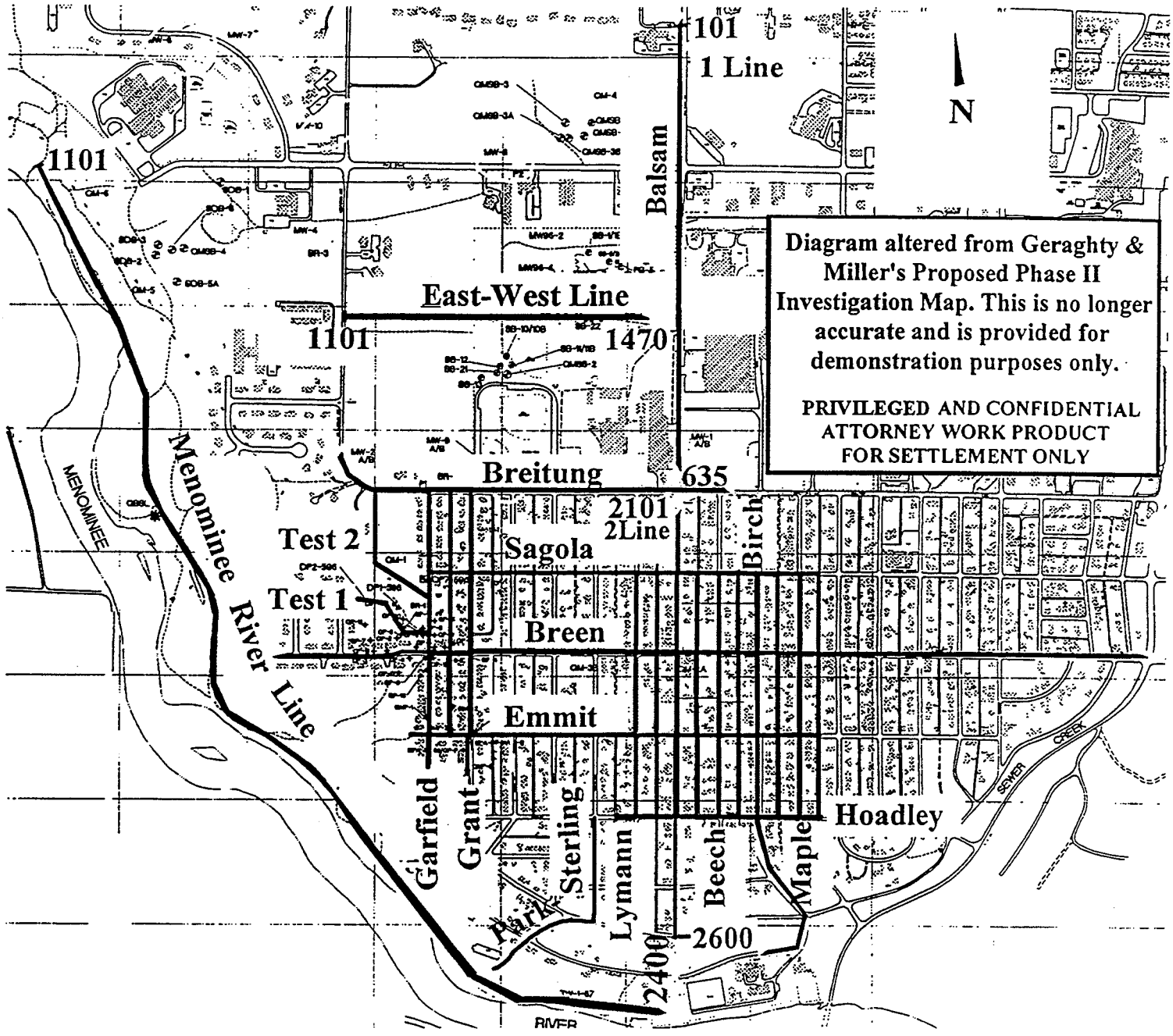

Figure 1: Easton Estates Site--Geophysical Investigation

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Appendix E

Geophysical Report

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First Submittal of the

Presentation of the Results for the Geophysical Surveys Conducted

at the

Easton Estates Site
Kingsford, Michigan

for

ARCADIS Geraghty & Miller
Milwaukee, Wisconsin

by

Fromm Applied Technology
Mequon, Wisconsin

February 28, 1998

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Appendix A: Easton Estates Site-- GPR Records

Appendix B: Easton Estates Site--Seismic Reflection Records

(Appendices A and B are not provided with this submittal.)

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INTRODUCTION

During the period of July 20 through November 2, 1997, electromagnetic, ground penetrating radar (GPR), and seismic reflection surveys were conducted at the Easton Estates site located in Kingsford, Michigan. The GPR survey was intended to characterize the unsaturated overburden while the seismic reflection survey was expected to characterize the depth to bedrock. An electromagnetic (EM31) survey, conducted in July, was used to evaluate if the surface conductivities were appropriate for conducting a GPR survey. As part of the investigation a boring program was established. To supplement the boring program, a non-intrusive geophysical program was developed to assist in characterizing the overburden and depth to bedrock.

INSTRUMENTATION

The electromagnetic survey implemented Geonics' EM31 terrain conductivity system. The EM31 system was operated in both the vertical and horizontal dipole modes. Apparent conductivity and inphase measurements were electronically stored on an attached data logger. The GPR survey implemented a pulse EKKO IV ground penetrating radar system manufactured by Sensors & Software, Inc. Acquisition, field output, and data storage are achieved through the use of a laptop computer. Antennas ranged from 50 to 200 MHz.

The seismic reflection survey utilized a Geometerics 48 channel instantaneous floating point (IFP) seismograph, a Bison Elastic Wave Generator (EWG) pulled by a Ford 1710 diesel tractor, Mark 40 Hz geophones connected to cables with swamp connectors and 10 foot take-out spacings. The reflection data is processed on Eavesdropper software licensed by the Kansas Geological Survey (KGS).

METHODOLOGY

Ground control was established by tying station locations along a geophysical line to cultural features. These features include streets, places (e.g., the park, wastewater treatment facility, and wells), and geographic descriptions (e.g., bottom of hill, middle of slope, top of hill, on grass, on asphalt). A base map for the site is presented in **Figure 1: Easton Estates Site--Geophysical Investigation.**

The preliminary EM31 data were acquired from the northwest end of Test 1, along Grant from Sagoloa to approximately 200 feet north of Breitung, and along the north side of Breitung from approximately Grant to LoDAL Park Road. Figure 1 shows the placement of the GPR and seismic reflection lines. With the exception of the seismic reflection lines, GPR data was acquired along each of the dark black lines. The seismic reflection lines are labeled Menominee River Line, East-West Line, Balsam 1 Line, and Balsam 2 Line.

The GPR surveys digitally recorded data along transect lines and with parameters consistent with the manufactures recommendations. Since data was collected with several different nominal frequencies the distance between stations varied. Though the targets are spatially large a relatively small spacing between stations is implemented in an effort to avoid spatial aliasing. An approximately 3 to 4 foot step size (station spacing), a 1000 volt pulser voltage, a 128 stack record, and a reflection survey mode is utilized for each transect line. The nominal frequency varied from 50 to 200 Megahertz. Spacing between coils for the 50 Megahertz acquisition is approximately 7.5 feet, for the 100 Megahertz acquisition is approximately 3.75 to 4 feet, and for the 200 Megahertz acquisition is

approximately 2 feet. Each trace consists of a 500 nanoseconds total time window. This record length is theoretically long enough to obtain events in excess of approximately 100 feet deep, assuming an average velocity 0.492 feet per nanosecond. However, reflections from depths much in excess of 40 feet were not anticipated. The survey parameters were selected on the basis of the guidelines provided by the manufacture and Annan and Cosway (1992).

The geometry and recording parameters for the seismic reflection survey were based on a comparison of boring logs and walkouts from two test sites. A walkout consists of setting out a geophone array and acquiring data with shot points located at the first geophone and at distances from the first geophone in increments equal to the length of the geophone array. The end result, after the successive records are joined together, is a large panel showing the relationship of seismic events in time verses distance away or offset from the source. The first walkout was conducted near boring GMSB-1 and the second walkout was conducted near boring GM-4. At GMSB-1, bedrock is expected at a depth of approximately 290 feet with the upper 50 feet unsaturated. In contrast, the bedrock at GM-4 is shallow and expected at a depth of approximately 120 feet with the upper 60 feet unsaturated. At the mobile processing center, models were generated from the results of the boring logs and from a range of interval velocities. While coherent events were observed in both walkouts and correlated well with the models, it was apparent that a continuous reflection across an entire set of 24 traces was unlikely for lines with very shallow bedrock and very deep bedrock. In other words, the geometry ideal for recording a reflection from shallow bedrock would not be ideal for the deepest bedrock. Hence, the selected geometry attempted to maximize the recording of reflected energy from moderate depths and minimized the number of traces not recording reflected energy from very shallow and very deep bedrock. In addition, the spacing of the geophones attempted to

maximize the available recordable normal moveout, which maximizes the stacking or signal to noise capabilities of the common depth point method. On the basis of discussion about the walkouts in the field with others, an end on 12 fold common depth point (CDP) survey was designed with a minimum offset of 140 feet and a geophone spacing of 7 feet. Five hundred millisecond records were recorded at a sample rate of .5 milliseconds. The field filters were set fairly wide with a band pass of 25 to 250 Hz and a 60Hz notch filter. Each trace consists of a single geophone, often with stacks ranging from 4 to 8 shots. Results were not significantly enhanced by stacking more than 8 shots. Each shot was generated by the EWG with shot stations spaced 7 feet apart. After the seismic data was acquired it was reformatted for processing with the KGS software. A spectral analysis was evaluated. Data was then filtered with a bandpass of 25-150 Megahertz, edited, muted, CDP sorted, and corrected for surface statics. A velocity scan was then completed on the sorted and corrected data. From the velocity scan, a set of stacking velocities were chosen to process the results. A filtered and automatic gain controlled (AGC) CDP stacked section was generated from the selected stacking velocities. The four stacked sections are created from a total of approximately 2625 field records or approximately 5350 CDP locations.

Geophysical Assumptions

In a geophysical site characterization as the one performed at the Easton Estates site, it was understood from the beginning that no one method would clearly answer all the questions about the site. If certain assumptions were made and held true, each method of investigation should yield desirable results. On the basis of the EM31 results, there was a high level of confidence that the GPR would penetrate deep enough to characterize the unsaturated overburden, assuming minimal cultural interference (i.e. buildings, fencing,

and demolition debris) and attenuation. With the exception of areas where the meter readings appeared to be artificially elevated by the presence of nearby cultural interference, the apparent soil conductivities were typically below 3 millimhos per meter. As a rough estimate, the depth of penetration is approximately equal to 35 divided by the soil conductivity in millimhos per meter. Hence, soil conductivities of 2 to 3 millimhos per meter are expected to yield depths of penetration of approximately 11.5 to 17.5 meters or 37 to 57 feet. Once the depth of penetration is established, it is assumed that a detectable dielectric and/or conductivity contrast exists between units of interest. These detectable contrasts in electrical properties reflect the electromagnetic energy. Hence, these units must be thick enough to produce an interpretable reflection. The most rigorous assumptions are that the transmitted electromagnetic energy propagated at a relatively constant velocity and was able to reach the receiver after being reflected off the desired target. In general, reflected energy is increasingly attenuated and the velocity decreased by an increase in the electrical conductivities. The depth of an interpreted event is then calculated from the measured time and an assumed velocity.

The assumptions made for the GPR survey closely parallel assumptions made for the seismic reflection survey. First of all, it is assumed that coherent energy is transmitted down to the bedrock and returned to a geophone, along a reasonable geometric path. Where reflections in a GPR survey are generated by variations in the electrical properties, reflections in a seismic survey are generated by variations in the mechanical properties. In both cases, the end result is measuring the time for a wave to propagate to a reflector at depth and return to the surface. The depth of the interpreted event is then calculated from the measured time and an assumed velocity.

PRESENTATION OF RESULTS

On July 20, a limited EM31 survey was conducted to determine if the soil conductivities were conducive for a GPR survey. As discussed in the Geophysical Assumption, the apparent conductivities are generally below 3 millimhos per meter. These relatively low conductivity values suggested that a GPR survey should yield desirable results. Starting on August 6, a series of tests were conducted with 50 and 100 Megahertz antennas. After the first session, it appeared the 50 Megahertz results lacked the detail provided by the 100 Megahertz antenna. Typically, the depth of penetration for the 50 Megahertz results would be greater; however, the 100 Megahertz response often yielded reflections from travel times in excess of 160 nanoseconds. Thus during the second session, starting October 29, 1997, a series of GPR lines with 100, and 200 Megahertz antennas were conducted. The 200 Megahertz antenna was tested to determine if greater detail could be achieved without the loss of penetration. The results of these surveys are included in **Appendix A: Easton Estates Site -- GPR Records**. Continuous records were supplied to ARCADIS Geraghty & Miller for their use. While the stations across the top of the plot approximate distance, the station setting was reset to 0, if a new file was opened to continue the line. The plots are attached in sequential order.

During the period from September 15 through September 2, four seismic reflection lines were acquired. The results of the reflection survey are included in **Appendix B: Easton Estates Site -- Seismic Reflection Lines.** As the velocity of the unconsolidated material varies laterally across a line, the position of a reflection may also vary.

Ground Penetrating Radar

Two areas were designated for conducting test lines, as shown in Figure 1. The 50, 100, and 200 Megahertz GPR lines, conducted at Test 1, started at the west edge of Garfield, followed the entrance into the staging area, and ended on the west side of the pit. The 50 and 100 Megahertz GPR lines conducted at Test 2 started on the west edge of Garfield, followed the top of the north edge of the pit past well GM1, and then headed north on a gravel road. These lines ended at the southern edge of Breitung. These two areas were chosen because wells were placed along the lines and little cultural interference was expected.

In viewing the GPR figures, or other radar results contained in this report, it should be noted that the depth scale is a relative scale. Transit time of the radar pulse is the accurately measured quantity and conversion to depth requires an assumption of the electromagnetic propagation velocity. Propagation velocities were not measured. The velocity of 0.492 feet per nanosecond is an estimate.

As expected, an increase in resolution is observed as the antenna frequencies increase. In addition, the amount of the reflected energy decreases as the antenna frequencies increase, which is also expected. A comparison of the results for lines 5KGMT1/TEST LINE1, 1KGMT1/TEST LINE1, and 2KGMT1/TEST 1 all indicate a strong coherent reflection at approximately 90 nanoseconds at the start of the line. This event is clearly followed to approximately the middle of each line, where the drop in elevation is seen at the top of the record. The reflection appears at approximately 60 nanoseconds. From this location towards the west the reflection becomes more difficult to follow. However, it is interpreted to dip towards the west and eventually level off at approximately 80

nanoseconds. Unlike the results for 2KGMT1/TEST 1, the lower frequency 5KGMT1/TEST LINE 1 and 1KGMT1/TEST LINE1 results yielded reflected energy after 125 nanoseconds. The source of the deeper reflected energy from approximately 150 nanoseconds is unknown.

A comparison of the results for 5KGMT2/TEST LINE 2 and 1KGMT2/ TEST LINE 2, yielded nearly identical results. In both cases, returned energy is recorded throughout the record. 1KGMT2/TEST LINE 2 starts with a reflection at approximately 150 nanoseconds near station 0, continues across the line and ends up at approximately 100 nanoseconds near station 1000. This event is difficult to observe, but even more difficult to follow on line 5KGMT2/TEST LINE2.

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The quality of the GPR data is easily tested by two simple observations. First of all, the data should be repeatable. And secondly, lines conducted perpendicular to each other should yield the same results at their intersection. This intersection of lines is called a tie

point. A comparison of all the GPR records at the tie points, yielded a very high correspondence. Major discrepancies were not apparent. Observed minor variations were often explained by cultural interference, which was associated with an intersection of two streets. In addition to the repeatability demonstrated in the test results, portions of 100 Megahertz data collected along Breen intentionally overlapped. Though the data collected along 1KGMC/BREEN was acquired from west to east and the data collected along BREEN was acquired from east to west, the area between Beech and the alley west of Beech was repeated. Along 1KGMC/BREEN station 2075 is near the alley and station 2225 ends at Beech. In contrast, along BREEN station 1690 is near Beech and station 1870 ends at the alley. The results at these two locations are mirrored images and correlate very well. The portion of record along 1KGMC/BREEN from 1925 to 2070 correlates well with cultural interference generated by utilities. Since no other area along the street was available to acquire data without interference, the GPR line was conducted down the center of the street up to station 2020. From station 2020 to 2070 the line systematically veered off towards the south, near GM2. This test provided a clear indication of the response from a utility (water main) at this site and an estimate of the distance from a buried utility that interference would be encountered.

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one or more shallower reflections may be observed. Many of the intersections experienced a loss of record while crossing an intersection. A good example of this is observed at station 1325, the center of Breen.

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After the walkouts were completed, data were collected starting at the north end of Balsam. The first shot station is labeled 101 and the end of the line is labeled 635, Figure 1. Because of traffic, data could not be collected across Breitung. Hence, the southern portion of Balsam was shot as a separate line. The line started at station 2101 and ended near station 2400. After Balsam 1 and Balsam 2 Lines were completed, the Menominee River Line was acquired from the northwest, station 1101, towards the southeast and ended near station 2400. The East-West Line was the last line shot. It started at Westwood, station 1101, and ended short of Balsam, station 1470. The stations discussed so far represent stations marked in the field for shooting and recording the seismic data. Reflection data that is reduced to a stack is annotated with CDP labels across the top of the section, 1/2 of a CDP station number represents the field station number from where the reflected event is projected to occur along the line. Laterally distances are measured from the beginning of a line. Depths to ground level, saturation, or bedrock, as provided by the test borings, have been converted to depths from a reference datum to eliminate the effects of surface relief. For Balsam 1 Line, Balsam 2 Line, and the East-West Line depths are measured from a datum of 1150 feet. For the Menominee River Line depths are measured from a datum of 1065 feet. The thickness of the unsaturated zone may play a crucial role in determining the depth to bedrock. These data were provided by ARCADIS Geraghty & Miller.

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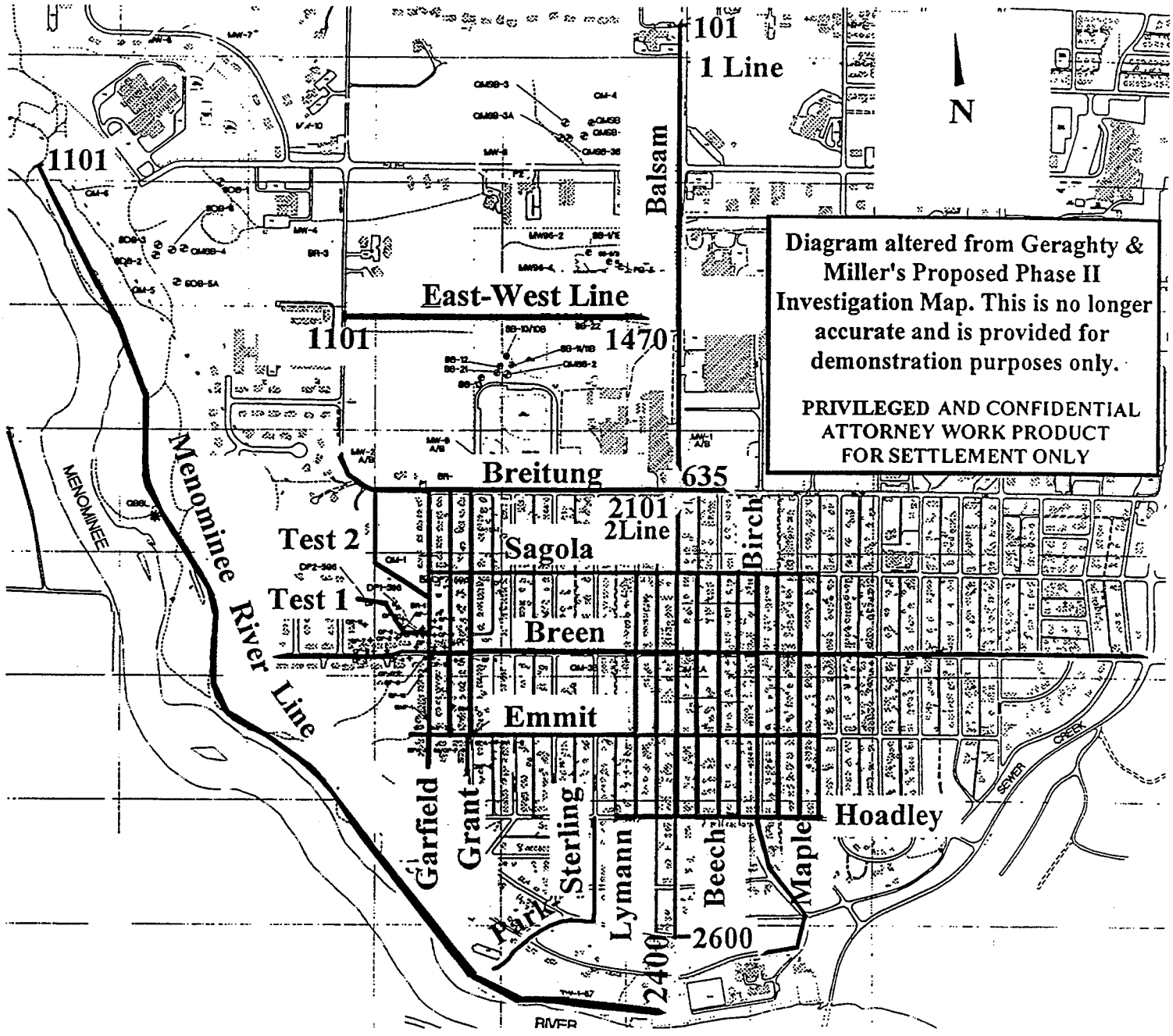

Figure 1: Easton Estates Site--Geophysical Investigation

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Appendix F

Laboratory Treatability and Bacteria Enumeration Methods

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Appendix F

Laboratory Treatbility and Bacteria Enumeration Methods

Treatability Testing Materials and Methods

Soil for the treatability study was collected in a plexiglas liner from the bore hole identified as GMSB-1 from a depth of 307 feet to 317 feet. After being removed from the liner, the soil was placed in a 5 gallon bucket and covered with distilled water. The bucket was sealed and shipped for overnight delivery to ARCADIS Geraghty & Miller's treatability laboratory in Research Triangle Park, North Carolina. A groundwater sample was also collected from GMSB-1 at 317 feet. The groundwater sample was allowed to fill and overflow from the 1 gallon amber sample jugs prior to sealing the jugs with zero headspace. The groundwater was shipped for next day delivery to Geraghty & Miller's treatability laboratory. Once the soil and groundwater arrived at the laboratory, the soil was transferred from the 5 gallon bucket into sterile 1 gallon glass jars. This transfer was accomplished in a glove box under a nitrogen blanket. The soil in the glass jars was stored at 4° C until use. The groundwater was stored at 4 °C as received.

On June 12, 1997 the GMSB-1 soil was composited inside a nitrogen glove box in stainless steel bowls that had been disinfected with HPLC grade isopropanol (Fisher). The glove box was confirmed to be anaerobic using a BBL dry anaerobic indicator strip (Becton Dickinson Part No. 71051). Soil was transferred from one bowl to another using a large disinfected stainless steel spoon. After the transfer of each spoon of soil, mixing was initiated prior to the transfer of another spoon of soil. After thorough homogenization, eight soil microcosms were established. The microcosms were established in 2 liter pyrex laboratory bottles (Corning). The soil placed in each microcosm was weighed in plastic weigh boats that had been disinfected with HPLC grade isopropanol. Seven 400 gram aliquots of soil were required to fill each 2 liter bottle to the 1400 milliliter gradation. Two hundred milliliters of GMSB-1 groundwater was added to each microcosm.

The microcosms were sealed with the closure shown in Figure F-1. The closure consists of a screw-on HPLC bottle top (Dionex, Part No. 045896) with 2 three-way valves and one three-way large bore valve (Cole-Parmer, Part Nos. E-30600-02 and E-30600-10) mounted in it. One of the valves was coupled to a luer-lok manifold (Cole-Parmer, Part No. Z-06464-84 with polyethylene connecting tubing (Cole-Parmer, Part No. E-30600-63). A second valve had no connections. The large bore three-way valve was connected to 1/8" teflon tubing which ran through the stopper assembly and terminated below the water line within the microcosms (Figure F-1). The luer-lok manifold was connected to a nitrogen supply (99.999% N_2). Nitrogen was flushed through the headspace of each microcosm using the luer-lok manifold for 5 minutes. The nitrogen exited each microcosm through the unused valve which was adjusted to the open position. Following headspace flushing, all valves were closed.

The microcosms were incubated in the glove box at room temperature from June 12 to July 20, 1997. The head spaces of the microcosms were periodically pressure tested using an Omega pressure gauge which was connected directly to the unused valve on the top of each microcosm (Figure F-1). The pressure measurements in pounds per square inch (p.s.i.) were compared to a pressure curve generated by

injecting known amounts of air (1 to 30 cubic centimeters) into a 2 liter bottle with 1,600 ml of water in it and measuring the generated pressure. This comparison was periodically used to estimate the volume of gas generated by each microcosm. Periodically, headspace gas samples were removed from each microcosm and analyzed for methane using a Hewlett Packard 5890 gas chromatograph with a flame ionization detector. The column used for this testing was equivalent to Supelco's Part No. 1-0293 with 100/120 HayeSep D packing. The injection port and detector were operated at 250°C. The chromatographic analysis consisted of a two minute hold at 60°C followed by a 25°C/minute temperature increase for a final temperature of 180°C which was held for 3 minutes. Total run time was 11.40 minutes and the equilibration time was set for 0.10 minutes. Samples were collected from the microcosms within the glove box using 1 ml gas tight syringes (Supelco, Part No. 2-0720) fitted with push button valves (Supelco, Part No. 2-2285) which protected sample integrity between the glove box and the gas chromatograph. The push button valve accommodated a luer hub needle (Supelco Part No. 2-0757) which was used to inject the sample into the gas chromatograph. An air lock was used to access the microcosms without introducing atmospheric air into the glove box. Following analysis, all microcosm head spaces were flushed for 5 minutes with nitrogen gas using the luer-lok manifold. The results of methane headspace analysis can be found in Figure F-2. Figure F-2 shows cumulative methane production for the microcosms.

On July 20 the microcosms were amended. The treatments shown in Table F-1 were established. Hydrogen peroxide was added to the microcosm by diluting a 30% solution (Fisher Part No. FL-06-0793) and confirming the final concentration of hydrogen peroxide with a test kit (Hach Part No. 24491-00). Hydrogen peroxide was added in 10 ml of volume. Nitrate was added as an aqueous solution of calcium nitrate tetrahydrate (Aldrich Part No. 23712-4) in 10 ml sterile deionized water (DI). Sulfate was added as an aqueous solution of magnesium sulfate heptahydrate (Mallinckrodt Part No. 6066) in 10 ml of sterile DI water. Sodium azide (Fluka Part No. 71289) was added as a dry solid to the abiotic control. The unamended control microcosms and the abiotic microcosm received 10 ml additions of sterile DI water. Prior to addition all aqueous amendments were sparged with nitrogen gas (99.999%) for 10 minutes. After amendment addition, each microcosm was mixed within the glove box using a stainless steel shaft mounted propeller and a cordless drill. The #8 nitrate amended microcosm was placed in a water bath within the glove box that was operated at 52°C to 55°C. The other microcosms were incubated at room temperature.

The availability of the alternate terminal electron acceptors added to microcosms #4, #5, #6, and #8 was monitored periodically. The presence of oxygen in the hydrogen peroxide amended microcosm was determined using both a dissolved oxygen (DO) probe and a redox probe. The presence of nitrate and sulfate in microcosm #5, #6, and #8 was determined by withdrawing 3 ml of water through the wide bore three-way valve and teflon tubing shown in Figure F-1. The samples were withdrawn using 10 ml disposable syringes (Becton Dickinson Part No. 301029). The samples were filtered through 0.2 µm teflon syringe filters (Supelco Part No. 5-9235) and analyzed on a Dionex ion chromatograph using an AS-11 IonPac® Column (Dionex Part No. 44076). The results of these analyses were used to determine the availability of nitrate and sulfate. As the availability was seen to decrease, additional nitrate or sulfate was added to the respective microcosm(s).

The microcosms were all amended again in the manner described above on 8/7/97. On 8/8/97 DO and redox measurements confirmed the need to amend microcosm #4 with hydrogen peroxide again. Microcosm #4 was amended with hydrogen peroxide again as has previously been described above. All microcosms were again amended as described above on 8/15/97. On the occasion of each amendment,

the microcosm(s) amended were mixed with the stainless steel shaft mounted impeller and cordless drill. On 8/21/97 the #8 nitrate amended microcosm was removed from the cold water bath and the #7 unamended microcosm was placed in the water bath. Headspace analysis for methane was conducted on 8/28/98, and 10/6/98. On 10/9/98 the microcosms were removed from the glove box and refrigerated thus terminating the study.

Bacteria Enumeration - Methanogens (produce methane)

Methanogenic bacteria were enumerated using a most probable number (MPN) technique based on an enrichment medium utilized by Michael Godsy of USGS. One sample from the site was processed. The enrichment vials established 5 replicates and 5 dilutions in a glovebox and were incubated for a minimum of 1 month. Methane measurement of the headspace gas confirmed/refuted the existence of methanogens within a given vial. A MPN table was used to compute the most probable number of bacteria present in the sample. Additional details on the contents of the medium are available upon request.

Methanogenic bacteria are obligately anaerobic and are destroyed by any contact with oxygen. Coordination with the field crew was required in order to minimize the impact of atmospheric oxygen on these samples. Each vial within each MPN series was checked for the presence of methane by GC/FID after incubation, thus the sample received 25 qualitative GC runs.

The results of the MPN analysis appear in the attached Figure F-3. The MPN calculation estimated a methanogen concentration of 1.4 cells/ml of soil.

Bacteria Enumeration - Methanotrophs (degrade methane)

Methanotrophic bacteria were enumerated using unsaturated soil samples and incorporating a selective spread plate count technique with both methane and air environment. Twenty-four soil samples were processed. The sample IDs are found in the attached Table F-2. After plating a series of ten-fold dilutions on mineral nutrient agar media, the agar plates were incubated in a dessicator filled with a 50:50 mixture of methane and air. The incubation interval was 4 weeks. The colonies present after 3 days were counted and attributed to the growth of heterotrophic bacteria on the minute quanities of organic carbon present in the agar (Brock et. al., 1988). The plates were returned to the methane/air environment of the desication and the colonies were counted again after 4 weeks. Methanotrophic bacteria were defined as the difference between the total number of colonies per plate and the number of colonies counted after 3 days of incubation. The sample requirement for these analyses was a 120 ml widemouth bottle. A positive control was successful. No methatrophs were detected.

Methane Oxidation/Degradation (Methanotrophs)

Respirometry analysis of slurries was conducted using colocated soil and groundwater samples to evaluate information on the rate of methane degradation by methanotrophic bacteria at the Kingsford site. This work was conducted using soil samples collected from the site and incorporating a respirometer capable of methane/oxygen/carbon dioxide quantification. Four soil samples were analyzed which were GMGW-118, GM-48/64, GM-44/64, and GM47/83. Samples were first analyzed without methane present to determine the background respiration rate of heterotrophic bacteria that are degrading energy sources more complex than methane. Following this analytical run, the same samples were analyzed with methane provided to support any methanotrophs that are present. The rate of oxygen consumption

and carbon dioxide production representing methanotrophic methane oxidation can then be obtained by subtraction. These respirometry runs were carried out at a temperature that was representative of the groundwater temperature at the site.

The methane oxidation rate was calculated from the methane and oxygen consumption data. Though methane, carbon dioxide, and oxygen must equilbrate between the slurry and the headspace of the respirometry sample container before being measureable by the respirometer, the equilibration of oxgyen and methenae is more simplistic than that of carbon dioxide, which can form carbonates in the aqueous slurry which will damage the reliability of the data for rate calculations. Following the determination of methanotrophic oxygen consumption by difference, the following equation was used to determine the rate of methane oxidation concomittant with any given rate of oxygen consumption, stochiometrically as:

$$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$$

This was used as a check on the direct methane consumption measurements. The data gathered early in this study is the most defensible in terms of actual methane degradation rates *in-situ* as the number of both the numbers of heterotrophic bacteria and methanotrophic bacteria are likely to diverge from *in-situ* levels gradually over time and this divergence will bring with it inaccurate oxygen consumption data. Divergence of bacterial numbers could be caused by either differences in incubation temperature or differences in the availability of oxygen or methane.

The volume of soil required for this study on a per sample basis was 2 liters. A comparable volume of groundwater was also collected. Dissolved oxygen was used as a screening parameter in the field to determine if a given sample was to be submitted. If the groundwater was anaerobic, no methanotrophic bacteria was assumed present in that region of the groundwater system. No methane degradation was detected during the study.

Methane Generation Rate and Yield Coefficient

The objective of this portion of treatability work was to generate understanding of the rate of methane generation in the subsurface in the area from which the sample was collected. Additionally any inhibitory/toxic effects of the groundwater from the sampling region were investigated and the methane yield coefficient was determined. A microcosm study was established in a glove box on November 26, 1998. The soil sample used was identified as GM37B/293, or a subsurface soil sample collected from Monitoring Well GM-37B at a depth of 293 ft bls. In an anaerobic glovebox, soil that had been composited, was added to five 2-liter screw-top flasks until the volume consumed by the soil was equilvalent to 1400 ml. The total weight of the soil was recorded. Duplicate samples of the composited soil were submitted for VOC, SVOC, and TOC analyses by Encotech to establish baseline concentrations. The ARCADIS Geraghty & Miller Treatability Lab conducted one methanogen enumeration test on this composite soil sample according to the methodology discussed below. Each flask then received a groundwater aliquot treatment according to that shown in Table F-3. The groundwater was collected from the same subsurface interval as the soil. The initial groundwater TOC was separately determined by Encotech.

The flasks were sealed and placed in a incubator at 10 degrees C to simulate native groundwater temperature. Incubation was in a refrigerator operated at the above temperature. The microcosms were designed to be positive pressure and were also pressure tight. These characteristics made it possible to

incubate the anaerobic vessels in an aerobic environment. Pressure measurements in the headspace over time were used to measure the volume of gas generated over time. Periodic headspace gas sample analysis by GC/FID revealed the concentration of methane in the headspace. The performance of this periodic headspace gas analysis was determined by the build-up of pressure in the headspaces of the flasks. At the time of headspace gas analysis, each flask was vented to atmospheric pressure after a determination of the internal pressure. At two descretionary intervals during the incubation of these flasks TOC measurements were made on the liquid component of each microcosm. By limiting TOC measurements during the experiment to the liquid phase it is assumed that the preponderance of the TOC available to anaerobic microorganisms is soluble. At the conclusion of the incubation, which was determined by gas production declining to near zero, both the liquid and solid fractions of each microcosm were tested for TOC. Minimal methane generation was detected over the course of approximately 6 months. This portion of the treatibility test was terminated in June 1999.

Table F-1. Microcosms Treatment, Ford/Kingsford Site, Kingsford, Michigan.

Treatment Description	Microcosm Identification	Sodium Azide	Hydrogen Peroxide	Nitrate	Sulfate
Abiotic Control	#1	10,000 mg/l of volume			
Unamended Controls	#2, #3, #7				
H_2O_2 Amended	#4		8 mg/l of volume		
Nitrate Amended	#5, #8			50 mg/l of volume	
Sulfate Amended	#6				100 mg/l of volume

Table F-2. Methanotroph Enumeration Sample Identification.

Sample ID	Date Collected	Sample Container
GM-44/64	8/9/1998	4 oz jar
GM-45/72	8/10/1998	4 oz jar
GM-46/74	8/11/1998	4 oz jar
GM-47/83	8/18/1998	4 oz jar
GM-48/85	8/19/1998	4 oz jar
GM-50/78	8/24/1998	4 oz jar
GM-52/82	8/25/1998	4 oz jar
GM-53/63	9/2/1998	4 oz jar
GMGW-118	9/10/1998	4 oz jar
GMSG-122/61	9/25/1998	4 oz jar
GMSG-122/12	9/25/1998	4 oz jar
GBGMSB-47A/40	9/27/1998	4 oz jar
GBGMSB-118A/12	9/26/1998	4 oz jar
GBGMSB-14A/27	9/26/1998	4 oz jar
GBGMSB-18A/15	9/26/1998	4 oz jar
GBGMSB-3A/22	9/26/1998	4 oz jar
GBGMSB-12A/28	9/26/1998	4 oz jar
GBGMSB-11BA/8	9/26/1998	4 oz jar
GBGMSB-33A/35	9/27/1998	4 oz jar
GBGMSB-16A/22	9/27/1998	4 oz jar
GBGMSB-45A/46	9/27/1998	4 oz jar
GBGMSB-26A/10-12	9/28/1998	4 oz jar
GBGMSB-10A/12-14	9/29/1998	1 Liter jar
GBGMSB-10A/20-30	9/30/1998	1 Liter jar

Table F-3. Microcosm Treatment, Ford/Kingsford Site, Kingsford, Michigan.

Microcosm Number	Ratios (Groundwater to Sterile Tap Water)	Total Volume of Water Addition (ml)	Volume of Groundwater (ml)	Volume of Sterile Tap Water (ml)
1	Full Strength	400	400	--
2	3:1	400	300	100
3	1:1	400	200	200
4	1:1	400	200	200
5	1:3	400	100	300

Figure F-1. Microcosm Closure with Valves

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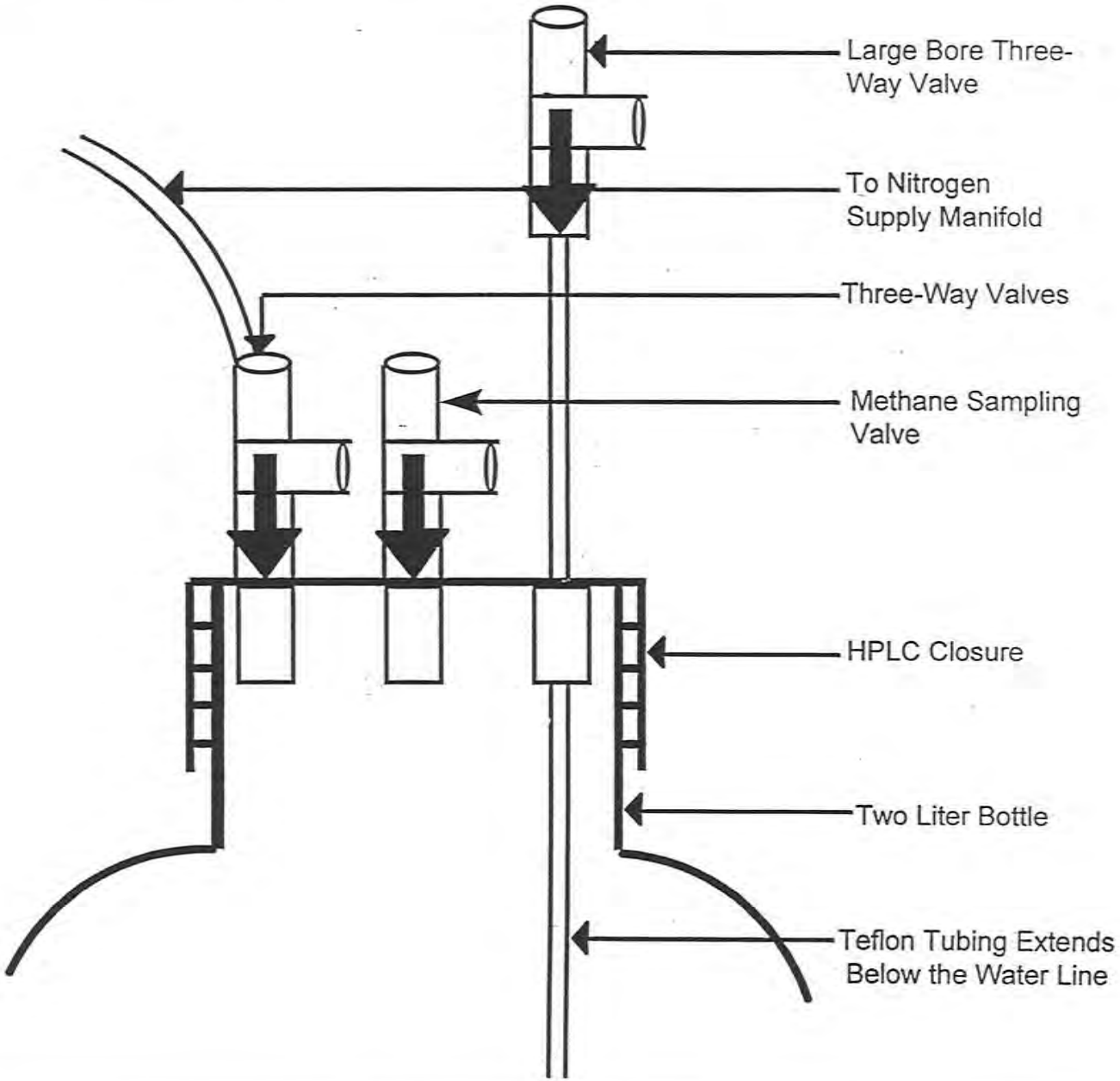
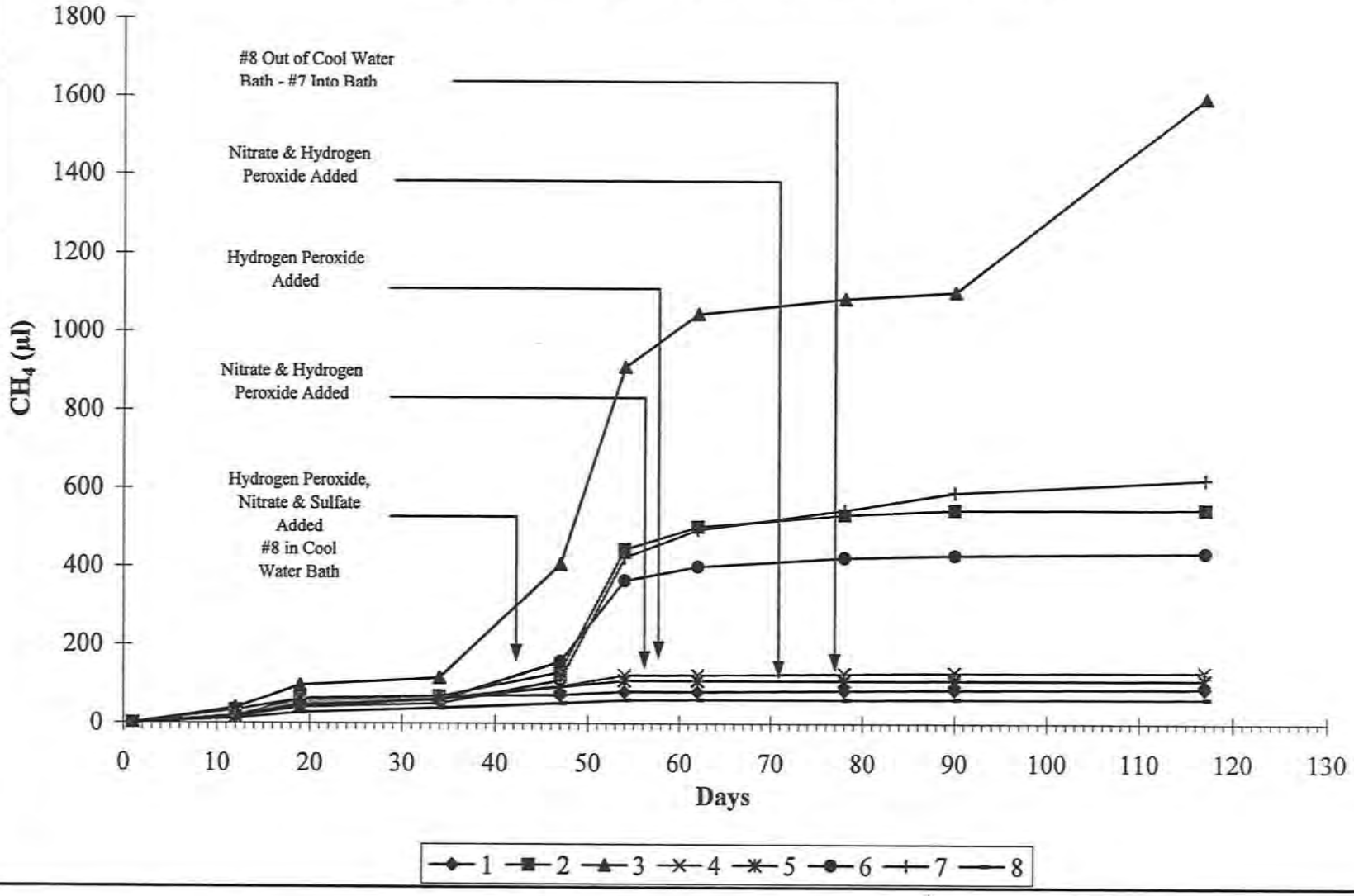


Figure F-2. Cumulative Methane Production



ford/wi0637/kingsford/tables/Sheet1 Chart 1.xls
06/10/02 12:39

Figure F-3. Methanogen MPN Calculation Results.

MOST PROBABLE NUMBER CALCULATOR
Version 4.04
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RISK REDUCTION ENGINEERING LABORATORY
CINCINNATI, OHIO

Kingsford Methanogen MPN

DATA SET 1
NUMBER OF DILUTIONS = 5

VOLUME, ml	# TUBES	# POSITIVE TUBES
10	5	5
1	5	3
.1	5	1
.01	5	1
.001	5	0

MOST PROBABLE NUMBER,,MPN (per ml) = 1.363
MPN CORRECTED FOR BIAS (Salama) = 1.164
SPEARMAN-KARBER ESTIMATE = 3.162

LOWER 95% CONFIDENCE LIMIT (Cornish & Fisher) = .3619
PER 95% CONFIDENCE LIMIT (Cornish & Fisher) = 3.282

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Appendix G

Residential Wells Abandonment Forms

Because we care
100% recycled paper produced by wind power energy

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction 1/4 1/4 1/4	Section No.	Town No.	Range No.
DICKINSON	Breitung	NE NW	12	39 (N/S)	31 (E/W)

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL
Address MYRON FETTERLY
401 NEWTON
KINGSFORD MI

Address Same as Well Location ☒ Yes ☐ No

2. WELL DEPTH: 34 ft.

3. Date Plugging Completed 9/21/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
☒ Yes ☐ No (Explain in COMMENTS)

4 USE: ☒ Single Family ☐ Type I Public ☐ Heat Pump
☐ Irrigation ☐ Type II Public ☐ _____
☐ Test Well ☐ Type III Public

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.	____	50# bags
Bentonite Pellets	from ____ ft. to ____ ft.	____	50# bags
Bentonite Grout	from ____ ft. to ____ ft.	____	50# bags
Neat Cement	from 0 ft. to 34 ft.	3	94# bags
Cement Grout	from ____ ft. to ____ ft.	____	94# bags

Other _____

5. REASON FOR ABANDONING WELL
☐ New Well Drilled
☐ Municipal Water Hookup ☐ Unrepairable
☒ Other _____

6. CASING:
4½ in. dia. to ? ft. depth.
____ in. dia. to ____ ft. depth

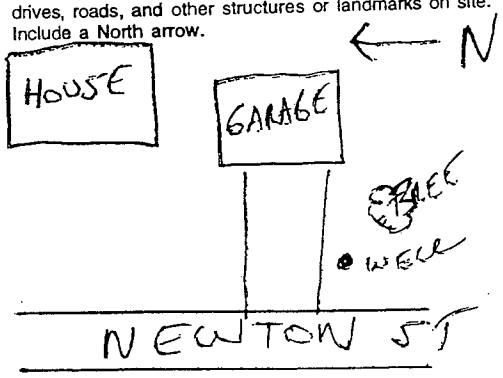
7. CASING MATERIAL
☒ Steel ☐ Other _____
☐ Plastic

15. LOST CIRCULATION ZONE MATERIALS USED ☐ Yes ☐ No
Type _____ Quantity _____ Placed from ____ ft. to ____ ft.

8. CASING STATUS AFTER PLUGGING
☒ Buried 1 ft. below grade ☐ Removed
☐ Above Grade ____ in.

9. FLOWING WELL: ☐ Yes ☒ No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS Mark Edens
Keith Newlett
Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

Klenman Pump & Well Drlg, Inc 0571
REGISTERED BUSINESS NAME REGISTRATION NO.

Address P.O. Box 704, Iron Mtn, MI 49801

Signed _____ Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

Authority: Act 368
Completion:
Penalty: Conviction of a violation of any provision is a misd

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
DICKINSON	Breitung	1/4 NE 1/4 NW 1/4	12	39 (N/S)	31 (E/W)

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL PATRICIA KLEIBER
Address 317 ROSE LAND
KINGSFORD
Address Same as Well Location [X] Yes [ ] No

2. WELL DEPTH: 36 ft.

3. Date Plugging Completed: 9 19 99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
[X] Yes [ ] No (Explain in COMMENTS)

4. USE: [X] Single Family [ ] Type I Public [ ] Heat Pump
[ ] Irrigation [ ] Type II Public [ ] _____
[ ] Test Well [ ] Type III Public

5. REASON FOR ABANDONING WELL
[ ] Municipal Water Hookup [ ] New Well Drilled
[X] Other _____ [ ] Unrepairable

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.	____	50# bags
Bentonite Pellets	from ____ ft. to ____ ft.	____	50# bags
Bentonite Grout	from ____ ft. to ____ ft.	____	50# bags
Neat Cement	from 0 ft. to 36 ft.	1	94# bags
Cement Grout	from ____ ft. to ____ ft.	____	94# bags

Other _____

6. CASING:
2 in. dia. to 36 ft. depth.
____ in. dia. to ____ ft. depth

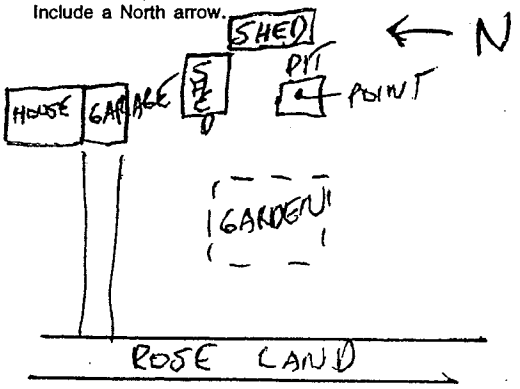
7. CASING MATERIAL
[X] Steel [ ] Other _____
[ ] Plastic

15. LOST CIRCULATION ZONE MATERIALS USED [ ] Yes [ ] No
Type _____ Quantity _____ Placed from ____ ft. to ____ ft.

8. CASING STATUS AFTER PLUGGING
[X] Buried 6 ft. below grade [ ] Removed
[ ] Above Grade ____ in.

9. FLOWING WELL: [ ] Yes [X] No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS mark Edens
[redacted]
Keith Hewlett
Service
men

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledg and belief.

Klenman Pump & Well Drilling, Inc. 0575
REGISTERED BUSINESS NAME REGISTRATION NO.

Address P.O. Box 704 Iron Mtn. MI 49801

Signed H. P. Klenman Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemenor.

GW-2-229

WELL OWNER COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
DICKINSON	Breitung	1/4 SW 1/4 SE 1/4	2	39 (N/S)	31 (E/W)

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL BRUCE BURKMAN
Address 221 LAWERENCE KINGSFORD MI
Address Same as Well Location [X] Yes [ ] No

2. WELL DEPTH: 11 82-6 ft.

3. Date Plugging Completed 9/18/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
[X] Yes [ ] No (Explain in COMMENTS)

4 USE: [X] Single Family [ ] Irrigation [ ] Test Well [ ] Type I Public [ ] Type II Public [ ] Type III Public [ ] Heat Pump [ ] _____

5. REASON FOR ABANDONING WELL
[ ] Municipal Water Hookup [X] Other _____
[ ] New Well Drilled [ ] Unrepairable

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.	____	50# bags
Bentonite Pellets	from ____ ft. to ____ ft.	____	50# bags
Bentonite Grout	from ____ ft. to ____ ft.	____	50# bags
Neat Cement	from 0 ft. to 82 ft.	10	94# bags
Cement Grout	from ____ ft. to ____ ft.	____	94# bags

Other _____

6. CASING:
4 in. dia. to ? ft. depth.
____ in. dia. to ____ ft. depth

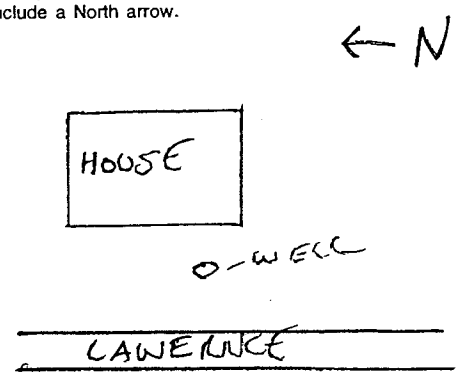
7. CASING MATERIAL
[X] Steel [ ] Other _____
[ ] Plastic

15. LOST CIRCULATION ZONE MATERIALS USED [ ] Yes [ ] No
Type _____ Quantity _____ Placed from ____ ft. to ____ ft.

8. CASING STATUS AFTER PLUGGING
[ ] Buried ____ ft. below grade [ ] Removed
[X] Above Grade 20 in.

9. FLOWING WELL: [ ] Yes [X] No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS Mark Edens, Keith Newlett, Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

Kleman Pump & Well Drlg, Inc 0571
REGISTERED BUSINESS NAME REGISTRATION NO.

Address P.O. Box 704 Iron Mtn. MI 49801

Signed _____ Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GW-2-229

WELL OWNER COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction 1/4	1/4	1/4	Section No.	Town No.	N/S	Range No.	E/W
DICKINSON	Breitung	SW		NW	12	39	N	31	W

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL DAVID VROSS
Address 537 HEMLOCK KINGSFORD MI
Address Same as Well Location [X] Yes [ ] No

2. WELL DEPTH: 99 ft.

3. Date Plugging Completed 9/8/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
[X] Yes [ ] No (Explain in COMMENTS)

4. USE: [X] Single Family [ ] Type I Public [ ] Heat Pump [ ] Irrigation [ ] Type II Public [ ] _____ [ ] Test Well [ ] Type III Public

5. REASON FOR ABANDONING WELL
[ ] Municipal Water Hookup [ ] New Well Drilled [X] Other _____ [ ] Unrepairable

6. CASING:
4½ in. dia. to ? ft. depth.
_____ in. dia. to _____ ft. depth

7. CASING MATERIAL
[X] Steel [ ] Other _____ [ ] Plastic

14. PLUGGING MATERIAL:

Bentonite Chips	from _____ ft. to _____ ft.	_____	50# bags
Bentonite Pellets	from _____ ft. to _____ ft.	_____	50# bags
Bentonite Grout	from _____ ft. to _____ ft.	_____	50# bags
Neat Cement	from 0 ft. to 99 ft.	12	94# bags
Cement Grout	from _____ ft. to _____ ft.	_____	94# bags

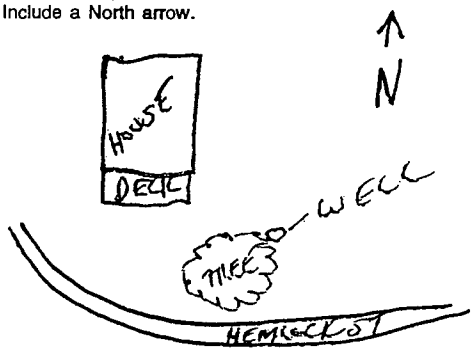
Other _____

15. LOST CIRCULATION ZONE MATERIALS USED [ ] Yes [ ] No
Type _____ Quantity _____ Placed from _____ ft. to _____ ft.

8. CASING STATUS AFTER PLUGGING
[X] Buried 1 ft. below grade [ ] Removed
[ ] Above Grade _____ in.

9. FLOWING WELL: [ ] Yes [X] No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS Mark Edens & Keith Newlett Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

Heiman Pump & Well Drilling Inc 0575
REGISTERED BUSINESS NAME REGISTRATION NO.

Address PO Box 204 Iron Mtn MI 49801

Signed _____ Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemenor.

GW-2-229

WELL OWNER COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction 1/4 1/4 1/4	Section No.	Town No.	Range No.
DICKINSON	Breitung	SW SW	1	39 N/S	31 E/W

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL
Address BRIAN ELLIOT
237 BEECH
KINGSFORD MI

Address Same as Well Location ☒ Yes ☐ No

2. WELL DEPTH: 59 ft.

3. Date Plugging Completed 9/8/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
☒ Yes ☐ No (Explain in COMMENTS)

4. USE: ☒ Single Family ☐ Type I Public ☐ Heat Pump
☐ Irrigation ☐ Type II Public ☐ _____
☐ Test Well ☐ Type III Public

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.	____	50# bags
Bentonite Pellets	from ____ ft. to ____ ft.	____	50# bags
Bentonite Grout	from ____ ft. to ____ ft.	____	50# bags
Neat Cement	from 0 ft. to 59 ft.	6	94# bags
Cement Grout	from ____ ft. to ____ ft.	____	94# bags

Other _____

5. REASON FOR ABANDONING WELL
☐ Municipal Water Hookup ☐ New Well Drilled
☒ Other _____ ☐ Unrepairable

6. CASING:
4½ in. dia. to ? ft. depth.
____ in. dia. to ____ ft. depth

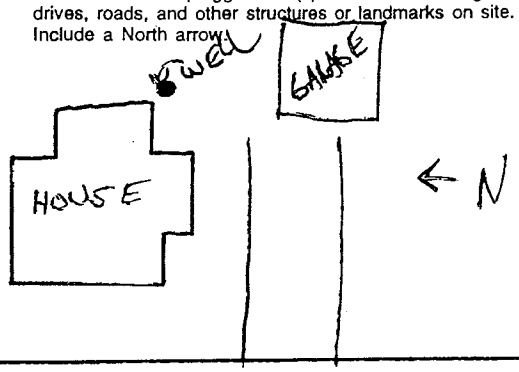
7. CASING MATERIAL
☐ Steel ☐ Other _____
☐ Plastic

15. LOST CIRCULATION ZONE MATERIALS USED ☐ Yes ☐ No
Type _____ Quantity _____ Placed from ____ ft. to ____ ft.

8. CASING STATUS AFTER PLUGGING
☒ Buried 1 ft. below grade ☐ Removed
☐ Above Grade ____ in.

9. FLOWING WELL: ☐ Yes ☒ No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS Mark Edens, Keith Newlett, Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

Herman Pump & Well Drlg. Inc. 0571
REGISTERED BUSINESS NAME REGISTRATION NO.

Address Harvey Mich. MI

Signed _____ Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemenor.

GW-2-229

WELL OWNER COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
Dickinson	Breitung	1/4 SE 1/4 SW 1/4	1	39 N/S	31 E/W

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL: MRS. WINIFRED BERGMAN
Address: 209 NEWTON ST
KINGSFORD MI

Address Same as Well Location ☒ Yes ☐ No

2. WELL DEPTH: 30 ft.

3. Date Plugging Completed: 9/1/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
☒ Yes ☐ No (Explain in COMMENTS)

4 USE: ☐ Single Family ☐ Type I Public ☐ Heat Pump
☐ Irrigation ☐ Type II Public ☐ _____
☐ Test Well ☐ Type III Public

5. REASON FOR ABANDONING WELL
☐ Municipal Water Hookup ☐ New Well Drilled
☐ Other _____ ☐ Unrepairable

6. CASING:
5 in. dia. to ? ft. depth.
_____ in. dia. to _____ ft. depth

7. CASING MATERIAL
☒ Steel ☐ Other _____
☐ Plastic

14. PLUGGING MATERIAL:

Bentonite Chips	from _____ ft. to _____ ft.	_____ 50# bags
Bentonite Pellets	from _____ ft. to _____ ft.	_____ 50# bags
Bentonite Grout	from _____ ft. to _____ ft.	_____ 50# bags
Neat Cement	from 0 ft. to 30 ft.	4 1/2 94# bags
Cement Grout	from _____ ft. to _____ ft.	_____ 94# bags

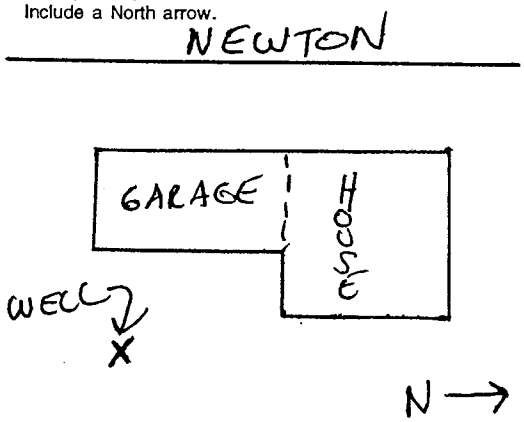
Other _____

8. CASING STATUS AFTER PLUGGING
☒ Buried 2 ft. below grade ☐ Removed
☐ Above Grade _____ in.

15. LOST CIRCULATION ZONE MATERIALS USED ☐ Yes ☐ No
Type _____ Quantity _____ Placed from _____ ft. to _____ ft.

9. FLOWING WELL: ☐ Yes ☒ No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS: Mark Edens, Keith Hewlett, Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowled and belief.

Kleeman Pump and Well Drlg. Inc 05-15
REGISTERED BUSINESS NAME REGISTRATION NO.

Address P.O. Box 704 Iron Mtn. MI 498

Signed _____ Date 9.7.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemenor.

GW-2-229

WELL OWNER COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
Dickinson	Breitung	1/4 SE 1/4 SW 1/4	1	39 (N/S)	31 (E/W)

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL Address: RICHARD ROBERTS, 113 ROSELAND, KINGSFORD MI

Address Same as Well Location ☒ Yes ☐ No

2. WELL DEPTH: 16-6 ft.

3. Date Plugging Completed: 9/21/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
☒ Yes ☐ No (Explain in COMMENTS)

4 USE: ☐ Single Family ☐ Type I Public ☐ Heat Pump ☐ Irrigation ☐ Type II Public ☐ _____ ☐ Test Well ☐ Type III Public

5. REASON FOR ABANDONING WELL ☐ New Well Drilled ☐ Municipal Water Hookup ☐ Unrepairable ☐ Other _____

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.	____	50# bags
Bentonite Pellets	from ____ ft. to ____ ft.	____	50# bags
Bentonite Grout	from ____ ft. to ____ ft.	____	50# bags
Neat Cement	from 0 ft. to 16 ft.	2	94# bags
Cement Grout	from ____ ft. to ____ ft.	____	94# bags

Other _____

6. CASING: 4½ in. dia. to ? ft. depth. ____ in. dia. to ____ ft. depth

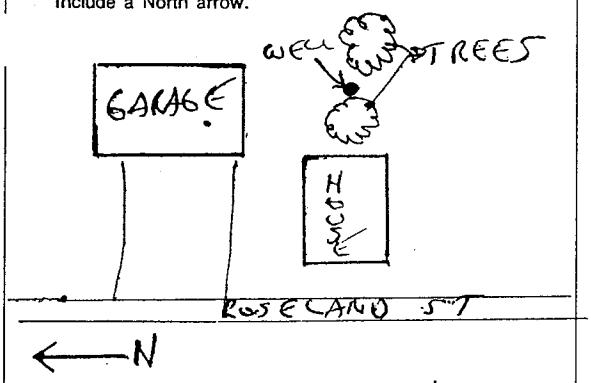
7. CASING MATERIAL ☒ Steel ☐ Other _____ ☐ Plastic

15. LOST CIRCULATION ZONE MATERIALS USED ☐ Yes ☐ No
Type _____ Quantity _____ Placed from ____ ft. to ____ ft.

8. CASING STATUS AFTER PLUGGING ☒ Buried 1 ft. below grade ☐ Removed ☐ Above Grade ____ in.

9. FLOWING WELL: ☐ Yes ☒ No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS: Mark Edens & Keith Newlett Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

REGISTERED BUSINESS NAME: Kleeman Pump & Well Drlg, Inc. REGISTRATION NO. 0575

Address: P.O. Box 704 Iron Mtn MI 49801

Signed _____ Date 9.7.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

GW-2-229

WELL OWNER COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemenor.

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
DICKINSON	Breitung	1/4 SE 1/4 NW 1/4	12	39 (N/S)	31 (E/W)

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL LAURA AMAN
Address 509 MAPLE KINGSFORD MI
Address Same as Well Location ☒ Yes ☐ No

2. WELL DEPTH: 17 ft.

3. Date Plugging Completed 9/9/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
☒ Yes ☐ No (Explain in COMMENTS)

4 USE: ☒ Single Family ☐ Irrigation ☐ Test Well ☐ Type I Public ☐ Type II Public ☐ Type III Public ☐ Heat Pump ☐ _____

5. REASON FOR ABANDONING WELL
☐ Municipal Water Hookup ☒ Other _____ ☐ New Well Drilled ☐ Unrepairable

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.		50# bags
Bentonite Pellets	from ____ ft. to ____ ft.		50# bags
Bentonite Grout	from ____ ft. to ____ ft.		50# bags
Neat Cement	from 0 ft. to 17 ft.	2	94# bags
Cement Grout	from ____ ft. to ____ ft.		94# bags

Other _____

6. CASING:
4½ in. dia. to ____ ft. depth.
____ in. dia. to ____ ft. depth

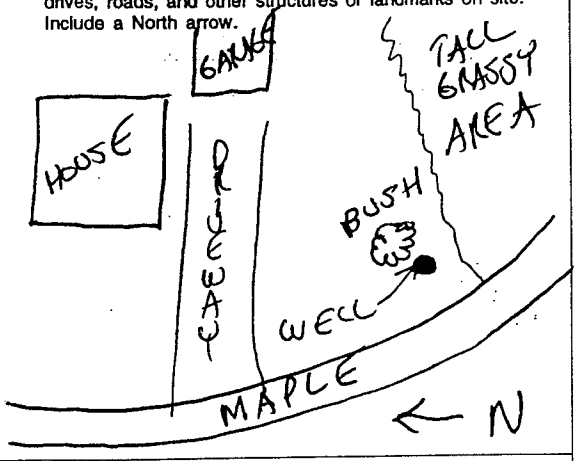
7. CASING MATERIAL
☒ Steel ☐ Other _____
☐ Plastic

15. LOST CIRCULATION ZONE MATERIALS USED ☐ Yes ☐ No
Type _____ Quantity _____ Placed from ____ ft. to ____ ft.

8. CASING STATUS AFTER PLUGGING
☒ Buried 1 ft. below grade ☐ Removed
☐ Above Grade ____ in.

9. FLOWING WELL: ☐ Yes ☒ No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS Mark Edens, Keith Newlett Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

Klerman Pump & Well Drlg, Inc 0537
REGISTERED BUSINESS NAME REGISTRATION NO.

Address P.O. Box 704 Iron Mtn. MI 49801

Signed _____ Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed

Authority: Act 368 PA 1978
Completion: Required

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction 1/4 1/4 1/4	Section No.	Town No. N/S	Range No. E/W
DICKINSON	Breitung	NE NE	11	39 N	31 E

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL Address: WALTER MICHAUD, 305 LYMAN, KINGSFORD MI

Address Same as Well Location [X] Yes [ ] No

2. WELL DEPTH: 6 ft.

3. Date Plugging Completed: 9/9/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
[X] Yes [ ] No (Explain in COMMENTS)

4 USE: [X] Single Family [ ] Irrigation [ ] Test Well [ ] Type I Public [ ] Type II Public [ ] Type III Public [ ] Heat Pump [ ] _____

5. REASON FOR ABANDONING WELL
[ ] Municipal Water Hookup [X] Other _____ [ ] New Well Drilled [ ] Unrepairable

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.	____	50# bags
Bentonite Pellets	from ____ ft. to ____ ft.	____	50# bags
Bentonite Grout	from ____ ft. to ____ ft.	____	50# bags
Neat Cement	from 0 ft. to 6 ft.	1	94# bags
Cement Grout	from ____ ft. to ____ ft.	____	94# bags

Other _____

6. CASING:
4½ in. dia. to ? ft. depth.
____ in. dia. to ____ ft. depth

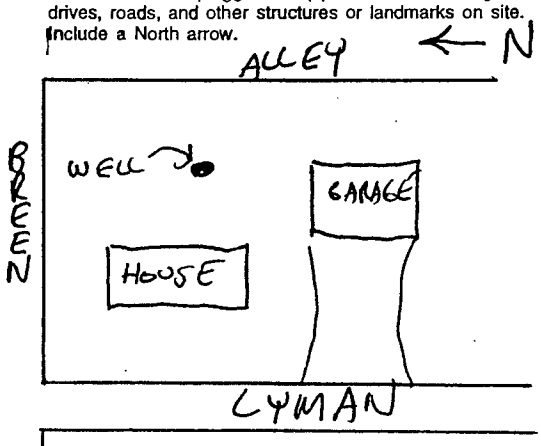
7. CASING MATERIAL
[X] Steel [ ] Other _____ [ ] Plastic

15. LOST CIRCULATION ZONE MATERIALS USED [ ] Yes [ ] No
Type _____ Quantity _____ Placed from _____ ft. to _____ ft.

8. CASING STATUS AFTER PLUGGING
[X] Buried 1 ft. below grade [ ] Removed
[ ] Above Grade _____ in.

9. FLOWING WELL: [ ] Yes [X] No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

11. COMMENTS: Mark Edens + Keith Hewlett Servicemen

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

Heiman Pump & Well Drlg Inc 0527
REGISTERED BUSINESS NAME REGISTRATION NO.

Address P.O. Box 704 Iron Mtn MI 49801

Signed _____ Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

GW-2-229

WELL OWNER COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemenor.

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
ABANDONED WELL PLUGGING RECORD

PERMIT NO:

1. LOCATION OF WELL

County	Township Name	Fraction 1/4 1/4 1/4	Section No.	Town No.	Range No.
DICKINSON	Breitung	NE NE	11	39 (N/S)	31 (E/W)

Distance and Direction from Road Intersection

Street Address & City of Well Location

12 OWNER OF WELL KEN CHRISTIANSON
Address 524 BALSAM
KINGSFORD MI
Address Same as Well Location [X] Yes [ ] No

2. WELL DEPTH: 49 ft.

3. Date Plugging Completed 9/21/99

13. DROP PIPE/PUMPING EQUIPMENT REMOVED
[X] Yes [ ] No (Explain in COMMENTS)

4. USE: [X] Single Family [ ] Type I Public [ ] Heat Pump
[ ] Irrigation [ ] Type II Public [ ] _____
[ ] Test Well [ ] Type III Public

5. REASON FOR ABANDONING WELL
[ ] New Well Drilled
[ ] Municipal Water Hookup
[ ] Unrepairable
[X] Other _____

14. PLUGGING MATERIAL:

Bentonite Chips	from ____ ft. to ____ ft.		50# bags
Bentonite Pellets	from ____ ft. to ____ ft.		50# bags
Bentonite Grout	from ____ ft. to ____ ft.		50# bags
Neat Cement	from 0 ft. to 49 ft.	6	94# bags
Cement Grout	from ____ ft. to ____ ft.		94# bags

Other _____

6. CASING:
4 1/2 in. dia. to ? ft. depth.
_____ in. dia. to _____ ft. depth

7. CASING MATERIAL
[X] Steel [ ] Other _____
[ ] Plastic

15. LOST CIRCULATION ZONE MATERIALS USED [ ] Yes [ ] No
Type _____ Quantity _____ Placed from _____ ft. to _____ ft.

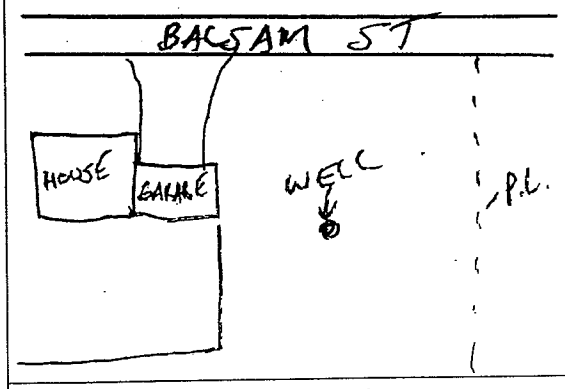
8. CASING STATUS AFTER PLUGGING
[X] Buried 1 ft. below grade [ ] Removed
[ ] Above Grade _____ in.

16. PLUGGING SKETCH (Complete if combination of materials was used.)
Show type of plugging materials and interval plugged.

MATERIAL _____ FEET BELOW GRADE

9. FLOWING WELL: [ ] Yes [X] No

10. SITE SKETCH:
Show location of plugged well(s) relative to buildings, drives, roads, and other structures or landmarks on site. Include a North arrow.



11. COMMENTS Mark Edens
"
Keith Newlett
Servicemen –

17. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was plugged under my jurisdiction and this report is true to the best of my knowledge and belief.

Kleiman Pump & Well Drlg, Inc 0575
REGISTERED BUSINESS NAME REGISTRATION NO.

Address P.O. Box 204 Iron Mtn. MI 49801

Signed _____ Date 9.14.99
AUTHORIZED REPRESENTATIVE

NOTE: **Plugging from well bottom up to ground surface is required.**

IMPORTANT: File with deed.

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemenor.

GW-2-229

WELL OWNER COPY

ARCADIS

Appendix H

3-D Visualization Data

Because we care
100% recycled paper produced by wind power energy

ARCADIS

Appendix H

3-D Visualization Data Directions for CD Rom

This CD-Rom contains visualizations of the physical setting and chemical characterization of Kingsford, Michigan. As described in the accompanying remedial investigation (RI) report, the visualizations were created using Environmental Visualization System, or EVS software. These files are an integral part of the presentation and understanding of the geology and constituent distribution in the groundwater. Additional information regarding EVS can be obtained from the internet, at http://www.ctech.com.

The attached files are in .HAV video clip format. HAV is a public domain video viewer, a copy of which is also included on the attached CD-Rom. The HAV program can be installed on a computer by clicking on the hav application file found under the read me folder and following the install directions. The visualization can be broadly categorized into Geology/Hydrogeology and Chemical Characterization. The following is a brief description of the attached files:

Geology/Hydrogeology

Six visualizations from the 3-D geologic model have been prepared to aid in the presentation of the site specific geology and hydrology. The six files are named as follows: Bedrock.HAV, Topobedrock.HAV, Boreholes.HAV, EWxsection.HAV, NSxsection.HAV, and Planexsection.HAV. The Bedrock and Topobedrock files illustrate the bedrock surface, while the EWxsection, NSxsection, and Planxsection files are east-west cross sections, north-south cross sections, and horizontal slice sections, respectively, across the site.

Chemical Characterization

Twenty-four visualizations from the 3-D chemical plumes have been prepared to aid in the presentation of chemical characteristics of the site. The 24 files, three files for each of the constituents modeled, are named as follows: 24DMP1.HAV, 24DMP2.HAV, and 24DMP3.HAV, 2MP1.HAV, 2MP2.HAV, and 2MP3.HAV, 4MP1.HAV, 4MP2.HAV, and 4MP3.HAV, MEK1.HAV, MEK2.HAV, and MEK3.HAV, Acetone1.HAV, Acetone2.HAV, and Acetone3.HAV, Acetic1.HAV, Acetic2.HAV, and Acetic3.HAV, TOC1.HAV, TOC2.HAV, and TOC3.HAV, and Methane1.HAV, Methane2.HAV, and Methane3.HAV.

The first file (designated with a "***1.HAV") is a visualization that represents the control points, or chemical concentration used from a groundwater sampling point. The second file (designated with a "***2.HAV") is a visualization that represents the compound plume from an "outside" view. The third file (designated with a "***3.HAV") is a visualization that represents the compound plume sliced through horizontally at various elevations.

The chemical compounds for the above abbreviations are as follows: 24DMP represents 2, 4-dimethlyphenol, 2MP and 4MP represent 2-methlyphenol and 4-methlyphenol respectively, MEK represents 2-butanone, Acetic represents acetic acid, Acetone represents acetone, TOC represents Total Organic Carbon, and Methane represents dissolved methane.

Table H-1. Concentration Values Used for 4-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968042.16	372462.71	GMSB-2	772	14000
25968042.16	372462.71	GMSB-2	852	13000
25965504.98	373463.06	GMSB-4	1005	0
25965504.98	373463.06	GMSB-4	936	0
25973008.43	370087.2	GMSB-8	1013	0
25973008.43	370087.2	GMSB-8	981	0
25968560.37	373586.87	MW-96-4	1058	0
25968885.78	373281.64	MW-96-3	1051	0
25968453.15	373288.42	MW-96-2	1057	0
25969350.72	373293.16	MW-96-1	1050	0
25973008.43	370087.2	GMSB-8	912	0
25969704.17	370113.03	GM-2B	1046	0
25969580.29	373036.5	GM-12	890	0
25969980.26	371521.22	GM-13	971	22000
25968524.1	370139.11	GM-3B	953	480
25968524.1	370139.11	GM-3B	855	1900
25971408.94	374171.72	GM-15	987	0
25968524.1	370139.11	GM-3B	1051	0
25969580.29	373036.5	GM-12	1055	0
25974268.72	374127.49	GM-14	1030	0
25971408.94	374171.72	GM-15	1072	0
25968524.1	370139.11	GM-3B	913	440
25965313.78	373215.84	GM-5	1007	0
25968524.1	370139.11	GM-3B	1001	0
25964101.1	371938.24	GM-10	901	0
25965313.78	373215.84	GM-5	949	0
25965313.78	373215.84	GM-5	887	0
25971402.51	370103.51	GM-7	955	0
25965960.33	369592.91	GM-9	991	0
25969704.17	370113.03	GM-2B	986	0
25968524.1	370139.11	GM-3B	815	8900
25969704.17	370113.03	GM-2B	916	0
25960859.94	375428.78	GM-11	1033	0
25967133.86	370815.38	GM-1	1027	2.2
25964101.1	371938.24	GM-10	961	0
25968975.03	373114.59	GMSB-1	842	0
25968042.16	372462.71	GMSB-2	1024	0
25968975.03	373114.59	GMSB-1	1032	5600
25968975.03	373114.59	GMSB-1	982	0
25968975.03	373114.59	GMSB-1	902	11000

Footnotes on Page 4.

Table H-1. Concentration Values Used for 4-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968975.03	373114.59	GMSB-1	792	8.7
25969704.17	370113.03	GM-2B	866	11000
25969905.63	369012.77	GM-39	992	0
25967501.63	371541.69	GM-33	1014	0
25967133.86	370815.38	GM-1	978	0
25969974.27	371521.83	GM-32	991	0
25965317.14	375466.98	GM-16	1015	0
25972077.74	372503.21	GM-17	1007	0
25967133.86	370815.38	GM-1	832	0
25967133.86	370815.38	GM-1	929	0
25967422.9	372249.83	GM-37B	784.29	8500
25969980.26	371521.22	GM-13	786.1	0
25969580.29	373036.5	GM-12	825.49	0
25965089.78	372546.41	GM-25C	836.94	0
25965349.66	371197.66	GM-27C	837.53	0
25969704.17	370113.03	GM-2B	845.33	16000
25972811.88	372515.77	UG-6	860.46	0
25965313.78	373215.84	GM-5	867.18	0
25964101.1	371938.24	GM-10	881.2	0
25964837.17	371702.08	GM-26C	882.27	0
25972077.74	372503.21	GM-17	882.54	0
25965960.33	369592.91	GM-9	884.04	0
25960859.94	375428.78	GM-11	888.14	0
25968573.25	369025.16	GM-38C	892.29	0
25967133.86	370815.38	GM-1	896.79	29
25965349.66	371197.66	GM-27B	902.61	0
25967835.23	369310.9	GM-24C	903.72	0
25967162.71	370460.56	GM-53B	903.83	0
25969321.3	373576.85	BR-5B	926.92	0
25968573.25	369025.16	GM-38B	932.3	0
25965958.96	370347.31	GM-28B	934.85	0
25964837.17	371702.08	GM-26B	941.17	0
25968524.1	370139.11	GM-3B	944.61	320
25965089.78	372546.41	GM-25B	944.85	14000
25971393.08	371888.37	BR-6	947.8	0
25967738.44	368596.63	CW-1	949.5	0
25965004.16	373950.51	GM-6	954.07	0
25971408.94	374171.72	GM-15	957.2	0
25971402.51	370103.51	GM-7	957.63	0
25969133.08	367258.4	GM-8	959.64	0

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Table H-1. Concentration Values Used for 4-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25967422.9	372249.83	GM-37A	968.35	5900
25974268.72	374127.49	GM-14	975.05	0
25969974.27	371521.83	GM-32	976.14	15000
25969633.07	372212.7	GM-40B	990.15	9400
25967835.23	369310.9	GM-24B	990.22	0
25965973.76	369577.21	GM-29	993.15	0
25968151.45	374162.63	MW-8	994.44	0
25968573.25	369025.16	GM-38A	997.22	0
25969905.63	369012.77	GM-39	997.29	0
25969226.67	368953.87	GM-34B	998.01	0
25966649.38	373542	BR-3	1001.03	4.8
25972579.93	373267.47	UG-4	1004.51	0
25968088.77	371544.24	MW-9B	1005.78	0
25964051.44	375422.42	GM-59	1010.97	0
25965328.57	373215.27	GM-31	1011.73	0
25964837.17	371702.08	GM-26A	1012.31	650
25966840.02	371711.17	MW-2B	1016.5	0
25965958.96	370347.31	GM-28A	1017.08	0
25965317.14	375466.98	GM-16	1017.25	0
25965349.66	371197.66	GM-27A	1017.45	0
25967162.71	370460.56	GM-53A	1019.76	0
25967835.23	369310.9	GM-24A	1023.38	0
25969472.66	371574.4	MW-1B	1023.5	0
25965089.78	372546.41	GM-25A	1023.71	0
25965416.12	373706.87	GM-51	1023.88	0
25969317.93	373587.64	BR-5A	1026.7	5
25971408.5	374166.02	GM-36	1027.17	0
25967024.62	371536.25	GM-50	1032.64	0
25966142.34	373173.32	GM-49	1033.19	0
25967202.12	371156.66	GM-52	1034.74	0
25969633.07	372212.7	GM-40A	1035.18	0
25967501.63	371541.69	GM-33	1037.93	0
25968524.1	370139.11	GM-3A	1040.54	0
25965919.64	373642.56	GM-30	1041.73	0
25965258.4	374299.5	GM-54	1041.88	0
25969519.93	373318.39	GM-42	1044.17	0
25968793.2	374589.36	GM-4	1044.54	0
25965892.41	370149.51	GM-21	1045.99	0
25965574.94	374598.56	GM-55	1046.68	0
25965841.93	370291.92	GM-23	1047.4	0

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Table H-1. Concentration Values Used for 4-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25966105.77	374816.7	GM-57	1049.81	0
25965680.09	375180.55	GM-58	1050.9	0
25969704.17	370113.03	GM-2C	1052.36	0
25969226.67	368953.87	GM-34A	1053.08	0
25965994.49	370335.32	GM-22	1053.23	0
25969530.63	375100.82	MW-5	1054.44	0
25967940.27	371087.61	GM-118D	1060.14	0
25969505.04	375082.81	BR-2	1062.13	0
25967270.19	372339.53	GM-18	1065.13	0
25967424.16	372259.63	GM-19	1066.13	0
25966218.75	375823.78	GM-61	1068.58	0
25967691.87	372311.42	GM-20	1072.1	0
25971404.04	374162.14	UG-2	1074.16	0
25969905.67	373040.31	GM-41	1075.17	0
25969585.33	373026.53	GM-35	1075.49	0
25969704.17	370113.03	GM-2A	1076.3	0
25970050.95	373439.65	GM-56	1079.06	0
25966728.12	375446.78	GM-60	1086.83	0

* Locations are in feet for the Michigan State Plane System.
ft msl Feet mean sea level.
µg/L Micrograms per liter.

Table H-2. Concentration Values Used for 2-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968042.16	372462.71	GMSB-2	1024	0
25968042.16	372462.71	GMSB-2	772	5300
25965504.98	373463.06	GMSB-4	1005	0
25965504.98	373463.06	GMSB-4	936	0
25973008.43	370087.2	GMSB-8	1013	0
25968560.37	373586.87	MW-96-4	1058	0
25968453.15	373288.42	MW-96-2	1057	0
25973008.43	370087.2	GMSB-8	912	0
25968885.78	373281.64	MW-96-3	1151	0
25968524.1	370139.11	GM-3B	953	140
25968524.1	370139.11	GM-3B	1001	0
25968524.1	370139.11	GM-3B	913	200
25965313.78	373215.84	GM-5	1007	0
25965313.78	373215.84	GM-5	949	0
25969350.72	373293.16	MW-96-1	1050	0
25971402.51	370103.51	GM-7	955	0
25965960.33	369592.91	GM-9	991	0
25964101.1	371938.24	GM-10	961	0
25964101.1	371938.24	GM-10	901	0
25960859.94	375428.78	GM-11	1033	0
25965313.78	373215.84	GM-5	887	0
25969704.17	370113.03	GM-2B	916	0
25967133.86	370815.38	GM-1	929	0
25967133.86	370815.38	GM-1	832	0
25967133.86	370815.38	GM-1	978	0
25967133.86	370815.38	GM-1	1027	0
25969704.17	370113.03	GM-2B	867	1800
25969704.17	370113.03	GM-2B	1047	0
25969704.17	370113.03	GM-2B	986	0
25968524.1	370139.11	GM-3B	855	520
25968524.1	370139.11	GM-3B	815	1600
25968524.1	370139.11	GM-3B	1051	0
25968975.03	373114.59	GMSB-1	982	0
25971408.94	374171.72	GM-15	987	0
25965317.14	375466.98	GM-16	1015	0
25972077.74	372503.21	GM-17	1007	0
25969974.27	371521.83	GM-32	991	0
25967501.63	371541.69	GM-33	1014	0
25969905.63	369012.77	GM-39	992	0
25971408.94	374171.72	GM-15	1072	0

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Table H-2. Concentration Values Used for 2-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968975.03	373114.59	GMSB-1	842	0
25968975.03	373114.59	GMSB-1	792	0
25968975.03	373114.59	GMSB-1	902	2800
25968975.03	373114.59	GMSB-1	1032	1000
25968042.16	372462.71	GMSB-2	852	7500
25974268.72	374127.49	GM-14	1030	0
25969980.26	371521.22	GM-13	972	10000
25969580.29	373036.5	GM-12	1055	0
25969580.29	373036.5	GM-12	890	0
25967422.9	372249.83	GM-37B	784.29	3800
25969980.26	371521.22	GM-13	786.1	0
25967888.23	372897.07	GM-62C	804.77	490
25969580.29	373036.5	GM-12	825.49	0
25965089.78	372546.41	GM-25C	836.94	0
25965349.66	371197.66	GM-27C	837.53	0
25969704.17	370113.03	GM-2B	845.33	2500
25972811.88	372515.77	UG-6	860.46	0
25965313.78	373215.84	GM-5	867.18	0
25964101.1	371938.24	GM-10	881.2	0
25964837.17	371702.08	GM-26C	882.27	0
25972077.74	372503.21	GM-17	882.54	0
25965960.33	369592.91	GM-9	884.04	0
25960859.94	375428.78	GM-11	888.14	0
25968573.25	369025.16	GM-38C	892.29	0
25967133.86	370815.38	GM-1	896.79	84
25965349.66	371197.66	GM-27B	902.61	0
25967835.23	369310.9	GM-24C	903.72	0
25967162.71	370460.56	GM-53B	903.83	0
25967888.23	372897.07	GM-62B	924.74	2100
25969321.3	373576.85	BR-5B	926.92	0
25968573.25	369025.16	GM-38B	932.3	0
25965958.96	370347.31	GM-28B	934.85	0
25964837.17	371702.08	GM-26B	941.17	0
25968524.1	370139.11	GM-3B	944.61	690
25965089.78	372546.41	GM-25B	944.85	6800
25971393.08	371888.37	BR-6	947.8	0
25967738.44	368596.63	CW-1	949.5	0
25965004.16	373950.51	GM-6	954.07	0
25971408.94	374171.72	GM-15	957.2	0
25971402.51	370103.51	GM-7	957.63	0

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Table H-2. Concentration Values Used for 2-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25969133.08	367258.4	GM-8	959.64	0
25967422.9	372249.83	GM-37A	968.35	3300
25974268.72	374127.49	GM-14	975.05	0
25969974.27	371521.83	GM-32	976.14	11000
25969633.07	372212.7	GM-40B	990.15	4900
25967835.23	369310.9	GM-24B	990.22	0
25965973.76	369577.21	GM-29	993.15	0
25968151.45	374162.63	MW-8	994.44	46
25968573.25	369025.16	GM-38A	997.22	0
25969905.63	369012.77	GM-39	997.29	0
25969226.67	368953.87	GM-34B	998.01	0
25966649.38	373542	BR-3	1001.03	2.6
25972579.93	373267.47	UG-4	1004.51	0
25968088.77	371544.24	MW-9B	1005.78	0
25964051.44	375422.42	GM-59	1010.97	0
25965328.57	373215.27	GM-31	1011.73	0
25964837.17	371702.08	GM-26A	1012.31	540
25966840.02	371711.17	MW-2B	1016.5	0
25965958.96	370347.31	GM-28A	1017.08	0
25965317.14	375466.98	GM-16	1017.25	0
25965349.66	371197.66	GM-27A	1017.45	70
25967162.71	370460.56	GM-53A	1019.76	0
25967835.23	369310.9	GM-24A	1023.38	0
25969472.66	371574.4	MW-1B	1023.5	0
25965089.78	372546.41	GM-25A	1023.71	0
25965416.12	373706.87	GM-51	1023.88	0
25969317.93	373587.64	BR-5A	1026.7	5
25971408.5	374166.02	GM-36	1027.17	0
25967888.23	372897.07	GM-62A	1029.78	0
25967024.62	371536.25	GM-50	1032.64	0
25966142.34	373173.32	GM-49	1033.19	0
25967202.12	371156.66	GM-52	1034.74	0
25969633.07	372212.7	GM-40A	1035.18	0
25967501.63	371541.69	GM-33	1037.93	0
25968524.1	370139.11	GM-3A	1040.54	0
25965919.64	373642.56	GM-30	1041.73	0
25965258.4	374299.5	GM-54	1041.88	0
25969519.93	373318.39	GM-42	1044.17	0
25968793.2	374589.36	GM-4	1044.54	0
25965892.41	370149.51	GM-21	1045.99	0

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Table H-2. Concentration Values Used for 2-Methylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25965574.94	374598.56	GM-55	1046.68	0
25965841.93	370291.92	GM-23	1047.4	0
25966105.77	374816.7	GM-57	1049.81	0
25965680.09	375180.55	GM-58	1050.9	0
25969704.17	370113.03	GM-2C	1052.36	0
25969226.67	368953.87	GM-34A	1053.08	0
25965994.49	370335.32	GM-22	1053.23	0
25969530.63	375100.82	MW-5	1054.44	0
25967940.27	371087.61	GM-118D	1060.14	0
25969505.04	375082.81	BR-2	1062.13	0
25967270.19	372339.53	GM-18	1065.13	0
25967424.16	372259.63	GM-19	1066.13	0
25966218.75	375823.78	GM-61	1068.58	0
25967691.87	372311.42	GM-20	1072.1	0
25971404.04	374162.14	UG-2	1074.16	0
25969905.67	373040.31	GM-41	1075.17	0
25969585.33	373026.53	GM-35	1075.49	0
25969704.17	370113.03	GM-2A	1076.3	0
25970050.95	373439.65	GM-56	1079.06	0
25966728.12	375446.78	GM-60	1086.83	0

* Locations are in feet for the Michigan State Plane System.
ft msl Feet mean sea level.
µg/L Micrograms per liter.

Table H-3. Concentration Values Used for 2,4-Dimethylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25965504.98	373463.06	GMSB-4	936	390
25973008.43	370087.2	GMSB-8	912	0
25968560.37	373586.87	MW-96-4	1058	0
25968885.78	373281.64	MW-96-3	1051	0
25968453.15	373288.42	MW-96-2	1057	0
25969350.72	373293.16	MW-96-1	1050	0
25965504.98	373463.06	GMSB-4	1005	4.9
25971402.51	370103.51	GM-7	955	2.9
25968524.1	370139.11	GM-3B	1051	0
25968524.1	370139.11	GM-3B	1001	3.3
25965313.78	373215.84	GM-5	1007	0
25965313.78	373215.84	GM-5	949	110
25968524.1	370139.11	GM-3B	913	130
25968524.1	370139.11	GM-3B	855	580
25965960.33	369592.91	GM-9	991	3.8
25964101.1	371938.24	GM-10	961	0
25973008.43	370087.2	GMSB-8	1013	0
25965313.78	373215.84	GM-5	887	770
25967133.86	370815.38	GM-1	929	0
25967133.86	370815.38	GM-1	832	2
25967133.86	370815.38	GM-1	978	0
25967133.86	370815.38	GM-1	1027	0
25969704.17	370113.03	GM-2B	867	2000
25969704.17	370113.03	GM-2B	1047	20
25969704.17	370113.03	GM-2B	986	0
25969704.17	370113.03	GM-2B	916	0
25968524.1	370139.11	GM-3B	815	2000
25968524.1	370139.11	GM-3B	953	75
25968975.03	373114.59	GMSB-1	982	2.3
25968975.03	373114.59	GMSB-1	842	130
25968975.03	373114.59	GMSB-1	792	100
25967501.63	371541.69	GM-33	1014	0
25969974.27	371521.83	GM-32	991	0
25968975.03	373114.59	GMSB-1	1032	1100
25968042.16	372462.71	GMSB-2	1024	18
25968042.16	372462.71	GMSB-2	772	3000
25968042.16	372462.71	GMSB-2	852	3900
25968975.03	373114.59	GMSB-1	902	2500
25969580.29	373036.5	GM-12	890	0
25964101.1	371938.24	GM-10	901	0

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Table H-3. Concentration Values Used for 2,4-Dimethylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25969905.63	369012.77	GM-39	992	0
25969580.29	373036.5	GM-12	1055	0
25969980.26	371521.22	GM-13	971	2800
25974268.72	374127.49	GM-14	1030	0
25971408.94	374171.72	GM-15	1072	0
25971408.94	374171.72	GM-15	987	0
25965317.14	375466.98	GM-16	1015	0
25972077.74	372503.21	GM-17	1007	0
25960859.94	375428.78	GM-11	1033	0
25967422.9	372249.83	GM-37B	784.29	2700
25969980.26	371521.22	GM-13	786.1	39
25967888.23	372897.07	GM-62C	804.77	1300
25969580.29	373036.5	GM-12	825.49	0
25965089.78	372546.41	GM-25C	836.94	0
25965349.66	371197.66	GM-27C	837.53	0
25969704.17	370113.03	GM-2B	845.33	3000
25972811.88	372515.77	UG-6	860.46	0
25965313.78	373215.84	GM-5	867.18	910
25964101.1	371938.24	GM-10	881.2	0
25964837.17	371702.08	GM-26C	882.27	2600
25972077.74	372503.21	GM-17	882.54	0
25965960.33	369592.91	GM-9	884.04	0
25960859.94	375428.78	GM-11	888.14	0
25968573.25	369025.16	GM-38C	892.29	0
25967133.86	370815.38	GM-1	896.79	940
25965349.66	371197.66	GM-27B	902.61	0
25967835.23	369310.9	GM-24C	903.72	0
25967162.71	370460.56	GM-53B	903.83	410
25967888.23	372897.07	GM-62B	924.74	1300
25969321.3	373576.85	BR-5B	926.92	0
25968573.25	369025.16	GM-38B	932.3	0
25965958.96	370347.31	GM-28B	934.85	0
25964837.17	371702.08	GM-26B	941.17	0
25968524.1	370139.11	GM-3B	944.61	310
25965089.78	372546.41	GM-25B	944.85	5300
25971393.08	371888.37	BR-6	947.8	0
25967738.44	368596.63	CW-1	949.5	0
25965004.16	373950.51	GM-6	954.07	250
25971408.94	374171.72	GM-15	957.2	0
25971402.51	370103.51	GM-7	957.63	0

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Table H-3. Concentration Values Used for 2,4-Dimethylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25969133.08	367258.4	GM-8	959.64	0
25967422.9	372249.83	GM-37A	968.35	2200
25974268.72	374127.49	GM-14	975.05	1.3
25969974.27	371521.83	GM-32	976.14	9200
25969633.07	372212.7	GM-40B	990.15	2700
25967835.23	369310.9	GM-24B	990.22	0
25965973.76	369577.21	GM-29	993.15	170
25968151.45	374162.63	MW-8	994.44	730
25968573.25	369025.16	GM-38A	997.22	0
25969905.63	369012.77	GM-39	997.29	0
25969226.67	368953.87	GM-34B	998.01	0
25966649.38	373542	BR-3	1001.03	3.4
25972579.93	373267.47	UG-4	1004.51	0
25968088.77	371544.24	MW-9B	1005.78	0
25964051.44	375422.42	GM-59	1010.97	0
25965328.57	373215.27	GM-31	1011.73	0
25965667.39	375108.95	MW-6	1012.26	0
25964837.17	371702.08	GM-26A	1012.31	1600
25966840.02	371711.17	MW-2B	1016.5	0
25965958.96	370347.31	GM-28A	1017.08	0
25965317.14	375466.98	GM-16	1017.25	0
25965349.66	371197.66	GM-27A	1017.45	1300
25967162.71	370460.56	GM-53A	1019.76	0
25967835.23	369310.9	GM-24A	1023.38	0
25969472.66	371574.4	MW-1B	1023.5	0
25965089.78	372546.41	GM-25A	1023.71	1300
25965416.12	373706.87	GM-51	1023.88	0
25969317.93	373587.64	BR-5A	1026.7	5
25971408.5	374166.02	GM-36	1027.17	0
25967888.23	372897.07	GM-62A	1029.78	0
25967024.62	371536.25	GM-50	1032.64	0
25966142.34	373173.32	GM-49	1033.19	0
25967202.12	371156.66	GM-52	1034.74	0
25966707.04	374476.32	MW-10	1035.16	0
25969633.07	372212.7	GM-40A	1035.18	0
25967501.63	371541.69	GM-33	1037.93	0
25968524.1	370139.11	GM-3A	1040.54	0
25966643.1	373575.61	MW-4	1040.8	0
25965919.64	373642.56	GM-30	1041.73	0
25965258.4	374299.5	GM-54	1041.88	0

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Table H-3. Concentration Values Used for 2,4-Dimethylphenol Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25969519.93	373318.39	GM-42	1044.17	0
25968793.2	374589.36	GM-4	1044.54	0
25965892.41	370149.51	GM-21	1045.99	0
25965574.94	374598.56	GM-55	1046.68	13
25965841.93	370291.92	GM-23	1047.4	0
25966105.77	374816.7	GM-57	1049.81	0
25965680.09	375180.55	GM-58	1050.9	0
25969704.17	370113.03	GM-2C	1052.36	0
25969226.67	368953.87	GM-34A	1053.08	0
25965994.49	370335.32	GM-22	1053.23	0
25969530.63	375100.82	MW-5	1054.44	0
25968084.09	371543.64	MW-9A	1055.79	0
25967940.27	371087.61	GM-118D	1060.14	0
25969505.04	375082.81	BR-2	1062.13	0
25967270.19	372339.53	GM-18	1065.13	0
25967424.16	372259.63	GM-19	1066.13	0
25966218.75	375823.78	GM-61	1068.58	0
25967691.87	372311.42	GM-20	1072.1	0
25969322.97	373619.92	MW-3	1072.25	0
25971404.04	374162.14	UG-2	1074.16	0
25969464.74	371576.48	MW-1A	1074.18	0
25966838.11	371715.62	MW-2A	1074.7	0
25969905.67	373040.31	GM-41	1075.17	0
25969585.33	373026.53	GM-35	1075.49	0
25969704.17	370113.03	GM-2A	1076.3	0
25970050.95	373439.65	GM-56	1079.06	0
25966728.12	375446.78	GM-60	1086.83	0

* Locations are in feet for the Michigan State Plane System.

ft msl Feet mean sea level.

µg/L Micrograms per liter.

Table H-4. Concentration Values Used for Butanone (MEK) Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968885.78	373281.64	MW-96-3	1051	0
25969350.72	373293.16	MW-96-1	1050	0
25968453.15	373288.42	MW-96-2	1050	0
25968524.1	370139.11	GM-3B	815	1000
25969580.29	373036.5	GM-12	890	0
25960859.94	375428.78	GM-11	1133	0
25964101.1	371938.24	GM-10	901	0
25964101.1	371938.24	GM-10	961	0
25965960.33	369592.91	GM-9	991	0
25971402.51	370103.51	GM-7	955	0
25965313.78	373215.84	GM-5	1007	0
25968560.37	373586.87	MW-96-4	1058	0
25965313.78	373215.84	GM-5	949	0
25969580.29	373036.5	GM-12	1055	0
25968524.1	370139.11	GM-3B	913	74
25965313.78	373215.84	GM-5	887	0
25968524.1	370139.11	GM-3B	1051	0
25968524.1	370139.11	GM-3B	855	39
25968524.1	370139.11	GM-3B	953	140
25969704.17	370113.03	GM-2B	1046	10
25969704.17	370113.03	GM-2B	986	0
25969704.17	370113.03	GM-2B	866	710
25969704.17	370113.03	GM-2B	916	0
25967133.86	370815.38	GM-1	832	0
25967133.86	370815.38	GM-1	929	0
25967133.86	370815.38	GM-1	978	0
25967133.86	370815.38	GM-1	1027	0
25968524.1	370139.11	GM-3B	1001	0
25968042.16	372462.71	GMSB-2	852	1100
25973008.43	370087.2	GMSB-8	912	0
25973008.43	370087.2	GMSB-8	981	0
25973008.43	370087.2	GMSB-8	1013	0
25965504.98	373463.06	GMSB-4	1005	0
25969980.26	371521.22	GM-13	971	1400
25968042.16	372462.71	GMSB-2	772	590
25968042.16	372462.71	GMSB-2	1024	0
25968975.03	373114.59	GMSB-1	902	920

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Table H-4. Concentration Values Used for Butanone (MEK) Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968975.03	373114.59	GMSB-1	792	0
25968975.03	373114.59	GMSB-1	842	0
25968975.03	373114.59	GMSB-1	1032	1600
25969974.27	371521.83	GM-32	991	0
25974268.72	374127.49	GM-14	1030	0
25965317.14	375466.98	GM-16	1015	0
25965504.98	373463.06	GMSB-4	936	0
25967501.63	371541.69	GM-33	1015	0
25969905.63	369012.77	GM-39	992	0
25971408.94	374171.72	GM-15	987	0
25968975.03	373114.59	GMSB-1	982	0
25971408.94	374171.72	GM-15	1072	0
25972077.74	372503.21	GM-17	1007	0
25967422.9	372249.83	GM-37B	784.29	1100
25969980.26	371521.22	GM-13	786.1	0
25967888.23	372897.07	GM-62C	804.77	780
25969580.29	373036.5	GM-12	825.49	0
25965089.78	372546.41	GM-25C	836.94	0
25965349.66	371197.66	GM-27C	837.53	0
25969704.17	370113.03	GM-2B	845.33	940
25972811.88	372515.77	UG-6	860.46	0
25965313.78	373215.84	GM-5	867.18	0
25964101.1	371938.24	GM-10	881.2	0
25964837.17	371702.08	GM-26C	882.27	10
25972077.74	372503.21	GM-17	882.54	0
25965960.33	369592.91	GM-9	884.04	0
25960859.94	375428.78	GM-11	888.14	0
25968573.25	369025.16	GM-38C	892.29	0
25967133.86	370815.38	GM-1	896.79	12
25965349.66	371197.66	GM-27B	902.61	0
25967835.23	369310.9	GM-24C	903.72	0
25967162.71	370460.56	GM-53B	903.83	0
25967888.23	372897.07	GM-62B	924.74	1200
25969321.3	373576.85	BR-5B	926.92	0
25968573.25	369025.16	GM-38B	932.3	0
25965958.96	370347.31	GM-28B	934.85	0
25964837.17	371702.08	GM-26B	941.17	0

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Table H-4. Concentration Values Used for Butanone (MEK) Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968524.1	370139.11	GM-3B	944.61	180
25965089.78	372546.41	GM-25B	944.85	1200
25971393.08	371888.37	BR-6	947.8	0
25967738.44	368596.63	CW-1	949.5	0
25965004.16	373950.51	GM-6	954.07	0
25971408.94	374171.72	GM-15	957.2	0
25971402.51	370103.51	GM-7	957.63	0
25969133.08	367258.4	GM-8	959.64	0
25967422.9	372249.83	GM-37A	968.35	790
25974268.72	374127.49	GM-14	975.05	0
25969974.27	371521.83	GM-32	976.14	1800
25969633.07	372212.7	GM-40B	990.15	1200
25967835.23	369310.9	GM-24B	990.22	0
25965973.76	369577.21	GM-29	993.15	0
25968151.45	374162.63	MW-8	994.44	0
25968573.25	369025.16	GM-38A	997.22	0
25969905.63	369012.77	GM-39	997.29	0
25969226.67	368953.87	GM-34B	998.01	0
25966649.38	373542	BR-3	1001.03	0
25972579.93	373267.47	UG-4	1004.51	0
25968088.77	371544.24	MW-9B	1005.78	0
25964051.44	375422.42	GM-59	1010.97	0
25965328.57	373215.27	GM-31	1011.73	0
25964837.17	371702.08	GM-26A	1012.31	51
25966840.02	371711.17	MW-2B	1016.5	0
25965958.96	370347.31	GM-28A	1017.08	0
25965317.14	375466.98	GM-16	1017.25	0
25965349.66	371197.66	GM-27A	1017.45	0
25967162.71	370460.56	GM-53A	1019.76	0
25967835.23	369310.9	GM-24A	1023.38	0
25969472.66	371574.4	MW-1B	1023.5	0
25965089.78	372546.41	GM-25A	1023.71	10
25965416.12	373706.87	GM-51	1023.88	0
25969317.93	373587.64	BR-5A	1026.7	0
25971408.5	374166.02	GM-36	1027.17	0
25967888.23	372897.07	GM-62A	1029.78	0
25967024.62	371536.25	GM-50	1032.64	0

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Table H-4. Concentration Values Used for Butanone (MEK) Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25966142.34	373173.32	GM-49	1033.19	0
25967202.12	371156.66	GM-52	1034.74	0
25969633.07	372212.7	GM-40A	1035.18	0
25967501.63	371541.69	GM-33	1037.93	0
25968524.1	370139.11	GM-3A	1040.54	0
25965919.64	373642.56	GM-30	1041.73	0
25965258.4	374299.5	GM-54	1041.88	0
25969519.93	373318.39	GM-42	1044.17	0
25968793.2	374589.36	GM-4	1044.54	0
25965892.41	370149.51	GM-21	1045.99	0
25965574.94	374598.56	GM-55	1046.68	0
25965841.93	370291.92	GM-23	1047.4	0
25966105.77	374816.7	GM-57	1049.81	0
25965680.09	375180.55	GM-58	1050.9	0
25969704.17	370113.03	GM-2C	1052.36	0
25969226.67	368953.87	GM-34A	1053.08	0
25965994.49	370335.32	GM-22	1053.23	0
25969530.63	375100.82	MW-5	1054.44	0
25967940.27	371087.61	GM-118D	1060.14	0
25969505.04	375082.81	BR-2	1062.13	0
25967270.19	372339.53	GM-18	1065.13	0
25967424.16	372259.63	GM-19	1066.13	0
25966218.75	375823.78	GM-61	1068.58	0
25967691.87	372311.42	GM-20	1072.1	0
25971404.04	374162.14	UG-2	1074.16	0
25969905.67	373040.31	GM-41	1075.17	0
25969585.33	373026.53	GM-35	1075.49	0
25969704.17	370113.03	GM-2A	1076.3	0
25970050.95	373439.65	GM-56	1079.06	0
25966728.12	375446.78	GM-60	1086.83	0

* Locations are in feet for the Michigan State Plane System.
ft msl Feet mean sea level.
µg/L Micrograms per liter.

Table H-5. Concentration Values Used for Total Organic Carbon Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25967501.63	371541.69	GM-33	1014	1.8
25968524.1	370139.11	GM-3B	953	57
25968524.1	370139.11	GM-3B	913	82
25968524.1	370139.11	GM-3B	1001	28
25968524.1	370139.11	GM-3B	1051	0
25965313.78	373215.84	GM-5	887	140
25969580.29	373036.5	GM-12	890	13
25969980.26	371521.22	GM-13	971	3300
25968975.03	373114.59	GMSB-1	1032	1100
25969905.63	369012.77	GM-39	992	16
25964101.1	371938.24	GM-10	901	0
25969580.29	373036.5	GM-12	1055	20
25964101.1	371938.24	GM-10	961	0
25968524.1	370139.11	GM-3B	815	310
25969974.27	371521.83	GM-32	991	18
25965313.78	373215.84	GM-5	1007	0
25965313.78	373215.84	GM-5	949	27
25974268.72	374127.49	GM-14	1030	3
25965960.33	369592.91	GM-9	991	3
25971402.51	370103.51	GM-7	955	6
25971408.94	374171.72	GM-15	987	1
25971408.94	374171.72	GM-15	1072	0
25965317.14	375466.98	GM-16	1015	1
25972077.74	372503.21	GM-17	1007	0
25967133.86	370815.38	GM-1	929	33
25968975.03	373114.59	GMSB-1	842	68
25968975.03	373114.59	GMSB-1	792	33
25968042.16	372462.71	GMSB-2	1024	14
25968042.16	372462.71	GMSB-2	852	2300
25967133.86	370815.38	GM-1	1027	0
25967133.86	370815.38	GM-1	978	25
25968042.16	372462.71	GMSB-2	772	1700
25965504.98	373463.06	GMSB-4	1005	11
25965504.98	373463.06	GMSB-4	936	56
25973008.43	370087.2	GMSB-8	912	0

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Table H-5. Concentration Values Used for Total Organic Carbon Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968524.1	370139.11	GM-3B	855	60
25973008.43	370087.2	GMSB-8	1013	0
25967133.86	370815.38	GM-1	832	15
25968975.03	373114.59	GMSB-1	982	18
25969704.17	370113.03	GM-2B	866	370
25968975.03	373114.59	GMSB-1	902	1000
25969704.17	370113.03	GM-2B	986	19
25969704.17	370113.03	GM-2B	916	0
25960859.94	375428.78	GM-11	1033	4
25973008.43	370087.2	GMSB-8	981	0
25969704.17	370113.03	GM-2B	1046	21
25967422.9	372249.83	GM-37B	784.29	2100
25969980.26	371521.22	GM-13	786.1	23
25967888.23	372897.07	GM-62C	804.77	820
25969580.29	373036.5	GM-12	825.49	1.7
25965089.78	372546.41	GM-25C	836.94	39
25965349.66	371197.66	GM-27C	837.53	1.2
25969704.17	370113.03	GM-2B	845.33	640
25972811.88	372515.77	UG-6	860.46	0
25965313.78	373215.84	GM-5	867.18	140
25964101.1	371938.24	GM-10	881.2	1.2
25964837.17	371702.08	GM-26C	882.27	180
25972077.74	372503.21	GM-17	882.54	2.8
25965960.33	369592.91	GM-9	884.04	4.5
25960859.94	375428.78	GM-11	888.14	0
25968573.25	369025.16	GM-38C	892.29	2
25967133.86	370815.38	GM-1	896.79	84
25965349.66	371197.66	GM-27B	902.61	5.5
25967835.23	369310.9	GM-24C	903.72	2.7
25967162.71	370460.56	GM-53B	903.83	78
25967888.23	372897.07	GM-62B	924.74	1700
25969321.3	373576.85	BR-5B	926.92	12
25968573.25	369025.16	GM-38B	932.3	3
25965958.96	370347.31	GM-28B	934.85	0
25964837.17	371702.08	GM-26B	941.17	1

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Table H-5. Concentration Values Used for Total Organic Carbon Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968524.1	370139.11	GM-3B	944.61	90
25965089.78	372546.41	GM-25B	944.85	2800
25971393.08	371888.37	BR-6	947.8	0
25967738.44	368596.63	CW-1	949.5	19
25965004.16	373950.51	GM-6	954.07	57
25971408.94	374171.72	GM-15	957.2	2.9
25971402.51	370103.51	GM-7	957.63	4
25969133.08	367258.4	GM-8	959.64	1
25967422.9	372249.83	GM-37A	968.35	710
25974268.72	374127.49	GM-14	975.05	5
25969974.27	371521.83	GM-32	976.14	4300
25969633.07	372212.7	GM-40B	990.15	2300
25967835.23	369310.9	GM-24B	990.22	2.7
25965973.76	369577.21	GM-29	993.15	29
25968151.45	374162.63	MW-8	994.44	95
25968573.25	369025.16	GM-38A	997.22	0
25969905.63	369012.77	GM-39	997.29	1.5
25969226.67	368953.87	GM-34B	998.01	1.8
25966649.38	373542	BR-3	1001.03	4
25972579.93	373267.47	UG-4	1004.51	2.2
25968088.77	371544.24	MW-9B	1005.78	130
25964051.44	375422.42	GM-59	1010.97	1.8
25965328.57	373215.27	GM-31	1011.73	1.3
25964837.17	371702.08	GM-26A	1012.31	200
25966840.02	371711.17	MW-2B	1016.5	11
25965958.96	370347.31	GM-28A	1017.08	1.6
25965317.14	375466.98	GM-16	1017.25	1
25965349.66	371197.66	GM-27A	1017.45	200
25967162.71	370460.56	GM-53A	1019.76	1.7
25967835.23	369310.9	GM-24A	1023.38	2
25969472.66	371574.4	MW-1B	1023.5	7
25965089.78	372546.41	GM-25A	1023.71	160
25965416.12	373706.87	GM-51	1023.88	0
25969317.93	373587.64	BR-5A	1026.7	6
25971408.5	374166.02	GM-36	1027.17	1.2

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Table H-5. Concentration Values Used for Total Organic Carbon Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25967888.23	372897.07	GM-62A	1029.78	37
25967024.62	371536.25	GM-50	1032.64	1.3
25966142.34	373173.32	GM-49	1033.19	4.7
25967202.12	371156.66	GM-52	1034.74	1
25966707.04	374476.32	MW-10	1035.16	2
25969633.07	372212.7	GM-40A	1035.18	0
25967501.63	371541.69	GM-33	1037.93	0
25968524.1	370139.11	GM-3A	1040.54	1
25965919.64	373642.56	GM-30	1041.73	5.4
25965258.4	374299.5	GM-54	1041.88	0
25969519.93	373318.39	GM-42	1044.17	6.1
25968793.2	374589.36	GM-4	1044.54	0
25965892.41	370149.51	GM-21	1045.99	7
25965574.94	374598.56	GM-55	1046.68	1.6
25965841.93	370291.92	GM-23	1047.4	2.7
25966105.77	374816.7	GM-57	1049.81	0
25965680.09	375180.55	GM-58	1050.9	0
25969704.17	370113.03	GM-2C	1052.36	1.8
25969226.67	368953.87	GM-34A	1053.08	1
25965994.49	370335.32	GM-22	1053.23	17
25969530.63	375100.82	MW-5	1054.44	1.6
25967940.27	371087.61	GM-118D	1060.14	1.2
25969505.04	375082.81	BR-2	1062.13	2
25967270.19	372339.53	GM-18	1065.13	0
25967424.16	372259.63	GM-19	1066.13	0
25966218.75	375823.78	GM-61	1068.58	2.8
25967691.87	372311.42	GM-20	1072.1	9
25971404.04	374162.14	UG-2	1074.16	1
25969905.67	373040.31	GM-41	1075.17	3.4
25969585.33	373026.53	GM-35	1075.49	3.9
25969704.17	370113.03	GM-2A	1076.3	2
25970050.95	373439.65	GM-56	1079.06	1.5
25966728.12	375446.78	GM-60	1086.83	2.1

* Locations are in feet for the Michigan State Plane System.
ft msl Feet mean sea level.
µg/L Micrograms per liter.

Table H-6. Concentration Values Used for Acetic Acid Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25967422.9	372249.83	GM-37B	784.29	15000
25969980.26	371521.22	GM-13	786.1	18
25969580.29	373036.5	GM-12	825.49	0.41
25965089.78	372546.41	GM-25C	836.94	1.7
25965349.66	371197.66	GM-27C	837.53	0.64
25969704.17	370113.03	GM-2B	845.33	2600
25965313.78	373215.84	GM-5	867.18	0.5
25964101.1	371938.24	GM-10	881.2	0
25964837.17	371702.08	GM-26C	882.27	3.4
25972077.74	372503.21	GM-17	882.54	0.65
25965960.33	369592.91	GM-9	884.04	0.24
25968573.25	369025.16	GM-38C	892.29	0.73
25967133.86	370815.38	GM-1	896.79	9.6
25965349.66	371197.66	GM-27B	902.61	16
25967835.23	369310.9	GM-24C	903.72	1.3
25967162.71	370460.56	GM-53B	903.83	1.3
25968573.25	369025.16	GM-38B	932.3	0.29
25965958.96	370347.31	GM-28B	934.85	0.5
25964837.17	371702.08	GM-26B	941.17	0
25968524.1	370139.11	GM-3B	944.61	100
25965089.78	372546.41	GM-25B	944.85	6700
25967738.44	368596.63	CW-1	949.5	0.75
25965004.16	373950.51	GM-6	954.07	0
25971408.94	374171.72	GM-15	957.2	0.3
25971402.51	370103.51	GM-7	957.63	0.41
25969133.08	367258.4	GM-8	959.64	11
25967422.9	372249.83	GM-37A	968.35	1710
25974268.72	374127.49	GM-14	975.05	0
25969974.27	371521.83	GM-32	976.14	3400
25969633.07	372212.7	GM-40B	990.15	14600
25967835.23	369310.9	GM-24B	990.22	0
25965973.76	369577.21	GM-29	993.15	0
25968151.45	374162.63	MW-8	994.44	2.5
25968573.25	369025.16	GM-38A	997.22	0
25969905.63	369012.77	GM-39	997.29	0.5
25969226.67	368953.87	GM-34B	998.01	0
25972579.93	373267.47	UG-4	1004.51	0

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Table H-6. Concentration Values Used for Acetic Acid Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25964051.44	375422.42	GM-59	1010.97	0.26
25965328.57	373215.27	GM-31	1011.73	0.34
25964837.17	371702.08	GM-26A	1012.31	16
25965317.14	375466.98	GM-16	1017.25	0
25965349.66	371197.66	GM-27A	1017.45	920
25967162.71	370460.56	GM-53A	1019.76	0
25967835.23	369310.9	GM-24A	1023.38	1.3
25965089.78	372546.41	GM-25A	1023.71	0
25965416.12	373706.87	GM-51	1023.88	0.25
25971408.5	374166.02	GM-36	1027.17	0
25967024.62	371536.25	GM-50	1032.64	0
25966142.34	373173.32	GM-49	1033.19	0
25967202.12	371156.66	GM-52	1034.74	0
25969633.07	372212.7	GM-40A	1035.18	0
25967501.63	371541.69	GM-33	1037.93	0
25968524.1	370139.11	GM-3A	1040.54	0
25965919.64	373642.56	GM-30	1041.73	0.29
25965258.4	374299.5	GM-54	1041.88	0
25969519.93	373318.39	GM-42	1044.17	0.46
25968793.2	374589.36	GM-4	1044.54	0.22
25965892.41	370149.51	GM-21	1045.99	0
25965574.94	374598.56	GM-55	1046.68	0.43
25965841.93	370291.92	GM-23	1047.4	0
25966105.77	374816.7	GM-57	1049.81	0
25965680.09	375180.55	GM-58	1050.9	0
25969704.17	370113.03	GM-2C	1052.36	0
25969226.67	368953.87	GM-34A	1053.08	0
25965994.49	370335.32	GM-22	1053.23	0.21
25969530.63	375100.82	MW-5	1054.44	0.26
25967940.27	371087.61	GM-118D	1060.14	0
25966218.75	375823.78	GM-61	1068.58	4
25971404.04	374162.14	UG-2	1074.16	0
25969905.67	373040.31	GM-41	1075.17	0
25969585.33	373026.53	GM-35	1075.49	0
25969704.17	370113.03	GM-2A	1076.3	0.21

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Table H-6. Concentration Values Used for Acetic Acid Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25970050.95	373439.65	GM-56	1079.06	0.32
25966728.12	375446.78	GM-60	1086.83	0

* Locations are in feet for the Michigan State Plane System.
ft msl Feet mean sea level.
µg/L Micrograms per liter.

Table H-7. Concentration Values Used for Methane Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sampl Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968042	372462.7	GMSB-2	852	155
25967502	371541.7	GM-33	1014	7.9
25969906	369012.8	GM-39	992	22.62
25968975	373114.6	GMSB-1	982	7.4
25968975	373114.6	GMSB-1	792	34
25969974	371521.8	GM-32	991	36.7
25968042	372462.7	GMSB-2	772	23.2
25973008	370087.2	GMSB-8	981	0
25968042	372462.7	GMSB-2	1024	3.6
25965505	373463.1	GMSB-4	936	36.8
25965505	373463.1	GMSB-4	1005	10.7
25973008	370087.2	GMSB-8	912	0
25965314	373215.8	GM-5	1007	6.6
25968975	373114.6	GMSB-1	902	87.2
25973008	370087.2	GMSB-8	883	0
25965314	373215.8	GM-5	949	30.9
25965960	369592.9	GM-9	991	1.65
25972078	372503.2	GM-17	1007	0.0112
25960860	375428.8	GM-11	1033	0.13
25969580	373036.5	GM-12	1055	0.55
25969580	373036.5	GM-12	890	7.83
25974269	374127.5	GM-14	1030	0
25971409	374171.7	GM-15	1072	0
25964101	371938.2	GM-10	961	1.09
25967423	372249.8	GM-37B	784.29	121
25969980	371521.2	GM-13	786.1	38.8
25967888	372897.1	GM-62C	804.77	298
25969580	373036.5	GM-12	825.49	0.47
25965090	372546.4	GM-25C	836.94	26.5
25965350	371197.7	GM-27C	837.53	13.5
25969704	370113	GM-2B	845.33	460
25972812	372515.8	UG-6	860.46	0.15
25965314	373215.8	GM-5	867.18	74.4
25964101	371938.2	GM-10	881.2	1.06
25964837	371702.1	GM-26C	882.27	134
25972078	372503.2	GM-17	882.54	12.4
25965960	369592.9	GM-9	884.04	0.32

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Table H-7. Concentration Values Used for Methane Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sampl Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25960860	375428.8	GM-11	888.14	0.12
25968573	369025.2	GM-38C	892.29	0.64
25967134	370815.4	GM-1	896.79	165
25965350	371197.7	GM-27B	902.61	0.18
25967835	369310.9	GM-24C	903.72	0.18
25967163	370460.6	GM-53B	903.83	147
25967888	372897.1	GM-62B	924.74	134
25969321	373576.9	BR-5B	926.92	15.8
25968573	369025.2	GM-38B	932.3	0.91
25965959	370347.3	GM-28B	934.85	0.41
25964837	371702.1	GM-26B	941.17	0.32
25968524	370139.1	GM-3B	944.61	127
25965090	372546.4	GM-25B	944.85	112.3
25971393	371888.4	BR-6	947.8	0.013
25967738	368596.6	CW-1	949.5	19.13
25965004	373950.5	GM-6	954.07	64.8
25971409	374171.7	GM-15	957.2	2.8
25971403	370103.5	GM-7	957.63	31.7
25969133	367258.4	GM-8	959.64	0.02
25967423	372249.8	GM-37A	968.35	66.1
25974269	374127.5	GM-14	975.05	8.46
25969974	371521.8	GM-32	976.14	33.2
25969633	372212.7	GM-40B	990.15	63.1
25967835	369310.9	GM-24B	990.22	9.44
25965974	369577.2	GM-29	993.15	29.2
25968151	374162.6	MW-8	994.44	86
25968573	369025.2	GM-38A	997.22	0.04
25969906	369012.8	GM-39	997.29	9.12
25969227	368953.9	GM-34B	998.01	0.11
25966649	373542	BR-3	1001.03	2.9
25972580	373267.5	UG-4	1004.51	0.22
25968089	371544.2	MW-9B	1005.78	0.014
25964051	375422.4	GM-59	1010.97	0.17
25965329	373215.3	GM-31	1011.73	6.98
25964837	371702.1	GM-26A	1012.31	59
25966840	371711.2	MW-2B	1016.5	34.8
25965959	370347.3	GM-28A	1017.08	37.6

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Table H-7. Concentration Values Used for Methane Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sampl Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25965317	375467	GM-16	1017.25	0.0055
25965350	371197.7	GM-27A	1017.45	48.2
25967163	370460.6	GM-53A	1019.76	31.7
25967835	369310.9	GM-24A	1023.38	34.7
25969473	371574.4	MW-1B	1023.5	18.2
25965090	372546.4	GM-25A	1023.71	38.9
25965416	373706.9	GM-51	1023.88	5.4
25969318	373587.6	BR-5A	1026.7	0.82
25971409	374166	GM-36	1027.17	0.02
25967888	372897.1	GM-62A	1029.78	8.47
25967025	371536.3	GM-50	1032.64	33
25966142	373173.3	GM-49	1033.19	9.2
25967202	371156.7	GM-52	1034.74	30.4
25966707	374476.3	MW-10	1035.16	0.011
25969633	372212.7	GM-40A	1035.18	1.46
25968524	370139.1	GM-3A	1040.54	0.14
25965920	373642.6	GM-30	1041.73	27.4
25965258	374299.5	GM-54	1041.88	0.091
25969520	373318.4	GM-42	1044.17	0.82
25968793	374589.4	GM-4	1044.54	0.02
25965892	370149.5	GM-21	1045.99	0.03
25965575	374598.6	GM-55	1046.68	24.6
25965842	370291.9	GM-23	1047.4	0.123
25966106	374816.7	GM-57	1049.81	14.3
25965680	375180.6	GM-58	1050.9	7.69
25969704	370113	GM-2C	1052.36	5.6
25969227	368953.9	GM-34A	1053.08	0.22
25965994	370335.3	GM-22	1053.23	0.16
25969531	375100.8	MW-5	1054.44	0.02
25967940	371087.6	GM-118D	1060.14	0.0087
25969505	375082.8	BR-2	1062.13	0.023
25967270	372339.5	GM-18	1065.13	0
25967424	372259.6	GM-19	1066.13	0
25966219	375823.8	GM-61	1068.58	5.71
25971404	374162.1	UG-2	1074.16	0.22
25969906	373040.3	GM-41	1075.17	8.32

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Table H-7. Concentration Values Used for Methane Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sampl Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25969585	373026.5	GM-35	1075.49	0.57
25969704	370113	GM-2A	1076.3	19.2
25970051	373439.7	GM-56	1079.06	0.3

* Locations are in feet for the Michigan State Plane System.
ft msl Feet mean sea level.
µg/L Micrograms per liter.

Table H-8. Concentration Values Used for Acetone Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25967133.86	370815.38	GM-1	832	0
25967133.86	370815.38	GM-1	929	0
25967133.86	370815.38	GM-1	1027	0
25964101.1	371938.24	GM-10	901	0
25964101.1	371938.24	GM-10	961	0
25960859.94	375428.78	GM-11	1133	0
25969580.29	373036.5	GM-12	890	0
25974268.72	374127.49	GM-14	1030	0
25971408.94	374171.72	GM-15	987	0
25971408.94	374171.72	GM-15	1072	0
25965317.14	375466.98	GM-16	1015	0
25972077.74	372503.21	GM-17	1007	0
25969704.17	370113.03	GM-2B	1046	9.3
25969704.17	370113.03	GM-2B	986	0
25969704.17	370113.03	GM-2B	916	0
25969704.17	370113.03	GM-2B	866	730
25969974.27	371521.83	GM-32	991	0
25967501.63	371541.69	GM-33	1015	0
25969905.63	369012.77	GM-39	992	0
25968524.1	370139.11	GM-3B	1051	0
25968524.1	370139.11	GM-3B	953	270
25968524.1	370139.11	GM-3B	913	190
25968524.1	370139.11	GM-3B	855	83
25968524.1	370139.11	GM-3B	815	1400
25965313.78	373215.84	GM-5	887	0
25965313.78	373215.84	GM-5	949	0
25971402.51	370103.51	GM-7	955	0
25965960.33	369592.91	GM-9	991	0
25968975.03	373114.59	GMSB-1	1032	2000
25968975.03	373114.59	GMSB-1	983	0
25968975.03	373114.59	GMSB-1	902	1100
25968975.03	373114.59	GMSB-1	842	0
25968975.03	373114.59	GMSB-1	792	16
25968042.16	372462.71	GMSB-2	1024	0
25968042.16	372462.71	GMSB-2	852	1500
25968042.16	372462.71	GMSB-2	772	1000
25965504.98	373463.06	GMSB-4	1005	0
25973008.43	370087.2	GMSB-8	912	0
25973008.43	370087.2	GMSB-8	981	0

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Table H-8. Concentration Values Used for Acetone Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25973008.43	370087.2	GMSB-8	1013	0
25967422.9	372249.83	GM-37B	784.29	1200
25969980.26	371521.22	GM-13	786.1	0
25967881.13	372897.75	GM-62C	804.77	690
25969580.29	373036.5	GM-12	825.49	0
25965089.78	372546.41	GM-25C	836.94	0
25965349.66	371197.66	GM-27C	837.53	0
25969704.17	370113.03	GM-2B	845.33	1200
25972811.88	372515.77	UG-6	860.46	0
25965313.78	373215.84	GM-5	867.18	0
25964101.1	371938.24	GM-10	881.2	0
25964837.17	371702.08	GM-26C	882.27	20
25972077.74	372503.21	GM-17	882.54	0
25965960.33	369592.91	GM-9	884.04	0
25960859.94	375428.78	GM-11	888.14	0
25968573.25	369025.16	GM-38C	892.29	0
25967133.86	370815.38	GM-1	896.79	12
25965356.52	371202.15	GM-27B	902.61	0
25967835.23	369310.9	GM-24C	903.72	0
25967162.71	370460.56	GM-53B	903.83	0
25967888.23	372897.07	GM-62B	924.74	990
25969321.3	373576.85	BR-5B	926.92	0
25968573.18	369020.26	GM-38B	932.3	0
25965958.96	370347.31	GM-28B	934.85	0
25964838.48	371707.27	GM-26B	941.17	0
25968524.1	370139.11	GM-3B	944.61	580
25965088.49	372548.99	GM-25B	944.85	1400
25971393.08	371888.37	BR-6	947.8	0
25967738.44	368596.63	CW-1	949.5	0
25965004.16	373950.51	GM-6	954.07	0
25971408.94	374171.72	GM-15	957.2	0
25971402.51	370103.51	GM-7	957.63	0
25969133.08	367258.4	GM-8	959.64	0
25967423.53	372254.59	GM-37A	968.35	1100
25974268.72	374127.49	GM-14	975.05	0
25969974.27	371521.83	GM-32	976.14	2900
25969633.07	372212.7	GM-40B	990.15	1600
25967829.92	369310.7	GM-24B	990.22	0
25965973.76	369577.21	GM-29	993.15	0
25968151.45	374162.63	MW-8	994.44	16

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Table H-8. Concentration Values Used for Acetone Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25968572.95	369015.28	GM-38A	997.22	0
25969905.63	369012.77	GM-39	997.29	0
25969226.67	368953.87	GM-34B	998.01	0
25966649.38	373542	BR-3	1001.03	0
25972579.93	373267.47	UG-4	1004.51	0
25964051.44	375422.42	GM-59	1010.97	0
25965328.57	373215.27	GM-31	1011.73	0
25964839.72	371712.12	GM-26A	1012.31	71
25966840.02	371711.17	MW-2B	1016.5	0
25965962.78	370345.73	GM-28A	1017.08	0
25965317.14	375466.98	GM-16	1017.25	0
25965360.84	371204.72	GM-27A	1017.45	0
25967167.74	370458.65	GM-53A	1019.76	0
25967825.21	369310.81	GM-24A	1023.38	0
25969472.66	371574.4	MW-1B	1023.5	0
25965086.52	372555.62	GM-25A	1023.71	0
25965416.12	373706.87	GM-51	1023.88	0
25969317.93	373587.64	BR-5A	1026.7	0
25971408.5	374166.02	GM-36	1027.17	0
25967872.09	372897.15	GM-62A	1029.78	0
25967024.62	371536.25	GM-50	1032.64	0
25966142.34	373173.32	GM-49	1033.19	0
25967202.12	371156.66	GM-52	1034.74	0
25969627.98	372212.55	GM-40A	1035.18	0
25967501.63	371541.69	GM-33	1037.93	0
25968519.05	370138.77	GM-3A	1040.54	0
25965919.64	373642.56	GM-30	1041.73	0
25965258.4	374299.5	GM-54	1041.88	0
25969519.93	373318.39	GM-42	1044.17	0
25968793.2	374589.36	GM-4	1044.54	0
25965892.41	370149.51	GM-21	1045.99	0
25965574.94	374598.56	GM-55	1046.68	0
25965841.93	370291.92	GM-23	1047.4	0
25966105.77	374816.7	GM-57	1049.81	0
25968885.78	373281.64	MW-96-3	1050.26	0
25969350.72	373293.16	MW-96-1	1050.51	0
25965680.09	375180.55	GM-58	1050.9	0
25969703.63	370120.4	GM-2C	1052.36	0
25969226.47	368950.52	GM-34A	1053.08	0

Footnotes on Page 4.

Table H-8. Concentration Values Used for Acetone Plume Model Construction, Ford/Kingsford Site, Kingsford, Michigan.

Location*		Well/Boring	Sample Elevation (ft msl)	Concentrations (µg/L)
Easting	Northing			
25965994.49	370335.32	GM-22	1053.23	0
25969530.63	375100.82	MW-5	1054.44	0
25968084.09	371543.64	MW-9A	1055.79	0
25968453.15	373288.42	MW-96-2	1056.52	0
25968560.37	373586.87	MW-96-4	1058.45	0
25967940.27	371087.61	GM-118D	1060.14	0
25969505.04	375082.81	BR-2	1062.13	0
25967270.19	372339.53	GM-18	1065.13	0
25967424.16	372259.63	GM-19	1066.13	0
25966218.75	375823.78	GM-61	1068.58	0
25967691.87	372311.42	GM-20	1072.1	0
25971404.04	374162.14	UG-2	1074.16	0
25969905.67	373040.31	GM-41	1075.17	0
25969585.33	373026.53	GM-35	1075.49	0
25969704.16	370107.55	GM-2A	1076.3	28
25970050.95	373439.65	GM-56	1079.06	0
25966728.12	375446.78	GM-60	1086.83	0

* Locations are in feet for the Michigan State Plane System.
ft msl Feet mean sea level.
µg/L Micrograms per liter.

ARCADIS

Appendix I

Biological Community Assessment
for the Menominee River

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ARCADIS GERAGHTY & MILLER

Biological Community Assessment for the Menominee River

Ford/Kingsford Site, Kingsford, Michigan

PREPARED FOR

Ford Motor Company,
The Kingsford Products Company

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Executive Summary

This report describes the results of a biological community assessment (bioassessment) of the Menominee River in the vicinity of the Ford/Kingsford site in Kingsford, Michigan. ARCADIS Geraghty & Miller conducted this bioassessment on behalf of the Ford Motor Company and The Kingsford Products Company, in order to determine whether aquatic biota have been adversely impacted by groundwater migrating from the Ford/Kingsford site. This investigation was conducted in accordance with methods developed and employed by the U.S. Environmental Protection Agency (USEPA) and several state agencies in the Great Lakes region.

Methods

The Menominee River bioassessment specifically addressed the numbers and types of sediment-dwelling (benthic) macroinvertebrates and fish at locations upstream, adjacent to, and downstream of the site. Physical habitat and chemistry data were collected where feasible to help distinguish the cause of any differences in the macroinvertebrate and fish communities between locations.

Components of the benthic macroinvertebrate survey included the following:

- Benthic macroinvertebrates were collected at 25 sample locations. At each of 15 shallow (wadeable) locations, four replicate samples were collected using the traveling kicknet method. Qualitative sweep net sampling was also conducted at wadeable locations, to provide a more complete list of the species present. At 10 deep (non-wadeable) locations, four replicate samples were collected using artificial substrate samplers (Hester-Dendy type). The samplers were placed in the river for six weeks to permit colonization by invertebrates.

- A visual-based habitat assessment was conducted at wadeable locations according to the Michigan Department of Environmental Quality's (MDEQ) protocol. The assessment rated characteristics such as the embeddedness of the substrate (degree of siltation), availability of instream cover (such as logs and aquatic plants), diversity of microhabitats, and bank stability.

- Current velocity, water depth, and water quality parameters (temperature, conductivity, pH, dissolved oxygen) were measured at each location.

- Subsurface temperature gradients were measured, as a potential indicator of areas of upwelling groundwater. During the summer months, upwelling groundwater is colder than surface water.

- Sediment samples were collected for chemical analyses from all wadeable sample locations (coarse sediments prevented effective sample collection at non-wadeable locations). The chemicals of interest included phenolic compounds, dissolved metals, common ions (such as magnesium and bicarbonate), and pH. To provide the most appropriate measure of exposure to benthic invertebrates, most analyses were conducted on porewater extracted from the sediment samples using centrifugation. Phenolic compounds were analyzed in whole sediment, however, due to the potential for losses during centrifugation. Other analyses conducted to aid the interpretation of the survey results included total organic carbon and moisture content (for evaluation of chemical bioavailability) and ammonia and sulfide (potential naturally occurring stressors).

Components of the fish survey are summarized as follows:

- Ten 500-meter zones were sampled at night using electrofishing, which involves shocking the water, collecting and evaluating stunned fish, and releasing the fish back into the river. The fish were identified, counted, batch weighed by species, and examined for external anomalies.

- A visual-based habitat assessment was conducted for each sampling zone.

- Water quality parameters (temperature, dissolved oxygen, conductivity, water clarity) were measured at each zone. Water chemistry was not analyzed, because previous analyses indicated that chemicals would be present in the water column at very low concentrations (generally below detection limits).

- The average water depth in each sampling zone was calculated from the results of a bathymetry survey, conducted using multi-beam sonar.

Results

For the 15 wadeable macroinvertebrate sample locations, benthic community composition was strongly correlated with habitat characteristics but not with chemical concentrations or proximity to the site. Ten metrics were used to evaluate the benthic

community: abundance; number of taxa; diversity; Hilsenhoff Biotic Index (HBI); number of mayfly, stonefly and caddisfly taxa; percent mayflies; percent Tanytarsini midges; percent other diptera and non-insects; percent tolerant; and percent Cricotopus. Most of these metrics are based on the relative abundance of sensitive or tolerant species. In most cases, between 80% and 90% of the variation in metric values among locations was explained based solely on sediment embeddedness, or on a combination of embeddedness and river mile values. River miles reflect a large-scale habitat gradient due to the fact that the study area is located between two dams.

For the 10 non-wadeable macroinvertebrate sample locations, benthic community composition was very similar among locations. Habitat differences within the river channel were most likely less extreme than among wadeable locations, and the use of artificial substrate samplers further limited the influence of physical habitat conditions. All metric values for locations adjacent to the site were within the range of values observed at upstream and downstream reference locations.

Overall, the benthic macroinvertebrate community in the study area was of high quality. Sensitive species were observed at all sample locations. Benthic community metric values were not consistent with the "biological response signature" identified by Ohio EPA as being associated with chemical toxicity. Differences among locations that were associated with physical habitat characteristics were consistent with the biology of taxa that inhabit embedded sediments versus "silt-free" gravel substrates.

Fish community composition was strongly correlated with water depth. Shallower locations supported more fish of smaller size, including more species and higher diversity than deeper locations. This is consistent with the fact that fish tend to congregate in the shallows at night, and shallow backwaters tend to serve as "nursery" areas for many fish species. The sampling zones adjacent to the site actually exhibited the highest number and diversity of fish, because these were the shallowest areas sampled. The fish were visually observed to be plump and healthy, and external anomalies were very uncommon (occurring in less than 1% of the fish captured).

Biological Community Assessment

Biological community survey results provide no evidence of adverse impacts related to groundwater migrating from the Ford/Kingsford site. This assessment is based on the following findings:

- Biological community metrics within the study area are similar to those at reference locations that have similar habitat characteristics;

- Biological community metrics are generally closely correlated with physical habitat characteristics and are not correlated with chemical concentrations;

- Sample locations immediately adjacent to the area of affected groundwater do not deviate from the biological community characteristics that are predicted based on habitat conditions; and

- These results are in agreement with biological survey data collected by the Wisconsin Department of Natural Resources from additional study area locations during 1996-1999.

These findings are based on an extensive sampling effort, such that any impact occurring at an ecologically relevant scale would have been detected. The sampling locations included anticipated "hot spots" of groundwater upwelling, and the subsurface temperature results confirm that groundwater upwelling was occurring at some locations. Thus, it is apparent that constituents in groundwater are being sufficiently attenuated to prevent toxicity to the benthic macroinvertebrate community.

These conclusions also have implications for other components of the Menominee River ecosystem. Based on the high quality of the macroinvertebrate and fish communities, as well as the non-bioaccumulative nature of the chemicals of interest, the river should provide an excellent prey base for aquatic-feeding wildlife. At the opposite end of the food chain, the high quality of the benthic macroinvertebrate and fish communities indicates that important ecological functions of the groundwater-surface water transition zone are not impaired. The transition zone may provide important habitat, enhanced degradation of contaminants, enhanced nutrient and carbon cycling, and production of a food source (microbial biofilms) for benthic macroinvertebrates. These functions are potentially important to the ecosystem. If they were impaired by groundwater migrating from the site, then effects on the benthic macroinvertebrate community would have been observed.

1. Introduction

This report describes the results of a biological community assessment (bioassessment) of the Menominee River in the vicinity of the Ford/Kingsford site in Kingsford, Michigan. ARCADIS Geraghty & Miller conducted this bioassessment on behalf of the Ford Motor Company and The Kingsford Products Company, in order to determine whether aquatic biota have been adversely impacted by groundwater migrating from the Ford/Kingsford site. This investigation was conducted in accordance with methods developed and employed by the USEPA and several state agencies in the Great Lakes region (Barbour et al., 1999; Bode et al., 1991; Lazorchak et al., 1999; MDEQ, 1997; WDNR, 1997; 1998; Yoder and Rankin, 1995).

Specific objectives of this bioassessment are:

- To determine whether the numbers and types of benthic (sediment-dwelling) macroinvertebrates in the Menominee River adjacent to the area of affected groundwater are indicative of chemical toxicity; and

- To determine whether the numbers, types, and health of fish in the Menominee River adjacent to the area of affected groundwater are indicative of chemical toxicity.

1.1 Background Information

The Menominee River forms the border between northeastern Wisconsin and the upper peninsula of Michigan. The Menominee River is formed by the junction of the Brule and Michigamme Rivers near Florence, Wisconsin. From this point, the river flows 118 miles to the southeast before discharging into Green Bay, an arm of Lake Michigan. The Menominee River Basin encompasses over 4,000 square miles of land, most of which is forested. Several major waterfalls and rapids formerly existed within the Menominee River, along the boundary between the Canadian Precambrian shield and adjacent sedimentary bedrock. Most of these areas have been impounded by dams, with the river being used for hydropower production (NRCS, 1992; Thuemler and Schnicke, 1992).

The Ford/Kingsford site is located in the City of Kingsford, in Dickinson County, Michigan. Groundwater near the Menominee River is affected by historical disposal

activities in areas known as the former Northeast and Southwest Pits. The principal source of contamination was waste water containing dissolved organic material (including methylated phenolic compounds) from wood pyrolysis processes. The dissolved organic material was carried deep into the groundwater aquifer, where biodegradation of the material is taking place. Biodegradation products include acetic acid and methane. Additionally, the reactive nature of the biodegradation process results in some solubilization of minerals from the soils comprising the groundwater system. The affected groundwater lies adjacent to a small portion of the Menominee River approximately 2500 feet in length, located between the Ford Dam (also called Kingsford Dam) and the Big Quinnesec Dam.

Groundwater near the Menominee River has been investigated through chemical analyses and toxicity testing. The comparison between chemical concentrations and MDEQ water quality values is described in detail in the draft Remedial Investigation Report (ARCADIS Geraghty & Miller, 2001). Chemicals of potential concern identified from this first-step screening process include certain phenolic compounds (2,4-dimethylphenol, 2-methylphenol, 3-methylphenol, phenol), acetic acid, and metals (manganese, barium, vanadium).

In addition to the evaluation of measured chemical concentrations, the MDEQ required toxicity tests to be conducted using groundwater collected from wells near the Menominee River. The tests were conducted using standard methods developed for whole-effluent toxicity (WET) testing. Some groundwater samples were toxic to fathead minnows (*Pimephales promelas*) and/or daphnids (*Daphnia magna*). Standard Toxicity Identification Evaluation (TIE) procedures were implemented to identify classes of chemicals contributing to the observed toxicity. In general, toxicity appeared to be due to a combination of iron, bicarbonate, and phenolic compounds. Groundwater toxicity test and TIE results are presented and compared to chemical concentrations in Appendix A.

The scientific literature provides little precedent to establish the ecological relevance of toxicity test results for groundwater. However, the application of these results is generally analogous to the monitoring of effluent discharges to surface water through WET testing. During the past several years, the USEPA and others have embarked on a mid-course review of WET testing (Ausley, 2000). Based on a technical review of the merits and limitations of WET testing, the appropriate use of this type of information is as an indicator of the need for further evaluation of risks to aquatic life (Chapman, 2000). Due to factors such as the inability to reliably predict instream biological condition from WET test results (Diamond and Daley, 2000), variability of

test results (Warren-Hicks et al., 2000; Moore et al., 2000a), and the likelihood of false positives (Moore et al., 2000b), WET testing does not provide a definitive determination of ecological impact (Chapman, 2000). The ability to predict surface water impacts based on WET test results is expected to be lower for groundwater toxicity tests than for whole effluent tests, because of the diffuse nature of groundwater discharge, inherent differences in the geochemistry of groundwater versus surface water, and various attenuation processes that occur before groundwater becomes surface water. Therefore, a bioassessment was conducted to provide a more direct and reliable method of assessing conditions in the Menominee River area of interest.

1.2 Study Design

This report presents a bioassessment of benthic macroinvertebrates and fish in the Menominee River area of interest. Bioassessments are direct measurements of biological community characteristics that have the potential to show impacts related to human activities. Bioassessment methods are often applied to aquatic ecosystems, based on the recognition that sole reliance on chemical and toxicity standards can sometimes result in undesirable outcomes: (1) chemical and toxicity water quality standards may all be met, but ecological integrity may not be attained, or (2) ecological integrity may be satisfactory even though water quality standards are not attained. With rigorous and robust data, bioassessments are a more accurate indicator of anthropogenic impacts than chemical and toxicity evaluations, because they directly measure the ecological resource that is being protected (USEPA, 2000a).

Twenty-five locations in the Menominee River were evaluated for benthic invertebrate community quality. Benthic invertebrate communities are frequently used in bioassessments, because they integrate the effects of chemical constituents over time, and their mobility is low enough to support spatial comparisons. Benthic invertebrates live in or on the sediment and, as such, experience greater exposure to migrating groundwater than aquatic organisms. Locations were sampled upstream, adjacent to, and downstream of the area of affected groundwater. In order to facilitate distinguishing between biological responses to physical habitat conditions and impacts related to migrating groundwater, physical habitat and sediment chemistry were characterized at the benthic invertebrate sample locations, where feasible.

Fish community quality was also assessed, for ten sampling zones within the area of interest. Fish in the Menominee River experience less exposure to constituents from migrating groundwater than benthic invertebrates, due to (1) dilution of groundwater by a large volume of surface water, and (2) the fact that the chemicals of potential

concern in the study area are not bioaccumulative in fish (USEPA, 1995). However, fish could potentially be affected by a diminished food supply if benthic invertebrates were significantly impacted by toxicity. Surface water chemistry was not characterized in conjunction with the fish survey, because chemical concentrations were generally expected to be very low throughout the area of interest, based on past analyses (ARCADIS Geraghty & Miller, 2001). Physical habitat characteristics were evaluated for the fish sampling zones.

1.3 Report Organization

The remainder of this report is organized in the following sections:

- Methods: Section 2 describes the procedures used in the habitat-based identification of sample locations, benthic invertebrate sampling, fish sampling, physical habitat evaluation, physicochemical analyses, and statistical evaluations.

- Results: Section 3 summarizes the biological, habitat, and physicochemical data collected for the bioassessment and provides a statistical analysis of the relationship between biological community quality, habitat characteristics, and chemistry.

- Discussion: Section 4 integrates the findings of this and other biological surveys of the Menominee River to assess the overall quality of the aquatic ecosystem.

- Summary and Conclusions are provided in Section 5.

- References

2. Methods

2.1 Sampling Locations

The identification of sample locations was based on several factors, including:

- The spatial extent of affected groundwater adjacent to the Menominee River,
- Large-scale physical habitat features of the study area, and
- Water depth and substrate characteristics, as determined from multi-beam and side-scan sonar surveys.

The characterization of the study area and selection of macroinvertebrate and fish sampling locations is described below.

2.1.1 Study Area Description

Figure 2-1 shows the locations of groundwater monitoring wells adjacent to the river. As described in Appendix A, toxicity tests have been conducted by exposing surface water organisms (fathead minnows and *Daphnia magna*) to groundwater collected from these wells. Monitoring well GM-25B has exhibited the highest level of toxicity in these tests. Groundwater samples collected from certain wells as far northwest as GM-5 and as far southeast as GM-27A were also classified as toxic to surface water organisms in laboratory tests (although samples from many of the groundwater wells within this area have not consistently elicited toxicity). Thus, the area adjacent to affected groundwater is approximately defined as river miles (RM) 99.9 through 100.4 (Table 2-1). Notable site-related features in the Menominee River within the study area include an area of continuous gas bubbling (venting methane) near Staff Gauge #2 (RM 100.31) and a seep exhibiting odor and sheen that is currently subject to interim containment (RM 100.0). Sampling locations were selected to encompass the area adjacent to the affected groundwater as well as reference locations.

The selection of reference locations required an understanding of key features affecting physical habitat conditions in the area of interest. The most important, large-scale features affecting aquatic habitat in this area are the upstream Ford Dam (RM 101.5) and the downstream Big Quinnesec Dam (RM 96.0). The Ford Dam influences the study area by (1) acting as a sediment trap, resulting in low levels of fine-grain sediment downstream of the dam, (2) releasing varying amounts of water based on electrical generation needs, resulting in fluctuating water levels, and (3) limiting

seasonal flooding (USGS, 2000). The Big Quinnesec Dam influences the study area by impounding the river, resulting in deeper water, slower flow, and greater sedimentation. Before construction of the Big Quinnesec Dam, a reach of high gradient water and rapids (4.2 miles with 49 feet of fall) extended approximately as far upstream as RM 100.2; this reach is now permanently flooded (Thuemler and Schnicke, 1992). The study area thus lies within a physical habitat gradient influenced by both dams. Reference locations were therefore selected between the two dams, both upstream and downstream of the study area, to encompass the range of habitat conditions in areas known to be unaffected by the site.

At a smaller scale, water depth and substrate type are very important in determining both (1) the types of organisms present at a given location and (2) the appropriate sampling methodology. These characteristics were evaluated through multi-beam and side-scan sonar surveys and concurrent sediment grain size analyses. The sonar surveys were conducted by Superior Special Services during June 5-9, 2000 under the supervision of ARCADIS Geraghty & Miller. Multi-beam sonar provided detailed bathymetry data for the study area (Figure 2-2), and side-scan sonar provided an image of the substrate (Appendix B). Sonar data collection was limited to areas with water depths greater than three feet at the time of the survey. Water depths were interpolated for shallower areas (see Figure 2-2). As a supplement to the side-scan sonar, surface sediment samples were collected for analysis of grain size and total organic carbon. Twenty grab samples of shallow surface sediment (top 10-15 cm) were collected at the time of the side-scan sonar survey.[1]

The data collected from these surveys support the following generalizations:

- Shallow (wadeable) areas are generally concentrated along the Michigan side of the river. Few wadeable areas are present along the Wisconsin shoreline.

- The substrate within the area of interest consists primarily of gravel with varying amounts of sand. Soft sediment substrate is quite limited in extent.

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[1] Sampling for grain size and total organic carbon was used to help delineate substrate types; the sample locations do not coincide with the locations subsequently selected for biological and chemical sampling.

- Submerged logs are abundant within the study area and are generally of similar length. Several areas containing a high density of submerged logs were identified.

- Many large boulders protrude from the river bottom, although their distribution is more sporadic than that of the submerged logs.

Finally, the following areas were avoided during the selection of sample locations, based on the expectation that biological community characteristics would differ from those in the area of interest due to factors unrelated to the site:

- Area immediately downstream of the Ford Dam,

- Little Popple River confluence,

- Wetlands near RM 100.0, and

- Area adjacent to the discharge from the Kingsford/Iron Mountain Wastewater Treatment Plant.

2.1.2 Benthic Macroinvertebrate Sampling Locations

Twenty-five locations were selected for benthic macroinvertebrate sampling and concurrent sediment sampling and habitat characterization. Sample locations were selected to represent shallow and deep habitat types. Submerged log density was considered in the selection of deep-water sample locations. Sediment grain size characteristics were also considered in the field during the final selection of sampling locations, to ensure that the reference locations encompassed the range of sediment types encountered at study area sample locations.

Figure 2-3 shows the benthic macroinvertebrate sampling locations for this study. Sample locations were confirmed using Global Positioning Satellite (GPS) technology. Fifteen wadeable locations were sampled (water depths <1 meter), including two locations on the Wisconsin shoreline and thirteen locations along the Michigan shoreline. Ten non-wadeable locations were sampled (water depths >1 meter), providing approximately equal representation of the Michigan and Wisconsin sides of the river channel. The majority of non-wadeable locations correspond to areas of high submerged log density. The reason for this is that this habitat type is expected to support greater biomass and diversity of macroinvertebrates and is therefore more important ecologically than areas lacking submerged logs. Additionally, the artificial

substrate samplers used at non-wadeable locations are designed to mimic submerged wood.

The study design includes several reference locations which are known to be unaffected by the site. Multiple reference locations are included in the study design because the use of a reference envelope provides a more accurate characterization of reference conditions than reliance on a single reference location. The following are considered reference locations (see Figure 2-3): RBM-1, -2, -14, -15, -16, -24, and -25. Additionally, the following locations are most likely outside the influence of potentially affected groundwater: RBM-3, -13, -17, and -23.

Wadeable sampling locations were approximately 50 meters in length, and non-wadeable sampling locations were approximately 100 meters in length. River mile designations for macroinvertebrate sampling locations are shown in Table 2-2.

2.1.3 Fish Sampling Zones

Fish sampling was conducted within the relatively shallow area between the shoreline and the deep river channel, as recommended by Simon and Sanders (1999). Sampling the deep portion of a river channel does not provide significant additional information on fish community quality (Simon and Sanders, 1999). Fish sampling zones were 500 meters in length, which allowed nearly complete coverage of the area of interest. Five pairs of sampling zones were selected, one on each side of the river, for a total of ten sampling zones (Figure 2-4). Locations RBF-1, -2, -9, and -10 are considered reference locations. In addition, locations RBF-7 and RBF-8 are most likely outside the influence of potentially affected groundwater. River mile designations for the fish sampling zones are shown in Table 2-3.

2.2 Benthic Macroinvertebrate Survey

2.2.1 Benthic Macroinvertebrate Sampling Procedures

The benthic macroinvertebrate sampling was conducted during July 23-27, 2000 by EA Engineering, Science & Technology, under the supervision of ARCADIS Geraghty & Miller. Two separate sampling methods were employed to characterize benthic invertebrate community quality: (1) direct sampling of natural substrates at wadeable locations, and (2) use of artificial substrate samplers at non-wadeable locations. The benthic macroinvertebrate sampling methods are based on the following:

- U.S. EPA's *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers* (Barbour et al., 1999);
- U.S. EPA's Environmental Monitoring and Assessment Program (EMAP) methods for measuring the ecological condition of non-wadeable rivers and streams (Lazorchak et al., 1999);
- Bioassessment methods developed for New York State streams and rivers (Bode et al., 1991); and
- Benthic invertebrate sampling methods used by the Wisconsin Department of Natural Resources (WDNR) in surveys of the Menominee River (WDNR, 1997; 1998; R. Lillie, personal communication).

The Rapid Bioassessment Protocols are widely used and provide a useful starting point for the development of a site-specific sampling plan. However, they are designed only for wadeable waters and provide only semi-quantitative information (no replication). The EMAP sampling protocols are somewhat more quantitative, as are the New York State methods. Additionally, the New York methods provide an alternative sampling protocol for deep waters. The WDNR methods are similar to the Rapid Bioassessment Protocols and are useful as a site-specific precedent.

2.2.1.1 Wadeable Sampling

Benthic macroinvertebrates were collected at each wadeable sample location using the traveling kicknet (TKN) method described by Bode et al. (1991). The TKN method uses a rectangular box-type kicknet (800-900 μm mesh). The net is placed on the substrate approximately 0.5 meter downstream of the collector. The collector proceeds to disturb the substrate while moving in an upstream direction bringing the net along the bottom so that dislodged organisms will be washed into the net. Sampling is conducted for a distance of five meters and for two to five minutes (Bode et al. 1991, Bode and Novak 1995, Bode et al. 1996). Four replicate TKN samples were collected at each of the 15 locations. To the extent possible, TKN sampling was conducted on coarse gravel substrate within each 50-meter sampling zone, to maximize comparability among locations. Replicate transects were parallel to one another and were successively further from shore, to encompass a gradient of water depth.

As a supplement to the TKN samples, macroinvertebrates were collected qualitatively using a triangular dip/sweep net (800-900 μm mesh) and sampling all available habitats (e.g., rocks, sand, snags, macrophytes, etc.). For each habitat, the collector

disturbed the substrate and then repeatedly swept through the area with the net to collect invertebrates that had been dislodged. In addition, the collector examined large substrates (e.g., logs and boulders) as well as the surrounding area for taxa that might otherwise have been missed (e.g., crayfish, mussels, and cased caddisflies). Collections from all habitats at a particular location were combined into one sample. The types of habitats sampled were recorded on a field collection data sheet at each location.

2.2.1.2 Non-Wadeable Sampling

Sampling at non-wadeable locations was conducted using modified Hester-Dendy artificial substrates (OEPA, 1987). Each Hester-Dendy sampler is comprised of eight 3"x 3"x1/8" hardboard plates variably spaced along a 4" eyebolt. The total surface area of one sampler is approximately one square foot. Four replicates Hester-Dendy arrays (each consisting of three Hester-Dendy samplers) were deployed from a boat at each of the ten non-wadeable locations during the July sampling event. The Hester-Dendy samplers were fixed to cinder blocks and set on the river bottom. Each replicate was marked with a surface float and an identification label.

The Hester-Dendy samplers were retrieved during September 5-8, 2000, after a six-week colonization period. Each cinder block was lifted close to the water surface, and a fine mesh sieve was placed under the block prior to breaking the water surface. The Hester-Dendy samplers were placed in containers with preservative, together with any organisms that had moved from the samplers into the sieve during the retrieval process. Of the 40 Hester-Dendy replicates, three were lost due to vandalism or other causes, and a fourth was unusable due to poor sample preservation. At least three replicates were successfully retrieved at each location, however.

2.2.1.3 Sample Preservation and Processing

All benthic macroinvertebrate samples were preserved in the field with a 10% formalin solution and transported to the EA laboratory for processing and analysis. Upon arrival at the laboratory, all benthic macroinvertebrate samples were assigned a log number to identify and track the samples through the various stages of processing. Each benthic macroinvertebrate sample was rinsed using a number 60-mesh sieve (250 µm) to remove preservative. Any remaining large debris was checked for organisms and discarded.

Random sub-sampling was employed to reduce the number of organisms per sample to a manageable sample size. A subsample of 150 organisms was removed from each benthic macroinvertebrate sample (WDNR, 1997; 1998). This was conducted by evenly distributing the sample debris in a gridded white enamel pan, randomly choosing grids, and removing the organisms within each grid under a 10X magnifying lamp. Grids were chosen and organisms removed until the sorter removed 150 or all the organisms present in the sample. The percentage of grids cleared was used subsequently to extrapolate the total number of organisms of each taxon present in the sample.

Chironomidae were cleared in 10% KOH and mounted in CMC-10 prior to identification. Organisms were identified to the lowest practical taxon using the most current literature available. Most organisms were identified to genus or species, with the exception of worms and certain mollusks, which were generally identified to the family level.

2.2.2 Physical Habitat Assessment

2.2.2.1 Visual-Based Habitat Assessment

A visual-based, qualitative habitat assessment was conducted for each of the 15 wadeable macroinvertebrate sample locations. The MDEQ's GLEAS 51 habitat survey protocol was used (Table 2-4). This protocol involves the determination of habitat quality scores for nine macrohabitat characteristics. Additionally, a description of substrate characteristics (grain size, embeddedness), submerged vegetation and other instream cover (type and extent), and any other notable habitat features was recorded. This type of assessment was not conducted for non-wadeable macroinvertebrate sampling locations, due to water depth (i.e., inability to see the river bottom).

2.2.2.2 Water Quality

Water quality parameters were measured at all macroinvertebrate sample locations. Water quality parameters (temperature, conductivity, pH, and dissolved oxygen) were measured using a YSI probe. A separate pH meter was used during the September sampling event. These measurements were made as close as possible to the river bottom within the water column. At wadeable locations, replicate measurements were recorded at the upstream and downstream ends of the sampling zone. At non-wadeable locations, measurements were recorded mid-zone during both the Hester-Dendy sampler placement and retrieval. Due to equipment malfunction, dissolved oxygen

readings from the July sampling event and pH readings from the September sampling event were unusable.

2.2.2.3 Water Depth and Current Velocity

During macroinvertebrate sampling, water depth was measured directly at the location of each replicate TKN transect for wadeable locations and each replicate Hester-Dendy sampler array for non-wadeable locations. Current velocity was measured as close to the river bottom as practical, using an electronic meter. Measurements were recorded at the location of each replicate TKN transect for wadeable locations and each replicate Hester-Dendy sampler array for non-wadeable locations. Current velocity was measured at non-wadeable locations during Hester-Dendy set and retrieval.

2.2.2.4 Subsurface Temperature

Shallow subsurface sediment temperature was measured during the July sampling event as a potential indicator of locations of groundwater flow into the river. Subsurface temperature can be used for this purpose during summer or winter, when surface water temperature differs significantly from the temperature of groundwater (Hendricks and White, 1991; White, 1993). A 24-inch, heavy-duty temperature probe was inserted into the sediment, and temperatures were recorded at 4-inch intervals to a depth of 24 inches or the limit of penetration. Where possible, this procedure was conducted at three locations within each macroinvertebrate sampling zone. At most non-wadeable locations and some wadeable locations, the substrate was too rocky for the temperature probe to penetrate fully.

2.2.3 Sediment Chemistry

Chemical analyses were conducted to facilitate the evaluation of whether spatial patterns of benthic invertebrate community quality and potential contaminant concentrations coincide. Surface sediment was sampled to correspond with the appropriate exposure point for benthic invertebrates. Surface water samples were not analyzed, based on the lack of detectable chemical concentrations in past analyses and the high degree of dilution of migrating groundwater. Fish tissue also was not analyzed, because the chemicals of interest for this study are not significantly bioaccumulative (USEPA, 1995).

2.2.3.1 Sediment Sampling

Surface sediment samples (top 10-15 cm) were collected for chemical analysis by ARCADIS Geraghty & Miller. Grab sampling was not practical due to the coarse nature of the substrate. Therefore, sediment was collected using an AMS split core sampler with a stainless steel or acrylic liner. The core sampler was augered into place. Sample integrity could not be maintained using this method at non-wadeable sample locations; therefore, sediment sampling was limited to wadeable macroinvertebrate sample locations.

Approximately 2.5 liters of sediment were collected at each location. Individual core samples were collected from representative locations throughout the macroinvertebrate sampling zone. Sediment was placed in a stainless steel container and minimally homogenized, then distributed to sample jars (no headspace) and placed on ice. Equipment rinsate blanks and matrix spike/matrix spike duplicate (MS/MSD) samples were also collected. General characteristics of the sediment (e.g. color, sediment type) were recorded.

2.2.3.2 Chemical Analyses

Extensive sediment toxicology research has demonstrated that the concentrations of chemicals in sediment porewater are much better predictors of toxicity than whole-sediment concentrations (e.g., Ankley et al., 1996; Di Toro et al., 1991). Therefore, most analyses for this study were conducted directly on sediment porewater. Sediment porewater was extracted at the Columbia Analytical Services laboratory (Kelso, WA) according to the U.S. Army Corps of Engineers Dredged Material Management Program protocol (Hoffman, 1998). This protocol employs centrifugation under an anaerobic atmosphere. Sediment porewater was analyzed for:

- Major ions (sodium, calcium, magnesium, potassium, chloride, sulfate, and bicarbonate);
- Dissolved metals (iron, manganese, barium, and vanadium) and hardness;
- pH (as an indicator of acetic acid); and
- Ammonia and sulfide (potential naturally occurring stressors).

Porewater was filtered (0.45 micron filter) prior to metals analysis.

Due to the potential for chemical losses due to volatilization during porewater extraction, phenolic compounds were not analyzed in porewater. Instead whole-sediment samples were analyzed by STL Savannah Laboratories (Savannah, GA) for:

- Phenolic compounds (phenol, monomethylphenols, and dimethylphenols), and
- Total organic carbon and percent moisture.

The concentrations of phenolic compounds in porewater were then estimated from whole-sediment concentrations, based on the sediment's organic carbon and moisture content (Fuchsman and Barber, 1999). Analytical methods for porewater and whole-sediment analyses are summarized in Table 2-5.

2.3 Fish Survey

2.3.1 Fish Sampling Procedures

Fish sampling was conducted during September 5-8, 2000. Fish were collected by boat electrofishing, which involves shocking the water and collecting the stunned fish by net. The electrofishing was conducted at night, within the relatively shallow area between the shoreline and the deep river channel. These methods are consistent with recommendations for fish sampling in large rivers (Simon and Sanders, 1999). Fish sampling was conducted by EA Engineering, Science & Technology under the supervision of ARCADIS Geraghty & Miller.

All sampling zones were 500 meters in length and were measured at each zone using a hip chain along the shoreline. Coordinates were recorded using a GPS unit at the beginning and end of each zone.

Fish were sampled using pulsed DC boat electrofishing at each of the 10 designated zones. The electroshocker was powered by a 5000-watt generator with output controlled by a Coffelt Model VVP-15 pulser. Output settings generally were maintained at 60 pulses per second and 60-80 percent pulse width. The sampling crew consisted of one driver and one dipper. A 3/16" mesh dip net was used to collect stunned fish. Electrofishing proceeded in a downstream direction within each zone.

All fish collected within each zone were identified, counted, checked for anomalies, and then batch weighed by species. To the greatest extent possible, adult and juvenile fish were processed in the field and returned to the water alive. However, some small

fish of uncertain taxonomy and/or extreme abundance were preserved in formalin and brought back to the laboratory for further examination and processing.

Identification of preserved fish was made using the best and most recent keys to midwestern fishes (Pflieger, 1975; Smith, 1979; Trautman, 1981; Becker, 1983; Page, 1983). Nomenclature followed the most recent guidance of the American Fisheries Society (Robins et al. 1991). As in the field sampling, the number of individuals and batch weight were determined for each species, and any physical anomalies were noted.

2.3.2 Physical Habitat Assessment

For fish sampling zones, the physical habitat assessment included the visual-based habitat assessment protocol described in Section 2.2.2.1, measurement of water quality parameters, and calculation of average water depths. Measurement of current velocity was not practical for fish sampling zones, due to the large size of each zone and the high degree of spatial variation in current velocity.

Average water depths were calculated from the multi-beam sonar data. Each zone was assumed to extend 25 feet from the shoreline into the river, for the purpose of this calculation. An average water depth could not be calculated for sample location RBF-2, which was located upstream of the area surveyed. Location RBF-1 was partially upstream of the area surveyed, and the average water depth in this zone was estimated based on the data for the surveyed portion of the zone.

Water quality parameters were measured at the upstream end of each electrofishing zone. Water temperature, conductivity, dissolved oxygen, and water clarity (i.e., Secchi disk depth) were measured. Secchi depth was measured using a standard Secchi disk. Since electrofishing was conducted at night, Secchi depths were measured using a spotlight. The remaining parameters were measured at mid-depth in the water column using electronic meters.

2.4 Statistical Analyses

For sampling methods that employed replication (TKN and Hester-Dendy), statistical comparisons were made between study area and reference locations for benthic macroinvertebrate community metrics. Analysis of variance (ANOVA) was conducted using Excel® software (Microsoft, 1999) to determine whether any locations were significantly different ($\alpha = 0.05$). In cases where significance was indicated, the

Bonferroni multiple comparison procedure was used to identify which study area locations were significantly different than each reference location. The minimum detectable difference for comparisons between study area and reference locations was calculated using Axum® software (MathSoft, 1999), based on α equal to 0.05, β equal to 0.8, a sample size of 4, and the average relative standard deviation for each biological metric.

Linear and non-linear regression analyses were conducted using DataFit® curve-fitting software (Oakdale Engineering, 2000), to evaluate the relationship between habitat and chemical conditions and biological community metrics. Logistic equations were derived according to the following equation:

$$y = \frac{a-d}{1+(x/c)^b} + d$$

where x = habitat or chemical value, y = biological metric, a = asymptotic maximum of y, b = slope parameter, c = x value at inflection point, and d = asymptotic minimum of y. Three-dimensional curve-fitting was conducted by substituting the following function for x:

$$F = mx_1 + nx_2$$

where m and n are constants and x_1 and x_2 are independent habitat or chemical variables.

3. Results

3.1 Benthic Macroinvertebrate Survey

Results of the physical habitat and sediment chemistry analyses are described in Sections 3.1.1 and 3.1.2. Benthic macroinvertebrate community results are described in relation to habitat and chemical conditions in Section 3.1.3.

3.1.1 Physical Habitat

Results of the visual-based habitat assessment for wadeable macroinvertebrate sample locations are shown in Table 3-1. Habitat conditions varied considerably among locations. Total habitat scores ranged from 53 (location RBM-7) to 120 (location RBM-4). For comparison, the MDEQ (1997) classifies total habitat scores as follows: excellent (107 or higher), good (71-106), fair (35-70), or poor (less than 35). Habitat metrics that showed little variation among sample locations included flow stability and all riparian and bank structure metrics. Some of the remaining metrics were combined to minimize redundancy. Specifically, the "embeddedness/siltation" and "bottom deposition/sedimentation" metrics were summed to create a total "embeddedness" score, and the "velocity:depth habitat variability" and "pools/riffles/runs-bends" metrics were summed to create a total "habitat diversity" score. Together with the "bottom substrate and available cover" metric and total habitat scores, these values provide a basis for assessing the spatial relationship between physical habitat conditions and benthic macroinvertebrate community characteristics.

Significant water level fluctuation (1 to 2 feet) was observed during the sampling events, due to dam-related flow regulation. The river shoreline was thus periodically inundated and re-exposed throughout the study area. During low water, the exposed shoreline was observed to be poorly vegetated. Aquatic macrophytes were abundant elsewhere in the river, including most sample locations. The most abundant macrophyte species was water celery (*Vallisneria americana*). Other species included *Elodea* spp. and large-leaved pondweed (*Potomogeton amplifolius*). Woody debris was also prevalent at many sample locations.

A visual-based habitat assessment was not possible for the non-wadeable sample locations, due to the depth of water. However, the side-scan sonar results for the study area (Appendix B) allowed the development of a qualitative ranking of the extent of large-scale cover, in the form of logs or boulders. These ranking values are shown in Table 3-2.

Water quality measurements (temperature, conductivity, pH), water depth, and current velocity data are summarized for the macroinvertebrate sample locations in Table 3-3. Replicate measurements are provided in Appendix C. Water column temperature, pH, and conductivity showed little variation among locations and are unlikely to contribute to differences in biological community quality within the study area. Water depth and velocity showed greater variation and are considered further in Section 3.1.3.

Subsurface temperature is primarily of interest as a means of identifying areas of upwelling groundwater. Temperatures at the sediment surface averaged 20.5°C, whereas groundwater temperature was approximately 10°C. Temperatures at a depth of 24 inches ranged from 8.9°C to 18.2°C, indicating that groundwater upwelling was occurring at some but not all sample locations. The maximum depth of penetration varied among locations; therefore, the average temperature drop per inch was calculated for each location to facilitate comparisons. Data were not included if the maximum depth was less than 12 inches, however. Subsurface temperature measurements are provided in Appendix C and summarized in Table 3-4 and Figure 3-1. Groundwater upwelling was clearly occurring at location RBM-4, where temperatures similar to that of groundwater were observed within the top 24 inches of sediment. Among the remaining locations, RBM-5 and RBM-9 exhibited the greatest temperature drop per inch. These locations correspond to Staff Gauge #2 and the seep area, where groundwater discharge was previously suspected based on visually observed phenomena (see Section 2.1.1).

3.1.2 Sediment Chemistry

Table 3-5 presents the results of sediment porewater analyses for wadeable sample locations. Whole-sediment analytical results are shown in Table 3-6. The relationship between chemical concentrations and benthic macroinvertebrate community quality is evaluated in Section 3.1.3.

Concentrations of iron, major ions (sodium, calcium, magnesium, potassium, chloride, sulfate, and bicarbonate), and phenolic compounds are of interest because these constituents were identified as contributing to groundwater toxicity in laboratory tests (Appendix A). Major ion concentrations in all porewater samples were well below levels expected to cause toxicity to invertebrates and fish (Mount et al., 1997; Tietge et al., 1994). Iron concentrations approached potentially toxic levels (low mg/L; see Appendix A) in certain samples (RBSD-2, -11, -15), but the spatial pattern of iron concentrations in porewater showed no relationship to the site. Indeed, two of the three highest iron concentrations were reported from reference locations, including the

highest iron concentration (4.2 mg/L, RBSD-15). Historical iron mining operations in the area suggest that elevated iron concentrations are naturally occurring.

The only phenolic constituent detected was 3-/4-methylphenol, which was reported for two sediment samples (RBSD-6 and RBSD-8). These samples were collected from locations adjacent to the area of affected groundwater. Concentrations of 3-/4-methylphenol in porewater were estimated using the equilibrium partitioning approach (Di Toro et al., 1991) modified for less hydrophobic compounds (Fuchsman and Barber, 1999):

$$Porewater\ concentration = \frac{Sediment\ concentration}{\left(f_{oc} \times K_{oc}\right) + \left(\frac{1 - f_{solids}}{f_{solids}}\right)}$$

where:

f_{oc} = Sediment-specific fraction organic carbon;

K_{oc} = Chemical-specific organic carbon-water partition coefficient, calculated from the octanol-water partition coefficient (K_{ow}) (Di Toro et al., 1991); and

f_{solids} = Sediment-specific fraction solids.

Based on a log K_{ow} of 1.96 (Karickhoff and Long, 1995), the porewater concentrations of 3-/4-methylphenol in samples RBSD-6 and RBSD-8 are estimated as 120 µg/L and 90 µg/L, respectively. These concentrations are slightly higher than the MDEQ's Final Chronic Value (FCV) for 3-methylphenol of 71 µg/L but much lower than the Final Acute Value (FAV) of 1,271 µg/L. As described in Section 4.2, the aquatic toxicity literature indicates that 3-/4-methylphenol is unlikely to cause toxicity at the concentrations estimated in porewater. Since the FAV is not exceeded, and the FCV would be adjusted for mixing at levels far in excess of those observed, 3-/4-methylphenol is not a compound of concern. The MDEQ has not adopted water quality values for 4-methylphenol. In contrast to groundwater samples, 2,4-dimethylphenol was not detected in any sediment sample.

Although not implicated as contributing to groundwater toxicity (Appendix A), several constituents were measured in sediment porewater because they exceeded an FCV in some groundwater samples. These include barium, manganese, and vanadium. Additionally, pH was measured as a surrogate for acetic acid, because analytical methods for acetic acid can be confounded by acetate, which occurs naturally in

sediments. All reported concentrations of barium were below the FCV (710 µg/L, based on an average hardness of 158 mg/L as $CaCO_3$). For manganese, the concentrations at most locations exceeded the FCV (790 µg/L at a hardness of 158 mg/L), and the concentrations at two locations, RBSD-12 and RBSD-15, exceeded the FAV (3,400 µg/L at a hardness of 158 mg/L). Similar to iron, the spatial pattern of manganese concentrations appears unrelated to the site, with elevated concentrations observed at reference locations. As shown in Figure 3-2, manganese concentrations were lowest at sample locations immediately adjacent to the area of affected groundwater, with generally higher concentrations occurring downstream. Vanadium was not detected in porewater samples. Acetic acid apparently was not present, as pH levels were neutral to slightly basic in all porewater samples.

Ammonia and sulfide were measured in porewater because they occur naturally in sediments and have the potential to cause toxicity. The national criterion for ammonia in fresh water (USEPA, 1999) is dependent on pH and temperature. Based on an average pH of 7.58 and an average temperature of 21.1°C, the applicable chronic criterion is 2.66 mg/L. All of the porewater ammonia concentrations reported in Table 3-5 are less than or approximately equal to this value and are thus unlikely to cause toxicity. Sulfide was detected only once at a very low concentration.

In summary, the concentrations of most constituents analyzed in whole sediment and porewater were well below screening concentrations. Iron, 3-/4-methylphenol, and manganese are considered further (Section 3.1.3) to determine whether they may have adversely affected benthic macroinvertebrate community quality.

3.1.3 Benthic Macroinvertebrates

The numbers and types of invertebrates collected at each sample location are provided in Appendix C. A total of 142 taxa were identified, including insects (primarily juvenile life stages of flying insects), crustaceans, bivalves, snails, worms, and a jellyfish relative (Table 3-7). The most abundant taxa included mayflies, midges, and clams. Tubificid worms, amphipods, and caddisflies were also abundant at certain locations.

Several metrics were calculated to facilitate the evaluation of benthic community quality. These include basic summary metrics frequently used in ecological assessments, the Hilsenhoff Biotic Index (HBI), and a set of metrics identified by the Ohio Environmental Protection Agency (OEPA) as useful in distinguishing chemical toxicity impacts from other types of impacts.

The summary metrics used in this assessment include:

- Abundance: For wadeable sample locations, this is simply the number organisms. For non-wadeable locations, where the precise sampling area is known, density is calculated as the number of organisms per square meter.

- Taxa richness: This is the number of distinct taxa at each location.

- Diversity: This metric incorporates both taxa richness and the evenness or equitability of allotment of individuals among the taxa, and is calculated using the Shannon-Wiener function (Krebs, 1985):

$$Diversity = -\sum_{i=1}^{t} p_i \times \ln(p_i)$$

where:

t = Number of taxa, and

p_i = Proportion of total sample belonging to the ith taxon.

These metrics are often used to provide a summary of benthic community characteristics, but they are not considered to be highly diagnostic of anthropogenic impacts (e.g., Lydy et al., 2000).

A potentially more diagnostic metric is the HBI, which was originally developed for assessing the level of impact of organic enrichment on riffle zones of Wisconsin streams (Hilsenhoff, 1987). This metric is used by the WDNR and others to assess variety of impact types. It provides a measure of the overall level of tolerance of the taxa present at a given location. Impacted locations are expected to be dominated by tolerant taxa, while intolerant taxa are prevalent at unimpacted locations. Hilsenhoff (1987) developed tolerance ratings for many invertebrate taxa, using a data set of invertebrate community composition in Wisconsin streams affected by varying levels of organic enrichment. The HBI is calculated by multiplying the proportion of the total sample belonging to each taxon by the corresponding tolerance rating:

$$HBI = \sum_{i=1}^{t} p_i \times tolerance\ rating$$

Higher HBI values indicate a higher proportion of tolerant species.

The Biological Response Signature approach, developed by the OEPA, is designed to distinguish impacts due to chemical toxicity from other types of impacts on the benthic community. Yoder and Rankin (1995) compiled a statewide data set of biomonitoring results for benthic invertebrate communities in Ohio. They assigned impact categories to each monitoring location (e.g., complex toxic, channelization, flow alteration, combined sewer outfalls) and examined whether various metrics could be used together to distinguish among the impact types. The following metrics showed a separation between chemical toxicity and other types of impacts (Yoder and Rankin, 1995):

- EPT Taxa Richness: This metric is calculated as the number of mayfly (Ephemeroptera), stonefly (Plecoptera), and caddisfly (Trichoptera) taxa. These three orders of insects are considered sensitive to anthropogenic impacts. Locations classified by OEPA as affected by chemical toxicity supported fewer EPT taxa (usually less than 5 taxa) than other types of impacted locations (Yoder and Rankin, 1995).

- % Mayflies: Mayflies comprised a lower percentage of the total number of organisms at Ohio locations affected by chemical toxicity (usually less than 5%) (Yoder and Rankin, 1995).

- % Tanytarsini Midges: The Tanytarsini tribe of the family Chironomidae (midges) comprised a lower percentage of the organisms at Ohio locations affected by chemical toxicity (usually less than 5%) (Yoder and Rankin, 1995).

- % Diptera (excluding Tanytarsini) + Non-Insects: This metric includes midges other than Tanytarsini, other flies, and non-insects such as worms and mollusks. The percentage of organisms in these categories was higher at Ohio locations affected by chemical toxicity (usually more than 80%) (Yoder and Rankin, 1995).

- % Tolerant: This metric includes several taxa identified by the OEPA as tolerant (DeShon, 1995), including: oligochaete worms, several midge species (*Cricotopus bicinctus*, *Cricotopus sylvestris* group, *Nanocladius distinctus*, *Chironomus* spp., *Polypedilum fallax* group, *Polypedilum illinoense*, and additional species not encountered in this study), and two snail genera (*Ferrissia* and *Physella*). The percentage of organisms classified as tolerant

was higher at Ohio locations affected by chemical toxicity (usually more than 20%) (Yoder and Rankin, 1995).

- % Cricotopus: Midges of the genus *Cricotopus* comprised a higher percentage of organisms at Ohio locations affected by chemical toxicity (usually 5% or more) (Yoder and Rankin, 1995).

The result for any one of these metrics taken alone would not be sufficient to identify an impact type, but taken together they have the potential to discriminate chemical toxicity from other impacts. It is important to note that the biological response signature approach was developed for benthic macroinvertebrates collected using Hester-Dendy samplers in Ohio. The metric values associated with chemical toxicity may be different for different sampling methods and regions. For example, non-insects such as worms and mollusks tend not to colonize Hester-Dendy samplers, and % Diptera + Non-Insect values are therefore likely to be higher for direct sampling methods than for Hester-Dendy samples. For this study, comparisons to the reference locations provide the primary means of evaluating benthic macroinvertebrate community metrics. Survey results are described below for wadeable and non-wadeable sample locations.

3.1.3.1 Wadeable Sample Locations

The benthic macroinvertebrate community metrics for wadeable sample locations in the Menominee River are shown in Table 3-8. The TKN samples are used preferentially for this analysis due to the qualitative nature of the sweep net sampling method. However, the number of species collected using the sweep net method is also presented, because the primary objective of the sweep net sampling was to provide a more comprehensive taxa list for each location.

Comparisons to Reference Locations

The wadeable reference locations (RBM-1, -2, -14, -15) encompassed a range of physical habitat conditions, and differences in metric values among these locations are evident, particularly between upstream and downstream reference locations. Statistical comparisons between study area and reference locations are summarized in Table 3-9. Benthic community metrics for the study area locations were generally within the range of values observed for the reference locations. The HBI score for location RBM-7 was significantly higher than for any of the wadeable reference locations, but no other metric for this location was significantly different from the range of conditions

defined by the reference locations. No other wadeable locations exhibited results that were significantly different than all four reference locations.

The statistical power of these comparisons is summarized in Table 3-10. The ability to detect a difference between locations is dependent upon the variability among replicate samples for each benthic community metric. The HBI and diversity metrics exhibited the least variability and greatest statistical power. The remaining metrics were more variable, such that pairwise statistical comparisons would only detect relatively large differences among locations. Relatively high variability is an inherent feature of benthic macroinvertebrate sampling, but it does not necessarily prevent an understanding of the interactions between benthic populations and their environment (Canton and Chadwick, 1988). To ensure that potential impacts are not overlooked, this assessment also includes an examination of trends in the benthic macroinvertebrate data, in relation to habitat and chemistry results.

Comparisons to Habitat and Chemistry Parameters

The following parameters were considered as variables that might explain the spatial patterns of benthic community metrics:

- Total habitat score,
- Embeddedness score,
- Habitat diversity score,
- Bottom substrate and available cover score,
- River mile,
- Current velocity,
- Water depth,
- Manganese concentration, and
- Iron concentration.

Concentrations of 3-/4-methylphenol were also considered for the two locations where they were detected.

In general, embeddedness and river mile showed the best relationship with the benthic community metrics, and manganese, iron and water depth showed the least relationship. Total habitat also showed a good relationship with some metrics. "Embeddedness" refers to the extent to which gravel, rocks, and debris are covered by deposited silt. As employed in the evaluation of wadeable sampling locations, this habitat metric reflects relatively localized conditions, such as shoreline backwaters

versus riffles. River mile values reflect the large-scale habitat gradient between free-flowing river (near the Ford dam) and impoundment (downstream). Figure 3-3 illustrates embeddedness and total habitat scores; river mile values are provided in Table 2-2.

Spatial patterns in the benthic community summary metrics (i.e., abundance, taxa richness, and diversity) are shown in Figure 3-4. Using non-linear regression as described in Section 2.4, approximately 80% of the variation in these metrics is explained based on physical habitat factors (Figure 3-5; Table 3-11). Abundance is best explained based on total habitat scores. Taxa richness (TKN and sweep net) and diversity are best explained based on the combination of river mile and embeddedness. These metrics decrease with increasing embeddedness of the substrate (i.e., decreasing embeddedness scores) and with progress from upstream to downstream.

Hilsenhoff Biotic Index scores show a very close relationship to embeddedness (Figure 3-6), with 87% of the variation in the HBI explained by embeddedness scores. This relationship is not surprising, given that the HBI was originally developed to assess organic enrichment, which is associated with sediment deposition. The only location which shows a higher (less favorable) HBI score than expected based on embeddedness is RBM-2, a reference location. The HBI score for location RBM-7, which is significantly higher than all four reference locations, is consistent with the very low (unfavorable) embeddedness score for this location.

The biological response signature metrics generally show two types of benthic macroinvertebrate communities (Figures 3-7 and 3-8). Locations having embeddedness scores below 15 (i.e., more embedded substrates) support fewer EPT taxa, fewer mayflies, more diptera and non-insects, and more tolerant organisms than locations with higher embeddedness scores. This finding is consistent with the ecology of depositional areas versus riffles. Embeddedness scores explain approximately 90% of the variation in EPT taxa richness, % mayflies, and % diptera and non-insects. Similar to the HBI, reference location RBM-2 shows the greatest deviation from the values predicted for these metrics based on embeddedness. For % Tanytarsini midges, it was necessary to exclude location RBM-2 (which had an exceptionally high % Tanytarsini value) to develop a successful nonlinear regression model; without this location, river mile and embeddedness scores combine to explain more than 90% of the variation in metric values. Although % tolerant values tended to increase at more embedded locations, embeddedness scores explain less than half the variation in this metric, largely due to the low % tolerant value at the most embedded location (RBM-7). The relative abundance of oligochaete worms strongly influenced % tolerant

values; at RBM-7, oligochaetes were present but were outnumbered by a very high abundance of peaclams. Lastly, % Cricotopus values were very low throughout the study area. Taken together, the biological response signature metrics show a strong link between physical habitat conditions (rather than chemical concentrations) and benthic community composition at wadeable sample locations in the study area.

In addition to the analysis of benthic community metrics, it should be noted that the area of shoreline affected by dam-related water level fluctuations was relatively devoid of macroinvertebrates. In the absence of flow regulation, the shoreline microhabitat would normally be highly utilized by invertebrates. The spatial extent of the affected area was small relative to the size of the river, however. This effect was observed only during sweep net sampling (as TKN sampling was conducted further from shore) and was consistent throughout the study area.

3.1.3.2 Non-Wadeable Sample Locations

In contrast to the wadeable sample locations, the benthic community metrics for non-wadeable locations show a high degree of similarity among locations (Table 3-12; Figures 3-9 and 3-10). The similarity among locations reflects the uniformity of substrate afforded by Hester-Dendy samplers, which tend to diminish the effects of physical habitat conditions. Additionally, depositional sediments were not encountered during sediment sampling efforts at any of the non-wadeable locations, suggesting greater habitat similarity within the river channel than along the shoreline.

No metric values for the non-wadeable study area locations were significantly outside the range of values exhibited by the reference locations (Table 3-13). The statistical power of these comparisons was very good for several metrics, including taxa richness, diversity, HBI, and EPT taxa richness (Table 3-14). Other metrics exhibited lower statistical power, and qualitative trends were therefore examined, as described below.

Highly uniform results were observed for several metrics: number of taxa, diversity, HBI, EPT taxa richness, and % diptera + non-insects. Location RBM-19 exhibited a higher proportion of Tanytarsini midges relative to mayflies than observed at other locations. Both of these taxa are considered sensitive to contaminants, and both were present in abundance at RBM-19, which supported the highest invertebrate density of any sample location. Locations RBM-18, RBM-19, and RBM-22 exhibited somewhat elevated % Cricotopus values; this result is also reflected in the % tolerant scores (which incorporate the Cricotopus species). The % Cricotopus results for these locations were quite variable among replicates, however, and were similar to the results

observed for reference location RBM-16. Taken together, the biological response signature metrics are inconsistent with the biological response signature for chemical toxicity developed by Yoder and Rankin (1995).

Benthic community metric values were also compared with water depth and current velocity measurements, river mile values, and the qualitative instream cover scores developed from the side-scan sonar results. In general, these parameters were not correlated with the biological community metrics. Instream cover scores were strongly correlated with taxa richness, but taxa richness showed so little variation among locations that this correlation probably is not meaningful. Overall, the non-wadeable macroinvertebrate sampling results are best characterized by uniformity among locations and a biological response signature that is not indicative of chemical toxicity.

3.2 Fish Survey

3.2.1 Physical Habitat

Results of the visual-based habitat assessment for Menominee River fish sampling zones are provided in Table 3-15 and illustrated in Figure 3-11. Similar to the habitat assessment results for wadeable macroinvertebrate sampling locations, the habitat metrics that showed the greatest variation among sampling zones included available cover, total embeddedness, and total microhabitat scores. Additionally, sampling zone RBF-5 was observed to contain a high proportion of shallow backwater habitat, which was expected to serve as high-quality "nursery" habitat for numerous small fish.

Water quality measurements and average water depths are shown in Table 3-16. Water quality was generally similar among locations. Water depth exhibited greater variation, with deeper water observed along the Wisconsin shoreline (Figure 3-11).

3.2.2 Fish

Fifteen fish species were collected from the Menominee River area of interest (Table 3-17). The number of individuals and batch weights for each species are listed for each sample location in Table 3-18. The most abundant species were rock bass, smallmouth bass, white sucker, and common shiner. Northern pike and walleye were also important in terms of biomass.

Fish community characteristics were closely related to water depth. The shallower locations along the Michigan shoreline supported more fish of smaller size. Trends in

species richness and diversity paralleled those for fish abundance (Table 3-19, Figure 3-12). Sampling zones RBF-3 and RBF-5, which included the Staff Gauge #2 and seep areas, exhibited the shallowest water depths and the highest fish abundance and diversity. Linear regression analysis showed that average water depth explained between 66% and 81% of the variation in these metrics (Table 3-20, Figure 3-13). This result is consistent with expected fish behavior, as fish tend to move into the shallows at night to forage. Electrofishing is also most efficient in shallow water, but this factor most likely contributed only slightly to the observed results. No correlation was observed between other habitat parameters (visual-based assessment results, water quality) and fish community metrics.

Nearly all fish were visually observed to be plump and healthy in appearance throughout the study area. Gross external anomalies (deformities, eroded fins, lesions, and tumors; DELT) were observed in less than 1% of fish (Figure 3-14). No deformities or tumors were recorded, and the anomalies recorded as lesions generally consisted of apparently fresh lacerations. For comparison, the incidence of DELT anomalies is usually greater than 4% at sites affected by chemical toxicity (Yoder and Rankin, 1995). Intolerant (sensitive) species, including hornyhead chub and mottled sculpin, were observed at nearly all sample locations (Figure 3-14). The only exception was location RBF-8, which contained the deepest water and the fewest fish. Intolerant species are not expected to occur in areas significantly affected by chemical toxicity.

4. Discussion

This section includes (1) a comparison to other biological community surveys of the Menominee River, (2) a biological community quality assessment integrating the results of this and other surveys, and (3) a discussion of the implications of benthic invertebrate and fish community quality for aspects of the Menominee River ecosystem not directly evaluated in this study.

4.1 Comparison to Other Biological Surveys

As part of a study of the effects of flow regulation by dams, the WDNR recently conducted benthic macroinvertebrate (arthropod), mussel, and fish surveys in the Menominee River (WDNR, 1997; 1998; 2000). Sampling was conducted in riverine areas downstream of several dams, including the Ford Dam. Benthic macroinvertebrates were collected in 1996 and 1997 at RM 100.0 near the Wisconsin shoreline (R. Lillie, personal communication), directly opposite RBM-9. Due to

excessive water depth at this location, the benthic macroinvertebrate sampling location in 1998 was moved to an area upstream of RBM-2. Freshwater mussels were surveyed in 1999 along transects spanning the width of the river, approximately at RM 101.3 (upstream of RBM-2) and RM 100.6 (near RBM-3) (R. Piette, personal communication). Fish were surveyed in 1996 and 1997 over a one-mile stretch of river between RM 99.9 and RM 100.9 (WDNR, 1998), which encompasses RBF-1 through RBF-6.

In 1996, benthic macroinvertebrates collected from RM 100.0 (near RBM-9) using both kicknet and microhabitat sampling (hand-picking) included 25 taxa, 15 EPT taxa, and 85% mayflies (WDNR, 1998). Samples collected in 1997 included approximately 60% mayflies (WDNR, 1998) and 24 EPT taxa (R. Lillie, personal communication). Due to the use of somewhat different sampling methods (i.e., different sampling equipment, EPT taxa summed rather than averaged over multiple samples), these results are not directly comparable to the results of the current study. However, they indicate that benthic macroinvertebrate community composition at the sample location was similar to that observed in 2000 at other locations having relatively low embeddedness (where TKN samples typically contained 60% mayflies and 13 EPT taxa; Figure 3-8). The WDNR's results also indicate similar benthic macroinvertebrate communities at sampling locations elsewhere in the Menominee River (WDNR, 1998).

In addition to qualitative data on freshwater mussels collected in conjunction with arthropod sampling, the WDNR conducted a quantitative mussel survey in 1999 using snorkeling and SCUBA. The transect located at RM 100.6 (near RBM-3) supported the highest number of freshwater mussel species of any survey location in the Menominee River (WDNR, 2000). At all sample locations, mussels were found to be most abundant at an intermediate distance between the shoreline and the river channel. This atypical distribution pattern was attributed to the combined dam-related impacts of nearshore water level fluctuation and very low embeddedness (termed sediment armoring) in the channel (WDNR, 2000). The relatively low abundance of mussels near the shoreline may account for the low diversity of freshwater mussels encountered throughout the study area in the current study.

Fish community composition in 1996 and 1997 (WDNR, 1998) was very similar to that observed in 2000. A total of 15 species were observed, and diversity (Shannon-Wiener) was reported as 2.1 and 2.0 in 1996 and 1997, respectively (WDNR, 1998). Species richness downstream of the Ford dam was similar to that observed throughout the upper portion of the Menominee River but lower than observed in the lower river. This difference was attributed to current and historical barriers to fish dispersal, in the

form of dams and waterfalls (WDNR, 1998). Smallmouth bass growth was also evaluated and was found to vary relatively little among study sites (WDNR, 1998). Similar to the current study, visual-based habitat assessment results did not explain variations in fish abundance and distribution (WDNR, 1998); the WDNR did not directly evaluate the effects of water depth.

4.2 Biological Community Quality Assessment for Macroinvertebrates and Fish

Biological community survey results provide no evidence of adverse impacts related to groundwater migrating from the Ford/Kingsford site. This assessment is based on the following findings:

- Biological community metrics within the study area are similar to those at reference locations that have similar habitat characteristics;
- Biological community metrics are generally closely correlated with physical habitat characteristics and are not correlated with chemical concentrations;
- Sample locations immediately adjacent to the area of affected groundwater do not deviate from the biological community characteristics that are predicted based on habitat conditions; and
- These results are consistent with biological survey data collected by WDNR from additional study area locations during 1996-1999.

These findings are based on an extensive sampling effort, such that any impact occurring at an ecologically relevant scale would have been detected. The sampling locations included anticipated "hot spots" of groundwater upwelling (i.e., the Staff Gauge #2 and seep areas). Subsurface temperature data confirm that groundwater upwelling was occurring at some of the sample locations, and the detection of 3-/4-methylphenol indicates that some of the upwelling groundwater may have originated in the affected portion of the groundwater system. Thus, it is reasonable to conclude that mechanisms such as degradation and dilution effectively detoxify the groundwater before it contacts the benthic macroinvertebrate and fish communities.

The apparent lack of chemical toxicity is observed even at locations where chemical concentrations in sediment porewater are measured or estimated as exceeding the MDEQ's water quality values. This result reflects the highly conservative nature of the water quality values for 3-methylphenol and manganese. These values were developed

using "Tier II" methods, whereby uncertainty factors are used to compensate for limited toxicity data availability. The uncertainty factors are intended to be overconservative in most cases. Although toxicity data are limited for 3-methylphenol, more extensive data are available for other methylated phenols, particularly phenol and 2,4-dimethylphenol. Numerous studies of quantitative structure-activity relationships indicate that the toxicity of monomethylated phenols is intermediate between phenol and dimethylated phenols (e.g., Feng et al., 1996; Karabunarliev et al., 1996; Schultz et al., 1986). The FCVs for phenol and 2,4-dimethylphenol are higher than the 3-/4-methylphenol concentrations estimated in sediment porewater from the Menominee River. Thus, the aquatic toxicity literature indicates that the estimated exceedance of the FCV for 3-methylphenol reflects an overconservative water quality value rather than a real potential for toxicity.

Manganese can occur naturally at toxic concentrations in anoxic sediment porewater (Lasier et al., 2000). Indeed, the manganese concentrations in Menominee River porewater appear to be naturally occurring, based on the high concentrations at reference locations. Several factors may contribute to the lack of apparent toxicity at the observed concentrations: (1) the FAV and FCV incorporate a Tier II uncertainty factor to compensate for limited data availability, resulting in water quality values that are probably overconservative; (2) the water quality values are protective of the species that are most sensitive to manganese (salmonids), which do not occur in the Menominee River study area; and (3) species that live in very close contact with sediment are relatively tolerant of constituents (such as manganese) that are normally present at higher concentrations in sediment porewater than in surface water.

4.3 Implications for Other Ecosystem Components

The high quality of the benthic macroinvertebrate and fish communities in the Menominee River study area has implications for other components of the ecosystem, including aquatic-feeding wildlife and instream microfauna. A variety of birds and mammals are expected to feed on aquatic organisms in the Menominee River. For example, bird species observed during sampling activities included bald eagles (which feed on fish) and Eastern kingbirds (which feed on flying insects such as adult midges and mayflies). Mammals such as mink and raccoons most likely feed on fish and invertebrates in the area as well. These species' success depends on the availability of aquatic prey. Although shoreline feeders might be affected by water level fluctuation and the resulting non-use of the shoreline by invertebrates, the river overall contains an abundance of aquatic prey. Based on the non-bioaccumulative nature of the chemicals

occurring in groundwater, aquatic prey obtained from the Menominee River are expected to provide a healthy food base for wildlife in the area.

At the opposite end of the food chain, organisms inhabiting the transition zone between groundwater and surface water have recently been a focus of attention (USEPA, 2000b). These organisms include microfauna such as bacteria, and in some cases meiofauna such as small, highly adapted amphipods (Boulton et al., 1998). USEPA (2000b) summarizes the functions of the transition zone as follows:

- High quality habitat: Areas of groundwater upwelling and downwelling can have important habitat functions due to the temperature differential between groundwater and surface water, as well as nutrient inputs.
    - Although not applicable to the coolwater Menominee River fish community, coldwater fish species such as salmonids often rely on upwelling groundwater for temperature regulation.
    - Conversely, upwelling groundwater areas can provide a warm refuge for aquatic organisms during winter.
    - Upwelling groundwater often enhances the growth of macrophytes.
    - Downwelling zones provide a refuge for macroinvertebrates (e.g., during spates).

- Contaminant attenuation/removal: Strong redox gradients in the transition zone enhance biogeochemical activity and microbial processes. As a result, a variety of contaminants and nutrients can be degraded or removed from groundwater within the transition zone.

- Nutrient and carbon cycling: Enhanced microbial activity also results in very active nutrient and carbon cycling.

- Food base for benthic organisms: Microbial biomass can serve as the base of a detrital food chain that can be important to overall ecosystem productivity.

A functioning transition zone is thus important to the quality of macroinvertebrate and fish communities. If the functions of the transition zone were significantly impaired, the quality of macroinvertebrate and fish communities would decline. Because the macroinvertebrate and fish communities in the Menominee River study area show no evidence of adverse effects related to migrating groundwater, it is apparent that the important functions of the transition zone are not significantly impaired.

5. Conclusions

Based on macroinvertebrate and fish surveys of the Menominee River near Kingsford, Michigan, there is no evidence that groundwater migrating from the Ford/Kingsford site is adversely affecting the aquatic ecosystem. This conclusion is based on the following findings:

- Direct substrate sampling of benthic macroinvertebrates shows a very close relationship between physical habitat conditions and benthic community composition. Conversely, there is no correlation between chemical concentrations or proximity to the site and biological community metrics.

- Artificial substrate sampling, which controls for physical habitat differences, shows a high degree of uniformity in benthic community composition throughout the study area.

- Sensitive macroinvertebrates such as mayflies, stoneflies, caddisflies, and Tanytarsini midges were collected at all macroinvertebrate sampling locations.

- Fish community composition was strongly influenced by water depth, not by proximity to the site. Sampling zones immediately adjacent to the site exhibited the highest fish abundance and diversity.

- Sensitive fish species, including hornyhead chub and mottled sculpin, occurred throughout the study area.

- Fish throughout the study area were observed to be plump and healthy, with very few external anomalies. This observation is consistent with the WDNR's finding that smallmouth bass growth in the study area was similar to that observed elsewhere in the Menominee River.

- The high quality of the benthic macroinvertebrate and fish communities indicates that important ecological functions of the transition zone between groundwater and surface water are not significantly impaired.

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Table 2-1. River Mile Designations of Site Features

Site Feature	River Mile	Distance from river (ft)	Top of Screen Depth (ft bgs)	Top of Screen Elevation (ft) [a]
Monitoring Wells				
GM-6	100.51	587	165	959.07
GM-66A	100.46	62	27	1018.7
GM-66B	100.46	62	125	920.72
GM-5	100.37	495	250	872.18
GM-31	100.37	545	105	1016.73
GM-25A	100.30	100	19	1028.71
GM-25B	100.30	100	98	949.85
GM-25C	100.30	100	206	841.94
GM-65	100.29	358	120	945.21
GM-10	100.17	273	170	886.2
GM-26A	100.13	53	30	1017.31
GM-26B	100.13	53	101	946.17
GM-26C	100.13	53	160	887.27
GM-63A	100.05	226	45	1004.72
GM-63B	100.05	226	105	944.72
GMEW-2	100.02	555	23	1019.49
GMEW-1	100.00	103	20	1026.53
GM-27A	99.97	135	30	1022.45
GM-27B	99.97	135	145	907.61
GM-27C	99.97	135	210	842.53
GM-64A	99.90	150	33	1021.73
GM-64B	99.90	150	117	938.13
GM-28A	99.85	637	40	1022.08
GM-28B	99.85	637	124.5	937.35
GM-9	99.60	60	164	889.04
GM-29	99.59	60	55	998.15
GM-8	98.80	92	79	964.64
Other Site Features				
Ford Dam	101.5	NA	NA	NA
Little Popple Confluence	100.72	NA	NA	NA
Staff Gauge #2	100.31	NA	NA	NA
Seep	100.0	NA	NA	NA
Big Quinnesec Dam	96.0	NA	NA	NA

[a]For comparison, the elevation of the Menominee River bed ranges from 1016 to 1036 ft.

Table 2-2. River Mile Designations of Macroinvertebrate Sample Locations

Location	River Mile	Location Type
RBM-1	100.84	Wadeable
RBM-2	100.85	Wadeable
RBM-3	100.58	Wadeable
RBM-4	100.45	Wadeable
RBM-5	100.32	Wadeable
RBM-6	100.21	Wadeable
RBM-7	100.22	Wadeable
RBM-8	100.07	Wadeable
RBM-9	99.95	Wadeable
RBM-10	99.8	Wadeable
RBM-11	99.74	Wadeable
RBM-12	99.59	Wadeable
RBM-13	99.45	Wadeable
RBM-14	99.19	Wadeable
RBM-15	98.97	Wadeable
RBM-16	100.85	Non-Wadeable
RBM-17	100.53	Non-Wadeable
RBM-18	100.32	Non-Wadeable
RBM-19	100.10	Non-Wadeable
RBM-20	99.93	Non-Wadeable
RBM-21	99.78	Non-Wadeable
RBM-22	99.66	Non-Wadeable
RBM-23	99.47	Non-Wadeable
RBM-24	99.10	Non-Wadeable
RBM-25	98.76	Non-Wadeable

Table 2-3. River Mile Designations of Fish Sample Locations

Location	Upstream River Mile	Downstream River Mile	Shoreline
RBF-1	101.02	100.7	MI
RBF-2	101.12	100.83	WI
RBF-3	100.38	100.08	MI
RBF-4	100.38	100.08	WI
RBF-5	100.05	99.77	MI
RBF-6	100.05	99.74	WI
RBF-7	99.54	99.25	MI
RBF-8	99.54	99.25	WI
RBF-9	98.94	98.63	MI
RBF-10	98.94	98.63	WI

Table 2-4. Visual-Based Habitat Assessment Protocol (GLEAS 51)

Habitat Parameter	Excellent	Good	Fair	Poor
Substrate and Available Cover				
Bottom Substrate Available Cover	Greater than 50% rubble, gravel, submerged logs, undercut banks, or other stable habitat.	30-50% rubble, gravel, or other stable habitat Adequate habitat	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable.	Less than 10% rubble, gravel or other stable habitat. Lack of habitat is obvious.
	16-20	11-15	6-10	0-5
Embeddedness/Siltation	Gravel, logs, cobble, and boulder particles have between 0 and 25% of their surface covered by find sediment/silt.	Gravel, logs, cobble, and boulder particles have between 25 and 50% of their surface covered by fine sediment/silt.	Gravel, logs, cobble and boulder particles have between 50 and 75% of their surface covered by fine sediment/silt.	Gravel, logs, cobble, and boulder particles have over 75% of their surface covered by fine sediment/silt.
	16-20	11-15	6-10	0-5
Velocity:Depth Pool - 1 ft/s 1.5ft Shallow Pool - 1 ft/s 1.5 ft Run - 1 ft/s 1.5 ft Riffle - 1 ft/s 1.5 ft	All habitats well represented. None greater than 50% of total area.	Only 3 of the 4 habitat categories present. Or if all 4 are present with one greater than 50% of total area.	Only 2 of the 4 habitat categories present.	Dominated by one velocity/depth category (usually pool).
	16-20	11-15	6-10	0-5

Table 2-4. Visual-Based Habitat Assessment Protocol (GLEAS 51)

Habitat Parameter	Excellent	Good	Fair	Poor
Channel Morphology				
Flow Stability	Continual flow all year. Natural water supply substantial.	Seasonal high flows. Low flow constant or nearly so. Some point discharge contributes to flow.	Periodic high and low flows. Irregular flow pattern. Discharges contribute substantially to low flow.	Ephemeral stream. Usually no mid-summer flow. If it flows year-round, discharge form major contribution.
	12-15	9-11	4-7	0-3
Bottom Deposition/ Sedimentation	Less than 5% of the bottom affected by deposition. Hard bottom substrate.	5-30% affected. Some deposition in pools. Soft bottom from sediments mainly in pools.	30-50% affected. Deposits, obstructions, constrictions, and bends. Some filling of pools with sediments/sand. Soft bottom more common.	More than 50% of the bottom affected. Pool almost absent due to deposition. Only large rocks in riffle expos. Frequent soft bottom, loose deposits very common, often deep.
	12-15	6-11	4-7	0-3
Pools-Riffles-Runs-Bends	Variety of habitats. Deep riffles and pools.	Adequate depth in pools and riffles. Bends provide habitat.	Occasional riffle or bend. Bottom contours provide some habitat.	Essentially a straight stream. Generally all falt water or shallow riffle. Poor habitat.
	12-15	9-11	4-7	0-3

Table 2-4. Visual-Based Habitat Assessment Protocol (GLEAS 51)

Habitat Parameter	Excellent	Good	Fair	Poor
Riparian and Bank Structure				
Bank Stability	Stable. No evidence of erosion or bank failure. Side slopes generally 30% potential for future problem.	Moderately stable. Infrequent, small areas or erosion mostly healed over. Side slopes up to 40% on one bank. Slight potential in extreme floods.	Moderately unstable. Moderate frequency and size of erosional areas. Side slopes up to 60% on some banks. High erosion potential during extreme high flow.	Unstable. Many eroded areas. Side slopes common. "Raw" areas frequent along straight sections and bends.
	9-10	6-8	3-5	0-2
Bank Vegetative Stability	Over 80% of the streambank surfaces covered by vegetation or boulders and cobble.	50-79% of the streambank surfaces covered by vegetation, gravel or larger material.	25-49% of the streambank surfaces covered by vegetation, gravel or larger material.	Less than 25% of the streambank surfaces covered by vegetation, gravel or larger material.
	9-10	6-8	3-5	0-2
Streamside Cover	Dominant vegetation is shrub.	Dominant vegetation is of tree form.	Dominant vegetation is grass or forbes.	Over 50% of the streambank has no vegetation and dominant material is soil, rock, bridge materials, culverts, mine trailings.
	9-10	6-8	3-5	0-2

Table 2-5. Summary of Sediment Chemistry Analyses

Sample Matrix	Parameter	Method
Sediment	Phenolic compounds (phenol, monomethylphenols, and dimethylphenols)	8270C
Sediment	Total organic carbon	9060
Sediment	Moisture	Gravimetric
Porewater	Dissolved metals (Ca, Mg, Fe, K, Na, Mn, Ba, V)	6010B
Porewater	Chloride, sulfate	EPA 300.0
Porewater	Bicarbonate	EPA 310.1/SM2320B
Porewater	Ammonia-N	EPA 350.1
Porewater	pH	EPA 150.1
Porewater	Sulfide	EPA 376.2

Table 3-1. Visual-Based Habitat Quality Assessment Results for Wadeable Macroinvertebrate Sample Locations

Habitat Parameter	LOCATION														
	RBM-1	RBM-2	RBM-3	RBM-4	RBM-5	RBM-6	RBM-7	RBM-8	RBM-9	RBM-10	RBM-11	RBM-12	RBM-13	RBM-14	RBM-15
Substrate and Available Cover															
Bottom substrate and available cover (A)	8	11	14	18	3	19	3	10	5	19	13	9	8	10	2
Embeddedness/siltation (B)	11	20	14	19	6	17	2	6	6	16	13	10	7	8	4
Velocity:depth (C)															
Habitat variability	7	11	13	16	3	16	6	6	11	11	11	13	9	8	8
Channel Morphology															
Flow stability (D)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Bottom deposition/sedimentation (E)	6	8	8	13	3	7	2	4	3	10	6	5	4	5	5
Pools/riffles/runs-bends (F)	2	3	4	11	4	11	2	3	3	4	4	4	3	3	3
Riparian and Bank Structure															
Bank stability (G)	8	8	8	9	8	8	9	8	8	6	6	6	6	7	8
Bank vegetative stability (H)	10	10	10	10	9	9	9	9	9	9	9	9	9	9	8
Streamside cover (I)	7	7	9	9	9	7	5	7	4	9	9	9	9	7	9
TOTAL	**74**	**93**	**95**	**120**	**60**	**109**	**53**	**68**	**64**	**99**	**86**	**80**	**70**	**72**	**62**
Total Embeddedness Score (B+E)	17	28	22	32	9	24	4	10	9	26	19	15	11	13	9
Total Habitat Diversity Score (C+F)	9	14	17	27	7	27	8	9	14	15	15	17	12	11	11

Table 3-2. Qualitative Ranking of Instream Cover Availability for Non-Wadeable Sample Locations

Location	Instream Cover Ranking[a]
RBM-16	4
RBM-17	1
RBM-18	3
RBM-19	2
RBM-20	3
RBM-21	3
RBM-22	2
RBM-23	4
RBM-24	5
RBM-25	5

[a]Developed based on side-scan sonar results (Appendix B)

Table 3-3. Summary of Water Quality, Depth, and Velocity at Macroinvertebrate Sample Locations

Location	Temperature (°C)	pH	Conductivity (uS/cm)	Depth (cm)	Velocity (ft/sec)
RBM-1	20.8	7.98	169	35.75	0.48
RBM-2	20.8	7.80	166	37.5	0.45
RBM-3	20.8	8.12	168	40.25	0.19
RBM-4	20.9	8.01	170	48.75	0.60
RBM-5	21.8	7.89	172	52.25	0.25
RBM-6	21.5	7.77	158	49.75	1.08
RBM-7	20.5	7.83	146	66.75	0.46
RBM-8	20.9	7.86	145	81	0.22
RBM-9	20.6	7.83	171	70.75	0.10
RBM-10	21.0	7.88	170	47.5	0.39
RBM-11	21.7	7.80	170	61	0.72
RBM-12	22.1	7.83	169	52	0.48
RBM-13	22.0	7.88	169	60.5	0.24
RBM-14	21.5	7.93	171	67.25	0.14
RBM-15	21.7	7.58	168	44.5	0.03
RBM-16	21.0	7.89	166	167	1.27
RBM-17	21.0	7.49	167	211	1.67
RBM-18	21.2	7.90	170	160.25	1.12
RBM-19	21.1	7.95	169	150.67	1.11
RBM-20	21.1	8.03	168	164	0.47
RBM-21	20.8	7.81	154	201.25	0.48
RBM-22	21.1	7.83	153	95	0.87
RBM-23	20.5	7.76	149	168.25	0.70
RBM-24	20.7	7.67	153	217.25	0.86
RBM-25	21.2	7.86	166	256.5	0.67

Table 3-4. Summary of Subsurface Temperatures at Menominee River Sample Locations

Location	Maximum Depth (in.)	Average Temp. Drop (°C/in.)
RBM-1	24	0.20
RBM-2	16	0.12
RBM-3	20	0.14
RBM-4	28	0.34
RBM-5	24	0.24
RBM-6	20	0.17
RBM-7	25	0.16
RBM-8	16	0.13
RBM-9	24	0.24
RBM-10	12	0.07
RBM-11	20	0.19
RBM-12	12	0.19
RBM-13	18	0.16
RBM-14	19	0.20
RBM-15	24	0.14
RBM-16	4	NC
RBM-17	4	NC
RBM-18	4	NC
RBM-19	8	NC
RBM-20	4	NC
RBM-21	4	NC
RBM-22	8	NC
RBM-23	3	NC
RBM-24	0	NC
RBM-25	16	0.19

NC - Not calculated due to limited depth of measurements.

Table 3-5. Porewater Analytical Results for Wadeable Sample Locations, Menominee River

Sample Name Sample Date	RBSD-1 7/23/00	RBSD-2 7/23/00	RBSD-3 7/23/00	RBSD-4 7/24/00	RBSD-5 7/24/00	RBSD-6 7/24/00	RBSD-7 7/24/00	RBSD-8 7/24/00
Metals (µg/L)								
Barium	35.8	63.9	57.6	270	252	70.5	37.3	334
Calcium	32800	22200	39500	49600	53300	44300	28800	48200
Iron	99.2	1400	<20	174	135	115	274	645
Magnesium	14200	8070	18500	21400	23300	22700	13600	30600
Manganese	864	1930	497	998	1070	1210	197	2490
Potassium	2220	2650	2910	4350	4250	2150	1320	2330
Sodium	8590	7070	5040	6690	7090	3210	2740	5470
Vanadium	<10	<10	<10	<10	<10	<10	<10	<10
Inorganics (mg/L)								
Ammonia as Nitrogen	0.23	0.62	0.27	0.48	0.48	0.6	1.25	1.41
Bicarbonate Alkalinity as $CaCO_3$	134	116	150	204	225	195	119	307
Chloride	5.9	4.7	14.8	16.8	17.8	5.6	8.8	4.3
pH (unitless)	7.58	7.42	7.68	7.5	7.61	7.73	7.32	7.25
Sulfate	25.7	18.6	24.2	8.9	7.8	9.1	8.4	4.1
Sulfide	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hardness as $CaCO_3$	140	89	175	212	229	204	128	246

µg/L Micrograms per liter.
mg/L Milligrams per liter.

Table 3-5. Porewater Analytical Results for Wadeable Sample Locations, Menominee River

Sample Name Sample Date	RBSD-9 7/25/00	RBSD-10 7/25/00	RBSD-11 7/25/00	RBSD-12 7/25/00	RBSD-13 7/25/00	RBSD-14 7/25/00	RBSD-15 7/25/00
Metals (µg/L)							
Barium	65.3	60.8	77.3	142	60.3	24.1	86.6
Calcium	20300	31200	21000	41400	36200	46600	20700
Iron	841	54	3910	239	846	242	4220
Magnesium	9550	13300	8720	19600	17200	22200	7700
Manganese	296	2850	2470	5550	1960	795	4380
Potassium	2450	3120	1910	4100	3620	2300	1170
Sodium	4620	10500	3390	5010	4800	7730	2010
Vanadium	<10	<10	<10	<10	<10	<10	<10
Inorganics (mg/L)							
Ammonia as Nitrogen	0.76	0.59	2.86	0.99	0.42	0.47	2.7
Bicarbonate Alkalinity as $CaCO_3$	87	131	106	171	169	182	95
Chloride	4.4	13.8	7.1	17.3	7.9	22.9	3
pH (unitless)	7.51	7.82	6.98	7.97	7.77	8.3	7.19
Sulfate	3.8	24	3.8	3.8	4.4	23	1.5
Sulfide	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05
Hardness as $CaCO_3$	90	133	88	184	161	208	83

µg/L Micrograms per liter.
mg/L Milligrams per liter.

Table 3-6. Whole-Sediment Analytical Results, Menominee River

Location Sample Date	RBSD-1 7/23/00	RBSD-2 7/23/00	RBSD-3 7/23/00	RBSD-4 7/24/00	RBSD-5 7/24/00	RBSD-6 7/24/00	RBSD-7 7/24/00	RBSD-8 7/24/00
2,4,5-Trichlorophenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
2,4,6-Trichlorophenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
2,4-Dichlorophenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
2,4-Dimethylphenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
2,4-Dinitrophenol	<1800 J	<2000 J	<2000 J	<2000 J	<1800	<1900 J	<2200 J	<2100 J
2-Chlorophenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
2-Methylphenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
2-Nitrophenol	<730 J	<780 J	<790 J	<780 J	<710 J	<760 J	<850 J	<820 J
3-Methylphenol/4-Methylphenol	<360 J	<380 J	<390 J	<380 J	<350 J	58 J	<420 J	56 J
4,6-Dinitro-2-methylphenol	<1800 J	<2000 J	<2000 J	<2000 J	<1800 J	<1900 J	<2200 J	<2100 J
4-Chloro-3-methylphenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
4-Nitrophenol	<1800 J	<2000 J	<2000 J	<2000 J	<1800 J	<1900 J	<2200 J	<2100 J
Pentachlorophenol	<1800 J	<2000 J	<2000 J	<2000 J	<1800 J	<1900 J	<2200 J	<2100 J
Phenol	<360 J	<380 J	<390 J	<380 J	<350 J	<380 J	<420 J	<400 J
Total Organic Carbon (mg/kg)	850	5400	1300	2700	5400	3900	8300	4800
Solids (%)	92	86	85	86	94	88	79	82

All results reported in micrograms per kilogram, unless otherwise indicated.
mg/kg Milligrams per kilogram.

Table 3-6. Whole-Sediment Analytical Results, Menominee River

Location Sample Date	RBSD-9 7/25/00	RBSD-10 7/25/00	RBSD-11 7/25/00	RBSD-12 7/25/00	RBSD-13 7/25/00	RBSD-14 7/25/00	RBSD-15 7/25/00
2,4,5-Trichlorophenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
2,4,6-Trichlorophenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
2,4-Dichlorophenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
2,4-Dimethylphenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<360 J
2,4-Dinitrophenol	<2300 J	<2000 J	<2400 J	<2200 J	<2000 J	<2000 J	<2300 J
2-Chlorophenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
2-Methylphenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
2-Nitrophenol	<920 J	<780 J	<930 J	<860 J	<770 J	<810 J	<890 J
3-Methylphenol/4-Methylphenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
4,6-Dinitro-2-methylphenol	<2300 J	<2000 J	<2400 J	<2200 J	<2000 J	<2000 J	<2300 J
4-Chloro-3-methylphenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
4-Nitrophenol	<2300 J	<2000 J	<2400 J	<2200 J	<2000 J	<2000 J	<2300 J
Pentachlorophenol	<2300 J	<2000 J	<2400 J	<2200 J	<2000 J	<2000 J	<2300 J
Phenol	<450 J	<380 J	<460 J	<420 J	<380 J	<400 J	<440 J
Total Organic Carbon (mg/kg)	8100	3500	8000	6900	7400	2400	8500
Solids (%)	73	86	72	78	87	83	75

All results reported in micrograms per kilogram, unless otherwise indicated.
mg/kg Milligrams per kilogram.

Table 3-7. Benthic Macroinvertebrate Taxa Collected from the Menominee River

Taxonomic Group: PHYLUM, *Class*, Order, Family	Scientific name	Common Name	Primary Feeding Group*
COELENTERATA		**COELENTERATES**	
Hydrozoa			
	Hydra		PR
PLATYHELMINTHES		**FLATWORMS**	
Turbellaria	(Identified to class only)		PR
ANNELIDA		**SEGMENTED WORMS**	
Oligochaeta		*Aquatic earthworms*	
Lumbriculida			
Lumbriculidae	(Identified to family only)		GC
Haplotaxida			
Naididae	(Identified to family only)		GC
Tubificidae	(Identified to family only)		GC
Hirudinea		*Leeches*	
Rhynchobdellida			
Glossiphoniidae			
	Placobdella		PR
Piscicolidae			
	Myzobdella lugubris		PR
Arhynchobdellida			
Erpobdellidae	(Identified to family only)		PR
ARTHROPODA		**ARTHROPODS**	
Crustacea		*Crustaceans*	
Isopoda		**sowbugs**	
Asellidae			
	Caecidotea		GC
Amphipoda		**scuds**	
Hyalellidae			
	Hyalella azteca		GC
Gammaridae			
	Gammarus		OM
Decapoda		**crabs, lobsters, shrimp**	
Cambaridae		crayfish	
	Orconectes rusticus	rusty crayfish	SH
Insecta		*Insects*	
Ephemeroptera		mayflies	
Oligoneuriidae			
	Isonychia		FC
Baetidae		small mayflies	
	Baetis intercalaris		OM
	Pseudocloeon propinquum		SC
	Baetis flavistriga		GC
	Acerpennapygmaea		OM
	Acentrella carolina		GC
	Callibaetis		GC
	Centroptilum		GC
	Procloeon		OM
Heptageniidae		stream mayflies	
	Leucrocuta hebe		SC
	Stenacron interpunctatum		OM
	Stenonema mediopunctatum		OM
	Stenonema femoratum		OM
	Stenonema modestum		SC
	Stenonema pulchellum		
	Stenonema terminatum		
	Stenonema exiguum		OM
	Stenonema vicarium		

Table 3-7. Benthic Macroinvertebrate Taxa Collected from the Menominee River

Taxonomic Group: PHYLUM, *Class*, Order, Family	Scientific name	Common Name	Primary Feeding Group*
ARTHROPODA			
Leptophlebiidae			
	Choroterpes basalis		GC
	Paraleptophlebia		GC
Ephemerellidae			
	Eurylophella		SC
Tricorythidae			
	Tricorythodes		GC
Caenidae			
	Caenis		GC
Ephemeridae		burrowing mayflies	
	Ephemera simulans		GC
	Hexagenia limbata		GC
Polymitarcyidae			
	Ephoron leukon		
Odonata		**dragonflies and damselflies**	
Coenagrionidae		narrow-winged damselflies	
	Argia		
Aeshnidae		damers	
	Boyeria vinosa		PR
Gomphidae		clubtails	
	Dromogomphus spinosus		PR
	Gomphus fraternus		PR
	Gomphus		PR
	Hagenius brevistylus		PR
	Ophiogomphus		PR
Libellulidae		skimmers	PR
	Macromia illinoiensis	common skimmer	
Plecoptera		**stoneflies**	
Perlidae		common stoneflies	
	Paragnetinamedia		PR
	Acroneuria abnormis		PR
	Acroneuria lycorias		PR
	Neoperla stewarti		PR
Chloroperlidae		green stoneflies	
	Perlesta decipiens		PR
Heteroptera/Hemiptera		**true bugs**	
Gerridae		water striders	
	Rheumatobates		PR
	Trepobates		PR
Corixidae		water boatmen	
	Palmacorixa		PR
	Sigara		PR
Megaloptera			
Corydalidae		fish flies	
	Nigronia serricornis		PR
Sialidae		alderflies	
	Sialis		PR
Trichoptera		**caddisflies**	
Philopotamidae		finger-net caddisflies	
	Chimarra obscura		FC
Psychomyiidae		trumpet-net caddisflies	
	Lype diversa		SC
	Psychomyia flavida		SC
	Phylocentropus placidus		FC
Polycentropodidae			
	Neureclipsis		FC
	Polycentropus		PR

Table 3-7. Benthic Macroinvertebrate Taxa Collected from the Menominee River

Taxonomic Group: PHYLUM, *Class*, Order, Family	Scientific name	Common Name	Primary Feeding Group*
ARTHROPODA			
Hydropsychidae		net-spinning caddisflies	
	Cheumatopsyche		FC
	Hydropsyche phalerata		FC
	Ceratopsyche morosa		FC
	Macrostemum zebratum		FC
Hydroptilidae		micro-caddisflies	
	Agraylea		
Rhyacophilidae		primitive caddisflies	
	Protoptila		SC
Uenoidae			
	Neophylax		SC
Limnephilinae		northern caddisflies	
	Pycnopsyche		SH
Leptoceridae		long-horned caddisflies	
	Ceraclea		GC
Coleoptera		**beetles**	
Gyrinidae		whirligig beetles	
	Gyrinus		PR
Elmidae		riffle beetles	
	Dubiraphia		GC
	Macronychus glabratus		OM
	Optioservus trivittatus		SC
	Stenelmis crenata		OM
Psephenidae		water penny beetles	
	Ectopria		SC
	Psephenus herricki		SC
Haliplidae		crawling water beetles	
	Peltodytes		SH
Diptera		**flies**	
Chironomidae		midges	
	Tribe: Procladiini		
	Procladius		PR
	Epoicocladius		
	Djalmabatista		PR
	Tribe: Coelotanypodini		
	Clinotanypus		PR
	Tribe: Pentaneurini		
	Ablabesmyia mallochi		OM
	Ablabesmyia annulata		OM
	Labrundinia		PR
	Thienemannimyia grp.		GC
	Corynoneura lobata		GC
	Monodiamesa		GC
	Thienemanniellaxena		GC
	Thienemanniella xena sp.3		GC
	Thienemanniella similis		GC
	Cricotopus tremulus grp.		SH
	Cricotopus bicinctus grp.		OM
	Cricotopus sylvestris grp.		OM
	Heterotrissocladius		GC
	Nanocladius		GC
	Nanocladius (Plecopteracoluthus)		
	Nanocladius incomptus		GC
	Parakiefferiella		GC
	Synorthocladius		GC
	Tvetenia (Eukiefferiella) discoloripes grp.		GC
	Tribe: Chironomini		
	Chironomus		GC
	Cryptochironomus		PR
	Cryptotendipes		GC
	Parachironomus		PR
	Dicrotendipes neomodestus		FG

Table 3-7. Benthic Macroinvertebrate Taxa Collected from the Menominee River

Taxonomic Group: PHYLUM, *Class*, Order, Family	Scientific name	Common Name	Primary Feeding Group[a]
ARTHROPODA			
Chironomidae			
	Glyptotendipes		FC
	Microtendipes		FC
	Paralauterborniella		GC
	Paratendipes		GC
	Polypedilum fallax grp.		
	Polypedilum convictum		SH
	Polypedilum halterale grp.		SH
	Polypedilum illinoense		SH
	Polypedilum scalaenum grp.		SH
	Stelechomyia perpulcher		GC
	Stenochironomus		SH
	Stictochironomus		OM
	Tribelos jucumdum		GC
	Tribe: Tanytarsini		
	Cladotanytarsus mancus grp.		GC
	Cladotanytarsus vanderwulpi grp.		GC
	Rheotanytarsus		FC
	Tanytarsus		FC
	Tanytarsus curticornis grp.		FC
	Tanytarsus glabrescens grp.		FG
	Tanytarsus guerlus grp.		FG
	Zavrelia		GC
Simuliidae		black flies	
	Simulium		FC
Tipulidae		crane flies	
	Hexatoma		PR
Empididae		dance flies	
	Hemerodromia		PR
Tabanidae		deer flies	
	Chrysops		GC
MOLLUSCA		MOLLUSKS	
Gastropoda		*Snails*	
Architaenioglossa			
Viviparidae	(Identified to family only)		SC
Neotaenioglossa			
Hydrobiidae			
	Amnicola		SC
Basommatophora			
Physidae			
	Physella		SC
Planorbidae		rams-horn snails	
	Helisoma		SC
Ancylidae		freshwater limpets	
	Ferrissia		SC
Bivalvia		*Bivalves*	
Veneroida			
Pisidiidae			
	Sphaerium	pea clams	GC
	Musculium	fingernail clams	FC
	Pisidium	pea mussels/clams	
Unionoida			
Unionidae		freshwater mussels	
	Pyganodon grandis	giant floater	

[a] PA=parasite
FC=filter/collector
PR=predator
SC=scraper
OM=omnivore
SH=shredder
GC=gatherer/collector
PI=piercer

Table 3-8. Summary of Benthic Macroinvertebrate Community Metrics for Wadeable Sample Locations

Metric[a]	Location	RBM-1	RBM-2	RBM-3	RBM-4	RBM-5	RBM-6	RBM-7	RBM-8	RBM-9	RBM-10	RBM-11	RBM-12	RBM-13	RBM-14	RBM-15
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Abundance	Mean	1105	608	950	2251	202	1773	671	260	53	1444	761	97	32	84	161
	SD	526	561	545	883	249	1014	492	180	17	354	504	50	15	40	18
Taxa Richness	Mean	31.5	21.8	22.8	28.5	22.3	29.5	16.0	23.8	17.8	28.8	30.0	18.3	9.3	15.3	11.8
	SD	8.4	5.9	5.9	5.2	5.3	7.2	7.3	7.2	4.6	5.0	5.0	8.7	3.0	4.4	3.5
Taxa Richness (Sweep Net)		38	43	33	26	16	26	30	17	26	17	27	16	13	10	15
Diversity	Mean	2.7	2.1	2.4	2.7	2.5	2.7	1.5	2.5	2.5	2.7	2.8	1.9	1.8	1.7	1.3
	SD	0.3	0.3	0.3	0.1	0.3	0.3	0.7	0.6	0.3	0.2	0.1	0.7	0.2	0.4	0.6
HBI	Mean	4.4	4.8	3.7	3.9	6.6	3.7	7.7	6.8	6.5	4.1	3.8	4.9	6.3	4.9	5.5
	SD	0.2	0.7	0.3	0.2	0.8	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.7	0.9
EPT Taxa Richness	Mean	12.3	9.5	12.3	13.3	4.5	14.3	2.8	5.0	3.8	13.0	14.8	8.0	1.5	7.0	2.0
	SD	1.0	1.9	1.9	1.3	0.6	2.5	1.7	2.6	1.7	1.4	3.0	4.2	0.6	3.7	0.8
% Mayflies	Mean	58%	42%	75%	62%	20%	66%	4%	17%	23%	62%	57%	20%	23%	16%	5%
	SD	10%	27%	13%	2%	17%	6%	1%	5%	13%	11%	17%	16%	16%	6%	4%
% Tanytarsini	Mean	6%	34%	1%	2%	11%	2%	15%	4%	5%	0%	2%	2%	2%	1%	0%
	SD	4%	21%	1%	1%	5%	2%	17%	5%	1%	0%	3%	2%	4%	1%	0%
% Tolerant	Mean	1%	8%	0%	1%	24%	5%	4%	17%	6%	2%	2%	1%	4%	0%	31%
	SD	1%	10%	0%	1%	16%	3%	3%	6%	8%	2%	1%	1%	5%	0%	28%
% Diptera[b]+Non-insect	Mean	17%	18%	8%	15%	67%	15%	80%	59%	65%	18%	14%	73%	58%	80%	94%
	SD	4%	18%	7%	5%	21%	6%	18%	11%	15%	7%	9%	20%	10%	6%	4%
% Cricotopus	Mean	0.5%	3%	0%	0%	0%	0%	0%	0.3%	0%	0%	0%	0%	0%	0%	0%
	SD	1%	2%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%

[a]All metrics are based on replicate traveling kicknet (TKN) samples unless indicated otherwise.

[b]Excluding Tanytarsini midges.

n - Number of replicate samples.

SD - Standard deviation.

Table 3-9. Results of Analysis of Variance (ANOVA) for Wadeable Macroinvertebrate Sample Locations

			Study Area Locations										
	Metric Type[a]	Reference Location	RBM-3	RBM-4	RBM-5	RBM-6	RBM-7	RBM-8	RBM-9	RBM-10	RBM-11	RBM-12	RBM-13
Abundance	Positive	RBM-1	X	X	X	X	X	X	X	X	X	X	X
		RBM-2	X	X	X	X	X	X	X	X	X	X	X
		RBM-14	X	H	X	X	X	X	X	H	X	X	X
		RBM-15	X	H	X	X	X	X	L	H	X	X	L
Taxa Richness	Positive	RBM-1	X	X	X	X	X	X	X	X	X	X	H
		RBM-2	X	X	X	X	X	X	X	X	X	X	X
		RBM-14	X	X	X	X	X	X	X	X	H	X	X
		RBM-15	X	H	X	H	X	X	X	H	H	X	X
% Mayfly	Positive	RBM-1	X	X	X	X	L	L	L	X	X	X	X
		RBM-2	X	X	X	X	X	X	X	X	X	X	X
		RBM-14	H	H	X	H	X	X	X	H	H	X	X
		RBM-15	H	H	X	H	X	X	X	H	H	X	X
HBI	Negative	RBM-1	L	X	H	X	H	H	H	X	X	X	H
		RBM-2	X	X	X	X	H	H	X	X	X	X	X
		RBM-14	X	X	X	X	H	H	X	X	X	X	X
		RBM-15	X	X	X	X	H	X	X	X	X	X	X
Diversity	Positive	RBM-1	X	X	X	X	X	X	X	X	X	X	L
		RBM-2	X	X	X	X	X	X	X	X	X	X	X
		RBM-14	X	H	X	H	X	X	X	H	H	X	X
		RBM-15	X	H	X	H	X	X	X	H	H	X	X
EPT Taxa Richness	Positive	RBM-1	X	X	L	X	L	L	L	X	X	X	L
		RBM-2	X	X	L	X	L	X	L	X	X	X	L
		RBM-14	X	X	X	X	X	X	X	X	X	X	X
		RBM-15	H	H	H	H	X	X	X	H	H	X	X
% Tanytarsini	Positive	RBM-1	X	X	X	X	X	X	X	X	X	X	X
		RBM-2	X	X	X	X	X	X	X	X	X	X	X
		RBM-14	X	X	X	X	X	X	H	X	X	X	X
		RBM-15	X	X	H	X	X	X	H	X	X	X	X
% Diptera[b]+Non-Insect	Negative	RBM-1	X	X	H	X	H	H	H	X	X	H	H
		RBM-2	X	X	X	X	H	X	H	X	X	H	X
		RBM-14	L	L	X	L	X	X	X	L	L	X	X
		RBM-15	L	L	X	L	X	L	X	L	L	X	L
% Tolerant	Negative	RBM-1	X	X	H	H	X	H	X	X	X	X	X
		RBM-2	X	X	X	X	X	X	X	X	X	X	X
		RBM-14	X	X	H	H	H	H	X	X	X	X	X
		RBM-15	X	X	X	X	X	X	X	X	X	X	X
% Cricotopus	Negative	RBM-1	X	X	X	X	X	X	X	X	X	X	X
		RBM-2	L	L	L	L	L	L	L	L	L	L	L
		RBM-14	X	X	X	X	X	X	X	X	X	X	X
		RBM-15	X	X	X	X	X	X	X	X	X	X	X

[a]"Positive" indicates that metric values increase with increasing benthic community quality. "Negative" indicates that metric values decrease with increasing benthic community quality.

[b]Excluding Tanytarsini midges.

X - No significant difference.

H - Metric is significantly higher than at respective reference location.

L - Metric is significantly lower than at respective reference location.

Table 3-10. Statistical Power Analysis for Wadeable Sample Locations

	Average RSD[a]	Minimum Detectable Difference
Number of Organisms	56	78%
Taxa Richness	28	39%
Diversity	19	27%
HBI	9	13%
EPT Taxa Richness	30	42%
% Mayflies	42	59%
% Tanytarsini	100	140%
% Tolerant	100	140%
% Diptera[b]/Non-insect	36	50%
% Cricotopus	53	74%

[a]RSD (Relative Standard Deviation) = (Standard Deviation/Mean) x 100.

[b]Excluding Tanytarsini midges.

Table 3-11. Equations Relating Benthic Macroinvertebrate Community Metrics and Physical Habitat Data

y	x	equation	r^2
Number of Organisms	Total Habitat Score	y = (2448.73-280.04)/(1+(x/100.87)^-12.51) + 280.04	82%
Number of Taxa - Kick Net	5.2*RM+0.36*Embeddedness Score	y = (27.26-12.04)/(1+(x/523.39)^-781.0) + 12.04	82%
Number of Taxa - Sweep Net	4.9*RM+0.018*Embeddedness Score	y = (3244.70-10.88)/(1+(x/513.66)^-124.11) + 10.88	76%
Diversity	4.4*RM+0.53*Embeddedness Score	y = (2.49-1.28)/(1+(x/443.49)^-1845.34) + 1.28	78%
HBI	Embeddedness Score	y = (7.54-3.92)/(1+(x/11.14)^4.48) + 3.92	87%
Number of EPT Taxa	Embeddedness Score	y = (12.89-3.31)/(1+(x/14.35)^-12.21) + 3.31	89%
% Mayflies	Embeddedness Score	y = (15.28-60.77)/(1+(x/15.85)^39.06) + 60.77	88%
% Tanytarsini Midges	5.0*RM-0.52*Embeddedness Score	y = (2458-0.37)/(1+(x/516.98)^-143.84) + 0.37	93%[a]
% Diptera[b] + Non-Insects	Embeddedness Score	y = (14.68-71.95)/(1+(x/16.71)^-172.29) + 71.95	92%
% Tolerant	Embeddedness Score	y = (19-2)/(1+(x/10)^88.262) + 2	46%
% Cricotopus	River Mile	NA	NA

[a]Excluding location RBM-2.

[b]Excluding Tanytarsini midges.

NA - Not applicable (% Cricotopus values showed no meaningful variation among sample locations).

Table 3-12. Summary of Benthic Macroinvertebrate Community Metrics for Non-Wadeable Sample Locations

	Location	RBM-16	RBM-17	RBM-18	RBM-19	RBM-20	RBM-21	RBM-22	RBM-23	RBM-24	RBM-25
	n	4	3	3	3	4	4	3	4	4	4
Density (#/m^2)	Mean	1781	1902	2809	5557	2904	1206	3325	1893	2482	2764
	SD	1661	623	1231	1818	1086	103	2119	974	1304	703
Taxa Richness	Mean	24.5	21.7	25.0	23.0	22.8	22.0	24.7	24.5	23.8	28.5
	SD	3.5	2.5	1.7	1.7	2.5	2.9	4.9	4.1	3.5	2.1
Diversity	Mean	2.4	2.4	2.4	2.2	2.4	2.4	2.6	2.5	2.4	2.7
	SD	0.1	0.2	0.2	0.3	0.2	0.2	0.1	0.4	0.1	0.1
HBI	Mean	5.1	4.9	5.4	5.6	5.0	4.3	5.1	4.9	4.6	4.8
	SD	0.1	0.3	0.2	0.1	0.2	0.4	0.3	0.4	0.5	0.05
EPT Taxa Richness	Mean	11.8	11.0	11.3	11.0	11.8	10.3	10.3	9.8	11.3	11.3
	SD	1.0	2.6	0.6	1.7	1.7	1.9	2.1	1.3	1.0	1.7
% Mayflies	Mean	28%	24%	17%	10%	21%	41%	24%	27%	38%	20%
	SD	9%	12%	2%	5%	7%	9%	16%	8%	13%	5%
% Tanytarsini	Mean	10%	19%	29%	41%	17%	13%	18%	18%	15%	12%
	SD	7%	10%	12%	11%	3%	7%	10%	13%	8%	7%
% Tolerant	Mean	6%	5%	11%	9%	2%	2%	12%	3%	3%	2%
	SD	4%	4%	3%	2%	1%	1%	6%	2%	3%	2%
% Diptera[a]+Non-insect	Mean	46%	39%	40%	35%	30%	28%	43%	44%	31%	54%
	SD	9%	7%	9%	8%	9%	7%	5%	10%	11%	11%
% Cricotopus	Mean	6%	3%	9%	8%	2%	1%	10%	1%	1%	2%
	SD	3%	3%	6%	2%	2%	0%	6%	1%	3%	1%

[a]Excluding Tanytarsini midges.
n - Number of replicate samples.
SD - Stand[illegible] deviation.

Table 3-13. Results of Analysis of Variance (ANOVA) for Non-Wadeable Macroinvertebrate Sample Locations

			Study Area Locations						
	Metric Type[a]	Reference Location	RBM-17	RBM-18	RBM-19	RBM-20	RBM-21	RBM-22	RBM-23
Density	Positive	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	X	X	X	X	X	X
		RBM-25	X	X	X	X	L	X	X
Taxa Richness	Positive	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	X	X	X	X	X	X
		RBM-25	X	X	X	X	X	X	X
% Mayfly	Positive	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	L	L	X	X	X	X
		RBM-25	X	X	X	X	X	X	X
HBI	Negative	RBM-16	X	X	H	X	X	X	X
		RBM-24	X	X	X	X	X	X	X
		RBM-25	X	H	H	X	X	X	X
Diversity	Positive	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	X	X	X	X	X	X
		RBM-25	X	X	X	X	X	X	X
EPT Taxa Richness	Positive	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	X	X	X	X	X	X
		RBM-25	X	X	X	X	X	X	X
% Tanytarsini	Positive	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	X	H	X	X	X	X
		RBM-25	X	X	X	X	X	X	X
% Diptera[b]+Non-Insect	Negative	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	X	X	X	X	X	X
		RBM-25	X	X	X	X	X	X	X
% Tolerant	Negative	RBM-16	X	X	X	X	X	X	X
		RBM-24	X	H	H	X	X	X	X
		RBM-25	X	H	H	X	X	H	X
% Cricotopus	Negative	RBM-16	X	X	X	X	L	X	L
		RBM-24	X	X	H	X	X	X	X
		RBM-25	X	H	H	X	X	H	X

[a]"Positive" indicates that metric values increase with increasing benthic community quality. "Negative" indicates that metric values decrease with increasing benthic community quality.

[b]Excluding Tanytarsini midges.

X - No significant difference.

H - Metric is significantly higher than at respective reference location.

L - Metric is significantly lower than at respective reference location.

Table 3-14. Statistical power analysis for non-wadeable sample locations

	Average RSD[a]	Minimum Detectable Difference
Density (#/m^2)	44	62%
Taxa Richness	12	17%
Diversity	8	11%
HBI	5	7%
EPT Taxa Richness	14	20%
% Mayflies	35	49%
% Tanytarsini	50	70%
% Tolerant	65	91%
% Diptera[b]/Non-insect	22	31%
% Cricotopus	75	105%

[a]RSD (Relative Standard Deviation) = (Standard Deviation/Mean) x 100.

[b]Excluding Tanytarsini midges.

Table 3-15. Visual-Based Habitat Assessment Results for Menominee River Fish Sampling Zones

Habitat Parameter	LOCATION RBF-1	RBF-2	RBF-3	RBF-4	RBF-5	RBF-6	RBF-7	RBF-8	RBF-9	RBF-10
Substrate and Available Cover										
Bottom substrate and available cover (A)	16	18	11	10	7	11	18	8	11	11
Embeddedness/siltation (B)	12	16	11	13	8	11	16	11	8	11
Velocity:depth (C)										
Habitat variability	16	13	12	11	8	11	8	11	8	8
Channel Morphology										
Flow stability (D)	15	15	15	15	15	15	15	15	15	15
Bottom deposition/sedimentation (E)	11	11	8	7	3	7	10	3	5	4
Pools/riffles/runs-bends (F)	12	10	7	4	4	4	4	4	3	3
Riparian and Bank Structure										
Bank stability (G)	8	8	7	6	6	7	7	6	7	8
Bank vegetative stability (H)	10	9	9	9	9	9	9	9	9	9
Streamside cover (I)	7	7	9	7	5	8	7	7	8	8
TOTAL	**107**	**107**	**89**	**82**	**65**	**83**	**94**	**74**	**74**	77
Total Embeddedness Score (B+E)	23	27	19	20	11	18	26	14	13	15
Total Habitat Diversity Score (C+F)	28	23	19	15	12	15	12	15	11	11

Table 3-16. Water Quality and Depth at Menominee River Fish Sampling Zones

Location	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Secchi Disk Depth (cm)	Average Depth (feet)[a]
RBF-1	18.0	7.3	190	170	1.29
RBF-2	18.3	7.3	188	183	NA[b]
RBF-3	17.9	6.8	194	191	0.49
RBF-4	17.4	7.4	187	189	4.44
RBF-5	18.2	6.7	201	188	0.58
RBF-6	17.4	7.3	189	183	5.72
RBF-7	18.0	6.3	199	163	0.99
RBF-8	17.3	7.0	195	180	5.81
RBF-9	17.7	6.6	198	165	3.23
RBF-10	17.3	6.8	198	200	3.81

[a]Calculated from multi-beam bathymetry survey results.

[b]Not available (sampling zone outside of bathymetry survey area).

Table 3-17. Fish Species Collected From the Menominee River Study Area

Family	Scientific Name	Common Name	Description[a]	Trophic[b]	Tolerance[b]
Esocidae	Esox Lucius	Northern Pike	Widely distributed in glaciated areas. Inhabits cool to moderately warm weedy lakes and sluggish rivers with quiet pools to fast currents over sand and mud.	P	M
Cyprinidae	Nocomis biguttatus	Hornyhead Chub	Appears to be decreasing over its general range, possibly due to siltation and intermittent flow. Common in clear water, riffles and pools over gravel or rubble in medium sized rivers.	S	I
	Nocomis raneyi	Golden Shiner	Found in sloughs and pools, clear water over sand with heavy vegetation. Medium to large rivers. Omnivore (algae and plants, crustaceans, terrestrial insects).	O	T
	Notropis cornutus	Common Shiner	Inhabits small, moderately clear streams over gravel, rubble and bedrock pools. Generalized food habits, primarily aquatic and terrestrial insects.	S	M
Catostomidae	Catomus commersoni	White Sucker	Common in most streams, clear to slightly turbid water over gravel and sand. Benthic invertebrate feeder.	O	T
Centrarchidae	Ambloplites rupestris	Rock Bass	Prefers clear, cool to warm waters over gravel or rock with some vegetation or cover. Feed on immature aquatic insects, small minnows, crayfish.	P	M
	Lepomis macrochirus	Bluegill	Occurs in clear water over sand and gravel. Intolerant of continuous high turbidity and siltation and thrives in warm waters where vegetation and cover is present. Generalized invertebrate feeder.	S	M
	Micropterus dolomieui	Smallmouth Bass	Common in medium to large rivers,moderate to swift currents. Abundance is decreasing and fishing along Great Lakes shoreline is no longer excellent. Prefers clear, flowing streams over rocks and sand, seeks out rocky ledges or weedy shorelines. Smallmouth is the ecological replacement for the spotted bass and the largemouth bass in clear,cool, permanent-flowing streams. It has low tolerance for siltation and turbidity. Piscivore (including larger invertebrates).	P	M
	Micropterus salmoides	Largemouth Bass	Widely distributed, abundant in medium to large rivers, clear to slightly turbid water over sand and gravel. Intolerant of excessive turbididty and siltation and thrives in warm waters having no noticeable current. Piscivore (including larger invertebrates).	P	M
	Pomoxis nigromaculatus	Black Crappie	Occurs in clear to slightly turbid water over sand and abundant cover in the form of submerged timber or aquatic vegetation. Intolerant of turbidity and siltation. Piscivore (including invertebrates).	P	M
Percidae	Etheostoma nigrum	Johnny Darter	Widely distributed, more abundant in creeks, tolerant of turbidity but avoids streams that are excessively turbid and silty and those with high gradients or continuous strong flow. Often found in quiet pools over sand. General invertebrate feeder.	S	M
	Perca flavescens	Yellow Perch	Panfish. Adaptable to a wide variety of habitats. Prefers sloughs with modest amounts of vegetaion and water of moderate fertility, clear to slightly turbid water over sand. Generalized invertebrate feeder.	S	M
	Percina caproides	Log Perch	Common in medium to large rivers with diverse habitats (pools) and clear water over sand and gravel. Generalized invertebrate feeder.	S	M
	Stizostedion vitreum	Walleye	Common in large rivers, clear water over sand, gravel, mud.	P	M
Cottidae	Cottus bardi	Mottled Sculpin	Common in cold headwater streams in clear to slightly turbid water over sand and gravel. Found in pools and in riffles in the vicinity of vegetation or debris. Distribution is dependent on shelter. Diet consists of larval aquatic insects and an occasional small fish (benthivore).	S	I

[a]Adapted from Becker (1983).

[b]Trophic guilds and tolerance ratings are from Barbour et al. (1999):

P - Piscivore
H - Herbivore
O - Omnivore
S - Insectivore
F - Filter Feeder
G - Generalist Feeder
V - Invertivore
I - Intolerant
M - Intermediate Tolerance
T - Tolerant

Table 3-18. Abundance and Biomass of Fish Species at Menominee River Sample Locations

		RBF-1	RBF-2	RBF-3	RBF-4	RBF-5	RBF-6	RBF-7	RBF-8	RBF-9	RBF-10
Northern Pike	Number	3	4	0	2	3	2	3	2	1	1
	Biomass[a]	1,860	2,860	0	1,440	1,330	460	450	5,680	1,100	730
Hornyhead Chub	Number	2	2	11	10	7	1	7	0	0	0
	Biomass	40	30	98	95	33	24	55	0	0	0
Golden Shiner	Number	0	0	0	0	1	0	0	0	1	0
	Biomass	0	0	0	0	10	0	0	0	1	0
Common Shiner	Number	81	14	32	14	49	11	14	2	2	1
	Biomass	501	105	349	182	462	31	190	30	19	20
White Sucker	Number	83	9	120	60	80	1	48	2	9	1
	Biomass	530	26	585	6,025	320	3,100	4,685	2,700	48	4
Rock Bass	Number	22	11	58	47	99	38	92	37	20	41
	Biomass	539	761	1,807	2,033	3,386	4,030	3,616	1,600	1,761	1,578
Bluegill	Number	0	0	14	0	23	0	12	1	1	2
	Biomass	0	0	122	0	13	0	16	12	65	105
Smallmouth Bass	Number	73	66	50	36	33	28	27	23	15	40
	Biomass	4,214	5,302	1,094	1,646	1,840	3,318	3,720	1,465	184	1,185
Largemouth Bass	Number	3	0	18	1	11	0	6	0	2	2
	Biomass	12	0	155	3	83	0	35	0	16	11
Black Crappie	Number	2	0	2	0	3	0	3	0	1	0
	Biomass	7	0	8	0	12	0	118	0	7	0
Johnny Darter	Number	9	4	10	10	15	2	8	0	0	2
	Biomass	8	5	8	10	16	2	6	0	0	4
Yellow Perch	Number	9	0	19	3	2	0	26	0	2	0
	Biomass	60	0	365	15	16	0	240	0	135	0
Log Perch	Number	6	14	7	4	2	1	1	1	3	6
	Biomass	27	65	30	20	10	4	8	10	16	25
Walleye	Number	7	4	5	14	7	9	3	4	3	7
	Biomass	962	70	101	917	504	475	85	75	65	100
Mottled Sculpin	Number	18	25	29	6	8	0	10	0	2	3
	Biomass	35	42	50	11	10	0	15	0	3	8

[a]Grams

Table 3-19. Summary of Fish Community Metrics

Location	Abundance	Species Richness	Average Biomass (g/fish)	Diversity	DELT[a] (%)	Intolerant[b] (%)
1	318	13	28	1.90	0.6	6.3
2	153	10	61	1.79	0	17.6
3	375	13	13	2.11	0	10.7
4	207	12	60	1.97	0.5	7.7
5	343	15	23	2.04	0.3	4.4
6	93	9	123	1.52	0	1.1
7	260	14	51	2.04	0	6.5
8	72	8	161	1.28	0	0.0
9	62	13	55	1.99	0	3.2
10	106	11	36	1.53	0	2.8

a. Percentage of fish exhibiting external anomalies (deformities, eroded fins, lesions, or tumors).
b. Percentage of fish classified as intolerant (sensitive).

Appendix A

Groundwater Toxicity Test and Toxicity Identification Evaluation (TIE) Results

Appendix A: Groundwater Toxicity Test and Toxicity Identification Evaluation (TIE) Results

At the request of the MDEQ, ARCADIS Geraghty & Miller conducted toxicity testing and chemical analyses of groundwater samples collected from wells located near the Menominee River. The tests were conducted using standard methods developed for whole-effluent toxicity (WET) testing. Limited additional testing was conducted directly by the MDEQ. A total of 78 toxicity tests were conducted, encompassing two test species (fathead minnows and *Daphnia magna*), 22 groundwater wells, and two seep locations. Standard Toxicity Identification Evaluation (TIE) procedures were conducted for seven water samples (six groundwater and one seep) to facilitate the identification of chemicals contributing to toxicity. Complete toxicity test and TIE results are provided by AScI (1999; 2000a,b) and New England Bioassay (2000a-e). As described in Section 1 of this report, groundwater toxicity test results are not necessarily predictive of ecological conditions in the Menominee River. Rather, these tests provide a means of focusing further evaluations designed to assess potential impacts on aquatic life (e.g., the bioassessment described in this report).

Toxicity Test Results

Toxicity test results are summarized in Table A-1. The test results are summarized as toxic unit (TU) values, which correspond to the amount of dilution with clean laboratory water that is required to achieve a specified level of test organism response. Acute TU (TU_A) values are based on a specified response of 50% mortality. A TU_A less than 1.0 indicates less than 50% mortality in the undiluted sample and is viewed by MDEQ as acceptable for discharge to surface waters. For certain samples, TU values were also calculated for 50% *Daphnia magna* immobilization (where this response was observed). Daphnid immobilization is considered equivalent to mortality for the purpose of calculating acute water quality criteria (Stephan et al., 1985).

Split sampling and/or repeated toxicity testing were implemented for nine groundwater wells and one seep location. The TU values varied considerably among tests, and in several cases the classification of samples as toxic (TU > 1.0) or nontoxic (TU < 1.0) varied among tests. One factor contributing to the observed variation was likely a difference in test procedures between laboratories. Specifically, New England Bioassay acclimated the *Daphnia magna* test organisms to very hard water conditions prior to toxicity testing, per USEPA guidance (USEPA, 1993), whereas AScI Corporation omitted this procedure. Test organism acclimation reduces stress related to water hardness and provides a result that is more indicative of the toxicity of

constituents of interest in the water sample. Additionally, variability and false positives are recognized as one of the limitations of WET test procedures (Warren-Hicks et al., 2000; Moore et al., 2000a; Moore et al., 2000b).

Table A-2 summarizes the spatial relationship between the tested groundwater wells and the Menominee River. A comparison of Tables A-1 and A-2 supports the following conclusions:

- Groundwater samples collected to the northwest of GM-5 and to the southwest of GM-27 did not consistently exhibit toxicity (TU > 1.0);
- Seven of twelve groundwater wells and one of two seeps between GM-5 and GM-27 exhibited toxicity (TU > 1.0);
- Groundwater collected from GM-25B and co-located extraction well GM-EW3 required between five and sixteen-fold dilution to achieve less than 50% mortality; and
- Dilution of approximately two-fold or less was generally sufficient to achieve less than 50% mortality for the remaining toxic samples.

TIE Results

The identity of chemicals contributing to groundwater toxicity was investigated using standard USEPA methods for a "Phase I" TIE, which, which involve specific manipulations of the sample, designed to remove toxicity due to certain classes of chemicals. Initially, a TIE was conducted for GM-25B groundwater using more than 20 different sample manipulations. The procedures which lowered toxicity in GM-25B groundwater included solid phase extraction with a C18 column, indicating a contribution to toxicity due to hydrophobic organic chemicals, and addition of EDTA, indicating a contribution to toxicity due to metals. Subsequent TIE testing was limited to these procedures.[1] The results of the TIE tests are summarized in Table A-3.

In most cases, the TIE results indicated toxicity due to a combination of hydrophobic organic chemicals and metals. However, the treatments which achieved a TU_A less

[1] An ion exchange procedure was also implemented for seep sample SP-2; results were inconclusive.

than 1.0 did not completely eliminate toxicity in most cases. Combined removal of organic compounds and addition of EDTA generally resulted in survival of 60-80% for both test species. The TIE results do not distinguish whether incomplete removal of metal toxicity or an uncharacterized source of toxicity (such as major ions; see below) was responsible for the residual toxicity. Removal of hydrophobic organic compounds was believed to be essentially complete, based on the use of a large volume of sorbent in the C18 column.

Procedures that did not reduce toxicity in the GM-25B TIE are also of interest, as they indicate classes of chemicals that were not important contributors to the observed toxicity. For example, toxicity due to particulate material was suspected in samples where a precipitate was evident; however, filtration did not reduce toxicity. Aeration also did not reduce toxicity, indicating that volatile compounds were not important contributors to toxicity.

Identification of Toxicants

Based on the TIE results, the classes of chemicals contributing to observed groundwater toxicity were identified as hydrophobic organic compounds, metals, and potentially an additional class of chemicals not affected by the TIE procedures. The analytical chemistry results for the TIE samples were examined to more specifically identify the apparent toxicants. The details of this evaluation are provided by ARCADIS Geraghty & Miller (2000). Three groups of chemicals were identified as contributors to toxicity: phenolic compounds, iron, and major ions, as described below.

Phenolic Compounds: The only hydrophobic organic compound that was consistently detected in the TIE samples was 2,4-dimethylphenol. Monomethylphenols and phenol were also detected in certain samples. Although the concentrations of these chemicals by themselves were not sufficient to cause toxicity in most of the TIE samples (Tables A-4 and A-5), phenolic compounds may have contributed to toxicity as part of a chemical mixture, together with iron and major ions.

Iron: In the TIE samples, detected metal concentrations were generally well below the MDEQ's Final Acute Values (FAVs), despite the TIE results indicating toxicity due to metals. However, the MDEQ has not developed an FAV for iron. Aquatic toxicity values for iron are available from the USEPA's AQUIRE database (Table A-6). Iron concentrations in all TIE samples except

SP-2 were within the range of LC50s reported for *Daphnia magna* and other species (Table A-4).

Major Ions: In fresh water, the major ions which constitute total dissolved solids are typically calcium, potassium, magnesium, sodium, chloride, bicarbonate, and sulfate. The standard TIE procedures implemented as part of this investigation do not directly address major ion toxicity. However, toxicity due to major ions can be predicted using the Gas Research Institute's Freshwater Salinity Toxicity Relationship (FW STR) model (Tietge et al., 1994), which was developed based on the results of toxicity tests with over 2,900 ion solutions. Validation studies have indicated that the model is somewhat over-predictive of toxicity for fathead minnows and *Daphnia magna* (Mount et al., 1997). The FW STR model predicts all of the TIE samples to be toxic to both test species due to major ions alone (Table A-7). Bicarbonate was the most important of the major ions in contributing to toxicity, based on a comparison to single-salt and double-salt toxicity test results (Mount et al., 1997) as well as model simulations. Bicarbonate may account for the residual toxicity observed following organic compound removal and EDTA addition in the TIE.

In groundwater samples that were tested for toxicity but not evaluated using TIE procedures, the relationship between toxicity and chemistry was consistent with the identification of toxicants described above. Chemistry results for the toxicity test samples are provided in the draft Remedial Investigation Report (ARCADIS Geraghty & Miller, 2001). Overall, the concentrations of phenolic compounds, major ions, and iron exhibited a strong correlation with toxicity.

Application to Menominee River Bioassessment

The results of the groundwater toxicity investigation were used to focus the Menominee River bioassessment study. The spatial extent of groundwater toxicity provided a basis for selecting study area and reference sample locations in the river. The identification of groundwater toxicants provided a basis for selecting a limited set of target analytes for sediment and porewater analyses. The chemical concentrations associated with toxicity in the groundwater toxicity tests also provide a means of evaluating concentrations occurring in sediment porewater. In the bioassessment study, all concentrations of chemicals of interest occurring in sediment porewater were well below levels associated with toxicity (see Section 3 of this report). This finding is consistent with the high quality of the benthic macroinvertebrates and fish communities observed in the Menominee River study area.

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Table A-1. Summary of Whole-Groundwater and Seep Toxicity Test Results[a]

			Groundwater Test TU_A		*D. magna*
Well/Seep	Date	Laboratory	Fathead minnow	*Daphnia magna*	Immobilization TU
GM-5	11/30/99	AScI	<1.0	3.6	NR
GM-5	8/15/00	NEB	<1.0	1.0	4.1
GM-5	9/20/00	NEB	1.5	<1.0	<1.0
GM-6	2/29/00	AScI	<1.0	1.3	NR
GM-6	2/29/00	NEB (for MDEQ)	<1.0	<1.0	NR
GM-6	7/19/00	NEB	<1.0	<1.0	2.8
GM-6	9/25/00	NEB	<1.0	<1.0	<1.0
GM-8	10/21/99	AScI	<1.0	<1.0	NR
GM-9	3/7/00	AScI	<1.0	<1.0	NR
GM-25A	12/1/99	AScI	1.6	<1.0	NR
GM-25A	8/21/00	NEB	1.2	1.2	NR
GM-25B	7/13/99	MDEQ	14	16	NR
GM-25B	8/25/99	MDEQ	9.7	8.3	NR
GM-25B	10/20/99	AScI	7.7	5.6	NR
GM-25C	8/2/00	NEB	<1.0	<1.0	<1.0
GM-26A	11/29/99	AScI	1.4	1.8	NR
GM-26A	11/29/99	MDEQ	NT	2.1	NR
GM-26A	8/16/00	NEB	1.0	1.7	2.8
GM-26B	11/30/99	AScI	<1.0	1.7	NR
GM-26B	11/30/99	MDEQ	NT	<1.0	NR
GM-26B	7/18/00	NEB	<1.0	<1.0	<1.0
GM-26C	11/30/99	AScI	2.1	1.4	NR
GM-26C	8/16/00	NEB	1.7	1.3	2.8
GM-27A	12/1/99	AScI	1.8	3.7	NR
GM-27B	7/18/00	NEB	<1.0	<1.0	<1.0
GM-27C	8/7/00	NEB	<1.0	<1.0	<1.0
GM-28A	2/29/00	AScI	<1.0	1.3	NR
GM-28A	7/19/00	NEB	<1.0	<1.0	<1.0
GM-28B	3/1/00[b]	AScI	<1.0	<1.0	NR
GM-29	2/29/00	AScI	<1.0	<1.0	NR
GM-29	2/29/00	NEB (for MDEQ)	<1.0	<1.0	NR
GM-31	10/9/00	NEB	<1.0	<1.0	<1.0
GM-64A	10/3/00	NEB	<1.0	<1.0	<1.0
GM-64B	7/24/00	NEB	<1.0	<1.0	5.6
GM-64B	10/4/00	NEB	<1.0	<1.0	<1.0
GM-66A	7/18/00	NEB	<1.0	<1.0	<1.0
GM-66B	7/19/00	NEB	<1.0	<1.0	<1.0
GM-EW3	7/24/00	NEB	10.2	5.6	11.4
SP-1	5/16/00	NEB	<1.0	<1.0	NR
KF-CA-2[c]	3/14/00	MDEQ	NT	19	NR
SP-2	6/27/00	NEB	<1.0	1.0	2.2

NT = Not tested.
NR = Not reported.
AScI = AScI Corporation.
NEB = New England Bioassay.

a Data are for toxicity tests conducted within 36-h holding time.

b Fathead minnow test initiated 3/7/00 following re-sampling.

c Seep samples KF-CA-2 and SP-2 were collected from the same location.

Table A-2. Spatial Relationship Between Groundwater Wells/Seeps and the Menominee River

Well/Seep	River Mile	Distance from river (ft)	Top of Screen Depth (ft bgs)	Top of Screen Elevation (ft) [a]
GM-6	100.51	587	165	959.07
GM-66A	100.46	62	27	1018.7
GM-66B	100.46	62	125	920.72
GM-5	100.37	495	250	872.18
GM-31	100.37	545	105	1016.73
GM-25A	100.30	100	19	1028.71
GM-25B	100.30	100	98	949.85
GM-25C	100.30	100	206	841.94
GM-EW3				
GM-26A	100.13	53	30	1017.31
GM-26B	100.13	53	101	946.17
GM-26C	100.13	53	160	887.27
Seep Area (SP-1, SP-2)	100.0	NA	NA	NA
GM-27A	99.97	135	30	1022.45
GM-27B	99.97	135	145	907.61
GM-27C	99.97	135	210	842.53
GM-64A	99.90	150	33	1021.73
GM-64B	99.90	150	117	938.13
GM-28A	99.85	637	40	1022.08
GM-28B	99.85	637	124.5	937.35
GM-9	99.60	60	164	889.04
GM-29	99.59	60	55	998.15
GM-8	98.80	92	79	964.64

[a]For comparison, the elevation of the Menominee River bed ranges from 1016 to 1036 ft.

Table A-3. TIE Procedures that Removed Toxicity from Groundwater or Seep Samples[a]

	GM-5 11/30/99	GM-25A 12/1/99	GM-25B 10/20/99	GM-26A 11/29/99	GM26C 11/30/99	GM-27A 12/1/99	SP-2[b] 6/27/00
Daphnia magna							
C18 column					X		
EDTA							X
C18 + EDTA	X	X	X	X		X	
Residual toxicity	X	X	X	X	X	X	
Fathead minnow							
C18 column			X				
EDTA							
C18 + EDTA	X	X		X	X	X	
Residual toxicity	X	X		X	X	X	

a. Removal of toxicity by sample passage through a C18 column indicates toxicity due to hydrophobic organic compounds. Removal of toxicity by EDTA addition indicates metal toxicity. Residual toxicity indicates either toxicity due to other factors (e.g., major ions) or incomplete removal of metal toxicity. Incomplete removal of organic toxicity was unlikely based on use of a large volume of sorbent.

b. Seep sample SP-2 was not toxic to fathead minnows and was only marginally toxic to *Daphnia magna* (TIE results interpreted based on behavioral endpoints due to high survival).

Table A-4. Concentrations of Phenolic Compounds and Iron in TIE Samples[a]

	GM-5	GM-25A	GM-25B	GM-26A	GM-26C	GM-27A	SP-2
2,4-Dimethylphenol	900	900	3,900	850	2200	890	590
2-Methylphenol	<20	<20	4,800	<20	<50	<20	<5
3-Methylphenol/4-Methylphenol	<20	<20	13,000	350	<50	<20	<5
Phenol	<20	<20	8,000	<20	<50	<20	<5
Iron	11,000	28,000	120,000	24,000	8,100	36,000	260

a Units are µg/L.

Table A-5. Aquatic Toxicity Values for Phenolic Compounds[a]

Chemical	Species Mean Acute Value		Final Acute Value
	Fathead Minnow	*Daphnia magna*	
2,4-Dimethylphenol	17,000	4,800	2,700
2-Methylphenol	14,000	12,000	1,500
4-Methylphenol	16,500	15,000	570
Phenol	29,500	12,600	3,200

a Values are as listed in MDEQ's Rule 57 Aquatic Values Data Sheets. Species Mean Acute Values represent the geometric mean of LC50s for each species.

Table A-6. Acute Toxicity of Iron to Aquatic Species[a]

Latin name	Common name	Duration (days)	LC50 or EC50[b] (µg/L)	Reference
Asellus aquaticus	Aquatic sowbug	4.00	124,000	Martin and Holdich, 1986
Austropotamobius pallipes pallipes	Crayfish	4.00	18,500	Boutet and Chaisemartin, 1973
Crangonyx pseudogracilis	Amphipod	4.00	120,000	Martin and Holdich, 1986
Daphnia magna	Water flea	2.00	9,600	Biesinger and Christensen, 1972
Daphnia magna	Water flea	2.00	76,000	Cabejszek and Stasiak, 1960
Daphnia magna	Water flea	2.00	8,600	Belabed et al., 1994
Daphnia magna	Water flea	2.00	12,000	Belabed et al., 1994
Daphnia magna	Water flea	2.00	6,400	Belabed et al., 1994
Daphnia magna	Water flea	2.00	13,000	Belabed et al., 1994
Daphnia pulex	Water flea	2.00	9,000	Lee, 1976
Daphnia pulex	Water flea	2.00	2,800	Lee, 1976
Diaptomus forbesi	Calanoid copepod	2.00	86,500	Mullick and Konar, 1991
Gambusia affinis	Western mosquitofish	4.00	26,000	Wallen et al., 1957
Ictalurus punctatus	Channel catfish	4.00	>500,000	Clemens and Sneed, 1959
Morone saxatilis	Striped bass	4.00	4,000	Hughes, 1973
Morone saxatilis	Striped bass	4.00	6,000	Hughes, 1973
Orconectes limosus	Crayfish	4.00	32,000	Boutet and Chaisemartin, 1973
Tubifex tubifex	Tubificid worm	4.00	101,840	Khangarot, 1991

a Data obtained from U.S. EPA's AQUIRE database.

b Concentration associated with 50% mortality (LC50) or 50% mortality + immobilization (EC50).

Table A-7. Major Ion Toxicity in TIE Samples Predicted by the Freshwater Salinity Toxicity Relationship Model

Sample	GM-5	GM-25A	GM-25B	GM-26A	GM-26C	GM-27A	SP-2
Calcium (mg/L)	110	170	740	160	130	210	160
Magnesium (mg/L)	170	230	570	160	160	180	130
Potassium (mg/L)	6.2	6.3	15	4.4	6.8	5.1	4.6
Sodium (mg/L)	34	24	57	20	46	18	13
Chloride (mg/L)[a]	17	11	36	19	19	16	12
Alkalinity (mg/L as $CaCO_3$)[b]	1040	1520	2292	1010	1050	1370	890
Bicarbonate (mg/L)[c]	1268	1853	2794	1231	1280	1670	1085
Sulfate (mg/L)[a]	9	29	17	10	<5	5.2	<5
Charge balance	-1.57%	-8.11%	+59.05%[d]	+1.91%	+1.11%	-6.40%	+6.34%
Predicted LC50, Fathead minnow	76%	52%	33%	78%	75%	58%	89%
Predicted LC50, *Daphnia magna*	81%	56%	34%	84%	81%	64%	96%
Predicted TU_A, Fathead minnow	1.3	1.9	3.0	1.3	1.3	1.7	1.1
Predicted TU_A, Daphnia magna	1.2	1.8	2.9	1.2	1.2	1.6	1

a Measured for TIE sample SP-2 only; for other samples, estimated as the average of concentrations previously reported for the same well boring.

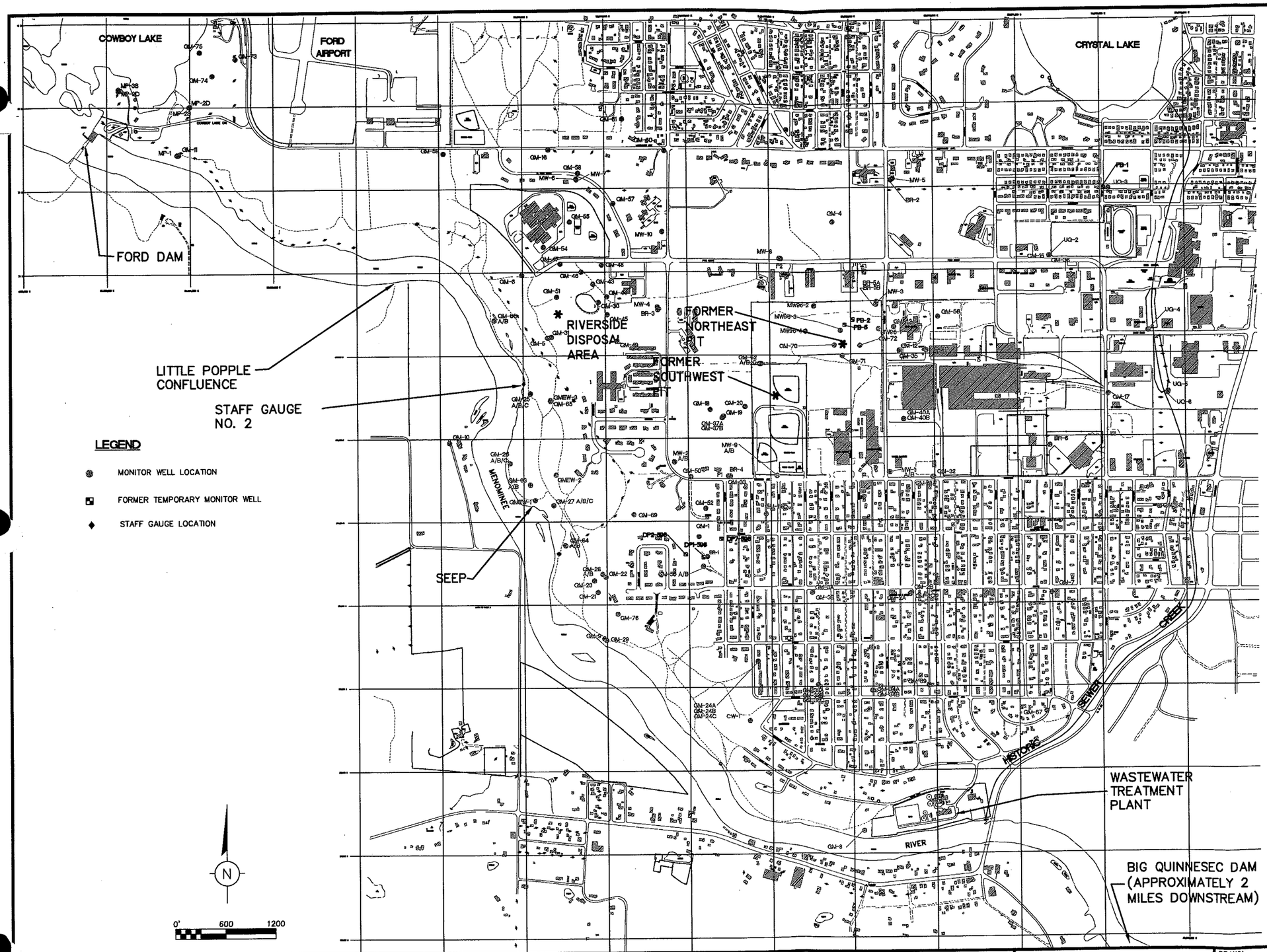
b Average of initial and renewal sample results reported by the toxicity testing laboratory.

c Bicarbonate concentration (mg/L as HCO_3) calculated by STR model from alkalinity (mg/L as $CaCO_3$).

d Remainder of charge balance attributable to acetate ions (acetic acid), hydrogen ions, and iron.

Table 3-20. Equations Relating Fish Community Metrics and Water Depth

y	x	equation	r^2
Number of Fish	Depth	y = 19.3x + 4.70	71%
Number of Species	Depth	y = -0.95x + 14.80	81%
Diversity	Depth	y = -0.11x + 2.15	66%
Average Biomass	Depth	y = -49.9x + 350	74%



LEGEND

- MONITOR WELL LOCATION
- FORMER TEMPORARY MONITOR WELL
- STAFF GAUGE LOCATION

NOTES

1. HORIZONTAL DATUM BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM.
   DATE OF PHOTOGRAPHY: 05/04/97
   ABRAMS AERIAL SURVEY CORPORATION # 26994.2
2. ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

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NO.	DATE	REVISION DESCRIPTION	BY / CKD

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Tampa, Florida 33618
Tel: 813/961-1921 Fax: 813/961-2599

RIVER BIOASSESSMENT

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

DRAWN	DATE
BJH	7/14/2000

SITE LOCATION MAP

PROJECT MANAGER	DEPARTMENT MANAGER
EC	BE
LEAD DESIGN PROF.	CHECKED
PF	PF
PROJECT NUMBER	FIGURE
WI00804.0001	2-1

COWBOY LAKE

FORD AIRPORT

CRYSTAL LAKE

EXTENT OF SURVEY

* RIVERSIDE DISPOSAL AREA

FORMER NORTHEAST* PIT

FORMER SOUTHWEST* PIT

FORMER PLANT SITE *

MENOMINEE RIVER

HISTORIC SEWER CREEK

NOTES

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   DATE OF PHOTOGRAPHY: 05/04/97
   ABRAMS AERIAL SURVEY CORPORATION # 26994.2
2. ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

LEGEND

DEPTH SCALE (Feet)

0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15

NOTE
1 BATHYMETRY DATA WAS OBTAINED FROM 'SUPERIOR SPECIAL SERVICES, INC.

2 DEPTHS ARE REFERENCED TO THE 1' MARK ON STAFF GAUGE #2

N

0' 600 1200

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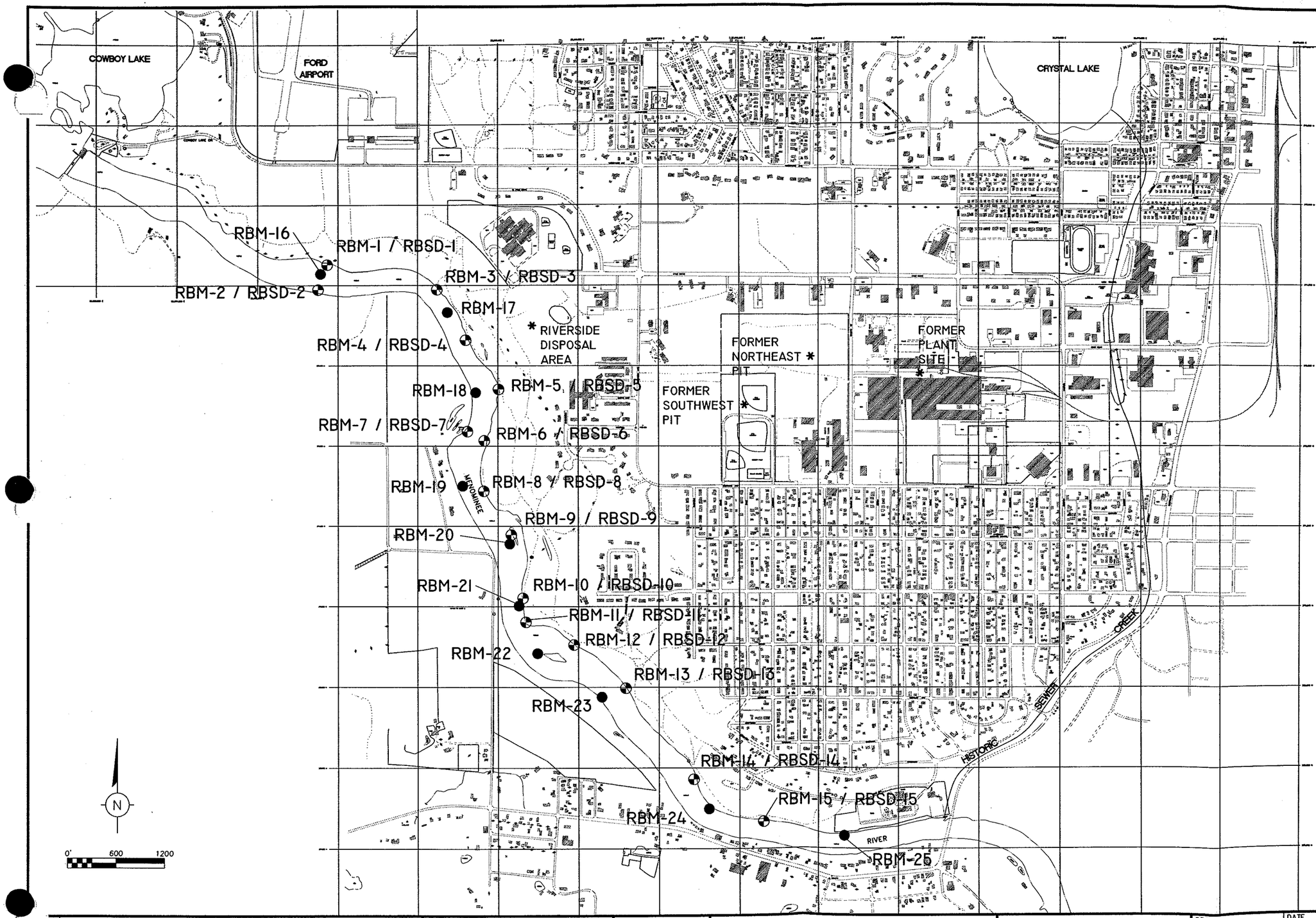
RIVER BIOASSESSMENT

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
BJH	12/27/00	EC	BE
		LEAD DESIGN PROF. PF	CHECKED PF
		PROJECT NUMBER W100804.0001	FIGURE 2-2

MENOMINEE RIVER BATHYMETRY



NOTES

1. HORIZONTAL DATUM BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM.
   DATE OF PHOTOGRAPHY: 05/04/97
   ABRAMS AERIAL SURVEY CORPORATION # 26994.2
2. ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

LEGEND

- NON-WADEABLE MACROINVERTEBRATE SAMPLE LOCATION
- WADEABLE MACROINVERTEBRATE AND SEDIMENT SAMPLE LOCATION

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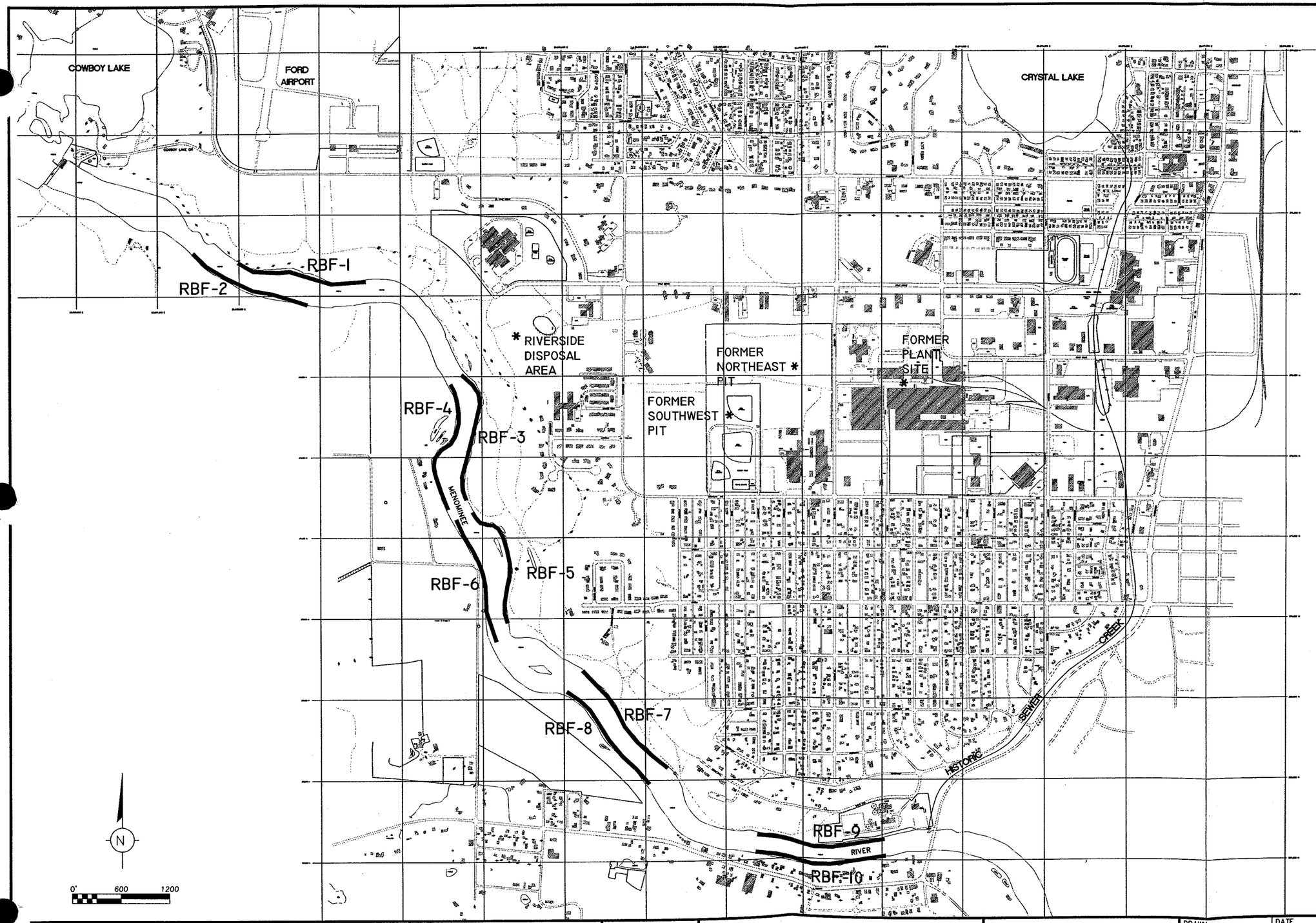
FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

DRAWN	DATE
BJH	7/14/2000

SURVEY LOCATED MENOMINEE RIVER BENTHIC MACROINVERTEBRATE AND SEDIMENT SAMPLE LOCATIONS

PROJECT MANAGER	DEPARTMENT MANAGER
EC	BE
LEAD DESIGN PROF.	CHECKED
PF	PF
PROJECT NUMBER	FIGURE
WI00804.0001	2-3



NOTES

1. HORIZONTAL DATUM BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM.
   DATE OF PHOTOGRAPHY: 05/04/97
   ABRAMS AERIAL SURVEY CORPORATION # 26994.2
2. ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

LEGEND

RBF-1 FISH SURVEY SAMPLE ZONE

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RIVER
BIOASSESSMENT

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

DRAWN	DATE
BJH	7/14/2000

SURVEY LOCATED
MENOMINEE RIVER FISH
SAMPLE LOCATIONS

PROJECT MANAGER	DEPARTMENT MANAGER
EC	BE
LEAD DESIGN PROF.	CHECKED
PF	PF
PROJECT NUMBER	FIGURE
WI00804.0001	2-4

Figure 3-1
Subsurface Temperature Gradients at Menominee River Sample Locations

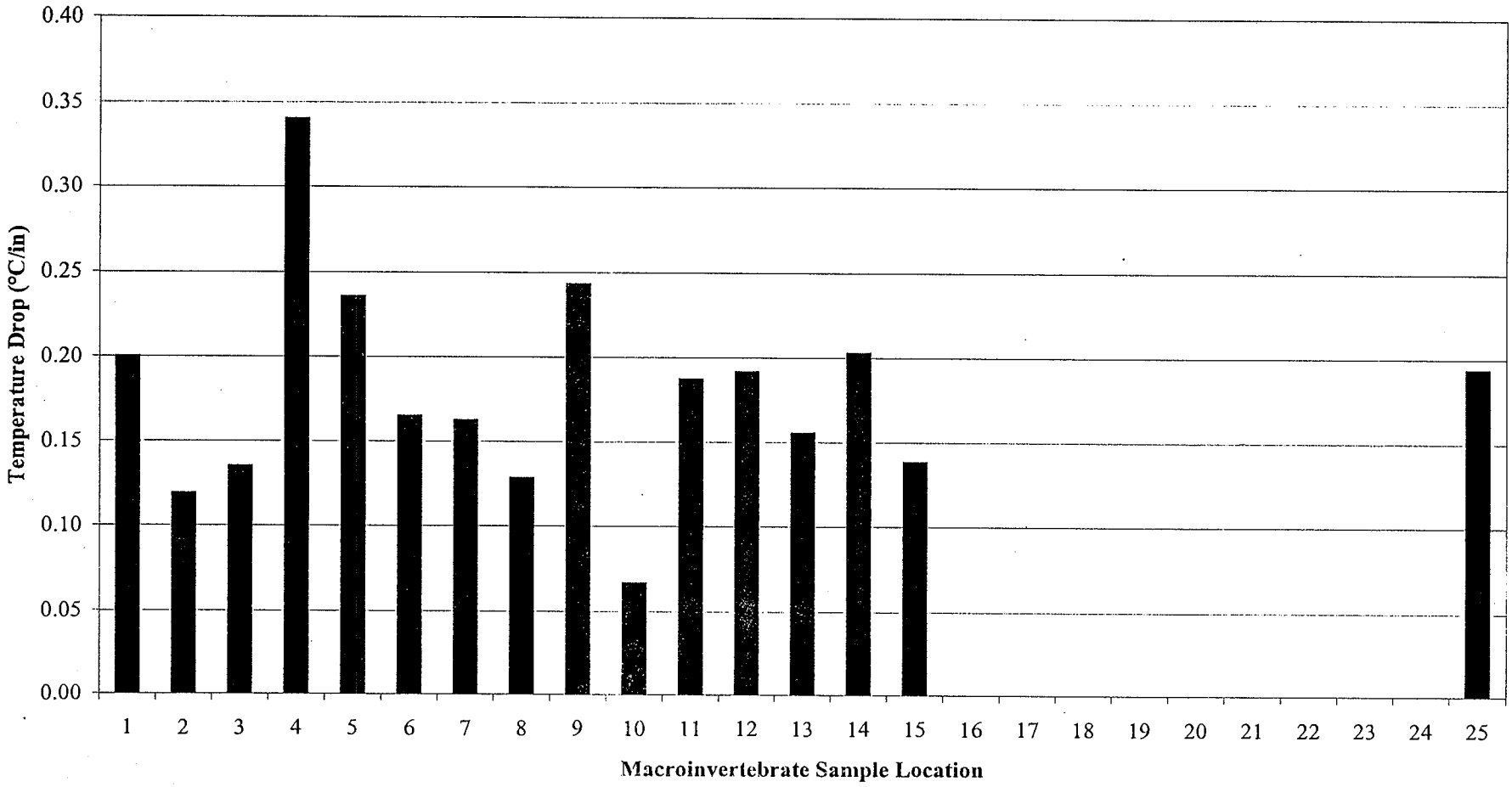

FIGURE 3-2

MANGANESE CONCENTRATIONS IN SEDIMENT POREWATER FROM WADEABLE MACROINVERTEBRATE SAMPLING LOCATIONS

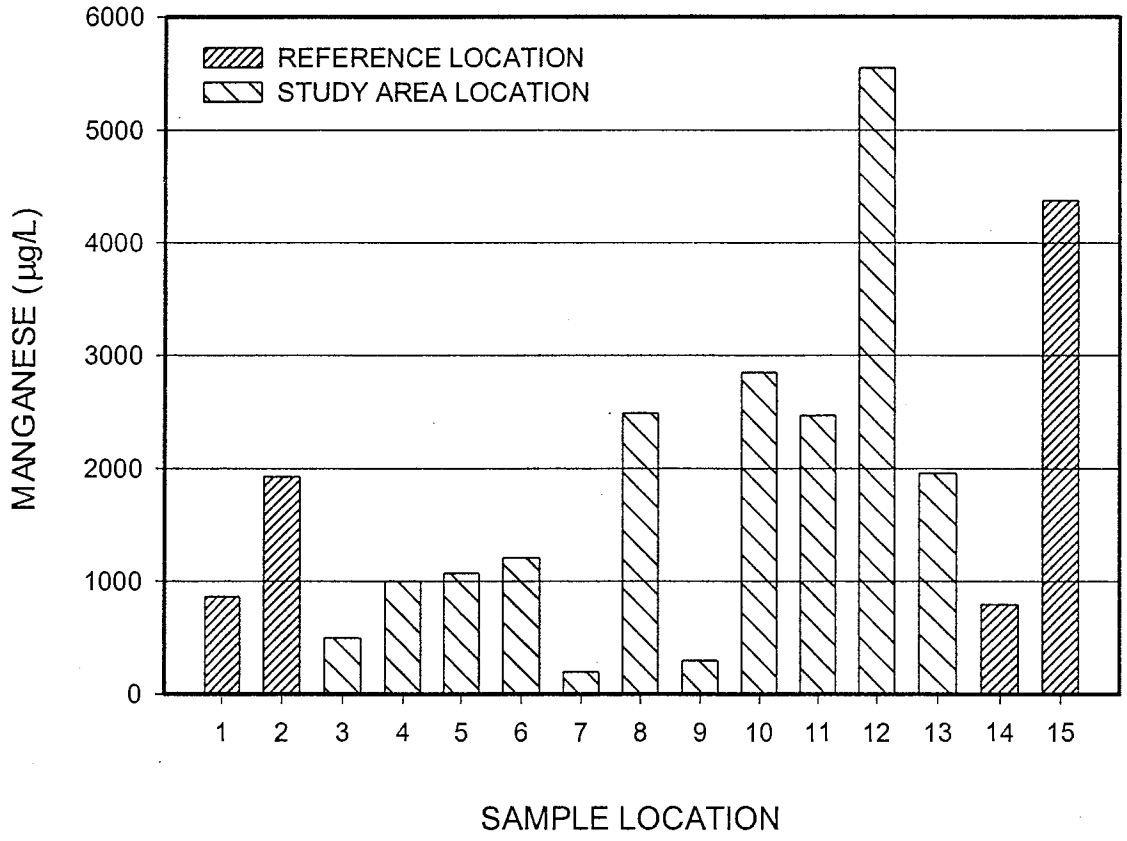

FIGURE 3-3

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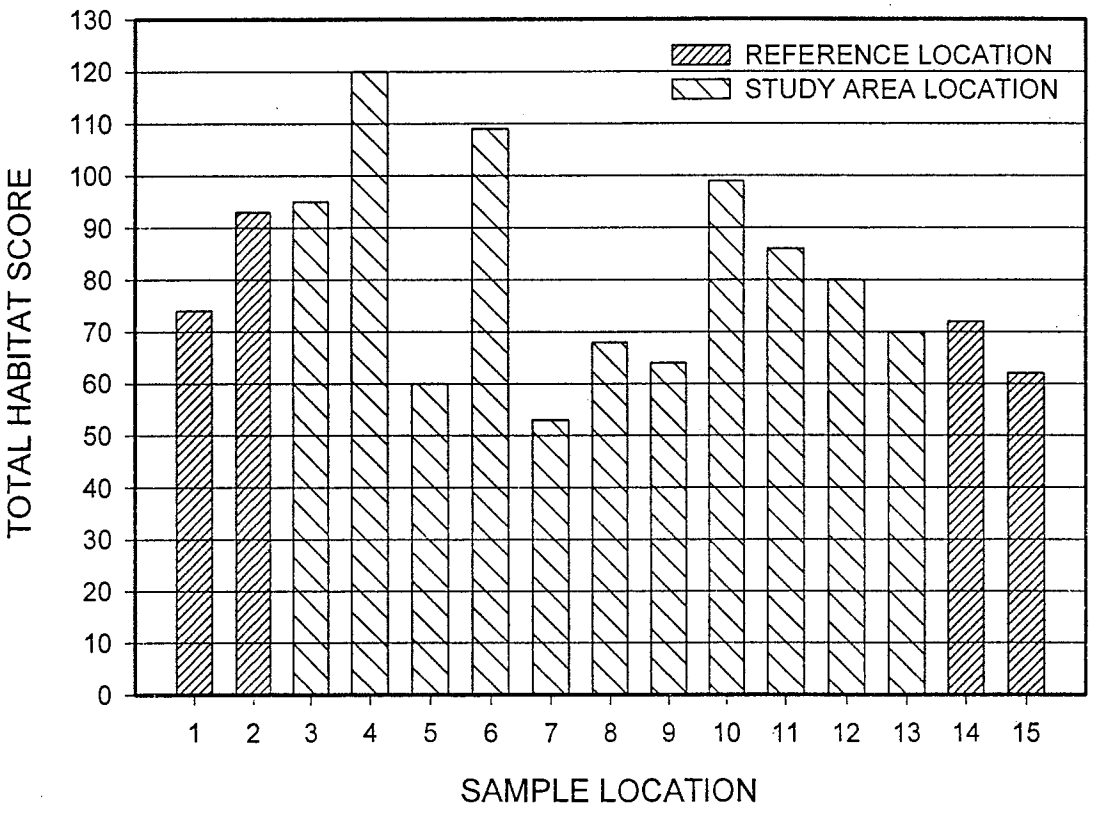
TOTAL HABITAT AND EMBEDDEDNESS SCORES FOR WADEABLE MACROINVERTEBRATE SAMPLING LOCATION



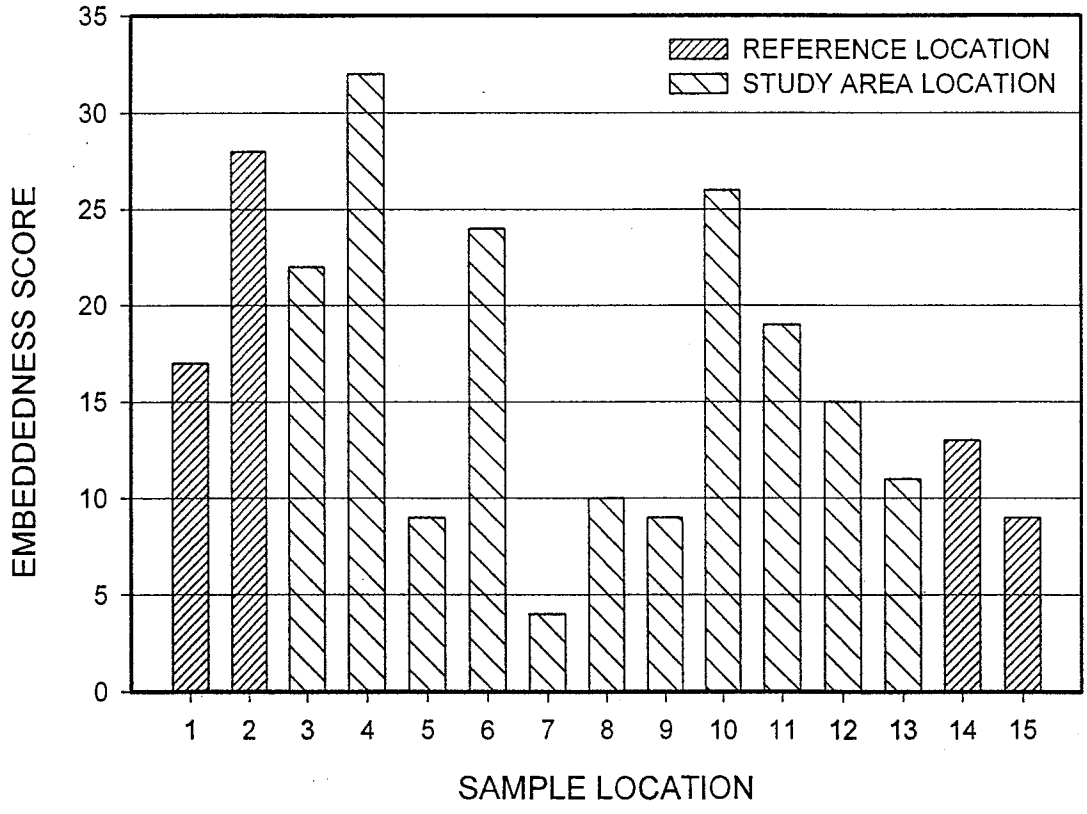


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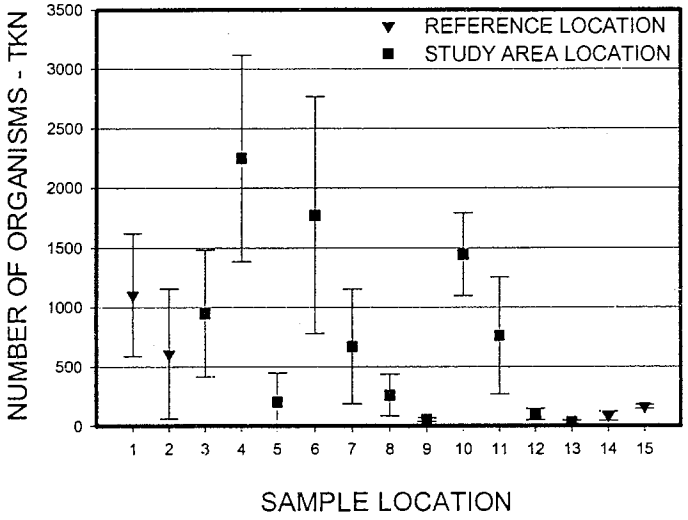
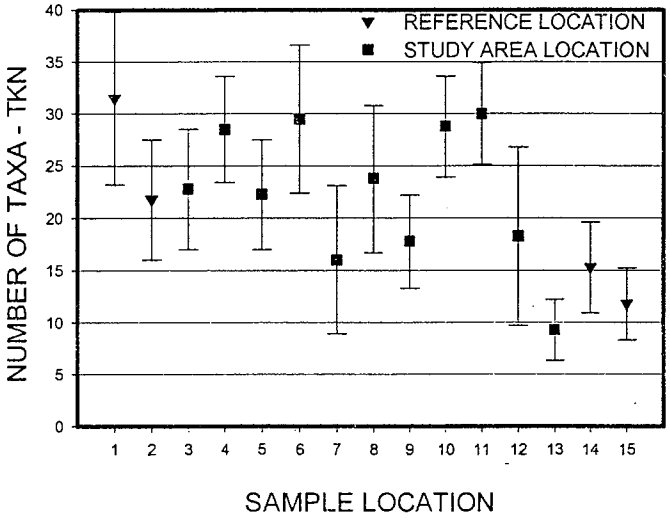
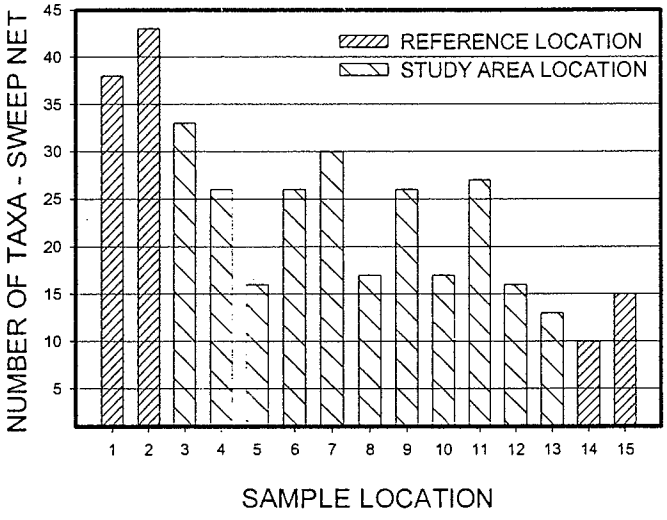
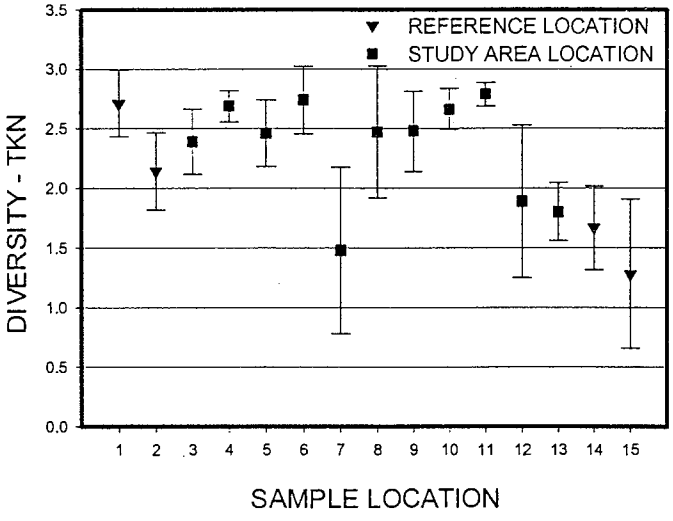
FIGURE 3-4

MACROINVERTEBRATE ABUNDANCE, TAXA RICHNESS, AND DIVERSITY AT WADEABLE SAMPLING LOCATIONS







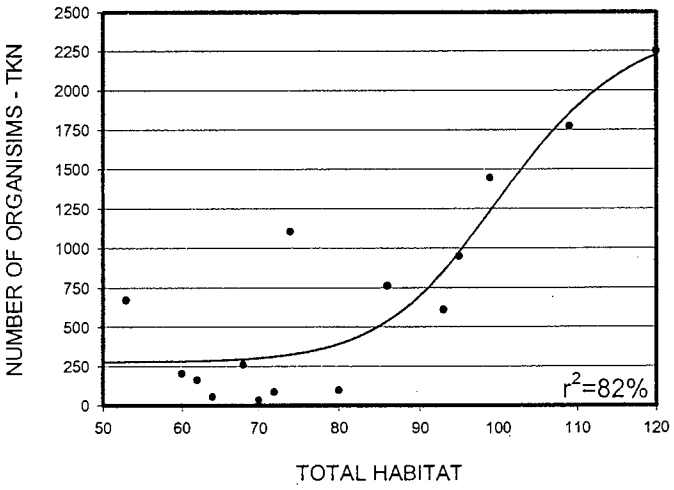


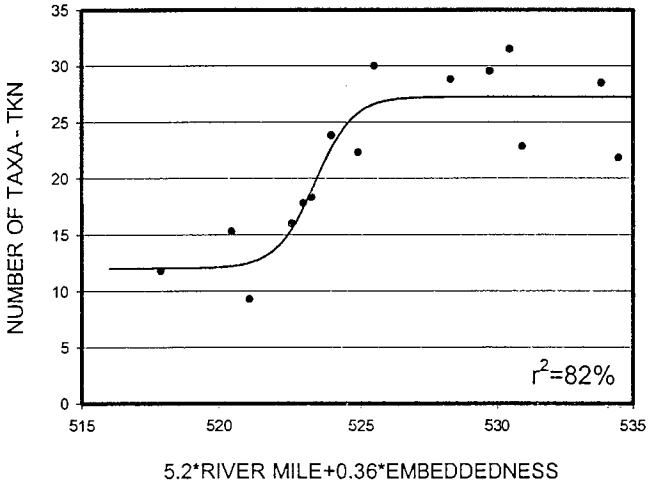
NOTE: ERROR BARS CORRESPOND TO 95% CONFIDENCE INTERVALS

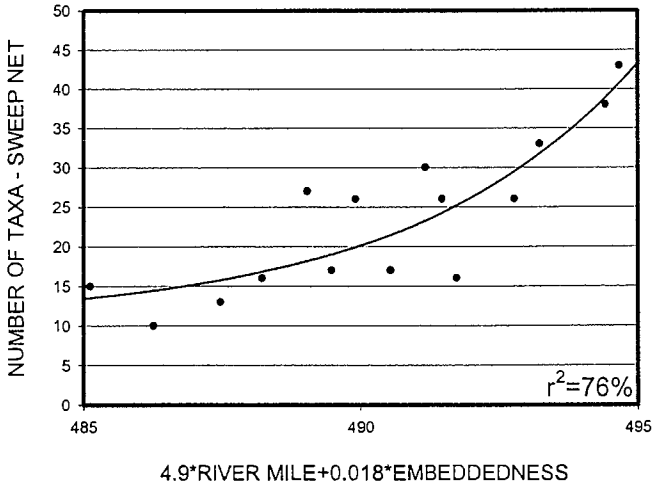
ARCADIS GERAGHTY & MILLER

FIGURE 3-5

RELATIONSHIP BETWEEN PHYSICAL HABITAT FACTORS AND MACROINVERTEBRATE ABUNDANCE, TAXA RICHNESS, AND DIVERSITY AT WADEABLE SAMPLING LOCATIONS







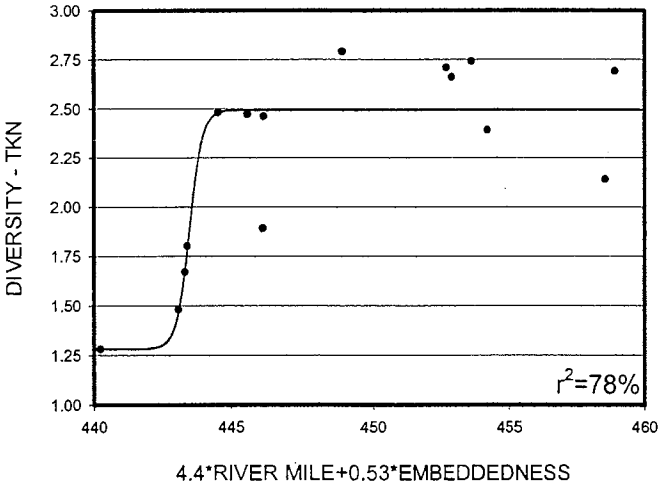


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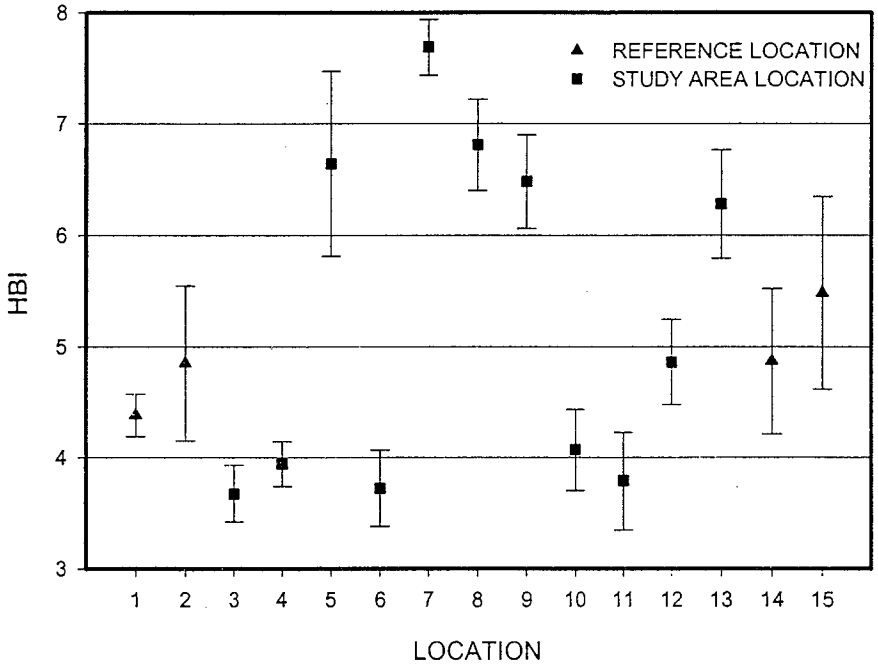
FIGURE 3-6

HILSENHOFF BIOTIC INDEX (HBI) SCORES FOR MACROINVERTEBRATES COLLECTED USING THE TRAVELING KICKNET METHOD: SUMMARY AND RELATIONSHIP TO EMBEDDEDNESS SCORES



NOTE: ERROR BARS CORRESPOND TO 95% CONFIDENCE INTERVALS

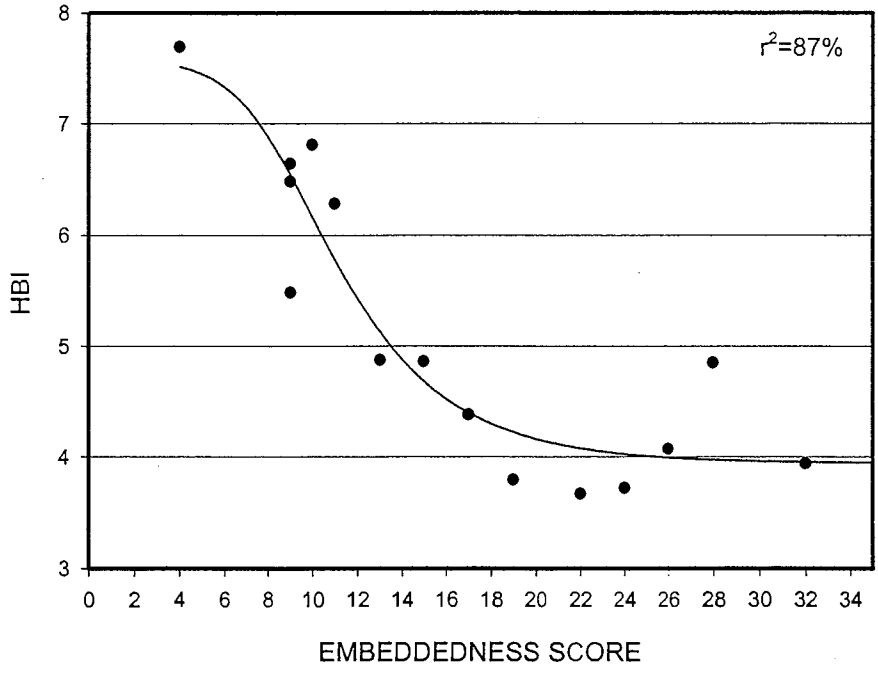


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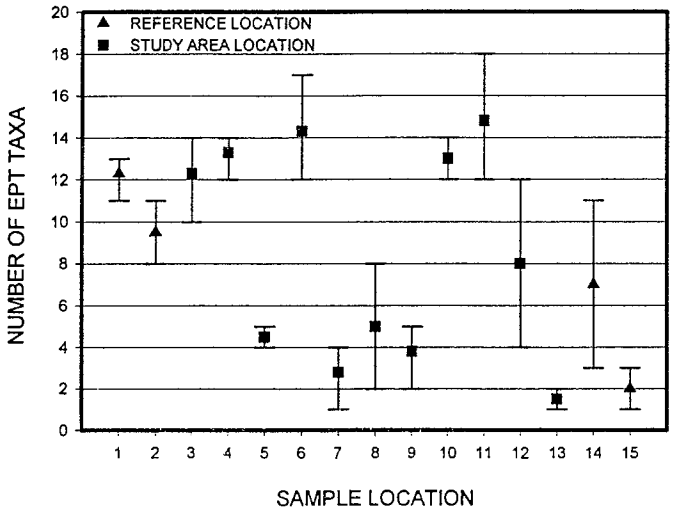
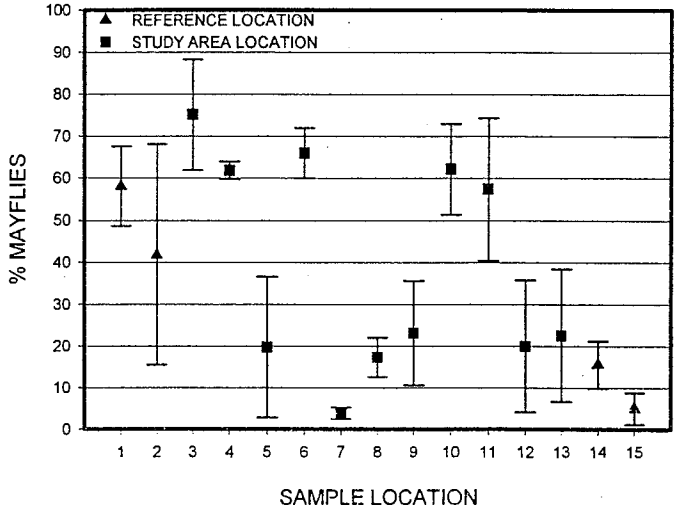
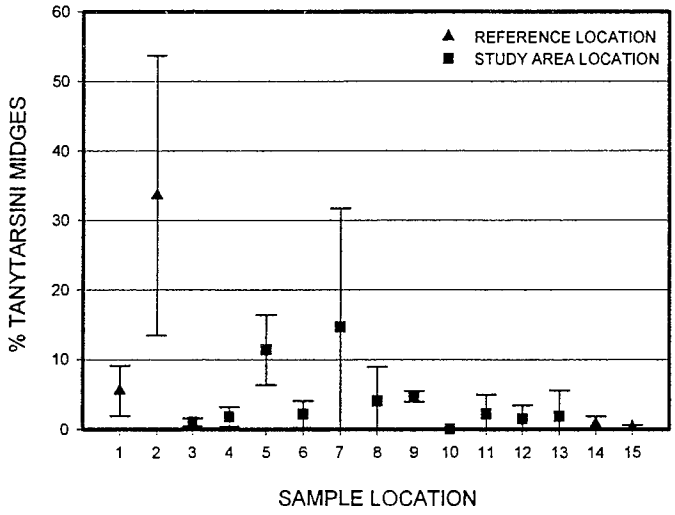
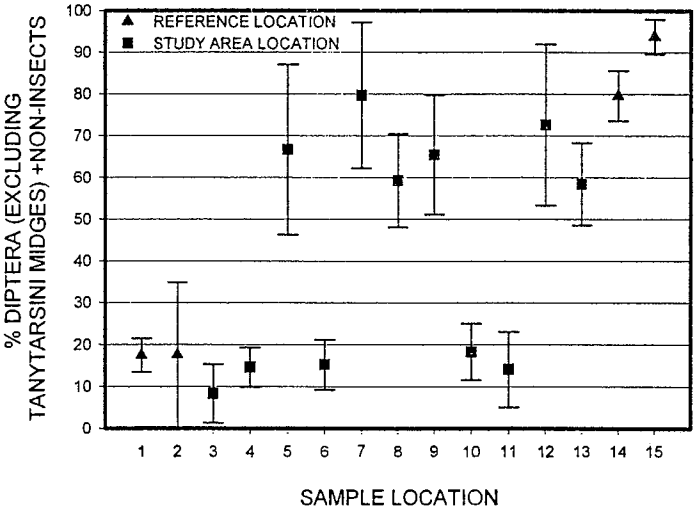
FIGURE 3-7

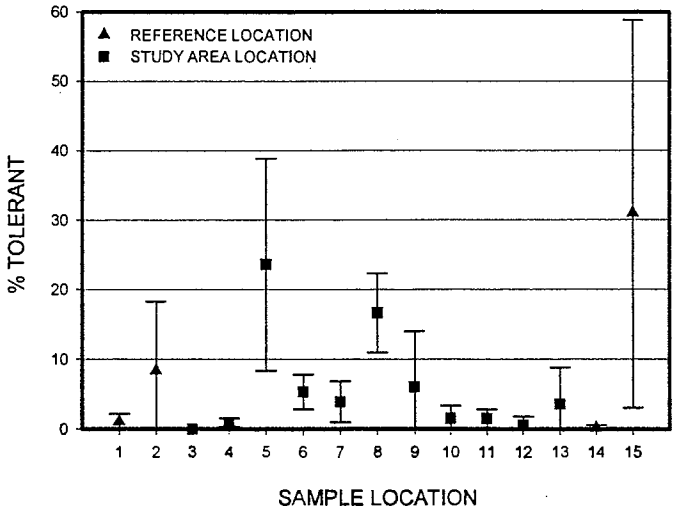
BIOLOGICAL RESPONSE SIGNATURE METRICS FOR MACROINVERTEBRATE COLLECTED USING THE TRAVELING KICKNET METHOD











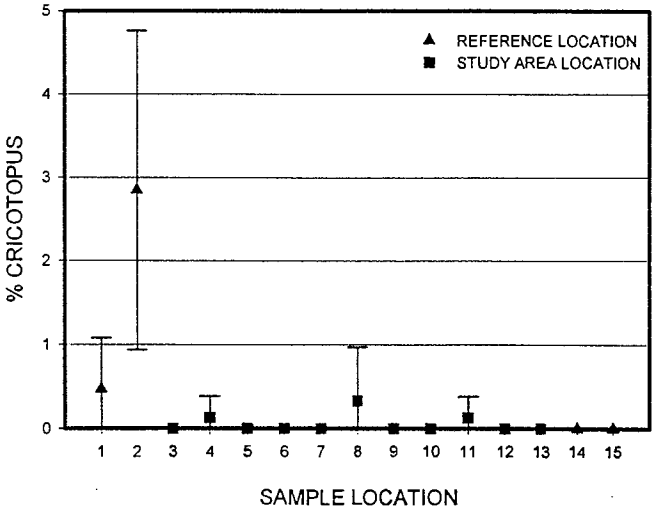


FIGURE 3-8

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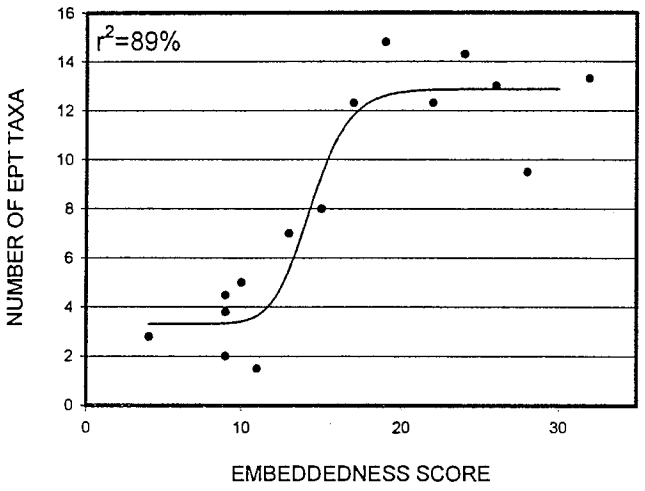
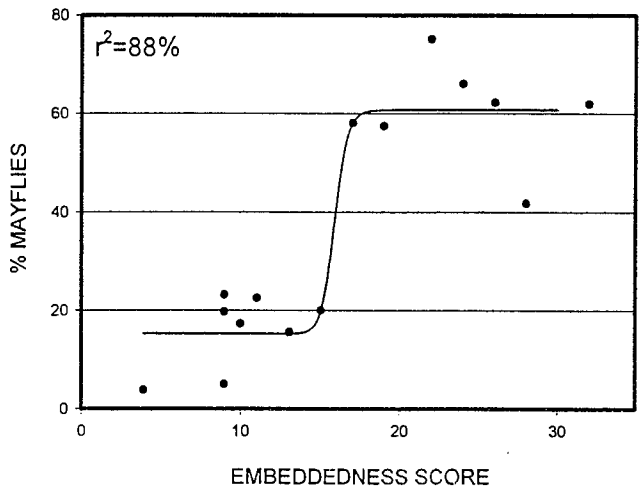
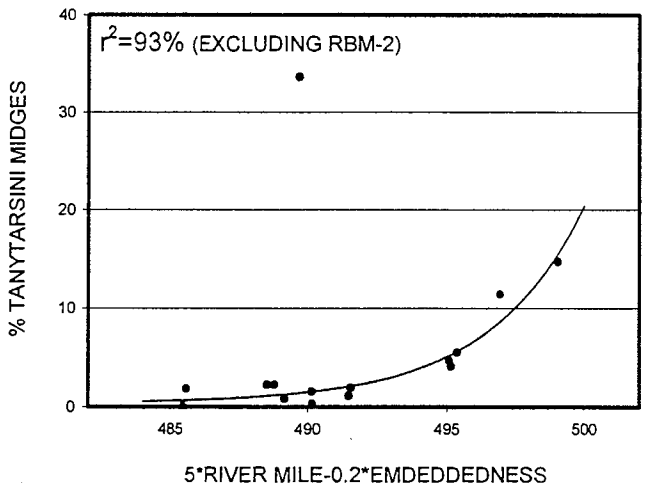
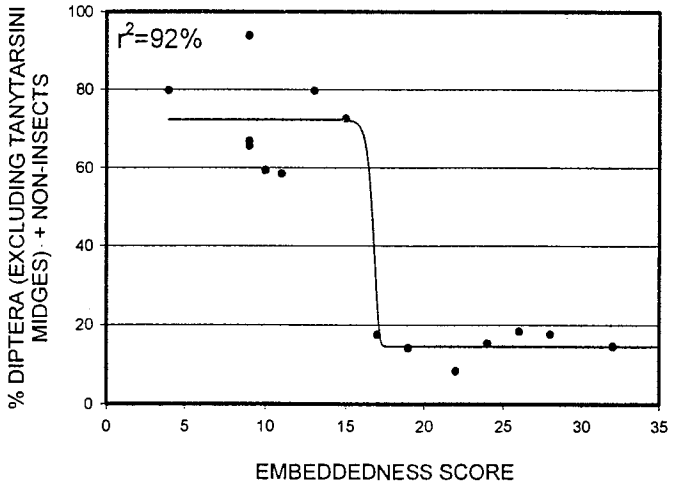
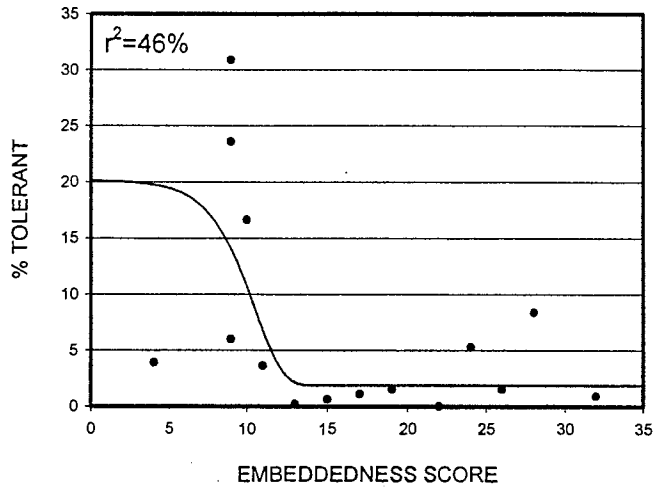
RELATIONSHIP BETWEEN PHYSICAL HABITAT FACTORS AND BIOLOGICA RESPONSE SIGNATURE METRICS FOR MACROINVERTEBRATES COLLECTED USING THE TRAVELING KICKNET METHOD











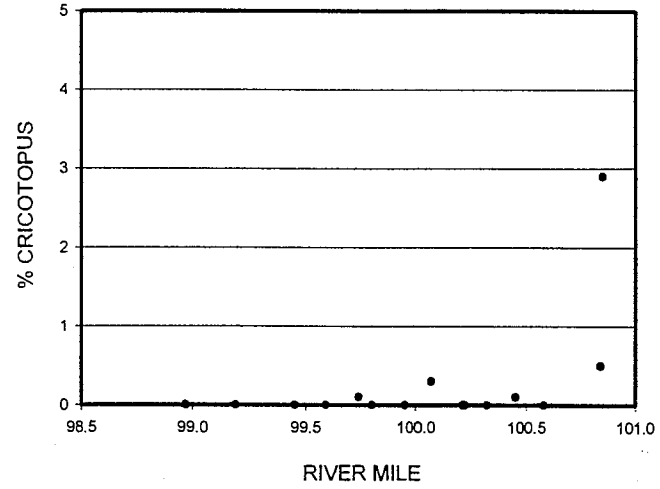


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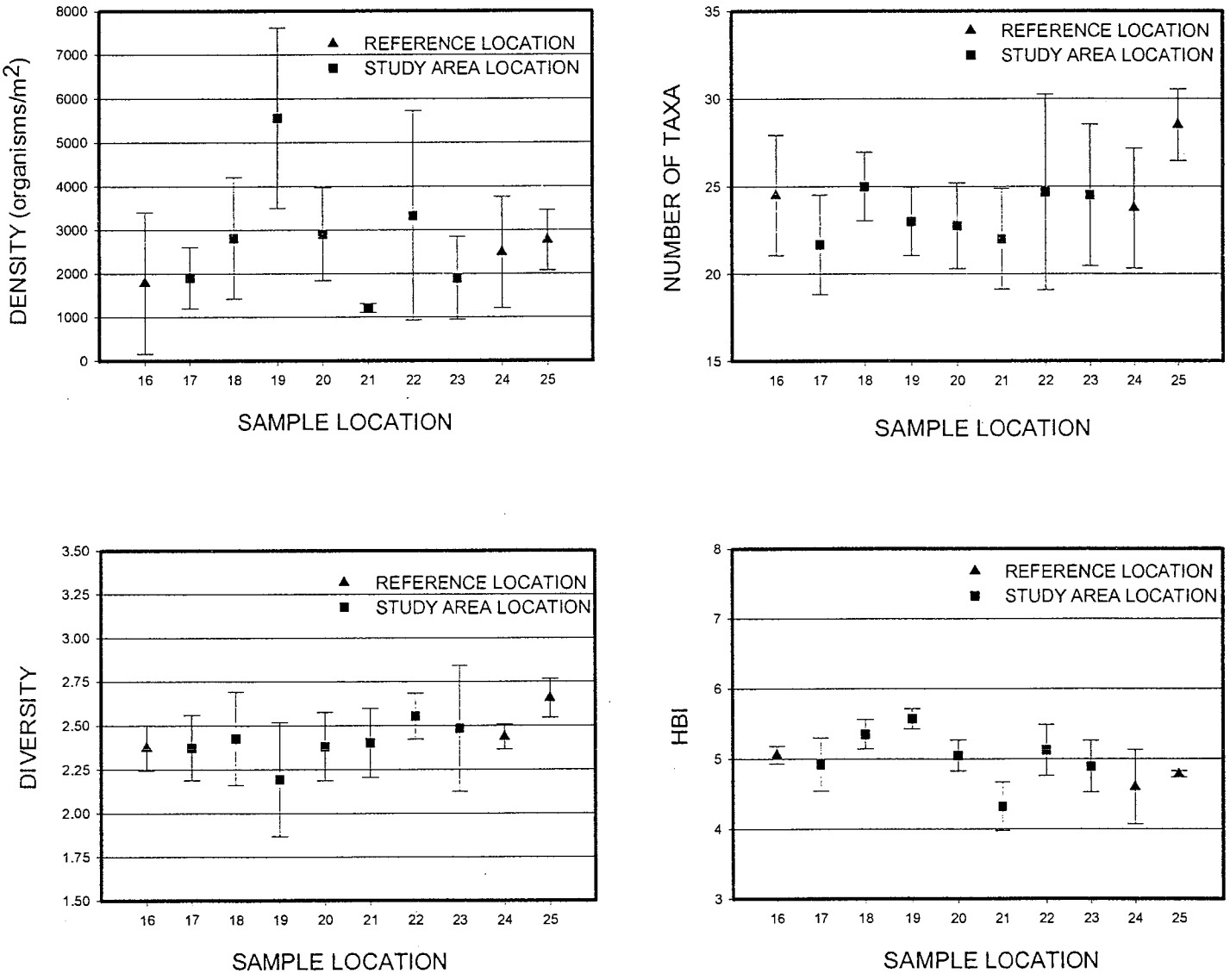
FIGURE 3-9

MACROINVERTEBRATE DENSITY, TAXA RICHNESS, DIVERSITY, AND HILSENHOFF BIOTIC INDEX (HBI) SCORES FOR NON-WADEABLE (HESTER-DENDY) SAMPLING LOCATIONS



NOTE: ERROR BARS CORRESPOND TO 95% CONFIDENCE INTERVALS

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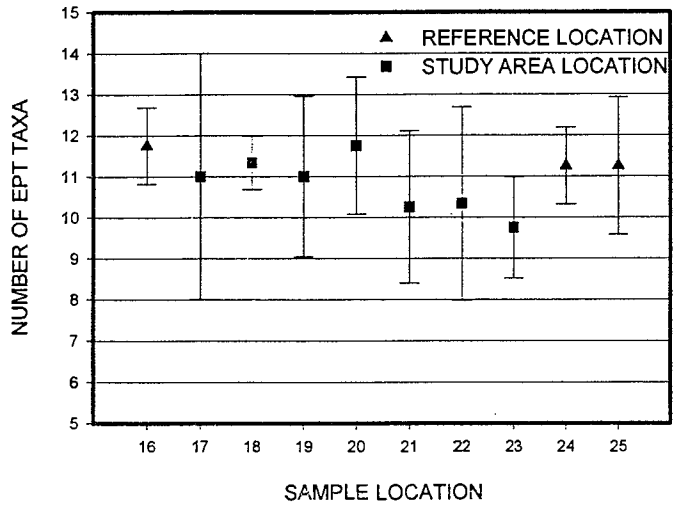
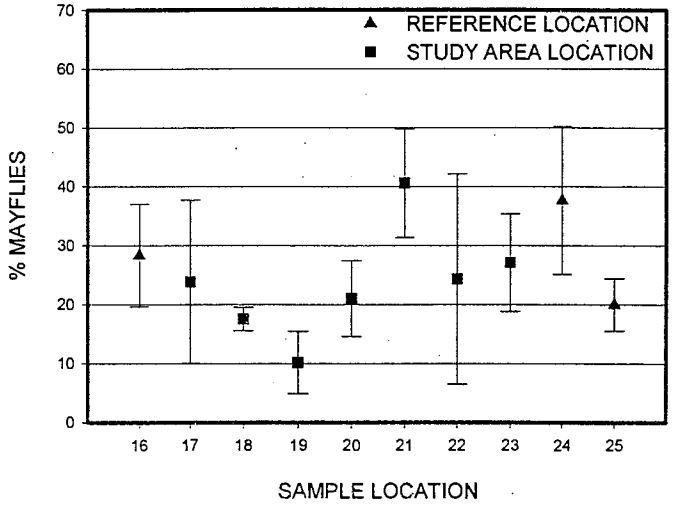
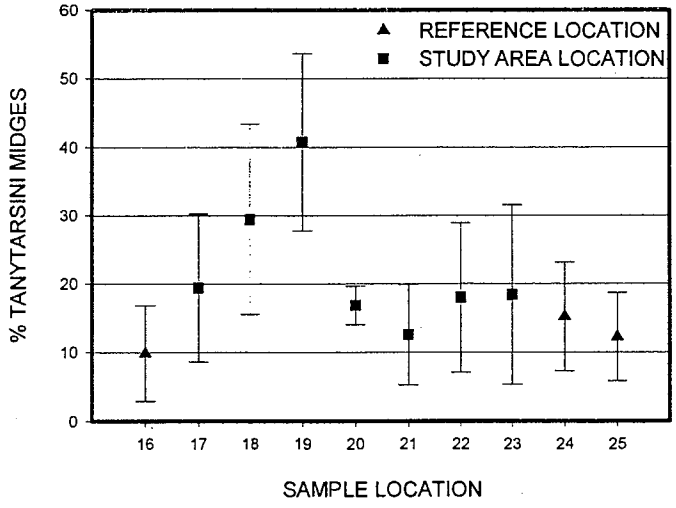
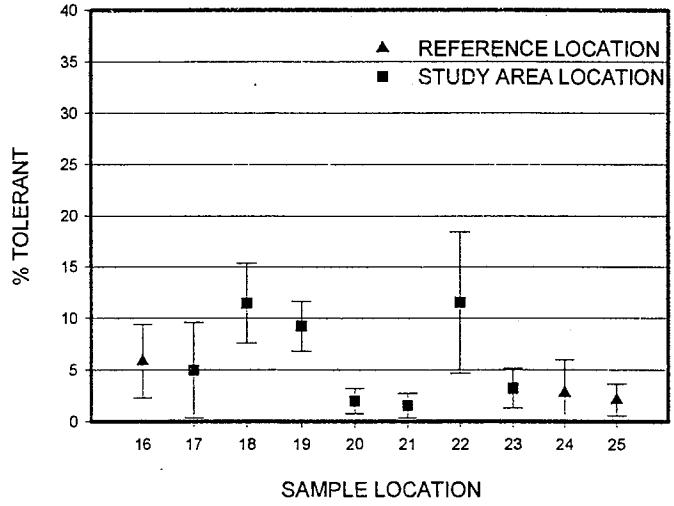
FIGURE 3-10

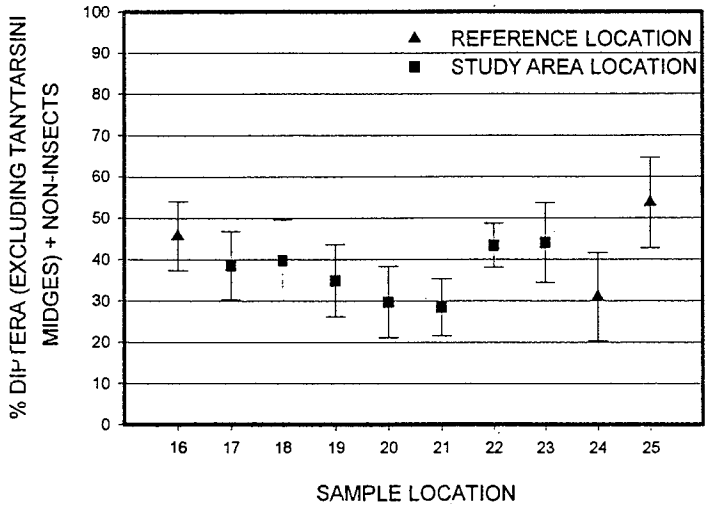
MACROINVERTEBRATE BIOLOGICAL RESPONSE SIGNATURE METRICS FOR NON-WADEABLE (HESTER-DENDY) SAMPLING LOCATIONS

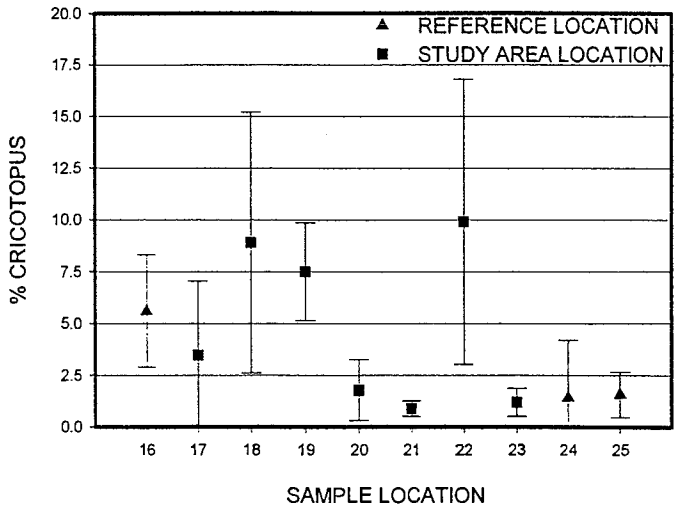










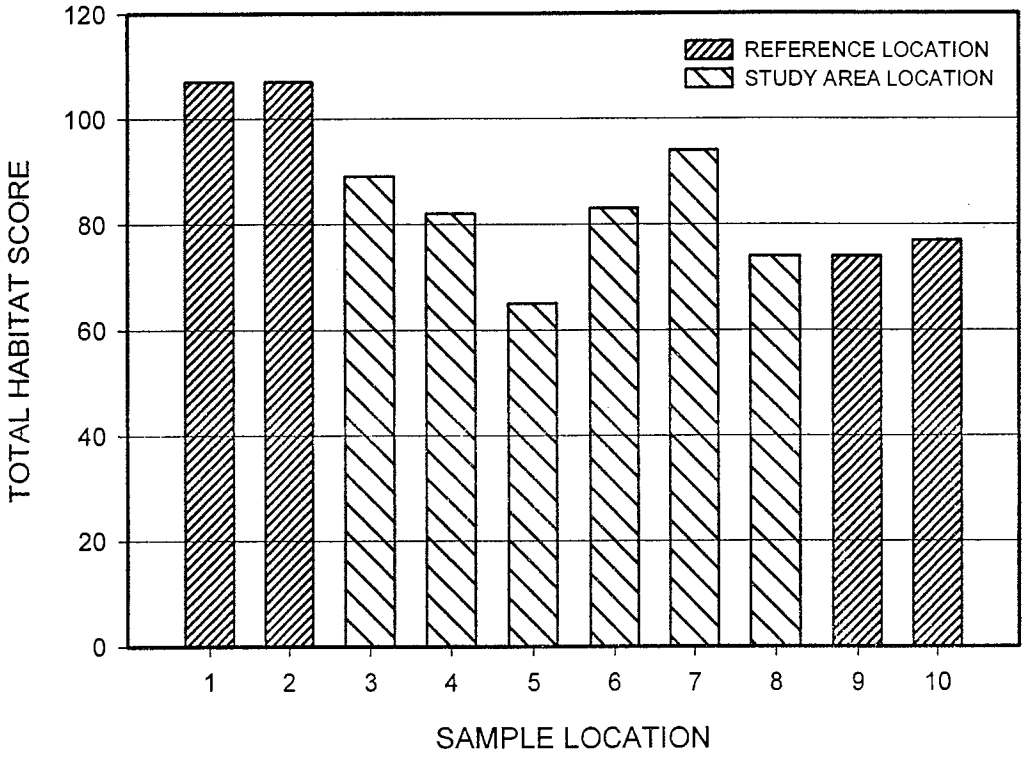


NOTE: ERROR BARS CORRESPOND TO 95% CONFIDENCE INTERVALS

ARCADIS GERAGHTY & MILLER

FIGURE 3-11

TOTAL HABITAT SCORES AND AVERAGE WATER DEPTH FOR FISH SAMPLING ZONES



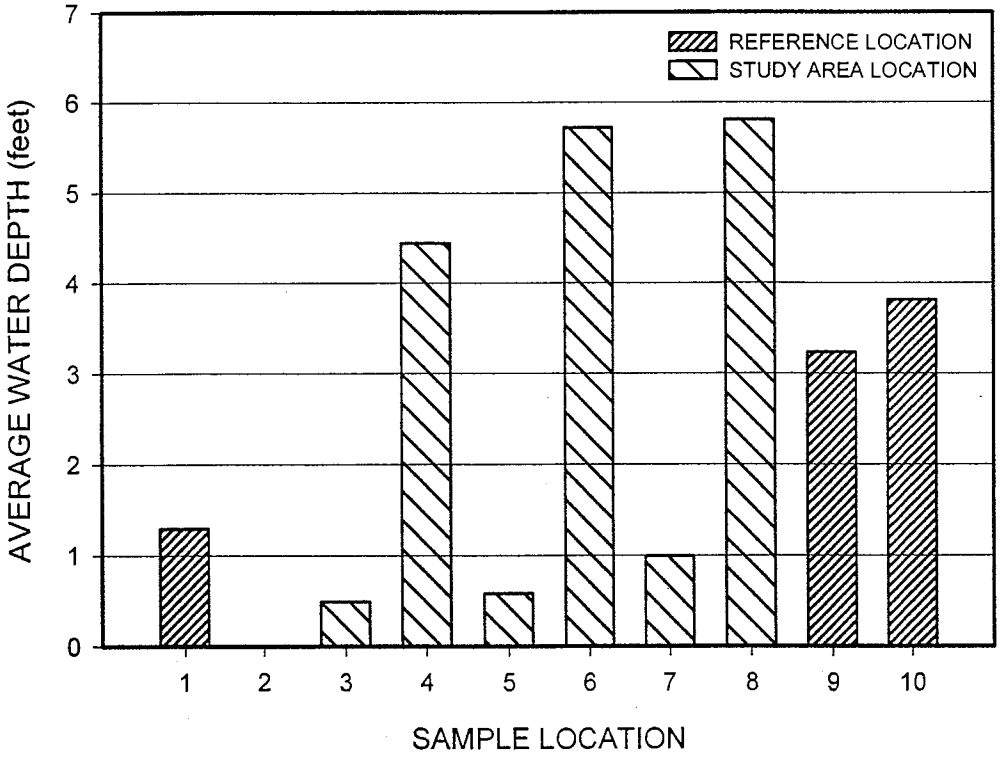


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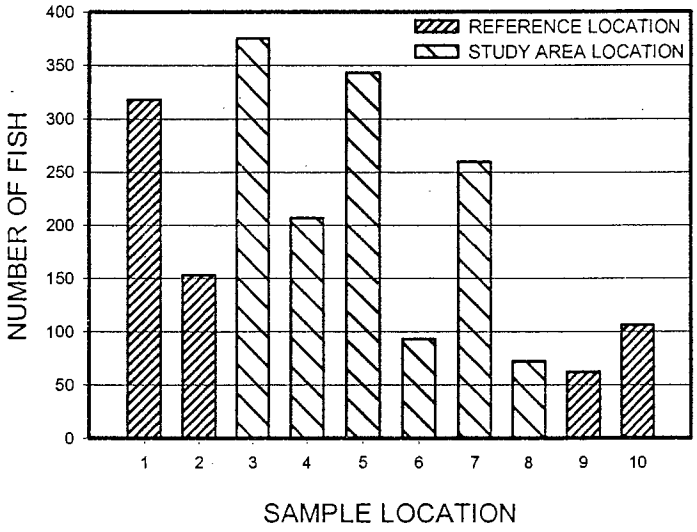
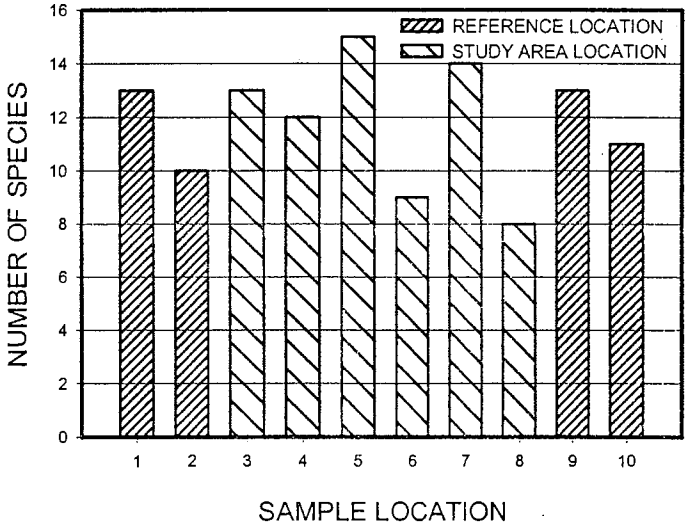
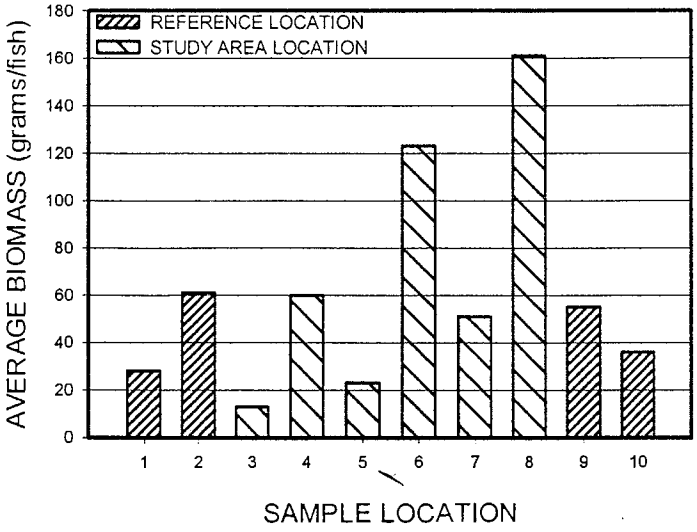
FIGURE 3-12

FISH ABUNDANCE, SPECIES RICHNESS, DIVERSITY, AND AVERAGE BIOMASS







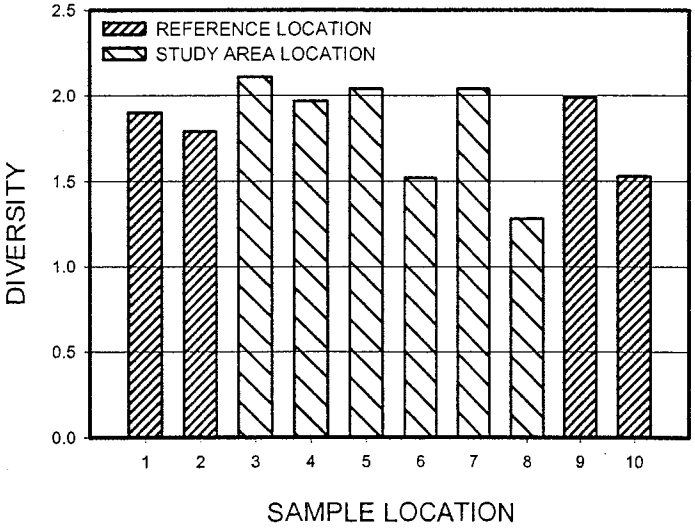


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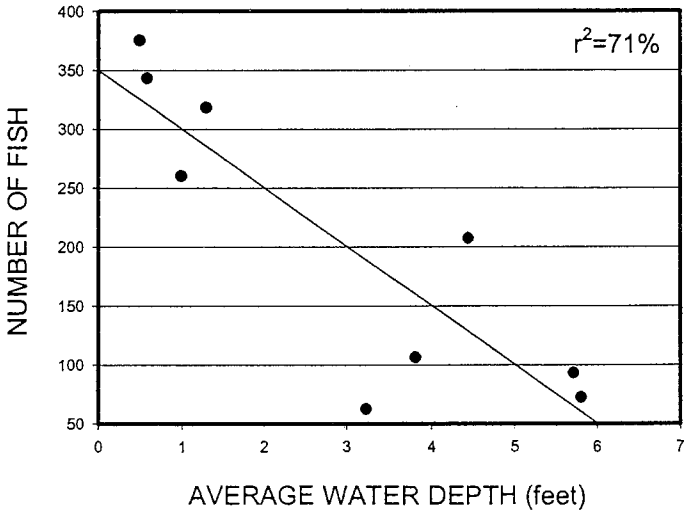
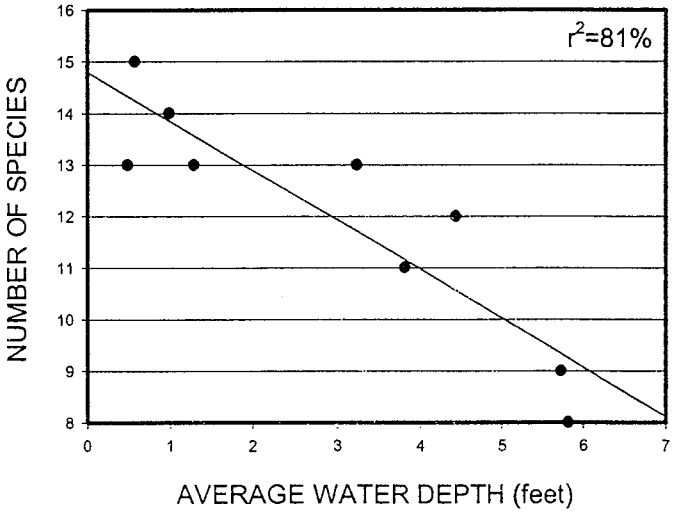
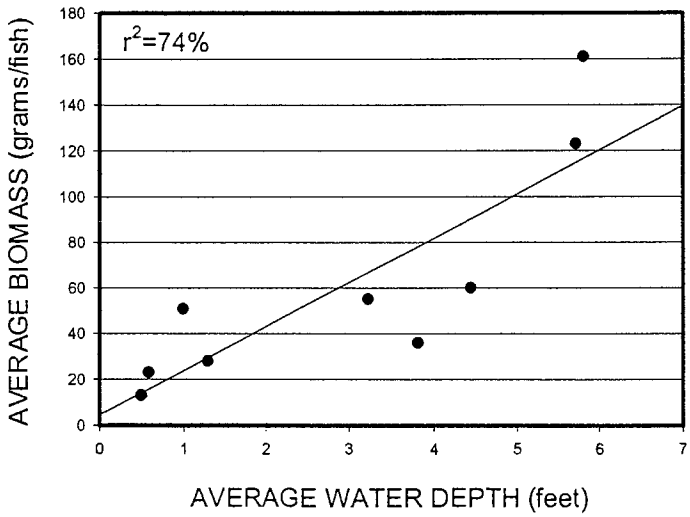
FIGURE 3-13

RELATIONSHIP BETWEEN WATER DEPTH AND FISH COMMUNITY CHARACTERISTICS







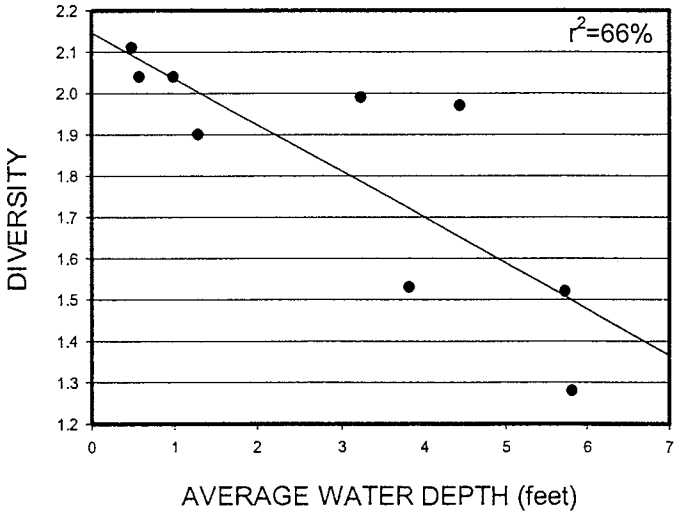


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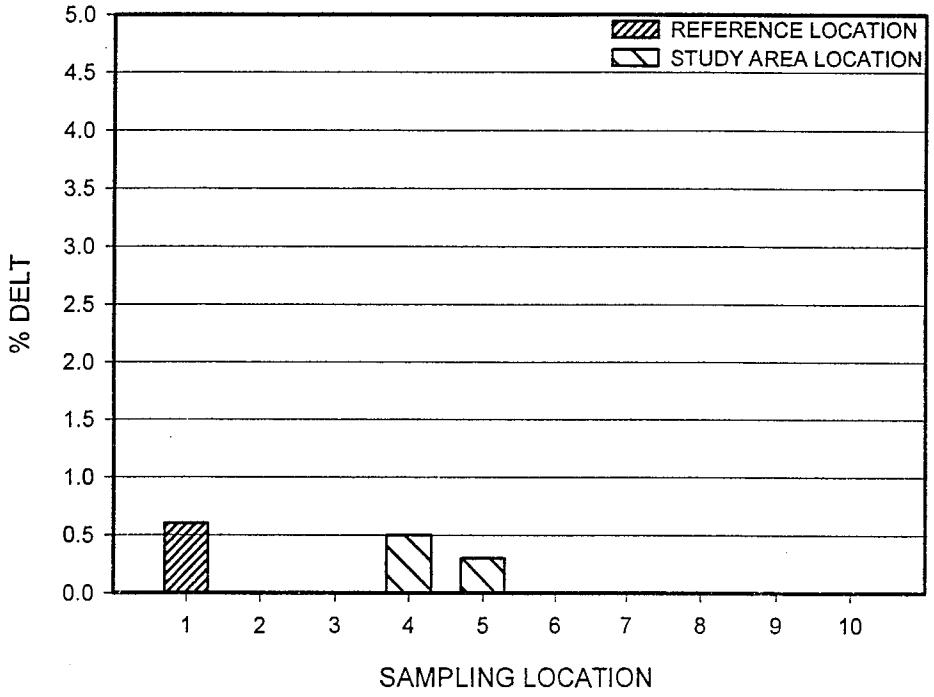
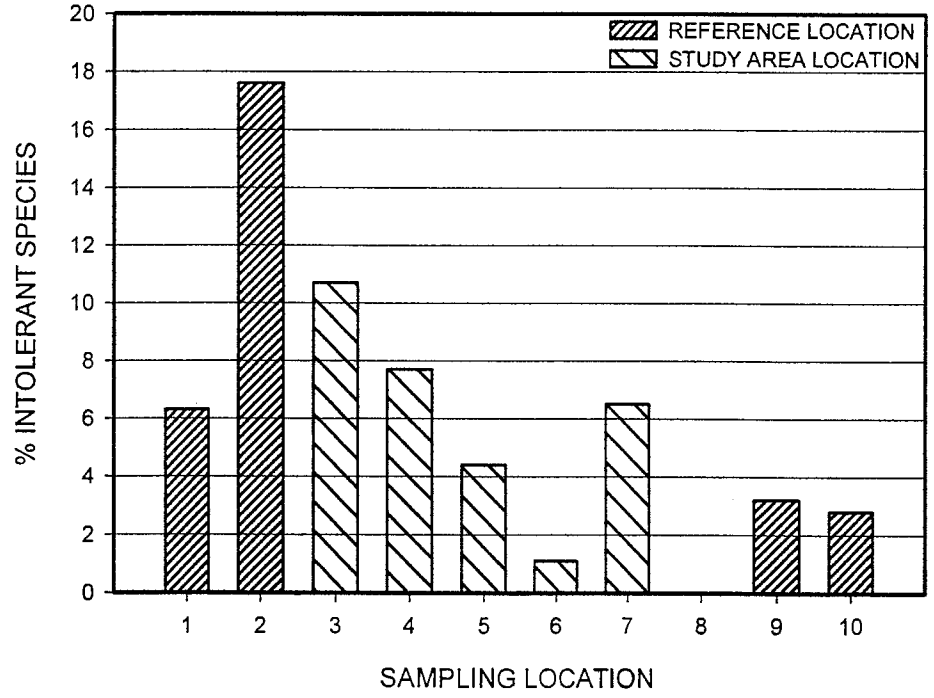
FIGURE 3-14

INCIDENCE OF DELT ANOMALIES AND PREVALENCE OF INTOLERANT (SENSITIVE) FISH SPECIES





Appendix B

Side-Scan Sonar Survey Results

Table B-1. Grain Size and TOC Content of Sediment Samples Collected in Conjunction with Side-Scan Sonar Survey

Sample ID	Latitude	Longitude	% Gravel	% Sand	% Silt	% Clay	% TOC
SD-01	45.48.248N	88.06.932W	89.0	0.0	11.0	0.0	0.13
SD-02	45.48.216N	88.06.765W	44.1	53.6	2.3	0.0	0.25
SD-03	45.48.213N	88.06.572W	19.6	27.7	34.2	18.5	0.14
SD-04	45.48.163N	88.06.430W	37.5	31.7	16.9	13.9	0.22
SD-05	45.47.984N	88.06.312W	64.8	33.4	1.6	0.2	<0.05
SD-06	45.47.865N	88.06.391W	38.5	59.8	1.3	0.4	0.09
SD-07	45.47.750N	88.06.319W	75.4	23.5	1.0	0.1	0.13
SD-08	45.47.431N	88.05.964W	55.7	43.3	1.0	0.0	0.075
SD-09	45.47.335N	88.05.859W	63.2	32.8	3.5	0.5	0.34
SD-10	45.47.173N	88.05.709W	50.9	47.3	1.8	0.0	0.11
SD-11	45.47.114N	88.05.537W	95.9	0.0	4.1	0.0	0.47
SD-12	45.47.078N	88.05.213W	55.8	42.5	1.6	0.1	0.13
SD-13	45.47.113N	88.04.97W	64.2	32.7	2.8	0.3	2.9
SD-14	45.47.102N	88.05.573W	58.1	39.6	2.1	0.2	0.2
SD-15	45.47.176N	88.05.672W	72.5	26.2	1.3	0.0	0.21
SD-16	45.47.375N	88.05.880W	35.9	15.9	42.3	5.9	0.65
SD-17	45.47.464N	88.06.157W	76.2	23.1	0.5	0.2	0.22
SD-18	45.47.724N	88.06.255W	42.2	55.9	1.6	0.3	<0.05
SD-19	45.47.851N	88.06.369W	68.9	30.4	0.5	0.2	0.096
SD-20	45.48.000N	88.06.338W	17.2	65.4	10.5	6.9	<0.05

TOC = Total organic carbon

Appendix C

Benthic Macroinvertebrate Survey Data

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C-12	Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 6
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C-15	Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 9
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Table C-1. Physicochemical Measurements Collected at Wadeable Macroinvertebrate Sampling Locations

	Temperature (°C)		Specific Conductance (µS/cm)		pH	
Location	Up	Down	Up	Down	Up	Down
RBM-1	20.60	20.60	169	169	8.00	7.94
RBM-2	20.70	20.80	166	166	7.80	7.70
RBM-3	20.90	20.70	168	168	8.04	8.20
RBM-4	21.10	20.60	171	168	7.94	8.07
RBM-5	21.80	21.70	170	173	8.00	7.98
RBM-6	21.70	21.50	171	171	7.83	8.01
RBM-7	20.50	20.50	145	146	7.78	7.87
RBM-8	20.80	20.90	144	145	7.91	7.80
RBM-9	20.60	20.60	170	171	7.82	7.84
RBM-10	20.90	21.00	170	170	7.92	7.84
RBM-11	21.62	21.76	170	169	7.93	7.67
RBM-12	22.00	22.20	169	169	7.95	7.71
RBM-13	21.90	22.06	169	169	7.90	7.86
RBM-14	21.59	21.44	170	171	7.96	7.90
RBM-15	21.60	21.70	167	168	7.43	7.73

Up - Upstream end of sampling zone.
Down - Downstream end of sampling zone.

Table C-2. Physicochemical Measurements Collected at Non-Wadeable Macroinvertebrate Sampling Locations

	Temperature (°C)		Dissolved Oxygen (mg/L)		Specific Conductance (µS/cm)		pH	
Location	Set	Retrieve	Set	Retrieve	Set	Retrieve	Set	Retrieve
RBM-16[a]	21.0	18.3	NR	8.0	166	188	7.89	NR
RBM-17	21.0	18.6	NR	8.1	167	188	7.49	NR
RBM-18	21.2	18.5	NR	8.0	170	186	7.90	NR
RBM-19	21.1	18.7	NR	8.4	169	186	7.95	NR
RBM-20	21.1	19.0	NR	8.4	168	188	8.03	NR
RBM-21	20.8	19.1	NR	8.4	154	187	7.81	NR
RBM-22	21.1	18.7	NR	8.2	153	188	7.83	NR
RBM-23	20.5	17.4	NR	7.6	149	190	7.67	NR
RBM-24	20.7	17.5	NR	7.1	153	190	7.76	NR
RBM-25	21.2	17.6	NR	7.3	166	191	7.86	NR

a. "Set" values for this location are the average of two replicate measurements.
NR - Not reported due to equipment malfunction.

Table C-3. Water Depth and Flow Velocity at Wadeable Macroinvertebrate Sampling Locations

	Depth (cm)					Velocity (ft/sec)				
Location	Replicate A	Replicate B	Replicate C	Replicate D	Average among replicates	Replicate A	Replicate B	Replicate C	Replicate D	Average among replicates
RBM-1	23	28	37	55	36	0.36	0.51	0.48	0.58	0.48
RBM-2	18	28	41	63	38	0.41	0.38	0.20*	0.57	0.45
RBM-3	20	33	47	61	40	0.08	0.15	0.20	0.32	0.19
RBM-4	31	45	55	64	49	0.53	0.51	0.68	0.67	0.60
RBM-5	21	43	60	85	52	0.25	0.15	0.27	0.33	0.25
RBM-6	47	52	50	50	50	1.41	1.13	1.01	0.77	1.08
RBM-7	41	65	74	87	67	0.53	0.36	0.0*	0.49	0.46
RBM-8	70	82	86	86	81	0.25	0.18	0.22	0.22	0.22
RBM-9	56	64	76	87	71	0.05	0.11	0.11	0.14	0.10
RBM-10	24	41	60	65	48	0.25	0.43	0.40	0.48	0.39
RBM-11	46	63	65	70	61	0.26	0.42	1.08	1.10	0.72
RBM-12	14	45	79	70	52	0.34	0.38	0.49	0.71	0.48
RBM-13	18	55	77	92	61	0.05	0.26	0.27	0.37	0.24
RBM-14	34	52	73	110	67	0.01	0.11	0.14	0.29	0.14
RBM-15	15	32	52	79	45	0.00	0.01	0.01	0.10	0.03

Table C-4. Water Depth and Flow Velocity at Non-Wadeable Macroinvertebrate Sampling Locations

Location		Set[a] Velocity (ft/sec)	Retrieve Velocity (ft/sec)	Retrieve Depth (cm)	Location		Set Velocity (ft/sec)	Retrieve Velocity (ft/sec)	Retrieve Depth (cm)
16	REP A	1.09	1.49	140	21	REP A	0.53	0.70	185
16	REP B	1.41	1.42	140	21	REP B	0.45	0.73	251
16	REP C	1.15	1.06	203	21	REP C	0.16	0.16	237
16	REP D	1.47	1.03	185	21	REP D	0.42	0.70	132
17	REP A	2.30	0.79	206	22	REP A	0.75	0.51	61
17	REP B	2.48	NR[b]	NR	22	REP B	0.77	1.04	67
17	REP C	2.11	1.10	216	22	REP C	1.34	1.01	157
17	REP D	2.11	0.82	211	22	REP D	0.67	NR	NR
18	REP A[c]	1.82	0.78	194	23	REP A	0.97	0.90	183
18	REP B	1.35	0.85	142	23	REP B	0.76	0.52	193
18	REP C	1.09	0.80	168	23	REP C	0.92	0.57	122
18	REP D	1.27	0.99	137	23	REP D	0.42	0.50	175
19	REP A	1.70	1.42	119	24	REP A	1.35	0.54	190
19	REP B	0.55	1.08	150	24	REP B	1.15	0.87	173
19	REP C	0.54	1.08	183	24	REP C	1.08	0.59	224
19	REP D	1.42	NR	NR	24	REP D	0.55	0.77	282
20	REP A	0.57	0.40	161	25	REP A	1.15	0.62	232
20	REP B	0.55	0.41	168	25	REP B	0.84	0.51	248
20	REP C	0.66	0.49	165	25	REP C	0.63	0.43	262
20	REP D	0.21	0.43	162	25	REP D	0.74	0.45	284

[a]Sample depth was not measured during the Hester-Dendy deployment

[b]NR = Sample not retrievable

[c]Sample was poorly preserved and therefore was not processed

Table C-5. Subsurface Temperature at Macroinvertebrate Sampling Locations

Location	Replicate Number	Depth (Inches)	Temperature (°C)
RBM-1	1	0	19.8
RBM-1	1	4	18.9
RBM-1	1	8	17.9
RBM-1	1	12	17.2
RBM-1	1	16	16.5
RBM-1	1	20	15.7
RBM-1	1	24	15.0
RBM-1	2	0	19.7
RBM-1	2	4	18.5
RBM-1	2	8	17.5
RBM-1	2	12	16.5
RBM-1	2	16	15.5
RBM-1	2	20	14.5
RBM-1	2	24	13.7
RBM-1	3	0	20.5
RBM-1	3	4	19.6
RBM-1	3	8	19.1
RBM-1	3	12	18.4
RBM-1	3	16	18.0
RBM-1	3	20	17.8
RBM-1	3	22	17.2
RBM-2	1	4	19.9
RBM-2	1	8	19.7
RBM-2	1	11	19.4
RBM-2	2	0	20.4
RBM-2	2	4	19.8
RBM-2	2	8	19.5
RBM-2	2	12	18.9
RBM-2	2	16	18.5
RBM-3	1	0	20.5
RBM-3	2	0	20.8
RBM-3	3	4	20.8
RBM-3	3	8	19.9
RBM-3	3	12	19.0
RBM-3	3	16	18.7
RBM-3	3	20	18.1
RBM-4	1	0	19.9
RBM-4	1	4	19.1
RBM-4	2	0	19.2
RBM-4	2	4	14.9

Table C-5. Subsurface Temperature at Macroinvertebrate Sampling Locations

Location	Replicate Number	Depth (Inches)	Temperature (°C)
RBM-4	2	8	12.9
RBM-4	2	12	11.3
RBM-4	2	16	10.3
RBM-4	2	20	9.5
RBM-4	2	24	8.9
RBM-4	2	28	8.7
RBM-4	3	0	20.4
RBM-4	3	4	18.7
RBM-4	3	8	17.4
RBM-4	3	12	16.8
RBM-4	3	16	15.9
RBM-4	3	20	15.1
RBM-4	3	24	14.5
RBM-4	3	28	13.7
RBM-4	4	0	20.2
RBM-4	4	4	16.5
RBM-4	4	8	15.0
RBM-4	4	12	14.7
RBM-4	4	16	14.7
RBM-5	1	0	20.2
RBM-5	1	4	16.4
RBM-5	1	8	15.2
RBM-5	1	12	14.9
RBM-5	1	16	14.7
RBM-5	1	20	14.7
RBM-5	1	24	14.7
RBM-5	2	0	20.1
RBM-5	2	4	17.9
RBM-5	2	8	17.0
RBM-5	2	12	16.1
RBM-5	2	16	15.1
RBM-5	2	20	14.3
RBM-5	2	24	14.6
RBM-5	3	0	20.4
RBM-5	3	4	19.6
RBM-5	3	8	18.9
RBM-6	1	0	20.7
RBM-6	1	4	19.6
RBM-6	1	8	19.1
RBM-6	1	10	18.9

Table C-5. Subsurface Temperature at Macroinvertebrate Sampling Locations

Location	Replicate Number	Depth (Inches)	Temperature (°C)
RBM-6	2	0	21.7
RBM-6	2	4	20.5
RBM-6	3	0	20.8
RBM-6	3	4	20.4
RBM-6	3	8	19.7
RBM-6	3	12	19.3
RBM-6	3	16	Not Reported
RBM-6	3	20	17.5
RBM-7	1	0	20.4
RBM-7	1	5	19.9
RBM-7	1	10	18.9
RBM-7	1	15	17.9
RBM-7	1	20	17.1
RBM-7	1	25	15.7
RBM-7	2	0	20.2
RBM-7	2	4	19.8
RBM-7	2	8	19.3
RBM-7	2	12	18.9
RBM-7	2	16	18.5
RBM-7	2	20	17.8
RBM-7	2	24	17.1
RBM-7	3	0	20.2
RBM-7	3	4	19.5
RBM-7	3	8	19.1
RBM-7	3	12	18.7
RBM-7	3	16	17.8
RBM-7	3	20	16.8
RBM-7	3	24	16.1
RBM-8	1	0	20.2
RBM-8	1	4	21.0
RBM-8	1	8	18.0
RBM-8	2	0	19.7
RBM-8	2	4	19.4
RBM-8	2	8	18.8
RBM-8	2	12	18.4
RBM-8	2	16	18.0
RBM-8	3	0	20.7
RBM-8	3	4	19.6
RBM-8	3	8	18.9
RBM-8	3	12	18.5

Table C-5. Subsurface Temperature at Macroinvertebrate Sampling Locations

Location	Replicate Number	Depth (Inches)	Temperature (°C)
RBM-8	3	16	18.3
RBM-9	1	0	20.4
RBM-9	1	4	18.2
RBM-9	1	8	17.0
RBM-9	1	12	16.5
RBM-9	1	16	15.5
RBM-9	1	20	14.7
RBM-9	1	24	13.6
RBM-9	2	0	18.7
RBM-9	2	4	17.7
RBM-9	2	8	16.5
RBM-9	2	12	15.5
RBM-9	2	16	14.6
RBM-9	2	20	14.1
RBM-9	2	24	13.5
RBM-9	3	0	19.1
RBM-9	3	4	18.7
RBM-9	3	8	17.8
RBM-9	3	12	16.2
RBM-9	3	16	15.2
RBM-9	3	20	14.1
RBM-9	3	24	13.6
RBM-10	1	0	19.8
RBM-10	1	4	19.4
RBM-10	1	8	19.4
RBM-10	1	12	19.1
RBM-10	2	0	20.1
RBM-10	2	4	19.7
RBM-10	2	8	19.4
RBM-10	2	12	19.2
RBM-10	3	0	20.1
RBM-10	3	4	18.9
RBM-10	3	7	18.8
RBM-11	1	0	21.3
RBM-11	1	4	19.6
RBM-11	1	8	18.9
RBM-11	1	12	18.4
RBM-11	1	16	18.1
RBM-11	1	20	17.7
RBM-11	2	0	20.4

Table C-5. Subsurface Temperature at Macroinvertebrate Sampling Locations

Location	Replicate Number	Depth (Inches)	Temperature (°C)
RBM-11	2	4	19.1
RBM-11	2	8	18.4
RBM-11	2	12	17.2
RBM-11	3	0	20.8
RBM-11	3	4	19.9
RBM-11	3	8	19.4
RBM-11	3	12	18.9
RBM-11	3	16	18.7
RBM-11	3	20	18.5
RBM-12	1	0	21.3
RBM-12	1	4	19.7
RBM-12	1	8	19.2
RBM-12	1	12	19.0
RBM-12	2	0	20.9
RBM-12	2	4	19.4
RBM-12	2	7 1/2	18.7
RBM-12	3	0	21.1
RBM-12	3	4	19.9
RBM-12	3	7	19.3
RBM-13	1	0	21.4
RBM-13	1	4	20.1
RBM-13	1	8	19.4
RBM-13	1	12	18.9
RBM-13	1	16	18.4
RBM-13	1	18	18.2
RBM-13	2	0	21.3
RBM-13	2	4	20.5
RBM-13	2	8	19.7
RBM-13	2	10 1/2	19.1
RBM-13	3	0	20.7
RBM-13	3	4	19.7
RBM-13	3	8	19.2
RBM-13	3	12	18.9
RBM-13	3	15	18.7
RBM-14	1	0	20.2
RBM-14	1	4	19.1
RBM-14	1	8	18.1
RBM-14	1	11	17.6
RBM-14	2	0	20.4
RBM-14	2	4	18.9

Table C-5. Subsurface Temperature at Macroinvertebrate Sampling Locations

Location	Replicate Number	Depth (Inches)	Temperature (°C)
RBM-14	2	8	18.2
RBM-14	2	10	18.0
RBM-14	3	0	21.4
RBM-14	3	4	20.7
RBM-14	3	8	19.8
RBM-14	3	12	18.9
RBM-14	3	16	17.9
RBM-14	3	19 1/4	17.5
RBM-15	1	0	21.1
RBM-15	1	4	20.1
RBM-15	1	8	19.5
RBM-15	1	12	18.9
RBM-15	2	0	20.6
RBM-15	2	4	20.2
RBM-15	2	8	19.7
RBM-15	2	12	19.2
RBM-15	2	16	18.9
RBM-15	2	20	18.6
RBM-15	2	24	18.2
RBM-15	3	0	21.0
RBM-15	3	4	20.4
RBM-15	3	8	19.7
RBM-15	3	12	19.2
RBM-15	3	16	18.9
RBM-16	1	0	20.7
RBM-16	1	4	20.5
RBM-17	1	0	20.7
RBM-17	1	4	20.5
RBM-18	1	0	20.8
RBM-18	1	4	20.6
RBM-19	1	0	20.9
RBM-19	1	4	20.5
RBM-19	1	8	20.2
RBM-20	1	0	20.8
RBM-20	1	4	20.8
RBM-20	2	0	21.1
RBM-21	1	0	20.8
RBM-21	1	4	20.9
RBM-21	2	0	20.9
RBM-21	2	4	20.9

Table C-5. Subsurface Temperature at Macroinvertebrate Sampling Locations

Location	Replicate Number	Depth (Inches)	Temperature (°C)
RBM-21	3	0	20.6
RBM-22	1	0	21.1
RBM-22	1	4	20.1
RBM-22	1	8	19.7
RBM-23	1	0	20.1
RBM-23	1	3	20.0
RBM-24	1	0	20.4
RBM-24	2	0	20.4
RBM-24	3	0	20.4
RBM-24	4	0	20.6
RBM-25	1	0	21.8
RBM-25	1	4	20.7
RBM-25	1	8	19.7
RBM-25	1	12	19.1
RBM-25	1	16	18.7

Table C-6. Macroinvetebrates Collected During Sweepnet Sampling

Taxa	RBM-1	RBM-2	RBM-3	RBM-4	RBM-5	RBM-6	RBM-7	RBM-8
Turbellaria	3	2	--	--	--	--	1	1
Lumbriculidae	--	--	--	1	--	--	--	1
Tubificidae	--	2	--	--	2	--	--	1
Placobdella	--	--	--	--	--	--	--	1
Erpobdellidae	--	--	--	--	--	--	--	--
Caecidotea	--	1	--	--	14	--	12	--
Hyalella azteca	2	--	--	--	--	--	--	2
Gammarus	3	4	9	4	8	9	5	5
Orconectes rusticus	9	9	13	15	9	23	3	--
Isonychia	--	--	--	--	--	--	1	--
Pseudocloeon propinquum	2	--	--	--	--	--	--	4
Acerpenna pygmaea	--	1	--	1	--	--	--	--
Acentrella carolina	--	1	--	--	--	--	--	--
Centroptilum	--	1	--	--	--	--	--	--
Procloeon	1	--	1	1	--	--	--	1
Callibaetis	1	--	--	--	1	--	--	--
Leucrocuta hebe	2	2	5	11	--	8	--	--
Stenacron interpunctatum	--	2	4	--	--	--	--	--
Stenonema femoratum	--	1	2	3	1	--	--	--
Stenonema modestum	--	--	--	--	--	1	--	--
Stenonema pulchellum	--	3	6	11	--	10	--	--
Stenonema terminatum	--	--	--	--	--	--	--	--
Stenonema exiguum	1	--	2	--	--	--	--	--
Stenonema vicarium	--	--	--	2	--	--	--	--
Choroterpes basalis	8	21	28	26	8	15	2	--
Tricorythodes	1	1	--	--	--	--	--	--
Caenis	--	1	1	4	--	2	--	--
Ephemera simulans	--	1	--	--	--	--	--	--
Hexagenia limbata	1	9	--	--	4	1	1	2
Ephoron leukon	--	--	1	6	--	--	--	--
Argia	1	--	1	1	--	1	--	--
Boyeria vinosa	--	--	--	--	--	--	--	--
Dromogomphus spinosus	7	1	2	--	--	--	--	--
Gomphus fraternus	2	--	--	--	--	--	--	--
Gomphus	1	1	--	--	--	--	--	--
Hagenius brevistylus	1	--	--	--	--	--	--	--
Ophiogomphus	--	2	--	2	--	1	--	--

Table C-6. Macroinvetebrates Collected During Sweepnet Sampling

Taxa	RBM-1	RBM-2	RBM-3	RBM-4	RBM-5	RBM-6	RBM-7	RBM-8
Macromia illinoiensis	1	1	--	--	--	--	1	--
Perlesta decipiens	--	1	--	--	--	--	--	--
Paragnetina media	--	--	--	1	--	--	--	--
Trepobates	--	--	--	--	--	--	2	--
Palmacorixa	--	--	--	--	--	--	--	--
Sigara	--	3	--	--	--	--	11	24
Nigronia serricornis	--	--	--	--	--	1	--	--
Chimarra obscura	--	--	1	3	--	--	--	--
Lype diversa	1	--	--	--	--	--	6	--
Cheumatopsyche	2	5	7	9	2	3	--	--
Ceratopsyche morosa	--	--	4	2	--	2	--	--
Macrostemum zebratum	--	5	8	6	--	1	1	--
Protoptila	--	--	2	--	--	--	--	--
Neophylax	14	11	4	--	--	2	--	--
Pycnopsyche	11	1	2	--	--	1	8	--
Gyrinus	--	4	--	--	1	--	--	--
Peltodytes	--	--	--	--	1	--	--	--
Optioservus trivittatus	--	--	--	--	--	2	--	--
Stenelmis crenata	--	2	1	--	--	8	--	--
Ectopria	3	1	1	--	--	--	--	--
Psephenus herricki	1	2	13	--	--	6	--	--
Procladius	--	--	--	--	--	--	--	--
Thienemannimyia grp.	--	1	1	--	--	--	2	1
Corynoneura celeripes	--	--	--	--	--	--	1	--
Cricotopus bicinctus grp.	1	--	--	1	--	1	--	--
Epoicocladius	--	--	--	--	--	1	--	--
Nanocladius (Plecopteracoluthus)	--	--	--	1	--	1	--	--
Tvetenia discoloripes grp.	--	2	--	--	--	--	--	--
Chironomus	--	--	--	--	--	--	--	--
Cryptochironomus	1	--	--	--	--	--	1	2
Dicrotendipes neomodestus	--	1	--	--	--	--	--	--
Microtendipes	--	--	--	--	--	--	--	--
Parachironomus	--	--	1	--	--	--	--	--
Paralauterborniella	--	--	--	--	--	--	1	--
Paratendipes	--	--	--	--	--	--	1	--
Polypedilum convictum	1	1	3	2	--	--	2	--
Polypedilum scalaenum grp.	--	--	--	--	--	--	1	--

Table C-6. Macroinvetebrates Collected During Sweepnet Sampling

Taxa	RBM-1	RBM-2	RBM-3	RBM-4	RBM-5	RBM-6	RBM-7	RBM-8
Stictochironomus	--	--	2	--	--	--	--	1
Tribelos jucundum	--	--	--	1	--	--	1	--
Cladotanytarsus vanderwulpi grp.	2	--	--	--	--	--	--	--
Rheotanytarsus	--	1	1	--	--	--	2	--
Tanytarsus	--	--	--	--	--	1	1	--
Tanytarsus curticornis grp.	--	--	--	--	--	--	1	--
Tanytarsus glabrescens grp.	2	1	--	--	--	--	1	--
Tanytarsus guerlus grp.	4	--	--	1	--	--	2	--
Simulium	--	1	--	--	--	--	--	--
Hexatoma	1	--	--	--	--	--	--	--
Chrysops	1	1	--	--	--	--	--	--
Viviparidae	--	--	1	--	--	--	--	1
Amnicola	6	2	--	--	2	--	4	--
Physella	26	--	--	--	11	--	8	2
Helisoma	--	--	--	--	1	--	1	--
Ferrissia	1	--	4	--	--	1	--	--
Sphaerium	1	4	2	7	4	9	--	1
Musculium	9	2	9	15	7	11	--	5
Pisidium	--	--	5	--	--	--	5	--
Pyganodon grandis	3	2	--	--	--	--	--	--

Table C-6. Macroinvetebrates Collected During Sweepnet Sampling

Taxa	RBM-9	RBM-10	RBM-11	RBM-12	RBM-13	RBM-14	RBM-15
Turbellaria	--	1	--	--	--	6	--
Lumbriculidae	4	--	--	--	--	--	--
Tubificidae	1	--	--	--	--	--	1
Placobdella	--	--	--	--	--	--	--
Erpobdellidae	1	--	--	--	--	--	--
Caecidotea	7	2	5	1	--	1	1
Hyalella azteca	1	--	--	--	--	--	--
Gammarus	17	17	12	5	9	12	23
Orconectes rusticus	1	15	15	9	3	3	--
Isonychia	--	--	--	--	--	--	--
Pseudocloeon propinquum	--	--	--	--	--	--	--
Acerpenna pygmaea	1	--	2	1	--	--	--
Acentrella carolina	--	--	--	--	--	--	--
Centroptilum	--	--	1	--	--	--	1
Procloeon	2	--	11	--	1	--	--
Callibaetis	--	--	--	--	--	--	--
Leucrocuta hebe	--	--	4	--	--	--	--
Stenacron interpunctatum	--	2	--	--	--	--	--
Stenonema femoratum	1	5	--	--	--	--	--
Stenonema modestum	--	--	--	--	--	--	--
Stenonema pulchellum	--	5	--	--	--	--	--
Stenonema terminatum	--	--	1	--	--	--	--
Stenonema exiguum	2	--	--	--	--	--	--
Stenonema vicarium	--	--	--	--	--	--	--
Choroterpes basalis	3	2	8	2	--	--	--
Tricorythodes	1	--	--	--	--	--	--
Caenis	1	--	1	--	--	--	--
Ephemera simulans	--	--	--	1	--	--	--
Hexagenia limbata	3	2	3	--	2	--	10
Ephoron leukon	--	--	2	1	--	--	--
Argia	--	9	--	--	--	--	--
Boyeria vinosa	1	--	--	--	--	--	--
Dromogomphus spinosus	--	--	--	--	--	--	--
Gomphus fraternus	--	1	--	1	--	1	3
Gomphus	--	--	--	--	--	--	--
Hagenius brevistylus	--	--	--	--	--	--	--
Ophiogomphus	--	--	--	--	--	--	--

Table C-6. Macroinvetebrates Collected During Sweepnet Sampling

Taxa	RBM-9	RBM-10	RBM-11	RBM-12	RBM-13	RBM-14	RBM-15
Macromia illinoiensis	--	--	--	--	--	--	--
Perlesta decipiens	--	--	--	--	--	--	--
Paragnetina media	--	--	--	--	--	--	--
Trepobates	--	--	--	--	--	--	--
Palmacorixa	2	--	2	--	--	1	--
Sigara	3	2	24	1	2	--	--
Nigronia serricornis	--	--	--	--	--	--	--
Chimarra obscura	--	--	2	--	--	--	--
Lype diversa	--	--	--	--	1	--	--
Cheumatopsyche	--	--	3	1	1	--	--
Ceratopsyche morosa	--	--	--	--	--	--	--
Macrostemum zebratum	--	--	2	--	--	--	--
Protoptila	--	--	--	--	--	--	--
Neophylax	--	--	--	--	--	--	--
Pycnopsyche	--	--	2	--	6	13	4
Gyrinus	--	--	1	2	--	--	--
Peltodytes	--	--	--	--	--	--	--
Optioservus trivittatus	--	--	--	--	--	--	--
Stenelmis crenata	--	--	4	--	--	--	--
Ectopria	--	--	--	--	--	--	--
Psephenus herricki	--	--	--	1	--	--	--
Procladius	2	--	--	--	--	--	--
Thienemannimyia grp.	--	--	--	--	2	--	--
Corynoneura celeripes	--	--	--	--	--	--	--
Cricotopus bicinctus grp.	--	--	1	--	--	--	--
Epoicocladius	--	--	--	--	--	--	--
Nanocladius (Plecopteracoluthus)	--	1	--	--	--	--	--
Tvetenia discoloripes grp.	--	--	--	--	--	--	--
Chironomus	2	--	--	--	--	--	1
Cryptochironomus	1	--	--	--	--	--	3
Dicrotendipes neomodestus	--	--	--	--	--	--	--
Microtendipes	--	--	1	--	--	--	--
Parachironomus	--	--	--	--	--	--	--
Paralauterborniella	--	--	--	--	--	--	--
Paratendipes	--	--	--	--	--	--	--
Polypedilum convictum	--	--	--	--	--	--	--
Polypedilum scalaenum grp.	--	--	--	--	--	--	--

Table C-6. Macroinvetebrates Collected During Sweepnet Sampling

Taxa	RBM-9	RBM-10	RBM-11	RBM-12	RBM-13	RBM-14	RBM-15
Stictochironomus	--	--	--	--	--	--	1
Tribelos jucundum	--	--	--	--	--	--	--
Cladotanytarsus vanderwulpi grp.	--	--	--	--	--	--	1
Rheotanytarsus	--	--	--	--	--	--	--
Tanytarsus	--	--	--	--	--	--	--
Tanytarsus curticornis grp.	--	--	--	--	--	--	--
Tanytarsus glabrescens grp.	--	--	--	--	--	--	2
Tanytarsus guerlus grp.	--	--	--	--	--	--	--
Simulium	--	--	--	--	--	--	--
Hexatoma	--	--	--	--	--	--	--
Chrysops	1	--	--	--	--	--	--
Viviparidae	1	--	--	--	--	1	26
Amnicola	8	1	2	1	1	17	8
Physella	3	--	19	3	--	7	--
Helisoma	--	--	--	--	--	--	--
Ferrissia	--	--	--	--	--	--	--
Sphaerium	1	5	6	5	6	--	1
Musculium	--	6	4	12	4	--	--
Pisidium	--	--	--	--	--	--	--
Pyganodon grandis	--	1	1	--	1	--	--

Table C-7. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 1

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Turbellaria	0	0	10	0.58	26	1.89	9	1.45
Naididae	0	0	10	0.58	9	0.65	4	0.64
Tubificidae	0	0	0	0	9	0.65	0	0
Placobdella	0	0	10	0.58	0	0	0	0
Gammarus	0	0	10	0.58	9	0.65	0	0
Orconectes rusticus	19	2.68	2	0.12	7	0.51	3	0.48
Isonychia	4	0.56	0	0	0	0	0	0
Acerpenna pygmaea	18	2.54	51	2.98	60	4.35	58	9.34
Acentrella carolina	0	0	0	0	17	1.23	0	0
Leucrocuta hebe	81	11.41	81	4.74	17	1.23	49	7.89
Stenonema femoratum	4	0.56	0	0	0	0	0	0
Stenonema pulchellum	0	0	0	0	0	0	18	2.9
Stenonema exiguum	9	1.27	30	1.75	60	4.35	9	1.45
Choroterpes basalis	166	23.38	295	17.25	293	21.25	125	20.13
Tricorythodes	9	1.27	20	1.17	60	4.35	27	4.35
Caenis	90	12.68	234	13.68	215	15.59	139	22.38
Ephemera simulans	0	0	51	2.98	0	0	0	0
Ephoron leukon	18	2.54	61	3.57	60	4.35	18	2.9
Dromogomphus spinosus	0	0	1	0.06	0	0	0	0
Gomphus fraternus	0	0	0	0	1	0.07	0	0
Gomphus	0	0	2	0.12	4	0.29	1	0.16
Ophiogomphus	0	0	0	0	3	0.22	1	0.16
Macromia illinoiensis	0	0	0	0	0	0	1	0.16
Neoperla stewarti	0	0	0	0	0	0	4	0.64
Sigara	0	0	0	0	9	0.65	0	0
Chimarra obscura	0	0	51	2.98	0	0	0	0
Neureclipsis	0	0	0	0	9	0.65	0	0
Cheumatopsyche	49	6.9	163	9.53	26	1.89	18	2.9
Ceratopsyche morosa	0	0	10	0.58	0	0	4	0.64
Macrostemum zebratum	4	0.56	30	1.75	17	1.23	0	0
Protoptila	0	0	41	2.4	9	0.65	18	2.9
Pycnopsyche	0	0	0	0	1	0.07	0	0
Optioservus trivittatus	13	1.83	20	1.17	9	0.65	0	0
Stenelmis crenata	72	10.14	142	8.3	95	6.89	9	1.45
Ectopria	13	1.83	0	0	9	0.65	4	0.64
Psephenus herricki	9	1.27	20	1.17	0	0	9	1.45

Table C-7. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 1

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Thienemannimyia grp.	4	0.56	61	3.57	17	1.23	4	0.64
Cricotopus bicinctus grp.	0	0	10	0.58	9	0.65	0	0
Cricotopus sylvestris grp.	0	0	0	0	9	0.65	0	0
Tvetenia discoloripes grp.	0	0	10	0.58	34	2.47	0	0
Dicrotendipes neomodestus	0	0	0	0	9	0.65	0	0
Microtendipes	0	0	10	0.58	9	0.65	0	0
Polypedilum convictum	4	0.56	0	0	0	0	0	0
Polypedilum halterale grp.	0	0	10	0.58	0	0	0	0
Stictochironomus	0	0	20	1.17	9	0.65	0	0
Cladotanytarsus vanderwulpi grp.	0	0	0	0	9	0.65	0	0
Rheotanytarsus	0	0	10	0.58	76	5.51	36	5.8
Tanytarsus	0	0	10	0.58	0	0	0	0
Tanytarsus curticornis grp.	4	0.56	30	1.75	17	1.23	0	0
Tanytarsus glabrescens grp.	0	0	10	0.58	0	0	0	0
Tanytarsus guerlus grp.	0	0	10	0.58	26	1.89	0	0
Zavrelia	0	0	41	2.4	0	0	0	0
Simulium	0	0	0	0	17	1.23	0	0
Hexatoma	0	0	0	0	0	0	4	0.64
Sphaerium	4	0.56	41	2.4	52	3.77	9	1.45
Musculium	112	15.77	92	5.38	26	1.89	9	1.45
Pisidium	4	0.56	0	0	26	1.89	31	4.99

Table C-8. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 2

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Tubificidae	0	0	0	0	0	0	10	0.69
Myzobdella lugubris	3	0.86	0	0	0	0	0	0
Orconectes rusticus	3	0.86	5	1.54	4	1.29	17	1.17
Acerpenna pygmaea	3	0.86	0	0	11	3.54	10	0.69
Acentrella carolina	14	4.01	3	0.93	0	0	20	1.38
Procloeon	0	0	3	0.93	11	3.54	0	0
Leucrocuta hebe	0	0	12	3.7	50	16.08	20	1.38
Stenacron interpunctatum	0	0	47	14.51	64	20.58	10	0.69
Stenonema femoratum	0	0	0	0	2	0.64	0	0
Stenonema pulchellum	0	0	0	0	18	5.79	30	2.07
Choroterpes basalis	31	8.88	62	19.14	66	21.22	173	11.94
Tricorythodes	3	0.86	0	0	0	0	10	0.69
Caenis	8	2.29	6	1.85	14	4.5	10	0.69
Ephemera simulans	0	0	0	0	2	0.64	0	0
Hexagenia limbata	6	1.72	0	0	0	0	61	4.21
Ephoron leukon	0	0	3	0.93	9	2.89	51	3.52
Argia	0	0	0	0	2	0.64	0	0
Psychomyia flavida	0	0	0	0	2	0.64	0	0
Cheumatopsyche	3	0.86	9	2.78	34	10.93	0	0
Protoptila	3	0.86	0	0	0	0	0	0
Gyrinus	17	4.87	0	0	0	0	10	0.69
Stenelmis crenata	6	1.72	6	1.85	2	0.64	0	0
Psephenus herricki	0	0	3	0.93	0	0	10	0.69
Djalmabatista	14	4.01	0	0	0	0	0	0
Thienemannimyia grp.	3	0.86	0	0	0	0	0	0
Thienemanniella xena	0	0	3	0.93	2	0.64	10	0.69
Cricotopus bicinctus grp.	14	4.01	3	0.93	2	0.64	71	4.9
Cricotopus sylvestris grp.	0	0	3	0.93	0	0	0	0
Heterotrissocladius	3	0.86	0	0	0	0	0	0
Nanocladius	3	0.86	0	0	0	0	0	0
Tvetenia discoloripes grp.	0	0	0	0	0	0	20	1.38
Cryptochironomus	3	0.86	0	0	0	0	0	0
Cryptotendipes	3	0.86	0	0	0	0	0	0
Dicrotendipes neomodestus	0	0	0	0	0	0	10	0.69
Polypedilum convictum	3	0.86	0	0	0	0	81	5.59
Polypedilum illinoense	3	0.86	0	0	0	0	0	0

Table C-8. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 2

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Stenochironomus	3	0.86	0	0	0	0	0	0
Stictochironomus	8	2.29	0	0	0	0	0	0
Cladotanytarsus vanderwulpi grp.	3	0.86	0	0	0	0	0	0
Rheotanytarsus	109	31.23	153	47.22	16	5.14	713	49.21
Tanytarsus glabrescens grp.	0	0	0	0	0	0	10	0.69
Simulium	0	0	3	0.93	0	0	41	2.83
Hexatoma	3	0.86	0	0	0	0	0	0
Ferrissia	62	17.77	0	0	0	0	41	2.83
Sphaerium	0	0	0	0	0	0	10	0.69
Pisidium	11	3.15	0	0	0	0	0	0
Pyganodon grandis	1	0.29	0	0	0	0	0	0

Table C-9. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 3

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Orconectes rusticus	5	3.13	5	0.4	9	0.66	5	0.49
Isonychia	0	0	0	0	7	0.51	0	0
Baetis flavistriga	0	0	9	0.73	0	0	0	0
Acerpenna pygmaea	0	0	60	4.84	45	3.28	112	10.88
Leucrocuta hebe	15	9.38	103	8.31	119	8.69	112	10.88
Stenacron interpunctatum	8	5	78	6.3	7	0.51	0	0
Stenonema femoratum	7	4.38	9	0.73	15	1.09	0	0
Stenonema pulchellum	3	1.88	164	13.24	194	14.16	99	9.62
Choroterpes basalis	68	42.5	422	34.06	202	14.74	158	15.35
Tricorythodes	2	1.25	43	3.47	7	0.51	6	0.58
Caenis	26	16.25	146	11.78	104	7.59	158	15.35
Ephemera simulans	1	0.63	0	0	0	0	0	0
Ephoron leukon	2	1.25	69	5.57	104	7.59	79	7.68
Argia	1	0.63	17	1.37	37	2.7	6	0.58
Ophiogomphus	0	0	0	0	1	0.07	0	0
Perlesta decipiens	0	0	0	0	7	0.51	0	0
Nigronia serricornis	0	0	1	0.08	1	0.07	0	0
Chimarra obscura	0	0	0	0	7	0.51	40	3.89
Cheumatopsyche	2	1.25	17	1.37	75	5.47	72	7
Ceratopsyche morosa	0	0	0	0	0	0	20	1.94
Macrostemum zebratum	0	0	52	4.2	30	2.19	59	5.73
Protoptila	0	0	0	0	7	0.51	0	0
Neophylax	2	1.25	0	0	0	0	0	0
Optioservus trivittatus	0	0	9	0.73	7	0.51	0	0
Stenelmis crenata	3	1.88	17	1.37	112	8.18	19	1.85
Ectopria	1	0.63	0	0	0	0	0	0
Psephenus herricki	2	1.25	0	0	22	1.61	26	2.53
Djalmabatista	0	0	0	0	7	0.51	0	0
Thienemannimyia grp.	0	0	0	0	37	2.7	0	0
Nanocladius (Plecopteracoluthus)	0	0	0	0	15	1.09	0	0
Microtendipes	1	0.63	0	0	0	0	0	0
Polypedilum convictum	0	0	0	0	15	1.09	0	0
Cladotanytarsus mancus grp.	2	1.25	0	0	0	0	0	0
Rheotanytarsus	0	0	0	0	7	0.51	0	0
Tanytarsus	0	0	9	0.73	7	0.51	6	0.58
Zavrelia	1	0.63	0	0	0	0	0	0

Table C-9. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 3

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Chrysops	2	1.25	0	0	0	0	0	0
Sphaerium	1	0.63	0	0	7	0.51	6	0.58
Musculium	4	2.5	0	0	7	0.51	46	4.47
Pisidium	1	0.63	9	0.73	149	10.88	0	0

Table C-10. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 4

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Lumbriculidae	9	0.39	7	0.47	4	0.12	1	0.06
Tubificidae	0	0	9	0.61	37	1.06	0	0
Orconectes rusticus	9	0.39	8	0.54	11	0.32	6	0.34
Isonychia	0	0	19	1.28	0	0	0	0
Acerpenna pygmaea	62	2.7	28	1.89	112	3.22	101	5.76
Acentrella carolina	0	0	0	0	0	0	11	0.63
Procloeon	12	0.52	9	0.61	37	1.06	34	1.94
Leucrocuta hebe	212	9.25	103	6.95	299	8.6	190	10.84
Stenacron interpunctatum	75	3.27	0	0	19	0.55	0	0
Stenonema femoratum	37	1.61	0	0	0	0	0	0
Stenonema modestum	0	0	0	0	0	0	11	0.63
Stenonema pulchellum	299	13.04	103	6.95	504	14.5	179	10.21
Stenonema vicarium	12	0.52	0	0	0	0	0	0
Choroterpes basalis	448	19.54	420	28.32	560	16.11	314	17.91
Tricorythodes	12	0.52	19	1.28	56	1.61	0	0
Caenis	199	8.68	140	9.44	336	9.67	190	10.84
Ephoron leukon	50	2.18	121	8.16	187	5.38	22	1.25
Argia	12	0.52	28	1.89	56	1.61	22	1.25
Ophiogomphus	1	0.04	0	0	1	0.03	0	0
Acroneuria abnormis	0	0	0	0	0	0	11	0.63
Nigronia serricornis	3	0.13	2	0.13	4	0.12	0	0
Chimarra obscura	12	0.52	37	2.49	112	3.22	67	3.82
Cheumatopsyche	75	3.27	75	5.06	317	9.12	101	5.76
Ceratopsyche morosa	12	0.52	19	1.28	0	0	0	0
Macrostemum zebratum	37	1.61	56	3.78	75	2.16	90	5.13
Optioservus trivittatus	37	1.61	9	0.61	0	0	0	0
Stenelmis crenata	149	6.5	140	9.44	280	8.06	34	1.94
Psephenus herricki	62	2.7	9	0.61	19	0.55	11	0.63
Thienemannimyia grp.	37	1.61	0	0	19	0.55	34	1.94
Cricotopus bicinctus grp.	12	0.52	0	0	0	0	0	0
Nanocladius (Plecopteracoluthus)	0	0	0	0	0	0	22	1.25
Microtendipes	12	0.52	0	0	0	0	0	0
Polypedilum convictum	12	0.52	0	0	19	0.55	0	0
Polypedilum scalaenum grp.	0	0	0	0	0	0	11	0.63
Tribelos jucundum	12	0.52	0	0	19	0.55	0	0
Tanytarsus	0	0	0	0	19	0.55	0	0

Table C-10. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 4

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Tanytarsus curticornis grp.	12	0.52	0	0	75	2.16	11	0.63
Tanytarsus guerlus grp.	12	0.52	0	0	19	0.55	34	1.94
Zavrelia	12	0.52	0	0	0	0	0	0
Hexatoma	0	0	0	0	19	0.55	0	0
Ferrissia	12	0.52	0	0	0	0	0	0
Sphaerium	50	2.18	19	1.28	37	1.06	101	5.76
Musculium	224	9.77	103	6.95	112	3.22	22	1.25
Pisidium	50	2.18	0	0	112	3.22	123	7.02

Table C-11. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 5

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Tubificidae	1	1.82	6	14.29	23	16.55	228	40
Caecidotea	4	7.27	3	7.14	2	1.44	4	0.7
Gammarus	1	1.82	3	7.14	0	0	0	0
Orconectes rusticus	1	1.82	1	2.38	1	0.72	1	0.18
Centroptilum	1	1.82	0	0	0	0	4	0.7
Procloeon	0	0	1	2.38	2	1.44	0	0
Stenacron interpunctatum	1	1.82	0	0	0	0	0	0
Stenonema femoratum	2	3.64	0	0	1	0.72	0	0
Choroterpes basalis	10	18.18	5	11.9	1	0.72	8	1.4
Caenis	1	1.82	0	0	0	0	0	0
Hexagenia limbata	0	0	11	26.19	2	1.44	27	4.74
Sialis	1	1.82	0	0	1	0.72	0	0
Phylocentropus placidus	0	0	1	2.38	0	0	4	0.7
Cheumatopsyche	0	0	1	2.38	0	0	0	0
Stenelmis crenata	0	0	0	0	1	0.72	0	0
Procladius	4	7.27	1	2.38	6	4.32	15	2.63
Ablabesmyia annulata	0	0	0	0	1	0.72	0	0
Nanocladius (Plecopteracoluthus)	1	1.82	0	0	0	0	0	0
Chironomus	4	7.27	0	0	8	5.76	23	4.04
Cryptochironomus	3	5.45	0	0	3	2.16	4	0.7
Cryptotendipes	0	0	0	0	3	2.16	4	0.7
Paralauterborniella	0	0	1	2.38	7	5.04	4	0.7
Paratendipes	0	0	0	0	2	1.44	54	9.47
Polypedilum halterale grp.	1	1.82	1	2.38	2	1.44	4	0.7
Polypedilum illinoense	1	1.82	0	0	0	0	0	0
Polypedilum scalaenum grp.	2	3.64	1	2.38	3	2.16	4	0.7
Tribelos jucundum	0	0	0	0	3	2.16	27	4.74
Cladotanytarsus mancus grp.	5	9.09	3	7.14	4	2.88	0	0
Cladotanytarsus vanderwulpi grp.	0	0	0	0	2	1.44	0	0
Tanytarsus	2	3.64	2	4.76	1	0.72	4	0.7
Tanytarsus curticornis grp.	1	1.82	0	0	1	0.72	0	0
Tanytarsus glabrescens grp.	0	0	0	0	1	0.72	0	0
Tanytarsus guerlus grp.	0	0	0	0	12	8.63	19	3.33
Helisoma	0	0	0	0	2	1.44	0	0
Ferrissia	0	0	0	0	2	1.44	8	1.4
Sphaerium	0	0	0	0	0	0	8	1.4

Table C-11. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 5

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Musculium	1	1.82	1	2.38	1	0.72	8	1.4
Pisidium	7	12.73	0	0	41	29.5	108	18.95

Table C-12. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 6

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Lumbriculidae	0	0	0	0	0	0	1	0.05
Tubificidae	56	7.92	128	4.21	26	2.04	124	5.99
Placobdella	0	0	16	0.53	0	0	0	0
Erpobdellidae	0	0	16	0.53	0	0	12	0.58
Orconectes rusticus	6	0.85	17	0.56	21	1.65	20	0.97
Acerpenna pygmaea	30	4.24	368	12.1	146	11.48	137	6.62
Procloeon	10	1.41	16	0.53	34	2.67	62	3
Leucrocuta hebe	10	1.41	128	4.21	155	12.19	199	9.61
Stenacron interpunctatum	5	0.71	0	0	0	0	12	0.58
Stenonema femoratum	0	0	64	2.1	9	0.71	50	2.42
Stenonema modestum	0	0	0	0	9	0.71	0	0
Stenonema pulchellum	148	20.93	336	11.05	181	14.23	187	9.03
Stenonema terminatum	0	0	96	3.16	52	4.09	50	2.42
Stenonema vicarium	15	2.12	32	1.05	76	5.97	87	4.2
Choroterpes basalis	158	22.35	576	18.94	198	15.57	324	15.65
Tricorythodes	20	2.83	32	1.05	9	0.71	12	0.58
Caenis	36	5.09	224	7.37	86	6.76	112	5.41
Ephemera simulans	0	0	0	0	0	0	12	0.58
Hexagenia limbata	5	0.71	0	0	0	0	12	0.58
Ephoron leukon	15	2.12	48	1.58	0	0	25	1.21
Argia	0	0	0	0	17	1.34	12	0.58
Nigronia serricornis	0	0	0	0	1	0.08	1	0.05
Sialis	0	0	16	0.53	0	0	0	0
Chimarra obscura	0	0	0	0	0	0	37	1.79
Psychomyia flavida	0	0	0	0	0	0	12	0.58
Cheumatopsyche	5	0.71	64	2.1	52	4.09	62	3
Macrostemum zebratum	10	1.41	16	0.53	9	0.71	50	2.42
Optioservus trivittatus	10	1.41	16	0.53	9	0.71	0	0
Stenelmis crenata	92	13.01	288	9.47	103	8.1	75	3.62
Ectopria	0	0	16	0.53	0	0	0	0
Psephenus herricki	51	7.21	16	0.53	9	0.71	12	0.58
Thienemannimyia grp.	0	0	48	1.58	0	0	12	0.58
Nanocladius (Plecopteracoluthus)	0	0	0	0	9	0.71	12	0.58
Microtendipes	0	0	16	0.53	0	0	25	1.21
Paratendipes	0	0	16	0.53	0	0	12	0.58
Tribelos jucundum	0	0	0	0	0	0	62	3

Table C-12. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 6

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Cladotanytarsus mancus grp.	0	0	16	0.53	0	0	0	0
Rheotanytarsus	0	0	16	0.53	0	0	0	0
Tanytarsus	0	0	16	0.53	0	0	12	0.58
Tanytarsus curticornis grp.	3	0.42	32	1.05	0	0	62	3
Tanytarsus guerlus grp.	1	0.14	0	0	9	0.71	25	1.21
Zavrelia	1	0.14	0	0	0	0	0	0
Hemerodromia	5	0.71	0	0	0	0	0	0
Ferrissia	0	0	16	0.53	0	0	12	0.58
Sphaerium	0	0	96	3.16	9	0.71	87	4.2
Musculium	15	2.12	160	5.26	43	3.38	25	1.21
Pisidium	0	0	80	2.63	0	0	25	1.21

Table C-13. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 7

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Lumbriculidae	0	0	0	0	1	0.18	1	1.67
Tubificidae	0	0	26	2.11	25	4.46	1	1.67
Caecidotea	0	0	0	0	0	0	1	1.67
Hyalella azteca	0	0	0	0	4	0.71	33	55
Orconectes rusticus	0	0	0	0	0	0	2	3.33
Acerpenna pygmaea	0	0	0	0	4	0.71	0	0
Acentrella carolina	0	0	0	0	8	1.43	1	1.67
Centroptilum	0	0	0	0	4	0.71	0	0
Leucrocuta hebe	5	0.6	0	0	0	0	0	0
Hexagenia limbata	21	2.53	26	2.11	12	2.14	2	3.33
Gomphus	1	0.12	1	0.08	1	0.18	0	0
Sigara	0	0	0	0	4	0.71	1	1.67
Cheumatopsyche	0	0	0	0	8	1.43	0	0
Macrostemum zebratum	5	0.6	0	0	0	0	0	0
Gyrinus	0	0	0	0	4	0.71	1	1.67
Procladius	0	0	9	0.73	4	0.71	1	1.67
Chironomus	11	1.33	9	0.73	12	2.14	0	0
Cryptochironomus	0	0	69	5.6	29	5.18	0	0
Cryptotendipes	0	0	26	2.11	16	2.86	0	0
Paralauterborniella	0	0	172	13.95	16	2.86	0	0
Polypedilum halterale grp.	0	0	9	0.73	0	0	0	0
Stictochironomus	25	3.01	9	0.73	16	2.86	1	1.67
Cladotanytarsus mancus grp.	5	0.6	76	6.16	4	0.71	0	0
Cladotanytarsus vanderwulpi grp.	0	0	112	9.08	182	32.5	0	0
Rheotanytarsus	0	0	26	2.11	4	0.71	0	0
Tanytarsus	0	0	0	0	4	0.71	0	0
Tanytarsus glabrescens grp.	0	0	17	1.38	4	0.71	0	0
Tanytarsus guerlus grp.	5	0.6	34	2.76	4	0.71	0	0
Chrysops	0	0	0	0	0	0	1	1.67
Amnicola	0	0	0	0	4	0.71	0	0
Ferrissia	0	0	0	0	8	1.43	0	0
Pisidium	752	90.6	612	49.64	178	31.79	14	23.33

Table C-14. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 8

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Turbellaria	0	0	0	0	6	2.34	5	3.29
Lumbriculidae	2	0.39	0	0	0	0	0	0
Tubificidae	95	18.41	25	21.37	17	6.64	17	11.18
Erpobdellidae	12	2.33	1	0.85	0	0	0	0
Caecidotea	4	0.78	2	1.71	21	8.2	0	0
Hyalella azteca	0	0	0	0	0	0	1	0.66
Gammarus	0	0	9	7.69	8	3.13	3	1.97
Orconectes rusticus	0	0	2	1.71	4	1.56	2	1.32
Acerpenna pygmaea	0	0	1	0.85	0	0	4	2.63
Centroptilum	0	0	1	0.85	0	0	1	0.66
Procloeon	0	0	1	0.85	13	5.08	2	1.32
Stenonema femoratum	0	0	0	0	4	1.56	0	0
Stenonema terminatum	0	0	0	0	0	0	3	1.97
Choroterpes basalis	0	0	0	0	9	3.52	8	5.26
Tricorythodes	0	0	0	0	2	0.78	8	5.26
Caenis	0	0	0	0	0	0	9	5.92
Hexagenia limbata	87	16.86	11	9.4	15	5.86	1	0.66
Macromia illinoiensis	0	0	0	0	1	0.39	2	1.32
Sigara	199	38.57	22	18.8	11	4.3	1	0.66
Cheumatopsyche	4	0.78	0	0	8	3.13	0	0
Gyrinus	0	0	1	0.85	0	0	0	0
Dubiraphia	0	0	0	0	2	0.78	0	0
Stenelmis crenata	0	0	1	0.85	0	0	5	3.29
Psephenus herricki	0	0	0	0	4	1.56	3	1.97
Procladius	12	2.33	2	1.71	8	3.13	0	0
Ablabesmyia annulata	0	0	0	0	2	0.78	0	0
Thienemannimyia grp.	0	0	0	0	2	0.78	3	1.97
Cricotopus sylvestris grp.	0	0	0	0	0	0	2	1.32
Heterotrissocladius	0	0	0	0	0	0	1	0.66
Chironomus	5	0.97	2	1.71	6	2.34	0	0
Cryptochironomus	3	0.58	1	0.85	0	0	4	2.63
Dicrotendipes neomodestus	0	0	2	1.71	0	0	0	0
Microtendipes	0	0	0	0	0	0	1	0.66
Paralauterborniella	4	0.78	0	0	0	0	0	0
Polypedilum illinoense	0	0	0	0	4	1.56	0	0
Polypedilum scalaenum grp.	0	0	0	0	2	0.78	0	0

Table C-14. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 8

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Stictochironomus	0	0	0	0	0	0	7	4.61
Cladotanytarsus mancus grp.	0	0	0	0	4	1.56	0	0
Cladotanytarsus vanderwulpi grp.	0	0	0	0	4	1.56	7	4.61
Rheotanytarsus	0	0	0	0	0	0	1	0.66
Tanytarsus	0	0	0	0	0	0	2	1.32
Tanytarsus glabrescens grp.	0	0	0	0	2	0.78	0	0
Tanytarsus guerlus grp.	2	0.39	0	0	4	1.56	6	3.95
Chrysops	4	0.78	2	1.71	0	0	0	0
Amnicola	0	0	1	0.85	0	0	0	0
Ferrissia	0	0	0	0	0	0	1	0.66
Sphaerium	4	0.78	4	3.42	8	3.13	10	6.58
Musculium	0	0	3	2.56	11	4.3	10	6.58
Pisidium	79	15.31	23	19.66	74	28.91	22	14.47

Table C-15. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 9

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Naididae	0	0	1	2.44	0	0	0	0
Tubificidae	1	1.33	1	2.44	6	10.71	0	0
Caecidotea	7	9.33	7	17.07	5	8.93	5	12.82
Gammarus	2	2.67	5	12.2	8	14.29	5	12.82
Orconectes rusticus	5	6.67	1	2.44	1	1.79	1	2.56
Pseudocloeon propinquum	0	0	0	0	0	0	1	2.56
Procloeon	2	2.67	5	12.2	1	1.79	1	2.56
Stenonema femoratum	0	0	2	4.88	0	0	0	0
Stenonema pulchellum	0	0	3	7.32	0	0	0	0
Choroterpes basalis	5	6.67	1	2.44	0	0	0	0
Hexagenia limbata	5	6.67	2	4.88	4	7.14	12	30.77
Sigara	2	2.67	2	4.88	0	0	0	0
Pycnopsyche	3	4	1	2.44	0	0	0	0
Gyrinus	0	0	2	4.88	3	5.36	0	0
Macronychus glabratus	0	0	1	2.44	0	0	0	0
Procladius	2	2.67	0	0	2	3.57	2	5.13
Ablabesmyia mallochi	1	1.33	0	0	1	1.79	0	0
Labrundinia	0	0	0	0	1	1.79	0	0
Nanocladius incomptus	0	0	0	0	1	1.79	0	0
Synorthocladius	0	0	0	0	1	1.79	0	0
Chironomus	0	0	0	0	2	3.57	0	0
Cryptochironomus	1	1.33	0	0	0	0	0	0
Cryptotendipes	5	6.67	0	0	3	5.36	2	5.13
Glyptotendipes	0	0	1	2.44	0	0	0	0
Microtendipes	0	0	1	2.44	1	1.79	0	0
Paralauterborniella	5	6.67	1	2.44	1	1.79	0	0
Tribelos jucundum	1	1.33	0	0	0	0	0	0
Cladotanytarsus mancus grp.	2	2.67	0	0	1	1.79	0	0
Cladotanytarsus vanderwulpi grp.	2	2.67	1	2.44	0	0	0	0
Rheotanytarsus	0	0	0	0	0	0	1	2.56
Tanytarsus	0	0	1	2.44	0	0	0	0
Tanytarsus glabrescens grp.	0	0	0	0	0	0	1	2.56
Tanytarsus guerlus grp.	0	0	0	0	1	1.79	0	0
Viviparidae	0	0	0	0	1	1.79	0	0
Amnicola	1	1.33	0	0	0	0	0	0
Ferrissia	0	0	0	0	2	3.57	0	0
Pisidium	23	30.67	2	4.88	10	17.86	8	20.51

Table C-16. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 10

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Turbellaria	0	0	8	0.68	9	0.59	12	0.63
Lumbriculidae	0	0	8	0.68	9	0.59	12	0.63
Tubificidae	0	0	0	0	9	0.59	69	3.62
Caecidotea	15	1.3	0	0	19	1.24	12	0.63
Gammarus	142	12.26	24	2.04	28	1.82	12	0.63
Orconectes rusticus	13	1.12	20	1.7	19	1.24	12	0.63
Acerpenna pygmaea	45	3.89	16	1.36	38	2.47	162	8.5
Procloeon	7	0.6	24	2.04	28	1.82	0	0
Leucrocuta hebe	119	10.28	96	8.17	76	4.94	58	3.04
Stenacron interpunctatum	90	7.77	80	6.81	18	1.17	35	1.84
Stenonema femoratum	171	14.77	72	6.13	47	3.06	23	1.21
Stenonema pulchellum	171	14.77	112	9.53	76	4.94	35	1.84
Stenonema vicarium	127	10.97	152	12.94	161	10.47	69	3.62
Choroterpes basalis	75	6.48	128	10.89	217	14.11	578	30.34
Paraleptophlebia	7	0.6	0	0	0	0	0	0
Tricorythodes	0	0	0	0	0	0	23	1.21
Caenis	45	3.89	8	0.68	57	3.71	196	10.29
Ephemera simulans	0	0	0	0	9	0.59	12	0.63
Ephoron leukon	15	1.3	32	2.72	19	1.24	23	1.21
Argia	7	0.6	144	12.26	66	4.29	46	2.41
Gomphus fraternus	0	0	0	0	1	0.07	0	0
Ophiogomphus	0	0	0	0	1	0.07	0	0
Chimarra obscura	0	0	0	0	19	1.24	0	0
Polycentropus	0	0	0	0	9	0.59	0	0
Cheumatopsyche	7	0.6	48	4.09	38	2.47	0	0
Macrostemum zebratum	0	0	24	2.04	19	1.24	12	0.63
Protoptila	0	0	0	0	0	0	23	1.21
Optioservus trivittatus	0	0	8	0.68	9	0.59	12	0.63
Stenelmis crenata	60	5.18	32	2.72	189	12.29	289	15.17
Ectopria	22	1.9	8	0.68	0	0	12	0.63
Psephenus herricki	15	1.3	16	1.36	0	0	12	0.63
Thienemannimyia grp.	2	0.17	3	0.26	2	0.13	1	0.05
Nanocladius (Plecopteracoluthus)	1	0.09	0	0	1	0.07	0	0
Chironomus	0	0	1	0.09	0	0	0	0
Microtendipes	2	0.17	4	0.34	3	0.2	4	0.21
Paratendipes	0	0	0	0	0	0	1	0.05

Table C-16. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 10

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Stictochironomus	0	0	0	0	1	0.07	0	0
Cladotanytarsus vanderwulpi grp.	0	0	2	0.17	0	0	0	0
Tanytarsus guerlus grp.	0	0	1	0.09	1	0.07	0	0
Sphaerium	0	0	8	0.68	123	8	23	1.21
Musculium	0	0	64	5.45	208	13.52	92	4.83
Pisidium	0	0	32	2.72	9	0.59	35	1.84

Table C-17. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 11

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Lumbriculidae	1	0.83	1	0.09	3	0.26	0	0
Tubificidae	2	1.67	26	2.24	7	0.6	0	0
Caecidotea	1	0.83	0	0	0	0	0	0
Gammarus	10	8.33	13	1.12	0	0	0	0
Orconectes rusticus	6	5	11	0.95	11	0.94	2	0.34
Isonychia	0	0	0	0	7	0.6	3	0.5
Acerpenna pygmaea	2	1.67	150	12.9	142	12.19	34	5.7
Acentrella carolina	0	0	0	0	0	0	7	1.17
Procloeon	0	0	0	0	15	1.29	7	1.17
Leucrocuta hebe	1	0.83	84	7.22	127	10.9	94	15.77
Stenacron interpunctatum	2	1.67	6	0.52	7	0.6	3	0.5
Stenonema femoratum	0	0	0	0	7	0.6	0	0
Stenonema modestum	0	0	0	0	7	0.6	0	0
Stenonema pulchellum	5	4.17	98	8.43	22	1.89	54	9.06
Stenonema terminatum	1	0.83	6	0.52	7	0.6	0	0
Stenonema vicarium	4	3.33	46	3.96	134	11.5	54	9.06
Choroterpes basalis	18	15	150	12.9	202	17.34	64	10.74
Tricorythodes	1	0.83	13	1.12	15	1.29	0	0
Caenis	5	4.17	78	6.71	127	10.9	64	10.74
Ephoron leukon	1	0.83	32	2.75	22	1.89	17	2.85
Argia	0	0	6	0.52	7	0.6	3	0.5
Gomphus fraternus	0	0	1	0.09	0	0	0	0
Ophiogomphus	0	0	2	0.17	0	0	0	0
Neoperla stewarti	0	0	0	0	7	0.6	0	0
Sigara	6	5	0	0	0	0	0	0
Chimarra obscura	0	0	20	1.72	15	1.29	20	3.36
Cheumatopsyche	1	0.83	13	1.12	30	2.58	30	5.03
Ceratopsyche morosa	0	0	0	0	15	1.29	0	0
Macrostemum zebratum	2	1.67	6	0.52	30	2.58	67	11.24
Ceraclea	0	0	6	0.52	0	0	0	0
Gyrinus	1	0.83	0	0	0	0	0	0
Macronychus glabratus	2	1.67	13	1.12	7	0.6	0	0
Optioservus trivittatus	4	3.33	72	6.19	15	1.29	7	1.17
Stenelmis crenata	24	20	169	14.53	75	6.44	23	3.86
Ectopria	1	0.83	0	0	0	0	0	0
Psephenus herricki	0	0	13	1.12	7	0.6	0	0

Table C-17. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 11

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Thienemannimyia grp.	1	0.83	6	0.52	0	0	3	0.5
Cricotopus bicinctus grp.	0	0	6	0.52	0	0	0	0
Cryptochironomus	1	0.83	6	0.52	7	0.6	3	0.5
Rheotanytarsus	6	5	0	0	7	0.6	0	0
Tanytarsus	1	0.83	0	0	7	0.6	0	0
Tanytarsus glabrescens grp.	0	0	0	0	15	1.29	0	0
Zavrelia	0	0	0	0	7	0.6	0	0
Hexatoma	1	0.83	0	0	7	0.6	0	0
Sphaerium	2	1.67	26	2.24	15	1.29	3	0.5
Musculium	4	3.33	58	4.99	30	2.58	17	2.85
Pisidium	3	2.5	26	2.24	0	0	17	2.85

Table C-18. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 12

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Turbellaria	4	3.77	0	0	0	0	2	1.22
Tubificidae	0	0	0	0	0	0	3	1.83
Hyalella azteca	0	0	1	1.79	3	4.76	4	2.44
Gammarus	53	50	39	69.64	32	50.79	1	0.61
Orconectes rusticus	1	0.94	7	12.5	4	6.35	2	1.22
Pseudocloeon propinquum	1	0.94	2	3.57	1	1.59	0	0
Acerpenna pygmaea	0	0	0	0	2	3.17	7	4.27
Acentrella carolina	0	0	1	1.79	1	1.59	2	1.22
Procloeon	1	0.94	3	5.36	1	1.59	1	0.61
Leucrocuta hebe	4	3.77	0	0	0	0	3	1.83
Stenacron interpunctatum	1	0.94	0	0	0	0	1	0.61
Stenonema femoratum	1	0.94	0	0	0	0	0	0
Stenonema pulchellum	0	0	0	0	0	0	8	4.88
Stenonema vicarium	0	0	0	0	0	0	3	1.83
Choroterpes basalis	1	0.94	0	0	4	6.35	29	17.68
Tricorythodes	0	0	0	0	1	1.59	2	1.22
Caenis	1	0.94	0	0	0	0	5	3.05
Ephemera simulans	0	0	0	0	0	0	5	3.05
Ephoron leukon	0	0	0	0	0	0	6	3.66
Gomphus fraternus	0	0	0	0	1	1.59	3	1.83
Rheumatobates	3	2.83	0	0	0	0	0	0
Sigara	1	0.94	0	0	0	0	0	0
Chimarra obscura	1	0.94	0	0	0	0	0	0
Neureclipsis	1	0.94	0	0	0	0	0	0
Cheumatopsyche	0	0	0	0	1	1.59	0	0
Protoptila	0	0	0	0	0	0	1	0.61
Stenelmis crenata	0	0	0	0	0	0	9	5.49
Ectopria	3	2.83	0	0	1	1.59	1	0.61
Psephenus herricki	0	0	1	1.79	0	0	0	0
Chironomus	0	0	0	0	0	0	1	0.61
Cryptochironomus	0	0	0	0	0	0	3	1.83
Microtendipes	0	0	0	0	0	0	1	0.61
Polypedilum scalaenumgrp.	0	0	0	0	1	1.59	0	0
Stictochironomus	0	0	0	0	0	0	1	0.61
Cladotanytarsus vanderwulpi grp.	0	0	0	0	0	0	1	0.61
Rheotanytarsus	0	0	1	1.79	0	0	6	3.66

Table C-18. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 12

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Chrysops	4	3.77	0	0	0	0	0	0
Sphaerium	0	0	0	0	7	11.11	3	1.83
Musculium	3	2.83	1	1.79	2	3.17	9	5.49
Pisidium	22	20.75	0	0	1	1.59	41	25

Table C-19. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 13

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Tubificidae	0	0	4	7.55	0	0	1	3.03
Gammarus	3	16.67	0	0	7	30.43	10	30.3
Leucrocuta hebe	0	0	0	0	0	0	1	3.03
Hexagenia limbata	0	0	17	32.08	5	21.74	11	33.33
Gomphus fraternus	0	0	0	0	0	0	1	3.03
Sigara	5	27.78	4	7.55	2	8.7	0	0
Lype diversa	0	0	4	7.55	0	0	0	0
Cheumatopsyche	1	5.56	0	0	0	0	0	0
Ectopria	1	5.56	0	0	0	0	1	3.03
Procladius	0	0	1	1.89	1	4.35	0	0
Ablabesmyia annulata	0	0	0	0	1	4.35	0	0
Monodiamesa	0	0	0	0	0	0	2	6.06
Chironomus	0	0	2	3.77	0	0	0	0
Cryptochironomus	1	5.56	0	0	1	4.35	0	0
Stictochironomus	0	0	1	1.89	0	0	0	0
Cladotanytarsus vanderwulpi grp.	0	0	1	1.89	0	0	0	0
Rheotanytarsus	0	0	3	5.66	0	0	0	0
Viviparidae	0	0	1	1.89	0	0	0	0
Sphaerium	0	0	2	3.77	1	4.35	3	9.09
Musculium	0	0	2	3.77	0	0	2	6.06
Pisidium	7	38.89	11	20.75	5	21.74	1	3.03

Table C-20. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 14

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Turbellaria	1	2.27	0	0	4	3.88	0	0
Tubificidae	0	0	0	0	0	0	1	0.77
Gammarus	14	31.82	40	70.18	68	66.02	68	52.31
Orconectes rusticus	2	4.55	3	5.26	6	5.83	3	2.31
Centroptilum	0	0	0	0	0	0	1	0.77
Procloeon	0	0	0	0	1	0.97	0	0
Leucrocuta hebe	0	0	1	1.75	2	1.94	1	0.77
Stenacron interpunctatum	2	4.55	0	0	1	0.97	1	0.77
Stenonema femoratum	0	0	1	1.75	0	0	4	3.08
Stenonema pulchellum	0	0	0	0	1	0.97	2	1.54
Stenonema terminatum	0	0	0	0	1	0.97	1	0.77
Choroterpes basalis	2	4.55	1	1.75	2	1.94	2	1.54
Tricorythodes	0	0	1	1.75	5	4.85	3	2.31
Ephemera simulans	0	0	0	0	0	0	4	3.08
Hexagenia limbata	6	13.64	1	1.75	2	1.94	2	1.54
Gomphus fraternus	1	2.27	4	7.02	0	0	0	0
Gomphus	0	0	1	1.75	0	0	0	0
Cheumatopsyche	0	0	0	0	1	0.97	1	0.77
Dubiraphia	0	0	0	0	1	0.97	0	0
Ectopria	1	2.27	0	0	0	0	0	0
Procladius	0	0	0	0	1	0.97	1	0.77
Monodiamesa	3	6.82	0	0	1	0.97	1	0.77
Stictochironomus	0	0	0	0	0	0	1	0.77
Cladotanytarsus vanderwulpi grp.	1	2.27	0	0	0	0	0	0
Tanytarsus guerlus grp.	0	0	0	0	1	0.97	0	0
Viviparidae	0	0	0	0	0	0	1	0.77
Sphaerium	3	6.82	0	0	3	2.91	14	10.77
Musculium	8	18.18	2	3.51	0	0	18	13.85
Pisidium	0	0	2	3.51	2	1.94	0	0

Table C-21. Replicate Macroinvertebrate Sampling Results (Abundance and Percent of Total Organisms): Location 15

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#	%	#	%	#	%	#	%
Turbellaria	1	0.63	1	0.54	0	0	0	0
Lumbriculidae	0	0	1	0.54	0	0	0	0
Tubificidae	0	0	26	13.98	6	4.11	97	64.24
Caecidotea	3	1.88	5	2.69	11	7.53	0	0
Gammarus	149	93.13	76	40.86	68	46.58	14	9.27
Centroptilum	0	0	0	0	0	0	1	0.66
Choroterpes basalis	0	0	1	0.54	0	0	0	0
Hexagenia limbata	1	0.63	5	2.69	14	9.59	9	5.96
Gomphus fraternus	0	0	1	0.54	0	0	0	0
Sigara	0	0	1	0.54	0	0	0	0
Sialis	0	0	0	0	0	0	2	1.32
Lype diversa	0	0	1	0.54	1	0.68	0	0
Procladius	0	0	1	0.54	2	1.37	0	0
Clinotanypus	0	0	1	0.54	2	1.37	0	0
Ablabesmyia annulata	0	0	0	0	1	0.68	1	0.66
Chironomus	0	0	37	19.89	24	16.44	6	3.97
Cryptochironomus	2	1.25	3	1.61	1	0.68	0	0
Cryptotendipes	0	0	0	0	0	0	4	2.65
Polypedilum halterale grp.	0	0	0	0	1	0.68	0	0
Tanytarsus guerlus grp.	0	0	1	0.54	0	0	1	0.66
Viviparidae	2	1.25	25	13.44	14	9.59	16	10.6
Physella	1	0.63	0	0	0	0	0	0
Musculium	0	0	0	0	1	0.68	0	0
Pisidium	1	0.63	0	0	0	0	0	0

Table C-22. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 16

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Hydra	0	0	0	0	0	0	31.9	0.75
Turbellaria	0	0	0	0	0	0	31.9	0.75
Caecidotea	7.1	0.75	0	0	0	0	0	0
Orconectes rusticus	7.1	0.75	14.2	1.67	7.1	0.67	3.5	0.08
Isonychia	14.2	1.49	7.1	0.84	60.3	5.7	95.8	2.24
Acerpenna pygmaea	14.2	1.49	0	0	7.1	0.67	31.9	0.75
Procloeon	28.4	2.99	7.1	0.84	0	0	0	0
Leucrocuta hebe	0	0	7.1	0.84	28.4	2.68	63.9	1.5
Stenacron interpunctatum	14.2	1.49	7.1	0.84	141.9	13.42	31.9	0.75
Stenonema pulchellum	31.9	3.36	42.6	5.02	127.8	12.08	670.7	15.71
Stenonema terminatum	0	0	0	0	7.1	0.67	0	0
Stenonema vicarium	141.9	14.93	95.8	11.3	21.3	2.01	0	0
Paraleptophlebia	7.1	0.75	21.3	2.51	35.5	3.36	95.8	2.24
Eurylophella	0	0	0	0	7.1	0.67	0	0
Acroneuria abnormis	56.8	5.97	53.2	6.28	53.2	5.03	28.4	0.67
Acroneuria lycorias	3.5	0.37	10.6	1.26	10.6	1.01	21.3	0.5
Chimarra obscura	0	0	0	0	0	0	31.9	0.75
Cheumatopsyche	14.2	1.49	42.6	5.02	46.1	4.36	926.2	21.7
Hydropsyche phalerata	7.1	0.75	0	0	0	0	0	0
Ceratopsyche morosa	39	4.1	28.4	3.35	14.2	1.34	31.9	0.75
Labrundinia pilosella	7.1	0.75	0	0	0	0	31.9	0.75
Thienemannimyia grp.	14.2	1.49	0	0	14.2	1.34	159.7	3.74
Corynoneura lobata	358.4	37.69	255.5	30.13	315.8	29.87	1117.8	26.18
Thienemanniella xena	0	0	7.1	0.84	0	0	0	0
Thienemanniella n. sp. 3	14.2	1.49	0	0	0	0	0	0
Thienemanniella similis	7.1	0.75	7.1	0.84	0	0	0	0
Cricotopus tremulus grp.	0	0	17.7	2.09	0	0	0	0
Cricotopus bicinctus grp.	92.3	9.7	21.3	2.51	46.1	4.36	159.7	3.74
Nanocladius distinctus	0	0	7.1	0.84	0	0	0	0
Parakiefferiella	14.2	1.49	21.3	2.51	14.2	1.34	0	0
Synorthocladius	7.1	0.75	0	0	14.2	1.34	0	0
Tvetenia discoloripes grp.	0	0	17.7	2.09	7.1	0.67	0	0
Microtendipes	7.1	0.75	7.1	0.84	0	0	0	0
Polypedilum fallax grp.	0	0	0	0	7.1	0.67	0	0
Polypedilum convictum	0	0	0	0	7.1	0.67	95.8	2.24
Polypedilum scalaenum grp.	0	0	0	0	7.1	0.67	0	0

Table C-22. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 16

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Rheotanytarsus	0	0	149	17.57	28.4	2.68	447.1	10.47
Tanytarsus curticornis grp.	0	0	0	0	7.1	0.67	0	0
Tanytarsus glabrescens grp.	14.2	1.49	0	0	7.1	0.67	159.7	3.74
Tanytarsus guerlus grp.	7.1	0.75	0	0	7.1	0.67	0	0
Zavrelia	7.1	0.75	0	0	0	0	0	0
Amnicola	0	0	0	0	7.1	0.67	0	0
Ferrissia	14.2	1.49	0	0	0	0	0	0

Table C-23. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 17

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Hydra	0	0	--	--	0	0	7.1	0.49
Gammarus	0	0	--	--	0	0	7.1	0.49
Orconectes rusticus	3.5	0.22	--	--	3.5	0.14	3.5	0.25
Isonychia	31.9	1.94	--	--	71	2.72	53.2	3.69
Baetis intercalaris	0	0	--	--	0	0	7.1	0.49
Acerpenna pygmaea	10.6	0.65	--	--	0	0	17.7	1.23
Leucrocuta hebe	10.6	0.65	--	--	0	0	46.1	3.19
Stenacron interpunctatum	0	0	--	--	17.7	0.68	35.5	2.46
Stenonema pulchellum	95.8	5.81	--	--	638.8	24.46	181	12.53
Stenonema vicarium	10.6	0.65	--	--	71	2.72	81.6	5.65
Paraleptophlebia	0	0	--	--	0	0	28.4	1.97
Acroneuria abnormis	42.6	2.58	--	--	56.8	2.17	78.1	5.41
Acroneuria lycorias	24.8	1.51	--	--	24.8	0.95	3.5	0.25
Paragnetina media	3.5	0.22	--	--	0	0	0	0
Chimarra obscura	31.9	1.94	--	--	0	0	7.1	0.49
Cheumatopsyche	244.9	14.84	--	--	53.2	2.04	134.8	9.34
Ceratopsyche morosa	106.5	6.45	--	--	71	2.72	46.1	3.19
Macrostemum zebratum	10.6	0.65	--	--	0	0	0	0
Thienemannimyia grp.	0	0	--	--	17.7	0.68	35.5	2.46
Corynoneura lobata	138.4	8.39	--	--	638.8	24.46	347.8	24.08
Thienemanniella xena	10.6	0.65	--	--	0	0	0	0
Cricotopus bicinctus grp.	117.1	7.1	--	--	35.5	1.36	28.4	1.97
Nanocladius distinctus	31.9	1.94	--	--	35.5	1.36	7.1	0.49
Nanocladius crassicornus/rectinervis	0	0	--	--	35.5	1.36	0	0
Nanocladius (Plecopteracoluthus)	21.3	1.29	--	--	92.3	3.53	53.2	3.69
Parakiefferiella	0	0	--	--	0	0	7.1	0.49
Tvetenia discoloripes grp.	10.6	0.65	--	--	0	0	0	0
Microtendipes	0	0	--	--	92.3	3.53	0	0
Polypedilum convictum	181	10.97	--	--	255.5	9.78	46.1	3.19
Rheotanytarsus	500.4	30.32	--	--	365.5	13.99	181	12.53
Tanytarsus glabrescens grp.	0	0	--	--	35.5	1.36	0	0
Ferrissia	10.6	0.65	--	--	0	0	0	0

Table C-24. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 18

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Orconectes rusticus	--	--	7.1	0.28	7.1	0.41	3.5	0.09
Isonychia	--	--	71	2.76	49.7	2.9	127.8	3.08
Baetis intercalaris	--	--	17.7	0.69	0	0	31.9	0.77
Acerpenna pygmaea	--	--	0	0	0	0	223.6	5.4
Leucrocuta hebe	--	--	35.5	1.38	0	0	63.9	1.54
Stenacron interpunctatum	--	--	0	0	14.2	0.83	0	0
Stenonema pulchellum	--	--	255.5	9.93	166.8	9.73	159.7	3.86
Stenonema vicarium	--	--	35.5	1.38	78.1	4.55	0	0
Choroterpes basalis	--	--	0	0	0	0	31.9	0.77
Paraleptophlebia	--	--	17.7	0.69	24.8	1.45	31.9	0.77
Acroneuria abnormis	--	--	14.2	0.55	14.2	0.83	17.7	0.43
Acroneuria lycorias	--	--	28.4	1.1	21.3	1.24	31.9	0.77
Paragnetina media	--	--	3.5	0.14	0	0	0	0
Chimarra obscura	--	--	17.7	0.69	39	2.28	0	0
Neureclipsis	--	--	0	0	14.2	0.83	0	0
Cheumatopsyche	--	--	198.7	7.72	205.8	12.01	255.5	6.17
Ceratopsyche morosa	--	--	35.5	1.38	39	2.28	63.9	1.54
Thienemannimyia grp.	--	--	35.5	1.38	78.1	4.55	127.8	3.08
Corynoneura lobata	--	--	163.2	6.34	344.2	20.08	511	12.34
Thienemanniella xena	--	--	0	0	14.2	0.83	0	0
Thienemanniella n. sp. 3	--	--	35.5	1.38	24.8	1.45	31.9	0.77
Cricotopus tremulus grp.	--	--	35.5	1.38	0	0	31.9	0.77
Cricotopus bicinctus grp.	--	--	220	8.55	49.7	2.9	542.9	13.11
Nanocladius distinctus	--	--	0	0	14.2	0.83	31.9	0.77
Nanocladius (Plecopteracoluthus)	--	--	35.5	1.38	0	0	31.9	0.77
Parakiefferiella	--	--	0	0	24.8	1.45	0	0
Synorthocladius	--	--	0	0	14.2	0.83	0	0
Tvetenia discoloripes grp.	--	--	35.5	1.38	0	0	31.9	0.77
Microtendipes	--	--	0	0	14.2	0.83	31.9	0.77
Polypedilum fallax grp.	--	--	0	0	14.2	0.83	0	0
Polypedilum convictum	--	--	181	7.03	49.7	2.9	447.1	10.8
Rheotanytarsus	--	--	1075.2	41.79	294.5	17.18	1149.8	27.76
Tanytarsus curticornis grp.	--	--	0	0	0	0	31.9	0.77
Tanytarsus glabrescens grp.	--	--	0	0	0	0	31.9	0.77
Hemerodromia	--	--	0	0	14.2	0.83	0	0
Ferrissia	--	--	17.7	0.69	88.7	5.18	63.9	1.54

Table C-25. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 19

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Orconectes rusticus	3.5	0.05	3.5	0.08	3.5	0.07	--	--
Isonychia	85.2	1.11	95.8	2.24	42.6	0.9	--	--
Baetis intercalaris	127.8	1.67	0	0	42.6	0.9	--	--
Acerpenna pygmaea	170.3	2.23	31.9	0.75	85.2	1.8	--	--
Stenonema pulchellum	298.1	3.9	63.9	1.49	340.7	7.18	--	--
Stenonema vicarium	383.3	5.02	31.9	0.75	0	0	--	--
Eurylophella	42.6	0.56	0	0	0	0	--	--
Acroneuria abnormis	7.1	0.09	14.2	0.33	35.5	0.75	--	--
Acroneuria lycorias	39	0.51	53.2	1.24	35.5	0.75	--	--
Paragnetina media	10.6	0.14	0	0	0	0	--	--
Chimarra obscura	42.6	0.56	31.9	0.75	0	0	--	--
Neureclipsis	0	0	0	0	42.6	0.9	--	--
Cheumatopsyche	468.4	6.13	415.2	9.69	369.1	7.78	--	--
Ceratopsyche morosa	298.1	3.9	95.8	2.24	170.3	3.59	--	--
Macrostemum zebratum	127.8	1.67	31.9	0.75	42.6	0.9	--	--
Thienemannimyia grp.	42.6	0.56	0	0	85.2	1.8	--	--
Corynoneura lobata	553.6	7.25	127.8	2.98	511	10.77	--	--
Thienemanniella xena	212.9	2.79	63.9	1.49	0	0	--	--
Thienemanniella similis	127.8	1.67	0	0	0	0	--	--
Cricotopus tremulus grp.	42.6	0.56	0	0	0	0	--	--
Cricotopus bicinctus grp.	468.4	6.13	255.5	5.96	468.4	9.87	--	--
Nanocladius distinctus	127.8	1.67	63.9	1.49	42.6	0.9	--	--
Parakiefferiella	0	0	31.9	0.75	0	0	--	--
Synorthocladius	0	0	31.9	0.75	0	0	--	--
Tvetenia discoloripes grp.	468.4	6.13	95.8	2.24	42.6	0.9	--	--
Microtendipes	0	0	0	0	85.2	1.8	--	--
Polypedilum convictum	1022	13.38	415.2	9.69	511	10.77	--	--
Stelechomyia perpulcher	42.6	0.56	0	0	0	0	--	--
Rheotanytarsus	2427.3	31.77	2267.6	52.9	1660.8	35	--	--
Tanytarsus curticornis grp.	0	0	31.9	0.75	42.6	0.9	--	--
Tanytarsus glabrescens grp.	0	0	0	0	42.6	0.9	--	--
Ferrissia	0	0	31.9	0.75	42.6	0.9	--	--

Table C-26. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 20

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Hydra	78.1	3.95	0	0	110	4.3	181	6.95
Turbellaria	14.2	0.72	31.9	0.71	0	0	0	0
Naididae	14.2	0.72	0	0	0	0	0	0
Gammarus	14.2	0.72	0	0	0	0	0	0
Orconectes rusticus	3.5	0.18	3.5	0.08	0	0	3.5	0.14
Isonychia	78.1	3.95	255.5	5.71	71	2.77	17.7	0.68
Acerpenna pygmaea	31.9	1.62	159.7	3.57	198.7	7.77	127.8	4.9
Procloeon	0	0	0	0	0	0	53.2	2.04
Leucrocuta hebe	14.2	0.72	127.8	2.85	17.7	0.69	53.2	2.04
Stenacron interpunctatum	0	0	31.9	0.71	0	0	0	0
Stenonema pulchellum	127.8	6.46	511	11.42	145.5	5.69	326.5	12.53
Stenonema vicarium	0	0	63.9	1.43	17.7	0.69	92.3	3.54
Paraleptophlebia	14.2	0.72	63.9	1.43	0	0	0	0
Acroneuria abnormis	17.7	0.9	28.4	0.63	24.8	0.97	21.3	0.82
Acroneuria lycorias	7.1	0.36	3.5	0.08	7.1	0.28	3.5	0.14
Chimarra obscura	31.9	1.62	0	0	0	0	0	0
Neureclipsis	49.7	2.51	127.8	2.85	17.7	0.69	92.3	3.54
Cheumatopsyche	908.4	45.96	958.1	21.41	564.2	22.05	436.5	16.76
Ceratopsyche morosa	31.9	1.62	31.9	0.71	0	0	17.7	0.68
Macrostemum zebratum	49.7	2.51	31.9	0.71	17.7	0.69	0	0
Agraylea	0	0	63.9	1.43	0	0	0	0
Ablabesmyia mallochi	0	0	0	0	35.5	1.39	0	0
Thienemannimyia grp.	49.7	2.51	191.6	4.28	127.8	4.99	127.8	4.9
Corynoneura lobata	78.1	3.95	638.8	14.27	493.3	19.28	418.7	16.08
Thienemanniella n. sp. 3	0	0	0	0	0	0	17.7	0.68
Cricotopus bicinctus grp.	0	0	95.8	2.14	92.3	3.61	35.5	1.36
Nanocladius (Plecopteracoluthus)	14.2	0.72	0	0	17.7	0.69	35.5	1.36
Parakiefferiella	0	0	0	0	0	0	17.7	0.68
Tvetenia discoloripes grp.	14.2	0.72	0	0	0	0	0	0
Microtendipes	0	0	0	0	0	0	17.7	0.68
Polypedilum convictum	63.9	3.23	255.5	5.71	92.3	3.61	53.2	2.04
Rheotanytarsus	255.5	12.93	702.6	15.7	436.5	17.06	326.5	12.53
Tanytarsus curticornis grp.	0	0	31.9	0.71	0	0	17.7	0.68
Tanytarsus glabrescens grp.	0	0	31.9	0.71	71	2.77	110	4.22
Pisidium	14.2	0.72	31.9	0.71	0	0	0	0

Table C-27. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 21

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Hydra	0	0	17.7	1.35	60.3	4.76	49.7	4.29
Turbellaria	0	0	0	0	17.7	1.4	0	0
Gammarus	0	0	0	0	7.1	0.56	0	0
Orconectes rusticus	7.1	0.65	7.1	0.54	3.5	0.28	3.5	0.31
Isonychia	35.5	3.27	35.5	2.7	24.8	1.96	21.3	1.84
Acerpenna pygmaea	21.3	1.96	28.4	2.16	49.7	3.92	67.4	5.83
Procloeon	0	0	0	0	0	0	10.6	0.92
Leucrocuta hebe	60.3	5.56	0	0	42.6	3.36	49.7	4.29
Stenacron interpunctatum	0	0	0	0	49.7	3.92	0	0
Stenonema femoratum	0	0	0	0	0	0	10.6	0.92
Stenonema pulchellum	354.9	32.68	191.6	14.59	230.7	18.21	106.5	9.2
Stenonema vicarium	28.4	2.61	127.8	9.73	237.8	18.77	149	12.88
Paraleptophlebia	0	0	0	0	0	0	10.6	0.92
Argia	0	0	0	0	3.5	0.28	0	0
Acroneuria abnormis	10.6	0.98	17.7	1.35	17.7	1.4	21.3	1.84
Acroneuria lycorias	17.7	1.63	10.6	0.81	0	0	3.5	0.31
Paragnetina media	3.5	0.33	3.5	0.27	0	0	0	0
Neureclipsis	0	0	0	0	7.1	0.56	21.3	1.84
Cheumatopsyche	149	13.73	145.5	11.08	85.2	6.72	276.8	23.93
Ceratopsyche morosa	14.2	1.31	0	0	0	0	49.7	4.29
Macrostemum zebratum	0	0	7.1	0.54	0	0	0	0
Stenelmis	0	0	0	0	7.1	0.56	0	0
Thienemannimyia grp.	28.4	2.61	28.4	2.16	92.3	7.28	28.4	2.45
Corynoneura lobata	141.9	13.07	283.9	21.62	205.8	16.25	60.3	5.21
Thienemanniella xena	7.1	0.65	17.7	1.35	7.1	0.56	0	0
Thienemanniella n. sp. 3	0	0	0	0	0	0	10.6	0.92
Cricotopus bicinctus grp.	7.1	0.65	7.1	0.54	17.7	1.4	10.6	0.92
Nanocladius distinctus	21.3	1.96	0	0	0	0	0	0
Nanocladius (Plecopteracoluthus)	7.1	0.65	35.5	2.7	0	0	28.4	2.45
Parakiefferiella	0	0	0	0	0	0	10.6	0.92
Tvetenia discoloripes grp.	7.1	0.65	0	0	0	0	0	0
Microtendipes	0	0	0	0	7.1	0.56	0	0
Parachironomus carinatus	0	0	0	0	7.1	0.56	0	0
Polypedilum convictum	21.3	1.96	46.1	3.51	17.7	1.4	28.4	2.45
Rheotanytarsus	127.8	11.76	301.6	22.97	67.4	5.32	106.5	9.2
Tanytarsus glabrescens grp.	0	0	0	0	0	0	10.6	0.92
Simulium	0	0	0	0	0	0	10.6	0.92
Ferrissia	7.1	0.65	0	0	0	0	0	0
Pisidium	7.1	0.65	0	0	0	0	0	0

Table C-28. Replicate Marcoinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 22

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Hydra	0	0	0	0	14.2	1.29	--	--
Naididae	0	0	63.9	1.2	7.1	0.64	--	--
Orconectes rusticus	7.1	0.2	7.1	0.13	10.6	0.96	--	--
Isonychia	230.7	6.5	223.6	4.2	7.1	0.64	--	--
Baetis intercalaris	0	0	31.9	0.6	0	0	--	--
Acerpenna pygmaea	869.4	24.5	287.4	5.4	60.3	5.47	--	--
Leucrocuta hebe	0	0	31.9	0.6	7.1	0.64	--	--
Stenacron interpunctatum	0	0	0	0	7.1	0.64	--	--
Stenonema mediopunctatum	0	0	31.9	0.6	0	0	--	--
Stenonema pulchellum	305.2	8.6	159.7	3	67.4	6.11	--	--
Stenonema vicarium	102.9	2.9	63.9	1.2	14.2	1.29	--	--
Acroneuria abnormis	10.6	0.3	35.5	0.67	35.5	3.22	--	--
Acroneuria lycorias	10.6	0.3	10.6	0.2	21.3	1.93	--	--
Polycentropus	0	0	0	0	7.1	0.64	--	--
Cheumatopsyche	280.3	7.9	606.8	11.4	127.8	11.58	--	--
Ceratopsyche morosa	0	0	63.9	1.2	14.2	1.29	--	--
Agraylea	49.7	1.4	63.9	1.2	0	0	--	--
Labrundinia pilosella	0	0	0	0	7.1	0.64	--	--
Thienemannimyia grp.	152.6	4.3	31.9	0.6	21.3	1.93	--	--
Corynoneura lobata	230.7	6.5	351.3	6.6	163.2	14.79	--	--
Thienemanniella xena	0	0	223.6	4.2	14.2	1.29	--	--
Thienemanniella n. sp. 3	0	0	31.9	0.6	0	0	--	--
Cricotopus bicinctus grp.	535.8	15.1	606.8	11.4	35.5	3.22	--	--
Nanocladius distinctus	0	0	127.8	2.4	0	0	--	--
Nanocladius (Plecopteracoluthus)	0	0	0	0	21.3	1.93	--	--
Parakiefferiella	49.7	1.4	31.9	0.6	14.2	1.29	--	--
Synorthocladius	177.4	5	95.8	1.8	0	0	--	--
Tvetenia discoloripes grp.	0	0	223.6	4.2	7.1	0.64	--	--
Glyptotendipes	24.8	0.7	0	0	0	0	--	--
Microtendipes	49.7	1.4	0	0	0	0	--	--
Polypedilum convictum	205.8	5.8	734.6	13.8	127.8	11.58	--	--
Rheotanytarsus	230.7	6.5	1085.9	20.4	255.5	23.15	--	--
Tanytarsus curticornis grp.	0	0	0	0	14.2	1.29	--	--
Tanytarsus glabrescens grp.	24.8	0.7	31.9	0.6	14.2	1.29	--	--
Simulium	0	0	31.9	0.6	0	0	--	--
Hemerodromia	0	0	31.9	0.6	0	0	--	--
Ferrissia	0	0	0	0	7.1	0.64	--	--

Table C-29. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 23

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Hydra	53.2	3.93	0	0	0	0	0	0
Turbellaria	0	0	0	0	0	0	24.8	1.89
Naididae	0	0	0	0	0	0	7.1	0.54
Gammarus	0	0	0	0	0	0	92.3	7.01
Orconectes rusticus	7.1	0.52	3.5	0.11	7.1	0.46	21.3	1.62
Isonychia	0	0	78.1	2.33	.0	0	17.7	1.35
Acerpenna pygmaea	35.5	2.62	255.5	7.64	117.1	7.53	17.7	1.35
Leucrocuta hebe	17.7	1.31	49.7	1.48	71	4.57	0	0
Stenacron interpunctatum	0	0	0	0	35.5	2.28	78.1	5.93
Stenonema pulchellum	127.8	9.42	535.8	16.01	138.4	8.9	134.8	10.24
Stenonema vicarium	17.7	1.31	24.8	0.74	46.1	2.97	24.8	1.89
Paraleptophlebia	0	0	24.8	0.74	81.6	5.25	163.2	12.4
Acroneuria abnormis	39	2.88	17.7	0.53	3.5	0.23	3.5	0.27
Acroneuria lycorias	10.6	0.79	7.1	0.21	3.5	0.23	3.5	0.27
Chimarra obscura	0	0	0	0	0	0	24.8	1.89
Neureclipsis	7.1	0.52	0	0	21.3	1.37	24.8	1.89
Polycentropus	0	0	24.8	0.74	0	0	0	0
Cheumatopsyche	156.1	11.52	230.7	6.89	56.8	3.65	102.9	7.82
Psephenus herricki	0	0	0	0	0	0	3.5	0.27
Thienemannimyia grp.	17.7	1.31	24.8	0.74	102.9	6.62	85.2	6.47
Corynoneura lobata	209.4	15.45	766.5	22.91	464.9	29.91	120.7	9.16
Thienemanniella xena	7.1	0.52	0	0	0	0	0	0
Thienemanniella similis	17.7	1.31	0	0	0	0	0	0
Cricotopus bicinctus grp.	28.4	2.09	24.8	0.74	21.3	1.37	7.1	0.54
Nanocladius distinctus	46.1	3.4	24.8	0.74	21.3	1.37	17.7	1.35
Nanocladius (Plecopteracoluthus)	28.4	2.09	0	0	0	0	17.7	1.35
Parakiefferiella	7.1	0.52	49.7	1.48	81.6	5.25	0	0
Synorthocladius	17.7	1.31	0	0	0	0	0	0
Dicrotendipes neomodestus	0	0	0	0	10.6	0.68	0.	0
Microtendipes	7.1	0.52	24.8	0.74	56.8	3.65	102.9	7.82
Polypedilum convictum	92.3	6.81	152.6	4.56	56.8	3.65	92.3	7.01
Polypedilum scalaenum grp.	0	0	0	0	10.6	0.68	24.8	1.89
Tribelos jucundum	0	0	0	0	0	0	24.8	1.89
Rheotanytarsus	390.3	28.8	1022	30.54	102.9	6.62	42.6	3.23
Tanytarsus curticornis grp.	0	0	0	0	0	0	17.7	1.35
Tanytarsus glabrescens grp.	7.1	0.52	0	0	21.3	1.37	7.1	0.54

Table C-29. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 23

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Zavrelia	0	0	0	0	10.6	0.68	0	0
Simulium	0	0	0	0	10.6	0.68	0	0
Physella	0	0	3.5	0.11	0	0	0	0
Ferrissia	7.1	0.52	0	0	0	0	0	0
Sphaerium	0	0	0	0	0	0	3.5	0.27
Pisidium	0	0	0	0	0	0	7.1	0.54

Table C-30. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 24

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Turbellaria	14.2	0.53	0	0	31.9	1.41	0	0
Naididae	14.2	0.53	24.8	0.61	0	0	0	0
Gammarus	0	0	0	0	63.9	2.83	7.1	0.78
Orconectes rusticus	7.1	0.26	3.5	0.09	3.5	0.16	7.1	0.78
Isonychia	49.7	1.84	78.1	1.92	31.9	1.41	35.5	3.92
Baetis intercalaris	0	0	24.8	0.61	0	0	0	0
Acerpenna pygmaea	88.7	3.29	305.2	7.5	269.7	11.93	28.4	3.14
Procloeon	14.2	0.53	0	0	0	0	0	0
Leucrocuta hebe	0	0	127.8	3.14	127.8	5.65	28.4	3.14
Stenacron interpunctatum	0	0	0	0	0	0	7.1	0.78
Stenonema pulchellum	241.3	8.96	716.8	17.61	525.2	23.23	127.8	14.12
Stenonema terminatum	0	0	0	0	14.2	0.63	0	0
Stenonema vicarium	127.8	4.74	255.5	6.28	127.8	5.65	173.9	19.22
Paraleptophlebia	14.2	0.53	0	0	14.2	0.63	0	0
Argia	14.2	0.53	0	0	0	0	0	0
Acroneuria abnormis	28.4	1.05	24.8	0.61	3.5	0.16	14.2	1.57
Acroneuria lycorias	7.1	0.26	10.6	0.26	3.5	0.16	0	0
Paragnetina media	3.5	0.13	0	0	0	0	0	0
Chimarra obscura	14.2	0.53	0	0	0	0	0	0
Neureclipsis	0	0	127.8	3.14	14.2	0.63	7.1	0.78
Polycentropus	0	0	0	0	0	0	7.1	0.78
Cheumatopsyche	269.7	10.01	638.8	15.69	255.5	11.3	117.1	12.94
Ceratopsyche morosa	14.2	0.53	49.7	1.22	63.9	2.83	0	0
Thienemannimyia grp.	127.8	4.74	78.1	1.92	127.8	5.65	17.7	1.96
Corynoneura lobata	716.8	26.61	383.3	9.42	223.6	9.89	163.2	18.04
Thienemanniella xena	0	0	24.8	0.61	31.9	1.41	0	0
Cricotopus bicinctus grp.	152.6	5.67	0	0	0	0	0	0
Nanocladius distinctus	24.8	0.92	49.7	1.22	0	0	0	0
Nanocladius (Plecopteracoluthus)	24.8	0.92	24.8	0.61	0	0	0	0
Parakiefferiella	0	0	0	0	0	0	17.7	1.96
Synorthocladius	49.7	1.84	0	0	0	0	7.1	0.78
Tvetenia discoloripes grp.	24.8	0.92	0	0	0	0	0	0
Glyptotendipes	24.8	0.92	0	0	0	0	0	0
Microtendipes	0	0	0	0	14.2	0.63	0	0
Polypedilum convictum	24.8	0.92	177.4	4.36	78.1	3.45	53.2	5.88
Polypedilum illinoense	0	0	0	0	14.2	0.63	0	0

Table C-30. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 24

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Polypedilum scalaenum grp.	0	0	24.8	0.61	14.2	0.63	0	0
Rheotanytarsus	535.8	19.89	894.3	21.97	177.4	7.85	71	7.84
Tanytarsus glabrescens grp.	49.7	1.84	24.8	0.61	14.2	0.63	0	0
Simulium	0	0	0	0	14.2	0.63	0	0
Physella	0	0	0	0	0	0	7.1	0.78
Ferrissia	14.2	0.53	0	0	0	0	0	0
Pisidium	0	0	0	0	0	0	7.1	0.78

Table C-31. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 25

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Hydra	177.4	4.99	24.8	1.32	986.5	32.98	291	11.1
Turbellaria	49.7	1.4	0	0	35.5	1.19	0	0
Naididae	24.8	0.7	0	0	0	0	17.7	0.68
Gammarus	78.1	2.19	447.1	23.77	418.7	14	347.8	13.26
Orconectes rusticus	10.6	0.3	21.3	1.13	17.7	0.59	14.2	0.54
Isonychia	127.8	3.59	0	0	0	0	0	0
Leucrocuta hebe	49.7	1.4	0	0	0	0	17.7	0.68
Stenacron interpunctatum	0	0	0	0	0	0	17.7	0.68
Stenonema femoratum	0	0	0	0	35.5	1.19	0	0
Stenonema pulchellum	333.6	9.37	191.6	10.19	198.7	6.64	511	19.49
Stenonema terminatum	0	0	14.2	0.75	0	0	17.7	0.68
Stenonema vicarium	49.7	1.4	39	2.08	35.5	1.19	17.7	0.68
Choroterpes basalis	0	0	14.2	0.75	17.7	0.59	0	0
Paraleptophlebia	255.5	7.18	63.9	3.4	127.8	4.27	35.5	1.35
Tricorythodes	0	0	14.2	0.75	0	0	0	0
Caenis	0	0	0	0	17.7	0.59	0	0
Ephemera simulans	0	0	0	0	0	0	17.7	0.68
Acroneuria abnormis	42.6	1.2	7.1	0.38	7.1	0.24	7.1	0.27
Acroneuria lycorias	7.1	0.2	0	0	3.5	0.12	3.5	0.14
Chimarra obscura	24.8	0.7	0	0	17.7	0.59	0	0
Neureclipsis	49.7	1.4	24.8	1.32	71	2.37	127.8	4.87
Polycentropus	0	0	0	0	35.5	1.19	0	0
Cheumatopsyche	230.7	6.48	255.5	13.58	198.7	6.64	308.7	11.77
Ceratopsyche morosa	0	0	0	0	17.7	0.59	0	0
Macrostemum zebratum	49.7	1.4	0	0	0	0	17.7	0.68
Dubiraphia	0	0	14.2	0.75	0	0	0	0
Psephenus herricki	3.5	0.1	0	0	0	0	0	0
Procladius	0	0	39	2.08	0	0	0	0
Ablabesmyia mallochi	0	0	0	0	17.7	0.59	0	0
Labrundinia pilosella	0	0	0	0	17.7	0.59	17.7	0.68
Thienemannimyia grp.	152.6	4.29	113.6	6.04	110	3.68	92.3	3.52
Corynoneura lobata	408.1	11.47	166.8	8.87	110	3.68	145.5	5.55
Cricotopus bicinctus grp.	102.9	2.89	39	2.08	17.7	0.59	17.7	0.68
Nanocladius crassicornus/rectinervis	0	0	14.2	0.75	0	0	0	0
Nanocladius (Plecopteracoluthus)	24.8	0.7	0	0	0	0	0	0
Parakiefferiella	24.8	0.7	0	0	0	0	0	0

Table C-31. Replicate Macroinvertebrate Sampling Results (Density and Percent of Total Organisms): Location 25

	Replicate A		Replicate B		Replicate C		Replicate D	
TAXA	#/m^2	%	#/m^2	%	#/m^2	%	#/m^2	%
Glyptotendipes	0	0	0	0	0	0	17.7	0.68
Microtendipes	102.9	2.89	88.7	4.72	92.3	3.08	17.7	0.68
Parachironomus carinatus	0	0	0	0	17.7	0.59	35.5	1.35
Polypedilum convictum	408.1	11.47	78.1	4.15	110	3.68	127.8	4.87
Stictochironomus	0	0	14.2	0.75	0	0	0	0
Tribelos jucundum	0	0	49.7	2.64	35.5	1.19	0	0
Rheotanytarsus	486.2	13.66	78.1	4.15	127.8	4.27	255.5	9.74
Tanytarsus curticornis grp.	0	0	0	0	17.7	0.59	35.5	1.35
Tanytarsus glabrescens grp.	255.5	7.18	49.7	2.64	17.7	0.59	35.5	1.35
Zavrelia	0	0	14.2	0.75	35.5	1.19	35.5	1.35
Ferrissia	24.8	0.7	0	0	0	0	0	0
Sphaerium	3.5	0.1	3.5	0.19	21.3	0.71	0	0
Musculium	0	0	0	0	0	0	17.7	0.68

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Appendix J

Water Level Data and Hydrographs

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-1	1097.75	5/27/1997	55.70	1042.05	General Study/Breen
BR-1	1097.75	5/30/1997	55.97	1041.78	General Study/Breen
BR-1	1097.75	5/31/1997	56.04	1041.71	General Study/Breen
BR-1	1097.75	6/1/1997	56.10	1041.65	General Study/Breen
BR-1	1097.75	6/3/1997	56.24	1041.51	General Study/Breen
BR-1	1097.75	6/12/1997	56.38	1041.37	General Study/Breen
BR-1	1097.75	6/17/1997	56.50	1041.25	General Study/Breen
BR-1	1097.75	6/23/1997	56.48	1041.27	General Study/Breen
BR-1	1097.75	8/5/1997	57.22	1040.53	General Study/Breen
BR-1	1097.75	9/8/1997	57.12	1040.63	General Study/Breen
BR-1	1097.75	9/22/1997	57.16	1040.59	General Study/Breen
BR-1	1097.75	10/6/1997	57.27	1040.48	General Study/Breen
BR-1	1097.75	11/13/1997	57.36	1040.39	General Study/Breen
BR-1	1097.75	11/21/1997	57.39	1040.36	General Study/Breen
BR-1	1097.75	4/15/1998	56.59	1041.16	General Study/Breen
BR-1	1097.75	6/3/1998	57.39	1040.36	General Study/Breen
BR-1	1097.75	6/30/1998	57.44	1040.31	General Study/Breen
BR-1	1097.75	7/10/1998	57.50	1040.25	General Study/Breen
BR-1	1097.75	7/28/1998	57.62	1040.13	General Study/Breen
BR-1	1097.75	8/11/1998	57.70	1040.05	General Study/Breen
BR-1	1097.75	9/24/1998	57.82	1039.93	General Study/Breen
BR-1	1097.75	10/22/1998	57.78	1039.97	General Study/Breen
BR-1	1097.75	3/9/1999	57.67	1040.08	General Study/Breen
BR-1	1097.75	4/29/1999	57.61	1040.14	General Study/Breen
BR-1	1097.75	6/14/1999	56.98	1040.77	General Study/Breen
BR-1	1097.75	7/26/1999	56.75	1041.00	General Study/Breen
BR-1	1097.75	8/21/1999	57.20	1040.55	General Study/Breen
BR-1	1097.75	9/22/1999	57.65	1040.10	General Study/Breen
BR-1	1097.75	10/25/1999	57.50	1040.25	General Study/Breen
BR-1	1097.75	11/19/1999	57.48	1040.27	General Study/Breen
BR-1	1097.75	3/18/2000	57.00	1040.75	General Study/Breen
BR-1	1097.75	6/17/2000	57.60	1040.15	General Study/Breen
BR-1	1097.75	9/25/2000	57.60	1040.15	General Study/Breen
BR-1	1097.75	11/30/2000	57.10	1040.65	General Study/Breen
BR-1	1097.75	3/9/2001	57.38	1040.37	General Study/Breen
BR-1	1097.75	6/1/2001	57.01	1040.74	General Study/Breen
BR-1	1097.75	9/12/2001	57.75	1040.00	General Study/Breen
BR-1	1097.75	12/11/2001	57.36	1040.39	General Study/Breen
BR-1	1097.75	3/27/2002	57.99	1039.76	General Study/Breen
BR-1	1097.75	6/11/2002	57.11	1040.64	General Study/Breen
BR-1	1097.75	11/5/2002	56.89	1040.86	General Study/Breen
BR-1	1097.75	5/19/2003	55.44	1042.31	General Study/Breen
BR-1	1097.75	12/1/2003	57.59	1040.16	General Study/Breen
BR-1	1097.75	11/17/2004	57.40	1040.35	General Study/Breen
BR-1	1097.75	6/3/2005	57.16	1040.59	General Study/Breen
BR-1	1097.75	11/10/2005	57.74	1040.01	General Study/Breen
BR-1	1097.75	5/23/2006	57.19	1040.56	General Study/Breen

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-1	1097.75	11/27/2006	58.21	1039.54	General Study/Breen
BR-1	1097.75	5/22/2007	58.20	1039.55	General Study/Breen
BR-1	1097.75	11/2/2007	56.57	1041.18	General Study/Breen
BR-2	1145.35	5/30/1997	60.38	1084.97	General Study
BR-2	1145.35	5/31/1997	60.43	1084.92	General Study
BR-2	1145.35	6/1/1997	60.44	1084.91	General Study
BR-2	1145.35	6/3/1997	60.45	1084.90	General Study
BR-2	1145.35	6/12/1997	60.20	1085.15	General Study
BR-2	1145.35	6/17/1997	60.42	1084.93	General Study
BR-2	1145.35	6/23/1997	60.31	1085.04	General Study
BR-2	1145.35	7/7/1997	60.91	1084.44	General Study
BR-2	1145.35	7/19/1997	60.66	1084.69	General Study
BR-2	1145.35	8/5/1997	60.51	1084.84	General Study
BR-2	1145.35	9/8/1997	60.35	1085.00	General Study
BR-2	1145.35	9/22/1997	60.39	1084.96	General Study
BR-2	1145.35	10/6/1997	60.56	1084.79	General Study
BR-2	1145.35	10/24/1997	60.39	1084.96	General Study
BR-2	1145.35	11/14/1997	60.44	1084.91	General Study
BR-2	1145.35	11/21/1997	60.51	1084.84	General Study
BR-2	1145.35	4/15/1998	61.05	1084.30	General Study
BR-2	1145.35	6/3/1998	61.03	1084.32	General Study
BR-2	1145.35	6/30/1998	60.99	1084.36	General Study
BR-2	1145.35	7/10/1998	61.10	1084.25	General Study
BR-2	1145.35	7/28/1998	60.90	1084.45	General Study
BR-2	1145.35	8/11/1998	61.17	1084.18	General Study
BR-2	1145.35	9/24/1998	61.15	1084.20	General Study
BR-2	1145.35	10/22/1998	61.40	1083.95	General Study
BR-2	1145.35	11/22/1998	61.32	1084.03	General Study
BR-2	1145.35	12/19/1998	61.68	1083.67	General Study
BR-2	1145.35	3/9/1999	61.94	1083.41	General Study
BR-2	1145.35	4/29/1999	62.32	1083.03	General Study
BR-2	1145.35	6/14/1999	62.37	1082.98	General Study
BR-2	1145.35	7/26/1999	62.21	1083.14	General Study
BR-2	1145.35	8/21/1999	62.11	1083.24	General Study
BR-2	1145.35	9/22/1999	61.71	1083.64	General Study
BR-2	1145.35	10/25/1999	61.27	1084.08	General Study
BR-2	1145.35	11/19/1999	60.86	1084.49	General Study
BR-2	1145.35	12/31/1999	61.04	1084.31	General Study
BR-2	1145.35	1/22/2000	60.91	1084.44	General Study
BR-2	1145.35	2/21/2000	61.25	1084.10	General Study
BR-2	1145.35	3/18/2000	61.53	1083.82	General Study
BR-2	1145.35	6/17/2000	62.11	1083.24	General Study
BR-2	1145.35	9/25/2000	61.83	1083.52	General Study
BR-2	1145.35	11/30/2000	61.98	1083.37	General Study
BR-2	1145.35	3/9/2001	62.10	1083.25	General Study
BR-2	1145.35	6/1/2001	62.16	1083.19	General Study
BR-2	1145.35	9/12/2001	62.59	1082.76	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-2	1145.35	12/11/2001	62.80	1082.55	General Study
BR-2	1145.35	3/27/2002	62.87	1082.48	General Study
BR-2	1145.35	6/11/2002	62.07	1083.28	General Study
BR-2	1145.35	11/5/2002	61.45	1083.90	General Study
BR-2	1145.35	5/19/2003	61.42	1083.93	General Study
BR-2	1145.35	12/1/2003	61.78	1083.57	General Study
BR-2	1145.35	5/13/2004	61.57	1083.78	General Study
BR-2	1145.35	11/17/2004	60.49	1084.86	General Study
BR-2	1145.35	6/2/2005	60.91	1084.44	General Study
BR-2	1145.35	11/9/2005	61.29	1084.06	General Study
BR-2	1145.35	5/24/2006	61.42	1083.93	General Study
BR-2	1145.35	11/27/2006	61.89	1083.46	General Study
BR-2	1145.35	5/22/2007	62.69	1082.66	General Study
BR-2	1145.35	11/1/2007	63.62	1081.73	General Study
BR-3	1128.21	5/30/1997	80.39	1047.82	General Study
BR-3	1128.21	5/31/1997	80.37	1047.84	General Study
BR-3	1128.21	6/1/1997	80.39	1047.82	General Study
BR-3	1128.21	6/3/1997	80.43	1047.78	General Study
BR-3	1128.21	6/12/1997	80.26	1047.95	General Study
BR-3	1128.21	6/17/1997	80.52	1047.69	General Study
BR-3	1128.21	6/23/1997	80.65	1047.56	General Study
BR-3	1128.21	7/7/1997	82.33	1045.88	General Study
BR-3	1128.21	7/19/1997	82.45	1045.76	General Study
BR-3	1128.21	9/8/1997	82.44	1045.77	General Study
BR-3	1128.21	9/22/1997	82.60	1045.61	General Study
BR-3	1128.21	10/6/1997	82.92	1045.29	General Study
BR-3	1128.21	10/24/1997	82.58	1045.63	General Study
BR-3	1128.21	11/13/1997	82.63	1045.58	General Study
BR-3	1128.21	11/21/1997	82.87	1045.34	General Study
BR-3	1128.21	4/15/1998	82.15	1046.06	General Study
BR-3	1128.21	6/3/1998	82.88	1045.33	General Study
BR-3	1128.21	6/30/1998	82.81	1045.40	General Study
BR-3	1128.21	7/10/1998	83.14	1045.07	General Study
BR-3	1128.21	7/28/1998	82.76	1045.45	General Study
BR-3	1128.21	8/11/1998	83.24	1044.97	General Study
BR-3	1128.21	9/24/1998	83.16	1045.05	General Study
BR-3	1128.21	10/22/1998	83.53	1044.68	General Study
BR-3	1128.21	11/22/1998	83.04	1045.17	General Study
BR-3	1128.21	3/9/1999	83.10	1045.11	General Study
BR-3	1128.21	4/29/1999	83.11	1045.10	General Study
BR-3	1128.21	6/14/1999	82.61	1045.60	General Study
BR-3	1128.21	7/26/1999	82.24	1045.97	General Study
BR-3	1128.21	8/21/1999	82.87	1045.34	General Study
BR-3	1128.21	9/22/1999	82.59	1045.62	General Study
BR-3	1128.21	10/25/1999	82.70	1045.51	General Study
BR-3	1128.21	11/19/1999	82.60	1045.61	General Study
BR-3	1128.21	12/31/1999	83.03	1045.18	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-3	1128.21	1/22/2000	82.77	1045.44	General Study
BR-3	1128.21	2/21/2000	82.68	1045.53	General Study
BR-3	1128.21	3/18/2000	82.63	1045.58	General Study
BR-3	1128.21	6/17/2000	83.31	1044.90	General Study
BR-3	1128.21	9/25/2000	83.22	1044.99	General Study
BR-3	1128.21	11/30/2000	83.24	1044.97	General Study
BR-3	1128.21	3/9/2001	82.58	1045.63	General Study
BR-3	1128.21	6/1/2001	82.18	1046.03	General Study
BR-3	1128.21	9/12/2001	83.38	1044.83	General Study
BR-3	1128.21	12/11/2001	83.41	1044.80	General Study
BR-3	1128.21	3/27/2002	82.77	1045.44	General Study
BR-3	1128.21	6/11/2002	81.38	1046.83	General Study
BR-3	1128.21	11/5/2002	81.71	1046.50	General Study
BR-3	1128.21	5/19/2003	81.50	1046.71	General Study
BR-3	1128.21	12/1/2003	82.78	1045.43	General Study
BR-3	1128.21	5/13/2004	81.72	1046.49	General Study
BR-3	1128.21	11/16/2004	82.67	1045.54	General Study
BR-3	1128.21	6/2/2005	81.73	1046.48	General Study
BR-3	1128.21	9/11/2005	82.48	1045.73	General Study
BR-3	1128.21	11/9/2005	82.81	1045.40	General Study
BR-3	1128.21	1/12/2006	83.34	1044.87	General Study
BR-3	1128.21	2/13/2006	83.64	1044.57	General Study
BR-3	1128.21	5/23/2006	83.17	1045.04	General Study
BR-3	1128.21	8/8/2006	84.07	1044.14	General Study
BR-3	1128.21	11/28/2006	84.05	1044.16	General Study
BR-3	1128.21	5/22/2007	84.06	1044.15	General Study
BR-3	1128.21	11/1/2007	84.46	1043.75	General Study
BR-4	1119.25	6/1/1997	79.90	1039.35	General Study/Breen
BR-4	1119.25	6/3/1997	78.80	1040.45	General Study/Breen
BR-4	1119.25	6/12/1997	76.22	1043.03	General Study/Breen
BR-4	1119.25	6/17/1997	76.76	1042.49	General Study/Breen
BR-4	1119.25	6/23/1997	76.88	1042.37	General Study/Breen
BR-4	1119.25	7/7/1997	77.45	1041.80	General Study/Breen
BR-4	1119.25	7/19/1997	77.61	1041.64	General Study/Breen
BR-4	1119.25	9/8/1997	77.65	1041.60	General Study/Breen
BR-4	1119.25	9/22/1997	78.05	1041.20	General Study/Breen
BR-4	1119.25	10/6/1997	78.33	1040.92	General Study/Breen
BR-4	1119.25	10/24/1997	77.78	1041.47	General Study/Breen
BR-4	1119.25	11/13/1997	78.08	1041.17	General Study/Breen
BR-4	1119.25	11/21/1997			General Study/Breen
BR-4	1119.25	4/15/1998	77.31	1041.94	General Study/Breen
BR-4	1119.25	6/3/1998	78.13	1041.12	General Study/Breen
BR-4	1119.25	6/30/1998	78.14	1041.11	General Study/Breen
BR-4	1119.25	7/10/1998			General Study/Breen
BR-4	1119.25	7/28/1998	78.16	1041.09	General Study/Breen
BR-4	1119.25	8/11/1998	78.60	1040.65	General Study/Breen
BR-4	1119.25	9/24/1998	78.58	1040.67	General Study/Breen

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-4	1119.25	10/22/1998	78.84	1040.41	General Study/Breen
BR-4	1119.25	11/22/1998	78.75	1040.50	General Study/Breen
BR-4	1119.25	12/19/1998	79.03	1040.22	General Study/Breen
BR-4	1119.25	3/9/1999	78.57	1040.68	General Study/Breen
BR-4	1119.25	4/29/1999	78.48	1040.77	General Study/Breen
BR-4	1119.25	6/14/1999	77.66	1041.59	General Study/Breen
BR-4	1119.25	7/26/1999	77.18	1042.07	General Study/Breen
BR-4	1119.25	8/21/1999	77.68	1041.57	General Study/Breen
BR-4	1119.25	9/22/1999	77.70	1041.55	General Study/Breen
BR-4	1119.25	10/25/1999	77.77	1041.48	General Study/Breen
BR-4	1119.25	11/19/1999	77.72	1041.53	General Study/Breen
BR-4	1119.25	12/31/1999	78.64	1040.61	General Study/Breen
BR-4	1119.25	1/22/2000	78.96	1040.29	General Study/Breen
BR-4	1119.25	2/21/2000	78.00	1041.25	General Study/Breen
BR-4	1119.25	3/18/2000	77.67	1041.58	General Study/Breen
BR-4	1119.25	6/17/2000	78.89	1040.36	General Study/Breen
BR-4	1119.25	9/25/2000	78.68	1040.57	General Study/Breen
BR-4	1119.25	11/30/2000	78.39	1040.86	General Study/Breen
BR-4	1119.25	3/9/2001	77.82	1041.43	General Study/Breen
BR-4	1119.25	6/1/2001	77.31	1041.94	General Study/Breen
BR-4	1119.25	9/12/2001	78.95	1040.30	General Study/Breen
BR-4	1119.25	12/11/2001	78.91	1040.34	General Study/Breen
BR-4	1119.25	3/27/2002	77.97	1041.28	General Study/Breen
BR-4	1119.25	6/11/2002	77.41	1041.84	General Study/Breen
BR-4	1119.25	11/5/2002	77.19	1042.06	General Study/Breen
BR-4	1119.25	5/19/2003	76.39	1042.86	General Study/Breen
BR-4	1119.25	12/1/2003	78.45	1040.80	General Study/Breen
BR-4	1119.25	5/13/2004	76.72	1042.53	General Study/Breen
BR-4	1119.25	11/17/2004	77.97	1041.28	General Study/Breen
BR-5B	1122.58	5/30/1997	65.75	1056.83	NE Pit
BR-5B	1122.58	5/31/1997	65.81	1056.77	NE Pit
BR-5B	1122.58	6/1/1997	65.83	1056.75	NE Pit
BR-5B	1122.58	6/3/1997	65.94	1056.64	NE Pit
BR-5B	1122.58	6/12/1997	65.59	1056.99	NE Pit
BR-5B	1122.58	6/17/1997	65.96	1056.62	NE Pit
BR-5B	1122.58	6/23/1997	65.90	1056.68	NE Pit
BR-5B	1122.58	7/7/1997	66.25	1056.33	NE Pit
BR-5B	1122.58	7/19/1997	66.30	1056.28	NE Pit
BR-5B	1122.58	8/5/1997	66.36	1056.22	NE Pit
BR-5B	1122.58	9/8/1997	66.31	1056.27	NE Pit
BR-5B	1122.58	9/22/1997	66.47	1056.11	NE Pit
BR-5B	1122.58	10/6/1997	66.74	1055.84	NE Pit
BR-5B	1122.58	11/14/1997	66.58	1056.00	NE Pit
BR-5B	1122.58	4/15/1998	66.58	1056.00	NE Pit
BR-5B	1122.58	6/3/1998	66.81	1055.77	NE Pit
BR-5B	1122.58	6/30/1998	66.83	1055.75	NE Pit
BR-5B	1122.58	7/10/1998	67.14	1055.44	NE Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-5B	1122.58	7/28/1998	66.80	1055.78	NE Pit
BR-5B	1122.58	8/11/1998	67.20	1055.38	NE Pit
BR-5B	1122.58	9/24/1998	67.19	1055.39	NE Pit
BR-5B	1122.58	10/22/1998	67.57	1055.01	NE Pit
BR-5B	1122.58	11/22/1998	67.21	1055.37	NE Pit
BR-5B	1122.58	12/19/1998	67.80	1054.78	NE Pit
BR-5B	1122.58	3/9/1999	67.80	1054.78	NE Pit
BR-5B	1122.58	4/29/1999	67.84	1054.74	NE Pit
BR-5B	1122.58	6/14/1999	67.26	1055.32	NE Pit
BR-5B	1122.58	7/26/1999	66.77	1055.81	NE Pit
BR-5B	1122.58	8/21/1999	66.97	1055.61	NE Pit
BR-5B	1122.58	9/22/1999	66.68	1055.90	NE Pit
BR-5B	1122.58	10/25/1999	66.58	1056.00	NE Pit
BR-5B	1122.58	11/19/1999	66.53	1056.05	NE Pit
BR-5B	1122.58	12/31/1999	66.98	1055.60	NE Pit
BR-5B	1122.58	1/22/2000	66.74	1055.84	NE Pit
BR-5B	1122.58	2/21/2000	67.13	1055.45	NE Pit
BR-5B	1122.58	3/18/2000	67.15	1055.43	NE Pit
BR-5B	1122.58	6/17/2000	67.50	1055.08	NE Pit
BR-5B	1122.58	9/25/2000	66.98	1055.60	NE Pit
BR-5B	1122.58	11/30/2000	66.99	1055.59	NE Pit
BR-5B	1122.58	3/9/2001	66.83	1055.75	NE Pit
BR-5B	1122.58	6/1/2001	66.36	1056.22	NE Pit
BR-5B	1122.58	9/12/2001	67.22	1055.36	NE Pit
BR-5B	1122.58	12/11/2001	67.20	1055.38	NE Pit
BR-5B	1122.58	3/27/2002	67.13	1055.45	NE Pit
BR-5B	1122.58	6/11/2002	65.71	1056.87	NE Pit
BR-5B	1122.58	11/5/2002	65.52	1057.06	NE Pit
BR-5B	1122.58	5/19/2003	65.62	1056.96	NE Pit
BR-5B	1122.58	12/1/2003	66.38	1056.20	NE Pit
BR-5B	1122.58	5/13/2004	65.53	1057.05	NE Pit
BR-5B	1122.58	11/16/2004	65.44	1057.14	NE Pit
BR-5B	1122.58	6/2/2005	65.85	1056.73	NE Pit
BR-5A	1122.32	5/30/1997	45.15	1077.17	NE Pit
BR-5A	1122.32	5/31/1997	45.15	1077.17	NE Pit
BR-5A	1122.32	6/1/1997	45.14	1077.18	NE Pit
BR-5A	1122.32	6/3/1997	45.19	1077.13	NE Pit
BR-5A	1122.32	6/12/1997	45.04	1077.28	NE Pit
BR-5A	1122.32	6/17/1997	45.18	1077.14	NE Pit
BR-5A	1122.32	6/23/1997	45.05	1077.27	NE Pit
BR-5A	1122.32	7/7/1997	45.24	1077.08	NE Pit
BR-5A	1122.32	7/19/1997	45.25	1077.07	NE Pit
BR-5A	1122.32	8/5/1997	45.35	1076.97	NE Pit
BR-5A	1122.32	9/8/1997	45.47	1076.85	NE Pit
BR-5A	1122.32	9/22/1997	45.61	1076.71	NE Pit
BR-5A	1122.32	10/6/1997	45.93	1076.39	NE Pit
BR-5A	1122.32	11/14/1997	45.89	1076.43	NE Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-5A	1122.32	4/15/1998	46.28	1076.04	NE Pit
BR-5A	1122.32	6/3/1998	46.08	1076.24	NE Pit
BR-5A	1122.32	6/30/1998	46.22	1076.10	NE Pit
BR-5A	1122.32	7/10/1998	46.34	1075.98	NE Pit
BR-5A	1122.32	7/28/1998	46.37	1075.95	NE Pit
BR-5A	1122.32	8/11/1998	46.62	1075.70	NE Pit
BR-5A	1122.32	9/24/1998	46.78	1075.54	NE Pit
BR-5A	1122.32	10/22/1998	47.00	1075.32	NE Pit
BR-5A	1122.32	11/22/1998	47.17	1075.15	NE Pit
BR-5A	1122.32	12/19/1998	47.42	1074.90	NE Pit
BR-5A	1122.32	3/9/1999	47.96	1074.36	NE Pit
BR-5A	1122.32	4/29/1999	47.81	1074.51	NE Pit
BR-5A	1122.32	6/14/1999	47.19	1075.13	NE Pit
BR-5A	1122.32	7/26/1999	46.20	1076.12	NE Pit
BR-5A	1122.32	8/21/1999	45.80	1076.52	NE Pit
BR-5A	1122.32	9/22/1999	45.69	1076.63	NE Pit
BR-5A	1122.32	10/25/1999	45.20	1077.12	NE Pit
BR-5A	1122.32	11/19/1999	45.02	1077.30	NE Pit
BR-5A	1122.32	12/31/1999	45.62	1076.70	NE Pit
BR-5A	1122.32	1/22/2000	45.82	1076.50	NE Pit
BR-5A	1122.32	2/21/2000	46.31	1076.01	NE Pit
BR-5A	1122.32	3/18/2000	46.25	1076.07	NE Pit
BR-5A	1122.32	6/17/2000	46.91	1075.41	NE Pit
BR-5A	1122.32	9/25/2000	45.35	1076.97	NE Pit
BR-5A	1122.32	10/6/2000	45.39	1076.93	NE Pit
BR-5A	1122.32	11/30/2000	45.68	1076.64	NE Pit
BR-5A	1122.32	3/9/2001	46.53	1075.79	NE Pit
BR-5A	1122.32	6/1/2001	46.42	1075.90	NE Pit
BR-5A	1122.32	9/12/2001	46.83	1075.49	NE Pit
BR-5A	1122.32	12/11/2001	46.75	1075.57	NE Pit
BR-5A	1122.32	3/27/2002	47.44	1074.88	NE Pit
BR-5A	1122.32	6/11/2002	45.59	1076.73	NE Pit
BR-5A	1122.32	11/5/2002	44.42	1077.90	NE Pit
BR-5A	1122.32	5/19/2003	44.94	1077.38	NE Pit
BR-5A	1122.32	12/1/2003	45.30	1077.02	NE Pit
BR-5A	1122.32	5/13/2004	44.78	1077.54	NE Pit
BR-5A	1122.32	11/16/2004	43.57	1078.75	NE Pit
BR-5A	1122.32	6/2/2005	44.82	1077.50	NE Pit
BR-6	1109.56	5/30/1997	34.90	1074.66	Former Plant Site
BR-6	1109.56	5/31/1997	34.89	1074.67	Former Plant Site
BR-6	1109.56	6/1/1997	34.92	1074.64	Former Plant Site
BR-6	1109.56	6/3/1997	34.90	1074.66	Former Plant Site
BR-6	1109.56	6/12/1997	34.86	1074.70	Former Plant Site
BR-6	1109.56	6/17/1997	34.91	1074.65	Former Plant Site
BR-6	1109.56	6/23/1997	34.81	1074.75	Former Plant Site
BR-6	1109.56	7/7/1997	34.86	1074.70	Former Plant Site
BR-6	1109.56	7/19/1997	34.85	1074.71	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
BR-6	1109.56	9/8/1997	34.93	1074.63	Former Plant Site
BR-6	1109.56	9/22/1997	35.00	1074.56	Former Plant Site
BR-6	1109.56	10/6/1997	35.08	1074.48	Former Plant Site
BR-6	1109.56	10/24/1997	35.02	1074.54	Former Plant Site
BR-6	1109.56	11/14/1997	35.13	1074.43	Former Plant Site
BR-6	1109.56	11/21/1997	35.17	1074.39	Former Plant Site
BR-6	1109.56	4/15/1998	35.57	1073.99	Former Plant Site
BR-6	1109.56	6/3/1998	35.23	1074.33	Former Plant Site
BR-6	1109.56	6/30/1998	35.21	1074.35	Former Plant Site
BR-6	1109.56	7/10/1998	35.23	1074.33	Former Plant Site
BR-6	1109.56	7/28/1998	35.14	1074.42	Former Plant Site
BR-6	1109.56	8/11/1998	35.22	1074.34	Former Plant Site
BR-6	1109.56	9/24/1998	35.41	1074.15	Former Plant Site
BR-6	1109.56	10/22/1998	35.55	1074.01	Former Plant Site
BR-6	1109.56	11/22/1998	35.69	1073.87	Former Plant Site
BR-6	1109.56	12/19/1998	35.84	1073.72	Former Plant Site
BR-6	1109.56	3/9/1999	35.68	1073.88	Former Plant Site
BR-6	1109.56	4/29/1999	35.59	1073.97	Former Plant Site
BR-6	1109.56	6/14/1999	35.28	1074.28	Former Plant Site
BR-6	1109.56	7/26/1999	34.69	1074.87	Former Plant Site
BR-6	1109.56	8/21/1999	34.30	1075.26	Former Plant Site
BR-6	1109.56	9/22/1999	34.20	1075.36	Former Plant Site
BR-6	1109.56	10/25/1999	34.36	1075.20	Former Plant Site
BR-6	1109.56	11/19/1999	34.56	1075.00	Former Plant Site
BR-6	1109.56	12/31/1999	34.93	1074.63	Former Plant Site
BR-6	1109.56	1/22/2000	35.07	1074.49	Former Plant Site
BR-6	1109.56	2/21/2000	35.19	1074.37	Former Plant Site
BR-6	1109.56	3/18/2000	34.68	1074.88	Former Plant Site
BR-6	1109.56	6/17/2000	34.28	1075.28	Former Plant Site
BR-6	1109.56	9/25/2000	33.21	1076.35	Former Plant Site
BR-6	1109.56	11/30/2000	33.04	1076.52	Former Plant Site
BR-6	1109.56	3/9/2001	33.67	1075.89	Former Plant Site
BR-6	1109.56	6/1/2001	32.68	1076.88	Former Plant Site
BR-6	1109.56	9/12/2001	31.39	1078.17	Former Plant Site
BR-6	1109.56	12/11/2001	30.66	1078.90	Former Plant Site
BR-6	1109.56	3/27/2002	34.67	1074.89	Former Plant Site
BR-6	1109.56	6/11/2002	34.23	1075.33	Former Plant Site
BR-6	1109.56	11/5/2002	33.85	1075.71	Former Plant Site
BR-6	1109.56	5/19/2003	34.43	1075.13	Former Plant Site
BR-6	1109.56	12/1/2003	34.73	1074.83	Former Plant Site
BR-6	1109.56	5/13/2004	34.30	1075.26	Former Plant Site
BR-6	1109.56	11/17/2004	33.79	1075.77	Former Plant Site
BR-6	1109.56	6/2/2005	34.50	1075.06	Former Plant Site
BR-6	1109.56	11/10/2005	34.83	1074.73	Former Plant Site
BR-6	1109.56	5/24/2006	35.17	1074.39	Former Plant Site
BR-6	1109.56	11/27/2006	35.33	1074.23	Former Plant Site
BR-6	1109.56	5/22/2007	36.03	1073.53	Former Plant Site
BR-6	1109.56	11/2/2007	36.54	1073.02	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
Bridge	1057.88	6/3/1998	23.12	1034.76	General Study
Bridge	1057.88	7/10/1998	22.91	1034.97	General Study
Bridge	1057.88	7/28/1998	22.80	1035.08	General Study
Bridge	1057.88	9/24/1998	23.20	1034.68	General Study
Bridge	1057.88	10/22/1998	23.07	1034.81	General Study
Bridge	1057.88	11/22/1998	22.96	1034.92	General Study
Bridge	1057.88	3/9/1999			General Study
Bridge	1057.88	4/29/1999	23.20	1034.68	General Study
Bridge	1057.88	6/14/1999	22.12	1035.76	General Study
Bridge	1057.88	7/26/1999	22.96	1034.92	General Study
Bridge	1057.88	8/21/1999	22.95	1034.93	General Study
Bridge	1057.88	9/22/1999	23.38	1034.50	General Study
Bridge	1057.88	10/25/1999	23.34	1034.54	General Study
Bridge	1057.88	11/19/1999	22.86	1035.02	General Study
Bridge	1057.88	12/31/1999	22.80	1035.08	General Study
Bridge	1057.88	1/22/2000			General Study
Bridge	1057.88	2/21/2000	22.35	1035.53	General Study
Bridge	1057.88	3/18/2000	22.30	1035.58	General Study
Bridge	1057.88	6/17/2000	22.90	1034.98	General Study
Bridge	1057.88	9/25/2000	23.18	1034.70	General Study
Bridge	1057.88	11/30/2000	23.00	1034.88	General Study
Bridge	1057.88	3/9/2001	22.30	1035.58	General Study
Bridge	1057.88	6/1/2001	24.56	1033.32	General Study
Bridge	1057.88	9/12/2001	23.21	1034.67	General Study
Bridge	1057.88	12/11/2001	23.35	1034.53	General Study
Bridge	1057.88	3/27/2002	22.80	1035.08	General Study
Bridge	1057.88	6/11/2002	22.29	1035.59	General Study
Bridge	1057.88	11/5/2002	23.16	1034.72	General Study
Bridge	1057.88	5/19/2003	21.37	1036.51	General Study
Bridge	1057.88	12/1/2003	22.84	1035.04	General Study
Bridge	1057.88	5/13/2004	22.41	1035.47	General Study
Bridge	1057.88	11/10/2005	23.18	1034.70	General Study
Bridge	1057.88	5/24/2006	22.85	1035.03	General Study
Bridge	1057.88	11/27/2006	22.99	1034.89	General Study
Bridge	1057.88	5/22/2007	23.41	1034.47	General Study
Bridge	1057.88	11/1/2007	24.15	1033.73	General Study
CW-1	1086.95	9/8/1997	46.43	1040.52	General Study
CW-1	1086.95	9/22/1997	46.35	1040.60	General Study
CW-1	1086.95	10/6/1997	46.74	1040.21	General Study
CW-1	1086.95	10/24/1997	46.57	1040.38	General Study
CW-1	1086.95	11/13/1997	46.73	1040.22	General Study
CW-1	1086.95	11/21/1997	46.82	1040.13	General Study
CW-1	1086.95	4/15/1998	46.40	1040.55	General Study
CW-1	1086.95	6/3/1998	46.93	1040.02	General Study
CW-1	1086.95	6/30/1998	46.82	1040.13	General Study
CW-1	1086.95	7/10/1998	46.95	1040.00	General Study
CW-1	1086.95	7/28/1998	46.93	1040.02	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
CW-1	1086.95	8/11/1998	47.08	1039.87	General Study
CW-1	1086.95	9/24/1998	47.12	1039.83	General Study
CW-1	1086.95	10/22/1998	47.18	1039.77	General Study
CW-1	1086.95	11/22/1998	46.94	1040.01	General Study
CW-1	1086.95	12/19/1998	47.42	1039.53	General Study
CW-1	1086.95	3/9/1999	47.04	1039.91	General Study
CW-1	1086.95	4/29/1999	47.32	1039.63	General Study
CW-1	1086.95	6/14/1999	46.48	1040.47	General Study
CW-1	1086.95	7/26/1999	46.40	1040.55	General Study
CW-1	1086.95	8/21/1999	47.12	1039.83	General Study
CW-1	1086.95	9/22/1999	46.74	1040.21	General Study
CW-1	1086.95	10/25/1999	46.77	1040.18	General Study
CW-1	1086.95	11/19/1999	46.75	1040.20	General Study
CW-1	1086.95	12/31/1999	46.36	1040.59	General Study
CW-1	1086.95	1/22/2000	46.85	1040.10	General Study
CW-1	1086.95	2/21/2000	46.65	1040.30	General Study
CW-1	1086.95	3/18/2000	46.42	1040.53	General Study
CW-1	1086.95	6/17/2000			General Study
CW-1	1086.95	6/3/2005	46.64	1040.31	General Study
CW-1	1086.95	11/10/2005	47.15	1039.80	General Study
CW-1	1086.95	5/24/2006	46.59	1040.36	General Study
CW-1	1086.95	11/27/2006	47.37	1039.58	General Study
CW-1	1086.95	5/22/2007	47.46	1039.49	General Study
CW-1	1086.95	11/1/2007	47.96	1038.99	General Study
EPA-97-1		9/22/1997	52.82		Emmet
EPA-97-1		10/6/1997	53.05		Emmet
EPA-97-1		10/24/1997	52.97		Emmet
EPA-97-1		11/21/1997	53.32		Emmet
EPA-97-1		4/15/1998	53.36		Emmet
EPA-97-1		6/3/1998	53.70		Emmet
EPA-97-1		6/30/1998	53.72		Emmet
EPA-97-1		7/10/1998	53.87		Emmet
EPA-97-1		7/28/1998	53.90		Emmet
EPA-97-1		8/11/1998	54.07		Emmet
EPA-97-1		9/24/1998	54.24		Emmet
EPA-97-1		10/22/1998	54.42		Emmet
EPA-97-1		11/22/1998	54.49		Emmet
EPA-97-1		3/9/1999	54.86		Emmet
EPA-97-1		4/29/1999	54.93		Emmet
EPA-97-1		6/14/1999	54.07		Emmet
EPA-97-1		7/26/1999	53.69		Emmet
EPA-97-1		8/21/1999	53.72		Emmet
EPA-97-1		9/22/1999	53.80		Emmet
EPA-97-1		10/25/1999	53.91		Emmet
EPA-97-1		11/19/1999	53.92		Emmet
EPA-97-1		1/22/2000	54.23		Emmet
EPA-97-1		2/21/2000	54.29		Emmet

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
EPA-97-1		3/18/2000	54.18		Emmet
EPA-97-1		6/17/2000	54.40		Emmet
EPA-97-1		9/25/2000	53.96		Emmet
EPA-97-1		11/30/2000	54.08		Emmet
EPA-97-1		6/1/2001	53.65		Emmet
EPA-97-1		9/12/2001	54.49		Emmet
EPA-97-1		12/11/2001	54.64		Emmet
EPA-97-1		11/5/2002	53.35		Emmet
EW-1	1090.67	9/10/2005	4.08	1086.59	Breen
GM-1	1123.97	5/27/1997	82.12	1041.85	General Study/Breen
GM-1	1123.97	5/30/1997	82.04	1041.93	General Study/Breen
GM-1	1123.97	5/31/1997	82.12	1041.85	General Study/Breen
GM-1	1123.97	6/1/1997	82.22	1041.75	General Study/Breen
GM-1	1123.97	6/3/1997	82.45	1041.52	General Study/Breen
GM-1	1123.97	6/15/1997	82.42	1041.55	General Study/Breen
GM-1	1123.97	6/16/1997	82.36	1041.61	General Study/Breen
GM-1	1123.97	6/17/1997	82.37	1041.60	General Study/Breen
GM-1	1123.97	6/23/1997	82.54	1041.43	General Study/Breen
GM-1	1123.97	7/7/1997	82.95	1041.02	General Study/Breen
GM-1	1123.97	7/19/1997	83.03	1040.94	General Study/Breen
GM-1	1123.97	9/8/1997	83.00	1040.97	General Study/Breen
GM-1	1123.97	9/22/1997	82.96	1041.01	General Study/Breen
GM-1	1123.97	10/6/1997	83.35	1040.62	General Study/Breen
GM-1	1123.97	10/24/1997	83.14	1040.83	General Study/Breen
GM-1	1123.97	11/13/1997	83.25	1040.72	General Study/Breen
GM-1	1123.97	11/21/1997	83.33	1040.64	General Study/Breen
GM-1	1123.97	4/15/1998	82.78	1041.19	General Study/Breen
GM-1	1123.97	6/3/1998	83.47	1040.50	General Study/Breen
GM-1	1123.97	6/30/1998	83.36	1040.61	General Study/Breen
GM-1	1123.97	7/10/1998	83.51	1040.46	General Study/Breen
GM-1	1123.97	7/28/1998	83.41	1040.56	General Study/Breen
GM-1	1123.97	8/11/1998	83.67	1040.30	General Study/Breen
GM-1	1123.97	9/24/1998	83.66	1040.31	General Study/Breen
GM-1	1123.97	10/22/1998	83.76	1040.21	General Study/Breen
GM-1	1123.97	11/22/1998	83.45	1040.52	General Study/Breen
GM-1	1123.97	3/9/1999	83.47	1040.50	General Study/Breen
GM-1	1123.97	4/29/1999	83.54	1040.43	General Study/Breen
GM-1	1123.97	6/14/1999	83.00	1040.97	General Study/Breen
GM-1	1123.97	7/26/1999	82.85	1041.12	General Study/Breen
GM-1	1123.97	8/21/1999	83.20	1040.77	General Study/Breen
GM-1	1123.97	9/22/1999	83.29	1040.68	General Study/Breen
GM-1	1123.97	10/25/1999	83.35	1040.62	General Study/Breen
GM-1	1123.97	11/19/1999	83.19	1040.78	General Study/Breen
GM-1	1123.97	3/18/2000	82.94	1041.03	General Study/Breen
GM-1	1123.97	6/17/2000	83.78	1040.19	General Study/Breen
GM-1	1123.97	9/25/2000	83.54	1040.43	General Study/Breen

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-1	1123.97	11/30/2000	83.86	1040.11	General Study/Breen
GM-1	1123.97	3/9/2001	82.52	1041.45	General Study/Breen
GM-1	1123.97	6/1/2001	82.75	1041.22	General Study/Breen
GM-1	1123.97	9/12/2001	83.88	1040.09	General Study/Breen
GM-1	1123.97	12/11/2001	83.36	1040.61	General Study/Breen
GM-1	1123.97	3/27/2002	83.41	1040.56	General Study/Breen
GM-1	1123.97	6/11/2002	83.04	1040.93	General Study/Breen
GM-1	1123.97	11/5/2002	82.83	1041.14	General Study/Breen
GM-1	1123.97	5/19/2003	81.51	1042.46	General Study/Breen
GM-1	1123.97	12/1/2003	83.80	1040.17	General Study/Breen
GM-1	1123.97	5/13/2004	82.45	1041.52	General Study/Breen
GM-1	1123.97	11/17/2004	83.21	1040.76	General Study/Breen
GM-1	1123.97	6/3/2005	83.08	1040.89	General Study/Breen
GM-1	1123.97	9/11/2005	83.46	1040.51	General Study/Breen
GM-1	1123.97	11/10/2005	83.85	1040.12	General Study/Breen
GM-1	1123.97	1/12/2006	83.81	1040.16	General Study/Breen
GM-1	1123.97	2/13/2006	83.91	1040.06	General Study/Breen
GM-1	1123.97	5/23/2006	83.39	1040.58	General Study/Breen
GM-1	1123.97	8/8/2006	84.34	1039.63	General Study/Breen
GM-1	1123.97	11/27/2006	84.20	1039.77	General Study/Breen
GM-1	1123.97	5/22/2007	84.25	1039.72	General Study/Breen
GM-1	1123.97	11/1/2007	84.69	1039.28	General Study/Breen
GM-2A	1121.11	5/15/1997	49.78	1071.33	General Study/GM-2A
GM-2A	1121.11	5/15/1997	49.75	1071.36	General Study/GM-2A
GM-2A	1121.11	5/27/1997	49.53	1071.58	General Study/GM-2A
GM-2A	1121.11	5/27/1997	49.55	1071.56	General Study/GM-2A
GM-2A	1121.11	5/30/1997	49.55	1071.56	General Study/GM-2A
GM-2A	1121.11	5/31/1997	49.49	1071.62	General Study/GM-2A
GM-2A	1121.11	6/1/1997	49.50	1071.61	General Study/GM-2A
GM-2A	1121.11	6/3/1997	49.51	1071.60	General Study/GM-2A
GM-2A	1121.11	6/12/1997	49.34	1071.77	General Study/GM-2A
GM-2A	1121.11	6/15/1997	49.20	1071.91	General Study/GM-2A
GM-2A	1121.11	6/16/1997	49.45	1071.66	General Study/GM-2A
GM-2A	1121.11	6/17/1997	49.45	1071.66	General Study/GM-2A
GM-2A	1121.11	6/23/1997	49.23	1071.88	General Study/GM-2A
GM-2A	1121.11	7/7/1997	49.25	1071.86	General Study/GM-2A
GM-2A	1121.11	7/19/1997	49.25	1071.86	General Study/GM-2A
GM-2A	1121.11	8/5/1997	49.17	1071.94	General Study/GM-2A
GM-2A	1121.11	9/8/1997	49.38	1071.73	General Study/GM-2A
GM-2A	1121.11	10/6/1997	49.57	1071.54	General Study/GM-2A
GM-2A	1121.11	10/24/1997	49.61	1071.50	General Study/GM-2A
GM-2A	1121.11	11/21/1997			General Study/GM-2A
GM-2A	1121.11	4/15/1998			General Study/GM-2A
GM-2A	1121.11	6/3/1998			General Study/GM-2A
GM-2A	1121.11	6/30/1998	50.18	1070.93	General Study/GM-2A
GM-2A	1121.11	7/10/1998	50.19	1070.92	General Study/GM-2A
GM-2A	1121.11	7/28/1998			General Study/GM-2A

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-2A	1121.11	8/11/1998			General Study/GM-2A
GM-2A	1121.11	9/24/1998	49.80	1071.31	General Study/GM-2A
GM-2A	1121.11	10/22/1998	49.74	1071.37	General Study/GM-2A
GM-2A	1121.11	11/22/1998	49.82	1071.29	General Study/GM-2A
GM-2A	1121.11	12/19/1998	49.82	1071.29	General Study/GM-2A
GM-2A	1121.11	3/9/1999	49.82	1071.29	General Study/GM-2A
GM-2A	1121.11	4/29/1999	49.69	1071.42	General Study/GM-2A
GM-2A	1121.11	6/14/1999	49.76	1071.35	General Study/GM-2A
GM-2A	1121.11	7/26/1999	49.77	1071.34	General Study/GM-2A
GM-2A	1121.11	8/21/1999	49.77	1071.34	General Study/GM-2A
GM-2A	1121.11	9/22/1999	49.78	1071.33	General Study/GM-2A
GM-2A	1121.11	10/25/1999	49.82	1071.29	General Study/GM-2A
GM-2A	1121.11	11/19/1999	49.80	1071.31	General Study/GM-2A
GM-2A	1121.11	12/31/1999	49.80	1071.31	General Study/GM-2A
GM-2A	1121.11	1/22/2000	49.80	1071.31	General Study/GM-2A
GM-2A	1121.11	2/21/2000	49.79	1071.32	General Study/GM-2A
GM-2A	1121.11	3/18/2000	49.79	1071.32	General Study/GM-2A
GM-2A	1121.11	6/17/2000	49.78	1071.33	General Study/GM-2A
GM-2A	1121.11	9/25/2000	49.81	1071.30	General Study/GM-2A
GM-2A	1121.11	11/30/2000	49.41	1071.70	General Study/GM-2A
GM-2A	1121.11	3/9/2001	49.85	1071.26	General Study/GM-2A
GM-2A	1121.11	6/1/2001	49.90	1071.21	General Study/GM-2A
GM-2A	1121.11	9/12/2001	49.80	1071.31	General Study/GM-2A
GM-2A	1121.11	12/11/2001	49.75	1071.36	General Study/GM-2A
GM-2A	1121.11	3/27/2002	49.86	1071.25	General Study/GM-2A
GM-2A	1121.11	6/11/2002	49.84	1071.27	General Study/GM-2A
GM-2A	1121.11	11/5/2002	49.25	1071.86	General Study/GM-2A
GM-2A	1121.11	5/19/2003	49.51	1071.60	General Study/GM-2A
GM-2A	1121.11	12/1/2003	49.70	1071.41	General Study/GM-2A
GM-2A	1121.11	5/13/2004	49.55	1071.56	General Study/GM-2A
GM-2A	1121.11	11/17/2004	48.76	1072.35	General Study/GM-2A
GM-2A	1121.11	6/3/2005	49.48	1071.63	General Study/GM-2A
GM-2A	1121.11	11/10/2005	49.95	1071.16	General Study/GM-2A
GM-2A	1121.11	5/23/2006	49.92	1071.19	General Study/GM-2A
GM-2A	1121.11	11/27/2006	49.96	1071.15	General Study/GM-2A
GM-2A	1121.11	5/22/2007	48.20	1072.91	General Study/GM-2A
GM-2A	1121.11	11/1/2007	49.92	1071.19	General Study/GM-2A
GM-2B	1121.19	5/15/1997	73.05	1048.14	General Study/GM-2A
GM-2B	1121.19	5/15/1997	73.23	1047.96	General Study/GM-2A
GM-2B	1121.19	5/27/1997	73.17	1048.02	General Study/GM-2A
GM-2B	1121.19	5/27/1997	73.16	1048.03	General Study/GM-2A
GM-2B	1121.19	5/30/1997	73.54	1047.65	General Study/GM-2A
GM-2B	1121.19	5/31/1997	73.28	1047.91	General Study/GM-2A
GM-2B	1121.19	6/1/1997	73.35	1047.84	General Study/GM-2A
GM-2B	1121.19	6/3/1997	73.51	1047.68	General Study/GM-2A
GM-2B	1121.19	6/12/1997	73.22	1047.97	General Study/GM-2A
GM-2B	1121.19	6/15/1997	73.36	1047.83	General Study/GM-2A

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-2B	1121.19	6/16/1997	73.41	1047.78	General Study/GM-2A
GM-2B	1121.19	6/17/1997	73.60	1047.59	General Study/GM-2A
GM-2B	1121.19	6/23/1997	73.66	1047.53	General Study/GM-2A
GM-2B	1121.19	7/7/1997	74.06	1047.13	General Study/GM-2A
GM-2B	1121.19	7/19/1997	74.03	1047.16	General Study/GM-2A
GM-2B	1121.19	8/5/1997	74.10	1047.09	General Study/GM-2A
GM-2B	1121.19	9/8/1997	73.90	1047.29	General Study/GM-2A
GM-2B	1121.19	10/6/1997	74.36	1046.83	General Study/GM-2A
GM-2B	1121.19	10/24/1997	74.19	1047.00	General Study/GM-2A
GM-2B	1121.19	11/13/1997	74.27	1046.92	General Study/GM-2A
GM-2B	1121.19	11/21/1997	74.47	1046.72	General Study/GM-2A
GM-2B	1121.19	4/15/1998	74.03	1047.16	General Study/GM-2A
GM-2B	1121.19	6/3/1998	74.52	1046.67	General Study/GM-2A
GM-2B	1121.19	6/30/1998	74.58	1046.61	General Study/GM-2A
GM-2B	1121.19	7/10/1998	74.77	1046.42	General Study/GM-2A
GM-2B	1121.19	7/28/1998	74.71	1046.48	General Study/GM-2A
GM-2B	1121.19	8/11/1998	74.88	1046.31	General Study/GM-2A
GM-2B	1121.19	9/24/1998	75.13	1046.06	General Study/GM-2A
GM-2B	1121.19	10/22/1998	75.12	1046.07	General Study/GM-2A
GM-2B	1121.19	11/22/1998	74.95	1046.24	General Study/GM-2A
GM-2B	1121.19	12/19/1998	75.49	1045.70	General Study/GM-2A
GM-2B	1121.19	3/9/1999	75.18	1046.01	General Study/GM-2A
GM-2B	1121.19	4/29/1999	75.17	1046.02	General Study/GM-2A
GM-2B	1121.19	6/14/1999	74.62	1046.57	General Study/GM-2A
GM-2B	1121.19	7/26/1999	74.00	1047.19	General Study/GM-2A
GM-2B	1121.19	8/21/1999	74.72	1046.47	General Study/GM-2A
GM-2B	1121.19	9/22/1999	74.65	1046.54	General Study/GM-2A
GM-2B	1121.19	10/25/1999	74.47	1046.72	General Study/GM-2A
GM-2B	1121.19	11/19/1999	74.40	1046.79	General Study/GM-2A
GM-2B	1121.19	12/31/1999	74.91	1046.28	General Study/GM-2A
GM-2B	1121.19	1/22/2000	74.55	1046.64	General Study/GM-2A
GM-2B	1121.19	2/21/2000	74.72	1046.47	General Study/GM-2A
GM-2B	1121.19	3/18/2000	74.57	1046.62	General Study/GM-2A
GM-2B	1121.19	6/17/2000	74.85	1046.34	General Study/GM-2A
GM-2B	1121.19	9/25/2000	74.88	1046.31	General Study/GM-2A
GM-2B	1121.19	11/30/2000	74.59	1046.60	General Study/GM-2A
GM-2B	1121.19	3/9/2001	74.81	1046.38	General Study/GM-2A
GM-2B	1121.19	6/1/2001	74.21	1046.98	General Study/GM-2A
GM-2B	1121.19	9/12/2001	75.16	1046.03	General Study/GM-2A
GM-2B	1121.19	12/11/2001	74.55	1046.64	General Study/GM-2A
GM-2B	1121.19	3/27/2002	75.35	1045.84	General Study/GM-2A
GM-2B	1121.19	6/11/2002	74.33	1046.86	General Study/GM-2A
GM-2B	1121.19	11/5/2002	74.07	1047.12	General Study/GM-2A
GM-2B	1121.19	5/19/2003	72.14	1049.05	General Study/GM-2A
GM-2B	1121.19	12/1/2003	74.70	1046.49	General Study/GM-2A
GM-2B	1121.19	5/13/2004	73.50	1047.69	General Study/GM-2A
GM-2B	1121.19	11/17/2004	73.98	1047.21	General Study/GM-2A
GM-2B	1121.19	6/3/2005	73.97	1047.22	General Study/GM-2A

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-2B	1121.19	11/10/2005	74.84	1046.35	General Study/GM-2A
GM-2B	1121.19	5/23/2006	74.59	1046.60	General Study/GM-2A
GM-2B	1121.19	11/27/2006	75.28	1045.91	General Study/GM-2A
GM-2B	1121.19	5/22/2007	75.36	1045.83	General Study/GM-2A
GM-2B	1121.19	11/1/2007	75.94	1045.25	General Study/GM-2A
GM-2C	1120.99	7/28/1998	50.50	1070.49	General Study/GM-2A
GM-2C	1120.99	8/11/1998	50.93	1070.06	General Study/GM-2A
GM-2C	1120.99	9/24/1998	50.95	1070.04	General Study/GM-2A
GM-2C	1120.99	10/22/1998	51.15	1069.84	General Study/GM-2A
GM-2C	1120.99	11/22/1998	51.29	1069.70	General Study/GM-2A
GM-2C	1120.99	12/19/1998	51.68	1069.31	General Study/GM-2A
GM-2C	1120.99	3/9/1999	52.06	1068.93	General Study/GM-2A
GM-2C	1120.99	4/29/1999	52.02	1068.97	General Study/GM-2A
GM-2C	1120.99	6/14/1999	51.78	1069.21	General Study/GM-2A
GM-2C	1120.99	7/26/1999	51.36	1069.63	General Study/GM-2A
GM-2C	1120.99	11/19/1999	50.53	1070.46	General Study/GM-2A
GM-2C	1120.99	12/31/1999	50.93	1070.06	General Study/GM-2A
GM-2C	1120.99	2/21/2000	51.24	1069.75	General Study/GM-2A
GM-2C	1120.99	3/18/2000	51.33	1069.66	General Study/GM-2A
GM-2C	1120.99	6/17/2000	51.15	1069.84	General Study/GM-2A
GM-2C	1120.99	9/25/2000	50.39	1070.60	General Study/GM-2A
GM-2C	1120.99	11/30/2000	49.79	1071.20	General Study/GM-2A
GM-2C	1120.99	3/9/2001	50.69	1070.30	General Study/GM-2A
GM-2C	1120.99	9/12/2001	50.41	1070.58	General Study/GM-2A
GM-2C	1120.99	12/11/2001	50.64	1070.35	General Study/GM-2A
GM-2C	1120.99	11/5/2002	48.96	1072.03	General Study/GM-2A
GM-2C	1120.99	5/19/2003	49.43	1071.56	General Study/GM-2A
GM-2C	1120.99	12/1/2003	49.59	1071.40	General Study/GM-2A
GM-2C	1120.99	5/13/2004	49.45	1071.54	General Study/GM-2A
GM-2C	1120.99	11/17/2004	48.62	1072.37	General Study/GM-2A
GM-2C	1120.99	6/3/2005	49.32	1071.67	General Study/GM-2A
GM-2C	1120.99	5/23/2006	50.71	1070.28	General Study/GM-2A
GM-2C	1120.99	11/27/2006	51.11	1069.88	General Study/GM-2A
GM-2C	1120.99	5/22/2007	51.86	1069.13	General Study/GM-2A
GM-2C	1120.99	11/1/2007	52.77	1068.22	General Study/GM-2A
GM-3A	1119.35	5/15/1997	47.41	1071.94	General Study
GM-3A	1119.35	5/15/1997	47.41	1071.94	General Study
GM-3A	1119.35	5/27/1997	47.24	1072.11	General Study
GM-3A	1119.35	5/27/1997	47.24	1072.11	General Study
GM-3A	1119.35	5/30/1997	47.24	1072.11	General Study
GM-3A	1119.35	5/31/1997	47.19	1072.16	General Study
GM-3A	1119.35	6/1/1997	47.23	1072.12	General Study
GM-3A	1119.35	6/3/1997	47.21	1072.14	General Study
GM-3A	1119.35	6/12/1997	47.09	1072.26	General Study
GM-3A	1119.35	6/15/1997	47.05	1072.30	General Study
GM-3A	1119.35	6/16/1997	47.14	1072.21	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-3A	1119.35	6/17/1997	47.13	1072.22	General Study
GM-3A	1119.35	6/23/1997	46.97	1072.38	General Study
GM-3A	1119.35	7/7/1997	46.97	1072.38	General Study
GM-3A	1119.35	7/19/1997	46.95	1072.40	General Study
GM-3A	1119.35	8/5/1997	46.96	1072.39	General Study
GM-3A	1119.35	9/8/1997	47.14	1072.21	General Study
GM-3A	1119.35	9/22/1997	47.25	1072.10	General Study
GM-3A	1119.35	10/6/1997	47.36	1071.99	General Study
GM-3A	1119.35	10/24/1997	47.44	1071.91	General Study
GM-3A	1119.35	11/13/1997	47.58	1071.77	General Study
GM-3A	1123.17	11/21/1997	51.49	1071.68	General Study
GM-3A	1119.35	4/15/1998	48.46	1070.89	General Study
GM-3A	1119.35	6/3/1998	48.17	1071.18	General Study
GM-3A	1119.35	6/30/1998	48.34	1071.01	General Study
GM-3A	1119.35	7/10/1998	48.47	1070.88	General Study
GM-3A	1119.35	7/28/1998	48.48	1070.87	General Study
GM-3A	1119.35	8/11/1998	48.70	1070.65	General Study
GM-3A	1119.35	9/24/1998	48.88	1070.47	General Study
GM-3A	1119.35	10/22/1998	49.00	1070.35	General Study
GM-3A	1119.35	11/22/1998	49.18	1070.17	General Study
GM-3A	1119.35	12/19/1998	49.41	1069.94	General Study
GM-3A	1119.35	3/9/1999	49.87	1069.48	General Study
GM-3A	1119.35	4/29/1999	49.77	1069.58	General Study
GM-3A	1119.35	6/14/1999	49.43	1069.92	General Study
GM-3A	1119.35	7/26/1999	48.89	1070.46	General Study
GM-3A	1119.35	8/21/1999	48.40	1070.95	General Study
GM-3A	1119.35	9/22/1999	48.18	1071.17	General Study
GM-3A	1119.35	10/25/1999	48.29	1071.06	General Study
GM-3A	1119.35	11/19/1999	48.49	1070.86	General Study
GM-3A	1119.35	12/31/1999	48.88	1070.47	General Study
GM-3A	1119.35	1/22/2000	48.97	1070.38	General Study
GM-3A	1119.35	2/21/2000	49.24	1070.11	General Study
GM-3A	1119.35	3/18/2000	49.36	1069.99	General Study
GM-3A	1119.35	6/17/2000	48.92	1070.43	General Study
GM-3A	1119.35	9/25/2000	48.05	1071.30	General Study
GM-3A	1119.35	11/30/2000	48.79	1070.56	General Study
GM-3A	1119.35	3/9/2001	48.46	1070.89	General Study
GM-3A	1119.35	6/1/2001	47.96	1071.39	General Study
GM-3A	1119.35	9/12/2001	48.11	1071.24	General Study
GM-3A	1119.35	12/11/2001	48.50	1070.85	General Study
GM-3A	1119.35	6/11/2002	47.57	1071.78	General Study
GM-3A	1119.35	11/5/2002	46.80	1072.55	General Study
GM-3A	1119.35	5/19/2003	46.97	1072.38	General Study
GM-3A	1119.35	12/1/2003	47.37	1071.98	General Study
GM-3A	1119.35	5/13/2004	47.03	1072.32	General Study
GM-3A	1119.35	11/17/2004	46.42	1072.93	General Study
GM-3A	1119.35	6/3/2005	47.24	1072.11	General Study
GM-3A	1119.35	9/11/2005	48.02	1071.33	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-3A	1119.35	11/10/2005	48.46	1070.89	General Study
GM-3A	1119.35	1/12/2006	48.54	1070.81	General Study
GM-3A	1119.35	2/13/2006	48.61	1070.74	General Study
GM-3A	1119.35	5/23/2006	48.54	1070.81	General Study
GM-3A	1119.35	8/8/2006	48.48	1070.87	General Study
GM-3A	1119.35	11/27/2006	49.13	1070.22	General Study
GM-3A	1119.35	5/22/2007	49.87	1069.48	General Study
GM-3A	1119.35	11/1/2007	50.69	1068.66	General Study
GM-3B	1119.40	5/15/1997	74.08	1045.32	General Study
GM-3B	1119.40	5/15/1997	73.66	1045.74	General Study
GM-3B	1119.40	5/27/1997	74.32	1045.08	General Study
GM-3B	1119.40	5/27/1997	74.04	1045.36	General Study
GM-3B	1119.40	5/30/1997	74.07	1045.33	General Study
GM-3B	1119.40	5/31/1997	74.15	1045.25	General Study
GM-3B	1119.40	6/1/1997	74.21	1045.19	General Study
GM-3B	1119.40	6/3/1997	74.37	1045.03	General Study
GM-3B	1119.40	6/12/1997	74.26	1045.14	General Study
GM-3B	1119.40	6/15/1997	74.25	1045.15	General Study
GM-3B	1119.40	6/16/1997	74.21	1045.19	General Study
GM-3B	1119.40	6/17/1997	74.39	1045.01	General Study
GM-3B	1119.40	6/23/1997	74.54	1044.86	General Study
GM-3B	1119.40	7/7/1997	74.83	1044.57	General Study
GM-3B	1119.40	7/19/1997	74.96	1044.44	General Study
GM-3B	1119.40	8/5/1997	75.02	1044.38	General Study
GM-3B	1119.40	9/8/1997	74.91	1044.49	General Study
GM-3B	1119.40	9/22/1997	74.95	1044.45	General Study
GM-3B	1119.40	10/6/1997	75.27	1044.13	General Study
GM-3B	1123.32	11/14/1997	79.07	1044.25	General Study
GM-3B	1123.32	11/21/1997	79.27	1044.05	General Study
GM-3B	1119.40	4/15/1998	74.86	1044.54	General Study
GM-3B	1119.40	6/3/1998	75.39	1044.01	General Study
GM-3B	1119.40	6/30/1998	75.32	1044.08	General Study
GM-3B	1119.40	7/10/1998	75.55	1043.85	General Study
GM-3B	1119.40	7/28/1998	75.32	1044.08	General Study
GM-3B	1119.40	8/11/1998	75.69	1043.71	General Study
GM-3B	1119.40	9/24/1998	75.67	1043.73	General Study
GM-3B	1119.40	10/22/1998	75.94	1043.46	General Study
GM-3B	1119.40	11/22/1998	75.55	1043.85	General Study
GM-3B	1119.40	12/19/1998	75.89	1043.51	General Study
GM-3B	1119.40	3/9/1999	75.76	1043.64	General Study
GM-3B	1119.40	4/29/1999	75.75	1043.65	General Study
GM-3B	1119.40	6/14/1999	75.21	1044.19	General Study
GM-3B	1119.40	7/26/1999	74.94	1044.46	General Study
GM-3B	1119.40	8/21/1999	75.16	1044.24	General Study
GM-3B	1119.40	9/22/1999	75.23	1044.17	General Study
GM-3B	1119.40	10/25/1999	75.31	1044.09	General Study
GM-3B	1119.40	11/19/1999	75.14	1044.26	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-3B	1119.40	12/31/1999	75.71	1043.69	General Study
GM-3B	1119.40	1/22/2000	75.17	1044.23	General Study
GM-3B	1119.40	2/21/2000	75.26	1044.14	General Study
GM-3B	1119.40	3/18/2000	75.08	1044.32	General Study
GM-3B	1119.40	6/17/2000	75.84	1043.56	General Study
GM-3B	1119.40	9/25/2000	75.54	1043.86	General Study
GM-3B	1119.40	11/30/2000	75.49	1043.91	General Study
GM-3B	1119.40	3/9/2001	75.55	1043.85	General Study
GM-3B	1119.40	6/1/2001	74.85	1044.55	General Study
GM-3B	1119.40	9/12/2001	75.84	1043.56	General Study
GM-3B	1119.40	12/11/2001	75.34	1044.06	General Study
GM-3B	1119.40	6/11/2002	75.02	1044.38	General Study
GM-3B	1119.40	11/5/2002	74.73	1044.67	General Study
GM-3B	1119.40	5/19/2003	73.72	1045.68	General Study
GM-3B	1119.40	12/1/2003	75.71	1043.69	General Study
GM-3B	1119.40	5/13/2004	74.46	1044.94	General Study
GM-3B	1119.40	11/17/2004	74.93	1044.47	General Study
GM-3B	1119.40	6/3/2005	74.93	1044.47	General Study
GM-3B	1119.40	9/11/2005	75.38	1044.02	General Study
GM-3B	1119.40	11/10/2005	76.50	1042.90	General Study
GM-3B	1119.40	1/12/2006	75.58	1043.82	General Study
GM-3B	1119.40	2/13/2006	75.66	1043.74	General Study
GM-3B	1119.40	5/23/2006	75.28	1044.12	General Study
GM-3B	1119.40	8/8/2006	76.15	1043.25	General Study
GM-3B	1119.40	11/27/2006	76.07	1043.33	General Study
GM-3B	1119.40	5/22/2007	76.13	1043.27	General Study
GM-3B	1119.40	11/1/2007	76.71	1042.69	General Study
GM-4	1127.98	6/16/1997	42.11	1085.87	General Study
GM-4	1127.98	7/7/1997	42.10	1085.88	General Study
GM-4	1127.98	7/19/1997	42.11	1085.87	General Study
GM-4	1127.98	8/5/1997	42.14	1085.84	General Study
GM-4	1127.98	9/8/1997	42.26	1085.72	General Study
GM-4	1127.98	9/22/1997	42.37	1085.61	General Study
GM-4	1127.98	10/6/1997	42.50	1085.48	General Study
GM-4	1127.98	10/24/1997	42.58	1085.40	General Study
GM-4	1127.98	11/14/1997	42.68	1085.30	General Study
GM-4	1127.98	11/21/1997	42.71	1085.27	General Study
GM-4	1127.98	4/15/1998	43.38	1084.60	General Study
GM-4	1127.98	6/3/1998	43.10	1084.88	General Study
GM-4	1127.98	6/30/1998	43.18	1084.80	General Study
GM-4	1127.98	7/10/1998	43.27	1084.71	General Study
GM-4	1127.98	7/28/1998	43.30	1084.68	General Study
GM-4	1127.98	8/11/1998	43.47	1084.51	General Study
GM-4	1127.98	9/24/1998	43.74	1084.24	General Study
GM-4	1127.98	10/22/1998	43.90	1084.08	General Study
GM-4	1127.98	11/22/1998	44.10	1083.88	General Study
GM-4	1127.98	12/19/1998	44.38	1083.60	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-4	1127.98	3/9/1999	44.94	1083.04	General Study
GM-4	1127.98	4/29/1999	45.20	1082.78	General Study
GM-4	1127.98	6/14/1999	45.11	1082.87	General Study
GM-4	1127.98	7/26/1999	44.72	1083.26	General Study
GM-4	1127.98	8/21/1999	44.15	1083.83	General Study
GM-4	1127.98	9/22/1999	43.80	1084.18	General Study
GM-4	1127.98	10/25/1999	43.07	1084.91	General Study
GM-4	1127.98	11/19/1999	42.65	1085.33	General Study
GM-4	1127.98	12/31/1999	42.89	1085.09	General Study
GM-4	1127.98	1/22/2000	43.04	1084.94	General Study
GM-4	1127.98	3/18/2000	43.58	1084.40	General Study
GM-4	1127.98	6/17/2000	43.84	1084.14	General Study
GM-4	1127.98	9/25/2000	43.79	1084.19	General Study
GM-4	1127.98	11/30/2000	43.66	1084.32	General Study
GM-4	1127.98	3/9/2001	44.13	1083.85	General Study
GM-4	1127.98	6/1/2001	44.06	1083.92	General Study
GM-4	1127.98	9/12/2001	44.43	1083.55	General Study
GM-4	1127.98	12/11/2001	44.79	1083.19	General Study
GM-4	1127.98	3/27/2002	45.14	1082.84	General Study
GM-4	1127.98	6/11/2002	43.47	1084.51	General Study
GM-4	1127.98	11/5/2002	43.16	1084.82	General Study
GM-4	1127.98	5/19/2003	42.59	1085.39	General Study
GM-4	1127.98	12/1/2003	42.94	1085.04	General Study
GM-4	1127.98	5/13/2004	42.65	1085.33	General Study
GM-4	1127.98	11/16/2004	41.66	1086.32	General Study
GM-4	1127.98	6/2/2005	42.12	1085.86	General Study
GM-4	1127.98	11/9/2005	42.89	1085.09	General Study
GM-4	1127.98	5/24/2006	43.04	1084.94	General Study
GM-4	1127.98	11/27/2006	43.38	1084.60	General Study
GM-4	1127.98	5/22/2007	44.19	1083.79	General Study
GM-4	1127.98	11/1/2007	45.34	1082.64	General Study
GM-5	1125.58	6/15/1997	84.23	1041.35	General Study/Riverside Disposal
GM-5	1125.58	6/16/1997	84.20	1041.38	General Study/Riverside Disposal
GM-5	1125.58	6/17/1997	84.15	1041.43	General Study/Riverside Disposal
GM-5	1125.58	6/23/1997	84.54	1041.04	General Study/Riverside Disposal
GM-5	1125.58	7/7/1997	84.99	1040.59	General Study/Riverside Disposal
GM-5	1125.58	7/19/1997	85.16	1040.42	General Study/Riverside Disposal
GM-5	1125.58	8/5/1997	85.36	1040.22	General Study/Riverside Disposal
GM-5	1125.58	9/8/1997	85.15	1040.43	General Study/Riverside Disposal
GM-5	1125.58	9/22/1997	85.10	1040.48	General Study/Riverside Disposal
GM-5	1125.58	10/6/1997	85.48	1040.10	General Study/Riverside Disposal
GM-5	1125.58	10/24/1997	85.33	1040.25	General Study/Riverside Disposal
GM-5	1125.58	11/13/1997	85.49	1040.09	General Study/Riverside Disposal
GM-5	1125.58	11/21/1997	85.51	1040.07	General Study/Riverside Disposal
GM-5	1125.58	4/15/1998	84.75	1040.83	General Study/Riverside Disposal
GM-5	1125.58	6/3/1998	85.60	1039.98	General Study/Riverside Disposal
GM-5	1125.58	6/30/1998	85.57	1040.01	General Study/Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-5	1125.58	7/10/1998	85.63	1039.95	General Study/Riverside Disposal
GM-5	1125.58	7/28/1998	85.67	1039.91	General Study/Riverside Disposal
GM-5	1125.58	8/11/1998	85.91	1039.67	General Study/Riverside Disposal
GM-5	1125.58	9/24/1998	85.91	1039.67	General Study/Riverside Disposal
GM-5	1125.58	10/22/1998	85.90	1039.68	General Study/Riverside Disposal
GM-5	1125.58	11/22/1998	85.63	1039.95	General Study/Riverside Disposal
GM-5	1125.58	12/19/1998	86.19	1039.39	General Study/Riverside Disposal
GM-5	1125.58	3/9/1999	85.46	1040.12	General Study/Riverside Disposal
GM-5	1125.58	4/29/1999	85.44	1040.14	General Study/Riverside Disposal
GM-5	1125.58	6/14/1999	84.92	1040.66	General Study/Riverside Disposal
GM-5	1125.58	7/26/1999	84.73	1040.85	General Study/Riverside Disposal
GM-5	1125.58	8/21/1999	85.30	1040.28	General Study/Riverside Disposal
GM-5	1125.58	9/22/1999	85.35	1040.23	General Study/Riverside Disposal
GM-5	1125.58	10/25/1999	85.56	1040.02	General Study/Riverside Disposal
GM-5	1125.58	11/19/1999	85.59	1039.99	General Study/Riverside Disposal
GM-5	1125.58	12/31/1999	85.99	1039.59	General Study/Riverside Disposal
GM-5	1125.58	1/22/2000	85.30	1040.28	General Study/Riverside Disposal
GM-5	1125.58	2/21/2000	85.16	1040.42	General Study/Riverside Disposal
GM-5	1125.58	3/18/2000	84.84	1040.74	General Study/Riverside Disposal
GM-5	1125.58	6/17/2000	85.85	1039.73	General Study/Riverside Disposal
GM-5	1125.58	9/25/2000	86.81	1038.77	General Study/Riverside Disposal
GM-5	1125.58	11/30/2000	85.86	1039.72	General Study/Riverside Disposal
GM-5	1125.58	1/12/2001	85.37	1040.21	General Study/Riverside Disposal
GM-5	1125.58	1/28/2001	85.50	1040.08	General Study/Riverside Disposal
GM-5	1125.58	2/6/2001	85.44	1040.14	General Study/Riverside Disposal
GM-5	1125.58	2/20/2001	85.39	1040.19	General Study/Riverside Disposal
GM-5	1125.58	2/27/2001	85.48	1040.10	General Study/Riverside Disposal
GM-5	1125.58	3/9/2001	85.36	1040.22	General Study/Riverside Disposal
GM-5	1125.58	3/23/2001	85.41	1040.17	General Study/Riverside Disposal
GM-5	1125.58	4/2/2001	85.41	1040.17	General Study/Riverside Disposal
GM-5	1125.58	4/16/2001	83.47	1042.11	General Study/Riverside Disposal
GM-5	1125.58	4/18/2001	83.87	1041.71	General Study/Riverside Disposal
GM-5	1125.58	4/18/2001	83.80	1041.78	General Study/Riverside Disposal
GM-5	1125.58	4/21/2001	84.07	1041.51	General Study/Riverside Disposal
GM-5	1125.58	4/23/2001	83.95	1041.63	General Study/Riverside Disposal
GM-5	1125.58	6/1/2001	84.83	1040.75	General Study/Riverside Disposal
GM-5	1125.58	9/12/2001	86.03	1039.55	General Study/Riverside Disposal
GM-5	1125.58	12/11/2001	85.58	1040.00	General Study/Riverside Disposal
GM-5	1125.58	3/27/2002	85.64	1039.94	General Study/Riverside Disposal
GM-5	1125.58	6/11/2002	84.76	1040.82	General Study/Riverside Disposal
GM-5	1125.58	11/5/2002	85.01	1040.57	General Study/Riverside Disposal
GM-5	1125.58	5/19/2003	83.47	1042.11	General Study/Riverside Disposal
GM-5	1125.58	10/25/2003	86.13	1039.45	General Study/Riverside Disposal
GM-5	1125.58	11/25/2003	85.47	1040.11	General Study/Riverside Disposal
GM-5	1125.58	12/1/2003	85.84	1039.74	General Study/Riverside Disposal
GM-5	1125.58	12/8/2003	85.53	1040.05	General Study/Riverside Disposal
GM-5	1125.58	12/9/2003	85.57	1040.01	General Study/Riverside Disposal
GM-5	1125.58	12/10/2003	85.42	1040.16	General Study/Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-5	1125.58	12/11/2003	85.68	1039.90	General Study/Riverside Disposal
GM-5	1125.58	12/12/2003	85.84	1039.74	General Study/Riverside Disposal
GM-5	1125.58	12/16/2003	85.39	1040.19	General Study/Riverside Disposal
GM-5	1125.58	12/22/2003	85.82	1039.76	General Study/Riverside Disposal
GM-5	1125.58	12/31/2003	85.47	1040.11	General Study/Riverside Disposal
GM-5	1125.58	5/13/2004	84.59	1040.99	General Study/Riverside Disposal
GM-5	1125.58	11/16/2004	85.62	1039.96	General Study/Riverside Disposal
GM-5	1125.58	4/14/2005	84.60	1040.98	General Study/Riverside Disposal
GM-5	1125.58	6/3/2005	85.42	1040.16	General Study/Riverside Disposal
GM-5	1125.58	9/11/2005	85.71	1039.87	General Study/Riverside Disposal
GM-5	1125.58	1/12/2006	87.11	1038.47	General Study/Riverside Disposal
GM-5	1125.58	2/13/2006	87.06	1038.52	General Study/Riverside Disposal
GM-5	1125.58	5/23/2006	86.25	1039.33	General Study/Riverside Disposal
GM-5	1125.58	8/8/2006	87.51	1038.07	General Study/Riverside Disposal
GM-5	1125.58	11/28/2006	87.38	1038.20	General Study/Riverside Disposal
GM-5	1125.58	2/5/2007	87.30	1038.28	General Study/Riverside Disposal
GM-5	1125.58	5/22/2007	87.41	1038.17	General Study/Riverside Disposal
GM-5	1125.58	8/14/2007	87.88	1037.70	General Study/Riverside Disposal
GM-5	1125.58	11/1/2007	87.84	1037.74	General Study/Riverside Disposal
GM-6	1126.71	5/27/1997	83.38	1043.33	General Study/Riverside Disposal
GM-6	1126.71	5/30/1997	83.26	1043.45	General Study/Riverside Disposal
GM-6	1126.71	5/31/1997	83.34	1043.37	General Study/Riverside Disposal
GM-6	1126.71	6/1/1997	83.50	1043.21	General Study/Riverside Disposal
GM-6	1126.71	6/3/1997	83.70	1043.01	General Study/Riverside Disposal
GM-6	1126.71	6/15/1997	83.73	1042.98	General Study/Riverside Disposal
GM-6	1126.71	6/16/1997	83.65	1043.06	General Study/Riverside Disposal
GM-6	1126.71	6/17/1997	83.67	1043.04	General Study/Riverside Disposal
GM-6	1126.71	6/23/1997	83.85	1042.86	General Study/Riverside Disposal
GM-6	1126.71	7/7/1997	84.28	1042.43	General Study/Riverside Disposal
GM-6	1126.71	7/19/1997	84.46	1042.25	General Study/Riverside Disposal
GM-6	1126.71	8/5/1997	84.62	1042.09	General Study/Riverside Disposal
GM-6	1126.71	9/8/1997	84.41	1042.30	General Study/Riverside Disposal
GM-6	1126.71	9/22/1997	84.42	1042.29	General Study/Riverside Disposal
GM-6	1126.71	10/6/1997	84.80	1041.91	General Study/Riverside Disposal
GM-6	1126.71	10/24/1997	84.56	1042.15	General Study/Riverside Disposal
GM-6	1126.71	11/13/1997	84.68	1042.03	General Study/Riverside Disposal
GM-6	1126.71	11/21/1997	84.76	1041.95	General Study/Riverside Disposal
GM-6	1126.71	4/15/1998	84.06	1042.65	General Study/Riverside Disposal
GM-6	1126.71	6/3/1998	84.87	1041.84	General Study/Riverside Disposal
GM-6	1126.71	6/30/1998	84.81	1041.90	General Study/Riverside Disposal
GM-6	1126.71	7/10/1998	84.92	1041.79	General Study/Riverside Disposal
GM-6	1126.71	7/28/1998	84.82	1041.89	General Study/Riverside Disposal
GM-6	1126.71	8/11/1998	85.18	1041.53	General Study/Riverside Disposal
GM-6	1126.71	9/24/1998	85.11	1041.60	General Study/Riverside Disposal
GM-6	1126.71	10/22/1998	85.16	1041.55	General Study/Riverside Disposal
GM-6	1126.71	11/22/1998	84.87	1041.84	General Study/Riverside Disposal
GM-6	1126.71	12/19/1998	85.49	1041.22	General Study/Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-6	1126.71	3/9/1999	84.73	1041.98	General Study/Riverside Disposal
GM-6	1126.71	4/29/1999	84.70	1042.01	General Study/Riverside Disposal
GM-6	1126.71	6/14/1999	84.25	1042.46	General Study/Riverside Disposal
GM-6	1126.71	7/26/1999	84.10	1042.61	General Study/Riverside Disposal
GM-6	1126.71	8/21/1999	84.70	1042.01	General Study/Riverside Disposal
GM-6	1126.71	9/22/1999	84.48	1042.23	General Study/Riverside Disposal
GM-6	1126.71	10/25/1999	84.75	1041.96	General Study/Riverside Disposal
GM-6	1126.71	11/19/1999	84.82	1041.89	General Study/Riverside Disposal
GM-6	1126.71	12/31/1999	85.20	1041.51	General Study/Riverside Disposal
GM-6	1126.71	1/22/2000	84.59	1042.12	General Study/Riverside Disposal
GM-6	1126.71	2/21/2000	84.41	1042.30	General Study/Riverside Disposal
GM-6	1126.71	3/18/2000	84.22	1042.49	General Study/Riverside Disposal
GM-6	1126.71	6/17/2000	85.18	1041.53	General Study/Riverside Disposal
GM-6	1126.71	11/30/2000	85.11	1041.60	General Study/Riverside Disposal
GM-6	1126.71	1/12/2001	84.80	1041.91	General Study/Riverside Disposal
GM-6	1126.71	1/28/2001	84.54	1042.17	General Study/Riverside Disposal
GM-6	1126.71	2/6/2001	84.53	1042.18	General Study/Riverside Disposal
GM-6	1126.71	2/20/2001	84.76	1041.95	General Study/Riverside Disposal
GM-6	1126.71	2/27/2001	84.75	1041.96	General Study/Riverside Disposal
GM-6	1126.71	3/9/2001	84.54	1042.17	General Study/Riverside Disposal
GM-6	1126.71	3/23/2001	84.69	1042.02	General Study/Riverside Disposal
GM-6	1126.71	4/2/2001	84.69	1042.02	General Study/Riverside Disposal
GM-6	1126.71	4/16/2001	82.96	1043.75	General Study/Riverside Disposal
GM-6	1126.71	4/18/2001	83.24	1043.47	General Study/Riverside Disposal
GM-6	1126.71	4/18/2001	83.31	1043.40	General Study/Riverside Disposal
GM-6	1126.71	4/21/2001	83.26	1043.45	General Study/Riverside Disposal
GM-6	1126.71	4/23/2001	83.13	1043.58	General Study/Riverside Disposal
GM-6	1126.71	6/1/2001	84.11	1042.60	General Study/Riverside Disposal
GM-6	1126.71	9/12/2001	85.27	1041.44	General Study/Riverside Disposal
GM-6	1126.71	12/11/2001	84.66	1042.05	General Study/Riverside Disposal
GM-6	1126.71	3/27/2002	84.94	1041.77	General Study/Riverside Disposal
GM-6	1126.71	6/11/2002	83.66	1043.05	General Study/Riverside Disposal
GM-6	1126.71	11/5/2002	84.01	1042.70	General Study/Riverside Disposal
GM-6	1126.71	5/19/2003	82.89	1043.82	General Study/Riverside Disposal
GM-6	1126.71	10/25/2003	85.38	1041.33	General Study/Riverside Disposal
GM-6	1126.71	11/25/2003	84.55	1042.16	General Study/Riverside Disposal
GM-6	1126.71	12/1/2003	84.89	1041.82	General Study/Riverside Disposal
GM-6	1126.71	12/8/2003	84.45	1042.26	General Study/Riverside Disposal
GM-6	1126.71	12/9/2003	84.55	1042.16	General Study/Riverside Disposal
GM-6	1126.71	12/10/2003	84.31	1042.40	General Study/Riverside Disposal
GM-6	1126.71	12/11/2003	84.60	1042.11	General Study/Riverside Disposal
GM-6	1126.71	12/12/2003	84.84	1041.87	General Study/Riverside Disposal
GM-6	1126.71	12/16/2003	84.13	1042.58	General Study/Riverside Disposal
GM-6	1126.71	12/22/2003	84.06	1042.65	General Study/Riverside Disposal
GM-6	1126.71	12/31/2003	84.02	1042.69	General Study/Riverside Disposal
GM-6	1126.71	5/13/2004	84.63	1042.08	General Study/Riverside Disposal
GM-6	1126.71	11/16/2004	84.63	1042.08	General Study/Riverside Disposal
GM-6	1126.71	4/14/2005	83.91	1042.80	General Study/Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-6	1126.71	6/3/2005	84.36	1042.35	General Study/Riverside Disposal
GM-6	1126.71	9/11/2005	84.52	1042.19	General Study/Riverside Disposal
GM-6	1126.71	11/9/2005	84.94	1041.77	General Study/Riverside Disposal
GM-6	1126.71	1/12/2006	85.36	1041.35	General Study/Riverside Disposal
GM-6	1126.71	2/13/2006	85.33	1041.38	General Study/Riverside Disposal
GM-6	1126.71	5/23/2006	84.84	1041.87	General Study/Riverside Disposal
GM-6	1126.71	8/8/2006	81.87	1044.84	General Study/Riverside Disposal
GM-6	1126.71	11/28/2006	85.81	1040.90	General Study/Riverside Disposal
GM-6	1126.71	2/5/2007	85.74	1040.97	General Study/Riverside Disposal
GM-6	1126.71	5/22/2007	85.89	1040.82	General Study/Riverside Disposal
GM-6	1126.71	8/14/2007	86.31	1040.40	General Study/Riverside Disposal
GM-6	1126.71	11/1/2007	86.34	1040.37	General Study/Riverside Disposal
GM-7	1107.40	6/16/1997	45.02	1062.38	General Study
GM-7	1107.40	6/17/1997	45.17	1062.23	General Study
GM-7	1107.40	6/23/1997	44.55	1062.85	General Study
GM-7	1107.40	7/7/1997	44.52	1062.88	General Study
GM-7	1107.40	7/19/1997	44.57	1062.83	General Study
GM-7	1107.40	9/8/1997	44.58	1062.82	General Study
GM-7	1107.40	9/22/1997	44.65	1062.75	General Study
GM-7	1107.40	10/6/1997	44.92	1062.48	General Study
GM-7	1107.40	10/24/1997	44.83	1062.57	General Study
GM-7	1107.40	11/13/1997	44.94	1062.46	General Study
GM-7	1107.40	11/21/1997	45.06	1062.34	General Study
GM-7	1107.40	4/15/1998	45.52	1061.88	General Study
GM-7	1107.40	6/3/1998	45.41	1061.99	General Study
GM-7	1107.40	6/30/1998	45.37	1062.03	General Study
GM-7	1107.40	7/28/1998	45.39	1062.01	General Study
GM-7	1107.40	8/11/1998	45.75	1061.65	General Study
GM-7	1107.40	9/24/1998	45.77	1061.63	General Study
GM-7	1107.40	10/22/1998	46.10	1061.30	General Study
GM-7	1107.40	11/22/1998	46.08	1061.32	General Study
GM-7	1107.40	12/19/1998	46.34	1061.06	General Study
GM-7	1107.40	3/9/1999	46.74	1060.66	General Study
GM-7	1107.40	4/29/1999	46.84	1060.56	General Study
GM-7	1107.40	6/14/1999	46.54	1060.86	General Study
GM-7	1107.40	7/26/1999	46.18	1061.22	General Study
GM-7	1107.40	8/21/1999	45.70	1061.70	General Study
GM-7	1107.40	9/22/1999	45.48	1061.92	General Study
GM-7	1107.40	10/25/1999	45.36	1062.04	General Study
GM-7	1107.40	11/19/1999	45.37	1062.03	General Study
GM-7	1107.40	12/31/1999	45.75	1061.65	General Study
GM-7	1107.40	1/22/2000	45.82	1061.58	General Study
GM-7	1107.40	2/21/2000	46.05	1061.35	General Study
GM-7	1107.40	3/18/2000	46.13	1061.27	General Study
GM-7	1107.40	6/17/2000	46.24	1061.16	General Study
GM-7	1107.40	9/25/2000	45.65	1061.75	General Study
GM-7	1107.40	11/30/2000	45.34	1062.06	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-7	1107.40	3/9/2001	45.71	1061.69	General Study
GM-7	1107.40	6/1/2001	45.30	1062.10	General Study
GM-7	1107.40	9/12/2001	45.49	1061.91	General Study
GM-7	1107.40	12/11/2001	45.32	1062.08	General Study
GM-7	1107.40	6/11/2002	45.24	1062.16	General Study
GM-7	1107.40	11/5/2002	44.39	1063.01	General Study
GM-7	1107.40	5/19/2003	44.36	1063.04	General Study
GM-7	1107.40	12/1/2003	44.69	1062.71	General Study
GM-7	1107.40	5/13/2004	44.21	1063.19	General Study
GM-7	1107.40	11/16/2004	43.73	1063.67	General Study
GM-7	1107.40	6/2/2005	44.17	1063.23	General Study
GM-7	1107.40	11/10/2005	45.96	1061.44	General Study
GM-7	1107.40	5/24/2006	45.10	1062.30	General Study
GM-7	1107.40	11/27/2006	45.40	1062.00	General Study
GM-7	1107.40	5/22/2007	45.84	1061.56	General Study
GM-7	1107.40	11/1/2007	46.81	1060.59	General Study
GM-8	1046.43	7/19/1997	11.20	1035.23	General Study/Menominee River
GM-8	1046.43	8/5/1997	11.32	1035.11	General Study/Menominee River
GM-8	1046.43	9/8/1997	11.22	1035.21	General Study/Menominee River
GM-8	1046.43	9/22/1997	11.01	1035.42	General Study/Menominee River
GM-8	1046.43	10/6/1997	11.27	1035.16	General Study/Menominee River
GM-8	1046.43	11/13/1997	11.51	1034.92	General Study/Menominee River
GM-8	1046.43	11/21/1997	11.39	1035.04	General Study/Menominee River
GM-8	1046.43	4/15/1998	10.85	1035.58	General Study/Menominee River
GM-8	1046.43	6/3/1998	11.53	1034.90	General Study/Menominee River
GM-8	1046.43	6/30/1998	11.29	1035.14	General Study/Menominee River
GM-8	1046.43	7/10/1998	11.33	1035.10	General Study/Menominee River
GM-8	1046.43	7/28/1998	11.46	1034.97	General Study/Menominee River
GM-8	1046.43	8/11/1998	11.36	1035.07	General Study/Menominee River
GM-8	1046.43	9/24/1998	11.56	1034.87	General Study/Menominee River
GM-8	1046.43	10/22/1998	11.46	1034.97	General Study/Menominee River
GM-8	1046.43	11/22/1998	11.35	1035.08	General Study/Menominee River
GM-8	1046.43	12/19/1998	11.62	1034.81	General Study/Menominee River
GM-8	1046.43	3/9/1999	11.08	1035.35	General Study/Menominee River
GM-8	1046.43	4/29/1999	11.38	1035.05	General Study/Menominee River
GM-8	1046.43	6/14/1999	10.74	1035.69	General Study/Menominee River
GM-8	1046.43	7/26/1999	10.88	1035.55	General Study/Menominee River
GM-8	1046.43	8/21/1999	11.08	1035.35	General Study/Menominee River
GM-8	1046.43	9/22/1999	11.37	1035.06	General Study/Menominee River
GM-8	1046.43	10/25/1999	11.41	1035.02	General Study/Menominee River
GM-8	1046.43	11/19/1999	11.35	1035.08	General Study/Menominee River
GM-8	1046.43	12/31/1999	11.74	1034.69	General Study/Menominee River
GM-8	1046.43	1/22/2000	11.16	1035.27	General Study/Menominee River
GM-8	1046.43	2/21/2000	11.06	1035.37	General Study/Menominee River
GM-8	1046.43	3/18/2000	10.73	1035.70	General Study/Menominee River
GM-8	1046.43	6/17/2000	11.48	1034.95	General Study/Menominee River
GM-8	1046.43	9/25/2000	11.34	1035.09	General Study/Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-8	1046.43	11/30/2000	11.69	1034.74	General Study/Menominee River
GM-8	1046.43	3/9/2001	11.32	1035.11	General Study/Menominee River
GM-8	1046.43	6/1/2001	10.95	1035.48	General Study/Menominee River
GM-8	1046.43	9/12/2001	11.55	1034.88	General Study/Menominee River
GM-8	1046.43	12/11/2001	11.41	1035.02	General Study/Menominee River
GM-8	1046.43	3/27/2002	11.40	1035.03	General Study/Menominee River
GM-8	1046.43	6/11/2002	10.80	1035.63	General Study/Menominee River
GM-8	1046.43	11/5/2002	11.20	1035.23	General Study/Menominee River
GM-8	1046.43	5/19/2003	9.39	1037.04	General Study/Menominee River
GM-8	1046.43	12/1/2003	11.51	1034.92	General Study/Menominee River
GM-8	1046.43	5/13/2004	10.61	1035.82	General Study/Menominee River
GM-8	1046.43	11/17/2004	11.37	1035.06	General Study/Menominee River
GM-8	1046.43	4/14/2005	10.41	1036.02	General Study/Menominee River
GM-8	1046.43	6/2/2005	11.43	1035.00	General Study/Menominee River
GM-8	1046.43	9/11/2005	11.28	1035.15	General Study/Menominee River
GM-8	1046.43	11/10/2005	11.41	1035.02	General Study/Menominee River
GM-8	1046.43	1/12/2006	11.55	1034.88	General Study/Menominee River
GM-8	1046.43	2/13/2006	11.43	1035.00	General Study/Menominee River
GM-8	1046.43	5/24/2006	10.89	1035.54	General Study/Menominee River
GM-8	1046.43	8/8/2006	11.48	1034.95	General Study/Menominee River
GM-8	1046.43	11/28/2006	11.36	1035.07	General Study/Menominee River
GM-8	1046.43	2/5/2007	11.59	1034.84	General Study/Menominee River
GM-8	1046.43	5/22/2007	11.61	1034.82	General Study/Menominee River
GM-8	1046.43	8/14/2007	11.69	1034.74	General Study/Menominee River
GM-8	1046.43	11/1/2007	11.63	1034.80	General Study/Menominee River
GM-9	1055.69	9/22/1997	17.35	1038.34	Menominee River
GM-9	1055.69	10/6/1997	17.70	1037.99	Menominee River
GM-9	1055.69	10/24/1997	17.59	1038.10	Menominee River
GM-9	1055.69	11/13/1997	17.81	1037.88	Menominee River
GM-9	1055.69	11/21/1997	17.77	1037.92	Menominee River
GM-9	1055.69	4/15/1998	17.31	1038.38	Menominee River
GM-9	1055.69	6/3/1998	17.85	1037.84	Menominee River
GM-9	1055.69	6/30/1998	17.73	1037.96	Menominee River
GM-9	1055.69	7/10/1998	17.88	1037.81	Menominee River
GM-9	1055.69	7/28/1998	17.92	1037.77	Menominee River
GM-9	1055.69	8/11/1998	17.94	1037.75	Menominee River
GM-9	1055.69	9/24/1998	18.10	1037.59	Menominee River
GM-9	1055.69	10/22/1998	18.10	1037.59	Menominee River
GM-9	1055.69	11/22/1998	17.80	1037.89	Menominee River
GM-9	1055.69	12/19/1998	18.23	1037.46	Menominee River
GM-9	1055.69	3/9/1999	17.71	1037.98	Menominee River
GM-9	1055.69	4/29/1999	18.00	1037.69	Menominee River
GM-9	1055.69	6/14/1999	17.25	1038.44	Menominee River
GM-9	1055.69	7/26/1999	17.33	1038.36	Menominee River
GM-9	1055.69	8/21/1999	17.48	1038.21	Menominee River
GM-9	1055.69	9/22/1999	17.70	1037.99	Menominee River
GM-9	1055.69	10/25/1999	17.67	1038.02	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-9	1055.69	11/19/1999	17.71	1037.98	Menominee River
GM-9	1055.69	12/31/1999	18.23	1037.46	Menominee River
GM-9	1055.69	1/22/2000	17.68	1038.01	Menominee River
GM-9	1055.69	2/21/2000	17.47	1038.22	Menominee River
GM-9	1055.69	3/18/2000	17.21	1038.48	Menominee River
GM-9	1055.69	6/17/2000	18.05	1037.64	Menominee River
GM-9	1055.69	9/25/2000	17.76	1037.93	Menominee River
GM-9	1055.69	11/30/2000	18.02	1037.67	Menominee River
GM-9	1055.69	1/12/2001	17.64	1038.05	Menominee River
GM-9	1055.69	1/28/2001	17.83	1037.86	Menominee River
GM-9	1055.69	2/6/2001	17.69	1038.00	Menominee River
GM-9	1055.69	2/20/2001	17.66	1038.03	Menominee River
GM-9	1055.69	2/27/2001	17.74	1037.95	Menominee River
GM-9	1055.69	3/9/2001	17.79	1037.90	Menominee River
GM-9	1055.69	3/23/2001	17.62	1038.07	Menominee River
GM-9	1055.69	4/2/2001	19.47	1036.22	Menominee River
GM-9	1055.69	4/16/2001	15.44	1040.25	Menominee River
GM-9	1055.69	4/18/2001	16.19	1039.50	Menominee River
GM-9	1055.69	4/18/2001	16.15	1039.54	Menominee River
GM-9	1055.69	4/21/2001	16.66	1039.03	Menominee River
GM-9	1055.69	4/23/2001	16.52	1039.17	Menominee River
GM-9	1055.69	6/1/2001	17.20	1038.49	Menominee River
GM-9	1055.69	9/12/2001	18.07	1037.62	Menominee River
GM-9	1055.69	12/11/2001	17.85	1037.84	Menominee River
GM-9	1055.69	3/27/2002	17.93	1037.76	Menominee River
GM-9	1055.69	6/11/2002	17.23	1038.46	Menominee River
GM-9	1055.69	11/5/2002	17.47	1038.22	Menominee River
GM-9	1055.69	5/19/2003	15.97	1039.72	Menominee River
GM-9	1055.69	10/25/2003	18.12	1037.57	Menominee River
GM-9	1055.69	11/25/2003	17.72	1037.97	Menominee River
GM-9	1055.69	12/1/2003	18.04	1037.65	Menominee River
GM-9	1055.69	5/13/2004	17.04	1038.65	Menominee River
GM-9	1055.69	11/17/2004	17.69	1038.00	Menominee River
GM-9	1055.69	4/14/2005	16.98	1038.71	Menominee River
GM-9	1055.69	6/3/2005	17.70	1037.99	Menominee River
GM-9	1055.69	7/22/2005	18.18	1037.51	Menominee River
GM-9	1055.69	9/11/2005	17.84	1037.85	Menominee River
GM-9	1055.69	11/10/2005	18.12	1037.57	Menominee River
GM-9	1055.69	1/12/2006	18.26	1037.43	Menominee River
GM-9	1055.69	2/13/2006	18.07	1037.62	Menominee River
GM-9	1055.69	5/24/2006	17.69	1038.00	Menominee River
GM-9	1055.69	8/8/2006	18.49	1037.20	Menominee River
GM-9	1055.69	11/28/2006	18.20	1037.49	Menominee River
GM-9	1055.69	2/5/2007	18.56	1037.13	Menominee River
GM-9	1055.69	5/23/2007	18.62	1037.07	Menominee River
GM-9	1055.69	8/14/2007	18.71	1036.98	Menominee River
GM-9	1055.69	11/1/2007	18.58	1037.11	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-10	1055.86	10/6/1997	16.95	1038.91	General Study/Wisconsin
GM-10	1055.86	10/24/1997	16.86	1039.00	General Study/Wisconsin
GM-10	1060.00	11/14/1997	21.22	1038.78	General Study/Wisconsin
GM-10	1060.00	11/21/1997	21.08	1038.92	General Study/Wisconsin
GM-10	1055.86	4/15/1998	16.26	1039.60	General Study/Wisconsin
GM-10	1055.86	6/3/1998	17.13	1038.73	General Study/Wisconsin
GM-10	1055.86	6/30/1998	16.99	1038.87	General Study/Wisconsin
GM-10	1055.86	7/10/1998	17.11	1038.75	General Study/Wisconsin
GM-10	1055.86	8/11/1998	17.26	1038.60	General Study/Wisconsin
GM-10	1055.86	9/24/1998	17.35	1038.51	General Study/Wisconsin
GM-10	1055.86	10/22/1998	17.40	1038.46	General Study/Wisconsin
GM-10	1055.86	11/22/1998	17.17	1038.69	General Study/Wisconsin
GM-10	1055.86	12/19/1998	17.55	1038.31	General Study/Wisconsin
GM-10	1055.86	3/9/1999	16.97	1038.89	General Study/Wisconsin
GM-10	1055.86	4/29/1999	17.24	1038.62	General Study/Wisconsin
GM-10	1055.86	6/14/1999	16.20	1039.66	General Study/Wisconsin
GM-10	1055.86	7/26/1999	16.20	1039.66	General Study/Wisconsin
GM-10	1055.86	8/21/1999	16.57	1039.29	General Study/Wisconsin
GM-10	1055.86	9/22/1999	16.95	1038.91	General Study/Wisconsin
GM-10	1055.86	10/25/1999	17.10	1038.76	General Study/Wisconsin
GM-10	1055.86	11/19/1999	17.00	1038.86	General Study/Wisconsin
GM-10	1055.86	12/31/1999	17.36	1038.50	General Study/Wisconsin
GM-10	1055.86	1/22/2000	16.88	1038.98	General Study/Wisconsin
GM-10	1055.86	2/21/2000	16.69	1039.17	General Study/Wisconsin
GM-10	1055.86	3/18/2000	16.28	1039.58	General Study/Wisconsin
GM-10	1055.86	6/17/2000	17.11	1038.75	General Study/Wisconsin
GM-10	1055.86	9/25/2000	17.12	1038.74	General Study/Wisconsin
GM-10	1055.86	11/30/2000	17.10	1038.76	General Study/Wisconsin
GM-10	1055.86	3/9/2001	16.99	1038.87	General Study/Wisconsin
GM-10	1055.86	6/1/2001	16.21	1039.65	General Study/Wisconsin
GM-10	1055.86	9/12/2001	17.27	1038.59	General Study/Wisconsin
GM-10	1055.86	12/11/2001	17.15	1038.71	General Study/Wisconsin
GM-10	1055.86	3/27/2002	17.14	1038.72	General Study/Wisconsin
GM-10	1055.86	6/11/2002	16.17	1039.69	General Study/Wisconsin
GM-10	1055.86	11/5/2002	16.42	1039.44	General Study/Wisconsin
GM-10	1055.86	5/19/2003	14.91	1040.95	General Study/Wisconsin
GM-10	1055.86	12/1/2003	17.31	1038.55	General Study/Wisconsin
GM-10	1055.86	5/13/2004	15.91	1039.95	General Study/Wisconsin
GM-10	1055.86	11/16/2004	17.14	1038.72	General Study/Wisconsin
GM-10	1055.86	6/2/2005	16.77	1039.09	General Study/Wisconsin
GM-10	1055.86	9/11/2005	17.11	1038.75	General Study/Wisconsin
GM-10	1055.86	11/10/2005	17.88	1037.98	General Study/Wisconsin
GM-10	1055.86	1/12/2006	18.02	1037.84	General Study/Wisconsin
GM-10	1055.86	2/13/2006	17.99	1037.87	General Study/Wisconsin
GM-10	1055.86	5/24/2006	17.28	1038.58	General Study/Wisconsin
GM-10	1055.86	8/8/2006	18.34	1037.52	General Study/Wisconsin
GM-10	1055.86	11/27/2006	18.30	1037.56	General Study/Wisconsin
GM-10	1055.86	2/5/2007	18.32	1037.54	General Study/Wisconsin

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-10	1055.86	5/22/2007	18.29	1037.57	General Study/Wisconsin
GM-10	1055.86	8/14/2007	18.70	1037.16	General Study/Wisconsin
GM-10	1055.86	11/2/2007	18.68	1037.18	General Study/Wisconsin
GM-11	1067.60	10/6/1997	13.33	1054.27	General Study/Menominee River
GM-11	1067.60	10/24/1997	13.23	1054.37	General Study/Menominee River
GM-11	1071.62	11/14/1997	17.30	1054.32	General Study/Menominee River
GM-11	1071.62	11/21/1997	17.40	1054.22	General Study/Menominee River
GM-11	1067.60	4/15/1998	12.83	1054.77	General Study/Menominee River
GM-11	1067.60	6/3/1998	13.26	1054.34	General Study/Menominee River
GM-11	1067.60	6/30/1998	13.41	1054.19	General Study/Menominee River
GM-11	1067.60	7/10/1998	13.39	1054.21	General Study/Menominee River
GM-11	1067.60	7/28/1998	13.60	1054.00	General Study/Menominee River
GM-11	1067.60	8/11/1998	13.68	1053.92	General Study/Menominee River
GM-11	1067.60	9/24/1998	13.63	1053.97	General Study/Menominee River
GM-11	1067.60	10/22/1998	13.68	1053.92	General Study/Menominee River
GM-11	1067.60	11/22/1998	13.55	1054.05	General Study/Menominee River
GM-11	1067.60	12/19/1998	13.84	1053.76	General Study/Menominee River
GM-11	1067.60	3/9/1999	13.51	1054.09	General Study/Menominee River
GM-11	1067.60	4/29/1999	13.24	1054.36	General Study/Menominee River
GM-11	1067.60	6/14/1999	13.04	1054.56	General Study/Menominee River
GM-11	1067.60	7/26/1999	12.96	1054.64	General Study/Menominee River
GM-11	1067.60	8/21/1999	13.06	1054.54	General Study/Menominee River
GM-11	1067.60	9/22/1999	12.91	1054.69	General Study/Menominee River
GM-11	1067.60	10/25/1999	13.37	1054.23	General Study/Menominee River
GM-11	1067.60	11/19/1999	13.31	1054.29	General Study/Menominee River
GM-11	1067.60	12/31/1999	13.80	1053.80	General Study/Menominee River
GM-11	1067.60	1/22/2000	13.48	1054.12	General Study/Menominee River
GM-11	1067.60	2/21/2000	13.36	1054.24	General Study/Menominee River
GM-11	1067.60	3/18/2000	13.14	1054.46	General Study/Menominee River
GM-11	1067.60	6/17/2000	13.62	1053.98	General Study/Menominee River
GM-11	1067.60	9/25/2000	13.41	1054.19	General Study/Menominee River
GM-11	1067.60	11/30/2000	13.62	1053.98	General Study/Menominee River
GM-11	1067.60	1/16/2001	13.39	1054.21	General Study/Menominee River
GM-11	1067.60	1/25/2001	13.44	1054.16	General Study/Menominee River
GM-11	1067.60	2/13/2001	13.95	1053.65	General Study/Menominee River
GM-11	1067.60	3/9/2001	8.41	1059.19	General Study/Menominee River
GM-11	1067.60	6/1/2001	13.07	1054.53	General Study/Menominee River
GM-11	1067.60	9/12/2001	13.60	1054.00	General Study/Menominee River
GM-11	1067.60	12/11/2001	13.56	1054.04	General Study/Menominee River
GM-11	1067.60	3/27/2002	13.56	1054.04	General Study/Menominee River
GM-11	1067.60	6/11/2002	13.08	1054.52	General Study/Menominee River
GM-11	1067.60	11/5/2002	13.17	1054.43	General Study/Menominee River
GM-11	1067.60	5/19/2003	12.21	1055.39	General Study/Menominee River
GM-11	1067.60	12/1/2003	13.53	1054.07	General Study/Menominee River
GM-11	1067.60	5/13/2004	12.61	1054.99	General Study/Menominee River
GM-11	1067.60	11/16/2004	13.33	1054.27	General Study/Menominee River
GM-11	1067.60	6/2/2005	13.18	1054.42	General Study/Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-11	1067.60	9/10/2005	13.54	1054.06	General Study/Menominee River
GM-11	1067.60	11/10/2005	13.50	1054.10	General Study/Menominee River
GM-11	1067.60	1/12/2006	13.62	1053.98	General Study/Menominee River
GM-11	1067.60	2/13/2006	13.44	1054.16	General Study/Menominee River
GM-11	1067.60	5/24/2006	12.96	1054.64	General Study/Menominee River
GM-11	1067.60	8/8/2006	13.52	1054.08	General Study/Menominee River
GM-11	1067.60	11/27/2006	13.71	1053.89	General Study/Menominee River
GM-11	1067.60	2/5/2007	13.78	1053.82	General Study/Menominee River
GM-11	1067.60	5/22/2007	13.39	1054.21	General Study/Menominee River
GM-11	1067.60	8/14/2007	13.82	1053.78	General Study/Menominee River
GM-11	1067.60	11/1/2007	13.74	1053.86	General Study/Menominee River
GM-12	1123.23	10/24/1997	67.31	1055.92	Former Plant Site
GM-12	1123.23	11/14/1997	67.41	1055.82	Former Plant Site
GM-12	1123.23	11/21/1997	67.54	1055.69	Former Plant Site
GM-12	1123.23	4/15/1998	67.37	1055.86	Former Plant Site
GM-12	1123.23	6/3/1998	67.65	1055.58	Former Plant Site
GM-12	1123.23	6/30/1998	67.66	1055.57	Former Plant Site
GM-12	1123.23	7/10/1998	67.95	1055.28	Former Plant Site
GM-12	1123.23	7/28/1998	67.62	1055.61	Former Plant Site
GM-12	1123.23	8/11/1998	68.04	1055.19	Former Plant Site
GM-12	1123.23	9/24/1998	68.01	1055.22	Former Plant Site
GM-12	1123.23	10/22/1998	68.38	1054.85	Former Plant Site
GM-12	1123.23	11/22/1998	68.04	1055.19	Former Plant Site
GM-12	1123.23	12/19/1998	68.61	1054.62	Former Plant Site
GM-12	1123.23	3/9/1999	68.64	1054.59	Former Plant Site
GM-12	1123.23	4/29/1999	68.65	1054.58	Former Plant Site
GM-12	1123.23	6/14/1999	68.10	1055.13	Former Plant Site
GM-12	1123.23	7/26/1999	67.61	1055.62	Former Plant Site
GM-12	1123.23	8/21/1999	67.86	1055.37	Former Plant Site
GM-12	1123.23	9/22/1999	67.57	1055.66	Former Plant Site
GM-12	1123.23	10/25/1999	67.47	1055.76	Former Plant Site
GM-12	1123.23	11/19/1999	67.41	1055.82	Former Plant Site
GM-12	1123.23	12/31/1999	67.61	1055.62	Former Plant Site
GM-12	1123.23	1/22/2000	67.60	1055.63	Former Plant Site
GM-12	1123.23	2/21/2000	68.00	1055.23	Former Plant Site
GM-12	1123.23	3/18/2000	67.96	1055.27	Former Plant Site
GM-12	1123.23	6/17/2000	68.33	1054.90	Former Plant Site
GM-12	1123.23	9/25/2000	67.76	1055.47	Former Plant Site
GM-12	1123.23	11/30/2000	68.06	1055.17	Former Plant Site
GM-12	1123.23	6/1/2001	67.20	1056.03	Former Plant Site
GM-12	1123.23	3/27/2002	67.83	1055.40	Former Plant Site
GM-12	1123.23	6/11/2002	66.71	1056.52	Former Plant Site
GM-12	1123.23	11/5/2002	66.59	1056.64	Former Plant Site
GM-12	1123.23	5/19/2003	66.68	1056.55	Former Plant Site
GM-12	1123.23	12/1/2003	67.54	1055.69	Former Plant Site
GM-12	1123.23	5/13/2004	66.69	1056.54	Former Plant Site
GM-12	1123.23	11/17/2004	66.55	1056.68	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-12	1123.23	6/2/2005	66.69	1056.54	Former Plant Site
GM-12	1123.23	11/9/2005	67.24	1055.99	Former Plant Site
GM-12	1123.23	5/23/2006	68.06	1055.17	Former Plant Site
GM-12	1123.23	11/27/2006	68.62	1054.61	Former Plant Site
GM-12	1123.23	5/22/2007	68.82	1054.41	Former Plant Site
GM-12	1123.23	11/1/2007	69.61	1053.62	Former Plant Site
GM-13	1115.78	10/6/1997	61.06	1054.72	Former Plant Site
GM-13	1115.78	10/24/1997	60.90	1054.88	Former Plant Site
GM-13	1115.78	11/13/1997	60.98	1054.80	Former Plant Site
GM-13	1119.82	11/21/1997	65.19	1054.63	Former Plant Site
GM-13	1115.78	4/15/1998	61.12	1054.66	Former Plant Site
GM-13	1115.78	6/3/1998	61.32	1054.46	Former Plant Site
GM-13	1115.78	6/30/1998	61.26	1054.52	Former Plant Site
GM-13	1115.78	7/10/1998	61.57	1054.21	Former Plant Site
GM-13	1115.78	7/28/1998	61.28	1054.50	Former Plant Site
GM-13	1115.78	8/11/1998	61.62	1054.16	Former Plant Site
GM-13	1115.78	9/24/1998	61.70	1054.08	Former Plant Site
GM-13	1115.78	10/22/1998	62.06	1053.72	Former Plant Site
GM-13	1115.78	11/22/1998	61.75	1054.03	Former Plant Site
GM-13	1115.78	12/19/1998	62.18	1053.60	Former Plant Site
GM-13	1115.78	3/9/1999	62.23	1053.55	Former Plant Site
GM-13	1115.78	4/29/1999	62.34	1053.44	Former Plant Site
GM-13	1115.78	6/14/1999	61.85	1053.93	Former Plant Site
GM-13	1115.78	7/26/1999	61.37	1054.41	Former Plant Site
GM-13	1115.78	8/21/1999	61.50	1054.28	Former Plant Site
GM-13	1115.78	9/22/1999	61.32	1054.46	Former Plant Site
GM-13	1115.78	10/25/1999	61.26	1054.52	Former Plant Site
GM-13	1115.78	11/19/1999	61.19	1054.59	Former Plant Site
GM-13	1115.78	12/31/1999	61.61	1054.17	Former Plant Site
GM-13	1115.78	1/22/2000	61.59	1054.19	Former Plant Site
GM-13	1115.78	2/21/2000	61.75	1054.03	Former Plant Site
GM-13	1115.78	3/18/2000	61.79	1053.99	Former Plant Site
GM-13	1115.78	6/17/2000	62.03	1053.75	Former Plant Site
GM-13	1115.78	9/25/2000	61.55	1054.23	Former Plant Site
GM-13	1115.78	11/30/2000	61.47	1054.31	Former Plant Site
GM-13	1115.78	3/9/2001	61.45	1054.33	Former Plant Site
GM-13	1115.78	6/1/2001	60.97	1054.81	Former Plant Site
GM-13	1115.78	9/12/2001	61.57	1054.21	Former Plant Site
GM-13	1115.78	12/11/2001	61.80	1053.98	Former Plant Site
GM-13	1115.78	6/11/2002	60.69	1055.09	Former Plant Site
GM-13	1115.78	11/5/2002	60.37	1055.41	Former Plant Site
GM-13	1115.78	5/19/2003	60.32	1055.46	Former Plant Site
GM-13	1115.78	12/1/2003	61.17	1054.61	Former Plant Site
GM-13	1115.78	5/13/2004	60.35	1055.43	Former Plant Site
GM-13	1115.78	11/17/2004	60.31	1055.47	Former Plant Site
GM-13	1115.78	6/3/2005	60.48	1055.30	Former Plant Site
GM-13	1115.78	11/10/2005	61.41	1054.37	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-13	1115.78	5/23/2006	51.67	1064.11	Former Plant Site
GM-13	1115.78	11/27/2006	62.18	1053.60	Former Plant Site
GM-13	1115.78	5/23/2007	62.41	1053.37	Former Plant Site
GM-13	1115.78	11/1/2007	63.12	1052.66	Former Plant Site
GM-14	1114.56	10/6/1997	32.46	1082.10	General Study
GM-14	1114.56	10/24/1997	32.17	1082.39	General Study
GM-14	1114.56	11/13/1997	32.42	1082.14	General Study
GM-14	1114.56	11/21/1997	32.50	1082.06	General Study
GM-14	1114.56	4/15/1998	32.96	1081.60	General Study
GM-14	1114.56	6/3/1998	33.10	1081.46	General Study
GM-14	1114.56	6/30/1998	33.09	1081.47	General Study
GM-14	1114.56	7/10/1998	33.07	1081.49	General Study
GM-14	1114.56	7/28/1998	33.19	1081.37	General Study
GM-14	1114.56	8/11/1998	33.35	1081.21	General Study
GM-14	1114.56	9/24/1998	33.67	1080.89	General Study
GM-14	1114.56	10/22/1998	33.71	1080.85	General Study
GM-14	1114.56	11/22/1998	33.92	1080.64	General Study
GM-14	1114.56	12/19/1998	34.21	1080.35	General Study
GM-14	1114.56	3/9/1999	34.91	1079.65	General Study
GM-14	1114.56	4/29/1999	34.89	1079.67	General Study
GM-14	1114.56	6/14/1999	34.32	1080.24	General Study
GM-14	1114.56	7/26/1999	33.34	1081.22	General Study
GM-14	1114.56	8/21/1999	32.99	1081.57	General Study
GM-14	1114.56	9/22/1999	32.92	1081.64	General Study
GM-14	1114.56	10/25/1999	32.92	1081.64	General Study
GM-14	1114.56	11/19/1999	33.15	1081.41	General Study
GM-14	1114.56	12/31/1999	33.51	1081.05	General Study
GM-14	1114.56	1/22/2000	33.69	1080.87	General Study
GM-14	1114.56	2/21/2000	34.03	1080.53	General Study
GM-14	1114.56	3/18/2000	33.81	1080.75	General Study
GM-14	1114.56	6/17/2000	33.84	1080.72	General Study
GM-14	1114.56	9/25/2000	31.95	1082.61	General Study
GM-14	1114.56	11/30/2000	31.99	1082.57	General Study
GM-14	1114.56	3/9/2001	32.91	1081.65	General Study
GM-14	1114.56	6/1/2001	32.81	1081.75	General Study
GM-14	1114.56	9/12/2001	33.10	1081.46	General Study
GM-14	1114.56	12/11/2001	33.70	1080.86	General Study
GM-14	1114.56	3/27/2002	34.59	1079.97	General Study
GM-14	1114.56	6/11/2002	33.50	1081.06	General Study
GM-14	1114.56	11/5/2002	32.38	1082.18	General Study
GM-14	1114.56	5/19/2003	33.02	1081.54	General Study
GM-14	1114.56	12/1/2003	33.43	1081.13	General Study
GM-14	1114.56	5/13/2004	33.36	1081.20	General Study
GM-14	1114.56	11/16/2004	32.41	1082.15	General Study
GM-14	1114.56	6/2/2005	33.58	1080.98	General Study
GM-14	1114.56	11/10/2005	33.89	1080.67	General Study
GM-14	1114.56	5/24/2006	34.55	1080.01	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-14	1114.56	11/27/2006	34.93	1079.63	General Study
GM-14	1114.56	5/22/2007	35.76	1078.80	General Study
GM-14	1114.56	11/1/2007	35.83	1078.73	General Study
GM-15	1126.99	10/6/1997	40.77	1086.22	General Study
GM-15	1126.99	10/24/1997	40.64	1086.35	General Study
GM-15	1130.93	11/14/1997	44.89	1086.04	General Study
GM-15	1130.93	11/21/1997	44.95	1085.98	General Study
GM-15	1126.99	4/15/1998	41.62	1085.37	General Study
GM-15	1126.99	6/3/1998	41.35	1085.64	General Study
GM-15	1126.99	6/30/1998	41.36	1085.63	General Study
GM-15	1126.99	7/10/1998	41.45	1085.54	General Study
GM-15	1126.99	7/28/1998	41.41	1085.58	General Study
GM-15	1126.99	8/11/1998	41.60	1085.39	General Study
GM-15	1126.99	9/24/1998	41.89	1085.10	General Study
GM-15	1126.99	10/22/1998	42.18	1084.81	General Study
GM-15	1126.99	11/22/1998	42.44	1084.55	General Study
GM-15	1126.99	12/19/1998	42.73	1084.26	General Study
GM-15	1126.99	3/9/1999	43.08	1083.91	General Study
GM-15	1126.99	4/29/1999	43.71	1083.28	General Study
GM-15	1126.99	6/14/1999	43.36	1083.63	General Study
GM-15	1126.99	7/26/1999	42.77	1084.22	General Study
GM-15	1126.99	8/21/1999	42.34	1084.65	General Study
GM-15	1126.99	9/22/1999	42.00	1084.99	General Study
GM-15	1126.99	10/25/1999	41.89	1085.10	General Study
GM-15	1126.99	11/19/1999	41.91	1085.08	General Study
GM-15	1126.99	12/31/1999	42.32	1084.67	General Study
GM-15	1126.99	1/22/2000	42.48	1084.51	General Study
GM-15	1126.99	2/21/2000	42.80	1084.19	General Study
GM-15	1126.99	3/18/2000	42.43	1084.56	General Study
GM-15	1126.99	6/17/2000	42.71	1084.28	General Study
GM-15	1126.99	9/25/2000	41.68	1085.31	General Study
GM-15	1126.99	11/30/2000	41.01	1085.98	General Study
GM-15	1126.99	3/9/2001	42.01	1084.98	General Study
GM-15	1126.99	6/1/2001	41.97	1085.02	General Study
GM-15	1126.99	9/12/2001	41.80	1085.19	General Study
GM-15	1126.99	12/11/2001	42.07	1084.92	General Study
GM-15	1126.99	3/27/2002	42.69	1084.30	General Study
GM-15	1126.99	6/11/2002	41.43	1085.56	General Study
GM-15	1126.99	11/5/2002	40.97	1086.02	General Study
GM-15	1126.99	5/19/2003	39.33	1087.66	General Study
GM-15	1126.99	12/1/2003	41.81	1085.18	General Study
GM-15	1126.99	5/13/2004	42.35	1084.64	General Study
GM-15	1126.99	11/16/2004	41.14	1085.85	General Study
GM-15	1126.99	6/2/2005	41.85	1085.14	General Study
GM-15	1126.99	11/10/2005	42.45	1084.54	General Study
GM-15	1126.99	5/24/2006	42.96	1084.03	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-15	1126.99	11/27/2006	43.28	1083.71	General Study
GM-15	1126.99	5/22/2007	44.24	1082.75	General Study
GM-15	1126.99	11/1/2007	44.09	1082.90	General Study
GM-16	1129.80	10/24/1997	76.31	1053.49	General Study
GM-16	1129.80	11/13/1997	76.39	1053.41	General Study
GM-16	1129.80	11/21/1997	76.56	1053.24	General Study
GM-16	1129.80	4/15/1998	76.08	1053.72	General Study
GM-16	1129.80	6/3/1998	76.58	1053.22	General Study
GM-16	1129.80	6/30/1998	76.49	1053.31	General Study
GM-16	1129.80	7/10/1998	76.62	1053.18	General Study
GM-16	1129.80	7/28/1998	76.34	1053.46	General Study
GM-16	1129.80	8/11/1998	76.77	1053.03	General Study
GM-16	1129.80	9/24/1998	76.66	1053.14	General Study
GM-16	1129.80	10/22/1998	76.94	1052.86	General Study
GM-16	1129.80	11/22/1998	76.70	1053.10	General Study
GM-16	1129.80	12/19/1998	77.25	1052.55	General Study
GM-16	1129.80	3/9/1999	76.72	1053.08	General Study
GM-16	1129.80	4/29/1999	76.78	1053.02	General Study
GM-16	1129.80	6/14/1999	76.32	1053.48	General Study
GM-16	1129.80	7/26/1999	76.13	1053.67	General Study
GM-16	1129.80	8/21/1999	76.58	1053.22	General Study
GM-16	1129.80	9/22/1999	76.22	1053.58	General Study
GM-16	1129.80	10/25/1999	76.73	1053.07	General Study
GM-16	1129.80	11/19/1999	76.53	1053.27	General Study
GM-16	1129.80	12/31/1999	76.81	1052.99	General Study
GM-16	1129.80	1/22/2000	76.48	1053.32	General Study
GM-16	1129.80	2/21/2000	76.21	1053.59	General Study
GM-16	1129.80	3/18/2000	76.12	1053.68	General Study
GM-16	1129.80	6/17/2000	76.68	1053.12	General Study
GM-16	1129.80	9/25/2000	77.90	1051.90	General Study
GM-16	1129.80	11/30/2000	77.26	1052.54	General Study
GM-16	1129.80	3/9/2001	76.94	1052.86	General Study
GM-16	1129.80	6/1/2001	76.19	1053.61	General Study
GM-16	1129.80	9/12/2001	77.34	1052.46	General Study
GM-16	1129.80	12/11/2001	77.40	1052.40	General Study
GM-16	1129.80	3/27/2002	77.34	1052.46	General Study
GM-16	1129.80	6/11/2002	75.71	1054.09	General Study
GM-16	1129.80	11/5/2002	76.25	1053.55	General Study
GM-16	1129.80	5/19/2003	75.76	1054.04	General Study
GM-16	1129.80	12/1/2003	77.29	1052.51	General Study
GM-16	1129.80	5/13/2004	75.71	1054.09	General Study
GM-16	1129.80	11/17/2004	76.03	1053.77	General Study
GM-16	1129.80	6/2/2005	75.49	1054.31	General Study
GM-16	1129.80	11/10/2005	76.74	1053.06	General Study
GM-16	1129.80	11/29/2006	77.07	1052.73	General Study
GM-16	1129.80	5/22/2007	77.30	1052.50	General Study
GM-16	1129.80	11/1/2007	78.27	1051.53	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-17	1111.51	11/14/1997	55.51	1056.00	Former Plant Site
GM-17	1111.51	11/21/1997	55.58	1055.93	Former Plant Site
GM-17	1111.51	4/15/1998	55.91	1055.60	Former Plant Site
GM-17	1111.51	6/3/1998	55.88	1055.63	Former Plant Site
GM-17	1111.51	6/30/1998	55.89	1055.62	Former Plant Site
GM-17	1111.51	7/10/1998	56.06	1055.45	Former Plant Site
GM-17	1111.51	7/28/1998	55.94	1055.57	Former Plant Site
GM-17	1111.51	8/11/1998	56.17	1055.34	Former Plant Site
GM-17	1111.51	9/24/1998	56.31	1055.20	Former Plant Site
GM-17	1111.51	10/22/1998	56.50	1055.01	Former Plant Site
GM-17	1111.51	11/22/1998	56.52	1054.99	Former Plant Site
GM-17	1111.51	12/19/1998	56.81	1054.70	Former Plant Site
GM-17	1111.51	3/9/1999	57.20	1054.31	Former Plant Site
GM-17	1111.51	4/29/1999	57.24	1054.27	Former Plant Site
GM-17	1111.51	6/14/1999	56.89	1054.62	Former Plant Site
GM-17	1111.51	7/26/1999	56.41	1055.10	Former Plant Site
GM-17	1111.51	8/21/1999	56.26	1055.25	Former Plant Site
GM-17	1111.51	9/22/1999	56.09	1055.42	Former Plant Site
GM-17	1111.51	10/25/1999	56.13	1055.38	Former Plant Site
GM-17	1111.51	11/19/1999	56.11	1055.40	Former Plant Site
GM-17	1111.51	12/31/1999	56.45	1055.06	Former Plant Site
GM-17	1111.51	1/22/2000	56.52	1054.99	Former Plant Site
GM-17	1111.51	2/21/2000	56.75	1054.76	Former Plant Site
GM-17	1111.51	3/18/2000	56.82	1054.69	Former Plant Site
GM-17	1111.51	6/17/2000	57.95	1053.56	Former Plant Site
GM-17	1111.51	9/25/2000	56.23	1055.28	Former Plant Site
GM-17	1111.51	11/30/2000	56.00	1055.51	Former Plant Site
GM-17	1111.51	3/9/2001	56.40	1055.11	Former Plant Site
GM-17	1111.51	6/1/2001	56.21	1055.30	Former Plant Site
GM-17	1111.51	3/27/2002	57.02	1054.49	Former Plant Site
GM-17	1111.51	11/5/2002	55.55	1055.96	Former Plant Site
GM-17	1111.51	5/19/2003	55.36	1056.15	Former Plant Site
GM-17	1111.51	12/1/2003	56.02	1055.49	Former Plant Site
GM-17	1111.51	11/17/2004	55.04	1056.47	Former Plant Site
GM-17	1111.51	6/2/2005	55.56	1055.95	Former Plant Site
GM-17	1111.51	11/10/2005	56.19	1055.32	Former Plant Site
GM-17	1111.51	5/24/2006	56.57	1054.94	Former Plant Site
GM-17	1111.51	11/27/2006	56.96	1054.55	Former Plant Site
GM-17	1111.51	5/22/2007	57.51	1054.00	Former Plant Site
GM-17	1111.51	11/1/2007	58.07	1053.44	Former Plant Site
GM-18	1122.40	4/15/1998	55.79	1066.61	SW Pit
GM-18	1122.40	6/3/1998	55.75	1066.65	SW Pit
GM-18	1122.40	6/30/1998	55.70	1066.70	SW Pit
GM-18	1122.40	7/10/1998			SW Pit
GM-18	1122.40	7/28/1998			SW Pit
GM-18	1122.40	8/11/1998	55.43	1066.97	SW Pit
GM-18	1122.40	9/24/1998	55.59	1066.81	SW Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-18	1122.40	10/22/1998	55.66	1066.74	SW Pit
GM-18	1122.40	11/22/1998	55.86	1066.54	SW Pit
GM-18	1122.40	3/9/1999	56.55	1065.85	SW Pit
GM-18	1122.40	4/29/1999	56.63	1065.77	SW Pit
GM-18	1122.40	6/14/1999	56.84	1065.56	SW Pit
GM-18	1122.40	7/26/1999	56.60	1065.80	SW Pit
GM-18	1122.40	8/21/1999	56.16	1066.24	SW Pit
GM-18	1122.40	9/22/1999	55.70	1066.70	SW Pit
GM-18	1122.40	10/25/1999	55.47	1066.93	SW Pit
GM-18	1122.40	11/19/1999	55.36	1067.04	SW Pit
GM-18	1122.40	12/31/1999	55.34	1067.06	SW Pit
GM-18	1122.40	1/22/2000	55.44	1066.96	SW Pit
GM-18	1122.40	2/21/2000	55.64	1066.76	SW Pit
GM-18	1122.40	3/18/2000	55.76	1066.64	SW Pit
GM-18	1122.40	6/17/2000	56.09	1066.31	SW Pit
GM-18	1122.40	9/25/2000	55.82	1066.58	SW Pit
GM-18	1122.40	11/30/2000	55.39	1067.01	SW Pit
GM-18	1122.40	3/9/2001	54.68	1067.72	SW Pit
GM-18	1122.40	6/1/2001	55.72	1066.68	SW Pit
GM-18	1122.40	9/12/2001	55.84	1066.56	SW Pit
GM-18	1122.40	12/11/2001	56.61	1065.79	SW Pit
GM-18	1122.40	3/27/2002	56.57	1065.83	SW Pit
GM-18	1122.40	6/11/2002	55.65	1066.75	SW Pit
GM-18	1122.40	11/5/2002	55.00	1067.40	SW Pit
GM-18	1122.40	5/19/2003	54.59	1067.81	SW Pit
GM-18	1122.40	12/1/2003	54.78	1067.62	SW Pit
GM-18	1122.40	5/13/2004	54.41	1067.99	SW Pit
GM-18	1122.40	11/16/2004	53.76	1068.64	SW Pit
GM-19	1119.55	4/15/1998	54.27	1065.28	SW Pit
GM-19	1119.55	6/3/1998	54.25	1065.30	SW Pit
GM-19	1119.55	6/30/1998	54.23	1065.32	SW Pit
GM-19	1119.55	7/10/1998	54.32	1065.23	SW Pit
GM-19	1119.55	7/28/1998	54.26	1065.29	SW Pit
GM-19	1119.55	8/11/1998	54.41	1065.14	SW Pit
GM-19	1119.55	9/24/1998	54.59	1064.96	SW Pit
GM-19	1119.55	10/22/1998	54.68	1064.87	SW Pit
GM-19	1119.55	11/22/1998	54.84	1064.71	SW Pit
GM-19	1119.55	3/9/1999	55.47	1064.08	SW Pit
GM-19	1119.55	4/29/1999	55.50	1064.05	SW Pit
GM-19	1119.55	6/14/1999	55.62	1063.93	SW Pit
GM-19	1119.55	7/26/1999	55.38	1064.17	SW Pit
GM-19	1119.55	8/21/1999	54.92	1064.63	SW Pit
GM-19	1119.55	9/22/1999	54.55	1065.00	SW Pit
GM-19	1119.55	10/25/1999	54.38	1065.17	SW Pit
GM-19	1119.55	11/19/1999	54.31	1065.24	SW Pit
GM-19	1119.55	12/31/1999	54.34	1065.21	SW Pit
GM-19	1119.55	1/22/2000	54.43	1065.12	SW Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-19	1119.55	2/21/2000	54.60	1064.95	SW Pit
GM-19	1119.55	3/18/2000	54.70	1064.85	SW Pit
GM-19	1119.55	6/17/2000	54.96	1064.59	SW Pit
GM-19	1119.55	9/25/2000	54.68	1064.87	SW Pit
GM-19	1119.55	11/30/2000	53.96	1065.59	SW Pit
GM-19	1119.55	3/9/2001	54.44	1065.11	SW Pit
GM-19	1119.55	6/1/2001	54.48	1065.07	SW Pit
GM-19	1119.55	9/12/2001	54.67	1064.88	SW Pit
GM-19	1119.55	12/11/2001	54.96	1064.59	SW Pit
GM-19	1119.55	3/27/2002	55.33	1064.22	SW Pit
GM-19	1119.55	6/11/2002	54.33	1065.22	SW Pit
GM-19	1119.55	11/5/2002	53.76	1065.79	SW Pit
GM-19	1119.55	5/19/2003	53.41	1066.14	SW Pit
GM-19	1119.55	12/1/2003	53.64	1065.91	SW Pit
GM-19	1119.55	5/13/2004	53.17	1066.38	SW Pit
GM-19	1119.55	11/16/2004	52.67	1066.88	SW Pit
GM-20	1121.35	4/15/1998	50.99	1070.36	SW Pit
GM-20	1121.35	6/3/1998	50.55	1070.80	SW Pit
GM-20	1121.35	6/30/1998	50.55	1070.80	SW Pit
GM-20	1121.35	7/10/1998	50.64	1070.71	SW Pit
GM-20	1121.35	7/28/1998	50.66	1070.69	SW Pit
GM-20	1121.35	8/11/1998	50.88	1070.47	SW Pit
GM-20	1121.35	9/24/1998	51.15	1070.20	SW Pit
GM-20	1121.35	10/22/1998	51.31	1070.04	SW Pit
GM-20	1121.35	11/22/1998	51.51	1069.84	SW Pit
GM-20	1121.35	3/9/1999	52.35	1069.00	SW Pit
GM-20	1121.35	4/29/1999	52.43	1068.92	SW Pit
GM-20	1121.35	6/14/1999	52.33	1069.02	SW Pit
GM-20	1121.35	7/26/1999	51.47	1069.88	SW Pit
GM-20	1121.35	8/21/1999	50.52	1070.83	SW Pit
GM-20	1121.35	9/22/1999	49.98	1071.37	SW Pit
GM-20	1121.35	10/25/1999	50.05	1071.30	SW Pit
GM-20	1121.35	11/19/1999	50.21	1071.14	SW Pit
GM-20	1121.35	12/31/1999	50.60	1070.75	SW Pit
GM-20	1121.35	1/22/2000	50.72	1070.63	SW Pit
GM-20	1121.35	2/21/2000	51.05	1070.30	SW Pit
GM-20	1121.35	3/18/2000	51.21	1070.14	SW Pit
GM-20	1121.35	6/17/2000	50.86	1070.49	SW Pit
GM-20	1121.35	9/25/2000	50.07	1071.28	SW Pit
GM-20	1121.35	10/11/2000	49.71	1071.64	SW Pit
GM-20	1121.35	11/30/2000	49.45	1071.90	SW Pit
GM-20	1121.35	3/9/2001	49.95	1071.40	SW Pit
GM-20	1121.35	6/1/2001	49.64	1071.71	SW Pit
GM-20	1121.35	9/12/2001	50.16	1071.19	SW Pit
GM-20	1121.35	12/11/2001	50.61	1070.74	SW Pit
GM-20	1121.35	3/27/2002	51.19	1070.16	SW Pit
GM-20	1121.35	6/11/2002	49.04	1072.31	SW Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-20	1121.35	11/5/2002	48.67	1072.68	SW Pit
GM-20	1121.35	5/19/2003	48.16	1073.19	SW Pit
GM-20	1121.35	12/1/2003	48.76	1072.59	SW Pit
GM-20	1121.35	5/13/2004	47.50	1073.85	SW Pit
GM-20	1121.35	11/16/2004	47.10	1074.25	SW Pit
GM-21	1059.06	4/15/1998	5.02	1054.04	General Study/West Breen Disposal
GM-21	1059.06	6/3/1998	7.41	1051.65	General Study/West Breen Disposal
GM-21	1059.06	6/30/1998	8.04	1051.02	General Study/West Breen Disposal
GM-21	1059.06	7/10/1998	8.03	1051.03	General Study/West Breen Disposal
GM-21	1059.06	7/28/1998	9.14	1049.92	General Study/West Breen Disposal
GM-21	1059.06	8/11/1998	9.41	1049.65	General Study/West Breen Disposal
GM-21	1059.06	9/24/1998	10.18	1048.88	General Study/West Breen Disposal
GM-21	1059.06	10/22/1998	9.79	1049.27	General Study/West Breen Disposal
GM-21	1059.06	11/22/1998	8.90	1050.16	General Study/West Breen Disposal
GM-21	1059.06	12/19/1998	8.43	1050.63	General Study/West Breen Disposal
GM-21	1059.06	3/9/1999	7.00	1052.06	General Study/West Breen Disposal
GM-21	1059.06	4/29/1999	5.98	1053.08	General Study/West Breen Disposal
GM-21	1059.06	6/14/1999	7.87	1051.19	General Study/West Breen Disposal
GM-21	1059.06	7/26/1999	5.85	1053.21	General Study/West Breen Disposal
GM-21	1059.06	8/21/1999	6.92	1052.14	General Study/West Breen Disposal
GM-21	1059.06	9/22/1999	7.82	1051.24	General Study/West Breen Disposal
GM-21	1059.06	10/25/1999	6.68	1052.38	General Study/West Breen Disposal
GM-21	1059.06	11/19/1999	7.06	1052.00	General Study/West Breen Disposal
GM-21	1059.06	12/31/1999	6.76	1052.30	General Study/West Breen Disposal
GM-21	1059.06	1/22/2000	6.86	1052.20	General Study/West Breen Disposal
GM-21	1059.06	3/18/2000	4.81	1054.25	General Study/West Breen Disposal
GM-21	1059.06	6/17/2000	7.23	1051.83	General Study/West Breen Disposal
GM-21	1059.06	9/25/2000	6.49	1052.57	General Study/West Breen Disposal
GM-21	1059.06	11/30/2000	6.67	1052.39	General Study/West Breen Disposal
GM-21	1059.06	1/12/2001	6.47	1052.59	General Study/West Breen Disposal
GM-21	1059.06	1/28/2001	6.75	1052.31	General Study/West Breen Disposal
GM-21	1059.06	2/6/2001	6.59	1052.47	General Study/West Breen Disposal
GM-21	1059.06	2/20/2001	6.71	1052.35	General Study/West Breen Disposal
GM-21	1059.06	2/27/2001	6.67	1052.39	General Study/West Breen Disposal
GM-21	1059.06	3/9/2001	6.76	1052.30	General Study/West Breen Disposal
GM-21	1059.06	3/23/2001	4.88	1054.18	General Study/West Breen Disposal
GM-21	1059.06	4/2/2001	4.75	1054.31	General Study/West Breen Disposal
GM-21	1059.06	4/16/2001	4.74	1054.32	General Study/West Breen Disposal
GM-21	1059.06	4/18/2001	4.91	1054.15	General Study/West Breen Disposal
GM-21	1059.06	4/18/2001	4.86	1054.20	General Study/West Breen Disposal
GM-21	1059.06	4/21/2001	4.85	1054.21	General Study/West Breen Disposal
GM-21	1059.06	4/23/2001	4.46	1054.60	General Study/West Breen Disposal
GM-21	1059.06	6/1/2001	5.62	1053.44	General Study/West Breen Disposal
GM-21	1059.06	9/12/2001	9.48	1049.58	General Study/West Breen Disposal
GM-21	1059.06	12/11/2001	7.27	1051.79	General Study/West Breen Disposal
GM-21	1059.06	3/27/2002	5.47	1053.59	General Study/West Breen Disposal
GM-21	1059.06	6/11/2002	5.36	1053.70	General Study/West Breen Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-21	1059.06	11/5/2002	5.29	1053.77	General Study/West Breen Disposal
GM-21	1059.06	5/19/2003	4.69	1054.37	General Study/West Breen Disposal
GM-21	1059.06	12/1/2003	6.49	1052.57	General Study/West Breen Disposal
GM-21	1059.06	5/13/2004	4.51	1054.55	General Study/West Breen Disposal
GM-21	1059.06	11/17/2004	6.11	1052.95	General Study/West Breen Disposal
GM-21	1059.06	4/14/2005	5.11	1053.95	General Study/West Breen Disposal
GM-21	1059.06	6/3/2005	6.37	1052.69	General Study/West Breen Disposal
GM-21	1059.06	7/22/2005	9.24	1049.82	General Study/West Breen Disposal
GM-21	1059.06	9/11/2005	9.93	1049.13	General Study/West Breen Disposal
GM-21	1059.06	11/10/2005	8.65	1050.41	General Study/West Breen Disposal
GM-21	1059.06	1/12/2006	7.32	1051.74	General Study/West Breen Disposal
GM-21	1059.06	2/13/2006	6.74	1052.32	General Study/West Breen Disposal
GM-21	1059.06	5/24/2006	5.51	1053.55	General Study/West Breen Disposal
GM-21	1059.06	8/8/2006	8.24	1050.82	General Study/West Breen Disposal
GM-21	1059.06	11/28/2006	6.62	1052.44	General Study/West Breen Disposal
GM-21	1059.06	5/23/2007	6.71	1052.35	General Study/West Breen Disposal
GM-21	1059.06	11/2/2007	8.83	1050.23	General Study/West Breen Disposal
GM-22	1066.70	4/15/1998	7.51	1059.19	General Study/West Breen Disposal
GM-22	1066.70	6/3/1998	8.51	1058.19	General Study/West Breen Disposal
GM-22	1066.70	6/30/1998	8.84	1057.86	General Study/West Breen Disposal
GM-22	1066.70	7/10/1998	9.21	1057.49	General Study/West Breen Disposal
GM-22	1066.70	7/28/1998	10.59	1056.11	General Study/West Breen Disposal
GM-22	1066.70	8/11/1998	10.24	1056.46	General Study/West Breen Disposal
GM-22	1066.70	9/24/1998	12.65	1054.05	General Study/West Breen Disposal
GM-22	1066.70	10/22/1998	10.22	1056.48	General Study/West Breen Disposal
GM-22	1066.70	11/22/1998	8.72	1057.98	General Study/West Breen Disposal
GM-22	1066.70	12/19/1998	9.21	1057.49	General Study/West Breen Disposal
GM-22	1066.70	3/9/1999	8.48	1058.22	General Study/West Breen Disposal
GM-22	1066.70	4/29/1999	9.17	1057.53	General Study/West Breen Disposal
GM-22	1066.70	6/14/1999	8.33	1058.37	General Study/West Breen Disposal
GM-22	1066.70	7/26/1999	7.55	1059.15	General Study/West Breen Disposal
GM-22	1066.70	8/21/1999	8.10	1058.60	General Study/West Breen Disposal
GM-22	1066.70	9/22/1999	8.51	1058.19	General Study/West Breen Disposal
GM-22	1066.70	10/25/1999	7.75	1058.95	General Study/West Breen Disposal
GM-22	1066.70	11/19/1999	8.14	1058.56	General Study/West Breen Disposal
GM-22	1066.70	12/31/1999	8.22	1058.48	General Study/West Breen Disposal
GM-22	1066.70	1/22/2000	8.19	1058.51	General Study/West Breen Disposal
GM-22	1066.70	2/21/2000	8.23	1058.47	General Study/West Breen Disposal
GM-22	1066.70	3/18/2000	7.45	1059.25	General Study/West Breen Disposal
GM-22	1066.70	6/17/2000	8.23	1058.47	General Study/West Breen Disposal
GM-22	1066.70	9/25/2000	7.62	1059.08	General Study/West Breen Disposal
GM-22	1066.70	11/30/2000	7.58	1059.12	General Study/West Breen Disposal
GM-22	1066.70	1/12/2001	7.88	1058.82	General Study/West Breen Disposal
GM-22	1066.70	1/28/2001	8.14	1058.56	General Study/West Breen Disposal
GM-22	1066.70	2/6/2001	7.97	1058.73	General Study/West Breen Disposal
GM-22	1066.70	2/20/2001	8.17	1058.53	General Study/West Breen Disposal
GM-22	1066.70	2/27/2001	7.94	1058.76	General Study/West Breen Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-22	1066.70	3/9/2001	8.01	1058.69	General Study/West Breen Disposal
GM-22	1066.70	3/23/2001	7.11	1059.59	General Study/West Breen Disposal
GM-22	1066.70	4/2/2001	7.15	1059.55	General Study/West Breen Disposal
GM-22	1066.70	4/16/2001	7.18	1059.52	General Study/West Breen Disposal
GM-22	1066.70	4/18/2001	7.27	1059.43	General Study/West Breen Disposal
GM-22	1066.70	4/18/2001	7.28	1059.42	General Study/West Breen Disposal
GM-22	1066.70	4/21/2001	7.29	1059.41	General Study/West Breen Disposal
GM-22	1066.70	4/23/2001	7.11	1059.59	General Study/West Breen Disposal
GM-22	1066.70	6/1/2001	7.39	1059.31	General Study/West Breen Disposal
GM-22	1066.70	9/12/2001	10.03	1056.67	General Study/West Breen Disposal
GM-22	1066.70	12/11/2001	7.88	1058.82	General Study/West Breen Disposal
GM-22	1066.70	3/27/2002	7.62	1059.08	General Study/West Breen Disposal
GM-22	1066.70	6/11/2002	7.34	1059.36	General Study/West Breen Disposal
GM-22	1066.70	11/5/2002	7.50	1059.20	General Study/West Breen Disposal
GM-22	1066.70	5/19/2003	7.32	1059.38	General Study/West Breen Disposal
GM-22	1066.70	12/1/2003	8.00	1058.70	General Study/West Breen Disposal
GM-22	1066.70	5/13/2004	7.39	1059.31	General Study/West Breen Disposal
GM-22	1066.70	11/17/2004	7.86	1058.84	General Study/West Breen Disposal
GM-22	1066.70	4/14/2005	7.62	1059.08	General Study/West Breen Disposal
GM-22	1066.70	6/3/2005	8.27	1058.43	General Study/West Breen Disposal
GM-22	1066.70	7/22/2005	12.00	1054.70	General Study/West Breen Disposal
GM-22	1066.70	9/11/2005	12.59	1054.11	General Study/West Breen Disposal
GM-22	1066.70	11/10/2005	8.41	1058.29	General Study/West Breen Disposal
GM-22	1066.70	1/12/2006	8.41	1058.29	General Study/West Breen Disposal
GM-22	1066.70	2/13/2006	8.35	1058.35	General Study/West Breen Disposal
GM-22	1066.70	5/24/2006	7.62	1059.08	General Study/West Breen Disposal
GM-22	1066.70	8/8/2006	10.06	1056.64	General Study/West Breen Disposal
GM-22	1066.70	11/28/2006	7.78	1058.92	General Study/West Breen Disposal
GM-22	1066.70	5/23/2007	8.36	1058.34	General Study/West Breen Disposal
GM-22	1066.70	11/2/2007	9.38	1057.32	General Study/West Breen Disposal
GM-23	1058.44	4/15/1998	4.80	1053.64	General Study/West Breen Disposal
GM-23	1058.44	6/3/1998	8.12	1050.32	General Study/West Breen Disposal
GM-23	1058.44	6/30/1998	9.00	1049.44	General Study/West Breen Disposal
GM-23	1058.44	7/10/1998	9.18	1049.26	General Study/West Breen Disposal
GM-23	1058.44	7/28/1998	9.87	1048.57	General Study/West Breen Disposal
GM-23	1058.44	8/11/1998	10.11	1048.33	General Study/West Breen Disposal
GM-23	1058.44	9/24/1998	10.72	1047.72	General Study/West Breen Disposal
GM-23	1058.44	10/22/1998	10.19	1048.25	General Study/West Breen Disposal
GM-23	1058.44	11/22/1998	9.61	1048.83	General Study/West Breen Disposal
GM-23	1058.44	12/19/1998	9.32	1049.12	General Study/West Breen Disposal
GM-23	1058.44	3/9/1999	8.47	1049.97	General Study/West Breen Disposal
GM-23	1058.44	4/29/1999	6.37	1052.07	General Study/West Breen Disposal
GM-23	1058.44	6/14/1999	6.58	1051.86	General Study/West Breen Disposal
GM-23	1058.44	7/26/1999	5.97	1052.47	General Study/West Breen Disposal
GM-23	1058.44	8/21/1999	7.20	1051.24	General Study/West Breen Disposal
GM-23	1058.44	9/22/1999	8.40	1050.04	General Study/West Breen Disposal
GM-23	1058.44	10/25/1999	8.12	1050.32	General Study/West Breen Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-23	1058.44	11/19/1999	8.41	1050.03	General Study/West Breen Disposal
GM-23	1058.44	12/31/1999	8.38	1050.06	General Study/West Breen Disposal
GM-23	1058.44	1/22/2000	8.37	1050.07	General Study/West Breen Disposal
GM-23	1058.44	2/21/2000	8.62	1049.82	General Study/West Breen Disposal
GM-23	1058.44	3/18/2000	5.25	1053.19	General Study/West Breen Disposal
GM-23	1058.44	6/17/2000	7.75	1050.69	General Study/West Breen Disposal
GM-23	1058.44	9/25/2000	6.89	1051.55	General Study/West Breen Disposal
GM-23	1058.44	11/30/2000	6.95	1051.49	General Study/West Breen Disposal
GM-23	1058.44	1/12/2001	8.13	1050.31	General Study/West Breen Disposal
GM-23	1058.44	1/28/2001	8.27	1050.17	General Study/West Breen Disposal
GM-23	1058.44	2/6/2001	8.18	1050.26	General Study/West Breen Disposal
GM-23	1058.44	2/20/2001	8.30	1050.14	General Study/West Breen Disposal
GM-23	1058.44	2/27/2001	8.31	1050.13	General Study/West Breen Disposal
GM-23	1058.44	3/9/2001	8.31	1050.13	General Study/West Breen Disposal
GM-23	1058.44	3/23/2001	7.37	1051.07	General Study/West Breen Disposal
GM-23	1058.44	4/2/2001	6.49	1051.95	General Study/West Breen Disposal
GM-23	1058.44	4/16/2001	4.17	1054.27	General Study/West Breen Disposal
GM-23	1058.44	4/18/2001	4.41	1054.03	General Study/West Breen Disposal
GM-23	1058.44	4/18/2001	4.38	1054.06	General Study/West Breen Disposal
GM-23	1058.44	4/21/2001	4.57	1053.87	General Study/West Breen Disposal
GM-23	1058.44	4/23/2001	4.13	1054.31	General Study/West Breen Disposal
GM-23	1058.44	6/1/2001	6.02	1052.42	General Study/West Breen Disposal
GM-23	1058.44	9/12/2001	10.09	1048.35	General Study/West Breen Disposal
GM-23	1058.44	12/11/2001	8.12	1050.32	General Study/West Breen Disposal
GM-23	1058.44	3/27/2002	7.31	1051.13	General Study/West Breen Disposal
GM-23	1058.44	6/11/2002	5.42	1053.02	General Study/West Breen Disposal
GM-23	1058.44	11/5/2002	6.24	1052.20	General Study/West Breen Disposal
GM-23	1058.44	5/19/2003	4.39	1054.05	General Study/West Breen Disposal
GM-23	1058.44	12/1/2003	8.06	1050.38	General Study/West Breen Disposal
GM-23	1058.44	5/13/2004	4.77	1053.67	General Study/West Breen Disposal
GM-23	1058.44	11/17/2004	7.29	1051.15	General Study/West Breen Disposal
GM-23	1058.44	4/14/2005	5.08	1053.36	General Study/West Breen Disposal
GM-23	1058.44	6/3/2005	6.47	1051.97	General Study/West Breen Disposal
GM-23	1058.44	7/22/2005	9.77	1048.67	General Study/West Breen Disposal
GM-23	1058.44	9/11/2005	10.32	1048.12	General Study/West Breen Disposal
GM-23	1058.44	11/10/2005	9.12	1049.32	General Study/West Breen Disposal
GM-23	1058.44	1/12/2006	8.41	1050.03	General Study/West Breen Disposal
GM-23	1058.44	2/13/2006	8.37	1050.07	General Study/West Breen Disposal
GM-23	1058.44	5/24/2006	5.27	1053.17	General Study/West Breen Disposal
GM-23	1058.44	8/8/2006	9.17	1049.27	General Study/West Breen Disposal
GM-23	1058.44	11/28/2006	8.64	1049.80	General Study/West Breen Disposal
GM-23	1058.44	5/23/2007	7.04	1051.40	General Study/West Breen Disposal
GM-23	1058.44	11/2/2007	9.00	1049.44	General Study/West Breen Disposal
GM-24A	1098.96	11/22/1998	45.50	1053.46	General Study/Emmet
GM-24A	1098.96	4/29/1999	59.24	1039.72	General Study/Emmet
GM-24A	1098.96	6/14/1999	58.68	1040.28	General Study/Emmet
GM-24A	1098.96	7/26/1999	58.64	1040.32	General Study/Emmet

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-24A	1098.96	8/21/1999	58.83	1040.13	General Study/Emmet
GM-24A	1098.96	9/22/1999	58.90	1040.06	General Study/Emmet
GM-24A	1098.96	10/25/1999	58.96	1040.00	General Study/Emmet
GM-24A	1098.96	11/19/1999	58.92	1040.04	General Study/Emmet
GM-24A	1098.96	12/31/1999	59.04	1039.92	General Study/Emmet
GM-24A	1098.96	1/22/2000	58.80	1040.16	General Study/Emmet
GM-24A	1098.96	2/21/2000	58.77	1040.19	General Study/Emmet
GM-24A	1098.96	3/18/2000	58.41	1040.55	General Study/Emmet
GM-24A	1098.96	6/17/2000	59.29	1039.67	General Study/Emmet
GM-24A	1098.96	9/25/2000	59.02	1039.94	General Study/Emmet
GM-24A	1098.96	11/30/2000	59.35	1039.61	General Study/Emmet
GM-24A	1098.96	3/9/2001	59.11	1039.85	General Study/Emmet
GM-24A	1098.96	6/1/2001	58.35	1040.61	General Study/Emmet
GM-24A	1098.96	9/12/2001	59.39	1039.57	General Study/Emmet
GM-24A	1098.96	12/11/2001	57.90	1041.06	General Study/Emmet
GM-24A	1098.96	3/27/2002	59.02	1039.94	General Study/Emmet
GM-24A	1098.96	6/11/2002	58.73	1040.23	General Study/Emmet
GM-24A	1098.96	11/5/2002	58.38	1040.58	General Study/Emmet
GM-24A	1098.96	5/19/2003	57.18	1041.78	General Study/Emmet
GM-24A	1098.96	12/1/2003	59.33	1039.63	General Study/Emmet
GM-24A	1098.96	5/13/2004	57.75	1041.21	General Study/Emmet
GM-24A	1098.96	11/17/2004	58.70	1040.26	General Study/Emmet
GM-24A	1098.96	6/3/2005	58.73	1040.23	General Study/Emmet
GM-24A	1098.96	9/11/2005	59.02	1039.94	General Study/Emmet
GM-24A	1098.96	11/9/2005	59.05	1039.91	General Study/Emmet
GM-24A	1098.96	1/12/2006	59.17	1039.79	General Study/Emmet
GM-24A	1098.96	2/13/2006	59.20	1039.76	General Study/Emmet
GM-24A	1098.96	5/23/2006	58.68	1040.28	General Study/Emmet
GM-24A	1098.96	8/8/2006	59.58	1039.38	General Study/Emmet
GM-24A	1098.96	11/27/2006	59.45	1039.51	General Study/Emmet
GM-24A	1098.96	5/22/2007	59.58	1039.38	General Study/Emmet
GM-24A	1098.96	11/1/2007	59.08	1039.88	General Study/Emmet
GM-24B	1098.80	11/22/1998			General Study/Emmet
GM-24B	1098.80	4/29/1999	48.45	1050.35	General Study/Emmet
GM-24B	1098.80	6/14/1999	47.88	1050.92	General Study/Emmet
GM-24B	1098.80	7/26/1999	48.30	1050.50	General Study/Emmet
GM-24B	1098.80	8/21/1999	48.20	1050.60	General Study/Emmet
GM-24B	1098.80	9/22/1999	48.00	1050.80	General Study/Emmet
GM-24B	1098.80	10/25/1999			General Study/Emmet
GM-24B	1098.80	6/1/2001	58.07	1040.73	General Study/Emmet
GM-24B	1098.80	9/12/2001	58.77	1040.03	General Study/Emmet
GM-24B	1098.80	5/19/2003	56.63	1042.17	General Study/Emmet
GM-24B	1098.80	9/11/2005	58.62	1040.18	General Study/Emmet
GM-24C	1098.73	11/22/1998	60.10	1038.63	General Study/Emmet
GM-24C	1098.73	12/19/1998	59.00	1039.73	General Study/Emmet
GM-24C	1098.73	3/9/1999	58.69	1040.04	General Study/Emmet

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-24C	1098.73	4/29/1999	58.76	1039.97	General Study/Emmet
GM-24C	1098.73	6/14/1999	58.48	1040.25	General Study/Emmet
GM-24C	1098.73	7/26/1999	57.93	1040.80	General Study/Emmet
GM-24C	1098.73	8/21/1999	58.22	1040.51	General Study/Emmet
GM-24C	1098.73	9/22/1999	58.50	1040.23	General Study/Emmet
GM-24C	1098.73	10/25/1999	58.50	1040.23	General Study/Emmet
GM-24C	1098.73	11/19/1999	58.37	1040.36	General Study/Emmet
GM-24C	1098.73	12/31/1999	58.64	1040.09	General Study/Emmet
GM-24C	1098.73	1/22/2000	58.37	1040.36	General Study/Emmet
GM-24C	1098.73	2/21/2000	58.31	1040.42	General Study/Emmet
GM-24C	1098.73	3/18/2000	52.08	1046.65	General Study/Emmet
GM-24C	1098.73	6/17/2000	58.85	1039.88	General Study/Emmet
GM-24C	1098.73	9/25/2000	58.37	1040.36	General Study/Emmet
GM-24C	1098.73	11/30/2000	58.80	1039.93	General Study/Emmet
GM-24C	1098.73	3/9/2001	58.63	1040.10	General Study/Emmet
GM-24C	1098.73	12/11/2001	58.58	1040.15	General Study/Emmet
GM-24C	1098.73	3/27/2002	58.71	1040.02	General Study/Emmet
GM-24C	1098.73	6/11/2002	58.14	1040.59	General Study/Emmet
GM-24C	1098.73	11/5/2002	58.07	1040.66	General Study/Emmet
GM-24C	1098.73	12/1/2003	58.93	1039.80	General Study/Emmet
GM-24C	1098.73	5/13/2004	58.20	1040.53	General Study/Emmet
GM-24C	1098.73	11/17/2004	58.45	1040.28	General Study/Emmet
GM-24C	1098.73	6/3/2005	58.33	1040.40	General Study/Emmet
GM-24C	1098.73	11/9/2005	58.55	1040.18	General Study/Emmet
GM-24C	1098.73	1/12/2006	58.78	1039.95	General Study/Emmet
GM-24C	1098.73	2/13/2006	59.12	1039.61	General Study/Emmet
GM-24C	1098.73	5/23/2006	58.30	1040.43	General Study/Emmet
GM-24C	1098.73	8/8/2006	59.23	1039.50	General Study/Emmet
GM-24C	1098.73	11/27/2006	59.10	1039.63	General Study/Emmet
GM-24C	1098.73	5/22/2007	59.16	1039.57	General Study/Emmet
GM-24C	1098.73	11/1/2007	59.47	1039.26	General Study/Emmet
GM-25A	1050.30	7/28/1998	12.63	1037.67	Menominee River
GM-25A	1050.30	8/11/1998	12.67	1037.63	Menominee River
GM-25A	1050.30	9/24/1998	12.73	1037.57	Menominee River
GM-25A	1050.30	10/22/1998	12.72	1037.58	Menominee River
GM-25A	1050.30	11/22/1998	12.32	1037.98	Menominee River
GM-25A	1050.30	12/19/1998	12.95	1037.35	Menominee River
GM-25A	1050.30	3/9/1999	12.26	1038.04	Menominee River
GM-25A	1050.30	4/29/1999	12.49	1037.81	Menominee River
GM-25A	1050.30	6/14/1999	11.72	1038.58	Menominee River
GM-25A	1050.30	7/14/1999	11.31	1038.99	Menominee River
GM-25A	1050.30	7/26/1999	11.81	1038.49	Menominee River
GM-25A	1050.30	8/21/1999	12.19	1038.11	Menominee River
GM-25A	1050.30	9/22/1999	12.22	1038.08	Menominee River
GM-25A	1050.30	10/25/1999	12.31	1037.99	Menominee River
GM-25A	1050.30	11/19/1999	12.38	1037.92	Menominee River
GM-25A	1050.30	12/31/1999	12.85	1037.45	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-25A	1050.30	1/22/2000	12.11	1038.19	Menominee River
GM-25A	1050.30	2/21/2000	11.93	1038.37	Menominee River
GM-25A	1050.30	3/18/2000	11.57	1038.73	Menominee River
GM-25A	1050.30	6/17/2000	12.72	1037.58	Menominee River
GM-25A	1050.30	9/25/2000	12.52	1037.78	Menominee River
GM-25A	1050.30	11/30/2000	12.91	1037.39	Menominee River
GM-25A	1050.30	1/12/2001	12.19	1038.11	Menominee River
GM-25A	1050.30	1/28/2001	12.42	1037.88	Menominee River
GM-25A	1050.30	2/6/2001	12.32	1037.98	Menominee River
GM-25A	1050.30	2/20/2001	12.12	1038.18	Menominee River
GM-25A	1050.30	2/27/2001	12.17	1038.13	Menominee River
GM-25A	1050.30	3/9/2001	12.49	1037.81	Menominee River
GM-25A	1050.30	3/23/2001	12.08	1038.22	Menominee River
GM-25A	1050.30	4/2/2001	12.07	1038.23	Menominee River
GM-25A	1050.30	4/16/2001	9.65	1040.65	Menominee River
GM-25A	1050.30	4/18/2001	10.32	1039.98	Menominee River
GM-25A	1050.30	4/18/2001	10.30	1040.00	Menominee River
GM-25A	1050.30	4/21/2001	10.84	1039.46	Menominee River
GM-25A	1050.30	4/23/2001	10.67	1039.63	Menominee River
GM-25A	1050.30	6/1/2001	11.58	1038.72	Menominee River
GM-25A	1050.30	6/28/2001	11.84	1038.46	Menominee River
GM-25A	1050.30	7/3/2001	11.92	1038.38	Menominee River
GM-25A	1050.30	7/11/2001	12.40	1037.90	Menominee River
GM-25A	1050.30	7/12/2001	12.62	1037.68	Menominee River
GM-25A	1050.30	8/7/2001	12.44	1037.86	Menominee River
GM-25A	1050.30	8/22/2001	12.53	1037.77	Menominee River
GM-25A	1050.30	9/12/2001	12.73	1037.57	Menominee River
GM-25A	1050.30	12/11/2001	12.25	1038.05	Menominee River
GM-25A	1050.30	3/27/2002	12.39	1037.91	Menominee River
GM-25A	1050.30	6/11/2002	11.97	1038.33	Menominee River
GM-25A	1050.30	11/5/2002	11.97	1038.33	Menominee River
GM-25A	1050.30	5/19/2003	10.35	1039.95	Menominee River
GM-25A	1050.30	10/25/2003	12.81	1037.49	Menominee River
GM-25A	1050.30	11/25/2003	12.18	1038.12	Menominee River
GM-25A	1050.30	12/1/2003	12.78	1037.52	Menominee River
GM-25A	1050.30	12/8/2003	12.41	1037.89	Menominee River
GM-25A	1050.30	12/9/2003	12.46	1037.84	Menominee River
GM-25A	1050.30	12/10/2003	12.27	1038.03	Menominee River
GM-25A	1050.30	12/11/2003	12.57	1037.73	Menominee River
GM-25A	1050.30	12/12/2003	12.72	1037.58	Menominee River
GM-25A	1050.30	12/16/2003	12.33	1037.97	Menominee River
GM-25A	1050.30	12/22/2003	12.57	1037.73	Menominee River
GM-25A	1050.30	12/31/2003	12.55	1037.75	Menominee River
GM-25A	1050.30	5/13/2004	11.47	1038.83	Menominee River
GM-25A	1050.30	11/16/2004	12.42	1037.88	Menominee River
GM-25A	1050.08	4/14/2005	11.46	1038.84	Menominee River
GM-25A	1050.08	6/2/2005	12.27	1038.03	Menominee River
GM-25A	1050.30	7/22/2005	12.97	1037.33	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-25A	1050.08	9/10/2005	12.55	1037.53	Menominee River
GM-25A	1050.08	11/9/2005	12.74	1037.34	Menominee River
GM-25A	1050.08	1/12/2006	13.82	1036.26	Menominee River
GM-25A	1050.08	2/6/2006	13.85	1036.23	Menominee River
GM-25A	1050.08	2/13/2006	13.50	1036.58	Menominee River
GM-25A	1050.08	3/15/2006	13.68	1036.40	Menominee River
GM-25A	1050.08	5/23/2006	13.00	1037.08	Menominee River
GM-25A	1050.08	8/8/2006	14.27	1035.81	Menominee River
GM-25A	1050.08	11/28/2006	13.94	1036.14	Menominee River
GM-25A	1050.08	2/5/2007	13.99	1036.09	Menominee River
GM-25A	1050.08	5/23/2007	14.32	1035.76	Menominee River
GM-25A	1050.08	8/14/2007	14.62	1035.46	Menominee River
GM-25A	1050.08	11/2/2007	14.25	1035.83	Menominee River
GM-25B	1050.15	7/28/1998	11.24	1038.94	Menominee River
GM-25B	1050.15	8/11/1998	11.51	1038.67	Menominee River
GM-25B	1050.15	9/24/1998	11.41	1038.77	Menominee River
GM-25B	1050.15	10/22/1998	11.54	1038.64	Menominee River
GM-25B	1050.15	11/22/1998	11.10	1039.08	Menominee River
GM-25B	1050.15	12/19/1998	11.70	1038.48	Menominee River
GM-25B	1050.15	3/9/1999	11.09	1039.09	Menominee River
GM-25B	1050.15	4/29/1999	11.30	1038.88	Menominee River
GM-25B	1050.15	6/14/1999	10.44	1039.74	Menominee River
GM-25B	1050.15	7/14/1999	10.18	1040.00	Menominee River
GM-25B	1050.15	7/26/1999	10.31	1039.87	Menominee River
GM-25B	1050.15	8/21/1999	10.82	1039.36	Menominee River
GM-25B	1050.15	9/22/1999	10.89	1039.29	Menominee River
GM-25B	1050.15	10/25/1999	11.00	1039.18	Menominee River
GM-25B	1050.15	11/19/1999	11.03	1039.15	Menominee River
GM-25B	1050.15	12/31/1999	11.53	1038.65	Menominee River
GM-25B	1050.15	1/22/2000	11.07	1039.11	Menominee River
GM-25B	1050.15	2/21/2000	10.81	1039.37	Menominee River
GM-25B	1050.15	3/18/2000	10.40	1039.78	Menominee River
GM-25B	1050.15	6/17/2000	11.37	1038.81	Menominee River
GM-25B	1050.15	9/25/2000	11.19	1038.99	Menominee River
GM-25B	1050.15	11/30/2000	11.61	1038.57	Menominee River
GM-25B	1050.15	1/12/2001	11.00	1039.18	Menominee River
GM-25B	1050.15	1/28/2001	11.25	1038.93	Menominee River
GM-25B	1050.15	2/6/2001	10.93	1039.25	Menominee River
GM-25B	1050.15	2/20/2001	10.98	1039.20	Menominee River
GM-25B	1050.15	2/27/2001	11.18	1039.00	Menominee River
GM-25B	1050.15	3/9/2001	11.26	1038.92	Menominee River
GM-25B	1050.15	3/23/2001	10.94	1039.24	Menominee River
GM-25B	1050.15	4/2/2001	10.97	1039.21	Menominee River
GM-25B	1050.15	4/16/2001	8.94	1041.24	Menominee River
GM-25B	1050.15	4/18/2001	9.21	1040.97	Menominee River
GM-25B	1050.15	4/18/2001	9.25	1040.93	Menominee River
GM-25B	1050.15	4/21/2001	9.47	1040.71	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-25B	1050.15	4/23/2001	9.39	1040.79	Menominee River
GM-25B	1050.15	6/1/2001	10.10	1040.08	Menominee River
GM-25B	1050.15	9/12/2001	11.46	1038.72	Menominee River
GM-25B	1050.15	12/11/2001	11.11	1039.07	Menominee River
GM-25B	1050.15	3/27/2002	12.42	1037.76	Menominee River
GM-25B	1050.15	6/11/2002	11.51	1038.67	Menominee River
GM-25B	1050.15	11/5/2002	10.78	1039.40	Menominee River
GM-25B	1050.18	5/19/2003	9.14	1041.04	Menominee River
GM-25B	1050.18	10/25/2003	11.34	1038.84	Menominee River
GM-25B	1050.18	11/25/2003	10.85	1039.33	Menominee River
GM-25B	1050.18	12/1/2003	11.47	1038.71	Menominee River
GM-25B	1050.18	5/13/2004	9.85	1040.33	Menominee River
GM-25B	1050.18	11/16/2004	11.57	1038.61	Menominee River
GM-25B	1049.99	4/14/2005	10.21	1039.97	Menominee River
GM-25B	1049.99	6/2/2005	10.69	1039.49	Menominee River
GM-25B	1050.18	7/22/2005	11.43	1038.75	Menominee River
GM-25B	1049.99	9/10/2005	11.15	1038.84	Menominee River
GM-25B	1049.99	11/9/2005	13.81	1036.18	Menominee River
GM-25B	1049.99	1/12/2006	13.85	1036.14	Menominee River
GM-25B	1049.99	2/13/2006	13.78	1036.21	Menominee River
GM-25B	1049.99	5/23/2006	13.25	1036.74	Menominee River
GM-25B	1049.99	8/8/2006	14.81	1035.18	Menominee River
GM-25B	1049.99	11/28/2006	14.33	1035.66	Menominee River
GM-25B	1049.99	2/5/2007	14.81	1035.18	Menominee River
GM-25B	1049.99	5/23/2007	14.67	1035.32	Menominee River
GM-25B	1049.99	8/14/2007	15.60	1034.39	Menominee River
GM-25B	1049.99	11/2/2007	14.85	1035.14	Menominee River
GM-25C	1050.05	7/28/1998	10.67	1039.38	Menominee River
GM-25C	1050.05	8/11/1998	10.83	1039.22	Menominee River
GM-25C	1050.05	9/24/1998	10.81	1039.24	Menominee River
GM-25C	1050.05	10/22/1998	10.88	1039.17	Menominee River
GM-25C	1050.05	11/22/1998	10.49	1039.56	Menominee River
GM-25C	1050.05	12/19/1998	11.07	1038.98	Menominee River
GM-25C	1050.05	3/9/1999	10.44	1039.61	Menominee River
GM-25C	1050.05	4/29/1999	10.65	1039.40	Menominee River
GM-25C	1050.05	6/14/1999	9.80	1040.25	Menominee River
GM-25C	1050.05	7/14/1999	9.51	1040.54	Menominee River
GM-25C	1050.05	7/26/1999	9.63	1040.42	Menominee River
GM-25C	1050.05	8/21/1999	10.11	1039.94	Menominee River
GM-25C	1050.05	9/22/1999	10.25	1039.80	Menominee River
GM-25C	1050.05	10/25/1999	10.41	1039.64	Menominee River
GM-25C	1050.05	11/19/1999	10.44	1039.61	Menominee River
GM-25C	1050.05	12/31/1999	10.89	1039.16	Menominee River
GM-25C	1050.05	1/22/2000	10.37	1039.68	Menominee River
GM-25C	1050.05	2/21/2000	10.07	1039.98	Menominee River
GM-25C	1050.05	3/18/2000	9.73	1040.32	Menominee River
GM-25C	1050.05	6/17/2000	10.75	1039.30	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-25C	1050.05	9/25/2000	10.58	1039.47	Menominee River
GM-25C	1050.05	11/30/2000	10.89	1039.16	Menominee River
GM-25C	1050.05	1/12/2001	10.21	1039.84	Menominee River
GM-25C	1050.05	1/28/2001	10.42	1039.63	Menominee River
GM-25C	1050.05	2/6/2001	10.30	1039.75	Menominee River
GM-25C	1050.05	2/20/2001	10.29	1039.76	Menominee River
GM-25C	1050.05	2/27/2001	10.40	1039.65	Menominee River
GM-25C	1050.05	3/9/2001	10.58	1039.47	Menominee River
GM-25C	1050.05	3/23/2001	10.31	1039.74	Menominee River
GM-25C	1050.05	4/2/2001	10.31	1039.74	Menominee River
GM-25C	1050.05	4/16/2001	8.23	1041.82	Menominee River
GM-25C	1050.05	4/18/2001	8.58	1041.47	Menominee River
GM-25C	1050.05	4/18/2001	8.60	1041.45	Menominee River
GM-25C	1050.05	4/21/2001	8.87	1041.18	Menominee River
GM-25C	1050.05	4/23/2001	8.82	1041.23	Menominee River
GM-25C	1050.05	6/1/2001	9.55	1040.50	Menominee River
GM-25C	1050.05	9/12/2001	10.78	1039.27	Menominee River
GM-25C	1050.05	12/11/2001	10.48	1039.57	Menominee River
GM-25C	1050.05	3/27/2002	10.54	1039.51	Menominee River
GM-25C	1050.05	6/11/2002	9.87	1040.18	Menominee River
GM-25C	1050.05	11/5/2002	9.83	1040.22	Menominee River
GM-25C	1050.05	5/19/2003	8.52	1041.53	Menominee River
GM-25C	1050.05	10/25/2003	10.89	1039.16	Menominee River
GM-25C	1050.05	11/25/2003	10.37	1039.68	Menominee River
GM-25C	1050.05	12/1/2003	10.88	1039.17	Menominee River
GM-25C	1050.05	5/13/2004	9.36	1040.69	Menominee River
GM-25C	1050.05	11/17/2004	10.42	1039.63	Menominee River
GM-25C	1049.89	4/14/2005	9.55	1040.50	Menominee River
GM-25C	1050.05	7/22/2005	10.86	1039.19	Menominee River
GM-25C	1049.89	9/10/2005	10.58	1039.31	Menominee River
GM-25C	1049.89	11/9/2005	12.34	1037.55	Menominee River
GM-25C	1049.89	1/12/2006	12.74	1037.15	Menominee River
GM-25C	1049.89	2/13/2006	12.73	1037.16	Menominee River
GM-25C	1049.89	5/23/2006	11.87	1038.02	Menominee River
GM-25C	1049.89	8/8/2006	13.54	1036.35	Menominee River
GM-25C	1049.89	11/28/2006	13.20	1036.69	Menominee River
GM-25C	1049.89	2/5/2007	13.54	1036.35	Menominee River
GM-25C	1049.89	5/23/2007	13.54	1036.35	Menominee River
GM-25C	1049.89	8/14/2007	13.92	1035.97	Menominee River
GM-25C	1049.89	11/2/2007	13.73	1036.16	Menominee River
GM-26A	1049.70	7/28/1998	12.44	1037.26	Menominee River
GM-26A	1049.70	8/11/1998	12.42	1037.28	Menominee River
GM-26A	1049.70	9/24/1998	12.51	1037.19	Menominee River
GM-26A	1049.70	10/22/1998	12.44	1037.26	Menominee River
GM-26A	1049.70	11/22/1998	12.12	1037.58	Menominee River
GM-26A	1049.70	12/19/1998	12.67	1037.03	Menominee River
GM-26A	1049.70	3/9/1999	12.00	1037.70	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-26A	1049.70	4/29/1999	12.22	1037.48	Menominee River
GM-26A	1049.70	6/14/1999	11.54	1038.16	Menominee River
GM-26A	1049.70	7/26/1999	11.55	1038.15	Menominee River
GM-26A	1049.70	8/21/1999	11.92	1037.78	Menominee River
GM-26A	1049.70	9/22/1999	12.10	1037.60	Menominee River
GM-26A	1049.70	10/25/1999	12.16	1037.54	Menominee River
GM-26A	1049.70	11/19/1999	12.18	1037.52	Menominee River
GM-26A	1049.70	12/31/1999	12.58	1037.12	Menominee River
GM-26A	1049.70	1/22/2000	11.92	1037.78	Menominee River
GM-26A	1049.70	2/21/2000	11.69	1038.01	Menominee River
GM-26A	1049.70	3/18/2000	11.35	1038.35	Menominee River
GM-26A	1049.70	6/17/2000	12.40	1037.30	Menominee River
GM-26A	1049.70	9/25/2000	12.22	1037.48	Menominee River
GM-26A	1049.70	11/30/2000	12.56	1037.14	Menominee River
GM-26A	1049.70	1/12/2001	11.96	1037.74	Menominee River
GM-26A	1049.70	1/28/2001	12.18	1037.52	Menominee River
GM-26A	1049.70	2/6/2001	12.04	1037.66	Menominee River
GM-26A	1049.70	2/20/2001	11.92	1037.78	Menominee River
GM-26A	1049.70	2/27/2001	11.97	1037.73	Menominee River
GM-26A	1049.70	3/9/2001	12.21	1037.49	Menominee River
GM-26A	1049.70	3/23/2001	11.85	1037.85	Menominee River
GM-26A	1049.70	4/2/2001	11.83	1037.87	Menominee River
GM-26A	1049.70	4/16/2001	9.55	1040.15	Menominee River
GM-26A	1049.70	4/18/2001	10.17	1039.53	Menominee River
GM-26A	1049.70	4/18/2001	10.14	1039.56	Menominee River
GM-26A	1049.70	4/21/2001	10.72	1038.98	Menominee River
GM-26A	1049.70	4/23/2001	9.61	1040.09	Menominee River
GM-26A	1049.70	5/4/2001	11.02	1038.68	Menominee River
GM-26A	1049.70	5/8/2001	11.24	1038.46	Menominee River
GM-26A	1049.70	5/16/2001	11.62	1038.08	Menominee River
GM-26A	1049.70	5/30/2001	11.48	1038.22	Menominee River
GM-26A	1049.70	6/1/2001	11.41	1038.29	Menominee River
GM-26A	1049.70	6/14/2001	11.50	1038.20	Menominee River
GM-26A	1049.70	6/28/2001	11.71	1037.99	Menominee River
GM-26A	1049.70	7/3/2001	11.81	1037.89	Menominee River
GM-26A	1049.70	7/11/2001	12.15	1037.55	Menominee River
GM-26A	1049.70	7/12/2001	12.35	1037.35	Menominee River
GM-26A	1049.70	8/7/2001	12.24	1037.46	Menominee River
GM-26A	1049.70	8/22/2001	12.32	1037.38	Menominee River
GM-26A	1049.70	9/12/2001	12.56	1037.14	Menominee River
GM-26A	1049.70	12/11/2001	12.11	1037.59	Menominee River
GM-26A	1049.70	3/27/2002	12.29	1037.41	Menominee River
GM-26A	1049.70	6/11/2002	11.81	1037.89	Menominee River
GM-26A	1049.70	11/5/2002	11.80	1037.90	Menominee River
GM-26A	1049.70	5/19/2003	10.17	1039.53	Menominee River
GM-26A	1049.70	10/25/2003	12.60	1037.10	Menominee River
GM-26A	1049.70	11/25/2003	12.02	1037.68	Menominee River
GM-26A	1049.70	12/1/2003	12.61	1037.09	Menominee River

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-26A	1049.70	5/13/2004	11.29	1038.41	Menominee River
GM-26A	1049.70	11/16/2004	12.38	1037.32	Menominee River
GM-26A	1049.56	4/14/2005	11.18	1038.52	Menominee River
GM-26A	1049.56	6/2/2005	12.07	1037.63	Menominee River
GM-26A	1049.70	7/21/2005	12.64	1037.06	Menominee River
GM-26A	1049.56	11/9/2005	12.59	1036.97	Menominee River
GM-26A	1049.56	1/12/2006	14.05	1035.51	Menominee River
GM-26A	1049.56	2/13/2006	13.97	1035.59	Menominee River
GM-26A	1049.56	5/23/2006	13.16	1036.40	Menominee River
GM-26A	1049.56	8/8/2006	14.47	1035.09	Menominee River
GM-26A	1049.56	11/28/2006	14.11	1035.45	Menominee River
GM-26A	1049.56	2/5/2007	14.18	1035.38	Menominee River
GM-26A	1049.56	5/23/2007	14.40	1035.16	Menominee River
GM-26A	1049.56	8/14/2007	14.59	1034.97	Menominee River
GM-26A	1049.56	11/2/2007	14.37	1035.19	Menominee River
GM-26B	1049.78	7/28/1998	12.12	1037.66	Menominee River
GM-26B	1049.78	8/11/1998	12.16	1037.62	Menominee River
GM-26B	1049.78	9/24/1998	12.22	1037.56	Menominee River
GM-26B	1049.78	10/22/1998	12.19	1037.59	Menominee River
GM-26B	1049.78	11/22/1998	11.85	1037.93	Menominee River
GM-26B	1049.78	12/19/1998	12.40	1037.38	Menominee River
GM-26B	1049.78	3/9/1999	11.45	1038.33	Menominee River
GM-26B	1049.78	4/29/1999	11.98	1037.80	Menominee River
GM-26B	1049.78	6/14/1999	11.22	1038.56	Menominee River
GM-26B	1049.78	7/26/1999	11.22	1038.56	Menominee River
GM-26B	1049.78	8/21/1999	11.61	1038.17	Menominee River
GM-26B	1049.78	9/22/1999	11.78	1038.00	Menominee River
GM-26B	1049.78	10/25/1999	11.87	1037.91	Menominee River
GM-26B	1049.78	11/19/1999	11.88	1037.90	Menominee River
GM-26B	1049.78	12/31/1999	12.30	1037.48	Menominee River
GM-26B	1049.78	1/22/2000	11.69	1038.09	Menominee River
GM-26B	1049.78	2/21/2000	11.46	1038.32	Menominee River
GM-26B	1049.78	3/18/2000	11.10	1038.68	Menominee River
GM-26B	1049.78	6/17/2000	12.10	1037.68	Menominee River
GM-26B	1049.78	9/25/2000	11.93	1037.85	Menominee River
GM-26B	1049.78	11/30/2000	12.27	1037.51	Menominee River
GM-26B	1049.78	1/12/2001	11.66	1038.12	Menominee River
GM-26B	1049.78	1/28/2001	11.87	1037.91	Menominee River
GM-26B	1049.78	2/6/2001	11.70	1038.08	Menominee River
GM-26B	1049.78	2/20/2001	11.64	1038.14	Menominee River
GM-26B	1049.78	2/27/2001	11.70	1038.08	Menominee River
GM-26B	1049.78	3/9/2001	11.94	1037.84	Menominee River
GM-26B	1049.78	3/23/2001	11.60	1038.18	Menominee River
GM-26B	1049.78	4/2/2001	11.56	1038.22	Menominee River
GM-26B	1049.78	4/16/2001	9.31	1040.47	Menominee River
GM-26B	1049.78	4/18/2001	9.84	1039.94	Menominee River
GM-26B	1049.78	4/18/2001	9.88	1039.90	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-26B	1049.78	4/21/2001	9.38	1040.40	Menominee River
GM-26B	1049.78	4/23/2001	10.31	1039.47	Menominee River
GM-26B	1049.78	6/1/2001	11.07	1038.71	Menominee River
GM-26B	1049.78	9/12/2001	12.23	1037.55	Menominee River
GM-26B	1049.78	12/11/2001	11.81	1037.97	Menominee River
GM-26B	1049.78	3/27/2002	11.96	1037.82	Menominee River
GM-26B	1049.78	6/11/2002	11.45	1038.33	Menominee River
GM-26B	1049.78	11/5/2002	11.41	1038.37	Menominee River
GM-26B	1049.78	5/19/2003	9.88	1039.90	Menominee River
GM-26B	1049.78	10/25/2003	12.30	1037.48	Menominee River
GM-26B	1049.78	11/25/2003	11.72	1038.06	Menominee River
GM-26B	1049.78	12/1/2003	12.31	1037.47	Menominee River
GM-26B	1049.78	5/13/2004	10.94	1038.84	Menominee River
GM-26B	1049.78	11/16/2004	12.03	1037.75	Menominee River
GM-26B	1049.63	4/14/2005	10.89	1038.89	Menominee River
GM-26B	1049.63	6/2/2005	11.73	1038.05	Menominee River
GM-26B	1049.78	7/21/2005	12.30	1037.48	Menominee River
GM-26B	1049.63	9/10/2005	12.03	1037.60	Menominee River
GM-26B	1049.63	11/9/2005	12.31	1037.32	Menominee River
GM-26B	1049.63	1/12/2006	13.52	1036.11	Menominee River
GM-26B	1049.63	2/13/2006	13.50	1036.13	Menominee River
GM-26B	1049.63	5/23/2006	12.73	1036.90	Menominee River
GM-26B	1049.63	8/8/2006	14.03	1035.60	Menominee River
GM-26B	1049.63	11/28/2006	13.73	1035.90	Menominee River
GM-26B	1049.63	2/5/2007	13.93	1035.70	Menominee River
GM-26B	1049.63	5/23/2007	14.03	1035.60	Menominee River
GM-26B	1049.63	8/14/2007	14.23	1035.40	Menominee River
GM-26B	1049.63	11/2/2007	14.05	1035.58	Menominee River
GM-26C	1049.70	7/28/1998	11.49	1038.21	Menominee River
GM-26C	1049.70	8/11/1998	11.60	1038.10	Menominee River
GM-26C	1049.70	9/24/1998	11.63	1038.07	Menominee River
GM-26C	1049.70	10/22/1998	11.64	1038.06	Menominee River
GM-26C	1049.70	11/22/1998	11.30	1038.40	Menominee River
GM-26C	1049.70	12/19/1998	11.85	1037.85	Menominee River
GM-26C	1049.70	3/9/1999	11.22	1038.48	Menominee River
GM-26C	1049.70	4/29/1999	11.46	1038.24	Menominee River
GM-26C	1049.70	6/14/1999	10.67	1039.03	Menominee River
GM-26C	1049.70	7/26/1999	10.59	1039.11	Menominee River
GM-26C	1049.70	8/21/1999	10.99	1038.71	Menominee River
GM-26C	1049.70	9/22/1999	11.18	1038.52	Menominee River
GM-26C	1049.70	10/25/1999	11.28	1038.42	Menominee River
GM-26C	1049.70	11/19/1999	11.29	1038.41	Menominee River
GM-26C	1049.70	12/31/1999	11.78	1037.92	Menominee River
GM-26C	1049.70	1/22/2000	11.21	1038.49	Menominee River
GM-26C	1049.70	2/21/2000	10.97	1038.73	Menominee River
GM-26C	1049.70	3/18/2000	10.60	1039.10	Menominee River
GM-26C	1049.70	6/17/2000	11.58	1038.12	Menominee River

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-26C	1049.70	9/25/2000	11.42	1038.28	Menominee River
GM-26C	1049.70	11/30/2000	11.75	1037.95	Menominee River
GM-26C	1049.70	1/12/2001	11.16	1038.54	Menominee River
GM-26C	1049.70	1/28/2001	0.00	1049.70	Menominee River
GM-26C	1049.70	2/6/2001	11.08	1038.62	Menominee River
GM-26C	1049.70	2/20/2001	11.15	1038.55	Menominee River
GM-26C	1049.70	2/27/2001	11.24	1038.46	Menominee River
GM-26C	1049.70	3/9/2001	11.42	1038.28	Menominee River
GM-26C	1049.70	3/23/2001	11.13	1038.57	Menominee River
GM-26C	1049.70	4/2/2001	11.10	1038.60	Menominee River
GM-26C	1049.70	4/16/2001	8.94	1040.76	Menominee River
GM-26C	1049.70	4/18/2001	9.41	1040.29	Menominee River
GM-26C	1049.70	4/18/2001	9.42	1040.28	Menominee River
GM-26C	1049.70	4/21/2001	9.86	1039.84	Menominee River
GM-26C	1049.70	4/23/2001	9.83	1039.87	Menominee River
GM-26C	1049.70	6/1/2001	10.52	1039.18	Menominee River
GM-26C	1049.70	9/12/2001	11.69	1038.01	Menominee River
GM-26C	1049.70	12/11/2001	11.47	1038.23	Menominee River
GM-26C	1049.70	3/27/2002	11.58	1038.12	Menominee River
GM-26C	1049.70	6/11/2002	11.01	1038.69	Menominee River
GM-26C	1049.70	11/5/2002	10.97	1038.73	Menominee River
GM-26C	1049.70	5/19/2003	9.53	1040.17	Menominee River
GM-26C	1049.70	10/25/2003	11.92	1037.78	Menominee River
GM-26C	1049.70	11/25/2003	11.37	1038.33	Menominee River
GM-26C	1049.70	12/1/2003	11.96	1037.74	Menominee River
GM-26C	1049.70	12/8/2003	11.60	1038.10	Menominee River
GM-26C	1049.70	12/9/2003	11.69	1038.01	Menominee River
GM-26C	1049.70	12/10/2003	11.52	1038.18	Menominee River
GM-26C	1049.70	12/11/2003	11.76	1037.94	Menominee River
GM-26C	1049.70	12/12/2003	11.91	1037.79	Menominee River
GM-26C	1049.70	12/16/2003	11.56	1038.14	Menominee River
GM-26C	1049.70	12/22/2003	11.82	1037.88	Menominee River
GM-26C	1049.70	12/31/2003	11.80	1037.90	Menominee River
GM-26C	1049.70	5/13/2004	10.55	1039.15	Menominee River
GM-26C	1049.70	11/16/2004	11.67	1038.03	Menominee River
GM-26C	1049.56	4/14/2005	10.59	1039.11	Menominee River
GM-26C	1049.56	6/2/2005	11.33	1038.37	Menominee River
GM-26C	1049.70	7/21/2005	11.91	1037.79	Menominee River
GM-26C	1049.56	11/9/2005	12.01	1037.55	Menominee River
GM-26C	1049.56	1/12/2006	13.81	1035.75	Menominee River
GM-26C	1049.56	2/13/2006	13.87	1035.69	Menominee River
GM-26C	1049.56	5/23/2006	12.97	1036.59	Menominee River
GM-26C	1049.56	8/8/2006	14.15	1035.41	Menominee River
GM-26C	1049.56	11/28/2006	13.93	1035.63	Menominee River
GM-26C	1049.56	2/5/2007	14.18	1035.38	Menominee River
GM-26C	1049.56	5/23/2007	14.10	1035.46	Menominee River
GM-26C	1049.56	8/14/2007	14.29	1035.27	Menominee River
GM-26C	1049.56	11/2/2007	14.09	1035.47	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-27A	1055.08	7/28/1998	17.14	1037.94	Menominee River
GM-27A	1055.08	8/11/1998	17.23	1037.85	Menominee River
GM-27A	1055.08	9/24/1998	17.28	1037.80	Menominee River
GM-27A	1055.08	10/22/1998	17.29	1037.79	Menominee River
GM-27A	1055.08	11/22/1998	16.95	1038.13	Menominee River
GM-27A	1055.08	12/19/1998	17.42	1037.66	Menominee River
GM-27A	1055.08	3/9/1999	16.87	1038.21	Menominee River
GM-27A	1055.08	4/29/1999	17.08	1038.00	Menominee River
GM-27A	1055.08	6/14/1999	16.36	1038.72	Menominee River
GM-27A	1055.08	7/26/1999	16.28	1038.80	Menominee River
GM-27A	1055.08	8/21/1999	16.66	1038.42	Menominee River
GM-27A	1055.08	9/22/1999	16.84	1038.24	Menominee River
GM-27A	1055.08	10/25/1999	16.88	1038.20	Menominee River
GM-27A	1055.08	11/19/1999	16.91	1038.17	Menominee River
GM-27A	1055.08	12/31/1999	17.33	1037.75	Menominee River
GM-27A	1055.08	1/22/2000	16.79	1038.29	Menominee River
GM-27A	1055.08	2/21/2000	16.56	1038.52	Menominee River
GM-27A	1055.08	3/18/2000	16.24	1038.84	Menominee River
GM-27A	1055.08	6/17/2000	17.18	1037.90	Menominee River
GM-27A	1055.08	9/25/2000	16.99	1038.09	Menominee River
GM-27A	1055.08	11/30/2000	17.16	1037.92	Menominee River
GM-27A	1055.08	1/12/2001	16.75	1038.33	Menominee River
GM-27A	1055.08	1/28/2001	16.89	1038.19	Menominee River
GM-27A	1055.08	2/6/2001	15.74	1039.34	Menominee River
GM-27A	1055.08	2/20/2001	16.72	1038.36	Menominee River
GM-27A	1055.08	2/27/2001	16.82	1038.26	Menominee River
GM-27A	1055.08	3/9/2001	16.94	1038.14	Menominee River
GM-27A	1055.08	3/23/2001	16.68	1038.40	Menominee River
GM-27A	1055.08	4/2/2001	16.64	1038.44	Menominee River
GM-27A	1055.08	4/16/2001	14.59	1040.49	Menominee River
GM-27A	1055.08	4/17/2001	14.92	1040.16	Menominee River
GM-27A	1055.08	4/17/2001	15.08	1040.00	Menominee River
GM-27A	1055.08	4/17/2001	15.00	1040.08	Menominee River
GM-27A	1055.08	4/17/2001	15.00	1040.08	Menominee River
GM-27A	1055.08	4/17/2001	14.99	1040.09	Menominee River
GM-27A	1055.08	4/17/2001	15.00	1040.08	Menominee River
GM-27A	1055.08	4/17/2001	15.08	1040.00	Menominee River
GM-27A	1055.08	4/17/2001	14.98	1040.10	Menominee River
GM-27A	1055.08	4/17/2001	15.11	1039.97	Menominee River
GM-27A	1055.08	4/17/2001	14.91	1040.17	Menominee River
GM-27A	1055.08	4/17/2001	14.91	1040.17	Menominee River
GM-27A	1055.08	4/17/2001	14.90	1040.18	Menominee River
GM-27A	1055.08	4/17/2001	14.86	1040.22	Menominee River
GM-27A	1055.08	4/17/2001	14.87	1040.21	Menominee River
GM-27A	1055.08	4/17/2001	14.98	1040.10	Menominee River
GM-27A	1055.08	4/18/2001	15.23	1039.85	Menominee River
GM-27A	1055.08	4/18/2001	15.23	1039.85	Menominee River
GM-27A	1055.08	4/18/2001	15.18	1039.90	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-27A	1055.08	4/19/2001	15.40	1039.68	Menominee River
GM-27A	1055.08	4/19/2001	15.33	1039.75	Menominee River
GM-27A	1055.08	4/19/2001	15.34	1039.74	Menominee River
GM-27A	1055.08	4/19/2001	15.35	1039.73	Menominee River
GM-27A	1055.08	4/19/2001	15.36	1039.72	Menominee River
GM-27A	1055.08	4/19/2001	15.37	1039.71	Menominee River
GM-27A	1055.08	4/19/2001	15.38	1039.70	Menominee River
GM-27A	1055.08	4/19/2001	15.34	1039.74	Menominee River
GM-27A	1055.08	4/19/2001	15.39	1039.69	Menominee River
GM-27A	1055.08	4/19/2001	15.42	1039.66	Menominee River
GM-27A	1055.08	4/19/2001	15.41	1039.67	Menominee River
GM-27A	1055.08	4/19/2001	15.42	1039.66	Menominee River
GM-27A	1055.08	4/19/2001	15.35	1039.73	Menominee River
GM-27A	1055.08	4/19/2001	15.36	1039.72	Menominee River
GM-27A	1055.08	4/19/2001	15.38	1039.70	Menominee River
GM-27A	1055.08	4/19/2001	15.33	1039.75	Menominee River
GM-27A	1055.08	4/19/2001	15.33	1039.75	Menominee River
GM-27A	1055.08	4/19/2001	15.33	1039.75	Menominee River
GM-27A	1055.08	4/19/2001	15.33	1039.75	Menominee River
GM-27A	1055.08	4/19/2001	15.33	1039.75	Menominee River
GM-27A	1055.08	4/19/2001	15.42	1039.66	Menominee River
GM-27A	1055.08	4/20/2001	15.53	1039.55	Menominee River
GM-27A	1055.08	4/20/2001	15.52	1039.56	Menominee River
GM-27A	1055.08	4/20/2001	15.54	1039.54	Menominee River
GM-27A	1055.08	4/20/2001	15.50	1039.58	Menominee River
GM-27A	1055.08	4/20/2001	15.43	1039.65	Menominee River
GM-27A	1055.08	4/20/2001	15.54	1039.54	Menominee River
GM-27A	1055.08	4/20/2001	15.54	1039.54	Menominee River
GM-27A	1055.08	4/20/2001	15.54	1039.54	Menominee River
GM-27A	1055.08	4/20/2001	15.54	1039.54	Menominee River
GM-27A	1055.08	4/20/2001	15.50	1039.58	Menominee River
GM-27A	1055.08	4/20/2001	15.48	1039.60	Menominee River
GM-27A	1055.08	4/20/2001	15.58	1039.50	Menominee River
GM-27A	1055.08	4/20/2001	15.43	1039.65	Menominee River
GM-27A	1055.08	4/20/2001	15.50	1039.58	Menominee River
GM-27A	1055.08	4/20/2001	15.55	1039.53	Menominee River
GM-27A	1055.08	4/20/2001	15.49	1039.59	Menominee River
GM-27A	1055.08	4/20/2001	15.55	1039.53	Menominee River
GM-27A	1055.08	4/20/2001	15.57	1039.51	Menominee River
GM-27A	1055.08	4/20/2001	15.43	1039.65	Menominee River
GM-27A	1055.08	4/20/2001	15.52	1039.56	Menominee River
GM-27A	1055.08	4/20/2001	15.47	1039.61	Menominee River
GM-27A	1055.08	4/20/2001	15.47	1039.61	Menominee River
GM-27A	1055.08	4/20/2001	15.47	1039.61	Menominee River
GM-27A	1055.08	4/21/2001	15.61	1039.47	Menominee River
GM-27A	1055.08	4/21/2001	15.63	1039.45	Menominee River
GM-27A	1055.08	4/22/2001	16.04	1039.04	Menominee River
GM-27A	1055.08	4/23/2001	15.53	1039.55	Menominee River

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-27A	1055.08	5/4/2001	16.01	1039.07	Menominee River
GM-27A	1055.08	5/8/2001	16.15	1038.93	Menominee River
GM-27A	1055.08	5/16/2001	16.44	1038.64	Menominee River
GM-27A	1055.08	5/30/2001	18.44	1036.64	Menominee River
GM-27A	1055.08	6/1/2001	16.24	1038.84	Menominee River
GM-27A	1055.08	6/14/2001	16.43	1038.65	Menominee River
GM-27A	1055.08	6/28/2001	16.49	1038.59	Menominee River
GM-27A	1055.08	7/3/2001	16.55	1038.53	Menominee River
GM-27A	1055.08	7/11/2001	16.88	1038.20	Menominee River
GM-27A	1055.08	7/12/2001	17.11	1037.97	Menominee River
GM-27A	1055.08	8/7/2001	17.03	1038.05	Menominee River
GM-27A	1055.08	8/22/2001	17.16	1037.92	Menominee River
GM-27A	1055.08	9/12/2001	17.36	1037.72	Menominee River
GM-27A	1055.08	12/11/2001	17.11	1037.97	Menominee River
GM-27A	1055.08	3/27/2002	17.15	1037.93	Menominee River
GM-27A	1055.08	6/11/2002	16.62	1038.46	Menominee River
GM-27A	1055.08	11/5/2002	16.62	1038.46	Menominee River
GM-27A	1055.08	5/19/2003	14.81	1040.27	Menominee River
GM-27A	1055.08	10/25/2003	17.49	1037.59	Menominee River
GM-27A	1055.08	11/25/2003	16.90	1038.18	Menominee River
GM-27A	1055.08	12/1/2003	17.50	1037.58	Menominee River
GM-27A	1055.08	12/8/2003	17.15	1037.93	Menominee River
GM-27A	1055.08	12/9/2003	17.23	1037.85	Menominee River
GM-27A	1055.08	12/10/2003	17.01	1038.07	Menominee River
GM-27A	1055.08	12/11/2003	17.25	1037.83	Menominee River
GM-27A	1055.08	12/12/2003	17.40	1037.68	Menominee River
GM-27A	1055.08	12/16/2003	17.08	1038.00	Menominee River
GM-27A	1055.08	12/22/2003	17.31	1037.77	Menominee River
GM-27A	1055.08	12/31/2003	17.32	1037.76	Menominee River
GM-27A	1055.08	5/13/2004	10.17	1044.91	Menominee River
GM-27A	1055.08	11/16/2004	17.15	1037.93	Menominee River
GM-27A	1054.96	4/14/2005	16.00	1039.08	Menominee River
GM-27A	1054.96	6/3/2005	16.71	1038.37	Menominee River
GM-27A	1055.08	7/22/2005	17.34	1037.74	Menominee River
GM-27A	1054.96	9/10/2005	17.00	1037.96	Menominee River
GM-27A	1054.96	11/9/2005	17.20	1037.76	Menominee River
GM-27A	1054.96	1/12/2006	18.12	1036.84	Menominee River
GM-27A	1054.96	2/6/2006	18.50	1036.46	Menominee River
GM-27A	1054.96	2/13/2006	18.27	1036.69	Menominee River
GM-27A	1054.96	5/23/2006	17.55	1037.41	Menominee River
GM-27A	1054.96	8/8/2006	18.71	1036.25	Menominee River
GM-27A	1054.96	11/28/2006	18.30	1036.66	Menominee River
GM-27A	1054.96	2/5/2007	18.69	1036.27	Menominee River
GM-27A	1054.96	5/23/2007	18.60	1036.36	Menominee River
GM-27A	1054.96	8/14/2007	18.85	1036.11	Menominee River
GM-27A	1054.96	11/2/2007	18.71	1036.25	Menominee River

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-27B	1055.39	7/28/1998	16.97	1038.42	Menominee River
GM-27B	1055.39	8/11/1998	17.06	1038.33	Menominee River
GM-27B	1055.39	9/24/1998	17.13	1038.26	Menominee River
GM-27B	1055.39	10/22/1998	17.16	1038.23	Menominee River
GM-27B	1055.39	11/22/1998	16.81	1038.58	Menominee River
GM-27B	1055.39	12/19/1998	17.28	1038.11	Menominee River
GM-27B	1055.39	3/9/1999	16.75	1038.64	Menominee River
GM-27B	1055.39	4/29/1999	17.00	1038.39	Menominee River
GM-27B	1055.39	6/14/1999	16.22	1039.17	Menominee River
GM-27B	1055.39	7/26/1999	16.16	1039.23	Menominee River
GM-27B	1055.39	8/21/1999	16.49	1038.90	Menominee River
GM-27B	1055.39	9/22/1999	16.67	1038.72	Menominee River
GM-27B	1055.39	10/25/1999	16.73	1038.66	Menominee River
GM-27B	1055.39	11/19/1999	16.71	1038.68	Menominee River
GM-27B	1055.39	12/31/1999	17.19	1038.20	Menominee River
GM-27B	1055.39	1/22/2000	16.66	1038.73	Menominee River
GM-27B	1055.39	2/21/2000	16.45	1038.94	Menominee River
GM-27B	1055.39	3/18/2000	16.13	1039.26	Menominee River
GM-27B	1055.39	6/17/2000	17.05	1038.34	Menominee River
GM-27B	1055.39	9/25/2000	16.87	1038.52	Menominee River
GM-27B	1055.39	11/30/2000	17.00	1038.39	Menominee River
GM-27B	1055.39	1/12/2001	16.62	1038.77	Menominee River
GM-27B	1055.39	1/28/2001	16.76	1038.63	Menominee River
GM-27B	1055.39	2/6/2001	16.61	1038.78	Menominee River
GM-27B	1055.39	2/20/2001	16.61	1038.78	Menominee River
GM-27B	1055.39	2/27/2001	16.73	1038.66	Menominee River
GM-27B	1055.39	3/9/2001	16.81	1038.58	Menominee River
GM-27B	1055.39	3/23/2001	16.60	1038.79	Menominee River
GM-27B	1055.39	4/2/2001	16.56	1038.83	Menominee River
GM-27B	1055.39	4/16/2001	14.53	1040.86	Menominee River
GM-27B	1055.39	4/18/2001	15.07	1040.32	Menominee River
GM-27B	1055.39	4/18/2001	15.07	1040.32	Menominee River
GM-27B	1055.39	4/21/2001	15.45	1039.94	Menominee River
GM-27B	1055.39	4/23/2001	15.41	1039.98	Menominee River
GM-27B	1055.39	6/1/2001	16.05	1039.34	Menominee River
GM-27B	1055.39	9/12/2001	17.10	1038.29	Menominee River
GM-27B	1055.39	12/11/2001	16.86	1038.53	Menominee River
GM-27B	1055.39	3/27/2002	16.90	1038.49	Menominee River
GM-27B	1055.39	6/11/2002	16.36	1039.03	Menominee River
GM-27B	1055.39	11/5/2002	16.38	1039.01	Menominee River
GM-27B	1055.39	5/19/2003	14.66	1040.73	Menominee River
GM-27B	1055.39	10/25/2003	17.19	1038.20	Menominee River
GM-27B	1055.39	11/25/2003	16.69	1038.70	Menominee River
GM-27B	1055.39	12/1/2003	17.19	1038.20	Menominee River
GM-27B	1055.39	5/13/2004	15.91	1039.48	Menominee River
GM-27B	1055.39	11/17/2004	16.77	1038.62	Menominee River
GM-27B	1055.30	4/14/2005	15.90	1039.49	Menominee River
GM-27B	1055.30	6/3/2005	16.59	1038.80	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-27B	1055.39	7/22/2005	17.20	1038.19	Menominee River
GM-27B	1055.30	9/10/2005	16.90	1038.40	Menominee River
GM-27B	1055.30	11/9/2005	17.11	1038.19	Menominee River
GM-27B	1055.30	1/12/2006	17.81	1037.49	Menominee River
GM-27B	1055.30	2/13/2006	17.87	1037.43	Menominee River
GM-27B	1055.30	5/23/2006	17.17	1038.13	Menominee River
GM-27B	1055.30	8/8/2006	18.30	1037.00	Menominee River
GM-27B	1055.30	11/28/2006	17.98	1037.32	Menominee River
GM-27B	1055.30	2/5/2007	18.35	1036.95	Menominee River
GM-27B	1055.30	5/23/2007	18.29	1037.01	Menominee River
GM-27B	1055.30	8/14/2007	18.48	1036.82	Menominee River
GM-27B	1055.30	11/2/2007	18.39	1036.91	Menominee River
GM-27C	1055.05	7/28/1998	16.13	1038.92	Menominee River
GM-27C	1055.05	8/11/1998	16.24	1038.81	Menominee River
GM-27C	1055.05	9/24/1998	16.30	1038.75	Menominee River
GM-27C	1055.05	10/22/1998	16.37	1038.68	Menominee River
GM-27C	1055.05	11/22/1998	16.04	1039.01	Menominee River
GM-27C	1055.05	12/19/1998	16.41	1038.64	Menominee River
GM-27C	1055.05	3/9/1999	15.99	1039.06	Menominee River
GM-27C	1055.05	4/29/1999	16.29	1038.76	Menominee River
GM-27C	1055.05	6/14/1999	15.45	1039.60	Menominee River
GM-27C	1055.05	7/26/1999	15.37	1039.68	Menominee River
GM-27C	1055.05	8/21/1999	15.72	1039.33	Menominee River
GM-27C	1055.05	9/22/1999	15.91	1039.14	Menominee River
GM-27C	1055.05	10/25/1999	15.95	1039.10	Menominee River
GM-27C	1055.05	11/19/1999	15.88	1039.17	Menominee River
GM-27C	1055.05	12/31/1999	16.41	1038.64	Menominee River
GM-27C	1055.05	1/22/2000	15.91	1039.14	Menominee River
GM-27C	1055.05	2/21/2000	15.71	1039.34	Menominee River
GM-27C	1055.05	3/18/2000	15.40	1039.65	Menominee River
GM-27C	1055.05	6/17/2000	16.28	1038.77	Menominee River
GM-27C	1055.05	9/25/2000	16.10	1038.95	Menominee River
GM-27C	1055.05	11/30/2000	16.19	1038.86	Menominee River
GM-27C	1055.05	1/12/2001	15.86	1039.19	Menominee River
GM-27C	1055.05	1/28/2001	15.95	1039.10	Menominee River
GM-27C	1055.05	2/6/2001	15.82	1039.23	Menominee River
GM-27C	1055.05	2/20/2001	15.83	1039.22	Menominee River
GM-27C	1055.05	2/27/2001	15.98	1039.07	Menominee River
GM-27C	1055.05	3/9/2001	16.01	1039.04	Menominee River
GM-27C	1055.05	3/23/2001	15.87	1039.18	Menominee River
GM-27C	1055.05	4/2/2001	15.85	1039.20	Menominee River
GM-27C	1055.05	4/16/2001	13.84	1041.21	Menominee River
GM-27C	1055.05	4/18/2001	14.34	1040.71	Menominee River
GM-27C	1055.05	4/18/2001	14.37	1040.68	Menominee River
GM-27C	1055.05	4/21/2001	14.71	1040.34	Menominee River
GM-27C	1055.05	4/23/2001	14.73	1040.32	Menominee River
GM-27C	1055.05	6/1/2001	15.31	1039.74	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-27C	1055.05	9/12/2001	16.29	1038.76	Menominee River
GM-27C	1055.05	12/11/2001	16.04	1039.01	Menominee River
GM-27C	1055.05	3/27/2002	16.06	1038.99	Menominee River
GM-27C	1055.05	6/11/2002	15.56	1039.49	Menominee River
GM-27C	1055.05	11/5/2002	15.52	1039.53	Menominee River
GM-27C	1055.05	5/19/2003	13.93	1041.12	Menominee River
GM-27C	1055.05	10/25/2003	16.35	1038.70	Menominee River
GM-27C	1055.05	11/25/2003	15.92	1039.13	Menominee River
GM-27C	1055.05	12/1/2003	16.35	1038.70	Menominee River
GM-27C	1055.05	5/13/2004	15.09	1039.96	Menominee River
GM-27C	1055.05	11/16/2004	16.06	1038.99	Menominee River
GM-27C	1055.00	4/14/2005	15.20	1039.85	Menominee River
GM-27C	1055.00	6/3/2005	15.83	1039.22	Menominee River
GM-27C	1055.05	7/22/2005	16.41	1038.64	Menominee River
GM-27C	1055.00	9/10/2005	16.11	1038.89	Menominee River
GM-27C	1055.00	11/9/2005	16.25	1038.75	Menominee River
GM-27C	1055.00	1/12/2006	16.88	1038.12	Menominee River
GM-27C	1055.00	2/13/2006	16.99	1038.01	Menominee River
GM-27C	1055.00	5/23/2006	16.28	1038.72	Menominee River
GM-27C	1055.00	8/8/2006	17.38	1037.62	Menominee River
GM-27C	1055.00	11/28/2006	17.11	1037.89	Menominee River
GM-27C	1055.00	2/5/2007	17.49	1037.51	Menominee River
GM-27C	1055.00	5/23/2007	17.35	1037.65	Menominee River
GM-27C	1055.00	8/14/2007	17.52	1037.48	Menominee River
GM-27C	1055.00	11/2/2007	17.54	1037.46	Menominee River
GM-28A	1064.55	7/28/1998	26.23	1038.32	Menominee River/West Breen Disposal
GM-28A	1064.55	8/11/1998	26.34	1038.21	Menominee River/West Breen Disposal
GM-28A	1064.55	9/24/1998	26.46	1038.09	Menominee River/West Breen Disposal
GM-28A	1064.55	10/22/1998	26.45	1038.10	Menominee River/West Breen Disposal
GM-28A	1064.55	11/22/1998	26.15	1038.40	Menominee River/West Breen Disposal
GM-28A	1064.55	12/19/1998	26.62	1037.93	Menominee River/West Breen Disposal
GM-28A	1064.55	3/9/1999	26.10	1038.45	Menominee River/West Breen Disposal
GM-28A	1064.55	4/29/1999	26.34	1038.21	Menominee River/West Breen Disposal
GM-28A	1064.55	6/14/1999	25.61	1038.94	Menominee River/West Breen Disposal
GM-28A	1064.55	7/26/1999	25.58	1038.97	Menominee River/West Breen Disposal
GM-28A	1064.55	8/21/1999	25.81	1038.74	Menominee River/West Breen Disposal
GM-28A	1064.55	9/22/1999	25.99	1038.56	Menominee River/West Breen Disposal
GM-28A	1064.55	10/25/1999	26.00	1038.55	Menominee River/West Breen Disposal
GM-28A	1064.55	11/19/1999	26.05	1038.50	Menominee River/West Breen Disposal
GM-28A	1064.55	12/31/1999	26.57	1037.98	Menominee River/West Breen Disposal
GM-28A	1064.55	1/22/2000	25.98	1038.57	Menominee River/West Breen Disposal
GM-28A	1064.55	2/21/2000	25.88	1038.67	Menominee River/West Breen Disposal
GM-28A	1064.55	3/18/2000	25.51	1039.04	Menominee River/West Breen Disposal
GM-28A	1064.55	6/17/2000	26.42	1038.13	Menominee River/West Breen Disposal
GM-28A	1064.55	9/25/2000	26.20	1038.35	Menominee River/West Breen Disposal
GM-28A	1064.55	11/30/2000	26.38	1038.17	Menominee River/West Breen Disposal
GM-28A	1064.55	1/12/2001	25.97	1038.58	Menominee River/West Breen Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-28A	1064.55	1/28/2001	26.15	1038.40	Menominee River/West Breen Disposal
GM-28A	1064.55	2/6/2001	26.01	1038.54	Menominee River/West Breen Disposal
GM-28A	1064.55	2/20/2001	25.98	1038.57	Menominee River/West Breen Disposal
GM-28A	1064.55	2/27/2001	26.11	1038.44	Menominee River/West Breen Disposal
GM-28A	1064.55	3/9/2001	26.17	1038.38	Menominee River/West Breen Disposal
GM-28A	1064.55	3/23/2001	25.96	1038.59	Menominee River/West Breen Disposal
GM-28A	1064.55	4/2/2001	25.92	1038.63	Menominee River/West Breen Disposal
GM-28A	1064.55	4/16/2001	23.91	1040.64	Menominee River/West Breen Disposal
GM-28A	1064.55	4/18/2001	24.54	1040.01	Menominee River/West Breen Disposal
GM-28A	1064.55	4/18/2001	24.52	1040.03	Menominee River/West Breen Disposal
GM-28A	1064.55	4/21/2001	24.89	1039.66	Menominee River/West Breen Disposal
GM-28A	1064.55	4/23/2001	24.76	1039.79	Menominee River/West Breen Disposal
GM-28A	1064.55	6/1/2001	25.45	1039.10	Menominee River/West Breen Disposal
GM-28A	1064.55	9/12/2001	26.46	1038.09	Menominee River/West Breen Disposal
GM-28A	1064.55	12/11/2001	26.22	1038.33	Menominee River/West Breen Disposal
GM-28A	1064.55	3/27/2002	26.23	1038.32	Menominee River/West Breen Disposal
GM-28A	1064.55	6/11/2002	25.71	1038.84	Menominee River/West Breen Disposal
GM-28A	1064.55	11/5/2002	25.71	1038.84	Menominee River/West Breen Disposal
GM-28A	1064.55	5/19/2003	24.34	1040.21	Menominee River/West Breen Disposal
GM-28A	1064.55	10/25/2003	26.51	1038.04	Menominee River/West Breen Disposal
GM-28A	1064.55	11/25/2003	26.03	1038.52	Menominee River/West Breen Disposal
GM-28A	1064.55	12/1/2003	26.45	1038.10	Menominee River/West Breen Disposal
GM-28A	1064.55	5/13/2004	25.28	1039.27	Menominee River/West Breen Disposal
GM-28A	1064.55	11/17/2004	26.04	1038.51	Menominee River/West Breen Disposal
GM-28A	1064.55	4/14/2005	25.31	1039.24	Menominee River/West Breen Disposal
GM-28A	1064.55	6/3/2005	25.97	1038.58	Menominee River/West Breen Disposal
GM-28A	1064.55	7/22/2005	26.51	1038.04	Menominee River/West Breen Disposal
GM-28A	1064.55	9/11/2005	26.20	1038.35	Menominee River/West Breen Disposal
GM-28A	1064.55	11/10/2005	26.54	1038.01	Menominee River/West Breen Disposal
GM-28A	1064.55	1/12/2006	26.68	1037.87	Menominee River/West Breen Disposal
GM-28A	1064.55	2/13/2006	26.59	1037.96	Menominee River/West Breen Disposal
GM-28A	1064.55	5/24/2006	26.11	1038.44	Menominee River/West Breen Disposal
GM-28A	1064.55	8/8/2006	27.23	1037.32	Menominee River/West Breen Disposal
GM-28A	1064.55	11/28/2006	26.69	1037.86	Menominee River/West Breen Disposal
GM-28A	1064.55	2/5/2007	27.05	1037.50	Menominee River/West Breen Disposal
GM-28A	1064.55	5/23/2007	27.12	1037.43	Menominee River/West Breen Disposal
GM-28A	1064.55	8/14/2007	27.32	1037.23	Menominee River/West Breen Disposal
GM-28A	1064.55	11/2/2007	27.14	1037.41	Menominee River/West Breen Disposal
GM-28B	1064.39	7/28/1998	26.32	1038.07	Menominee River/West Breen Disposal
GM-28B	1064.39	8/11/1998	26.41	1037.98	Menominee River/West Breen Disposal
GM-28B	1064.39	9/24/1998	26.53	1037.86	Menominee River/West Breen Disposal
GM-28B	1064.39	10/22/1998	26.54	1037.85	Menominee River/West Breen Disposal
GM-28B	1064.39	11/22/1998	26.23	1038.16	Menominee River/West Breen Disposal
GM-28B	1064.39	12/19/1998	26.61	1037.78	Menominee River/West Breen Disposal
GM-28B	1064.39	3/9/1999	26.17	1038.22	Menominee River/West Breen Disposal
GM-28B	1064.39	4/29/1999	26.40	1037.99	Menominee River/West Breen Disposal
GM-28B	1064.39	6/14/1999	25.68	1038.71	Menominee River/West Breen Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-28B	1064.39	7/26/1999	25.68	1038.71	Menominee River/West Breen Disposal
GM-28B	1064.39	8/21/1999	25.91	1038.48	Menominee River/West Breen Disposal
GM-28B	1064.39	9/22/1999	26.07	1038.32	Menominee River/West Breen Disposal
GM-28B	1064.39	10/25/1999	26.12	1038.27	Menominee River/West Breen Disposal
GM-28B	1064.39	11/19/1999	26.11	1038.28	Menominee River/West Breen Disposal
GM-28B	1064.39	12/31/1999	26.63	1037.76	Menominee River/West Breen Disposal
GM-28B	1064.39	1/22/2000	26.07	1038.32	Menominee River/West Breen Disposal
GM-28B	1064.39	2/21/2000	25.79	1038.60	Menominee River/West Breen Disposal
GM-28B	1064.39	3/18/2000	25.60	1038.79	Menominee River/West Breen Disposal
GM-28B	1064.39	6/17/2000	26.48	1037.91	Menominee River/West Breen Disposal
GM-28B	1064.39	9/25/2000	26.28	1038.11	Menominee River/West Breen Disposal
GM-28B	1064.39	11/30/2000	26.43	1037.96	Menominee River/West Breen Disposal
GM-28B	1064.39	1/12/2001	26.03	1038.36	Menominee River/West Breen Disposal
GM-28B	1064.39	1/28/2001	26.21	1038.18	Menominee River/West Breen Disposal
GM-28B	1064.39	2/6/2001	26.04	1038.35	Menominee River/West Breen Disposal
GM-28B	1064.39	2/20/2001	26.05	1038.34	Menominee River/West Breen Disposal
GM-28B	1064.39	2/27/2001	26.18	1038.21	Menominee River/West Breen Disposal
GM-28B	1064.39	3/9/2001	26.22	1038.17	Menominee River/West Breen Disposal
GM-28B	1064.39	3/23/2001	26.04	1038.35	Menominee River/West Breen Disposal
GM-28B	1064.39	4/2/2001	25.98	1038.41	Menominee River/West Breen Disposal
GM-28B	1064.39	4/16/2001	24.95	1039.44	Menominee River/West Breen Disposal
GM-28B	1064.39	4/18/2001	24.61	1039.78	Menominee River/West Breen Disposal
GM-28B	1064.39	4/18/2001	24.56	1039.83	Menominee River/West Breen Disposal
GM-28B	1064.39	4/21/2001	24.98	1039.41	Menominee River/West Breen Disposal
GM-28B	1064.39	4/23/2001	24.87	1039.52	Menominee River/West Breen Disposal
GM-28B	1064.39	6/1/2001	25.56	1038.83	Menominee River/West Breen Disposal
GM-28B	1064.39	9/12/2001	26.50	1037.89	Menominee River/West Breen Disposal
GM-28B	1064.39	12/11/2001	26.28	1038.11	Menominee River/West Breen Disposal
GM-28B	1064.39	3/27/2002	26.31	1038.08	Menominee River/West Breen Disposal
GM-28B	1064.39	6/11/2002	25.81	1038.58	Menominee River/West Breen Disposal
GM-28B	1064.39	11/5/2002	25.81	1038.58	Menominee River/West Breen Disposal
GM-28B	1064.39	5/19/2003	24.40	1039.99	Menominee River/West Breen Disposal
GM-28B	1064.39	10/25/2003	26.55	1037.84	Menominee River/West Breen Disposal
GM-28B	1064.39	11/25/2003	26.10	1038.29	Menominee River/West Breen Disposal
GM-28B	1064.39	12/1/2003	26.48	1037.91	Menominee River/West Breen Disposal
GM-28B	1064.39	5/13/2004	25.38	1039.01	Menominee River/West Breen Disposal
GM-28B	1064.39	11/17/2004	26.12	1038.27	Menominee River/West Breen Disposal
GM-28B	1064.39	4/14/2005	25.38	1039.01	Menominee River/West Breen Disposal
GM-28B	1064.39	6/3/2005	26.07	1038.32	Menominee River/West Breen Disposal
GM-28B	1064.39	7/22/2005	26.60	1037.79	Menominee River/West Breen Disposal
GM-28B	1064.39	9/11/2005	26.26	1038.13	Menominee River/West Breen Disposal
GM-28B	1064.39	11/10/2005	26.60	1037.79	Menominee River/West Breen Disposal
GM-28B	1064.39	1/12/2006	26.76	1037.63	Menominee River/West Breen Disposal
GM-28B	1064.39	2/13/2006	26.67	1037.72	Menominee River/West Breen Disposal
GM-28B	1064.39	5/24/2006	26.20	1038.19	Menominee River/West Breen Disposal
GM-28B	1064.39	8/8/2006	27.08	1037.31	Menominee River/West Breen Disposal
GM-28B	1064.39	11/28/2006	26.78	1037.61	Menominee River/West Breen Disposal
GM-28B	1064.39	2/5/2007	27.17	1037.22	Menominee River/West Breen Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-28B	1064.39	5/23/2007	27.19	1037.20	Menominee River/West Breen Disposal
GM-28B	1064.39	8/14/2007	27.27	1037.12	Menominee River/West Breen Disposal
GM-28B	1064.39	11/2/2007	27.18	1037.21	Menominee River/West Breen Disposal
GM-29	1055.80	7/28/1998	18.92	1036.88	Menominee River
GM-29	1055.80	8/11/1998	18.86	1036.94	Menominee River
GM-29	1055.80	9/24/1998	19.10	1036.70	Menominee River
GM-29	1055.80	10/22/1998	19.00	1036.80	Menominee River
GM-29	1055.80	11/22/1998	18.75	1037.05	Menominee River
GM-29	1055.80	3/9/1999	18.60	1037.20	Menominee River
GM-29	1055.80	4/29/1999	18.90	1036.90	Menominee River
GM-29	1055.80	6/14/1999	18.24	1037.56	Menominee River
GM-29	1055.80	7/26/1999	18.41	1037.39	Menominee River
GM-29	1055.80	8/21/1999	18.47	1037.33	Menominee River
GM-29	1055.80	9/22/1999	18.71	1037.09	Menominee River
GM-29	1055.80	10/25/1999	18.65	1037.15	Menominee River
GM-29	1055.80	11/19/1999	18.76	1037.04	Menominee River
GM-29	1055.80	12/31/1999	19.22	1036.58	Menominee River
GM-29	1055.80	1/22/2000	18.61	1037.19	Menominee River
GM-29	1055.80	2/21/2000	18.39	1037.41	Menominee River
GM-29	1055.80	3/18/2000	18.16	1037.64	Menominee River
GM-29	1055.80	6/17/2000	19.06	1036.74	Menominee River
GM-29	1055.80	9/25/2000	18.82	1036.98	Menominee River
GM-29	1055.80	11/30/2000	19.06	1036.74	Menominee River
GM-29	1055.80	1/12/2001	18.60	1037.20	Menominee River
GM-29	1055.80	1/28/2001	18.86	1036.94	Menominee River
GM-29	1055.80	2/6/2001	18.77	1037.03	Menominee River
GM-29	1055.80	2/20/2001	18.63	1037.17	Menominee River
GM-29	1055.80	2/27/2001	18.67	1037.13	Menominee River
GM-29	1055.80	3/9/2001	18.72	1037.08	Menominee River
GM-29	1055.80	3/23/2001	18.53	1037.27	Menominee River
GM-29	1055.80	4/2/2001	17.54	1038.26	Menominee River
GM-29	1055.80	4/16/2001	16.16	1039.64	Menominee River
GM-29	1055.80	4/18/2001	17.14	1038.66	Menominee River
GM-29	1055.80	4/18/2001	17.08	1038.72	Menominee River
GM-29	1055.80	4/21/2001	17.20	1038.60	Menominee River
GM-29	1055.80	4/23/2001	17.50	1038.30	Menominee River
GM-29	1055.80	6/1/2001	18.24	1037.56	Menominee River
GM-29	1055.80	9/12/2001	19.80	1036.00	Menominee River
GM-29	1055.80	12/11/2001	18.82	1036.98	Menominee River
GM-29	1055.80	3/27/2002	18.93	1036.87	Menominee River
GM-29	1055.80	6/11/2002	18.17	1037.63	Menominee River
GM-29	1055.80	11/5/2002	18.61	1037.19	Menominee River
GM-29	1055.80	5/19/2003	16.97	1038.83	Menominee River
GM-29	1055.80	10/25/2003	19.14	1036.66	Menominee River
GM-29	1055.80	11/25/2003	18.75	1037.05	Menominee River
GM-29	1055.80	12/1/2003	19.01	1036.79	Menominee River
GM-29	1055.80	5/13/2004	18.13	1037.67	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-29	1055.80	11/17/2004	18.69	1037.11	Menominee River
GM-29	1055.80	4/14/2005	17.94	1037.86	Menominee River
GM-29	1055.80	6/3/2005	18.75	1037.05	Menominee River
GM-29	1055.80	7/22/2005	19.18	1036.62	Menominee River
GM-29	1055.80	9/11/2005	18.83	1036.97	Menominee River
GM-29	1055.80	11/10/2005	19.02	1036.78	Menominee River
GM-29	1055.80	1/12/2006	19.19	1036.61	Menominee River
GM-29	1055.80	2/13/2006	18.89	1036.91	Menominee River
GM-29	1055.80	5/24/2006	18.62	1037.18	Menominee River
GM-29	1055.80	8/8/2006	19.32	1036.48	Menominee River
GM-29	1055.80	11/28/2006	19.04	1036.76	Menominee River
GM-29	1055.80	2/5/2007	19.29	1036.51	Menominee River
GM-29	1055.80	5/23/2007	19.50	1036.30	Menominee River
GM-29	1055.80	8/14/2007	19.52	1036.28	Menominee River
GM-29	1055.80	11/2/2007	19.23	1036.57	Menominee River
GM-30	1124.47	7/28/1998	80.38	1044.09	Riverside Disposal
GM-30	1124.47	8/11/1998	80.67	1043.80	Riverside Disposal
GM-30	1124.47	9/24/1998	80.51	1043.96	Riverside Disposal
GM-30	1124.47	10/22/1998	80.51	1043.96	Riverside Disposal
GM-30	1124.47	11/22/1998	80.51	1043.96	Riverside Disposal
GM-30	1131.83	3/9/1999	87.46	1037.01	Riverside Disposal
GM-30	1131.83	4/29/1999	87.40	1037.07	Riverside Disposal
GM-30	1131.83	7/26/1999	86.68	1037.79	Riverside Disposal
GM-30	1131.83	9/22/1999			Riverside Disposal
GM-30	1131.83	10/25/1999			Riverside Disposal
GM-30	1124.47	11/19/1999	80.02	1044.45	Riverside Disposal
GM-30	1124.47	2/21/2000			Riverside Disposal
GM-30	1124.47	9/12/2001	80.02	1044.45	Riverside Disposal
GM-30	1124.47	3/27/2002	80.10	1044.37	Riverside Disposal
GM-30	1124.47	6/11/2002	78.44	1046.03	Riverside Disposal
GM-30	1124.47	11/5/2002	79.18	1045.29	Riverside Disposal
GM-30	1124.47	5/19/2003	78.86	1045.61	Riverside Disposal
GM-30	1124.47	12/1/2003	80.10	1044.37	Riverside Disposal
GM-30	1124.47	5/13/2004	79.23	1045.24	Riverside Disposal
GM-30	1124.47	11/16/2004	79.76	1044.71	Riverside Disposal
GM-30	1124.47	6/2/2005	79.24	1045.23	Riverside Disposal
GM-30	1124.47	11/9/2005	79.80	1044.67	Riverside Disposal
GM-30	1124.47	5/23/2006	80.08	1044.39	Riverside Disposal
GM-30	1124.47	11/27/2006	81.06	1043.41	Riverside Disposal
GM-30	1124.47	5/22/2007	80.12	1044.35	Riverside Disposal
GM-30	1124.47	11/1/2007	81.69	1042.78	Riverside Disposal
GM-30A	1123.98	11/16/2004	77.83	1046.45	Riverside Disposal
GM-30A	1124.28	5/23/2006			Riverside Disposal
GM-31	1124.22	7/28/1998	84.13	1040.09	Riverside Disposal
GM-31	1124.22	8/11/1998	84.47	1039.75	Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-31	1124.22	9/24/1998	84.41	1039.81	Riverside Disposal
GM-31	1124.22	10/22/1998	84.44	1039.78	Riverside Disposal
GM-31	1124.22	11/22/1998	84.08	1040.14	Riverside Disposal
GM-31	1124.22	12/19/1998	84.42	1039.80	Riverside Disposal
GM-31	1124.22	3/9/1999	83.99	1040.23	Riverside Disposal
GM-31	1124.22	4/29/1999	83.99	1040.23	Riverside Disposal
GM-31	1124.22	6/14/1999	83.49	1040.73	Riverside Disposal
GM-31	1124.22	7/26/1999	83.36	1040.86	Riverside Disposal
GM-31	1124.22	8/21/1999	83.92	1040.30	Riverside Disposal
GM-31	1124.22	9/22/1999	83.79	1040.43	Riverside Disposal
GM-31	1124.22	10/25/1999	83.99	1040.23	Riverside Disposal
GM-31	1124.22	11/19/1999	84.05	1040.17	Riverside Disposal
GM-31	1124.22	12/31/1999	84.49	1039.73	Riverside Disposal
GM-31	1124.22	1/22/2000	83.82	1040.40	Riverside Disposal
GM-31	1124.22	2/21/2000	83.66	1040.56	Riverside Disposal
GM-31	1124.22	3/18/2000	83.40	1040.82	Riverside Disposal
GM-31	1124.22	6/17/2000	84.49	1039.73	Riverside Disposal
GM-31	1124.22	9/25/2000	84.44	1039.78	Riverside Disposal
GM-31	1124.22	11/30/2000	84.37	1039.85	Riverside Disposal
GM-31	1124.22	1/12/2001	83.79	1040.43	Riverside Disposal
GM-31	1124.22	1/28/2001	83.88	1040.34	Riverside Disposal
GM-31	1124.22	2/6/2001	83.86	1040.36	Riverside Disposal
GM-31	1124.22	2/20/2001	83.91	1040.31	Riverside Disposal
GM-31	1124.22	2/27/2001	83.99	1040.23	Riverside Disposal
GM-31	1124.22	3/9/2001	83.75	1040.47	Riverside Disposal
GM-31	1124.22	3/23/2001	83.86	1040.36	Riverside Disposal
GM-31	1124.22	4/2/2001	83.91	1040.31	Riverside Disposal
GM-31	1124.22	4/16/2001	81.99	1042.23	Riverside Disposal
GM-31	1124.22	4/18/2001	82.40	1041.82	Riverside Disposal
GM-31	1124.22	4/18/2001	82.27	1041.95	Riverside Disposal
GM-31	1124.22	4/21/2001	82.47	1041.75	Riverside Disposal
GM-31	1124.22	4/23/2001	82.30	1041.92	Riverside Disposal
GM-31	1124.22	6/1/2001	83.31	1040.91	Riverside Disposal
GM-31	1124.22	9/12/2001	84.55	1039.67	Riverside Disposal
GM-31	1124.22	12/11/2001	84.04	1040.18	Riverside Disposal
GM-31	1124.22	3/27/2002	84.04	1040.18	Riverside Disposal
GM-31	1124.22	6/11/2002	83.12	1041.10	Riverside Disposal
GM-31	1124.22	11/5/2002	83.32	1040.90	Riverside Disposal
GM-31	1124.22	5/19/2003	81.99	1042.23	Riverside Disposal
GM-31	1124.22	10/25/2003	84.61	1039.61	Riverside Disposal
GM-31	1124.22	11/25/2003	83.79	1040.43	Riverside Disposal
GM-31	1124.22	12/1/2003	84.22	1040.00	Riverside Disposal
GM-31	1124.22	5/13/2004	83.04	1041.18	Riverside Disposal
GM-31	1124.22	11/16/2004	83.97	1040.25	Riverside Disposal
GM-31	1124.22	4/14/2005	83.10	1041.12	Riverside Disposal
GM-31	1124.22	6/3/2005	83.76	1040.46	Riverside Disposal
GM-31	1124.22	9/11/2005	83.90	1040.32	Riverside Disposal
GM-31	1124.22	11/9/2005	84.10	1040.12	Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-31	1124.22	1/12/2006	84.74	1039.48	Riverside Disposal
GM-31	1124.22	2/13/2006	84.69	1039.53	Riverside Disposal
GM-31	1124.22	5/23/2006	84.18	1040.04	Riverside Disposal
GM-31	1124.22	8/8/2006	85.46	1038.76	Riverside Disposal
GM-31	1124.22	11/27/2006	85.22	1039.00	Riverside Disposal
GM-31	1124.22	2/5/2007	85.17	1039.05	Riverside Disposal
GM-31	1124.22	5/22/2007	85.25	1038.97	Riverside Disposal
GM-31	1124.22	8/14/2007	85.59	1038.63	Riverside Disposal
GM-31	1124.22	11/1/2007	85.66	1038.56	Riverside Disposal
GM-32	1115.88	7/28/1998	44.64	1071.24	Former Plant Site
GM-32	1115.88	8/11/1998	44.98	1070.90	Former Plant Site
GM-32	1115.88	9/24/1998	45.03	1070.85	Former Plant Site
GM-32	1115.88	10/22/1998	45.32	1070.56	Former Plant Site
GM-32	1115.88	11/22/1998	45.32	1070.56	Former Plant Site
GM-32	1115.88	12/19/1998	45.88	1070.00	Former Plant Site
GM-32	1115.88	3/9/1999	46.04	1069.84	Former Plant Site
GM-32	1115.88	4/29/1999	46.21	1069.67	Former Plant Site
GM-32	1115.88	6/14/1999	45.76	1070.12	Former Plant Site
GM-32	1115.88	7/26/1999	45.17	1070.71	Former Plant Site
GM-32	1115.88	8/21/1999	44.68	1071.20	Former Plant Site
GM-32	1115.88	9/22/1999	44.34	1071.54	Former Plant Site
GM-32	1115.88	10/25/1999	44.37	1071.51	Former Plant Site
GM-32	1115.88	11/19/1999	44.52	1071.36	Former Plant Site
GM-32	1115.88	12/31/1999	45.06	1070.82	Former Plant Site
GM-32	1115.88	1/22/2000	45.12	1070.76	Former Plant Site
GM-32	1115.88	2/21/2000	45.49	1070.39	Former Plant Site
GM-32	1115.88	3/18/2000	45.45	1070.43	Former Plant Site
GM-32	1115.88	6/17/2000	45.40	1070.48	Former Plant Site
GM-32	1115.88	9/25/2000	44.37	1071.51	Former Plant Site
GM-32	1115.88	11/30/2000	44.12	1071.76	Former Plant Site
GM-32	1115.88	3/9/2001	43.71	1072.17	Former Plant Site
GM-32	1115.88	6/1/2001	44.38	1071.50	Former Plant Site
GM-32	1115.88	9/12/2001	44.40	1071.48	Former Plant Site
GM-32	1115.88	12/11/2001	44.72	1071.16	Former Plant Site
GM-32	1115.88	6/11/2002	44.00	1071.88	Former Plant Site
GM-32	1115.88	11/5/2002	43.10	1072.78	Former Plant Site
GM-32	1115.88	5/19/2003	43.35	1072.53	Former Plant Site
GM-32	1115.88	12/1/2003	43.91	1071.97	Former Plant Site
GM-32	1115.88	5/13/2004	43.45	1072.43	Former Plant Site
GM-32	1115.88	11/17/2004	42.63	1073.25	Former Plant Site
GM-32	1115.88	6/3/2005	43.43	1072.45	Former Plant Site
GM-32	1115.88	11/9/2005	44.21	1071.67	Former Plant Site
GM-32	1115.88	5/23/2006	44.65	1071.23	Former Plant Site
GM-32	1115.88	11/27/2006	45.08	1070.80	Former Plant Site
GM-32	1115.88	5/22/2007	45.70	1070.18	Former Plant Site
GM-32	1115.88	11/1/2007	46.59	1069.29	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-33	1119.13	7/28/1998	81.69	1037.44	General Study/Breen
GM-33	1119.13	8/11/1998	75.30	1043.83	General Study/Breen
GM-33	1119.13	9/24/1998	75.84	1043.29	General Study/Breen
GM-33	1119.13	10/22/1998	83.41	1035.72	General Study/Breen
GM-33	1119.13	11/22/1998	83.76	1035.37	General Study/Breen
GM-33	1119.13	12/19/1998	79.00	1040.13	General Study/Breen
GM-33	1119.13	4/29/1999	73.00	1046.13	General Study/Breen
GM-33	1119.13	6/14/1999	74.95	1044.18	General Study/Breen
GM-33	1119.13	7/26/1999	77.06	1042.07	General Study/Breen
GM-33	1119.13	8/21/1999			General Study/Breen
GM-33	1119.13	9/22/1999	77.00	1042.13	General Study/Breen
GM-33	1119.13	10/25/1999			General Study/Breen
GM-34A	1088.18	7/28/1998	18.58	1069.60	General Study
GM-34A	1088.18	8/11/1998	18.72	1069.46	General Study
GM-34A	1088.18	9/24/1998	19.00	1069.18	General Study
GM-34A	1088.18	10/22/1998	19.11	1069.07	General Study
GM-34A	1088.18	11/22/1998	19.33	1068.85	General Study
GM-34A	1088.18	12/19/1998	19.50	1068.68	General Study
GM-34A	1088.18	3/9/1999	20.03	1068.15	General Study
GM-34A	1088.18	4/29/1999	19.91	1068.27	General Study
GM-34A	1088.18	6/14/1999	19.46	1068.72	General Study
GM-34A	1088.18	7/26/1999	18.79	1069.39	General Study
GM-34A	1088.18	8/21/1999	18.61	1069.57	General Study
GM-34A	1088.18	9/22/1999	18.49	1069.69	General Study
GM-34A	1088.18	10/25/1999	18.39	1069.79	General Study
GM-34A	1088.18	11/19/1999	18.55	1069.63	General Study
GM-34A	1088.18	12/31/1999			General Study
GM-34A	1088.18	2/21/2000			General Study
GM-34A	1088.18	3/18/2000	19.19	1068.99	General Study
GM-34A	1088.18	6/17/2000	19.04	1069.14	General Study
GM-34A	1088.18	9/25/2000	18.12	1070.06	General Study
GM-34A	1088.18	11/30/2000	17.90	1070.28	General Study
GM-34A	1088.18	3/9/2001			General Study
GM-34A	1088.18	6/1/2001	17.93	1070.25	General Study
GM-34A	1088.18	9/12/2001	18.29	1069.89	General Study
GM-34A	1088.18	12/11/2001	18.72	1069.46	General Study
GM-34A	1088.18	6/11/2002	17.88	1070.30	General Study
GM-34A	1088.18	11/5/2002	17.05	1071.13	General Study
GM-34A	1088.18	5/19/2003	17.08	1071.10	General Study
GM-34A	1088.18	12/1/2003	17.60	1070.58	General Study
GM-34A	1088.18	5/13/2004	17.03	1071.15	General Study
GM-34A	1088.18	11/17/2004	16.72	1071.46	General Study
GM-34A	1088.18	6/3/2005	17.37	1070.81	General Study
GM-34A	1088.18	9/11/2005	18.04	1070.14	General Study
GM-34A	1088.18	11/10/2005	18.40	1069.78	General Study
GM-34A	1088.18	1/12/2006	18.63	1069.55	General Study
GM-34A	1088.18	5/23/2006	18.56	1069.62	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-34A	1088.18	8/8/2006	18.57	1069.61	General Study
GM-34A	1088.18	11/27/2006	19.16	1069.02	General Study
GM-34A	1088.18	5/22/2007	19.87	1068.31	General Study
GM-34A	1088.18	11/1/2007	19.68	1068.50	General Study
GM-34B	1088.16	7/28/1998	45.94	1042.22	General Study
GM-34B	1088.16	8/11/1998	46.11	1042.05	General Study
GM-34B	1088.16	9/24/1998	46.13	1042.03	General Study
GM-34B	1088.16	10/22/1998	46.31	1041.85	General Study
GM-34B	1088.16	11/22/1998	46.04	1042.12	General Study
GM-34B	1088.16	12/19/1998	46.44	1041.72	General Study
GM-34B	1088.16	3/9/1999	46.20	1041.96	General Study
GM-34B	1088.16	4/29/1999	46.40	1041.76	General Study
GM-34B	1088.16	6/14/1999	45.73	1042.43	General Study
GM-34B	1088.16	7/26/1999	45.60	1042.56	General Study
GM-34B	1088.16	8/21/1999	45.61	1042.55	General Study
GM-34B	1088.16	9/22/1999	45.74	1042.42	General Study
GM-34B	1088.16	10/25/1999	45.78	1042.38	General Study
GM-34B	1088.16	11/19/1999	45.72	1042.44	General Study
GM-34B	1088.16	12/31/1999			General Study
GM-34B	1088.16	2/21/2000			General Study
GM-34B	1088.16	3/18/2000	45.60	1042.56	General Study
GM-34B	1088.16	6/17/2000	46.29	1041.87	General Study
GM-34B	1088.16	9/25/2000	45.99	1042.17	General Study
GM-34B	1088.16	11/30/2000	46.20	1041.96	General Study
GM-34B	1088.16	3/9/2001			General Study
GM-34B	1088.16	6/1/2001	45.37	1042.79	General Study
GM-34B	1088.16	9/12/2001	46.31	1041.85	General Study
GM-34B	1088.16	12/11/2001	45.95	1042.21	General Study
GM-34B	1088.16	6/11/2002	45.60	1042.56	General Study
GM-34B	1088.16	11/5/2002	45.29	1042.87	General Study
GM-34B	1088.16	5/19/2003	44.21	1043.95	General Study
GM-34B	1088.16	12/1/2003	46.10	1042.06	General Study
GM-34B	1088.16	5/13/2004	45.08	1043.08	General Study
GM-34B	1088.16	11/17/2004	45.49	1042.67	General Study
GM-34B	1088.16	6/3/2005	45.67	1042.49	General Study
GM-34B	1088.16	9/11/2005	45.94	1042.22	General Study
GM-34B	1088.16	11/10/2005	46.26	1041.90	General Study
GM-34B	1088.16	1/12/2006	46.16	1042.00	General Study
GM-34B	1088.16	5/23/2006	45.74	1042.42	General Study
GM-34B	1088.16	8/8/2006	46.47	1041.69	General Study
GM-34B	1088.16	11/27/2006	46.40	1041.76	General Study
GM-34B	1088.16	5/22/2007	46.57	1041.59	General Study
GM-34B	1088.16	11/1/2007	47.10	1041.06	General Study
GM-35	1123.29	7/28/1998	48.85	1074.44	Former Plant Site
GM-35	1123.29	8/11/1998	49.12	1074.17	Former Plant Site
GM-35	1123.29	9/24/1998	49.35	1073.94	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-35	1123.29	10/22/1998	49.55	1073.74	Former Plant Site
GM-35	1123.29	11/22/1998	49.72	1073.57	Former Plant Site
GM-35	1123.29	12/19/1998	49.97	1073.32	Former Plant Site
GM-35	1123.29	4/29/1999	50.70	1072.59	Former Plant Site
GM-35	1123.29	6/14/1999	50.03	1073.26	Former Plant Site
GM-35	1123.29	7/26/1999	49.25	1074.04	Former Plant Site
GM-35	1123.29	8/21/1999	48.51	1074.78	Former Plant Site
GM-35	1123.29	9/22/1999	48.33	1074.96	Former Plant Site
GM-35	1123.29	10/25/1999	48.50	1074.79	Former Plant Site
GM-35	1123.29	11/19/1999	48.63	1074.66	Former Plant Site
GM-35	1123.29	12/31/1999	49.06	1074.23	Former Plant Site
GM-35	1123.29	1/22/2000	49.26	1074.03	Former Plant Site
GM-35	1123.29	2/21/2000	49.63	1073.66	Former Plant Site
GM-35	1123.29	3/18/2000	49.87	1073.42	Former Plant Site
GM-35	1123.29	6/17/2000	49.73	1073.56	Former Plant Site
GM-35	1123.29	9/25/2000	48.06	1075.23	Former Plant Site
GM-35	1123.29	10/11/2000	47.99	1075.30	Former Plant Site
GM-35	1123.29	11/30/2000	48.31	1074.98	Former Plant Site
GM-35	1123.29	6/1/2001	49.14	1074.15	Former Plant Site
GM-35	1123.29	3/27/2002	49.31	1073.98	Former Plant Site
GM-35	1123.29	6/11/2002	47.95	1075.34	Former Plant Site
GM-35	1123.29	11/5/2002	47.29	1076.00	Former Plant Site
GM-35	1123.29	5/19/2003	47.89	1075.40	Former Plant Site
GM-35	1123.29	12/1/2003	48.02	1075.27	Former Plant Site
GM-35	1123.29	5/13/2004	47.75	1075.54	Former Plant Site
GM-35	1123.29	11/17/2004	46.83	1076.46	Former Plant Site
GM-35	1123.29	6/2/2005	47.72	1075.57	Former Plant Site
GM-35	1123.29	11/9/2005	48.36	1074.93	Former Plant Site
GM-35	1123.29	5/23/2006	48.96	1074.33	Former Plant Site
GM-35	1123.29	11/27/2006	49.19	1074.10	Former Plant Site
GM-35	1123.29	5/22/2007	50.13	1073.16	Former Plant Site
GM-35	1123.29	11/1/2007	50.99	1072.30	Former Plant Site
GM-36	1126.77	7/28/1998	39.54	1087.23	General Study
GM-36	1126.77	8/11/1998	39.72	1087.05	General Study
GM-36	1126.77	9/24/1998	39.99	1086.78	General Study
GM-36	1126.77	10/22/1998	40.14	1086.63	General Study
GM-36	1126.77	11/22/1998	40.41	1086.36	General Study
GM-36	1126.77	12/19/1998	40.65	1086.12	General Study
GM-36	1126.77	3/9/1999	41.36	1085.41	General Study
GM-36	1126.77	4/29/1999	41.50	1085.27	General Study
GM-36	1126.77	6/14/1999	41.07	1085.70	General Study
GM-36	1126.77	7/26/1999	40.45	1086.32	General Study
GM-36	1126.77	8/21/1999	39.83	1086.94	General Study
GM-36	1126.77	9/22/1999	39.42	1087.35	General Study
GM-36	1126.77	10/25/1999	39.29	1087.48	General Study
GM-36	1126.77	11/19/1999	39.31	1087.46	General Study
GM-36	1126.77	12/31/1999	39.68	1087.09	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-36	1126.77	1/22/2000	39.86	1086.91	General Study
GM-36	1126.77	2/21/2000	40.16	1086.61	General Study
GM-36	1126.77	3/18/2000	40.28	1086.49	General Study
GM-36	1126.77	6/17/2000	40.17	1086.60	General Study
GM-36	1126.77	9/25/2000	38.56	1088.21	General Study
GM-36	1126.77	11/30/2000	38.36	1088.41	General Study
GM-36	1126.77	3/9/2001	38.19	1088.58	General Study
GM-36	1126.77	6/1/2001	39.32	1087.45	General Study
GM-36	1126.77	9/12/2001	39.30	1087.47	General Study
GM-36	1126.77	12/11/2001	39.70	1087.07	General Study
GM-36	1126.77	3/27/2002	40.32	1086.45	General Study
GM-36	1126.77	6/11/2002	39.27	1087.50	General Study
GM-36	1126.77	11/5/2002	38.51	1088.26	General Study
GM-36	1126.77	5/19/2003	41.64	1085.13	General Study
GM-36	1126.77	12/1/2003	39.32	1087.45	General Study
GM-36	1126.77	5/13/2004	39.49	1087.28	General Study
GM-36	1126.77	11/16/2004	38.49	1088.28	General Study
GM-36	1126.77	6/2/2005	39.50	1087.27	General Study
GM-36	1126.77	11/10/2005	40.10	1086.67	General Study
GM-36	1126.77	5/24/2006	40.71	1086.06	General Study
GM-36	1126.77	11/27/2006	41.00	1085.77	General Study
GM-36	1126.77	5/22/2007	42.07	1084.70	General Study
GM-36	1126.77	11/1/2007	42.85	1083.92	General Study
GM-37A	1119.92	8/11/1998	72.95	1046.97	General Study
GM-37A	1119.92	9/24/1998	72.85	1047.07	General Study
GM-37A	1119.92	10/22/1998	73.28	1046.64	General Study
GM-37A	1119.92	11/22/1998	73.20	1046.72	General Study
GM-37A	1119.92	3/9/1999	73.12	1046.80	General Study
GM-37A	1119.92	4/29/1999	73.20	1046.72	General Study
GM-37A	1119.92	6/14/1999	72.58	1047.34	General Study
GM-37A	1119.92	7/26/1999	72.13	1047.79	General Study
GM-37A	1119.92	8/21/1999	72.63	1047.29	General Study
GM-37A	1119.92	9/22/1999	72.46	1047.46	General Study
GM-37A	1119.92	10/25/1999	72.43	1047.49	General Study
GM-37A	1119.92	11/19/1999	72.42	1047.50	General Study
GM-37A	1119.92	12/31/1999	72.91	1047.01	General Study
GM-37A	1119.92	1/22/2000	72.62	1047.30	General Study
GM-37A	1119.92	2/21/2000	72.53	1047.39	General Study
GM-37A	1119.92	3/18/2000	73.00	1046.92	General Study
GM-37A	1119.92	6/17/2000	73.90	1046.02	General Study
GM-37A	1119.92	9/25/2000	72.89	1047.03	General Study
GM-37A	1119.92	11/30/2000	72.19	1047.73	General Study
GM-37A	1119.92	3/9/2001	72.20	1047.72	General Study
GM-37A	1119.92	6/1/2001	71.63	1048.29	General Study
GM-37A	1119.92	9/12/2001	73.15	1046.77	General Study
GM-37A	1119.92	12/11/2001	72.70	1047.22	General Study
GM-37A	1119.92	3/27/2002	72.40	1047.52	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-37A	1119.92	6/11/2002	71.72	1048.20	General Study
GM-37A	1119.92	11/5/2002	71.28	1048.64	General Study
GM-37A	1119.92	5/19/2003	71.55	1048.37	General Study
GM-37A	1119.92	12/1/2003	73.12	1046.80	General Study
GM-37A	1119.92	5/13/2004	71.41	1048.51	General Study
GM-37A	1119.92	11/16/2004	72.03	1047.89	General Study
GM-37B	1119.92	8/11/1998	74.10	1045.82	General Study
GM-37B	1119.92	9/24/1998	73.97	1045.95	General Study
GM-37B	1119.92	10/22/1998	73.93	1045.99	General Study
GM-37B	1119.92	11/22/1998	74.46	1045.46	General Study
GM-37B	1119.92	3/9/1999	74.68	1045.24	General Study
GM-37B	1119.92	4/29/1999	74.70	1045.22	General Study
GM-37B	1119.92	6/14/1999	74.35	1045.57	General Study
GM-37B	1119.92	7/26/1999	73.92	1046.00	General Study
GM-37B	1119.92	8/21/1999	74.47	1045.45	General Study
GM-37B	1119.92	9/22/1999	74.32	1045.60	General Study
GM-37B	1119.92	10/25/1999	74.40	1045.52	General Study
GM-37B	1119.92	11/19/1999	74.35	1045.57	General Study
GM-37B	1119.92	12/31/1999	74.89	1045.03	General Study
GM-37B	1119.92	1/22/2000	74.61	1045.31	General Study
GM-37B	1119.92	2/21/2000	74.51	1045.41	General Study
GM-37B	1119.92	3/18/2000	74.47	1045.45	General Study
GM-37B	1119.92	6/17/2000	75.19	1044.73	General Study
GM-37B	1119.92	9/25/2000	74.84	1045.08	General Study
GM-37B	1119.92	11/30/2000	74.25	1045.67	General Study
GM-37B	1119.92	3/9/2001	74.26	1045.66	General Study
GM-37B	1119.92	6/1/2001	73.88	1046.04	General Study
GM-37B	1119.92	9/12/2001	75.17	1044.75	General Study
GM-37B	1119.92	12/11/2001	74.84	1045.08	General Study
GM-37B	1119.92	3/27/2002	73.74	1046.18	General Study
GM-37B	1119.92	6/11/2002	73.68	1046.24	General Study
GM-37B	1119.92	11/5/2002	73.42	1046.50	General Study
GM-37B	1119.92	5/19/2003	73.21	1046.71	General Study
GM-37B	1119.92	12/1/2003	74.91	1045.01	General Study
GM-37B	1119.92	5/13/2004	73.09	1046.83	General Study
GM-37B	1119.92	11/16/2004	73.69	1046.23	General Study
GM-38A	1096.86	7/28/1998	55.73	1041.13	General Study
GM-38A	1096.86	8/11/1998	55.90	1040.96	General Study
GM-38A	1096.86	9/24/1998	55.91	1040.95	General Study
GM-38A	1096.86	10/22/1998	56.07	1040.79	General Study
GM-38A	1096.86	11/22/1998	55.78	1041.08	General Study
GM-38A	1096.86	12/19/1998	56.22	1040.64	General Study
GM-38A	1096.86	3/9/1999	55.89	1040.97	General Study
GM-38A	1096.86	4/29/1999	56.02	1040.84	General Study
GM-38A	1096.86	6/14/1999	55.41	1041.45	General Study
GM-38A	1096.86	7/26/1999	55.33	1041.53	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-38A	1096.86	8/21/1999	55.46	1041.40	General Study
GM-38A	1096.86	9/22/1999	55.52	1041.34	General Study
GM-38A	1096.86	10/25/1999	55.57	1041.29	General Study
GM-38A	1096.86	11/19/1999	55.50	1041.36	General Study
GM-38A	1096.86	12/31/1999	55.81	1041.05	General Study
GM-38A	1096.86	1/22/2000	55.47	1041.39	General Study
GM-38A	1096.86	2/21/2000	55.55	1041.31	General Study
GM-38A	1096.86	3/18/2000	55.30	1041.56	General Study
GM-38A	1096.86	6/17/2000	56.04	1040.82	General Study
GM-38A	1096.86	9/25/2000	55.75	1041.11	General Study
GM-38A	1096.86	11/30/2000	56.03	1040.83	General Study
GM-38A	1096.86	3/9/2001	55.88	1040.98	General Study
GM-38A	1096.86	6/1/2001	55.10	1041.76	General Study
GM-38A	1096.86	9/12/2001	55.11	1041.75	General Study
GM-38A	1096.86	12/11/2001	55.69	1041.17	General Study
GM-38A	1096.86	6/11/2002	55.38	1041.48	General Study
GM-38A	1096.86	11/5/2002	55.07	1041.79	General Study
GM-38A	1096.86	5/19/2003	53.93	1042.93	General Study
GM-38A	1096.86	12/1/2003	55.92	1040.94	General Study
GM-38A	1096.86	5/13/2004	54.89	1041.97	General Study
GM-38A	1096.86	11/17/2004	55.34	1041.52	General Study
GM-38A	1096.86	6/3/2005	55.43	1041.43	General Study
GM-38A	1096.86	9/11/2005	55.74	1041.12	General Study
GM-38A	1096.86	11/10/2005	56.06	1040.80	General Study
GM-38A	1096.86	1/12/2006	55.95	1040.91	General Study
GM-38A	1096.86	2/13/2006	55.96	1040.90	General Study
GM-38A	1096.86	5/23/2006	55.47	1041.39	General Study
GM-38A	1096.86	8/8/2006	56.30	1040.56	General Study
GM-38A	1096.86	11/27/2006	56.20	1040.66	General Study
GM-38A	1096.86	5/22/2007	56.34	1040.52	General Study
GM-38A	1096.86	11/1/2007	56.85	1040.01	General Study
GM-38B	1096.86	7/28/1998	54.12	1042.74	General Study
GM-38B	1096.86	8/11/1998	54.40	1042.46	General Study
GM-38B	1096.86	9/24/1998	54.38	1042.48	General Study
GM-38B	1096.86	10/22/1998	54.65	1042.21	General Study
GM-38B	1096.86	11/22/1998	54.28	1042.58	General Study
GM-38B	1096.86	12/19/1998	54.44	1042.42	General Study
GM-38B	1096.86	3/9/1999	54.44	1042.42	General Study
GM-38B	1096.86	6/14/1999	53.93	1042.93	General Study
GM-38B	1096.86	7/26/1999	53.73	1043.13	General Study
GM-38B	1096.86	8/21/1999	53.98	1042.88	General Study
GM-38B	1096.86	9/22/1999	54.00	1042.86	General Study
GM-38B	1096.86	10/25/1999	54.00	1042.86	General Study
GM-38B	1096.86	11/19/1999	53.94	1042.92	General Study
GM-38B	1096.86	12/31/1999	54.15	1042.71	General Study
GM-38B	1096.86	1/22/2000	54.00	1042.86	General Study
GM-38B	1096.86	2/21/2000	54.08	1042.78	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-38B	1096.86	3/18/2000	53.84	1043.02	General Study
GM-38B	1096.86	6/17/2000	54.57	1042.29	General Study
GM-38B	1096.86	9/25/2000	54.28	1042.58	General Study
GM-38B	1096.86	11/30/2000	54.50	1042.36	General Study
GM-38B	1096.86	3/9/2001	54.31	1042.55	General Study
GM-38B	1096.86	6/1/2001	53.51	1043.35	General Study
GM-38B	1096.86	9/12/2001	54.61	1042.25	General Study
GM-38B	1096.86	12/11/2001	54.13	1042.73	General Study
GM-38B	1096.86	6/11/2002	53.84	1043.02	General Study
GM-38B	1096.86	11/5/2002	53.48	1043.38	General Study
GM-38B	1096.86	5/19/2003	52.41	1044.45	General Study
GM-38B	1096.86	12/1/2003	54.45	1042.41	General Study
GM-38B	1096.86	5/13/2004	53.30	1043.56	General Study
GM-38B	1096.86	11/17/2004	53.75	1043.11	General Study
GM-38B	1096.86	6/3/2005	53.79	1043.07	General Study
GM-38B	1096.86	9/11/2005	54.16	1042.70	General Study
GM-38B	1096.86	11/10/2005	54.52	1042.34	General Study
GM-38B	1096.86	1/12/2006	54.34	1042.52	General Study
GM-38B	1096.86	2/13/2006	54.43	1042.43	General Study
GM-38B	1096.86	5/23/2006	54.00	1042.86	General Study
GM-38B	1096.86	8/8/2006	54.84	1042.02	General Study
GM-38B	1096.86	11/27/2006	54.78	1042.08	General Study
GM-38B	1096.86	5/22/2007	54.84	1042.02	General Study
GM-38B	1096.86	11/1/2007	54.37	1042.49	General Study
GM-38C	1096.96	7/28/1998	54.81	1042.15	General Study
GM-38C	1096.96	8/11/1998	54.58	1042.38	General Study
GM-38C	1096.96	9/24/1998	54.57	1042.39	General Study
GM-38C	1096.96	10/22/1998	54.81	1042.15	General Study
GM-38C	1096.96	11/22/1998	54.45	1042.51	General Study
GM-38C	1096.96	12/19/1998	54.75	1042.21	General Study
GM-38C	1096.96	3/9/1999	54.59	1042.37	General Study
GM-38C	1096.96	4/29/1999	54.77	1042.19	General Study
GM-38C	1096.96	6/14/1999	54.10	1042.86	General Study
GM-38C	1096.96	7/26/1999	53.92	1043.04	General Study
GM-38C	1096.96	8/21/1999	54.11	1042.85	General Study
GM-38C	1096.96	9/22/1999	54.18	1042.78	General Study
GM-38C	1096.96	10/25/1999	54.19	1042.77	General Study
GM-38C	1096.96	11/19/1999	54.12	1042.84	General Study
GM-38C	1096.96	12/31/1999	54.42	1042.54	General Study
GM-38C	1096.96	1/22/2000	54.18	1042.78	General Study
GM-38C	1096.96	2/21/2000	54.25	1042.71	General Study
GM-38C	1096.96	3/18/2000	54.01	1042.95	General Study
GM-38C	1096.96	6/17/2000	54.75	1042.21	General Study
GM-38C	1096.96	9/25/2000	54.45	1042.51	General Study
GM-38C	1096.96	11/30/2000	54.68	1042.28	General Study
GM-38C	1096.96	3/9/2001	54.50	1042.46	General Study
GM-38C	1096.96	6/1/2001	53.67	1043.29	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-38C	1096.96	9/12/2001	54.78	1042.18	General Study
GM-38C	1096.96	12/11/2001	54.30	1042.66	General Study
GM-38C	1096.96	6/11/2002	54.02	1042.94	General Study
GM-38C	1096.96	11/5/2002	53.66	1043.30	General Study
GM-38C	1096.96	5/19/2003	52.59	1044.37	General Study
GM-38C	1096.96	12/1/2003	54.64	1042.32	General Study
GM-38C	1096.96	5/13/2004	53.45	1043.51	General Study
GM-38C	1096.96	11/17/2004	53.94	1043.02	General Study
GM-38C	1096.96	6/3/2005	53.98	1042.98	General Study
GM-38C	1096.96	9/11/2005	54.35	1042.61	General Study
GM-38C	1096.96	11/10/2005	54.70	1042.26	General Study
GM-38C	1096.96	1/12/2006	54.53	1042.43	General Study
GM-38C	1096.96	2/13/2006	54.61	1042.35	General Study
GM-38C	1096.96	5/23/2006	54.18	1042.78	General Study
GM-38C	1096.96	8/8/2006	55.02	1041.94	General Study
GM-38C	1096.96	11/27/2006	54.94	1042.02	General Study
GM-38C	1096.96	5/22/2007	55.02	1041.94	General Study
GM-38C	1096.96	11/1/2007	55.54	1041.42	General Study
GM-39	1086.97	8/11/1998	43.17	1043.80	General Study
GM-39	1086.97	9/24/1998	43.23	1043.74	General Study
GM-39	1086.97	10/22/1998	43.41	1043.56	General Study
GM-39	1086.97	11/22/1998	43.21	1043.76	General Study
GM-39	1086.97	12/19/1998	43.56	1043.41	General Study
GM-39	1086.97	3/9/1999	43.48	1043.49	General Study
GM-39	1086.97	4/29/1999	43.63	1043.34	General Study
GM-39	1086.97	6/14/1999	43.02	1043.95	General Study
GM-39	1086.97	7/26/1999	42.84	1044.13	General Study
GM-39	1086.97	8/21/1999	42.88	1044.09	General Study
GM-39	1086.97	9/22/1999	42.85	1044.12	General Study
GM-39	1086.97	10/25/1999	42.89	1044.08	General Study
GM-39	1086.97	11/19/1999	42.85	1044.12	General Study
GM-39	1086.97	12/31/1999	43.16	1043.81	General Study
GM-39	1086.97	1/22/2000	42.94	1044.03	General Study
GM-39	1086.97	2/21/2000	43.07	1043.90	General Study
GM-39	1086.97	3/18/2000	42.90	1044.07	General Study
GM-39	1086.97	6/17/2000	43.45	1043.52	General Study
GM-39	1086.97	9/25/2000	43.15	1043.82	General Study
GM-39	1086.97	11/30/2000	43.28	1043.69	General Study
GM-39	1086.97	3/9/2001	43.29	1043.68	General Study
GM-39	1086.97	6/1/2001	42.62	1044.35	General Study
GM-39	1086.97	9/12/2001	23.41	1063.56	General Study
GM-39	1086.97	12/11/2001	43.19	1043.78	General Study
GM-39	1086.97	3/27/2002	43.39	1043.58	General Study
GM-39	1086.97	6/11/2002	42.74	1044.23	General Study
GM-39	1086.97	11/5/2002	42.38	1044.59	General Study
GM-39	1086.97	5/19/2003	41.48	1045.49	General Study
GM-39	1086.97	12/1/2003	43.08	1043.89	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-39	1086.97	5/13/2004	42.20	1044.77	General Study
GM-39	1086.97	11/16/2004	42.53	1044.44	General Study
GM-39	1086.97	6/3/2005	42.64	1044.33	General Study
GM-39	1086.97	11/10/2005	43.32	1043.65	General Study
GM-39	1086.97	5/23/2006	42.93	1044.04	General Study
GM-39	1086.97	11/27/2006	43.50	1043.47	General Study
GM-39	1086.97	5/22/2007	43.70	1043.27	General Study
GM-39	1086.97	11/1/2007	43.28	1043.69	General Study
GM-40A	1115.07	8/11/1998	43.39	1071.68	Former Plant Site
GM-40A	1115.07	9/24/1998	43.57	1071.50	Former Plant Site
GM-40A	1115.07	10/22/1998	43.78	1071.29	Former Plant Site
GM-40A	1115.07	11/22/1998	43.85	1071.22	Former Plant Site
GM-40A	1115.07	12/19/1998	44.20	1070.87	Former Plant Site
GM-40A	1115.07	3/9/1999	44.51	1070.56	Former Plant Site
GM-40A	1115.07	4/29/1999	44.63	1070.44	Former Plant Site
GM-40A	1115.07	6/14/1999	44.12	1070.95	Former Plant Site
GM-40A	1115.07	7/26/1999	43.49	1071.58	Former Plant Site
GM-40A	1115.07	8/21/1999	42.99	1072.08	Former Plant Site
GM-40A	1115.07	9/22/1999	42.75	1072.32	Former Plant Site
GM-40A	1115.07	10/25/1999	42.87	1072.20	Former Plant Site
GM-40A	1115.07	11/19/1999	42.99	1072.08	Former Plant Site
GM-40A	1115.07	12/31/1999			Former Plant Site
GM-40A	1115.07	1/22/2000	43.60	1071.47	Former Plant Site
GM-40A	1115.07	2/21/2000	43.94	1071.13	Former Plant Site
GM-40A	1115.07	3/18/2000	44.05	1071.02	Former Plant Site
GM-40A	1115.07	6/17/2000	43.44	1071.63	Former Plant Site
GM-40A	1115.07	9/25/2000	42.79	1072.28	Former Plant Site
GM-40A	1115.07	11/30/2000	42.61	1072.46	Former Plant Site
GM-40A	1115.07	3/9/2001			Former Plant Site
GM-40A	1115.07	6/1/2001	42.96	1072.11	Former Plant Site
GM-40A	1115.07	6/1/2001	42.96	1072.11	Former Plant Site
GM-40A	1115.07	9/12/2001	43.32	1071.75	Former Plant Site
GM-40A	1115.07	12/11/2001	43.20	1071.87	Former Plant Site
GM-40A	1115.07	3/27/2002	43.64	1071.43	Former Plant Site
GM-40A	1115.07	6/11/2002	42.48	1072.59	Former Plant Site
GM-40A	1115.07	5/19/2003	41.86	1073.21	Former Plant Site
GM-40A	1115.07	12/1/2003	42.17	1072.90	Former Plant Site
GM-40A	1115.07	5/13/2004	41.79	1073.28	Former Plant Site
GM-40A	1115.07	11/17/2004	40.99	1074.08	Former Plant Site
GM-40A	1115.07	6/2/2005	41.80	1073.27	Former Plant Site
GM-40A	1115.07	11/9/2005	42.50	1072.57	Former Plant Site
GM-40A	1115.07	5/23/2006	43.04	1072.03	Former Plant Site
GM-40A	1115.07	11/27/2006	43.46	1071.61	Former Plant Site
GM-40A	1115.07	5/22/2007	44.25	1070.82	Former Plant Site
GM-40A	1115.07	11/1/2007	44.92	1070.15	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-40B	1114.86	8/11/1998	43.25	1071.61	Former Plant Site
GM-40B	1114.86	9/24/1998	43.42	1071.44	Former Plant Site
GM-40B	1114.86	10/22/1998	43.66	1071.20	Former Plant Site
GM-40B	1114.86	11/22/1998	43.73	1071.13	Former Plant Site
GM-40B	1114.86	12/19/1998	44.13	1070.73	Former Plant Site
GM-40B	1114.86	3/9/1999	44.63	1070.23	Former Plant Site
GM-40B	1114.86	4/29/1999	44.57	1070.29	Former Plant Site
GM-40B	1114.86	6/14/1999	44.05	1070.81	Former Plant Site
GM-40B	1114.86	7/26/1999	43.42	1071.44	Former Plant Site
GM-40B	1114.86	8/21/1999	42.90	1071.96	Former Plant Site
GM-40B	1114.86	9/22/1999	42.65	1072.21	Former Plant Site
GM-40B	1114.86	10/25/1999	42.73	1072.13	Former Plant Site
GM-40B	1114.86	11/19/1999	42.88	1071.98	Former Plant Site
GM-40B	1114.86	12/31/1999			Former Plant Site
GM-40B	1114.86	1/22/2000	43.55	1071.31	Former Plant Site
GM-40B	1114.86	2/21/2000	43.89	1070.97	Former Plant Site
GM-40B	1114.86	3/18/2000	43.96	1070.90	Former Plant Site
GM-40B	1114.86	6/17/2000	43.83	1071.03	Former Plant Site
GM-40B	1114.86	9/25/2000	42.74	1072.12	Former Plant Site
GM-40B	1114.86	11/30/2000	42.56	1072.30	Former Plant Site
GM-40B	1114.86	3/9/2001	43.23	1071.63	Former Plant Site
GM-40B	1114.86	6/1/2001	42.85	1072.01	Former Plant Site
GM-40B	1114.86	6/1/2001	42.85	1072.01	Former Plant Site
GM-40B	1114.86	9/12/2001	43.06	1071.80	Former Plant Site
GM-40B	1114.86	12/11/2001	43.11	1071.75	Former Plant Site
GM-40B	1114.86	3/27/2002	43.51	1071.35	Former Plant Site
GM-40B	1114.86	6/11/2002	42.37	1072.49	Former Plant Site
GM-40B	1114.86	5/19/2003	41.74	1073.12	Former Plant Site
GM-40B	1114.86	12/1/2003	42.11	1072.75	Former Plant Site
GM-40B	1114.86	5/13/2004	41.75	1073.11	Former Plant Site
GM-40B	1114.86	11/17/2004	40.92	1073.94	Former Plant Site
GM-40B	1114.86	6/2/2005	41.78	1073.08	Former Plant Site
GM-40B	1114.86	11/9/2005	41.97	1072.89	Former Plant Site
GM-40B	1114.86	5/23/2006	43.03	1071.83	Former Plant Site
GM-40B	1114.86	11/27/2006	43.43	1071.43	Former Plant Site
GM-40B	1114.86	5/22/2007	44.21	1070.65	Former Plant Site
GM-40B	1114.86	11/1/2007	44.88	1069.98	Former Plant Site
GM-41	1119.68	8/11/1998	42.90	1076.78	Former Plant Site
GM-41	1119.68	9/24/1998	43.07	1076.61	Former Plant Site
GM-41	1119.68	10/22/1998	43.16	1076.52	Former Plant Site
GM-41	1119.68	11/22/1998	43.24	1076.44	Former Plant Site
GM-41	1119.68	12/19/1998	43.35	1076.33	Former Plant Site
GM-41	1119.68	4/29/1999	44.19	1075.49	Former Plant Site
GM-41	1119.68	6/14/1999	43.68	1076.00	Former Plant Site
GM-41	1119.68	7/26/1999	43.04	1076.64	Former Plant Site
GM-41	1119.68	8/21/1999	42.63	1077.05	Former Plant Site
GM-41	1119.68	9/22/1999	42.55	1077.13	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-41	1119.68	10/25/1999	42.67	1077.01	Former Plant Site
GM-41	1119.68	11/19/1999	42.81	1076.87	Former Plant Site
GM-41	1119.68	1/22/2000	43.27	1076.41	Former Plant Site
GM-41	1119.68	2/21/2000	43.59	1076.09	Former Plant Site
GM-41	1119.68	3/18/2000	43.74	1075.94	Former Plant Site
GM-41	1119.68	6/17/2000	43.25	1076.43	Former Plant Site
GM-41	1119.68	9/25/2000	42.46	1077.22	Former Plant Site
GM-41	1119.68	10/11/2000	42.35	1077.33	Former Plant Site
GM-41	1119.68	11/30/2000	42.61	1077.07	Former Plant Site
GM-41	1119.68	6/1/2001	43.22	1076.46	Former Plant Site
GM-41	1119.68	9/12/2001	42.69	1076.99	Former Plant Site
GM-41	1119.68	12/11/2001	41.38	1078.30	Former Plant Site
GM-41	1119.68	3/27/2002	42.87	1076.81	Former Plant Site
GM-41	1119.68	6/11/2002	42.05	1077.63	Former Plant Site
GM-41	1119.68	11/5/2002	41.56	1078.12	Former Plant Site
GM-41	1119.68	5/19/2003	42.27	1077.41	Former Plant Site
GM-41	1119.68	12/1/2003	41.86	1077.82	Former Plant Site
GM-41	1119.68	5/13/2004	42.19	1077.49	Former Plant Site
GM-41	1119.68	11/17/2004	40.47	1079.21	Former Plant Site
GM-41	1119.68	6/2/2005	41.78	1077.90	Former Plant Site
GM-41	1119.68	11/10/2005	42.35	1077.33	Former Plant Site
GM-41	1119.68	5/25/2006	42.56	1077.12	Former Plant Site
GM-41	1119.68	11/27/2006	42.67	1077.01	Former Plant Site
GM-41	1119.68	5/22/2007	43.62	1076.06	Former Plant Site
GM-41	1119.68	11/1/2007	44.04	1075.64	Former Plant Site
GM-42	1121.12	8/11/1998	44.06	1077.06	Former Plant Site
GM-42	1121.12	9/24/1998	44.06	1077.06	Former Plant Site
GM-42	1121.12	10/22/1998	44.28	1076.84	Former Plant Site
GM-42	1121.12	11/22/1998	44.51	1076.61	Former Plant Site
GM-42	1121.12	12/19/1998	44.60	1076.52	Former Plant Site
GM-42	1121.12	4/29/1999	45.26	1075.86	Former Plant Site
GM-42	1121.12	6/14/1999	44.46	1076.66	Former Plant Site
GM-42	1121.12	7/26/1999	43.74	1077.38	Former Plant Site
GM-42	1121.12	8/21/1999	43.25	1077.87	Former Plant Site
GM-42	1121.12	9/22/1999	43.08	1078.04	Former Plant Site
GM-42	1121.12	10/25/1999	42.82	1078.30	Former Plant Site
GM-42	1121.12	11/19/1999	42.80	1078.32	Former Plant Site
GM-42	1121.12	2/21/2000	43.98	1077.14	Former Plant Site
GM-42	1121.12	3/18/2000	44.01	1077.11	Former Plant Site
GM-42	1121.12	6/17/2000	44.25	1076.87	Former Plant Site
GM-42	1121.12	9/25/2000	42.76	1078.36	Former Plant Site
GM-42	1121.12	10/11/2000	42.71	1078.41	Former Plant Site
GM-42	1121.12	11/30/2000	43.25	1077.87	Former Plant Site
GM-42	1121.12	6/1/2001	44.10	1077.02	Former Plant Site
GM-42	1121.12	6/11/2002	42.85	1078.27	Former Plant Site
GM-42	1121.12	11/5/2002	42.08	1079.04	Former Plant Site
GM-42	1121.12	5/19/2003	42.88	1078.24	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-42	1121.12	12/1/2003	43.05	1078.07	Former Plant Site
GM-42	1121.12	5/13/2004	42.69	1078.43	Former Plant Site
GM-42	1121.12	6/2/2005	42.83	1078.29	Former Plant Site
GM-42	1121.12	11/10/2005	43.23	1077.89	Former Plant Site
GM-42	1121.12	5/23/2006	43.62	1077.50	Former Plant Site
GM-42	1121.12	11/27/2006	43.96	1077.16	Former Plant Site
GM-42	1121.12	5/22/2007	44.80	1076.32	Former Plant Site
GM-42	1121.12	11/1/2007	45.53	1075.59	Former Plant Site
GM-43	1125.31	8/11/1998	76.80	1048.51	Riverside Disposal
GM-43	1125.31	9/24/1998			Riverside Disposal
GM-43	1125.31	10/22/1998			Riverside Disposal
GM-43	1125.31	11/22/1998	77.14	1048.17	Riverside Disposal
GM-43	1132.61	3/9/1999	82.22	1043.09	Riverside Disposal
GM-43	1132.61	4/29/1999	83.77	1041.54	Riverside Disposal
GM-43	1132.61	7/26/1999	83.00	1042.31	Riverside Disposal
GM-43	1125.31	8/21/1999	76.92	1048.39	Riverside Disposal
GM-43	1125.31	10/25/1999	75.50	1049.81	Riverside Disposal
GM-43	1125.31	11/19/1999	75.47	1049.84	Riverside Disposal
GM-43	1125.31	12/31/1999	75.97	1049.34	Riverside Disposal
GM-43	1125.31	2/21/2000	75.40	1049.91	Riverside Disposal
GM-43	1125.31	3/18/2000	76.00	1049.31	Riverside Disposal
GM-43	1125.31	6/17/2000	77.08	1048.23	Riverside Disposal
GM-43	1125.31	9/25/2000	75.76	1049.55	Riverside Disposal
GM-43	1125.31	9/12/2001	76.13	1049.18	Riverside Disposal
GM-43	1125.31	12/11/2001	76.33	1048.98	Riverside Disposal
GM-43	1125.31	3/27/2002	69.00	1056.31	Riverside Disposal
GM-43	1125.31	6/11/2002	71.30	1054.01	Riverside Disposal
GM-43	1125.31	11/5/2002	74.25	1051.06	Riverside Disposal
GM-43	1125.31	5/19/2003	73.92	1051.39	Riverside Disposal
GM-43	1125.31	12/1/2003	75.34	1049.97	Riverside Disposal
GM-43	1125.31	5/13/2004	73.65	1051.66	Riverside Disposal
GM-43	1125.31	11/16/2004	73.49	1051.82	Riverside Disposal
GM-43	1125.31	6/2/2005	71.13	1054.18	Riverside Disposal
GM-43	1125.31	11/9/2005	72.81	1052.50	Riverside Disposal
GM-43	1125.31	5/23/2006	72.97	1052.34	Riverside Disposal
GM-43	1125.31	11/27/2006	75.31	1050.00	Riverside Disposal
GM-43	1125.31	5/22/2007	73.52	1051.79	Riverside Disposal
GM-43	1125.31	11/1/2007	76.77	1048.54	Riverside Disposal
GM-43A	1125.06	5/23/2006			Riverside Disposal
GM-44	1125.47	8/11/1998	80.25	1045.22	Riverside Disposal
GM-44	1125.47	9/24/1998	79.85	1045.62	Riverside Disposal
GM-44	1125.47	10/22/1998	80.13	1045.34	Riverside Disposal
GM-44	1125.47	11/22/1998	79.72	1045.75	Riverside Disposal
GM-44	1125.47	12/19/1998	79.49	1045.98	Riverside Disposal
GM-44	1125.47	3/9/1999	79.80	1045.67	Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-44	1125.47	4/29/1999	79.47	1046.00	Riverside Disposal
GM-44	1125.47	6/14/1999	79.10	1046.37	Riverside Disposal
GM-44	1125.47	7/26/1999	78.38	1047.09	Riverside Disposal
GM-44	1125.47	8/21/1999	77.82	1047.65	Riverside Disposal
GM-44	1125.47	9/22/1999	77.51	1047.96	Riverside Disposal
GM-44	1125.47	10/25/1999	78.16	1047.31	Riverside Disposal
GM-44	1125.47	11/19/1999	78.76	1046.71	Riverside Disposal
GM-44	1125.47	12/31/1999	79.35	1046.12	Riverside Disposal
GM-44	1125.47	2/21/2000	79.22	1046.25	Riverside Disposal
GM-44	1125.47	3/18/2000	79.91	1045.56	Riverside Disposal
GM-44	1125.47	6/17/2000	79.37	1046.10	Riverside Disposal
GM-44	1125.47	9/25/2000	79.18	1046.29	Riverside Disposal
GM-44	1125.47	9/12/2001	80.39	1045.08	Riverside Disposal
GM-44	1125.47	3/27/2002	77.90	1047.57	Riverside Disposal
GM-44	1125.47	6/11/2002	77.92	1047.55	Riverside Disposal
GM-44	1125.47	11/5/2002	76.60	1048.87	Riverside Disposal
GM-44	1125.47	5/19/2003	76.69	1048.78	Riverside Disposal
GM-44	1125.47	12/1/2003	77.74	1047.73	Riverside Disposal
GM-44	1125.47	5/13/2004	76.67	1048.80	Riverside Disposal
GM-44	1125.47	11/16/2004	78.96	1046.51	Riverside Disposal
GM-44	1125.47	6/2/2005	77.65	1047.82	Riverside Disposal
GM-44	1125.47	11/9/2005	77.67	1047.80	Riverside Disposal
GM-44	1125.47	5/23/2006	79.94	1045.53	Riverside Disposal
GM-44	1125.47	11/27/2006	78.42	1047.05	Riverside Disposal
GM-44	1125.47	5/22/2007	78.42	1047.05	Riverside Disposal
GM-44	1125.47	11/1/2007	78.26	1047.21	Riverside Disposal
GM-44A	1124.92	5/23/2006			Riverside Disposal
GM-45	1124.92	8/11/1998	80.60	1044.32	Riverside Disposal
GM-45	1124.92	9/24/1998	83.27	1041.65	Riverside Disposal
GM-45	1124.92	10/22/1998	83.41	1041.51	Riverside Disposal
GM-45	1124.92	11/22/1998	83.10	1041.82	Riverside Disposal
GM-45	1132.46	3/9/1999			Riverside Disposal
GM-45	1132.46	4/29/1999	90.24	1034.68	Riverside Disposal
GM-45	1132.46	7/26/1999	88.69	1036.23	Riverside Disposal
GM-45	1124.92	8/21/1999	81.97	1042.95	Riverside Disposal
GM-45	1124.92	9/22/1999	82.49	1042.43	Riverside Disposal
GM-45	1124.92	10/25/1999	81.46	1043.46	Riverside Disposal
GM-45	1124.92	11/19/1999	81.42	1043.50	Riverside Disposal
GM-45	1124.92	12/31/1999	81.97	1042.95	Riverside Disposal
GM-45	1124.92	2/21/2000	79.70	1045.22	Riverside Disposal
GM-45	1124.92	3/18/2000	81.16	1043.76	Riverside Disposal
GM-45	1124.92	6/17/2000	83.30	1041.62	Riverside Disposal
GM-45	1124.92	9/25/2000	82.53	1042.39	Riverside Disposal
GM-45	1124.92	11/30/2000	82.87	1042.05	Riverside Disposal
GM-45	1124.92	3/9/2001	81.65	1043.27	Riverside Disposal
GM-45	1124.92	6/1/2001	81.85	1043.07	Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-45	1124.92	9/12/2001	81.11	1043.81	Riverside Disposal
GM-45	1124.92	12/11/2001	81.80	1043.12	Riverside Disposal
GM-45	1124.92	3/27/2002	81.45	1043.47	Riverside Disposal
GM-45	1124.92	6/11/2002	80.73	1044.19	Riverside Disposal
GM-45	1124.92	11/5/2002	81.56	1043.36	Riverside Disposal
GM-45	1124.92	5/19/2003	81.05	1043.87	Riverside Disposal
GM-45	1124.92	12/1/2003	83.24	1041.68	Riverside Disposal
GM-45	1124.92	5/13/2004	81.73	1043.19	Riverside Disposal
GM-45	1124.92	11/16/2004	82.61	1042.31	Riverside Disposal
GM-45	1124.92	6/2/2005	82.07	1042.85	Riverside Disposal
GM-45	1124.92	11/9/2005	82.54	1042.38	Riverside Disposal
GM-45	1124.92	5/23/2006	82.84	1042.08	Riverside Disposal
GM-45	1124.92	11/27/2006	84.04	1040.88	Riverside Disposal
GM-45	1124.92	5/22/2007	83.42	1041.50	Riverside Disposal
GM-45	1124.92	11/1/2007	84.39	1040.53	Riverside Disposal
GM-45A	1125.91	11/16/2004	82.09	1044.08	Riverside Disposal
GM-45A	1126.17	6/2/2005	80.14	1046.03	Riverside Disposal
GM-45A	1126.17	11/9/2005	78.91	1047.26	Riverside Disposal
GM-45A	1126.17	5/23/2006	78.79	1047.38	Riverside Disposal
GM-46	1125.59	9/24/1998	73.49	1052.10	Riverside Disposal
GM-46	1125.59	10/22/1998	73.66	1051.93	Riverside Disposal
GM-46	1125.59	11/22/1998	73.13	1052.46	Riverside Disposal
GM-46	1132.94	3/9/1999			Riverside Disposal
GM-46	1132.94	4/29/1999	77.97	1047.62	Riverside Disposal
GM-46	1132.94	7/26/1999	77.36	1048.23	Riverside Disposal
GM-46	1125.59	9/22/1999			Riverside Disposal
GM-46	1125.59	10/25/1999			Riverside Disposal
GM-46	1125.59	11/19/1999	69.72	1055.87	Riverside Disposal
GM-46	1125.59	2/21/2000			Riverside Disposal
GM-46	1125.59	9/25/2000	71.48	1054.11	Riverside Disposal
GM-46	1125.59	9/12/2001	73.74	1051.85	Riverside Disposal
GM-46	1125.59	12/11/2001	73.79	1051.80	Riverside Disposal
GM-46	1125.59	3/27/2002	88.00	1037.59	Riverside Disposal
GM-46	1125.59	6/11/2002	64.48	1061.11	Riverside Disposal
GM-46	1125.59	11/5/2002	64.44	1061.15	Riverside Disposal
GM-46	1125.59	5/19/2003	64.08	1061.51	Riverside Disposal
GM-46	1125.59	12/1/2003	65.32	1060.27	Riverside Disposal
GM-46	1125.59	5/13/2004	64.19	1061.40	Riverside Disposal
GM-46	1125.59	11/16/2004	64.06	1061.53	Riverside Disposal
GM-46	1125.59	6/2/2005	63.63	1061.96	Riverside Disposal
GM-46	1125.59	11/9/2005	63.77	1061.82	Riverside Disposal
GM-46	1125.59	5/23/2006	64.06	1061.53	Riverside Disposal
GM-46	1125.59	11/27/2006	64.97	1060.62	Riverside Disposal
GM-46	1125.59	5/22/2007	64.84	1060.75	Riverside Disposal
GM-46	1125.59	11/1/2007	65.24	1060.35	Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-47	1125.78	9/24/1998			Riverside Disposal
GM-47	1125.78	10/22/1998			Riverside Disposal
GM-47	1125.78	11/22/1998	83.00	1043.12	Riverside Disposal
GM-47	1125.78	12/19/1998			Riverside Disposal
GM-47	1125.78	3/9/1999	82.39	1043.73	Riverside Disposal
GM-47	1125.78	4/29/1999	82.11	1044.01	Riverside Disposal
GM-47	1125.78	6/14/1999	81.76	1044.36	Riverside Disposal
GM-47	1125.78	7/26/1999	81.96	1044.16	Riverside Disposal
GM-47	1125.78	8/21/1999	82.14	1043.98	Riverside Disposal
GM-47	1125.78	9/22/1999	81.95	1044.17	Riverside Disposal
GM-47	1125.78	10/25/1999	81.70	1044.42	Riverside Disposal
GM-47	1125.78	11/19/1999	81.35	1044.77	Riverside Disposal
GM-47	1125.78	12/31/1999	81.49	1044.63	Riverside Disposal
GM-47	1125.78	2/21/2000	78.00	1048.12	Riverside Disposal
GM-47	1125.78	3/18/2000	75.60	1050.52	Riverside Disposal
GM-47	1125.78	6/17/2000	81.21	1044.91	Riverside Disposal
GM-47	1125.78	9/25/2000	80.70	1045.42	Riverside Disposal
GM-47	1125.78	9/12/2001	82.33	1043.79	Riverside Disposal
GM-47	1125.78	12/11/2001	82.35	1043.77	Riverside Disposal
GM-47	1125.78	6/11/2002	80.81	1045.31	Riverside Disposal
GM-47	1125.78	11/5/2002	72.44	1053.68	Riverside Disposal
GM-47	1125.78	5/19/2003	80.54	1045.58	Riverside Disposal
GM-47	1125.78	12/1/2003	79.34	1046.78	Riverside Disposal
GM-47	1125.78	5/13/2004	75.78	1050.34	Riverside Disposal
GM-47	1125.78	11/16/2004	81.76	1044.36	Riverside Disposal
GM-47	1126.12	6/2/2005	81.93	1044.19	Riverside Disposal
GM-47	1126.12	11/10/2005	81.39	1044.73	Riverside Disposal
GM-47	1126.12	5/24/2006	81.74	1044.38	Riverside Disposal
GM-47	1126.12	11/27/2006	82.02	1044.10	Riverside Disposal
GM-47	1126.12	5/22/2007	82.11	1044.01	Riverside Disposal
GM-47	1126.12	11/1/2007	81.95	1044.17	Riverside Disposal
GM-48	1127.36	9/24/1998	81.14	1046.22	Riverside Disposal
GM-48	1127.36	10/22/1998	81.46	1045.90	Riverside Disposal
GM-48	1127.36	11/22/1998	82.50	1044.86	Riverside Disposal
GM-48	1135.10	3/9/1999	85.00	1042.36	Riverside Disposal
GM-48	1135.10	4/29/1999	84.31	1043.05	Riverside Disposal
GM-48	1135.10	7/26/1999	82.30	1045.06	Riverside Disposal
GM-48	1127.36	8/21/1999	74.80	1052.56	Riverside Disposal
GM-48	1127.36	9/22/1999	70.70	1056.66	Riverside Disposal
GM-48	1127.36	10/25/1999	70.50	1056.86	Riverside Disposal
GM-48	1127.36	11/19/1999	70.69	1056.67	Riverside Disposal
GM-48	1127.36	12/31/1999	70.80	1056.56	Riverside Disposal
GM-48	1127.36	2/21/2000	69.10	1058.26	Riverside Disposal
GM-48	1127.36	3/18/2000	69.00	1058.36	Riverside Disposal
GM-48	1127.36	6/17/2000	71.26	1056.10	Riverside Disposal
GM-48	1127.36	9/25/2000	73.13	1054.23	Riverside Disposal
GM-48	1127.36	11/30/2000	69.25	1058.11	Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-48	1127.36	3/9/2001	68.15	1059.21	Riverside Disposal
GM-48	1127.36	6/1/2001	68.47	1058.89	Riverside Disposal
GM-48	1127.36	9/12/2001	67.86	1059.50	Riverside Disposal
GM-48	1127.36	12/11/2001	70.37	1056.99	Riverside Disposal
GM-48	1127.36	3/27/2002	70.43	1056.93	Riverside Disposal
GM-48	1127.36	6/11/2002	66.84	1060.52	Riverside Disposal
GM-48	1127.36	11/5/2002	68.21	1059.15	Riverside Disposal
GM-48	1127.36	5/19/2003	67.73	1059.63	Riverside Disposal
GM-48	1127.36	12/1/2003	77.56	1049.80	Riverside Disposal
GM-48	1127.36	5/13/2004	71.95	1055.41	Riverside Disposal
GM-48	1127.36	11/16/2004	67.86	1059.50	Riverside Disposal
GM-48	1127.36	6/2/2005	71.12	1056.24	Riverside Disposal
GM-48	1127.36	11/9/2005	72.70	1054.66	Riverside Disposal
GM-48	1127.36	5/23/2006	68.70	1058.66	Riverside Disposal
GM-48	1127.36	11/27/2006	69.24	1058.12	Riverside Disposal
GM-48	1127.36	5/22/2007	74.72	1052.64	Riverside Disposal
GM-48	1127.36	11/1/2007	76.73	1050.63	Riverside Disposal
GM-49	1124.05	9/24/1998	82.56	1041.49	General Study/Riverside Disposal
GM-49	1124.05	10/22/1998	82.77	1041.28	General Study/Riverside Disposal
GM-49	1124.05	11/22/1998	82.32	1041.73	General Study/Riverside Disposal
GM-49	1124.05	12/19/1998	82.98	1041.07	General Study/Riverside Disposal
GM-49	1124.05	3/9/1999	82.32	1041.73	General Study/Riverside Disposal
GM-49	1124.05	4/29/1999	82.33	1041.72	General Study/Riverside Disposal
GM-49	1124.05	6/14/1999	81.81	1042.24	General Study/Riverside Disposal
GM-49	1124.05	7/26/1999	81.50	1042.55	General Study/Riverside Disposal
GM-49	1124.05	8/21/1999	82.13	1041.92	General Study/Riverside Disposal
GM-49	1124.05	9/22/1999	81.93	1042.12	General Study/Riverside Disposal
GM-49	1124.05	10/25/1999	82.10	1041.95	General Study/Riverside Disposal
GM-49	1124.05	11/19/1999	82.18	1041.87	General Study/Riverside Disposal
GM-49	1124.05	12/31/1999	82.64	1041.41	General Study/Riverside Disposal
GM-49	1124.05	2/21/2000	82.49	1041.56	General Study/Riverside Disposal
GM-49	1124.05	3/18/2000	81.77	1042.28	General Study/Riverside Disposal
GM-49	1124.05	6/17/2000	82.86	1041.19	General Study/Riverside Disposal
GM-49	1124.05	9/25/2000	82.62	1041.43	General Study/Riverside Disposal
GM-49	1124.05	11/30/2000	82.63	1041.42	General Study/Riverside Disposal
GM-49	1124.05	3/9/2001	81.94	1042.11	General Study/Riverside Disposal
GM-49	1124.05	6/1/2001	81.42	1042.63	General Study/Riverside Disposal
GM-49	1124.05	9/12/2001	82.91	1041.14	General Study/Riverside Disposal
GM-49	1124.05	12/11/2001	82.35	1041.70	General Study/Riverside Disposal
GM-49	1124.05	3/27/2002	82.21	1041.84	General Study/Riverside Disposal
GM-49	1124.05	6/11/2002	81.07	1042.98	General Study/Riverside Disposal
GM-49	1124.05	11/5/2002	81.32	1042.73	General Study/Riverside Disposal
GM-49	1124.05	5/19/2003	80.46	1043.59	General Study/Riverside Disposal
GM-50	1120.00	9/24/1998	77.20	1042.80	Breen
GM-50	1120.00	10/22/1998	78.60	1041.40	Breen
GM-50	1120.00	11/22/1998	76.10	1043.90	Breen

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-50	1120.00	4/29/1999	77.30	1042.70	Breen
GM-50	1120.00	6/14/1999	76.43	1043.57	Breen
GM-50	1120.00	7/26/1999	81.00	1039.00	Breen
GM-50	1120.00	8/21/1999	81.00	1039.00	Breen
GM-50	1120.00	9/22/1999	81.00	1039.00	Breen
GM-50	1120.00	10/25/1999			Breen
GM-51	1098.44	9/24/1998	57.28	1041.16	General Study/Riverside Disposal
GM-51	1098.44	10/22/1998	57.42	1041.02	General Study/Riverside Disposal
GM-51	1098.44	11/22/1998	57.02	1041.42	General Study/Riverside Disposal
GM-51	1098.44	12/19/1998	57.68	1040.76	General Study/Riverside Disposal
GM-51	1098.44	3/9/1999	56.90	1041.54	General Study/Riverside Disposal
GM-51	1098.44	4/29/1999	57.03	1041.41	General Study/Riverside Disposal
GM-51	1098.44	6/14/1999	56.42	1042.02	General Study/Riverside Disposal
GM-51	1098.44	7/26/1999	56.23	1042.21	General Study/Riverside Disposal
GM-51	1098.44	8/21/1999	56.86	1041.58	General Study/Riverside Disposal
GM-51	1098.44	9/22/1999	56.61	1041.83	General Study/Riverside Disposal
GM-51	1098.44	10/25/1999	56.85	1041.59	General Study/Riverside Disposal
GM-51	1098.44	11/19/1999	56.95	1041.49	General Study/Riverside Disposal
GM-51	1098.44	12/31/1999	57.37	1041.07	General Study/Riverside Disposal
GM-51	1098.44	1/22/2000	56.82	1041.62	General Study/Riverside Disposal
GM-51	1098.44	2/21/2000	56.60	1041.84	General Study/Riverside Disposal
GM-51	1098.44	3/18/2000	56.39	1042.05	General Study/Riverside Disposal
GM-51	1098.44	6/17/2000	57.42	1041.02	General Study/Riverside Disposal
GM-51	1098.44	9/25/2000	57.46	1040.98	General Study/Riverside Disposal
GM-51	1098.44	11/30/2000	57.23	1041.21	General Study/Riverside Disposal
GM-51	1098.44	3/9/2001	56.60	1041.84	General Study/Riverside Disposal
GM-51	1098.44	6/1/2001	56.07	1042.37	General Study/Riverside Disposal
GM-51	1098.44	9/12/2001	53.37	1045.07	General Study/Riverside Disposal
GM-51	1098.44	12/11/2001	56.63	1041.81	General Study/Riverside Disposal
GM-51	1098.44	3/27/2002	56.96	1041.48	General Study/Riverside Disposal
GM-51	1098.44	6/11/2002	55.59	1042.85	General Study/Riverside Disposal
GM-51	1098.44	11/5/2002	55.93	1042.51	General Study/Riverside Disposal
GM-51	1098.44	5/19/2003	54.99	1043.45	General Study/Riverside Disposal
GM-52	1122.13	9/24/1998	79.00	1043.13	Breen
GM-52	1122.13	10/22/1998	80.40	1041.73	Breen
GM-52	1122.13	11/22/1998	76.70	1045.43	Breen
GM-52	1122.13	4/29/1999	80.00	1042.13	Breen
GM-52	1122.13	6/14/1999	77.50	1044.63	Breen
GM-52	1122.13	7/26/1999	80.40	1041.73	Breen
GM-52	1122.13	8/21/1999	80.00	1042.13	Breen
GM-52	1122.13	9/22/1999	80.00	1042.13	Breen
GM-52	1122.13	10/25/1999	79.27	1042.86	Breen
GM-52	1122.13	11/19/1999	79.51	1042.62	Breen
GM-52	1122.13	3/18/2000	79.38	1042.75	Breen
GM-52	1122.13	6/17/2000	81.21	1040.92	Breen
GM-52	1122.13	9/25/2000	81.17	1040.96	Breen

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-53A	1106.73	10/22/1998	67.20	1039.53	General Study/Breen
GM-53A	1106.73	11/22/1998	66.34	1040.39	General Study/Breen
GM-53A	1106.73	12/19/1998	67.68	1039.05	General Study/Breen
GM-53A	1106.73	3/9/1999	67.19	1039.54	General Study/Breen
GM-53A	1106.73	4/29/1999	67.25	1039.48	General Study/Breen
GM-53A	1106.73	6/14/1999	66.61	1040.12	General Study/Breen
GM-53A	1106.73	7/26/1999	66.31	1040.42	General Study/Breen
GM-53A	1106.73	8/21/1999	66.64	1040.09	General Study/Breen
GM-53A	1106.73	9/22/1999	66.75	1039.98	General Study/Breen
GM-53A	1106.73	10/25/1999	66.85	1039.88	General Study/Breen
GM-53A	1106.73	11/19/1999	66.84	1039.89	General Study/Breen
GM-53A	1106.73	12/31/1999	67.03	1039.70	General Study/Breen
GM-53A	1106.73	1/22/2000	66.66	1040.07	General Study/Breen
GM-53A	1106.73	2/21/2000	66.60	1040.13	General Study/Breen
GM-53A	1106.73	3/18/2000	66.84	1039.89	General Study/Breen
GM-53A	1106.73	6/17/2000	67.48	1039.25	General Study/Breen
GM-53A	1106.73	9/25/2000	67.17	1039.56	General Study/Breen
GM-53A	1106.73	11/30/2000	67.55	1039.18	General Study/Breen
GM-53A	1106.73	3/9/2001	67.14	1039.59	General Study/Breen
GM-53A	1106.73	6/1/2001	66.32	1040.41	General Study/Breen
GM-53A	1106.73	9/12/2001	67.62	1039.11	General Study/Breen
GM-53A	1106.73	12/11/2001	67.12	1039.61	General Study/Breen
GM-53A	1106.73	3/27/2002	67.08	1039.65	General Study/Breen
GM-53A	1106.73	6/11/2002	66.45	1040.28	General Study/Breen
GM-53A	1106.73	11/5/2002	66.34	1040.39	General Study/Breen
GM-53A	1106.73	5/19/2003	65.21	1041.52	General Study/Breen
GM-53A	1106.73	12/1/2003	67.52	1039.21	General Study/Breen
GM-53A	1106.73	5/13/2004	65.81	1040.92	General Study/Breen
GM-53A	1106.73	11/17/2004	66.93	1039.80	General Study/Breen
GM-53A	1106.73	6/3/2005	66.61	1040.12	General Study/Breen
GM-53A	1106.73	9/11/2005	67.17	1039.56	General Study/Breen
GM-53A	1106.73	11/10/2005	67.64	1039.09	General Study/Breen
GM-53A	1106.73	1/12/2006	67.65	1039.08	General Study/Breen
GM-53A	1106.73	2/13/2006	67.68	1039.05	General Study/Breen
GM-53A	1106.73	5/23/2006	67.14	1039.59	General Study/Breen
GM-53A	1106.73	8/8/2006	68.24	1038.49	General Study/Breen
GM-53A	1106.73	11/27/2006	68.14	1038.59	General Study/Breen
GM-53A	1106.73	2/5/2007	68.47	1038.26	General Study/Breen
GM-53A	1106.73	5/22/2007	68.08	1038.65	General Study/Breen
GM-53A	1106.73	8/14/2007	68.41	1038.32	General Study/Breen
GM-53A	1106.73	11/1/2007	68.59	1038.14	General Study/Breen
GM-53B	1106.75	10/22/1998	67.01	1039.74	General Study/Breen
GM-53B	1106.75	11/22/1998	66.66	1040.09	General Study/Breen
GM-53B	1106.75	12/19/1998	67.01	1039.74	General Study/Breen
GM-53B	1106.75	3/9/1999	66.61	1040.14	General Study/Breen
GM-53B	1106.75	4/29/1999	66.76	1039.99	General Study/Breen
GM-53B	1106.75	6/14/1999	66.18	1040.57	General Study/Breen

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-53B	1106.75	7/26/1999	66.09	1040.66	General Study/Breen
GM-53B	1106.75	8/21/1999	66.38	1040.37	General Study/Breen
GM-53B	1106.75	9/22/1999	66.48	1040.27	General Study/Breen
GM-53B	1106.75	10/25/1999	66.53	1040.22	General Study/Breen
GM-53B	1106.75	11/19/1999	66.40	1040.35	General Study/Breen
GM-53B	1106.75	12/31/1999	66.71	1040.04	General Study/Breen
GM-53B	1106.75	1/22/2000	66.38	1040.37	General Study/Breen
GM-53B	1106.75	2/21/2000	66.33	1040.42	General Study/Breen
GM-53B	1106.75	3/18/2000	66.11	1040.64	General Study/Breen
GM-53B	1106.75	6/17/2000	66.93	1039.82	General Study/Breen
GM-53B	1106.75	9/25/2000	66.70	1040.05	General Study/Breen
GM-53B	1106.75	11/30/2000	67.00	1039.75	General Study/Breen
GM-53B	1106.75	3/9/2001	66.68	1040.07	General Study/Breen
GM-53B	1106.75	6/1/2001	65.94	1040.81	General Study/Breen
GM-53B	1106.75	9/12/2001	67.04	1039.71	General Study/Breen
GM-53B	1106.75	12/11/2001	66.56	1040.19	General Study/Breen
GM-53B	1106.75	3/27/2002	66.60	1040.15	General Study/Breen
GM-53B	1106.75	6/11/2002	66.25	1040.50	General Study/Breen
GM-53B	1106.75	11/5/2002	66.04	1040.71	General Study/Breen
GM-53B	1106.75	5/19/2003	64.75	1042.00	General Study/Breen
GM-53B	1106.75	12/1/2003	66.96	1039.79	General Study/Breen
GM-53B	1106.75	5/13/2004	65.67	1041.08	General Study/Breen
GM-53B	1106.75	11/17/2004	66.39	1040.36	General Study/Breen
GM-53B	1106.75	6/3/2005	66.30	1040.45	General Study/Breen
GM-53B	1106.75	9/11/2005	66.62	1040.13	General Study/Breen
GM-53B	1106.75	11/10/2005	67.01	1039.74	General Study/Breen
GM-53B	1106.75	1/12/2006	66.92	1039.83	General Study/Breen
GM-53B	1106.75	2/13/2006	67.01	1039.74	General Study/Breen
GM-53B	1106.75	5/23/2006	66.48	1040.27	General Study/Breen
GM-53B	1106.75	8/8/2006	67.42	1039.33	General Study/Breen
GM-53B	1106.75	11/27/2006	67.26	1039.49	General Study/Breen
GM-53B	1106.75	2/5/2007	67.65	1039.10	General Study/Breen
GM-53B	1106.75	5/22/2007	67.38	1039.37	General Study/Breen
GM-53B	1106.75	8/14/2007	67.63	1039.12	General Study/Breen
GM-53B	1106.75	11/1/2007	67.75	1039.00	General Study/Breen
GM-54	1126.42	11/22/1998	58.67	1067.75	General Study/Riverside Disposal
GM-54	1126.42	12/19/1998	59.17	1067.25	General Study/Riverside Disposal
GM-54	1126.42	3/9/1999	59.04	1067.38	General Study/Riverside Disposal
GM-54	1126.42	4/29/1999	58.52	1067.90	General Study/Riverside Disposal
GM-54	1126.42	6/14/1999	57.94	1068.48	General Study/Riverside Disposal
GM-54	1126.42	7/26/1999	56.68	1069.74	General Study/Riverside Disposal
GM-54	1126.42	8/21/1999	56.21	1070.21	General Study/Riverside Disposal
GM-54	1126.42	9/22/1999	56.28	1070.14	General Study/Riverside Disposal
GM-54	1126.42	10/25/1999	56.66	1069.76	General Study/Riverside Disposal
GM-54	1126.42	11/19/1999	56.62	1069.80	General Study/Riverside Disposal
GM-54	1126.42	2/21/2000	57.63	1068.79	General Study/Riverside Disposal
GM-54	1126.42	3/18/2000	57.41	1069.01	General Study/Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-54	1126.42	6/17/2000	57.72	1068.70	General Study/Riverside Disposal
GM-54	1126.42	9/25/2000	56.42	1070.00	General Study/Riverside Disposal
GM-54	1126.42	3/9/2001	58.28	1068.14	General Study/Riverside Disposal
GM-54	1126.42	9/12/2001	58.06	1068.36	General Study/Riverside Disposal
GM-54	1126.42	12/11/2001	57.52	1068.90	General Study/Riverside Disposal
GM-54	1126.42	6/11/2002	56.37	1070.05	General Study/Riverside Disposal
GM-55	1126.36	11/22/1998	75.09	1051.27	General Study/Riverside Disposal
GM-55	1126.36	12/19/1998	75.73	1050.63	General Study/Riverside Disposal
GM-55	1126.36	3/9/1999	75.21	1051.15	General Study/Riverside Disposal
GM-55	1126.36	4/29/1999	75.14	1051.22	General Study/Riverside Disposal
GM-55	1126.36	6/14/1999	75.01	1051.35	General Study/Riverside Disposal
GM-55	1126.36	7/26/1999	74.76	1051.60	General Study/Riverside Disposal
GM-55	1126.36	8/21/1999	75.34	1051.02	General Study/Riverside Disposal
GM-55	1126.36	9/22/1999	74.52	1051.84	General Study/Riverside Disposal
GM-55	1126.36	10/25/1999	74.83	1051.53	General Study/Riverside Disposal
GM-55	1126.36	11/19/1999	74.99	1051.37	General Study/Riverside Disposal
GM-55	1126.36	2/21/2000	74.82	1051.54	General Study/Riverside Disposal
GM-55	1126.36	3/18/2000	74.80	1051.56	General Study/Riverside Disposal
GM-55	1126.36	6/17/2000	75.36	1051.00	General Study/Riverside Disposal
GM-55	1126.36	9/25/2000	75.38	1050.98	General Study/Riverside Disposal
GM-55	1126.36	3/9/2001	75.00	1051.36	General Study/Riverside Disposal
GM-55	1126.36	9/12/2001	75.79	1050.57	General Study/Riverside Disposal
GM-55	1126.36	12/11/2001	75.72	1050.64	General Study/Riverside Disposal
GM-55	1126.36	6/11/2002	73.82	1052.54	General Study/Riverside Disposal
GM-55	1126.36	12/1/2003	75.93	1050.43	General Study/Riverside Disposal
GM-55	1126.36	5/13/2004	74.43	1051.93	General Study/Riverside Disposal
GM-55	1126.36	11/16/2004	74.74	1051.62	General Study/Riverside Disposal
GM-55	1126.36	6/2/2005	74.00	1052.36	General Study/Riverside Disposal
GM-55	1126.36	11/10/2005	75.16	1051.20	General Study/Riverside Disposal
GM-55	1126.36	5/24/2006	74.92	1051.44	General Study/Riverside Disposal
GM-55	1126.36	11/28/2006	75.31	1051.05	General Study/Riverside Disposal
GM-55	1126.36	5/22/2007	75.82	1050.54	General Study/Riverside Disposal
GM-55	1126.36	11/1/2007	76.65	1049.71	General Study/Riverside Disposal
GM-56	1121.39	10/22/1998	43.24	1078.15	Former Plant Site
GM-56	1121.39	11/22/1998	43.36	1078.03	Former Plant Site
GM-56	1121.39	12/19/1998	43.50	1077.89	Former Plant Site
GM-56	1121.39	4/29/1999	44.07	1077.32	Former Plant Site
GM-56	1121.39	6/14/1999	43.54	1077.85	Former Plant Site
GM-56	1121.39	7/26/1999	42.83	1078.56	Former Plant Site
GM-56	1121.39	8/21/1999	42.40	1078.99	Former Plant Site
GM-56	1121.39	9/22/1999	42.31	1079.08	Former Plant Site
GM-56	1121.39	10/25/1999	42.32	1079.07	Former Plant Site
GM-56	1121.39	11/19/1999	42.25	1079.14	Former Plant Site
GM-56	1121.39	12/31/1999	42.51	1078.88	Former Plant Site
GM-56	1121.39	1/22/2000	42.74	1078.65	Former Plant Site
GM-56	1121.39	2/21/2000	43.08	1078.31	Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-56	1121.39	3/18/2000	43.18	1078.21	Former Plant Site
GM-56	1121.39	6/17/2000	43.27	1078.12	Former Plant Site
GM-56	1121.39	9/25/2000	42.02	1079.37	Former Plant Site
GM-56	1121.39	10/11/2000	41.92	1079.47	Former Plant Site
GM-56	1121.39	11/30/2000	42.19	1079.20	Former Plant Site
GM-56	1121.39	6/1/2001	42.87	1078.52	Former Plant Site
GM-56	1121.39	3/27/2002	42.94	1078.45	Former Plant Site
GM-56	1121.39	6/11/2002	41.74	1079.65	Former Plant Site
GM-56	1121.39	11/5/2002	41.27	1080.12	Former Plant Site
GM-56	1121.39	5/19/2003	41.75	1079.64	Former Plant Site
GM-56	1121.39	12/1/2003	42.11	1079.28	Former Plant Site
GM-56	1121.39	5/13/2004	41.75	1079.64	Former Plant Site
GM-56	1121.39	11/17/2004	41.03	1080.36	Former Plant Site
GM-56	1121.39	6/2/2005	41.92	1079.47	Former Plant Site
GM-56	1121.39	11/10/2005	42.49	1078.90	Former Plant Site
GM-56	1121.39	5/23/2006	42.73	1078.66	Former Plant Site
GM-56	1121.39	11/27/2006	43.12	1078.27	Former Plant Site
GM-56	1121.39	5/22/2007	43.88	1077.51	Former Plant Site
GM-56	1121.39	11/1/2007	44.55	1076.84	Former Plant Site
GM-57	1130.29	12/19/1998	78.49	1051.80	General Study/Riverside Disposal
GM-57	1130.29	3/9/1999	77.94	1052.35	General Study/Riverside Disposal
GM-57	1130.29	4/29/1999	78.27	1052.02	General Study/Riverside Disposal
GM-57	1130.29	6/14/1999	77.96	1052.33	General Study/Riverside Disposal
GM-57	1130.29	7/26/1999	77.77	1052.52	General Study/Riverside Disposal
GM-57	1130.29	8/21/1999	78.40	1051.89	General Study/Riverside Disposal
GM-57	1130.29	9/22/1999	77.65	1052.64	General Study/Riverside Disposal
GM-57	1130.29	10/25/1999	77.77	1052.52	General Study/Riverside Disposal
GM-57	1130.29	11/19/1999	77.78	1052.51	General Study/Riverside Disposal
GM-57	1130.29	12/31/1999	78.14	1052.15	General Study/Riverside Disposal
GM-57	1130.29	2/21/2000	77.77	1052.52	General Study/Riverside Disposal
GM-57	1130.29	3/18/2000	77.96	1052.33	General Study/Riverside Disposal
GM-57	1130.29	6/17/2000	78.28	1052.01	General Study/Riverside Disposal
GM-57	1130.29	9/25/2000	78.25	1052.04	General Study/Riverside Disposal
GM-57	1130.29	11/30/2000	78.79	1051.50	General Study/Riverside Disposal
GM-57	1130.29	3/9/2001	77.93	1052.36	General Study/Riverside Disposal
GM-57	1130.29	6/1/2001	77.54	1052.75	General Study/Riverside Disposal
GM-57	1130.29	9/12/2001	78.18	1052.11	General Study/Riverside Disposal
GM-57	1130.29	12/11/2001	78.21	1052.08	General Study/Riverside Disposal
GM-57	1130.29	3/27/2002	78.21	1052.08	General Study/Riverside Disposal
GM-57	1130.29	6/11/2002	76.66	1053.63	General Study/Riverside Disposal
GM-57	1130.29	11/5/2002	77.53	1052.76	General Study/Riverside Disposal
GM-57	1130.29	5/19/2003	77.40	1052.89	General Study/Riverside Disposal
GM-57	1130.29	12/1/2003	77.99	1052.30	General Study/Riverside Disposal
GM-57	1130.29	5/13/2004	77.34	1052.95	General Study/Riverside Disposal
GM-57	1130.29	11/16/2004	77.72	1052.57	General Study/Riverside Disposal
GM-57	1130.29	6/2/2005	76.55	1053.74	General Study/Riverside Disposal
GM-57	1130.29	9/11/2005	77.38	1052.91	General Study/Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-57	1130.29	11/10/2005	77.92	1052.37	General Study/Riverside Disposal
GM-57	1130.29	1/12/2006	78.14	1052.15	General Study/Riverside Disposal
GM-57	1130.29	2/13/2006	77.86	1052.43	General Study/Riverside Disposal
GM-57	1130.29	5/23/2006	78.20	1052.09	General Study/Riverside Disposal
GM-57	1130.29	8/8/2006	77.84	1052.45	General Study/Riverside Disposal
GM-57	1130.29	11/27/2006	78.71	1051.58	General Study/Riverside Disposal
GM-57	1130.29	5/22/2007	78.68	1051.61	General Study/Riverside Disposal
GM-57	1130.29	11/1/2007	79.49	1050.80	General Study/Riverside Disposal
GM-58	1130.60	12/19/1998	78.81	1051.79	General Study/Riverside Disposal
GM-58	1130.60	3/9/1999	78.30	1052.30	General Study/Riverside Disposal
GM-58	1130.60	4/29/1999	78.35	1052.25	General Study/Riverside Disposal
GM-58	1130.60	6/14/1999	77.99	1052.61	General Study/Riverside Disposal
GM-58	1130.60	7/26/1999	77.82	1052.78	General Study/Riverside Disposal
GM-58	1130.60	8/21/1999	78.33	1052.27	General Study/Riverside Disposal
GM-58	1130.60	9/22/1999	77.77	1052.83	General Study/Riverside Disposal
GM-58	1130.60	10/25/1999	78.02	1052.58	General Study/Riverside Disposal
GM-58	1130.60	11/19/1999	77.99	1052.61	General Study/Riverside Disposal
GM-58	1130.60	12/31/1999	78.31	1052.29	General Study/Riverside Disposal
GM-58	1130.60	2/21/2000	77.91	1052.69	General Study/Riverside Disposal
GM-58	1130.60	3/18/2000	77.90	1052.70	General Study/Riverside Disposal
GM-58	1130.60	6/17/2000	78.39	1052.21	General Study/Riverside Disposal
GM-58	1130.60	9/25/2000	78.31	1052.29	General Study/Riverside Disposal
GM-58	1130.60	11/30/2000	78.56	1052.04	General Study/Riverside Disposal
GM-58	1130.60	3/9/2001	77.92	1052.68	General Study/Riverside Disposal
GM-58	1130.60	6/1/2001	77.56	1053.04	General Study/Riverside Disposal
GM-58	1130.60	9/12/2001	78.75	1051.85	General Study/Riverside Disposal
GM-58	1130.60	12/11/2001	78.90	1051.70	General Study/Riverside Disposal
GM-58	1130.60	3/27/2002	78.56	1052.04	General Study/Riverside Disposal
GM-58	1130.60	6/11/2002	76.81	1053.79	General Study/Riverside Disposal
GM-58	1130.60	11/5/2002	77.57	1053.03	General Study/Riverside Disposal
GM-58	1130.60	5/19/2003	77.31	1053.29	General Study/Riverside Disposal
GM-58	1130.60	12/1/2003	78.88	1051.72	General Study/Riverside Disposal
GM-58	1130.60	5/13/2004	77.21	1053.39	General Study/Riverside Disposal
GM-58	1130.60	11/16/2004	77.52	1053.08	General Study/Riverside Disposal
GM-58	1130.60	6/2/2005	76.76	1053.84	General Study/Riverside Disposal
GM-58	1130.60	9/11/2005	77.69	1052.91	General Study/Riverside Disposal
GM-58	1130.60	11/10/2005	78.15	1052.45	General Study/Riverside Disposal
GM-58	1130.60	1/12/2006	77.79	1052.81	General Study/Riverside Disposal
GM-58	1130.60	2/13/2006	77.84	1052.76	General Study/Riverside Disposal
GM-58	1130.60	5/23/2006	78.20	1052.40	General Study/Riverside Disposal
GM-58	1130.60	8/8/2006	78.03	1052.57	General Study/Riverside Disposal
GM-58	1130.60	11/27/2006	78.76	1051.84	General Study/Riverside Disposal
GM-58	1130.60	5/22/2007	78.83	1051.77	General Study/Riverside Disposal
GM-58	1130.60	11/1/2007	79.56	1051.04	General Study/Riverside Disposal
GM-59	1131.81	11/22/1998	83.27	1048.54	General Study
GM-59	1131.81	12/19/1998	82.21	1049.60	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-59	1131.81	3/9/1999	81.74	1050.07	General Study
GM-59	1131.81	4/29/1999	81.63	1050.18	General Study
GM-59	1131.81	6/14/1999	81.11	1050.70	General Study
GM-59	1131.81	7/26/1999	80.96	1050.85	General Study
GM-59	1131.81	8/21/1999	81.36	1050.45	General Study
GM-59	1131.81	9/22/1999	81.38	1050.43	General Study
GM-59	1131.81	10/25/1999	82.00	1049.81	General Study
GM-59	1131.81	11/19/1999	81.63	1050.18	General Study
GM-59	1131.81	12/31/1999	81.87	1049.94	General Study
GM-59	1131.81	1/22/2000	81.38	1050.43	General Study
GM-59	1131.81	2/21/2000	81.18	1050.63	General Study
GM-59	1131.81	3/18/2000	80.95	1050.86	General Study
GM-59	1131.81	6/17/2000	81.56	1050.25	General Study
GM-59	1131.81	9/25/2000	81.41	1050.40	General Study
GM-59	1131.81	11/30/2000	81.41	1050.40	General Study
GM-59	1131.81	3/9/2001	80.93	1050.88	General Study
GM-59	1131.81	6/1/2001	80.56	1051.25	General Study
GM-59	1131.81	9/12/2001	81.74	1050.07	General Study
GM-59	1131.81	12/11/2001	81.85	1049.96	General Study
GM-59	1131.81	3/27/2002	81.71	1050.10	General Study
GM-59	1131.81	6/11/2002	80.42	1051.39	General Study
GM-59	1131.81	11/5/2002	80.78	1051.03	General Study
GM-59	1131.81	5/19/2003	79.61	1052.20	General Study
GM-59	1131.81	12/1/2003	81.55	1050.26	General Study
GM-59	1131.81	5/13/2004	80.09	1051.72	General Study
GM-59	1131.81	11/16/2004	80.75	1051.06	General Study
GM-59	1131.81	6/2/2005	80.32	1051.49	General Study
GM-59	1131.81	9/11/2005	80.91	1050.90	General Study
GM-59	1131.81	11/9/2005	80.90	1050.91	General Study
GM-59	1131.81	1/12/2006	81.12	1050.69	General Study
GM-59	1131.81	2/13/2006	81.13	1050.68	General Study
GM-59	1131.81	5/23/2006	80.82	1050.99	General Study
GM-59	1131.81	8/8/2006	81.83	1049.98	General Study
GM-59	1131.81	11/27/2006	81.73	1050.08	General Study
GM-59	1131.81	5/22/2007	81.85	1049.96	General Study
GM-59	1131.81	11/1/2007	82.56	1049.25	General Study
GM-60	1190.74	11/22/1998	106.77	1083.97	General Study/Riverside Disposal/Notch
GM-60	1190.74	12/19/1998			General Study/Riverside Disposal/Notch
GM-60	1190.74	3/9/1999	103.15	1087.59	General Study/Riverside Disposal/Notch
GM-60	1190.74	4/29/1999	101.29	1089.45	General Study/Riverside Disposal/Notch
GM-60	1190.74	6/14/1999	101.19	1089.55	General Study/Riverside Disposal/Notch
GM-60	1190.74	7/26/1999	101.44	1089.30	General Study/Riverside Disposal/Notch
GM-60	1190.74	8/21/1999	101.67	1089.07	General Study/Riverside Disposal/Notch
GM-60	1190.74	9/22/1999	101.32	1089.42	General Study/Riverside Disposal/Notch
GM-60	1190.74	10/25/1999	101.36	1089.38	General Study/Riverside Disposal/Notch
GM-60	1190.74	11/19/1999	101.22	1089.52	General Study/Riverside Disposal/Notch
GM-60	1190.74	12/31/1999	101.42	1089.32	General Study/Riverside Disposal/Notch

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-60	1190.74	1/22/2000	102.78	1087.96	General Study/Riverside Disposal/Notch
GM-60	1190.74	2/21/2000	102.60	1088.14	General Study/Riverside Disposal/Notch
GM-60	1190.74	3/18/2000	102.98	1087.76	General Study/Riverside Disposal/Notch
GM-60	1190.74	6/17/2000	105.05	1085.69	General Study/Riverside Disposal/Notch
GM-60	1190.74	9/25/2000	105.06	1085.68	General Study/Riverside Disposal/Notch
GM-60	1190.74	11/30/2000	104.89	1085.85	General Study/Riverside Disposal/Notch
GM-60	1190.74	3/9/2001	105.35	1085.39	General Study/Riverside Disposal/Notch
GM-60	1190.74	6/1/2001	102.37	1088.37	General Study/Riverside Disposal/Notch
GM-60	1190.74	9/12/2001	101.92	1088.82	General Study/Riverside Disposal/Notch
GM-60	1190.74	12/11/2001	101.95	1088.79	General Study/Riverside Disposal/Notch
GM-60	1190.74	3/27/2002	105.20	1085.54	General Study/Riverside Disposal/Notch
GM-60	1190.74	6/11/2002	105.31	1085.43	General Study/Riverside Disposal/Notch
GM-60	1190.74	11/5/2002	105.65	1085.09	General Study/Riverside Disposal/Notch
GM-60	1190.74	5/19/2003	106.27	1084.47	General Study/Riverside Disposal/Notch
GM-60	1190.74	12/1/2003	106.82	1083.92	General Study/Riverside Disposal/Notch
GM-60	1190.74	5/13/2004	106.60	1084.14	General Study/Riverside Disposal/Notch
GM-60	1190.74	11/16/2004	106.14	1084.60	General Study/Riverside Disposal/Notch
GM-60	1190.74	6/2/2005	106.19	1084.55	General Study/Riverside Disposal/Notch
GM-60	1190.74	11/10/2005	106.50	1084.24	General Study/Riverside Disposal/Notch
GM-60	1190.74	5/24/2006	106.36	1084.38	General Study/Riverside Disposal/Notch
GM-60	1190.74	11/29/2006	106.52	1084.22	General Study/Riverside Disposal/Notch
GM-60	1190.74	5/22/2007	106.52	1084.22	General Study/Riverside Disposal/Notch
GM-60	1190.74	11/1/2007	106.71	1084.03	General Study/Riverside Disposal/Notch
GM-61	1211.60	3/9/1999	121.18	1090.42	General Study
GM-61	1211.60	4/29/1999	121.33	1090.27	General Study
GM-61	1211.60	6/14/1999	121.65	1089.95	General Study
GM-61	1211.60	7/26/1999	121.61	1089.99	General Study
GM-61	1211.60	8/21/1999	121.69	1089.91	General Study
GM-61	1211.60	9/22/1999	121.30	1090.30	General Study
GM-61	1211.60	10/25/1999	121.22	1090.38	General Study
GM-61	1211.60	11/19/1999	120.94	1090.66	General Study
GM-61	1211.60	12/31/1999	121.30	1090.30	General Study
GM-61	1211.60	1/22/2000	121.13	1090.47	General Study
GM-61	1211.60	2/21/2000	120.99	1090.61	General Study
GM-61	1211.60	3/18/2000	121.19	1090.41	General Study
GM-61	1211.60	6/17/2000	121.75	1089.85	General Study
GM-61	1211.60	9/25/2000	121.45	1090.15	General Study
GM-61	1211.60	11/30/2000	121.58	1090.02	General Study
GM-61	1211.60	3/9/2001	121.40	1090.20	General Study
GM-61	1211.60	6/1/2001	121.03	1090.57	General Study
GM-61	1211.60	9/12/2001	121.79	1089.81	General Study
GM-61	1211.60	12/11/2001	121.82	1089.78	General Study
GM-61	1211.60	3/27/2002	121.76	1089.84	General Study
GM-61	1211.60	6/11/2002	121.15	1090.45	General Study
GM-61	1211.60	11/5/2002	120.85	1090.75	General Study
GM-61	1211.60	5/19/2003	120.38	1091.22	General Study
GM-61	1211.60	12/1/2003	120.66	1090.94	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-61	1211.60	5/13/2004	120.31	1091.29	General Study
GM-61	1211.60	11/16/2004	119.49	1092.11	General Study
GM-61	1211.60	6/2/2005	119.50	1092.10	General Study
GM-61	1211.60	11/9/2005	119.65	1091.95	General Study
GM-61	1211.60	5/24/2006	120.53	1091.07	General Study
GM-61	1211.60	11/27/2006	121.05	1090.55	General Study
GM-61	1211.60	5/22/2007	121.29	1090.31	General Study
GM-61	1211.60	11/1/2007	122.09	1089.51	General Study
GM-62A	1127.69	7/14/1999	57.24	1070.45	SW Pit
GM-62A	1127.69	7/26/1999	56.87	1070.82	SW Pit
GM-62A	1127.69	8/21/1999	56.28	1071.41	SW Pit
GM-62A	1127.69	9/22/1999	55.86	1071.83	SW Pit
GM-62A	1127.69	10/25/1999	55.81	1071.88	SW Pit
GM-62A	1127.69	11/19/1999	55.93	1071.76	SW Pit
GM-62A	1127.69	12/31/1999	56.25	1071.44	SW Pit
GM-62A	1127.69	1/22/2000	56.30	1071.39	SW Pit
GM-62A	1127.69	2/21/2000	56.53	1071.16	SW Pit
GM-62A	1127.69	3/18/2000	56.57	1071.12	SW Pit
GM-62A	1127.69	6/17/2000	56.81	1070.88	SW Pit
GM-62A	1127.69	9/25/2000	56.77	1070.92	SW Pit
GM-62A	1127.69	11/30/2000	56.50	1071.19	SW Pit
GM-62A	1127.69	3/9/2001	55.85	1071.84	SW Pit
GM-62A	1127.69	6/1/2001	55.70	1071.99	SW Pit
GM-62A	1127.69	9/12/2001	56.14	1071.55	SW Pit
GM-62A	1127.69	12/11/2001	56.46	1071.23	SW Pit
GM-62A	1127.69	3/27/2002	56.78	1070.91	SW Pit
GM-62A	1127.69	6/11/2002	54.48	1073.21	SW Pit
GM-62A	1127.69	11/5/2002	54.63	1073.06	SW Pit
GM-62A	1127.69	5/19/2003	54.43	1073.26	SW Pit
GM-62A	1127.69	5/13/2004	54.30	1073.39	SW Pit
GM-62A	1127.69	11/16/2004	53.39	1074.30	SW Pit
GM-62A	1127.69	6/2/2005	54.09	1073.60	SW Pit
GM-62A	1127.69	9/11/2005	54.72	1072.97	SW Pit
GM-62A	1127.69	11/9/2005	52.48	1075.21	SW Pit
GM-62A	1127.69	1/12/2006	55.04	1072.65	SW Pit
GM-62A	1127.69	2/13/2006	55.12	1072.57	SW Pit
GM-62A	1127.69	5/23/2006	55.38	1072.31	SW Pit
GM-62A	1127.69	8/8/2006	55.18	1072.51	SW Pit
GM-62A	1127.69	11/27/2006	55.67	1072.02	SW Pit
GM-62A	1127.69	5/22/2007	56.45	1071.24	SW Pit
GM-62A	1127.69	11/1/2007	57.54	1070.15	SW Pit
GM-62B	1128.05	7/14/1999	76.14	1051.91	SW Pit
GM-62B	1128.05	7/26/1999	75.88	1052.17	SW Pit
GM-62B	1128.05	8/21/1999	76.18	1051.87	SW Pit
GM-62B	1128.05	9/22/1999	75.90	1052.15	SW Pit
GM-62B	1128.05	10/25/1999	75.86	1052.19	SW Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-62B	1128.05	11/19/1999	75.89	1052.16	SW Pit
GM-62B	1128.05	12/31/1999	76.35	1051.70	SW Pit
GM-62B	1128.05	1/22/2000	76.49	1051.56	SW Pit
GM-62B	1128.05	2/21/2000	76.62	1051.43	SW Pit
GM-62B	1128.05	3/18/2000	76.35	1051.70	SW Pit
GM-62B	1128.05	6/17/2000	76.88	1051.17	SW Pit
GM-62B	1128.05	9/25/2000	76.36	1051.69	SW Pit
GM-62B	1128.05	11/30/2000	76.50	1051.55	SW Pit
GM-62B	1128.05	3/9/2001	75.90	1052.15	SW Pit
GM-62B	1128.05	6/1/2001	75.96	1052.09	SW Pit
GM-62B	1128.05	9/12/2001	75.56	1052.49	SW Pit
GM-62B	1128.05	12/11/2001	76.64	1051.41	SW Pit
GM-62B	1128.05	3/27/2002	76.16	1051.89	SW Pit
GM-62B	1128.05	6/11/2002	75.14	1052.91	SW Pit
GM-62B	1128.05	11/5/2002	75.12	1052.93	SW Pit
GM-62B	1128.05	5/19/2003	74.98	1053.07	SW Pit
GM-62B	1128.05	5/13/2004	75.02	1053.03	SW Pit
GM-62B	1128.05	11/16/2004	75.27	1052.78	SW Pit
GM-62B	1128.05	6/2/2005	75.14	1052.91	SW Pit
GM-62B	1128.05	9/11/2005	75.80	1052.25	SW Pit
GM-62B	1128.05	11/9/2005	75.85	1052.20	SW Pit
GM-62B	1128.05	1/12/2006	76.33	1051.72	SW Pit
GM-62B	1128.05	2/13/2006	76.45	1051.60	SW Pit
GM-62B	1128.05	5/23/2006	76.55	1051.50	SW Pit
GM-62B	1128.05	8/8/2006	77.21	1050.84	SW Pit
GM-62B	1128.05	11/27/2006	77.12	1050.93	SW Pit
GM-62B	1128.05	5/22/2007	77.40	1050.65	SW Pit
GM-62B	1128.05	11/1/2007	78.04	1050.01	SW Pit
GM-62C	1128.00	7/14/1999	75.94	1052.06	SW Pit
GM-62C	1128.00	7/26/1999	75.66	1052.34	SW Pit
GM-62C	1128.00	8/21/1999	75.97	1052.03	SW Pit
GM-62C	1128.00	9/22/1999	75.76	1052.24	SW Pit
GM-62C	1128.00	10/25/1999	75.71	1052.29	SW Pit
GM-62C	1128.00	11/19/1999	75.72	1052.28	SW Pit
GM-62C	1128.00	12/31/1999	76.16	1051.84	SW Pit
GM-62C	1128.00	1/22/2000	76.07	1051.93	SW Pit
GM-62C	1128.00	2/21/2000	76.46	1051.54	SW Pit
GM-62C	1128.00	3/18/2000	76.02	1051.98	SW Pit
GM-62C	1128.00	6/17/2000	76.55	1051.45	SW Pit
GM-62C	1128.00	9/25/2000	76.01	1051.99	SW Pit
GM-62C	1128.00	11/30/2000	76.52	1051.48	SW Pit
GM-62C	1128.00	3/9/2001	75.69	1052.31	SW Pit
GM-62C	1128.00	6/1/2001	75.35	1052.65	SW Pit
GM-62C	1128.00	9/12/2001	72.47	1055.53	SW Pit
GM-62C	1128.00	12/11/2001	76.35	1051.65	SW Pit
GM-62C	1128.00	3/27/2002	75.90	1052.10	SW Pit
GM-62C	1128.00	6/11/2002	74.91	1053.09	SW Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-62C	1128.00	11/5/2002	74.89	1053.11	SW Pit
GM-62C	1128.00	5/19/2003	74.77	1053.23	SW Pit
GM-62C	1128.00	5/13/2004	74.94	1053.06	SW Pit
GM-62C	1128.00	11/16/2004	75.18	1052.82	SW Pit
GM-62C	1128.00	6/2/2005	75.10	1052.90	SW Pit
GM-62C	1128.00	9/11/2005	75.83	1052.17	SW Pit
GM-62C	1128.00	11/9/2005	75.86	1052.14	SW Pit
GM-62C	1128.00	1/12/2006	76.40	1051.60	SW Pit
GM-62C	1128.00	2/13/2006	76.52	1051.48	SW Pit
GM-62C	1128.00	5/23/2006	76.71	1051.29	SW Pit
GM-62C	1128.00	8/8/2006	77.40	1050.60	SW Pit
GM-62C	1128.00	11/27/2006	77.41	1050.59	SW Pit
GM-62C	1128.00	5/22/2007	77.50	1050.50	SW Pit
GM-62C	1128.00	11/1/2007	78.28	1049.72	SW Pit
GM-63A	1052.32	9/25/2000	14.58	1037.74	Menominee River
GM-63A	1052.32	11/30/2000	14.85	1037.47	Menominee River
GM-63A	1052.32	1/12/2001	14.29	1038.03	Menominee River
GM-63A	1052.32	1/28/2001	14.46	1037.86	Menominee River
GM-63A	1052.32	2/6/2001	13.33	1038.99	Menominee River
GM-63A	1052.32	2/20/2001	14.29	1038.03	Menominee River
GM-63A	1052.32	2/27/2001	14.34	1037.98	Menominee River
GM-63A	1052.32	3/9/2001	9.53	1042.79	Menominee River
GM-63A	1052.32	3/23/2001	14.20	1038.12	Menominee River
GM-63A	1052.32	4/2/2001	14.20	1038.12	Menominee River
GM-63A	1052.32	4/16/2001	12.06	1040.26	Menominee River
GM-63A	1052.32	4/17/2001	12.32	1040.00	Menominee River
GM-63A	1052.32	4/17/2001	13.24	1039.08	Menominee River
GM-63A	1052.32	4/17/2001	12.54	1039.78	Menominee River
GM-63A	1052.32	4/17/2001	12.50	1039.82	Menominee River
GM-63A	1052.32	4/17/2001	12.32	1040.00	Menominee River
GM-63A	1052.32	4/17/2001	12.40	1039.92	Menominee River
GM-63A	1052.32	4/17/2001	12.49	1039.83	Menominee River
GM-63A	1052.32	4/17/2001	12.40	1039.92	Menominee River
GM-63A	1052.32	4/17/2001	12.40	1039.92	Menominee River
GM-63A	1052.32	4/17/2001	12.40	1039.92	Menominee River
GM-63A	1052.32	4/17/2001	12.32	1040.00	Menominee River
GM-63A	1052.32	4/17/2001	12.39	1039.93	Menominee River
GM-63A	1052.32	4/17/2001	12.38	1039.94	Menominee River
GM-63A	1052.32	4/17/2001	12.33	1039.99	Menominee River
GM-63A	1052.32	4/17/2001	12.34	1039.98	Menominee River
GM-63A	1052.32	4/18/2001	12.70	1039.62	Menominee River
GM-63A	1052.32	4/18/2001	12.66	1039.66	Menominee River
GM-63A	1052.32	4/18/2001	12.61	1039.71	Menominee River
GM-63A	1052.32	4/19/2001	12.86	1039.46	Menominee River
GM-63A	1052.32	4/19/2001	12.86	1039.46	Menominee River
GM-63A	1052.32	4/19/2001	12.85	1039.47	Menominee River
GM-63A	1052.32	4/19/2001	12.85	1039.47	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-63A	1052.32	4/19/2001	12.84	1039.48	Menominee River
GM-63A	1052.32	4/19/2001	12.90	1039.42	Menominee River
GM-63A	1052.32	4/19/2001	12.86	1039.46	Menominee River
GM-63A	1052.32	4/19/2001	12.86	1039.46	Menominee River
GM-63A	1052.32	4/19/2001	12.86	1039.46	Menominee River
GM-63A	1052.32	4/19/2001	12.90	1039.42	Menominee River
GM-63A	1052.32	4/19/2001	12.90	1039.42	Menominee River
GM-63A	1052.32	4/19/2001	12.87	1039.45	Menominee River
GM-63A	1052.32	4/19/2001	12.88	1039.44	Menominee River
GM-63A	1052.32	4/19/2001	12.88	1039.44	Menominee River
GM-63A	1052.32	4/19/2001	12.85	1039.47	Menominee River
GM-63A	1052.32	4/19/2001	12.90	1039.42	Menominee River
GM-63A	1052.32	4/19/2001	12.89	1039.43	Menominee River
GM-63A	1052.32	4/19/2001	12.89	1039.43	Menominee River
GM-63A	1052.32	4/19/2001	12.90	1039.42	Menominee River
GM-63A	1052.32	4/19/2001	12.86	1039.46	Menominee River
GM-63A	1052.32	4/19/2001	12.89	1039.43	Menominee River
GM-63A	1052.32	4/20/2001	13.03	1039.29	Menominee River
GM-63A	1052.32	4/20/2001	12.99	1039.33	Menominee River
GM-63A	1052.32	4/20/2001	13.00	1039.32	Menominee River
GM-63A	1052.32	4/20/2001	13.00	1039.32	Menominee River
GM-63A	1052.32	4/20/2001	13.00	1039.32	Menominee River
GM-63A	1052.32	4/20/2001	12.99	1039.33	Menominee River
GM-63A	1052.32	4/20/2001	12.99	1039.33	Menominee River
GM-63A	1052.32	4/20/2001	13.01	1039.31	Menominee River
GM-63A	1052.32	4/20/2001	13.02	1039.30	Menominee River
GM-63A	1052.32	4/20/2001	13.02	1039.30	Menominee River
GM-63A	1052.32	4/20/2001	13.08	1039.24	Menominee River
GM-63A	1052.32	4/20/2001	13.03	1039.29	Menominee River
GM-63A	1052.32	4/20/2001	13.07	1039.25	Menominee River
GM-63A	1052.32	4/20/2001	13.03	1039.29	Menominee River
GM-63A	1052.32	4/20/2001	13.05	1039.27	Menominee River
GM-63A	1052.32	4/20/2001	12.96	1039.36	Menominee River
GM-63A	1052.32	4/20/2001	12.99	1039.33	Menominee River
GM-63A	1052.32	4/20/2001	13.04	1039.28	Menominee River
GM-63A	1052.32	4/20/2001	13.05	1039.27	Menominee River
GM-63A	1052.32	4/20/2001	13.06	1039.26	Menominee River
GM-63A	1052.32	4/20/2001	12.95	1039.37	Menominee River
GM-63A	1052.32	4/20/2001	13.04	1039.28	Menominee River
GM-63A	1052.32	4/21/2001	13.16	1039.16	Menominee River
GM-63A	1052.32	4/21/2001	13.16	1039.16	Menominee River
GM-63A	1052.32	4/22/2001	13.51	1038.81	Menominee River
GM-63A	1052.32	4/23/2001	13.12	1039.20	Menominee River
GM-63A	1052.32	5/4/2001	13.50	1038.82	Menominee River
GM-63A	1052.32	5/8/2001	13.69	1038.63	Menominee River
GM-63A	1052.32	5/16/2001	14.00	1038.32	Menominee River
GM-63A	1052.32	5/30/2001	13.97	1038.35	Menominee River
GM-63A	1052.32	6/1/2001	13.86	1038.46	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-63A	1052.32	6/14/2001	13.99	1038.33	Menominee River
GM-63A	1052.32	6/28/2001	14.10	1038.22	Menominee River
GM-63A	1052.32	7/3/2001	14.16	1038.16	Menominee River
GM-63A	1052.32	7/11/2001	14.46	1037.86	Menominee River
GM-63A	1052.32	7/12/2001	14.68	1037.64	Menominee River
GM-63A	1052.32	8/7/2001	14.64	1037.68	Menominee River
GM-63A	1052.32	8/22/2001	14.75	1037.57	Menominee River
GM-63A	1052.32	9/12/2001	14.92	1037.40	Menominee River
GM-63A	1052.32	12/11/2001	14.58	1037.74	Menominee River
GM-63A	1052.32	3/27/2002	14.72	1037.60	Menominee River
GM-63A	1052.32	6/11/2002	14.23	1038.09	Menominee River
GM-63A	1052.32	11/5/2002	14.21	1038.11	Menominee River
GM-63A	1052.32	5/19/2003	12.79	1039.53	Menominee River
GM-63A	1052.32	10/25/2003	15.06	1037.26	Menominee River
GM-63A	1052.32	11/25/2003	14.45	1037.87	Menominee River
GM-63A	1052.32	12/1/2003	15.03	1037.29	Menominee River
GM-63A	1052.32	5/13/2004	13.74	1038.58	Menominee River
GM-63A	1052.32	11/16/2004	14.70	1037.62	Menominee River
GM-63A	1052.27	4/14/2005	13.56	1038.76	Menominee River
GM-63A	1052.27	6/3/2005	14.35	1037.97	Menominee River
GM-63A	1052.32	7/22/2005	15.10	1037.22	Menominee River
GM-63A	1052.27	9/10/2005	14.68	1037.59	Menominee River
GM-63A	1052.27	11/10/2005	15.20	1037.07	Menominee River
GM-63A	1052.27	1/12/2006	16.25	1036.02	Menominee River
GM-63A	1052.27	2/13/2006	16.33	1035.94	Menominee River
GM-63A	1052.27	5/23/2006	15.56	1036.71	Menominee River
GM-63A	1052.27	8/8/2006	16.69	1035.58	Menominee River
GM-63A	1052.27	11/28/2006	16.21	1036.06	Menominee River
GM-63A	1052.27	2/5/2007	16.53	1035.74	Menominee River
GM-63A	1052.27	5/23/2007	16.56	1035.71	Menominee River
GM-63A	1052.27	8/14/2007	16.77	1035.50	Menominee River
GM-63A	1052.27	11/2/2007	16.63	1035.64	Menominee River
GM-63B	1052.15	9/25/2000	13.72	1038.43	Menominee River
GM-63B	1052.15	11/30/2000	14.02	1038.13	Menominee River
GM-63B	1052.15	1/12/2001	13.48	1038.67	Menominee River
GM-63B	1052.15	1/28/2001	13.63	1038.52	Menominee River
GM-63B	1052.15	2/6/2001	13.52	1038.63	Menominee River
GM-63B	1052.15	2/20/2001	13.47	1038.68	Menominee River
GM-63B	1052.15	2/27/2001	13.58	1038.57	Menominee River
GM-63B	1052.15	3/9/2001	8.29	1043.86	Menominee River
GM-63B	1052.15	3/23/2001	13.45	1038.70	Menominee River
GM-63B	1052.15	4/2/2001	13.43	1038.72	Menominee River
GM-63B	1052.15	4/16/2001	11.35	1040.80	Menominee River
GM-63B	1052.15	4/18/2001	11.88	1040.27	Menominee River
GM-63B	1052.15	4/18/2001	11.88	1040.27	Menominee River
GM-63B	1052.15	4/21/2001	12.29	1039.86	Menominee River
GM-63B	1052.15	4/23/2001	12.23	1039.92	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-63B	1052.15	6/1/2001	12.94	1039.21	Menominee River
GM-63B	1052.15	9/12/2001	13.98	1038.17	Menominee River
GM-63B	1052.15	12/11/2001	13.70	1038.45	Menominee River
GM-63B	1052.15	3/27/2002	13.77	1038.38	Menominee River
GM-63B	1052.15	6/11/2002	13.23	1038.92	Menominee River
GM-63B	1052.15	11/5/2002	13.21	1038.94	Menominee River
GM-63B	1052.15	5/19/2003	11.96	1040.19	Menominee River
GM-63B	1052.15	10/25/2003	14.07	1038.08	Menominee River
GM-63B	1052.15	11/25/2003	13.55	1038.60	Menominee River
GM-63B	1052.15	12/1/2003	14.07	1038.08	Menominee River
GM-63B	1052.15	5/13/2004	12.76	1039.39	Menominee River
GM-63B	1052.15	11/16/2004	13.87	1038.28	Menominee River
GM-63B	1052.11	4/14/2005	12.80	1039.35	Menominee River
GM-63B	1052.11	6/3/2005	13.51	1038.64	Menominee River
GM-63B	1052.15	7/22/2005	14.11	1038.04	Menominee River
GM-63B	1052.11	9/10/2005	14.84	1037.27	Menominee River
GM-63B	1052.11	11/10/2005	14.31	1037.80	Menominee River
GM-63B	1052.11	1/12/2006	15.02	1037.09	Menominee River
GM-63B	1052.11	2/13/2006	15.08	1037.03	Menominee River
GM-63B	1052.11	5/23/2006	14.37	1037.74	Menominee River
GM-63B	1052.11	8/8/2006	15.54	1036.57	Menominee River
GM-63B	1052.11	11/28/2006	15.70	1036.41	Menominee River
GM-63B	1052.11	2/5/2007	15.51	1036.60	Menominee River
GM-63B	1052.11	5/23/2007	15.49	1036.62	Menominee River
GM-63B	1052.11	8/14/2007	15.67	1036.44	Menominee River
GM-63B	1052.11	11/2/2007	15.57	1036.54	Menominee River
GM-64A	1057.26	9/25/2000	19.10	1038.16	Menominee River
GM-64A	1057.26	11/30/2000	19.29	1037.97	Menominee River
GM-64A	1057.26	1/12/2001	18.87	1038.39	Menominee River
GM-64A	1057.26	1/28/2001	19.05	1038.21	Menominee River
GM-64A	1057.26	2/6/2001	18.94	1038.32	Menominee River
GM-64A	1057.26	2/20/2001	18.87	1038.39	Menominee River
GM-64A	1057.26	2/27/2001	18.97	1038.29	Menominee River
GM-64A	1057.26	3/23/2001	18.83	1038.43	Menominee River
GM-64A	1057.26	4/2/2001	18.79	1038.47	Menominee River
GM-64A	1057.26	4/16/2001	16.78	1040.48	Menominee River
GM-64A	1057.26	4/18/2001	17.40	1039.86	Menominee River
GM-64A	1057.26	4/18/2001	17.41	1039.85	Menominee River
GM-64A	1057.26	4/21/2001	17.79	1039.47	Menominee River
GM-64A	1057.26	4/23/2001	17.68	1039.58	Menominee River
GM-64A	1057.26	5/4/2001	18.11	1039.15	Menominee River
GM-64A	1057.26	5/8/2001	18.29	1038.97	Menominee River
GM-64A	1057.26	5/16/2001	18.52	1038.74	Menominee River
GM-64A	1057.26	5/30/2001	18.53	1038.73	Menominee River
GM-64A	1057.26	6/1/2001	18.34	1038.92	Menominee River
GM-64A	1057.26	6/14/2001	18.47	1038.79	Menominee River
GM-64A	1057.26	6/28/2001	18.60	1038.66	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-64A	1057.26	7/3/2001	18.66	1038.60	Menominee River
GM-64A	1057.26	7/11/2001	18.99	1038.27	Menominee River
GM-64A	1057.26	7/12/2001	19.18	1038.08	Menominee River
GM-64A	1057.26	8/7/2001	19.11	1038.15	Menominee River
GM-64A	1057.26	8/22/2001	19.16	1038.10	Menominee River
GM-64A	1057.26	9/12/2001	19.37	1037.89	Menominee River
GM-64A	1057.26	12/11/2001	19.13	1038.13	Menominee River
GM-64A	1057.26	3/27/2002	19.15	1038.11	Menominee River
GM-64A	1057.26	6/11/2002	18.63	1038.63	Menominee River
GM-64A	1057.26	11/5/2002	18.69	1038.57	Menominee River
GM-64A	1057.26	5/19/2003	17.26	1040.00	Menominee River
GM-64A	1057.26	10/25/2003	19.45	1037.81	Menominee River
GM-64A	1057.26	11/25/2003	18.97	1038.29	Menominee River
GM-64A	1057.26	12/1/2003	19.41	1037.85	Menominee River
GM-64A	1057.26	5/13/2004	18.22	1039.04	Menominee River
GM-64B	1057.57	9/25/2000	19.35	1038.22	Menominee River
GM-64B	1057.57	11/30/2000	19.52	1038.05	Menominee River
GM-64B	1057.57	1/12/2001	19.12	1038.45	Menominee River
GM-64B	1057.57	1/28/2001	19.29	1038.28	Menominee River
GM-64B	1057.57	2/6/2001	19.18	1038.39	Menominee River
GM-64B	1057.57	2/20/2001	19.11	1038.46	Menominee River
GM-64B	1057.57	2/27/2001	19.22	1038.35	Menominee River
GM-64B	1057.57	3/23/2001	19.09	1038.48	Menominee River
GM-64B	1057.57	4/2/2001	19.05	1038.52	Menominee River
GM-64B	1057.57	4/16/2001	17.04	1040.53	Menominee River
GM-64B	1057.57	4/18/2001	17.65	1039.92	Menominee River
GM-64B	1057.57	4/18/2001	17.66	1039.91	Menominee River
GM-64B	1057.57	4/21/2001	18.06	1039.51	Menominee River
GM-64B	1057.57	4/23/2001	17.96	1039.61	Menominee River
GM-64B	1057.57	6/1/2001	17.59	1039.98	Menominee River
GM-64B	1057.57	9/12/2001	19.60	1037.97	Menominee River
GM-64B	1057.57	12/11/2001	19.37	1038.20	Menominee River
GM-64B	1057.57	3/27/2002	19.41	1038.16	Menominee River
GM-64B	1057.57	6/11/2002	18.87	1038.70	Menominee River
GM-64B	1057.57	11/5/2002	18.94	1038.63	Menominee River
GM-64B	1057.57	5/19/2003	17.49	1040.08	Menominee River
GM-64B	1057.57	10/25/2003	19.67	1037.90	Menominee River
GM-64B	1057.57	11/25/2003	19.22	1038.35	Menominee River
GM-64B	1057.57	12/1/2003	19.67	1037.90	Menominee River
GM-64B	1057.57	5/13/2004	18.47	1039.10	Menominee River
GM-65	1065.83	9/25/2000	25.94	1042.43	Menominee River
GM-65	1065.83	11/30/2000	26.31	1042.06	Menominee River
GM-65	1065.83	1/12/2001	25.68	1042.69	Menominee River
GM-65	1065.83	1/28/2001	25.72	1042.65	Menominee River
GM-65	1065.83	2/6/2001	25.57	1042.80	Menominee River
GM-65	1065.83	2/20/2001	25.66	1042.71	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-65	1065.83	2/27/2001	25.89	1042.48	Menominee River
GM-65	1065.83	3/9/2001	25.98	1042.39	Menominee River
GM-65	1065.83	3/23/2001	25.68	1042.69	Menominee River
GM-65	1065.83	4/2/2001	25.74	1042.63	Menominee River
GM-65	1065.83	4/16/2001	23.80	1044.57	Menominee River
GM-65	1065.83	4/18/2001	24.04	1044.33	Menominee River
GM-65	1065.83	4/18/2001	23.96	1044.41	Menominee River
GM-65	1065.83	4/21/2001	24.03	1044.34	Menominee River
GM-65	1065.83	4/23/2001	24.09	1044.28	Menominee River
GM-65	1065.83	6/1/2001	24.87	1043.50	Menominee River
GM-65	1065.83	9/12/2001	26.22	1042.15	Menominee River
GM-65	1065.83	12/11/2001	26.51	1041.86	Menominee River
GM-65	1065.83	6/11/2002	25.64	1042.73	Menominee River
GM-65	1065.83	11/5/2002	25.29	1043.08	Menominee River
GM-65	1068.37	5/19/2003	27.20	1041.17	Menominee River
GM-65	1068.37	10/25/2003	29.16	1039.21	Menominee River
GM-65	1068.37	11/25/2003	28.56	1039.81	Menominee River
GM-65	1068.37	12/1/2003	29.14	1039.23	Menominee River
GM-65	1068.37	5/13/2004	27.55	1040.82	Menominee River
GM-65	1068.37	11/16/2004	28.65	1039.72	Menominee River
GM-65	1068.21	4/14/2005	27.69	1040.68	Menominee River
GM-65	1068.21	6/3/2005	28.10	1040.27	Menominee River
GM-65	1068.37	7/22/2005	28.91	1039.46	Menominee River
GM-65	1068.21	9/10/2005	28.61	1039.60	Menominee River
GM-65	1068.21	11/9/2005	29.79	1038.42	Menominee River
GM-65	1068.21	1/12/2006	30.30	1037.91	Menominee River
GM-65	1068.21	2/13/2006	30.22	1037.99	Menominee River
GM-65	1068.21	5/23/2006	29.45	1038.76	Menominee River
GM-65	1068.21	8/8/2006	31.40	1036.81	Menominee River
GM-65	1068.21	11/28/2006	30.51	1037.70	Menominee River
GM-65	1068.21	2/5/2007	31.18	1037.03	Menominee River
GM-65	1068.21	5/23/2007	30.91	1037.30	Menominee River
GM-65	1068.21	8/14/2007	31.27	1036.94	Menominee River
GM-65	1068.21	11/2/2007	30.26	1037.95	Menominee River
GM-66A	1048.30	9/25/2000	9.66	1038.64	Menominee River
GM-66A	1048.30	11/30/2000	9.96	1038.34	Menominee River
GM-66A	1048.30	1/12/2001	9.14	1039.16	Menominee River
GM-66A	1048.30	1/28/2001	9.44	1038.86	Menominee River
GM-66A	1048.30	2/6/2001	9.43	1038.87	Menominee River
GM-66A	1048.30	2/20/2001	9.20	1039.10	Menominee River
GM-66A	1048.30	2/27/2001	9.16	1039.14	Menominee River
GM-66A	1048.30	3/23/2001	9.17	1039.13	Menominee River
GM-66A	1048.30	4/2/2001	9.13	1039.17	Menominee River
GM-66A	1048.30	4/16/2001	6.88	1041.42	Menominee River
GM-66A	1048.30	4/18/2001	7.55	1040.75	Menominee River
GM-66A	1048.30	4/18/2001	7.59	1040.71	Menominee River
GM-66A	1048.30	4/21/2001	8.08	1040.22	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-66A	1048.30	4/23/2001	6.62	1041.68	Menominee River
GM-66A	1048.30	6/1/2001	8.70	1039.60	Menominee River
GM-66A	1048.30	9/12/2001	9.81	1038.49	Menominee River
GM-66A	1048.30	12/11/2001	9.37	1038.93	Menominee River
GM-66A	1048.30	3/27/2002	9.52	1038.78	Menominee River
GM-66A	1048.30	6/11/2002	8.71	1039.59	Menominee River
GM-66A	1048.30	11/5/2002	9.00	1039.30	Menominee River
GM-66A	1048.30	5/19/2003	7.43	1040.87	Menominee River
GM-66A	1048.30	10/25/2003	9.82	1038.48	Menominee River
GM-66A	1048.30	11/25/2003	9.25	1039.05	Menominee River
GM-66A	1048.30	12/1/2003	9.67	1038.63	Menominee River
GM-66A	1048.30	5/13/2004	8.41	1039.89	Menominee River
GM-66A	1048.30	11/16/2004	9.36	1038.94	Menominee River
GM-66A	1048.16	4/14/2005	7.31	1040.99	Menominee River
GM-66A	1048.16	6/2/2005	9.28	1039.02	Menominee River
GM-66A	1048.30	7/21/2005	9.63	1038.67	Menominee River
GM-66A	1048.16	9/10/2005	9.62	1038.54	Menominee River
GM-66A	1048.16	11/9/2005	9.66	1038.50	Menominee River
GM-66A	1048.16	1/12/2006	9.92	1038.24	Menominee River
GM-66A	1048.16	2/13/2006	9.76	1038.40	Menominee River
GM-66A	1048.16	5/23/2006	9.23	1038.93	Menominee River
GM-66A	1048.16	8/8/2006	10.29	1037.87	Menominee River
GM-66A	1048.16	11/28/2006	10.10	1038.06	Menominee River
GM-66A	1048.16	2/5/2007	9.85	1038.31	Menominee River
GM-66A	1048.16	5/23/2007	10.34	1037.82	Menominee River
GM-66A	1048.16	8/14/2007	10.68	1037.48	Menominee River
GM-66A	1048.16	11/2/2007	10.33	1037.83	Menominee River
GM-66B	1048.30	9/25/2000	8.36	1039.94	Menominee River
GM-66B	1048.30	11/30/2000	8.62	1039.68	Menominee River
GM-66B	1048.30	1/12/2001	7.97	1040.33	Menominee River
GM-66B	1048.30	1/28/2001	8.12	1040.18	Menominee River
GM-66B	1048.30	2/6/2001	8.04	1040.26	Menominee River
GM-66B	1048.30	2/20/2001	8.04	1040.26	Menominee River
GM-66B	1048.30	2/27/2001	8.04	1040.26	Menominee River
GM-66B	1048.30	3/23/2001	8.02	1040.28	Menominee River
GM-66B	1048.30	4/2/2001	8.01	1040.29	Menominee River
GM-66B	1048.30	4/16/2001	5.99	1042.31	Menominee River
GM-66B	1048.30	4/18/2001	6.41	1041.89	Menominee River
GM-66B	1048.30	4/18/2001	6.43	1041.87	Menominee River
GM-66B	1048.30	4/21/2001	6.70	1041.60	Menominee River
GM-66B	1048.30	4/23/2001	7.91	1040.39	Menominee River
GM-66B	1048.30	6/1/2001	7.32	1040.98	Menominee River
GM-66B	1048.30	9/12/2001	8.51	1039.79	Menominee River
GM-66B	1048.30	12/11/2001	8.17	1040.13	Menominee River
GM-66B	1048.30	3/27/2002	8.26	1040.04	Menominee River
GM-66B	1048.30	6/11/2002	7.38	1040.92	Menominee River
GM-66B	1048.30	11/5/2002	7.02	1041.28	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-66B	1048.30	5/19/2003	6.28	1042.02	Menominee River
GM-66B	1048.30	10/25/2003	8.65	1039.65	Menominee River
GM-66B	1048.30	11/25/2003	8.13	1040.17	Menominee River
GM-66B	1048.30	12/1/2003	8.56	1039.74	Menominee River
GM-66B	1048.30	12/8/2003	8.23	1040.07	Menominee River
GM-66B	1048.30	12/9/2003	8.27	1040.03	Menominee River
GM-66B	1048.30	12/10/2003	8.04	1040.26	Menominee River
GM-66B	1048.30	12/11/2003	8.35	1039.95	Menominee River
GM-66B	1048.30	12/12/2003	8.50	1039.80	Menominee River
GM-66B	1048.30	12/16/2003	8.10	1040.20	Menominee River
GM-66B	1048.30	12/22/2003	8.25	1040.05	Menominee River
GM-66B	1048.30	12/31/2003	8.16	1040.14	Menominee River
GM-66B	1048.30	5/13/2004	7.09	1041.21	Menominee River
GM-66B	1048.30	11/16/2004	8.17	1040.13	Menominee River
GM-66B	1048.16	4/14/2005	8.50	1039.80	Menominee River
GM-66B	1048.16	6/2/2005	7.95	1040.35	Menominee River
GM-66B	1048.30	7/21/2005	8.60	1039.70	Menominee River
GM-66B	1048.16	9/10/2005	8.38	1039.78	Menominee River
GM-66B	1048.16	11/9/2005	9.24	1038.92	Menominee River
GM-66B	1048.16	1/12/2006	9.52	1038.64	Menominee River
GM-66B	1048.16	2/6/2006	9.66	1038.50	Menominee River
GM-66B	1048.16	2/13/2006	9.43	1038.73	Menominee River
GM-66B	1048.16	5/23/2006	8.59	1039.57	Menominee River
GM-66B	1048.16	8/8/2006	9.82	1038.34	Menominee River
GM-66B	1048.16	11/28/2006	9.66	1038.50	Menominee River
GM-66B	1048.16	2/5/2007	9.62	1038.54	Menominee River
GM-66B	1048.16	5/23/2007	9.85	1038.31	Menominee River
GM-66B	1048.16	8/14/2007	10.20	1037.96	Menominee River
GM-66B	1048.16	11/2/2007	10.02	1038.14	Menominee River
GM-67	1115.37	9/25/2000	69.04	1046.33	General Study/East Bedrock
GM-67	1115.37	11/30/2000	68.90	1046.47	General Study/East Bedrock
GM-67	1115.37	3/9/2001	68.20	1047.17	General Study/East Bedrock
GM-67	1115.37	6/1/2001	68.83	1046.54	General Study/East Bedrock
GM-67	1115.37	9/12/2001	93.00	1022.37	General Study/East Bedrock
GM-67	1115.37	12/11/2001	69.35	1046.02	General Study/East Bedrock
GM-67	1115.37	3/27/2002	69.68	1045.69	General Study/East Bedrock
GM-67	1115.37	6/11/2002	68.58	1046.79	General Study/East Bedrock
GM-67	1115.37	11/5/2002	68.12	1047.25	General Study/East Bedrock
GM-67	1115.37	5/19/2003	67.79	1047.58	General Study/East Bedrock
GM-67	1115.37	12/1/2003	68.47	1046.90	General Study/East Bedrock
GM-67	1115.37	5/13/2004	68.00	1047.37	General Study/East Bedrock
GM-67	1115.37	11/16/2004	67.88	1047.49	General Study/East Bedrock
GM-67	1115.37	6/2/2005	68.18	1047.19	General Study/East Bedrock
GM-67	1115.37	11/10/2005	68.57	1046.80	General Study/East Bedrock
GM-67	1115.37	5/24/2006	68.90	1046.47	General Study/East Bedrock

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-67	1115.37	11/27/2006	69.20	1046.17	General Study/East Bedrock
GM-67	1115.37	5/22/2007	69.52	1045.85	General Study/East Bedrock
GM-67	1115.37	11/1/2007	70.21	1045.16	General Study/East Bedrock
GM-68	1105.58	9/25/2000	35.40	1070.18	General Study/East Bedrock
GM-68	1105.58	11/30/2000	35.25	1070.33	General Study/East Bedrock
GM-68	1105.58	3/9/2001	35.57	1070.01	General Study/East Bedrock
GM-68	1105.58	6/1/2001	35.33	1070.25	General Study/East Bedrock
GM-68	1105.58	9/12/2001	37.01	1068.57	General Study/East Bedrock
GM-68	1105.58	12/11/2001	37.42	1068.16	General Study/East Bedrock
GM-68	1105.58	6/11/2002	36.97	1068.61	General Study/East Bedrock
GM-68	1105.58	11/5/2002	36.30	1069.28	General Study/East Bedrock
GM-68	1105.58	5/19/2003	36.77	1068.81	General Study/East Bedrock
GM-68	1105.58	12/1/2003	37.13	1068.45	General Study/East Bedrock
GM-68	1105.58	5/13/2004	36.91	1068.67	General Study/East Bedrock
GM-68	1105.58	11/16/2004	36.49	1069.09	General Study/East Bedrock
GM-68	1105.58	6/2/2005	37.17	1068.41	General Study/East Bedrock
GM-68	1105.58	11/10/2005	37.44	1068.14	General Study/East Bedrock
GM-68	1105.58	5/24/2006	37.78	1067.80	General Study/East Bedrock
GM-68	1105.58	11/27/2006	37.96	1067.62	General Study/East Bedrock
GM-68	1105.58	5/22/2007	38.60	1066.98	General Study/East Bedrock
GM-68	1105.58	11/1/2007	38.98	1066.60	General Study/East Bedrock
GM-69	1088.98	9/25/2000	49.39	1039.59	General Study/Breen
GM-69	1088.98	11/30/2000	49.78	1039.20	General Study/Breen
GM-69	1088.98	1/12/2001	49.16	1039.82	General Study/Breen
GM-69	1088.98	1/28/2001	49.21	1039.77	General Study/Breen
GM-69	1088.98	2/6/2001	49.02	1039.96	General Study/Breen
GM-69	1088.98	2/20/2001	49.07	1039.91	General Study/Breen
GM-69	1088.98	2/27/2001	49.39	1039.59	General Study/Breen
GM-69	1088.98	3/9/2001	49.35	1039.63	General Study/Breen
GM-69	1088.98	3/23/2001	49.16	1039.82	General Study/Breen
GM-69	1088.98	4/2/2001	49.18	1039.80	General Study/Breen
GM-69	1088.98	4/16/2001	47.61	1041.37	General Study/Breen
GM-69	1088.98	4/18/2001	47.74	1041.24	General Study/Breen
GM-69	1088.98	4/18/2001	47.82	1041.16	General Study/Breen
GM-69	1088.98	4/21/2001	47.26	1041.72	General Study/Breen
GM-69	1088.98	4/23/2001	47.55	1041.43	General Study/Breen
GM-69	1088.98	6/1/2001	48.36	1040.62	General Study/Breen
GM-69	1088.98	9/12/2001	49.60	1039.38	General Study/Breen
GM-69	1088.98	12/11/2001	49.87	1039.11	General Study/Breen
GM-69	1088.98	3/27/2002	49.13	1039.85	General Study/Breen
GM-69	1088.98	6/11/2002	48.56	1040.42	General Study/Breen
GM-69	1088.98	11/5/2002	48.50	1040.48	General Study/Breen
GM-69	1088.98	5/19/2003	47.24	1041.74	General Study/Breen
GM-69	1088.98	11/10/2005	45.13	1043.85	General Study/Breen

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-70	1120.52	9/25/2000	47.89	1072.63	NE PIT
GM-70	1120.52	10/6/2000	47.76	1072.76	NE PIT
GM-70	1120.52	10/11/2000	47.60	1072.92	NE PIT
GM-70	1120.52	11/30/2000	47.35	1073.17	NE PIT
GM-70	1120.52	3/9/2001	48.28	1072.24	NE PIT
GM-70	1120.52	6/1/2001	46.10	1074.42	NE PIT
GM-70	1120.52	9/12/2001	48.47	1072.05	NE PIT
GM-70	1120.52	12/11/2001	48.76	1071.76	NE PIT
GM-70	1120.52	3/27/2002	49.06	1071.46	NE PIT
GM-70	1120.52	6/11/2002	47.73	1072.79	NE PIT
GM-71	1120.50	9/25/2000	38.81	1081.69	NE PIT
GM-71	1120.50	10/6/2000	38.34	1082.16	NE PIT
GM-71	1120.50	10/11/2000	38.08	1082.42	NE PIT
GM-71	1120.50	11/30/2000	38.61	1081.89	NE PIT
GM-71	1120.50	3/9/2001	40.52	1079.98	NE PIT
GM-71	1120.50	6/1/2001	40.75	1079.75	NE PIT
GM-71	1120.50	9/12/2001	41.34	1079.16	NE PIT
GM-71	1120.50	12/11/2001	42.00	1078.50	NE PIT
GM-71	1120.50	3/27/2002	42.47	1078.03	NE PIT
GM-71	1120.50	6/11/2002	38.44	1082.06	NE PIT
GM-72	1121.45	9/25/2000	42.10	1079.35	NE PIT
GM-72	1121.45	10/6/2000	41.87	1079.58	NE PIT
GM-72	1121.45	10/11/2000	41.72	1079.73	NE PIT
GM-72	1121.45	11/30/2000	41.91	1079.54	NE PIT
GM-72	1121.45	3/9/2001	42.18	1079.27	NE PIT
GM-72	1121.45	6/1/2001	43.45	1078.00	NE PIT
GM-72	1121.45	9/12/2001	43.95	1077.50	NE PIT
GM-72	1121.45	12/11/2001	44.48	1076.97	NE PIT
GM-72	1121.45	3/27/2002	44.94	1076.51	NE PIT
GM-72	1121.45	6/11/2002	42.67	1078.78	NE PIT
GM-72	1121.45	11/5/2002	41.23	1080.22	NE PIT
GM-72	1121.45	5/19/2003	41.38	1080.07	NE PIT
GM-72	1121.45	5/13/2004	41.62	1079.83	NE PIT
GM-72A	1123.20	6/2/2005	43.87	1079.33	NE Pit
GM-72A	1123.20	11/9/2005	44.16	1078.04	NE Pit
GM-72A	1123.20	5/23/2006	45.14	1078.06	NE Pit
GM-72A	1123.20	5/23/2006	45.14	1078.06	NE Pit
GM-72A	1123.20	11/27/2006	45.29	1077.91	NE Pit
GM-72A	1123.20	5/22/2007	46.59	1076.61	NE Pit
GM-72A	1123.20	11/1/2007	47.34	1075.86	NE Pit
GM-73	1113.90	9/25/2000	47.36	1066.54	Charcoal Dump
GM-73	1113.90	11/30/2000	47.45	1066.45	Charcoal Dump
GM-73	1113.90	1/16/2001	47.70	1066.20	Charcoal Dump
GM-73	1113.90	1/25/2001	47.72	1066.18	Charcoal Dump

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-73	1113.90	2/13/2001	47.81	1066.09	Charcoal Dump
GM-73	1113.90	3/9/2001	47.92	1065.98	Charcoal Dump
GM-73	1113.90	9/12/2001	47.59	1066.31	Charcoal Dump
GM-73	1113.90	12/11/2001	47.83	1066.07	Charcoal Dump
GM-73	1113.90	3/27/2002	48.16	1065.74	Charcoal Dump
GM-73	1113.90	6/11/2002	47.11	1066.79	Charcoal Dump
GM-73	1113.90	11/5/2002	47.19	1066.71	Charcoal Dump
GM-73	1113.90	5/19/2003	47.21	1066.69	Charcoal Dump
GM-73	1113.90	12/1/2003	47.71	1066.19	Charcoal Dump
GM-73	1113.90	5/13/2004	40.83	1073.07	Charcoal Dump
GM-73	1113.90	11/16/2004	47.33	1066.57	Charcoal Dump
GM-73	1113.90	6/2/2005	47.17	1066.73	Charcoal Dump
GM-73	1113.90	11/10/2005	47.47	1066.43	Charcoal Dump
GM-73	1113.90	5/24/2006	47.35	1066.55	Charcoal Dump
GM-73	1113.90	11/27/2006	47.72	1066.18	Charcoal Dump
GM-73	1113.90	5/22/2007	47.71	1066.19	Charcoal Dump
GM-73	1113.90	11/1/2007	48.06	1065.84	Charcoal Dump
GM-74	1103.35	9/25/2000	37.49	1065.86	Charcoal Dump
GM-74	1103.35	11/30/2000	37.69	1065.66	Charcoal Dump
GM-74	1103.35	1/16/2001	38.04	1065.31	Charcoal Dump
GM-74	1103.35	1/25/2001	38.02	1065.33	Charcoal Dump
GM-74	1103.35	2/13/2001	38.13	1065.22	Charcoal Dump
GM-74	1103.35	3/9/2001	38.20	1065.15	Charcoal Dump
GM-74	1103.35	9/12/2001	37.80	1065.55	Charcoal Dump
GM-74	1103.35	12/11/2001	38.02	1065.33	Charcoal Dump
GM-74	1103.35	3/27/2002	38.39	1064.96	Charcoal Dump
GM-74	1103.35	6/11/2002	37.38	1065.97	Charcoal Dump
GM-74	1103.35	11/5/2002	37.56	1065.79	Charcoal Dump
GM-74	1103.35	5/19/2003	37.33	1066.02	Charcoal Dump
GM-74	1103.35	12/1/2003	37.99	1065.36	Charcoal Dump
GM-74	1103.35	5/13/2004	37.04	1066.31	Charcoal Dump
GM-74	1103.35	11/16/2004	37.65	1065.70	Charcoal Dump
GM-74	1103.35	6/2/2005	37.40	1065.95	Charcoal Dump
GM-74	1103.35	11/10/2005	37.70	1065.65	Charcoal Dump
GM-74	1103.35	5/24/2006	37.48	1065.87	Charcoal Dump
GM-74	1103.35	11/27/2006	37.88	1065.47	Charcoal Dump
GM-74	1103.35	5/22/2007	37.72	1065.63	Charcoal Dump
GM-74	1103.35	11/1/2007	38.12	1065.23	Charcoal Dump
GM-75	1091.51	9/25/2000	25.27	1066.24	Charcoal Dump
GM-75	1091.51	11/30/2000	25.45	1066.06	Charcoal Dump
GM-75	1091.51	1/16/2001	25.74	1065.77	Charcoal Dump
GM-75	1091.51	1/25/2001	25.72	1065.79	Charcoal Dump
GM-75	1091.51	2/13/2001	25.88	1065.63	Charcoal Dump
GM-75	1091.51	3/9/2001	25.88	1065.63	Charcoal Dump
GM-75	1091.51	9/12/2001	25.49	1066.02	Charcoal Dump
GM-75	1091.51	12/11/2001	25.66	1065.85	Charcoal Dump

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-75	1091.51	3/27/2002	25.94	1065.57	Charcoal Dump
GM-75	1091.51	6/11/2002	25.33	1066.18	Charcoal Dump
GM-75	1091.51	11/5/2002	25.45	1066.06	Charcoal Dump
GM-75	1091.51	5/19/2003	25.12	1066.39	Charcoal Dump
GM-75	1091.51	12/1/2003	25.68	1065.83	Charcoal Dump
GM-75	1091.51	5/13/2004	24.97	1066.54	Charcoal Dump
GM-75	1091.51	11/16/2004	25.51	1066.00	Charcoal Dump
GM-75	1091.51	6/2/2005	25.23	1066.28	Charcoal Dump
GM-75	1091.51	11/10/2005	25.49	1066.02	Charcoal Dump
GM-75	1091.51	5/24/2006	25.27	1066.24	Charcoal Dump
GM-75	1091.51	11/27/2006	25.47	1066.04	Charcoal Dump
GM-75	1091.51	5/22/2007	25.29	1066.22	Charcoal Dump
GM-75	1091.51	11/1/2007	25.65	1065.86	Charcoal Dump
GM-76	1059.96	1/28/2001	4.31	1055.65	West Breen Disposal
GM-76	1059.96	2/6/2001			West Breen Disposal
GM-76	1059.96	2/20/2001			West Breen Disposal
GM-76	1059.96	2/27/2001			West Breen Disposal
GM-76	1059.96	3/9/2001			West Breen Disposal
GM-76	1059.96	4/2/2001			West Breen Disposal
GM-76	1059.96	4/16/2001	4.14	1055.82	West Breen Disposal
GM-76	1059.96	4/18/2001	4.18	1055.78	West Breen Disposal
GM-76	1059.96	4/18/2001	4.21	1055.75	West Breen Disposal
GM-76	1059.96	4/21/2001	4.16	1055.80	West Breen Disposal
GM-76	1059.96	4/23/2001	3.92	1056.04	West Breen Disposal
GM-76	1059.96	6/1/2001	4.14	1055.82	West Breen Disposal
GM-76	1059.96	9/12/2001	7.86	1052.10	West Breen Disposal
GM-76	1059.96	12/11/2001	4.60	1055.36	West Breen Disposal
GM-76	1059.96	3/27/2002	4.01	1055.95	West Breen Disposal
GM-76	1059.96	6/11/2002	3.34	1056.62	West Breen Disposal
GM-76	1059.96	11/5/2002	4.17	1055.79	West Breen Disposal
GM-76	1059.96	5/19/2003	4.41	1055.55	West Breen Disposal
GM-76	1059.96	12/1/2003	4.74	1055.22	West Breen Disposal
GM-76	1059.96	5/13/2004	4.44	1055.52	West Breen Disposal
GM-76	1059.96	11/17/2004	4.73	1055.23	West Breen Disposal
GM-76	1059.96	4/14/2005	4.76	1055.20	West Breen Disposal
GM-76	1059.96	6/3/2005	5.51	1054.45	West Breen Disposal
GM-76	1059.96	7/22/2005	9.14	1050.82	West Breen Disposal
GM-76	1059.96	9/11/2005	9.64	1050.32	West Breen Disposal
GM-76	1059.96	11/10/2005	6.38	1053.58	West Breen Disposal
GM-76	1059.96	1/12/2006	5.24	1054.72	West Breen Disposal
GM-76	1059.96	2/13/2006	5.13	1054.83	West Breen Disposal
GM-76	1059.96	5/24/2006	4.85	1055.11	West Breen Disposal
GM-76	1059.96	8/8/2006	7.33	1052.63	West Breen Disposal
GM-76	1059.96	11/27/2006	4.66	1055.30	West Breen Disposal
GM-76	1059.96	5/22/2007	5.66	1054.30	West Breen Disposal
GM-76	1059.96	11/2/2007	8.06	1051.90	West Breen Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-77	1045.43	10/25/2003	6.18	1039.25	Menominee River
GM-77	1045.43	11/25/2003	7.68	1037.75	Menominee River
GM-77	1045.43	12/1/2003	6.14	1039.29	Menominee River
GM-77	1045.43	12/8/2003	5.80	1039.63	Menominee River
GM-77	1045.43	12/9/2003	5.84	1039.59	Menominee River
GM-77	1045.43	12/10/2003	5.72	1039.71	Menominee River
GM-77	1045.43	12/11/2003	5.93	1039.50	Menominee River
GM-77	1045.43	12/12/2003	6.09	1039.34	Menominee River
GM-77	1045.43	12/16/2003	5.70	1039.73	Menominee River
GM-77	1045.43	12/22/2003	5.88	1039.55	Menominee River
GM-77	1045.43	12/31/2003	5.81	1039.62	Menominee River
GM-77	1045.43	5/13/2004	4.65	1040.78	Menominee River
GM-77	1045.43	11/16/2004	5.75	1039.68	Menominee River
GM-77	1045.26	4/14/2005	4.86	1040.57	Menominee River
GM-77	1045.26	6/2/2005	8.50	1036.93	Menominee River
GM-77	1045.43	7/21/2005	6.13	1039.30	Menominee River
GM-77	1045.26	9/10/2005	5.91	1039.35	Menominee River
GM-77	1045.26	11/9/2005	7.22	1038.04	Menominee River
GM-77	1045.26	1/12/2006	7.51	1037.75	Menominee River
GM-77	1045.26	2/6/2006	7.68	1037.58	Menominee River
GM-77	1045.26	2/13/2006	7.43	1037.83	Menominee River
GM-77	1045.26	3/16/2006	7.48	1037.78	Menominee River
GM-77	1045.26	5/23/2006	6.62	1038.64	Menominee River
GM-77	1045.26	8/8/2006	7.91	1037.35	Menominee River
GM-77	1045.26	11/28/2006	7.72	1037.54	Menominee River
GM-77	1045.26	2/5/2007	7.79	1037.47	Menominee River
GM-77	1045.26	5/23/2007	7.93	1037.33	Menominee River
GM-77	1045.26	8/14/2007	8.30	1036.96	Menominee River
GM-77	1045.26	11/2/2007	8.10	1037.16	Menominee River
GM-78	1051.90	10/25/2003	14.50	1037.40	Menominee River
GM-78	1051.90	11/25/2003	13.87	1038.03	Menominee River
GM-78	1051.90	12/1/2003	14.45	1037.45	Menominee River
GM-78	1051.90	12/8/2003	14.11	1037.79	Menominee River
GM-78	1051.90	12/9/2003	14.13	1037.77	Menominee River
GM-78	1051.90	12/10/2003	13.96	1037.94	Menominee River
GM-78	1051.90	12/11/2003	14.26	1037.64	Menominee River
GM-78	1051.90	12/12/2003	14.37	1037.53	Menominee River
GM-78	1051.90	12/16/2003	14.02	1037.88	Menominee River
GM-78	1051.90	12/22/2003	14.22	1037.68	Menominee River
GM-78	1051.90	12/31/2003	14.21	1037.69	Menominee River
GM-78	1051.90	5/13/2004	13.21	1038.69	Menominee River
GM-78	1051.90	11/16/2004	14.09	1037.81	Menominee River
GM-78	1051.72	4/14/2005	13.17	1038.73	Menominee River
GM-78	1051.72	6/2/2005	14.04	1037.86	Menominee River
GM-78	1051.90	7/22/2005	14.92	1036.98	Menominee River
GM-78	1051.72	9/10/2005	14.29	1037.43	Menominee River
GM-78	1051.72	11/9/2005	14.34	1037.38	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-78	1051.72	1/12/2006	15.09	1036.63	Menominee River
GM-78	1051.72	2/13/2006	14.86	1036.86	Menominee River
GM-78	1051.72	5/23/2006	14.43	1037.29	Menominee River
GM-78	1051.72	8/8/2006	15.58	1036.14	Menominee River
GM-78	1051.72	11/28/2006	15.30	1036.42	Menominee River
GM-78	1051.72	2/5/2007	15.21	1036.51	Menominee River
GM-78	1051.72	5/23/2007	15.65	1036.07	Menominee River
GM-78	1051.72	8/14/2007	15.92	1035.80	Menominee River
GM-78	1051.72	11/2/2007	15.54	1036.18	Menominee River
GM-79	1052.37	10/25/2003	14.71	1037.66	Menominee River
GM-79	1052.37	11/25/2003	14.21	1038.16	Menominee River
GM-79	1052.37	12/1/2003	14.72	1037.65	Menominee River
GM-79	1052.37	12/8/2003	14.38	1037.99	Menominee River
GM-79	1052.37	12/9/2003	14.45	1037.92	Menominee River
GM-79	1052.37	12/10/2003	14.24	1038.13	Menominee River
GM-79	1052.37	12/11/2003	14.49	1037.88	Menominee River
GM-79	1052.37	12/12/2003	14.62	1037.75	Menominee River
GM-79	1052.37	12/16/2003	14.32	1038.05	Menominee River
GM-79	1052.37	12/22/2003	14.53	1037.84	Menominee River
GM-79	1052.37	12/31/2003	14.58	1037.79	Menominee River
GM-79	1052.37	5/13/2004	13.46	1038.91	Menominee River
GM-79	1052.37	4/14/2005	13.35	1039.02	Menominee River
GM-79	1052.37	6/3/2005	14.04	1038.33	Menominee River
GM-79	1052.37	7/22/2005	14.92	1037.45	Menominee River
GM-79	1052.37	9/10/2005	14.32	1038.05	Menominee River
GM-79	1052.37	11/10/2005	14.65	1037.72	Menominee River
GM-79	1052.37	1/12/2006	15.14	1037.23	Menominee River
GM-79	1052.37	2/13/2006	15.11	1037.26	Menominee River
GM-79	1052.37	5/23/2006	14.53	1037.84	Menominee River
GM-79	1052.37	8/8/2006	15.60	1036.77	Menominee River
GM-79	1052.37	11/28/2006	15.46	1036.91	Menominee River
GM-79	1052.37	2/5/2007	15.62	1036.75	Menominee River
GM-79	1052.37	5/23/2007	15.58	1036.79	Menominee River
GM-79	1052.37	8/14/2007	15.78	1036.59	Menominee River
GM-79	1052.37	11/2/2007	15.63	1036.74	Menominee River
GM-80	1120.51	11/16/2004	43.82	1076.69	General Study/Former Plant Site
GM-80	1120.51	6/2/2005	44.62	1075.89	General Study/Former Plant Site
GM-80	1120.51	11/10/2005	45.13	1075.38	General Study/Former Plant Site
GM-80	1120.51	5/24/2006	45.54	1074.97	General Study/Former Plant Site
GM-80	1120.51	11/27/2006	45.88	1074.63	General Study/Former Plant Site
GM-80	1120.51	5/22/2007	46.65	1073.86	General Study/Former Plant Site
GM-80	1120.51	11/1/2007	47.31	1073.20	General Study/Former Plant Site
GM-81A	1110.84	6/2/2005	37.75		General Study/Former Plant Site
GM-81A	1110.84	11/10/2005	38.68	1072.16	General Study/Former Plant Site
GM-81A	1110.84	5/24/2006	38.82	1072.02	General Study/Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-81A	1110.84	11/27/2006	39.40	1071.44	General Study/Former Plant Site
GM-81A	1110.84	5/22/2007	40.11	1070.73	General Study/Former Plant Site
GM-81A	1110.84	11/2/2007	40.72	1070.12	General Study/Former Plant Site
GM-81B	1111.32	6/2/2005	54.54		General Study/Former Plant Site
GM-81B	1111.32	11/10/2005	55.32	1056.00	General Study/Former Plant Site
GM-81B	1111.32	5/24/2006	55.59	1055.73	General Study/Former Plant Site
GM-81B	1111.32	11/27/2006	56.09	1055.23	General Study/Former Plant Site
GM-81B	1111.32	5/22/2007	56.52	1054.80	General Study/Former Plant Site
GM-81B	1111.32	11/2/2007	57.13	1054.19	General Study/Former Plant Site
GM-84	1055.21	4/14/2005	14.17	1041.04	Menominee River
GM-84	1055.21	6/2/2005	14.85	1040.36	Menominee River
GM-84	1055.21	7/21/2005	15.50	1039.71	Menominee River
GM-84	1055.14	9/10/2005	15.26	1039.88	Menominee River
GM-84	1055.14	11/9/2005	15.66	1039.48	Menominee River
GM-84	1055.14	1/12/2006	15.88	1039.26	Menominee River
GM-84	1055.14	2/13/2006	15.75	1039.39	Menominee River
GM-84	1055.14	5/23/2006	16.02	1039.12	Menominee River
GM-84	1055.14	8/8/2006	18.19	1036.95	Menominee River
GM-84	1055.14	11/28/2006	16.04	1039.10	Menominee River
GM-84	1055.14	2/5/2007	16.09	1039.05	Menominee River
GM-84	1055.14	5/23/2007	16.22	1038.92	Menominee River
GM-84	1055.14	8/14/2007	16.58	1038.56	Menominee River
GM-84	1055.14	11/2/2007	16.36	1038.78	Menominee River
GM-85	1070.20	11/16/2004	22.33	1047.87	General Study/East Bedrock
GM-85	1070.20	6/2/2005	22.77	1047.43	General Study/East Bedrock
GM-85	1070.20	11/10/2005	23.40	1046.80	General Study/East Bedrock
GM-85	1070.20	5/24/2006	23.54	1046.66	General Study/East Bedrock
GM-85	1070.20	11/28/2006	23.74	1046.46	General Study/East Bedrock
GM-85	1070.20	5/22/2007	24.04	1046.16	General Study/East Bedrock
GM-85	1070.20	11/1/2007	24.73	1045.47	General Study/East Bedrock
GM-86A	1117.92	11/1/2007	68.48	1049.44	Lodal Park
GM-86B	1117.95	11/1/2007	69.15	1048.80	Lodal Park
GM-87A	1054.16	2/13/2006	16.63	1037.53	Menominee River
GM-87A	1054.16	5/23/2006	16.14	1038.02	Menominee River
GM-87A	1054.16	8/8/2006	17.12	1037.04	Menominee River
GM-87A	1054.16	11/28/2006	16.92	1037.24	Menominee River
GM-87A	1054.16	2/5/2007	17.15	1037.01	Menominee River
GM-87A	1054.16	5/23/2007	17.16	1037.00	Menominee River
GM-87A	1054.16	8/14/2007	17.36	1036.80	Menominee River
GM-87A	1054.16	11/2/2007	17.20	1036.96	Menominee River
GM-87B	1054.27	2/13/2006	16.65	1037.62	Menominee River
GM-87B	1054.27	5/23/2006	16.13	1038.14	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GM-87B	1054.27	8/8/2006	17.12	1037.15	Menominee River
GM-87B	1054.27	11/28/2006	16.95	1037.32	Menominee River
GM-87B	1054.27	2/5/2007	17.12	1037.15	Menominee River
GM-87B	1054.27	5/23/2007	17.19	1037.08	Menominee River
GM-87B	1054.27	8/14/2007	17.34	1036.93	Menominee River
GM-87B	1054.27	11/2/2007	17.18	1037.09	Menominee River
GM-100	1111.68	7/26/1999	70.20	1041.48	Breen
GM-100	1111.68	10/25/1999	75.10	1036.58	Breen
GM-100	1111.68	11/19/1999	71.30	1040.38	Breen
GM-100	1111.68	3/18/2000	75.00	1036.68	Breen
GM-100	1111.68	6/17/2000	72.18	1039.50	Breen
GM-100	1111.68	9/25/2000	71.91	1039.77	Breen
GM-118D	1116.32	9/24/1998	50.20	1066.12	General Study/Breen
GM-118D	1116.32	10/22/1998	50.28	1066.04	General Study/Breen
GM-118D	1116.32	11/22/1998	50.47	1065.85	General Study/Breen
GM-118D	1116.32	6/14/1999	51.24	1065.08	General Study/Breen
GM-118D	1116.32	7/26/1999	50.91	1065.41	General Study/Breen
GM-118D	1116.32	8/21/1999	50.42	1065.90	General Study/Breen
GM-118D	1116.32	9/22/1999	50.00	1066.32	General Study/Breen
GM-118D	1116.32	10/25/1999	49.82	1066.50	General Study/Breen
GM-118D	1116.32	11/19/1999	49.77	1066.55	General Study/Breen
GM-118D	1116.32	1/22/2000	50.05	1066.27	General Study/Breen
GM-118D	1116.32	2/21/2000	50.35	1065.97	General Study/Breen
GM-118D	1116.32	3/18/2000	50.53	1065.79	General Study/Breen
GM-118D	1116.32	6/17/2000	50.61	1065.71	General Study/Breen
GM-118D	1116.32	9/25/2000	50.02	1066.30	General Study/Breen
GM-118D	1116.32	11/30/2000	49.63	1066.69	General Study/Breen
GM-118D	1116.32	3/9/2001	49.97	1066.35	General Study/Breen
GM-118D	1116.32	6/1/2001	50.01	1066.31	General Study/Breen
GM-118D	1116.32	9/12/2001	49.94	1066.38	General Study/Breen
GM-118D	1116.32	12/11/2001	50.25	1066.07	General Study/Breen
GM-118D	1116.32	3/27/2002	50.69	1065.63	General Study/Breen
GM-118D	1116.32	6/11/2002	49.91	1066.41	General Study/Breen
GM-118D	1116.32	11/5/2002	48.84	1067.48	General Study/Breen
GM-118D	1116.32	5/19/2003	48.85	1067.47	General Study/Breen
GM-118D	1116.32	12/1/2003	48.96	1067.36	General Study/Breen
GM-118D	1116.32	5/13/2004	48.79	1067.53	General Study/Breen
GM-118D	1116.32	11/17/2004	47.95	1068.37	General Study/Breen
GM-118D	1116.32	6/3/2005	48.51	1067.81	General Study/Breen
GM-118D	1116.32	11/9/2005	49.30	1067.02	General Study/Breen
GM-118D	1116.32	5/23/2006	49.96	1066.36	General Study/Breen
GM-118D	1116.32	11/27/2006	50.14	1066.18	General Study/Breen
GM-118D	1116.32	5/22/2007	50.86	1065.46	General Study/Breen
GM-118D	1116.32	11/1/2007	51.81	1064.51	General Study/Breen

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-1	1039.82	9/25/2000	3.21	1038.48	Menominee River
GMEW-1	1039.82	1/12/2001	3.80	1037.89	Menominee River
GMEW-1	1039.82	1/28/2001	3.98	1037.71	Menominee River
GMEW-1	1039.82	2/6/2001	3.90	1037.79	Menominee River
GMEW-1	1039.82	2/20/2001	3.88	1037.81	Menominee River
GMEW-1	1039.82	2/27/2001	3.81	1037.88	Menominee River
GMEW-1	1039.82	3/23/2001	3.72	1037.97	Menominee River
GMEW-1	1039.82	4/2/2001	3.67	1038.02	Menominee River
GMEW-1	1039.82	4/16/2001	1.59	1040.10	Menominee River
GMEW-1	1039.82	4/17/2001	7.54	1034.15	Menominee River
GMEW-1	1039.82	4/17/2001	6.84	1034.85	Menominee River
GMEW-1	1039.82	4/17/2001	6.95	1034.74	Menominee River
GMEW-1	1039.82	4/17/2001	10.54	1031.15	Menominee River
GMEW-1	1039.82	4/17/2001	7.00	1034.69	Menominee River
GMEW-1	1039.82	4/17/2001	7.06	1034.63	Menominee River
GMEW-1	1039.82	4/17/2001	7.11	1034.58	Menominee River
GMEW-1	1039.82	4/17/2001	7.15	1034.54	Menominee River
GMEW-1	1039.82	4/17/2001	7.26	1034.43	Menominee River
GMEW-1	1039.82	4/17/2001	10.08	1031.61	Menominee River
GMEW-1	1039.82	4/17/2001	8.36	1033.33	Menominee River
GMEW-1	1039.82	4/17/2001	7.45	1034.24	Menominee River
GMEW-1	1039.82	4/17/2001	7.82	1033.87	Menominee River
GMEW-1	1039.82	4/17/2001	6.88	1034.81	Menominee River
GMEW-1	1039.82	4/17/2001	10.00	1031.69	Menominee River
GMEW-1	1039.82	4/17/2001	8.75	1032.94	Menominee River
GMEW-1	1039.82	4/17/2001	8.60	1033.09	Menominee River
GMEW-1	1039.82	4/17/2001	8.49	1033.20	Menominee River
GMEW-1	1039.82	4/17/2001	8.26	1033.43	Menominee River
GMEW-1	1039.82	4/17/2001	8.05	1033.64	Menominee River
GMEW-1	1039.82	4/17/2001	7.93	1033.76	Menominee River
GMEW-1	1039.82	4/17/2001	7.69	1034.00	Menominee River
GMEW-1	1039.82	4/17/2001	7.36	1034.33	Menominee River
GMEW-1	1039.82	4/17/2001	6.37	1035.32	Menominee River
GMEW-1	1039.82	4/17/2001	6.76	1034.93	Menominee River
GMEW-1	1039.82	4/17/2001	6.71	1034.98	Menominee River
GMEW-1	1039.82	4/17/2001	6.65	1035.04	Menominee River
GMEW-1	1039.82	4/17/2001	6.80	1034.89	Menominee River
GMEW-1	1039.82	4/17/2001	1.86	1039.83	Menominee River
GMEW-1	1039.82	4/17/2001	6.59	1035.10	Menominee River
GMEW-1	1039.82	4/17/2001	6.10	1035.59	Menominee River
GMEW-1	1039.82	4/17/2001	6.52	1035.17	Menominee River
GMEW-1	1039.82	4/18/2001	11.27	1030.42	Menominee River
GMEW-1	1039.82	4/18/2001	11.18	1030.51	Menominee River
GMEW-1	1039.82	4/18/2001	11.18	1030.51	Menominee River
GMEW-1	1039.82	4/18/2001	11.32	1030.37	Menominee River
GMEW-1	1039.82	4/19/2001	2.71	1038.98	Menominee River
GMEW-1	1039.82	4/19/2001	2.73	1038.96	Menominee River
GMEW-1	1039.82	4/19/2001	2.76	1038.93	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-1	1039.82	4/19/2001	2.76	1038.93	Menominee River
GMEW-1	1039.82	4/19/2001	2.68	1039.01	Menominee River
GMEW-1	1039.82	4/19/2001	2.67	1039.02	Menominee River
GMEW-1	1039.82	4/19/2001	2.66	1039.03	Menominee River
GMEW-1	1039.82	4/19/2001	2.65	1039.04	Menominee River
GMEW-1	1039.82	4/19/2001	2.64	1039.05	Menominee River
GMEW-1	1039.82	4/19/2001	2.63	1039.06	Menominee River
GMEW-1	1039.82	4/19/2001	2.62	1039.07	Menominee River
GMEW-1	1039.82	4/19/2001	2.69	1039.00	Menominee River
GMEW-1	1039.82	4/19/2001	2.53	1039.16	Menominee River
GMEW-1	1039.82	4/19/2001	11.36	1030.33	Menominee River
GMEW-1	1039.82	4/19/2001	2.52	1039.17	Menominee River
GMEW-1	1039.82	4/19/2001	2.51	1039.18	Menominee River
GMEW-1	1039.82	4/19/2001	2.51	1039.18	Menominee River
GMEW-1	1039.82	4/19/2001	2.52	1039.17	Menominee River
GMEW-1	1039.82	4/19/2001	2.58	1039.11	Menominee River
GMEW-1	1039.82	4/19/2001	2.53	1039.16	Menominee River
GMEW-1	1039.82	4/19/2001	2.61	1039.08	Menominee River
GMEW-1	1039.82	4/19/2001	2.51	1039.18	Menominee River
GMEW-1	1039.82	4/19/2001	2.57	1039.12	Menominee River
GMEW-1	1039.82	4/19/2001	2.55	1039.14	Menominee River
GMEW-1	1039.82	4/19/2001	2.84	1038.85	Menominee River
GMEW-1	1039.82	4/19/2001	2.59	1039.10	Menominee River
GMEW-1	1039.82	4/19/2001	2.60	1039.09	Menominee River
GMEW-1	1039.82	4/19/2001	2.52	1039.17	Menominee River
GMEW-1	1039.82	4/19/2001	3.10	1038.59	Menominee River
GMEW-1	1039.82	4/19/2001	9.00	1032.69	Menominee River
GMEW-1	1039.82	4/19/2001	10.65	1031.04	Menominee River
GMEW-1	1039.82	4/19/2001	11.36	1030.33	Menominee River
GMEW-1	1039.82	4/19/2001	2.53	1039.16	Menominee River
GMEW-1	1039.82	4/20/2001	10.46	1031.23	Menominee River
GMEW-1	1039.82	4/20/2001	2.65	1039.04	Menominee River
GMEW-1	1039.82	4/20/2001	11.41	1030.28	Menominee River
GMEW-1	1039.82	4/20/2001	10.36	1031.33	Menominee River
GMEW-1	1039.82	4/20/2001	10.41	1031.28	Menominee River
GMEW-1	1039.82	4/20/2001	10.43	1031.26	Menominee River
GMEW-1	1039.82	4/20/2001	8.90	1032.79	Menominee River
GMEW-1	1039.82	4/20/2001	10.43	1031.26	Menominee River
GMEW-1	1039.82	4/20/2001	9.98	1031.71	Menominee River
GMEW-1	1039.82	4/20/2001	10.51	1031.18	Menominee River
GMEW-1	1039.82	4/20/2001	10.33	1031.36	Menominee River
GMEW-1	1039.82	4/20/2001	2.63	1039.06	Menominee River
GMEW-1	1039.82	4/20/2001	10.42	1031.27	Menominee River
GMEW-1	1039.82	4/20/2001	10.61	1031.08	Menominee River
GMEW-1	1039.82	4/20/2001	9.83	1031.86	Menominee River
GMEW-1	1039.82	4/20/2001	10.60	1031.09	Menominee River
GMEW-1	1039.82	4/20/2001	10.05	1031.64	Menominee River
GMEW-1	1039.82	4/20/2001	10.11	1031.58	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-1	1039.82	4/20/2001	10.14	1031.55	Menominee River
GMEW-1	1039.82	4/20/2001	10.17	1031.52	Menominee River
GMEW-1	1039.82	4/20/2001	10.20	1031.49	Menominee River
GMEW-1	1039.82	4/20/2001	10.25	1031.44	Menominee River
GMEW-1	1039.82	4/20/2001	10.25	1031.44	Menominee River
GMEW-1	1039.82	4/20/2001	10.28	1031.41	Menominee River
GMEW-1	1039.82	4/20/2001	10.31	1031.38	Menominee River
GMEW-1	1039.82	4/20/2001	10.35	1031.34	Menominee River
GMEW-1	1039.82	4/20/2001	9.61	1032.08	Menominee River
GMEW-1	1039.82	4/20/2001	11.15	1030.54	Menominee River
GMEW-1	1039.82	4/20/2001	2.63	1039.06	Menominee River
GMEW-1	1039.82	4/20/2001	10.53	1031.16	Menominee River
GMEW-1	1039.82	4/20/2001	2.60	1039.09	Menominee River
GMEW-1	1039.82	4/20/2001	11.23	1030.46	Menominee River
GMEW-1	1039.82	4/20/2001	11.26	1030.43	Menominee River
GMEW-1	1039.82	4/21/2001	10.80	1030.89	Menominee River
GMEW-1	1039.82	4/21/2001	11.65	1030.04	Menominee River
GMEW-1	1039.82	4/22/2001	12.45	1029.24	Menominee River
GMEW-1	1039.82	4/23/2001	11.21	1030.48	Menominee River
GMEW-1	1039.82	5/4/2001	12.05	1029.64	Menominee River
GMEW-1	1039.82	5/8/2001	12.61	1029.08	Menominee River
GMEW-1	1039.82	5/16/2001	11.80	1029.89	Menominee River
GMEW-1	1041.69	5/30/2001	13.42	1028.27	Menominee River
GMEW-1	1041.69	6/1/2001	12.86	1028.83	Menominee River
GMEW-1	1041.69	6/14/2001	13.24	1028.45	Menominee River
GMEW-1	1041.69	6/28/2001	3.62	1038.07	Menominee River
GMEW-1	1041.69	7/3/2001	2.65	1039.04	Menominee River
GMEW-1	1041.69	7/11/2001	4.00	1037.69	Menominee River
GMEW-1	1041.69	7/12/2001	13.75	1027.94	Menominee River
GMEW-1	1041.69	8/7/2001	13.21	1028.48	Menominee River
GMEW-1	1041.69	8/22/2001	13.32	1028.37	Menominee River
GMEW-1	1041.69	9/12/2001	12.65	1029.04	Menominee River
GMEW-1	1041.69	12/11/2001	12.59	1029.10	Menominee River
GMEW-1	1041.69	3/27/2002	12.78	1028.91	Menominee River
GMEW-1	1041.69	6/11/2002	13.20	1028.49	Menominee River
GMEW-1	1041.69	11/5/2002	14.17	1027.52	Menominee River
GMEW-1	1041.69	5/19/2003	7.67	1034.02	Menominee River
GMEW-1	1041.69	11/25/2003	12.39	1029.30	Menominee River
GMEW-1	1041.69	12/1/2003	13.06	1028.63	Menominee River
GMEW-1	1041.69	5/13/2004	13.13	1028.56	Menominee River
GMEW-1	1041.69	11/16/2004	18.36	1023.33	Menominee River
GMEW-1	1041.69	4/14/2005	3.20	1038.49	Menominee River
GMEW-1	1041.69	6/2/2005	4.03	1037.66	Menominee River
GMEW-1	1041.69	1/12/2006	5.60	1036.09	Menominee River
GMEW-1	1041.69	2/6/2006	5.81	1035.88	Menominee River
GMEW-1	1041.69	2/13/2006	5.61	1036.08	Menominee River
GMEW-1	1041.69	5/23/2006	4.94	1036.75	Menominee River
GMEW-1	1041.69	8/8/2006	6.03	1035.66	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-1	1041.69	11/28/2006	5.64	1036.05	Menominee River
GMEW-1	1041.69	2/5/2007	5.84	1035.85	Menominee River
GMEW-1	1041.69	5/23/2007	5.94	1035.75	Menominee River
GMEW-1	1041.69	8/14/2007	6.16	1035.53	Menominee River
GMEW-1	1041.69	11/2/2007	5.95	1035.74	Menominee River
GMEW-2	1049.72	9/25/2000	11.23	1039.21	Menominee River
GMEW-2	1049.72	1/12/2001	11.68	1038.76	Menominee River
GMEW-2	1049.72	1/28/2001	11.73	1038.71	Menominee River
GMEW-2	1049.72	2/6/2001	12.60	1037.84	Menominee River
GMEW-2	1049.72	2/20/2001	11.65	1038.79	Menominee River
GMEW-2	1049.72	2/27/2001	11.81	1038.63	Menominee River
GMEW-2	1049.72	3/23/2001	11.61	1038.83	Menominee River
GMEW-2	1049.72	4/2/2001	11.61	1038.83	Menominee River
GMEW-2	1049.72	4/16/2001	9.64	1040.80	Menominee River
GMEW-2	1049.72	4/17/2001	9.90	1040.54	Menominee River
GMEW-2	1049.72	4/17/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/17/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/17/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/17/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/17/2001	9.87	1040.57	Menominee River
GMEW-2	1049.72	4/17/2001	9.87	1040.57	Menominee River
GMEW-2	1049.72	4/17/2001	9.89	1040.55	Menominee River
GMEW-2	1049.72	4/17/2001	9.90	1040.54	Menominee River
GMEW-2	1049.72	4/17/2001	9.93	1040.51	Menominee River
GMEW-2	1049.72	4/17/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/17/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/17/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/18/2001	9.92	1040.52	Menominee River
GMEW-2	1049.72	4/18/2001	9.88	1040.56	Menominee River
GMEW-2	1049.72	4/18/2001	9.91	1040.53	Menominee River
GMEW-2	1049.72	4/19/2001	10.00	1040.44	Menominee River
GMEW-2	1049.72	4/19/2001	9.99	1040.45	Menominee River
GMEW-2	1049.72	4/20/2001	10.07	1040.37	Menominee River
GMEW-2	1049.72	4/20/2001	10.06	1040.38	Menominee River
GMEW-2	1049.72	4/21/2001	10.02	1040.42	Menominee River
GMEW-2	1049.72	4/21/2001	10.11	1040.33	Menominee River
GMEW-2	1049.72	4/22/2001	10.72	1039.72	Menominee River
GMEW-2	1049.72	4/23/2001	10.14	1040.30	Menominee River
GMEW-2	1049.72	5/4/2001	10.76	1039.68	Menominee River
GMEW-2	1049.72	5/8/2001	10.81	1039.63	Menominee River
GMEW-2	1050.42	5/16/2001	11.04	1039.40	Menominee River
GMEW-2	1050.42	5/30/2001	11.33	1039.11	Menominee River
GMEW-2	1050.42	6/1/2001	10.93	1039.51	Menominee River
GMEW-2	1050.42	6/14/2001	11.24	1039.20	Menominee River
GMEW-2	1050.42	6/28/2001	11.44	1039.00	Menominee River
GMEW-2	1050.42	7/3/2001	11.40	1039.04	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-2	1050.42	7/11/2001	11.71	1038.73	Menominee River
GMEW-2	1050.42	7/12/2001	11.82	1038.62	Menominee River
GMEW-2	1050.42	8/7/2001	11.88	1038.56	Menominee River
GMEW-2	1050.42	8/22/2001	11.98	1038.46	Menominee River
GMEW-2	1050.42	9/12/2001	17.51	1032.93	Menominee River
GMEW-2	1049.72	12/11/2001	17.42	1033.02	Menominee River
GMEW-2	1049.72	3/27/2002	17.10	1033.34	Menominee River
GMEW-2	1049.72	6/11/2002	11.41	1039.03	Menominee River
GMEW-2	1049.72	11/5/2002	11.26	1039.18	Menominee River
GMEW-2	1050.44	5/19/2003	9.50	1040.94	Menominee River
GMEW-2	1050.44	10/25/2003	21.65	1028.79	Menominee River
GMEW-2	1050.44	11/25/2003	19.39	1031.05	Menominee River
GMEW-2	1050.44	12/1/2003	22.85	1027.59	Menominee River
GMEW-2	1050.44	5/13/2004	21.75	1028.69	Menominee River
GMEW-2	1050.44	11/16/2004	11.96	1038.48	Menominee River
GMEW-2	1050.44	4/14/2005	10.80	1039.64	Menominee River
GMEW-2	1050.44	6/2/2005	11.45	1038.99	Menominee River
GMEW-2	1050.44	11/10/2005	12.43	1038.01	Menominee River
GMEW-2	1050.44	1/12/2006	13.12	1037.32	Menominee River
GMEW-2	1050.44	2/13/2006	13.30	1037.14	Menominee River
GMEW-2	1050.44	5/23/2006	12.41	1038.03	Menominee River
GMEW-2	1050.44	8/8/2006	13.82	1036.62	Menominee River
GMEW-2	1050.44	11/28/2006	13.45	1036.99	Menominee River
GMEW-2	1050.44	2/5/2007	13.90	1036.54	Menominee River
GMEW-2	1050.44	5/23/2007	13.61	1036.83	Menominee River
GMEW-2	1050.44	8/14/2007	13.93	1036.51	Menominee River
GMEW-2	1050.44	11/2/2007	13.88	1036.56	Menominee River
GMEW-3	1065.64	9/25/2000	26.24	1040.55	Menominee River
GMEW-3	1065.64	11/30/2000	26.58	1040.21	Menominee River
GMEW-3	1065.64	1/28/2001	25.98	1040.81	Menominee River
GMEW-3	1065.64	2/6/2001	25.75	1041.04	Menominee River
GMEW-3	1065.64	2/20/2001	25.93	1040.86	Menominee River
GMEW-3	1065.64	2/27/2001	25.98	1040.81	Menominee River
GMEW-3	1065.64	3/9/2001	26.02	1040.77	Menominee River
GMEW-3	1065.64	3/23/2001	25.31	1041.48	Menominee River
GMEW-3	1065.64	4/2/2001	24.54	1042.25	Menominee River
GMEW-3	1065.64	4/16/2001	23.60	1043.19	Menominee River
GMEW-3	1065.64	4/18/2001	23.74	1043.05	Menominee River
GMEW-3	1065.64	4/18/2001	23.67	1043.12	Menominee River
GMEW-3	1065.64	4/21/2001	23.76	1043.03	Menominee River
GMEW-3	1065.64	4/23/2001	23.73	1043.06	Menominee River
GMEW-3	1065.64	6/1/2001	24.56	1042.23	Menominee River
GMEW-3	1065.64	9/12/2001	24.46	1042.33	Menominee River
GMEW-3	1065.64	3/27/2002	26.91	1039.88	Menominee River
GMEW-3	1065.64	6/11/2002	26.61	1040.18	Menominee River
GMEW-3	1065.64	11/5/2002	26.38	1040.41	Menominee River
GMEW-3	1066.79	5/19/2003	30.24	1036.55	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-3	1066.79	10/25/2003	13.90	1052.89	Menominee River
GMEW-3	1066.79	11/25/2003	26.61	1040.18	Menominee River
GMEW-3	1066.79	12/1/2003	27.28	1039.51	Menominee River
GMEW-3	1066.79	5/13/2004	25.96	1040.83	Menominee River
GMEW-3	1066.79	11/16/2004	11.13	1055.66	Menominee River
GMEW-3	1066.79	4/14/2005	25.77	1041.02	Menominee River
GMEW-3	1066.79	6/2/2005	26.24	1040.55	Menominee River
GMEW-3	1066.79	11/10/2005	28.48	1038.31	Menominee River
GMEW-3	1066.79	1/12/2006	28.44	1038.35	Menominee River
GMEW-3	1066.79	2/13/2006	28.49	1038.30	Menominee River
GMEW-3	1066.79	5/23/2006	27.74	1039.05	Menominee River
GMEW-3	1066.79	8/8/2006	29.35	1037.44	Menominee River
GMEW-3	1066.79	11/28/2006	28.73	1038.06	Menominee River
GMEW-3	1066.79	5/23/2007	29.22	1037.57	Menominee River
GMEW-3	1066.79	11/2/2007	29.51	1037.28	Menominee River
GMEW-4	1049.37	3/27/2002	25.61	1023.58	Menominee River
GMEW-4	1049.37	6/11/2002	7.50	1041.69	Menominee River
GMEW-4	1049.19	10/25/2003	8.96	1040.23	Menominee River
GMEW-4	1049.19	11/25/2003	8.43	1040.76	Menominee River
GMEW-4	1049.19	12/1/2003	7.65	1041.54	Menominee River
GMEW-4	1049.19	5/13/2004	7.25	1041.94	Menominee River
GMEW-4R	1050.12	11/5/2002	35.90	1014.22	Menominee River
GMEW-4R	1050.12	10/25/2003	11.44	1038.68	Menominee River
GMEW-4R	1050.12	11/25/2003	10.95	1039.17	Menominee River
GMEW-4R	1050.12	12/1/2003	11.56	1038.56	Menominee River
GMEW-4R	1050.12	5/13/2004	9.93	1040.19	Menominee River
GMEW-4R	1050.12	11/16/2004	11.17	1038.95	Menominee River
GMEW-4R	1047.32	4/14/2005	10.20	1039.92	Menominee River
GMEW-4R	1047.32	6/2/2005	10.71	1039.41	Menominee River
GMEW-4R	1050.12	7/22/2005	8.86	1041.26	Menominee River
GMEW-4R	1047.32	9/10/2005	8.55	1038.77	Menominee River
GMEW-4R	1047.32	11/9/2005	61.84	985.48	Menominee River
GMEW-4R	1047.32	1/12/2006	78.98	968.34	Menominee River
GMEW-4R	1047.32	2/13/2006	82.17	965.15	Menominee River
GMEW-4R	1047.32	8/8/2006	12.26	1035.06	Menominee River
GMEW-4R	1047.32	11/28/2006	11.68	1035.64	Menominee River
GMEW-4R	1047.32	5/23/2007	11.84	1035.48	Menominee River
GMEW-4R	1047.32	11/2/2007	11.96	1035.36	Menominee River
GMEW-5	1068.51	11/5/2002	29.30	1039.21	Menominee River
GMEW-5	1068.51	5/19/2003	28.17	1040.34	Menominee River
GMEW-5	1068.51	10/25/2003	30.39	1038.12	Menominee River
GMEW-5	1068.51	11/25/2003	29.27	1039.24	Menominee River
GMEW-5	1068.51	12/1/2003	30.54	1037.97	Menominee River
GMEW-5	1068.51	12/8/2003	29.94	1038.57	Menominee River
GMEW-5	1068.51	12/9/2003	30.07	1038.44	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-5	1068.51	12/10/2003	29.81	1038.70	Menominee River
GMEW-5	1068.51	12/11/2003	30.10	1038.41	Menominee River
GMEW-5	1068.51	12/12/2003	30.28	1038.23	Menominee River
GMEW-5	1068.51	12/16/2003	29.86	1038.65	Menominee River
GMEW-5	1068.51	12/22/2003	30.16	1038.35	Menominee River
GMEW-5	1068.51	12/31/2003	30.17	1038.34	Menominee River
GMEW-5	1068.51	5/13/2004	29.04	1039.47	Menominee River
GMEW-5	1068.51	11/16/2004	29.87	1038.64	Menominee River
GMEW-5	1068.33	4/14/2005	28.98	1039.53	Menominee River
GMEW-5	1068.33	6/2/2005	29.64	1038.87	Menominee River
GMEW-5	1068.51	7/22/2005	30.32	1038.19	Menominee River
GMEW-5	1068.33	9/10/2005	30.01	1038.32	Menominee River
GMEW-5	1068.33	11/9/2005	30.18	1038.15	Menominee River
GMEW-5	1068.33	1/12/2006	31.01	1037.32	Menominee River
GMEW-5	1068.33	2/13/2006	31.14	1037.19	Menominee River
GMEW-5	1068.33	5/23/2006	30.48	1037.85	Menominee River
GMEW-5	1068.33	8/8/2006	31.71	1036.62	Menominee River
GMEW-5	1068.33	11/28/2006	31.29	1037.04	Menominee River
GMEW-5	1068.33	5/23/2007	31.57	1036.76	Menominee River
GMEW-5	1068.33	11/2/2007	31.75	1036.58	Menominee River
GMEW-6	1062.51	11/5/2002	23.47	1039.04	Menominee River
GMEW-6	1062.51	5/19/2003	22.25	1040.26	Menominee River
GMEW-6	1062.51	10/25/2003	24.54	1037.97	Menominee River
GMEW-6	1062.51	11/25/2003	23.85	1038.66	Menominee River
GMEW-6	1062.51	12/1/2003	24.41	1038.10	Menominee River
GMEW-6	1062.51	12/8/2003	24.04	1038.47	Menominee River
GMEW-6	1062.51	12/9/2003	24.11	1038.40	Menominee River
GMEW-6	1062.51	12/10/2003	23.89	1038.62	Menominee River
GMEW-6	1062.51	12/11/2003	24.21	1038.30	Menominee River
GMEW-6	1062.51	12/12/2003	24.38	1038.13	Menominee River
GMEW-6	1062.51	12/16/2003	23.91	1038.60	Menominee River
GMEW-6	1062.51	12/22/2003	24.17	1038.34	Menominee River
GMEW-6	1062.51	12/31/2003	24.14	1038.37	Menominee River
GMEW-6	1062.51	5/13/2004	23.10	1039.41	Menominee River
GMEW-6	1062.51	11/16/2004	23.73	1038.78	Menominee River
GMEW-6	1062.18	6/3/2005	23.58	1038.93	Menominee River
GMEW-6	1062.51	7/22/2005	24.38	1038.13	Menominee River
GMEW-6	1062.18	9/10/2005	23.98	1038.20	Menominee River
GMEW-6	1062.18	11/10/2005	24.16	1038.02	Menominee River
GMEW-6	1062.18	1/12/2006	24.93	1037.25	Menominee River
GMEW-6	1062.18	2/13/2006	24.81	1037.37	Menominee River
GMEW-6	1062.18	5/23/2006	24.27	1037.91	Menominee River
GMEW-6	1062.18	8/8/2006	25.54	1036.64	Menominee River
GMEW-6	1062.18	11/28/2006	25.06	1037.12	Menominee River
GMEW-6	1062.18	5/23/2007	25.54	1036.64	Menominee River
GMEW-6	1062.18	11/2/2007	25.56	1036.62	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEW-7	1069.60	10/25/2003	29.10	1040.50	Menominee River
GMEW-7	1069.60	11/25/2003	28.46	1041.14	Menominee River
GMEW-7	1069.60	12/1/2003	29.06	1040.54	Menominee River
GMEW-7	1069.60	5/13/2004	27.52	1042.08	Menominee River
GMEW-7	1069.60	11/16/2004	28.64	1040.96	Menominee River
GMEW-7	1069.60	4/14/2005	27.76	1041.84	Menominee River
GMEW-7	1069.60	6/3/2005	32.61	1036.99	Menominee River
GMEW-7	1069.60	7/22/2005	29.11	1040.49	Menominee River
GMEW-7	1069.60	11/9/2005	30.41	1039.19	Menominee River
GMEW-7	1069.60	5/23/2006			Menominee River
GMEW-7	1069.60	11/28/2006	30.70	1038.90	Menominee River
GMEW-7	1069.60	5/23/2007	31.22	1038.38	Menominee River
GMEW-7	1069.60	11/2/2007	31.47	1038.13	Menominee River
GMEW-8	1046.48	11/25/2003	8.02	1038.46	Menominee River
GMEW-8	1046.48	12/1/2003	8.69	1037.79	Menominee River
GMEW-8	1046.48	12/8/2003	8.29	1038.19	Menominee River
GMEW-8	1046.48	12/9/2003	8.39	1038.09	Menominee River
GMEW-8	1046.48	12/10/2003	8.17	1038.31	Menominee River
GMEW-8	1046.48	12/11/2003	8.45	1038.03	Menominee River
GMEW-8	1046.48	12/12/2003	8.62	1037.86	Menominee River
GMEW-8	1046.48	12/16/2003	8.24	1038.24	Menominee River
GMEW-8	1046.48	12/22/2003	8.51	1037.97	Menominee River
GMEW-8	1046.48	12/31/2003	8.51	1037.97	Menominee River
GMEW-8	1046.48	5/13/2004	7.22	1039.26	Menominee River
GMEW-8	1046.48	11/16/2004	8.60	1037.88	Menominee River
GMEW-8	1046.47	4/14/2005	7.28	1039.20	Menominee River
GMEW-8	1046.47	6/3/2005	7.96	1038.52	Menominee River
GMEW-8	1046.48	7/22/2005	8.64	1037.84	Menominee River
GMEW-8	1046.47	9/10/2005	8.33	1038.14	Menominee River
GMEW-8	1046.47	11/9/2005	8.80	1037.67	Menominee River
GMEW-8	1046.47	1/12/2006	9.91	1036.56	Menominee River
GMEW-8	1046.47	2/13/2006	9.98	1036.49	Menominee River
GMEW-8	1046.47	5/23/2006	9.13	1037.34	Menominee River
GMEW-8	1046.47	8/8/2006	10.43	1036.04	Menominee River
GMEW-8	1046.47	11/28/2006	10.06	1036.41	Menominee River
GMEW-8	1046.47	5/23/2007	10.40	1036.07	Menominee River
GMEW-8	1046.47	11/2/2007	10.46	1036.01	Menominee River
GMEWA-1	1053.90	11/16/2004	15.63	1038.27	Menominee River
GMEWA-1	1052.66	4/14/2005	14.61	1039.29	Menominee River
GMEWA-1	1052.66	6/2/2005	15.30	1038.60	Menominee River
GMEWA-1	1053.90	7/22/2005	15.94	1037.96	Menominee River
GMEWA-1	1052.66	9/10/2005	14.42	1038.24	Menominee River
GMEWA-1	1052.66	11/9/2005	14.44	1038.22	Menominee River
GMEWA-1	1052.66	1/12/2006	15.32	1037.34	Menominee River
GMEWA-1	1052.66	2/13/2006	15.41	1037.25	Menominee River
GMEWA-1	1052.66	8/8/2006	15.86	1036.80	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWA-1	1052.66	11/28/2006	15.58	1037.08	Menominee River
GMEWA-1	1052.66	2/5/2007	15.93	1036.73	Menominee River
GMEWA-1	1052.66	5/23/2007	15.82	1036.84	Menominee River
GMEWA-1	1052.66	8/14/2007	16.04	1036.62	Menominee River
GMEWA-1	1052.66	11/2/2007	15.90	1036.76	Menominee River
GMEWA-2	1053.80	11/16/2004	15.59	1038.21	Menominee River
GMEWA-2	1052.62	4/14/2005	14.50	1039.30	Menominee River
GMEWA-2	1052.62	6/2/2005	15.21	1038.59	Menominee River
GMEWA-2	1053.80	7/22/2005	15.86	1037.94	Menominee River
GMEWA-2	1052.62	9/10/2005	14.42	1038.20	Menominee River
GMEWA-2	1052.62	11/9/2005	14.44	1038.18	Menominee River
GMEWA-2	1052.62	1/12/2006	15.42	1037.20	Menominee River
GMEWA-2	1052.62	2/13/2006	15.56	1037.06	Menominee River
GMEWA-2	1052.62	8/8/2006	16.01	1036.61	Menominee River
GMEWA-2	1052.62	11/28/2006	15.70	1036.92	Menominee River
GMEWA-2	1052.62	2/5/2007	16.04	1036.58	Menominee River
GMEWA-2	1052.62	5/23/2007	15.88	1036.74	Menominee River
GMEWA-2	1052.62	8/14/2007	16.14	1036.48	Menominee River
GMEWA-2	1052.62	11/2/2007	16.02	1036.60	Menominee River
GMEWA-3	1053.75	11/16/2004	15.61	1038.14	Menominee River
GMEWA-3	1051.89	4/14/2005	14.44	1039.31	Menominee River
GMEWA-3	1051.89	6/2/2005	15.17	1038.58	Menominee River
GMEWA-3	1053.75	7/22/2005	15.86	1037.89	Menominee River
GMEWA-3	1051.89	9/10/2005	14.71	1037.18	Menominee River
GMEWA-3	1051.89	11/9/2005	13.76	1038.13	Menominee River
GMEWA-3	1051.89	1/12/2006	14.84	1037.05	Menominee River
GMEWA-3	1051.89	2/6/2006	15.32	1036.57	Menominee River
GMEWA-3	1051.89	2/13/2006	15.06	1036.83	Menominee River
GMEWA-3	1051.89	8/8/2006	15.51	1036.38	Menominee River
GMEWA-3	1051.89	11/28/2006	15.20	1036.69	Menominee River
GMEWA-3	1051.89	2/5/2007	15.54	1036.35	Menominee River
GMEWA-3	1051.89	5/23/2007	15.38	1036.51	Menominee River
GMEWA-3	1051.89	8/14/2007	15.62	1036.27	Menominee River
GMEWA-3	1051.89	11/2/2007	15.49	1036.40	Menominee River
GMEWA-4	1050.35	11/16/2004	12.28	1038.07	Menominee River
GMEWA-4	1047.94	4/14/2005	11.08	1039.27	Menominee River
GMEWA-4	1047.94	6/2/2005	11.81	1038.54	Menominee River
GMEWA-4	1050.35	7/22/2005	12.51	1037.84	Menominee River
GMEWA-4	1047.94	9/10/2005	9.81	1038.13	Menominee River
GMEWA-4	1047.94	11/9/2005	9.88	1038.06	Menominee River
GMEWA-4	1047.94	1/12/2006	11.16	1036.78	Menominee River
GMEWA-4	1047.94	2/13/2006	15.06	1032.88	Menominee River
GMEWA-5	1043.66	11/16/2004	5.86	1037.80	Menominee River
GMEWA-5	1041.54	4/14/2005	4.63	1039.03	Menominee River

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWA-5	1041.54	6/2/2005	5.32	1038.34	Menominee River
GMEWA-5	1043.66	7/22/2005	6.00	1037.66	Menominee River
GMEWA-5	1041.54	9/10/2005	3.64	1037.90	Menominee River
GMEWA-5	1041.54	11/9/2005	3.80	1037.74	Menominee River
GMEWA-5	1041.54	1/12/2006	7.17	1034.37	Menominee River
GMEWA-5	1041.54	2/13/2006	7.72	1033.82	Menominee River
GMEWA-6	1045.82	11/16/2004	8.25	1037.57	Menominee River
GMEWA-6	1042.41	4/14/2005	6.95	1038.87	Menominee River
GMEWA-6	1042.41	6/2/2005	7.71	1038.11	Menominee River
GMEWA-6	1045.82	7/21/2005	8.31	1037.51	Menominee River
GMEWA-6	1042.41	9/10/2005	4.71	1037.70	Menominee River
GMEWA-6	1042.41	11/9/2005	4.76	1037.65	Menominee River
GMEWA-6	1042.41	1/12/2006	11.05	1031.36	Menominee River
GMEWA-6	1042.41	2/13/2006	11.67	1030.74	Menominee River
GMEWA-7	1042.19	11/16/2004	4.96	1037.23	Menominee River
GMEWA-7	1041.88	4/14/2005	3.52	1038.67	Menominee River
GMEWA-7	1041.88	6/2/2005	4.33	1037.86	Menominee River
GMEWA-7	1042.19	7/21/2005	4.87	1037.32	Menominee River
GMEWA-7	1041.88	9/10/2005	4.41	1037.47	Menominee River
GMEWA-7	1041.88	11/9/2005	4.40	1037.48	Menominee River
GMEWA-7	1041.88	1/12/2006	8.49	1033.39	Menominee River
GMEWA-7	1041.88	2/13/2006	8.90	1032.98	Menominee River
GMEWA-8	1042.56	11/16/2004	5.24	1037.32	Menominee River
GMEWA-8	1040.60	4/14/2005	3.99	1038.57	Menominee River
GMEWA-8	1040.60	6/2/2005	4.84	1037.72	Menominee River
GMEWA-8	1042.56	7/21/2005	5.37	1037.19	Menominee River
GMEWA-8	1040.60	9/10/2005	3.20	1037.40	Menominee River
GMEWA-8	1040.60	11/9/2005	3.20	1037.40	Menominee River
GMEWA-8	1040.60	1/12/2006	6.05	1034.55	Menominee River
GMEWA-8	1040.60	2/13/2006	5.91	1034.69	Menominee River
GMEWA-9	1043.43	11/16/2004	6.07	1037.36	Menominee River
GMEWA-9	1039.96	4/14/2005	4.90	1038.53	Menominee River
GMEWA-9	1039.96	6/2/2005	5.76	1037.67	Menominee River
GMEWA-9	1043.43	7/21/2005	6.31	1037.12	Menominee River
GMEWA-9	1039.96	9/10/2005	2.61	1037.35	Menominee River
GMEWA-9	1039.96	11/9/2005	2.60	1037.36	Menominee River
GMEWA-9	1039.96	1/12/2006	5.13	1034.83	Menominee River
GMEWA-9	1039.96	2/13/2006	5.04	1034.92	Menominee River
GMEWA-10	1043.57	11/16/2004	6.18	1037.39	Menominee River
GMEWA-10	1040.92	4/14/2005	5.03	1038.54	Menominee River
GMEWA-10	1040.92	6/2/2005	5.91	1037.66	Menominee River
GMEWA-10	1043.57	7/21/2005	6.47	1037.10	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWA-10	1040.92	11/9/2005	3.60	1037.32	Menominee River
GMEWA-10	1040.92	1/12/2006	8.94	1031.98	Menominee River
GMEWA-10	1040.92	2/13/2006	5.85	1035.07	Menominee River
GMEWA-11	1046.34	11/16/2004	8.90	1037.44	Menominee River
GMEWA-11	1042.78	4/14/2005	7.76	1038.58	Menominee River
GMEWA-11	1042.78	6/2/2005	8.63	1037.71	Menominee River
GMEWA-11	1046.34	7/21/2005	6.21	1040.13	Menominee River
GMEWA-11	1042.78	9/10/2005	5.46	1037.32	Menominee River
GMEWA-11	1042.78	11/9/2005	5.52	1037.26	Menominee River
GMEWA-11	1042.78	1/12/2006	8.69	1034.09	Menominee River
GMEWA-11	1042.78	2/13/2006	8.38	1034.40	Menominee River
GMEWA-12	1047.56	11/16/2004	10.16	1037.40	Menominee River
GMEWA-12	1043.72	4/14/2005	9.02	1038.54	Menominee River
GMEWA-12	1043.72	6/2/2005	9.90	1037.66	Menominee River
GMEWA-12	1047.56	7/21/2005	10.48	1037.08	Menominee River
GMEWA-12	1043.72	9/10/2005	6.46	1037.26	Menominee River
GMEWA-12	1043.72	11/9/2005	6.52	1037.20	Menominee River
GMEWA-12	1043.72	1/12/2006	10.55	1033.17	Menominee River
GMEWA-12	1043.72	2/13/2006	11.04	1032.68	Menominee River
GMEWA-13	1045.29	11/16/2004	7.93	1037.36	Menominee River
GMEWA-13	1044.26	4/14/2005	6.75	1038.54	Menominee River
GMEWA-13	1044.26	6/2/2005	7.64	1037.65	Menominee River
GMEWA-13	1045.29	7/21/2005	8.23	1037.06	Menominee River
GMEWA-13	1044.26	9/10/2005	7.01	1037.25	Menominee River
GMEWA-13	1044.26	11/9/2005	7.14	1037.12	Menominee River
GMEWA-13	1044.26	1/12/2006	10.20	1034.06	Menominee River
GMEWA-13	1044.26	2/13/2006	10.22	1034.04	Menominee River
GMEWA-14	1047.62	11/16/2004	10.31	1037.31	Menominee River
GMEWA-14	1045.48	4/14/2005	6.13	1041.49	Menominee River
GMEWA-14	1045.48	6/2/2005	10.03	1037.59	Menominee River
GMEWA-14	1047.62	7/21/2005	10.62	1037.00	Menominee River
GMEWA-14	1045.48	9/10/2005	8.25	1037.23	Menominee River
GMEWA-14	1045.48	11/9/2005	8.44	1037.04	Menominee River
GMEWA-14	1045.48	1/12/2006	11.37	1034.11	Menominee River
GMEWA-14	1045.48	2/13/2006	11.25	1034.23	Menominee River
GMEWA-15	1049.34	11/16/2004	11.93	1037.41	Menominee River
GMEWA-15	1045.67	4/14/2005	10.77	1038.57	Menominee River
GMEWA-15	1045.67	6/2/2005	11.68	1037.66	Menominee River
GMEWA-15	1049.34	7/21/2005	12.24	1037.10	Menominee River
GMEWA-15	1045.67	9/10/2005	8.43	1037.24	Menominee River
GMEWA-15	1045.67	11/9/2005	8.72	1036.95	Menominee River
GMEWA-15	1045.67	1/12/2006	11.79	1033.88	Menominee River
GMEWA-15	1045.67	2/13/2006	12.25	1033.42	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWA-16	1049.91	11/16/2004	12.54	1037.37	Menominee River
GMEWA-16	1046.23	4/14/2005	11.37	1038.54	Menominee River
GMEWA-16	1046.23	6/2/2005	12.27	1037.64	Menominee River
GMEWA-16	1049.91	7/21/2005	12.86	1037.05	Menominee River
GMEWA-16	1046.23	9/10/2005	9.01	1037.22	Menominee River
GMEWA-16	1046.23	11/9/2005	9.42	1036.81	Menominee River
GMEWA-16	1046.23	1/12/2006	11.86	1034.37	Menominee River
GMEWA-16	1046.23	2/13/2006	12.10	1034.13	Menominee River
GMEWA-17	1050.24	11/16/2004	12.91	1037.33	Menominee River
GMEWA-17	1047.17	4/14/2005	11.71	1038.53	Menominee River
GMEWA-17	1047.17	6/2/2005	12.61	1037.63	Menominee River
GMEWA-17	1050.24	7/22/2005	10.35	1039.89	Menominee River
GMEWA-17	1047.17	9/10/2005	10.03	1037.14	Menominee River
GMEWA-17	1047.17	11/9/2005	13.44	1033.73	Menominee River
GMEWA-17	1047.17	1/12/2006	15.18	1031.99	Menominee River
GMEWA-17	1047.17	2/13/2006	15.45	1031.72	Menominee River
GMEWA-18	1051.00	11/16/2004	13.75	1037.25	Menominee River
GMEWA-18	1046.77	4/14/2005	12.53	1038.47	Menominee River
GMEWA-18	1051.00	7/22/2005	10.04	1040.96	Menominee River
GMEWA-18	1046.77	9/10/2005	9.68	1037.09	Menominee River
GMEWA-18	1046.77	11/9/2005	11.56	1035.21	Menominee River
GMEWA-18	1046.77	1/12/2006	12.59	1034.18	Menominee River
GMEWA-18	1046.77	2/13/2006	13.45	1033.32	Menominee River
GMEWA-19	1050.96	11/16/2004	13.77	1037.19	Menominee River
GMEWA-19	1047.27	4/14/2005	12.54	1038.42	Menominee River
GMEWA-19	1047.27	6/2/2005	13.48	1037.48	Menominee River
GMEWA-19	1050.96	7/22/2005	10.59	1040.37	Menominee River
GMEWA-19	1047.27	9/10/2005	10.25	1037.02	Menominee River
GMEWA-19	1047.27	11/9/2005	13.42	1033.85	Menominee River
GMEWA-19	1047.27	1/12/2006	14.32	1032.95	Menominee River
GMEWA-19	1047.27	2/13/2006	14.41	1032.86	Menominee River
GMEWA-20	1051.45	11/16/2004	14.41	1037.04	Menominee River
GMEWA-20	1047.93	4/14/2005	13.04	1038.41	Menominee River
GMEWA-20	1047.93	6/2/2005	13.95	1037.50	Menominee River
GMEWA-20	1051.45	7/22/2005	11.28	1040.17	Menominee River
GMEWA-20	1047.93	9/10/2005	10.90	1037.03	Menominee River
GMEWA-20	1047.93	11/9/2005	14.76	1033.17	Menominee River
GMEWA-20	1047.93	1/12/2006	12.85	1035.08	Menominee River
GMEWA-20	1047.93	2/13/2006	14.61	1033.32	Menominee River
GMEWA-21	1051.71	11/16/2004	14.89	1036.82	Menominee River
GMEWA-21	1048.61	4/14/2005	13.20	1038.51	Menominee River
GMEWA-21	1048.61	6/2/2005	14.10	1037.61	Menominee River
GMEWA-21	1051.71	7/22/2005	11.86	1039.85	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWA-21	1048.61	9/10/2005	11.51	1037.10	Menominee River
GMEWA-21	1048.61	11/9/2005	13.86	1034.75	Menominee River
GMEWA-21	1048.61	1/12/2006	14.99	1033.62	Menominee River
GMEWA-21	1048.61	2/13/2006	15.01	1033.60	Menominee River
GMEWA-22	1052.96	11/16/2004	15.86	1037.10	Menominee River
GMEWA-22	1048.42	4/14/2005	14.48	1038.48	Menominee River
GMEWA-22	1048.42	6/2/2005	15.37	1037.59	Menominee River
GMEWA-22	1052.96	7/22/2005	11.57	1041.39	Menominee River
GMEWA-22	1048.42	9/10/2005	11.36	1037.06	Menominee River
GMEWA-22	1048.42	11/9/2005	14.82	1033.60	Menominee River
GMEWA-22	1048.42	1/12/2006	16.84	1031.58	Menominee River
GMEWA-22	1048.42	2/13/2006	16.98	1031.44	Menominee River
GMEWA-23	1052.00	11/16/2004	14.67	1037.33	Menominee River
GMEWA-23	1047.85	4/14/2005	14.44	1037.56	Menominee River
GMEWA-23	1047.85	6/2/2005	14.33	1037.67	Menominee River
GMEWA-23	1047.85	9/10/2005	9.66	1038.19	Menominee River
GMEWA-23	1047.85	11/9/2005	10.98	1036.87	Menominee River
GMEWA-23	1047.85	1/12/2006	14.70	1033.15	Menominee River
GMEWA-23	1047.85	2/13/2006	14.84	1033.01	Menominee River
GMEWA-24	1049.50	11/16/2004	11.96	1037.54	Menominee River
GMEWA-24	1046.74	4/14/2005	11.82	1037.68	Menominee River
GMEWA-24	1046.74	6/2/2005	11.67	1037.83	Menominee River
GMEWA-24	1049.50	7/22/2005	9.81	1039.69	Menominee River
GMEWA-24	1046.74	9/10/2005	9.39	1037.35	Menominee River
GMEWA-24	1046.74	11/9/2005	9.64	1037.10	Menominee River
GMEWA-24	1046.74	1/12/2006	11.96	1034.78	Menominee River
GMEWA-24	1046.74	2/13/2006	12.58	1034.16	Menominee River
GMEWA-25	1051.79	11/16/2004	14.23	1037.56	Menominee River
GMEWA-25	1047.46	4/14/2005	13.10	1038.69	Menominee River
GMEWA-25	1047.46	6/2/2005	13.95	1037.84	Menominee River
GMEWA-25	1051.79	7/22/2005	10.50	1041.29	Menominee River
GMEWA-25	1047.46	9/10/2005	10.10	1037.36	Menominee River
GMEWA-25	1047.46	11/9/2005	10.26	1037.20	Menominee River
GMEWA-25	1047.46	1/12/2006	12.89	1034.57	Menominee River
GMEWA-25	1047.46	2/13/2006	12.79	1034.67	Menominee River
GMEWA-26	1051.79	11/16/2004	13.83	1037.96	Menominee River
GMEWA-26	1048.05	4/14/2005	12.86	1038.93	Menominee River
GMEWA-26	1048.05	6/2/2005	13.66	1038.13	Menominee River
GMEWA-26	1051.79	7/22/2005	10.73	1041.06	Menominee River
GMEWA-26	1048.05	9/10/2005	10.40	1037.65	Menominee River
GMEWA-26	1048.05	11/9/2005	10.58	1037.47	Menominee River
GMEWA-26	1048.05	1/12/2006	12.96	1035.09	Menominee River
GMEWA-26	1048.05	2/13/2006	11.46	1036.59	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWA-26	1048.05	8/8/2006	12.24	1035.81	Menominee River
GMEWA-26	1048.05	11/28/2006	11.90	1036.15	Menominee River
GMEWA-26	1048.05	2/5/2007	11.97	1036.08	Menominee River
GMEWA-26	1048.05	5/23/2007	12.24	1035.81	Menominee River
GMEWA-26	1048.05	8/14/2007	12.47	1035.58	Menominee River
GMEWA-26	1048.05	11/2/2007	12.16	1035.89	Menominee River
GMEWA-27	1049.77	11/16/2004	11.83	1037.94	Menominee River
GMEWA-27	1047.24	4/14/2005	11.90	1037.87	Menominee River
GMEWA-27	1047.24	6/2/2005	11.72	1038.05	Menominee River
GMEWA-27	1049.77	7/22/2005	9.97	1039.80	Menominee River
GMEWA-27	1047.24	9/10/2005	9.63	1037.61	Menominee River
GMEWA-27	1047.24	11/9/2005	9.74	1037.50	Menominee River
GMEWA-27	1047.24	1/12/2006	9.76	1037.48	Menominee River
GMEWA-27	1047.24	2/13/2006	10.51	1036.73	Menominee River
GMEWA-27	1047.24	8/8/2006	11.24	1036.00	Menominee River
GMEWA-27	1047.24	11/28/2006	10.90	1036.34	Menominee River
GMEWA-27	1047.24	2/5/2007	10.94	1036.30	Menominee River
GMEWA-27	1047.24	5/23/2007	11.28	1035.96	Menominee River
GMEWA-27	1047.24	8/14/2007	11.51	1035.73	Menominee River
GMEWA-27	1047.24	11/2/2007	11.19	1036.05	Menominee River
GMEWA-28	1050.87	11/16/2004	12.96	1037.91	Menominee River
GMEWA-28	1047.98	4/14/2005	12.02	1038.85	Menominee River
GMEWA-28	1047.98	6/2/2005	12.86	1038.01	Menominee River
GMEWA-28	1050.87	7/22/2005	10.77	1040.10	Menominee River
GMEWA-28	1047.98	9/10/2005	10.43	1037.55	Menominee River
GMEWA-28	1047.98	11/9/2005	10.50	1037.48	Menominee River
GMEWA-28	1047.98	1/12/2006	11.37	1036.61	Menominee River
GMEWA-28	1047.98	2/13/2006	11.14	1036.84	Menominee River
GMEWA-28	1047.98	8/8/2006	11.87	1036.11	Menominee River
GMEWA-28	1047.98	11/28/2006	11.58	1036.40	Menominee River
GMEWA-28	1047.98	2/5/2007	11.54	1036.44	Menominee River
GMEWA-28	1047.98	5/23/2007	11.26	1036.72	Menominee River
GMEWA-28	1047.98	8/14/2007	12.15	1035.83	Menominee River
GMEWA-28	1047.98	11/2/2007	11.82	1036.16	Menominee River
GMEWA-28A	1052.10	11/16/2004	14.22	1037.88	Menominee River
GMEWA-28A	1048.65	4/14/2005	13.29	1038.81	Menominee River
GMEWA-28A	1048.65	6/2/2005	14.13	1037.97	Menominee River
GMEWA-28A	1052.10	7/22/2005	11.47	1040.63	Menominee River
GMEWA-28A	1048.65	9/10/2005	11.15	1037.50	Menominee River
GMEWA-28A	1048.65	11/9/2005	11.18	1037.47	Menominee River
GMEWA-28A	1048.65	1/12/2006	11.99	1036.66	Menominee River
GMEWA-28A	1048.65	2/13/2006	11.76	1036.89	Menominee River
GMEWA-28A	1048.65	8/8/2006	12.47	1036.18	Menominee River
GMEWA-28A	1048.65	11/28/2006	12.18	1036.47	Menominee River
GMEWA-28A	1048.65	2/5/2007	12.15	1036.50	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWA-28A	1048.65	5/23/2007	11.92	1036.73	Menominee River
GMEWA-28A	1048.65	8/14/2007	12.77	1035.88	Menominee River
GMEWA-28A	1048.65	11/2/2007	12.47	1036.18	Menominee River
GMEWB-1	1051.82	11/16/2004	13.37	1038.45	Menominee River
GMEWB-1	1047.17	4/14/2005	12.32	1039.50	Menominee River
GMEWB-1	1047.17	6/2/2005	12.91	1038.91	Menominee River
GMEWB-1	1051.82	7/22/2005	9.25	1042.57	Menominee River
GMEWB-1	1047.17	9/10/2005	8.91	1038.26	Menominee River
GMEWB-1	1047.17	11/9/2005	76.94	970.23	Menominee River
GMEWB-1	1047.17	1/12/2006	11.19	1035.98	Menominee River
GMEWB-1	1047.17	2/13/2006	11.18	1035.99	Menominee River
GMEWB-1	1047.17	8/8/2006	11.92	1035.25	Menominee River
GMEWB-1	1047.17	11/28/2006	11.70	1035.47	Menominee River
GMEWB-1	1047.17	5/22/2007	11.80	1035.37	Menominee River
GMEWB-1	1047.17	11/2/2007	11.96	1035.21	Menominee River
GMEWC-1	1045.28	11/16/2004	5.25	1040.03	Menominee River
GMEWC-1	1044.28	4/14/2005	4.40	1040.88	Menominee River
GMEWC-1	1044.28	6/2/2005	5.02	1040.26	Menominee River
GMEWC-1	1045.28	7/22/2005	4.80	1040.48	Menominee River
GMEWC-1	1044.28	9/10/2005	4.63	1039.65	Menominee River
GMEWC-1	1044.28	11/9/2005	7.68	1036.60	Menominee River
GMEWC-1	1044.28	1/12/2006	8.60	1035.68	Menominee River
GMEWC-1	1044.28	2/1/2006	5.90	1038.38	Menominee River
GMEWC-1	1044.28	2/6/2006	6.12	1038.16	Menominee River
GMEWC-1	1044.28	2/13/2006	5.89	1038.39	Menominee River
GMEWC-1	1044.28	3/16/2006	6.00	1038.28	Menominee River
GMEWC-1	1044.28	8/8/2006	6.07	1038.21	Menominee River
GMEWC-1	1044.28	11/28/2006	5.92	1038.36	Menominee River
GMEWC-1	1044.28	5/23/2007	6.08	1038.20	Menominee River
GMEWC-1	1044.28	11/2/2007	6.24	1038.04	Menominee River
GMEWC-1A	1047.44	11/16/2004	7.37	1040.07	Menominee River
GMEWC-1A	1044.27	4/14/2005	6.51	1040.93	Menominee River
GMEWC-1A	1044.27	6/2/2005	7.14	1040.30	Menominee River
GMEWC-1A	1047.44	7/22/2005	4.80	1042.64	Menominee River
GMEWC-1A	1044.27	9/10/2005	4.54	1039.73	Menominee River
GMEWC-1A	1044.27	11/9/2005	8.16	1036.11	Menominee River
GMEWC-1A	1044.27	1/12/2006	8.98	1035.29	Menominee River
GMEWC-1A	1044.27	2/1/2006	8.51	1035.76	Menominee River
GMEWC-1A	1044.27	2/13/2006	8.52	1035.75	Menominee River
GMEWC-1A	1044.27	8/8/2006	6.07	1038.20	Menominee River
GMEWC-1A	1044.27	11/28/2006	5.08	1039.19	Menominee River
GMEWC-1A	1044.27	5/23/2007	6.08	1038.19	Menominee River
GMEWC-1A	1044.27	11/2/2007	6.23	1038.04	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWC-2	1045.96	11/16/2004	6.14	1039.82	Menominee River
GMEWC-2	1042.91	4/14/2005	5.26	1040.70	Menominee River
GMEWC-2	1042.91	6/2/2005	5.90	1040.06	Menominee River
GMEWC-2	1045.96	7/22/2005	3.61	1042.35	Menominee River
GMEWC-2	1042.91	9/10/2005	3.48	1039.43	Menominee River
GMEWC-2	1042.91	11/9/2005	7.28	1035.63	Menominee River
GMEWC-2	1042.91	1/12/2006	8.58	1034.33	Menominee River
GMEWC-2	1042.91	2/6/2006	5.71	1037.20	Menominee River
GMEWC-2	1042.91	2/13/2006	5.49	1037.42	Menominee River
GMEWC-2	1042.91	3/16/2006	5.80	1037.11	Menominee River
GMEWC-2	1042.91	8/8/2006	5.86	1037.05	Menominee River
GMEWC-2	1042.91	11/28/2006	5.73	1037.18	Menominee River
GMEWC-2	1042.91	2/5/2007	5.70	1037.21	Menominee River
GMEWC-2	1042.91	5/23/2007	5.92	1036.99	Menominee River
GMEWC-2	1042.91	8/14/2007	6.28	1036.63	Menominee River
GMEWC-2	1042.91	11/2/2007	8.11	1034.80	Menominee River
GMEWC-2A	1046.46	11/16/2004	6.85	1039.61	Menominee River
GMEWC-2A	1042.50	4/14/2005	5.83	1040.63	Menominee River
GMEWC-2A	1042.50	6/2/2005	6.45	1040.01	Menominee River
GMEWC-2A	1046.46	7/22/2005	3.34	1043.12	Menominee River
GMEWC-2A	1042.50	9/10/2005	3.10	1039.40	Menominee River
GMEWC-2A	1042.50	11/9/2005	9.46	1033.04	Menominee River
GMEWC-2A	1042.50	1/12/2006	10.06	1032.44	Menominee River
GMEWC-2A	1042.50	2/13/2006	10.00	1032.50	Menominee River
GMEWC-3	1049.00	11/16/2004	9.12	1039.88	Menominee River
GMEWC-3	1046.02	4/14/2005	8.25	1040.75	Menominee River
GMEWC-3	1046.02	6/2/2005	8.84	1040.16	Menominee River
GMEWC-3	1046.02	9/10/2005	6.45	1039.57	Menominee River
GMEWC-3	1046.02	11/9/2005	12.48	1033.54	Menominee River
GMEWC-3	1046.02	1/12/2006	13.06	1032.96	Menominee River
GMEWC-3	1046.02	2/13/2006	12.96	1033.06	Menominee River
GMEWC-4 (GMEW-9)	1051.26	4/14/2005	9.80	1040.46	Menominee River
GMEWC-4 (GMEW-9)	1051.26	7/22/2005	7.60	1043.66	Menominee River
GMEWC-4 (GMEW-9)	1046.63	9/10/2005	7.35	1039.28	Menominee River
GMEWC-4 (GMEW-9)	1046.63	11/9/2005	27.06	1019.57	Menominee River
GMEWC-4 (GMEW-9)	1046.63	1/12/2006	24.30	1022.33	Menominee River
GMEWC-4 (GMEW-9)	1046.63	2/13/2006	24.49	1022.14	Menominee River
GMEWC-5	1051.70	11/16/2004	12.16	1039.54	Menominee River
GMEWC-5	1049.86	4/14/2005	11.39	1040.31	Menominee River
GMEWC-5	1049.86	6/2/2005	11.85	1039.85	Menominee River
GMEWC-5	1051.70	7/22/2005	10.93	1040.77	Menominee River
GMEWC-5	1049.86	9/10/2005	10.65	1039.21	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWC-5	1049.86	11/9/2005	42.30	1007.56	Menominee River
GMEWC-5	1049.86	1/12/2006	48.62	1001.24	Menominee River
GMEWC-5	1049.86	2/13/2006	49.55	1000.31	Menominee River
GMEWC-6	1050.28	11/16/2004	11.31	1038.97	Menominee River
GMEWC-6	1047.61	4/14/2005	10.28	1040.00	Menominee River
GMEWC-6	1047.61	6/2/2005	10.78	1039.50	Menominee River
GMEWC-6	1050.28	7/22/2005	9.06	1041.22	Menominee River
GMEWC-6	1047.61	9/10/2005	8.76	1038.85	Menominee River
GMEWC-6	1047.61	11/9/2005	65.08	982.53	Menominee River
GMEWC-6	1047.61	1/12/2006	91.47	956.14	Menominee River
GMEWC-6	1047.61	2/13/2006	101.91	945.70	Menominee River
GMEWC-6	1047.61	8/8/2006	12.85	1034.76	Menominee River
GMEWC-6	1047.61	11/28/2006	12.30	1035.31	Menominee River
GMEWC-6	1047.61	2/5/2007	12.86	1034.75	Menominee River
GMEWC-6	1047.61	5/22/2007	12.91	1034.70	Menominee River
GMEWC-6	1047.61	8/14/2007	13.13	1034.48	Menominee River
GMEWC-6	1047.61	11/2/2007	13.21	1034.40	Menominee River
GMEWC-7	1051.96	11/16/2004	13.11	1038.85	Menominee River
GMEWC-7	1048.07	4/14/2005	12.09	1039.87	Menominee River
GMEWC-7	1048.07	6/2/2005	12.67	1039.29	Menominee River
GMEWC-7	1051.96	7/22/2005	9.68	1042.28	Menominee River
GMEWC-7	1048.07	9/10/2005	9.38	1038.69	Menominee River
GMEWC-7	1048.07	11/9/2005	41.76	1006.31	Menominee River
GMEWC-7	1048.07	1/12/2006	51.42	996.65	Menominee River
GMEWC-7	1048.07	2/13/2006	54.32	993.75	Menominee River
GMEWC-7A	1052.06	11/16/2004	13.27	1038.79	Menominee River
GMEWC-7A	1047.64	4/14/2005	12.23	1039.83	Menominee River
GMEWC-7A	1047.64	6/2/2005	12.79	1039.27	Menominee River
GMEWC-7A	1052.06	7/22/2005	9.28	1042.78	Menominee River
GMEWC-7A	1047.64	9/10/2005	9.02	1038.62	Menominee River
GMEWC-7A	1047.64	11/9/2005	12.76	1034.88	Menominee River
GMEWC-7A	1047.64	1/12/2006	13.37	1034.27	Menominee River
GMEWC-7A	1047.64	2/13/2006	13.38	1034.26	Menominee River
GMEWC-7A	1047.64	8/8/2006	14.23	1033.41	Menominee River
GMEWC-7A	1047.64	11/28/2006	13.72	1033.92	Menominee River
GMEWC-7A	1047.64	5/23/2007	14.18	1033.46	Menominee River
GMEWC-7A	1047.64	11/2/2007	14.34	1033.30	Menominee River
GMEWC-8	1049.39	11/16/2004	11.23	1038.16	Menominee River
GMEWC-8	1045.70	4/14/2005	10.15	1039.24	Menominee River
GMEWC-8	1045.70	6/2/2005	10.91	1038.48	Menominee River
GMEWC-8	1049.39	7/21/2005	11.48	1037.91	Menominee River
GMEWC-8	1045.70	9/10/2005	7.69	1038.01	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMEWC-8	1045.70	11/9/2005	8.00	1037.70	Menominee River
GMEWC-8	1045.70	1/12/2006	30.35	1015.35	Menominee River
GMEWC-8	1045.70	2/13/2006	33.95	1011.75	Menominee River
GMEWC-8A	1049.71	11/16/2004	11.45	1038.26	Menominee River
GMEWC-8A	1045.77	4/14/2005	10.39	1039.32	Menominee River
GMEWC-8A	1045.77	6/2/2005	11.16	1038.55	Menominee River
GMEWC-8A	1049.71	7/21/2005	11.72	1037.99	Menominee River
GMEWC-8A	1045.77	9/10/2005	7.71	1038.06	Menominee River
GMEWC-8A	1045.77	11/9/2005	8.00	1037.77	Menominee River
GMEWC-8A	1045.77	1/12/2006	9.91	1035.86	Menominee River
GMEWC-8A	1045.77	2/13/2006	10.08	1035.69	Menominee River
GMEWC-8A	1045.77	8/8/2006	10.38	1035.39	Menominee River
GMEWC-8A	1045.77	11/2/2007	10.37	1035.40	Menominee River
GMEWC-9	1051.06	11/16/2004	12.02	1039.04	Menominee River
GMEWC-9	1047.56	4/14/2005	11.15	1039.91	Menominee River
GMEWC-9	1047.56	6/2/2005	11.67	1039.39	Menominee River
GMEWC-9	1051.06	7/22/2005	9.11	1041.95	Menominee River
GMEWC-9	1047.56	9/10/2005	8.85	1038.71	Menominee River
GMEWC-9	1047.56	11/9/2005	111.24	936.32	Menominee River
GMEWC-9	1047.56	1/12/2006	11.52	1036.04	Menominee River
GMEWC-9	1047.56	2/13/2006	11.45	1036.11	Menominee River
GMEWC-9	1047.56	8/8/2006	12.25	1035.31	Menominee River
GMEWC-9	1047.56	11/28/2006	11.80	1035.76	Menominee River
GMEWC-9	1047.56	2/5/2007	12.25	1035.31	Menominee River
GMEWC-9	1047.56	5/23/2007	11.84	1035.72	Menominee River
GMEWC-9	1047.56	8/14/2007	12.14	1035.42	Menominee River
GMEWC-9	1047.56	11/2/2007	11.99	1035.57	Menominee River
GMEWC-10	1051.68	11/16/2004	12.32	1039.36	Menominee River
GMEWC-10	1048.12	4/14/2005	11.46	1040.22	Menominee River
GMEWC-10	1048.12	6/2/2005	11.98	1039.70	Menominee River
GMEWC-10	1051.68	7/22/2005	9.39	1042.29	Menominee River
GMEWC-10	1048.12	9/10/2005	9.11	1039.01	Menominee River
GMEWC-10	1048.12	11/9/2005	69.96	978.16	Menominee River
GMEWC-10	1048.12	1/12/2006	91.37	956.75	Menominee River
GMEWC-10	1048.12	2/13/2006	90.13	957.99	Menominee River
GMEWC-10	1048.12	8/8/2006	13.09	1035.03	Menominee River
GMEWC-10	1048.12	11/28/2006	12.80	1035.32	Menominee River
GMEWC-10	1048.12	5/23/2007	12.58	1035.54	Menominee River
GMEWC-10	1048.12	11/2/2007	12.91	1035.21	Menominee River
GMIM-1	1044.50	11/16/2004	6.37	1038.13	Menominee River
GMIM-1	1044.50	4/14/2005	5.12	1039.38	Menominee River
GMIM-1	1044.50	6/3/2005	5.92	1038.58	Menominee River
GMIM-1	1044.50	9/10/2005	6.31	1038.19	Menominee River
GMIM-1	1044.50	11/9/2005	6.55	1037.95	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMIM-1	1044.50	1/12/2006	7.71	1036.79	Menominee River
GMIM-1	1044.50	2/13/2006	7.92	1036.58	Menominee River
GMIM-1	1044.50	5/23/2006	6.94	1037.56	Menominee River
GMIM-1	1044.50	8/8/2006	8.06	1036.44	Menominee River
GMIM-1	1044.50	11/28/2006	6.98	1037.52	Menominee River
GMIM-1	1044.50	5/22/2007	7.82	1036.68	Menominee River
GMIM-1	1044.50	11/2/2007	8.41	1036.09	Menominee River
GMIM-2	1044.32	11/16/2004	6.13	1038.19	Menominee River
GMIM-2	1044.32	4/14/2005	4.88	1039.44	Menominee River
GMIM-2	1044.32	6/3/2005	5.70	1038.62	Menominee River
GMIM-2	1044.32	9/10/2005	6.06	1038.26	Menominee River
GMIM-2	1044.32	11/9/2005	6.30	1038.02	Menominee River
GMIM-2	1044.32	1/12/2006	7.40	1036.92	Menominee River
GMIM-2	1044.32	2/13/2006	7.63	1036.69	Menominee River
GMIM-2	1044.32	5/23/2006	6.67	1037.65	Menominee River
GMIM-2	1044.32	8/8/2006	8.34	1035.98	Menominee River
GMIM-2	1044.32	11/28/2006	7.64	1036.68	Menominee River
GMIM-2	1044.32	2/5/2007	8.08	1036.24	Menominee River
GMIM-2	1044.32	5/22/2007	8.10	1036.22	Menominee River
GMIM-2	1044.32	8/14/2007	8.17	1036.15	Menominee River
GMIM-2	1044.32	11/2/2007	8.14	1036.18	Menominee River
GMIM-3	1044.70	11/16/2004	6.64	1038.06	Menominee River
GMIM-3	1044.70	4/14/2005	5.36	1039.34	Menominee River
GMIM-3	1044.70	6/3/2005	6.17	1038.53	Menominee River
GMPZ-1	1052.76	12/11/2001	14.94	1037.82	Menominee River
GMPZ-1	1052.76	3/27/2002	14.98	1037.78	Menominee River
GMPZ-1	1052.76	6/11/2002	13.87	1038.89	Menominee River
GMPZ-1	1052.76	11/5/2002	13.56	1039.20	Menominee River
GMPZ-1	1052.76	5/19/2003	12.59	1040.17	Menominee River
GMPZ-1	1052.76	10/25/2003	15.18	1037.58	Menominee River
GMPZ-1	1052.76	11/25/2003	14.51	1038.25	Menominee River
GMPZ-1	1052.76	12/1/2003	15.23	1037.53	Menominee River
GMPZ-1	1052.76	5/13/2004	13.70	1039.06	Menominee River
GMPZ-1	1052.76	11/16/2004	14.17	1038.59	Menominee River
GMPZ-1	1052.67	4/14/2005	13.07	1039.69	Menominee River
GMPZ-1	1052.67	6/2/2005	13.76	1039.00	Menominee River
GMPZ-1	1052.76	7/22/2005	14.57	1038.19	Menominee River
GMPZ-1	1052.67	9/10/2005	14.20	1038.47	Menominee River
GMPZ-1	1052.67	11/9/2005	14.52	1038.15	Menominee River
GMPZ-1	1052.67	1/12/2006	15.41	1037.26	Menominee River
GMPZ-1	1052.67	5/23/2006	14.68	1037.99	Menominee River
GMPZ-1	1052.67	8/8/2006	16.12	1036.55	Menominee River
GMPZ-1	1052.67	11/28/2006	15.67	1037.00	Menominee River
GMPZ-1	1052.67	5/23/2007	15.91	1036.76	Menominee River
GMPZ-1	1052.67	11/2/2007	16.18	1036.49	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZ-2	1053.23	12/11/2001	15.00	1038.23	Menominee River
GMPZ-2	1053.23	3/27/2002	14.62	1038.61	Menominee River
GMPZ-2	1053.23	6/11/2002	14.17	1039.06	Menominee River
GMPZ-2	1053.23	11/5/2002	13.91	1039.32	Menominee River
GMPZ-2	1053.23	5/19/2003	12.95	1040.28	Menominee River
GMPZ-2	1053.23	10/25/2003	15.38	1037.85	Menominee River
GMPZ-2	1053.23	11/25/2003	14.74	1038.49	Menominee River
GMPZ-2	1053.23	12/1/2003	15.43	1037.80	Menominee River
GMPZ-2	1053.23	5/13/2004	13.84	1039.39	Menominee River
GMPZ-2	1053.23	11/16/2004	14.40	1038.83	Menominee River
GMPZ-2	1053.14	4/14/2005	13.33	1039.90	Menominee River
GMPZ-2	1053.14	6/2/2005	14.10	1039.13	Menominee River
GMPZ-2	1053.23	7/22/2005	14.94	1038.29	Menominee River
GMPZ-2	1053.14	11/9/2005	14.80	1038.34	Menominee River
GMPZ-2	1053.14	1/12/2006	15.74	1037.40	Menominee River
GMPZ-2	1053.14	5/23/2006	14.98	1038.16	Menominee River
GMPZ-2	1053.14	8/8/2006	16.43	1036.71	Menominee River
GMPZ-2	1053.14	11/28/2006	16.02	1037.12	Menominee River
GMPZ-2	1053.14	5/23/2007	16.25	1036.89	Menominee River
GMPZ-2	1053.14	11/2/2007	16.69	1036.45	Menominee River
GMPZ-3	1044.17	12/11/2001	6.15	1038.02	Menominee River
GMPZ-3	1044.17	11/5/2002	5.31	1038.86	Menominee River
GMPZ-3	1044.17	5/19/2003	4.08	1040.09	Menominee River
GMPZ-3	1044.17	10/25/2003	6.49	1037.68	Menominee River
GMPZ-3	1044.17	11/25/2003	5.86	1038.31	Menominee River
GMPZ-3	1044.17	12/1/2003	6.50	1037.67	Menominee River
GMPZ-3	1044.17	5/13/2004	5.05	1039.12	Menominee River
GMPZ-3	1044.17	11/16/2004	5.93	1038.24	Menominee River
GMPZ-3	1044.08	4/14/2005	4.66	1039.51	Menominee River
GMPZ-3	1044.08	6/2/2005	5.44	1038.73	Menominee River
GMPZ-3	1044.08	6/3/2005	5.44	1038.73	Menominee River
GMPZ-3	1044.17	7/22/2005	6.25	1037.92	Menominee River
GMPZ-3	1044.08	9/10/2005	5.85	1038.23	Menominee River
GMPZ-3	1044.08	11/9/2005	6.15	1037.93	Menominee River
GMPZ-3	1044.08	1/12/2006	7.18	1036.90	Menominee River
GMPZ-3	1044.08	5/23/2006	6.47	1037.61	Menominee River
GMPZ-3	1044.08	8/8/2006	7.91	1036.17	Menominee River
GMPZ-3	1044.08	11/28/2006	7.30	1036.78	Menominee River
GMPZ-3	1044.08	5/23/2007	7.62	1036.46	Menominee River
GMPZ-3	1044.08	11/2/2007	7.94	1036.14	Menominee River
GMPZ-4	1060.63	12/11/2001	21.35	1039.28	Menominee River
GMPZ-4	1060.63	3/27/2002	20.74	1039.89	Menominee River
GMPZ-4	1060.63	6/11/2002	20.28	1040.35	Menominee River
GMPZ-4	1060.63	11/5/2002	20.06	1040.57	Menominee River
GMPZ-4	1060.63	5/19/2003	17.15	1043.48	Menominee River
GMPZ-4	1060.63	11/25/2003	20.58	1040.05	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZ-4	1060.63	12/1/2003	21.16	1039.47	Menominee River
GMPZ-4	1060.63	5/13/2004	19.56	1041.07	Menominee River
GMPZ-4	1060.63	11/16/2004	20.81	1039.82	Menominee River
GMPZ-4	1060.63	4/14/2005	19.82	1040.81	Menominee River
GMPZ-4	1060.63	6/3/2005	20.30	1040.33	Menominee River
GMPZ-5	1068.60	11/5/2002	29.63	1038.97	Menominee River
GMPZ-5	1068.60	5/19/2003	28.50	1040.10	Menominee River
GMPZ-5	1068.60	10/25/2003	30.74	1037.86	Menominee River
GMPZ-5	1068.60	11/25/2003	30.06	1038.54	Menominee River
GMPZ-5	1068.60	12/1/2003	30.74	1037.86	Menominee River
GMPZ-5	1068.60	12/8/2003	30.30	1038.30	Menominee River
GMPZ-5	1068.60	12/9/2003	30.41	1038.19	Menominee River
GMPZ-5	1068.60	12/10/2003	30.14	1038.46	Menominee River
GMPZ-5	1068.60	12/11/2003	30.43	1038.17	Menominee River
GMPZ-5	1068.60	12/12/2003	30.61	1037.99	Menominee River
GMPZ-5	1068.60	12/16/2003	30.21	1038.39	Menominee River
GMPZ-5	1068.60	12/22/2003	30.49	1038.11	Menominee River
GMPZ-5	1068.60	12/31/2003	30.50	1038.10	Menominee River
GMPZ-5	1068.60	5/13/2004	29.28	1039.32	Menominee River
GMPZ-5	1068.60	11/16/2004	30.18	1038.42	Menominee River
GMPZ-5	1068.54	4/14/2005	29.21	1039.39	Menominee River
GMPZ-5	1068.54	6/2/2005	29.88	1038.72	Menominee River
GMPZ-5	1068.60	7/22/2005	30.54	1038.06	Menominee River
GMPZ-5	1068.54	9/10/2005	30.23	1038.31	Menominee River
GMPZ-5	1068.54	11/9/2005	30.40	1038.14	Menominee River
GMPZ-5	1068.54	1/12/2006	31.21	1037.33	Menominee River
GMPZ-5	1068.54	2/6/2006	31.71	1036.83	Menominee River
GMPZ-5	1068.54	2/13/2006	31.48	1037.06	Menominee River
GMPZ-5	1068.54	5/23/2006	30.70	1037.84	Menominee River
GMPZ-5	1068.54	8/8/2006	31.91	1036.63	Menominee River
GMPZ-5	1068.54	11/28/2006	31.46	1037.08	Menominee River
GMPZ-5	1068.54	2/5/2007	31.98	1036.56	Menominee River
GMPZ-5	1068.54	5/23/2007	31.78	1036.76	Menominee River
GMPZ-5	1068.54	8/14/2007	32.07	1036.47	Menominee River
GMPZ-5	1068.54	11/2/2007	31.95	1036.59	Menominee River
GMPZ-6	1063.50	11/5/2002	24.47	1039.03	Menominee River
GMPZ-6	1063.50	5/19/2003	23.22	1040.28	Menominee River
GMPZ-6	1063.50	10/25/2003	25.48	1038.02	Menominee River
GMPZ-6	1063.50	11/25/2003	24.79	1038.71	Menominee River
GMPZ-6	1063.50	12/1/2003	25.36	1038.14	Menominee River
GMPZ-6	1063.50	12/8/2003	24.99	1038.51	Menominee River
GMPZ-6	1063.50	12/9/2003	25.06	1038.44	Menominee River
GMPZ-6	1063.50	12/10/2003	24.85	1038.65	Menominee River
GMPZ-6	1063.50	12/11/2003	25.16	1038.34	Menominee River
GMPZ-6	1063.50	12/12/2003	25.33	1038.17	Menominee River
GMPZ-6	1063.50	12/16/2003	24.87	1038.63	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZ-6	1063.50	12/22/2003	25.11	1038.39	Menominee River
GMPZ-6	1063.50	12/31/2003	25.08	1038.42	Menominee River
GMPZ-6	1063.50	5/13/2004	24.08	1039.42	Menominee River
GMPZ-6	1063.50	11/16/2004	24.98	1038.52	Menominee River
GMPZ-6	1063.36	6/3/2005	24.79	1038.71	Menominee River
GMPZ-6	1063.50	7/22/2005	25.49	1038.01	Menominee River
GMPZ-6	1063.36	9/10/2005	25.05	1038.31	Menominee River
GMPZ-6	1063.36	11/9/2005	25.35	1038.01	Menominee River
GMPZ-6	1063.36	1/12/2006	26.13	1037.23	Menominee River
GMPZ-6	1063.36	2/13/2006	26.03	1037.33	Menominee River
GMPZ-6	1063.36	5/23/2006	25.48	1037.88	Menominee River
GMPZ-6	1063.36	8/8/2006	26.73	1036.63	Menominee River
GMPZ-6	1063.36	11/28/2006	26.22	1037.14	Menominee River
GMPZ-6	1063.36	2/5/2007	26.64	1036.72	Menominee River
GMPZ-6	1063.36	5/23/2007	26.74	1036.62	Menominee River
GMPZ-6	1063.36	8/14/2007	26.99	1036.37	Menominee River
GMPZ-6	1063.36	11/2/2007	26.75	1036.61	Menominee River
GMPZ-7	1068.69	10/25/2003	29.28	1039.41	Menominee River
GMPZ-7	1068.69	11/25/2003	28.64	1040.05	Menominee River
GMPZ-7	1068.69	12/1/2003	29.21	1039.48	Menominee River
GMPZ-7	1068.69	5/13/2004	27.66	1041.03	Menominee River
GMPZ-7	1068.69	11/16/2004	12.80	1055.89	Menominee River
GMPZ-7	1068.58	4/14/2005	27.91	1040.78	Menominee River
GMPZ-7	1068.58	6/3/2005	32.81	1035.88	Menominee River
GMPZ-7	1068.69	7/22/2005	29.21	1039.48	Menominee River
GMPZ-7	1068.58	9/10/2005	28.92	1039.66	Menominee River
GMPZ-7	1068.58	11/10/2005	31.20	1037.38	Menominee River
GMPZ-7	1068.58	1/12/2006	31.17	1037.41	Menominee River
GMPZ-7	1068.58	2/13/2006	31.20	1037.38	Menominee River
GMPZ-7	1068.58	5/23/2006	30.36	1038.22	Menominee River
GMPZ-7	1068.58	8/8/2006	32.17	1036.41	Menominee River
GMPZ-7	1068.58	11/28/2006	31.83	1036.75	Menominee River
GMPZ-7	1068.58	5/23/2007	32.53	1036.05	Menominee River
GMPZ-7	1068.58	11/2/2007	32.91	1035.67	Menominee River
GMPZ-8	1047.60	10/25/2003	6.49	1041.11	Menominee River
GMPZ-8	1047.60	11/25/2003	8.99	1038.61	Menominee River
GMPZ-8	1047.60	12/1/2003	9.62	1037.98	Menominee River
GMPZ-8	1047.60	12/8/2003	9.21	1038.39	Menominee River
GMPZ-8	1047.60	12/9/2003	9.28	1038.32	Menominee River
GMPZ-8	1047.60	12/10/2003	9.08	1038.52	Menominee River
GMPZ-8	1047.60	12/11/2003	9.34	1038.26	Menominee River
GMPZ-8	1047.60	12/12/2003	9.53	1038.07	Menominee River
GMPZ-8	1047.60	12/16/2003	9.16	1038.44	Menominee River
GMPZ-8	1047.60	12/22/2003	9.43	1038.17	Menominee River
GMPZ-8	1047.60	12/31/2003	9.41	1038.19	Menominee River
GMPZ-8	1047.60	5/13/2004	8.15	1039.45	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZ-8	1047.60	11/16/2004	9.56	1038.04	Menominee River
GMPZ-8	1047.50	4/14/2005	8.20	1039.40	Menominee River
GMPZ-8	1047.50	6/3/2005	8.91	1038.69	Menominee River
GMPZ-8	1047.60	7/22/2005	9.58	1038.02	Menominee River
GMPZ-8	1047.57	9/10/2005	9.26	1038.31	Menominee River
GMPZ-8	1047.57	11/9/2005	9.74	1037.83	Menominee River
GMPZ-8	1047.50	1/12/2006	10.93	1036.57	Menominee River
GMPZ-8	1047.50	2/13/2006	11.03	1036.47	Menominee River
GMPZ-8	1047.50	5/23/2006	10.21	1037.29	Menominee River
GMPZ-8	1047.50	8/8/2006	11.50	1036.00	Menominee River
GMPZ-8	1047.50	11/28/2006	11.58	1035.92	Menominee River
GMPZ-8	1047.50	2/5/2007	11.63	1035.87	Menominee River
GMPZ-8	1047.50	5/23/2007	11.52	1035.98	Menominee River
GMPZ-8	1047.50	8/14/2007	11.74	1035.76	Menominee River
GMPZ-8	1047.50	11/2/2007	11.57	1035.93	Menominee River
GMPZ-10	1067.53	10/25/2003	28.02	1039.51	Menominee River
GMPZ-10	1067.53	11/25/2003	27.42	1040.11	Menominee River
GMPZ-10	1067.53	12/1/2003	28.01	1039.52	Menominee River
GMPZ-10	1067.53	5/13/2004	26.53	1041.00	Menominee River
GMPZ-10	1067.53	11/16/2004	27.89	1039.64	Menominee River
GMPZ-10	1067.53	4/14/2005	26.90	1040.63	Menominee River
GMPZ-10	1067.53	6/3/2005	27.37	1040.16	Menominee River
GMPZ-10	1067.53	7/22/2005	28.18	1039.35	Menominee River
GMPZ-10	1067.53	11/9/2005			Menominee River
GMPZA-1	1051.97	6/2/2005	14.01	1038.12	Menominee River
GMPZA-1	1052.13	7/22/2005	14.64	1037.49	Menominee River
GMPZA-1	1051.97	9/10/2005	14.30	1037.67	Menominee River
GMPZA-1	1051.97	11/9/2005	14.51	1037.46	Menominee River
GMPZA-1	1051.97	1/12/2006	15.71	1036.26	Menominee River
GMPZA-1	1051.97	2/6/2006	15.65	1036.32	Menominee River
GMPZA-1	1051.97	2/13/2006	15.30	1036.67	Menominee River
GMPZA-1	1051.97	3/15/2006	15.47	1036.50	Menominee River
GMPZA-1	1051.97	5/23/2006	14.78	1037.19	Menominee River
GMPZA-1	1051.97	8/8/2006	16.10	1035.87	Menominee River
GMPZA-1	1051.97	11/28/2006	15.76	1036.21	Menominee River
GMPZA-1	1051.97	2/5/2007	15.80	1036.17	Menominee River
GMPZA-1	1051.97	5/22/2007	16.08	1035.89	Menominee River
GMPZA-1	1051.97	8/14/2007	16.38	1035.59	Menominee River
GMPZA-1	1051.97	11/2/2007	16.07	1035.90	Menominee River
GMPZA-2	1051.74	6/2/2005	14.05	1037.87	Menominee River
GMPZA-2	1051.92	7/22/2005	14.78	1037.14	Menominee River
GMPZA-2	1051.74	9/10/2005	14.37	1037.37	Menominee River
GMPZA-2	1051.74	11/9/2005	14.59	1037.15	Menominee River
GMPZA-2	1051.74	1/12/2006	15.98	1035.76	Menominee River
GMPZA-2	1051.74	2/6/2006	16.14	1035.60	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-2	1051.74	2/13/2006	15.81	1035.93	Menominee River
GMPZA-2	1051.74	3/15/2006	16.08	1035.66	Menominee River
GMPZA-2	1051.74	5/23/2006	15.34	1036.40	Menominee River
GMPZA-2	1051.74	8/8/2006	16.73	1035.01	Menominee River
GMPZA-2	1051.74	11/28/2006	16.32	1035.42	Menominee River
GMPZA-2	1051.74	2/5/2007	16.56	1035.18	Menominee River
GMPZA-2	1051.74	5/23/2007	16.68	1035.06	Menominee River
GMPZA-2	1051.74	8/14/2007	16.92	1034.82	Menominee River
GMPZA-2	1051.74	11/2/2007	16.62	1035.12	Menominee River
GMPZA-3	1051.77	6/2/2005	14.14	1037.84	Menominee River
GMPZA-3	1051.98	7/21/2005	14.69	1037.29	Menominee River
GMPZA-3	1051.77	9/10/2005	14.46	1037.31	Menominee River
GMPZA-3	1051.77	11/9/2005	14.76	1037.01	Menominee River
GMPZA-3	1051.77	1/12/2006	16.18	1035.59	Menominee River
GMPZA-3	1051.77	2/6/2006	16.45	1035.32	Menominee River
GMPZA-3	1051.77	2/13/2006	16.14	1035.63	Menominee River
GMPZA-3	1051.77	5/23/2006	15.56	1036.21	Menominee River
GMPZA-3	1051.77	8/8/2006	16.52	1035.25	Menominee River
GMPZA-3	1051.77	11/28/2006	16.00	1035.77	Menominee River
GMPZA-3	1051.77	2/5/2007	16.21	1035.56	Menominee River
GMPZA-3	1051.77	5/23/2007	16.38	1035.39	Menominee River
GMPZA-3	1051.77	8/14/2007	16.64	1035.13	Menominee River
GMPZA-3	1051.77	11/2/2007	16.32	1035.45	Menominee River
GMPZA-4	1051.81	6/2/2005	14.30	1037.69	Menominee River
GMPZA-4	1051.99	7/21/2005	14.86	1037.13	Menominee River
GMPZA-4	1051.81	9/10/2005	14.61	1037.20	Menominee River
GMPZA-4	1051.81	11/9/2005	15.01	1036.80	Menominee River
GMPZA-4	1051.81	1/12/2006	16.52	1035.29	Menominee River
GMPZA-4	1051.81	2/13/2006	16.43	1035.38	Menominee River
GMPZA-4	1051.81	5/23/2006	15.76	1036.05	Menominee River
GMPZA-4	1051.81	8/8/2006	17.23	1034.58	Menominee River
GMPZA-4	1051.81	11/28/2006	16.76	1035.05	Menominee River
GMPZA-4	1051.81	2/5/2007	17.03	1034.78	Menominee River
GMPZA-4	1051.81	5/23/2007	17.15	1034.66	Menominee River
GMPZA-4	1051.81	8/14/2007	17.38	1034.43	Menominee River
GMPZA-4	1051.81	11/2/2007	17.08	1034.73	Menominee River
GMPZA-5	1052.00	6/2/2005	14.57	1037.60	Menominee River
GMPZA-5	1052.17	7/21/2005	15.12	1037.05	Menominee River
GMPZA-5	1052.00	9/10/2005	14.60	1037.40	Menominee River
GMPZA-5	1052.00	11/9/2005	15.70	1036.30	Menominee River
GMPZA-5	1052.00	1/12/2006	16.67	1035.33	Menominee River
GMPZA-5	1052.00	2/13/2006	16.59	1035.41	Menominee River
GMPZA-5	1052.00	5/23/2006	15.92	1036.08	Menominee River
GMPZA-5	1052.00	8/8/2006	17.54	1034.46	Menominee River
GMPZA-5	1052.00	11/28/2006	17.03	1034.97	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-5	1052.00	2/5/2007	17.31	1034.69	Menominee River
GMPZA-5	1052.00	5/23/2007	17.46	1034.54	Menominee River
GMPZA-5	1052.00	8/14/2007	17.66	1034.34	Menominee River
GMPZA-5	1052.00	11/2/2007	17.36	1034.64	Menominee River
GMPZA-6	1052.13	6/2/2005	14.62	1037.68	Menominee River
GMPZA-6	1052.30	7/21/2005	15.19	1037.11	Menominee River
GMPZA-6	1052.13	9/10/2005	14.85	1037.28	Menominee River
GMPZA-6	1052.13	11/9/2005	15.67	1036.46	Menominee River
GMPZA-6	1052.13	1/12/2006	16.50	1035.63	Menominee River
GMPZA-6	1052.13	2/13/2006	16.44	1035.69	Menominee River
GMPZA-6	1052.13	5/23/2006	15.72	1036.41	Menominee River
GMPZA-6	1052.13	8/8/2006	17.63	1034.50	Menominee River
GMPZA-6	1052.13	11/28/2006	17.19	1034.94	Menominee River
GMPZA-6	1052.13	2/5/2007	17.43	1034.70	Menominee River
GMPZA-6	1052.13	5/23/2007	17.56	1034.57	Menominee River
GMPZA-6	1052.13	8/14/2007	17.77	1034.36	Menominee River
GMPZA-6	1052.13	11/2/2007	17.48	1034.65	Menominee River
GMPZA-7	1051.80	6/2/2005	14.41	1037.55	Menominee River
GMPZA-7	1051.96	7/21/2005	14.97	1036.99	Menominee River
GMPZA-7	1051.80	9/10/2005	14.71	1037.09	Menominee River
GMPZA-7	1051.80	11/9/2005	15.57	1036.23	Menominee River
GMPZA-7	1051.80	1/12/2006	16.17	1035.63	Menominee River
GMPZA-7	1051.80	2/6/2006	16.38	1035.42	Menominee River
GMPZA-7	1051.80	2/13/2006	16.12	1035.68	Menominee River
GMPZA-7	1051.80	5/23/2006	15.42	1036.38	Menominee River
GMPZA-7	1051.80	8/8/2006	17.28	1034.52	Menominee River
GMPZA-7	1051.80	11/28/2006	16.85	1034.95	Menominee River
GMPZA-7	1051.80	2/5/2007	17.10	1034.70	Menominee River
GMPZA-7	1051.80	5/23/2007	17.22	1034.58	Menominee River
GMPZA-7	1051.80	8/14/2007	17.44	1034.36	Menominee River
GMPZA-7	1051.80	11/2/2007	17.06	1034.74	Menominee River
GMPZA-8	1051.64	6/2/2005	14.21	1037.52	Menominee River
GMPZA-8	1051.73	7/21/2005	14.77	1036.96	Menominee River
GMPZA-8	1051.64	9/10/2005	12.36	1039.28	Menominee River
GMPZA-8	1051.64	11/9/2005	15.31	1036.33	Menominee River
GMPZA-8	1051.64	1/12/2006	16.11	1035.53	Menominee River
GMPZA-8	1051.64	2/6/2006	16.33	1035.31	Menominee River
GMPZA-8	1051.64	2/13/2006	16.08	1035.56	Menominee River
GMPZA-8	1051.64	5/23/2006	15.30	1036.34	Menominee River
GMPZA-8	1051.64	8/8/2006	16.94	1034.70	Menominee River
GMPZA-8	1051.64	11/28/2006	16.57	1035.07	Menominee River
GMPZA-8	1051.64	2/5/2007	16.77	1034.87	Menominee River
GMPZA-8	1051.64	5/23/2007	16.91	1034.73	Menominee River
GMPZA-8	1051.64	8/14/2007	17.12	1034.52	Menominee River
GMPZA-8	1051.64	11/2/2007	16.89	1034.75	Menominee River

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-9	1050.11	7/21/2005	13.10	1037.01	Menominee River
GMPZA-9	1049.94	9/10/2005	12.88	1037.06	Menominee River
GMPZA-9	1049.94	11/9/2005	13.60	1036.34	Menominee River
GMPZA-9	1049.94	1/12/2006	14.51	1035.43	Menominee River
GMPZA-9	1049.94	2/6/2006	14.83	1035.11	Menominee River
GMPZA-9	1049.94	2/13/2006	14.59	1035.35	Menominee River
GMPZA-9	1049.94	5/23/2006	13.81	1036.13	Menominee River
GMPZA-9	1049.94	8/8/2006	15.18	1034.76	Menominee River
GMPZA-9	1049.94	11/28/2006	14.79	1035.15	Menominee River
GMPZA-9	1049.94	2/5/2007	14.95	1034.99	Menominee River
GMPZA-9	1049.94	5/23/2007	15.13	1034.81	Menominee River
GMPZA-9	1049.94	8/14/2007	15.33	1034.61	Menominee River
GMPZA-9	1049.94	11/2/2007	15.11	1034.83	Menominee River
GMPZA-10	1050.70	6/2/2005	13.19	1037.70	Menominee River
GMPZA-10	1050.89	7/21/2005	13.77	1037.12	Menominee River
GMPZA-10	1050.70	9/10/2005	13.53	1037.17	Menominee River
GMPZA-10	1050.70	11/9/2005	14.27	1036.43	Menominee River
GMPZA-10	1050.70	1/12/2006	15.40	1035.30	Menominee River
GMPZA-10	1050.70	2/13/2006	15.37	1035.33	Menominee River
GMPZA-10	1050.70	5/23/2006	14.58	1036.12	Menominee River
GMPZA-10	1050.70	8/8/2006	15.95	1034.75	Menominee River
GMPZA-10	1050.70	11/28/2006	15.57	1035.13	Menominee River
GMPZA-10	1050.70	2/5/2007	15.70	1035.00	Menominee River
GMPZA-10	1050.70	5/23/2007	15.88	1034.82	Menominee River
GMPZA-10	1050.70	8/14/2007	16.08	1034.62	Menominee River
GMPZA-10	1050.70	11/2/2007	15.82	1034.88	Menominee River
GMPZA-11	1050.11	6/2/2005	12.60	1037.71	Menominee River
GMPZA-11	1050.31	7/21/2005	13.19	1037.12	Menominee River
GMPZA-11	1050.11	9/10/2005	12.91	1037.20	Menominee River
GMPZA-11	1050.11	11/9/2005	13.33	1036.78	Menominee River
GMPZA-11	1050.11	1/12/2006	14.69	1035.42	Menominee River
GMPZA-11	1050.11	2/13/2006	14.67	1035.44	Menominee River
GMPZA-11	1050.11	5/23/2006	13.86	1036.25	Menominee River
GMPZA-11	1050.11	8/8/2006	15.23	1034.88	Menominee River
GMPZA-11	1050.11	11/28/2006	14.83	1035.28	Menominee River
GMPZA-11	1050.11	2/5/2007	14.97	1035.14	Menominee River
GMPZA-11	1050.11	5/23/2007	15.15	1034.96	Menominee River
GMPZA-11	1050.11	8/14/2007	15.35	1034.76	Menominee River
GMPZA-11	1050.11	11/2/2007	15.13	1034.98	Menominee River
GMPZA-12	1049.73	6/2/2005	12.23	1037.70	Menominee River
GMPZA-12	1049.93	7/21/2005	12.81	1037.12	Menominee River
GMPZA-12	1049.73	9/10/2005	12.54	1037.19	Menominee River
GMPZA-12	1049.73	11/9/2005	12.83	1036.90	Menominee River
GMPZA-12	1049.73	1/12/2006	14.34	1035.39	Menominee River
GMPZA-12	1049.73	2/13/2006	14.29	1035.44	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-12	1049.73	5/23/2006	13.44	1036.29	Menominee River
GMPZA-12	1049.73	8/8/2006	14.79	1034.94	Menominee River
GMPZA-12	1049.73	11/28/2006	14.41	1035.32	Menominee River
GMPZA-12	1049.73	2/5/2007	14.50	1035.23	Menominee River
GMPZA-12	1049.73	5/23/2007	14.70	1035.03	Menominee River
GMPZA-12	1049.73	8/14/2007	14.91	1034.82	Menominee River
GMPZA-12	1049.73	11/2/2007	14.73	1035.00	Menominee River
GMPZA-13	1049.43	6/2/2005	11.90	1037.72	Menominee River
GMPZA-13	1049.62	7/21/2005	12.49	1037.13	Menominee River
GMPZA-13	1049.43	9/10/2005	12.20	1037.23	Menominee River
GMPZA-13	1049.43	11/9/2005	12.43	1037.00	Menominee River
GMPZA-13	1049.43	1/12/2006	13.97	1035.46	Menominee River
GMPZA-13	1049.43	2/13/2006	13.89	1035.54	Menominee River
GMPZA-13	1049.43	5/23/2006	13.11	1036.32	Menominee River
GMPZA-13	1049.43	8/8/2006	14.43	1035.00	Menominee River
GMPZA-13	1049.43	11/28/2006	14.04	1035.39	Menominee River
GMPZA-13	1049.43	2/5/2007	14.11	1035.32	Menominee River
GMPZA-13	1049.43	5/23/2007	14.33	1035.10	Menominee River
GMPZA-13	1049.43	8/14/2007	14.53	1034.90	Menominee River
GMPZA-13	1049.43	11/2/2007	14.28	1035.15	Menominee River
GMPZA-14	1047.74	6/2/2005	10.20	1037.72	Menominee River
GMPZA-14	1047.92	7/21/2005	10.81	1037.11	Menominee River
GMPZA-14	1047.74	9/10/2005	10.50	1037.24	Menominee River
GMPZA-14	1047.74	11/9/2005	10.65	1037.09	Menominee River
GMPZA-14	1047.74	1/12/2006	12.18	1035.56	Menominee River
GMPZA-14	1047.74	2/13/2006	12.15	1035.59	Menominee River
GMPZA-14	1047.74	5/23/2006	11.42	1036.32	Menominee River
GMPZA-14	1047.74	8/8/2006	12.76	1034.98	Menominee River
GMPZA-14	1047.74	11/28/2006	12.25	1035.49	Menominee River
GMPZA-14	1047.74	2/5/2007	12.34	1035.40	Menominee River
GMPZA-14	1047.74	5/23/2007	12.57	1035.17	Menominee River
GMPZA-14	1047.74	8/14/2007	12.78	1034.96	Menominee River
GMPZA-14	1047.74	11/2/2007	12.51	1035.23	Menominee River
GMPZA-15	1047.13	6/2/2005	9.58	1037.75	Menominee River
GMPZA-15	1047.33	7/21/2005	10.15	1037.18	Menominee River
GMPZA-15	1047.13	9/10/2005	9.85	1037.28	Menominee River
GMPZA-15	1047.13	11/9/2005	9.94	1037.19	Menominee River
GMPZA-15	1047.13	1/12/2006	11.60	1035.53	Menominee River
GMPZA-15	1047.13	2/13/2006	11.56	1035.57	Menominee River
GMPZA-15	1047.13	5/23/2006	10.83	1036.30	Menominee River
GMPZA-15	1047.13	8/8/2006	12.04	1035.09	Menominee River
GMPZA-15	1047.13	11/28/2006	11.54	1035.59	Menominee River
GMPZA-15	1047.13	2/5/2007	11.67	1035.46	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-15	1047.13	5/23/2007	11.89	1035.24	Menominee River
GMPZA-15	1047.13	8/14/2007	12.08	1035.05	Menominee River
GMPZA-15	1047.13	11/2/2007	11.81	1035.32	Menominee River
GMPZA-16	1045.77	6/2/2005	8.22	1037.76	Menominee River
GMPZA-16	1045.98	7/21/2005	8.79	1037.19	Menominee River
GMPZA-16	1045.77	9/10/2005	8.47	1037.30	Menominee River
GMPZA-16	1045.77	11/9/2005	8.50	1037.27	Menominee River
GMPZA-16	1045.77	1/12/2006	10.22	1035.55	Menominee River
GMPZA-16	1045.77	2/13/2006	10.20	1035.57	Menominee River
GMPZA-16	1045.77	5/23/2006	9.52	1036.25	Menominee River
GMPZA-16	1045.77	8/8/2006	10.63	1035.14	Menominee River
GMPZA-16	1045.77	11/28/2006	10.60	1035.17	Menominee River
GMPZA-16	1045.77	2/5/2007	10.20	1035.57	Menominee River
GMPZA-16	1045.77	5/23/2007	10.41	1035.36	Menominee River
GMPZA-16	1045.77	8/14/2007	10.60	1035.17	Menominee River
GMPZA-16	1045.77	11/2/2007	10.33	1035.44	Menominee River
GMPZA-17	1044.97	6/2/2005	6.68	1037.76	Menominee River
GMPZA-17	1044.44	7/21/2005	7.34	1037.10	Menominee River
GMPZA-17	1046.04	11/9/2005	8.73	1037.31	Menominee River
GMPZA-17	1044.97	1/12/2006	9.36	1035.61	Menominee River
GMPZA-17	1044.97	2/13/2006	9.31	1035.66	Menominee River
GMPZA-17	1044.97	5/23/2006	8.64	1036.33	Menominee River
GMPZA-17	1044.97	8/8/2006	9.73	1035.24	Menominee River
GMPZA-17	1044.97	11/28/2006	9.15	1035.82	Menominee River
GMPZA-17	1044.97	2/5/2007	9.30	1035.67	Menominee River
GMPZA-17	1044.97	5/23/2007	9.49	1035.48	Menominee River
GMPZA-17	1044.97	8/14/2007	9.69	1035.28	Menominee River
GMPZA-17	1044.97	11/2/2007	9.42	1035.55	Menominee River
GMPZA-18	1043.15	6/2/2005	5.61	1037.76	Menominee River
GMPZA-18	1043.37	7/21/2005	6.15	1037.22	Menominee River
GMPZA-18	1043.15	9/10/2005	5.82	1037.33	Menominee River
GMPZA-18	1043.15	11/9/2005	5.85	1037.30	Menominee River
GMPZA-18	1043.15	1/12/2006	7.54	1035.61	Menominee River
GMPZA-18	1043.15	2/13/2006	7.49	1035.66	Menominee River
GMPZA-18	1043.15	5/23/2006	6.83	1036.32	Menominee River
GMPZA-18	1043.15	8/8/2006	7.86	1035.29	Menominee River
GMPZA-18	1043.15	11/28/2006	7.38	1035.77	Menominee River
GMPZA-18	1043.15	2/5/2007	7.48	1035.67	Menominee River
GMPZA-18	1043.15	5/23/2007	7.66	1035.49	Menominee River
GMPZA-18	1043.15	8/14/2007	7.84	1035.31	Menominee River
GMPZA-18	1043.15	11/2/2007	7.59	1035.56	Menominee River
GMPZA-19	1044.61	6/2/2005	7.06	1037.83	Menominee River
GMPZA-19	1044.89	7/21/2005	7.61	1037.28	Menominee River
GMPZA-19	1044.61	9/10/2005	7.27	1037.34	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-19	1044.61	11/9/2005	7.30	1037.31	Menominee River
GMPZA-19	1044.61	1/12/2006	9.08	1035.53	Menominee River
GMPZA-19	1044.61	2/13/2006	9.06	1035.55	Menominee River
GMPZA-19	1044.61	5/23/2006	8.36	1036.25	Menominee River
GMPZA-19	1044.61	8/8/2006	9.40	1035.21	Menominee River
GMPZA-19	1044.61	11/28/2006	8.93	1035.68	Menominee River
GMPZA-19	1044.61	2/5/2007	9.05	1035.56	Menominee River
GMPZA-19	1044.61	5/23/2007	9.18	1035.43	Menominee River
GMPZA-19	1044.61	8/14/2007	9.37	1035.24	Menominee River
GMPZA-19	1044.61	11/2/2007	9.13	1035.48	Menominee River
GMPZA-20	1045.31	6/2/2005	7.55	1037.98	Menominee River
GMPZA-20	1045.53	7/21/2005	8.13	1037.40	Menominee River
GMPZA-20	1045.31	9/10/2005	7.81	1037.50	Menominee River
GMPZA-20	1045.31	11/9/2005	7.85	1037.46	Menominee River
GMPZA-20	1045.31	1/12/2006	9.61	1035.70	Menominee River
GMPZA-20	1045.31	2/6/2006	9.86	1035.45	Menominee River
GMPZA-20	1045.31	2/13/2006	9.67	1035.64	Menominee River
GMPZA-20	1045.31	5/23/2006	8.94	1036.37	Menominee River
GMPZA-20	1045.31	8/8/2006	10.04	1035.27	Menominee River
GMPZA-20	1045.31	11/28/2006	9.67	1035.64	Menominee River
GMPZA-20	1045.31	2/5/2007	9.85	1035.46	Menominee River
GMPZA-20	1045.31	5/23/2007	9.89	1035.42	Menominee River
GMPZA-20	1045.31	8/14/2007	10.09	1035.22	Menominee River
GMPZA-20	1045.31	11/2/2007	9.91	1035.40	Menominee River
GMPZA-21	1046.26	6/2/2005	8.25	1038.24	Menominee River
GMPZA-21	1046.49	7/21/2005	8.85	1037.64	Menominee River
GMPZA-21	1046.26	9/10/2005	8.56	1037.70	Menominee River
GMPZA-21	1046.26	11/9/2005	8.63	1037.63	Menominee River
GMPZA-21	1046.26	1/12/2006	10.39	1035.87	Menominee River
GMPZA-21	1046.26	2/6/2006	10.75	1035.51	Menominee River
GMPZA-21	1046.26	2/13/2006	10.55	1035.71	Menominee River
GMPZA-21	1046.26	5/23/2006	9.70	1036.56	Menominee River
GMPZA-21	1046.26	8/8/2006	10.91	1035.35	Menominee River
GMPZA-21	1046.26	11/28/2006	10.52	1035.74	Menominee River
GMPZA-21	1046.26	2/5/2007	10.81	1035.45	Menominee River
GMPZA-21	1046.26	5/23/2007	10.72	1035.54	Menominee River
GMPZA-21	1046.26	8/14/2007	10.95	1035.31	Menominee River
GMPZA-21	1046.26	11/2/2007	10.84	1035.42	Menominee River
GMPZA-22	1045.24	6/2/2005	7.03	1038.39	Menominee River
GMPZA-22	1045.42	7/22/2005	7.68	1037.74	Menominee River
GMPZA-22	1045.24	9/10/2005	7.34	1037.90	Menominee River
GMPZA-22	1045.24	11/9/2005	7.43	1037.81	Menominee River
GMPZA-22	1045.24	1/12/2006	9.14	1036.10	Menominee River
GMPZA-22	1045.24	2/6/2006	9.57	1035.67	Menominee River
GMPZA-22	1045.24	2/13/2006	9.37	1035.87	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-22	1045.24	5/23/2006	8.47	1036.77	Menominee River
GMPZA-22	1045.24	8/8/2006	9.71	1035.53	Menominee River
GMPZA-22	1045.24	11/28/2006	9.36	1035.88	Menominee River
GMPZA-22	1045.24	2/5/2007	9.69	1035.55	Menominee River
GMPZA-22	1045.24	5/23/2007	9.52	1035.72	Menominee River
GMPZA-22	1045.24	8/14/2007	9.80	1035.44	Menominee River
GMPZA-22	1045.24	11/2/2007	9.74	1035.50	Menominee River
GMPZA-23	1052.04	6/2/2005	14.61	1037.59	Menominee River
GMPZA-23	1052.20	7/22/2005	15.26	1036.94	Menominee River
GMPZA-23	1052.04	9/10/2005	14.32	1037.72	Menominee River
GMPZA-23	1052.04	11/9/2005	14.99	1037.05	Menominee River
GMPZA-23	1052.04	1/12/2006	16.03	1036.01	Menominee River
GMPZA-23	1052.04	2/6/2006	16.10	1035.94	Menominee River
GMPZA-23	1052.04	2/13/2006	15.76	1036.28	Menominee River
GMPZA-23	1052.04	3/15/2006	15.97	1036.07	Menominee River
GMPZA-23	1052.04	5/23/2006	15.29	1036.75	Menominee River
GMPZA-23	1052.04	8/8/2006	16.58	1035.46	Menominee River
GMPZA-23	1052.04	11/28/2006	16.23	1035.81	Menominee River
GMPZA-23	1052.04	2/5/2007	16.43	1035.61	Menominee River
GMPZA-23	1052.04	5/23/2007	16.02	1036.02	Menominee River
GMPZA-23	1052.04	8/14/2007	16.86	1035.18	Menominee River
GMPZA-23	1052.04	11/2/2007	16.49	1035.55	Menominee River
GMPZA-24	1051.08	6/2/2005	13.70	1037.55	Menominee River
GMPZA-24	1051.25	7/22/2005	14.36	1036.89	Menominee River
GMPZA-24	1051.08	9/10/2005	13.95	1037.13	Menominee River
GMPZA-24	1051.08	11/9/2005	14.10	1036.98	Menominee River
GMPZA-24	1051.08	1/12/2006	15.22	1035.86	Menominee River
GMPZA-24	1051.08	2/6/2006	15.33	1035.75	Menominee River
GMPZA-24	1051.08	2/13/2006	15.02	1036.06	Menominee River
GMPZA-24	1051.08	3/15/2006	15.21	1035.87	Menominee River
GMPZA-24	1051.08	5/23/2006	14.49	1036.59	Menominee River
GMPZA-24	1051.08	8/8/2006	15.83	1035.25	Menominee River
GMPZA-24	1051.08	11/28/2006	15.45	1035.63	Menominee River
GMPZA-24	1051.08	2/5/2007	15.67	1035.41	Menominee River
GMPZA-24	1051.08	5/23/2007	15.86	1035.22	Menominee River
GMPZA-24	1051.08	8/14/2007	16.06	1035.02	Menominee River
GMPZA-24	1051.08	11/2/2007	15.72	1035.36	Menominee River
GMPZA-25	1052.19	6/2/2005	14.81	1037.54	Menominee River
GMPZA-25	1052.35	7/21/2005	15.35	1037.00	Menominee River
GMPZA-25	1052.19	9/10/2005	15.08	1037.11	Menominee River
GMPZA-25	1052.19	11/9/2005	15.30	1036.89	Menominee River
GMPZA-25	1052.19	1/12/2006	16.59	1035.60	Menominee River
GMPZA-25	1052.19	2/6/2006	16.68	1035.51	Menominee River
GMPZA-25	1052.19	2/13/2006	16.36	1035.83	Menominee River
GMPZA-25	1052.19	3/15/2006	16.56	1035.63	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-25	1052.19	5/23/2006	15.92	1036.27	Menominee River
GMPZA-25	1052.19	8/8/2006	17.22	1034.97	Menominee River
GMPZA-25	1052.19	11/28/2006	16.77	1035.42	Menominee River
GMPZA-25	1052.19	2/5/2007	16.95	1035.24	Menominee River
GMPZA-25	1052.19	5/23/2007	17.08	1035.11	Menominee River
GMPZA-25	1052.19	8/14/2007	17.38	1034.81	Menominee River
GMPZA-25	1052.19	11/2/2007	17.08	1035.11	Menominee River
GMPZA-26	1051.95	6/2/2005	14.65	1037.46	Menominee River
GMPZA-26	1052.11	7/21/2005	15.18	1036.93	Menominee River
GMPZA-26	1051.95	9/10/2005	14.92	1037.03	Menominee River
GMPZA-26	1051.95	11/9/2005	15.26	1036.69	Menominee River
GMPZA-26	1051.95	1/12/2006	16.52	1035.43	Menominee River
GMPZA-26	1051.95	2/13/2006	16.41	1035.54	Menominee River
GMPZA-26	1051.95	5/23/2006	15.75	1036.20	Menominee River
GMPZA-26	1051.95	8/8/2006	17.22	1034.73	Menominee River
GMPZA-26	1051.95	11/28/2006	16.80	1035.15	Menominee River
GMPZA-26	1051.95	2/5/2007	16.98	1034.97	Menominee River
GMPZA-26	1051.95	5/23/2007	17.16	1034.79	Menominee River
GMPZA-26	1051.95	8/14/2007	17.37	1034.58	Menominee River
GMPZA-26	1051.95	11/2/2007	17.06	1034.89	Menominee River
GMPZA-27	1052.24	6/2/2005	14.88	1037.39	Menominee River
GMPZA-27	1052.27	7/21/2005	15.42	1036.85	Menominee River
GMPZA-27	1052.24	9/10/2005	15.17	1037.07	Menominee River
GMPZA-27	1052.24	11/9/2005	15.88	1036.36	Menominee River
GMPZA-27	1052.24	1/12/2006	16.83	1035.41	Menominee River
GMPZA-27	1052.24	2/13/2006	16.73	1035.51	Menominee River
GMPZA-27	1052.24	5/23/2006	16.07	1036.17	Menominee River
GMPZA-27	1052.24	8/8/2006	17.63	1034.61	Menominee River
GMPZA-27	1052.24	11/28/2006	17.20	1035.04	Menominee River
GMPZA-27	1052.24	2/5/2007	17.43	1034.81	Menominee River
GMPZA-27	1052.24	5/23/2007	17.56	1034.68	Menominee River
GMPZA-27	1052.24	8/14/2007	17.75	1034.49	Menominee River
GMPZA-27	1052.24	11/2/2007	17.45	1034.79	Menominee River
GMPZA-28	1051.91	6/2/2005	15.01	1037.06	Menominee River
GMPZA-28	1052.07	7/21/2005	15.55	1036.52	Menominee River
GMPZA-28	1051.91	9/10/2005	15.11	1036.80	Menominee River
GMPZA-28	1051.91	11/9/2005	15.70	1036.21	Menominee River
GMPZA-28	1051.91	1/12/2006	16.45	1035.46	Menominee River
GMPZA-28	1051.91	2/13/2006	16.32	1035.59	Menominee River
GMPZA-28	1051.91	5/23/2006	15.65	1036.26	Menominee River
GMPZA-28	1051.91	8/8/2006	17.35	1034.56	Menominee River
GMPZA-28	1051.91	11/28/2006	16.96	1034.95	Menominee River
GMPZA-28	1051.91	2/5/2007	17.15	1034.76	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-28	1051.91	5/23/2007	17.30	1034.61	Menominee River
GMPZA-28	1051.91	8/14/2007	17.47	1034.44	Menominee River
GMPZA-28	1051.91	11/2/2007	17.14	1034.77	Menominee River
GMPZA-29	1050.81	6/2/2005	13.91	1037.06	Menominee River
GMPZA-29	1050.97	7/21/2005	14.44	1036.53	Menominee River
GMPZA-29	1050.81	9/10/2005	14.08	1036.73	Menominee River
GMPZA-29	1050.81	11/9/2005	14.68	1036.13	Menominee River
GMPZA-29	1050.81	1/12/2006	15.29	1035.52	Menominee River
GMPZA-29	1050.81	2/6/2006	15.44	1035.37	Menominee River
GMPZA-29	1050.81	2/13/2006	15.20	1035.61	Menominee River
GMPZA-29	1050.81	5/23/2006	14.51	1036.30	Menominee River
GMPZA-29	1050.81	8/8/2006	16.20	1034.61	Menominee River
GMPZA-29	1050.81	11/28/2006	15.85	1034.96	Menominee River
GMPZA-29	1050.81	2/5/2007	16.02	1034.79	Menominee River
GMPZA-29	1050.81	5/23/2007	16.19	1034.62	Menominee River
GMPZA-29	1050.81	8/14/2007	16.34	1034.47	Menominee River
GMPZA-29	1050.81	11/2/2007	16.02	1034.79	Menominee River
GMPZA-30	1051.30	6/2/2005	14.33	1037.12	Menominee River
GMPZA-30	1051.45	7/21/2005	14.86	1036.59	Menominee River
GMPZA-30	1051.30	9/10/2005	14.58	1036.72	Menominee River
GMPZA-30	1051.30	11/9/2005	15.08	1036.22	Menominee River
GMPZA-30	1051.30	1/12/2006	15.81	1035.49	Menominee River
GMPZA-30	1051.30	2/6/2006	15.96	1035.34	Menominee River
GMPZA-30	1051.30	2/13/2006	15.73	1035.57	Menominee River
GMPZA-30	1051.30	5/23/2006	15.00	1036.30	Menominee River
GMPZA-30	1051.30	8/8/2006	16.52	1034.78	Menominee River
GMPZA-30	1051.30	11/28/2006	16.16	1035.14	Menominee River
GMPZA-30	1051.30	2/5/2007	16.34	1034.96	Menominee River
GMPZA-30	1051.30	5/23/2007	16.52	1034.78	Menominee River
GMPZA-30	1051.30	8/14/2007	16.68	1034.62	Menominee River
GMPZA-30	1051.30	11/2/2007	16.38	1034.92	Menominee River
GMPZA-31	1051.33	7/21/2005	14.57	1036.76	Menominee River
GMPZA-31	1051.17	9/10/2005	14.32	1036.85	Menominee River
GMPZA-31	1051.17	11/9/2005	14.84	1036.33	Menominee River
GMPZA-31	1051.17	1/12/2006	15.70	1035.47	Menominee River
GMPZA-31	1051.17	2/6/2006	15.90	1035.27	Menominee River
GMPZA-31	1051.17	2/13/2006	15.62	1035.55	Menominee River
GMPZA-31	1051.17	5/23/2006	14.90	1036.27	Menominee River
GMPZA-31	1051.17	8/8/2006	16.29	1034.88	Menominee River
GMPZA-31	1051.17	11/28/2006	15.94	1035.23	Menominee River
GMPZA-31	1051.17	2/5/2007	16.02	1035.15	Menominee River
GMPZA-31	1051.17	5/23/2007	16.28	1034.89	Menominee River
GMPZA-31	1051.17	8/14/2007	16.45	1034.72	Menominee River
GMPZA-31	1051.17	11/2/2007	16.17	1035.00	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-32	1051.25	6/2/2005	14.00	1037.43	Menominee River
GMPZA-32	1051.43	7/21/2005	14.55	1036.88	Menominee River
GMPZA-32	1051.25	9/10/2005	14.29	1036.96	Menominee River
GMPZA-32	1051.25	11/9/2005	14.75	1036.50	Menominee River
GMPZA-32	1051.25	1/12/2006	15.78	1035.47	Menominee River
GMPZA-32	1051.25	2/13/2006	15.70	1035.55	Menominee River
GMPZA-32	1051.25	5/23/2006	14.92	1036.33	Menominee River
GMPZA-32	1051.25	8/8/2006	16.27	1034.98	Menominee River
GMPZA-32	1051.25	11/28/2006	15.92	1035.33	Menominee River
GMPZA-32	1051.25	2/5/2007	15.99	1035.26	Menominee River
GMPZA-32	1051.25	5/23/2007	16.26	1034.99	Menominee River
GMPZA-32	1051.25	8/14/2007	16.42	1034.83	Menominee River
GMPZA-32	1051.25	11/2/2007	16.15	1035.10	Menominee River
GMPZA-33	1050.52	6/2/2005	13.78	1036.91	Menominee River
GMPZA-33	1050.69	7/21/2005	13.75	1036.94	Menominee River
GMPZA-33	1050.52	9/10/2005	13.48	1037.04	Menominee River
GMPZA-33	1050.52	11/9/2005	13.80	1036.72	Menominee River
GMPZA-33	1050.52	1/12/2006	14.97	1035.55	Menominee River
GMPZA-33	1050.52	2/13/2006	14.88	1035.64	Menominee River
GMPZA-33	1050.52	5/23/2006	14.07	1036.45	Menominee River
GMPZA-33	1050.52	8/8/2006	15.41	1035.11	Menominee River
GMPZA-33	1050.52	11/28/2006	15.06	1035.46	Menominee River
GMPZA-33	1050.52	2/5/2007	15.15	1035.37	Menominee River
GMPZA-33	1050.52	5/23/2007	15.41	1035.11	Menominee River
GMPZA-33	1050.52	8/14/2007	15.58	1034.94	Menominee River
GMPZA-33	1050.52	11/2/2007	15.31	1035.21	Menominee River
GMPZA-34	1050.41	6/2/2005	12.99	1037.58	Menominee River
GMPZA-34	1050.57	7/21/2005	13.55	1037.02	Menominee River
GMPZA-34	1050.41	9/10/2005	13.29	1037.12	Menominee River
GMPZA-34	1050.41	11/9/2005	13.53	1036.88	Menominee River
GMPZA-34	1050.41	1/12/2006	14.82	1035.59	Menominee River
GMPZA-34	1050.41	2/13/2006	14.72	1035.69	Menominee River
GMPZA-34	1050.41	5/23/2006	13.95	1036.46	Menominee River
GMPZA-34	1050.41	8/8/2006	15.26	1035.15	Menominee River
GMPZA-34	1050.41	11/28/2006	14.92	1035.49	Menominee River
GMPZA-34	1050.41	2/5/2007	14.98	1035.43	Menominee River
GMPZA-34	1050.41	5/23/2007	15.23	1035.18	Menominee River
GMPZA-34	1050.41	8/14/2007	15.40	1035.01	Menominee River
GMPZA-34	1050.41	11/2/2007	15.15	1035.26	Menominee River
GMPZA-35	1049.34	6/2/2005	11.97	1037.54	Menominee River
GMPZA-35	1049.51	7/21/2005	12.47	1037.04	Menominee River
GMPZA-35	1049.34	9/10/2005	12.19	1037.15	Menominee River
GMPZA-35	1049.34	11/9/2005	12.38	1036.96	Menominee River
GMPZA-35	1049.34	1/12/2006	13.72	1035.62	Menominee River
GMPZA-35	1049.34	2/13/2006	13.61	1035.73	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-35	1049.34	5/23/2006	12.86	1036.48	Menominee River
GMPZA-35	1049.34	8/8/2006	14.15	1035.19	Menominee River
GMPZA-35	1049.34	11/28/2006	13.78	1035.56	Menominee River
GMPZA-35	1049.34	2/5/2007	13.88	1035.46	Menominee River
GMPZA-35	1049.34	5/23/2007	14.12	1035.22	Menominee River
GMPZA-35	1049.34	8/14/2007	14.30	1035.04	Menominee River
GMPZA-35	1049.34	11/2/2007	14.02	1035.32	Menominee River
GMPZA-36	1048.32	6/2/2005	10.82	1037.67	Menominee River
GMPZA-36	1048.49	7/21/2005	11.39	1037.10	Menominee River
GMPZA-36	1048.32	9/10/2005	11.11	1037.21	Menominee River
GMPZA-36	1048.32	11/9/2005	11.25	1037.07	Menominee River
GMPZA-36	1048.32	1/12/2006	12.65	1035.67	Menominee River
GMPZA-36	1048.32	2/13/2006	12.56	1035.76	Menominee River
GMPZA-36	1048.32	5/23/2006	11.84	1036.48	Menominee River
GMPZA-36	1048.32	8/8/2006	13.12	1035.20	Menominee River
GMPZA-36	1048.32	11/28/2006	12.69	1035.63	Menominee River
GMPZA-36	1048.32	2/5/2007	12.82	1035.50	Menominee River
GMPZA-36	1048.32	5/23/2007	13.04	1035.28	Menominee River
GMPZA-36	1048.32	8/14/2007	13.24	1035.08	Menominee River
GMPZA-36	1048.32	11/2/2007	12.93	1035.39	Menominee River
GMPZA-37	1048.34	6/2/2005	10.81	1037.71	Menominee River
GMPZA-37	1048.52	7/21/2005	11.38	1037.14	Menominee River
GMPZA-37	1048.34	9/10/2005	11.08	1037.26	Menominee River
GMPZA-37	1048.34	11/9/2005	11.16	1037.18	Menominee River
GMPZA-37	1048.34	1/12/2006	12.61	1035.73	Menominee River
GMPZA-37	1048.34	2/13/2006	12.55	1035.79	Menominee River
GMPZA-37	1048.34	5/23/2006	11.87	1036.47	Menominee River
GMPZA-37	1048.34	8/8/2006	13.04	1035.30	Menominee River
GMPZA-37	1048.34	11/28/2006	12.59	1035.75	Menominee River
GMPZA-37	1048.34	2/5/2007	12.76	1035.58	Menominee River
GMPZA-37	1048.34	5/23/2007	12.95	1035.39	Menominee River
GMPZA-37	1048.34	8/14/2007	13.16	1035.18	Menominee River
GMPZA-37	1048.34	11/2/2007	12.85	1035.49	Menominee River
GMPZA-38	1046.56	6/2/2005	9.00	1037.73	Menominee River
GMPZA-38	1046.56	9/10/2005	9.25	1037.31	Menominee River
GMPZA-38	1046.56	11/9/2005	9.29	1037.27	Menominee River
GMPZA-38	1046.56	1/12/2006	10.81	1035.75	Menominee River
GMPZA-38	1046.56	2/13/2006	10.75	1035.81	Menominee River
GMPZA-38	1046.56	5/23/2006	10.08	1036.48	Menominee River
GMPZA-38	1046.56	8/8/2006	11.19	1035.37	Menominee River
GMPZA-38	1046.56	11/28/2006	10.69	1035.87	Menominee River
GMPZA-38	1046.56	2/5/2007	10.89	1035.67	Menominee River
GMPZA-38	1046.56	5/23/2007	11.07	1035.49	Menominee River
GMPZA-38	1046.56	8/14/2007	11.26	1035.30	Menominee River
GMPZA-38	1046.56	11/2/2007	10.96	1035.60	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-39	1045.47	6/2/2005	7.93	1037.72	Menominee River
GMPZA-39	1045.65	7/21/2005	8.48	1037.17	Menominee River
GMPZA-39	1045.47	9/10/2005	8.18	1037.29	Menominee River
GMPZA-39	1045.47	11/9/2005	8.18	1037.29	Menominee River
GMPZA-39	1045.47	1/12/2006	9.67	1035.80	Menominee River
GMPZA-39	1045.47	2/13/2006	9.61	1035.86	Menominee River
GMPZA-39	1045.47	5/23/2006	8.97	1036.50	Menominee River
GMPZA-39	1045.47	8/8/2006	10.04	1035.43	Menominee River
GMPZA-39	1045.47	11/28/2006	9.57	1035.90	Menominee River
GMPZA-39	1045.47	2/5/2007	9.75	1035.72	Menominee River
GMPZA-39	1045.47	5/23/2007	9.89	1035.58	Menominee River
GMPZA-39	1045.47	8/14/2007	10.10	1035.37	Menominee River
GMPZA-39	1045.47	11/2/2007	9.80	1035.67	Menominee River
GMPZA-40	1043.54	6/2/2005	6.02	1037.70	Menominee River
GMPZA-40	1043.72	7/21/2005	6.56	1037.16	Menominee River
GMPZA-40	1043.54	9/10/2005	6.23	1037.31	Menominee River
GMPZA-40	1043.54	11/9/2005	6.23	1037.31	Menominee River
GMPZA-40	1043.54	1/12/2006	7.71	1035.83	Menominee River
GMPZA-40	1043.54	2/13/2006	7.66	1035.88	Menominee River
GMPZA-40	1043.54	5/23/2006	7.03	1036.51	Menominee River
GMPZA-40	1043.54	8/8/2006	8.08	1035.46	Menominee River
GMPZA-40	1043.54	11/28/2006	7.62	1035.92	Menominee River
GMPZA-40	1043.54	2/5/2007	7.73	1035.81	Menominee River
GMPZA-40	1043.54	5/23/2007	7.94	1035.60	Menominee River
GMPZA-40	1043.54	8/14/2007	8.16	1035.38	Menominee River
GMPZA-40	1043.54	11/2/2007	7.85	1035.69	Menominee River
GMPZA-41	1041.84	6/2/2005	4.33	1037.70	Menominee River
GMPZA-41	1042.03	7/22/2005	14.77	1027.26	Menominee River
GMPZA-41	1041.84	9/10/2005	4.53	1037.31	Menominee River
GMPZA-41	1041.84	11/9/2005	4.50	1037.34	Menominee River
GMPZA-41	1041.84	1/12/2006	5.88	1035.96	Menominee River
GMPZA-41	1041.84	2/13/2006	5.85	1035.99	Menominee River
GMPZA-41	1041.84	5/23/2006	5.21	1036.63	Menominee River
GMPZA-41	1041.84	8/8/2006	6.26	1035.58	Menominee River
GMPZA-41	1041.84	11/28/2006	5.83	1036.01	Menominee River
GMPZA-41	1041.84	2/5/2007	5.97	1035.87	Menominee River
GMPZA-41	1041.84	5/23/2007	6.16	1035.68	Menominee River
GMPZA-41	1041.84	8/14/2007	6.34	1035.50	Menominee River
GMPZA-41	1041.84	11/2/2007	6.07	1035.77	Menominee River
GMPZA-42	1044.73	6/2/2005	6.69	1038.23	Menominee River
GMPZA-42	1044.92	7/22/2005	7.26	1037.66	Menominee River
GMPZA-42	1044.73	9/10/2005	6.96	1037.77	Menominee River
GMPZA-42	1044.73	11/9/2005	7.03	1037.70	Menominee River
GMPZA-42	1044.73	1/12/2006	8.53	1036.20	Menominee River
GMPZA-42	1044.73	2/6/2006	8.88	1035.85	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZA-42	1044.73	2/13/2006	8.67	1036.06	Menominee River
GMPZA-42	1044.73	5/23/2006	7.89	1036.84	Menominee River
GMPZA-42	1044.73	8/8/2006	9.07	1035.66	Menominee River
GMPZA-42	1044.73	11/28/2006	8.62	1036.11	Menominee River
GMPZA-42	1044.73	2/5/2007	8.99	1035.74	Menominee River
GMPZA-42	1044.73	5/23/2007	8.92	1035.81	Menominee River
GMPZA-42	1044.73	8/14/2007	9.18	1035.55	Menominee River
GMPZA-42	1044.73	11/2/2007	9.04	1035.69	Menominee River
GMPZB-1	1054.47	1/12/2006	13.85	1040.62	Menominee River
GMPZB-1	1054.47	5/23/2006	13.05	1041.42	Menominee River
GMPZC-1	1048.35	4/14/2005	6.00	1041.05	Menominee River
GMPZC-1	1048.35	6/2/2005	6.69	1040.36	Menominee River
GMPZC-1	1047.05	7/21/2005	7.33	1039.72	Menominee River
GMPZC-1	1046.88	9/10/2005	5.81	1041.07	Menominee River
GMPZC-1	1046.88	11/9/2005	8.00	1038.88	Menominee River
GMPZC-1	1048.35	1/12/2006	10.09	1038.26	Menominee River
GMPZC-1	1048.35	2/1/2006	10.00	1038.35	Menominee River
GMPZC-1	1048.35	2/6/2006	10.22	1038.13	Menominee River
GMPZC-1	1048.35	2/13/2006	10.00	1038.35	Menominee River
GMPZC-1	1048.35	3/16/2006	10.10	1038.25	Menominee River
GMPZC-1	1048.35	5/23/2006	8.88	1039.47	Menominee River
GMPZC-1	1048.35	8/8/2006	10.12	1038.23	Menominee River
GMPZC-1	1048.35	11/28/2006	9.98	1038.37	Menominee River
GMPZC-1	1048.35	2/5/2007	9.91	1038.44	Menominee River
GMPZC-1	1048.35	5/23/2007	10.15	1038.20	Menominee River
GMPZC-1	1048.35	8/14/2007	10.50	1037.85	Menominee River
GMPZC-1	1048.35	11/2/2007	10.34	1038.01	Menominee River
GMPZC-2	1046.10	4/14/2005	6.49	1039.79	Menominee River
GMPZC-2	1046.10	6/2/2005	6.10	1040.18	Menominee River
GMPZC-2	1046.28	7/21/2005	6.27	1040.01	Menominee River
GMPZC-2	1046.10	11/9/2005	7.96	1038.14	Menominee River
GMPZC-2	1046.10	1/12/2006	8.24	1037.86	Menominee River
GMPZC-2	1046.10	2/1/2006	8.18	1037.92	Menominee River
GMPZC-2	1046.10	2/6/2006	8.42	1037.68	Menominee River
GMPZC-2	1046.10	2/13/2006	8.19	1037.91	Menominee River
GMPZC-2	1046.10	3/16/2006	8.25	1037.85	Menominee River
GMPZC-2	1046.10	5/23/2006	7.37	1038.73	Menominee River
GMPZC-2	1046.10	8/8/2006	8.61	1037.49	Menominee River
GMPZC-2	1046.10	11/28/2006	8.44	1037.66	Menominee River
GMPZC-2	1046.10	2/5/2007	8.51	1037.59	Menominee River
GMPZC-2	1046.10	5/23/2007	8.68	1037.42	Menominee River
GMPZC-2	1046.10	8/14/2007	9.02	1037.08	Menominee River
GMPZC-2	1046.10	11/2/2007	12.86	1033.24	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZC-3	1046.96	4/14/2005	10.27	1040.75	Menominee River
GMPZC-3	1046.96	6/2/2005	10.88	1040.14	Menominee River
GMPZC-3	1051.02	7/21/2005	11.54	1039.48	Menominee River
GMPZC-3	1050.86	9/10/2005	11.34	1039.52	Menominee River
GMPZC-3	1050.86	11/9/2005	13.30	1037.56	Menominee River
GMPZC-3	1046.96	1/12/2006	12.70	1034.26	Menominee River
GMPZC-3	1046.96	2/6/2006	12.88	1034.08	Menominee River
GMPZC-3	1046.96	2/13/2006	12.62	1034.34	Menominee River
GMPZC-3	1046.96	3/16/2006	12.61	1034.35	Menominee River
GMPZC-3	1046.96	5/23/2006	11.79	1035.17	Menominee River
GMPZC-3	1046.96	8/8/2006	13.22	1033.74	Menominee River
GMPZC-3	1046.96	11/28/2006	13.00	1033.96	Menominee River
GMPZC-3	1046.96	2/5/2007	13.16	1033.80	Menominee River
GMPZC-3	1046.96	5/23/2007	13.24	1033.72	Menominee River
GMPZC-3	1046.96	8/14/2007	13.62	1033.34	Menominee River
GMPZC-3	1046.96	11/1/2007	13.37	1033.59	Menominee River
GMPZC-4 (GMPZ-9)	1050.93	7/21/2005	8.59	1042.34	Menominee River
GMPZC-4 (GMPZ-9)	1050.64	9/10/2005	7.35	1043.29	Menominee River
GMPZC-4 (GMPZ-9)	1050.64	11/10/2005	5.92	1044.72	Menominee River
GMPZC-4 (GMPZ-9)	1050.64	11/28/2006	19.16	1031.48	Menominee River
GMPZC-5	1053.98	4/14/2005	13.46	1040.70	Menominee River
GMPZC-5	1053.98	6/2/2005	14.02	1040.14	Menominee River
GMPZC-5	1054.16	7/21/2005	14.64	1039.52	Menominee River
GMPZC-5	1053.98	9/10/2005	14.54	1039.44	Menominee River
GMPZC-5	1053.98	11/9/2005	18.12	1035.86	Menominee River
GMPZC-5	1053.98	1/12/2006	18.55	1035.43	Menominee River
GMPZC-5	1053.98	2/13/2006	18.45	1035.53	Menominee River
GMPZC-5	1053.98	5/23/2006	17.68	1036.30	Menominee River
GMPZC-5	1053.98	8/8/2006	19.51	1034.47	Menominee River
GMPZC-5	1053.98	11/28/2006	15.30	1038.68	Menominee River
GMPZC-5	1053.98	2/5/2007	19.52	1034.46	Menominee River
GMPZC-5	1053.98	5/23/2007	19.64	1034.34	Menominee River
GMPZC-5	1053.98	8/14/2007	20.18	1033.80	Menominee River
GMPZC-5	1053.98	11/2/2007	19.98	1034.00	Menominee River
GMPZC-6	1051.25	4/14/2005	11.70	1039.73	Menominee River
GMPZC-6	1051.25	6/2/2005	11.66	1039.77	Menominee River
GMPZC-6	1051.43	7/22/2005	12.37	1039.06	Menominee River
GMPZC-6	1051.25	11/9/2005	14.92	1036.33	Menominee River
GMPZC-6	1051.25	1/12/2006	15.33	1035.92	Menominee River
GMPZC-6	1051.25	2/13/2006	15.21	1036.04	Menominee River
GMPZC-6	1051.25	5/23/2006	14.31	1036.94	Menominee River
GMPZC-6	1051.25	8/8/2006	15.88	1035.37	Menominee River
GMPZC-6	1051.25	11/28/2006	18.86	1032.39	Menominee River
GMPZC-6	1051.25	2/5/2007	15.85	1035.40	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZC-6	1051.25	5/23/2007	15.75	1035.50	Menominee River
GMPZC-6	1051.25	8/14/2007	16.08	1035.17	Menominee River
GMPZC-6	1051.25	11/2/2007	15.94	1035.31	Menominee River
GMPZC-7	1052.21	4/14/2005	12.25	1040.17	Menominee River
GMPZC-7	1052.21	6/2/2005	12.88	1039.54	Menominee River
GMPZC-7	1052.42	7/21/2005	13.51	1038.91	Menominee River
GMPZC-7	1052.21	9/10/2005	13.34	1038.87	Menominee River
GMPZC-7	1052.21	11/9/2005	17.77	1034.44	Menominee River
GMPZC-7	1052.21	1/12/2006	18.43	1033.78	Menominee River
GMPZC-7	1052.21	2/13/2006	18.36	1033.85	Menominee River
GMPZC-7	1052.21	5/23/2006	17.64	1034.57	Menominee River
GMPZC-7	1052.21	8/8/2006	19.34	1032.87	Menominee River
GMPZC-7	1052.21	11/28/2006	14.82	1037.39	Menominee River
GMPZC-7	1052.21	2/5/2007	19.34	1032.87	Menominee River
GMPZC-7	1052.21	5/23/2007	19.42	1032.79	Menominee River
GMPZC-7	1052.21	8/14/2007	19.79	1032.42	Menominee River
GMPZC-7	1052.21	11/2/2007	19.64	1032.57	Menominee River
GMPZC-8	1050.09	4/14/2005	10.87	1039.42	Menominee River
GMPZC-8	1050.09	6/2/2005	11.63	1038.66	Menominee River
GMPZC-8	1050.29	7/21/2005	12.18	1038.11	Menominee River
GMPZC-8	1050.09	11/9/2005	12.51	1037.58	Menominee River
GMPZC-8	1050.09	1/12/2006	14.45	1035.64	Menominee River
GMPZC-8	1050.09	2/13/2006	14.51	1035.58	Menominee River
GMPZC-8	1050.09	5/23/2006	13.69	1036.40	Menominee River
GMPZC-8	1050.09	8/8/2006	14.94	1035.15	Menominee River
GMPZC-8	1050.09	11/28/2006	15.68	1034.41	Menominee River
GMPZC-8	1050.09	2/5/2007	15.09	1035.00	Menominee River
GMPZC-8	1050.09	5/23/2007	15.04	1035.05	Menominee River
GMPZC-8	1050.09	8/14/2007	15.25	1034.84	Menominee River
GMPZC-8	1050.09	11/2/2007	15.04	1035.05	Menominee River
GMPZC-9	1051.75	4/14/2005	11.52	1040.38	Menominee River
GMPZC-9	1051.75	6/2/2005	12.06	1039.84	Menominee River
GMPZC-9	1051.90	7/22/2005	12.83	1039.07	Menominee River
GMPZC-9	1051.75	9/10/2005	12.70	1039.05	Menominee River
GMPZC-9	1051.75	11/9/2005	16.78	1034.97	Menominee River
GMPZC-9	1051.75	1/12/2006	15.26	1036.49	Menominee River
GMPZC-9	1051.75	2/13/2006	15.21	1036.54	Menominee River
GMPZC-9	1051.75	5/23/2006	14.39	1037.36	Menominee River
GMPZC-9	1051.75	8/8/2006	16.10	1035.65	Menominee River
GMPZC-9	1051.75	11/28/2006	16.80	1034.95	Menominee River
GMPZC-9	1051.75	5/23/2007	16.06	1035.69	Menominee River
GMPZC-9	1051.75	11/2/2007	16.24	1035.51	Menominee River
GMPZC-10	1052.46	4/14/2005	11.92	1040.54	Menominee River
GMPZC-10	1052.46	6/2/2005	12.32	1040.14	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZC-10	1052.46	7/22/2005	13.11	1039.35	Menominee River
GMPZC-10	1052.28	9/10/2005	12.84	1039.44	Menominee River
GMPZC-10	1052.28	11/9/2005	15.44	1036.84	Menominee River
GMPZC-10	1052.28	1/12/2006	15.79	1036.49	Menominee River
GMPZC-10	1052.28	2/13/2006	15.68	1036.60	Menominee River
GMPZC-10	1052.28	5/23/2006	14.88	1037.40	Menominee River
GMPZC-10	1052.28	8/8/2006	17.01	1035.27	Menominee River
GMPZC-10	1052.28	11/28/2006	7.04	1045.24	Menominee River
GMPZC-10	1052.28	2/5/2007	16.97	1035.31	Menominee River
GMPZC-10	1052.28	5/23/2007	16.96	1035.32	Menominee River
GMPZC-10	1052.28	8/14/2007	17.32	1034.96	Menominee River
GMPZC-10	1052.28	11/2/2007	17.24	1035.04	Menominee River
GMPZC-11	1045.53	4/14/2005	4.52	1041.16	Menominee River
GMPZC-11	1045.53	6/2/2005	5.38	1040.30	Menominee River
GMPZC-11	1045.68	7/21/2005	5.86	1039.82	Menominee River
GMPZC-11	1045.53	9/10/2005	8.74	1036.79	Menominee River
GMPZC-11	1045.53	11/10/2005	7.10	1038.43	Menominee River
GMPZC-11	1045.53	1/12/2006	7.11	1038.42	Menominee River
GMPZC-11	1045.53	2/1/2006	7.04	1038.49	Menominee River
GMPZC-11	1045.53	2/6/2006	7.26	1038.27	Menominee River
GMPZC-11	1045.53	2/13/2006	7.00	1038.53	Menominee River
GMPZC-11	1045.53	3/16/2006	7.15	1038.38	Menominee River
GMPZC-11	1045.53	5/23/2006	6.07	1039.46	Menominee River
GMPZC-11	1045.53	8/8/2006	7.33	1038.20	Menominee River
GMPZC-11	1045.53	11/28/2006	8.32	1037.21	Menominee River
GMPZC-11	1045.53	2/5/2007	7.15	1038.38	Menominee River
GMPZC-11	1045.53	5/23/2007	7.35	1038.18	Menominee River
GMPZC-11	1045.53	8/14/2007	7.68	1037.85	Menominee River
GMPZC-11	1045.53	11/2/2007	7.49	1038.04	Menominee River
GMPZC-12	1046.00	4/14/2005	5.50	1040.67	Menominee River
GMPZC-12	1046.00	6/2/2005	9.07	1037.10	Menominee River
GMPZC-12	1046.00	9/10/2005	6.51	1039.49	Menominee River
GMPZC-12	1046.00	11/9/2005	7.86	1038.14	Menominee River
GMPZC-12	1046.00	1/12/2006	8.19	1037.81	Menominee River
GMPZC-12	1046.00	2/6/2006	8.31	1037.69	Menominee River
GMPZC-12	1046.00	2/13/2006	8.10	1037.90	Menominee River
GMPZC-12	1046.00	3/16/2006	8.15	1037.85	Menominee River
GMPZC-12	1046.00	5/23/2006	7.30	1038.70	Menominee River
GMPZC-12	1046.00	8/8/2006	7.61	1038.39	Menominee River
GMPZC-12	1046.00	11/28/2006	8.02	1037.98	Menominee River
GMPZC-12	1046.00	2/5/2007	8.49	1037.51	Menominee River
GMPZC-12	1046.00	5/23/2007	8.62	1037.38	Menominee River
GMPZC-12	1046.00	8/14/2007	9.00	1037.00	Menominee River
GMPZC-12	1046.00	11/2/2007	8.82	1037.18	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZC-13	1045.21	4/14/2005	4.68	1040.65	Menominee River
GMPZC-13	1045.21	6/2/2005	5.26	1040.07	Menominee River
GMPZC-13	1045.33	7/21/2005	5.64	1039.69	Menominee River
GMPZC-13	1045.21	9/10/2005	5.75	1039.46	Menominee River
GMPZC-13	1045.21	11/9/2005	7.54	1037.67	Menominee River
GMPZC-13	1045.21	1/12/2006	7.84	1037.37	Menominee River
GMPZC-13	1045.21	2/6/2006	8.04	1037.17	Menominee River
GMPZC-13	1045.21	2/13/2006	7.77	1037.44	Menominee River
GMPZC-13	1045.21	3/16/2006	7.75	1037.46	Menominee River
GMPZC-13	1045.21	5/23/2006	7.01	1038.20	Menominee River
GMPZC-13	1045.21	8/8/2006	8.39	1036.82	Menominee River
GMPZC-13	1045.21	11/28/2006	11.40	1033.81	Menominee River
GMPZC-13	1045.21	2/5/2007	8.29	1036.92	Menominee River
GMPZC-13	1045.21	5/23/2007	7.38	1037.83	Menominee River
GMPZC-13	1045.21	8/14/2007	7.76	1037.45	Menominee River
GMPZC-13	1045.21	11/2/2007	8.53	1036.68	Menominee River
GMPZC-14	1047.38	4/14/2005	7.05	1040.47	Menominee River
GMPZC-14	1047.38	6/2/2005	10.34	1037.18	Menominee River
GMPZC-14	1047.38	6/2/2005	7.75	1039.77	Menominee River
GMPZC-14	1047.38	9/10/2005	8.22	1039.16	Menominee River
GMPZC-14	1047.38	11/10/2005	11.72	1035.66	Menominee River
GMPZC-14	1047.38	1/12/2006	10.97	1036.41	Menominee River
GMPZC-14	1047.38	2/13/2006	10.87	1036.51	Menominee River
GMPZC-14	1047.38	5/23/2006	10.05	1037.33	Menominee River
GMPZC-14	1047.38	8/8/2006	11.86	1035.52	Menominee River
GMPZC-14	1047.38	11/28/2006	13.34	1034.04	Menominee River
GMPZC-14	1047.38	2/5/2007	11.84	1035.54	Menominee River
GMPZC-14	1047.38	5/23/2007	11.65	1035.73	Menominee River
GMPZC-14	1047.38	8/14/2007	12.02	1035.36	Menominee River
GMPZC-14	1047.38	11/2/2007	11.86	1035.52	Menominee River
GMPZC-15	1048.94	4/14/2005	8.80	1040.30	Menominee River
GMPZC-15	1048.94	6/2/2005	9.31	1039.79	Menominee River
GMPZC-15	1049.10	7/22/2005	10.21	1038.89	Menominee River
GMPZC-15	1048.94	9/10/2005	9.81	1039.13	Menominee River
GMPZC-15	1048.94	11/10/2005	12.45	1036.49	Menominee River
GMPZC-15	1048.94	1/12/2006	12.86	1036.08	Menominee River
GMPZC-15	1048.94	2/13/2006	12.72	1036.22	Menominee River
GMPZC-15	1048.94	5/23/2006	11.82	1037.12	Menominee River
GMPZC-15	1048.94	8/8/2006	13.79	1035.15	Menominee River
GMPZC-15	1048.94	11/28/2006	14.26	1034.68	Menominee River
GMPZC-15	1048.94	2/5/2007	13.87	1035.07	Menominee River
GMPZC-15	1048.94	5/23/2007	13.83	1035.11	Menominee River
GMPZC-15	1048.94	8/14/2007	14.14	1034.80	Menominee River
GMPZC-15	1048.94	11/2/2007	13.98	1034.96	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
GMPZC-16	1048.83	4/14/2005	8.90	1040.11	Menominee River
GMPZC-16	1048.83	6/2/2005	9.57	1039.44	Menominee River
GMPZC-16	1048.83	9/10/2005	10.07	1038.76	Menominee River
GMPZC-16	1048.83	1/12/2006	13.76	1035.07	Menominee River
GMPZC-16	1048.83	2/13/2006	13.66	1035.17	Menominee River
GMPZC-16	1048.83	5/23/2006	12.96	1035.87	Menominee River
GMPZC-16	1048.83	8/8/2006	14.85	1033.98	Menominee River
GMPZC-16	1048.83	11/28/2006	11.14	1037.69	Menominee River
GMPZC-16	1048.83	2/5/2007	14.78	1034.05	Menominee River
GMPZC-16	1048.83	5/23/2007	14.64	1034.19	Menominee River
GMPZC-16	1048.83	8/14/2007	14.95	1033.88	Menominee River
GMPZC-16	1048.83	11/2/2007	14.83	1034.00	Menominee River
GMPZC-17	1046.79	4/14/2005	7.48	1039.48	Menominee River
GMPZC-17	1046.79	6/2/2005	8.36	1038.60	Menominee River
GMPZC-17	1046.96	7/21/2005	8.91	1038.05	Menominee River
GMPZC-17	1046.79	9/10/2005	8.70	1038.09	Menominee River
GMPZC-17	1046.79	11/10/2005	9.32	1037.47	Menominee River
GMPZC-17	1046.79	1/12/2006	10.73	1036.06	Menominee River
GMPZC-17	1046.79	2/13/2006	10.80	1035.99	Menominee River
GMPZC-17	1046.79	5/23/2006	10.04	1036.75	Menominee River
GMPZC-17	1046.79	8/8/2006	11.30	1035.49	Menominee River
GMPZC-17	1046.79	11/28/2006	17.60	1029.19	Menominee River
GMPZC-17	1046.79	2/5/2007	11.36	1035.43	Menominee River
GMPZC-17	1046.79	5/23/2007	11.33	1035.46	Menominee River
GMPZC-17	1046.79	8/14/2007	11.51	1035.28	Menominee River
GMPZC-17	1046.79	11/2/2007	11.32	1035.47	Menominee River
GMPZC-18	1050.07	2/13/2006	13.29	1036.78	Menominee River
GMPZC-18	1050.07	5/23/2006	12.48	1037.59	Menominee River
GMPZC-18	1050.07	8/8/2006	14.06	1036.01	Menominee River
GMPZC-18	1050.07	2/5/2007	17.96	1032.11	Menominee River
GMPZC-18	1050.07	8/14/2007	18.32	1031.75	Menominee River
GMPZC-18	1050.07	11/2/2007	18.09	1031.98	Menominee River
GMSG-29	1117.17	5/20/2001	16.80	1100.37	Lodal Park
GMSG-29	1117.17	5/30/2001	17.31	1099.86	Lodal Park
GMSG-31	1118.06	5/20/2001	19.64	1098.42	Lodal Park
GMSG-31	1118.06	5/30/2001	19.71	1098.35	Lodal Park
GMSG-33	1116.46	5/20/2001	15.28	1101.18	Lodal Park
GMSG-33	1116.46	5/30/2001	15.76	1100.70	Lodal Park
GMSG-214	1098.77	7/29/2003	43.42	1055.35	Emmet
GMSG-216	1097.48	7/29/2003	43.37	1054.11	Emmet

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MP-1S	1067.27	11/30/2000	9.67	1057.60	Cowboy Lake
MP-1S	1067.27	1/16/2001	10.05	1057.22	Cowboy Lake
MP-1S	1067.27	1/25/2001	10.06	1057.21	Cowboy Lake
MP-1S	1067.27	2/13/2001	10.11	1057.16	Cowboy Lake
MP-1S	1067.27	3/9/2001	10.21	1057.06	Cowboy Lake
MP-1S	1067.27	6/1/2001	9.51	1057.76	Cowboy Lake
MP-1S	1067.27	9/12/2001	9.61	1057.66	Cowboy Lake
MP-1S	1067.27	12/11/2001	9.60	1057.67	Cowboy Lake
MP-1S	1067.27	3/27/2002	10.26	1057.01	Cowboy Lake
MP-1S	1067.27	6/11/2002	9.42	1057.85	Cowboy Lake
MP-1S	1067.27	11/5/2002	9.52	1057.75	Cowboy Lake
MP-1S	1067.27	5/19/2003	9.20	1058.07	Cowboy Lake
MP-1S	1067.27	12/1/2003	9.78	1057.49	Cowboy Lake
MP-1S	1067.27	5/13/2004	4.20	1063.07	Cowboy Lake
MP-1S	1067.27	11/16/2004	9.58	1057.69	Cowboy Lake
MP-1S	1067.27	6/2/2005	9.37	1057.90	Cowboy Lake
MP-1S	1067.27	9/10/2005	9.46	1057.81	Cowboy Lake
MP-1S	1067.27	11/10/2005	9.53	1057.74	Cowboy Lake
MP-1S	1067.27	1/12/2006	10.02	1057.25	Cowboy Lake
MP-1S	1067.27	2/13/2006	10.10	1057.17	Cowboy Lake
MP-1S	1067.27	5/24/2006	9.35	1057.92	Cowboy Lake
MP-1S	1067.27	8/8/2006	9.50	1057.77	Cowboy Lake
MP-1S	1067.27	11/27/2006	9.70	1057.57	Cowboy Lake
MP-1S	1067.27	2/5/2007	10.05	1057.22	Cowboy Lake
MP-1S	1067.27	5/22/2007	9.52	1057.75	Cowboy Lake
MP-1S	1067.27	8/14/2007	9.60	1057.67	Cowboy Lake
MP-1S	1067.27	11/1/2007	9.61	1057.66	Cowboy Lake
MP-2D	1071.69	11/30/2000	7.80	1063.89	Cowboy Lake
MP-2D	1071.69	1/16/2001	7.99	1063.70	Cowboy Lake
MP-2D	1071.69	1/25/2001	7.93	1063.76	Cowboy Lake
MP-2D	1071.69	2/13/2001	8.16	1063.53	Cowboy Lake
MP-2D	1071.69	3/9/2001	8.04	1063.65	Cowboy Lake
MP-2D	1071.69	9/12/2001	7.84	1063.85	Cowboy Lake
MP-2D	1071.69	12/11/2001	9.46	1062.23	Cowboy Lake
MP-2D	1071.69	6/11/2002	7.57	1064.12	Cowboy Lake
MP-2D	1071.69	11/5/2002	7.69	1064.00	Cowboy Lake
MP-2D	1071.69	5/19/2003	7.24	1064.45	Cowboy Lake
MP-2D	1071.69	12/1/2003	7.98	1063.71	Cowboy Lake
MP-2D	1071.69	5/13/2004	7.22	1064.47	Cowboy Lake
MP-2D	1071.69	11/16/2004	7.77	1063.92	Cowboy Lake
MP-2D	1071.69	6/2/2005	7.52	1064.17	Cowboy Lake
MP-2D	1071.69	11/10/2005	7.80	1063.89	Cowboy Lake
MP-2D	1071.69	5/24/2006	7.51	1064.18	Cowboy Lake
MP-2D	1071.69	11/27/2006	7.76	1063.93	Cowboy Lake
MP-2D	1071.69	5/22/2007	7.53	1064.16	Cowboy Lake
MP-2D	1071.69	11/1/2007	8.00	1063.69	Cowboy Lake

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MP-2S	1071.62	11/30/2000	7.05	1064.57	Cowboy Lake
MP-2S	1071.62	1/16/2001	7.56	1064.06	Cowboy Lake
MP-2S	1071.62	1/25/2001	7.55	1064.07	Cowboy Lake
MP-2S	1071.62	2/13/2001	7.68	1063.94	Cowboy Lake
MP-2S	1071.62	3/9/2001	7.73	1063.89	Cowboy Lake
MP-2S	1071.62	6/1/2001	6.57	1065.05	Cowboy Lake
MP-2S	1071.62	9/12/2001	6.87	1064.75	Cowboy Lake
MP-2S	1071.62	12/11/2001	7.23	1064.39	Cowboy Lake
MP-2S	1071.62	6/11/2002	6.61	1065.01	Cowboy Lake
MP-2S	1071.62	11/5/2002	6.98	1064.64	Cowboy Lake
MP-2S	1071.62	5/19/2003	6.30	1065.32	Cowboy Lake
MP-2S	1071.62	12/1/2003	7.25	1064.37	Cowboy Lake
MP-2S	1071.62	5/13/2004	6.22	1065.40	Cowboy Lake
MP-2S	1071.62	11/16/2004	7.04	1064.58	Cowboy Lake
MP-2S	1071.62	6/2/2005	6.51	1065.11	Cowboy Lake
MP-2S	1071.62	11/10/2005	6.99	1064.63	Cowboy Lake
MP-2S	1071.62	5/24/2006	6.53	1065.09	Cowboy Lake
MP-2S	1071.62	11/27/2006	7.00	1064.62	Cowboy Lake
MP-2S	1071.62	5/22/2007	8.52	1063.10	Cowboy Lake
MP-2S	1071.62	11/1/2007	9.08	1062.54	Cowboy Lake
MP-3D	1080.49	11/30/2000	16.14	1064.35	Cowboy Lake
MP-3D	1080.49	1/16/2001	16.43	1064.06	Cowboy Lake
MP-3D	1080.49	1/25/2001	16.29	1064.20	Cowboy Lake
MP-3D	1080.49	2/13/2001	16.57	1063.92	Cowboy Lake
MP-3D	1080.49	3/9/2001	16.71	1063.78	Cowboy Lake
MP-3D	1080.49	6/1/2001	15.99	1064.50	Cowboy Lake
MP-3D	1080.49	9/12/2001	16.31	1064.18	Cowboy Lake
MP-3D	1080.49	12/11/2001	16.20	1064.29	Cowboy Lake
MP-3D	1080.49	6/11/2002	16.16	1064.33	Cowboy Lake
MP-3D	1080.49	11/5/2002	16.18	1064.31	Cowboy Lake
MP-3D	1080.49	5/19/2003	15.77	1064.72	Cowboy Lake
MP-3D	1080.49	12/1/2003	16.43	1064.06	Cowboy Lake
MP-3D	1080.49	5/13/2004	14.85	1065.64	Cowboy Lake
MP-3D	1080.49	11/16/2004	16.24	1064.25	Cowboy Lake
MP-3D	1080.49	6/2/2005	16.03	1064.46	Cowboy Lake
MP-3D	1080.49	11/10/2005	16.20	1064.29	Cowboy Lake
MP-3D	1080.49	5/24/2006	15.97	1064.52	Cowboy Lake
MP-3D	1080.49	11/27/2006	16.06	1064.43	Cowboy Lake
MP-3D	1080.49	5/22/2007	15.86	1064.63	Cowboy Lake
MP-3D	1080.49	11/1/2007	16.25	1064.24	Cowboy Lake
MP-3S	1080.47	11/30/2000	14.36	1066.11	Cowboy Lake
MP-3S	1080.47	1/16/2001	15.60	1064.87	Cowboy Lake
MP-3S	1080.47	1/25/2001	14.60	1065.87	Cowboy Lake
MP-3S	1080.47	2/13/2001	14.85	1065.62	Cowboy Lake
MP-3S	1080.47	3/9/2001	14.71	1065.76	Cowboy Lake
MP-3S	1080.47	6/1/2001	14.10	1066.37	Cowboy Lake

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MP-3S	1080.47	9/12/2001	14.31	1066.16	Cowboy Lake
MP-3S	1080.47	12/11/2001	14.38	1066.09	Cowboy Lake
MP-3S	1080.47	6/11/2002	14.31	1066.16	Cowboy Lake
MP-3S	1080.47	11/5/2002	14.43	1066.04	Cowboy Lake
MP-3S	1080.47	5/19/2003	13.91	1066.56	Cowboy Lake
MP-3S	1080.47	5/13/2004	13.91	1066.56	Cowboy Lake
MP-3S	1080.47	11/16/2004	14.55	1065.92	Cowboy Lake
MP-3S	1080.47	6/2/2005	14.12	1066.35	Cowboy Lake
MP-3S	1080.47	11/10/2005	14.38	1066.09	Cowboy Lake
MP-3S	1080.47	5/24/2006	14.07	1066.40	Cowboy Lake
MP-3S	1080.47	11/27/2006	14.21	1066.26	Cowboy Lake
MP-3S	1080.47	5/22/2007	13.94	1066.53	Cowboy Lake
MP-3S	1080.47	11/1/2007	14.31	1066.16	Cowboy Lake
MW-1A	1114.30	5/30/1997			General Study
MW-1A	1114.30	5/31/1997	27.80	1086.50	General Study
MW-1A	1114.30	6/1/1997	27.81	1086.49	General Study
MW-1A	1114.30	6/3/1997	27.83	1086.47	General Study
MW-1A	1114.30	6/12/1997	27.81	1086.49	General Study
MW-1A	1114.30	6/17/1997	27.85	1086.45	General Study
MW-1A	1114.30	6/23/1997	28.02	1086.28	General Study
MW-1A	1114.30	7/7/1997	27.85	1086.45	General Study
MW-1A	1114.30	7/19/1997	27.93	1086.37	General Study
MW-1A	1114.30	9/8/1997	28.38	1085.92	General Study
MW-1A	1114.30	9/22/1997	28.37	1085.93	General Study
MW-1A	1114.30	10/6/1997	28.52	1085.78	General Study
MW-1A	1114.30	10/24/1997	28.13	1086.17	General Study
MW-1A	1114.30	11/13/1997	28.57	1085.73	General Study
MW-1A	1114.30	11/21/1997	28.73	1085.57	General Study
MW-1A	1114.30	4/15/1998	28.11	1086.19	General Study
MW-1A	1114.30	6/3/1998	28.52	1085.78	General Study
MW-1A	1114.30	6/30/1998	28.66	1085.64	General Study
MW-1A	1114.30	7/10/1998	28.51	1085.79	General Study
MW-1A	1114.30	7/28/1998	28.66	1085.64	General Study
MW-1A	1114.30	8/11/1998	28.93	1085.37	General Study
MW-1A	1114.30	9/24/1998	29.37	1084.93	General Study
MW-1A	1114.30	10/22/1998	29.41	1084.89	General Study
MW-1A	1114.30	11/22/1998	29.68	1084.62	General Study
MW-1A	1114.30	12/19/1998	29.86	1084.44	General Study
MW-1A	1114.30	3/9/1999	30.77	1083.53	General Study
MW-1A	1114.30	4/29/1999	29.16	1085.14	General Study
MW-1A	1114.30	6/14/1999	28.07	1086.23	General Study
MW-1A	1114.30	7/26/1999	27.00	1087.30	General Study
MW-1A	1114.30	8/21/1999	26.78	1087.52	General Study
MW-1A	1114.30	9/22/1999	27.64	1086.66	General Study
MW-1A	1114.30	10/25/1999	28.14	1086.16	General Study
MW-1A	1114.30	11/19/1999	28.65	1085.65	General Study
MW-1A	1114.30	12/31/1999			General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-1A	1114.30	1/22/2000			General Study
MW-1A	1114.30	2/21/2000			General Study
MW-1A	1114.30	3/18/2000	29.13	1085.17	General Study
MW-1A	1114.30	6/17/2000	28.68	1085.62	General Study
MW-1A	1114.30	9/25/2000	27.91	1086.39	General Study
MW-1A	1114.30	11/30/2000	28.32	1085.98	General Study
MW-1A	1114.30	3/9/2001	31.14	1083.16	General Study
MW-1A	1114.30	6/1/2001	28.35	1085.95	General Study
MW-1A	1114.30	9/12/2001	29.00	1085.30	General Study
MW-1A	1114.30	12/11/2001	28.95	1085.35	General Study
MW-1A	1114.30	3/27/2002	30.48	1083.82	General Study
MW-1A	1114.30	6/11/2002	27.41	1086.89	General Study
MW-1A	1114.30	11/5/2002	25.88	1088.42	General Study
MW-1A	1114.30	5/19/2003	25.93	1088.37	General Study
MW-1A	1114.30	12/1/2003	27.91	1086.39	General Study
MW-1A	1114.30	5/13/2004	25.92	1088.38	General Study
MW-1A	1114.30	11/17/2004	26.53	1087.77	General Study
MW-1A	1114.30	6/2/2005	27.73	1086.57	General Study
MW-1A	1114.30	11/9/2005	27.22	1087.08	General Study
MW-1A	1114.30	5/24/2006	26.48	1087.82	General Study
MW-1A	1114.30	11/27/2006	28.16	1086.14	General Study
MW-1A	1114.30	5/22/2007	27.72	1086.58	General Study
MW-1A	1114.30	11/1/2007	26.71	1087.59	General Study
MW-1B	1114.53	5/30/1997			General Study
MW-1B	1114.53	5/31/1997	42.20	1072.33	General Study
MW-1B	1114.53	6/1/1997	42.18	1072.35	General Study
MW-1B	1114.53	6/3/1997	42.18	1072.35	General Study
MW-1B	1114.53	6/12/1997	41.96	1072.57	General Study
MW-1B	1114.53	6/17/1997	42.14	1072.39	General Study
MW-1B	1114.53	6/23/1997	41.91	1072.62	General Study
MW-1B	1114.53	7/7/1997	41.99	1072.54	General Study
MW-1B	1114.53	7/19/1997	41.98	1072.55	General Study
MW-1B	1114.53	9/8/1997	42.08	1072.45	General Study
MW-1B	1114.53	9/22/1997	42.28	1072.25	General Study
MW-1B	1114.53	10/6/1997	42.35	1072.18	General Study
MW-1B	1114.53	10/24/1997	42.32	1072.21	General Study
MW-1B	1114.53	11/13/1997	42.43	1072.10	General Study
MW-1B	1114.53	11/21/1997	42.52	1072.01	General Study
MW-1B	1114.53	4/15/1998	43.31	1071.22	General Study
MW-1B	1114.53	6/3/1998	42.92	1071.61	General Study
MW-1B	1114.53	6/30/1998	43.04	1071.49	General Study
MW-1B	1114.53	7/10/1998	43.14	1071.39	General Study
MW-1B	1114.53	7/28/1998	43.10	1071.43	General Study
MW-1B	1114.53	8/11/1998	43.37	1071.16	General Study
MW-1B	1114.53	9/24/1998	43.48	1071.05	General Study
MW-1B	1114.53	10/22/1998	43.69	1070.84	General Study
MW-1B	1114.53	11/22/1998	43.76	1070.77	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-1B	1114.53	12/19/1998	44.21	1070.32	General Study
MW-1B	1114.53	3/9/1999	44.49	1070.04	General Study
MW-1B	1114.53	4/29/1999	44.52	1070.01	General Study
MW-1B	1114.53	6/14/1999	44.14	1070.39	General Study
MW-1B	1114.53	7/26/1999	43.53	1071.00	General Study
MW-1B	1114.53	8/21/1999	43.01	1071.52	General Study
MW-1B	1114.53	9/22/1999	42.71	1071.82	General Study
MW-1B	1114.53	10/25/1999	42.81	1071.72	General Study
MW-1B	1114.53	11/19/1999	42.96	1071.57	General Study
MW-1B	1114.53	12/31/1999			General Study
MW-1B	1114.53	1/22/2000			General Study
MW-1B	1114.53	2/21/2000			General Study
MW-1B	1114.53	3/18/2000	43.95	1070.58	General Study
MW-1B	1114.53	6/17/2000	43.81	1070.72	General Study
MW-1B	1114.53	9/25/2000	42.81	1071.72	General Study
MW-1B	1114.53	11/30/2000	42.55	1071.98	General Study
MW-1B	1114.53	3/9/2001	41.16	1073.37	General Study
MW-1B	1114.53	6/1/2001	42.89	1071.64	General Study
MW-1B	1114.53	9/12/2001	42.98	1071.55	General Study
MW-1B	1114.53	12/11/2001	42.77	1071.76	General Study
MW-1B	1114.53	3/27/2002	43.51	1071.02	General Study
MW-1B	1114.53	6/11/2002	42.45	1072.08	General Study
MW-1B	1114.53	11/5/2002	41.51	1073.02	General Study
MW-1B	1114.53	5/19/2003	41.73	1072.80	General Study
MW-1B	1114.53	12/1/2003	42.09	1072.44	General Study
MW-1B	1114.53	5/13/2004	41.69	1072.84	General Study
MW-1B	1114.53	11/17/2004	40.86	1073.67	General Study
MW-1B	1114.53	6/2/2005	41.71	1072.82	General Study
MW-1B	1114.53	11/9/2005	42.58	1071.95	General Study
MW-1B	1114.53	5/24/2006	42.92	1071.61	General Study
MW-1B	1114.53	11/27/2006	43.47	1071.06	General Study
MW-1B	1114.53	5/22/2007	44.17	1070.36	General Study
MW-1B	1114.53	11/1/2007	45.02	1069.51	General Study
MW-2B	1121.46	5/30/1997	80.08	1041.38	General Study
MW-2B	1121.46	5/31/1997	80.22	1041.24	General Study
MW-2B	1121.46	6/1/1997	80.30	1041.16	General Study
MW-2B	1121.46	6/3/1997	80.48	1040.98	General Study
MW-2B	1121.46	6/12/1997	80.21	1041.25	General Study
MW-2B	1121.46	6/17/1997	81.65	1039.81	General Study
MW-2B	1121.46	6/23/1997	80.62	1040.84	General Study
MW-2B	1121.46	7/7/1997	81.35	1040.11	General Study
MW-2B	1121.46	7/19/1997	81.47	1039.99	General Study
MW-2B	1121.46	9/8/1997	82.42	1039.04	General Study
MW-2B	1121.46	9/22/1997	81.58	1039.88	General Study
MW-2B	1121.46	10/6/1997	82.95	1038.51	General Study
MW-2B	1121.46	10/24/1997	82.61	1038.85	General Study
MW-2B	1121.46	11/13/1997	82.64	1038.82	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-2B	1121.46	11/21/1997	82.87	1038.59	General Study
MW-2B	1121.46	4/15/1998	80.90	1040.56	General Study
MW-2B	1121.46	6/3/1998	81.88	1039.58	General Study
MW-2B	1121.46	6/30/1998	81.85	1039.61	General Study
MW-2B	1121.46	7/10/1998	82.10	1039.36	General Study
MW-2B	1121.46	7/28/1998	81.90	1039.56	General Study
MW-2B	1121.46	8/11/1998	82.30	1039.16	General Study
MW-2B	1121.46	9/24/1998	82.17	1039.29	General Study
MW-2B	1121.46	10/22/1998	82.37	1039.09	General Study
MW-2B	1121.46	11/22/1998	81.91	1039.55	General Study
MW-2B	1121.46	3/9/1999	81.95	1039.51	General Study
MW-2B	1121.46	4/29/1999	81.97	1039.49	General Study
MW-2B	1121.46	6/14/1999	81.37	1040.09	General Study
MW-2B	1121.46	7/26/1999	80.95	1040.51	General Study
MW-2B	1121.46	8/21/1999	81.44	1040.02	General Study
MW-2B	1121.46	9/22/1999	81.43	1040.03	General Study
MW-2B	1121.46	10/25/1999	81.54	1039.92	General Study
MW-2B	1121.46	11/19/1999	81.60	1039.86	General Study
MW-2B	1121.46	12/31/1999	82.29	1039.17	General Study
MW-2B	1121.46	1/22/2000	82.57	1038.89	General Study
MW-2B	1121.46	2/21/2000	81.46	1040.00	General Study
MW-2B	1121.46	3/18/2000	81.31	1040.15	General Study
MW-2B	1121.46	6/17/2000	82.46	1039.00	General Study
MW-2B	1121.46	9/25/2000	82.05	1039.41	General Study
MW-2B	1121.46	11/30/2000	82.20	1039.26	General Study
MW-2B	1121.46	3/9/2001	81.45	1040.01	General Study
MW-2B	1121.46	6/1/2001	81.97	1039.49	General Study
MW-2B	1121.46	6/1/2001	81.97	1039.49	General Study
MW-2B	1121.46	9/12/2001	82.54	1038.92	General Study
MW-2B	1121.46	12/11/2001	82.87	1038.59	General Study
MW-2B	1121.46	3/27/2002	81.65	1039.81	General Study
MW-2B	1121.46	6/11/2002	81.04	1040.42	General Study
MW-2B	1121.46	11/5/2002	81.00	1040.46	General Study
MW-2B	1121.46	5/19/2003	80.04	1041.42	General Study
MW-2B	1121.46	12/1/2003	82.16	1039.30	General Study
MW-2B	1121.46	5/13/2004	38.67	1082.79	General Study
MW-2B	1121.46	11/17/2004	82.66	1038.80	General Study
MW-2A	1123.32	5/30/1997	38.09	1085.23	General Study
MW-2A	1123.32	5/31/1997	38.07	1085.25	General Study
MW-2A	1123.32	6/1/1997	38.06	1085.26	General Study
MW-2A	1123.32	6/3/1997	38.05	1085.27	General Study
MW-2A	1123.32	6/12/1997	38.00	1085.32	General Study
MW-2A	1123.32	6/17/1997	38.25	1085.07	General Study
MW-2A	1123.32	6/23/1997	37.92	1085.40	General Study
MW-2A	1123.32	7/7/1997	37.92	1085.40	General Study
MW-2A	1123.32	7/19/1997	37.97	1085.35	General Study
MW-2A	1123.32	9/8/1997	38.32	1085.00	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-2A	1123.32	9/22/1997	38.45	1084.87	General Study
MW-2A	1123.32	10/6/1997	38.57	1084.75	General Study
MW-2A	1123.32	10/24/1997	38.66	1084.66	General Study
MW-2A	1123.32	11/13/1997	38.78	1084.54	General Study
MW-2A	1123.32	11/21/1997	38.83	1084.49	General Study
MW-2A	1123.32	4/15/1998	39.26	1084.06	General Study
MW-2A	1123.32	6/3/1998	38.80	1084.52	General Study
MW-2A	1123.32	6/30/1998	38.91	1084.41	General Study
MW-2A	1123.32	7/10/1998	38.99	1084.33	General Study
MW-2A	1123.32	7/28/1998	39.08	1084.24	General Study
MW-2A	1123.32	8/11/1998	39.26	1084.06	General Study
MW-2A	1123.32	9/24/1998	39.64	1083.68	General Study
MW-2A	1123.32	10/22/1998	39.77	1083.55	General Study
MW-2A	1123.32	11/22/1998	40.07	1083.25	General Study
MW-2A	1123.32	11/22/1998			General Study
MW-2A	1123.32	3/9/1999	40.83	1082.49	General Study
MW-2A	1123.32	4/29/1999	40.77	1082.55	General Study
MW-2A	1123.32	6/14/1999	39.98	1083.34	General Study
MW-2A	1123.32	7/26/1999	39.18	1084.14	General Study
MW-2A	1123.32	8/21/1999	38.36	1084.96	General Study
MW-2A	1123.32	9/22/1999	38.14	1085.18	General Study
MW-2A	1123.32	10/25/1999	38.41	1084.91	General Study
MW-2A	1123.32	11/19/1999	38.65	1084.67	General Study
MW-2A	1123.32	12/31/1999	39.05	1084.27	General Study
MW-2A	1123.32	1/22/2000	39.22	1084.10	General Study
MW-2A	1123.32	2/21/2000	39.50	1083.82	General Study
MW-2A	1123.32	3/18/2000	39.66	1083.66	General Study
MW-2A	1123.32	6/17/2000	39.24	1084.08	General Study
MW-2A	1123.32	9/25/2000	38.67	1084.65	General Study
MW-2A	1123.32	11/30/2000	38.81	1084.51	General Study
MW-2A	1123.32	3/9/2001	39.65	1083.67	General Study
MW-2A	1123.32	6/1/2001	39.69	1083.63	General Study
MW-2A	1123.32	6/1/2001	39.69	1083.63	General Study
MW-2A	1123.32	9/12/2001	39.71	1083.61	General Study
MW-2A	1123.32	12/11/2001	40.19	1083.13	General Study
MW-2A	1123.32	3/27/2002	40.81	1082.51	General Study
MW-2A	1123.32	6/11/2002	39.14	1084.18	General Study
MW-2A	1123.32	11/5/2002	38.42	1084.90	General Study
MW-2A	1123.32	5/19/2003	38.76	1084.56	General Study
MW-2A	1123.32	12/1/2003	38.98	1084.34	General Study
MW-2A	1123.32	5/13/2004	81.63	1041.69	General Study
MW-2A	1123.32	11/17/2004	38.24	1085.08	General Study
MW-3	1121.00	5/30/1997	41.07	1079.93	General Study
MW-3	1121.00	5/31/1997	41.01	1079.99	General Study
MW-3	1121.00	6/1/1997	41.04	1079.96	General Study
MW-3	1121.00	6/3/1997	41.09	1079.91	General Study
MW-3	1121.00	6/12/1997	41.02	1079.98	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-3	1121.00	6/17/1997	41.15	1079.85	General Study
MW-3	1121.00	6/23/1997	41.08	1079.92	General Study
MW-3	1121.00	7/7/1997	41.15	1079.85	General Study
MW-3	1121.00	7/19/1997	41.26	1079.74	General Study
MW-3	1121.00	9/8/1997	41.68	1079.32	General Study
MW-3	1121.00	9/22/1997	41.72	1079.28	General Study
MW-3	1121.00	10/6/1997	41.85	1079.15	General Study
MW-3	1121.00	11/14/1997	41.85	1079.15	General Study
MW-3	1121.00	4/15/1998	42.29	1078.71	General Study
MW-3	1121.00	6/30/1998	42.47	1078.53	General Study
MW-3	1121.00	7/10/1998	42.59	1078.41	General Study
MW-3	1121.00	7/28/1998	42.68	1078.32	General Study
MW-3	1121.00	8/11/1998	42.96	1078.04	General Study
MW-3	1121.00	9/24/1998	43.02	1077.98	General Study
MW-3	1121.00	10/22/1998	43.39	1077.61	General Study
MW-3	1121.00	11/22/1998	43.31	1077.69	General Study
MW-3	1121.00	12/19/1998	43.68	1077.32	General Study
MW-3	1121.00	3/9/1999	43.95	1077.05	General Study
MW-3	1121.00	4/29/1999	43.78	1077.22	General Study
MW-3	1121.00	6/14/1999	43.09	1077.91	General Study
MW-3	1121.00	7/26/1999	41.59	1079.41	General Study
MW-3	1121.00	8/21/1999	41.70	1079.30	General Study
MW-3	1121.00	9/22/1999	40.71	1080.29	General Study
MW-3	1121.00	10/25/1999	40.82	1080.18	General Study
MW-3	1121.00	11/19/1999	40.67	1080.33	General Study
MW-3	1121.00	12/31/1999	41.50	1079.50	General Study
MW-3	1121.00	1/22/2000	41.66	1079.34	General Study
MW-3	1121.00	2/21/2000	42.19	1078.81	General Study
MW-3	1121.00	3/18/2000	42.15	1078.85	General Study
MW-3	1121.00	6/17/2000	42.22	1078.78	General Study
MW-3	1121.00	9/25/2000	41.55	1079.45	General Study
MW-3	1121.00	10/6/2000	41.68	1079.32	General Study
MW-3	1121.00	10/11/2000	41.64	1079.36	General Study
MW-3	1121.00	11/30/2000	42.04	1078.96	General Study
MW-3	1121.00	3/9/2001	42.81	1078.19	General Study
MW-3	1121.00	6/1/2001	42.95	1078.05	General Study
MW-3	1121.00	9/12/2001	43.29	1077.71	General Study
MW-3	1121.00	12/11/2001	43.19	1077.81	General Study
MW-3	1121.00	6/11/2002	41.75	1079.25	General Study
MW-3	1121.00	11/5/2002	40.84	1080.16	General Study
MW-3	1121.00	5/19/2003	41.37	1079.63	General Study
MW-3	1121.00	12/1/2003	41.73	1079.27	General Study
MW-3	1121.00	5/13/2004	41.21	1079.79	General Study
MW-3	1121.00	11/16/2004	39.92	1081.08	General Study
MW-3	1121.00	6/2/2005	41.19	1079.81	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-4	1127.27	5/30/1997	67.22	1060.05	General Study
MW-4	1127.27	5/31/1997	67.32	1059.95	General Study
MW-4	1127.27	6/1/1997	67.35	1059.92	General Study
MW-4	1127.27	6/3/1997	67.43	1059.84	General Study
MW-4	1127.27	6/12/1997	66.99	1060.28	General Study
MW-4	1127.27	6/17/1997	67.35	1059.92	General Study
MW-4	1127.27	6/23/1997	67.35	1059.92	General Study
MW-4	1127.27	7/7/1997	67.60	1059.67	General Study
MW-4	1127.27	7/19/1997	67.60	1059.67	General Study
MW-4	1127.27	9/8/1997	67.52	1059.75	General Study
MW-4	1127.27	9/22/1997	67.71	1059.56	General Study
MW-4	1127.27	10/6/1997	67.98	1059.29	General Study
MW-4	1127.27	10/24/1997	67.44	1059.83	General Study
MW-4	1127.27	11/13/1997	67.77	1059.50	General Study
MW-4	1127.27	11/21/1997	67.94	1059.33	General Study
MW-4	1127.27	4/15/1998	68.14	1059.13	General Study
MW-4	1127.27	6/3/1998	68.27	1059.00	General Study
MW-4	1127.27	6/30/1998	68.25	1059.02	General Study
MW-4	1127.27	7/10/1998	68.52	1058.75	General Study
MW-4	1127.27	7/28/1998	68.16	1059.11	General Study
MW-4	1127.27	8/11/1998	68.54	1058.73	General Study
MW-4	1127.27	9/24/1998	68.53	1058.74	General Study
MW-4	1127.27	10/22/1998	68.96	1058.31	General Study
MW-4	1127.27	11/22/1998	68.67	1058.60	General Study
MW-4	1127.27	3/9/1999	69.26	1058.01	General Study
MW-4	1127.27	4/29/1999	69.42	1057.85	General Study
MW-4	1127.27	6/14/1999	69.25	1058.02	General Study
MW-4	1127.27	7/26/1999	68.73	1058.54	General Study
MW-4	1127.27	8/21/1999	68.91	1058.36	General Study
MW-4	1127.27	9/22/1999	68.45	1058.82	General Study
MW-4	1127.27	10/25/1999	68.32	1058.95	General Study
MW-4	1127.27	11/19/1999	68.21	1059.06	General Study
MW-4	1127.27	12/31/1999	68.58	1058.69	General Study
MW-4	1127.27	1/22/2000	68.44	1058.83	General Study
MW-4	1127.27	2/21/2000	68.47	1058.80	General Study
MW-4	1127.27	3/18/2000	68.66	1058.61	General Study
MW-4	1127.27	6/17/2000	69.00	1058.27	General Study
MW-4	1127.27	9/25/2000	69.82	1057.45	General Study
MW-4	1127.27	11/30/2000	69.13	1058.14	General Study
MW-4	1127.27	3/9/2001	68.79	1058.48	General Study
MW-4	1127.27	6/1/2001	68.97	1058.30	General Study
MW-4	1127.27	9/12/2001	69.86	1057.41	General Study
MW-4	1127.27	12/11/2001	69.93	1057.34	General Study
MW-4	1127.27	3/27/2002	69.97	1057.30	General Study
MW-4	1127.27	6/11/2002	68.90	1058.37	General Study
MW-4	1127.27	11/5/2002	68.80	1058.47	General Study
MW-4	1127.27	5/19/2003	68.94	1058.33	General Study
MW-4	1127.27	12/1/2003	69.94	1057.33	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-4	1127.27	5/13/2004	69.33	1057.94	General Study
MW-4	1127.27	11/16/2004	69.07	1058.20	General Study
MW-4	1127.27	6/2/2005	69.10	1058.17	General Study
MW-4	1127.27	9/11/2005	69.91	1057.36	General Study
MW-4	1127.27	11/9/2005	69.87	1057.40	General Study
MW-4	1127.27	1/12/2006	70.24	1057.03	General Study
MW-4	1127.27	2/13/2006	70.36	1056.91	General Study
MW-4	1127.27	5/23/2006	70.82	1056.45	General Study
MW-4	1127.27	8/8/2006	70.09	1057.18	General Study
MW-4	1127.27	11/27/2006	71.95	1055.32	General Study
MW-4	1127.27	5/22/2007	71.21	1056.06	General Study
MW-4	1127.27	11/1/2007	72.14	1055.13	General Study
MW-5	1145.32	5/30/1997	61.65	1083.67	General Study
MW-5	1145.32	5/31/1997	61.70	1083.62	General Study
MW-5	1145.32	6/1/1997	61.70	1083.62	General Study
MW-5	1145.32	6/3/1997	61.73	1083.59	General Study
MW-5	1145.32	6/12/1997	61.46	1083.86	General Study
MW-5	1145.32	6/17/1997	61.71	1083.61	General Study
MW-5	1145.32	6/23/1997	61.52	1083.80	General Study
MW-5	1145.32	7/7/1997	61.61	1083.71	General Study
MW-5	1145.32	7/19/1997	61.57	1083.75	General Study
MW-5	1145.32	8/5/1997	61.47	1083.85	General Study
MW-5	1145.32	9/8/1997	61.38	1083.94	General Study
MW-5	1145.32	9/22/1997	61.45	1083.87	General Study
MW-5	1145.32	10/6/1997	61.67	1083.65	General Study
MW-5	1145.32	10/24/1997	61.51	1083.81	General Study
MW-5	1145.32	11/14/1997	61.57	1083.75	General Study
MW-5	1145.32	11/21/1997	61.65	1083.67	General Study
MW-5	1145.32	4/15/1998	62.25	1083.07	General Study
MW-5	1145.32	6/3/1998	62.29	1083.03	General Study
MW-5	1145.32	6/30/1998	62.28	1083.04	General Study
MW-5	1145.32	7/10/1998	62.37	1082.95	General Study
MW-5	1145.32	7/28/1998	62.16	1083.16	General Study
MW-5	1145.32	8/11/1998	62.44	1082.88	General Study
MW-5	1145.32	9/24/1998	62.42	1082.90	General Study
MW-5	1145.32	10/22/1998	62.70	1082.62	General Study
MW-5	1145.32	11/22/1998	62.63	1082.69	General Study
MW-5	1145.32	12/19/1998	63.03	1082.29	General Study
MW-5	1145.32	3/9/1999	63.16	1082.16	General Study
MW-5	1145.32	4/29/1999	63.51	1081.81	General Study
MW-5	1145.32	6/14/1999	63.58	1081.74	General Study
MW-5	1145.32	7/26/1999	63.42	1081.90	General Study
MW-5	1145.32	8/21/1999	63.31	1082.01	General Study
MW-5	1145.32	9/22/1999	62.83	1082.49	General Study
MW-5	1145.32	10/25/1999	62.35	1082.97	General Study
MW-5	1145.32	11/19/1999	61.90	1083.42	General Study
MW-5	1145.32	12/31/1999	61.99	1083.33	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-5	1145.32	1/22/2000	61.77	1083.55	General Study
MW-5	1145.32	2/21/2000	62.06	1083.26	General Study
MW-5	1145.32	3/18/2000	62.25	1083.07	General Study
MW-5	1145.32	6/17/2000	62.83	1082.49	General Study
MW-5	1145.32	9/25/2000	62.49	1082.83	General Study
MW-5	1145.32	11/30/2000	62.57	1082.75	General Study
MW-5	1145.32	3/9/2001	62.62	1082.70	General Study
MW-5	1145.32	6/1/2001	62.61	1082.71	General Study
MW-5	1145.32	9/12/2001	63.05	1082.27	General Study
MW-5	1145.32	12/11/2001	63.21	1082.11	General Study
MW-5	1145.32	3/27/2002	63.26	1082.06	General Study
MW-5	1145.32	6/11/2002	62.50	1082.82	General Study
MW-5	1145.32	11/5/2002	61.94	1083.38	General Study
MW-5	1145.32	5/19/2003	51.83	1093.49	General Study
MW-5	1145.32	12/1/2003	62.20	1083.12	General Study
MW-5	1145.32	5/13/2004	61.97	1083.35	General Study
MW-5	1145.32	11/17/2004	60.82	1084.50	General Study
MW-5	1145.32	6/2/2005	61.22	1084.10	General Study
MW-5	1145.32	11/9/2005	61.62	1083.70	General Study
MW-5	1145.32	5/24/2006	61.76	1083.56	General Study
MW-5	1145.32	11/27/2006	62.23	1083.09	General Study
MW-5	1145.32	5/22/2007	62.97	1082.35	General Study
MW-5	1145.32	11/1/2007	63.92	1081.40	General Study
MW-6	1129.03	5/30/1997	75.98	1053.05	General Study
MW-6	1129.03	5/31/1997	76.11	1052.92	General Study
MW-6	1129.03	6/1/1997	76.12	1052.91	General Study
MW-6	1129.03	6/3/1997	76.22	1052.81	General Study
MW-6	1129.03	6/12/1997	75.75	1053.28	General Study
MW-6	1129.03	6/17/1997	76.22	1052.81	General Study
MW-6	1129.03	6/23/1997	76.11	1052.92	General Study
MW-6	1129.03	7/7/1997	76.46	1052.57	General Study
MW-6	1129.03	7/19/1997	76.06	1052.97	General Study
MW-6	1129.03	8/5/1997	76.13	1052.90	General Study
MW-6	1129.03	9/8/1997	76.43	1052.60	General Study
MW-6	1129.03	9/22/1997	76.55	1052.48	General Study
MW-6	1129.03	10/6/1997	76.97	1052.06	General Study
MW-6	1129.03	10/24/1997	76.59	1052.44	General Study
MW-6	1129.03	11/14/1997	76.68	1052.35	General Study
MW-6	1129.03	11/21/1997	76.81	1052.22	General Study
MW-6	1129.03	4/15/1998	76.45	1052.58	General Study
MW-6	1129.03	6/3/1998	76.87	1052.16	General Study
MW-6	1129.03	6/30/1998	76.82	1052.21	General Study
MW-6	1129.03	7/10/1998	77.01	1052.02	General Study
MW-6	1129.03	7/28/1998	76.63	1052.40	General Study
MW-6	1129.03	8/11/1998	77.11	1051.92	General Study
MW-6	1129.03	9/24/1998	77.01	1052.02	General Study
MW-6	1129.03	10/22/1998	77.35	1051.68	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-6	1129.03	11/22/1998	76.89	1052.14	General Study
MW-6	1129.03	12/19/1998	77.55	1051.48	General Study
MW-6	1129.03	3/9/1999	77.05	1051.98	General Study
MW-6	1129.03	4/29/1999	77.16	1051.87	General Study
MW-6	1129.03	6/14/1999	76.80	1052.23	General Study
MW-6	1129.03	7/26/1999	76.60	1052.43	General Study
MW-6	1129.03	8/21/1999	77.23	1051.80	General Study
MW-6	1129.03	9/22/1999	76.53	1052.50	General Study
MW-6	1129.03	10/25/1999	76.79	1052.24	General Study
MW-6	1129.03	11/19/1999	76.77	1052.26	General Study
MW-6	1129.03	12/31/1999	76.19	1052.84	General Study
MW-6	1129.03	1/22/2000	76.87	1052.16	General Study
MW-6	1129.03	2/21/2000	76.66	1052.37	General Study
MW-6	1129.03	3/18/2000	76.70	1052.33	General Study
MW-6	1129.03	6/17/2000	77.22	1051.81	General Study
MW-6	1129.03	9/25/2000	77.19	1051.84	General Study
MW-6	1129.03	11/30/2000	77.51	1051.52	General Study
MW-6	1129.03	3/9/2001	76.77	1052.26	General Study
MW-6	1129.03	6/1/2001	76.49	1052.54	General Study
MW-6	1129.03	9/12/2001	77.62	1051.41	General Study
MW-6	1129.03	12/11/2001	77.81	1051.22	General Study
MW-6	1129.03	3/27/2002	77.40	1051.63	General Study
MW-6	1129.03	6/11/2002	75.61	1053.42	General Study
MW-6	1129.03	11/5/2002	76.38	1052.65	General Study
MW-6	1129.03	5/19/2003	76.14	1052.89	General Study
MW-7	1129.73	5/30/1997	28.48	1101.25	General Study/Riverside Disposal
MW-7	1129.73	5/31/1997	28.47	1101.26	General Study/Riverside Disposal
MW-7	1129.73	6/1/1997	28.46	1101.27	General Study/Riverside Disposal
MW-7	1129.73	6/3/1997	28.47	1101.26	General Study/Riverside Disposal
MW-7	1129.73	6/12/1997	28.43	1101.30	General Study/Riverside Disposal
MW-7	1129.73	6/17/1997	28.49	1101.24	General Study/Riverside Disposal
MW-7	1129.73	6/23/1997	28.40	1101.33	General Study/Riverside Disposal
MW-7	1129.73	7/7/1997	28.47	1101.26	General Study/Riverside Disposal
MW-7	1129.73	7/19/1997	28.50	1101.23	General Study/Riverside Disposal
MW-7	1129.73	8/5/1997	28.59	1101.14	General Study/Riverside Disposal
MW-7	1129.73	9/8/1997	28.79	1100.94	General Study/Riverside Disposal
MW-7	1129.73	9/22/1997			General Study/Riverside Disposal
MW-7	1129.73	10/6/1997			General Study/Riverside Disposal
MW-7	1129.73	10/24/1997			General Study/Riverside Disposal
MW-7	1129.73	11/14/1997			General Study/Riverside Disposal
MW-7	1129.73	4/15/1998			General Study/Riverside Disposal
MW-7	1129.73	6/3/1998			General Study/Riverside Disposal
MW-7	1129.73	6/30/1998			General Study/Riverside Disposal
MW-7	1129.73	7/10/1998			General Study/Riverside Disposal
MW-7	1129.73	7/28/1998			General Study/Riverside Disposal
MW-7	1129.73	8/11/1998			General Study/Riverside Disposal
MW-7	1129.73	9/24/1998			General Study/Riverside Disposal

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-7	1129.73	10/22/1998			General Study/Riverside Disposal
MW-7	1129.73	11/22/1998			General Study/Riverside Disposal
MW-7	1129.73	12/19/1998			General Study/Riverside Disposal
MW-7	1129.73	3/9/1999			General Study/Riverside Disposal
MW-7	1129.73	4/29/1999			General Study/Riverside Disposal
MW-7	1129.73	6/14/1999			General Study/Riverside Disposal
MW-7	1129.73	7/26/1999			General Study/Riverside Disposal
MW-7	1129.73	8/21/1999			General Study/Riverside Disposal
MW-7	1129.73	9/22/1999			General Study/Riverside Disposal
MW-7	1129.73	10/25/1999			General Study/Riverside Disposal
MW-7	1129.73	11/19/1999			General Study/Riverside Disposal
MW-7	1129.73	12/31/1999			General Study/Riverside Disposal
MW-7	1129.73	1/22/2000			General Study/Riverside Disposal
MW-7	1129.73	2/21/2000			General Study/Riverside Disposal
MW-7	1129.73	3/18/2000			General Study/Riverside Disposal
MW-7	1129.73	6/17/2000			General Study/Riverside Disposal
MW-7	1129.73	9/25/2000			General Study/Riverside Disposal
MW-7	1129.73	11/30/2000			General Study/Riverside Disposal
MW-7	1129.73	3/9/2001			General Study/Riverside Disposal
MW-7	1129.73	6/1/2001			General Study/Riverside Disposal
MW-7	1129.73	9/12/2001			General Study/Riverside Disposal
MW-7	1129.73	12/11/2001			General Study/Riverside Disposal
MW-7	1129.73	3/27/2002			General Study/Riverside Disposal
MW-7	1129.73	6/11/2002			General Study/Riverside Disposal
MW-7	1129.73	11/5/2002			General Study/Riverside Disposal
MW-7	1129.73	5/19/2003			General Study/Riverside Disposal
MW-8	1133.87	5/31/1997	74.40	1059.47	General Study
MW-8	1133.87	6/1/1997	74.39	1059.48	General Study
MW-8	1133.87	6/3/1997	74.48	1059.39	General Study
MW-8	1133.87	6/12/1997	74.06	1059.81	General Study
MW-8	1133.87	6/17/1997	74.44	1059.43	General Study
MW-8	1133.87	6/23/1997	74.68	1059.19	General Study
MW-8	1133.87	7/7/1997	74.70	1059.17	General Study
MW-8	1133.87	7/19/1997	74.73	1059.14	General Study
MW-8	1133.87	8/5/1997	74.73	1059.14	General Study
MW-8	1133.87	9/8/1997	74.62	1059.25	General Study
MW-8	1133.87	9/22/1997	74.78	1059.09	General Study
MW-8	1133.87	10/6/1997	75.04	1058.83	General Study
MW-8	1133.87	10/24/1997	74.80	1059.07	General Study
MW-8	1133.87	11/14/1997	74.88	1058.99	General Study
MW-8	1133.87	11/21/1997	75.01	1058.86	General Study
MW-8	1133.87	4/15/1998	75.08	1058.79	General Study
MW-8	1133.87	6/3/1998	75.24	1058.63	General Study
MW-8	1133.87	6/30/1998	75.21	1058.66	General Study
MW-8	1133.87	7/10/1998	75.54	1058.33	General Study
MW-8	1133.87	7/28/1998	75.12	1058.75	General Study
MW-8	1133.87	8/11/1998	75.58	1058.29	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-8	1133.87	9/24/1998	75.52	1058.35	General Study
MW-8	1133.87	10/22/1998	76.00	1057.87	General Study
MW-8	1133.87	11/22/1998	75.54	1058.33	General Study
MW-8	1133.87	12/19/1998	76.03	1057.84	General Study
MW-8	1133.87	3/9/1999	76.12	1057.75	General Study
MW-8	1133.87	4/29/1999	76.31	1057.56	General Study
MW-8	1133.87	6/14/1999	75.90	1057.97	General Study
MW-8	1133.87	7/26/1999	75.52	1058.35	General Study
MW-8	1133.87	8/21/1999	75.70	1058.17	General Study
MW-8	1133.87	9/22/1999	75.31	1058.56	General Study
MW-8	1133.87	10/25/1999	75.18	1058.69	General Study
MW-8	1133.87	11/19/1999	74.99	1058.88	General Study
MW-8	1133.87	12/31/1999	75.38	1058.49	General Study
MW-8	1133.87	1/22/2000	75.30	1058.57	General Study
MW-8	1133.87	2/21/2000	75.36	1058.51	General Study
MW-8	1133.87	3/18/2000	75.60	1058.27	General Study
MW-8	1133.87	6/17/2000	75.93	1057.94	General Study
MW-8	1133.87	9/25/2000	75.51	1058.36	General Study
MW-8	1133.87	11/30/2000	75.51	1058.36	General Study
MW-8	1133.87	3/9/2001	75.04	1058.83	General Study
MW-8	1133.87	6/1/2001	74.85	1059.02	General Study
MW-8	1133.87	9/12/2001	75.77	1058.10	General Study
MW-8	1133.87	12/11/2001	75.80	1058.07	General Study
MW-8	1133.87	3/27/2002	75.78	1058.09	General Study
MW-8	1133.87	6/11/2002	74.71	1059.16	General Study
MW-8	1133.87	11/5/2002	74.17	1059.70	General Study
MW-8	1133.87	5/19/2003	74.15	1059.72	General Study
MW-8	1133.87	12/1/2003	74.84	1059.03	General Study
MW-8	1133.87	5/13/2004	74.07	1059.80	General Study
MW-8	1133.87	11/16/2004	73.76	1060.11	General Study
MW-8	1133.87	6/2/2005	73.78	1060.09	General Study
MW-8	1133.87	11/9/2005	74.24	1059.63	General Study
MW-8	1133.87	5/23/2006	75.38	1058.49	General Study
MW-8	1133.87	11/27/2006	75.72	1058.15	General Study
MW-8	1133.87	5/22/2007	76.01	1057.86	General Study
MW-8	1133.87	11/1/2007	76.96	1056.91	General Study
MW-9A	1115.96	5/30/1997	44.10	1071.86	General Study/Lodal Park
MW-9A	1115.96	5/31/1997	44.09	1071.87	General Study/Lodal Park
MW-9A	1115.96	6/1/1997	44.10	1071.86	General Study/Lodal Park
MW-9A	1115.96	6/3/1997	44.11	1071.85	General Study/Lodal Park
MW-9A	1115.96	6/12/1997	44.04	1071.92	General Study/Lodal Park
MW-9A	1115.96	6/17/1997	44.08	1071.88	General Study/Lodal Park
MW-9A	1115.96	6/23/1997	43.95	1072.01	General Study/Lodal Park
MW-9A	1115.96	7/7/1997	44.03	1071.93	General Study/Lodal Park
MW-9A	1115.96	7/19/1997	44.02	1071.94	General Study/Lodal Park
MW-9A	1115.96	9/8/1997	44.25	1071.71	General Study/Lodal Park
MW-9A	1115.96	9/22/1997	44.35	1071.61	General Study/Lodal Park

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-9A	1115.96	10/6/1997	44.40	1071.56	General Study/Lodal Park
MW-9A	1115.96	10/24/1997	44.38	1071.58	General Study/Lodal Park
MW-9A	1115.96	11/13/1997	44.47	1071.49	General Study/Lodal Park
MW-9A	1115.96	11/21/1997	44.52	1071.44	General Study/Lodal Park
MW-9A	1115.96	4/15/1998	45.00	1070.96	General Study/Lodal Park
MW-9A	1115.96	6/3/1998	44.74	1071.22	General Study/Lodal Park
MW-9A	1115.96	6/30/1998	44.87	1071.09	General Study/Lodal Park
MW-9A	1115.96	7/10/1998	44.95	1071.01	General Study/Lodal Park
MW-9A	1115.96	7/28/1998	44.96	1071.00	General Study/Lodal Park
MW-9A	1115.96	8/11/1998	45.15	1070.81	General Study/Lodal Park
MW-9A	1115.96	9/24/1998	45.45	1070.51	General Study/Lodal Park
MW-9A	1115.96	10/22/1998	45.56	1070.40	General Study/Lodal Park
MW-9A	1115.96	11/22/1998	45.82	1070.14	General Study/Lodal Park
MW-9A	1115.96	12/19/1998	46.04	1069.92	General Study/Lodal Park
MW-9A	1115.96	3/9/1999	46.51	1069.45	General Study/Lodal Park
MW-9A	1115.96	4/29/1999	46.19	1069.77	General Study/Lodal Park
MW-9A	1115.96	6/14/1999	44.54	1071.42	General Study/Lodal Park
MW-9A	1115.96	7/26/1999	43.78	1072.18	General Study/Lodal Park
MW-9A	1115.96	8/21/1999	43.20	1072.76	General Study/Lodal Park
MW-9A	1115.96	9/22/1999	43.18	1072.78	General Study/Lodal Park
MW-9A	1115.96	10/25/1999	43.46	1072.50	General Study/Lodal Park
MW-9A	1115.96	11/19/1999	43.58	1072.38	General Study/Lodal Park
MW-9A	1115.96	12/31/1999	44.05	1071.91	General Study/Lodal Park
MW-9A	1115.96	1/5/2000	44.02	1071.94	General Study/Lodal Park
MW-9A	1115.96	1/22/2000	44.20	1071.76	General Study/Lodal Park
MW-9A	1115.96	2/21/2000	44.45	1071.51	General Study/Lodal Park
MW-9A	1115.96	3/18/2000	44.65	1071.31	General Study/Lodal Park
MW-9A	1115.96	6/17/2000	44.29	1071.67	General Study/Lodal Park
MW-9A	1115.96	9/25/2000	43.32	1072.64	General Study/Lodal Park
MW-9A	1115.96	11/30/2000	43.27	1072.69	General Study/Lodal Park
MW-9A	1115.96	3/9/2001	44.00	1071.96	General Study/Lodal Park
MW-9A	1115.96	6/1/2001	43.75	1072.21	General Study/Lodal Park
MW-9A	1115.96	9/12/2001	44.98	1070.98	General Study/Lodal Park
MW-9A	1115.96	12/11/2001	44.10	1071.86	General Study/Lodal Park
MW-9A	1115.96	3/27/2002	44.56	1071.40	General Study/Lodal Park
MW-9A	1115.96	6/11/2002	43.22	1072.74	General Study/Lodal Park
MW-9A	1115.96	11/5/2002	41.95	1074.01	General Study/Lodal Park
MW-9A	1115.96	5/19/2003	42.01	1073.95	General Study/Lodal Park
MW-9A	1115.96	12/1/2003	42.41	1073.55	General Study/Lodal Park
MW-9A	1115.96	5/13/2004	43.02	1072.94	General Study/Lodal Park
MW-9A	1115.96	11/17/2004	42.57	1073.39	General Study/Lodal Park
MW-9A	1115.96	6/2/2005	43.25	1072.71	General Study/Lodal Park
MW-9A	1115.96	11/9/2005	50.81	1065.15	General Study/Lodal Park
MW-9A	1115.96	5/24/2006	50.18	1065.78	General Study/Lodal Park
MW-9A	1115.96	11/27/2006	50.68	1065.28	General Study/Lodal Park
MW-9A	1115.96	5/22/2007	51.28	1064.68	General Study/Lodal Park
MW-9A	1115.96	11/1/2007	53.31	1062.65	General Study/Lodal Park

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-9B	1115.92	6/1/1997	50.97	1064.95	General Study/Lodal Park
MW-9B	1115.92	6/3/1997	50.98	1064.94	General Study/Lodal Park
MW-9B	1115.92	6/12/1997	50.51	1065.41	General Study/Lodal Park
MW-9B	1115.92	6/17/1997	50.95	1064.97	General Study/Lodal Park
MW-9B	1115.92	6/23/1997	50.76	1065.16	General Study/Lodal Park
MW-9B	1115.92	7/7/1997	50.81	1065.11	General Study/Lodal Park
MW-9B	1115.92	7/19/1997	50.83	1065.09	General Study/Lodal Park
MW-9B	1115.92	9/8/1997	50.84	1065.08	General Study/Lodal Park
MW-9B	1115.92	9/22/1997	50.90	1065.02	General Study/Lodal Park
MW-9B	1115.92	10/6/1997	51.02	1064.90	General Study/Lodal Park
MW-9B	1115.92	10/24/1997	51.02	1064.90	General Study/Lodal Park
MW-9B	1115.92	11/13/1997	51.09	1064.83	General Study/Lodal Park
MW-9B	1115.92	11/21/1997	51.17	1064.75	General Study/Lodal Park
MW-9B	1115.92	4/15/1998	51.87	1064.05	General Study/Lodal Park
MW-9B	1115.92	6/3/1998	52.43	1063.49	General Study/Lodal Park
MW-9B	1115.92	6/30/1998	52.41	1063.51	General Study/Lodal Park
MW-9B	1115.92	7/10/1998	51.77	1064.15	General Study/Lodal Park
MW-9B	1115.92	7/28/1998	52.42	1063.50	General Study/Lodal Park
MW-9B	1115.92	8/11/1998	51.93	1063.99	General Study/Lodal Park
MW-9B	1115.92	9/24/1998	52.78	1063.14	General Study/Lodal Park
MW-9B	1115.92	10/22/1998	52.96	1062.96	General Study/Lodal Park
MW-9B	1115.92	11/22/1998	53.01	1062.91	General Study/Lodal Park
MW-9B	1115.92	12/19/1998	52.64	1063.28	General Study/Lodal Park
MW-9B	1115.92	3/9/1999	53.60	1062.32	General Study/Lodal Park
MW-9B	1115.92	4/29/1999	52.94	1062.98	General Study/Lodal Park
MW-9B	1115.92	6/14/1999	51.71	1064.21	General Study/Lodal Park
MW-9B	1115.92	7/26/1999	51.28	1064.64	General Study/Lodal Park
MW-9B	1115.92	8/21/1999	50.87	1065.05	General Study/Lodal Park
MW-9B	1115.92	9/22/1999	50.53	1065.39	General Study/Lodal Park
MW-9B	1115.92	10/25/1999	50.45	1065.47	General Study/Lodal Park
MW-9B	1115.92	11/19/1999	50.41	1065.51	General Study/Lodal Park
MW-9B	1115.92	12/31/1999	50.71	1065.21	General Study/Lodal Park
MW-9B	1115.92	1/5/2000	50.85	1065.07	General Study/Lodal Park
MW-9B	1115.92	1/22/2000	50.66	1065.26	General Study/Lodal Park
MW-9B	1115.92	2/21/2000	50.93	1064.99	General Study/Lodal Park
MW-9B	1115.92	3/18/2000	51.13	1064.79	General Study/Lodal Park
MW-9B	1115.92	6/17/2000	51.22	1064.70	General Study/Lodal Park
MW-9B	1115.92	9/25/2000	50.55	1065.37	General Study/Lodal Park
MW-9B	1115.92	11/30/2000	50.32	1065.60	General Study/Lodal Park
MW-9B	1115.92	3/9/2001	50.46	1065.46	General Study/Lodal Park
MW-9B	1115.92	6/1/2001	50.43	1065.49	General Study/Lodal Park
MW-9B	1115.92	9/12/2001	51.77	1064.15	General Study/Lodal Park
MW-9B	1115.92	12/11/2001	50.83	1065.09	General Study/Lodal Park
MW-9B	1115.92	3/27/2002	51.15	1064.77	General Study/Lodal Park
MW-9B	1115.92	6/11/2002	50.29	1065.63	General Study/Lodal Park
MW-9B	1115.92	11/5/2002	49.34	1066.58	General Study/Lodal Park
MW-9B	1115.92	5/19/2003	49.15	1066.77	General Study/Lodal Park
MW-9B	1115.92	12/1/2003	49.44	1066.48	General Study/Lodal Park

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-9B	1115.92	5/13/2004	49.03	1066.89	General Study/Lodal Park
MW-9B	1115.92	11/17/2004	49.60	1066.32	General Study/Lodal Park
MW-9B	1115.92	6/2/2005	50.00	1065.92	General Study/Lodal Park
MW-9B	1115.92	11/9/2005	44.15	1071.77	General Study/Lodal Park
MW-9B	1115.92	5/23/2006			General Study/Lodal Park
MW-9B	1115.92	11/27/2006	43.78	1072.14	General Study/Lodal Park
MW-9B	1115.92	5/22/2007	44.42	1071.50	General Study/Lodal Park
MW-9B	1115.92	11/1/2007	46.12	1069.80	General Study/Lodal Park
MW-10	1133.19	5/30/1997	79.00	1054.19	General Study
MW-10	1133.19	5/31/1997	79.09	1054.10	General Study
MW-10	1133.19	6/1/1997	79.08	1054.11	General Study
MW-10	1133.19	6/3/1997	79.15	1054.04	General Study
MW-10	1133.19	6/12/1997	78.72	1054.47	General Study
MW-10	1133.19	6/17/1997	79.12	1054.07	General Study
MW-10	1133.19	6/23/1997	78.96	1054.23	General Study
MW-10	1133.19	7/7/1997	79.21	1053.98	General Study
MW-10	1133.19	7/19/1997	79.26	1053.93	General Study
MW-10	1133.19	8/5/1997	79.28	1053.91	General Study
MW-10	1133.19	9/8/1997	79.17	1054.02	General Study
MW-10	1133.19	9/22/1997	79.33	1053.86	General Study
MW-10	1133.19	10/6/1997	79.60	1053.59	General Study
MW-10	1133.19	10/24/1997	79.33	1053.86	General Study
MW-10	1133.19	11/14/1997	79.40	1053.79	General Study
MW-10	1133.19	11/21/1997	79.48	1053.71	General Study
MW-10	1133.19	4/15/1998	79.34	1053.85	General Study
MW-10	1133.19	6/3/1998	79.62	1053.57	General Study
MW-10	1133.19	6/30/1998	79.60	1053.59	General Study
MW-10	1133.19	7/10/1998	79.79	1053.40	General Study
MW-10	1133.19	7/28/1998	79.44	1053.75	General Study
MW-10	1133.19	8/11/1998	79.87	1053.32	General Study
MW-10	1133.19	9/24/1998	79.80	1053.39	General Study
MW-10	1133.19	10/22/1998	80.11	1053.08	General Study
MW-10	1133.19	11/22/1998	79.79	1053.40	General Study
MW-10	1133.19	12/19/1998	80.40	1052.79	General Study
MW-10	1133.19	3/9/1999	79.99	1053.20	General Study
MW-10	1133.19	4/29/1999	80.08	1053.11	General Study
MW-10	1133.19	6/14/1999	79.87	1053.32	General Study
MW-10	1133.19	7/26/1999	79.71	1053.48	General Study
MW-10	1133.19	8/21/1999	81.28	1051.91	General Study
MW-10	1133.19	9/22/1999	79.53	1053.66	General Study
MW-10	1133.19	10/25/1999	79.58	1053.61	General Study
MW-10	1133.19	11/19/1999	79.60	1053.59	General Study
MW-10	1133.19	12/31/1999	79.91	1053.28	General Study
MW-10	1133.19	1/22/2000	79.66	1053.53	General Study
MW-10	1133.19	2/21/2000	79.56	1053.63	General Study
MW-10	1133.19	3/18/2000	79.43	1053.76	General Study
MW-10	1133.19	6/17/2000	80.08	1053.11	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-10	1133.19	9/25/2000	80.11	1053.08	General Study
MW-10	1133.19	11/30/2000	80.69	1052.50	General Study
MW-10	1133.19	3/9/2001	79.98	1053.21	General Study
MW-10	1133.19	6/1/2001	79.64	1053.55	General Study
MW-10	1133.19	9/12/2001	80.61	1052.58	General Study
MW-10	1133.19	12/11/2001	81.04	1052.15	General Study
MW-10	1133.19	3/27/2002	80.47	1052.72	General Study
MW-10	1133.19	6/11/2002	78.68	1054.51	General Study
MW-10	1133.19	11/5/2002	79.47	1053.72	General Study
MW-10	1133.19	5/19/2003	79.41	1053.78	General Study
MW-10	1133.19	12/1/2003	80.46	1052.73	General Study
MW-10	1133.19	5/13/2004	79.72	1053.47	General Study
MW-10	1133.19	11/16/2004	79.30	1053.89	General Study
MW-10	1133.19	6/2/2005	78.50	1054.69	General Study
MW-10	1133.19	9/11/2005	79.45	1053.74	General Study
MW-10	1133.19	11/9/2005	79.31	1053.88	General Study
MW-10	1133.19	1/12/2006	79.60	1053.59	General Study
MW-10	1133.19	2/13/2006	79.65	1053.54	General Study
MW-10	1133.19	5/23/2006	80.18	1053.01	General Study
MW-10	1133.19	8/8/2006	80.78	1052.41	General Study
MW-10	1133.19	11/27/2006	80.60	1052.59	General Study
MW-10	1133.19	5/22/2007	80.71	1052.48	General Study
MW-10	1133.19	11/1/2007	81.52	1051.67	General Study
MW-96-1	1122.47	5/31/1997	43.39	1079.08	NE Pit
MW-96-1	1122.47	6/1/1997	43.40	1079.07	NE Pit
MW-96-1	1122.47	6/3/1997	43.44	1079.03	NE Pit
MW-96-1	1122.47	6/12/1997	43.34	1079.13	NE Pit
MW-96-1	1122.47	6/17/1997	43.54	1078.93	NE Pit
MW-96-1	1122.47	6/23/1997	43.41	1079.06	NE Pit
MW-96-1	1122.47	7/7/1997	43.61	1078.86	NE Pit
MW-96-1	1122.47	7/19/1997	43.67	1078.80	NE Pit
MW-96-1	1122.47	9/8/1997	43.96	1078.51	NE Pit
MW-96-1	1122.47	9/22/1997	44.12	1078.35	NE Pit
MW-96-1	1122.47	10/6/1997	44.33	1078.14	NE Pit
MW-96-1	1122.47	11/14/1997	44.38	1078.09	NE Pit
MW-96-1	1122.47	11/21/1997	44.44	1078.03	NE Pit
MW-96-1	1122.47	4/15/1998	44.53	1077.94	NE Pit
MW-96-1	1122.47	6/3/1998	44.30	1078.17	NE Pit
MW-96-1	1122.47	6/30/1998	44.57	1077.90	NE Pit
MW-96-1	1122.47	7/10/1998	44.69	1077.78	NE Pit
MW-96-1	1122.47	7/28/1998	44.72	1077.75	NE Pit
MW-96-1	1122.47	8/11/1998	44.98	1077.49	NE Pit
MW-96-1	1122.47	9/24/1998	45.00	1077.47	NE Pit
MW-96-1	1122.47	10/22/1998	45.09	1077.38	NE Pit
MW-96-1	1122.47	11/22/1998	45.42	1077.05	NE Pit
MW-96-1	1122.47	12/19/1998	45.83	1076.64	NE Pit
MW-96-1	1122.47	3/9/1999	46.17	1076.30	NE Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-96-1	1122.47	4/29/1999	46.02	1076.45	NE Pit
MW-96-1	1122.47	6/14/1999	45.14	1077.33	NE Pit
MW-96-1	1122.47	7/26/1999	44.33	1078.14	NE Pit
MW-96-1	1122.47	8/21/1999	43.81	1078.66	NE Pit
MW-96-1	1122.47	9/22/1999	43.76	1078.71	NE Pit
MW-96-1	1122.47	10/25/1999	43.57	1078.90	NE Pit
MW-96-1	1122.47	11/19/1999	43.58	1078.89	NE Pit
MW-96-1	1122.47	12/31/1999	44.17	1078.30	NE Pit
MW-96-1	1122.47	1/22/2000	44.43	1078.04	NE Pit
MW-96-1	1122.47	2/21/2000	44.86	1077.61	NE Pit
MW-96-1	1122.47	3/18/2000	44.68	1077.79	NE Pit
MW-96-1	1122.47	6/17/2000	45.19	1077.28	NE Pit
MW-96-1	1122.47	9/25/2000	43.58	1078.89	NE Pit
MW-96-1	1122.47	10/6/2000	43.56	1078.91	NE Pit
MW-96-1	1122.47	10/11/2000	43.49	1078.98	NE Pit
MW-96-1	1122.47	11/30/2000	44.07	1078.40	NE Pit
MW-96-1	1122.47	3/9/2001	45.14	1077.33	NE Pit
MW-96-1	1122.47	6/1/2001	44.91	1077.56	NE Pit
MW-96-1	1122.47	9/12/2001	45.26	1077.21	NE Pit
MW-96-1	1122.47	12/11/2001	42.60	1079.87	NE Pit
MW-96-1	1122.47	3/27/2002	45.75	1076.72	NE Pit
MW-96-1	1122.47	6/11/2002	43.75	1078.72	NE Pit
MW-96-1	1122.47	11/5/2002	42.70	1079.77	NE Pit
MW-96-1	1122.47	5/19/2003	43.66	1078.81	NE Pit
MW-96-1	1122.47	12/1/2003	43.93	1078.54	NE Pit
MW-96-1	1122.47	5/13/2004	43.46	1079.01	NE Pit
MW-96-1	1122.47	11/16/2004	42.10	1080.37	NE Pit
MW-96-1	1122.47	6/2/2005	43.66	1078.81	NE Pit
MW-96-1	1122.47	11/9/2005	43.62	1078.85	NE Pit
MW-96-1	1122.47	5/23/2006	44.30	1078.17	NE Pit
MW-96-1	1122.47	11/27/2006	44.72	1077.75	NE Pit
MW-96-1	1122.47	5/22/2007	45.66	1076.81	NE Pit
MW-96-1	1122.47	11/1/2007	46.16	1076.31	NE Pit
MW-96-2	1121.32	5/31/1997			NE Pit
MW-96-2	1121.32	6/3/1997	48.62	1072.70	NE Pit
MW-96-2	1121.32	6/12/1997	48.50	1072.82	NE Pit
MW-96-2	1121.32	6/17/1997	48.59	1072.73	NE Pit
MW-96-2	1121.32	6/23/1997	48.42	1072.90	NE Pit
MW-96-2	1121.32	7/7/1997	48.53	1072.79	NE Pit
MW-96-2	1121.32	7/19/1997	48.50	1072.82	NE Pit
MW-96-2	1121.32	9/8/1997	48.59	1072.73	NE Pit
MW-96-2	1121.32	9/22/1997	48.70	1072.62	NE Pit
MW-96-2	1121.32	10/6/1997	48.89	1072.43	NE Pit
MW-96-2	1121.32	11/14/1997	48.93	1072.39	NE Pit
MW-96-2	1121.32	11/21/1997	48.99	1072.33	NE Pit
MW-96-2	1121.32	4/15/1998	49.44	1071.88	NE Pit
MW-96-2	1121.32	6/3/1998	49.27	1072.05	NE Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-96-2	1121.32	6/30/1998	49.38	1071.94	NE Pit
MW-96-2	1121.32	7/10/1998	49.50	1071.82	NE Pit
MW-96-2	1121.32	7/28/1998	49.42	1071.90	NE Pit
MW-96-2	1121.32	8/11/1998	49.63	1071.69	NE Pit
MW-96-2	1121.32	9/24/1998	49.81	1071.51	NE Pit
MW-96-2	1121.32	10/22/1998	49.98	1071.34	NE Pit
MW-96-2	1121.32	11/22/1998	50.11	1071.21	NE Pit
MW-96-2	1121.32	12/19/1998	50.51	1070.81	NE Pit
MW-96-2	1121.32	3/9/1999	50.89	1070.43	NE Pit
MW-96-2	1121.32	4/29/1999	50.88	1070.44	NE Pit
MW-96-2	1121.32	6/14/1999	50.70	1070.62	NE Pit
MW-96-2	1121.32	7/26/1999	50.04	1071.28	NE Pit
MW-96-2	1121.32	8/21/1999	49.50	1071.82	NE Pit
MW-96-2	1121.32	9/22/1999	49.18	1072.14	NE Pit
MW-96-2	1121.32	10/25/1999	49.10	1072.22	NE Pit
MW-96-2	1121.32	11/19/1999	49.12	1072.20	NE Pit
MW-96-2	1121.32	12/31/1999	49.40	1071.92	NE Pit
MW-96-2	1121.32	1/22/2000	49.51	1071.81	NE Pit
MW-96-2	1121.32	2/21/2000	49.78	1071.54	NE Pit
MW-96-2	1121.32	3/18/2000	49.85	1071.47	NE Pit
MW-96-2	1121.32	6/17/2000	50.08	1071.24	NE Pit
MW-96-2	1121.32	9/25/2000	49.06	1072.26	NE Pit
MW-96-2	1121.32	10/6/2000	48.96	1072.36	NE Pit
MW-96-2	1121.32	10/11/2000	48.82	1072.50	NE Pit
MW-96-2	1121.32	11/30/2000	48.82	1072.50	NE Pit
MW-96-2	1121.32	3/9/2001	49.31	1072.01	NE Pit
MW-96-2	1121.32	6/1/2001	49.17	1072.15	NE Pit
MW-96-2	1121.32	9/12/2001	49.50	1071.82	NE Pit
MW-96-2	1121.32	12/11/2001	49.81	1071.51	NE Pit
MW-96-2	1121.32	3/27/2002	50.27	1071.05	NE Pit
MW-96-2	1121.32	6/11/2002	48.92	1072.40	NE Pit
MW-96-2	1121.32	11/5/2002	50.19	1071.13	NE Pit
MW-96-2	1121.32	5/19/2003	50.15	1071.17	NE Pit
MW-96-2	1121.32	12/1/2003	50.38	1070.94	NE Pit
MW-96-2	1121.32	5/13/2004	49.97	1071.35	NE Pit
MW-96-2	1121.32	11/16/2004	49.08	1072.24	NE Pit
MW-96-2	1121.32	6/2/2005	47.45	1073.87	NE Pit
MW-96-2	1121.32	11/9/2005	48.09	1073.23	NE Pit
MW-96-2	1121.32	5/23/2006	51.00	1070.32	NE Pit
MW-96-2	1121.32	11/27/2006	51.22	1070.10	NE Pit
MW-96-2	1121.32	5/22/2007	51.97	1069.35	NE Pit
MW-96-2	1121.32	11/1/2007	52.97	1068.35	NE Pit
MW-96-3	1121.71	5/31/1997	47.92	1073.79	NE Pit
MW-96-3	1121.71	6/1/1997	47.95	1073.76	NE Pit
MW-96-3	1121.71	6/3/1997	47.94	1073.77	NE Pit
MW-96-3	1121.71	6/12/1997	47.76	1073.95	NE Pit
MW-96-3	1121.71	6/17/1997	47.98	1073.73	NE Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-96-3	1121.71	6/23/1997	47.77	1073.94	NE Pit
MW-96-3	1121.71	7/7/1997	47.86	1073.85	NE Pit
MW-96-3	1121.71	7/19/1997	47.87	1073.84	NE Pit
MW-96-3	1121.71	9/8/1997	47.98	1073.73	NE Pit
MW-96-3	1121.71	9/22/1997	48.07	1073.64	NE Pit
MW-96-3	1121.71	10/6/1997	48.33	1073.38	NE Pit
MW-96-3	1121.71	11/14/1997	48.37	1073.34	NE Pit
MW-96-3	1121.71	11/21/1997	48.42	1073.29	NE Pit
MW-96-3	1121.71	4/15/1998			NE Pit
MW-96-3	1121.71	6/3/1998	48.53	1073.18	NE Pit
MW-96-3	1121.71	6/30/1998	48.73	1072.98	NE Pit
MW-96-3	1121.71	7/10/1998	48.77	1072.94	NE Pit
MW-96-3	1121.71	7/28/1998	48.72	1072.99	NE Pit
MW-96-3	1121.71	8/11/1998	48.98	1072.73	NE Pit
MW-96-3	1121.71	9/24/1998	49.15	1072.56	NE Pit
MW-96-3	1121.71	10/22/1998	49.40	1072.31	NE Pit
MW-96-3	1121.71	11/22/1998	49.41	1072.30	NE Pit
MW-96-3	1121.71	12/19/1998	49.91	1071.80	NE Pit
MW-96-3	1121.71	3/9/1999	50.00	1071.71	NE Pit
MW-96-3	1121.71	4/29/1999	50.05	1071.66	NE Pit
MW-96-3	1121.71	6/14/1999	49.71	1072.00	NE Pit
MW-96-3	1121.71	7/26/1999	48.90	1072.81	NE Pit
MW-96-3	1121.71	8/21/1999	48.36	1073.35	NE Pit
MW-96-3	1121.71	9/22/1999	48.04	1073.67	NE Pit
MW-96-3	1121.71	10/25/1999	48.02	1073.69	NE Pit
MW-96-3	1121.71	11/19/1999	48.10	1073.61	NE Pit
MW-96-3	1121.71	1/22/2000	48.67	1073.04	NE Pit
MW-96-3	1121.71	2/21/2000	49.02	1072.69	NE Pit
MW-96-3	1121.71	3/18/2000	49.02	1072.69	NE Pit
MW-96-3	1121.71	6/17/2000	49.38	1072.33	NE Pit
MW-96-3	1121.71	9/25/2000	48.09	1073.62	NE Pit
MW-96-3	1121.71	10/6/2000	47.99	1073.72	NE Pit
MW-96-3	1121.71	10/11/2000	47.85	1073.86	NE Pit
MW-96-3	1121.71	11/30/2000	47.99	1073.72	NE Pit
MW-96-3	1121.71	3/9/2001	48.60	1073.11	NE Pit
MW-96-3	1121.71	6/1/2001	48.40	1073.31	NE Pit
MW-96-3	1121.71	9/12/2001	48.86	1072.85	NE Pit
MW-96-3	1121.71	12/11/2001	49.13	1072.58	NE Pit
MW-96-3	1121.71	3/27/2002	49.60	1072.11	NE Pit
MW-96-3	1121.71	6/11/2002	47.99	1073.72	NE Pit
MW-96-3	1121.71	11/5/2002	46.83	1074.88	NE Pit
MW-96-3	1121.71	5/19/2003	47.14	1074.57	NE Pit
MW-96-3	1121.71	12/1/2003	47.41	1074.30	NE Pit
MW-96-3	1121.71	5/13/2004	46.80	1074.91	NE Pit
MW-96-4	1122.97	5/31/1997			NE Pit
MW-96-4	1122.97	6/3/1997	50.90	1072.07	NE Pit
MW-96-4	1122.97	6/12/1997	50.96	1072.01	NE Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-96-4	1122.97	6/17/1997	50.88	1072.09	NE Pit
MW-96-4	1122.97	6/23/1997	50.69	1072.28	NE Pit
MW-96-4	1122.97	7/7/1997	50.81	1072.16	NE Pit
MW-96-4	1122.97	7/19/1997	50.79	1072.18	NE Pit
MW-96-4	1122.97	9/8/1997	50.85	1072.12	NE Pit
MW-96-4	1122.97	9/22/1997	50.94	1072.03	NE Pit
MW-96-4	1122.97	10/6/1997	51.10	1071.87	NE Pit
MW-96-4	1122.97	11/14/1997	51.17	1071.80	NE Pit
MW-96-4	1122.97	11/21/1997	51.21	1071.76	NE Pit
MW-96-4	1122.97	4/15/1998	51.60	1071.37	NE Pit
MW-96-4	1122.97	6/3/1998	51.54	1071.43	NE Pit
MW-96-4	1122.97	6/30/1998	51.64	1071.33	NE Pit
MW-96-4	1122.97	7/10/1998	51.45	1071.52	NE Pit
MW-96-4	1122.97	7/28/1998	51.64	1071.33	NE Pit
MW-96-4	1122.97	8/11/1998	51.88	1071.09	NE Pit
MW-96-4	1122.97	9/24/1998	52.01	1070.96	NE Pit
MW-96-4	1122.97	10/22/1998	52.16	1070.81	NE Pit
MW-96-4	1122.97	11/22/1998	52.29	1070.68	NE Pit
MW-96-4	1122.97	12/19/1998	52.75	1070.22	NE Pit
MW-96-4	1122.97	3/9/1999	53.06	1069.91	NE Pit
MW-96-4	1122.97	4/29/1999	53.02	1069.95	NE Pit
MW-96-4	1122.97	6/14/1999	52.85	1070.12	NE Pit
MW-96-4	1122.97	7/26/1999	52.16	1070.81	NE Pit
MW-96-4	1122.97	8/21/1999	51.79	1071.18	NE Pit
MW-96-4	1122.97	9/22/1999	51.45	1071.52	NE Pit
MW-96-4	1122.97	10/25/1999	51.36	1071.61	NE Pit
MW-96-4	1122.97	11/19/1999	51.37	1071.60	NE Pit
MW-96-4	1122.97	12/31/1999	51.22	1071.75	NE Pit
MW-96-4	1122.97	1/22/2000	51.69	1071.28	NE Pit
MW-96-4	1122.97	2/21/2000	51.99	1070.98	NE Pit
MW-96-4	1122.97	3/18/2000	52.02	1070.95	NE Pit
MW-96-4	1122.97	6/17/2000	52.32	1070.65	NE Pit
MW-96-4	1122.97	9/25/2000	51.31	1071.66	NE Pit
MW-96-4	1122.97	10/6/2000	51.24	1071.73	NE Pit
MW-96-4	1122.97	10/11/2000	51.11	1071.86	NE Pit
MW-96-4	1122.97	11/30/2000	51.12	1071.85	NE Pit
MW-96-4	1122.97	3/9/2001	51.55	1071.42	NE Pit
MW-96-4	1122.97	6/1/2001	51.35	1071.62	NE Pit
MW-96-4	1122.97	9/12/2001	51.76	1071.21	NE Pit
MW-96-4	1122.97	12/11/2001	52.03	1070.94	NE Pit
MW-96-4	1122.97	3/27/2002	52.47	1070.50	NE Pit
MW-96-4	1122.97	6/11/2002	51.19	1071.78	NE Pit
MW-96-4	1122.97	11/5/2002	48.91	1074.06	NE Pit
MW-96-4	1122.97	5/19/2003	47.91	1075.06	NE Pit
MW-96-4	1122.97	12/1/2003	48.14	1074.83	NE Pit
MW-96-4	1122.97	5/13/2004	47.74	1075.23	NE Pit
MW-96-4	1122.97	11/16/2004	46.80	1076.17	NE Pit
MW-96-4	1122.97	6/2/2005	49.70	1073.27	NE Pit

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
MW-96-4	1122.97	11/9/2005	50.29	1072.68	NE Pit
MW-96-4	1122.97	5/23/2006	48.79	1074.18	NE Pit
MW-96-4	1122.97	11/27/2006	48.99	1073.98	NE Pit
MW-96-4	1122.97	5/22/2007	49.78	1073.19	NE Pit
MW-96-4	1122.97	11/1/2007	50.78	1072.19	NE Pit
P-1	1119.08	5/30/1997	36.06	1083.02	General Study
P-1	1119.08	5/31/1997	36.05	1083.03	General Study
P-1	1119.08	6/1/1997	36.08	1083.00	General Study
P-1	1119.08	6/3/1997	36.11	1082.97	General Study
P-1	1119.08	6/12/1997	36.18	1082.90	General Study
P-1	1119.08	6/17/1997	36.23	1082.85	General Study
P-1	1119.08	6/23/1997	36.12	1082.96	General Study
P-1	1119.08	7/7/1997	36.22	1082.86	General Study
P-1	1119.08	7/19/1997	36.35	1082.73	General Study
P-1	1119.08	9/8/1997	37.79	1081.29	General Study
P-1	1119.08	9/22/1997	38.15	1080.93	General Study
P-1	1119.08	10/6/1997	38.59	1080.49	General Study
P-1	1119.08	10/24/1997	38.20	1080.88	General Study
P-1	1119.08	11/13/1997	38.84	1080.24	General Study
P-1	1119.08	11/21/1997	39.15	1079.93	General Study
P-1	1119.08	4/15/1998	38.13	1080.95	General Study
P-1	1119.08	6/3/1998	38.16	1080.92	General Study
P-1	1119.08	6/30/1998	39.00	1080.08	General Study
P-1	1119.08	7/10/1998			General Study
P-1	1119.08	7/28/1998	39.39	1079.69	General Study
P-1	1119.08	8/11/1998	39.43	1079.65	General Study
P-1	1119.08	9/24/1998			General Study
P-1	1119.08	10/22/1998			General Study
P-1	1119.08	11/22/1998	39.50	1079.58	General Study
P-1	1119.08	12/19/1998			General Study
P-1	1119.08	4/29/1999			General Study
P-1	1119.08	6/14/1999			General Study
P-1	1119.08	7/26/1999	35.61	1083.47	General Study
P-1	1119.08	8/21/1999	35.54	1083.54	General Study
P-1	1119.08	9/22/1999	36.02	1083.06	General Study
P-1	1119.08	10/25/1999	37.21	1081.87	General Study
P-1	1119.08	11/19/1999	38.14	1080.94	General Study
P-1	1119.08	12/31/1999			General Study
P-1	1119.08	1/22/2000			General Study
P-1	1119.08	2/21/2000			General Study
P-1	1119.08	3/18/2000			General Study
P-1	1119.08	6/17/2000			General Study
P-1	1119.08	9/25/2000	36.80	1082.28	General Study
P-1	1119.08	11/30/2000	36.29	1082.79	General Study
P-1	1119.08	3/9/2001			General Study
P-1	1119.08	6/1/2001			General Study
P-1	1119.08	9/12/2001			General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
P-1	1119.08	12/11/2001			General Study
P-1	1119.08	3/27/2002			General Study
P-1	1119.08	6/11/2002	38.16	1080.92	General Study
P-1	1119.08	11/5/2002	34.95	1084.13	General Study
P-1	1119.08	5/19/2003	35.09	1083.99	General Study
P-1	1119.08	12/1/2003	38.53	1080.55	General Study
P-1	1119.08	5/13/2004	33.39	1085.69	General Study
P-1	1119.08	11/17/2004	35.87	1083.21	General Study
P-2	1131.08	5/30/1997	29.01	1102.07	General Study
P-2	1131.08	5/31/1997	28.99	1102.09	General Study
P-2	1131.08	6/1/1997	29.04	1102.04	General Study
P-2	1131.08	6/3/1997	29.04	1102.04	General Study
P-2	1131.08	6/12/1997	29.06	1102.02	General Study
P-2	1131.08	6/17/1997	29.22	1101.86	General Study
P-2	1131.08	6/23/1997	29.23	1101.85	General Study
P-2	1131.08	7/7/1997	29.42	1101.66	General Study
P-2	1131.08	7/19/1997	29.59	1101.49	General Study
P-2	1131.08	8/5/1997	29.75	1101.33	General Study
P-2	1131.08	9/8/1997	30.21	1100.87	General Study
P-2	1131.08	9/22/1997	30.49	1100.59	General Study
P-2	1131.08	10/6/1997	30.95	1100.13	General Study
P-2	1131.08	10/24/1997	31.22	1099.86	General Study
P-2	1131.08	11/14/1997	30.99	1100.09	General Study
P-2	1131.08	11/21/1997	30.62	1100.46	General Study
P-2	1131.08	4/15/1998	28.90	1102.18	General Study
P-2	1131.08	6/3/1998	29.43	1101.65	General Study
P-2	1131.08	6/30/1998	29.97	1101.11	General Study
P-2	1131.08	7/10/1998	30.13	1100.95	General Study
P-2	1131.08	7/28/1998	30.51	1100.57	General Study
P-2	1131.08	8/11/1998	30.96	1100.12	General Study
P-2	1131.08	9/24/1998	32.62	1098.46	General Study
P-2	1131.08	10/22/1998	33.43	1097.65	General Study
P-2	1131.08	11/22/1998	34.56	1096.52	General Study
P-2	1131.08	12/19/1998	34.61	1096.47	General Study
P-2	1131.08	3/9/1999			General Study
P-2	1131.08	4/29/1999	30.32	1100.76	General Study
P-2	1131.08	6/14/1999	29.24	1101.84	General Study
P-2	1131.08	7/26/1999	28.31	1102.77	General Study
P-2	1131.08	8/21/1999	28.76	1102.32	General Study
P-2	1131.08	9/22/1999	29.37	1101.71	General Study
P-2	1131.08	10/25/1999	30.14	1100.94	General Study
P-2	1131.08	11/19/1999	31.04	1100.04	General Study
P-2	1131.08	2/21/2000			General Study
P-2	1131.08	3/18/2000	30.93	1100.15	General Study
P-2	1131.08	6/17/2000	29.91	1101.17	General Study
P-2	1131.08	9/25/2000	29.22	1101.86	General Study
P-2	1131.08	11/30/2000	29.89	1101.19	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
P-2	1131.08	6/1/2001	29.99	1101.09	General Study
P-2	1131.08	9/12/2001	31.09	1099.99	General Study
P-2	1131.08	12/11/2001	31.10	1099.98	General Study
P-2	1131.08	6/11/2002	28.62	1102.46	General Study
P-2	1131.08	11/5/2002	28.67	1102.41	General Study
P-2	1131.08	5/19/2003	28.49	1102.59	General Study
P-2	1131.08	12/1/2003	30.23	1100.85	General Study
P-2	1131.08	5/13/2004	28.53	1102.55	General Study
P-2	1131.08	11/16/2004	29.73	1101.35	General Study
P-2	1131.08	6/2/2005	29.49	1101.59	General Study
P-2	1131.08	11/11/2005	30.32	1100.76	General Study
P-2	1131.08	5/24/2006	29.14	1101.94	General Study
P-2	1131.08	11/27/2006	31.08	1100.00	General Study
P-2	1131.08	5/22/2007	30.80	1100.28	General Study
P-2	1131.08	11/1/2007	31.85	1099.23	General Study
SG-1	1037.94	10/24/1997	0.25	1035.19	Menominee River
SG-1	1037.94	12/2/1997	0.15	1035.09	Menominee River
SG-1	1037.50	4/15/1998	0.12	1034.62	Menominee River
SG-1	1037.50	6/3/1998			Menominee River
SG-1	1037.50	6/30/1998	0.07	1034.57	Menominee River
SG-1	1037.50	7/10/1998			Menominee River
SG-1	1037.50	7/28/1998			Menominee River
SG-1	1037.50	8/11/1998			Menominee River
SG-1	1037.50	9/24/1998			Menominee River
SG-1	1037.50	10/22/1998			Menominee River
SG-1	1037.50	11/22/1998	0.06	1034.56	Menominee River
SG-1	1037.50	3/9/1999			Menominee River
SG-1	1037.50	4/29/1999	0.63	1035.13	Menominee River
SG-1	1037.50	6/14/1999	1.20	1035.70	Menominee River
SG-1	1037.50	7/26/1999	0.83	1035.33	Menominee River
SG-1	1037.50	8/21/1999	0.98	1035.48	Menominee River
SG-1	1037.50	9/22/1999	0.60	1035.10	Menominee River
SG-1	1037.50	10/25/1999	0.80	1035.30	Menominee River
SG-1	1037.50	11/19/1999	0.47	1034.97	Menominee River
SG-1	1037.50	12/31/1999	0.45	1034.95	Menominee River
SG-1	1037.50	1/22/2000	0.80	1035.30	Menominee River
SG-1	1037.50	2/21/2000	1.30	1035.80	Menominee River
SG-1	1037.50	3/18/2000	0.60	1035.10	Menominee River
SG-1	1037.36	6/17/2000			Menominee River
SG-1	1037.12	6/1/2001	3.06	1037.18	Menominee River
SG-1	1037.12	6/28/2001	1.49	1035.61	Menominee River
SG-1	1037.12	9/12/2001	0.68	1034.80	Menominee River
SG-1	1037.12	12/11/2001	1.75	1035.87	Menominee River
SG-1	1037.12	11/5/2002	0.54	1034.66	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
SG-2	1037.47	11/13/1997	0.64	1035.11	Menominee River
SG-2	1037.47	12/2/1997	0.87	1035.34	Menominee River
SG-2	1037.93	4/15/1998			Menominee River
SG-2	1037.93	6/30/1998	1.07	1036.00	Menominee River
SG-2	1037.93	7/10/1998	0.60	1035.53	Menominee River
SG-2	1037.93	7/28/1998	0.44	1035.37	Menominee River
SG-2	1037.93	8/11/1998	0.69	1035.62	Menominee River
SG-2	1037.93	9/24/1998	0.37	1035.30	Menominee River
SG-2	1037.93	10/22/1998	0.46	1035.39	Menominee River
SG-2	1037.93	11/22/1998	1.00	1035.93	Menominee River
SG-2	1037.93	3/9/1999	0.71	1035.64	Menominee River
SG-2	1037.93	4/29/1999	0.56	1035.49	Menominee River
SG-2	1037.93	6/14/1999	1.27	1036.20	Menominee River
SG-2	1037.93	7/26/1999	0.77	1035.70	Menominee River
SG-2	1037.93	8/21/1999	0.90	1035.83	Menominee River
SG-2	1037.93	9/22/1999	0.59	1035.52	Menominee River
SG-2	1037.93	10/25/1999	0.45	1035.38	Menominee River
SG-2	1037.93	11/19/1999	0.20	1035.13	Menominee River
SG-2	1037.93	12/31/1999	0.30	1035.23	Menominee River
SG-2	1037.93	1/22/2000	0.58	1035.51	Menominee River
SG-2	1037.93	2/21/2000	0.98	1035.91	Menominee River
SG-2	1037.93	3/18/2000			Menominee River
SG-2	1037.21	6/17/2000	0.64	1035.57	Menominee River
SG-2	1037.21	9/25/2000	0.84	1035.77	Menominee River
SG-2	1037.21	11/30/2000	0.38	1035.31	Menominee River
SG-2	1037.25	6/1/2001	2.24	1036.49	Menominee River
SG-2	1037.25	6/28/2001			Menominee River
SG-2	1037.25	7/3/2001	1.56	1035.81	Menominee River
SG-2	1037.25	7/11/2001	0.90	1035.15	Menominee River
SG-2	1037.25	7/12/2001	0.70	1034.95	Menominee River
SG-2	1037.25	8/7/2001	1.30	1035.55	Menominee River
SG-2	1037.25	8/22/2001			Menominee River
SG-2	1037.25	9/12/2001	0.77	1035.02	Menominee River
SG-2	1037.25	12/11/2001	1.36	1035.61	Menominee River
SG-2	1037.25	11/5/2002	0.72	1034.97	Menominee River
SG-3	1038.08	11/13/1997	0.90	1035.98	Menominee River
SG-3	1038.08	12/2/1997	1.34	1036.42	Menominee River
SG-3	1038.12	4/15/1998	1.70	1036.82	Menominee River
SG-3	1038.12	6/3/1998	1.42	1036.54	Menominee River
SG-3	1038.12	6/30/1998	1.37	1036.49	Menominee River
SG-3	1038.12	7/10/1998	1.46	1036.58	Menominee River
SG-3	1038.12	7/28/1998	0.38	1035.50	Menominee River
SG-3	1038.12	8/11/1998	0.56	1035.68	Menominee River
SG-3	1038.12	9/24/1998	0.39	1035.51	Menominee River
SG-3	1038.12	10/22/1998	0.43	1035.55	Menominee River
SG-3	1038.12	11/22/1998	1.18	1036.30	Menominee River
SG-3	1038.12	12/19/1998	0.35	1035.47	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
SG-3	1038.12	3/9/1999	1.50	1036.62	Menominee River
SG-3	1038.12	3/9/1999	1.52	1036.64	Menominee River
SG-3	1038.12	4/29/1999	1.34	1036.46	Menominee River
SG-3	1038.12	6/14/1999	1.89	1037.01	Menominee River
SG-3	1038.12	7/26/1999	1.48	1036.60	Menominee River
SG-3	1038.12	8/21/1999	0.98	1036.10	Menominee River
SG-3	1038.12	9/22/1999	0.43	1035.55	Menominee River
SG-3	1038.12	10/25/1999	0.95	1036.07	Menominee River
SG-3	1038.12	11/19/1999	1.50	1036.62	Menominee River
SG-3	1038.12	1/22/2000	1.40	1036.52	Menominee River
SG-3	1038.12	2/21/2000			Menominee River
SG-3	1038.12	3/18/2000			Menominee River
SG-3	1037.92	6/17/2000	0.55	1035.67	Menominee River
SG-3	1037.92	9/25/2000	0.62	1035.74	Menominee River
SG-3	1037.92	11/30/2000	0.54	1035.66	Menominee River
SG-3	1037.93	6/1/2001	1.72	1036.65	Menominee River
SG-3	1037.93	12/11/2001	1.20	1036.13	Menominee River
SG-3	1037.93	11/5/2002	1.68	1036.61	Menominee River
SG-4	1036.32	11/13/1997	1.34	1034.66	Menominee River
SG-4	1036.32	12/2/1997	1.54	1034.86	Menominee River
SG-4	1037.23	4/15/1998			Menominee River
SG-4	1037.23	6/30/1998	1.60	1035.83	Menominee River
SG-4	1037.23	7/10/1998	1.47	1035.70	Menominee River
SG-4	1037.23	7/28/1998	1.36	1035.59	Menominee River
SG-4	1037.23	8/11/1998	1.59	1035.82	Menominee River
SG-4	1037.23	9/24/1998	1.21	1035.44	Menominee River
SG-4	1037.23	10/22/1998	1.30	1035.53	Menominee River
SG-4	1037.23	11/22/1998	1.48	1035.71	Menominee River
SG-4	1037.23	12/19/1998	1.17	1035.40	Menominee River
SG-4	1037.23	3/9/1999	1.21	1035.44	Menominee River
SG-4	1034.23	4/29/1999	0.87	1035.10	Menominee River
SG-4	1037.23	6/14/1999	1.33	1035.56	Menominee River
SG-4	1034.23	7/26/1999	1.02	1035.25	Menominee River
SG-4	1034.23	8/21/1999	1.15	1035.38	Menominee River
SG-4	1037.23	9/22/1999	0.76	1034.99	Menominee River
SG-4	1037.23	10/25/1999	0.94	1035.17	Menominee River
SG-4	1037.23	11/19/1999	0.76	1034.99	Menominee River
SG-4	1037.23	12/31/1999	0.60	1034.83	Menominee River
SG-4	1037.23	1/22/2000	1.00	1035.23	Menominee River
SG-4	1037.23	2/21/2000	1.00	1035.23	Menominee River
SG-4	1037.23	3/18/2000			Menominee River
SG-4	1036.33	6/17/2000	1.41	1035.64	Menominee River
SG-4	1036.33	11/30/2000	0.93	1035.16	Menominee River
SG-4	1037.67	9/12/2001	0.10	1034.77	Menominee River
SG-4	1037.67	12/11/2001	0.43	1035.10	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
SG-6	1037.61	4/17/2001	2.08	1036.69	Menominee River
SG-6	1037.61	4/17/2001	2.24	1036.85	Menominee River
SG-6	1037.61	4/17/2001	2.08	1036.69	Menominee River
SG-6	1037.61	4/17/2001	2.09	1036.70	Menominee River
SG-6	1037.61	4/17/2001	2.10	1036.71	Menominee River
SG-6	1037.61	4/17/2001	2.14	1036.75	Menominee River
SG-6	1037.61	4/17/2001	2.19	1036.80	Menominee River
SG-6	1037.61	4/17/2001	2.17	1036.78	Menominee River
SG-6	1037.61	4/17/2001	2.15	1036.76	Menominee River
SG-6	1037.61	4/17/2001	2.10	1036.71	Menominee River
SG-6	1037.61	4/17/2001	1.98	1036.59	Menominee River
SG-6	1037.61	4/17/2001	2.24	1036.85	Menominee River
SG-6	1037.61	4/17/2001	2.23	1036.84	Menominee River
SG-6	1037.61	4/17/2001	2.24	1036.85	Menominee River
SG-6	1037.61	4/17/2001	2.27	1036.88	Menominee River
SG-6	1037.61	4/17/2001	2.23	1036.84	Menominee River
SG-6	1037.61	4/17/2001	2.23	1036.84	Menominee River
SG-6	1037.61	4/17/2001	2.25	1036.86	Menominee River
SG-6	1037.61	4/17/2001	2.23	1036.84	Menominee River
SG-6	1037.61	4/17/2001	1.98	1036.59	Menominee River
SG-6	1037.61	4/17/2001	2.22	1036.83	Menominee River
SG-6	1037.61	4/17/2001	2.07	1036.68	Menominee River
SG-6	1037.61	4/17/2001	1.98	1036.59	Menominee River
SG-6	1037.61	4/17/2001	2.23	1036.84	Menominee River
SG-6	1037.61	4/17/2001	2.23	1036.84	Menominee River
SG-6	1037.61	4/17/2001	2.02	1036.63	Menominee River
SG-6	1037.61	4/17/2001	2.00	1036.61	Menominee River
SG-6	1037.61	4/17/2001	2.07	1036.68	Menominee River
SG-6	1037.61	4/17/2001	2.08	1036.69	Menominee River
SG-6	1037.61	4/17/2001	2.24	1036.85	Menominee River
SG-6	1037.61	4/17/2001	2.19	1036.80	Menominee River
SG-6	1037.61	4/17/2001	2.25	1036.86	Menominee River
SG-6	1037.61	4/17/2001	2.20	1036.81	Menominee River
SG-6	1037.61	4/17/2001	1.98	1036.59	Menominee River
SG-6	1037.61	4/17/2001	2.23	1036.84	Menominee River
SG-6	1037.61	4/18/2001	1.30	1035.91	Menominee River
SG-6	1037.61	4/18/2001	1.50	1036.11	Menominee River
SG-6	1037.61	4/18/2001	1.45	1036.06	Menominee River
SG-6	1037.61	4/19/2001	0.70	1035.31	Menominee River
SG-6	1037.61	4/19/2001	0.70	1035.31	Menominee River
SG-6	1037.61	4/19/2001	0.71	1035.32	Menominee River
SG-6	1037.61	4/19/2001	0.71	1035.32	Menominee River
SG-6	1037.61	4/19/2001	0.70	1035.31	Menominee River
SG-6	1037.61	4/19/2001	0.70	1035.31	Menominee River
SG-6	1037.61	4/19/2001	0.71	1035.32	Menominee River
SG-6	1037.61	4/19/2001	0.79	1035.40	Menominee River
SG-6	1037.61	4/19/2001	1.28	1035.89	Menominee River
SG-6	1037.61	4/19/2001	0.68	1035.29	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
SG-6	1037.61	4/19/2001	0.69	1035.30	Menominee River
SG-6	1037.61	4/19/2001	0.68	1035.29	Menominee River
SG-6	1037.61	4/19/2001	0.69	1035.30	Menominee River
SG-6	1037.61	4/19/2001	0.85	1035.46	Menominee River
SG-6	1037.61	4/19/2001	0.86	1035.47	Menominee River
SG-6	1037.61	4/19/2001	0.84	1035.45	Menominee River
SG-6	1037.61	4/19/2001	0.83	1035.44	Menominee River
SG-6	1037.61	4/19/2001	0.82	1035.43	Menominee River
SG-6	1037.61	4/19/2001	0.77	1035.38	Menominee River
SG-6	1037.61	4/19/2001	0.81	1035.42	Menominee River
SG-6	1037.61	4/19/2001	0.72	1035.33	Menominee River
SG-6	1037.61	4/19/2001	0.70	1035.31	Menominee River
SG-6	1037.61	4/19/2001	0.72	1035.33	Menominee River
SG-6	1037.61	4/19/2001	0.80	1035.41	Menominee River
SG-6	1037.61	4/19/2001	0.74	1035.35	Menominee River
SG-6	1037.61	4/19/2001	0.78	1035.39	Menominee River
SG-6	1037.61	4/19/2001	0.73	1035.34	Menominee River
SG-6	1037.61	4/19/2001	0.75	1035.36	Menominee River
SG-6	1037.61	4/19/2001	0.76	1035.37	Menominee River
SG-6	1037.61	4/19/2001	0.78	1035.39	Menominee River
SG-6	1037.61	4/19/2001	0.78	1035.39	Menominee River
SG-6	1037.61	4/19/2001	0.80	1035.41	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.50	1035.11	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.50	1035.11	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.50	1035.11	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.50	1035.11	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
SG-6	1037.61	4/20/2001	0.62	1035.23	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.48	1035.09	Menominee River
SG-6	1037.61	4/20/2001	0.62	1035.23	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/20/2001	0.49	1035.10	Menominee River
SG-6	1037.61	4/21/2001	0.33	1034.94	Menominee River
SG-6	1037.61	4/21/2001	0.40	1035.01	Menominee River
SG-6	1037.61	4/22/2001	0.38	1034.99	Menominee River
SG-6	1037.61	5/4/2001	2.20	1036.81	Menominee River
SG-6	1037.61	5/8/2001	3.14	1037.75	Menominee River
SG-6	1037.61	5/16/2001	3.00	1037.61	Menominee River
SG-6	1037.61	5/30/2001	3.08	1037.69	Menominee River
SG-6	1037.61	6/14/2001	2.60	1037.21	Menominee River
SG-6	1037.61	6/28/2001	2.86	1037.47	Menominee River
SG-6	1037.61	7/3/2001	2.80	1037.41	Menominee River
SG-6	1037.61	7/11/2001	2.69	1037.30	Menominee River
SG-6	1037.61	7/12/2001	2.62	1037.23	Menominee River
SG-6	1037.61	8/7/2001	2.36	1036.96	Menominee River
SG-6	1037.61	8/22/2001	2.37	1036.98	Menominee River
SG-6	1037.61	9/11/2001	1.66	1036.27	Menominee River
SG-6	1037.61	9/11/2001	2.02	1036.63	Menominee River
SG-6	1037.61	9/11/2001	2.48	1037.09	Menominee River
SG-6	1037.61	9/12/2001	2.34	1036.95	Menominee River
SG-6	1037.61	12/11/2001	2.81	1037.40	Menominee River
SG-6	1037.61	11/5/2002	2.80	1037.41	Menominee River
SG-6	1037.61	5/19/2003	3.27		Menominee River
SG-6	1037.61	11/16/2004	2.05	1036.66	Menominee River
SG-7	1037.58	5/13/2004	3.20	1037.78	Menominee River
SG-7	1037.58	11/16/2004	2.48	1037.06	Menominee River
SG-8	1037.35	12/10/2003	1.04	1035.39	Menominee River
SG-8	1037.35	12/11/2003	0.80	1035.15	Menominee River
SG-8	1037.35	12/12/2003	0.64	1034.99	Menominee River
SG-8	1037.35	12/16/2003	0.66	1035.01	Menominee River
SG-8	1037.35	12/22/2003	0.70	1035.05	Menominee River
SG-8	1037.35	12/31/2003	0.52	1034.87	Menominee River
SG-9	1037.40	12/10/2003	1.04	1035.44	Menominee River
SG-9	1037.40	12/11/2003	0.68	1035.08	Menominee River
SG-9	1037.40	12/12/2003	0.74	1035.14	Menominee River
SG-9	1037.40	12/16/2003	0.79	1035.19	Menominee River
SG-9	1037.40	12/22/2003	0.76	1035.16	Menominee River
SG-9	1037.40	12/31/2003	0.72	1035.12	Menominee River
SG-9	1037.40	5/13/2004	1.30	1035.70	Menominee River

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-1	1177.92	5/30/1997	75.89	1102.03	General Study
UG-1	1177.92	5/31/1997	75.88	1102.04	General Study
UG-1	1177.92	6/1/1997	75.91	1102.01	General Study
UG-1	1177.92	6/3/1997	75.85	1102.07	General Study
UG-1	1177.92	6/12/1997	75.89	1102.03	General Study
UG-1	1177.92	6/17/1997	75.91	1102.01	General Study
UG-1	1177.92	6/23/1997	75.71	1102.21	General Study
UG-1	1177.92	7/7/1997	75.76	1102.16	General Study
UG-1	1177.92	7/19/1997	75.73	1102.19	General Study
UG-1	1177.92	8/5/1997	75.64	1102.28	General Study
UG-1	1177.92	9/8/1997	75.50	1102.42	General Study
UG-1	1177.92	9/22/1997	75.52	1102.40	General Study
UG-1	1177.92	10/6/1997	75.56	1102.36	General Study
UG-1	1177.92	10/24/1997	75.52	1102.40	General Study
UG-1	1177.92	11/13/1997	75.54	1102.38	General Study
UG-1	1182.08	11/21/1997	79.62	1102.46	General Study
UG-1	1177.92	4/15/1998	76.07	1101.85	General Study
UG-1	1177.92	6/3/1998	76.27	1101.65	General Study
UG-1	1177.92	6/30/1998	76.35	1101.57	General Study
UG-1	1177.92	7/10/1998	76.32	1101.60	General Study
UG-1	1177.92	7/28/1998	76.23	1101.69	General Study
UG-1	1177.92	8/11/1998	76.35	1101.57	General Study
UG-1	1177.92	9/24/1998	76.38	1101.54	General Study
UG-1	1177.92	10/22/1998	76.34	1101.58	General Study
UG-1	1177.92	11/22/1998	76.53	1101.39	General Study
UG-1	1177.92	12/19/1998	76.70	1101.22	General Study
UG-1	1177.92	3/9/1999	76.91	1101.01	General Study
UG-1	1177.92	4/29/1999	77.19	1100.73	General Study
UG-1	1177.92	6/14/1999	77.46	1100.46	General Study
UG-1	1177.92	7/26/1999	77.62	1100.30	General Study
UG-1	1177.92	8/21/1999	77.51	1100.41	General Study
UG-1	1177.92	9/22/1999	77.08	1100.84	General Study
UG-1	1177.92	10/25/1999	76.83	1101.09	General Study
UG-1	1177.92	11/19/1999	76.74	1101.18	General Study
UG-1	1177.92	12/31/1999	76.61	1101.31	General Study
UG-1	1177.92	1/22/2000	76.57	1101.35	General Study
UG-1	1177.92	2/21/2000	76.57	1101.35	General Study
UG-1	1177.92	3/18/2000	76.76	1101.16	General Study
UG-1	1177.92	6/17/2000	77.26	1100.66	General Study
UG-1	1177.92	9/25/2000	76.91	1101.01	General Study
UG-1	1177.92	11/30/2000	76.64	1101.28	General Study
UG-1	1177.92	3/9/2001	76.40	1101.52	General Study
UG-1	1177.92	6/1/2001	76.88	1101.04	General Study
UG-1	1177.92	9/12/2001	77.20	1100.72	General Study
UG-1	1177.92	12/11/2001	77.19	1100.73	General Study
UG-1	1177.92	3/27/2002	77.31	1100.61	General Study
UG-1	1177.92	11/5/2002	76.37	1101.55	General Study
UG-1	1177.92	5/19/2003	76.04	1101.88	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-1	1177.92	12/1/2003	75.91	1102.01	General Study
UG-1	1177.92	5/13/2004	76.20	1101.72	General Study
UG-1	1177.92	11/16/2004	74.63	1103.29	General Study
UG-1	1177.92	6/2/2005	75.29	1102.63	General Study
UG-1	1177.92	11/9/2005	75.85	1102.07	General Study
UG-1	1177.92	5/24/2006	76.21	1101.71	General Study
UG-1	1177.92	11/27/2006	76.34	1101.58	General Study
UG-1	1177.92	5/22/2007	76.79	1101.13	General Study
UG-1	1177.92	11/1/2007	77.54	1100.38	General Study
UG-2	1126.57	5/30/1997			General Study
UG-2	1126.57	5/31/1997	39.14	1087.43	General Study
UG-2	1126.57	6/1/1997	39.16	1087.41	General Study
UG-2	1126.57	6/3/1997	39.15	1087.42	General Study
UG-2	1126.57	6/12/1997	39.12	1087.45	General Study
UG-2	1126.57	6/17/1997	39.15	1087.42	General Study
UG-2	1126.57	6/23/1997	39.02	1087.55	General Study
UG-2	1126.57	7/7/1997	39.05	1087.52	General Study
UG-2	1126.57	7/19/1997	39.05	1087.52	General Study
UG-2	1126.57	8/5/1997	39.07	1087.50	General Study
UG-2	1126.57	9/8/1997	39.18	1087.39	General Study
UG-2	1126.57	9/22/1997	39.25	1087.32	General Study
UG-2	1126.57	10/6/1997	39.32	1087.25	General Study
UG-2	1126.57	10/24/1997	39.26	1087.31	General Study
UG-2	1131.01	11/14/1997	43.71	1087.30	General Study
UG-2	1131.01	11/21/1997	43.77	1087.24	General Study
UG-2	1126.57	4/15/1998	39.93	1086.64	General Study
UG-2	1126.57	6/3/1998	39.65	1086.92	General Study
UG-2	1126.57	6/30/1998	39.69	1086.88	General Study
UG-2	1126.57	7/10/1998	39.75	1086.82	General Study
UG-2	1126.57	7/28/1998	39.70	1086.87	General Study
UG-2	1126.57	8/11/1998	39.86	1086.71	General Study
UG-2	1126.57	9/24/1998	40.09	1086.48	General Study
UG-2	1126.57	10/22/1998	40.19	1086.38	General Study
UG-2	1126.57	11/22/1998	40.40	1086.17	General Study
UG-2	1126.57	12/19/1998	40.56	1086.01	General Study
UG-2	1126.57	3/9/1999	41.08	1085.49	General Study
UG-2	1126.57	4/29/1999	41.18	1085.39	General Study
UG-2	1126.57	6/14/1999	40.82	1085.75	General Study
UG-2	1126.57	7/26/1999	40.41	1086.16	General Study
UG-2	1126.57	8/21/1999	39.93	1086.64	General Study
UG-2	1126.57	9/22/1999	39.61	1086.96	General Study
UG-2	1126.57	10/25/1999	39.57	1087.00	General Study
UG-2	1126.57	11/19/1999	39.57	1087.00	General Study
UG-2	1126.57	12/31/1999	39.89	1086.68	General Study
UG-2	1126.57	1/22/2000	40.03	1086.54	General Study
UG-2	1126.57	2/21/2000	40.29	1086.28	General Study
UG-2	1126.57	3/18/2000	40.40	1086.17	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-2	1126.57	6/17/2000	40.21	1086.36	General Study
UG-2	1126.57	9/25/2000	39.36	1087.21	General Study
UG-2	1126.57	11/30/2000	37.96	1088.61	General Study
UG-2	1126.57	3/9/2001	39.56	1087.01	General Study
UG-2	1126.57	6/1/2001	39.50	1087.07	General Study
UG-2	1126.57	9/12/2001	39.65	1086.92	General Study
UG-2	1126.57	12/11/2001	39.87	1086.70	General Study
UG-2	1126.57	3/27/2002	40.30	1086.27	General Study
UG-2	1126.57	6/11/2002	39.46	1087.11	General Study
UG-2	1126.57	11/5/2002	38.56	1088.01	General Study
UG-2	1126.57	5/19/2003	39.16	1087.41	General Study
UG-2	1126.57	12/1/2003	39.28	1087.29	General Study
UG-2	1126.57	5/13/2004	39.38	1087.19	General Study
UG-2	1126.57	11/16/2004	38.61	1087.96	General Study
UG-2	1126.57	6/2/2005	39.48	1087.09	General Study
UG-2	1126.57	11/10/2005	39.91	1086.66	General Study
UG-2	1126.57	5/24/2006	40.37	1086.20	General Study
UG-2	1126.57	11/27/2006	40.66	1085.91	General Study
UG-2	1126.57	5/22/2007	41.58	1084.99	General Study
UG-2	1126.57	11/1/2007	42.31	1084.26	General Study
UG-3	1124.95	5/30/1997	28.07	1096.88	General Study
UG-3	1124.95	5/31/1997	28.04	1096.91	General Study
UG-3	1124.95	6/1/1997	28.03	1096.92	General Study
UG-3	1124.95	6/3/1997	28.02	1096.93	General Study
UG-3	1124.95	6/12/1997	27.96	1096.99	General Study
UG-3	1124.95	6/17/1997	27.99	1096.96	General Study
UG-3	1124.95	6/23/1997	27.85	1097.10	General Study
UG-3	1124.95	7/7/1997	27.89	1097.06	General Study
UG-3	1124.95	7/19/1997	27.72	1097.23	General Study
UG-3	1124.95	8/5/1997	27.71	1097.24	General Study
UG-3	1124.95	9/8/1997	27.93	1097.02	General Study
UG-3	1124.95	9/22/1997	28.00	1096.95	General Study
UG-3	1124.95	10/6/1997	28.10	1096.85	General Study
UG-3	1124.95	10/24/1997	28.02	1096.93	General Study
UG-3	1124.95	11/14/1997	28.08	1096.87	General Study
UG-3	1124.95	11/21/1997	28.11	1096.84	General Study
UG-3	1124.95	4/15/1998	29.16	1095.79	General Study
UG-3	1124.95	6/3/1998	28.72	1096.23	General Study
UG-3	1124.95	6/30/1998	28.75	1096.20	General Study
UG-3	1124.95	7/10/1998	28.79	1096.16	General Study
UG-3	1124.95	7/28/1998	28.82	1096.13	General Study
UG-3	1124.95	8/11/1998	29.00	1095.95	General Study
UG-3	1124.95	9/24/1998	29.47	1095.48	General Study
UG-3	1124.95	10/22/1998	29.68	1095.27	General Study
UG-3	1124.95	11/22/1998	30.14	1094.81	General Study
UG-3	1124.95	12/19/1998	30.46	1094.49	General Study
UG-3	1124.95	3/9/1999	31.34	1093.61	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-3	1124.95	4/29/1999	31.51	1093.44	General Study
UG-3	1124.95	6/14/1999	30.91	1094.04	General Study
UG-3	1124.95	7/26/1999	29.98	1094.97	General Study
UG-3	1124.95	8/21/1999	28.92	1096.03	General Study
UG-3	1124.95	9/22/1999	28.20	1096.75	General Study
UG-3	1124.95	10/25/1999	28.04	1096.91	General Study
UG-3	1124.95	11/19/1999	28.13	1096.82	General Study
UG-3	1124.95	12/31/1999	28.66	1096.29	General Study
UG-3	1124.95	1/22/2000	28.92	1096.03	General Study
UG-3	1124.95	2/21/2000	29.33	1095.62	General Study
UG-3	1124.95	3/18/2000	29.47	1095.48	General Study
UG-3	1124.95	6/17/2000	28.95	1096.00	General Study
UG-3	1124.95	9/25/2000	26.43	1098.52	General Study
UG-3	1124.95	11/30/2000	25.77	1099.18	General Study
UG-3	1124.95	6/1/2001	28.18	1096.77	General Study
UG-3	1124.95	9/12/2001	28.59	1096.36	General Study
UG-3	1124.95	12/11/2001	29.85	1095.10	General Study
UG-3	1124.95	3/27/2002	31.10	1093.85	General Study
UG-3	1124.95	6/11/2002	30.08	1094.87	General Study
UG-3	1124.95	11/5/2002	28.13	1096.82	General Study
UG-3	1124.95	5/19/2003	29.46	1095.49	General Study
UG-3	1124.95	12/1/2003	29.38	1095.57	General Study
UG-3	1124.95	5/13/2004	30.03	1094.92	General Study
UG-3	1124.95	11/16/2004	28.29	1096.66	General Study
UG-3	1124.95	6/2/2005	29.80	1095.15	General Study
UG-3	1124.95	11/9/2005	30.70	1094.25	General Study
UG-3	1124.95	5/24/2006	31.62	1093.33	General Study
UG-3	1124.95	11/27/2006	31.82	1093.13	General Study
UG-3	1124.95	5/22/2007	32.85	1092.10	General Study
UG-3	1124.95	11/1/2007	33.59	1091.36	General Study
UG-4	1114.74	5/30/1997	46.43	1068.31	General Study
UG-4	1114.74	5/31/1997	46.45	1068.29	General Study
UG-4	1114.74	6/1/1997	46.45	1068.29	General Study
UG-4	1114.74	6/3/1997	46.48	1068.26	General Study
UG-4	1114.74	6/12/1997	46.26	1068.48	General Study
UG-4	1114.74	6/17/1997	46.26	1068.48	General Study
UG-4	1114.74	6/23/1997	46.26	1068.48	General Study
UG-4	1114.74	7/7/1997	46.22	1068.52	General Study
UG-4	1114.74	7/19/1997	46.29	1068.45	General Study
UG-4	1114.74	8/5/1997	46.39	1068.35	General Study
UG-4	1114.74	9/8/1997	46.21	1068.53	General Study
UG-4	1114.74	9/22/1997	46.18	1068.56	General Study
UG-4	1114.74	10/6/1997	46.42	1068.32	General Study
UG-4	1114.74	10/24/1997	47.21	1067.53	General Study
UG-4	1118.74	11/14/1997	51.42	1067.32	General Study
UG-4	1118.74	11/21/1997	51.51	1067.23	General Study
UG-4	1114.74	4/15/1998	47.65	1067.09	General Study

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-4	1114.74	6/3/1998	47.72	1067.02	General Study
UG-4	1114.74	6/30/1998	47.64	1067.10	General Study
UG-4	1114.74	7/10/1998	47.73	1067.01	General Study
UG-4	1114.74	7/28/1998	47.82	1066.92	General Study
UG-4	1114.74	8/11/1998	47.98	1066.76	General Study
UG-4	1114.74	9/24/1998	48.25	1066.49	General Study
UG-4	1114.74	10/22/1998	48.32	1066.42	General Study
UG-4	1114.74	11/22/1998	47.86	1066.88	General Study
UG-4	1114.74	12/19/1998	48.20	1066.54	General Study
UG-4	1114.74	3/9/1999	48.65	1066.09	General Study
UG-4	1114.74	4/29/1999	47.61	1067.13	General Study
UG-4	1114.74	6/14/1999	46.84	1067.90	General Study
UG-4	1114.74	7/26/1999	46.72	1068.02	General Study
UG-4	1114.74	8/21/1999	46.85	1067.89	General Study
UG-4	1114.74	9/22/1999	46.98	1067.76	General Study
UG-4	1114.74	10/25/1999	47.06	1067.68	General Study
UG-4	1114.74	11/19/1999	47.22	1067.52	General Study
UG-4	1114.74	12/31/1999	47.62	1067.12	General Study
UG-4	1114.74	1/22/2000			General Study
UG-4	1114.74	2/21/2000			General Study
UG-4	1114.74	3/18/2000	47.41	1067.33	General Study
UG-4	1114.74	6/17/2000	47.81	1066.93	General Study
UG-4	1114.74	9/25/2000	46.44	1068.30	General Study
UG-4	1114.74	11/30/2000	46.76	1067.98	General Study
UG-4	1114.74	3/9/2001	47.36	1067.38	General Study
UG-4	1114.74	6/1/2001	47.05	1067.69	General Study
UG-4	1114.74	9/12/2001	47.03	1067.71	General Study
UG-4	1114.74	12/11/2001	46.95	1067.79	General Study
UG-4	1114.74	3/27/2002	47.64	1067.10	General Study
UG-4	1114.74	6/11/2002	46.66	1068.08	General Study
UG-4	1114.74	11/5/2002	45.97	1068.77	General Study
UG-4	1114.74	5/19/2003	46.19	1068.55	General Study
UG-4	1114.74	12/1/2003	41.65	1073.09	General Study
UG-4	1114.74	11/16/2004	45.82	1068.92	General Study
UG-4	1114.74	6/2/2005	46.70	1068.04	General Study
UG-4	1114.74	11/9/2005	47.11	1067.63	General Study
UG-4	1114.74	5/24/2006	47.73	1067.01	General Study
UG-4	1114.74	11/27/2006	48.25	1066.49	General Study
UG-4	1114.74	5/22/2007	49.02	1065.72	General Study
UG-4	1114.74	11/1/2007	49.09	1065.65	General Study
UG-5	1106.56	5/30/1997			General Study/Former Plant Site
UG-5	1106.56	5/31/1997	51.82	1054.74	General Study/Former Plant Site
UG-5	1106.56	6/1/1997	51.80	1054.76	General Study/Former Plant Site
UG-5	1106.56	6/3/1997	51.83	1054.73	General Study/Former Plant Site
UG-5	1106.56	6/12/1997	51.71	1054.85	General Study/Former Plant Site
UG-5	1106.56	6/17/1997	51.83	1054.73	General Study/Former Plant Site
UG-5	1106.56	6/23/1997	52.19	1054.37	General Study/Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-5	1106.56	7/7/1997	51.85	1054.71	General Study/Former Plant Site
UG-5	1106.56	7/19/1997	51.50	1055.06	General Study/Former Plant Site
UG-5	1106.56	8/5/1997	51.92	1054.64	General Study/Former Plant Site
UG-5	1106.56	9/8/1997	51.94	1054.62	General Study/Former Plant Site
UG-5	1106.56	9/22/1997	52.04	1054.52	General Study/Former Plant Site
UG-5	1106.56	10/6/1997	52.15	1054.41	General Study/Former Plant Site
UG-5	1106.56	10/24/1997	52.04	1054.52	General Study/Former Plant Site
UG-5	1106.56	11/14/1997	52.14	1054.42	General Study/Former Plant Site
UG-5	1106.56	11/21/1997	52.22	1054.34	General Study/Former Plant Site
UG-5	1106.56	4/15/1998	52.63	1053.93	General Study/Former Plant Site
UG-5	1106.56	6/3/1998	52.55	1054.01	General Study/Former Plant Site
UG-5	1106.56	6/30/1998	52.57	1053.99	General Study/Former Plant Site
UG-5	1106.56	7/10/1998	52.72	1053.84	General Study/Former Plant Site
UG-5	1106.56	7/28/1998	52.64	1053.92	General Study/Former Plant Site
UG-5	1106.56	8/11/1998	52.85	1053.71	General Study/Former Plant Site
UG-5	1106.56	9/24/1998	52.99	1053.57	General Study/Former Plant Site
UG-5	1106.56	10/22/1998	53.19	1053.37	General Study/Former Plant Site
UG-5	1106.56	11/22/1998	53.24	1053.32	General Study/Former Plant Site
UG-5	1106.56	12/19/1998	53.51	1053.05	General Study/Former Plant Site
UG-5	1106.56	3/9/1999	53.91	1052.65	General Study/Former Plant Site
UG-5	1106.56	4/29/1999	53.99	1052.57	General Study/Former Plant Site
UG-5	1106.56	6/14/1999	53.66	1052.90	General Study/Former Plant Site
UG-5	1106.56	7/26/1999	53.22	1053.34	General Study/Former Plant Site
UG-5	1106.56	8/21/1999	53.05	1053.51	General Study/Former Plant Site
UG-5	1106.56	9/22/1999	52.87	1053.69	General Study/Former Plant Site
UG-5	1106.56	10/25/1999	52.87	1053.69	General Study/Former Plant Site
UG-5	1106.56	11/19/1999	52.90	1053.66	General Study/Former Plant Site
UG-5	1106.56	12/31/1999	53.24	1053.32	General Study/Former Plant Site
UG-5	1106.56	1/22/2000	53.32	1053.24	General Study/Former Plant Site
UG-5	1106.56	2/21/2000	53.55	1053.01	General Study/Former Plant Site
UG-5	1106.56	3/18/2000	53.62	1052.94	General Study/Former Plant Site
UG-5	1106.56	6/17/2000	53.74	1052.82	General Study/Former Plant Site
UG-5	1106.56	9/25/2000	53.03	1053.53	General Study/Former Plant Site
UG-5	1106.56	11/30/2000	52.82	1053.74	General Study/Former Plant Site
UG-5	1106.56	3/9/2001	53.18	1053.38	General Study/Former Plant Site
UG-5	1106.56	6/1/2001	52.94	1053.62	General Study/Former Plant Site
UG-5	1106.56	9/12/2001	53.13	1053.43	General Study/Former Plant Site
UG-5	1106.56	12/11/2001	53.45	1053.11	General Study/Former Plant Site
UG-5	1106.56	3/27/2002	53.79	1052.77	General Study/Former Plant Site
UG-5	1106.56	6/11/2002	52.89	1053.67	General Study/Former Plant Site
UG-5	1106.56	11/5/2002	52.21	1054.35	General Study/Former Plant Site
UG-5	1106.56	5/19/2003	52.17	1054.39	General Study/Former Plant Site
UG-5	1106.56	12/1/2003	52.66	1053.90	General Study/Former Plant Site
UG-5	1106.56	5/13/2004	51.31	1055.25	General Study/Former Plant Site
UG-5	1106.56	11/16/2004	51.80	1054.76	General Study/Former Plant Site
UG-5	1106.56	6/2/2005	52.29	1054.27	General Study/Former Plant Site
UG-5	1106.56	11/9/2005	52.95	1053.61	General Study/Former Plant Site
UG-5	1106.56	5/24/2006	53.39	1053.17	General Study/Former Plant Site

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Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-5	1106.56	11/27/2006	53.68	1052.88	General Study/Former Plant Site
UG-5	1106.56	5/22/2007	54.19	1052.37	General Study/Former Plant Site
UG-5	1106.56	11/1/2007	54.81	1051.75	General Study/Former Plant Site
UG-6	1106.97	5/30/1997	52.23	1054.74	General Study/Former Plant Site
UG-6	1106.97	5/31/1997	52.27	1054.70	General Study/Former Plant Site
UG-6	1106.97	6/1/1997	52.27	1054.70	General Study/Former Plant Site
UG-6	1106.97	6/3/1997	52.29	1054.68	General Study/Former Plant Site
UG-6	1106.97	6/12/1997	52.16	1054.81	General Study/Former Plant Site
UG-6	1106.97	6/17/1997	52.27	1054.70	General Study/Former Plant Site
UG-6	1106.97	6/23/1997	52.74	1054.23	General Study/Former Plant Site
UG-6	1106.97	7/7/1997	52.29	1054.68	General Study/Former Plant Site
UG-6	1106.97	7/19/1997	52.30	1054.67	General Study/Former Plant Site
UG-6	1106.97	8/5/1997	52.33	1054.64	General Study/Former Plant Site
UG-6	1106.97	9/8/1997	52.38	1054.59	General Study/Former Plant Site
UG-6	1106.97	9/22/1997	52.97	1054.00	General Study/Former Plant Site
UG-6	1106.97	10/6/1997	52.59	1054.38	General Study/Former Plant Site
UG-6	1106.97	10/24/1997	52.49	1054.48	General Study/Former Plant Site
UG-6	1106.97	11/14/1997	52.60	1054.37	General Study/Former Plant Site
UG-6	1106.97	11/21/1997	52.67	1054.30	General Study/Former Plant Site
UG-6	1106.97	4/15/1998	53.08	1053.89	General Study/Former Plant Site
UG-6	1106.97	6/3/1998	53.00	1053.97	General Study/Former Plant Site
UG-6	1106.97	6/30/1998	53.02	1053.95	General Study/Former Plant Site
UG-6	1106.97	7/10/1998	53.17	1053.80	General Study/Former Plant Site
UG-6	1106.97	7/28/1998	53.08	1053.89	General Study/Former Plant Site
UG-6	1106.97	8/11/1998	53.29	1053.68	General Study/Former Plant Site
UG-6	1106.97	9/24/1998	53.44	1053.53	General Study/Former Plant Site
UG-6	1106.97	10/22/1998	53.60	1053.37	General Study/Former Plant Site
UG-6	1106.97	11/22/1998	53.69	1053.28	General Study/Former Plant Site
UG-6	1106.97	12/19/1998	53.96	1053.01	General Study/Former Plant Site
UG-6	1106.97	3/9/1999	54.32	1052.65	General Study/Former Plant Site
UG-6	1106.97	4/29/1999	54.42	1052.55	General Study/Former Plant Site
UG-6	1106.97	6/14/1999	54.10	1052.87	General Study/Former Plant Site
UG-6	1106.97	7/26/1999	53.68	1053.29	General Study/Former Plant Site
UG-6	1106.97	8/21/1999	53.50	1053.47	General Study/Former Plant Site
UG-6	1106.97	9/22/1999	53.31	1053.66	General Study/Former Plant Site
UG-6	1106.97	10/25/1999	53.31	1053.66	General Study/Former Plant Site
UG-6	1106.97	11/19/1999	53.34	1053.63	General Study/Former Plant Site
UG-6	1106.97	12/31/1999	53.68	1053.29	General Study/Former Plant Site
UG-6	1106.97	1/22/2000	53.78	1053.19	General Study/Former Plant Site
UG-6	1106.97	2/21/2000	53.99	1052.98	General Study/Former Plant Site
UG-6	1106.97	3/18/2000	54.06	1052.91	General Study/Former Plant Site
UG-6	1106.97	6/17/2000	54.18	1052.79	General Study/Former Plant Site
UG-6	1106.97	9/25/2000	53.46	1053.51	General Study/Former Plant Site
UG-6	1106.97	11/30/2000	53.27	1053.70	General Study/Former Plant Site
UG-6	1106.97	3/9/2001	53.61	1053.36	General Study/Former Plant Site
UG-6	1106.97	6/1/2001	53.40	1053.57	General Study/Former Plant Site
UG-6	1106.97	9/12/2001	53.57	1053.40	General Study/Former Plant Site

Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
UG-6	1106.97	12/11/2001	53.88	1053.09	General Study/Former Plant Site
UG-6	1106.97	3/27/2002	54.22	1052.75	General Study/Former Plant Site
UG-6	1106.97	6/11/2002	53.33	1053.64	General Study/Former Plant Site
UG-6	1106.97	11/5/2002	52.65	1054.32	General Study/Former Plant Site
UG-6	1106.97	5/19/2003	52.63	1054.34	General Study/Former Plant Site
UG-6	1106.97	12/1/2003	53.10	1053.87	General Study/Former Plant Site
UG-6	1106.97	5/13/2004	52.75	1054.22	General Study/Former Plant Site
UG-6	1106.97	11/16/2004	52.23	1054.74	General Study/Former Plant Site
UG-6	1106.97	6/2/2005	52.73	1054.24	General Study/Former Plant Site
UG-6	1106.97	11/9/2005	53.39	1053.58	General Study/Former Plant Site
UG-6	1106.97	5/24/2006	53.82	1053.15	General Study/Former Plant Site
UG-6	1106.97	11/27/2006	54.11	1052.86	General Study/Former Plant Site
UG-6	1106.97	5/22/2007	54.62	1052.35	General Study/Former Plant Site
UG-6	1106.97	11/1/2007	55.23	1051.74	General Study/Former Plant Site
USGS	1091.94	10/6/1997	42.77	1049.17	General Study
USGS	1091.94	11/21/1997	42.91	1049.03	General Study
USGS	1091.94	4/15/1998	43.30	1048.64	General Study
USGS	1091.94	6/3/1998	43.17	1048.77	General Study
USGS	1091.94	6/30/1998	43.30	1048.64	General Study
USGS	1091.94	7/10/1998	43.39	1048.55	General Study
USGS	1091.94	7/28/1998	43.40	1048.54	General Study
USGS	1091.94	8/11/1998	43.58	1048.36	General Study
USGS	1091.94	9/24/1998	43.85	1048.09	General Study
USGS	1091.94	10/22/1998	43.94	1048.00	General Study
USGS	1091.94	11/22/1998	44.16	1047.78	General Study
USGS	1091.94	12/19/1998	44.34	1047.60	General Study
USGS	1091.94	3/9/1999	44.88	1047.06	General Study
USGS	1091.94	4/29/1999	44.96	1046.98	General Study
USGS	1091.94	6/14/1999	44.58	1047.36	General Study
USGS	1091.94	7/26/1999	44.03	1047.91	General Study
USGS	1091.94	8/21/1999	43.73	1048.21	General Study
USGS	1091.94	9/22/1999	43.58	1048.36	General Study
USGS	1091.94	10/25/1999	43.62	1048.32	General Study
USGS	1091.94	11/19/1999	43.70	1048.24	General Study
USGS	1091.94	12/31/1999	44.00	1047.94	General Study
USGS	1091.94	1/22/2000	44.15	1047.79	General Study
USGS	1091.94	2/21/2000	44.38	1047.56	General Study
USGS	1091.94	3/18/2000	44.43	1047.51	General Study
USGS	1091.94	6/17/2000	44.59	1047.35	General Study
USGS	1091.94	9/25/2000	43.97	1047.97	General Study
USGS	1091.94	11/30/2000	43.93	1048.01	General Study
USGS	1091.94	3/9/2001	44.45	1047.49	General Study
USGS	1091.94	6/1/2001	44.24	1047.70	General Study
USGS	1091.94	9/12/2001	43.36	1048.58	General Study
USGS	1091.94	12/11/2001	44.70	1047.24	General Study
USGS	1091.94	3/27/2002	44.93	1047.01	General Study
USGS	1091.94	6/11/2002	43.83	1048.11	General Study

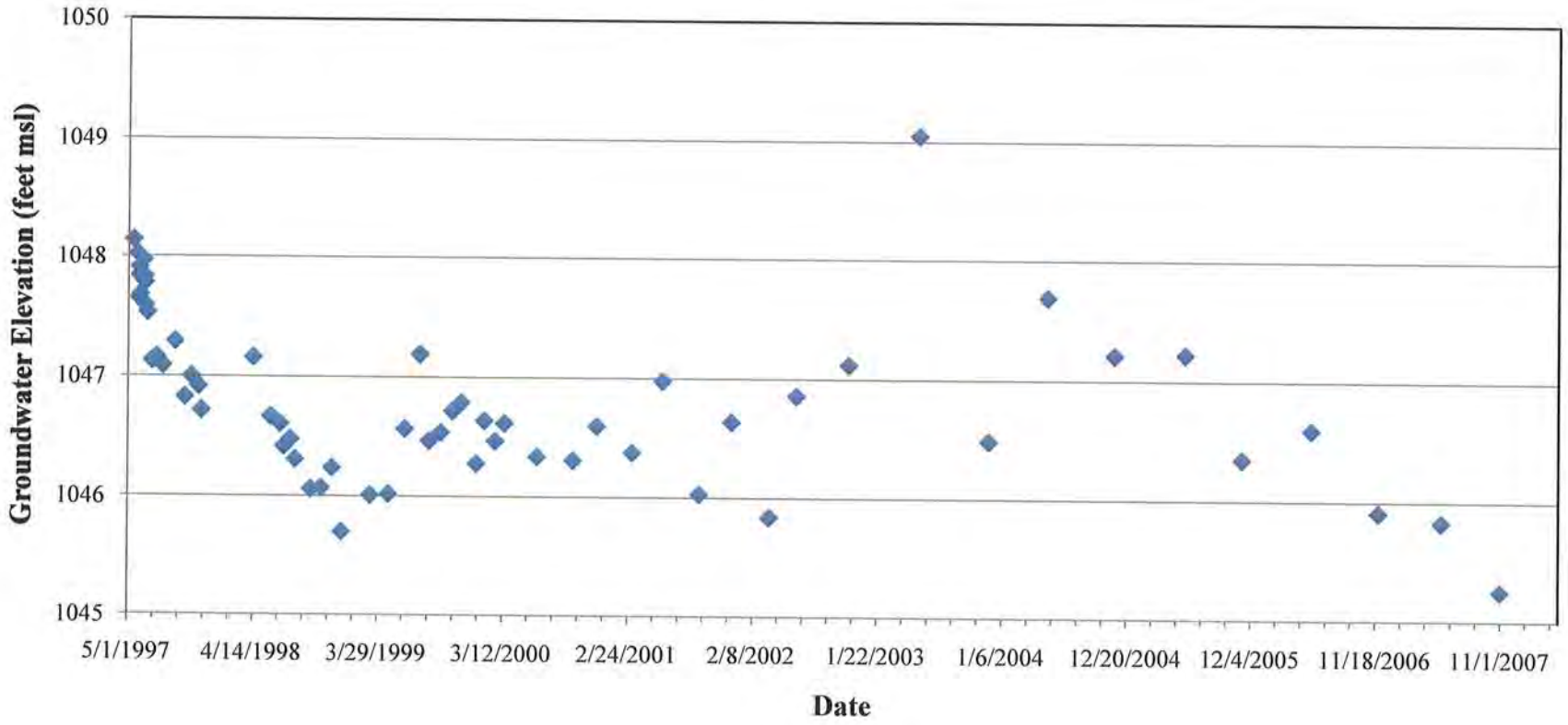
Footnotes on Page 184.

Table J-1. Groundwater Elevations, Ford/Kingsford Site, Kingsford, Michigan.

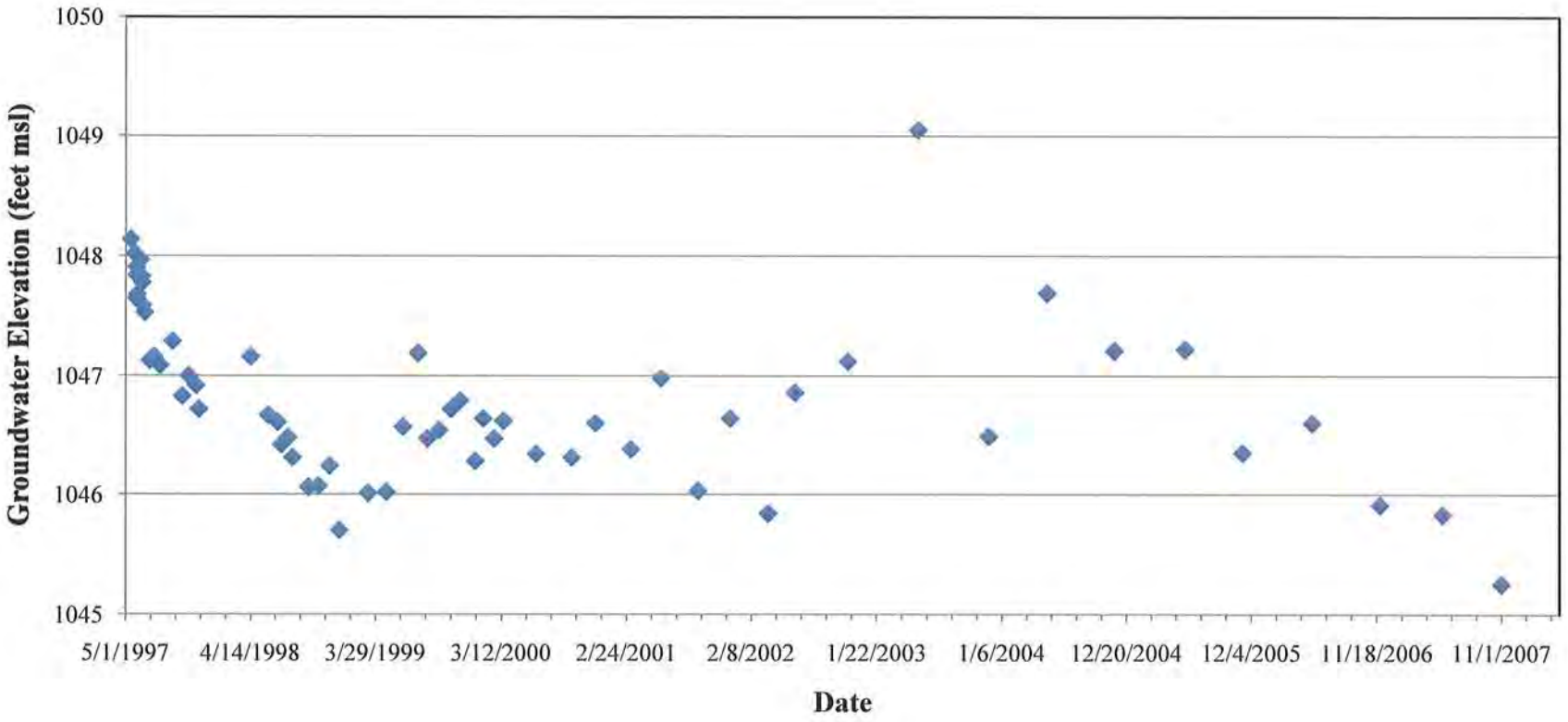
Well/ Boring	TOC Elevation (ft msl)	Date	DTW	Groundwater Elevation (ft msl)	Area
USGS	1091.94	11/5/2002	43.10	1048.84	General Study
USGS	1091.94	5/19/2003	43.04	1048.90	General Study
USGS	1091.94	12/1/2003	43.34	1048.60	General Study
USGS	1091.94	5/13/2004	43.10	1048.84	General Study
USGS	1091.94	11/16/2004	42.57	1049.37	General Study
USGS	1091.94	6/2/2005	43.18	1048.76	General Study
USGS	1091.94	11/10/2005	43.79	1048.15	General Study
USGS	1091.94	5/24/2006	44.21	1047.73	General Study
USGS	1091.94	11/27/2006	44.31	1047.63	General Study
USGS	1091.94	5/22/2007	44.73	1047.21	General Study
USGS	1091.94	11/1/2007	45.41	1046.53	General Study

DTW Depth to water.
ft msl Feet above mean sea level.
TOC Top of Casing.

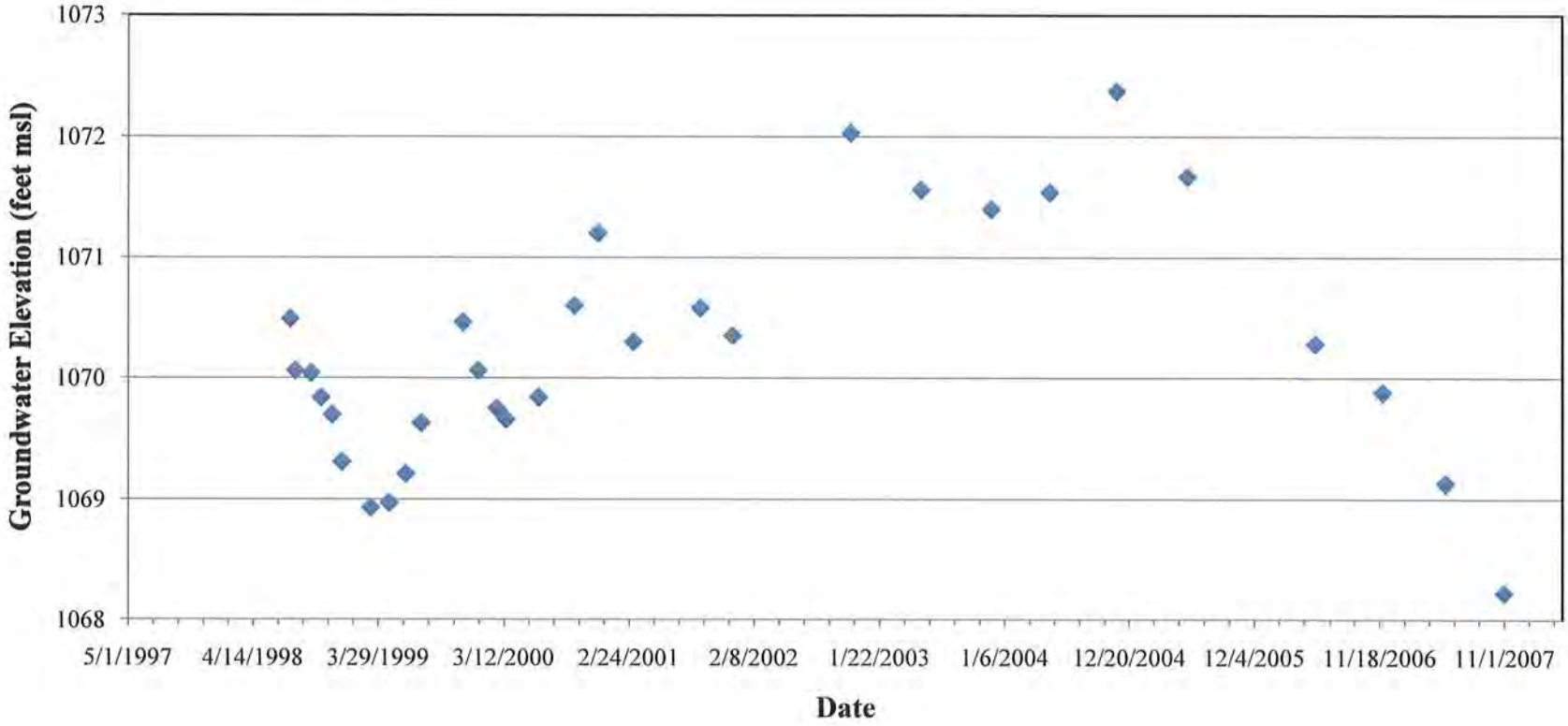
Groundwater Elevations in Well GM-2B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 271-281 Feet Below Ground Surface



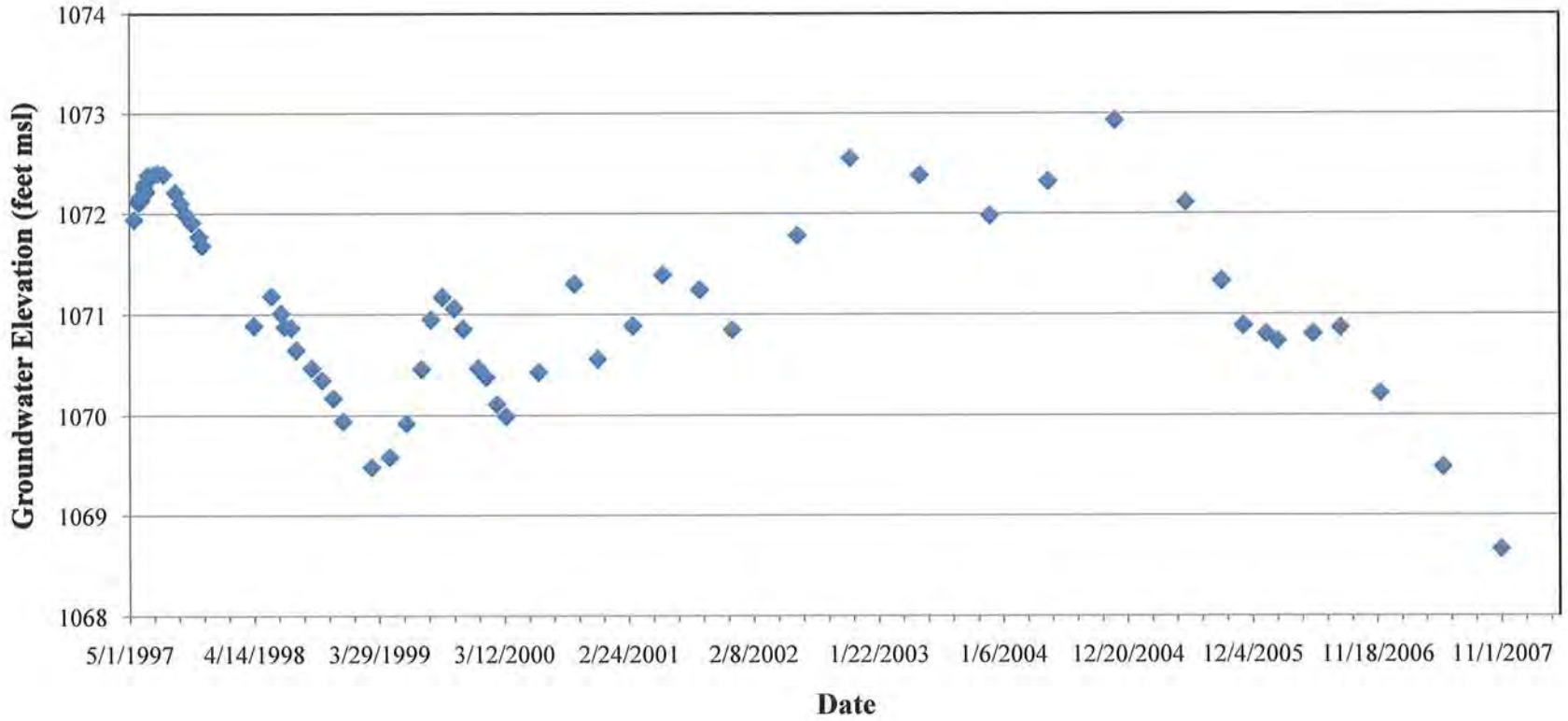
Groundwater Elevations in Well GM-2B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 271-281 Feet Below Ground Surface



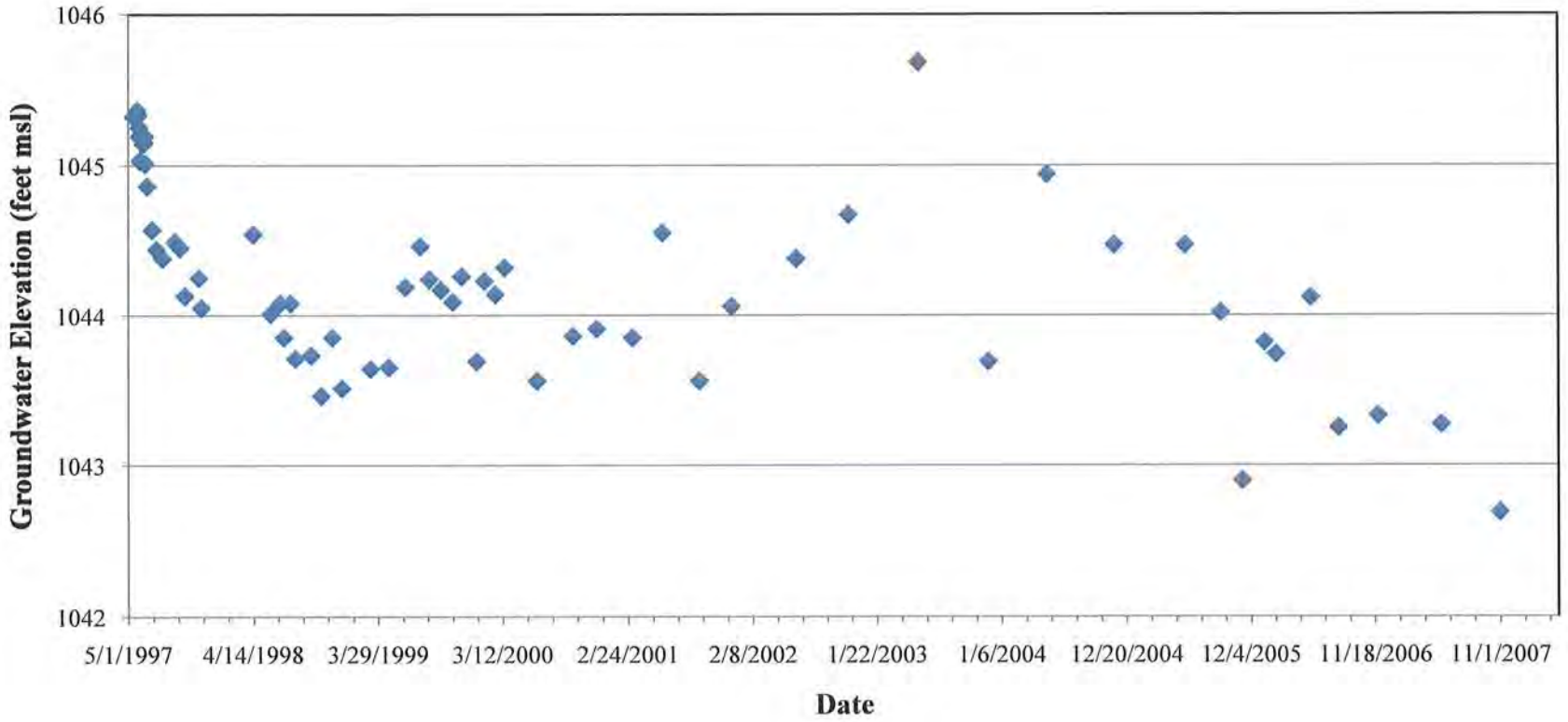
Groundwater Elevations in Well GM-2C
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 64-74 Feet Below Ground Surface



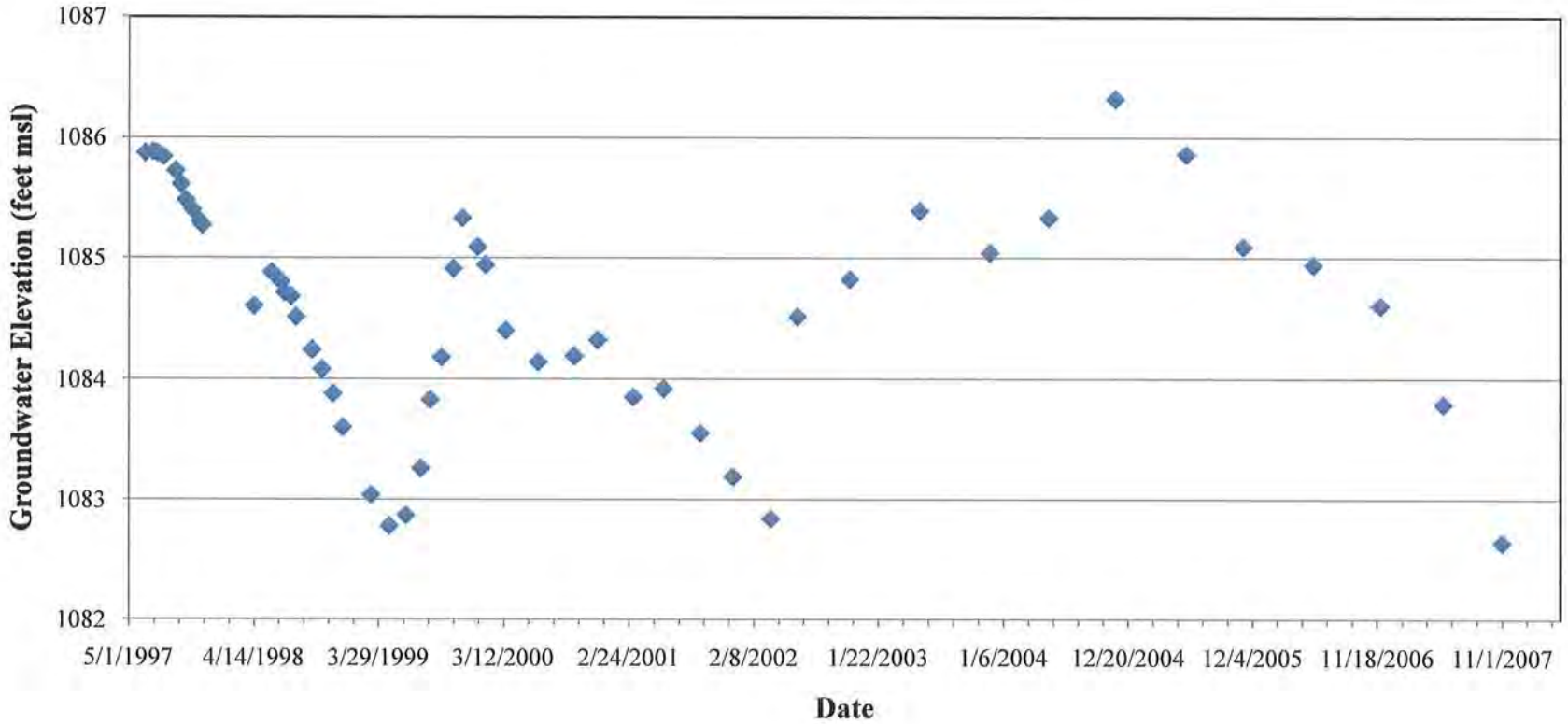
Groundwater Elevations in Well GM-3A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 74-84 Feet Below Ground Surface



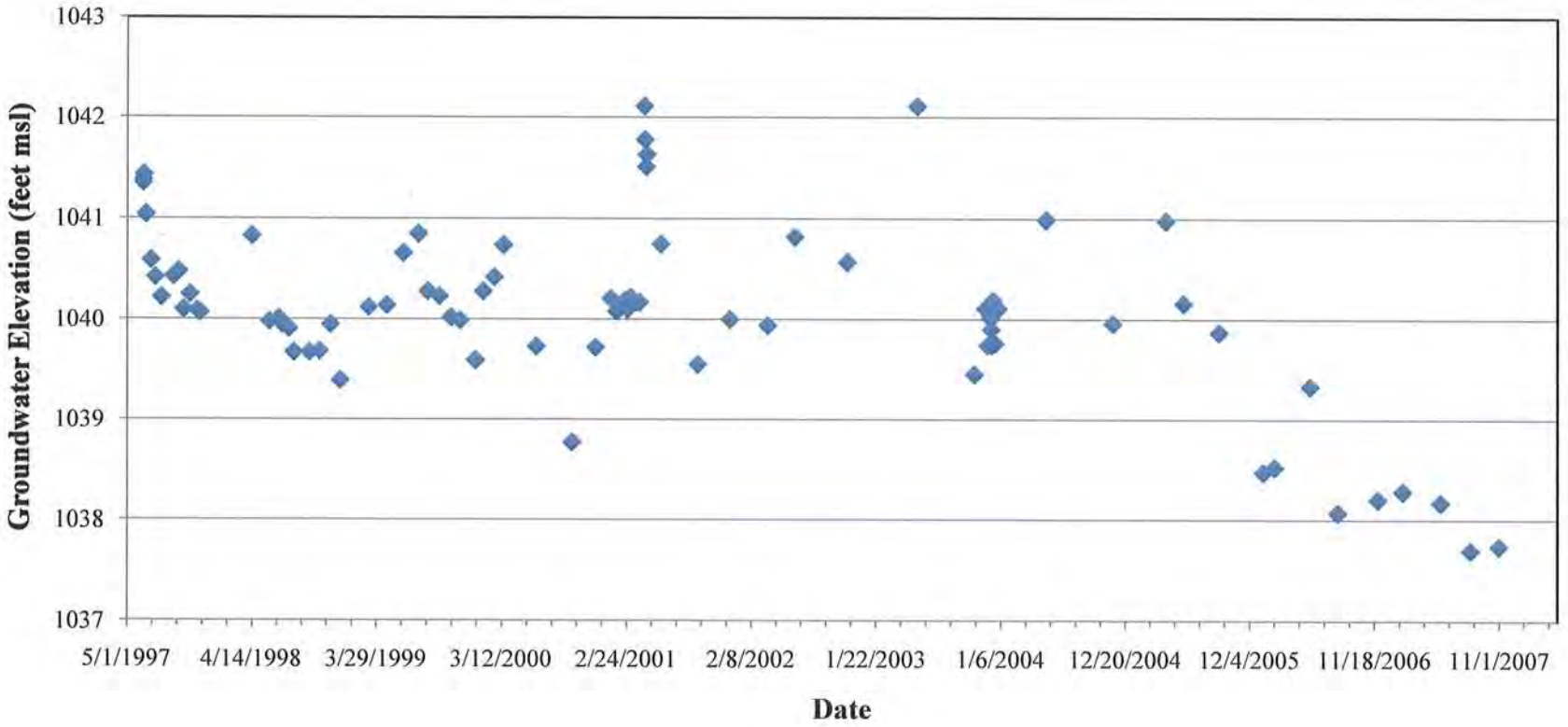
Groundwater Elevations in Well GM-3A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 74-84 Feet Below Ground Surface



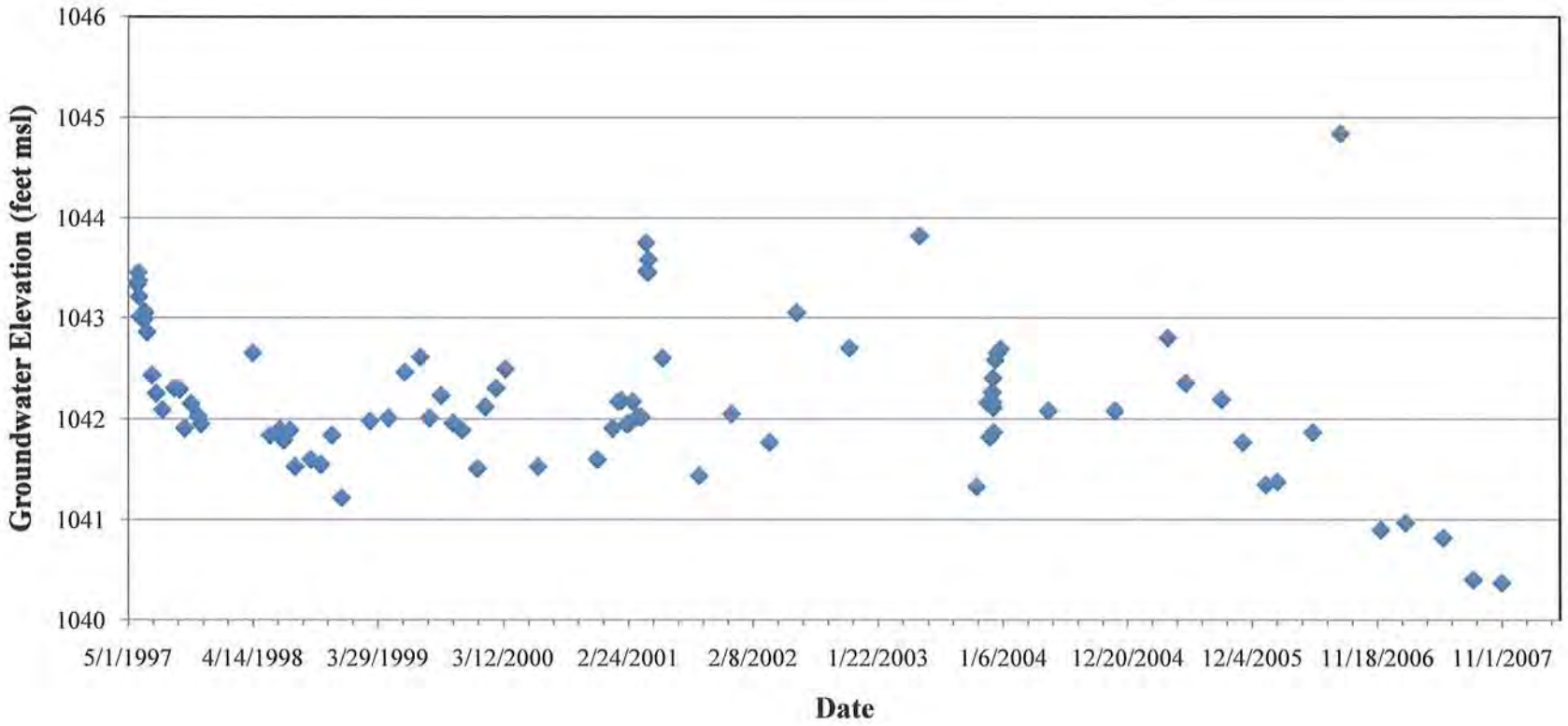
Groundwater Elevations in Well GM-4
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 76-86 Feet Below Ground Surface



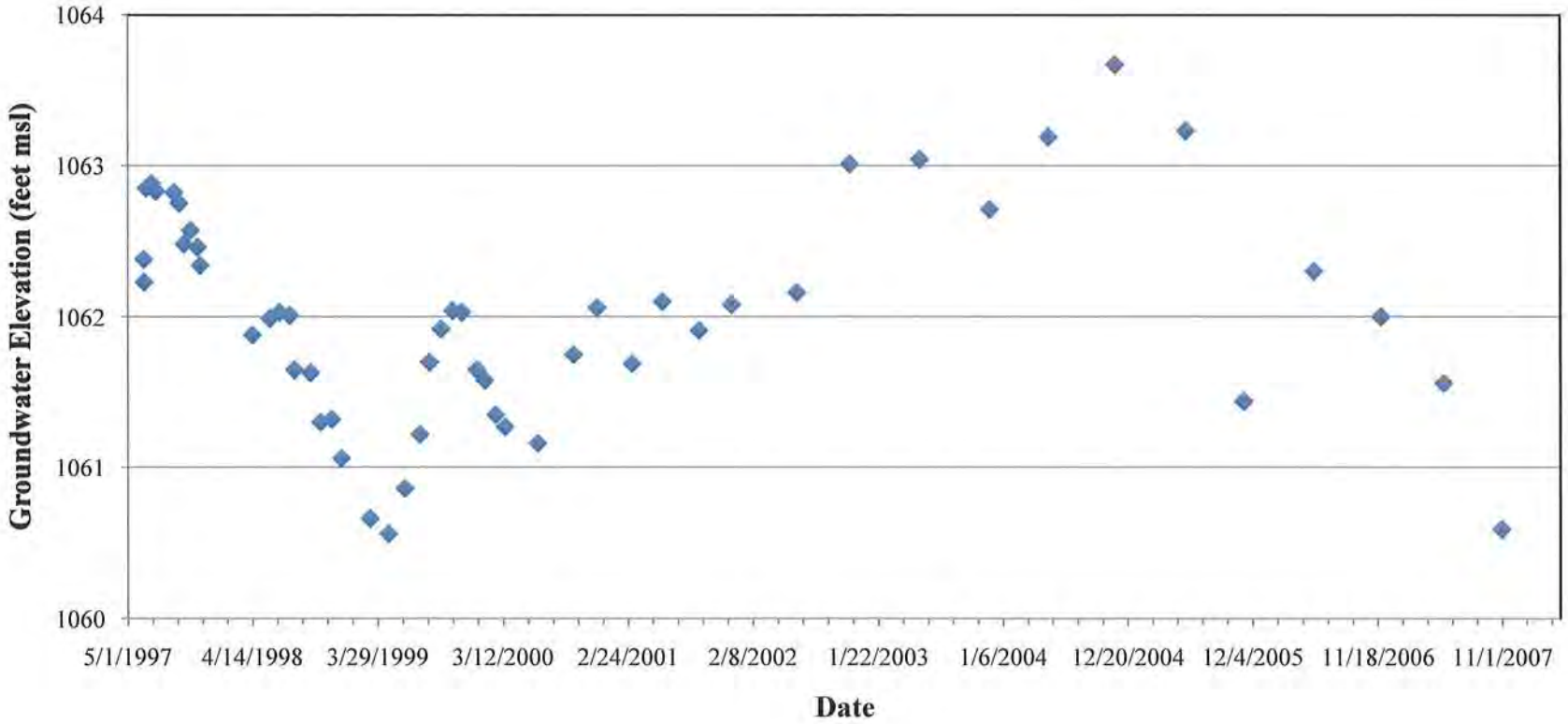
Groundwater Elevations in Well GM-5
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 250-260 Feet Below Ground Surface



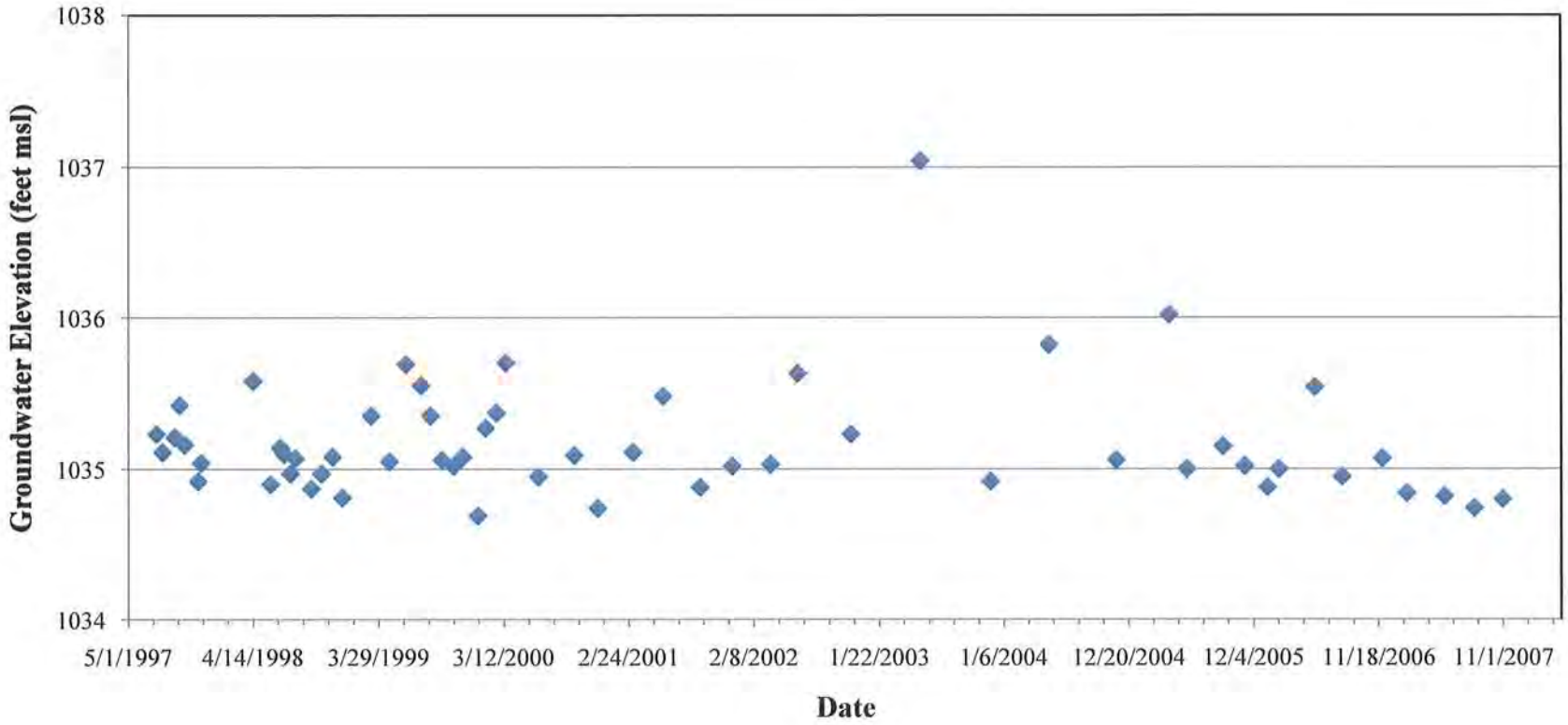
Groundwater Elevations in Well GM-6
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 165-175 Feet Below Ground Surface



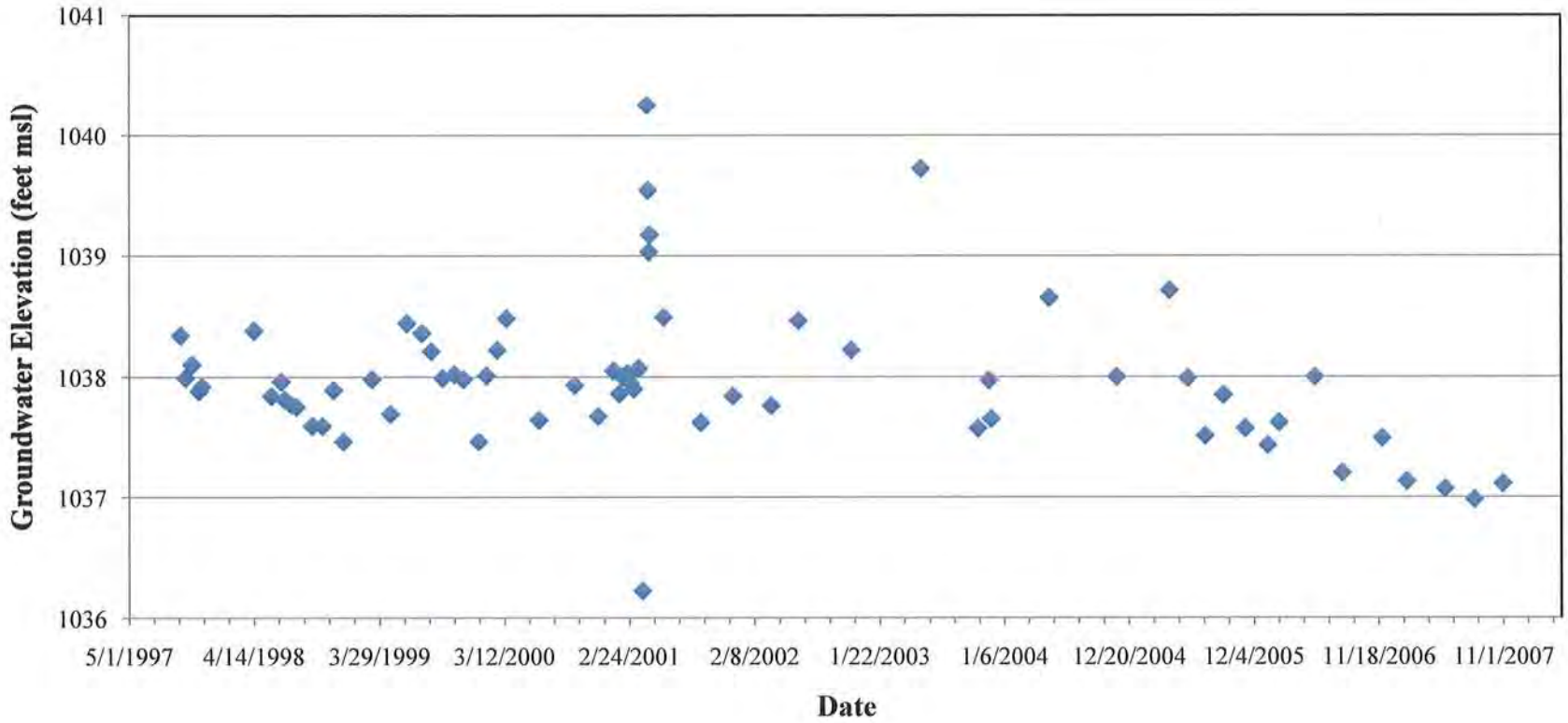
Groundwater Elevations in Well GM-7
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 145-155 Feet Below Ground Surface



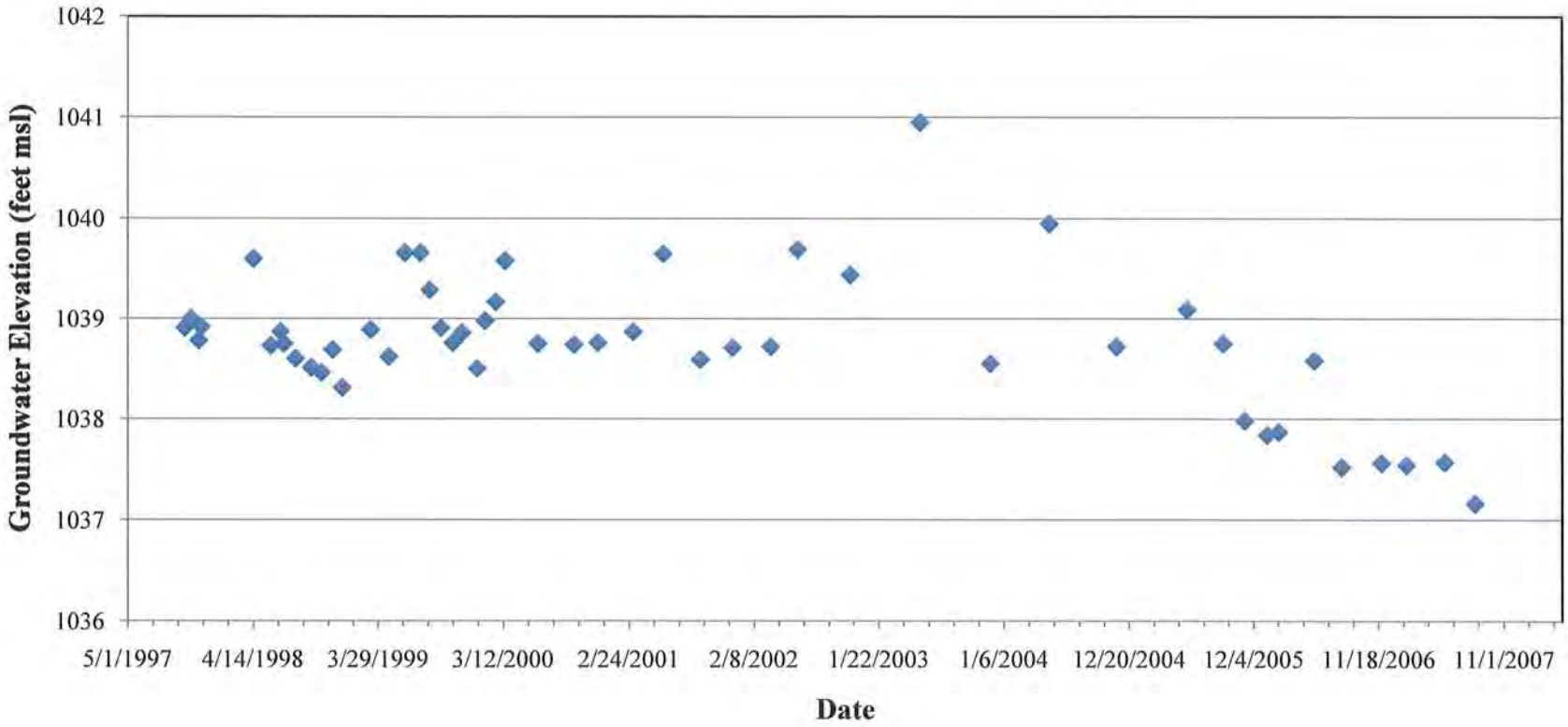
Groundwater Elevations in Well GM-8
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 79-89 Feet Below Ground Surface



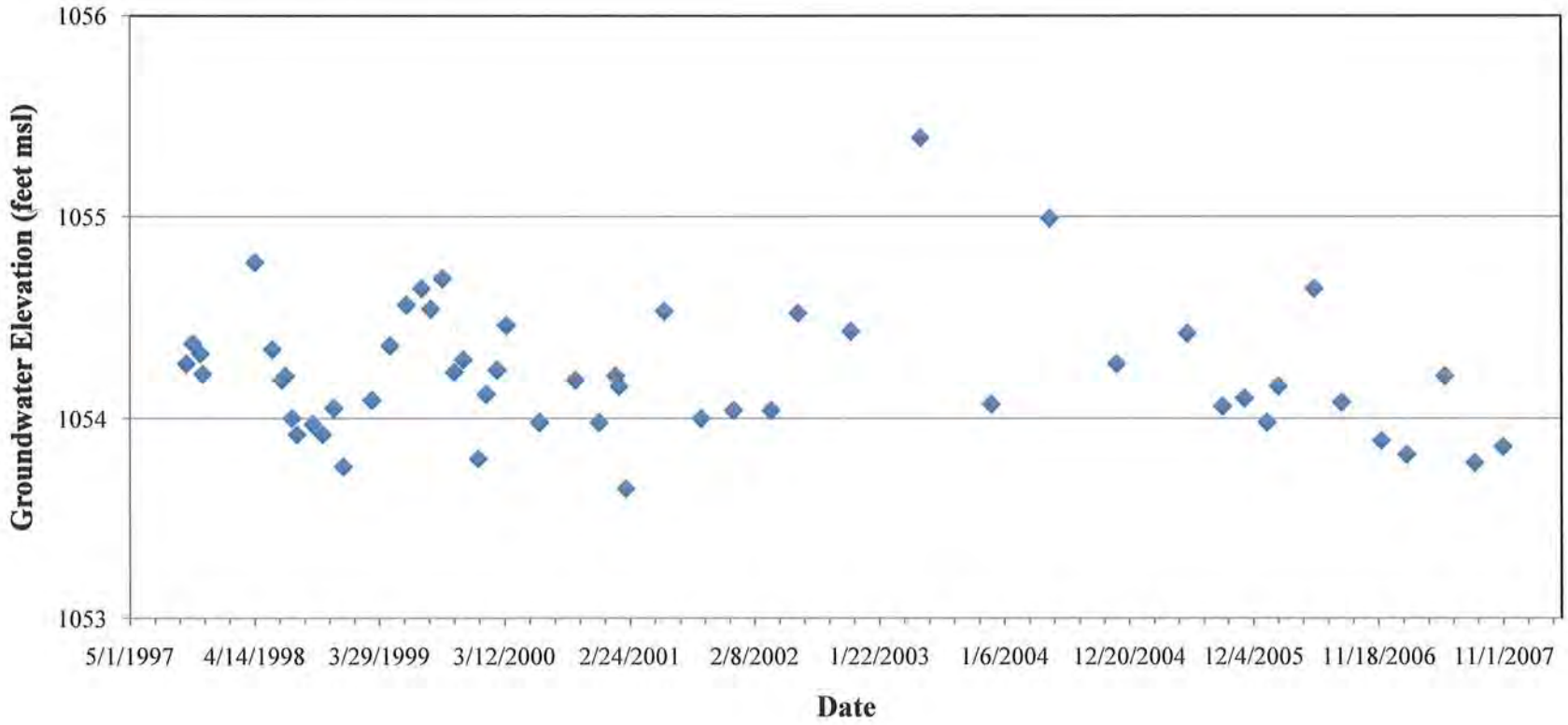
Groundwater Elevations in Well GM-9
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 164-174 Feet Below Ground Surface



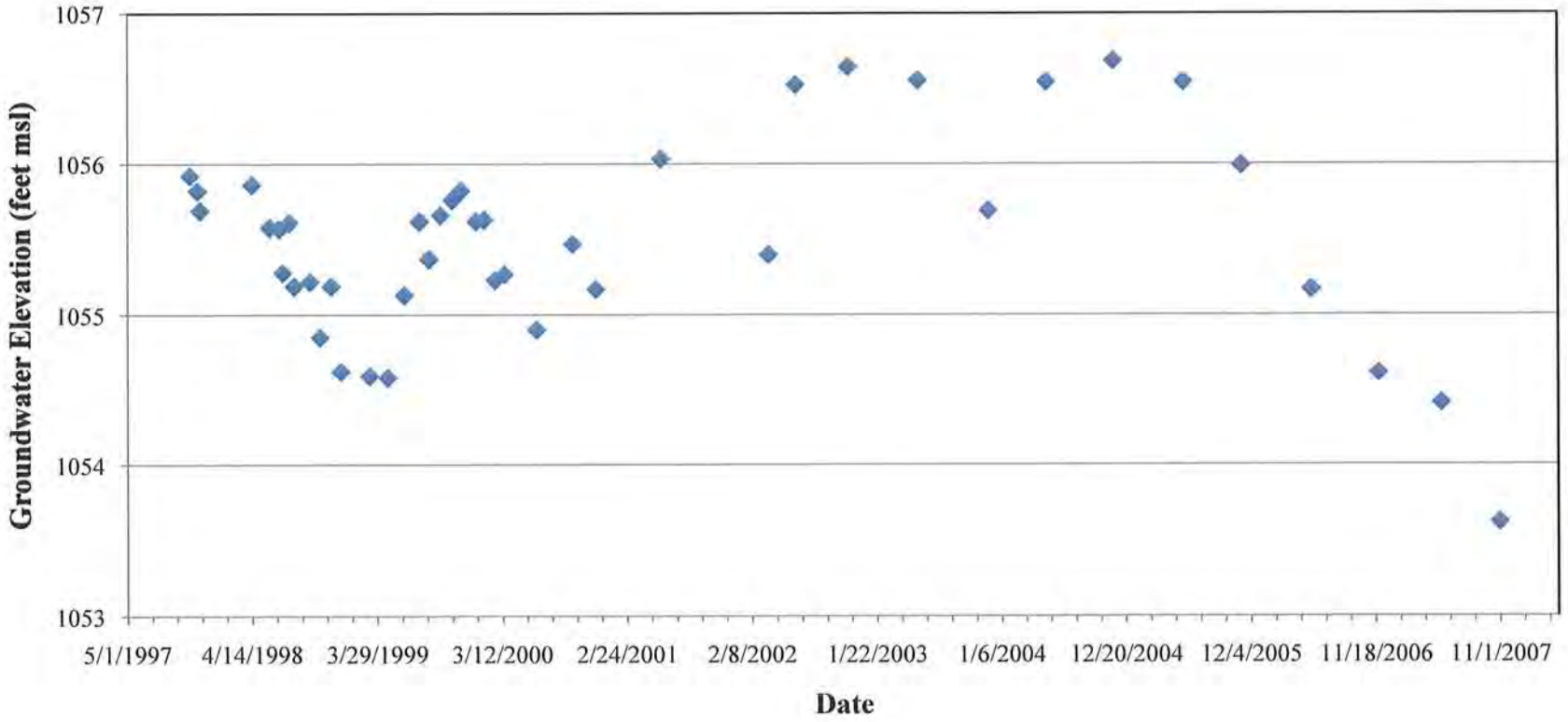
Groundwater Elevations in Well GM-10
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 170-180 Feet Below Ground Surface



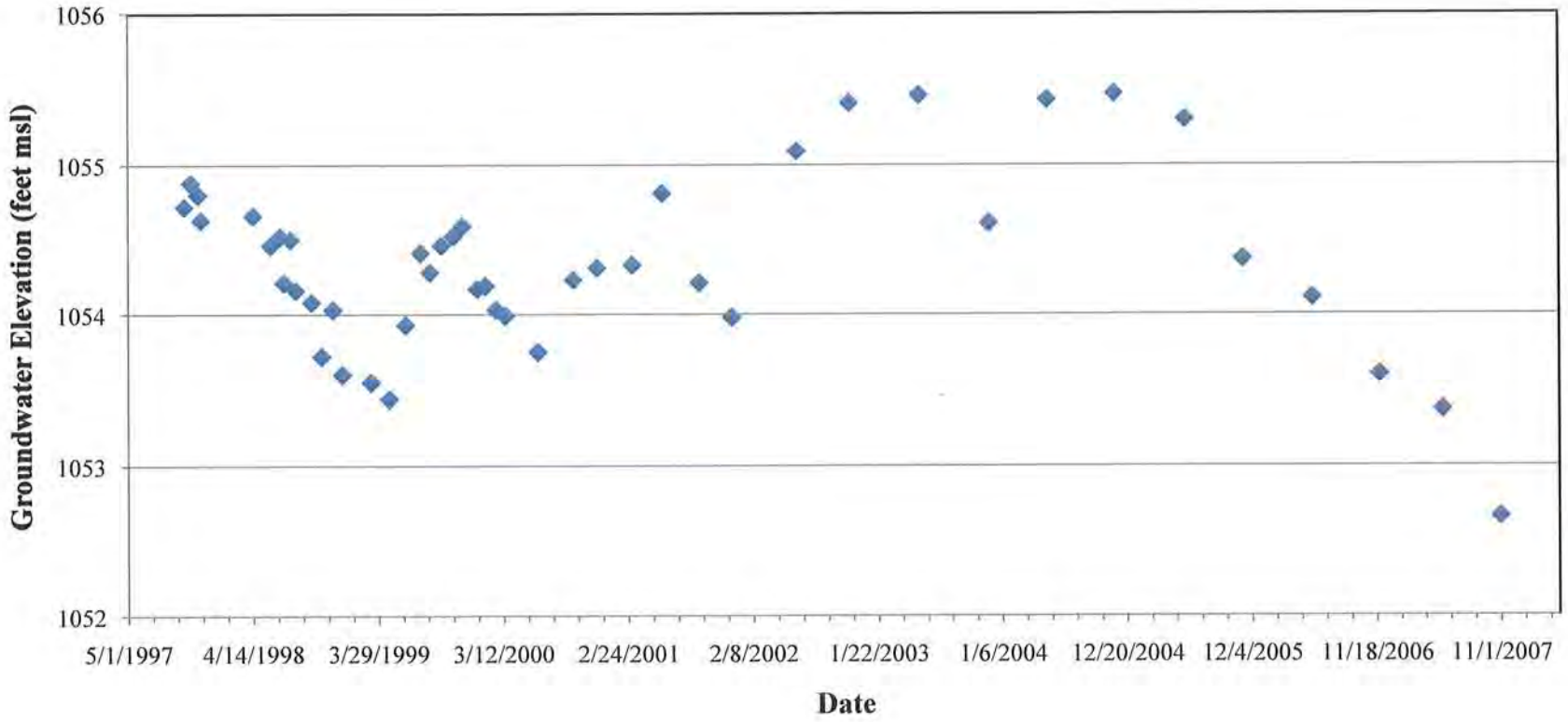
Groundwater Elevations in Well GM-11
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 174.7-184.7 Feet Below Ground Surface



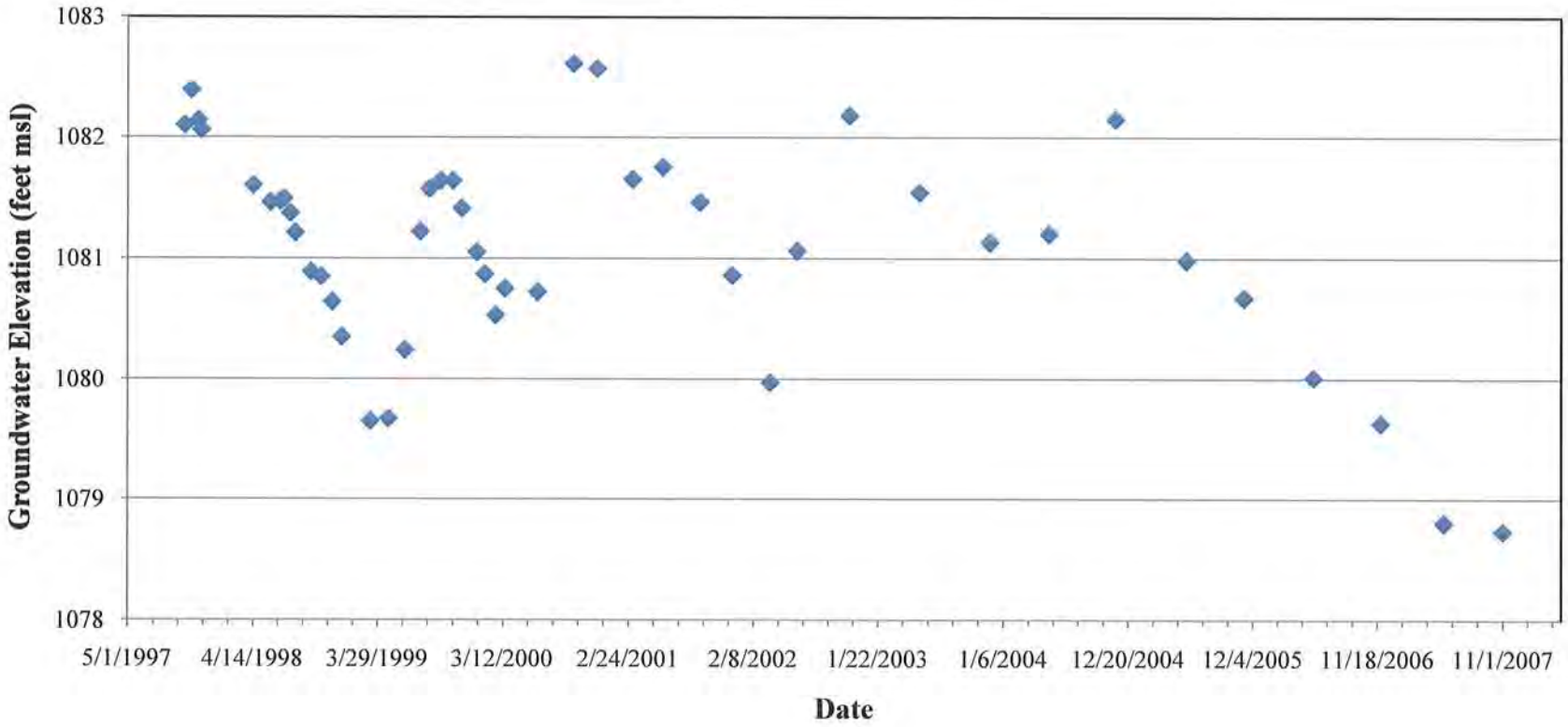
Groundwater Elevations in Well GM-12
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 290-300 Feet Below Ground Surface



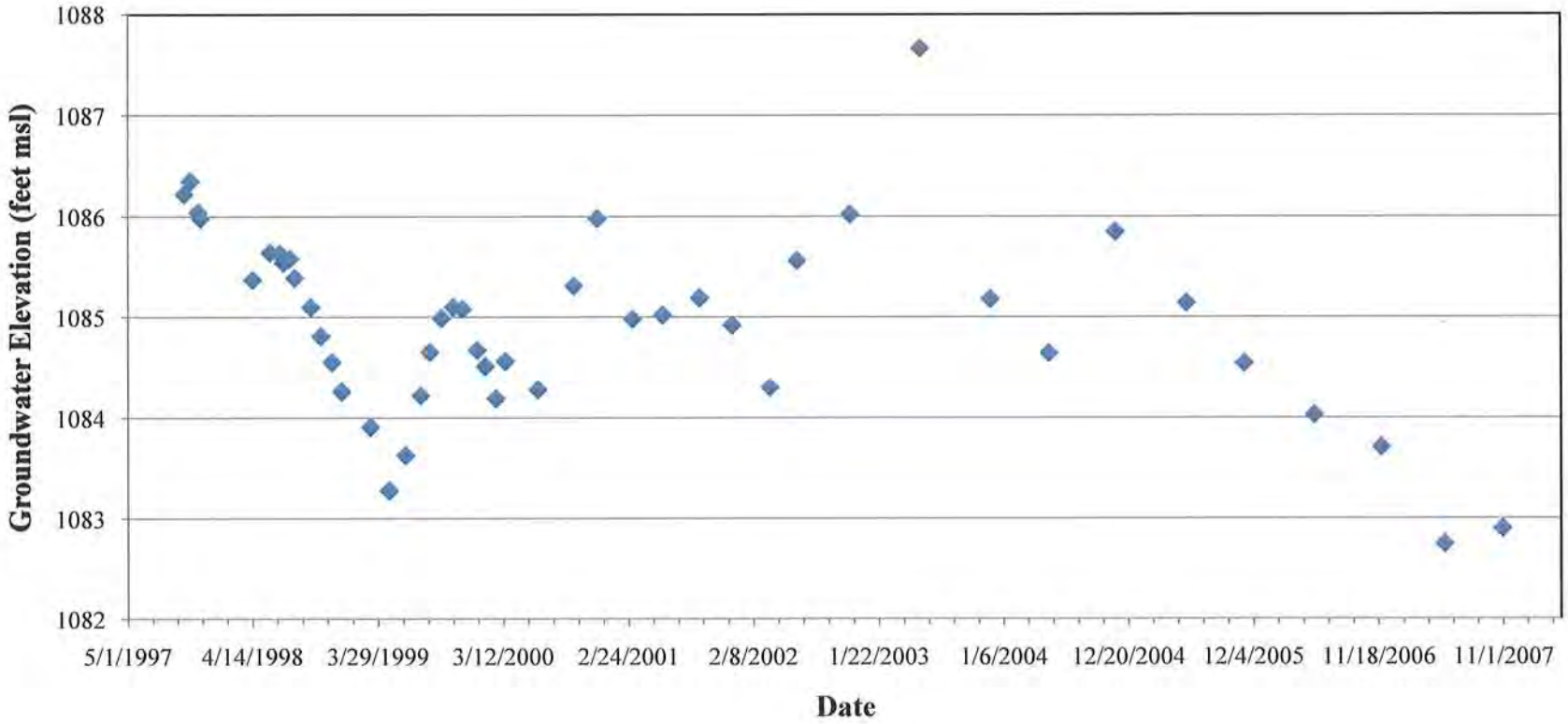
Groundwater Elevations in Well GM-13
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 325-335 Feet Below Ground Surface



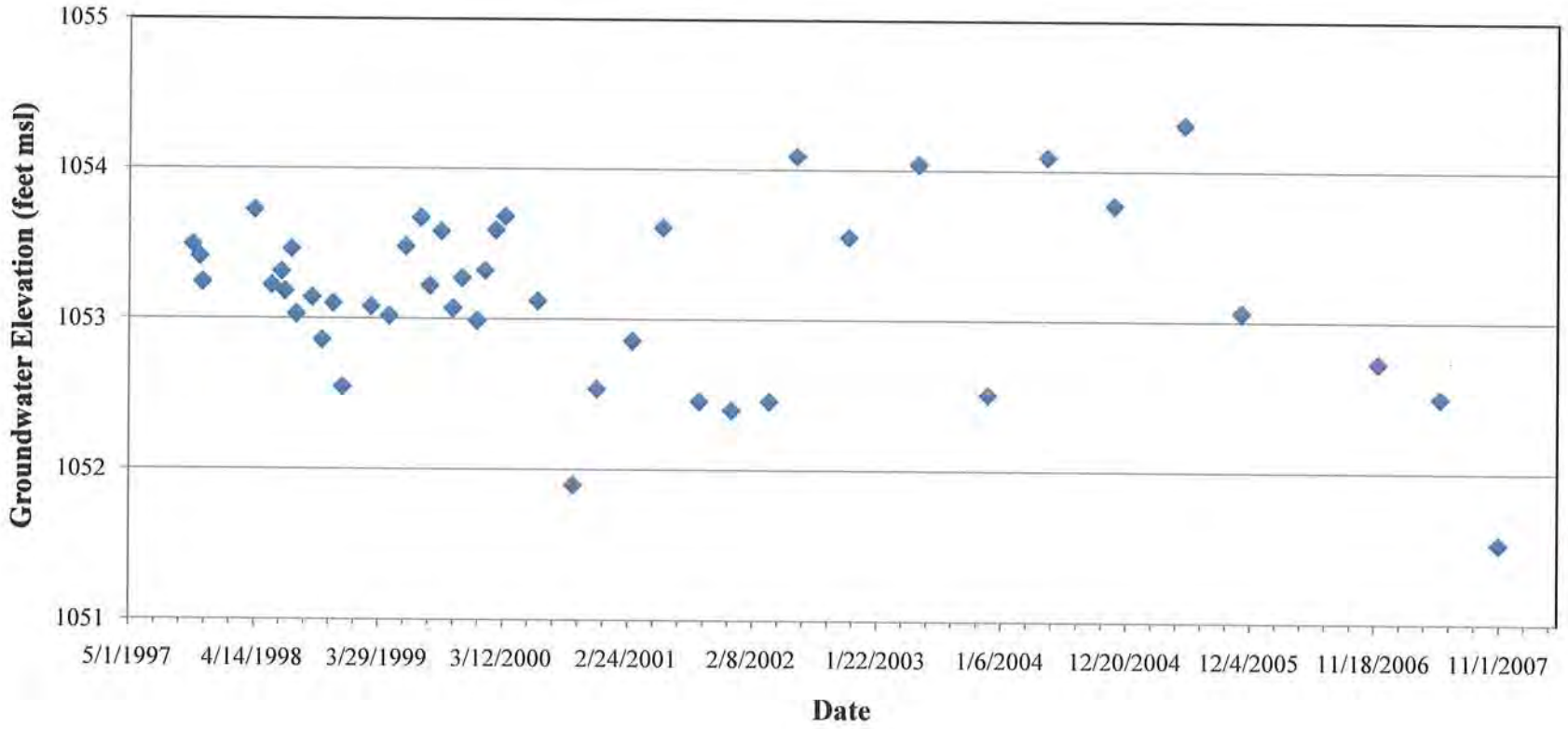
Groundwater Elevations in Well GM-14
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 135-145 Feet Below Ground Surface



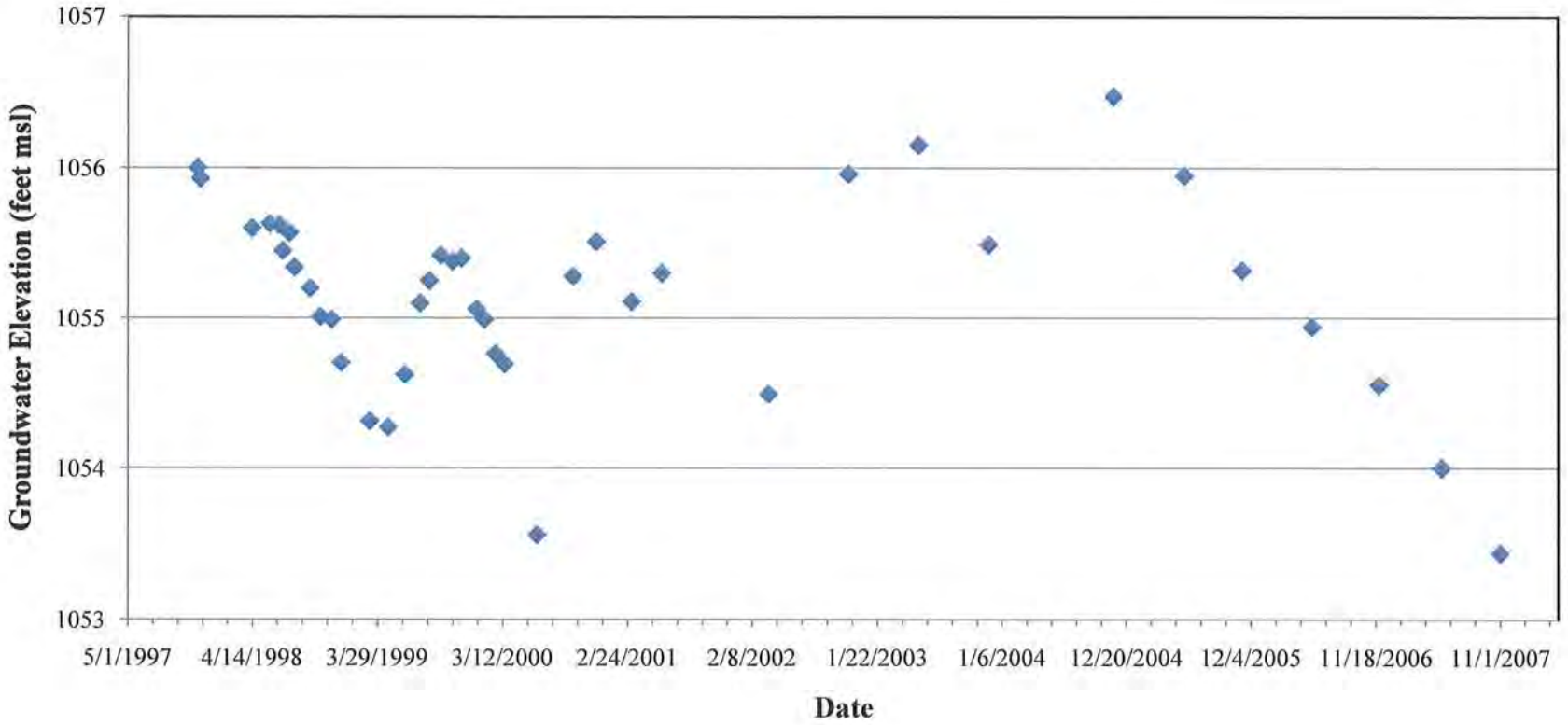
Groundwater Elevations in Well GM-15
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 165-175 Feet Below Ground Surface



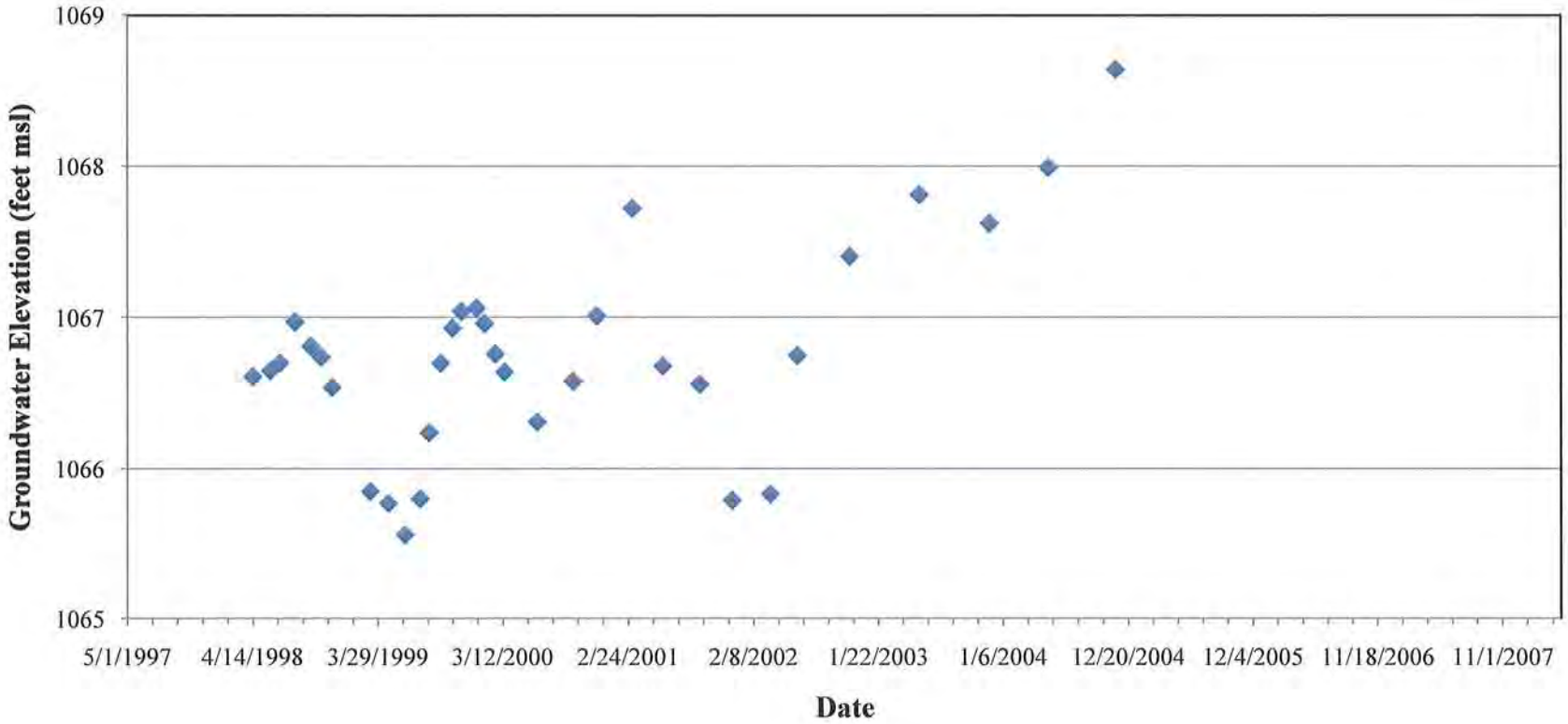
Groundwater Elevations in Well GM-16
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 108-118 Feet Below Ground Surface



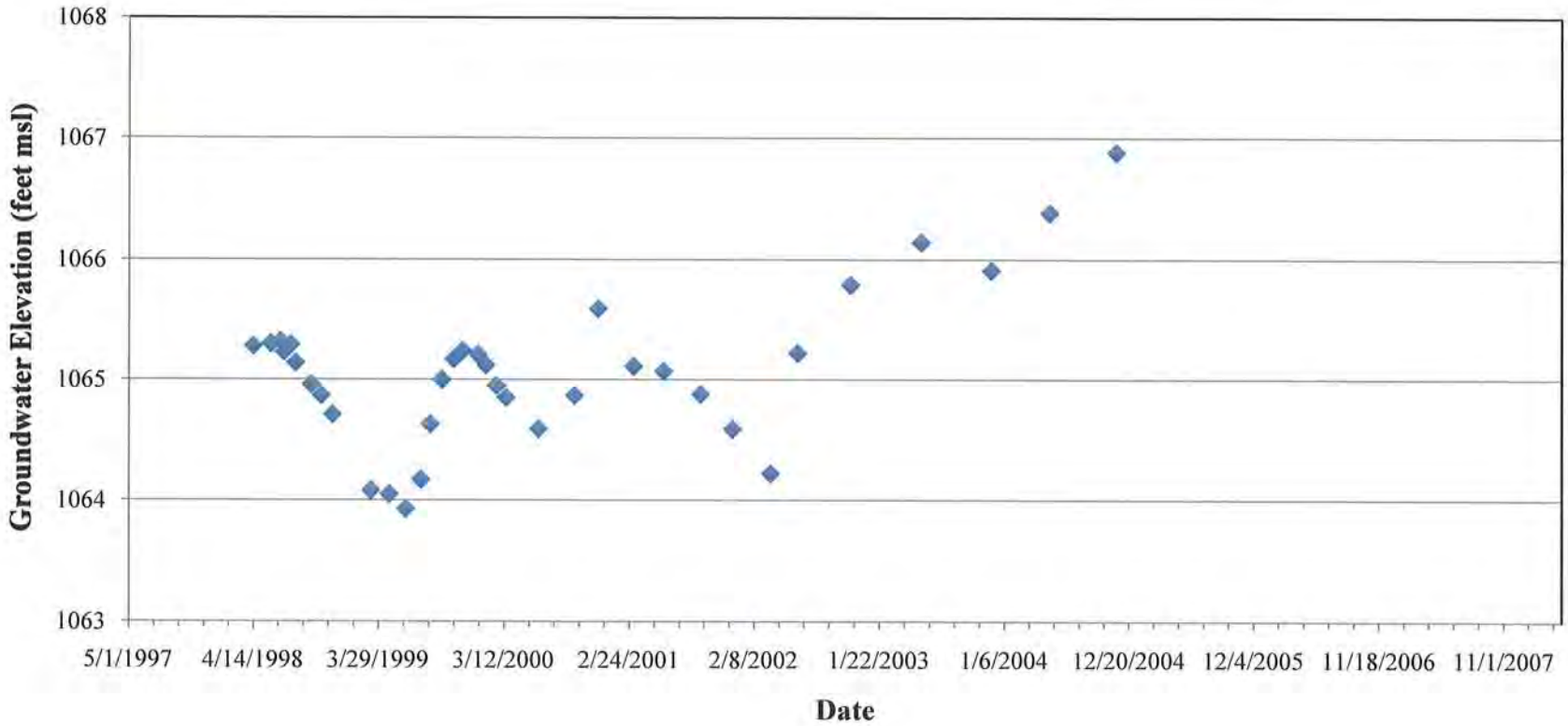
Groundwater Elevations in Well GM-17
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 224.3-234.3 Feet Below Ground Surface



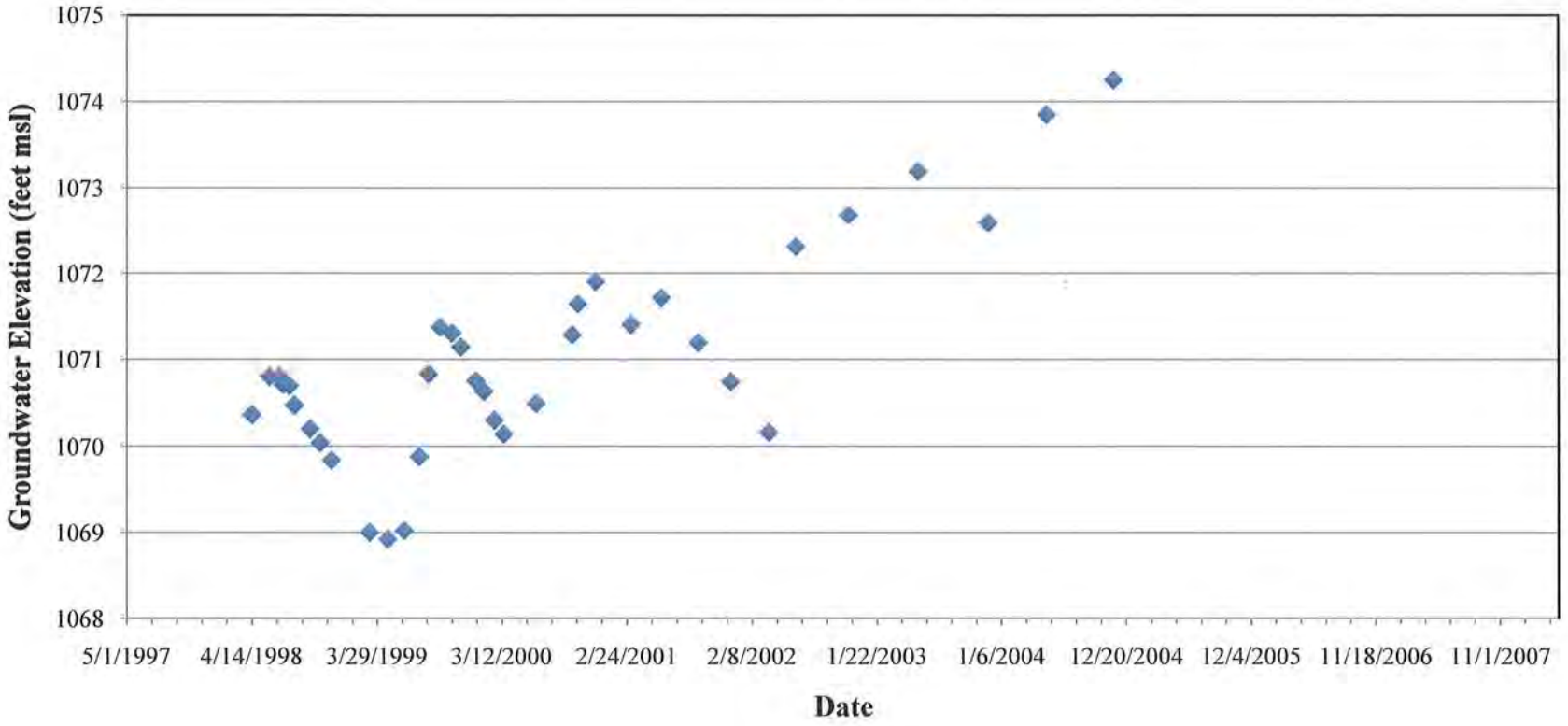
Groundwater Elevations in Well GM-18
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 50-60 Feet Below Ground Surface



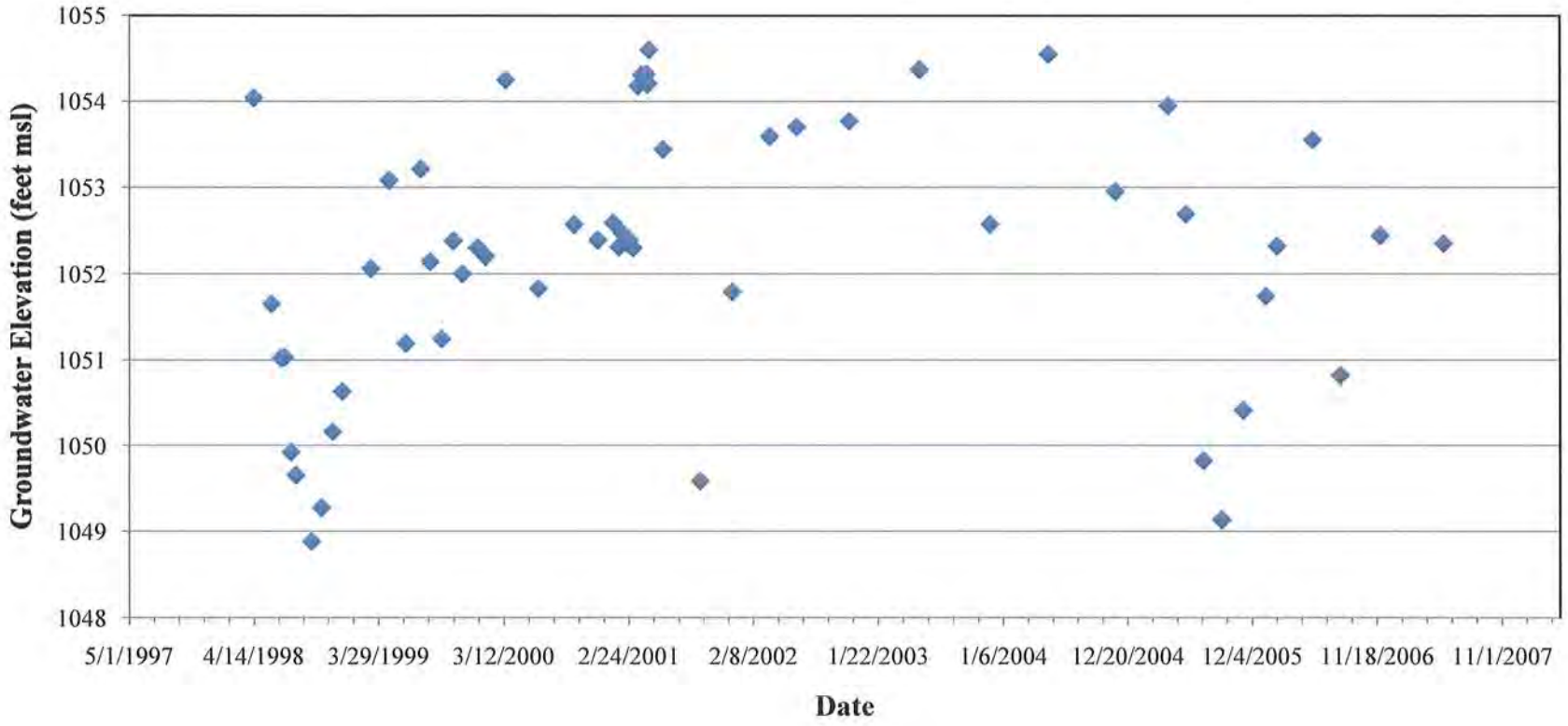
Groundwater Elevations in Well GM-19
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 46-56 Feet Below Ground Surface



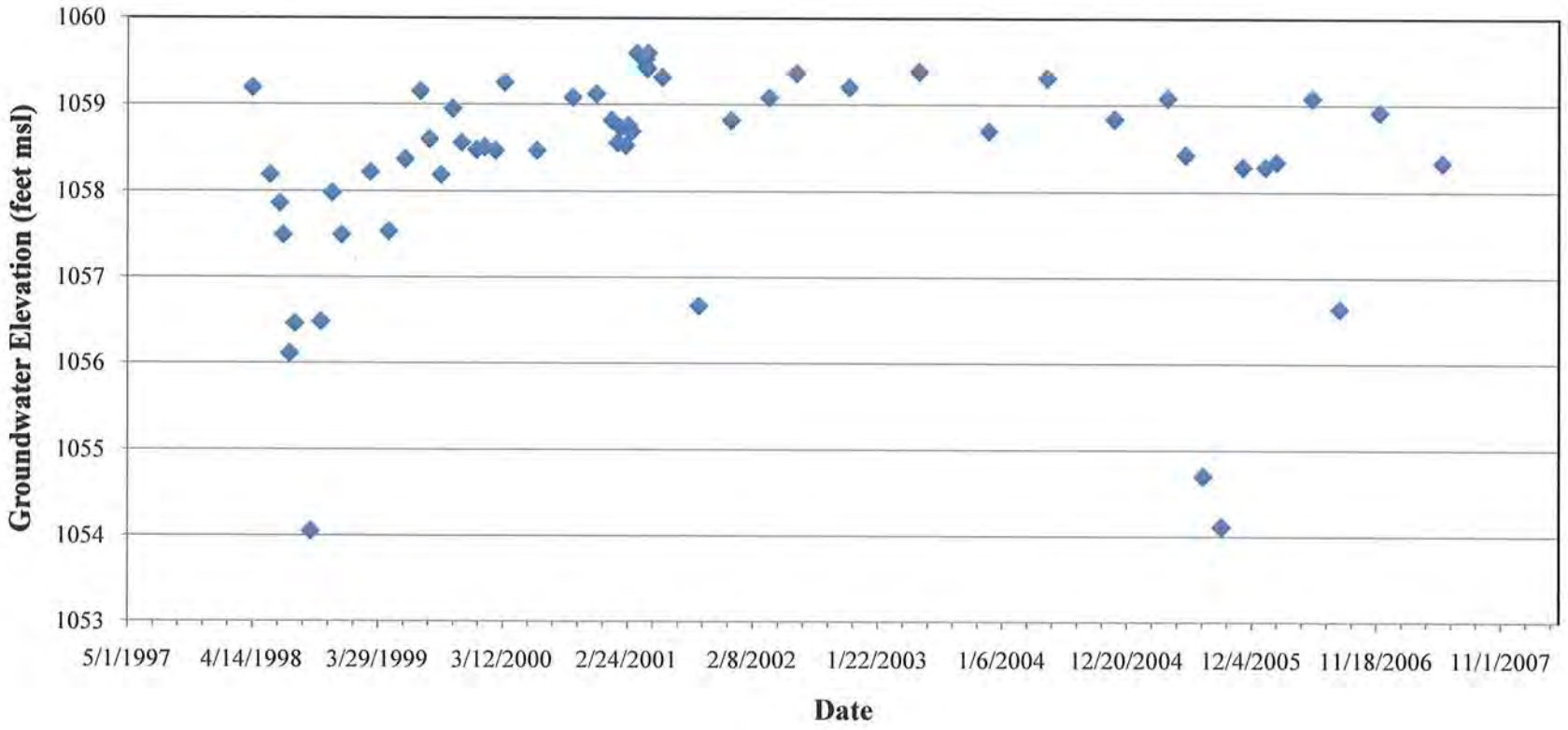
Groundwater Elevations in Well GM-20
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 42-52 Feet Below Ground Surface



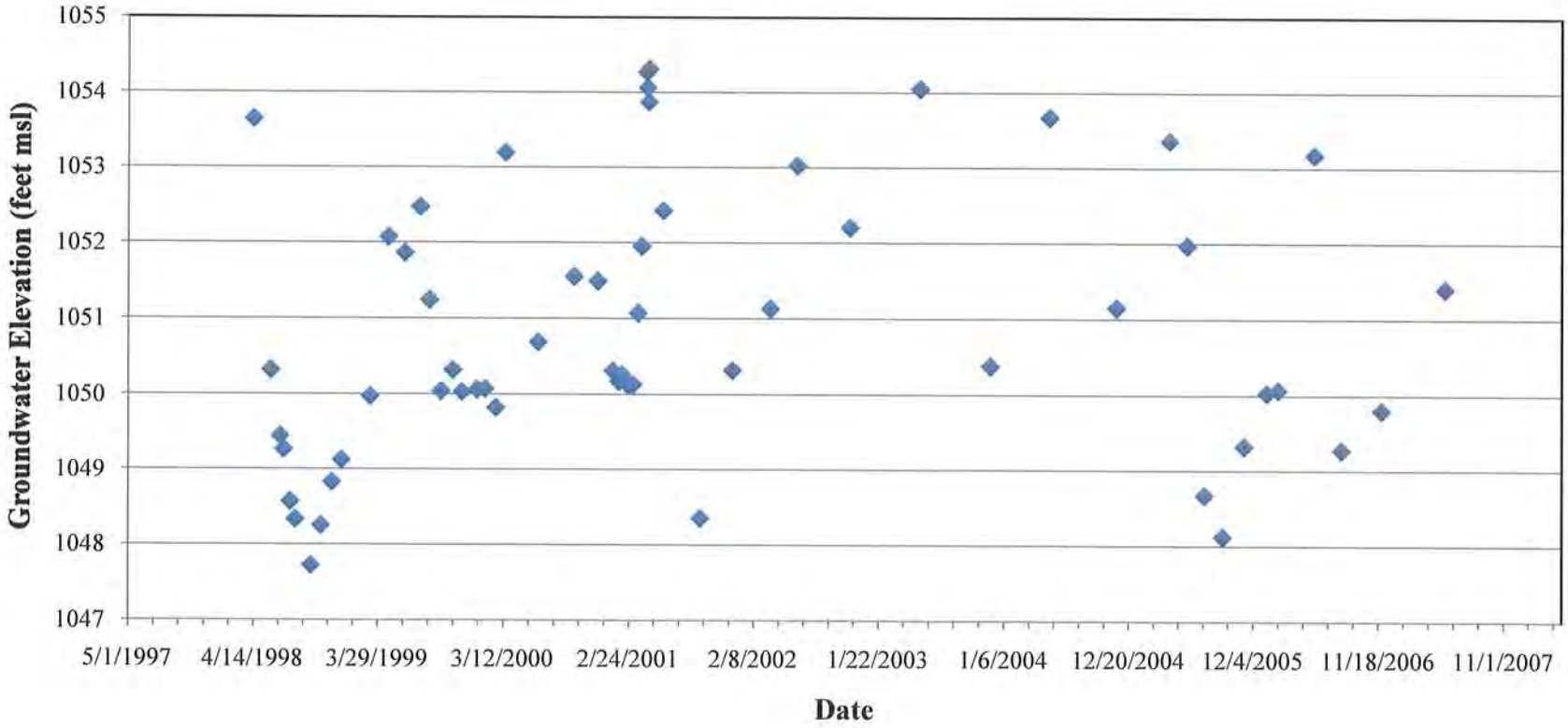
Groundwater Elevations in Well GM-21
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 5-15 Feet Below Ground Surface



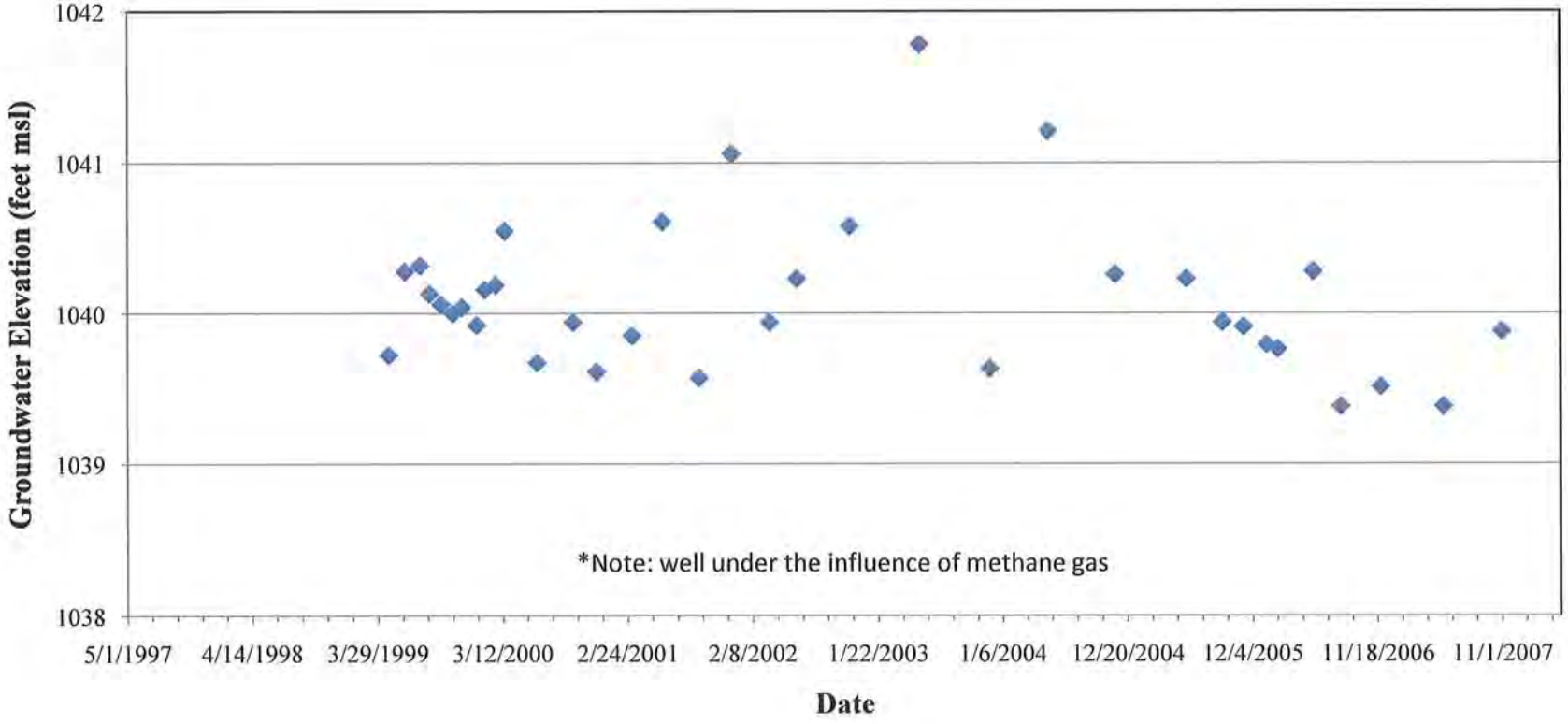
Groundwater Elevations in Well GM-22
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 6-16 Feet Below Ground Surface



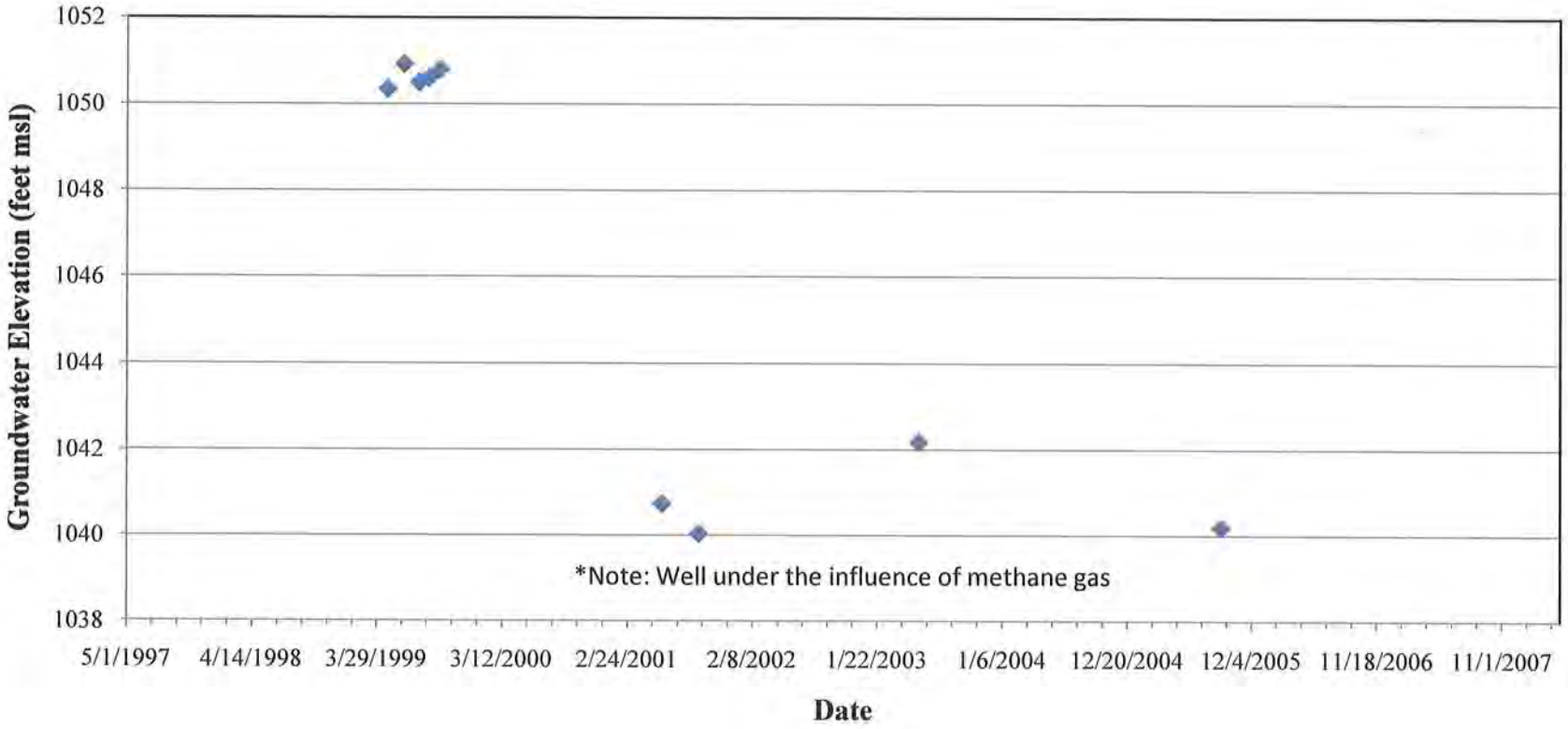
Groundwater Elevations in Well GM-23
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 3.5-13.5 Feet Below Ground Surface



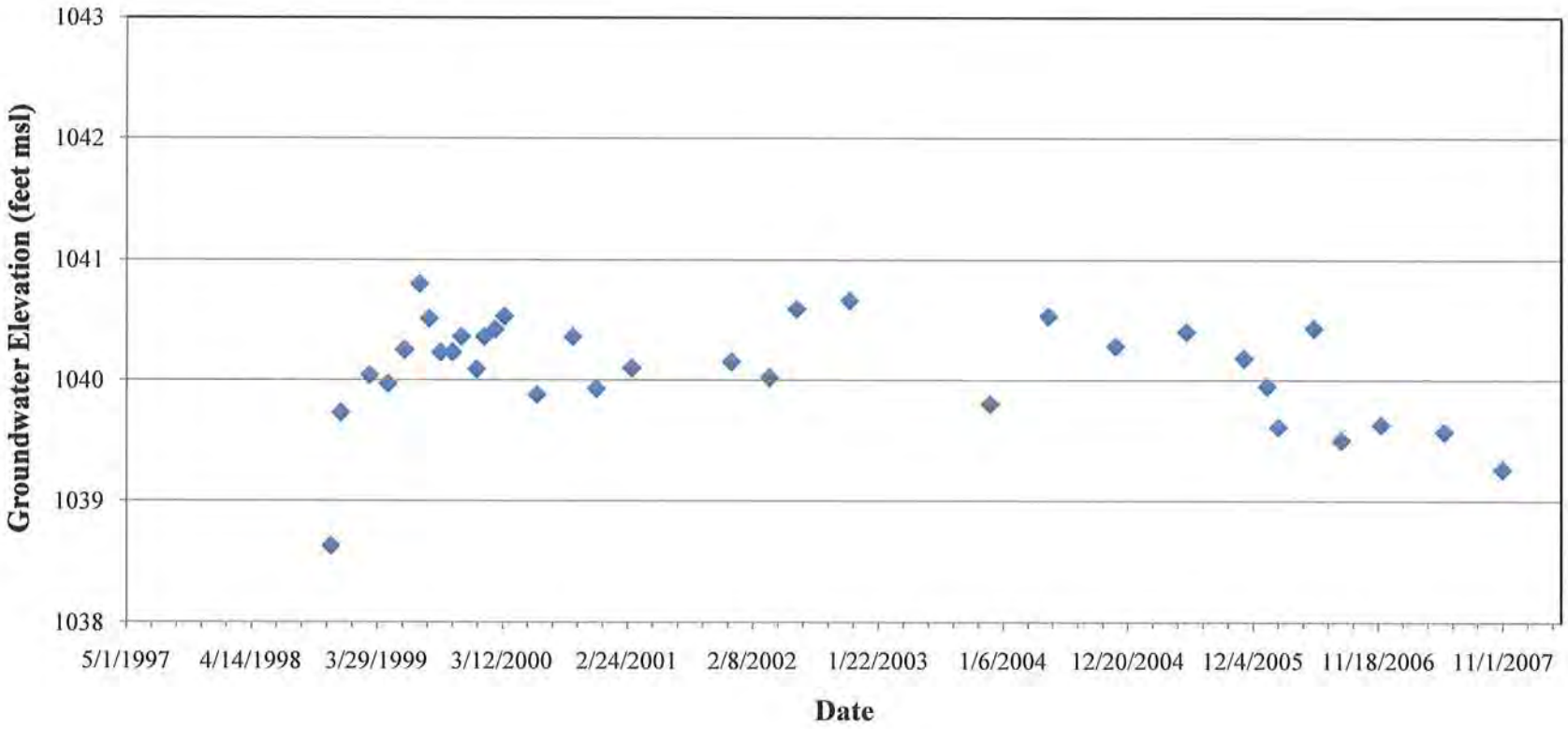
Groundwater Elevations in Well GM-24A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 71-81 Feet Below Ground Surface



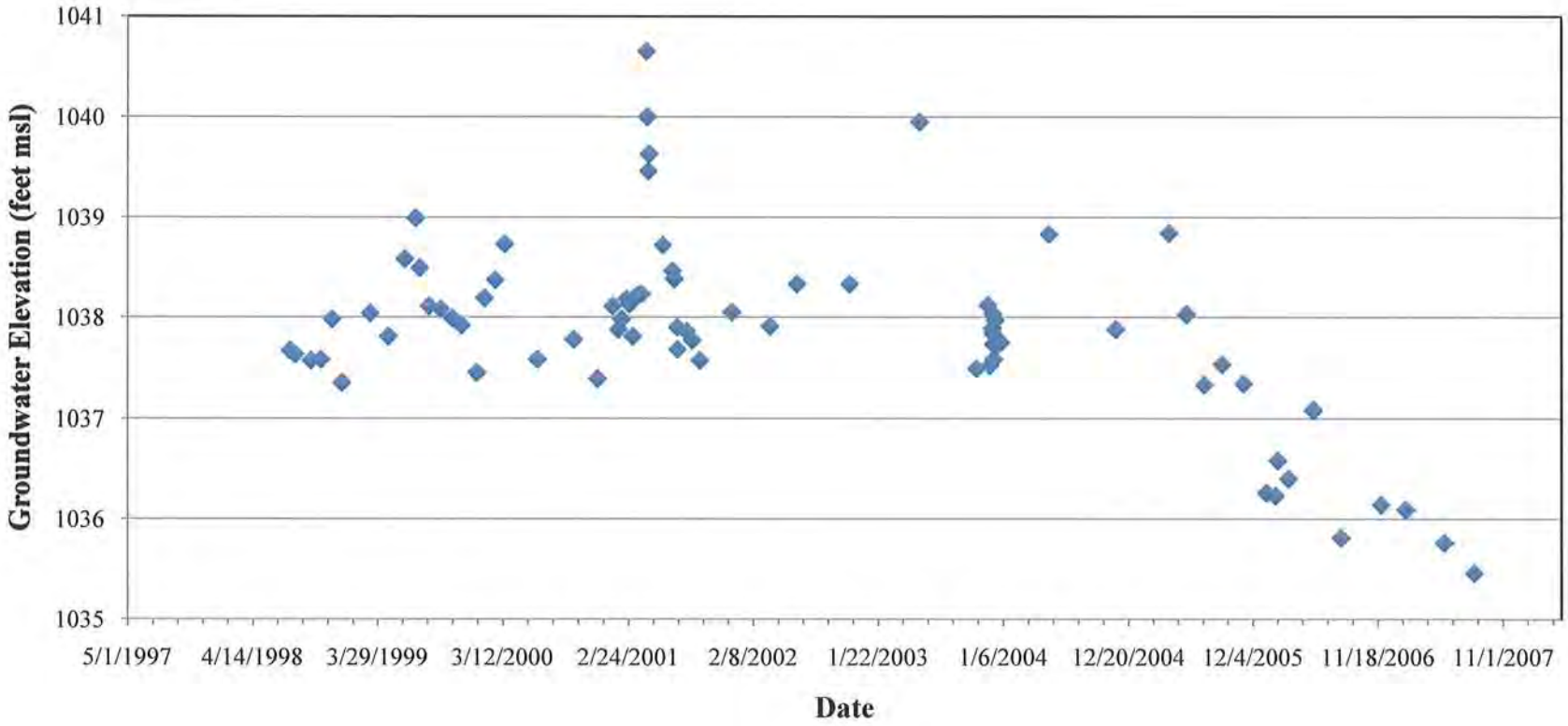
Groundwater Elevations in Well GM-24B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 104-114 Feet Below Ground Surface



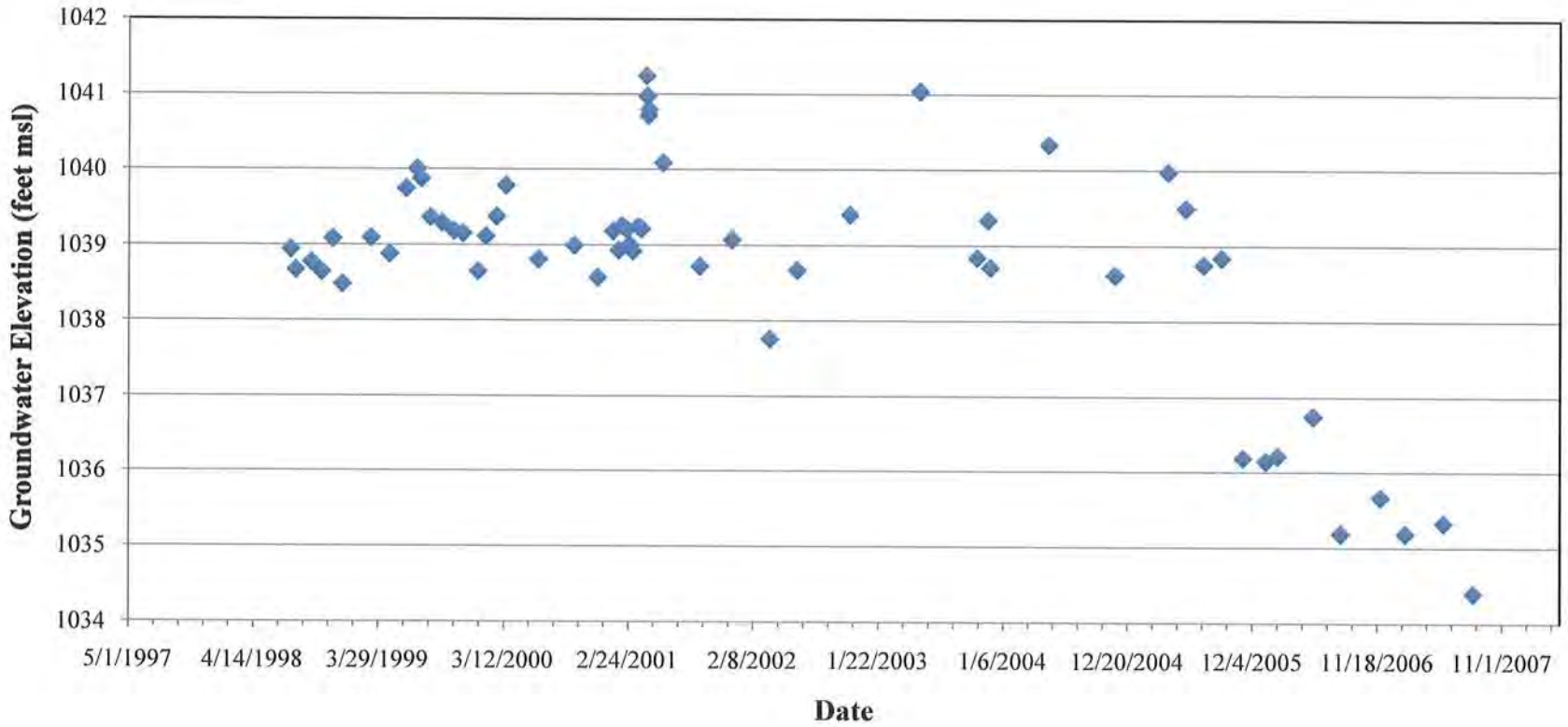
Groundwater Elevations in Well GM-24C
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 193-198 Feet Below Ground Surface



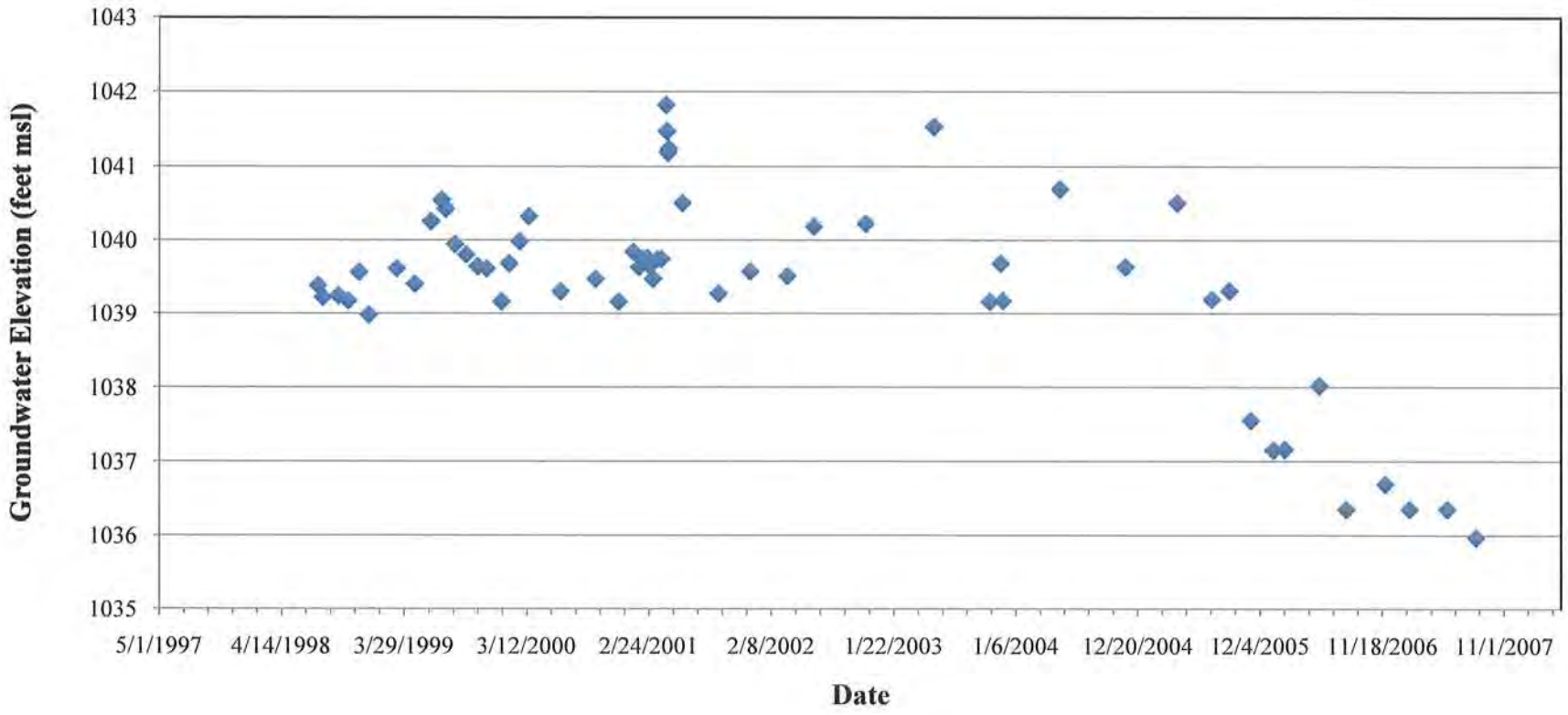
Groundwater Elevations in Well GM-25A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 19-29 Feet Below Ground Surface



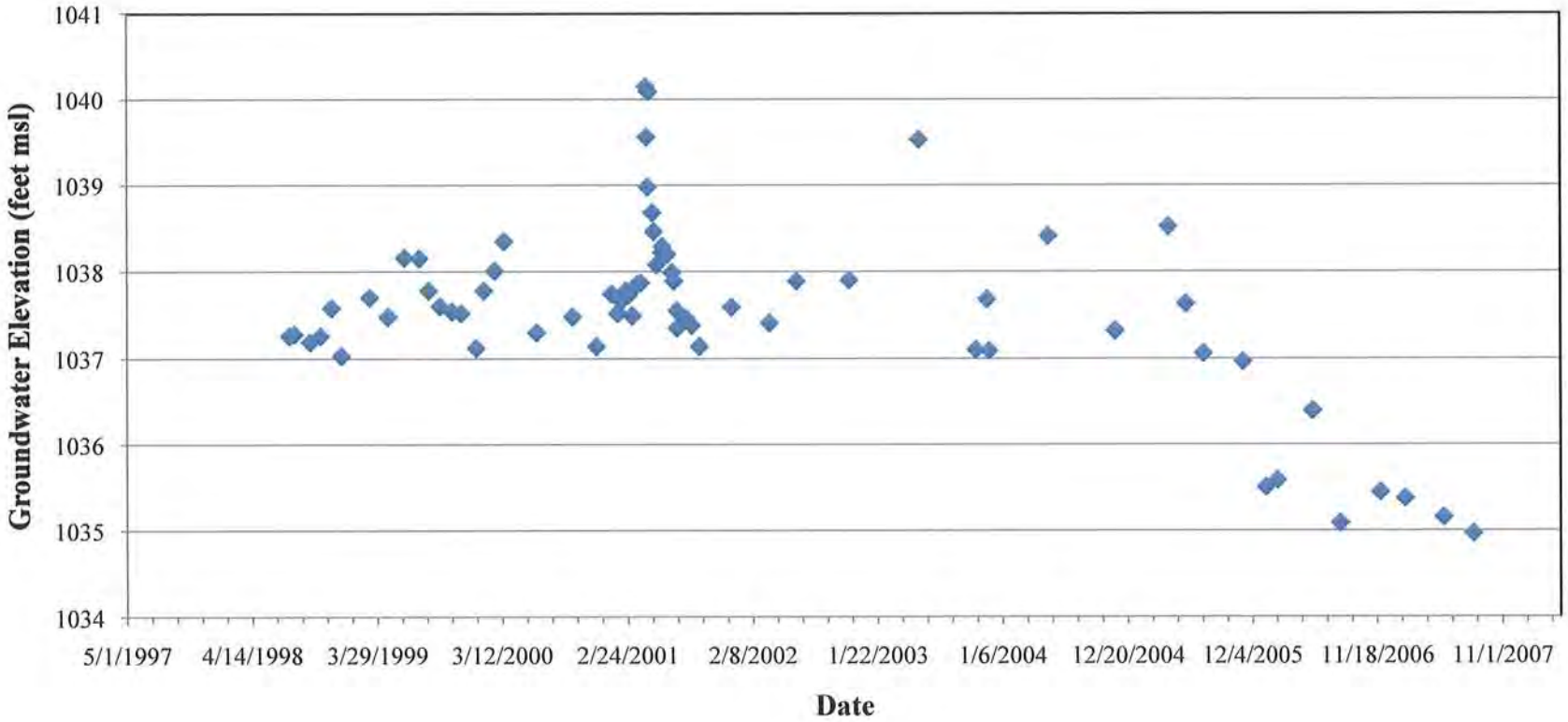
Groundwater Elevations in Well GM-25B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 98-108 Feet Below Ground Surface



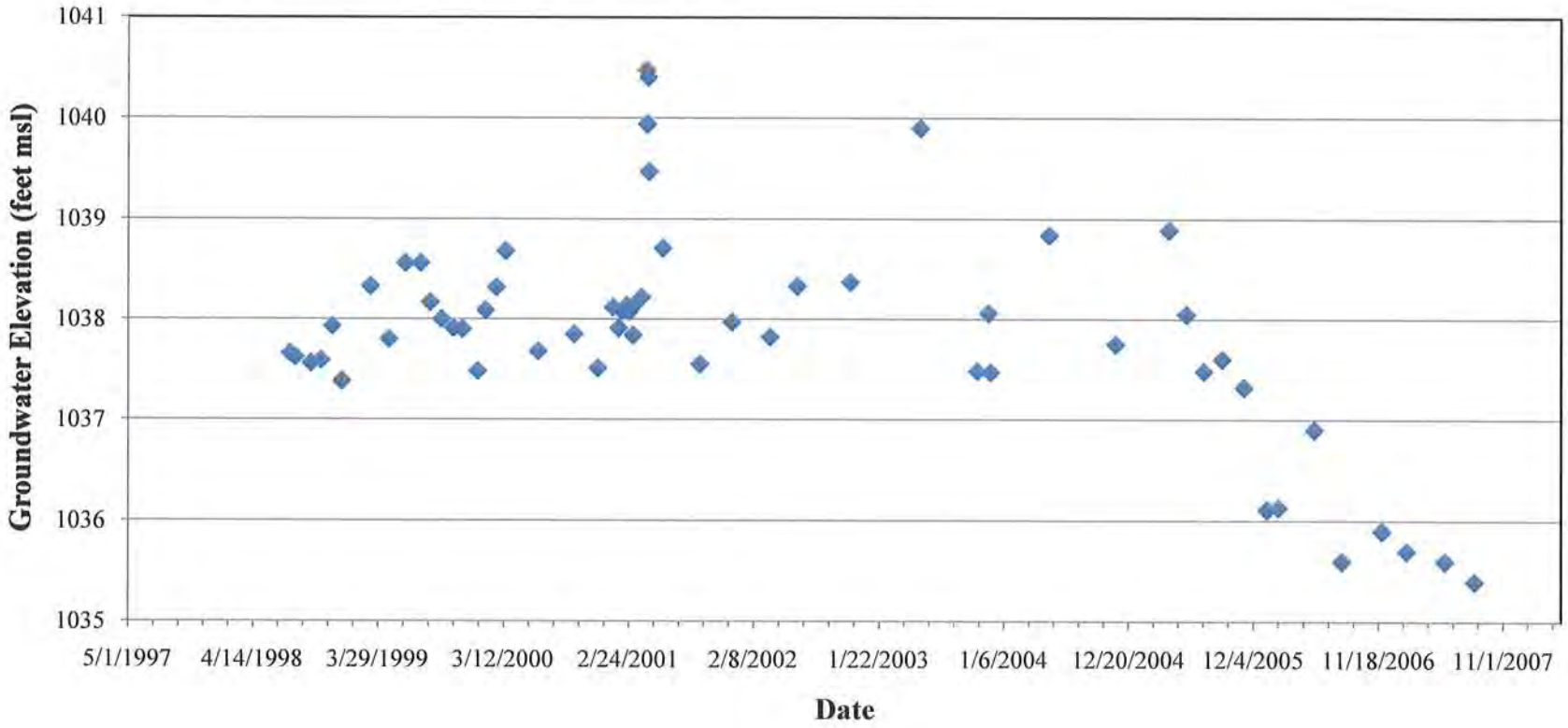
Groundwater Elevations in Well GM-25C
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 206-216 Feet Below Ground Surface



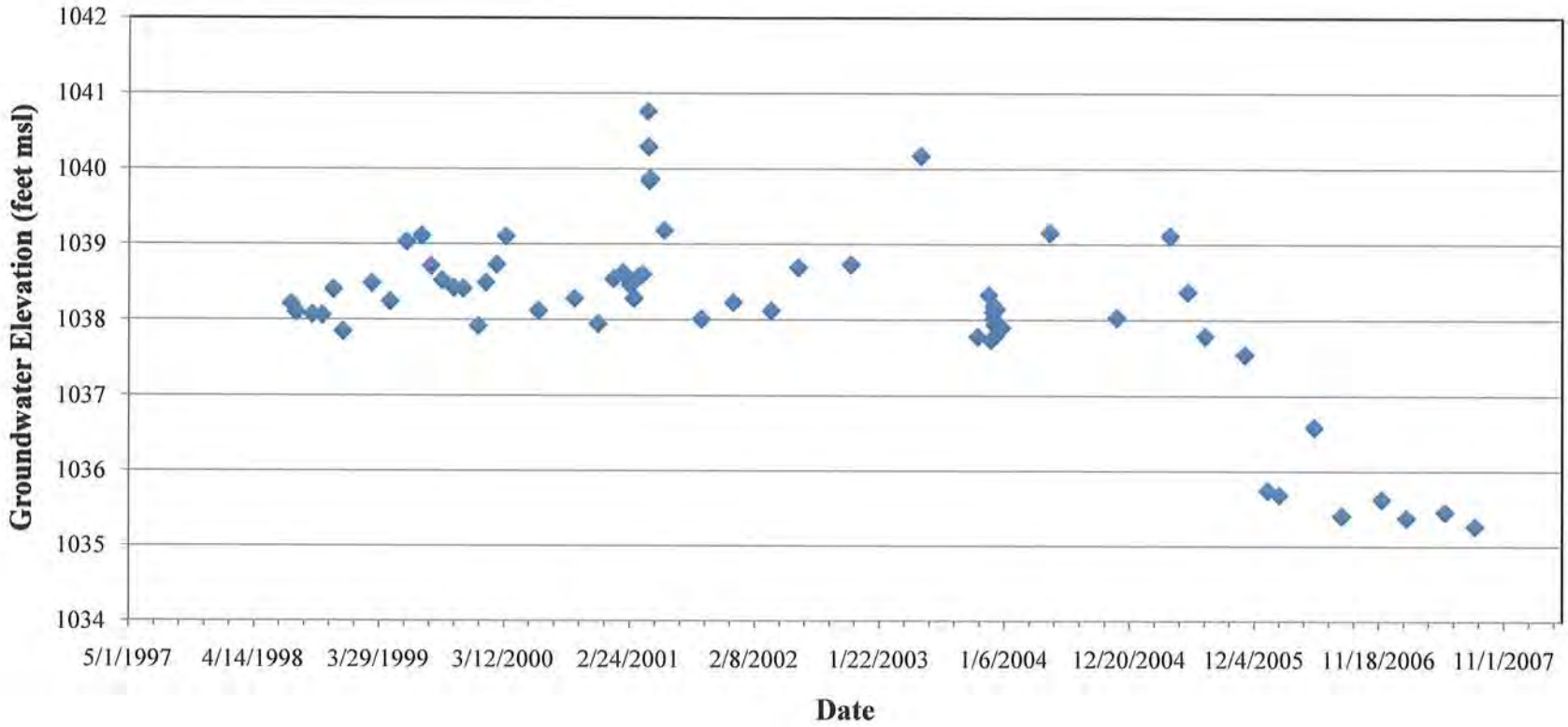
Groundwater Elevations in Well GM-26A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 30-40 Feet Below Ground Surface



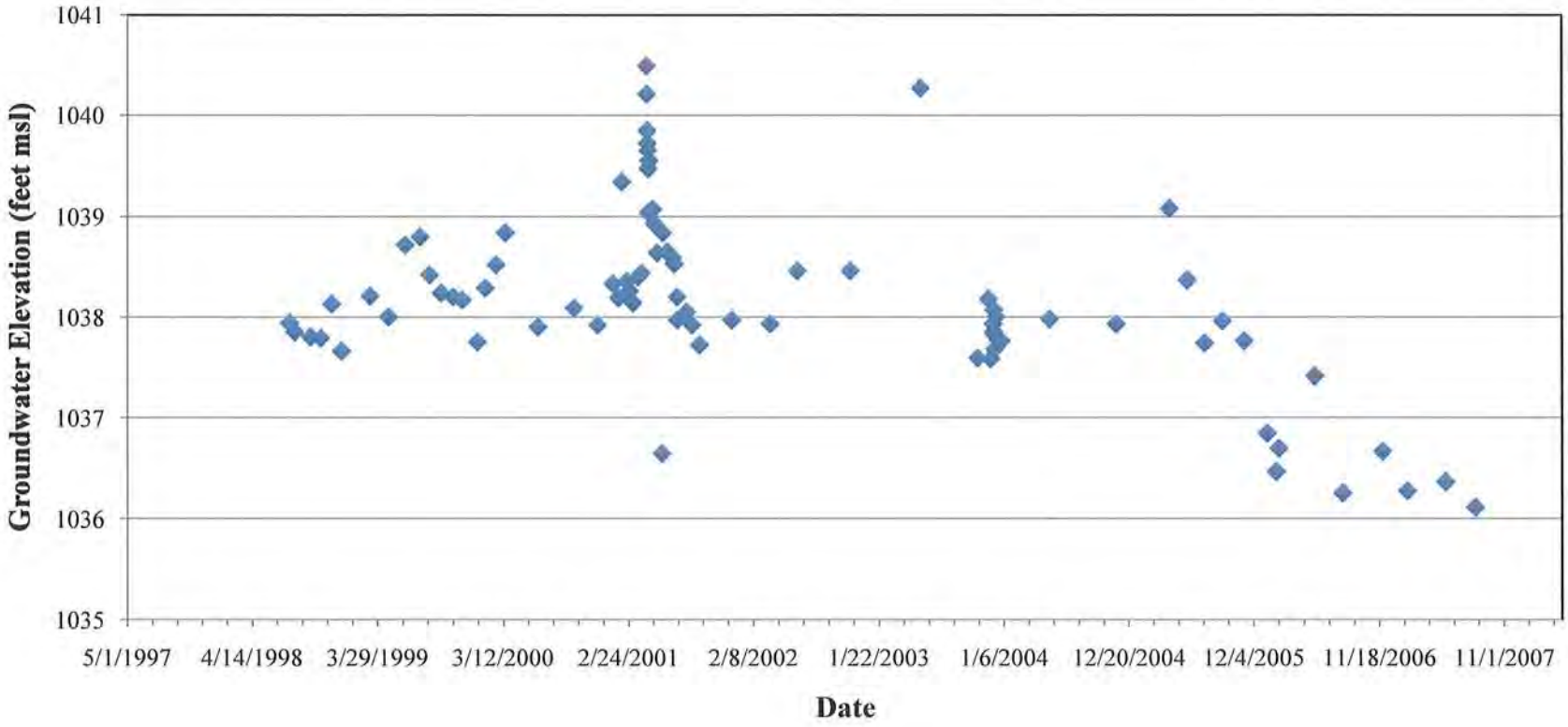
Groundwater Elevations in Well GM-26B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 101-111 Feet Below Ground Surface



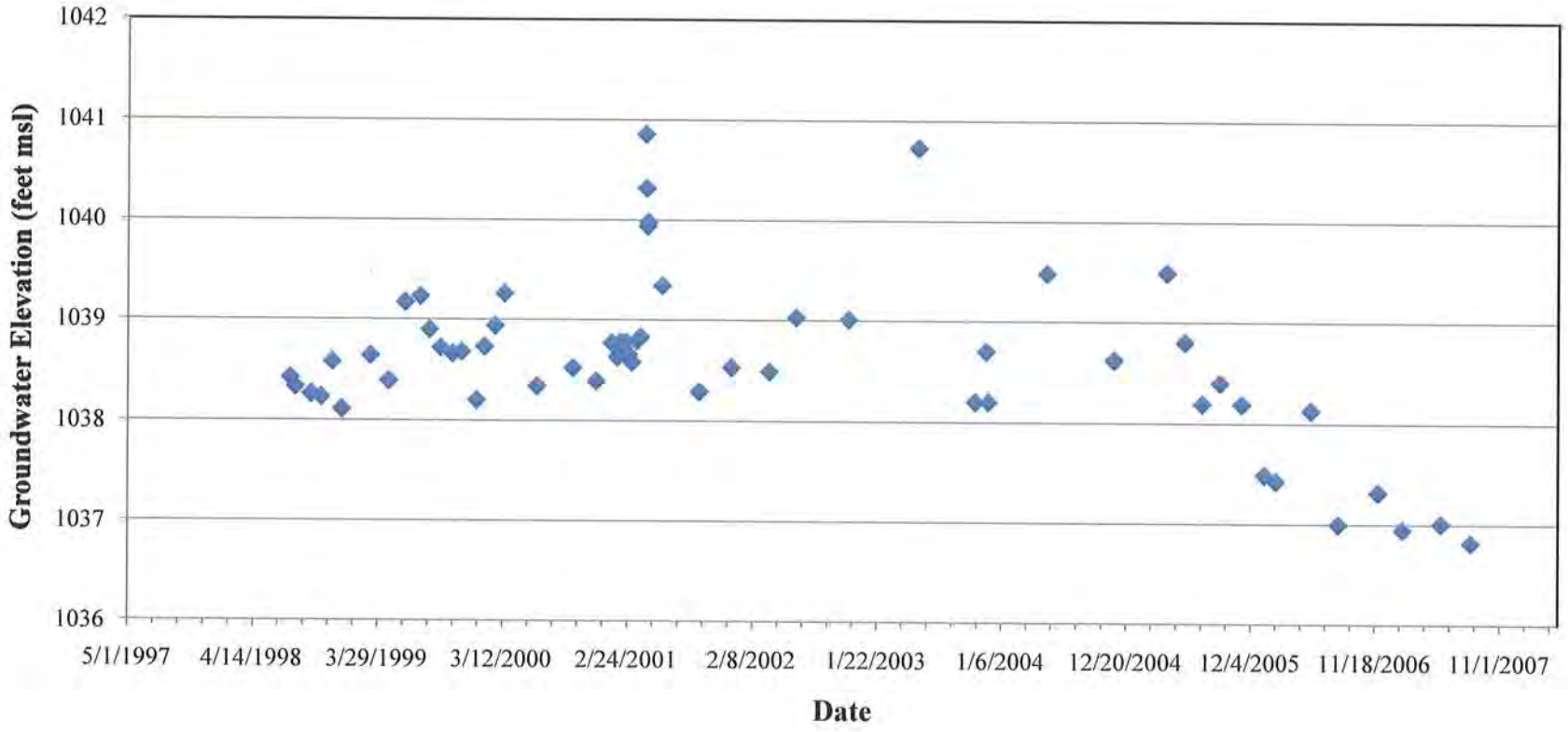
Groundwater Elevations in Well GM-26C
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 160-170 Feet Below Ground Surface



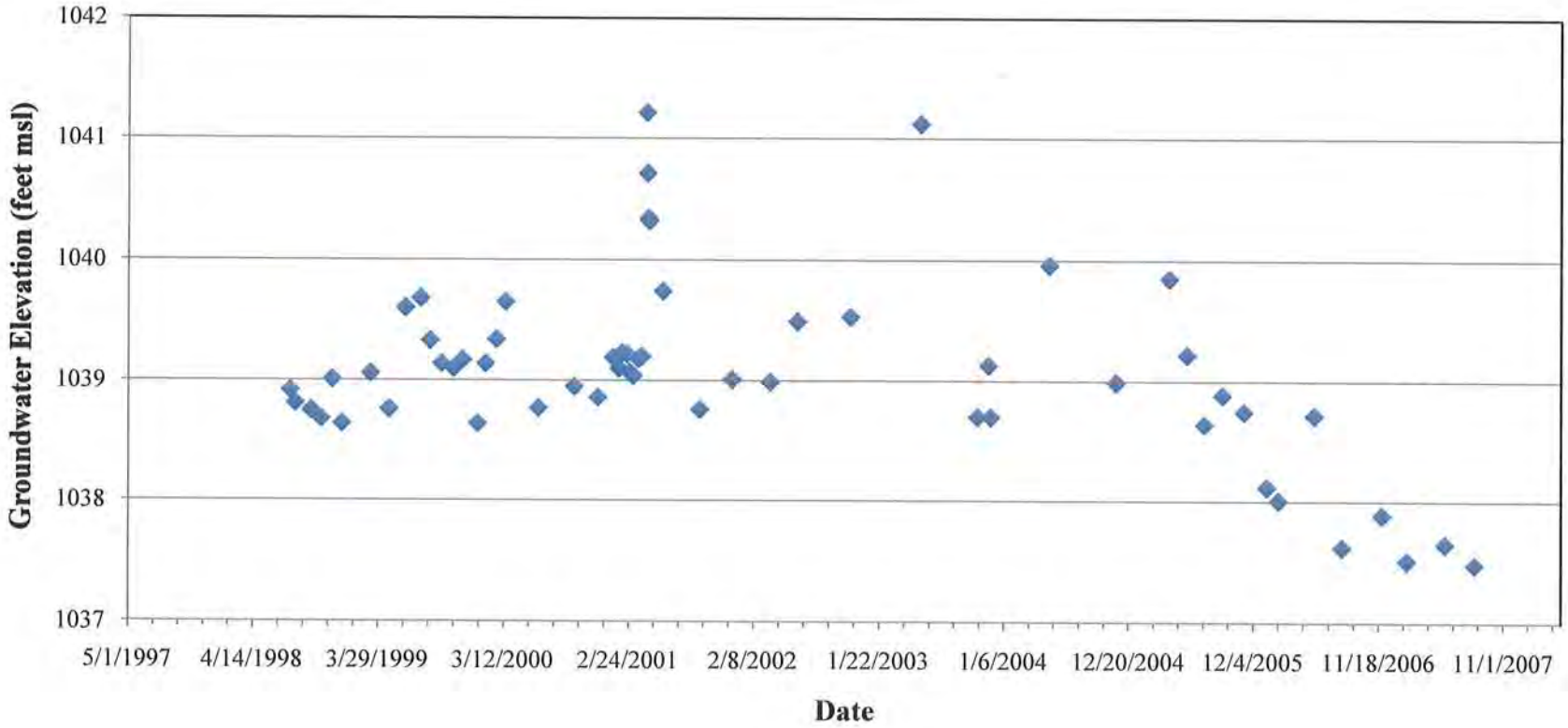
Groundwater Elevations in Well GM-27A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 30-40 Feet Below Ground Surface



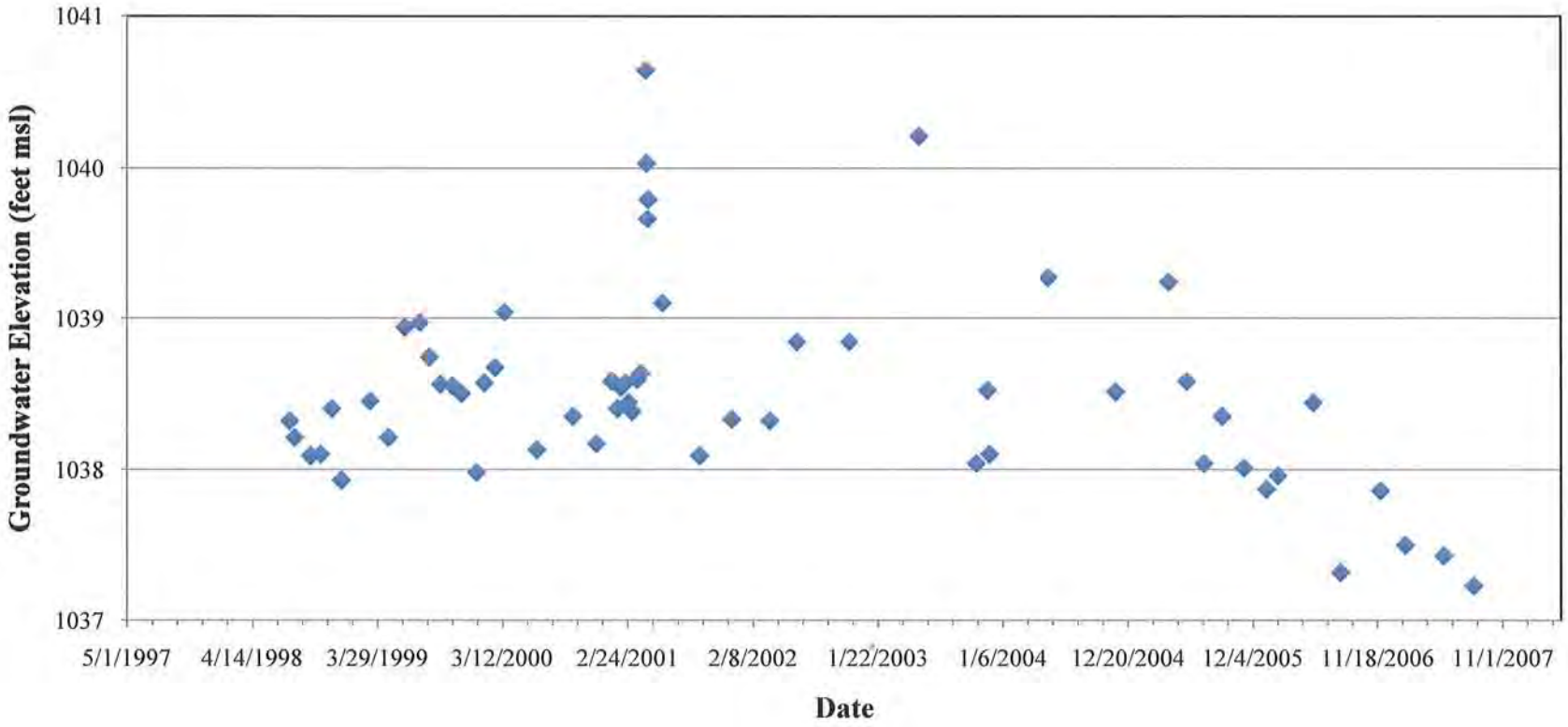
Groundwater Elevations in Well GM-27B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 145-155 Feet Below Ground Surface



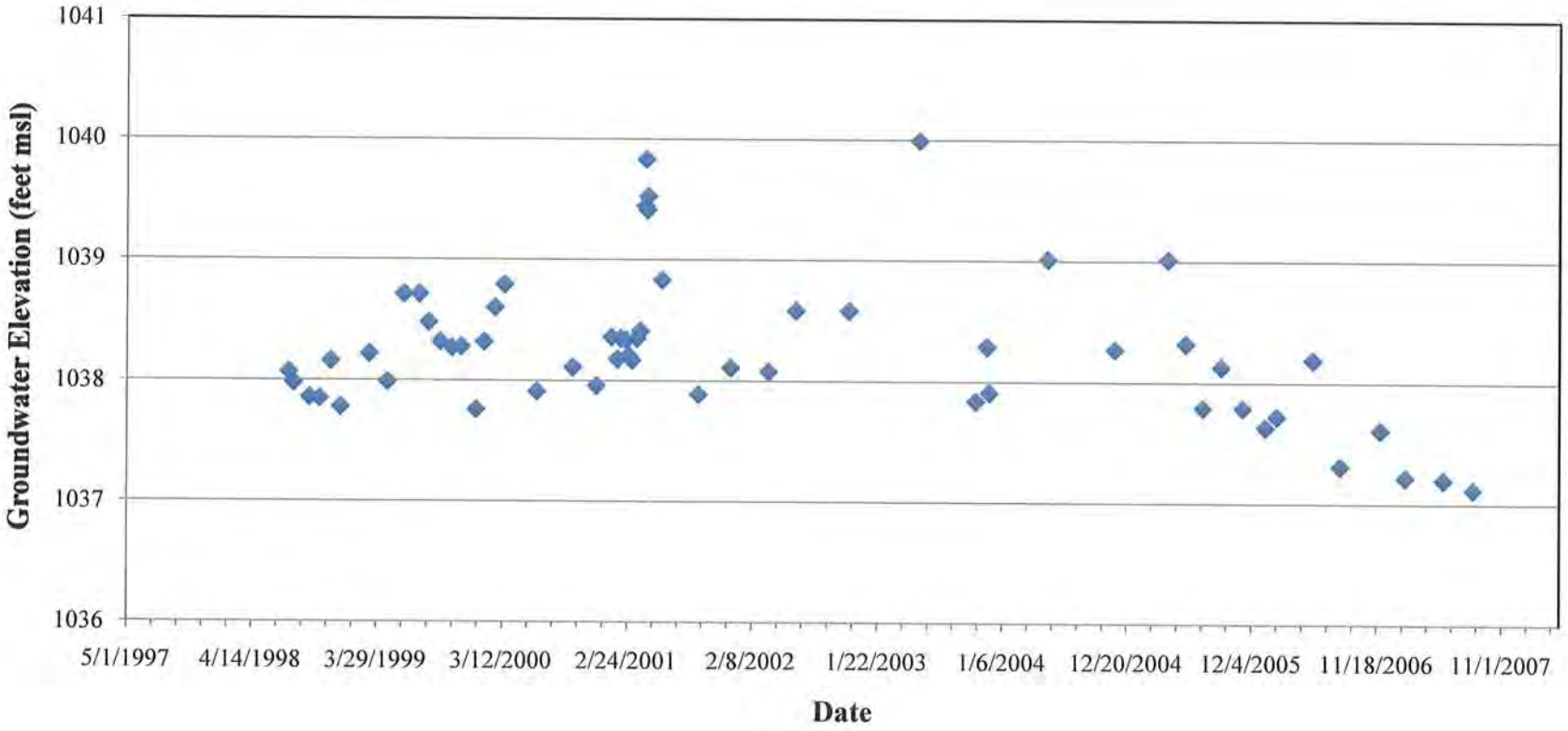
Groundwater Elevations in Well GM-27C
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 210-220 Feet Below Ground Surface



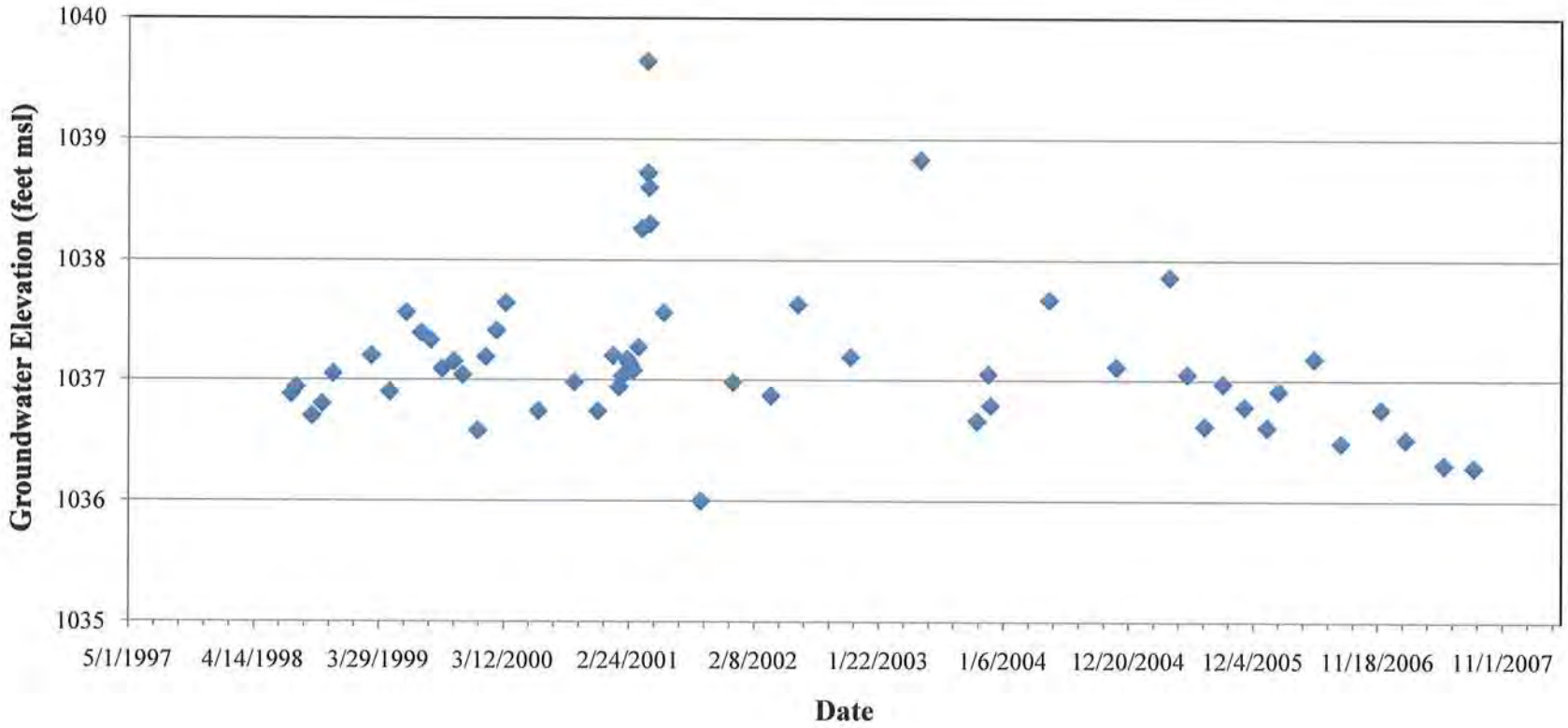
Groundwater Elevations in Well GM-28A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 40-50 Feet Below Ground Surface



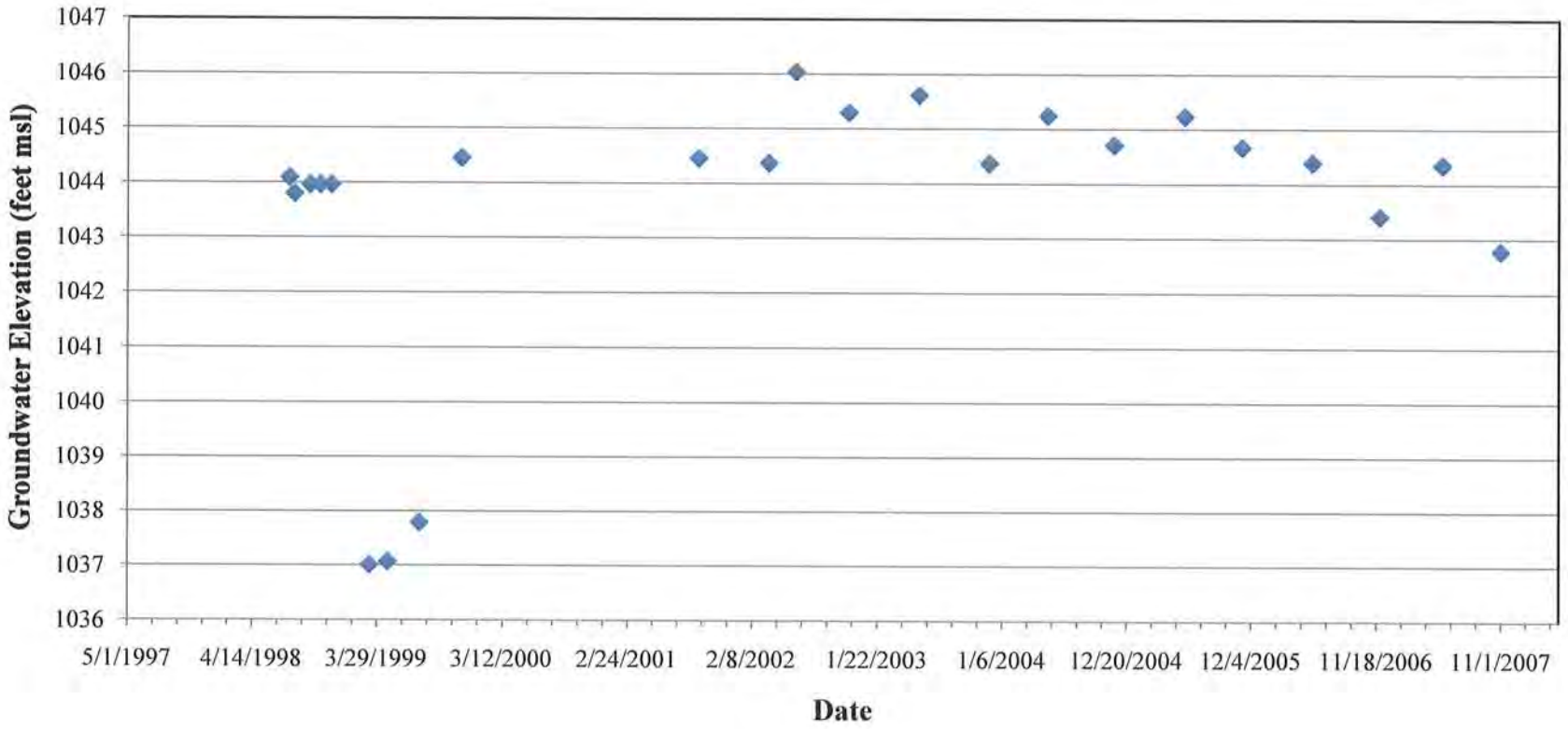
Groundwater Elevations in Well GM-28B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 124.5-129.5 Feet Below Ground Surface



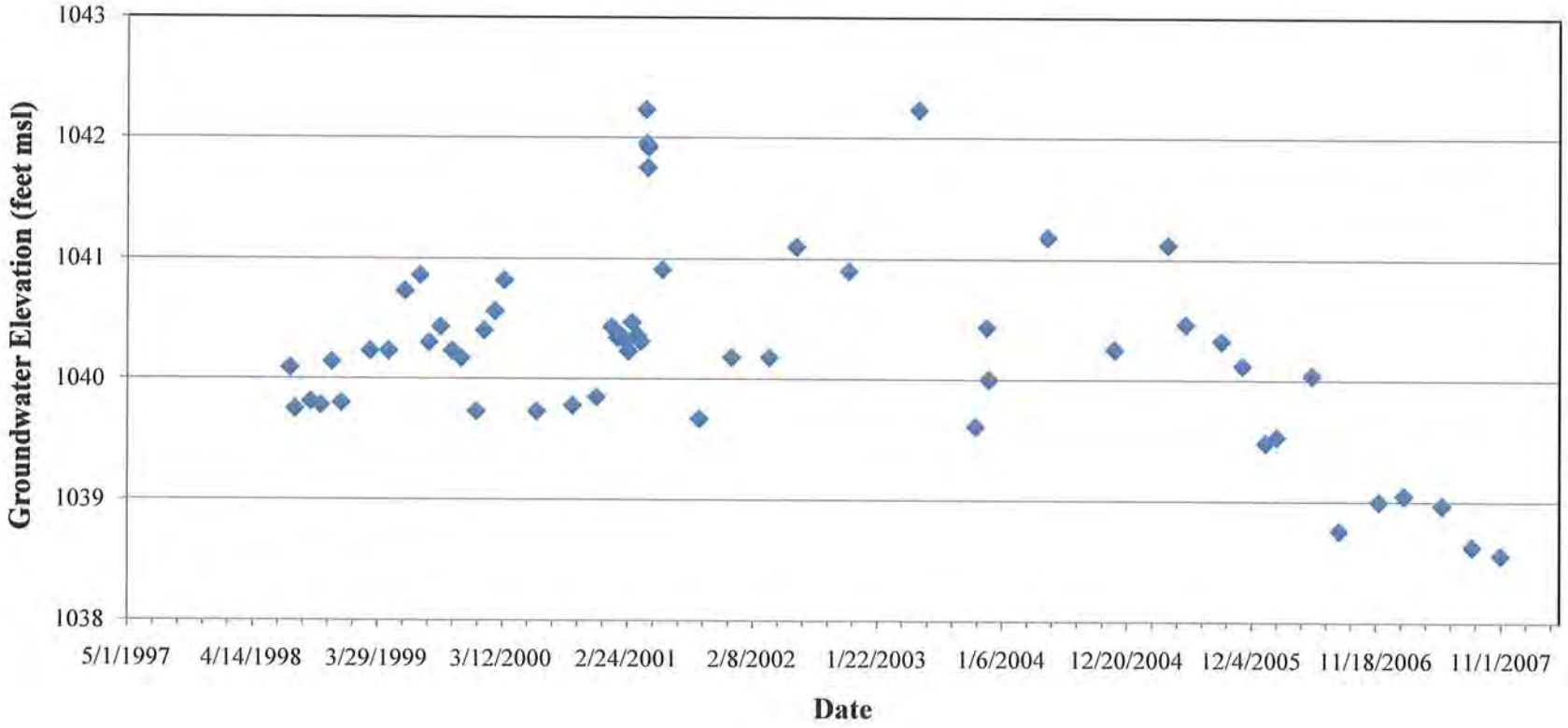
Groundwater Elevations in Well GM-29
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 55-65 Feet Below Ground Surface



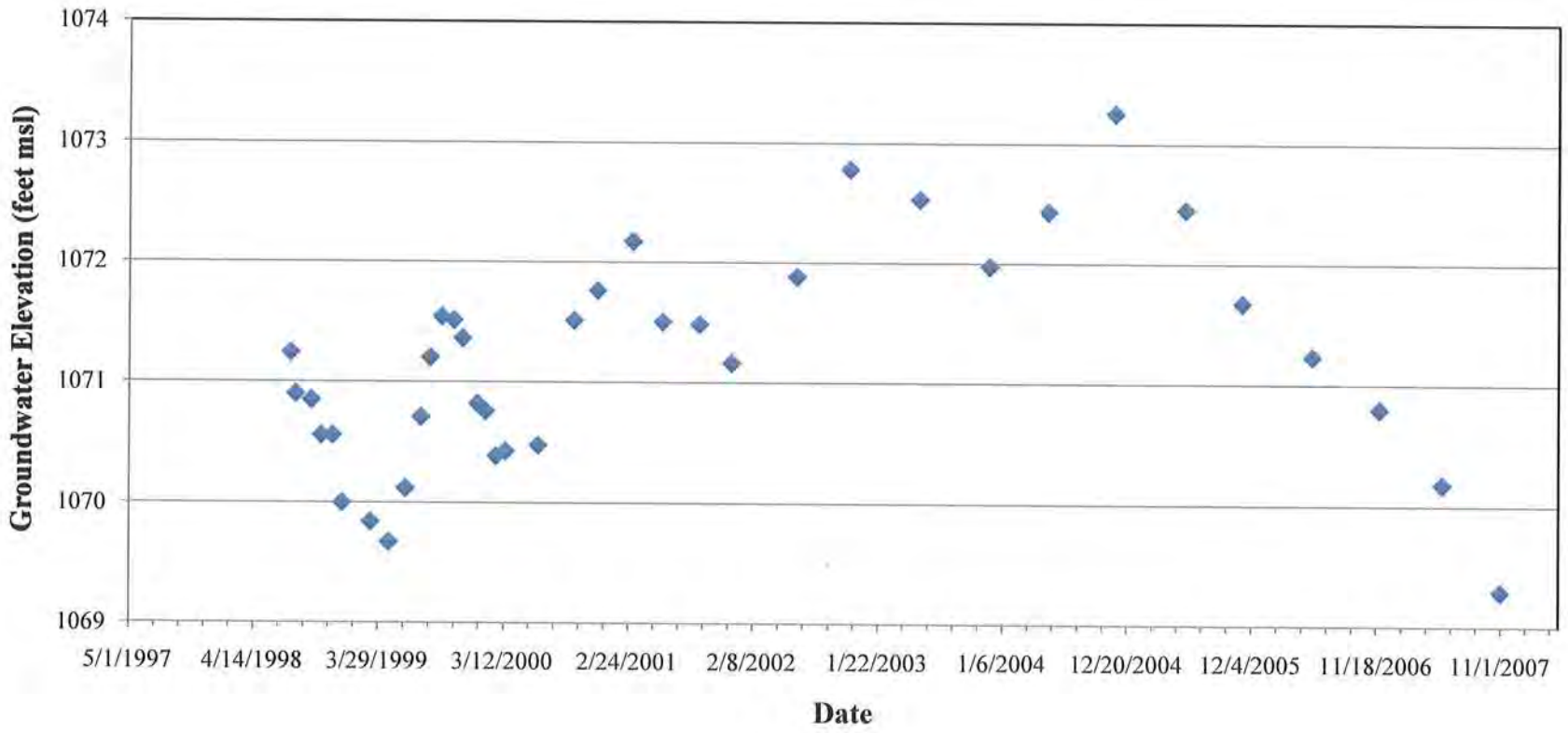
Groundwater Elevations in Well GM-30
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 75-85 Feet Below Ground Surface



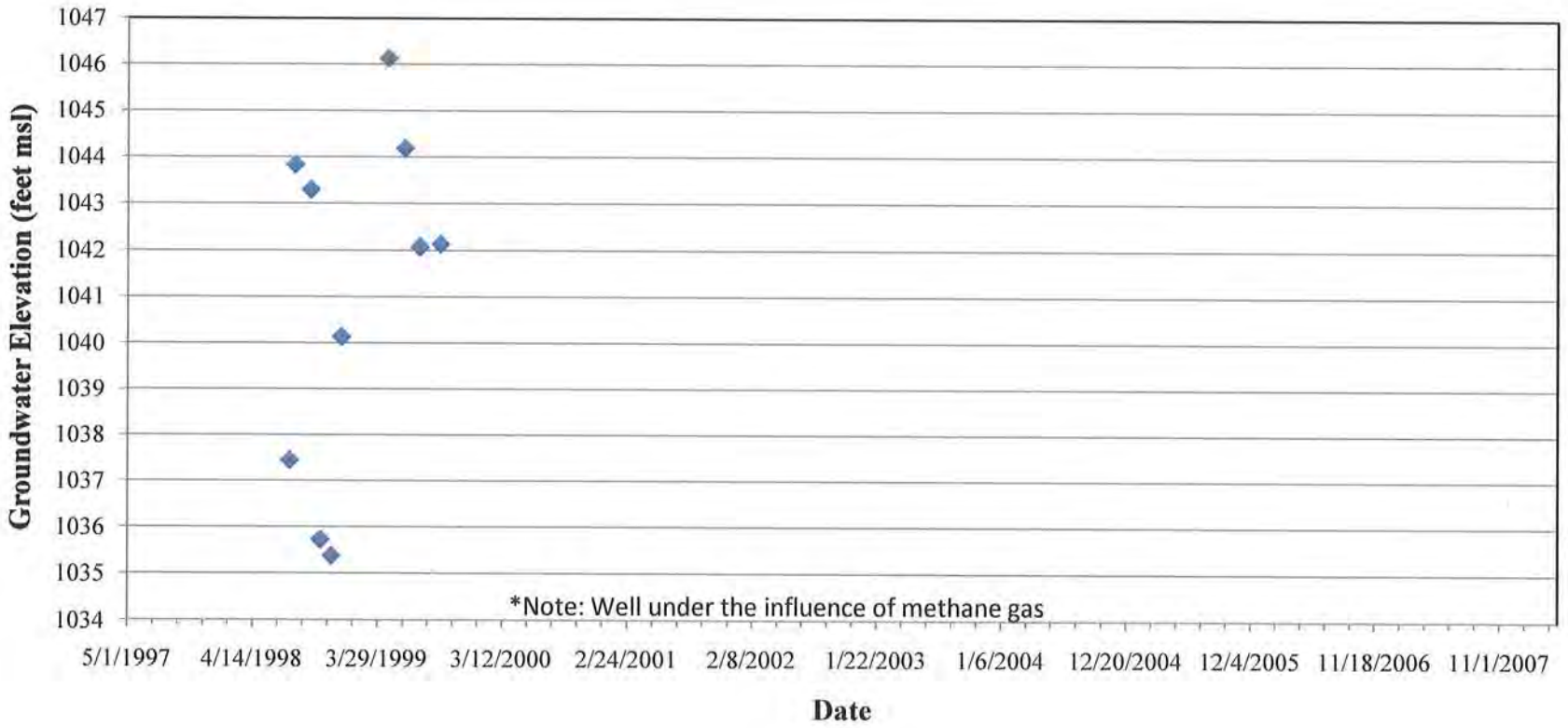
Groundwater Elevations in Well GM-31
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 105-115 Feet Below Ground Surface



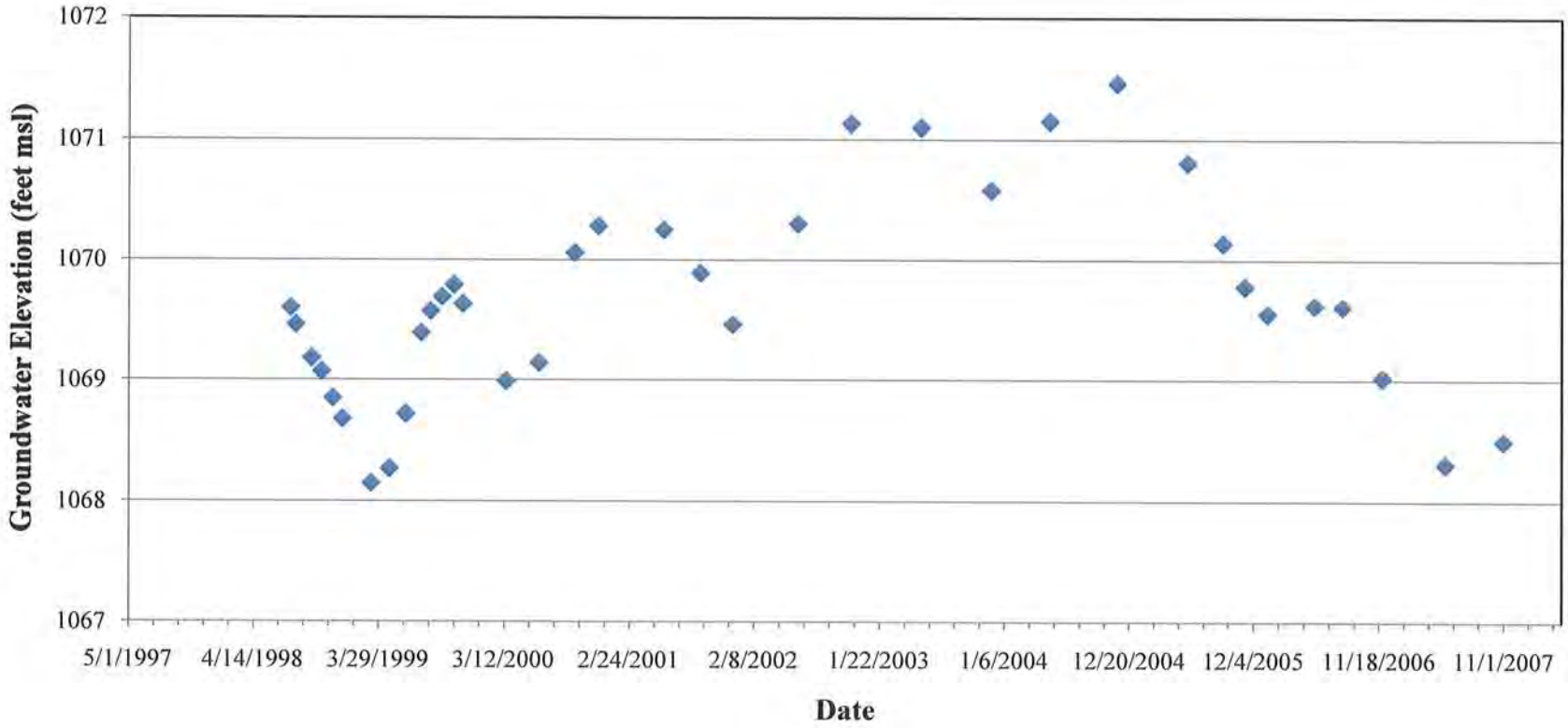
Groundwater Elevations in Well GM-32
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 135-145 Feet Below Ground Surface



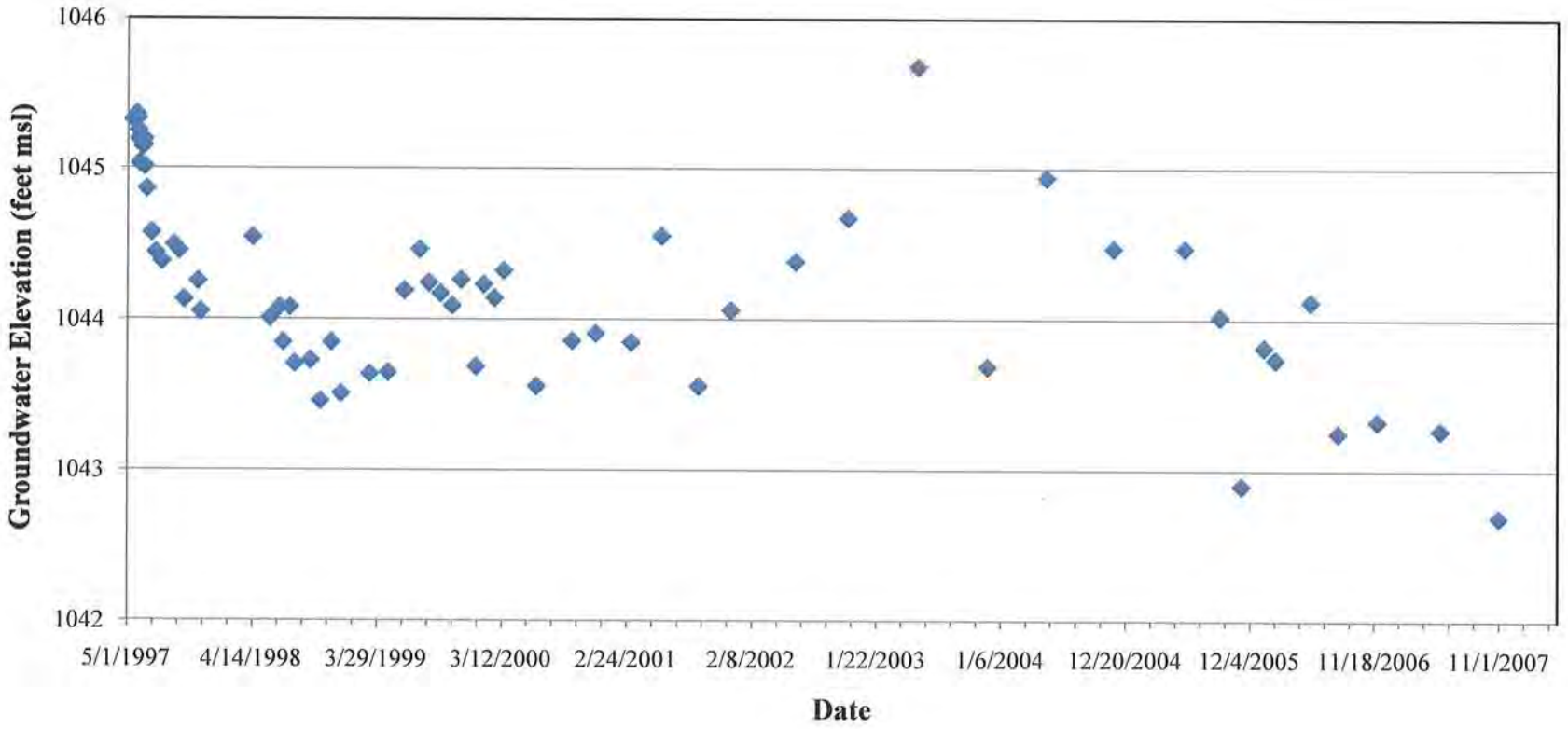
Groundwater Elevations in Well GM-33
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 74-89 Feet Below Ground Surface



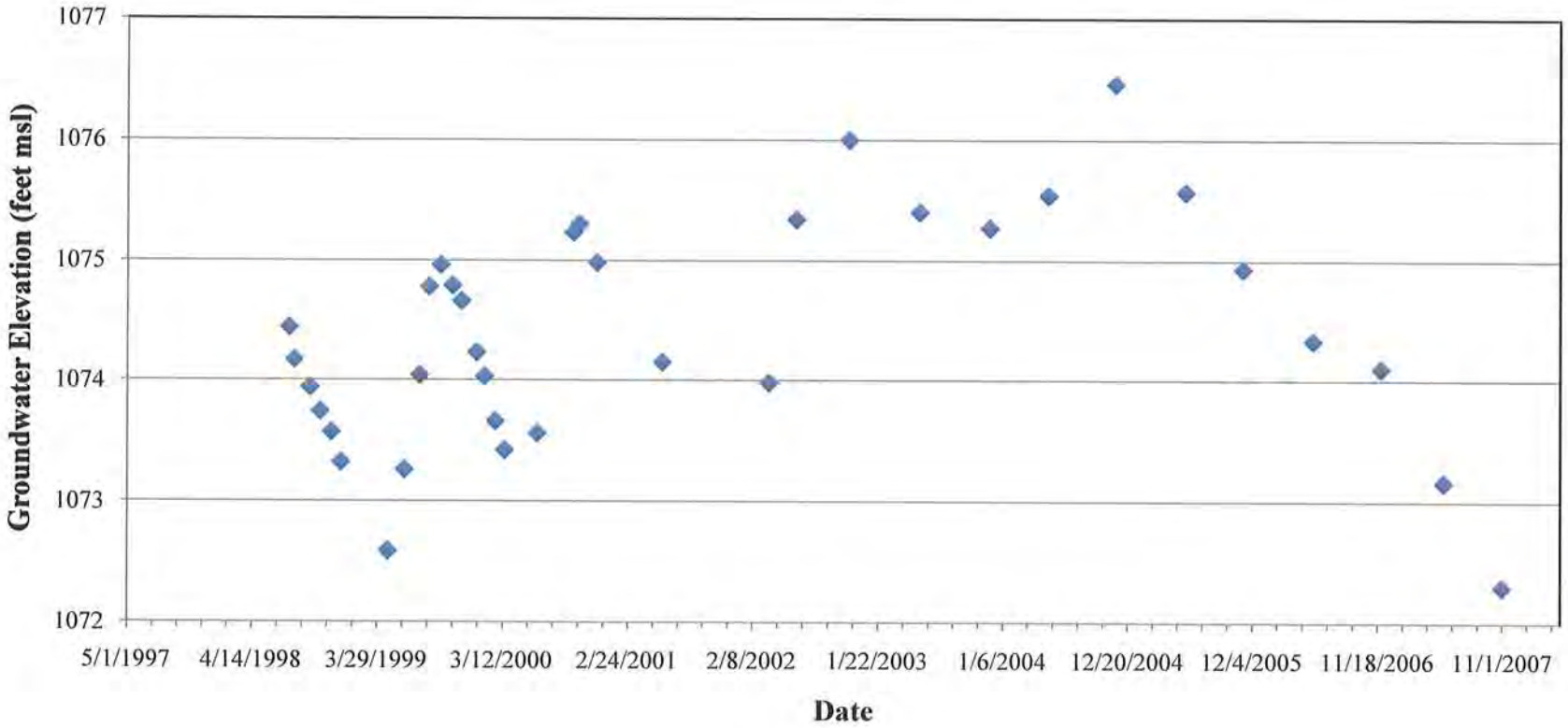
Groundwater Elevations in Well GM-34A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 30-40 Feet Below Ground Surface



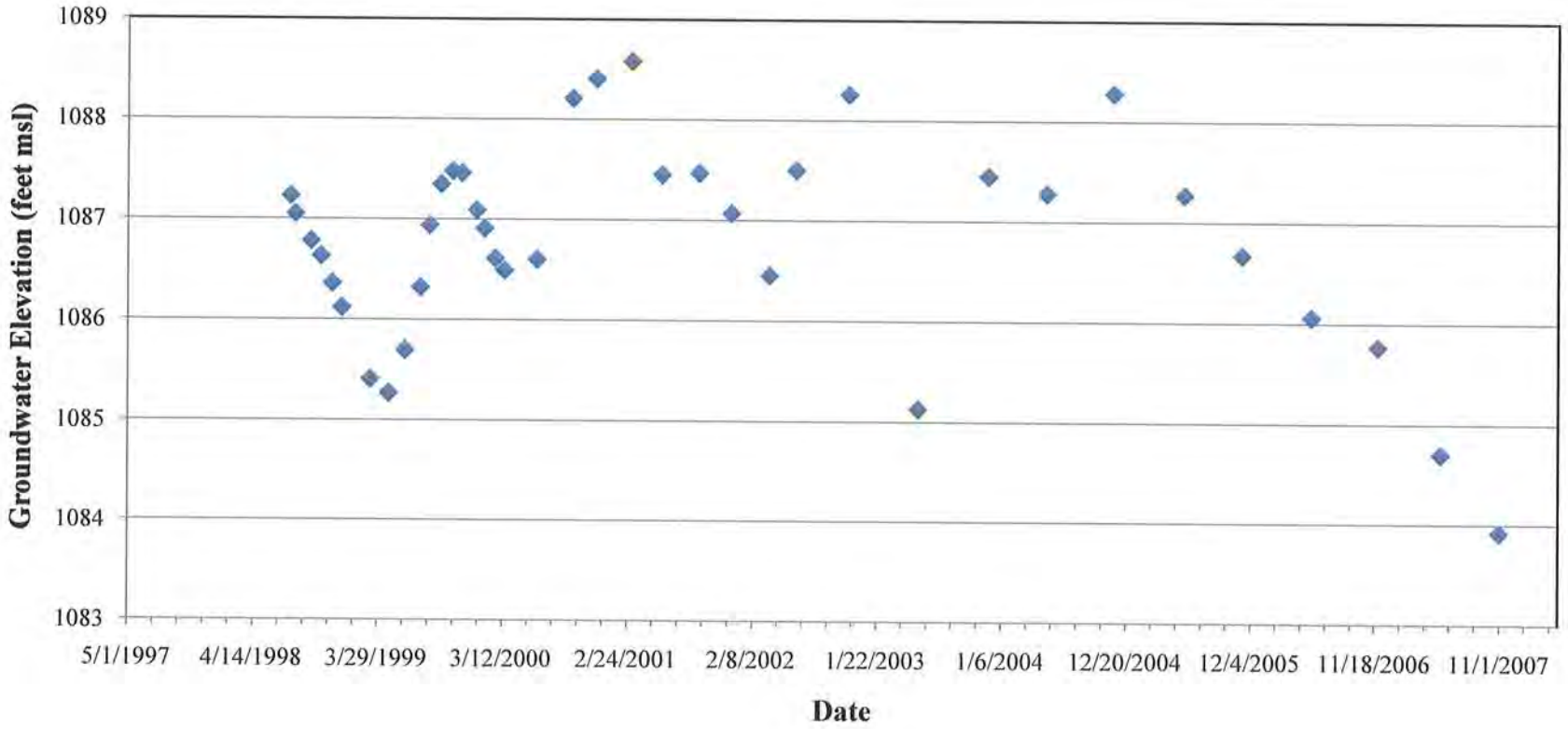
Groundwater Elevations in Well GM-34B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 85-95 Feet Below Ground Surface



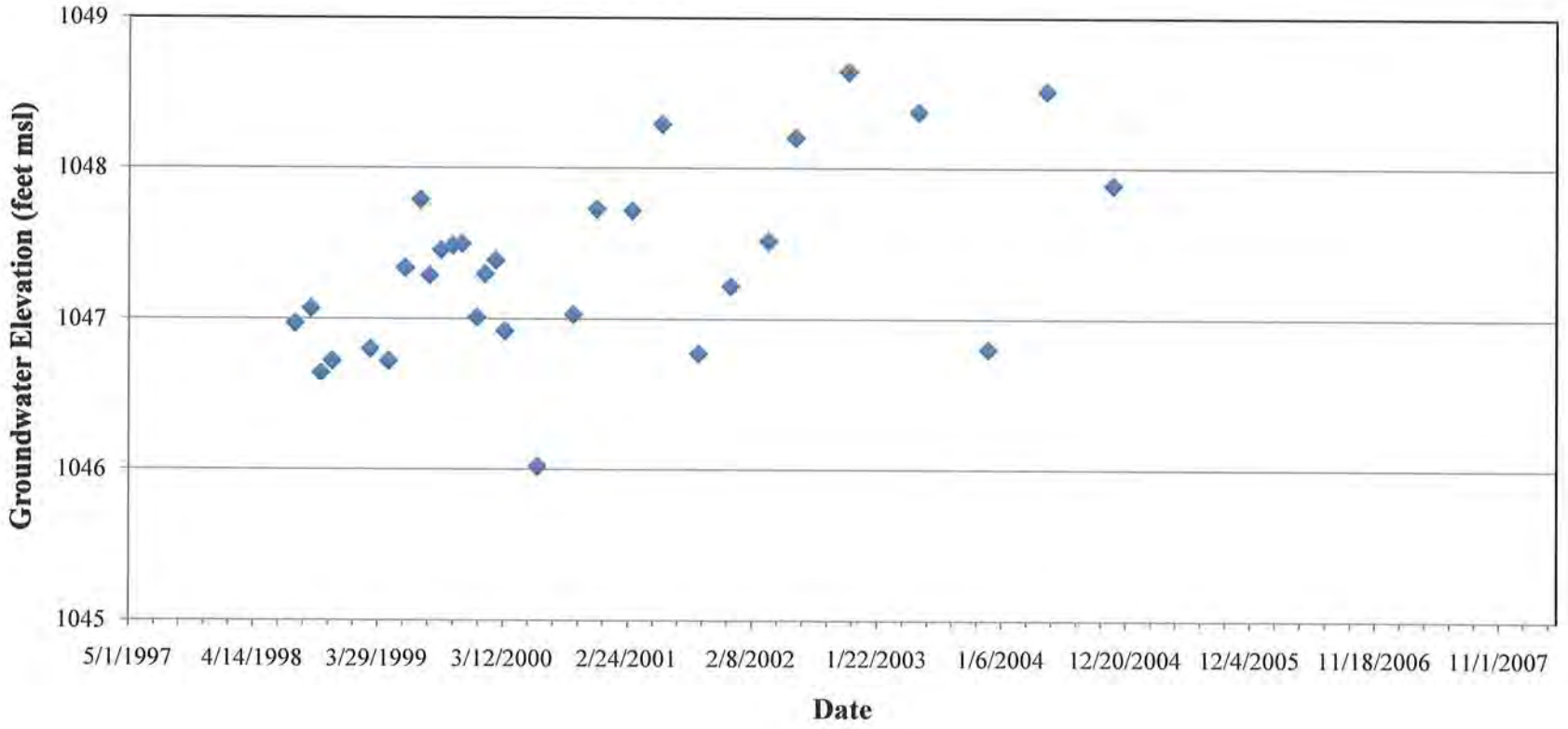
Groundwater Elevations in Well GM-35
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 40-50 Feet Below Ground Surface



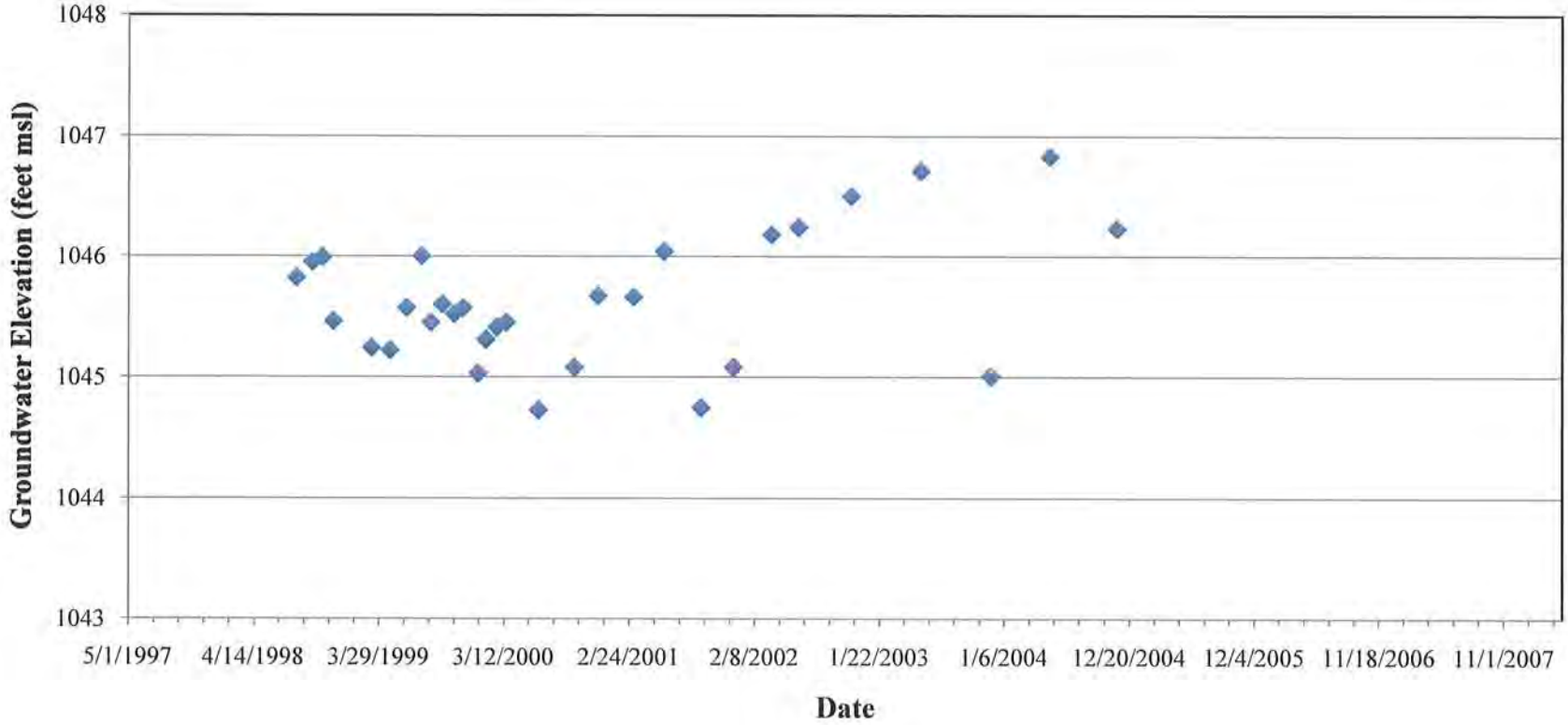
Groundwater Elevations in Well GM-36
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 95-105 Feet Below Ground Surface



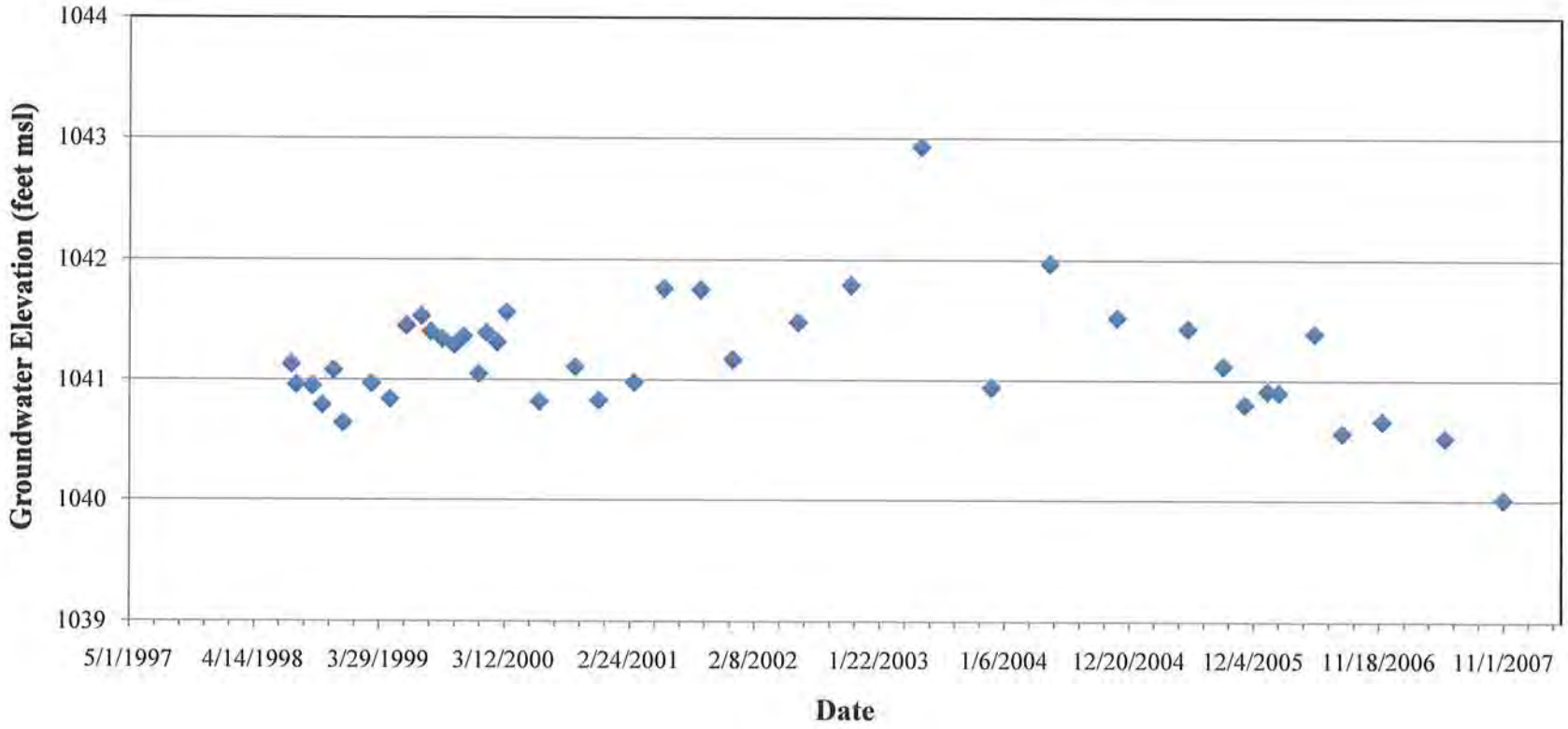
Groundwater Elevations in Well GM-37A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 144-154 Feet Below Ground Surface



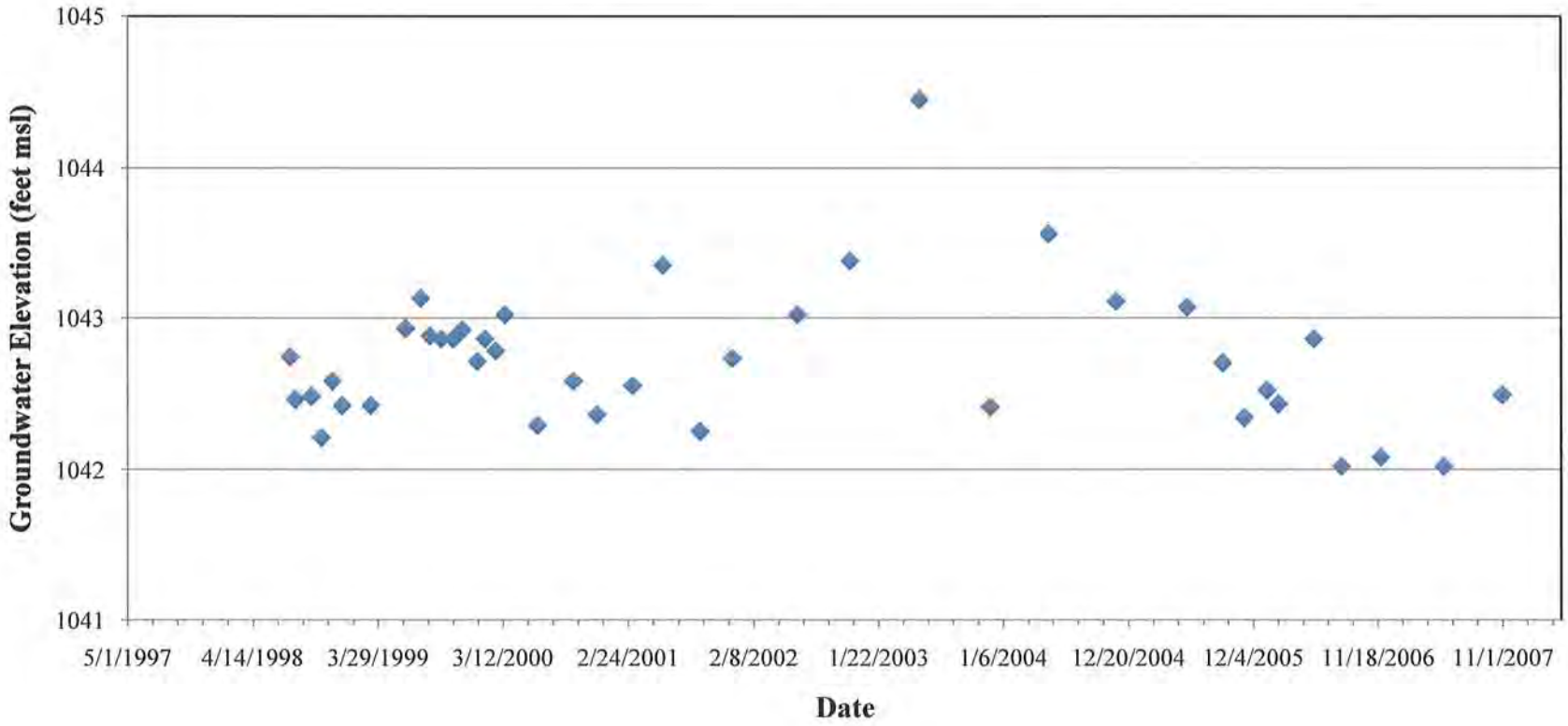
Groundwater Elevations in Well GM-37B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 328-338 Feet Below Ground Surface



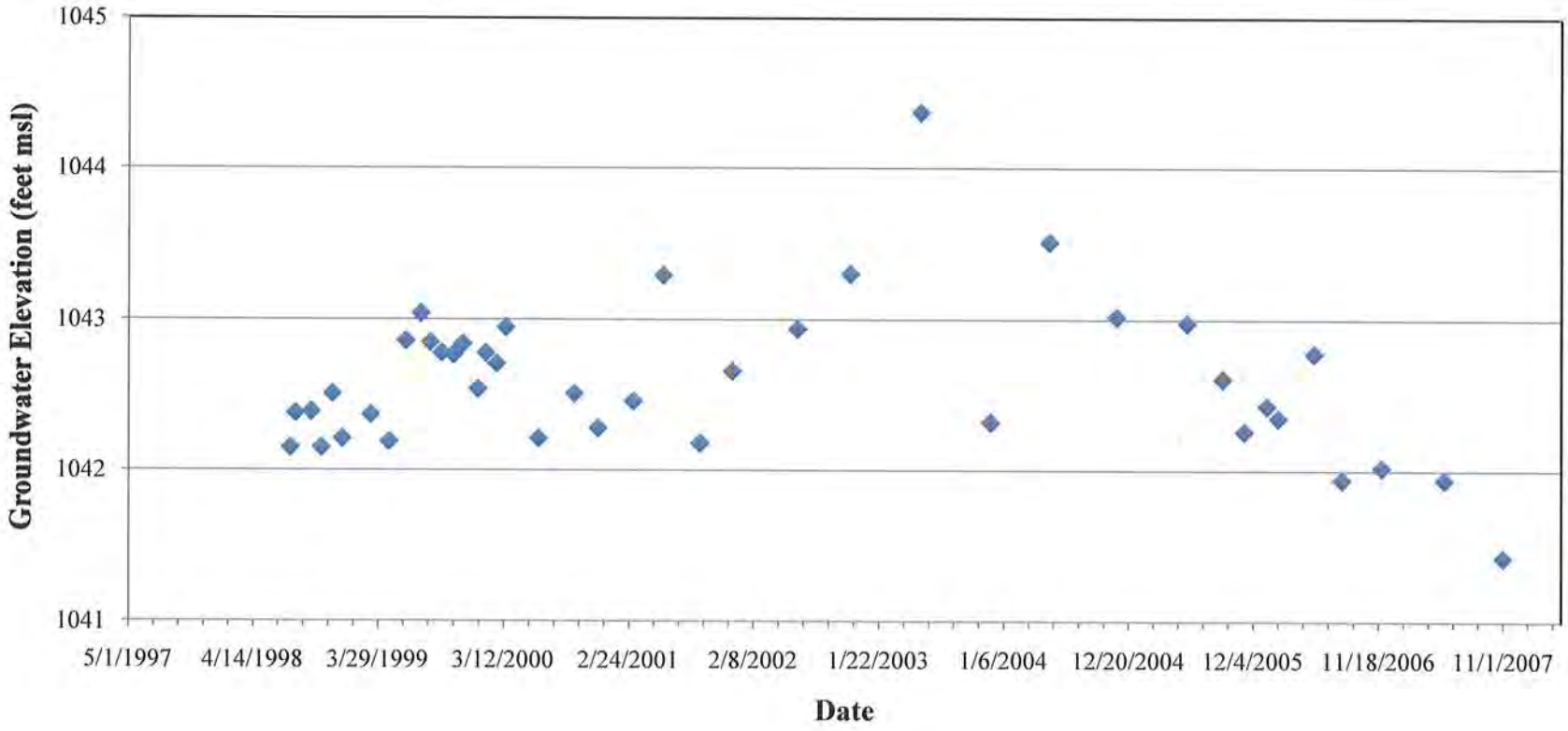
Groundwater Elevations in Well GM-38A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 95-105 Feet Below Ground Surface



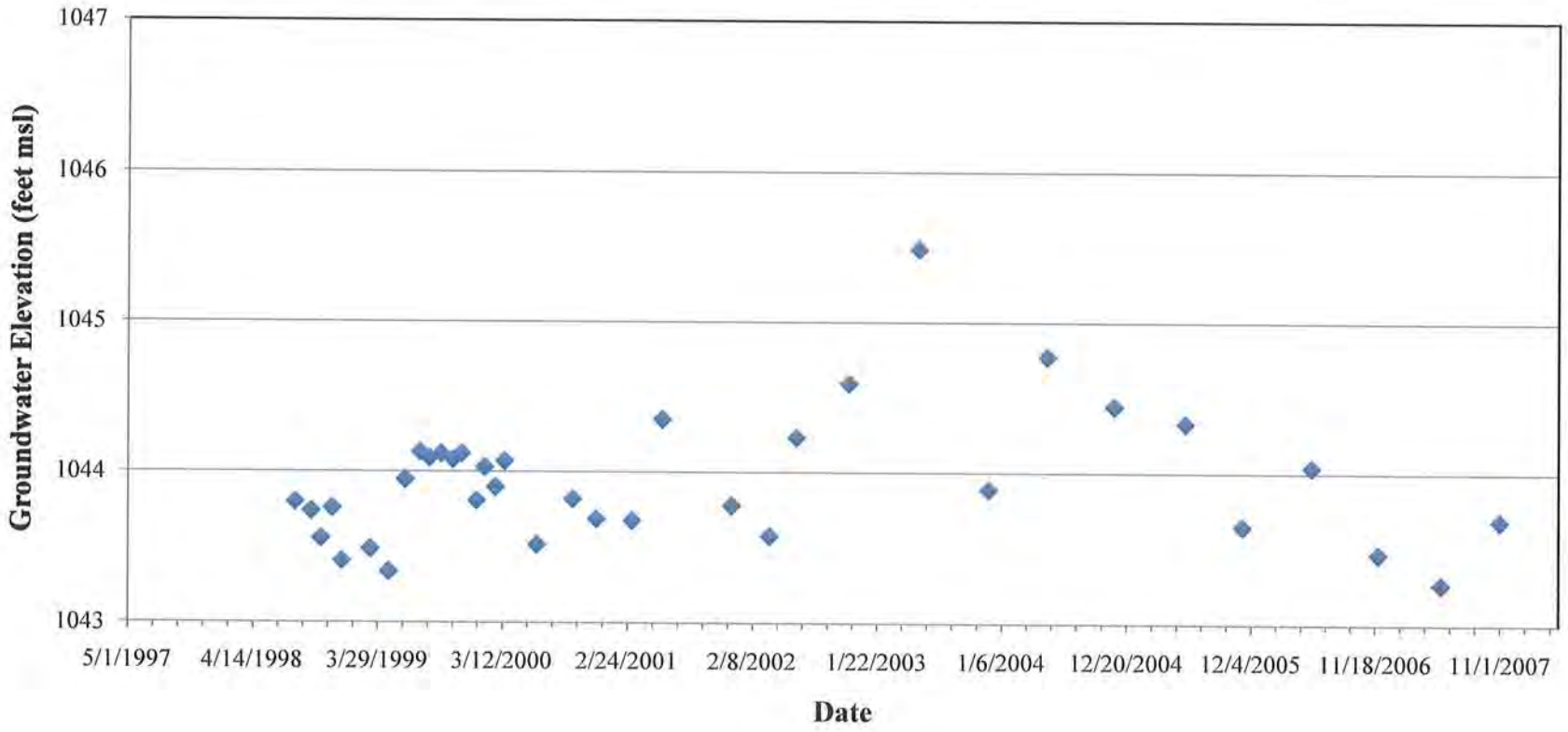
Groundwater Elevations in Well GM-38B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 160-170 Feet Below Ground Surface



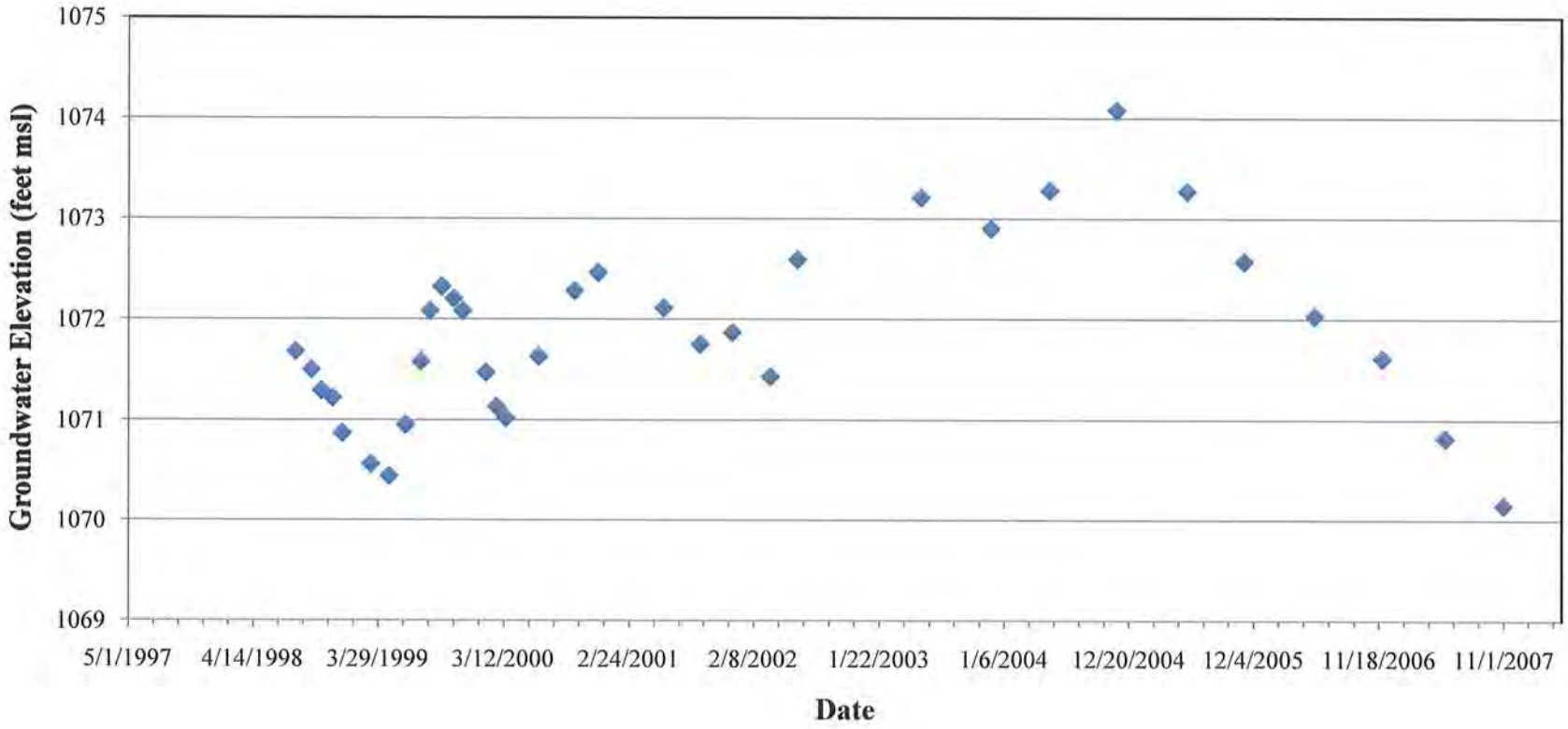
Groundwater Elevations in Well GM-38C
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 200-210 Feet Below Ground Surface



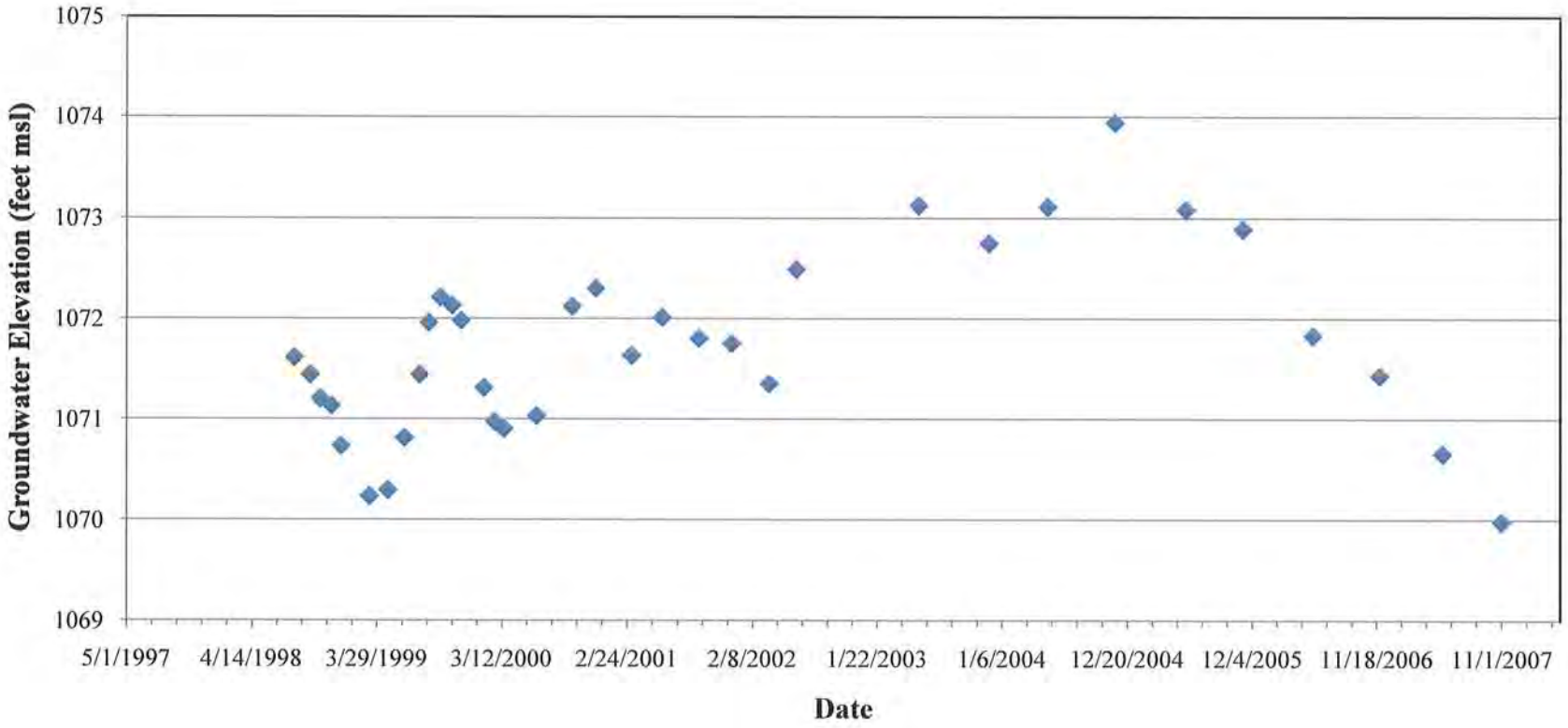
Groundwater Elevations in Well GM-39
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 85-95 Feet Below Ground Surface



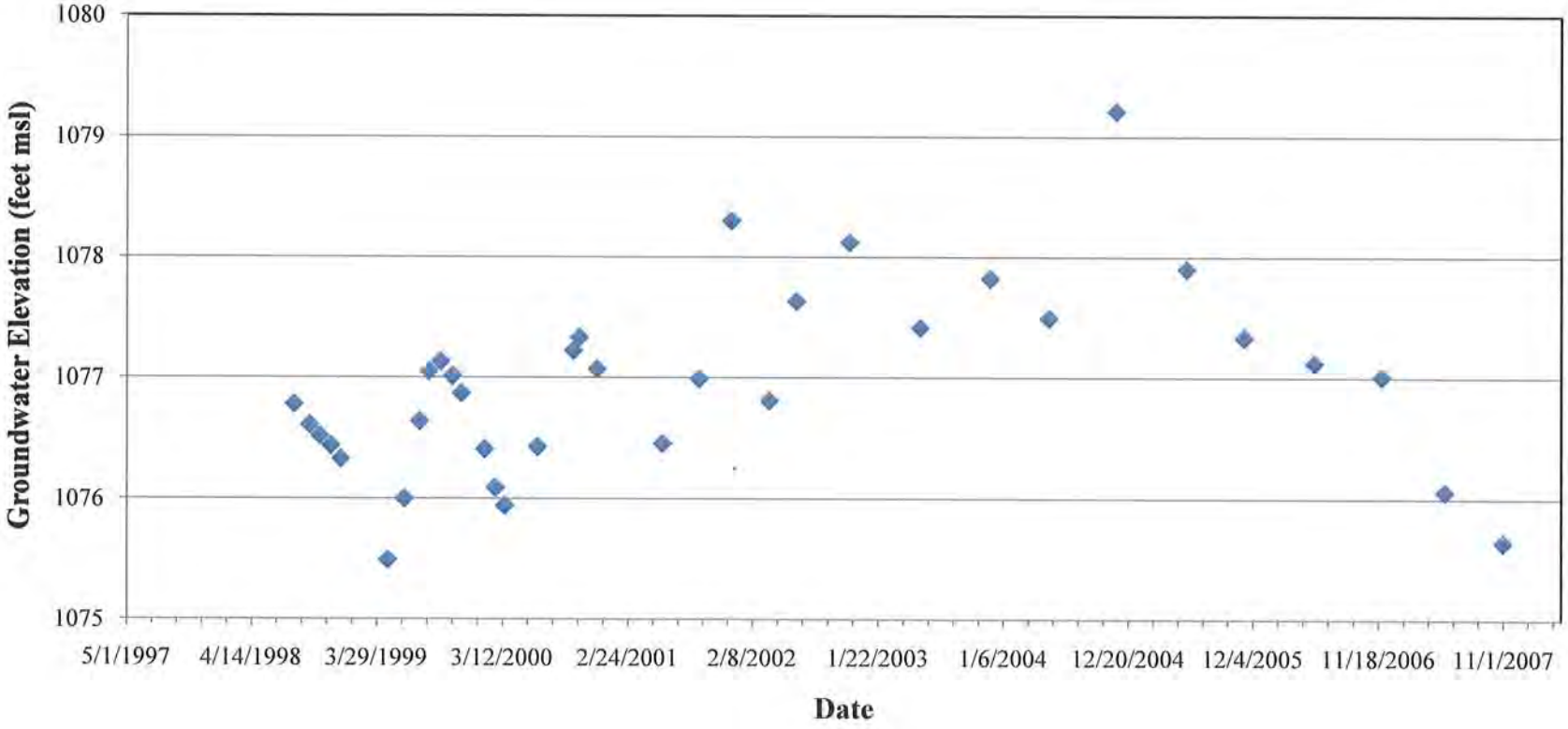
Groundwater Elevations in Well GM-40A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 75-85 Feet Below Ground Surface



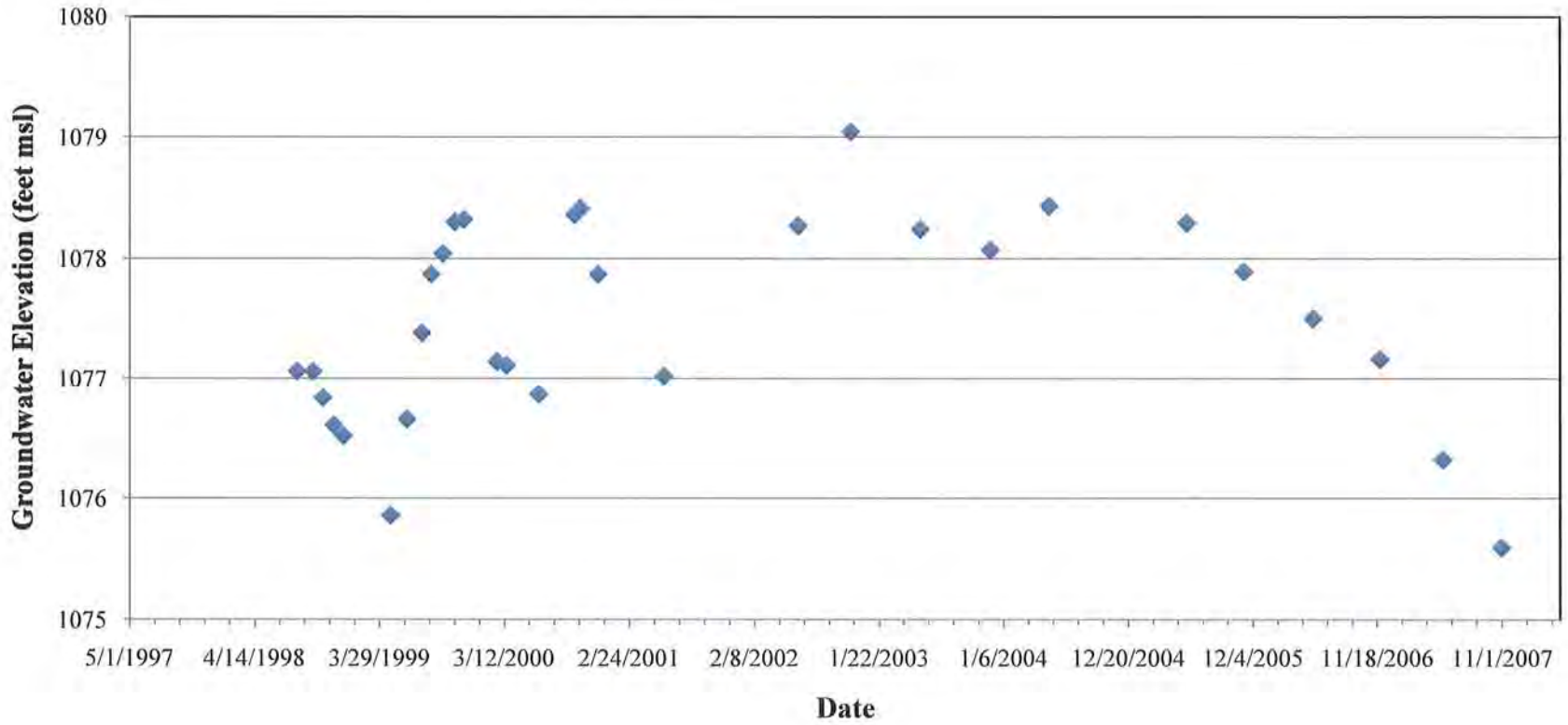
Groundwater Elevations in Well GM-40B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 120-130 Feet Below Ground Surface



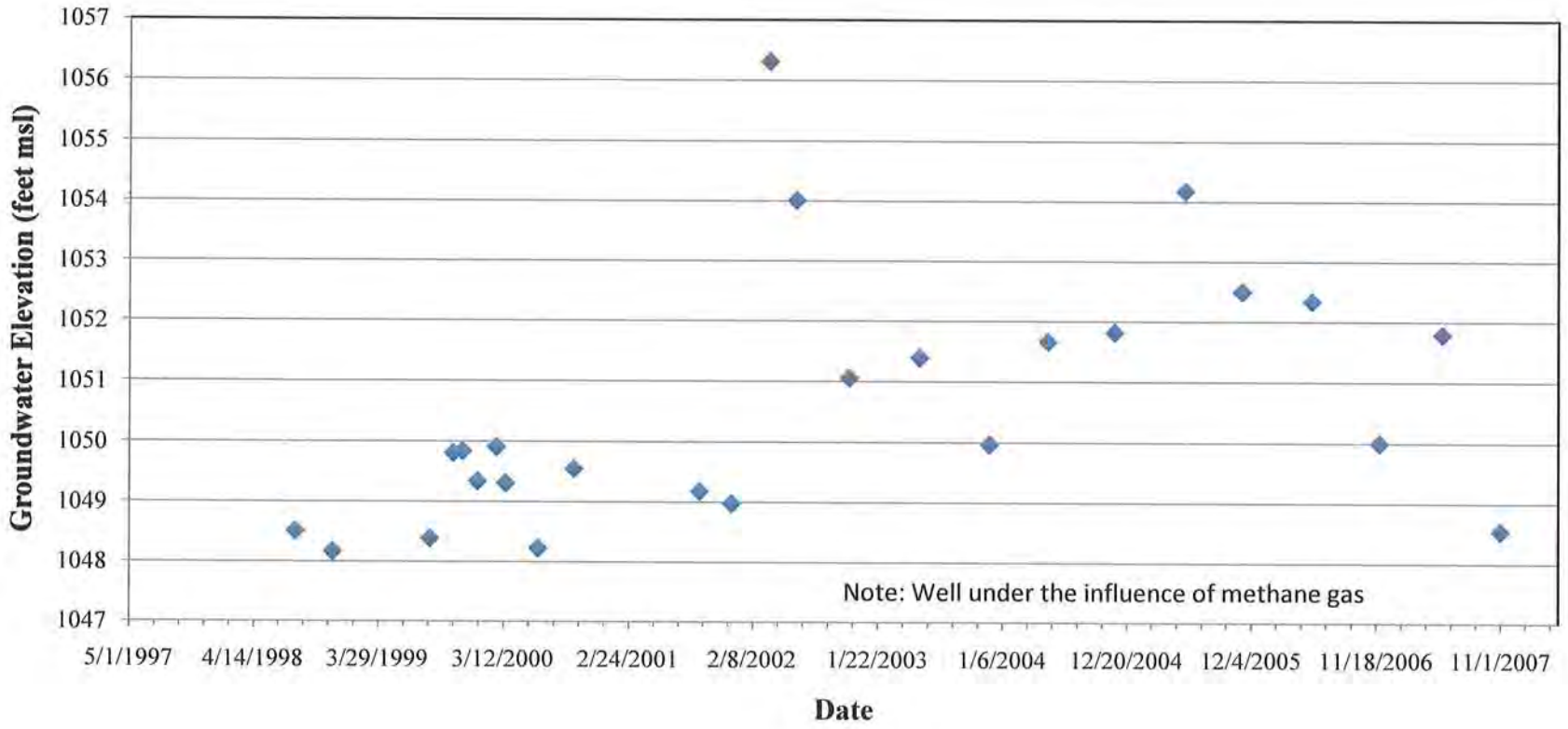
Groundwater Elevations in Well GM-41
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 40-50 Feet Below Ground Surface



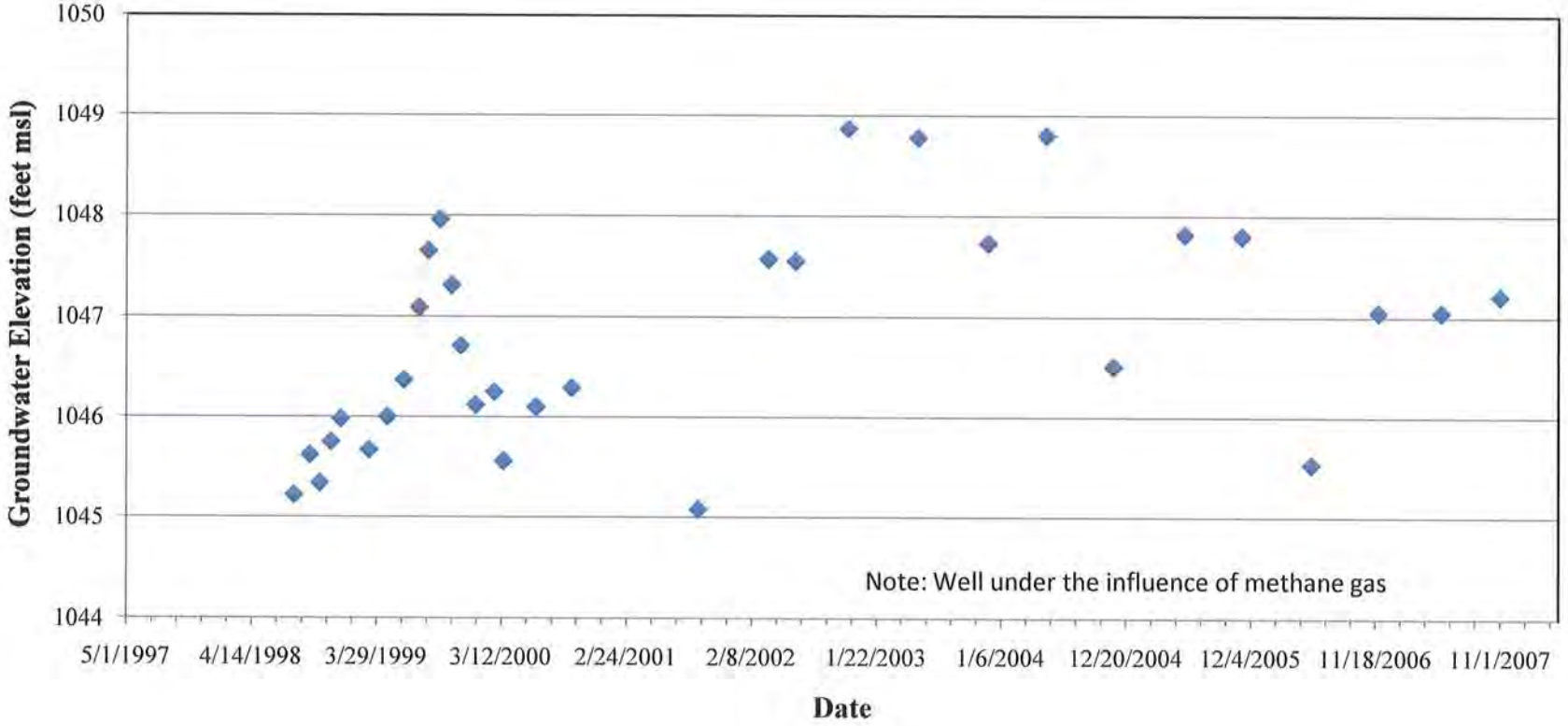
Groundwater Elevations in Well GM-42
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 72-82 Feet Below Ground Surface



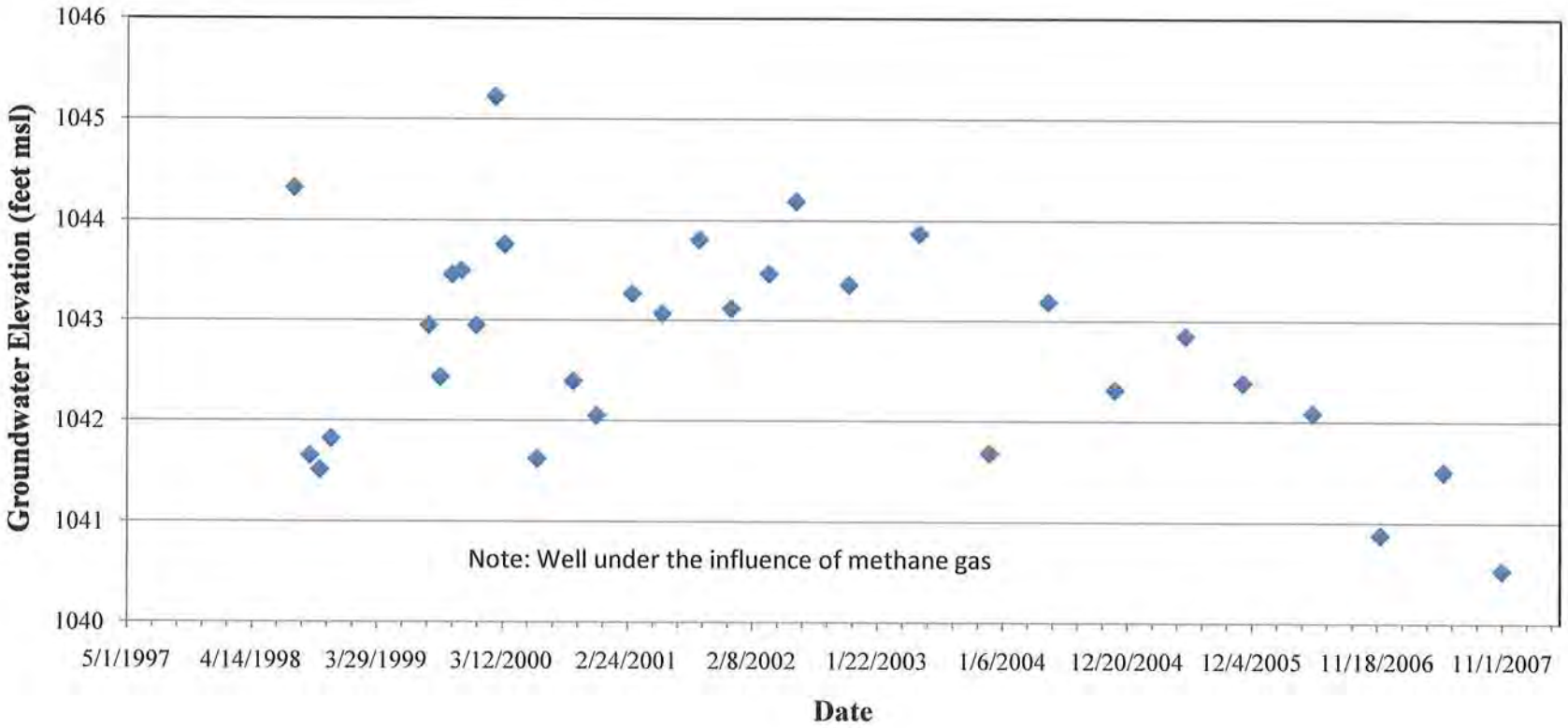
Groundwater Elevations in Well GM-43
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 64-74 Feet Below Ground Surface



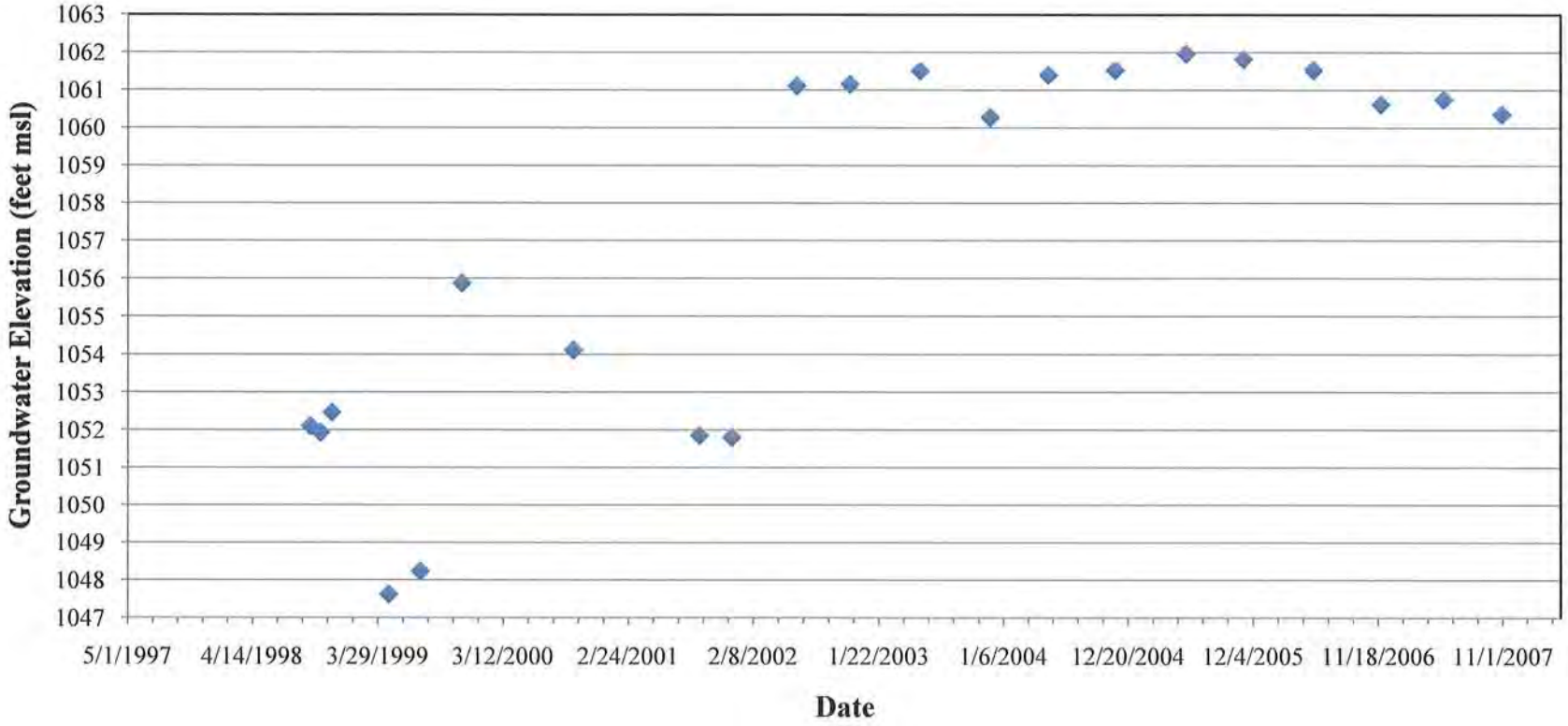
Groundwater Elevations in Well GM-44
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 60-80 Feet Below Ground Surface



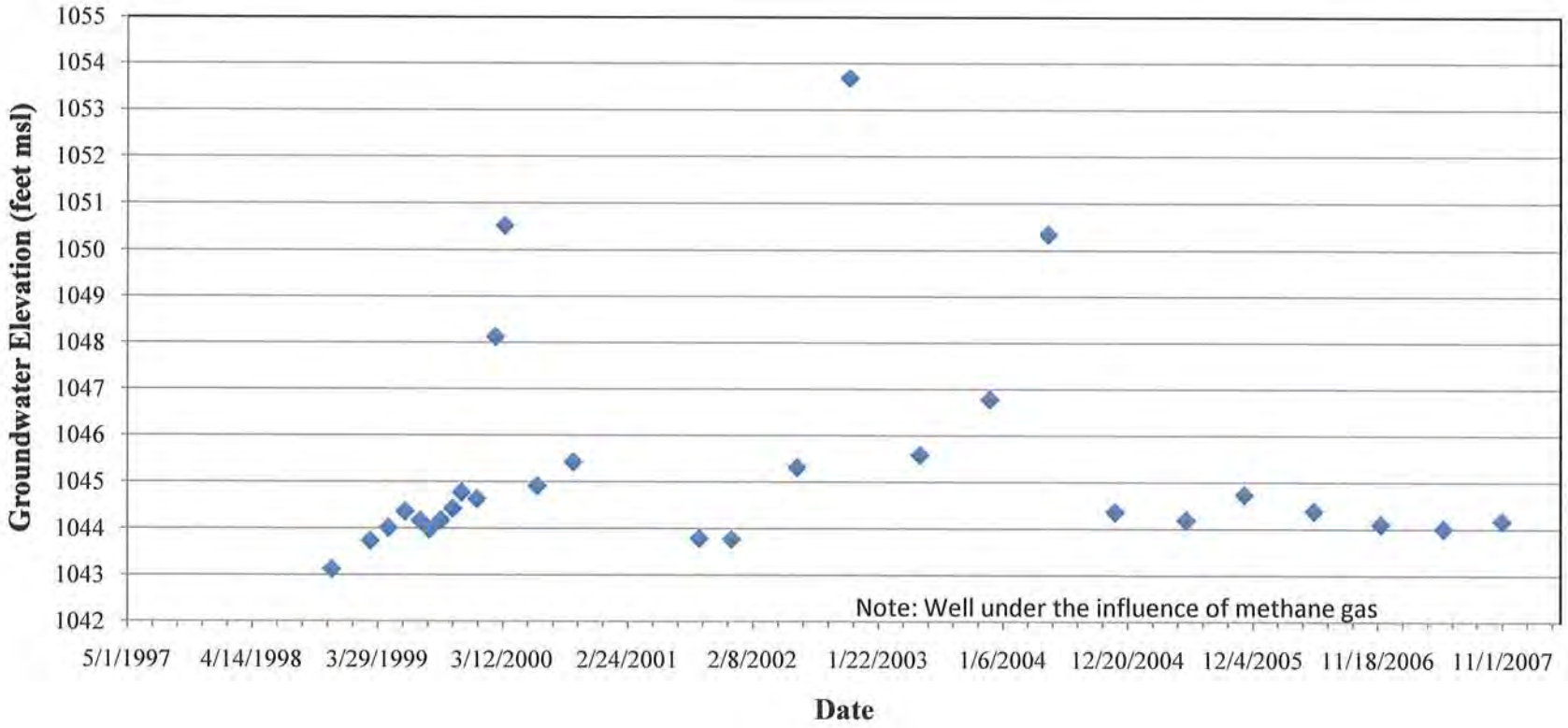
Groundwater Elevations in Well GM-45
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 70-85 Feet Below Ground Surface



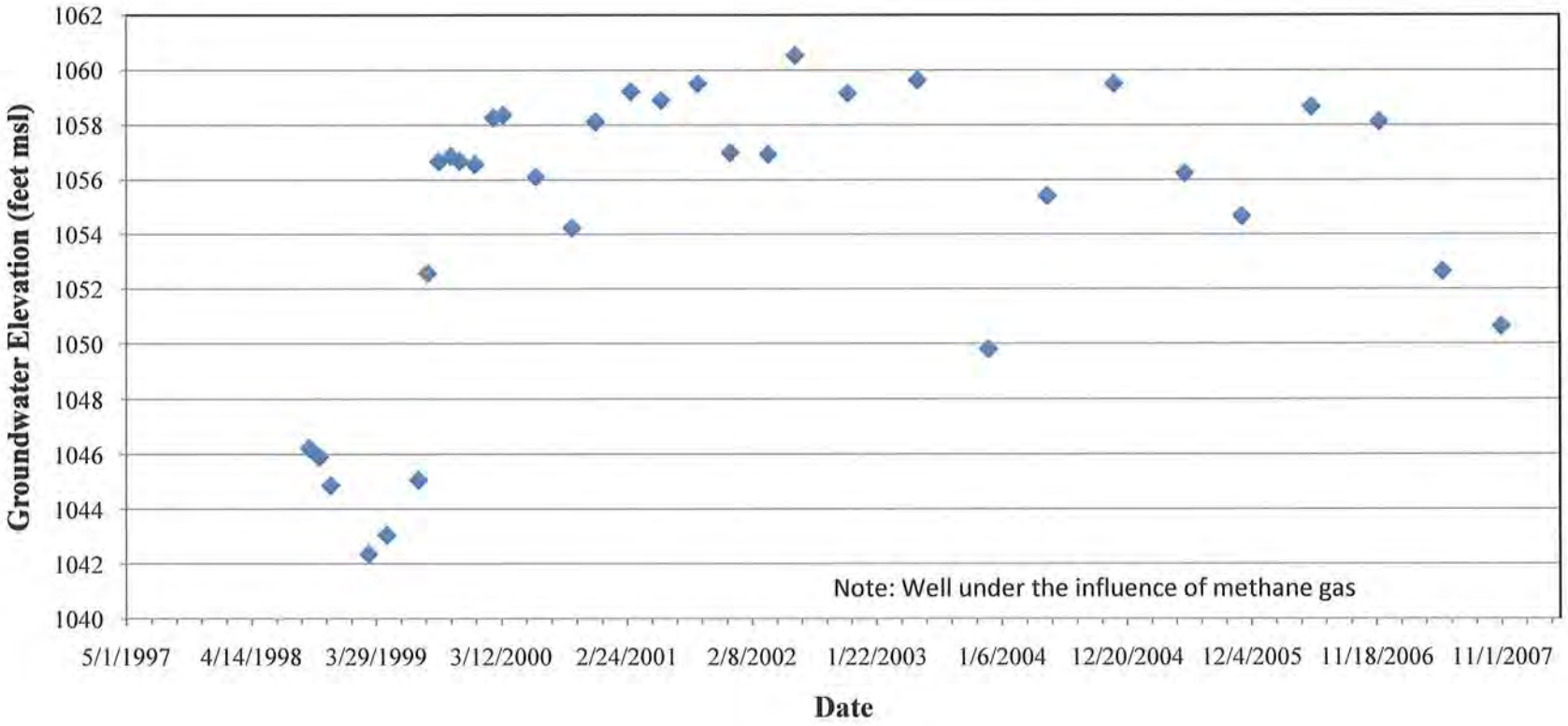
Groundwater Elevations in Well GM-46
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 65-75 Feet Below Ground Surface



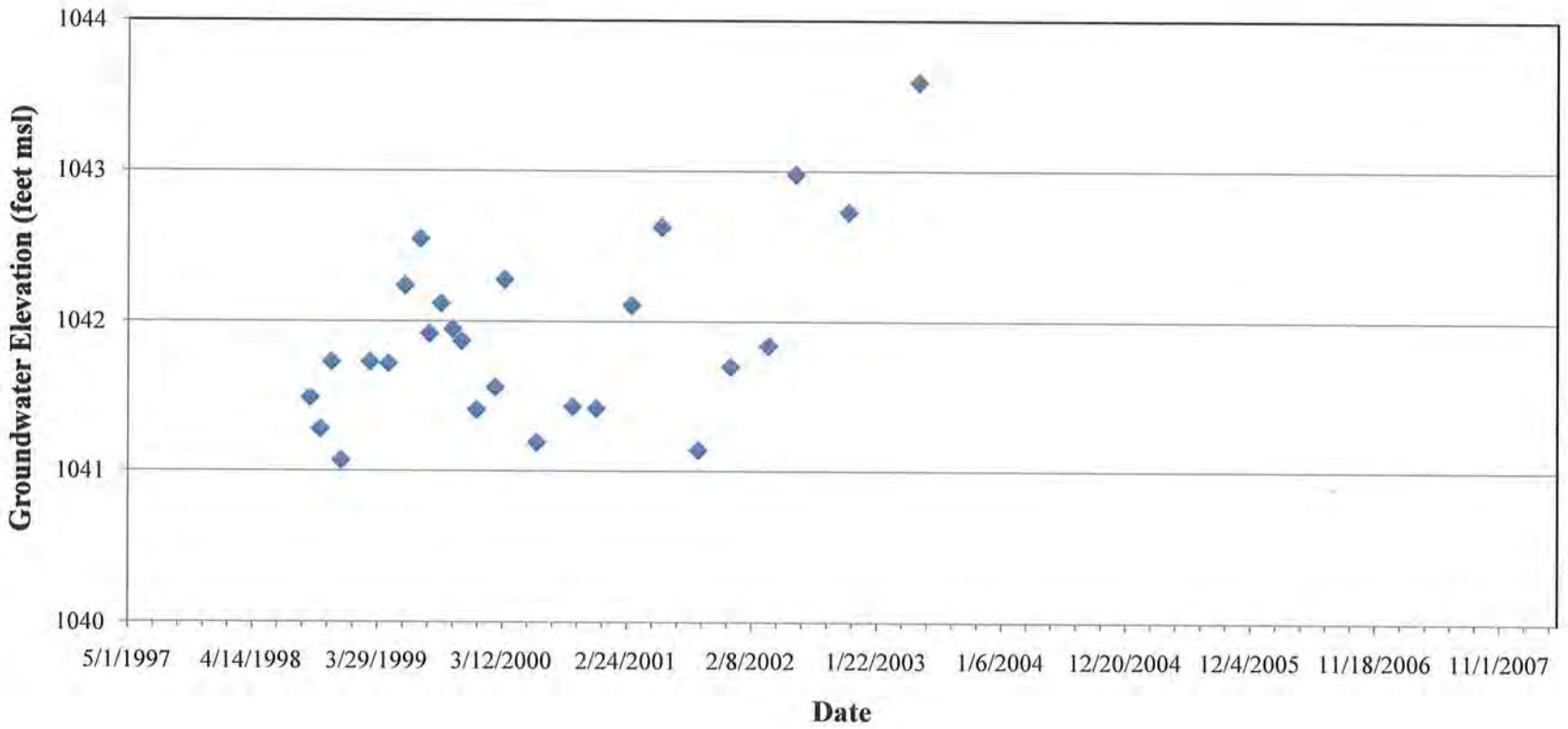
Groundwater Elevations in Well GM-47
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 69-84 Feet Below Ground Surface



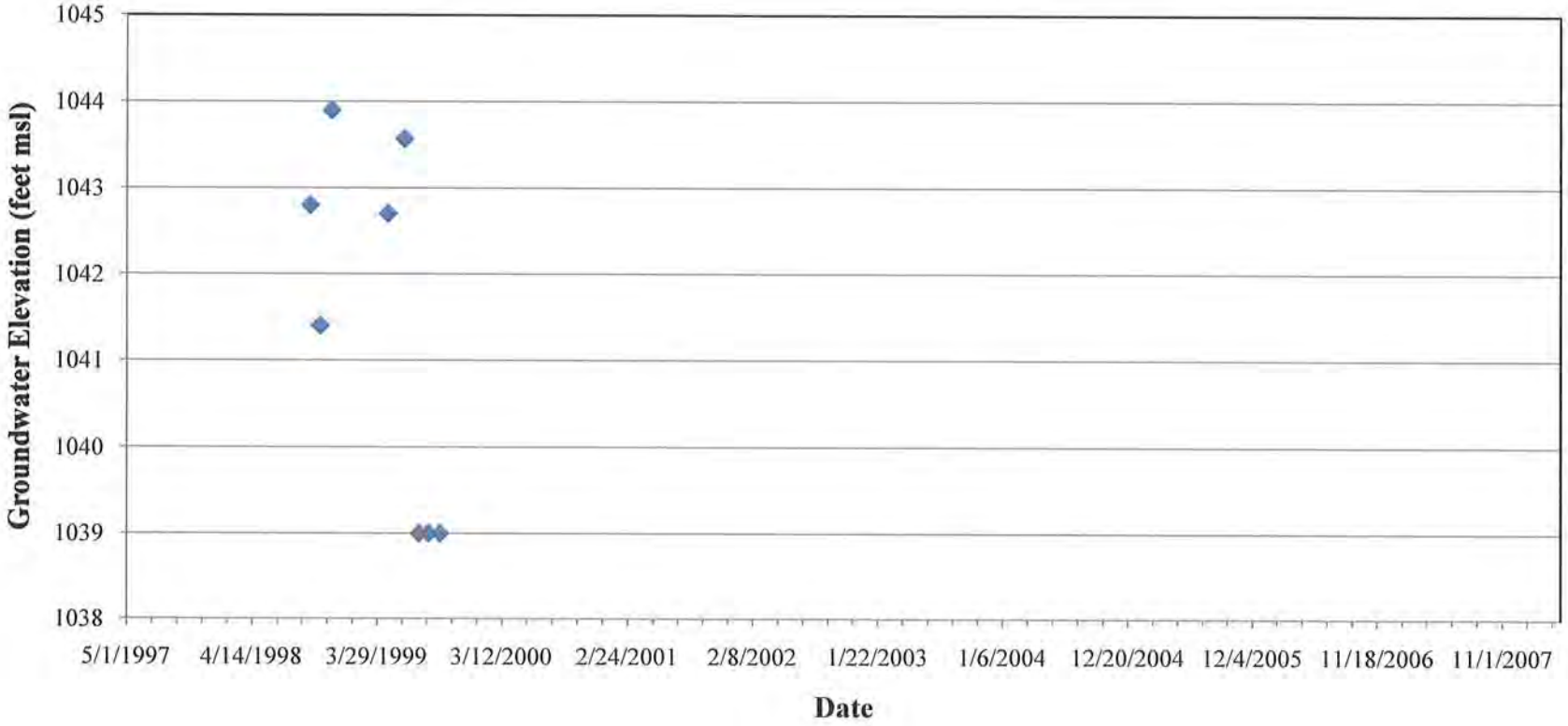
Groundwater Elevations in Well GM-48
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 65-85 Feet Below Ground Surface



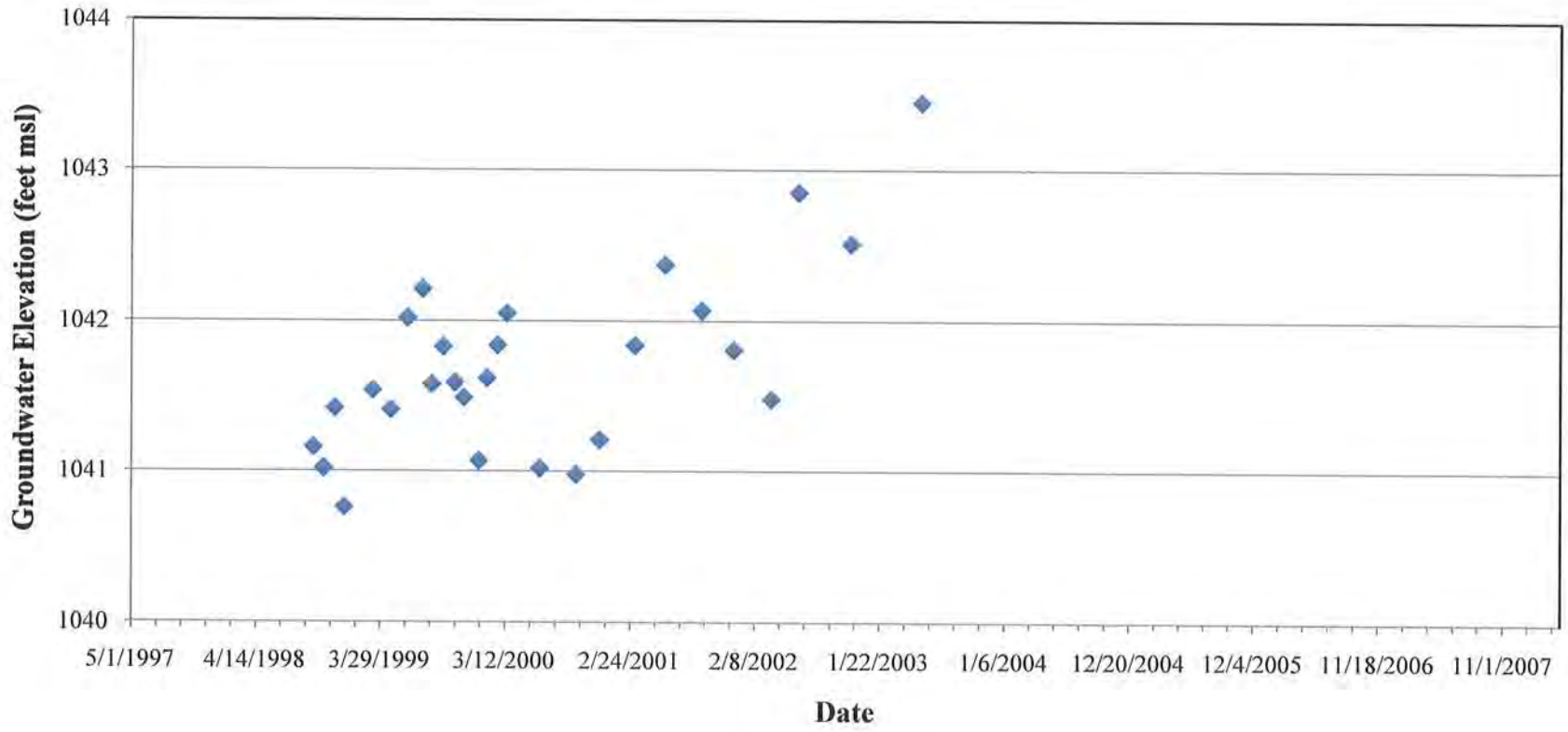
Groundwater Elevations in Well GM-49
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 83.5-93.5 Feet Below Ground Surface



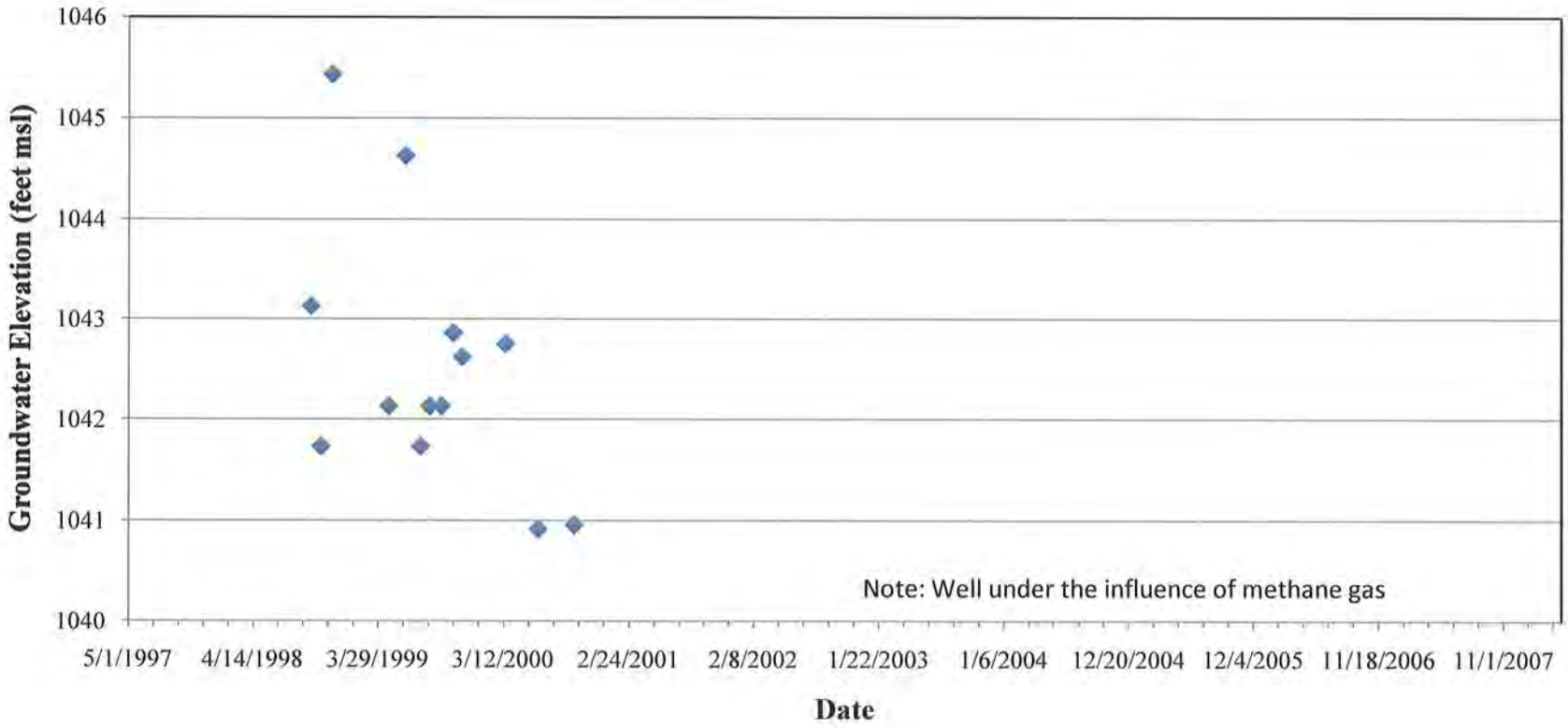
Groundwater Elevations in Well GM-50
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 80.5-95.5 Feet Below Ground Surface



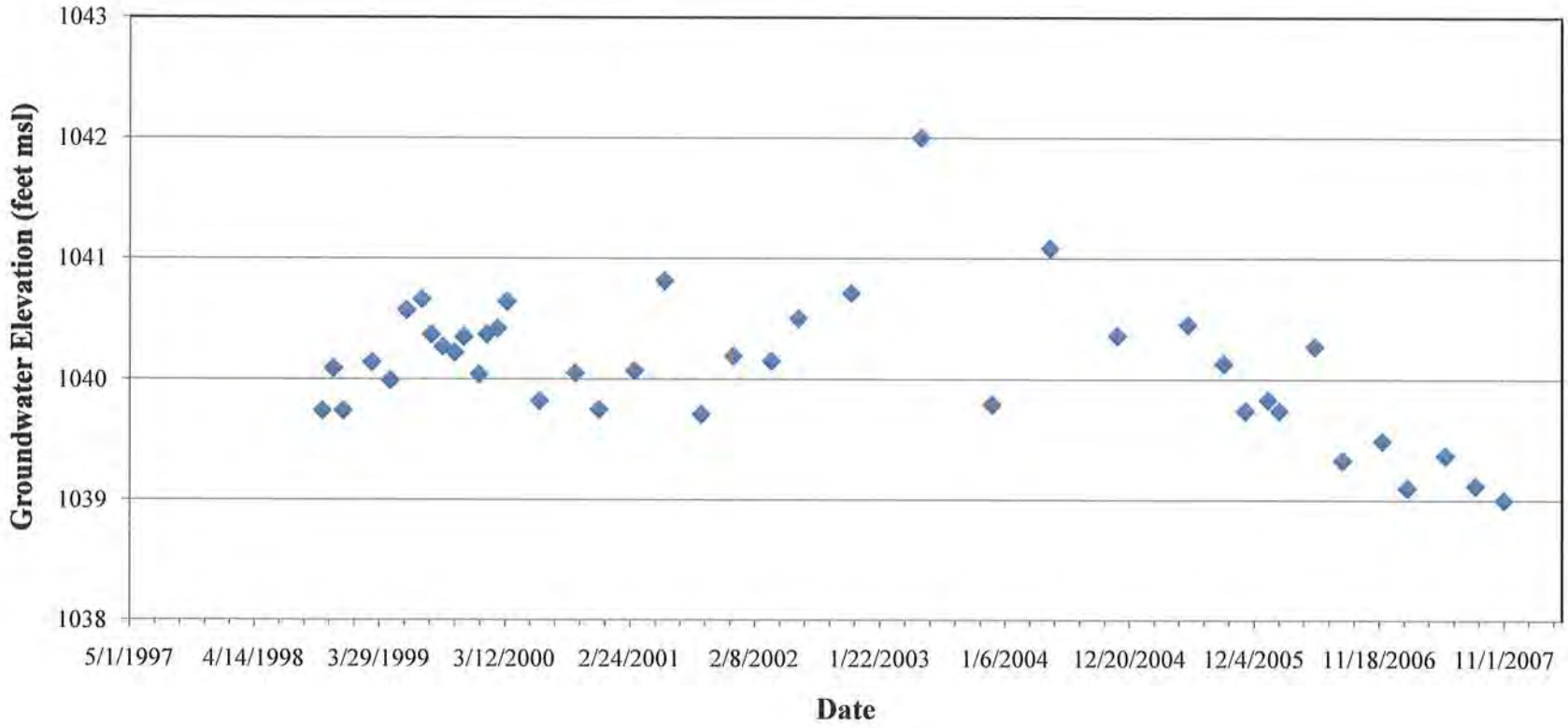
Groundwater Elevations in Well GM-51
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 67-77 Feet Below Ground Surface



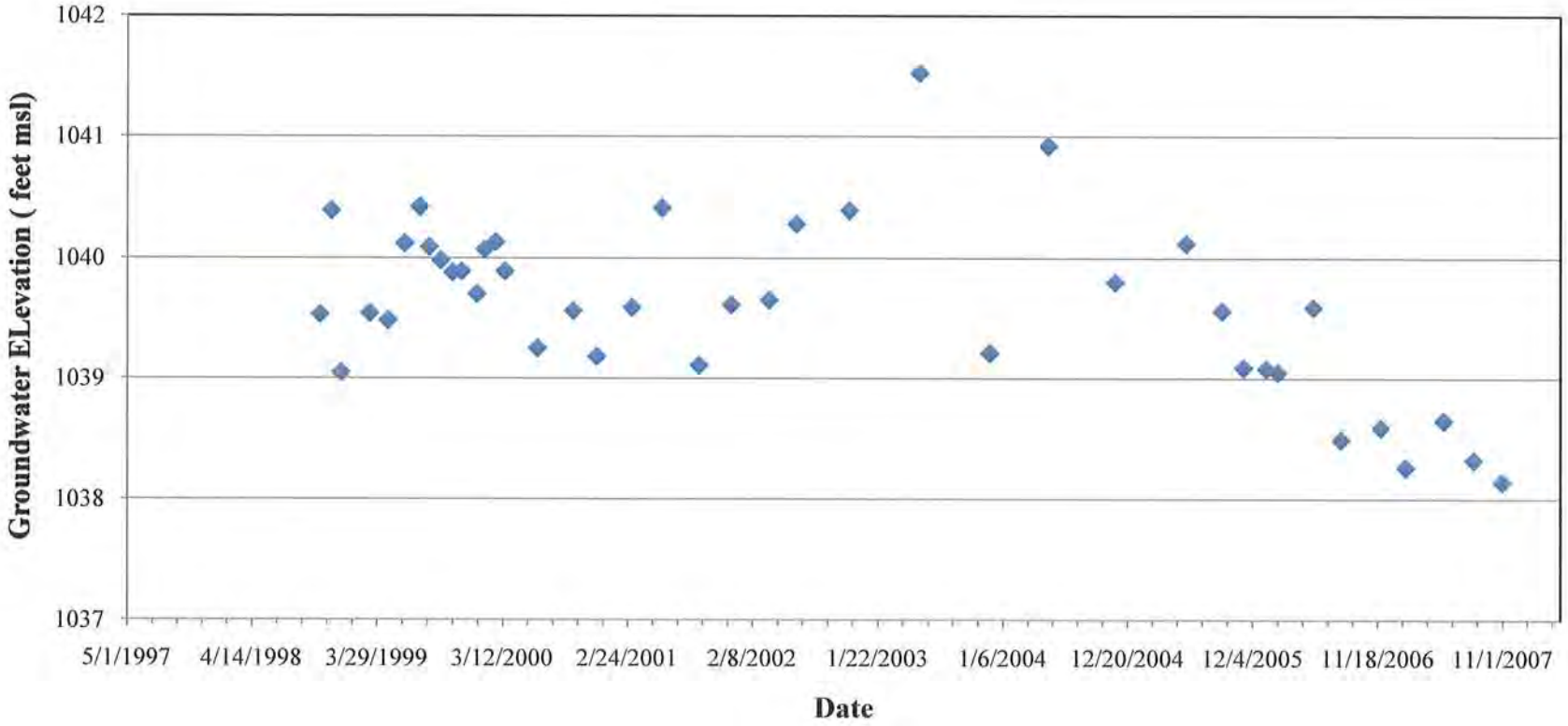
Groundwater Elevations in Well GM-52
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 75-95 Feet Below Ground Surface



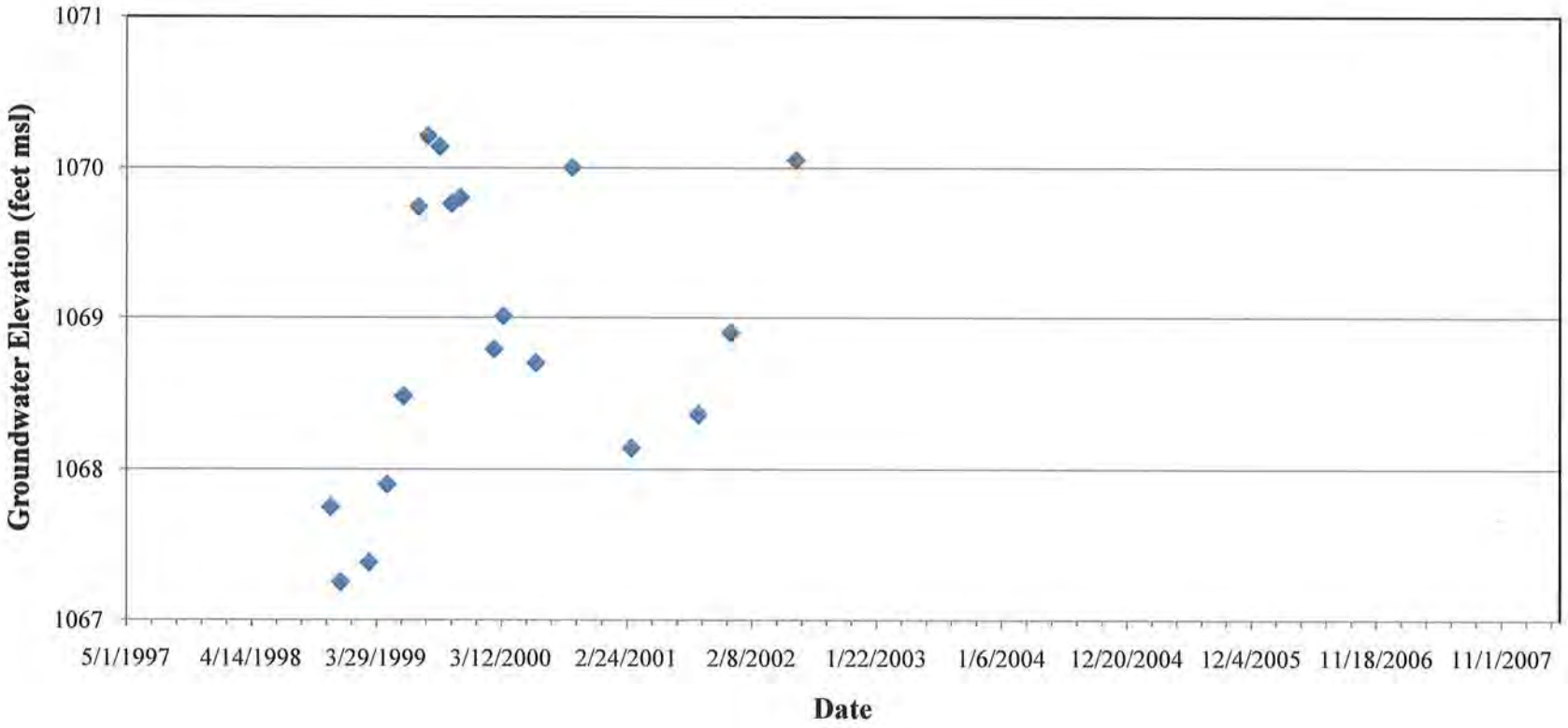
Groundwater Elevations in Well GM-53B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 195-205 Feet Below Ground Surface



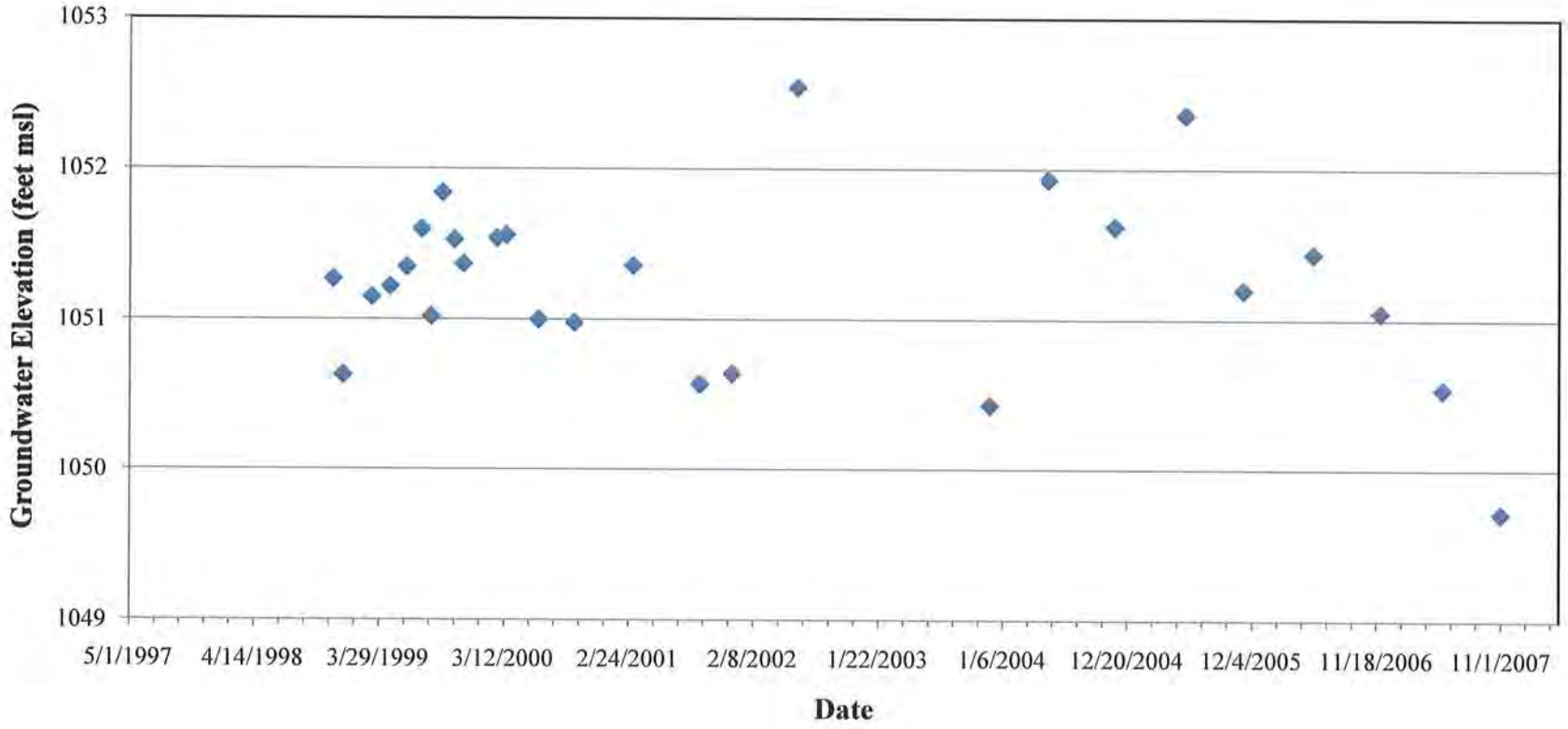
Groundwater Elevations in Well GM-53A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 79-89 Feet Below Ground Surface



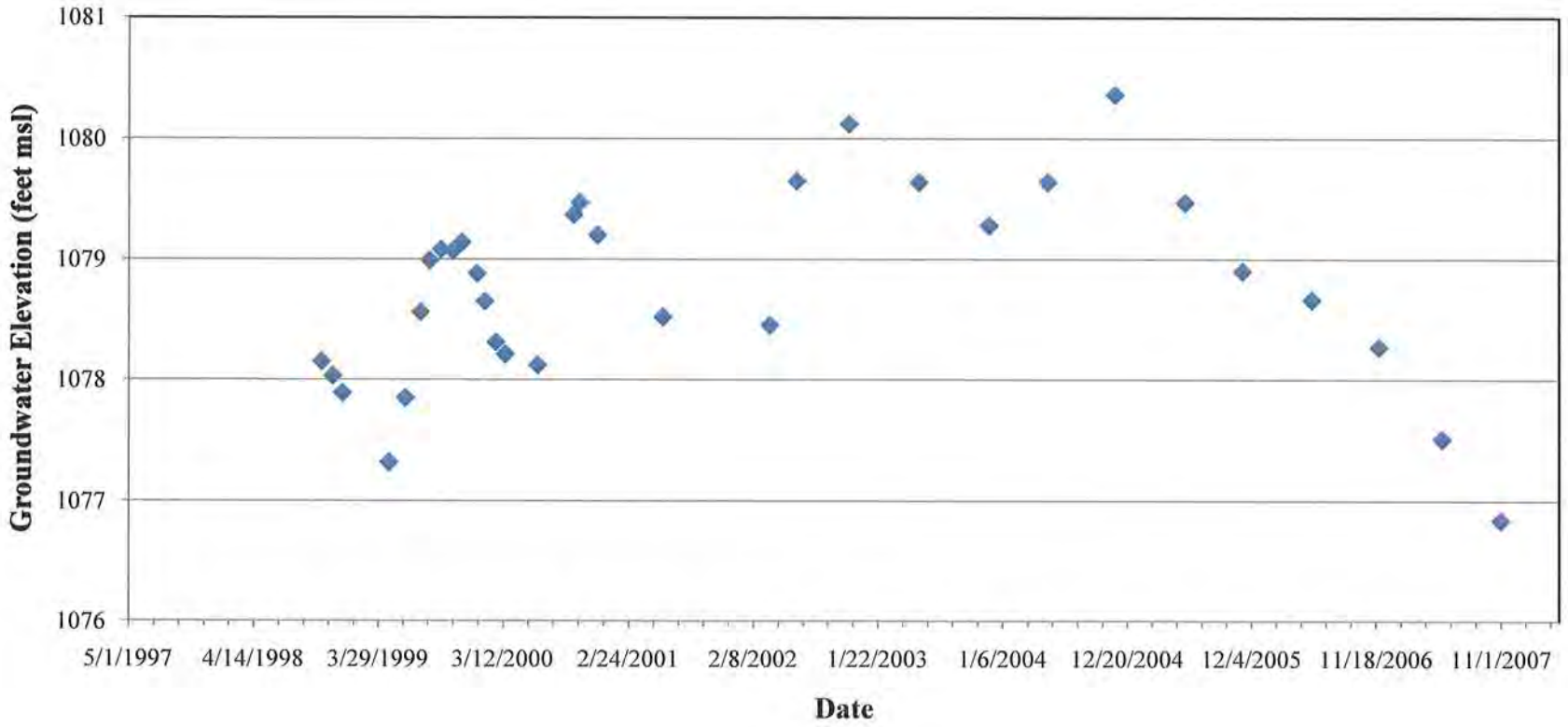
Groundwater Elevations in Well GM-54
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 80-90 Feet Below Ground Surface



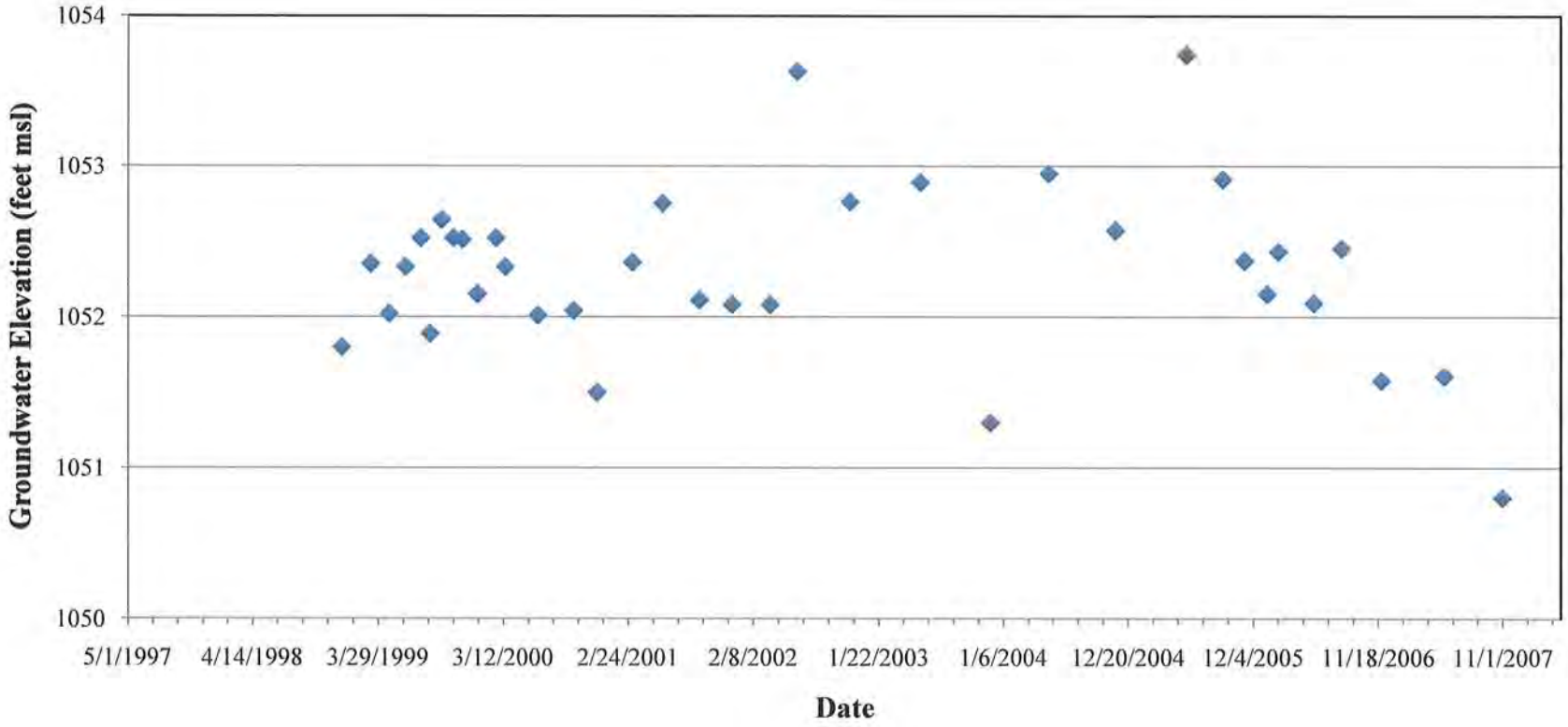
Groundwater Elevations in Well GM-55
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 75-85 Feet Below Ground Surface



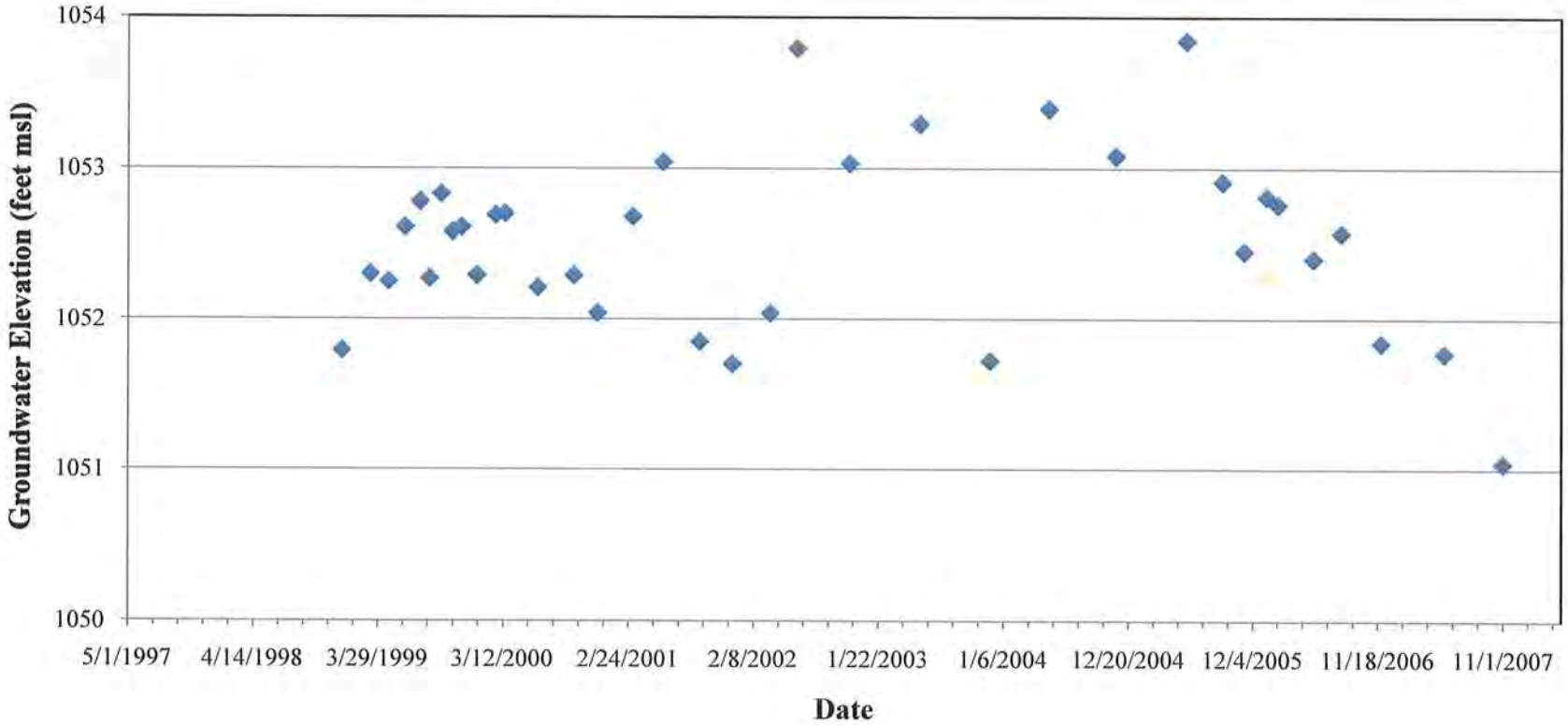
Groundwater Elevations in Well GM-5
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 32-47 Feet Below Ground Surface



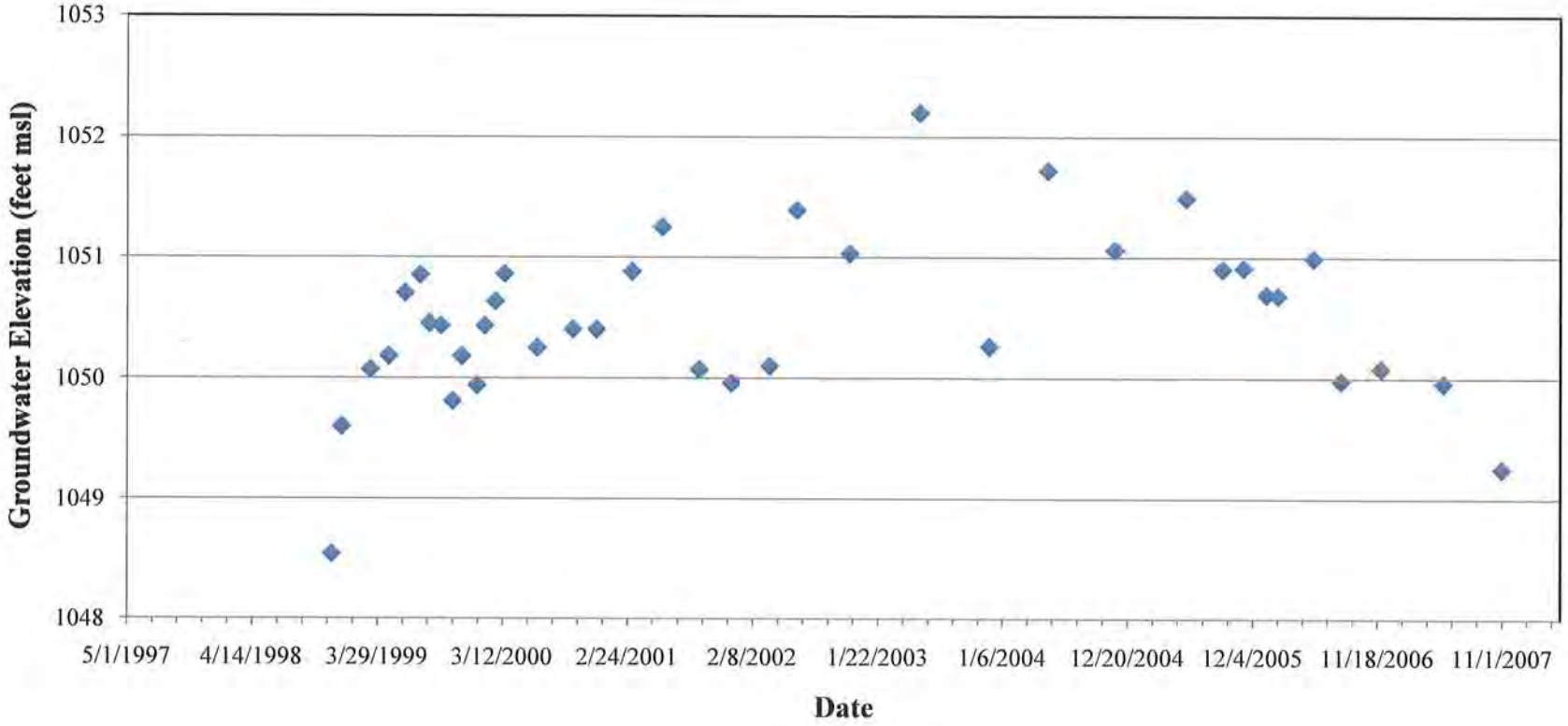
Groundwater Elevations in Well GM-57
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 76-86 Feet Below Ground Surface



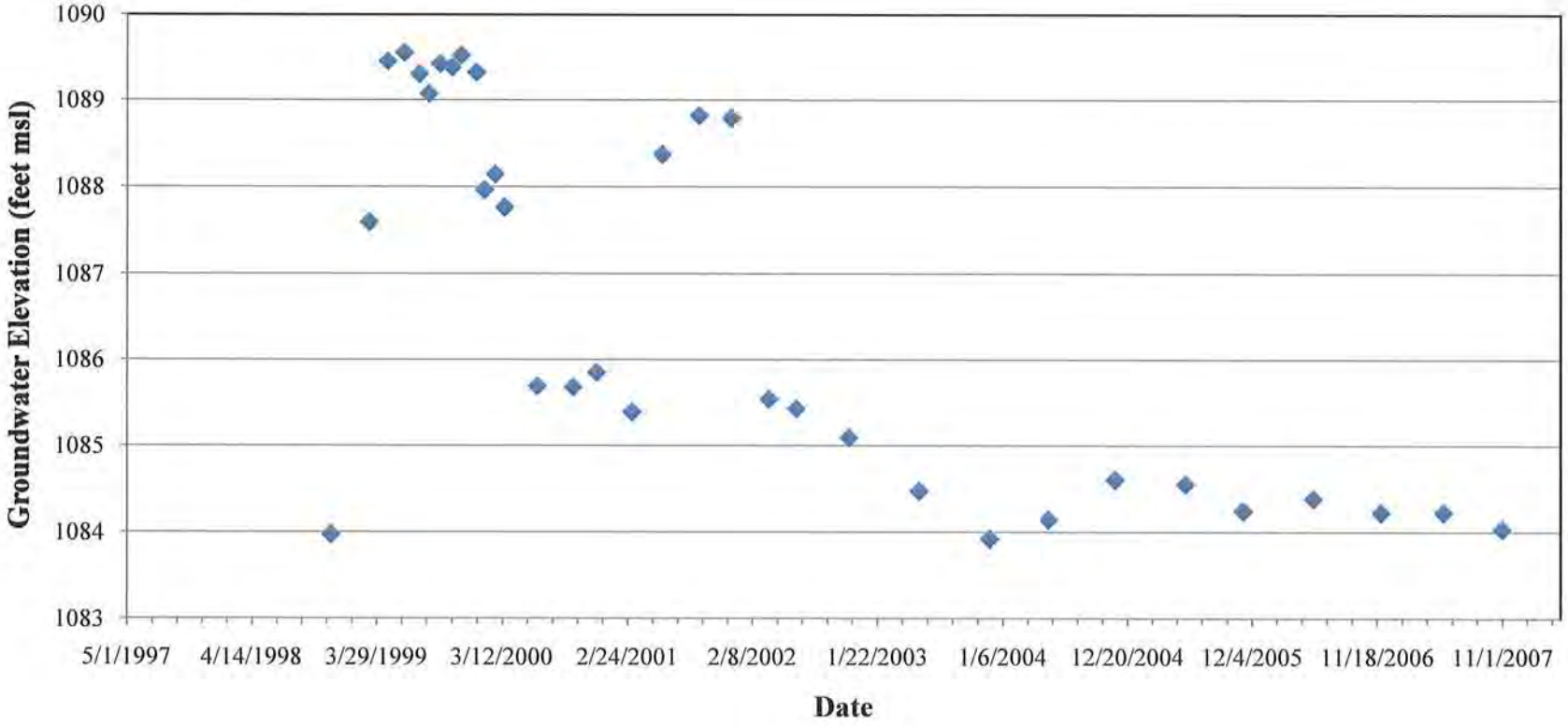
Groundwater Elevations in Well GM-58
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 75-85 Feet Below Ground Surface



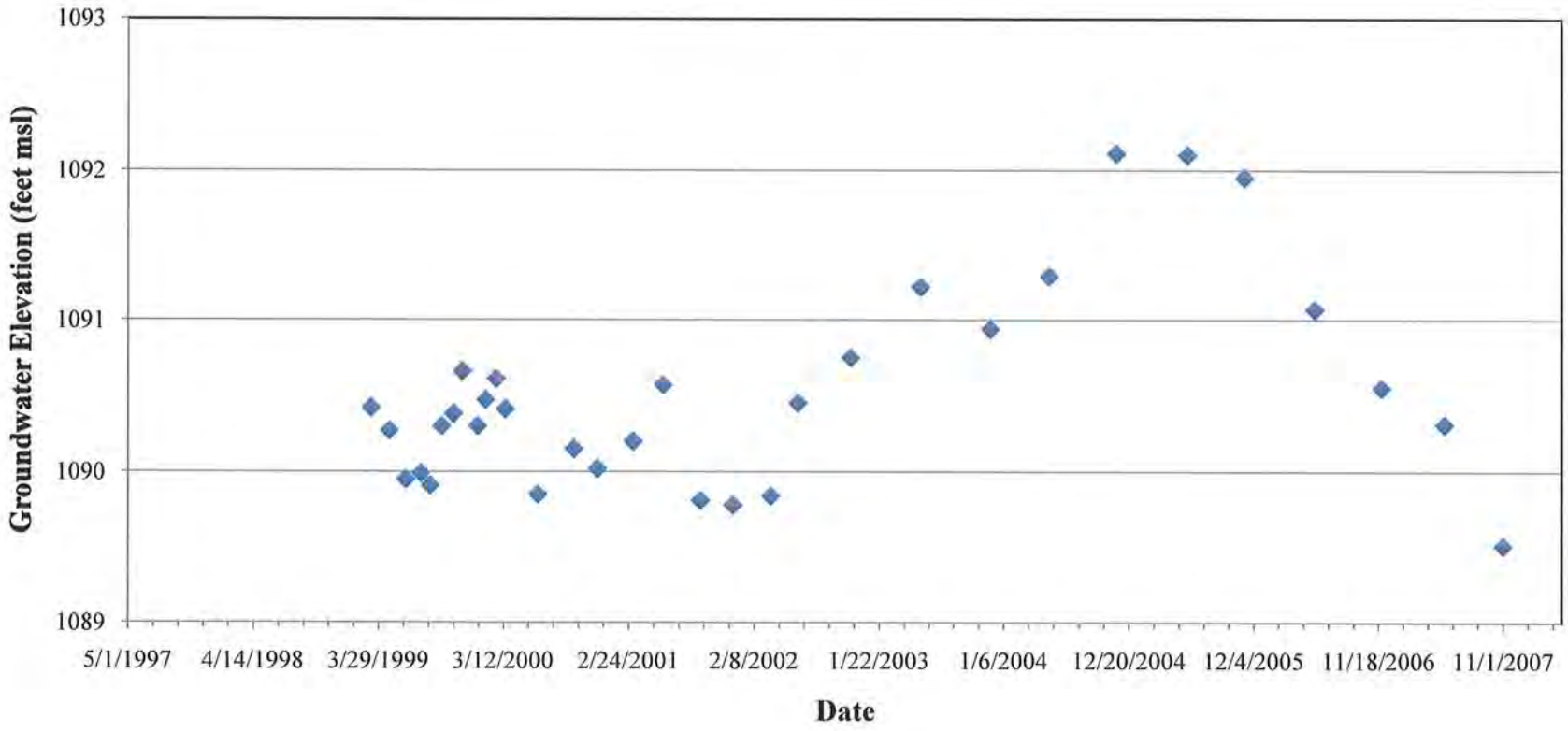
Groundwater Elevations in Well GM-59
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 114-124 Feet Below Ground Surface



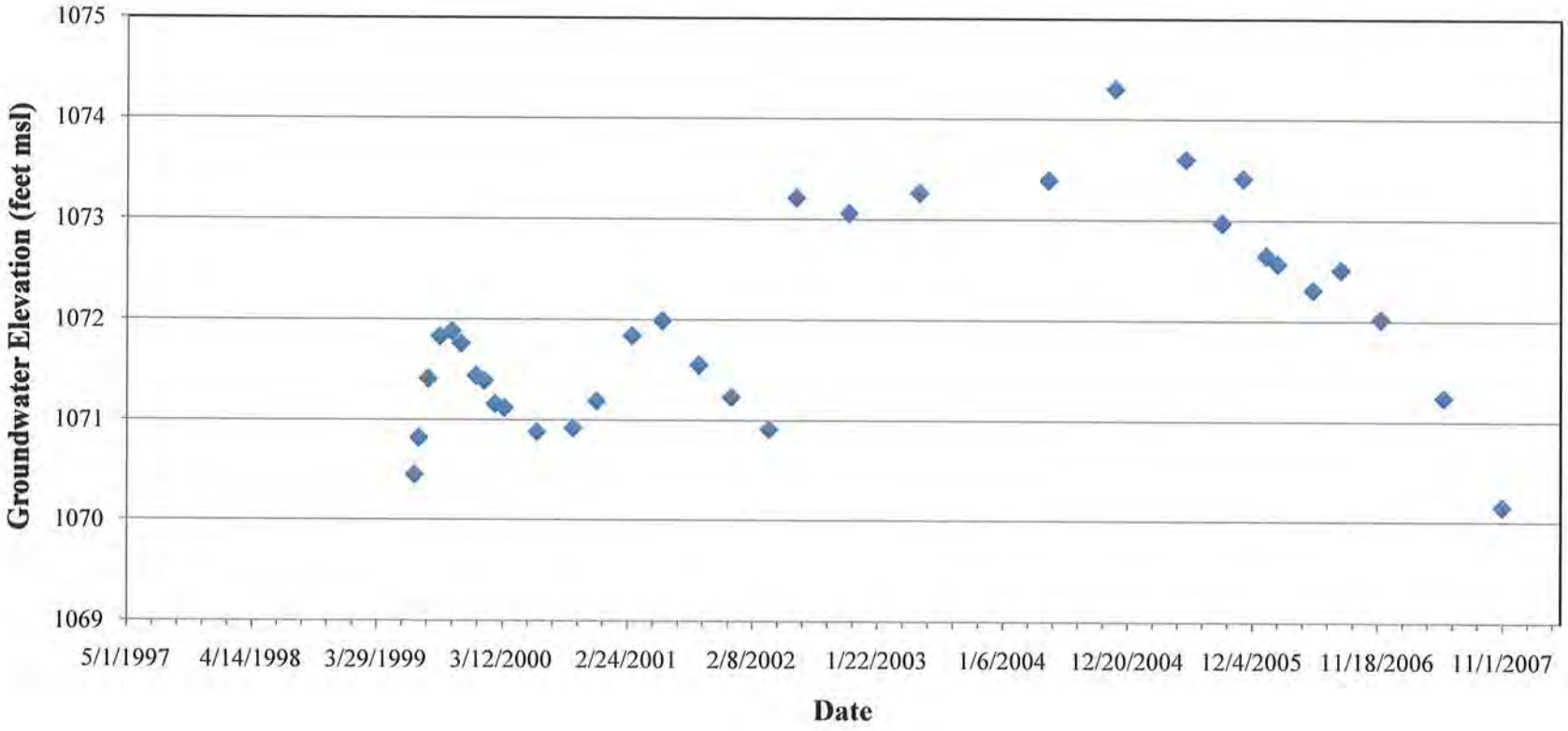
Groundwater Elevations in Well GM-60
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 102-107 Feet Below Ground Surface



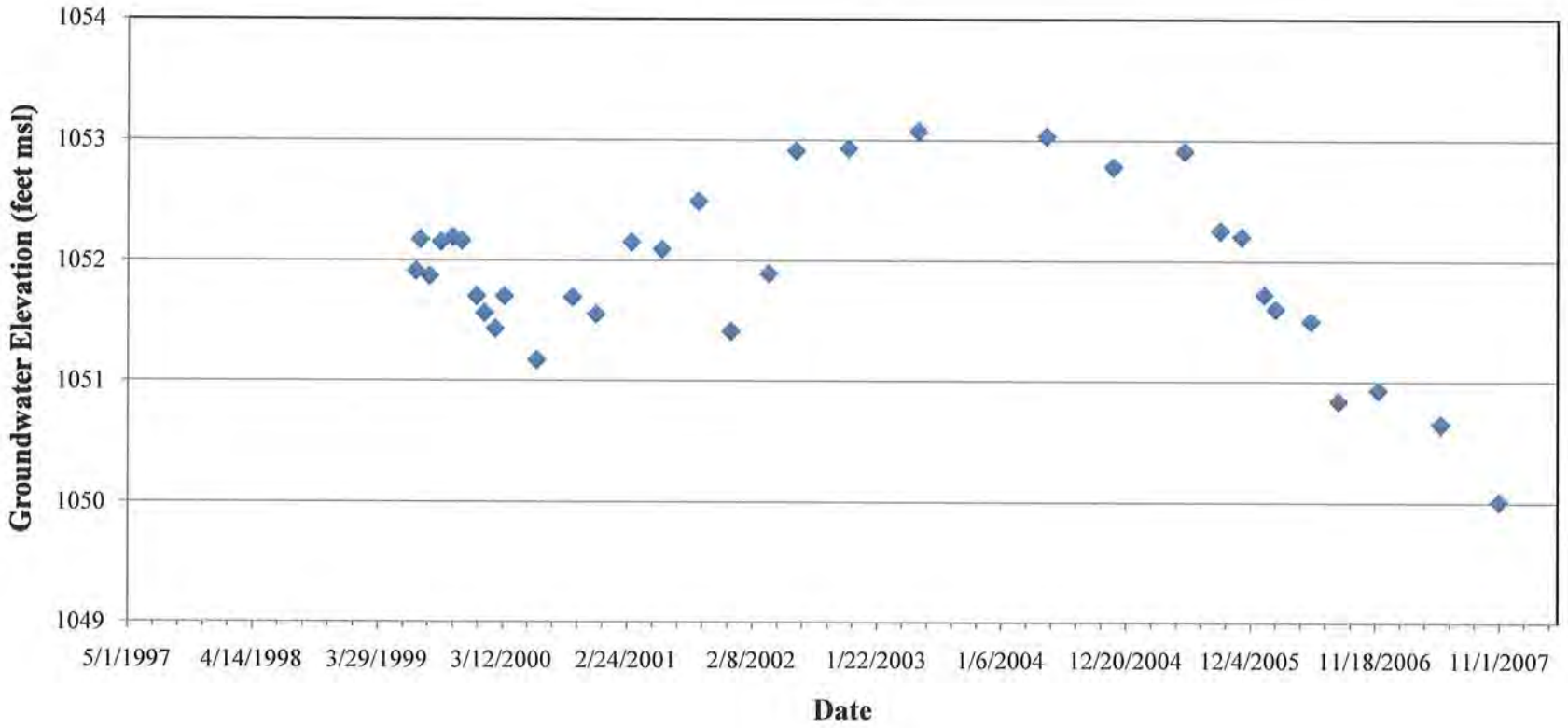
Groundwater Elevations in Well GM-61
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 138-143 Feet Below Ground Surface



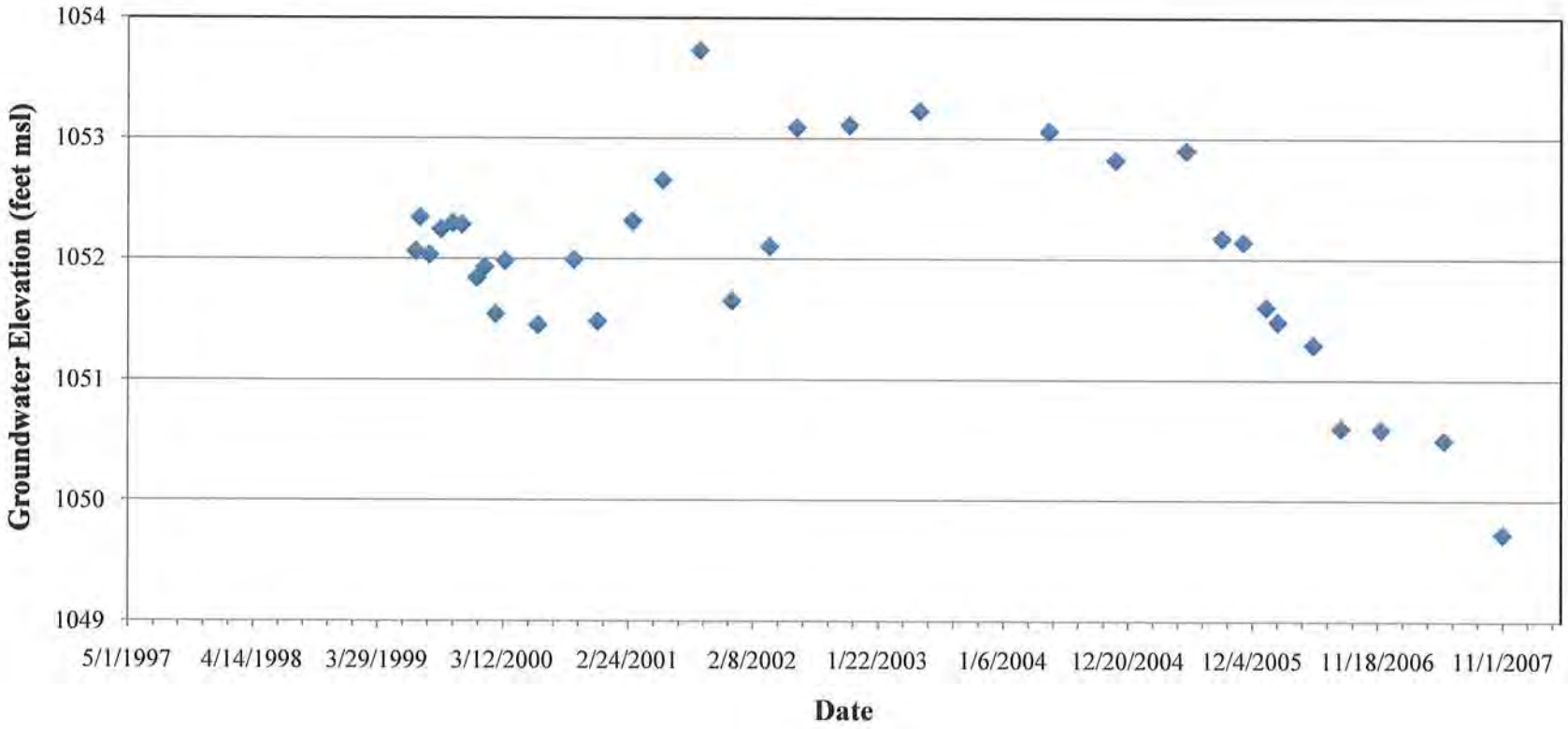
Groundwater Elevations in Well GM-62A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 90-100 Feet Below Ground Surface



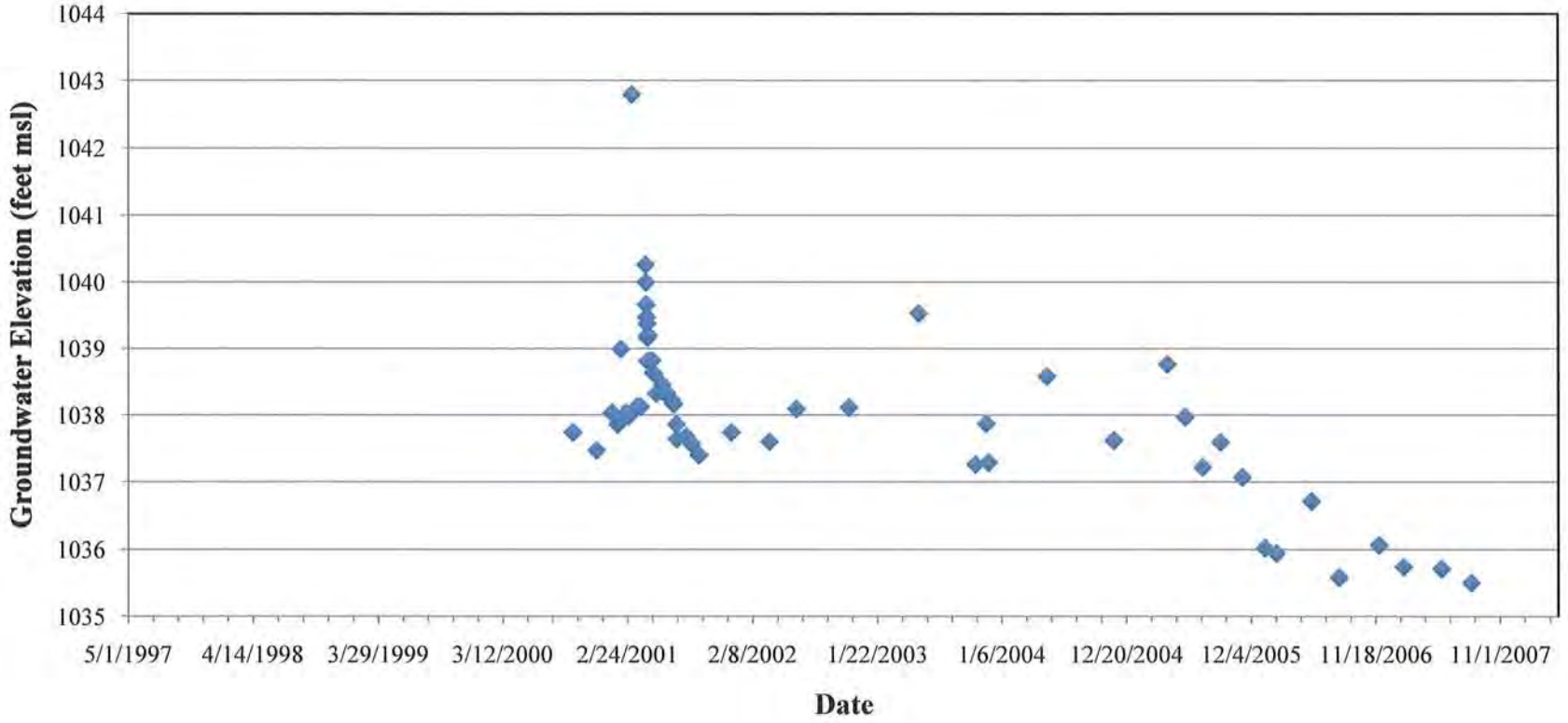
Groundwater Elevations in Well GM-62B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 195-205 Feet Below Ground Surface



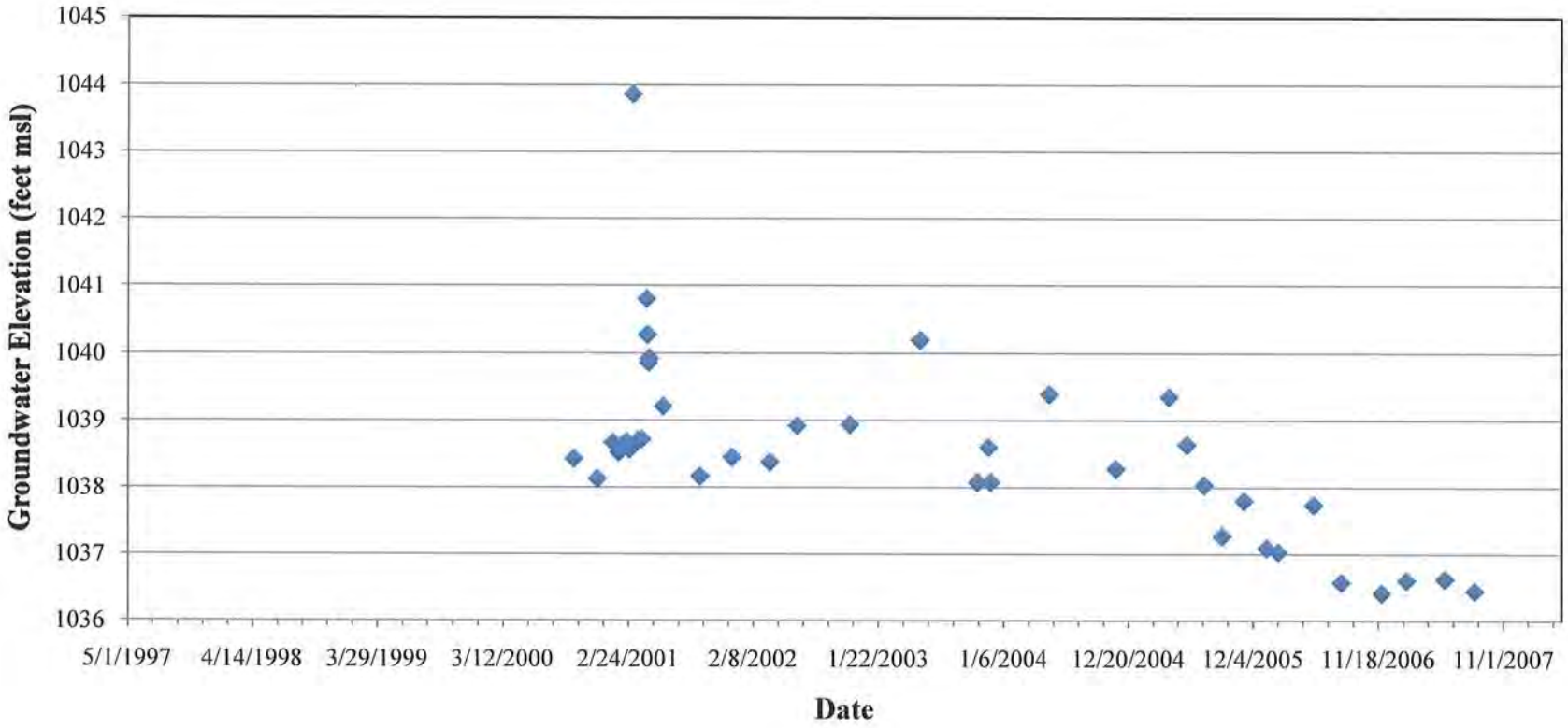
Groundwater Elevations in Well GM-62C
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 315-325 Feet Below Ground Surface



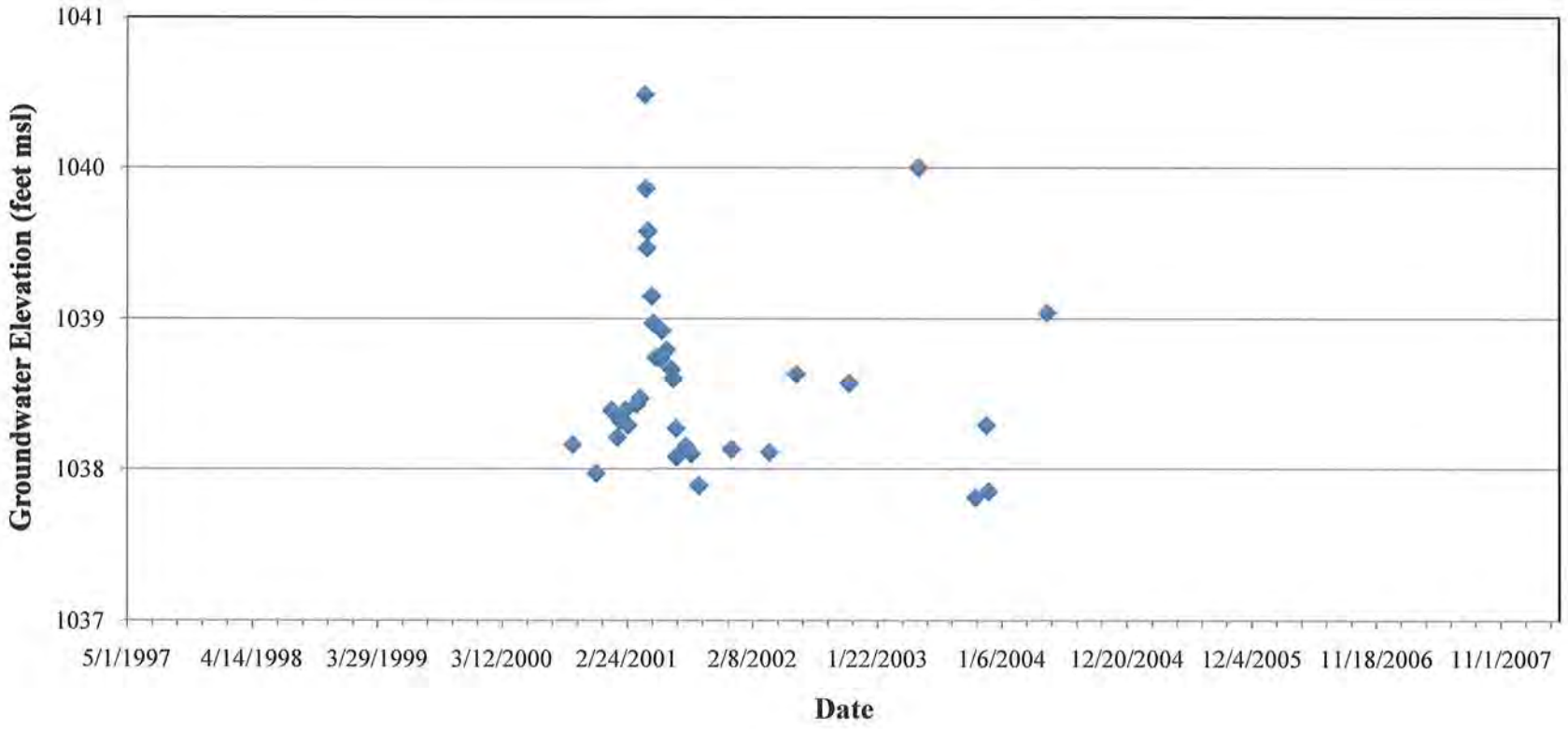
Groundwater Elevations in Well GM-63A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 45-50 Feet Below Ground Surface



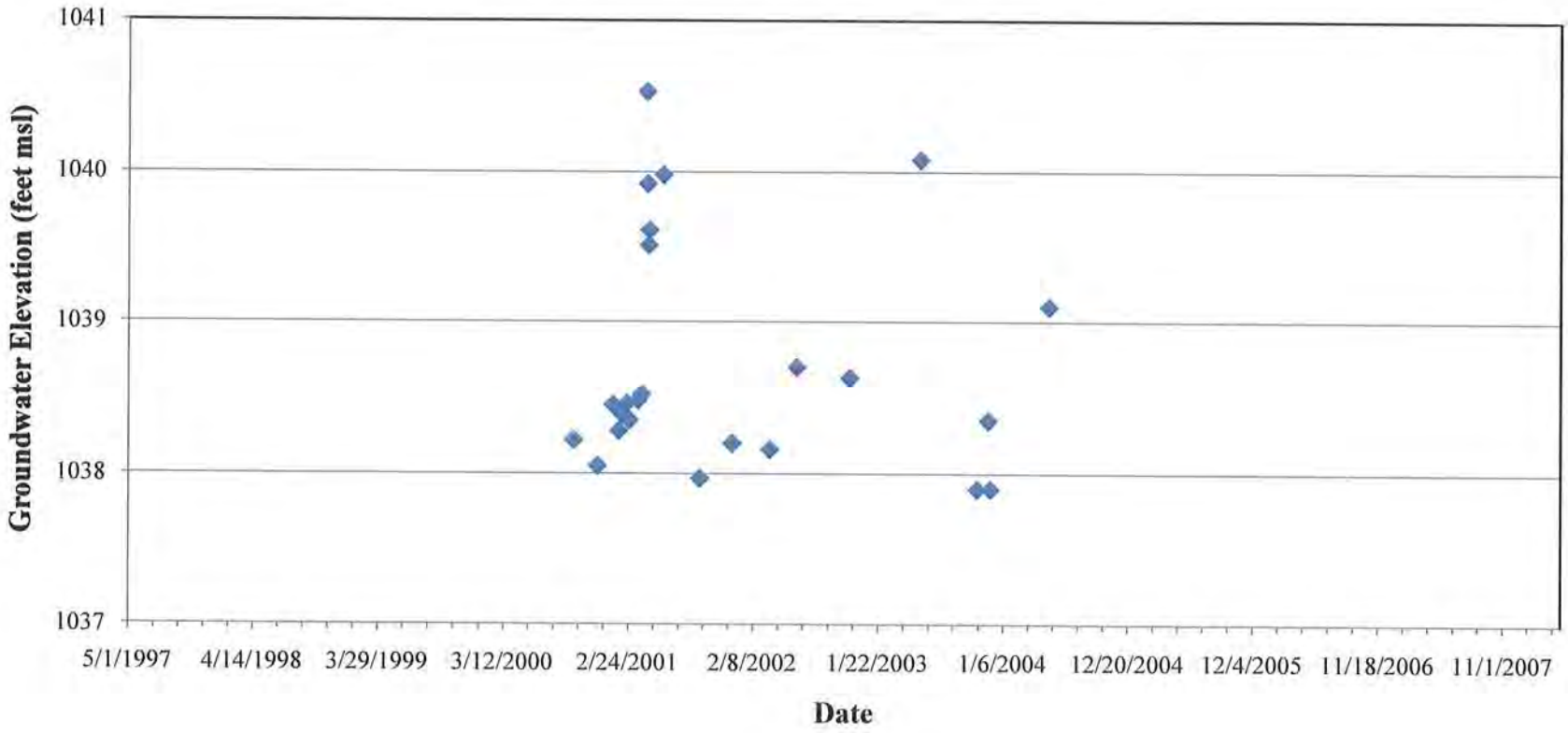
Groundwater Elevations in Well GM-63B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 105-110 Feet Below Ground Surface



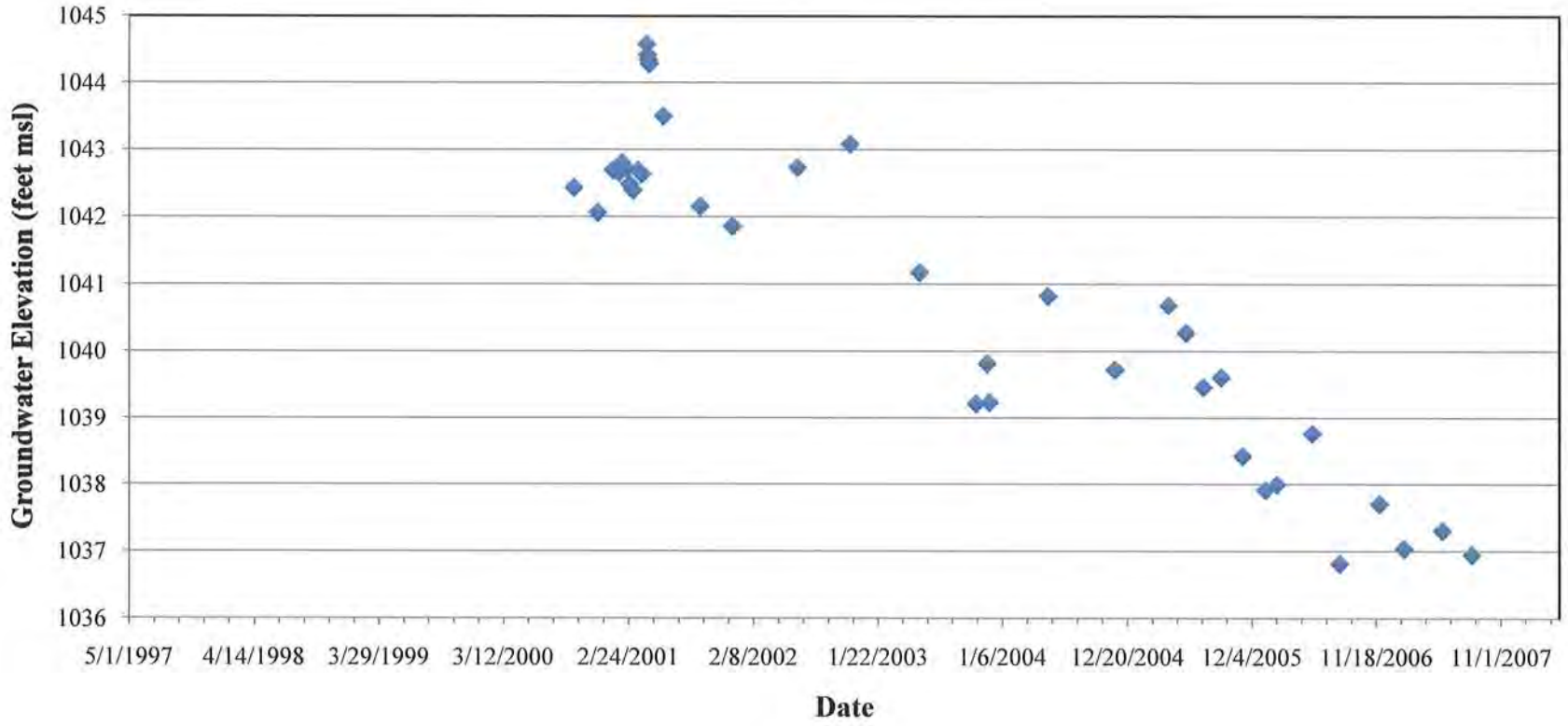
Groundwater Elevations in Well GM-64A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 33-43 Feet Below Ground Surface



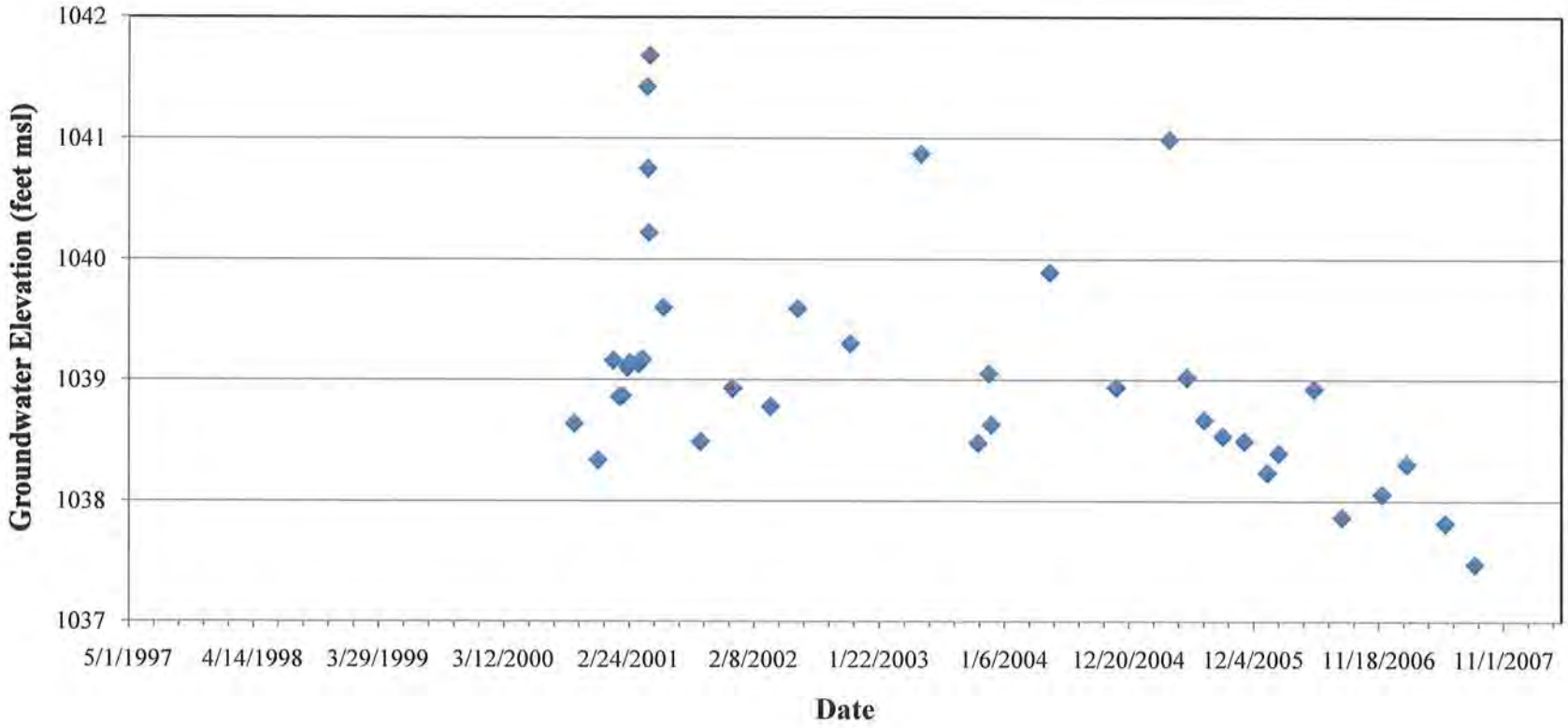
Groundwater Elevations in Well GM-64B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 117-122 Feet Below Ground Surface



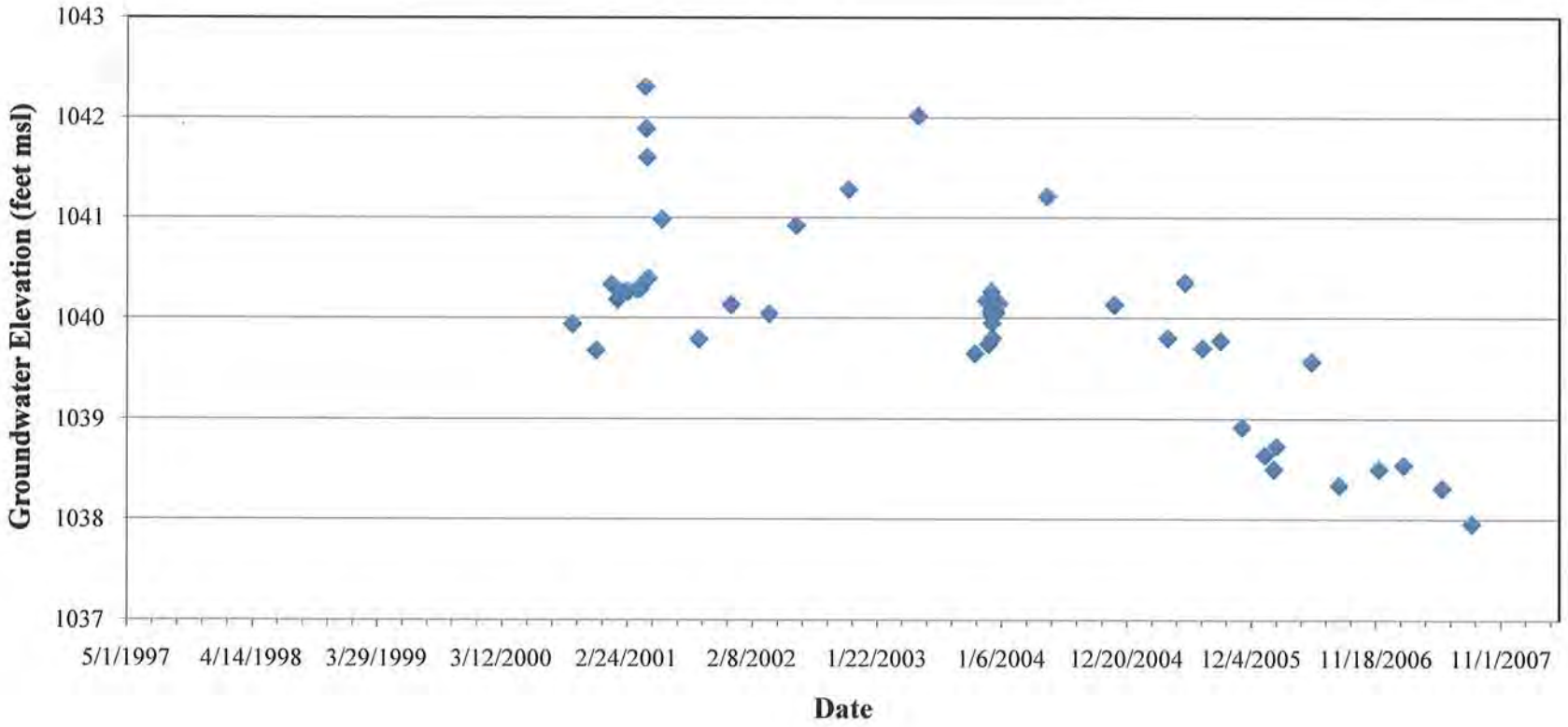
Groundwater Elevations in Well GM-65
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 120-130 Feet Below Ground Surface



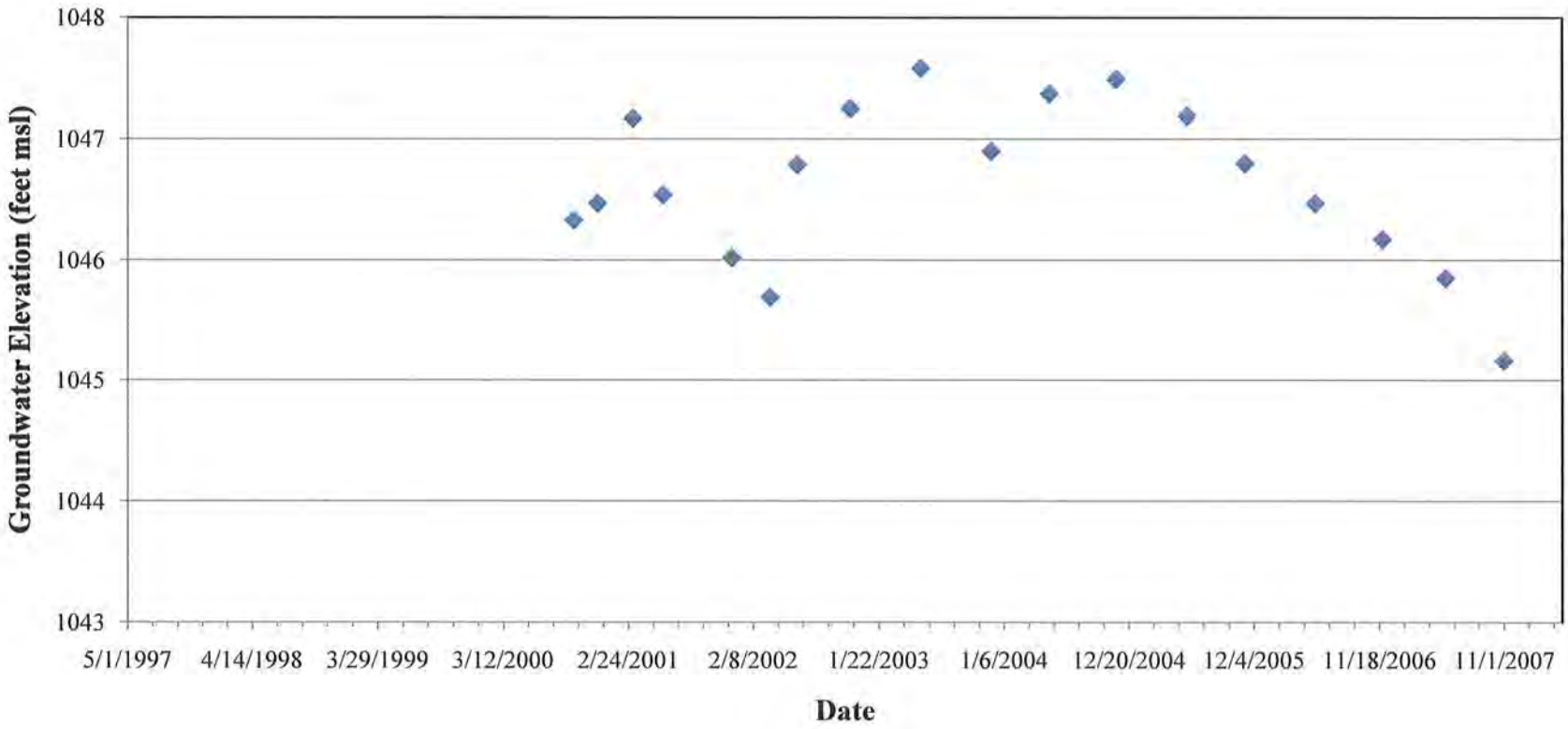
Groundwater Elevations in Well GM-66A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 27-37 Feet Below Ground Surface



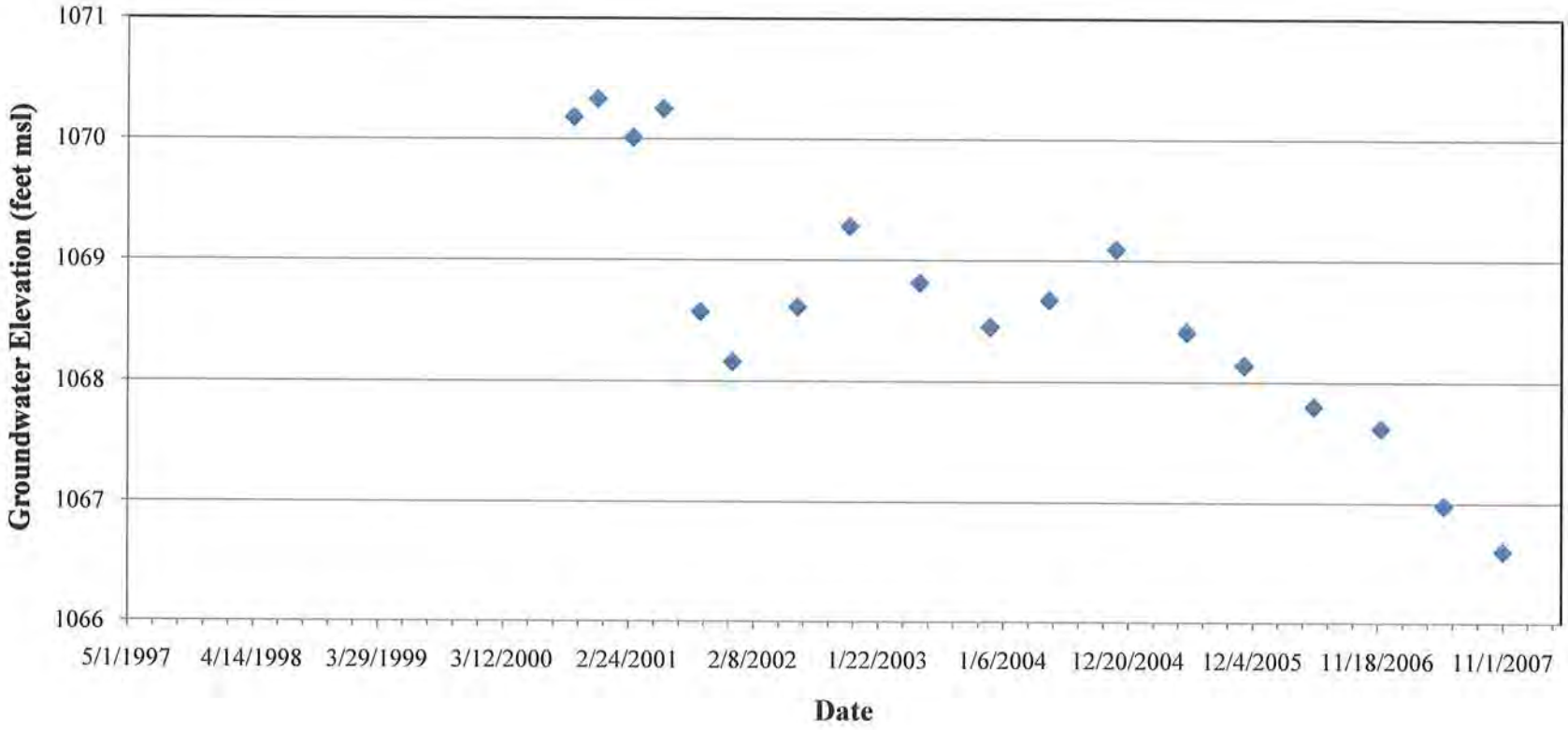
Groundwater Elevations in Well GM-66B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 125-135 Feet Below Ground Surface



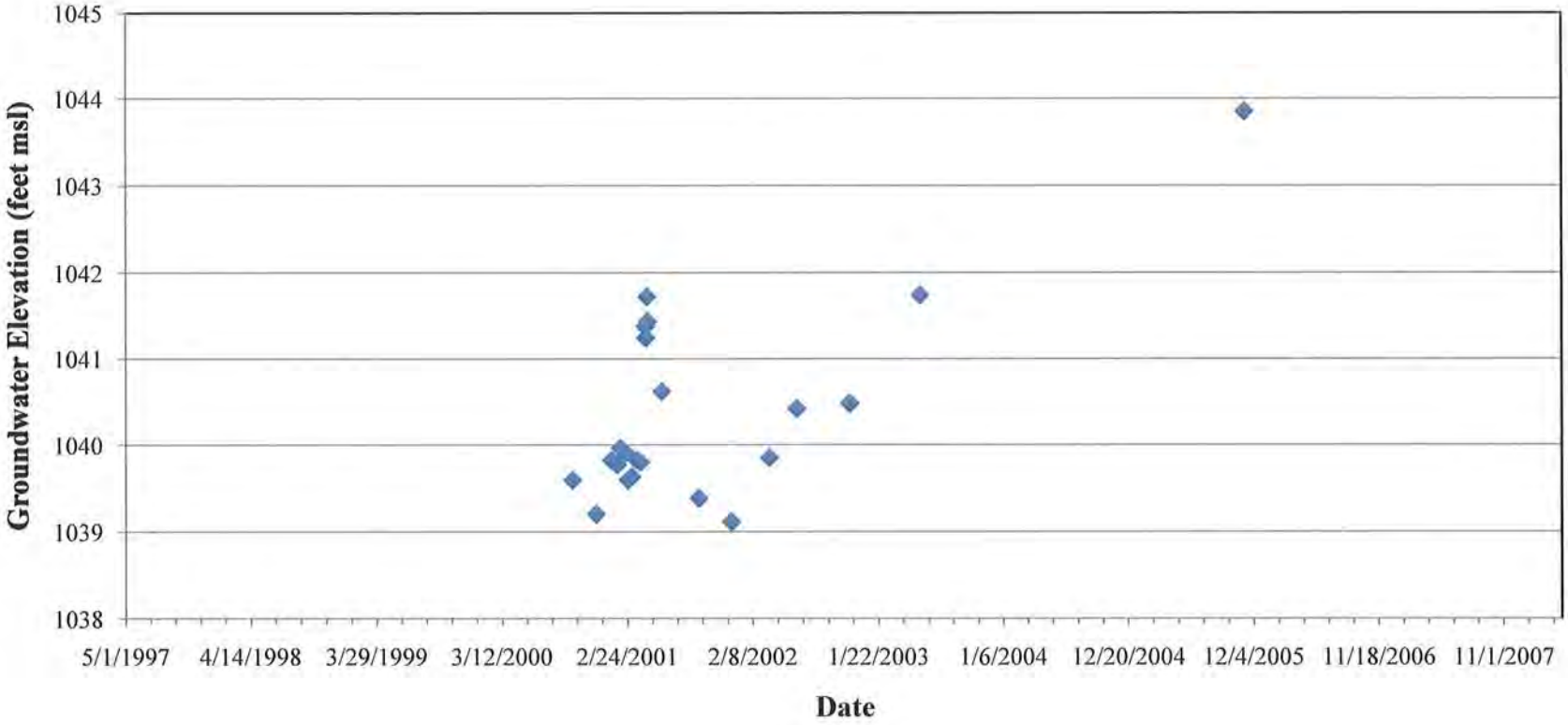
Groundwater Elevations in Well GM-67
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 122-127 Feet Below Ground Surface



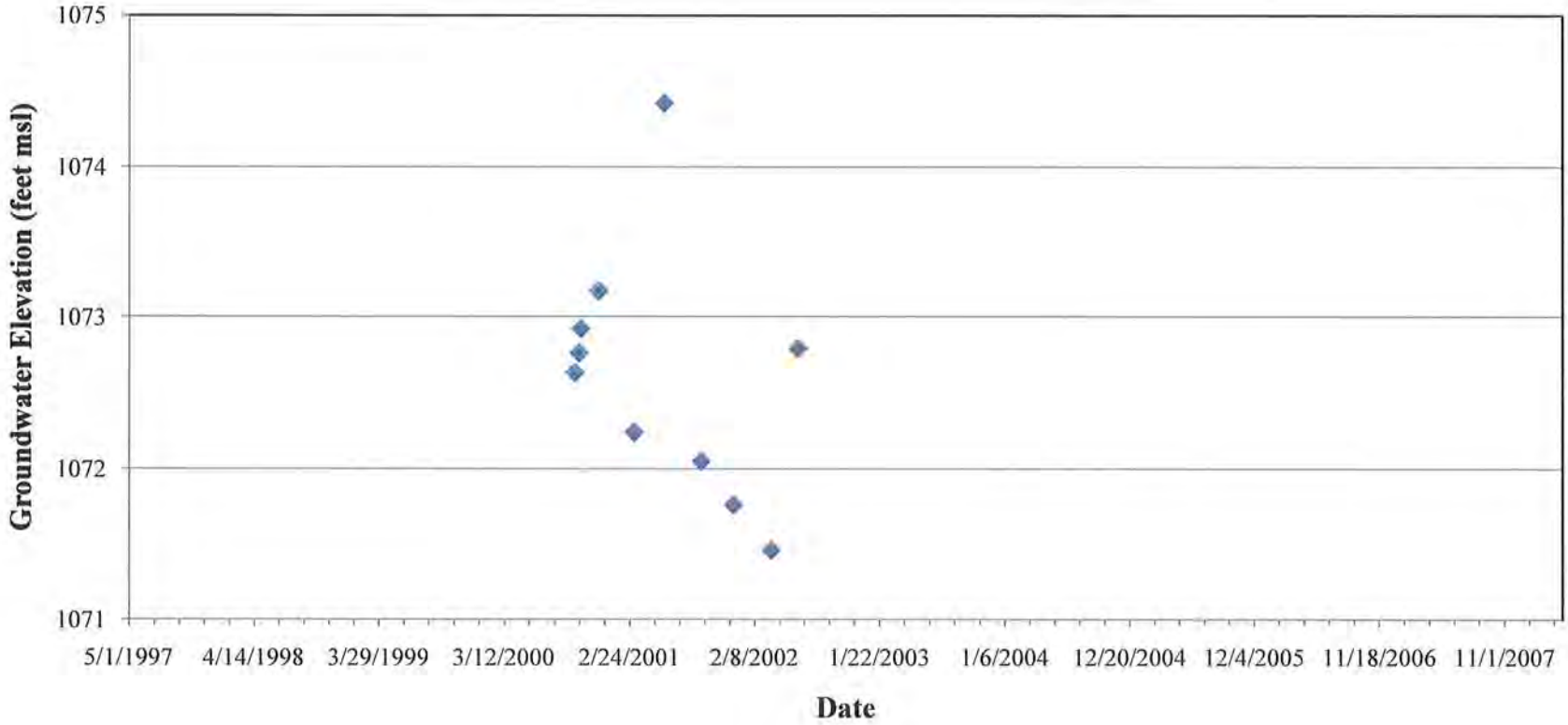
Groundwater Elevations in Well GM-68
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 140-150 Feet Below Ground Surface



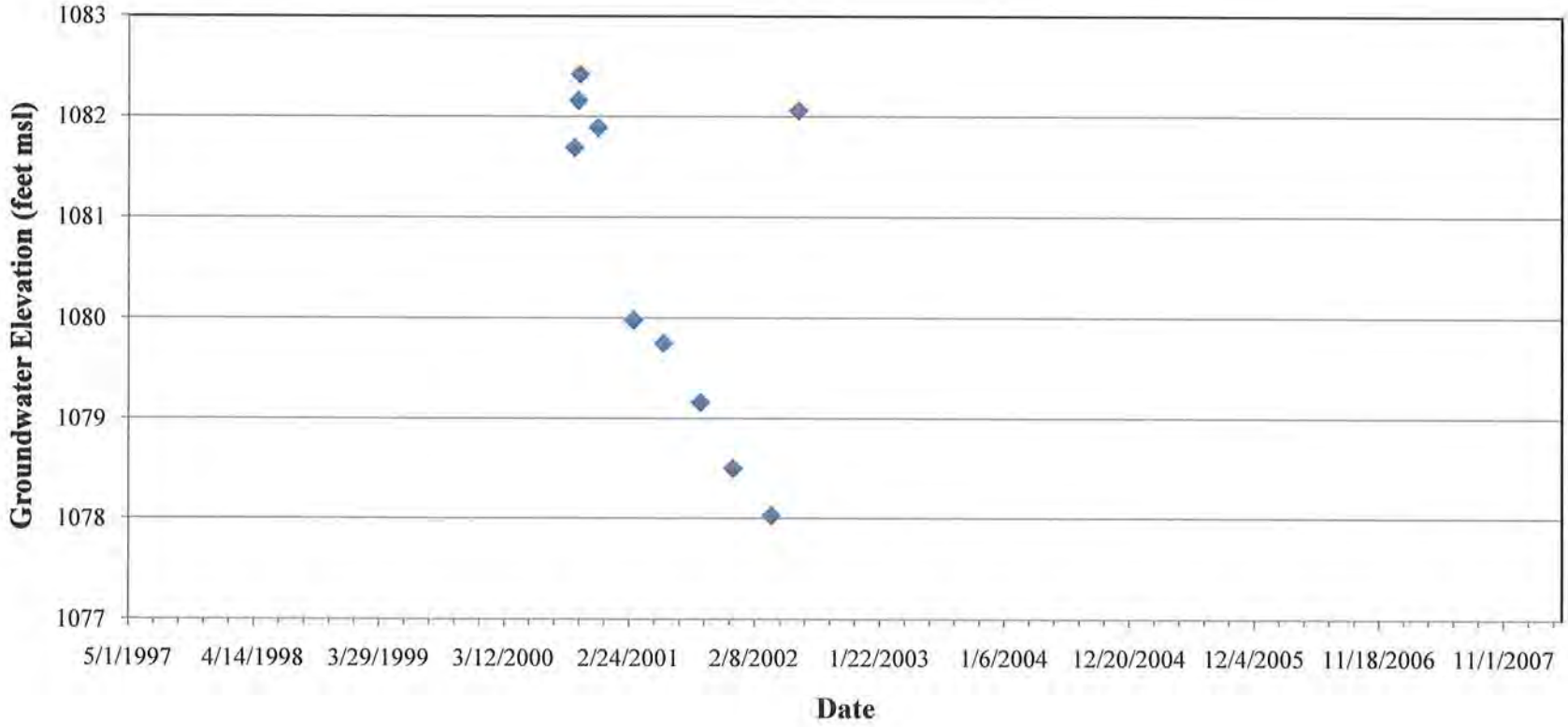
Groundwater Elevations in Well GM-69
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 59-69 Feet Below Ground Surface



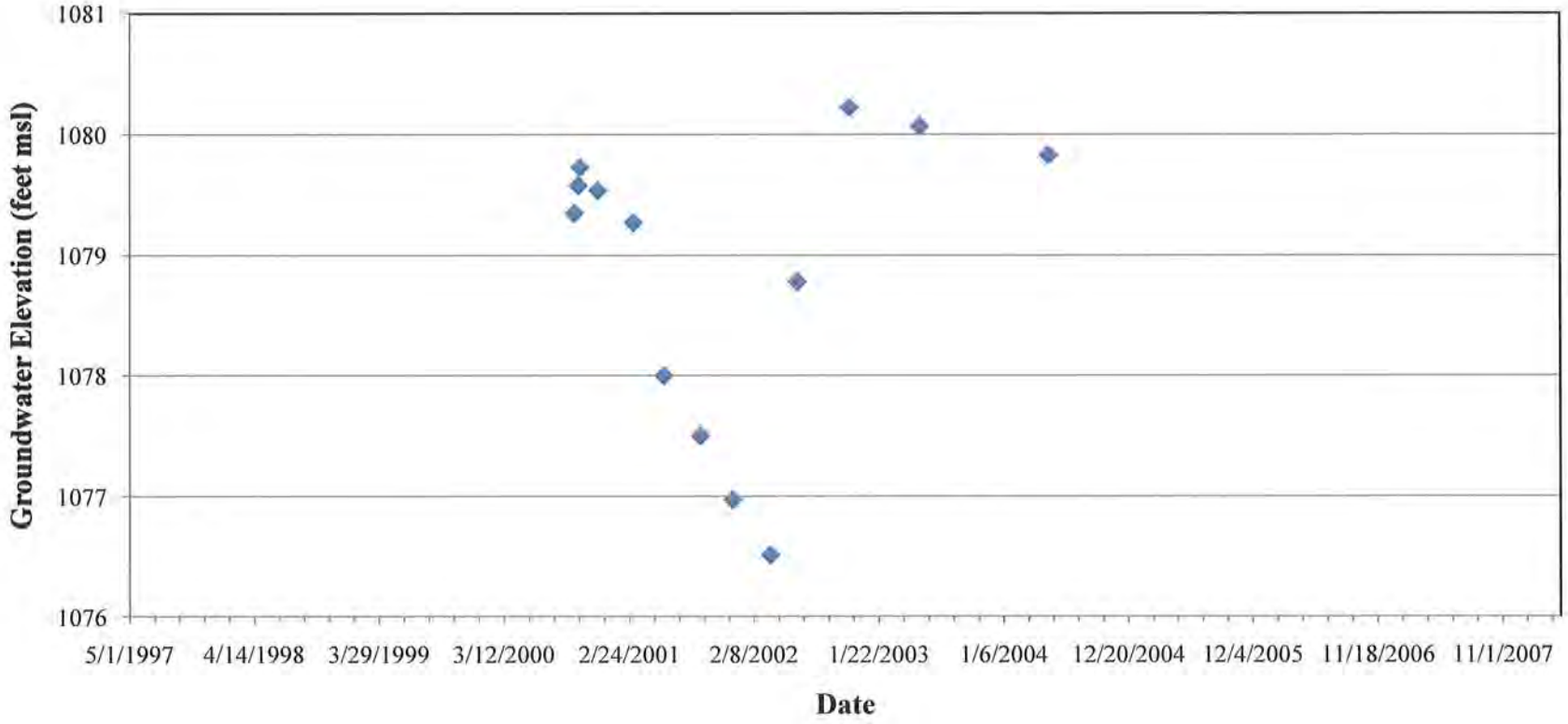
Groundwater Elevations in Well GM-70
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 42-52 Feet Below Ground Surface



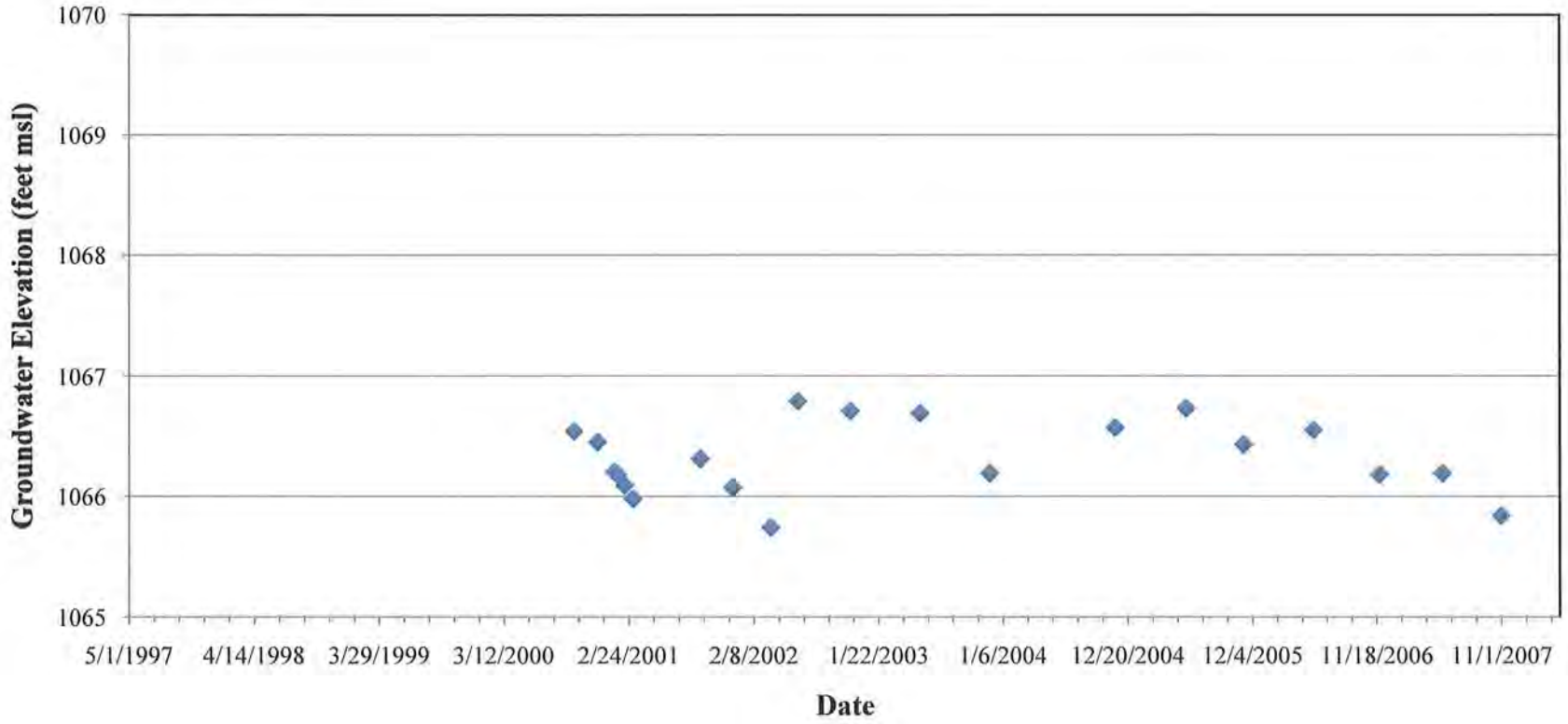
Groundwater Elevations in Well GM-71
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 39-49 Feet Below Ground Surface



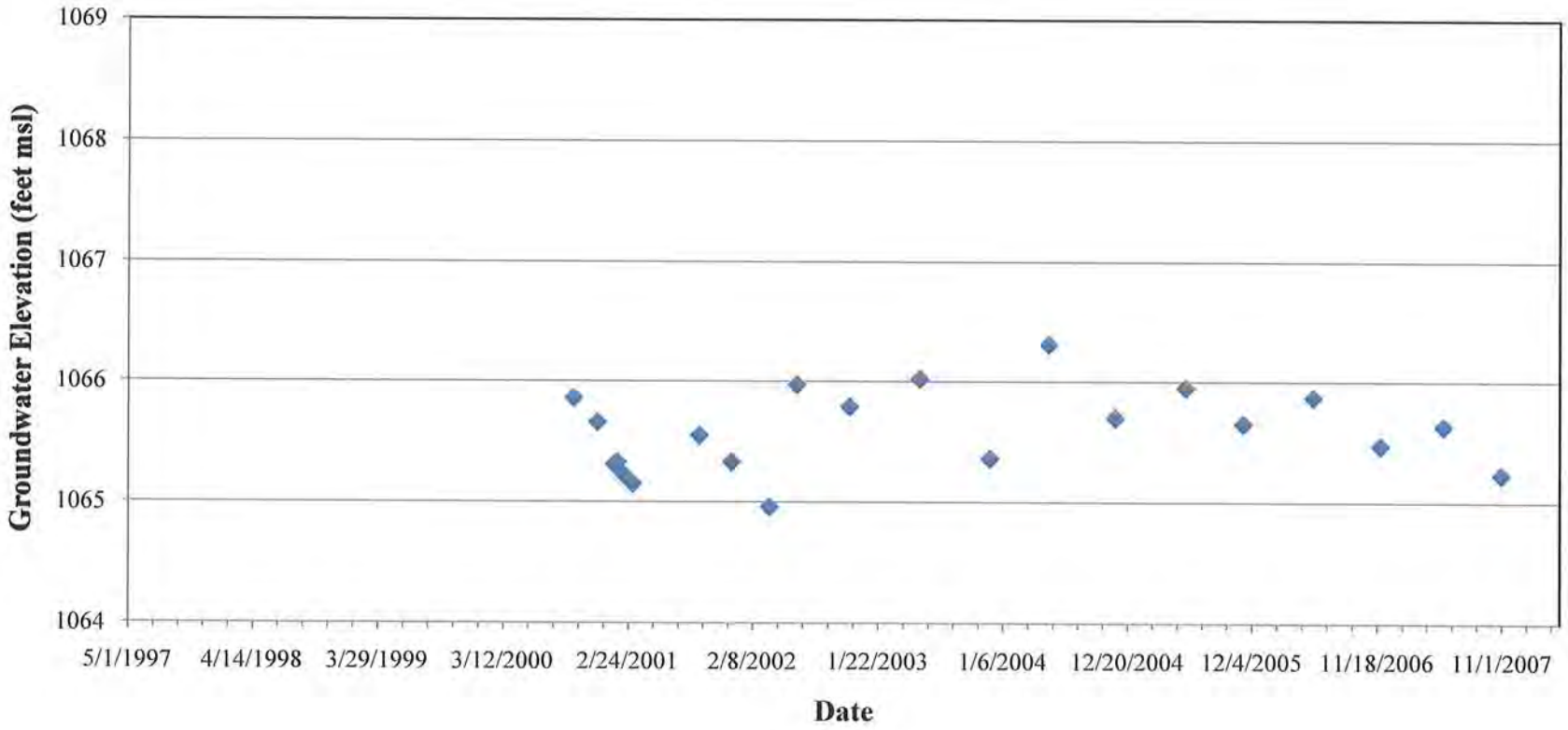
Groundwater Elevations in Well GM-72
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 43-53 Feet Below Ground Surface



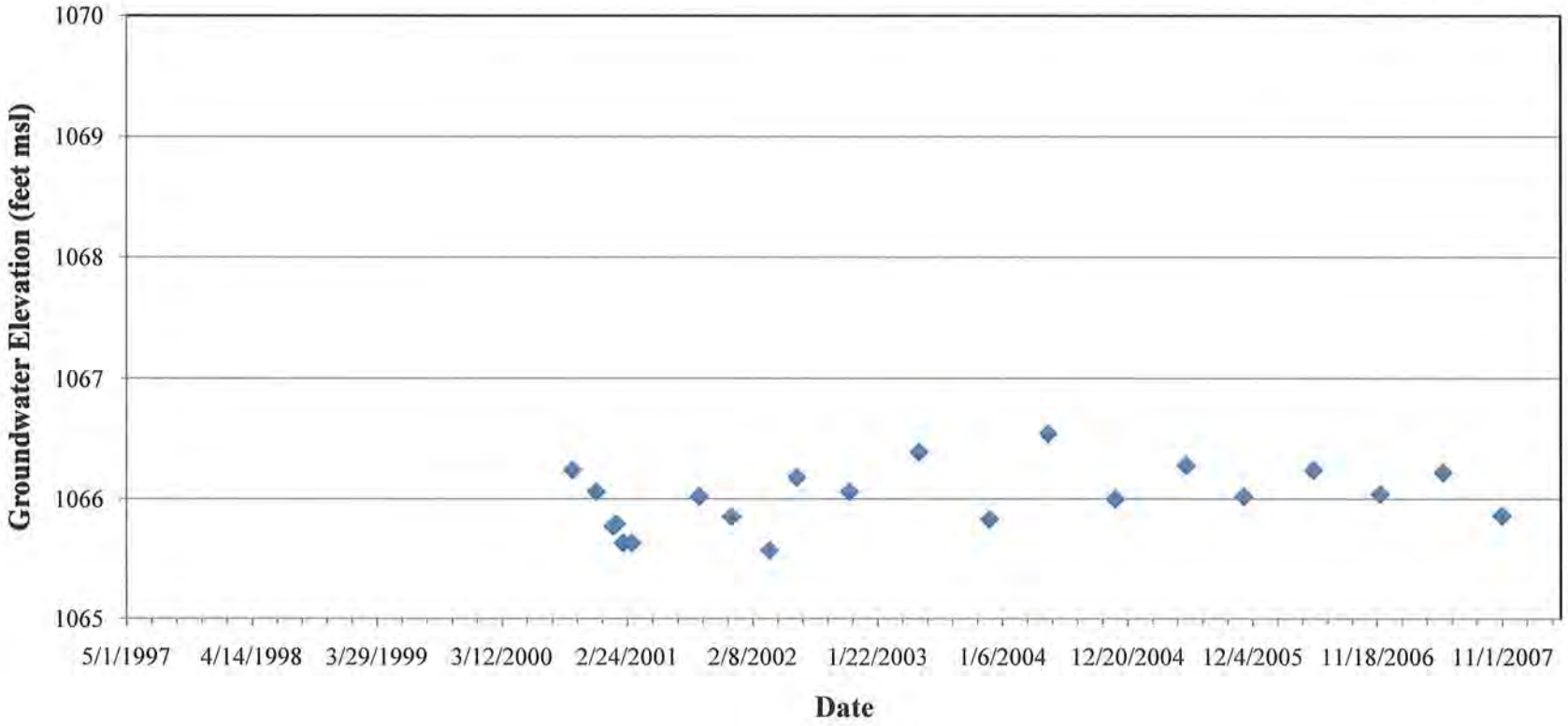
Groundwater Elevations in Well GM-73
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 42-52 Feet Below Ground Surface



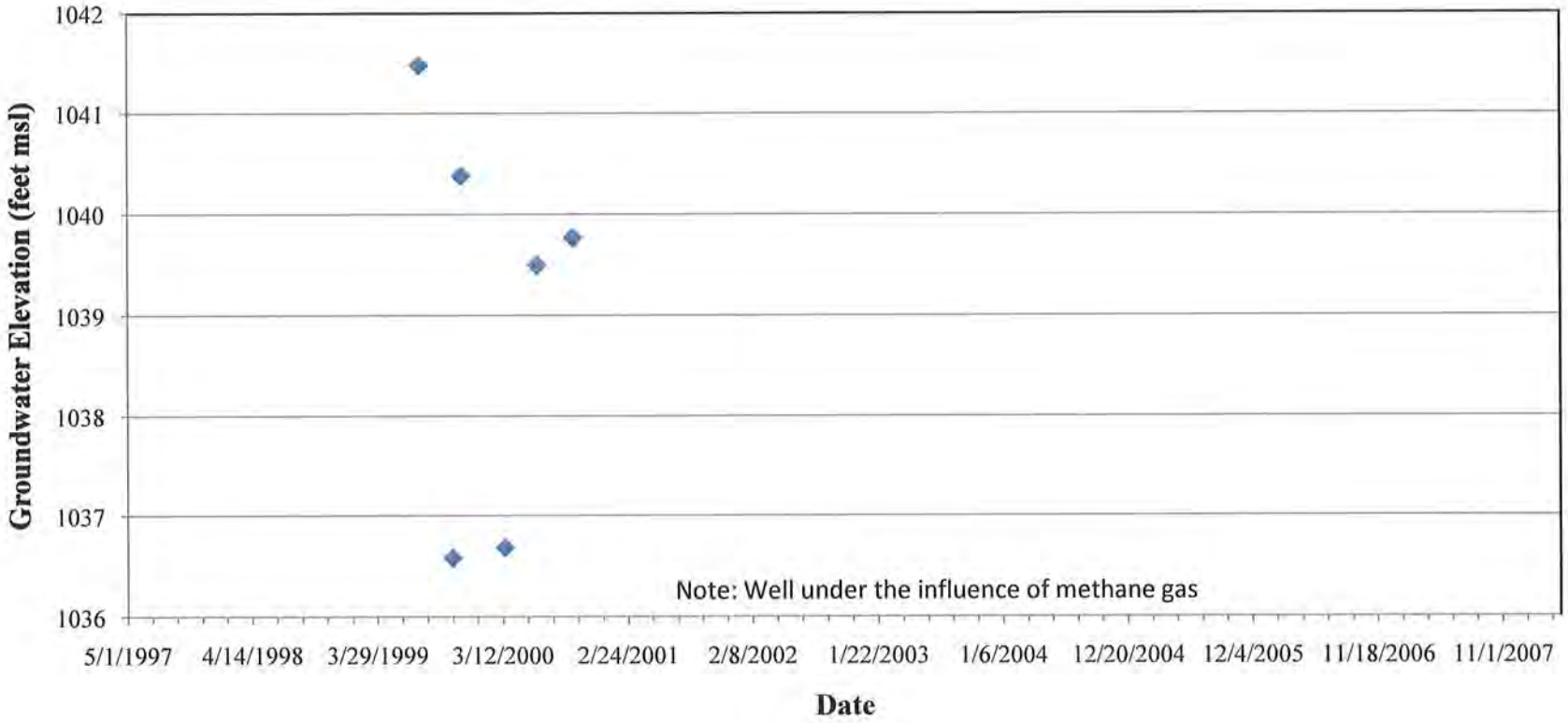
Groundwater Elevations in Well GM-74
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 34-44 Feet Below Ground Surface



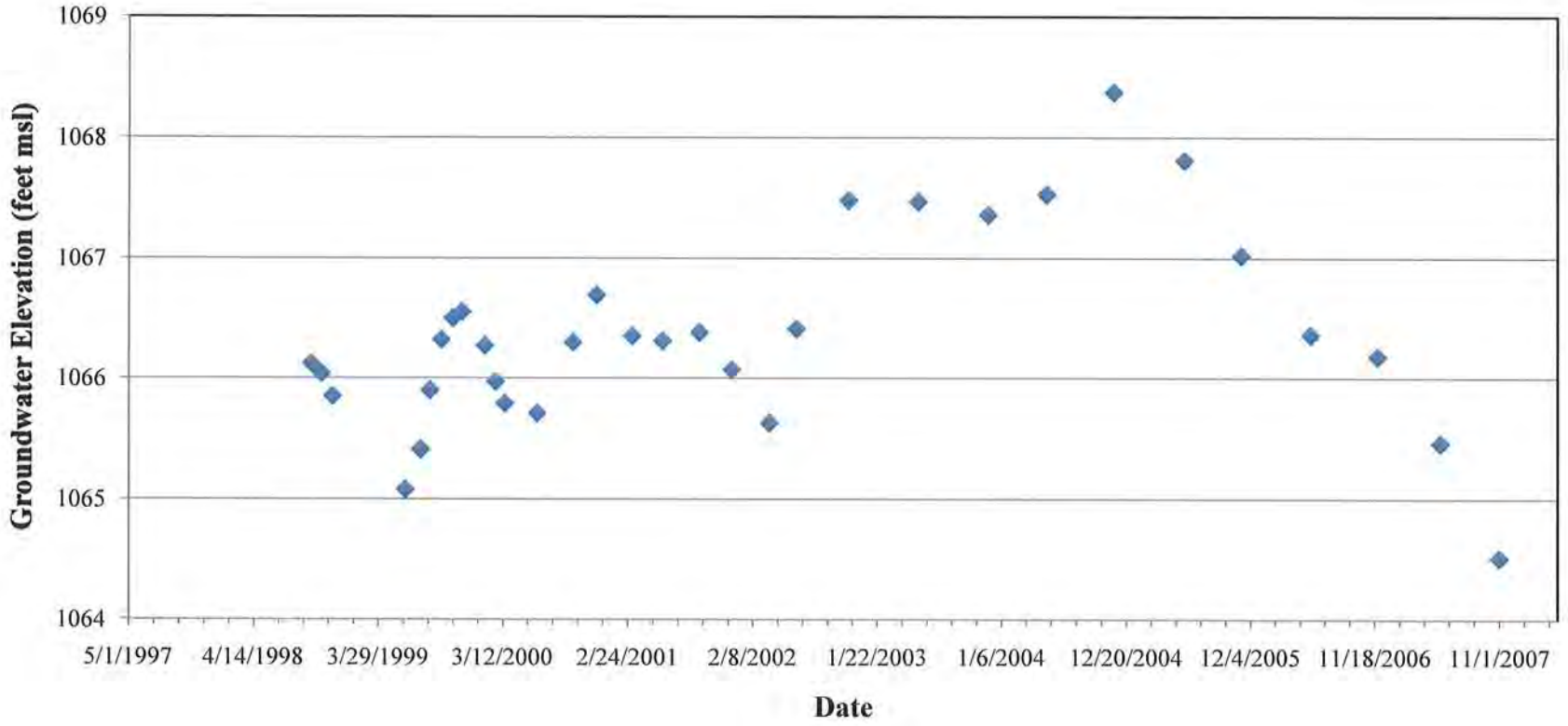
Groundwater Elevations in Well GM-75
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 24-34 Feet Below Ground Surface



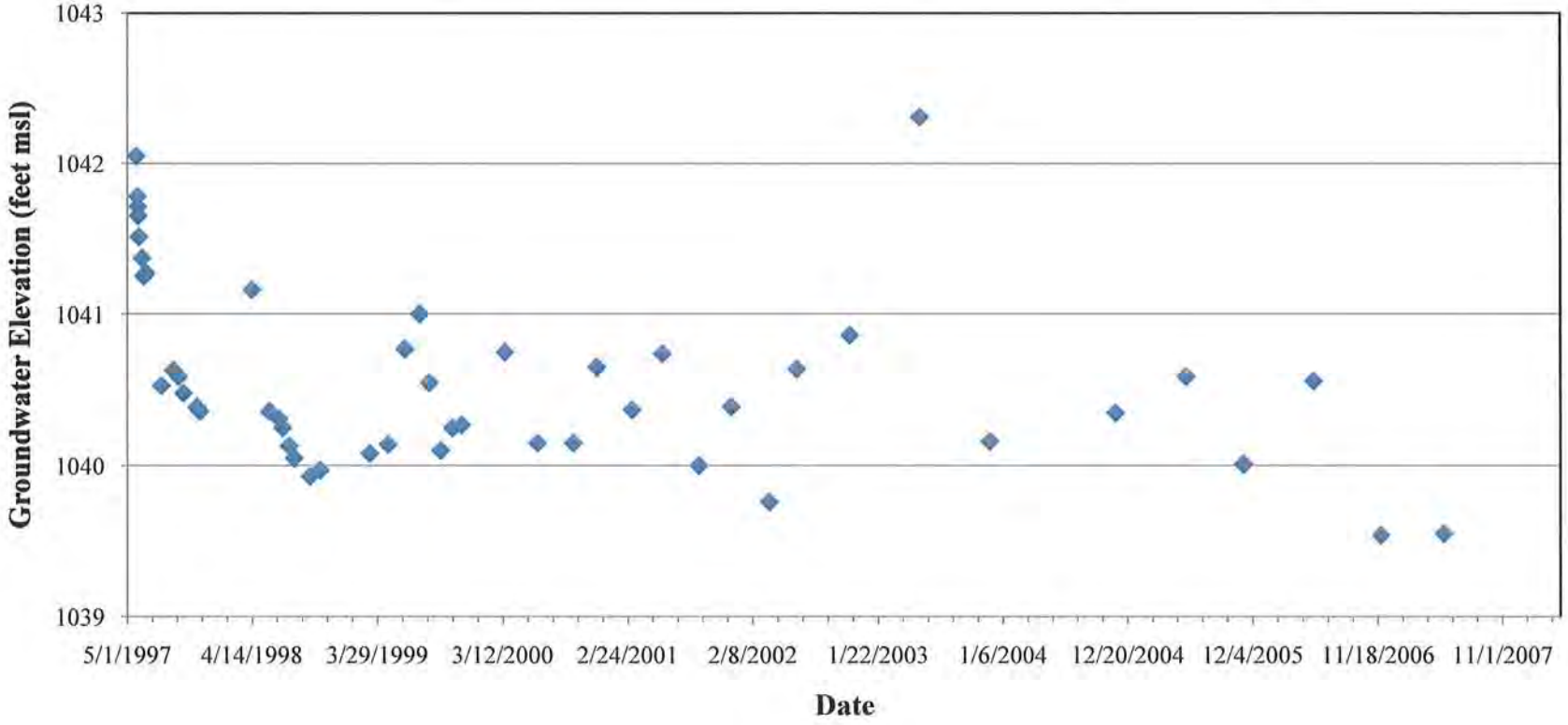
Groundwater Elevations in Well GM-100
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 65.5-75.5 Feet Below Ground Surface



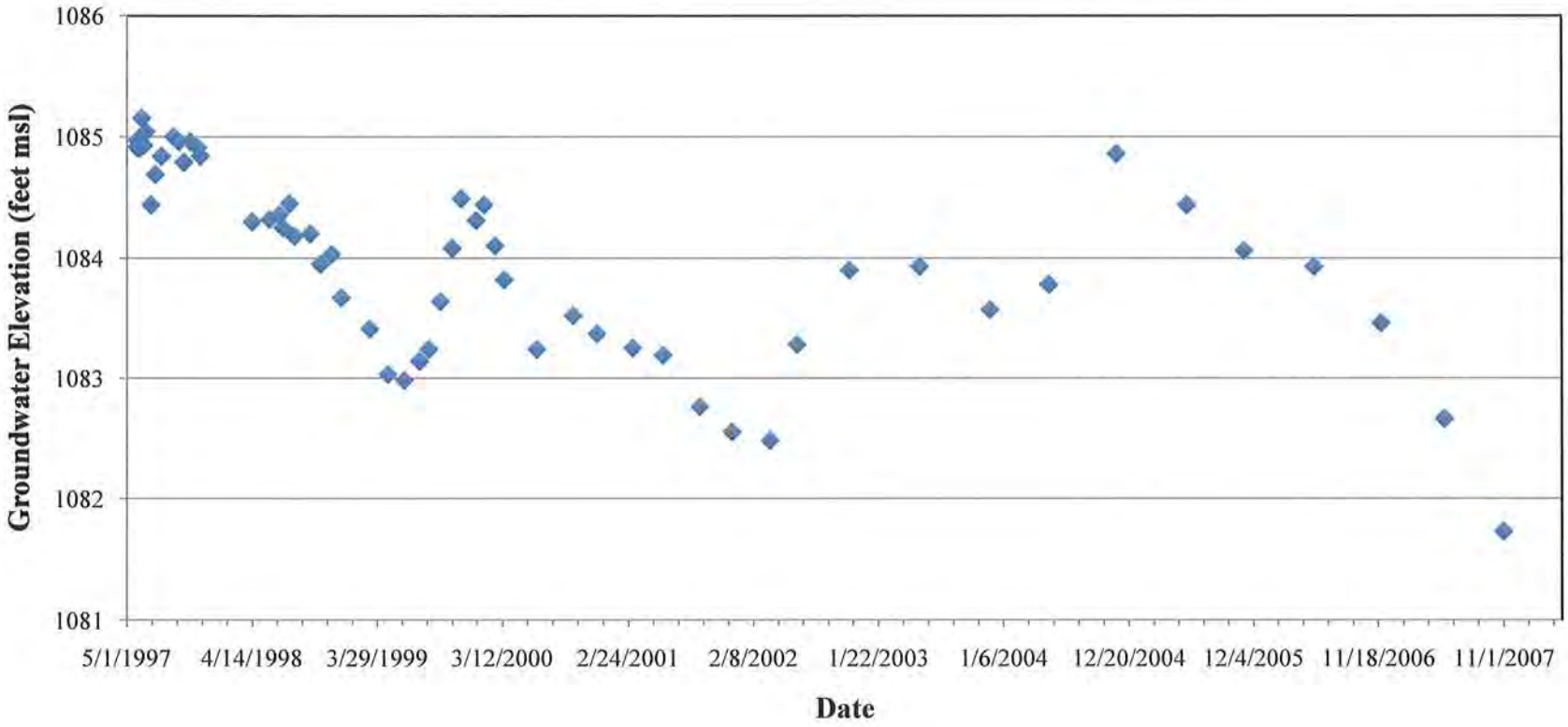
Groundwater Elevations in Well GM-118D
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 54-59 Feet Below Ground Surface



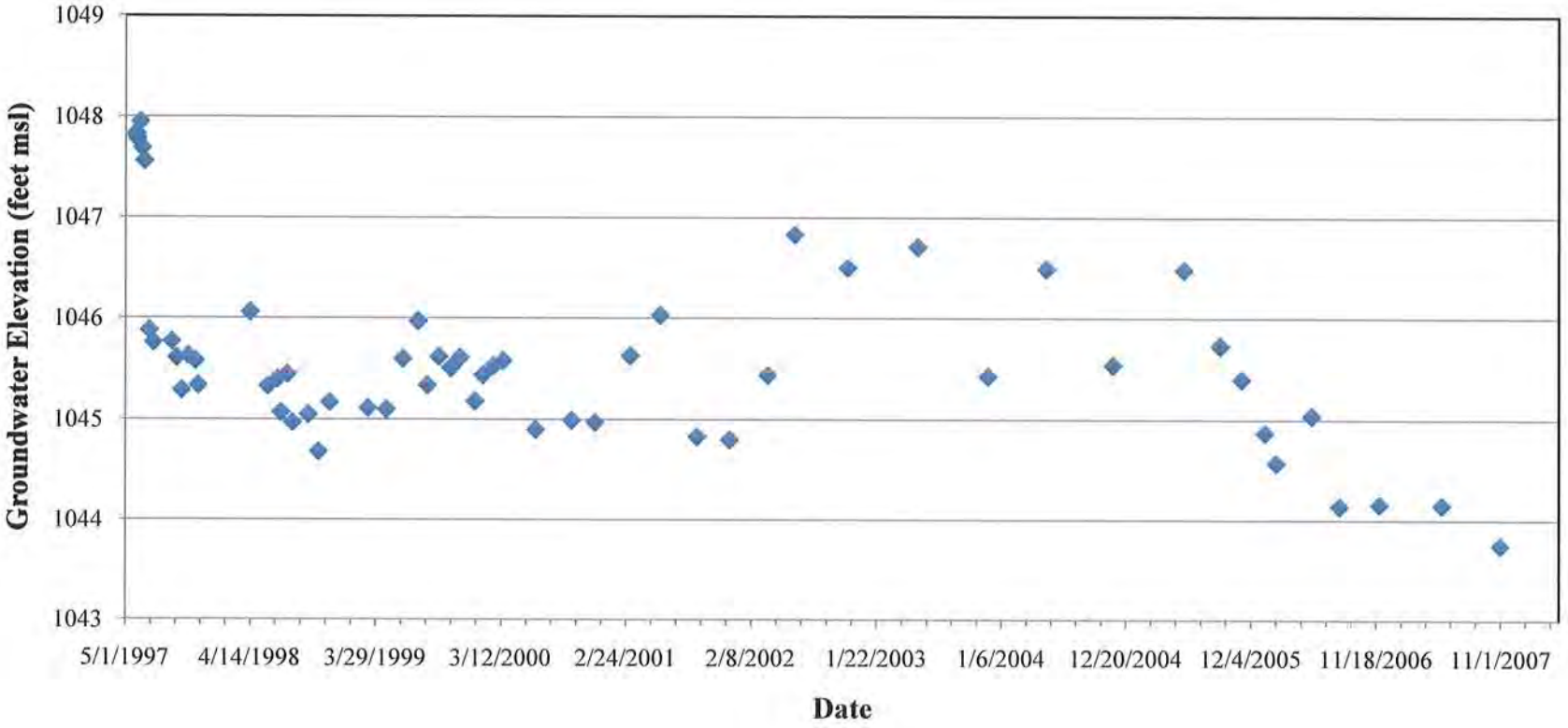
Groundwater Elevations in Well BR-1
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 206-226 Feet Below Ground Surface



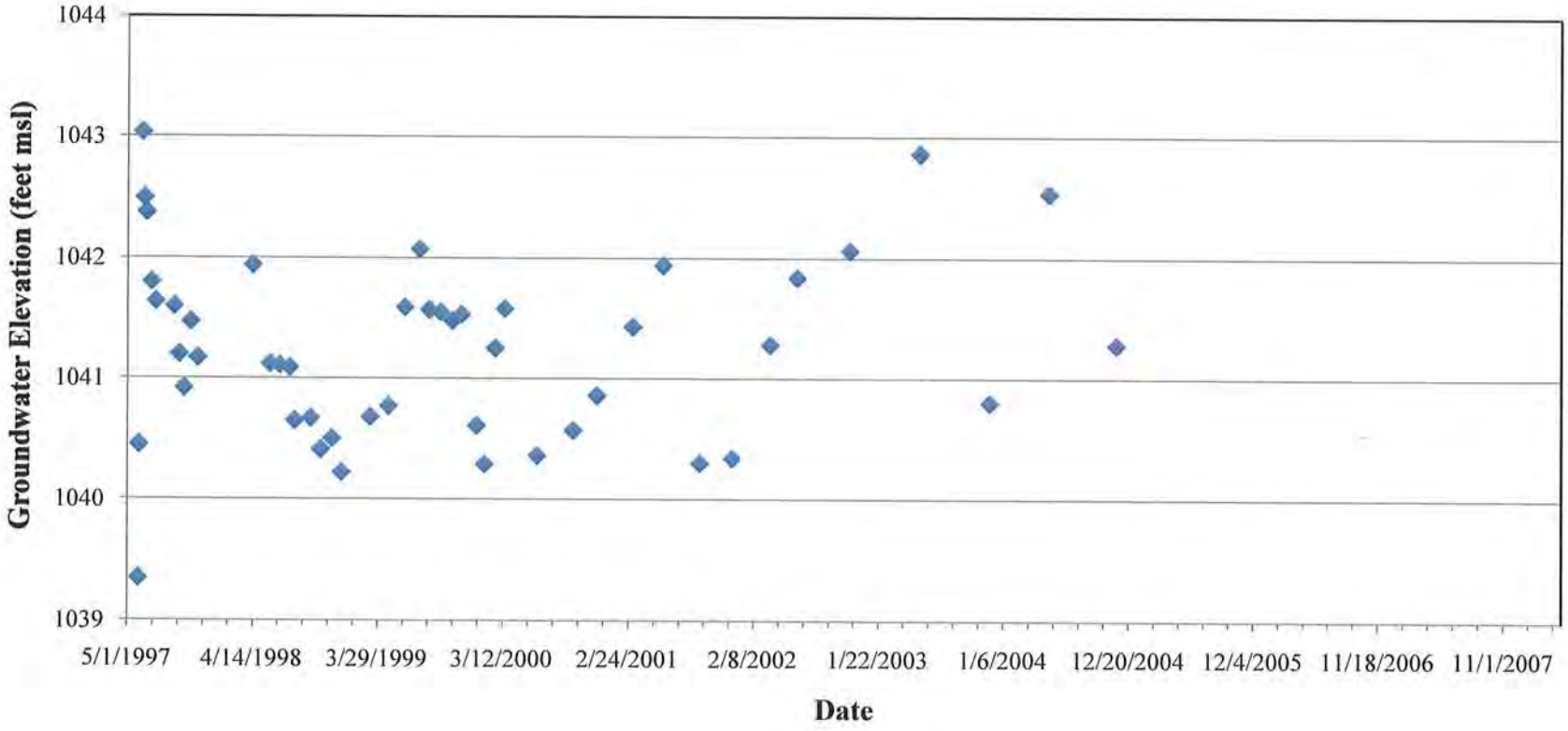
Groundwater Elevations in Well BR-2
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 75-85 Feet Below Ground Surface



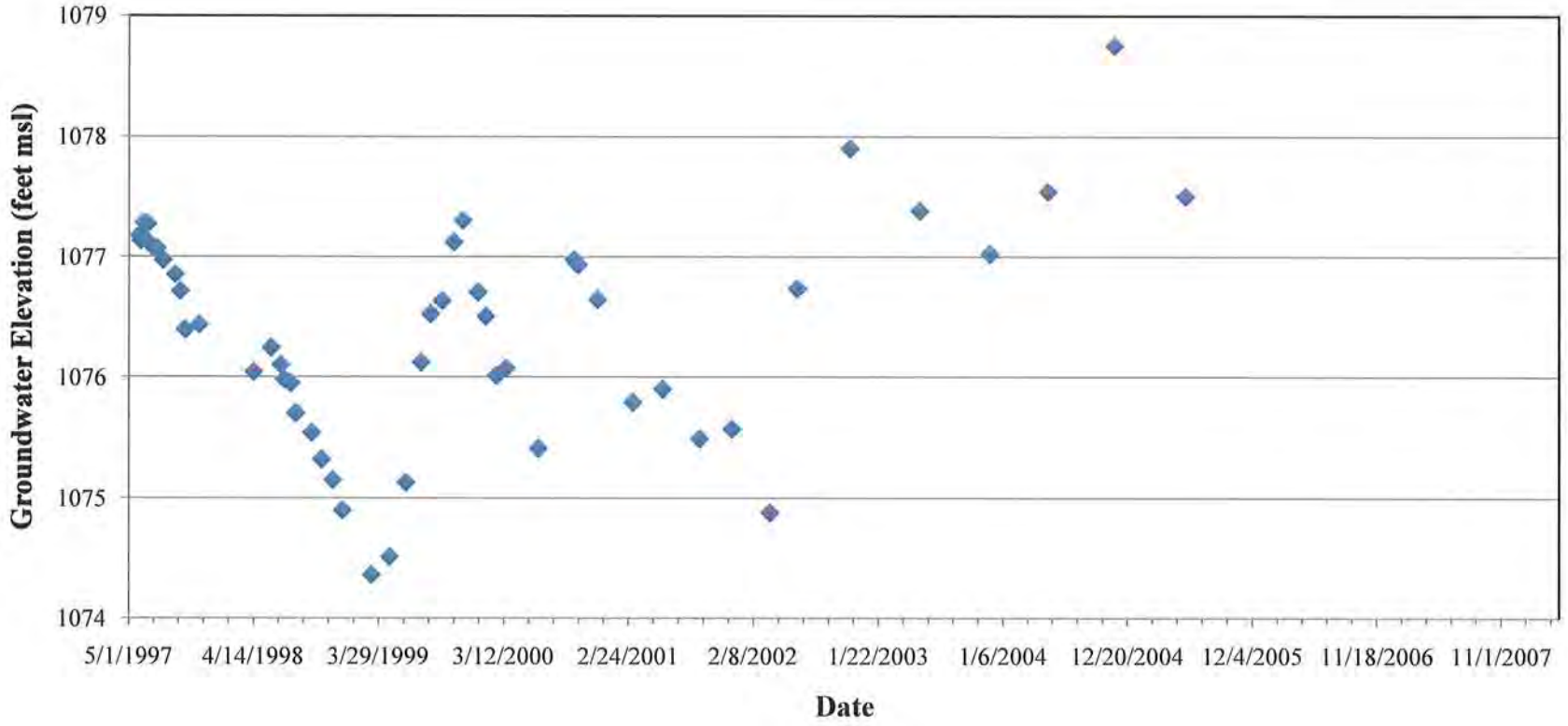
Groundwater Elevations in Well BR-3
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 122-127 Feet Below Ground Surface



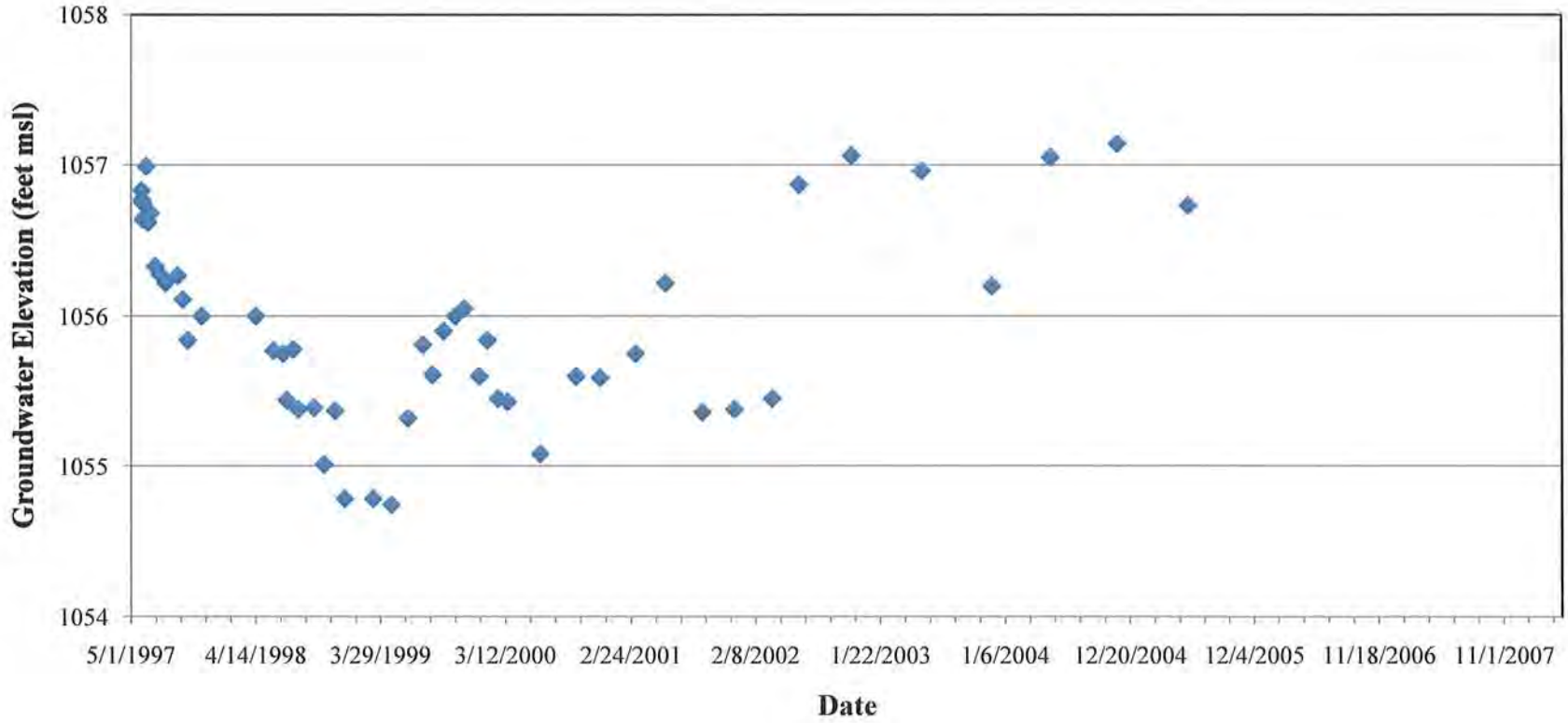
Groundwater Elevations in Well BR-4
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 95-105 Feet Below Ground Surface



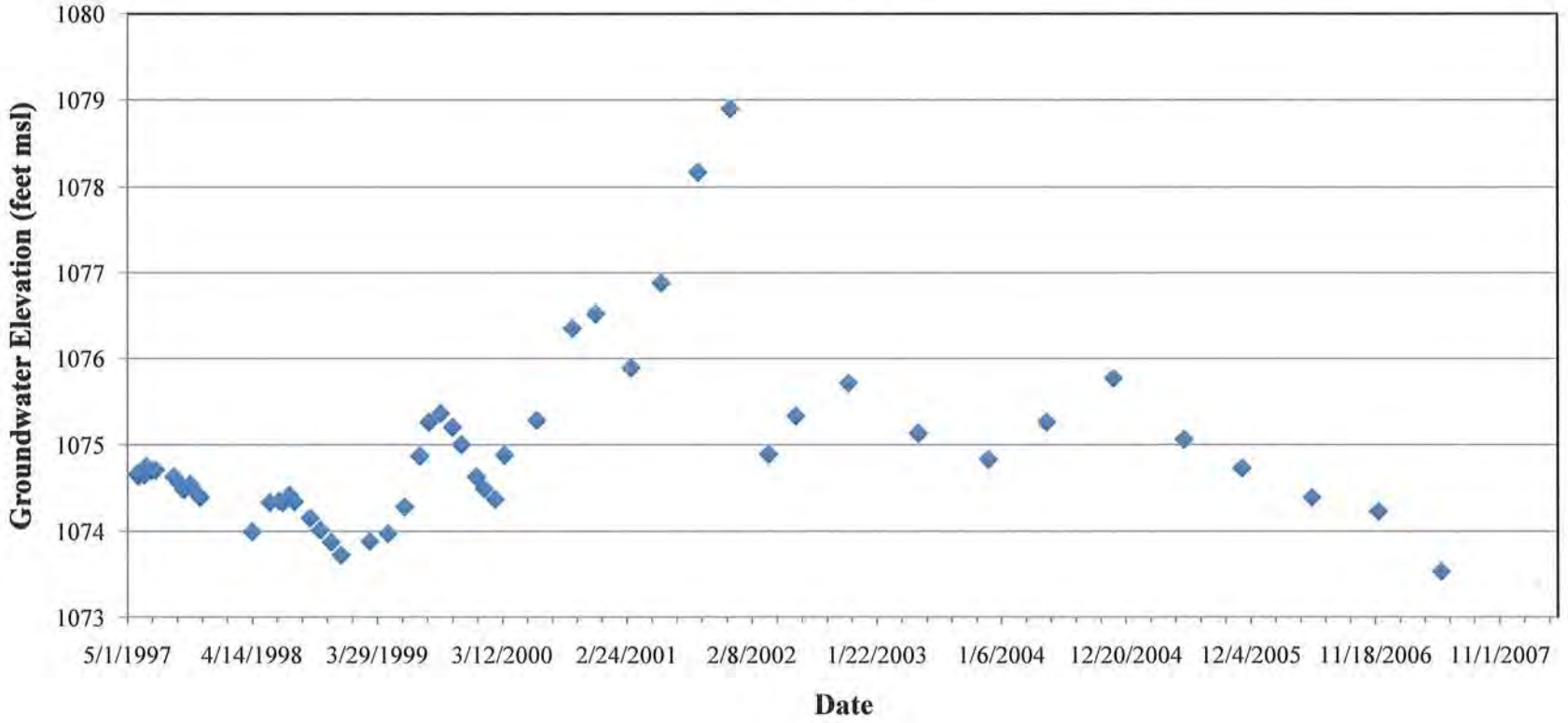
Groundwater Elevations in Well BR-5A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 88-98 Feet Below Ground Surface



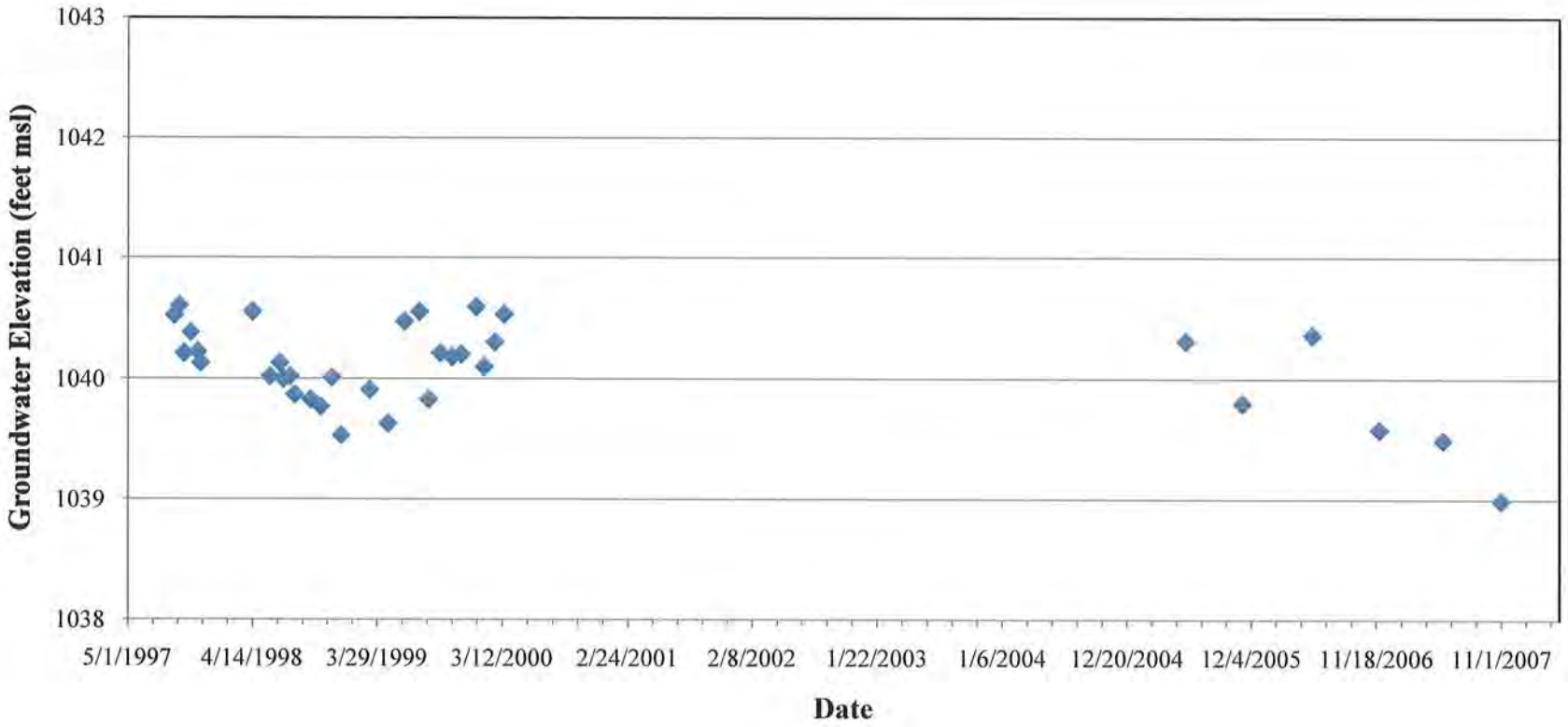
Groundwater Elevations in Well BR-5B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 188-198 Feet Below Ground Surface



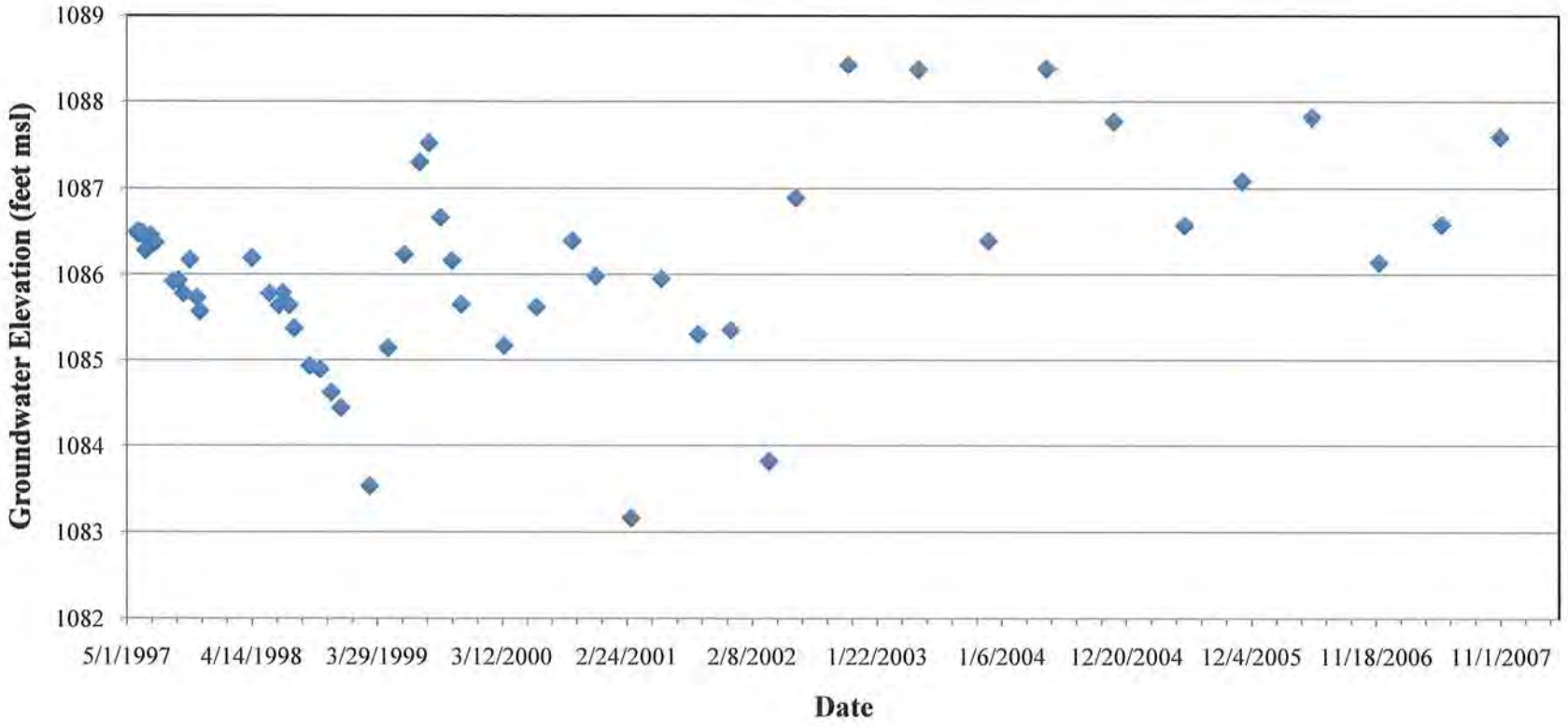
Groundwater Elevations in Well BR-6
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 149-169 Feet Below Ground Surface



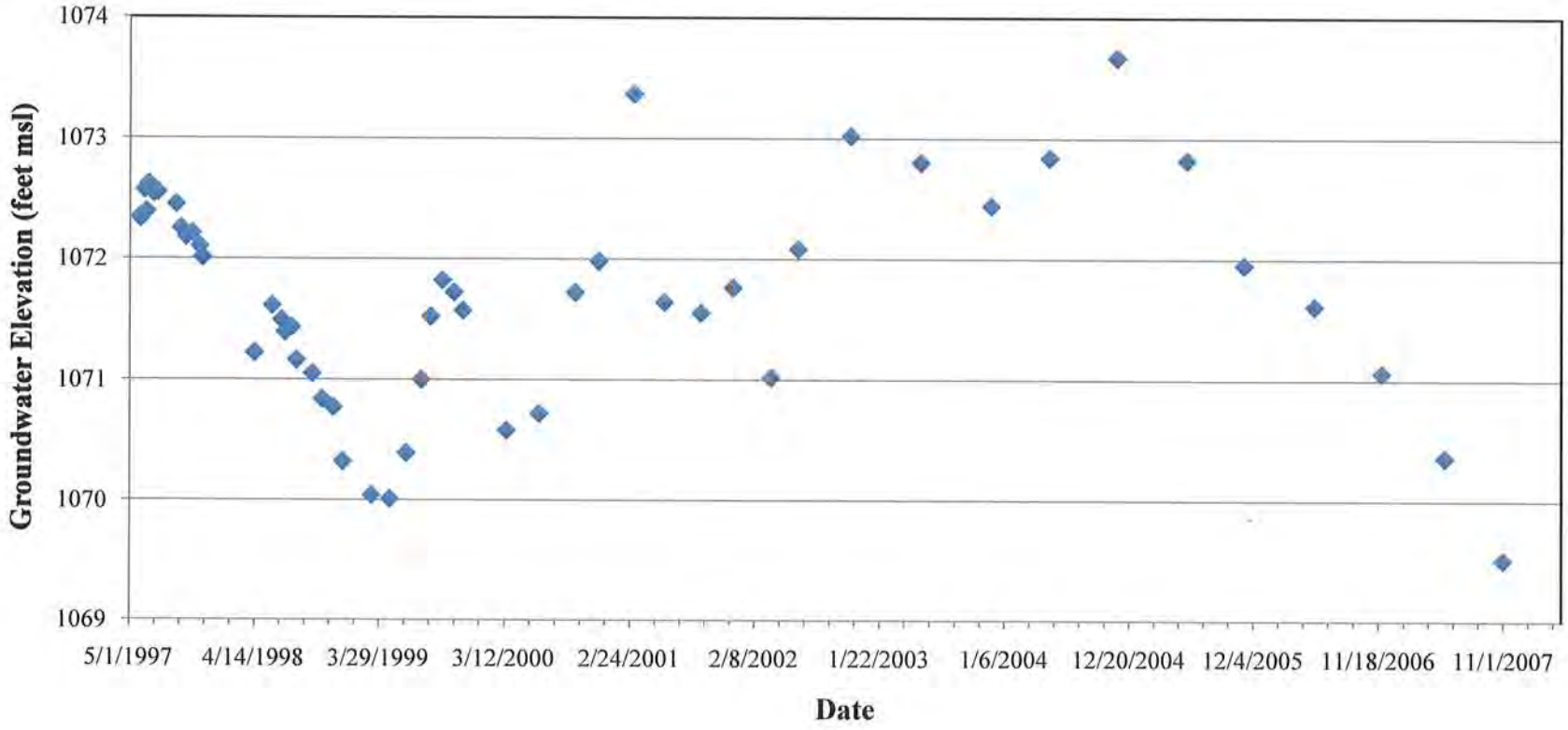
Groundwater Elevations in Well CW-1
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 130-140 Feet Below Ground Surface



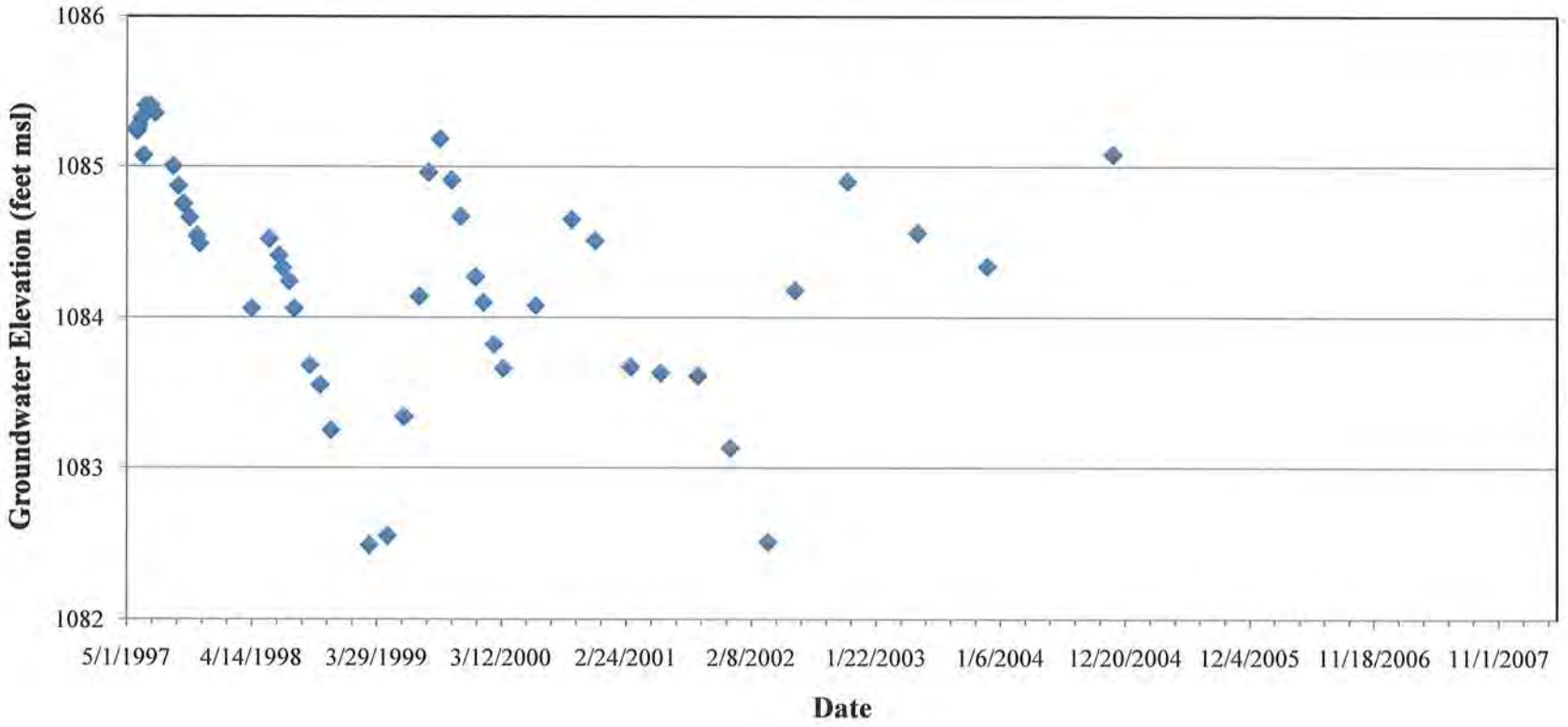
Groundwater Elevations in Well MW-1A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 35-45 Feet Below Ground Surface



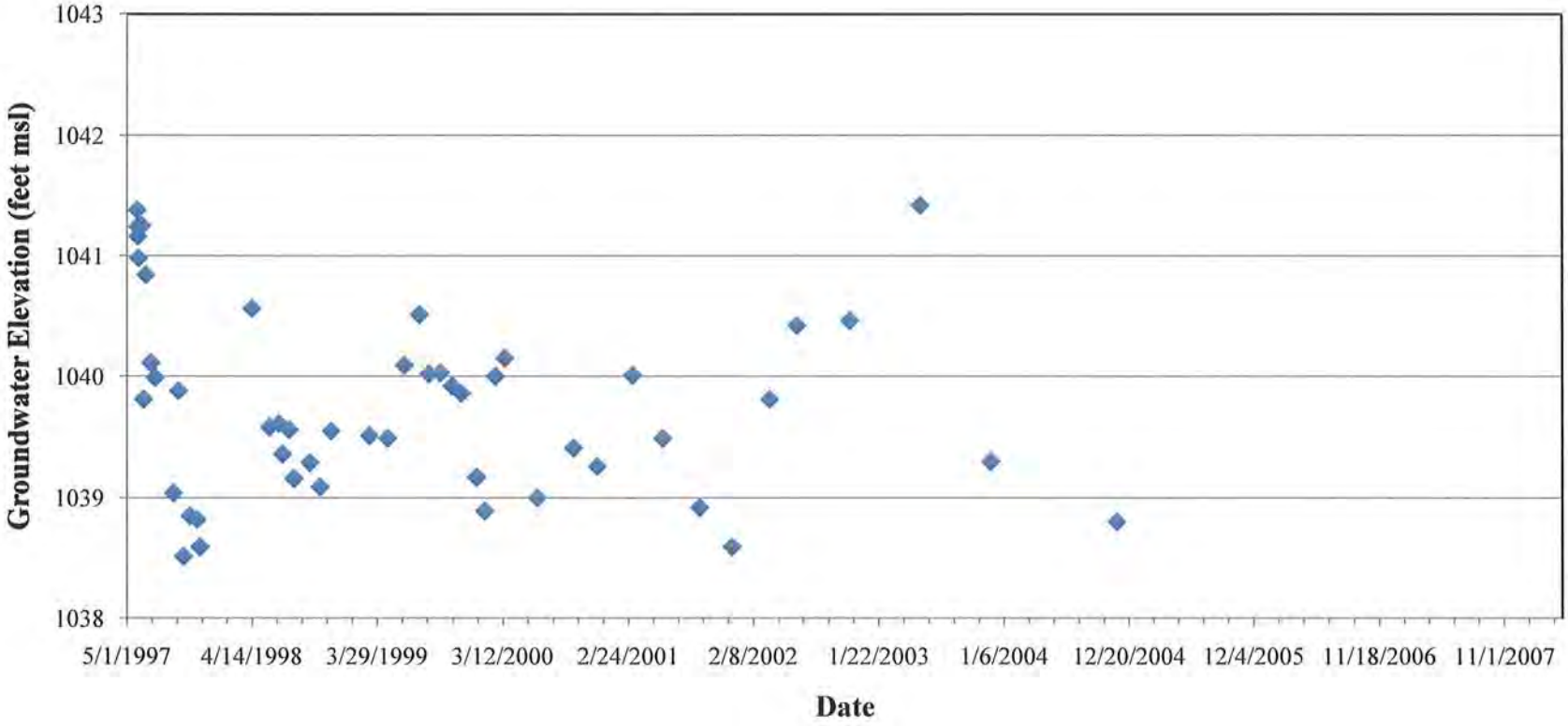
Groundwater Elevations in Well MW-1B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 86-95 Feet Below Ground Surface



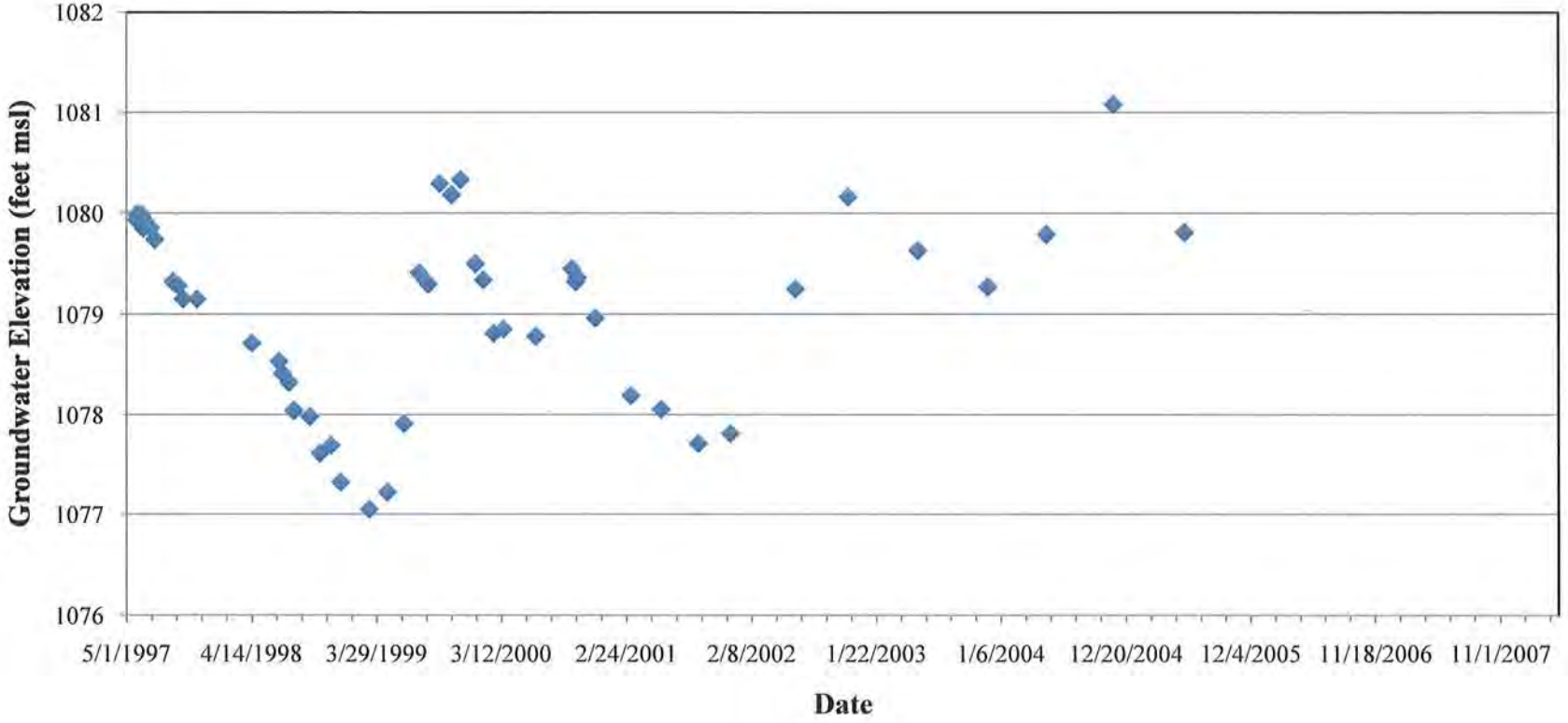
Groundwater Elevations in Well MW-2A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 42-52 Feet Below Ground Surface



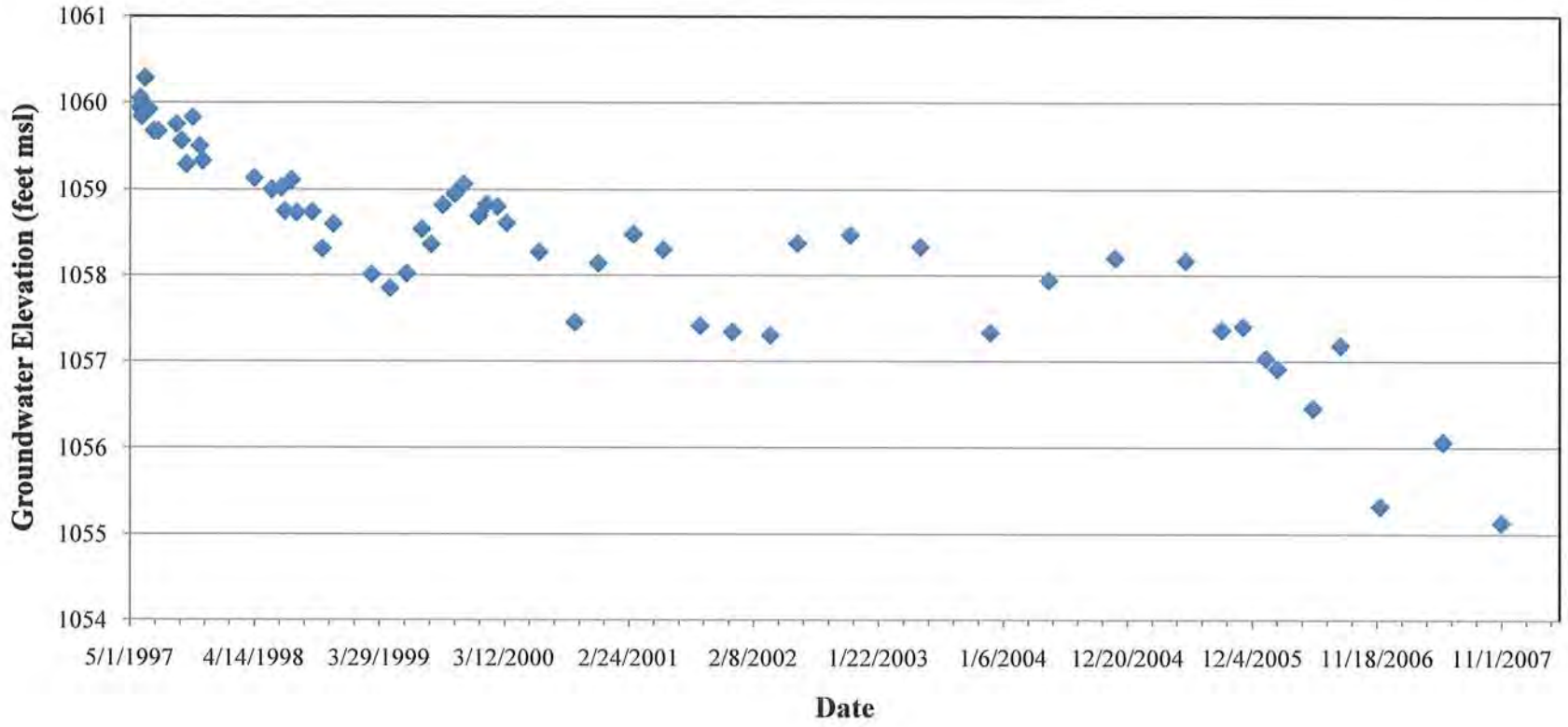
Groundwater Elevations in Well MW-2B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 102-110 Feet Below Ground Surface



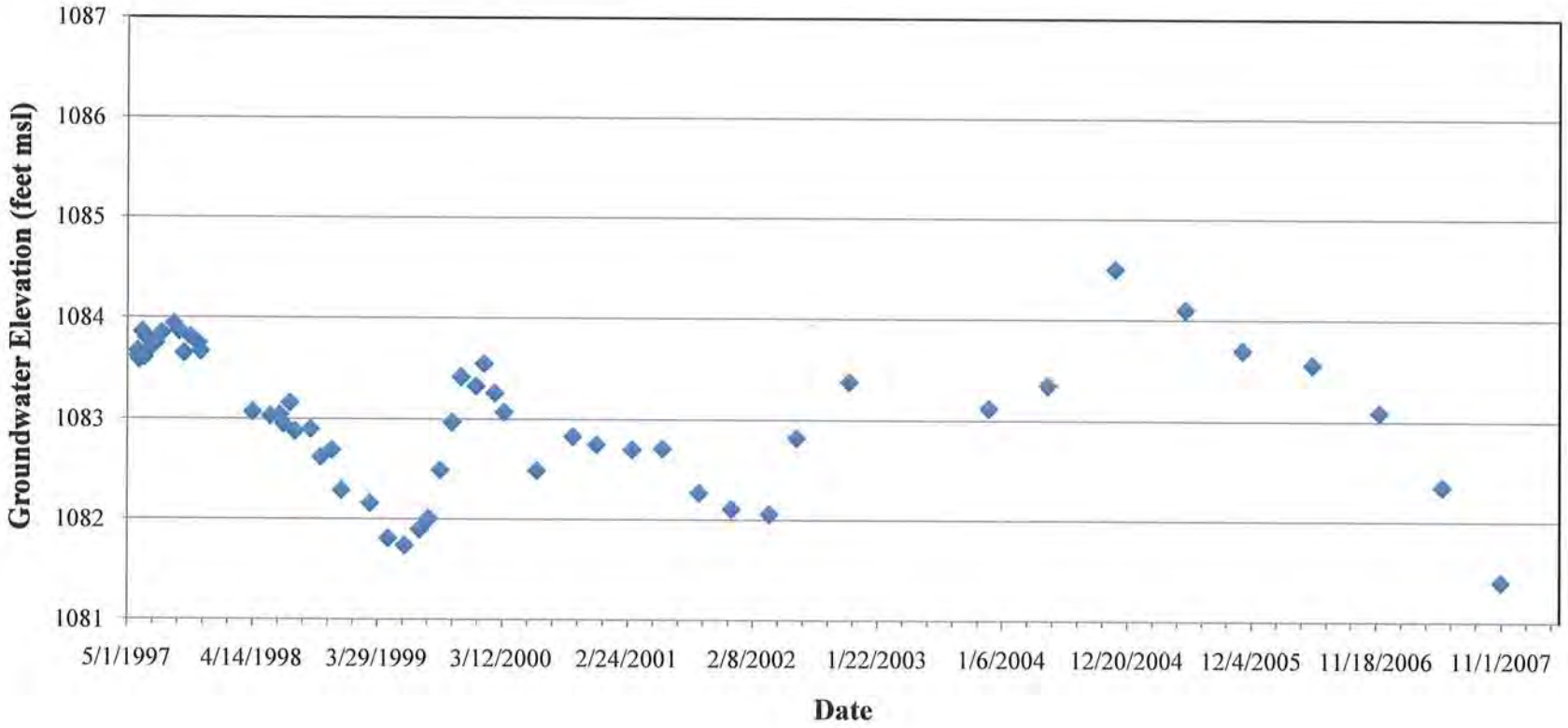
Groundwater Elevations in Well MW-3
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 42-52 Feet Below Ground Surface



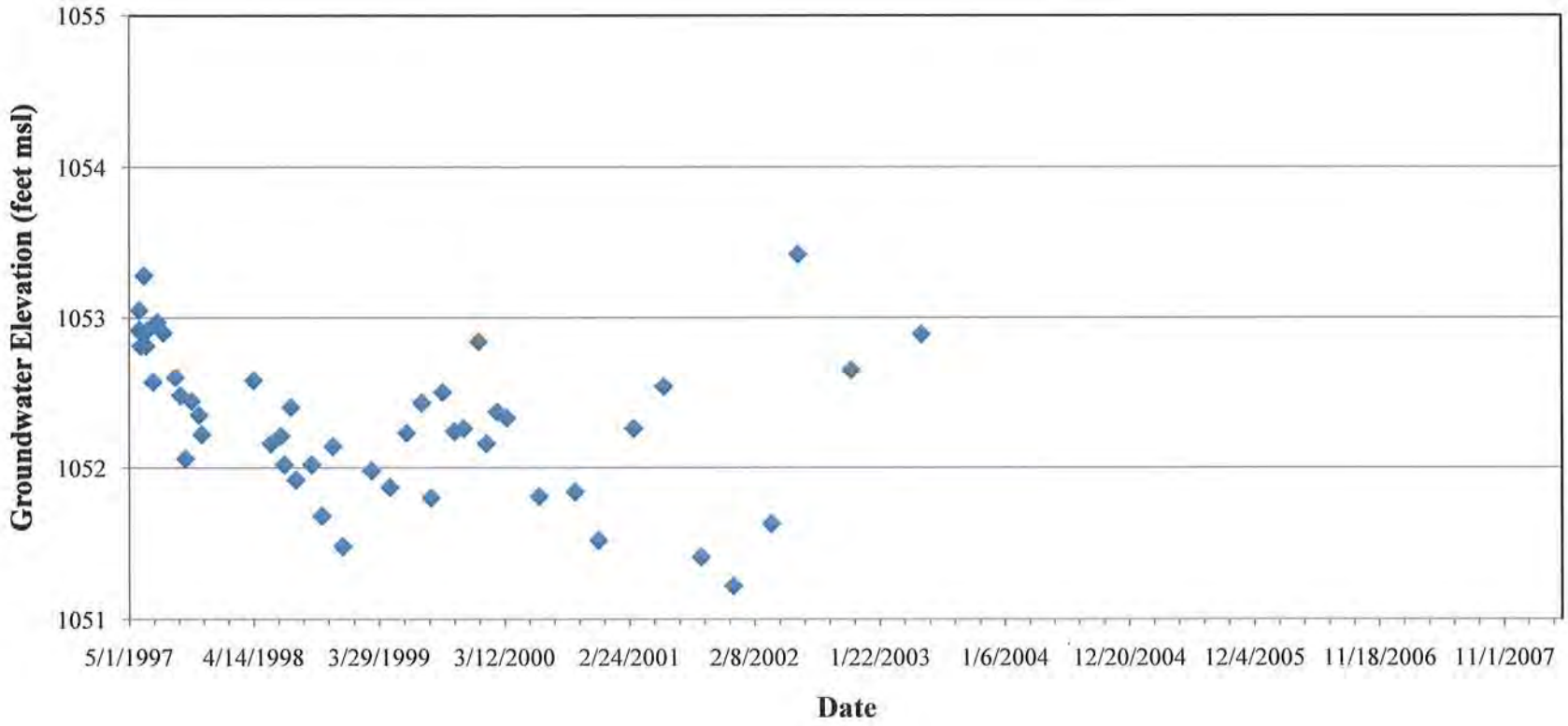
Groundwater Elevations in Well MW-4
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 80-90 Feet Below Ground Surface



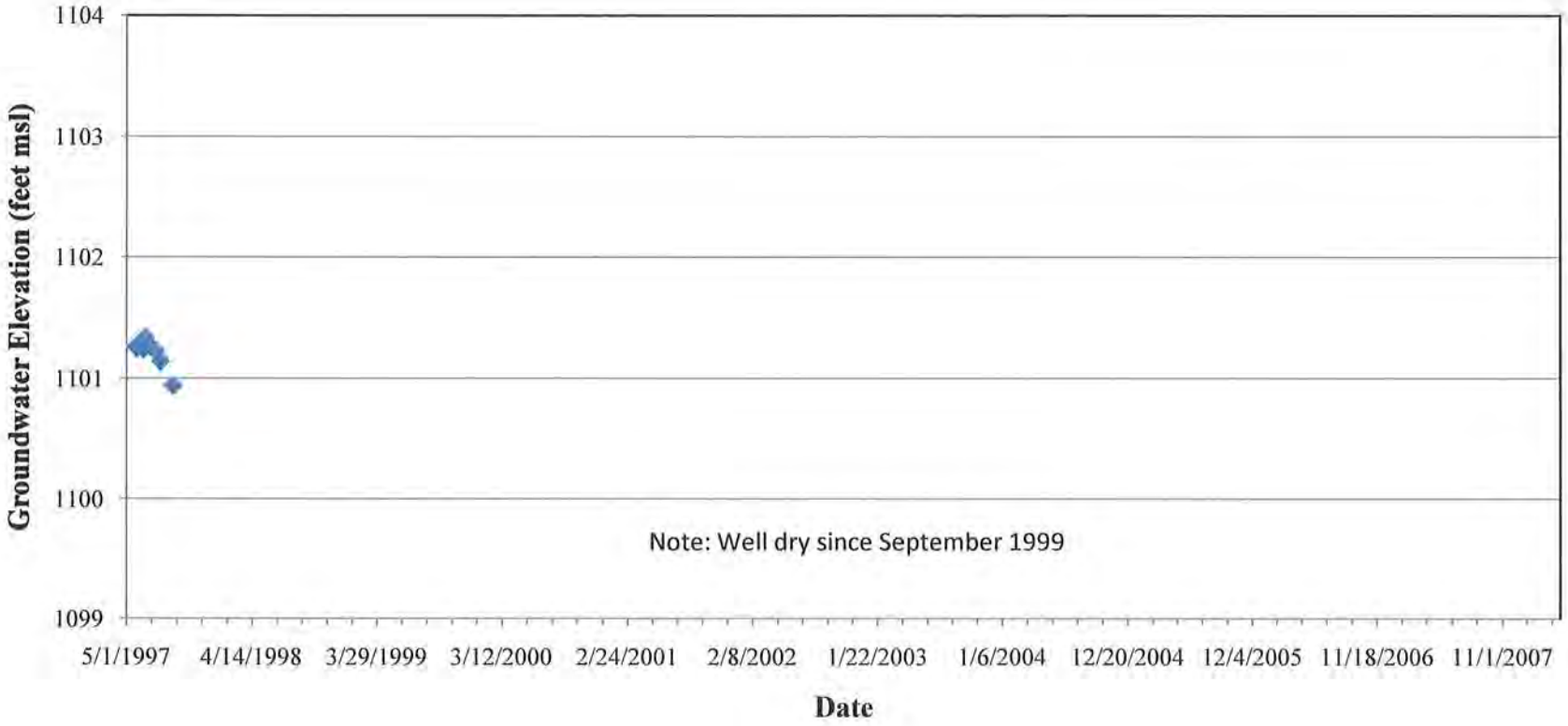
Groundwater Elevations in Well MW-5
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 83-93 Feet Below Ground Surface



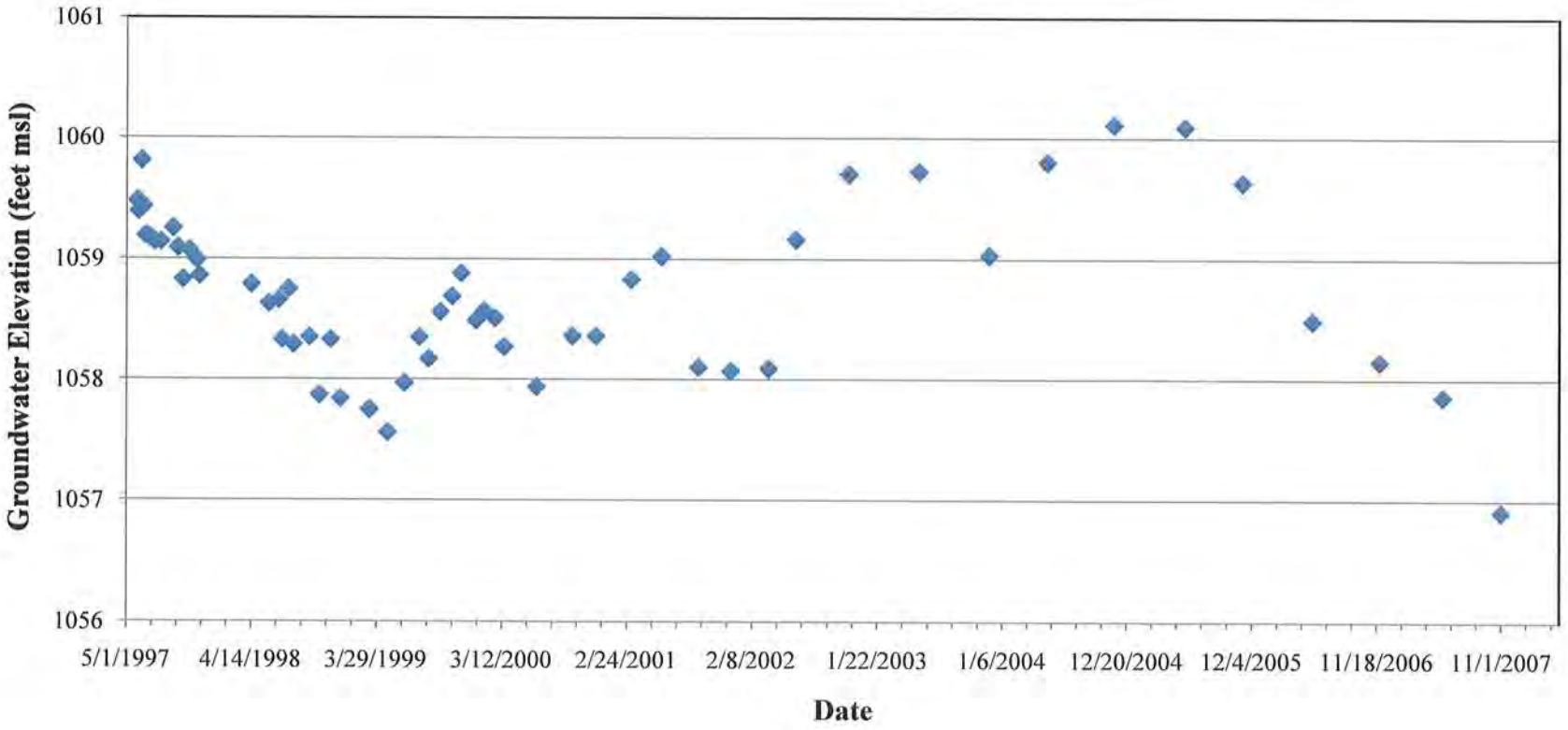
Groundwater Elevations in Well MW-6
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 111-121 Feet Below Ground Surface



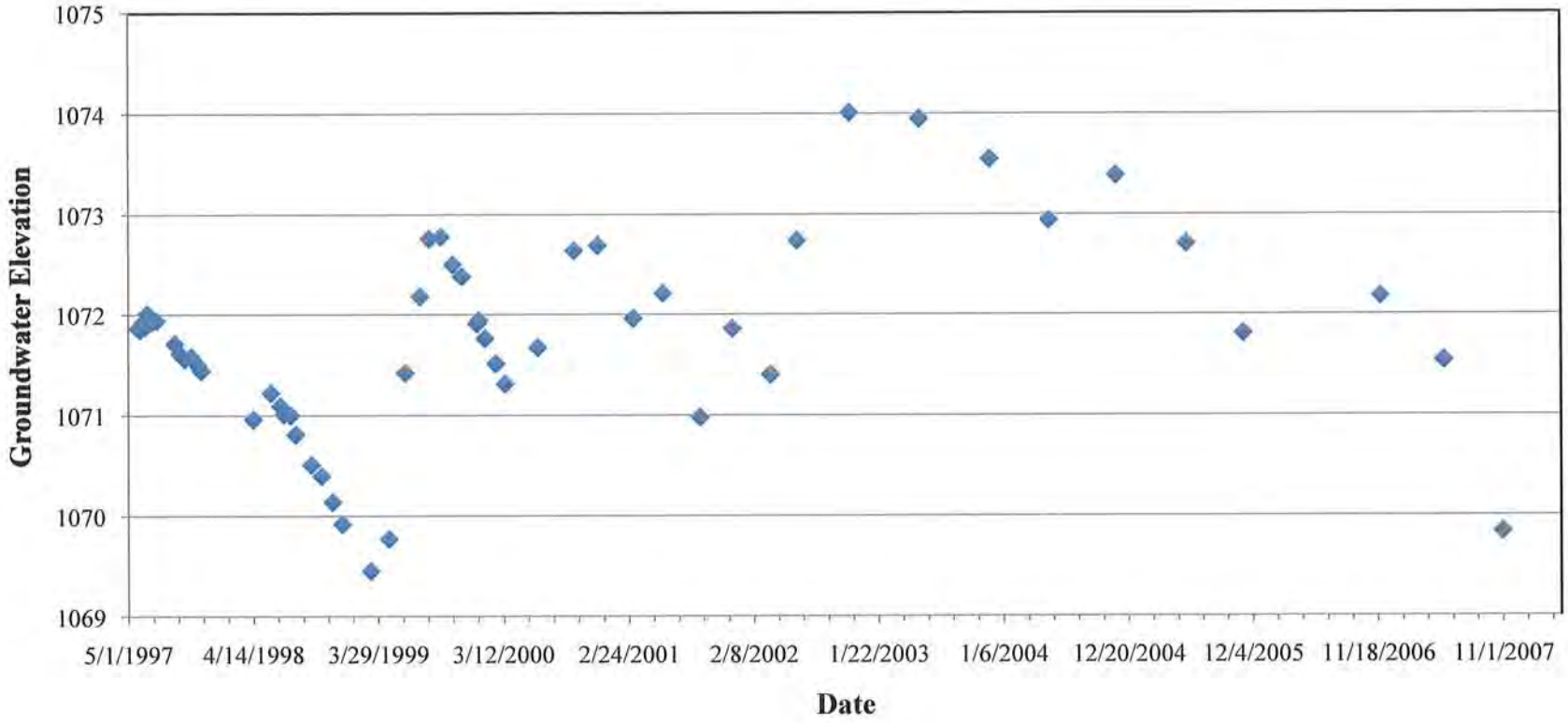
Groundwater Elevations in Well MW-7
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 24.5-34.5 Feet Below Ground Surface



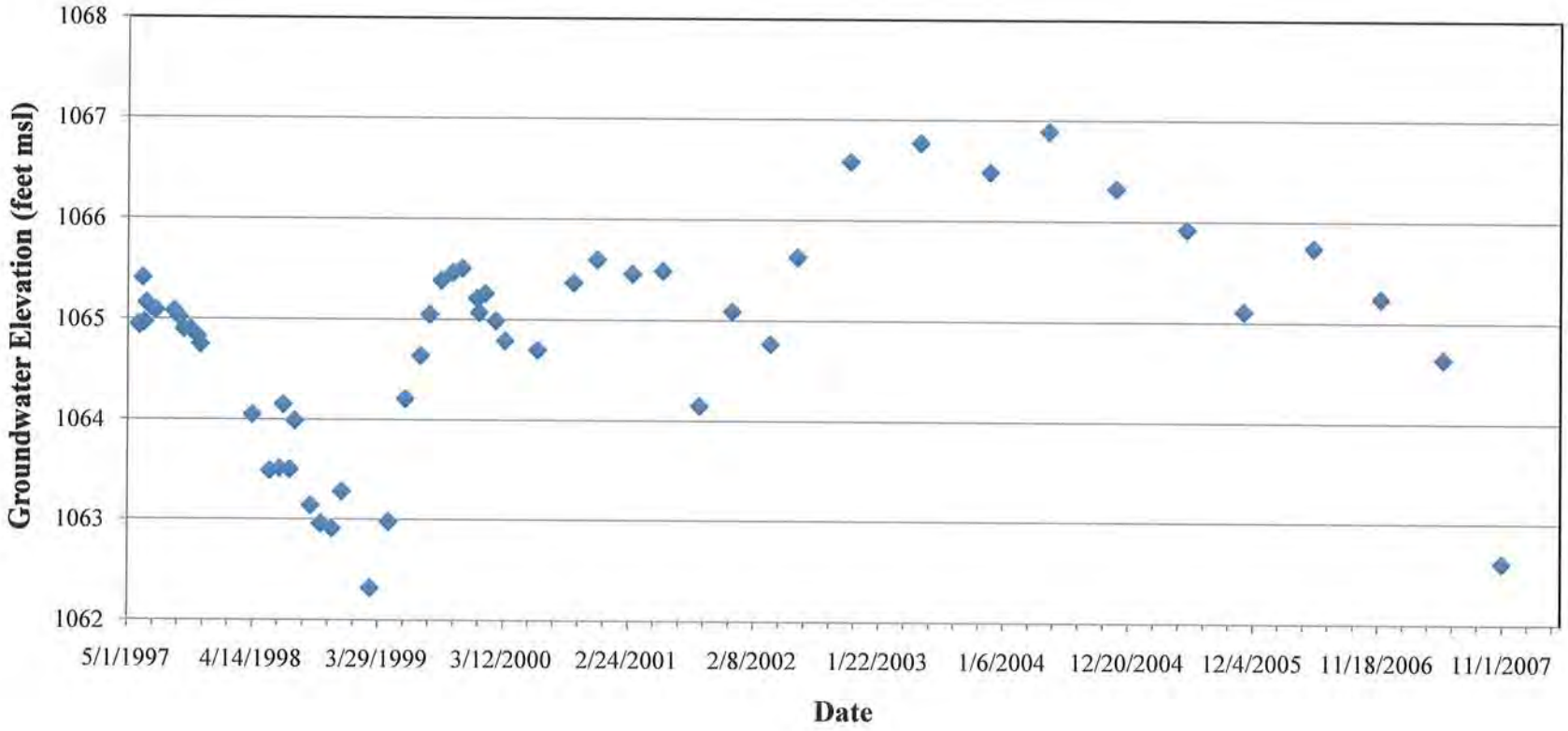
Groundwater Elevations in Well MW-8
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 133-141 Feet Below Ground Surface



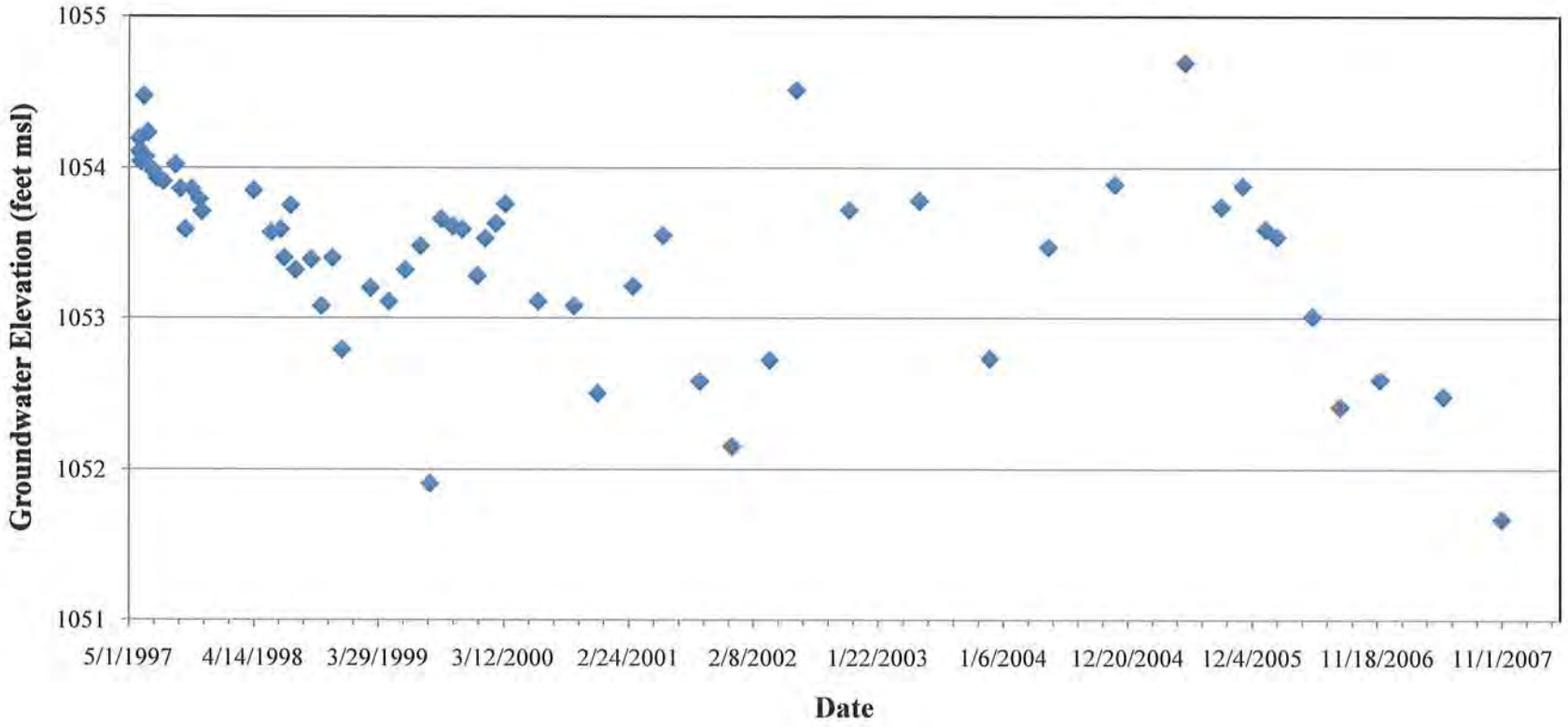
Groundwater Elevations in Well MW-9A
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 55-63.5 Feet Below Ground Surface



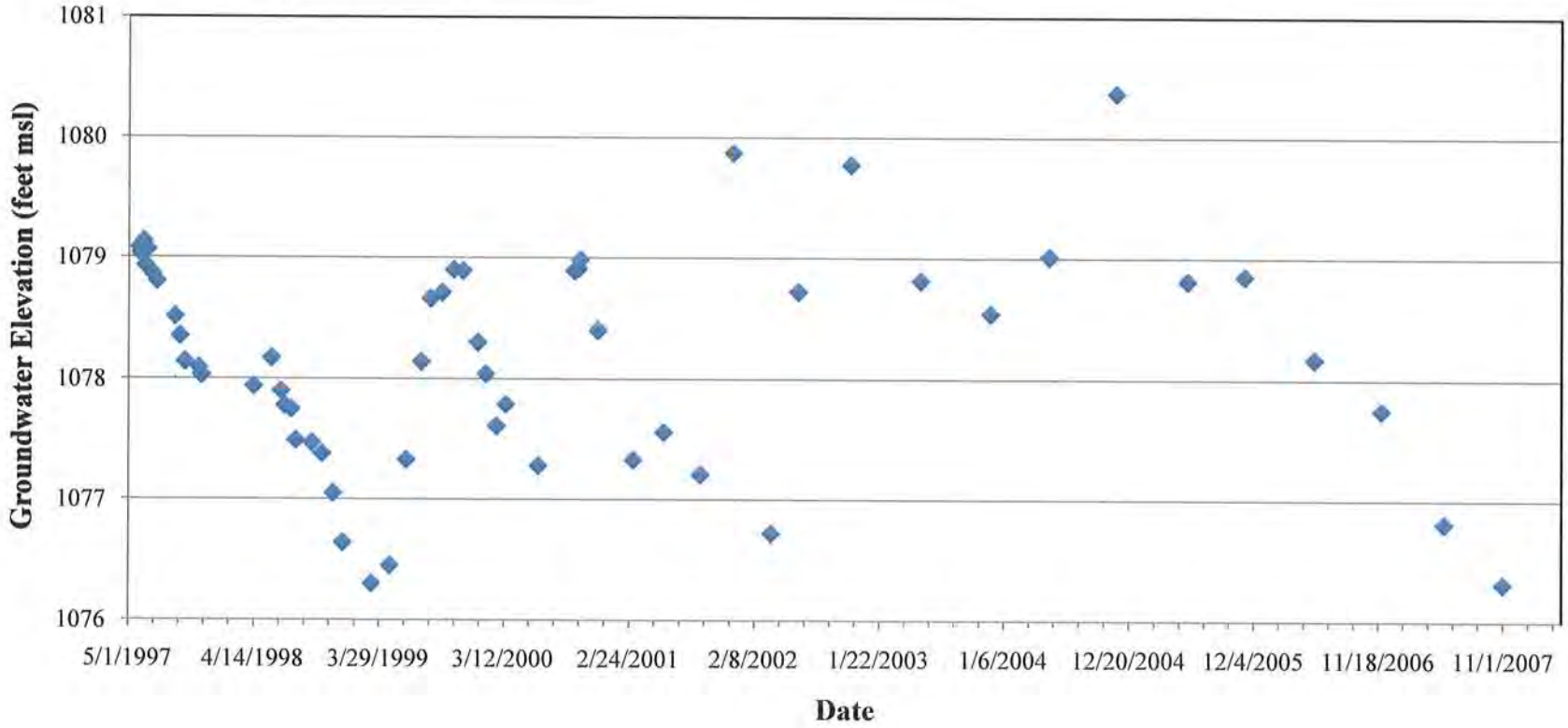
Groundwater Elevations in Well MW-9B
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 105-113.5 Feet Below Ground Surface



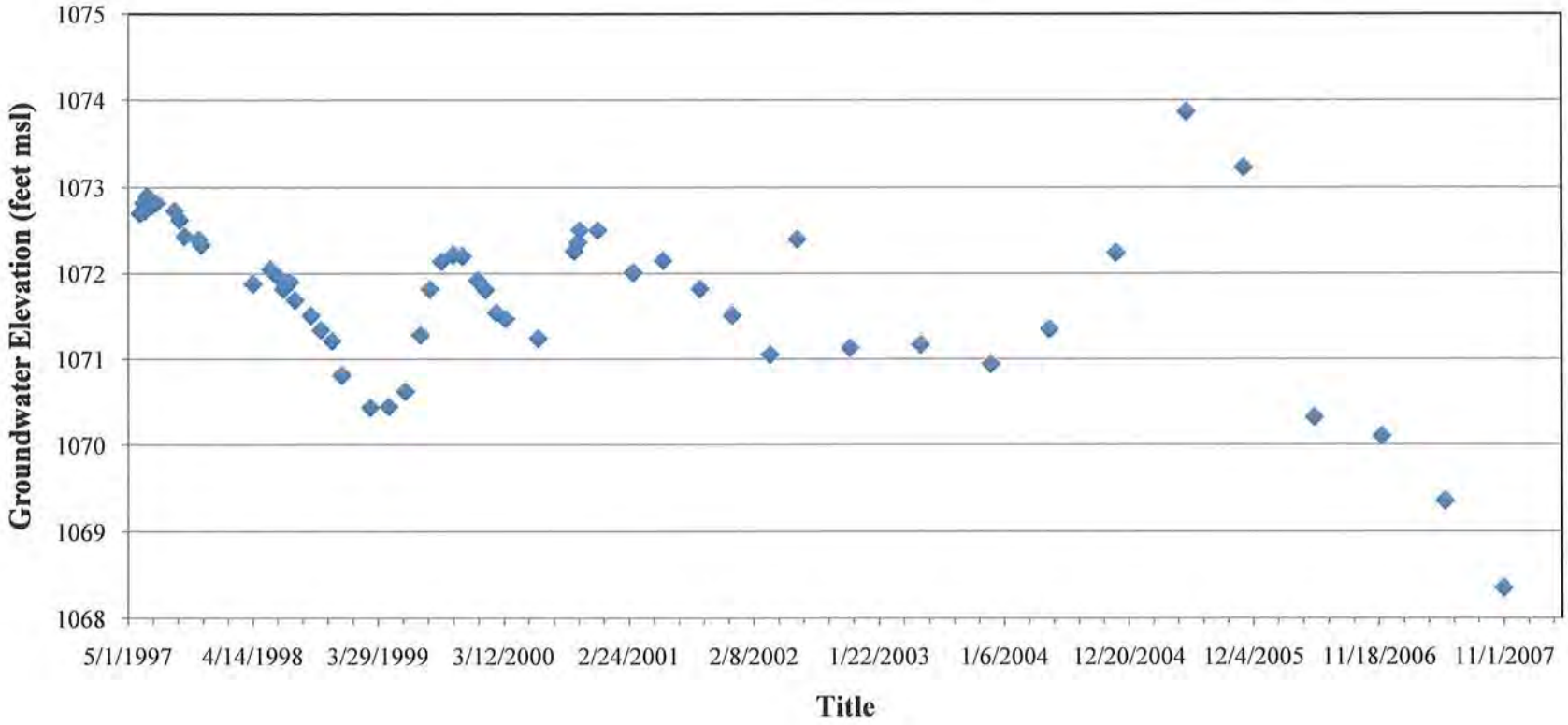
Groundwater Elevations in Well MW-10
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 92-100.5 Feet Below Ground Surface



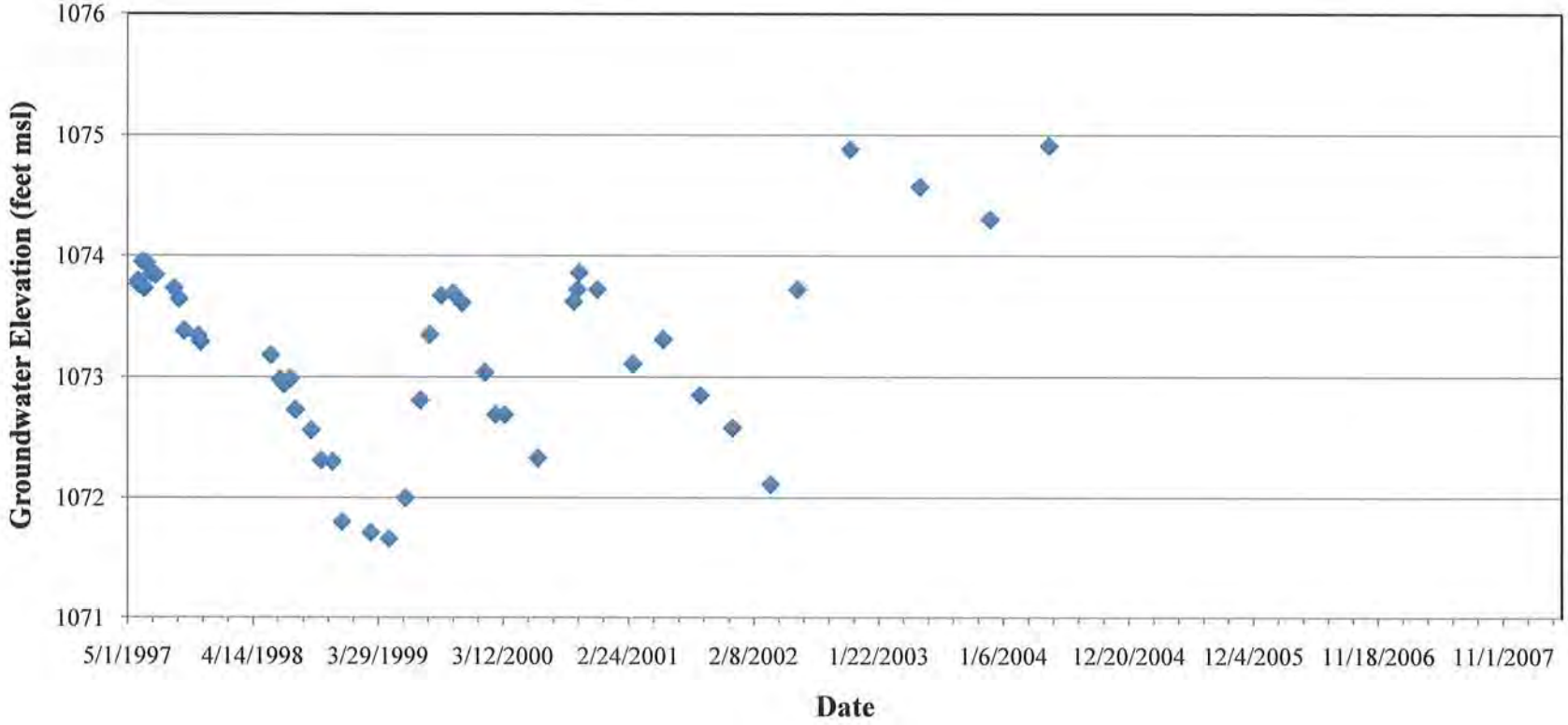
Groundwater Elevations in Well MW-96-1
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 65-75 Feet Below Ground Surface



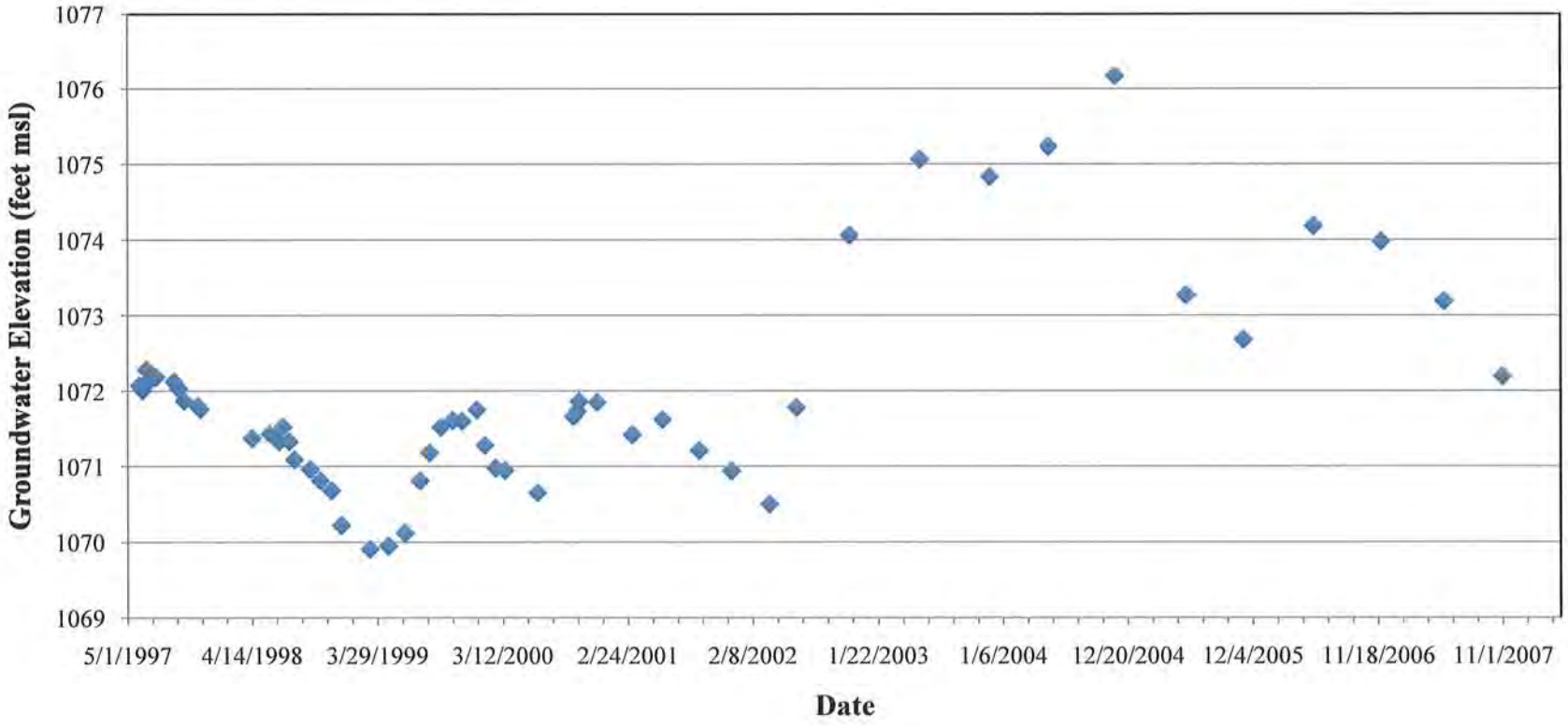
Groundwater Elevations in Well MW-96-2
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 60-65 Feet Below Ground Surface



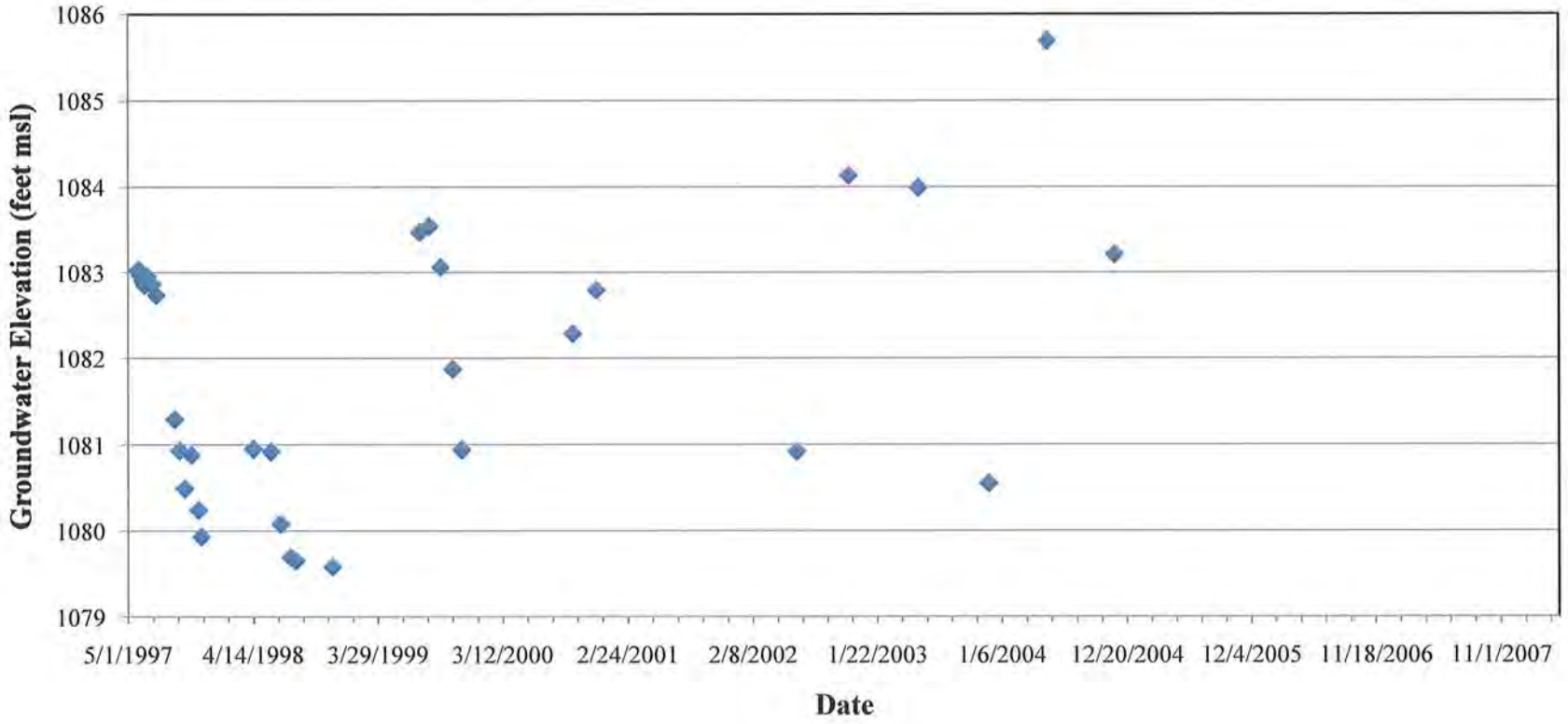
Groundwater Elevations in Well MW-96-3
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 66-71 Feet Below Ground Surface



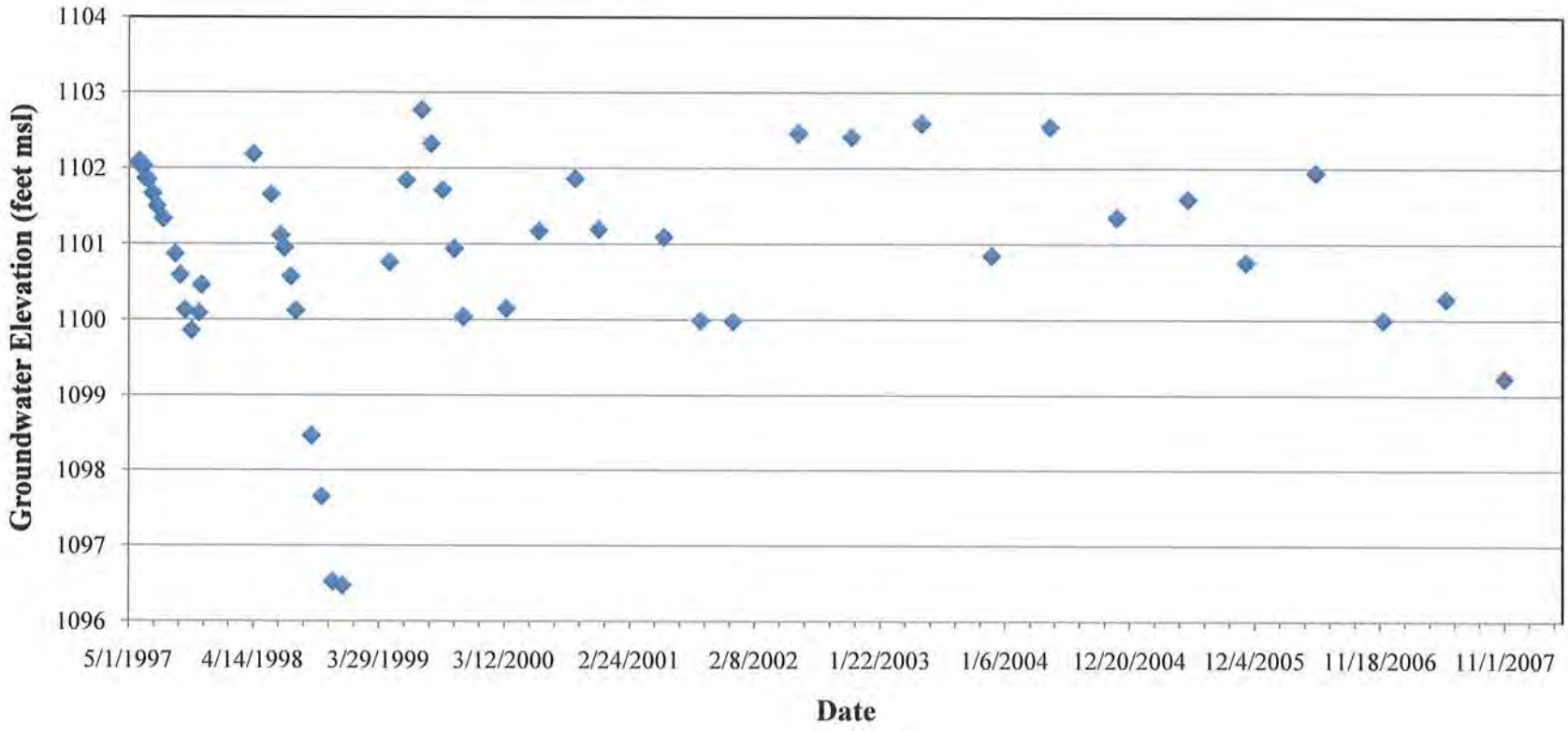
Groundwater Elevations in Well MW-96-4
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 60-65 Feet Below Ground Surface



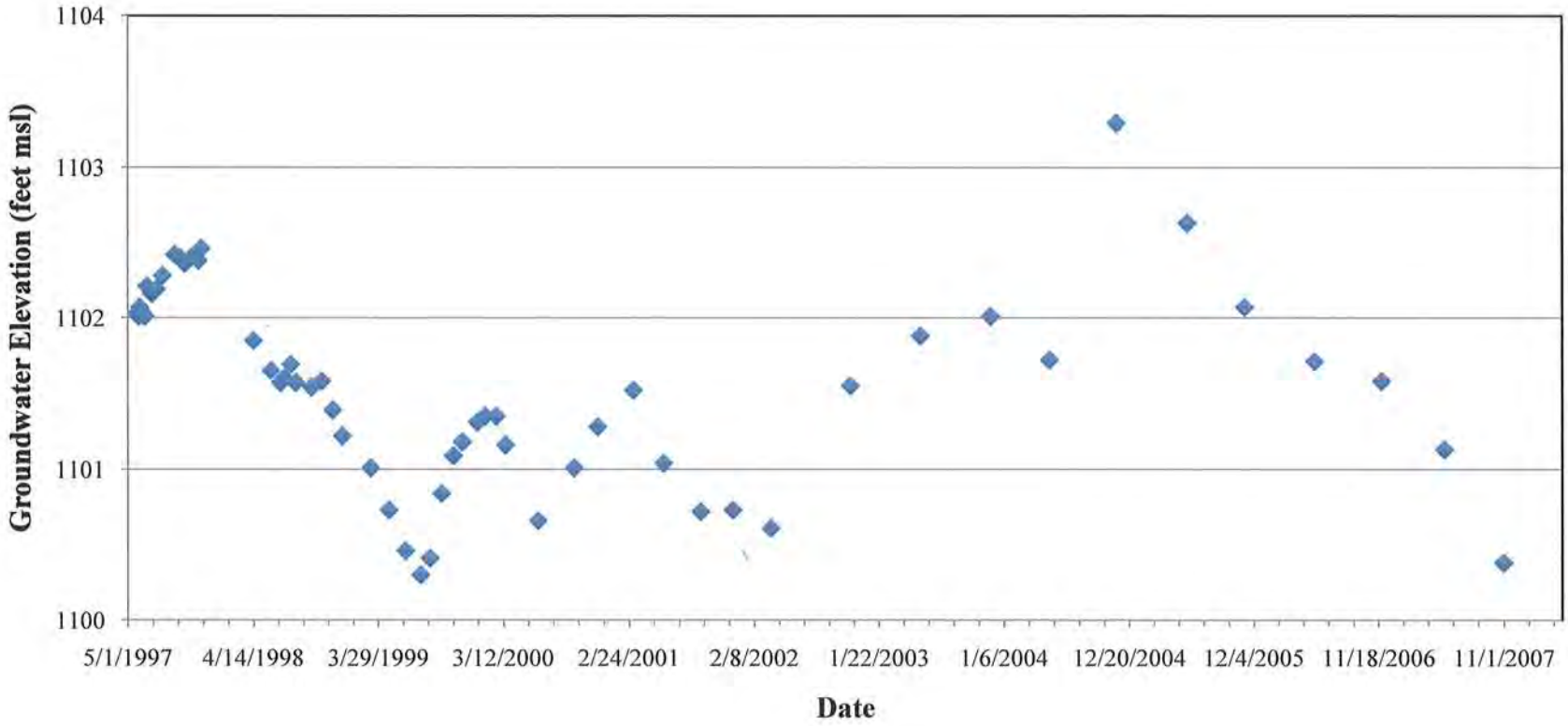
Groundwater Elevations in Well P-1
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 30-40 Feet Below Ground Surface



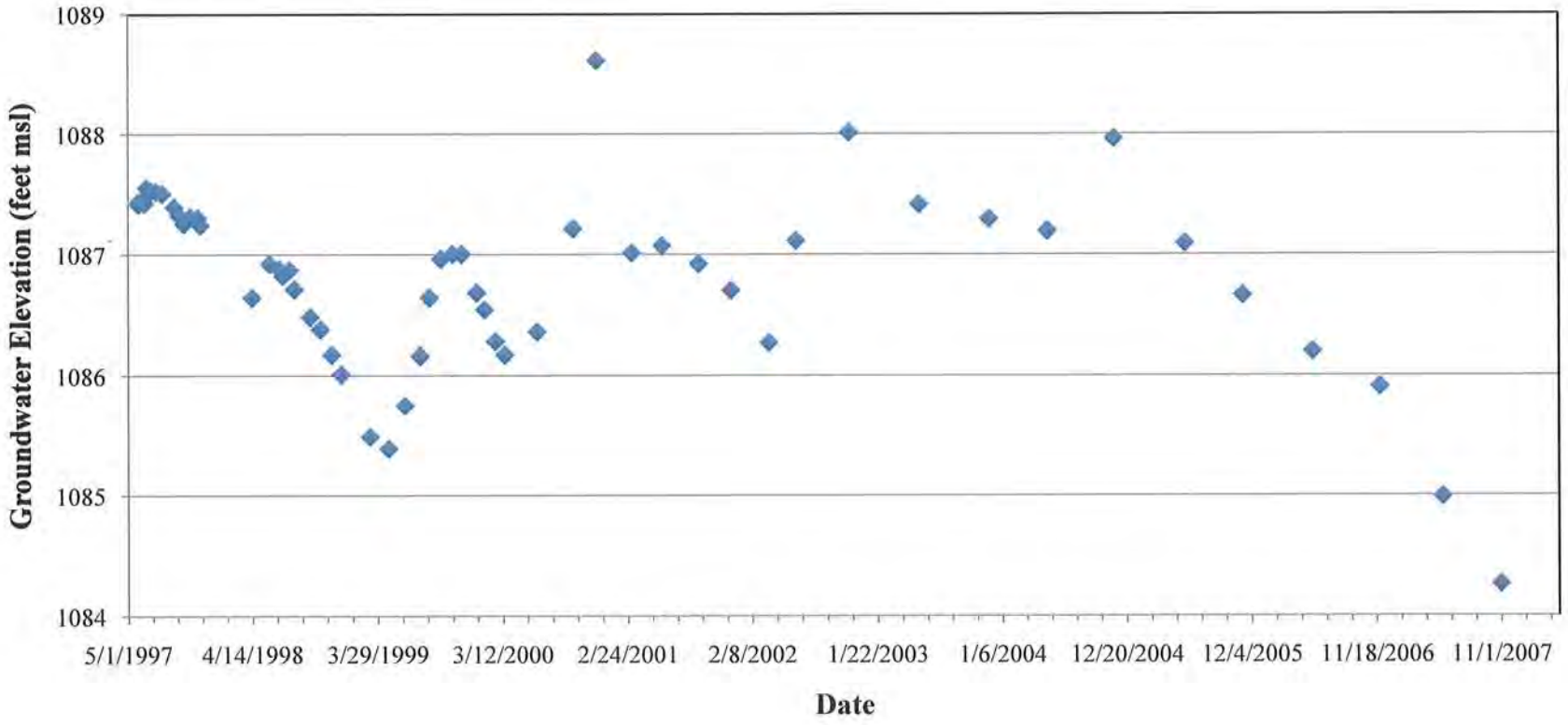
Groundwater Elevations in Well P-2
Ford/Kingsford Site, Kingsford, Michigan
Screened Interval 28-38 Feet Below Ground Surface



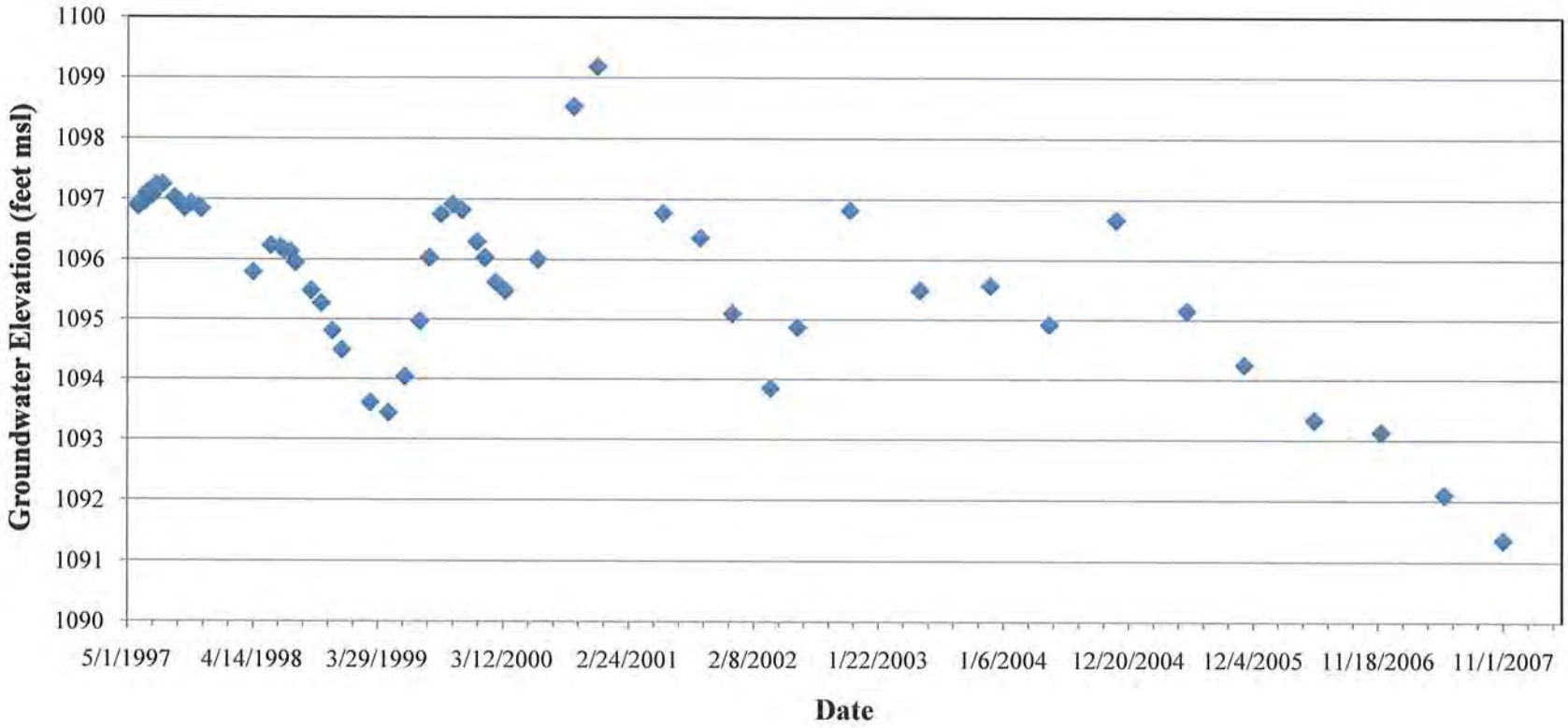
Groundwater Elevations in Well UG-1
Ford/Kingsford Site, Kingsford, Michigan



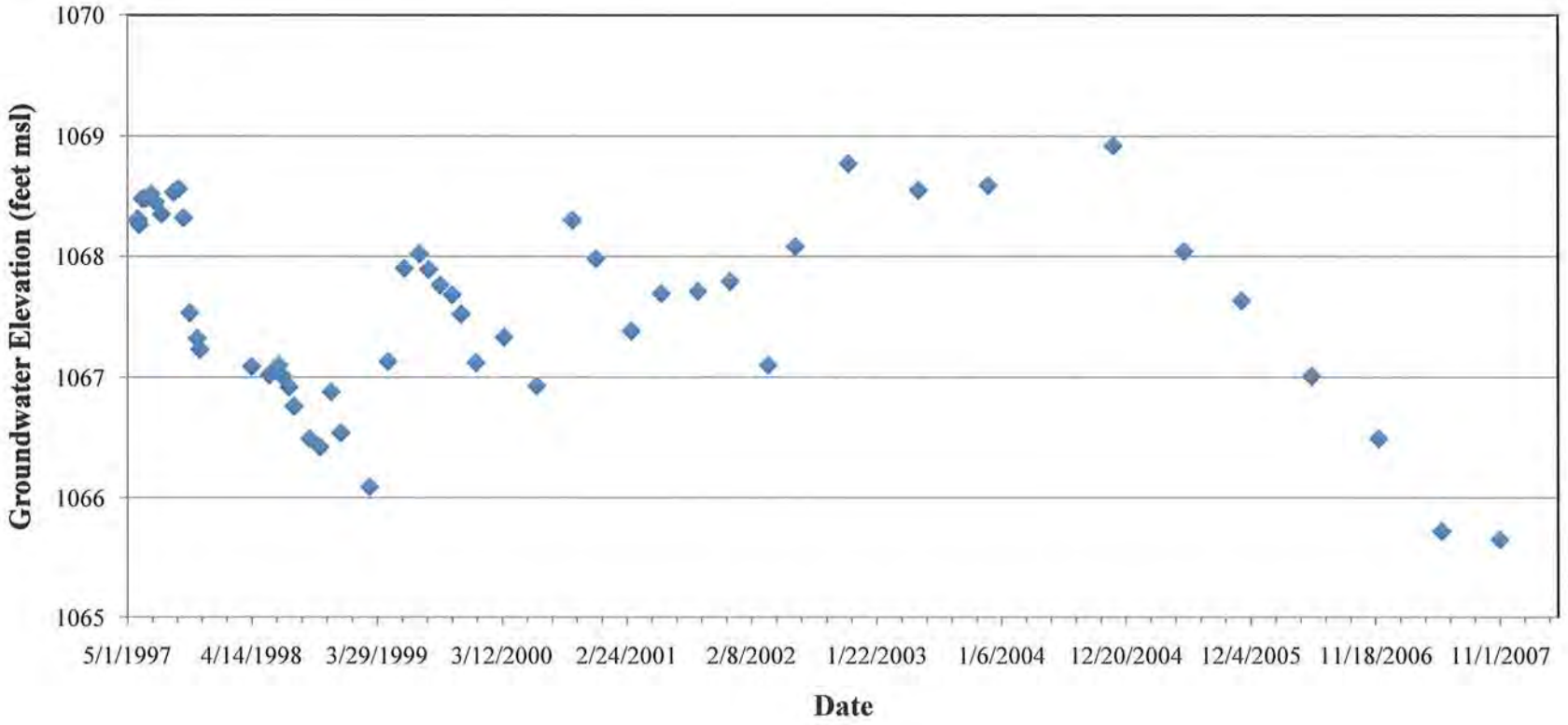
Groundwater Elevations in Well UG-2
Ford/Kingsford Site, Kingsford, Michigan



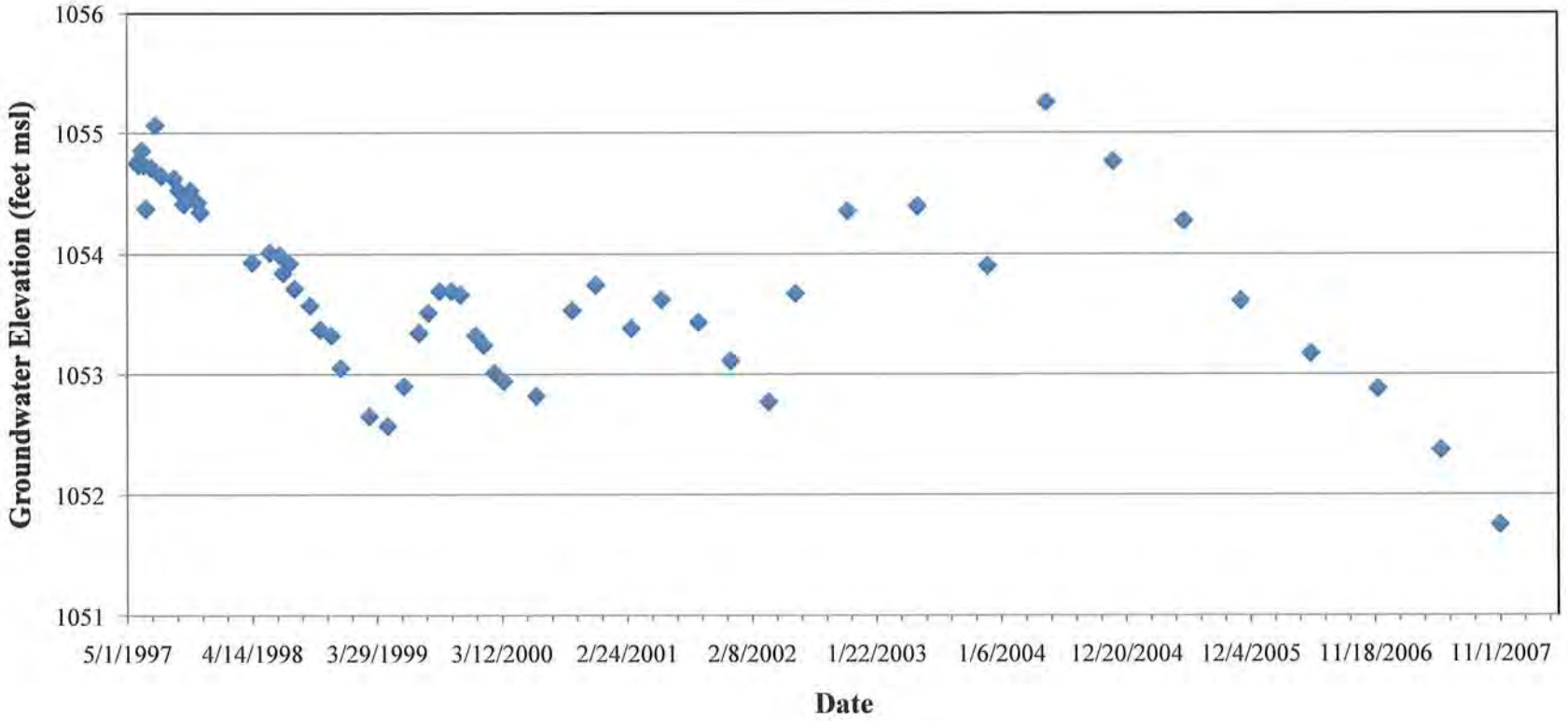
Groundwater Elevations in Well UG-3
Ford/Kingsford Site, Kingsford, Michigan



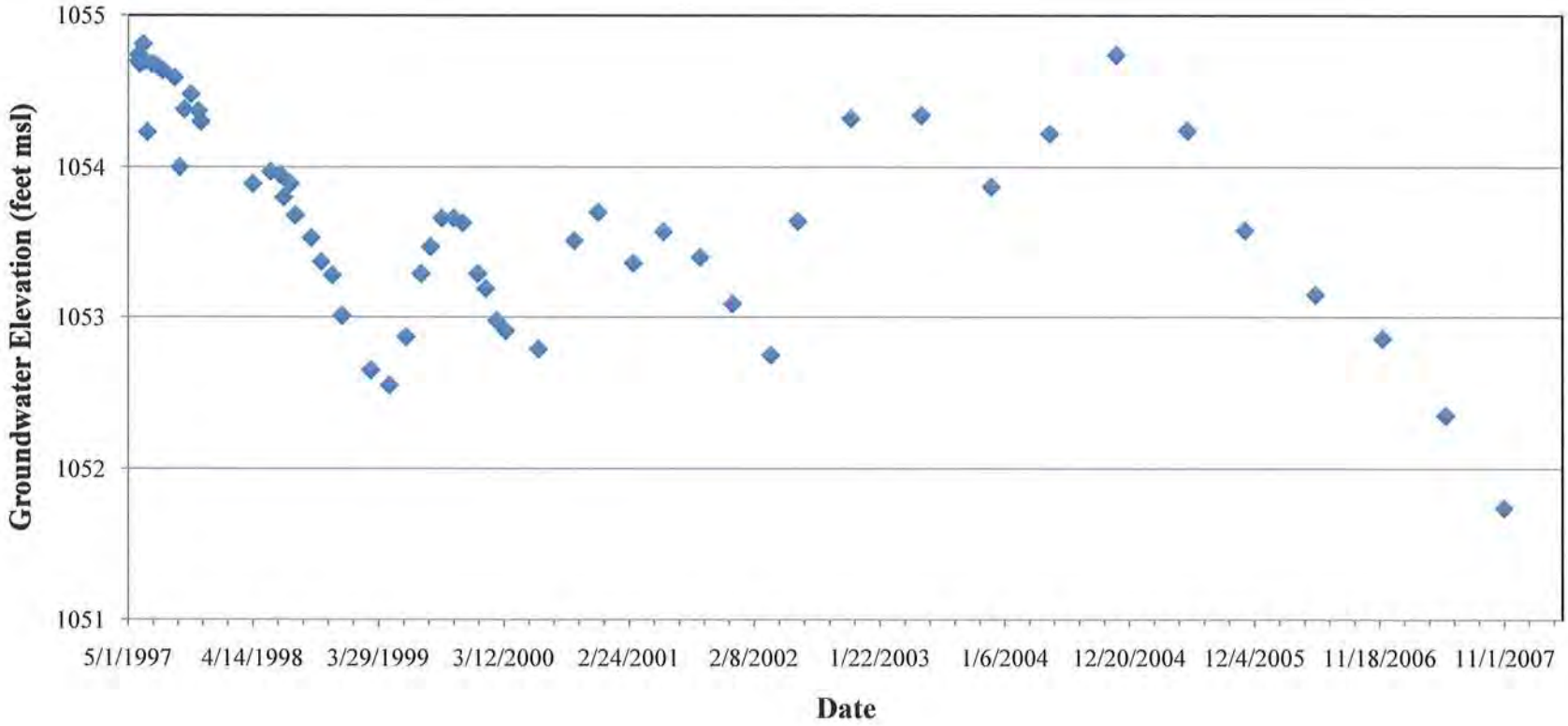
Groundwater Elevations in Well UG-4
Ford/Kingsford Site, Kingsford, Michigan



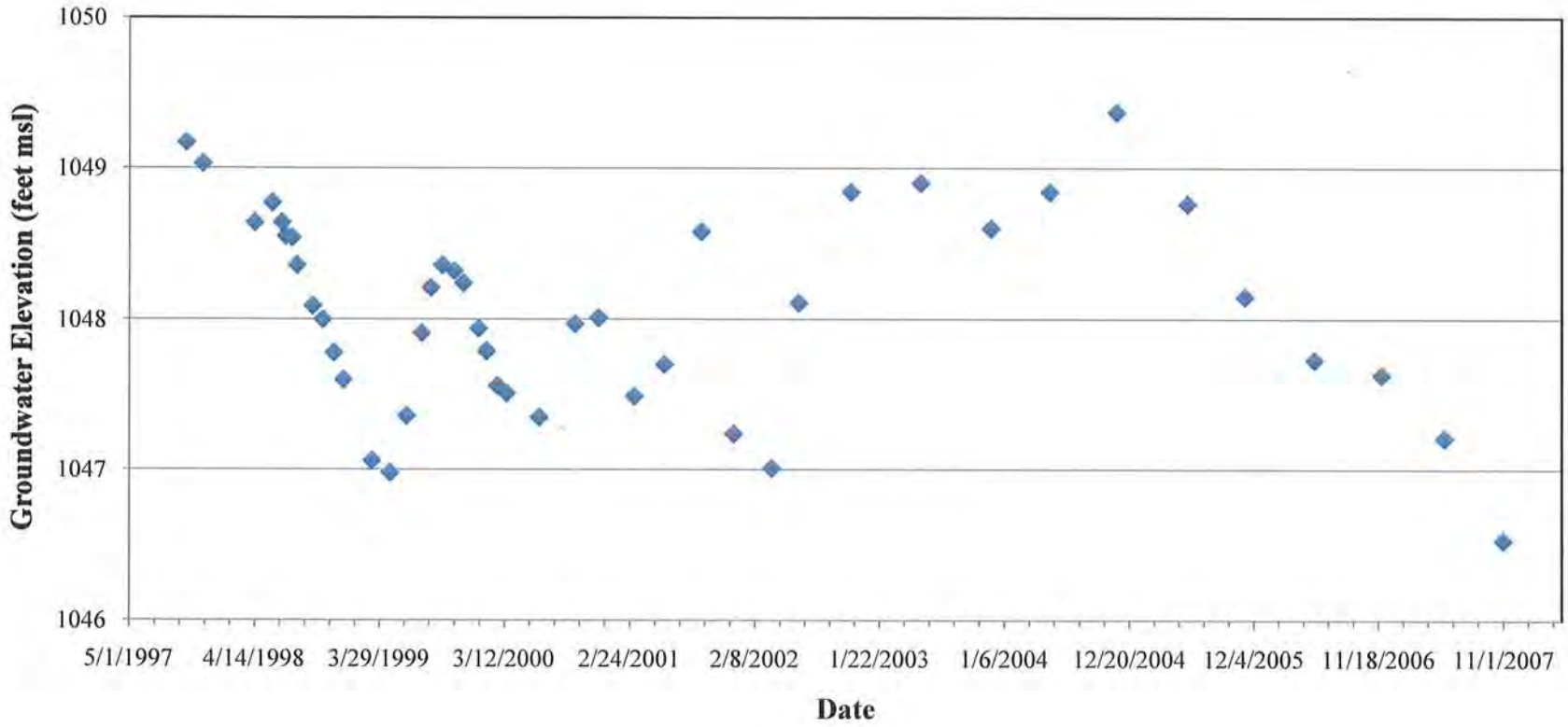
Groundwater Elevations in Well UG-5
Ford/Kingsford Site, Kingsford, Michigan



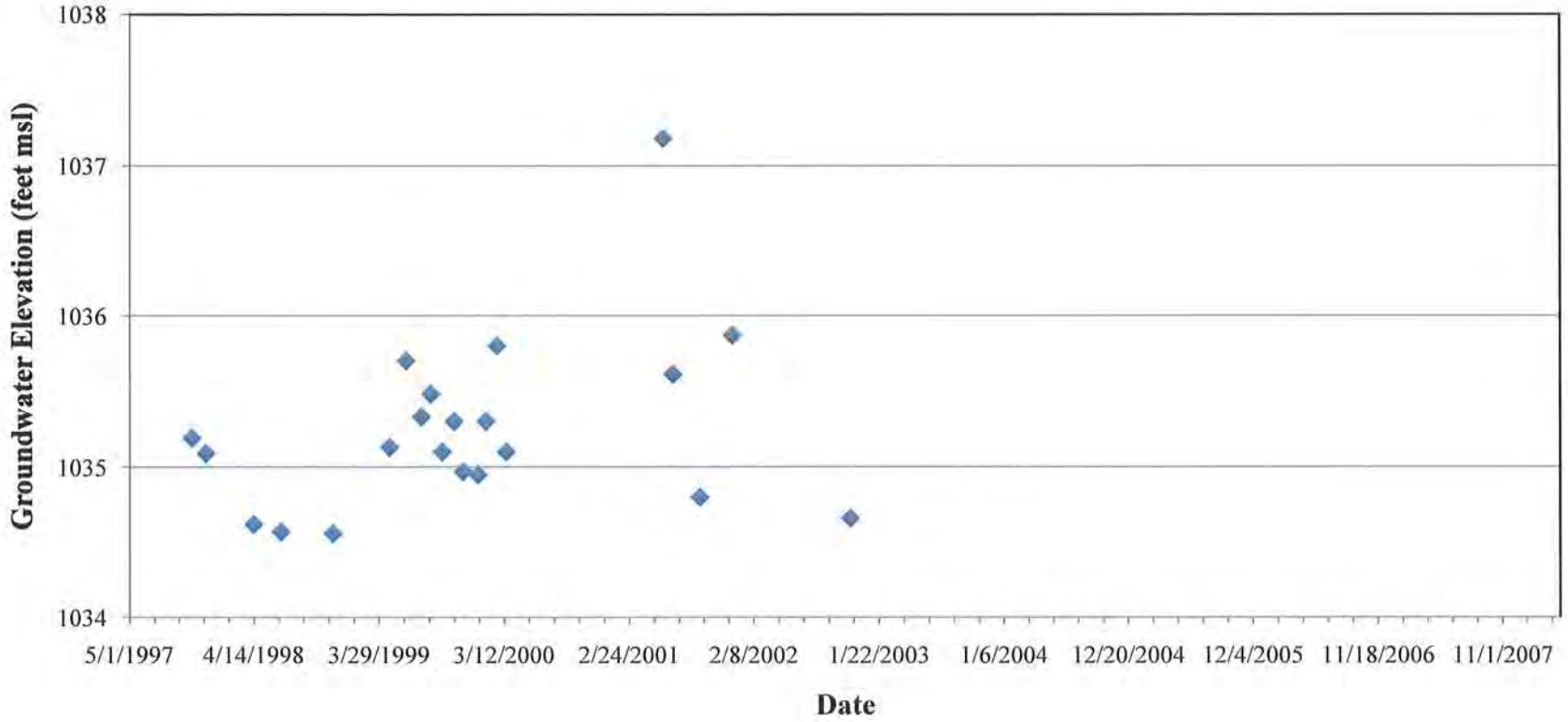
Groundwater Elevations in Well UG-6
Ford/Kingsford Site, Kingsford, Michigan



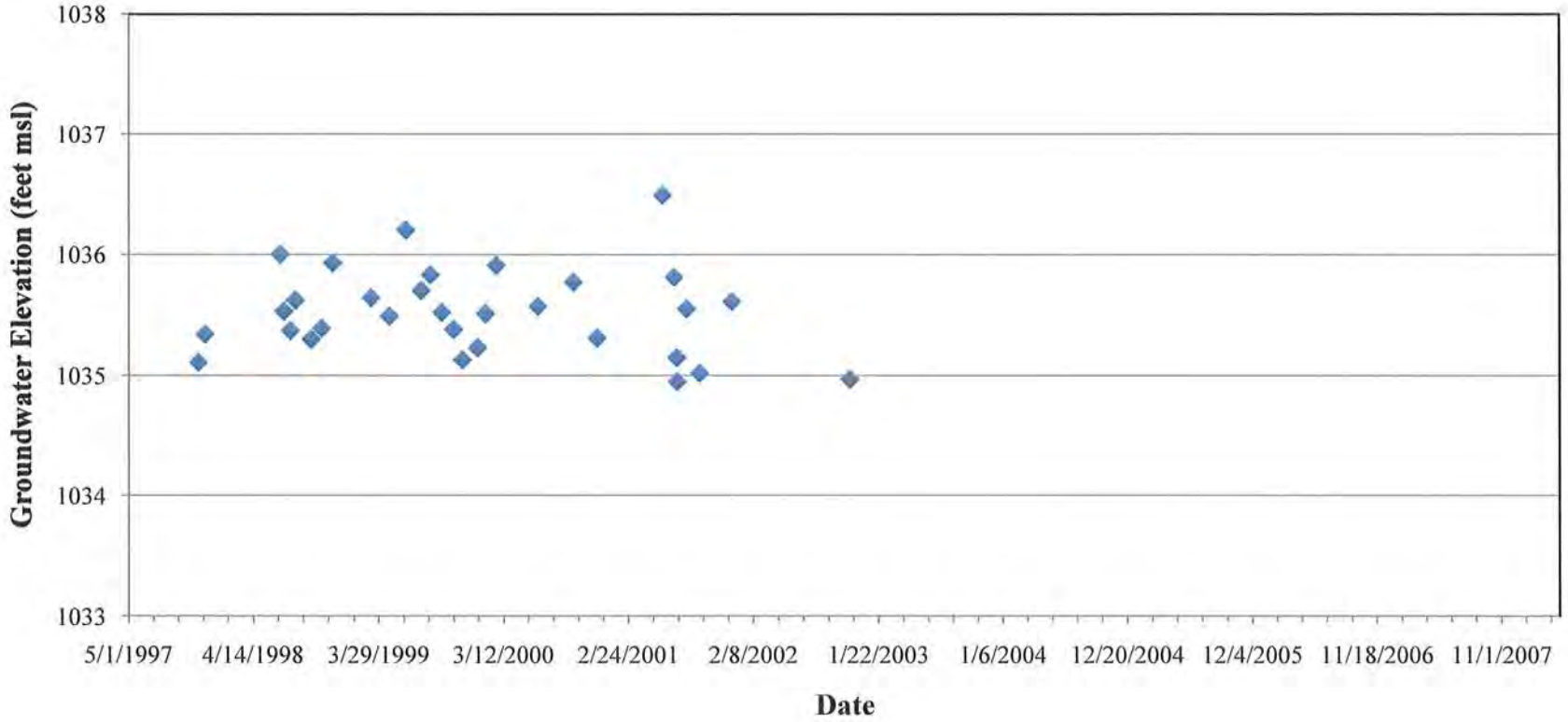
Groundwater Elevations in USGS Well
Ford/Kingsford Site, Kingsford, Michigan



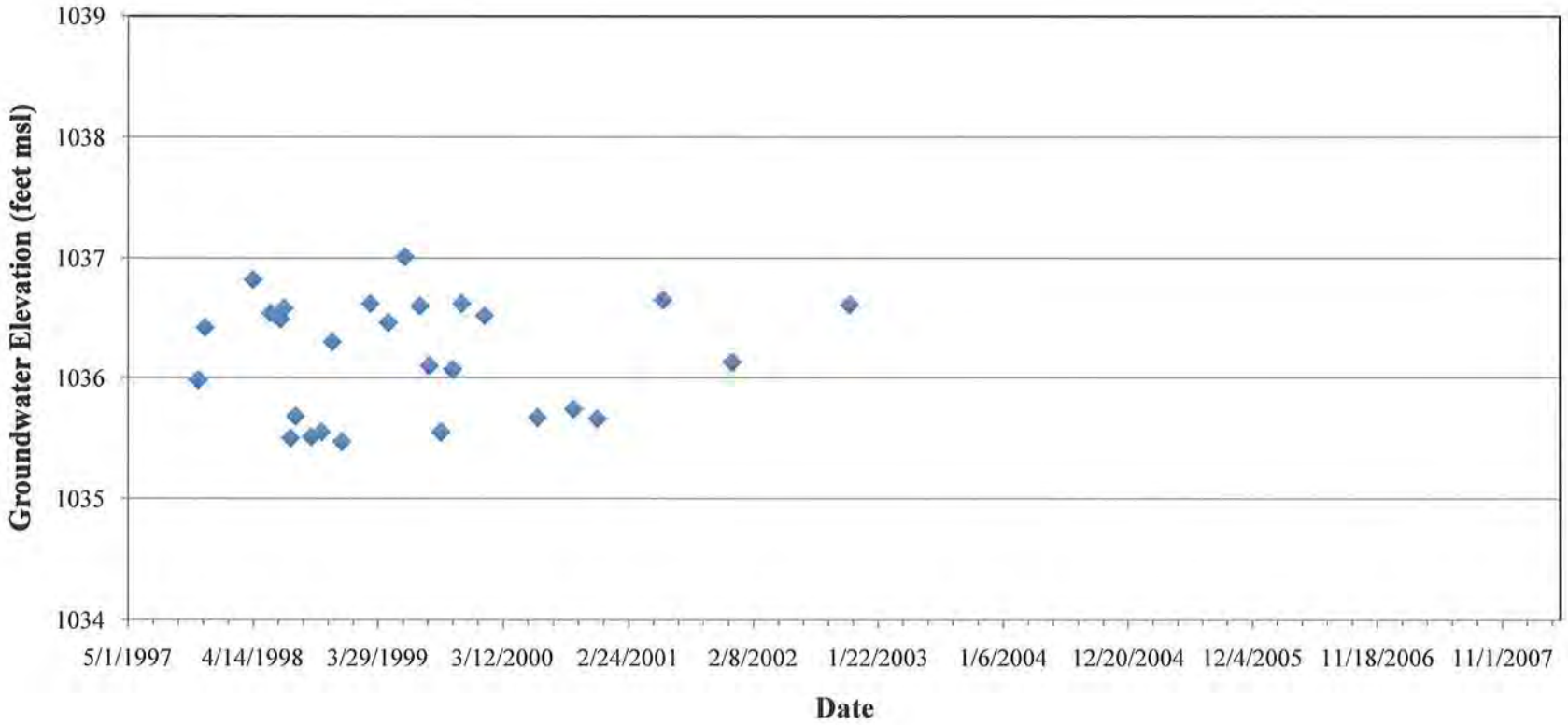
River Elevations at SG-1
Ford/Kingsford Site, Kingsford, Michigan



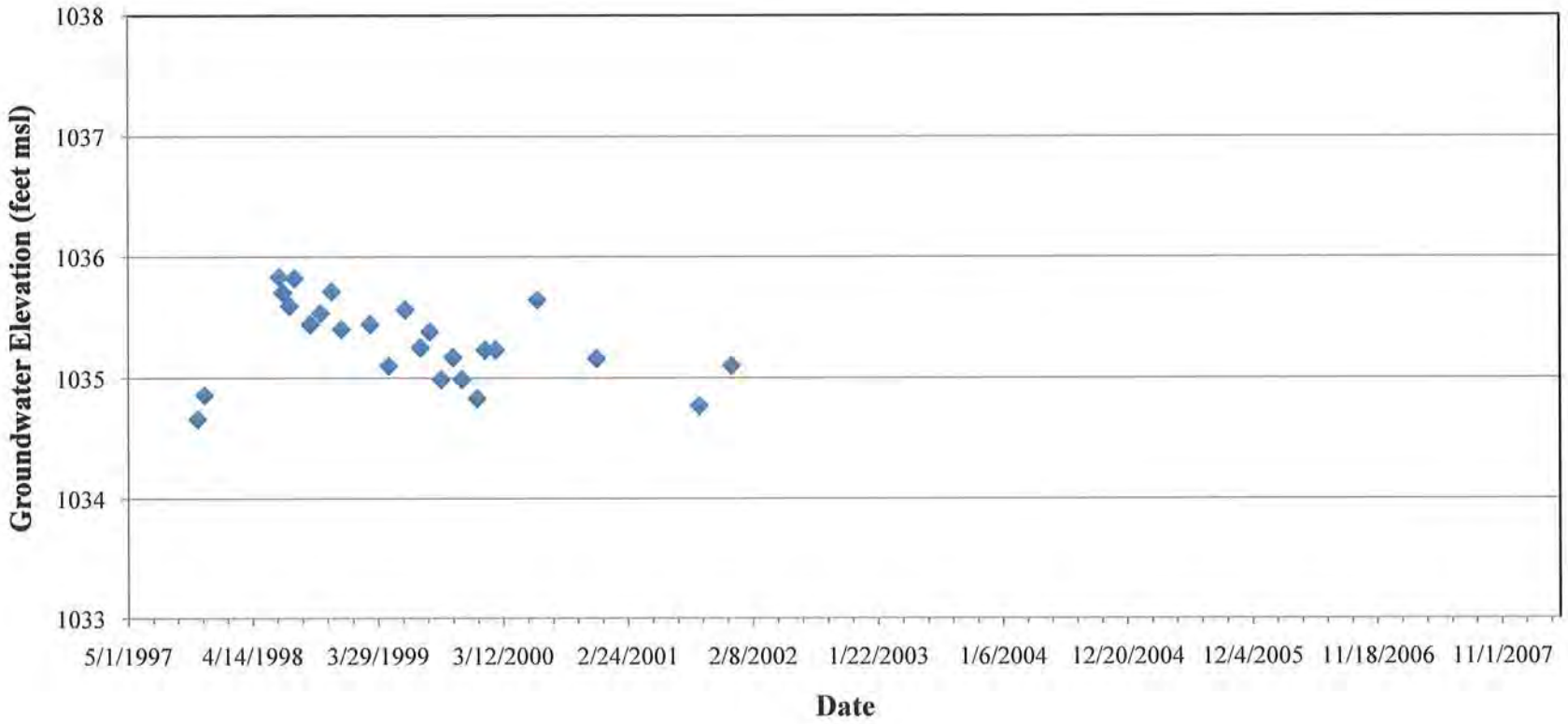
River Elevations at SG-2
Ford/Kingsford Site, Kingsford, Michigan



River Elevations at SG-3
Ford/Kingsford Site, Kingsford, Michigan



River Elevations at SG-4
Ford/Kingsford Site, Kingsford, Michigan



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Appendix K

Tentatively Identified Compound (TIC) Tables

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Table K-1. Tentatively Identified Compounds Above 100 µg/L for Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-13	GBGM-13/145	9/23/1997	145	2-Methylfuran	10.196	91,000
GM-25C	GBGM-25/105	6/10/1998	105	2,5-Dimethylfuran	15.01	120
GM-25C	GBGM-25/105	6/10/1998	105	2-Methylcyclopentanone	20.49	1,000
GM-25C	GBGM-25/105	6/10/1998	105	Cyclopentanone	19.08	400
GM-25C	GBGM-25/105	6/10/1998	105	Dimethylcyclopentanone isomer	21.56-21.90	520
GM-25C	GBGM-25/105	6/10/1998	105	Methylcyclopentanone isomer	20.82	240
GM-25C	GBGM-25/105	6/10/1998	105	Pentanone isomer	15.19	200
GM-25C	GBGM-25/105	6/10/1998	105	Thiophene	14.22	140
GM-25C	GBGM-25/105	6/10/1998	105	Unknown Cyclopentanone	23.13	240
GM-26C	GBGM-26/30	6/15/1998	30	2-Methylcyclopentanone	16.55	130
GM-26C	GBGM-26/30	6/15/1998	30	Dimethylcyclopentanone isomer	17.78-18.38	130
GM-67	GBGWGM-67/122-127	6/14/2000	122-127	Carbon Dioxide	0.882	R
GMSB-1	GBGMSB-1/85	5/16/1997	85	2-Methylfuran	5.2984	290
GMSB-2	GBGMSB-2/265	5/20/1997	265	2-Methylcyclopentanone	15.304	220
GMSB-49	GBGWGMSB-49/93	5/19/2000	93	Carbon Dioxide	0.886	R
GMSB-50	GBGWGMSB-50/100-105	6/1/2000	100-105	Carbon Dioxide	0.888	R

µg/L Micrograms per liter.
R Rejected.

Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-1	GBGM-1/144	5/13/1997	144	2,3,4-Trimethyl-2-cyclopenten-1-one	7.2044	120 N
GM-1	GBGM-1/144	5/13/1997	144	Unknown	5.1271	160
GM-1	GBGM-1/144	5/13/1997	144	Unknown	6.244	250
GM-1	GBGM-1/144	5/13/1997	144	Unknown	6.6929	150
GM-1	GBGM-1/144	5/13/1997	144	Unknown	7.6324	190
GM-1	GBGM-1/144	5/13/1997	144	Unknown	9.6574	190
GM-1	GBGM-1/193	5/14/1997	193	Unknown	7.4027	180
GM-1	GBGM-1/193	5/14/1997	193	Unknown	5.1271	140
GM-1	GBGM-1/193	5/14/1997	193	Unknown	4.7618	110
GM-1	GBGM-1/193	5/14/1997	193	Unknown	4.1355	150
GM-1	GBGM-1/193	5/14/1997	193	Unknown Dimethylphenol isomer	8.7388	150
GM-2B	GBGM-2/135	5/3/1997	135	Unknown	9.0798	130
GM-2B	GBGM-2/135	5/3/1997	135	Unknown	26.035	380
GM-2B	GBGM-2/135	5/3/1997	135	Unknown	24.62	110
GM-2B	GBGM-2/255	5/5/1997	255	2,3-Dimethylcyclopent-2-en-1-one	7.416	2,800 N
GM-2B	GBGM-2/255	5/5/1997	255	2-Methyl-2-cyclopenten-1-one	6.3796	3,100 N
GM-2B	GBGM-2/255	5/5/1997	255	2-Methylcyclopentanone	4.5847	4,500 N
GM-2B	GBGM-2/255	5/5/1997	255	3-Ethylphenol	9.1576	4,100 N
GM-2B	GBGM-2/255	5/5/1997	255	3-Methylcyclopentanone	4.6915	940 N
GM-2B	GBGM-2/255	5/5/1997	255	5-Ethylcyclopentanone	6.0431	1,000 N
GM-2B	GBGM-2/255	5/5/1997	255	Cyclopentanol	3.73	1,100 N
GM-2B	GBGM-2/255	5/5/1997	255	Cyclopentanone	3.8421	3,300 N
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	8.9439	540
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	9.6758	1,400
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	6.8498	790
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	7.7526	820
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	8.1586	640
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	5.2097	640
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	10.29	2,100
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	8.2975	480

Footnotes on Page 9.

Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	10.701	570
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	9.9749	500
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	4.5313	840
GM-2B	GBGM-2/255	5/5/1997	255	Unknown	6.791	850
GM-3B	GBGM-3/167	5/1/1997	167	2-Methylcyclopentanone	3.7535	320 N
GM-3B	GBGM-3/167	5/1/1997	167	3-Ethylphenol	8.6379	140 N
GM-3B	GBGM-3/167	5/1/1997	167	3-Methylcyclopentanone	3.8683	200 N
GM-3B	GBGM-3/167	5/1/1997	167	Unknown	11.977	110
GM-3B	GBGM-3/207	5/1/1997	207	2-Methylcyclopentanone	3.9333	700 N
GM-3B	GBGM-3/207	5/1/1997	207	3-Ethylphenol	8.5115	160 N
GM-3B	GBGM-3/207	5/1/1997	207	3-Methyl-2-Cyclopenten-1-one	5.7176	300 N
GM-3B	GBGM-3/207	5/1/1997	207	5-Ethylcyclopentanone	5.365	110 N
GM-3B	GBGM-3/207	5/1/1997	207	Cyclopentanol	3.1053	140 N
GM-3B	GBGM-3/207	5/1/1997	207	Cyclopentanone	3.2389	670 N
GM-3B	GBGM-3/207	5/1/1997	207	Unknown	7.0585	120
GM-3B	GBGM-3/207	5/1/1997	207	Unknown	4.553	140
GM-3B	GBGM-3/207	5/1/1997	207	Unknown	9.0511	140
GM-3B	GBGM-3/207	5/1/1997	207	Unknown	6.1022	130
GM-3B	GBGM-3/207	5/1/1997	207	Unknown	6.1183	140
GM-3B	GBGM-3/265	5/3/1997	265	2,3,4-Trimethyl-2-cyclopenten-1-one	8.0886	190 N
GM-3B	GBGM-3/265	5/3/1997	265	2-Methylcyclopentanone	4.894	1,500 N
GM-3B	GBGM-3/265	5/3/1997	265	3-Ethylcyclopentanone	6.6622	130 N
GM-3B	GBGM-3/265	5/3/1997	265	3-Ethylphenol	9.4775	540 N
GM-3B	GBGM-3/265	5/3/1997	265	3-Methyl-2-Cyclopenten-1-one	6.705	510 N
GM-3B	GBGM-3/265	5/3/1997	265	3-Methylcyclopentanone	5.0062	640 N
GM-3B	GBGM-3/265	5/3/1997	265	5-Ethylcyclopentanone	6.3684	300 N
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	7.1751	220
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	7.1163	160
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	5.519	140
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	5.8502	160

Footnotes on Page 9.

Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	11.032	140
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	10.006	330
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	10.62	180
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	10.695	190
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	5.6633	140
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	4.8299	210 N
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	7.752	790
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	8.6281	130
GM-3B	GBGM-3/265	5/3/1997	265	Unknown	5.5778	140
GM-3B	GBGM-3/305	5/4/1997	305	2,6-Dimethylphenol	9.2664	510 N
GM-3B	GBGM-3/305	5/4/1997	305	2-Methylcyclopentanone	4.8942	6,600 N
GM-3B	GBGM-3/305	5/4/1997	305	3-Ethylcyclopentanone	6.6624	570 N
GM-3B	GBGM-3/305	5/4/1997	305	3-Ethylphenol	9.4777	4,600 N
GM-3B	GBGM-3/305	5/4/1997	305	3-Methyl-2-Cyclopenten-1-one	6.7052	3,600 N
GM-3B	GBGM-3/305	5/4/1997	305	3-Methylcyclopentanone	5.0064	1,300 N
GM-3B	GBGM-3/305	5/4/1997	305	5-Ethylcyclopentanone	6.3686	1,300 N
GM-3B	GBGM-3/305	5/4/1997	305	Cyclopentanone	4.1463	6,500 N
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	7.1753	860
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	5.578	670
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	5.5245	860
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	10.615	1,800
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	4.0181	960
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	11.032	500
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	10.001	1,100
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	7.7522	3,000
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	8.4894	650
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	8.0888	830
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	5.6634	700
GM-3B	GBGM-3/305	5/4/1997	305	Unknown	7.1165	530
GM-5	GBGM-5/173	6/12/1997	173	Unknown	4.6585	150

Footnotes on Page 9.

Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-5	GBGM-5/235	6/13/1997	235	2,6-Dimethylphenol	8.4666	140 N
GM-5	GBGM-5/235	6/13/1997	235	3,5-Dimethylphenol	9.2571	180 N
GM-5	GBGM-5/235	6/13/1997	235	Unknown	12.397	330
GM-5	GBGM-5/235	6/13/1997	235	Unknown	8.723	130
GM-5	GBGM-5/235	6/13/1997	235	Unknown	8.5841	160
GM-5	GBGM-5/235	6/13/1997	235	Unknown	8.3972	110
GM-5	GBGM-5/235	6/13/1997	235	Unknown	9.7912	280
GM-5	GBGM-5/235	6/13/1997	235	Unknown	8.317	240
GM-5	GBGM-5/235	6/13/1997	235	Unknown	6.0791	180
GM-5	GBGM-5/235	6/13/1997	235	Unknown	4.589	420
GM-5	GBGM-5/235	6/13/1997	235	Unknown	12.525	190
GM-5	GBGM-5/235	6/13/1997	235	Unknown	5.2406	160
GM-5	GBGM-5/235	6/13/1997	235	Unknown	5.5931	210
GM-5	GBGM-5/235	6/13/1997	235	Unknown	7.7082	110
GM-5	GBGM-5/235	6/13/1997	235	Unknown	7.7829	370
GM-13	GBGM-13/145	9/23/1997	145	1,2-Benzenediol	8.7959	19,000
GM-13	GBGM-13/145	9/23/1997	145	2,6-Dimethylphenol	7.6315	2,200
GM-13	GBGM-13/145	9/23/1997	145	2-Ethylcyclopentanone	5.2921	2,600
GM-13	GBGM-13/145	9/23/1997	145	2-Methylcyclopentanone	3.8714	15,000
GM-13	GBGM-13/145	9/23/1997	145	3-Ethylphenol	8.4113	12,000
GM-13	GBGM-13/145	9/23/1997	145	3-Propylphenol	9.5223	3,200
GM-13	GBGM-13/145	9/23/1997	145	4-Methyl-1,2-benzenediol	9.9335	5,900
GM-13	GBGM-13/145	9/23/1997	145	Unknown	4.3735	4,100
GM-13	GBGM-13/145	9/23/1997	145	Unknown	4.5391	6,800
GM-13	GBGM-13/145	9/23/1997	145	Unknown	6.6595	6,500
GM-13	GBGM-13/145	9/23/1997	145	Unknown	6.5526	10,000
GM-13	GBGM-13/145	9/23/1997	145	Unknown	6.1093	3,000
GM-13	GBGM-13/145	9/23/1997	145	Unknown	4.475	5,700
GM-13	GBGM-13/145	9/23/1997	145	Unknown	8.9561	2,400
GM-13	GBGM-13/145	9/23/1997	145	Unknown	3.1557	27,000

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Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-13	GBGM-13/145	9/23/1997	145	Unknown	3.0756	3,700
GM-13	GBGM-13/145	9/23/1997	145	Unknown	4.8328	8,400
GM-13	GBGM-13/145	9/23/1997	145	Unknown	5.4737	2,800
GM-13	GBGM-13/145	9/23/1997	145	Unknown	5.6607	11,000
GM-13	GBGM-13/145	9/23/1997	145	Unknown Acid	3.0115	120,000
GM-13	GBGM-13/145	9/23/1997	145	Unknown Acid	4.1385	80,000
GM-13	GBGM-13/145	9/23/1997	145	Unknown Acid	5.0358	13,000
GM-25C	GBGM-25/105	6/10/1998	105	1-(2-Furanyl)-ethanone	4.84	1,900
GM-25C	GBGM-25/105	6/10/1998	105	2,3-Dimethylcyclopent-2-en-1-one	6.56	2,200
GM-25C	GBGM-25/105	6/10/1998	105	2,5-Hexanedione	5.06	570
GM-25C	GBGM-25/105	6/10/1998	105	Cyclopentanone Isomer	5.26	1,000
GM-25C	GBGM-25/105	6/10/1998	105	Dimethylcyclohexenone isomer	5.97	530
GM-25C	GBGM-25/105	6/10/1998	105	Dimethylcyclopentanone isomer	4.63	470
GM-25C	GBGM-25/105	6/10/1998	105	Dimethylphenol isomer	7.51	570
GM-25C	GBGM-25/105	6/10/1998	105	Ethylphenol isomer	8.22	2,600
GM-25C	GBGM-25/105	6/10/1998	105	Methylcyclopentanone isomer	5.58	1,300
GM-25C	GBGM-25/105	6/10/1998	105	Methylhexadiene isomer	7.25	620
GM-25C	GBGM-25/105	6/10/1998	105	Propylphenol isomer	9.33	660
GM-25C	GBGM-25/105	6/10/1998	105	Trimethylcyclopentanone isomer	6.88	730
GM-25C	GBGM-25/105	6/10/1998	105	Unknown	11.36	410
GM-25C	GBGM-25/105	6/10/1998	105	Unknown	4.72	400
GM-25C	GBGM-25/105	6/10/1998	105	Unknown	6.02	550
GM-25C	GBGM-25/105	6/10/1998	105	Unknown	7.39	600
GM-25C	GBGM-25/105	6/10/1998	105	Unknown	6.36	570
GM-26C	GBGM-26/30	6/15/1998	30	Dimethylcyclopentanone isomer	4.43-4.62	1,300
GM-26C	GBGM-26/30	6/15/1998	30	Dimethylphenol isomer	7.4	470
GM-26C	GBGM-26/30	6/15/1998	30	Ethylcyclopentanone isomer	5.45	280
GM-26C	GBGM-26/30	6/15/1998	30	Ethylphenol isomer	8.15	1,300
GM-26C	GBGM-26/30	6/15/1998	30	Methylcyclopentanone isomer	5.48	220
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	9.26	370

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Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	5.17	800
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	11.37	350
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	11.26	510
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	5.87	310
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	8.64	250
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	7.3	470
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	7.68	340
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	5.28	220
GM-26C	GBGM-26/30	6/15/1998	30	Unknown	6.78	650
GM-26C	GBGM-26/30	6/15/1998	30	Unknown Alkylphenol	8.38	210
GM-26C	GBGM-26/30	6/15/1998	30	Unknown Organic Acid	20.18	270
GM-26C	GBGM-26/140	6/16/1998	140	Unknown	12.02	150
GM-32	GBGM-32/125	7/8/1998	125	Unknown	12.14	140
GM-32	GBGM-32/125	7/8/1998	125	Unknown	8.59	150
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	13.021	500
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	9.337	5,200
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	4.3795	760
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	11.267	450
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	12.29	3,400
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	4.8701	1,300
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	8.4081	1,200
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	7.8237	790
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	12.958	440
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	10.098	860
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	9.9632	800
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	5.7259	1,200
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	7.8967	580
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	3.8473	2,700
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	6.8113	800
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	3.1271	2,500

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Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	5.3502	760
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	6.6026	670
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	6.1225	710
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	12.155	5,800
GMSB-1	GBGMSB-1/85	5/16/1997	85	Unknown	12.885	1,300
GMSB-1	GBGMSB-1/135	5/17/1997	135	Unknown	12.7	120
GMSB-1	GBGMSB-1/135	5/17/1997	135	Unknown	12.564	220
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	5.9901	1,100
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	3.4126	8,300
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	7.1485	4,500
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	5.6771	2,100
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	9.5799	780
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	9.0164	4,300
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	4.1535	8,900
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	5.1657	2,100
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	4.2787	6,000
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	7.5137	1,100
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	4.9466	1,800
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	3.7987	4,100
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	4.8631	1,600
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	10.247	1,400
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	10.362	1,000
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	4.8109	1,400
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	7.9311	1,100
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	4.6231	2,600
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	5.0301	3,200
GMSB-1	GBGMSB-1/215	5/18/1997	215	Unknown	3.2874	2,000
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	12.606	240
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	12.094	110
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	12.741	200

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Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	7.5554	110
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	7.2215	120
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	12.543	190
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	9.9138	140
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	11.656	110
GMSB-1	GBGMSB-1/275'	5/19/1997	275	Unknown	4.1848	110
GMSB-2	GBGMSB-2/93	5/18/1997	93	Sulfur, mol. (S8)	19.232	110 N
GMSB-2	GBGMSB-2/265'	5/20/1997	265	1,2-Benzenediol	9.4129	13,000 N
GMSB-2	GBGMSB-2/265'	5/20/1997	265	3-Methyl-1,2-Benzenediol	10.654	8,400 N
GMSB-2	GBGMSB-2/265'	5/20/1997	265	4-Methyl-1,2-benzenediol	10.247	3,800 N
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	5.8127	2,200
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	4.164	22,000
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	4.0074	9,500
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	3.8196	4,200
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	7.0858	11,000
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	9.0372	9,200
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	6.0841	6,200
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	4.2787	8,500
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	4.8944	3,800
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	8.3798	3,000
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	5.1971	13,000
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	5.291	2,800
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	5.6875	2,200
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	3.4231	8,400
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	3.0891	3,200
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	7.1902	3,800
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown	5.4788	2,500
GMSB-2	GBGMSB-2/265'	5/20/1997	265	Unknown Acid	4.7796	2,600
GMSB-2	GBGMSB-2/345	5/31/1997	345	2-Methylcyclopentanone	4.0131	7,100 N
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	8.1758	550

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Table K-2. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Grab Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	5.891	4,100
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	3.8566	10,000
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	10.074	750
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	8.854	2,000
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	7.9255	550
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	4.7226	2,800
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	5.0355	8,500
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	2.9803	3,400
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	3.2932	6,200
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	4.9625	3,800
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	6.9865	5,200
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	4.6078	2,500
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	6.8717	6,400
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	6.4023	2,000
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	11.243	1,300
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	15.218	1,800
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	7.7377	9,200
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown	3.6793	2,900
GMSB-2	GBGMSB-2/345	5/31/1997	345	Unknown Dimethylphenol isomer	8.0402	520
GMSB-4	GBGMSB-4/183.5	6/9/1997	183.5	Unknown	12.263	150
GMSB-4	GBGMSB-4/183.5	6/9/1997	183.5	Unknown	15.236	110
GMSB-4	GBGMSB-4/183.5	6/9/1997	183.5	Unknown	4.9903	110
GMSB-4	GBGMSB-4/183.5	6/9/1997	183.5	Unknown	3.9886	120

µg/L Micrograms per liter.

N TICs that were not reported as unknowns were qualified as tentatively identified.

Table K-3. Tentatively Identified Compounds Above 100 µg/L for Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Chemical	Retention Time (minutes)	Value (µg/L)
GM-2B	GWGM-2B	6/26/1997	271	2-Methylfuran	5.3364	130
GM-2B	GM-2B	12/11/1997	271	2,5-Dimethylfuran	14.55	110 J
GM-2B	GWGM-2B	11/22/1998	271	2-Methylcyclopentanone	15.7	300
GM-2B	GWGM-2B	11/22/1998	271	2-Methylfuran	6.36	150
GM-2B	GWGM-2B	4/16/1999	271	2-Methylcyclopentanone	15.6	330 NJ
GM-2B	GWGM-2B	4/16/1999	271	2-Methylfuran	6.24	110 NJ
GM-3B	GWGM-88	4/17/1999	170	2-Methylcyclopentanone	15.6	110 NJ
GM-6	GWGM-6	6/28/1997	165	2,5-Dimethylcyclopentanone	17.181	120
GM-6	GWGM-6	6/28/1997	165	2,5-Dimethylfuran	9.1555	220
GM-6	GWGM-6	6/28/1997	165	Thiophene	8.178	170
GM-6	GWGM-6	6/28/1997	165	Unknown	22.765	170
GM-6	GWGM-6	6/28/1997	165	Unknown	22.963	120
GM-6	GWGM-6	6/28/1997	165	Unknown	11.986	180
GM-6	GWGM-6	7/19/2000	165	Carbon Dioxide	0.88	R
GM-25B	GWGM-25B	10/6/1998	98	2-Ethylcyclopentanone	19.09	140
GM-25B	GWGM-25B	10/6/1998	98	2-Methylcyclopentanone	15.94	500
GM-25B	GWGM-25B	10/6/1998	98	Cyclopentanone Isomer	14.36	170
GM-25B	GWGM-25B	4/27/1999	98	Cyclopentanone, 2-methyl	15.7	500 NJ
GM-25B	GWGM-25B	4/27/1999	98	Unknown	18.8	120 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	14.1	170 J
GM-25B	GM-25B	10/20/1999	98	Carbon Dioxide	1.289	R
GM-25B	GM-25B	10/20/1999	98	Unknown	10.621	210 J
GM-25B	GM-25B	10/20/1999	98	Unknown	6.533	160 J
GM-25B	GM-25B	10/20/1999	98	Unknown	11.254	190 J
GM-25B	GM-25B	10/20/1999	98	Unknown	11.552	180 J
GM-25B	GM-25B	10/20/1999	98	Unknown	4.59	320 J
GM-25B	GM-25B	10/20/1999	98	Unknown	18.043	260 J
GM-25B	GM-25B	10/20/1999	98	Unknown	9.264	380 J
GM-25B	GM-25B	10/20/1999	98	Unknown	12.628	200 J
GM-25C	GWGM-25C	8/2/2000	206	Carbon Dioxide	0.886	120 NJ
GM-26B	GWGM-26B	7/18/2000	101	Carbon Dioxide	0.874	R

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Table K-3. Tentatively Identified Compounds Above 100 µg/L for Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Chemical	Retention Time (minutes)	Value (µg/L)
GM-27B	GWGM-27B	7/18/2000	145	Carbon Dioxide	0.876	R
GM-27C	GMGW-27C	8/7/2000	210	Carbon Dioxide	0.886	R
GM-28A	GWGM-28A	7/19/2000	40	Carbon Dioxide	0.874	R
GM-32	GWGM-32	10/25/1998	135	1-(2-Furanyl)-ethanone	13.3	110
GM-32	GWGM-32	10/25/1998	135	2,5-Dimethylfuran	10.03	230
GM-32	GWGM-32	10/25/1998	135	2-Ethylcyclopentanone	19.04	120
GM-32	GWGM-32	10/25/1998	135	2-Methylcyclopentanone	15.89	570
GM-32	GWGM-32	10/25/1998	135	2-Methylfuran	6.5	340
GM-32	GWGM-32	10/25/1998	135	Cyclopentanone	14.32	210
GM-32	GWGM-32	10/25/1998	135	Thiophene	9.02	120
GM-32	GWGM-32	4/27/1999	135	2,5-Dimethylfuran	9.83	220 NJ
GM-32	GWGM-32	4/27/1999	135	2-Methylfuran	6.28	280 NJ
GM-32	GWGM-32	4/27/1999	135	Cyclopentanone, 2-ethyl	18.8	120 NJ
GM-32	GWGM-32	4/27/1999	135	Cyclopentanone, 2-methyl	15.7	580 NJ
GM-32	GWGM-32	4/27/1999	135	Thiophene	8.78	120 NJ
GM-32	GWGM-32	4/27/1999	135	Unknown	14.1	200 J
GM-37A	GWGM-37A	5/11/1999	144	Cyclopentanone, 2-methyl	15.6	130 NJ
GM-37B	GWGM-37B	5/14/1999	328	2-Methylcyclopentanone	15.6	340 NJ
GM-37B	GWGM-37B	5/14/1999	328	Cyclohexanone	17.62	431 J
GM-40B	GWGM-40B	10/26/1998	120	2-Methylcyclopentanone	16.03	380
GM-40B	GWGM-40B	10/26/1998	120	2-Methylfuran	6.6	250
GM-40B	GWGM-40B	10/26/1998	120	Cyclopentanone	14.48	120
GM-40B	GWGM-40B	10/26/1998	120	Thiophene	9.13	150
GM-40B	GWGM-40B	10/26/1998	120	Unknown	10.15	180
GM-40B	GWGM-40B	4/27/1999	120	2-Methylcyclopentanone	15.6	360 NJ
GM-40B	GWGM-40B	4/27/1999	120	2-Methylfuran	6.28	220 NJ
GM-40B	GWGM-40B	4/27/1999	120	Thiophene	8.79	130 NJ
GM-40B	GWGM-40B	4/27/1999	120	Unknown	14.1	110 J
GM-40B	GWGM-40B	4/27/1999	120	Unknown	9.81	160 J
GM-40B	GWGM-40B	4/27/1999	120	Unknown	3.6	260 J
GM-62A	GWGM-62A	8/23/1999	90	Carbon Dioxide	3.165	R

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Table K-3. Tentatively Identified Compounds Above 100 µg/L for Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Chemical	Retention Time (minutes)	Value (µg/L)
GM-62B	GWGM-62B	8/24/1999	195	Carbon Dioxide	3.16	R
GM-62B	GWGM-82	8/24/1999	195	Carbon Dioxide	3.166	R
GM-62B	GWGM-82	8/24/1999	195	Unknown	13.772	110 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	13.261	140 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	14.024	110 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	12.088	250 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	14.037	110 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	8.914	180 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	13.273	140 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	12.101	240 J
GM-62C	GWGM-62C	8/24/1999	315	Carbon Dioxide	3.166	R
GM-62C	GWGM-62C	8/24/1999	315	Unknown	8.908	160 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	12.089	160 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	13.773	110 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	14.127	110 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	14.025	120 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	13.267	160 J
GM-63A	GWGM-63A	8/29/2000	45	Carbon Dioxide	0.813	R
GM-64A	GWGM-64A	8/30/2000	33	Carbon Dioxide	0.815	R
GM-64A	GWGM-64A	10/3/2000	33	Carbon Dioxide	0.807	R
GM-64B	GWGM-64B	7/24/2000	117	Carbon Dioxide	0.88	R
GM-66A	GWGM-66A	7/18/2000	27	Carbon Dioxide	0.879	R
GM-66B	GWGM-66B	7/19/2000	125	Carbon Dioxide	0.876	R
GM-66B	GMGW-66B	8/3/2000	125	Carbon Dioxide	0.886	R
GM-67	GWGM-67	8/7/2000	122	Carbon Dioxide	0.885	R
GM-68	GWGM-68	8/31/2000	140	Carbon Dioxide	0.813	R
GM-70	GWGM-70	8/17/2000	42	Carbon Dioxide	0.868	R
GM-71	GWGM-71	8/21/2000	39	Carbon Dioxide	0.866	R
GM-72	GWGM-72	8/22/2000	43	Carbon Dioxide	0.864	R
GM-72	GWGM-72	8/22/2000	43	Unknown	1.843	620 J
GM-73	GWGM-73	9/6/2000	42	Carbon Dioxide	0.815	R

Footnotes on Page 4.

Table K-3. Tentatively Identified Compounds Above 100 µg/L for Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Chemical	Retention Time (minutes)	Value (µg/L)
GM-74	GWGM-74	9/7/2000	34	Carbon Dioxide	0.812	R
GM-75	GWGM-75	9/8/2000	24	Carbon Dioxide	0.813	R
GMEW-1	GMEWGW-1	9/21/2000	20	Carbon Dioxide	0.824	R
GMEW-2	GMEWGW-2	9/21/2000	23	Carbon Dioxide	0.826	R
GMEW-2	GMEWGW-2	9/21/2000	23	Unknown Ketone	3.745	160 J
GMEW-3	GWGMEW-3	7/24/2000	135	Carbon Dioxide	0.88	R
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	5.789	200 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	7.28	120 J
MW-8	GWMW-8	6/29/1997	133	2,5-Dimethylcyclopentanone	16.871	280
MW-8	GWMW-8	6/29/1997	133	2,5-Dimethylfuran	8.6592	510
MW-8	GWMW-8	6/29/1997	133	2-Ethyl-5-methylfuran	12.235	230
MW-8	GWMW-8	6/29/1997	133	2-Ethylcyclohexanone	20.558	160
MW-8	GWMW-8	6/29/1997	133	2-Methylbenzofuran	22.938	270
MW-8	GWMW-8	6/29/1997	133	2-Methylfuran	5.3656	190
MW-8	GWMW-8	6/29/1997	133	2-Methylthiophene	11.515	330
MW-8	GWMW-8	6/29/1997	133	Tetrahydrofuran	6.327	440
MW-8	GWMW-8	6/29/1997	133	Unknown	17.386	220
MW-8	GWMW-8	6/29/1997	133	Unknown	17.552	190
MW-8	GWGM-99	6/29/1997	133	2,5-Dimethylcyclopentanone	16.87	270
MW-8	GWGM-99	6/29/1997	133	2,5-Dimethylfuran	8.6599	480
MW-8	GWGM-99	6/29/1997	133	2-Ethyl-5-methylfuran	12.235	210
MW-8	GWGM-99	6/29/1997	133	2-Methylbenzofuran	22.946	230
MW-8	GWGM-99	6/29/1997	133	2-Methylfuran	5.3666	150
MW-8	GWGM-99	6/29/1997	133	3-Methylcyclohexanone	17.395	200
MW-8	GWGM-99	6/29/1997	133	Methylthiophene isomer	11.525	290
MW-8	GWGM-99	6/29/1997	133	Unknown	21.259	140
MW-8	GWGM-99	6/29/1997	133	Unknown	17.561	180
MW-8	GWGM-99	6/29/1997	133	Unknown Cycloalkane	20.566	150

µg/L Micrograms per liter.
R Rejected.
N TICs that were not reported as unknowns were qualified as tentatively identified.
J Estimated results.

Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-1	GWGM-1	6/24/1997	220	Unknown	7.6517	240
GM-1	GWGM-1	6/24/1997	220	Unknown	8.1858	180
GM-1	GWGM-1	6/24/1997	220	Unknown	24.198	5,000
GM-1	GWGM-1	6/24/1997	220	Unknown	22.777	210
GM-1	GWGM-1	6/24/1997	220	Unknown	7.8387	230
GM-1	GWGM-1	6/24/1997	220	Unknown	5.4672	280
GM-1	GWGM-1	6/24/1997	220	Unknown	5.9479	330
GM-1	GWGM-1	6/24/1997	220	Unknown	5.1361	650
GM-1	GWGM-1	6/24/1997	220	Unknown	6.2844	290
GM-1	GWGM-1	6/24/1997	220	Unknown	8.4369	120
GM-1	GWGM-1	6/24/1997	220	Unknown	25.79	990
GM-1	GWGM-1	6/24/1997	220	Unknown	8.6986	120
GM-1	GWGM-1	6/24/1997	220	Unknown	9.6012	200
GM-1	GWGM-1	6/24/1997	220	Unknown	7.1069	110
GM-1	GWGM-1	6/24/1997	220	Unknown	12.245	180
GM-1	GWGM-1	6/24/1997	220	Unknown	25.677	910
GM-1	GWGM-1	6/24/1997	220	Unknown	8.5864	170
GM-1	GWGM-1	6/24/1997	220	Unknown	38	1,000
GM-1	GWGM-1	6/24/1997	220	Unknown Dimethylphenol isomer	8.3301	120
GM-1	GWGM-1	6/24/1997	220	Unknown Dimethylphenol isomer	9.1259	140
GM-1	GM-1	10/9/1997	220	2-Methylcyclopentanone	4.1925	590 N
GM-1	GM-1	10/9/1997	220	Unknown	12.538	180
GM-1	GM-1	10/9/1997	220	Unknown	6.5919	160
GM-1	GM-1	10/9/1997	220	Unknown	8.1254	210
GM-1	GM-1	10/9/1997	220	Unknown	8.6574	140
GM-1	GM-1	10/9/1997	220	Unknown	5.2148	200
GM-1	GM-1	10/9/1997	220	Unknown	12.673	110
GM-1	GM-1	10/9/1997	220	Unknown	4.8706	470
GM-1	GM-1	10/9/1997	220	Unknown	8.5531	160
GM-1	GM-1	10/9/1997	220	Unknown	6.9674	120
GM-1	GM-1	10/9/1997	220	Unknown	6.7379	140

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-1	GM-1	10/9/1997	220	Unknown	6.4354	200
GM-1	GM-1	10/9/1997	220	Unknown	6.0911	300
GM-1	GM-1	10/9/1997	220	Unknown	5.8512	120
GM-1	GM-1	10/9/1997	220	Unknown	7.5516	230
GM-1	GM-1	10/9/1997	220	Unknown	5.726	290
GM-1	GM-1	10/9/1997	220	Unknown	9.6485	190
GM-1	GM-1	10/9/1997	220	Unknown Dimethylphenol isomer	9.1373	170
GM-1	GWGM-1	10/7/1998	220	Dimethylcyclopentenone isomer	5.65	260
GM-1	GWGM-1	10/7/1998	220	Dimethylcyclopentenone isomer	6.3	130
GM-1	GWGM-1	10/7/1998	220	Dimethylhexadiene isomer	6.07	160
GM-1	GWGM-1	10/7/1998	220	Dimethylphenol isomer	7.3	150
GM-1	GWGM-1	10/7/1998	220	Dimethylphenol isomer	8.12	150
GM-1	GWGM-1	10/7/1998	220	Ethylphenol isomer	7.67	120
GM-1	GWGM-1	10/7/1998	220	Hexene isomer	4.92	350
GM-1	GWGM-1	10/7/1998	220	Methylcyclopentenone isomer	5.25	250
GM-1	GWGM-1	10/7/1998	220	Trimethylcyclopentenone isomer	6.62	330
GM-1	GWGM-1	10/7/1998	220	Trimethylphenol isomer	8.62	140
GM-1	GWGM-1	10/7/1998	220	Unknown	11.43	200
GM-1	GWGM-1	10/7/1998	220	Unknown	5.71	110
GM-1	GWGM-1	10/7/1998	220	Unknown	4.31	120
GM-1	GWGM-1	10/7/1998	220	Unknown	4.13	200
GM-1	GWGM-1	10/7/1998	220	Unknown	7.57	180
GM-1	GWGM-1	10/7/1998	220	Unknown	7.7	120
GM-1	GWGM-1	10/7/1998	220	Unknown	11.55	170
GM-1	GWGM-1	10/7/1998	220	Unknown	7.25	110
GM-1	GWGM-1	10/7/1998	220	Unknown	7.15	250
GM-1	GWGM-1	4/16/1999	220	1-(2-Furanyl)-ethanone	4.47	130 NJ
GM-1	GWGM-1	4/16/1999	220	2-Cyclopenten-1-one, 3-methyl	5.3	320 NJ
GM-1	GWGM-1	4/16/1999	220	3-Ethylcyclopent-2-en-1-one	6.78	170 NJ
GM-1	GWGM-1	4/16/1999	220	Cyclopentanone, 2,5-dimethyl	4.25	140 NJ
GM-1	GWGM-1	4/16/1999	220	Cyclopentenone, trimethyl-isomers	6.58	310 NJ

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-1	GWGM-1	4/16/1999	220	Ethylphenol isomer	7.56	190 NJ
GM-1	GWGM-1	4/16/1999	220	Phenol, dimethyl-isomers	7.98	260 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	7.48	150 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	5.86	130 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	11	200 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	5.67	230 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	4.42	110 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	4.99	330 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	11.1	140 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	6.07	170 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	5.08	130 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	7.09	270 NJ
GM-1	GWGM-1	4/16/1999	220	Unknown	6.5	200 NJ
GM-2B	GWGM-2B	6/26/1997	271	2-Ethylcyclopentanone	5.6416	1,200 N
GM-2B	GWGM-2B	6/26/1997	271	2-Methylcyclopentanone	4.1939	6,000 N
GM-2B	GWGM-2B	6/26/1997	271	3,4-Dimethylphenol	9.1087	670 N
GM-2B	GWGM-2B	6/26/1997	271	3-Ethylphenol	8.7775	4,700 N
GM-2B	GWGM-2B	6/26/1997	271	3-Methyl-2-Cyclopenten-1-one	5.9835	3,000 N
GM-2B	GWGM-2B	6/26/1997	271	3-Methylcyclopentanone	4.3061	2,200 N
GM-2B	GWGM-2B	6/26/1997	271	3-Propylphenol	9.8993	690 N
GM-2B	GWGM-2B	6/26/1997	271	Unknown	6.8436	930
GM-2B	GWGM-2B	6/26/1997	271	Unknown	7.6289	820
GM-2B	GWGM-2B	6/26/1997	271	Unknown	3.4674	5,600
GM-2B	GWGM-2B	6/26/1997	271	Unknown	8.5531	810
GM-2B	GWGM-2B	6/26/1997	271	Unknown	4.6213	1,900
GM-2B	GWGM-2B	6/26/1997	271	Unknown	4.8263	780
GM-2B	GWGM-2B	6/26/1997	271	Unknown	9.9901	720
GM-2B	GWGM-2B	6/26/1997	271	Unknown	8.4783	510
GM-2B	GWGM-2B	6/26/1997	271	Unknown	7.3404	700
GM-2B	GWGM-2B	6/26/1997	271	Unknown	3.3552	1,200
GM-2B	GWGM-2B	6/26/1997	271	Unknown	6.3895	780

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-2B	GWGM-2B	6/26/1997	271	Unknown	6.4537	870
GM-2B	GWGM-2B	6/26/1997	271	Unknown	7.0092	2,800
GM-2B	GWGM-2B	6/26/1997	271	Unknown	9.269	930
GM-2B	GWGM-2B	6/26/1997	271	Unknown	4.8777	730
GM-2B	GM-2B	10/21/1997	271	3-Ethylphenol	9.4054	9,300 N
GM-2B	GM-2B	10/21/1997	271	5-Ethylcyclopentanone	6.3023	1,400 N
GM-2B	GM-2B	10/21/1997	271	Unknown	4.0751	8,800
GM-2B	GM-2B	10/21/1997	271	Unknown	10.959	1,100
GM-2B	GM-2B	10/21/1997	271	Unknown	7.1088	1,300
GM-2B	GM-2B	10/21/1997	271	Unknown	5.2074	3,400
GM-2B	GM-2B	10/21/1997	271	Unknown	4.9403	2,600
GM-2B	GM-2B	10/21/1997	271	Unknown	4.8548	1,500
GM-2B	GM-2B	10/21/1997	271	Unknown	4.8228	6,300
GM-2B	GM-2B	10/21/1997	271	Unknown	7.0554	1,300
GM-2B	GM-2B	10/21/1997	271	Unknown	6.6441	5,000
GM-2B	GM-2B	10/21/1997	271	Unknown	10.543	2,900
GM-2B	GM-2B	10/21/1997	271	Unknown	5.4744	2,200
GM-2B	GM-2B	10/21/1997	271	Unknown	7.5094	1,100
GM-2B	GM-2B	10/21/1997	271	Unknown	7.6803	4,300
GM-2B	GM-2B	10/21/1997	271	Unknown	7.9153	1,200
GM-2B	GM-2B	10/21/1997	271	Unknown	8.0168	1,200
GM-2B	GM-2B	10/21/1997	271	Unknown	8.4227	1,100
GM-2B	GM-2B	10/21/1997	271	Unknown	9.9342	1,700
GM-2B	GM-2B	10/21/1997	271	Unknown	9.1918	1,200
GM-2B	GM-2B	10/21/1997	271	Unknown	3.9575	3,100
GM-2B	GM-2B	10/21/1997	271	Unknown	3.7225	1,500
GM-2B	GM-2B	12/11/1997	271	Unknown	3.6334	1,300
GM-2B	GM-2B	12/11/1997	271	Unknown	4.4459	930
GM-2B	GM-2B	12/11/1997	271	Unknown	3.8209	1,600
GM-2B	GM-2B	12/11/1997	271	Unknown	6.2873	4,600
GM-2B	GM-2B	12/11/1997	271	Unknown	4.6045	1,600

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-2B	GM-2B	12/11/1997	271	Unknown	5.119	950
GM-2B	GM-2B	12/11/1997	271	Unknown	4.494	5,000
GM-2B	GM-2B	12/11/1997	271	Unknown	10.282	1,800
GM-2B	GM-2B	12/11/1997	271	Unknown	6.6959	1,200
GM-2B	GM-2B	12/11/1997	271	Unknown	8.5805	930
GM-2B	GM-2B	12/11/1997	271	Unknown	10.191	1,200
GM-2B	GM-2B	12/11/1997	271	Unknown	3.7632	4,000
GM-2B	GM-2B	12/11/1997	271	Unknown	4.917	3,100
GM-2B	GM-2B	12/11/1997	271	Unknown	5.1622	1,300
GM-2B	GM-2B	12/11/1997	271	Unknown	9.0613	6,100
GM-2B	GM-2B	12/11/1997	271	Unknown	9.5709	1,500
GM-2B	GM-2B	12/11/1997	271	Unknown	8.1815	880
GM-2B	GM-2B	12/11/1997	271	Unknown	7.143	1,900
GM-2B	GM-2B	12/11/1997	271	Unknown	6.7536	1,100
GM-2B	GM-2B	12/11/1997	271	Unknown	7.3161	4,000
GM-2B	GM-2B	12/11/1997	271	Unknown	7.6526	1,000
GM-2B	GM-2B	12/11/1997	271	Unknown	5.9459	1,100
GM-2B	GWGM-2B	11/22/1998	271	3-Ethylcyclopent-2-en-1-one	6.85	810
GM-2B	GWGM-2B	11/22/1998	271	Cyclohexanol	4.3	1,000
GM-2B	GWGM-2B	11/22/1998	271	Dimethylcyclopentanone isomer	4.37	600
GM-2B	GWGM-2B	11/22/1998	271	Dimethylcyclopentanone isomer	6.28	4,400
GM-2B	GWGM-2B	11/22/1998	271	Dimethylhexadiene isomer	6.09	850
GM-2B	GWGM-2B	11/22/1998	271	Dimethylphenol isomer	7.22	450
GM-2B	GWGM-2B	11/22/1998	271	Ethylcyclopentanone isomer	4.99	1,600
GM-2B	GWGM-2B	11/22/1998	271	Ethylphenol isomer	7.95	4,900
GM-2B	GWGM-2B	11/22/1998	271	Methylcyclopentanone isomer	5.31	4,000
GM-2B	GWGM-2B	11/22/1998	271	Propylphenol isomer	9.07	1,200
GM-2B	GWGM-2B	11/22/1998	271	Trimethylcyclopentanone isomer	6.6	1,100
GM-2B	GWGM-2B	11/22/1998	271	Unknown	7.48	840
GM-2B	GWGM-2B	11/22/1998	271	Unknown	5.75	800
GM-2B	GWGM-2B	11/22/1998	271	Unknown	4.45	640

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-2B	GWGM-2B	11/22/1998	271	Unknown	7.6	730
GM-2B	GWGM-2B	11/22/1998	271	Unknown	7.11	790
GM-2B	GWGM-2B	4/16/1999	271	2,5-Hexanedione	4.79	340 NJ
GM-2B	GWGM-2B	4/16/1999	271	2-Cyclopenten-1-one, trimethyl-isomers	7	870 NJ
GM-2B	GWGM-2B	4/16/1999	271	3-Ethylcyclopent-2-en-1-one	6.86	440 NJ
GM-2B	GWGM-2B	4/16/1999	271	3-Methyl-2-Cyclopenten-1-one	5.31	3,200 NJ
GM-2B	GWGM-2B	4/16/1999	271	3-Propylphenol	9.06	610 NJ
GM-2B	GWGM-2B	4/16/1999	271	4,4-Dimethyl-2-cyclopenten-1-one	5.68	720 NJ
GM-2B	GWGM-2B	4/16/1999	271	Cyclohexanol	4.28	820 NJ
GM-2B	GWGM-2B	4/16/1999	271	Cyclopentanone, 2,4-dimethyl	4.36	590 NJ
GM-2B	GWGM-2B	4/16/1999	271	Cyclopentanone, ethyl-isomer	4.99	1,200 NJ
GM-2B	GWGM-2B	4/16/1999	271	Cyclopentenone, trimethyl-isomers	6.61	680 NJ
GM-2B	GWGM-2B	4/16/1999	271	Ethylphenol isomer	7.96	2,200 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	5.75	900 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	11	370 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	6.09	640 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	4.41	720 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	5.07	370 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	7.12	620 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	7.61	350 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	7.49	360 NJ
GM-2B	GWGM-2B	4/16/1999	271	Unknown	5.82	420 NJ
GM-3B	GWGM-3B	6/26/1997	170	2,3,4-Trimethyl-2-cyclopenten-1-one	7.3496	210 N
GM-3B	GWGM-3B	6/26/1997	170	2-Ethylcyclopentanone	5.6508	300 N
GM-3B	GWGM-3B	6/26/1997	170	2-Methylcyclopentanone	4.2138	1,500 N
GM-3B	GWGM-3B	6/26/1997	170	3,5-Dimethylphenol	8.824	150 N
GM-3B	GWGM-3B	6/26/1997	170	3-Ethylcyclopentanone	5.9393	150 N
GM-3B	GWGM-3B	6/26/1997	170	3-Methyl-2-Cyclopenten-1-one	5.982	170 N
GM-3B	GWGM-3B	6/26/1997	170	Cyclohexanol	4.8869	130 N
GM-3B	GWGM-3B	6/26/1997	170	Unknown	11.927	130
GM-3B	GWGM-3B	6/26/1997	170	Unknown	6.4735	200

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-3B	GWGM-3B	6/26/1997	170	Unknown	4.3366	740
GM-3B	GWGM-3B	6/26/1997	170	Unknown	9.3262	360
GM-3B	GWGM-3B	6/26/1997	170	Unknown	7.7876	130
GM-3B	GWGM-3B	6/26/1997	170	Unknown	5.1753	160
GM-3B	GWGM-3B	6/26/1997	170	Unknown	9.0003	110
GM-3B	GWGM-3B	6/26/1997	170	Unknown	4.9617	170
GM-3B	GWGM-3B	6/26/1997	170	Unknown	7.9533	110
GM-3B	GWGM-3B	6/26/1997	170	Unknown	7.8838	130
GM-3B	GWGM-3B	6/26/1997	170	Unknown	8.1242	120
GM-3B	GWGM-3B	6/26/1997	170	Unknown	8.5088	180
GM-3B	GWGM-3B	6/26/1997	170	Unknown	7.5312	130
GM-3B	GWGM-3B	6/26/1997	170	Unknown	6.5483	150
GM-3B	GWGM-3B	6/26/1997	170	Unknown	4.8441	270
GM-3B	GM-3B	10/14/1997	170	3-Methylcyclopentanone	4.3698	570 N
GM-3B	GM-3B	10/14/1997	170	Unknown	5.0166	130
GM-3B	GM-3B	10/14/1997	170	Unknown	6.6753	230
GM-3B	GM-3B	10/14/1997	170	Unknown	7.2178	190
GM-3B	GM-3B	10/14/1997	170	Unknown	7.2699	320
GM-3B	GM-3B	10/14/1997	170	Unknown	4.2446	800
GM-3B	GM-3B	10/14/1997	170	Unknown	5.7573	140
GM-3B	GM-3B	10/14/1997	170	Unknown	6.0702	120
GM-3B	GM-3B	10/14/1997	170	Unknown	8.0419	330
GM-3B	GM-3B	10/14/1997	170	Unknown	5.3191	250
GM-3B	GM-3B	10/14/1997	170	Unknown	4.954	160
GM-3B	GWGM-3B	10/8/1998	170	Acetonylcyclopentanone isomer	8.34	310
GM-3B	GWGM-3B	10/8/1998	170	Dimethylcyclopentanone isomer	4.17	120
GM-3B	GWGM-3B	10/8/1998	170	Dimethylcyclopentanone isomer	4.28	200
GM-3B	GWGM-3B	10/8/1998	170	Dimethylphenol isomer	8.15	180
GM-3B	GWGM-3B	10/8/1998	170	Ethylcyclopentanone isomer	5.21	230
GM-3B	GWGM-3B	10/8/1998	170	Methylcyclopentanone isomer	5.28	220
GM-3B	GWGM-3B	10/8/1998	170	Trimethylcyclopentanone isomer	5.83	210

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-3B	GWGM-3B	10/8/1998	170	Trimethylcyclopentenone isomer	6.63	340
GM-3B	GWGM-3B	10/8/1998	170	Unknown	7.79	190
GM-3B	GWGM-3B	10/8/1998	170	Unknown	11.41	220
GM-3B	GWGM-3B	10/8/1998	170	Unknown	8.63	160
GM-3B	GWGM-3B	10/8/1998	170	Unknown	7.18	190
GM-3B	GWGM-3B	10/8/1998	170	Unknown	7.59	190
GM-3B	GWGM-3B	10/8/1998	170	Unknown	4.36	120
GM-3B	GWGM-3B	10/8/1998	170	Unknown	8.88	120
GM-3B	GWGM-3B	10/8/1998	170	Unknown	4.55	180
GM-3B	GWGM-3B	10/8/1998	170	Unknown	7.71	240
GM-3B	GWGM-3B	10/8/1998	170	Unknown	11.55	190
GM-3B	GWGM-3B	10/8/1998	170	Unknown	5.04	190
GM-3B	GWGM-3B	10/8/1998	170	Unknown	5.76	280
GM-3B	GWGM-3B	10/8/1998	170	Unknown Alkane	4.94	470
GM-3B	GWGM-3B	4/17/1999	170	2,3-Dimethylcyclopent-2-en-1-one	6.31	530 NJ
GM-3B	GWGM-3B	4/17/1999	170	2-Acetonylcyclopentanone	8.2	110 NJ
GM-3B	GWGM-3B	4/17/1999	170	3-Methyl-2-Cyclopenten-1-one	5.31	210 NJ
GM-3B	GWGM-3B	4/17/1999	170	4,4-Dimethyl-2-cyclopenten-1-one	5.7	200 NJ
GM-3B	GWGM-3B	4/17/1999	170	Cyclopentanone, 2,4-dimethyl	4.38	150 NJ
GM-3B	GWGM-3B	4/17/1999	170	Cyclopentenone, trimethyl-isomers	6.61	160 NJ
GM-3B	GWGM-3B	4/17/1999	170	Phenol, dimethyl-isomers	8.01	120 NJ
GM-3B	GWGM-3B	4/17/1999	170	Unknown	5.01	210 NJ
GM-3B	GWGM-3B	4/17/1999	170	Unknown	7.12	130 NJ
GM-3B	GWGM-3B	4/17/1999	170	Unknown	11	130 NJ
GM-3B	GWGM-3B	4/17/1999	170	Unknown	5.77	130 NJ
GM-3B	GWGM-3B	4/17/1999	170	Unknown	4.45	150 NJ
GM-3B	GWGM-88	4/17/1999	170	2,3-Dimethylcyclopent-2-en-1-one	6.31	470 NJ
GM-3B	GWGM-88	4/17/1999	170	3-Methyl-2-Cyclopenten-1-one	5.32	190 NJ
GM-3B	GWGM-88	4/17/1999	170	Cyclopentanone, 2,4-dimethyl	4.39	130 NJ
GM-3B	GWGM-88	4/17/1999	170	Cyclopentenone, trimethyl-isomers	6.62	140 NJ
GM-3B	GWGM-88	4/17/1999	170	Unknown	5.7	190 NJ

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-3B	GWGM-88	4/17/1999	170	Unknown	5.77	120 NJ
GM-3B	GWGM-88	4/17/1999	170	Unknown	7.12	110 NJ
GM-3B	GWGM-88	4/17/1999	170	Unknown	11	140 NJ
GM-3B	GWGM-88	4/17/1999	170	Unknown	4.49	130 NJ
GM-3B	GWGM-88	4/17/1999	170	Unknown	5.01	200 NJ
GM-5	GWGM-5	7/2/1997	250	2,5-Dimethylcyclopentanone	4.8282	260 N
GM-5	GWGM-5	7/2/1997	250	2,6-Dimethylphenol	8.0281	220 N
GM-5	GWGM-5	7/2/1997	250	3,5-Dimethylphenol	8.8348	320 N
GM-5	GWGM-5	7/2/1997	250	Unknown	6.4629	210
GM-5	GWGM-5	7/2/1997	250	Unknown	9.6628	240
GM-5	GWGM-5	7/2/1997	250	Unknown	8.1403	350
GM-5	GWGM-5	7/2/1997	250	Unknown	8.4769	140
GM-5	GWGM-5	7/2/1997	250	Unknown	12.061	360
GM-5	GWGM-5	7/2/1997	250	Unknown	8.3967	140
GM-5	GWGM-5	7/2/1997	250	Unknown	6.7727	220
GM-5	GWGM-5	7/2/1997	250	Unknown	9.2889	200
GM-5	GWGM-5	7/2/1997	250	Unknown	9.353	590
GM-5	GWGM-5	7/2/1997	250	Unknown	11.938	620
GM-5	GWGM-5	7/2/1997	250	Unknown	14.636	220
GM-5	GWGM-5	7/2/1997	250	Unknown	7.8732	460
GM-5	GWGM-5	7/2/1997	250	Unknown	4.2031	590
GM-5	GWGM-5	7/2/1997	250	Unknown	7.3497	520
GM-5	GWGM-5	7/2/1997	250	Unknown	7.9533	210
GM-5	GWGM-5	7/2/1997	250	Unknown	7.5527	200
GM-5	GWGM-5	7/2/1997	250	Unknown	5.6669	260
GM-5	GWGM-5	7/2/1997	250	Unknown	5.1808	400
GM-5	GWGM-5	7/2/1997	250	Unknown	8.2792	210
GM-5	GM-5	10/15/1997	250	Unknown	12.68	200
GM-5	GM-5	10/15/1997	250	Unknown	5.735	190
GM-5	GM-5	10/15/1997	250	Unknown	6.5171	160
GM-5	GM-5	10/15/1997	250	Unknown	5.2032	210

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-5	GM-5	10/15/1997	250	Unknown	15.495	200
GM-5	GM-5	10/15/1997	250	Unknown	4.1604	190
GM-5	GM-5	10/15/1997	250	Unknown	13.441	130
GM-5	GM-5	10/15/1997	250	Unknown	9.6873	500
GM-5	GM-5	10/15/1997	250	Unknown	8.1231	320
GM-5	GM-5	10/15/1997	250	Unknown	8.561	140
GM-5	GM-5	10/15/1997	250	Unknown	4.8487	200
GM-5	GM-5	10/15/1997	250	Unknown	9.9271	140
GM-5	GM-5	10/15/1997	250	Unknown	8.3838	140
GM-5	GM-5	10/15/1997	250	Unknown	11.428	140
GM-5	GM-5	10/15/1997	250	Unknown	7.5495	350
GM-5	GM-5	10/15/1997	250	Unknown	12.544	390
GM-5	GM-5	10/15/1997	250	Unknown Dimethylphenol isomer	8.2586	160
GM-5	GM-5	10/15/1997	250	Unknown Dimethylphenol isomer	9.1137	180
GM-5	GM-5	10/15/1997	250	Unknown Dimethylphenol isomer	9.218	120
GM-5	GWGM-5	4/18/1999	250	Cyclopentenone, trimethyl-isomers	6.59	310 NJ
GM-5	GWGM-5	4/18/1999	250	Phenol, dimethyl-isomers	8	230 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	5.7	110 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	4.26	140 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	4.43	140 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	8.47	170 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	5.01	140 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	6.29	930 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	6.49	120 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	7.1	200 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	11.2	240 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	11	390 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	7.49	170 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	7.61	120 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	5.85	140 NJ
GM-5	GWGM-5	4/18/1999	250	Unknown	9.09	120 NJ

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-5	GM-5	11/30/1999	250	Unknown	7.617	170 J
GM-5	GM-5	11/30/1999	250	Unknown	8	160 J
GM-5	GM-5	11/30/1999	250	Unknown	9.501	240 J
GM-5	GM-5	11/30/1999	250	Unknown	9.708	290 J
GM-5	GM-5	11/30/1999	250	Unknown	11.157	250 J
GM-5	GM-5	11/30/1999	250	Unknown	5.102	180 J
GM-5	GM-5	11/30/1999	250	Unknown	8.321	220 J
GM-5	GM-5	11/30/1999	250	Unknown	10.019	170 J
GM-5	GM-5	11/30/1999	250	Unknown	7.007	160 J
GM-5	GM-5	11/30/1999	250	Unknown	5.434	170 J
GM-5	GM-5	11/30/1999	250	Unknown	11.964	1,300 J
GM-5	GM-5	11/30/1999	250	Unknown	11.695	190 J
GM-5	GM-5	11/30/1999	250	Unknown	8.683	400 J
GM-5	GM-5	11/30/1999	250	Unknown	4.761	210 J
GM-5	GM-5	11/30/1999	250	Unknown	11.509	140 J
GM-5	GM-5	11/30/1999	250	Unknown Phenol Isomer	5.133	310 J
GM-5	GM-5	11/30/1999	250	Unknown Phenol Isomer	5.62	200 J
GM-5	GM-5	11/30/1999	250	Unknown Phenol Isomer	6.324	170 J
GM-5	GWGM-5	8/15/2000	250	Unknown	3.756	120 J
GM-5	GWGM-5	8/15/2000	250	Unknown	6.23	140 J
GM-5	GWGM-5	8/15/2000	250	Unknown	6.096	720 J
GM-5	GWGM-5	8/15/2000	250	Unknown	7.95	480 J
GM-5	GWGM-5	8/15/2000	250	Unknown	3.863	110 J
GM-5	GWGM-5	8/15/2000	250	Unknown	4.905	270 J
GM-5	GWGM-5	8/15/2000	250	Unknown	5.572	160 J
GM-5	GWGM-5	8/15/2000	250	Unknown	3.238	170 J
GM-5	GWGM-5	8/15/2000	250	Unknown	3.436	220 J
GM-5	GWGM-5	8/15/2000	250	Unknown	5.241	210 J
GM-5	GWGM-5	8/15/2000	250	Unknown	5.946	130 J
GM-5	GWGM-5	8/15/2000	250	Unknown	4.702	980 J
GM-5	GWGM-5	8/15/2000	250	Unknown	9.894	150 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-5	GWGM-5	8/15/2000	250	Unknown	8.5	260 J
GM-5	GWGM-5	8/15/2000	250	Unknown Dimethylphenol isomer	5.279	490 J
GM-5	GWGM-5	8/15/2000	250	Unknown Dimethylphenol isomer	5.85	170 J
GM-5	GWGM-5	8/15/2000	250	Unknown Dimethylphenol isomer	5.77	260 J
GM-5	GWGM-5	8/15/2000	250	Unknown Methylphenol isomer	6.486	220 J
GM-5	GWGM-5	9/20/2000	250	Unknown	13.599	140 J
GM-5	GWGM-5	9/20/2000	250	Unknown	7.595	740 J
GM-5	GWGM-5	9/20/2000	250	Unknown	5.175	180 J
GM-5	GWGM-5	9/20/2000	250	Unknown	11.756	1,100 J
GM-5	GWGM-5	9/20/2000	250	Unknown	4.929	210 J
GM-5	GWGM-5	9/20/2000	250	Unknown	10.17	1,600 J
GM-5	GWGM-5	9/20/2000	250	Unknown	5.773	640 J
GM-5	GWGM-5	9/20/2000	250	Unknown	3.129	150 J
GM-5	GWGM-5	9/20/2000	250	Unknown	4.395	810 J
GM-5	GWGM-5	9/20/2000	250	Unknown	12.397	220 J
GM-5	GWGM-5	9/20/2000	250	Unknown	11.302	460 J
GM-5	GWGM-5	9/20/2000	250	Unknown	6.163	180 J
GM-5	GWGM-5	9/20/2000	250	Unknown	10.955	800 J
GM-5	GWGM-5	9/20/2000	250	Unknown	9.502	430 J
GM-5	GWGM-5	9/20/2000	250	Unknown	11.489	570 J
GM-5	GWGM-5	9/20/2000	250	Unknown	7.68	390 J
GM-5	GWGM-5	9/20/2000	250	Unknown	4.592	240 J
GM-5	GWGM-5	9/20/2000	250	Unknown Dimethylphenol	5.458	290 J
GM-5	GWGM-5	9/20/2000	250	Unknown Dimethylphenol	4.972	410 J
GM-6	GWGM-6	6/28/1997	165	Unknown	4.7176	120
GM-6	GWGM-6	6/28/1997	165	Unknown	6.6483	270
GM-6	GWGM-6	6/28/1997	165	Unknown	6.9926	150
GM-6	GWGM-6	6/28/1997	165	Unknown	3.7158	110
GM-6	GWGM-6	6/28/1997	165	Unknown Dimethylphenol isomer	8.2867	160
GM-6	GWGM-6	6/28/1997	165	Unknown Dimethylphenol isomer	7.7127	110
GM-6	GM-6	10/22/1997	165	Unknown	12.728	120

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-6	GM-6	10/22/1997	165	Unknown	8.1028	130
GM-6	GM-6	10/22/1997	165	Unknown	8.7757	110
GM-6	GWGM-6	10/10/1998	165	Trimethylcyclopentanone isomer	6.47	120
GM-6	GWGM-6	10/10/1998	165	Unknown	10.94	150
GM-6	GWGM-6	4/19/1999	165	Unknown	11	110 NJ
GM-6	GWGM-6	2/29/2000	165	Unknown	6.507	120 J
GM-6	GWGM-6	7/19/2000	165	Unknown cyclopentane isomer	4.567	130 J
GM-6	GWGM-6	7/19/2000	165	Unknown Dimethylphenol isomer	5.149	120 J
GM-6	GWGM-6	9/25/2000	165	Unknown	11.652	120 J
GM-6	GWGM-6	9/25/2000	165	Unknown	7.491	110 J
GM-6	GWGM-6	9/25/2000	165	Unknown	12.064	120 J
GM-6	GWGM-6	9/25/2000	165	Unknown	10.595	170 J
GM-6	GWGM-6	9/25/2000	165	Unknown	9.478	130 J
GM-8	GM-8	10/21/1999	79	Unknown Aldol Condensate	3.293	315 A
GM-13	GM-13	10/22/1997	325	Unknown	25.798	160
GM-13	GM-13	10/22/1997	325	Unknown	10.359	190
GM-13	GWGM-13	4/20/1999	325	2,3-Dimethylcyclopent-2-en-1-one	6.29	160 NJ
GM-13	GWGM-13	4/20/1999	325	Unknown	5.7	170 NJ
GM-16	GM-16	10/22/1997	108	Unknown	27.172	110
GM-16	GM-78	10/22/1997	108	Unknown	23.707	110
GM-24C	GWGM-24C	5/13/1999	193	2-Ethyl-1-hexanol	6.21	190 NJ
GM-25A	GWGM-25A	10/6/1998	19	2,3-Dihydro-1H-inden-1-one	9.65	130
GM-25A	GWGM-25A	10/6/1998	19	2-Hydroxy-3,5-dimethyl cyclopent-2-en-1-one	6.79	130
GM-25A	GWGM-25A	10/6/1998	19	Dimethylcyclopentanone isomer	4.15	210
GM-25A	GWGM-25A	10/6/1998	19	Dimethylphenol isomer	7.31	260
GM-25A	GWGM-25A	10/6/1998	19	Dimethylphenol isomer	8.12	330
GM-25A	GWGM-25A	10/6/1998	19	Ethylcyclopentanone isomer	4.92	560
GM-25A	GWGM-25A	10/6/1998	19	Methylcyclohexanone isomer	4.26	210
GM-25A	GWGM-25A	10/6/1998	19	Methylcyclopentanedione isomer	4.52	130
GM-25A	GWGM-25A	10/6/1998	19	Trimethylcyclohexane isomer	5.81	130
GM-25A	GWGM-25A	10/6/1998	19	Trimethylcyclopentenone isomer	6.62	440

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-25A	GWGM-25A	10/6/1998	19	Trimethylphenol isomer	8.63	230
GM-25A	GWGM-25A	10/6/1998	19	Unknown	7.57	200
GM-25A	GWGM-25A	10/6/1998	19	Unknown	5.65	170
GM-25A	GWGM-25A	10/6/1998	19	Unknown	7.25	170
GM-25A	GWGM-25A	10/6/1998	19	Unknown	7.7	190
GM-25A	GWGM-25A	10/6/1998	19	Unknown	11.57	290
GM-25A	GWGM-25A	10/6/1998	19	Unknown	7.16	300
GM-25A	GWGM-25A	10/6/1998	19	Unknown	11.44	410
GM-25A	GWGM-25A	10/6/1998	19	Unknown	5.2	200
GM-25A	GWGM-25A	10/6/1998	19	Unknown	10.58	140
GM-25A	GWGM-25A	10/6/1998	19	Unknown Alkylheptene	4.31	280
GM-25A	GWGM-25A	10/6/1998	19	Unknown Alkylphenol	9	160
GM-25A	GWGM-25A	4/16/1999	19	3-Ethylcyclopentanone	5.26	130 NJ
GM-25A	GWGM-25A	4/16/1999	19	5-Ethylcyclopentanone	4.99	360 NJ
GM-25A	GWGM-25A	4/16/1999	19	Cyclopentanone, 2,4-dimethyl	4.37	140 NJ
GM-25A	GWGM-25A	4/16/1999	19	Cyclopentanone, 2,5-dimethyl	4.25	150 NJ
GM-25A	GWGM-25A	4/16/1999	19	Phenol, dimethyl-isomers	7.98	250 NJ
GM-25A	GWGM-25A	4/16/1999	19	Phenol, ethyl-methyl-isomers	9.08	110 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	7.08	260 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	5.68	120 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	5.13	120 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	11.2	200 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	4.42	230 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	8.82	120 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	7.59	140 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	11	350 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	5.82	160 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	6.58	310 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	7.47	170 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	6.49	140 NJ
GM-25A	GWGM-25A	4/16/1999	19	Unknown	10.2	130 NJ

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-25A	GWGM-25A	4/16/1999	19	Unknown	8.45	160 NJ
GM-25A	GM-25A	12/1/1999	19	Unknown	6.831	200 J
GM-25A	GM-25A	12/1/1999	19	Unknown	7.617	200 J
GM-25A	GM-25A	12/1/1999	19	Unknown	3.633	200 J
GM-25A	GM-25A	12/1/1999	19	Unknown	8.683	260 J
GM-25A	GM-25A	12/1/1999	19	Unknown	10.898	120 J
GM-25A	GM-25A	12/1/1999	19	Unknown	5.951	300 J
GM-25A	GM-25A	12/1/1999	19	Unknown	13.331	140 J
GM-25A	GM-25A	12/1/1999	19	Unknown	4.761	210 J
GM-25A	GM-25A	12/1/1999	19	Unknown	7.783	310 J
GM-25A	GM-25A	12/1/1999	19	Unknown Phenol Isomer	5.62	200 J
GM-25A	GM-25A	12/1/1999	19	Unknown Phenol Isomer	5.133	290 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	7.779	500 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	4.136	110 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	9.697	190 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	5.049	140 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	5.092	180 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	5.423	110 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	8.319	180 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	7.154	320 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	3.623	290 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	3.292	190 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	3.089	160 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	4.552	830 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown	6.123	110 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown Dimethylphenol isomer	5.616	260 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown Dimethylphenol isomer	5.129	420 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown Ethylmethyl-phenol isomer	6.326	140 J
GM-25A	GWGM-25A	8/21/2000	19	Unknown Methylethyl-phenol isomer	6.16	120 J
GM-25B	GWGM-25B	10/6/1998	98	1-(2-Furanyl)-ethanone	4.47	2,300
GM-25B	GWGM-25B	10/6/1998	98	2,5-Hexanedione	4.71	940

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-25B	GWGM-25B	10/6/1998	98	3-Ethylphenol	8.07	3,500
GM-25B	GWGM-25B	10/6/1998	98	3-Propylphenol	9.25	960
GM-25B	GWGM-25B	10/6/1998	98	Dimethylbutadiene isomer	7.16	930
GM-25B	GWGM-25B	10/6/1998	98	Methylcyclopentenone isomer	5.24	2,500
GM-25B	GWGM-25B	10/6/1998	98	Trimethylcyclohexene isomer	6.65	1,100
GM-25B	GWGM-25B	10/6/1998	98	Trimethylcyclopentenone isomer	7.02	900
GM-25B	GWGM-25B	10/6/1998	98	Triphenylphosphine carbethoxyethylidine	23.2	770
GM-25B	GWGM-25B	10/6/1998	98	Unknown	11.41	630
GM-25B	GWGM-25B	10/6/1998	98	Unknown	4.16	2,600
GM-25B	GWGM-25B	10/6/1998	98	Unknown	4.31	650
GM-25B	GWGM-25B	10/6/1998	98	Unknown	6.28	3,900
GM-25B	GWGM-25B	10/6/1998	98	Unknown	4.91	1,600
GM-25B	GWGM-25B	10/6/1998	98	Unknown	6.89	730
GM-25B	GWGM-25B	10/6/1998	98	Unknown	5.65	780
GM-25B	GWGM-25B	10/6/1998	98	Unknown	6.08	930
GM-25B	GWGM-25B	10/6/1998	98	Unknown	8.58	620
GM-25B	GWGM-25B	10/6/1998	98	Unknown	5.17	1,200
GM-25B	GWGM-25B	4/27/1999	98	1-(2-Furanyl)-ethanone	4.57	4,600 NJ
GM-25B	GWGM-25B	4/27/1999	98	2,3-Dimethylcyclopent-2-en-1-one	6.29	5,900 NJ
GM-25B	GWGM-25B	4/27/1999	98	2,5-Hexanedione	4.79	1,600 NJ
GM-25B	GWGM-25B	4/27/1999	98	2-Ethylcyclopentanone	4.99	2,800 NJ
GM-25B	GWGM-25B	4/27/1999	98	3-Methyl-2-Cyclopenten-1-one	5.31	4,200 NJ
GM-25B	GWGM-25B	4/27/1999	98	Cyclopentanone, 2,4-dimethyl	4.37	1,100 NJ
GM-25B	GWGM-25B	4/27/1999	98	Ethylphenol isomer	7.96	5,200 NJ
GM-25B	GWGM-25B	4/27/1999	98	Ethylphenol isomer	7.56	830 NJ
GM-25B	GWGM-25B	4/27/1999	98	Unknown	9.06	1,300 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	5.09	720 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	4.28	2,600 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	7.12	1,300 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	6.63	1,600 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	5.7	2,100 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-25B	GWGM-25B	4/27/1999	98	Unknown	5.75	1,400 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	4.42	1,500 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	6.99	2,100 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	11	880 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	6.09	1,300 J
GM-25B	GWGM-25B	4/27/1999	98	Unknown	6.87	950 J
GM-25B	GM-25B	10/20/1999	98	Unknown	5.2	4,000 J
GM-25B	GM-25B	10/20/1999	98	Unknown	6.587	620 J
GM-25B	GM-25B	10/20/1999	98	Unknown Alcohol	3.751	3,400 J
GM-25B	GM-25B	10/20/1999	98	Unknown Alcohol	6.99	1,100 J
GM-25B	GM-25B	10/20/1999	98	Unknown Alkene	4.527	3,200 J
GM-25B	GM-25B	10/20/1999	98	Unknown Cycloketone	3.327	7,400 J
GM-25B	GM-25B	10/20/1999	98	Unknown Dimethylphenol isomer	5.769	790 J
GM-25B	GM-25B	10/20/1999	98	Unknown Ketone	4.165	1,600 J
GM-25B	GM-25B	10/20/1999	98	Unknown Ketone	3.389	2,400 J
GM-25B	GM-25B	10/20/1999	98	Unknown Ketone	4.01	3,300 J
GM-25B	GM-25B	10/20/1999	98	Unknown Ketone	4.279	2,200 J
GM-25B	GM-25B	10/20/1999	98	Unknown Organic Acid	3.637	6,300 J
GM-25B	GM-25B	10/20/1999	98	Unknown Organic Acid	3.451	1,600 J
GM-25B	GM-25B	10/20/1999	98	Unknown Organic Acid	3.948	2,700 J
GM-25B	GM-25B	10/20/1999	98	Unknown Organic Acid	3.161	22,000 J
GM-25B	GM-25B	10/20/1999	98	Unknown Phenol Isomer	6.245	3,200 J
GM-25C	GWGM-95	11/9/1998	206	2-Ethyl-1-hexanol	6.18	160
GM-25C	GWGM-25C	8/2/2000	206	Unknown	5.86	110 J
GM-26A	GWGM-26A	10/7/1998	30	2,3-Dihydro-1H-inden-1-one	9.63	130
GM-26A	GWGM-26A	10/7/1998	30	Alkylphenol isomer	9	140
GM-26A	GWGM-26A	10/7/1998	30	Alkylphenol isomer	9.28	140
GM-26A	GWGM-26A	10/7/1998	30	Dimethylcyclopentanone isomer	4.13	170
GM-26A	GWGM-26A	10/7/1998	30	Dimethylcyclopentanone isomer	4.26	120
GM-26A	GWGM-26A	10/7/1998	30	Dimethylphenol isomer	7.29	180
GM-26A	GWGM-26A	10/7/1998	30	Dimethylphenol isomer	8.12	380

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-26A	GWGM-26A	10/7/1998	30	Trimethylcyclopentenone	6.62	360
GM-26A	GWGM-26A	10/7/1998	30	Unknown	7.57	190
GM-26A	GWGM-26A	10/7/1998	30	Unknown	6.29	1,200
GM-26A	GWGM-26A	10/7/1998	30	Unknown	8.62	210
GM-26A	GWGM-26A	10/7/1998	30	Unknown	7.26	190
GM-26A	GWGM-26A	10/7/1998	30	Unknown	11.57	210
GM-26A	GWGM-26A	10/7/1998	30	Unknown	7.16	260
GM-26A	GWGM-26A	10/7/1998	30	Unknown	11.42	290
GM-26A	GWGM-26A	10/7/1998	30	Unknown	5.65	200
GM-26A	GWGM-26A	10/7/1998	30	Unknown	5.2	120
GM-26A	GWGM-26A	10/7/1998	30	Unknown	5.79	120
GM-26A	GWGM-26A	10/7/1998	30	Unknown Cyclohexane	7.7	180
GM-26A	GWGM-26A	10/7/1998	30	Unknown Hexen	4.92	430
GM-26A	GWGM-26A	4/14/1999	30	3-Ethylcyclopentanone	5.28	350 NJ
GM-26A	GWGM-26A	4/14/1999	30	Cyclohexanone, 4-methyl	4.44	350 NJ
GM-26A	GWGM-26A	4/14/1999	30	Cyclopentanone, 2,4-dimethyl	4.39	290 NJ
GM-26A	GWGM-26A	4/14/1999	30	Cyclopentanone, 2,5-dimethyl	4.27	390 NJ
GM-26A	GWGM-26A	4/14/1999	30	Phenol, dimethyl-isomers	8	570 NJ
GM-26A	GWGM-26A	4/14/1999	30	Phenol, ethyl-methyl-isomers	8.83	130 NJ
GM-26A	GWGM-26A	4/14/1999	30	Phenol, trimethyl-isomers	9.22	160 NJ
GM-26A	GWGM-26A	4/14/1999	30	Unknown	11.7	220 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	5.01	610 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	5.84	230 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	6.6	470 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	11	320 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	9.08	230 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	8.47	200 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	11.2	210 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	7.12	410 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	7.49	200 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	11.9	140 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-26A	GWGM-26A	4/14/1999	30	Unknown	7.61	240 J
GM-26A	GWGM-26A	4/14/1999	30	Unknown	5.08	260 J
GM-26A	GM-26A	11/29/1999	30	Unknown	11.695	840 J
GM-26A	GM-26A	11/29/1999	30	Unknown	8.735	280 J
GM-26A	GM-26A	11/29/1999	30	Unknown	3.26	290 J
GM-26A	GM-26A	11/29/1999	30	Unknown	4.719	290 J
GM-26A	GM-26A	11/29/1999	30	Unknown	3.591	310 J
GM-26A	GM-26A	11/29/1999	30	Unknown	4.522	1,200 J
GM-26A	GM-26A	11/29/1999	30	Unknown	9.967	380 J
GM-26A	GM-26A	11/29/1999	30	Unknown	7.731	300 J
GM-26A	GM-26A	11/29/1999	30	Unknown	9.346	420 J
GM-26A	GM-26A	11/29/1999	30	Unknown	6.282	140 J
GM-26A	GM-26A	11/29/1999	30	Unknown	2.649	530 J
GM-26A	GM-26A	11/29/1999	30	Unknown	8.631	250 J
GM-26A	GM-26A	11/29/1999	30	Unknown	9.656	460 J
GM-26A	GM-26A	11/29/1999	30	Unknown	9.149	160 J
GM-26A	GM-26A	11/29/1999	30	Unknown	6.033	130 J
GM-26A	GM-26A	11/29/1999	30	Unknown Phenol Isomer	5.578	250 J
GM-26A	GM-26A	11/29/1999	30	Unknown Phenol Isomer	5.092	270 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	3.778	330 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	7.325	170 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	3.441	140 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	6.23	130 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	7.955	250 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	5.241	120 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	4.707	1,200 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	3.858	120 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	6.101	320 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	9.9	240 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	3.949	120 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown	4.905	290 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-26A	GWGM-26A	8/16/2000	30	Unknown Dimethylphenol isomer	5.776	180 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown Dimethylphenol isomer	5.284	300 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown Methylphenol isomer	6.491	150 J
GM-26A	GWGM-26A	8/16/2000	30	Unknown Methylphenol isomer	6.561	110 J
GM-26B	GM-26B	11/30/1999	101	Unknown	19.748	200 J
GM-26C	GWGM-26C	10/25/1998	160	2-Hexenal	6.59	240
GM-26C	GWGM-26C	10/25/1998	160	Dimethylphenol isomer	8.18	300
GM-26C	GWGM-26C	10/25/1998	160	Dimethylphenol isomer	7.3	400
GM-26C	GWGM-26C	10/25/1998	160	Dimethylphenol isomer	8.08	440
GM-26C	GWGM-26C	10/25/1998	160	Ethylmethylphenol isomer	8.91	250
GM-26C	GWGM-26C	10/25/1998	160	Ethylmethylphenol isomer	8.77	200
GM-26C	GWGM-26C	10/25/1998	160	Hexene isomer	5.1	630
GM-26C	GWGM-26C	10/25/1998	160	Octene isomer	5.37	220
GM-26C	GWGM-26C	10/25/1998	160	Pentynol isomer	7.69	240
GM-26C	GWGM-26C	10/25/1998	160	Unknown	7.59	450
GM-26C	GWGM-26C	10/25/1998	160	Unknown	8.28	270
GM-26C	GWGM-26C	10/25/1998	160	Unknown	11.83	200
GM-26C	GWGM-26C	10/25/1998	160	Unknown	7.2	480
GM-26C	GWGM-26C	10/25/1998	160	Unknown	5.93	190
GM-26C	GWGM-26C	10/25/1998	160	Unknown	7.11	230
GM-26C	GWGM-26C	10/25/1998	160	Unknown	11.95	200
GM-26C	GWGM-26C	10/25/1998	160	Unknown	8.55	600
GM-26C	GWGM-26C	10/25/1998	160	Unknown	6.69	670
GM-26C	GWGM-26C	10/25/1998	160	Unknown	11.16	1,300
GM-26C	GWGM-26C	10/25/1998	160	Unknown	4.35	260
GM-26C	GWGM-26C	10/25/1998	160	Unknown	5.86	840
GM-26C	GWGM-26C	10/25/1998	160	Unknown	5.79	360
GM-26C	GWGM-26C	10/25/1998	160	Unknown	11.27	800
GM-26C	GWGM-26C	4/17/1999	160	2,3-Dimethylcyclopent-2-en-1-one	6.29	2,200 NJ
GM-26C	GWGM-26C	4/17/1999	160	3-Ethylcyclopentanone	5.26	290 NJ
GM-26C	GWGM-26C	4/17/1999	160	Phenol, dimethyl-isomers	8	370 NJ

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-26C	GWGM-26C	4/17/1999	160	Unknown	4.27	310 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	4.99	790 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	5.69	300 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	11	560 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	4.42	420 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	5.13	230 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	5.75	640 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	6.6	630 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	8.46	310 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	7.59	230 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	7.1	530 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	6.75	280 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	6.5	290 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	6.07	300 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	7.49	280 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	11.2	350 NJ
GM-26C	GWGM-26C	4/17/1999	160	Unknown	5.84	320 NJ
GM-26C	GM-26C	11/30/1999	160	Unknown	9.719	260 J
GM-26C	GM-26C	11/30/1999	160	Unknown	12.555	880 J
GM-26C	GM-26C	11/30/1999	160	Unknown	10.743	310 J
GM-26C	GM-26C	11/30/1999	160	Unknown	7.731	820 J
GM-26C	GM-26C	11/30/1999	160	Unknown	9.967	220 J
GM-26C	GM-26C	11/30/1999	160	Unknown	4.523	2,300 J
GM-26C	GM-26C	11/30/1999	160	Unknown	6.086	230 J
GM-26C	GM-26C	11/30/1999	160	Unknown	4.999	270 J
GM-26C	GM-26C	11/30/1999	160	Unknown	3.591	660 J
GM-26C	GM-26C	11/30/1999	160	Unknown	4.72	600 J
GM-26C	GM-26C	11/30/1999	160	Unknown	6.955	270 J
GM-26C	GM-26C	11/30/1999	160	Unknown	8.177	270 J
GM-26C	GM-26C	11/30/1999	160	Unknown	9.646	240 J
GM-26C	GM-26C	11/30/1999	160	Unknown	6.355	240 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-26C	GM-26C	11/30/1999	160	Unknown Phenol Isomer	5.579	410 J
GM-26C	GM-26C	11/30/1999	160	Unknown Phenol Isomer	5.092	490 J
GM-26C	GM-26C	11/30/1999	160	Unknown Phenol Isomer	6.117	240 J
GM-26C	GM-26C	11/30/1999	160	Unknown Phenol Isomer	6.282	250 J
GM-26C	GWGM-26C	8/16/2000	160	1H-Inden-1-one, 2,3-dihydro-	6.529	220 NJ
GM-26C	GWGM-26C	8/16/2000	160	2-Ethylcyclopentanone	3.622	760 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	5.086	260 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	7.768	740 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	3.286	340 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	3.163	300 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	9.68	270 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	4.547	2,500 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	8.313	280 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	4.21	660 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	5.027	320 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	5.417	190 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	3.793	310 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	4.386	260 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown	4.75	730 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown Dimethylphenol isomer	5.61	440 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown Dimethylphenol isomer	5.69	230 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown Dimethylphenol isomer	5.124	580 J
GM-26C	GWGM-26C	8/16/2000	160	Unknown Ethylmethyl-phenol isomer	6.32	300 J
GM-27A	GWGM-27A	10/8/1998	30	Bicyclononane isomer	7.17	260
GM-27A	GWGM-27A	10/8/1998	30	Dimethylcyclopentanone isomer	4.3	110
GM-27A	GWGM-27A	10/8/1998	30	Dimethylcyclopentanone isomer	4.17	130
GM-27A	GWGM-27A	10/8/1998	30	Dimethylhydroxy butenoic lactone isomer	7.26	110
GM-27A	GWGM-27A	10/8/1998	30	Dimethylphenol isomer	7.31	150
GM-27A	GWGM-27A	10/8/1998	30	Dimethylphenol isomer	8.13	230
GM-27A	GWGM-27A	10/8/1998	30	Trimethylcyclopentenone isomer	6.63	310
GM-27A	GWGM-27A	10/8/1998	30	Trimethylphenol isomer	8.63	120

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-27A	GWGM-27A	10/8/1998	30	Unknown	7.72	120
GM-27A	GWGM-27A	10/8/1998	30	Unknown	7.59	140
GM-27A	GWGM-27A	10/8/1998	30	Unknown	5.22	140
GM-27A	GWGM-27A	10/8/1998	30	Unknown	11.41	220
GM-27A	GWGM-27A	10/8/1998	30	Unknown	4.94	400
GM-27A	GWGM-27A	10/8/1998	30	Unknown	11.55	160
GM-27A	GWGM-27A	10/8/1998	30	Unknown	4.55	110
GM-27A	GWGM-27A	10/8/1998	30	Unknown Alkylheptene	4.34	130
GM-27A	GWGM-27A	4/15/1999	30	2,3-Dimethylcyclopent-2-en-1-one	6.3	1,000 NJ
GM-27A	GWGM-27A	4/15/1999	30	3-Ethylcyclopentanone	5.27	160 NJ
GM-27A	GWGM-27A	4/15/1999	30	Cyclopentanone, 2,4-dimethyl	4.37	140 NJ
GM-27A	GWGM-27A	4/15/1999	30	Cyclopentanone, 2,5-dimethyl	4.25	140 NJ
GM-27A	GWGM-27A	4/15/1999	30	Cyclopentenone, trimethyl-isomers	6.6	320 NJ
GM-27A	GWGM-27A	4/15/1999	30	Phenol, dimethyl-isomers		210 NJ
GM-27A	GWGM-27A	4/15/1999	30	Unknown		260 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	4.99	380 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	7.11	250 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	11.2	190 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	8.47	120 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	5.84	160 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	5.69	210 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	7.49	140 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	6.77	110 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	11.7	120 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	7.61	130 J
GM-27A	GWGM-27A	4/15/1999	30	Unknown	4.45	170 J
GM-27A	GM-27A	12/1/1999	30	Unknown	9.408	290 J
GM-27A	GM-27A	12/1/1999	30	Unknown	10.029	240 J
GM-27A	GM-27A	12/1/1999	30	Unknown	4.999	200 J
GM-27A	GM-27A	12/1/1999	30	Unknown	8.228	120 J
GM-27A	GM-27A	12/1/1999	30	Unknown	9.771	190 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-27A	GM-27A	12/1/1999	30	Unknown	10.381	920 J
GM-27A	GM-27A	12/1/1999	30	Unknown	7.783	160 J
GM-27A	GM-27A	12/1/1999	30	Unknown	13.321	140 J
GM-27A	GM-27A	12/1/1999	30	Unknown	6.127	120 J
GM-27A	GM-27A	12/1/1999	30	Unknown	5.103	120 J
GM-27A	GM-27A	12/1/1999	30	Unknown	11.758	150 J
GM-27A	GM-27A	12/1/1999	30	Unknown	3.633	280 J
GM-27A	GM-27A	12/1/1999	30	Unknown	9.708	130 J
GM-27A	GM-27A	12/1/1999	30	Unknown	11.509	150 J
GM-27A	GM-27A	12/1/1999	30	Unknown	2.722	240 J
GM-27A	GM-27A	12/1/1999	30	Unknown Phenol Isomer	5.134	240 J
GM-27A	GM-27A	12/1/1999	30	Unknown Phenol Isomer	5.62	220 J
GM-27B	GWGM-27B	10/26/1998	145	2-Ethyl-1-hexanol	6.2	340
GM-27B	GWGM-27B	4/14/1999	145	1-Hexanol, 2-ethyl	6.19	190 NJ
GM-29	GWGM-29	10/9/1998	55	Unknown	5.59	110
GM-29	GWGM-29	10/9/1998	55	Unknown	5.2	110
GM-29	GWGM-29	10/9/1998	55	Unknown	6.18	410
GM-29	GWGM-99	10/9/1998	55	Unknown	6.18	400
GM-29	GWGM-99	10/9/1998	55	Unknown	4.89	110
GM-29	GWGM-99	10/9/1998	55	Unknown	5.21	120
GM-29	GWGM-29	4/16/1999	55	2,3-Dimethylcyclopent-2-en-1-one	6.32	170 NJ
GM-29	GMGM-29	2/29/2000	55	Unknown	6.504	110 J
GM-32	GWGM-32	10/25/1998	135	1-(2-Furanyl)-ethanone	4.68	8,500
GM-32	GWGM-32	10/25/1998	135	Ethylphenol isomer	8.04	9,700
GM-32	GWGM-32	10/25/1998	135	Propylphenol isomer	9.14	2,000
GM-32	GWGM-32	10/25/1998	135	Unknown	6.69	2,000
GM-32	GWGM-32	10/25/1998	135	Unknown	5.85	2,100
GM-32	GWGM-32	10/25/1998	135	Unknown	5.79	2,100
GM-32	GWGM-32	10/25/1998	135	Unknown	5.42	7,300
GM-32	GWGM-32	10/25/1998	135	Unknown	6.2	3,100
GM-32	GWGM-32	10/25/1998	135	Unknown	5.1	2,600

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-32	GWGM-32	10/25/1998	135	Unknown	4.39	2,400
GM-32	GWGM-32	4/27/1999	135	1-(2-Furanyl)-ethanone	4.6	3,200 NJ
GM-32	GWGM-32	4/27/1999	135	2,3-Dimethylcyclopent-2-en-1-one	6.31	2,800 NJ
GM-32	GWGM-32	4/27/1999	135	2,5-Hexanedione	4.8	810 NJ
GM-32	GWGM-32	4/27/1999	135	2-Cyclopenten-1-one, 2,3,4-trimethyl	6.61	950 NJ
GM-32	GWGM-32	4/27/1999	135	3-Methyl-2-Cyclopenten-1-one	5.34	3,400 NJ
GM-32	GWGM-32	4/27/1999	135	3-Propylphenol	9.08	460 NJ
GM-32	GWGM-32	4/27/1999	135	4,4-Dimethyl-2-cyclopenten-1-one	5.7	1,100 NJ
GM-32	GWGM-32	4/27/1999	135	Cyclopentanone, 2,4-dimethyl	4.38	680 NJ
GM-32	GWGM-32	4/27/1999	135	Cyclopentanone, ethyl-isomer	5.01	1,700 NJ
GM-32	GWGM-32	4/27/1999	135	Ethylphenol isomer	7.98	1,400 NJ
GM-32	GWGM-32	4/27/1999	135	Unknown	4.43	710 J
GM-32	GWGM-32	4/27/1999	135	Unknown	11	600 J
GM-32	GWGM-32	4/27/1999	135	Unknown	6.9	440 J
GM-32	GWGM-32	4/27/1999	135	Unknown	5.77	540 J
GM-32	GWGM-32	4/27/1999	135	Unknown	11.2	430 J
GM-32	GWGM-32	4/27/1999	135	Unknown	7.13	540 J
GM-32	GWGM-32	4/27/1999	135	Unknown	4.26	1,500 J
GM-32	GWGM-32	4/27/1999	135	Unknown	5.9	550 J
GM-32	GWGM-32	4/27/1999	135	Unknown	6.1	770 J
GM-32	GWGM-32	4/27/1999	135	Unknown	5.14	410 J
GM-37A	GWGM-37A	11/18/1998	144	2,3,4-Trimethyl-2-cyclopenten-1-one	6.94	350
GM-37A	GWGM-37A	11/18/1998	144	2,3-Dimethylcyclopent-2-en-1-one	6.24	1,300
GM-37A	GWGM-37A	11/18/1998	144	2,5-Hexanedione	4.77	270
GM-37A	GWGM-37A	11/18/1998	144	2-Ethylcyclopentanone	4.96	370
GM-37A	GWGM-37A	11/18/1998	144	3-Ethyl-2-hydroxy-2-Cyclopenten-1-one	7.28	210
GM-37A	GWGM-37A	11/18/1998	144	Dimethylphenol isomer	8.05	270
GM-37A	GWGM-37A	11/18/1998	144	Dimethylphenol isomer	7.19	400
GM-37A	GWGM-37A	11/18/1998	144	Ethylphenol isomer	7.55	260
GM-37A	GWGM-37A	11/18/1998	144	Ethylphenol isomer	7.93	990
GM-37A	GWGM-37A	11/18/1998	144	Methylcyclopentanone isomer	5.28	1,000

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-37A	GWGM-37A	11/18/1998	144	Trimethylcyclopentanone isomer	6.57	370
GM-37A	GWGM-37A	11/18/1998	144	Unknown	6.08	540
GM-37A	GWGM-37A	11/18/1998	144	Unknown	11.7	820
GM-37A	GWGM-37A	11/18/1998	144	Unknown	7.06	330
GM-37A	GWGM-37A	11/18/1998	144	Unknown	6.99	270
GM-37A	GWGM-37A	11/18/1998	144	Unknown	5.72	260
GM-37A	GWGM-37A	5/11/1999	144	2,5-Hexanedione	4.82	680 NJ
GM-37A	GWGM-37A	5/11/1999	144	2-Cyclopenten-1-one, 3-ethyl-2-hydroxy-	7.35	280 NJ
GM-37A	GWGM-37A	5/11/1999	144	2-Cyclopenten-1-one, 3-methyl	5.34	1,700 NJ
GM-37A	GWGM-37A	5/11/1999	144	3-Ethylcyclopent-2-en-1-one	6.9	580 NJ
GM-37A	GWGM-37A	5/11/1999	144	3-Propylphenol	9.09	350 NJ
GM-37A	GWGM-37A	5/11/1999	144	5-Ethylcyclopentanone	5.02	750 NJ
GM-37A	GWGM-37A	5/11/1999	144	Cyclopentanone, 2,4-dimethyl	4.4	450 NJ
GM-37A	GWGM-37A	5/11/1999	144	Ethylphenol isomer	7.99	1,500 NJ
GM-37A	GWGM-37A	5/11/1999	144	Ethylphenol isomer	7.61	370 NJ
GM-37A	GWGM-37A	5/11/1999	144	Unknown	4.31	490 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	3.84	416 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	8.48	210 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	6.66	580 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	5.78	420 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	7.52	260 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	8.86	270 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	7.15	360 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	11.7	1,200 J
GM-37A	GWGM-37A	5/11/1999	144	Unknown	6.14	970 J
GM-37B	GWGM-37B	10/13/1998	328	1-(2-Furanyl)-ethanone	4.47	180
GM-37B	GWGM-37B	10/13/1998	328	2,5-Dimethylcyclopentanone	4.15	210
GM-37B	GWGM-37B	10/13/1998	328	2,5-Hexanedione	4.71	130
GM-37B	GWGM-37B	10/13/1998	328	Ethylcyclopentanone isomer	4.92	210
GM-37B	GWGM-37B	10/13/1998	328	Ethylphenol isomer	8.1	360
GM-37B	GWGM-37B	10/13/1998	328	Methylcyclopentanone isomer	5.26	280

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-37B	GWGM-37B	10/13/1998	328	Trimethylcyclopentanone isomer	7.07	150
GM-37B	GWGM-37B	10/13/1998	328	Trimethylcyclopentenone isomer	6.65	160
GM-37B	GWGM-37B	10/13/1998	328	Unknown	6.1	110
GM-37B	GWGM-37B	5/14/1999	328	1-(2-Furanyl)-ethanone	4.61	2,200 NJ
GM-37B	GWGM-37B	5/14/1999	328	2,3-Dimethylcyclopent-2-en-1-one	6.31	4,100 NJ
GM-37B	GWGM-37B	5/14/1999	328	2,5-Hexanedione	4.83	1,300 NJ
GM-37B	GWGM-37B	5/14/1999	328	3-Methyl-2-Cyclopenten-1-one	5.33	2,900 NJ
GM-37B	GWGM-37B	5/14/1999	328	3-Propylphenol	9.1	950 NJ
GM-37B	GWGM-37B	5/14/1999	328	5-Ethylcyclopentanone	5.01	1,900 NJ
GM-37B	GWGM-37B	5/14/1999	328	Cyclopentanone, 2,4-dimethyl	4.4	1,000 NJ
GM-37B	GWGM-37B	5/14/1999	328	Ethylphenol isomer	8	3,800 NJ
GM-37B	GWGM-37B	5/14/1999	328	Unknown	6.13	1,100 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	6.63	1,200 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	4.32	1,700 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	5.15	610 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	6.89	910 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	7	1,200 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	7.14	980 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	7.63	660 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	5.77	890 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	5.72	1,400 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	4.45	910 J
GM-37B	GWGM-37B	5/14/1999	328	Unknown	11	810 J
GM-40B	GWGM-40B	10/26/1998	120	1-(2-Furanyl)-ethanone	4.49	2,100
GM-40B	GWGM-40B	10/26/1998	120	5-Ethylcyclopentanone	4.92	1,500
GM-40B	GWGM-40B	10/26/1998	120	Dimethylcyclopentanone isomer	6.29	3,000
GM-40B	GWGM-40B	10/26/1998	120	Dimethylhexadiene isomer	5.66	820
GM-40B	GWGM-40B	10/26/1998	120	Dimethylphenol isomer	7.29	660
GM-40B	GWGM-40B	10/26/1998	120	Ethylphenol isomer	8.07	3,400
GM-40B	GWGM-40B	10/26/1998	120	Propylphenol isomer	9.26	1,000
GM-40B	GWGM-40B	10/26/1998	120	Trimethylcyclopentanone isomer	6.63	860

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-40B	GWGM-40B	10/26/1998	120	Unknown	4.28	950
GM-40B	GWGM-40B	10/26/1998	120	Unknown	11.42	700
GM-40B	GWGM-40B	10/26/1998	120	Unknown	4.15	870
GM-40B	GWGM-40B	10/26/1998	120	Unknown	6.1	1,100
GM-40B	GWGM-40B	10/26/1998	120	Unknown	6.89	860
GM-40B	GWGM-40B	10/26/1998	120	Unknown	5.26	2,800
GM-40B	GWGM-40B	10/26/1998	120	Unknown	4.21	980
GM-40B	GWGM-40B	10/26/1998	120	Unknown	5.73	870
GM-40B	GWGM-40B	10/26/1998	120	Unknown	7.16	720
GM-40B	GWGM-40B	4/27/1999	120	1-(2-Furanyl)-ethanone	4.49	310 NJ
GM-40B	GWGM-40B	4/27/1999	120	2-Cyclopenten-1-one, 3-methyl	5.23	430 NJ
GM-40B	GWGM-40B	4/27/1999	120	4,4-Dimethyl-2-cyclopenten-1-one	5.62	110 NJ
GM-40B	GWGM-40B	4/27/1999	120	5-Ethylcyclopentanone	4.91	210 NJ
GM-40B	GWGM-40B	4/27/1999	120	Cyclohexanol	4.22	190 NJ
GM-40B	GWGM-40B	4/27/1999	120	Ethylphenol isomer	7.87	440 NJ
GM-40B	GWGM-40B	4/27/1999	120	Unknown	6.53	120 J
GM-40B	GWGM-40B	4/27/1999	120	Unknown	7.02	110 J
GM-40B	GWGM-40B	4/27/1999	120	Unknown	8.98	120 J
GM-40B	GWGM-40B	4/27/1999	120	Unknown	6.02	130 J
GM-40B	GWGM-40B	4/27/1999	120	Unknown	4.3	180 J
GM-42	GWGM-42	10/20/1998	72	2-Ethyl-1-hexanol	6.16	130
GM-53B	GWGM-53B	11/5/1998	195	Dimethylcyclopentanone isomer	6.35	400
GM-53B	GWGM-53B	11/5/1998	195	Hexene isomer	4.94	120
GM-53B	GWGM-53B	5/1/1999	195	2-Cyclopenten-1-one, 3-methyl	5.28	110 NJ
GM-53B	GWGM-53B	5/1/1999	195	3-Ethylcyclopent-2-en-1-one	6.77	140 NJ
GM-53B	GWGM-53B	5/1/1999	195	Cyclopentenone, trimethyl-isomers	6.56	230 NJ
GM-53B	GWGM-53B	5/1/1999	195	Phenol, dimethyl-isomers	7.97	140 NJ
GM-53B	GWGM-53B	5/1/1999	195	Unknown	7.46	110 J
GM-53B	GWGM-53B	5/1/1999	195	Unknown	11	130 J
GM-53B	GWGM-53B	5/1/1999	195	Unknown	5.8	110 J
GM-53B	GWGM-53B	5/1/1999	195	Unknown	5.74	150 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-53B	GWGM-53B	5/1/1999	195	Unknown	4.98	240 J
GM-53B	GWGM-53B	5/1/1999	195	Unknown	6.06	110 J
GM-53B	GWGM-53B	5/1/1999	195	Unknown	7.58	110 J
GM-53B	GWGM-53B	5/1/1999	195	Unknown	7.07	200 J
GM-53B	GWGM-53B	5/1/1999	195	Unknown	5.67	190 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	6.65	640 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	3.276	1,500 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	6.433	1,100 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	8.347	600 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	7.395	650 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	19.65	9,300 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	2.851	1,100 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	4.652	1,200 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	4.549	940 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	9.786	600 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	2.789	2,600 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown	5.925	520 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown Alcohol	3.214	840 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown Alcohol	5.698	2,300 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown Organic Acid	3.317	1,100 J
GM-62B	GWGM-62B	8/24/1999	195	Unknown Organic Acid	2.996	1,200 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	3.99	600 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	9.786	460 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	4.652	950 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	4.549	740 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	2.851	680 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	3.286	1,200 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	8.347	370 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	6.422	950 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	6.65	480 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	7.395	430 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-62B	GWGM-82	8/24/1999	195	Unknown	5.925	360 J
GM-62B	GWGM-82	8/24/1999	195	Unknown	2.8	2,200 J
GM-62B	GWGM-82	8/24/1999	195	Unknown Alcohol	3.214	950 J
GM-62B	GWGM-82	8/24/1999	195	Unknown Alcohol	5.698	1,900 J
GM-62B	GWGM-82	8/24/1999	195	Unknown Organic Acid	2.986	1,100 J
GM-62B	GWGM-82	8/24/1999	195	Unknown Organic Acid	3.307	810 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	2.792	3,400 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	19.642	15,000 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	17.975	950 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	6.435	1,400 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	2.854	1,700 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	9.788	660 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	2.957	1,500 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	3.216	1,600 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	3.744	970 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	4.862	570 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown	4.655	1,800 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown Alcohol	5.897	380 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown Alcohol	5.7	3,200 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown Alcohol	5.224	450 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown Organic Acid	6.456	900 J
GM-62C	GWGM-62C	8/24/1999	315	Unknown Organic Acid	3.247	1,000 J
GM-63A	GWGM-63A	9/19/2000	45	Unknown	7.665	140 J
GM-63A	GWGM-63A	9/19/2000	45	Unknown	5.838	190 J
GM-63A	GWGM-63A	9/19/2000	45	Unknown	4.657	110 J
GM-63A	GWGM-63A	9/19/2000	45	Unknown	8.204	110 J
GM-63A	GWGM-63A	9/19/2000	45	Unknown	4.459	410 J
GM-63A	GWGM-63A	9/19/2000	45	Unknown Dimethylphenol	5.036	150 J
GM-64B	GWGM-64B	7/24/2000	117	Unknown	3.53	110 J
GM-64B	GWGM-64B	7/24/2000	117	Unknown	4.117	240 J
GM-64B	GWGM-64B	7/24/2000	117	Unknown	3.204	110 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GM-64B	GWGM-64B	7/24/2000	117	Unknown Cyclopentene isomer	4.454	680 J
GM-64B	GWGM-64B	7/24/2000	117	Unknown Dimethylphenol isomer	5.025	140 J
GM-64B	GWGM-64B	7/24/2000	117	Unknown Trimethylcyclopentene isomer	4.657	180 J
GM-64B	GWGM-64B	10/4/2000	117	Unknown	5.465	220 J
GM-64B	GWGM-64B	10/4/2000	117	Unknown Aldol Condensate	1.508	260 JA
GM-64B	GWGM-64B	10/4/2000	117	Unknown Dimethylphenol isomer	6.047	130 J
GM-66B	GWGM-66B	7/19/2000	125	Unknown Cyclopentene isomer	4.46	170 J
GM-66B	GWGM-66B	7/19/2000	125	Unknown Dimethylphenol isomer	5.04	110 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	4.616	150 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	3.815	170 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	5.573	130 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	8.388	170 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	8.479	120 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	5.872	120 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	5.284	300 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	5.514	400 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	4.125	120 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown	5.076	800 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown Alkene	6.454	330 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown Ketone	3.617	140 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown Organic Acid	5.647	430 J
GM-66B	GMGW-66B	8/3/2000	125	Unknown Phenol	6.705	140 J
GM-70	GWGM-70	8/17/2000	42	Unknown	8.017	240 J
GM-70	GWGM-70	8/17/2000	42	Unknown	6.981	210 J
GMEW-3	GWGMEW-3	7/24/2000	135	2-Methylcyclopentanone	2.61	9,400 NJ
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	3.785	2,500 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	4.453	3,800 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	9.539	910 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	6.221	2,500 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	4.122	1,100 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	3.021	3,000 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	5.735	1,800 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	3.278	2,700 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown	7.653	700 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown cyclopentanone isomer	3.545	1,900 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown Ethylphenol isomer	5.5	4,500 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown Organic Acid	2.818	3,300 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown Organic Acid	3.139	6,200 J
GMEW-3	GWGMEW-3	7/24/2000	135	Unknown Organic Acid	2.3	8,700 J
MW-8	GWGM-99	6/29/1997	133	2,4,6-Trimethylphenol	9.2499	130 N
MW-8	GWGM-99	6/29/1997	133	2,6-Dimethylphenol	7.9892	150 N
MW-8	GWGM-99	6/29/1997	133	2-Ethylcyclopentanone	5.6119	250 N
MW-8	GWGM-99	6/29/1997	133	2-Methylcyclopentanone	4.1749	740 N
MW-8	GWGM-99	6/29/1997	133	3,4-Dimethylphenol	9.095	150 N
MW-8	GWGM-99	6/29/1997	133	3,5-Dimethylphenol	8.7958	170 N
MW-8	GWGM-99	6/29/1997	133	3-Methyl-2-Cyclopenten-1-one	5.9592	280 N
MW-8	GWGM-99	6/29/1997	133	Unknown	11.888	180
MW-8	GWGM-99	6/29/1997	133	Unknown	4.7946	130
MW-8	GWGM-99	6/29/1997	133	Unknown	9.2873	110
MW-8	GWGM-99	6/29/1997	133	Unknown	8.2403	130
MW-8	GWGM-99	6/29/1997	133	Unknown	7.8396	190
MW-8	GWGM-99	6/29/1997	133	Unknown	5.1525	160
MW-8	GWGM-99	6/29/1997	133	Unknown	7.3107	240
MW-8	GWGM-99	6/29/1997	133	Unknown	12.017	120
MW-8	GWGM-99	6/29/1997	133	Unknown	7.5244	200
MW-8	GWMW-8	6/29/1997	133	2,4,6-Trimethylphenol	9.2451	220 N
MW-8	GWMW-8	6/29/1997	133	2,5-Dimethylcyclopentanone	4.7898	140 N
MW-8	GWMW-8	6/29/1997	133	2,6-Dimethylphenol	7.9844	140 N
MW-8	GWMW-8	6/29/1997	133	2-Ethylcyclopentanone	5.6125	240 N
MW-8	GWMW-8	6/29/1997	133	2-Methylcyclopentanone	4.1701	780 N
MW-8	GWMW-8	6/29/1997	133	3,4-Dimethylphenol	9.0902	140 N
MW-8	GWMW-8	6/29/1997	133	3,5-Dimethylphenol	8.7911	160 N

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
MW-8	GWMW-8	6/29/1997	133	3-Methyl-2-Cyclopenten-1-one	5.949	260 N
MW-8	GWMW-8	6/29/1997	133	Unknown	5.1424	160
MW-8	GWMW-8	6/29/1997	133	Unknown	7.8348	160
MW-8	GWMW-8	6/29/1997	133	Unknown	7.5196	220
MW-8	GWMW-8	6/29/1997	133	Unknown	11.884	150
MW-8	GWMW-8	6/29/1997	133	Unknown	8.2355	120
MW-8	GWMW-8	6/29/1997	133	Unknown	7.2418	160
MW-8	GWMW-8	10/24/1998	133	Dimethylphenol isomer	7.33	130
MW-8	GWMW-8	10/24/1998	133	Dimethylphenol isomer	8.09	170
MW-8	GWMW-8	10/24/1998	133	Pentyne isomer	5.42	290
MW-8	GWMW-8	10/24/1998	133	Trimethylcyclopentenone isomer	6.69	250
MW-8	GWMW-8	10/24/1998	133	Unknown	10.37	150
MW-8	GWMW-8	10/24/1998	133	Unknown	6.4	1,200
MW-8	GWMW-8	10/24/1998	133	Unknown	11.27	170
MW-8	GWMW-8	10/24/1998	133	Unknown	8.29	120
MW-8	GWMW-8	10/24/1998	133	Unknown	7.7	130
MW-8	GWMW-8	10/24/1998	133	Unknown	7.19	210
MW-8	GWMW-8	10/24/1998	133	Unknown	5.1	190
MW-8	GWMW-8	10/24/1998	133	Unknown	11.15	260
MW-8	GWMW-8	10/24/1998	133	Unknown	7.58	130
MW-8	GWMW-8	10/24/1998	133	Unknown Furan	5.86	110
MW-8	GWMW-8	5/3/1999	133	2-Cyclopenten-1-one, 3-methyl	5.29	360 NJ
MW-8	GWMW-8	5/3/1999	133	2-Ethylcyclopentanone	4.97	260 NJ
MW-8	GWMW-8	5/3/1999	133	Cyclopentanone, 2,4-dimethyl	4.35	110 NJ
MW-8	GWMW-8	5/3/1999	133	Unknown	4.4	230 J
MW-8	GWMW-8	5/3/1999	133	Unknown	11.1	120 J
MW-8	GWMW-8	5/3/1999	133	Unknown	5.66	200 J
MW-8	GWMW-8	5/3/1999	133	Unknown	5.73	130 J
MW-8	GWMW-8	5/3/1999	133	Unknown	5.8	130 J
MW-8	GWMW-8	5/3/1999	133	Unknown	6.05	110 J
MW-8	GWMW-8	5/3/1999	133	Unknown	6.56	290 J

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Table K-4. Tentatively Identified Compounds Above 100 µg/L for Semi-Volatile Organic Compounds in Groundwater Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (µg/L)
MW-8	GWMW-8	5/3/1999	133	Unknown	6.78	170 J
MW-8	GWMW-8	5/3/1999	133	Unknown	7.07	250 J
MW-8	GWMW-8	5/3/1999	133	Unknown	7.57	110 J
MW-8	GWMW-8	5/3/1999	133	Unknown	11	180 J
MW-8	GWMW-8	5/3/1999	133	Unknown cyclopentanone isomer	4.23	130 J
MW-8	GWMW-8	5/3/1999	133	Unknown Dimethylphenol isomer	7.96	150 J
MW-8	GWMW-8	5/3/1999	133	Unknown Dimethylphenol isomer	7.2	140 NJ

µg/L Micrograms per liter.
J Estimated results.
N TICs that were not reported as unknowns were qualified as tentatively identified.

Table K-5. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMGP-2	GMGP-2/18	12/12/2000	18	Carbon Dioxide	0.974	R
GMGP-2	GMGP-2/18	12/12/2000	18	Unknown	1.378	2.6 J
GMGP-3	GMGP-3/15	12/12/2000	18	Carbon Dioxide	0.974	R
GMGP-3	GMGP-3/15	12/12/2000	18	Unknown	1.404	3.3 J
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	2,3-Dihydro-1-methylindene	23.899	20
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	2-Methylbenzofuran	23.324	100
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Benzofuran	21.483	31
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Dimethylanisole isomer	23.007	16
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Naphthalene	24.819	47
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Trimethylbenzene isomer	20.793	15
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	21.656	40
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown Aromatic Hydrocarbon	22.432	21
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown Aromatic Hydrocarbon	22.03	20
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown Aromatic Hydrocarbon	23.669	19
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Undecane	19.775	1.3
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	19.225	0.88
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	20.249	0.7
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	21.158	0.95
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	20.065	0.83
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	18.347	0.75
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	16.881	0.92
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	21.796	1.9
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	16.678	0.96
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Aromatic Hydrocarbon	18.656	1.4
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown Cycloalkane	19.634	0.11
GMSB-34	GMSB-34/6	10/20/1999	6	Carbon Dioxide	0.988	R
GMSB-34	GMSB-34/6	10/20/1999	6	Column Bleed	11.999	R
GMSB-34	GMSB-34/6	10/20/1999	6	Septum Bleed	15.273	0.13 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	13.205	10 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	15.476	2.3 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	6.051	12 J

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Table K-5. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	13.806	2 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	15.542	3.1 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	11.277	2.4 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	6.213	4.5 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.396	6.3 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	10.802	3.1 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown Alkene	13.578	8.6 J
GMSB-36	GMSB-36/12	10/20/1999	12	Naphthalene	17.242	0.75 NJ
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	5.901	1.3 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	15.524	0.4 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	15.464	0.47 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	15.26	0.51 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	6.033	1.2 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	4.195	3 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	2.158	6.3 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	13.548	0.9 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	13.181	1 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	17.062	60 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	13.734	110 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	14.087	94 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	15.833	87 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	16.095	170 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	17.847	R
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	17.974	74 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	18.187	110 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	19.958	92 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	16.022	130 J
GMSB-38	GMSB-38/7	10/21/1999	7	Carbon Dioxide	1.282	R
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	17.865	R
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	17.47	1.2 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	17.379	1.3 J

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Table K-5. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	15.243	1.2 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	18.766	4.1 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	19.964	1.4 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	20.116	1.6 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	20.743	1.9 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	18.182	2.4 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Carbon Dioxide	1.278	R
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	17.003	1 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	17.466	1.2 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	18.305	1 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	18.761	2.1 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	19.339	1.1 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	20.745	2.2 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	19.966	1.6 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	20.118	1.9 J
GMSB-38	GMSB-38/7-RE	10/21/1999	7	Unknown	16.9	1.3 J
GMSB-40	GMSB-40/12	10/21/1999	12	Naphthalene	17.841	59 NJ
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	16.095	130 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	17.062	61 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	17.969	42 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	19.24	43 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	18.182	46 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	15.833	76 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	13.741	110 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	14.093	110 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	16.016	110 J
GMSB-41	GMSB-41/8	10/21/1999	8	Naphthalene	17.844	5.8 NJ
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	18.762	5.2 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	20.338	3 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	20.551	3.6 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	19.961	8.6 J

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Table K-5. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	17.972	5.6 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	16.092	4.4 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	16.019	3.6 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	20.746	4.1 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	18.185	6.8 J
GMSB-43	GMSB-43/3	10/21/1999	3	Carbon Dioxide	0.981	R
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.253	0.19 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.986	0.17 J
GMSB-44	GMSB-44/15	10/21/1999	15	Carbon Dioxide	0.982	R
GMSB-44	GMSB-44/15	10/21/1999	15	Column Bleed	11.975	0.83 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	15.243	0.16 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	0.952	0.2 J
GMSB-45	GMSB-45/10	10/21/1999	10	Carbon Dioxide	0.981	R
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	0.944	0.16 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	1.461	0.14 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	2.14	0.16 J
GMSB-47	GMSB-47/15	10/22/1999	15	Carbon Dioxide	0.987	R
GMSB-47	GMSB-47/15	10/22/1999	15	Naphthalene	17.219	0.93 NJ
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	19.273	1.6 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	17.579	0.96 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	17.297	1.4 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Alkane	19.934	1.1 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Alkane	18.156	4.1 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Alkane	14.341	1.3 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Alkane	16.582	1.2 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Alkane	16.312	3.3 J
GMSB-48	GMSB-48/22	10/22/1999	22	Carbon Dioxide	0.982	R
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Carbon Dioxide	0.809	R
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown	1.077	R
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown	1.454	2.2 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown	6.631	0.78 J

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Table K-5. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Carbon Dioxide	0.849	R
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	6.501	R
GMSB-55	GMSB-55/0-1	8/18/2000	0-1	Carbon Dioxide	0.86	R
GMSB-55	GMSB-55/0-1	8/18/2000	0-1	Unknown	1.122	R
GMSB-55	GMSB-55/0-1	8/18/2000	0-1	Unknown	6.499	R
GMSB-58	GMSB-58/0-0.5	8/18/2000	0-0.5	Carbon Dioxide	0.807	R
GMSB-58	GMSB-58/0-0.5	8/18/2000	0-0.5	Unknown	1.074	R
GMSB-58	GMSB-58/0-0.5	8/18/2000	0-0.5	Unknown	1.202	R
GMSB-58	GMSB-58/0-0.5	8/18/2000	0-0.5	Unknown	1.458	0.56 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Carbon Dioxide	0.85	R
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	1.118	R
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	1.489	0.55 J
GMSB-61	GMSB-61/2-4	8/22/2000	4-Feb	Carbon Dioxide	0.806	R
GMSB-61	GMSB-61/2-4	8/22/2000	4-Feb	Unknown	1.08	1.7 JB
GMSB-61	GMSB-61/2-4	8/22/2000	4-Feb	Unknown	1.117	1.7 JB
GMSB-61	GMSB-61/2-4	8/22/2000	4-Feb	Unknown	1.202	R
GMSB-61	GMSB-61/2-4	8/22/2000	4-Feb	Unknown	2.059	0.44 J
GMSB-63	GMSB-63 0-0.5	8/23/2000	0-0.5	Carbon Dioxide	0.849	R
GMSB-63	GMSB-63 0-0.5	8/23/2000	0-0.5	Unknown	6.5	0.54 JB
GMSB-63	GMSB-63 0-0.5	8/23/2000	0-0.5	Unknown	5.034	0.78 J
GMSB-63	GMSB-63 0-0.5	8/23/2000	0-0.5	Unknown	1.117	2.5 JB
GMSB-64	GMSB-64 0-1.0	8/23/2000	0-1	Carbon Dioxide	0.813	28 JNB
GMSB-64	GMSB-64 0-1.0	8/23/2000	0-1	Unknown	5.254	2.8 J
GMSB-64	GMSB-64 0-1.0	8/23/2000	0-1	Unknown	1.08	3.7 JB
GMSB-64	GMSB-64 0-1.0	8/23/2000	0-1	Unknown	1.214	0.55 JB
GMSB-64	GMSB-64 0-1.0	8/23/2000	0-1	Unknown	1.464	1.2 J
GMSB-64	GMSB-64 0-1.0	8/23/2000	0-1	Unknown	4.767	1.5 J
TP-5A	TP-5A/2	11/2/1999	2	Column Bleed	14.118	22 J
TP-5A	TP-5A/2	11/2/1999	2	Column Bleed	16.103	220 J
TP-5A	TP-5A/2	11/2/1999	2	Column Bleed	15.846	15 J
TP-5A	TP-5A/2	11/2/1999	2	Septum Bleed	17.064	83 J

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Table K-5. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
TP-5A	TP-5A/2	11/2/1999	2	Septum Bleed	14.096	170 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	13.765	19 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	16.024	150 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	16.771	8.1 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	15.379	62 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	18.573	65 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	15.835	120 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	18.188	6.7 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	17.069	7.4 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	16.12	18 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	16.041	19 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	14.374	6.7 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	19.242	68 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	13.743	160 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown	17.854	6.9 J
TP-5A	TP-5A/2	11/2/1999	2	Unknown Alkene	17.843	64 J
TP-10	TP-10/12	11/3/1999	12	Septum Bleed	18.997	59 J
TP-10	TP-10/12	11/3/1999	12	Septum Bleed	17.063	39 J
TP-10	TP-10/12	11/3/1999	12	Unknown	15.377	44 J
TP-10	TP-10/12	11/3/1999	12	Unknown	13.752	21 J
TP-10	TP-10/12	11/3/1999	12	Unknown	14.105	21 J
TP-10	TP-10/12	11/3/1999	12	Unknown	15.383	8.2 J
TP-10	TP-10/12	11/3/1999	12	Unknown	15.839	16 J
TP-10	TP-10/12	11/3/1999	12	Unknown	16.034	16 J
TP-10	TP-10/12	11/3/1999	12	Unknown	16.107	20 J
TP-10	TP-10/12	11/3/1999	12	Unknown	16.764	7.8 J
TP-10	TP-10/12	11/3/1999	12	Unknown	18.996	7.5 J
TP-10	TP-10/12	11/3/1999	12	Unknown	19.246	7 J
TP-10	TP-10/12	11/3/1999	12	Unknown	18.182	38 J
TP-10	TP-10/12	11/3/1999	12	Unknown	14.094	62 J
TP-10	TP-10/12	11/3/1999	12	Unknown	15.834	56 J

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Table K-5. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
TP-10	TP-10/12	11/3/1999	12	Unknown	16.022	62 J
TP-10	TP-10/12	11/3/1999	12	Unknown	16.095	95 J
TP-10	TP-10/12	11/3/1999	12	Unknown	12.53	7.6 J
TP-10	TP-10/12	11/3/1999	12	Unknown	19.24	43 J
TP-10	TP-10/12	11/3/1999	12	Unknown	13.741	67 J

mg/kg	Milligrams per kilogram.
B	Constituent was also detected in laboratory blank.
J	Estimated results.
N	TICs that were not reported as unknowns were qualified as tentatively identified.
R	Rejected results.

Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMGP-2	GMGP-2/18	12/12/2000	18	Unknown	14.66	0.26 J
GMGP-2	GMGP-2/18	12/12/2000	18	Unknown Aldol Condensate	2.256	R
GMGP-3	GMGP-3/15	12/12/2000	15	Sulfur	10.962	0.62 NJ
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	14.22	1.3 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	16.384	0.77 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	16.176	0.99 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	15.492	1.1 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	15.438	1.1 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	15.353	0.91 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	14.605	0.92 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	13.782	1.9 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	12.709	2 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	6.912	13 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	15.022	0.77 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	6.202	9.2 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	7.5	12 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	8.05	3.9 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	8.104	5.8 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	9.007	1.8 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	9.632	0.96 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown	9.808	0.64 J
GMGP-3	GMGP-3/15	12/12/2000	15	Unknown Organic Acid	10.492	0.64 J
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Benzofuran	6.5432	11 N
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	12.199	5.9
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	8.1815	11
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	22.916	10
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	22.603	8
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	21.288	7.9
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	14.056	5.8
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	13.482	9
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	12.668	23

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	12.522	22
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	12.449	15
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	7.9207	66
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	9.1833	20
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	5.124	9.5
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	11.917	7.9
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	8.2442	12
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	9.6112	30
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	9.726	30
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	9.9764	9.4
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	10.519	31
GMSB-1	GMSB-1 COMPOSITE	5/16/1997	0-31.5	Unknown	11.52	16
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	12.553	8.5
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	25.984	17
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	26.067	17
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	24.283	17
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	22.968	9
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	19.441	9.8
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	16.644	11
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	14.38	9.5
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	13.451	12
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	28.801	26
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	26.349	28
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	5.9588	15
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	7.8581	14
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	8.8285	6.8
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown	9.0372	5
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Acid	17.875	15
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Hydrocarbon	10.769	5.8
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Hydrocarbon	8.0459	41
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Hydrocarbon	9.4547	13

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Hydrocarbon	6.5536	20
GMSB-2	GMSB-2/0525	5/17/1997	5-25	Unknown Hydrocarbon	9.6216	5.6
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Sulfur, mol. (S8)	18.605	1.5 N
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	19.795	1.6
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	28.3	1.1
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	28.363	2.4
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	27.935	1.5
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	27.622	1.1
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	27.518	3.9
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	25.816	1.2
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	17.655	1.1
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	24.606	3.7
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	23.27	1.6
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	23.197	0.59
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	18.501	1.4
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	28.092	3.3
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	19.91	4.2
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	2.8783	0.83
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown	18.177	1.1
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown Hydrocarbon	7.6998	0.51
GMSB-4	GMSB-4/5-25	6/3/1997	5-25	Unknown Hydrocarbon	15.015	1.1
GMSB-34	GMSB-34/6	10/20/1999	6	Sulfur	11.962	27 NJ
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	8.049	5.5 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	11.506	6.5 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	10.854	5.1 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	12.127	6.8 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	17.913	15 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	13.804	7.5 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	12.728	6.8 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown	10.689	4.1 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	13.328	12 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	12.169	12 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	11.548	10 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	10.896	9.4 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	10.223	9.2 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	9.519	5.7 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	8.795	6.6 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Alkane	13.825	9.5 J
GMSB-34	GMSB-34/6	10/20/1999	6	Unknown Organic Acid	17.561	12 J
GMSB-35	GMSB-35/22	10/20/1999	22	Benzofuran	4.106	340 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.028	84 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	7.708	1100 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	4.303	310 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.059	320 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.504	91 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.607	94 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.866	180 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.949	95 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	5.452	74 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	7.284	220 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	13.691	680 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	7.791	610 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	8.34	220 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	8.495	590 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	10.689	130 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	11.113	220 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	11.207	200 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	11.227	250 J
GMSB-35	GMSB-35/22	10/20/1999	22	Unknown	6.425	150 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	13.449	280 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	8.212	150 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	8.626	140 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	9.806	150 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	8.543	370 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	14.732	330 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	10.282	200 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	8.284	140 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	9.04	160 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	12.931	210 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	7.922	180 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	7.839	260 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	14.277	270 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	14.36	280 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown	14.484	300 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown Alkene	13.604	330 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown Phenol Isomer	7.787	350 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown Phenol Isomer	7.208	760 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown Phenol Isomer	5.635	2,000 J
GMSB-36	GMSB-36/12	10/20/1999	12	Unknown Phenol Isomer	10.478	310 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	7.028	250 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	9.813	280 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	6.376	210 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	11.003	700 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	7.07	260 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	7.929	210 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	8.229	250 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	8.57	1,100 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	8.602	310 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	8.633	200 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	9.761	260 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	10.744	490 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown	5.093	740 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown Organic Acid	12.183	450 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown Phenol Isomer	10.123	570 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown Phenol Isomer	5.641	2,000 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown Phenol Isomer	7.215	890 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown Phenol Isomer	7.805	1,100 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown Phenol Isomer	7.856	320 J
GMSB-37	GMSB-37/10	10/21/1999	10	Unknown Phenol Isomer	10.496	1,200 J
GMSB-38	GMSB-38/7	10/21/1999	7	Sulfur, mol. (S8)	11.954	20 NJ
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	16.518	19 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	17.822	63 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	17.926	39 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	13.827	12 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	13.651	11 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	18.143	16 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	17.574	19 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	10.225	8 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	9.749	7.8 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	9.573	6.9 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown	8.052	7.5 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown Alkane	8.797	6.2 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown Alkane	11.54	7.6 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown Alkane	10.898	7.2 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown Alkane	9.521	7.4 J
GMSB-38	GMSB-38/7	10/21/1999	7	Unknown PAH	8.621	6.7 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	5.779	940 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	14.473	630 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	13.448	480 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	12.889	250 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	12.092	640 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	11.978	350 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	8.2	370 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	9.049	360 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	8.614	700 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	8.532	1,100 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	6.72	380 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	6.368	270 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	7.859	170 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	7.766	180 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	7.238	240 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	7.196	440 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	9.36	410 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown	6.575	510 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown Methyl-Benzofuran Isomer	5.81	310 J
GMSB-40	GMSB-40/12	10/21/1999	12	Unknown Phenol Isomer	5.623	590 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	9.07	5.5 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	9.494	5.7 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	8.583	7.8 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	8.697	6.4 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	11.057	26 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown	9.608	7.4 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkane	13.065	27 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkane	10.405	44 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkane	11.109	41 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkane	12.434	30 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkane	11.792	36 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkane	8.107	6.8 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkane	9.66	10 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkene	8.832	7.1 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Alkyl Benzene	10.281	32 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown Cycloalkane	10.343	32 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown PAH	9.536	8.8 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown PAH	8.407	5.4 J
GMSB-41	GMSB-41/8	10/21/1999	8	Unknown PAH	8.283	5.2 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-43	GMSB-43/3	10/21/1999	3	Sulfur, mol. (S8)	12.004	37 NJ
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	17.614	5.1 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.724	1.1 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	17.572	6.9 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	17.417	4.4 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	12.407	1.9 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.869	1.3 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	17.779	3.6 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.817	1.4 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.424	1.2 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.3	2 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.228	1.3 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.072	1.7 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	10.824	1.5 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown	11.776	1.3 J
GMSB-43	GMSB-43/3	10/21/1999	3	Unknown Alkane	11.548	2.2 J
GMSB-44	GMSB-44/15	10/21/1999	15	Sulfur, mol. (S8)	12.971	14 NJ
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.824	4.6 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.285	5.2 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.399	6.6 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.451	4.6 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.617	5 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.203	9.8 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	16.604	5.7 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.565	4.4 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.068	4.5 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.016	4.6 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.151	5.6 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown	14.327	6.9 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown Aldol Condensate	3.304	4.7 JA
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown Alkane	15.403	5.9 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown Alkane	14.109	9.8 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown Alkane	13.613	5.1 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown Alkane	12.66	2.1 J
GMSB-44	GMSB-44/15	10/21/1999	15	Unknown Alkane	12.412	2.1 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	19.087	40 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	15.795	6.8 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	8.561	2.9 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	8.167	2.9 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	7.184	2.3 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	16.603	12 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	18.579	9.1 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	3.986	5.9 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	18.952	44 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown	10.817	2.9 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown Aldol Condensate	3.303	7.8 JA
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown Organic Acid	12.142	2.2 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown Organic Acid	13.28	5.8 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown PAH	9.389	2.3 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown Phenol Isomer	6.47	2.7 J
GMSB-45	GMSB-45/10	10/21/1999	10	Unknown Phenol Isomer	6.056	2.1 J
GMSB-47	GMSB-47/15	10/22/1999	15	Sulfur	11.971	89 NJ
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	18.564	13 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	14.724	8.3 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	10.274	6.8 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	8.204	13 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	15.097	14 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	16.536	15 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	17.612	20 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	12.996	15 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown	6.693	12 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Alkane	14.279	7.9 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Organic Acid	12.416	10 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Organic Acid	11.298	5.4 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Organic Acid	17.571	30 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown PAH	7.531	8.1 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown PAH	7.417	6 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Phenol Isomer	5.523	6.7 J
GMSB-47	GMSB-47/15	10/22/1999	15	Unknown Phenol Isomer	6.216	7.5 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	17.564	20 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	13.652	3.2 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	19.561	8 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	19.385	7.4 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	18.94	6 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	18.143	6.6 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	17.916	27 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	17.605	6.3 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	4.906	7.6 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	12.409	7.4 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	17.823	23 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	9.915	2.7 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown	12.999	3.5 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown Aldol Condensate	2.618	R
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown Alkane	15.101	6.6 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown Alkyl Benzene	5.723	4.1 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown PAH	6.696	4.8 J
GMSB-48	GMSB-48/22	10/22/1999	22	Unknown Phenol Isomer	6.396	4.8 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown	18.419	0.55 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown Aldol Condensate	3.13	R
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown Alkane	15.155	0.73 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown Alkane	16.427	0.77 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown Alkane	14.514	0.45 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5'	Unknown Organic Acid	17.618	1 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown Organic Acid	16.213	1.7 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown Organic Acid	15.583	0.81 J
GMSB-53	GMSB-53/0-0.5	8/17/2000	0-0.5	Unknown Organic Acid	15.759	0.65 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	17.822	0.21 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	18.998	0.51 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	18.426	1.4 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	19.281	2.1 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	18.154	0.2 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	18.063	0.19 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	18.004	0.2 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	17.075	0.19 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown	17.32	0.2 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown Aldol Condensate	3.132	R
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown Alkane	15.755	0.52 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown Alkane	15.157	0.82 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5	Unknown Organic Acid	17.614	2.4 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5'	Unknown Organic Acid	16.434	0.78 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5'	Unknown Organic Acid	16.215	1.1 J
GMSB-54	GMSB-54/0-0.5	8/18/2000	0-0.5'	Unknown Organic Acid	15.584	0.58 J
GMSB-55	GMSB-55/0-1	8/18/2000	0-1	Unknown Aldol Condensate	3.128	R
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	16.426	0.65 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	17.617	1.2 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	18.424	0.66 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	19.075	0.75 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	17.676	0.56 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	15.686	0.34 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	18.14	0.72 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown	16.178	0.37 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Aldol Condensate	3.1	R
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	14.513	0.63 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	15.154	2.1 J

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Table K-6. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds Waste Samples, Ford-Kingsford Products Facility, Kingford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	15.763	2.2 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	13.803	0.84 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	13.365	0.64 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	12.804	1.2 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	12.179	0.52 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	11.532	0.42 J
GMSB-59	GMSB-59/0-0.5	8/19/2000	0-0.5	Unknown Alkane	14.15	0.83 J
TP-10	TP-10/12	11/3/1999	12	Unknown	7.275	120 J
TP-10	TP-10/12	11/3/1999	12	Unknown	7.616	110 J
TP-10	TP-10/12	11/3/1999	12	Unknown	8.62	85 J
TP-10	TP-10/12	11/3/1999	12	Unknown	8.682	150 J
TP-10	TP-10/12	11/3/1999	12	Unknown	9.407	120 J
TP-10	TP-10/12	11/3/1999	12	Unknown	9.841	110 J
TP-10	TP-10/12	11/3/1999	12	Unknown	6.178	140 J
TP-10	TP-10/12	11/3/1999	12	Unknown	9.583	140 J
TP-10	TP-10/12	11/3/1999	12	Unknown	6.519	140 J
TP-10	TP-10/12	11/3/1999	12	Unknown	6.084	86 J
TP-10	TP-10/12	11/3/1999	12	Unknown	5.857	140 J
TP-10	TP-10/12	11/3/1999	12	Unknown Alcohol	6.343	440 J
TP-10	TP-10/12	11/3/1999	12	Unknown Alkane	9.459	150 J
TP-10	TP-10/12	11/3/1999	12	Unknown Alkane	12.098	120 J
TP-10	TP-10/12	11/3/1999	12	Unknown Alkane	9.676	130 J
TP-10	TP-10/12	11/3/1999	12	Unknown DimethoxyPhenol	6.902	92 J
TP-10	TP-10/12	11/3/1999	12	Unknown DimethylNapthalene Isomer	7.471	63 J
TP-10	TP-10/12	11/3/1999	12	Unknown Ketone	4.998	220 J

mg/kg Milligrams per kilogram.
J Estimated results.
N TICs that were not reported as unknowns were qualified as tentatively identified.

Table K-7. Tentatively Identified Compounds Above .1 mg/L for TCLP and SPLP Analyses of Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-34	GMSB-34/6 (SPLP)	10/20/1999	6	Carbon Dioxide	1.29	R
GMSB-34	GMSB-34/6 (TCLP)	10/20/1999	6	Carbon Dioxide	1.289	R
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Carbon Dioxide	1.288	R
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	11.302	0.3 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	11.801	0.28 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	13.735	1.2 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	14.088	1.5 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	15.767	0.25 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	15.828	0.36 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	16.016	0.45 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	16.089	0.71 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	6.526	0.53 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	11.304	0.25 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	13.549	0.2 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	13.737	0.85 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	14.09	1 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	15.611	0.21 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	15.769	0.26 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	15.83	0.25 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	16.019	0.39 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	16.092	0.49 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	6.528	0.39 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Carbon Dioxide	1.289	R
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Septum Bleed	16.753	0.26 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Septum Bleed	18.56	0.12 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	13.736	R
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	14.089	0.28 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	14.95	0.12 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	15.37	0.11 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	15.646	0.14 J

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Table K-7. Tentatively Identified Compounds Above .1 mg/L for TCLP and SPLP Analyses of Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	16.017	R
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	16.096	0.34 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	17.842	0.25 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	4.67	0.42 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	6.533	R
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Carbon Dioxide	1.291	R
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	13.731	0.16 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	14.084	0.21 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	15.83	0.18 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	16.092	0.19 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	16.755	0.18 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	17.838	R
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	19	0.11 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	4.661	0.55 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	4.983	0.5 J
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Column Bleed	4.983	R
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Unknown	14.084	0.12 J
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Unknown	3.207	R
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Unknown	4.661	R
GMSB-38	GMSB-38/7 (SPLP)	10/21/1999	7	Carbon Dioxide	1.291	R
GMSB-38	GMSB-38/7 (TCLP)	10/21/1999	7	Carbon Dioxide	1.29	R
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Septum Bleed	15.828	0.17 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Septum Bleed	7.786	0.24 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	13.736	0.49 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	14.088	0.58 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	15.609	0.13 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	15.767	0.12 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	16.017	0.28 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	16.09	0.31 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	17.057	0.18 J

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Table K-7. Tentatively Identified Compounds Above .1 mg/L for TCLP and SPLP Analyses of Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	17.836	R
GMSB-41	GMSB-41/8 (TCLP)	10/21/1999	8	Carbon Dioxide	1.294	R
GMSB-43	GMSB-43/3 (TCLP)	10/21/1999	3	Carbon Dioxide	1.294	R
GMSB-44	GMSB-44/15 (TCLP)	10/21/1999	15	Carbon Dioxide	1.29	R
GMSB-45	GMSB-45/10 (SPLP)	10/21/1999	10	Carbon Dioxide	1.29	R
GMSB-45	GMSB-45/10 (TCLP)	10/21/1999	10	Carbon Dioxide	1.294	R
GMSB-47	GMSB-47/15 (TCLP)	10/22/1999	15	Carbon Dioxide	1.294	R
GMSB-48	GMSB-48/22 (SPLP)	10/22/1999	22	Carbon Dioxide	1.291	R
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Column Bleed	16.016	0.15 J
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Unknown	13.741	0.27 J
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Unknown	14.093	0.28 J
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Unknown	16.095	0.18 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Carbon Dioxide	1.29	R
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Column Bleed	16.092	0.24 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	13.731	0.32 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	14.084	0.32 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	15.374	0.11 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	15.83	0.12 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	16.012	0.16 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Column Bleed	16.089	0.24 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	14.088	0.28 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	16.016	0.18 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	18.182	0.12 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	18.997	0.11 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown Alkene	17.841	0.11 J

J	Estimated results.
mg/kg	Milligrams per kilogram.
R	TICs that were not reported as unknowns were qualified as tentatively identified.
SPLP	Synthetic Precipitation Leaching Procedure.
TCLP	Toxic Characteristic Leaching Procedure.

Table K-8. Tentatively Identified Compounds Above .1 mg/L for TCLP and SPLP Analyses of Semi-Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-34	GMSB-34/6 (SPLP)	10/20/1999	6	Carbon Dioxide	1.29	R
GMSB-34	GMSB-34/6 (TCLP)	10/20/1999	6	Carbon Dioxide	1.289	R
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Carbon Dioxide	1.288	R
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	14.088	1.5 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	16.089	0.71 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	16.016	0.45 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	15.767	0.25 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	13.735	1.2 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	11.801	0.28 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	11.302	0.3 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	6.526	0.53 J
GMSB-35	GMSB-35/22 (SPLP)	10/20/1999	22	Unknown	15.828	0.36 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	16.019	0.39 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	15.611	0.21 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	16.092	0.49 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	15.83	0.25 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	15.769	0.26 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	13.737	0.85 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	13.549	0.2 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	11.304	0.25 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	6.528	0.39 J
GMSB-35	GMSB-35/22 (TCLP)	10/20/1999	22	Unknown	14.09	1 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Carbon Dioxide	1.289	R
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Septum Bleed	18.56	0.12 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Septum Bleed	16.753	0.26 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	15.646	0.14 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	14.95	0.12 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	17.842	0.25 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	4.67	0.42 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	16.017	R
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	14.089	0.28 J

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Table K-8. Tentatively Identified Compounds Above .1 mg/L for TCLP and SPLP Analyses of Semi-Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	13.736	R
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	6.533	R
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	15.37	0.11 J
GMSB-36	GMSB-36/12 (TCLP)	10/20/1999	12	Unknown	16.096	0.34 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Carbon Dioxide	1.291	R
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	17.838	R
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	4.661	0.55 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	4.983	0.5 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	13.731	0.16 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	14.084	0.21 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	15.83	0.18 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	16.092	0.19 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	19	0.11 J
GMSB-37	GMSB-37/10 (SPLP)	10/21/1999	10	Unknown	16.755	0.18 J
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Column Bleed	4.983	R
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Unknown	3.207	R
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Unknown	4.661	R
GMSB-37	GMSB-37/10 (TCLP)	10/21/1999	10	Unknown	14.084	0.12 J
GMSB-38	GMSB-38/7 (SPLP)	10/21/1999	7	Carbon Dioxide	1.291	R
GMSB-38	GMSB-38/7 (TCLP)	10/21/1999	7	Carbon Dioxide	1.29	R
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Septum Bleed	7.786	0.24 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Septum Bleed	15.828	0.17 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	17.836	R
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	17.057	0.18 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	16.09	0.31 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	16.017	0.28 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	15.767	0.12 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	15.609	0.13 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	13.736	0.49 J
GMSB-40	GMSB-40/12 (TCLP)	10/21/1999	12	Unknown	14.088	0.58 J
GMSB-41	GMSB-41/8 (TCLP)	10/21/1999	8	Carbon Dioxide	1.294	R

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Table K-8. Tentatively Identified Compounds Above .1 mg/L for TCLP and SPLP Analyses of Semi-Volatile Organic Compounds in Waste Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-43	GMSB-43/3 (TCLP)	10/21/1999	3	Carbon Dioxide	1.294	R
GMSB-44	GMSB-44/15 (TCLP)	10/21/1999	15	Carbon Dioxide	1.29	R
GMSB-45	GMSB-45/10 (SPLP)	10/21/1999	10	Carbon Dioxide	1.29	R
GMSB-45	GMSB-45/10 (TCLP)	10/21/1999	10	Carbon Dioxide	1.294	R
GMSB-47	GMSB-47/15 (TCLP)	10/22/1999	15	Carbon Dioxide	1.294	R
GMSB-48	GMSB-48/22 (SPLP)	10/22/1999	22	Carbon Dioxide	1.291	R
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Column Bleed	16.016	0.15 J
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Unknown	13.741	0.27 J
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Unknown	16.095	0.18 J
TP-5A	TP-5A/2 (SPLP)	11/2/1999	2	Unknown	14.093	0.28 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Carbon Dioxide	1.29	R
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Column Bleed	16.092	0.24 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	13.731	0.32 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	14.084	0.32 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	15.374	0.11 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	15.83	0.12 J
TP-5A	TP-5A/2 (TCLP)	11/2/1999	2	Unknown	16.012	0.16 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Column Bleed	16.089	0.24 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	18.182	0.12 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	16.016	0.18 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	14.088	0.28 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown	18.997	0.11 J
TP-10	TP-10/12 (TCLP)	11/3/1999	12	Unknown Alkene	17.841	0.11 J

TCLP	Toxic Characteristic Leaching Procedure.
SPLP	Synthetic Precipitation Leaching Procedure.
mg/kg	Milligrams per kilogram.
J	Estimated results.
R	TICs that were not reported as unknowns were qualified as tentatively identified.

Table K-9. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-1	GMSB-1/90	5/16/1997	90	Naphthalene	22.565	0.13
GMSB-1	GMSB-1/115	5/17/1997	115	2-Methylcyclopentanone	13.791	0.13

mg/kg Milligrams per kilogram.

Table K-10. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GM-12	GM-12/50	9/30/1997	50	2,6-Diethylpyridine	7.0598	0.14 N
GM-12	GM-12/50	9/30/1997	50	Aldol Condensation Product	3.93	37 AB
GM-12	GM-12/50	9/30/1997	50	Sulfur, mol. (S8)	18.535	13 N
GM-12	GM-12/50	9/30/1997	50	Unknown	13.622	1.2
GM-12	GM-12/50	9/30/1997	50	Unknown	3.5857	0.26 B
GM-12	GM-12/50	9/30/1997	50	Unknown	2.0417	0.14 B
GM-12	GM-12/50	9/30/1997	50	Unknown	16.198	0.35
GM-12	GM-12/50	9/30/1997	50	Unknown	2.8867	0.26 B
GM-12	GM-12/50	9/30/1997	50	Unknown	6.3608	0.16
GM-12	GM-12/50	9/30/1997	50	Unknown	12.359	0.16
GM-12	GM-12/50	9/30/1997	50	Unknown	5.0568	0.16
GM-12	GM-12/50	9/30/1997	50	Unknown	15.489	0.12
GM-12	GM-12/50	9/30/1997	50	Unknown	16.303	0.48
GM-12	GM-12/50	9/30/1997	50	Unknown	15.364	0.43
GM-12	GM-12/50	9/30/1997	50	Unknown	7.4354	0.2
GM-12	GM-12/50	9/30/1997	50	Unknown	8.2492	0.16
GM-12	GM-12/50	9/30/1997	50	Unknown Trimethylpyridine isomer	6.1939	0.18
GM-12	GM-12/50	9/30/1997	50	Unknown Trimethylpyridine isomer	5.9853	0.53
GM-41	GBGM-41/49	8/6/1998	49	Molecular Sulfur	16.54	7.0 JN
GM-41	GBGM-41/49	8/6/1998	49	Unknown Alkyl Cyclohexane	4.59	0.14 J
GM-42	GM-42/1.5	8/6/1998	1.5	Diphenyl sulfone	15.91	0.56 JN
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	2-Methylpyridine	4.5436	0.19 N
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	3-Ethylphenol	9.5439	0.67 N
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	3-Propylphenol	10.692	0.49 N
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Aldol Condensation Product	4.9229	1.4
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Hexadecanoic acid	17.701	0.33 N
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Sulfur, mol. (S8)	18.999	3.1 N
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	12.161	0.28
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	11.867	0.16
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	6.2585	0.21
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	13.465	0.27
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	8.796	0.31
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	10.083	0.44

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Table K-10. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	12.77	1.7
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	13.577	0.16
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	12.898	1.3
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	13.646	0.16
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	13.742	0.13
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	14.18	0.93
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	16.83	0.32
GMSB-1	GMSB-1/35-45	5/16/1997	35-45	Unknown	11.082	0.25
GMSB-1	GMSB-1/65	5/16/1997	65	3-Ethylphenol	9.535	0.62 N
GMSB-1	GMSB-1/65	5/16/1997	65	Aldol Condensation Product	4.9408	2.3 A
GMSB-1	GMSB-1/65	5/16/1997	65	Sulfur, mol. (S8)	18.947	0.43 N
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	10.683	0.36
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	4.7966	0.35
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	4.4547	0.25
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	3.3435	0.31
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	4.2196	0.34
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	4.1074	0.2
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	3.4343	0.24
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	10.09	1.3
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	8.7177	0.19
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	10.432	0.25
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	13.472	1.5
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	13.039	0.31
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	3.4824	0.43
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	16.827	0.36
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	13.568	0.19
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	13.322	0.21
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	12.889	1.2
GMSB-1	GMSB-1/65	5/16/1997	65	Unknown	12.767	1.6
GMSB-1	GMSB-1/90	5/16/1997	90	2-Ethyl-6-methylpyridine	6.6318	0.72 N
GMSB-1	GMSB-1/90	5/16/1997	90	2-Ethylpyridine	5.7824	0.3 N
GMSB-1	GMSB-1/90	5/16/1997	90	2-Methylpyridine	4.5056	1.3 N
GMSB-1	GMSB-1/90	5/16/1997	90	3,4-Dimethylpyridine	6.1777	0.68 N

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Table K-10. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-1	GMSB-1/90	5/16/1997	90	3-Methylpyridine	5.1467	0.18 N
GMSB-1	GMSB-1/90	5/16/1997	90	Aldol Condensation Product	4.8528	1.2
GMSB-1	GMSB-1/90	5/16/1997	90	Sulfur, mol. (S8)	18.902	9.4 N
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	4.7139	0.27
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	14.26	0.25
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	16.728	0.33
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	13.384	2.7
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	14.084	0.35
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	9.9973	0.94
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	4.0248	0.23
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	12.668	1.5
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	12.791	1.1
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	5.4672	0.52
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	5.5046	0.73
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	7.1446	0.19
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	9.4471	0.27
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	10.611	0.23
GMSB-1	GMSB-1/90	5/16/1997	90	Unknown	3.3998	0.44
GMSB-1	GMSB-1/115	5/17/1997	115	2,5-Hexanedione	6.114	0.69 N
GMSB-1	GMSB-1/115	5/17/1997	115	3-Methyl-2-Cyclopenten-1-one	6.723	2.1
GMSB-1	GMSB-1/115	5/17/1997	115	Aldol Condensation Product	4.8693	3.8 A
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	8.6515	0.6
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	4.1267	1.1
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	5.5851	0.62
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	5.8736	2.5
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	7.1397	0.65
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	6.3971	0.79
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	7.7434	1.5
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	8.0639	0.72
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	10.008	1.9
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	12.668	1
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	12.791	0.94
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	15.361	0.63

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Table K-10. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	4.0573	0.76
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown	7.1771	0.76
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown Acid	4.9975	4.6
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown Acid	3.9611	0.66
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown Acid	3.7421	7.9
GMSB-1	GMSB-1/115	5/17/1997	115	Unknown Acid	5.2486	0.59
GMSB-1	GMSB-1/140	5/17/1997	140	Aldol Condensation Product	4.8726	1.7 A
GMSB-1	GMSB-1/140	5/17/1997	140	Sulfur, mol. (S8)	18.468	6.2 N
GMSB-1	GMSB-1/140	5/17/1997	140	Unknown	6.2082	0.12
GMSB-1	GMSB-1/140	5/17/1997	140	Unknown	8.7724	0.15
GMSB-1	GMSB-1/170	5/17/1997	170	Aldol Condensation Product	4.8687	4.1 A
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	12.695	0.17
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	6.215	0.15
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	3.6561	0.12
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	13.41	0.21
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	3.4317	0.18
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	12.823	0.16
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	4.0461	0.19
GMSB-1	GMSB-1/170	5/17/1997	170	Unknown	9.9919	0.17
GMSB-1	GMSB-1/237	5/19/1997	237	Aldol Condensation Product	4.8779	1.7 AB
GMSB-1	GMSB-1/237	5/19/1997	237	Sulfur, mol. (S8)	18.511	6 N
GMSB-1	GMSB-1/237	5/19/1997	237	Unknown	9.9957	0.17
GMSB-1	GMSB-1/237	5/19/1997	237	Unknown	4.0499	0.16
GMSB-1	GMSB-1/312	5/20/1997	312	Unknown	6.2077	0.12
GMSB-1	GMSB-1/312	5/20/1997	312	Unknown	3.4244	0.15
GMSB-2	GMSB-2/35	5/17/1997	35	3-Ethylphenol	9.4371	0.6 N
GMSB-2	GMSB-2/35	5/17/1997	35	3-Propylphenol	10.58	0.18 N
GMSB-2	GMSB-2/35	5/17/1997	35	Aldol Condensation Product	4.8429	2.1 A
GMSB-2	GMSB-2/35	5/17/1997	35	Sulfur, mol. (S8)	18.299	5.4 N
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown	4.0042	0.21
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown	3.6035	0.13
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown	3.3738	0.17
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown	3.1762	0.27

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Table K-10. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown	4.111	0.18
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown	2.9358	0.13
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown	6.4028	0.13
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown Acid	5.5588	0.25
GMSB-2	GMSB-2/35	5/17/1997	35	Unknown Acid	4.501	1.6
GMSB-2	GMSB-2/110	5/19/1997	110	Sulfur, mol. (S8)	18.41	5.3 N
GMSB-2	GMSB-2/110	5/19/1997	110	Unknown	3.4253	0.16
GMSB-2	GMSB-2/110	5/19/1997	110	Unknown	6.8282	0.38
GMSB-2	GMSB-2/110	5/19/1997	110	Unknown	4.0503	0.13
GMSB-2	GMSB-2/110	5/19/1997	110	Unknown	14.02	0.39
GMSB-2	GMSB-2/110	5/19/1997	110	Unknown	4.5258	0.15
GMSB-2	GMSB-2/110	5/19/1997	110	Unknown	6.2085	0.14
GMSB-2	GMSB-2/245'	5/20/1997	245	Unknown	4.0627	0.14
GMSB-2	GMSB-2/245'	5/20/1997	245	Unknown	3.427	0.78
GMSB-2	GMSB-2/245'	5/20/1997	245	Unknown	3.817	0.18
GMSB-2	GMSB-2/245'	5/20/1997	245	Unknown Acid	4.5115	0.67
GMSB-2	GMSB-2/300'	5/20/1997	300	3-Ethylphenol	9.4888	0.48 N
GMSB-2	GMSB-2/300'	5/20/1997	300	3-Propylphenol	10.626	0.15 N
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	7.2024	0.17
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	13.415	0.12
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	4.0719	0.13
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	10.007	0.11
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	5.8989	0.23
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	7.3359	0.12
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	5.8188	0.6
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	6.7376	0.27
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	4.12	0.2
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	4.0238	0.29
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	6.1393	0.15
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	5.5837	0.21
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown	5.1083	0.23
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown Acid	3.7834	3.7
GMSB-2	GMSB-2/300'	5/20/1997	300	Unknown Acid	4.7343	3.1

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Table K-10. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	22.208	0.93
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	24.147	0.15
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	25.237	0.22
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	20.749	0.38
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	23.126	0.23
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	23.949	0.29
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	23.383	0.17
GMSB-2	GMSB-2/323	5/30/1997	323	Unknown	27.197	0.12
GMSB-2	GMSB-2/355	5/30/1997	355	3-Ethylphenol	9.6322	0.65 N
GMSB-2	GMSB-2/355	5/30/1997	355	3-Propylphenol	10.77	0.19 N
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	5.273	0.3
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	8.254	0.16
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	6.881	0.72
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	3.2591	0.61
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	4.4717	0.23
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	7.3191	0.2
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	15.54	0.2
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	10.155	0.17
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	9.472	0.18
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	7.3565	0.36
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	7.49	0.21
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	6.288	0.3
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	6.1865	0.16
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	6.0477	0.64
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	5.7431	0.59
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	5.0967	8.6
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	4.3275	0.81
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	4.2153	0.24
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	3.9749	6.6
GMSB-2	GMSB-2/355	5/30/1997	355	Unknown	8.7882	0.15
GMSB-3	GMSB-3/33	6/13/1997	33	Unknown	2.7049	0.13
GMSB-3	GMSB-3/33	6/13/1997	33	Unknown	3.2682	0.15
GMSB-3	GMSB-3/33	6/13/1997	33	Unknown	3.4246	0.11

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Table K-10. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Subsurface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Sample Depth (feet)	Compound	Retention Time (minutes)	Value (mg/kg)
GMSB-3	GMSB-3/33	6/13/1997	33	Unknown	6.3973	0.15
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	2.4339	0.22
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	3.3938	0.19
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	2.6947	0.31
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	3.2686	0.37
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	5.4077	0.21
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	6.4094	0.22
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	2.9034	0.2
GMSB-3	GMSB-3/62	6/13/1997	62	Unknown	6.7328	0.14
GMSB-4	GMSB-4/109	6/4/1997	109	Aldol Condensation Product	4.857	2.2 AB
GMSB-4	GMSB-4/109	6/4/1997	109	Unknown	3.3986	0.16
GMSB-4	GMSB-4/109	6/4/1997	109	Unknown	4.0236	0.11
GMSB-4	GMSB-4/185	6/9/1997	185	Unknown	2.7049	0.16
GMSB-4	GMSB-4/185	6/9/1997	185	Unknown	3.2682	0.18
GMSB-4	GMSB-4/185	6/9/1997	185	Unknown	5.6359	0.13
GMSB-4	GMSB-4/185	6/9/1997	185	Unknown	6.3973	0.13
GMSB-4	GMSB-4/185	6/9/1997	185	Unknown	2.9031	0.11

<	Less than detection limit.
mg/kg	Milligrams per kilogram.
A	Tentatively identified compound is an adol condensate.
B	Constituent was also detected in laboratory blank.
J	Estimated results.
N	TICs that were not reported as unknowns were qualified as tentatively identified.

Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-1	8/10/1999	Carbon Dioxide	3.148	<5
Surface Soil	SSLP-1	8/10/1999	Unknown	4.544	2.5 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	4.145	<2.3
Surface Soil	SSLP-2	8/10/1999	Carbon Dioxide	3.145	<5.8
Surface Soil	SSLP-2	8/10/1999	Unknown	5.649	0.25 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	19.257	<1.1
Surface Soil	SSLP-2	8/10/1999	Unknown	4.077	<0.32
Surface Soil	SSLP-3	8/10/1999	Carbon Dioxide	3.146	<5.7
Surface Soil	SSLP-3	8/10/1999	Unknown	4.144	<2.7
Surface Soil	SSLP-3	8/10/1999	Unknown	20.989	1.8 NJ
Surface Soil	SSLP-4	8/10/1999	Carbon Dioxide	3.146	<5.6
Surface Soil	SSLP-4	8/10/1999	Unknown	4.144	<1.9
Surface Soil	SSLP-4	8/10/1999	Unknown	21.259	1.1 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	4.543	2 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	6.088	0.32 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	4.114	<0.34
Surface Soil	SSLP-5	8/10/1999	Carbon Dioxide	3.145	<5.7
Surface Soil	SSLP-5	8/10/1999	Unknown	4.148	<3.4
Surface Soil	SSLP-5	8/10/1999	Unknown	21.202	0.85 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	4.112	<0.28
Surface Soil	SSLP-5	8/10/1999	Unknown	17.909	0.32 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	6.086	0.73 NJ
Surface Soil	SSLP-6	8/10/1999	Carbon Dioxide	3.146	<5.6
Surface Soil	SSLP-6	8/10/1999	Unknown	20.129	0.69 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	4.537	1.3 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	4.144	<3.6
Surface Soil	SSLP-7	8/10/1999	Carbon Dioxide	3.145	<5.5
Surface Soil	SSLP-7	8/10/1999	Unknown	21.232	0.6 NJ

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-7	8/10/1999	Unknown	4.148	<3.1
Surface Soil	SSLP-8	8/10/1999	Carbon Dioxide	3.145	<5.2
Surface Soil	SSLP-8	8/10/1999	Unknown	3.986	<0.3
Surface Soil	SSLP-8	8/10/1999	Unknown	4.136	<4
Surface Soil	SSLP-8	8/10/1999	Unknown	5.907	0.52 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	19.232	<0.27
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Carbon Dioxide	3.146	<5.6
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	6.209	0.26 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	4.084	<0.36
Surface Soil	SSLP-9	8/10/1999	Carbon Dioxide	3.14	<5.6
Surface Soil	SSLP-9	8/10/1999	Unknown	21.204	0.28 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	5.902	0.52 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	4.537	4.6 NJ
Surface Soil	SSLP-10	8/10/1999	Carbon Dioxide	3.14	<4.4
Surface Soil	SSLP-10	8/10/1999	Unknown	4.114	<0.42
Surface Soil	SSLP-10	8/10/1999	Unknown	20.988	0.63 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	16.505	0.65 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	5.908	0.5 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	4.144	<3.5
Surface Soil	SSLP-10	8/10/1999	Unknown	3.242	0.51 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	18.843	0.26 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	4.544	2.1 NJ
Surface Soil	SSLP-11	8/10/1999	Carbon Dioxide	3.14	<5.2
Surface Soil	SSLP-11	8/10/1999	Unknown	4.144	<3
Surface Soil	SSLP-11	8/10/1999	Unknown	5.926	0.53 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	4.55	2.1 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	4.096	<0.32
Surface Soil	SSLP-12	8/10/1999	Carbon Dioxide	3.144	<5.3

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-12	8/10/1999	Unknown	4.142	<2.8
Surface Soil	SSLP-12	8/10/1999	Unknown	5.469	0.23 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	4.106	<0.33
Surface Soil	SSLP-12	8/10/1999	Unknown	20.922	0.66 NJ
Surface Soil	SSLP-13	8/10/1999	Carbon Dioxide	3.145	<5.9
Surface Soil	SSLP-13	8/10/1999	Unknown	4.143	<4.2
Surface Soil	SSLP-13	8/10/1999	Unknown	18.758	0.31 NJ
Surface Soil	SSNE-1	8/5/1999	Carbon Dioxide	3.15	<6.3
Surface Soil	SSNE-1	8/5/1999	Unknown	6.074	0.8 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	4.154	<2.2
Surface Soil	SSNE-1	8/5/1999	Unknown	4.069	0.41 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	6.621	0.26 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	18.269	0.26 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	19.159	<0.26
Surface Soil	SSNE-1	8/5/1999	Unknown Alkane	4.553	<2.1
Surface Soil	SSNE-1	8/5/1999	Unknown Alkane	4.926	<2
Surface Soil	SSNE-2	8/5/1999	Carbon Dioxide	3.158	<7.2
Surface Soil	SSNE-2	8/5/1999	Unknown	4.162	<2
Surface Soil	SSNE-2	8/5/1999	Unknown	6.363	0.65 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	19.22	<0.92
Surface Soil	SSNE-2	8/5/1999	Unknown	21.42	<0.86
Surface Soil	SSNE-2	8/5/1999	Unknown	4.566	<1.5
Surface Soil	SSNE-2	8/5/1999	Unknown	5.936	0.85 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown Alkane	4.939	<1.2
Surface Soil	SSNE-3	8/5/1999	Carbon Dioxide	3.152	<6.9
Surface Soil	SSNE-3	8/5/1999	Unknown	4.572	<1.7
Surface Soil	SSNE-3	8/5/1999	Unknown	18.306	0.22 NJ
Surface Soil	SSNE-3	8/5/1999	Unknown	21.408	1.2 NJ

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-3	8/5/1999	Unknown	4.161	<1.8
Surface Soil	SSNE-3	8/5/1999	Unknown Alkane	4.945	<2.4
Surface Soil	SSNE-4	8/5/1999	Carbon Dioxide	3.146	<6.4
Surface Soil	SSNE-4	8/5/1999	Unknown	4.597	<1.9
Surface Soil	SSNE-4	8/5/1999	Unknown	19.161	<0.75
Surface Soil	SSNE-4	8/5/1999	Unknown	6.076	0.94 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown	6.809	0.38 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown	4.156	<2.9
Surface Soil	SSNE-5	8/5/1999	Carbon Dioxide	3.152	<6.2
Surface Soil	SSNE-5	8/5/1999	Unknown	21.414	<0.46
Surface Soil	SSNE-5	8/5/1999	Unknown	4.155	<0.91
Surface Soil	SSNE-5	8/5/1999	Unknown	4.56	<1.2
Surface Soil	SSNE-5	8/5/1999	Unknown	4.939	<1.9
Surface Soil	SSNE-5	8/5/1999	Unknown	13.66	0.29 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	5.931	0.24 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	4.071	0.35 NJ
Surface Soil	SSNE-6	8/5/1999	Carbon Dioxide	3.157	<6.5
Surface Soil	SSNE-6	8/5/1999	Unknown	4.572	<1.4
Surface Soil	SSNE-6	8/5/1999	Unknown	13.659	0.59 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	4.161	<1.9
Surface Soil	SSNE-6	8/5/1999	Unknown	5.93	0.59 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	3.902	0.32 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	21.395	<1
Surface Soil	SSNE-6	8/5/1999	Unknown Alkane	4.944	<1.3
Surface Soil	SSNE-7	8/5/1999	Carbon Dioxide	3.153	<6.4
Surface Soil	SSNE-7	8/5/1999	Unknown	4.162	<3.4
Surface Soil	SSNE-7	8/5/1999	Unknown	6.094	0.56 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	4.126	0.26 NJ

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-7	8/5/1999	Unknown	13.685	0.39 NJ
Surface Soil	SSNE-8	8/5/1999	Carbon Dioxide	3.158	<6.5
Surface Soil	SSNE-8	8/5/1999	Unknown	4.053	0.34 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	21.336	0.61 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	13.654	0.26 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	4.162	<1.7
Surface Soil	SSNE-8	8/5/1999	Unknown	4.572	<1.4
Surface Soil	SSNE-8	8/5/1999	Unknown	6.099	0.48 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	21.408	<0.22
Surface Soil	SSNE-8	8/5/1999	Unknown Alkane	4.951	<1.8
Surface Soil	SSNE-98	8/5/1999	Carbon Dioxide	3.152	<6.3
Surface Soil	SSNE-98	8/5/1999	Unknown	19.143	<1.2
Surface Soil	SSNE-98	8/5/1999	Unknown	4.156	<1.3
Surface Soil	SSNE-98	8/5/1999	Unknown	4.561	<1.3
Surface Soil	SSNE-98	8/5/1999	Unknown	21.378	<0.53
Surface Soil	SSNE-98	8/5/1999	Unknown Alkane	4.94	<1.7
Surface Soil	SSNE-9	8/5/1999	Carbon Dioxide	3.152	<6.5
Surface Soil	SSNE-9	8/5/1999	Unknown	4.927	<2.9
Surface Soil	SSNE-9	8/5/1999	Unknown	18.276	0.23 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	19.088	<0.32
Surface Soil	SSNE-9	8/5/1999	Unknown	21.402	<0.61
Surface Soil	SSNE-9	8/5/1999	Unknown	3.939	0.34 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	4.155	<3.6
Surface Soil	SSNE-10	8/5/1999	Carbon Dioxide	3.151	<6.3
Surface Soil	SSNE-10	8/5/1999	Unknown	19.171	<0.32
Surface Soil	SSNE-10	8/5/1999	Unknown	4.56	<0.82
Surface Soil	SSNE-10	8/5/1999	Unknown	4.155	<1.2
Surface Soil	SSNE-10	8/5/1999	Unknown	6.224	0.29 NJ

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-10	8/5/1999	Unknown Alkane	4.938	<1.3
Surface Soil	SSNE-11	8/5/1999	Carbon Dioxide	3.151	<6.6
Surface Soil	SSNE-11	8/5/1999	Unknown	5.937	0.61 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	4.554	<1.3 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	19.136	<0.48
Surface Soil	SSNE-11	8/5/1999	Unknown	4.155	<1
Surface Soil	SSNE-11	8/5/1999	Unknown Alkane	4.933	<1.5
Surface Soil	SSNE-12	8/5/1999	Carbon Dioxide	3.151	<6.6
Surface Soil	SSNE-12	8/5/1999	Unknown	4.848	0.22 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	21.401	<0.38
Surface Soil	SSNE-12	8/5/1999	Unknown	16.598	0.35 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	13.659	0.29 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	4.155	<0.68
Surface Soil	SSNE-12	8/5/1999	Unknown	4.553	<1.2
Surface Soil	SSNE-12	8/5/1999	Unknown Alkane	4.932	<1.9
Surface Soil	SSRIV-1	8/6/1999	Carbon Dioxide	3.139	<7.2
Surface Soil	SSRIV-1	8/6/1999	Unknown	5.896	0.36 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	6.058	0.3 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	4.137	<1.8
Surface Soil	SSRIV-1	8/6/1999	Unknown	4.904	<3
Surface Soil	SSRIV-1	8/6/1999	Unknown	4.046	0.49 NJ
Surface Soil	SSRIV-2	8/6/1999	Carbon Dioxide	3.134	<6.5
Surface Soil	SSRIV-2	8/6/1999	Unknown	5.897	1.2 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	4.533	<2.6
Surface Soil	SSRIV-2	8/6/1999	Unknown	18.375	0.31 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	5.206	1.1 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	4.131	<2.4
Surface Soil	SSRIV-3	8/6/1999	Carbon Dioxide	3.146	<6.6

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-3	8/6/1999	Unknown	5.908	0.55 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	4.143	<1.8
Surface Soil	SSRIV-4	8/5/1999	Carbon Dioxide	3.135	<7.5
Surface Soil	SSRIV-4	8/5/1999	Unknown	4.138	<3
Surface Soil	SSRIV-4	8/5/1999	Unknown	18.386	1.4 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	5.896	1.5 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	4.538	<1.7
Surface Soil	SSRIV-4	8/5/1999	Unknown	4.91	<2.2
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Carbon Dioxide	3.14	<7.1
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	4.544	<3.7
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	4.144	<4
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	5.902	1.4 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	21.283	0.93 NJ
Surface Soil	SSRIV-5	8/6/1999	Carbon Dioxide	3.138	<6.6
Surface Soil	SSRIV-5	8/6/1999	Unknown	4.525	<3
Surface Soil	SSRIV-5	8/6/1999	Unknown	4.136	<2.7
Surface Soil	SSRIV-5	8/6/1999	Unknown	5.902	0.32 NJ
Surface Soil	SSRIV-6	8/5/1999	Carbon Dioxide	3.139	<6.1
Surface Soil	SSRIV-6	8/5/1999	Unknown	4.736	0.51 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	5.902	0.56 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	4.112	<0.46
Surface Soil	SSRIV-6	8/5/1999	Unknown	4.142	<2.5
Surface Soil	SSRIV-6	8/5/1999	Unknown	21.758	2.2 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	6.082	0.88 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	4.544	<0.65
Surface Soil	SSRIV-6	8/5/1999	Unknown Alkane	4.922	<1.5
Surface Soil	SSRIV-7	8/5/1999	Carbon Dioxide	3.134	<6.4
Surface Soil	SSRIV-7	8/5/1999	Unknown	5.902	0.61 NJ

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-7	8/5/1999	Unknown	4.138	<1.6
Surface Soil	SSRIV-8	8/6/1999	Carbon Dioxide	3.14	<6.6
Surface Soil	SSRIV-8	8/6/1999	Unknown	5.903	0.75 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	5.524	0.53 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	4.544	<0.98
Surface Soil	SSRIV-8	8/6/1999	Unknown	6.065	0.56 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	4.138	<1.4
Surface Soil	SSRIV-8	8/6/1999	Unknown	4.917	<1.4
Surface Soil	SSRIV-9	8/6/1999	Carbon Dioxide	3.14	<6
Surface Soil	SSRIV-9	8/6/1999	Unknown	5.535	0.74 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	4.137	<1.5
Surface Soil	SSRIV-9	8/6/1999	Unknown	6.064	0.41 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	4.76	<1.3
Surface Soil	SSRIV-9	8/6/1999	Unknown	5.902	0.6 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	4.065	0.52 NJ
Surface Soil	SSRIV-10	8/5/1999	Carbon Dioxide	3.139	<6.6
Surface Soil	SSRIV-10	8/5/1999	Unknown	13.967	0.3 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	4.549	<0.83
Surface Soil	SSRIV-10	8/5/1999	Unknown	4.137	<1.4
Surface Soil	SSRIV-10	8/5/1999	Unknown	4.927	<1.7
Surface Soil	SSRIV-10	8/5/1999	Unknown	4.741	0.63 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	19.605	1.1 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	5.901	0.5 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	18.103	0.31 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown Alkane	6.081	0.49 NJ
Surface Soil	SSRIV-11	8/5/1999	Carbon Dioxide	3.139	<7.6
Surface Soil	SSRIV-11	8/5/1999	Unknown	4.537	<2.2
Surface Soil	SSRIV-11	8/5/1999	Unknown	18.956	1.3 NJ

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Table K-11. Tentatively Identified Compounds Above .1 mg/kg for Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford, Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-11	8/5/1999	Unknown	6.064	0.59 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	5.901	0.55 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	4.137	<3
Surface Soil	SSRIV-11	8/5/1999	Unknown	4.107	<0.42
Surface Soil	SSRIV-11	8/5/1999	Unknown Alkane	4.916	<2.1
Surface Soil	SSRIV-12	8/6/1999	Carbon Dioxide	3.138	<5.4
Surface Soil	SSRIV-12	8/6/1999	Unknown	19.626	0.35 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown	5.903	0.51 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown	15.917	0.44 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown	18.381	0.31 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown	4.142	<3
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Carbon Dioxide	3.139	5.6 JNB
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	4.143	4.2 JB
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	5.901	0.26 J
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	6.058	0.25 J
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	21.306	1.6 J
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	6.256	0.46 J
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	4.543	2.4 J
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	20.88	0.28 J
Surface Soil	SSRIV-13	8/6/1999	Carbon Dioxide	3.139	<7.2
Surface Soil	SSRIV-13	8/6/1999	Unknown	4.137	<5.4
Surface Soil	SSRIV-13	8/6/1999	Unknown	21.3	1.1 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	5.901	1.3 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	4.082	0.55 NJ

mg/kg	Milligrams per kilogram.
<	Less than detection limit.
B	Constituent was also detected in laboratory blank.
J	Estimated results.
N	TICs that were not reported as unknowns were qualified as tentatively identified.

Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-1	8/10/1999	Benzenesulfonamide, 4-methyl-	9.495	0.23 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	18.138	0.21 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	16.595	0.32 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	16.533	0.68 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	16.885	0.26 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	16.088	0.3 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	17.889	0.2 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	16.306	0.29 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	17.123	0.43 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	17.372	0.2 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	16.689	0.34 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	17.993	0.35 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	18.293	0.44 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	17.599	<0.93
Surface Soil	SSLP-1	8/10/1999	Unknown	16.844	0.31 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	17.755	0.37 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown	18.262	0.3 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown Alkane	16.482	0.33 NJ
Surface Soil	SSLP-1	8/10/1999	Unknown Amide	15.415	<0.66
Surface Soil	SSLP-1	8/10/1999	Unknown Organic Acid	17.537	0.55 NJ
Surface Soil	SSLP-2	8/10/1999	Benzenesulfonamide, 4-methyl-	9.424	0.25 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	17.301	0.23 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	17.073	<0.29
Surface Soil	SSLP-2	8/10/1999	Unknown	16.494	0.24 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	17.736	0.18 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	17.601	<0.38
Surface Soil	SSLP-2	8/10/1999	Unknown	17.684	<0.31
Surface Soil	SSLP-2	8/10/1999	Unknown	16.773	0.15 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-2	8/10/1999	Unknown	18.947	0.39 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	16.639	0.28 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	17.912	0.33 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	18.098	0.34 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	18.429	0.37 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown	18.346	0.15 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown Alkane	16.432	0.28 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown Amide	15.365	<0.53
Surface Soil	SSLP-2	8/10/1999	Unknown Organic Acid	18.17	0.47 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown Organic Acid	17.467	0.59 NJ
Surface Soil	SSLP-2	8/10/1999	Unknown PAH	17.798	0.22 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	18.189	0.29 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	18.261	0.84 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	16.533	0.82 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	17.609	<0.58
Surface Soil	SSLP-3	8/10/1999	Unknown	16.305	0.31 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	16.088	0.34 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	17.35	0.34 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	17.133	0.49 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	16.698	0.45 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	17.64	<0.29
Surface Soil	SSLP-3	8/10/1999	Unknown	17.682	<0.38
Surface Soil	SSLP-3	8/10/1999	Unknown	18.002	0.73 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	19.048	0.33 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	17.878	0.52 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	16.885	0.33 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown	17.764	0.61 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown Alkane	15.808	0.46 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-3	8/10/1999	Unknown Alkane	16.481	0.46 NJ
Surface Soil	SSLP-3	8/10/1999	Unknown Amide	15.415	<0.53
Surface Soil	SSLP-3	8/10/1999	Unknown Organic Acid	17.537	0.83 NJ
Surface Soil	SSLP-4	8/10/1999	Benzenesulfonamide, 4-methyl-	9.434	0.63 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	18.18	0.27 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	16.679	0.17 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	17.921	0.28 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	17.797	0.19 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	17.745	0.16 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	17.683	<0.26
Surface Soil	SSLP-4	8/10/1999	Unknown	16.783	0.19 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	17.601	<0.18
Surface Soil	SSLP-4	8/10/1999	Unknown	17.538	<0.15
Surface Soil	SSLP-4	8/10/1999	Unknown	16.638	0.15 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	17.114	<0.15
Surface Soil	SSLP-4	8/10/1999	Unknown	17.062	<0.27
Surface Soil	SSLP-4	8/10/1999	Unknown	16.98	<0.27
Surface Soil	SSLP-4	8/10/1999	Unknown	16.845	0.21 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown	17.311	0.17 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown Alkane	16.431	0.16 NJ
Surface Soil	SSLP-4	8/10/1999	Unknown Amide	15.365	<0.6
Surface Soil	SSLP-4	8/10/1999	Unknown Organic Acid	17.466	0.54 NJ
Surface Soil	SSLP-5	8/10/1999	Benzenesulfonamide, 4-methyl-	9.494	0.61 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	18.261	0.77 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	17.992	0.62 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	17.36	0.65 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	17.133	0.8 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	16.895	0.5 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-5	8/10/1999	Unknown	16.543	0.76 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	16.305	0.49 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	16.087	0.52 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	13.665	0.61 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	18.064	0.58 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown	16.512	0.53 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown Alkane	16.481	0.69 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown Amide	15.414	<0.48
Surface Soil	SSLP-5	8/10/1999	Unknown Organic Acid	16.708	0.69 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown Organic Acid	17.536	1.7 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown PAH	17.764	0.66 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown PAH	13.614	0.67 NJ
Surface Soil	SSLP-5	8/10/1999	Unknown PAH	13.479	1.1 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	18.264	1 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	16.887	0.52 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	17.364	0.8 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	17.602	<0.8
Surface Soil	SSLP-6	8/10/1999	Unknown	17.767	0.61 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	17.881	0.51 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	16.691	0.5 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	18.668	0.52 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	16.536	0.76 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	17.995	0.74 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	17.136	0.8 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown	16.173	0.53 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown Alkane	16.484	0.78 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown Alkane	17.25	0.63 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown Amide	15.418	<0.51

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-6	8/10/1999	Unknown Organic Acid	16.505	0.5 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown Organic Acid	16.298	0.58 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown Organic Acid	15.604	0.54 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown Organic Acid	17.54	1.2 NJ
Surface Soil	SSLP-6	8/10/1999	Unknown PAH	16.825	0.52 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown	19.079	0.19 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown	16.491	0.38 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown	17.071	<0.26
Surface Soil	SSLP-7	8/10/1999	Unknown	16.977	<0.37
Surface Soil	SSLP-7	8/10/1999	Unknown	17.205	0.26 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown	17.536	<0.46
Surface Soil	SSLP-7	8/10/1999	Unknown	18.219	0.31 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown	16.833	0.25 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown	20.134	0.19 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown	17.65	<0.16
Surface Soil	SSLP-7	8/10/1999	Unknown Organic Acid	17.464	0.33 NJ
Surface Soil	SSLP-7	8/10/1999	Unknown Organic Acid	15.767	0.23 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.118	0.43 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.294	0.39 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	15.435	0.22 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	15.653	0.25 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.015	0.39 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.046	0.29 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.729	0.23 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.18	0.45 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.253	0.38 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.501	0.68 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown	16.833	0.44 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-8	8/10/1999	Unknown	16.605	0.33 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown Alkane	16.439	0.92 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown Amide	15.373	<0.41
Surface Soil	SSLP-8	8/10/1999	Unknown Organic Acid	17.474	0.46 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown Organic Acid	15.559	0.62 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown Organic Acid	17.071	0.56 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown Organic Acid	16.657	0.45 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown PAH	16.77	0.34 NJ
Surface Soil	SSLP-8	8/10/1999	Unknown PAH	17.205	0.57 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.708	0.66 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.895	0.39 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	17.246	0.34 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.832	0.46 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.77	0.38 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	17.36	0.54 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	17.536	<0.75
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	15.632	0.38 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	17.133	0.48 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.543	0.7 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.646	0.42 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.418	0.36 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.356	0.36 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.294	0.52 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.232	0.42 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	16.087	0.56 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown	18.002	0.35 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown Alkane	16.481	1 NJ
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown Amide	15.414	<0.59

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-99 (SSLP-8)	8/10/1999	Unknown Organic Acid	15.601	0.45 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.421	0.78 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.297	0.92 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.048	0.73 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.825	0.74 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.173	0.85 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.545	1.5 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.897	0.82 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	17.353	0.94 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	16.09	0.81 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	17.963	0.94 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	18.263	1.2 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown	17.591	<0.91
Surface Soil	SSLP-9	8/10/1999	Unknown Alkane	16.514	0.7 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown Amide	15.417	<0.9
Surface Soil	SSLP-9	8/10/1999	Unknown Organic Acid	15.603	0.7 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown Organic Acid	16.711	1.2 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown Organic Acid	17.135	0.93 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown Organic Acid	17.549	1.1 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown PAH	14.931	0.9 NJ
Surface Soil	SSLP-9	8/10/1999	Unknown PAH	13.482	1.2 NJ
Surface Soil	SSLP-10	8/10/1999	Benzenesulfonamide, 4-methyl-	9.422	0.2 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	17.06	<0.22
Surface Soil	SSLP-10	8/10/1999	Unknown	16.636	0.23 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	17.661	<0.18
Surface Soil	SSLP-10	8/10/1999	Unknown	16.967	<0.23
Surface Soil	SSLP-10	8/10/1999	Unknown	17.909	0.16 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown	18.168	0.23 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-10	8/10/1999	Unknown	17.526	<0.18
Surface Soil	SSLP-10	8/10/1999	Unknown Aldol Condensate	2.663	0.37 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown Alkane	16.429	0.2 NJ
Surface Soil	SSLP-10	8/10/1999	Unknown Amide	15.373	<0.74
Surface Soil	SSLP-10	8/10/1999	Unknown Organic Acid	17.464	0.46 NJ
Surface Soil	SSLP-11	8/10/1999	Benzenesulfonamide, 4-methyl-	9.493	0.67 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	16.532	0.95 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	16.366	0.42 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	16.087	0.45 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	19.171	0.38 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	17.608	<1.1
Surface Soil	SSLP-11	8/10/1999	Unknown	18.291	1.4 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	16.697	0.39 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	17.028	<1.2
Surface Soil	SSLP-11	8/10/1999	Unknown	17.132	0.52 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	18.436	1.6 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	18.001	0.82 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	17.929	0.63 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	17.38	1.1 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	17.743	0.74 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown	16.894	0.59 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown Alkane	16.48	0.57 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown Amide	15.414	<0.82
Surface Soil	SSLP-11	8/10/1999	Unknown Organic Acid	17.536	0.7 NJ
Surface Soil	SSLP-11	8/10/1999	Unknown Organic Acid	15.6	0.49 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	18.55	0.23 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	17.598	<0.28
Surface Soil	SSLP-12	8/10/1999	Unknown	17.639	<0.22

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-12	8/10/1999	Unknown	17.681	<0.17
Surface Soil	SSLP-12	8/10/1999	Unknown	17.764	0.56 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	17.877	0.33 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	18.002	0.59 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	18.178	0.22 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	19.057	0.19 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	18.519	0.23 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	16.532	0.19 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	18.581	0.3 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	18.271	0.67 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown	17.929	0.21 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown Amide	15.414	<0.7
Surface Soil	SSLP-12	8/10/1999	Unknown Organic Acid	15.6	0.29 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown Organic Acid	17.132	0.36 NJ
Surface Soil	SSLP-12	8/10/1999	Unknown Organic Acid	17.536	0.74 NJ
Surface Soil	SSLP-13	8/10/1999	Benzenesulfonamide, 4-methyl-	9.435	0.99 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	17.798	0.56 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	16.122	0.45 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	16.37	0.51 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	16.494	0.97 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	16.763	0.44 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	17.922	0.89 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	17.291	0.63 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	18.947	0.44 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	17.364	0.51 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	18.171	0.9 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown	17.684	<0.8
Surface Soil	SSLP-13	8/10/1999	Unknown Aldol Condensate	2.656	0.77 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSLP-13	8/10/1999	Unknown Alkane	15.563	0.78 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown Alkane	16.432	1 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown Amide	15.366	<0.79
Surface Soil	SSLP-13	8/10/1999	Unknown Organic Acid	17.074	0.71 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown Organic Acid	16.649	0.73 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown Organic Acid	16.256	0.47 NJ
Surface Soil	SSLP-13	8/10/1999	Unknown Organic Acid	17.467	1.4 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	17.701	0.19 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	18.425	0.14 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	9.535	0.2 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown	17.111	0.21 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown Aldol Condensate	2.776	0.68 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown Alkane	3.47	0.16 NJ
Surface Soil	SSNE-1	8/5/1999	Unknown Amide	15.476	<0.17
Surface Soil	SSNE-2	8/5/1999	Unknown	17.754	0.22 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	17.112	0.41 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	16.315	0.16 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	16.605	0.4 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	17.226	0.36 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	19.379	<0.21
Surface Soil	SSNE-2	8/5/1999	Unknown	17.64	0.4 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	16.16	0.16 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	17.878	0.26 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	18.126	0.32 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	18.426	0.28 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	18.582	0.26 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	18.727	0.37 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown	17.371	0.3 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-2	8/5/1999	Unknown	17.702	0.3 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown Aldol Condensate	2.767	3.6 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown Alkane	9.536	0.56 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown Alkane	16.553	0.19 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown Alkane	15.87	0.17 NJ
Surface Soil	SSNE-2	8/5/1999	Unknown Amide	15.477	<0.28
Surface Soil	SSNE-3	8/5/1999	Unknown	16.601	0.22 NJ
Surface Soil	SSNE-3	8/5/1999	Unknown	17.108	0.19 NJ
Surface Soil	SSNE-3	8/5/1999	Unknown Aldol Condensate	2.784	1.1 NJ
Surface Soil	SSNE-3	8/5/1999	Unknown Alkane	3.477	0.15 NJ
Surface Soil	SSNE-3	8/5/1999	Unknown Amide	9.553	0.28 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown	18.422	0.15 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown	17.108	0.36 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown	16.611	0.17 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown	17.646	0.15 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown	17.708	0.22 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown Aldol Condensate	2.783	1.2 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown Alkane	3.477	0.16 NJ
Surface Soil	SSNE-4	8/5/1999	Unknown Amide	15.483	<0.18
Surface Soil	SSNE-5	8/5/1999	Unknown	17.409	0.75 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	18.123	0.32 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	17.109	0.44 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	18.392	0.6 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	15.877	0.25 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	16.602	0.37 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	18.051	0.19 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	17.368	0.3 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	9.533	0.43 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-5	8/5/1999	Unknown	17.533	0.18 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	17.647	0.69 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	17.709	0.49 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown	17.223	0.39 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown Aldol Condensate	2.774	3.5 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown Alkane	16.55	0.24 NJ
Surface Soil	SSNE-5	8/5/1999	Unknown Amide	15.474	<0.2
Surface Soil	SSNE-6	8/5/1999	Unknown	18.125	0.14 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	7.765	0.14 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	18.425	0.22 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	17.701	0.36 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	17.639	0.22 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	17.111	0.34 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	16.604	0.2 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	9.535	0.58 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown	17.225	0.16 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown Aldol Condensate	2.786	1 NJ
Surface Soil	SSNE-6	8/5/1999	Unknown Amide	15.476	<0.16
Surface Soil	SSNE-7	8/5/1999	Unknown	18.724	0.29 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	17.637	0.41 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	9.533	0.75 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	19.376	<0.15
Surface Soil	SSNE-7	8/5/1999	Unknown	16.602	0.21 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	17.109	0.24 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	17.223	0.36 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	17.751	0.22 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	17.368	0.34 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	17.875	0.24 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-7	8/5/1999	Unknown	18	0.17 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	18.579	0.23 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	17.699	0.19 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown	18.134	0.27 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown Aldol Condensate	2.775	2.9 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown Alkane	16.551	0.24 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown Alkane	15.878	0.21 NJ
Surface Soil	SSNE-7	8/5/1999	Unknown Amide	15.474	<0.17
Surface Soil	SSNE-8	8/5/1999	Unknown	18.426	0.39 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	17.37	0.17 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	19.326	<0.28
Surface Soil	SSNE-8	8/5/1999	Unknown	16.604	0.35 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	17.111	0.44 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown	17.701	0.41 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown Aldol Condensate	2.777	3 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown Alkane	3.47	0.14 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown Amide	9.556	0.39 NJ
Surface Soil	SSNE-8	8/5/1999	Unknown Amide	15.476	<0.18
Surface Soil	SSNE-98	8/5/1999	Unknown	17.111	0.26 NJ
Surface Soil	SSNE-98	8/5/1999	Unknown	16.604	0.24 NJ
Surface Soil	SSNE-98	8/5/1999	Unknown	17.701	0.14 NJ
Surface Soil	SSNE-98	8/5/1999	Unknown Aldol Condensate	2.786	0.48 NJ
Surface Soil	SSNE-98	8/5/1999	Unknown Alkane	3.469	0.14 NJ
Surface Soil	SSNE-98	8/5/1999	Unknown Amide	15.476	<0.29
Surface Soil	SSNE-98	8/5/1999	Unknown Amide	9.555	0.21 NJ
Surface Soil	SSNE-98	8/5/1999	Unknown Organic Acid	14.617	0.16 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	15.878	0.55 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	16.602	0.55 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-9	8/5/1999	Unknown	18.196	0.23 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	15.661	<0.23
Surface Soil	SSNE-9	8/5/1999	Unknown	18.424	0.23 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	16.157	0.23 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	17.223	0.23 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	17.637	0.37 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	18.124	0.26 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	17.11	0.51 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	16.975	0.24 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	16.778	0.26 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	16.551	0.31 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	17.699	0.31 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	16.509	0.23 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	16.364	0.24 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown	17.368	0.48 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown Aldol Condensate	2.785	1.2 NJ
Surface Soil	SSNE-9	8/5/1999	Unknown Amide	9.554	0.25 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	18.434	0.3 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.637	0.28 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.709	0.28 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	9.532	0.39 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	16.612	0.32 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.109	0.42 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.223	0.37 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.75	0.27 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.875	0.3 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	18.133	0.36 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	18.578	0.35 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-10	8/5/1999	Unknown	18.723	0.6 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.367	0.3 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown	17.999	0.2 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown Aldol Condensate	2.784	1.1 NJ
Surface Soil	SSNE-10	8/5/1999	Unknown Alkane	3.467	0.17 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.637	0.33 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.709	0.16 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	18.133	0.24 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	18.578	0.19 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.999	0.16 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.761	0.18 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	18.723	0.23 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.367	0.26 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.885	0.18 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.223	0.28 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	7.763	0.18 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	9.532	0.64 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	16.612	0.18 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown	17.109	0.18 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown Aldol Condensate	2.784	1.2 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown Alkane	15.877	0.24 NJ
Surface Soil	SSNE-11	8/5/1999	Unknown Alkane	16.55	0.16 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	16.364	0.45 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	17.368	0.33 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	16.271	0.55 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	9.533	0.51 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	16.157	0.37 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	17.223	0.33 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSNE-12	8/5/1999	Unknown	16.612	0.56 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	17.647	0.84 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	17.71	0.41 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	18.051	0.3 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	18.124	0.46 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	18.393	0.61 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	17.109	0.57 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown	17.42	1.1 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown Aldol Condensate	2.774	3.6 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown Alkane	16.55	0.39 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown Alkane	15.878	0.58 NJ
Surface Soil	SSNE-12	8/5/1999	Unknown Amide	15.474	<0.35
Surface Soil	SSNE-12	8/5/1999	Unknown Amide	9.554	0.55 NJ
Surface Soil	SSQ-3	9/29/1999	Unknown	19.505	0.68 J
Surface Soil	SSQ-3	9/29/1999	Unknown	20.488	0.73 J
Surface Soil	SSQ-3	9/29/1999	Unknown	18.708	0.53 J
Surface Soil	SSQ-3	9/29/1999	Unknown Aldol Condensate	3.349	R
Surface Soil	SSQ-3	9/29/1999	Unknown Organic Acid	18.046	0.32 J
Surface Soil	SSQ-4	9/29/1999	Unknown	20.063	0.53 J
Surface Soil	SSQ-4	9/29/1999	Unknown Alkane	17.993	1.4 J
Surface Soil	SSRIV-1	8/6/1999	Unknown	17.497	0.48 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	18.098	0.93 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	17.146	0.64 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	18.398	0.8 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	14.838	0.36 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	15.521	0.38 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	16.783	<0.4
Surface Soil	SSRIV-1	8/6/1999	Unknown	17.591	0.44 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-1	8/6/1999	Unknown	18.274	0.44 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	19.081	0.36 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	17.849	0.81 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	17.725	0.4 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown	17.622	0.48 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown Alcohol	15.738	0.87 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown Amide	15.324	<0.89
Surface Soil	SSRIV-1	8/6/1999	Unknown Amide	9.395	3.4 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown Amide	9.085	0.91 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown Organic Acid	16.421	0.6 NJ
Surface Soil	SSRIV-1	8/6/1999	Unknown Organic Acid	17.404	0.95 NJ
Surface Soil	SSRIV-2	8/6/1999	Cholesterol	16.647	1.4 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	17.92	0.39 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	19.886	0.33 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	18.562	0.92 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	17.734	0.37 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	17.464	1 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	18.717	0.88 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	18.179	0.58 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	16.823	0.72 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown	15.56	0.62 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown Aldol Condensate	2.664	0.35 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown Alkane	16.253	0.34 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown Alkane	15.043	0.58 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown Alkane	15.767	2.5 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown Amide	15.374	<0.91
Surface Soil	SSRIV-2	8/6/1999	Unknown Organic Acid	16.46	2.3 NJ
Surface Soil	SSRIV-2	8/6/1999	Unknown Organic Acid	16.978	<0.82

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-2	8/6/1999	Unknown Organic Acid	17.071	0.61 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	17.456	0.51 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	17.839	1 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	16.462	0.59 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	17.725	0.67 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	15.521	0.73 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	17.663	0.3 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	16.504	0.54 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	15.376	0.33 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	17.145	0.33 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	16.928	<0.39
Surface Soil	SSRIV-3	8/6/1999	Unknown	16.338	0.57 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	16.214	0.42 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown	16.007	0.36 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown Alcohol	15.738	2.9 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown Alkane	16.421	0.61 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown Alkane	15.003	1.9 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown Amide	15.335	<0.6
Surface Soil	SSRIV-3	8/6/1999	Unknown Organic Acid	17.404	0.89 NJ
Surface Soil	SSRIV-3	8/6/1999	Unknown Organic Acid	18.097	0.6 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	18.561	0.3 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	17.733	0.54 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	17.795	0.56 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	17.526	0.7 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	17.609	0.26 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	18.178	0.78 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	17.909	0.9 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	18.716	0.38 NJ

Footnotes on Page 25.

Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-4	8/5/1999	Unknown	16.977	<0.34
Surface Soil	SSRIV-4	8/5/1999	Unknown	17.205	0.38 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	15.559	0.39 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown	16.512	0.4 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown Alcohol	15.777	2.2 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown Alcohol	15.042	1.1 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown Alkane	2.022	1.1 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown Alkane	16.46	0.34 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown Amide	15.373	<0.97
Surface Soil	SSRIV-4	8/5/1999	Unknown Amide	9.422	0.32 NJ
Surface Soil	SSRIV-4	8/5/1999	Unknown Organic Acid	17.464	1 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	18.718	0.83 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	15.562	0.39 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	19.495	0.35 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	18.936	0.42 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	17.518	0.77 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	17.911	1.2 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	19.319	0.41 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	17.735	0.48 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	16.98	<0.62
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	16.545	0.35 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown	16.514	0.57 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Alcohol	16.452	0.56 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Alcohol	15.044	1.3 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Alcohol	15.769	2.2 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Amide	15.375	<0.97
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Amide	9.424	0.45 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Cycloalkane	17.797	0.77 NJ

Footnotes on Page 25.

Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Organic Acid	17.466	1.2 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Organic Acid	17.207	0.62 NJ
Surface Soil	SSRIV-97 (SSRIV-4)	8/5/1999	Unknown Organic Acid	18.18	0.77 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	18.16	5.3 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	11.827	0.29 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	15.521	0.42 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	16.556	0.52 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	16.928	<3.2
Surface Soil	SSRIV-5	8/6/1999	Unknown	20.033	4.8 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	18.636	0.54 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	18.998	5.1 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	17.145	0.52 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	16.452	1.9 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	16.018	0.51 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	17.487	3.9 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	10.574	0.37 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown	11.257	1.2 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown Alkane	15.728	0.73 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown Alkane	15.003	0.56 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown Alkane	10.926	0.93 NJ
Surface Soil	SSRIV-5	8/6/1999	Unknown Amide	15.335	<0.6
Surface Soil	SSRIV-5	8/6/1999	Unknown Organic Acid	17.404	0.54 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	17.909	0.31 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	15.56	0.25 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	16.46	0.2 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	16.833	0.19 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	17.071	<0.22
Surface Soil	SSRIV-6	8/5/1999	Unknown	17.464	0.44 NJ

Footnotes on Page 25.

Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-6	8/5/1999	Unknown	17.567	0.22 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	18.178	0.28 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	17.692	0.26 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	17.733	0.18 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown	17.205	0.31 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown Alkane	2.022	0.31 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown Alkane	15.767	0.77 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown Alkane	15.042	0.22 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown Amide	9.422	0.37 NJ
Surface Soil	SSRIV-6	8/5/1999	Unknown Amide	15.373	<0.75
Surface Soil	SSRIV-7	8/5/1999	Unknown	16.978	<0.49
Surface Soil	SSRIV-7	8/5/1999	Unknown	17.682	0.36 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	17.734	0.37 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	19.058	0.26 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	17.599	0.34 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	17.464	1 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	17.796	0.52 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	15.56	0.31 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	17.909	0.67 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	16.491	0.32 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown	17.527	0.84 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown Alkane	10.851	0.31 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown Alkane	15.767	1.5 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown Alkane	15.042	0.46 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown Amide	9.433	1.3 NJ
Surface Soil	SSRIV-7	8/5/1999	Unknown Amide	15.374	<0.77
Surface Soil	SSRIV-7	8/5/1999	Unknown Organic Acid	18.179	0.88 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	15.521	1 NJ

Footnotes on Page 25.

Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-8	8/6/1999	Unknown	16.069	0.28 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	20.033	0.8 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	17.477	1.4 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	18.988	0.76 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	18.16	1.2 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	16.452	0.93 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	18.025	0.39 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	16.928	<1.2
Surface Soil	SSRIV-8	8/6/1999	Unknown	16.214	0.35 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown	17.011	<0.97
Surface Soil	SSRIV-8	8/6/1999	Unknown Alcohol	15.738	5.7 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown Alcohol	16.411	0.77 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown Aldol Condensate	2.627	0.42 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown Alkane	15.004	3.8 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown Amide	15.335	<0.92
Surface Soil	SSRIV-8	8/6/1999	Unknown Organic Acid	17.839	0.31 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown Organic Acid	17.404	1.4 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown Organic Acid	17.146	0.86 NJ
Surface Soil	SSRIV-8	8/6/1999	Unknown Organic Acid	18.098	1 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	16.978	<0.4
Surface Soil	SSRIV-9	8/6/1999	Unknown	16.253	0.23 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	15.56	0.52 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	16.833	0.21 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	17.071	<0.3
Surface Soil	SSRIV-9	8/6/1999	Unknown	17.205	0.59 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	17.516	0.36 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	17.733	0.32 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown	16.636	0.2 NJ

Footnotes on Page 25.

Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-9	8/6/1999	Unknown	16.491	0.34 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown Alcohol	15.042	1.1 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown Alcohol	15.777	2.6 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown Amide	15.373	<0.69
Surface Soil	SSRIV-9	8/6/1999	Unknown Cycloalkane	16.46	0.43 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown Organic Acid	18.178	0.4 NJ
Surface Soil	SSRIV-9	8/6/1999	Unknown Organic Acid	17.464	0.64 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	16.978	<0.39
Surface Soil	SSRIV-10	8/5/1999	Unknown	17.299	0.46 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	17.071	<0.3
Surface Soil	SSRIV-10	8/5/1999	Unknown	16.254	0.31 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	16.833	0.27 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	18.168	0.45 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	17.516	0.4 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	19.183	0.27 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown	17.734	0.36 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown Alcohol	15.767	2.2 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown Alcohol	15.043	0.52 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown Alkane	16.44	0.55 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown Amide	9.422	0.45 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown Amide	15.374	<0.7
Surface Soil	SSRIV-10	8/5/1999	Unknown Organic Acid	17.465	0.72 NJ
Surface Soil	SSRIV-10	8/5/1999	Unknown Organic Acid	15.56	0.72 NJ
Surface Soil	SSRIV-11	8/5/1999	Cholesterol	16.646	2.8 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	18.178	1 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	16.512	0.81 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	17.247	0.67 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	18.716	0.86 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-11	8/5/1999	Unknown	17.516	0.92 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	17.919	2.6 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown	17.795	1.6 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown Alcohol	15.777	1.6 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown Alkane	15.042	0.89 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown Amide	15.373	<1.2
Surface Soil	SSRIV-11	8/5/1999	Unknown Amide	9.443	3.6 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown Amide	9.143	0.73 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown Organic Acid	16.988	<1.4
Surface Soil	SSRIV-11	8/5/1999	Unknown Organic Acid	17.071	1.3 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown Organic Acid	17.464	1.5 NJ
Surface Soil	SSRIV-11	8/5/1999	Unknown Organic Acid	16.802	2 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown	16.977	<0.22
Surface Soil	SSRIV-12	8/6/1999	Unknown	17.536	0.29 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown	17.194	0.18 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown Aldol Condensate	2.663	0.33 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown Alkane	2.021	0.16 NJ
Surface Soil	SSRIV-12	8/6/1999	Unknown Amide	15.373	<0.61
Surface Soil	SSRIV-12	8/6/1999	Unknown Organic Acid	17.463	0.38 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	4.185	0.23 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	18.169	0.17 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	17.537	0.18 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	17.206	0.19 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	16.978	<0.17
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown	4.351	0.3 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown Alcohol	15.767	0.18 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown Aldol Condensate	2.664	0.28 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown Alkane	10.851	0.37 NJ

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Table K-12. Tentatively Identified Compounds Above .1 mg/kg for Semi-Volatile Organic Compounds in Surface Soil Samples, Ford-Kingsford Products Facility, Kingsford, Michigan.

Well/Boring	Sample I.D.	Sample Date	Compound	Retention Time (minutes)	Value (mg/kg)
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown Alkane	2.022	0.29 NJ
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown Amide	15.374	<0.7
Surface Soil	SSRIV-96 (SSRIV-12)	8/6/1999	Unknown Organic Acid	17.465	0.34 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	13.655	0.38 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	15.518	3.3 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	17.484	3.8 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	17.846	0.9 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	18.157	2.3 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	17.412	1.1 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	19.73	4.5 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	20.03	2.6 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	18.995	1.5 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	16.925	<0.94
Surface Soil	SSRIV-13	8/6/1999	Unknown	16.46	1.5 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	15.632	1 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	15.001	1.4 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	15.735	2.6 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown	20.247	0.42 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown Aldol Condensate	2.624	0.48 NJ
Surface Soil	SSRIV-13	8/6/1999	Unknown Amide	15.332	<1
Surface Soil	SSRIV-13	8/6/1999	Unknown Organic Acid	17.722	0.92 NJ

mg/kg Milligrams per kilogram.
< Less than detection limit.
J Estimated results.
N TICs that were not reported as unknowns were qualified as tentatively identified.

ARCADIS

Appendix L

USGS Laboratory Investigation
Report, M. Godsy, 1999

Because we care
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United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Water Resources Division
Western Region
345 Middlefield Road, Mail Stop 480
Menlo Park, California 94025

April 7, 2000

Mr. Peter L. Palmer
Arcadis Geraghty & Miller
14497 North Dale Mabry Highway
Suite 115
Tampa, Florida 33618

Dear Peter,

Enclosed is a draft copy of the report "Biodegradation of the Pyroligneous Acid Fraction of Charcoal Production Wastes in Ground Water at Kingsford, Michigan". The report has not yet received U.S. Geological Survey approval and, therefore, should be considered only as a draft.

The report discusses the isotopic and chemical evidence for a single source material for the samples taken at GMSB-2A, GMSAB-2B, and GM13. Even though the samples are along different flow paths, the source location is most likely from spillage and leakage at or near the distillation areas of the plant.

The report also gives the findings of the recently completed laboratory biodegradation study of a water sample from GMSB-2B. Also included in the study are the methanogenic Total Organic Carbon (TOC) biodegradation rate constants and the methane production rate constant. Yield coefficients for the production of methane, carbon dioxide, and biomass based on TOC utilization are also included.

I hope that the report and included references contain the information that you require. Please call me if more information is required or you have any further questions.

Sincerely,

E M Godsy

E. Michael Godsy, Ph.D
Research Microbiologist
(650) 329-4504
emgodsy@usgs.gov

Biodegradation of the Pyroligneous Acid Fraction of Charcoal Production Wastes in Ground Water at Kingsford, Michigan

by

E. Michael Godsy and Ean Warren
U.S. Geological Survey
Menlo Park, California

Background

Description of Problem

On July 12, 1995, an explosion occurred at 2104 West Breen Street in the City of Kingsford, Michigan. The explosion was apparently caused by methane gas that leaked into the basement from the surrounding subsurface. Subsequent studies by the U.S. Environmental Protection Agency, the local power company, and consulting engineers determined that the CH_4 in the residence resulted from high concentrations of this compound in the soil gas. The occurrence of CH_4 was localized around this residence and subsequently, a soil gas vapor extraction system was installed that alleviated the high CH_4 concentrations. A second occurrence of high methane concentration in soil gas was discovered approximately 300 m southeast at 2001 Emmet Street. Further laboratory and engineering studies determined that the gas was biogenic and recent in age. A third known CH_4 seep is located west of the plant site in a shallow bay section of the Menomonee River.

Large amounts of organic wastes have been dumped into natural depressions adjacent to and possibly leaked or spilled in an industrial area northeast of the explosion site. Due to the local geology, the aquifers beneath the plant site area, the depressions and the explosion site are interconnected. In addition, the overlaying clay layers that separate the aquifers are discontinuous in some places. Organic compounds including volatile fatty acids (VFAs), polynuclear aromatic hydrocarbons (PAHs), and phenolic compounds found in the wastes migrated into these lower aquifers. In some areas, VFAs are found at 6,000 to 7,000 mg/L and phenolic compounds at 50 to 60 mg/L (Westjohn and Godsy, 1997). After the natural bacteria in the aquifers depleted other electron acceptors in the ground water - O_2, NO_3^-, SO_4^{2-}, and Fe^{3+} - microorganisms produced CH_4 and CO_2 from the wastes creating plumes in the lower aquifers. In areas near the river where the hydraulic gradient is upwards, methane in the ground water is super-saturated with respect to atmospheric pressure, and where there

are openings in the confining layer(s), CH_4 escapes into the overlaying aquifer and unsaturated zone (Westjohn et al., 1996; Westjohn and Godsy, 1997). The house with explosive levels of methane had this misfortune to be situated over some of these discontinuous portions of the clay layers.

Nature of Wood Carbonization Products

From approximately 1921 until 1951, Ford Motor Company (Ford) manufactured wooden automobile parts to the northeast of the explosion site. That operation yielded approximately 3.63×10^5 kg or 363 t (metric tons) of scrap wood per day from the sawmill and body plant (Nelson, 1930). To utilize the scrap, a wood carbonization and by-products distillation plant was built which produced several commercial products:

1. *Charcoal* - approximately 300 kg/t of wood.

2. *Noncondensable Gas* - approximately 160 m^3 combustible gases/t of wood (mostly H_2, CH_4, and C_2H_6).

3. *Wood Creosote/Tar* - approximately 14 L creosote, 33 kg pitch, and 91 L of soluble tar/t of wood. These products consisted mainly of PAHs and phenolic compounds.

4. *Pyroligneous Acid* - approximately 460 L/t of wood. This fraction consists of 12.5% acetic acid, 4.5% methanol, smaller amounts of other volatile fatty acids, solvents, and phenolic compounds.

The pyroligneous acid fraction (PA) prior to 1928 was recovered by mixing with lime and recovering the acetic acid as a calcium acetate precipitate. At this time, the growing demand for ethyl acetate resulted in the direct distillation of this fraction into the various products and the production of ethyl acetate from acetic acid in the presence of ethyl alcohol and sulfuric acid (Nelson, 1930).

The various alcohols and solvents produced by the distillation plant were of standard purity and were chiefly sold outside of the company, with the exception of ethyl acetate, the production of which was largely utilized in making the lacquer finish and artificial leather for the Ford car. Non-commercial products also generated were combustible gases, wood pitch, wood creosote, and wood tar. Most of these non-commercial products were used as fuel for the kilns during charcoal production. The remaining non-commercial products or wastes consisting of "off specification" chemicals, and residual products were periodically dumped

into two natural depressions; a primary site consisting of two interconnected natural surface depressions which received the "off specification" creosote and general plant wastes and a secondary site where wastes were comprised primarily of wood charcoal and tar (EWA Engineers, 1986 and 1987). From 1951 until 1961, Kingsford Chemical Co. obtained the wood carbonization plant and continued the production of charcoal and the off-loading of the wastes to both the primary and secondary sites.

Laboratory Investigations

Compound Specific Isotopic Analysis for Source Identification

Compound Specific Isotope Analysis was used to determine the $\delta^{13}C$ ratios of individual organic compounds within the plume. The purpose of carbon isotope analyses is first to derive a signature of the most prominent compounds in order to identify the potential source area or areas. Secondly, the isotopes may be useful to trace the degradation process occurring along a flow path. Four samples from three sites were studied: (1) two depths west of the plant site at the I° disposal site, GMSB-2A (74.7 m) and GMSB-2B (80.1 m); (2) south west of the plant site but along a different flow path at GM13 (grab sample at 44.2 m); and (3) GM2B (82.6 m), a well along the flow path of GM13 where microbial degradation has significantly lowered contaminant concentrations .

Individual organic components were identified by Gas Chromatography/Mass Spectrometry (GC/MS) on a Finnigan-GCQ. Isotopic analyses were performed by Gas Chromatography/Isotope Ratio Mass Spectrometry (GC/IRMS) using an HP 5890 gas chromatograph attached to a VG Optima mass spectrometer. VFAs and phenolic compounds were extracted from ground water samples using 1:1 and 10:1 acid extracts into diethylether for sample identification and isotope analysis, respectively. The GC columns used for both instruments were 0.25 mm I.D., 30 m DB-WAXETR (J&W Scientific, Folsom, Calif.) with a film thickness of 0.25 μm. For isotopic ratio analyses, individual organic compounds are separated by the GC and passed through a CuO furnace where they are combusted to CO_2. Water is cryogenically trapped while the CO_2 is admitted to the mass spectrometer. The CO_2 is ionized, accelerated down a flight tube and swept past a magnetic field that separates the ions by mass into individual beams. The beams strike Faraday cups producing currents proportional to their abundance. Isotope ratios and delta values are derived from these measurements.

Isotope analysis of the dissolved VFAs and phenolic compounds at the sites with high contaminant concentrations GMSB-2A, GMSB-2B and GM13 gave $\delta^{13}C$ values of approximately -30 ‰, -20 ‰, and -27 ‰ for acetate, propionate and butyrate, respectively. The phenolic compounds in these samples taken near the source, although at much lower concentrations than VFAs, appeared to have $\delta^{13}C$ values of about -27 ‰. Although GMSB-2A and GMSB-2B do not lie on the same flow path as GM13, the isotopic data supports the chemical evidence (Figures 1, 2, and 3 respectively) that the source of the contamination is similar for both locations. Very little microbial degradation appears to have occurred at these sites, which can be attributed to the microbial toxicity of the undiluted PA. Analysis of the dissolved organics from the down gradient site GM2B (Figure 4) gave a carbon–isotope ratio of -14.2 ‰ for acetate and -14.8 ‰ for 3-ethylphenol. Microbial degradation is occurring upgradient from and at GM2B, as evidenced in both the change in concentrations and the large shift in $\delta^{13}C$ of these compounds. Values for $\delta^{13}C$ have become much heavier for both compounds It is assumed that the original VFAs have been completely consumed and that the acetate at this site is an intermediate compound during microbial degradation of higher molecular weight phenolic compounds. All VFAs and phenolic compounds in well water samples tested were at or below detectable limits after traveling approximately 1000 m down gradient from the plant area.

Toxicity and Microbial Enumeration of Water and Sediment Sample

Water and sediment samples from the grab sample at GMSB-2A were tested for the presence of microorganisms that might be present in an anoxic-methanogenic environment. Microorganisms capable of (1) aerobic heterotrophic growth, (2) growth under denitrifying conditions, (3) growth under sulfate-reducing conditions, (4) growth under anaerobic heterotrophic fermentative conditions, (5) growth under anaerobic iron reducing conditions, and (6) growth under methanogenic conditions using H_2 and CO_2, acetate, and a mixture of both substrates were tested for growth (Godsy *et al.*, 1992) and the results are given in Table 1.

The water sample from GMSB-2A tested did not contain any culturable microorganisms (<1 cell/0.1 mL GMSB-2A); however, the corresponding sediment sample contained 10^5 or greater total microorganisms/g dry weight sediment. The microbial population present on the sediment appears to be anaerobic in nature. The population capable of aerobic growth consists of facultative anaerobes also capable of denitrification and anaerobic fermentation. The high numbers of iron reducing bacteria and lack of methanogenic microorganisms

suggests that the sediment sample came from an area were iron reduction predominates, not methanogenesis. This finding is also supported by the low dissolved CH_4 (16 mg/L) at GMSB-2 at 74.7 m below land surface (BLS) while the dissolved CH_4 value at 80.1 m was 155 mg/L (Arcadis Geraghty & Miller, Inc., 1998). Microcosms containing only the sediment and ground water from 74.7 m BLS incubated at 20°C did not produced detectable amounts CH_4, but produced high concentrations of CO_2 and dissolved iron (Fe^{2+}). Analyses of the chemical constituents present before and during growth were not performed on this series of experiments. The lack of culturable microorganisms in this water sample strongly implies that the water is somewhat hostile to microbial growth unless there is dilution with the native ground water. The viable, but not methanogenic, anaerobic microbial population on the sediment suggests that protection is provided within the sediments.

This finding provides a possible explanation as to why such a readily biodegradable material has persisted for many years in the subsurface. The PA is moving vertically downward due to the hydraulic gradient and laterally with the ground water flow. This can be seen at GM13, just south of the plant area, where the PA fraction was encountered in a grab sample taken at 44.2 m below land surface, but not in samples from the bedrock well location (99.1 m). When the PA mixes with the ground water during down gradient travel in the higher conductivity lenses, the inhibition is relieved by dilution with ground water, and degradation of the waste begins. The other sites where PA fractions were encountered (GMSB-2A, GMSB-2B, and GM2B) were located farther southwest and south of the plant site and deeper towards bedrock, respectively.

Biodegradation of Pyroligneous Acid Fraction

Microbial Growth and Substrate Utilization

The growth of a microbial population is a complex phenomenon composed of a number of simultaneously occurring events. Relative magnitudes of the respective rates determine the net effect upon the population. The primary events are the utilization of substrate and the concurrent growth of the organisms. These two events are closely related because it is only through the utilization of substrate that energy and carbon are made available for cell growth.

Bacteria divide by binary fission and consequently the number of viable cells will increase in an exponential fashion. The reaction rate for bacterial growth can be expressed as a first-order equation

$$\frac{dX_a}{dt} = \mu X_a$$

where X_a is the concentration of active bacteria (mg/L), and μ is the specific growth rate (day^{-1}). The growth rate constant is referred to as a specific growth rate because it defines the rate of cell growth in terms of the concentration of cells present.

The growth yield, Y (mg/mg), is defined as the ratio of the rate of cell growth to the rate of substrate, S (mg/L), removal. This can be expressed mathematically as

$$-\frac{dS}{dt} = \frac{\mu}{Y} X_a$$

Consequently it can be seen that the rate of substrate removal is first-order with respect to the concentration of viable cells. The effect of the concentration of growth limiting nutrient upon the specific growth rate (μ) is a function of the initial substrate concentration and μ increases as the substrate concentration is increased until it approaches some maximum value (μ_{max}).

The question of the best mathematical formula to express the relationship of the growth rate and substrate concentration has been a subject of much debate. No one yet knows enough about the mechanisms of microbial growth to propose a mechanistic equation which will characterize growth exactly. Instead, experimenters have observed the effects of various factors upon growth and have attempted to fit empirical mathematical equations to their observations. The equation with historical precedence and greatest acceptance is the one proposed by Monod (1949)

$$\mu = \frac{\mu_{max} S}{K_s + S}$$

where K_s (mg/L) is the half-saturation constant. K_s determines how rapidly μ approaches μ_{max} and is defined as the substrate concentration at which μ is equal to half of μ_{max}.

The above relationships can be combined into an expression that relates substrate utilization to bacterial growth.

$$-\frac{dS}{dt} = \frac{\mu_{max} X_a S}{Y(K_s + S)}$$

These expressions can be combined into one equation that relates bacterial growth and decay to substrate utilization.

$$\frac{dX_a}{dt} = \frac{\mu_{max} X_a S}{K_s + S}$$

The above equations are general expressions of a system in which only population densities and substrate concentration determine the kinetics of degradation. When the inoculum density is extreme compared to the substrate concentration or, when substrate concentration is very low or very high with respect to K_s, the Monod equation may be simplified to 5 special forms or Monod family of equations (Table 2). When the initial bacterial density is much greater than the number of new bacteria which would be produced from the substrate at time zero, i.e., $X_o >> S_o$, the growth of population during the course of the experiment is insignificant. Similarly, when the initial substrate concentration is much greater than K_s, i.e., $S_o >> K_s$, most of the substrate will disappear while the enzyme uptake systems of the cells are saturated, and $K_s + S$ in the above equation can be approximated by only S. Alternatively, when the substrate is initially present at much less than saturating levels ($S_o << K_s$), the value of $K_s + S$ can be approximated by only K_s. These simplifications allow the modeling of the variety of shapes of substrate disappearance or product appearance curves with only substrate concentration and bacterial density and the parameters of Monod kinetics.

Laboratory Microcosms

Two identical microcosms were prepared using 4 L solvent bottles fitted with Mininert® valves to facilitate removal of water samples from one digestor and gas samples from the second digestor. Both digestors were prepared with 3.1 L of water from GMSB-2B taken at 80.1 m below land surface and 0.75 L of anaerobic domestic sewage sludge. The sludge was used as an anaerobic inoculum because of the lack of methanogenic microorganism in the water samples from GMSB-2A and presumable GMSB-2B. Before use, the sludge was aged until CH_4 production ceased and all particulate matter had precipitated. Both digestors were maintained in an O_2-free anaerobic glove box at 20±1°C.

Analytical Methods

Gas volumes were measured using a water wetted 10 mL syringe. Head space and dissolved gas composition was determined by head-space analysis using a GC equipped with a thermal conductivity detector. TOC was determined by wet-chemical oxidation method. Organic compounds were identification using GC/MS as described. Tentatively identified compounds were confirmed with certified standards. Phenolic compounds were quantified using a HPLC system consisting of a Waters 490 Detector set at 280 nm and dual ISCO 2350

pumps. The samples were run through a reverse-phase C^{18} column. The stationary phase was ammonium acetate buffer (pH 7.0) and the mobile phase was acetonitrile.

Low-molecular weight fatty acids (formate, acetate, propionate, and butyrate) were determined using a Dionex Ion Chromatography System equipped with an autosampler and a Dionex AS15 column and guard column. The AS15 column temperature was maintained at 30°C.

Substrate Utilization

After the microcosms were inoculated, a leak developed in the gas sampling valve that was not detected for approximately 60 days. The lack of gas production was mistakenly assumed to be a sign of a lack of biodegradation. When the leak was discovered, the microcosms were rezeroed, sampled, and the time set to day zero. GC/MS chromatograms show the differences in fatty acid concentrations at both times (Figure 5). The leak resulted in an unknown amount of CH_4 and CO_2 being lost during the initial biodegradation of acetate and butyrate; however, the mass balance and the kinetics of substrate disappearance and product appearance from that time forward would not be affected. As a further assurance, the rate of TOC disappearance (k_{20}) was used to back-calculate the starting TOC of the microcosm, the values agreed within 5% of the TOC of the water sample collected from GMSB-2B plus the aged anaerobic sewage sludge.

The biodegradation of the VFAs and phenolic compounds are shown in Figures 6, 7, and 8. The gas chromatogram shown in Figure 6A is that of the water sample taken from GMSB-2B for comparison before dilution with the inoculum and Figure 6B is a chromatogram of the rezeroed inoculated microcosm. The loss of the VFAs is readily apparent; however, no loss of phenolic compounds was observed. Figure 7A is a chromatogram at Day 0 and Figure 7B is a chromatogram after 93 days of biodegradation at which time the VFAs are essentially gone and the microbial population has switched to biodegradation of the phenolic compounds. Figure 8A is a gas chromatogram of the microcosm after 267 days and Figure 8B is a gas chromatogram of the microcosm after 471 days, after greater than 99% of the degradable compounds have been utilized. The shift in substrate utilization can easily be seen in Figure 9A where the rate of total gas production abruptly increases at approximately day 100. This is further verified in Figure 9B which shows the VFAs change in concentration with time and Table 3 which give the concentrations of several selected phenolic compounds during this time period. Phenol is not biodegraded until the VFAs are gone at about 63 to 106 days. Once phenol is degraded, 3- and 4-methylphenol are biodegraded after 131 days. 2-

Methylphenol does not biodegrade during this time, and is the last phenol to biodegrade around 276 days. This similar to the sequential methanogenic biodegradation of phenolic compounds observed at a former creosote plant (Godsy *et al.*, 1992).

The identified and confirmed compounds of interest in GMSB-2B are shown in Figures 10 for VFAs and 11 for phenolic compounds. Unconfirmed compounds in Figure 9 are mainly alcohols, furans, and cyclic hydrocarbons, while those in Figure 10 are mostly aromatic compounds. The majority of these compounds contained one or more side chains and are consistent with compounds attributed to the PA fraction (Hawley, 1923; Klar, 1925).

Figures 12and 13 identify those VFAs and phenolic compounds, respectfully, that were not degraded in the microcosm after 267 days. Acetate was the only VFAS present in the microcosm and is the major and last intermediate compound during the biodegradation of more complex organic compounds (*e.g.*, phenols). The concentration of acetate will decrease to a level at which the microorganisms will no longer be able to degrade the compound (~ 0.1 mg/L). At day 471, acetate could not be detected in the microcosm and of the confirmed phenolic compounds, only 2,6- and 2,4-dimethylphenol remained. This observation is consistent with published results that find that 2-methylphenol is the most difficult and slowest of the methylphenols to biodegrade under methanogenic conditions (Godsy *et al.*, 1992). Similarly, phenols with only one attached alkyl chain (*e.g.*, methylphenols and ethylphenols) are biodegradable under these conditions, while phenols with two or more alkyl chains (*e.g.*, dimethylphenols) have not been shown to be biodegradable under methanogenic conditions.

Mass Balance and Kinetic Parameters

A mass balance of carbon transformation with time was performed and is shown in Figure 14. TOC analyses of the digestor fluid indicated a loss of 53.1 mmol/L of carbon had occurred up to day 271. The TOC loss was accompanied by the production of 23.0 mmol/L of carbon as CH_4, 32.3 mmol/L of carbon as CO_2, and (not shown in Figure 14) 0.28 mmol/L of carbon as biomass. The biodegradation resulted in 105% of the carbon being accounted in the products, which may be a result of very slow biodegradation of the compounds in the inoculum; however, whatever the cause, the value is well within the experimental error observed in sampling and analysis.

Shown in Figure 15A is the disappearance of TOC (mg/L) with time in the 4L digestor. The remaining 275 mg/L TOC after day 271 is due to the recalcitrant material in the aged

anaerobic sewage digestor sludge used as the methanogenic inoculum. Shown in Figure 15B is the production of CH_4 (mg/L) with time. Using non-linear regression analysis to determine the Monod kinetic parameters, a K_s value of approximately 7000±3000 mg/L TOC was obtained. The conditions for a First-Order approximation require that very little growth ($X_{ao} >> S_o$) or a very low Y (mg cells/mg TOC) occurs and that the substrate concentration be much less than the value of K_s ($S_o << K_s$). Both conditions are satisfied and a First-Order model may be used to describe the TOC degradation and CH_4 production. The integrated form of the TOC biodegradation and CH_4 production respectively to determine the concentrations at any time t are as follows:

$$S = S_o \exp^{-kt}$$

$$P = P_o(1-\exp^{-kt})$$

where:

k is the First-Order rate constant,
S is the substrate at time t,
S_o is the starting substrate concentration,
P is the product at time t,
and P_o is the final concentration of product.

Reaction rates are strongly affected by temperature changes, but reaction stoichiometry is generally unaffected. For the First-Order model, temperature effects are accounted for in the rate constant k, using the following modified form of the van't Hoff-Arrhenius relationship:

$$k_T = A\exp^{-E/RT}$$

where:

k_T is the First-Order rate constant at T °K, day^{-1},
A is the van't Hoff-Arrhenius coefficient, day^{-1},
E is the activation energy, J/mol,
R is the universal gas constant, 8.314 J/mol•°K,
and T is the temperature, °K.

Because it is convenient to use degrees centigrade and because E for microbial systems is relatively constant (33,500 to 50,250 J/mol) the equation can be modified to account for temperature differences and rewritten as follows:

$$\frac{k_{T1}}{k_{T2}} = \exp\left(\frac{E}{RT_2} - \frac{E}{RT_1}\right)$$

$$k_{T1} = k_{T2}\exp\left[\left(\frac{E}{RT_1T_2}\right)(T_1 - T_2)\right]$$

and simplified to

$$k_{t1} = k_{t2}\theta^{(t1-t2)}$$

where:

θ is the temperature coefficient and is considered approximately constant and equal to $\exp(E/RT_1T_2)$ with a value of 1.135 for $4 < t < 20$°C and 1.056 for $t > 20$°C.

Figures 15A and B, showing the rate of TOC biodegradation and rate of CH_4 production, also give the modeled First-Order rate parameters based on the values listed in Table 4 for 20°C. The rate values adjusted for the ground-water temperature of 10°C using the van't Hoff-Arrhenius relationship are also given in Table 4.

Given in Table 5 are the calculated yield coefficients for the production of CH_4/TOC consumed and CO_2 produced/TOC consumed. It can be seen that on a per mol basis, slightly more than 40% of the carbon appears as CH_4, with slightly more than 60% appearing as CO_2. Also included in the table are the yield coefficients for CH_4 and biomass on weight (mg/mg TOC) basis.

Discussion of the Contamination Nature and Methane Source

Wastes characteristic of the wood carbonization operations are prevalent throughout the area bordering former plant site. Analyses of shallow ground-water samples, especially in a westerly direction towards the I° and II° disposal pits, contained elevated concentrations of volatile and semi-volatile compounds (Arcadis Geraghty & Miller Inc., 1998) reminiscent of the water soluble fraction of wood creosote (Hawley 1923; Klar 1925). Although these compounds pose a water quality threat, these contaminants are not present in high enough concentrations to account for the extremely high dissolved CH_4 and CO_2 concentrations observed throughout the area (155 mg/L CH_4 at GMSB-2B at 80.1 m). Water samples from wells up gradient from the former plant area did not contain significant levels of CH_4 and CO_2 or of the volatile and semi-volatile compounds.

A preponderance of evidence suggests that leakage and/or spillage of PA fraction from the distillation and transport processes at the plant site are the major source of CH_4 and CO_2 in the ground-water system. The plant area is directly up gradient from GMSB-2A, GMSB-2B, and GM13 are green-yellow in color, have a very strong odor of burnt wood, contain high concentrations of mononuclear aromatic and phenolic compounds (Arcadis Geraghty & Miller Inc., 1998), and extremely high concentrations of VFAs. All of these ground-water samples also have a lower pH and very high TOC values. Ground water samples from GM12 and other wells, directly up gradient from plant site, do not contain significant levels of CH_4 and CO_2 and do not contain volatile or semi-volatile contaminants or VFAs. Samples from GM2B, approximately 425 m south of GM13, contained approximately one-fourth the concentrations of VFAs and apparently has been biodegraded and diluted with ground water during down gradient travel. In addition, the VFAs in ground-water samples from these wells have an identical isotopic signature, adding credence to the plant area as the source.

The majority of the dissolved compounds in ground water samples from the PA fraction (GMSB-2B) have been shown to be anaerobically biodegradable to CH_4 and CO_2 in laboratory microcosms. The biodegradable compounds, and the rates and amounts of CH_4 and CO_2 produced in the microcosms are consistent with observations form field samples.

It is apparent that methanogenesis of the PA begins after dilution with ground water after approximately400 m downgradient travel in the direction of the ground-water flow. The majority of the VFAs and phenolic compounds in this fraction are rapidly biodegraded to CH_4 and CO_2 after approximately 1000 m of travel. Those recalcitrant compounds remaining are most likely diluted to below detection levels by the time the ground water reaches the Menominee River.

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Figures

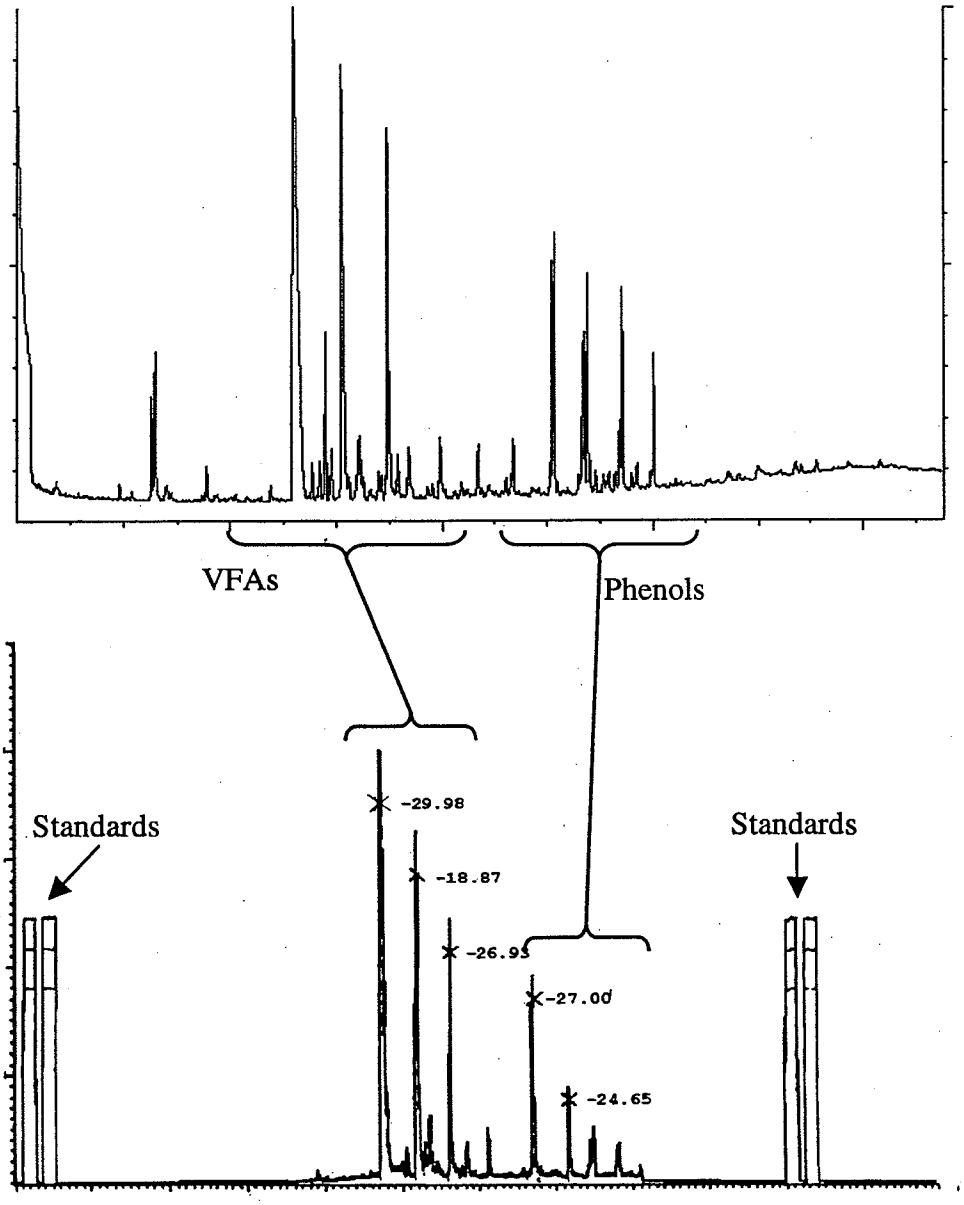

Figure 1. Ground-water sample from GMSB-2A. Concentrations of VFAs are greater than 6000 mg/L and concentrations of phenolic compounds are greater than 50 mg/L. The labeled peaks are acetate, propionate, butyrate, 2-methylphenol, and 3-methylphenol, in that order.

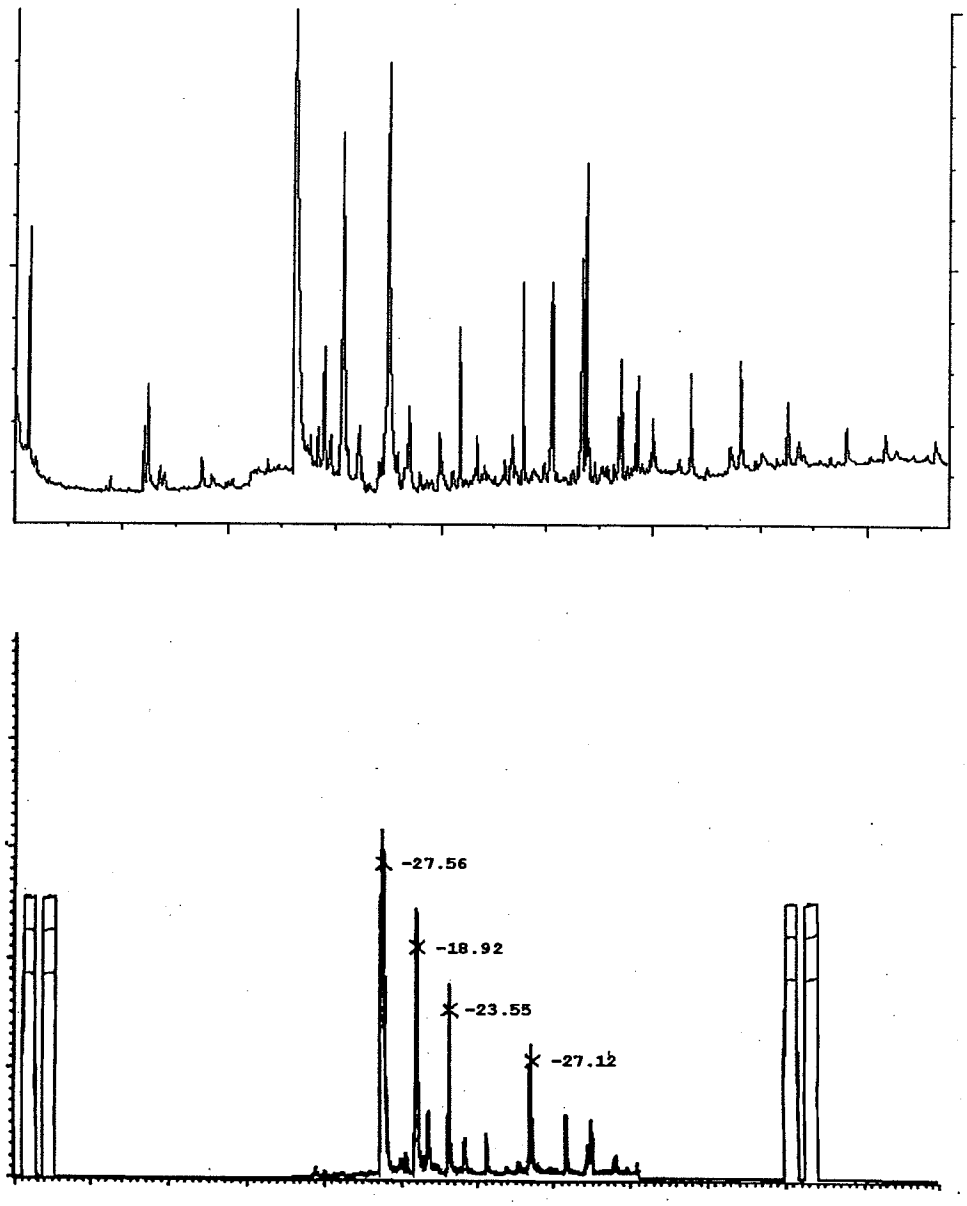

Figure 2. Ground-water sample from GMSB-2B. Contaminant concentrations are similar to GMSB-2A shown in Figure 1. The labeled peaks are acetate, propionate, butyrate, and 2-methylphenol, in that order.

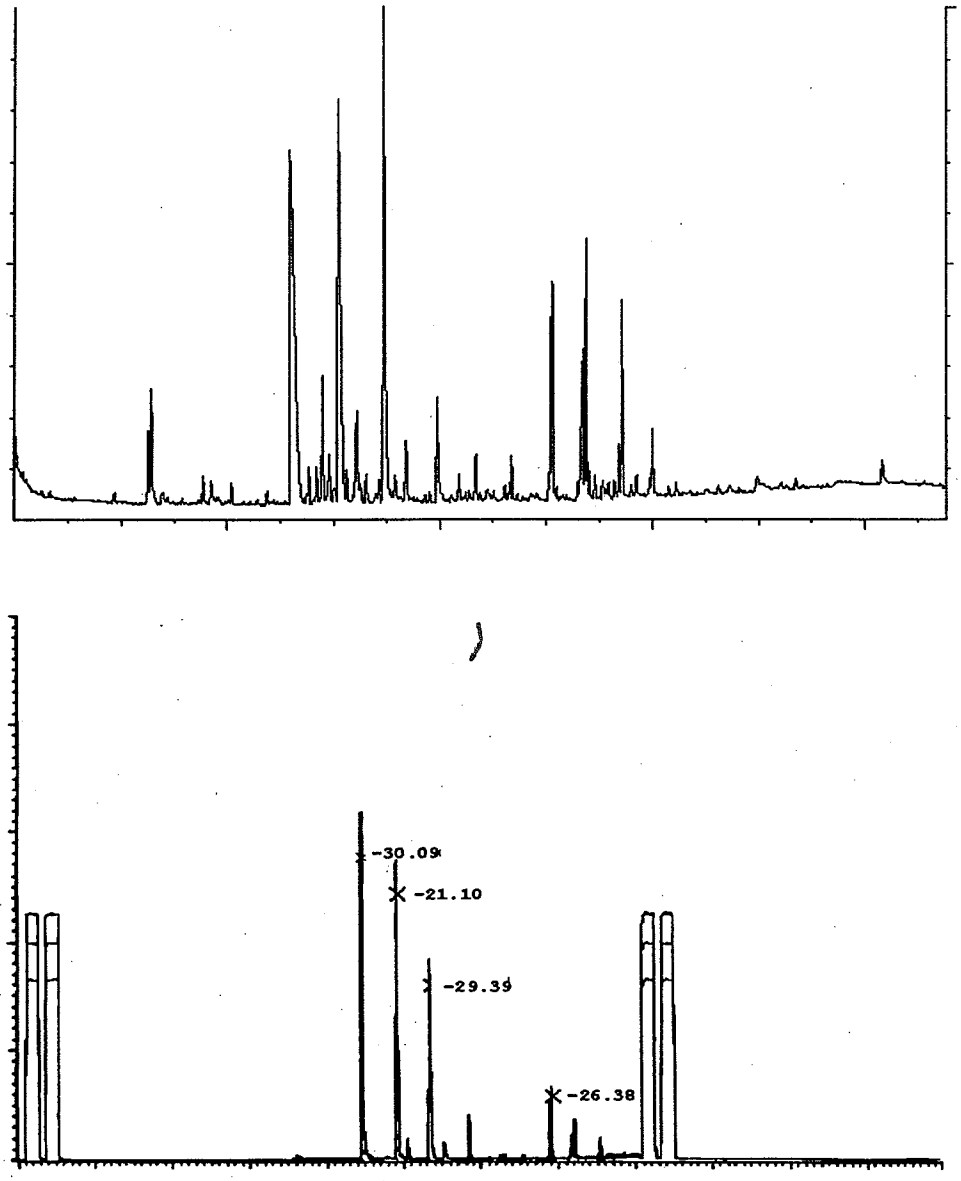

Figure 3. Ground-water sample from GM13. Contaminant concentrations are similar to GMSB-2A shown in Figure 1. The labeled peaks are acetate, propionate, butyrate, and 3-methylphenol, in that order.

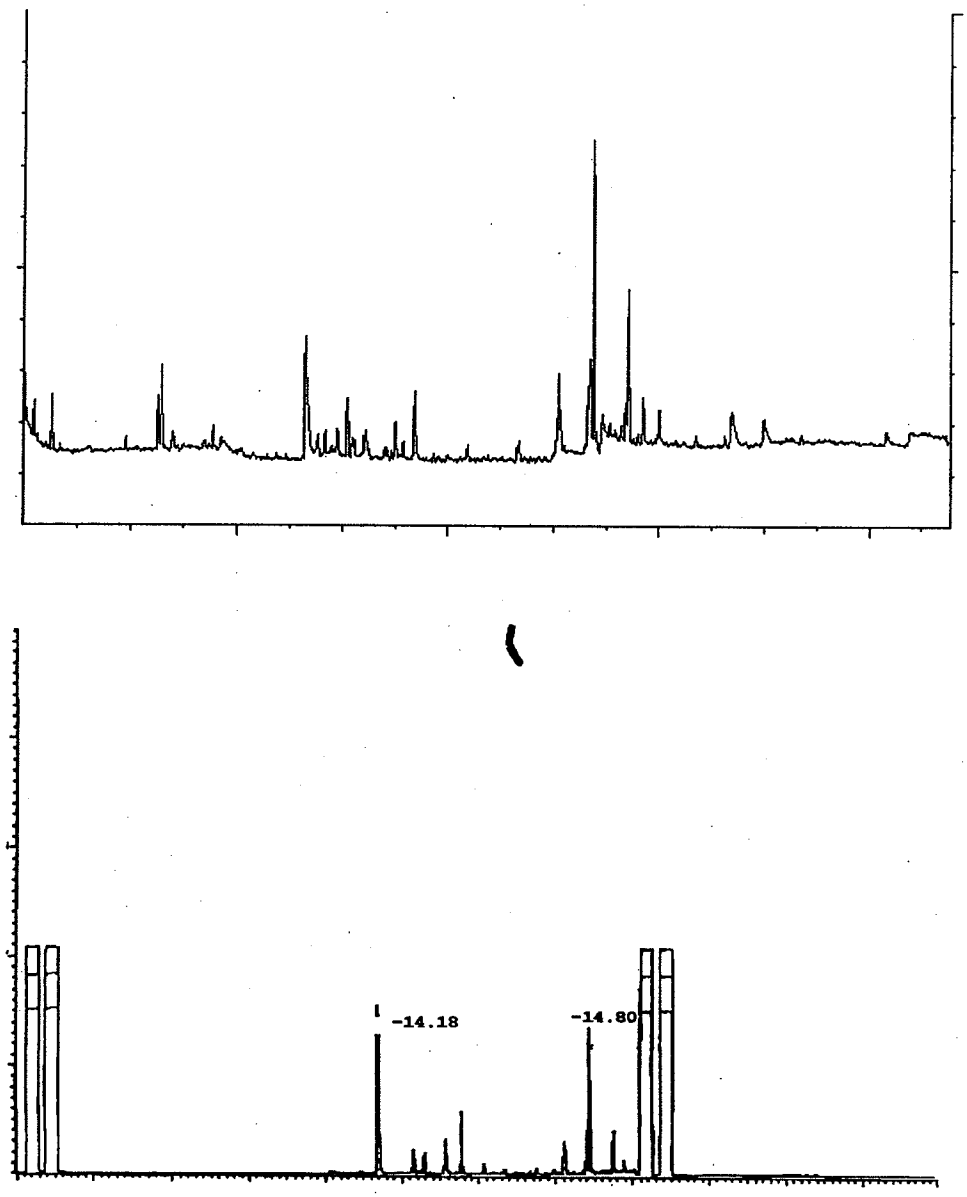

Figure 4. Ground-water sample from GM2B. Acetate concentrations are about 1000 mg/L and 3-ethylphenol is 1 mg/L. The labeled peaks are acetate and 3-ethylphenol, in that order.

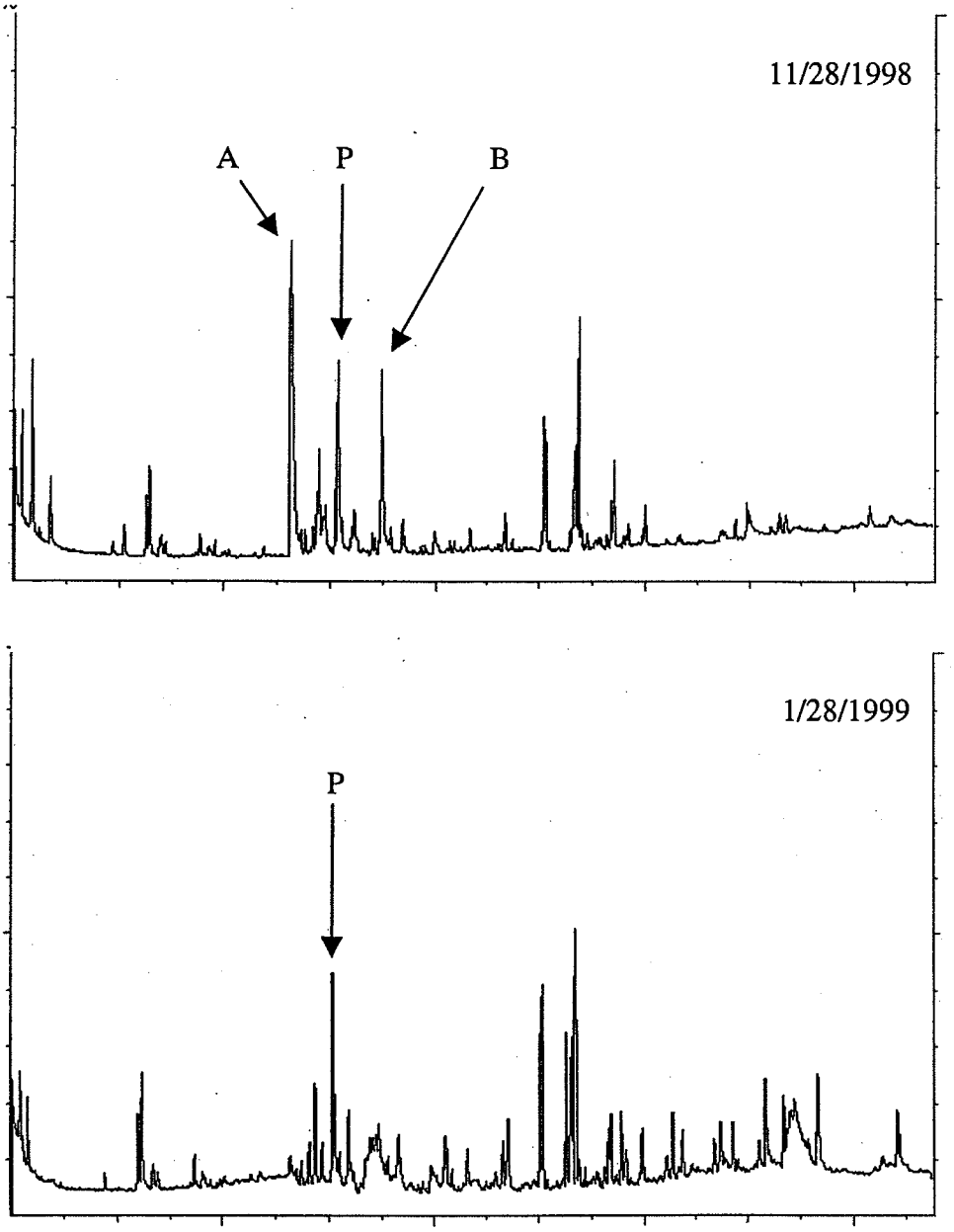

Figure 5. GC/MS chromatogram showing the loss of VFAs that occurred during the first ~ 60 days of incubation as a result of a faulty sampling valve. A = acetate, B = butyrate, and P = propionate.

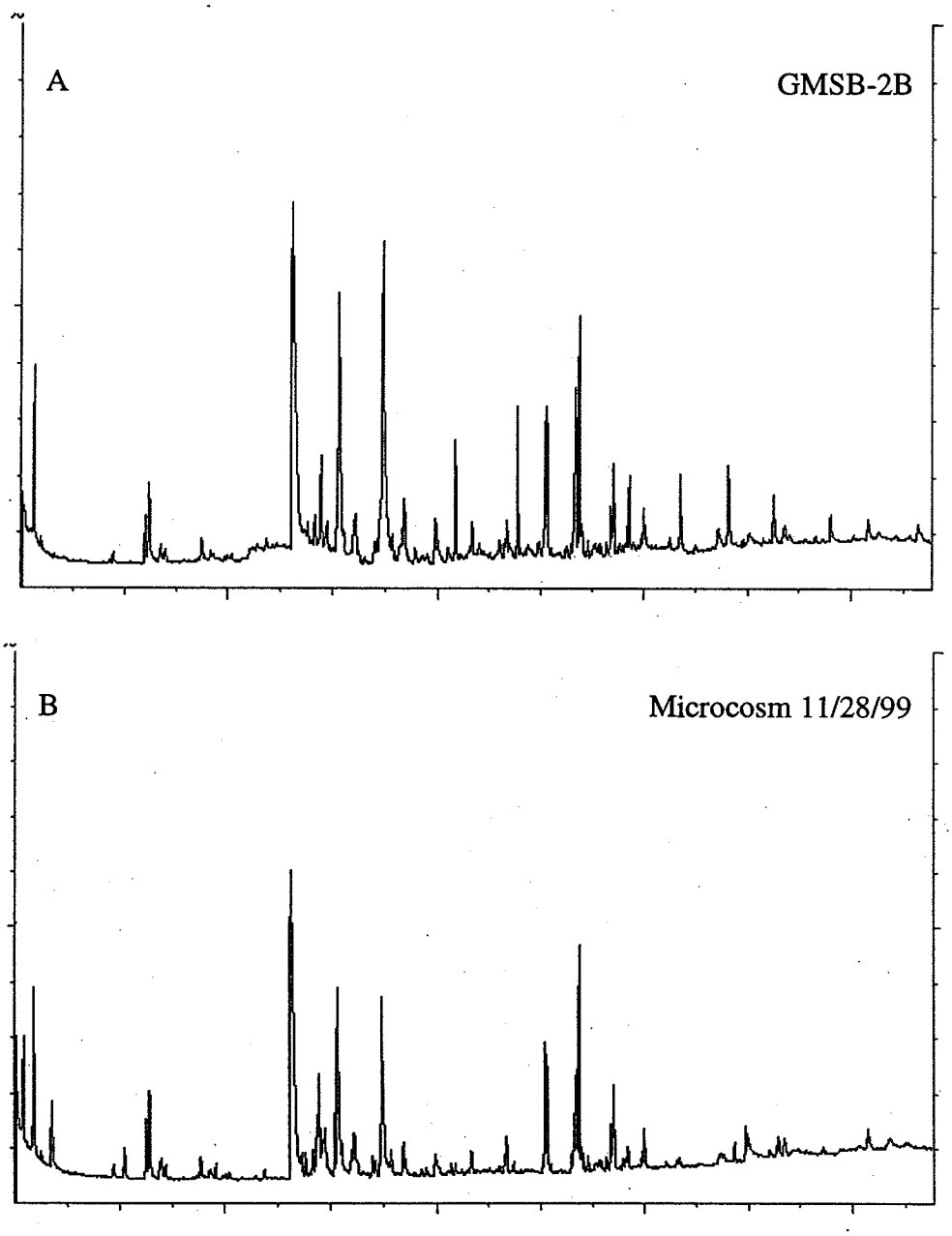

Figure 6. GC/MS chromatograms of ground-water sample GMSB-2B (A) and B the inoculated microcosm sample.

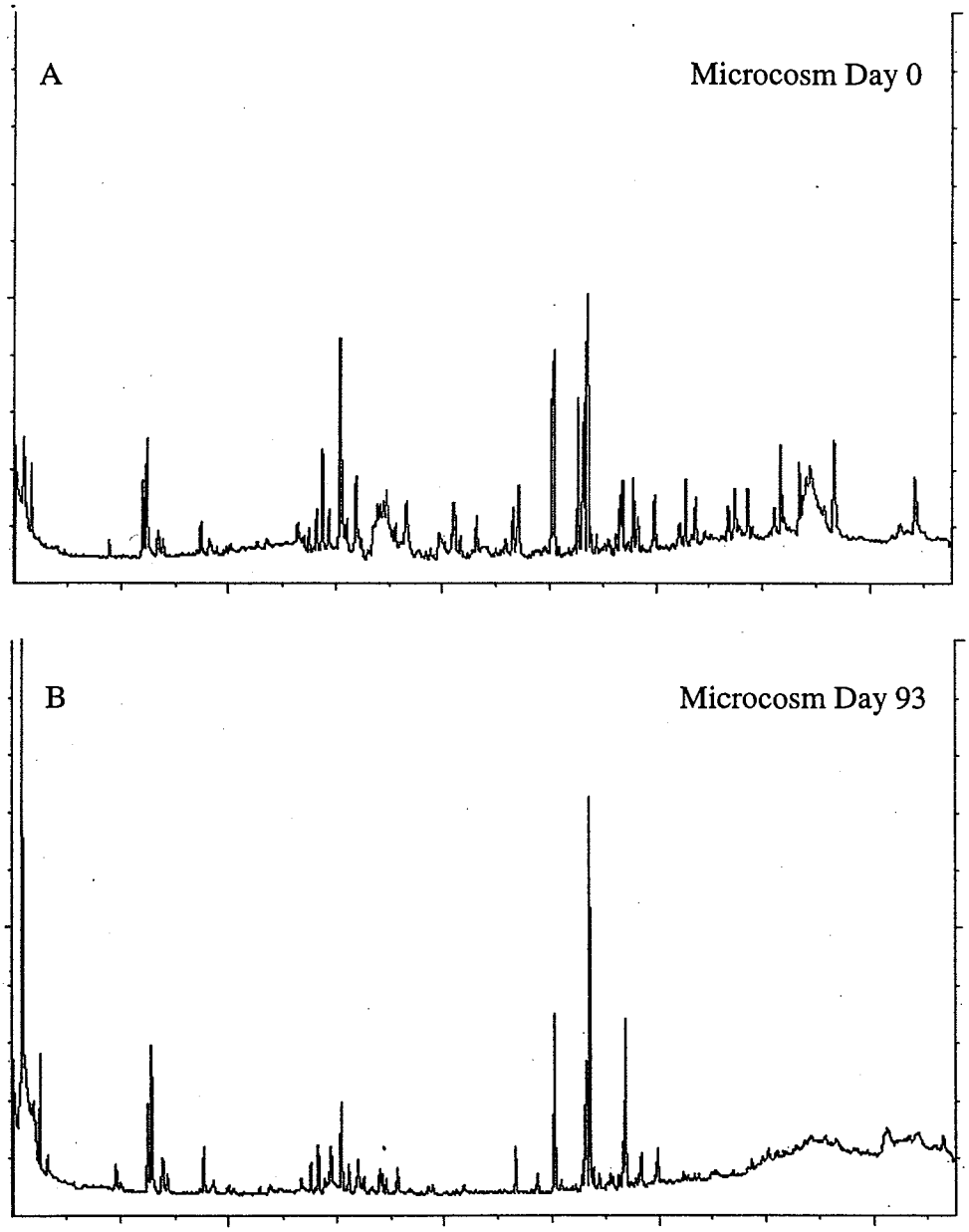

Figure 7. Comparison of the GC/MS chromatograms of Day 0 (A) to Day 93 (B) showing the approximate shift from biodegradation of VFAs to biodegradation of phenolic compounds.

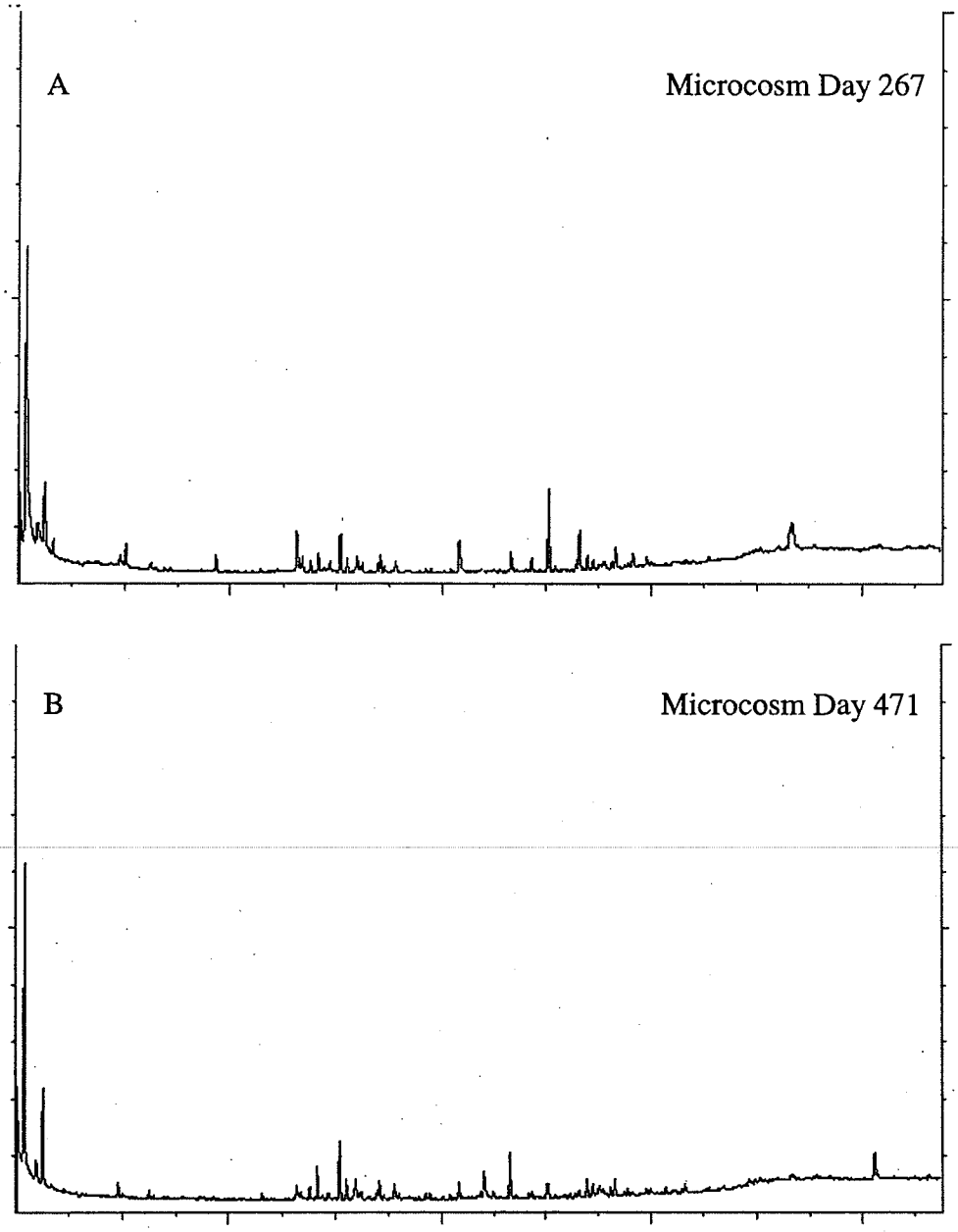

Figure 8. Comparison of the GC/MS chromatograms of Day 271 (A) where several of the phenolic compounds are present to Day 471 (B) when all of the biodegradable compounds have been utilized.

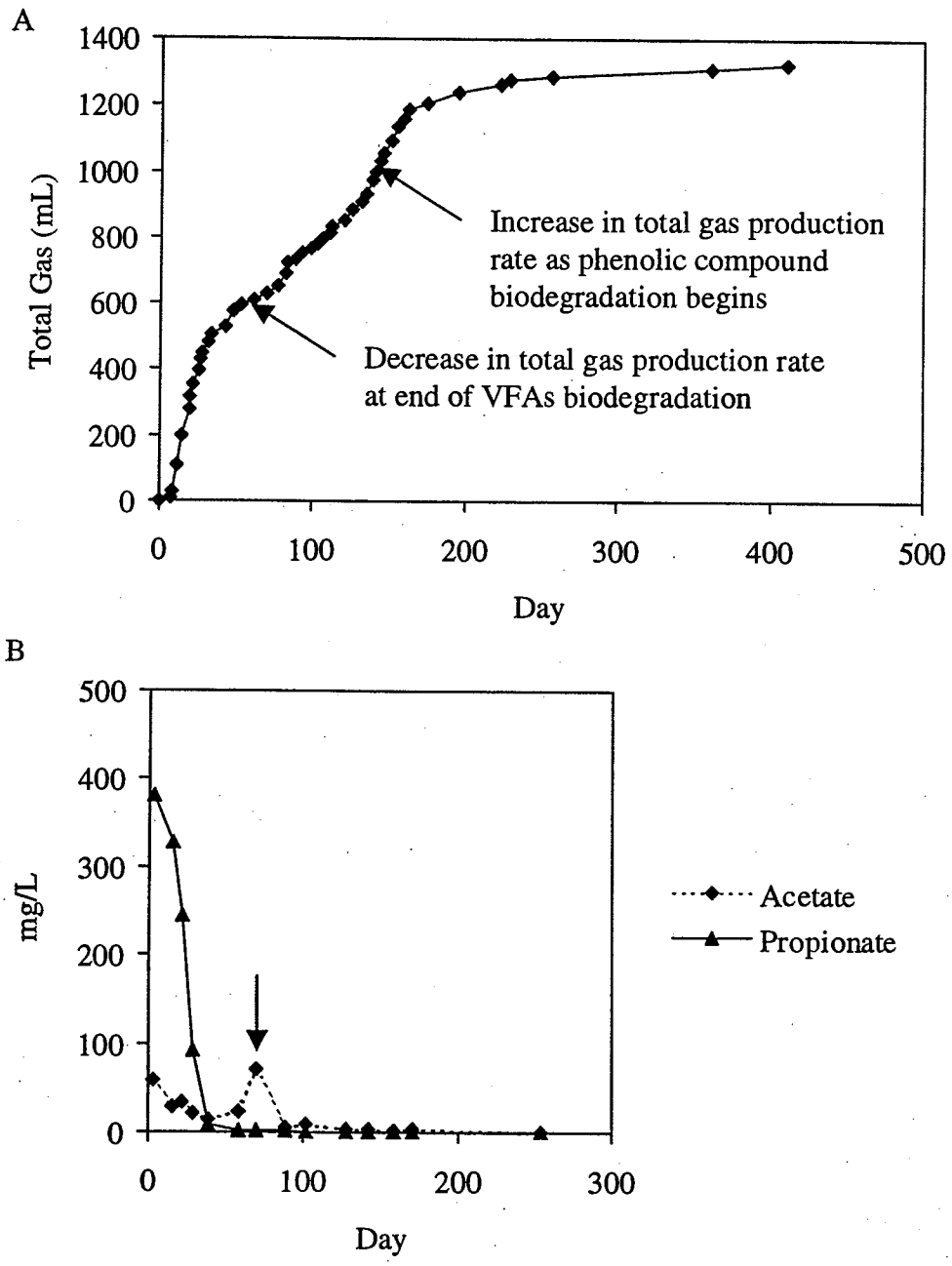

Figure 9. Total gas production (A) and VFA concentrations (B) in the microcosm. The increase in total gas production rate after Day ~80 is due to the shift to phenolic compound biodegradation. The arrow in B, is the concomitant increase in acetate as the result of propionate biodegradation.

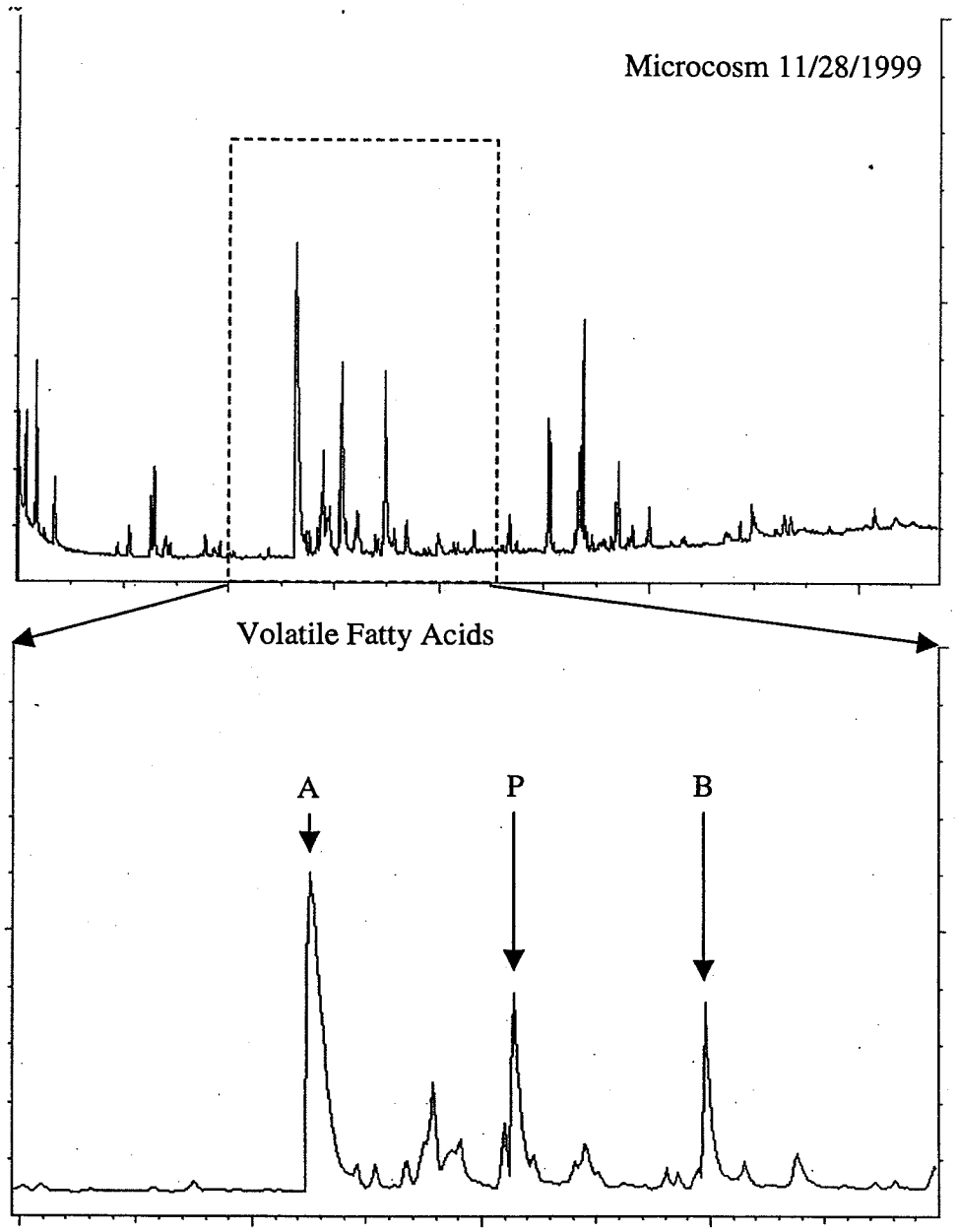

Figure 10. Identified and confirmed VFA in the microcosm on 11/28/1998. A = acetate, B = butyrate, and P = propionate.

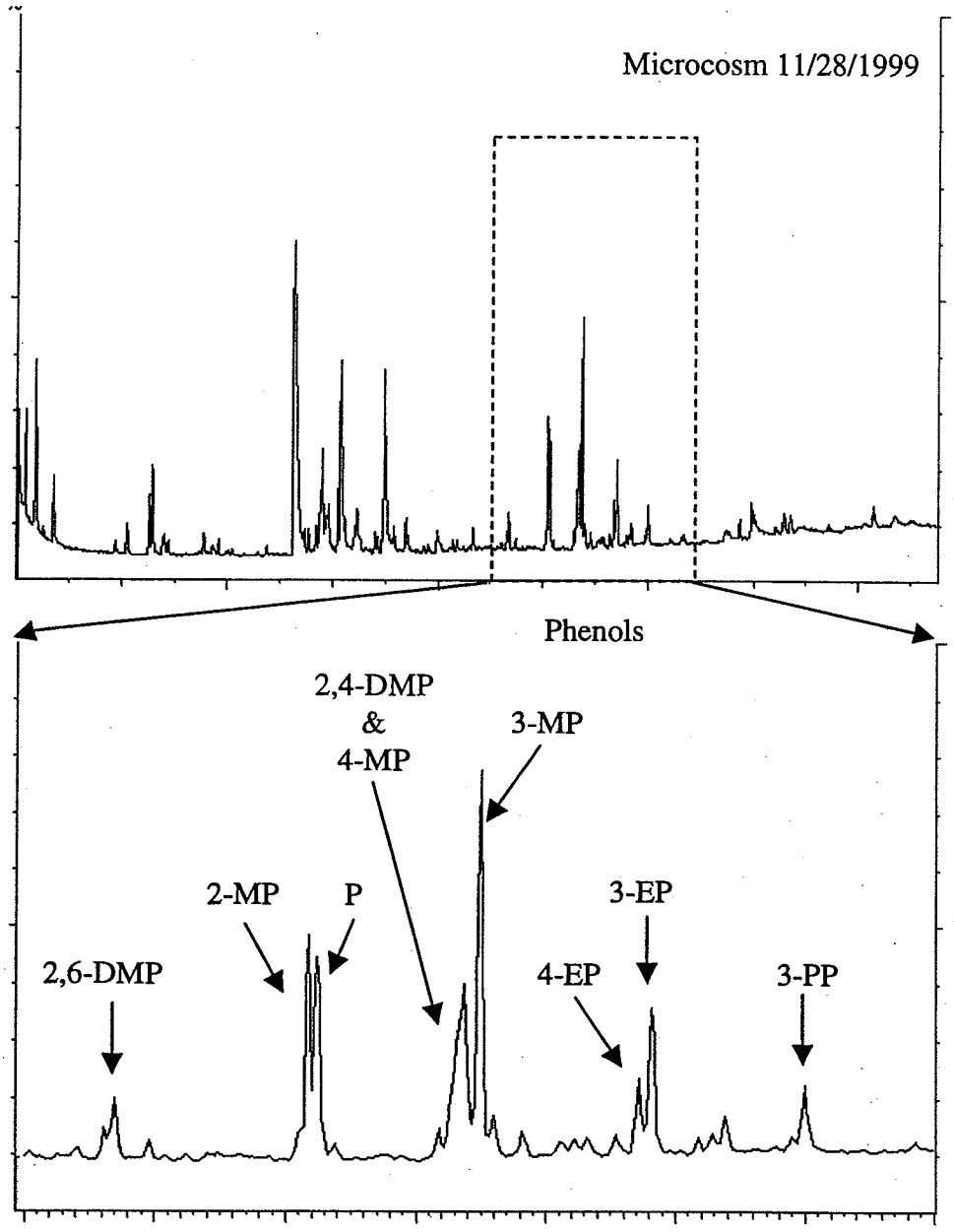

Figure 11. Identified and confirmed phenolic compounds in the microcosm on 11/28/1998. P = phenol, 2-MP = 2-methylphenol, 3-MP = 3-methylphenol, 4-MP = 4-methylphenol, 3-EP = 3-ethylphenol, 4-EP = 4-ethylphenol, 3-PP = 3-propylphenol, 2,4-DMP = 2,4-dimethylphenol, 2,6-DMP = 2,6-dimethylphenol.

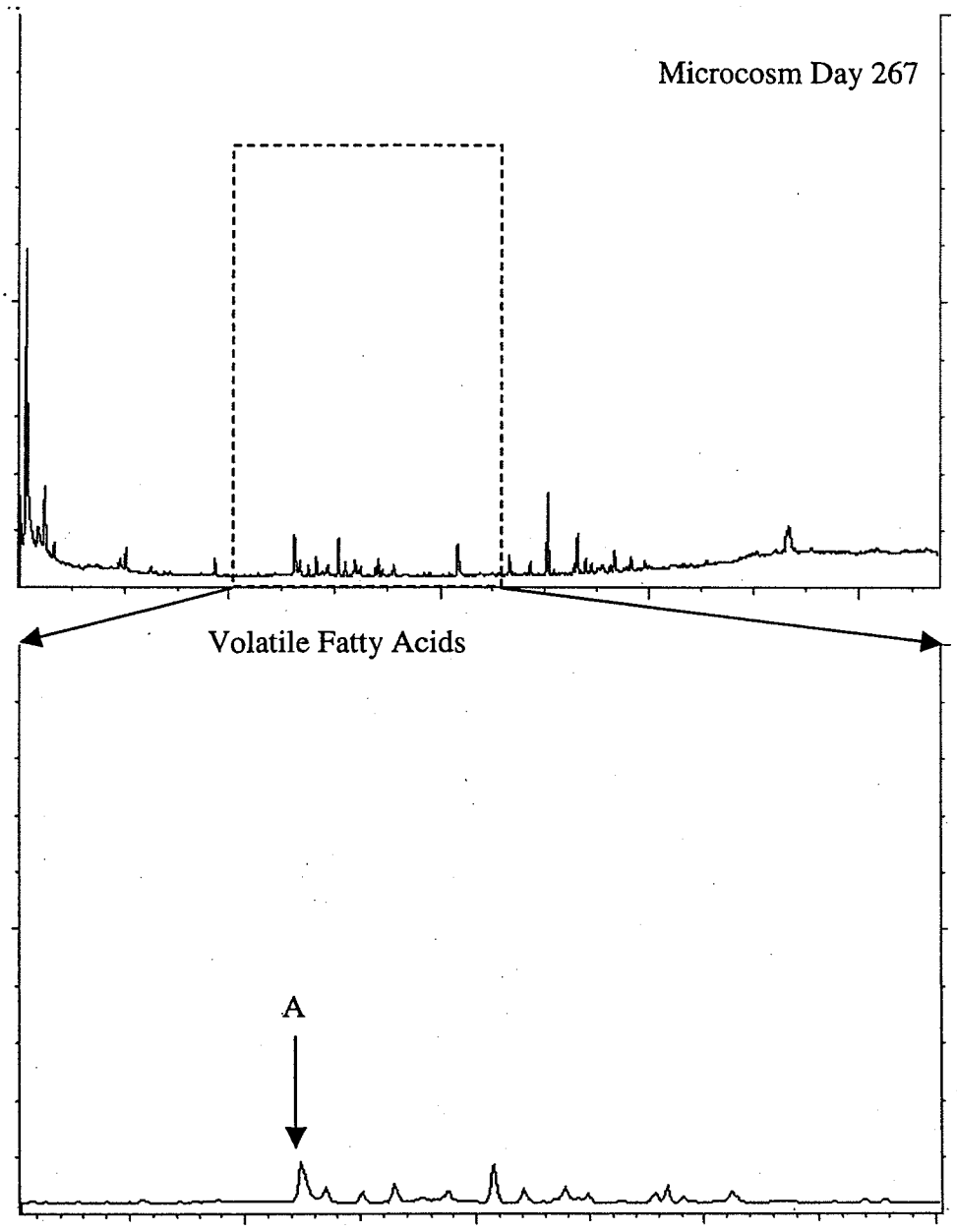

Figure 12. Identified and confirmed VFAs in the microcosm on Day 276. Abbreviations same as for Figure 10.

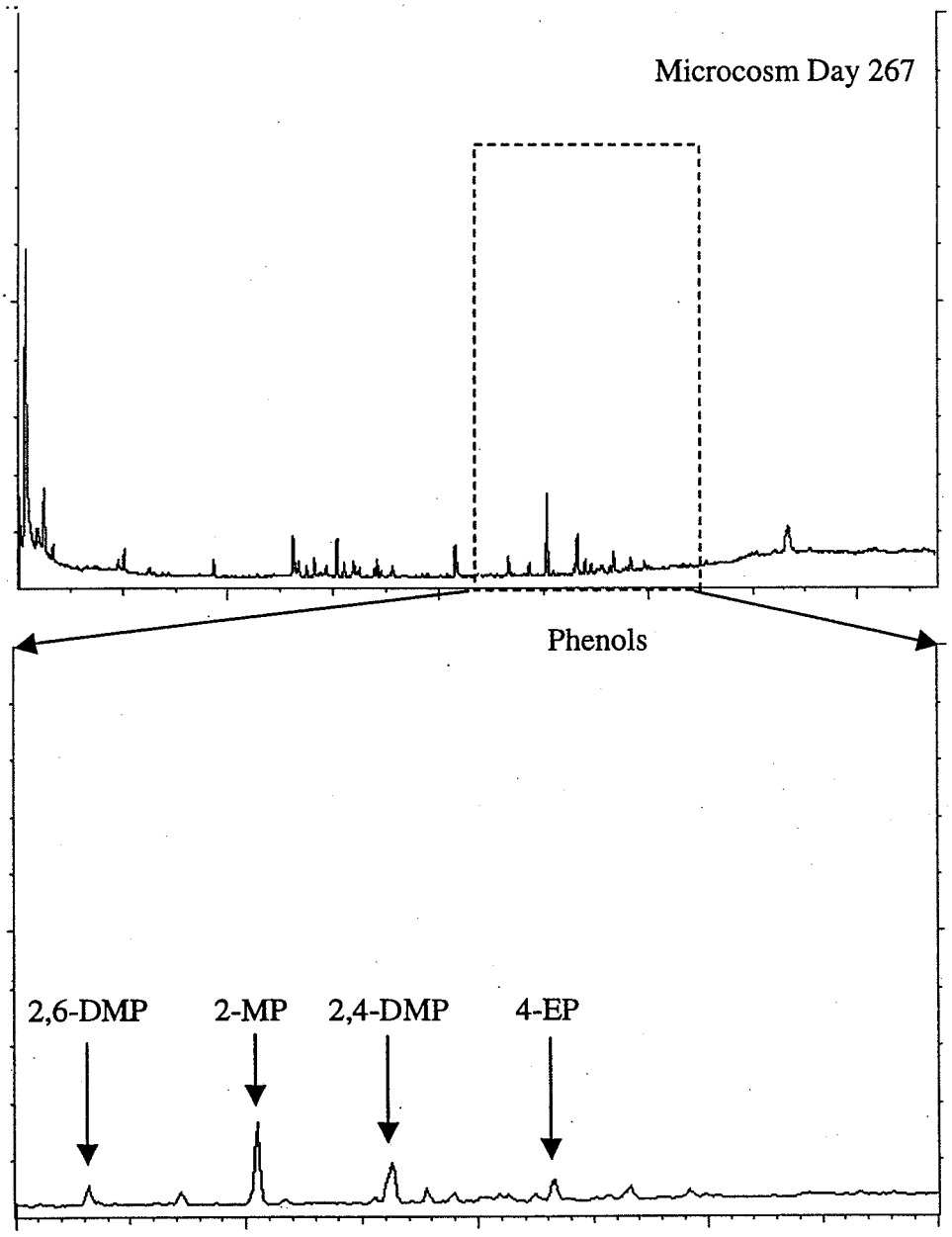

Figure 13. Identified and confirmed phenolic compounds in the microcosm on Day 276. Abbreviations same as for Figure 11.

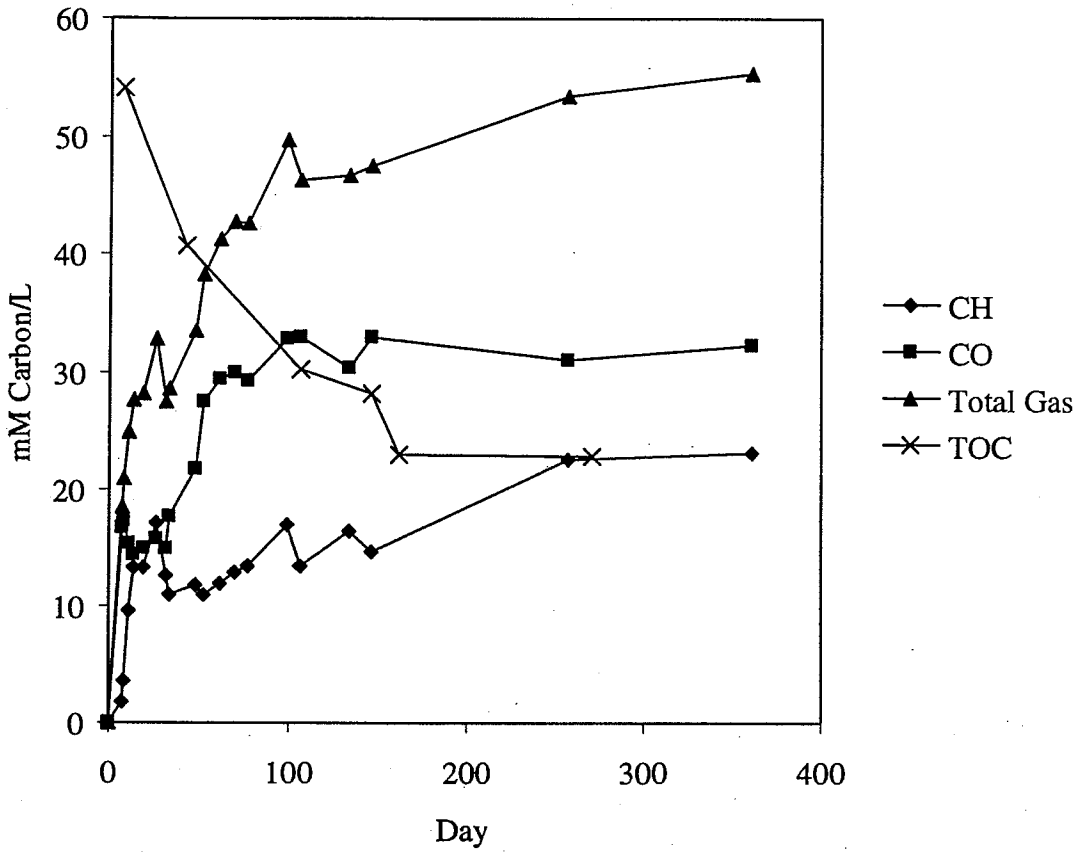

Figure 14. Mass balance of mmol/L TOC degradation compared with the mmol/L Total Gas production, mmol/L CH_4 production, and mmol/L CO_2 production. A total of 105% of the TOC carbon was accounted for in the biodegradation process. Included, but not shown, is the 0.28 mmol/L carbon as biomass.

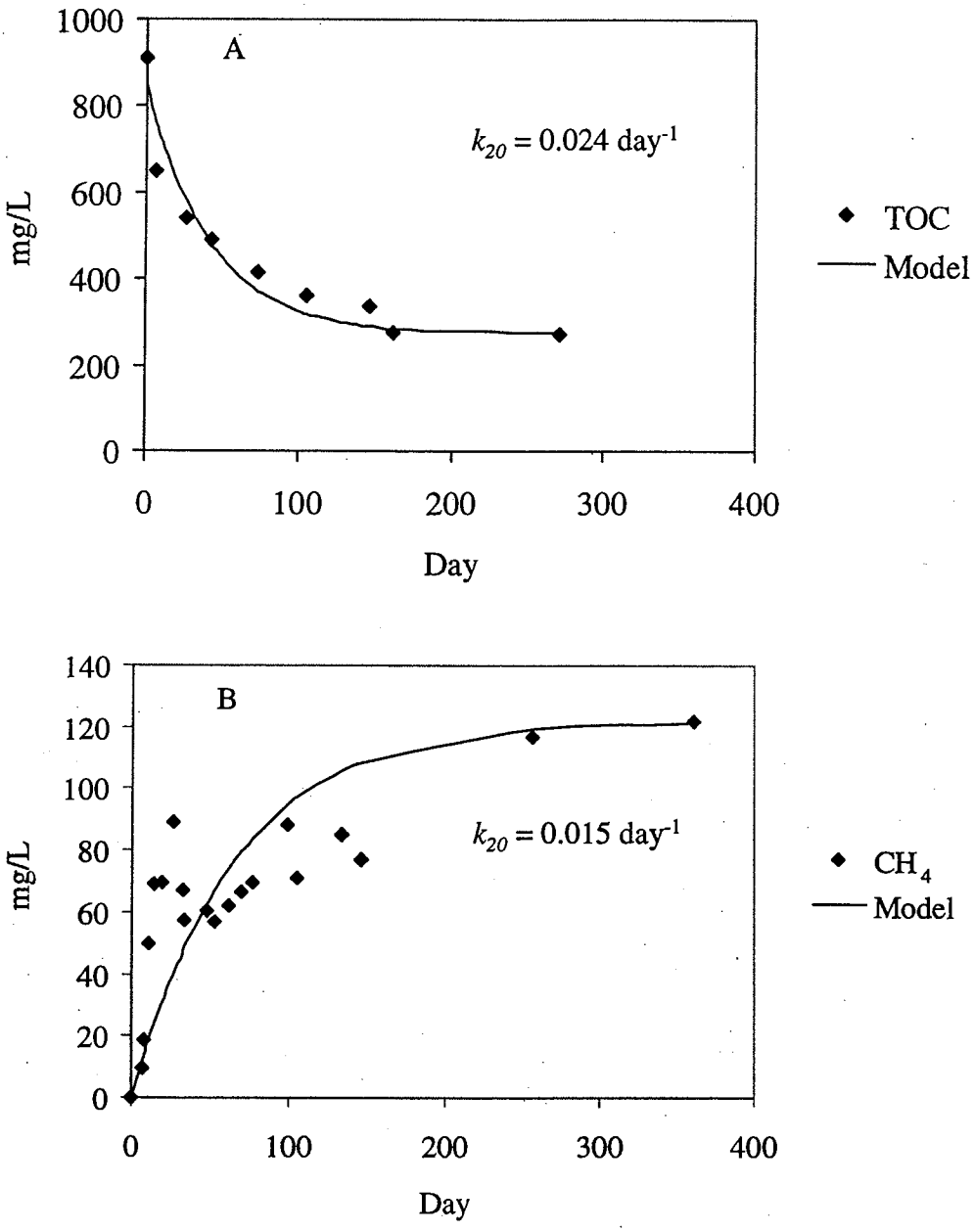

Figure 15. First-order model predictions determined by non-linear regression analysis of TOC utilization (A) and CH_4 production (B) in the microcosm. The k_{10} values are given in Table 4.

Tables

Table 1. Number of microorganisms present in water and sediment samples from GMSB-2A. Methanogenic microorganisms were tested using the two substrates listed and a third or total medium that contained both of the other two substrates.

	Water, cells/ml	*Sediment, cells/g dry weight*
Aerobes	ND	$>2.5 \times 10^5$
Fermenters	ND	$>2.5 \times 10^5$
Denitrifyers	ND	1.4×10^5
Iron Reducers	ND	$>2.5 \times 10^5$
Sulfate Reducers	-	-
Methanogens		
H_2 - CO_2	ND	<1.6
Acetate	ND	<1.6
Total	ND	<1.6

\- Samples accidentally destroyed before analysis
ND Less than 1 cell/0.1 mL water sample

Table 2. Monod family of equations for substrate utilization and growth.

	Equation	Derived Constant	Condition
Monod	$-\frac{dS}{dt} = \frac{\mu_{max} X_a S}{Y(K_s + S)}$	None	None
Growth	$\frac{dX_a}{dt} = \frac{\mu_{max} X_a S}{K_s + S}$	None	None
Zero-Order, Substrate	$-\frac{dS}{dt} = k_0$	$k_0 = \frac{\mu_{max} X_{ao}}{Y}$	$X_{ao} >> S_o$, $S_o >> K_s$
First-Order, Substrate	$-\frac{dS}{dt} = kS$	$k = \frac{\mu_{max} X_{ao}}{YK_s}$	$X_{ao} >> S_o$, $S_o << K_s$
First-Order, Product	$\frac{dP}{dt} = k(P_o - P)$		

Table 3. Concentrations (mg/L) of selected phenolic compounds determined by HPLC.

	Days					
	0	25	63	106	131	162
Phenol	8.5	8.7	8.4	ND	ND	ND
3- & 4-Methylphenol	25.2	26.2	23.7	27.9	27.5	3.6
2-Methylphenol	4.8	4.8	5.46	3.5	3.7	3.8
2,4-Dimethylphenol	3.2	4.1	3.8	3.0	3.1	3.8

ND = not detected

Table 4. First-Order rate constants ± 95% confidence interval for TOC biodegradation and CH_4 production at 20°C (laboratory) and at 10°C (ground water) adapted using the van't Hoff-Arrhenius relationship.

	TOC, mg/L	CH_4, mg/L
k_{20}, day^{-1}	0.024±0.008	0.015±0.005
k_{10}, day^{-1}	0.007±0.002	0.004±0.001

Table 5. Yield coefficients (Y) for CH_4 produced/TOC consumed and biomass produced/TOC consumed.

	$\frac{\text{mmol } CH_4}{\text{mmol TOC}}$	$\frac{\text{mmol } CO_2}{\text{mmol TOC}}$	$\frac{\text{mg } CH_4}{\text{mg TOC}}$	$\frac{\text{mg biomass}}{\text{mg TOC}}$
Y, -	0.43	0.61	0.51	0.01

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Appendix M

Dioxin/Furan Correspondence and Data

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Mini-FAX Transmittal Date pgs

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RUSSELL J. HARDING, Director

REPLY TO

ENVIRONMENTAL RESPONSE DIVISION
KNAPPS CENTRE
PO BOX 30426
LANSING MI 48909-7926

March 7, 2001

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. David Miller
Ford Motor Company
550 Town Center Dr., Suite 200
Dearborn, Michigan 48126-2477

Mr. Daniel Musgrove
The Kingsford Products Company
7123 West 65th Street
Chicago, Illinois 60638

Dear Mr. Miller and Mr. Musgrove:

SUBJECT: Ford Motor Company/Kingsford Products Site, Dickinson County
MDEQ's Dioxin Analytical Results

The Michigan Department of Environmental Quality (MDEQ) has reviewed the May 2000 groundwater dioxin analytical results from the Ford Motor Company/Kingsford Products (FORD/KPC) Site. From the data, total toxic equivalent concentrations (TECs) have been calculated according to procedures outlined in Rule 323.1209 of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. TEC calculations for the total data are attached. The TEC calculations for the wells along the Menominee River are shown in Table 1.

Table 1: Total TECs for monitoring wells GM-5, GM-25-B, GM-26-A, and GM-26-C at the Ford-Kingsford/Easton Estates site, May 2000.

Congener	GM-5	GM-25-B	GM-26-A	GM-26-C
Dioxins				
2,3,7,8-TCDD	---	---	---	---
1,2,3,7,8-PeCDD	---	---	---	---
1,2,3,4,7,8-HxCDD	---	---	---	---
1,2,3,6,7,8-HxCDD	---	---	---	---
1,2,3,7,8,9-HxCDD	---	---	---	---
1,2,3,4,6,7,8-HpCDD	---	---	---	---
OCDD	---	0.000043	---	---

EQP 0100e
(Rev. 1/98)

2.6.1 - 3/7/01

Furans				
2,3,7,8-TCDF	---	---	---	---
1,2,3,7,8-PeCDF	**0.055**	---	---	---
2,3,4,7,8-PeCDF	---	---	---	---
1,2,3,4,7,8-HxCDF	**0.032**	---	---	**0.0152**
1,2,3,6,7,8-HxCDF	**0.08**	---	---	---
2,3,4,6,7,8-HxCDF	**0.182**	---	---	---
1,2,3,7,8,9-HxCDF	**0.246**	---	---	---
1,2,3,4,6,7,8-HpCDF	---	---	---	---
1,2,3,4,7,8,9-HpCDF	---	---	---	---
OCDF	**0.000124**	---	---	---
TOTAL TECs (pg/l)	0.595124	0.000043	0	0.0152

Total TECs were compared, in accordance with Rule 323.1209, to the water quality standard of 0.0031 picograms per liter (pg/l), the applicable groundwater-surface water interface (GSI) criteria. Total TECs at monitoring wells GM-5 and GM-26-C exceed the generic GSI criteria. Additional investigation is necessary to confirm and define the extent of the dioxin contamination along the Menominee River. The maximum concentrations and the discharge rate of the venting groundwater, including dioxin, the ambient water concentrations, fish tissue concentrations, and other potential sources of dioxin and furan congeners to the receiving waters must be determined to include in a mixing zone calculation.

In FORD/KPC's August 22, 2000 letter to Mr. Christopher Austin, a number of concerns about the integrity of the MDEQ's groundwater dioxin analyses results were expressed.

These concerns included the MDEQ's sampling techniques and sampling rates. Monitoring wells (MWs) GM-25-B, GM-26-A, and GM-26-C were sampled using the technique described in U.S. Environmental Protection Agency's "Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedure," Groundwater Issue, April 1996. The remaining MWs, GM-2-B, GM-15, and GM-5, were sampled using a submersible groundwater-sampling pump set at the lowest flow rate possible. Since the concentrations found from well GM-5 were at maximum GSI exceedence, it would be advisable to resample the well using a low-flow technique.

FORD/KPC indicated that the reported groundwater results might actually represent dioxin partitioned onto soil, rather than dioxin dissolved in groundwater. The MDEQ's records indicate that only the sample collected from MW GM-2B contained perceptible sediment. In addition, it is unlikely that dioxins/furans were present in the depositional environment that resulted in the formation of this aquifer.

FORD/KPC noted that some sampling equipment encountered the ground surface, and postulated this may have introduced "artifact" concentrations of dioxins into the groundwater samples. The MDEQ's records show that no sampling equipment that contacted the samples touched the ground. Sampling equipment which does not

contact the sample (i.e. the peristaltic pump, the wheels on the pump, and the cooler used to ship the samples) likely contacted the ground. During mobilization to a sampling location, this can not be avoided in any practical sense, and contact of this equipment with the ground would not affect the analytical results of the samples.

A final concern expressed in the letter regarded the possibility of cross contamination affecting sample analyses results. A blank was collected before sampling any MW to determine whether the pump could have contaminated the sample. The data for these pump blanks show that cross contamination did not cause the dioxin detections in the groundwater samples. Additionally, these MWs were sampled in the order of least contaminated to most contaminated, based on concentrations of other compounds (non-dioxin/furan) detected in previous sampling events. The analytic results from this sampling event indicate that these MWs were indeed sampled in the order of least to most contaminated (with dioxins/furans). The appropriate selection of MW sampling order and the analyses of pump blanks demonstrate that dioxins detected in groundwater samples can not be attributed to cross contamination.

If you have any questions or comments, please contact Mr. Austin at 906-875-2071, or you may contact me.

Sincerely,

Andrew W. Hogarth, Assistant Chief
Environmental Response Division
517-373-9838

Attachment - SWQD TEC Calculation sheets
cc: Mr. Darryl Wickman, City of Kingsford
Mr. Jerry Amber, FORD
Mr. Richard T. Conti, KPC
cc/att: Mr. Christopher Dobyns, Michigan Department of Attorney General
Mr. Steve Casey, MDEQ
Ms. Patricia A. McKay, MDEQ
Ms. Patricia A. Brandt, MDEQ
Mr. Clifton Clark, MDEQ
Mr. Christopher Austin, MDEQ

DIOXINs and FURANs TEQ and TEC Calculator

Facility: Ford-Kingsford/Easton Estates
Date: October 2, 2000
Reviewer: C.L.Summer

$(TEC)_{TCDD} = sum[(C)_x (TEF)_x (BEF)_x]$
$(TEC)_{TCDD}$ = 2,3,7,8-TCDD toxicity equivalence concentration
$(C)_x$ = concentration of congener x in the discharge
$(TEF)_x$ = toxicity equivalency factor for congener x
$(BEF)_x$ = bioaccumulation equivalency factor for congener x

Notes: VGW request by P.Brandt 8/3/00. Follow up from A. Hogarth to D. Armbruster 8/3/00. RCW = MENOMINEE RIVER.

Sample or Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
GM-2B May 2000	**Dioxins**		(pg/L)							
	2,3,7,8-TCDD	<	1.9		1.0	—	1.0	—	PCDD TECs (%) 0.8%	Triangle Labs data. Method 8290. "J"= Estimated conc. b/c analyte to internal standard ration outside calibration curve. "U" = isomer cannot be resolved from co-eluting interferent GC peak. The specific isomer reported as N.D. b/c valid concentration can't be determined. "EMPC" = Estimated Maximum Possible Concentration (see below). "B" = analyte detected in laboratory method blank. Flag is used when sample conc. <20x blank conc.
Do not use for compliance	**1,2,3,7,8-PeCDD**	<	2.6	UJ	0.5	—	0.9	—		
	1,2,3,4,7,8-HxCDD	<	3.6	UJ	0.1	—	0.3	—		
	1,2,3,6,7,8-HxCDD	<	3.2		0.1	—	0.1	—		
Sample noted as cloudy, yellow, and had an odor.	1,2,3,7,8,9-HxCDD	<	3.3		0.1	—	0.1	—		
	1,2,3,4,6,7,8-HpCDD		4.9	J	0.01	0.049	0.05	0.00245		
	OCDD		26.5	J	0.001	0.0265	0.01	0.000265		
	Total Dioxin Congeners		**31.4**		$(TEQ)_{TCDD}$ =	**0.0755**	$(TEC)_{TCDD}$ =	**0.002715**		
Congeners in bold type: % recovery outside QC limits, but relative % diff. Within QC limits. Most are non-detect, so doesn't affect conc reported. Effect on 1,2,3,4,7,8-HxCDF reported as not significant.	**Furans**		(pg/L)							
	2,3,7,8-TCDF		3.6	J	0.1	0.36	0.8	0.288	PCDF TECs (%) 99.2%	
	1,2,3,7,8-PeCDF	*	2.6	EMPC,J	0.05	—	0.2	—		
	2,3,4,7,8-PeCDF	<	1.6		0.5	—	1.6	—		
	1,2,3,4,7,8-HxCDF		4.2	J	0.1	0.42	0.08	0.0336		
	1,2,3,6,7,8-HxCDF	<	2.4		0.1	—	0.2	—		
	2,3,4,6,7,8-HxCDF	<	2.8	UJ	0.1	—	0.7	—		
	1,2,3,7,8,9-HxCDF	<	3.1	UJ	0.1	—	0.6	—		
	1,2,3,4,6,7,8-HpCDF	<	3.2		0.01	—	0.01	—		
	1,2,3,4,7,8,9-HpCDF	<	3.9		0.01	—	0.4	—		
	OCDF		9.3	J	0.001	0.0093	0.02	0.000186		
	Total Furan Congeners		**47.1**		$(TEQ)_{TCDF}$ =	**0.7893**	$(TEC)_{TCDF}$ =	**0.321786**	**0.324501**	
								Total TECs =	**1.0E+02**	**> MWQS**

Sample or Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
GM-SG-5 MAY 2000	**Dioxins**		(pg/L)							
	2,3,7,8-TCDD	<	1.7		1.0	—	1.0	—	PCDD TECs (%) 0.9%	TLI Blank [OCDD]=22.3 ('J'). Therefore, blank correction = 33.9-22.3 = 11.6
	1,2,3,7,8-PeCDD	<	2		0.5	—	0.9	—		
	1,2,3,4,7,8-HxCDD	<	2.4		0.1	—	0.3	—		
	1,2,3,6,7,8-HxCDD	<	2.2		0.1	—	0.1	—		
	1,2,3,7,8,9-HxCDD	<	2.3		0.1	—	0.1	—		
	1,2,3,4,6,7,8-HpCDD		6.6	J	0.01	0.066	0.05	0.00033		
	OCDD		11.6	J,B,(U)	0.001	0.0116	0.01	0.000116		
	Total Dioxin Congeners		**18.2**		$(TEQ)_{TCDD}$ =	**0.0776**	$(TEC)_{TCDD}$ =	**0.003416**		
	Furans		(pg/L)							EMPC code means congener meets the retention time criteria, but does not match the isotope. Therefore, some kind of interference occurred.
	2,3,7,8-TCDF	<	1.4		0.1	—	0.8	—	PCDF TECs (%) 99.1%	
	1,2,3,7,8-PeCDF		4.4	J	0.05	0.22	0.2	0.044		
	2,3,4,7,8-PeCDF	<	1.4		0.5	—	1.6	—		
	1,2,3,4,7,8-HxCDF		4.7	J	0.1	0.47	0.08	0.0376		
	1,2,3,6,7,8-HxCDF		3.7	J	0.1	0.37	0.2	0.074		
	2,3,4,6,7,8-HxCDF		3.4	J	0.1	0.34	0.7	0.238		
	1,2,3,7,8,9-HxCDF	<	1.9		0.1	—	0.6	—		
	1,2,3,4,6,7,8-HpCDF	*	4.1	EMPC, J	0.01	—	0.01	—		
	1,2,3,4,7,8,9-HpCDF	<	3.5		0.01	—	0.4	—		
	OCDF		12.6	J	0.001	0.0126	0.02	0.000252		Cumulative TECs
	Total Furan Congeners		**28.8**		$(TEQ)_{TCDF}$ =	**1.4**	$(TEC)_{TCDF}$ =	**0.393852**	**0.397268**	**0.721769**
								Total TECs =	**1.3E+02**	**> MWQS**

MI WATER QUALITY STDS	HNV Drink = Non-Drink	HCV Drink = Non-Drink	WV	Enforceable WQ Value (pg/l)
2,3,7,8-TCDD	6.7×10^{-8} ug/l	8.6×10^{-9} ug/l	3.1×10^{-9} ug/l	0.0086
Total TECs				0.0031

DIOXINs and FURANs TEQ and TEC Calculator

$(TEC)_{TCDD} = sum[(C)_x (TEF)_x (BEF)_x]$

$(TEC)_{TCDD}$ = 2,3,7,8-TCDD toxicity equivalence concentration

$(C)_x$ = concentration of congener x in the discharge

$(TEF)_x$ = toxicity equivalency factor for congener x

$(BEF)_x$ = bioaccumulation equivalency factor for congener x

Facility: Ford-Kingsford/Easton Estates
Date: October 2, 2000
Reviewer: C.L.Summer

Sample or Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
GM-5 MAY 2000	**Dioxins**		(pg/L)							
	2,3,7,8-TCDD	<	2.6		1.0	—	1.0	—	PCDD TECs (%)	TLI Blank = 22.3, therefore blank correction = 20.4 - 22.3 = (< 0).
Near river - consider compliance point.	1,2,3,7,8-PeCDD	<	3.6		0.5	—	0.9	—	—	
	1,2,3,4,7,8-HxCDD	<	3		0.1	—	0.3	—		
	1,2,3,6,7,8-HxCDD	<	2.8		0.1	—	0.1	—		
	1,2,3,7,8,9-HxCDD	<	2.8		0.1	—	0.1	—		
Sample noted as slightly cloudy, yellow, and with an odor.	1,2,3,4,6,7,8-HpCDD	*	3.6	EMPC, J	0.01	—	0.05	—		
	OCDD	<	0	EMPC,J,B,(U)	0.001	—	0.01	—		
	Total Dioxin Congeners		0		$(TEQ)_{TCDD}$ =	0	$(TEC)_{TCDD}$ =	0		
	Furans		(pg/L)							
	2,3,7,8-TCDF	<	2		0.1	—	0.8	—	PCDF TECs (%)	
	1,2,3,7,8-PeCDF		5.5	J	0.05	0.275	0.2	0.055	100.0%	
	2,3,4,7,8-PeCDF	<	2.6		0.5	—	1.6	—		
	1,2,3,4,7,8-HxCDF		4	J	0.1	0.4	0.08	0.032		
	1,2,3,6,7,8-HxCDF		4	J	0.1	0.4	0.2	0.08		
	2,3,4,6,7,8-HxCDF		2.6	J	0.1	0.26	0.7	0.182		
	1,2,3,7,8,9-HxCDF		4.1	J	0.1	0.41	0.6	0.246		
	1,2,3,4,6,7,8-HpCDF	*	2.4	EMPC,J	0.01	—	0.01	—		
	1,2,3,4,7,8,9-HpCDF	*	2.8	EMPC,J	0.01	—	0.4	—		
	OCDF		6.2		0.001	0.0062	0.02	0.000124		Cumulative TECs
	Total Furan Congeners		26.4		$(TEQ)_{TCDF}$ =	1.7512	$(TEC)_{TCDF}$ =	0.595124	0.595124	1.316893
							Total TECs =	**1.9E+02**	**> MWQS**	

Site and Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
GM-15 MAY 2000	**Dioxins**		(pg/L)							
	2,3,7,8-TCDD	<	1.3		1.0	—	1.0	—	PCDD TECs (%)	TLI Blank = 22.3, therefore blank correction = 4.4 - 22.3 = (< 0).
Not compliance point. Near source.	1,2,3,7,8-PeCDD	<	2		0.5	—	0.9	—	—	
	1,2,3,4,7,8-HxCDD	<	1.8		0.1	—	0.3	—		
	1,2,3,6,7,8-HxCDD	<	1.7		0.1	—	0.1	—		
	1,2,3,7,8,9-HxCDD	<	1.7		0.1	—	0.1	—		
Sample noted as slightly hazy, colorless, and no odor.	1,2,3,4,6,7,8-HpCDD	<	2.1		0.01	—	0.05	—		
	OCDD	<	0	J,B,(U)	0.001	—	0.01	—		
	Total Dioxin Congeners		0		$(TEQ)_{TCDD}$ =	0	$(TEC)_{TCDD}$ =	0		
	Furans		(pg/L)							
	2,3,7,8-TCDF	<	0.9		0.1	—	0.8	—	PCDF TECs (%)	
	1,2,3,7,8-PeCDF	<	1.3		0.05	—	0.2	—	—	
	2,3,4,7,8-PeCDF	<	1.3		0.5	—	1.6	—		
	1,2,3,4,7,8-HxCDF	<	1		0.1	—	0.08	—		
	1,2,3,6,7,8-HxCDF	<	1		0.1	—	0.2	—		
	2,3,4,6,7,8-HxCDF	<	1		0.1	—	0.7	—		
	1,2,3,7,8,9-HxCDF	<	1.2		0.1	—	0.6	—		
	1,2,3,4,6,7,8-HpCDF	<	1.2		0.01	—	0.01	—		
	1,2,3,4,7,8,9-HpCDF	<	1.6		0.01	—	0.4	—		
	OCDF	<	2.7		0.001	—	0.02	—		Cumulative TECs
	Total Furan Congeners		0		$(TEQ)_{TCDF}$ =	0	$(TEC)_{TCDF}$ =	0	0	1.316893
							Total TECs =	—	**> MWQS**	

MI WATER QUALITY STDS.	HNV Drink = Non-Drink	HCV Drink = Non-Drink	WV	Enforceable WQ Value (pg/l)
2,3,7,8-TCDD	6.7×10^{-8} ug/l	8.6×10^{-9} ug/l	3.1×10^{-9} ug/l	0.0086
Total TECs				0.0031

DIOXINs and FURANs TEQ and TEC Calculator

Facility: Ford-Kingsford/Easton Estates
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$(TEC)_{TCDD} = sum[(C)_x (TEF)_x (BEF)_x]$
$(TEC)_{TCDD}$ = 2,3,7,8-TCDD toxicity equivalence concentration
$(C)_x$ = concentration of congener x in the discharge
$(TEF)_x$ = toxicity equivalency factor for congener x
$(BEF)_x$ = bioaccumulation equivalency factor for congener x

Sample or Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
GM-25-B MAY 2000	**Dioxins**		(pg/L)							
	2,3,7,8-TCDD	<	1.2		1.0	—	1.0	—	PCDD TECs (%)	TLI Blank = 6.2 ('J'), therefore, blank correction = 10.5-6.2 = 4.3.
On river Compliance point.	1,2,3,7,8-PeCDD	<	1.5		0.5	—	0.9	—	100.0%	
	1,2,3,4,7,8-HxCDD	<	1.4		0.1	—	0.3	—		
	1,2,3,6,7,8-HxCDD	<	1.3		0.1	—	0.1	—		
	1,2,3,7,8,9-HxCDD	<	1.4		0.1	—	0.1	—		
Sample noted as cloudy, black, and with an odor.	1,2,3,4,6,7,8-HpCDD	<	2.1		0.01	—	0.05	—		
	OCDD		4.3	J,B,(U)	0.001	0.0043	0.01	0.000043		
	Total Dioxin Congeners		4.3		$(TEQ)_{TCDD}$ =	0.0043	$(TEC)_{TCDD}$ =	0.000043		
	Furans		(pg/L)							
	2,3,7,8-TCDF	<	0.8		0.1	—	0.8	—	PCDF TECs (%)	
	1,2,3,7,8-PeCDF	<	1		0.05	—	0.2	—	—	
	2,3,4,7,8-PeCDF	<	1		0.5	—	1.6	—		
	1,2,3,4,7,8-HxCDF	<	0.9		0.1	—	0.08	—		
	1,2,3,6,7,8-HxCDF	<	0.8		0.1	—	0.2	—		
	2,3,4,6,7,8-HxCDF	<	0.9		0.1	—	0.7	—		
	1,2,3,7,8,9-HxCDF	<	1		0.1	—	0.6	—		
	1,2,3,4,6,7,8-HpCDF	<	1		0.01	—	0.01	—		
	1,2,3,4,7,8,9-HpCDF	<	1.5		0.01	—	0.4	—		
	OCDF	<	2.6		0.001	—	0.02	—		Cumulative TECs
	Total Furan Congeners		0		$(TEQ)_{TCDF}$ =	0	$(TEC)_{TCDF}$ =	0	0.000043	1.316936
								Total TECs =	1.4E-02	> MWQS

Sample or Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
GM-26-A MAY 2000	**Dioxins**		(pg/L)							
	2,3,7,8-TCDD	<	1		1.0	—	1.0	—	PCDD TECs (%)	
On river Compliance point.	1,2,3,7,8-PeCDD	<	1.2		0.5	—	0.9	—	—	
	1,2,3,4,7,8-HxCDD	<	1.1		0.1	—	0.3	—		
	1,2,3,6,7,8-HxCDD	<	1		0.1	—	0.1	—		
	1,2,3,7,8,9-HxCDD	<	1.1		0.1	—	0.1	—		
Sample noted as cloudy, yellow, and with an odor.	1,2,3,4,6,7,8-HpCDD	<	1.5		0.01	—	0.05	—		
	OCDD	<	2.3		0.001	—	0.01	—		
	Total Dioxin Congeners		0		$(TEQ)_{TCDD}$ =	0	$(TEC)_{TCDD}$ =	0		
Sample also used for matrix spike and matrix spike dupl.	**Furans**		(pg/L)							
	2,3,7,8-TCDF	<	0.7		0.1	—	0.8	—	PCDF TECs (%)	
	1,2,3,7,8-PeCDF	<	0.8		0.05	—	0.2	—	—	
	2,3,4,7,8-PeCDF	<	0.8		0.5	—	1.6	—		
	1,2,3,4,7,8-HxCDF	<	0.7		0.1	—	0.08	—		
	1,2,3,6,7,8-HxCDF	<	0.7		0.1	—	0.2	—		
	2,3,4,6,7,8-HxCDF	<	0.7		0.1	—	0.7	—		
	1,2,3,7,8,9-HxCDF	<	0.9		0.1	—	0.6	—		
	1,2,3,4,6,7,8-HpCDF	<	0.9		0.01	—	0.01	—		
	1,2,3,4,7,8,9-HpCDF	<	1.3		0.01	—	0.4	—		
	OCDF	<	1.8		0.001	—	0.02	—		Cumulative TECs
	Total Furan Congeners		0		$(TEQ)_{TCDF}$ =	0	$(TEC)_{TCDF}$ =	0	0	1.316936
								Total TECs =	—	> MWQS

MI WATER QUALITY STDS.	HNV Drink = Non-Drink	HCV Drink = Non-Drink	WV	Enforceable WQ Value (pg/l)
2,3,7,8-TCDD	6.7×10^{-6} ug/l	8.6×10^{-9} ug/l	3.1×10^{-9} ug/l	0.0086
Total TECs				0.0031

DIOXINs and FURANs TEQ and TEC Calculator

$(TEC)_{TCDD} = sum[(C)_x (TEF)_x (BEF)_x]$
$(TEC)_{TCDD}$ = 2,3,7,8-TCDD toxicity equivalence concentration
$(C)_x$ = concentration of congener x in the discharge
$(TEF)_x$ = toxicity equivalency factor for congener x
$(BEF)_x$ = bioaccumulation equivalency factor for congener x

Facility: Ford-Kingsford/Easton Estates
Date: October 2, 2000
Reviewer: C.L.Summer

Sample or Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
GM-26-C MAY 2000	**Dioxins**		(pg/L)							
	2,3,7,8-TCDD	<	0.7		1.0	—	1.0	—	PCDD TECs	HpCDD TLI Blank = 4.1, therefore blank correction = 2.7 - 4.1 = (< 0)
	1,2,3,7,8-PeCDD	<	0.8		0.5	—	0.9	—	(%)	
On river Compliance point	1,2,3,4,7,8-HxCDD	<	0.8		0.1	—	0.3	—	—	
	1,2,3,6,7,8-HxCDD	<	0.7		0.1	—	0.1	—		
	1,2,3,7,8,9-HxCDD	<	0.8		0.1	—	0.1	—		
Sample noted as cloudy, yellow, and with an odor.	1,2,3,4,6,7,8-HpCDD	<	0	J,B,(U)	0.01	—	0.05	—		OCDD TLI Blank = 6.2, therefore blank correction = 6.1 - 6/2 = (<0).
	OCDD	*	6.1	EMPC,J,B,(U)	0.001	—	0.01	—		
	Total Dioxin Congeners		0		$(TEQ)_{TCDD}$ =	0	$(TEC)_{TCDD}$ =	0		
	Furans		(pg/L)							
	2,3,7,8-TCDF	<	0.5		0.1	—	0.8	—	PCDF TECs	
	1,2,3,7,8-PeCDF	<	0.6		0.05	—	0.2	—	(%)	
	2,3,4,7,8-PeCDF	<	0.6		0.5	—	1.6	—	100.0%	
	1,2,3,4,7,8-HxCDF		1.9	J	0.1	0.19	0.08	0.0152		
	1,2,3,6,7,8-HxCDF	<	0.4		0.1	—	0.2	—		
	2,3,4,6,7,8-HxCDF	<	0.5		0.1	—	0.7	—		
	1,2,3,7,8,9-HxCDF	<	0.6		0.1	—	0.6	—		
	1,2,3,4,6,7,8-HpCDF	*	1.7	EMPC,J,B,(U)	0.01	—	0.01	—		
	1,2,3,4,7,8,9-HpCDF	<	0.8		0.01	—	0.4	—		
	OCDF	<	1.4		0.001	—	0.02	—		Cumulative TECs
	Total Furan Congeners		1.9		$(TEQ)_{TCDF}$ =	0.2	$(TEC)_{TCDF}$ =	0.0152	0.0152	1.332136
							Total TECs =		4.9E+00	> MWQS

Site and Outfall ID	Congener	<	Reported Conc	Lab Codes	TEF	TEQ	BEF	TEC	Total TEC	Notes
	Dioxins		(pg/L)							
	2,3,7,8-TCDD				1.0	0	1.0	0	PCDD TECs	
	1,2,3,7,8-PeCDD				0.5	0	0.9	0	(%)	
	1,2,3,4,7,8-HxCDD				0.1	0	0.3	0	—	
	1,2,3,6,7,8-HxCDD				0.1	0	0.1	0		
	1,2,3,7,8,9-HxCDD				0.1	0	0.1	0		
	1,2,3,4,6,7,8-HpCDD				0.01	0	0.05	0		
	OCDD				0.001	0	0.01	0		
	Total Dioxin Congeners		0		$(TEQ)_{TCDD}$ =	0.0	$(TEC)_{TCDD}$ =	0		
	Furans		(pg/L)							
	2,3,7,8-TCDF				0.1	0	0.8	0	PCDF TECs	
	1,2,3,7,8-PeCDF				0.05	0	0.2	0	(%)	
	2,3,4,7,8-PeCDF				0.5	0	1.6	0	—	
	1,2,3,4,7,8-HxCDF				0.1	0	0.08	0		
	1,2,3,6,7,8-HxCDF				0.1	0	0.2	0		
	2,3,4,6,7,8-HxCDF				0.1	0	0.7	0		
	1,2,3,7,8,9-HxCDF				0.1	0	0.6	0		
	1,2,3,4,6,7,8-HpCDF				0.01	0	0.01	0		
	1,2,3,4,7,8,9-HpCDF				0.01	0	0.4	0		
	OCDF				0.001	0	0.02	0		Cumulative TECs
	Total Furan Congeners		0		$(TEQ)_{TCDF}$ =	0.0	$(TEC)_{TCDF}$ =	0	0	1.332136
							Total TECs =		—	> MWQS

MI WATER QUALITY STDS.	HNV Drink = Non-Drink	HCV Drink = Non-Drink	WV	Enforceable WQ Value (pg/l)
2,3,7,8-TCDD	6.7×10^{-8} ug/l	8.6×10^{-9} ug/l	3.1×10^{-9} ug/l	0.0086
Total TECs				0.0031

FILE COPY

August 10, 2001

Christopher Austin
Michigan Department of Environmental Quality
1420 US 2 West
Crystal Falls, MI 49920-9626

Subject:
Kingsford Study Area, Kingsford, Michigan
Response to MDEQ March 7, 2001 Letter

Dear Mr. Austin:

ARCADIS G&M reviewed the Michigan Department of Environmental Quality (MDEQ) letter dated March 7, 2001 discussing dioxin/furan data as well as the raw data collected for the above-referenced site. The purpose of this letter is to respond to the MDEQ letter.

The MDEQ letter states that two well samples, from Monitoring Wells GM-25B and GM-26C, show exceedances of dioxin/furan toxicity equivalence concentration (TEC) generic groundwater/surface water interface (GSI) criteria and that additional investigation is needed. ARCADIS G&M has data for a much larger number of wells, including the four referenced in the MDEQ letter, totaling 31 wells. We believe that additional data is not required because no exceedances occur for the entire database, as explained in the letter.

The first matter we would like to address is the evaluation of the dioxin/furan data with respect to results that are found below the detection limit. The MDEQ guidance document, Operational Memorandum #6 Revision 6 (January 12, 2001) specifies that when cleanup criteria do not exceed background or Target Detection Limits (TDLs) then either the background level or the TDLs become the cleanup criteria for purposes of § 20a(11) of Part 201 and for establishing limits for response actions. If the reported analytical results are below the TDLs, then the samples are in compliance with the cleanup criteria.

The second matter we would like to address relates to the appropriate analytical method to use. Operational Memorandum #6 indicates that either of two analytical methods is appropriate for dioxin/furan analysis: Method 8290 or 1613. Method 8290 is from SW-846 and is typically used for waste analysis. Method 1613 is from 40 CFR Part 136 and is used for water analysis. Table 1 of Operational Memorandum #6 specifies the TDLs to be used for dioxin/furan analysis: 10 parts

per quadrillion (ppq) for 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD) and 2,3,7,8-tetrachlorodibenzofuran (2,3,7,8-TCDF), 50 ppq for the penta-, hexa-, and hepta-isomers and 100 ppq for the octa-isomers regardless of which method is used. These detection limits are appropriate for Method 1613 and are the Minimum Level (ML) as well as the TDLs. Method 8290 itself does not actually specify any TDLs. Operational Memorandum #6 Revision 6 uses the 10, 50, and 100 where either analytical method is used. When an analytical result is less than the TDL, that data point is to be used as a zero in the TEC calculation. This approach is consistent with the specific methodology now placed in NPDES permits by MDEQ for polychlorinated biphenyls (PCBs). Dioxins and furans are no different for that purpose.

MDEQ Rule 721 provides that, if the cleanup criterion is below the Practical Quantification Level (PQL), a sample with a result below the MDL shall be considered to have achieved the cleanup criterion. Rule 721 is a carry over from the Michigan Environmental Response Act before Part 201 was enacted, so its terminology is dated, but when read together with Operational Memorandum #6, Revision 6, it is clear that an analytical result below the TDL is in compliance with cleanup criteria.

If a constituent was not detected above the TDL, it was assigned a value of zero. If the constituent was detected in a sample above the TDL, then the detected concentration was used in the TEC calculation. The results of the data evaluation are shown in Table 1.

There are no wells exceeding any generic GSI criteria (regardless of the location of the compliance point and ignoring the use of a mixing zone). Thirty of 31 wells have a TEC of zero. One well, GWGM-68 has a non-zero TEC that is below the generic GSI criterion. The data for GMGW-68 are of questionable quality due to contamination in the blank (see Table 1). The MDEQ March 7, 2001 letter stated that GM-5 and GM-26C exceed generic GSI criteria. That is not the case. No wells exceed generic GSI criteria because the reported data are below TDLs and thus would become zero or the results of the TEC calculation indicate that the result is below the GSI criterion.

The Part 31 rules also deal with the situation where a water quality based effluent limit (WQBEL) is less than the quantification level. Rule 1213 specifies that the analytical method to be used for water is the analytical method specified in 40 CFR Part 136. Where a sample analytical result is less than the quantification level, the sample is considered to be in compliance. Rule 1213(1)(c) provides that the quantification level shall be the ML specified in 40 CFR Part 136. When Rule 1213 went into effect, the Part 136 analytical method (then Method 613) had a MDL of 0.002 micrograms per liter, or 2 parts per trillion. Two parts per trillion is actually

the currently applicable MDL under Rule 1213 because that rule remains unchanged. Since then, U.S. EPA amended Part 136 to add Method 1613 for Clean Water Act analytical use. Method 1613 specifies an ML of 10 ppq for 2,3,7,8-TCDD and 2,3,7,8-TCDF; 50 ppq for the penta-, hexa-, and hepta-isomers; and 100 ppq for the octa-isomers. Note that 40 CFR Part 136 does not contain Method 8290.

When the entire database of 31 well samples is properly evaluated under Part 201, Part 31, Operational Memorandum #6, Revision #6, the Part 31 and Part 201 rules and the MDEQ policy regarding calculating with analytical results below the quantification level, the conclusion to be drawn is that no further action is necessary or appropriate with respect to dioxins and furans.

Very Truly Yours

David Miller by dd
Ford Motor Company

Daniel D. Musgrove
The Kingsford Products Co.

Copies:
Mr. Darryl Wickman, City of Kingsford
Mr. Jerry Amber, Ford Motor Company
Mr. Christopher Dobyns, MDEQ
Mr. Steve Casey, MDEQ
Mr. Clifton Clark, MDEQ
Mr. Christopher Austin, MDEQ

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Easton Estates, Kingsford, Michigan.

Dioxin/Furan Congener	TEF	BEF	TDL	Sample: GM-2B Date Collected: May-5-2000 Result (ppq)	TEC * (ppq)	GM-5 May-3-2000 Result (ppq)	TEC * (ppq)	GM-15 May-3-2000 Result (ppq)	TEC * (ppq)	GM-25-B May-2-2000 Result (ppq)	TEC * (ppq)	GM-26-A May-2-2000 Result (ppq)	TEC * (ppq)
2,3,7,8-TCDD	1	1	10	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDD	0.5	0.9	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDD	0.1	0.3	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDD	0.1	0.1	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDD	0.1	0.1	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDD	0.01	0.05	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDD	0.001	0.01	100	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,7,8-TCDF	0.1	0.8	10	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDF	0.05	0.2	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,7,8-PeCDF	0.5	1.6	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDF	0.1	0.08	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDF	0.1	0.2	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,6,7,8-HxCDF	0.1	0.7	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDF	0.1	0.6	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	0.01	0.01	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8,9-HpCDF	0.01	0.4	50	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDF	0.001	0.02	100	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDD	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDD	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDD	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDD	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDF	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDF	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDF	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDF	0	0	–	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Sample Total TEC (ppq):					0		0		0		0		0

Footnotes on Page 6.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Easton Estates, Kingsford, Michigan.

Dioxin/Furan Congener	GM-26-C May-2-2000 Result (ppq)	GM-26-C May-2-2000 TEC * (ppq)	GM-SG-5 May-3-2000 Result (ppq)	GM-SG-5 May-3-2000 TEC * (ppq)	GWGM-25C Aug-2-2000 Result (ppq)	GWGM-25C Aug-2-2000 TEC * (ppq)	GWGM-27C Aug-7-2000 Result (ppq)	GWGM-27C Aug-7-2000 TEC * (ppq)	GWGM-63A Aug-29-2000 Result (ppq)	GWGM-63A Aug-29-2000 TEC * (ppq)	GWGM-64A Aug-30-2000 Result (ppq)	GWGM-64A Aug-30-2000 TEC * (ppq)	GWGM-66B Aug-3-2000 Result (ppq)	GWGM-66B Aug-3-2000 TEC * (ppq)
2,3,7,8-TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,7,8-TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8,9-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Sample Total TEC (ppq):		0		0		0		0		0		0		0

Footnotes on Page 6.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Easton Estates, Kingsford, Michigan.

Dioxin/Furan Congener	GWGM-67 Aug-7-2000 Result (ppq)	GWGM-67 Aug-7-2000 TEC * (ppq)	GWGM-68 Aug-31-2000 Result (ppq)	GWGM-68 Aug-31-2000 TEC * (ppq)	GWGM-70 Aug-17-2000 Result (ppq)	GWGM-70 Aug-17-2000 TEC * (ppq)	GWGM-71 Aug-21-2000 Result (ppq)	GWGM-71 Aug-21-2000 TEC * (ppq)	GWGM-72 Aug-22-2000 Result (ppq)	GWGM-72 Aug-22-2000 TEC * (ppq)	GWGM-73 Sep-6-2000 Result (ppq)	GWGM-73 Sep-6-2000 TEC * (ppq)	GWGM-74 Sep-7-2000 Result (ppq)	GWGM-74 Sep-7-2000 TEC * (ppq)
2,3,7,8-TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDD	BTDL	—	242 EB	0.0024	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,7,8-TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8,9-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Sample Total TEC (ppq):		0		0.0024		0		0		0		0		0

Footnotes on Page 6.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Easton Estates, Kingsford, Michigan.

Dioxin/Furan Congener	GWGM-75 Sep-8-2000 Result (ppq)	GWGM-75 Sep-8-2000 TEC * (ppq)	GWGMEW-3 Jul-24-2000 Result (ppq)	GWGMEW-3 Jul-24-2000 TEC * (ppq)	GWGM-6 Jul-19-2000 Result (ppq)	GWGM-6 Jul-19-2000 TEC * (ppq)	GWGM-26B Jul-19-2000 Result (ppq)	GWGM-26B Jul-19-2000 TEC * (ppq)	GWGM-27B Jul-19-2000 Result (ppq)	GWGM-27B Jul-19-2000 TEC * (ppq)	GWGM-64B Jul-24-2000 Result (ppq)	GWGM-64B Jul-24-2000 TEC * (ppq)	GWGM-68 Sep-26-2000 Result (ppq)	GWGM-68 Sep-26-2000 TEC * (ppq)
2,3,7,8-TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,7,8-TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8,9-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Sample Total TEC (ppq):								0		0		0		0

Footnotes on Page 6.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Easton Estates, Kingsford, Mich

Dioxin/Furan Congener	GWGM-63A Sep-19-2000 Result (ppq)	GWGM-63A Sep-19-2000 TEC * (ppq)	GWGM-64A Oct-3-2000 Result (ppq)	GWGM-64A Oct-3-2000 TEC * (ppq)	GWGM-28A Jul-19-2000 Result (ppq)	GWGM-28A Jul-19-2000 TEC * (ppq)	GWGM-66A Jul-18-2000 Result (ppq)	GWGM-66A Jul-18-2000 TEC * (ppq)	GWGM-66A Jul-19-2000 Result (ppq)	GWGM-66A Jul-19-2000 TEC * (ppq)
2,3,7,8-TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,7,8-TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8,9-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Total HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Sample Total TEC (ppq):		0		0		0		0		0

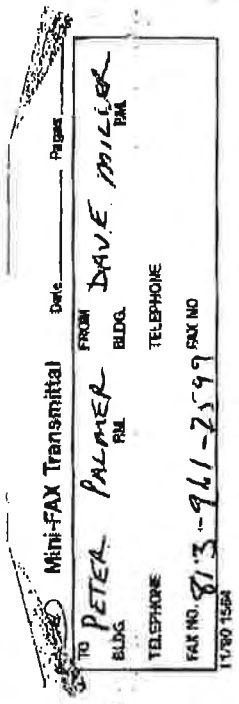
Footnotes on Page 6.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Easton Estates, Kingsford, Michigan.

ppq Parts per quadrillion (picograms per liter).
BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
TDL Target Detection Limit.
BTDL Below target detection limit.

Data Qualifiers:
B Compound was detected in the associated QC method blank sample.
E Estimated maximum possible concentration.

* $\text{TEC (ppq)} = \text{Result (ppq)} \times \text{TEF} \times \text{BEF}$



STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

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RUSSELL J. HARDING, Director

REPLY TO:
MARQUETTE DISTRICT OFFICE
1990 US HIGHWAY 41 S
MARQUETTE MI 49855

November 4, 2001

Miller
Company
owers East, Suite 1400
Boulevard
Michigan 48126-2477

Mr. Daniel D. Musgrove
The Kingsford Products Company
7123 West 65th Street
Chicago, Illinois 60638

Dear Messrs. Miller and Musgrove:

SUBJECT: Ford/Kingsford Study Area

The purpose of this letter is to specify monitoring that must be completed to initially characterize the Ford/Kingsford site groundwater (treated or raw) that is discharging to the Iron Mountain/Kingsford wastewater treatment plant (WWTP) as part of a preliminary treatability assessment. The characterization sampling addressed by this letter is for polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans). Some dioxin and furan sampling of the groundwater has occurred to date but the data reported to the Michigan Department of Environmental Quality (MDEQ) are inadequate to assess potential effects on the WWTP or its discharge. The dioxin and furan data reported to the MDEQ has been noted as below the target level of detection (BTDL). As part of the additional characterization sampling specified below, the actual laboratory analytical results must be provided to the MDEQ in compliance with Part II, Section C. 10 and 11 of the National Pollutant Discharge Elimination System (NPDES) permit number MI0023205 issued to the Iron Mountain/Kingsford Wastewater Treatment Plant.

Dioxin and furan congener monitoring shall be accomplished by analysis of 24-hour composite samples which, at a minimum, shall be comprised of at least three discreet portions collected at approximately evenly spaced intervals during a 24 hour period. Dioxin and furan congener sampling, handling, and analyses shall be conducted according to EPA Method 1613. A minimum of ten Phase II effluent samples will be needed to assess the discharge directed to the WWTP. Also, a minimum of five Phase II influent samples will be required. The ten effluent samples shall be collected to correspond to the respective influent samples (i.e., the effluent samples will be collected a period of time, equivalent to the treatment residence time, after the influent samples were collected). Collection of the five influent samples shall be evenly distributed over the sampling period (i.e., corresponding to every second effluent sample). At a minimum, the current Method 1613 congener specific quantification levels (i.e., minimum levels) for the 17 dioxin and furan congeners listed in Method 1613 (see Attachment A) shall be achieved unless higher levels are appropriate because of sample matrix interference. The basis for any elevated quantification levels must be explained in the reporting of the data for each sample.

The reporting of the data for each sample shall include:

- congener specific detection levels,
- congener specific quantification levels,
- all analytical data for congeners that are detected at or above the respective detection level but below the respective quantification level.

- all analytical data for congeners that are detected at or above the respective quantification level.
- blank and spike information or quality assurance summaries for each sample as appropriate for accurate interpretation of the sample data.
- the toxicity equivalency concentration for each sample calculated as shown in Attachment A.

The data for the 15 samples shall be individually presented and summarized in a final report submitted to Clifton Clark, Marquette District Supervisor of the Environmental Response Division (ERD) by February 28, 2001. If the data requirements noted above are available for any previously analyzed Phase II wastewater samples, those samples could be included as part of the set of 15 samples needed to characterize the initial site wastewaters directed to the WWTP.

An estimate of the change or range in the site influent and effluent congener concentrations when the more contaminated wells are included in the pumping regime shall be included in the final report. A dioxin and furan headworks analyses to assess potential effects on the WWTP effluent and sludge shall also be included in this report.

Please notify Mr. Clark by November 14, 2001, of your intended schedule for implementation of the dioxin and furan congener monitoring as described above. If this monitoring is not initiated by the Ford Motor Company and The Kingsford Products Company by November 28, 2001, the ERD intends to proceed with the monitoring.

As stated in previous letters, the state continues to incur costs associated with this facility and interest continues to accrue. Any expenditure of public funds and accumulated interest for this purpose is subject to cost recovery actions by the state pursuant to state law, Section 20126a of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Please be aware that additional chemical characterization, headworks analyses, and reporting may be necessary for later phases of the site cleanup. If you have any questions regarding these monitoring needs, please feel free to contact us.

Sincerely,

for Steven Casey

Steven Casey
Marquette District Supervisor
Surface Water Quality Division
906-226-1373

Clifton Clark

Clifton Clark
Marquette District Supervisor
Environmental Response Division
906-228-6568

ks

cc: Mr. Gary Lessard, Iron Mountain/Kingsford WWTP
Mr. Darryl Wickman, City of Kingsford
Mr. Andrew Hogarth, MDEQ
Mr. Gerald Saalfeld, MDEQ
Ms. Patricia Brandt, MDEQ
Mr. Christopher Austin, MDEQ

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ENVIRONMENTAL

Mr. Clifton Clark
Environmental Response Division
Michigan Department of Environmental Quality
1990 US-41 South
Marquette, Michigan49855

Mr. Steven Casey
Surface Water Quality Division
Michigan Department of Environmental Quality
1990 US-41 South
Marquette, Michigan 49855

Subject:
Response to MDEQ November 4, 2001 Letter Regarding Dioxin Characterization of Groundwater Discharge from Phase II of the Pilot Test, Ford/Kingsford Site, Kingsford, Michigan.
ARCADIS G&M Project No. WI000925.0021

Tampa, Florida
11 December 2001

Contact:
Jim Bedessem

Direct Dial:
813 264 3402

Dear Messrs. Clark and Casey:

On behalf of Ford Motor Company (Ford) and The Kingsford Products Company (Kingsford), ARCADIS G&M, Inc. (ARCADIS) is responding to the MDEQ letter dated November 4, 2001 to Mr. David Miller of Ford and Mr. Daniel Musgrove of Kingsford. In the November 4, 2001 letter, the MDEQ stated that Ford and Kingsford must complete an initial polychlorinated dibenzo-p-dioxin (dioxins) and polychlorinated dibenzofuran (furans) characterization of the site groundwater being discharged to the Iron Mountain/Kingsford wastewater treatment plant (WWTP) as part of a preliminary treatability assessment.

Provided below is a summary of the items stated in the November 4, 2001 letter and our response. For ease of review, each item is provided in italics format followed by our response in regular font.

Collect ten effluent and five influent samples of Phase II groundwater and have the samples analyzed for polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans).

Response: Ford and Kingsford sampled the groundwater discharge to the WWTP for dioxins and furans. During Phase I, a total of six effluent and two influent samples were collected and submitted for laboratory analysis of dioxins and furans. Through November 2001, a total of four effluent and three influent samples (one sample from each of the three wells being pumped) have been collected from Phase II and submitted for laboratory analysis of dioxins and furans.

While we feel that the Phase I samples are appropriate for use in this study because the water that was extracted, pretreated, and discharged in Phase I also comprises 50

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percent of the flow in Phase II, we will comply with MDEQ's request to collect a total of ten effluent and five influent samples from Phase II under the following conditions. To achieve the reporting requirements requested by MDEQ, the additional dioxin and furan samples must be collected (beyond the previously approved sampling protocol for the Phase I and Phase II discharge) and submitted for laboratory analysis prior to the end of December 2001. By complying with this additional request from the MDEQ, and due to the fact that Phase II already incorporates pumping the most impacted well along the river, no additional dioxin and furan analyses/evaluations will be conducted for the remainder of the remedial activities unless this additional dioxin and furan monitoring and evaluation shows that the Phase II discharge will have an adverse effect on the WWTP effluent and sludge.

Samples should be 24-hour composites comprised of at least three discreet portions collected at approximately evenly spaced intervals during a 24-hour period.

Response: The MDEQ-approved monitoring plans that have been followed during Phase I and Phase II did not require collection of composite samples and the samples collected to date are grab samples. It is our intent to continue to collect grab samples rather than composite samples for the reasons explained below.

The collection of composite samples is not necessary to provide representative samples from the pretreatment systems – particularly the Phase II system. The Phase II pretreatment system consists of two complete-mix biological reactors and a single clarifier. The residence time through the complete-mix biological reactors at the average Phase II flowrate of 45 gallons per minute (gpm) is approximately 1 day, and the clarifier provides approximately 8 additional hours of residence time. The complete-mix nature of the biological reactors and the residence time through the entire system results in effluent samples that will not have substantial changes in concentrations throughout a 1-day period and therefore, compositing is unnecessary.

With respect to the influent samples, compositing of those samples is also unnecessary to generate representative samples. The influent samples are being collected from the individual wells contributing flow to the Phase II system. Constituent concentrations do not change significantly over the course of a day, but change gradually over several months to several years depending on the aquifer formation and plume characteristics. Therefore, composite samples are not warranted.

Dioxin and furan congener sampling, handling, and analyses shall be conducted according to EPA Method 1613....At a minimum, the current Method 1613 congener specific quantification levels (i.e., minimum levels) for the 17 dioxin and furan congeners listed in Method 1613 shall be achieved unless higher levels are appropriate because of sample matrix interference.

Response: As discussed in previous correspondence dated August 7, 2001 to the MDEQ Environmental Response Division, MDEQ Operational Memorandum #6

indicates that either of two analytical methods is appropriate for dioxin/furan analysis: EPA Methods 8290 or 1613. EPA Method 8290 is from SW-846 and is typically used for waste analysis. EPA Method 1613 is from 40 CFR Part 136 and is used for water analysis. In my call with Ron Raisanen on November 13, 2001, I indicated that the analytical method we have been using for the existing Phase I and Phase II dioxin and furan analyses may not be EPA Method 1613 and he indicated that this was acceptable as long as the desired quantification levels were achieved.

The samples collected during Phases I and II (listed above) have been analyzed using EPA Method 8290, and the desired quantification levels have been achieved. It is our intent at this time to continue to use EPA Method 8290 for dioxin and furan analysis for the remainder of the study.

The actual laboratory analytical results must be provided to the MDEQ.

Response: The actual laboratory analytical results will be provided to the MDEQ. We would like to point out that as part of the Phase I and Phase II discharge approval process, Ford and Kingsford agreed to specific monitoring plans to be implemented during the Phase I and Phase II pilot study, and as part of the reporting to provide the actual laboratory results for the monitoring that was done. The laboratory results for the Phase I and Phase II monitoring have been provided as they became available and after the data were validated, in the monthly reports to the WWTP and the MDEQ.

The reporting of the data for each sample shall include:

- *Congener specific detection levels.*
- *Congener specific quantification levels.*
- *All analytical data for congeners that are detected at or above the respective detection level but below the respective quantification level.*
- *All analytical data for congeners that are detected at or above the respective quantification level.*
- *Blank and spike information or quality assurance summaries for each sample as appropriate for accurate interpretation of the sample data.*
- *The toxicity equivalency concentration for each sample calculated as shown in Attachment A.*

Response: As discussed in previous correspondence dated August 7, 2001 to the MDEQ Environmental Response Division, Ford and Kingsford do not concur with a portion of the calculation approach described in Attachment A to the November 4, 2001 letter and will continue to calculate and report the dioxin and furan toxicity equivalency concentrations in accordance with our August 7, 2001 letter.

As indicated in the previous response, the actual laboratory results will be provided to the MDEQ.

An estimate of the change or range in concentration in the site influent and effluent congener concentrations when the more contaminated wells are included in the pumping regime shall be included in the final report. A dioxin and furan headworks

ARCADIS GERAGHTY & MILLER

analysis to assess the potential effects on the WWTP effluent and sludge shall also be included in this report.

Response: The estimate and headworks analysis will be included in the report.

Requirement: *Schedule requirements include monitoring be initiated by November 28, 2001 and a final report submitted by February 28, 2002.*

Response: As indicated previously, this monitoring is already underway and the last samples will be collected in December 2001. A preliminary report providing the data generated through October 2001 will be provided to the MDEQ in December 2001 and the final report with complete analyses will be provided by February 28, 2002.

If you have any questions regarding this response letter or our implementation plans, please contact me at the number listed above.

Sincerely,

ARCADIS G&M, Inc.

James M. Bedessem, P.E.
Principal Engineer

Copies:
Mr. Ron Raisanen, MDEQ
Mr. Andrew Hogarth, MDEQ
Mr. Gerald Saalfeld, MDEQ
Ms. Patricia Brandt, MDEQ
Mr. Chris Austin, MDEQ
Mr. Darryl Wickman, City of Kingsford
Mr. Gary Lessard, Iron Mountain/Kingsford WWTP
Mr. Steve Lepak, STS Consultants
Mr. David Miller, Ford Motor Comany
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Peter Palmer, ARCADIS G&M
Mr. Eric Carman, ARCADIS G&M
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ENVIRONMENTAL

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Mr. Steven Casey
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Marquette, Michigan 49855

Subject:
Dioxin Characterization of Groundwater Discharge from Phase II of the Pilot Test, Ford/Kingsford Site, Kingsford, Michigan.
ARCADIS G&M Project No. WI000925.0021

Tampa, Florida
27 December 2001

Contact:
Jim Bedessem

Direct Dial:
813 264 3402

Dear Messrs. Clark and Casey:

On behalf of Ford Motor Company (Ford) and The Kingsford Products Company (Kingsford), ARCADIS G&M, Inc. (ARCADIS) is providing a submittal of polychlorinated dibenzo-p-dioxin (dioxins) and polychlorinated dibenzofuran (furans) data gathered through October 2001 as part of the requested characterization of groundwater being discharged from Phase II of the Pilot Test. This data includes three Phase II effluent samples as well as background data from samples of the wastewater treatment plant influent and digested sludge. Also included are five Phase I effluent and one Phase I influent sample. Included with this letter are the following:

- Tabulated data with toxicity equivalents calculated.
- Laboratory data packages.

As shown in the tabulated data summary, the analysis of the samples collected to date have successfully met the minimum levels as requested in your November 4, 2001 letter and no concentrations of dioxins or furans above the specified congener-specific quantification levels have been detected.

The requested headworks analysis will be provided following the completion of the remaining characterization sampling and provided with the final report at the end of February 2002.

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If you have any questions regarding the information provided with this letter, please contact me at the number listed above.

Sincerely,

ARCADIS G&M, Inc.

James M. Bedessem PLS

James M. Bedessem, P.E.
Principal Engineer

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Mr. Ron Raisanen, MDEQ
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Mr. David Miller, Ford Motor Comany
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Peter Palmer, ARCADIS G&M
Mr. Eric Carman, ARCADIS G&M
Mr. Ric Studebaker, ARCADIS G&M

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan

Dioxin/Furan Congener	TEF	BEF	TDL	Sample: WWTP-Influent Date Collected: Apr-4-2001 Result (ppq)	 TEC * (ppq)	Sample: WWTP-Digester 1and 2 Date Collected: Apr-10-2001 Result (ppq)	 TEC * (ppq)
2,3,7,8-TCDD	1	1	10	BTDL	—	63.9	63.9
1,2,3,7,8-PeCDD	0.5	0.9	50	BTDL	—	458	206
1,2,3,4,7,8-HxCDD	0.1	0.3	50	BTDL	—	328	9.84
1,2,3,6,7,8-HxCDD	0.1	0.1	50	BTDL	—	926	9.26
1,2,3,7,8,9-HxCDD	0.1	0.1	50	BTDL	—	951	9.51
1,2,3,4,6,7,8-HpCDD	0.01	0.05	50	BTDL	—	20380	10.19
OCDD	0.001	0.01	100	237	0.00237	177660	1.7766
2,3,7,8-TCDF	0.1	0.8	10	BTDL	—	377	30.2
1,2,3,7,8-PeCDF	0.05	0.2	50	BTDL	—	108	1.08
2,3,4,7,8-PeCDF	0.5	1.6	50	BTDL	—	216	173
1,2,3,4,7,8-HxCDF	0.1	0.08	50	BTDL	—	447	3.58
1,2,3,6,7,8-HxCDF	0.1	0.2	50	BTDL	—	288	5.76
2,3,4,6,7,8-HxCDF	0.1	0.7	50	BTDL	—	432	30.2
1,2,3,7,8,9-HxCDF	0.1	0.6	50	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	0.01	0.01	50	BTDL	—	6350	0.635
1,2,3,4,7,8,9-HpCDF	0.01	0.4	50	BTDL	—	267	1.07
OCDF	0.001	0.02	100	BTDL	—	16960	0.3392
			Sample Total TEC (ppq):		0.00237		556

Footnotes on Page 4.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan

Dioxin/Furan Congener	Ph 1 Eff May-3-2001 Result (ppq)	Ph 1 Eff May-3-2001 TEC * (ppq)	Ph 1 Eff May-17-2001 Result (ppq)	Ph 1 Eff May-17-2001 TEC * (ppq)	Ph 1 Eff May-8-2001 Result (ppq)	Ph 1 Eff May-8-2001 TEC * (ppq)	Ph 1 Eff Jun-12-2001 Result (ppq)	Ph 1 Eff Jun-12-2001 TEC * (ppq)	Ph 1 Inf Jun-12-2001 Result (ppq)	Ph 1 Inf Jun-12-2001 TEC * (ppq)
2,3,7,8-TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,7,8-TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8,9-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Sample Total TEC (ppq):		0		0		0		0		0

Footnotes on Page 4.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan

Dioxin/Furan Congener	Ph 1 Eff Jul-12-2001 Result (ppq)	Ph 1 Eff Jul-12-2001 TEC * (ppq)	Ph II Eff Sep-6-2001 Result (ppq)	Ph II Eff Sep-6-2001 TEC * (ppq)	Ph II Eff Sep-17-2001 Result (ppq)	Ph II Eff Sep-17-2001 TEC * (ppq)	Ph II Eff Oct-11-2001 Result (ppq)	Ph II Eff Oct-11-2001 TEC * (ppq)
2,3,7,8-TCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDD	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,7,8-TCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,7,8-PeCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
2,3,4,6,7,8-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,7,8,9-HxCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,6,7,8-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
1,2,3,4,7,8,9-HpCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
OCDF	BTDL	—	BTDL	—	BTDL	—	BTDL	—
Sample Total TEC (ppq):		0		0		0		0

Footnotes on Page 4.

Table 1. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan

* $$\text{TEC (ppq)} = \text{Result (ppq)} \times \text{TEF} \times \text{BEF}$$

ppq	Parts per quadrillion (picograms per liter).
BEF	Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
TEC	Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF	Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
TDL	Target Detection Limit.
BTDL	Below target detection limit.

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ENVIRONMENT

Subject:
Dioxin Characterization of Groundwater Discharge from Phase II of the Pilot Test, Ford/Kingsford Site, Kingsford, Michigan.
ARCADIS G&M Project No. WI000950.0021

Tampa, Florida
27 February 2002

Contact:
Jim Bedessem

Direct Dial:
813 264 3402

Dear Messrs. Clark and Casey:

On behalf of Ford Motor Company (Ford) and The Kingsford Products Company (Kingsford), ARCADIS is providing this final submittal of polychlorinated dibenzo-p-dioxin (dioxins) and polychlorinated dibenzofuran (furans) data gathered as part of the requested characterization of groundwater being discharged from Phase II of the Pilot Test, as well as previous dioxin and furan data collected during Phase I of the Pilot Test. This data has been organized as requested in the letter from Ron Raisenan dated February 5, 2002, and is presented in tabular format as follows:

Table 1. Summary of Samples Collected as Part of the Pilot Test.
Table 2. Phase I Influent Sample Results.
Table 3. Phase I Effluent Sample Results.
Table 4. Phase II Influent Sample Results.
Table 5. Phase II Effluent Sample Results.
Table 6. Wastewater Treatment Plant Sample Results.

As discussed in previous correspondence to the Michigan Department of Environmental Quality (MDEQ) (letters dated August 7, 2001 and December 11, 2001), Ford and Kingsford do not concur with a portion of the calculation approach described in Attachment A to your November 4, 2001 letter. Therefore, while the data has now been organized so that the presentation is more consistent with the format requested in the February 5, 2002 letter from Ron Raisenan, we have still calculated and presented the dioxin and furan toxicity equivalent concentrations in accordance with our August 7, 2001 letter.

As agreed to in our response letter dated December 11, 2001, also included with this data transmittal are the complete laboratory data packages for the samples collected since October 31, 2001. The laboratory data packages for samples collected prior to this date were previously transmitted to the MDEQ in a letter dated December 27,

2.6.1 – 2/27/02

2001, with the exception of the data packages for samples collected on August 15, 2001, which are included with this transmittal.

As shown in the tabulated data summary, the analysis of the samples collected successfully met the quantification levels as requested in your November 4, 2001 letter, and no concentrations of dioxins or furans above the specified congener-specific quantification levels have been found in either the influent or effluent samples from Phase I or Phase II. This includes five samples from Extraction Well GMEW-3 which has the highest concentration of constituents in groundwater along the river as measured by the chemical oxygen demand (COD). Based on these data, the dioxin and furan congener concentrations in the influent and effluent are not expected to be present above specified congener-specific quantification levels even if more wells are included in the pumping regime in the future.

The November 4, 2001 letter also requested a headworks analysis to assess the potential effects on the Wastewater Treatment Plant (WWTP) effluent and sludge. The discharge from the groundwater system will not have an adverse effect on the WWTP effluent or sludge because dioxins or furans above specified congener-specific quantitation levels are not currently discharged and are not expected to be discharged in the future even if more wells are added to the pumping regime. A headworks analysis is not necessary because the water from the pretreatment system is below congener-specific quantitation levels and therefore any headworks calculations would only show that the groundwater flow from the pretreatment system dilutes the dioxin and furan concentrations previously observed at the WWTP.

Finally, as indicated in our December 11, 2001 response letter, since no dioxins or furans above the specified congener-specific quantification levels were found in either the influent or effluent during this requested study, and it was demonstrated that no adverse impacts to the WWTP effluent or sludge are expected, no additional dioxin and furan analyses/evaluations will be conducted during the remainder of the remedial activities.

If you have any questions regarding the information provided with this letter, please contact me at the number listed above.

Sincerely,

ARCADIS G&M, Inc.

James M. Bedessem PLS FOR

James M. Bedessem, P.E.
Principal Engineer

Copies:
Mr. Ron Raisanen, MDEQ
Mr. Andrew Hogarth, MDEQ
Mr. Gerald Saalfeld, MDEQ
Ms. Patricia Brandt, MDEQ

Mr. Chris Austin, MDEQ
Mr. Darryl Wickman, city of Kingsford
Mr. Gary Lessard, Iron Mountain/Kingsford WWTP
Mr. Steve Lepak, STS Consultants
Mr. David Miller, Ford Motor Company
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Peter Palmer, ARCADIS
Mr. Ric Studebaker, ARCADIS

Table 1. Summary of Samples Collected as Part of the Pilot Test, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
Phase I, Influent Samples – Table 2	
Ph 1 Inf	6/12/2001
Ph I-Inf-EW1	8/15/2001
Phase I, Effluent Samples – Table 3	
Ph 1 Eff	5/03/2001
Ph 1 Eff	5/08/2001
Ph 1 Eff	5/17/2001
Ph 1 Eff	6/12/2001
Ph 1 Eff	7/12/2001
Ph I-Eff-EW1	8/15/2001
Phase II, Influent Samples – Table 4	
GMEW-1	11/05/2001
GMEW-2	11/05/2001
GMEW-3	11/05/2001
GMEW-1	12/03/2001
GMEW-2	12/03/2001
GMEW-3	12/03/2001
GMEW-1	12/05/2001
GMEW-2	12/05/2001
GMEW-3	12/05/2001
GMEW-1	12/12/2001
GMEW-2	12/12/2001
GMEW-3	12/12/2001
GMEW-1	12/19/2001
GMEW-2	12/19/2001
GMEW-3	12/19/2001
Phase II, Effluent Samples – Table 5	
Ph II Eff	9/06/2001
Ph II Eff	9/17/2001
Ph II Eff	10/11/2001
Ph II Eff	11/05/2001
Ph II Eff	11/29/2001
Ph II Eff	12/04/2001
Ph II Eff	12/06/2001
Ph II Eff	12/13/2001
Ph II Eff	12/20/2001
Ph II Eff	12/27/2001
Ph II Eff	1/10/2002
WWTP Samples – Table 6	
WWTP-Influent	4/04/2001
WWTP-Digester 1&2	4/10/2001
WWTP Digester	11/08/2001

WWTP Waste Water Treatment Plant.

Table 2. Phase I Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Inf	06/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Inf-EW1	08/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 2. Phase I Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph 1 Inf	06/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Inf-EW1	08/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Eff	05/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53903r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	05/08/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54018			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	05/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54017			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	06/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	07/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54700			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Eff-EW1	08/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph 1 Eff	05/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53903r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	05/08/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54018			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	05/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54017			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	06/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	07/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54700			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Eff-EW1	08/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

BEF	Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL	Result was below the QL; contribution to the TEC is zero.
ppq	Parts per quadrillion (picograms per liter).
QL	Congener quantification level (ppq).
TEC	Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF	Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

J – Concentration is qualified as estimated.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	09/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55229			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	09/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55281			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	10/11/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55567r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/29/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56003			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/04/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

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Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	12/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/13/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56160			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/20/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/27/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56308r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	01/10/02	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56401r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	09/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55229			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	09/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55281			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	10/11/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55567r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/29/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56003			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/04/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	12/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/13/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56160			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/20/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/27/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56308r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	01/10/02	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56401r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

BQL Result was below the QL; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level (ppq).

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 6. Wastewater Treatment Plant Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
WWTP-Influent	04/04/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53674			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
WWTP Digester 1 & 2	04/10/01	*Result*	63.9	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	63.9	0	0	0	0	0	0	63.9
METHOD BLANK Sample Set – 53756			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
WWTP-Digester	11/08/01	*Result*	BQL	BQL	BQL	BQL	902	BQL	BQL	0
		*TEC **	0	0	0	0	9.02	0	0	9.02
METHOD BLANK Sample Set – 55851			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 6. Wastewater Treatment Plant Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
WWTP-Influent	04/04/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53674			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
WWTP Digester 1 & 2	04/10/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	16960	0
		*TEC **	0	0	0	0	0	0	0	0	0	0.3392	0.3392
METHOD BLANK Sample Set – 53756			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
WWTP-Digester	11/08/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	12050	0
		*TEC **	0	0	0	0	0	0	0	0	0	0.2410	0.2410
METHOD BLANK Sample Set – 55851			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

BQL Result was below the QL; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level (ppq).

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-1	12/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	12/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-1	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-1	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-1	12/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/03/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	09/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55229			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	09/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55281			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	10/11/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55567r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/29/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56003			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/04/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	12/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/13/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56160			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/20/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/27/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56308r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	01/10/02	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56401r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

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Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	09/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55229			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	09/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55281			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	10/11/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55567r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/05/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/29/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56003			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/04/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	12/06/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/13/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56160			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/20/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/27/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56308r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	01/10/02	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56401r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

JOHN ENGLER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
MARQUETTE DISTRICT OFFICE

RUSSELL J. HARDING
DIRECTOR

March 4, 2002

Mr. James M. Bedessem
Arcadis Geraghty & Miller
3903 Northdale Boulevard, Suite 120
Tampa, Florida 33624

Dear Jim:

SUBJECT: Dioxin Characterization Phase II

This is a reply to your December 11, 2001 letter of response to the Michigan Department of Environmental Quality's (DEQ) November 4, 2001 letter. Your December 11, 2001 letter was submitted in response to MDEQ's letter which requested, in part, characterization of contaminated ground waters for polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) and specified some sampling and reporting details. Our response will be in the same order as your responses, which are italicized.

Response: *Ford and Kingsford sampled the groundwater discharge to the WWTP for dioxins and furans. During Phase I, a total of six effluent and two influent samples were collected and submitted for laboratory analysis of dioxins and furans. Through November 2001, a total of four effluent and three influent samples (one sample from each of the three wells being pumped) have been collected from Phase II and submitted for laboratory analysis of dioxins and furans.*

While we feel that the Phase I samples are appropriate for use in this study because the water that was extracted, pretreated, and discharged in Phase I also comprises 50 percent of the flow in Phase II, we will comply with DEQ's requirement to collect a total of ten effluent and five influent samples from Phase II under the following conditions. To achieve the reporting requirements requested by DEQ, the additional dioxin and furan samples must be collected (beyond the previously approved sampling protocol for the Phase I and Phase II discharge) and submitted for laboratory analysis prior to the end of December 2001. By complying with this additional request from the DEQ, and due to the fact that Phase II already incorporates pumping the most impacted well along the river, no additional dioxin and furan analyses/evaluations will be conducted for the remainder of the remedial activities unless this additional dioxin and furan monitoring and evaluation shows that the Phase II discharge will have an adverse effect on the WWTP effluent and sludge.

DEQ response:

We can agree to the use of individual well sample data as influent data if all the well data collected on a particular day are to be considered to represent one influent sample for which there is a corresponding effluent sample. For example, the data from three well samples collected on a Thursday (or other appropriate short time window) from three different wells may be used to represent the influent character for an effluent sample collected the next day on Friday (this approximates the Phase II detention time) and those three samples will be considered one of the requested five influent samples.

Although the Phase II Operating Procedures, which were approved by the DEQ included dioxin and furan sampling, the data provided was not considered sufficient to evaluate potential effluent quality (PEQ). The additional Dioxin and Furan sampling requested in the DEQ Nov. 4, 2001 letter should cover the sampling requirements of the Phase II Operating Procedures unless it is shown that accepting the Phase II effluent poses a problem for the Iron Mountain/Kingsford WWTP. The MDEQ reserves the right to require additional PCDD/PCDF sampling based on its review of the available database and the evaluation of potential effluent quality. The water quality-based limits for PCDD/PCDF are well below detection and quantification levels and as such require the DEQ to consider all data and potential effects in the evaluation of the need for monitoring and/or limit conditions relative to the regulation of an NPDES permit. In this instance, imposing a requirement for additional characterization work is not limited to a scenario founded only on the presence of quantifiable PCDD/PCDF congeners in the WWTP effluent. Additionally, your letter notes that the source water character could change over a period of time and this issue may support the need for additional future monitoring. We wish to emphasize that in NPDES programs, the interpretation or use of data for some chemicals can differ between a compliance and a monitoring mode and also when deciding the need for water quality based effluent conditions in a NPDES permit.

Response: *The DEQ-approved monitoring plans that have been followed during Phase I and Phase II did not require collection of composite samples and the samples collected to date are grab samples. It is our intent to continue to collect grab samples rather than composite samples for the reasons explained below.*

The collection of composite samples is not necessary to provide representative samples from the pretreatment systems – particularly the Phase II system. The Phase II pretreatment system consists of two complete-mix biological reactors and a single clarifier. The residence time through the complete-mix biological reactors at the average Phase II flowrate of 45 gallons per minute (gpm) is approximately 1 day, and the clarifier provides approximately 8 additional hours of residence time. The complete-mix nature of the biological reactors and the residence time through the entire system results in effluent samples that will not have substantial changes in concentrations throughout a 1-day period and therefore, compositing is unnecessary.

With respect to the influent samples, compositing of those samples is also unnecessary to generate representative samples. The influent samples are being collected from the individual wells contributing flow to the Phase II system. Constituent concentrations do not change significantly over the course of a day, but change gradually over several

months to several years depending on the aquifer formation and plume characteristics. Therefore, composite samples are not warranted.

DEQ response:
We concur that grab sampling is appropriate as long as effluent samples correspond temporally to influent samples.

Response: *As discussed in previous correspondence dated August 7, 2001 to the MDEQ Environmental Response Division, DEQ Operational Memorandum #6 indicates that either of two analytical methods is appropriate for dioxin/furan analysis: EPA Methods 8290 or 1613. EPA Method 8290 is from SW-846 and is typically used for waste analysis. EPA Method 1613 is from 40 CFR Part 136 and is used for water analysis. In my call with Ron Raisanen on November 13, 2001, I indicated that the analytical method we have been using for the existing Phase I and Phase II dioxin and furan analyses may not be EPA Method 1613 and he indicated that this was acceptable as long as the desired quantification levels were achieved.*

The samples collected thus far during Phases I and II (listed above) have been analyzed using EPA Method 8290, and the desired quantification levels have been achieved. It is our intent at this time to continue to use EPA Method 8290 for dioxin and furan analysis for the remainder of the study.

DEQ response:
We can agree to the use of EPA method 8290 for analyses of the Phase II influent and effluent samples; however, if monitoring is required at the WWTP based on our review of the available database, EPA method 1613 must be used as required by the NPDES program.

Response: *The actual laboratory analytical results will be provided to the DEQ. We would like to point out that as part of the Phase I and Phase II discharge approval process, Ford and Kingsford agreed to specific monitoring plans to be implemented during the Phase I and Phase II pilot study, and as part of the reporting to provide the actual laboratory results for the monitoring that was done. The laboratory results for the Phase I and Phase II monitoring have been provided as they became available and after the data were validated, in the monthly reports to the WWTP and the DEQ.*

DEQ response:
We agree that laboratory results have been submitted as they have become available.

Response: *As discussed in previous correspondence dated August 7, 2001 to the DEQ Environmental Response Division, Ford and Kingsford do not concur with the calculation approach described in the November 4, 2001 letter and will continue to calculate and report the dioxin and furan toxicity equivalency concentrations in accordance with our August 7, 2001 letter.*

As indicated in the previous response, the actual laboratory results will be provided to the DEQ and will show the detection limits requested by DEQ.

DEQ response:
We wish to emphasize that there are programmatic differences between the Surface Water Quality Division and the Environmental Response Division in the way that data are utilized in some cases. The discharge from the site is now being directed to a NPDES regulated facility. The regulations and rules that govern the NPDES program dictate what data are needed and how those data are utilized in evaluations of PEQ and in developing monitoring or limit conditions for a permitted facility. The TEC calculation method specified in Attachment A of the DEQ November 4, 2001 letter is consistent with those rules and regulations and will be used in assessing potential effects from the Ford Kingsford site.

Response: *The estimate and headworks analysis will be included in the report.*

DEQ response:
The submittal of a headworks analysis will be adequate.

Response: As indicated previously, this monitoring is already underway and the last samples will be collected in December 2001. A preliminary report providing the data generated through October 2001 will be provided to the MDEQ in December 2001 and the final report with complete analyses will be provided by February 28, 2002.

DEQ response:
We have received the preliminary report.

If you have any questions, feel free to contact Ron Raisanen, Chris Austin or ourselves at any time.

Sincerely,

Steve Casey
Marquette District Supervisor
Surface Water Quality Division
906-226-1373

Clifton Clark
Marquette District Supervisor
Environmental Response Division
906-228-6568

cc: Chris Austin, ERD
Patricia Brandt, ERD
William Taft, SWQD
Bruce Walker, SWQD
Gerald Saalfeld, SWQD
Ron Raisanen, SWQD

ARCADIS

Infrastructure, buildings, environment, communications

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3903 Northdale Boulevard
Suite 120
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Florida 33624
Tel 813 961 1921
Fax 813 963 1447

ENVIRONMENTAL

Subject:
Dioxin Characterization of Groundwater Discharge from Phase II of the Pilot Test, Ford/Kingsford Site, Kingsford, Michigan.
ARCADIS G&M Project No. WI000925.0021

Tampa, Florida
29 March 2002

Contact:
Jim Bedessem

Direct Dial:
813 264 3402

Dear Messrs. Clark and Casey:

On behalf of Ford Motor Company (Ford) and The Kingsford Products Company (Kingsford), ARCADIS G&M, Inc. (ARCADIS) is providing this submittal of polychlorinated dibenzo-p-dioxin (dioxins) and polychlorinated dibenzofuran (furans) data. This submittal presents the data and toxicity equivalent concentration calculations in the format requested by the MDEQ. However, as discussed in previous correspondence to the MDEQ (letters dated August 7, 2001, December 11, 2001, and February 27, 2002), Ford and Kingsford still do not concur with a portion of the calculation approach described in Attachment A to the November 4, 2001 letter from the MDEQ to Ford and Kingsford. Therefore, we are providing two sets of tabulated data, one set with dioxin and furan toxicity equivalent concentrations calculated in accordance with our August 7, 2001 letter (Attachment 1) and one set calculated as requested in MDEQ's November 4, 2001 letter (Attachment 2). It should be noted that nearly all detections, particularly those detections at concentrations between the detection limit (DL) and the quantification level (QL), are estimated or otherwise qualified results.

Each set of data is presented in tabular format as follows:

Table 1. Summary of Samples Collected as Part of the Pilot Test.
Table 2. Phase I Influent Sample Results.
Table 3. Phase I Effluent Sample Results.
Table 4. Phase II Influent Sample Results.
Table 5. Phase II Effluent Sample Results.
Table 6. Wastewater Treatment Plant Sample Results.

The laboratory data packages have previously been transmitted to the MDEQ, therefore this submission includes only the tabulated data.

ARCADIS

If you have any questions regarding the information provided with this letter, please contact me at the number listed above.

Sincerely,

ARCADIS G&M, Inc.

James M. Bedessem, P.E.
Principal Engineer

Copies:
Mr. Ron Raisanen, MDEQ
Mr. Andrew Hogarth, MDEQ
Mr. Gerald Saalfeld, MDEQ
Ms. Patricia Brandt, MDEQ
Mr. Chris Austin, MDEQ
Mr. Darryl Wickman, City of Kingsford
Mr. Gary Lessard, Iron Mountain/Kingsford WWTP
Mr. Steve Lepak, STS Consultants
Mr. David Miller, Ford Motor Comany
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Peter Palmer, ARCADIS G&M
Mr. Ric Studebaker, ARCADIS G&M

ARCADIS

Table 1. Summary of Samples Collected as Part of the Pilot Test, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
Phase I, Influent Samples – Table 2	
Ph 1 Inf	6/12/2001
Ph I-Inf-EW1	8/15/2001
Phase I, Effluent Samples – Table 3	
Ph 1 Eff	5/03/2001
Ph 1 Eff	5/08/2001
Ph 1 Eff	5/17/2001
Ph 1 Eff	6/12/2001
Ph 1 Eff	7/12/2001
Ph I-Eff-EW1	8/15/2001
Phase II, Influent Samples – Table 4	
GMEW-1	11/05/2001
GMEW-2	11/05/2001
GMEW-3	11/05/2001
GMEW-1	12/03/2001
GMEW-2	12/03/2001
GMEW-3	12/03/2001
GMEW-1	12/05/2001
GMEW-2	12/05/2001
GMEW-3	12/05/2001
GMEW-1	12/12/2001
GMEW-2	12/12/2001
GMEW-3	12/12/2001
GMEW-1	12/19/2001
GMEW-2	12/19/2001
GMEW-3	12/19/2001
Phase II, Effluent Samples – Table 5	
Ph II Eff	9/06/2001
Ph II Eff	9/17/2001
Ph II Eff	10/11/2001
Ph II Eff	11/05/2001
Ph II Eff	11/29/2001
Ph II Eff	12/04/2001
Ph II Eff	12/06/2001
Ph II Eff	12/13/2001
Ph II Eff	12/20/2001
Ph II Eff	12/27/2001
Ph II Eff	1/10/2002
WWTP Samples – Table 6	
WWTP-Influent	4/04/2001
WWTP-Digester 1&2	4/10/2001
WWTP Digester	11/08/2001

WWTP Waste Water Treatment Plant.

Table 2. Phase I Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Inf	6/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Inf-EW1	8/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 2. Phase I Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph 1 Inf	6/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Inf-EW1	8/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Eff	5/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53903r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	5/8/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54018			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	5/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54017			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	6/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	7/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54700			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Eff-EW1	8/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph 1 Eff	5/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53903r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	5/8/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54018			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	5/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54017			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	6/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54338			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph 1 Eff	7/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 54700			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph I-Eff-EW1	8/15/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55036			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

BEF	Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL	Result was below the QL; contribution to the TEC is zero.
ppq	Parts per quadrillion (picograms per liter).
QL	Congener quantification level (ppq).
TEC	Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF	Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

J – Concentration is qualified as estimated.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-1	12/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	12/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-1	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-1	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-1	12/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/3/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-1	12/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-1	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/12/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56161			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-1	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-2	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
GMEW-3	12/19/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	9/6/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55229			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	9/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55281			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	10/11/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55567r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/29/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56003			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/4/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		*TEC **	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	12/6/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/13/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56160			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/20/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/27/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56308r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	1/10/02	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56401r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	9/6/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55229			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	9/17/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55281			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	10/11/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 55567r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/5/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – S1-17187A and 55789			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	11/29/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56003			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/4/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56093			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

Footnotes appear on the last page.

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	12/6/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56092			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/13/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56160			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/20/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56256			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	12/27/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56308r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
Ph II Eff	1/10/02	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 56401r1			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
BQL Result was below the QL; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level (ppq).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 6. Wastewater Treatment Plant Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		QL	10	50	50	50	50	50	100	
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
WWTP-Influent	4/4/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53674			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
WWTP Digester 1 & 2	4/10/01	*Result*	63.9	BQL	BQL	BQL	BQL	BQL	BQL	0
		TEC *	63.9	0	0	0	0	0	0	63.9
METHOD BLANK Sample Set – 53756			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
WWTP-Digester	11/8/01	*Result*	BQL	BQL	BQL	BQL	902	BQL	BQL	0
		TEC *	0	0	0	0	9.02	0	0	9.02
METHOD BLANK Sample Set – 55851			BQL	BQL	BQL	BQL	BQL	BQL	BQL	0

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

BQL Result was below the QL; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level (ppq).

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Table 6. Wastewater Treatment Plant Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		QL	10	50	50	50	50	50	50	50	50	100	
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
WWTP-Influent	4/4/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
		TEC *	0	0	0	0	0	0	0	0	0	0	0
METHOD BLANK Sample Set – 53674			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
WWTP Digester 1 & 2	4/10/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	16960	0
		TEC *	0	0	0	0	0	0	0	0	0	0.3392	0.3392
METHOD BLANK Sample Set – 53756			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0
WWTP-Digester	11/8/01	*Result*	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	12050	0
		TEC *	0	0	0	0	0	0	0	0	0	0.2410	0.2410
METHOD BLANK Sample Set – 55851			BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

BQL Result was below the QL; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level (ppq).

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

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Table 1. Summary of Samples Collected as Part of the Pilot Test, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date	Sample ID	Sample Date
Phase I, Influent Samples – Table 2		Phase II, Effluent Samples – Table 5	
Ph 1 Inf	6/12/2001	Ph II Eff	9/06/2001
Ph I-Inf-EW1	8/15/2001	Ph II Eff	9/17/2001
		Ph II Eff	10/11/2001
Phase I, Effluent Samples – Table 3		Ph II Eff	11/05/2001
Ph 1 Eff	5/03/2001	Ph II Eff	11/29/2001
Ph 1 Eff	5/08/2001	Ph II Eff	12/04/2001
Ph 1 Eff	5/17/2001	Ph II Eff	12/06/2001
Ph 1 Eff	6/12/2001	Ph II Eff	12/13/2001
Ph 1 Eff	7/12/2001	Ph II Eff	12/20/2001
Ph I-Eff-EW1	8/15/2001	Ph II Eff	12/27/2001
		Ph II Eff	1/10/2002
Phase II, Influent Samples – Table 4			
GMEW-1	11/05/2001	WWTP Samples – Table 6	
GMEW-2	11/05/2001	WWTP-Influent	4/04/2001
GMEW-3	11/05/2001	WWTP-Digester 1&2	4/10/2001
GMEW-1	12/03/2001	WWTP Digester	11/08/2001
GMEW-2	12/03/2001		
GMEW-3	12/03/2001		
GMEW-1	12/05/2001		
GMEW-2	12/05/2001		
GMEW-3	12/05/2001		
GMEW-1	12/12/2001		
GMEW-2	12/12/2001		
GMEW-3	12/12/2001		
GMEW-1	12/19/2001		
GMEW-2	12/19/2001		
GMEW-3	12/19/2001		

WWTP Waste Water Treatment Plant.

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Table 2. Phase I Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Inf	6/12/01	*DL*	2.7	3.5	3.9	3.9	3.9	6.6	9.7	—
		Result	<2.7	<3.5	<3.9	<3.9	<3.9	<6.6	<9.7	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	—
Ph I-Inf-EW1	8/15/01	*DL*	2.5	2.7	2.8	2.8	2.6	4.3	NA	—
		Result	<2.5	<2.7	<2.8	<2.8	<2.6	<4.3	17.8 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000178	0.000178
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

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Table 2. Phase I Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph 1 Inf	6/12/01	*DL*	2.7	2.5	2.6	2.3	2.3	2.6	3.1	3.4	4.7	7.8	—
		Result	<2.7	<2.5	<2.6	<2.3	<2.3	<2.6	<3.1	<3.4	<4.7 J	<7.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph I-Inf-EW1	8/15/01	*DL*	1.8	2.1	1.9	1.8	1.9	1.8	2.1	2.5	3.2	5.4	—
		Result	<1.8	<2.1	<1.9	<1.8	<1.9	<1.8	<2.1	<2.5	<3.2	<5.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ppq Parts per quadrillion (picograms per liter).
NA Information is not available.
ND Congener was not detected; contribution to the TEC is zero.
QL Congener quantifical limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:
J – Concentration is qualified as estimated.

ARCADIS GERAGHTY & MILLER

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Eff	5/3/01	*DL*	1.9	2.4	4.4	4.5	4.0	7.3	NA	—
		Result	<1.9	<2.4	<4.4	<4.5	<4.0	<7.3	33.2 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000332	0.000332
METHOD BLANK Sample Set – 53903r1			ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	5/8/01	*DL*	0.7	0.7	1.2	1.2	1.1	1.5	NA	—
		Result	<0.7	<0.7	<1.2	<1.2	<1.1	<1.5	1.9 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000019	0.000019
METHOD BLANK Sample Set – 54018			ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	5/17/01	*DL*	3.5	8.0	7.1	7.3	7.2	6.4	10.1	—
		Result	<3.5	<8.0	<7.1	<7.3	<7.2	<6.4 J	<10.1 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54017			ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	6/12/01	*DL*	2.9	3.5	3.8	3.8	3.8	7.5	10.8	—
		Result	<2.9	<3.5	<3.8	<3.8	<3.8	<7.5	<10.8	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

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Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph 1 Eff	5/3/01	*DL*	1.4	1.5	1.5	2.3	2.2	2.4	2.7	3.9	4.9	10.0	—
		Result	<1.4	<1.5	<1.5	<2.3	<2.2	<2.4	<2.7	<3.9	<4.9	<10.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 53903r1			ND	3.6 J	ND	ND	2.7 J	ND	ND	ND	ND	ND	—
Ph 1 Eff	5/8/01	*DL*	0.5	0.5	0.5	0.7	0.6	0.7	0.8	0.9	1.1	2.2	—
		Result	<0.5	<0.5	<0.5	<0.7	<0.6	<0.7	<0.8	<0.9	<1.1	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54018			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	5/17/01	*DL*	2.9	3.8	3.8	3.0	2.8	3.1	4.0	4.0	5.6	7.7	—
		Result	<2.9	<3.8	<3.8	<3.0 J	<2.8 J	<3.1	<4.0 J	<4.0 J	<5.6 J	<7.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54017			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	6/12/01	*DL*	2.7	2.4	2.4	2.4	2.4	2.7	3.2	3.6	5.0	8.7	—
		Result	<2.7	<2.4	<2.4	<2.4	<2.4	<2.7	<3.2	<3.6	<5.0 J	<8.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

ARCADIS GERAGHTY & MILLER

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Eff	7/12/01	*DL*	1.4	1.9	2.6	2.7	2.6	5.1	16.4	—
		Result	<1.4 J	<1.9 J	<2.6 J	<2.7 J	<2.6	<5.1	<16.4 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 54700			ND	ND	ND	ND	ND	1.9 J	10.7 J	—
Ph I-Eff-EW1	8/15/01	*DL*	3.1	3.2	3.1	3.1	2.9	5.5	8.5	—
		Result	<3.1	<3.2	<3.1	<3.1	<2.9	<5.5	<8.5	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

ARCADIS GERAGHTY & MILLER

Table 3. Phase I Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph 1 Eff	7/12/01	*DL*	1.1	1.4	1.3	1.7	1.7	1.7	2.0	2.5	2.9	8.0	—
		Result	<1.1 J	<1.4 J	<1.3 J	<1.7 J	<1.7 J	<1.7 J	<2.0 J	<2.5	<2.9	<8.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54700			ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6 J	—
Ph I-Eff-EW1	8/15/01	*DL*	2.1	2.4	2.2	1.8	1.9	1.9	2.2	2.6	3.3	6.9	—
		Result	<2.1	<2.4	<2.2	<1.8	<1.9	<1.9	<2.2	<2.6	<3.3	<6.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ppq Parts per quadrillion (picograms per liter).
NA Information is not available.
ND Congener was not detected; contribution to the TEC is zero.
QL Congener quantifical limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:
B – Compound was detected in the associated QC method blank sample.
J – Concentration is qualified as estimated.

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Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	11/5/01	*DL*	1.1	1.1	1.4	1.4	1.4	2.3	5.1	—
		Result	<1.1	<1.1	<1.4	<1.4	<1.4	<2.3	<5.1 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—
GMEW-2	11/5/01	*DL*	1.4	2.7	4.1	3.6	NA	5.0	6.3	—
		Result	<1.4	<2.7 EJ	<4.1 J	<3.6 J	3.6 EJ	<5.0 J	<6.3 EJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	(ND)	(ND)	(ND)	0.036	(ND)	(ND)	0.036
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—
GMEW-3	11/5/01	*DL*	1.8	1.6	3.4	2.2	NA	3.7	24.5	—
		Result	<1.8	<1.6	<3.4 EJ	<2.2 EJ	4.2 J	<3.7 EJ	<24.5 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	(ND)	(ND)	0.042	(ND)	(ND)	0.042
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—
GMEW-1	12/3/01	*DL*	NA	NA	0.7	0.8	0.74	NA	12.0	—
		Result	1.1 J	0.73 J	<0.7	<0.8	<0.74 EJ	1.6 EJ	<12.0 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	1.1	0.33	ND	ND	(ND)	0.00080	(ND)	1.4
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—

Footnotes appear on the last page.

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Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-1	11/5/01	*DL*	NA	0.8	0.7	0.9	0.9	0.9	1.1	1.3	1.4	3.0	—
		Result	1.6 J	<0.8	<0.7	<0.9	<0.9	<0.9	<1.1	<1.3	<1.4	<3.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—
GMEW-2	11/5/01	*DL*	NA	2.7	3.3	3.8	3.1	3.2	4.7	2.2	2.3	11.0	—
		Result	2.5 J	<2.7 EJB	<3.3 JB	<3.8 EJB	<3.1 EJB	<3.2 JB	<4.7 JB	<2.2 EJB	<2.3 EJB	<11.0 JB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.2	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	0.2
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—
GMEW-3	11/5/01	*DL*	NA	2.6	2.3	3.2	2.4	NA	1.3	2.8	3.6	11.8	—
		Result	8.9 J	<2.6 JB	<2.3 JB	<3.2 EJB	<2.4 JB	29.4 JB	<1.3 JB	<2.8	<3.6	<11.8 JB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.71	(ND)	(ND)	(ND)	(ND)	2.06	(ND)	ND	ND	(ND)	2.77
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—
GMEW-1	12/3/01	*DL*	NA	NA	0.5	1.4	0.5	0.5	NA	0.6	0.6	NA	—
		Result	0.85 EJ	1.4 J	<0.5	<1.4 JB	<0.5	<0.5	1.0 J	<0.6	<0.6	4.5 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.068	0.014	ND	(ND)	ND	ND	0.060	ND	ND	0.000090	0.142
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—

Footnotes appear on the last page.

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Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-2	12/3/01	*DL*	1.3	1.2	1.6	1.7	1.6	2.4	4.1	—
		Result	<1.3 J	<1.2	<1.6 J	<1.7	<1.6	<2.4	<4.1	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-3	12/3/01	*DL*	1.1	0.9	1.3	1.4	1.30	1.8	3.0	—
		Result	<1.1 J	<0.9	<1.3 J	<1.4	<1.3	<1.8	<3.0 EJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-1	12/5/01	*DL*	0.8	0.6	0.8	0.9	0.8	1.0	3.4	—
		Result	<0.8 J	<0.6	<0.8	<0.9	<0.8	<1.0	<3.4 EJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-2	12/5/01	*DL*	1.5	1.2	1.7	1.8	1.7	2.3	15.2	—
		Result	<1.5 J	<1.2	<1.7 J	<1.8 J	<1.7	<2.3	<15.2 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—

Footnotes appear on the last page.

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Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-2	12/3/01	*DL*	1.0	1.1	1.0	1.1	1.1	1.1	1.3	1.4	1.6	3.1	—
		Result	<1.0 J	<1.1 J	<1.0 J	<1.1 J	<1.1	<1.1 J	<1.3 J	<1.4	<1.6	<3.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-3	12/3/01	*DL*	0.8	0.9	0.8	0.8	0.8	0.8	1.0	1.1	1.2	2.1	—
		Result	<0.8 J	<0.9	<0.8	<0.8 J	<0.8	<0.8 J	<1.0	<1.1	<1.2	<2.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-1	12/5/01	*DL*	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.7	1.2	—
		Result	<0.6 J	<0.6	<0.6	<0.5	<0.5	<0.5	<0.6	<0.6	<0.7	<1.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-2	12/5/01	*DL*	1.1	1.2	1.1	1.7	1.1	1.0	1.3	1.8	1.5	NA	—
		Result	<1.1 J	<1.2 J	<1.1 J	<1.7 JB	<1.1 J	<1.0 J	<1.3 J	<1.8 EJB	<1.5	4.0 EJ	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	(ND)	ND	ND	ND	(ND)	ND	0.000080	0.000080
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.9 J	ND	—

Footnotes appear on the last page.

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Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-3	12/5/01	*DL*	1.0	0.8	1.1	1.2	1.6	1.7	5.9	—
		Result	<1.0	<0.8	<1.1	<1.2	<1.6 JB	<1.7	<5.9 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	(ND)	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-1	12/12/01	*DL*	1.4	1.6	1.7	1.7	1.6	2.4	4.4	—
		Result	<1.4	<1.6	<1.7	<1.7	<1.6	<2.4	<4.4	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	—
GMEW-2	12/12/01	*DL*	3.9	4.4	4.3	4.5	4.3	6.3	12.9	—
		Result	<3.9 J	<4.4	<4.3	<4.5	<4.3	<6.3	<12.9	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/12/01	*DL*	1.4	1.5	1.5	1.6	1.5	2.3	NA	—
		Result	<1.4 J	<1.5	<1.5	<1.6	<1.5	<2.3	7.0 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000070	0.000070
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

ARCADIS GERAGHTY & MILLER

Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-3	12/5/01	*DL*	0.8	0.8	0.8	1.1	0.8	0.7	NA	1.0	1.1	NA	—
		Result	<0.8	<0.8	<0.8	<1.1 JB	<0.8	<0.7	2.0 J	<1.0	<1.1	4.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	(ND)	ND	ND	0.12	ND	ND	0.000088	0.12
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-1	12/12/01	*DL*	1.0	1.2	1.2	0.9	0.9	0.9	1.0	1.2	1.4	3.3	—
		Result	<1.0	<1.2 J	<1.2	<0.9	<0.9	<0.9	<1.0	<1.2	<1.4	<3.3	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-2	12/12/01	*DL*	2.9	3.8	3.5	2.4	2.4	2.3	2.8	3.4	3.9	9.6	—
		Result	<2.9 J	<3.8 J	<3.5 J	<2.4	<2.4	<2.3	<2.8	<3.4	<3.9	<9.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/12/01	*DL*	1.0	1.2	1.1	NA	0.9	0.9	NA	1.2	1.3	NA	—
		Result	<1.0 J	<1.2 J	<1.1	1.9 J	<0.9	<0.9	1.9 EJ	<1.2	<1.3	6.1 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	0.015	ND	ND	0.11	ND	ND	0.00012	0.13
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-1	12/19/01	*DL*	1.2	1.8	1.2	1.2	1.2	1.8	NA	—
		Result	<1.2	<1.8	<1.2	<1.2	<1.2	<1.8	8.0 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000080	0.000080
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—
GMEW-2	12/19/01	*DL*	2.5	4.5	NA	NA	NA	NA	NA	—
		Result	<2.5	<4.5	3.3 EJ	3.9 EJ	5.9 J	4.3 EJ	26.2 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	0.099	0.039	0.059	0.0022	0.000262	0.199
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/19/01	*DL*	5.3	6.4	5.3	5.3	5.3	8.6	NA	—
		Result	<5.3 J	<6.4 J	<5.3	<5.3	<5.3	<8.6	24.7 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000247	0.000247
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

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Table 4. Phase II Influent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GMEW-1	12/19/01	*DL*	NA	1.3	1.2	0.8	0.8	0.9	1.1	1.2	1.6	2.4	—
		Result	2 EJ	<1.3	<1.2	<0.8	<0.8	<0.9	<1.1	<1.2	<1.6	<2.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-2	12/19/01	*DL*	2.3	NA	NA	NA	NA	NA	NA	NA	4.3	NA	—
		Result	<2.3	6.6 J	6.6 J	5.5 J	4.9 J	5.4 EJ	6.7 J	6.5 J	<4.3	14.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	0.066	5.3	0.044	0.098	0.38	0.40	0.00065	ND	0.000288	6.3
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/19/01	*DL*	4.9	5.5	5.3	3.4	3.5	3.7	4.6	5.5	7.0	15.2	—
		Result	<4.9 J	<5.5 J	<5.3 J	<3.4	<3.5	<3.7 J	<4.6 J	<5.5	<7.0	<15.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

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Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	9/6/01	*DL*	2.7	NA	2.8	NA	NA	5.1	NA	—
		Result	<2.7	3.5 J	<2.8	2.3 EJ	2.9 J	<5.1	17.5 EJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	1.6	ND	0.023	0.029	ND	0.000175	1.7
METHOD BLANK Sample Set – 55229			ND	ND	ND	ND	ND	ND	26.2 J	—
Ph II Eff	9/17/01	*DL*	1.1	1.2	1.6	1.6	1.6	2.1	8.4	—
		Result	<1.1	<1.2	<1.6	<1.6	<1.6	<2.1	<8.4 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 55281			ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	10/11/01	*DL*	NA	1.2	1.6	1.7	1.6	NA	39.0	—
		Result	8.8 J	<1.2	<1.6	<1.7	<1.6	3.8 J	<39.0 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	8.8	ND	ND	ND	ND	0.0019	(ND)	8.8
METHOD BLANK Sample Set – 55567r1			ND	ND	ND	0.96 J	ND	ND	9.1 J	—
Ph II Eff	11/5/01	*DL*	NA	1.6	2.1	2.8	NA	2.6	11.3	—
		Result	1.3 EJ	<1.6 EJB	<2.1 EJB	<2.8 EJB	2.4 EJB	<2.6	<11.3 EJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	1.3	(ND)	(ND)	(ND)	0.024	ND	(ND)	1.3
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—

Footnotes appear on the last page.

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Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	9/6/01	*DL*	1.9	2.2	2.1	NA	NA	NA	NA	3.2	4.2	NA	—
		Result	<1.9	<2.2	<2.1	2.6 J	2.7 J	2.4 J	2.5 J	<3.2	<4.2	6 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	0.021	0.054	0.17	0.15	ND	ND	0.00012	0.40
METHOD BLANK Sample Set – 55229			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	9/17/01	*DL*	0.9	1.0	1.0	1.4	1.0	1.0	1.2	1.3	1.6	2.8	—
		Result	<0.9	<1.0	<1.0	<1.4 JB	<1.0	<1.0	<1.2	<1.3	<1.6	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	(ND)	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55281			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	10/11/01	*DL*	0.7	0.9	0.8	1.0	1.0	1.0	1.2	1.5	1.7	10.4	—
		Result	<0.7	<0.9	<0.8	<1.0	<1.0	<1.0	<1.2	<1.5	<1.7	<10.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 55567r1			ND	ND	ND	0.85 J	ND	0.81 J	1 J	ND	ND	3.4 EJ	—
Ph II Eff	11/5/01	*DL*	0.9	2.9	3.0	3.3	2.5	2.1	3.2	1.7	2.2	6.4	—
		Result	<0.9	<2.9 JB	<3.0 EJB	<3.3 JB	<2.5 JB	<2.1 JB	<3.2 JB	<1.7	<2.2	<6.4 JB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	ND	ND	(ND)	0
METHOD BLANK Sample Set – S1-17187A and 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—

Footnotes appear on the last page.

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Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	11/29/01	*DL*	4.1	3.8	5.6	5.8	5.60	7.2	12.8	—
		Result	<4.1 J	<3.8 J	<5.6 J	<5.8 J	<5.6	<7.2	<12.8	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56003			ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/4/01	*DL*	NA	1.4	1.8	1.9	1.8	2.2	5.2	—
		Result	2.5 J	<1.4	<1.8 J	<1.9 J	<1.8	<2.2	<5.2 EJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	2.5	ND	ND	ND	ND	ND	(ND)	2.5
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
Ph II Eff	12/6/01	*DL*	1.9	1.5	2.2	2.2	2.1	2.9	5.3	—
		Result	<1.9 J	<1.5	<2.2 J	<2.2	<2.1	<2.9	<5.3 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
Ph II Eff	12/13/01	*DL*	6.8	7.7	8.7	9.0	8.5	12.5	27.2	—
		Result	<6.8 J	<7.7 J	<8.7 J	<9.0 J	<8.5	<12.5	<27.2 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56160			ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

ARCADIS GERAGHTY & MILLER

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	11/29/01	*DL*	3.2	3.1	2.9	3.3	3.4	3.4	4.1	4.4	5.7	11.1	—
		Result	<3.2 J	<3.1 J	<2.9 J	<3.3 J	<3.4	<3.4 J	<4.1 J	<4.4	<5.7	<11.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56003			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/4/01	*DL*	NA	1.3	1.2	1.1	1.2	1.1	1.3	1.3	1.5	2.8	—
		Result	2.9 J	<1.3 J	<1.2 J	<1.1 J	<1.2 J	<1.1 J	<1.3 J	<1.3	<1.5	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.9 J	ND	—
Ph II Eff	12/6/01	*DL*	1.4	1.5	1.4	1.3	1.3	1.3	1.6	1.6	1.8	3.5	—
		Result	<1.4 J	<1.5 J	<1.4 J	<1.3 J	<1.3	<1.3 J	<1.6 J	<1.6	<1.8	<3.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.9 J	ND	—
Ph II Eff	12/13/01	*DL*	4.6	6.1	5.7	4.4	4.5	4.3	5.2	6.8	7.7	20.2	—
		Result	<4.6 J	<6.1 J	<5.7 J	<4.4 J	<4.5 J	<4.3 J	<5.2 J	<6.8	<7.7	<20.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56160			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

ARCADIS GERAGHTY & MILLER

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph II Eff	12/20/01	*DL*	3.4	4.9	3.6	3.6	3.6	4.8	9.4	—
		Result	<3.4	<4.9	<3.6	<3.6	<3.6	<4.8	<9.4	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/27/01	*DL*	11.8	9.6	3.9	9.5	12.60	8.5	25.5	—
		Result	<11.8 EJB	<9.6 JB	<3.9 EJB	<9.5 JB	<12.6 JB	<8.5	<25.5 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	(ND)	(ND)	(ND)	(ND)	(ND)	ND	(ND)	0
METHOD BLANK Sample Set – 56308r2			ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	1/10/02	*DL*	NA	NA	1.9	1.9	2.2	10.3	NA	—
		Result	2.5 J	2.5 J	<1.9 JB	<1.9 JB	<2.2 EJB	<10.3 JB	52.7 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	2.5	1.1	(ND)	(ND)	(ND)	(ND)	0.000527	3.6
METHOD BLANK Sample Set – 56401r1			ND	ND	ND	ND	ND	ND	ND	—

Footnotes appear on the last page.

ARCADIS GERAGHTY & MILLER

Table 5. Phase II Effluent Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
Ph II Eff	12/20/01	*DL*	2.8	3.3	3.2	2.1	2.1	2.3	2.8	3.0	3.8	7.4	—
		Result	<2.8	<3.3	<3.2	<2.1	<2.1	<2.3	<2.8	<3.0	<3.8	<7.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/27/01	*DL*	2.2	6.5	2.2	6.8	4.7	3.0	12.7	5.7	7.1	14.4	—
		Result	<2.2	<6.5 EJB	<2.2	<6.8 EJB	<4.7 EJB	<3.0	<12.7 JB	<5.7	<7.1	<14.4 EJB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	(ND)	ND	(ND)	(ND)	ND	(ND)	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56308r2			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	1/10/02	*DL*	NA	2.8	NA	3.1	2.5	2.6	1.8	4.1	1.8	11.1	—
		Result	3.7 J	<2.8 JB	2.1 J	<3.1 EJB	<2.5 JB	<2.6 JB	<1.8 EJB	<4.1 EJB	<1.8 EJB	<11.1 JB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.3	(ND)	1.7	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	2.0
METHOD BLANK Sample Set – 56401r1			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

ARCADIS GERAGHTY & MILLER

Table 6. Waste Water Treatment Plant Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
WWTP-Influent	4/4/01	*DL*	9.2	12.2	11.2	11.3	11.4	NA	NA	—
		Result	<9.2 J	<12.2 J	<11.2 J	<11.3 J	<11.4 J	30.2 EJ	237 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0151	0.00237	0.0175
METHOD BLANK Sample Set – 53674			ND	ND	ND	ND	ND	ND	ND	—
WWTP Digester 1 & 2	4/10/01	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	63.9	458 EJ	328 J	926 J	951 J	20380 J	177660 EJ	—
		QL	10	50	50	50	50	50	100	—
		TEC *	63.9	206	9.84	9.26	9.51	10.19	1.7766	310
METHOD BLANK Sample Set – 53756			ND	ND	ND	ND	ND	ND	9.4 J	—
WWTP-Digester	11/8/01	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	61.6 J	308 EJ	317 J	861 J	902	15480 J	147720 JK	—
		QL	10	50	50	50	50	50	100	—
		TEC *	61.6	139	9.51	8.61	9.02	7.740	1.4772	237
METHOD BLANK Sample Set – 55851			ND	ND	ND	ND	ND	ND	3.2 J	—

Footnotes appear on the last page.

ARCADIS GERAGHTY & MILLER

Table 6. Waste Water Treatment Plant Sample Results, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
WWTP-Influent	4/4/01	*DL*	7.2	10.1	10.3	7.9	7.7	8.7	10.4	12.6	17.6	26.5	—
		Result	<7.2 J	<10.1 J	<10.3 J	<7.9 J	<7.7 J	<8.7 J	<10.4 J	<12.6 J	<17.6 J	<26.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 53674			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
WWTP Digester 1 & 2	4/10/01	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	377 EJ	108 J	216 EJ	447 J	288 J	432 J	22.0 J	6350 J	267 J	16960	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	30.2	1.08	173	3.58	5.76	30.2	1.32	0.635	1.07	0.3392	247
METHOD BLANK Sample Set – 53756			ND	ND	ND	1.8 J	ND	ND	ND	ND	ND	ND	—
WWTP-Digester	11/8/01	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	167 J	317 J	173 J	390 J	325 J	340 J	71.3 J	5130 J	214 J	12050	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	13.4	3.17	138	3.12	6.50	23.8	4.28	0.513	0.856	0.2410	194
METHOD BLANK Sample Set – 55851			0.76 EJ	ND	ND	0.72 J	ND	ND	ND	ND	ND	ND	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

COPY

Iron Mountain/Kingsford
Wastewater Treatment Plant
Box 88 Park Drive
Kingsford, Mi. 49802
906-774-2255

Mr. Brian Brady
Surface Water Quality Division
Michigan Department of Environmental Quality
420 5th Street
Gwinn, Michigan 49841

Subject:
Dioxin Sampling Schedule for the Iron Mountain/Kingsford Wastewater Treatment Plant (IMKWWTP).

Dear Mr. Brady:

As we discussed at our meeting on November 12, 2002, we believe the effluent sampling plan proposed in our August 1, 2002 letter will allow the determination of the following:

1. The current Phase II effluent dioxin concentrations at the IMKWWTP.
2. The potential effects on the IMKWWTP effluent dioxin concentrations due to the Phase III effluent discharge.

Three samples over three months (1 sample per month) will be collected to evaluate whether any dioxin congeners are detectable in the IMKWWTP effluent. Composite samples will be collected and analyzed using United States Environmental Protection Agency (USEPA) Method 1613. This effluent data, along with the previously collected sludge data, influent data, and Phase I and II groundwater influent and effluent data, will be used to perform the requested dioxin headworks analysis for the Phase III discharge.

The schedule for this sampling and subsequent evaluation will be as follows:

August 1, 2002	Proposal submitted to MDEQ
October 15, 2002	MDEQ acceptance of proposal
January 22, 2002	Sampling event 1
February 11, 2003	Sampling event 2
March 10, 2003	Sampling event 3
May 30, 2002	Submittal of Sampling Report, Determination in accordance with R323.1211, and Headworks Analysis

The sampling will be coordinated with ARCADIS to ensure that the groundwater discharge remains generally consistent (in terms of percentage of flow from the various extraction wells included in the pilot test) from event to event.

If you have any questions regarding the proposed schedule, please contact me at 906-774-2255.

Sincerely,

Gary Lessard, Superintendent
Iron Mountain/Kingsford Wastewater Treatment Plant

Copies:
Mr. Steve Casey, MDEQ
Mr. Gerald Saalfeld, MDEQ
Mr. Bruce Walker, MDEQ
Iron Mountain/Kingsford Joint Sewage Board
Mr. Steve Lepak, STS Consultants
Mr. David Miller, Ford Motor Comany
Mr. Dan Musgrove, The Kingsford Products Company
Mr. James Bedessem, ARCADIS G&M
Mr. Ric Studebaker, ARCADIS G&M

FILE

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS G&M, Inc.
126 North Jefferson Street
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Milwaukee
Wisconsin 53202
Tel 414 276 7742
Fax 414 276 7603

Transmittal Letter

To:
Gary Lessard – Iron Mt/Kingsford Waste Water Treatment Plant

Copies:
File

BUSINESS UNIT

From:
Richard L. Studebaker, Jr.

Date:
11 March 2003

Subject:
January 2003 – Dioxin WWTP and Phase II Pretreatment System Effluent Sampling Results

ARCADIS Project No.:
WI000975.0021

We are sending you:

☒ **Attached** ☐ **Under Separate Cover Via _____ the Following Items:**

☐ Shop Drawings ☐ Plans ☐ Specifications ☐ Change Order
☐ Prints ☐ Samples ☐ Copy of Letter ☐ Reports
☒ Other:

Copies	Date	Drawing No.	Rev.	Description	Action*
1	3/11/03			WWTP and Phase II Effluent Dioxin/Furan Summary Tables, Validation Memo and Copy of the Validated Laboratory Report (H3A300238) for the samples collected January 22, 2003.	

Action*

☐ A Approved ☐ CR Correct and Resubmit ☐ Resubmit ____ Copies
☐ AN Approved As Noted ☐ F File ☐ Return ____ Copies
☒ AS As Requested ☐ FA For Approval ☐ Review and Comment
☐ Other:

Mailing Method

☐ U.S. Postal Service 1st Class ☐ Courier/Hand Delivery ☐ FedEx Priority Overnight ☐ FedEx 2-Day Delivery
☐ Certified/Registered Mail ☐ United Postal Service (UPS) ☐ FedEx Standard Overnight ☐ FedEx Economy
☐ Other:

Comments: As requested please find enclosed the January 22, 2003 dioxin/furan sampling results for the WWTP and the Phase II Effluent. Please call with any questions.

R. L. Studebaker Jr.

Table 1. Summary of Waste Water Treatment Plant Dioxin/Furan Samples Collected in 2003, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
WWTP, Total Samples – Table 2	
WWTP EFF (1/22/03)T	1/22/2003
WWTP EFF (2/13/03)T	2/13/2003
WWTP EFF (3/4/03)T	3/04/2003
WWTP, Dissolved Samples – Table 3	
WWTP EFF (1/23/03)D	1/22/2003
WWTP EFF (2/13/03)D	2/13/2003
WWTP EFF (3/4/03)D	3/04/2003

WWTP Waste Water Treatment Plant.

Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Total Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (1/22/03)T	01/22/03	*DL*	3.7	1.7	1.8	2.0	1.9	2.8	5.5	—
		Result	<3.7	<1.7	<1.8	<2.0	<1.9	<2.8	<12 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (2/13/03)T	02/13/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—
WWTP EFF (3/4/03)T	03/04/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank samp

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Total Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (1/22/03)T	01/22/03	*DL*	2.8	1.3	0.97	0.89	0.96	1.1	1.5	2.6	3.7	7.8	—
		Result	<2.8	<1.3	<0.97	<0.89	<0.96	<1.1	<1.5	<2.6	<3.7	<7.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
WWTP EFF (2/13/03)T	02/13/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—
WWTP EFF (3/4/03)T	03/04/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Dissolved Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.6	1.3	1.1	1.1	1.1	1.8	2.2	—
		Result	<2.6	<1.3	<1.1	<1.1	<1.1	<1.8	<3.2 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (2/13/03)D	02/13/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—
WWTP EFF (3/4/03)D	03/04/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Dissolved Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.0	1.0	0.77	0.64	0.71	0.77	1.0	1.4	1.9	2.8	—
		Result	<2.0	<1.0	<0.77	<0.64	<0.71	<0.77	<1.0	<1.4	<1.9	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
WWTP EFF (2/13/03)D	02/13/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—
WWTP EFF (3/4/03)D	03/04/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) x BEF x TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 4. Summary of Phase II Effluent Dioxin/Furan Samples Collected in 2003, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
Phase II, Total Effluent Samples – Table 2	
PhII EFF (1/22/03)T	1/22/2003
PhII EFF (2/13/03)T	2/13/2003
PhII EFF (3/4/03)T	3/04/2003
Phase II, Dissolved Effluent Samples – Table 3	
PhII EFF (1/22/03)D	1/22/2003
PhII EFF (2/13/03)D	2/13/2003
PhII EFF (3/4/03)D	3/04/2003

Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)T	01/22/03	*DL*	4.4	1.9	1.9	2.0	2.0	2.8	3.7	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.8	<9.8 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—
PHII EFF (3/4/03)T	03/04/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)T	01/22/03	*DL*	3.0	1.7	1.3	1.2	1.4	1.4	1.7	2.4	2.9	4.9	—
		Result	<3.0	<1.7	<1.3	<1.2	<1.4	<1.4	<1.7	<2.4	<2.9	<4.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—
PHII EFF (3/4/03)T	03/04/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)D	01/22/03	*DL*	3.0	1.4	1.6	1.6	1.6	1.9	2.7	—
		Result	<3.0	<1.4	<1.6	<1.6	<1.6	<1.9	<7.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—
PHII EFF (3/4/03)D	03/04/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) x BEF x TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)D	01/22/03	*DL*	2.3	1.1	0.86	0.79	0.87	0.95	1.1	1.5	1.7	2.3	—
		Result	<2.3	<1.1	<0.86	<0.79	<0.87	<0.95	<1.1	<1.5	<1.7	<4.0 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—
PHII EFF (3/4/03)D	03/04/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor

Date:
March 6, 2003

Subject:
Dioxin Data Validation Samples Collected January 22, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the January 22, 2003 samples WWTP EFF and PhII EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on January 22, 2003 were received by STL on January 24, 2003, and were assigned the STL project number H3A300238.

No field quality control (QC) samples were collected on January 22, 2003 in association with samples WWTP EFF, and PhII EFF. Sample WWTP EFF was a composite of samples collected from three different times. Both the WWTP and PhII samples had a second portion filtered and analyzed. A total of four samples were analyzed. All samples were extracted February 3, 2003 and analyzed on February 11, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected January 22, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for each of the instruments used for STL Report H3A300238. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3A300238: t 030211s2 associated with Method Blank, Laboratory Control Sample (LCS), PHII EFF (1/22/03)D, PHII EFF (1/22/03)T, WWTP EFF (1/22/03)T, and WWTP EFF (1/22/03)D. All continuing calibrations associated with STL Report H3A300238 were acceptable.

1.4 Method Blanks

Method blank (FG2X61AA) was extracted with the field samples in STL Report H3A300238. In accordance with the *"Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002,"* and *"USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002,"* any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those vales reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target detection limit

(Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. All detected compounds were less than five times the method blank. Therefore, all detected sample compounds for this report should be re-flagged as NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3A300238.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. The analysis of MS/MSD on project related matrices not only provides precision and accuracy data but serves to determine if there are matrix interferences related to the method. Method accuracy was demonstrated though the analysis of an LCS.

1.8 Laboratory Control Sample(LCS)

One LCS (file FG2X61AC) was extracted in association with the field samples analyzed in STL Report H3A300238. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.9 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3A300238 contained samples PHII EFF (1/22/03)D, PHII EFF (1/22/03)T, WWTP EFF (1/22/03)T, and WWTP EFF (1/22/03)D collected on January 22, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 picograms per liter (pg/L) TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

WWTP EFF (1/22/03) – One internal standard was outside of the lower control limit criteria of 40-135 percent recovery. In accordance with the "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," criteria, only detected values are qualified as "J/Estimated." Non detected values are qualified when the labeled standard recoveries are less than 10 percent. In this case, all of the labeled standards were less than 40 percent recovery but greater than 10 percent, and all of the associated sample results were non detect; therefore, no qualification was necessary.

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3A300238 are presented in Attachment A. No data were rejected. All of the detected compounds were lower than five times the method blank detected levels. Therefore all detected sample compounds were assigned the value NOT Detected.

STL SAVANNAH

Client Sample ID: PHII EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-001 Work Order #...: FGWQE1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.9	pg/L	EPA-5 1613B
OCDD	**7.0 B,J,M**	**2.7**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.3	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.1	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.86	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.79	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.87	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.95	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.7	pg/L	EPA-5 1613B
OCDF	**4.0 B,J,M**	**2.3**	**pg/L**	**EPA-5 1613B**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	(20 - 175)
13C-1,2,3,7,8-PeCDD	65	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	75	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	67	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	67	(26 - 166)
13C-OCDD	42	(13 - 199)
13C-2,3,7,8-TCDF	75	(22 - 152)
13C-1,2,3,7,8-PeCDF	59	(21 - 192)
13C-2,3,4,7,8-PeCDF	65	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	75	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	66	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	71	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	73	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	62	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	63	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	97	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: PHII EFF(1/22/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-002 Work Order #...: FGWQL1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	4.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.8	pg/L	EPA-5 1613B
OCDD	**9.8 B,J,** *ll*	**3.7**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.7	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	2.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.9	pg/L	EPA-5 1613B
OCDF	ND	4.9	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	62	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	79	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	72	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	70	(26 - 166)
13C-OCDD	42	(13 - 199)
13C-2,3,7,8-TCDF	78	(22 - 152)
13C-1,2,3,7,8-PeCDF	56	(21 - 192)
13C-2,3,4,7,8-PeCDF	61	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	80	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	70	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	74	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	66	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	62	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	98	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-003 Work Order #...: FGWQP1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.7	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.8	pg/L	EPA-5 1613B
OCDD	12 B,J, ll	5.5	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.97	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.89	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.96	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	2.6	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	3.7	pg/L	EPA-5 1613B
OCDF	ND	7.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	(20 - 175)
13C-1,2,3,7,8-PeCDD	61	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	83	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	73	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	58	(26 - 166)
13C-OCDD	26	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	60	(21 - 192)
13C-2,3,4,7,8-PeCDF	67	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	91	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	81	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	82	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	59	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	51	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	91	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-005 Work Order #...: FGWQW1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.8	pg/L	EPA-5 1613B
OCDD	3.2 Q,B,J,M	2.2	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.0	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.77	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.64	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.71	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.77	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.9	pg/L	EPA-5 1613B
OCDF	ND	2.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(20 - 175)
13C-1,2,3,7,8-PeCDD	73	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	85	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	78	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	75	(26 - 166)
13C-OCDD	43	(13 - 199)
13C-2,3,7,8-TCDF	86	(22 - 152)
13C-1,2,3,7,8-PeCDF	67	(21 - 192)
13C-2,3,4,7,8-PeCDF	77	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	87	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	78	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	82	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	80	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	71	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	67	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	99	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-005 Work Order #...: FGWQW1AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AA Matrix.....: WATER
MB Lot-Sample #: H3B030000-268

Prep Date.....: 02/03/03
Analysis Date..: 02/11/03 Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.0	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	**1.8 Q,J**	**1.1**	**pg/L**	**EPA-5 1613B**
OCDD	**7.7 J**	**1.4**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	**1.1 Q,J**	**0.85**	**pg/L**	**EPA-5 1613B**
2,3,4,7,8-PeCDF	ND	0.64	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	**1.3 J**	**0.65**	**pg/L**	**EPA-5 1613B**
1,2,3,6,7,8-HxCDF	**1.4 J**	**0.73**	**pg/L**	**EPA-5 1613B**
2,3,4,6,7,8-HxCDF	ND	0.76	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	**1.7 J**	**0.88**	**pg/L**	**EPA-5 1613B**
1,2,3,4,6,7,8-HpCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.2	pg/L	EPA-5 1613B
OCDF	**5.7 J**	**1.8**	**pg/L**	**EPA-5 1613B**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	73	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	75	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	68	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	79	(26 - 166)
13C-OCDD	57	(13 - 199)
13C-2,3,7,8-TCDF	77	(22 - 152)
13C-1,2,3,7,8-PeCDF	66	(21 - 192)
13C-2,3,4,7,8-PeCDF	76	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	75	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	65	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	73	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	78	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	67	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	75	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	96	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AC Matrix.....: WATER
LCS Lot-Sample#: H3B030000-268
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,3,7,8-TCDD	90 Q	(67 - 158)	EPA-5 1613B
1,2,3,7,8-PeCDD	91	(70 - 142)	EPA-5 1613B
1,2,3,4,7,8-HxCDD	90	(70 - 164)	EPA-5 1613B
1,2,3,6,7,8-HxCDD	93	(76 - 134)	EPA-5 1613B
1,2,3,7,8,9-HxCDD	97	(64 - 162)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	93 B	(70 - 140)	EPA-5 1613B
OCDD	90 B	(78 - 144)	EPA-5 1613B
2,3,7,8-TCDF	94	(75 - 158)	EPA-5 1613B
1,2,3,7,8-PeCDF	102 B	(80 - 134)	EPA-5 1613B
2,3,4,7,8-PeCDF	90	(68 - 160)	EPA-5 1613B
1,2,3,4,7,8-HxCDF	90 B	(72 - 134)	EPA-5 1613B
1,2,3,6,7,8-HxCDF	90 B	(84 - 130)	EPA-5 1613B
2,3,4,6,7,8-HxCDF	90	(70 - 156)	EPA-5 1613B
1,2,3,7,8,9-HxCDF	87 B	(78 - 130)	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	89	(82 - 122)	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	88	(78 - 138)	EPA-5 1613B
OCDF	98 B	(63 - 170)	EPA-5 1613B

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AC Matrix.....: WATER
LCS Lot-Sample#: H3B030000-268

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	65	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	85	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	75	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	74	(26 - 166)
13C-OCDD	41	(13 - 199)
13C-2,3,7,8-TCDF	76	(22 - 152)
13C-1,2,3,7,8-PeCDF	57	(21 - 192)
13C-2,3,4,7,8-PeCDF	68	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	87	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	77	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	79	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	78	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	68	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	63	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	98	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AC Matrix.....: WATER
LCS Lot-Sample#: H3B030000-268
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,3,7,8-TCDD	200	180 Q	pg/L	90	EPA-5 1613B
1,2,3,7,8-PeCDD	1000	914	pg/L	91	EPA-5 1613B
1,2,3,4,7,8-HxCDD	1000	904	pg/L	90	EPA-5 1613B
1,2,3,6,7,8-HxCDD	1000	935	pg/L	93	EPA-5 1613B
1,2,3,7,8,9-HxCDD	1000	965	pg/L	97	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	1000	927 B	pg/L	93	EPA-5 1613B
OCDD	2000	1790 B	pg/L	90	EPA-5 1613B
2,3,7,8-TCDF	200	188	pg/L	94	EPA-5 1613B
1,2,3,7,8-PeCDF	1000	1020 B	pg/L	102	EPA-5 1613B
2,3,4,7,8-PeCDF	1000	905	pg/L	90	EPA-5 1613B
1,2,3,4,7,8-HxCDF	1000	897 B	pg/L	90	EPA-5 1613B
1,2,3,6,7,8-HxCDF	1000	902 B	pg/L	90	EPA-5 1613B
2,3,4,6,7,8-HxCDF	1000	905	pg/L	90	EPA-5 1613B
1,2,3,7,8,9-HxCDF	1000	867 B	pg/L	87	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	1000	894	pg/L	89	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	1000	879	pg/L	88	EPA-5 1613B
OCDF	2000	1950 B	pg/L	98	EPA-5 1613B

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AC Matrix.....: WATER
LCS Lot-Sample#: H3B030000-268

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	65	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	85	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	75	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	74	(26 - 166)
13C-OCDD	41	(13 - 199)
13C-2,3,7,8-TCDF	76	(22 - 152)
13C-1,2,3,7,8-PeCDF	57	(21 - 192)
13C-2,3,4,7,8-PeCDF	68	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	87	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	77	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	79	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	78	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	68	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	63	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	98	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

ARCADIS

Infrastructure, buildings, environment, communications

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ENVIRONMENT

Mr. Gerald Saalfeld
Surface Water Quality Division
Michigan Department of Environmental Quality
Knapps Centre, Suite 340
300 South Washington
Lansing, MI 48909

Subject:
Dioxin Characterization of Groundwater Discharge from the Phase II Pre-Treatment Pilot Study, Ford/Kingsford Site, Kingsford, Michigan.

Date:
7 April 2003

Contact:
Jim Bedessem

Phone:
813 264 3402

Email:
jbedessem@arcadis-us.com

Our ref:
WI0009750021.00001

Dear Mr. Saalfeld:

On behalf of Ford Motor Company (Ford) and The Kingsford Products Company (KPC), ARCADIS is providing this submittal of recently collected polychlorinated dibenzo-p-dioxin (dioxin) and polychlorinated dibenzofuran (furan) data.

This data is being collected at the request of the Iron Mountain/Kingsford Joint Sewage Board, and is being done concurrently with data collection on the effluent from the Wastewater Treatment Plant (WWTP). An agreement between the Iron Mountain/Kingford Joint Sewage Board and the MDEQ on that effluent sampling program required only the collection and reporting of 3 months of data on the WWTP effluent.

This submittal presents the recent Phase II effluent data and toxicity equivalent concentration calculations in the format requested by the MDEQ (attached Table 1). However, as discussed in previous correspondence to the MDEQ (letters dated August 7, 2001, December 11, 2001, and February 27, 2002), Ford and KPC still do not concur with a portion of the calculation approach described in Attachment A of the MDEQ letter dated November 4, 2001. The validated data in Table 1 shows that dioxins and furans were not detected in the Phase II effluent and that the detection limits (DL) achieved were below the required quantification levels (QL). While this submittal reports validated data, it should be still be considered "Preliminary" and does not include the laboratory reports. The final report will be sent by the end of May 2003.

In your conversation with Mr. Robinson, you also requested the groundwater data to the Phase II system. This data was provided to the MDEQ in a letter dated March 29, 2002 addressed to Mr. Clifton Clark and Mr. Steve Casey, on which you were copied. The influent data was presented in Tables 2 and 4 attached to the March 29, 2002 letter. We would like to note that the data show no detections above QL, and

2.6.1 - 4/7/03

for the few detections that were reported, all were between the DL and QL and were reported as estimated or otherwise qualified. Please let us know if you would like us to resubmit that information to you.

If you have any questions regarding the information provided with this letter, please contact the undersigned.

Sincerely,

ARCADIS G&M, Inc.

James M. Bedessem PLS

James M. Bedessem, PE
Principal Engineer

Attachments

Copies:
Mr. Chris Austin, MDEQ
Mr. Brian Brady, MDEQ
Mr. Steve Lepak, STS Consultants
Mr. Gary Lessard, Iron Mountain/Kingsford WWTP
Mr. David Miller, Ford Motor Comany
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Peter Palmer, ARCADIS G&M
Mr. Ric Studebaker, ARCADIS G&M
Mr. Darryl Wickman, City of Kingsford

DRAFT

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MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor

Date:
March 6, 2003

Subject:
Dioxin Data Validation Samples Collected January 22, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the January 22, 2003 samples WWTP EFF and PHII EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on January 22, 2003 were received by STL on January 24, 2003, and were assigned the STL project number H3A300238.

Samples WWTP EFF and PHII EFF were collected on January 22, 2003. Sample WWTP EFF was a composite of samples collected from three different times. Both the WWTP and PHII samples had a second portion filtered and analyzed. A total of four samples were analyzed. All samples were extracted February 3, 2003 and analyzed on February 11, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected January 22, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for each of the instruments used for STL Report H3A300238. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3A300238: t 030211s2 associated with Method Blank, Laboratory Control Sample (LCS), PHII EFF (1/22/03)D, PHII EFF (1/22/03)T, WWTP EFF (1/22/03)T, and WWTP EFF (1/22/03)D. All continuing calibrations associated with STL Report H3A300238 were acceptable.

1.4 Method Blanks

Method blank (FG2X61AA) was extracted with the field samples in STL Report H3A300238. In accordance with the "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target

detection limit (Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in samples PHII EFF (1/22/03)T, PHII EFF (1/22/03)D, WWTP EFF (1/23/03)T, and WWTP EFF (1/23/03)D at concentrations (9.8, 7.0, 12, and 3.2 picograms per liter (pg/L), respectively) less than five times the concentration detected in the method blank (7.7 pg/L). OCDF was detected in the sample PHII EFF (1/22/03)D at a concentration (4.0 pg/L) that was less than five times the concentration in the method blank (5.7 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3A300238.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. The analysis of MS/MSD on project related matrices not only provides precision and accuracy data but serves to determine if there are matrix interferences related to the method. Method accuracy was demonstrated though the analysis of an LCS.

1.7 Laboratory Control Sample(LCS)

One LCS (file FG2X61AC) was extracted in association with the field samples analyzed in STL Report H3A300238. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3A300238 contained samples PHII EFF (1/22/03)D, PHII EFF (1/22/03)T, WWTP EFF (1/22/03)T, and WWTP EFF (1/22/03)D collected on January 22, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

$\leq$ 10 pg/L TCDD & TCDF
$\leq$ 50 pg/L Pent – Hepta CDD & CDF
$\leq$ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

WWTP EFF (1/22/03) – One internal standard was outside of the lower control limit criteria of 40-135 percent recovery. In accordance with the "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," criteria, only detected values are qualified as "J/Estimated." Non detected values are qualified when the labeled standard recoveries are less than 10 percent. In this case, all of the labeled standards were less than 40 percent recovery but greater than 10 percent, and all of the associated sample results were non detect; therefore, no qualification was necessary.

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3A300238 are presented in Attachment A. No data were rejected. OCDD was detected in samples PHII EFF (1/22/03)T, PHII EFF

(1/22/03)D, WWTP EFF (1/23/03)T, and WWTP EFF (1/23/03)D at concentrations (9.8, 7.0, 12, and 3.2 pg/L, respectively) less than five times the concentration detected in the method blank (7.7 pg/L). OCDF was detected in the sample PHII EFF (1/22/03)D at a concentration (4.0 pg/L) that was less than five times the concentration in the method blank (5.7 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

DRAFT

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Tel 919-541-2686
Fax 919-541-3745

MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor Dennis Tabor

Date:
March 18, 2003

Subject:
Dioxin Data Validation Samples Collected February, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the February 13, 2003 samples PHII EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on February 13, 2003 were received by STL on February 14, 2003, and were assigned the STL project number H3B140161.

The PHII EFF sample had a second portion filtered and analyzed. A total of two samples were analyzed. Both samples were extracted February 20, 2003 and analyzed on February 27, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected February 13, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S/M2A was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for the instrument used for STL Report H3B140161. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3B140161: t 030227s1 associated with Method Blank, Laboratory Control Sample (LCS), PHII EFF (2/13/03)D, and PHII EFF (2/13/03)T. All continuing calibrations associated with STL Report H3B140161 were acceptable.

1.4 Method Blanks

Method blank (FHX421AA) was extracted with the field samples in STL Report H3B140161. In accordance with the "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target

detection limit (Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in samples PHII EFF (2/13/03)T and PHII EFF (2/13/03)D at concentrations (5.2 and 3.5 picograms per liter (pg/L), respectively) less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3B140161.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. The analysis of MS/MSD on project related matrices not only provides precision and accuracy data but serves to determine if there are matrix interferences related to the method. Method accuracy was demonstrated though the analysis of an LCS.

1.7 Laboratory Control Sample(LCS)

One LCS (file FHX421AC) was extracted in association with the field samples analyzed in STL Report H3B140161. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3B140161 contained samples PHII EFF (2/13/03)D, and PHII EFF (2/13/03)T, collected on February 13, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 pg/L TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

None

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3B140161 are presented in Attachment A. No data were rejected. OCDD was detected in samples PHII EFF (2/13/03)T and PHII EFF (2/13/03)D at concentrations (5.2 and 3.5 pg/L, respectively) less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

DRAFT

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Durham, NC 27713
Tel 919-541-2686
Fax 919-541-3745

MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor Dennis Tabor

Date:
March 18, 2003

Subject:
Dioxin Data Validation Samples Collected February, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the February 13, 2003 samples WWTP EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on February 13, 2003 were received by STL on February 15, 2003, and were assigned the STL project number H3B170102.

Sample WWTP EFF was a composite of samples collected from three different times. The WWTP sample had a second portion filtered and analyzed. A total of two samples were analyzed. Both samples were extracted February 20, 2003 and analyzed on February 27, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected February 13, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S/M2A was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for the instrument used for STL Report H3B170102. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3B170102: t 030227s1 associated with Method Blank, Laboratory Control Sample (LCS), WWTP EFF (2/13/03)D, and WWTP EFF (2/13/03)T. All continuing calibrations associated with STL Report H3B170102 were acceptable.

1.4 Method Blanks

Method blank (FHX421AA) was extracted with the field samples in STL Report H3B170102. In accordance with the *"Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002,"* and *"USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002,"* any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target detection limit

(Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in sample WWTP EFF (2/13/03)T at a concentration (7.1 picograms per liter (pg/L)) that was less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3B170102.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. The analysis of MS/MSD on project related matrices not only provides precision and accuracy data but serves to determine if there are matrix interferences related to the method. Method accuracy was demonstrated though the analysis of an LCS.

1.7 Laboratory Control Sample(LCS)

One LCS (file FHX421AC) was extracted in association with the field samples analyzed in STL Report H3B170102. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3B170102 contained composited samples WWTP EFF (2/13/03)D, and WWTP EFF (2/13/03)T, collected on February 13, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 pg/L TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

None

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3B170102 are presented in Attachment A. No data were rejected. OCDD was detected in sample WWTP EFF (2/13/03)T at a concentration (7.1 pg/L) that was less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

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Table 1. Summary of Waste Water Treatment Plant Dioxin/Furan Samples Collected in 2003, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
WWTP, Total Samples – Table 2	
WWTP EFF (1/22/03)T	1/22/2003
WWTP EFF (2/13/03)T	2/13/2003
WWTP EFF (3/4/03)T	3/04/2003
WWTP, Dissolved Samples – Table 3	
WWTP EFF (1/22/03)D	1/22/2003
WWTP EFF (2/13/03)D	2/13/2003
WWTP EFF (3/4/03)D	3/04/2003

WWTP Waste Water Treatment Plant.

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Total Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (1/22/03)T	1/22/2003	*DL*	3.7	1.7	1.8	2.0	1.9	2.8	5.5	—
		Result	<3.7	<1.7	<1.8	<2.0	<1.9	<2.8	<12 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (2/13/03)T	2/13/2003	*DL*	2.9	1.2	1.1	1.3	1.2	1.4	1.8	—
		Result	<2.9	<1.2	<1.1	<1.3	<1.2	<1.4	<7.1 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	ND	ND	ND	6.1 J	—
WWTP EFF (3/4/03)T	3/4/2003	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sampl

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Total Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (1/22/03)T	1/22/2003	*DL*	2.8	1.3	0.97	0.89	0.96	1.1	1.5	2.6	3.7	7.8	—
		Result	<2.8	<1.3	<0.97	<0.89	<0.96	<1.1	<1.5	<2.6	<3.7	<7.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	
WWTP EFF (2/13/03)T	2/13/2003	*DL*	2.2	1.1	0.89	0.58	0.6	0.66	0.81	1.3	1.7	2.1	—
		Result	<2.2	<1.1	<0.89	<0.58	<0.6	<0.66	<0.81	<1.3	<1.7	<2.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
WWTP EFF (3/4/03)T	3/4/2003	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Dissolved Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.6	1.3	1.1	1.1	1.1	1.8	2.2	—
		Result	<2.6	<1.3	<1.1	<1.1	<1.1	<1.8	<3.2 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (2/13/03)D	02/13/03	*DL*	2.0	0.89	1.0	1.1	1.0	1.4	4.0	—
		Result	<2.0	<0.89	<1.0	<1.1	<1.0	<1.4	<4.0	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	ND	ND	ND	6.1 J	—
WWTP EFF (3/4/03)D	03/04/03	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Dissolved Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.0	1.0	0.77	0.64	0.71	0.77	1.0	1.4	1.9	2.8	—
		Result	<2.0	<1.0	<0.77	<0.64	<0.71	<0.77	<1.0	<1.4	<1.9	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	
WWTP EFF (2/13/03)D	02/13/03	*DL*	1.4	0.8	0.6	0.47	0.52	0.59	0.73	1.1	1.4	2.8	—
		Result	<1.4	<0.8	<0.6	<0.47	<0.52	<0.59	<0.73	<1.1	<1.4	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
WWTP EFF (3/4/03)D	03/04/03	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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Table 4. Summary of Phase II Effluent Dioxin/Furan Samples Collected in 2003, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
Phase II, Total Effluent Samples – Table 2	
PhII EFF (1/22/03)T	1/22/2003
PhII EFF (2/13/03)T	2/13/2003
PhII EFF (3/4/03)T	3/04/2003
Phase II, Dissolved Effluent Samples – Table 3	
PhII EFF (1/22/03)D	1/22/2003
PhII EFF (2/13/03)D	2/13/2003
PhII EFF (3/4/03)D	3/04/2003

Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)T	1/22/2003	*DL*	4.4	1.9	1.9	2.0	2.0	2.8	3.7	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.8	<9.8 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)T	2/13/2003	*DL*	3.1	1.3	1.2	1.4	1.3	2.0	2.1	—
		Result	<3.1	<1.3	<1.2	<1.4	<1.3	<2.0	<5.2 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (3/4/03)T	3/4/2003	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
PHII EFF (1/22/03)T	1/22/2003	*DL*	3.0	1.7	1.3	1.2	1.4	1.4	1.7	2.4	2.9	4.9	—
		Result	<3.0	<1.7	<1.3	<1.2	<1.4	<1.4	<1.7	<2.4	<2.9	<4.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	
PHII EFF (2/13/03)T	2/13/2003	*DL*	2.3	1.2	0.95	0.73	0.87	0.86	0.99	1.4	1.6	2.2	—
		Result	<2.3	<1.2	<0.95	<0.73	<0.87	<0.86	<0.99	<1.4	<1.6	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (3/4/03)T	3/4/2003	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
PHII EFF (1/22/03)D	1/22/2003	*DL*	3.0	1.4	1.6	1.6	1.6	1.9	2.7	—
		Result	<3.0	<1.4	<1.6	<1.6	<1.6	<1.9	<7.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)D	2/13/2003	*DL*	4.4	1.9	1.9	2.0	2.0	2.1	2.1	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.1	<3.5 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (3/4/03)D	3/4/2003	*DL*								—
		Result								—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK										—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

DRAFT

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)D	1/22/2003	*DL*	2.3	1.1	0.86	0.79	0.87	0.95	1.1	1.5	1.7	2.3	—
		Result	<2.3	<1.1	<0.86	<0.79	<0.87	<0.95	<1.1	<1.5	<1.7	<4.0 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)D	2/13/2003	*DL*	3.1	1.5	1.2	0.93	1.0	1.1	1.3	1.9	2.1	2.2	—
		Result	<3.1	<1.5	<1.2	<0.93	<1.0	<1.1	<1.3	<1.9	<2.1	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (3/4/03)D	3/4/2003	*DL*											—
		Result											—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK 0													—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero

ppq Parts per quadrillion (picograms per liter).

QL Congener quantifical limit for that sample

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323 1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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Mr. Steve Casey
Michigan Department of Environmental Quality
420 5th Street
Gwinn, Michigan 49841

Subject:
Dioxin Characterization for the Iron Mountain/Kingsford Wastewater Treatment Plant Effluent, Kingsford, Michigan.

ENVIRONMENT

Date:
29 May 2003

Contact:
Jim Bedessem

Phone:
813 264 3402

Email:
jbedessem@arcadis-us.com

Our ref:
WI001025.00032

Dear Mr. Casey:

In response to a request from the Michigan Department of Environmental Quality (MDEQ), and in accordance with a proposal dated January 10, 2003, which was approved by the MDEQ, monthly monitoring of the Iron Mountain/Kingsford (IMK) Wastewater Treatment Plant (WWTP) effluent for polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans) was performed in January, February, and March 2003. ARCADIS, on behalf of the IMK Joint Sewage Board, has prepared this letter to transmit the results of that monitoring effort.

WWTP Effluent Dioxin Concentrations

The January 22, February 13, and March 4, 2003 dioxin and furan monitoring results for the IMK WWTP effluent are summarized in Tables 1 through 3. Samples of the effluent following dechlorination were collected 3 times per day at approximately 7 am, 3 pm, and 11 pm to make a composite sample that was representative of flow throughout the day. The individual samples were shipped on ice to Severn Trent Laboratories (STL) in Knoxville, Tennessee. Equal volumes of each sample were combined at the laboratory to make a single composite sample that was analyzed for dioxins and furans using United States Environmental Protection Agency Method 1613. The compositing was performed in the laboratory to minimize the potential for field contamination.

The results presented in Table 2 and Table 3 show that there are no detectable concentrations of dioxins or furans present in the effluent from the IMK WWTP. Table 2 presents the results for total dioxins and furans while Table 3 presents the results for dissolved dioxins and furans. The detection limits achieved by STL were lower than the minimum practical quantitation levels required by the MDEQ. The data presented in Tables 2 and 3 was validated by ARCADIS and the validation reports are provided in Attachment A. The laboratory reports generated by STL are being transmitted to the MDEQ under separate cover by ARCADIS.

Closing Remarks

The IMK Joint Sewage Board and ARCADIS appreciate MDEQ's support and understanding as we work cooperatively through this issue. If you have any questions regarding this submittal, please contact me at (813) 961-1921 or you may also contact Gary Lessard at (906) 774-2255.

Sincerely,

ARCADIS G&M, Inc.

James M. Bedessem, PE
Principal Engineer

Copies:
Iron Mountain/Kingsford Joint Sewage Board
Mr. Gary Lessard, Superintendent, IMK WWTP
Mr. David Miller, Ford Motor Comany
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Gerald Saalfeld, MDEQ
Mr. Ric Studebaker, ARCADIS

ARCADIS

Table 1. Summary of Waste Water Treatment Plant Dioxin/Furan Samples Collected in 2003, Kingsford, Michigan.

Sample ID	Sample Date
WWTP, Total Samples – Table 2	
WWTP EFF (1/22/03)T	1/22/2003
WWTP EFF (2/13/03)T	2/13/2003
WWTP EFF (3/4/03)T	3/04/2003
WWTP, Dissolved Samples – Table 3	
WWTP EFF (1/22/03)D	1/22/2003
WWTP EFF (2/13/03)D	2/13/2003
WWTP EFF (3/4/03)D	3/04/2003

WWTP Waste Water Treatment Plant.

Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Total Samples, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (1/22/03)T	01/22/03	*DL*	3.7	1.7	1.8	2.0	1.9	2.8	5.5	—
		Result	<3.7	<1.7	<1.8	<2.0	<1.9	<2.8	<12 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (2/13/03)T	02/13/03	*DL*	2.9	1.2	1.1	1.3	1.2	1.4	1.8	—
		Result	<2.9	<1.2	<1.1	<1.3	<1.2	<1.4	<7.1 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	ND	ND	ND	6.1 J	—
WWTP EFF (3/4/03)T	03/04/03	*DL*	3.1	1.3	1.2	1.3	1.3	1.6	2.0	—
		Result	<3.1	<1.3	<1.2	<1.3	<1.3	<1.6	<14 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Total Samples, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (1/22/03)T	01/22/03	*DL*	2.8	1.3	0.97	0.89	0.96	1.1	1.5	2.6	3.7	7.8	—
		Result	<2.8	<1.3	<0.97	<0.89	<0.96	<1.1	<1.5	<2.6	<3.7	<7.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
WWTP EFF (2/13/03)T	02/13/03	*DL*	2.2	1.1	0.89	0.58	0.6	0.66	0.81	1.3	1.7	2.1	—
		Result	<2.2	<1.1	<0.89	<0.58	<0.6	<0.66	<0.81	<1.3	<1.7	<2.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
WWTP EFF (3/4/03)T	03/04/03	*DL*	2.1	1.1	0.88	0.80	0.78	0.86	1.1	1.1	1.4	1.7	—
		Result	<2.1	<1.1	<0.88	<0.80	<0.78	<0.86	<1.1	<1.1	<1.4	<6.8 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Dissolved Samples, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.6	1.3	1.1	1.1	1.1	1.8	2.2	—
		Result	<2.6	<1.3	<1.1	<1.1	<1.1	<1.8	<3.2 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (2/13/03)D	02/13/03	*DL*	2.0	0.89	1.0	1.1	1.0	1.4	4.0	—
		Result	<2.0	<0.89	<1.0	<1.1	<1.0	<1.4	<4.0	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	ND	ND	ND	6.1 J	—
WWTP EFF (3/4/03)D	03/04/03	*DL*	4.1	1.7	1.7	1.7	1.7	2.4	3.2	—
		Result	<4.1	<1.7	<1.7	<1.7	<1.7	<2.4	<3.2	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant, 2003 Dissolved Samples, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	1,2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.0	1.0	0.77	0.64	0.71	0.77	1.0	1.4	1.9	2.8	—
		Result	<2.0	<1.0	<0.77	<0.64	<0.71	<0.77	<1.0	<1.4	<1.9	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
WWTP EFF (2/13/03)D	02/13/03	*DL*	1.4	0.8	0.6	0.47	0.52	0.59	0.73	1.1	1.4	2.8	—
		Result	<1.4	<0.8	<0.6	<0.47	<0.52	<0.59	<0.73	<1.1	<1.4	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
WWTP EFF (3/4/03)D	03/04/03	*DL*	3.2	1.5	1.2	0.88	0.87	0.94	1.2	1.4	2.2	3.5	—
		Result	<3.2	<1.5	<1.2	<0.88	<0.87	<0.94	<1.2	<1.4	<2.2	<3.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

ARCADIS G&M, Inc.
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MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor

Dennis G Tabor

Date:
April 9, 2003

Subject:
Dioxin Data Validation Samples Collected March, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the March 4, 2003 samples WWTP EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on March 4, 2003 were received by STL on March 6, 2003, and were assigned the STL project number H3C060154.

Sample WWTP EFF was a composite of samples collected from three different times. The WWTP sample had a second portion filtered and analyzed. A total of two samples were analyzed. Both samples were extracted March 7, 2003 and analyzed on March 26, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected March 4, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S/M2A was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for the instrument used for STL Report H3C060154. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3C060154: t 030325s4 associated with Method Blank, Laboratory Control Sample (LCS), WWTP EFF (3/04/03)D, and WWTP EFF (3/04/03)T. All continuing calibrations associated with STL Report H3C060154 were acceptable.

1.4 Method Blanks

Method blank (FJQ9A1AA) was extracted with the field samples in STL Report H3C060154. In accordance with the *"Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002,"* and *"USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002,"* any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target detection limit

(Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in sample WWTP EFF (3/04/03)T at a concentration (14 picograms per liter (pg/L)) that was less than five times the concentration detected in the method blank (9.5 pg/L). OCDF was detected in sample WWTP EFF (3/04/03)T at a concentration (6.8 pg/L) that was less than five times the concentration detected in the method blank (6.8 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3C060154.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. Method accuracy was demonstrated though the analysis of a LCS.

1.7 Laboratory Control Sample (LCS)

One LCS (file FJQ9A1AC) was extracted in association with the field samples analyzed in STL Report H3C060154. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3C060154 contained composited samples WWTP EFF (3/04/03)D, and WWTP EFF (3/04/03)T, collected on March 4, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at or below 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 pg/L TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

None

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3C060154 are presented in Attachment A. No data were rejected. OCDD was detected in sample WWTP EFF (3/04/03)T at a concentration (14 pg/L) that was less than five times the concentration detected in the method blank (9.5 pg/L). OCDF was detected in sample WWTP EFF (3/04/03)T at a concentration (6.8 pg/L) that was less than five times the concentration detected in the method blank (6.8 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

Attachment A

STL SAVANNAH

Client Sample ID: WWTP EFF(3/4/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3C060154-001 Work Order #...: FJNN71AA Matrix.....: WATER
Date Sampled...: 03/04/03 Date Received..: 03/06/03
Prep Date.....: 03/07/03 Analysis Date..: 03/26/03
Prep Batch #...: 3066303
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.6	pg/L	EPA-5 1613B
OCDD	14 Q,B,J, μ	2.0	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.1	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.88	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.80	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.78	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.86	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.4	pg/L	EPA-5 1613B
OCDF	6.8 B,J, μ	1.7	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	(20 - 175)
13C-1,2,3,7,8-PeCDD	78	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	81	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	76	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	90	(26 - 166)
13C-OCDD	81	(13 - 199)
13C-2,3,7,8-TCDF	77	(22 - 152)
13C-1,2,3,7,8-PeCDF	67	(21 - 192)
13C-2,3,4,7,8-PeCDF	73	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	74	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	71	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	76	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	81	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	77	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	83	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	97	(31 - 191)

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STL SAVANNAH

Client Sample ID: WWTP EFF(3/4/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3C060154-001 Work Order #...: FJNN71AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: WWTP EFF(3/4/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3C060154-002 Work Order #...: FJNPF1AA Matrix.....: WATER
Date Sampled...: 03/04/03 Date Received..: 03/06/03
Prep Date.....: 03/07/03 Analysis Date..: 03/26/03
Prep Batch #...: 3066303
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	4.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.4	pg/L	EPA-5 1613B
OCDD	ND	3.2	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	3.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.5	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.88	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.87	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.94	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.2	pg/L	EPA-5 1613B
OCDF	ND	3.5	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	75	(20 - 175)
13C-1,2,3,7,8-PeCDD	77	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	77	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	72	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	73	(26 - 166)
13C-OCDD	51	(13 - 199)
13C-2,3,7,8-TCDF	72	(22 - 152)
13C-1,2,3,7,8-PeCDF	65	(21 - 192)
13C-2,3,4,7,8-PeCDF	71	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	72	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	71	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	74	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	74	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	68	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	64	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	92	(31 - 191)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3C060154 Work Order #...: FJQ9A1AA Matrix.....: WATER
MB Lot-Sample #: H3C070000-303

Prep Date.....: 03/07/03
Analysis Date..: 03/26/03 Prep Batch #...: 3066303
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.5	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	0.95	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	0.91	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	0.98	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	1.7 J	0.95	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	2.5 J	1.0	pg/L	EPA-5 1613B
OCDD	9.5 J	1.1	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	1.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	0.94	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.71	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	1.8 J	0.54	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	1.2 J	0.54	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.58	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	1.5 J	0.64	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	1.9 Q,J	0.78	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	1.7 Q,J	0.91	pg/L	EPA-5 1613B
OCDF	6.8 J	1.1	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	82	(20 - 175)
13C-1,2,3,7,8-PeCDD	76	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	85	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	75	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	84	(26 - 166)
13C-OCDD	68	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	67	(21 - 192)
13C-2,3,4,7,8-PeCDF	75	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	79	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	74	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	78	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	88	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	76	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	85	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	89	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

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METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3C060154 Work Order #...: FJQ9A1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

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MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor

Dennis M Tabor

Date:
March 6, 2003

Subject:
Dioxin Data Validation Samples Collected January 22, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the January 22, 2003 samples WWTP EFF and PHII EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on January 22, 2003 were received by STL on January 24, 2003, and were assigned the STL project number H3A300238.

Samples WWTP EFF and PHII EFF were collected on January 22, 2003. Sample WWTP EFF was a composite of samples collected from three different times. Both the WWTP and PHII samples had a second portion filtered and analyzed. A total of four samples were analyzed. All samples were extracted February 3, 2003 and analyzed on February 11, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected January 22, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for each of the instruments used for STL Report H3A300238. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3A300238: t 030211s2 associated with Method Blank, Laboratory Control Sample (LCS), PHII EFF (1/22/03)D, PHII EFF (1/22/03)T, WWTP EFF (1/22/03)T, and WWTP EFF (1/22/03)D. All continuing calibrations associated with STL Report H3A300238 were acceptable.

1.4 Method Blanks

Method blank (FG2X61AA) was extracted with the field samples in STL Report H3A300238. In accordance with the "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target

Attachment A

STL SAVANNAH

Client Sample ID: PHII EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-001 Work Order #...: FGWQE1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.9	pg/L	EPA-5 1613B
OCDD	**7.0 B,J,μ**	**2.7**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.3	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.1	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.86	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.79	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.87	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.95	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.7	pg/L	EPA-5 1613B
OCDF	**4.0 B,J,μ**	**2.3**	**pg/L**	**EPA-5 1613B**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	(20 - 175)
13C-1,2,3,7,8-PeCDD	65	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	75	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	67	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	67	(26 - 166)
13C-OCDD	42	(13 - 199)
13C-2,3,7,8-TCDF	75	(22 - 152)
13C-1,2,3,7,8-PeCDF	59	(21 - 192)
13C-2,3,4,7,8-PeCDF	65	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	75	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	66	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	71	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	73	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	62	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	63	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	97	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: PHII EFF(1/22/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-002 Work Order #...: FGWQL1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	4.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.8	pg/L	EPA-5 1613B
OCDD	**9.8 B,J, ll**	**3.7**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.7	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	2.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.9	pg/L	EPA-5 1613B
OCDF	ND	4.9	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	62	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	79	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	72	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	70	(26 - 166)
13C-OCDD	42	(13 - 199)
13C-2,3,7,8-TCDF	78	(22 - 152)
13C-1,2,3,7,8-PeCDF	56	(21 - 192)
13C-2,3,4,7,8-PeCDF	61	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	80	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	70	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	74	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	66	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	62	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	98	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-003 Work Order #...: FGWQP1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.7	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.8	pg/L	EPA-5 1613B
OCDD	12 B,J, μ	5.5	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.97	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.89	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.96	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	2.6	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	3.7	pg/L	EPA-5 1613B
OCDF	ND	7.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	(20 - 175)
13C-1,2,3,7,8-PeCDD	61	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	83	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	73	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	58	(26 - 166)
13C-OCDD	26	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	60	(21 - 192)
13C-2,3,4,7,8-PeCDF	67	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	91	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	81	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	82	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	59	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	51	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	91	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-005 Work Order #...: FGWQW1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.8	pg/L	EPA-5 1613B
OCDD	**3.2 Q,B,J,**	**2.2**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.0	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.77	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.64	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.71	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.77	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.9	pg/L	EPA-5 1613B
OCDF	ND	2.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(20 - 175)
13C-1,2,3,7,8-PeCDD	73	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	85	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	78	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	75	(26 - 166)
13C-OCDD	43	(13 - 199)
13C-2,3,7,8-TCDF	86	(22 - 152)
13C-1,2,3,7,8-PeCDF	67	(21 - 192)
13C-2,3,4,7,8-PeCDF	77	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	87	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	78	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	82	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	80	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	71	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	67	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	99	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-005 Work Order #...: FGWQW1AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AA Matrix.....: WATER
MB Lot-Sample #: H3B030000-268

Prep Date.....: 02/03/03
Analysis Date..: 02/11/03 Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.0	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	**1.8 Q,J**	**1.1**	**pg/L**	**EPA-5 1613B**
OCDD	**7.7 J**	**1.4**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	**1.1 Q,J**	**0.85**	**pg/L**	**EPA-5 1613B**
2,3,4,7,8-PeCDF	ND	0.64	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	**1.3 J**	**0.65**	**pg/L**	**EPA-5 1613B**
1,2,3,6,7,8-HxCDF	**1.4 J**	**0.73**	**pg/L**	**EPA-5 1613B**
2,3,4,6,7,8-HxCDF	ND	0.76	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	**1.7 J**	**0.88**	**pg/L**	**EPA-5 1613B**
1,2,3,4,6,7,8-HpCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.2	pg/L	EPA-5 1613B
OCDF	**5.7 J**	**1.8**	**pg/L**	**EPA-5 1613B**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	73	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	75	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	68	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	79	(26 - 166)
13C-OCDD	57	(13 - 199)
13C-2,3,7,8-TCDF	77	(22 - 152)
13C-1,2,3,7,8-PeCDF	66	(21 - 192)
13C-2,3,4,7,8-PeCDF	76	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	75	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	65	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	73	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	78	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	67	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	75	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	96	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

ARCADIS G&M, Inc.
4915F Prospectus Dr.
Durham, NC 27713
Tel 919-541-2686
Fax 919-541-3745

MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor

Date:
March 18, 2003

Subject:
Dioxin Data Validation Samples Collected February, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the February 13, 2003 samples WWTP EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on February 13, 2003 were received by STL on February 15, 2003, and were assigned the STL project number H3B170102.

Sample WWTP EFF was a composite of samples collected from three different times. The WWTP sample had a second portion filtered and analyzed. A total of two samples were analyzed. Both samples were extracted February 20, 2003 and analyzed on February 27, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected February 13, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S/M2A was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for the instrument used for STL Report H3B170102. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3B170102: t 030227s1 associated with Method Blank, Laboratory Control Sample (LCS), WWTP EFF (2/13/03)D, and WWTP EFF (2/13/03)T. All continuing calibrations associated with STL Report H3B170102 were acceptable.

1.4 Method Blanks

Method blank (FHX421AA) was extracted with the field samples in STL Report H3B170102. In accordance with the *"Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002,"* and *"USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002,"* any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target detection limit

(Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in sample WWTP EFF (2/13/03)T at a concentration (7.1 picograms per liter (pg/L)) that was less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3B170102.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. Method accuracy was demonstrated though the analysis of a LCS.

1.7 Laboratory Control Sample (LCS)

One LCS (file FHX421AC) was extracted in association with the field samples analyzed in STL Report H3B170102. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3B170102 contained composited samples WWTP EFF (2/13/03)D, and WWTP EFF (2/13/03)T, collected on February 13, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 pg/L TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

None

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3B170102 are presented in Attachment A. No data were rejected. OCDD was detected in sample WWTP EFF (2/13/03)T at a concentration (7.1 pg/L) that was less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

Attachment A

STL SAVANNAH

Client Sample ID: WWTP EFF(2/13/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3B170102-001 Work Order #...: FHPQR1AA Matrix.....: WATER
Date Sampled...: 02/13/03 Date Received..: 02/15/03
Prep Date.....: 02/20/03 Analysis Date..: 02/27/03
Prep Batch #...: 3051349
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	0.89	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.0	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.4	pg/L	EPA-5 1613B
OCDD	ND	4.0	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	0.80	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.60	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.47	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.52	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.59	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.73	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.4	pg/L	EPA-5 1613B
OCDF	ND	2.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	(20 - 175)
13C-1,2,3,7,8-PeCDD	71	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	90	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	80	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	73	(26 - 166)
13C-OCDD	40	(13 - 199)
13C-2,3,7,8-TCDF	80	(22 - 152)
13C-1,2,3,7,8-PeCDF	60	(21 - 192)
13C-2,3,4,7,8-PeCDF	67	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	84	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	77	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	78	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	78	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	68	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	70	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	96	(31 - 191)

STL SAVANNAH

Client Sample ID: WWTP EFF(2/13/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3B170102-003 Work Order #...: FHPQW1AA Matrix.....: WATER
Date Sampled...: 02/13/03 Date Received..: 02/15/03
Prep Date.....: 02/20/03 Analysis Date..: 02/27/03
Prep Batch #...: 3051349
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.9	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.4	pg/L	EPA-5 1613B
OCDD	7.1 B,J,u	1.8	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.1	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.89	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.58	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.60	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.66	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.81	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.7	pg/L	EPA-5 1613B
OCDF	ND	2.1	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	(20 - 175)
13C-1,2,3,7,8-PeCDD	78	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	83	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	77	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	83	(26 - 166)
13C-OCDD	60	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	64	(21 - 192)
13C-2,3,4,7,8-PeCDF	71	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	79	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	72	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	78	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	79	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	73	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	79	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	94	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3B170102 Work Order #...: FHX421AA Matrix.....: WATER
MB Lot-Sample #: H3B200000-349

Prep Date.....: 02/20/03
Analysis Date..: 02/27/03 Prep Batch #...: 3051349
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.2	pg/L	EPA-5 1613B
OCDD	**6.1 J**	**1.4**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.0	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.79	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	**0.88 Q,J**	**0.68**	**pg/L**	**EPA-5 1613B**
1,2,3,6,7,8-HxCDF	ND	0.67	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.73	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.88	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.2	pg/L	EPA-5 1613B
OCDF	**4.6 J**	**1.6**	**pg/L**	**EPA-5 1613B**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	83	(20 - 175)
13C-1,2,3,7,8-PeCDD	73	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	76	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	71	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	81	(26 - 166)
13C-OCDD	64	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	64	(21 - 192)
13C-2,3,4,7,8-PeCDF	70	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	71	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	66	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	71	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	69	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	78	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	96	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3B170102 Work Order #...: FHX421AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

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Mr. Steve Casey
Michigan Department of Environmental Quality
420 5th Street
Gwinn, Michigan 49841

ENVIRONMENT

Subject:
Dioxin Characterization for the Iron Mountain/Kingsford Wastewater Treatment Plant Effluent, Kingsford, Michigan.

Date:
2 June 2003

Contact:
Jim Bedessem

Phone:
813 264 3402

Email:
jbedessem@arcadis-us.com

Our ref:
WI001025.00032

Dear Mr. Casey:

In response to a request from the Michigan Department of Environmental Quality (MDEQ), and in accordance with a proposal dated January 10, 2003, which was approved by the MDEQ, monthly monitoring of the Iron Mountain/Kingsford (IMK) Wastewater Treatment Plant (WWTP) effluent for polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans) was performed in January, February, and March 2003. While not required by the MDEQ, the IMK Joint Sewage Board requested that Ford Motor Company (Ford) and The Kingsford Products Company (KPC) have the Phase II groundwater pretreatment system effluent sampled and analyzed for dioxins and furans concurrently with the sampling that was performed at the WWTP. ARCADIS, on behalf of Ford and KPC, has prepared this letter to transmit the results of that monitoring effort.

Phase II Effluent Dioxin Concentrations

On January 22, February 13, and March 4, 2003, ARCADIS sampled the Phase II effluent and shipped the samples on ice to STL in Knoxville, Tennessee where they were analyzed for dioxins and furans using United States Environmental Protection Agency Method 1613B. Consistent with previous sampling methods approved by the MDEQ for the Phase II effluent, a single grab sample was collected. Composite sampling was determined to not be necessary since a consistent flowrate through the treatment system can be maintained.

During the months of January, February, and March while the sampling was being performed, the groundwater being treated by the Phase II pretreatment system consisted primarily of groundwater extracted from Extraction Wells GMEW-1, GMEW-2, and GMEW-3, which contribute low strength, medium strength, and high strength groundwater (as measured by biochemical oxygen demand), respectively to the pretreatment system. The contribution of flow from each of the extraction wells during the sampling events is provided in Table 1.

The January 22, February 13, and March 4, 2003 dioxin and furan monitoring results for the Phase II effluent are summarized in Tables 2 through 4. The results presented in Tables 3 and 4 show that there are no detectable concentrations of dioxins or furans present in the effluent from the Phase II pretreatment system. Table 3 presents the results for total dioxins and furans while Table 4 presents the results for dissolved dioxins and furans. The detection limits achieved by STL were lower than the minimum PQLs required by the MDEQ. The data presented in Tables 3 and 4 was validated by ARCADIS and the validation reports are provided in Attachment A. The laboratory reports generated by STL are being transmitted to the MDEQ under separate cover by ARCADIS.

These data are considered to more accurately represent the effluent from the Phase II pretreatment system than the data collected and reported in the March 29, 2002 submittal that were analyzed by Triangle Laboratories. This determination is based on the following facts:

- All detections in the March 29, 2002 submittal were between the detection level and the PQL and were estimated or otherwise qualified results.

- Dioxin and furan congeners that were detected by Triangle Laboratories varied from sample to sample and from influent to effluent.

- Nearly 1/4 (22.5 percent) of the dioxin and furan congeners identified in the Phase II effluent samples that were reported in the March 29, 2002 submittal were qualified as non-detect due to the congener also being detected in the associated quality control method blank. Comparatively, less than 6 percent of the Phase II effluent samples collected in 2003 (analyzed by STL) were qualified as non-detect due to method blank contamination. This suggests there was a significantly higher level of laboratory contamination affecting sample accuracy in the 2002 data, particularly when congener levels are less than the PQL.

- The data generated by STL did not have the problems associated with the Triangle Laboratories data, and appears to be more accurate and representative of actual conditions.

Closing Remarks

Ford, KPC, and ARCADIS appreciate MDEQ's support and understanding as we work cooperatively through this issue. If you have any questions regarding this submittal, please contact me at (813) 961-1921.

Sincerely,

ARCADIS G&M, Inc.

James M. Bedessem pe

James M. Bedessem, P.E.
Principal Engineer

Copies:
Mr. Chris Austin, MDEQ
Mr. Gary Lessard, Superintendent, IMK WWTP
Mr. David Miller, Ford Motor Company
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Gerald Saalfeld, MDEQ
Mr. Ric Studebaker, ARCADIS

ARCADIS

Table 1. Summary of Phase II Groundwater Pretreatment System Flow Data During Dioxin and Furan Sampling, Ford/Kingsford Site, Kingsford, Michigan.

	Phase II Effluent Daily Flow (gpm)	GMEW-1 Flowrate (gpm)	GMEW-2 Flowrate (gpm)	GMEW-3 Flowrate (gpm)	GMEW-4 Flowrate (gal)	GMEW-4R Flowrate (gal)
January 22, 2003	42	22	10	10	---	---
February 13, 2003	27	12	7	8	---	---
March 4, 2003	22	13	6	3	---	---

--- Denotes extraction well not in service.
gpm Gallons per minute.

Table 2. Summary of Phase II Effluent Dioxin/Furan Samples Collected in 2003, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
Phase II, Total Effluent Samples – Table 2	
PhII EFF (1/22/03)T	1/22/2003
PhII EFF (2/13/03)T	2/13/2003
PhII EFF (3/4/03)T	3/04/2003
Phase II, Dissolved Effluent Samples – Table 3	
PhII EFF (1/22/03)D	1/22/2003
PhII EFF (2/13/03)D	2/13/2003
PhII EFF (3/4/03)D	3/04/2003

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)T	01/22/03	*DL*	4.4	1.9	1.9	2.0	2.0	2.8	3.7	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.8	<9.8 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*	3.1	1.3	1.2	1.4	1.3	2.0	2.1	—
		Result	<3.1	<1.3	<1.2	<1.4	<1.3	<2.0	<5.2 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (3/4/03)T	03/04/03	*DL*	2.8	1.2	1.1	1.3	1.2	2.6	3.0	—
		Result	<2.8	<1.2	<1.1	<1.3	<1.2	<2.6	<9.0 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)T	01/22/03	*DL*	3.0	1.7	1.3	1.2	1.4	1.4	1.7	2.4	2.9	4.9	—
		Result	<3.0	<1.7	<1.3	<1.2	<1.4	<1.4	<1.7	<2.4	<2.9	<4.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*	2.3	1.2	0.95	0.73	0.87	0.86	0.99	1.4	1.6	2.2	—
		Result	<2.3	<1.2	<0.95	<0.73	<0.87	<0.86	<0.99	<1.4	<1.6	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (3/4/03)T	03/04/03	*DL*	2.0	1.2	0.86	0.67	0.67	0.85	1.0	1.5	1.8	2.6	—
		Result	<2.0	<1.2	<0.86	<0.67	<0.67	<0.85	<1.0	<1.5	<1.8	<2.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantification level.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)D	01/22/03	*DL*	3.0	1.4	1.6	1.6	1.6	1.9	2.7	—
		Result	<3.0	<1.4	<1.6	<1.6	<1.6	<1.9	<7.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*	4.4	1.9	1.9	2.0	2.0	2.1	2.1	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.1	<3.5 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (3/4/03)D	03/04/03	*DL*	3.5	1.5	1.1	1.3	1.2	1.6	1.6	—
		Result	<3.5	<1.5	<1.1	<1.3	<1.2	<1.6	<4.8 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample

E – Estimated maximum possible concentration

J – Concentration is qualified as estimated

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration

Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)D	01/22/03	*DL*	2.3	1.1	0.86	0.79	0.87	0.95	1.1	1.5	1.7	2.3	—
		Result	<2.3	<1.1	<0.86	<0.79	<0.87	<0.95	<1.1	<1.5	<1.7	<4.0 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*	3.1	1.5	1.2	0.93	1.0	1.1	1.3	1.9	2.1	2.2	—
		Result	<3.1	<1.5	<1.2	<0.93	<1.0	<1.1	<1.3	<1.9	<2.1	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (3/4/03)D	03/04/03	*DL*	3.0	1.4	1.1	0.68	0.69	0.78	0.91	1.2	1.5	2.2	—
		Result	<3.0	<1.4	<1.1	<0.97 B,J,U	<0.85 B,J,U	<0.78	<0.91	<1.2	<1.5	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	(ND)	(ND)	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

ppq Parts per quadrillion (picograms per liter).

* TEC (ppq) = Detected result (ppq) x BEF x TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Q – Estimated maximum possible concentration.

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MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor

Dennis G Tabor

Date:
March 18, 2003

Subject:
Dioxin Data Validation Samples Collected February, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the February 13, 2003 samples PHII EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on February 13, 2003 were received by STL on February 14, 2003, and were assigned the STL project number H3B140161.

The PHII EFF sample had a second portion filtered and analyzed. A total of two samples were analyzed. Both samples were extracted February 20, 2003 and analyzed on February 27, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected February 13, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S/M2A was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for the instrument used for STL Report H3B140161. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3B140161: t 030227s1 associated with Method Blank, Laboratory Control Sample (LCS), PHII EFF (2/13/03)D, and PHII EFF (2/13/03)T. All continuing calibrations associated with STL Report H3B140161 were acceptable.

1.4 Method Blanks

Method blank (FHX421AA) was extracted with the field samples in STL Report H3B140161. In accordance with the "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target

detection limit (Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in samples PHII EFF (2/13/03)T and PHII EFF (2/13/03)D at concentrations (5.2 and 3.5 picograms per liter (pg/L), respectively) less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3B140161.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. Method accuracy was demonstrated though the analysis of a LCS.

1.7 Laboratory Control Sample (LCS)

One LCS (file FHX421AC) was extracted in association with the field samples analyzed in STL Report H3B140161. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3B140161 contained samples PHII EFF (2/13/03)D, and PHII EFF (2/13/03)T, collected on February 13, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 pg/L TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

None

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3B140161 are presented in Attachment A. No data were rejected. OCDD was detected in samples PHII EFF (2/13/03)T and PHII EFF (2/13/03)D at concentrations (5.2 and 3.5 pg/L, respectively) less than five times the concentration detected in the method blank (6.1 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

Attachment A

STL SAVANNAH

Client Sample ID: PHII EFF(2/13/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3B140161-001 Work Order #...: FHL0J1AA Matrix.....: WATER
Date Sampled...: 02/13/03 Date Received..: 02/14/03
Prep Date.....: 02/20/03 Analysis Date..: 02/27/03
Prep Batch #...: 3051349
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	4.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.1	pg/L	EPA-5 1613B
OCDD	**3.5 B,J,**	**2.1**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	3.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.5	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.93	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.0	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.1	pg/L	EPA-5 1613B
OCDF	ND	2.2	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	70	(20 - 175)
13C-1,2,3,7,8-PeCDD	62	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	69	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	62	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	68	(26 - 166)
13C-OCDD	50	(13 - 199)
13C-2,3,7,8-TCDF	63	(22 - 152)
13C-1,2,3,7,8-PeCDF	53	(21 - 192)
13C-2,3,4,7,8-PeCDF	57	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	64	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	59	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	60	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	66	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	58	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	66	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	95	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: PHII EFF(2/13/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3B140161-002 Work Order #...: FHL0N1AA Matrix.....: WATER
Date Sampled...: 02/13/03 Date Received..: 02/14/03
Prep Date.....: 02/20/03 Analysis Date..: 02/27/03
Prep Batch #...: 3051349
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.4	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.0	pg/L	EPA-5 1613B
OCDD	**5.2 B,J,ll**	**2.1**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.3	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.95	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.73	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.87	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.86	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.99	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.6	pg/L	EPA-5 1613B
OCDF	ND	2.2	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	70	(20 - 175)
13C-1,2,3,7,8-PeCDD	62	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	70	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	64	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	68	(26 - 166)
13C-OCDD	51	(13 - 199)
13C-2,3,7,8-TCDF	65	(22 - 152)
13C-1,2,3,7,8-PeCDF	53	(21 - 192)
13C-2,3,4,7,8-PeCDF	57	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	66	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	59	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	62	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	68	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	60	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	66	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	97	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3B140161 Work Order #...: FHX421AA Matrix.....: WATER
MB Lot-Sample #: H3B200000-349

Prep Date.....: 02/20/03
Analysis Date..: 02/27/03 Prep Batch #...: 3051349
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.2	pg/L	EPA-5 1613B
OCDD	**6.1 J**	**1.4**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.0	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.79	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	**0.88 Q,J**	**0.68**	**pg/L**	**EPA-5 1613B**
1,2,3,6,7,8-HxCDF	ND	0.67	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.73	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.88	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.2	pg/L	EPA-5 1613B
OCDF	**4.6 J**	**1.6**	**pg/L**	**EPA-5 1613B**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	83	(20 - 175)
13C-1,2,3,7,8-PeCDD	73	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	76	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	71	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	81	(26 - 166)
13C-OCDD	64	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	64	(21 - 192)
13C-2,3,4,7,8-PeCDF	70	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	71	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	66	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	71	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	69	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	78	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	96	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3B140161 Work Order #...: FHX421AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

ARCADIS G&M, Inc.
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Durham, NC 27713
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MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor

Dennis M Tabor

Date:
March 6, 2003

Subject:
Dioxin Data Validation Samples Collected January 22, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the January 22, 2003 samples WWTP EFF and PHII EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on January 22, 2003 were received by STL on January 24, 2003, and were assigned the STL project number H3A300238.

Samples WWTP EFF and PHII EFF were collected on January 22, 2003. Sample WWTP EFF was a composite of samples collected from three different times. Both the WWTP and PHII samples had a second portion filtered and analyzed. A total of four samples were analyzed. All samples were extracted February 3, 2003 and analyzed on February 11, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected January 22, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for each of the instruments used for STL Report H3A300238. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3A300238: t 030211s2 associated with Method Blank, Laboratory Control Sample (LCS), PHII EFF (1/22/03)D, PHII EFF (1/22/03)T, WWTP EFF (1/22/03)T, and WWTP EFF (1/22/03)D. All continuing calibrations associated with STL Report H3A300238 were acceptable.

1.4 Method Blanks

Method blank (FG2X61AA) was extracted with the field samples in STL Report H3A300238. In accordance with the "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target

detection limit (Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in samples PHII EFF (1/22/03)T, PHII EFF (1/22/03)D, WWTP EFF (1/23/03)T, and WWTP EFF (1/23/03)D at concentrations (9.8, 7.0, 12, and 3.2 picograms per liter (pg/L), respectively) less than five times the concentration detected in the method blank (7.7 pg/L). OCDF was detected in the sample PHII EFF (1/22/03)D at a concentration (4.0 pg/L) that was less than five times the concentration in the method blank (5.7 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3A300238.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. Method accuracy was demonstrated though the analysis of a LCS.

1.7 Laboratory Control Sample (LCS)

One LCS (file FG2X61AC) was extracted in association with the field samples analyzed in STL Report H3A300238. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3A300238 contained samples PHII EFF (1/22/03)D, PHII EFF (1/22/03)T, WWTP EFF (1/22/03)T, and WWTP EFF (1/22/03)D collected on January 22, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times.

(1/22/03)D, WWTP EFF (1/23/03)T, and WWTP EFF (1/23/03)D at concentrations (9.8, 7.0, 12, and 3.2 pg/L, respectively) less than five times the concentration detected in the method blank (7.7 pg/L). OCDF was detected in the sample PHII EFF (1/22/03)D at a concentration (4.0 pg/L) that was less than five times the concentration in the method blank (5.7 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

Attachment A

STL SAVANNAH

Client Sample ID: PHII EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-001 Work Order #...: FGWQE1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.9	pg/L	EPA-5 1613B
OCDD	**7.0 B,J,μ**	**2.7**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.3	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.1	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.86	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.79	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.87	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.95	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.7	pg/L	EPA-5 1613B
OCDF	**4.0 B,J,μ**	**2.3**	**pg/L**	**EPA-5 1613B**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	(20 - 175)
13C-1,2,3,7,8-PeCDD	65	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	75	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	67	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	67	(26 - 166)
13C-OCDD	42	(13 - 199)
13C-2,3,7,8-TCDF	75	(22 - 152)
13C-1,2,3,7,8-PeCDF	59	(21 - 192)
13C-2,3,4,7,8-PeCDF	65	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	75	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	66	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	71	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	73	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	62	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	63	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	97	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: PHII EFF(1/22/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-002 Work Order #...: FGWQL1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	4.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.8	pg/L	EPA-5 1613B
OCDD	**9.8 B,J, μ**	**3.7**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.7	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	2.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.9	pg/L	EPA-5 1613B
OCDF	ND	4.9	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	62	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	79	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	72	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	70	(26 - 166)
13C-OCDD	42	(13 - 199)
13C-2,3,7,8-TCDF	78	(22 - 152)
13C-1,2,3,7,8-PeCDF	56	(21 - 192)
13C-2,3,4,7,8-PeCDF	61	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	80	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	70	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	74	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	66	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	62	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	98	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-003 Work Order #...: FGWQP1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.7	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.8	pg/L	EPA-5 1613B
OCDD	**12 B,J,**	**5.5**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.97	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.89	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.96	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	2.6	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	3.7	pg/L	EPA-5 1613B
OCDF	ND	7.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	(20 - 175)
13C-1,2,3,7,8-PeCDD	61	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	83	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	73	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	58	(26 - 166)
13C-OCDD	26	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	60	(21 - 192)
13C-2,3,4,7,8-PeCDF	67	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	91	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	81	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	82	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	77	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	59	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	51	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	91	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-005 Work Order #...: FGWQW1AA Matrix.....: WATER
Date Sampled...: 01/22/03 Date Received..: 01/24/03
Prep Date.....: 02/03/03 Analysis Date..: 02/11/03
Prep Batch #...: 3034268
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.8	pg/L	EPA-5 1613B
OCDD	**3.2 Q,B,J,μ**	**2.2**	**pg/L**	**EPA-5 1613B**
2,3,7,8-TCDF	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.0	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.77	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.64	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.71	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.77	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.9	pg/L	EPA-5 1613B
OCDF	ND	2.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(20 - 175)
13C-1,2,3,7,8-PeCDD	73	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	85	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	78	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	75	(26 - 166)
13C-OCDD	43	(13 - 199)
13C-2,3,7,8-TCDF	86	(22 - 152)
13C-1,2,3,7,8-PeCDF	67	(21 - 192)
13C-2,3,4,7,8-PeCDF	77	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	87	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	78	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	82	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	80	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	71	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	67	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	99	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: WWTP EFF(1/22/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3A300238-005 Work Order #...: FGWQW1AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3A300238 Work Order #...: FG2X61AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

J Estimated result. Result is less than the reporting limit.

ARCADIS G&M, Inc.
4915F Prospectus Dr
Durham, NC 27713
Tel 919-541-2686
Fax 919-541-3745

MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Dennis Tabor
Dennis G Tabor

Date:
April 9, 2003

Subject:
Dioxin Data Validation Samples Collected March, 2003, at Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of the March 4, 2003 samples PHII EFF collected in Kingsford, Michigan. Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Samples collected on March 4, 2003 were received by STL on March 5, 2003, and were assigned the STL project number H3C050164.

The PHII EFF sample had a second portion filtered and analyzed. A total of two samples were analyzed. Both samples were extracted March 7, 2003 and analyzed on March 26, 2003.

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected March 4, 2003 is presented in the following sections.

1.0 System performance Quality control Review

USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

1.1 System Performance Check

Each instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12 hour analysis period, and for each instrument used during analysis. HRGC/HRMS instrument MAT95S/M2A was used to analyze the field samples and associated batch QC.

1.2 Initial Calibrations

Initial calibrations were reviewed for the instrument used for STL Report H3C050164. A five point initial calibration was performed by STL on the instrument. The following initial calibrations were reviewed: 9/12-13/02. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibrations were acceptable.

1.3 Continuing Calibrations

A continuing calibration (mid level standard) was analyzed prior to and following sample analysis. Less than the standard 12 hour analytical period was used. The continuing calibration was reviewed for each instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and was acceptable. The following continuing calibrations were reviewed in association with STL Report H3C050164: t 030325s4 associated with Method Blank, Laboratory Control Sample (LCS), PHII EFF (3/04/03)D, and PHII EFF (3/04/03)T. All continuing calibrations associated with STL Report H3C050164 were acceptable.

1.4 Method Blanks

Method blank (FJQ9A1AA) was extracted with the field samples in STL Report H3C050164. In accordance with the "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). All values detected in the method blank were less than the target

detection limit (Section 2.3 of this evaluation) and therefore, the method blank is determined to be acceptable. OCDD was detected in samples PHII EFF (3/04/03)T and PHII EFF (3/04/03)D at concentrations (9.0 and 4.8 picograms per liter (pg/L), respectively) less than five times the concentration detected in the method blank (9.5 pg/L). 1,2,3,4,7,8 HxCDF was detected in sample PHII EFF (3/04/03)D at a concentration (0.97 pg/L) less than five times the concentration detected in the method blank (1.8 pg/L). 1,2,3,6,7,8 HxCDF was detected in sample PHII EFF (3/04/03)D at a concentration (0.85 pg/L) less than five times the concentration detected in the method blank (1.2 pg/L). Therefore, all detected sample compounds for this report were assigned the value NOT Detected.

1.5 Rinsate Blanks

A rinsate blank, field QC sample was not collected in associated with samples reported in STL Report H3C050164.

1.6 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

Additional sample volume of the samples was not supplied for MS/MSD analyses. Method accuracy was demonstrated though the analysis of a LCS.

1.7 Laboratory Control Sample(LCS)

One LCS (file FJQ9A1AC) was extracted in association with the field samples analyzed in STL Report H3C050164. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable.

1.8 Duplicate Analyses

Additional sample volume of the samples was not supplied for duplicate sample analyses. The samples presented were duplicates with one being filtered and one not. But, because all compounds were considered non-detect, precision cannot be determined.

2.0 Sample Review

STL Report H3C050164 contained samples PHII EFF (3/04/03)D, and PHII EFF (3/04/03)T, collected on March 4, 2003.

2.1 Holding Time

The chain-of-custody form was properly completed and signed and the groundwater sample was received in good condition and properly preserved at or below 4 degrees centigrade. The samples were extracted and analyzed within holding times.

2.2 Compound Identification

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable.

All of the detected compounds were lower than five times the method blank detected levels. Therefore, all detected sample compounds were assigned the value NOT Detected.

2.3 Reporting

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 pg/L TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

2.4 Internal Standards

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All labeled standards were reviewed for each of the associated field samples and found to be acceptable with the following exceptions:

None

3.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3C050164 are presented in Attachment A. No data were rejected. OCDD was detected in samples PHII EFF (3/04/03)T and PHII EFF (3/04/03)D at concentrations (9.0 and 4.8 pg/L, respectively) less than five times the concentration detected in the method blank (9.5 pg/L). 1,2,3,4,7,8 HxCDF was detected in sample PHII EFF (3/04/03)D at a concentration (0.97 pg/L) less than five times the concentration detected in the method blank (1.8 pg/L). 1,2,3,6,7,8 HxCDF was detected in sample PHII EFF (3/04/03)D at a concentration (0.85 pg/L) less than five times the concentration detected in the method blank (1.2 pg/L). Therefore, all detected sample compounds

for this report were assigned the value NOT Detected. No other compounds were detected in either of these samples.

Attachment A

STL SAVANNAH

Client Sample ID: PHII EFF(3/4/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3C050164-001 Work Order #...: FJLHD1AA Matrix.....: WATER
Date Sampled...: 03/04/03 Date Received..: 03/05/03
Prep Date.....: 03/07/03 Analysis Date..: 03/26/03
Prep Batch #...: 3066303
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	3.5	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.6	pg/L	EPA-5 1613B
OCDD	4.8 Q,B,J,U	1.6	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	3.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.4	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	0.97 B,J,U	0.68	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	0.85 B,J,U	0.69	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.78	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	0.91	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.5	pg/L	EPA-5 1613B
OCDF	ND	2.2	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	61	(20 - 175)
13C-1,2,3,7,8-PeCDD	63	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	71	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	65	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	68	(26 - 166)
13C-OCDD	52	(13 - 199)
13C-2,3,7,8-TCDF	56	(22 - 152)
13C-1,2,3,7,8-PeCDF	53	(21 - 192)
13C-2,3,4,7,8-PeCDF	57	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	64	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	59	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	64	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	68	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	62	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	67	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	92	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: PHII EFF(3/4/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3C050164-001 Work Order #...: FJLHD1AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: PHII EFF(3/4/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3C050164-002 Work Order #...: FJLHH1AA Matrix.....: WATER
Date Sampled...: 03/04/03 Date Received..: 03/05/03
Prep Date.....: 03/07/03 Analysis Date..: 03/26/03
Prep Batch #...: 3066303
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.6	pg/L	EPA-5 1613B
OCDD	9.0 Q,B,J,μ	3.0	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.86	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.67	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.67	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.85	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.8	pg/L	EPA-5 1613B
OCDF	ND	2.6	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	59	(20 - 175)
13C-1,2,3,7,8-PeCDD	53	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	68	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	62	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	62	(26 - 166)
13C-OCDD	43	(13 - 199)
13C-2,3,7,8-TCDF	55	(22 - 152)
13C-1,2,3,7,8-PeCDF	45	(21 - 192)
13C-2,3,4,7,8-PeCDF	49	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	64	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	59	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	57	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	60	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	54	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	61	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	89	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: PHII EFF(3/4/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3C050164-002 Work Order #...: FJLHH1AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3C050164 Work Order #...: FJQ9A1AA Matrix.....: WATER
MB Lot-Sample #: H3C070000-303

Prep Date.....: 03/07/03
Analysis Date..: 03/26/03 Prep Batch #...: 3066303
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.5	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	0.95	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	0.91	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	0.98	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	1.7 J	0.95	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	2.5 J	1.0	pg/L	EPA-5 1613B
OCDD	9.5 J	1.1	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	1.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	0.94	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.71	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	1.8 J	0.54	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	1.2 J	0.54	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	0.58	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	1.5 J	0.64	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	1.9 Q,J	0.78	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	1.7 Q,J	0.91	pg/L	EPA-5 1613B
OCDF	6.8 J	1.1	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	82	(20 - 175)
13C-1,2,3,7,8-PeCDD	76	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	85	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	75	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	84	(26 - 166)
13C-OCDD	68	(13 - 199)
13C-2,3,7,8-TCDF	79	(22 - 152)
13C-1,2,3,7,8-PeCDF	67	(21 - 192)
13C-2,3,4,7,8-PeCDF	75	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	79	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	74	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	78	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	88	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	76	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	85	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	89	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3C050164 Work Order #...: FJQ9A1AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

FILE COPY

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ENVIRONMENT

Mr. Gerald Saalfeld
Water Division
Michigan Department of Environmental Quality
Knapps Centre, Suite 340
300 South Washington
Lansing, MI 48909

Subject:
Dioxin Characterization in Monitoring Wells Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

Date:
6 June 2003

Contact:
Ric Studebaker

Phone:
414 277 6225

Email:
rstudebaker@arcadis-us.com

Our ref:
WI0009750006.00001

Dear Mr. Saalfeld:

On behalf of Ford Motor Company (Ford) and The Kingsford Products Company, ARCADIS is proposing this sampling plan for polychlorinated dibenzo-p-dioxin (dioxins) and polychlorinated dibenzofuran (furans) in several monitoring wells along the Menominee River. The results of previous groundwater sampling for dioxin suggest false positive detections of dioxin may have been recorded for these wells, and additional sampling and analysis is warranted to resolve this issue.

In May 2000, the Michigan Department of Environmental Quality (MDEQ) collected groundwater samples for dioxin analysis from six monitoring wells, four of which were located in the vicinity of the Menominee River. ARCADIS supplemented the MDEQ dioxin program with groundwater sampling for analysis of dioxin in July and August 2000. Additional groundwater sampling for dioxin was also conducted in September and October 2000, and February 2001. To date, 19 groundwater samples have been collected and analyzed for dioxin from 16 monitoring wells along the Menominee River. The results of the dioxin analyses are included in the attached Table 1. However, several of the monitoring wells are not representative of groundwater conditions near the Menominee River, as these monitoring wells are located more than 500 feet away (specifically Monitoring Wells GM-5, GM-6, and GM-28A).

The results of the dioxin analyses for the groundwater indicate that dioxin was not detected in 11 of the groundwater samples. The dioxin detected in the eight remaining groundwater samples were all reported as estimated concentrations between the method detection limit and method quantification limit (QL), or were otherwise qualified. Triangle Laboratories, Inc. (Durham, North Carolina) conducted all of these dioxin analyses using United States Environmental Protection Agency (U.S. EPA) Method 8290.

2.6.1 - 6/6/03_2

Evaluation of the dioxin groundwater data shows a higher level of estimated dioxin detections in groundwater samples collected during August/September 2000 than on the other sampling dates, along with several inconsistencies in the dioxin sampling results, which suggest there may have been a quality control issue at Triangle Laboratories at this time (Table 1). For example, the groundwater sample collected from Monitoring Well GM-66B had no dioxin detections in July 2000, but several estimated dioxin detections below the QL were indicated in the August 2000 groundwater sample. The groundwater sample collected from Monitoring Well GM-64A in August 2000 contained estimated dioxin detections, but no detections were present in the groundwater sample collected from this monitoring well in October 2000. Likewise, groundwater samples collected from Monitoring Well GM-68, located at the southeastern corner of the site, during August and September 2000 showed inconsistent estimated dioxin detections. The dioxin results from Monitoring Well GM-68 have been included in Table 1 to demonstrate the date inconsistencies, although this well is not associated with the Menominee River. A copy of the groundwater dioxin analytical results is being submitted to the MDEQ under separate cover.

Based on the existing dioxin results for the groundwater collected from monitoring wells along the Menominee River, ARCADIS proposes to resample the groundwater from five monitoring wells. The recommended sampling locations include Monitoring Wells GM-5, GM-25C, GM-26C, GM-63A, and GM-66A. In addition, ARCADIS recommends using Severn Trent Laboratories (STL) of Knoxsville, Tennessee for the dioxin analysis. The dioxin analysis would be conducted using U.S. EPA Method 1613B. This laboratory and analytical method were recently used to evaluate the potential presence of dioxin associated with the Iron Mountain/Kingsford wastewater treatment plant.

The collection of groundwater samples for dioxin analysis will be conducted in accordance with the procedures described in the Remedial Investigation Report for the Ford/Kingsford site (ARCADIS, June 2002). The groundwater samples will be collected from the monitoring wells using low-flow purging and sampling techniques. A Bennet air-piston positive displacement pump (Model 1800) or a Masterflex peristaltic pump (Model L/S 7570-10) will be used to complete the low-flow purging and sampling. A YSI (Model 610 XL) water probe will be placed down the well casing or in a flow-through cell assembly to monitor temperature, pH, specific conductance, dissolved oxygen, and redox potential during the sampling activities. Water levels will also be monitored to ensure that unacceptable drawdown within the monitoring well does not occur.

The monitoring wells will be purged at a flowrate between 100 and 500 milliliters per minute. Following stabilization of the field parameters, the groundwater samples will be collected by filling the sample containers directly from the pump tubing at the

stabilized purging flowrate. Upon collection, the groundwater samples will be placed on ice in a cooler and submitted under appropriate chain-of custody protocol to STL.

Any sampling equipment not dedicated to a monitoring well will be decontaminated with detergent solution wash and distilled water, as well as a hexane rinse, prior to and between each sampling event. Any decontaminated sampling equipment will be stored in aluminum foil to prevent contamination from plastics or other organic wrappings. New silicone and polyethylene tubing will be used with the peristaltic pump for each sampling event and will be discarded following completion of the sampling. New, disposable latex gloves will be worn by the sampling personnel and discarded after each sampling event. The water extracted during the monitoring well purging and sampling activities will be contained in plastic buckets or steel drums and transported to the Phase II groundwater treatment system for appropriate treatment.

Following receipt of MDEQ approval, the proposed sampling activities will be scheduled. If you have any questions regarding the information provided with this letter, please contact the undersigned.

Sincerely,

ARCADIS G&M, Inc.

Richard L. Studebaker, Jr., PE
Senior Engineer/Project Manager

Attachments

Copies:
Mr. Chris Austin, MDEQ
Mr. Jim Bedessem, ARCADIS
Mr. David Miller, Ford Motor Company
Mr. Dan Musgrove, The Kingsford Products Company
Mr. Peter Palmer, ARCADIS

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GM-5 (MDEQ Sample)	05/03/00	*DL*	2.6	3.6	3.0	2.8	2.8	NA	NA	—
		Result	<2.6	<3.6	<3.0	<2.8	<2.8	3.6 E,J	<20.4 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	0.0018	(ND)	0.0018
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	22.3 J	—
GWGM-6	07/19/00	*DL*	2.0	1.7	2.0	2.0	1.9	2.6	NA	—
		Result	<2.0	<1.7	<2.0	<2.0	<1.9	<2.6	<5.6 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51485			ND	ND	ND	ND	ND	ND	7.7 J	—
GM-25-B (MDEQ Sample)	05/02/00	*DL*	1.2	1.5	1.4	1.3	1.4	2.1	NA	—
		Result	<1.2	<1.5	<1.4	<1.3	<1.4	<2.1	<10.5 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 50957			3.3 J	ND	ND	ND	ND	4.1 J	6.2 J	—
GWGM-25C	08/02/00	*DL*	1.2	1.5	1.7	1.7	1.7	2.7	NA	—
		Result	<1.2	<1.5	<1.7	<1.7	<1.7	<2.7	3.3 E,J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000033	0.000033
METHOD BLANK Sample Set – 51574			ND	ND	ND	ND	ND	ND	ND	—
GM-26-A (MDEQ Sample)	05/02/00	*DL*	1.0	1.2	1.1	1.0	1.1	1.5	2.3	—
		Result	<1.0	<1.2	<1.1	<1.0	<1.1	<1.5	<2.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			3.3 J	ND	ND	ND	ND	4.1 J	6.2 J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GM-5	05/03/00	*DL*	2.0	NA	2.6	NA	NA	NA	NA	NA	NA	NA	—
		Result	<2.0	5.5 J	<2.6	4.0 J	4.0 J	2.6 J	4.1 J	2.4 E,J	2.8 E,J	<6.2 J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.055	ND	0.032	0.080	0.18	0.25	0.00024	0.011	(ND)	0.61
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-6	07/19/00	*DL*	1.6	1.5	1.5	1.3	1.3	1.4	1.7	1.5	2.0	3.1	—
		Result	<1.6	<1.5	<1.5	<1.3	<1.3	<1.4	<1.7	<1.5	<2.0	<3.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51485			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25-B	05/02/00	*DL*	0.8	1.0	1.0	0.9	0.8	0.9	1.0	1.0	1.5	2.6	—
		Result	<0.8	<1.0	<1.0	<0.9	<0.8	<0.9	<1.0	<1.0	<1.5	<2.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—
GWGM-25C	08/02/00	*DL*	1.0	1.1	1.1	1.0	1.0	1.1	1.3	1.5	2.0	3.5	—
		Result	<1.0	<1.1	<1.1	<1.0	<1.0	<1.1	<1.3	<1.5	<2.0	<3.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51574			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26-A	05/02/00	*DL*	0.7	0.8	0.8	0.7	0.7	0.7	0.9	0.9	1.3	1.8	—
		Result	<0.7	<0.8	<0.8	<0.7	<0.7	<0.7	<0.9	<0.9	<1.3	<1.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-26B	07/18/00	*DL*	2.1	2.5	2.3	2.2	2.3	3.7	5.3	—
		Result	<2.1	<2.5	<2.3	<2.2	<2.3	<3.7	<5.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GM-26-C (MDEQ Sample)	05/02/00	*DL*	0.7	0.8	0.8	0.7	0.8	NA	NA	—
		Result	<0.7	<0.8	<0.8	<0.7	<0.8	<2.7 J,B,U	<6.1 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	(ND)	(ND)	0
METHOD BLANK Sample Set – 50957			3.3 J	ND	ND	ND	ND	4.1 J	6 2 J	—
GWGM-27B	07/18/00	*DL*	2.3	2.8	2.8	2.7	2.8	5.2	8.3	—
		Result	<2.3	<2.8	<2.8	<2.7	<2.8	<5.2	<8.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-27C	08/07/00	*DL*	3.9	4.0	4.4	4.3	4.3	7.2	11.8	—
		Result	<3.9	<4.0	<4.4	<4.3	<4.3	<7.2	<11.8	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	—
GWGM-28A	07/19/00	*DL*	2.1	2.4	2.2	2.1	2.1	3.3	NA	—
		Result	<2.1	<2.4	<2.2	<2.1	<2.1	<3.3	<7.3 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-26B	07/18/00	*DL*	1.7	1.6	1.6	1.6	1.5	1.7	2.1	2.2	2.9	4.2	—
		Result	<1.7	<1.6	<1.6	<1.6	<1.5	<1.7	<2.1	<2.2	<2.9	<4.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GM-26-C	05/02/00	*DL*	0.5	0.6	0.6	NA	0.4	0.5	0.6	NA	0.8	1.4	—
		Result	<0.5	<0.6	<0.6	1.9 J	<0.4	<0.5	<0.6	<1.7 E,J,B,U	<0.8	<1.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.015	ND	ND	ND	(ND)	ND	ND	0.015
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—
GWGM-27B	07/18/00	*DL*	1.9	2.0	1.9	2.0	1.9	2.1	2.6	3.0	3.9	6.6	—
		Result	<1.9	<2.0	<1.9	<2.0	<1.9	<2.1	<2.6	<3.0	<3.9	<6.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-27C	08/07/00	*DL*	3.0	3.2	3.1	3.1	2.9	3.2	3.9	3.8	5.2	9.1	—
		Result	<3.0	<3.2	<3.1	<3.1	<2.9	<3.2	<3.9	<3.8	<5.2	<9.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-28A	07/19/00	*DL*	1.9	1.7	1.7	1.6	1.5	1.7	2.0	1.9	2.5	3.9	—
		Result	<1.9	<1.7	<1.7	<1.6	<1.5	<1.7	<2.0	<1.9	<2.5	<3.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-63A	08/29/00	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	2.3 J	3.5 E,J	<4.2 J,B,U	4.0 J	<7.0 J,B,U	10.2 J	61.1 J,B	—
		QL	10	50	50	50	50	50	100	—
		TEC *	2.3	1.6	(ND)	0.040	(ND)	0.00510	0.000611	3.9
METHOD BLANK Sample Set – 51777			ND	ND	3.0 E,J	ND	3.1 E,J	ND	7.4 J	—
GWGM-63A	09/19/00	*DL*	0.3	0.3	0.3	NA	NA	0.5	NA	—
		Result	<0.3	<0.3	<0.3	0.43 J	0.35 E,J	<0.5	<2.3 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	0.0043	0.0035	ND	(ND)	0.0078
METHOD BLANK Sample Set – 51936			ND	ND	ND	ND	ND	ND	36.6 J	—
GWGM-63B	02/07/01	*DL*	1.9	2.6	2.7	2.7	2.6	4.0	NA	—
		Result	<1.9	<2.6	<2.7	<2.7	<2.6	<4.0	<11.5 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 52961			ND	ND	ND	ND	ND	ND	10.8 J	—
GWGM-64A	08/30/00	*DL*	1.1	1.2	1.5	1.4	1.5	NA	NA	—
		Result	<1.1	<1.2	<1.5	<1.4	<1.5	2.4 E,J	<4.1 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0012	(ND)	0.0012
METHOD BLANK Sample Set – 51796			ND	ND	ND	ND	ND	ND	37 J	—
GWGM-64A	10/03/00	*DL*	2.1	1.8	1.9	1.9	1.9	2.6	3.6	—
		Result	<2.1	<1.8	<1.9	<1.9	<1.9	<2.6	<3.6	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52058			ND	ND	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-63A	08/29/00	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	2.7 J	5.7 J	4.3 J	<3.4 E,J,B,U	<3.7 J,B,U	<4.2 J,B,U	<8.2 J,B,U	5.9 J	<6.7 J,B,U	19.6 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.22	0.057	3.4	(ND)	(ND)	(ND)	(ND)	0.00059	(ND)	0.000392	3.7
METHOD BLANK Sample Set – 51777			ND	ND	ND	3.3 J	2.6 E,J	3.0 J	3.9 E,J	ND	4.5 J	ND	—
GWGM-63A	09/19/00	*DL*	0.2	NA	0.2	NA	0.2	0.2	NA	NA	0.4	NA	—
		Result	<0.2	0.39 J	<0.2	<0.22 E,J,B,U	<0.2	<0.2	0.49 J	0.25 E,J	<0.4	1.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.0039	ND	(ND)	ND	ND	0.029	0.000025	ND	0.000028	0.033
METHOD BLANK Sample Set – 51936			ND	ND	ND	1.7 J	ND	ND	ND	ND	ND	ND	—
GWGM-63B	02/07/01	*DL*	1.3	1.7	1.6	1.6	1.5	1.7	1.8	2.3	2.7	4.3	—
		Result	<1.3	<1.7	<1.6	<1.6	<1.5	<1.7	<1.8	<2.3	<2.7	<4.3	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52961			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-64A	08/30/00	*DL*	0.8	0.9	0.9	0.8	0.8	0.9	1.1	NA	1.6	NA	—
		Result	<0.8	<0.9	<0.9	<0.8	<0.8	<0.9	<1.1	2.0 J	<1.6	8.8 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0.00020	ND	0.00018	0.00038
METHOD BLANK Sample Set – 51796			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-64A	10/03/00	*DL*	1.4	1.5	1.5	1.3	1.2	1.3	1.6	1.5	2.0	3.0	—
		Result	<1.4	<1.5	<1.5	<1.3	<1.2	<1.3	<1.6	<1.5	<2.0	<3.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52058			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-64B	07/24/00	*DL*	0.6	0.6	0.6	0.6	0.6	0.8	NA	—
		Result	<0.6	<0.6	<0.6	<0.6	<0.6	<0.8	<3.0 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	7.7 J	—
GWGM-66A	07/18/00	*DL*	1.6	1.9	1.7	1.6	1.7	NA	NA	—
		Result	<1.6	<1.9	<1.7	<1.6	<1.7	2.6 E,J	<24.7 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	0.0013	(ND)	0.0013
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-66B	07/19/00	*DL*	2.0	2.7	2.3	2.2	2.3	3.3	5.3	—
		Result	<2.0	<2.7	<2.3	<2.2	<2.3	<3.3	<5.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-66B	08/03/00	*DL*	1.3	1.7	1.3	1.3	1.3	2.1	NA	—
		Result	<1.3	<1.7	<1.3	<1.3	<1.3	<2.1	4.3 E,J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000043	0.000043
METHOD BLANK Sample Set – 51582			ND	ND	ND	ND	ND	ND	ND	—
GWGM-68	08/31/00	*DL*	NA	4.6	5.2	4.9	5.2	NA	NA	—
		Result	0.93 E,J	<4.6	<5.2	<4.9	<5.2	22.7 E,J	242 E,B,J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	0.93	ND	ND	ND	ND	0.0114	0.00242	0.94
METHOD BLANK Sample Set – 51803			ND	ND	ND	ND	ND	ND	37 J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-64B	07/24/00	*DL*	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.6	1.0	—
		Result	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.5	<0.5	<0.6	<1.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-66A	07/18/00	*DL*	1.4	1.5	1.5	1.2	1.1	1.2	1.5	1.5	2.0	2.7	—
		Result	<1.4	<1.5	<1.5	<1.2	<1.1	<1.2	<1.5	<1.5	<2.0	<2.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-66B	07/19/00	*DL*	1.7	1.8	1.8	1.7	1.6	1.8	2.2	2.1	2.7	4.2	—
		Result	<1.7	<1.8	<1.8	<1.7	<1.6	<1.8	<2.2	<2.1	<2.7	<4.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-66B	08/03/00	*DL*	0.9	1.1	1.1	NA	0.9	1.1	1.3	1.5	1.9	2.5	—
		Result	<0.9	<1.1	<1.1	1.5 J	<0.9	<1.1	<1.3	<1.5	<1.9	<2.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	0.012
METHOD BLANK Sample Set – 51582			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-68	08/31/00	*DL*	2.9	4.0	4.1	2.9	2.7	3.2	3.8	NA	5.0	NA	—
		Result	<2.9	<4.0	<4.1	<2.9	<2.7	<3.2	<3.8	6.1 J	<5.0	33.9 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0.00061	ND	0.000678	0.00129
METHOD BLANK Sample Set – 51803			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-68	09/26/00	*DL*	4.1	4.4	4.4	4.4	4.3	7.0	NA	—
		Result	<4.1	<4.4	<4.4	<4.4	<4.3	<7.0	36.2 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000362	0.000362
METHOD BLANK Sample Set – 51987			ND	ND	ND	ND	ND	ND	ND	—

GWGM-68 is not considered a river well.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ppq Parts per quadrillion (picograms per liter).
NA Information is not available.
ND Congener was not detected; contribution to the TEC is zero.
(ND) Detected result (as the shown concentration) was qualified as "not detected" due to associated blank contamination.
QL Congener quantification limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:
B – Compound was detected in the associated QC method blank sample.
E – Estimated maximum possible concentration.
J – Concentration is qualified as estimated.
U – Result was qualified as not detected due to associated blank contamination.

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-68	09/26/00	*DL*	2.8	3.3	3.2	NA	NA	NA	3.5	3.6	4.7	10.0	—
		Result	<2.8	<3.3	<3.2	3.3 J	2.5 J	3.5 J	<3.5	<3.6	<4.7	<10.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	0.026	0.050	0.25	ND	ND	ND	ND	0.33
METHOD BLANK Sample Set – 51987			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

GWGM-68 is not considered a river well.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ppq Parts per quadrillion (picograms per liter).
NA Information is not available.
ND Congener was not detected; contribution to the TEC is zero.
(ND) Detected result (as the shown concentration) was qualified as "not detected" due to associated blank contamination.
QL Congener quantification limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:
B – Compound was detected in the associated QC method blank sample.
E – Estimated maximum possible concentration.
J – Concentration is qualified as estimated.
U – Result was qualified as "not detected" due to associated blank contamination.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
CRYSTAL FALLS

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

July 1, 2003

FILE COPY

Mr. David Miller
Ford Motor Company
Environmental Quality Office
Parklane Towers East Suite 1400
One Parklane Blvd.
Dearborn, MI 48126-2477

Mr. Daniel Musgrove
The Kingsford Products Company
7201 Adams Street
Willowbrook, IL 60521

Dear Mr. Miller and Mr. Musgrove:

Subject: Dioxin Characterization in Monitoring Wells along the Menominee River, Kingsford/Breitung Township Site, Kingsford, Michigan

The Michigan Department of Environmental Quality (MDEQ) has received the sampling proposal for the above subject site dated June 6, 2003, for the Dioxin Characterization in Monitoring wells along the Menominee River in Kingsford, Michigan. Your consultant, ARCADIS G&M, prepared the sampling proposal. I have reviewed the information, and have the following comments:

1) The sampling plan should be expanded to provide the MDEQ with splits of all groundwater samples collected. Please provide the MDEQ with a schedule (21 days prior to any field activities) so the appropriate arrangements can be made with our contract laboratory.

2) The sampling plan should be modified to document the QA procedures (e.g. collection and analysis of replicate samples and field and laboratory blanks) that will be followed by ARCADIS.

3) The sampling plan should be expanded to identify the detection and quantification levels that will be achieved by Stevern Trent Laboratories for each dioxin/furan congener analyzed.

2.6.1 - 7/1/03

ARCADIS

Infrastructure, buildings, environment, communications

FILE COPY

ARCADIS G&M, Inc.
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Milwaukee
Wisconsin 53202
Tel 414 276 7742
Fax 414 276 7603
www.arcadis-us.com

ENVIRONMENT

Mr. Chris Austin
Michigan Department of Environmental Quality
1420 U.S. 2 West
Crystal Falls, MI 49920

Subject:
Response to MDEQ Correspondence Dated July 1, 2003, Dioxin Characterization in Monitoring Wells Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

Dear Mr. Austin:

ARCADIS, on behalf of Ford Motor Company (Ford) and The Kingsford Products Company (KPC), has received the Michigan Department of Environmental Quality (MDEQ) correspondence dated July 1, 2003 regarding the Ford/KPC dioxin characterization plan for monitoring wells along the Menominee River at the subject site (outlined in a letter dated June 6, 2003). This letter provides the additional information requested by MDEQ and clarification regarding the dioxin characterization plan.

As outlined in the document entitled *Sampling and Quality Assurance Plan, Appendix A, Remedial Investigation Work Plan for the Ford/Kingsford Site* dated July 1998, ARCADIS will collect one sample replicate and one field blank sample per every 10 or fewer groundwater samples. Laboratory method blanks are routinely run by the project laboratory for every groundwater sample submitted for dioxin analysis.

In addition, as indicated in the dioxin characterization sampling plan, Method 1613-B will be used for analysis of the dioxin/furans. The congener quantification levels for Method 1613-B and laboratory methodology information regarding congener detection levels are provided as an attachment to this letter.

Although ARCADIS does not agree that estimated dioxin/furan congener values detected below the quantification levels are quantifiable data as suggested by the MDEQ, any congener value above the detection limit will be included in one of the TEC calculations for the groundwater sample in accordance with previous dioxin submittals, an example of which is provided in the attached Table 1. The MDEQ has previously requested and approved this dioxin submittal format.

ARCADIS, on behalf of Ford/KPC, plans to initiate the proposed dioxin characterization plan in August/September 2003. Per your request, ARCADIS will notify MDEQ at least 21 days prior to the groundwater sampling activities.

Date:
1 August 2003

Contact:
Ric Studebaker

Phone:
414 277 6225

Email:
rstudebaker@arcadis-us.com

Our ref:
WI001025.0032

2.6.1 - 8/1/03

We trust this information will meet your needs. If you have any questions, or require any further information, please contact the undersigned.

Sincerely,

ARCADIS G&M, Inc.

Richard L. Studebaker, Jr., PE
Senior Engineer/Project Manager

Copies:
David Miller
Daniel Musgrove

Attachment

Dioxins/Furans by HRGC/HRMS EPA Methods 1613-B
Minimum Levels (ML)

Analyte	CAS Number	Water ML (pg/L)	Soil ML (pg/g)
2,3,7,8-TCDD	1746-01-6	10	1.0
Total-TCDD	41903-57-5	10	1.0
1,2,3,7,8-PeCDD	40321-76-4	50	5.0
Total-PeCDD	36088-22-9	50	5.0
1,2,3,4,7,8-HxCDD	39227-28-6	50	5.0
1,2,3,6,7,8-HxCDD	57653-85-7	50	5.0
1,2,3,7,8,9-HxCDD	19408-74-3	50	5.0
Total-HxCDD	34465-46-8	50	5.0
1,2,3,4,6,7,8-HPCDD	35822-46-9	50	5.0
Total-HPCDD	37871-00-4	50	5.0
OCDD	3268-87-9	100	10
2,3,7,8-TCDF	51207-31-9	10	1.0
Total-TCDF	55722-27-5	10	1.0
1,2,3,7,8-PECDF	57117-41-6	50	5.0
2,3,4,7,8-PECDF	57117-31-4	50	5.0
Total-PECDF	30402-15-4	50	5.0
1,2,3,4,7,8-HXCDF	70648-26-9	50	5.0
1,2,3,6,7,8-HXCDF	57117-44-9	50	5.0
2,3,4,6,7,8-HXCDF	60851-34-5	50	5.0
1,2,3,7,8,9-HXCDF	72918-21-9	50	5.0
Total-HXCDF	55684-94-1	50	5.0
1,2,3,4,6,7,8-HPCDF	67562-39-4	50	5.0
1,2,3,4,7,8,9-HPCDF	55673-89-7	50	5.0
Total-HPCDF	38998-75-3	50	5.0
OCDF	39001-02-0	100	10

Appendix 1

Method 8290 and 1613B reference the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A.
The USEPA Engineering and Assessment Division has established guidance for setting the ML which is a level set 2-3 times the *interlaboratory method mdls* established for the methods during validation.
Unlike the way 40 CFR Part 136A is often used (i.e., as a measure of individual laboratory performance) the MLs established for 8290 and 1613 were established from data at multiple laboratories to assess method performance.
The lab will report all detections down to the smallest allowable peaks (i.e., 2.5 times the average noise for 3 consecutive scans). The Estimated Detection Limit (EDL) is also provided for each analyte. This is a value calculated to estimate the concentration in the sample that would meet the minimum signal-to-noise requirement (2.5 times the intensity of the average noise level). The EDL does not exactly equal the smallest amount reported. This is primarily due to differences in the way the two values are calculated. The EDL is calculated using peak intensity, whereas the sample concentration is calculated on the basis of area. The ratio between the two varies with concentration.
Any detections below the ML are qualified by a J flag.

Estimated Detection Limits

If no peaks are present in the region of the ion chromatogram where the compounds of interest are expected to elute, the EDL for that compound is calculated and reported. The EDL reflects the amount of the particular analyte that would be required to cause a positive result for the particular analysis.

The EDL is calculated according to the following equation:

$$\text{Estimated Detection Limit} = \frac{N \times 2.5 \times Qis}{His \times RRF \times W \times S}$$

where:

N	=	peak to peak noise of quantitation ion signal in the region of the ion chromatogram where the compound of interest is expected to elute
His	=	peak height of quantitation ion for appropriate internal standard
Qis	=	ng of internal standard added to sample
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

Appendix 2

J – The reported result is an estimate. The amount reported is below the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A. For the purposes of this report the ML is qualitatively defined as described above, and quantitatively defined as follows:
Minimum Level: The concentration or mass of analyte in the sample that corresponds to the lowest calibration level in the initial calibration. It is the sample concentration which results in an extract concentration equal to the lowest calibration standard, after corrections for sample weights/volumes, extract splitting and dilutions have been employed.
Example: The lowest calibration level for TCDD in the initial calibration is 0.5 pg/uL. A mass of 10 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 0.5 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the lowest calibration standard, the 10 pg mass in the sample components is the ML. If the sample extract is further diluted, the ML will increase by the dilution factor.
Example: A 1/10 dilution is performed on the sample extract described above. The ML for 2,3,7,8-TCDD becomes 100 pg rather than the default of 10 pg.
E – The reported result is an estimate. The amount reported is above the UCL described below.
The E qualifier is applied based on the **Upper Calibration Level (UCL)**. The quantitative definition of the UCL is listed below:
The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is the sample concentration which results in an extract concentration equal to the highest calibration standard, after corrections for sample weights/volumes, extract splitting and dilutions have been employed.
Example: The highest calibration level for TCDD in the initial calibration is 200 pg/uL. A mass of 4000 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 200 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the highest calibration standard, the 4000 pg mass in the sample components is the UCL. If the sample extract is further diluted, the ML will increase by the dilution factor.
Example: A 1/10 dilution is performed on the sample extract described above. The UCL for 2,3,7,8-TCDD becomes 40000 pg rather than the default of 4000 pg.

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GM-5 (MDEQ Sample)	05/03/00	*DL*	2.6	3.6	3.0	2.8	2.8	NA	NA	—
		Result	<2.6	<3.6	<3.0	<2.8	<2.8	3.6 E,J	<20.4 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	0.0018	(ND)	0.0018
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	22.3 J	—
GWGM-6	07/19/00	*DL*	2.0	1.7	2.0	2.0	1.9	2.6	NA	—
		Result	<2.0	<1.7	<2.0	<2.0	<1.9	<2.6	<5.6 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51485			ND	ND	ND	ND	ND	ND	7.7 J	—
GM-25-B (MDEQ Sample)	05/02/00	*DL*	1.2	1.5	1.4	1.3	1.4	2.1	NA	—
		Result	<1.2	<1.5	<1.4	<1.3	<1.4	<2.1	<10.5 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 50957			3.3 J	ND	ND	ND	ND	4.1 J	6.2 J	—
GWGM-25C	08/02/00	*DL*	1.2	1.5	1.7	1.7	1.7	2.7	NA	—
		Result	<1.2	<1.5	<1.7	<1.7	<1.7	<2.7	3.3 E,J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000033	0.000033
METHOD BLANK Sample Set – 51574			ND	ND	ND	ND	ND	ND	ND	—
GM-26-A (MDEQ Sample)	05/02/00	*DL*	1.0	1.2	1.1	1.0	1.1	1.5	2.3	—
		Result	<1.0	<1.2	<1.1	<1.0	<1.1	<1.5	<2.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			3.3 J	ND	ND	ND	ND	4.1 J	6.2 J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GM-5	05/03/00	*DL*	2.0	NA	2.6	NA	NA	NA	NA	NA	NA	NA	—
		Result	<2.0	5.5 J	<2.6	4.0 J	4.0 J	2.6 J	4.1 J	2.4 E,J	2.8 E,J	<6.2 J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.055	ND	0.032	0.080	0.18	0.25	0.00024	0.011	(ND)	0.61
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-6	07/19/00	*DL*	1.6	1.5	1.5	1.3	1.3	1.4	1.7	1.5	2.0	3.1	—
		Result	<1.6	<1.5	<1.5	<1.3	<1.3	<1.4	<1.7	<1.5	<2.0	<3.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51485			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25-B	05/02/00	*DL*	0.8	1.0	1.0	0.9	0.8	0.9	1.0	1.0	1.5	2.6	—
		Result	<0.8	<1.0	<1.0	<0.9	<0.8	<0.9	<1.0	<1.0	<1.5	<2.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—
GWGM-25C	08/02/00	*DL*	1.0	1.1	1.1	1.0	1.0	1.1	1.3	1.5	2.0	3.5	—
		Result	<1.0	<1.1	<1.1	<1.0	<1.0	<1.1	<1.3	<1.5	<2.0	<3.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51574			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26-A	05/02/00	*DL*	0.7	0.8	0.8	0.7	0.7	0.7	0.9	0.9	1.3	1.8	—
		Result	<0.7	<0.8	<0.8	<0.7	<0.7	<0.7	<0.9	<0.9	<1.3	<1.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	0.001	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	0.01	
GWGM-26B	07/18/00	*DL*	2.1	2.5	2.3	2.2	2.3	3.7	5.3	—
		Result	<2.1	<2.5	<2.3	<2.2	<2.3	<3.7	<5.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GM-26-C (MDEQ Sample)	05/02/00	*DL*	0.7	0.8	0.8	0.7	0.8	NA	NA	—
		Result	<0.7	<0.8	<0.8	<0.7	<0.8	<2.7 J,B,U	<6.1 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	(ND)	(ND)	0
METHOD BLANK Sample Set – 50957			3.3 J	ND	ND	ND	ND	4.1 J	6.2 J	—
GWGM-27B	07/18/00	*DL*	2.3	2.8	2.8	2.7	2.8	5.2	8.3	—
		Result	<2.3	<2.8	<2.8	<2.7	<2.8	<5.2	<8.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-27C	08/07/00	*DL*	3.9	4.0	4.4	4.3	4.3	7.2	11.8	—
		Result	<3.9	<4.0	<4.4	<4.3	<4.3	<7.2	<11.8	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	—
GWGM-28A	07/19/00	*DL*	2.1	2.4	2.2	2.1	2.1	3.3	NA	—
		Result	<2.1	<2.4	<2.2	<2.1	<2.1	<3.3	<7.3 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	0.01	0.001	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	0.4	0.02	
GWGM-26B	07/18/00	*DL*	1.7	1.6	1.6	1.6	1.5	1.7	2.1	2.2	2.9	4.2	—
		Result	<1.7	<1.6	<1.6	<1.6	<1.5	<1.7	<2.1	<2.2	<2.9	<4.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GM-26-C	05/02/00	*DL*	0.5	0.6	0.6	NA	0.4	0.5	0.6	NA	0.8	1.4	—
		Result	<0.5	<0.6	<0.6	1.9 J	<0.4	<0.5	<0.6	<1.7 E,J,B,U	<0.8	<1.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.015	ND	ND	ND	(ND)	ND	ND	0.015
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—
GWGM-27B	07/18/00	*DL*	1.9	2.0	1.9	2.0	1.9	2.1	2.6	3.0	3.9	6.6	—
		Result	<1.9	<2.0	<1.9	<2.0	<1.9	<2.1	<2.6	<3.0	<3.9	<6.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-27C	08/07/00	*DL*	3.0	3.2	3.1	3.1	2.9	3.2	3.9	3.8	5.2	9.1	—
		Result	<3.0	<3.2	<3.1	<3.1	<2.9	<3.2	<3.9	<3.8	<5.2	<9.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-28A	07/19/00	*DL*	1.9	1.7	1.7	1.6	1.5	1.7	2.0	1.9	2.5	3.9	—
		Result	<1.9	<1.7	<1.7	<1.6	<1.5	<1.7	<2.0	<1.9	<2.5	<3.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-63A	08/29/00	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	2.3 J	3.5 E,J	<4.2 J,B,U	4.0 J	<7.0 J,B,U	10.2 J	61.1 J,B	—
		QL	10	50	50	50	50	50	100	—
		TEC *	2.3	1.6	(ND)	0.040	(ND)	0.00510	0.000611	3.9
METHOD BLANK Sample Set – 51777			ND	ND	3.0 E,J	ND	3.1 E,J	ND	7.4 J	—
GWGM-63A	09/19/00	*DL*	0.3	0.3	0.3	NA	NA	0.5	NA	—
		Result	<0.3	<0.3	<0.3	0.43 J	0.35 E,J	<0.5	<2.3 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	0.0043	0.0035	ND	(ND)	0.0078
METHOD BLANK Sample Set – 51936			ND	ND	ND	ND	ND	ND	36.6 J	—
GWGM-63B	02/07/01	*DL*	1.9	2.6	2.7	2.7	2.6	4.0	NA	—
		Result	<1.9	<2.6	<2.7	<2.7	<2.6	<4.0	<11.5 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 52961			ND	ND	ND	ND	ND	ND	10.8 J	—
GWGM-64A	08/30/00	*DL*	1.1	1.2	1.5	1.4	1.5	NA	NA	—
		Result	<1.1	<1.2	<1.5	<1.4	<1.5	2.4 E,J	<4.1 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0012	(ND)	0.0012
METHOD BLANK Sample Set – 51796			ND	ND	ND	ND	ND	ND	37 J	—
GWGM-64A	10/03/00	*DL*	2.1	1.8	1.9	1.9	1.9	2.6	3.6	—
		Result	<2.1	<1.8	<1.9	<1.9	<1.9	<2.6	<3.6	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52058			ND	ND	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	0.01	0.001	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	0.02	
GWGM-63A	08/29/00	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	2.7 J	5.7 J	4.3 J	<3.4 E,J,B,U	<3.7 J,B,U	<4.2 J,B,U	<8.2 J,B,U	5.9 J	<6.7 J,B,U	19.6 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.22	0.057	3.4	(ND)	(ND)	(ND)	(ND)	0.00059	(ND)	0.000392	3.7
METHOD BLANK Sample Set – 51777			ND	ND	ND	3.3 J	2.6 E,J	3.0 J	3.9 E,J	ND	4.5 J	ND	—
GWGM-63A	09/19/00	*DL*	0.2	NA	0.2	NA	0.2	0.2	NA	NA	0.4	NA	—
		Result	<0.2	0.39 J	<0.2	<0.22 E,J,B,U	<0.2	<0.2	0.49 J	0.25 E,J	<0.4	1.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.0039	ND	(ND)	ND	ND	0.029	0.000025	ND	0.000028	0.033
METHOD BLANK Sample Set – 51936			ND	ND	ND	1.7 J	ND	ND	ND	ND	ND	ND	—
GWGM-63B	02/07/01	*DL*	1.3	1.7	1.6	1.6	1.5	1.7	1.8	2.3	2.7	4.3	—
		Result	<1.3	<1.7	<1.6	<1.6	<1.5	<1.7	<1.8	<2.3	<2.7	<4.3	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52961			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-64A	08/30/00	*DL*	0.8	0.9	0.9	0.8	0.8	0.9	1.1	NA	1.6	NA	—
		Result	<0.8	<0.9	<0.9	<0.8	<0.8	<0.9	<1.1	2.0 J	<1.6	8.8 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0.00020	ND	0.00018	0.00038
METHOD BLANK Sample Set – 51796			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-64A	10/03/00	*DL*	1.4	1.5	1.5	1.3	1.2	1.3	1.6	1.5	2.0	3.0	—
		Result	<1.4	<1.5	<1.5	<1.3	<1.2	<1.3	<1.6	<1.5	<2.0	<3.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52058			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	0.001	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	0.01	
GWGM-64B	07/24/00	*DL*	0.6	0.6	0.6	0.6	0.6	0.8	NA	—
		Result	<0.6	<0.6	<0.6	<0.6	<0.6	<0.8	<3.0 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	7.7 J	—
GWGM-66A	07/18/00	*DL*	1.6	1.9	1.7	1.6	1.7	NA	NA	—
		Result	<1.6	<1.9	<1.7	<1.6	<1.7	2.6 E,J	<24.7 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0013	(ND)	0.0013
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-66B	07/19/00	*DL*	2.0	2.7	2.3	2.2	2.3	3.3	5.3	—
		Result	<2.0	<2.7	<2.3	<2.2	<2.3	<3.3	<5.3	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-66B	08/03/00	*DL*	1.3	1.7	1.3	1.3	1.3	2.1	NA	—
		Result	<1.3	<1.7	<1.3	<1.3	<1.3	<2.1	4.3 E,J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000043	0.000043
METHOD BLANK Sample Set – 51582			ND	ND	ND	ND	ND	ND	ND	—
GWGM-68	08/31/00	*DL*	NA	4.6	5.2	4.9	5.2	NA	NA	—
		Result	0.93 E,J	<4.6	<5.2	<4.9	<5.2	22.7 E,J	242 E,B,J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	0.93	ND	ND	ND	ND	0.0114	0.00242	0.94
METHOD BLANK Sample Set – 51803			ND	ND	ND	ND	ND	ND	37 J	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	0.01	0.001	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	0.4	0.02	
GWGM-64B	07/24/00	*DL*	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.6	1.0	—
		Result	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.5	<0.5	<0.6	<1.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-66A	07/18/00	*DL*	1.4	1.5	1.5	1.2	1.1	1.2	1.5	1.5	2.0	2.7	—
		Result	<1.4	<1.5	<1.5	<1.2	<1.1	<1.2	<1.5	<1.5	<2.0	<2.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-66B	07/19/00	*DL*	1.7	1.8	1.8	1.7	1.6	1.8	2.2	2.1	2.7	4.2	—
		Result	<1.7	<1.8	<1.8	<1.7	<1.6	<1.8	<2.2	<2.1	<2.7	<4.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-66B	08/03/00	*DL*	0.9	1.1	1.1	NA	0.9	1.1	1.3	1.5	1.9	2.5	—
		Result	<0.9	<1.1	<1.1	1.5 J	<0.9	<1.1	<1.3	<1.5	<1.9	<2.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	0.012
METHOD BLANK Sample Set – 51582			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-68	08/31/00	*DL*	2.9	4.0	4.1	2.9	2.7	3.2	3.8	NA	5.0	NA	—
		Result	<2.9	<4.0	<4.1	<2.9	<2.7	<3.2	<3.8	6.1 J	<5.0	33.9 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0.00061	ND	0.000678	0.00129
METHOD BLANK Sample Set – 51803			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	0.001	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	0.01	
GWGM-68	09/26/00	*DL*	4.1	4.4	4.4	4.4	4.3	7.0	NA	—
		Result	<4.1	<4.4	<4.4	<4.4	<4.3	<7.0	36.2 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000362	0.000362
METHOD BLANK Sample Set – 51987			ND	ND	ND	ND	ND	ND	ND	—

GWGM-68 is not considered a river well.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ppq Parts per quadrillion (picograms per liter).
NA Information is not available.
ND Congener was not detected; contribution to the TEC is zero.
(ND) Detected result (as the shown concentration) was qualified as "not detected" due to associated blank contamination.
QL Congener quantification limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:
B – Compound was detected in the associated QC method blank sample.
E – Estimated maximum possible concentration.
J – Concentration is qualified as estimated.
U – Result was qualified as not detected due to associated blank contamination.

Table 1. Dioxin and Furan Results from Groundwater Samples Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	0.01	0.001	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	0.4	0.02	
GWGM-68	09/26/00	*DL*	2.8	3.3	3.2	NA	NA	NA	3.5	3.6	4.7	10.0	—
		Result	<2.8	<3.3	<3.2	3.3 J	2.5 J	3.5 J	<3.5	<3.6	<4.7	<10.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.026	0.050	0.25	ND	ND	ND	ND	0.33
METHOD BLANK Sample Set – 51987			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

GWGM-68 is not considered a river well.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ppq Parts per quadrillion (picograms per liter).
NA Information is not available.
ND Congener was not detected; contribution to the TEC is zero.
(ND) Detected result (as the shown concentration) was qualified as "not detected" due to associated blank contamination.
QL Congener quantification limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:
B – Compound was detected in the associated QC method blank sample
E – Estimated maximum possible concentration
J – Concentration is qualified as estimated.
U – Result was qualified as "not detected" due to associated blank contamination.

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ENVIRONMENT

Mr. Chris Austin
Michigan Department of Environmental Quality
1420 U.S. 2 West
Crystal Falls, MI 49920

Subject:
Analyses for Dioxin in Groundwater Pretreatment System Effluent and Extraction Wells Along the Menominee River, Ford/Kingsford Site, Kingsford, Michigan.

Date:
10 October 2003

Contact:
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Our ref:
WI001025.0032

Dear Mr. Austin:

In accordance with your request of September 26, 2003, ARCADIS is submitting this document on behalf of Ford Motor Company (Ford) and The Kingsford Products Company (KPC), to provide the most recent results of the subject analyses. Monitoring of Groundwater Extraction Wells GMEW-1, GMEW-2, GMEW-3, GMEW-4R, and treated effluent from the Groundwater Pretreatment System (System) located at 2241 West Breitung Avenue was performed in January, February, March, and June 2003 for polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans). The results of the January, February, and March 2003 sampling were previously submitted to the Michigan Department of Environmental Quality (MDEQ) in a letter report dated June 2, 2003.

On June 26, 2003, ARCADIS collected samples from Extraction Wells GMEW-1, GMEW-2, GMEW-3, GMEW-4R, and the System effluent. The samples were submitted to Severn Trent Laboratories, Inc. (STL), Knoxville, Tennessee, for analysis of dioxins and furans (total and dissolved) using United States Environmental Protection Agency Method 1613, Revision B *"Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS"* (October 1994). The monitoring event consisted of collecting a grab sample from each location, consistent with the sampling methods approved by MDEQ. The contribution of flow from each of the extraction wells to the System 8 days prior to, and 4 days after each sampling event is provided in Table 1. As seen in the table, flowrates were consistent throughout the sampling.

The results of the dioxin and furan sampling and analyses indicate that there are no detectable concentrations of dioxins or furans in the System effluent or the groundwater pumped from Extraction Wells GMEW-1, GMEW-2, GMEW-3, and GMEW-4R. All toxicity equivalence concentration (TEC) results are zero and detection limits are well below U.S. Environmental Protection Agency and MDEQ Target Detection Limits and Quantification Limits. Results are summarized in

2.6.1.34 - 10/10/03

Tables 2 through 4. The data presented in Tables 3 and 4 were validated by ARCADIS and the validation reports are provided in Attachment A. The laboratory reports generated by STL will be transmitted to the MDEQ under separate cover by ARCADIS.

Ford, KPC, and ARCADIS appreciate MDEQ's cooperation on this issue. Should you have any questions regarding this submittal, please contact me at (414) 277-6225.

Sincerely,

ARCADIS G&M, Inc.

Richard L. Studebaker, Jr., PE
Senior Engineer/Project Manager

Copies:
Mr. David Miller
Mr. Daniel Musgrove

ARCADIS

Table 1. Summary of Groundwater Extraction System Pumping Rates Associated with Sampling for Dioxin Analyses, Ford/Kingsford Site, Kingsford, Michigan.

Date	GMEW-1		GMEW-2		GMEW-3		GMEW-4		GMEW-4R		GMEW-5		GMEW-6		System Total	
	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average[1] Flow (gpm)
First Sampling Event: January 22, 2003																
1/14/03	34,155	24	14,850	10	14,496	10	0	0	0	0	0	0	0	0	63,501	44
1/15/03	32,085	22	13,950	10	13,965	10	0	0	0	0	0	0	0	0	60,000	42
1/16/03	32,670	23	14,850	10	14,980	10	0	0	0	0	0	0	0	0	62,500	43
1/17/03	33,465	23	14,550	10	14,385	10	0	0	0	0	0	0	0	0	62,400	43
1/18/03	31,460	22	14,300	10	14,140	10	0	0	0	0	0	0	0	0	59,900	42
1/19/03	27,720	19	13,200	9	13,579	10	0	0	0	0	0	0	0	0	54,499	38
1/20/03	26,070	18	11,850	8	11,680	10	0	0	0	0	0	0	0	0	49,600	34
1/21/03	30,801	21	14,600	10	14,600	10	0	0	0	0	0	0	0	0	60,001	42
1/22/03*	**32,800**	**22**	**14,950**	**10**	**14,950**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**62,700**	**42**
1/23/03	30,600	21	14,600	10	14,600	10	0	0	0	0	0	0	0	0	59,800	42
1/24/03	30,240	21	14,400	10	14,539	10	0	0	0	0	0	0	0	0	59,179	41
1/25/03	30,240	21	14,400	10	14,539	10	0	0	0	0	0	0	0	0	59,179	41
1/26/03	29,505	20	14,050	10	14,186	10	0	0	0	0	0	0	0	0	57,741	40
Second Sampling Event: February 13, 2003																
2/5/03	19,305	13	11,880	8	5,615	4	0	0	0	0	0	0	0	0	36,800	26
2/6/03	21,450	15	10,799	8	8,250	6	0	0	0	0	0	0	0	0	40,499	28
2/7/03	16,848	12	8,873	6	6,480	5	0	0	0	0	0	0	0	0	32,201	22
2/8/03	19,422	13	10,208	7	7,470	5	0	0	0	0	0	0	0	0	37,100	26
2/9/03	17,160	12	7,440	5	6,600	5	0	0	0	0	0	0	0	0	31,200	22
2/10/03	16,440	11	10,534	7	7,225	5	0	0	0	0	0	0	0	0	34,199	24
2/11/03	17,340	12	9,890	7	8,670	6	0	0	0	0	0	0	0	0	35,900	25
2/12/03	16,560	12	9,660	7	10,981	8	0	0	0	0	0	0	0	0	37,201	26
2/13/03*	**18,150**	**12**	**10,430**	**7**	**11,920**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40,500**	**27**
2/14/03	17,420	12	9,380	7	8,699	6	0	0	0	0	0	0	0	0	35,499	25
2/15/03	24,115	17	11,130	8	12,455	9	0	0	0	0	0	0	0	0	47,700	33
2/16/03	14,625	10	6,750	5	7,426	5	0	0	0	0	0	0	0	0	28,801	20
2/17/03	21,060	15	9,720	7	9,519	7	0	0	0	0	0	0	0	0	40,299	28

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Table 1. Summary of Groundwater Extraction System Pumping Rates Associated with Sampling for Dioxin Analyses, Ford/Kingsford Site, Kingsford, Michigan.

Date	GMEW-1		GMEW-2		GMEW-3		GMEW-4		GMEW-4R		GMEW-5		GMEW-6		System Total	
	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average Flow (gpm)	Daily Flow (gal)	Average[(1)] Flow (gpm)
Third Sampling Event: March 4, 2003																
2/24/03	18,200	13	8,400	6	5,900	4	0	0	0	0	0	0	0	0	32,500	23
2/25/03	18,980	13	8,760	6	4,960	3	0	0	0	0	0	0	0	0	32,700	23
2/26/03	19,045	13	7,974	6	1,080	0.8	0	0	0	0	0	0	0	0	28,099	20
2/27/03	18,300	13	8,520	6	5,680	4	0	0	0	0	0	0	0	0	32,500	23
2/28/03	19,427	13	10,164	7	5,808	4	0	0	0	0	0	0	0	0	35,399	25
3/1/03	20,971	15	8,886	6	4,443	3	0	0	0	0	0	0	0	0	34,300	24
3/2/03	18,660	13	8,160	6	4,080	3	0	0	0	0	0	0	0	0	30,900	21
3/3/03	19,256	13	8,430	6	4,215	3	0	0	0	0	0	0	0	0	31,901	22
3/4/03*	**19,560**	**13**	**8,760**	**6**	**4,380**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**32,700**	**22**
3/5/03	18,655	13	8,610	6	1,434	1	0	0	0	0	0	0	0	0	28,699	20
3/6/03	18,460	13	8,520	6	4,120	3	0	0	0	0	0	0	0	0	31,100	22
3/7/03	20,800	14	9,300	6	4,800	3	0	0	0	0	0	0	0	0	34,900	24
3/8/03	19,825	14	8,501	6	4,575	3	0	0	0	0	0	0	0	0	32,901	23
Groundwater Sampling Event: June 26, 2003																
6/18/03	28,700	20	26,001	18	0	0	0	0	0	0	0	0	0	0	54,701	38
6/19/03	30,400	21	28,700	20	0	0	0	0	0	0	0	0	0	0	59,100	41
6/20/03	27,700	19	24,900	17	0	0	0	0	0	0	0	0	0	0	52,600	37
6/21/03	30,800	21	27,600	19	0	0	0	0	0	0	0	0	0	0	58,400	41
6/22/03	22,200	15	19,900	14	0	0	0	0	0	0	0	0	0	0	42,100	29
6/23/03	28,900	20	26,010	18	5,390	4	0	0	0	0	0	0	0	0	60,300	42
6/24/03	28,700	20	25,830	18	8,169	6	0	0	0	0	0	0	0	0	62,699	44
6/25/03	30,000	20	27,000	19	8,600	6	0	0	0	0	0	0	0	0	65,600	46
6/26/03*	**28,800**	**20**	**25,920**	**18**	**6,406**	**4**	**0**	**0**	**475**	**5**	**0**	**0**	**0**	**0**	**61,601**	**43**
6/27/03	30,400	21	27,360	19	6,940	5	0	0	0	0	0	0	0	0	64,700	45
6/28/03	31,500	22	28,350	20	7,750	5	0	0	0	0	0	0	0	0	67,600	47
6/29/03	23,600	16	20,060	14	5840	4	0	0	0	0	0	0	0	0	49,500	34
6/30/03	28,300	20	24,325	17	7,075	5	0	0	0	0	0	0	0	0	59,700	41

* Dioxin sample was collected from either the system effluent or the extraction wells.

gal Gallon

gpm Gallon per minute.

(1) Daily flow (gal) is the arithmetic sum of the daily flow (gal) of each extraction well. Daily flow (gpm) is the average flowrate over 24 hours (e.g. 32,500 gal/1,440 minutes/day = 23 gpm).

Table 2. Summary of Phase II System Samples Collected in 2003 for Dixon/Furan Analyses, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date
Phase II, Total System Samples – Table 2	
PhII EFF (1/22/03)T	1/22/2003
PhII EFF (2/13/03)T	2/13/2003
PhII EFF (3/4/03)T	3/04/2003
GMEW-1 (6/26/03)T	6/26/2003
GMEW-2 (6/26/03)T	6/26/2003
GMEW-3 (6/26/03)T	6/26/2003
GMEW-4R (6/26/03)T	6/26/2003
Phase II, Dissolved System Samples – Table 3	
PhII EFF (1/22/03)D	1/22/2003
PhII EFF (2/13/03)D	2/13/2003
PhII EFF (3/4/03)D	3/04/2003
GMEW-1 (6/26/03)D	6/26/2003
GMEW-2 (6/26/03)D	6/26/2003
GMEW-3 (6/26/03)D	6/26/2003
GMEW-4R (6/26/03)D	6/26/2003

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total System Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)T	01/22/03	*DL*	4.4	1.9	1.9	2.0	2.0	2.8	3.7	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.8	<9.8 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*	3.1	1.3	1.2	1.4	1.3	2.0	2.1	—
		Result	<3.1	<1.3	<1.2	<1.4	<1.3	<2.0	<5.2 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (3/4/03)T	03/04/03	*DL*	2.8	1.2	1.1	1.3	1.2	2.6	3.0	—
		Result	<2.8	<1.2	<1.1	<1.3	<1.2	<2.6	<9.0 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—
GMEW-1 (6/26/03)T	06/26/03	*DL*	2.5	2.2	2.6	2.6	2.5	1.8	2.0	—
		Result	<2.5	<2.2	<2.6	<2.6	<2.5	<1.8	<7.7 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-2 (6/26/03)T	06/26/03	*DL*	2.4	2.1	2.6	2.6	2.5	2.1	2.3	—
		Result	<2.4	<2.1	<2.6	<2.6	<2.5	<2.1	<9.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total System Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GMEW-3 (6/26/03)T	06/26/03	*DL*	1.9	1.6	1.8	1.9	1.8	1.6	1.9	—
		Result	<1.9	<1.6	<1.8	<1.9	<1.8	<1.6	<7.9 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-4R (6/26/03)T	06/26/03	*DL*	2.2	1.8	2.0	2.3	2.1	2.1	2.5	—
		Result	<2.2	<1.8	<2.0	<2.3	<2.1	<2.1	<4.7 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)T	01/22/03	*DL*	3.0	1.7	1.3	1.2	1.4	1.4	1.7	2.4	2.9	4.9	—
		Result	<3.0	<1.7	<1.3	<1.2	<1.4	<1.4	<1.7	<2.4	<2.9	<4.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*	2.3	1.2	0.95	0.73	0.87	0.86	0.99	1.4	1.6	2.2	—
		Result	<2.3	<1.2	<0.95	<0.73	<0.87	<0.86	<0.99	<1.4	<1.6	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (3/4/03)T	03/04/03	*DL*	2.0	1.2	0.86	0.67	0.67	0.85	1.0	1.5	1.8	2.6	—
		Result	<2.0	<1.2	<0.86	<0.67	<0.67	<0.85	<1.0	<1.5	<1.8	<2.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—
GMEW-1 (6/26/03)T	06/26/03	*DL*	2.4	1.8	1.5	1.5	1.6	1.6	1.9	1.6	2.0	2.0	—
		Result	<2.4	<1.8	<1.5	<1.5	<1.6	<1.6	<1.9	<1.6	<2.0	<4.5 Q,B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-2 (6/26/03)T	06/26/03	*DL*	2.4	1.7	1.5	1.5	1.5	1.7	1.8	1.5	1.8	2.6	—
		Result	<2.4	<1.7	<1.5	<1.5	<1.5	<1.7	<1.8	<1.5	<1.8	<5.5 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Total Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GMEW-3 (6/26/03)T	06/26/03	*DL*	1.9	1.2	1.0	1.2	1.2	1.5	1.5	1.7	1.7	2.0	—
		Result	<1.9	<1.2	<1.0	<1.2	<1.2	<1.5	<1.5	<1.7	<1.7	<2.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-4R (6/26/03)T	06/26/03	*DL*	1.9	1.5	1.2	1.4	1.5	1.4	1.8	1.6	1.8	2.4	—
		Result	<1.9	<1.5	<1.2	<1.4	<1.5	<1.4	<1.8	<1.6	<1.8	<2.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—

All values are reported in parts per quadrillion (ppq).

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.
BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ND Congener was not detected; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantification level.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.
E Estimated maximum possible concentration.
J Concentration is qualified as estimated.
K Concentration exceeds the calibration curve; qualified as estimated.
U Result was qualified as "not detected" during data validation.
Q Estimated maximum possible concentration.

Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved System Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)D	01/22/03	*DL*	3.0	1.4	1.6	1.6	1.6	1.9	2.7	—
		Result	<3.0	<1.4	<1.6	<1.6	<1.6	<1.9	<7.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*	4.4	1.9	1.9	2.0	2.0	2.1	2.1	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.1	<3.5 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (3/4/03)D	03/04/03	*DL*	3.5	1.5	1.1	1.3	1.2	1.6	1.6	—
		Result	<3.5	<1.5	<1.1	<1.3	<1.2	<1.6	<4.8 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—
GMEW-1 (6/26/03)D	06/26/03	*DL*	2.3	2.2	2.4	2.6	2.4	2.3	2.0	—
		Result	<2.3	<2.2	<2.4	<2.6	<5.7 B,J,U	<3.3 B,J,U	<5.4 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	(ND)	(ND)	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-2 (6/26/03)D	06/26/03	*DL*	1.8	1.5	1.6	1.7	1.6	1.4	1.6	—
		Result	<1.8	<1.5	<1.6	<1.7	<1.6	<1.4	<5.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—

Footnotes on Page 4.

Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved System Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GMEW-3 (6/26/03)D	06/26/03	*DL*	2.1	1.8	2.2	2.4	2.2	2.0	1.7	—
		Result	<2.1	<1.8	<2.2	<2.4	<2.2	<2.0	<7.9 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-4R (6/26/03)D	06/26/03	*DL*	1.5	1.1	1.3	1.3	1.2	1.2	1.1	—
		Result	<1.5	<1.1	<1.3	<1.3	<2.3 Q,B,J,U	<1.2	<4.4 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	(ND)	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—

Footnotes on Page 4.

Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved System Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)D	01/22/03	*DL*	2.3	1.1	0.86	0.79	0.87	0.95	1.1	1.5	1.7	2.3	—
		Result	<2.3	<1.1	<0.86	<0.79	<0.87	<0.95	<1.1	<1.5	<1.7	<4.0 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*	3.1	1.5	1.2	0.93	1.0	1.1	1.3	1.9	2.1	2.2	—
		Result	<3.1	<1.5	<1.2	<0.93	<1.0	<1.1	<1.3	<1.9	<2.1	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (3/4/03)D	03/04/03	*DL*	3.0	1.4	1.1	0.68	0.69	0.78	0.91	1.2	1.5	2.2	—
		Result	<3.0	<1.4	<1.1	<0.97 B,J,U	<0.85 B,J,U	<0.78	<0.91	<1.2	<1.5	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	(ND)	(ND)	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—
GMEW-1 (6/26/03)D	06/26/03	*DL*	2.2	1.6	1.3	1.4	1.5	1.6	1.8	1.6	2.0	2.6	—
		Result	<2.2	<1.6	<1.3	<1.4	<1.5	<1.6	<1.8	<1.6	<2.0	<6.5 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-2 (6/26/03)D	06/26/03	*DL*	1.8	1.1	0.93	1.1	1.1	1.2	1.4	1.1	1.2	1.8	—
		Result	<1.8	<1.1	<0.93	<1.1	<1.1	<2.1 B,J,U	<1.4	<1.1	<1.2	<4.6 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	(ND)	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—

Footnotes on Page 4.

Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase II, 2003 Dissolved System Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GMEW-3 (6/26/03)D	06/26/03	*DL*	2.0	1.4	1.2	1.3	1.3	1.6	1.7	1.5	1.9	2.2	—
		Result	<2.0	<1.4	<1.2	<1.3	<1.3	<1.6	<1.7	<1.5	<1.9	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-4R (6/26/03)D	06/26/03	*DL*	1.5	1.0	0.80	0.86	0.88	1.1	1.1	0.92	1.0	1.1	—
		Result	<1.5	<1.0	<0.80	<0.86	<0.88	<1.1	<1.1	<1.4 Q,J,U	<1.0	<2.2 Q,B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	(ND)	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—

All values are reported in parts per quadrillion (ppq).

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

* TEC (ppq) = Detected result (ppq) × BEF × TEF

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

E Estimated maximum possible concentration.

J Concentration is qualified as estimated.

K Concentration exceeds the calibration curve; qualified as estimated.

U Result was qualified as "not detected" during data validation.

Q Estimated maximum possible concentration.

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MEMORANDUM

To:
Ric Studebaker

Copies:

ENVIRONMENT

From:
Libby Nessley

Date:
September 3, 2003

Subject:
Dioxin Data Validation Samples Collected June 26, 2003 Kingsford, Michigan

ARCADIS Geraghty & Miller Project No.:
WI000975.0021

This report summarizes the review and evaluation of eight samples collected June 26, 2003 in Kingsford, Michigan. This includes the following samples:

- GMEW-1 (6/26/03)T
- GMEW-2 (6/26/03)T
- GMEW-3 (6/26/03)T
- GMEW-4R (6/26/03)T
- GMEW-1 (6/26/03)D
- GMEW-2 (6/26/03)D
- GMEW-3 (6/26/03)D
- GMEW-4R (6/26/03)D

Samples were submitted to Severn Trent Laboratories (STL), Inc., in Knoxville, Tennessee for the analysis of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) using United States Environmental Protection Agency (USEPA) Method 1613 Revision B (USEPA Method 1613B) (October 1994). This method uses high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS). Grab samples collected on June 26, 2003 were received by STL on June 27, 2003, and were assigned the STL project number H3F270267. The samples with the T designation represent total samples and those with the D designation were laboratory filtered prior to extraction and analysis. Samples were extracted on July 7, 2003 and analyzed on July 15, 2003. USEPA Method 1613B requires the use of HRGC/HRMS to detect and quantitate PCDD/PCDF. The high-resolution capillary column DB-5 was used for all analyses. Analytical results were reported to the estimated detection limit (EDL).

The evaluation of data quality was performed using the guidance documents entitled: "*Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002*," and "*USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002*," the method specified criteria from USEPA Method 1613B, and professional judgment.

A detailed evaluation of the associated samples collected June 26, 2003 is presented in the following sections.

1.0 Holding Times, Storage and Preservation

The chain-of-custody form was properly completed and signed. The groundwater samples were received in good condition and properly preserved at 4 degrees centigrade. The samples were extracted and analyzed within holding times of 30 and 45 days, respectively.

2.0 Performance Evaluation Samples

No performance evaluation samples were included with this delivery group. Method accuracy was determined through the analysis of a laboratory control sample (LCS).

3.0 Mass Calibration and Mass Spectrometer Resolution

The instrument used for USEPA Method 1613B analysis was tuned using calibrant perfluorokerosene (PFK) for mass calibration and mass spectrometer resolution greater than or equal to 10,000, selective ion monitoring (SIM) scan descriptor switching times, and GC resolution. A system performance check was provided for each 12-hour analysis period, and for the instrument used during analysis. HRGC/HRMS instrument MAT95S was used to analyze the field samples and associated batch QC. All system performance checks met the mass spectrometer resolution requirement of >10,000.

4.0 Window Defining Mix

The Window Defining Mix (WDM), a standard solution composed of the first and last eluting dioxin and furan isomers used to define the beginning and ending retention times, was run at the required frequency. Retention times for identified compounds were within the established windows.

5.0 Chromatographic Resolution

Review of the chromatographic peak separation between the 2,3,7,8-TCDD peak and the 1,2,3,8-TCDD peak showed a resolution valley within the criteria of <25%.

6.0 Instrument Stability

All criteria for absolute and relative retention times, ion abundance ratios, instrument sensitivity and relative response were met.

7.0 HRGC/HRMS Initial Calibration

Initial calibration was reviewed for the instrument used for STL Report H3F270267. A five point initial calibration was performed by STL on the instrument. The following initial calibration was reviewed: 4/1/03. The percent relative standard deviations (%RSDs), relative response factors (RRFs), signal to noise (S/N), retention time windows, and ion abundance ratios were reviewed against the method specified criteria. The associated initial calibration was acceptable.

8.0 HRGC/GRMS Calibration Verification

Continuing calibrations (mid level standard) were analyzed prior to and following sample analysis. The continuing calibrations were performed more frequently than the minimum mandated by the method (e.g. each 12-hour analytical period). The continuing calibrations were reviewed for instrument RRFs, percent differences (%D), ion-abundance ratios, internal standard, and recovery compound, and were acceptable. The following continuing calibrations were reviewed in association with STL Report H3F270267: t030714S2, t030715S2 and t030715S3. All continuing calibrations associated with STL Report H3F270267 were acceptable.

9.0 Identification Criteria

Sample results were reviewed against the method specific criteria for compound identification. Laboratory performance was acceptable. Compound identifications qualified with "Q" flags (indicating the estimated maximum possible concentration (EMPCs)) were individually evaluated by the reviewer for signal-to-noise, retention time and ion abundance criteria. Professional judgment was used to determine whether the flagged compounds were positively identified or not detected.

Detected compounds at concentrations lower than five times the method blank detected levels were qualified as "U"/NOT Detected in all samples except sample GMEW-4R (6/26/03)D. This sample had a reported EMPC of 1,2,3,4,6,7,8 HpCDF (1.4 Q,J pg/L). This compound, however, did not meet Method 1613 ion abundance criteria using peak area or peak height (as allowed in the Functional Guidelines, Part IX, Section C.4). Therefore, this compound is not identified and the result is not reported as stated in Method 1613, Section 16.6. For this reason, this compound is qualified with a "U"/NOT Detected. Sample results and the associated qualifiers are summarized in Table 1.

10.0 Method Blank

Method blank (FRR911AA) was extracted with the field samples in STL Report H3F270267. In accordance with the "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0,

dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," any target analyte detected in the associated method blank is evaluated against the associated field samples by multiplying the blank concentration by five times (action level). The associated field sample data values reported less than the Action Level are qualified as "U/Not Detected," inclusive of those values reported at the EDL or estimated maximum possible concentration (EMPC). The following compounds were reported in the Method Blank: 1,2,3,7,8,9-HxCDD (5.8J pg/L); 1,2,3,4,6,7,8-HpCDD (3.4J pg/L); OCDD (9.3Q, J pg/L); 2,3,4,6,7,8-HxCDF (2.9J pg/L) and OCDF (8.4J pg/L). The OCDD peak was flagged "Q" by the laboratory for falling slightly outside ion abundance criteria for peak area. The peak integration was evaluated and ion abundance criteria using peak height was met. In the reviewer's professional judgment, the laboratory "Q" flag should be dropped from this compound.

All values detected in the method blank were less than the target detection limit (Section 12 of this evaluation) and therefore, the method blank is determined to be acceptable.

11.0 Laboratory Control Samples

One LCS (file FRR911AC) was extracted in association with the field samples analyzed in STL Report H3F270267. All recoveries were reviewed against the in-house control limit criteria for LCS recovery. The LCS accuracy data was acceptable. Raw data for a laboratory control sample duplicate (LCSD) was also included in the data package but not detailed in the summary report because analysis of an LCSD is not required by the Functional Guidelines. However, review of the LCSD data showed good agreement between the LCS and LCSD. Percent differences were all <5%.

12.0 Estimated Detection Limit and Estimated Maximum Possible Concentration

Target detection limits for USEPA Method 1613B are as follows for aqueous matrix:

≤ 10 pg/L TCDD & TCDF
≤ 50 pg/L Pent – Hepta CDD & CDF
≤ 100 pg/L OCDD & OCDF

The laboratory reported EDL, presented on the analytical reports as the detection limit (DL), which represents the maximum possible concentration of a target analyte that could be present without being detected. The EDL was reported for non-detected values less than the method target detection limit and were calculated for each field sample.

13.0 Labeled Compound Recoveries

Fifteen internal standards are required by USEPA Method 1613B. All 15 labeled internals, surrogates, and alternate standards were reviewed against a control limit criteria of 40-130 percent recovery. STL has established in-house criteria. All criteria were met for all samples.

14.0 Overall Data Assessment

The evaluation of data quality was performed using the following Guidance documents "Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry, USEPA Region IV, Revision 3.0, dated May 2002," and "USEPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review dated August 2002," the method specified criteria from USEPA Method 1613B, and professional judgment. The field sample data for STL Report H3F270267 are presented in Attachment A. 1,2,3,4,6,7,8-HpCDF (1.4 Q,J) reported in sample GMEW-4R (6/26/03)D should have been reported by the laboratory as a non-detect, due to failure to meet ion abundance criteria for peak area and peak height. Other reported concentrations were all less than five times the concentration detected in the method blank. Therefore, the detected sample compounds for this report were assigned the value NOT Detected and qualified "U".

Table 1. Sample Results and Qualifier Summary

IDENTIFIED COMPOUNDS	LABORATORY REPORTED CONC. (pg/L)	ADDITIONAL QUALIFIERS	REASON
GMEW-1 (6/26/03)T			
OCDD	7.7 B,J	U	<5X Method Blank
OCDF	4.5 Q,B,J	U	<5X Method Blank
GMEW-2 (6/26/03)T			
OCDD	9.0 B,J	U	<5X Method Blank
OCDF	5.5 B,J	U	<5X Method Blank
GMEW-3 (6/26/03)T			
OCDD	7.9 B,J	U	<5X Method Blank
GMEW-4R (6.26.03)T			
OCDD	4.7 Q,B,J	U	<5X Method Blank
GMEW-1 (6/26/03)D			
1,2,3,7,8,9-HxCDD	5.7 B,J	U	<5X Method Blank
1,2,3,4,6,7,8-HpCDD	3.3 B,J	U	<5X Method Blank
OCDD	5.4 Q,B,J	U	<5X Method Blank
OCDF	6.5 B,J	U	<5X Method Blank
GMEW-2 (6/26/03)D			
OCDD	5.0 B,J	U	<5X Method Blank
2,3,4,6,7,8-HxCDF	2.1 B,J	U	<5X Method Blank
OCDF	4.6 B,J	U	<5X Method Blank
GMEW-3 (6/26/03)D			
OCDD	7.9 B,J	U	<5X Method Blank
GMEW-4R (6/26/03)D			
1,2,3,7,8,9-HxCDD	2.3 Q,B,J	U	<5X Method Blank
OCDD	4.4 B,J	U	<5X Method Blank
1,2,3,4,6,7,8-HpCDF	1.4 Q,J	U	Failed ion abundance criteria
OCDF	2.2 Q,B,J	U	<5X Method Blank

Attachment A

STL SAVANNAH

Client Sample ID: GMBW-1(6/26/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-001 Work Order #...: FRDPT1AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188208 Analysis Time..: 02:23
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.5	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	2.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.5	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.8	pg/L	EPA-5 1613B
OCDD	7.7 B,J,M	2.0	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.8	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.6	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.9	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.0	pg/L	EPA-5 1613B
OCDF	4.5 Q,B,J,M	2.0	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	(20 - 175)
13C-1,2,3,7,8-PeCDD	89	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	83	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	77	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	94	(26 - 166)
13C-OCDD	88	(13 - 199)
13C-2,3,7,8-TCDF	83	(22 - 152)
13C-1,2,3,7,8-PeCDF	79	(21 - 192)
13C-2,3,4,7,8-PeCDF	89	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	84	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	78	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	81	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	88	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	86	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	95	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	116	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: GMEW-1(6/26/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-001 Work Order #...: FRDPT1AA Matrix.....: WATER

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

STL SAVANNAH

Client Sample ID: GMEW-2(6/26/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-002 Work Order #...: FRDPX1AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188208 Analysis Time..: 03:26
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	2.1	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.5	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.1	pg/L	EPA-5 1613B
OCDD	9.0 B,J,μ	2.3	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.4	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.7	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.5	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.7	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.8	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.8	pg/L	EPA-5 1613B
OCDF	5.5 B,J,μ	2.6	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	(20 - 175)
13C-1,2,3,7,8-PeCDD	76	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	73	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	65	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	83	(26 - 166)
13C-OCDD	77	(13 - 199)
13C-2,3,7,8-TCDF	71	(22 - 152)
13C-1,2,3,7,8-PeCDF	68	(21 - 192)
13C-2,3,4,7,8-PeCDF	75	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	73	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	68	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	70	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	75	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	75	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	84	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	104	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: GMEW-3(6/26/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-003 Work Order #...: FRDP11AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188208 Analysis Time..: 04:29
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.9	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	7.9 B,J,u	1.6	pg/L	EPA-5 1613B
OCDD	ND	1.9	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	1.9	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.0	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.2	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.7	pg/L	EPA-5 1613B
OCDF	ND	2.0	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	88	(20 - 175)
13C-1,2,3,7,8-PeCDD	88	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	92	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	81	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	88	(26 - 166)
13C-OCDD	70	(13 - 199)
13C-2,3,7,8-TCDF	82	(22 - 152)
13C-1,2,3,7,8-PeCDF	76	(21 - 192)
13C-2,3,4,7,8-PeCDF	86	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	88	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	81	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	83	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	86	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	83	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	91	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	103	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: GMEW-4R(6/26/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-004 Work Order #...: FRDP31AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188208 Analysis Time..: 05:32
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	2.0	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	4.7 Q,B,J,M	2.1	pg/L	EPA-5 1613B
OCDD	ND	2.5	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	1.9	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.5	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.5	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.7	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.8	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.8	pg/L	EPA-5 1613B
OCDF	ND	2.4	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	94	(20 - 175)
13C-1,2,3,7,8-PeCDD	95	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	94	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	85	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	92	(26 - 166)
13C-OCDD	80	(13 - 199)
13C-2,3,7,8-TCDF	86	(22 - 152)
13C-1,2,3,7,8-PeCDF	83	(21 - 192)
13C-2,3,4,7,8-PeCDF	93	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	91	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	84	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	88	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	92	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	86	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	96	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	112	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: GMEW-4R(6/26/03)T

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-004 Work Order #...: FRDP31AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC).

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: GMEW-1(6/26/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-005 Work Order #...: FRDP51AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188208 Analysis Time..: 14:26
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.3	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	2.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	2.4	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	5.7 B,J,ML	2.4	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	3.3 B,J,ML	2.3	pg/L	EPA-5 1613B
OCDD	5.4 Q,B,J,ML	2.0	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.2	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.6	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.5	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.8	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.0	pg/L	EPA-5 1613B
OCDF	6.5 B,J,ML	2.6	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	(20 - 175)
13C-1,2,3,7,8-PeCDD	78	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	75	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	66	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	83	(26 - 166)
13C-OCDD	73	(13 - 199)
13C-2,3,7,8-TCDF	71	(22 - 152)
13C-1,2,3,7,8-PeCDF	68	(21 - 192)
13C-2,3,4,7,8-PeCDF	76	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	74	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	68	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	71	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	75	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	76	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	82	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	99	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: GMEW-1(6/26/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3F270257-005 Work Order #...: FRDP51AA Matrix.....: WATER

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

STL SAVANNAH

Client Sample ID: GMEW-2(6/26/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-006 Work Order #...: FRDQD1AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188208 Analysis Time..: 15:29
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.7	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.4	pg/L	EPA-5 1613B
OCDD	5.0 B,J,ll	1.6	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	1.8	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.1	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.93	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.1	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	2.1 B,J,ll	1.2	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.4	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.2	pg/L	EPA-5 1613B
OCDF	4.6 B,J,ll	1.8	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	76	(20 - 175)
13C-1,2,3,7,8-PeCDD	77	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	74	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	67	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	83	(26 - 166)
13C-OCDD	78	(13 - 199)
13C-2,3,7,8-TCDF	69	(22 - 152)
13C-1,2,3,7,8-PeCDF	68	(21 - 192)
13C-2,3,4,7,8-PeCDF	76	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	74	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	67	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	72	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	75	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	76	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	87	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	101	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: GMEW-3(6/26/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-007 Work Order #...: FRDQF1AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188208 Analysis Time..: 16:32
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.1	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.8	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	2.2	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	2.4	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	ND	2.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	2.0	pg/L	EPA-5 1613B
OCDD	7.9 B,J, ll	1.7	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.0	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.4	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.2	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.3	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.3	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.6	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.7	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.9	pg/L	EPA-5 1613B
OCDF	ND	2.2	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	(20 - 175)
13C-1,2,3,7,8-PeCDD	89	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	86	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	76	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	90	(26 - 166)
13C-OCDD	81	(13 - 199)
13C-2,3,7,8-TCDF	81	(22 - 152)
13C-1,2,3,7,8-PeCDF	77	(21 - 192)
13C-2,3,4,7,8-PeCDF	86	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	84	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	78	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	78	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	85	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	84	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	91	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	105	(31 - 191)

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

STL SAVANNAH

Client Sample ID: GMEW-4R(6/26/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-008 Work Order #...: FRDQJ1AA Matrix.....: WATER
Date Sampled...: 06/26/03 Date Received..: 06/27/03
Prep Date.....: 07/07/03 Analysis Date..: 07/15/03
Prep Batch #...: 3188205 Analysis Time..: 17:36
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	1.5	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	1.3	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	2.3 Q,B,J,ll	1.2	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	ND	1.2	pg/L	EPA-5 1613B
OCDD	4.4 B,J,ll	1.1	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	1.5	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	1.0	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	0.80	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	0.86	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	0.88	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	1.1	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	1.4 Q,J,ll	0.92	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	1.0	pg/L	EPA-5 1613B
OCDF	2.2 Q,B,J,ll	1.1	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	87	(20 - 175)
13C-1,2,3,7,8-PeCDD	88	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	84	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	74	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	93	(26 - 166)
13C-OCDD	92	(13 - 199)
13C-2,3,7,8-TCDF	78	(22 - 152)
13C-1,2,3,7,8-PeCDF	77	(21 - 192)
13C-2,3,4,7,8-PeCDF	88	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	80	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	75	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	80	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	86	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	83	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	96	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	101	(31 - 191)

(Continued on next page)

STL SAVANNAH

Client Sample ID: GMEW-4R(6/26/03)D

Trace Level Organic Compounds

Lot-Sample #...: H3F270267-008 Work Order #...: FRDQJ1AA Matrix.....: WATER

NOTE(S):

Q Estimated maximum possible concentration (EMPC)

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated result. Result is less than the reporting limit.

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3P270267 Work Order #...: FRR911AA Matrix.....: WATER
MB Lot-Sample #: H3G070000-208

Prep Date.....: 07/07/03 Analysis Time..: 01:20
Analysis Date..: 07/15/03 Prep Batch #...: 3188208
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	2.7	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDD	ND	2.5	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDD	ND	3.0	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDD	ND	3.1	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDD	5.8 J	2.9	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDD	3.4 J	2.2	pg/L	EPA-5 1613B
OCDD	9.3 Q,J	2.4	pg/L	EPA-5 1613B
2,3,7,8-TCDF	ND	2.6	pg/L	EPA-5 1613B
1,2,3,7,8-PeCDF	ND	2.0	pg/L	EPA-5 1613B
2,3,4,7,8-PeCDF	ND	1.6	pg/L	EPA-5 1613B
1,2,3,4,7,8-HxCDF	ND	1.8	pg/L	EPA-5 1613B
1,2,3,6,7,8-HxCDF	ND	1.9	pg/L	EPA-5 1613B
2,3,4,6,7,8-HxCDF	2.9 J	2.0	pg/L	EPA-5 1613B
1,2,3,7,8,9-HxCDF	ND	2.3	pg/L	EPA-5 1613B
1,2,3,4,6,7,8-HpCDF	ND	2.1	pg/L	EPA-5 1613B
1,2,3,4,7,8,9-HpCDF	ND	2.3	pg/L	EPA-5 1613B
OCDF	8.4 J	2.3	pg/L	EPA-5 1613B

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	(20 - 175)
13C-1,2,3,7,8-PeCDD	88	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	89	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	81	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	97	(26 - 166)
13C-OCDD	95	(13 - 199)
13C-2,3,7,8-TCDF	86	(22 - 152)
13C-1,2,3,7,8-PeCDF	79	(21 - 192)
13C-2,3,4,7,8-PeCDF	88	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	87	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	82	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	85	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	92	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	86	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	98	(20 - 186)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	104	(31 - 191)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

(Continued on next page)

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: H3F270267 Work Order #...: FRR911AA Matrix.....: WATER

NOTE(S):

J Estimated result. Result is less than the reporting limit.

Q Estimated maximum possible concentration (EMPC).

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
UPPER PENINSULA DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

November 5, 2003

COPY

Mr. Gary Lessard
Iron Mountain-Kingsford WWTP
P.O. Box 88
Kingsford, MI 49802

Dear Mr. Lessard:

We have reviewed the dioxin and furan (dioxin) characterization reports provided by Arcadis on behalf of the Iron Mountain/Kingsford WWTP (IMK) and Ford/Kingsford (F/K) on May 29, 2003, and June 2, 2003, respectively. These data were reported as non-detect (ND) for all monitored dioxin congeners. Coupled with data from March 29, 2002, samples that report dioxin at levels of concern, the existing database does not clearly indicate that dioxins are not a chemical of concern at F/K and IMK.

Dioxin sampling and headworks analysis requirements were outlined in Ms. Kristen Mariuzza's letter of October 15, 2002. Dioxin treatability via headworks analysis at IMK WWTP, while accepting Phase II, was not possible due to dioxin being reported as ND in the recent submittals. For that reason, the DEQ will allow IMK WWTP and F/K to proceed to Phase III or remain at Phase II with the sampling stipulations and response/notification actions as described in the attached memo from Mr. Bruce Walker, DEQ Surface Water Quality Assessment Section (SWQAS). This monitoring program shall be initiated within 90 days of the receipt of this letter unless:

1) Demonstration, via a robust sampling program, is conducted according to a DEQ approved plan, that F/K site groundwaters and effluent do not contain unacceptable levels of dioxin, or;
2) The IMK WWTP notifies the Water Division Supervisor of the Upper Peninsula District in writing that the IMK no longer accepts the F/K site waters/effluent.

The IMK WWTP's National Pollutant Discharge Elimination System (NPDES) permit will be processed in the coming year and is scheduled to be issued by September 30, 2004. All existing and future dioxin data from IMK WWTP and F/K site sampling will be used in the NPDES permit renewal review. Inclusion of NPDES monitoring conditions is, at a minimum, to be expected if dioxin is detected in the IMK WWTP or F/K flows. If unacceptable levels of dioxin are present in the IMK effluent, dioxin limitations, monitoring conditions, and pollutant minimization plan requirements will be included in the next permit.

The conditional approval of Phase III flows is based upon the proposal described in an Arcadis document dated December 13, 2001, submitted to Water Division. If Phase III plans have changed, the DEQ would need Arcadis to submit a new proposal.

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In summary, within 90 days of receiving this letter, dioxin monitoring and reporting is required if IMK accepts Phase III F/K waters or continues to accept F/K Phase II waters. These monitoring conditions will not be required if DEQ is informed that F/K flows to IMK are terminated or if a robust, DEQ approved sampling program demonstrates F/K site waters and effluent flows do not contain unacceptable levels of dioxin.

Thank you for your continued cooperation. Please contact me with any questions, concerns or comments.

Sincerely,

Benjamin R. Thierry

Ben Thierry
Upper Peninsula District Office
Water Division
906-346-8528

cc: Steven Casey, UP District Supervisor, WD, UP MDEQ
Gerald Saalfeld, Chief, North Unit, SWQAS, WD, MDEQ
Bruce Walker, SWQAS, WD, MDEQ
Clifton Clark, UP District Supervisor, RRD, UP MDEQ
Chris Austin, RRD, UP MDEQ
Jim Bedessem, Arcadis
Iron Mountain/Kingsford Joint Sewage Board
David Miller, Ford Motor Company
Dave Musgrove, The Kingsford Products Company
Ric Studebaker, Arcadis G&M
IMK WWTP File

MICHIGAN D 'ARTMENT OF ENVIRONMI TAL QUALITY

INTEROFFICE COMMUNICATION

November 5, 2003

FILE COPY

TO: Ben Thierry, MDEQ, UP District

FROM: Bruce Walker, MEDQ, SWQAS, Lansing

SUBJECT: Iron Mountain/Kingsford WWTP and Ford/Kingsford Pilot Dioxin Characterization

We have reviewed the dioxin and furan (dioxin) characterization reports provided by Arcadis on behalf of the Iron Mountain/Kingsford WWTP (IMK) and Ford/Kingsford (F/K) on May 29 and June 2, 2003. The submittal dated May 29, 2003 included dioxin data for three IMK effluent composite samples collected during the period January to March, 2003. The submittal dated June 2, 2003 included dioxin data for three F/K Phase II effluent grab samples collected during the period January to March, 2003.

These data were provided in response to Kristen Mariuzza's October 15, 2002 letter to the IMK. That letter outlined the required headworks analysis associated with Phase II flows from the F/K pilot site to the IMK. The basis for generating these limited datasets was to provide a preliminary dioxin characterization of the IMK effluent while receiving F/K Phase II effluent, to hopefully provide data that would allow an IMK headworks and treatability analyses for dioxin, to provide additional data on potential F/K Phase II effluent dioxin discharges, and to provide information relative to potential IMK dioxin discharges under F/K Phase III conditions.

In the noted May and June 2003 submittals, the three IMK effluent samples only had the octa-substituted congeners reported as detected, which were also detected in the blanks, and the three F/K Phase II site effluent samples were reported as non-detect (ND) for all monitored congeners. Because of the ND results, the required Phase II headworks and treatability analysis was not possible. Water Division (WD) recognizes that the specified effort was made and, therefore, we suggest suspending the previous Phase II headworks analysis requirement until additional sampling and analysis are completed.

To gain the best overview of the potential dioxin related issues at the IMK, the data included in the May 29, 2003 and June 2, 2003 submittals were reviewed as well as the other dioxin data available for the IMK and the F/K site.

The larger F/K site Phase II dataset contained in the March 29, 2002 submittal indicated the presence of detectable dioxin congeners at levels of concern in a number of the well and site effluent samples. Some of the data in this submittal may reflect the apparently

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viable pumping conditi[illegible]s at the F/K site. This 2002 dataset superficially may appear to show a different picture than that presented by the smaller 2003 datasets noted above but it is worth pointing out that some of the samples in the March 29, 2002 submittal were also reported as ND. The WD is of the opinion that the information in this larger dataset indicates the potential presence of dioxin at levels of concern in the F/K site groundwaters and effluents and, therefore, potentially at the IMK.

To address some questions raised about the data contained in these submittals, the DEQ Remediation and Redevelopment Division (RRD) had an outside review conducted on the data contained in the March 29, 2002, the May 30, 2003, and the June 2, 2003 submittals. The 2003 samples were analyzed by a different laboratory than that used for the prior samples. The review noted that some samples had detections for some congeners in the associated blanks, but concluded that the data packages in these submittals were of acceptable quality and the data from both laboratories were usable given the appropriate qualifications. This finding lends support to WD's interpretation of the existing dioxin database for the F/K site.

Additionally, during our review of the data in the June 2, 2003 submittal, we noted that the third bullet on page 2 of the submittal's cover letter discusses the issue of congener detections in blank samples. This bullet basically states that the F/K Phase II site effluent samples in the March 2002 submittal had more congener detections in the associated blanks than did the 2003 samples and more of the reported sample congener detections were therefore actually ND. The bullet then suggests that the 2003 data are therefore more accurate. It is not clear to us how the stated (22.5%) percent blank detection (and the "corrected' congener result of ND) calculation was done for the March 2002 submittal data. Our review of the March 2002 submittal dataset indicates that very few (< 5%) of the dioxin congeners reported as detected in either the F/K Phase II site effluent or groundwater samples had the same congener reported as detected in the associated blank.

Another set of F/K site dioxin groundwater data from May 2000 was also available for this review. These data, apparently the first groundwater dioxin sampling to occur at the F/K site, also included the reporting of some detected dioxin congeners at levels of concern.

Overall, our above review of the small, currently available IMK effluent dioxin data does not indicate the presence of detectable levels of dioxin in the IMK effluent under the site conditions present at the time of sampling. We wish to point out that theoretical IMK effluent limitations for dioxin are below current standard sampling and analytical methods. These limited effluent data suggest there is not a need to immediately modify the IMK permit. Therefore, we suggest that WD conditionally approve the IMK request to accept Phase III effluent from the F/K site (as described in a December 13, 2001, document submitted to WD by Arcadis).

The suggested WD approval for IMK to accept Phase III F/K site effluents is contingent upon IMK satisfying the monitoring requirements that are listed below. These monitoring conditions are necessary because the larger body of data reviewed indicate the potential for the presence of some dioxin congeners at levels of concern in the F/K site groundwaters and in the effluents that is generated as part of the pilot project which is pumping and treating a small portion of the extensive chemical plume at this site. Acceptance of these contaminated F/K site groundwaters or effluents as an IMK influent

stream creates a cond' n where dioxin potentially could be sent in the IMK effluent. This indicates that, during Phase III, there is a need to continue dioxin monitoring at IMK and to continue the tracking of dioxin at the F/K site. These monitoring requirements shall be accomplished via EPA Method 1613 for the 17 dioxin congeners currently assessed. As used below, the term "routine monitoring" means a sampling frequency of twice per month for water samples and once per month for sludge samples. Collection of the water samples (well, influent, and effluents) for this routine monitoring will be coordinated between the F/K and IMK sampling locations such that the temporal sequence of sample collection reflects the flow pattern and detention times present in these two systems (i.e. wells first and IMK effluent last).

IMK Dioxin Monitoring Requirements

A. Dioxin sampling at the IMK Facility.
   1) Routine monitoring via composite samples of both the combined IMK influent and the final effluent. Effluent sample collections shall be temporally spaced from the influent sample collections to account for detention times such that the effluent samples correspond to the associated influent samples.
   2) Routine monitoring of dewatered primary clarifier sludge, including percent solids data for each sample.

B. Dioxin sampling at the F/K Site.
   3) Routine monitoring of appropriate (to be determined in concert with RRD staff) F/K site groundwater extraction and monitoring wells. All wells pumping to the F/K site shall be sampled such that these samples correspond to the effluent sample as described in 4) below.
   4) Routine monitoring of the effluent from the F/K site treatment facility. As with the IMK sampling, the collection of effluent samples shall be temporally spaced from that of the well samples to account for detention times such that the effluent samples correspond to the associated site influent (i.e. well) samples.
   5) Routine monitoring of the sludge generated by the F/K site treatment facility, including percent solids data for each sample.

C. Reporting.
   6) The results from these monitoring activities shall be reported via a monthly report to the Water Division Supervisor of the Upper Peninsula District. The report shall include the congener specific data, including detection level data and appropriate associated quality assurance data for the individual samples, and a summary of that month's data. The data summary also shall include information on trends over time in dioxin concentration in the matrices monitored. The report shall be submitted within 30 days of receipt of the analytical results for the last sample in each monthly sampling period.

   7) If monitoring results show the presence of dioxin in the F/K site wells or effluent at concentrations which exceed Michigan Water Quality Standards (WQS), a robust headworks and treatability analysis for dioxin must be conducted by the IMK and submitted to the Water Division Supervisor of the Upper Peninsula District after IMK is notified in writing of the need for such an analysis. If the monitoring reveals quantified levels of dioxin above the WQS in the IMK effluent, the IMK shall notify the Water Division Supervisor of the Upper Peninsula District of this finding and immediately terminate acceptance of the F/K site waters and/or effluent. The WQS for the 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (2, 3, 7,

8-TCDD) congener and the 2, 3, 7, 8-TCDD toxicity equivalency concentration (TEC) are 0.003 ppg and 0.0086 ppq, respectively. If the monitoring reveals the presence of detectable levels of dioxin in the IMK effluent, the Department reserves the right to require additional monitoring and/or source control actions as warranted. These actions may include termination of IMK acceptance of F/K flows and/or conducting a robust headworks and treatability analysis for dioxin.

D. Reductions in monitoring.

8) After 6 months of Phase III data have been generated and submitted, the IMK may request a reduction in the monitoring frequency for any of the specified matrices or locations. No reduction in the specified monitoring shall occur unless authorized in writing by the Water Division Supervisor of the Upper Peninsula District. Additionally, upon written notification by the Water Division Supervisor of the Upper Peninsula District, the IMK dioxin monitoring conditions may be expanded as warranted by the available data or as the conditions change at the F/K site.

This monitoring program shall be initiated within 90 days of IMK receiving this letter unless:

1) the IMK notifies the Water Division Supervisor of the Upper Peninsula District in writing that the IMK no longer accepts the F/K site waters/effluent or;
2 the IMK can demonstrate, via a robust sampling program conducted according to a DEQ approved plan, that the F/K site groundwaters and effluent do not contain unacceptable levels of dioxin.

The IMK should recognize that all existing and future dioxin data for the IMK and F/K site matrices may be used during the review of the current IMK NPDES permit renewal application. The IMK also should be aware that the presence of unacceptable levels of dioxin in the monitored IMK or F/K site matrices will, at a minimum, likely trigger inclusion of NPDES permit monitoring conditions similar to those described above as well as the potential inclusion of additional appropriate permit conditions which could include numerical dioxin limitations.

In summary, we suggest that the MDEQ approve the IMK request to accept F/K Phase III effluent contingent upon IMK satisfying the dioxin monitoring and reporting requirements that are listed above. These conditions also apply to IMK acceptance of the F/K site Phase II effluent.

cc: Gerald Saalfeld, SWQAS
Iron Mountain/Kingsford WWTP Facility File

COPY

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Date:
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Our ref:
WI001025.0032

Subject:
Summary of Analyses for Dioxins and Furans, Ford/Kingsford Site, Kingsford, Michigan.

Dear Messrs. Dell and Saalfeld:

ARCADIS is pleased to submit this document on behalf of Ford Motor Company (Ford) and The Kingsford Products Company (KPC) to provide a summary of polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans) analyses for the subject site previously submitted to the Michigan Department of Environmental Quality (MDEQ). This document is submitted in accordance with the action items established during our Wednesday, November 12, 2003 meeting to discuss the preliminary National Pollutant Discharge Elimination System (NPDES) permit application for the full-scale groundwater treatment system proposed for the subject site. Historical monitoring data for dioxins/furans is presented from the following sample locations:

- Groundwater extraction wells located along the Menominee River at the subject site.
- Influent and effluent of the groundwater pretreatment system located at 2241 West Breitung Avenue in Kingsford, Michigan.
- Influent, effluent, and digester sludge from the Iron Mountain/Kingsford Wastewater Treatment Plant.

Sample collection during each monitoring event was completed in accordance with the sampling methods approved by MDEQ approved sampling methodologies.

In addition to the previously submitted data, this document provides data from the sampling conducted at Groundwater Monitoring Wells GM-5, GM-25C, GM-26C, GM-63A, and GM-66A on September 15, 2003. These data, recently validated, are presented herein for the first time (without the validation reports). ARCADIS will submit the September 2003 data with validation reports under separate cover. Analytical results are summarized in Tables 1 through 10.

Analytical Methodology

The samples summarized in the attached tables were submitted for analysis of dioxins and furans using one of two United States Environmental Protection Agency (U.S. EPA) analytical methods, summarized as follows:

- U.S. EPA Method 8290 Rev. 0 *"Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS)"* (September 1994).

- U.S. EPA Method 1613, Revision B *"Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS"* (October 1994).

All samples collected prior to calendar year 2003 were submitted to Triangle Laboratories, Inc. (Triangle), Durham, North Carolina and all analyses were conducted using U.S. EPA Method 8290. All subsequent samples were submitted to Severn Trent Laboratories, Inc. (STL), Knoxville, Tennessee and all analyses were conducted using U.S. EPA Method 1613B.

As indicated in the method titles, each method uses HRGC/HRMS. Each method is capable of detection and quantitative measurement of dioxins and furans at parts-per-trillion and parts-per-quadrillion concentrations. In addition, each method utilizes similar quality control criteria to identify a signal response (gas chromatographic peak) as a dioxin or furan congener. These quality control criteria were established to minimize the potential for misinterpretation of a peak yielded by matrix interference(s) to be a dioxin/furan congener. Matrix interferences may originate from laboratory contamination since solvents, reagents, glassware, and other sample processing hardware may yield artifacts and/or elevated baselines causing misinterpretation of chromatograms. Further, low level peaks that are close to the instrument detection limits can be significantly affected by instrument and chemical noise, and thus can lead to misinterpretation of chromatograms. The following table

provides the identification criteria and section where the identification criteria are presented for each of the methods. Both methods state that all of the listed criteria must be met for a signal response to be identified as a dioxin or furan congener.

Identification Criteria	U.S. EPA Method 8290	U.S. EPA Method 1613B
Retention Time	Sec. 7.8.4.1.1 through 7.8.4.1.3	Sec. 16.4
Mass-to-Charge Ratio	Sec. 7.8.4.1.4 through 7.8.4.1.5	Sec. 16.1
Ion Abundance Ratio	Sec. 7.8.4.2.1	Sec. 16.3
Signal-to-Noise Ratio	Sec. 7.8.4.3.1	Sec. 16.2
Polychlorinated diphenyl ether interferences	Sec. 7.8.4.4.1	---
Confirmatory analysis for 2,3,7,8-TCDD	---	Sec. 16.5

As indicated above, the methods have similar identification criteria. However, the major differences between the two methods are summarized below:

- The methods have different reporting requirements for a signal response (or peak) that does not meet all the identification criteria. U.S. EPA Method 8290 specifies that the peaks that meet the retention time criteria and signal-to-noise criteria be reported as an Estimated Maximum Possible Concentration (EMPC) value and flagged as such (Sec. 7.9.5.2.1). U.S. EPA Method 1613B specifies that values below the minimum level be reported as not detected or as required by the regulatory authority (Sec. 17.6.1.4.1).

- U.S. EPA Method 1613B specifies that if all the identification criteria are not met, the dioxin or furan congener has not been identified and the results may not be reported for regulatory compliance purposes (Sec. 16.6).

- U.S. EPA Method 1613B is approved under section 304(h) of the Clean Water Act for analysis of dioxins/furans, whereas U.S. EPA Method 8290 is not since it is a solid waste methodology. It should be noted that U.S. EPA Method 613, which is much less sensitive than U.S. EPA Methods 8290 and 1613B, is the only method currently approved under Part 31 of the Natural Resource and Environmental Protection Act (NREPA) for analysis of dioxins/furans. Michigan's proposed Part 31 rules would substitute U.S. EPA Method 1613B for U.S. EPA Method 613. U.S. Method 8290 is not the specified method.

- Pursuant to U.S. EPA's Fact Sheet, Method 1613B's use of isotope dilution techniques, internal standard calibration, and the 1600 series method quality control protocol, results in improved sensitivity, precision, and accuracy (http://www.epa.gov/waterscience/methods/1613.html).

The first point illustrates an important distinction between the two methods. U.S. EPA Method 8290, by reporting questionable peaks as an EMPC, creates ambiguity that can lead to misinterpretation of the data. From a technical perspective, reporting values from questionable peaks as an EMPC or as an elevated detection limit are equivalent (e.g., the intended chemistry behind each method is that dioxins/furans were not identified by the method, but could potentially be present below the level of the interferant). However, to persons without a background in analytical chemistry, a flagged EMPC can easily and erroneously be interpreted to mean that dioxins/furans are present in the sample since the data is reported as a discrete concentration and laboratory flags are not easy to find or understand for the uninitiated. U.S. EPA Method 1613B unambiguously states that these data cannot be used for regulatory compliance purposes.

The remaining points listed above further indicate that U.S. EPA Method 1613B for analysis of dioxins/furans in samples collected from groundwater along the Menominee River, pretreatment system influent/effluent, and IM/K WWTP influent/effluent provide the most valid data for use in MDEQ's evaluations relative to their NPDES program (ignoring the fact, for the moment, that Method 613 is the current Part 31 method).

Data Validation

As discussed in previous submittals to the MDEQ, ARCADIS does not consider the data generated by Triangle to be representative of Site conditions for the following reasons:

- Abundant matrix interferences (e.g., instrument signal noise, laboratory contaminants, etc.) for nearly all dioxin and furan congeners are present in the laboratory method blanks

- U.S. EPA Method 8290 is not approved for analyses of dioxins/furans under the Clean Water Act (CWA) or Part 31 of NREPA.

- At least one sample failed to meet quality control criteria and had to be rejected as invalid.

- Internal standard recoveries were routinely at the lower end of the acceptable range specified in the method.

- U.S. EPA Method 8290 specifies that for a gas chromatographic peak to be identified as a dioxin or furan, it must meet all of the identification criteria (Sec. 7.8.4).

It is the professional opinion of ARCADIS' data validation experts that Triangle's matrix interferences are more prevalent than what is typically encountered or acceptable for the evaluation of an analyte at concentrations between the practical quantitation limit (concentration of the lowest standard) and the method detection limit of the instrument. As a result, the Triangle data is suspect. Therefore, the switch to STL was implemented during calendar year 2003 (STL is qualified to perform analysis of dioxins/furans using U.S. EPA Method 1613B). STL has demonstrated excellent quality control with fewer instances of matrix interferences. The results of the dioxin and furan analyses by STL indicate that there are no detectable concentration of dioxins or furans in the Phase II Groundwater Pretreatment System effluent, in the groundwater pumped from the extraction wells, or in the five groundwater monitoring wells included in the September 2003 sampling program. Based on the STL data, all toxicity equivalence concentrations results have been zero and detection limits are well below U.S. EPA and MDEQ Target Detection Limits, Quantification Limits, and Minimum Levels.

Conclusions

In summary:

- It is ARCADIS' opinion that data generated by Triangle are not representative of site conditions due to quality control problems including abundant matrix interferences and at least on rejected data set. In addition, all Triangle data were generated using U.S. EPA Method 8290.

- Data generated by STL exhibits excellent quality control with fewer instances of matrix interferences. Further STL conducted their analyses of dioxins/furans using U.S. EPA Method 1613B, thus the data is in compliance with the analytical requirements of the CWA

- U.S. EPA Method 8290 is not approved under the CWA, Part 31 of the NREPA, or the proposed Part 31 rules.

For the reasons described above, ARCADIS recommends that all data generated using U.S. EPA Method 8290 be excluded from consideration by the MDEQ. The Triangle data are not valid for any further determinations by the MDEQ relative to monitoring requirements or discharge limitations in NPDES permits reissued to the IM/K WWTP or issued for the proposed full-scale groundwater treatment system. ARCADIS recommends that any additional sampling and analysis program include submission of samples to STL and Alta Analytical using U.S. EPA Method 1613B.

Closing

We appreciate MDEQ's cooperation on this issue. If you have any questions regarding this submittal or require any further information, please contact either of the undersigned.

Sincerely,

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Table 1. Summary of all Dixoin Samples Collected, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date	Laboratory	TEC_{dioxin}	TEC_{furan}	TEC_{total}	Criteria
Groundwater Samples – Table 2						
GM-2B	05/05/00	Triangle	0.0028	0.35	0.35	---
GM-5	05/03/00	Triangle	0.0018	0.61	0.61	---
GM-15	05/03/00	Triangle	0	0	0	---
GM-25-B	05/02/00	Triangle	0	0	0	---
GM-26-A	05/02/00	Triangle	0	0	0	---
GM-26-C	05/02/00	Triangle	0	0.015	0.015	---
GM-SG-5	05/03/00	Triangle	0.0033	0.40	0.40	---
GWGM-25C	08/02/00	Triangle	0.000033	0	0.000033	---
GWGM-27C	08/07/00	Triangle	0	0	0	---
GWGM-63A	08/29/00	Triangle	3.9	3.7	7.6	---
GWGM-64A	08/30/00	Triangle	0.0012	0.00038	0.0016	---
GWGM-66B	08/03/00	Triangle	0.000043	0.012	0.012	---
GWGM-67	08/07/00	Triangle	0	0.14	0.14	---
GWGM-68	08/31/00	Triangle	0.94	0.001288	0.94	---
GWGM-70	08/17/00	Triangle	0.087	0.041	0.13	---
GWGM-71	08/21/00	Triangle	2.4	4.1	6.5	---
GWGM-72	08/22/00	Triangle	0	0.41	0.41	---
GWGM-73	09/06/00	Triangle	3	2.9	5.9	---
GWGM-74	09/07/00	Triangle	0	0	0	---
GWGM-75	09/08/00	Triangle	0	0	0	---
GWGMEW-3	07/24/00	Triangle	1.1	0.22	1.3	---
GWGM-6	07/19/00	Triangle	0	0	0	---
GWGM-26B	07/19/00	Triangle	0	0	0	---
GWGM-27B	07/19/00	Triangle	0	0	0	---
GWGM-64B	07/24/00	Triangle	0	0	0	---
GWGM-68	09/26/00	Triangle	0.000362	0.33	0.33	---
GWGM-63A	09/19/00	Triangle	0.0078	0.033	0.041	---
GWGM-64A	10/03/00	Triangle	0	0	0	---
GWGM-28A	07/19/00	Triangle	0	0	0	---
GWGM-66A	07/18/00	Triangle	0.0013	0	0.0013	---
GWGM-66B	07/19/00	Triangle	0	0	0	---
GWGM-63B	02/07/01	Triangle	0	0	0	---
AGM-GSI-1	07/23/01	Triangle	0	0	0	---
AGM-Seep 2	07/25/01	Triangle	0	0.000408	0.00041	---
Groundwater Samples – Table 3						
GM-5	09/17/03	STL	0	0	0	---
GM-5 (filtered)	09/17/03	STL	0	0	0	---
GM-25C	09/15/03	STL	0	0	0	---
GM-25C (filtered)	09/15/03	STL	0	0	0	---
GM-26C	09/16/03	STL	0	0	0	---
GM-26C (filtered)	09/16/03	STL	0	0	0	---
GM-63A	09/15/03	STL	0	0	0	---
GM-63A (filtered)	09/15/03	STL	0	0	0	---
GM-66A	09/16/03	STL	0	0	0	---
GM-66A (filtered)	09/16/03	STL	0	0	0	---

Footnotes on Page 3.

Table 1. Summary of all Dixoin Samples Collected, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date	Laboratory	TEC_{dioxin}	TEC_{furan}	TEC_{total}	Criteria
Phase I and II, Influent Samples – Table 4						
Ph 1 Inf	6/12/2001	Triangle	0	0	0	---
Ph I-Inf-EW1	8/15/2001	Triangle	0.000178	0	0.000178	---
GMEW-1	11/05/2001	Triangle	0	0.13	0.13	---
GMEW-2	11/05/2001	Triangle	2.436	0.2	2.6	---
GMEW-3	11/05/2001	Triangle	0.042	2.77	2.8	---
GMEW-1	12/03/2001	Triangle	1.4	0.142	1.5	---
GMEW-2	12/03/2001	Triangle	0	0	0	---
GMEW-3	12/03/2001	Triangle	0	0	0	---
GMEW-1	12/05/2001	Triangle	0	0	0	---
GMEW-2	12/05/2001	Triangle	0	0.00008	0.00008	---
GMEW-3	12/05/2001	Triangle	0	0.12	0.12	---
GMEW-1	12/12/2001	Triangle	0	0	0	---
GMEW-2	12/12/2001	Triangle	0	0	0	---
GMEW-3	12/12/2001	Triangle	0.000070	0.13	0.13	---
GMEW-1	12/19/2001	Triangle	0.000080	0.16	0.16	---
GMEW-2	12/19/2001	Triangle	0.199	6.3	6.5	---
GMEW-3	12/19/2001	Triangle	0.000247	0	0.000247	---
Phase I and II, Influent Samples – Table 5						
GMEW-1 (6/26/03)T	6/26/2003	STL	0	0	0	---
GMEW-1 (6/26/03)D	6/26/2003	STL	0	0	0	---
GMEW-2 (6/26/03)T	6/26/2003	STL	0	0	0	---
GMEW-2 (6/26/03)D	6/26/2003	STL	0	0	0	---
GMEW-3 (6/26/03)T	6/26/2003	STL	0	0	0	---
GMEW-3 (6/26/03)D	6/26/2003	STL	0	0	0	---
GMEW-4R (6/26/03)T	6/26/2003	STL	0	0	0	---
GMEW-4R (6/26/03)D	6/26/2003	STL	0	0	0	---
Phase I and II, Effluent Samples – Table 6						
Ph 1 Eff	5/03/2001	Triangle	0.000332	0	0.000332	10[1]
Ph 1 Eff	5/08/2001	Triangle	0.000019	0	0.000019	10[1]
Ph 1 Eff	5/17/2001	Triangle	0	0	0	10[1]
Ph 1 Eff	6/12/2001	Triangle	0	0	0	10[1]
Ph 1 Eff	7/12/2001	Triangle	0	0	0	10[1]
Ph I-Eff-EW1	8/15/2001	Triangle	0	0	0	10[1]
Ph II Eff	9/06/2001	Triangle	1.7	0.40	2.1	10[1]
Ph II Eff	9/17/2001	Triangle	0	0	0	10[1]
Ph II Eff	10/11/2001	Triangle	8.8	0	8.8	10[1]
Ph II Eff	11/05/2001	Triangle	1.3	0	1.3	10[1]
Ph II Eff	11/29/2001	Triangle	0	0	0	10[1]
Ph II Eff	12/04/2001	Triangle	2.5	0.23	2.7	10[1]
Ph II Eff	12/06/2001	Triangle	0	0	0	10[1]
Ph II Eff	12/13/2001	Triangle	0	0	0	10[1]
Ph II Eff	12/20/2001	Triangle	0	0	0	10[1]
Ph II Eff	12/27/2001	Triangle	0	0	0	10[1]
Ph II Eff	1/10/2002	Triangle	3.6	2	5.6	10[1]

Table 1. Summary of all Dixoin Samples Collected, Ford/Kingsford Site, Kingsford, Michigan.

Sample ID	Sample Date	Laboratory	TEC_{dioxin}	TEC_{furan}	TEC_{total}	Criteria
Footnotes on Page 3.						
Phase I and II, Effluent Samples – Table 7						
PhII EFF (1/22/03)T	1/22/2003	STL	0	0	0	10(1)
PhII EFF (1/22/03)D	1/22/2003	STL	0	0	0	10(1)
PhII EFF (2/13/03)T	2/13/2003	STL	0	0	0	10(1)
PhII EFF (2/13/03)D	2/13/2003	STL	0	0	0	10(1)
PhII EFF (3/4/03)T	3/04/2003	STL	0	0	0	10(1)
PhII EFF (3/4/03)D	3/04/2003	STL	0	0	0	10(1)
WWTP, Influent Samples – Table 8						
WWTP-Influent	4/04/2001	Triangle	0.0175	0	0.0175	---
WWTP, Digester Samples – Table 9						
WWTP-Digester 1&2	4/10/2001	Triangle	310	247	557	990,000
WWTP Digester	11/08/2001	Triangle	237	194	431	990,000
WWTP Effluent Samples – Table 10						
WWTP EFF (1/22/03)T	1/22/2003	STL	0	0	0	10(1)
WWTP EFF (1/22/03)D	1/22/2003	STL	0	0	0	10(1)
WWTP EFF (2/13/03)T	2/13/2003	STL	0	0	0	10(1)
WWTP EFF (2/13/03)D	2/13/2003	STL	0	0	0	10(1)
WWTP EFF (3/4/03)T	3/04/2003	STL	0	0	0	10(1)
WWTP EFF (3/4/03)D	3/04/2003	STL	0	0	0	10(1)

All results reported as parts per quadrillion (picograms per liter)

D	Laboratory Filtered Sample
T	Unfiltered Sample
WWTP	Waste Water Treatment Plant
Triangle	Triangle Labs, Inc., Durham, North Carolina
STL	Severn Trent Laboratories, Inc., Knoxville, Tennessee
TEC_{dioxin}	Toxicity equivalence concentration of 2,3,7,8-TCDD for dioxins congeners.
TEC_{total}	Toxicity equivalence concentration of 2,3,7,8-TCDD for furans congeners.
TEC_{total}	Toxicity equivalence concentration of 2,3,7,8-TCDD for dioxins and furans congeners.

Notes:

(1) A concentration value of zero shall be used in the TEC calculation for any congener which is not present at or above its respective quantification level. The permittee shall report all analytical results that show the presence of any of the seventeen dioxin/furan congeners at levels that are at or above respective detection levels but less than the respective quantification levels.

Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GM-2B	05/05/00	*DL*	1.9	2.6	3.6	3.2	3.3	NA	NA	—
		Result	<1.9	<2.6	<3.6	<3.2	<3.3	4.9 J	26.5 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0025	0.000265	0.0028
METHOD BLANK Sample Set – 50978			ND	ND	ND	ND	ND	ND	ND	—
GM-5	05/03/00	*DL*	2.6	3.6	3.0	2.8	2.8	NA	NA	—
		Result	<2.6	<3.6	<3.0	<2.8	<2.8	3.6 E,J	<20.4 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0018	(ND)	0.0018
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	22.3 J	—
GM-15	05/03/00	*DL*	1.3	2.0	1.8	1.7	1.7	2.1	NA	—
		Result	<1.3	<2.0	<1.8	<1.7	<1.7	<2.1	<4.4 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	22.3 J	—
GM-25-B	05/02/00	*DL*	1.2	1.5	1.4	1.3	1.4	2.1	NA	—
		Result	<1.2	<1.5	<1.4	<1.3	<1.4	<2.1	<10.5 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 50957			3.3 J	ND	ND	ND	ND	4.1 J	6.2 J	—

Footnotes on Page 18.

Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GM-26-A	05/02/00	*DL*	1.0	1.2	1.1	1.0	1.1	1.5	2.3	—
		Result	<1.0	<1.2	<1.1	<1.0	<1.1	<1.5	<2.3	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			3.3	ND	ND	ND	ND	4.1 J	6.2 J	—
GM-26-C	05/02/00	*DL*	0.7	0.8	0.8	0.7	0.8	NA	NA	—
		Result	<0.7	<0.8	<0.8	<0.7	<0.8	<2.7 J,B,U	<6.1 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	(ND)	(ND)	0
METHOD BLANK Sample Set – 50957			3.3	ND	ND	ND	ND	4.1 J	6.2 J	—
GM-SG-5	05/03/00	*DL*	1.7	2.0	2.4	2.2	2.3	NA	NA	—
		Result	<1.7	<2.0	<2.4	<2.2	<2.3	6.6 J	<33.9 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0033	(ND)	0.0033
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	22.3 J	—
GWGM-25C	08/02/00	*DL*	1.2	1.5	1.7	1.7	1.7	2.7	NA	—
		Result	<1.2	<1.5	<1.7	<1.7	<1.7	<2.7	3.3 E,J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000033	0.000033
METHOD BLANK Sample Set – 51574			ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-27C	08/07/00	*DL*	3.9	4.0	4.4	4.3	4.3	7.2	11.8	—
		Result	<3.9	<4.0	<4.4	<4.3	<4.3	<7.2	<11.8	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	—
GWGM-63A	08/29/00	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	2.3 J	3.5 E,J	<4.2 J,B,U	4.0 J	<7.0 J,B,U	10.2 J	61.1 J,B	—
		QL	10	50	50	50	50	50	100	—
		TEC *	2.3	1.6	(ND)	0.040	(ND)	0.00510	0.000611	3.9
METHOD BLANK Sample Set – 51777			ND	ND	3.0 E,J	ND	3.1 E,J	ND	7.4 J	—
GWGM-64A	08/30/00	*DL*	1.1	1.2	1.5	1.4	1.5	NA	NA	—
		Result	<1.1	<1.2	<1.5	<1.4	<1.5	2.4 E,J	<4.1 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0012	(ND)	0.0012
METHOD BLANK Sample Set – 51796			ND	ND	ND	ND	ND	ND	37 J	—
GWGM-66B	08/03/00	*DL*	1.3	1.7	1.3	1.3	1.3	2.1	NA	—
		Result	<1.3	<1.7	<1.3	<1.3	<1.3	<2.1	4.3 E,J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000043	0.000043
METHOD BLANK Sample Set – 51582			ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GWGM-67	08/07/00	*DL*	2.4	2.5	2.8	2.7	2.7	4.9	8.4	—
		Result	<2.4	<2.5	<2.8	<2.7	<2.7	<4.9	<8.4	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	—
GWGM-68	08/31/00	*DL*	NA	4.6	5.2	4.9	5.2	NA	NA	—
		Result	0.93 E,J	<4.6	<5.2	<4.9	<5.2	22.7 E,J	242 E,B,J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	0.93	ND	ND	ND	ND	0.0114	0.00242	0.94
METHOD BLANK Sample Set – 51803			ND	ND	ND	ND	ND	ND	37 J	—
GWGM-70	08/17/00	*DL*	0.7	0.9	NA	NA	NA	NA	NA	—
		Result	<0.7	<0.9	1.7 E,J	1.4 E,J	2.1 J	2.1 E,J	<9.3 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	0.051	0.014	0.021	0.0011	(ND)	0.087
METHOD BLANK Sample Set – 51729			ND	ND	ND	ND	ND	ND	3.3 E,J	—
GWGM-71	08/21/00	*DL*	2.6	NA	NA	NA	NA	NA	NA	—
		Result	<2.6	4.8 EJ	3.3 EJ	4.2 J	5.9 J	<8.3 JB	<30.6 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	2.2	0.099	0.042	0.059	(ND)	(ND)	2.4
METHOD BLANK Sample Set – 51843			ND	ND	ND	ND	ND	6.3 J	26.1 J	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-72	08/22/00	*DL*	2.2	2.3	2.4	2.4	2.4	4.5	NA	—
		Result	<2.2	<2.3	<2.4	<2.4	<2.4	<4.5	<23.9 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51843			ND	ND	ND	ND	ND	6.3 J	26.1 J	—
GWGM-73	09/06/00	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	1.7 EJ	2.4 EJ	2.8 J	2.6 J	4.1 J	<4.8 JB	<10.1 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	1.7	1.1	0.084	0.026	0.041	(ND)	(ND)	3.0
METHOD BLANK Sample Set – 51839			ND	ND	ND	ND	ND	6.3 J	26.1 J	—
GWGM-74	09/07/00	*DL*	1.4	1.2	1.5	1.4	1.5	2.1	NA	—
		Result	<1.4	<1.2	<1.5	<1.4	<1.5	<2.1	<15.5 JB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51849			ND	ND	ND	ND	ND	ND	36.6 J	—
GWGM-75	09/08/00	*DL*	4.9	7.5	13.1	12.8	12.3	32.8	84.8	—
		Result	<4.9	<7.5	<13.1	<12.8	<12.3	<32.8	<84.8	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51856			ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGMEW-3	07/24/00	*DL*	1.2	NA	1.4	1.4	NA	NA	NA	—
		Result	<1.2	2.5 E,J	<1.4	<1.4	4.4 J	5.6 E,J	<36.8 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	1.1	ND	ND	0.044	0.0028	(ND)	1.1
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	7.7 J	—
GWGM-6	07/19/00	*DL*	2.0	1.7	2.0	2.0	1.9	2.6	NA	—
		Result	<2.0	<1.7	<2.0	<2.0	<1.9	<2.6	<5.6 E,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51485			ND	ND	ND	ND	ND	ND	7.7 J	—
GWGM-26B	07/19/00	*DL*	2.1	2.5	2.3	2.2	2.3	3.7	5.3	—
		Result	<2.1	<2.5	<2.3	<2.2	<2.3	<3.7	<5.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-27B	07/19/00	*DL*	2.3	2.8	2.8	2.7	2.8	5.2	8.3	—
		Result	<2.3	<2.8	<2.8	<2.7	<2.8	<5.2	<8.3	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	ND	ND	39.4 E,J	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-64B	07/24/00	*DL*	0.6	0.6	0.6	0.6	0.6	0.8	NA	—
		Result	<0.6	<0.6	<0.6	<0.6	<0.6	<0.8	<3.0 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	7.7 J	—
GWGM-68	09/26/00	*DL*	4.1	4.4	4.4	4.4	4.3	7.0	NA	—
		Result	<4.1	<4.4	<4.4	<4.4	<4.3	<7.0	36.2 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000362	0.000362
METHOD BLANK Sample Set – 51987			ND	ND	ND	ND	ND	ND	ND	—
GWGM-63A	09/19/00	*DL*	0.3	0.3	0.3	NA	NA	0.5	NA	—
		Result	<0.3	<0.3	<0.3	0.43 J	0.35 E,J	<0.5	<2.3 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	0.0043	0.0035	ND	(ND)	0.0078
METHOD BLANK Sample Set – 51936			ND	ND	ND	ND	ND	ND	36.6 J	—
GWGM-64A	10/03/00	*DL*	2.1	1.8	1.9	1.9	1.9	2.6	3.6	—
		Result	<2.1	<1.8	<1.9	<1.9	<1.9	<2.6	<3.6	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52058			ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GWGM-28A	07/19/00	*DL*	2.1	2.4	2.2	2.1	2.1	3.3	NA	—
		Result	<2.1	<2.4	<2.2	<2.1	<2.1	<3.3	<7.3 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 EJ	—
GWGM-66A	07/18/00	*DL*	1.6	1.9	1.7	1.6	1.7	NA	NA	—
		Result	<1.6	<1.9	<1.7	<1.6	<1.7	2.6 E,J	<24.7 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0013	(ND)	0.0013
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-66B	07/19/00	*DL*	2.0	2.7	2.3	2.2	2.3	3.3	5.3	—
		Result	<2.0	<2.7	<2.3	<2.2	<2.3	<3.3	<5.3	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	ND	ND	39.4 E,J	—
GWGM-63B	02/07/01	*DL*	1.9	2.6	2.7	2.7	2.6	4.0	NA	—
		Result	<1.9	<2.6	<2.7	<2.7	<2.6	<4.0	<11.5 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 52961			ND	ND	ND	ND	ND	ND	10.8 J	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
AGM-GSI-1	07/23/01	*DL*	3.0	3.4	4.0	4.2	3.9	6.7	11.2	—
		Result	<3.0 J	<3.4 J	<4.0	<4.2	<3.9	<6.7	<11.2	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54777			ND	ND	ND	ND	ND	ND	15.8 J	—
AGM-Seep 2	07/25/01	*DL*	4.9	5.3	6.3	6.5	6.4	10.3	14.6	—
		Result	<4.9 J	<5.3	<6.3	<6.5	<6.4	<10.3	<14.6	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54813			ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GM-2B	05/05/00	*DL*	NA	NA	1.6	NA	2.4	2.8	3.1	3.2	3.9	NA	—
		Result	3.6 J	2.6 EJ	<1.6	4.2 J	<2.4	<2.8	<3.1	<3.2	<3.9	9.3 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.29	0.026	ND	0.034	ND	ND	ND	ND	ND	0.00019	0.35
METHOD BLANK Sample Set – 50978			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-5	05/03/00	*DL*	2.0	NA	2.6	NA	NA	NA	NA	NA	NA	NA	—
		Result	<2.0	5.5 J	<2.6	4.0 J	4.0 J	2.6 J	4.1 J	2.4 E,J	2.8 E,J	<6.2 J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.055	ND	0.032	0.080	0.18	0.25	0.00024	0.011	(ND)	0.61
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-15	05/03/00	*DL*	0.9	1.3	1.3	1.0	1.0	1.0	1.2	1.2	1.6	2.7	—
		Result	<0.9	<1.3	<1.3	<1.0	<1.0	<1.0	<1.2	<1.2	<1.6	<2.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25-B	05/02/00	*DL*	0.8	1.0	1.0	0.9	0.8	0.9	1.0	1.0	1.5	2.6	—
		Result	<0.8	<1.0	<1.0	<0.9	<0.8	<0.9	<1.0	<1.0	<1.5	<2.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GM-26-A	05/02/00	*DL*	0.7	0.8	0.8	0.7	0.7	0.7	0.9	0.9	1.3	1.8	—
		Result	<0.7	<0.8	<0.8	<0.7	<0.7	<0.7	<0.9	<0.9	<1.3	<1.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—
GM-26-C	05/02/00	*DL*	0.5	0.6	0.6	NA	0.4	0.5	0.6	NA	0.8	1.4	—
		Result	<0.5	<0.6	<0.6	1.9 J	<0.4	<0.5	<0.6	<1.7 E,J,B,U	<0.8	<1.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.015	ND	ND	ND	(ND)	ND	ND	0.015
METHOD BLANK Sample Set – 50957			ND	ND	ND	ND	ND	ND	ND	2.3 E,J	ND	4.9 J	—
GM-SG-5	05/03/00	*DL*	1.4	NA	1.4	NA	NA	NA	1.9	NA	3.5	NA	—
		Result	<1.4	4.4 J	<1.4	4.7 J	3.7 J	3.4 J	<1.9	4.1 E,J	<3.5	12.6 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.044	ND	0.038	0.074	0.24	ND	0.00041	ND	0.000252	0.40
METHOD BLANK Sample Set – 50971B			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-25C	08/02/00	*DL*	1.0	1.1	1.1	1.0	1.0	1.1	1.3	1.5	2.0	3.5	—
		Result	<1.0	<1.1	<1.1	<1.0	<1.0	<1.1	<1.3	<1.5	<2.0	<3.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51574			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-27C	08/07/00	*DL*	3.0	3.2	3.1	3.1	2.9	3.2	3.9	3.8	5.2	9.1	—
		Result	<3.0	<3.2	<3.1	<3.1	<2.9	<3.2	<3.9	<3.8	<5.2	<9.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-63A	08/29/00	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	2.7 J	5.7 J	4.3 J	<3.4 E,J,B,U	<3.7 J,B,U	<4.2 J,B,U	<8.2 J,B,U	5.9 J	<6.7 J,B,U	19.6 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.22	0.057	3.4	(ND)	(ND)	(ND)	(ND)	0.00059	(ND)	0.000392	3.7
METHOD BLANK Sample Set – 51777			ND	ND	ND	3.3 J	2.6 EJ	3.0 J	3.9 E,J	ND	4.5 J	ND	—
GWGM-64A	08/30/00	*DL*	0.8	0.9	0.9	0.8	0.8	0.9	1.1	NA	1.6	NA	—
		Result	<0.8	<0.9	<0.9	<0.8	<0.8	<0.9	<1.1	2.0 J	<1.6	8.8 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0.00020	ND	0.00018	0.00038
METHOD BLANK Sample Set – 51796			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-66B	08/03/00	*DL*	0.9	1.1	1.1	NA	0.9	1.1	1.3	1.5	1.9	2.5	—
		Result	<0.9	<1.1	<1.1	1.5 J	<0.9	<1.1	<1.3	<1.5	<1.9	<2.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	0.012
METHOD BLANK Sample Set – 51582			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001	
		BEF	0.8	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02	
GWGM-67	08/07/00	*DL*	1.8	2.0	2.0	1.8	1.7	1.9	NA	2.3	3.1	6.5	—
		Result	<1.8	<2.0	<2.0	<1.8	<1.7	<1.9	2.3 J	<2.3	<3.1	<6.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.14	ND	ND	ND	0.14
METHOD BLANK Sample Set – 51623			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-68	08/31/00	*DL*	2.9	4.0	4.1	2.9	2.7	3.2	3.8	NA	5.0	NA	—
		Result	<2.9	<4.0	<4.1	<2.9	<2.7	<3.2	<3.8	6.1 J	<5.0	33.9 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0.00061	ND	0.000678	0.001288
METHOD BLANK Sample Set – 51803			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-70	08/17/00	*DL*	0.5	0.6	0.6	NA	NA	0.5	0.6	NA	0.9	NA	—
		Result	<0.5	<0.6	<0.6	1.6 J	1.4 J	<0.5	<0.6	1.1 EJ	<0.9	3.5 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	0.013	0.028	ND	ND	0.00011	ND	0.000070	0.041
METHOD BLANK Sample Set – 51729			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-71	08/21/00	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	3.4	NA	—
		Result	3.2 J	4.1 J	3.8 EJ	5.4 J	4.2 J	4.4 J	6.1 J	<5.8 JB	<3.4	13.1 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.26	0.041	3.0	0.043	0.084	0.31	0.37	(ND)	ND	0.000262	4.1
METHOD BLANK Sample Set – 51843			ND	ND	ND	ND	ND	ND	ND	3.6 J	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-72	08/22/00	*DL*	NA	NA	1.6	NA	NA	NA	2.2	NA	3.0	5.8	—
		Result	2.8 J	1.9 J	<1.6	2.5 J	1.9 J	1.6 J	<2.2	<2.6 EJB	<3.0	<5.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.22	0.019	ND	0.020	0.038	0.11	ND	(ND)	ND	ND	0.41
METHOD BLANK Sample Set – 51843			ND	ND	ND	ND	ND	ND	ND	3.6 J	ND	ND	—
GWGM-73	09/06/00	*DL*	1.1	NA	NA	NA	NA	NA	NA	1.8	2.3	NA	—
		Result	<1.1	2.9 J	2.7 EJ	3.4 J	2.9 J	3.7 EJ	5.1 J	<1.8	<2.3	6.3 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.029	2.2	0.027	0.058	0.26	0.31	ND	ND	0.00013	2.9
METHOD BLANK Sample Set – 51839			ND	ND	ND	ND	ND	ND	ND	3.6 J	ND	ND	—
GWGM-74	09/07/00	*DL*	0.9	1.1	1.1	1.0	0.9	1.1	1.3	1.2	1.7	2.5	—
		Result	<0.9	<1.1	<1.1	<1.0	<0.9	<1.1	<1.3	<1.2	<1.7	<2.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51849			ND	ND	ND	1.7 J	ND	ND	ND	ND	ND	ND	—
GWGM-75	09/08/00	*DL*	4.0	5.2	5.1	7.9	7.5	8.4	10.3	15.2	21.5	68.1	—
		Result	<4.0	<5.2	<5.1	<7.9	<7.5	<8.4	<10.3	<15.2	<21.5	<68.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51856			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGMEW-3	07/24/00	*DL*	NA	NA	0.9	NA	0.9	1.0	1.2	NA	1.5	NA	—
		Result	2.2 J	3.1 J	<0.9	1.3 EJ	<0.9	<1.0	<1.2	1.4 EJ	<1.5	8.7 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.18	0.031	ND	0.010	ND	ND	ND	0.00014	ND	0.00017	0.22
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-6	07/19/00	*DL*	1.6	1.5	1.5	1.3	1.3	1.4	1.7	1.5	2.0	3.1	—
		Result	<1.6	<1.5	<1.5	<1.3	<1.3	<1.4	<1.7	<1.5	<2.0	<3.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51485			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-26B	07/19/00	*DL*	1.7	1.6	1.6	1.6	1.5	1.7	2.1	2.2	2.9	4.2	—
		Result	<1.7	<1.6	<1.6	<1.6	<1.5	<1.7	<2.1	<2.2	<2.9	<4.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-27B	07/19/00	*DL*	1.9	2.0	1.9	2.0	1.9	2.1	2.6	3.0	3.9	6.6	—
		Result	<1.9	<2.0	<1.9	<2.0	<1.9	<2.1	<2.6	<3.0	<3.9	<6.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51466			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-64B	07/24/00	*DL*	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.6	1.0	—
		Result	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.5	<0.5	<0.6	<1.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51510			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-68	09/26/00	*DL*	2.8	3.3	3.2	NA	NA	NA	3.5	3.6	4.7	10.0	—
		Result	<2.8	<3.3	<3.2	3.3 J	2.5 J	3.5 J	<3.5	<3.6	<4.7	<10.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.026	0.050	0.25	ND	ND	ND	ND	0.33
METHOD BLANK Sample Set – 51987			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GWGM-63A	09/19/00	*DL*	0.2	NA	0.2	NA	0.2	0.2	NA	NA	0.4	NA	—
		Result	<0.2	0.39 J	<0.2	<0.22 E,J,B,U	<0.2	<0.2	0.49 J	0.25 E,J	<0.4	1.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.0039	ND	(ND)	ND	ND	0.029	0.000025	ND	0.000028	0.033
METHOD BLANK Sample Set – 51936			ND	ND	ND	1.7 J	ND	ND	ND	ND	ND	ND	—
GWGM-64A	10/03/00	*DL*	1.4	1.5	1.5	1.3	1.2	1.3	1.6	1.5	2.0	3.0	—
		Result	<1.4	<1.5	<1.5	<1.3	<1.2	<1.3	<1.6	<1.5	<2.0	<3.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52058			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GWGM-28A	07/19/00	*DL*	1.9	1.7	1.7	1.6	1.5	1.7	2.0	1.9	2.5	3.9	—
		Result	<1.9	<1.7	<1.7	<1.6	<1.5	<1.7	<2.0	<1.9	<2.5	<3.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-66A	07/18/00	*DL*	1.4	1.5	1.5	1.2	1.1	1.2	1.5	1.5	2.0	2.7	—
		Result	<1.4	<1.5	<1.5	<1.2	<1.1	<1.2	<1.5	<1.5	<2.0	<2.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-66B	07/19/00	*DL*	1.7	1.8	1.8	1.7	1.6	1.8	2.2	2.1	2.7	4.2	—
		Result	<1.7	<1.8	<1.8	<1.7	<1.6	<1.8	<2.2	<2.1	<2.7	<4.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 51470			ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	—
GWGM-63B	02/07/01	*DL*	1.3	1.7	1.6	1.6	1.5	1.7	1.8	2.3	2.7	4.3	—
		Result	<1.3	<1.7	<1.6	<1.6	<1.5	<1.7	<1.8	<2.3	<2.7	<4.3	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 52961			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
AGM-GSI-1	07/23/01	*DL*	2.4	2.8	2.6	2.6	2.8	2.6	3.2	3.9	4.4	8.3	—
		Result	<2.4 J	<2.8	<2.6 J	<2.6	<2.8	<2.6	<3.2	<3.9	<4.4	<8.3	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54777			ND	ND	ND	ND	ND	ND	ND	ND	ND	15.8 J	—
AGM-Seep 2	07/25/01	*DL*	3.6	3.9	3.7	3.7	3.8	3.8	4.8	4.9	5.9	NA	—
		Result	<3.6 J	<3.9	<3.7	<3.7	<3.8	<3.8	<4.8	<4.9	<5.9	20.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000408	0.000408
METHOD BLANK Sample Set – 54813			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ppq Parts per quadrillion (picograms per liter).
NA Information is not available.
ND Congener was not detected; contribution to the TEC is zero.
(ND) Detected result (as the shown concentration) was qualified as "not detected" due to associated blank contamination.
QL Congener quantifical limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:
B – Compound was detected in the associated QC method blank sample.
E – Estimated maximum possible concentration.
J – Concentration is qualified as estimated.
X – Indicates a furan peak which exhibited interference from a diphnenyl ether peak of at least 10 percent of the total peak intensity.

Table 3. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GM-5	09/17/03	*DL*	6.0	3.0	3.8	4.1	3.8	5.7	5.8	—
		Result	<6.0	<3.0	<3.8	<4.1	<3.8	<5.7	<7.7 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I180135			ND	ND	ND	ND	ND	ND	10 Q,J	—
GM-5 (filtered)	09/17/03	*DL*	3.1	1.8	2.1	2.2	2.1	3.6	4.3	—
		Result	<3.1	<1.8	<2.1	<2.2	<2.1	<3.6	<7.2 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I180135			ND	ND	ND	ND	ND	ND	10 Q,J	—
GM-25C	09/15/03	*DL*	3.7	1.7	1.8	2.0	1.9	2.4	2.3	—
		Result	<3.7	<1.7	<1.8	<2.0	<1.9	<2.4	<5.7 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	10 Q,J	—
GM-25C (filtered)	09/15/03	*DL*	2.0	1.0	1.1	1.1	1.1	1.6	2.2	—
		Result	<2.0	<1.0	<1.1	<1.1	<1.1	<1.6	<7.2 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	10 Q,J	—

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Table 3. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GM-26C	09/16/03	*DL*	4.9	2.9	3.1	3.4	3.1	4.9	5.3	—
		Result	<4.9	<2.9	<3.1	<3.4	<3.1	<4.9	<17 Q,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	10 Q,J	—
GM-26C (filtered)	09/16/03	*DL*	1.4	0.77	0.74	0.79	0.74	0.86	0.80	—
		Result	<1.4	<0.77	<0.74	<0.79	<0.74	<2.3 Q,U	<12 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	(ND)	(ND)	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	10 Q,J	—
GM-63A	09/15/03	*DL*	2.5	1.2	1.5	1.8	1.6	2.3	2.9	—
		Result	<2.5	<1.2	<1.5	<1.8	<1.6	<2.3	<10 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	10 Q,J	—
GM-63A (filtered)	09/15/03	*DL*	2.6	1.6	2.2	2.3	2.2	4.3	6.0	—
		Result	<2.6	<1.6	<2.2	<2.3	<2.2	<4.3	<9.4 Q,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	10 Q,J	—

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Table 3. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TEC
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GM-66A	09/16/03	*DL*	2.5	1.2	1.3	1.4	1.3	1.8	1.5	—
		Result	<2.5	<1.2	<1.3	<1.4	<1.3	<1.8	<6.7 Q,J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	10 Q,J	—
GM-66A (filtered)	09/16/03	*DL*	2.7	1.6	1.7	1.8	1.7	2.3	2.4	—
		Result	<2.7	<1.6	<1.7	<1.8	<1.7	<2.3	<7.7 J,B,U	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	10 Q,J	—

Table 3. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GM-5	09/17/03	*DL*	6.0	2.6	2.1	2.1	2.3	2.4	3.3	3.8	5.0	5.9	—
		Result	<6.0	<2.6	<2.1	<2.1	<2.3	<2.4	<3.3	<3.8	<5.0	<5.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I180135			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-5 (filtered)	09/17/03	*DL*	2.8	1.3	1.1	1.3	1.3	1.5	1.8	2.1	2.8	3.7	—
		Result	<2.8	<1.3	<1.1	<1.3	<1.3	<1.5	<1.8	<2.1	<2.8	<3.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I180135			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25C	09/15/03	*DL*	3.3	1.6	1.2	1.3	1.3	1.4	1.7	1.6	1.9	2.5	—
		Result	<3.3	<1.6	<1.2	<1.3	<1.3	<1.4	<1.7	<1.6	<1.9	<2.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25C (filtered)	09/15/03	*DL*	2.1	0.86	0.67	0.61	0.64	0.72	0.88	1.2	1.7	2.1	—
		Result	<2.1	<0.86	<0.67	<0.61	<0.64	<0.72	<0.88	<1.2	<1.7	<2.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 3. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GM-26C	09/16/03	*DL*	4.8	2.4	2.0	2.0	1.8	2.5	2.9	3.0	4.1	5.1	—
		Result	<4.8	<2.4	<2.0	<2.0	<1.8	<2.5	<2.9	<3.0	<4.1	<6.1 J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	(ND)	ND	(ND)	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26C (filtered)	09/16/03	*DL*	1.4	0.61	0.54	0.49	0.47	0.53	0.60	0.59	0.70	0.73	—
		Result	<1.4	<0.61	<0.54	<0.49	<0.47	<0.81 Q,J,U	<0.60	<2.0 Q,J,U	<1.1 Q,J,U	<2.1 J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	(ND)	ND	(ND)	(ND)	(ND)	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-63A	09/15/03	*DL*	2.5	1.1	0.84	0.88	0.89	0.96	1.2	1.4	2.1	2.8	—
		Result	<2.5	<1.1	<0.84	<0.88	<0.89	<0.96	<1.2	<1.4	<2.1	<4.2 J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-63A (filtered)	09/15/03	*DL*	2.5	1.2	1.0	1.2	1.3	1.5	1.9	2.3	3.5	6.1	—
		Result	<2.5	<1.2	<1.0	<1.2	<1.3	<1.5	<1.9	<2.3	<3.5	<6.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I160214			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 3. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Groundwater Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TEC
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GM-66A	09/16/03	*DL*	2.3	1.0	0.81	0.81	0.81	0.95	1.1	1.1	1.5	1.7	—
		Result	<2.3	<1.0	<0.81	<0.81	<0.81	<0.95	<1.1	<1.1	<1.5	<1.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GM-66A (filtered)	09/16/03	*DL*	2.5	1.3	1.1	0.99	1.0	1.1	1.3	1.5	1.9	2.6	—
		Result	<2.5	<1.3	<1.1	<0.99	<1.0	<1.1	<1.3	<1.5	<1.9	<2.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3I170183			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

Q – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
Ph 1 Inf	06/12/01	*DL*	2.7	3.5	3.9	3.9	3.9	6.6	9.7	—
		Result	<2.7	<3.5	<3.9	<3.9	<3.9	<6.6	<9.7	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	—
Ph I-Inf-EW1	08/15/01	*DL*	2.5	2.7	2.8	2.8	2.6	4.3	NA	—
		Result	<2.5	<2.7	<2.8	<2.8	<2.6	<4.3	17.8 J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000178	0.000178
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	—
GMEW-1	11/05/01	*DL*	1.1	1.1	1.4	1.4	1.4	2.3	NA	—
		Result	<1.1	<1.1	<1.4	<1.4	<1.4	<2.3	<5.1 UJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—
GMEW-2	11/05/01	*DL*	1.4	NA	NA	NA	NA	NA	NA	—
		Result	2.4	<2.7 UEJ	<4.1 UJ	<3.6 UJ	3.6 EJ	<5.0 UJ	<6.3 UEJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	2.4	(ND)	(ND)	(ND)	0.036	(ND)	(ND)	2.436
METHOD BLANK Sample Set – 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—
GMEW-3	11/05/01	*DL*	1.8	1.6	NA	NA	NA	NA	NA	—
		Result	<1.8	<1.6	<3.4 UEJ	<2.2 UEJ	4.2 J	<3.7 UEJ	<24.5 UJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	(ND)	(ND)	0.042	(ND)	(ND)	0.042
METHOD BLANK Sample Set – 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—

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Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GMEW-1	12/03/01	*DL*	NA	NA	0.7	0.8	NA	NA	NA	—
		Result	1.1 J	0.73 J	<0.7	<0.8	<0.74 UEJ	1.6 EJ	<12.0 UJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	1.1	0.33	ND	ND	(ND)	0.00080	(ND)	1.4
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-2	12/03/01	*DL*	1.3	1.2	1.6	1.7	1.6	2.4	4.1	—
		Result	<1.3	<1.2	<1.6	<1.7	<1.6	<2.4	<4.1	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-3	12/03/01	*DL*	1.1	0.9	1.3	1.4	1.3	1.8	NA	—
		Result	<1.1	<0.9	<1.3	<1.4	<1.3	<1.8	<3.0 UEJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-1	12/05/01	*DL*	0.8	0.6	0.8	0.9	0.8	1.0	NA	—
		Result	<0.8	<0.6	<0.8	<0.9	<0.8	<1.0	<3.4 UEJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-2	12/05/01	*DL*	1.5	1.2	1.7	1.8	1.7	2.3	NA	—
		Result	<1.5	<1.2	<1.7	<1.8	<1.7	<2.3	<15.2 UJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—

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Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GMEW-3	12/05/01	*DL*	1.0	0.8	1.1	1.2	NA	1.7	NA	—
		Result	<1.0	<0.8	<1.1	<1.2	<1.6 UJB	<1.7	<5.9 UJB	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	(ND)	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
GMEW-1	12/12/01	*DL*	1.4	1.6	1.7	1.7	1.6	2.4	4.4	—
		Result	<1.4	<1.6	<1.7	<1.7	<1.6	<2.4	<4.4	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	—
GMEW-2	12/12/01	*DL*	3.9	4.4	4.3	4.5	4.3	6.3	12.9	—
		Result	<3.9	<4.4	<4.3	<4.5	<4.3	<6.3	<12.9	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/12/01	*DL*	1.4	1.5	1.5	1.6	1.5	2.3	NA	—
		Result	<1.4	<1.5	<1.5	<1.6	<1.5	<2.3	7.0 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000070	0.000070
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	—
GMEW-1	12/19/01	*DL*	1.2	1.8	1.2	1.2	1.2	1.8	NA	—
		Result	<1.2	<1.8	<1.2	<1.2	<1.2	<1.8	8.0 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000080	0.000080
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—

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Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GMEW-2	12/19/01	*DL*	2.5	4.5	NA	NA	NA	NA	NA	—
		Result	<2.5	<4.5	3.3 EJ	3.9 EJ	5.9 J	4.3 EJ	26.2 J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	0.099	0.039	0.059	0.0022	0.000262	0.199
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/19/01	*DL*	5.3	6.4	5.3	5.3	5.3	8.6	NA	—
		Result	<5.3	<6.4	<5.3	<5.3	<5.3	<8.6	24.7 J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000247	0.000247
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—

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Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
Ph 1 Inf	06/12/01	*DL*	2.7	2.5	2.6	2.3	2.3	2.6	3.1	3.4	4.7	7.8	—
		Result	<2.7	<2.5	<2.6	<2.3	<2.3	<2.6	<3.1	<3.4	<4.7	<7.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph I-Inf-EW1	08/15/01	*DL*	1.8	2.1	1.9	1.8	1.9	1.8	2.1	2.5	3.2	5.4	—
		Result	<1.8	<2.1	<1.9	<1.8	<1.9	<1.8	<2.1	<2.5	<3.2	<5.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-1	11/05/01	*DL*	NA	0.8	0.7	0.9	0.9	0.9	1.1	1.3	1.4	3.0	—
		Result	1.6 J	<0.8	<0.7	<0.9	<0.9	<0.9	<1.1	<1.3	<1.4	<3.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13
METHOD BLANK Sample Set – 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—
GMEW-2	11/05/01	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	2.5 J	<2.7 UEJB	<3.3 UJB	<3.8 UEJB	<3.1 UEJB	<3.2 UJB	<4.7 UJB	<2.2 UEJB	<2.3 UEJB	<11.0 UJB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.20	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	0.2
METHOD BLANK Sample Set – 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—
GMEW-3	11/05/01	*DL*	NA	NA	NA	NA	NA	NA	NA	2.8	3.6	NA	—
		Result	8.9 J	<2.6 UJB	<2.3 UJB	<3.2 UEJB	<2.4 UJB	29.4 JB	<1.3 UJB	<2.8	<3.6	<11.8 UJB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.71	(ND)	(ND)	(ND)	(ND)	2.06	(ND)	ND	ND	(ND)	2.77
METHOD BLANK Sample Set – 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—

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Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GMEW-1	12/03/01	*DL*	NA	NA	0.5	NA	0.5	0.5	NA	0.6	0.6	NA	—
		Result	0.85 EJ	1.4 J	<0.5	<1.4 UJB	<0.5	<0.5	1.0 J	<0.6	<0.6	4.5 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.068	0.014	ND	(ND)	ND	ND	0.060	ND	ND	0.000090	0.142
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-2	12/03/01	*DL*	1.0	1.1	1.0	1.1	1.1	1.1	1.3	1.4	1.6	3.1	—
		Result	<1.0	<1.1	<1.0	<1.1	<1.1	<1.1	<1.3	<1.4	<1.6	<3.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-3	12/03/01	*DL*	0.8	0.9	0.8	0.8	0.8	0.8	1.0	1.1	1.2	2.1	—
		Result	<0.8	<0.9	<0.8	<0.8	<0.8	<0.8	<1.0	<1.1	<1.2	<2.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-1	12/05/01	*DL*	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.7	1.2	—
		Result	<0.6	<0.6	<0.6	<0.5	<0.5	<0.5	<0.6	<0.6	<0.7	<1.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-2	12/05/01	*DL*	1.1	1.2	1.1	NA	1.1	1.0	1.3	NA	1.5	NA	—
		Result	<1.1	<1.2	<1.1	<1.7 UJB	<1.1	<1.0	<1.3	<1.8 UEJB	<1.5	4.0 EJ	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	(ND)	ND	ND	ND	(ND)	ND	0.000080	0.000080
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—

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Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GMEW-3	12/05/01	*DL*	0.8	0.8	0.8	NA	0.8	0.7	NA	1.0	1.1	NA	—
		Result	<0.8	<0.8	<0.8	<1.1 UJB	<0.8	<0.7	2.0 J	<1.0	<1.1	4.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	(ND)	ND	ND	0.12	ND	ND	0.000088	0.12
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
GMEW-1	12/12/01	*DL*	1.0	1.2	1.2	0.9	0.9	0.9	1.0	1.2	1.4	3.3	—
		Result	<1.0	<1.2	<1.2	<0.9	<0.9	<0.9	<1.0	<1.2	<1.4	<3.3	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-2	12/12/01	*DL*	2.9	3.8	3.5	2.4	2.4	2.3	2.8	3.4	3.9	9.6	—
		Result	<2.9	<3.8	<3.5	<2.4	<2.4	<2.3	<2.8	<3.4	<3.9	<9.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/12/01	*DL*	1.0	1.2	1.1	NA	0.9	0.9	NA	1.2	1.3	NA	—
		Result	<1.0	<1.2	<1.1	1.9 J	<0.9	<0.9	1.9 EJ	<1.2	<1.3	6.1 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.015	ND	ND	0.11	ND	ND	0.00012	0.13
METHOD BLANK Sample Set – 56161			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-1	12/19/01	*DL*	NA	1.3	1.2	0.8	0.8	0.9	1.1	1.2	1.6	2.4	—
		Result	2.0 EJ	<1.3	<1.2	<0.8	<0.8	<0.9	<1.1	<1.2	<1.6	<2.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 4. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GMEW-2	12/19/01	*DL*	2.3	NA	NA	NA	NA	NA	NA	NA	4.3	NA	—
		Result	<2.3	6.6 J	6.6 J	5.5 J	4.9 J	5.4 EJ	6.7 J	6.5 J	<4.3	14.4 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	0.066	5.3	0.044	0.098	0.38	0.40	0.00065	ND	0.000288	6.3
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3	12/19/01	*DL*	4.9	5.5	5.3	3.4	3.5	3.7	4.6	5.5	7.0	15.2	—
		Result	<4.9	<5.5	<5.3	<3.4	<3.5	<3.7	<4.6	<5.5	<7.0	<15.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Table 5. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
GMEW-1 (6/26/03)T	06/26/03	*DL*	2.5	2.2	2.6	2.6	2.5	1.8	2.0	—
		Result	<2.5	<2.2	<2.6	<2.6	<2.5	<1.8	<7.7 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-1 (6/26/03)D	06/26/03	*DL*	2.3	2.2	2.4	2.6	2.4	2.3	2.0	—
		Result	<2.3	<2.2	<2.4	<2.6	<5.7 B,J,U	<3.3 B,J,U	<5.4 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	(ND)	(ND)	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-2 (6/26/03)T	06/26/03	*DL*	2.4	2.1	2.6	2.6	2.5	2.1	2.3	—
		Result	<2.4	<2.1	<2.6	<2.6	<2.5	<2.1	<9.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-2 (6/26/03)D	06/26/03	*DL*	1.8	1.5	1.6	1.7	1.6	1.4	1.6	—
		Result	<1.8	<1.5	<1.6	<1.7	<1.6	<1.4	<5.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-3 (6/26/03)T	06/26/03	*DL*	1.9	1.6	1.8	1.9	1.8	1.6	1.9	—
		Result	<1.9	<1.6	<1.8	<1.9	<1.8	<1.6	<7.9 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267.			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—

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Table 5. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	
GMEW-3 (6/26/03)D	06/26/03	*DL*	2.1	1.8	2.2	2.4	2.2	2.0	1.7	—
		Result	<2.1	<1.8	<2.2	<2.4	<2.2	<2.0	<7.9 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-4R (6/26/03)T	06/26/03	*DL*	2.2	1.8	2.0	2.3	2.1	2.1	2.5	—
		Result	<2.2	<1.8	<2.0	<2.3	<2.1	<2.1	<4.7 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—
GMEW-4R (6/26/03)D	06/26/03	*DL*	1.5	1.1	1.3	1.3	1.2	1.2	1.1	—
		Result	<1.5	<1.1	<1.3	<1.3	<2.3 Q,B,J,U	<1.2	<4.4 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	(ND)	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	5.8 J	3.4 J	9.3 J	—

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Table 5. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GMEW-1 (6/26/03)T	06/26/03	*DL*	2.4	1.8	1.5	1.5	1.6	1.6	1.9	1.6	2.0	2.0	—
		Result	<2.4	<1.8	<1.5	<1.5	<1.6	<1.6	<1.9	<1.6	<2.0	<4.5 Q,B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-1 (6/26/03)D	06/26/03	*DL*	2.2	1.6	1.3	1.4	1.5	1.6	1.8	1.6	2.0	2.6	—
		Result	<2.2	<1.6	<1.3	<1.4	<1.5	<1.6	<1.8	<1.6	<2.0	<6.5 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-2 (6/26/03)T	06/26/03	*DL*	2.4	1.7	1.5	1.5	1.5	1.7	1.8	1.5	1.8	2.6	—
		Result	<2.4	<1.7	<1.5	<1.5	<1.5	<1.7	<1.8	<1.5	<1.8	<5.5 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-2 (6/26/03)D	06/26/03	*DL*	1.8	1.1	0.93	1.1	1.1	1.2	1.4	1.1	1.2	1.8	—
		Result	<1.8	<1.1	<0.93	<1.1	<1.1	<2.1 B,J,U	<1.4	<1.1	<1.2	<4.6 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	(ND)	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-3 (6/26/03)T	06/26/03	*DL*	1.9	1.2	1.0	1.2	1.2	1.5	1.5	1.7	1.7	2.0	—
		Result	<1.9	<1.2	<1.0	<1.2	<1.2	<1.5	<1.5	<1.7	<1.7	<2.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—

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Table 5. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and Phase II Influent Samples, Ford/Kingsford Site, Kingsford,, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
GMEW-3 (6/26/03)D	06/26/03	*DL*	2.0	1.4	1.2	1.3	1.3	1.6	1.7	1.5	1.9	2.2	—
		Result	<2.0	<1.4	<1.2	<1.3	<1.3	<1.6	<1.7	<1.5	<1.9	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-4R (6/26/03)T	06/26/03	*DL*	1.9	1.5	1.2	1.4	1.5	1.4	1.8	1.6	1.8	2.4	—
		Result	<1.9	<1.5	<1.2	<1.4	<1.5	<1.4	<1.8	<1.6	<1.8	<2.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—
GMEW-4R (6/26/03)D	06/26/03	*DL*	1.5	1.0	0.80	0.86	0.88	1.1	1.1	0.92	1.0	1.1	—
		Result	<1.5	<1.0	<0.80	<0.86	<0.88	<1.1	<1.1	<1.4 Q,J,U	<1.0	<2.2 Q,B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	(ND)	ND	(ND)	0
METHOD BLANK - Sample Set – H3F270267			ND	ND	ND	ND	ND	2.9 J	ND	ND	ND	8.4 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

Q – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
Ph 1 Eff	05/03/01	*DL*	1.9	2.4	4.4	4.5	4.0	7.3	NA	—
		Result	<1.9	<2.4	<4.4	<4.5	<4.0	<7.3	33.2 J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000332	0.000332
METHOD BLANK Sample Set – 53903r1			ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	05/08/01	*DL*	0.7	0.7	1.2	1.2	1.1	1.5	NA	—
		Result	<0.7	<0.7	<1.2	<1.2	<1.1	<1.5	1.9 J	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000019	0.000019
METHOD BLANK Sample Set – 54018			ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	05/17/01	*DL*	3.5	8.0	7.1	7.3	7.2	6.4	10.1	—
		Result	<3.5	<8.0	<7.1	<7.3	<7.2	<6.4	<10.1	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54017			ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	06/12/01	*DL*	2.9	3.5	3.8	3.8	3.8	7.5	10.8	—
		Result	<2.9	<3.5	<3.8	<3.8	<3.8	<7.5	<10.8	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	07/12/01	*DL*	1.4	1.9	2.6	2.7	2.6	5.1	NA	—
		Result	<1.4	<1.9	<2.6	<2.7	<2.6	<5.1	<16.4 UJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 54700			ND	ND	ND	ND	ND	1.9 J	10.7 J	—

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Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
Ph I-Eff-EW1	08/15/01	*DL*	3.1	3.2	3.1	3.1	2.9	5.5	8.5	—
		Result	<3.1	<3.2	<3.1	<3.1	<2.9	<5.5	<8.5	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	09/06/01	*DL*	2.7	NA	2.8	NA	NA	5.1	NA	—
		Result	<2.7	3.5 J	<2.8	2.3 EJ	2.9 J	<5.1	17.5 EJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	1.6	ND	0.023	0.029	ND	0.000175	1.7
METHOD BLANK Sample Set – 55229			ND	ND	ND	ND	ND	ND	26.2 J	—
Ph II Eff	09/17/01	*DL*	1.1	1.2	1.6	1.6	1.6	2.1	NA	—
		Result	<1.1	<1.2	<1.6	<1.6	<1.6	<2.1	<8.4 UJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 55281			ND	ND	ND	ND	ND	ND	NA	—
Ph II Eff	10/11/01	*DL*	NA	1.2	1.6	1.7	1.6	NA	NA	—
		Result	8.8 J	<1.2	<1.6	<1.7	<1.6	3.8 J	<39.0 UJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	8.8	ND	ND	ND	ND	0.0019	(ND)	8.8
METHOD BLANK Sample Set – 55567r1			ND	ND	ND	0.96 J	ND	ND	9.1 J	—
Ph II Eff	11/05/01	*DL*	NA	NA	NA	NA	NA	2.6	NA	—
		Result	1.3 EJ	<1.6 UEJB	<2.1 UEJB	<2.8 UEJB	2.4 EJ	<2.6	<11.3 UEJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	1.3	(ND)	(ND)	(ND)	0.024	ND	(ND)	1.3
METHOD BLANK Sample Set – 55789			ND	2.2 EJ	3.1 EJ	3.5 EJ	ND	5.4 J	10.7 EJ	—

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Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
Ph II Eff	11/29/01	*DL*	4.1	3.8	5.6	5.8	5.6	7.2	12.8	—
		Result	<4.1	<3.8	<5.6	<5.8	<5.6	<7.2	<12.8	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56003			ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/04/01	*DL*	NA	1.4	1.8	1.9	1.8	2.2	NA	—
		Result	2.5 J	<1.4	<1.8	<1.9	<1.8	<2.2	<5.2 UEJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	2.5	ND	ND	ND	ND	ND	(ND)	2.5
METHOD BLANK Sample Set – 56093			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
Ph II Eff	12/06/01	*DL*	1.9	1.5	2.2	2.2	2.1	2.9	NA	—
		Result	<1.9	<1.5	<2.2	<2.2	<2.1	<2.9	<5.3 UJB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 56092			ND	ND	1.3 J	ND	1.6 J	ND	3.7 J	—
Ph II Eff	12/13/01	*DL*	6.8	7.7	8.7	9.0	8.5	12.5	27.2	—
		Result	<6.8	<7.7	<8.7	<9.0	<8.5	<12.5	<27.2	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56160			ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/20/01	*DL*	3.4	4.9	3.6	3.6	3.6	4.8	9.4	—
		Result	<3.4	<4.9	<3.6	<3.6	<3.6	<4.8	<9.4	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	—

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Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
Ph II Eff - REJECTED - NOT USABLE	12/27/01	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	R	R	R	R	R	R	R	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	NA	NA	NA	NA	NA	NA	NA	0
METHOD BLANK Sample Set – 56308r1			7.5 J	12.4 EJ	8.8 EJ	10.8 J	15.3 J	10.9 J	25.3 J	—
Ph II Eff	01/10/02	*DL*	10	NA	NA	NA	NA	NA	NA	—
		Result	2.5 J	2.5 J	<1.9 UJB	<1.9 UJB	<2.2 UEJB	<10.3 UJB	52.7 JB	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	2.5	1.1	(ND)	(ND)	(ND)	(ND)	0.000527	3.6
METHOD BLANK Sample Set – 56401r1			ND	ND	1.6 J	1.4 EJ	1.7 EJ	2.6 EJ	9.3 EJ	—

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Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of dioxin TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
Ph 1 Eff	05/03/01	*DL*	1.4	1.5	1.5	2.3	2.2	2.4	2.7	3.9	4.9	10.0	—
		Result	<1.4	<1.5	<1.5	<2.3	<2.2	<2.4	<2.7	<3.9	<4.9	<10.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 53903r1			ND	3.6 J	ND	ND	2.7 J	ND	ND	ND	ND	ND	—
Ph 1 Eff	05/08/01	*DL*	0.5	0.5	0.5	0.7	0.6	0.7	0.8	0.9	1.1	2.2	—
		Result	<0.5	<0.5	<0.5	<0.7	<0.6	<0.7	<0.8	<0.9	<1.1	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54018			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	05/17/01	*DL*	2.9	3.8	3.8	3.0	2.8	3.1	4.0	4.0	5.6	7.7	—
		Result	<2.9	<3.8	<3.8	<3.0	<2.8	<3.1	<4.0	<4.0	<5.6	<7.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54017			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	06/12/01	*DL*	2.7	2.4	2.4	2.4	2.4	2.7	3.2	3.6	5.0	8.7	—
		Result	<2.7	<2.4	<2.4	<2.4	<2.4	<2.7	<3.2	<3.6	<5.0	<8.7	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54338			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph 1 Eff	07/12/01	*DL*	1.1	1.4	1.3	1.7	1.7	1.7	2.0	2.5	2.9	8.0	—
		Result	<1.1	<1.4	<1.3	<1.7	<1.7	<1.7	<2.0	<2.5	<2.9	<8.0	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 54700			ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6 J	—

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Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of dioxin TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
Ph I-Eff-EW1	08/15/01	*DL*	2.1	2.4	2.2	1.8	1.9	1.9	2.2	2.6	3.3	6.9	—
		Result	<2.1	<2.4	<2.2	<1.8	<1.9	<1.9	<2.2	<2.6	<3.3	<6.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55036			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	09/06/01	*DL*	1.9	2.2	2.1	NA	NA	NA	NA	3.2	4.2	NA	—
		Result	<1.9	<2.2	<2.1	2.6 J	2.7 J	2.4 J	2.5 J	<3.2	<4.2	6.0 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	0.021	0.054	0.17	0.15	ND	ND	0.00012	0.40
METHOD BLANK Sample Set – 55229			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	09/17/01	*DL*	0.9	1.0	1.0	NA	1.0	1.0	1.2	1.3	1.6	2.8	—
		Result	<0.9	<1.0	<1.0	<1.4 UJB	<1.0	<1.0	<1.2	<1.3	<1.6	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 55281			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	10/11/01	*DL*	0.7	0.9	0.8	1.0	1.0	1.0	1.2	1.5	1.7	NA	—
		Result	<0.7	<0.9	<0.8	<1.0	<1.0	<1.0	<1.2	<1.5	<1.7	<10.4 UJB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – 55567r1			ND	ND	ND	0.85 J	ND	0.81 J	1.0 J	ND	ND	3.4 EJ	—
Ph II Eff	11/05/01	*DL*	0.9	NA	NA	NA	NA	NA	NA	1.7	2.2	NA	—
		Result	<0.9	<2.9 UJB	<3.0 UEJ	<3.3 UJB	<2.5 UJB	<2.1 UJB	<3.2 UJB	<1.7	<2.2	<6.4 UJB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	ND	ND	(ND)	0
METHOD BLANK Sample Set – 55789			ND	2.4 J	1.7 EJ	4.1 J	3.5 J	3.4 J	4.5 J	3.8 EJ	4.0 J	8.9 J	—

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Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of dioxin TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
Ph II Eff	11/29/01	*DL*	3.2	3.1	2.9	3.3	3.4	3.4	4.1	4.4	5.7	11.1	—
		Result	<3.2	<3.1	<2.9	<3.3	<3.4	<3.4	<4.1	<4.4	<5.7	<11.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56003			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/04/01	*DL*	NA	1.3	1.2	1.1	1.2	1.1	1.3	1.3	1.5	2.8	—
		Result	2.9 J	<1.3	<1.2	<1.1	<1.2	<1.1	<1.3	<1.3	<1.5	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23
METHOD BLANK Sample Set – 56093			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
Ph II Eff	12/06/01	*DL*	1.4	1.5	1.4	1.3	1.3	1.3	1.6	1.6	1.8	3.5	—
		Result	<1.4	<1.5	<1.4	<1.3	<1.3	<1.3	<1.6	<1.6	<1.8	<3.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56092			ND	ND	ND	1.6 J	1.3 J	ND	ND	0.95 EJ	0.90 J	ND	—
Ph II Eff	12/13/01	*DL*	4.6	6.1	5.7	4.4	4.5	4.3	5.2	6.8	7.7	20.2	—
		Result	<4.6	<6.1	<5.7	<4.4	<4.5	<4.3	<5.2	<6.8	<7.7	<20.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56160			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—
Ph II Eff	12/20/01	*DL*	2.8	3.3	3.2	2.1	2.1	2.3	2.8	3.0	3.8	7.4	—
		Result	<2.8	<3.3	<3.2	<2.1	<2.1	<2.3	<2.8	<3.0	<3.8	<7.4	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 56256			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 6. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of dioxin TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
Ph II Eff	12/27/01	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
- REJECTED -		*Result*	R	R	R	R	R	R	R	R	R	R	—
NOT USABLE		*QL*	10	50	50	50	50	50	50	50	50	100	—
		TEC *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
METHOD BLANK Sample Set – 56308r1			5.3 J	15.3 J	11.3 EJ	10.5 J	9.7 EJ	9.9 J	17.6 J	11.1 J	15.6 J	20.0 J	—
Ph II Eff	01/10/02	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	3.7 J	<2.8 UJB	2.1 J	<3.1 UEJB	<2.5 UJB	<2.6 UJB	<1.8 UEJB	<4.1 UEJB	<1.8 UEJB	<11.1 UJB	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	0.30	(ND)	1.7	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)	2.0
METHOD BLANK Sample Set – 56401r1			ND	2.6 EJ	ND	1.5 EJ	1.4 EJ	2.1 J	1.3 EJ	2.3 J	2.4 J	3.0 EJ	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated.

R – Result was rejected during data validation.

U – Result was qualified as "not detected" during data validation.

Table 7. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (1/22/03)T	01/22/03	*DL*	4.4	1.9	1.9	2.0	2.0	2.8	3.7	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.8	<9.8 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (1/22/03)D	01/22/03	*DL*	3.0	1.4	1.6	1.6	1.6	1.9	2.7	—
		Result	<3.0	<1.4	<1.6	<1.6	<1.6	<1.9	<7.0 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*	3.1	1.3	1.2	1.4	1.3	2.0	2.1	—
		Result	<3.1	<1.3	<1.2	<1.4	<1.3	<2.0	<5.2 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*	4.4	1.9	1.9	2.0	2.0	2.1	2.1	—
		Result	<4.4	<1.9	<1.9	<2.0	<2.0	<2.1	<3.5 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	ND	ND	ND	6.1 J	—
PHII EFF (3/4/03)T	03/04/03	*DL*	2.8	1.2	1.1	1.3	1.2	2.6	3.0	—
		Result	<2.8	<1.2	<1.1	<1.3	<1.2	<2.6	<9.0 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

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Table 7. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
PHII EFF (3/4/03)D	03/04/03	*DL*	3.5	1.5	1.1	1.3	1.2	1.6	1.6	—
		Result	<3.5	<1.5	<1.1	<1.3	<1.2	<1.6	<4.8 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

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Table 7. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of dioxin TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (1/22/03)T	01/22/03	*DL*	3.0	1.7	1.3	1.2	1.4	1.4	1.7	2.4	2.9	4.9	—
		Result	<3.0	<1.7	<1.3	<1.2	<1.4	<1.4	<1.7	<2.4	<2.9	<4.9	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (1/22/03)D	01/22/03	*DL*	2.3	1.1	0.86	0.79	0.87	0.95	1.1	1.5	1.7	2.3	—
		Result	<2.3	<1.1	<0.86	<0.79	<0.87	<0.95	<1.1	<1.5	<1.7	<4.0 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
PHII EFF (2/13/03)T	02/13/03	*DL*	2.3	1.2	0.95	0.73	0.87	0.86	0.99	1.4	1.6	2.2	—
		Result	<2.3	<1.2	<0.95	<0.73	<0.87	<0.86	<0.99	<1.4	<1.6	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (2/13/03)D	02/13/03	*DL*	3.1	1.5	1.2	0.93	1.0	1.1	1.3	1.9	2.1	2.2	—
		Result	<3.1	<1.5	<1.2	<0.93	<1.0	<1.1	<1.3	<1.9	<2.1	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B140161			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
PHII EFF (3/4/03)T	03/04/03	*DL*	2.0	1.2	0.86	0.67	0.67	0.85	1.0	1.5	1.8	2.6	—
		Result	<2.0	<1.2	<0.86	<0.67	<0.67	<0.85	<1.0	<1.5	<1.8	<2.6	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

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Table 7. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Phase I and II, Effluent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	1,2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of dioxin TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
PHII EFF (3/4/03)D	03/04/03	*DL*	3.0	1.4	1.1	0.68	0.69	0.78	0.91	1.2	1.5	2.2	—
		Result	<3.0	<1.4	<1.1	<0.97 B,J,U	<0.85 B,J,U	<0.78	<0.91	<1.2	<1.5	<2.2	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	(ND)	(ND)	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C050164			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

Q – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

U – Result was qualified as "not detected" during data validation.

Table 8. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples Influent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP-Influent	04/04/01	*DL*	9.2	12.2	11.2	11.3	11.4	NA	NA	—
		Result	<9.2	<12.2	<11.2	<11.3	<11.4	30.2 EJ	237 J	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	0.0151	0.00237	0.0175
METHOD BLANK Sample Set – 53674			ND	ND	ND	ND	ND	ND	ND	—

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Table 8. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples Influent Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP-Influent	04/04/01	*DL*	7.2	10.1	10.3	7.9	7.7	8.7	10.4	12.6	17.6	26.5	—
		Result	<7.2	<10.1	<10.3	<7.9	<7.7	<8.7	<10.4	<12.6	<17.6	<26.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – 53674			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

Table 9. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples, Digester Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP Digester 1 & 2	04/10/01	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	63.9	458 EJ	328 J	926 J	951 J	20,380 J	177,660 EJ	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	63.9	206	9.84	9.26	9.51	10.19	1.7766	310
METHOD BLANK Sample Set – 53756			ND	ND	ND	ND	ND	ND	9.4 J	—
WWTP-Digester	11/08/01	*DL*	NA	NA	NA	NA	NA	NA	NA	—
		Result	61.6 J	308 EJ	317 J	861 J	902 J	15,480 J	147,720 JK	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	61.6	139	9.51	8.61	9.02	7.740	1.4772	237
METHOD BLANK Sample Set – 55851			ND	ND	ND	ND	ND	ND	3.2 J	—

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Table 9. Triangle Laboratory Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples, Digester Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP Digester 1 & 2	04/10/01	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	377 EJ	108 J	216 EJ	447 J	288 J	432 J	22.0 J	6,350 J	267 J	16,960	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	30.2	1.08	173	3.58	5.76	30.2	1.32	0.635	1.07	0.3392	247
METHOD BLANK Sample Set – 53756			ND	ND	ND	1.8 J	ND	ND	ND	ND	ND	ND	—
WWTP-Digester	11/08/01	*DL*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
		Result	167 J	317 J	173 J	390 J	325 J	340 J	71.3 J	5,130 J	214 J	12,050 J	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	13.4	3.17	138	3.12	6.50	23.8	4.28	0.513	0.856	0.2410	194
METHOD BLANK Sample Set – 55851			0.76 EJ	ND	ND	0.72 J	ND	ND	ND	ND	ND	ND	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

E – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

K – Concentration exceeds the calibration curve; qualified as estimated

Table 10. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (1/22/03)T	01/22/03	*DL*	3.7	1.7	1.8	2.0	1.9	2.8	5.5	—
		Result	<3.7	<1.7	<1.8	<2.0	<1.9	<2.8	<12 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.6	1.3	1.1	1.1	1.1	1.8	2.2	—
		Result	<2.6	<1.3	<1.1	<1.1	<1.1	<1.8	<3.2 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3A300238			ND	ND	ND	ND	ND	1.8 Q, J	7.7 J	—
WWTP EFF (2/13/03)T	02/13/03	*DL*	2.9	1.2	1.1	1.3	1.2	1.4	1.8	—
		Result	<2.9	<1.2	<1.1	<1.3	<1.2	<1.4	<7.1 B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	ND	ND	ND	6.1 J	—
WWTP EFF (2/13/03)D	02/13/03	*DL*	2.0	0.89	1.0	1.1	1.0	1.4	4.0	—
		Result	<2.0	<0.89	<1.0	<1.1	<1.0	<1.4	<4.0	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	ND	ND	ND	6.1 J	—
WWTP EFF (3/4/03)T	03/04/03	*DL*	3.1	1.3	1.2	1.3	1.3	1.6	2.0	—
		Result	<3.1	<1.3	<1.2	<1.3	<1.3	<1.6	<14 Q,B,J,U	—
		QL	10	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

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Table 10. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	
WWTP EFF (3/4/03)D	03/04/03	*DL*	4.1	1.7	1.7	1.7	1.7	2.4	3.2	—
		Result	<4.1	<1.7	<1.7	<1.7	<1.7	<2.4	<3.2	—
		QL	10	50	50	50	50	50	100	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	ND	1.7 J	2.5 J	9.5 J	—

Table 10. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (1/22/03)T	01/22/03	*DL*	2.8	1.3	0.97	0.89	0.96	1.1	1.5	2.6	3.7	7.8	—
		Result	<2.8	<1.3	<0.97	<0.89	<0.96	<1.1	<1.5	<2.6	<3.7	<7.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
WWTP EFF (1/22/03)D	01/22/03	*DL*	2.0	1.0	0.77	0.64	0.71	0.77	1.0	1.4	1.9	2.8	—
		Result	<2.0	<1.0	<0.77	<0.64	<0.71	<0.77	<1.0	<1.4	<1.9	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3A300238			ND	1.1 Q, J	ND	1.3 J	1.4 J	ND	1.7 J	ND	ND	5.7 J	—
WWTP EFF (2/13/03)T	02/13/03	*DL*	2.2	1.1	0.89	0.58	0.6	0.66	0.81	1.3	1.7	2.1	—
		Result	<2.2	<1.1	<0.89	<0.58	<0.6	<0.66	<0.81	<1.3	<1.7	<2.1	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
WWTP EFF (2/13/03)D	02/13/03	*DL*	1.4	0.8	0.6	0.47	0.52	0.59	0.73	1.1	1.4	2.8	—
		Result	<1.4	<0.8	<0.6	<0.47	<0.52	<0.59	<0.73	<1.1	<1.4	<2.8	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK Sample Set – H3B170102			ND	ND	ND	0.88 Q,J	ND	ND	ND	ND	ND	4.6 J	—
WWTP EFF (3/4/03)T	03/04/03	*DL*	2.1	1.1	0.88	0.80	0.78	0.86	1.1	1.1	1.4	1.7	—
		Result	<2.1	<1.1	<0.88	<0.80	<0.78	<0.86	<1.1	<1.1	<1.4	<6.8 B,J,U	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	(ND)	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

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Table 10. STL Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for Waste Water Treatment Plant Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs
		TEF	**0.1**	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**	
		BEF	**0.8**	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**	
WWTP EFF (3/4/03)D	03/04/03	*DL*	3.2	1.5	1.2	0.88	0.87	0.94	1.2	1.4	2.2	3.5	—
		Result	<3.2	<1.5	<1.2	<0.88	<0.87	<0.94	<1.2	<1.4	<2.2	<3.5	—
		QL	10	50	50	50	50	50	50	50	50	100	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
METHOD BLANK - Sample Set – H3C060154			ND	ND	ND	1.8 J	1.2 J	ND	1.5 J	1.9 Q,J	1.7 Q,J	6.8 J	—

(ND) Detected result was qualified as "not detected" due to associated blank contamination; contribution to the TEC is zero.

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ppq Parts per quadrillion (picograms per liter).

NA Information is not available.

ND Congener was not detected; contribution to the TEC is zero.

QL Congener quantifical limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) x BEF x TEF

Data Qualifiers:

B – Compound was detected in the associated QC method blank sample.

Q – Estimated maximum possible concentration.

J – Concentration is qualified as estimated.

U – Result was qualified as "not detected" during data validation.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
UPPER PENINSULA DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

March 9, 2004

COPY

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Mr. Daniel Musgrove
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Dear Mr. Miller and Mr. Musgrove:

SUBJECT: Work Plan for Additional Dioxin/Furan Monitoring,
Full-Scale Groundwater Treatment System, and
NPDES Permit Application
Kingsford/Breitung Township Site, Kingsford, Michigan

We are writing in response to your Work Plan of January 22, 2004, regarding the additional dioxin/furan monitoring for the Kingsford/Breitung Township Site. The Michigan Department of Environmental Quality (MDEQ) Water Division (WD) and the Remediation and Redevelopment Division (RRD) are working together to review this plan in a timely manner. Consequently, we are providing our comments that are available at this time to advance the preparation of the Work Plan.

Your consultant, ARCADIS, has already received some preliminary verbal comments from the WD regarding the January submittal, which was subsequently slightly modified via a February 13, 2004 plan revision submittal. At this time, we are providing the MDEQ's initial comments on the introduction, background, sampling methodology, and well specification portions of the January 22, 2004 Work Plan. Because the content of the plan we are commenting on is essentially unchanged in the February 13, 2004 draft, the scope of this letter generally does not address the February 13, 2004 plan. However, we have determined that it is appropriate to include one comment on a paragraph in the February 13, 2004 plan revision. Additional comments that deal with the laboratory analytical Standard Operating Procedures, laboratory Quality Assurance and performance issues, and data reporting/review will be presented in a separate letter in the near future.

Section 1: Introduction

- The term "dioxin" should be defined early in the document as to what it applies to. The document uses *"dioxin," "dioxin and furans," "dioxin/furans,"* etc., and it would be better to use one global term in the document.

- Page 1/13, 1.0 Introduction, paragraph 1, sentences 2 & 3 of the Work Plan should be written as: "Initially ARCADIS constructed a Phase I pretreatment system consisting of a degasification/precipitation tank, an aeration blower, and a de-foaming system with the treated effluent being discharged to the sanitary sewer system serving the IM/K WWTP. In October 2001 construction of the Phase II pretreatment system was completed and the new system was put into operation which consisted of 2-fixed film bioreactors, associated aeration blowers, nutrient feed systems and piping, and a clarifier. In 2003, the Phase II system was re-designed to an activated sludge treatment process with associated aeration blowers, nutrient feed system and piping, a clarifier, and a liquid sludge storage

not correct completed

tank. Treated effluent from the Phase II System is currently being discharged to the sanitary sewer system serving the IM/K WWTP"

Section 2: Project Background

Section 2.0 is incomplete, contains inaccuracies, and misleads the reader, as written. The MDEQ does not consider this section necessary for inclusion in the Work Plan; however, in the February 4, 2004 conference call with the WD, ARCADIS stated their belief that this section must be retained. As the MDEQ finds it serves no pertinent purpose and increases the potential for misleading the reader, the MDEQ strongly disagrees with inclusion of this section. If FORD and KPC insist in retaining Section 2.0 in their Work Plan, then the MDEQ expects that the next revision will be complete and accurate, and the MDEQ points out the following inaccuracies and incomplete statements, for the record:

- Page 3/13, 2.1 FORD/Kingsford Site Background, sentence 2 of the Work Plan would have been more accurately written as: "The remaining liquid fraction, predominantly water and organic acids, with . . ."

- Page 3/13, 2.1 FORD/Kingsford Site Background, bullet 1 of the Work Plan states: *"No chlorinated chemicals were used in any of the processes."* This statement is contradictory to the data collected during the Remedial Investigation which found trichloroethene (TCE) present in the waste materials from the NE Pit in concentrations ranging up to 110,000 parts per billion (ppb).

  Bullet 2, of the Work Plan states: *"The pyrolysis process by which charcoal is generated and the distillation process are not combustion processes."* This is true, however, the burning of fuels such as excess charcoal, non-condensable gas, distilled wood tars and creosote oil, along with sawdust and shaving by-products in the Powerhouse, as specified in Section 2.1 of the Work Plan, is a potential source for dioxin/furan generation. The Work Plan fails to include this information. Also, the summary does not include discussion of the operation of the incinerator, or the waste products from the incinerator which was located at the SW Pit, as potential sources.

  Bullet 3, of the Work Plan, states: *". . . the wastes were land applied . . ."* This choice of words leads the reader to believe the wastes were disposed of in a well thought out manner. The wastes certainly were not "land applied" in the contemporary sense. In fact, the waste products generated by FORD/KPC plant operations were simply dumped in glacial kettles (e.g., pits). These pits were unlined, unlicensed, and extended to within five feet of the "current" static water levels at the site. At the time of disposal, the pits would have provided recharge to the underlying groundwater, where direct interactions between the waste liquids and groundwater would have occurred. This information is not included in the section.

  Bullet 5, of the Work Plan states: *"The waste disposal areas that are the sources of the subject groundwater plume are located a minimum of 3,000 feet from the Menominee River."* It is also evident that there is a large reservoir of contamination still present in the saturated zone that is also acting as a source of the subject groundwater plume. This observation is missing from the section.

- Page 4/13, 2.2.1: The second bullet is incomplete and does not note that the Michigan Water Quality Standards (WQS) also regulate the 2,3,7,8-TCDD congener on a congener specific basis.

- Page 4/13, 2.2 Sources of Dioxin/Furans, sentence 1 of the Work Plan states: *"Dioxins are ubiquitous in the environment and are present at parts per quadrillion and parts per trillion levels."* However, the U.S. Department of Health and Human Services

Toxicological Profile for Chlorinated Dibenzo-p-Dioxins, dated December 1998 strongly suggests that the generation of dioxin/furan is most commonly associated with anthropogenic sources (e.g., produced from industrial processes), rather than natural processes. This concept is lacking in Section 2. Additionally, the Section 2 discussion fails to note that dioxin/furan concentrations and congener fingerprints in contamination from industrial sources can be different from that resulting from natural sources.

- Page 5/13, 2.2.2 Sources of Dioxins/Furans, Bullet 5 of the Work Plan states: *"Production and recycling of certain metals."* Further clarification as to which metals this point addresses is lacking.

- Page 6/13, 2.2.3 Fate and Transport of Dioxins/Furans: Although the toxicological profile for dioxin (U.S. Department of Health and Human Services, 1998) indicates that dioxins generally will strongly adsorb to organic matter and are unlikely to leach to groundwater, the profile also goes on to indicate that dioxins may dissolve in other organic pollutants, making them more mobile through soil. As a general point, dioxin contamination of ground water has been documented at other sites of contamination in the United States. This information is lacking in Section 2. Regarding the presentation and discussion of the conventional wastewater treatment process proposed, Section 2.2.3 variously states that the proposed treatment: *"adequately prevents releases," "has been demonstrated to be successful in removing dioxins and furans,"* and *"are expected to appropriately address and prevent releases of dioxins and furans."* These descriptions appear to only acknowledge that conventional treatment can be capable of reducing dioxins/furans to levels below quantification, and sometimes below detection levels. This presentation fails to acknowledge that this level of control by itself is inadequate to clearly demonstrate that the waste stream is treated to a degree that complies with the requirements of the WQS.

- Page 6/13, 2.2.3 Fate and Transport of Dioxins/Furans, Bullet 1 of the Work Plan states: *"The absence of chlorinated materials (in other than relatively minor amounts) in the source area at the Site eliminates a potential source of dioxins/furans (e.g., disposal of polychlorinated biphenyls, chlorinated benzenes, chlorinated pesticides, etc.)."* Refer to the previous comment regarding TCE concentrations in the source materials.

  Bullet 3, of the Work Plan states: *"None of the sources of dioxin/furan listed in the previous section are related to historical operations at the site that resulted in wastewater discharge into the pits."* This statement does not reflect the fact that other potential sources of dioxins (e.g., fuels burned, the incinerator, waste materials from the powerhouse and incinerator, etc.) existed at the site. See the comments above regarding Bullet 2 of the Work Plan. Your analysis fails to include these obvious potential sources from your historical operations.

  This section should have included a description of all the other activities that occurred at this site, including the production of various chemicals.

  Bullet 4, the wording in sentence 2 of the Work Plan is incorrect (regarding consolidated soils). "Consolidated" refers to firm units (e.g., sand to sandstone); and drift deposits are normally referred to as unconsolidated deposits, not consolidated. The second part of the same sentence states: *". . . (including perched sand seams with little or no connectivity between other preferred pathways)."* This statement appears contradictory to the data gathered during the RI investigation because if there was little to no connectivity between other preferred pathways there would be little to no contamination in the Zone A, B, C, D sands.

Section 3: Sampling Plans

These Section 3 comments are not comprehensive as the MDEQ review of this section's discussion of analytical/SOP/ performance, etc., issues is not yet complete.

- Page 7/13, 3.1.1 Groundwater, Bullet 1, Shallow Wells Away from the Menominee River: replace monitoring well GM-62A with monitoring well GM-72.

  Bullet 2, Deep Wells Away from the Menominee River: include monitoring well GM-62C. Also monitoring well GM-5 should be included here.

  Bullet 3, Shallow Wells Along the Menominee River: replace monitoring wells GM-63A, and GM-66A with monitoring wells GM-25A, GM-26A, and GM-27A.

  Bullet 4, Deep Wells Along the Menominee River: replace monitoring well GM-25C, with monitoring well GM-64B.

- The plan must be changed in all the appropriate places to reflect the noted changes in the sampling wells.

Page 7/13, 3.1.2 Pretreatment System Influent (Groundwater Extraction Wells). Extraction Well GMEW-6 is not included in the discussion list of extraction wells to be sampled, but is included on Table D-1. The new river wells (GMEW 5-9) shall be sampled three times).

- Page 7/13, 3.1.2 Pretreatment System Effluent: The effluent samples should be collected with consideration of the site treatment plant detention time such that the effluent samples correspond with the information generated from the contemporaneous well samples.

- Page 8/13, 3.1.4 Split Samples. Split samples will provide an additional level of quality control, but the section shall be revised to address the following items:

Page 9/13, 3.3 Sampling Procedures, paragraph 3. New tubing must be used with the displacement pump for each well sampling event. This section must be expanded to discuss when, how, how many, etc., field and equipment blanks will be collected. Well sampling must also include collection and analyses of samples for other selected signature chemicals (such as the phenol compounds, BOD, etc.) in addition to the proposed physical measurements to provide necessary sample characterization. Because of the potential for cross contamination, we do not support placing probes in the well casing. This sampling procedure must have text added to define steps sufficient to ensure sample integrity and proper custody. Additional comments may be forthcoming on this part of the plan.

- Paragraph 4, sentence two of the Work Plan should be written as: "Oversight of all sampling activities will be conducted by the MDEQ or their subcontractor, if the MDEQ elects to do so."

- Page 10/13, 3.4 Sampling Schedule. Two sampling events are proposed: one during the first week in February 2004 and the second during the first week of March 2004. Since seasonal variations in dioxin/furan concentrations are a concern, the second sampling shall be conducted during the Spring (late April or early May 2004), and a third sampling event shall be included during the Summer (late July 2004).

- Page 10/14 (comment on 2/13/04 draft), 3.4, Sampling Schedule: The early sampling dates in this section obviously will need to be changed eventually to reflect the timeline of this submittal and review process. The data validation timeline comment in the first

paragraph should be deleted. The second paragraph notes that the "away" wells sampling plan are not included in this plan. However, it is mandatory that this plan include the "away" well sampling specifics as they are part of the site characterization that this plan is to achieve. Although the data from these wells may not be available in time for the permit development, the data will be relevant to permit conditions likely to be included in the permit. Consequently, the "away" wells must be part of this overall plan for generating a database for permit development and also for consideration of potential permit triggers.

Please incorporate these changes into the draft Work Plan. However, do not submit a revised Work Plan for MDEQ review until after you have received the additional MDEQ comments relating to analytical, performance, data reporting and data review, etc., aspects contained in Sections 3, 4, and 5 of the draft plan. We are currently working on compiling and discussing these additional comments. However, at this point we can state that inclusion of Figure D-3 as drafted is unacceptable.

Please contact Mr. Steven Casey at 906-346-8535 or Mr. Christopher Austin at 906-875-2072 if you have any questions about the above comments.

Sincerely,

Clifton Clark
District Supervisor
Remediation and Remediation Division
906-346-8515

Steven Casey, P.E.
District Supervisor
Water Division
906-346-8535

ks

cc: Mr. Gary Lessard, Kingsford/Iron Mountain WWTP
Mr. Richard Studebaker, ARCADIS
Mr. Peter Palmer, ARCADIS
Mr. Gerald Saalfeld, MDEQ
Mr. Bruce Walker, MDEQ
Mr. Benjamin Thierry, MDEQ
Ms. Patricia Brandt, MDEQ
Mr. Christopher Austin, MDEQ

JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
UPPER PENINSULA DISTRICT OFFICE

STEVEN E. CHESTER
DIRECTOR

March 23, 2004

Mr. Gary Lessard
Iron Mountain-Kingsford WWTP
P.O. Box 88
Kingsford, MI 49802

Dear Mr. Lessard:

SUBJECT: Suspended deadlines

The Michigan Department of Environmental Quality (MDEQ) is suspending the schedule for review of the monitoring plan to sample and analyze Ford/Kingsford site groundwater for dioxin and furans (Plan) and Sample Operating Procedures (SOPs) from the letter dated 2/18/04. MDEQ is continuing approval for the Iron Mountain-Kingsford Joint Sewage Board to continue its acceptance of flows from the Ford/Kingsford Phase II flows.

The MDEQ has numerous staff in different divisions of MDEQ, as well as Weston Solutions Inc., which are engaged in reviewing the Plan and SOPs. MDEQ is engaged with Arcadis when the Plan or SOPs they are reviewing is incomplete. This is accomplished via written and verbal notification of Arcadis to submit the necessary information. Arcadis submittals are necessary for MDEQ to provide technical comments on a complete Plan. Time is also necessary for the consolidation and discussion of MDEQ and Weston comments in order to provide formal comments to Arcadis. The MDEQ will continue to notify you of progress and the arrangement of deadlines for Plan approval and its initiation by Arcadis.

Thank you for your continued cooperation. Please contact me at (906) 346-8528 with any questions, concerns or comments.

Sincerely,

Ben Thierry
EQA – Water Quality Division
Upper Peninsula District Office
906-346-8528

BT:TM

cc: Mr. Steven Casey, UP District Supervisor, WD, UP MDEQ
Mr. Gerald Saalfeld, Chief, North Unit, SWQAS, WD, MDEQ
Mr. Bruce Walker, SWQAS, WD, MDEQ
Mr. Clifton Clark, UP District Supervisor, RRD, UP MDEQ
Mr. Chris Austin, RRD, UP MDEQ
Ms. Patricia Brandt, MDEQ RRD
Mr. Jim Bedessem, Arcadis G&M
Iron Mountain/Kingsford Joint Sewage Board
Mr. David Miller, Ford Motor Company
Mr. Dave Musgrove, The Kingsford Products Company
Mr. Ric Studebaker, Arcadis G&M
Mr. Jon Forbort, Arcadis G&M
File: Iron Mountain/Kingsford WWTP, Dickinson County, Correspondence

JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
UPPER PENINSULA DISTRICT OFFICE

STEVEN E. CHESTER
DIRECTOR

April 6, 2004

COPY

Mr. David Miller
Ford Motor Company
Environmental Quality Office
Suite 950
Parklane Towers West
3 Parklane Boulevard
Dearborn, Michigan 48126

Mr. Daniel Musgrove
The Kingsford Products Company
5064 South Merrimac Ave.
Chicago, Illinois 60638

Dear Mr. Miller and Mr. Musgrove:

SUBJECT: Work Plan for Additional Dioxin/Furan Monitoring, Full-Scale Groundwater Treatment System, National Pollution Discharge Elimination System (NPDES) Permit Application, Kingsford/Breitung Township Site, Kingsford, Michigan

This letter provides additional Michigan Department of Environmental Quality (MDEQ) comments on the dioxin/furan (hereafter called dioxin) characterization work plan (WP) submitted as Attachment D of the NPDES permit application for the Kingsford/Breitung Township Site (hereafter the F/K Site). Two drafts of the WP have been submitted and these comments address both drafts. The comments below address WP sections 3.0, 4.0, and 5.0 which cover, in part, the analytical requirements, the data review/reporting requirements, and the data interpretation parts of the site characterization effort. Some initial WP comments were previously provided in the March 9, 2004, letter signed by us. A few additional comments were provided to Mr. Jon Forbort of Arcadis via a March 22, 2004, e-mail from Mr. Bruce Walker (MDEQ, Water Division). The WP must be revised to include the comments below as well as the previously transmitted comments. The revised WP should be submitted after Ford Motor Company and Kingsford Products Company (FORD/KPC) has received all MDEQ comments.

Although some comments below relate to the analytical aspects (i.e. SOP type issues) of the plan, we are not able to complete our review of all SOP related issues. An outstanding issue is that the ALTA analytical SOPs reviewed to date do not specify what kind of corrective actions are to be taken in response to some analytical or procedural issues that indicate something is out of compliance with QA/QC boundaries. Implementation of corrective actions to yield acceptable results must be a key part of the WP. The MDEQ must be provided with this type of information as part of the plan review/approval. Additionally, as noted below, there is yet much to be provided regarding the performance evaluation (PE) component of this plan as noted in the March 22, 2004, e-mail. Consequently, the MDEQ will be providing additional comments on these two issues in a subsequent letter.

Section 3.0 – Sampling Plan, Analytical Laboratories

1.) The final WP must specify collection of sufficient sample volume for each laboratory such that there is enough sample or extract volume to conduct a re-analyses if there are QA related problems with the initial sample analyses. With the small sample size being generated per

sampling point in this plan, it will not be acceptable to the MDEQ if analytical results for sampling points are lost or compromised due to sampling or analytical problems.

3) The final WP must specify that ultra clean, dioxin free sample bottles will be used and that dioxin free water will be used in any field blanks. Additionally, the proposed decontamination reagents/cleaning agents must be of similar grade and the decontamination process must be sufficient to prevent any potential cross contamination from sampling equipment that is reused.

4) The final WP must delete descriptors such as "primary" and "secondary" when discussing the proposed analytical laboratories. An objective of this effort is to obtain valid data from two laboratories and the MDEQ will consider the data of each approved laboratory to be of equivalent quality.

5) The final WP must include a complete description of the analytical and reporting directives/instructions that will be provided to the laboratories conducting the analyses.

6) The final WP must specify that samples within analytical runs that have associated QA/QC issues (excessive blank contamination, poor recoveries, atypically high detection levels, etc) that compromise the integrity or utility of the result(s) will be re-extracted, cleaned up, re-run after instrument cleanup or whatever is necessary (i.e. corrective actions) to produce acceptable results. Excessive blank contamination is detection of congeners at concentrations that are out of control relative to the laboratory's historic blank analyses. The statement in the draft plan that the reprocessing/re-analysis of a sample will occur only if there are problems that "... preclude identification at a level above the PQLs." must be deleted as it is unacceptable and is inconsistent with the objectives of the WP.

7) The final WP must state, for the wells selected for the plan objective of addressing the F/K site discharge to the Iron Mountain-Kingsford WWTP (IMK) facility that confirmed detection of dioxin (congener or TEC) above Michigan Water Quality Standards (WQS) in the initial samples can be a basis for termination of this WP's entire sampling program. The final WP also must state, for the wells selected for the plan objective of addressing the full-scale site treatment that confirmed detection of dioxin above WQS in those samples can be a basis for the termination of the remainder of that objective's sampling effort. Finally, the final WP must state that confirmed detection of dioxin in the site treatment plant effluent above WQS can also be a basis to terminate this plan's entire sampling program.

8) The final WP must include a complete section on the PE sample component of the plan. At the time of this letter, the PE component of the plan is incomplete. The performance sample shall include congener spike concentrations in the vicinity of the laboratories typical detection levels and some concentrations between the detection level and the EPA method 1613 specified MLs. The draft plan statement of setting spiking levels as close to the quantification level as possible must be deleted as it is unacceptable and is contradictory to the intent of this sampling program. The PE sample component must include details on corrective actions that will be triggered to address and correct unsatisfactory PE sample analyses as well as any site sample analyses associated with that PE sample.

Section 4.0 – Data Validation and Report Specifications

This section must be substantially changed as identified below through deletion of unnecessary proposed actions and clarification of some processes.

Data Validation

1) The final WP must delete all the draft plan references to and discussion about having data validated by Arcadis "experts".

2) The final WP must delete all the draft plan references to and discussion about data validation guidelines, references, or criteria other than those specified in EPA Method 1613 or those allowed by MDEQ (e.g. EMPC as previously discussed).

3) The final WP must delete all the draft plan references to and discussion about having the data "adjusted" (such as baseline adjustments, 5x the blank thresholds, recovery based corrections, etc) by Arcadis "experts".

4) The final WP must delete all references to and the presentation of the data review as noted in Figure D.3 because the draft work plan Figure D.3, as previously noted, is unacceptable to the MDEQ.

Data Reporting Specifications

1) The final WP must specify that a summary of the QA/QC acceptance criteria used by each laboratory will be included in each sample report.

2) The final WP must specify that each laboratory will report the sample congener results on both a quantified, if present at such a level, and detected basis. If a sample result requires coding which reflects an analytical issue, codes will be assigned to the respective result only by the appropriate laboratory analyst, not by FORD/KPC or Arcadis staff. All codes must be defined and any result that is determined by the laboratory to be unacceptable must be explained.

3) The final WP must specify that the laboratory result reports shall include total dioxin results for each of the tetra – octa substituted homolog groups.

4) The final WP must specify that each original, complete analytical report package generated by each laboratory will be mailed simultaneously to the specified contacts in Water Division (WD) and Remediation and Redevelopment Division (RRD) of MDEQ and the designated FORD/KPC, and IMK facility contacts. The sampling, analyses, and reporting must be coordinated between the laboratories such that the reports from each lab will contain the results for the same set of samples.

5) The draft plan notes the STL reporting of "EMPC" coding of data. The final WP shall specify that both laboratories report detections (coded with EMPC) that meet at least the retention time and S/N criteria. For EMPC coded data, the laboratory reports shall include a description of which identification criteria were not satisfied.

Data Summary Tables

1) As noted in the draft WP, data summary tables of detected and quantified congeners shall be presented using the format of prior submittals for this site. Only codes assigned by the analytical laboratory can be included in the summary tables. Non-detect results shall be reported as "< X.Y pg/l" rather than as "ND". The analytical results for the method blank associated with each sample shall be included in the table as done in previous submittals. The results reported by each laboratory for a specific sample shall be presented in a paired fashion so that the both sets of results for a sample are directly comparable in the summary tables.

2) For the preparation of the summary tables, the final WP must state that the only potential data manipulation applied to the reported congeners results will be the subtraction of the respective method blank value. Only method blank values that are within control can be subtracted from a raw result. The tables should highlight (bolded, shaded cell, etc) any congener value that is modified by subtraction of the blank value. Values determined for field blanks shall be included in the tables but may not be subtracted from any sample result.

3) The final WP must state that TEC values for individual samples will be calculated using the TEF and BEF values and TEC calculation formula presented in Rule 1209 of the WQS and the raw data from the summary tables discussed above. The only exceptions to this stated TEC calculation are that : 1) results that are "< DL" and appropriately coded EMPC results will be treated as "0" in the calculation and; 2) congener values may be "corrected" via subtraction to reflect within bounds method blank values. Unless there is a quantified result for a congener, the TEC calculations shall be made using the detection level results for the congeners.

4) The results and findings of the site characterization work shall be presented in a report(s), with the analytical data being presented consistent with the final WP which will incorporate the comments above, submitted to the designated contacts for WD and RRD and the IMK facility. The report shall be structured so that it presents the results and findings as applicable to each of the study's dual objectives.

5) If FORD/KPC wishes to present an interpretation of the study data using their own data "validation" rules which may be different from than those noted above, FORD/KPC may elect to submit separately a report detailing their alternative review of the data generated in this study. While the MDEQ will consider all relevant information, Ford/KPC must recognize that the MDEQ is under no obligation to accept the alternate review or its conclusions. Additionally, since FORD/KPC will be allowed the option to submit a separate data report, the final WP must not include the last sentence (i.e. the "...reserves their position..." statement) of the fifth bullet of Section 4.3 in the February 13, 2004, draft WP.

Section 5.0 – Data Review and Interpretation Specifications

This section shall be expanded, as described below, to describe the data review process and include the decision factors that will be used by MDEQ.

1) The final WP shall contain the following paragraph:
"At a minimum, if a final WP has not been approved by the time of the NPDES issuance, the NPDES permit for the F/K site, and the IMK facility as appropriate, will include dioxin related conditions which are effective upon permit issuance. If the data generated by this study are not adequate to clearly demonstrate to the MDEQ that dioxins are not present in the groundwaters or that any dioxins present at the F/K site are not at concentrations above WQS, the MDEQ will include and/or trigger dioxin related conditions in the NPDES permit for the F/K site and also, as appropriate, will require dioxin monitoring by the IMK facility. If the WP specified data for addressing the dual objectives are not provided in a timely fashion due to sampling or laboratory performance problems (e.g. blank issues, PE samples, QA issues, etc.), the MDEQ is under no obligation to extend the sampling period and the MDEQ reserves the right to require and/or trigger dioxin monitoring in either or both the Ford/KPC and IMK permits."

2) The final WP must state that the regulatory interpretation of the data determined to be acceptable by the MDEQ will be based on the highest congener and/or TEC values from either or both laboratories. The purpose of this statement is to clarify that if there are differences between

laboratories in the analytical results for a sample, the MDEQ review must be conservative in nature and the review must use the higher result(s).

3) The final WP must state that the confirmed detection by either laboratory of dioxin congeners or a dioxin TEC above WQS in any individual well or site effluent sample at any time is sufficient basis to conclude that dioxins are present at levels of concern in the site groundwaters and that this finding provides a basis for including dioxin permit conditions in the Ford/KPC permit and, as appropriate, requiring dioxin monitoring by the IMK facility if they are accepting effluent or groundwaters from the F/K site.

4) Inclusion of the above comments eliminates the need for Figure D.4. However, if the final WP is to contain Figure D.4, it must be modified to correct a WQS value error (3.5 should be 3.1) and the text must be made consistent with the above comments. Additionally, we would prefer the WP document and figures use the units of "parts per quadrillion" rather than "parts per quintillion".

Please contact Mr. Ben Thierry at (906) 346-8528 if you have questions on the above comments.

Sincerely,

Steve Casey
District Supervisor
Water Division
(906) 346-8535

Clif Clark
District Supervisor
Remediation and
Redevelopment Division
(906) 346-8515

SC:TM

cc: Mr. Bruce Walker, MDEQ WD Lansing
Mr. Ben Thierry, MDEQ WD
Mr. Jon Forbort, ARCADIS
File: NPDES, Ford/Kingsford, Dickinson County, Correspondence
File: NPDES, Iron Mountain-Kingsford WWTP, Dickinson County, Correspondence

ARCADIS

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MEMO

To:
Michigan Department of Environmental Quality

Copies:
Gary Lessard
David Miller
Daniel Musgrove

From:
Jon Forbort, PE

Date:
14 October 2004

ARCADIS Project No.:
WI0010025.0032

Subject:
Attachment D, Work Plan for Additional Dioxin/Furan Monitoring, Full-Scale Groundwater Treatment System, National Pollutant Discharge Elimination System (NPDES) Permit Application, Ford/Kingsford Site, Kingsford, Michigan

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The purpose of this memorandum is to establish a work plan to analyze groundwater at the subject site for polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (dioxins/furans), and to establish a consensus among the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD), the MDEQ Water Division (WD), the Iron Mountain/Kingsford Wastewater Treatment Plant (IM/K WWTP), Ford Motor Company, The Kingsford Products Company, and ARCADIS for the execution of the plan and specifications for reporting, congener identification, data review, and data interpretation.

The work plan presented herein is a support document for a NPDES permit application for the proposed full-scale treatment system designed for the ex-situ treatment of impacted groundwater and subsequent discharge of treated effluent to the Menominee River. The additional data are being generated to:

- Address MDEQ concerns with the potential for discharge of dioxins/furans from the existing pretreatment system to the IM/K WWTP, which will continue as long as practicable until the full-scale treatment system is operational.
- Address MDEQ concerns with the potential for the full-scale treatment system discharge to exceed Michigan Part 31 Rules discharge standards for dioxins/furans to the Menominee River.

1.0 Introduction

As a component of a multi-phase pilot program proposed in a draft work plan submitted to the MDEQ to address venting groundwater along the Menominee River (*"Work Plan for Investigation and Pilot Pumping Studies Along the Menominee River, May 30, 2000"*), a groundwater extraction and pretreatment

system was constructed in 2001. ARCADIS initially constructed a Phase I pretreatment system (Phase I System) consisting of a degasification/precipitation tank, an aeration blower, and a de-foaming system with the treated effluent being discharged to the sanitary sewer system serving the IM/K WWTP. In October 2001, construction of the Phase II pretreatment system (Phase II System) was completed and operation of the new system, consisting of two fixed-film bioreactors, associated aeration blowers, nutrient feed systems and piping, clarifier, and a liquid sludge storage tank was initiated. In 2003, the Phase II system was re-designed as an activated sludge treatment process with associated aeration blowers, nutrient feed system and piping, a clarifier, and a liquid sludge storage tank. Treated effluent from the Phase II System is currently being discharged to the sanitary sewer system serving the IM/K WWTP (historically, discharge flows have averaged less than 60 gallons per minute [gpm]). Based on the findings of the pilot testing, the conceptual design for the proposed full-scale groundwater treatment system was completed consisting of pretreatment aeration and clarification for metals removal, first-stage biological treatment using activated sludge aeration basins with gravity clarification, followed by second- stage biological treatment using submerged fixed-film bioreactors with gravity clarification. However, the pretreatment system will continue to operate (up to 100 gpm) and discharge treated effluent to the IM/K WWTP during construction of the full-scale system. ARCADIS anticipates that the pretreatment system will be shut down in summer 2005 to integrate the existing equipment into the full-scale treatment plant.

1.1 Existing Dioxin/Furan Data

Historical dioxin/furan data was generated using the following United States Environmental Protection Agency (U.S. EPA) Methods:

- U.S. EPA Method 8290, Revision 0 *"Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS)"* (September 1994).

- U.S. EPA Method 1613, Revision B *"Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS"* (October 1994).

U.S. EPA Method 1613, Revision B is approved under the Clean Water Act for analysis of dioxins/furans, whereas U.S. EPA Method 8290 is not. Since the majority of the historical data was generated by U.S. EPA Method 8290, the MDEQ has concluded that additional sampling and laboratory analytical data using U.S. EPA Method 1613B is required.

2.0 Sampling Plan

The sampling plan presented in this section specifies the sampling locations, number of sample rounds, procedures for collecting samples, a brief description of sampling methods, and a listing of the laboratories selected to perform the analyses. Sample locations relevant to the pretreatment system discharge to the IM/K WWTP include five monitoring wells along the Menominee River, the four extraction wells that are currently piped to the pretreatment system, and the pretreatment system effluent. Sample locations relevant to the full-scale groundwater treatment system include six monitoring wells located away from

the Menominee River and five future extraction wells in addition to the existing pretreatment system. Samples relevant only to the pretreatment system discharge will be designated as "Pretreatment." Samples not relevant to the pretreatment system will be designated as "Full-Scale" for purposes of clarity (the "Pretreatment" samples are also relevant for interpretation of the full-scale treatment system). It should be noted that the wells sampled under this plan are a representative subset of a larger network of both existing and future wells at the site, and provide a comprehensive and appropriate characterization of the site groundwater.

2.1 Sample Locations

In developing the basis for sampling locations, the following objectives were identified:

- Supplement existing Method 1613B dioxin and furan data for groundwater with samples from monitoring wells and extraction wells as described in Section 2.1.1 and 2.1.2 to determine the lateral and vertical extents of dioxins/furans, if any.
- Supplement existing Method 1613B dioxin and furan data for the pretreatment system influent (e.g., groundwater extraction wells as described in Section 2.1.2).
- Supplement existing Method 1613B dioxin and furan data for the pretreatment system effluent (as described in Section 2.1.3).

2.1.1 Groundwater Monitoring Wells

The following groundwater monitoring wells have been selected for sample collection:

- Shallow Wells Away from the Menominee River (Full-Scale): GM-37A, GM-72A
- Deep Wells Away from the Menominee River (Full-Scale): GM-37B, GM-62B, GM-62C, GM-5
- Shallow Wells Along the Menominee River (Pretreatment): GM-25A, GM-26A, GM-27A
- Deep Wells Along the Menominee River (Pretreatment): GM-26C, GM-64B (not yet re-installed)

Monitoring Wells GM-37A, GM-37B, GM-62B, GM-5, and GM-62C are located upgradient from the areas along the Menominee River, but are downgradient from the former pits. Monitoring Well GM-72A is located directly beneath the former Northeast Pit. Monitoring Wells GM-25A, GM-26A, GM-26C, GM-27A, and GM-64B are within the areas that will be subject to hydraulic control via extraction wells under the full-scale pumping scenario. The monitoring wells provide lateral and vertical coverage (Zones A, B, C, and D). Refer to Figure D-1 for a site plan with the locations of the monitoring wells, and to Figure D-2 for a cross-section of the area along the Menominee River.

2.1.2 Pretreatment System Influent (Groundwater Extraction Wells)

The following extraction wells will be analyzed:

- Pretreatment: GMEW-1, GMEW-2, GMEW-3, GMEW-4R
- Full-Scale: GMEW-5, GMEW-6, GMEW-7, GMEW-8, and GMEW-9

These wells will also be used to supplement the lateral and vertical coverage of the monitoring wells described in Section 2.1.1

2.1.3 Pretreatment System Effluent

Samples of the pretreatment system effluent will be collected and submitted for analysis of dioxins/furans. Samples will be collected with consideration of the pretreatment system detention time such that the effluent samples correspond with the information generated from the contemporaneous extraction well samples.

2.1.4 Split Samples

The purpose of split samples is to provide an additional level of quality control, and the split samples should be equivalent and thus provide a metric for comparing each laboratory's sample preparation and analytical capabilities (e.g., level of precision and accuracy). Split sample replicates will be collected concurrently at each sample location, and will be submitted to both laboratories presented in Section 2.2.

2.1.5 Equipment Blanks

The purpose of equipment blanks is to check for potential procedural contamination during sample collection activities that may be caused by deficiencies in decontamination procedures or new sampling equipment. For wells sampled using the bladder pump, the equipment blanks will be collected by rinsing the decontaminated sampling equipment and new tubing with distilled water (provided by the laboratory). For wells sampled with the peristaltic pump where the only sampling equipment that comes in contact with the groundwater is new tubing, the equipment blank will be collected by pouring distilled water (provided the laboratory) through the tubing. In each case, the rinsate will be collected for laboratory analysis. All equipment blanks will be collected at a frequency of one equipment blank for every ten samples. Enough sample volume will be collected such that replicate equipment blank samples can be submitted to both laboratories presented in Section 2.2.

2.1.6 Field Blanks

The purpose of field blank samples is to further assess the quality of data from the field sampling program Field blanks will be collected in the field by filling sampling containers with distilled water (provided by

the laboratory). Field blanks will be collected at a frequency of one for every ten samples, or at a minimum of one per day. Enough sample volume will be collected such that replicate field blank samples can be submitted to both laboratories presented in Section 2.2.

2.1.7 Temperature Blanks

Temperature blanks consisting of distilled water (provided by laboratory) will be submitted with each sample cooler shipped. Temperature blanks will be included so that the temperature of the samples can be measured if no ice is present in the shipment container. If the sample does not meet U.S EPA Method 1613B temperature specifications, ARCADIS will be notified by the laboratory project manager so that an informed decision can be made whether to proceed with analysis of the sample.

2.1.8 Additional Quality Assurance/Quality Control

Performance samples can be used to provide another level of quality assurance/quality control (e.g., sample prepared by an outside contractor with a known concentration of analyte submitted with the field samples). However, it is not currently possible to prepare a performance sample with a concentration between the instrument detection limit and the minimum level specified in Method 1613B since the minimum level (PQL) is the lowest point in the calibration curve for the instrument. In other words, a supplier of laboratory standards will not certify a performance sample below the PQL because it is below the calibrated range of the instrument. Therefore, in lieu of performance samples, MDEQ has requested that the laboratories demonstrate the quality of the data produced by analyzing a quality control (QC) check sample (as referenced in Sections 7.16 and 9.6 of U.S. EPA Method 1613B) immediately before the analyses of the samples from the first sampling round and third sampling round. This sample will be analyzed with any other QC samples (e.g. laboratory control sample) prior to the method blank and the samples submitted for analysis. To address contaminant carryover, it is standard procedure to run a rinse sample between the QC samples and the method blank. The analysis of the QC check sample will be requested on a chain-of-custody submitted during the first sample round and third sampling round.

2.2 Analytical Laboratories

Split samples will be submitted to both laboratories identified below for analysis of dioxins/furans using U.S. EPA Method 1613B in accordance within the schedule proposed in Section 2.4.

Severn Trent Laboratories, Inc.
STL Knoxville
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Phone: (865) 291-3000
Laboratory Quality Manual, Revision 2, July 17, 2003

Alta Analytical Laboratory Inc.
1104 Windfield Way
El Dorado Hills, California 95762
Phone: (916) 933-1640
Laboratory Quality Manual, Revision 1.0, March 2003

Laboratory Quality Manuals (revision information listed above) for each of the laboratories have been submitted to the MDEQ RRD and WD divisions under separate cover. A summary of project analytical and reporting requirements to be provided to each laboratory is presented in Attachment A.

2.3 Sampling Procedures

The collection of groundwater samples for dioxin/furan analysis will be conducted in accordance with the procedures described in the RI Report for the Ford/Kingsford site (ARCADIS, June 2002). The groundwater samples will be collected from the monitoring wells using low-flow purging and sampling techniques. An air-piston positive displacement pump (Model 1800), a bladder pump (Model R8550021D), or a peristaltic pump (Model L/S 7570-10) will be used to complete the low-flow purging and sampling. The piston or bladder pump will be used for deep groundwater wells and the peristaltic pump will be used for shallow groundwater wells. New tubing will be used with the bladder and peristaltic pumps for each sampling event. A decontaminated water level probe will be used to monitor the depth to water during sampling activities to demonstrate that the static water level is not affected by low-flow sampling. To minimize the potential for cross-contamination, a down-hole probe (e.g., YSI) will not be deployed to measure parameters during the sampling events; however, a flow-through cell will be used at the well head to monitor well parameters during sample collection.

In accordance with previous sampling results and procedures, sampling order will be from the well with the lowest historical concentrations of the site-specific target compound list (TCL) parameters (non-dioxin/furan constituents) to the well with the highest TCL concentrations (non-dioxin/furan constituents).

The monitoring wells will be purged at a flowrate between 100 and 500 milliliters per minute until the field parameters stabilize. The groundwater samples will be collected by filling the sample containers directly from the pump tubing at the stabilized purging flowrate. Samples will be collected in ultra clean, dioxin-free laboratory-supplied sample bottles. Upon collection, the groundwater samples will be placed on ice in a cooler and submitted under appropriate chain-of custody protocol to each of the selected laboratories. Three liters of groundwater will be collected at each sample location for each laboratory. That sample volume will insure that two or three analytical runs can be performed per sample, if needed.

Any sampling equipment not dedicated to a monitoring well will be decontaminated with detergent solution wash and de-ionized water, as well as a hexane rinse, prior to and between each sampling event. De-ionized water and hexane will be supplied by the laboratory and/or their subcontractor. Any decontaminated sampling equipment will be stored in aluminum foil to prevent contamination from plastics or other organic wrappings. New silicone and polyethylene tubing will be used with the peristaltic

pump for each sampling event and will be discarded following completion of the sampling. New, disposable latex gloves will be worn by the sampling personnel and discarded after each sampling event. The water extracted during the monitoring well purging and sampling activities will be contained in plastic buckets or steel drums and transported to the pretreatment system for appropriate treatment.

ARCADIS personnel will perform all the work associated with the sampling activities described herein. Oversight of all sampling activities will be conducted by the MDEQ or their subcontractor, if the MDEQ elects to do so.

2.4 Sampling Schedule

ARCADIS proposes the collection of two rounds of data for each of the sampling locations discussed in Section 2.1 above. The proposed schedule for the sampling is the collection of the first round during the first or second week of October 2004, and the collection of the second round during the first or second week of December 2004. A sample collection matrix and schedule is included in Table D-1. It is expected that analytical reports will be generated 6 to 7 weeks after samples are received at each laboratory.

In addition, one (1) additional round of samples from the monitoring wells away from the Menominee River (GM-37A, GM-72A, GM-37B, GM-62B, GM-62C, and GM-5) will be required to address MDEQ requirements for temporal sampling. This temporal sample event would be proposed for spring of 2005.

3.0 Data Review and Reporting Specifications

Data will be generated and reported by the laboratory per the requirements of U.S. EPA Method 1613B. The review of these data will be consistent with U.S. EPA Method 1613B and other congener identification review specifications detailed by the MDEQ in this work plan.

3.1 Congener Identification Criteria

Per Section 16.0 of U.S. EPA Method 1613B, all of the identification criteria must be met before a peak can be identified as a dioxin/furan congener (in a standard, blank, or sample). If any single identification criteria (or combination) is outside the acceptable range, the peak is **NOT** a dioxin/furan congener, and the analyte must be identified as a non-detect with a QC flag. Non-detects will be treated as zero in the subsequent toxicity equivalency concentrations (TEC) calculations. Congener identification criteria from U.S. EPA Method 1613B are as follows:

1. The signals for the two exact mass to charge ratios specified in Table 8 of U.S. EPA Method 1613B must be present and must maximize within the same two seconds.

2. The signal-to-noise ratio must be above 2.5 for all suspected dioxin/furan peaks.

3. Ion abundance ratios must be within the limits specified in Table 9 of U.S. EPA Method 1613B.

4. Relative retention times for 2,3,7,8-substituted chlorinated dibenzo-p-dioxin and chlorinated dibenzofuran must be within the limits specified in Table 2 of U.S EPA Method 1613B.

5. Confirmatory analysis must be performed for any peaks identified as 2,3,7,8-tetrachlorodibenzofuran using the gas chromatograph columns specified in U.S. EPA Method 1613B.

3.2 Laboratory Reporting Criteria

The project analytical and reporting requirements to be provided to each laboratory are presented in Attachment A; a brief summary is as follows. The laboratory will report data consistent with the requirements of U.S. EPA Method 1613B, which pursuant to Section 16.6, states the following:

- If the criteria for identification, summarized above, are not met, the dioxin or furan has not been identified. *"If interferences preclude identification, a new aliquot of sample must be extracted, further cleaned up, and analyzed."*

Each laboratory will run the samples in the sampling order and will report the "pretreatment" and "full-scale" samples in separate batches. In addition to the reporting requirements specified in U.S EPA Method 1613B, the laboratory will be required to report the method detection limit (it is a common practice for laboratories to exclude the method detection limit from the report when there is a reportable concentration). Only the laboratory will code the data. The laboratory reports will include chromatograms, all calibrations, and all raw quality control data (e.g., quantitation reports). A final copy of each laboratory report will be distributed by the laboratory to Ric Studebaker of ARCADIS and to Chris Austin and Gerry Saalfeld of MDEQ. In addition, the laboratory reports will be reported electronically as a portable document format and in electronic data deliverable.

3.3 Data Review Guidelines

The following definitions are provided to maintain consistent terminology for detection and quantitation limits:

- Detection Level: The minimum concentration of an analyte that can be measured above the instrument background noise. Also referred as instrument detection limit, detection limit, or estimated detection limit.

- Quantitation Level: The level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard. Also referred to as minimum level, or PQL.

The following data review actions are anticipated:

- Matrix interferences are sometimes observed in the method blanks. Per U.S. EPA Method 1613B, method blanks should be free from contamination or matrix interferences (e.g., there should be non-detects for all congeners). If excessive method blank contamination occurs, or if 2,3,7,8-TCDD is detected in a method blank, the samples associated with the method blank will be re-extracted, cleaned up, and re-run in accordance with U.S. EPA Method 1613B and each laboratory's corrective action procedures. Excessive blank contamination is defined to be detection of congeners at concentrations that are out of control relative to the laboratory's historic blank analyses.

- If unacceptable contamination (e.g., unusually high and/or numerous congeners) is found in the field or equipment blanks, samples with detections associated with the blanks will be disqualified as invalid data and will be resampled. Samples that are non-detect will be valid since these samples were not affected by potential field procedures.

3.3.1 Data Reports and Summary Tables

For each sampling round, ARCADIS will prepare a brief summary report that includes a cover letter, summary data tables, and summary analytical reports. If an analytical laboratory's preliminary results show the presence of detectable levels of dioxins/furans, the laboratory will immediately forward these data to ARCADIS. ARCADIS will notify the MDEQ of these preliminary findings within seven days. Summary tables will be prepared in the format submitted for all the existing sample data. Replicate samples will be paired to facilitate comparison of analytical results from each laboratory. Summary tables will also contain the following information:

- Bioaccumulation equivalency factors (BEF) will be provided in accordance with Part 8, Rule 1209, Table 2. BEF provides toxicological information on chlorinated dibenzo-p-dioxin and chlorinated dibenzo-p-furans relative to 2,3,7,8-tetrachlorodibenzo-p-dioxin.

- Toxicity equivalency factors (TEF) will also be provided in accordance with Part 8, Rule 1209, Table 2. TEF provides information on the toxicity associated with a mixture of chlorinated dibenzo-p-dioxins and chlorinated dibenzo-p-furans relative to the toxicity of 2,3,7,8-tetrachlorodibenzo-p-dioxin.

- Sample TECs will also be provided. In accordance with previous dioxin submittals, one table will summarize TEC calculation using data above the detection level and a second table will summarize TEC calculations using data above the MDEQ's target detection limit. In accordance with Part 8, Rule 1209, the BEF and TEF factors will be used to calculate the TEC for a sample. First, the TEC for a specific congener (TEC_i) will be calculated as follows (including subtracting out method blank concentrations associated with the samples, provided that excessive method blank contamination is not present as described in Section 3.3 above):

TEC_i = [(sample concentration) – (method blank concentration)] × TEF × BEF

Or

$TEC_i = 0.$

Second, the TEC for the sample will be calculated as follows:

$TEC=\sum TEC_i$

TEC calculations with method blank concentrations subtracted from an associated sample result will be identified with a shaded cell in the table.

- Detection levels, analytical results, and quantitation levels will also be provided in the summary tables.
- Non-detects will be reported as "<X.X" picograms per liter in lieu of "ND". Analytical results for the method blank associated with each sample will also be included (as in previous submittals).
- Data that has not met congener identification criteria will be reported as a non-detect with the laboratory specific data qualifying flag. Footnotes will be included with each of the tables with a description of each data qualifying flag.

4.0 References

U.S. Environmental Protection Agency. October 24, 2003. Federal Register: October 24, 2003 (Volume 68, Number 206).

U.S. Department of Health and Human Services. December 1998. Toxicological Profile for Chlorinated Dibenzo-p-dioxins. Public Health Service. Agency for Toxic Substances and Disease Registry.

Table D-1. Sample Collection Matrix, Ford/Kingsford Site, Kingsford, Michigan.

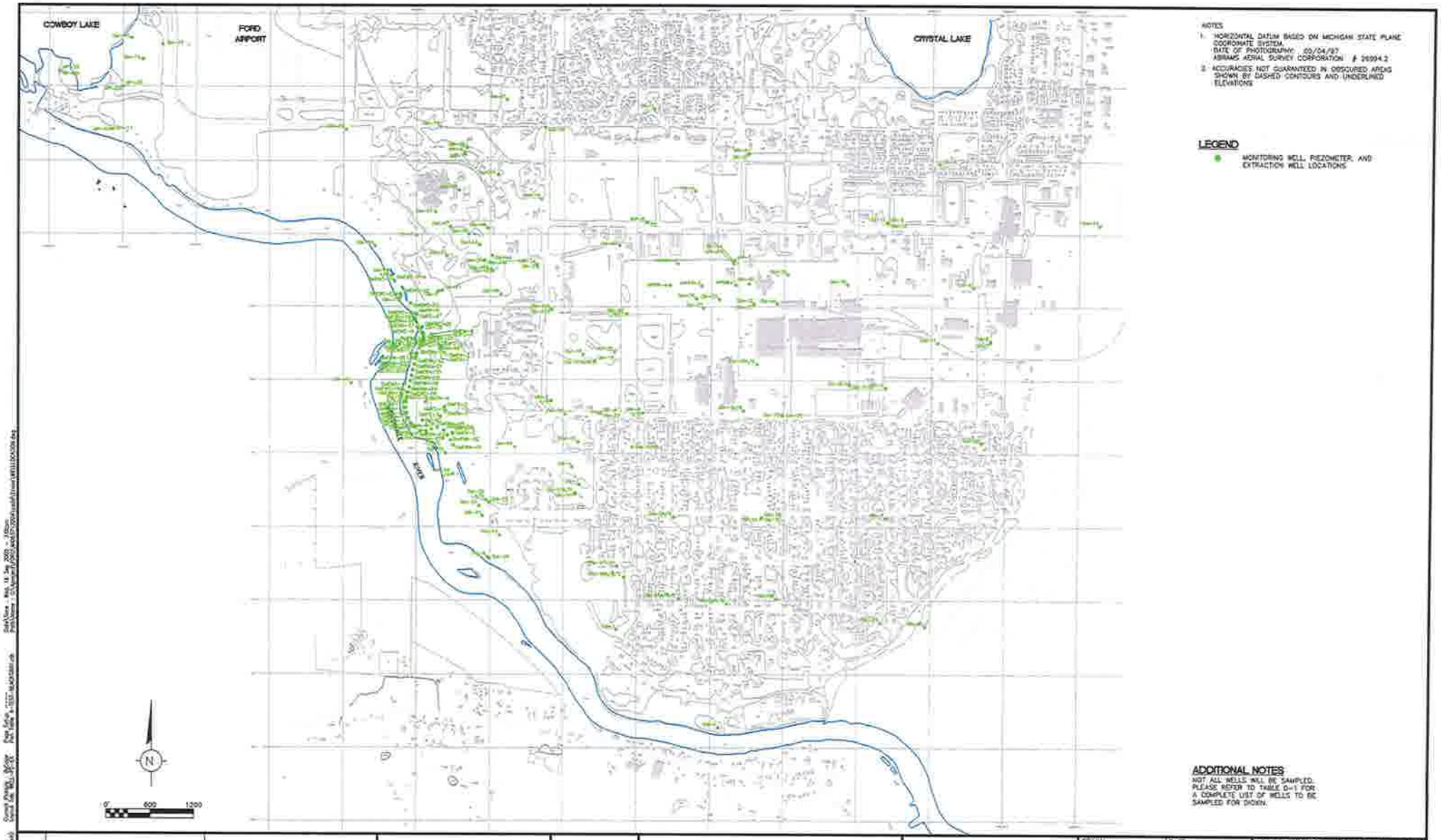
							October 2004 Samples	
	Matrix	Position Relative to Menominee River	Groundwater Zone	Low Flow Pumping Method	Order of Sample Collection[1]	Sampling Rounds	No. Samples per Location[2]	Field Split Samples[3]
Monitoring Well GM-37A	Groundwater	Away	NA	Bennett/Bladder	4b	3	1	1
Monitoring Well GM-72A	Groundwater	Away	NA	Bennett/Bladder	3b	3	1	1
Monitoring Well GM-37B	Groundwater	Away	Zone B / C	Bennett/Bladder	7b	3	1	1
Monitoring Well GM-62B	Groundwater	Away	Zone B / C	Bennett/Bladder	6b	3	1	1
Monitoring Well GM-62C	Groundwater	Away	Zone C	Bennett/Bladder	5b	3	1	1
Monitoring Well GM-5	Groundwater	Away	Zone C	Bennett/Bladder	1b	3	1	1
Monitoring Well GM-25A	Groundwater	Along	Zone A	Peristaltic	2p	2	1	1
Monitoring Well GM-64B*	Groundwater	Along	Zone B/C	Peristaltic	1p	2	1	1
Monitoring Well GM-26A	Groundwater	Along	Zone A	Peristaltic	5p	2	1	1
Monitoring Well GM-26C	Groundwater	Along	Zone C	Peristaltic	4p	2	1	1
Monitoring Well GM-27A	Groundwater	Along	Zone A	Peristaltic	3p	2	1	1
Extraction Well GMEW-1	Influent	Along	Zone A	Peristaltic	See Note 7	2	1	1
Extraction Well GMEW-2	Influent	Along	Zone A	Peristaltic	See Note 7	2	1	1
Extraction Well GMEW-3	Influent	Along	Zone B	Bennett/Bladder	See Note 7	2	1	1
Extraction Well GMEW-4R	Influent	Along	Zone B	Peristaltic	8p	2	1	1
Extraction Well GMEW-5	Influent	Along	Zone A	Bennett/Bladder	2b	2	1	1
Extraction Well GMEW-7	Influent	Along	Zone C	Bennett/Bladder	8b	2	1	1
Extraction Well GMEW-8	Influent	Along	Zone C	Peristaltic	7p	2	1	1
Extraction Well GMEW-9	Influent	Along	Zone C	Peristaltic	6p	2	1	1
Pretreatment System Effluent	Effluent	NA	NA	NA	See Note 7	2	1	1
Field Blank[4]	NA	NA	NA			3	5	5
Equipment Blank[5]	NA	NA	NA			3	2	2
Temperature Blank[6]	NA	NA	NA				NA	NA
						Total:	**27**	**27**

NA Not applicable
(1) Wells will be sampled in order, from the least impacted well to the well with the highest impacts.
(2) Samples to be submitted to Severn Trent Laboratories, Inc. (STL Knoxville), Middlebrook, Tennessee.
(3) Split samples to be submitted to Alta Analytical Laboratory, Inc., El Dorado Hills, California.
(4) Field blanks will be collected one for every ten samples or/ one per day.
(5) Equipment blanks will be collected one for every ten samples per sampling type.
(6) Temperature blanks will be submitted in each cooler and will not be analyzed by U.S. EPA Method 1613B.
(7) Pretreatment system sampling will be initiated following a minimum of five consecutive days of steady state operation.
* Well will be re-installed prior to sampling.

Table D-1. Sample Collection Matrix, Ford/Kingsford Site, Kingsford, Michigan.

	December 2004 Samples		Spring 2005 Samples		
	No. Samples per Location[2]	Field Split Samples[3]	No. Samples per Location[2]	Field Split Samples[3]	Total Samples
Monitoring Well GM-37A	1	1	1	1	6
Monitoring Well GM-72	1	1	1	1	6
Monitoring Well GM-37B	1	1	1	1	6
Monitoring Well GM-62B	1	1	1	1	6
Monitoring Well GM-62C	1	1	1	1	6
Monitoring Well GM-5	1	1	1	1	6
Monitoring Well GM-25A	1	1			4
Monitoring Well GM-64B*	1	1			4
Monitoring Well GM-26A	1	1			4
Monitoring Well GM-26C	1	1			4
Monitoring Well GM-27A	1	1			4
Extraction Well GMEW-1	1	1			4
Extraction Well GMEW-2	1	1			4
Extraction Well GMEW-3	1	1			4
Extraction Well GMEW-4R	1	1			4
Extraction Well GMEW-5	1	1			4
Extraction Well GMEW-7	1	1			4
Extraction Well GMEW-8	1	1			4
Extraction Well GMEW-9	1	1			4
Pretreatment System Effluent	1	1			4
Field Blank [4]	5	5	2	2	24
Equipment Blank [5]	2	2	1	1	10
Temperature Blank [6]	NA	NA	NA	NA	NA
	27	**27**	**9**	**9**	**126**

NA Not applicable
(1) Wells will be sampled in order, from the least impacted well to the well with the highest impacts.
(2) Samples to be submitted to Severn Trent Laboratories, Inc. (STL Knoxville), Middlebrook, Tennessee.
(3) Split samples to be submitted to Alta Analytical Laboratory, Inc., El Dorado Hills, California.
(4) Field blanks will be collected one for every ten samples or/ one per day.
(5) Equipment blanks will be collected one for every ten samples per sampling type.
(6) Temperature blanks will be submitted in each cooler and will not be analyzed by U.S. EPA Method 1613B.
(7) Pretreatment system sampling will be initiated following a minimum of five consecutive days of steady state operation.
* Well will be re-installed prior to sampling.



NOTES
1. HORIZONTAL DATUM BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM.
   DATE OF PHOTOGRAPHY: 03/04/97
   ABRAMS AERIAL SURVEY CORPORATION # 26094.2
2. ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

LEGEND

- MONITORING WELL, PIEZOMETER, AND EXTRACTION WELL LOCATIONS

ADDITIONAL NOTES
NOT ALL WELLS WILL BE SAMPLED. PLEASE REFER TO TABLE D-1 FOR A COMPLETE LIST OF WELLS TO BE SAMPLED FOR DIOXIN.

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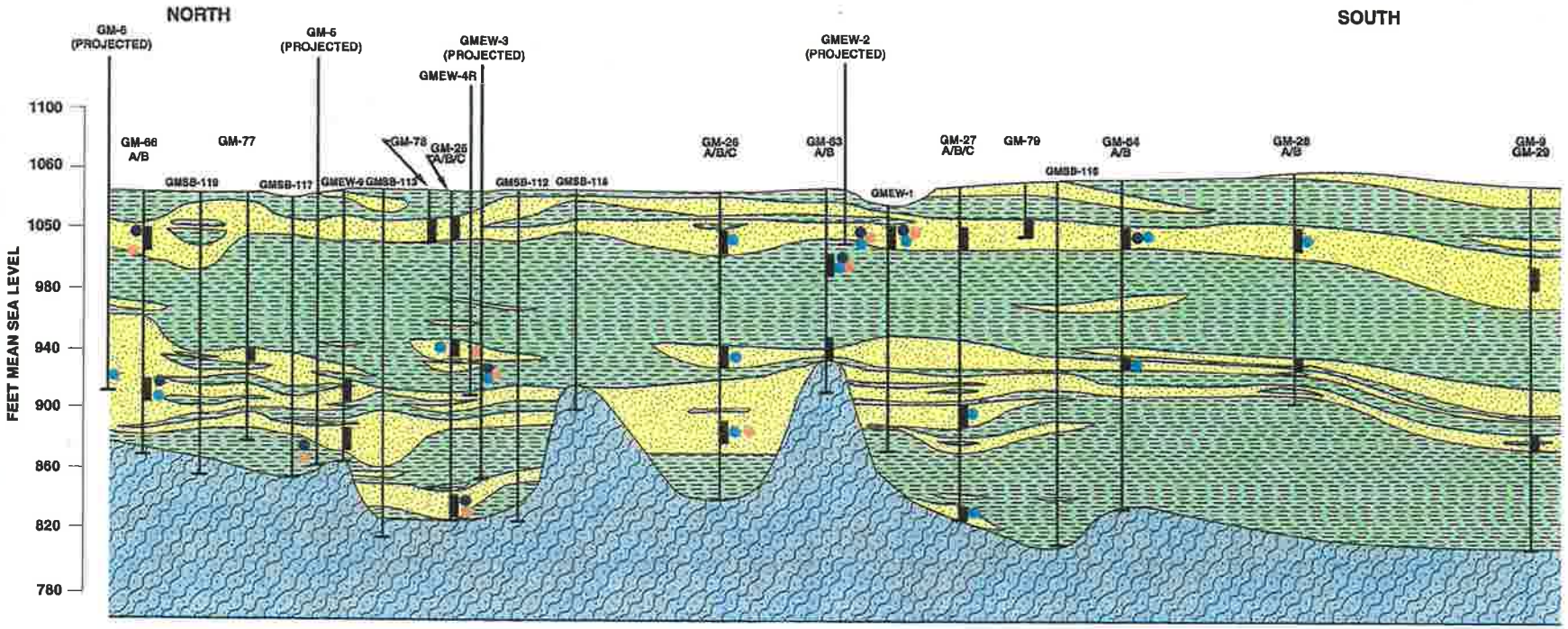
NO.	DATE	REVISION DESCRIPTION	BY / CHD

ARCADIS
3905 Northdale Boulevard, Suite 100
Tampa, Florida 33624
Tel: 813/961-1931 Fax: 813/961-2099

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

LOCATION OF MONITORING WELLS, PIEZOMETERS, AND EXTRACTION WELLS

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
CDM	8/25/04	EC	BE
LEAD DESIGN PROF.		CHECKED	
BE		BE	
PROJECT NUMBER		FIGURE	
WI00975.0001		D-1	



EXPLANATION

- SAND/GRAVEL (FINE TO COARSE)
- SILT/CLAY SILTY SAND
- BEDROCK

GM-78

- WELL/BORING LOCATION
- WELL SCREEN INTERVAL

- QUESTIONABLE DATA, U.S. EPA METHOD 8290
- NON-DETECT, U.S. EPA METHOD 8290
- NON-DETECT, U.S. EPA METHOD 1613B

80
40
0
0 200 400
APPROXIMATE SCALE IN FEET
VERTICAL EXAGGERATION = 5x

ARCADIS

WORK PLAN FOR ADDITIONAL DIOXIN/FURAN MONITORING

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
D-2

DRAFTER: LMB | APPROVED: | CHECKED: JEF/RPF | DRAWING: XSEC_WORKPLAN.AI | FILE NO.: GRAPHICS | PN: FORDWI0837/2004 | DWG DATE: 24AUG04

ARCADIS

ATTACHMENT A
Guidelines for Analysis and Reporting of Dioxin Samples Collected From the Ford/Kingsford Site.

Dioxin samples collected from the Ford/Kingsford site will be analyzed and reported according to the information contained within this memo. It is anticipated that there will be two sampling events each consisting of approximately 20 primary samples, five field blanks, and two equipment blanks. The proposed schedule for the sampling is the collection of the first round during the third or fourth week of October 2004, and the collection of the second round during the first or second week of December 2004. A third sampling round, consisting of approximately seven primary samples, three field blanks, and two equipment blanks, will be collected during 2005. Three liters of groundwater will be collected at each sample location to ensure that two or three analytical runs can be performed per sample, if needed.

The following information is provided to support the analysis of these samples:

1) Samples will be run by United States Environmental Protection Agency (U.S. EPA) Method 1613B.

2) Samples will be run in the sampling order, based on chain-of-custody sampling date and time. Samples will be held until all samples are received for each sampling event. Approximately 27 will be received by the laboratory for the first two sampling rounds and 12 samples for the third sampling round. A representative of ARCADIS will contact the laboratory to confirm that all samples have been received prior to sample extraction and analysis. All samples will be extracted at the same time and then run in two consecutive analytical batches.

3) Samples will be run for the 17 congeners listed on Table 1 of U.S. EPA Method 1613B. Totals will not be reported since these may include other dioxin/furans not listed on this table.

4) A low-level quality control (QC) check sample (as referenced in Sections 7.16 and 9.6 of U.S. EPA Method 1613B) will be analyzed immediately before the analysis of the samples from the first sampling round and the third sampling round (at a minimum). This sample will be analyzed with any other QC samples (e.g. laboratory control sample) prior to the method blank and the samples submitted for analysis. To address contaminant carryover, a rinse sample will be run between the QC samples and the method blank.

5) A second method blank will be run with each analytical batch (e.g., a total of four method blanks for each of the first two sampling events and a total of two method blanks for the third sampling event).

6) Congener Identification: Per Section 16.0 of U.S. EPA Method 1613B, all of the identification criteria must be met before a peak can be identified as a dioxin/furan congener (in a standard, blank, or sample). If any single identification criteria (or combination) is outside the acceptable range, the peak is not a dioxin/furan congener, and the analyte must be identified as a non-detect with a QC flag. Congener identification criteria from U.S. EPA Method 1613B are as follows:

a) The signals for the two exact mass to charge ratios (m/z) specified in Table 8 of U.S. EPA Method 1613B must be present and must maximize within the same two seconds.

b) The signal-to-noise ratio (S/N) must be above 2.5 for all suspected dioxin/furan peaks.

c) Ion abundance ratios must be within the limits specified in Table 9 of U.S. EPA Method 1613B.

d) Relative retention times for 2,3,7,8-substituted chlorinated dibenzo-p-dioxin and chlorinated dibenzofuran must be within the limits specified in Table 2 of U.S EPA Method 1613B.

e) Confirmatory analysis must be performed for any peaks identified as 2,3,7,8-tetrachlorodibenzofuran using the gas chromatograph columns specified in U.S. EPA Method 1613B.

Note: Peaks that meet the retention time **and** signal-to-noise criteria described above, but **do not** meet the remaining congener identification criteria will be reported as non-detect and the elevated detection limit flagged indicating that the "Does not meet all the method specified congener identification criteria."

The following information is provided to support the reporting of these samples:

1) The laboratory will group the "pretreatment" and "full-scale" samples in separate laboratory reports. The attached table (Table A-1) identifies the samples as "pretreatment" or "full-scale."

2) In addition to the reporting requirements specified in U.S EPA Method 1613B, the laboratory will be required to report the method detection limit (e.g., EDL).

3) If preliminary results show the presence of detectable levels of dioxins/furans, the laboratory will immediately forward these data to ARCADIS. ARCADIS will notify the MDEQ of these preliminary findings within seven days.

4) The laboratory reports will consist of a full data package and include: narrative explaining qualified (flagged) results, initial calibration (ICAL), continuing calibrations (CCALs), method blanks (MB), ongoing precision and recovery (OPR), sample raw data, confirmation data (if applicable), quality control and sample datasheets, sample preparation bench sheets, and receiving documents (e.g., chain of custody, sample receiving checklist, etc.).

5) A final copy of each laboratory report will be distributed by the laboratory to the following three individuals:

Ric Studebaker
ARCADIS
126 N. Jefferson Street Ste. 400
Milwaukee, Wisconsin 53202

Gerald Saalfeld
Water Division
Michigan Department of Environmental Quality
MDEQ-Water Division, 2 South
525 West Allegan
Lansing MI 48933

Chris Austin
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
1420 West US Hwy. 2
Crystal Falls, MI 49920-9623

6) Each laboratory report will also be reported electronically as a portable document format (PDF) and in electronic data deliverable (EDD) format.

The following data review actions are anticipated:

- Matrix interferences are sometimes observed in the method blanks. Per U.S. EPA Method 1613B, method blanks should be free from contamination or matrix interferences (e.g., there should be non-detects for all congeners). If excessive method blank contamination occurs, or if 2,3,7,8-TCDD is detected in a method blank, the samples associated with the method blank will be re-extracted, cleaned up, and re-run in accordance with U.S. EPA Method 1613B and each laboratory's corrective action procedures. Excessive blank contamination is defined to be detection of congeners at concentrations that are out of control relative to the laboratory's historic blank analyses.

- If unacceptable contamination is found in the field or equipment blanks, samples with detections associated with the blanks will be disqualified as invalid data and will be resampled. Samples that are non-detect will be valid since these samples were not affected by potential field procedures.

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Table A-1. Reporting Batch Designations, Ford/Kingsford Site, Kingsford, Michigan.

Sample Location	Reporting Batch
Pretreatment System Effluent	Pretreatment
Extraction Well GMEW-5	Pretreatment
Monitoring Well GM-64B	Pretreatment
Monitoring Well GM-25A	Pretreatment
Monitoring Well GM-27A	Pretreatment
Monitoring Well GM-26C	Pretreatment
Extraction Well GMEW-1	Pretreatment
Monitoring Well GM-26A	Pretreatment
Extraction Well GMEW-7	Pretreatment
Extraction Well GMEW-9	Pretreatment
Extraction Well GMEW-3	Pretreatment
Extraction Well GMEW-8	Pretreatment
Extraction Well GMEW-2	Pretreatment
Extraction Well GMEW-4R	Pretreatment
Monitoring Well GM-5	Full-Scale
Monitoring Well GM-72A	Full-Scale
Monitoring Well GM-37A	Full-Scale
Monitoring Well GM-62C	Full-Scale
Monitoring Well GM-62B	Full-Scale
Monitoring Well GM-37B	Full-Scale
Field Blank	With associated samples
Equipment Blank	With associated samples
Temperature Blank	Not reported.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
UPPER PENINSULA DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

FORD COURT CASE NO
04-001427-CE-

October 18, 2004

Mr. David Miller
Ford Motor Company
Environmental Quality Office
Suite 950
Parklane Towers West
3 Parklane Boulevard
Dearborn, Michigan 48126

Mr. Daniel Musgrove
The Kingsford Products Company
5064 South Merrimac Ave.
Chicago, Illinois 60638

Dear Mr. Miller and Mr. Musgrove:

SUBJECT: Work Plan for Additional Dioxin/Furan Monitoring, Full-Scale Groundwater Treatment System, National Pollution Discharge Elimination System (NPDES) Permit Application, Kingsford/Breitung Township Site, Kingsford, Michigan

This letter provides Ford Motor Company and Kingsford Products Company (FORD/KPC) with MDEQ comments upon and provisional approval of the dioxin/furan (hereafter called dioxin) characterization work plan (WP) submitted as Attachment D of the NPDES permit application for the Kingsford/Breitung Township Site (hereafter the F/K Site). A number of drafts of the WP previously have been submitted, reviewed and commented upon and the latest draft reflects recent discussions with FORD/KPC representatives (Arcadis), the analytical laboratories, and MDEQ staff via emails and telephone calls. The comments and approval contained in this letter are pertinent to the October 14, 2004, draft of the WP.

The MDEQ approves the October 14, 2004, WP contingent upon the incorporation of the comments and topics below into the understanding of and execution of the WP by Arcadis.

1) Section 1 of the October 14, 2004, draft of the WP references a May 30, 2000, draft work plan to address venting to the Menominee River. For the record, the MDEQ again states that the May 30, 2000, draft work plan to address venting to the Menominee River did not fulfill the objectives specified in the February 29, 2000, letter from the MDEQ to Ford/KPC. This shortcoming has been noted more than once by the MDEQ.

2) For purposes of clarification, the use of the term "full-scale" for the WP described groundwater sampling and plume characterization is considered to be specific to the execution of this WP since future "full-scale" operations at the site will encompass a different set of wells, monitoring efforts, and control actions.

3) As noted in a previous draft of the WP and as communicated to Arcadis, the MDEQ will review and interpret the data and findings generated by this WP largely based upon the data review and interpretation positions contained in Section 5.0 of the April 6, 2004, MDEQ letter from Mr. Casey and Mr. Clark to Ford/KPC.

4) The only modification and "coding" by Arcadis of the laboratory results summarized by Arcadis staff would be the potential subtraction of method blank values from the sample results

as previously communicated to Arcadis by MDEQ. It is the position of the MDEQ, and it is our understanding that Arcadis agrees, that it is inappropriate to subtract excessive method blank results from associated sample results. Consequently, the MDEQ reserves the right to interpret the analytical results independent of elevated or excessive method blank results. This position, however, does not preclude the subtraction of typical, low level method blank contamination from sample results.

5) To emphasize a significant point included in the MDEQ April 6, 2004, letter, we wish to restate that if the WP specified data for addressing the dual objectives of the WP are not provided to the MDEQ in a timely fashion due to sampling and/or laboratory performance problems (e.g. blank contamination issues, lab QA issues, etc.), the MDEQ is under no obligation to extend the sampling period and the MDEQ reserves the right to require and/or trigger dioxin monitoring in either or both the Ford/KPC and Iron Mountain/Kingsford WWTP (IMK) permits. Through Arcadis, Ford/KPC is responsible for ensuring that the sampling is conducted properly and promptly and that the desired data are generated in an acceptable manner. Additionally, if the data generated by this study (including the detection level data) do not clearly demonstrate to the MDEQ that dioxin concentrations in the groundwaters are less than Michigan Water Quality Standards, the MDEQ will include and/or trigger dioxin related conditions in the NPDES permit for the F/K site and also, as appropriate, will require dioxin monitoring by the IMK facility.

6) MDEQ approval of the WP does not mean that all data generated will be automatically considered acceptable by the MDEQ or that Ford/KPC, or the IMK facility will necessarily be released from actual or potential limit and/or monitoring conditions in their respective NPDES permits.

Please contact Mr. Bruce Walker or Mr. Chris Austin if you have questions on the above comments, or you may contact us.

Sincerely,

Clifton Clark
District Supervisor
Remediation and Redevelopment Division
(906) 346-8515

Steve Casey
District Supervisor
Water Bureau
(906) 346-8535

CC:SC:TM

cc: Mr. Gerald Saalfeld, WB, Lansing
Mr. Bruce Walker, WB, Lansing
Mr. Chris Austin, RRD, Crystal Falls
Mr. Ben Thierry, WB, UP District Office
Mr. Jon Forbort, ARCADIS
Mr. Rick Studebaker, ARCADIS
File: NPDES, Ford/Kingsford, Dickinson County, Correspondence

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Date:
2 May 2005

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Our ref:
WI001095.0021

Subject:
Summary of Analyses for Dioxins and Furans, Ford/Kingsford Site, Kingsford, Michigan.

Dear Messrs. Dell and Saalfeld:

ARCADIS is pleased to submit this document on behalf of Ford Motor Company (Ford) and The Kingsford Products Company (KPC), to provide a summary of the analytical results for the groundwater and pretreatment system samples collected for analysis of polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans) in accordance with Attachment D, Work Plan for Additional Dioxin/Furan Monitoring, Full-Scale Groundwater Treatment System, National Pollutant Discharge Elimination System (NPDES) Permit Application, Ford/Kingsford Site, Kingsford, Michigan (Work Plan) dated October 14, 2004. The Work Plan had been previously submitted to, reviewed, and approved by the Michigan Department of Environmental Quality (MDEQ) prior to sampling. These samples were collected to support the NPDES permit application for the full-scale groundwater treatment system for the subject site that is currently under construction.

Sampling Events

Groundwater samples were collected from select shallow and deep wells located along and away from the Menominee River, as identified in the Work Plan, in October 2004. The second sampling event was completed in December 2004. Groundwater samples were collected from all of the sampling points outlined in the Work Plan, except for Monitoring Well GM-64B which has not been re-installed (it

was formerly located in the vicinity of the full-scale treatment system, currently a high activity construction area). The wells sampled were selected to provide lateral and vertical coverage (Zones A, B, C, and D).

A total of thirty-one samples were collected during each sampling event for laboratory analysis of dioxins and furans using United States Environmental Protection Agency (U.S. EPA) Method 1613, Revision B *"Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS"* (October 1994). Nineteen samples were collected from monitoring wells, groundwater extraction wells and the groundwater pretreatment system effluent. In addition, nine (9) field blanks and three (3) equipment blanks were also submitted for analysis during each event. These samples were submitted to check for potential procedural contamination and to assess the quality of data from the field sampling program.

Enough sample volume was collected for each sample location to submit split samples to Severn Trent Laboratory (STL) in Knoxville, Tennessee and to Alta Analytical (Alta) in El Dorado Hills, California. The purpose of the split samples was to provide an additional level of quality control, and provide a metric for comparing each laboratory's sample preparation and analytical capabilities. Each laboratory was provided with specific guidelines for sample preparation, analysis and reporting. A copy of these instructions is provided in Attachment A.

Summary of Analytical Results

As requested by the MDEQ, each laboratory reported the samples in two separate reports based on proximity to the Menominee River. Wells located adjacent to the river (Pretreatment) and wells located away from the river (Full-Scale). The results of Pretreatment samples were presented by STL in laboratory reports H4K060104 (October 2004) and H4L230143 (December 2004) and by Alta in laboratory reports 25386 (October 2004) and 25520 (December 2004). The results of Full-Scale samples were presented by STL in laboratory reports H4K060107 (October 2004) and H4L230147 (December 2004) and by Alta in laboratory reports 25446 (October 2004) and 25519 (December 2004). Both laboratories concurrently submitted a copy of these reports to Gerry Saalfeld and Chris Austin of the MDEQ and Ric Studebaker of ARCADIS.

The analytical results were tabulated in accordance with the Work Plan to facilitate data review. A summary of the toxicity equivalency concentration (TEC) calculations for each sample is presented in Table 1. The Pretreatment and Full-Scale analytical results and TEC calculations are presented in Tables 2 and 3, respectively. Results of the equipment blanks, field blanks, and laboratory quality control samples are presented in Tables 4, 5, and 6, respectively. Corrections were made to address method blank detections as specified in the Work Plan. For

example, in situations when a congener was detected in both the sample and the corresponding method blank, the method blank concentration was subtracted from the sample concentration. If the method blank concentration was higher than the sample concentration, the sample concentration was reported as less than "<" the original sample concentration (note that this adjusted concentration was treated as a zero in the subsequent TEC calculations). Adjusted concentrations are denoted in the table with a shaded cell. In accordance with the Work Plan, the summary tables with the raw data (e.g. the adjustment was not made to address the method blank detected concentrations) and the subsequent TEC calculations are presented in Attachment B as Tables B1 through B6.

The analytical results indicate that the samples were generally free of dioxin and furans. Of the detected congeners, octa- and hepta-congeners (e.g., OCDF, OCDF, HpCDD, HpCDF) were the most commonly detected, and were detected at low levels in several of the groundwater samples, field blanks, and method blanks. Additional congeners (e.g. PeCDD, HxCDD, and HxCDF) were detected at low levels in the samples collected from Monitoring Wells GM-62B and GM-72A. All samples were non-detect for 2,3,7,8-TCDD.

The analytical results between the two laboratories were consistently equivalent. However, during the December 2004 sampling event, HxCDF congeners were detected in five (GWGMEW-3, GWGMEW-9, GWGM-72A, EBGWGM-62C and GWGM-62C) samples and in the method blank reported by STL that were inconsistent with the results of the split and the October 2004 sampling event. As a result, these samples were re-extracted and analyzed. With the exception of one sample (GWGM-72A), the results of the re-extracted sample yielded non-detect results for HxCDF, suggesting that the presence of this congener in these samples was a laboratory artifact and illustrating the potential for false positives at extremely low detection levels.

Results of the equipment blanks, field blanks, and method blanks were reviewed for procedural sources of dioxin contamination. As indicated above, octa- and hepta-congeners were detected at low levels in some of the blank samples. Since the congeners identified and concentrations detected in the equipment and field blanks were comparable with the method blanks this data suggests that the field procedures employed to collect and ship the samples did not have an affect on the results.

TEC Calculations

Consistent with previous data submittals, TEC calculations were completed for all of the samples, field blanks, equipment blanks and method blanks. These calculations are presented for each sample, and a summary of TEC calculations are presented in Table 1. MDEQ staff defines level of concern as a TEC of 0.0086 parts per

quadrillion (ppq) for all congeners (the threshold specific to the 2,3,7,8-TCDD congener is not applicable since all data was non-detect). Corrections were made to address method blank detections, as indicated above, prior to performing the TEC calculation. Adjusted concentrations are denoted in the table with a shaded cell. Raw data and TEC calculations are presented in Appendix B as Tables B1 through B6.

The samples collected from three sampling locations have resulted in a TEC calculation value above the threshold value of 0.0086 ppq. These samples were collected from Monitoring Wells GM-62B, GM-62C, and GM-72A, which are located away from the Menominee River and are not part of the required groundwater extraction area. Samples collected from Monitoring Well GM-62B yielded a TEC of 0.57464 ppq from Alta and 0.27504 ppq from STL in October 2004. The December 2004 sampling results yielded a TEC of 0.04727 ppq from STL and the result from Alta was below the threshold at 0.00835 ppq. It should be noted that the December 2004 results for Monitoring Well GM-62B are one to two orders of magnitude lower than the October 2004 results for both laboratories. Further, the Alta result was below the threshold value. The range of TEC calculation values for samples collected from this well is attributed to the presence of sediment disturbed from the bottom of the well during the October 2004 sampling event. Additional precautions were taken during the December 2004 sampling event not to disturb the sediment, and this is reflected in the results.

In addition to Monitoring Well GM-62B, one sample collected from Monitoring Wells GM-62C and GM-72A was detected above the threshold value. In October 2004, the sample collected from Monitoring Well GM-62C yielded a TEC of 0.01521 ppq from Alta (the sample from STL was below the threshold at 0.00385 ppq). The Monitoring Well GM-62C samples in December 2004 were both below the threshold value and yielded a TEC of 0.00496 and 0.00125 from Alta and STL, respectively. Conversely, the December 2004 sample collected from Monitoring Well GM-72A yielded a TEC of 0.00880 from STL, which was slightly above the threshold and likely influenced by matrix interferences as discussed below. Comparatively, the Alta split sample from Monitoring Well GM-72A in December 2004 yielded a TEC of 0.00394 from Alta, below the threshold value. In October 2004, samples collected from Monitoring Well GM-72A yielded a TEC of 0.00046 ppq from Alta and 0.00000 ppq from STL, both below the threshold value.

Two method blanks from STL yielded a TEC that is one order of magnitude above the threshold value of 0.0086 ppq. The elevated TEC in both blanks was based on the presence of 2,3,4,6,7,8-HxCDF at a peak of 1.3 ppq in Method Blank 4323358 and 0.43 ppq in Method Blank 5012114. In October 2004, this congener was not detected in any other sample or blank. In December 2004, as previously described, HxCDF was detected in five samples which were subsequently re-extracted and re-analyzed in the STL data set. With the exception of one sample, HxCDF was not

detected in the re-extracted samples. In both cases, it was concluded that the peak was associated with matrix interferences (e.g., laboratory contaminant or artifact, instrument noise, etc.). The STL method blanks strongly demonstrate how matrix interferences can contribute significantly to the TEC.

Results Evaluation

All of the samples collected along the river to address MDEQ concerns regarding the potential for discharge of dioxins/furans from the existing pretreatment system to the Iron Mountain/Kingsford wastewater treatment plant yielded results that were below levels of concern.

Data yielding a TEC above 0.0086 ppq were found in groundwater samples collected from Monitoring Wells GM-62B, GM-62C, and GM-72A. Monitoring Wells GM-62B and GM-62C represent a monitoring well nest and are located downgradient of Monitoring Well GM-72A (which is located within the source area) and upgradient of the nested Monitoring Wells GM-37A and GM-37B. Only one of the four groundwater samples collected from Monitoring Well GM-62C, which is screened below Monitoring Well GM-62B, resulted in a TEC above the threshold value. Groundwater samples collected from Monitoring Well GM-72A, also yielded only one TEC which was slightly above the threshold value. The downgradient Monitoring Wells GM-37A and GM-37B yielded laboratory results that were below levels of concern. The upgradient and downgradient wells (in reference to the source area) indicated that there may be a localized area near Monitoring Well GM-62B with slightly elevated concentrations or that the data collected from this well is anomalous. Based on the variability observed between samples, it appears likely that the concentrations are the result of sediment disturbances from sampling activities and are thus not indicative of a mobile source of dioxins/furans.

Monitoring Wells GM-62B and GM-62C, which yielded results that were above levels of concern, are located more than 2,800 feet from the river. It is our understanding that 1,000 feet is the rule-of-thumb distance threshold employed by MDEQ in their dioxin/furan determinations (e.g., dioxins/furans are not expected to migrate 1,000 feet in groundwater given their hydrophobic properties). Refer to Figure 1 for a depiction of the site with the location of the wells and a summary of the TEC results.

Monitoring Wells GM-62B and GM-62C are located more than 2,000 feet away from the full-scale treatment system extraction well network. Groundwater velocities calculated for the permeable material at the site range from 3 to 280 feet per day (ft/day). Based on groundwater flow, dioxins and furans should have reached the full-scale treatment system extraction well network within 2 years. However,

dioxins and furans are hydrophobic and not particularly mobile since they adhere strongly to the soil matrix.

In addition, the environmental conditions at the Northeast Pit have existed for approximately 75 years and are stabilized. Furthermore, the recent completion of the Northeast Pit interim response action placed an impermeable cover over the Northeast Pit, which will reduce or eliminate the potential for any continued introduction of contaminants into the groundwater via infiltration through waste materials. Therefore, it is extremely unlikely that conditions at Monitoring Well GM-62 will cause any detectable changes at the river area regarding dioxins and furans.

Finally, the groundwater along the river that will be captured by the full-scale treatment system extraction well network has been shown to be below levels of concern for dioxins/furans. Therefore, the monitoring requirements contained in the draft NPDES permit for the full-scale groundwater treatment system are too restrictive as written. The data do not support a conclusion that there is any reasonable potential for the system effluent to exceed levels of concern, let alone any applicable water quality based effluent limitations.

Conclusions

Based on the results discussed above, the following conclusions can be reached for the Ford/Kingsford Site.

- All samples were non-detect for 2,3,7,8-TCDD.

- The data indicates that operation of the existing pretreatment system was not a source of dioxins/furans above levels of concern, as it pertains to the Iron Mountain/Kingsford wastewater treatment plant. In fact, pretreatment effluent sample results were non-detect for all congeners with the exception of the octa-congener for both dioxin and furan in the October 2004 split sample submitted to STL, which resulted in a TEC value that was at least one order of magnitude below the MDEQ level of concern.

- The October and December 2004 data indicate that dioxins/furans are not present at levels of concern in groundwater along the Menominee River. These results are consistent with the findings from the historical U.S. EPA Method 1613B data for samples collected in 2003 at the pretreatment system and monitoring wells/extraction wells along the Menominee River.
- The low concentrations in Extraction Well GMEW-7 (e.g., near the instrument detection limit) of octa- and hepta-congeners yield a slightly elevated TEC

(compared to other wells) that is anamolous to the data set due to the ubiquitous nature of these congeners. Further proof of the ubiquitous nature of the octa- and hepta-congeners is found in their detections in the method, field, and equipment blanks.

- All samples are far below the minimum level for analytical results.
- Ford and KPC have performed a considerable amount of dioxin/furan monitoring at a significant cost.

Closing

Ford, KPC, and ARCADIS appreciate MDEQ's cooperation on this issue. If you have questions regarding this submittal or require any further information, please contact either of the undersigned.

Sincerely,

ARCADIS G&M, Inc.

Jon E. Forbort, PE
Senior Engineer

Richard L. Studebaker, Jr., PE
Principal Engineer/Project Manager

Copies:
Mr. Chris Austin
Mr. Alvin Lam
Mr. J. David Langford
Mr. David Miller

Table 1. Summary of Dioxin/Furan Samples Collected in 2004, Ford/Kingsford Site, Kingsford, Michigan.

Well	Sample ID	Sample Date	Sample Time	ATLA TEC (ppq)	STL TEC (ppq)
Pretreatment Samples					
GM-25A	GWGM-25A (10/19/04)	10/19/04	17:25	0.00000	0.00006
GM-25A	GWGM-25A (12/06/04)	12/06/04	15:50	0.00000	0.00075
GM-26A	GWGM-26A (10/21/04)	10/21/04	10:40	0.00052	0.00004
GM-26A	GWGM-26A (12/10/04)	12/10/04	10:50	0.00002	0.00000
GM-26C	GWGM-26C (10/20/04)	10/20/04	15:20	0.00067	0.00005
GM-26C	GWGM-26C (12/09/04)	12/09/04	10:50	0.00000	0.00007
GM-27A	GWGM-27A (10/20/04)	10/20/04	11:25	0.00000	0.00000
GM-27A	GWGM-27A (12/07/04)	12/07/04	12:00	0.00000	0.00005
GMEW-1	GWGMEW-1 (10/29/04)	10/29/04	10:35	0.00000	0.00005
GMEW-1	GWGMEW-1 (12/08/04)	12/08/04	14:10	0.00000	0.00004
GMEW-2	GWGMEW-2 (10/30/04)	10/30/04	16:30	0.00000	0.00002
GMEW-2	GWGMEW-2 (12/08/04)	12/08/04	10:25	0.00000	0.00003
GMEW-3	GWGMEW-3 (10/29/04)	10/29/04	11:45	0.00056	0.00009
GMEW-3	GWGMEW-3 (12/08/04)	12/08/04	12:10	0.00083	0.00004
GMEW-4R	GWGMEW-4R (10/30/04)	10/30/04	18:45	0.00043	0.00011
GMEW-4R	GWGMEW-4R (12/13/04)	12/13/04	13:00	0.00034	0.00007
GMEW-5	GWGMEW-5 (10/19/04)	10/19/04	16:27	0.00000	0.00004
GMEW-5	GWGMEW-5 (12/06/04)	12/06/04	16:25	0.00000	0.00004
GMEW-7	GWGMEW-7 (10/26/04)	10/26/04	13:40	0.00145	0.00168
GMEW-7	GWGMEW-7 (12/14/04)	12/14/04	11:30	0.00253	0.00015
GMEW-8	GWGMEW-8 (10/22/04)	10/22/04	11:00	0.00004	0.00003
GMEW-8	GWGMEW-8 (12/12/04)	12/12/04	11:00	0.00005	0.00152
GMEW-9	GWGMEW-9 (10/21/04)	10/21/04	16:20	0.00068	0.00000
GMEW-9	GWGMEW-9 (12/11/04)	12/11/04	9:30	0.00025	0.00000
Phase II EFF	GWEFFLUENT (10/30/04)	10/30/04	13:25	0.00000	0.00012
Phase II EFF	GWEFFLUENT (12/09/04)	12/09/04	14:40	0.00000	0.00000
Full Scale					
GM-5	GWGM-5 (10/20/04)	10/20/04	12:17	0.00097	0.00090
GM-5	GWGM-5 (12/7/04)	12/07/04	9:55	0.00004	0.00003
GM-37A	GWGM-37A (11/2/04)	11/02/04	16:05	0.00004	0.00004
GM-37A	GWGM-37A (12/10/04)	12/10/04	10:30	0.00021	0.00018
GM-37B	GWGM-37B (10/27/04)	10/27/04	9:00	0.00007	0.00000
GM-37B	GWGM-37B (12/13/04)	12/13/04	10:35	0.00004	0.00003
GM-62B	GWGM-62B (10/25/04)	10/25/04	17:10	**0.57464**	**0.27504**
GM-62B	GWGM-62B (12/12/04)	12/12/04	10:50	0.00835	**0.04727**
GM-62C	GWGM-62C (10/22/04)	10/22/04	12:20	**0.01521**	0.00385
GM-62C	GWGM-62C (12/11/04)	12/11/04	16:05	0.00496	0.00125
GM-72A	GWGM-72A (10/20/04)	10/20/04	17:45	0.00046	0.00000
GM-72A	GWGM-72A (12/9/04)	12/09/04	10:25	0.00394	**0.00880**

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Table 1. Summary of Dioxin/Furan Samples Collected in 2004, Ford/Kingsford Site, Kingsford, Michigan.

Well	Sample ID	Sample Date	Sample Time	ATLA TEC (ppq)	STL TEC (ppq)
Equipment Blank					
Equipment Blank	EBGWGM-27A (10/20/04)	10/20/04	9:30	0.00069	0.00004
Equipment Blank	EBGWGM-62C (10/22/04)	10/22/04	9:10	0.00001	0.00003
Equipment Blank	EBGWGMEW-7 (10/26/04)	10/26/04	11:00	0.00000	0.00164
Equipment Blank	EBGWGM-27A (12/7/04)	12/07/04	9:20	0.00000	0.00000
Equipment Blank	EBGWGM-62C (12/11/04)	12/11/04	10:00	0.00002	0.00001
Equipment Blank	EBGWGMEW-7 (12/14/04)	12/14/04	8:15	0.00003	0.00000
Field Blank					
FB	FB (10/19/04)	10/19/04	16:53	0.00001	0.00000
FB	FB (10/20/04)	10/20/04	14:05	0.00000	0.00000
FB	FB (10/21/04)	10/21/04	15:25	0.00000	0.00006
FB	FB (10/22/04)	10/22/04	9:50	0.00061	0.00000
FB	FB (10/26/04)	10/26/04	13:10	0.00025	0.00006
FB	FB (10/27/04)	10/27/04	8:00	0.00000	0.00003
FB	FB (10/29/04)	10/29/04	11:30	0.00000	0.00002
FB	FB (10/30/04)	10/30/04	15:20	0.00000	0.00000
FB	FB (11/02/04)	11/02/04	15:35	0.00000	0.00000
FB	FB (12/06/04)	12/06/04	13:50	0.00006	0.00000
FB	FB (12/07/04)	12/07/04	8:30	0.00005	0.00003
FB	FB (12/08/04)	12/08/04	9:40	0.00215	0.00002
FB	FB (12/09/04)	12/09/04	9:00	0.00005	0.00000
FB	FB (12/10/04)	12/10/04	9:15	0.00000	0.00000
FB	FB (12/11/04)	12/11/04	9:40	0.00000	0.00000
FB	FB (12/12/04)	12/12/04	8:55	0.00000	0.00000
FB	FB (12/13/04)	12/13/04	11:50	0.00005	0.00000
FB	FB (12/14/04)	12/14/04	8:25	0.00006	0.00000
Method Blanks					
Alta - October 2004					
Supplemental Method Blank	Supplemental Method Blank			0.00000	--
Supplemental Method Blank	Supplemental Method Blank			0.00003	--
Method Blank-6300	ATLA Sample Batch Method Blank			0.00006	--
Method Blank-6302	ATLA Sample Batch Method Blank			0.00006	--
Method Blank-6324	ATLA Sample Batch Method Blank			0.00003	--
Alta - December 2004					
Supplemental Method Blank	Supplemental Method Blank			0.00005	--
Supplemental Method Blank	Supplemental Method Blank			0.00003	--
Method Blank-6399	ATLA Sample Batch Method Blank			0.00047	--
Method Blank-6411	ATLA Sample Batch Method Blank			0.00000	--
STL - October 2004					
Supplemental Method Blank	Supplemental Method Blank			--	0.00000
Supplemental Method Blank	Supplemental Method Blank			--	0.00000
Method Blank-4322264	STL Sample Batch Method Blank			--	0.00000
Method Blank-4323358	STL Sample Batch Method Blank			--	**0.09100**

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Table 1. Summary of Dioxin/Furan Samples Collected in 2004, Ford/Kingsford Site, Kingsford, Michigan.

Well	Sample ID	Sample Date	Sample Time	ATLA TEC (ppq)	STL TEC (ppq)
STL - December 2004					
	Supplemental Method Blank	Supplemental Method Blank		--	0.00000
	Supplemental Method Blank	Supplemental Method Blank		--	0.00001
	Method Blank-5011047	STL Sample Batch Method Blank		--	0.00006
	Method Blank-5012114	STL Sample Batch Method Blank		--	**0.03015**
	Method Blank-5019306	STL Sample Batch Method Blank		--	0.00110
	Method Blank-5032342	STL Sample Batch Method Blank		--	0.00024

ppq Parts per quadrillion (picograms per liter).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
Bold Calculated value is above the threshold value of 0.0086 ppq.

Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-25A ALTA	10/19/2004	*DL*	1.220	0.389	0.474	0.481	0.482	0.791	0.839	0.184	—
		Result	<1.220	<0.389	<0.474	<0.481	<0.482	<0.791	<4.77 B,J	<0.184	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-25A STL	10/19/2004	*DL*	2.6	1.1	1.0	1.1	0.96	1.2	3.9	2.5	
		Result	<2.6	<1.1	<1.0	<1.1	<0.96	<1.2	<3.9 P	<2.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25A ALTA	12/6/2004	*DL*	0.950	0.649	1.37	1.42	1.39	1.47	2.70	0.726	—
		Result	<0.950	<0.649	<1.37	<1.42	<1.39	<1.47	<2.70	<0.726	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25A STL	12/6/2004	*DL*	1.6	0.69	0.62	0.65	0.60	0.79	3.8	1.5	
		Result	<1.6	<0.69	<0.62	<0.65	<0.60	1.3 J	<3.8 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.00065	ND	ND	0.00065
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-26A ALTA	10/21/2004	*DL*	1.350	0.299	0.560	0.571	0.571	0.229	0.252	0.268	—
		Result	<1.350	<0.299	<0.560	<0.571	<0.571	1.04 J	<5.5 B,J	<0.268	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.00052	ND	ND	0.00052
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-26A STL	10/21/2004	*DL*	1.5	0.78	0.81	0.91	0.80	0.78	0.87	1.5	
		Result	<1.5	<0.78	<0.81	<0.91	<0.80	<0.78	4.0 J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.00004	ND	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26A ALTA	12/10/2004	*DL*	0.876	1.03	1.09	1.12	1.10	0.962	1.080	0.668	—
		Result	<0.876	<1.03	<1.09	<1.12	<1.10	<0.962	1.83 J	<0.668	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000183	ND	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-26A STL	12/10/2004	*DL*	1.2	0.51	0.53	0.54	0.51	0.65	2.7	0.94	
		Result	<1.2	<0.51	<0.53	<0.54	<0.51	<0.65	<2.7 P	<0.94	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-26C ALTA	10/20/2004	*DL*	0.733	0.210	0.370	0.384	0.381	0.258	0.456	0.204	—
		Result	<0.733	<0.210	<0.370	<0.384	<0.381	1.29 J	1.55 B,J	<0.204	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.000645	0.0000155	ND	0.00066
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-26C STL	10/20/2004	*DL*	2.6	0.99	1.4	1.5	1.3	1.3	1.1	2.3	
		Result	<2.6	<0.99	<1.4	<1.5	<1.3	<1.3	5.0 J	<2.3	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.00005	ND	0.00005
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26C ALTA	12/9/2004	*DL*	0.727	1.12	1.10	1.11	1.10	1.75	11.8	0.622	—
		Result	<0.727	<1.12	<1.10	<1.11	<1.10	<1.75	<11.8	<0.622	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26C STL	12/9/2004	*DL*	1.8	0.62	0.63	0.69	0.62	0.95	0.66	1.4	
		Result	<1.8	<0.62	<0.63	<0.69	<0.62	<0.95	7.4 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000074	ND	0.00007
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-27A ALTA	10/20/2004	*DL*	0.647	0.241	0.299	0.305	0.305	0.723	0.339	0.201	—
		Result	<0.647	<0.241	<0.299	<0.305	<0.305	<0.723	<4.71 B,J	<0.201	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-27A STL	10/20/2004	*DL*	2.1	0.90	1.2	1.2	1.1	1.2	2.6	2.2	
		Result	<2.1	<0.90	<1.2	<1.2	<1.1	<1.2	<2.6 P	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-27A ALTA	12/7/2004	*DL*	0.727	0.829	1.00	1.02	1.01	1.94	3.77	0.610	—
		Result	<0.727	<0.829	<1.00	<1.02	<1.01	<1.94	<3.77	<0.610	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-27A STL	12/7/2004	*DL*	1.9	0.76	0.56	0.57	0.54	1.6	0.66	1.3	
		Result	<1.9	<0.76	<0.56	<0.57	<0.54	<1.6 P	5.4 J	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000054	ND	0.00005
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-1 ALTA	10/29/2004	*DL*	0.265	0.370	0.297	0.310	0.307	0.372	0.256	0.184	—
		Result	<0.265	<0.370	<0.297	<0.310	<0.307	<0.372	<1.63 B,J	<0.184	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-1 STL	10/29/2004	*DL*	1.7	0.67	0.80	0.84	0.77	0.91	0.91	1.6	
		Result	<1.7	<0.67	<0.80	<0.84	<0.77	<0.91	4.6 J	<1.6	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000046	ND	0.00005
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-1 ALTA	12/8/2004	*DL*	1.00	0.857	1.21	1.19	1.20	1.38	2.76	0.563	—
		Result	<1.00	<0.857	<1.21	<1.19	<1.20	<1.38	<2.76	<0.563	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-1 STL	12/8/2004	*DL*	1.7	0.67	0.61	0.62	0.58	0.95	0.63	1.4	
		Result	<1.7	<0.67	<0.61	<0.62	<0.58	<0.95	4.3 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000043	ND	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-2 ALTA	10/30/2004	*DL*	0.413	0.504	0.683	0.678	0.688	1.120	1.890	0.190	—
		Result	<0.413	<0.504	<0.683	<0.678	<0.688	<1.120	<1.890	<0.190	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6324			ND	ND	ND	ND	ND	ND	3.23 J	ND	—
GMEW-2 STL	10/30/2004	*DL*	2.0	0.72	1.1	1.2	1.1	0.99	0.83	1.7	
		Result	<2.0	<0.72	<1.1	<1.2	<1.1	<0.99	1.9 J	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000019	ND	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-2 ALTA	12/8/2004	*DL*	0.937	0.799	1.32	1.36	1.34	1.15	2.45	0.514	
		Result	<0.937	<0.799	<1.32	<1.36	<1.34	<1.15	<2.45	<0.514	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-2 STL	12/8/2004	*DL*	1.8	0.61	0.57	0.62	0.57	0.76	0.76	1.7	
		Result	<1.8	<0.61	<0.57	<0.62	<0.57	<0.76	2.9 J	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000029	ND	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	**0.1**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	**0.8**	
GMEW-3 ALTA	10/21/2004	*DL*	0.288	0.456	0.339	0.334	0.339	0.237	0.303	0.163	—
		Result	<0.288	<0.456	<0.339	<0.334	<0.339	1.11 J	<5.6 B,J	<0.163	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.000555	ND	ND	0.00056
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-3 STL	10/21/2004	*DL*	2.8	1.1	1.6	1.7	1.5	1.2	1.5	2.9	
		Result	<2.8	<1.1	<1.6	<1.7	<1.5	<1.2	8.8 J	<2.9	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000088	ND	0.00009
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3 ALTA	12/8/2004	*DL*	0.827	0.802	1.49	1.47	1.47	0.982	2.430	0.603	—
		Result	<0.827	<0.802	<1.49	<1.47	<1.47	1.57 J	4.87 J	<0.603	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.000785	0.0000487	ND	0.00083
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3 STL	12/8/2004	*DL*	1.2	0.83	1.2	1.1	1.1	1.2	1.0	1.2	
		Result	<1.2	<0.83	<1.2	<1.1	<1.1	<1.2	4.3 B,J	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000043	ND	0.00004
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-4R ALTA	10/30/2004	*DL*	0.307	0.293	0.365	0.380	0.377	0.153	0.406	0.151	—
		Result	<0.307	<0.293	<0.365	<0.380	<0.377	0.85 J	<4.5 B,J	<0.151	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.000427	ND	ND	0.00043
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-4R STL	10/30/2004	*DL*	2.3	0.96	0.76	0.83	0.75	0.80	0.80	2.2	
		Result	<2.3	<0.96	<0.76	<0.83	<0.75	<0.80	7.6 J	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000076	ND	0.00008
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-4R ALTA	12/13/2004	*DL*	0.729	0.880	1.34	1.27	1.30	0.771	1.330	0.638	—
		Result	<0.729	<0.880	<1.34	<1.27	<1.30	0.41 B,J	10.6 J	<0.638	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.000206	0.000106	ND	0.00031
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-4R STL	12/13/2004	*DL*	2.1	0.80	0.71	0.73	0.68	1.7	0.89	1.9	
		Result	<2.1	<0.80	<0.71	<0.73	<0.68	<1.7 P	6.7 B,J	<1.9	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000067	ND	0.00007
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-5 ALTA	10/19/2004	*DL*	0.665	0.344	0.375	0.222	0.228	1.56	0.38	0.192	—
		Result	<0.665	<0.344	<0.375	<0.222	<0.228	<1.56	<5.24 B,J	<0.192	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GMEW-5 STL	10/19/2004	*DL*	2.4	0.86	1.0	1.1	0.97	0.89	1.0	3.2	
		Result	<2.4	<0.86	<1.0	<1.1	<0.97	<0.89	3.6 J	<3.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000036	ND	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-5 ALTA	12/6/2004	*DL*	0.691	0.841	1.02	1.09	1.05	1.17	4.29	0.627	—
		Result	<0.691	<0.841	<1.02	<1.09	<1.05	<1.17	<4.29	<0.627	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-5 STL	12/6/2004	*DL*	1.9	0.73	0.62	0.62	0.59	0.86	0.82	1.5	
		Result	<1.9	<0.73	<0.62	<0.62	<0.59	<0.86	3.7 J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000037	ND	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-7 ALTA	10/26/2004	DL	0.305	0.383	0.362	0.358	0.364	0.315	0.240	0.169	—
		Result	<0.305	<0.383	<0.362	<0.358	<0.364	2.50 J	14.74 B,J	<0.169	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.00125	0.0001474	ND	0.00140
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-7 STL	10/26/2004	DL	2.1	1.0	1.2	1.4	1.2	1.3	1.1	2.4	
		Result	<2.1	<1.0	<1.2	<1.4	<1.2	3.0 J	18.0 J	<2.4	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.0015	0.00018	ND	0.00168
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-7 ALTA	12/14/2004	DL	0.933	0.989	1.41	1.39	1.39	0.814	0.941	0.703	—
		Result	<0.933	<0.989	<1.41	<1.39	<1.39	3.90 B,J	36.9 J	<0.703	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.001951	0.000369	ND	0.00232
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-7 STL	12/14/2004	DL	4.4	1.8	1.8	2.0	1.8	4.3	1.8	3.2	
		Result	<4.4	<1.8	<1.8	<2.0	<1.8	<4.3 P	14.7 B,J	<3.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000147	ND	0.00015
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-8 ALTA	10/22/2004	*DL*	0.488	0.302	0.461	0.445	0.457	1.600	0.628	0.168	—
		Result	<0.488	<0.302	<0.461	<0.445	<0.457	<1.60	4.27 B,J	<0.168	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000427	ND	0.00004
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GMEW-8 STL	10/22/2004	*DL*	1.2	0.53	0.61	0.64	0.58	0.70	0.75	1.3	
		Result	<1.2	<0.53	<0.61	<0.64	<0.58	<0.70	3.4 J	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000034	ND	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-8 ALTA	12/12/2004	*DL*	0.678	0.974	0.947	0.994	0.969	0.879	1.02	0.485	—
		Result	<0.678	<0.974	<0.947	<0.994	<0.969	<0.88	4.83 J	<0.485	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000483	ND	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-8 STL	12/12/2004	*DL*	2.0	0.67	0.60	0.61	0.57	0.68	0.58	1.4	
		Result	<2.0	<0.67	<0.60	<0.61	<0.57	3.0 J	1.7 B,J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0015	0.000017	ND	0.00152
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-9 ALTA	10/21/2004	*DL*	0.356	0.254	0.278	0.276	0.280	0.323	0.27	0.194	—
		Result	<0.356	<0.254	<0.278	<0.276	<0.280	1.11 J	12.27 B,J	<0.194	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000555	0.0001227	ND	0.00068
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GMEW-9 STL	10/21/2004	*DL*	2.1	1.1	0.94	0.99	0.90	0.96	5.8	2.2	
		Result	<2.1	<1.1	<0.94	<0.99	<0.90	<0.96	<5.8 P	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-9 ALTA	12/11/2004	*DL*	0.769	0.833	1.02	1.03	1.02	1.21	12.2	0.652	—
		Result	<0.769	<0.833	<1.02	<1.03	<1.02	0.26 B,J	12.2 J	<0.652	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000131	0.000122	ND	0.00025
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-9 STL	12/11/2004	*DL*	1.1	0.89	1.0	1.1	1.0	1.3	2.8	1.2	
		Result	<1.1	<0.89	<1.0	<1.1	<1.0	<1.3	<2.8 P	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GWEFFLUENT ALTA	10/30/2004	*DL*	0.349	0.417	0.364	0.377	0.375	0.657	0.316	0.227	—
		Result	<0.349	<0.417	<0.364	<0.377	<0.375	<0.657	<2.87 B,J	<0.227	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GWEFFLUENT STL	10/30/2004	*DL*	2.7	1.3	1.3	1.5	1.3	1.3	1.5	3.1	
		Result	<2.7	<1.3	<1.3	<1.5	<1.3	<1.3	6.3 J	<3.1	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000063	ND	0.00006
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GWEFFLUENT ALTA	12/9/2004	*DL*	0.917	0.876	0.884	0.893	0.886	0.717	1.91	0.476	—
		Result	<0.917	<0.876	<0.884	<0.893	<0.886	<0.717	<1.91	<0.476	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GWEFFLUENT STL	12/9/2004	*DL*	1.3	0.54	0.53	0.54	0.51	0.73	1.9	1.0	
		Result	<1.3	<0.54	<0.53	<0.54	<0.51	<0.73	<1.9 P	<1.0	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-25A ALTA	10/19/04	*DL*	0.415	0.376	0.202	0.205	0.118	0.171	0.414	0.292	0.959	—	—
		Result	<0.415	<0.376	<0.202	<0.205	<0.118	<0.171	<0.414	<0.292	<0.959	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-25A STL	10/19/04	*DL*	1.2	0.93	0.58	0.59	0.68	0.79	0.79	1.0	4.1	—	—
		Result	<1.2	<0.93	<0.58	<0.59	<0.68	<0.79	0.56 J	<1.0	<4.1 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000056	ND	ND	0.00006	0.00006
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-25A ALTA	12/6/04	*DL*	0.967	1.00	0.423	0.485	0.599	1.01	0.905	1.19	2.12	—	—
		Result	<0.967	<1.00	<0.423	<0.485	<0.599	<1.01	<0.905	<1.19	<2.12	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-25A STL	12/6/04	*DL*	0.60	0.65	0.42	0.39	0.43	0.51	0.52	0.71	1.2	—	—
		Result	<0.60	<0.65	<0.42	<0.39	<0.43	<0.51	1.0 J	<0.71	<1.2 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0001	ND	ND	0.00010	0.00075
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-26A ALTA	10/21/04	*DL*	0.353	0.346	0.112	0.113	0.129	0.113	0.262	0.182	0.739	—	—
		Result	<0.353	<0.346	<0.112	<0.113	<0.129	<0.113	<0.262	<0.182	<0.739	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00052
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26A STL	10/21/04	*DL*	0.61	0.52	0.45	0.46	0.51	0.60	0.53	0.65	1.7	—	—
		Result	<0.61	<0.52	<0.45	<0.46	<0.51	<0.60	<0.53	<0.65	<1.7 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26A ALTA	12/10/04	*DL*	0.728	0.791	0.303	0.325	0.403	0.666	0.469	0.593	1.27	—	—
		Result	<0.728	<0.791	<0.303	<0.325	<0.403	<0.666	<0.469	<0.593	<1.27	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26A STL	12/10/04	*DL*	0.47	0.39	0.82	0.34	0.36	0.41	0.45	0.57	0.96	—	—
		Result	<0.47	<0.39	<0.82 P	<0.34	<0.36	<0.41	<0.45	<0.57	<0.96 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-26C ALTA	10/20/04	*DL*	0.368	0.292	0.149	0.276	0.119	0.166	0.613	0.435	0.417	—	—
		Result	<0.368	<0.292	<0.149	<0.276	<0.119	<0.166	<0.613	<0.435	0.673 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00001346	0.00001	0.00067
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26C STL	10/20/04	*DL*	0.97	0.80	0.64	0.66	0.70	0.86	0.83	1.0	1.5	—	—
		Result	<0.97	<0.80	<0.64	<0.66	<0.70	<0.86	<0.83	<1.0	<1.5	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26C ALTA	12/9/04	*DL*	1.04	1.22	0.747	0.798	0.999	1.61	0.961	1.28	2.91	—	—
		Result	<1.04	<1.22	<0.747	<0.798	<0.999	<1.61	<0.961	<1.28	<2.91	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26C STL	12/9/04	*DL*	0.58	0.54	0.42	0.41	0.43	0.52	0.48	0.57	1.4	—	—
		Result	<0.58	<0.54	<0.42	<0.41	<0.43	<0.52	<0.48 P	<0.57	<1.4 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00007
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-27A ALTA	10/20/04	*DL*	0.370	0.336	0.138	0.133	0.144	0.200	0.158	0.098	0.878	—	—
		Result	<0.370	<0.336	<0.138	<0.133	<0.144	<0.200	<0.158	<0.098	<0.878	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-27A STL	10/20/04	*DL*	0.71	0.72	0.56	0.58	0.64	0.81	0.70	0.95	1.1	—	—
		Result	<0.71	<0.72	<0.56	<0.58	<0.64	<0.81	<0.70	<0.95	<1.1	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-27A ALTA	12/7/04	*DL*	0.918	0.966	0.372	0.406	0.495	0.809	0.563	0.739	1.32	—	—
		Result	<0.918	<0.966	<0.372	<0.406	<0.495	<0.809	<0.563	<0.739	<1.32	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-27A STL	12/7/04	*DL*	0.62	0.55	0.37	0.37	0.39	0.46	0.43	0.57	0.67	—	—
		Result	<0.62	<0.55	<0.37	<0.37	<0.39	<0.46	<0.43	<0.57	<0.67	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-1 ALTA	10/29/04	*DL*	0.304	0.263	0.098	0.097	0.110	0.144	0.145	0.120	0.609	—	—
		Result	<0.304	<0.263	<0.098	<0.097	<0.110	<0.144	<0.145	<0.120	<0.609	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-1 STL	10/29/04	*DL*	0.65	0.56	0.45	0.47	0.55	0.63	0.56	0.70	2.2	—	—
		Result	<0.65	<0.56	<0.45	<0.47	<0.55	<0.63	<0.56	<0.70	<2.2 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-1 ALTA	12/8/04	*DL*	0.856	0.841	0.339	0.381	0.434	0.712	0.545	0.835	1.72	—	—
		Result	<0.856	<0.841	<0.339	<0.381	<0.434	<0.712	<0.545	<0.835	<1.72	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-1 STL	12/8/04	*DL*	0.58	0.73	0.43	0.43	0.44	0.56	0.53	0.75	0.69	—	—
		Result	<0.58	<0.73 P	<0.43	<0.43	<0.44	<0.56	<0.53	<0.75	<0.69	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-2 ALTA	10/30/04	*DL*	0.465	0.381	0.184	0.173	0.404	0.277	0.299	0.507	1.380	—	—
		Result	<0.465	<0.381	<0.184	<0.173	<0.404	<0.277	<0.299	<0.507	<1.380	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6324			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-2 STL	10/30/04	*DL*	0.80	0.62	0.45	0.47	0.50	0.63	0.62	0.78	0.88	—	—
		Result	<0.80	<0.62	<0.45	<0.47	<0.50	<0.63	<0.62	<0.78	<0.88	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-2 ALTA	12/8/04	*DL*	0.925	0.963	0.289	0.316	0.390	0.638	0.610	0.781	1.70	—	—
		Result	<0.925	<0.963	<0.289	<0.316	<0.390	<0.638	<0.610	<0.781	<1.70	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-2 STL	12/8/04	*DL*	0.58	0.66	0.38	0.36	0.42	0.49	0.41	0.58	0.83	—	—
		Result	<0.58	<0.66	<0.38	<0.36	<0.42	<0.49	<0.41	<0.58	<0.83	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-3 ALTA	10/21/04	*DL*	0.363	0.342	0.178	0.186	0.086	0.102	0.332	0.204	1.560	—	—
		Result	<0.363	<0.342	<0.178	<0.186	<0.086	<0.102	<0.332	<0.204	<1.560	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00056
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-3 STL	10/21/04	*DL*	1.1	0.95	0.80	0.80	0.84	1.1	0.87	1.1	1.8	—	—
		Result	<1.1	<0.95	<0.80	<0.80	<0.84	<1.1	<0.87	<1.1	<1.8	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00009
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-3 ALTA	12/8/04	*DL*	0.921	0.943	0.551	0.586	0.697	1.16	0.836	1.11	2.86	—	—
		Result	<0.921	<0.943	<0.551	<0.586	<0.697	<1.16	<0.836	<1.11	<2.86	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00083
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-3 STL	12/8/04	*DL*	0.74	0.65	0.59	0.57	0.69	0.81	0.84	1.1	1.2	—	—
		Result	<0.74	<0.65	<0.59	<0.57	<0.69	<0.81	<0.84	<1.1	<3.5 B,J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-4R ALTA	10/30/04	*DL*	0.299	0.272	0.135	0.135	0.152	0.195	0.333	0.114	0.995	—	—
		Result	<0.299	<0.272	<0.135	<0.135	<0.152	<0.195	<0.333	<0.114	<0.995	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00043
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-4R STL	10/30/04	*DL*	0.72	0.55	0.43	0.43	0.51	0.57	0.40	0.50	0.94	—	—
		Result	<0.72	<0.55	<0.43	<0.43	<0.51	<0.57	<0.40	<0.50	1.9 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000038	0.00004	0.00011
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-4R ALTA	12/13/04	*DL*	1.10	1.09	0.490	0.520	0.626	1.04	0.676	0.784	1.240	—	—
		Result	<1.10	<1.09	<0.490	<0.520	<0.626	<1.04	<0.676	<0.784	1.28 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00003	0.00003	0.00034
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-4R STL	12/13/04	*DL*	0.61	0.55	0.41	0.42	0.45	0.57	0.55	0.78	1.9	—	—
		Result	<0.61	<0.55	<0.41	<0.42	<0.45	<0.57	<0.55	<0.78	<1.9 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00007
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-5 ALTA	10/19/04	*DL*	0.307	0.279	0.161	0.161	0.178	0.249	0.206	0.202	0.778	—	—
		Result	<0.307	<0.279	<0.161	<0.161	<0.178	<0.249	<0.206	<0.202	<0.778	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-5 STL	10/19/04	*DL*	0.75	0.69	0.52	0.53	0.58	0.72	0.64	0.79	2.6	—	—
		Result	<0.75	<0.69	<0.52	<0.53	<0.58	<0.72	<0.64	<0.79	<2.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-5 ALTA	12/6/04	*DL*	1.03	1.02	0.434	0.468	0.576	0.960	0.826	1.03	2.77	—	—
		Result	<1.03	<1.02	<0.434	<0.468	<0.576	<0.960	<0.826	<1.03	<2.77	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-5 STL	12/6/04	*DL*	0.59	0.55	0.44	0.42	0.45	0.60	0.53	0.78	0.85	—	—
		Result	<0.59	<0.55	<0.44	<0.42	<0.45	<0.60	<0.53	<0.78	<0.85	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-7 ALTA	10/26/04	*DL*	0.330	0.302	0.219	0.214	0.231	0.179	0.495	0.199	0.354	—	—
		Result	<0.330	<0.302	<0.219	<0.214	<0.231	<0.179	<0.495	<0.199	2.41 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.0000482	0.00005	0.00145
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-7 STL	10/26/04	*DL*	0.96	0.77	0.62	0.60	0.72	0.82	0.81	1.0	1.9	—	—
		Result	<0.96	<0.77	<0.62	<0.60	<0.72	<0.82	<0.81	<1.0	<1.9 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00168
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-7 ALTA	12/14/04	*DL*	1.25	1.31	0.728	0.766	0.937	1.58	0.308	0.721	4.23	—	—
		Result	<1.25	<1.31	<0.728	<0.766	<0.937	<1.58	2.11 J	<0.721	<4.23	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000211	ND	ND	0.00021	0.00253
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-7 STL	12/14/04	*DL*	1.7	1.4	1.1	1.0	1.1	1.4	1.8	1.8	3.6	—	—
		Result	<1.7	<1.4	<1.1	<1.0	<1.1	<1.4	<1.8 P	<1.8	<3.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00015
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-8 ALTA	10/22/04	DL	0.396	0.355	0.159	0.156	0.179	0.113	0.291	0.240	1.080	—	—
		Result	<0.396	<0.355	<0.159	<0.156	<0.179	<0.113	<0.291	<0.240	<1.080	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-8 STL	10/22/04	DL	0.55	0.48	0.33	0.35	0.36	0.45	0.53	0.72	0.93	—	—
		Result	<0.55	<0.48	<0.33	<0.35	<0.36	<0.45	<0.53	<0.72	<0.93	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-8 ALTA	12/12/04	DL	0.826	0.857	0.352	0.366	0.395	0.690	0.482	0.499	1.05	—	—
		Result	<0.826	<0.857	<0.352	<0.366	<0.395	<0.690	<0.482	<0.499	<1.05	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-8 STL	12/12/04	DL	0.87	0.76	0.41	0.45	0.47	0.56	0.57	0.58	2.6	—	—
		Result	<0.87 P	<0.76 P	<0.41	<0.45	<0.47	<0.56	<0.57 P	<0.58	<2.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00152
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-9 ALTA	10/21/04	*DL*	0.345	0.298	0.137	0.145	0.157	0.211	0.255	0.188	0.586	—	—
		Result	<0.345	<0.298	<0.137	<0.145	<0.157	<0.211	<0.255	<0.188	<0.586	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00068
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-9 STL	10/21/04	*DL*	0.89	0.83	0.52	0.51	0.58	0.64	0.75	0.96	1.2	—	—
		Result	<0.89	<0.83	<0.52	<0.51	<0.58	<0.64	<0.75	<0.96	<1.2	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-9 ALTA	12/11/04	*DL*	0.693	0.724	0.210	0.232	0.269	0.447	0.500	0.673	1.59	—	—
		Result	<0.693	<0.724	<0.210	<0.232	<0.269	<0.447	<0.500	<0.673	<1.59	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00025
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-9 STL	12/11/04	*DL*	0.76	0.56	0.74	0.74	0.82	1.0	0.86	0.93	1.3	—	—
		Result	<0.76	<0.56	<0.74	<0.74	<0.82	<1.0	<0.86	<0.93	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

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Table 2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GWEFFLUENT ALTA	10/30/04	*DL*	0.445	0.406	0.159	0.161	0.102	0.133	0.131	0.209	0.457	—	—
		Result	<0.445	<0.406	<0.159	<0.161	<0.102	<0.133	<0.131	<0.209	<0.457	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GWEFFLUENT STL	10/30/04	*DL*	1.2	1.0	0.66	0.70	0.80	0.89	1.0	1.3	1.5	—	—
		Result	<1.2	<1.0	<0.66	<0.70	<0.80	<0.89	<1.0	<1.3	2.9 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.000058	0.00006	0.00012
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GWEFFLUENT ALTA	12/9/04	*DL*	0.717	0.807	0.403	0.412	0.462	0.826	0.458	0.556	1.56	—	—
		Result	<0.717	<0.807	<0.403	<0.412	<0.462	<0.826	<0.458	<0.556	<1.56	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GWEFFLUENT STL	12/9/04	*DL*	0.54	0.50	0.30	0.28	0.31	0.38	0.34	0.50	0.62	—	—
		Result	<0.54	<0.50	<0.30	<0.28	<0.31	<0.38	<0.34	<0.50	<0.62	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantitation limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

Result adjusted for method blank contamination (i.e. the method blank result was subtracted from the original result).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

J Concentration is qualified as estimated.

P Does not meet all the method specified congener identification criteria.

Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-5 ALTA	10/20/2004	*DL*	0.460	0.395	0.402	0.419	0.415	0.199	8.86	0.283	—
		Result	<0.460	<0.395	<0.402	<0.419	<0.415	1.94 J	<8.86	<0.283	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00097	ND	ND	0.00097
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-5 STL	10/20/2004	*DL*	2.3	1.0	1.2	1.3	1.2	1.2	3.6	2.4	
		Result	<2.3	<1.0	<1.2	<1.3	<1.2	1.80 J	<3.6 P	<2.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0009	ND	ND	0.00090
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-5 ALTA	12/7/2004	*DL*	0.990	0.705	1.09	1.12	1.10	0.956	1.88	0.565	—
		Result	<0.990	<0.705	<1.09	<1.12	<1.10	<0.956	4.13 J	<0.565	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000413	ND	0.00004
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-5 STL	12/7/2004	*DL*	2.4	1.1	0.88	0.89	0.84	1.1	0.86	2.2	
		Result	<2.4	<1.1	<0.88	<0.89	<0.84	<1.1	3.1 J	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000031	ND	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-37A ALTA	11/2/2004	*DL*	0.309	0.483	0.444	0.457	0.455	0.715	0.523	0.236	—
		Result	<0.309	<0.483	<0.444	<0.457	<0.455	<0.715	<2.62 B,J	<0.236	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GM-37A STL	11/2/2004	*DL*	2.3	1.1	1.2	1.2	1.1	1.1	1.1	2.1	
		Result	<2.3	<1.1	<1.2	<1.2	<1.1	<1.1	4.1 J	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000041	ND	0.00004
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-37A ALTA	12/10/2004	*DL*	1.04	1.09	1.35	1.37	1.36	0.678	12.3	0.489	—
		Result	<1.04	<1.09	<1.35	<1.37	<1.36	0.42 B,J	<12.3	<0.489	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000211	ND	ND	0.00021
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-37A STL	12/10/2004	*DL*	1.6	1.0	1.2	1.2	1.1	3.7	1.4	1.8	
		Result	<1.6	<1.0	<1.2	<1.2	<1.1	<3.7 P	11 J	<1.8	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00011	ND	0.00011
METHOD BLANK Sample Set – 5019306			ND	ND	ND	ND	ND	2.2 J	ND	ND	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-37B ALTA	10/27/2004	*DL*	0.481	0.376	0.344	0.352	0.352	0.841	0.316	0.190	—
		Result	<0.481	<0.376	<0.344	<0.352	<0.352	<0.841	<5.19 B,J	<0.190	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GM-37B STL	10/27/2004	*DL*	2.0	1.0	1.1	1.2	1.1	1.0	4.8	2.1	
		Result	<2.0	<1.0	<1.1	<1.2	<1.1	<1.0	<4.8 P	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-37B ALTA	12/13/2004	*DL*	0.825	1.02	1.19	1.22	1.20	0.529	0.801	0.482	—
		Result	<0.825	<1.02	<1.19	<1.22	<1.20	<0.529	3.65 J	<0.482	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000365	ND	0.00004
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-37B STL	12/13/2004	*DL*	1.2	0.53	0.65	0.63	0.61	0.92	0.66	0.95	
		Result	<1.2	<0.53	<0.65	<0.63	<0.61	<0.92	2.6 B,J	<0.95	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000026	ND	0.00003
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-62B ALTA	10/25/2004	*DL*	5.250	0.599	0.384	0.385	0.388	0.748	0.398	0.219	—
		Result	<5.250	0.713 J	1.72 J	4.82 J	4.18 J	116 J	903 B,J	<0.219	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	0.32085	0.0516	0.0482	0.0418	0.058	0.0090314	ND	0.52948
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GM-62B STL	10/25/2004	*DL*	1.6	0.79	0.92	0.99	0.89	1.0	1.0	1.7	
		Result	<1.6	<0.79	2.1 J	6.40 J	7.30 J	130 J	800 P	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	0.063	0.064	0.073	0.065	0.008	ND	0.27300
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-62B ALTA	12/12/2004	*DL*	0.714	0.944	1.48	1.47	1.47	0.922	1.21	0.658	—
		Result	<0.714	<0.944	<1.48	<1.47	<1.47	14.0 B,J	108	<0.658	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.006976	0.00108	ND	0.00806
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-62B STL	12/12/2004	*DL*	1.5	0.61	0.61	0.68	0.62	0.86	0.78	1.2	
		Result	<1.5	<0.61	<0.61	2.0 J	2.0 J	13 J	68 B,J	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	0.02	0.02	0.0065	0.000677	ND	0.04718
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-62C ALTA	10/22/2004	*DL*	0.379	0.602	0.304	1.780	0.713	0.829	0.502	0.211	—
		Result	<0.379	<0.602	<0.304	<1.780	<0.713	23.60 J	291 B,J	<0.211	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.0118	0.0029077	ND	0.01471
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-62C STL	10/22/2004	*DL*	1.7	0.7	0.9	0.9	0.8	1.1	1.1	1.6	
		Result	<1.7	<0.7	<0.9	<0.9	<0.8	6.30 J	56.0 J	<1.6	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.00315	0.00056	ND	0.00371
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-62C ALTA	12/11/2004	*DL*	1.18	1.08	1.41	1.45	1.42	1.13	1.86	0.794	—
		Result	<1.18	<1.08	<1.41	<1.45	<1.42	7.96 B,J	88.0	<0.794	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.003981	0.00088	ND	0.00486
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-62C STL	12/11/2004	*DL*	2.0	1.5	1.4	1.4	1.3	1.9	14	2.1	
		Result	<2.0	<1.5	<1.4	<1.4	<1.3	2.5 J	<14 P	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.00125	ND	ND	0.00125
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-72A ALTA	10/20/2004	*DL*	0.455	0.375	0.494	0.505	0.505	0.380	0.657	0.241	—
		Result	<0.455	<0.375	<0.494	<0.505	<0.505	0.848 J	3.26 B,J	<0.241	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.000424	0.0000326	ND	0.00046
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-72A STL	10/20/2004	*DL*	2.2	0.82	0.92	1.0	0.91	1.2	2.3	2.1	
		Result	<2.2	<0.82	<0.92	<1.0	<0.91	<1.2	<2.3 P	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-72A ALTA	12/9/2004	*DL*	0.806	1.30	1.47	1.40	1.42	0.844	2.810	0.762	—
		Result	<0.806	<1.30	<1.47	<1.40	<1.42	6.42 J	53.0	<0.762	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.00321	0.00053	ND	0.00374
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-72A STL	12/9/2004	*DL*	1.4	1.1	1.2	1.3	1.2	2.8	6.3	1.5	
		Result	<1.4	<1.1	<1.2	<1.3	<1.2	<2.8 P	<6.3 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-5 ALTA	10/20/2004	*DL*	0.410	0.377	0.106	0.375	0.122	0.169	0.609	0.270	1.22	—	—
		Result	<0.410	<0.377	<0.106	<0.375	<0.122	<0.169	<0.609	<0.270	<1.22	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00097
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-5 STL	10/20/2004	*DL*	0.96	0.91	0.72	0.73	0.79	0.94	0.80	0.93	1.3	—	—
		Result	<0.96	<0.91	<0.72	<0.73	<0.79	<0.94	<0.80	<0.93	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00090
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-5 ALTA	12/7/2004	*DL*	0.900	0.890	0.381	0.404	0.469	0.822	0.457	0.551	1.22	—	—
		Result	<0.900	<0.890	<0.381	<0.404	<0.469	<0.822	<0.457	<0.551	<1.22	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-5 STL	12/7/2004	*DL*	0.93	1.1	0.52	0.50	0.56	0.66	0.69	0.94	0.95	—	—
		Result	<0.93	<1.1	<0.52	<0.50	<0.56	<0.66	<0.69	<0.94	<0.95	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-37A ALTA	11/2/2004	*DL*	0.446	0.406	0.152	0.157	0.170	0.235	0.0942	0.154	0.839	—	—
		Result	<0.446	<0.406	<0.152	<0.157	<0.170	<0.235	0.359 J	<0.154	<0.839	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000359	ND	ND	0.00004	0.00004
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37A STL	11/2/2004	*DL*	0.83	0.69	0.60	0.61	0.68	0.80	0.63	0.81	1.4	—	—
		Result	<0.83	<0.69	<0.60	<0.61	<0.68	<0.80	<0.63	<0.81	<1.4	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-37A ALTA	12/10/2004	*DL*	1.11	1.13	0.446	0.492	0.572	0.969	0.612	0.803	1.85	—	—
		Result	<1.11	<1.13	<0.446	<0.492	<0.572	<0.969	<0.612	<0.803	<1.85	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00021
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37A STL	12/10/2004	*DL*	0.78	0.96	0.81	0.82	0.92	1.1	1.6	1.2	1.6	—	—
		Result	<0.78	<0.96	<0.81	<0.82	<0.92	<1.1	<1.6 P	<1.2	3.6 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000072	0.00007	0.00018
METHOD BLANK Sample Set – 5019306			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-37B ALTA	10/27/2004	*DL*	0.248	0.237	0.127	0.131	0.091	0.106	0.141	0.221	0.807	—	—
		Result	<0.248	<0.237	<0.127	<0.131	<0.091	<0.106	0.705 J	<0.221	<0.807	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000705	ND	ND	0.00007	0.00007
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37B STL	10/27/2004	*DL*	0.90	0.74	0.53	0.55	0.62	0.69	0.68	0.85	1.6	—	—
		Result	<0.90	<0.74	<0.53	<0.55	<0.62	<0.69	<0.68	<0.85	<1.6	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-37B ALTA	12/13/2004	*DL*	0.786	0.843	0.391	0.428	0.517	0.838	1.01	1.20	1.25	—	—
		Result	<0.786	<0.843	<0.391	<0.428	<0.517	<0.838	<1.01	<1.20	<1.25	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37B STL	12/13/2004	*DL*	0.55	0.47	0.36	0.36	0.40	0.47	1.0	0.65	1.9	—	—
		Result	<0.55	<0.47	<0.36	<0.36	<0.40	<0.47	<1.0 P	<0.65	<1.9 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-62B ALTA	10/25/2004	*DL*	0.193	0.168	0.367	0.356	0.683	0.443	0.273	0.615	1.08	—	—
		Result	<0.193	<0.168	<0.367	2.10 J	<0.683	<0.443	23.80 J	<0.615	38.90 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	0.042	ND	ND	0.00238	ND	0.000778	0.04516	0.57464
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62B STL	10/25/2004	*DL*	0.68	0.68	0.45	0.45	1.40	0.56	0.64	1.6	1.3	—	—
		Result	<0.68	<0.68	<0.45	<0.45	<1.4 P	<0.56	12 J	<1.6 P	42 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0012	ND	0.00084	0.00204	0.27504
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-62B ALTA	12/12/2004	*DL*	0.940	1.14	0.436	0.542	0.673	1.06	0.365	0.570	1.33	—	—
		Result	<0.940	<1.14	<0.436	<0.542	<0.673	<1.06	1.70 J	<0.570	5.98 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00017	ND	0.0001196	0.00029	0.00835
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62B STL	12/12/2004	*DL*	0.92	1.3	0.41	0.92	0.44	0.58	1.8	0.69	0.66	—	—
		Result	<0.92 P	<1.3 P	<0.41	<0.92 P	<0.44	<0.58	<1.8 P	<0.69	4.8 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000096	0.00010	0.04727
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-62C ALTA	10/22/2004	*DL*	0.276	0.333	0.117	0.431	0.130	0.181	0.283	0.166	0.523	—	—
		Result	<0.276	<0.333	<0.117	<0.431	<0.130	<0.181	2.86 J	<0.166	10.60 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000286	ND	0.000212	0.00050	0.01521
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62C STL	10/22/2004	*DL*	0.80	0.62	0.47	0.49	0.55	0.62	0.96	0.80	1.3	—	—
		Result	<0.80	<0.62	<0.47	<0.49	<0.55	<0.62	<0.96 J	<0.80	7.0 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00014	0.00014	0.00385
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-62C ALTA	12/11/2004	*DL*	1.95	1.95	0.671	0.691	0.842	1.38	1.48	2.01	1.10	—	—
		Result	<1.95	<1.95	<0.671	<0.691	<0.842	<1.38	<1.48	<2.01	4.99 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.0000998	0.00010	0.00496
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62C STL	12/11/2004	*DL*	1.2	1.1	0.97	0.92	1.0	1.3	1.2	1.4	1.8	—	—
		Result	<1.2	<1.1	<0.97	<0.92	<1.0	<1.3	<1.2	<1.4	<2.3 B,J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00125
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

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Table 3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-72A ALTA	10/20/2004	*DL*	0.406	0.368	0.221	0.226	0.239	0.333	0.409	0.258	1.270	—	—
		Result	<0.406	<0.368	<0.221	<0.226	<0.239	<0.333	<0.409	<0.258	<1.270	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00046
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-72A STL	10/20/2004	*DL*	0.78	0.62	0.42	0.42	0.49	0.59	0.60	0.79	1.3	—	—
		Result	<0.78	<0.62	<0.42	<0.42	<0.49	<0.59	<0.60	<0.79	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-72A ALTA	12/9/2004	*DL*	1.06	1.19	0.618	0.669	0.784	1.26	0.348	1.56	1.02	—	—
		Result	<1.06	<1.19	<0.618	<0.669	<0.784	<1.26	1.13 J	<1.56	4.25 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000113	ND	0.000085	0.00020	0.00394
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-72A STL	12/9/2004	*DL*	0.78	0.77	0.74	0.77	0.89	1.1	0.96	1.2	1.6	—	—
		Result	<0.78	<0.77	1.1 J	<0.77	<0.89	<1.1	<0.96	<1.2	<2.6 B,J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	0.0088	ND	ND	ND	ND	ND	ND	0.00880	0.00880
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantitation limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

Result adjusted for method blank contamination (i.e. the method blank result was subtracted from the original result).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

J Concentration is qualified as estimated.

P Does not meet all the method specified congener identification criteria.

Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
EBGWGM-27A ALTA	10/20/2004	*DL*	0.855	0.289	0.455	0.455	0.460	0.310	0.632	0.186	—
		Result	<0.855	<0.289	<0.455	<0.455	<0.460	1.20	8.57 B,J	<0.186	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0006	0.0000857	ND	0.00069
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
EBGWGM-27A STL	10/20/2004	*DL*	2.9	1.3	1.4	1.3	1.3	1.3	3.9	2.8	
		Result	<2.9	<1.3	<1.4	<1.3	<1.3	<1.3	<3.9 P	<2.8	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
EBGWGM-62C ALTA	10/22/2004	*DL*	0.377	0.257	0.491	0.475	0.487	1.02	0.491	0.194	—
		Result	<0.377	<0.257	<0.491	<0.475	<0.487	<1.02	1.49 B,J	<0.194	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000149	ND	0.00001
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
EBGWGM-62C STL	10/22/2004	*DL*	2.2	0.96	0.87	0.97	0.85	0.89	0.83	2.2	
		Result	<2.2	<0.96	<0.87	<0.97	<0.85	<0.89	2.6 J	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000026	ND	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
EBGWGMEW-7 ALTA	10/26/2004	*DL*	0.173	0.362	0.330	0.327	0.332	0.531	0.425	0.188	—
		Result	<0.173	<0.362	<0.330	<0.327	<0.332	<0.531	<3.57 B,J	<0.188	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
EBGWGMEW-7 STL	10/26/2004	*DL*	1.7	1.0	1.0	1.1	0.97	0.95	16.0	1.7	
		Result	<1.7	<1.0	<1.0	<1.1	<0.97	3.2 J	<16 P	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0016	ND	ND	0.00160
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
EBGWGM-27A ALTA	12/7/2004	*DL*	0.824	0.611	1.13	1.15	1.14	1.16	3.46	0.519	
		Result	<0.824	<0.611	<1.13	<1.15	<1.14	<1.16	<3.46	<0.519	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
EBGWGM-27A STL	12/7/2004	*DL*	1.7	0.57	0.67	0.65	0.62	1.1	3.1	1.3	
		Result	<1.7	<0.57	<0.67	<0.65	<0.62	<1.1	<3.1 P	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
EBGWGM-62C ALTA	12/11/2004	*DL*	0.758	0.703	1.29	1.32	1.30	0.617	1.10	0.541	—
		Result	<0.758	<0.703	<1.29	<1.32	<1.30	<0.617	2.33 J	<0.541	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000233	ND	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
EBGWGM-62C STL	12/11/2004	*DL*	3.2	1.1	1.1	1.1	1.1	1.2	1.4	3.7	
		Result	<3.2	<1.1	<1.1	<1.1	<1.1	<1.2	0.5 B,J	<3.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000005	ND	0.00001
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—
EBGWGMEW-7 ALTA	12/14/2004	*DL*	0.741	0.885	1.14	1.16	1.15	0.664	0.938	0.660	—
		Result	<0.741	<0.885	<1.14	<1.16	<1.15	<0.664	3.47 J	<0.660	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000347	ND	0.00003
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
EBGWGMEW-7 STL	12/14/2004	*DL*	1.8	0.67	0.50	0.54	0.49	0.59	2.5	1.5	
		Result	<1.8	<0.67	<0.50	<0.54	<0.49	<0.59	<2.5 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
EBGWGM-27A ALTA	10/20/04	*DL*	0.452	0.364	0.172	0.169	0.187	0.273	0.189	0.304	1.040	—	—
		Result	<0.452	<0.364	<0.172	<0.169	<0.187	<0.273	<0.189	<0.304	<1.040	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00069
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-27A STL	10/20/04	*DL*	1.0	0.94	0.61	0.61	0.69	0.91	0.95	1.3	1.5	—	—
		Result	<1.0	<0.94	<0.61	<0.61	<0.69	<0.91	<0.95	<1.3	2.0 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00004	0.00004	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-62C ALTA	10/22/2004	*DL*	0.413	0.339	0.106	0.101	0.111	0.162	0.140	0.222	1.290	—	—
		Result	<0.413	<0.339	<0.106	<0.101	<0.111	<0.162	<0.140	<0.222	<1.290	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00001
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-62C STL	10/22/2004	*DL*	0.75	0.67	0.45	0.47	0.53	0.59	0.64	0.76	1.1	—	—
		Result	<0.75	<0.67	<0.45	<0.47	<0.53	<0.59	<0.64	<0.76	<1.1	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
EBGWGMEW-7 ALTA	10/26/04	*DL*	0.304	0.278	0.134	0.128	0.145	0.190	0.180	0.290	1.150	—	—
		Result	<0.304	<0.278	<0.134	<0.128	<0.145	<0.190	<0.180	<0.290	<1.150	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGMEW-7 STL	10/26/04	*DL*	0.76	0.58	0.46	0.45	0.53	0.61	0.65	0.85	1.3	—	—
		Result	<0.76	<0.58	<0.46	<0.45	<0.53	<0.61	<0.65	<0.85	2.2 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000044	0.00004	0.00164
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
EBGWGM-27A ALTA	12/7/04	*DL*	0.828	0.814	0.386	0.412	0.497	0.823	0.600	0.817	2.14	—	—
		Result	<0.828	<0.814	<0.386	<0.412	<0.497	<0.823	<0.600	<0.817	<2.14	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-27A STL	12/7/04	*DL*	0.55	0.50	0.40	0.43	0.46	0.55	0.75	0.71	0.79	—	—
		Result	<0.55	<0.50	<0.40	<0.43	<0.46	<0.55	<0.75 P	<0.71	<0.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
EBGWGM-62C ALTA	12/11/2004	*DL*	0.746	0.708	0.276	0.288	0.312	0.553	0.363	0.481	1.18	—	—
		Result	<0.746	<0.708	<0.276	<0.288	<0.312	<0.553	<0.363	<0.481	<1.18	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-62C STL	12/11/2004	*DL*	1.4	0.91	0.78	0.79	0.77	0.92	0.85	1.0	1.5	—	—
		Result	<1.4	<0.91	<0.78	<0.79	<0.77	<0.92	<0.85	<1.0	<1.5	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00001
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—
EBGWGMEW-7 ALTA	12/14/04	*DL*	0.825	0.848	0.239	0.238	0.269	0.473	0.529	0.591	1.28	—	—
		Result	<0.825	<0.848	<0.239	<0.238	<0.269	<0.473	<0.529	<0.591	<1.28	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGMEW-7 STL	12/14/04	*DL*	0.63	0.51	0.29	0.29	0.33	0.39	0.38	0.50	0.45	—	—
		Result	<0.63	<0.51	<0.29	<0.29	<0.33	<0.39	<0.38	<0.50	<0.45	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantitation limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

Result adjusted for method blank contamination (i.e. the method blank result was subtracted from the original result).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

J Concentration is qualified as estimated.

P Does not meet all the method specified congener identification criteria.

Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/19/04) ALTA	10/19/2004	*DL*	1.040	0.473	0.523	0.521	0.528	1.03	1.01	0.390	—
		Result	<1.040	<0.473	<0.523	<0.521	<0.528	<1.03	0.53 B,J	<0.390	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	5.3E-06	ND	0.00001
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/19/04) STL	10/19/2004	*DL*	2.8	1.0	1.2	1.3	1.2	1.3	1.8	3.4	—
		Result	<2.8	<1.0	<1.2	<1.3	<1.2	<1.3	<1.8 P	<3.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
FB (10/20/04) ALTA	10/20/2004	*DL*	0.848	0.471	0.371	0.380	0.379	1.290	0.790	0.249	—
		Result	<0.848	<0.471	<0.371	<0.380	<0.379	<1.290	<5.63 B,J	<0.249	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/20/04) STL	10/20/2004	*DL*	2.4	1.1	1.3	1.3	1.2	1.1	1.2	2.2	
		Result	<2.4	<1.1	<1.3	<1.3	<1.2	<1.1	<1.2	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/21/04) ALTA	10/21/2004	*DL*	0.320	0.398	0.436	0.447	0.446	0.739	0.606	0.169	—
		Result	<0.320	<0.398	<0.436	<0.447	<0.446	<0.739	<4.74 B,J	<0.169	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/21/04) STL	10/21/2004	*DL*	1.9	0.64	0.97	1.1	0.95	0.99	4.1	2.0	
		Result	<1.9	<0.64	<0.97	<1.1	<0.95	<0.99	<4.1 P	<2.0	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
FB (10/22/04) ALTA	10/22/2004	*DL*	0.383	0.285	0.367	0.359	0.367	0.272	5.71	0.157	—
		Result	<0.383	<0.285	<0.367	<0.359	<0.367	1.22 J	<5.71	<0.157	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00061	ND	ND	0.00061
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/22/04) STL	10/22/2004	*DL*	1.5	0.69	0.68	0.69	0.64	0.78	1.9	1.5	
		Result	<1.5	<0.69	<0.68	<0.69	<0.64	<0.78	<1.9 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/26/04) ALTA	10/26/2004	*DL*	0.274	0.363	0.522	0.513	0.523	0.159	0.514	0.132	—
		Result	<0.274	<0.363	<0.522	<0.513	<0.523	0.471 J	<2.15 B,J	<0.132	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0002355	ND	ND	0.00024
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB (10/26/04) STL	10/26/2004	*DL*	1.8	0.83	1.0	1.0	0.96	0.69	0.85	1.5	
		Result	<1.8	<0.83	<1.0	<1.0	<0.96	<0.69	5.6 J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000056	ND	0.00006
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(10/27/04) ALTA	10/27/2004	*DL*	0.304	0.562	0.410	0.405	0.412	0.498	1.74	0.176	—
		Result	<0.304	<0.562	<0.410	<0.405	<0.412	<0.498	<1.74	<0.176	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB(10/27/04) STL	10/27/2004	*DL*	1.9	0.86	1.0	1.0	0.93	0.85	0.80	1.7	
		Result	<1.9	<0.86	<1.0	<1.0	<0.93	<0.85	3.3 J	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000033	ND	0.00003
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/29/04) ALTA	10/29/2004	*DL*	0.367	0.386	0.353	0.338	0.348	0.442	0.318	0.131	—
		Result	<0.367	<0.386	<0.353	<0.338	<0.348	<0.442	<1.63 B,J	<0.131	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB (10/29/04) STL	10/29/2004	*DL*	0.82	0.42	0.40	0.40	0.37	0.44	0.46	0.79	
		Result	<0.82	<0.42	<0.40	<0.40	<0.37	<0.44	2.0 J	<0.79	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00002	ND	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(10/30/04) ALTA	10/30/2004	*DL*	0.244	0.337	0.283	0.293	0.291	0.410	1.68	0.105	—
		Result	<0.244	<0.337	<0.283	<0.293	<0.291	<0.410	<1.680	<0.105	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB(10/30/04) STL	10/30/2004	*DL*	1.4	0.73	0.80	0.79	0.74	0.78	0.81	1.5	—
		Result	<1.4	<0.73	<0.80	<0.79	<0.74	<0.78	<0.81	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(11/2/04) ALTA	11/2/2004	*DL*	0.446	0.507	0.630	0.600	0.620	0.692	0.940	0.216	—
		Result	<0.446	<0.507	<0.630	<0.600	<0.620	<0.692	<2.30 B, J	<0.216	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB(11/2/04) STL	11/2/2004	*DL*	1.3	0.61	0.68	0.71	0.65	0.60	1.6	1.1	
		Result	<1.3	<0.61	<0.68	<0.71	<0.65	<0.60	<1.6 P	<1.1	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/6/04) ALTA	12/6/2004	*DL*	1.00	1.21	1.75	1.80	1.77	1.72	1.79	0.633	—
		Result	<1.00	<1.21	<1.75	<1.80	<1.77	<1.72	6.30 J	<0.633	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000063	ND	0.00006
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/6/04) STL	12/6/2004	*DL*	1.2	0.46	0.45	0.47	0.44	0.52	1.7	0.92	
		Result	<1.2	<0.46	<0.45	<0.47	<0.44	<0.52	<1.7 P	<0.92	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(12/7/04) ALTA	12/7/2004	*DL*	0.785	0.802	1.38	1.33	1.35	1.06	1.82	0.603	—
		Result	<0.785	<0.802	<1.38	<1.33	<1.35	<1.06	5.32 J	<0.603	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000532	ND	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/7/04) STL	12/7/2004	*DL*	1.7	0.67	0.66	0.71	0.65	0.84	0.94	1.4	
		Result	<1.7	<0.67	<0.66	<0.71	<0.65	<0.84	2.5 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000025	ND	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/8/04) ALTA	12/8/2004	*DL*	0.887	0.941	1.47	1.46	1.46	0.906	2.54	0.625	—
		Result	<0.887	<0.941	<1.47	<1.46	<1.46	3.80 J	25.4 J	<0.625	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0019	0.000254	ND	0.00215
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/8/04) STL	12/8/2004	*DL*	2.1	0.68	0.60	0.64	0.59	0.90	0.61	1.4	
		Result	<2.1	<0.68	<0.60	<0.64	<0.59	<0.90	1.5 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000015	ND	0.00002
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	**0.1**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	**0.8**	
FB(12/9/04) ALTA	12/9/2004	*DL*	1.00	0.890	1.37	1.39	1.38	1.39	1.90	0.527	—
		Result	<1.00	<0.890	<1.37	<1.39	<1.38	<1.39	5.04 J	<0.527	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000504	ND	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/9/04) STL	12/9/2004	*DL*	1.3	0.60	0.60	0.63	0.70	0.77	1.8	1.0	
		Result	<1.3	<0.60	<0.60	<0.63	<0.70 P	<0.77	<1.8 P	<1.0	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/10/04) ALTA	12/10/2004	*DL*	0.959	1.01	1.24	1.22	1.22	1.35	2.60	0.696	—
		Result	<0.959	<1.01	<1.24	<1.22	<1.22	<1.35	<2.60	<0.696	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/10/04) STL	12/10/2004	*DL*	2.0	0.65	0.74	0.78	0.72	0.82	2.0	1.3	
		Result	<2.0	<0.65	<0.74	<0.78	<0.72	<0.82	<2.0 P	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(12/11/04) ALTA	12/11/2004	*DL*	0.634	0.660	0.717	0.701	0.705	0.888	2.91	0.403	—
		Result	<0.634	<0.660	<0.717	<0.701	<0.705	<0.888	<2.91	<0.403	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/11/04) STL	12/11/2004	*DL*	1.1	0.59	0.55	0.58	0.54	0.72	0.53	0.93	
		Result	<1.1	<0.59	<0.55	<0.58	<0.54	<0.72	<2.6 B,J	<0.93	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—
FB(12/12/04) ALTA	12/12/2004	*DL*	0.678	0.965	1.21	1.23	1.21	1.27	2.75	0.533	—
		Result	<0.678	<0.965	<1.21	<1.23	<1.21	<1.27	<2.75	<0.533	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/12/04) STL	12/12/2004	*DL*	1.7	0.65	0.79	0.78	0.75	0.85	1.1	1.3	
		Result	<1.7	<0.65	<0.79	<0.78	<0.75	<0.85	<1.1 P	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(12/13/04) ALTA	12/13/2004	*DL*	0.754	0.891	1.00	1.01	1.00	0.482	0.969	0.551	—
		Result	<0.754	<0.891	<1.00	<1.01	<1.00	<0.690 B,J	4.61 J	<0.551	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000461	ND	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/13/04) STL	12/13/2004	*DL*	1.5	0.69	0.69	0.70	0.66	1.6	3.3	1.2	
		Result	<1.5	<0.69	<0.69	<0.70	<0.66	<1.6 P	<3.3 P	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—
FB(12/14/04) ALTA	12/14/2004	*DL*	1.14	1.09	1.11	1.15	1.13	0.860	0.987	0.784	—
		Result	<1.14	<1.09	<1.11	<1.15	<1.13	<0.860	5.87 J	<0.784	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000587	ND	0.00006
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/14/04) STL	12/14/2004	*DL*	2.0	0.62	0.72	0.76	0.70	0.69	0.59	1.5	
		Result	<2.0	<0.62	<0.72	<0.76	<0.70	<0.69	<1.1 B,J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/19/04) ALTA	10/19/04	*DL*	0.499	0.437	0.293	0.290	0.307	0.452	0.311	0.274	0.972	—	—
		Result	<0.499	<0.437	<0.293	<0.290	<0.307	<0.452	<0.311	<0.274	<0.972	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00001
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/19/04) STL	10/19/04	*DL*	1.1	1.1	0.58	0.59	0.61	0.76	0.93	1.2	1.4	—	—
		Result	<1.1	<1.1	<0.58	<0.59	<0.61	<0.76	<0.93	<1.2	<1.4	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/20/04) ALTA	10/20/04	*DL*	0.373	0.352	0.173	0.168	0.178	0.138	0.219	0.295	0.659	—	—
		Result	<0.373	<0.352	<0.173	<0.168	<0.178	<0.138	<0.219	<0.295	<0.659	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/20/04) STL	10/20/04	*DL*	0.98	0.72	0.56	0.59	0.59	0.78	0.84	0.97	1.4	—	—
		Result	<0.98	<0.72	<0.56	<0.59	<0.59	<0.78	<0.84	<0.97	<1.4	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/21/04) ALTA	10/21/04	*DL*	0.343	0.305	0.166	0.167	0.174	0.250	0.291	0.441	0.617	—	—
		Result	<0.343	<0.305	<0.166	<0.167	<0.174	<0.250	<0.291	<0.441	<0.617	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/21/04) STL	10/21/04	*DL*	0.66	0.52	0.44	0.46	0.50	0.56	0.62	0.75	0.78	—	—
		Result	<0.66	<0.52	<0.44	<0.46	<0.50	<0.56	<0.62	<0.75	3.2 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00006	0.00006	0.00006
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/22/04) ALTA	10/22/04	*DL*	0.441	0.100	0.106	0.105	0.113	0.156	0.225	0.172	0.565	—	—
		Result	<0.441	<0.100	<0.106	<0.105	<0.113	<0.156	<0.225	<0.172	<0.565	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00061
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/22/04) STL	10/22/04	*DL*	0.59	0.50	0.42	0.42	0.44	0.52	0.57	0.68	0.94	—	—
		Result	<0.59	<0.50	<0.42	<0.42	<0.44	<0.52	<0.57	<0.68	<0.94	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/26/04) ALTA	10/26/04	*DL*	0.334	0.313	0.178	0.175	0.192	0.256	0.286	0.220	0.299	—	—
		Result	<0.334	<0.313	<0.178	<0.175	<0.192	<0.256	<0.286	<0.220	0.712 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00001	0.00001	0.00025
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/26/04) STL	10/26/04	*DL*	0.78	0.60	0.45	0.47	0.47	0.58	0.57	0.67	0.97	—	—
		Result	<0.78	<0.60	<0.45	<0.47	<0.47	<0.58	<0.57	<0.67	<0.97	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
FB(10/27/04) ALTA	10/27/2004	*DL*	0.221	0.198	0.120	0.126	0.119	0.161	0.124	0.195	1.03	—	—
		Result	<0.221	<0.198	<0.120	<0.126	<0.119	<0.161	<0.124	<0.195	<1.03	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(10/27/04) STL	10/27/2004	*DL*	0.85	0.65	0.55	0.57	0.62	0.72	0.69	0.92	1.3	—	—
		Result	<0.85	<0.65	<0.55	<0.57	<0.62	<0.72	<0.69	<0.92	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/29/04) ALTA	10/29/04	*DL*	0.343	0.301	0.114	0.119	0..126	0.176	0.115	0.183	0.460	—	—
		Result	<0.343	<0.301	<0.114	<0.119	<0..126	<0.176	<0.115	<0.183	<0.460	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/29/04) STL	10/29/04	*DL*	0.29	0.25	0.37	0.22	0.23	0.28	0.29	0.38	0.47	—	—
		Result	<0.29	<0.25	<0.37 P	<0.22	<0.23	<0.28	<0.29	<0.38	<0.47	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
FB(10/30/04) ALTA	10/30/04	*DL*	0.274	0.243	0.103	0.106	0.111	0.134	0.223	0.150	0.647	—	—
		Result	<0.274	<0.243	<0.103	<0.106	<0.111	<0.134	<0.223	<0.150	<0.647	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(10/30/04) STL	10/30/04	*DL*	0.59	0.50	0.34	0.35	0.38	0.47	0.48	0.65	0.94	—	—
		Result	<0.59	<0.50	<0.34	<0.35	<0.38	<0.47	<0.48	<0.65	<0.94	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE	TEF / BEF	1,2,3,7,8-PeCDF (0.05 / 0.2)	2,3,4,7,8-PeCDF (0.5 / 1.6)	1,2,3,4,7,8-HxCDF (0.1 / 0.08)	1,2,3,6,7,8-HxCDF (0.1 / 0.2)	2,3,4,6,7,8-HxCDF (0.1 / 0.7)	1,2,3,7,8,9-HxCDF (0.1 / 0.6)	1,2,3,4,6,7,8-HpCDF (0.01 / 0.01)	1,2,3,4,7,8,9-HpCDF (0.01 / 0.4)	OCDF (0.001 / 0.02)	Sum of furan TECs	Sum of Dioxins Furans TECs
FB(11/2/04) ALTA	11/2/2004	DL	0.435	0.384	0.146	0.138	0.158	0.224	0.182	0.319	0.954	—	—
		Result	<0.435	<0.384	<0.146	<0.138	<0.158	<0.224	<0.182	<0.319	<0.954	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(11/2/04) STL	11/2/2004	DL	0.55	0.45	0.38	0.37	0.41	0.47	0.41	0.50	0.9	—	—
		Result	<0.55	<0.45	<0.38	<0.37	<0.41	<0.47	<0.41	<0.50	<0.93	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
FB(12/6/04) ALTA	12/6/2004	DL	0.879	0.933	0.380	0.425	0.498	0.882	0.978	1.35	2.62	—	—
		Result	<0.879	<0.933	<0.380	<0.425	<0.498	<0.882	<0.978	<1.35	<2.62	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/6/04) STL	12/6/2004	DL	0.41	0.36	0.72	0.29	0.32	0.37	0.34	0.43	0.52	—	—
		Result	<0.41	<0.36	<0.72 P	<0.29	<0.32	<0.37	<0.34	<0.43	<0.52	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/7/04) ALTA	12/7/2004	*DL*	0.998	0.978	0.391	0.404	0.485	0.857	0.569	0.717	1.93	—	—
		Result	<0.998	<0.978	<0.391	<0.404	<0.485	<0.857	<0.569	<0.717	<1.93	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/7/04) STL	12/7/2004	*DL*	0.65	0.54	0.42	0.43	0.48	0.55	0.49	0.75	1.0	—	—
		Result	<0.65	<0.54	<0.42	<0.43	<0.48	<0.55	<0.49	<0.75	<1.0	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—
FB(12/8/04) ALTA	12/8/2004	*DL*	1.05	1.02	0.477	0.506	0.595	1.00	0.878	1.14	4.65	—	—
		Result	<1.05	<1.02	<0.477	<0.506	<0.595	<1.00	<0.878	<1.14	<4.65	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00215
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/8/04) STL	12/8/2004	*DL*	0.59	0.53	0.38	0.40	0.45	0.55	0.43	0.65	0.79	—	—
		Result	<0.59	<0.53	<0.38	<0.40	<0.45	<0.55	<0.43	<0.65	<0.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/9/04) ALTA	12/9/2004	*DL*	0.858	0.868	0.543	0.577	0.627	1.11	0.862	0.825	1.79	—	—
		Result	<0.858	<0.868	<0.543	<0.577	<0.627	<1.11	<0.862	<0.825	<1.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/9/04) STL	12/9/2004	*DL*	0.57	0.46	0.33	0.35	0.37	0.44	0.39	0.51	0.97	—	—
		Result	<0.57	<0.46	<0.33	<0.35	<0.37	<0.44	<0.39	<0.51	<0.97 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—
FB(12/10/04) ALTA	12/10/2004	*DL*	1.16	1.27	0.383	0.414	0.469	0.862	0.539	0.710	1.89	—	—
		Result	<1.16	<1.27	<0.383	<0.414	<0.469	<0.862	<0.539	<0.710	<1.89	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/10/04) STL	12/10/2004	*DL*	0.54	0.43	0.39	0.38	0.41	0.51	0.42	0.57	0.71	—	—
		Result	<0.54	<0.43	<0.39	<0.38	<0.41	<0.51	<0.42	<0.57	<0.71	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/11/04) ALTA	12/11/2004	*DL*	0.668	0.739	0.289	0.296	0.337	0.582	0.357	0.396	1.12	—	—
		Result	<0.668	<0.739	<0.289	<0.296	<0.337	<0.582	<0.357	<0.396	<1.12	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/11/04) STL	12/11/2004	*DL*	0.49	0.39	0.31	0.34	0.35	0.42	0.44	0.61	0.57	—	—
		Result	<0.49	<0.39	<0.31	<0.34	<0.35	<0.42	<0.44	<0.61	<0.57	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—
FB(12/12/04) ALTA	12/12/2004	*DL*	1.11	1.10	0.522	0.528	0.669	1.15	0.680	0.970	1.60	—	—
		Result	<1.11	<1.10	<0.522	<0.528	<0.669	<1.15	<0.680	<0.970	<1.60	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/12/04) STL	12/12/2004	*DL*	0.72	0.55	0.45	0.43	0.48	0.57	0.53	0.79	0.82	—	—
		Result	<0.72	<0.55	<0.45	<0.43	<0.48	<0.57	<0.53	<0.79	<0.82	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table 5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/13/04) ALTA	12/13/2004	*DL*	0.816	0.823	0.411	0.433	0.502	0.840	0.477	0.670	1.13	—	—
		Result	<0.816	<0.823	<0.411	<0.433	<0.502	<0.840	<0.477	<0.670	<1.13	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/13/04) STL	12/13/2004	*DL*	0.66	0.52	0.40	0.40	0.42	0.52	0.55	0.77	0.61	—	—
		Result	<0.66	<0.52	<0.40	<0.40	<0.42	<0.52	<0.55	<0.77	<0.61	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—
FB(12/14/04) ALTA	12/14/2004	*DL*	1.06	1.08	0.389	0.432	0.494	0.845	0.485	0.613	0.998	—	—
		Result	<1.06	<1.08	<0.389	<0.432	<0.494	<0.845	<0.485	<0.613	<0.998	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/14/04) STL	12/14/2004	*DL*	0.68	0.53	0.37	0.36	0.40	0.48	0.48	0.61	0.65	—	—
		Result	<0.68	<0.53	<0.37	<0.36	<0.40	<0.48	<0.48	<0.61	<0.65	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantitation limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

Result adjusted for method blank contamination (i.e. the method blank result was subtracted from the original result).

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

J Concentration is qualified as estimated.

P Does not meet all the method specified congener identification criteria.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
ALTA											
Supplemental Method Blank ALTA	October 04	*DL*	0.470	0.363	0.389	0.387	0.392	0.859	5.50	0.171	—
		Result	<0.470	<0.363	<0.389	<0.387	<0.392	<0.859	<5.5 B,J	<0.171	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
Supplemental Method Blank ALTA	October 04	*DL*	0.490	0.436	0.422	0.440	0.436	0.782	0.726	0.227	—
		Result	<0.490	<0.436	<0.422	<0.440	<0.436	<0.782	2.99 B,J	<0.227	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000299	ND	0.00003
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
Method Blank-6300 ALTA	October 04	*DL*	0.319	0.596	0.400	0.411	0.410	1.46	1.40	0.910	—
		Result	<0.319	<0.596	<0.400	<0.411	<0.410	<1.46	6.23 J	<0.910	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000623	ND	0.00006
Method Blank-6302 ALTA	October 04	*DL*	0.482	0.359	0.737	0.708	0.729	0.826	0.356	0.178	—
		Result	<0.482	<0.359	<0.737	<0.708	<0.729	<0.826	5.86 J	<0.178	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000586	ND	0.00006
Method Blank-6324 ALTA	October 04	*DL*	0.413	0.705	0.820	0.839	0.838	1.44	0.740	0.316	—
		Result	<0.413	<0.705	<0.820	<0.839	<0.838	<1.44	3.23 J	<0.316	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000323	ND	0.00003

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Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
Supplemental Method Blank ALTA	December 04	*DL*	0.725	0.796	1.13	1.15	1.13	1.52	0.958	0.638	—
		Result	<0.725	<0.796	<1.13	<1.15	<1.13	<1.52	5.28 J	<0.638	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000528	ND	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
Supplemental Method Blank ALTA	December 04	*DL*	0.908	0.709	1.51	1.57	1.54	0.976	2.24	0.562	—
		Result	<0.908	<0.709	<1.51	<1.57	<1.54	<0.976	3.40 J	<0.562	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000034	ND	0.00003
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
Method Blank-6399 ALTA	December 04	*DL*	0.608	0.613	1.18	1.17	1.17	0.946	3.28	0.484	—
		Result	<0.608	<0.613	<1.18	<1.17	<1.17	0.948 J	<3.28	<0.484	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000474	ND	ND	0.00047
Method Blank-6411 ALTA	December 04	*DL*	0.597	0.523	1.30	1.37	1.34	1.72	7.54	0.821	—
		Result	<0.597	<0.523	<1.30	<1.37	<1.34	<1.72	<7.54	<0.821	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000

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Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
STL											
Supplemental Method Blank STL	October 04	*DL*	2.2	0.89	1.0	1.1	1.0	0.98	1.8	2.0	
		Result	<2.2	<0.89	<1.0	<1.1	<1.0	<0.98	<1.8 P	<2.0	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
Supplemental Method Blank STL	October 04	*DL*	1.6	0.68	0.84	0.90	0.81	0.84	1.6	1.4	
		Result	<1.6	<0.68	<0.84	<0.90	<0.81	<0.84	<1.6 P	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
Method Blank-432264 STL	October 04	*DL*	2.5	1.4	1.5	1.5	1.4	1.2	4.5	2.6	—
		Result	<2.5	<1.4	<1.5	<1.5	<1.4	<1.2	<4.5 P	<2.6	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
Method Blank-432358 STL	October 04	*DL*	2.2	1.1	1.2	1.3	1.1	1.1	5.7	1.7	—
		Result	<2.2	<1.1	<1.2	<1.3	<1.1	<1.1	<5.7 P	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000

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Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
Supplemental Method Blank STL	December 04	*DL*	2.5	0.75	0.63	0.71	0.64	0.80	3.3	2.0	
		Result	<2.5	<0.75	<0.63	<0.71	<0.64	<0.80	<3.3 P	<2.0	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—
Supplemental Method Blank STL	December 04	*DL*	1.6	0.63	0.51	0.54	0.50	0.61	0.55	0.94	
		Result	<1.6	<0.63	<0.51	<0.54	<0.50	<0.61	1.1 J	<0.94	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000011	ND	0.00001
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—
Method Blank-5011047 STL	December 04	*DL*	1.4	0.49	0.41	0.42	0.39	0.76	3.5	1.1	—
		Result	<1.4	<0.49	<0.41	<0.42	<0.39	<0.76 P	<3.5 P	<1.1	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
Method Blank-5012114 STL	December 04	*DL*	1.7	0.71	0.57	0.57	0.54	0.68	0.59	1.3	—
		Result	<1.7	<0.71	<0.57	<0.57	<0.54	<0.68	5.3 J	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000053	ND	0.00005
Method Blank-5019306 STL	December 04	*DL*	1.1	0.78	0.90	0.92	0.86	1.1	7.2	1.1	—
		Result	<1.1	<0.78	<0.90	<0.92	<0.86	2.2 J	<7.2 P	<1.1	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.0011	ND	ND	0.00110
Method Blank-5032342 STL	December 04	*DL*	1.2	0.73	0.92	0.91	0.87	1.2	1.1	1.2	—
		Result	<1.2	<0.73	<0.92	<0.91	<0.87	<1.2	4.2 J	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000042	ND	0.00004

Footnotes on Page 5.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

All values are reported in parts per quadrillion (ppq).

BEF	Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL	Detection limit.
ND	Congener was not detected; contribution to the TEC is zero.
ppq	Parts per quadrillion (picograms per liter).
QL	Congener quantitation limit for that sample.
TEC	Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF	Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
	Result adjusted for method blank contamination (i.e. the method blank result was subtracted from the original result).

TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B	Compound was detected in the associated QC method blank sample.
J	Concentration is qualified as estimated.
P	Does not meet all the method specified congener identification criteria.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
ALTA													
Supplemental Method Blank ALTA	October 04	*DL*	0.334	0.303	0.210	0.210	0.222	0.146	0.273	0.246	0.505	—	—
		Result	<0.334	<0.303	<0.210	<0.210	<0.222	<0.146	<0.273	<0.246	<0.505	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Supplemental Method Blank ALTA	October 04	*DL*	0.338	0.299	0.179	0.179	0.185	0.220	0.157	0.236	1.490	—	—
		Result	<0.338	<0.299	<0.179	<0.179	<0.185	<0.220	<0.157	<0.236	<1.490	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Method Blank-6300 ALTA	October 04	*DL*	0.686	0.601	0.446	0.429	0.478	0.705	1.51	2.32	1.79	—	—
		Result	<0.686	<0.601	<0.446	<0.429	<0.478	<0.705	<1.51	<2.32	<1.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
Method Blank-6302 ALTA	October 04	*DL*	0.454	0.438	0.168	0.601	0.187	0.259	0.245	0.378	1.180	—	—
		Result	<0.454	<0.438	<0.168	<0.601	<0.187	<0.259	<0.245	<0.378	<1.180	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
Method Blank-6324 ALTA	October 04	*DL*	0.601	0.546	0.559	0.525	0.590	0.864	0.681	0.672	2.40	—	—
		Result	<0.601	<0.546	<0.559	<0.525	<0.590	<0.864	<0.681	<0.672	<2.40	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003

Footnotes on Page 5.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
Supplemental Method Blank ALTA	December 04	*DL*	0.989	0.900	0.336	0.344	0.383	0.648	0.525	0.785	1.34	—	—
		Result	<0.989	<0.900	<0.336	<0.344	<0.383	<0.648	<0.525	<0.785	<1.34	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Supplemental Method Blank ALTA	December 04	*DL*	1.16	1.14	0.292	0.300	0.377	0.663	0.763	0.985	1.66	—	—
		Result	<1.16	<1.14	<0.292	<0.300	<0.377	<0.663	<0.763	<0.985	<1.66	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Method Blank-6399 ALTA	December 04	*DL*	0.927	0.965	0.417	0.484	0.555	0.936	0.789	0.811	2.05	—	—
		Result	<0.927	<0.965	<0.417	<0.484	<0.555	<0.936	<0.789	<0.811	<2.05	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00047
Method Blank-6411 ALTA	December 04	*DL*	1.02	1.05	0.610	0.668	0.776	1.42	1.08	1.45	3.15	—	—
		Result	<1.02	<1.05	<0.610	<0.668	<0.776	<1.42	<1.08	<1.45	<3.15	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000

Footnotes on Page 5.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

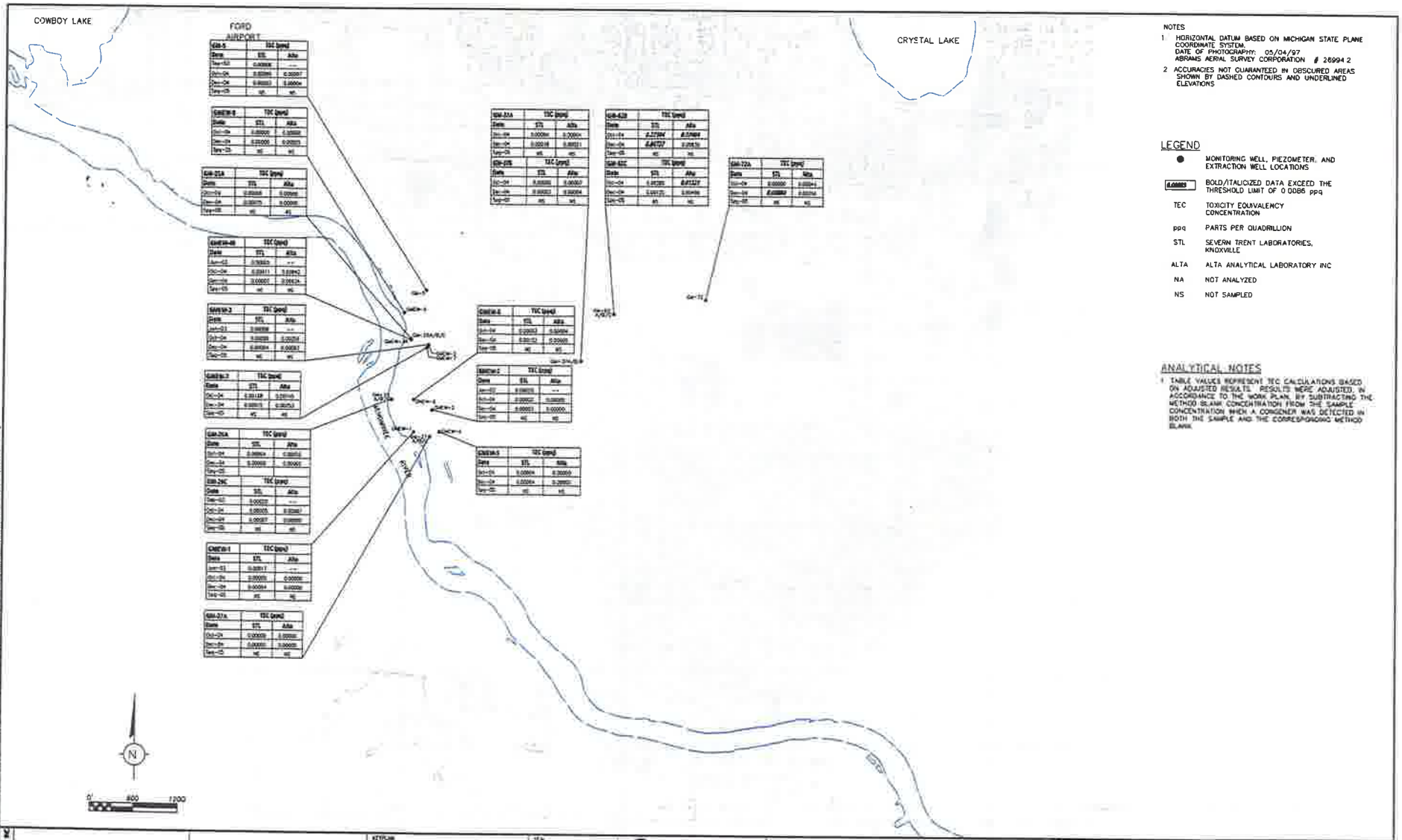
SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
STL													
Supplemental Method Blank STL	October 04	*DL*	0.82	0.65	0.45	0.50	0.51	0.64	0.68	0.84	1.3	—	—
		Result	<0.82	<0.65	<0.45	<0.50	<0.51	<0.64	<0.68	<0.84	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Supplemental Method Blank STL	October 04	*DL*	0.64	0.48	0.37	0.40	0.44	0.53	0.61	0.76	0.99	—	—
		Result	<0.64	<0.48	<0.37	<0.40	<0.44	<0.53	<0.61	<0.76	<0.99	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
Method Blank-432264 STL	October 04	*DL*	1.40	1.00	0.71	0.76	0.77	0.98	1.8	1.0	2.4	—	—
		Result	<1.40	<1.00	<0.71	<0.76	<0.77	<0.98	<1.8 P	<1.0	<2.4 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
Method Blank-432358 STL	October 04	*DL*	0.99	0.75	1.0	0.67	0.73	0.86	2.2	0.97	3.6	—	—
		Result	<0.99	<0.75	<1.0	<0.67	1.3 J	<0.86	<2.2 P	<0.97	<3.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	0.091	ND	ND	ND	ND	0.09100	0.09100

Footnotes on Page 5.

Table 6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
Supplemental Method Blank STL	December 04	*DL*	0.64	0.49	0.44	0.45	0.49	0.60	0.52	0.71	0.85	—	—
		Result	<0.64	<0.49	<0.44	<0.45	<0.49	<0.60	<0.52	<0.71	<0.85	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—
Supplemental Method Blank STL	December 04	*DL*	0.48	0.44	0.32	0.33	0.36	0.45	0.40	0.59	0.66		
		Result	<0.48	<0.44	<0.32	<0.33	<0.36	<0.45	<0.40	<0.59	<0.66	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00001
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—
Method Blank-5011047 STL	December 04	*DL*	0.49	0.44	0.30	0.29	0.46	0.39	0.36	0.50	1.2	—	—
		Result	<0.49	<0.44	<0.30	<0.29	<0.46 P	<0.39	0.63 J	<0.50	<1.2 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000063	ND	ND	0.00006	0.00006
Method Blank-5012114 STL	December 04	*DL*	0.58	0.49	0.37	0.35	0.38	0.47	0.43	0.56	1.8	—	—
		Result	<0.58	<0.49	<0.37	<0.35	0.43 J	<0.47	<0.43	<0.56	<1.8 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	0.0301	ND	ND	ND	ND	0.03010	0.03015
Method Blank-5019306 STL	December 04	*DL*	0.58	0.52	0.52	0.54	0.86	1.5	1.4	1.2	4.5	—	—
		Result	<0.58	<0.52	<0.52	<0.54	<0.86 P	<1.5 P	<1.4 P	<1.2 P	<4.5 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00110
Method Blank-5032342 STL	December 04	*DL*	0.68	0.59	0.74	0.69	0.82	1.0	0.85	0.98	1.2	—	—
		Result	<0.68	<0.59	<0.74	<0.69	<0.82	<1.0	1.2 J	<0.98	3.8 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00012	ND	7.6E-05	0.00020	0.00024

Footnotes on Page 5.



NOTES

1 HORIZONTAL DATUM BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM.
DATE OF PHOTOGRAPHY: 05/04/97
ABRAMS AERIAL SURVEY CORPORATION # 26994 2

2 ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

LEGEND

●	MONITORING WELL, PIEZOMETER, AND EXTRACTION WELL LOCATIONS
0.00083	BOLD/ITALICIZED DATA EXCEED THE THRESHOLD LIMIT OF 0 0086 ppq
TEC	TOXICITY EQUIVALENCY CONCENTRATION
ppq	PARTS PER QUADRILLION
STL	SEVERN TRENT LABORATORIES, KNOXVILLE
ALTA	ALTA ANALYTICAL LABORATORY INC
NA	NOT ANALYZED
NS	NOT SAMPLED

ANALYTICAL NOTES

1 TABLE VALUES REPRESENT TEC CALCULATIONS BASED ON ADJUSTED RESULTS. RESULTS WERE ADJUSTED, IN ACCORDANCE TO THE WORK PLAN, BY SUBTRACTING THE METHOD BLANK CONCENTRATION FROM THE SAMPLE CONCENTRATION WHEN A CONGENER WAS DETECTED IN BOTH THE SAMPLE AND THE CORRESPONDING METHOD BLANK

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KEYPLAN

SEAL

REV. ISSUED DATE DESCRIPTION

ARCADIS

PROJECT MANAGER: R. STAEDTMER	DEPARTMENT MANAGER: R. MAERLE	LEAD DESIGN PROF: J. FORBUSH	CHECKED BY: Checked By
SHEET TITLE: DIOXIN/FURAN SAMPLE RESULTS		DATA/PHASE NUMBER: W001075.0021	DRAWN BY: C. SCHEDDICK
		PROJECT NUMBER: W001075	DRAWING NUMBER: 1

ATTACHMENT A
Guidelines for Analysis and Reporting of Dioxin Samples Collected From the Ford/Kingsford Site.

Dioxin samples collected from the Ford/Kingsford site will be analyzed and reported according to the information contained within this memo. It is anticipated that there will be two sampling events each consisting of approximately 20 primary samples, five field blanks, and two equipment blanks. The proposed schedule for the sampling is the collection of the first round during the third or fourth week of October 2004, and the collection of the second round during the first or second week of December 2004. A third sampling round, consisting of approximately seven primary samples, three field blanks, and two equipment blanks, will be collected during 2005. Three liters of groundwater will be collected at each sample location to ensure that two or three analytical runs can be performed per sample, if needed.

The following information is provided to support the analysis of these samples:

1) Samples will be run by United States Environmental Protection Agency (U.S. EPA) Method 1613B.

2) Samples will be run in the sampling order, based on chain-of-custody sampling date and time. Samples will be held until all samples are received for each sampling event. Approximately 27 will be received by the laboratory for the first two sampling rounds and 12 samples for the third sampling round. A representative of ARCADIS will contact the laboratory to confirm that all samples have been received prior to sample extraction and analysis. All samples will be extracted at the same time and then run in two consecutive analytical batches.

3) Samples will be run for the 17 congeners listed on Table 1 of U.S. EPA Method 1613B. Totals will not be reported since these may include other dioxin/furans not listed on this table.

4) A low-level quality control (QC) check sample (as referenced in Sections 7.16 and 9.6 of U.S. EPA Method 1613B) will be analyzed immediately before the analysis of the samples from the first sampling round and the third sampling round (at a minimum). This sample will be analyzed with any other QC samples (e.g. laboratory control sample) prior to the method blank and the samples submitted for analysis. To address contaminant carryover, a rinse sample will be run between the QC samples and the method blank.

5) A second method blank will be run with each analytical batch (e.g., a total of four method blanks for each of the first two sampling events and a total of two method blanks for the third sampling event).

6) Congener Identification: Per Section 16.0 of U.S. EPA Method 1613B, all of the identification criteria must be met before a peak can be identified as a dioxin/furan congener (in a standard, blank, or sample). If any single identification criteria (or combination) is outside the acceptable range, the peak is not a dioxin/furan congener, and the analyte must be identified as a non-detect with a QC flag. Congener identification criteria from U.S. EPA Method 1613B are as follows:

a) The signals for the two exact mass to charge ratios (m/z) specified in Table 8 of U.S. EPA Method 1613B must be present and must maximize within the same two seconds.

b) The signal-to-noise ratio (S/N) must be above 2.5 for all suspected dioxin/furan peaks.

c) Ion abundance ratios must be within the limits specified in Table 9 of U.S. EPA Method 1613B.

d) Relative retention times for 2,3,7,8-substituted chlorinated dibenzo-p-dioxin and chlorinated dibenzofuran must be within the limits specified in Table 2 of U.S EPA Method 1613B.

e) Confirmatory analysis must be performed for any peaks identified as 2,3,7,8-tetrachlorodibenzofuran using the gas chromatograph columns specified in U.S. EPA Method 1613B.

Note: Peaks that meet the retention time **and** signal-to-noise criteria described above, but **do not** meet the remaining congener identification criteria will be reported as non-detect and the elevated detection limit flagged indicating that the "Does not meet all the method specified congener identification criteria."

The following information is provided to support the reporting of these samples:

1) The laboratory will group the "pretreatment" and "full-scale" samples in separate laboratory reports. The attached table (Table A-1) identifies the samples as "pretreatment" or "full-scale."

2) In addition to the reporting requirements specified in U.S EPA Method 1613B, the laboratory will be required to report the method detection limit (e.g., EDL).

3) If preliminary results show the presence of detectable levels of dioxins/furans, the laboratory will immediately forward these data to ARCADIS. ARCADIS will notify the MDEQ of these preliminary findings within seven days.

4) The laboratory reports will consist of a full data package and include: narrative explaining qualified (flagged) results, initial calibration (ICAL), continuing calibrations (CCALs), method blanks (MB), ongoing precision and recovery (OPR), sample raw data, confirmation data (if applicable), quality control and sample datasheets, sample preparation bench sheets, and receiving documents (e.g., chain of custody, sample receiving checklist, etc.).

5) A final copy of each laboratory report will be distributed by the laboratory to the following three individuals:

Ric Studebaker
ARCADIS
126 N. Jefferson Street Ste. 400
Milwaukee, Wisconsin 53202

Gerald Saalfeld
Water Division
Michigan Department of Environmental Quality
MDEQ-Water Division, 2 South
525 West Allegan
Lansing MI 48933

Chris Austin
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
1420 West US Hwy. 2
Crystal Falls, MI 49920-9623

6) Each laboratory report will also be reported electronically as a portable document format (PDF) and in electronic data deliverable (EDD) format.

The following data review actions are anticipated:

- Matrix interferences are sometimes observed in the method blanks. Per U.S. EPA Method 1613B, method blanks should be free from contamination or matrix interferences (e.g., there should be non-detects for all congeners). If excessive method blank contamination occurs, or if 2,3,7,8-TCDD is detected in a method blank, the samples associated with the method blank will be re-extracted, cleaned up, and re-run in accordance with U.S. EPA Method 1613B and each laboratory's corrective action procedures. Excessive blank contamination is defined to be detection of congeners at concentrations that are out of control relative to the laboratory's historic blank analyses.

- If unacceptable contamination is found in the field or equipment blanks, samples with detections associated with the blanks will be disqualified as invalid data and will be resampled. Samples that are non-detect will be valid since these samples were not affected by potential field procedures.

Table B1. Summary of Dioxin/Furan Samples Collected in 2004, Ford/Kingsford Site, Kingsford, Michigan.

Well	Sample ID	Sample Date	Sample Time	ATLA TEC (ppq)	STL TEC (ppq)
Pretreatment Samples					
GM-25A	GWGM-25A (10/19/04)	10/19/04	17:25	0.00005	0.00006
GM-25A	GWGM-25A (12/06/04)	12/06/04	15:50	0.00000	0.00075
GM-26A	GWGM-26A (10/21/04)	10/21/04	10:40	0.00058	0.00004
GM-26A	GWGM-26A (12/10/04)	12/10/04	10:50	0.00002	0.00000
GM-26C	GWGM-26C (10/20/04)	10/20/04	15:20	0.00074	0.00005
GM-26C	GWGM-26C (12/09/04)	12/09/04	10:50	0.00000	0.00007
GM-27A	GWGM-27A (10/20/04)	10/20/04	11:25	0.00005	0.00000
GM-27A	GWGM-27A (12/07/04)	12/07/04	12:00	0.00000	0.00005
GMEW-1	GWGMEW-1 (10/29/04)	10/29/04	10:35	0.00002	0.00005
GMEW-1	GWGMEW-1 (12/08/04)	12/08/04	14:10	0.00000	0.00004
GMEW-2	GWGMEW-2 (10/30/04)	10/30/04	16:30	0.00000	0.00002
GMEW-2	GWGMEW-2 (12/08/04)	12/08/04	10:25	0.00000	0.00003
GMEW-3	GWGMEW-3 (10/29/04)	10/29/04	11:45	0.00061	0.00009
GMEW-3	GWGMEW-3 (12/08/04)	12/08/04	12:10	0.00083	0.00016
GMEW-4R	GWGMEW-4R (10/30/04)	10/30/04	18:45	0.00047	0.00011
GMEW-4R	GWGMEW-4R (12/13/04)	12/13/04	13:00	0.00081	0.00012
GMEW-5	GWGMEW-5 (10/19/04)	10/19/04	16:27	0.00005	0.00004
GMEW-5	GWGMEW-5 (12/06/04)	12/06/04	16:25	0.00000	0.00004
GMEW-7	GWGMEW-7 (10/26/04)	10/26/04	13:40	0.00150	0.00168
GMEW-7	GWGMEW-7 (12/14/04)	12/14/04	11:30	0.00301	0.00020
GMEW-8	GWGMEW-8 (10/22/04)	10/22/04	11:00	0.00011	0.00003
GMEW-8	GWGMEW-8 (12/12/04)	12/12/04	11:00	0.00005	0.00157
GMEW-9	GWGMEW-9 (10/21/04)	10/21/04	16:20	0.00074	0.00000
GMEW-9	GWGMEW-9 (12/11/04)	12/11/04	9:30	0.00073	0.00000
Phase II EFF	GWEFFLUENT (10/30/04)	10/30/04	13:25	0.00003	0.00012
Phase II EFF	GWEFFLUENT (12/09/04)	12/09/04	14:40	0.00000	0.00000
Full Scale					
GM-5	GWGM-5 (10/20/04)	10/20/04	12:17	0.00097	0.00090
GM-5	GWGM-5 (12/7/04)	12/07/04	9:55	0.00004	0.00003
GM-37A	GWGM-37A (11/2/04)	11/02/04	16:05	0.00006	0.00004
GM-37A	GWGM-37A (12/10/04)	12/10/04	10:30	0.00069	0.00018
GM-37B	GWGM-37B (10/27/04)	10/27/04	9:00	0.00012	0.00000
GM-37B	GWGM-37B (12/13/04)	12/13/04	10:35	0.00004	0.00008
GM-62B	GWGM-62B (10/25/04)	10/25/04	17:10	**0.57470**	**0.27504**
GM-62B	GWGM-62B (12/12/04)	12/12/04	10:50	**0.00882**	**0.04733**
GM-62C	GWGM-62C (10/22/04)	10/22/04	12:20	**0.01524**	0.00385
GM-62C	GWGM-62C (12/11/04)	12/11/04	16:05	0.00543	0.00130
GM-72A	GWGM-72A (10/20/04)	10/20/04	17:45	0.00052	0.00000
GM-72A	GWGM-72A (12/9/04)	12/09/04	10:25	0.00394	**0.00885**

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Table B1. Summary of Dioxin/Furan Samples Collected in 2004, Ford/Kingsford Site, Kingsford, Michigan.

Well	Sample ID	Sample Date	Sample Time	ATLA TEC (ppq)	STL TEC (ppq)
Equipment Blank					
Equipment Blank	EBGWGM-27A (10/20/04)	10/20/04	9:30	0.00075	0.00004
Equipment Blank	EBGWGM-62C (10/22/04)	10/22/04	9:10	0.00008	0.00003
Equipment Blank	EBGWGMEW-7 (10/26/04)	10/26/04	11:00	0.00004	0.00164
Equipment Blank	EBGWGM-27A (12/7/04)	12/07/04	9:20	0.00000	0.00000
Equipment Blank	EBGWGM-62C (12/11/04)	12/11/04	10:00	0.00002	0.00005
Equipment Blank	EBGWGMEW-7 (12/14/04)	12/14/04	8:15	0.00003	0.00000
Field Blank					
FB	FB (10/19/04)	10/19/04	16:53	0.00007	0.00000
FB	FB (10/20/04)	10/20/04	14:05	0.00006	0.00000
FB	FB (10/21/04)	10/21/04	15:25	0.00005	0.00006
FB	FB (10/22/04)	10/22/04	9:50	0.00061	0.00000
FB	FB (10/26/04)	10/26/04	13:10	0.00027	0.00006
FB	FB (10/27/04)	10/27/04	8:00	0.00000	0.00003
FB	FB (10/29/04)	10/29/04	11:30	0.00002	0.00002
FB	FB (10/30/04)	10/30/04	15:20	0.00000	0.00000
FB	FB (11/02/04)	11/02/04	15:35	0.00002	0.00000
FB	FB (12/06/04)	12/06/04	13:50	0.00006	0.00000
FB	FB (12/07/04)	12/07/04	8:30	0.00005	0.00003
FB	FB (12/08/04)	12/08/04	9:40	0.00215	0.00002
FB	FB (12/09/04)	12/09/04	9:00	0.00005	0.00000
FB	FB (12/10/04)	12/10/04	9:15	0.00000	0.00000
FB	FB (12/11/04)	12/11/04	9:40	0.00000	0.00003
FB	FB (12/12/04)	12/12/04	8:55	0.00000	0.00000
FB	FB (12/13/04)	12/13/04	11:50	0.00039	0.00000
FB	FB (12/14/04)	12/14/04	8:25	0.00006	0.00001
Method Blanks					
Alta - October 2004					
Supplemental Method Blank	Supplemental Method Blank			0.00006	--
Supplemental Method Blank	Supplemental Method Blank			0.00009	--
Method Blank-6300	ATLA Sample Batch Method Blank			0.00006	--
Method Blank-6302	ATLA Sample Batch Method Blank			0.00006	--
Method Blank-6324	ATLA Sample Batch Method Blank			0.00003	--
Alta - December 2004					
Supplemental Method Blank	Supplemental Method Blank			0.00005	--
Supplemental Method Blank	Supplemental Method Blank			0.00003	--
Method Blank-6399	ATLA Sample Batch Method Blank			0.00047	--
Method Blank-6411	ATLA Sample Batch Method Blank			0.00000	--
STL - October 2004					
Supplemental Method Blank	Supplemental Method Blank			--	0.00000
Supplemental Method Blank	Supplemental Method Blank			--	0.00000
Method Blank-4322264	STL Sample Batch Method Blank			--	0.00000
Method Blank-4323358	STL Sample Batch Method Blank			--	**0.09100**

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Table B1. Summary of Dioxin/Furan Samples Collected in 2004, Ford/Kingsford Site, Kingsford, Michigan.

Well	Sample ID	Sample Date	Sample Time	ATLA TEC (ppq)	STL TEC (ppq)
STL - December 2004					
	Supplemental Method Blank	Supplemental Method Blank		--	0.00000
	Supplemental Method Blank	Supplemental Method Blank		--	0.00001
	Method Blank-5011047	STL Sample Batch Method Blank		--	0.00006
	Method Blank-5012114	STL Sample Batch Method Blank		--	**0.03015**
	Method Blank-5019306	STL Sample Batch Method Blank		--	0.00110
	Method Blank-5032342	STL Sample Batch Method Blank		--	0.00024

ppq Parts per quadrillion (picograms per liter).
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
Italics Calculated value is above the threshold value of 0.0086 ppq.

Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-25A ALTA	10/19/2004	*DL*	1.220	0.389	0.474	0.481	0.482	0.791	0.839	0.184	—
		Result	<1.220	<0.389	<0.474	<0.481	<0.482	<0.791	4.77 B,J	<0.184	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000477	ND	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-25A STL	10/19/2004	*DL*	2.6	1.1	1.0	1.1	0.96	1.2	3.9	2.5	
		Result	<2.6	<1.1	<1.0	<1.1	<0.96	<1.2	<3.9 P	<2.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25A ALTA	12/6/2004	*DL*	0.950	0.649	1.37	1.42	1.39	1.47	2.70	0.726	—
		Result	<0.950	<0.649	<1.37	<1.42	<1.39	<1.47	<2.70	<0.726	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-25A STL	12/6/2004	*DL*	1.6	0.69	0.62	0.65	0.60	0.79	3.8	1.5	
		Result	<1.6	<0.69	<0.62	<0.65	<0.60	1.3 J	<3.8 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00065	ND	ND	0.00065
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-26A ALTA	10/21/2004	*DL*	1.350	0.299	0.560	0.571	0.571	0.229	0.252	0.268	—
		Result	<1.350	<0.299	<0.560	<0.571	<0.571	1.04 J	5.50 B,J	<0.268	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00052	0.000055	ND	0.00058
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-26A STL	10/21/2004	*DL*	1.5	0.78	0.81	0.91	0.80	0.78	0.87	1.5	
		Result	<1.5	<0.78	<0.81	<0.91	<0.80	<0.78	4.0 J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00004	ND	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26A ALTA	12/10/2004	*DL*	0.876	1.03	1.09	1.12	1.10	0.962	1.080	0.668	—
		Result	<0.876	<1.03	<1.09	<1.12	<1.10	<0.962	1.83 J	<0.668	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00002	ND	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-26A STL	12/10/2004	*DL*	1.2	0.51	0.53	0.54	0.51	0.65	2.7	0.94	
		Result	<1.2	<0.51	<0.53	<0.54	<0.51	<0.65	<2.7 P	<0.94	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-26C ALTA	10/20/2004	*DL*	0.733	0.210	0.370	0.384	0.381	0.258	0.456	0.204	—
		Result	<0.733	<0.210	<0.370	<0.384	<0.381	1.29 J	7.78 B,J	<0.204	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000645	0.0000778	ND	0.00072
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-26C STL	10/20/2004	*DL*	2.6	0.99	1.4	1.5	1.3	1.3	1.1	2.3	
		Result	<2.6	<0.99	<1.4	<1.5	<1.3	<1.3	5.0 J	<2.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00005	ND	0.00005
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26C ALTA	12/9/2004	*DL*	0.727	1.12	1.10	1.11	1.10	1.75	11.8	0.622	—
		Result	<0.727	<1.12	<1.10	<1.11	<1.10	<1.75	<11.8	<0.622	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-26C STL	12/9/2004	*DL*	1.8	0.62	0.63	0.69	0.62	0.95	0.66	1.4	
		Result	<1.8	<0.62	<0.63	<0.69	<0.62	<0.95	7.4 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000074	ND	0.00007
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-27A ALTA	10/20/2004	*DL*	0.647	0.241	0.299	0.305	0.305	0.723	0.339	0.201	—
		Result	<0.647	<0.241	<0.299	<0.305	<0.305	<0.723	4.71 B,J	<0.201	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000471	ND	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-27A STL	10/20/2004	*DL*	2.1	0.90	1.2	1.2	1.1	1.2	2.6	2.2	
		Result	<2.1	<0.90	<1.2	<1.2	<1.1	<1.2	<2.6 P	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-27A ALTA	12/7/2004	*DL*	0.727	0.829	1.00	1.02	1.01	1.94	3.77	0.610	—
		Result	<0.727	<0.829	<1.00	<1.02	<1.01	<1.94	<3.77	<0.610	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-27A STL	12/7/2004	*DL*	1.9	0.76	0.56	0.57	0.54	1.6	0.66	1.3	
		Result	<1.9	<0.76	<0.56	<0.57	<0.54	<1.6 P	5.4 J	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000054	ND	0.00005
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	**0.1**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	**0.8**	
GMEW-1 ALTA	10/29/2004	*DL*	0.265	0.370	0.297	0.310	0.307	0.372	0.256	0.184	—
		Result	<0.265	<0.370	<0.297	<0.310	<0.307	<0.372	1.63 B,J	<0.184	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000163	ND	0.00002
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-1 STL	10/29/2004	*DL*	1.7	0.67	0.80	0.84	0.77	0.91	0.91	1.6	
		Result	<1.7	<0.67	<0.80	<0.84	<0.77	<0.91	4.6 J	<1.6	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000046	ND	0.00005
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-1 ALTA	12/8/2004	*DL*	1.00	0.857	1.21	1.19	1.20	1.38	2.76	0.563	—
		Result	<1.00	<0.857	<1.21	<1.19	<1.20	<1.38	<2.76	<0.563	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-1 STL	12/8/2004	*DL*	1.7	0.67	0.61	0.62	0.58	0.95	0.63	1.4	
		Result	<1.7	<0.67	<0.61	<0.62	<0.58	<0.95	4.3 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000043	ND	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-2 ALTA	10/30/2004	*DL*	0.413	0.504	0.683	0.678	0.688	1.120	1.890	0.190	—
		Result	<0.413	<0.504	<0.683	<0.678	<0.688	<1.120	<1.890	<0.190	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6324			ND	ND	ND	ND	ND	ND	3.23 J	ND	—
GMEW-2 STL	10/30/2004	*DL*	2.0	0.72	1.1	1.2	1.1	0.99	0.83	1.7	
		Result	<2.0	<0.72	<1.1	<1.2	<1.1	<0.99	1.9 J	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000019	ND	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-2 ALTA	12/8/2004	*DL*	0.937	0.799	1.32	1.36	1.34	1.15	2.45	0.514	
		Result	<0.937	<0.799	<1.32	<1.36	<1.34	<1.15	<2.45	<0.514	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-2 STL	12/8/2004	*DL*	1.8	0.61	0.57	0.62	0.57	0.76	0.76	1.7	
		Result	<1.8	<0.61	<0.57	<0.62	<0.57	<0.76	2.9 J	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000029	ND	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-3 ALTA	10/21/2004	*DL*	0.288	0.456	0.339	0.334	0.339	0.237	0.303	0.163	—
		Result	<0.288	<0.456	<0.339	<0.334	<0.339	1.11 J	5.60 B,J	<0.163	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000555	0.000056	ND	0.00061
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-3 STL	10/21/2004	*DL*	2.8	1.1	1.6	1.7	1.5	1.2	1.5	2.9	
		Result	<2.8	<1.1	<1.6	<1.7	<1.5	<1.2	8.8 J	<2.9	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000088	ND	0.00009
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3 ALTA	12/8/2004	*DL*	0.827	0.802	1.49	1.47	1.47	0.982	2.430	0.603	—
		Result	<0.827	<0.802	<1.49	<1.47	<1.47	1.57 J	4.87 J	<0.603	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000785	0.0000487	ND	0.00083
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-3 STL	12/8/2004	*DL*	1.2	0.83	1.2	1.1	1.1	1.2	1.0	1.2	
		Result	<1.2	<0.83	<1.2	<1.1	<1.1	<1.2	8.5 B,J	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000085	ND	0.00009
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-4R ALTA	10/30/2004	*DL*	0.307	0.293	0.365	0.380	0.377	0.153	0.406	0.151	—
		Result	<0.307	<0.293	<0.365	<0.380	<0.377	0.85 J	4.50 B, J	<0.151	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000427	0.000045	ND	0.00047
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-4R STL	10/30/2004	*DL*	2.3	0.96	0.76	0.83	0.75	0.80	0.80	2.2	
		Result	<2.3	<0.96	<0.76	<0.83	<0.75	<0.80	7.6 J	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000076	ND	0.00008
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-4R ALTA	12/13/2004	*DL*	0.729	0.880	1.34	1.27	1.30	0.771	1.330	0.638	—
		Result	<0.729	<0.880	<1.34	<1.27	<1.30	1.36 B,J	10.6 J	<0.638	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00068	0.000106	ND	0.00079
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-4R STL	12/13/2004	*DL*	2.1	0.80	0.71	0.73	0.68	1.7	0.89	1.9	
		Result	<2.1	<0.80	<0.71	<0.73	<0.68	<1.7 P	12 B,J	<1.9	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00012	ND	0.00012
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-5 ALTA	10/19/2004	*DL*	0.665	0.344	0.375	0.222	0.228	1.56	0.38	0.192	—
		Result	<0.665	<0.344	<0.375	<0.222	<0.228	<1.56	5.24 B,J	<0.192	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000524	ND	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GMEW-5 STL	10/19/2004	*DL*	2.4	0.86	1.0	1.1	0.97	0.89	1.0	3.2	
		Result	<2.4	<0.86	<1.0	<1.1	<0.97	<0.89	3.6 J	<3.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000036	ND	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-5 ALTA	12/6/2004	*DL*	0.691	0.841	1.02	1.09	1.05	1.17	4.29	0.627	—
		Result	<0.691	<0.841	<1.02	<1.09	<1.05	<1.17	<4.29	<0.627	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-5 STL	12/6/2004	*DL*	1.9	0.73	0.62	0.62	0.59	0.86	0.82	1.5	
		Result	<1.9	<0.73	<0.62	<0.62	<0.59	<0.86	3.7 J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000037	ND	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-7 ALTA	10/26/2004	*DL*	0.305	0.383	0.362	0.358	0.364	0.315	0.240	0.169	—
		Result	<0.305	<0.383	<0.362	<0.358	<0.364	2.50 J	20.60 B,J	<0.169	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00125	0.000206	ND	0.00146
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GMEW-7 STL	10/26/2004	*DL*	2.1	1.0	1.2	1.4	1.2	1.3	1.1	2.4	
		Result	<2.1	<1.0	<1.2	<1.4	<1.2	3.0 J	18.0 J	<2.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0015	0.00018	ND	0.00168
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-7 ALTA	12/14/2004	*DL*	0.933	0.989	1.41	1.39	1.39	0.814	0.941	0.703	—
		Result	<0.933	<0.989	<1.41	<1.39	<1.39	4.85 B,J	36.9 J	<0.703	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.002425	0.000369	ND	0.00279
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-7 STL	12/14/2004	*DL*	4.4	1.8	1.8	2.0	1.8	4.3	1.8	3.2	
		Result	<4.4	<1.8	<1.8	<2.0	<1.8	<4.3 P	20 B,J	<3.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0002	ND	0.00020
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-8 ALTA	10/22/2004	*DL*	0.488	0.302	0.461	0.445	0.457	1.600	0.628	0.168	—
		Result	<0.488	<0.302	<0.461	<0.445	<0.457	<1.60	10.50 B,J	<0.168	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000105	ND	0.00011
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GMEW-8 STL	10/22/2004	*DL*	1.2	0.53	0.61	0.64	0.58	0.70	0.75	1.3	
		Result	<1.2	<0.53	<0.61	<0.64	<0.58	<0.70	3.4 J	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000034	ND	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-8 ALTA	12/12/2004	*DL*	0.678	0.974	0.947	0.994	0.969	0.879	1.02	0.485	—
		Result	<0.678	<0.974	<0.947	<0.994	<0.969	<0.88	4.83 J	<0.485	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000483	ND	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-8 STL	12/12/2004	*DL*	2.0	0.67	0.60	0.61	0.57	0.68	0.58	1.4	
		Result	<2.0	<0.67	<0.60	<0.61	<0.57	3.0 J	7.0 B,J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0015	0.00007	ND	0.00157
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GMEW-9 ALTA	10/21/2004	*DL*	0.356	0.254	0.278	0.276	0.280	0.323	0.27	0.194	—
		Result	<0.356	<0.254	<0.278	<0.276	<0.280	1.11 J	18.50 B,J	<0.194	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000555	0.000185	ND	0.00074
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GMEW-9 STL	10/21/2004	*DL*	2.1	1.1	0.94	0.99	0.90	0.96	5.8	2.2	
		Result	<2.1	<1.1	<0.94	<0.99	<0.90	<0.96	<5.8 P	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GMEW-9 ALTA	12/11/2004	*DL*	0.769	0.833	1.02	1.03	1.02	1.21	12.2	0.652	—
		Result	<0.769	<0.833	<1.02	<1.03	<1.02	1.21 B,J	12.2 J	<0.652	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000605	0.000122	ND	0.00073
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GMEW-9 STL	12/11/2004	*DL*	1.1	0.89	1.0	1.1	1.0	1.3	2.8	1.2	
		Result	<1.1	<0.89	<1.0	<1.1	<1.0	<1.3	<2.8 P	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GWEFFLUENT ALTA	10/30/2004	*DL*	0.349	0.417	0.364	0.377	0.375	0.657	0.316	0.227	—
		Result	<0.349	<0.417	<0.364	<0.377	<0.375	<0.657	2.87 B,J	<0.227	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000287	ND	0.00003
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GWEFFLUENT STL	10/30/2004	*DL*	2.7	1.3	1.3	1.5	1.3	1.3	1.5	3.1	
		Result	<2.7	<1.3	<1.3	<1.5	<1.3	<1.3	6.3 J	<3.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000063	ND	0.00006
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GWEFFLUENT ALTA	12/9/2004	*DL*	0.917	0.876	0.884	0.893	0.886	0.717	1.91	0.476	—
		Result	<0.917	<0.876	<0.884	<0.893	<0.886	<0.717	<1.91	<0.476	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GWEFFLUENT STL	12/9/2004	*DL*	1.3	0.54	0.53	0.54	0.51	0.73	1.9	1.0	
		Result	<1.3	<0.54	<0.53	<0.54	<0.51	<0.73	<1.9 P	<1.0	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-25A ALTA	10/19/04	*DL*	0.415	0.376	0.202	0.205	0.118	0.171	0.414	0.292	0.959	—	—
		Result	<0.415	<0.376	<0.202	<0.205	<0.118	<0.171	<0.414	<0.292	<0.959	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-25A STL	10/19/04	*DL*	1.2	0.93	0.58	0.59	0.68	0.79	0.79	1.0	4.1	—	—
		Result	<1.2	<0.93	<0.58	<0.59	<0.68	<0.79	0.56 J	<1.0	<4.1 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000056	ND	ND	0.00006	0.00006
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-25A ALTA	12/6/04	*DL*	0.967	1.00	0.423	0.485	0.599	1.01	0.905	1.19	2.12	—	—
		Result	<0.967	<1.00	<0.423	<0.485	<0.599	<1.01	<0.905	<1.19	<2.12	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-25A STL	12/6/04	*DL*	0.60	0.65	0.42	0.39	0.43	0.51	0.52	0.71	1.2	—	—
		Result	<0.60	<0.65	<0.42	<0.39	<0.43	<0.51	1.0 J	<0.71	<1.2 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0001	ND	ND	0.00010	0.00075
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-26A ALTA	10/21/04	*DL*	0.353	0.346	0.112	0.113	0.129	0.113	0.262	0.182	0.739	—	—
		Result	<0.353	<0.346	<0.112	<0.113	<0.129	<0.113	<0.262	<0.182	<0.739	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00058
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26A STL	10/21/04	*DL*	0.61	0.52	0.45	0.46	0.51	0.60	0.53	0.65	1.7	—	—
		Result	<0.61	<0.52	<0.45	<0.46	<0.51	<0.60	<0.53	<0.65	<1.7 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26A ALTA	12/10/04	*DL*	0.728	0.791	0.303	0.325	0.403	0.666	0.469	0.593	1.27	—	—
		Result	<0.728	<0.791	<0.303	<0.325	<0.403	<0.666	<0.469	<0.593	<1.27	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26A STL	12/10/04	*DL*	0.47	0.39	0.82	0.34	0.36	0.41	0.45	0.57	0.96	—	—
		Result	<0.47	<0.39	<0.82 P	<0.34	<0.36	<0.41	<0.45	<0.57	<0.96 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**		
		BEF	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**		
GM-26C ALTA	10/20/04	*DL*	0.368	0.292	0.149	0.276	0.119	0.166	0.613	0.435	0.417	—	—
		Result	<0.368	<0.292	<0.149	<0.276	<0.119	<0.166	<0.613	<0.435	0.673 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00001	0.00001	0.00074
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26C STL	10/20/04	*DL*	0.97	0.80	0.64	0.66	0.70	0.86	0.83	1.0	1.5	—	—
		Result	<0.97	<0.80	<0.64	<0.66	<0.70	<0.86	<0.83	<1.0	<1.5	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26C ALTA	12/9/04	*DL*	1.04	1.22	0.747	0.798	0.999	1.61	0.961	1.28	2.91	—	—
		Result	<1.04	<1.22	<0.747	<0.798	<0.999	<1.61	<0.961	<1.28	<2.91	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-26C STL	12/9/04	*DL*	0.58	0.54	0.42	0.41	0.43	0.52	0.48	0.57	1.4	—	—
		Result	<0.58	<0.54	<0.42	<0.41	<0.43	<0.52	<0.48 P	<0.57	<1.4 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00007
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-27A ALTA	10/20/04	*DL*	0.370	0.336	0.138	0.133	0.144	0.200	0.158	0.098	0.878	—	—
		Result	<0.370	<0.336	<0.138	<0.133	<0.144	<0.200	<0.158	<0.098	<0.878	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-27A STL	10/20/04	*DL*	0.71	0.72	0.56	0.58	0.64	0.81	0.70	0.95	1.1	—	—
		Result	<0.71	<0.72	<0.56	<0.58	<0.64	<0.81	<0.70	<0.95	<1.1	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-27A ALTA	12/7/04	*DL*	0.918	0.966	0.372	0.406	0.495	0.809	0.563	0.739	1.32	—	—
		Result	<0.918	<0.966	<0.372	<0.406	<0.495	<0.809	<0.563	<0.739	<1.32	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-27A STL	12/7/04	*DL*	0.62	0.55	0.37	0.37	0.39	0.46	0.43	0.57	0.67	—	—
		Result	<0.62	<0.55	<0.37	<0.37	<0.39	<0.46	<0.43	<0.57	<0.67	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-1 ALTA	10/29/04	*DL*	0.304	0.263	0.098	0.097	0.110	0.144	0.145	0.120	0.609	—	—
		Result	<0.304	<0.263	<0.098	<0.097	<0.110	<0.144	<0.145	<0.120	<0.609	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-1 STL	10/29/04	*DL*	0.65	0.56	0.45	0.47	0.55	0.63	0.56	0.70	2.2	—	—
		Result	<0.65	<0.56	<0.45	<0.47	<0.55	<0.63	<0.56	<0.70	<2.2 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-1 ALTA	12/8/04	*DL*	0.856	0.841	0.339	0.381	0.434	0.712	0.545	0.835	1.72	—	—
		Result	<0.856	<0.841	<0.339	<0.381	<0.434	<0.712	<0.545	<0.835	<1.72	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-1 STL	12/8/04	*DL*	0.58	0.73	0.43	0.43	0.44	0.56	0.53	0.75	0.69	—	—
		Result	<0.58	<0.73 P	<0.43	<0.43	<0.44	<0.56	<0.53	<0.75	<0.69	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**		
		BEF	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**		
GMEW-2 ALTA	10/30/04	*DL*	0.465	0.381	0.184	0.173	0.404	0.277	0.299	0.507	1.380	—	—
		Result	<0.465	<0.381	<0.184	<0.173	<0.404	<0.277	<0.299	<0.507	<1.380	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6324			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-2 STL	10/30/04	*DL*	0.80	0.62	0.45	0.47	0.50	0.63	0.62	0.78	0.88	—	—
		Result	<0.80	<0.62	<0.45	<0.47	<0.50	<0.63	<0.62	<0.78	<0.88	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-2 ALTA	12/8/04	*DL*	0.925	0.963	0.289	0.316	0.390	0.638	0.610	0.781	1.70	—	—
		Result	<0.925	<0.963	<0.289	<0.316	<0.390	<0.638	<0.610	<0.781	<1.70	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-2 STL	12/8/04	*DL*	0.58	0.66	0.38	0.36	0.42	0.49	0.41	0.58	0.83	—	—
		Result	<0.58	<0.66	<0.38	<0.36	<0.42	<0.49	<0.41	<0.58	<0.83	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**		
		BEF	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**		
GMEW-3 ALTA	10/21/04	*DL*	0.363	0.342	0.178	0.186	0.086	0.102	0.332	0.204	1.560	—	—
		Result	<0.363	<0.342	<0.178	<0.186	<0.086	<0.102	<0.332	<0.204	<1.560	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00061
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-3 STL	10/21/04	*DL*	1.1	0.95	0.80	0.80	0.84	1.1	0.87	1.1	1.8	—	—
		Result	<1.1	<0.95	<0.80	<0.80	<0.84	<1.1	<0.87	<1.1	<1.8	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00009
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-3 ALTA	12/8/04	*DL*	0.921	0.943	0.551	0.586	0.697	1.16	0.836	1.11	2.86	—	—
		Result	<0.921	<0.943	<0.551	<0.586	<0.697	<1.16	<0.836	<1.11	<2.86	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00083
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-3 STL	12/8/04	*DL*	0.74	0.65	0.59	0.57	0.69	0.81	0.84	1.1	1.2	—	—
		Result	<0.74	<0.65	<0.59	<0.57	<0.69	<0.81	<0.84	<1.1	3.5 B,J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00007	0.00007	0.00016
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-4R ALTA	10/30/04	*DL*	0.299	0.272	0.135	0.135	0.152	0.195	0.333	0.114	0.995	—	—
		Result	<0.299	<0.272	<0.135	<0.135	<0.152	<0.195	<0.333	<0.114	<0.995	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00047
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-4R STL	10/30/04	*DL*	0.72	0.55	0.43	0.43	0.51	0.57	0.40	0.50	0.94	—	—
		Result	<0.72	<0.55	<0.43	<0.43	<0.51	<0.57	<0.40	<0.50	1.9 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00004	0.00004	0.00011
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-4R ALTA	12/13/04	*DL*	1.10	1.09	0.490	0.520	0.626	1.04	0.676	0.784	1.240	—	—
		Result	<1.10	<1.09	<0.490	<0.520	<0.626	<1.04	<0.676	<0.784	1.28 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00003	0.00003	0.00081
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-4R STL	12/13/04	*DL*	0.61	0.55	0.41	0.42	0.45	0.57	0.55	0.78	1.9	—	—
		Result	<0.61	<0.55	<0.41	<0.42	<0.45	<0.57	<0.55	<0.78	<1.9 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00012
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-5 ALTA	10/19/04	*DL*	0.307	0.279	0.161	0.161	0.178	0.249	0.206	0.202	0.778	—	—
		Result	<0.307	<0.279	<0.161	<0.161	<0.178	<0.249	<0.206	<0.202	<0.778	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-5 STL	10/19/04	*DL*	0.75	0.69	0.52	0.53	0.58	0.72	0.64	0.79	2.6	—	—
		Result	<0.75	<0.69	<0.52	<0.53	<0.58	<0.72	<0.64	<0.79	<2.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-5 ALTA	12/6/04	*DL*	1.03	1.02	0.434	0.468	0.576	0.960	0.826	1.03	2.77	—	—
		Result	<1.03	<1.02	<0.434	<0.468	<0.576	<0.960	<0.826	<1.03	<2.77	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-5 STL	12/6/04	*DL*	0.59	0.55	0.44	0.42	0.45	0.60	0.53	0.78	0.85	—	—
		Result	<0.59	<0.55	<0.44	<0.42	<0.45	<0.60	<0.53	<0.78	<0.85	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-7 ALTA	10/26/04	*DL*	0.330	0.302	0.219	0.214	0.231	0.179	0.495	0.199	0.354	—	—
		Result	<0.330	<0.302	<0.219	<0.214	<0.231	<0.179	<0.495	<0.199	2.41 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00005	0.00005	0.00150
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-7 STL	10/26/04	*DL*	0.96	0.77	0.62	0.60	0.72	0.82	0.81	1.0	1.9	—	—
		Result	<0.96	<0.77	<0.62	<0.60	<0.72	<0.82	<0.81	<1.0	<1.9 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00168
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GMEW-7 ALTA	12/14/04	*DL*	1.25	1.31	0.728	0.766	0.937	1.58	0.308	0.721	4.23	—	—
		Result	<1.25	<1.31	<0.728	<0.766	<0.937	<1.58	2.11 J	<0.721	<4.23	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000211	ND	ND	0.00021	0.00301
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-7 STL	12/14/04	*DL*	1.7	1.4	1.1	1.0	1.1	1.4	1.8	1.8	3.6	—	—
		Result	<1.7	<1.4	<1.1	<1.0	<1.1	<1.4	<1.8 P	<1.8	<3.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00020
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**		
		BEF	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**		
GMEW-8 ALTA	10/22/04	*DL*	0.396	0.355	0.159	0.156	0.179	0.113	0.291	0.240	1.080	—	—
		Result	<0.396	<0.355	<0.159	<0.156	<0.179	<0.113	<0.291	<0.240	<1.080	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00011
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-8 STL	10/22/04	*DL*	0.55	0.48	0.33	0.35	0.36	0.45	0.53	0.72	0.93	—	—
		Result	<0.55	<0.48	<0.33	<0.35	<0.36	<0.45	<0.53	<0.72	<0.93	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-8 ALTA	12/12/04	*DL*	0.826	0.857	0.352	0.366	0.395	0.690	0.482	0.499	1.05	—	—
		Result	<0.826	<0.857	<0.352	<0.366	<0.395	<0.690	<0.482	<0.499	<1.05	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-8 STL	12/12/04	*DL*	0.87	0.76	0.41	0.45	0.47	0.56	0.57	0.58	2.6	—	—
		Result	<0.87 P	<0.76 P	<0.41	<0.45	<0.47	<0.56	<0.57 P	<0.58	<2.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00157
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GMEW-9 ALTA	10/21/04	*DL*	0.345	0.298	0.137	0.145	0.157	0.211	0.255	0.188	0.586	—	—
		Result	<0.345	<0.298	<0.137	<0.145	<0.157	<0.211	<0.255	<0.188	<0.586	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00074
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-9 STL	10/21/04	*DL*	0.89	0.83	0.52	0.51	0.58	0.64	0.75	0.96	1.2	—	—
		Result	<0.89	<0.83	<0.52	<0.51	<0.58	<0.64	<0.75	<0.96	<1.2	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-9 ALTA	12/11/04	*DL*	0.693	0.724	0.210	0.232	0.269	0.447	0.500	0.673	1.59	—	—
		Result	<0.693	<0.724	<0.210	<0.232	<0.269	<0.447	<0.500	<0.673	<1.59	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00073
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GMEW-9 STL	12/11/04	*DL*	0.76	0.56	0.74	0.74	0.82	1.0	0.86	0.93	1.3	—	—
		Result	<0.76	<0.56	<0.74	<0.74	<0.82	<1.0	<0.86	<0.93	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

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Table B2. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Pretreatment Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GWEFFLUENT ALTA	10/30/04	*DL*	0.445	0.406	0.159	0.161	0.102	0.133	0.131	0.209	0.457	—	—
		Result	<0.445	<0.406	<0.159	<0.161	<0.102	<0.133	<0.131	<0.209	<0.457	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GWEFFLUENT STL	10/30/04	*DL*	1.2	1.0	0.66	0.70	0.80	0.89	1.0	1.3	1.5	—	—
		Result	<1.2	<1.0	<0.66	<0.70	<0.80	<0.89	<1.0	<1.3	2.9 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000058	0.00006	0.00012
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GWEFFLUENT ALTA	12/9/04	*DL*	0.717	0.807	0.403	0.412	0.462	0.826	0.458	0.556	1.56	—	—
		Result	<0.717	<0.807	<0.403	<0.412	<0.462	<0.826	<0.458	<0.556	<1.56	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GWEFFLUENT STL	12/9/04	*DL*	0.54	0.50	0.30	0.28	0.31	0.38	0.34	0.50	0.62	—	—
		Result	<0.54	<0.50	<0.30	<0.28	<0.31	<0.38	<0.34	<0.50	<0.62	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantitation limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) x BEF x TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

J Concentration is qualified as estimated.

P Does not meet all the method specified congener identification criteria.

Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-5 ALTA	10/20/2004	*DL*	0.460	0.395	0.402	0.419	0.415	0.199	8.86	0.283	—
		Result	<0.460	<0.395	<0.402	<0.419	<0.415	1.94 J	<8.86	<0.283	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00097	ND	ND	0.00097
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-5 STL	10/20/2004	*DL*	2.3	1.0	1.2	1.3	1.2	1.2	3.6	2.4	
		Result	<2.3	<1.0	<1.2	<1.3	<1.2	1.80 J	<3.6 P	<2.4	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0009	ND	ND	0.00090
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-5 ALTA	12/7/2004	*DL*	0.990	0.705	1.09	1.12	1.10	0.956	1.88	0.565	—
		Result	<0.990	<0.705	<1.09	<1.12	<1.10	<0.956	4.13 J	<0.565	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000413	ND	0.00004
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-5 STL	12/7/2004	*DL*	2.4	1.1	0.88	0.89	0.84	1.1	0.86	2.2	
		Result	<2.4	<1.1	<0.88	<0.89	<0.84	<1.1	3.1 J	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000031	ND	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-37A ALTA	11/2/2004	*DL*	0.309	0.483	0.444	0.457	0.455	0.715	0.523	0.236	—
		Result	<0.309	<0.483	<0.444	<0.457	<0.455	<0.715	2.62 B, J	<0.236	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000262	ND	0.00003
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GM-37A STL	11/2/2004	*DL*	2.3	1.1	1.2	1.2	1.1	1.1	1.1	2.1	
		Result	<2.3	<1.1	<1.2	<1.2	<1.1	<1.1	4.1 J	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000041	ND	0.00004
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-37A ALTA	12/10/2004	*DL*	1.04	1.09	1.35	1.37	1.36	0.678	12.3	0.489	—
		Result	<1.04	<1.09	<1.35	<1.37	<1.36	1.37 B,J	<12.3	<0.489	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000685	ND	ND	0.00069
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-37A STL	12/10/2004	*DL*	1.6	1.0	1.2	1.2	1.1	3.7	1.4	1.8	
		Result	<1.6	<1.0	<1.2	<1.2	<1.1	<3.7 P	11 J	<1.8	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00011	ND	0.00011
METHOD BLANK Sample Set – 5019306			ND	ND	ND	ND	ND	2.2 J	ND	ND	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-37B ALTA	10/27/2004	*DL*	0.481	0.376	0.344	0.352	0.352	0.841	0.316	0.190	—
		Result	<0.481	<0.376	<0.344	<0.352	<0.352	<0.841	5.19 B, J	<0.190	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000519	ND	0.00005
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GM-37B STL	10/27/2004	*DL*	2.0	1.0	1.1	1.2	1.1	1.0	4.8	2.1	
		Result	<2.0	<1.0	<1.1	<1.2	<1.1	<1.0	<4.8 P	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-37B ALTA	12/13/2004	*DL*	0.825	1.02	1.19	1.22	1.20	0.529	0.801	0.482	—
		Result	<0.825	<1.02	<1.19	<1.22	<1.20	<0.529	3.65 J	<0.482	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000365	ND	0.00004
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-37B STL	12/13/2004	*DL*	1.2	0.53	0.65	0.63	0.61	0.92	0.66	0.95	
		Result	<1.2	<0.53	<0.65	<0.63	<0.61	<0.92	7.9 B,J	<0.95	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000079	ND	0.00008
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
GM-62B ALTA	10/25/2004	*DL*	5.250	0.599	0.384	0.385	0.388	0.748	0.398	0.219	—
		Result	<5.250	0.713 J	1.72 J	4.82 J	4.18 J	116 J	909 B, J	<0.219	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	0.32085	0.0516	0.0482	0.0418	0.058	0.00909	ND	0.52954
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
GM-62B STL	10/25/2004	*DL*	1.6	0.79	0.92	0.99	0.89	1.0	1.0	1.7	
		Result	<1.6	<0.79	2.1 J	6.40 J	7.30 J	130 J	800 P	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	0.063	0.064	0.073	0.065	0.008	ND	0.27300
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-62B ALTA	12/12/2004	*DL*	0.714	0.944	1.48	1.47	1.47	0.922	1.21	0.658	—
		Result	<0.714	<0.944	<1.48	<1.47	<1.47	14.9 B,J	108	<0.658	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00745	0.00108	ND	0.00853
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-62B STL	12/12/2004	*DL*	1.5	0.61	0.61	0.68	0.62	0.86	0.78	1.2	
		Result	<1.5	<0.61	<0.61	2.0 J	2.0 J	13 J	73 B,J	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	0.02	0.02	0.0065	0.00073	ND	0.04723
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	**0.1**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	**0.8**	
GM-62C ALTA	10/22/2004	*DL*	0.379	0.602	0.304	1.780	0.713	0.829	0.502	0.211	—
		Result	<0.379	<0.602	<0.304	<1.780	<0.713	23.60 J	294.00 B,J	<0.211	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0118	0.00294	ND	0.01474
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-62C STL	10/22/2004	*DL*	1.7	0.7	0.9	0.9	0.8	1.1	1.1	1.6	
		Result	<1.7	<0.7	<0.9	<0.9	<0.8	6.30 J	56.0 J	<1.6	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00315	0.00056	ND	0.00371
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-62C ALTA	12/11/2004	*DL*	1.18	1.08	1.41	1.45	1.42	1.13	1.86	0.794	—
		Result	<1.18	<1.08	<1.41	<1.45	<1.42	8.91 B,J	88.0	<0.794	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.004455	0.00088	ND	0.00534
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
GM-62C STL	12/11/2004	*DL*	2.0	1.5	1.4	1.4	1.3	1.9	14	2.1	
		Result	<2.0	<1.5	<1.4	<1.4	<1.3	2.5 J	<14 P	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00125	ND	ND	0.00125
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	**1**	**0.5**	**0.1**	**0.1**	**0.1**	**0.01**	**0.001**	**0.1**	
		BEF	**1**	**0.9**	**0.3**	**0.1**	**0.1**	**0.05**	**0.01**	**0.8**	
GM-72A ALTA	10/20/2004	*DL*	0.455	0.375	0.494	0.505	0.505	0.380	0.657	0.241	—
		Result	<0.455	<0.375	<0.494	<0.505	<0.505	0.848 J	9.49 B,J	<0.241	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000424	0.0000949	ND	0.00052
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
GM-72A STL	10/20/2004	*DL*	2.2	0.82	0.92	1.0	0.91	1.2	2.3	2.1	
		Result	<2.2	<0.82	<0.92	<1.0	<0.91	<1.2	<2.3 P	<2.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-72A ALTA	12/9/2004	*DL*	0.806	1.30	1.47	1.40	1.42	0.844	2.810	0.762	—
		Result	<0.806	<1.30	<1.47	<1.40	<1.42	6.42 J	53.0	<0.762	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.00321	0.00053	ND	0.00374
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
GM-72A STL	12/9/2004	*DL*	1.4	1.1	1.2	1.3	1.2	2.8	6.3	1.5	
		Result	<1.4	<1.1	<1.2	<1.3	<1.2	<2.8 P	<6.3 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-5 ALTA	10/20/2004	*DL*	0.410	0.377	0.106	0.375	0.122	0.169	0.609	0.270	1.22	—	—
		Result	<0.410	<0.377	<0.106	<0.375	<0.122	<0.169	<0.609	<0.270	<1.22	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00097
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-5 STL	10/20/2004	*DL*	0.96	0.91	0.72	0.73	0.79	0.94	0.80	0.93	1.3	—	—
		Result	<0.96	<0.91	<0.72	<0.73	<0.79	<0.94	<0.80	<0.93	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00090
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-5 ALTA	12/7/2004	*DL*	0.900	0.890	0.381	0.404	0.469	0.822	0.457	0.551	1.22	—	—
		Result	<0.900	<0.890	<0.381	<0.404	<0.469	<0.822	<0.457	<0.551	<1.22	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-5 STL	12/7/2004	*DL*	0.93	1.1	0.52	0.50	0.56	0.66	0.69	0.94	0.95	—	—
		Result	<0.93	<1.1	<0.52	<0.50	<0.56	<0.66	<0.69	<0.94	<0.95	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-37A ALTA	11/2/2004	*DL*	0.446	0.406	0.152	0.157	0.170	0.235	0.0942	0.154	0.839	—	—
		Result	<0.446	<0.406	<0.152	<0.157	<0.170	<0.235	0.359 J	<0.154	<0.839	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000359	ND	ND	0.00004	0.00006
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37A STL	11/2/2004	*DL*	0.83	0.69	0.60	0.61	0.68	0.80	0.63	0.81	1.4	—	—
		Result	<0.83	<0.69	<0.60	<0.61	<0.68	<0.80	<0.63	<0.81	<1.4	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-37A ALTA	12/10/2004	*DL*	1.11	1.13	0.446	0.492	0.572	0.969	0.612	0.803	1.85	—	—
		Result	<1.11	<1.13	<0.446	<0.492	<0.572	<0.969	<0.612	<0.803	<1.85	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00069
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37A STL	12/10/2004	*DL*	0.78	0.96	0.81	0.82	0.92	1.1	1.6	1.2	1.6	—	—
		Result	<0.78	<0.96	<0.81	<0.82	<0.92	<1.1	<1.6 P	<1.2	3.6 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000072	0.00007	0.00018
METHOD BLANK Sample Set – 5019306			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-37B ALTA	10/27/2004	*DL*	0.248	0.237	0.127	0.131	0.091	0.106	0.141	0.221	0.807	—	—
		Result	<0.248	<0.237	<0.127	<0.131	<0.091	<0.106	0.705 J	<0.221	<0.807	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000705	ND	ND	0.00007	0.00012
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37B STL	10/27/2004	*DL*	0.90	0.74	0.53	0.55	0.62	0.69	0.68	0.85	1.6	—	—
		Result	<0.90	<0.74	<0.53	<0.55	<0.62	<0.69	<0.68	<0.85	<1.6	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-37B ALTA	12/13/2004	*DL*	0.786	0.843	0.391	0.428	0.517	0.838	1.01	1.20	1.25	—	—
		Result	<0.786	<0.843	<0.391	<0.428	<0.517	<0.838	<1.01	<1.20	<1.25	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-37B STL	12/13/2004	*DL*	0.55	0.47	0.36	0.36	0.40	0.47	1.0	0.65	1.9	—	—
		Result	<0.55	<0.47	<0.36	<0.36	<0.40	<0.47	<1.0 P	<0.65	<1.9 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00008
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-62B ALTA	10/25/2004	*DL*	0.193	0.168	0.367	0.356	0.683	0.443	0.273	0.615	1.08	—	—
		Result	<0.193	<0.168	<0.367	2.10 J	<0.683	<0.443	23.80 J	<0.615	38.90 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	0.042	ND	ND	0.00238	ND	0.000778	0.04516	0.57470
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62B STL	10/25/2004	*DL*	0.68	0.68	0.45	0.45	1.40	0.56	0.64	1.6	1.3	—	—
		Result	<0.68	<0.68	<0.45	<0.45	<1.4 P	<0.56	12 J	<1.6 P	42 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0012	ND	0.00084	0.00204	0.27504
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-62B ALTA	12/12/2004	*DL*	0.940	1.14	0.436	0.542	0.673	1.06	0.365	0.570	1.33	—	—
		Result	<0.940	<1.14	<0.436	<0.542	<0.673	<1.06	1.70 J	<0.570	5.98 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00017	ND	0.0001196	0.00029	0.00882
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62B STL	12/12/2004	*DL*	0.92	1.3	0.41	0.92	0.44	0.58	1.8	0.69	0.66	—	—
		Result	<0.92 P	<1.3 P	<0.41	<0.92 P	<0.44	<0.58	<1.8 P	<0.69	4.8 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000096	0.00010	0.04733
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

Footnotes on Page 12.

Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
GM-62C ALTA	10/22/2004	*DL*	0.276	0.333	0.117	0.431	0.130	0.181	0.283	0.166	0.523	—	—
		Result	<0.276	<0.333	<0.117	<0.431	<0.130	<0.181	2.86 J	<0.166	10.60 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000286	ND	0.000212	0.00050	0.01524
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62C STL	10/22/2004	*DL*	0.80	0.62	0.47	0.49	0.55	0.62	0.96	0.80	1.3	—	—
		Result	<0.80	<0.62	<0.47	<0.49	<0.55	<0.62	<0.96 J	<0.80	7.0 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00014	0.00014	0.00385
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
GM-62C ALTA	12/11/2004	*DL*	1.95	1.95	0.671	0.691	0.842	1.38	1.48	2.01	1.10	—	—
		Result	<1.95	<1.95	<0.671	<0.691	<0.842	<1.38	<1.48	<2.01	4.99 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.0000998	0.00010	0.00543
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-62C STL	12/11/2004	*DL*	1.2	1.1	0.97	0.92	1.0	1.3	1.2	1.4	1.8	—	—
		Result	<1.2	<1.1	<0.97	<0.92	<1.0	<1.3	<1.2	<1.4	2.3 B,J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.000046	0.00005	0.00130
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

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Table B3. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Full Scale Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of Furan TECs	Sum of Dioxins Furans TECs
		TEF	**0.05**	**0.5**	**0.1**	**0.1**	**0.1**	**0.1**	**0.01**	**0.01**	**0.001**		
		BEF	**0.2**	**1.6**	**0.08**	**0.2**	**0.7**	**0.6**	**0.01**	**0.4**	**0.02**		
GM-72A ALTA	10/20/2004	*DL*	0.406	0.368	0.221	0.226	0.239	0.333	0.409	0.258	1.270	—	—
		Result	<0.406	<0.368	<0.221	<0.226	<0.239	<0.333	<0.409	<0.258	<1.270	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00052
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-72A STL	10/20/2004	*DL*	0.78	0.62	0.42	0.42	0.49	0.59	0.60	0.79	1.3	—	—
		Result	<0.78	<0.62	<0.42	<0.42	<0.49	<0.59	<0.60	<0.79	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-72A ALTA	12/9/2004	*DL*	1.06	1.19	0.618	0.669	0.784	1.26	0.348	1.56	1.02	—	—
		Result	<1.06	<1.19	<0.618	<0.669	<0.784	<1.26	1.13 J	<1.56	4.25 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000113	ND	0.00009	0.00020	0.00394
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
GM-72A STL	12/9/2004	*DL*	0.78	0.77	0.74	0.77	0.89	1.1	0.96	1.2	1.6	—	—
		Result	<0.78	<0.77	1.1 J	<0.77	<0.89	<1.1	<0.96	<1.2	2.6 B,J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	0.0088	ND	ND	ND	ND	ND	0.00005	0.00885	0.00885
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantitation limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

J Concentration is qualified as estimated.

P Does not meet all the method specified congener identification criteria.

Table B4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
EBGWGM-27A ALTA	10/20/2004	*DL*	0.855	0.289	0.455	0.455	0.460	0.310	0.632	0.186	—
		Result	<0.855	<0.289	<0.455	<0.455	<0.460	1.20	14.80 B,J	<0.186	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0006	0.000148	ND	0.00075
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
EBGWGM-27A STL	10/20/2004	*DL*	2.9	1.3	1.4	1.3	1.3	1.3	3.9	2.8	
		Result	<2.9	<1.3	<1.4	<1.3	<1.3	<1.3	<3.9 P	<2.8	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
EBGWGM-62C ALTA	10/22/2004	*DL*	0.377	0.257	0.491	0.475	0.487	1.02	0.491	0.194	—
		Result	<0.377	<0.257	<0.491	<0.475	<0.487	<1.02	7.72 B,J	<0.194	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000772	ND	0.00008
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
EBGWGM-62C STL	10/22/2004	*DL*	2.2	0.96	0.87	0.97	0.85	0.89	0.83	2.2	
		Result	<2.2	<0.96	<0.87	<0.97	<0.85	<0.89	2.6 J	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000026	ND	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
EBGWGMEW-7 ALTA	10/26/2004	DL	0.173	0.362	0.330	0.327	0.332	0.531	0.425	0.188	—
		Result	<0.173	<0.362	<0.330	<0.327	<0.332	<0.531	3.57 B,J	<0.188	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000357	ND	0.00004
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
EBGWGMEW-7 STL	10/26/2004	DL	1.7	1.0	1.0	1.1	0.97	0.95	16.0	1.7	
		Result	<1.7	<1.0	<1.0	<1.1	<0.97	3.2 J	<16 P	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.0016	ND	ND	0.00160
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
EBGWGM-27A ALTA	12/7/2004	DL	0.824	0.611	1.13	1.15	1.14	1.16	3.46	0.519	
		Result	<0.824	<0.611	<1.13	<1.15	<1.14	<1.16	<3.46	<0.519	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
EBGWGM-27A STL	12/7/2004	DL	1.7	0.57	0.67	0.65	0.62	1.1	3.1	1.3	
		Result	<1.7	<0.57	<0.67	<0.65	<0.62	<1.1	<3.1 P	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
EBGWGM-62C ALTA	12/11/2004	*DL*	0.758	0.703	1.29	1.32	1.30	0.617	1.10	0.541	—
		Result	<0.758	<0.703	<1.29	<1.32	<1.30	<0.617	2.33 J	<0.541	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000233	ND	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
EBGWGM-62C STL	12/11/2004	*DL*	3.2	1.1	1.1	1.1	1.1	1.2	1.4	3.7	
		Result	<3.2	<1.1	<1.1	<1.1	<1.1	<1.2	4.7 B,J	<3.7	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000047	ND	0.00005
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	4.2 J	ND	—
EBGWGMEW-7 ALTA	12/14/2004	*DL*	0.741	0.885	1.14	1.16	1.15	0.664	0.938	0.660	—
		Result	<0.741	<0.885	<1.14	<1.16	<1.15	<0.664	3.47 J	<0.660	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000347	ND	0.00003
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
EBGWGMEW-7 STL	12/14/2004	*DL*	1.8	0.67	0.50	0.54	0.49	0.59	2.5	1.5	
		Result	<1.8	<0.67	<0.50	<0.54	<0.49	<0.59	<2.5 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
EBGWGM-27A ALTA	10/20/04	*DL*	0.452	0.364	0.172	0.169	0.187	0.273	0.189	0.304	1.040	—	—
		Result	<0.452	<0.364	<0.172	<0.169	<0.187	<0.273	<0.189	<0.304	<1.040	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00075
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-27A STL	10/20/04	*DL*	1.0	0.94	0.61	0.61	0.69	0.91	0.95	1.3	1.5	—	—
		Result	<1.0	<0.94	<0.61	<0.61	<0.69	<0.91	<0.95	<1.3	2.0 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00004	0.00004	0.00004
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-62C ALTA	10/22/2004	*DL*	0.413	0.339	0.106	0.101	0.111	0.162	0.140	0.222	1.290	—	—
		Result	<0.413	<0.339	<0.106	<0.101	<0.111	<0.162	<0.140	<0.222	<1.290	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00008
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-62C STL	10/22/2004	*DL*	0.75	0.67	0.45	0.47	0.53	0.59	0.64	0.76	1.1	—	—
		Result	<0.75	<0.67	<0.45	<0.47	<0.53	<0.59	<0.64	<0.76	<1.1	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table B4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
EBGWGMEW-7 ALTA	10/26/04	*DL*	0.304	0.278	0.134	0.128	0.145	0.190	0.180	0.290	1.150	—	—
		Result	<0.304	<0.278	<0.134	<0.128	<0.145	<0.190	<0.180	<0.290	<1.150	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00004
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGMEW-7 STL	10/26/04	*DL*	0.76	0.58	0.46	0.45	0.53	0.61	0.65	0.85	1.3	—	—
		Result	<0.76	<0.58	<0.46	<0.45	<0.53	<0.61	<0.65	<0.85	2.2 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00004	0.00004	0.00164
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
EBGWGM-27A ALTA	12/7/04	*DL*	0.828	0.814	0.386	0.412	0.497	0.823	0.600	0.817	2.14	—	—
		Result	<0.828	<0.814	<0.386	<0.412	<0.497	<0.823	<0.600	<0.817	<2.14	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-27A STL	12/7/04	*DL*	0.55	0.50	0.40	0.43	0.46	0.55	0.75	0.71	0.79	—	—
		Result	<0.55	<0.50	<0.40	<0.43	<0.46	<0.55	<0.75 P	<0.71	<0.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B4. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Equipment Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
EBGWGM-62C ALTA	12/11/2004	DL	0.746	0.708	0.276	0.288	0.312	0.553	0.363	0.481	1.18	—	—
		Result	<0.746	<0.708	<0.276	<0.288	<0.312	<0.553	<0.363	<0.481	<1.18	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGM-62C STL	12/11/2004	DL	1.4	0.91	0.78	0.79	0.77	0.92	0.85	1.0	1.5	—	—
		Result	<1.4	<0.91	<0.78	<0.79	<0.77	<0.92	<0.85	<1.0	<1.5	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set –5032342			ND	ND	ND	ND	ND	ND	1.2 J	ND	3.8 J	—	—
EBGWGMEW-7 ALTA	12/14/04	DL	0.825	0.848	0.239	0.238	0.269	0.473	0.529	0.591	1.28	—	—
		Result	<0.825	<0.848	<0.239	<0.238	<0.269	<0.473	<0.529	<0.591	<1.28	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
EBGWGMEW-7 STL	12/14/04	DL	0.63	0.51	0.29	0.29	0.33	0.39	0.38	0.50	0.45	—	—
		Result	<0.63	<0.51	<0.29	<0.29	<0.33	<0.39	<0.38	<0.50	<0.45	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL Detection limit.
ND Congener was not detected; contribution to the TEC is zero.
ppq Parts per quadrillion (picograms per liter).
QL Congener quantitation limit for that sample.
TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.
J Concentration is qualified as estimated.
P Does not meet all the method specified congener identification criteria.

Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/19/04) ALTA	10/19/2004	*DL*	1.040	0.473	0.523	0.521	0.528	1.03	1.01	0.390	—
		Result	<1.040	<0.473	<0.523	<0.521	<0.528	<1.03	6.76 B,J	<0.390	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000676	ND	0.00007
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/19/04) STL	10/19/2004	*DL*	2.8	1.0	1.2	1.3	1.2	1.3	1.8	3.4	—
		Result	<2.8	<1.0	<1.2	<1.3	<1.2	<1.3	<1.8 P	<3.4	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
FB (10/20/04) ALTA	10/20/2004	*DL*	0.848	0.471	0.371	0.380	0.379	1.290	0.790	0.249	—
		Result	<0.848	<0.471	<0.371	<0.380	<0.379	<1.290	5.63 B,J	<0.249	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000563	ND	0.00006
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/20/04) STL	10/20/2004	*DL*	2.4	1.1	1.3	1.3	1.2	1.1	1.2	2.2	
		Result	<2.4	<1.1	<1.3	<1.3	<1.2	<1.1	<1.2	<2.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/21/04) ALTA	10/21/2004	*DL*	0.320	0.398	0.436	0.447	0.446	0.739	0.606	0.169	—
		Result	<0.320	<0.398	<0.436	<0.447	<0.446	<0.739	4.74 B,J	<0.169	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000474	ND	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/21/04) STL	10/21/2004	*DL*	1.9	0.64	0.97	1.1	0.95	0.99	4.1	2.0	
		Result	<1.9	<0.64	<0.97	<1.1	<0.95	<0.99	<4.1 P	<2.0	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
FB (10/22/04) ALTA	10/22/2004	*DL*	0.383	0.285	0.367	0.359	0.367	0.272	5.71	0.157	—
		Result	<0.383	<0.285	<0.367	<0.359	<0.367	1.22 J	<5.71	<0.157	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.00061	ND	ND	0.00061
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
FB (10/22/04) STL	10/22/2004	*DL*	1.5	0.69	0.68	0.69	0.64	0.78	1.9	1.5	
		Result	<1.5	<0.69	<0.68	<0.69	<0.64	<0.78	<1.9 P	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/26/04) ALTA	10/26/2004	DL	0.274	0.363	0.522	0.513	0.523	0.159	0.514	0.132	—
		Result	<0.274	<0.363	<0.522	<0.513	<0.523	0.471 J	2.15 B,J	<0.132	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.0002355	0.0000215	ND	0.00026
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB (10/26/04) STL	10/26/2004	DL	1.8	0.83	1.0	1.0	0.96	0.69	0.85	1.5	
		Result	<1.8	<0.83	<1.0	<1.0	<0.96	<0.69	5.6 J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000056	ND	0.00006
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(10/27/04) ALTA	10/27/2004	DL	0.304	0.562	0.410	0.405	0.412	0.498	1.74	0.176	—
		Result	<0.304	<0.562	<0.410	<0.405	<0.412	<0.498	<1.74	<0.176	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB(10/27/04) STL	10/27/2004	DL	1.9	0.86	1.0	1.0	0.93	0.85	0.80	1.7	
		Result	<1.9	<0.86	<1.0	<1.0	<0.93	<0.85	3.3 J	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000033	ND	0.00003
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB (10/29/04) ALTA	10/29/2004	*DL*	0.367	0.386	0.353	0.338	0.348	0.442	0.318	0.131	—
		Result	<0.367	<0.386	<0.353	<0.338	<0.348	<0.442	1.63 B,J	<0.131	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000163	ND	0.00002
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB (10/29/04) STL	10/29/2004	*DL*	0.82	0.42	0.40	0.40	0.37	0.44	0.46	0.79	
		Result	<0.82	<0.42	<0.40	<0.40	<0.37	<0.44	2.0 J	<0.79	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00002	ND	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(10/30/04) ALTA	10/30/2004	*DL*	0.244	0.337	0.283	0.293	0.291	0.410	1.68	0.105	—
		Result	<0.244	<0.337	<0.283	<0.293	<0.291	<0.410	<1.680	<0.105	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB(10/30/04) STL	10/30/2004	*DL*	1.4	0.73	0.80	0.79	0.74	0.78	0.81	1.5	—
		Result	<1.4	<0.73	<0.80	<0.79	<0.74	<0.78	<0.81	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(11/2/04) ALTA	11/2/2004	*DL*	0.446	0.507	0.630	0.600	0.620	0.692	0.940	0.216	—
		Result	<0.446	<0.507	<0.630	<0.600	<0.620	<0.692	2.30 B, J	<0.216	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000023	ND	0.00002
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
FB(11/2/04) STL	11/2/2004	*DL*	1.3	0.61	0.68	0.71	0.65	0.60	1.6	1.1	
		Result	<1.3	<0.61	<0.68	<0.71	<0.65	<0.60	<1.6 P	<1.1	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/6/04) ALTA	12/6/2004	*DL*	1.00	1.21	1.75	1.80	1.77	1.72	1.79	0.633	—
		Result	<1.00	<1.21	<1.75	<1.80	<1.77	<1.72	6.30 J	<0.633	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000063	ND	0.00006
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/6/04) STL	12/6/2004	*DL*	1.2	0.46	0.45	0.47	0.44	0.52	1.7	0.92	
		Result	<1.2	<0.46	<0.45	<0.47	<0.44	<0.52	<1.7 P	<0.92	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(12/7/04) ALTA	12/7/2004	*DL*	0.785	0.802	1.38	1.33	1.35	1.06	1.82	0.603	—
		Result	<0.785	<0.802	<1.38	<1.33	<1.35	<1.06	5.32 J	<0.603	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000532	ND	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/7/04) STL	12/7/2004	*DL*	1.7	0.67	0.66	0.71	0.65	0.84	0.94	1.4	
		Result	<1.7	<0.67	<0.66	<0.71	<0.65	<0.84	2.5 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000025	ND	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/8/04) ALTA	12/8/2004	*DL*	0.887	0.941	1.47	1.46	1.46	0.906	2.54	0.625	—
		Result	<0.887	<0.941	<1.47	<1.46	<1.46	3.80 J	25.4 J	<0.625	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.0019	0.000254	ND	0.00215
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/8/04) STL	12/8/2004	*DL*	2.1	0.68	0.60	0.64	0.59	0.90	0.61	1.4	
		Result	<2.1	<0.68	<0.60	<0.64	<0.59	<0.90	1.5 J	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000015	ND	0.00002
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(12/9/04) ALTA	12/9/2004	*DL*	1.00	0.890	1.37	1.39	1.38	1.39	1.90	0.527	—
		Result	<1.00	<0.890	<1.37	<1.39	<1.38	<1.39	5.04 J	<0.527	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000504	ND	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/9/04) STL	12/9/2004	*DL*	1.3	0.60	0.60	0.63	0.70	0.77	1.8	1.0	
		Result	<1.3	<0.60	<0.60	<0.63	<0.70 P	<0.77	<1.8 P	<1.0	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—
FB(12/10/04) ALTA	12/10/2004	*DL*	0.959	1.01	1.24	1.22	1.22	1.35	2.60	0.696	—
		Result	<0.959	<1.01	<1.24	<1.22	<1.22	<1.35	<2.60	<0.696	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/10/04) STL	12/10/2004	*DL*	2.0	0.65	0.74	0.78	0.72	0.82	2.0	1.3	
		Result	<2.0	<0.65	<0.74	<0.78	<0.72	<0.82	<2.0 P	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(12/11/04) ALTA	12/11/2004	*DL*	0.634	0.660	0.717	0.701	0.705	0.888	2.91	0.403	—
		Result	<0.634	<0.660	<0.717	<0.701	<0.705	<0.888	<2.91	<0.403	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/11/04) STL	12/11/2004	*DL*	1.1	0.59	0.55	0.58	0.54	0.72	0.53	0.93	
		Result	<1.1	<0.59	<0.55	<0.58	<0.54	<0.72	2.6 B,J	<0.93	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000026	ND	0.00003
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—
FB(12/12/04) ALTA	12/12/2004	*DL*	0.678	0.965	1.21	1.23	1.21	1.27	2.75	0.533	—
		Result	<0.678	<0.965	<1.21	<1.23	<1.21	<1.27	<2.75	<0.533	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/12/04) STL	12/12/2004	*DL*	1.7	0.65	0.79	0.78	0.75	0.85	1.1	1.3	
		Result	<1.7	<0.65	<0.79	<0.78	<0.75	<0.85	<1.1 P	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
FB(12/13/04) ALTA	12/13/2004	*DL*	0.754	0.891	1.00	1.01	1.00	0.482	0.969	0.551	—
		Result	<0.754	<0.891	<1.00	<1.01	<1.00	0.690 B,J	4.61 J	<0.551	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	0.000345	0.0000461	ND	0.00039
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/13/04) STL	12/13/2004	*DL*	1.5	0.69	0.69	0.70	0.66	1.6	3.3	1.2	
		Result	<1.5	<0.69	<0.69	<0.70	<0.66	<1.6 P	<3.3 P	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—
FB(12/14/04) ALTA	12/14/2004	*DL*	1.14	1.09	1.11	1.15	1.13	0.860	0.987	0.784	—
		Result	<1.14	<1.09	<1.11	<1.15	<1.13	<0.860	5.87 J	<0.784	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.0000587	ND	0.00006
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
FB(12/14/04) STL	12/14/2004	*DL*	2.0	0.62	0.72	0.76	0.70	0.69	0.59	1.5	
		Result	<2.0	<0.62	<0.72	<0.76	<0.70	<0.69	1.1 B,J	<1.5	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	0.000011	ND	0.00001
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/19/04) ALTA	10/19/04	*DL*	0.499	0.437	0.293	0.290	0.307	0.452	0.311	0.274	0.972	—	—
		Result	<0.499	<0.437	<0.293	<0.290	<0.307	<0.452	<0.311	<0.274	<0.972	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00007
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/19/04) STL	10/19/04	*DL*	1.1	1.1	0.58	0.59	0.61	0.76	0.93	1.2	1.4	—	—
		Result	<1.1	<1.1	<0.58	<0.59	<0.61	<0.76	<0.93	<1.2	<1.4	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/20/04) ALTA	10/20/04	*DL*	0.373	0.352	0.173	0.168	0.178	0.138	0.219	0.295	0.659	—	—
		Result	<0.373	<0.352	<0.173	<0.168	<0.178	<0.138	<0.219	<0.295	<0.659	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/20/04) STL	10/20/04	*DL*	0.98	0.72	0.56	0.59	0.59	0.78	0.84	0.97	1.4	—	—
		Result	<0.98	<0.72	<0.56	<0.59	<0.59	<0.78	<0.84	<0.97	<1.4	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/21/04) ALTA	10/21/04	*DL*	0.343	0.305	0.166	0.167	0.174	0.250	0.291	0.441	0.617	—	—
		Result	<0.343	<0.305	<0.166	<0.167	<0.174	<0.250	<0.291	<0.441	<0.617	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/21/04) STL	10/21/04	*DL*	0.66	0.52	0.44	0.46	0.50	0.56	0.62	0.75	0.78	—	—
		Result	<0.66	<0.52	<0.44	<0.46	<0.50	<0.56	<0.62	<0.75	3.2 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00006	0.00006	0.00006
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/22/04) ALTA	10/22/04	*DL*	0.441	0.100	0.106	0.105	0.113	0.156	0.225	0.172	0.565	—	—
		Result	<0.441	<0.100	<0.106	<0.105	<0.113	<0.156	<0.225	<0.172	<0.565	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00061
METHOD BLANK Sample Set – 6300			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/22/04) STL	10/22/04	*DL*	0.59	0.50	0.42	0.42	0.44	0.52	0.57	0.68	0.94	—	—
		Result	<0.59	<0.50	<0.42	<0.42	<0.44	<0.52	<0.57	<0.68	<0.94	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/26/04) ALTA	10/26/04	*DL*	0.334	0.313	0.178	0.175	0.192	0.256	0.286	0.220	0.299	—	—
		Result	<0.334	<0.313	<0.178	<0.175	<0.192	<0.256	<0.286	<0.220	0.712 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00001	0.00001	0.00027
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/26/04) STL	10/26/04	*DL*	0.78	0.60	0.45	0.47	0.47	0.58	0.57	0.67	0.97	—	—
		Result	<0.78	<0.60	<0.45	<0.47	<0.47	<0.58	<0.57	<0.67	<0.97	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
FB(10/27/04) ALTA	10/27/2004	*DL*	0.221	0.198	0.120	0.126	0.119	0.161	0.124	0.195	1.03	—	—
		Result	<0.221	<0.198	<0.120	<0.126	<0.119	<0.161	<0.124	<0.195	<1.03	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(10/27/04) STL	10/27/2004	*DL*	0.85	0.65	0.55	0.57	0.62	0.72	0.69	0.92	1.3	—	—
		Result	<0.85	<0.65	<0.55	<0.57	<0.62	<0.72	<0.69	<0.92	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB (10/29/04) ALTA	10/29/04	*DL*	0.343	0.301	0.114	0.119	0..126	0.176	0.115	0.183	0.460	—	—
		Result	<0.343	<0.301	<0.114	<0.119	<0..126	<0.176	<0.115	<0.183	<0.460	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB (10/29/04) STL	10/29/04	*DL*	0.29	0.25	0.37	0.22	0.23	0.28	0.29	0.38	0.47	—	—
		Result	<0.29	<0.25	<0.37 P	<0.22	<0.23	<0.28	<0.29	<0.38	<0.47	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
FB(10/30/04) ALTA	10/30/04	*DL*	0.274	0.243	0.103	0.106	0.111	0.134	0.223	0.150	0.647	—	—
		Result	<0.274	<0.243	<0.103	<0.106	<0.111	<0.134	<0.223	<0.150	<0.647	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(10/30/04) STL	10/30/04	*DL*	0.59	0.50	0.34	0.35	0.38	0.47	0.48	0.65	0.94	—	—
		Result	<0.59	<0.50	<0.34	<0.35	<0.38	<0.47	<0.48	<0.65	<0.94	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(11/2/04) ALTA	11/2/2004	*DL*	0.435	0.384	0.146	0.138	0.158	0.224	0.182	0.319	0.954	—	—
		Result	<0.435	<0.384	<0.146	<0.138	<0.158	<0.224	<0.182	<0.319	<0.954	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(11/2/04) STL	11/2/2004	*DL*	0.55	0.45	0.38	0.37	0.41	0.47	0.41	0.50	0.9	—	—
		Result	<0.55	<0.45	<0.38	<0.37	<0.41	<0.47	<0.41	<0.50	<0.93	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
FB(12/6/04) ALTA	12/6/2004	*DL*	0.879	0.933	0.380	0.425	0.498	0.882	0.978	1.35	2.62	—	—
		Result	<0.879	<0.933	<0.380	<0.425	<0.498	<0.882	<0.978	<1.35	<2.62	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/6/04) STL	12/6/2004	*DL*	0.41	0.36	0.72	0.29	0.32	0.37	0.34	0.43	0.52	—	—
		Result	<0.41	<0.36	<0.72 P	<0.29	<0.32	<0.37	<0.34	<0.43	<0.52	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/7/04) ALTA	12/7/2004	*DL*	0.998	0.978	0.391	0.404	0.485	0.857	0.569	0.717	1.93	—	—
		Result	<0.998	<0.978	<0.391	<0.404	<0.485	<0.857	<0.569	<0.717	<1.93	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/7/04) STL	12/7/2004	*DL*	0.65	0.54	0.42	0.43	0.48	0.55	0.49	0.75	1.0	—	—
		Result	<0.65	<0.54	<0.42	<0.43	<0.48	<0.55	<0.49	<0.75	<1.0	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—
FB(12/8/04) ALTA	12/8/2004	*DL*	1.05	1.02	0.477	0.506	0.595	1.00	0.878	1.14	4.65	—	—
		Result	<1.05	<1.02	<0.477	<0.506	<0.595	<1.00	<0.878	<1.14	<4.65	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00215
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/8/04) STL	12/8/2004	*DL*	0.59	0.53	0.38	0.40	0.45	0.55	0.43	0.65	0.79	—	—
		Result	<0.59	<0.53	<0.38	<0.40	<0.45	<0.55	<0.43	<0.65	<0.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00002
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/9/04) ALTA	12/9/2004	*DL*	0.858	0.868	0.543	0.577	0.627	1.11	0.862	0.825	1.79	—	—
		Result	<0.858	<0.868	<0.543	<0.577	<0.627	<1.11	<0.862	<0.825	<1.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/9/04) STL	12/9/2004	*DL*	0.57	0.46	0.33	0.35	0.37	0.44	0.39	0.51	0.97	—	—
		Result	<0.57	<0.46	<0.33	<0.35	<0.37	<0.44	<0.39	<0.51	<0.97 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—
FB(12/10/04) ALTA	12/10/2004	*DL*	1.16	1.27	0.383	0.414	0.469	0.862	0.539	0.710	1.89	—	—
		Result	<1.16	<1.27	<0.383	<0.414	<0.469	<0.862	<0.539	<0.710	<1.89	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/10/04) STL	12/10/2004	*DL*	0.54	0.43	0.39	0.38	0.41	0.51	0.42	0.57	0.71	—	—
		Result	<0.54	<0.43	<0.39	<0.38	<0.41	<0.51	<0.42	<0.57	<0.71	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/11/04) ALTA	12/11/2004	*DL*	0.668	0.739	0.289	0.296	0.337	0.582	0.357	0.396	1.12	—	—
		Result	<0.668	<0.739	<0.289	<0.296	<0.337	<0.582	<0.357	<0.396	<1.12	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/11/04) STL	12/11/2004	*DL*	0.49	0.39	0.31	0.34	0.35	0.42	0.44	0.61	0.57	—	—
		Result	<0.49	<0.39	<0.31	<0.34	<0.35	<0.42	<0.44	<0.61	<0.57	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—
FB(12/12/04) ALTA	12/12/2004	*DL*	1.11	1.10	0.522	0.528	0.669	1.15	0.680	0.970	1.60	—	—
		Result	<1.11	<1.10	<0.522	<0.528	<0.669	<1.15	<0.680	<0.970	<1.60	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/12/04) STL	12/12/2004	*DL*	0.72	0.55	0.45	0.43	0.48	0.57	0.53	0.79	0.82	—	—
		Result	<0.72	<0.55	<0.45	<0.43	<0.48	<0.57	<0.53	<0.79	<0.82	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

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Table B5. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Field Blank Samples, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
FB(12/13/04) ALTA	12/13/2004	*DL*	0.816	0.823	0.411	0.433	0.502	0.840	0.477	0.670	1.13	—	—
		Result	<0.816	<0.823	<0.411	<0.433	<0.502	<0.840	<0.477	<0.670	<1.13	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00039
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/13/04) STL	12/13/2004	*DL*	0.66	0.52	0.40	0.40	0.42	0.52	0.55	0.77	0.61	—	—
		Result	<0.66	<0.52	<0.40	<0.40	<0.42	<0.52	<0.55	<0.77	<0.61	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—
FB(12/14/04) ALTA	12/14/2004	*DL*	1.06	1.08	0.389	0.432	0.494	0.845	0.485	0.613	0.998	—	—
		Result	<1.06	<1.08	<0.389	<0.432	<0.494	<0.845	<0.485	<0.613	<0.998	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
FB(12/14/04) STL	12/14/2004	*DL*	0.68	0.53	0.37	0.36	0.40	0.48	0.48	0.61	0.65	—	—
		Result	<0.68	<0.53	<0.37	<0.36	<0.40	<0.48	<0.48	<0.61	<0.65	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00001
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—

All values are reported in parts per quadrillion (ppq).

BEF Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

DL Detection limit.

ND Congener was not detected; contribution to the TEC is zero.

ppq Parts per quadrillion (picograms per liter).

QL Congener quantitation limit for that sample.

TEC Toxicity equivalence concentration of 2,3,7,8-TCDD.

TEF Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) × BEF × TEF

Data Qualifiers:

B Compound was detected in the associated QC method blank sample.

J Concentration is qualified as estimated.

P Does not meet all the method specified congener identification criteria.

Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	Sum of dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
ALTA											
Supplemental Method Blank ALTA	October 04	*DL*	0.470	0.363	0.389	0.387	0.392	0.859	5.50	0.171	—
		Result	<0.470	<0.363	<0.389	<0.387	<0.392	<0.859	5.50 B,J	<0.171	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000055	ND	0.00006
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	6.23 J	ND	—
Supplemental Method Blank ALTA	October 04	*DL*	0.490	0.436	0.422	0.440	0.436	0.782	0.726	0.227	—
		Result	<0.490	<0.436	<0.422	<0.440	<0.436	<0.782	8.85 B,J	<0.227	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000885	ND	0.00009
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	5.86 J	ND	—
Method Blank-6300 ALTA	October 04	*DL*	0.319	0.596	0.400	0.411	0.410	1.46	1.40	0.910	—
		Result	<0.319	<0.596	<0.400	<0.411	<0.410	<1.46	6.23 J	<0.910	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000623	ND	0.00006
Method Blank-6302 ALTA	October 04	*DL*	0.482	0.359	0.737	0.708	0.729	0.826	0.356	0.178	—
		Result	<0.482	<0.359	<0.737	<0.708	<0.729	<0.826	5.86 J	<0.178	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000586	ND	0.00006
Method Blank-6324 ALTA	October 04	*DL*	0.413	0.705	0.820	0.839	0.838	1.44	0.740	0.316	—
		Result	<0.413	<0.705	<0.820	<0.839	<0.838	<1.44	3.23 J	<0.316	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000323	ND	0.00003

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Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
Supplemental Method Blank ALTA	December 04	*DL*	0.725	0.796	1.13	1.15	1.13	1.52	0.958	0.638	—
		Result	<0.725	<0.796	<1.13	<1.15	<1.13	<1.52	5.28 J	<0.638	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.0000528	ND	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	0.948 J	ND	ND	—
Supplemental Method Blank ALTA	December 04	*DL*	0.908	0.709	1.51	1.57	1.54	0.976	2.24	0.562	—
		Result	<0.908	<0.709	<1.51	<1.57	<1.54	<0.976	3.40 J	<0.562	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000034	ND	0.00003
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	—
Method Blank-6399 ALTA	December 04	*DL*	0.608	0.613	1.18	1.17	1.17	0.946	3.28	0.484	—
		Result	<0.608	<0.613	<1.18	<1.17	<1.17	0.948 J	<3.28	<0.484	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.000474	ND	ND	0.00047
Method Blank-6411 ALTA	December 04	*DL*	0.597	0.523	1.30	1.37	1.34	1.72	7.54	0.821	—
		Result	<0.597	<0.523	<1.30	<1.37	<1.34	<1.72	<7.54	<0.821	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000

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Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
STL											
Supplemental Method Blank STL	October 04	*DL*	2.2	0.89	1.0	1.1	1.0	0.98	1.8	2.0	
		Result	<2.2	<0.89	<1.0	<1.1	<1.0	<0.98	<1.8 P	<2.0	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	—
Supplemental Method Blank STL	October 04	*DL*	1.6	0.68	0.84	0.90	0.81	0.84	1.6	1.4	
		Result	<1.6	<0.68	<0.84	<0.90	<0.81	<0.84	<1.6 P	<1.4	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	ND	ND	ND	ND	—
Method Blank-432264 STL	October 04	*DL*	2.5	1.4	1.5	1.5	1.4	1.2	4.5	2.6	—
		Result	<2.5	<1.4	<1.5	<1.5	<1.4	<1.2	<4.5 P	<2.6	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
Method Blank-432358 STL	October 04	*DL*	2.2	1.1	1.2	1.3	1.1	1.1	5.7	1.7	—
		Result	<2.2	<1.1	<1.2	<1.3	<1.1	<1.1	<5.7 P	<1.7	—
		QL	10	50	50	50	50	50	100	10	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	0.00000

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Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	dioxin TECs
		TEF	1	0.5	0.1	0.1	0.1	0.01	0.001	0.1	
		BEF	1	0.9	0.3	0.1	0.1	0.05	0.01	0.8	
Supplemental Method Blank STL	December 04	*DL*	2.5	0.75	0.63	0.71	0.64	0.80	3.3	2.0	
		Result	<2.5	<0.75	<0.63	<0.71	<0.64	<0.80	<3.3 P	<2.0	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	ND	ND	5.3 J	ND	—
Supplemental Method Blank STL	December 04	*DL*	1.6	0.63	0.51	0.54	0.50	0.61	0.55	0.94	
		Result	<1.6	<0.63	<0.51	<0.54	<0.50	<0.61	1.1 J	<0.94	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000011	ND	0.00001
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	ND	ND	—
Method Blank-5011047 STL	December 04	*DL*	1.4	0.49	0.41	0.42	0.39	0.76	3.5	1.1	—
		Result	<1.4	<0.49	<0.41	<0.42	<0.39	<0.76 P	<3.5 P	<1.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	0.00000
Method Blank-5012114 STL	December 04	*DL*	1.7	0.71	0.57	0.57	0.54	0.68	0.59	1.3	—
		Result	<1.7	<0.71	<0.57	<0.57	<0.54	<0.68	5.3 J	<1.3	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000053	ND	0.00005
Method Blank-5019306 STL	December 04	*DL*	1.1	0.78	0.90	0.92	0.86	1.1	7.2	1.1	—
		Result	<1.1	<0.78	<0.90	<0.92	<0.86	2.2 J	<7.2 P	<1.1	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	0.0011	ND	ND	0.00110
Method Blank-5032342 STL	December 04	*DL*	1.2	0.73	0.92	0.91	0.87	1.2	1.1	1.2	—
		Result	<1.2	<0.73	<0.92	<0.91	<0.87	<1.2	4.2 J	<1.2	—
		QL	10	50	50	50	50	50	100	10	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000042	ND	0.00004

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Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

All values are reported in parts per quadrillion (ppq).

BEF	Bioaccumulation equivalency factor [MDEQ, Rule 323.1209(4)(ii)].
DL	Detection limit.
ND	Congener was not detected; contribution to the TEC is zero.
ppq	Parts per quadrillion (picograms per liter).
QL	Congener quantitation limit for that sample.
TEC	Toxicity equivalence concentration of 2,3,7,8-TCDD.
TEF	Toxicity equivalency factor [MDEQ, Rule 323.1209(4)(ii)].

* TEC (ppq) = Detected result (ppq) x BEF x TEF

Data Qualifiers:

B	Compound was detected in the associated QC method blank sample.
J	Concentration is qualified as estimated.
P	Does not meet all the method specified congener identification criteria.

Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
ALTA													
Supplemental Method Blank ALTA	October 04	*DL*	0.334	0.303	0.210	0.210	0.222	0.146	0.273	0.246	0.505	—	—
		Result	<0.334	<0.303	<0.210	<0.210	<0.222	<0.146	<0.273	<0.246	<0.505	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Supplemental Method Blank ALTA	October 04	*DL*	0.338	0.299	0.179	0.179	0.185	0.220	0.157	0.236	1.490	—	—
		Result	<0.338	<0.299	<0.179	<0.179	<0.185	<0.220	<0.157	<0.236	<1.490	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00009
METHOD BLANK Sample Set – 6302			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Method Blank-6300 ALTA	October 04	*DL*	0.686	0.601	0.446	0.429	0.478	0.705	1.51	2.32	1.79	—	—
		Result	<0.686	<0.601	<0.446	<0.429	<0.478	<0.705	<1.51	<2.32	<1.79	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
Method Blank-6302 ALTA	October 04	*DL*	0.454	0.438	0.168	0.601	0.187	0.259	0.245	0.378	1.180	—	—
		Result	<0.454	<0.438	<0.168	<0.601	<0.187	<0.259	<0.245	<0.378	<1.180	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00006
Method Blank-6324 ALTA	October 04	*DL*	0.601	0.546	0.559	0.525	0.590	0.864	0.681	0.672	2.40	—	—
		Result	<0.601	<0.546	<0.559	<0.525	<0.590	<0.864	<0.681	<0.672	<2.40	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003

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Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
Supplemental Method Blank ALTA	December 04	*DL*	0.989	0.900	0.336	0.344	0.383	0.648	0.525	0.785	1.34	—	—
		Result	<0.989	<0.900	<0.336	<0.344	<0.383	<0.648	<0.525	<0.785	<1.34	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00005
METHOD BLANK Sample Set – 6399			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Supplemental Method Blank ALTA	December 04	*DL*	1.16	1.14	0.292	0.300	0.377	0.663	0.763	0.985	1.66	—	—
		Result	<1.16	<1.14	<0.292	<0.300	<0.377	<0.663	<0.763	<0.985	<1.66	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00003
METHOD BLANK Sample Set – 6411			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Method Blank-6399 ALTA	December 04	*DL*	0.927	0.965	0.417	0.484	0.555	0.936	0.789	0.811	2.05	—	—
		Result	<0.927	<0.965	<0.417	<0.484	<0.555	<0.936	<0.789	<0.811	<2.05	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00047
Method Blank-6411 ALTA	December 04	*DL*	1.02	1.05	0.610	0.668	0.776	1.42	1.08	1.45	3.15	—	—
		Result	<1.02	<1.05	<0.610	<0.668	<0.776	<1.42	<1.08	<1.45	<3.15	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000

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Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE	TEF / BEF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
STL													
Supplemental Method Blank STL	October 04	DL	0.82	0.65	0.45	0.50	0.51	0.64	0.68	0.84	1.3	—	—
		Result	<0.82	<0.65	<0.45	<0.50	<0.51	<0.64	<0.68	<0.84	<1.3	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4322264			ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—
Supplemental Method Blank STL	October 04	DL	0.64	0.48	0.37	0.40	0.44	0.53	0.61	0.76	0.99		
		Result	<0.64	<0.48	<0.37	<0.40	<0.44	<0.53	<0.61	<0.76	<0.99	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 4323358			ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	—	—
Method Blank-432264 STL	October 04	DL	1.40	1.00	0.71	0.76	0.77	0.98	1.8	1.0	2.4	—	—
		Result	<1.40	<1.00	<0.71	<0.76	<0.77	<0.98	<1.8 P	<1.0	<2.4 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
Method Blank-432358 STL	October 04	DL	0.99	0.75	1.0	0.67	0.73	0.86	2.2	0.97	3.6	—	—
		Result	<0.99	<0.75	<1.0	<0.67	1.3 J	<0.86	<2.2 P	<0.97	<3.6 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		TEC *	ND	ND	ND	ND	0.091	ND	ND	ND	ND	0.09100	0.09100

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Table B6. Dioxin and Furan 2,3,7,8-TCDD Equivalency Calculations for 2004 Method Blanks, Ford/Kingsford Site, Kingsford, Michigan.

SAMPLE ID	SAMPLE DATE		1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	,8,9-HpCDF	OCDF	Sum of furan TECs	Sum of Dioxins Furans TECs
		TEF	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.001		
		BEF	0.2	1.6	0.08	0.2	0.7	0.6	0.01	0.4	0.02		
Supplemental Method Blank STL	December 04	*DL*	0.64	0.49	0.44	0.45	0.49	0.60	0.52	0.71	0.85	—	—
		Result	<0.64	<0.49	<0.44	<0.45	<0.49	<0.60	<0.52	<0.71	<0.85	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00000
METHOD BLANK Sample Set – 5012114			ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	—	—
Supplemental Method Blank STL	December 04	*DL*	0.48	0.44	0.32	0.33	0.36	0.45	0.40	0.59	0.66		
		Result	<0.48	<0.44	<0.32	<0.33	<0.36	<0.45	<0.40	<0.59	<0.66	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00001
METHOD BLANK Sample Set – 5011047			ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	—	—
Method Blank-5011047 STL	December 04	*DL*	0.49	0.44	0.30	0.29	0.46	0.39	0.36	0.50	1.2	—	—
		Result	<0.49	<0.44	<0.30	<0.29	<0.46 P	<0.39	0.63 J	<0.50	<1.2 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.000063	ND	ND	0.00006	0.00006
Method Blank-5012114 STL	December 04	*DL*	0.58	0.49	0.37	0.35	0.38	0.47	0.43	0.56	1.8	—	—
		Result	<0.58	<0.49	<0.37	<0.35	0.43 J	<0.47	<0.43	<0.56	<1.8 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	0.0301	ND	ND	ND	ND	0.03010	0.03015
Method Blank-5019306 STL	December 04	*DL*	0.58	0.52	0.52	0.54	0.86	1.5	1.4	1.2	4.5	—	—
		Result	<0.58	<0.52	<0.52	<0.54	<0.86 P	<1.5 P	<1.4 P	<1.2 P	<4.5 P	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00000	0.00110
Method Blank-5032342 STL	December 04	*DL*	0.68	0.59	0.74	0.69	0.82	1.0	0.85	0.98	1.2	—	—
		Result	<0.68	<0.59	<0.74	<0.69	<0.82	<1.0	1.2 J	<0.98	3.8 J	—	—
		QL	50	50	50	50	50	50	50	50	100	—	—
		*TEC **	ND	ND	ND	ND	ND	ND	0.00012	ND	7.6E-05	0.00020	0.00024

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Appendix N

Whole Effluent Toxicity Testing

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Appendix N

Whole Groundwater Toxicity Testing

This appendix summarizes the results of groundwater and seep toxicity testing for the Ford/Kingsford site and discusses the relationship between toxicity and chemistry results. The primary classes of chemicals contributing to toxicity are identified, and their relative importance is qualitatively discussed.

Introduction

At the request of the MDEQ, ARCADIS G&M, Inc. conducted toxicity testing and chemical analyses of groundwater samples collected from wells located near the Menominee River. The tests were conducted using standard methods developed for whole-effluent toxicity (WET) testing. Limited additional testing was conducted directly by the MDEQ. A total of 78 toxicity tests were conducted, encompassing two test species (fathead minnows and *Daphnia magna*), 22 groundwater wells, and two seep locations. Standard Toxicity Identification Evaluation (TIE) procedures were conducted for seven water samples (six groundwater and one seep) to facilitate the identification of chemicals contributing to toxicity. Complete toxicity test and TIE results are provided by AScI (1999; 2000a,b) and New England Bioassay (2000a-e). Chemistry results are included in Tables 6-16 and 6-18 of this Remedial Investigation (RI) report.

The WET test methods used in this investigation were originally developed for monitoring of effluent discharges, for the purpose of protecting biological community quality in the receiving waters. During the past several years, the U.S. Environmental Protection Agency (EPA) and others have embarked on a mid-course review of WET testing (Ausley, 2000). Based on a technical review of the merits and limitations of WET testing, the most appropriate use of this type of information is as an indicator of the need for further evaluation of risks to aquatic life (Chapman, 2000). Due to factors such as the inability to reliably predict instream biological conditions from WET test results (Diamond and Daley, 2000), variability of test results (Warren-Hicks et al., 2000; Moore et al., 2000a), and the potential for false positives (Moore et al., 2000b), WET testing does not provide a definitive determination of ecological impact (Chapman, 2000).

In contrast to WET testing, groundwater toxicity testing has little precedent in the technical literature, and the ability to predict ecological impacts based on groundwater toxicity test results has not been evaluated. However, it is reasonable to expect that the predictive ability of groundwater toxicity testing is lower than that of WET testing, because of the diffuse nature of groundwater discharge and inherent differences in the geochemistry of groundwater versus surface water. Given the important uncertainties associated with WET test methodologies and the additional uncertainty associated with groundwater toxicity testing, the results summarized in this appendix should be viewed not as an end in themselves, but rather as a means of focusing further investigations of potential risks to aquatic life in the Menominee River (see Appendix J).

Groundwater Toxicity Test Results

The groundwater toxicity test results are summarized in Table N-1. The test results are summarized as toxic unit (TU) values, which correspond to the amount of dilution with clean laboratory water that is required to

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achieve a specified level of test organism response. Acute TU (TU_A) values are based on a specified response of 50% mortality. A TU_A less than 1.0 indicates less than 50% mortality in the undiluted sample and is viewed by MDEQ as acceptable for discharge to surface waters. For certain samples, TU values were also calculated for 50% *Daphnia magna* immobilization (where this response was observed). Daphnid immobilization is considered equivalent to mortality for the purpose of calculating acute water quality criteria (Stephan et al., 1985).

Split sampling and/or repeated toxicity testing were implemented for nine groundwater wells and one seep location. The TU values varied considerably among tests, and in several cases the classification of samples as toxic (TU > 1.0) or nontoxic (TU < 1.0) varied among tests. Toxicity was observed even in one sample collected from GM-26B, which was selected as an uncontaminated reference well based on previous chemical analyses. One factor contributing to the observed variation in toxicity test results was likely a difference in test procedures between laboratories. Specifically, New England Bioassay acclimated the *Daphnia magna* test organisms to very hard water conditions prior to toxicity testing, per USEPA guidance (USEPA, 1993), whereas AScI Corporation omitted this procedure. Test organism acclimation reduces stress related to water hardness and provides a result that is more indicative of the toxicity of constituents of interest in the water sample. Additionally, variability and false positives are recognized as one of the limitations of WET test procedures (Warren-Hicks et al., 2000; Moore et al., 2000a; Moore et al., 2000b).

The results shown in Table N-1 support the following conclusions:

- Groundwater samples collected to the northwest of GM-5 and to the southwest of GM-27 did not consistently exhibit toxicity (TU > 1.0);
- Between GM-5 and GM-27, seven of twelve groundwater wells (GM-5, GM-25A, GM-25B, GM-26A, GM-26C, GM-27A, and GM-EW3) and one of two seeps (SP-2) exhibited toxicity (TU > 1.0);
- Groundwater collected from GM-25B and extraction well GM-EW3 required between five and sixteen-fold dilution to achieve less than 50% mortality; and
- Dilution of approximately two-fold or less was generally sufficient to achieve less than 50% mortality for the remaining toxic samples.

Toxicity Identification Evaluation (TIE) Results

The identity of chemicals contributing to groundwater toxicity was investigated using standard USEPA methods for a "Phase I" TIE, which involve specific manipulations of the sample, designed to remove toxicity due to certain classes of chemicals. Initially, a TIE was conducted for GM-25B groundwater using more than 20 different sample manipulations. The procedures which lowered toxicity in GM-25B groundwater included solid phase extraction with a C18 column, indicating a contribution to toxicity due to hydrophobic organic chemicals, and addition of EDTA, indicating a contribution to toxicity due to metals.

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Subsequent TIE testing was limited to these procedures.[1] The results of the TIE tests are summarized in Table N-2.

In most cases, the TIE results indicated toxicity due to a combination of hydrophobic organic chemicals and metals. However, the treatments which achieved a TU_A less than 1.0 did not completely eliminate toxicity in most cases. Combined removal of organic compounds and addition of EDTA generally resulted in survival of 60-80% for both test species. The TIE results do not distinguish whether incomplete removal of metal toxicity or an uncharacterized source of toxicity (such as major ions; see below) was responsible for the residual toxicity. Removal of hydrophobic organic compounds was believed to be essentially complete, based on the use of a large volume of sorbent in the C18 column.

Procedures that did not reduce toxicity in the GM-25B TIE are also of interest, as they indicate classes of chemicals that were not important contributors to the observed toxicity. For example, toxicity due to particulate material was suspected in samples where a precipitate was evident; however, filtration did not reduce toxicity. Aeration also did not reduce toxicity, indicating that volatile compounds were not important contributors to toxicity.

Identification of Toxicants

Chemicals contributing to observed groundwater toxicity are identified based on an evaluation of the TIE and analytical chemistry results. Three important groups of chemicals identified as contributors to toxicity are phenolic compounds, iron, and major ions. These chemicals are discussed below, followed by a brief discussion of other chemicals which were detected but probably did not play an important toxicological role.

Phenolic Compounds

Table N-3 summarizes the concentrations of phenolic compounds in the groundwater samples tested for toxicity. Elevated concentrations of 2,4-dimethylphenol were detected in all TIE samples. However, the 2,4-dimethylphenol concentration exceeded MDEQ's Final Acute Value (FAV) only in GM-25B groundwater. Monomethylphenols and phenol also exceeded the respective FAVs in GM-25B but were generally not detected in the other samples. While the FAV values for phenolic compounds are useful for screening purposes, their derivation incorporates data for a variety of species, as well as uncertainty factors. The LC50s measured directly for fathead minnows and *Daphnia magna* provide a more accurate means of assessing toxicity to these species and are summarized in Table N-4.

Although the LC50s for individual phenolic compounds were not exceeded in GM-25B groundwater, the combined concentrations were clearly sufficient to cause toxicity on an additive basis, even in the absence of other chemicals. However, the concentrations of 2,4-dimethylphenol (or in the case of GM-26A, 2,4-dimethylphenol and 3- and 4-methylphenol combined) were well below the LC50s for either test species in all other samples. For fathead minnows, the concentrations of phenolic compounds were between 5% and

[1] An ion exchange procedure was also implemented for seep sample SP-2; results were inconclusive.

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15% of the LC50. For *Daphnia magna*, the concentrations of phenolic compounds ranged from 20% to nearly 50% of the LC50.

Thus, the reported concentrations of phenolic compounds in most samples do not clearly account for the toxicity attributed to organic compounds in the TIE. The apparent discrepancy could be due to unmeasured organic compounds (e.g., complex compounds related to lignin degradation; Higashi et al., 1992), or it may reflect the cumulative effect of phenolic compounds, iron, and major ions. These two explanations cannot be distinguished based on the TIE results, because toxicity due to major ions was not affected by the TIE procedures, and iron toxicity may not have been completely removed. However, the analysis of iron and major ion concentrations is consistent with cumulative toxicity (see below).

Iron

Despite TIE results implicating metals as important toxicants, none of the metal concentrations reported for the groundwater samples exceeded the respective FAV levels. However, MDEQ has not adopted an FAV for iron, which was detected at concentrations ranging from 260 to 120,000 µg/l (Table N-3). Iron LC50s for aquatic organisms were identified from U.S. EPA's AQUIRE database, as shown in Table N-5. With the exception of dissolved iron in seep sample SP-2, iron concentrations were within the range of LC50s reported for *Daphnia magna* and other species. The total iron concentration in seep sample SP-2 (approximately 30 mg/kg; A. Stewart, STL-Savannah, personal communication) was within the range of *Daphnia magna* LC50s. Iron LC50s were not identified for fathead minnows.

Interpretation of the relationship between iron concentrations and toxicity is somewhat complicated by the fact that iron tends to precipitate out of solution under aerobic conditions. However, it is evident from the toxicity data shown in Table N-5 that iron concentrations can be maintained in water at levels sufficient to cause acute toxicity. Extensive precipitation was observed in GM-25B groundwater, which contained the highest iron concentration upon sample collection (Table N-3). Seep sample SP-2 also exhibited settling of particulate material during the course of the toxicity tests. The toxicity testing laboratory did not observe precipitation in the remaining groundwater samples.

The identification of iron as a contributor to the observed groundwater toxicity is generally consistent with the results of the TIE. Although EDTA most strongly reduces the toxicity of metals such as cadmium, copper, lead, nickel, and zinc, it is known to weakly reduce the toxicity of other metals such as manganese (Hockett and Mount, 1996) and would be expected to weakly reduce the toxicity of iron as well. The apparent lack of metal toxicity to fathead minnows in GM-25B groundwater is surprising, given the very high iron concentration and the contribution of metals to *Daphnia magna* toxicity in this sample. However, the bioavailable iron concentration in the GM-25B sample was clearly reduced by precipitation. Among the remaining groundwater TIE samples, two samples required a higher EDTA concentration to achieve a TU_A of <1.0 and also contained the highest iron concentrations (GM-25A and GM-27A).

Major Ions

In fresh water, the major ions which constitute total dissolved solids are typically calcium, potassium, magnesium, sodium, chloride, bicarbonate, and sulfate. The TIE samples all contained high concentrations

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of major ions, as indicated by high hardness, alkalinity, and conductivity values. The standard TIE procedures implemented as part of this investigation do not directly address major ion toxicity. However, well-developed methods are available to evaluate the toxicity of major ions to fathead minnows and *Daphnia magna*. Specifically, Mount et al. (1997) developed statistical relationships between major ion concentrations and toxicity to fathead minnows, *Daphnia magna*, and *Ceriodaphnia dubia*, based on the results of toxicity tests with over 2,900 ion solutions. These statistical relationships can be applied using the Gas Research Institute's Freshwater Salinity Toxicity Relationship (GRI-FW STR) model (Tietge et al., 1994). Validation studies have indicated that the model is highly accurate for *Ceriodaphnia dubia* but somewhat over-predictive of toxicity for fathead minnows and *Daphnia magna* (Mount et al., 1997).

Predicted LC50 and TU_A values based on major ions alone are summarized for groundwater samples in Table N-6. All of the TIE samples were predicted to be toxic to both test species. Consistent with previous findings, the STR model appears to over-predict toxicity somewhat, given that TU_A values of <1.0 were achieved without the removal of major ions in the TIE. Bicarbonate was the most important of the major ions in contributing to toxicity, based on a comparison to single-salt and double-salt toxicity test results (Mount et al., 1997) as well as model simulations.

Although less toxic than predicted, major ion concentrations probably approached LC50 levels, based on the STR model results. Major ions may account for the residual toxicity observed following organic compound removal and EDTA addition in the TIE. Major ions and phenolic compounds acting as co-stressors may also account for toxicity following EDTA addition, when the reported concentrations of phenolic compounds by themselves were not sufficient to produce the observed level of toxicity. Methods for more accurately determining the relative importance of major ions and other toxicants are available and could be implemented if it becomes important to quantitatively assess the relative contribution of each toxicant to groundwater toxicity (Goodfellow et al., 2000).

Other Chemicals

Several other chemicals were detected in the TIE samples but probably did not contribute significantly to the observed toxicity. Among these, acetic acid is most notable because the concentrations reported for GM-25B and GM-26A groundwater exceeded MDEQ's FAV. The FAV incorporates a safety factor due to the limited number of species tested, but LC50s are available for both fathead minnows and *Daphnia magna* (Rule 57 Aquatic Values Data Sheet for acetic acid). The LC50 for *Daphnia magna* (5,200 mg/L) is higher than the concentrations reported for both groundwater samples, but the LC50s for fathead minnows (79-88 mg/L) were exceeded in GM-25B groundwater. However, toxicity due to acetic acid would most likely be the result of low pH, whereas the pH of GM-25B groundwater (6.02) was not low enough to cause acute toxicity (U.S. EPA, 1986). Additionally, the TIE results for GM-25B do not implicate acetic acid as an important source of toxicity to fathead minnows, as toxicity was eliminated without the removal of acetic acid.

Estimated concentrations of several high molecular weight polycyclic aromatic hydrocarbons (PAHs) were reported for GM-26C groundwater and SP-2 seep water, at concentrations generally exceeding the compounds solubility limits. Presumably the PAHs were adsorbed to suspended solids in the sample; therefore, the bioavailable (dissolved) concentrations in the sample are not known. However, the LC50s of

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the detected PAHs are higher than the solubility limits or the detected concentrations, such that their toxicological role in the toxicity tests (if any) would have been limited to that of a secondary stressor (U.S. EPA, 2000).

Other chemicals which were detected in the toxicity test samples but for which FAVs are not available include aluminum, titanium, diethyl ether, and several alcohols and aldehydes. These concentrations were reported in most cases as estimated values (below quantitative detection limits). Toxicity data in the U.S. EPA's AQUIRE database for these chemicals, where available, indicated LC50s that exceeded the reported concentrations. Although data were unavailable for some alcohols and aldehydes, the available data suggested that these classes of chemicals generally exhibited low toxicity (high LC50s). Therefore, these chemicals were considered unlikely to have contributed significantly to the toxicity observed in this investigation.

Summary and Conclusions

A total of 78 groundwater and seep samples were tested for toxicity at the request of MDEQ. The chemicals contributing to observed toxicity were identified based on standard TIE procedures and an evaluation of analytical chemistry results. The findings of this investigation are as follows:

- Groundwater samples collected to the northwest of GM-5 and to the southwest of GM-27 did not consistently exhibit toxicity (TU > 1.0). Seven of twelve groundwater wells and one of two seeps between GM-5 and GM-27 exhibited toxicity (TU > 1.0).

- Dilution of approximately two-fold or less was generally sufficient to achieve less than 50% mortality in groundwater and seep samples, with additional dilution required for samples from GM-25B and GM-EW3.

- Chemicals identified as important contributors to the observed toxicity include phenolic compounds, iron, and major ions (particularly bicarbonate). A semi-quantitative analysis suggests that (1) the measured concentrations of phenolic compounds in most samples were not sufficient to cause acute toxicity but rather acted as co-stressors, (2) iron concentrations may have been sufficient to cause acute toxicity, and (3) major ions probably served as an important co-stressor.

- These results indicate the need for an investigation to determine whether groundwater venting to the Menominee River is adversely affecting biological community quality. Such an investigation has been conducted and is described in Appendix J. No adverse effects on biological community quality in the Menominee River were observed.

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Table N-1. Summary of Whole-Groundwater and Seep Toxicity Test Results[a].

Well/Seep	Date	Laboratory	Groundwater Test TU_A		*D. magna*
			Fathead minnow	*Daphnia magna*	Immobilization TU
GM-5	11/30/99	AScI	<1.0	3.6	NR
GM-5	08/15/00	NEB	<1.0	1.0	4.1
GM-5	09/20/00	NEB	1.5	<1.0	<1.0
GM-6	02/29/00	AScI	<1.0	1.3	NR
GM-6	02/29/00	NEB (for MDEQ)	<1.0	<1.0	NR
GM-6	07/19/00	NEB	<1.0	<1.0	2.8
GM-6	09/25/00	NEB	<1.0	<1.0	<1.0
GM-8	10/21/99	AScI	<1.0	<1.0	NR
GM-9	03/07/00	AScI	<1.0	<1.0	NR
GM-25A	12/01/99	AScI	1.6	<1.0	NR
GM-25A	08/21/00	NEB	1.2	1.2	NR
GM-25B	07/13/99	MDEQ	14	16	NR
GM-25B	08/25/99	MDEQ	9.7	8.3	NR
GM-25B	10/20/99	AScI	7.7	5.6	NR
GM-25C	08/02/00	NEB	<1.0	<1.0	<1.0
GM-26A	11/29/99	AScI	1.4	1.8	NR
GM-26A	11/29/99	MDEQ	NT	2.1	NR
GM-26A	08/16/00	NEB	1.0	1.7	2.8
GM-26B	11/30/99	AScI	<1.0	1.7	NR
GM-26B	11/30/99	MDEQ	NT	<1.0	NR
GM-26B	07/18/00	NEB	<1.0	<1.0	<1.0
GM-26C	11/30/99	AScI	2.1	1.4	NR
GM-26C	08/16/00	NEB	1.7	1.3	2.8
GM-27A	12/01/99	AScI	1.8	3.7	NR
GM-27B	07/18/00	NEB	<1.0	<1.0	<1.0
GM-27C	08/07/00	NEB	<1.0	<1.0	<1.0

Footnotes on Page 2.

Table N-1. Summary of Whole-Groundwater and Seep Toxicity Test Results[a].

Well/Seep	Date	Laboratory	Groundwater Test TU_A		*D. magna*
			Fathead minnow	*Daphnia magna*	Immobilization TU
GM-28A	02/29/00	AScI	<1.0	1.3	NR
GM-28A	07/19/00	NEB	<1.0	<1.0	<1.0
GM-28B	3/1/00[b]	AScI	<1.0	<1.0	NR
GM-29	02/29/00	AScI	<1.0	<1.0	NR
GM-29	02/29/00	NEB (for MDEQ)	<1.0	<1.0	NR
GM-31	10/09/00	NEB	<1.0	<1.0	<1.0
GM-64A	10/03/00	NEB	<1.0	<1.0	<1.0
GM-64B	07/24/00	NEB	<1.0	<1.0	5.6
GM-64B	10/04/00	NEB	<1.0	<1.0	<1.0
GM-66A	07/18/00	NEB	<1.0	<1.0	<1.0
GM-66B	07/19/00	NEB	<1.0	<1.0	<1.0
GM-EW3	07/24/00	NEB	10.2	5.6	11.4
SP-1	05/16/00	NEB	<1.0	<1.0	NR
KF-CA-2[c]	03/13/00	MDEQ	NT	19	NR
SP-2	06/27/00	NEB	<1.0	1.0	2.2

NT Not tested.
AScI AScI Corporation.
NR Not reported.
NEB New England Bioassay.
a Data are for toxicity tests conducted within 36-h holding time.
b Fathead minnow test initiated 3/7/00 following re-sampling.
c Seep samples KF-CA-2 and SP-2 were collected from the same location.

Table N-2. TIE Procedures that Removed Toxicity from Groundwater or Seep Samples[a]

	GM-5 11/30/99	GM-25A 12/01/99	GM-25B 10/20/99	GM-26A 11/29/99	GM26C 11/30/99	GM-27A 12/01/99	SP-2[b] 06/27/00
Daphnia magna							
C18 column					X		
EDTA							X
C18 + EDTA	X	X	X	X		X	
Residual toxicity	X	X	X	X	X	X	
Fathead minnow							
C18 column			X				
EDTA							
C18 + EDTA	X	X		X	X	X	
Residual toxicity	X	X		X	X	X	

a. Removal of toxicity by sample passage through a C18 column indicates toxicity due to hydrophobic organic compounds. Removal of toxicity by EDTA addition indicates metal toxicity. Residual toxicity indicates either toxicity due to other factors (e.g., major ions) or incomplete removal of metal toxicity. Incomplete removal of organic toxicity was unlikely based on use of a large volume of sorbent.

b. Seep sample SP-2 was not toxic to fathead minnows and was only marginally toxic to *Daphnia magna* (TIE results interpreted based on behavioral endpoints due to high survival).

Table N-3. Concentrations of Phenolic Compounds and Iron in TIE Samples[a]

	GM-5	GM-25A	GM-25B	GM-26A	GM-26C	GM-27A	SP-2
2,4-Dimethylphenol	900	900	3,900	850	2200	890	590
2-Methylphenol	<20	<20	4,800	<20	<50	<20	<5
3-Methylphenol/4-Methylphenol	<20	<20	13,000	350	<50	<20	<5
Phenol	<20	<20	8,000	<20	<50	<20	<5
Iron	11,000	28,000	120,000	24,000	8,100	36,000	260

a Units are µg/L.

Table N-4. Aquatic Toxicity Values for Phenolic Compounds[a]

Chemical	Species Mean Acute Value		Final Acute Value
	Fathead Minnow	*Daphnia magna*	
2,4-Dimethylphenol	17,000	4,800	2,700
2-Methylphenol	14,000	12,000	1,500
3-Methylphenol	55,900	>99,500[b]	1,300
4-Methylphenol	16,500	15,000	570
Phenol	29,500	12,600	3,200

a Values are as listed in MDEQ's Rule 57 Aquatic Values Data Sheets. Species Mean Acute Values represent the geometric mean of LC50s for each species.

b Value is for *Daphnia pulicaria*.

Table N-5. Acute Toxicity of Iron to Aquatic Species[a].

Scientific name	Common name	Duration (days)	LC50 or EC50[b] (µg/L)	Reference
Asellus aquaticus	Aquatic sowbug	4.0	124,000	Martin and Holdich, 1986
Austropotamobius pallipes pallipes	Crayfish	4.0	18,500	Boutet and Chaisemartin, 1973
Crangonyx pseudogracilis	Amphipod	4.0	120,000	Martin and Holdich, 1986
Daphnia magna	Water flea	2.0	9,600	Biesinger and Christensen, 1972
Daphnia magna	Water flea	2.0	76,000	Cabejszek and Stasiak, 1960
Daphnia magna	Water flea	2.0	8,600	Belabed et al., 1994
Daphnia magna	Water flea	2.0	12,000	Belabed et al., 1994
Daphnia magna	Water flea	2.0	6,400	Belabed et al., 1994
Daphnia magna	Water flea	2.0	13,000	Belabed et al., 1994
Daphnia pulex	Water flea	2.0	9,000	Lee, 1976
Daphnia pulex	Water flea	2.0	2,800	Lee, 1976
Diaptomus forbesi	Calanoid copepod	2.0	86,500	Mullick and Konar, 1991
Gambusia affinis	Western mosquitofish	4.0	26,000	Wallen et al., 1957
Ictalurus punctatus	Channel catfish	4.0	>500,000	Clemens and Sneed, 1959
Morone saxatilis	Striped bass	4.0	4,000	Hughes, 1973
Morone saxatilis	Striped bass	4.0	6,000	Hughes, 1973
Orconectes limosus	Crayfish	4.0	32,000	Boutet and Chaisemartin, 1973
Tubifex tubifex	Tubificid worm	4.0	101,840	Khangarot, 1991

a Data obtained from U.S. EPA's AQUIRE database.

b Concentration associated with 50% mortality (LC50) or 50% mortality + immobilization (EC50).

Table N-6. Major Ion Toxicity in TIE Samples Predicted by the Freshwater Salinity Toxicity Relationship Model.

Sample	GM-5	GM-25A	GM-25B	GM-26A	GM-26C	GM-27A	SP-2
Calcium (mg/L)	110	170	740	160	130	210	160
Magnesium (mg/L)	170	230	570	160	160	180	130
Potassium (mg/L)	6.2	6.3	15	4.4	6.8	5.1	4.6
Sodium (mg/L)	34	24	57	20	46	18	13
Chloride (mg/L)[a]	17	11	36	19	19	16	12
Alkalinity (mg/L as $CaCO_3$)[b]	1,040	1,520	2,292	1,010	1,050	1,370	890
Bicarbonate (mg/L)[c]	1,268	1,853	2,794	1,231	1,280	1,670	1,085
Sulfate (mg/L)[a]	9	29	17	10	<5	5.2	<5
Charge balance	-1.57%	-8.11%	+59.05%[d]	+1.91%	+1.11%	-6.40%	+6.34%
Predicted LC50, Fathead minnow	76%	52%	33%	78%	75%	58%	89%
Predicted LC50, *Daphnia magna*	81%	56%	34%	84%	81%	64%	96%
Predicted TU_A, Fathead minnow	1.3	1.9	3.0	1.3	1.3	1.7	1.1
Predicted TU_A, *Daphnia magna*	1.2	1.8	2.9	1.2	1.2	1.6	1.0

a Measured for TIE sample SP-2 only; for other samples, estimated as the average of concentrations previously reported for the same well boring.

b Average of initial and renewal sample results reported by the toxicity testing laboratory.

c Bicarbonate concentration (mg/L as HCO_3) calculated by STR model from alkalinity (mg/L as $CaCO_3$).

d Remainder of charge balance attributable to acetate ions (acetic acid), hydrogen ions, and iron.

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Appendix O

Numerical Groundwater Flow Model

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The Kingsford Products Company

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NUMERICAL GROUNDWATER FLOW MODEL

KINGSFORD, MICHIGAN

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Infrastructure, buildings, environment, communications

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Numerical Groundwater Flow Model

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A USGS Groundwater Flow Model Report.

B Hydrogeologic Framework, Areas Exceeding Acute GSI Criteria, and Results of Aquifer Pumping Tests Performed in the Vicinity of the Menominee River.

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1. Introduction

ARCADIS, on behalf of Ford Motor Company (Ford) and The Kingsford Products Company (KPC) has prepared a steady-state, three-dimensional groundwater flow model (model) for Kingsford, Michigan. The model was prepared to aid in the design of a groundwater extraction and treatment system to capture groundwater adjacent to the Menominee River in the Study Area where groundwater exceeds acute groundwater surface water interface (GSI) criteria.

The model was developed based on a steady-state, three-dimensional, finite-difference groundwater-flow model prepared by the United States Geological Survey (USGS) and presented in the *Ground-Water Flow and Contributing Areas to Public-Supply Wells in Kingsford and Iron Mountain, Michigan*, (Luukkonen and Westjohn, 2001) (see Appendix A). The model encompasses the communities of Kingsford and Iron Mountain and surrounding areas. The study area location map is shown on Figure 1. The USGS model was refined using site-specific geologic and hydrogeologic data derived from the ongoing remedial investigation and quantitative estimates of hydraulic parameters derived from pumping tests performed by ARCADIS at the Site along the Menominee River between 2001 and 2003 (see Appendix B). The USGS model finite-difference grid was also refined to evaluate the appropriate number and spacing of groundwater extraction wells to be installed along the Menominee River.

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1.1 Purpose and Scope

The purpose of this report is to describe the development, calibration, and application of a groundwater flow model of the Study Area located in Kingsford, Michigan

It is critical to develop the purpose and objectives of the groundwater model prior to the model development. The area of the model domain, the dimensions of individual calculation cells, and the process of model calibration depend on the ultimate use of the model. The purpose of this modeling effort is to provide a groundwater flow model capable of simulating groundwater flow within the Study Area at a sufficient level of detail and precision to provide a basis for design of the groundwater extraction and treatment system.

To this end, the groundwater flow model has the following specific initial objectives:

§ Achieve a more complete understanding of the hydrogeologic framework of the Study Area.

- Develop a groundwater flow model that accurately reflects the hydrogeologic conditions at the Site.

- Reliably simulate the groundwater flow system within the vicinity of the Ford/Kingsford Site to simulate and evaluate the potential effects of the installation of a groundwater extraction system.

- Evaluate the installation of groundwater extraction system under several different scenarios.

It is anticipated that the groundwater model will be used to predict the performance of the groundwater extraction system once operation has begun. Additional Site data may be incorporated into the model as it is developed through site investigation and remedial system operation.

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2. Conceptual Model

A conceptual groundwater flow model succinctly describes the principal components of a groundwater flow system and is developed from regional, local, and site-specific data. The primary components of a groundwater flow system include (1) areal extent, configuration, and types of aquifers and aquitards, (2) hydraulic properties of aquifers and aquitards, (3) natural groundwater recharge and discharge zones, (4) anthropogenic groundwater sources and sinks, and (5) areal and vertical distribution of groundwater hydraulic head potential. These aquifer system components serve as a framework for the construction of a numerical groundwater flow model.

Prior to constructing the numerical model, a conceptual model was developed to interpret geology, hydrogeology, recharge, surface water, and other factors that may influence the construction of the numerical model. The objective of the conceptual model was to identify the major hydrologic and hydrogeologic processes and boundary conditions that influence the behavior of the groundwater flow system. The conceptual model also served to identify potential data gaps, as well as the various assumptions necessary for the development of the numerical model.

This section describes the geologic and hydrogeologic framework and the conceptual movement of groundwater within the Study Area. In addition, a discussion of the hydrologic boundaries and hydraulic properties is also presented in this section.

Available hydrogeologic data were evaluated to define the groundwater flow system. Published data from the USGS, as well as site-specific investigation reports, were used to develop the hydrogeologic framework. Hydrogeologic characteristics including hydraulic conductivity, hydraulic gradients, porosity, and recharge were obtained from direct field measurements, where available, or interpreted from published information. Regional hydrogeologic features including areal extent and thickness of aquifers and bedrock topography were adopted from the USGS model. Groundwater levels within the Study Area were obtained from routine groundwater elevation monitoring at the Site between 2002 and 2003. The groundwater elevation data were then utilized for the calibration of the groundwater flow model. Groundwater extraction rates for the Kingsford and Iron Mountain municipal well fields were obtained from the USGS Model report.

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2.1 Site Setting

The City of Kingsford is located in southwestern Dickinson County, in the south-central part of Michigan's Upper Peninsula (Figure 1). The City of Kingsford is bounded by the Menominee River on the west and south, by Breitung Township on the southeast, and by the City of Iron Mountain on the north and east.

The Site is located within a light industrial, commercial, and residential area of the City of Kingsford, and includes the former Plant site, the Northeast and Southwest pits, and the Riverside Disposal Area. The Study Area is primarily defined by the Menominee River to the west and south, Michigan State Highway 95 (Carpenter Avenue) to the east, and Woodward Avenue to the north. The Study Area is mostly within Sections 1, 2, 11, and 12 of Township 39 North, Range 31 West of Dickinson County. The Site and Study Area are presented in Figure 2.

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2.1.1 Topography

The land surface immediately north of the City of Kingsford is dominated by Pine Mountain with an elevation over 1,500 feet above mean sea level (ft msl). South of Pine Mountain to Woodward Avenue in the City of Kingsford, the topography is irregular and contains numerous hills and hollows which are between 1,120 and 1,140 ft msl.

Three landform terraces dominate the topography, from Woodward Avenue south to the Menominee River. The uppermost terrace (Upper Terrace) consists of a large tract of land with a flat surface at an elevation of approximately 1,120 ft msl, which extends across most of the City of Kingsford. This terrace contains occasional isolated, enclosed depressions up to 40 feet deep that are glacial kettle landforms. These kettles are natural features formed by blocks of ice that broke off receding continental glaciers and subsequently melted. Several of the glacial kettle features have been filled in and are no longer visible in the topographic surface (NE and SW Pits).

The Upper Terrace is separated from a second terrace (Lower Terrace) by a steep northwest-southeast downward trending slope in the topography. The Lower Terrace occupies the southern and southwestern portions of the Study Area. The topography on the Lower Terrace is more irregular than the Upper Terrace, with the exception of the kettle features. From the Upper Terrace, the ground surface on the Lower Terrace slopes gradually downward to the south to approximately 1,080 ft msl, before rising gradually to an elevation of approximately 1,110 ft msl. The southern edge of the

Lower Terrace slopes steeply down to a third terrace (Riverside Terrace), which occurs along the banks of the Menominee River at an elevation of approximately 1,045 ft msl. The Riverside Terrace is found along the south and western sides of the City of Kingsford and Breitung Township. Further north and west, the Upper Terrace directly abuts the Menominee River.

2.2 Regional Geology

Precambrian metamorphosed igneous and sedimentary rocks make up the bedrock that underlies the City of Kingsford and Breitung Township (Milstein, 1987). Two bedrock formations are present in the area; the Lower Precambrian Quinnesec consisting of altered volcanic rocks, and the Middle Precambrian Michigamme Slate, consisting of primarily slate. A major east-west striking fault, downthrown to the north, has been documented by the USGS (Bayley, Dutton, and Lamey, 1966) to exist within the Study Area, south of the former Ford Plant. The fault separates the Quinnesec and Michigamme Formations, as well as Green Schist and Oligoclase-Amphibole regional metamorphic isofacies.

Bedrock is overlain by glacially derived unconsolidated deposits, except at locations south of the Ford Airport and close to the Menominee River, where bedrock is occasionally exposed. Examination of the bedrock outcrops reveal that apart from a few fractures, the bedrock is massive and therefore unlikely to transmit significant volumes of groundwater. The bedrock forms a depression beneath the central portion of the Study Area, with a monadnock located within the depression.

The unconsolidated deposits in the area include glacial moraines, present south (Menominee Moraine) and north (Marenisco Moraine) of the area (Westjohn et. al., 1996; Martin, 1995), and glaciofluvial (glacial river) deposits that form the uppermost glacial deposits in the area. These deposits may be pro-graded outwash that was deposited during formation of the Marenisco Moraine. A morphologic feature of the outwash is the presence of glacial kettles.

The unconsolidated deposits that overlie the bedrock consist of a complex sequence of interbedded gravel, sand, silt, and clay, with significant variations both vertically and laterally over short distances. These deposits are consistent with a glaciolacustrine (glacial lake) depositional environment. In some areas of the Study Area, a dense, silt/clay till unit, known as lodgement till, is present on top of the bedrock. Overall, coarser-grain deposits appear to be more abundant in the eastern part of the Study Area

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and the unconsolidated deposits generally become increasingly finer-grain to the south and west.

Finer-grain silt and clay deposits are locally absent in some areas immediately adjacent to the banks of the Menominee River. In these areas, if bedrock is not exposed, a succession of gravel and coarse-grain to medium-grain sand rests on top of bedrock.

The principal soil in the Kingsford area is the Pence sandy loam (Soil Conservation Service [SCS], 1989). The unit is nearly level, well drained, and is typically found on flats and knolls in upland areas. The Channing fine sand loam and Zimmerman fine sand also occur along the Menominee River drainage ways and ridges, respectively (SCS, 1989).

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2.3 Regional Hydrogeology and Hydrology

According to the USGS (Luukkonen and Westjohn, 2001), two regional glacial aquifers underlie the Kingsford and Iron Mountain area. The upper glacial aquifer comprising the upper terrace sand-and-gravel unit consists of 0 to 160 feet of medium to fine-grained sand with varying amount of silt and gravel. The lower outwash aquifer is comprised of approximately 0 to 240 feet of sand and gravel. The two aquifers are generally separated by a lacustrine silt and clay aquitard that ranges in thickness from 0 to 150 feet. The lithologic characteristics of the two aquifers vary locally with facies changes ranging from massive sand units to interbedded sands, gravels, and silt and clay. Similarly, the thickness and lithology of the confining bed is variable on a local scale, ranging from massive, stratified silt and clay beds to alternating beds of silt with fine sand.

The Menominee River is the principal hydrologic feature in the Kingsford area. The river flows to the southeast and forms the southern and western boundaries of the Study Area. Year-round flow and surface water level in the Menominee River is regulated by a number of dams, including a dam operated by Wisconsin Electric Power Company that is located northwest of the City of Kingsford (The Old Ford Dam) and the Big Quinnesec Dam downriver of the city. Apart from the Menominee River, no other surface water features are currently present south of Woodward Avenue.

In addition to Crystal Lake, there are a number of surface water features in the Kingsford area north and northeast of the city. Some of the lakes, such as Chapin Pit, are former iron mines that were subsequently abandoned and flooded.

The average precipitation in the Kingsford and Iron Mountain area is approximately 29 inches/year (NOAA Climate Database, 2004).

2.4 Site Hydrogeology and Stratigraphy

The Site hydrogeology is dominated by the glacial sediments. The town of Kingsford is located within a bedrock scallop feature and sediments are locally thickest within the Menominee River valley. Ongoing site investigation activities conducted by ARCADIS have identified four discreet water bearing zones within the unconsolidated glacial sediments adjacent to and on the east side of the Menominee River. From top to bottom these are referred to as the Zone A, Zone B, Zone C, and Zone D sands. Each of these units is generally separated from the underlying by a semi-confining unit that consists of silts, clays, and very fine-grained sands although in places the Zone B, Zone C, and/or Zone D sands may be in direct hydraulic connection with each other. The Study Area hydrogeology is depicted in cross-section parallel (north to south) and perpendicular (west to east) to the Menominee River in Figures 3 and 4, respectively. Figure 2 shows the location of the cross-sections depicted on Figures 3 and 4.

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The physical characteristics of the unconsolidated glacial deposits (glaciofluvial and glaciolacustrine depositional environments) suggest that groundwater flowing beneath the Study Area follows irregular flow paths. Groundwater flow is in part controlled by the variable thickness and hydraulic conductivity of the saturated deposits. Saturated thickness is strongly influenced by bedrock topography and the water table configuration, both of which vary significantly beneath the Study Area.

Groundwater flowing through the unconsolidated deposits beneath the Kingsford area migrates to the Menominee River. Figure 5 shows the shallow aquifer groundwater flow pattern based on measurements obtained in June 2000. Due to its dense nature, the bedrock is the base of the groundwater flow in the overlying unconsolidated deposits. The hydraulic conductivity of the unconsolidated deposits is variable and corresponds to grain size. Finer-grain sand, silt, and clay have low hydraulic conductivities and hinder groundwater flow. In contrast, coarser-grain sand and gravel have higher hydraulic conductivity and allow groundwater to move more easily through them. The coarser-grain sand and gravel are preferential pathways for transmitting groundwater in the area.

Groundwater level measurements at paired wells indicate that a downward vertical component of the hydraulic gradient is present throughout most of the Study Area, except near the Menominee River where the vertical component of the hydraulic

gradient has always been observed as an upward flow condition. Except during unusual high water events, the groundwater would always vent into the Menominee River, because the pressure head of the groundwater is greater than the surface water of the Menominee River.

2.4.1 Zone A Sands

The Zone A sands correspond to the upper aquifer in the USGS model. The thickness of the Zone A sands range from approximately 40 feet, east of the Menominee River, to greater than 80 feet, west of the river and east of the upper terrace. East of the upper terrace, the Zone A sands consist primarily of massive fine- to medium grained sands with limited gravel content. West of the upper terrace, the sediments contain a higher fraction of medium to coarse sand with gravel and often include intervening silt or clay lenses. Based on the elevation of the top of the Zone A sands and the depth of the Menominee River, it appears that there are areas where the Menominee River channel might incise into the upper most water bearing unit. The Zone A sands are commonly encountered between approximately 1,010 ft msl and 1,080 ft msl.

The Zone A sands vary between confined and unconfined conditions, depending on the nature of the overlying sediments. Pumping tests performed during the siting of the Kingsford municipal wells, report an estimated transmissivity of between 9,100 and 11,400 feet squared per day (ft^2/day)(Luukkonen and Westjohn, 2001). Pumping tests performed by ARCADIS in the Zone A sands at Extraction Wells GMEW-1, GMEW-2, GMEW-5, and GMEW-6 ranged from approximately 600 to 4,700 ft^2/day (Appendix B).

2.4.2 Regional Confining Bed

Within the Study Area the regional confining bed consists primarily of fine sand and silt, with interbedded clay lenses, except beneath portions of the Menominee River where facies changes result in primarily fine sand. Where the confining unit consists of silt and clay (e.g., away from the Menominee River), there is a poor degree of hydraulic communication between the Zone A sands and the underlying Zone B and Zone C sands. However, beneath the Menominee River the occurrence of fine sand rather than silt or clay allow a greater degree of communication.

Pumping tests performed by ARCADIS in the Zone B and Zone C sands resulted in an range of estimated leakance (vertical hydraulic conductivity/layer thickness) for the confining beds of between 2.9×10^{-2} and 4.9×10^{-3} day^{-1} (Appendix B).

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2.4.3 Zone B Sands

The Zone B sands occur between the regional confining bed and a much thinner confining bed (approximately 10 feet thick) immediately above the Zone C sands. This water bearing unit has been encountered along the Menominee River and appears to be laterally discontinuous. Where present along the river, the Zone B sands are often less than 20-feet thick and commonly contain intervening silt/clay beds. The Zone B sands have been observed between approximately 940 and 960 ft msl.

ARCADIS performed a pumping test at Extraction Well GMEW-4R. The estimated transmissivity for this test ranged between 334 ft^2/day for recovery and 602 ft^2/day during pumping.

2.4.4 Zone C and D Sands

Zone C and D sands correspond to the lower aquifer in the USGS model. The Zone C sands are laterally extensive with thickness ranging from approximately 60 to 80 feet; however, the morphologic characteristics vary from massive sands to interbedded sands with gravel and silt lenses. Throughout the majority of the study area the Zone C sands bottom on lodgement till or bedrock, except where the Zone D sands are present. The Zone D sands have been encountered adjacent to the Menominee River beneath a relatively thin silt/clay confining unit that underlies the Zone C sands. The morphology and lithology of the Zone D sands is similar to the Zone C sands, but are treated as a separate water bearing unit because groundwater impacts in these sands adjacent to the Menominee River have not been identified through prior investigations. The Zone C sands are encountered between approximately 860 and 940 ft msl. Where present adjacent to the Menominee River, the Zone D sands have been encountered at approximately 820 and 860 ft msl.

The USGS reported the pumping test results for the Kingsford and Iron Mountain wells in the lower aquifer and estimated transmissivity between 2,800 and 24,100 ft^2/day (Luukkonen and Westjohn, 2001). Pumping tests performed by ARCADIS at GMEW-3, GMEW-7, GMEW-8, and GMEW-9 resulted in an estimated range for transmissivity of the Zone C sands between approximately 1,770 and 3,100 ft^2/day (Appendix B).

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3. Groundwater Flow Model Construction

ARCADIS used the simulation program MODFLOW 2000 to develop a numerical groundwater flow model for the Site. The primary phases in the development of a numerical groundwater flow model include the construction of a finite-difference grid for the model area, specification of model layer top and bottom elevations, assignment of boundary conditions, specification of hydraulic parameter values and zones, and selection of appropriate water-level measurements for calibration of the model. This information forms the basis for subsequent calibration of the numerical model to observed groundwater flow conditions in the Study Area.

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3.1 Model Selection and Description

MODFLOW 2000 is a publicly available groundwater flow simulation program developed by the USGS (Harbaugh, Banta, Hill, and McDonald, 2000). The program is thoroughly documented, widely used by consultants, government agencies, and researchers, and is consistently accepted in regulatory and litigation proceedings.

In addition to its attributes of widespread use and acceptance, MODFLOW 2000 was also chosen because of its versatile simulation features. MODFLOW 2000 can simulate transient or steady-state saturated groundwater flow in one, two, or three dimensions and offers a variety of boundary conditions including specified head, areal recharge, injection or extraction wells, evapotranspiration, drains, and rivers or streams. Aquifers simulated by MODFLOW 2000 can be confined or unconfined, or convertible between confined and unconfined conditions. Regarding the hydrostratigraphy of the Site, which consists of a multi-layered geologic system with variable unit thicknesses and boundary conditions, MODFLOW 2000's three-dimensional capability and boundary condition versatility are essential for the proper simulation of groundwater flow conditions.

MODFLOW 2000 simulates transient, three-dimensional groundwater flow through porous media described by the following partial differential equation for a constant density fluid:

$$\frac{\partial}{\partial x}\left(K_{xx}\frac{\partial h}{\partial x}\right)+\frac{\partial}{\partial y}\left(K_{yy}\frac{\partial h}{\partial y}\right)+\frac{\partial}{\partial z}\left(K_{zz}\frac{\partial h}{\partial z}\right)-W=S_s\frac{\partial h}{\partial t} \qquad (3\text{-}1)$$

Where

> **K_{xx}**, **K_{yy}**, and **K_{zz}** are values of hydraulic conductivity along the x, y, and z coordinate axes, which are assumed to be parallel to the major axes of hydraulic conductivity [L/T];
>
> **h** is the potentiometric head [L];
>
> **W** is a volumetric flux per unit volume and represents sources and/or sinks of water [1/T];
>
> **S_s** is the specific storage of the porous material [1/L]; and
>
> **t** is time [T];

In Equation (3-1), the hydraulic parameters (i.e., K_{xx}, K_{yy}, K_{zz}, and S_s) may vary in space but not in time; the source/sink (W) terms may vary in both space and time.

MODFLOW 2000 uses a numerical approximation technique known as the method of finite differences to solve Equation 3-1 on a computer. Using a block-centered finite-difference approach, MODFLOW 2000 replaces the continuous system represented in Equation 3-1 by a set of discrete points in space and time. This process of discretization ultimately leads to a system of simultaneous linear algebraic equations. MODFLOW solves these finite-difference equations with one of the following four iterative solution techniques: strongly implicit procedure, slice-successive over-relaxation, preconditioned conjugate gradients, or LINK Algebraic Multigrid. The solution of the finite-difference equations produces time-varying values of head at each of the discrete points representing the real aquifer system. Given a sufficient number of discrete points, the simulated values of head yield close approximations of the head distributions given by exact analytical solutions to Equation 3-1.

The Department of Defense Groundwater Modeling System (GMS) software package, version 5.0, was used to pre- and post-process the MODFLOW 2000 simulation.

3.2 Model Discretization

The finite-difference technique employed in MODFLOW 2000 to simulate hydraulic head distributions in multi-aquifer systems requires areal and vertical discretization or subdivision of the continuous groundwater system into a set of discrete blocks that

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form a three-dimensional model grid. In the block-centered finite-difference formulation used in MODFLOW 2000, the center of each grid block corresponds to a computational point or node. When MODFLOW 2000 solves the set of linear algebraic finite-difference equations for the complete set of blocks, the solution yields values of hydraulic head at each node in the three-dimensional grid.

Water levels computed for each block represent an average water level over the volume of the block. Thus, adequate discretization (e.g., a sufficiently fine grid) is required to resolve features of interest and yet not be computationally burdensome. MODFLOW 2000 allows the use of variable grid spacing so that a model may have a finer grid in areas of interest where greater accuracy is required and a coarser grid in areas requiring less detail.

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The model domain and boundary conditions used for this model are generally the same as the USGS model. The exceptions include refinement of the grid spacing to allow analysis of groundwater extraction along the Menominee River and the addition of several model layers to provide more flexibility in simulating the stratigraphy identified at the Site.

The three-dimensional grid developed for the Site covers approximately 64 square miles (Figure 6). Except for the southern boundary, the boundaries of the model are located at distances from the area where the extraction system will be installed to minimize the effect of boundaries on model simulations of groundwater extraction. The southern boundary is defined as a no flow boundary to simulate the presence of near surface and bedrock outcropping in this area. The finite difference grid is composed of 704 rows and 343 columns with 8 vertical layers for a total of 1,931,776 nodes. The model uses 20 feet by 20 feet areal grid spacing in the vicinity of where the extraction system will be installed (along the Menominee River) to provide increased computational refinement for this area. This spacing increases to 500 feet by 1,000 feet at the limits of the active model domain. To avoid numerical and mass balance problems, adjacent cells were changed by no more than 50 percent.

The extent of the finite-difference grid and the areal grid spacing were selected for the purpose of simulating both regional groundwater flow conditions around the Study Area and detailed hydraulic head distributions in the vicinity of the proposed groundwater extraction system. The extent chosen for the grid also ensures adequate incorporation of regional groundwater flow features that could affect conditions at the proposed groundwater extraction system. The areal grid spacing specified within the Study Area allows for sufficiently detailed hydraulic heads to match water levels and groundwater

flow directions that have been measured. Meeting both of these objectives was needed for the calibration of the three-dimensional groundwater flow model.

The model was subdivided into eight layers to provide more flexibility in simulating the stratigraphy identified on Site. As the stratigraphy of the sedimentary units is reasonably flat, the model layer geometry was developed by contouring the bottom of the Zone A sands and using uniform thickness for the underlying water-bearing units and confining beds. The generalized conceptual model stratigraphy is shown on Figure 7. The vertical discretization of the model is summarized below:

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- Layer one (top layer) was used to simulate the Zone A sands and overlying sediments. The top of layer one was derived from a digital elevation model for the Kingsford and Iron Mountain area.
- Layers two and three were used to simulate the regional confining bed and thicker portions of the Zone A sands.
- Layer four was used to simulate the Zone B sands and the thicker portions of the regional confining bed.
- Layer five was used to simulate the thin confining bed that separates the Zone B and Zone C sands.
- Layers six and seven were used to simulate The Zone C sands to account for the variability of the unit and underlying bedrock topography.
- Layer eight was used to simulate the Zone D sands and lodgement till.

Material property zonation was used within each of the layers as necessary to account for the fact that the top of bedrock extends above the groundwater table in the groundwater system comprising the glacial sediments.

3.3 Model Boundary Conditions

As indicated earlier, ARCADIS adopted the extent of the model domain and boundary conditions from the USGS model.

Boundary conditions are used to distinguish the area within the model domain from the adjacent groundwater system or hydrologic features. The boundaries of the model can

be specified several ways. They can occur at the edges of the model and at locations within the model domain where external features are represented, such as rivers, wells, and recharge. Boundary conditions at locations within the model domain typically relate to the simulation of natural recharge and stream channel recharge/discharge. This section presents a discussion of the boundary conditions simulated at the edges of the model domain.

Minor modifications to the USGS model boundary conditions were made in the model to account for site-specific data including staff gauge measurements in the Menominee River or elimination of constant head boundaries adjacent to the river or in deeper model layers. These modifications are identified in the sections that follow.

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The external boundaries of the model are generally located at distances from the proposed groundwater extraction system to minimize the influence of the boundaries on the simulated groundwater flow patterns in this area. External model boundaries were chosen to coincide with natural surface-water discharge points or topographic ridges, which act as groundwater flow divides. The modeled area encompasses the lower portion of the drainage basins of the Brule and Little Popple Rivers, west of the Menominee River, and Lake Antoine to the north. The Study Area is bounded by topographic highs to the north and west. The western perimeter of the model is treated as a constant head boundary in model layer 1, using the prescribed heads from the USGS model. The Menominee and Brule Rivers constitute the southern perimeter of the model. The eastern boundary is the extension of the topographic highs from the north to the Menominee River at the southeastern corner, represented as a no-flow boundary. Where constant head or river boundaries are not prescribed, MODFLOW 2000 defaults to a no-flow boundary. This is the condition beneath the bottom of the model and along the northern and eastern perimeter.

Figure 8 shows the plan view map of the model domain and the assigned boundary types. Constant head boundaries are shown on Figure 8 using orange squares.

3.3.1 River Boundary Conditions

The Menominee River, Brule River, Little Popple Creek, Lake Antoine, Crystal Lake, Cowboy Lake, and two mine shafts were simulated using the river package in MODFLOW 2000. The location of the river boundaries are shown on Figure 8 using blue crosses.

The interaction between the surface water bodies and groundwater system is simulated as a function of the head difference between the water table and the surface water, as well as the degree of hydraulic communication. River boundaries simulate the interaction with the uppermost hydrostratigraphic unit through the specification of a surface-water stage, bed elevation, and a conductance term. River boundaries allow groundwater to flow from or to the aquifer, based on the difference between the stage and simulated water level (head) in the groundwater system. If the simulated water level in the groundwater system is below the stage elevation, the river cell recharges water into the groundwater system based on the bed conductance. If the stage in the surface water body is lower than the groundwater system, groundwater flows in to the surface water body (river cell).

The stages and bed elevations for the surface water bodies were based on USGS topographic maps, dam elevations, and staff gauge measurements during the interval for calibration. The conductance terms for the river cells were calculated from the individual grid cell dimensions and the calibrated hydraulic conductivity of the groundwater system, assuming a unit bed thickness.

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3.3.2 Kingsford and Iron Mountain Municipal Wells

Pumping at the Kingsford and Iron Mountain well fields was simulated using the well package in MODFLOW 2000. Use of the well package requires specification of well screen interval and average pumping rate (for steady-state simulation) during the period of interest. ARCADIS used the pumping rate information from the USGS model. Table 1 summarizes the average flow rates used for the municipal wells that were simulated in the model during calibration and identifies which model layer is being pumped.

After model calibration, ARCADIS used the well package to simulate pumping from groundwater extraction wells along the Menominee River in the Zone A, Zone B, and Zone C sands. The flow rates and well construction for these simulations are discussed in Section 5.

3.3.3 Recharge

Recharge (percolation of infiltrating precipitation) was applied to the uppermost active model layer (layer 1). Net areal recharge from precipitation within the Study Area was the primary source of inflow to the model. The net recharge is defined as the total recharge from precipitation and re-infiltrated runoff that is available to the water-table

after taking into account loses from evapotranspiration and surface-water runoff. Estimates of recharge were obtained from the previous modeling efforts and published climatic data. The USGS model used average discharge data from gauging stations to estimate the upper limit of recharge, as it represents base flow (groundwater contributions) and surface water run-off. According to the data cited in their report, during the period between 1996 and 1997, the average annual discharge in the Menominee River at Niagara, Wisconsin was 13.8 inches per year. The USGS model assumed that recharge rates were zero, where bedrock and till outcrop at the surface, and 9 inches per year throughout the rest of their model.

ARCADIS used a similar recharge zonation scheme in this model, except that the bedrock and till areas received a minor amount of recharge. The calibrated estimate of annual recharge was 9 inches per year (2.1×10^{-3} feet per day) across the areas that did not exhibit bedrock or till at the ground surface and 0.2 inches per year (5.0×10^{-5} feet per day) at the bedrock and till locations. The recharge zonation for the calibrated model is shown on Figure 9.

3.4 Hydraulic Parameters

ARCADIS used the results of pumping tests to parameterize the region of the model in the vicinity of the proposed groundwater extraction system. For the external areas, ARCADIS maintained the initial estimates of the hydraulic conductivity that were developed in the USGS model.

Initial estimates of horizontal and vertical hydraulic conductivity in the individual model layers were developed using the transmissivity and leakance values from the corresponding pumping tests in the Zone A, Zone B, and Zone C sands. The areal extent of the individual hydrostratigraphic units and confining beds were mapped using the boring logs, cross-sections, geologic visualization, and bedrock topography previously developed during the site investigation. During the calibration process, parameter values were adjusted up or down as necessary to improve the match between the simulated and observed heads. Throughout the process, the parameter values were compared with the site-specific pumping test results to ensure that the model assumptions regarding horizontal and vertical hydraulic conductivity (leakance) were consistent. During the process, it was recognized that the variability of the morphology and lithology within the water-bearing units and confining beds was significant. Therefore, the hydraulic parameters were prescribed using zones to account for the influence of the depositional environment on the hydraulic behavior and to map the 3-dimensional nature of the bedrock.

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The resulting assemblage of model assumptions is deemed an accurate representation for the available information and resources of the hydrogeologic system at the Site and will allow confident use of the model to evaluate groundwater pumping requirements to prevent discharge of groundwater exceeding acute GSI criteria to the Menominee River.

3.4.1 Model Hydraulic Parameter Zonation

Once the extent of the individual stratigraphic units was mapped to the individual model layers, ARCADIS reviewed the morphological and lithological trends within each unit to develop facies maps for the sediments using polygons in the GMS system. The area included within each polygon was determined based on review of morphologic characteristics (i.e., massive sand, graded sands, or interbedded sands and silts) and lithologic trends (percent gravel, sand, fine materials within the water bearing units or confining beds). After grouping similar facies, effective horizontal and vertical hydraulic conductivity values were calculated and mapped to the MODFLOW model for simulation and evaluation. The areal and vertical extents of bedrock were also mapped in this fashion

The final hydraulic parameters for the calibrated model zonation for each layer is summarized in Table 2 and presented in plan view on Figures 10 through 17. Throughout the model layers, bedrock was treated using a single value for horizontal hydraulic conductivity (0.001 feet/day) and vertical hydraulic conductivity (0.0001 feet/day).

In general, vertical anisotropy (e.g., ratio of horizontal to vertical hydraulic conductivity) within the sand units was varied between approximately 10 and 15 for less stratified morphologies and between 120 and 390 for interbedded morphologies. Horizontal hydraulic conductivity for the water bearing units ranged between approximately 20 and 32 feet per day for fine sand to silty sand to approximately 160 feet per day for sand and gravel mixtures.

The horizontal hydraulic conductivity of the confining beds ranged from 0.01 feet per day for interbedded silt and clay to approximately 5 feet per day for silt or sandy silt. The vertical anisotropy for the confining beds ranged from approximately 120 to 1,200.

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3.5 Calibration Targets

Calibration targets are a set of field measurements, typically groundwater elevations, used to test the ability of a model to reproduce observed conditions within a groundwater flow system. For the calibration of a steady-state (time-invariant) model, the goal in selecting calibration targets is to define a set of water-level measurements that represent the average elevation of the water-table or potentiometric surface at locations throughout the model domain.

Table 3 lists the monitoring wells and water-level elevations chosen for the calibration of the groundwater flow model. This list of calibration targets represents water-level elevations measured between January 2002 and December 2003. The model calibration targets were selected to provide groundwater levels within each of the Zone A, Zone B, Zone C, and Zone D sands. Monitoring wells under the influence of the vapor extraction system, groundwater extraction wells, or gas-phase methane were specifically excluded from the target list. There are a total of 92 calibration targets. There are 53, 13, 17, and 9 calibration targets in Zone A sands (model layers 1 and 2), Zone B sands (model layer 4), Zone C sands (model layers 6 and 7), and Zone D sands (model layer 8), respectively. The locations of the calibration targets are shown on the calibrated groundwater flow maps for Zone A, Zone B, Zone C, and Zone D sands in Figures 19 through 23.

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4. Groundwater Flow Model Calibration

Calibration of a groundwater flow model refers to the process of adjusting model parameters to obtain a reasonable match between observed and simulated water levels. In general, model calibration is an iterative procedure that involves variation of hydraulic properties or boundary conditions to achieve the best match between observed and simulated water levels. During model calibration, site-specific pumping test data were used as the primary constraints for the calibrated values of hydraulic conductivity based on the greater reliability of the data.

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4.1 Calibration Procedure

For best results, the calibration of a model should rely on discrete measurements to produce answers free of contouring interpretations. In the calibration of a groundwater flow model, use of point data eliminates the potential for interpretive bias that may result from attempting to match a contoured potentiometric surface (Anderson and Woessner, 1992). The groundwater flow model for the Site was calibrated using 92 water-level calibration targets measured in monitoring wells distributed throughout the hydrogeologic units identified (see Table 3).

As a further goal for the calibration of a model, the principle of parameter parsimony is applied to achieve an adequate calibration of the model through the use of the fewest number of model parameters. It should be noted that the use of greater numbers of model parameters during model calibration creates a situation in which different combinations of model parameter values produce similar calibration results. In this case, the model calibration parameters are called non-unique. Following the principle of parameter parsimony reduces the degree of non-uniqueness and results in more reliable calibrated parameter values. The information gathered for the conceptual model guides any decision to add model parameters (e.g., zones of hydraulic conductivity) to the model during the calibration process. Therefore, in the absence of hydrogeologic evidence, the simpler model is preferred.

During the calibration procedure initial estimates for the model parameters are systematically varied to minimize the difference between simulated and observed water levels at a set of calibration targets. Model parameters were adjusted in a systematic manner until a reasonable fit was obtained between the model solution and the target water-elevation data.

The primary criterion for evaluating the calibration of a groundwater flow model is the difference between simulated and observed water levels (heads) at a set of calibration targets. A residual or model error, e_i, is defined as the difference between the observed and simulated hydraulic head measured at a target location:

$$e_i = h_i - \hat{h}_i \quad (4\text{-}1)$$

where h_i is the measured value of hydraulic head and $\hat{h}_i$ is the simulated value at a specific target location. A residual with a negative sign indicates overprediction by the model (i.e., the simulated head is higher than the measured value). Conversely, a positive residual indicates underprediction.

The automatic parameter estimation procedure seeks to minimize an objective function defined by the residual sum of squares (RSS):

$$RSS = \sum_{i=1}^{n} \left(h_i - \hat{h}_i\right)^2 \quad (4\text{-}2)$$

where n is the total number of calibration targets.

The root mean square error (RMSE), which normalizes the RSS by the number of calibration targets, is defined as follows:

$$RMSE = \sqrt{\frac{RSS}{n}} \quad (4\text{-}3)$$

The RSME is useful for comparing model calibrations because it is normalized by the number of calibration targets and thus provides a measure of the average RSS error associated with each point. The RMSE is the primary measure of calibration used in this report. Another calibration measure is the mean of all residuals, or mean error (ME):

$$ME = \frac{1}{n} \sum_{i=1}^{n} e_i \quad (4\text{-}4)$$

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A mean residual significantly different from zero indicates model bias. Lastly, the mean average error (MAE) provides an indication of the magnitude of the mean error as shown below:

$$MAE = \frac{1}{n}\sum_{i=1}^{n} / e_i / \qquad (4\text{-}5)$$

4.2 Calibration Results

The groundwater flow model calibration required numerous individual computer simulations. The values and shapes of the various parameter zones in the model were gradually varied until a reasonable solution was achieved in agreement with the conceptual model. The 92 water-level targets selected for the calibration of the groundwater flow model were used to evaluate the calibration of the model through the analysis of (1) simulated hydraulic head distributions in the model layers, (2) residual statistics, and (3) estimated hydraulic parameters.

4.2.1 Simulated Hydraulic Head Distribution

As a part of evaluating the calibration of the numerical model, simulated potentiometric surface maps are prepared for each of the water-bearing unit model layers to depict groundwater flow conditions in the Zone A, Zone B, and Zone C sands. The regional (model-wide) simulated groundwater flow pattern for model layer one is shown on Figure 18. Figures 19 and 20 show the calibrated groundwater flow patterns and residuals associated with the Zone A sands in model layer one and two, respectively. Figure 21 shows the calibrated groundwater flow patterns for the Zone B sands in model layer four. The calibrated groundwater flow patterns for the Zone C sands (model layers six and seven) and Zone D sands (model layer eight) are shown in Figures 22 through 24, respectively. Figure 25 depicts groundwater flow in cross-section from the area near the northeast pit to the Menominee River.

From the simulated groundwater contours in the aquifer units (Figures 19 through 24), it is apparent that in the vicinity of the proposed groundwater extraction system groundwater flows primarily to the west toward the Menominee River. This result is in general agreement with prior groundwater flow interpretations and is consistent with the distribution of groundwater impacts identified at the Site. Review of the groundwater flow in cross-section indicates that flow originating near the Northeast pit is generally downward (consistent with local recharge) to the Zone C sands and then horizontal toward the Menominee River, where flow is directed upward to the point of

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discharge. This flow pattern in cross-section is also consistent with the lateral and vertical distribution of groundwater impacts, which indicates that the shallow portion of the groundwater system (Zone A sands) exhibits significantly less impacts in the area between the Northeast pit and the Menominee River.

4.2.2 Analysis of Residuals

The calibration of the groundwater flow model for the Study Area sought to minimize the RMS error (Equation 4-3) computed for the 92 water-level calibration targets. Table 4 lists the simulated water elevations and model residuals for each of the calibration targets. The maps of simulated hydraulic heads (Figure 18 through 23) show the spatial distribution of these residuals in the Zone A, Zone B, and Zone C sands, respectively..

The largest computed residual for the entire set of targets is 16.67 feet. Approximately 90 percent of the targets have residuals of 5.0 feet or less. Overall, the model shows a good match to the measured water levels in the Study Area. Figure 26 shows graphically the agreement between observed and simulated water levels (heads) at the calibration targets. As shown on Figure 26, six target points fall outside the plus/minus 10-precent range of observed heads, which was 65 feet.

Residual statistics (summarized on Figure 26) for the calibrated groundwater flow model indicate good agreement between simulated and measured groundwater elevations. The calculated RMS error for the calibrated model was 3.41, which is approximately 5 percent of the 65-foot range of observed heads for the entire model domain. The calculated residual ME, -0.37 feet, is close to zero indicating limited bias. The MAE was calculated to be 2.30 feet. These statistics show that a high level of calibration standard has been achieved in this modeling effort and overall, the model shows a very good match to the measured water levels in the Study Area.

4.2.3 Model Flow Balance

The calibrated model solution was obtained with virtually no flow balance error (see Table 5). Evaluation of the calibrated model flow budget summarized on Table 5 indicates that the majority of the water input into the model (approximately 53 percent) is derived from recharge. Constant head boundaries also contributed a significant portion of inflow (40 percent), with river cells contributing the least (approximately 7 percent). Note that river cells were used to simulate the lakes (Lake Antoine, Crystal Lake, and Cowboy Lake) and mine shafts, as well as the Menominee River, Brule

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River, and Little Popple River in the model. The majority of the inflow (greater than 90 percent) is due to the lakes that are simulated using the river cells. The majority of the outflow from the model is through leakage to the river boundaries, particularly to the Menominee River.

4.2.3.1 Sensitivity Analysis

4.2.4 Methods of Analysis

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Once the model was calibrated, a sensitivity analysis was performed to identify which model input parameters have the most impact on the degree of calibration. The model sensitivity analysis was conducted in general accordance with the procedures presented in American Society for Testing and Materials (ASTM) Standard D 5447 Application of a Ground-Water Flow Model to a Site-Specific Problem (ASTM, 1994).

Sensitivity analysis was performed to examine the effects of uncertainties in each of the model calibration parameters. The response of the calibrated model (as indicated by the RMSE) to changes in the horizontal hydraulic conductivity, vertical hydraulic conductivity, river bed conductance, and recharge in the study area was evaluated through a discrete sensitivity analysis. In this analysis, one parameter at a time was varied while all other parameters were held constant. For horizontal conductivity, the parameter values within the model layers and zones corresponding to the Zone A, Zone B, Zone C, and Zone D sands were varied at the same time using a multiplier on the calibrated model values. Similarly, vertical conductivity of the aquitard (confining beds) layers and zones were varied by the same factor for each sensitivity run. Riverbed conductance values were varied only within the vicinity of the proposed groundwater extraction system, while recharge parameters were varied across the model domain.

To quantify parameter sensitivity, each calibrated parameter was initially varied by a factor of plus or minus 20 percent (e.g., multiplied by a factor 1.2 and 0.8). A normalized RMSE was then calculated for the revised values by dividing the resulting RMSE by the value for the calibrated model (3.41) and multiplying by 100. The range of parameter variation for each parameter's sensitivity analysis was determined based on the magnitude of change in the normalized RMSE and model stability. The latter criterion, model stability, was assessed by evaluating mass balance errors and the number of dry cells, which could make the model unreliable or unrepresentative. The former criterion, change in normalized RMSE, was quantitatively evaluated for each sensitivity simulation that converged without significant mass balance error or dry

cells. A model is characterized as being "insensitive" to a model parameter when the magnitude of change in the normalized RMSE is less than the change in the parameter. Conversely, a model is termed "sensitive" or "highly sensitive" to a parameter when the change in the magnitude of the normalized RMSE error is greater or much greater than the change in the parameter. Therefore, the range of each parameter variation was determined by the model sensitivity. The results of the sensitivity analysis are discussed in the sections that follow.

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4.2.4.1 Horizontal Hydraulic Conductivity

The hydraulic conductivity values in each aquifer matrix zone for all layers except layer 3 (regional confining bed) were multiplied by 0.5, 0.8, 1.2, and 1.5. The resulting RMS errors are summarized in Table 6 and graphed on Figure 27. Based on the relative change in computed RMS errors for these sensitivity simulations, it appears that the model is relatively insensitive to minor changes in horizontal hydraulic conductivity, as increasing or decreasing hydraulic conductivity by 20 percent results in a change in RMSE of approximately 3 percent. In response to a 50-percent increase in hydraulic conductivity, the RMSE increased only 10-percent; however, at a decrease of 50-percent, the RMSE increased nearly 40 percent, which is the largest observed change in RMSE for the sensitivity analysis. These results indicate that model is sensitive to a reduction in hydraulic conductivity, but relatively insensitive to modest increases.

As shown on Figure 27, the calibrated model is located at the local minimum RMSE, indicating that the calibrated model estimates of hydraulic conductivity provide the best overall results.

4.2.4.2 Vertical Hydraulic Conductivity (Leakance)

The vertical hydraulic conductivity (leakance) values for the aquitard units in all layers except for layer 8 were multiplied by 0.5, 0.5, 1.2, and 1.5 to evaluate the calibrated model's sensitivity to this parameter. The resulting normalized RMSE (see Table 6) are graphed on Figure 27. As shown in Table 6 and on Figure 27, the model is insensitive to increases and decreases in vertical hydraulic conductivity for the aquitard matrix with resulting increases of approximately 5 and 11 percent in RMSE when values are decreased or increased by a range of 50 percent.

The low degree of change in the RMSE with changes in vertical hydraulic conductivity indicates that the model is insensitive to range of values considered in the sensitivity

analysis. Given the very small relative changes in RMSE as a result of a wide range of this parameter, it is unlikely that a significant improvement in the model can be achieved by considering a wider range of parameter values. While a larger range of vertical conductivity could be evaluated, this would result in model leakance values that would be inconsistent with the results of the pumping tests near the Menominee River.

4.2.4.3 Recharge

Areally distributed recharge (infiltrating precipitation) is the primary source of water in the groundwater flow model. The areally distributed recharge rates used in the calibrated model (see Figure 9) were multiplied by a factor of 0.8, 0.9, 1.1, and 1.2 to evaluate the model's sensitivity to recharge. The results are summarized in Table 6 and plotted on Figure 27.

As shown on Figure 27, the model is somewhat sensitive to the amount of recharge. Relatively minor decreases in the recharge rate result in a proportional increase in RMSE. The model is less sensitive to increasing recharge rates, in fact, a 10 percent increase in the recharge rate resulted in almost no change in the RMSE. However, an increase of 20 percent in recharge results in a more proportional increase in RMSE. Recharge appears to be the most sensitive parameter in the model.

4.2.4.4 River Bed Conductance

The Menominee River is the primary outlet for groundwater in the model. The calibrated model river conductance values were multiplied by 0.5, 0.8, 1.2, and 1.5. As shown in Table 6 and on Figure 27, the resulting changes in RMSE were minor with changes of 50 percent resulting in an RMSE change of 8 and 2 percent. The river conductance appears to be the least sensitive parameter in the model.

4.2.5 Summary of Sensitivity Analysis Results

Results of the sensitivity analysis indicate that the model is relatively insensitive to variations in vertical hydraulic conductivity and river conductance over a plus/minus 50-percent range of the calibrated model values. The sensitivity analysis results indicate that horizontal hydraulic conductivity is slightly more sensitive to change with the greatest influence occurring with a substantive decrease. The most significant model sensitivity is recharge. Because recharge is a sensitive parameter, the quality of information used to determine it is important. Recharge for the aquifer was based on

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the rate used by the USGS model with a comparison to actual Site precipitation data which indicates that it is appropriate. It is believed that recharge is defined adequately for the intent of the modeling effort.

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5. Groundwater Pumping Simulations

ARCADIS used the calibrated groundwater flow model in conjunction with simulated pumping to evaluate the configuration and flow rates of extraction wells in the Zone A, Zone B, and Zone C sands to capture a plume of groundwater that exceeds MDEQ acute GSI criteria adjacent to the Menominee River. The rationale for the definition of the reaches along the Menominee River requiring capture is presented in the ARCADIS document "*Hydrogeologic Framework, Areas Exceeding Acute GSI Criteria, and Results of Aquifer Pumping Tests Performed in the Vicinity of the Menominee River*", which is included in Appendix B.

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Groundwater flow and particle tracking simulations, using MODPATH (Pollack, 1994), were performed to aid in the design of the groundwater extraction system. Based on the analysis presented in Appendix B, the following areas adjacent to the Menominee River in the Zone A, Zone B, and Zone C sands exceed the acute GSI criteria and were targeted for the evaluation:

- Zone A sands – between Monitoring Wells GM-78 and GM-79.
- Zone B sands – between Soil Borings GMSB-112 and GMSB-113.
- Zone B sands – between Monitoring Wells GM-66A/B and GMSB-63A/B.
- Zone D sands – there are no exceedances of acute GSI criteria.

Numerous groundwater flow and particle tracking simulations were performed to evaluate the optimal configuration of the extraction well arrays and to determine the pumping rates required to maintain capture of the plume in the target areas. There were two constraints that were used to guide the evaluation of the capture zone analysis:

- The draft Consent Judgment requires that an inward hydraulic gradient (in permeable zones) be maintained continuously where groundwater exceeds (acute) GSI criteria at a maximum distance of 70 feet landward from the ordinary high water mark in the Menominee River. For purposes of this analysis, it was assumed that if an extraction well ceased pumping, the pumping rate on the adjacent pumping wells (within that same zone) would have the capability of being

increased by 50 percent and at that rate the system would be capable of maintaining the inward gradient. In other words, under average pumping conditions each well is pumped a minimum of 2/3 of its maximum rate so that if an adjacent well (within the same zone) ceases operation the adjacent wells pumping rates can be increased by 50 percent.

§ The pumping rates used in the scenarios were based on a consideration of the hydraulic capabilities of the permeable zones being pumped (well yield) and engineering constraints on the range of pumping rates provided by available pumps. For example, our experience with existing Extraction Well GMEW-2 suggests the maximum rate for pumping a well screened in the Zone A sands is 15 gallons per minute (gpm), due to the hydraulic properties of the Zone A sands and the limited available drawdown. The grundfos pump (the brand of pump to be used in the extraction system) that provides this pumping rate is Model # 16S, which has the flexibility to pump within the range of 10 to 20 gpm. The simulations performed for the Zone A sands are based on pumping every well at 10 gpm. For the Zone C sands, the maximum pumpage rate was assumed to be 30 gpm. The simulations performed for the Zone C sands are based on pumping every well at 20 gpm (Model #25S pumps between 18 and 32 gpm). For Zone B sands, the maximum pumping rate is assumed to be 15 gpm and the simulations for the Zone B sands assumed a pumping rate of 10 gpm.

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Two scenarios considering different off-set distances from the Menominee River were evaluated to assess the optimal well spacing and flow rates necessary to meet the requirements for capture subject to the practical engineering constraints described above.

§ Scenario One: Pumping wells off-set 70 feet from, and parallel to Menominee River (e.g., on a line 70-foot from the river) except on the southern end of the extraction system at the location of the treatment plant.

§ Scenario Two: Pumping wells off-set up to a maximum of 350 feet from Menominee River, where space is available

The results of the evaluation for each of the two scenarios are presented in the sections that follow.

5.1 Particle Tracking Simulations

Particle tracking simulations were used to assess capture of the plume in the two areas described above. The primary objectives were to ensure capture of the upgradient plume exceeding acute GSI criteria while creating a downgradient stagnation zone (due to pumping) that would be located, on average 70 feet or less from the ordinary high water level of the Menominee River.

Particles were placed in cells between the Menominee River and a north-south line approximately 350 feet from the river (e.g., Scenario Two pumping well locations) to assess the downgradient capture and stagnation zone location in the Zone A, Zone B, and Zone C sands.

By convention, the starting location of each particle is shown with green dots and the ending location is shown using orange dots. The lines between the dots indicate the path of the groundwater flow under conditions of advective transport only.

For the particle tracking analysis, the porosity of the Zone A, Zone B, and Zone C sands was assumed to be 30 percent.

5.1.1 Scenario One – Pumping Wells Placed 70 Feet from Menominee River

Scenario 1 is the most conservative scenario modeled since the extraction well arrays for each of the sands parallel the river and are located at a distance of 70 feet from the river. The advantage of this approach is that the stagnation zone would be located at a distance that is less than 70 feet from the river, provided that the pumping is adequate to capture flow between the individual wells.

There are 23 wells in the Zone A sands spaced approximately 80 feet apart, except at the northern end of the well network, where the wells are spaced approximately 60 feet apart. There are three wells in the Zone B sands spaced at approximately 160 feet and 11 wells in the Zone C sands spaced at approximately 200 feet apart. The pumping rates for the wells in the Zone A, Zone B, and Zone C sands are 10, 10, and 20 gpm, respectively.

Figures 28, 29, and 30 show the results for the Zone A, Zone B , and Zone C sands, respectively for Scenario One. These figures show the extraction well network is capable of capturing upgradient groundwater exceeding acute GSI criteria in each of the target areas in Zone A, Zone B, and Zone C sands, respectively, as none of the

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particles upgradient of the seventy-foot line escape the extraction well network. The total extraction rate for this scenario is 480 gpm (Zone A sands, 230 gpm; Zone B sands, 30 gpm; & Zone C sands, 220 gpm).

Comparison of the flow balance and budget with the calibrated model (see Table 7) indicates that the groundwater discharge to the river under Scenario One is reduced by 90,270 cubic feet per day (cfd) or approximately 470 gpm. Net leakage from the river increased by approximately 2,048 cfd (approximately 10 gpm), which combined with the decreased discharge makes up the combined pumping rate of 480 gpm. This minor increase in river leakage due to pumpage indicates that the pumping wells would create a minor flow reversal from the Menominee River.

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5.1.2 Scenario Two – Pumping Wells Placed up to 350 Feet from Menominee River

Scenario 2 was considered to evaluate the capture performance at a greater distance from the river where possible, to minimize flow contributions from the river. Wells in the Zone C sands on the northern end of the extraction system would parallel the river at a distance of about 70 feet along the inside of the narrow corridor between the river and the steep bluff. South of the corridor the wells in all three sand zones would be located primarily in a north-south line that passes through existing Extraction Well GMEW-8 (which would be used as one of the extraction wells) and intersects with the southern wells in the Zone A sands extraction well array, near the treatment plant.

There are 21 wells in the Zone A sands spaced approximately 80 feet apart, except at the northern end of the well network, where the wells are spaced approximately 60 feet apart. There are three wells in the Zone B sands spaced at approximately 160 feet and 10 wells in the Zone C sands spaced at approximately 200 feet apart. The pumping rate for the wells in the Zone A, Zone B, and Zone C sands are 10, 10, and 20 gpm, respectively.

Figures 31, 32, and 33 show the results for the Zone A, Zone B, and Zone C sands, respectively, for Scenario Two. As shown, the extraction wells capture the particles placed between the pumping wells and the seventy-foot line from the river, which indicates that the stagnation zone is seventy feet or less from the river. The total extraction rate for this scenario is 440 gpm (Zone A sands, 210 gpm; Zone B sands, 30 gpm; and Zone C sands, 200 gpm).

Comparison of the Scenario Two flow balance and budget with Scenario One (see Table 7) indicates that discharge to the river increased by approximately 5,703 cfd (30

gpm), which is essentially the difference between pumping rates in the two scenarios. River leakage into the model does not significantly change between the two pumping scenarios, indicating that locating the wells further from the river as in Scenario Two would still result in a minor flow contribution from the Menominee River.

6. Conclusions and Recommendations

6.1 Conclusions

D R A F T

Based upon the development of the conceptual model, construction of the three-dimensional finite-difference model, calibration, sensitivity analysis, and model simulation, the following conclusions are presented:

- The conceptual model properly characterizes salient features of the Ford/Kingsford Site including bedrock surface topography, groundwater levels, boundary conditions, groundwater pumping locations and rates, and groundwater/surface-water interaction.

- The calibrated model adequately captures the major features of the groundwater flow system. The elevation, shape, magnitude, gradient, and position of the potentiometric surface are comparable to that simulated by the calibrated model.

- The calibration of the groundwater flow model for the Study Area sought to minimize the RMSE computed for the water-level calibration targets. Evaluation of the residual statistics indicates that the model is accurately calibrated to the Study Area targets. Overall, the model shows a good match to the measured water levels in the Study Area. All but six residuals fall within the 10 percent range of observed water-level elevations (65-foot difference in observed water levels) with 90 percent of the targets having residuals of 5.0 feet or less. In ARCADIS' opinion, the groundwater flow model accurately reflects the hydrogeologic conditions in the Study Area and can be used to evaluate groundwater flow conditions.

- The results of the sensitivity analysis indicate that the calibrated model provides the best overall selection of model parameters to describe the site-wide behavior of the groundwater system. Significant reduction in model errors could not be accomplished over the range of hydraulic conductivity, recharge, and river bed conductances considered. The sensitivity analysis indicates that the groundwater model is most sensitive to changes in recharge and horizontal hydraulic

conductivity. Lesser sensitivity was demonstrated with respect to vertical conductivity (leakance) and river bed conductance.

§ Results of the simulated groundwater extraction indicate that groundwater flow in the Zone A, Zone B, and Zone C sands can be controlled to capture groundwater that exceeds acute GSI criteria adjacent to the Menominee River under the conditions of Scenarios One or Two. A slightly higher flow rate (480 gpm) is required if the extraction wells are arrayed at the seventy-foot line (Scenario One) than if the well arrays are set back (440 gpm for Scenario Two).

6.2 Recommendations

It is anticipated that the groundwater model will be utilized on an ongoing basis to assist in the evaluation of the performance of the groundwater extraction system.

The groundwater model can be used with confidence to aid in establishing the number and location of hydraulic monitoring points necessary to verify capture performance.

Additional data acquired during the operation of the groundwater extraction system can be used to refine the existing model and assist in evaluating and optimizing on-going performance.

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Table 1. Hydraulic Parameters and Model Zonation, Kingsford, Michigan.

Model Layer	Model Zone	Horizontal Hydraulic Conductivity (feet/day)	Vertical Hydraulic Conductivity (feet/day)	Aquifer Matrix
Layer 1	101	0.001	0.0001	Bedrock
	102	0.01	0.0008	Clay
	103	1	0.08	Silt
	104	4	0.3	Sandy Silt
	105	19.5	0.2	Silty Sand
	106	19.5	1.5	Silty Sand
	107	20.8	1.6	Silty Sand
	108	26	0.2	Silty Sand
	109	78	0.2	Sand
	110	104	8	Sand and Gravel
Layer 2	201	0.001	0.0001	Bedrock
	202	0.2	0.002	Silt
	203	5	0.04	Sandy Silt
	204	13	1	Silty Sand
	205	19.5	0.2	Silty Sand
	206	26	0.2	Silty Sand
	207	32.5	2.5	Silty Sand
	208	52	0.4	Sand
	209	78	6	Sand
	210	78	0.2	Sand
	211	158.6	12.2	Sand and Gravel
Layer 3	301	0.001	0.0001	Bedrock
	302	0.1	0.0008	Silty Clay
	303	1	0.008	Silt
	304	1	0.0008	Silt
	305	2	0.2	Silt
	306	10	0.7	Silty Sand
	307	20	0.4	Silty Sand
	308	25	2.5	Silty Sand
	309	122	12.2	Sand and Gravel
Layer 4	401	0.001	0.0001	Bedrock
	402	1	0.008	Silt
	403	28.6	2.2	Silty Sand
	404	32.5	0.1	Silty Sand
	405	32.5	1	Silty Sand
	406	65	5	Sand
	407	104	8	Sand and Gravel
Layer 5	501	0.001	0.0001	Bedrock
	502	0.2	0.002	Silty Clay
	503	2	0.3	Silt
	504	3	0.03	Silt
	505	13	0.1	Sandy Silt
	506	32.5	0.3	Silty Sand
	507	32.5	0.1	Silty Sand
	508	104	8	Sand and Gravel

Table 1. Hydraulic Parameters and Model Zonation, Kingsford, Michigan.

Model Layer	Model Zone	Horizontal Hydraulic Conductivity (feet/day)	Vertical Hydraulic Conductivity (feet/day)	Aquifer Matrix
Layer 6	601	0.001	0.0001	Bedrock
	602	1	0.008	Silt
	603	8	0.07	Sandy Silt
	604	22.1	0.2	Silty Sand
	605	32.5	2.5	Silty Sand
	606	45.5	3.5	Sand
	607	45.5	0.4	Sand
	608	65	5	Sand
	609	104	8	Sand and Gravel
Layer 7	701	0.001	0.0001	Bedrock
	702	1	0.008	Silt
	703	8	0.07	Sandy Silt
	704	22.1	0.2	Silty Sand
	705	32.5	2.5	Silty Sand
	706	45.5	3.5	Sand
	707	45.5	0.4	Sand
	708	65	5	Sand
	709	104	8	Sand and Gravel
Layer 8	801	0.001	0.0001	Bedrock
	802	5	0.3	Sandy Silt
	803	32.5	2.5	Silty Sand
	804	104	8	Sand and Gravel

Table 2. Municipal Well Pumping Rates, Kingsford, Michigan.

Well Identification	Pumping Rate (gallons per day)	Pumping Rate (cubic feet/day)	Model Layers
Kingsford Wells			
PW-1	150,000	20,053	1
PW-5	280,000	37,433	1
PW-6&7	600,000	80,214	6 and 7
Iron Mountain Wells			
IM-1,2,&3	900,000	120,321	2 and 3
IM-4	320,000	42,781	2 and 3
Total	**2,250,000**	**300,802**	

Table 3. Calibration Targets, Ford/Kingsford Site, Kingsford, Michigan.

Well Identification	Observation Average (feet)	Standard Deviation (feet)	Number of Measurements
Zone A Sand			
BR-2	1,083.43	0.59	5
GM-14	1,081.18	0.81	5
GM-16	1,053.33	0.80	5
GM-18	1,067.08	0.81	5
GM-19	1,065.46	0.77	5
GM-20	1,072.19	1.18	5
GM-24A	1,040.43	0.83	5
GM-24B	1,042.17	0.00	1
GM-25A	1,038.04	0.62	13
GM-26A	1,037.96	0.94	5
GM-27A	1,038.12	0.70	13
GM-28A	1,038.86	0.82	5
GM-29	1,037.46	0.83	5
GM-2A	1,071.48	0.26	5
GM-2C	1,071.66	0.33	3
GM-31	1,040.88	0.89	5
GM-32	1,072.29	0.44	4
GM-34B	1,042.86	0.80	4
GM-36	1,086.96	1.21	5
GM-38A	1,041.79	0.84	4
GM-39	1,044.36	0.74	5
GM-3A	1,072.17	0.35	4
GM-4	1,084.52	0.99	5
GM-40A	1,072.53	0.78	4
GM-40B	1,072.43	0.76	4
GM-42	1,078.41	0.43	4
GM-49	1,042.79	0.73	4
GM-51	1,042.57	0.83	4
GM-53A	1,040.21	0.88	5
GM-59	1,051.00	0.86	5
GM-62A	1,072.61	1.14	4
GM-63A	1,038.12	1.14	4
GM-64A	1,039.63	1.93	5
GM-66A	1,039.43	0.89	5
GM-67	1,046.84	0.71	5
GM-69	1,040.62	0.80	4
GM-73	1,066.42	0.45	5
GM-74	1,065.62	0.45	5
GM-75	1,066.01	0.32	5
GM-78	1,037.71	0.16	9
GM-79	1,037.89	0.15	9
GMPZ-1	1,038.71	1.08	5
GMPZ-2	1,039.01	0.91	5
GMPZ-3	1,038.87	1.21	3
GMPZ-5	1,038.37	0.63	10
GMPZ-6	1,038.60	0.61	10
MP-1S	1,057.63	0.41	5
MP-2S	1,064.84	0.42	4
MP-3S	1,066.25	0.27	3

Table 3. Calibration Targets, Ford/Kingsford Site, Kingsford, Michigan.

Well Identification	Observation Average (feet)	Standard Deviation (feet)	Number of Measurements
Zone A Sand (continued)			
MW-10	1,053.49	0.77	5
MW-6	1,052.65	0.75	4
MW-8	1,059.14	0.66	5
UG-1	1,101.51	0.63	4
Zone B Sand			
GM-25B	1,039.10	1.23	5
GM-26B	1,038.38	0.93	5
GM-28B	1,038.63	0.82	5
GM-37A	1,047.91	0.74	5
GM-38B	1,043.32	0.86	4
GM-3B	1,044.61	0.83	4
GM-6	1,042.45	0.57	13
GM-63B	1,038.90	0.81	5
GM-64B	1,039.69	1.93	5
GM-68	1,068.79	0.36	4
GM-7	1,062.73	0.41	4
GM-77	1,039.55	0.15	9
GM-8	1,035.57	0.87	5
Zone C Sand			
GM-62B	1,052.70	0.54	4
GMPZ-10	1,039.52	1.58	1
GMPZ-4	1,040.75	1.58	5
GM-66B	1,040.35	0.66	13
GM-24C	1,040.27	0.42	4
GMPZ-8	1,038.26	0.18	9
GM-53B	1,040.63	0.84	5
GM-27B	1,039.09	0.98	5
GM-1	1,041.05	0.87	5
GM-38C	1,043.23	0.86	4
GM-11	1,054.49	0.55	5
GM-9	1,038.36	0.83	5
GMPZ-9	1,039.50	0.16	9
GM-17	1,055.52	0.74	4
GM-26C	1,038.26	0.65	13
GM-10	1,039.47	0.96	5
GMPZ-7	1,039.48	0.50	1
Zone D Sand			
GM-12	1,056.16	0.57	5
GM-13	1,055.14	0.39	4
GM-25C	1,040.12	0.91	5
GM-27C	1,039.57	0.94	5
GM-2B	1,047.07	1.21	5
GM-37B	1,046.13	0.66	5
GM-5	1,040.24	0.65	13
GM-62C	1,052.88	0.53	4
UG-6	1,053.78	0.65	5

Table 4. Comparison of Simulated and Observed Heads, Kingsford, Michigan.

Well Identification	Calibration Target (feet)	Simulated Head (feet)	Residual (feet)
Zone A Sand			
BR-2	1,083.43	1,084.05	-0.62
GM-14	1,081.18	1,091.86	-10.68
GM-16	1,053.33	1,051.85	1.48
GM-18	1,067.08	1,050.30	16.78
GM-19	1,065.46	1,057.60	7.86
GM-20	1,072.19	1,068.21	3.98
GM-24A	1,040.43	1,038.73	1.71
GM-24B	1,042.17	1,038.76	3.41
GM-25A	1,038.04	1,038.10	-0.06
GM-26A	1,037.96	1,037.49	0.47
GM-27A	1,038.12	1,038.60	-0.48
GM-28A	1,038.86	1,038.50	0.36
GM-29	1,037.46	1,036.70	0.76
GM-2A	1,071.48	1,070.20	1.28
GM-2C	1,071.66	1,070.24	1.42
GM-31	1,040.88	1,042.61	-1.73
GM-32	1,072.29	1,074.25	-1.96
GM-34B	1,042.86	1,043.21	-0.35
GM-36	1,086.96	1,087.55	-0.59
GM-38A	1,041.79	1,039.85	1.94
GM-39	1,044.36	1,048.52	-4.16
GM-3A	1,072.17	1,069.11	3.06
GM-4	1,084.52	1,077.17	7.35
GM-40A	1,072.53	1,074.63	-2.10
GM-40B	1,072.43	1,074.97	-2.54
GM-42	1,078.41	1,076.31	2.10
GM-49	1,042.79	1,044.91	-2.12
GM-51	1,042.57	1,044.02	-1.45
GM-53A	1,040.21	1,040.18	0.03
GM-59	1,051.00	1,046.80	4.20
GM-62A	1,072.61	1,070.47	2.14
GM-63A	1,038.12	1,038.77	-0.65
GM-64A	1,039.63	1,038.46	1.18
GM-66A	1,039.43	1,039.60	-0.17
GM-67	1,046.84	1,050.20	-3.36
GM-69	1,040.62	1,040.57	0.05
GM-73	1,066.42	1,058.98	7.44
GM-74	1,065.62	1,058.95	6.67
GM-75	1,066.01	1,061.59	4.42
GM-78	1,037.71	1,038.17	-0.46
GM-79	1,037.89	1,038.49	-0.60
GMPZ-1	1,038.71	1,039.08	-0.37
GMPZ-2	1,039.01	1,039.12	-0.11
GMPZ-3	1,038.87	1,038.82	0.05
GMPZ-5	1,038.37	1,039.01	-0.64
GMPZ-6	1,038.60	1,039.10	-0.50
MP-1S	1,057.63	1,056.18	1.45
MP-2S	1,064.84	1,058.22	6.62

Table 4. Comparison of Simulated and Observed Heads, Kingsford, Michigan.

Well Identification	Calibration Target (feet)	Simulated Head (feet)	Residual (feet)
Zone A Sand (continued)			
MP-3S	1,066.25	1,061.71	4.55
MW-10	1,053.49	1,051.37	2.12
MW-6	1,052.65	1,049.21	3.44
MW-8	1,059.14	1,069.13	-9.99
UG-1	1,101.51	1,097.74	3.77
Zone B Sand			
GM-25B	1,039.10	1,040.79	-1.69
GM-26B	1,038.38	1,039.78	-1.40
GM-28B	1,038.63	1,039.66	-1.03
GM-37A	1,047.91	1,053.56	-5.65
GM-38B	1,043.32	1,041.11	2.21
GM-3B	1,044.61	1,045.41	-0.80
GM-6	1,042.45	1,042.51	-0.06
GM-63B	1,038.90	1,039.93	-1.03
GM-64B	1,039.69	1,039.82	-0.13
GM-68	1,068.79	1,069.96	-1.17
GM-7	1,062.73	1,059.26	3.47
GM-77	1,039.55	1,040.39	-0.84
GM-8	1,035.57	1,035.46	0.11
Zone C Sand			
GM-1	1,041.05	1,044.63	-3.58
GM-10	1,039.47	1,039.65	-0.18
GM-11	1,054.49	1,053.38	1.11
GM-17	1,055.52	1,056.50	-0.98
GM-24C	1,040.27	1,042.80	-2.53
GM-26C	1,038.26	1,040.00	-1.73
GM-27B	1,039.09	1,040.26	-1.17
GM-38C	1,043.23	1,045.68	-2.45
GM-53B	1,040.63	1,044.23	-3.60
GM-62B	1,052.70	1,048.96	3.74
GM-66B	1,040.35	1,040.90	-0.55
GM-9	1,038.36	1,039.57	-1.21
GMPZ-10	1,039.52	1,041.20	-1.68
GMPZ-4	1,040.75	1,041.15	-0.40
GMPZ-7	1,039.48	1,041.23	-1.75
Zone D Sand			
GM-12	1,056.16	1,054.26	1.90
GM-13	1,055.14	1,054.11	1.04
GM-25C	1,040.12	1,041.00	-0.88
GM-27C	1,039.57	1,040.29	-0.72
GM-2B	1,047.07	1,051.24	-4.17
GM-37B	1,046.13	1,046.81	-0.67
GM-5	1,040.24	1,041.64	-1.40
GM-62C	1,052.88	1,048.78	4.10
UG-6	1,053.78	1,056.82	-3.04

Table 5. Calibrated Model Flow Balance and Budget, Kingsford, Michigan.

Budget Component	Flow In (Cubic Feet Per Day)	Flow Out (Cubic Feet Per Day)
Contant Head	1,039,931	915,839
Recharge	1,376,045	0
River Leakage	161,711	1,361,060
Wells	0	300,802
Total	2,577,687	2,577,701
Error (percent)	-5.4E-04	

Table 6. Summary of Sensitivity Analysis Results, Kingsford, Michigan.

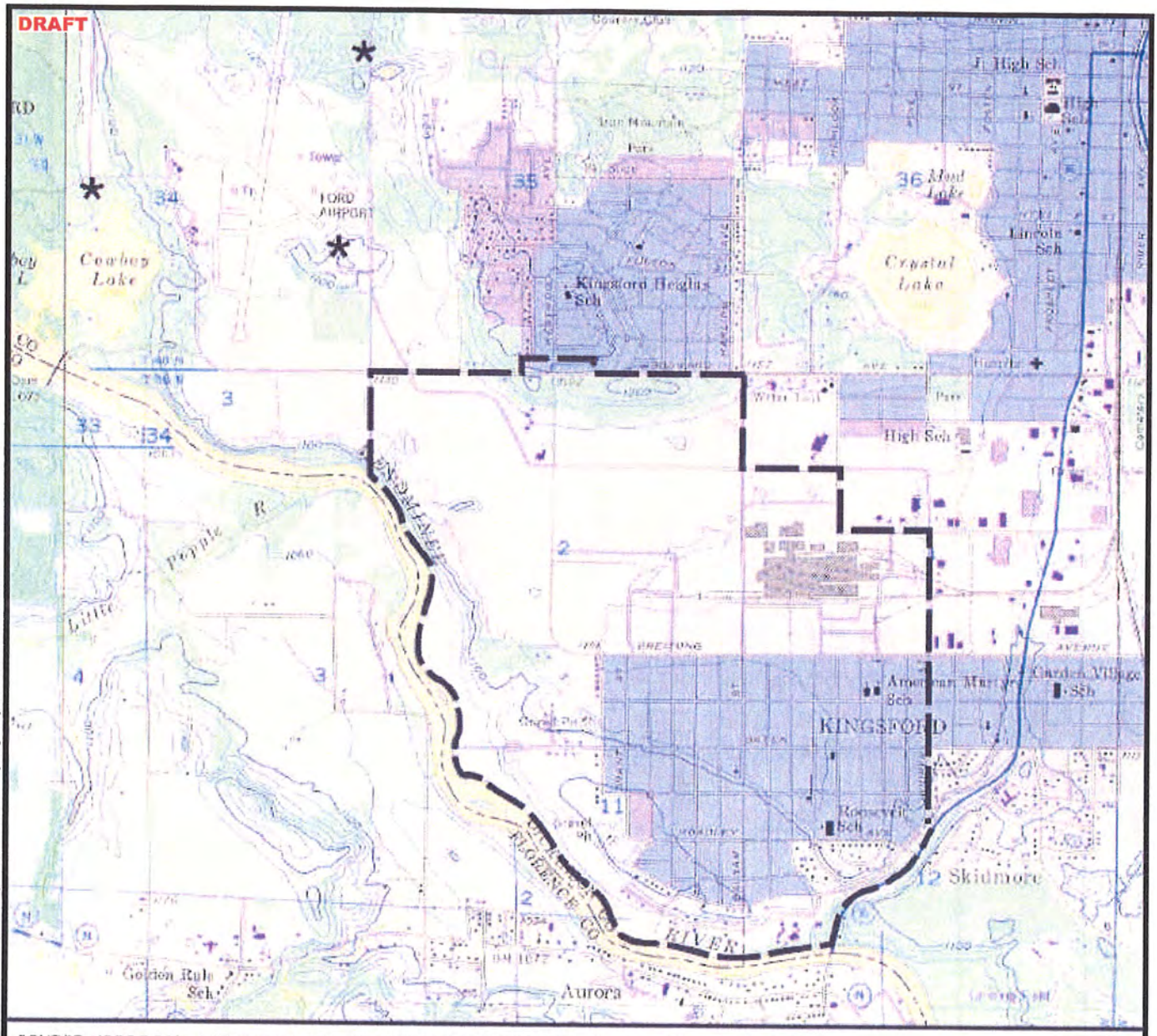
Model Run Multiplier	Normalized Mean Error (percent)	Normalized Absolute Mean Error (percent)	Normalized Root Mean Squared Error (percent)
Horizontal Hydraulic Conductivity (of Aquifer Matrix)			
0.5	-474	142	139
0.8	-48	105	104
1.0	100	100	100
1.2	204	102	102
1.5	329	112	110
Vertical Hydraulic Conductivity (of Aquitard Matrix)			
0.5	116	103	104
0.8	105	100	101
1.0	100	100	100
1.2	99	100	102
1.5	108	110	111
Recharge			
0.8	484	117	120
0.9	289	104	107
1.0	100	100	100
1.1	-85	101	100
1.2	-268	110	106
River Conductance			
0.5	-272	128	108
0.8	0	106	101
1.0	100	100	100
1.2	170	98	100
1.5	243	98	101

Table 7. Pumping Scenarios Budget Comparison, Ford/Kingsford Site, Kingsford, Michigan.

	Scenario One	Calibrated Model	Difference
Budget Component	**Flow In (Cubic Feet Per Day)**	**Flow In (Cubic Feet Per Day)**	**Flow In (Cubic Feet Per Day)**
Contant Head	1,039,966	1,039,931	35
Recharge	1,376,045	1,376,045	0
River Leakage	163,759	161,711	2,048
Wells	0	0	0
Total	**2,579,771**	**2,577,687**	**2,084**
	Flow Out (Cubic Feet Per Day)	**Flow Out (Cubic Feet Per Day)**	**Flow Out (Cubic Feet Per Day)**
Contant Head	915,796	915,839	-43
Recharge	0	0	0
River Leakage	1,270,790	1,361,060	-90,270
Wells	393,202	300,802	92,400
Total	**2,579,789**	**2,577,701**	**2,088**

Table 7. Pumping Scenarios Budget Comparison, Ford/Kingsford Site, Kingsford, Michigan.

	Scenario One	Scenario Two	Difference
Budget Component	**Flow In (Cubic Feet Per Day)**	**Flow In (Cubic Feet Per Day)**	**Flow In (Cubic Feet Per Day)**
Contant Head	1,039,966	1,039,965	1
Recharge	1,376,045	1,376,045	0
River Leakage	163,759	163,693	67
Wells	0	0	0
Total	**2,579,771**	**2,579,703**	**68**
	Flow Out (Cubic Feet Per Day)	**Flow Out (Cubic Feet Per Day)**	**Flow Out (Cubic Feet Per Day)**
Contant Head	915,796	915,798	-2
Recharge	0	0	0
River Leakage	1,270,790	1,276,494	-5,703
Wells	393,202	387,427	5,775
Total	**2,579,789**	**2,579,719**	**70**



SOURCE: USGS 7.5 Minute Topographic Map, IRON MOUNTAIN, MICHIGAN Quadrangle, 1955 Photorevised 1982

N

0 1000 2000 4000

SCALE IN FEET

STUDY AREA

KINGSFORD CITY WATER SUPPLY WELLS

MICHIGAN

User Name : tyarbrough Date\Time : Fri, 28 May 2004 - 12:11pm Path\Name : G:\EN\CAD Files\Ford - Kingsford\hydraulic conductivity.dwg Layout Tab: site location

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STUDY AREA LOCATION MAP

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	1

DRAFT

STUDY AREA SITE MAP

KINGSFORD, MICHIGAN

Area Manager	R. FERREE
Project Director	J. QUINNAN
Task Manager	K. WILSON
Technical Review	K. WILSON

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Figure	2

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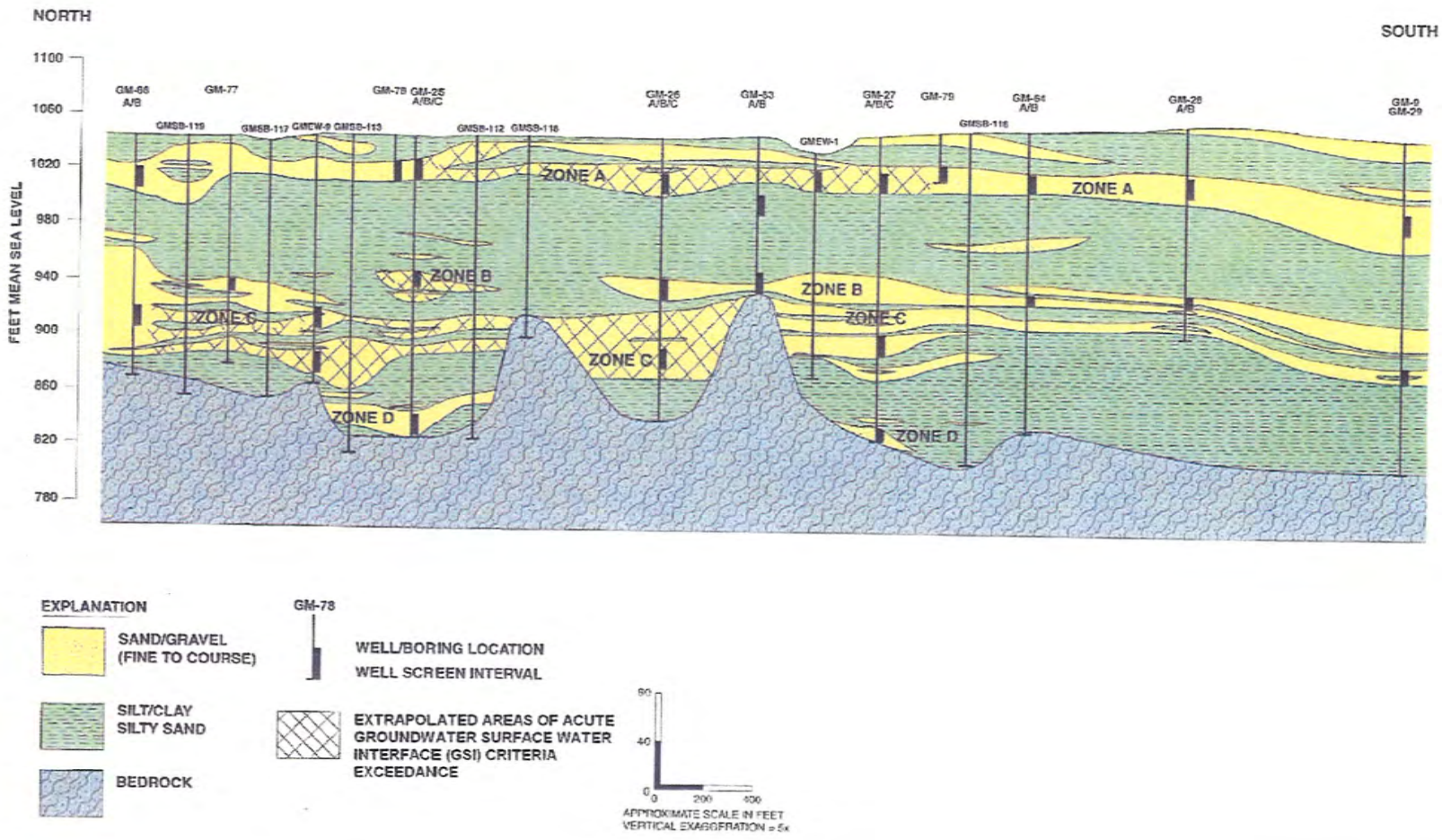
User Name: kpittsley Date/Time: Fri, 28 May 2004 - 12:18pm Path/Name: G:\ENVCAD Flex\Ford - Kingsford\Updates\ conductivity.dwg Layout Tab: site map

DRAFT



User Name: lyobrough Date\Time: Fri, 28 May 2004 - 12:14pm Path\Name: G:\VA\CAD files\Ford - Kingsford\Hydraulic conductivity.dwg Layout Tab: xs section

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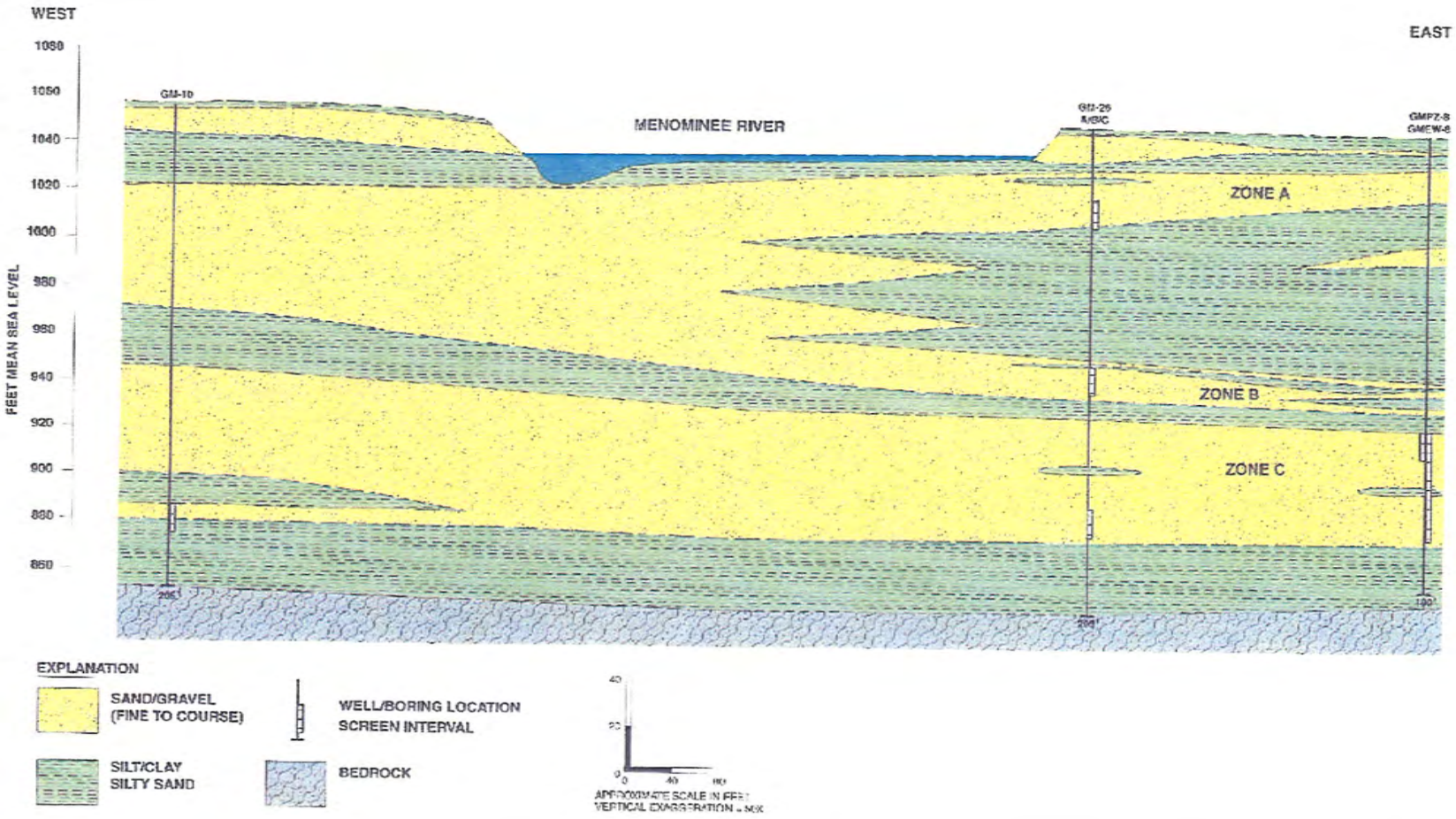
NORTH-SOUTH GEOLOGIC CROSS-SECTION

KINGSFORD, MICHIGAN

Project Number: WI001075.0022
Drawing Date: 28-MAY-04
Figure: 3

DRAFT



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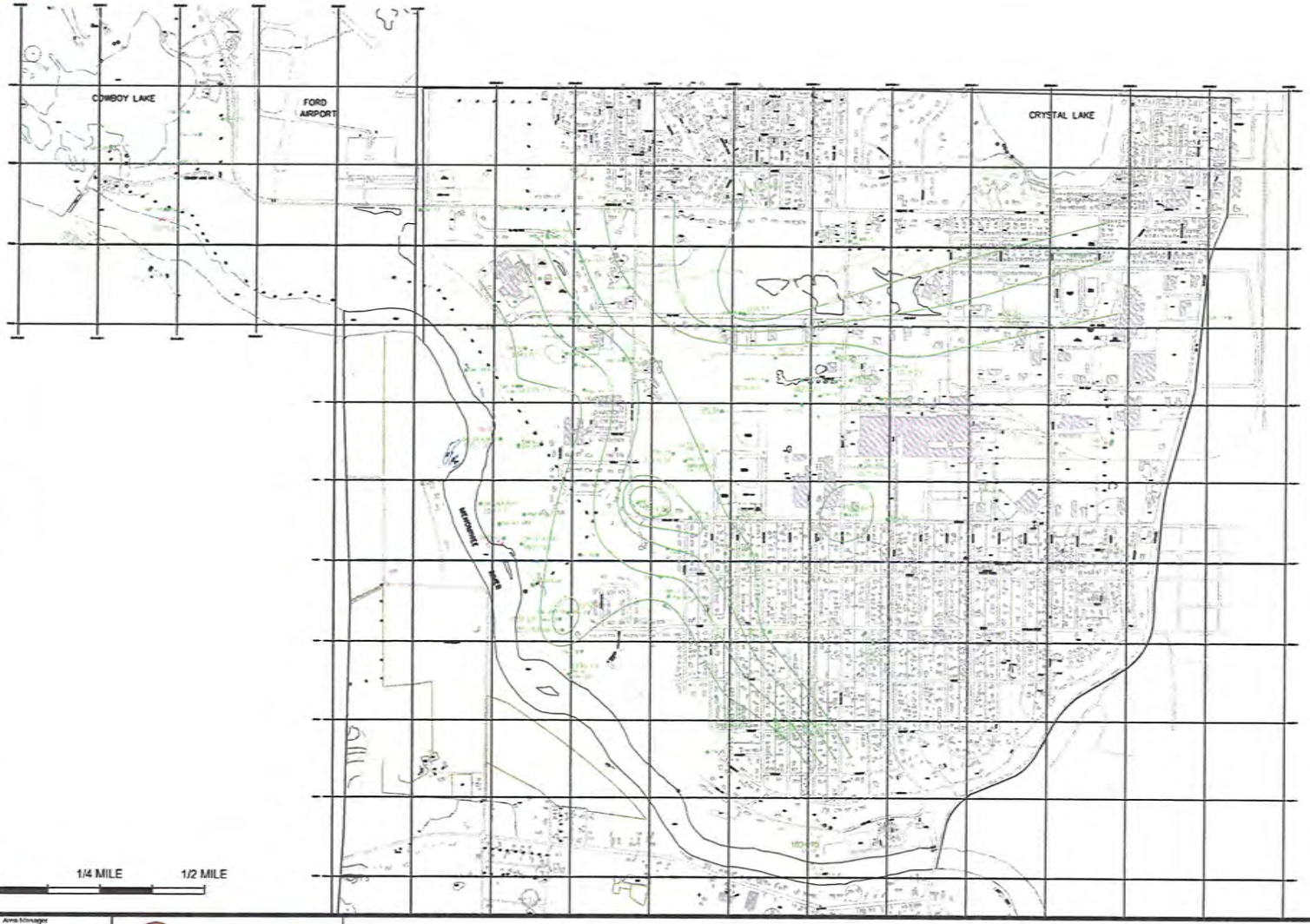
WEST-EAST GEOLOGIC CROSS-SECTION

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	4

DRAFT



LEGEND

- MONITOR WELL LOCATION
- STAFF GAUGE LOCATION
- WATER TABLE ELEVATION CONTOUR (MSL)
- WATER TABLE ELEVATION (MSL)

NOTES

1. THE SHALLOW GROUNDWATER SYSTEM ELEVATIONS ARE BASED ON MONITOR WELLS COMPLETED ABOVE 1000 FEET MEAN SEA LEVEL.
2. HORIZONTAL DATUM BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM. DATE OF PHOTOGRAPHY: 05/04/97 ABRAMS AERIAL SURVEY CORPORATION #26994.2
3. ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

User Name: lyoungh Date\Time: Fri, 28 May 2004 - 12:13pm Path\Name: G:\DWGD files\Ford - Kingsford\hydraulic conductivity.dwg Layout Tab: ge shallow
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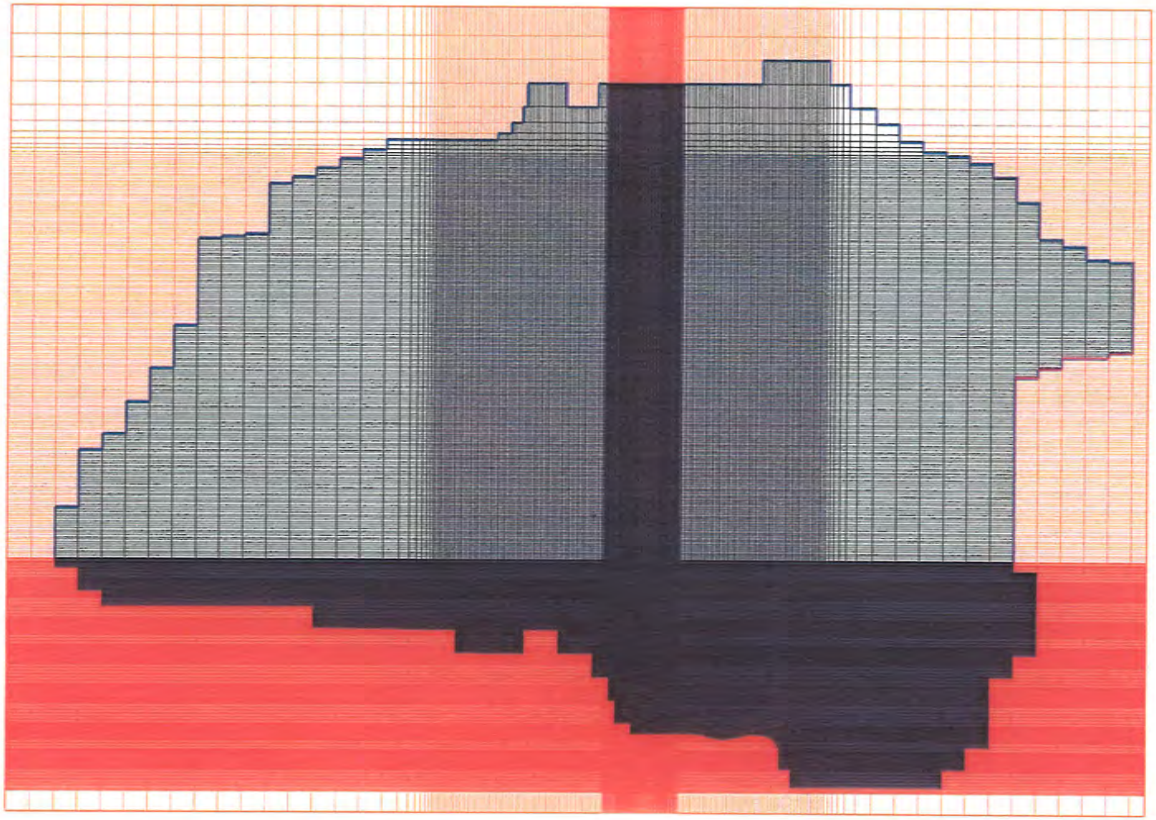
STUDY AREA SHALLOW GROUNDWATER FLOW MAP, JUNE 2000

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	5

DRAFT



LEGEND

CELLS ACTIVE IN MODEL

CELLS INACTIVE IN MODEL

NOTE: CELL DIMENSIONS IN CENTRAL AND SOUTHERN PATTERN OF THE MODEL ARE SMALL SO GRID LINES OVER LAP, GIVING APPEARANCE OF SOLID LINE.

0 1 MILE 2 MILES

User Name: lyzbinski Date/Time: Fri, 28 May 2004 - 12:13pm Path:\\Ems - G:\ENCAD Files\Ford - Kingsford\Hydraulic conductivity.dwg Layout: fdb_ differences grid

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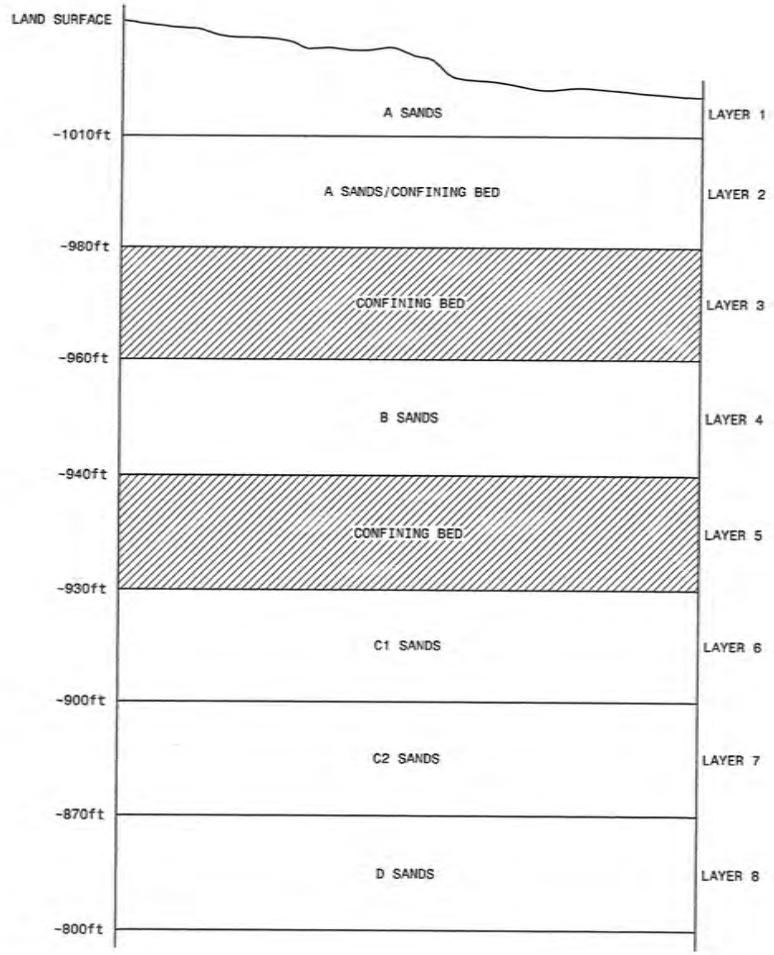
GROUNDWATER MODEL DOMAIN AND FINITE DIFFERENCE GRID

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	6

DRAFT



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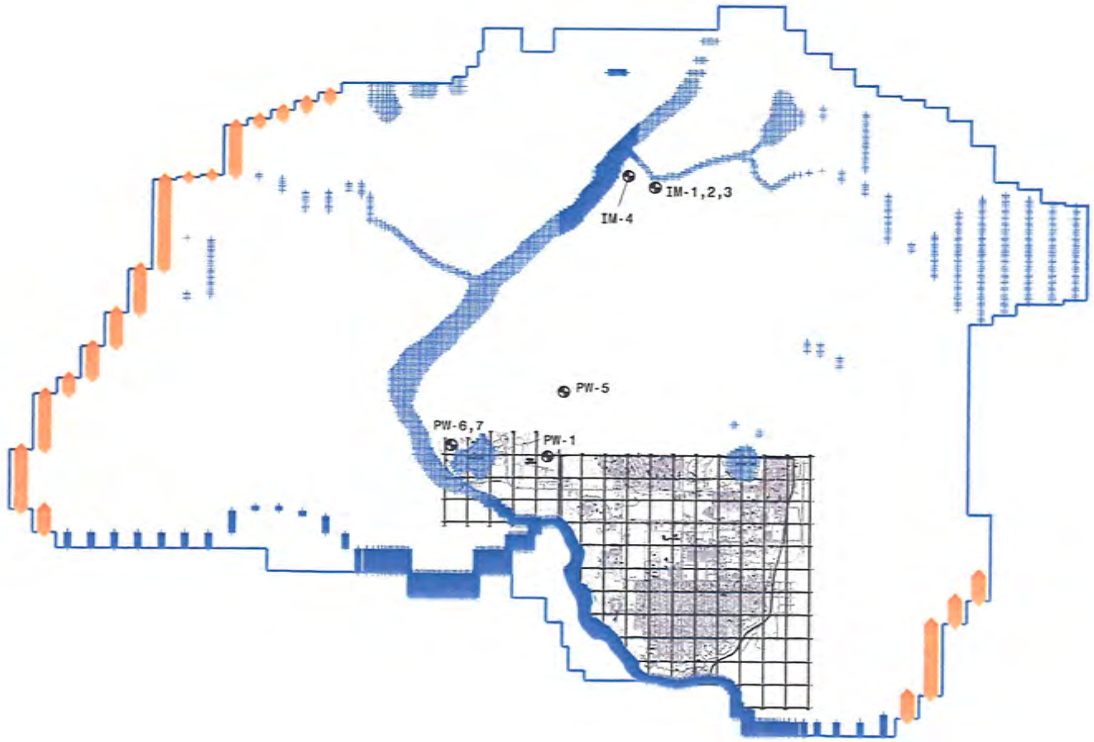
CONCEPTUAL MODEL
STATIGRAPHIC COLUMN

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	7

DRAFT



0 1 MILE 2 MILES

LEGEND

- MUNICIPAL WATER SUPPLY WELL
- RIVER CELL
- CONSTANT HEAD BOUNDARY
- NO-FLOW BOUNDARY

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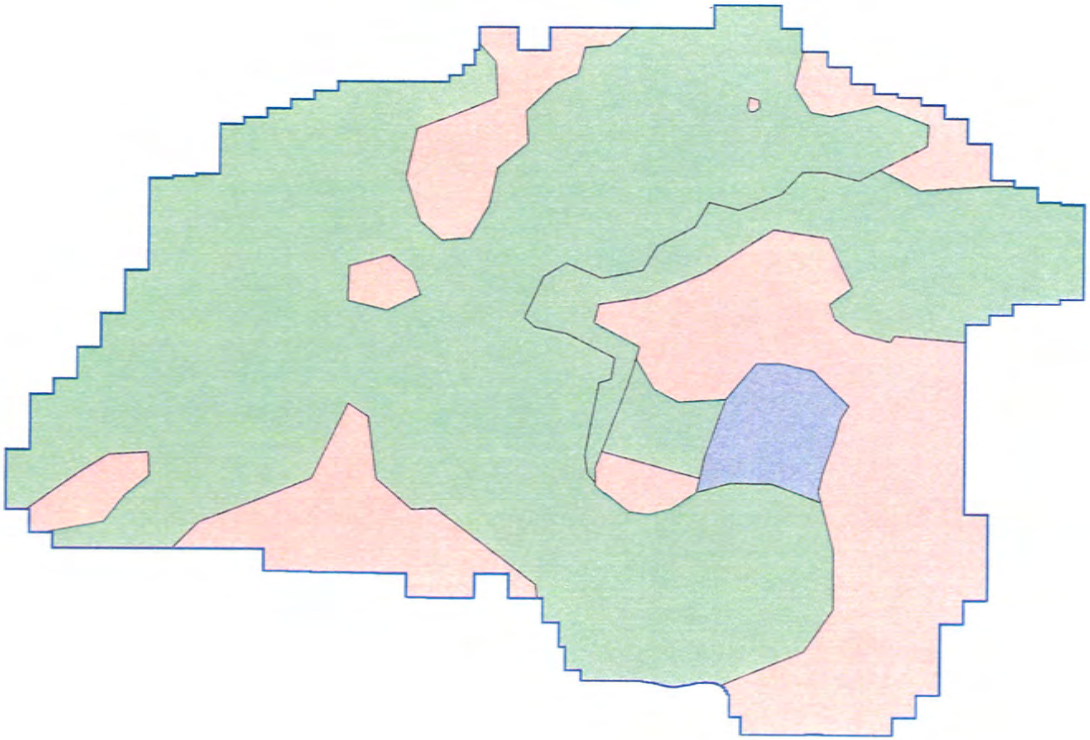
GROUNDWATER MODEL BOUNDARY CONDITIONS

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	8

DRAFT



LEGEND

- 0.000005 feet/day
- 0.002058 feet/day
- 0.00251 feet/day

0 1 MILE 2 MILES

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RECHARGE ZONATION FOR CALIBRATED MODEL

KINGSFORD, MICHIGAN

Project Number: WI001075.0022
Drawing Date: 28-MAY-04
Figure: 9

DRAFT

LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 0.01 feet/day, Kv = 0.0008 feet/day
- Kh = 1.0 feet/day, Kv = 0.08 feet/day
- Kh = 4 feet/day, Kv = 0.3 feet/day
- Kh = 19.5 feet/day, Kv = 0.2 feet/day
- Kh = 19.5 feet/day, Kv = 1.5 feet/day
- Kh = 20.8 feet/day, Kv = 1.6 feet/day
- Kh = 26 feet/day, Kv = 0.2 feet/day
- Kh = 78 feet/day, Kv = 0.2 feet/day
- Kh = 104 feet/day, Kv = 8 feet/day

Kh — Horizontal Hydraulic Conductivity

Kv — Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

User Name: lpitbrough Date/Time: Fri, 28 May 2004 - 12:14pm Path/Name: G:\ARCGIS\TheYard - Kingsford\Hydraulic conductivity.dwg Layout Tab: layer1

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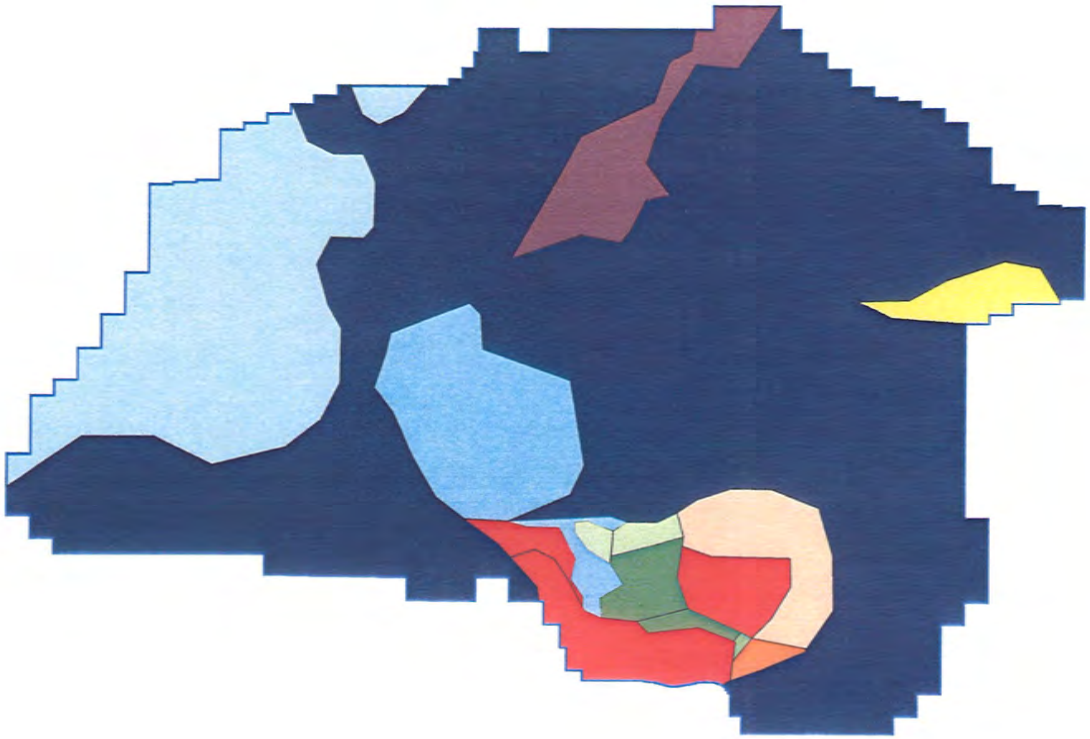
HYDRAULIC CONDUCTIVITY ZONATION MODEL LAYER 1

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	10

DRAFT



LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 0.2 feet/day, Kv = 0.002 feet/day
- Kh = 13 feet/day, Kv = 1 feet/day
- Kh = 5 feet/day, Kv = 0.04 feet/day
- Kh = 19.5 feet/day, Kv = 0.2 feet/day
- Kh = 26 feet/day, Kv = 0.2 feet/day
- Kh = 32.5 feet/day, Kv = 2.5 feet/day
- Kh = 52 feet/day, Kv = 0.4 feet/day
- Kh = 78 feet/day, Kv = 0.5 feet/day
- Kh = 78 feet/day, Kv = 6 feet/day
- Kh = 158.6 feet/day, Kv = 12.2 feet/day

Kh — Horizontal Hydraulic Conductivity

Kv — Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

User Name: kpittsburgh Date/Time: Fri, 28 May 2004 - 12:14pm Path/Name: S:\ENCAD Files\Ford - Kingsford\hydraulic conductivity.dwg Layout Tab: layer2
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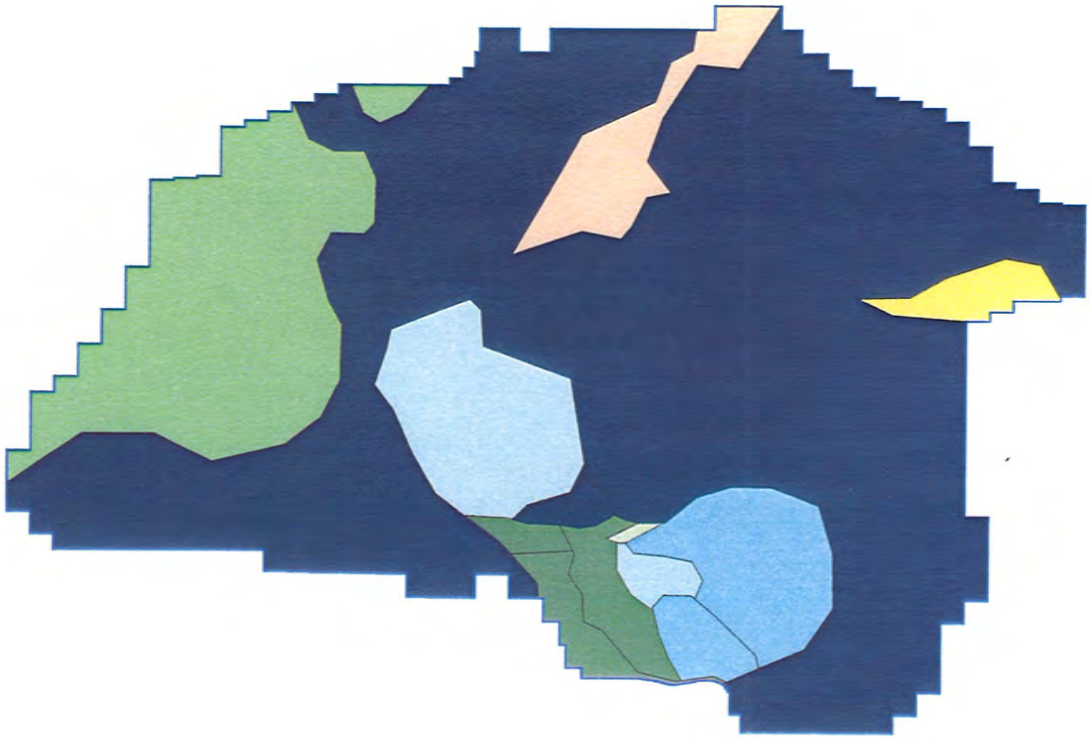
HYDRAULIC CONDUCTIVITY ZONATION
MODEL LAYER 2

KINGSFORD, MICHIGAN

Project Number: WI001075.0022
Drawing Date: 28-MAY-04
Figure: 11

DRAFT



LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 0.1 feet/day, Kv = 0.0008 feet/day
- Kh = 1 feet/day, Kv = 0.0008 feet/day
- Kh = 2 feet/day, Kv = 0.2 feet/day
- Kh = 10 feet/day, Kv = 0.7 feet/day
- Kh = 20 feet/day, Kv = 0.4 feet/day
- Kh = 25 feet/day, Kv = 2.5 feet/day
- Kh = 122 feet/day, Kv = 12.2 feet/day

Kh — Horizontal Hydraulic Conductivity

Kv — Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

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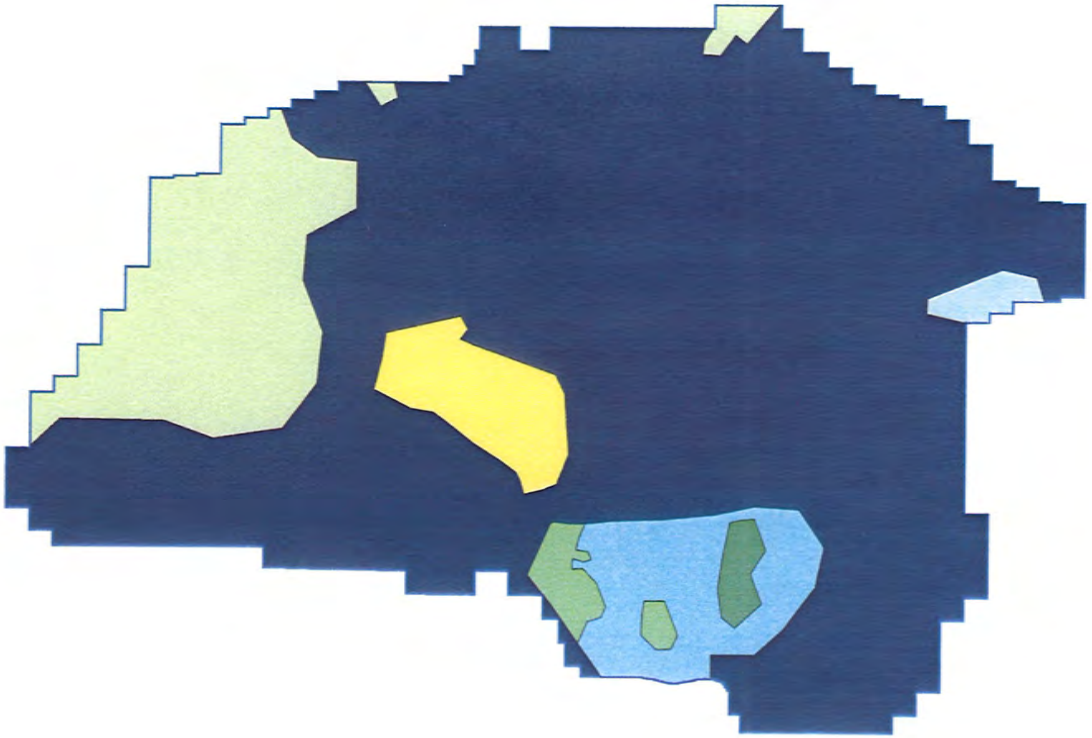
HYDRAULIC CONDUCTIVITY ZONATION
MODEL LAYER 3

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	12

DRAFT



LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 1 feet/day, Kv = 0.008 feet/day
- Kh = 28.6 feet/day, Kv = 2.2 feet/day
- Kh = 32.5 feet/day, Kv = 0.1 feet/day
- Kh = 32.5 feet/day, Kv = 1 feet/day
- Kh = 65 feet/day, Kv = 5 feet/day
- Kh = 104 feet/day, Kv = 8 feet/day

Kh — Horizontal Hydraulic Conductivity

Kv — Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

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HYDRAULIC CONDUCTIVITY ZONATION
MODEL LAYER 4

KINGSFORD, MICHIGAN

Project Number: WI001075.0022
Drawing Date: 28-MAY-04
Figure: 13

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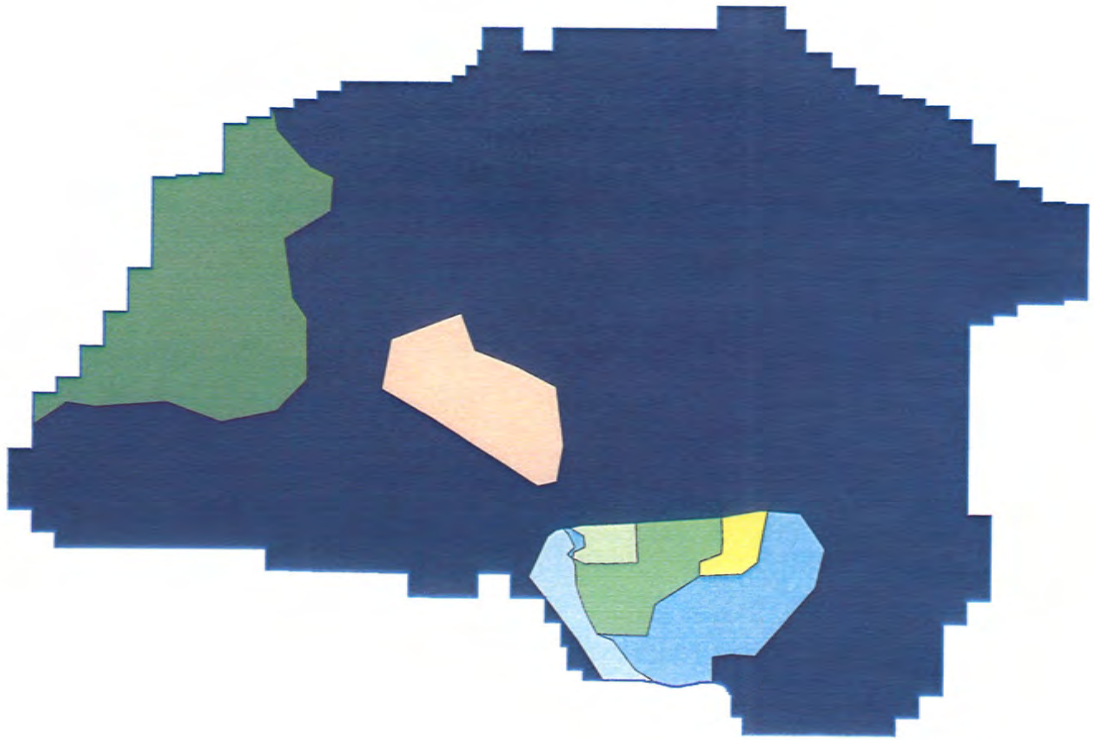
DRAFT



LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 0.2 feet/day, Kv = 0.002 feet/day
- Kh = 2 feet/day, Kv = 0.3 feet/day
- Kh = 3 feet/day, Kv = 0.03 feet/day
- Kh = 13 feet/day, Kv = 0.1 feet/day
- Kh = 32.5 feet/day, Kv = 0.3 feet/day
- Kh = 32.5 feet/day, Kv = 0.1 feet/day
- Kh = 104 feet/day, Kv = 8 feet/day

Kh — Horizontal Hydraulic Conductivity

Kv — Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

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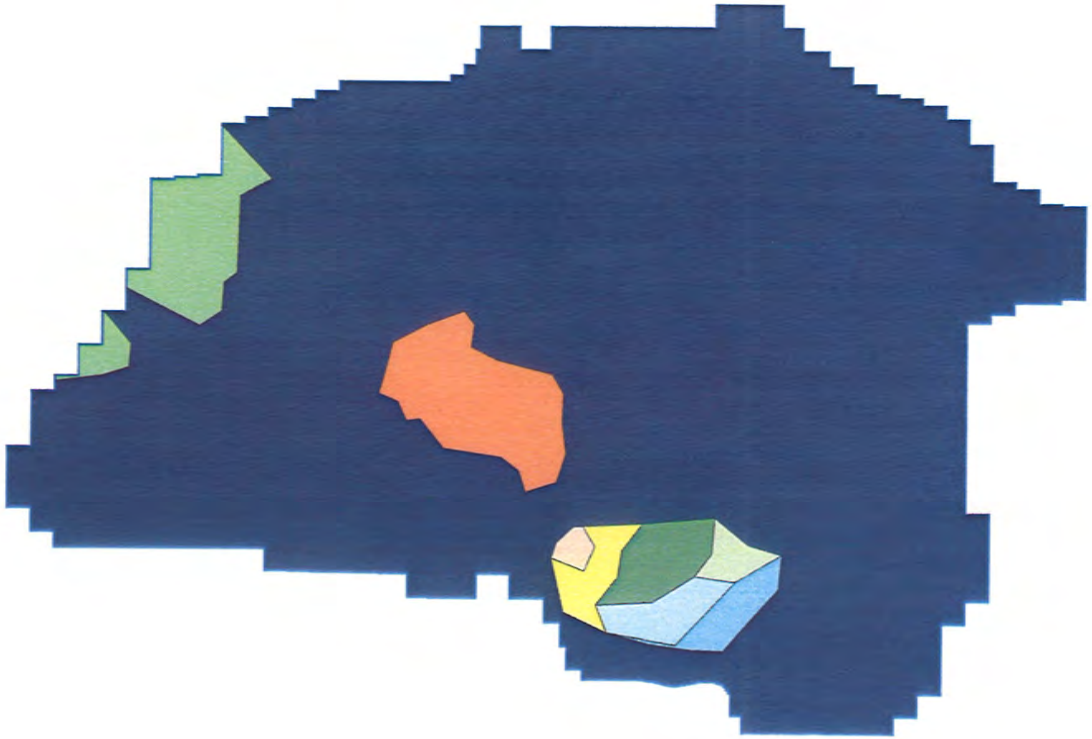
HYDRAULIC CONDUCTIVITY ZONATION
MODEL LAYER 5

KINGSFORD, MICHIGAN

Project Number: WI001075.0022
Drawing Date: 28-MAY-04
Figure: 14

DRAFT



LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 1 feet/day, Kv = 0.008 feet/day
- Kh = 8 feet/day, Kv = 0.07 feet/day
- Kh = 22.1 feet/day, Kv = 0.2 feet/day
- Kh = 32.5 feet/day, Kv = 2.5 feet/day
- Kh = 45.5 feet/day, Kv = 0.4 feet/day
- Kh = 45.5 feet/day, Kv = 3.5 feet/day
- Kh = 65 feet/day, Kv = 5 feet/day
- Kh = 104 feet/day, Kv = 8 feet/day

Kh Horizontal Hydraulic Conductivity

Kv Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

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HYDRAULIC CONDUCTIVITY ZONATION
MODEL LAYER 6

KINGSFORD, MICHIGAN

Project Number: WI001075.0022
Drawing Date: 28-MAY-04
Figure: 15

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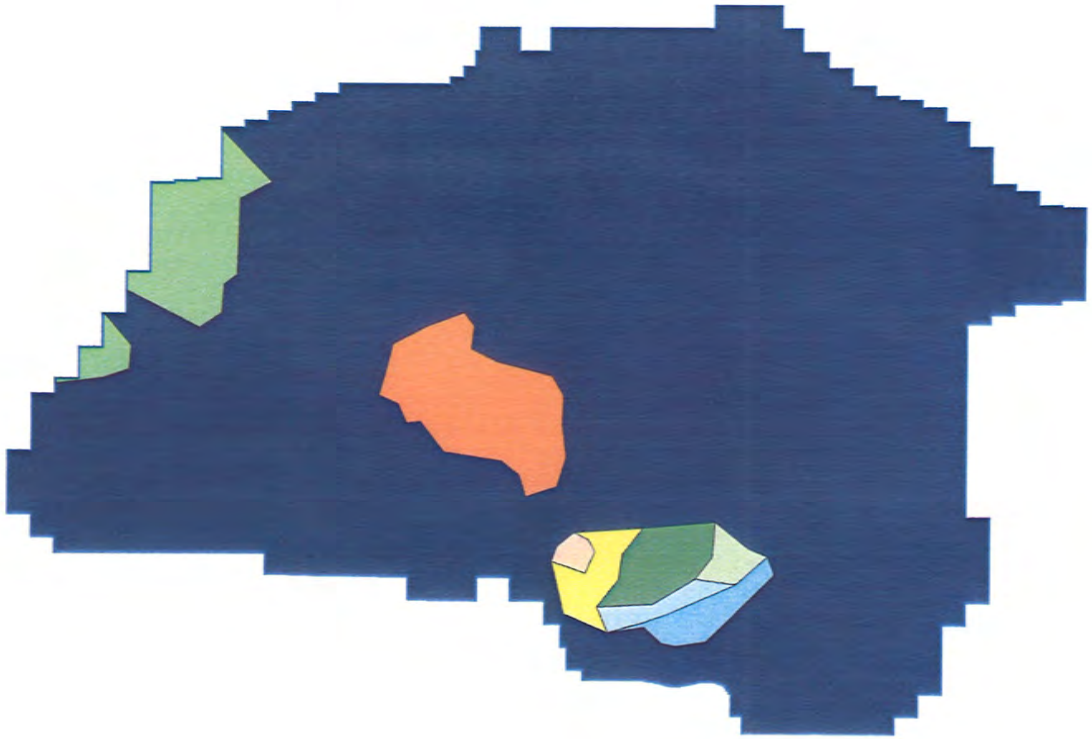
DRAFT



LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 1 feet/day, Kv = 0.008 feet/day
- Kh = 8 feet/day, Kv = 0.07 feet/day
- Kh = 22.1 feet/day, Kv = 0.2 feet/day
- Kh = 32.5 feet/day, Kv = 2.5 feet/day
- Kh = 45.5 feet/day, Kv = 0.4 feet/day
- Kh = 45.5 feet/day, Kv = 3.5 feet/day
- Kh = 65 feet/day, Kv = 5 feet/day
- Kh = 104 feet/day, Kv = 8 feet/day

Kh — Horizontal Hydraulic Conductivity

Kv — Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

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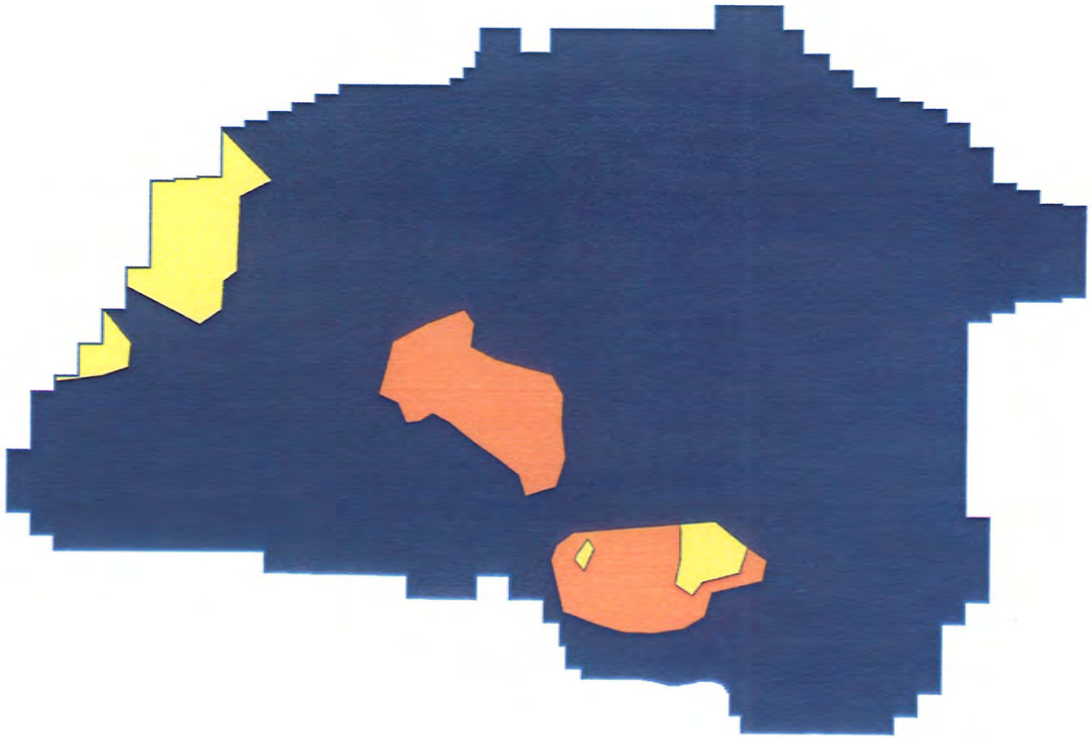
HYDRAULIC CONDUCTIVITY ZONATION
MODEL LAYER 7

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	16

DRAFT



LEGEND

- Kh = 0.001 feet/day, Kv = 0.0001 feet/day
- Kh = 5 feet/day, Kv = 0.3 feet/day
- Kh = 32.5 feet/day, Kv = 2.5 feet/day
- Kh = 104 feet/day, Kv = 8 feet/day

Kh — Horizontal Hydraulic Conductivity

Kv — Vertical Hydraulic Conductivity

0 1 MILE 2 MILES

User Name | Typthrough Date\Time Fri, 28 May 2004 - 12:14pm Path\Name G:\GIS\GIS Files\Fort - Kingford\Hydraulic conductivity.dwg Layout Tab: layout8

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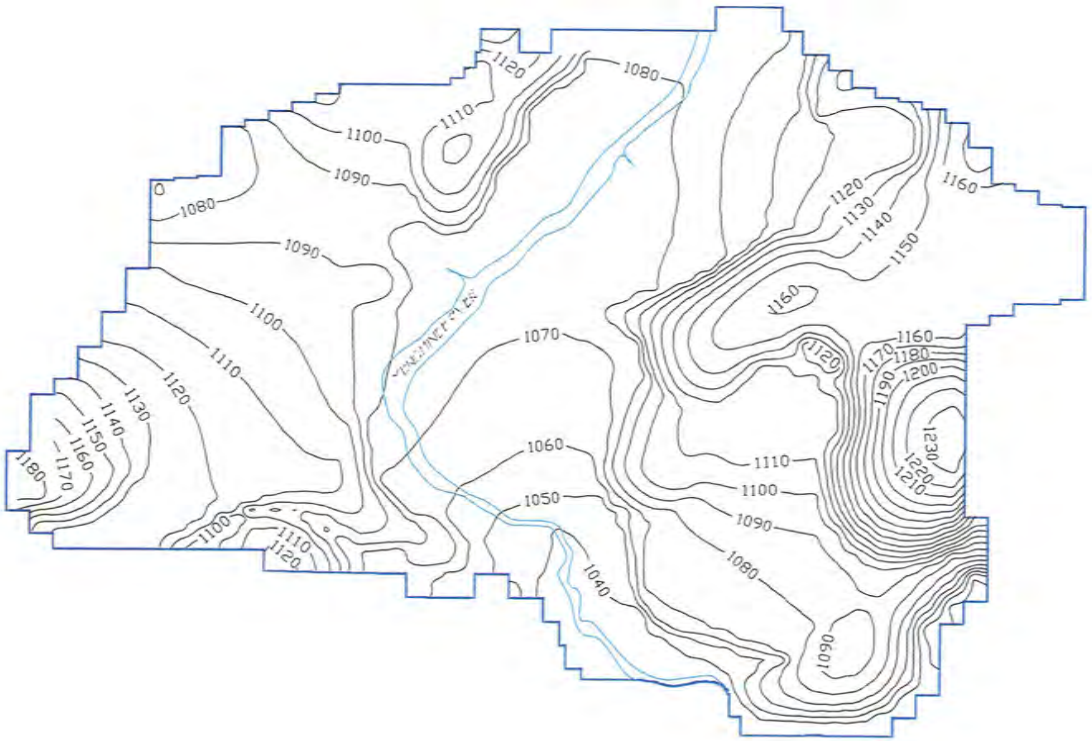
HYDRAULIC CONDUCTIVITY ZONATION
MODEL LAYER 8

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	17

DRAFT



0 1 MILE 2 MILES

LEGEND

—1080— SIMULATED GROUNDWATER CONTOUR (ft msl)

CONTOUR INTERVAL = 10 feet

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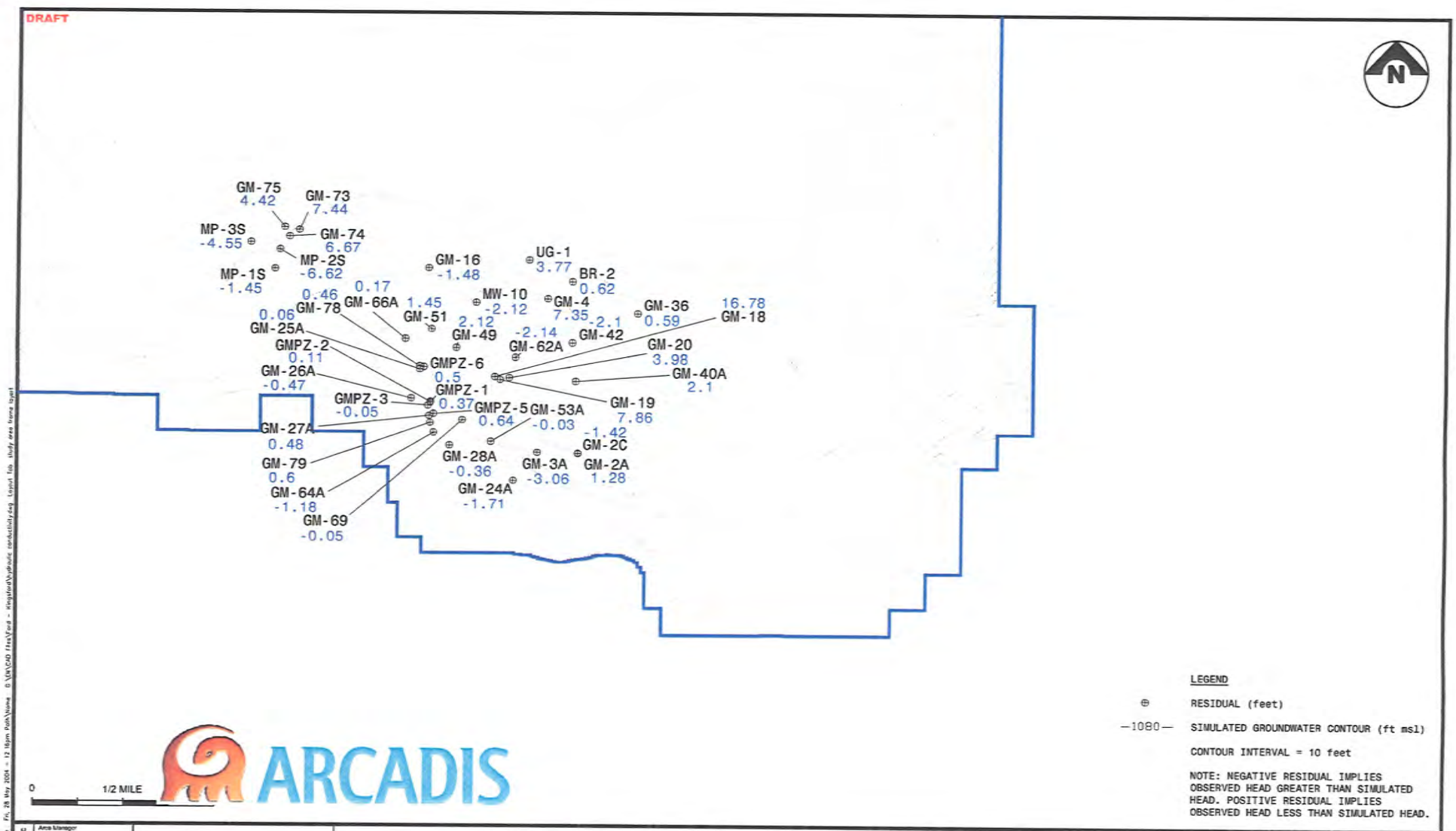
REGIONAL SIMULATED GROUNDWATER FLOW MAP
ZONE A SANDS, MODEL LAYER 1

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	18

DRAFT



ARCADIS

LEGEND

⊕ RESIDUAL (feet)

—1080— SIMULATED GROUNDWATER CONTOUR (ft msl)

CONTOUR INTERVAL = 10 feet

NOTE: NEGATIVE RESIDUAL IMPLIES OBSERVED HEAD GREATER THAN SIMULATED HEAD. POSITIVE RESIDUAL IMPLIES OBSERVED HEAD LESS THAN SIMULATED HEAD.

User Name: Lyonbrough Date\Time: Fri, 28 May 2004 - 12:18pm Path\Name: B:\ACAD files\Work - Kingsford\hydraulic conductivity.dwg Layout Tab: study area trans layer

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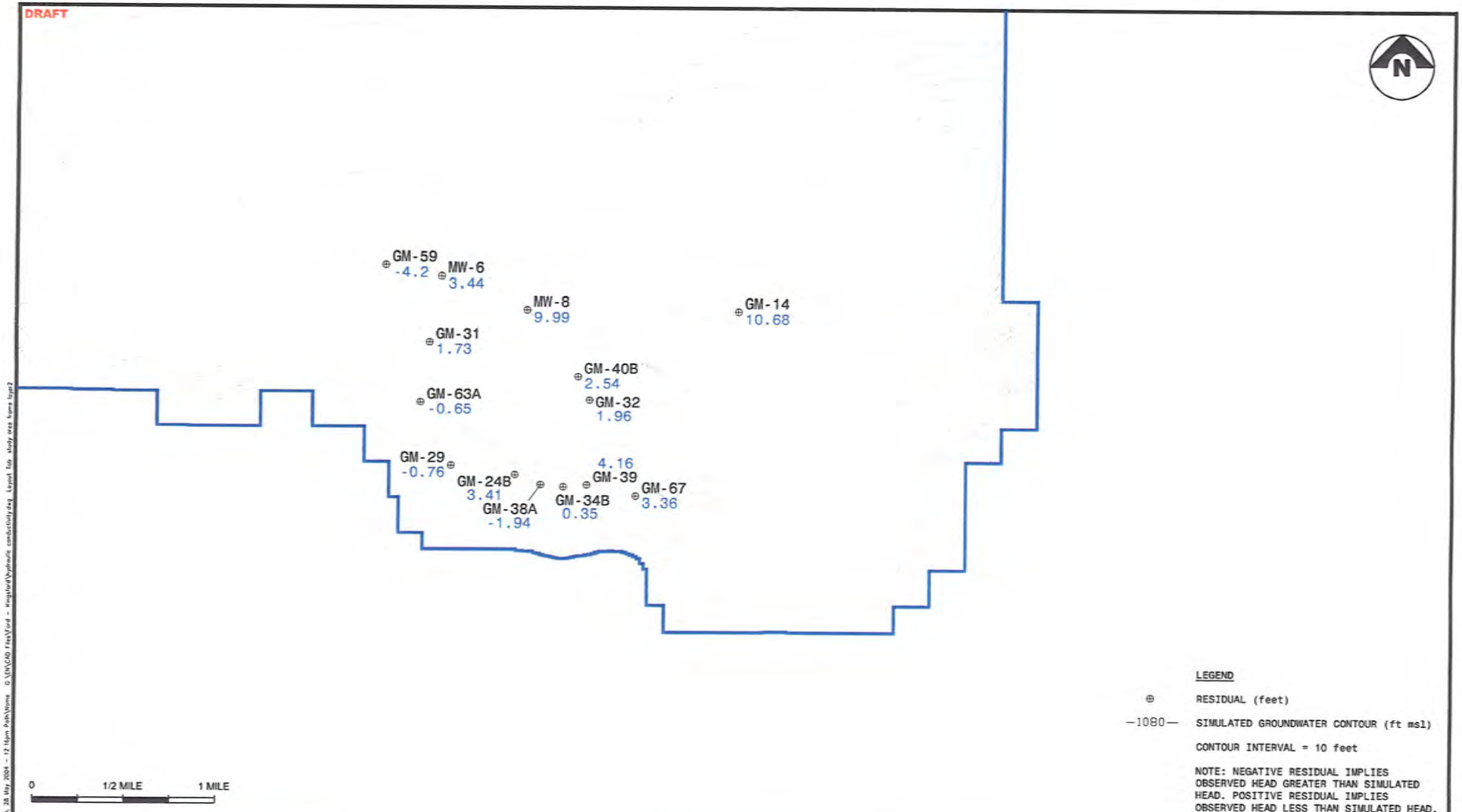
STUDY AREA SIMULATED GROUNDWATER FLOW MAP
ZONE A SANDS, MODEL LAYER 1

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	28-MAY-04
Figure	19

DRAFT



LEGEND

⊕ RESIDUAL (feet)

—1080— SIMULATED GROUNDWATER CONTOUR (ft msl)

CONTOUR INTERVAL = 10 feet

NOTE: NEGATIVE RESIDUAL IMPLIES OBSERVED HEAD GREATER THAN SIMULATED HEAD. POSITIVE RESIDUAL IMPLIES OBSERVED HEAD LESS THAN SIMULATED HEAD.

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STUDY AREA SIMULATED GROUNDWATER FLOW MAP
ZONE A SANDS, MODEL LAYER 2

KINGSFORD, MICHIGAN

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Figure: 20

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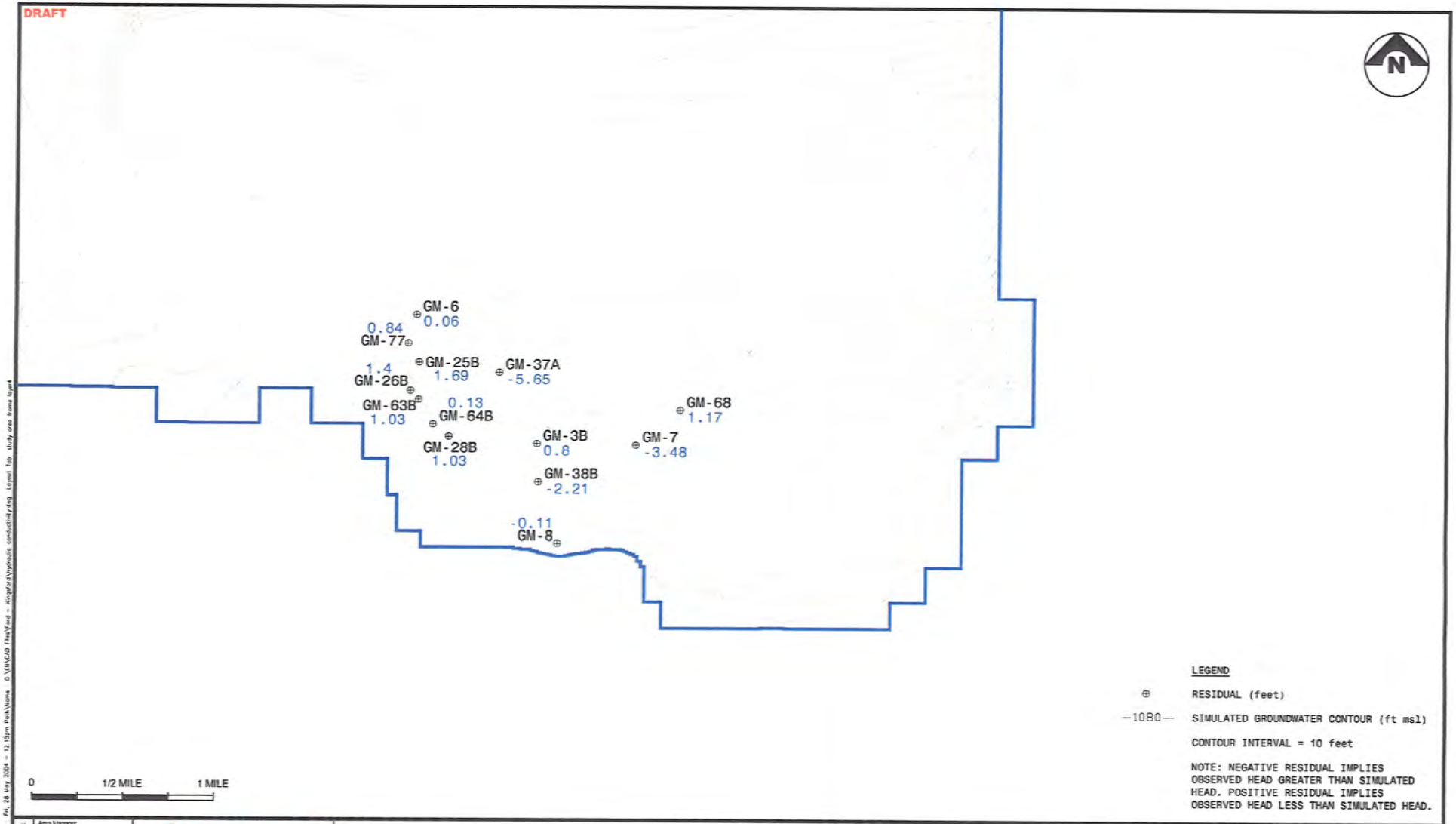

LEGEND

⊕ RESIDUAL (feet)

—1080— SIMULATED GROUNDWATER CONTOUR (ft msl)

CONTOUR INTERVAL = 10 feet

NOTE: NEGATIVE RESIDUAL IMPLIES OBSERVED HEAD GREATER THAN SIMULATED HEAD. POSITIVE RESIDUAL IMPLIES OBSERVED HEAD LESS THAN SIMULATED HEAD.

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STUDY AREA SIMULATED GROUNDWATER FLOW MAP
ZONE B SANDS, MODEL LAYER 4

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Figure	21

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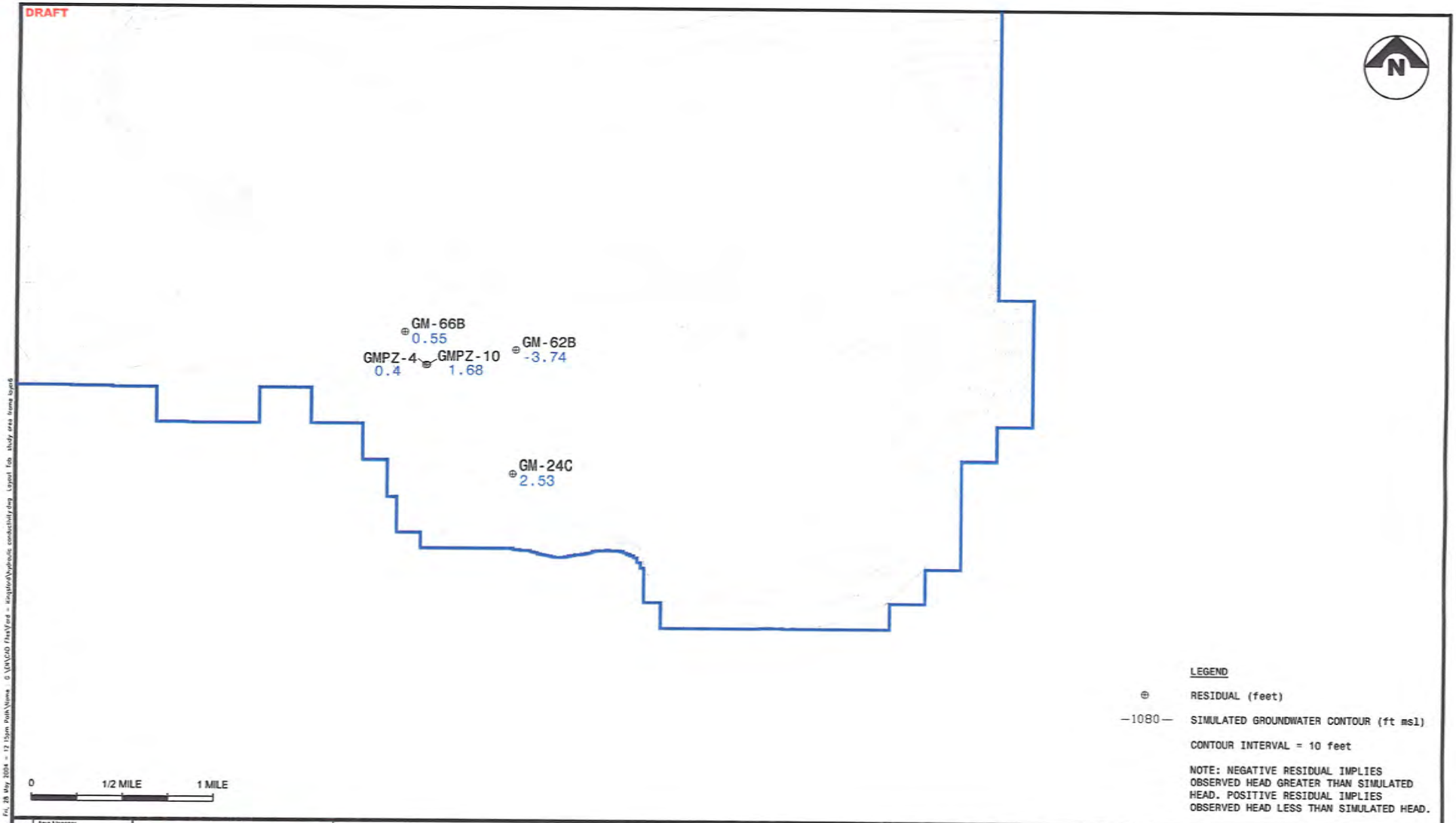

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STUDY AREA SIMULATED GROUNDWATER FLOW MAP
ZONE C SANDS, MODEL LAYER 6

KINGSFORD, MICHIGAN

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Figure: 22

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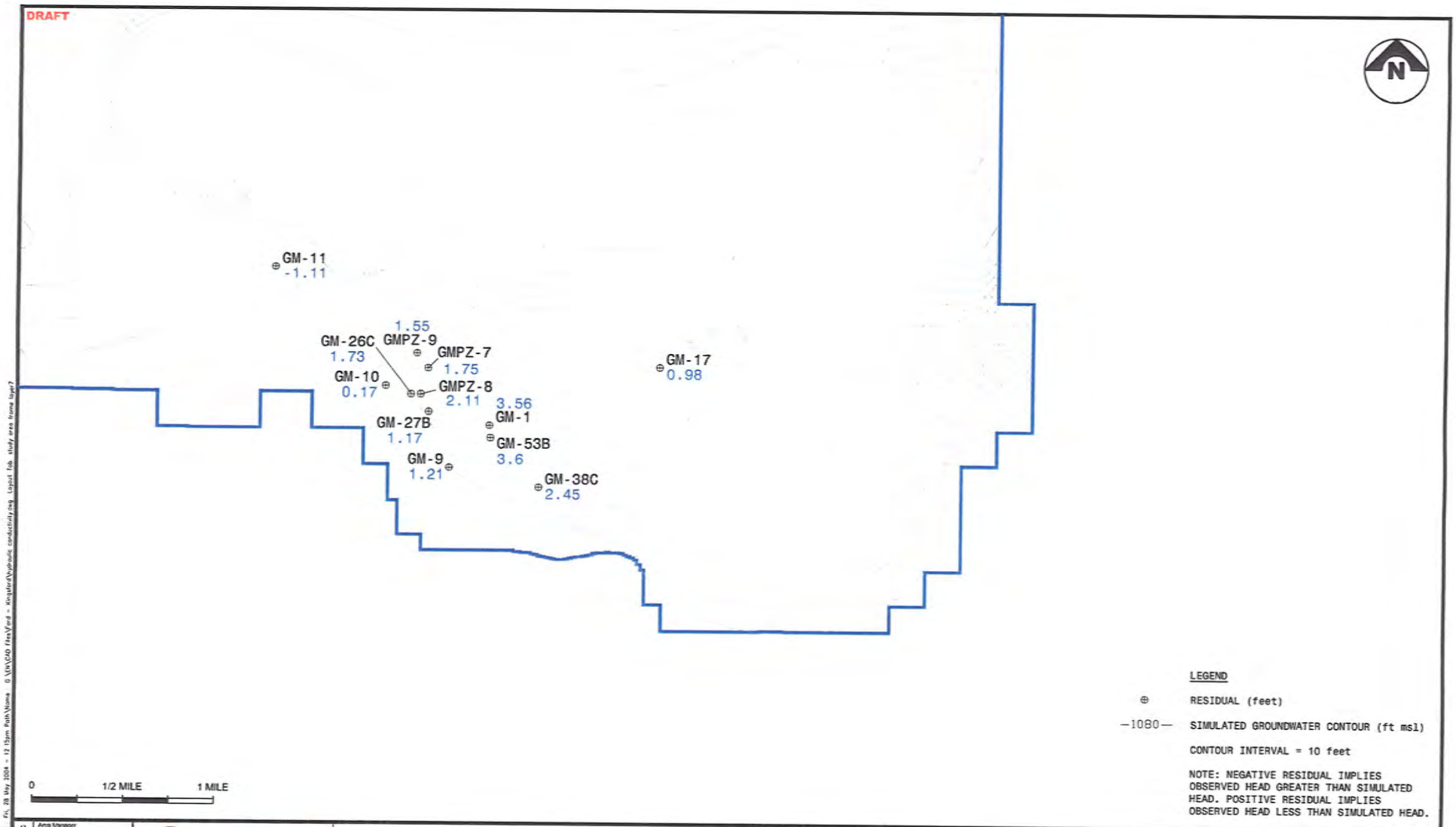

LEGEND

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CONTOUR INTERVAL = 10 feet

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STUDY AREA SIMULATED GROUNDWATER FLOW MAP
ZONE C SANDS, MODEL LAYER 7

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Figure	23

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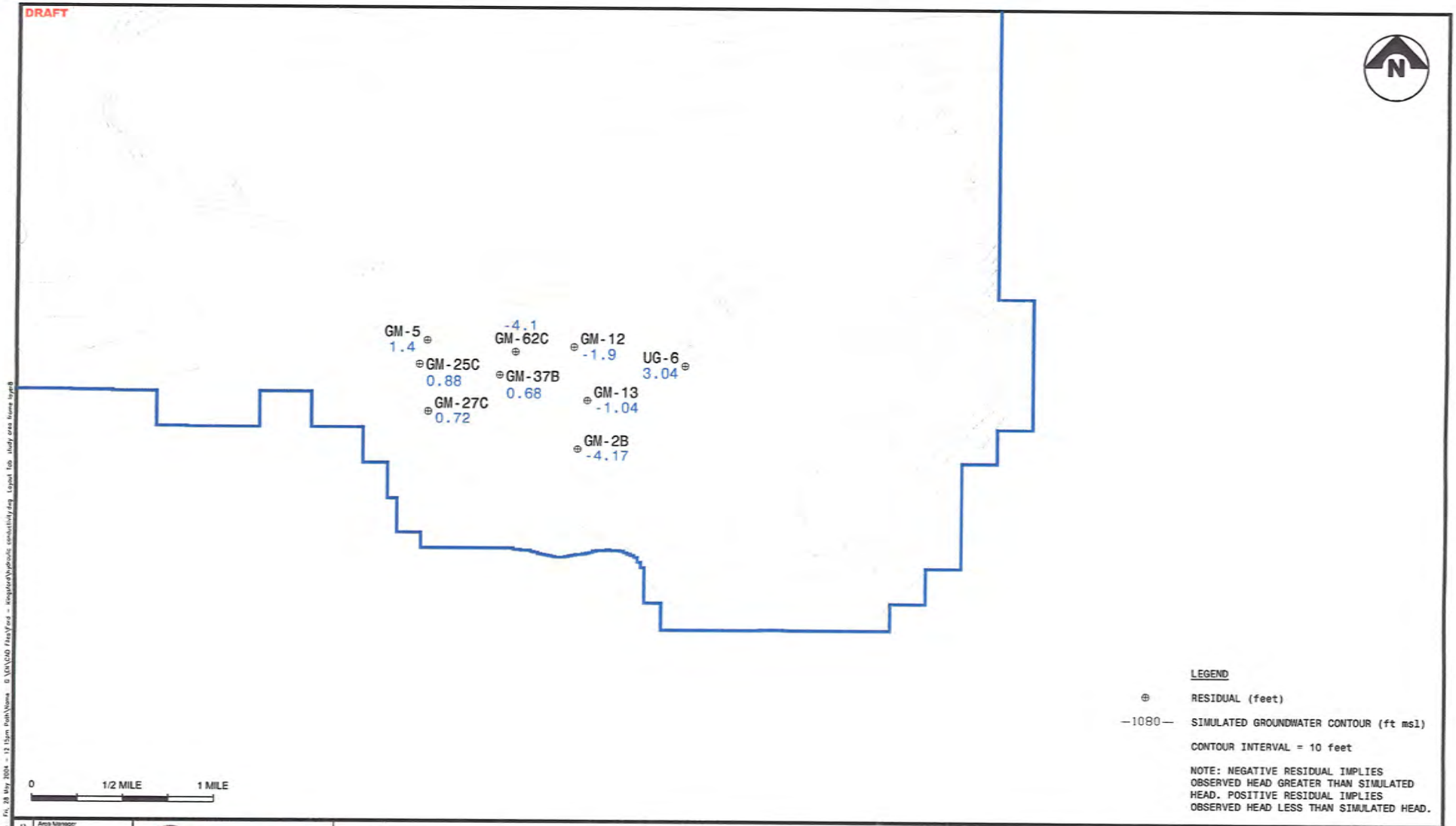

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STUDY AREA SIMULATED GROUNDWATER FLOW MAP
ZONE D SAND, MODEL LAYER 8

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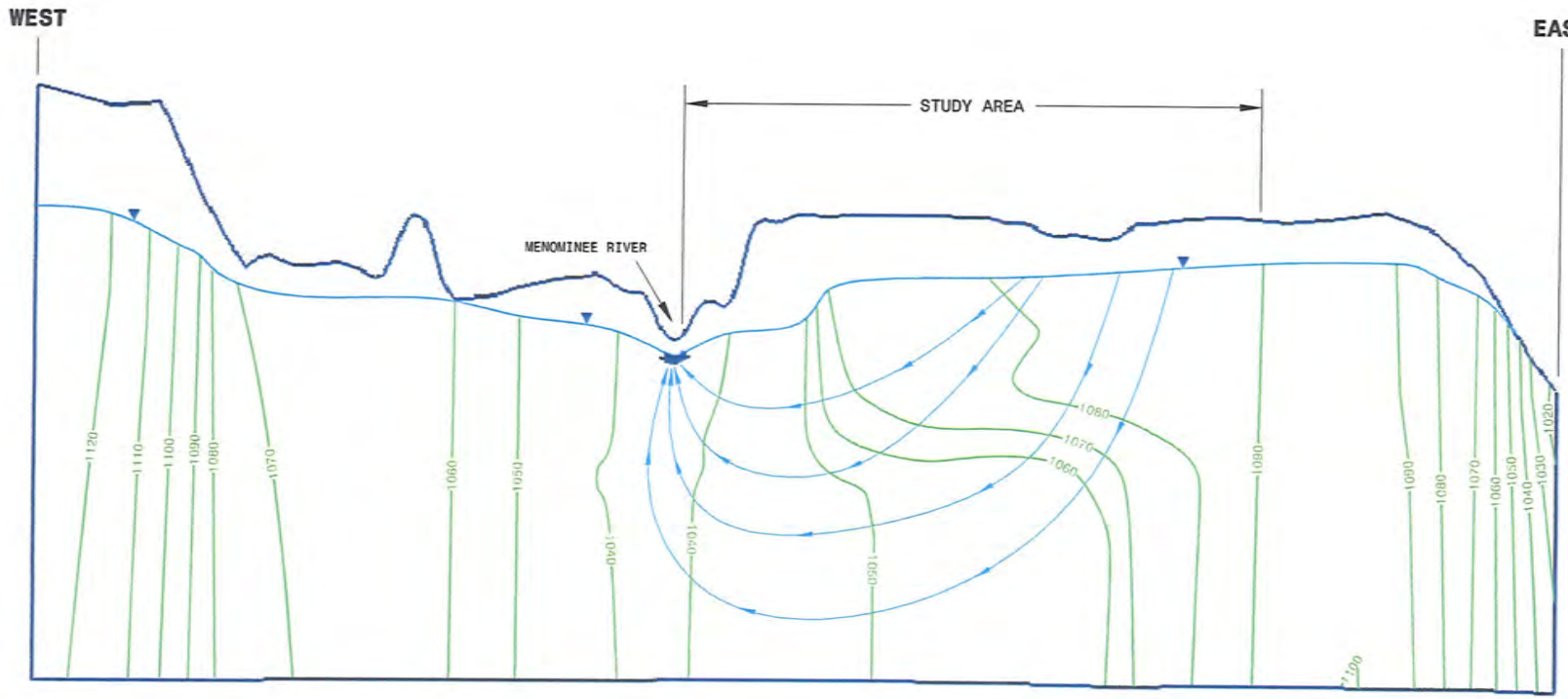

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- WATER TABLE
- DIRECTION OF GROUNDWATER
- −1120− EQUIPOTENTIAL CONTOUR (ft msl) CONTOUR INTERVAL = 10 feet

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SIMULATED GROUNDWATER FLOW WEST-EAST CROSS-SECTION

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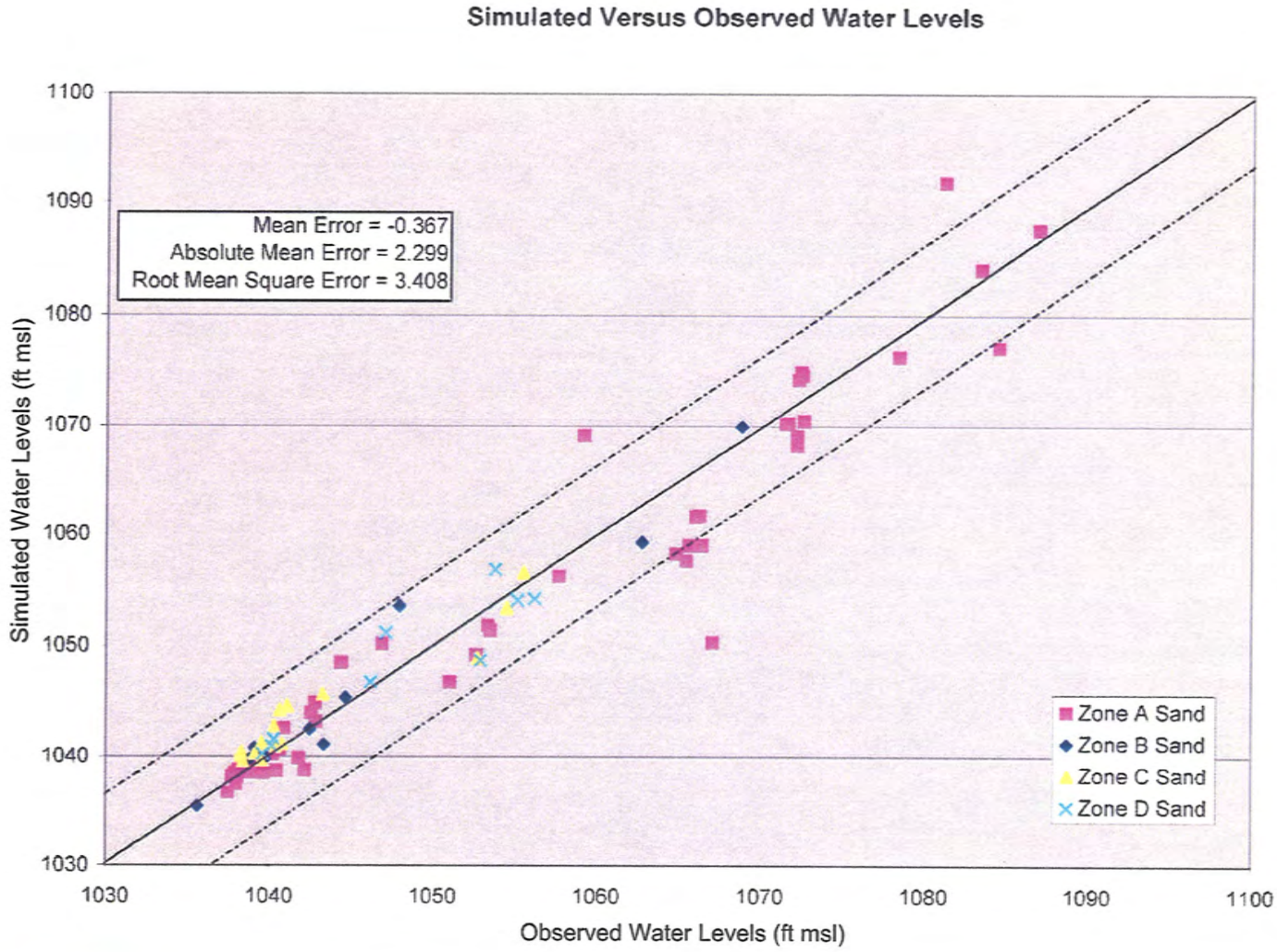

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PLOT OF SIMULATED VERSUS OBSERVED HEADS AND CALIBRATION STATISTICS

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Figure	26

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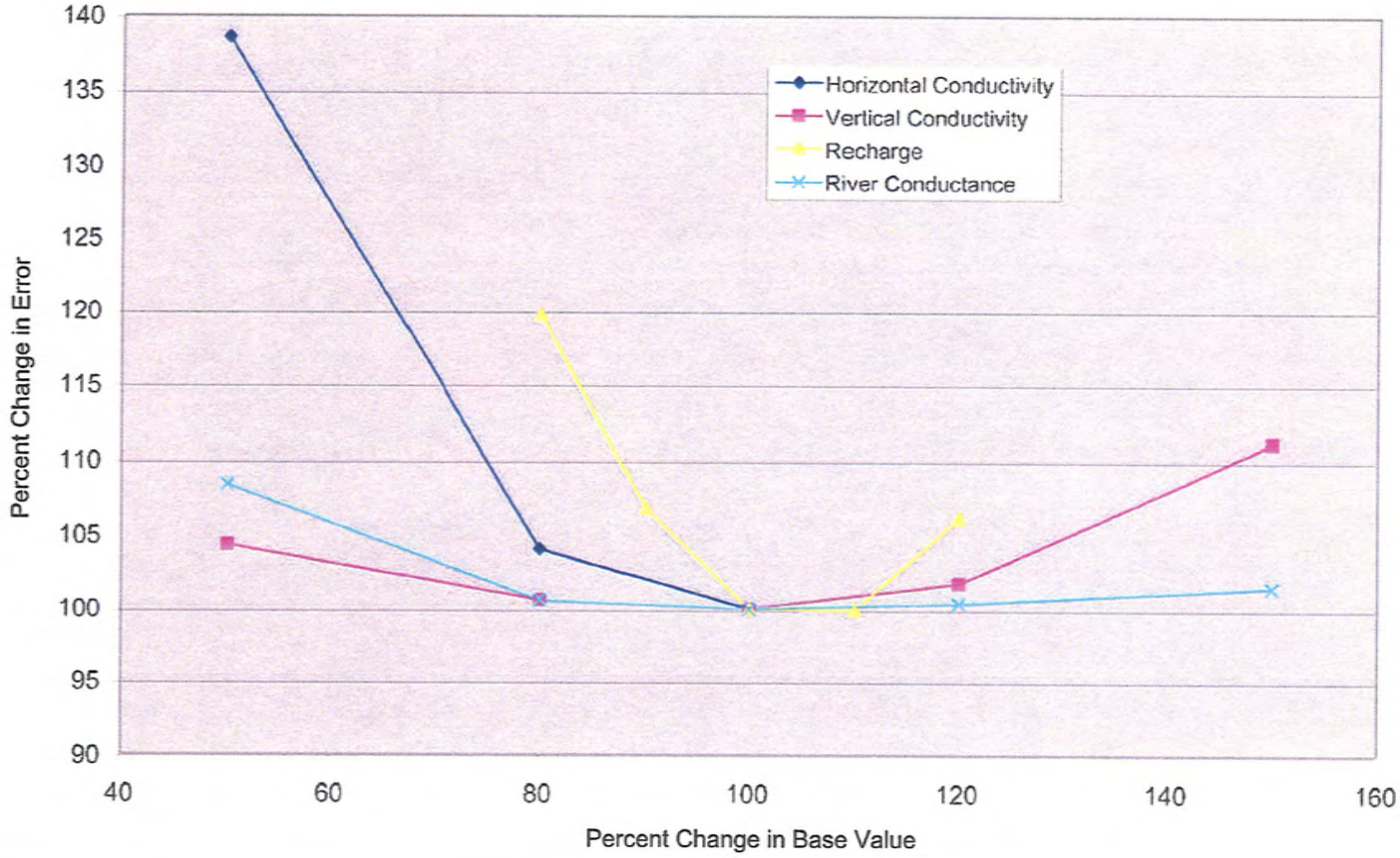
Sensitivity Analysis
Root Mean Square Results



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SENSITIVITY ANALYSIS RESULTS

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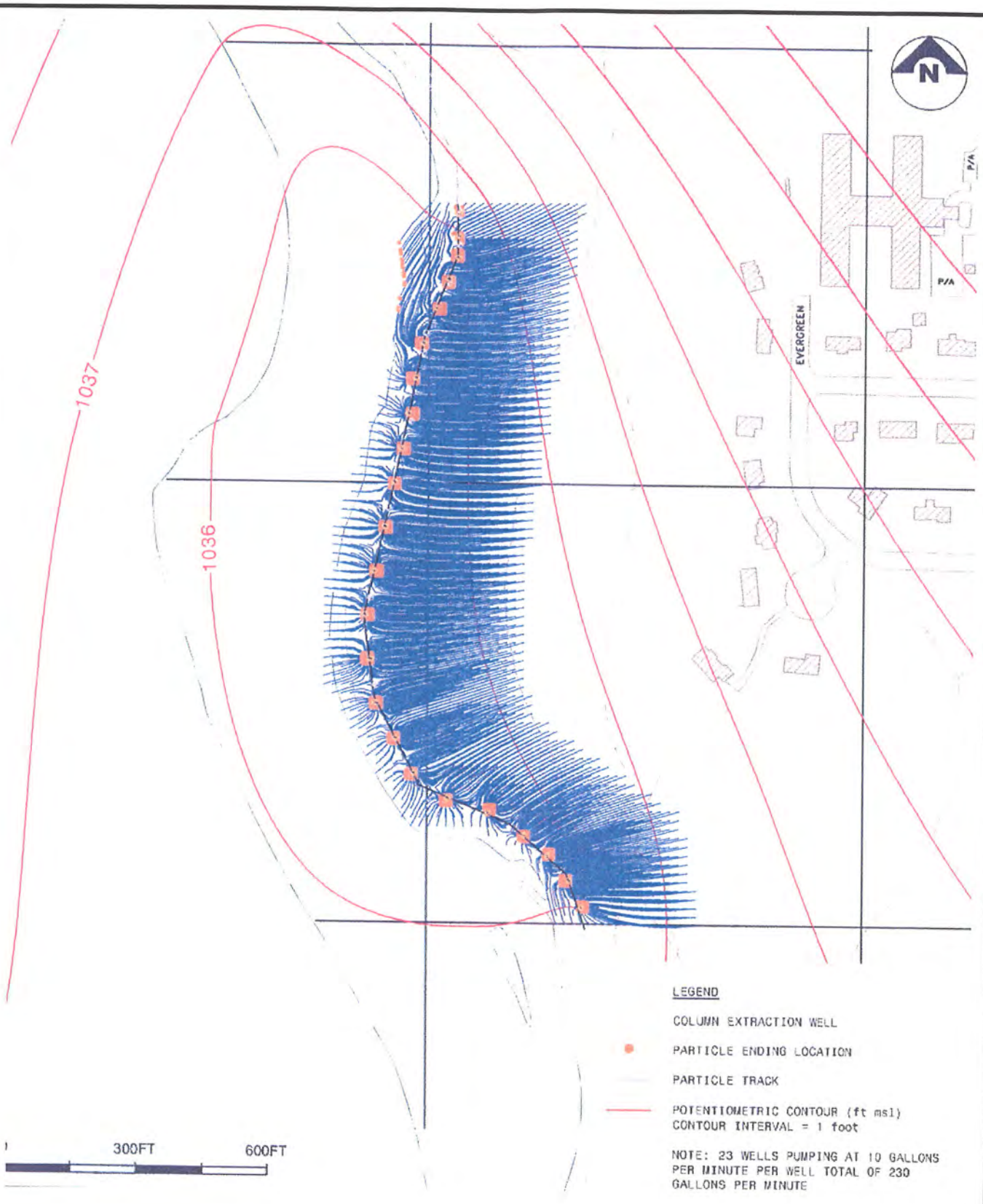
Figure: 27



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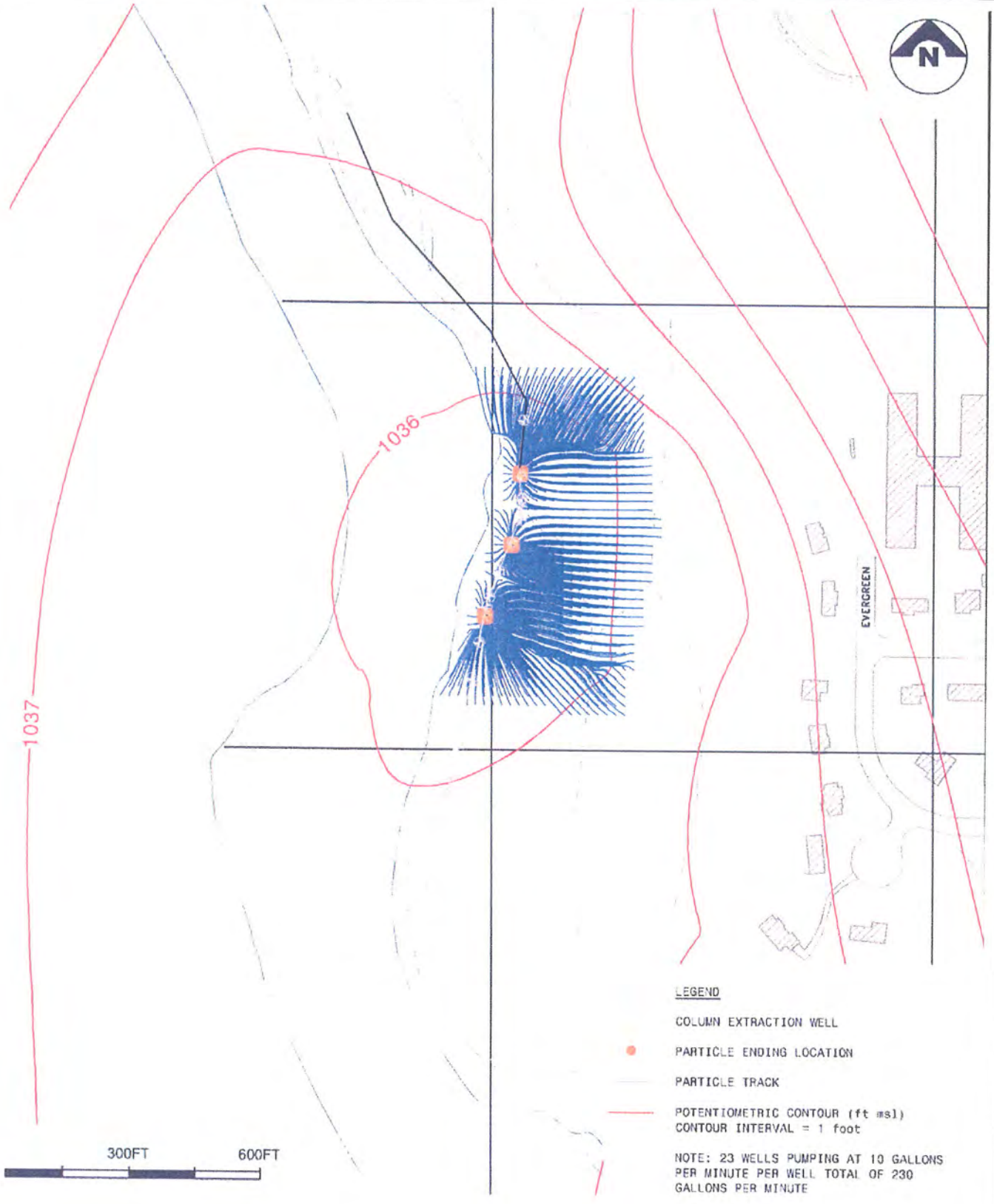
SIMULATED PUMPING AND CAPTURE ZONE A SANDS - SCENARIO ONE

KINGSFORD, MICHIGAN

FIGURE

28



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SIMULATED PUMPING AND CAPTURE ZONE B SANDS - SCENARIO ONE

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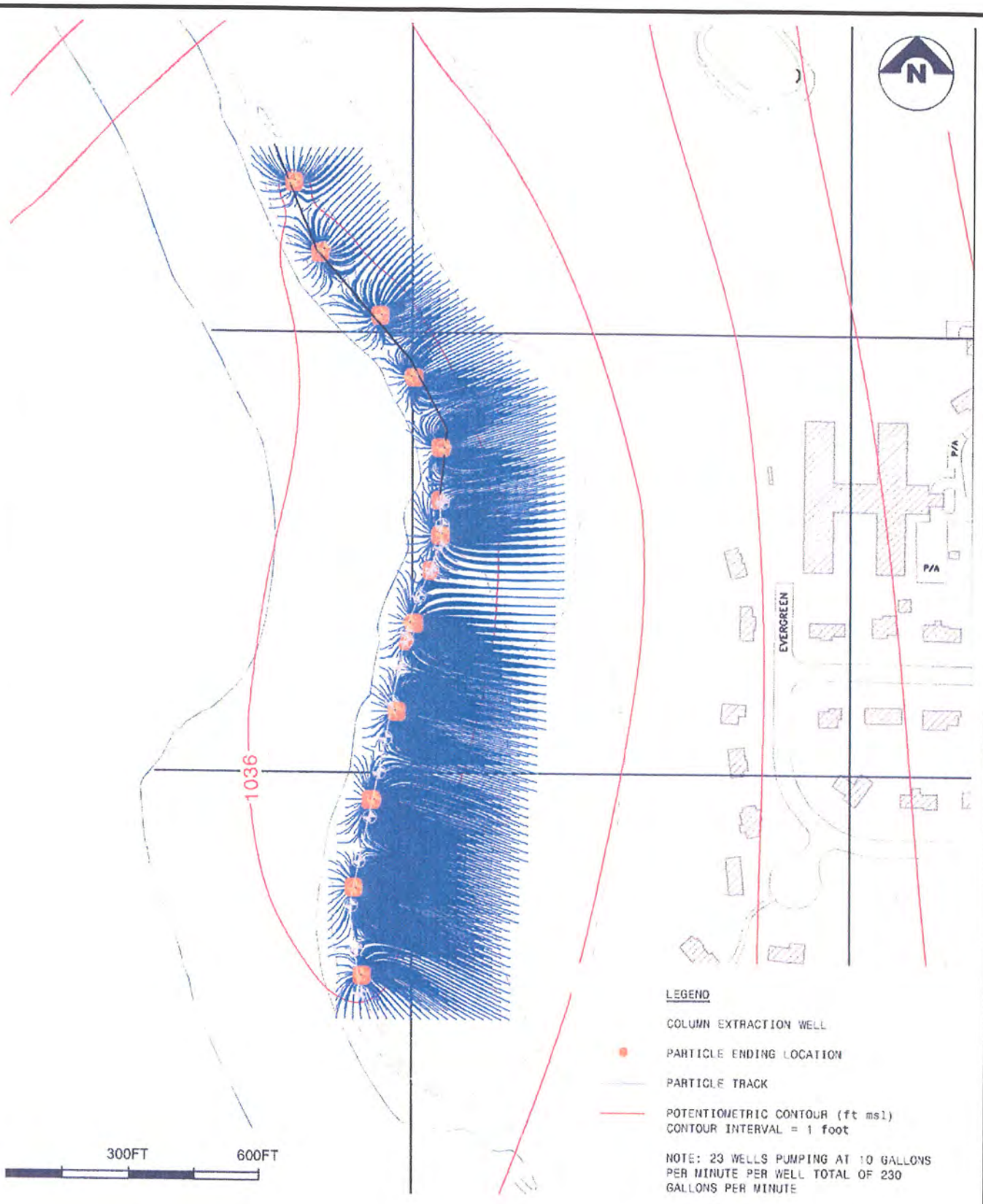
FIGURE

29



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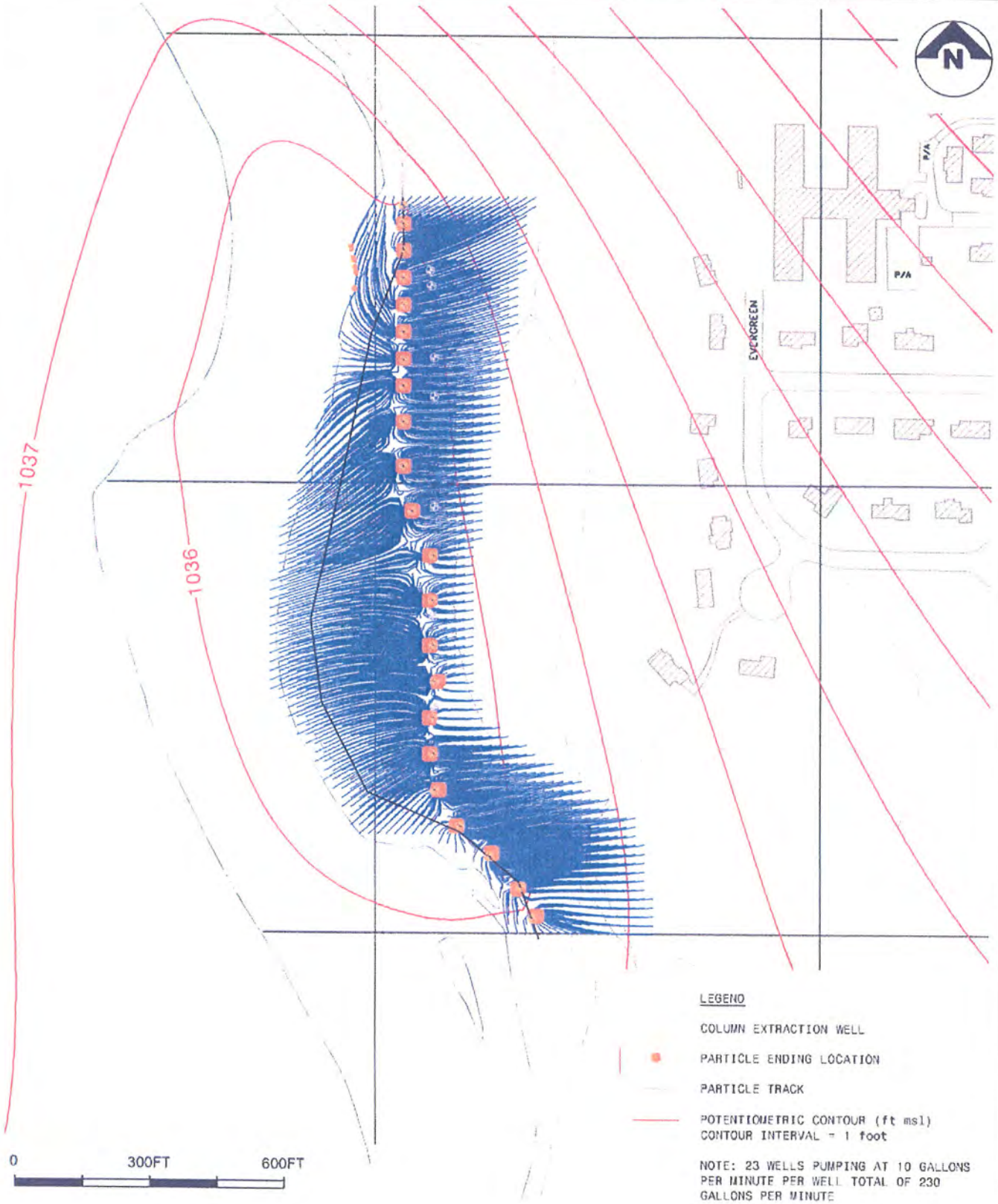
SIMULATED PUMPING AND CAPTURE ZONE C SANDS - SCENARIO ONE

KINGSFORD, MICHIGAN

FIGURE

30



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SIMULATED PUMPING AND CAPTURE ZONE A SANDS - SCENARIO TWO

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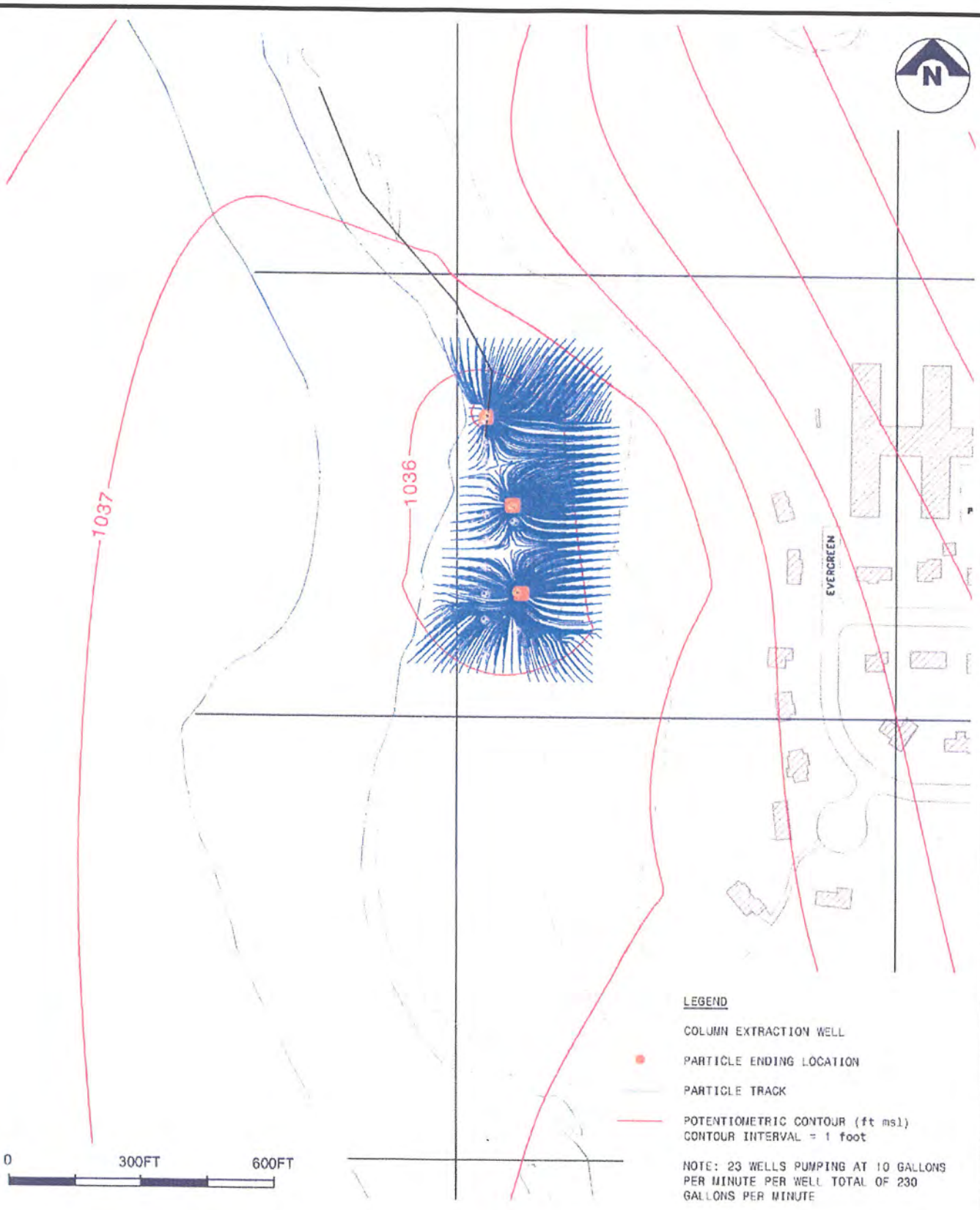
FIGURE 31



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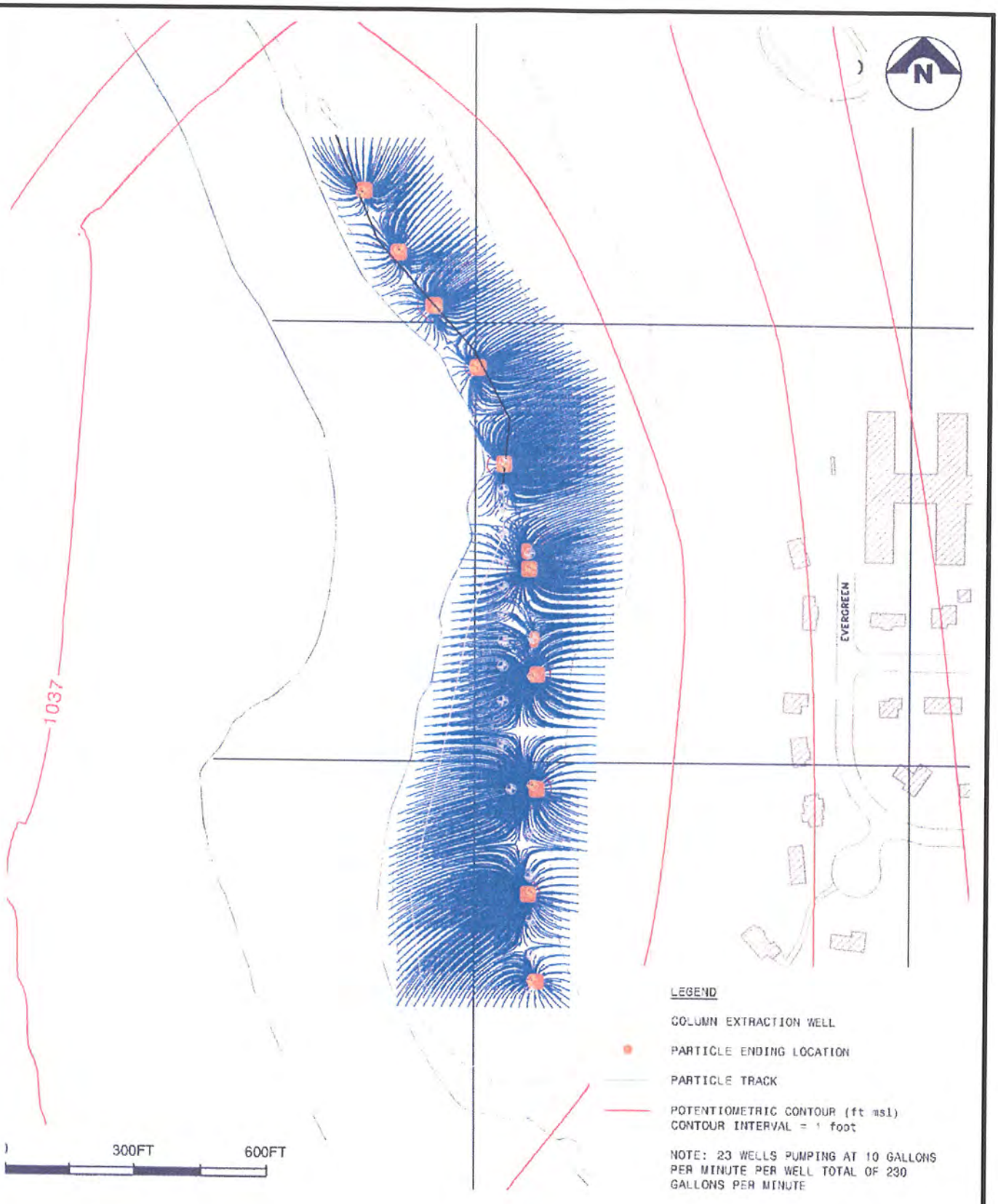
SIMULATED PUMPING AND CAPTURE ZONE B SANDS - SCENARIO TWO

KINGSFORD, MICHIGAN

FIGURE 32



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SIMULATED PUMPING AND CAPTURE ZONE C SANDS - SCENARIO TWO

KINGSFORD, MICHIGAN

FIGURE 33

Appendix A

USGS Groundwater Flow Model Report

Ground-Water Flow and Contributing Areas to Public-Supply Wells in Kingsford and Iron Mountain, Michigan

By Carol L. Luukkonen and D. B. Westjohn

Water-Resources Investigations Report 00-4226

Prepared in cooperation with the cities of Kingsford and Iron Mountain, Michigan

Lansing, Michigan
2001

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CONVERSION FACTORS, DATUM AND ABBREVIATIONS USED IN THIS REPORT

MULTIPLY	BY	TO OBTAIN
	Distance	
inches (in.)	25.4	millimeters
foot (ft)	0.3048	meter
mile (mi.)	1.609	kilometer
square mile (mi^2)	2.590	square kilometer
	Hydraulic Conductivity	
foot per day (ft/d)	0.1524	meter per day
	Transmissivity	
square foot per day (ft^2/d)	0.09290	square meter per day
	Flow	
cubic foot per second	0.02832	cubic meter per second

Temperature is given in degrees Centigrade (^oC), which can be converted to degrees Fahrenheit (^oF) by the following equation:

$$^oF = (^oC + 32) \times 1.8$$

Ground-Water Flow and Contributing Areas to Public –Supply Wells in Kingsford and Iron Mountain, Michigan

ABSTRACT

The cities of Kingsford and Iron Mountain are in the southwestern part of Dickinson County in the Upper Peninsula of Michigan. Residents and businesses in these cites rely primarily on ground water from aquifers in glacial deposits. Glacial deposits generally consist of an upper terrace sand-and-gravel unit and a lower outwash sand-and-gravel unit, separated by lacustrine silt and clay and eolian silt layers. These units are not regionally continuous, and are absent in some areas. Glacial deposits overlie Precambrian bedrock units that are generally impermeable. Precambrian bedrock consists of metasedimentary (Michigamme Slate, Vulcan Iron Formation, and Randville Dolomite) and metavolcanic (Badwater Greenstone and Quinnesec Formation) rocks. Where glacial deposits are too thin to compose an aquifer usable for public or residential water supply, Precambrian bedrock is relied upon for water supply. Typically a few hundred feet of bedrock must be open to a wellbore to provide adequate water for domestic users. Ground-water flow in the glacial deposits is primarily toward the Menominee River and follows the direction of the regional topographic slope and the bedrock surface.

To protect the quality of ground water, Kingsford and Iron Mountain are developing Wellhead Protection Plans to delineate areas that contribute water to public-supply wells. Because of the complexity of hydrogeology in this area and historical land-use practices, a steady-state ground-water-flow model was prepared to represent the ground-water-flow system and to delineate contributing areas to public-supply wells. Results of steady-state simulations indicate close agreement between simulated and observed water levels and between water flowing into and out of the model area. The 10-year contributing areas for Kingsford's public-supply wells encompass about 0.11 square miles and consist of elongated areas to the east of the well fields. The 10-year contributing areas for Iron Mountain's public-supply wells encompass about 0.09 square miles and consist of elongate areas to the east of the well field.

INTRODUCTION

In 1997, the U.S. Geological Survey, in cooperation with the cities of Kingsford and Iron Mountain, began a 2-year study to describe ground-water flow and determine the areas that contribute water to the cities' public-supply wells. The cities of Kingsford and Iron Mountain are in the southwestern part of Dickinson County, in the Upper Peninsula of Michigan (fig. 1). Both of these cities currently have four municipal wells in glacial aquifers that provide ground water to residents and businesses for water supply (fig. 2). In an effort to protect the quality of ground water that is withdrawn by these wells, the cities of Kingsford and Iron Mountain are developing Wellhead Protection Plans (WHPP). As part of WHPP, the cities will delineate areas that contribute water to public-supply wells. Kingsford's wells are located near Cowboy Lake and near Ford Airport (fig. 2). Iron Mountain's wells are located about 2 miles north of Kingsford's well fields. Because of the complexity of hydrogeology in these areas and historical land-use practices, a computer model is needed to describe the ground-water-flow system and to delineate areas that contribute water to public-supply wells.

This report describes the hydrology of the Kingsford-Iron Mountain area and the simulation of ground-water flow in the Kingsford-Iron Mountain area. During this study, water levels were measured in 28 domestic, irrigation, and observation wells to determine ground-water-flow directions. Thirteen aquifer tests performed previously to this study were reanalyzed and one aquifer test was conducted during this study to determine hydraulic conductivity information for the ground-water-flow model. Particle-tracking analysis was used in conjunction with flow

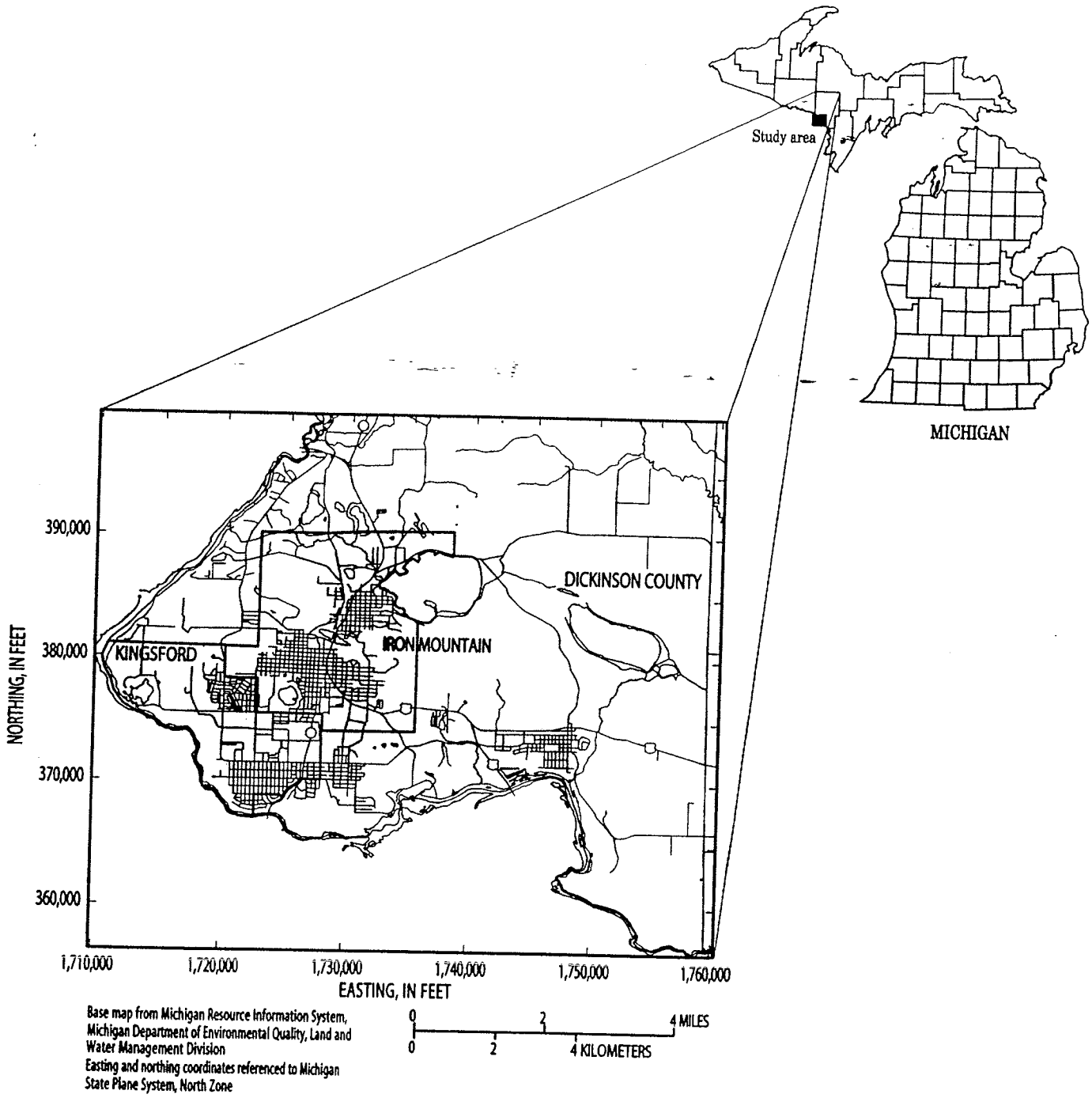

Figure 1. Location of Kingsford and Iron Mountain in the Upper Peninsula of Michigan.

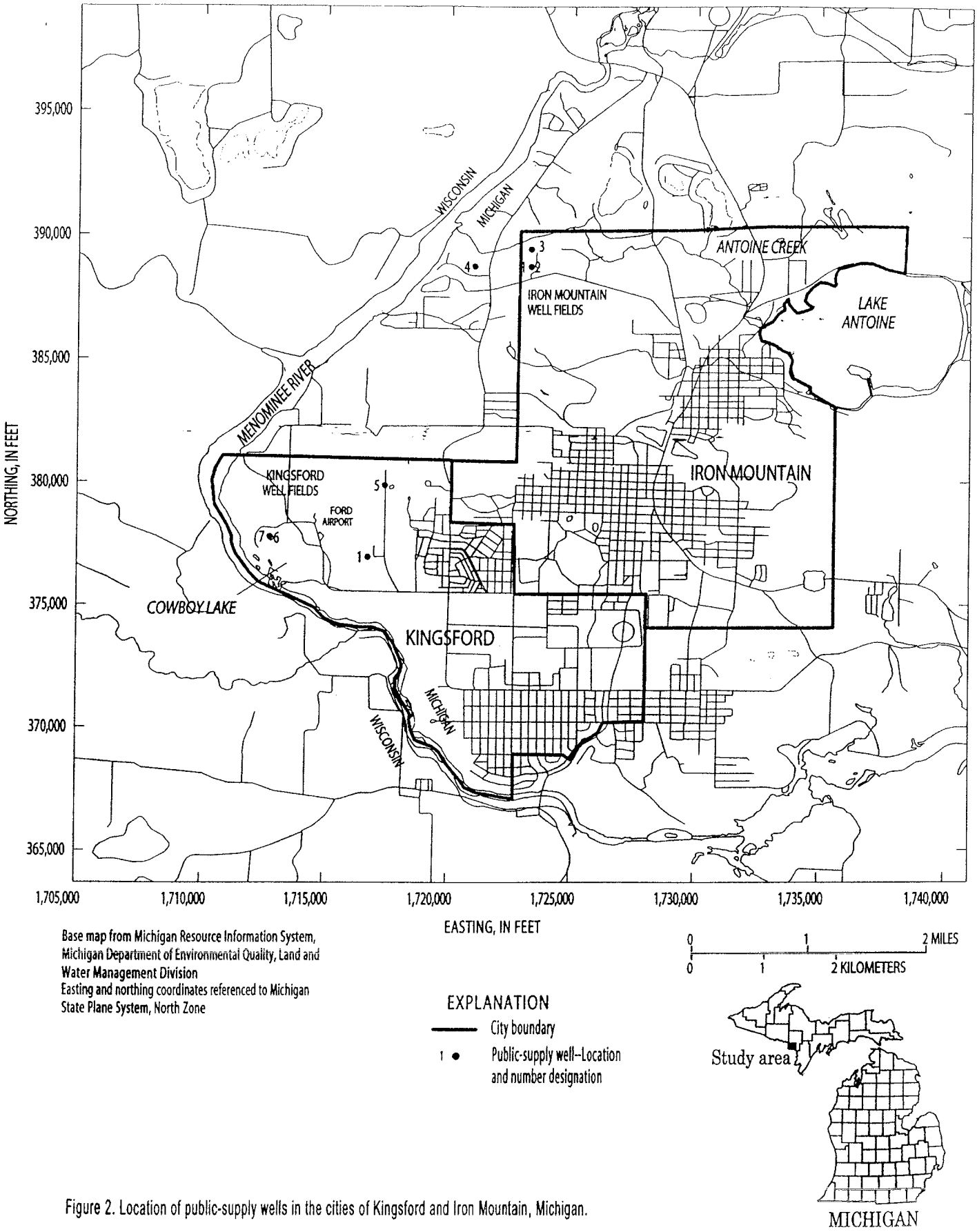

Figure 2. Location of public-supply wells in the cities of Kingsford and Iron Mountain, Michigan.

simulations to delineate the land surface and subsurface areas that contribute water to the public-supply wells. Model simulations are based on the U.S. Geological Survey Modular Three-Dimensional Finite-Difference Ground-Water Flow Model, MODFLOW-96 (McDonald and Harbaugh, 1988, 1996), which is a generalized code for ground-water-flow modeling. Areas contributing water to supply wells were determined using a particle-tracking post-processor package for MODFLOW (MODPATH, Pollock, 1989).

Previous Studies

Numerous studies have contributed to an understanding of the geology and hydrology of this area. Kingsford and Iron Mountain have evaluated potential areas for well-field development. These evaluations include test borings, aquifer tests, and geophysical surveys (Keck Consulting Services, Inc., 1974; Coleman Engineering Co., 1975, 1980, 1982, and 1987; Lynn M. Miller, P.E., 1976; Sundberg, Carlson, and Associates, Inc., 1989; and McNamee, Porter and Seeley, 1981 and 1990).

Two studies in the area (Engineering for Earth, Water, and Air Resources [EWA], 1986; 1987) focused on hydrogeologic conditions at a site in Kingsford that was used for manufacturing facilities. In this area, glacial kettles (depressions in the land surface formed by melting of ice blocks and subsidence of overlying deposits) were used as retention ponds for waste products. EWA's investigations included installation of monitoring wells and soil borings, and development of a ground-water-flow model to determine the potential effect of these waste-disposal pits on water quality, and the potential effect on Kingsford's water supply. Subsequent investigations have been conducted and indicate that although environmental contamination is present near historic industrial sites, it is unlikely that these areas pose any threat to the quality of water at either the Kingsford or Iron Mountain well fields.

Acknowledgments

The authors gratefully acknowledge the assistance of Darryl Wickman, Tony Edlebeck, George Groeneveld, and Al Muntz, city of Kingsford; and Jim Urbany and John Ellis, city of Iron Mountain, for providing information and access to the public-supply wells and providing other sources of information about the cities; Chuck Thomas, Drinking Water and Radiological Protection Division, Michigan Department of Environmental Quality, for providing copies of reports and information about geologic and hydrologic conditions in the areas; and Shirley Businski, Land and Water Management Division, Michigan Department of Environmental Quality, for providing information on public-supply wells. Sincere thanks also are given to homeowners and golf course owners, who permitted access to their wells for water-level measurements.

DESCRIPTION OF STUDY AREA

The cities of Kingsford and Iron Mountain are bounded by the Menominee River to the south and west, and by Trader Hill to the north (fig. 2). The Kingsford-Iron Mountain study area is within the Menominee River drainage basin which includes Dickinson County, Mich. and Florence County, Wisc. Historically, iron ore and timber industries were important to the area, while currently lumber and paper industries, tourism, and recreational activities support the area's economy. The geologic and hydrologic characteristics that affect ground-water flow in the study area are described below.

Geologic Setting

Most of the Kingsford-Iron Mountain area is underlain by Precambrian metasedimentary (Michigamme Slate) and metavolcanic (Badwater Greenstone and Quinnesec Formation) rocks. The Michigamme Slate consists of fine- to medium-grained metagraywacke and slate in massive or graded beds, whereas the Badwater Greenstone consists of massive, chloritized mafic volcanic rocks (Sims, 1990). The Quinnesec Formation consists of mafic and felsic volcanic rocks (Oakes and others, 1973). In the vicinity of Pine Mountain, Millie Hill, and Trader Hill (fig. 3), bedrock consists of metasedimentary rocks of the Vulcan Iron Formation, with alternating iron-rich and quartz-rich layers, and the Randville Dolomite,

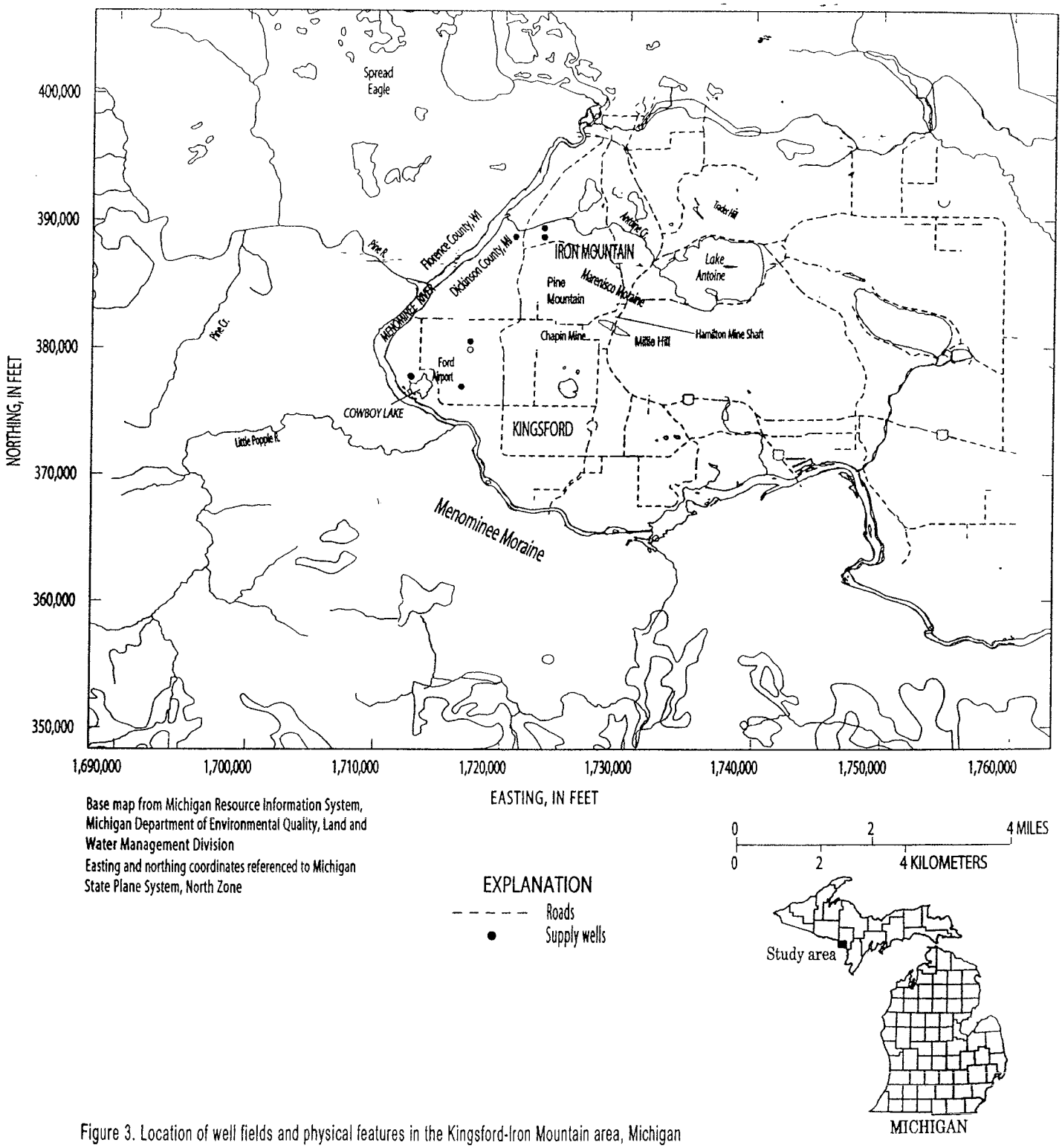

Figure 3. Location of well fields and physical features in the Kingsford-Iron Mountain area, Michigan

consisting of massive dolomite with detrital quartz grains and thick-bedded crystalline dolomite (Sims, 1990).

Bedrock is overlain by Pleistocene glacial deposits, except where bedrock is exposed along the Menominee River to the south and to the north near Spread Eagle, Wisconsin (Clayton, 1986). There also are isolated areas where bedrock is exposed (for example, Ford Airport), but these are of small areal extent. Glacial deposits range from 0 to about 380 ft in thickness. The Marenisco Moraine (Martin, 1955) forms a distinct ridge through the Kingsford-Iron Mountain area (fig. 3). Approximately parallel to this moraine and south of the Menominee River lies another moraine informally referred to as the Menominee Moraine.

Within the study area, glacial deposits generally consist of an upper terrace sand-and-gravel unit and a lower outwash sand-and-gravel unit separated by intermediate lacustrine silt and clay and eolian-silt layers (figs. 4, 5, and 6). These units are not regionally continuous and are absent in some isolated areas within Kingsford as indicated by boring logs. Towards the west and north, information obtained from well and geophysical logs indicates that upper terrace and lower outwash sand-and-gravel units are separated primarily by silt and fine sand.

The upper sand-and-gravel unit ranges from 0 to 160 ft in thickness and consists of medium to fine-grained sand with varying amounts of silt and gravel (Engineering for Earth, Water, and Air Resources, Inc., 1987). The confining unit ranges from 0 to 150 ft in thickness and consists of well sorted and well compacted fine silt and clay. In some areas, the silt and clay are absent, possibly due to partial burial and protrusion of stranded ice blocks that prevented silt deposition (Engineering for Earth, Water, and Air Resources, Inc., 1987). The lower sand-and-gravel unit ranges from 0 to 237 ft in thickness and consists of moderately well sorted fine to coarse sand with layers and lenses of silt and gravel (Engineering for Earth, Water, and Air Resources, Inc., 1987). The lower sand-and-gravel unit is underlain by a lodgement till or the Vulcan Iron Formation over much of the area. The lodgement till and Vulcan Iron Formation units range from 0 to 250 ft in thickness. West of the Menominee River, glacial deposits consist primarily of till or fluvial sediments that change conspicuously within relatively short distances (Clayton, 1986). The sediments consist of sand and gravel, which were deposited by glacial meltwater streams. The till consists of reddish brown or dark brown gravelly sandy loam with abundant surface boulders (Clayton, 1986, plate 1).

Hydrologic Setting

Precipitation averages about 29 in/yr over the Kingsford-Iron Mountain area. Mean monthly precipitation ranges from a minimum in February of 0.9 in to a maximum in August of 3.7 in. The study area receives about 62.8 in/yr of snowfall (Midwestern Climate Center, 1999). Precipitation averages about 30 in/yr in the Pine-Popple River Basin, west of the Menominee River, and is highest from late spring to early autumn (Oakes and others, 1973).

Two glacial aquifers (upper and lower aquifers) underlie the study area, based on previous studies and available well and boring logs. The upper aquifer in the glacial deposits consists of the upper terrace sand-and-gravel unit, whereas the lower aquifer in the glacial deposits consists of the lower outwash sand-and-gravel unit. The intermediate silt layer is a fairly effective barrier to hydraulic communication between the two aquifers. This lack of hydraulic communication is strongly indicated by substantial head differences between the two aquifers; water levels in shallow wells typically are 20-60 ft higher than water levels in deep wells (D.B. Westjohn, oral commun., 2000). Where the silt layer is absent in the Kingsford area, the upper and lower sand-and-gravel units compose one aquifer (Engineering for Earth, Water, and Air Resources, Inc., 1987). Hydraulic conductivities for the upper aquifer in the Kingsford area range from 9 to 0.9 ft/d based on tests performed by Engineering for Earth, Water, and Air Resources, Inc. (1987). Hydraulic conductivities average about 9 ft/d for the lower aquifer and range from 0.001 to 0.5 ft/d for the intermediate confining unit (Engineering for Earth, Water, and Air Resources, Inc., 1987).

An understanding of the hydraulic characteristics of glacial aquifers in the public-supply well field areas has been obtained from aquifer tests performed during investigations of

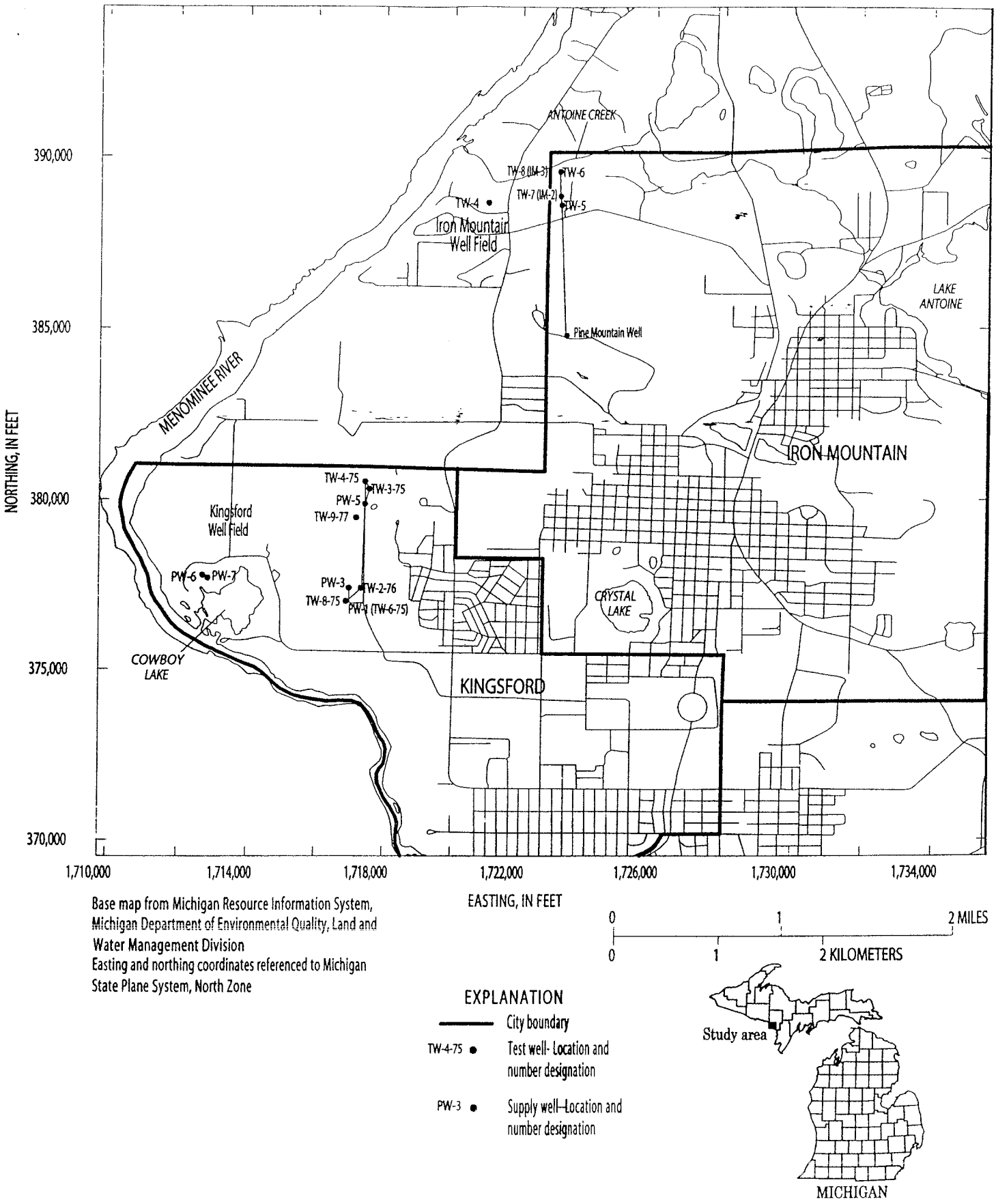

Figure 4. Location of lines of sections, test wells (TW), and supply wells (PW) in the Kingsford-Iron Mountain area, Michigan.

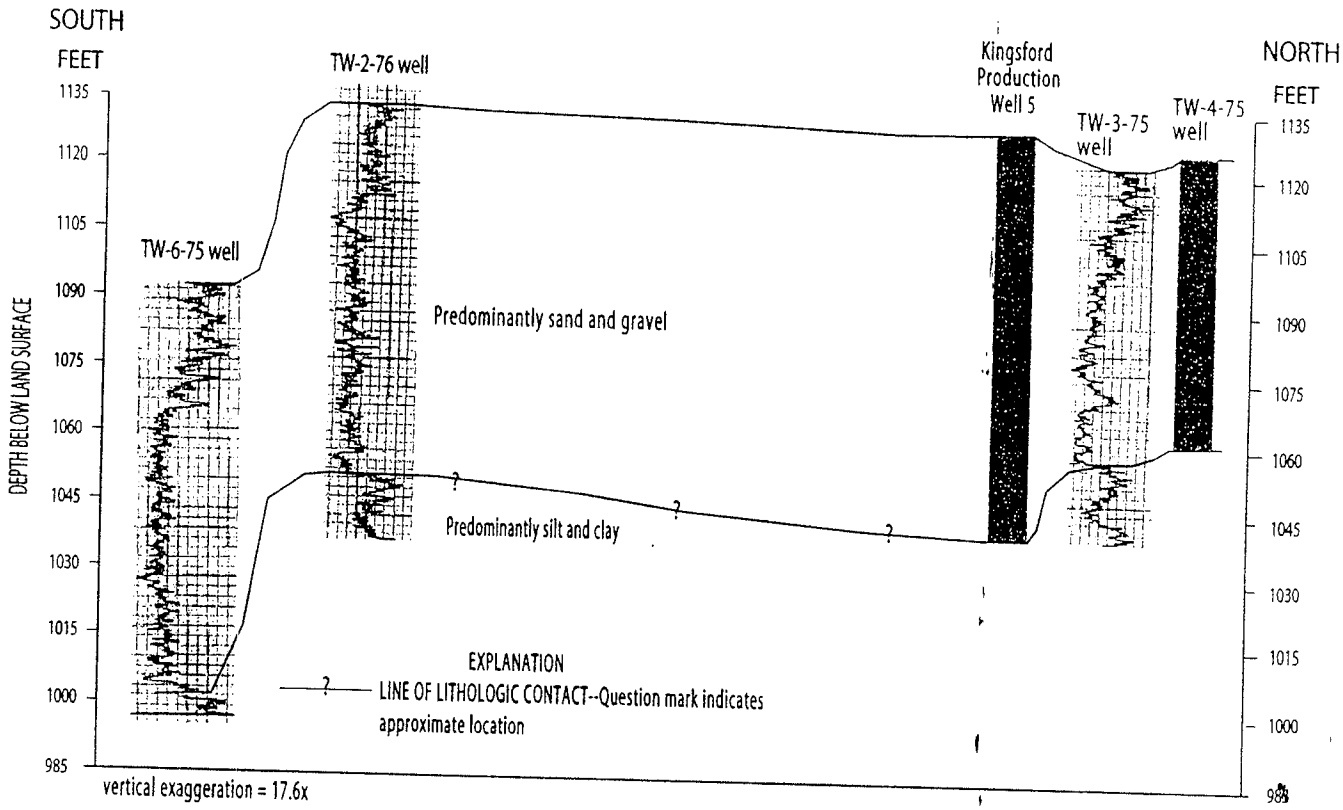

Figure 5. North-south section view of Kingsford's well field, Michigan. (Line of section shown in figure 4)

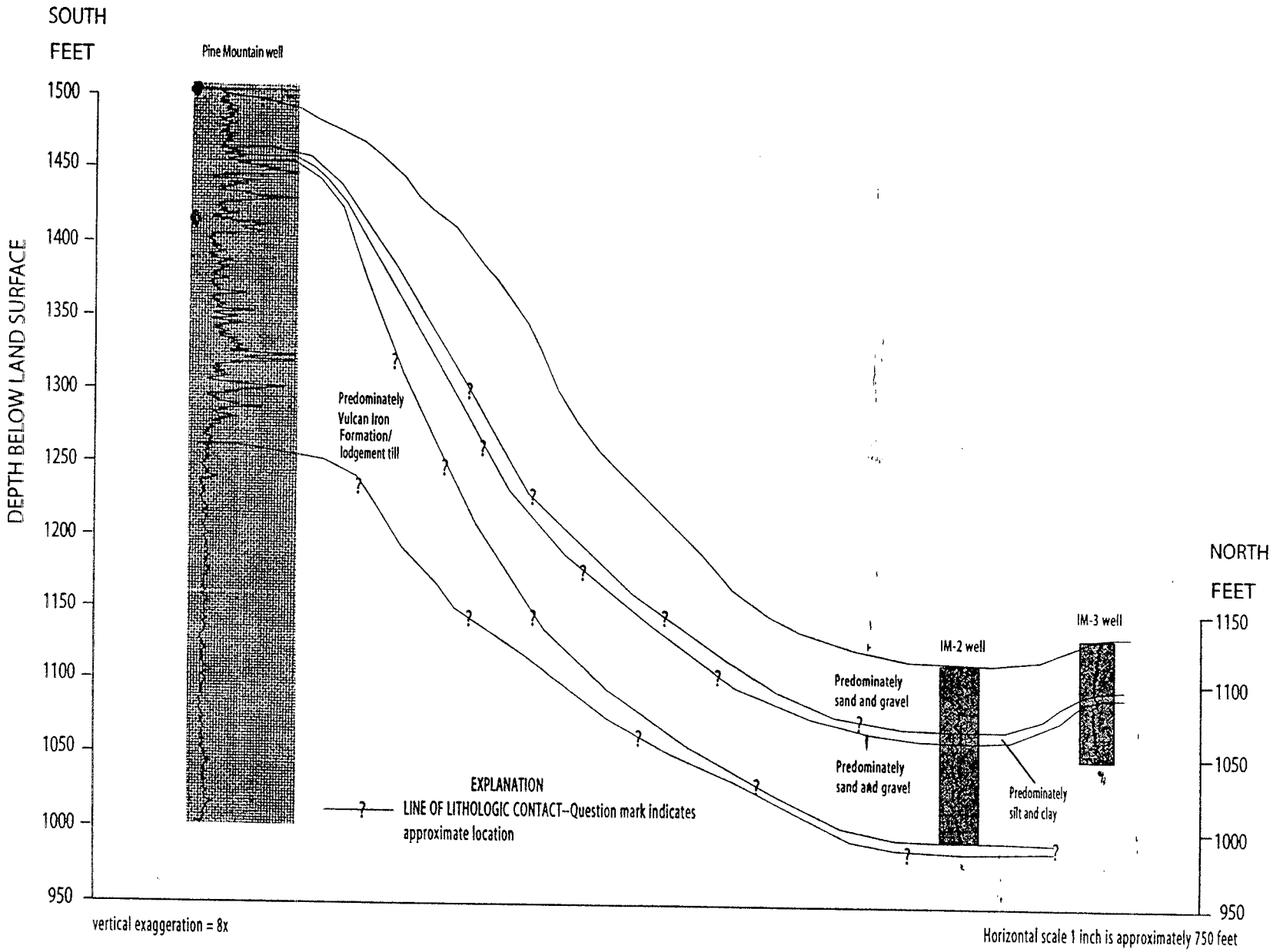

Figure 6. North-south section view of Iron Mountain's well field, Michigan. (Line of section shown in figure 4)

potential areas for well-field development (fig. 2, table 1). Aquifer tests of wells in the lower aquifer indicate ground-water leakage from overlying units. Iron Mountain's Well #4 is screened within the lower aquifer; however, in the immediate area surrounding well #4 the upper aquifer is missing.

Ground-water flow within the Kingsford-Iron Mountain area is primarily towards the surface-water bodies to the west and southwest and follows the topographic slope and the bedrock surface. Generally, the topographic slope follows the bedrock surface except within the central part of Kingsford where there is a bedrock low. Ground-water flow is probably confined primarily within the permeable sand-and-gravel units because Precambrian bedrock units appear to be largely unfractured and limit downward migration of ground water. However, bedrock consists of metasedimentary rocks in the vicinity of Pine Mountain and Millie Hill, and ground-water flow is locally controlled by these units where they are fractured.

CONCEPTUAL MODEL

The conceptual model describes ground-water flow within the Kingsford-Iron Mountain and surrounding areas and includes a definition of the position and thickness of aquifer and confining units, boundaries, and the flow system. Geologic units within the Kingsford-Iron Mountain area can be divided into layers that control ground-water flow. Four units were used to conceptualize the ground-water-flow system although not all units are present throughout the study area. These units consist of an upper permeable sand-and-gravel unit, an underlying confining unit consisting of silt and clay, a lower permeable sand-and-gravel unit, and a lowermost unit consisting of sandstone, dolomite, or lodgement till (where they are present). The bedrock of the Vulcan Iron Formation and the Randville Dolomite and the lodgement till of the glacial unit are poorly permeable and were combined in the lowermost unit because of their similar hydraulic properties.

Table 1. Estimated transmissivities for the glacial aquifers underlying Kingsford and Iron Mountain well fields, Michigan

Well field	Well numbers	Aquifer	Transmissivity (feet squared per day)
Kingsford	1, 5	upper aquifer	9,100 – 11,400
	6, 7	lower aquifer	2,800 – 12,700
Iron Mountain	1,2,3	lower aquifer	4,000 – 8,700
	4	lower aquifer	24,100

Although these units are poorly permeable, some domestic wells withdraw water from the bedrock; however, a few hundred feet of borehole must be open to a wellbore to provide an adequate supply. Geologic information obtained from logs of public-supply and domestic wells and geophysical logs were used to delineate the extent of the ground-water-flow system units.

Ground-water-flow systems have physical boundaries, which are formed by the presence of an impermeable body of rock or a large body of water, or hydrologic boundaries, which include ground-water divides and streamlines. Regional physical boundaries to the flow system are formed by the boundaries of the Menominee River drainage basin that extends west into Wisconsin and east into Michigan. Boundaries for the local-flow system in the Kingsford-Iron Mountain area consist primarily of bedrock and surface-water bodies in Michigan and Wisconsin that affect flow to the Menominee River. Locally, ground-water flow is affected by physical boundaries formed by bedrock highs south of the Menominee River and north of Iron Mountain's well fields, and by surface water bodies including Lake Antoine on the east, and the Pine and Little Popple Rivers on the west. Ground-water-flow divides are assumed to coincide with the surface-water divides which follow topographic highs and the impermeable bedrock in this area. Local hydrologic boundaries consist of streamlines, which are perpendicular to the ground-water-flow direction along the east and northeast. The lower boundary is formed by the upper surface of the Michigamme Slate, Badwater Greenstone, and Quinnesec Formations and is considered to be poorly permeable.

A preliminary understanding of ground-water-flow directions can be made on the basis of surface-water elevations taken from topographic maps of the area, ground-water levels measured during this study, and previous reports covering part of the study area. For this study, water levels were measured in 28 domestic, irrigation, and observation wells. Water levels recorded on well logs and average drawdown measurements obtained for each of the public-supply wells also were analyzed to understand ground-water-flow directions. Regional ground-water flow is towards the Menominee River and follows the direction of the regional topographic slope and the bedrock surface (fig. 7).

SIMULATION OF GROUND-WATER FLOW

Simulation of ground-water flow is made possible by first developing a conceptual model of the flow system and then developing a numerical model that is consistent with the conceptual model. The model area consists of the Kingsford-Iron Mountain area and surrounding parts of Dickinson County, Michigan and Florence County, Wisconsin. This larger area (larger than the cities of Kingsford and Iron Mountain) was modeled so as to eliminate boundary effects on the ground-water-flow solution in the interior portion of the model area by allowing natural physical and hydrologic boundaries to be chosen, as well as to investigate whether ground water moved beneath the Menominee River as possibly indicated by the high change in ground-water levels from Pine Creek to the Menominee River.

Numerical Model

The U.S. Geological Survey Modular Three-Dimensional Finite-Difference Ground-Water Flow Model (MODFLOW-96, McDonald and Harbaugh, 1996) was the computer code used to simulate ground-water flow in the Kingsford-Iron Mountain area.

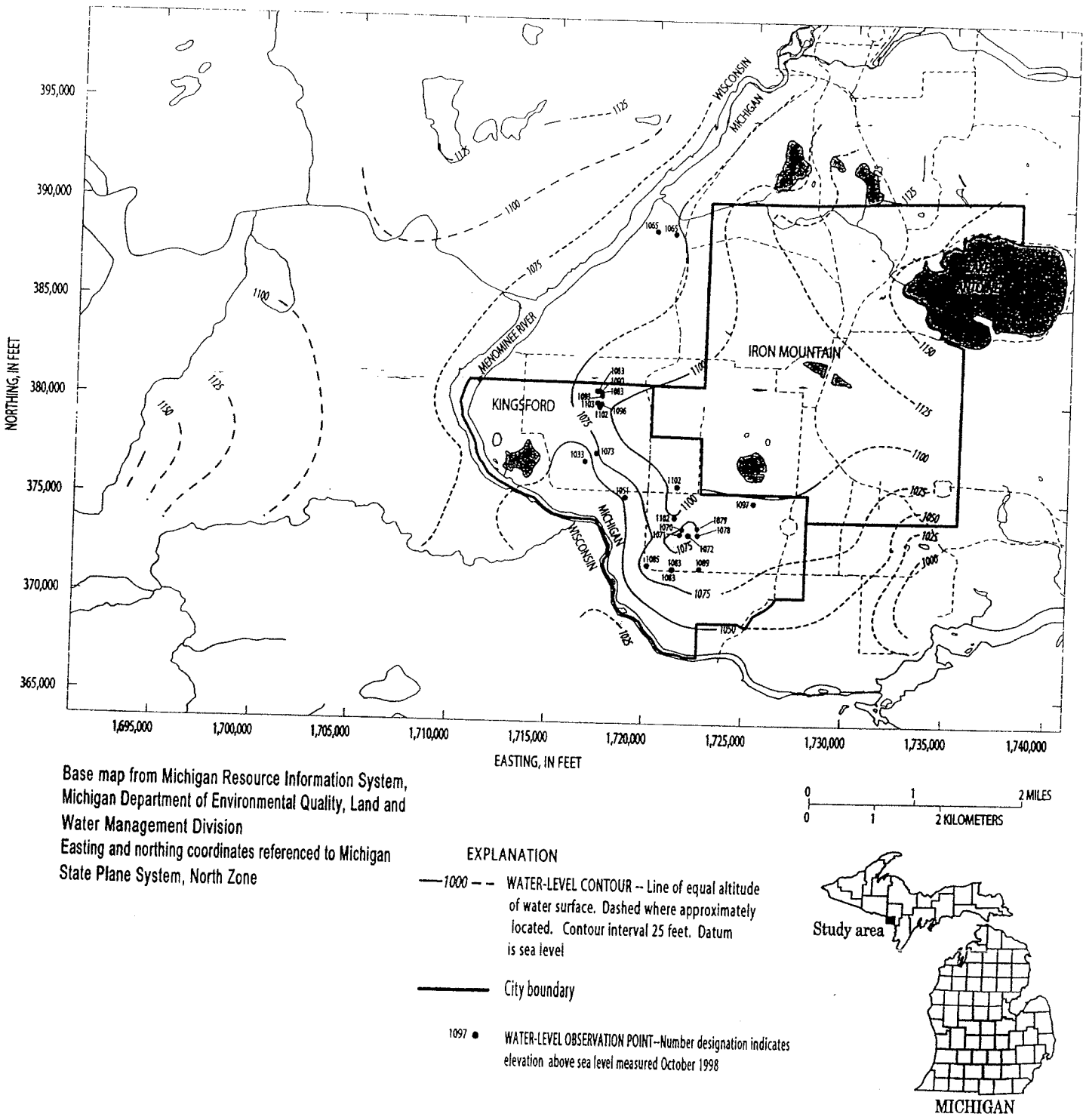

Figure 7. Ground water levels in the upper aquifer in the Kingsford - Iron Mountain area, Michigan.

This code allows the simulation of steady-state ground-water flow in two dimensions with leakage between model layers; no ground-water storage or temporal discretization terms are required. All water entering the model area through the boundaries or as recharge is assumed to leave the model area through the boundaries, rivers, or wells. The Kingsford and Iron Mountain wells have been in operation for 8 to 25 years; therefore the ground-water flow system is considered to be in steady state and water is not lost or gained from storage.

Various assumptions were made in the numerical simulation of ground-water flow. Recharge to ground water was assumed to differ over the model area depending on the presence or absence of glacial till. Recharge is assumed to be zero in areas where till or bedrock is at or very near the surface. In other areas recharge initially was assumed to be 10 in/yr. The assumption of no recharge to areas of till and bedrock highs was investigated during model calibration. Evapotranspiration of ground water also was assumed to be zero because recharge was applied to the upper surface of the model (water table), where the effects of evapotranspiration are expected to be small, and because of the regional scale of the model. Ground water was assumed to flow primarily through the glacial sand-and-gravel units. Glacial deposits are known to vary considerably with varying lithologies and thicknesses over short distances. This variability makes exact representation of the detailed hydrogeology impossible in the numerical model. Thus, hydraulic properties of the glacial deposits are generalized to represent the regional ground-water-flow system. The underlying lodgement till and bedrock units of the Vulcan Iron Formation and Randville Dolomite were simulated as a low permeability layer. The lowermost Precambrian bedrock units were simulated as impermeable boundaries. North of the Chapin Mine, ground water is withdrawn from the Hamilton Mine Shaft that extends deep into the underlying bedrock units and is discharged into Lake Antoine (fig. 3). A probable hydraulic connection is present between the bedrock and Lake Antoine based on that water levels in the mine shaft only can be lowered approximately 2 feet even with extensive pumping and the high gradient from the lake to the shaft. It is possible that the withdrawal of ground water from this mine shaft affects local ground-water levels in the immediate vicinity; however, this area is over 1.5 mi from the public-supply well fields and is not thought to affect hydrologic conditions there. Therefore, these conditions were not simulated in the model.

Model Grid and Layers

The modeled area is rectangular and consists of about 64 mi^2 (fig. 8). The area is 6.7 mi long (north-south) and 9.5 mi wide (east-west). This area is horizontally discretized into a variably spaced grid of cells in 213 columns and 204 rows. In the central portion of the model, each cell is 100 by 100 ft. Cell spacing increases initially by a factor of 1.25 for 5 rows/columns and then by a factor of 1.5 out to a maximum grid spacing of 1,029 ft. This maximum spacing was selected so as not to exceed a maximum row to column spacing ratio of 10:1. Each grid cell represents the average aquifer properties in the volume of aquifer represented by the cell; any variations in properties that are within a grid cell only can be represented in the model averages.

The model area is vertically discretized into three model layers. Layer 1 represents the upper aquifer in the glacial deposits. This aquifer is under unconfined conditions with water levels representing the water table. Layer 2 represents the lower aquifer in the glacial deposits. The lower aquifer represented in layer 2 is simulated as convertible and can be either confined or

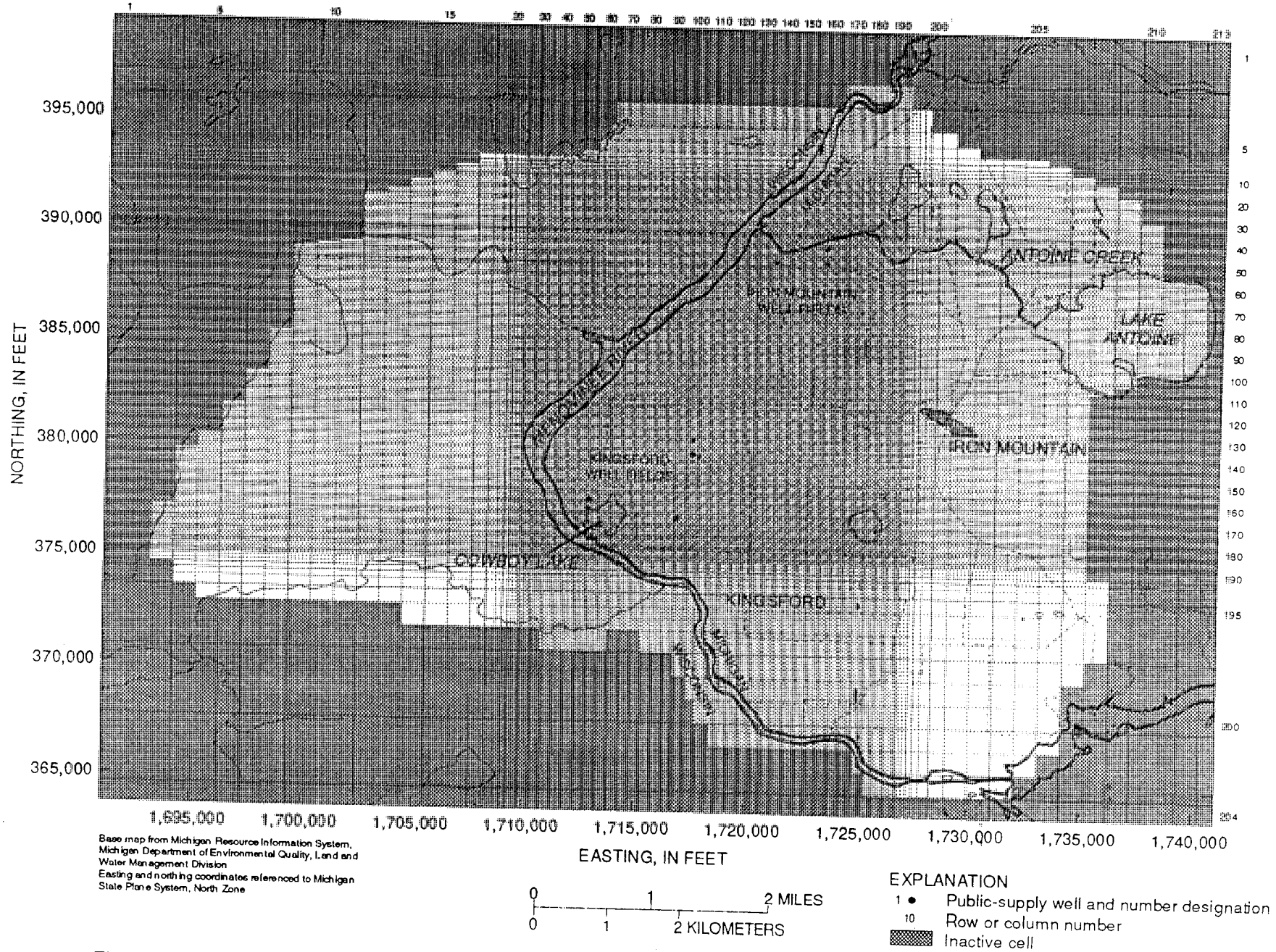

Figure 8. Model grid for simulating the ground-water-flow system underlying the Kingsford-Iron Mountain area, Michigan.

unconfined depending on the position of the water table. The intermediate confining unit that separates the upper and lower aquifers was included only in the leakance term between layers 1 and 2. The bottom model layer (layer 3) represents either metasedimentary rocks (in the vicinity of Pine Mountain, Millie Hill, and Trader Hill) or lodgement till (over the remaining area) and also is represented as convertible.

Model layer	Hydrologic unit
1	Upper aquifer in glacial deposits
2	Lower aquifer in glacial deposits
3	Lodgement till/ metasedimentary rocks

Land-surface information for most of the model area is available from a digital 1:100,000 topographic quadrangle map for Iron Mountain. This information was interpolated to a grid with a 50 ft spacing. Additional point-altitude data were taken from the topographic quadrangle map for Iron Mountain SW. This information was contoured over the model area to create land-surface elevations, which constitute the top of glacial deposits (fig. 9). The land surface is characterized by steep gradients in the vicinities of Pine Mountain, Millie Hill, and Trader Hill.

Layer surfaces were determined based on logs of domestic and public-supply wells obtained from Geological Survey Division, Michigan Department of Environmental Quality; Statewide Ground-Water Database, MIRIS-Geologic Resource Mapping Unit, Michigan Department of Environmental Quality; and Wisconsin Geologic and Natural History Survey (figs. 10-12). The top of the silt unit formed the bottom of layer 1 and the silt unit thickness was assigned to layer 2. In areas where the geologic materials composing a layer are absent, the layer is assigned a minimal thickness and the hydraulic properties of the overlying layer. Information for the Wisconsin part of the model area did not differentiate the glacial deposits into separate vertical units; therefore, on the western side of the Menominee River, glacial deposits are modeled as the upper layer with layer 2 assigned a 1 ft thickness and the hydraulic conductivity of the overlying layer. Additional delineation of layer surfaces in areas of sparse data was done by extrapolating from known nearby points, primarily within Wisconsin where few well logs are available. In the vicinity of Pine Mountain, Millie Hill, and Trader Hill, till overlies the bedrock units and the sand-and-gravel units are missing. Outcrops provide additional control for the delineation of the bedrock surface, especially in Wisconsin where outcrops indicate that glacial deposits are thin.

Boundary Conditions

Model boundaries extend approximately 1 mi north of the Iron Mountain well field, approximately 1 mi south of the Kingsford well field, and approximately 2 mi east and 3 mi west of the well fields (fig. 8). These boundaries are based on surface-water elevations and topographic information, and are represented by specified head, specified flux, and head-dependent flux conditions. Specified head boundaries (also referred to as constant head boundaries) are modeled by specifying head values that do not change during numeric simulation. Specified flux boundaries can be modeled by specifying the flux equal to zero to represent ground-water-flow divide boundaries and streamlines. Head-dependent flux boundaries are modeled by specifying a conductance, which limits the amount of water that can enter or leave any cell.

Specified head boundaries are used to represent hydraulic conditions along parts of the east and west model boundaries and are

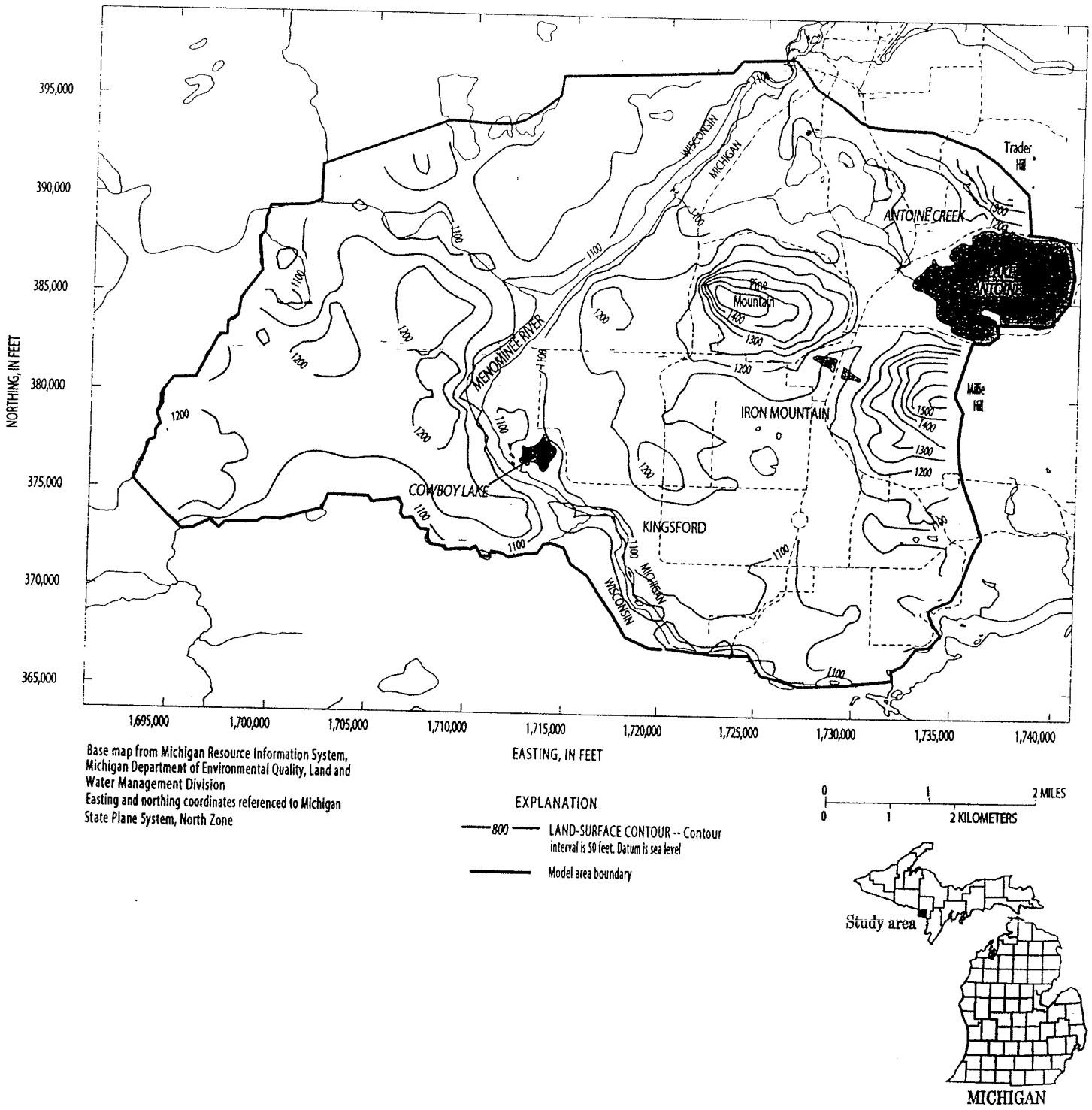

Figure 9. Estimated land surface elevations in the Kingsford-Iron Mountain area, Michigan.

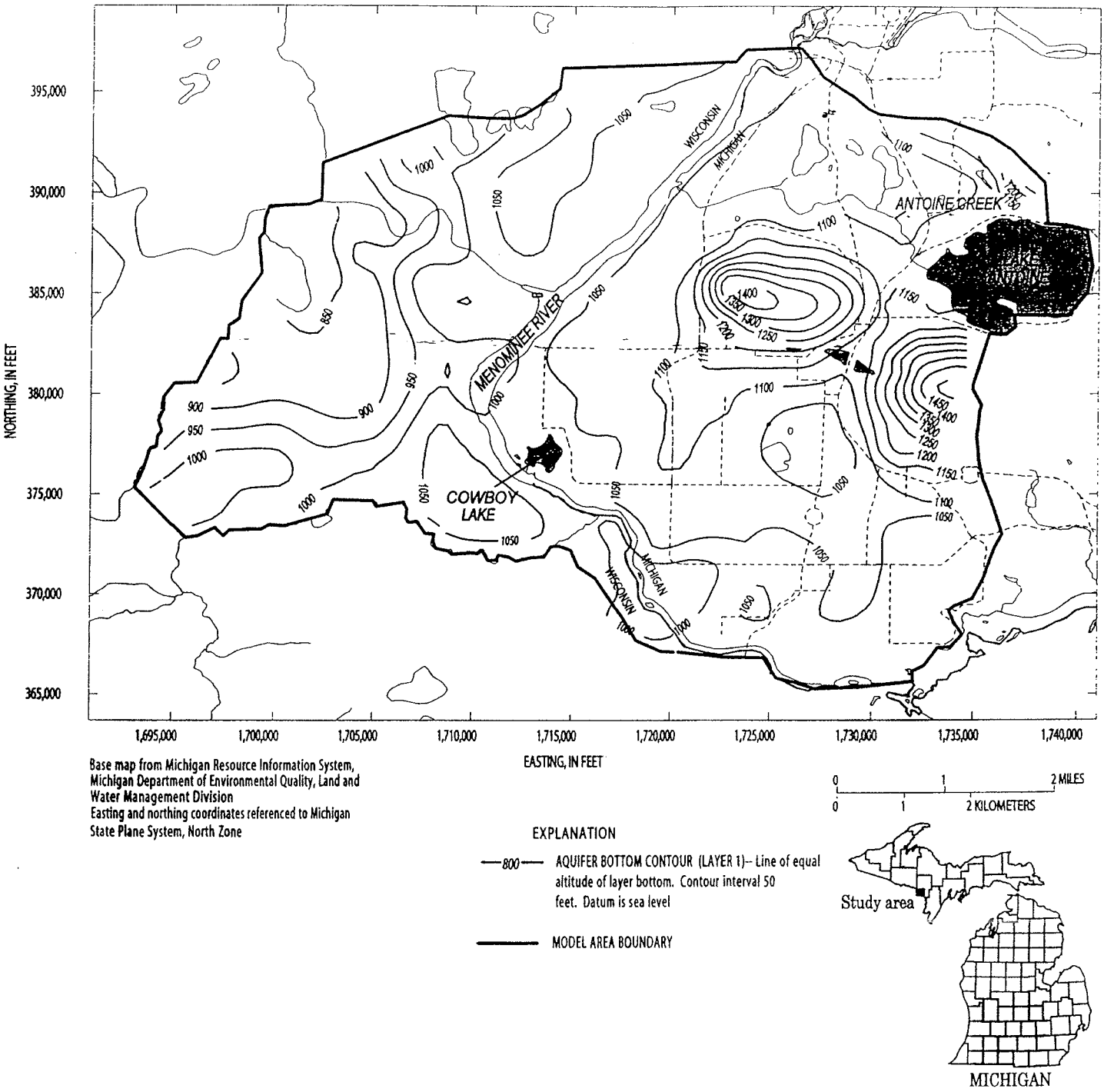

Figure 10. Estimated configuration of the bottom of the upper aquifer model (model layer 1) in the Kingsford-Iron Mountain area, Michigan.

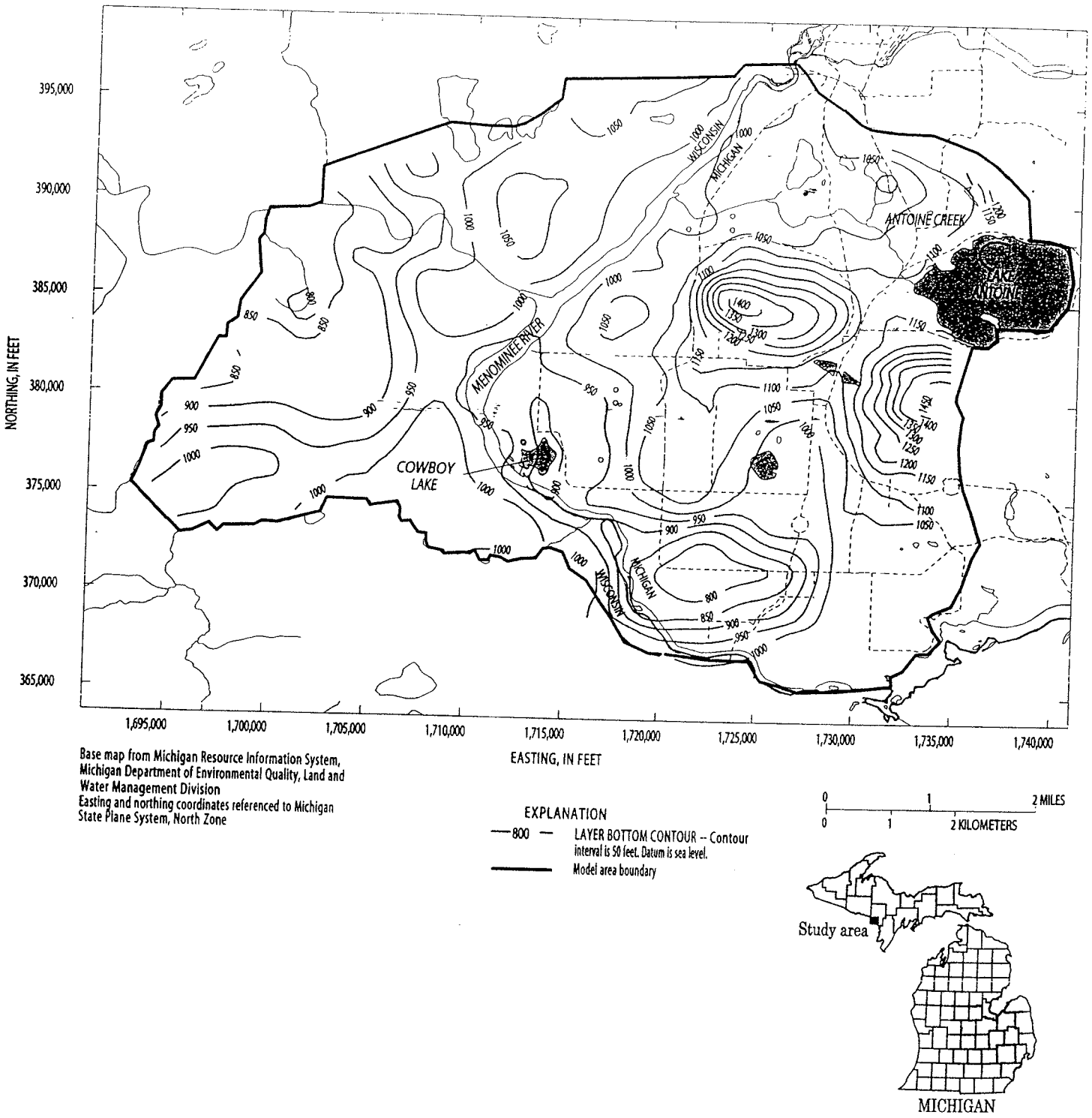

Figure 11. Estimated configuration of the bottom of the lower aquifer (model layer2), Kingsford-Iron Mountain area, Michigan.

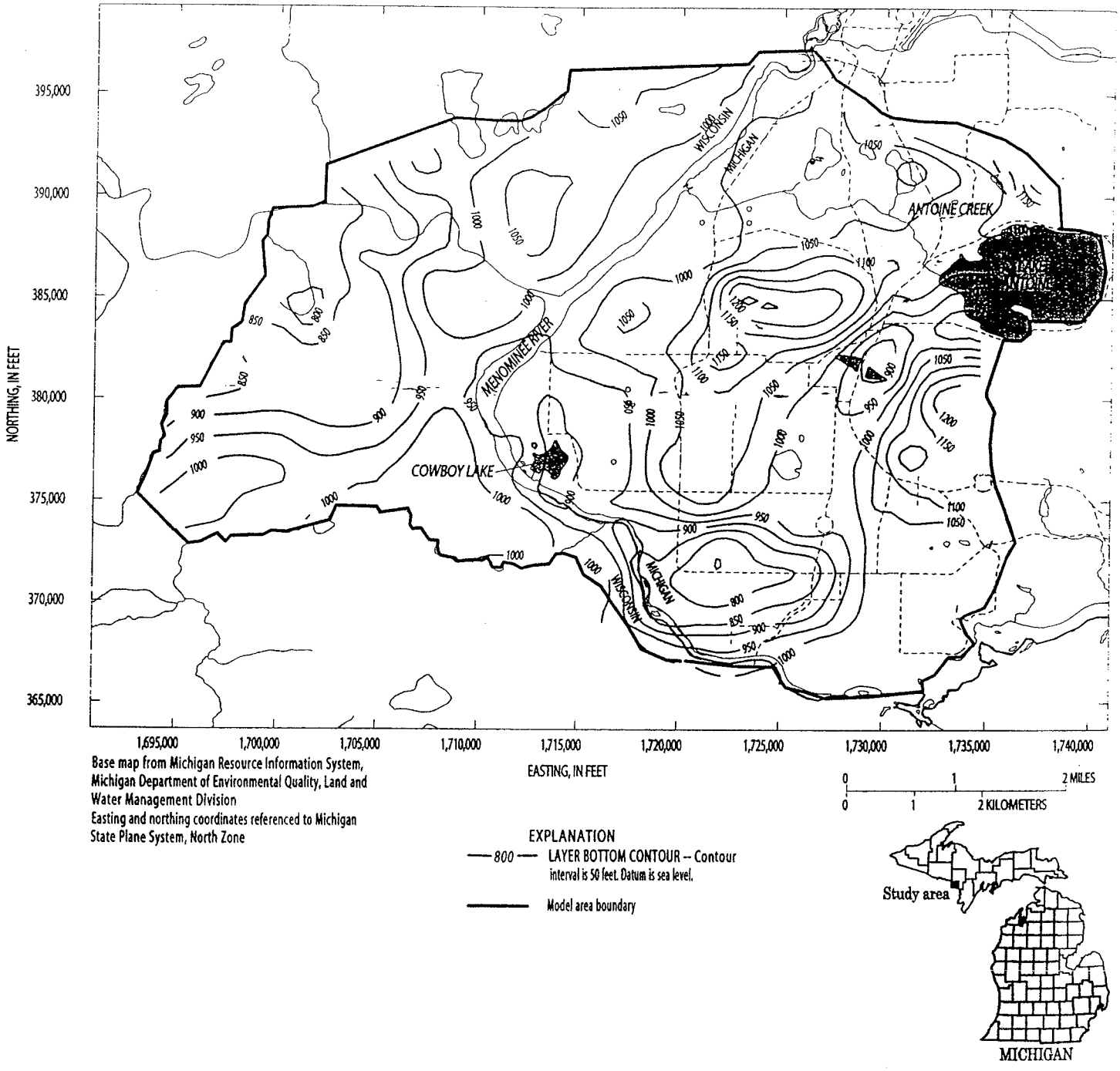

Figure 12. Estimated configuration of the bottom of the lodgement till and metasedimentary rocks (model layer 3), Kingsford-Iron Mountain area, Michigan.

based on surface-water elevations (fig. 13). Specified head boundaries also were used to represent the southernmost part of the Menominee River. Specified flux boundaries with flux equal to zero are used to represent natural physical boundaries formed by outcropping or shallow bedrock along parts of the north and south model boundaries. Specified flux boundaries with flux equal to zero also are used to represent ground-water-flow divides and streamlines along parts of the north and west boundaries. Finally, head-dependent flux boundaries are used to represent Lake Antoine along part of the east boundary and three small lakes along the west boundary.

In areas where a natural physical boundary does not exist, specified head boundaries located far from the well fields were used, based on available water-level data. After model development, sensitivity of model results to boundary conditions were analyzed. Fluxes through cells forming specified head boundaries were compared for simulations in which public-supply wells were being pumped and when wells were idle. As an additional check on the ground-water-flow solution, specified head boundaries were changed to specified flow boundaries and the solutions compared. The effect of stresses induced by pumping (on the assumption of no-flow across streamlines) also was investigated.

All boundaries of layer 2 are the same as those of layer 1, except that no-flow boundaries are located in the area of Lake Antoine, because the lake does not penetrate the lower sand-and-gravel unit. Layer 3 is bounded by no-flow boundaries. In layers 1 and 2, the Chapin Mine area of the model is represented by inactive (no-flow) cells and by head-dependent flux cells in layer 3. In this area, glacial deposits are relatively thin and unsaturated, and ground water is present only in the bedrock unit below the glacial deposits.

Hydraulic Properties

Hydraulic properties used in model simulations include layer hydraulic conductivities and leakances, recharge rates, and streambed conductance. Aquifer hydraulic properties and leakances affect ground-water flow through and between model layers. Recharge rates indicate the amount of water movement through the upper surface of the model. Streambed conductance affects vertical flow of ground water from an aquifer to a stream or from a stream to an aquifer.

Based on interpretation of well and geophysical logs, eleven zones were used to describe conditions within the three layers (table 2, figs. 14-16). The upper and lower aquifers were separated into different zones based on calculated horizontal hydraulic conductivities from aquifer-test analyses. Transition zones were added to reduce the difference in hydraulic conductivities between zones in some areas. Initial estimates of hydraulic conductivity for the zones within each layer were based on calculated hydraulic conductivities from aquifer-test analyses and on representative values estimated by Freeze and Cherry (1979) for the geologic materials present in the area.

Leakances as described by McDonald and Harbaugh (1988) are based on the layer thicknesses and the vertical hydraulic conductivity for each layer. The initial estimate of leakance between layers 1 and 2 was based on the thickness and assigned values for the hydraulic conductivity of the confining unit that separates the upper and lower aquifers. Vertical hydraulic conductivities were assigned based on the type of geologic materials present and consisted of zones representing till in the vicinity of Pine Mountain and Millie Hill, silt and clay in the south Kingsford area and to the north near Iron Mountain Well #4, and silt and silty sand over the rest of the area

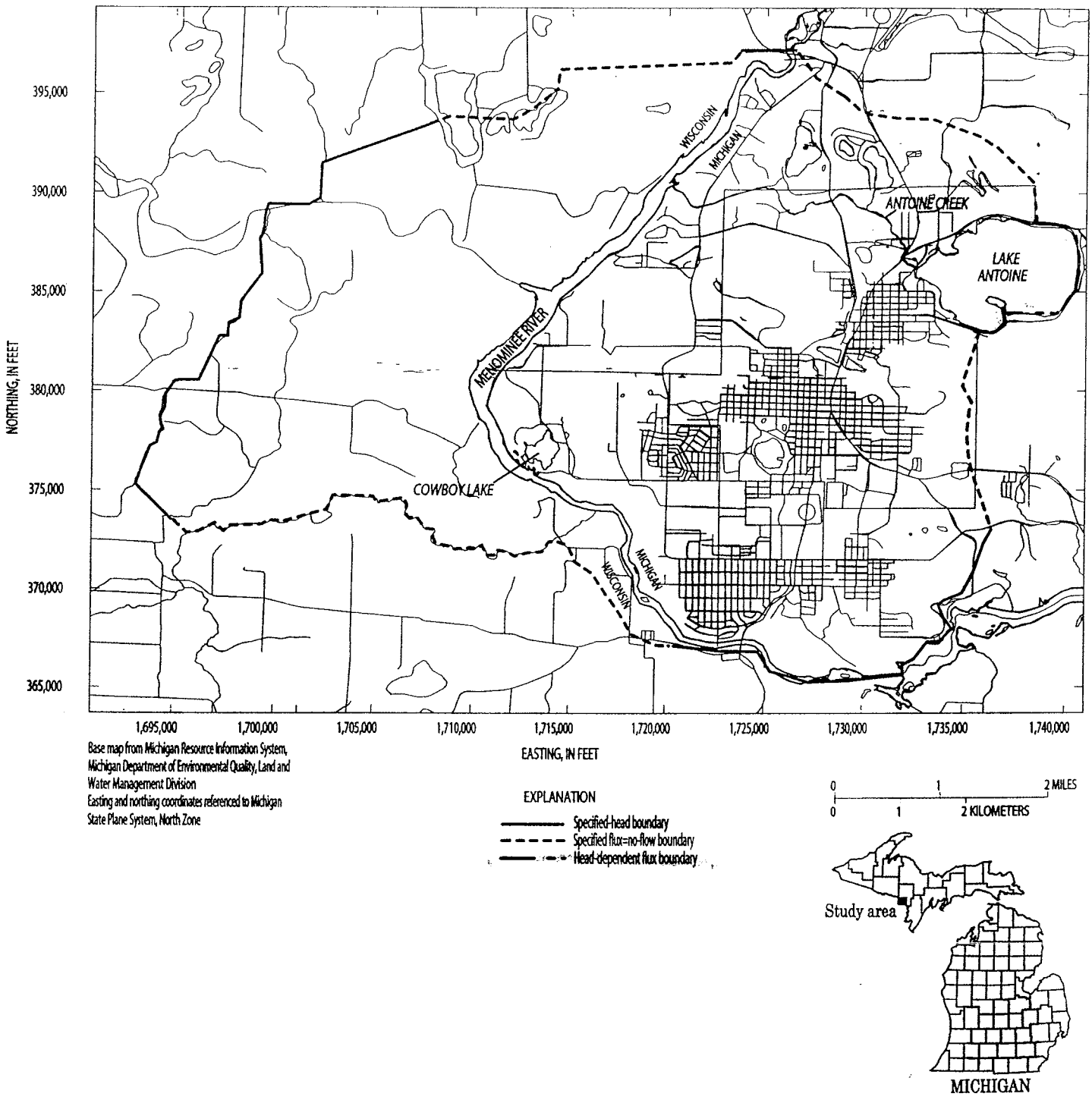

Figure 13. Boundary of model area in the Kingsford-Iron Mountain area, Michigan.

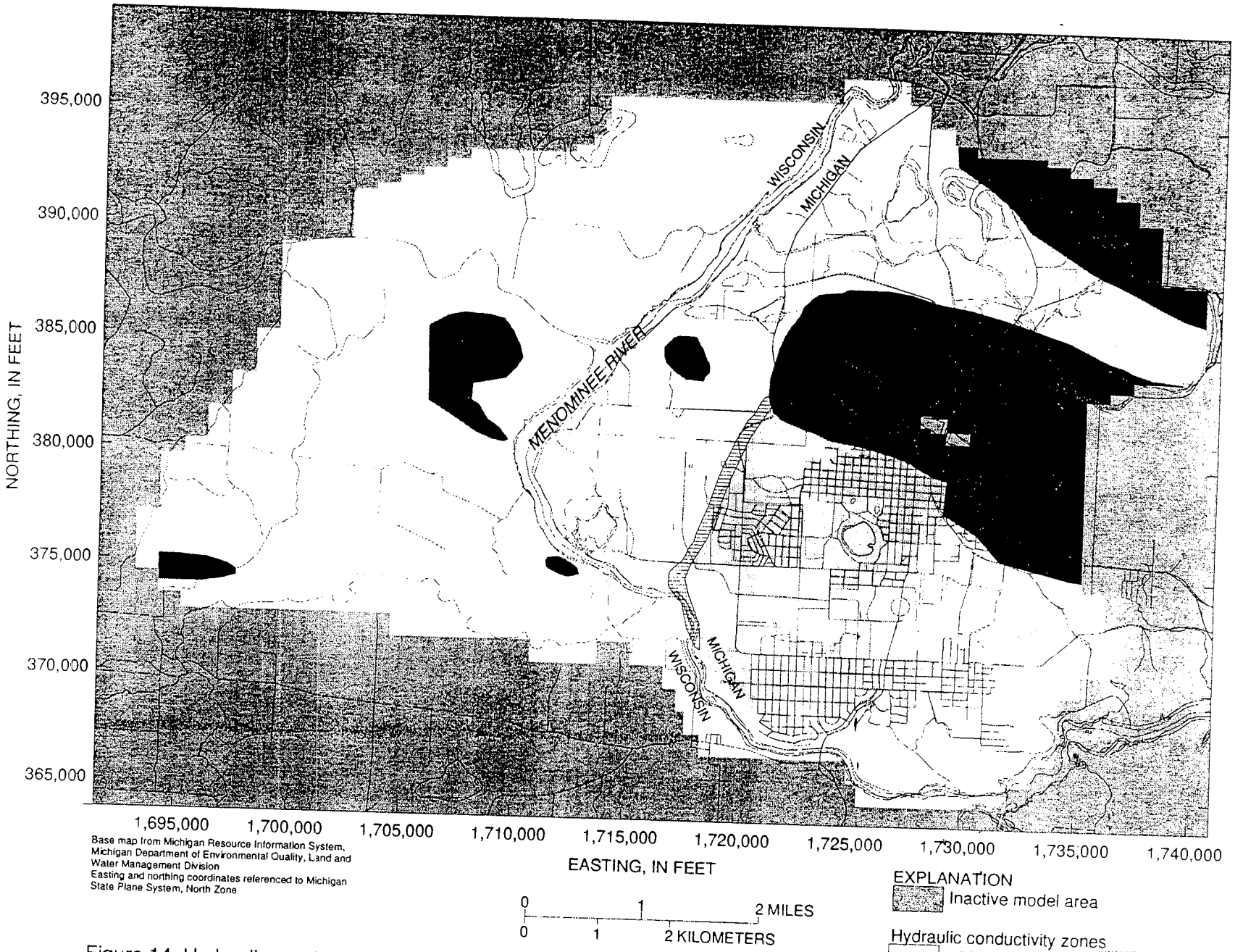

Figure 14. Hydraulic conductivity zones in the upper aquifer (model layer 1) for the ground-water-flow model, Kingsford-Iron Mountain area, Michigan.

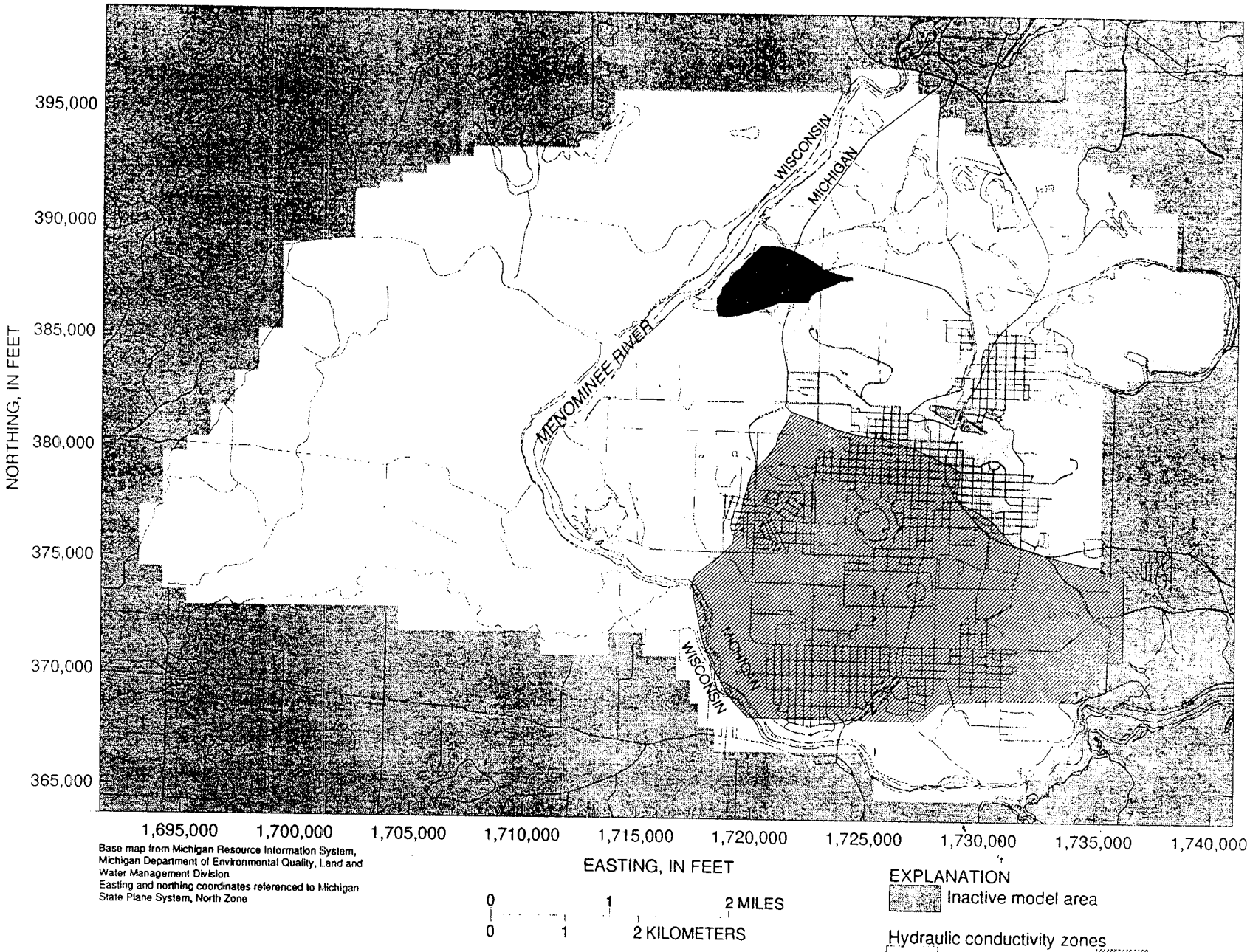

Figure 15. Hydraulic conductivity zones in the lower aquifer (model layer 2) for the ground-water-flow model, Kingsford-Iron Mountain area, Michigan.

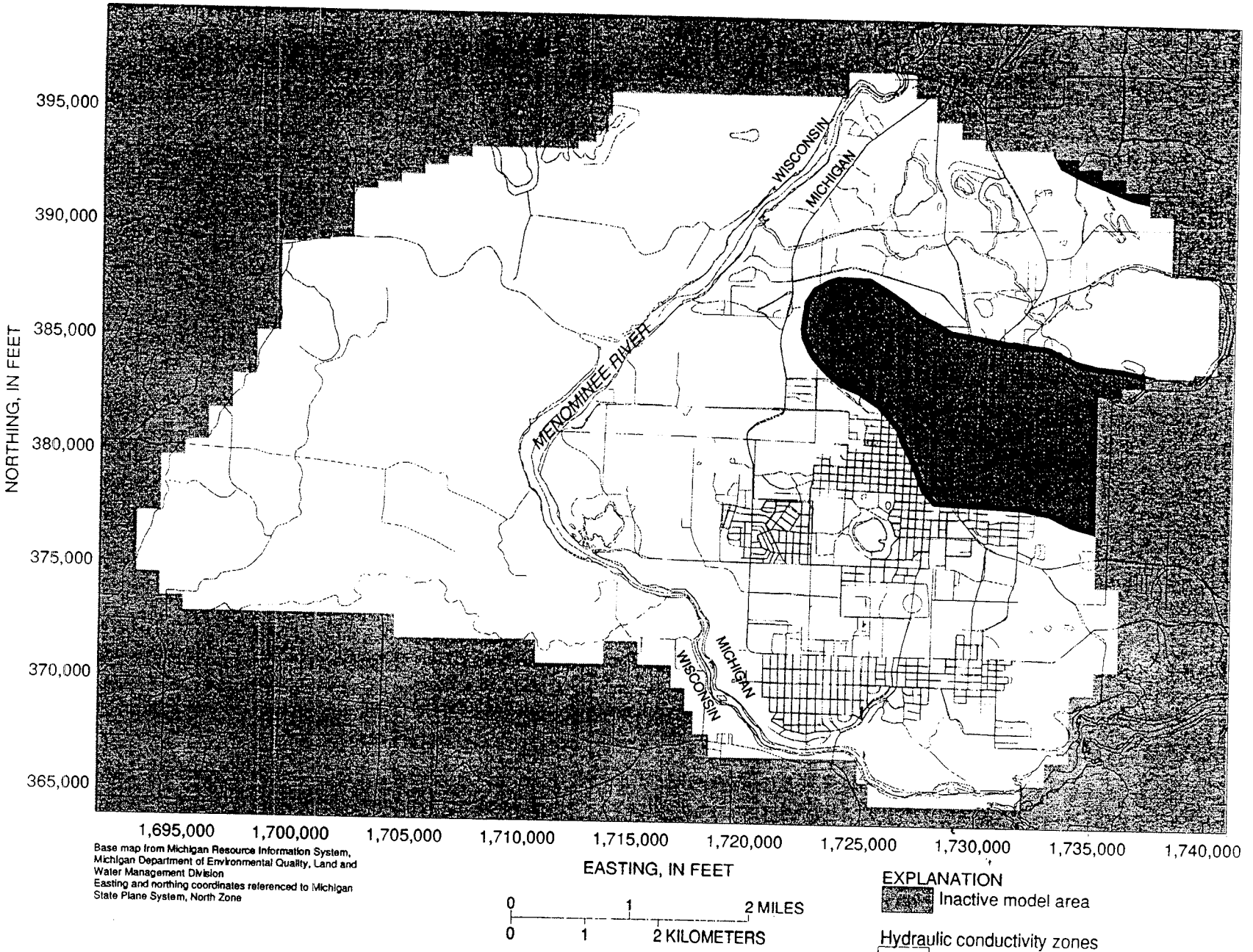

Figure 16. Hydraulic conductivity zones in the lodgement till and metasedimentary rocks (model layer 3) for the ground-water-flow model, Kingsford-Iron Mountain area, Michigan.

Table 2. Initial horizontal and vertical hydraulic conductivity estimaes for layer zones in the ground-water-flow model

Layer	Zone	Horizontal hydraulic conductivity (feet per day)	Vertical hydraulic conductivity (feet per day)
1	1	100	1.0
	2	5	.05
	3	25	.25
	4	50	.5
2	5	120	1.2
	6	5	.05
	7	25	.25
	8	250	2.5
3	9	.02	.002
	10	.002	.0002
	11	.0002	.00002

(fig. 17). These vertical hydraulic conductivities then were divided at each grid cell location by the layer thickness. The resulting values for leakance between layers 1 and 2 ranged from 3.8×10^{-6} to 2.5×10^{-3} /d (fig. 18). The initial estimate of leakance between layers 2 and 3 was based on the vertical hydraulic conductivity of the geologic materials present and the thickness of the over- and underlying layers. The resulting values for leakance between layers 2 and 3 ranged from 1.8×10^{-7} to 4×10^{-3} /d (fig. 19). Initial estimates of vertical hydraulic conductivity were assumed to be 0.01 times the horizontal hydraulic conductivity for each zone.

Recharge was assumed to differ in areas depending on the type and thickness of glacial deposits and was applied to the top model layer. In areas of surficial till, and in areas where the bedrock is located near the land surface, recharge was assumed to be zero. Over the rest of the area, recharge initially was assigned a value of 10 in/yr. Estimates of average discharge obtained from three nearby U.S. Geological Survey (USGS) gaging stations equaled 18.3 in/yr from 1914 to 1996 for the Menominee River near Florence, Wisc. (USGS gaging station 04063000); 15.1 in/yr from 1914 to 1997 for the Menominee River at Twin Falls near Iron Mountain, Mich. (USGS gaging station 04063500); and 13.8 in/yr from 1993 to 1997 for the Menominee River at Niagara, Wisc. (USGS gaging station 04065106, Water Resources Data for Michigan, Water Years 1996 and 1997). These discharges represent an upper limit for recharge because they include both baseflow and runoff. Actual estimates of baseflow could not be determined because of the presence of numerous control structures along the Menominee River.

In MODFLOW (McDonald and Harbaugh, 1988), streambed conductance is calculated as the product of the hydraulic conductivity of the streambed materials, stream length, and stream width, divided by the streambed thickness. Stream lengths for cells representing the Menominee River were equal to the length of the cell (fig. 8). Stream widths were assumed to be equal to approximately 100 ft. Stream lengths for cells representing the Pine River, Pine Creek, and Little Popple River in Wisconsin were equal to the length of the cell. Stream widths were assumed to equal 10 ft except along one section of the Pine River where the width was assumed to equal 100 ft. Stream lengths and widths for cells representing Antoine Creek were assumed to be 10 ft. Streambed thicknesses were assumed to be 1 ft. Hydraulic conductivities of the streambed materials were initially assigned a value of 10 ft/d, except for the section of Antoine Creek in the area immediately north of Iron Mountain Well #3 which was assigned an initial value of 1 ft/d. In this area, Coleman Engineering Company (1980) observed that the creek bottom consisted of silty sand which limits the direct flow of water from the creek to the well at this location. Horizontal

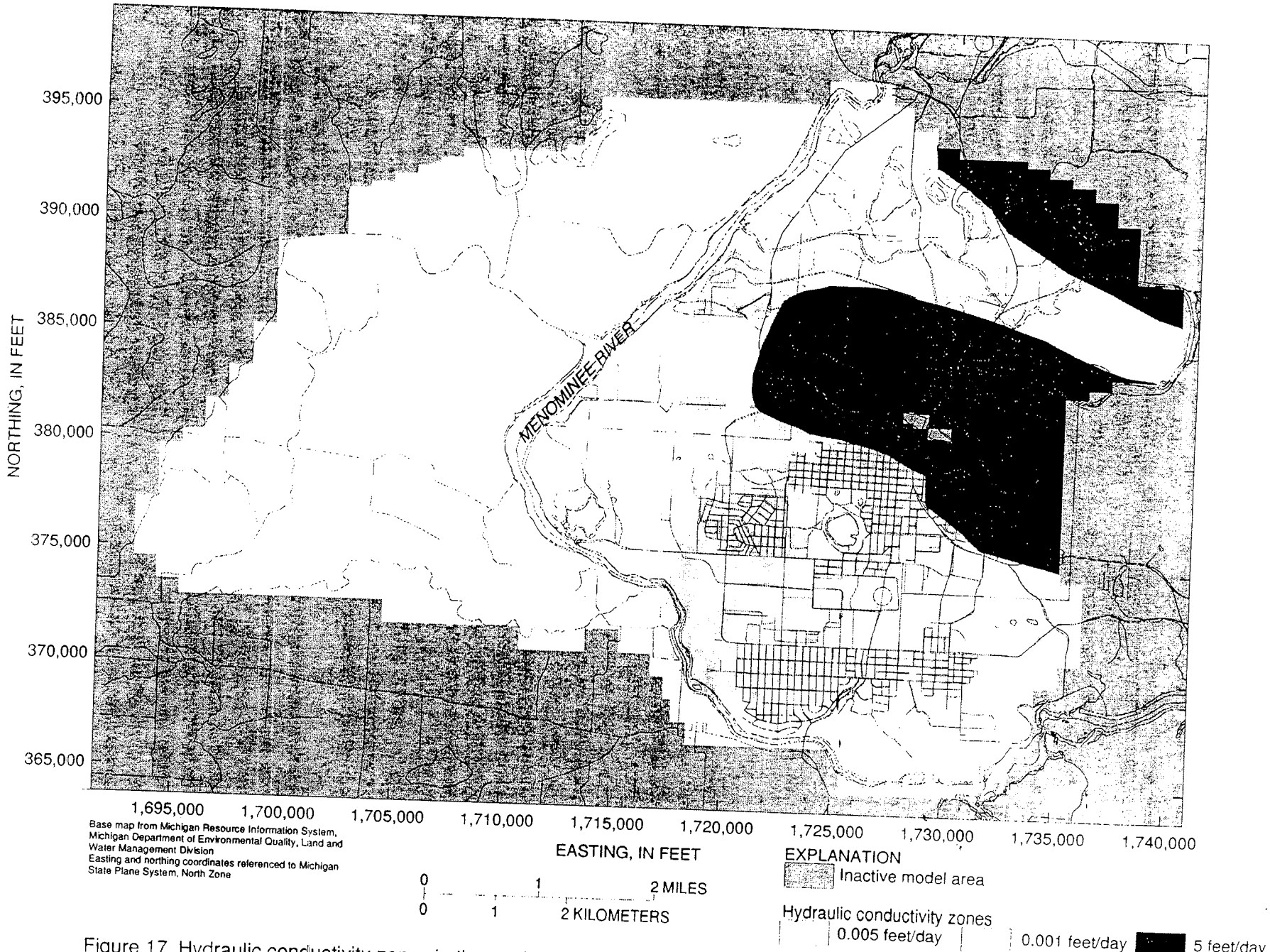

Figure 17. Hydraulic conductivity zones in the confining unit between the upper and lower aquifers (model layers 1 and 2), Kingsford-Iron Mountain area, Michigan.

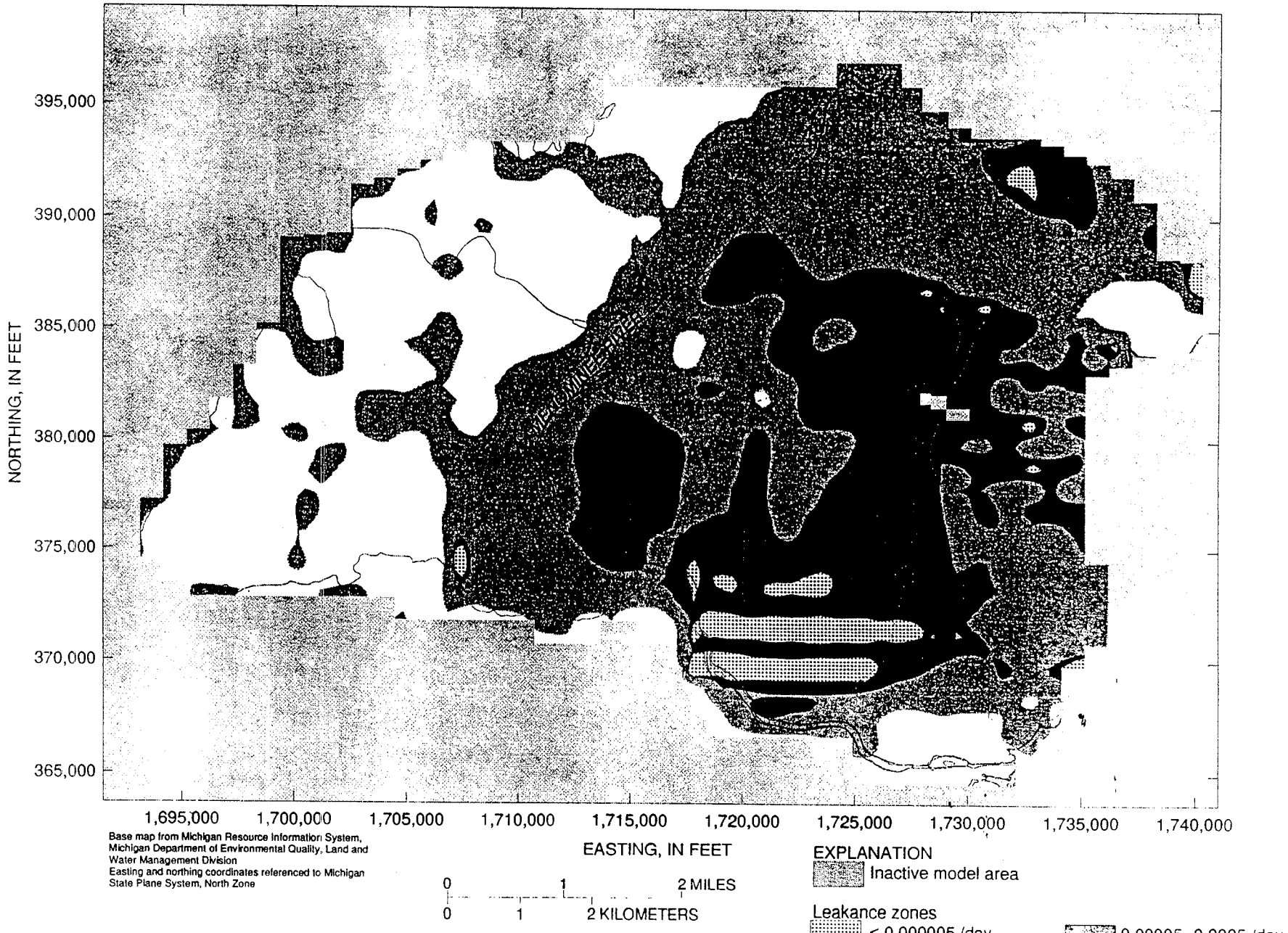

Figure 18. Estimated vertical leakance between the upper and lower aquifers (model layers 1 and 2), Kingsford-Iron Mountain area, Michigan

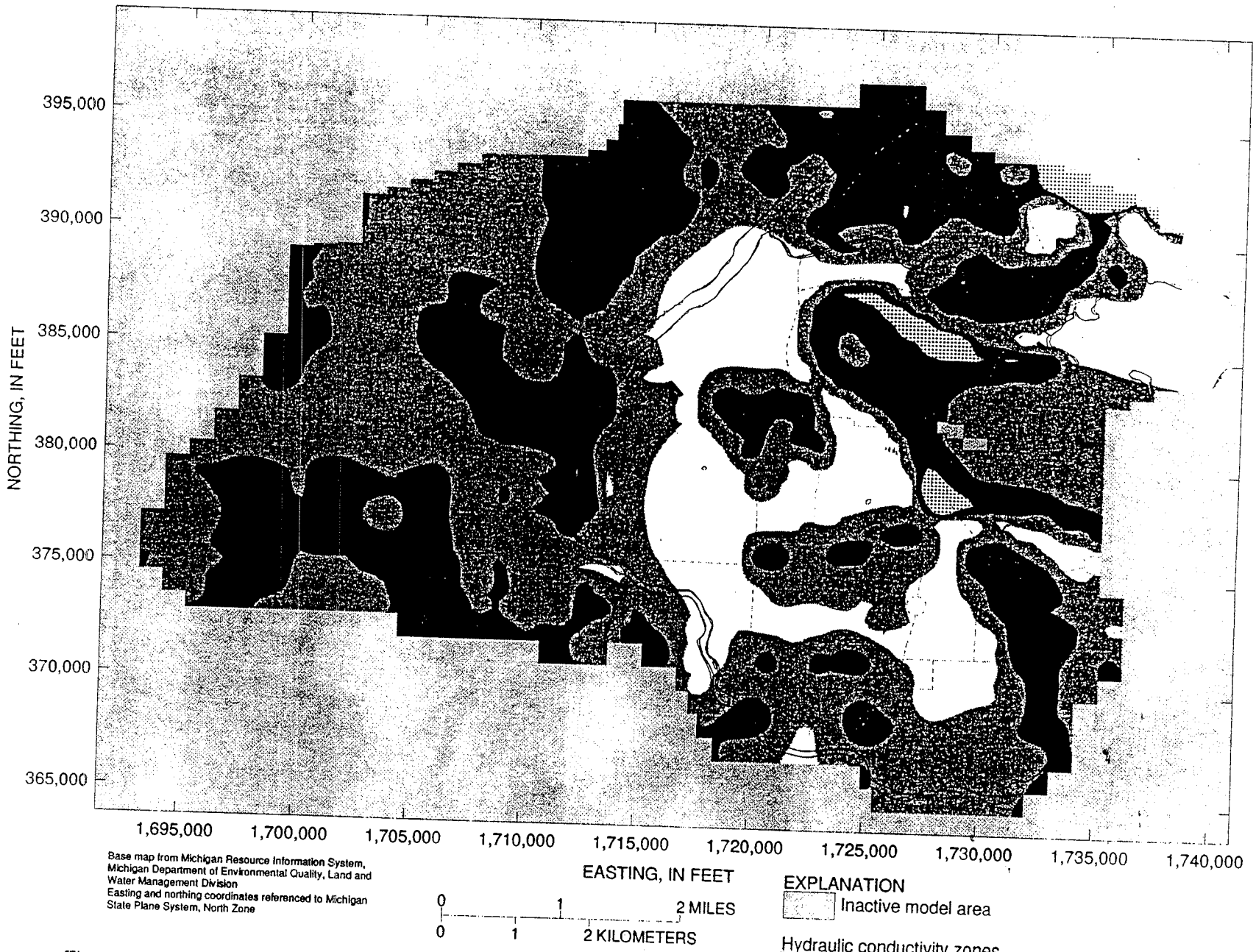

Figure 19. Estimated vertical leakance between the lower aquifer and the lodgement till-metasedimentary rocks (model layers 2 and 3), Kingsford-Iron Mountain area, Michigan

hydraulic conductivities for the lake cells were initially estimated to be 10 ft/d.

Ground-water withdrawals were simulated from the center of the cell containing a pumping well. Because of the close proximity of Iron Mountain wells 1 and 2, these wells were simulated as pumping from the same cell. Withdrawals from Kingsford and Iron Mountain wells totaled:

0.76 mgd	Iron MountainWells #1 and #2
0.14 mgd	Iron Mountain Well #3
0.32 mgd	Iron Mountain Well #4
0.15 mgd	Kingsford Well #1
0.28 mgd	Kingsford Well #5
0.23 mgd	Kingsford Well #6
0.37 mgd	Kingsford Well #7

Model Calibration

Model calibration is the process of reducing the difference between measured and simulated water levels and flows by adjusting model parameters. Multiple calibration trials were used to determine the set of parameter values that produced the best fit between simulated and measured values, whereas keeping parameters and the overall water budget within estimated values.

Head data used in the calibration of the ground-water-flow model include water-level measurements made during this study, measurements made during previous investigations of the Kingsford area, and measurements recorded on domestic well logs. Of the measurements used for this study, 24 are in layer 1, 44 are in layer 2, and 5 are in layer 3. Long-term drawdown measurements for the public-supply wells were included for comparison purposes. Because of the way in which pumping is represented in the model (continuous pumping at a constant rate, rather than intermittent pumping at varying rates); however, the water-level measurements at pumping wells will not be represented exactly.

Flow data at USGS gaging stations were examined to determine upper and lower bounds on flow within the Menominee River. Long-term data (greater than 80 years of record) are available for two stations (04063000 and 04063500) on the Menominee River upstream of the model area. Flow at these stations averaged 1,797 ft^3/s for 04063000 and 1,812 ft^3/s for 04063500 over the available years of record for similar size drainage basins (Water Resources Data for Michigan, Water Years 1996 and 1997). The length of river reach between these two stations is approximately the same length as that in the model area and the flow is assumed to be representative. The difference between these flows is small and is probably within the expected error range of the measurements; however, this comparison serves to illustrate that flow to river cells within the model is expected to be small (less than 15 ft^3/s).

Model sensitivity was investigated by varying model parameters within expected ranges (scenarios 1 – 9, Appendix) and comparing the resulting root mean square errors (RMSE). Different scenarios were considered because of the complexity of the ground-water system being represented, differing geologic materials and water levels observed at adjacent wells, the steep gradients present, and the unknown location of the water table in some areas of the model. The root mean square error is the average of the squared differences in measured and simulated water levels. RMSE values and simulated model flow budgets were compared for scenarios in which recharge to ground water; hydraulic conductivity of the streambed materials, zone 1 in layer 1, Cowboy Lake area, Iron Mountain Well #4 area, and zone 5 in layer 2, and all zones in layer 3; and the leakances between layers were varied. The best fit between measured

and simulated water levels was achieved when the Menominee River was represented as specified head cells in both layers 1 and 2 (scenario 1); however, this representation of the river does not allow for the possibility of flow beneath the river which was investigated in other scenarios (appendix).

The final parameter estimates (scenario 4) for each zone are within reasonable ranges (table 3).

Table 3. Final horizontal hydraulic conductivity estimates for layer zones in the ground-water-flow model for the Kingsford-Iron Mountain area, Michigan

Model layer	Zone	Horizontal hydraulic conductivity (feet/day)
1	1	120.
	2	5.
	3	25.
	4	50.
2	5	80.
	6	5.
	7	5.
	8	125.
3	9	.1
	10	.01
	11	.001

The horizontal hydraulic conductivities of layer zones are within the ranges determined from aquifer tests and flow to river cells is within the expected order of magnitude. Flow to river cells increased and water levels in layer 1 were higher with an increase in recharge. Recharge of 2 in/yr to till areas did not change the extent of the unsaturated areas and water levels remained about the same in all layers. Water levels in layer 1 were lower with increases in hydraulic conductivity for layer 1 or 2. Water levels in layer 2 remained about the same with an increase in the hydraulic conductivity of layer 1 and decreased with an increase in the hydraulic conductivity of layer 2. Water levels remained about the same with changes in the hydraulic conductivity of layer 3. Water levels were higher in layer 1 and remained about the same in layer 2 with changes in streambed hydraulic conductivity; however, flow to river cells decreased with lower streambed conductivity and increased with higher streambed conductivity. Changes in leakance resulted in small changes in water levels.

Results of model simulations indicate close agreement between water flowing into and out of the model area; percent discrepancy equalled –0.49 (table 4). Generally simulated water levels are close to measured water levels with the residuals about evenly split above and below the line representing simulated equal to measured water levels (fig. 20a, b, and c). Seventy-one percent of the simulated water levels are within 15 ft of the measured values. Differences between simulated and measured values are shown in figure 21 and do not indicate any spatial trends. Simulated water levels for layers 1 and 2 are shown in figures 22 and 23, respectively. Part of the difficulty in matching measured values is due to large observed differences in nearby wells. The simulated streamflow of 9.6 ft^3/s is less than 15 ft^3/s as expected. The simulated values obtained represent the best match to these different values.

Table 4. Ground-water-flow model budget, Kingsford-Iron Mountain area, Michigan

Budget component	Rate (cubic feet per day)
FLOW INTO MODEL AREA:	
Constant head	2,095,436.0
Recharge	1,504,997.0
River leakage	134,108.2
FLOW OUT OF MODEL AREA:	
Constant head	2,488,620.0
Wells	300,935.0
River leakage	963,167.3

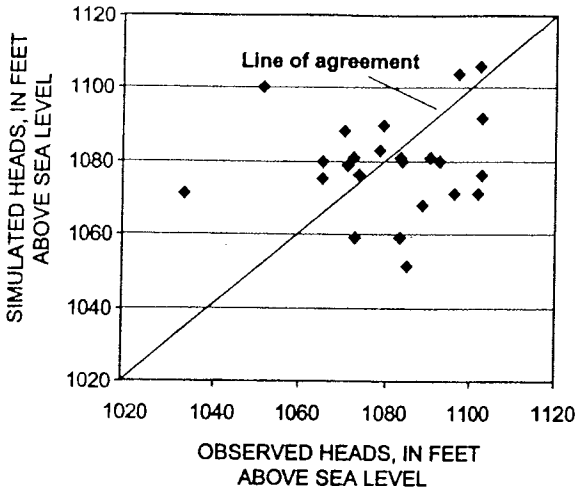

Figure 20a. Relation between observed and simulated water levels in the upper aquifer (model layer 1), Kingsford-Iron Mountain area, Michigan.

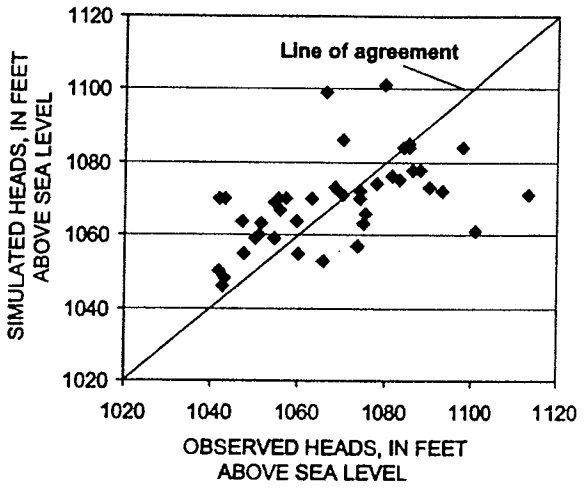

Figure 20b. Relation between observed and simulated water levels in the lower aquifer (model layer 2), Kingsford-Iron Mountain area, Michigan.

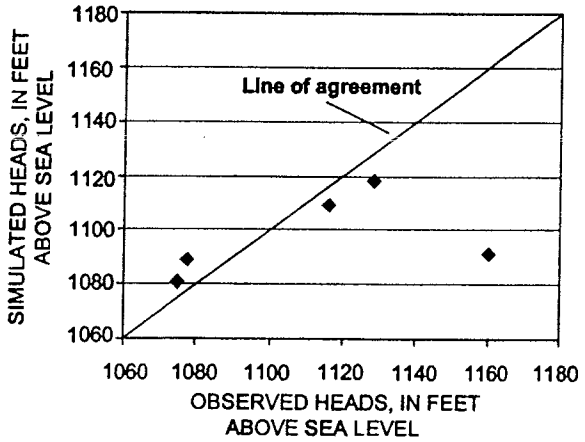

Figure 20c. Relation between observed and simulated water levels in the metasedimentary rocks (model layer 3), Kingsford-Iron Mountain area, Michigan.

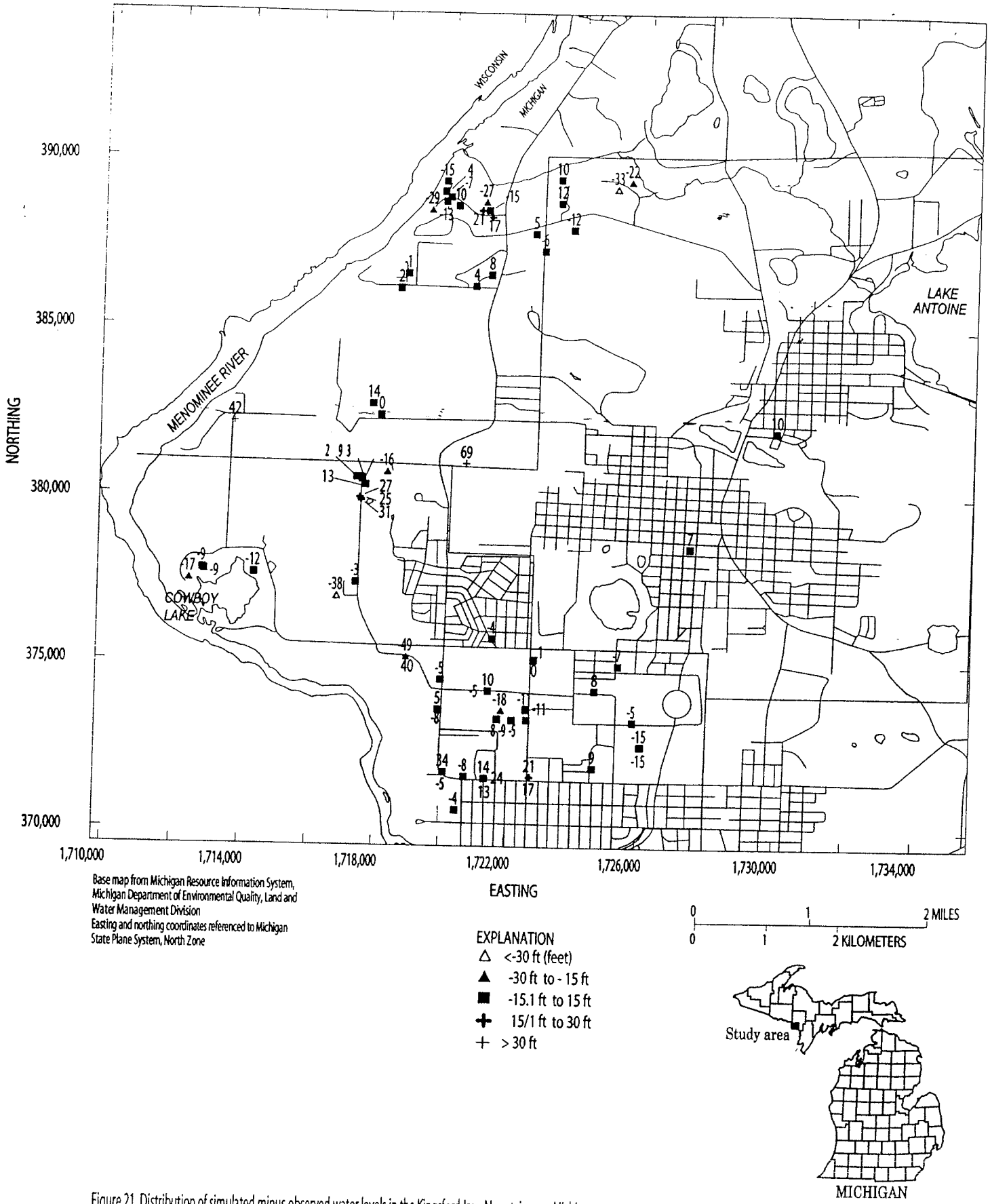

Figure 21. Distribution of simulated minus observed water levels in the Kingsford-Iron Mountain area, Michigan.

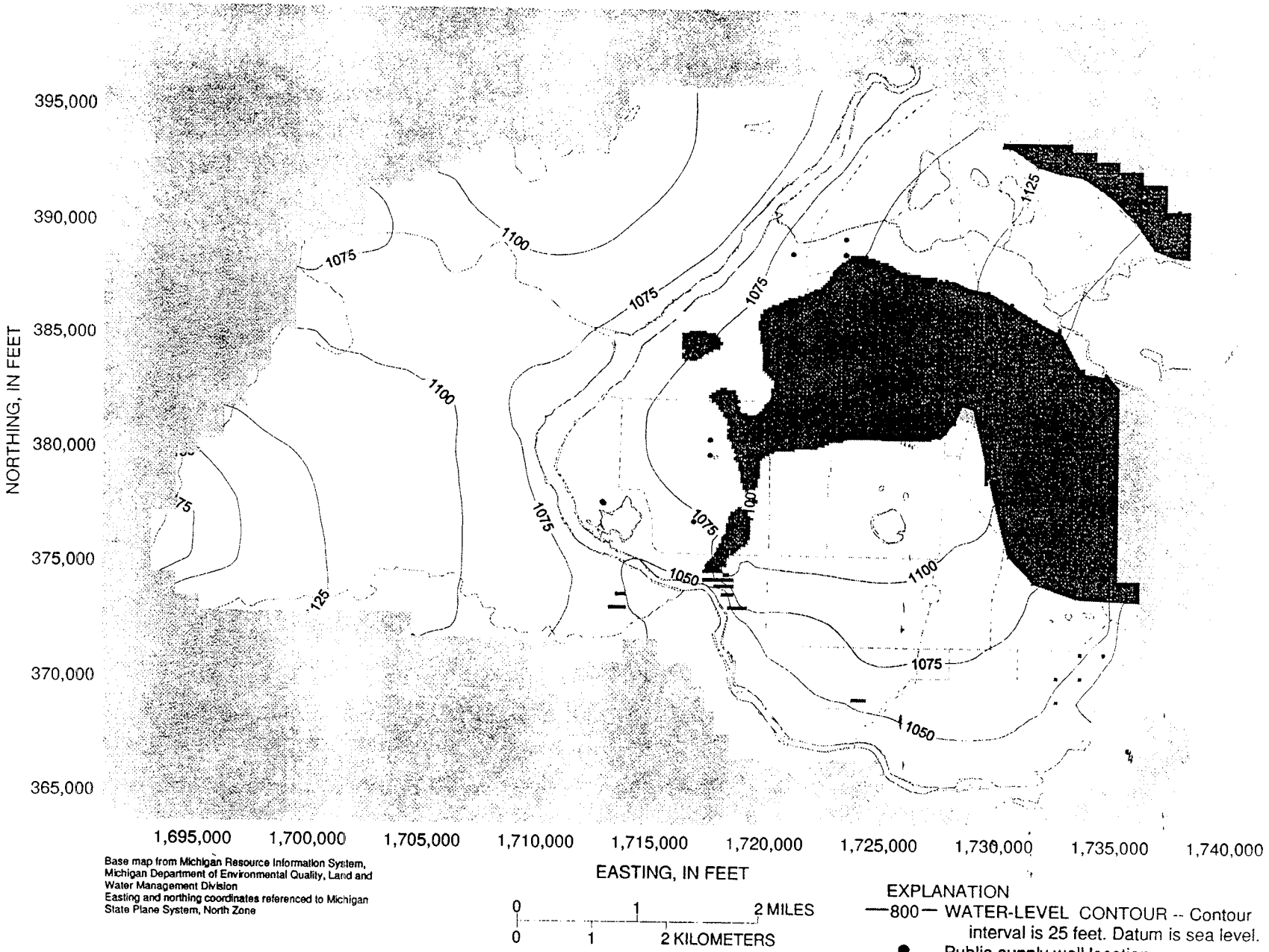

Figure 22. Simulated ground-water levels in the upper aquifer (model layer 1), Kingsford-Iron Mountain area, Michigan.

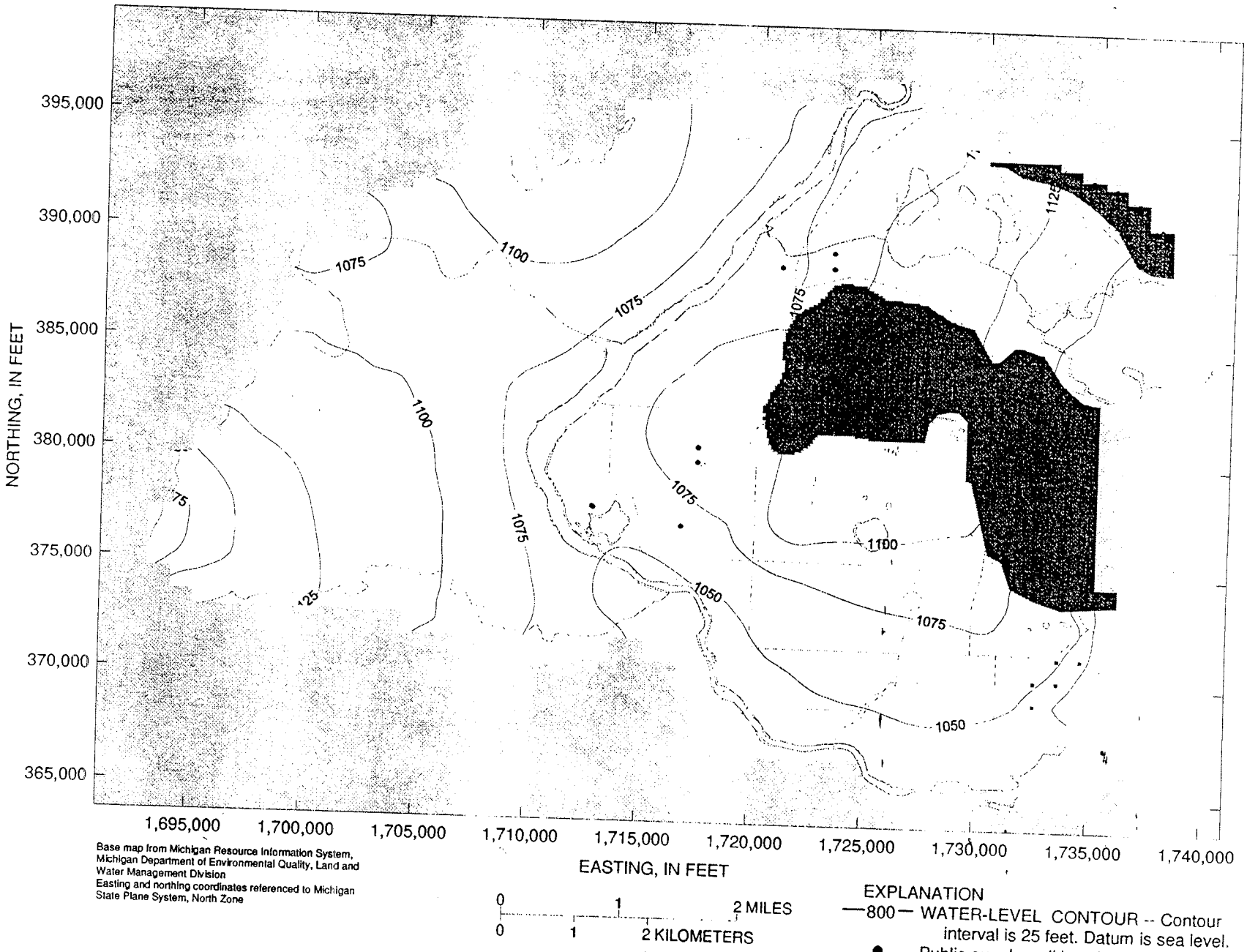

Figure 23. Simulated ground-water levels in the lower aquifer (model layer 2), Kingsford-Iron Mountain area, Michigan.

Investigation of Boundary Effects

Choice of hydraulic boundaries (such as the specified heads used in this model) does not allow conditions along the boundaries to change from initial values; thus, one must investigate whether the boundaries are affecting the solution in the interior portion of the model (Anderson and Woessner, 1992). After selection of a final model, changes in conditions at boundaries were investigated by comparing flow through specified head cells forming boundaries for simulations in which wells were pumping and in which wells were idle. Flow through the individual specified head cells when the public-supply wells were pumping differed by an average of 2.6 percent (standard deviation equaled 23.8) from the flow through these same cells when the public-supply wells were simulated as idle. As an additional check on the boundaries, specified head cells were changed to specified flow cells using the well package to represent the specified flows. The ground-water-flow solution differed slightly near the edge of the dry cell area when the specified heads were changed to specified flows. Water-level differences between the two solutions at measurement locations were within 2 ft or less. Stresses induced from pumping by the public-supply wells only affected water levels locally and did not affect flow across streamlines.

Model Limitations

The ground-water-flow model was developed to simulate the regional steady-state response of the flow system in the Kingsford-Iron Mountain area to ground-water withdrawals by the public-supply wells. Hydraulic properties in the aquifers were assumed to be isotropic. (Within a cell hydraulic properties are the same in the north-south direction as in the east-west direction; hydraulic properties vary from location to location). Vertical variations in aquifer properties within layers and any variations in head or flow within the aquifers are not represented in the model. Model simulations are restricted to steady-state conditions. All stresses within and inputs to the system, including well withdrawals and recharge rates, remain constant throughout the simulation. No net gain or loss of flow is simulated in the system and no changes in ground-water storage occur. This model, in its current (2000) form, cannot be used to simulate transient-flow conditions.

Each grid cell represents the average hydrologic and hydraulic properties in the volume of aquifer represented by the cell, and any variations in properties within the volume represented by the grid cell cannot be represented. Local flows over distances smaller than the dimensions of the grid cell also cannot be accurately represented. Additional geologic and hydrologic data, as well as finer discretization of the model, would be needed to simulate smaller-scale flow systems. Hydraulic properties of the individual layers are represented by zones and local variations are not represented. This representation by zones generalizes the glacial and bedrock properties and small-scale differences in ground-water flows are not represented. This generalization was necessary because nearby wells often penetrate different lithologic units with varying thicknesses and detailed geologic information is unavailable for large portions of the model area. The accuracy of layer surfaces and hydraulic conductivity estimates are limited by the available data at well and boring locations. Additional control and accuracy could be achieved by inclusion of more data points.

Recharge to ground water was assumed to vary over the model area depending on the presence or absence of surficial till deposits and poorly permeable

bedrock; thus, local variations in recharge rates, such as those associated with impermeable surfaces or differences in other types of surficial materials, are not represented in the model. Recharge in areas of surficial till deposits is assumed to be negligible. Simulated well withdrawals are assumed to come from the centers of grid cells. Small withdrawals from domestic wells were not included because of the difficulty in obtaining reliable data and the limitations in representing small-scale flow systems. However, domestic ground-water withdrawals are probably small at the scale of the model.

Other than flow within the Precambrian metasedimentary bedrock units in the vicinity of Pine Mountain and Millie Hill, the model does not simulate flow within the bedrock units. Thus, the bottom of the model is considered to be impermeable. This assumption is considered adequate for model development because of the limited flow available from fractures in bedrock. The model does not simulate flow through fractures or fissures in the rocks. Primary and secondary porosities are combined to represent average flow conditions. Thus, the presence of fractures and fissures could create local heterogeneities in hydraulic properties, which can not be represented by the model.

External boundary conditions were based on natural hydrologic conditions and were located distant from Kingsford's and Iron Mountain's well fields, and, based on the investigation of flow through the specified head cells, are assumed to have minimal effect on the solution in the interior portion of the model. Enlargement of the model area to natural physical hydrologic boundaries might improve model simulations and convergence and improve the match between simulated and observed ground water flows.

Different scenarios (in which recharge, hydraulic conductivity, and leakance parameters were varied) were considered because of the complexity of the system, different lithologic units and water levels observed at nearby wells, the steep gradients present, and the unknown location of the water table in some parts of the model area. Cells that went dry during model simulations were permitted to rewet; however, most remained dry. Most of the dry cells were in the vicinity of Pine Mountain, Millie Hill, and Trader Hill. In these areas the glacial deposits are thin and unsaturated. The measured water level in a well drilled on top of Pine Mountain shows that glacial deposits and bedrock are dry to the base of the mountain.

The accuracy of particle-tracking simulations is limited by the accuracy of the numerical model on which the simulations are based, the estimates of the effective porosity of the flow system, and the approximation of the cell flow velocities to the local ground-water-flow velocities. Additionally, the particle-tracking program considers ground-water flow by advection only. If the effects of dispersion were included, the contributing areas could be larger. Because the model does not specifically describe flow through fractures, ground-water flow and travel times in areas where fractures are present may not be accurately represented. Particle tracking was performed for public-supply wells near the center of the model area. Detailed analysis of contributing areas for small localized areas is inappropriate because the model was not designed to represent local flow systems. The areas that are represented as being dry in model simulations may contribute water and contaminants, if present, to the public-supply wells.

DELINEATION OF CONTRIBUTING AREAS

The particle-tracking program MODPATH (Pollock, 1989) can be combined with MODFLOW-calculated flow in each cell

to determine areas contributing water to public-supply wells. In this study, the particle-tracking program was used by specifying the locations of hypothetical water particles along the faces of each cell containing a public-supply well. These particles then were tracked backward in time through the ground-water-flow system until they reached the top cell face in layer 1, which represents the starting location of the particle. This collection of starting locations, projected up to the land surface, represents the contributing areas for the public-supply wells. The subsurface zones through which the particles travel are known as the zone of transport. Particles also can be tracked for a specified amount of time, such as 10 years. This 10 year time-of-travel area is identified by those particles whose travel times are 10 years or less. An estimated effective porosity of 15 percent was used in the delineation for all layers. This value is less than the estimated total porosity of 25 percent, which is representative of these types of materials (Freeze and Cherry, 1996) and provides a conservative estimate of the contributing areas. Particle tracking results were compared for several of the scenarios and found to delineate similar areas.

Particle tracking describes the advective movement of ground water and does not incorporate the effects of adsorption, diffusion, dispersion, and degradation. Therefore, particle tracking is not intended as a substitute for modeling transport of dissolved chemicals in a ground-water system.

The 10-year contributing areas for Kingsford's public-supply wells encompass about 0.11 mi^2, or 302 model cells, and consist of elongated areas to the east of the well fields (fig. 24). The 10-year contributing areas for Iron Mountain's public-supply wells encompass about 0.09 mi^2, or 30 model cells, and consist of elongated areas to the east of the well field. The 10-year zone-of-transport consist of elongated zones east and west of the well fields. Actual contributing areas may be larger because the areas that are represented as being dry in model simulations may contribute water and contaminants, if present, to the public-supply wells. Forty year time-of-travel contributing areas are shown in figure 25.

SUMMARY

A ground-water-flow model was developed to simulate the regional, steady-state ground-water flow system in the Kingsford-Iron Mountain area. Kingsford and Iron Mountain are located in Dickinson County in the Upper Peninsula of Michigan. These two cities rely entirely on ground water withdrawn for public supply from the glacial deposits. The glacial deposits overlie Precambrian metasedimentary (Michigamme Slate, Vulcan Iron Formation, and Randville Dolomite) and metavolcanic (Badwater Greenstone) rocks, except along the Menominee River and in isolated areas where bedrock is exposed. Glacial deposits range from 0 to about 380 ft in thickness.

Two glacial sand-and-gravel aquifers are present in the study area. The upper aquifer ranges from 0 to 160 ft in thickness and consists of medium to fine grained sand with varying amounts of silt and gravel. The confining unit ranges from 0 to 150 ft in thickness and consists of well sorted and well compacted fine silt with clay. In some areas the silt and clay are absent due to partial burial and protrusion of stranded ice blocks that prevented silt deposition. The intermediate silt layer is a fairly effective barrier to hydraulic communication between the two aquifers. However, where the silt is absent in the Kingsford area, the two aquifers appear to be hydraulically connected. The lower aquifer ranges from 0 to 237 ft in thickness and consists of moderately well sorted fine to coarse sand with layers and

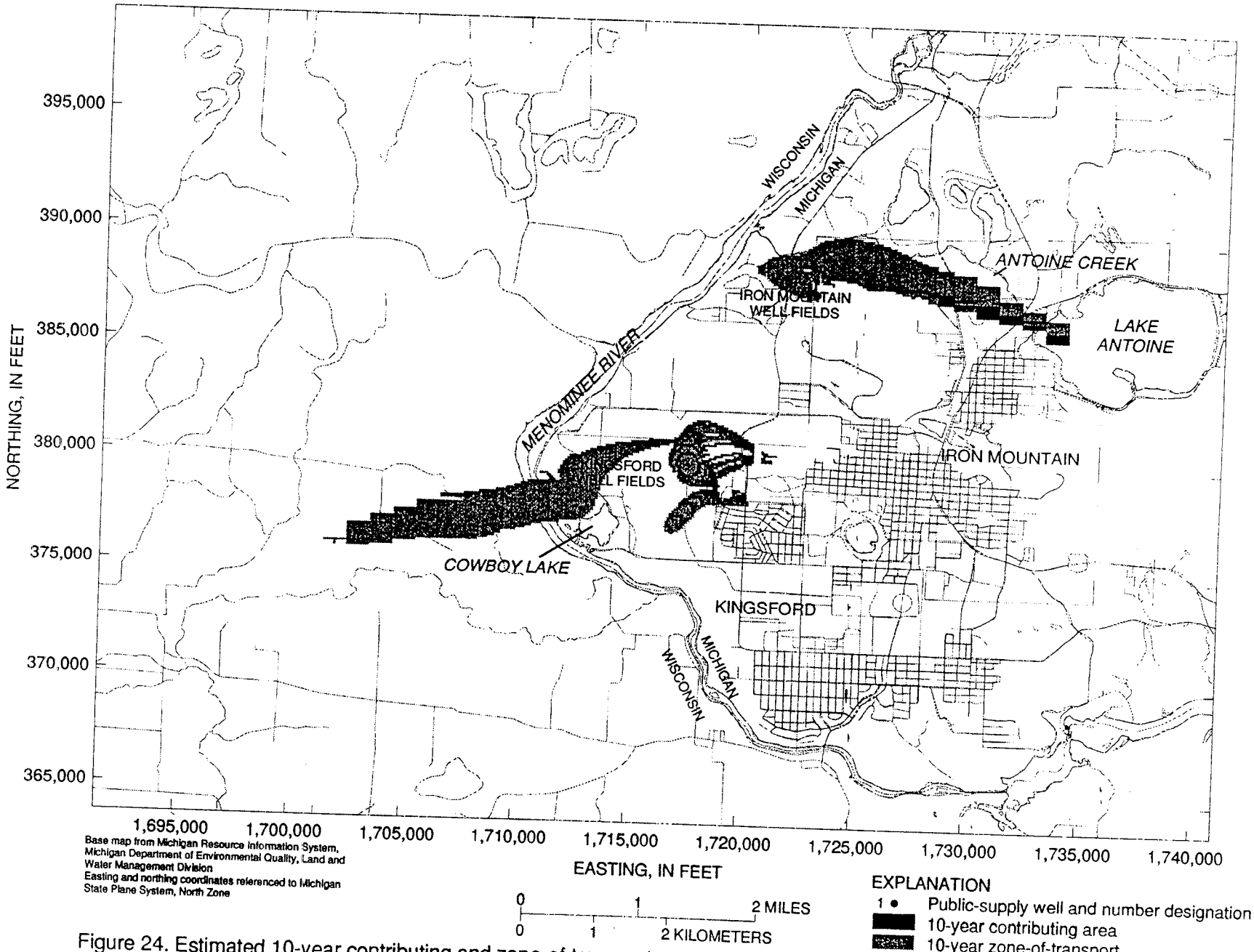

Figure 24. Estimated 10-year contributing and zone-of-transport areas projected to the land surface in the Kingsford-Iron Mountain area, Michigan.

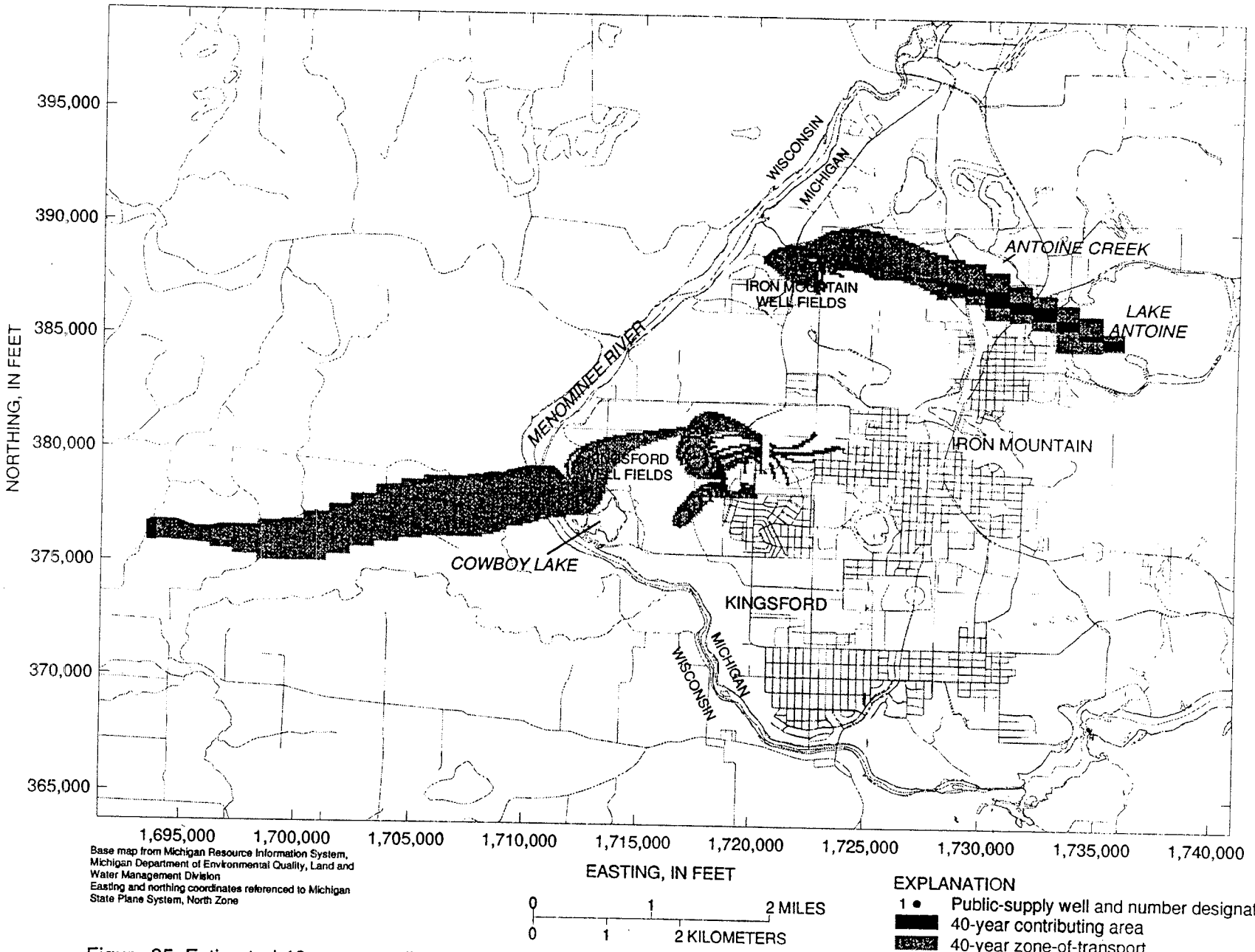

Figure 25. Estimated 40-year contributing and zone-of-transport areas projected to the land surface in the Kingsford-Iron Mountain area, Michigan.

lenses of silt. The lodgement till unit ranges from 0 to 25 ft in thickness.

Ground-water flow within glacial deposits in the Kingsford-Iron Mountain area is primarily towards surface-water bodies to the west and southwest and follows the regional topographic slope and bedrock surface. Ground-water flow is probably confined primarily within the permeable sand-and-gravel units because the Precambrian bedrock units appear to be largely unfractured and limit the downward migration of ground water. However, bedrock consists of metasedimentary bedrock units in the vicinity of Pine Mountain, and ground-water flow is locally affected by these units where they are fractured.

The ground-water-flow model developed for the Kingsford-Iron Mountain area encompasses part of Dickinson County, Michigan and Florence County, Wisconsin. This area is horizontally discretized into a variably spaced grid of cells in 213 columns and 204 rows. The model area is vertically discretized into three model layers. Layer 1 represents the upper aquifer in the glacial deposits; layer 2 represents the lower aquifer in the glacial deposits; and layer 3 represents either lodgement till or metasedimentary bedrock units where they are present in the model area. The intermediate confining unit between the upper and lower glacial aquifers is included only in the leakance term between layers 1 and 2. Specified-head, specified flux, and head-dependent flux cells form the model boundaries.

Conceptualized estimates of hydraulic conductivity for each layer were based on aquifer tests and on representative values taken from Freeze and Cherry (1979). These estimates were modified during model calibration. Each of the three layers was divided into zones containing similar geologic materials based on interpretation of well and geophysical logs.

The model was calibrated using multiple trials where parameters were changed to reduce differences between simulated and observed values, and to keep parameter estimates and the overall model budget within reasonable limits. Differences between observed and simulated values are attributed to the complex geology and hydrology of this area, the steep gradients in the vicinities of Pine Mountain, Millie Hill, and Trader Hill, and the large areas in which detailed hydrogeologic information was unavailable. Different scenarios (in which recharge, hydraulic conductivity, and leakance parameters were varied) were simulated in order to verify the reproducibility of regional ground-water-flow directions and contributing areas.

Contributing areas were delineated for Kingsford's and Iron Mountain's public-supply wells using particle-tracking analysis. Results of flow simulations based on 1997-1998 pumping conditions indicate that 10-year contributing areas, delineated by those particles with travel times of 10 years or less, cover 0.2 mi^2.

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APPENDIX

Table 1a. Root Mean Square Error (RMSE) values for selected scenarios
[ft^3/s, cubic feet per second;

Parameter	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
Recharge									
till areas	2	2	0	0	0	0	0	0	0
rest of model area	9	9	11	9	6	9	9	9	9
Hydraulic conductivity									
Streambed materials	0.02	0.04	0.1	0.04	0.02	0.02	0.04	0.04	0.04
Most of layer 1 (zone 1)	120	150	120	120	120	120	120	120	120
Cowboy Lake area, layer 2	60	80	80	80	80	60	80	80	80
Most of layer 2 (zone 5)	60	80	80	80	80	60	80	80	80
Layer 3 multiplier	5	1	1	5	1	5	5	5	5
Leakance									
multiplier for l-2	5	1	1	1	1	1	0.5	0.5	0.5
multiplier for 2-3	1	1	1	1	1	1	1	0.5	2
RMS	18.6	19.8	18.8	18.8	19.2	20.7	19.6	19.1	19.4
Flow in river cells (ft^3/s)	3.4	13.4	19	9.6	6.2	14.1	12	11	11.8
Budget	-32	-3.2	-12.5	-0.49	-1.27	-17.5	-3.1	-1.6	-2.7

Appendix B

Hydrogeologic Framework, Areas Exceeding Acute GSI Criteria, and Results of Aquifer Pumping Tests Performed in the Vicinity of the Menominee River

ARCADIS

APPENDIX B

Hydrogeologic Framework, Areas Exceeding Acute GSI Criteria, and Results of Aquifer Pumping Tests Performed in the Vicinity of the Menominee River

Introduction

ARCADIS, on behalf of Ford Motor Company (Ford) and The Kingsford Products Company (KPC) performed a multiphase pilot study along the Menominee River in Kingsford, Michigan to understand hydraulic and groundwater quality responses to groundwater extraction. The hydraulic data obtained from groundwater pumping tests that were performed during the pilot study were used in developing a groundwater flow model for the Ford/Kingsford Site (Site). Presented in this document is the hydrogeologic framework in the vicinity of the Menominee River, the areas where groundwater quality exceeds the acute groundwater surface water interface (GSI) criteria, and the hydraulic properties of the groundwater system based on the analysis of pumping tests conducted on extraction wells installed on the east side of the Menominee River.

Some of the hydraulic properties of the groundwater system were presented in documents previously submitted to the Michigan Department of Environmental Quality (MDEQ), which contained a detailed analysis of the aquifer pumping tests that were performed. During the fall of 2003 additional aquifer pumping tests were conducted on existing and newly installed extraction wells. This document contains only a summary of the results of the previous pumping tests, which have already been documented. Analysis of pumping tests that were performed in the fall of 2003, which have previously not been documented, is presented in this document.

Hydrogeologic Setting

Study Area

The local geologic system is comprised of glacially derived unconsolidated deposits consisting of clay, silt, sand, and gravel that overlie bedrock. This geologic system is complex, with the deposits having lateral and vertical spatial variability. This variability is consistent with the glacial depositional environments that formed these deposits. The data points that were used to derive the geologic setting in the study area are shown in Figure B-1, which shows the locations of monitoring wells, soil borings, piezometers and soil vapor probes. The depth to the bedrock (or the thickness of the unconsolidated deposits) is up to 363 feet in the center of the study area. In the area adjacent to the Menominee River, where aquifer pumping tests have been conducted, the bedrock ranges in depth from about 110 feet below land surface (ft bls) to over 220 ft bls.

The various lithologic formations, deposited under glaciolacustrine and glaciofluvial conditions, can be characterized by three composite units, which represent hydrogeologic units and characterize depositional settings. These three composite units are categorized as Unit 1 (fine-grain to coarse-grain sand and gravel), Unit 2 (very fine-grain sand and silty sand/sandy silt), and Unit 3 (silt and clay). The hydraulic conductivities in the coarser-grain sand units (Unit 1) generally range from approximately 10^{-3} centimeters per second (cm/sec) to 10^{-1} cm/sec. Well development records show that most of the

monitoring wells completed in the sand units produce sediment free water and can sustain flow rates over 1 gallon per minute (gpm) with little water level drawdown.

The hydraulic conductivities in Unit 2, which is characterized by very fine-grain sand and silty sand/sandy silt, range from 1×10^{-3} cm/sec to 4×10^{-5} cm/sec. As a result of the hydraulic conditions, only a few monitoring wells were screened in this type of unit because of the difficulty in producing groundwater from this unit. Monitoring wells in this unit can be purged dry and produce significant amounts of silt even after these wells are developed.

Data are not available for the hydraulic properties of the silt and clay, which are considered Unit 3, because aquifer tests were not performed in this unit. However the silt and clay representative of Unit 3 are expected to have hydraulic conductivities that are an order of magnitude or more lower then those determined for Unit 2.

The groundwater system at the Study Area is also complex. Different zones within the groundwater system are hydraulically connected; however, the varying hydraulic properties of the different zones result in preferred pathways for groundwater movement. These preferred pathways in the groundwater flow system consist of the higher permeability Unit 1 (sand and gravel) that are inner lain with lower permeability Units 2 and 3 (very fine-grain sand, silty sand/sandy silt, silt, and clay).

Vicinity of the Menominee River

Detailed subsurface investigations have been conducted in the vicinity of the Menominee River to identify preferential groundwater pathways (Unit 1), which were documented in the Remedial Investigation (RI) Report dated June 2002. Since submittal of the RI Report, additional subsurface investigations have been conducted on the eastern side of the Menominee River. These investigations were conducted to better understand groundwater conditions on the eastern side of the Menominee River and to be able to delineate areas where groundwater quality exceeds GSI criteria. Between August and December 2003, eight soil borings (Soil Borings GMSB-111, GMSB-112, GMSB-113, GMSB-116, GMSB-117, GMSB-118, GMSB-119, GMSB-122), three monitoring wells (Monitoring Wells GM-77, GM-78, GM-79), three extraction wells (Extraction Wells GMEW-7, GMEW-8, GMEW-9), and four piezometers (Piezometers GMPZ-7, GMPZ-8, GMPZ-9, GMPZ-10) were installed using hollow-stem or rotosonic drilling methods. The locations of each of these are also shown on Figure B-1. Attachment A to this appendix contains the sample/core logs and stratigraphic logs for each location noted above.

Subsurface investigations performed in the immediate vicinity of the Menominee River were used to define groundwater pathways at this location. Based on the data collected, four preferred groundwater pathways within the groundwater system have been delineated, and designated as Zone A, B, C, and D sands ranging from shallow to deep, respectively. In places some of these sand zones are absent and can also be interconnected. The Zone A, B, C and D sands are identified in a north-south hydrogeologic cross section constructed from geologic data collected during the investigations. Figure B-2 shows the location of the north-south cross section, which is shown as Figure B-3. Inspection of Figure B-3 reveals the following:

- Zone A sands are continuous along this section of the Menominee River and occur from a depth of about 5 ft bls to 50 ft bls.

- Zone B sands are discontinuous along this section of the Menominee River and generally occur between a depth of about 95 ft bls to 120 ft bls. To the north, Zone B sands pinch out between

Monitoring Well GM-25B and Soil Boring GMSB-113. To the south Zone B sands pinch out at Soil Boring GMSB-112 and reappear between Soil Boring GMSB-118 and Monitoring Well GM-26B.

- Zone C sands occur between depths of about 100 ft bls to 180 ft bls and are continuous along this section of the Menominee River, except were truncated against bedrock highs. Two bedrock highs have been identified in this area of the Menominee River, including one location at Soil Boring GMSB-118 and one location at Monitoring Well GM-63.

- Zone D sands occur on top of or near the bedrock, and where present are found at depths between approximately 185 ft bls to 220 ft bls.

To gain an insight into the distribution of these sands and intervening confining layers beneath the Menominee River a west-east hydrogeologic cross section was prepared and is presented in Figure B-4 (see Figure B-2 for location of the west-east cross section). As can be seen, at the location of Monitoring Well GM-10 on the west side of the river, there is a thicker sequence of sand between approximately 35 ft bls to 155 ft bls, which contains a silty layer from approximately 85 ft bls to110 ft bls. The data collected from Monitoring Well GM-10 suggests that the geologic deposits beneath the Menominee River in this area likely contain more sand and less silt than the geologic deposits east of the river.

Acute GSI Criteria Exceedance

Groundwater samples collected from monitoring wells installed in the immediate vicinity of the Menominee River were analyzed for site-specific constituents (target compound list) and compared to the Michigan final acute value criteria. In addition, groundwater samples were also collected from these wells for Whole Effluent Toxicity test analysis, and the results compared to the Michigan acute criteria of TUa>1. Together these criteria are used by the MDEQ to define where an exceedance of the acute GSI criteria occurs. Based on the analytical results of the groundwater samples, areas where the groundwater quality in the Zone A, B, C and D sands exceed the acute GSI criteria were delineated. These areas are shown in Figure B-5. As can be seen in Figure B-5 the groundwater quality exceeding the acute GSI criteria generally occurs in the following areas:

- Zone A sands – between Monitoring Wells GM-78 and GM-79.
- Zone B sands – between Soil Borings GMSB-112 and GMSB-113.
- Zone C sands – between Monitoring Wells GM-66A/B and GM-63A/B.
- Zone D sands – there are no exceedances of acute GSI criteria.

Summary of Hydraulic Properties from Previous Pumping Tests

During the multiphase groundwater pilot study, a number of pumping tests on extraction wells were performed to understand groundwater level responses from groundwater extraction. Hydraulic properties for the groundwater system were derived from these responses and these data were incorporated into a groundwater flow model developed for the Site. The results of previous pumping tests that have been described in documents already submitted to the MDEQ are summarized in this section.

Zone A Sands

Zone A sands are continuous along this section of the Menominee River and are present at depths of about 5 ft bls to 50 ft bls. Aquifer pumping tests were performed on four extraction wells screened into the Zone A sands, including Extraction Wells GMEW-1, GMEW-2, GMEW-5 and GMEW-6.

Extraction Well GMEW-1

In April 2001 a constant-rate pumping test was conducted on Extraction Well GMEW-1 at a rate of 25 gpm for approximately 45.5 hours. A detailed analysis of this test is provided in a report submitted to the MDEQ entitled, "*Phase 1 Pilot Study Report, Ford/Kingsford Site, Kingsford, Michigan*", dated January 2002. Extraction Well GMEW-1 is screened from a depth of 20 ft bls to 30 ft bls. Three phases of water level response were observed during the pumping test. The first phase was marked by a rapid depletion of storage, and the recharge boundary effects of the river (approximately 53 ft away) were almost immediately evident. During the second phase the slope of the drawdown increased indicating that the cone-of-depression from the pumped well intersected a discharge boundary. Water level drawdown stabilized during the third phase, which was attributed to the effects of recharge from the Menominee River becoming the dominant factor. Prior to encountering the discharge boundary, the transmissivity of the Zone A sands was determined to be approximately 1,250 feet squared per day (ft^2/day). Analysis of the late-time drawdown data, when the discharge boundary effects were evident, indicated that the transmissivity of the Zone A sands was approximately 568 ft^2/day. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-1 was determined to be approximately 2.6 gallons per minute per foot (gpm/ft).

Extraction Well GMEW-2

In October 2001 a constant-rate pumping test was conducted on Extraction Well GMEW-2 at a rate of 20 gpm for a period of 72.5 hours. The results of the pumping test were presented in a letter report to the MDEQ referenced as "*Phase IIA Pilot Study Results, Ford/Kingsford Site, Kingsford, Michigan*", dated July 2002. Extraction Well GMEW-2 is screened from a depth of 23 ft bls to 36 ft bls. The transmissivity determined from the drawdown and recovery data ranged from 1,915 ft^2/day to 3,745 ft^2/day, with at geometric average of 2,678 ft^2/day. The storage coefficients computed from analysis of the data ranged from 0.01 to 0.004, and the leakance coefficient ranged from 0.023 to 0.004 day^{-1}. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-2 was determined to be approximately 2.0 gpm/ft.

Extraction Well GMEW-5

In December 2002 a constant-rate pumping test was conducted on Extraction Well GMEW-5 at a rate of 10 gpm for a period of nine hours. The results of the pumping test were presented in a letter report to the MDEQ referenced as "*Phase IIA Pilot Study Results, Ford/Kingsford Site, Kingsford, Michigan*", dated July 2002. Extraction Well GMEW-5 is screened from a depth of 40 ft bls to 48 ft bls. Analysis of the drawdown data indicated a transmissivity of 4,679 ft^2/day. Analysis of the recovery data indicated a transmissivity of 2,005 ft^2/day. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-5 was determined to be approximately 2.0 gpm/ft.

Extraction Well GMEW-6

In July 2002 a constant-rate pumping test was performed on Extraction Well GMEW-6 at a rate of 10 gpm for approximately 2 days. The results of the pumping test were presented in a letter report to the MDEQ referenced as "*Phase IIA Pilot Study Results, Ford/Kingsford Site, Kingsford, Michigan*", dated

July 2002. Extraction Well GMEW-6 is screened from a depth of 39 ft bls to 46 ft bls. Analysis of the drawdown data indicated a transmissivity of 4,679 ft^2/day. Analysis of the recovery data indicated a transmissivity of 3,074 ft^2/day. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-6 was determined to be approximately 1.2 gpm/ft.

Zone B Sands

Zone B sands are discontinuous along this section of the Menominee River and, where present, are located at depths of about 95 ft bls to 120 ft bls. At some locations Zones B and C sands are in direct hydraulic connection with one another, and in fact could be considered either Zone B sands or the top of the Zone C sands. In general, the focus on the hydraulic testing of Zone B sands was on the sands screened by Monitoring Well GM-25B. Aquifer pumping tests were performed on two extraction wells screened into the Zone B sands, including Extraction Well GMEW-4 located 16 feet north of Monitoring Well GM-25B and Extraction Well GMEW-4R located 8 feet south of Monitoring Well GM-25B.

At the location of Extraction Wells GMEW-3 and GMEW-7, the Zone B sands and the top of the Zone C sands are in direct hydraulic communication with each other. This can be seen in Figure B-6, which is an east-west hydrogeologic cross section through Monitoring Well Nest GM-25 and Extraction Well GMEW-7. The results of the hydraulic testing of Extraction Well GMEW-3 is addressed in the Zone C sands section of this document, since Extraction Well GMEW-3 is screened proportionately more in the top of Zone C sands than in Zone B sands.

Extraction Well GMEW-4

In February 2002 a step pumping test was performed on Extraction Well GMEW-4 by pumping the well at 5 gpm, 10 gpm, and 15 gpm in 2-hour increments. Extraction Well GMEW-4 is screened from a depth of 100 ft bls to 120 ft bls. The results were presented in a letter report to the MDEQ referenced as "*Phase IIB Pilot Study Results, Ford/Kingsford Site, Kingsford, Michigan*", dated May 2004. Although an aquifer transmissivity was not calculated from the step pumping test data, the specific capacity of Extraction Well GMEW-4 at the end of the pumping period was determined to be 0.5 gpm/ft.

Extraction Well GMEW-4R

In December 2002 a step pumping test was performed on Extraction Well GMEW-4R by pumping the well at 5 gpm and 10 gpm in 2-hour increments. Extraction Well GMEW-4R is screened from a depth of 107 ft bls to 112 ft bls and from a depth of 117 ft bls to 127 ft bls. The results were presented in a letter report to the MDEQ referenced as "*Phase IIB Pilot Study Results, Ford/Kingsford Site, Kingsford, Michigan*", dated May 2004. Analysis of the drawdown data from the step pumping test on Extraction Well GMEW-4R indicated a transmissivity of 602 ft^2/day. Analysis of the recovery data indicated a transmissivity of 334 ft^2/day. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-4R was determined to be approximately 0.12 gpm/ft.

Zone C Sands

Zone C sands are continuous along this section of the Menominee River, except where truncated against bedrock highs at the locations of Soil Boring GMSB-118 and Monitoring Well GM-63B. Zone C sands are located at depths of about 100 ft bls to 180 ft bls. An aquifer pumping test had been performed on Extraction Well GMEW-3.

In November 2002, a constant-rate pumping test was conducted at a rate of about 25 gpm for a period of approximately four days on Extraction Well GMEW-3. Extraction Well GMEW-3 is screened from a depth of about 135 ft bls to 145 ft bls. The results were presented in a letter report to the MDEQ referenced as "*Phase IIB Pilot Study Results, Ford/Kingsford Site, Kingsford, Michigan*", dated May 2004. Analysis of the drawdown data from Extraction Well GMEW-3 indicated a transmissivity of 2,273 ft^2/day and a storage coefficient of 0.004. Analysis of the recovery data indicated a transmissivity of about 2,005 ft^2/day. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-3 was determined to be approximately 0.7 gpm/ft.

Pumping Test Analysis Fall 2003

Aquifer pumping tests were conducted on one existing and three new extraction wells screened in the Zone C sands between October 27, 2003 and December 6, 2003. The pumping tests were completed on Extraction Wells GMEW-3, GMEW-7, GMEW-8, and GMEW-9.

Pumping Test Procedures

Prior to, during, and after each of the pumping tests, groundwater elevation data was recorded in monitoring points to document groundwater elevation changes, if present. Monitoring point locations were selected to allow for representative groundwater elevation monitoring. Both newly installed and existing monitoring wells and piezometers were utilized as monitoring points during the pumping tests. Specific monitoring points used during each of the pumping tests are discussed in their respective sections and their locations are shown in Figure B-1.

All newly installed monitoring wells, piezometers, and extraction wells were surveyed with respect to a known geodetic datum point by STS Consultants of Marquette, Michigan, providing measuring point elevations (relative to mean sea level) and coordinates (relative to Michigan State Plane Coordinates). Groundwater level measurements were collected prior to, during, and after each phase of the pumping tests. Groundwater elevation measurements associated with the pumping tests were collected primarily with In-Situ data loggers. These downhole data loggers utilize pressure transducers to measure pressures associated with the water column height above the data logger and convert the pressure into a depth of water. Utilizing a location specific reference elevation, the data logger converted the depth of water to a groundwater potentiometric surface elevation. These data were recorded at a specified frequency programmed into the unit's onboard data logger. The data logger measurements were field verified using manual water level indicators at regular intervals during the pumping tests. The manually collected data provides a verification tool in the event that anomalies were observed in the automatically recorded data sets.

To establish groundwater elevation trends prior to and after each phase of the pumping tests, data loggers were placed in each monitoring well, piezometer, or extraction well associated with the selected observation network. The data recorders were programmed utilizing the manufacturer-supplied interface software to collect groundwater elevation data at appropriate time intervals determined for each portion of a specific pumping test (data loggers were programmed to collect measurements at intervals between 5 seconds to 1 minute). Each data logger associated with a specific pumping test was identified with a unique name that indicated the pumping test location, pumping test date and purpose. Upon completion of the specific pumping test (or portion of a test), the data was downloaded to a central file location and

backup files were created. Each data file contained the monitoring location, data logger identification number, pumping test name, pumping test duration, data collection frequency, user defined reference elevation, and data logger function data.

During the pumping tests, groundwater extraction was conducted utilizing a submersible Grundfos® pump, previously installed within the extraction well. The extraction well discharge was connected to an assembly that utilized a flow control valve and totalizing flow meter. Extraction flow rates were periodically verified during the pumping tests by diverting the discharge into a calibrated 250-gallon tank for a measured time period. Groundwater extracted during the pumping tests was pumped via a 2-inch diameter high-density polyethylene pipe to one of two 20,000-gallon tanks located next to the on-site groundwater pretreatment plant (approximately 1,000 to 2,000 feet from the pumping wells). The groundwater was then transferred from the tanks into the on-site groundwater pretreatment plant.

Pumping Test Analytical Methodology

Based upon the review of time-drawdown plots and the local hydrogeology, the Hantush-Jacob (1955) solution for a leaky confined aquifer was used to analyze the observation points (monitoring wells and piezometers) in each pumping test. Hantush and Jacob (1955) derived an analytical solution for predicting water-level changes in response to pumping in a leaky confined aquifer assuming steady flow (no storage) in the aquitard(s):

$$s = \frac{Q}{4\pi T}\int_{u}^{\infty}\frac{e^{-y-r^2/4B^2y}}{y}dy$$

$$u = \frac{r^2 S}{4Tt}$$

$$B = \sqrt{\frac{Tb'}{K'}}$$

where, s is the displacement [L] in the observation well, Q is the pumping rate [L^3/T], T is the aquifer transmissivity [L^2/T], r is the radial distance [L], S is the coefficient of storage in the aquifer [dimensionless], t is the time since pumping began [T], B is the leakage factor [L^{-1}], b' is the thickness of the aquitard overlying the aquifer in the leaky system [L], and K' is the hydraulic conductivity of the aquitard overlying the aquifer in the leaky system [L/T].

The integral expression in the drawdown equation is commonly referred to as the *Hantush well function for leaky aquifers*, abbreviated as *w(u,r/B)*. The Hantush drawdown equation, therefore, can be written in compact notation as follows:

$$s = \frac{Q}{4\pi T}w(u, r/B)$$

ARCADIS utilized AQTESOLV for Windows (Duffield, 1999) to visualize the results of the Hantush-Jacob solution and to obtain the best fit for the groundwater elevation data collected by the data loggers. AQTESOLV for Windows allows analysis of both constant- and variable-rate pumping tests using the Hantush-Jacob solution. Hantush (1961a,b) also derived equations for the effects of partial penetration in a leaky aquifer.

The assumptions for the Hantush-Jacob (1955) solution are as follows:

- aquifer has infinite areal extent
- aquifer is homogeneous, isotropic, and has uniform thickness
- aquifer potentiometric surface is initially horizontal
- aquifer is leaky
- flow is unsteady
- pumping well is fully or partially penetrating
- flow to pumping well is horizontal when pumping well is fully penetrating
- water is released instantaneously from storage with decline of hydraulic head
- diameter of pumping well is small so that storage in the well can be neglected
- confining bed(s) has infinite areal extent, uniform vertical hydraulic conductivity and uniform thickness
- confining bed(s) is overlain or underlain by an infinite constant-head plane source
- flow in the aquitard(s) is vertical

The Hantush-Jacob solution was applied to observation points that were in the same interval as the extraction well being pumped, and were near the extraction well. Results from these observation points represent aquifer conditions in the vicinity of each pumping well.

Extraction Well GMEW-3

In October/November 2003 a constant-rate pumping test was conducted at a rate of about 25 gpm for a period of approximately 48 hours on Extraction Well GMEW-3. Although a pumping test had previously been performed on this well in 2002, cold weather conditions during the pumping test in 2002 had affected test performance. Therefore, a decision was made to rerun the pumping test, and to install Piezometer GMPZ-10 to further monitor the zone screened by Extraction Well GMEW-3. Extraction Well GMEW-3 is screened in the upper Zone C sands from a depth of 135 ft bls to 145 ft bls. The pumping test utilized Extraction Well GMEW-3 as the pumping well, and Extraction Well GMEW-7, Monitoring Wells GM-66B, GM-65 and GM-25B, and Piezometers GMPZ-4, GMPZ-7, and GMPZ-10 for groundwater elevation monitoring. Table B-1 summarizes the selected monitoring well network, well construction, and well locations relative to the pumping well. Figure B-6 shows the relationships of the screen setting for the monitoring points in the immediate vicinity of Extraction Well GMEW-3. Monitoring Well GM-66B, which is not shown on Figure B-6, was used as a background well to monitoring regional trends in groundwater levels for the Zone C sands.

Background monitoring was conducted at 1-minute intervals at each monitoring locations within the observation network. Background groundwater elevation data was collected beginning on October 27, 2003. Water level data collected from each of the monitoring points was corrected for regional trends, as detected in the background well (Monitoring Well GM-66B), prior to being used for the pumping test analysis.

The constant-rate pumping test on Extraction Well GMEW-3 was initiated on October 29, 2003 at 0930 and was terminated on October 31, 2003 at 1000. Groundwater recovery data was collected from all monitoring points for approximately 24 hours after pumping ceased.

Groundwater Level Response

The data collected during the pumping test on Extraction Well GMEW-3 shows that under pumping conditions a drawdown in water levels in the upper portion of Zone C sands was observed at Piezometers GMPZ-10 (1.16 feet) and GMPZ-4 (0.84 feet) located 18 and 50 feet away, respectively from Extraction Well GMEW-3. The data also shows that drawdown was observed in the lower portion of Zone C sands at Extraction Well GMEW-7 (0.20 feet) and Piezometer GMPZ-7 (0.18 feet), located 19 and 9 feet away, respectively from Extraction Well GMEW-3. Drawdown was also observed at Monitoring Well GM-65 (0.98 feet), which appears to be located in the overlying Zone B sands 10 feet away from Extraction Well GMEW-3. These data indicate that there is good hydraulic communication between these zones at this location.

Analysis of Hydraulic Properties

The data collected from Monitoring Well GM-65 and Piezometer GMPZ-10 were used to derive hydraulic parameters for the Zone C sands in the area around Extraction Well GMEW-3. Figure B-7 shows the data collected from Monitoring Well GM-65 with a best fit to the Hantush Jacob analytical solution using both the drawdown and the recovery data. The results indicate that the transmissivity of the Zone B and upper portion of the Zone C sands is 2,440 ft^2/day and the storage coefficient 0.005. Based on an r/B factor of 0.014 the leakance coefficient is calculated to be 4.9×10^{-3} day^{-1}.

Figure B-8 shows the data collected from Piezometer GMPZ-10 with a best fit to the Hantush Jacob analytical solution using both the drawdown and the recovery data. The results indicate that the transmissivity of the sands is 2,640 ft^2/day and the storage coefficient 0.003. Based on an r/B factor of 0.019 the leakance coefficient is calculated to be 2.9×10^{-3} day^{-1}. Based on the observed drawdown at the end of the test, the specific capacity of Extraction Well GMEW-3 was determined to be approximately 1.6 gpm/ft.

Extraction Well GMEW-7

In November 2003 a constant-rate pumping test was conducted at a rate of about 23 gpm for a period of approximately 48 hours on Extraction Well GMEW-7. Extraction Well GMEW- 7 is screened in the lower Zone C sands from a depth of 183 ft bls to 193 ft bls. The pumping test utilized Extraction Well GMEW-7 as the pumping well and Extraction Well GMEW-3, Monitoring Wells GM-65, GM-25B, GM-25C and GM-26B and Piezometers GMPZ-4, GMPZ-7, and GMPZ-10 for groundwater elevation monitoring. Monitoring Well GM-26B was used as a background well to monitoring regional trends in the groundwater level in the Zone C sands. Table B-2 summarizes the selected monitoring well network, screened intervals, and well locations relative to the pumping well.

Background monitoring was conducted at each monitoring location within the observation network. Background groundwater elevation data was collected on 1-minute intervals at the monitoring locations beginning on November 17, 2003. The pumping test was initiated on November 21, 2003 at 0925 and was terminated on November 23, 2003 at 0930. Groundwater recovery data was collected from all monitoring points for approximately 24 hours after pumping ceased. Water level data collected from each of the monitoring points was corrected for regional trends, as detected in the background well (Monitoring Well GM-26B), prior to analysis.

Groundwater Level Response

The data collected during the pumping test on Extraction Well GMEW-7 shows that under pumping conditions a drawdown in water levels was observed in the lower portion of Zone C sands at Piezometer GMPZ-7 (2.52 feet), which is located 10 feet away from Extraction Well GMEW-7. In addition, drawdowns in water levels were also observed at the following monitoring points:

- In the upper portion of Zone C sands at Extraction Well GMEW-3 (0.54) and Piezometers GMPZ-4 (0.53 feet) and GMPZ-10 (0.55 feet), located 19, 57 and 19 feet away, respectively from Extraction Well GMEW-7.
- In Zone B sands at Monitoring Wells GM-25B (0.44 feet) and GM-65 (0.61) located 269 and 11 feet away, respectively from Extraction Well GMEW-7.
- In Zone D sands at Monitoring Well GM-25C (0.44 feet), located 267 feet away from Extraction Well GMEW-7.

These data indicate that there is good hydraulic communication between Zone B, C, and D sands in the area around Extraction Well GMEW-7. Refer to Figure B-6 for the relationship between screened intervals for these wells and piezometers.

Analysis of Hydraulic Properties

The data collected from Piezometer GMPZ-7 was determined to be the most applicable data to derive hydraulic parameters for the Zone C sands at this location. Figure B-9 shows the data collected from Piezometer GMPZ-7 with a best fit to the Hantush Jacob analytical solution using both the drawdown and the recovery data. The results indicate that the transmissivity of the sands is 1,770 ft^2/day and the storage coefficient 0.03. Based on an r/B factor of 0.01 the leakance coefficient is calculated to be 1.8×10^{-3} day^{-1}. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-7 was determined to be approximately 0.33 gpm/ft.

Extraction Well GMEW-8

A step pumping test was initiated on November 1, 2003 by pumping Extraction Well GMEW-8 in 2-hour increments at approximately 10 gpm, 20 gpm, 30 gpm, and 35 gpm. Data loggers were placed in the extraction well and nearby monitoring wells and piezometers to obtain data on groundwater responses to the pumping. The data collected during the step pumping test was used to establish a pumping rate for the constant-rate pumping test. Groundwater elevation data from the data loggers was collected at 5-second intervals from the extraction well and 15-second intervals from the monitoring wells and piezometers

throughout the testing period. The water level drawdown data collected from Extraction Well GMEW-8 during the step pumping test is shown in Figure B-10.

In November 2003 a constant-rate pumping test was conducted at a rate of about 25 gpm for a period of about 48 hours on Extraction Well GMEW-8. Extraction Well GMEW-8 is screened across the entire depth of Zone C sands at depths of 125 ft bls to 145 ft bls. The pumping test utilized Extraction Well GMEW-8 as the pumping well and Monitoring Wells GM-26B, GM-26C, GM-27B, GM-27C, GM-63B, and GM-66B along with Piezometer GMPZ-8 for groundwater elevation monitoring. Monitoring Well GM-66B was used as a background well to monitoring regional trends in groundwater levels in the Zone C sands. Table B-3 summarizes the selected monitoring well network, screened intervals, and well locations relative to the pumping well.

Background groundwater elevation data was collected at 1-minute intervals at the monitoring location beginning on November 2, 2003. The pumping test on Extraction Well GMEW-8 was initiated on November 4, 2003 at approximately 1115 hours. Groundwater recovery data was collected from all monitoring points for approximately 24 hours after pumping ceased. Water level data collected from each of the monitoring points was corrected for regional trends as detected in the background well (Monitoring Well GM-66B), prior to analysis.

Groundwater Level Response

The data collected during the pumping test shows that under pumping conditions drawdown in water levels, due to the pumping of GMEW-8, was observed in Piezometer GMPZ-8 (1.58 feet) and Monitoring Well GM-26C (0.58 feet) that are screened in Zone C sands located 10 and 295 feet away, respectively from Extraction Well GMEW-8. In addition, drawdowns in water levels were also observed at the following monitoring points:

- In Zone B sands at Monitoring Wells GM-26B (0.22 feet) and GM-63B (0.46), which are located 294 and 263 feet away, respectively from Extraction Well GMEW-8.

- In Zone D sands at Monitoring Well GM-27C (0.26), which is located 550 feet away from Extraction Well GMEW-8. Figure B-3 shows a bedrock high has been identified between Extraction Well GMEW-8 and Monitoring Well GM-27C, at the location of Monitoring Well Nest GM-63.

These data indicate that there is good hydraulic communication between Zone B, C, and D sands in the area around Extraction Well GMEW-8. Refer to Figures B-3 and B-4 for the relationship between screened intervals for these wells and piezometers.

Analysis of Hydraulic Properties

The data collected from Piezometer GMPZ-8 was determined to be the most applicable data to derive hydraulic parameters for the Zone C sands at this location. Figure B-11 shows the data collected from Piezometer GMPZ-8 with a best fit to the Hantush Jacob analytical solution using both the drawdown and the recovery data. The results indicate that the transmissivity of the Zone C sands is 1,560 ft^2/day and the storage coefficient 0.014. Based on an r/B factor of 0.041 the leakance coefficient is calculated to be 2.9 x 10^{-2} day^{-1}. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-8 was determined to be approximately 0.6 gpm/ft.

Extraction Well GMEW-9

In December 2003 a constant-rate pumping test was conducted at a rate of about 20 gpm for a period of about 30 hours on Extraction Well GMEW-9. Extraction Well GMEW-9 is screened in Zone C sands from a depth of 125 ft bls to 170 ft bls. The pumping test utilized Extraction Well GMEW-9 as the pumping well and Monitoring Wells GM-5, GM-25B, GM-25C, GM-26C, GM-66B along with Piezometers GMPZ-4, GMPZ-9 and GMPZ-10 for groundwater elevation monitoring. Monitoring Well GM-26C was used as a background well to monitoring regional trends in groundwater levels in the Zone C sands. Table B-4 summarizes the selected monitoring well network, screened intervals, and well locations relative to the pumping well.

Background monitoring was conducted at each monitoring locations within the observation network. Background groundwater elevation data was collected at 1-minute intervals at the monitoring locations beginning on December 1, 2003. Pumping was initiated on December 3, 2003 at approximately 1625 and was terminated on December 4, 2003 at 2234. Groundwater recovery data was collected from all monitoring points for approximately 24 hours after pumping ceased. Water level data collected from each of the monitoring points was corrected for regional trends as detected in the background well (Monitoring Well GM-26C), prior to analysis.

Groundwater Level Response

The data collected during the pumping test on Extraction Well GMEW-9 shows that under pumping conditions a drawdown in water levels in Zone C sands due to the pumping of GMEW-9 was observed in Piezometer GMPZ-9 (0.87 feet), and Monitoring Wells GM-5 (0.14 feet), GM-25C (0.15 feet) and GM-66B (0.12 feet), which are located 11, 447, 366, and 627 feet away, respectively from Extraction Well GMEW-9.

Analysis of Hydraulic Properties

The data collected from PiezometerGMPZ-9 was determined to be the most applicable data to derive hydraulic parameters for the Zone C sands in the area around Extraction Well GMEW-9. Figure shows the data collected from Piezometer GMPZ-9 with a best fit to the Hantush Jacob analytical solution using both the drawdown and the recovery data. The results indicate that the transmissivity of the sands is 3,102 ft^2/day and the storage coefficient 0.0005. Based on an r/B factor of 0.01 the leakance coefficient is calculated to be 2.8×10^{-3} day^{-1}. Based on the observed drawdown at the end of the pumping test, the specific capacity of Extraction Well GMEW-9 was determined to be approximately 0.9 gpm/ft.

References

Duffield, G.M., 1999. *AQTESOLV for Windows.* Hydrosolve Inc, Reston, Virginia.

Hantush, M.S. and C.E. Jacob, 1955. Non-steady radial flow in an infinite leaky aquifer, *Am. Geophys. Union Trans.*, vol. 36, pp. 95-100.

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Table B-1. GMEW-3 Pump Test Well Information, Ford/Kingsford Site, Kingsford, Michigan.

Well	Distance from Extraction Well (feet)	Northing	Easting	Ground Elevation (feet above mean sea level)	TOC Elevation (feet above mean sea level)	Top of Screen Depth (feet)	Bottom of Screen Depth (feet)	Total Depth (feet)	Top of Screen Elevation (feet above mean sea level)	Bottom of Screen Elevation (feet above mean sea level)	Casing Diameter
GMEW-3	0	372463.2	25965327.6	1065.4	1066.79	135	145	165	930	920	4"
GMEW-7	19	372446.48	25965337.1	1065.85	1069.6	183	193	205	883	873	6"
GM-25B	254	372548.99	25965088.5	1047.85	1050.18	98	108	109	950	940	2"
GM-65	10	372452.91	25965328.1	1065.21	1068.37	120	130	205	945	935	2"
GM-66B	1174	373426.38	25964655.6	1045.72	1048.3	125	135	175	921	911	2"
GMPZ-4	50	372448.679	25965279.6	1058.17	1060.63	131	141	141	927	917	1"
GMPZ-7	9	372456.66	25965333.7	1065.94	1068.69	183	193	196	883	873	2"
GMPZ-10	18	372448.11	25965318	1064.5	1067.53	135	145	210	930	920	2"

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Table B-2. GMEW-7 Pump Test Well Information, Ford/Kingsford Site, Kingsford, Michigan.

Well	Distance from Extraction Well (feet)	Northing	Easting	Ground Elevation (feet above mean sea level)	TOC Elevation (feet above mean sea level)	Top of Screen Depth (feet)	Bottom of Screen Depth (feet)	Total Depth (feet)	Top of Screen Elevation (feet above mean sea level)	Bottom of Screen Elevation (feet above mean sea level)	Casing Diameter
GMEW-7	0	372446.48	25965337.1	1065.85	1069.6	183	193	205	883	873	6"
GMEW-3	19	372463.2	25965327.6	1065.4	1066.79	135	145	165	930	920	4"
GM-25B	269	372548.99	25965088.5	1047.85	1050.18	98	108	109	950	940	2"
GM-25C	267	372546.41	25965089.8	1047.94	1050.05	206	216	220	842	832	2"
GM-26B	892	371707.27	25964838.5	1047.17	1049.78	101	111	111	946	936	2"
GM-65	11	372452.91	25965328.1	1065.21	1068.37	120	130	205	945	935	2"
GMPZ-4	57	372448.679	25965279.6	1058.17	1060.63	131	141	141	927	917	1"
GMPZ-7	10	372456.66	25965333.7	1065.94	1068.69	183	193	196	883	873	2"
GMPZ-10	19	372448.11	25965318	1064.5	1067.53	135	145	210	930	920	2"

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Table B-3. GMEW-8 Pump Test Well Information, Ford/Kingsford Site, Kingsford, Michigan.

Well	Distance from Extraction Well (feet)	Northing	Easting	Ground Elevation (feet above mean sea level)	TOC Elevation (feet above mean sea level)	Top of Screen Depth (feet)	Bottom of Screen Depth (feet)	Total Depth (feet)	Top of Screen Elevation (feet above mean sea level)	Bottom of Screen Elevation (feet above mean sea level)	Casing Diameter
GMEW-8	0	371703.39	25965132.2	1044.08	1046.48	125	170	185	919	874	6"
GM-26B	294	371707.27	25964838.5	1047.17	1049.78	101	111	111	946	936	2"
GM-26C	295	371702.08	25964837.2	1047.27	1049.7	160	170	205	887	877	2"
GM-27B	549	371202.15	25965356.5	1052.61	1055.39	145	155	156	908	898	2"
GM-27C	550	371197.66	25965349.7	1052.53	1055.05	210	220	222	843	833	2"
GM-63B	263	371445.06	25965081	1049.72	1052.15	105	110	135	945	940	2"
GM-66B	1,788	373426.38	25964655.6	1045.72	1048.3	125	135	175	921	911	2"
GMPZ-8	10	371702.84	25965122.2	1044.35	1047.6	125	145	190	919	899	2"

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Table B-4. GMEW-9 Pump Test Well Information, Ford/Kingsford Site, Kingsford, Michigan.

Well	Distance from Extraction Well (feet)	Northing	Easting	Ground Elevation (feet above mean sea level)	TOC Elevation (feet above mean sea level)	Top of Screen Depth (feet)	Bottom of Screen Depth (feet)	Total Depth (feet)	Top of Screen Elevation (feet above mean sea level)	Bottom of Screen Elevation (feet above mean sea level)	Casing Diameter
GMEW-9	0	372900.84	25964996.9	1048.91	1051.26	125	170	175	924	879	6"
GM-5	447	373215.84	25965313.8	1122.18	1125.58	250	260	263	872	862	2"
GM-25B	364	372548.99	25965088.5	1047.85	1050.18	98	108	109	950	940	2"
GM-25C	366	372546.41	25965089.8	1047.94	1050.05	206	216	220	842	832	2"
GM-26C	1209	371702.08	25964837.2	1047.27	1049.7	160	170	205	887	877	2"
GM-66B	627	373426.38	25964655.6	1045.72	1048.3	125	135	175	921	911	2"
GMPZ-4	533	372448.679	25965279.6	1058.17	1060.63	131	141	141	927	917	1"
GMPZ-9	11	372891.08	25965002.6	1048.31	1050.93	130	170	180	918	878	2"
GMPZ-10	555	372448.11	25965318	1064.5	1067.53	135	145	210	930	920	2"

Date\Time : Fri, 21 May 2004 – 2:55pm
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Acad Version : R16.0
User Name : cmckeough

A
A'
B
B'
C
C'

MARYS WAY
WESTWOOD AVE.
EVERGREEN
MORONI
EASTON LANE
NORMANDY PLACE
W. NORMANDY PLACE
P/A
WALL
TANK

0' 150' 300'
SCALE: 1" = 150'

LEGEND

- MONITOR WELL LOCATION
- SOIL BORING LOCATION
- GAS PROBES
- STAFF GAUGE LOCATION
- GPR SOIL BORING LOCATION
- GEOPROBE LOCATION

NOTES
1. HORIZONTAL DATUM BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM.
   DATE OF PHOTOGRAPHY: 5-04-97
   ABRAMS AERIAL SURVEY CORPORATION #26994.2
2. ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS

ARCADIS
3903 NORTHDALE BOULEVARD , SUITE 120
TAMPA, FLORIDA 33624
PHONE 813/961-1921, FAX 813/264-3425

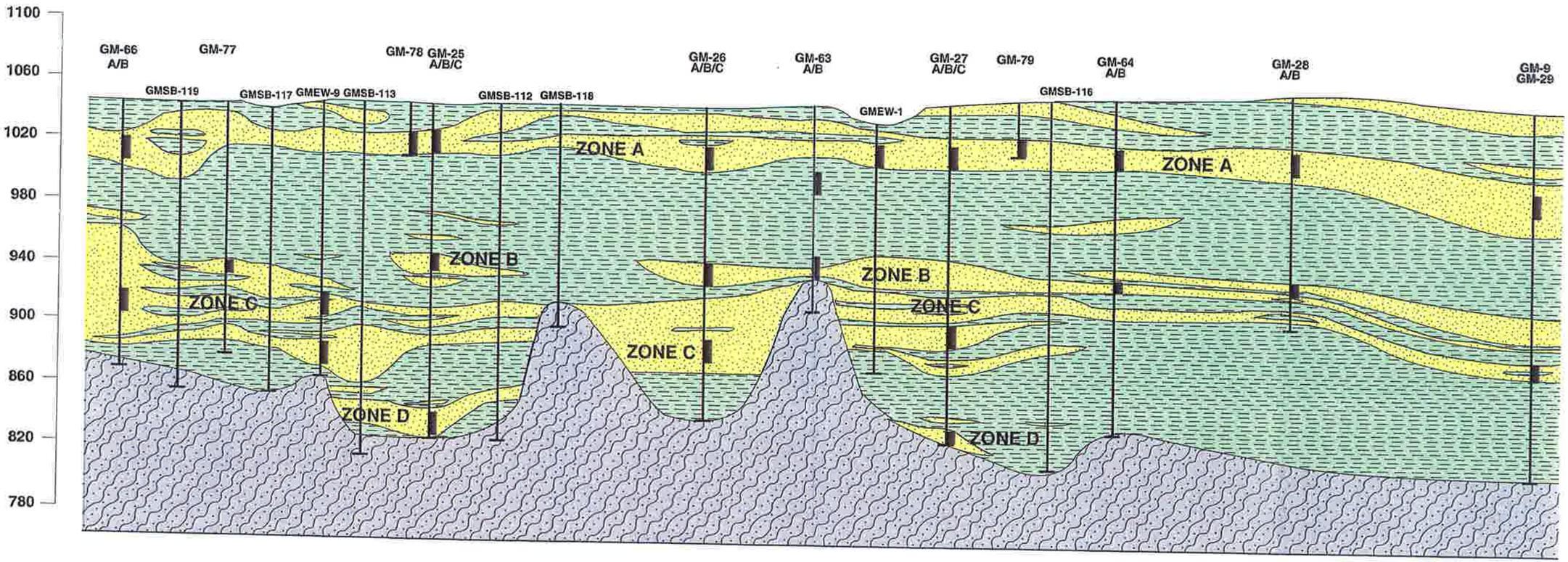
LOCATIONS OF GEOLOGIC CROSS-SECTIONS

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
JMG	07/09/02	RS	RS
		LEAD DESIGN PROF. BE	CHECKED BE
FORD/KINGSFORD SITE KINGSFORD, MICHIGAN		PROJECT NUMBER WI00950.0001	FIGURE B-2

DRAFTER: LMB | APPROVED: | CHECKED: BWE | DRAWING: XSEC_A-D ZONE_B3.AI | FILE NO.: GRAPHICS | PN: FORDWI0637\2004 | DWG DATE: 11MAY04

A
NORTH

A'
SOUTH



EXPLANATION

- SAND/GRAVEL (FINE TO COURSE)
- SILT/CLAY SILTY SAND
- BEDROCK

GM-78
WELL/BORING LOCATION
WELL SCREEN INTERVAL

80
40
0
0 200 400
APPROXIMATE SCALE IN FEET
VERTICAL EXAGGERATION = 5x

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NORTH - SOUTH GEOLOGIC CROSS SECTION A - A' ALONG THE MENOMINEE RIVER SHOWING A-D ZONE SANDS

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-3

DRAFTER: LMB | APPROVED: | CHECKED: BWE | DRAWING: XSEC.AI | FILE NO.: GRAPHICS | PN: FORDWI0637\2004 | DWG DATE: 20MAY04

B

WEST

B'

EAST

FEET MEAN SEA LEVEL

1080
1060
1040
1020
1000
980
960
940
920
900
880
860

GM-10

MENOMINEE RIVER

GM-26
A/B/C

GMPZ-8
GMEW-8

ZONE A

ZONE B

ZONE C

205'

305'

190'

EXPLANATION

SAND/GRAVEL
(FINE TO COURSE)

SILT/CLAY
SILTY SAND

BEDROCK

WELL/BORING LOCATION
SCREEN INTERVAL

40
20
0
0 40 80
APPROXIMATE SCALE IN FEET
VERTICAL EXAGGERATION = 50X

ARCADIS

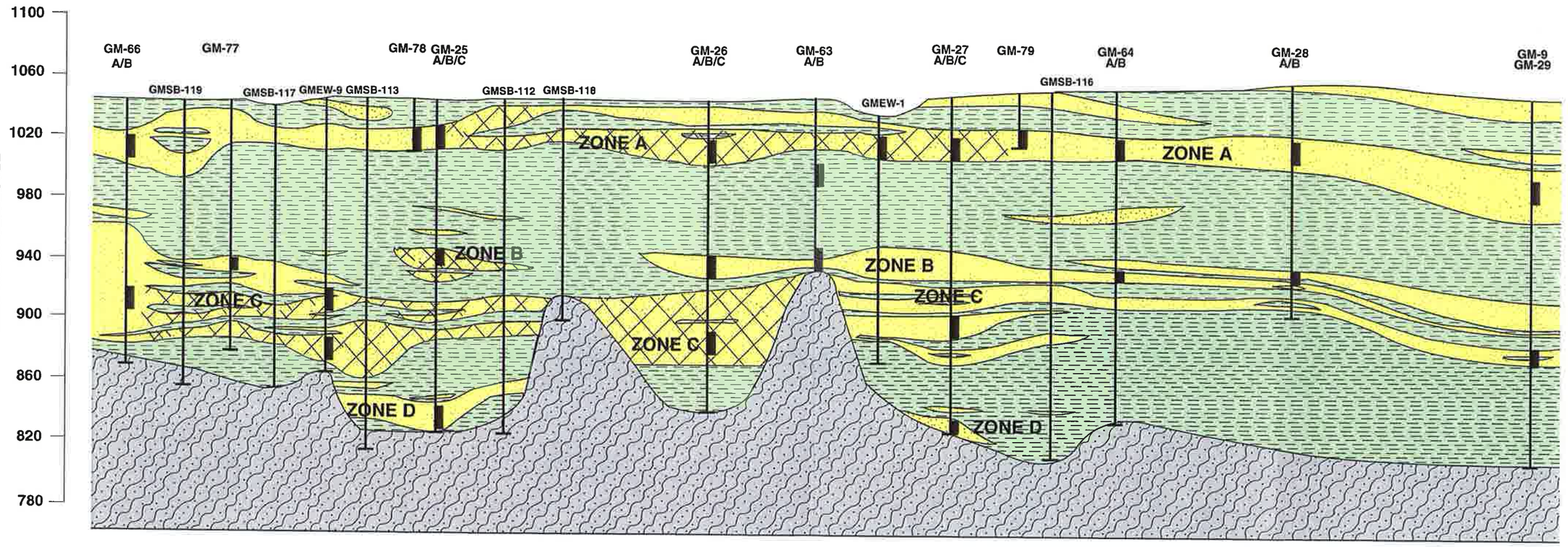
WEST - EAST GEOLOGIC CROSS-SECTION
B-B'
FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-4

DRAFTER: LMB | APPROVED: | CHECKED: BWE | DRAWING: XSEC_ACUTE_GSI.AI | FILE NO.: GRAPHICS | PN: FORDIWI063712004 | DWG DATE: 21MAY04

NORTH

SOUTH



EXPLANATION

- SAND/GRAVEL (FINE TO COURSE)
- SILT/CLAY SILTY SAND
- BEDROCK
- GM-78 — WELL/BORING LOCATION
- WELL SCREEN INTERVAL
- EXTRAPULATED AREAS OF ACUTE GROUNDWATER SURFACE WATER INTERFACE (GSI) CRITERIA EXCEEDANCE

80
40
0
0 200 400
APPROXIMATE SCALE IN FEET
VERTICAL EXAGGERATION = 5x

ARCADIS

NORTH - SOUTH GEOLOGIC CROSS SECTION SHOWING AREAS OF EXTRAPULATED ACUTE GSI EXCEEDENCE

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-5

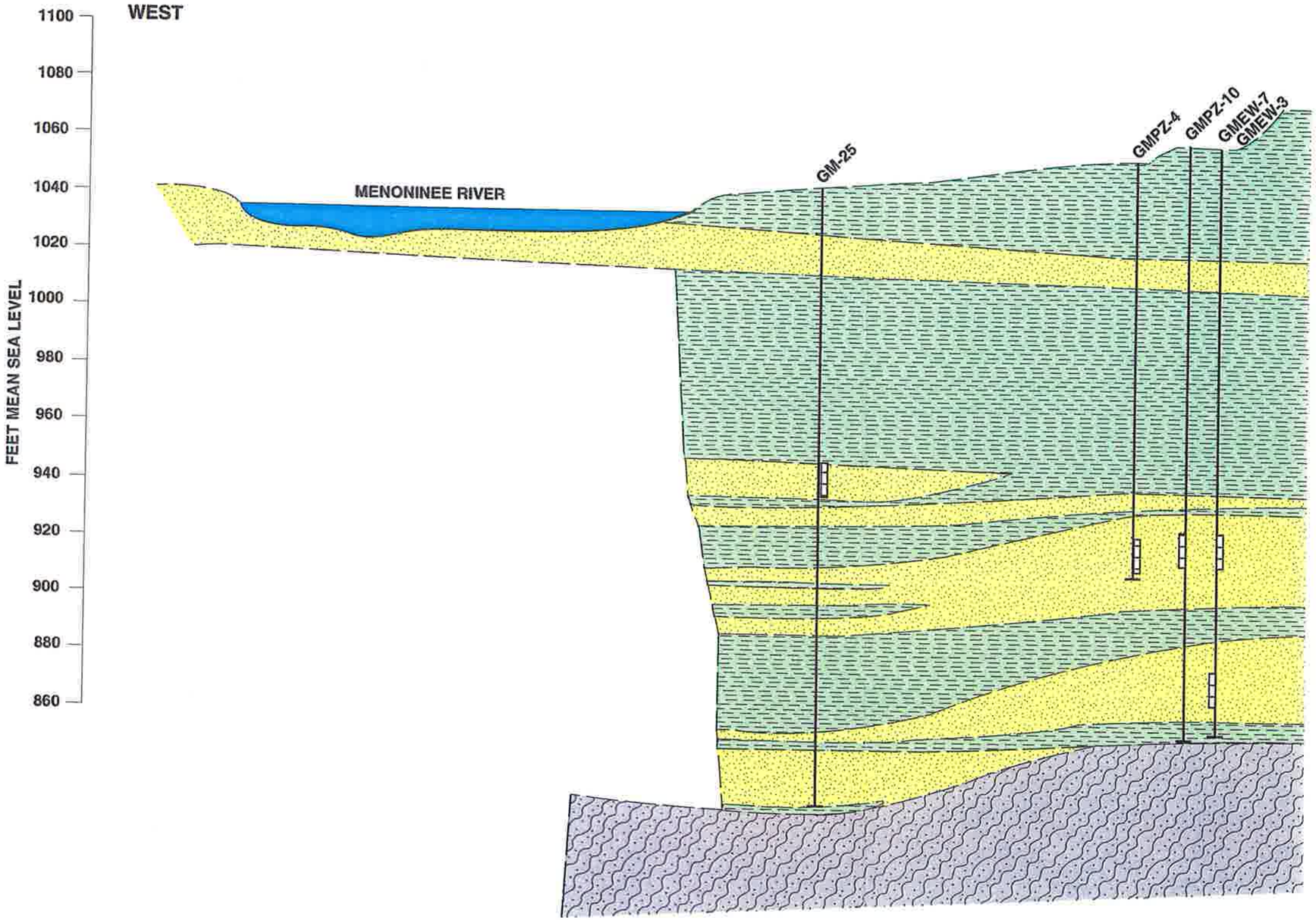
DRAFTER: LMB | APPROVED: | CHECKED: BWE | DRAWING: XSEC_051904.AI | FILE NO.: GRAPHICS | PN: FORDWI0637\2004 | DWG DATE: 21MAY04

C

WEST

C'

EAST



EXPLANATION

- SAND/GRAVEL (FINE TO COURSE)
- SILT/CLAY SILTY SAND
- BEDROCK
- WELL/BORING LOCATION SCREEN INTERVAL

40
20
0
0 40 80

APPROXIMATE SCALE IN FEET
VERTICAL EXAGGERATION = 50X

ARCADIS

WEST-EAST GEOLOGIC CROSS-SECTION
C - C'

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-6

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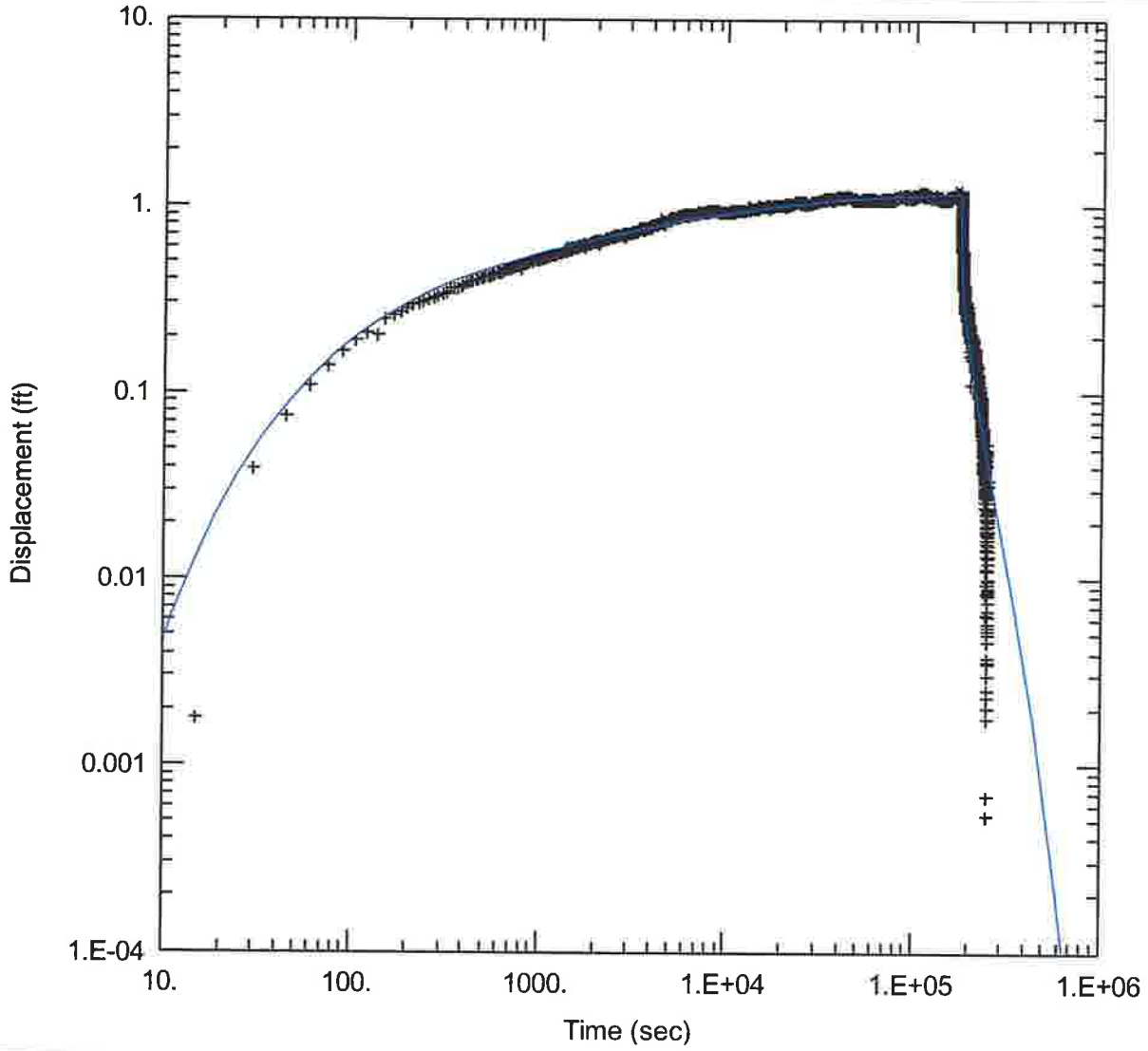

Obs. Wells
+ GM-65

Aquifer Model
Leaky

Solution
Hantush-Jacob

Parameters

T	= 2438.5 ft^2/day
S	= 0.004678
r/B	= 0.01419
Kz/Kr	= 0.1
b	= 32. ft

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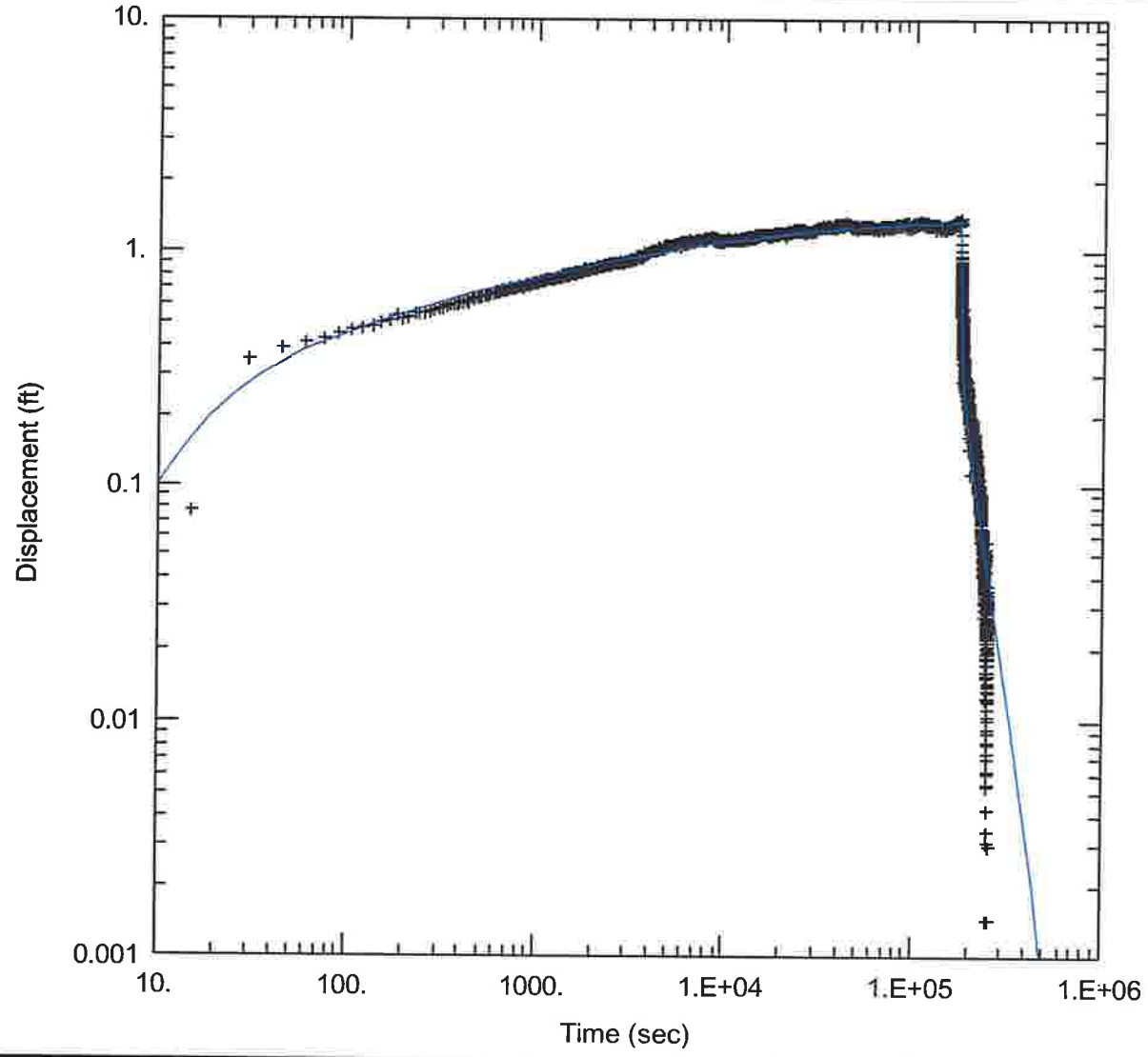
GMEW-3 PUMP TEST RESULTS FOR WELL GM65 (OBSERVATION WELL)

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-7

DWG DATE:	01-08-04	PRJCT NO.:	000000MD.0000	FILE NO.:	EW3-PZ10.SRF	CHECKED:	MPK	APPROVED:	PP	DRAFTER:	MWK



Obs. Wells
+ GMPZ-10

Aquifer Model
Leaky

Solution
Hantush-Jacob

Parameters
T = 2642.9 ft^2/day
S = 0.00313
r/B = 0.01879
Kz/Kr = 0.1
b = 32. ft

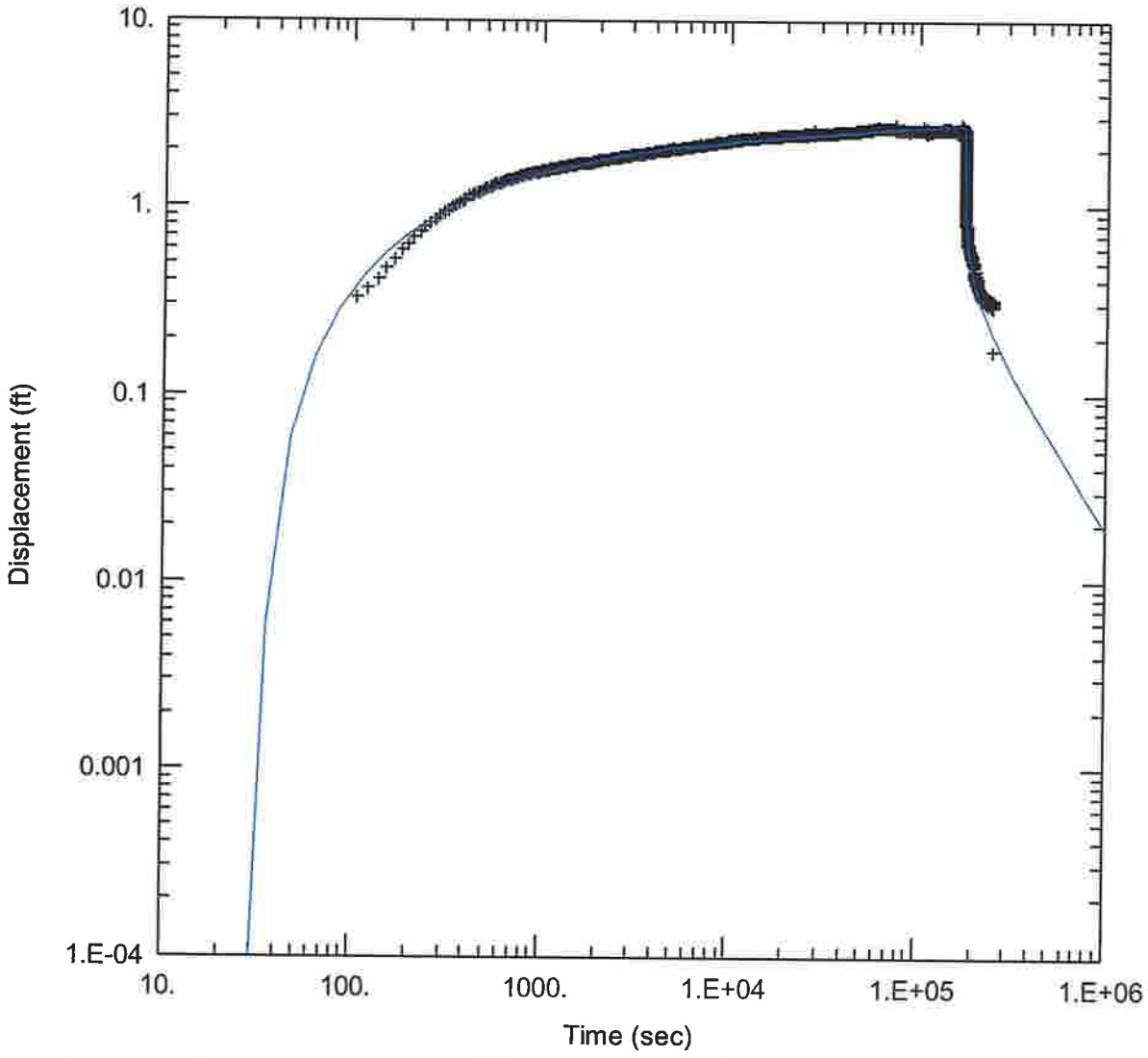
ARCADIS

GMEW-3 PUMP TEST RESULTS FOR WELL GMPZ-10 (OBSERVATION WELL)

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-8

DWG DATE:	01-08-04	PRJCT NO.:	000000MD.0000	FILE NO.:	EW7-PZ7.SRF	CHECKED:	MPK	APPROVED:	PP	DRAFTER:	MWK



Obs. Wells
+ GMPZ-7

Aquifer Model
Leaky

Solution
Hantush-Jacob

Parameters

T	= 1773.2 ft^2/day
S	= 0.02643
r/B	= 0.01
Kz/Kr	= 0.01011
b	= 32. ft

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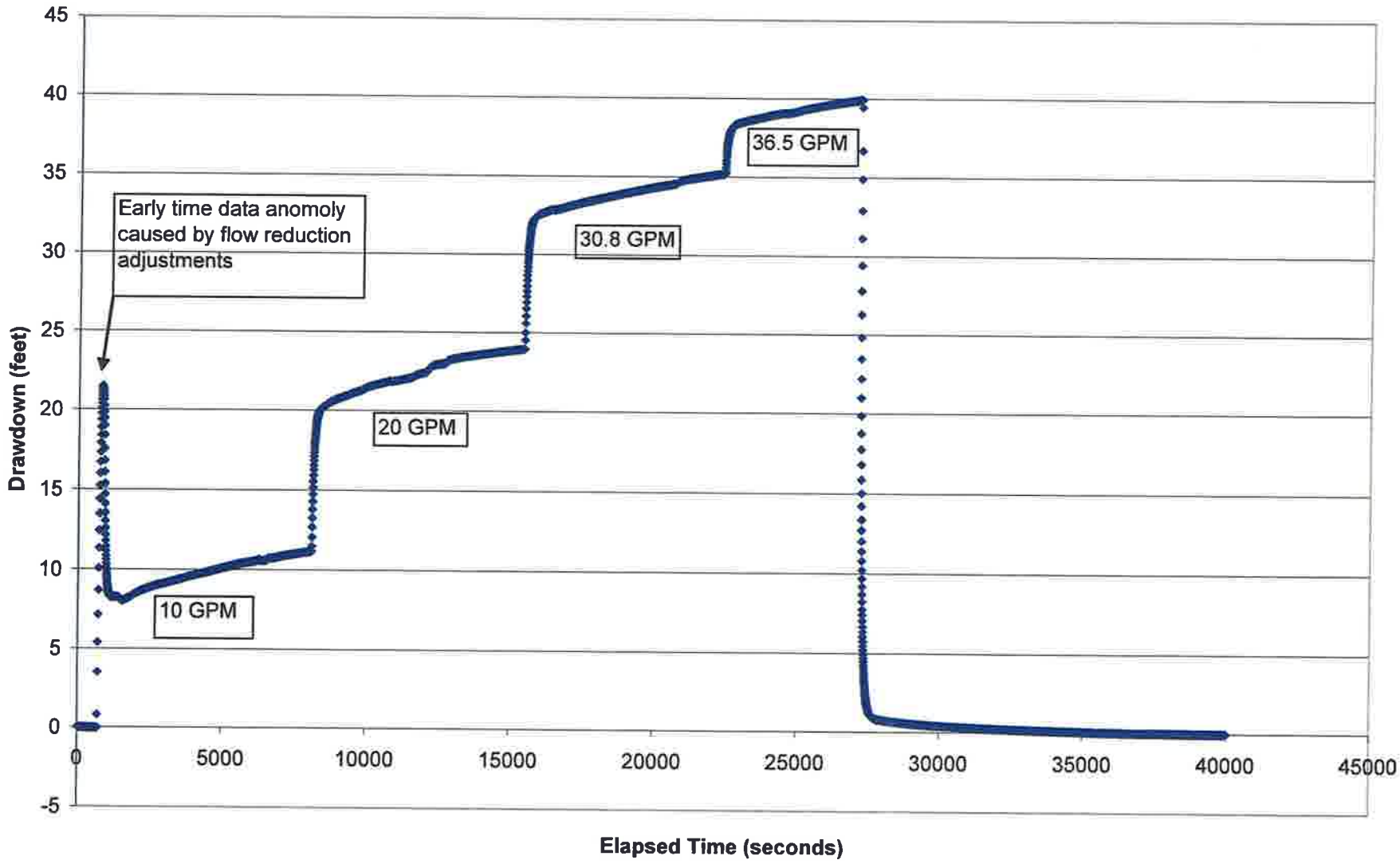
GMEW-7 PUMP TEST RESULTS FOR WELL GMPZ-7 (OBSERVATION WELL)

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-9

DWG DATE: 21MAY04	PN: FORD\WI0637\2004	FILE NO.: GRAPHICS	DRAWING: GMEW-3	CHECKED: BWE	APPROVED:	DRAFTER: LMB



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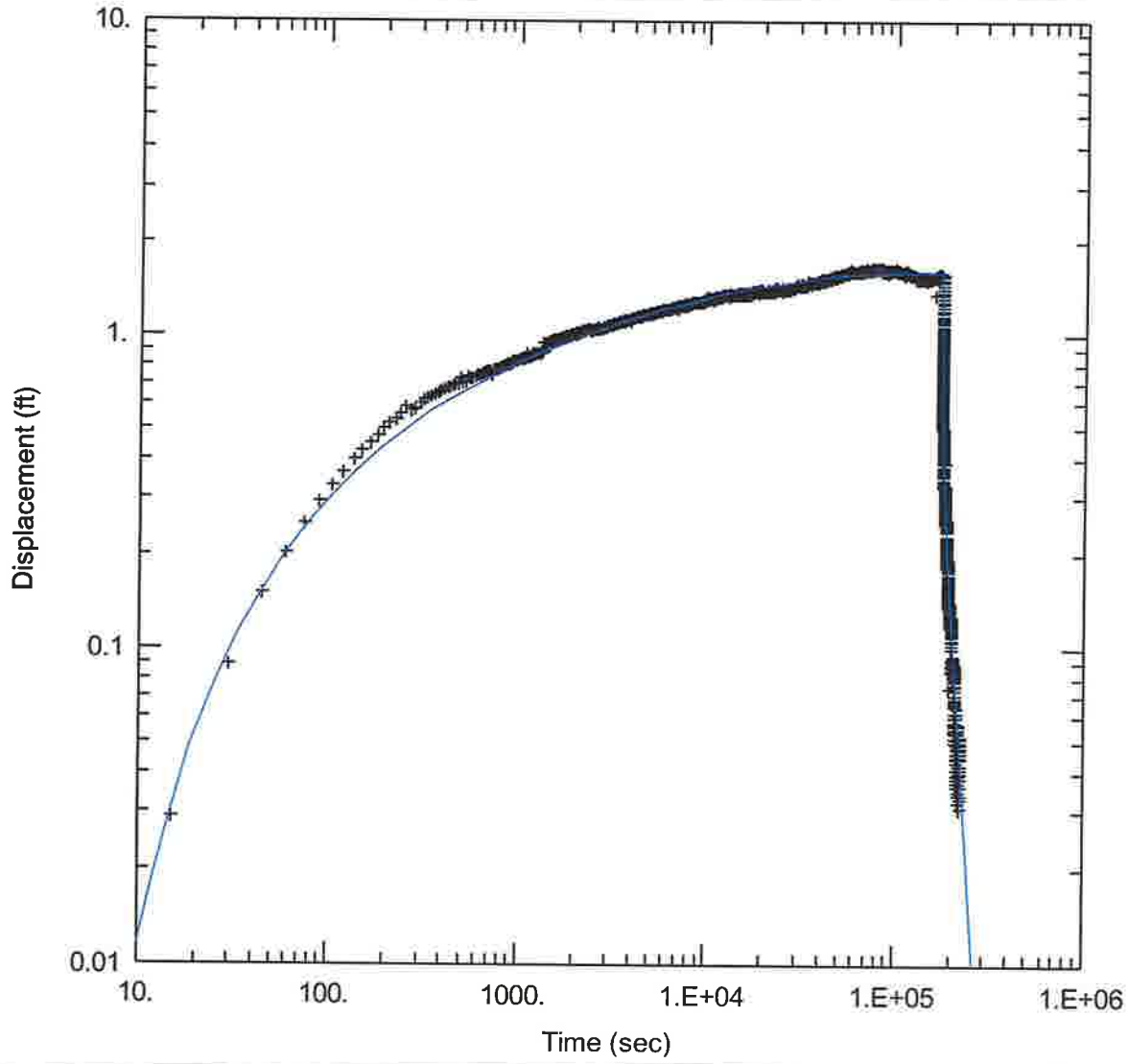
GMEW-3 STEP TEST RESULTS

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

B-10

DWG DATE:	01-08-04	PRJCT NO.:	000000MD.0000	FILE NO.:	EW8-PZ8.SRF	CHECKED:	MPK	APPROVED:	PP	DRAFTER:	MWK



Obs. Wells
+ GMPZ-8

Aquifer Model
Leaky

Solution
Hantush-Jacob

Parameters
T = 1563.2 ft^2/day
S = 0.01404
r/B = 0.04283
Kz/Kr = 0.1
b = 50. ft

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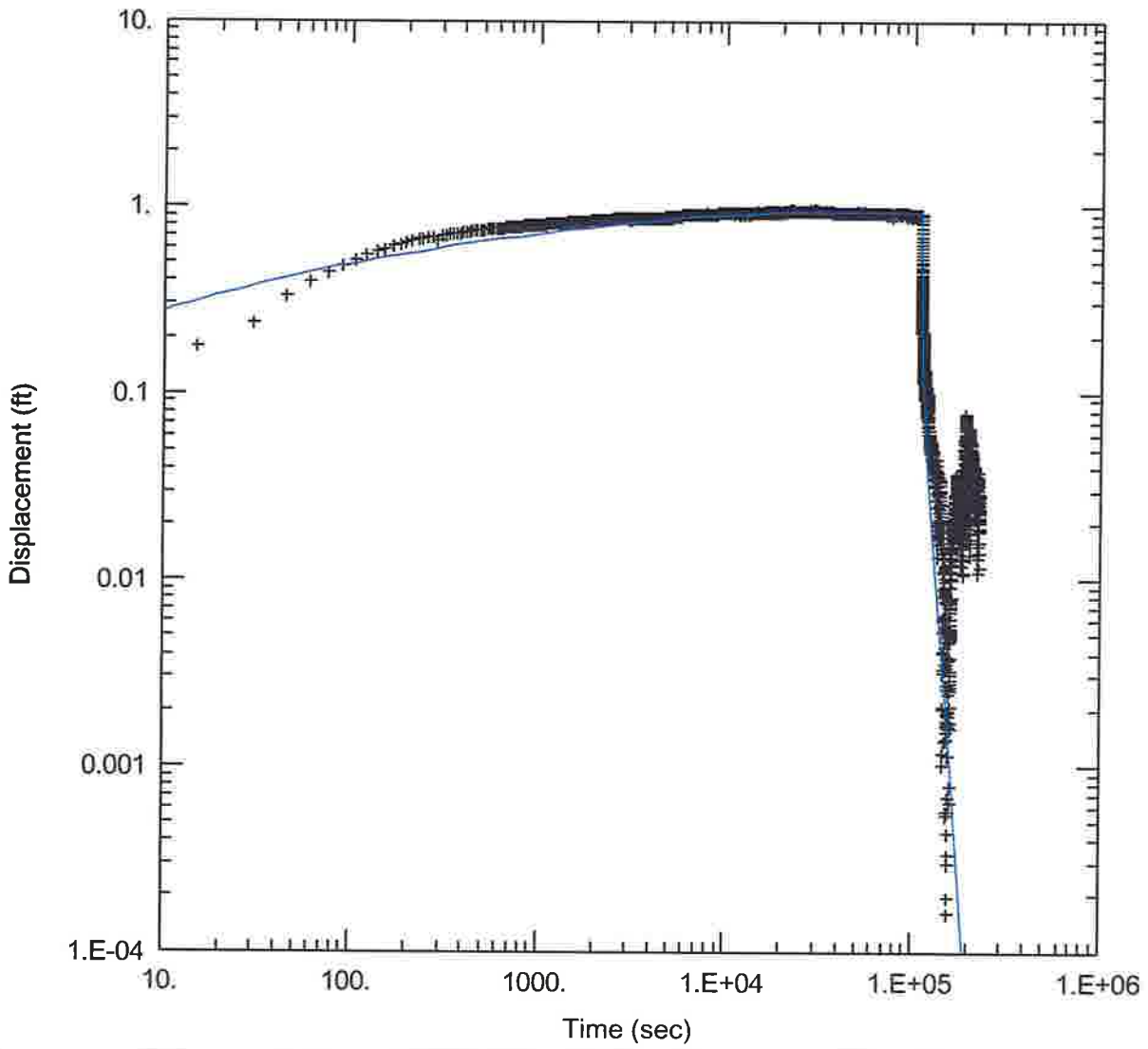
GMEW-8 PUMP TEST RESULTS FOR WELL GMPZ-8 (OBSERVATION WELL)

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-11

DWG DATE:	01-08-04	PRJCT NO.:	000000MD.0000	FILE NO.:	EW9-PZ9.SRF	CHECKED:	MPK	APPROVED:	PP	DRAFTER:	MWK



Obs. Wells
+ GMPZ-9

Aquifer Model
Leaky

Solution
Hantush-Jacob

Parameters
T = 3102.5 ft^2/day
S = 0.0004916
r/B = 0.01039
Kz/Kr = 0.1
b = 50. ft

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GMEW-9 PUMP TEST RESULTS FOR WELL GMPZ-9 (OBSERVATION WELL)

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
B-12

ADDENDUM TO NUMERICAL GROUNDWATER FLOW MODEL

Ford/Kingsford Site
Kingsford, Michigan

January 2005

Addendum to Numerical Groundwater Flow Model

Ford/Kingsford Site
Kingsford, Michigan

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Our Ref.:
WI001075.0022

Date:
24 January 2005

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1. Introduction

This report is being submitted as an addendum to the report submitted to the Michigan Department of Environmental Quality (MDEQ) entitled "*Numerical Groundwater Flow Model"* ARCADIS, May 28, 2004. The May 2004 report documented a steady-state, three-dimensional groundwater flow model that was used to develop the basis for the design of a groundwater extraction and treatment system to capture groundwater adjacent to the Menominee River where groundwater constituent concentrations are above the generic acute groundwater surface water interface (GSI) criteria.

Subsequent to the submittal of the May 2004 report and receipt of MDEQ comments, ARCADIS has collected additional data from the installation and testing of groundwater extraction wells along the Menominee River, based on Scenario One (Section 5 of Numerical Groundwater Flow Model Report). The results of the additional characterization performed during the summer and fall of 2004 were incorporated into the original calibrated groundwater model. This addendum presents the results of additional groundwater flow simulations based on the updated model and presents a strategy for further model refinement based on the initial start-up and performance testing of the groundwater extraction system.

Section 2 summarizes the results of additional characterization, which is presented in the Performance Monitoring Plan, describes the revisions to the model and results of additional simulations, and discusses the proposed approach for refining the model based on performance monitoring.

1.1 Purpose and Scope

The original calibrated model was developed to be used as a tool to aid in designing and optimizing the performance of the groundwater extraction system once operation has begun. Additional performance monitoring data acquired during the initial operations, as described in the main body of this report, will be used to refine the model and improve the reliability of its performance. The updated model as a result of this future effort will be used to assist in the operation and optimization of the extraction system. Compliance will be demonstrated by measured hydraulic gradients toward the extraction well network from the Menominee River and by groundwater quality at the monitoring wells.

2. Revisions to the Model and Future Modeling Strategy

This section summarizes the revisions to the model as a result of the installation and testing of groundwater extraction wells along the Menominee River during the 2004 construction season, comments received from MDEQ in a letter dated September 24, 2004, and follow-up discussions with Rick Mandle of the MDEQ regarding the model in mid-December 2004.

The objective of this section is to present the results of a simulation requested by MDEQ that would be based on the most conservative estimates of hydraulic conductivity that are supported by the pumping tests to illustrate the conservative nature of the groundwater pumping estimates to achieve capture of the groundwater along the Menominee River. The conservative pumping simulation was completed after updating the model and assessing impact of the model changes on the calibration. The conservative pumping simulation increased the hydraulic conductivity of model layers 1 through 7 by a factor of 1.5. Under this scenario, the modeled transmissivity of the Zone A sands is treated as its maximum measured value near the river from aquifer pumping tests, while the Zone B and C sands are treated as 3 and 1.4 times greater than the measured maximum, respectively.

2.1 Comparison of Modeled and Measured Transmissivity in the Original Calibrated Model

The final hydraulic parameters for the calibrated model zonation for each layer were summarized in Table 2 and presented in plan view on Figures 10 through 17 in the Numerical Groundwater Flow Model Report [ARCADIS, 2004]. The conceptual stratigraphic column for the model is shown in Figure 1.

Horizontal hydraulic conductivity for the water bearing units (Zone A, Zone B, and Zone C sands) ranged between approximately 20 and 32 feet per day (ft/day) for fine sand to silty sand to approximately 160 ft/day for sand and gravel mixtures. In general, vertical anisotropy (e.g., ratio of horizontal to vertical hydraulic conductivity) within the sand units was varied between approximately 10 and 15 for less stratified morphologies and between 120 and 390 for interbedded morphologies.

The hydraulic conductivity values for the water bearing units (Zone A, Zone B, and Zone C sands) along the Menominee River are consistent with, or higher than, the results of pumping tests which are summarized in the Performance Monitoring Plan. The average modeled transmissivity of Zone A sands along the river was 3,120 ft^2/day (based on average hydraulic conductivity of 104 ft/day and thickness of 30 feet) is

consistent with the average transmissivity results from the Zone A sands pumping tests of 2,960 ft^2/day. The Zone B sands were modeled with an average transmissivity of 650 ft^2/day along the river, which is higher than the pumping test average of 170 ft^2/day. The Zone C sands were modeled with transmissivities ranging between 2,900 and 6,500 ft^2/day (based on hydraulic conductivity between 45 and 65 ft/day and saturated thickness between 60 and 100 feet), which is higher than the average transmissivity from the Zone C sands pumping tests of 2,300 ft^2/day.

The horizontal hydraulic conductivity of the aquitards ranged from 0.01 ft/day for interbedded silt and clay to approximately 5 ft/day for silt or sandy silt. The vertical anisotropy for the aquitards ranged from approximately 120 to 1200. The aquitard separating the Zone A sands from the Zone B sands (e.g., model layers 2 and 3) was modeled using hydraulic conductivities between 0.2 and 2 ft/day, resulting in a range of transmissivity between approximately 20 and 100 ft^2/day along the river. The deeper aquitard (e.g., layer 5) that separates the Zone B sands from the Zone C sands in certain areas along the Menominee River was modeled using conductivities between 0.2 and 35 ft/day, which translates to a range of transmissivity between 2 and 350 ft^2/day based on an average thickness of 10 feet.

Throughout the model layers, bedrock was treated using a single value for horizontal hydraulic conductivity (0.001 feet/day) and vertical hydraulic conductivity (0.0001 feet/day).

2.2 Additional Characterization & Specific Capacity Testing

Between June and November 2004, ARCADIS installed and tested 44 wells along the Menominee River. A detailed discussion of the well installation and testing is provided in the Performance Monitoring Plan.

2.2.1 Revised Stratigraphy

The additional soil boring logs were used to update the stratigraphy along the Menominee River as shown on Figure 2. The primary change in the stratigraphy as a result of the additional soil borings is related to the bedrock elevations in two primary areas. In the first area, between GMEWA-17 and GMEWA-21, the bedrock was encountered at approximately 920 ft MSL over a broader area than previously identified. At the second area between GMEWA-10 and GMEWA-12, bedrock was encountered at approximately 1,000 ft MSL to the base of the Zone A sands.

In general, the interpreted stratigraphy of the water bearing units (e.g., Zone A, Zone B, and Zone C sands) was consistent with prior interpretations and model conceptualization. However, the additional data lead to the refinement of the stratigraphy in two areas. The additional boring log data indicates that the thickness of the Zone A sands is slightly thicker between Extraction Wells GMEWA-14 and GMEWA-17 than other areas along the Menominee River. In addition, the lateral extent of the Zone B sands as depicted in the original model was too extensive near the river and is probably less distinct from the Zone C sands in this area. As a result of borings placed in the vicinity of Extraction Well GMEWC-6, the extent of the impacted mapable Zone B sands is relegated to the immediate area between and around Extraction Well GMEWC-6 and Monitoring Well GM-25 (A/B/C). A detailed discussion of the findings from the soil borings drilled in this area is provided in the Performance Monitoring Plan.

2.2.2 Specific Capacity Testing Results

Two areas showed specific capacity results above 10 gpm/ft. The first area between Extraction Wells GMEWA-14 and GMEWA-16 showed specific capacity results slightly above 10 gpm/ft. The second area was between Extraction Wells GMEWA-8 and GMEWA-11, which had values ranging from approximately 13 and 28 gpm/ft. The Zone A sands in both of these areas were thicker when compared to other locations with lower specific capacity (Figures 2 and 3).

Although several attempts were made to install extraction wells in the Zone B sands as discussed in the Performance Monitoring Plan, only Extraction Well GMEWB-1 was completed in this zone and its specific capacity is less than 0.1 gpm/ft.

Specific capacity tests were performed on 14 Zone C sands extraction wells. The results of these tests are shown on Figure 4 for Extraction Wells GMEWC-1 through GMEWC-8A along with transmissivity values from prior pumping tests performed on existing extraction wells, for comparison. As shown on Figure 4, Zone C sands specific capacity test results range from approximately 0.25 to 7.7 gpm/ft, with an average of about 1.3 gpm/ft. The Zone C sands locations with higher specific capacity generally exhibit a greater thickness of sand or gravel facies. The transmissivity estimates from pumping tests performed on existing wells along the Menominee River ranged from 1,560 ft^2/day (Extraction Well GMEW-8) to 3,100 ft^2/day (Extraction Well GMEW-9). Generally, the lower transmissivity values loosely correlate to specific capacity results on the order of 0.3 to 2.4 gpm/ft. A specific capacity estimate

of 4.7 gpm/ft was obtained from Extraction Well GMEWC-4 during the 4-hour pumping tests, which is closest to the maximum transmissivity value of 3,100 ft^2/day.

As a result of the lower specific capacity testing of Extraction Well GMEWC-6, two additional extraction wells (GMEWC-9 and GMEWC-10) were installed into the Zone C sands in the vicinity of Extraction Well GMEWC-6. It is anticipated that the combined pumpage from these wells will easily total the design pumping rate from Extraction Well GMEWC-6 for the Zone C sands, which is 20 gallons per minute (gpm).

2.3 Model Updates

The revisions in the updated calibrated groundwater model were primarily associated with refinement of the stratigraphy due to the broader and somewhat shallower bedrock highs between Extraction Wells GMEWA-10 and GMEWA-12 and Extraction Wells GMEWA-17 and GMEWA-21 (Figure 2). The extents of the sand zones and aquitard units were modified to accommodate the elevated bedrock zone in these areas. The same hydraulic conductivity values and anisotropy ratios were used as in the calibrated model. As there was limited additional information as to the eastern extents of the bedrock highs in these two areas, their extents were interpreted based on existing data. The bedrock high near Extraction Wells GMEWA-10 and GMEWA-12 was treated as a spire, with essentially the same dimensions east-west as north-south. The bedrock high near Extraction Wells GMEWA-17 and GMEWA-21 was interpreted to be approximately 2-times longer in the east-west dimension than the north-south. Ultimately, the additional data acquired through the installation of the performance monitoring network may aid in the interpretation of the bedrock geometry and improve the stratigraphic interpretations regarding the geometry of the sand zones.

Based on groundwater sampling performed during the installation and testing of the extraction wells, it appears that the north-south extent of groundwater constituent concentrations above the generic acute GSI criteria in the Zone A sands is slightly less extensive than thought when the calibrated model was developed. The groundwater extraction network was installed using the 70-foot line geometry as discussed under Scenario One (Section 5.1.1). The results from WET testing, if confirmed by analytical results (as discussed in the Performance Monitoring Plan) indicate that the four northernmost wells (GMEWA-26 through GMEWA-28A) and four southernmost wells (GMEWA-1 through GMEWA-4) are below acute GSI criteria. Assuming that these results will be confirmed, ARCADIS performed additional simulations assuming that these wells were not pumped. The remaining 21 Zone A sands wells (GMEWA-5

through GMEWA-25) were simulated with pumping rates of 10 gpm for a Zone A sands total of 210 gpm.

The conditions in the Zone B sands prevented successful completion of dedicated groundwater extraction wells in the impacted area that could be pumped at the design rate. In addition, the areal extent of the Zone B sands was limited to the immediate area around Monitoring Well GM-25 (A/B/C). For this reason, the only extraction well screened into the Zone B sands is Extraction Well GMEWC-6, which is screened in both the Zone B and C sands. Additional simulations were completed assuming that this well, when pumped (at 30 gpm) would produce 10 gpm from the Zone B sands.

The occurrence of the bedrock high between the southern Zone C sands Extraction Wells GMEWC-7 and GMEWC-8 dictated an increased spacing between these wells. Extraction Well GMEWC-8 is located midway between the northern and southern bedrock highs that have been discussed in the preceding section. The simulations that were performed to mimic the groundwater extraction system assumed a pumping rate of 20 gpm at each Zone C sands extraction well for a total of 160 gpm produced from the Zone C sands. As indicated above although all simulations for the Zone C sands assumed that Extraction Well GMEWC-6 would produce 20 gpm from the Zone C sands, it is envisioned that withdrawals (20 gpm) in the area of Extraction Well GMEWC-6 would result from combined pumpage from Extraction Wells GMEWC-6, GMEWC-9 and GMEWC-10.

2.4 Updated Model Calibration

The results of the updated model calibration statistics did not significantly change from the original model. The calculated RMS error for the updated model was 3.45, which is comparable to the calibrated model results of 3.41. The updated calculated mean error, -0.46 feet, is slightly higher than the calibrated value of -0.37. The updated mean average error was 2.33, which compares well with the calibrated value of 2.30 feet. These relatively small changes in the calibration statistics indicate that the model updates had a minor impact on the model.

Calculated calibration statistics changed significantly for the worse, in the case where the updated model hydraulic conductivities were increased by a factor of 1.5 for the conservative flow simulation. The calculated RMS error was 5.34, mean error was 3.42, and the mean average error was -2.42. These results indicate that the conservative pumping scenario simulation is a poorer match to site behavior than the

updated model; however, the intent of this simulation was to evaluate the impact of capture under conservative flow conditions, not to improve the match of the model.

2.5 Conservative Pumping Simulation Results

The conservative pumping simulation was performed using the updates to the model as discussed in Section 4.1 of the Performance Monitoring Plan. The simulated heads resulting from the non-pumping simulation (no extraction wells) with 1.5 times higher hydraulic conductivity were used to calculate drawdown under the revised pumping conditions:

- 21 - Zone A sands extraction wells (northern and southernmost 4 wells eliminated for this case based on water quality) pumping at 10 gpm each for a total of 210 gpm.

- 1 - Zone B sands extraction well at location of Extraction Well GMEWC-6, pumping at 10 gpm

- 8 – Zone C sands extraction wells pumping at 20 gpm each for a total of 160 gpm.

Capture analysis was performed using the methods in Section 5 of the Numerical Groundwater Flow Model Report [ARCADIS, 2004]. The extent and number of particles used in the capture analysis was modified consistent with the findings for the Zone A and Zone B sands water quality testing results from 2004. Figures 5 through 7 show the steady-state cone of depression (drawdown) and capture analysis results for the Zone A, Zone B, and Zone C sands, respectively. Note that the intent of these simulations is not necessarily to show that complete capture is achieved under these conservative conditions when the pumping rates are unchanged; rather the goal is to illustrate the areas where the model indicates potential for problems, so that the Performance Monitoring Plan can be tailored to collect the information necessary to optimize performance. The results of this simulation are intended to be used as a conservative bench-mark for evaluating the performance monitoring data; however, it is recognized that additional model refinement may be necessary as discussed in Section 4.0.

As shown in Figure 5, the simulated cone-of-depression in the Zone A sands is well developed across the entire line of extraction wells. The effect of superposition of pumping is more pronounced to the south, resulting in greater combined drawdown in this area. The results of the particle tracking analysis indicate that complete capture is

maintained in all but the four northernmost active extraction wells in the conservative pumping simulation. In the calibrated model, capture is maintained by these four extraction wells. As shown in Figure 5, the decreased capture efficiency is mainly shown between the Menominee River and the extraction wells at these northern wells; however, a few particles originating from upgradient areas would also flow past these extraction wells. This result suggests that the capture at the northern end of the Zone A sands extraction wells is most sensitive to estimates of hydraulic conductivity. Considering that this simulation treats the entire Zone A sands along the river equal to the maximum measured value of transmissivity, the results indicate that the overall estimate of pumping required is conservative.

Figure 6 illustrates the simulated cone of depression and capture in the Zone B sands resulting from the operation of Extraction Well GMEWC-6, which is screened in the Zone B and C sands, and due to pumping above and below in the Zone A and Zone C sands. Under these conditions, the model indicates that a well developed cone-of-depression would form around Extraction Well GMEWC-6, resulting in complete capture of groundwater in the area where the Zone B sands exists (around Monitoring Well GM-25A/B/C as shown on Figure 2). It is acknowledged that the model treatment of the Zone B sands is oversimplified, as the model treats the Zone B sands as continuous, a layer that in this area only extends a few hundred feet north and south of Extraction Well GMEWC-6. For this reason the flow estimate is conservative; however, it may be necessary to add Zone B sands extraction wells or increase pumping in the Zone C sands to achieve spatial coverage, since the unit is less well developed and less extensive than treated in the model. This issue will be addressed in future modeling and performance monitoring efforts.

As shown in Figure 7, the simulated combined influence of pumping in the Zone C sands creates cone-of-depression that covers the entire line of pumping wells. The cone-of-depression is best developed around the extraction wells north of the bedrock highs (Extraction Wells GMEWC-1 through GMEWC-7). The cone-of-depression surrounding Extraction Well GMEWC-8 is better developed to the south due to the influence of the bedrock high that truncates the Zone C sands. Based on the particle tracking results, it appears that the Zone C sands extraction well system would still achieve complete capture, particularly to the north. At Extraction Well GMEWC-8, a portion of the particle paths indicate flow beneath the river prior to capture. These results suggest that the capture performance at Extraction Well GMEWC-8 is sensitive to the model estimates of hydraulic conductivity. In addition, the influence of the geometry of the bedrock highs could also have an impact on capture performance. For this reason, the Performance Monitoring Plan will be developed to evaluate this area in

particular. However, the degree of capture demonstrated by the model under these conditions indicates that the overall estimate of flow is conservative, even for much higher transmissivity conditions than measured in the field.

2.6 Future Modeling Strategy

Based on the findings of the well installation activities during the 2004 construction season, it is recommended that additional model refinements efforts be completed after the installation of the proposed performance monitoring piezometers and monitoring wells. The data collected from the additional soil borings may enhance interpretation of the site stratigraphy and the monitoring wells and piezometers will provide a significant number of new points for model calibration.

The proposed performance monitoring network was developed using the updated model and conservative pumping scenario as a bench-mark to assess the sensitivity of capture performance to model assumptions. These results were combined with the revised stratigraphic interpretations resulting from the well installation and testing to gauge where the model performance is potentially less reliable or uncertain so that it could be addressed during the performance monitoring. For this reason, there are more monitoring points at the north end of the Zone A extraction well network and surrounding Zone C Extraction Well GMEWC-8, which is centered between the bedrock highs.

The locations of the proposed points are shown on Figure 8, using color-coded symbols for each zone. The Zone A sands points are shown in blue (36 locations), the Zone B sands points are shown in green (3 locations), and the Zone C sands points are shown in Red (38 locations). Figure 9 shows the Zone A sands monitoring points superimposed on the updated model drawdown to better illustrate the locations and coverage. Figure 10 shows the Zone B and Zone C sands monitoring points superimposed on the Zone C sands drawdown.

It is anticipated that the additional calibration points and systematic data collection strategy presented in the Performance Monitoring Plan will improve the reliability of the model to meet the ongoing objectives of the Consent Judgment. However, it is anticipated that the model will also be used as a tool to assist in the operation and optimization of the system. Future modeling work will be developed using the telescopic mesh refinement technique to reduce the size of the model and allow more refined treatment of the site stratigraphy.

3. Conclusions and Recommendations

3.1 Conclusions

The following conclusions were drawn from the results of the additional work:

- The calibrated model was updated to reflect the stratigraphic and hydraulic data collected during the installation and testing of the extraction well network that was based on Scenario One, from the Numerical Groundwater Flow Model Report [ARCADIS 2004]. The primary changes related to the extension of two bedrock highs and minor reconfiguration of the aquifer and aquitard hydraulic conductivity zonation. These changes did not significantly change the calibration statistics for the updated model. Additional model refinement should be completed after the performance monitoring network is installed, using the performance monitoring data collected during initial start-up to calibrate the model.

- The updated model was used to develop a conservative pumping scenario, where the hydraulic conductivity of layers 1 through 7 were multiplied by a factor of 1.5. The modeled transmissivity values were equal to the maximum measured in the Zone A sands, 3 times greater than the maximum measured in the Zone B sands, and 1.4 times greater for the Zone C sands. Pumping was simulated using a revised extraction well network based on the extent of groundwater exceedance of acute GSI criteria including: twenty-one Zone A sands extraction wells, one Zone B sands extraction well, and eight Zone C sands extraction wells, pumping at 10 gpm, 10 gpm, and 20 gpm, respectively, for a combined total of 380 gpm. The results indicated that a well developed cone-of-depression would result in the conservative pumping model, resulting in reduced capture efficiency only at the northern most end of the Zone A sands and less so near Extraction Well GMEWC-8 in Zone C sands. Ultimately, these results indicate that the overall estimate of pumping to achieve capture is conservative.

3.2 Recommendations

It is anticipated that the groundwater model will be utilized to assist in the evaluation of the performance of the groundwater extraction system.

Further refinement of the model should be completed after the installation of the performance monitoring network, using hydraulic data collected during the initial operation of the system. Synoptic groundwater elevation measurements will be

combined with datalogger measurements as individual wells are brought on-line and these data will also be used in future re-calibration of the model. The additional data will allow for a refined model that will prove useful in the operation and optimization of the extraction system.

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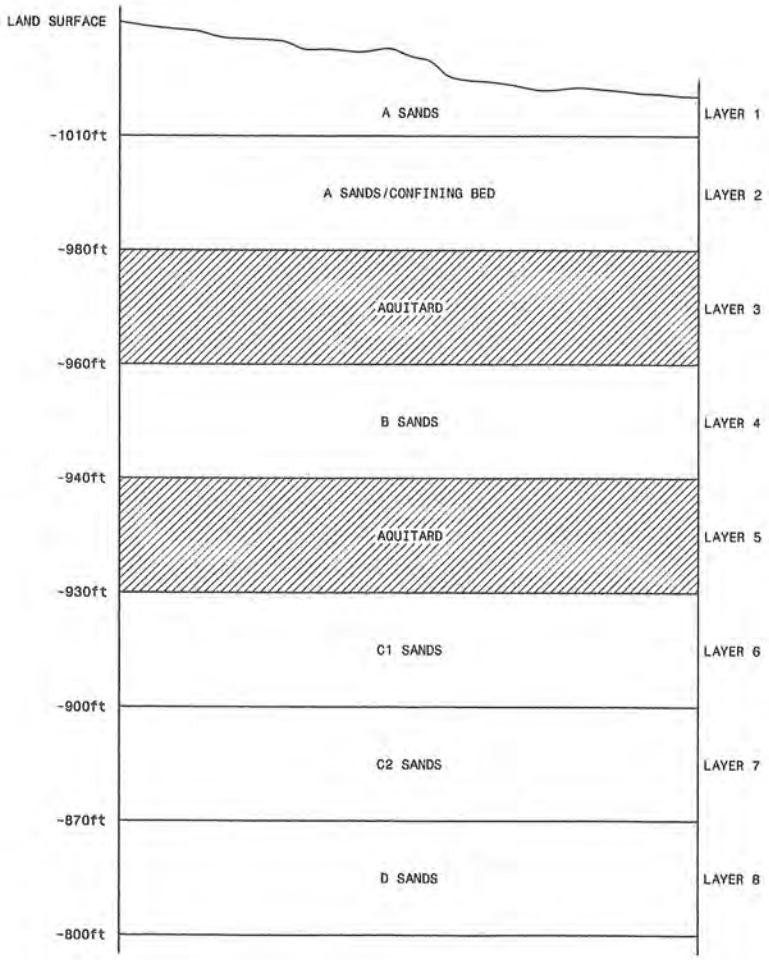

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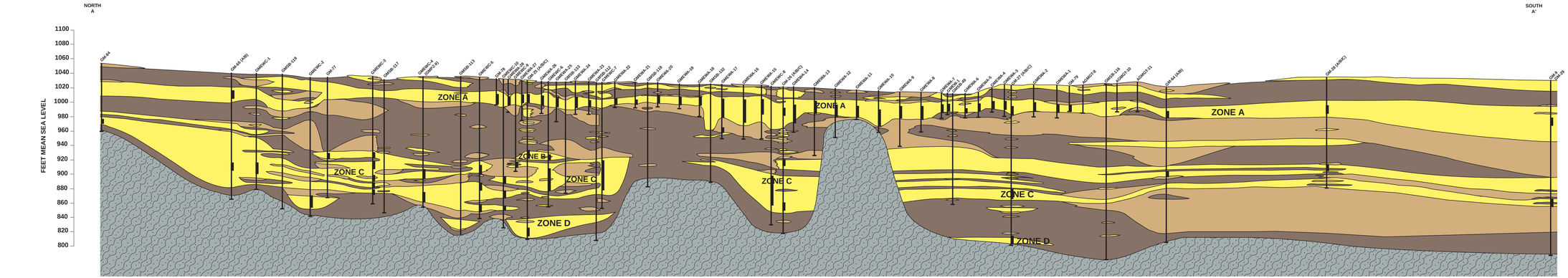
SITE CONCEPTUAL STRATIGRAPHIC COLUMN

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	14-JAN-05
Figure	1

DWG DATE: 20JAN05 | PN: FORD\WI9637C.I2005 | FILE NO.: GRAPHICS\GW MONT PLAN | DRAWING: XSEC_FIG2.AI | CHECKED: BWE | APPROVED: | DRAFTER: LMB



LEGEND

- SAND (FINE TO COARSE)
- VERY FINE SAND/SANDY SILT
- SILT/CLAY
- BEDROCK
- GM-84 WELL/BORING LOCATION
- WELL SCREEN INTERVAL

80
40
0
0 100 200

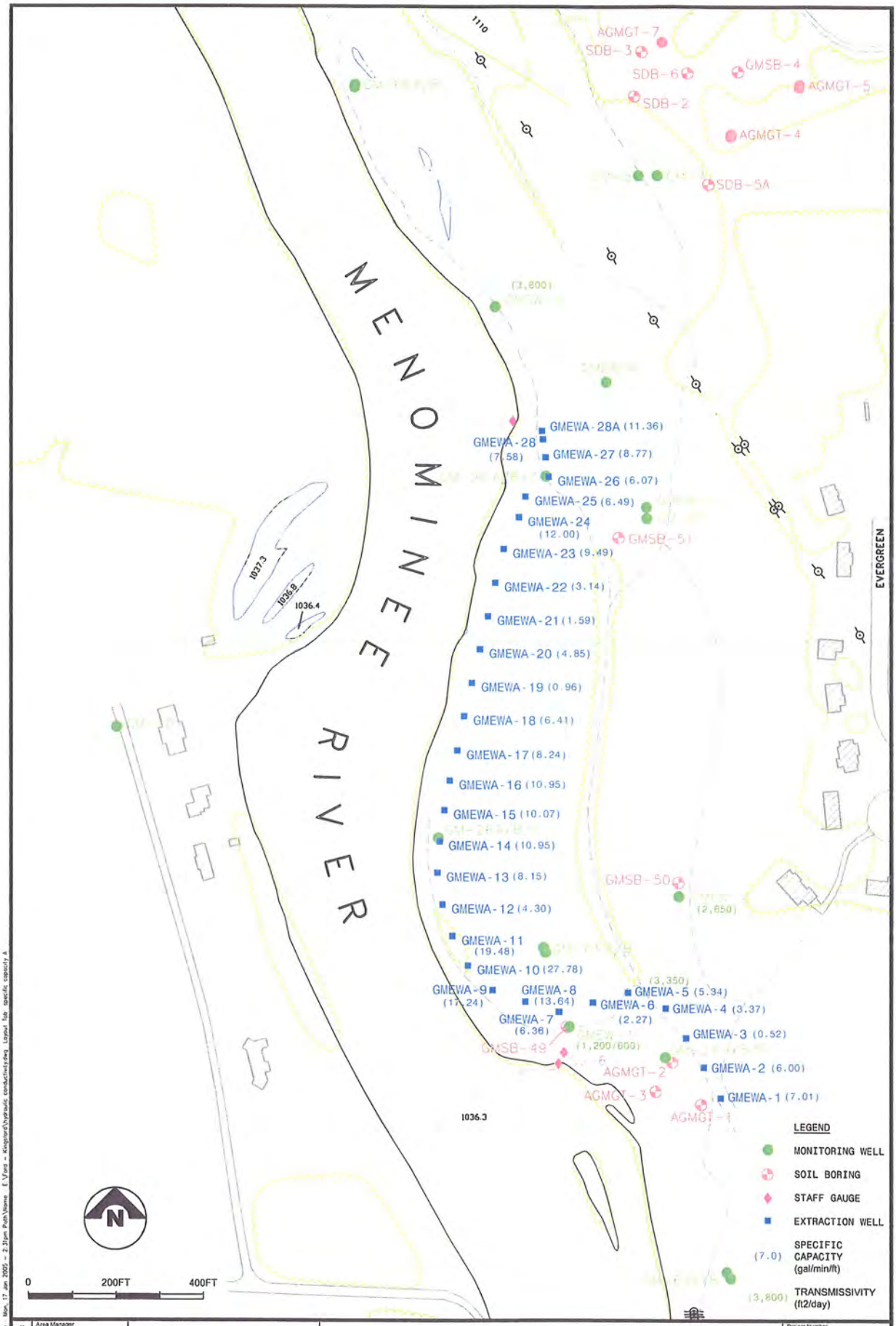
APPROXIMATE SCALE IN FEET
VERTICAL EXAGGERATION = 2.5X

ARCADIS

NORTH-SOUTH GEOLOGIC CROSS SECTION A-A'

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE
2



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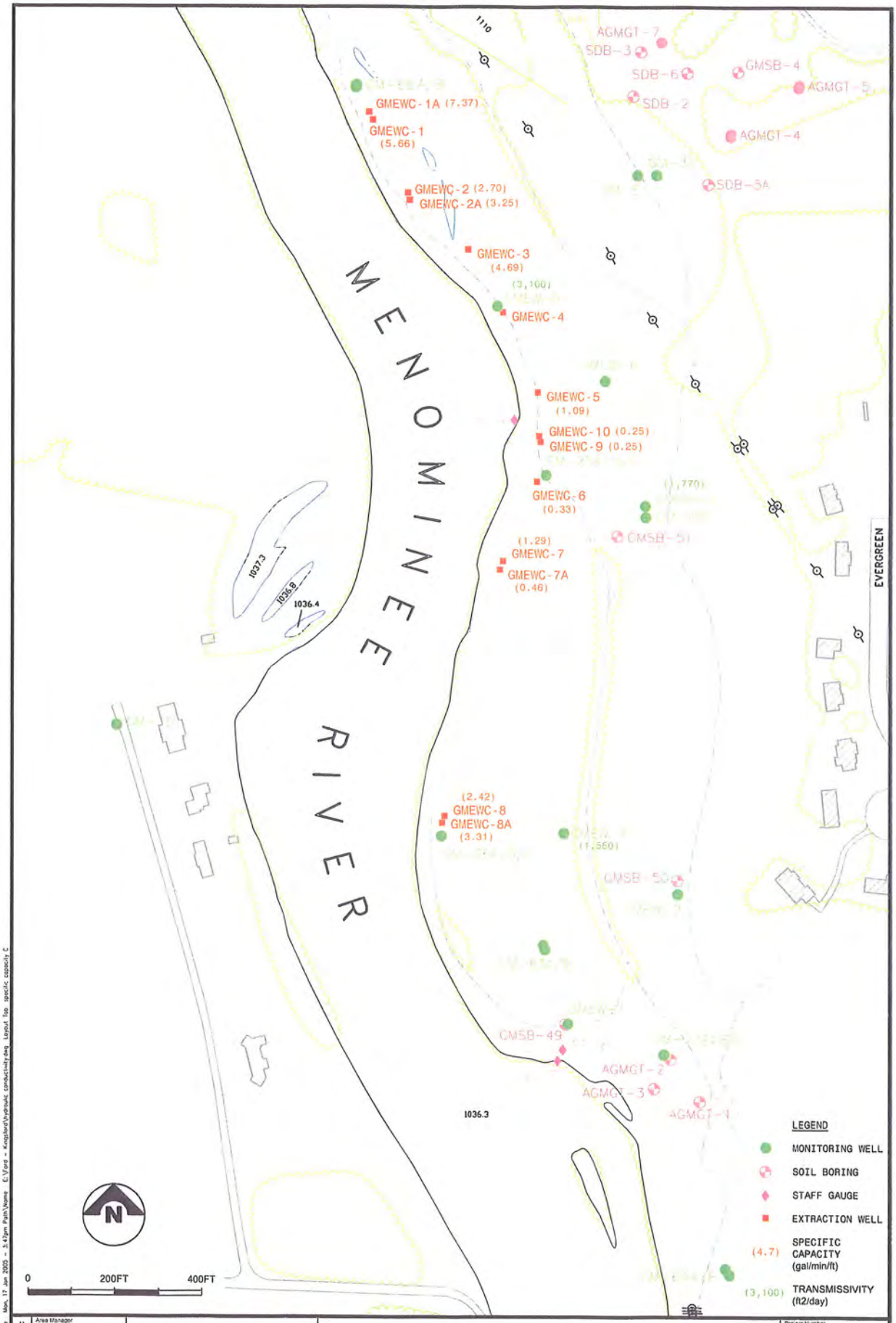
SUMMARY OF ZONE A SAND SPECIFIC CAPACITY TESTS

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	17-JAN-05
Figure	3



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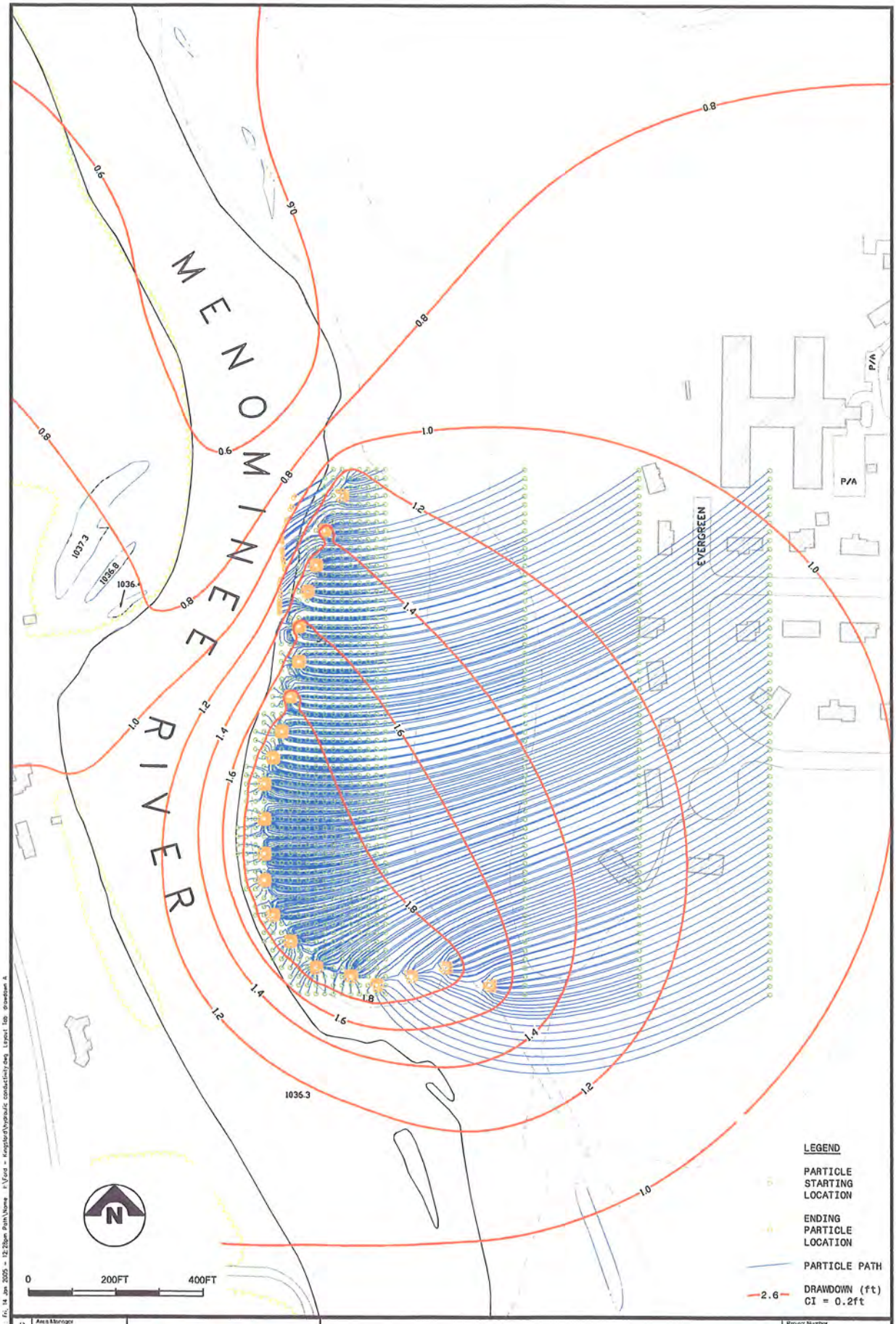
SUMMARY OF ZONE C SAND SPECIFIC CAPACITY TESTS

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	17-JAN-05
Figure	4



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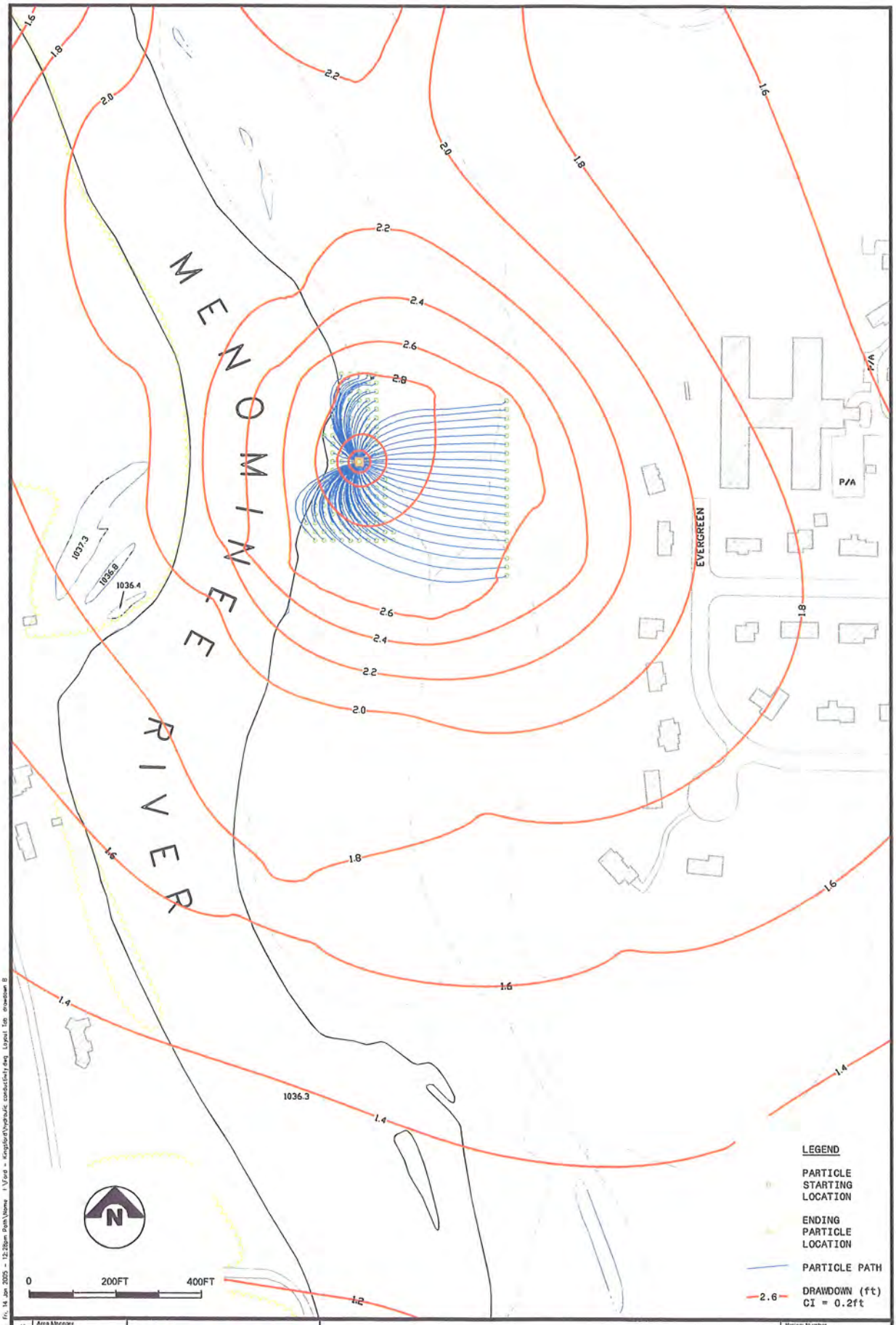
ZONE A SAND SIMULATED DRAWDOWN AND CAPTURE - CONSERVATIVE PUMPING SCENARIO

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	14-JAN-05
Figure	5



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ZONE B SAND SIMULATED DRAWDOWN AND CAPTURE - CONSERVATIVE PUMPING SCENARIO

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	14-JAN-05
Figure	6

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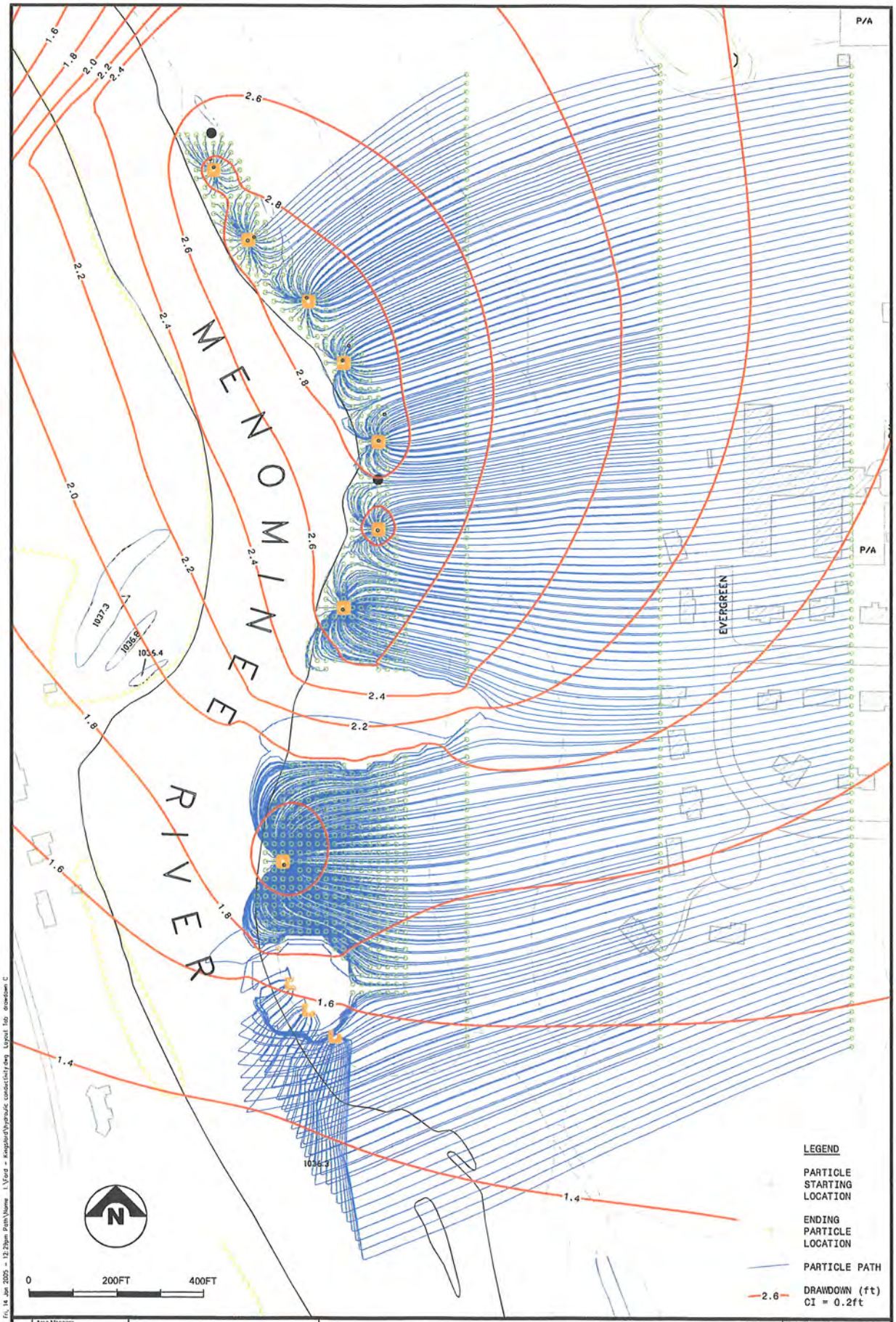

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ZONE C SAND SIMULATED DRAWDOWN AND CAPTURE - CONSERVATIVE PUMPING SCENARIO

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	14-JAN-05
Figure	7

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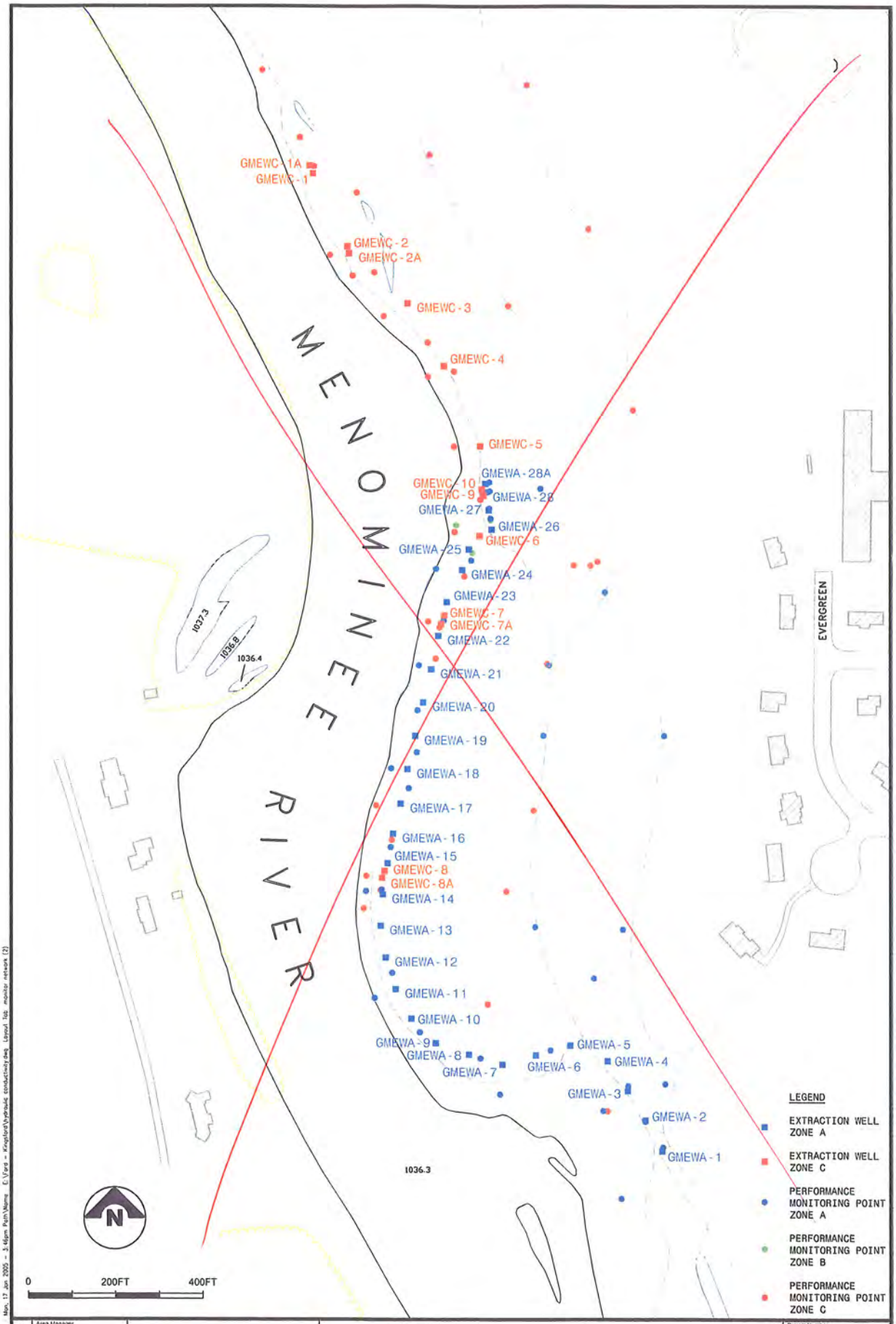

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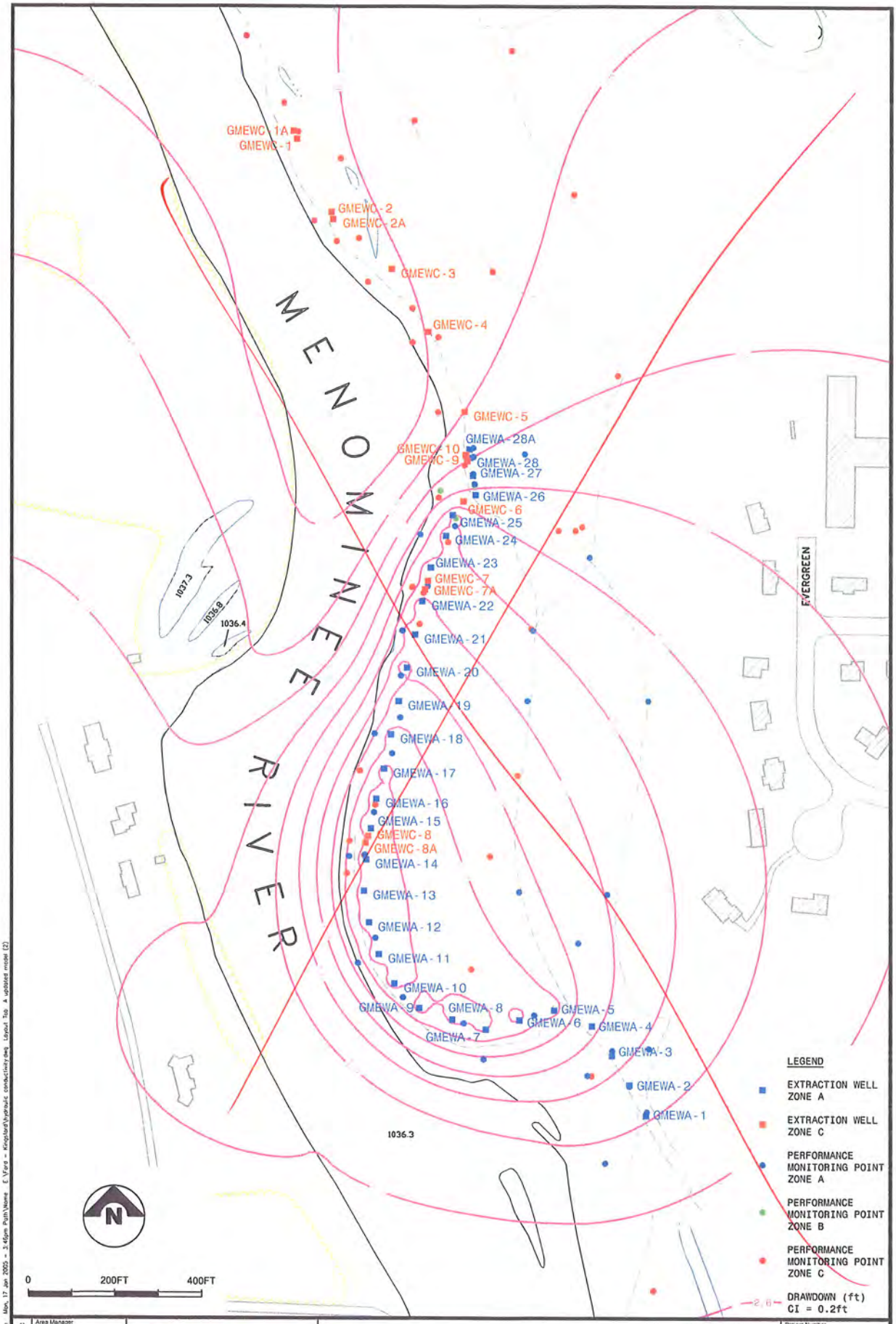
PROPOSED PERFORMANCE MONITORING NETWORK

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
Drawing Date	17-JAN-05
Figure	8



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PROPOSED PERFORMANCE MONITORING NETWORK FOR ZONE A EXTRACTION WELLS UNDER UPDATED MODEL CONDITIONS

KINGSFORD, MICHIGAN

Project Number	WI001075.0022
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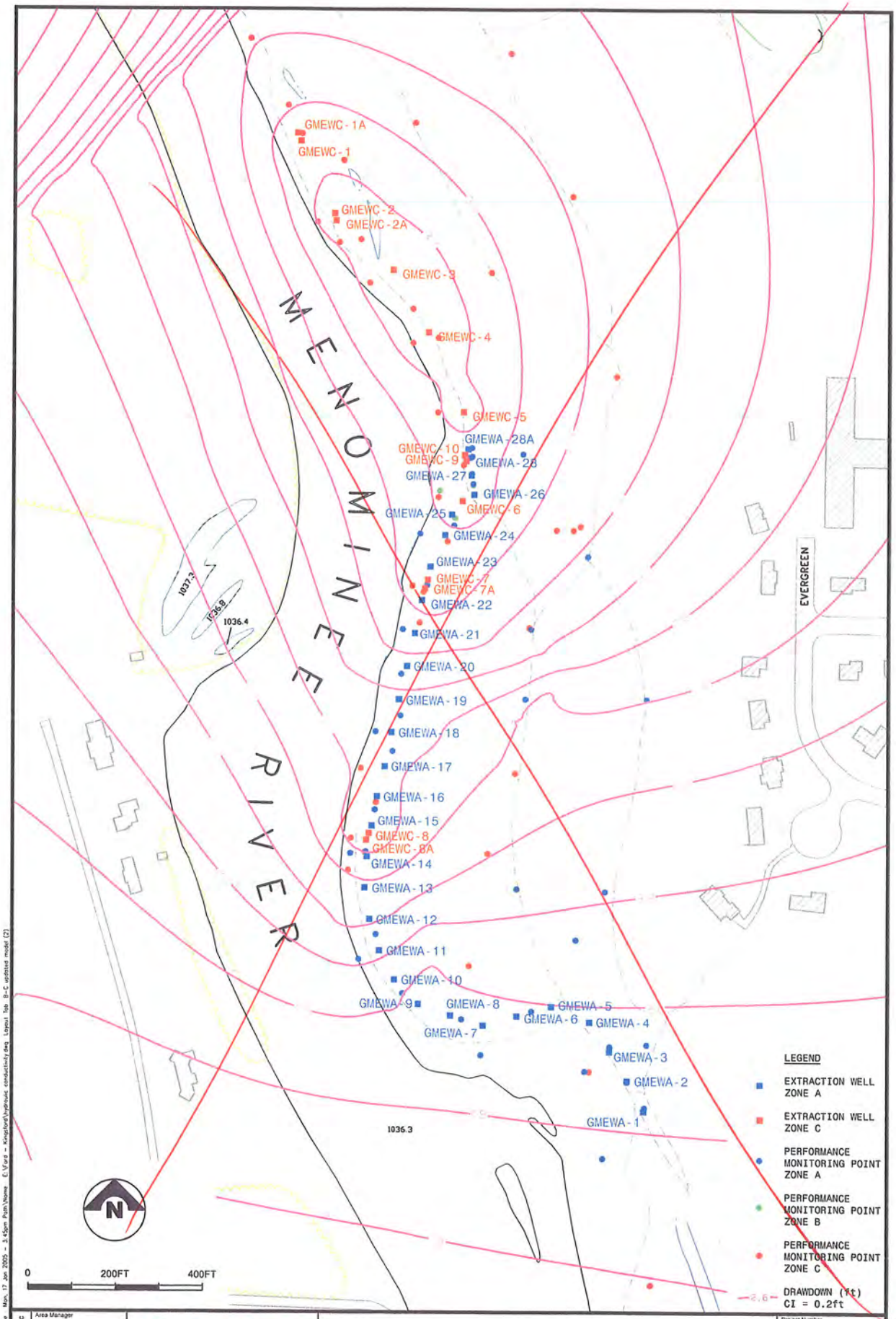

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PROPOSED PERFORMANCE MONITORING NETWORK FOR ZONE B AND C EXTRACTION WELLS UNDER UPDATED MODEL CONDITIONS

KINGSFORD, MICHIGAN

Project Number: WI001075.0022
Drawing Date: 17-JAN-05
Figure: 10

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Appendix P

WDNR Menominee River Progress Reports

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Effects of Flow Regulation and Restriction of Passage Due to Hydroelectric Project Operation on the Structure of Fish and Invertebrate Communities in Wisconsin's Large River Systems

1996 Progress Report

Phase II: Menominee River

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SUMMARY

Fish, arthropod, and mussel data were collected during 1996 to begin evaluation of how planned changes in river flow regulation from hydroelectric dams will affect the biota of the Menominee River in northeastern Wisconsin. Seven permanent study sites were established within riverine portions of the uppermost 51.5 miles of the Menominee River, and these were sampled using standardized techniques for fish, fish habitat, arthropods, and mussels. Four additional sites were sampled for arthropods on tributaries and a downstream area of the Menominee, and single reference sites on the St. Croix River and on the Chippewa River in northwestern Wisconsin were sampled for fish, fish habitat, and arthropods. For fish, 29 species were captured from the Menominee River sites (14-21 per site), 29 from the St. Croix, and 12 from the Chippewa. The St. Croix reference site (unregulated flows) had the highest species richness, diversity, and modified index of well being score (MIWB; an index of fish community quality) of all of the sites, whereas the Chippewa River reference site (highly regulated flows) had the lowest biomass, species richness, and diversity. Within the Menominee River, fish abundance, biomass, diversity, and MIWB scores were substantially higher in the lower portion of the study area than in the upper. Several fish species were common in the lower portion and absent in the upper. Some differences in habitat, primarily bottom substrate and cover, existed among sites, but these were unrelated to geographic patterns in fish community structure. Late September fish sampling gave different quantitative values for fish community structure than July/August sampling, but yielded similar qualitative patterns in community structure among sites. Growth rates of smallmouth bass at most Menominee River sites were below Wisconsin averages, but abundance of legal-sized fish was relatively high. For arthropods, 104 identifiable taxa (species or genera) were found at the combined Menominee River and tributary sites (26-46 per site), 69 were found at the St. Croix, and 14 were found at the Chippewa, which had very low arthropod abundance. The order Ephemeroptera had the most taxa at all sites, and the most individuals at all but two, where Chironomids (Diptera) were most numerous. No clear longitudinal patterns in arthropod taxa richness or abundance were evident within the Menominee River mainstem. Two adjacent sites in the lower portion of the study area had dramatic differences in taxa richness and abundance. For mussels, 14 species were collected in the Menominee River. Sites in the lower portion of the study area had higher species richness than sites in the upper portion. Nine species were restricted to the lower portion, but only one was restricted to the upper. Differences in fish and mussel communities between the upper and lower portions of the Menominee River study area could be due to natural barriers that restricted historical colonization of the upper portion, or alternatively could be due to recent extirpations from the upper portion.

INTRODUCTION

In 1995, the Wisconsin Department of Natural Resources (WDNR) began a research study to quantify the effects of hydroelectric power dams on biological communities in Wisconsin's larger rivers. This study focuses on riverine fish, aquatic arthropod, and mussel faunas, and has two phases:

I. Comparisons between river reaches with flows heavily regulated by dams and river reaches with few dams (1995-2000).

1. Intensive comparison between the heavily regulated Chippewa/Flambeau River system and the relatively unregulated St. Croix River system.
2. Extensive statewide comparison among river reaches for the development of an index of biotic integrity based on fish communities. This index will be used for the rapid bioassessment of human impacts, including flow regulation, on large river ecosystem health.

II. Evaluation of the changes in biota following a shift in flow regulation patterns in the Menominee River system (1996-2008).

The study emphasizes both the site-specific effects of flow regulation from individual dams and the system-wide cumulative effects of riverine habitat modification and fragmentation from multiple dams and impoundments. The rationale, goals, and design of the study are presented in detail in the formal research study proposal, available from John Lyons.

Phase II of the study, the subject of this report, has a before-and-after-control-impact (BACI) design (Underwood 1994), with intensive sampling of the biota of the Menominee River system scheduled for 1996-1998, before the planned shifts in flow regulation in 2001, and again in 2004-2006, after the biotic community has had a chance to adjust to the shifts in flows. Limited sampling will also occur during 1999-2003 to track the nature and rate of biological responses to flow changes. A site on the relatively unregulated St. Croix River and another site on the heavily regulated Chippewa River will be used as references ("control") for comparison with the Menominee River ("impact") sites.

This progress report summarizes results from the 1996 sampling in the Menominee River system, the first year of the "before" portion of Phase II. Much of the early part of the 1996 field season was spent in reconnaissance, identifying and delineating study sites. However, later in the year, fish, arthropods, and mussels were sampled, and these data are presented here.

STUDY AREA

The primary study area for phase II encompasses the upper portion of the Menominee River in northeastern Wisconsin, from Pemene Falls (River Mile (RM) 67.1) upstream 51.5 miles to the source of the Menominee at the confluence of the Michigamme and Brule rivers (RM 118.6) (Fig. 1). Within this stretch of river are five hydroelectric dams: Sturgeon Falls (RM 83.0), Little Quinnesec (Niagara)(RM 91.4), Big Quinnesec (RM 96.0), Kingsford (Henry Ford)(RM 101.5), and Twin Falls (RM 107.9) (Thuemler and Schnicke 1992). Just upstream of the start of the Menominee River are Michigamme Falls Dam, located on the Michigamme River at RM 0.2, and Brule Island Dam, located on the Brule River at RM 1.7. Flow through the Michigamme Falls Dam is heavily influenced by flows from three additional dams, Peavy, Hemlock, and Way, located further upstream in the Michigamme River system. Three waterfalls remain within the primary study area (several others were inundated by the hydroelectric dams): Pemene, Quivers (RM 72.9), and Sand Portage (Pier's Gorge)(RM 89.6).

The primary study area can be split into two subareas based on the planned shifts in flow regulation. The upper subarea extends from the Little Quinnesec Dam upstream to the Michigamme-Brule confluence (27.2 miles). This subarea is currently influenced by daily peaking operations at the Michigamme Falls, Twin Falls, Kingsford, and Big Quinnesec dams (Thuemler and Schnicke 1992). Peaking operations at all four dams are scheduled to change in 2001, when a new operating regime will be initiated. This regime mandates run-of-river flows during the spring, and for the rest of the year allows peaking operations only if the daily maximum flow does not exceed twice the daily minimum. The new regime should result in greatly reduced daily fluctuations in flow, and probably higher minimum flows as well. The lower subarea extends from Pemene Falls to the Little Quinnesec Dam (23.9 miles). This subarea is currently influenced by daily peaking operations at the Little Quinnesec Dam. The future operating regime of this dam has not yet been determined, but whatever the flow patterns, beginning in 2001, daily fluctuations in discharge from the Little Quinnesec Dam will be "re-regulated" at the Sturgeon Falls Dam to provide more stable flows downstream.

Based on initial reconnaissance in June 1996, a period of higher than normal flows, we established nine sampling sites in riverine segments within the primary study area. Each site contained one continuous mile of apparent riverine (i.e., non-impounded) habitat. Locations were chosen based on proximity to dams and waterfalls and ease of access. In the lower subarea, sites were established in two riverine reaches between Quivers and Pemene Falls (QF1 and QF2) and two below Sturgeon Falls Dam (SF1 and SF2). In the upper subarea, sites were located in two reaches below Kingsford Dam (KD1 and

KD2), one below Twin Falls Dam (TF1), and two below Michigamme Falls Dam (MF1 and MF2). Insufficient riverine habitat existed for a sampling site below the Big Quinnesec Dam, and we chose not to sample the riverine area below Little Quinnesec Dam because of uncertainty regarding future flow regulation patterns and concerns about the confounding impacts of historical point-source pollution problems. All nine sites were sampled for mussels during July or August 1996, four were sampled for arthropods (MF1, KD1, SF2, QF1), and six were sampled for fish and habitat (MF1, MF2, KD1, SF1, SF2, QF2). Additional reconnaissance and fish sampling in September 1996, a period of below-normal flows, clearly indicated that two sites, KD2 and MF2, were actually impounded and not comparable to the other sites. These two sites were then deleted from the sampling design, and data from them will not be reported here. Although they appear to be riverine, analyses of flow gage data indicate that sites TF1 and KD1 sometimes experience backwater effects from impoundments that are located just downstream of them (Tom Thuemler, WDNR, Peshtigo, personal communication). However, these two sites will be retained and will continue to be sampled in future years along with the remaining other five sites. The locations of the seven "final" primary sites are described more fully in Table 1. In 1997, an additional site may be added immediately below the confluence of the Michigamme and Brule rivers, just upstream from MF1.

Eight additional ("secondary") sites were sampled for arthropods in 1996 in the Menominee River system outside of the primary study area. Two were on the Menominee River below Pemene Falls, and six were on tributaries. Four of the eight sites, one on the Menominee and three on tributaries (Table 1), were judged suitable and will be resampled for arthropods in future years. An additional secondary site on the Pine-Popple River system may also be added.

Two reference sites were established, one on the relatively unregulated St. Croix River (MSC5), where daily peaking flows were absent, and the other on the Chippewa River below Cornell Dam (MC2), where major daily peaking occurred (Table 1). These sites were sampled for fish and arthropods in July or August 1996, but were not sampled for mussels. They will continue to be sampled for fish and arthropods in coming years, and will also be sampled for mussels if staff and funding are sufficient

METHODS

Fish

Fish were sampled throughout each study site during either July or August using two electrofishing techniques, a boat-mounted "mini-boom" shocker, and a pre-positioned bottom electrofishing grid. The mini-boom was used to capture medium- to large-bodied fishes. The mini-boom was a standard WDNR unit, with

a 3500 W AC generator that passed output through a transformer and pulsar unit to provide pulsed-DC current (60 Hertz, 25% duty cycle). Power output was kept between 7.5-10.5 A and 275-400 V. The anode was a single boom with a Wisconsin ring and 12-16 droppers, and the aluminum boat hull was the cathode. A single netter attempted to catch all fish observed that were large enough to be retained by a 3/4" stretch mesh dip net. The mini-boom was operated in a downstream direction over the entire length of each station (one mile). One shoreline and the middle of the channel were shocked during the daytime, and the remaining shoreline was shocked at night, for a total of three miles of mini-boom sampling. Preliminary studies in 1995 on the St. Croix, Chippewa, and Wisconsin rivers indicated that one mile of daytime shoreline mini-boom shocking gave a reasonably accurate and precise picture of fish community structure and composition, but that night shocking yielded great numbers and biomass and a wider size range of fish. The mid-channel shocking was included to capture fishes not closely associated with shoreline habitat.

Electrofishing grids (Bain et al. 1985) were used to capture small-bodied fishes in shallow shoreline habitats that could not be adequately sampled with the mini-boom. The grids were 6.6 X 26.3 ft, covering a rectangular bottom area of 173 ft^2. The long axes of the grid were made of steel wire and served as the electrodes; these wires were joined by ropes to form a rectangle. The electrodes were powered by a 3500 W generator that produced AC current at 7-11 A and 250-500 V. Girds were positioned on the bottom within 1 ft of shore in water less than 3.3 ft deep, with their long axis parallel to the shoreline. Grids were set and then left undisturbed for at least 15 minutes prior to activation. Bain et al. (1985) found this to be sufficient time for small fishes to recover from any disturbance caused by the setting of the grid. Power was then applied to grids for 30 seconds, and all stunned fish were collected with dip nets. In fast current, a small seine was positioned just downstream of the grid during sampling to catch drifting fish. Grids were set in pairs (each member of the pair separated by 10 m) at 13 randomly chosen locations over the entire length of each one mile site, for a total of 26 grid samples per site. Preliminary work in 1995 on the St. Croix and Wisconsin rivers indicated that 26 grid samples gave a reasonably accurate and precise estimate of the community structure and composition of small shoreline fishes.

In late September, the Menominee River study sites were resampled for fish using only the daytime shoreline miniboom sampling procedures. The goals of this sampling were to capture young-of-year fishes for an assessment of first-summer growth and to look at seasonal variation in fish community structure.

All captured fishes were identified to species, counted, and weighed in

aggregate. Gamefish (see Table 2) were measured for total length to the nearest mm. Scales were taken from a subsample of smallmouth bass and walleye for aging. Voucher specimens of difficult to identify or rare species were preserved for later examination in the laboratory, but most captured fish were returned to the river after processing.

The following summary statistics were calculated for each site (see Fausch et al. 1990 for formulae): total number of fish, total biomass, total species richness, species diversity (Shannon index) based on number and on biomass, evenness based on number and on biomass, and the number of individuals, biomass, and species richness of gamefish species and of riverine specialist species (require riverine habitat for entire life cycle; Kinsolving and Bain 1993)(Table 2). For the July and August sampling, data from both fish sampling methods were analyzed separately and aggregately by sampling site. We also calculated a modified index of well being from the daytime shoreline mini-boom data (Ohio EPA 1988). The MIWB combined information on fish abundance, biomass, and species diversity to produce an index of fish community quality. The MIWB values calculated here were not directly comparable to those from Ohio and other states because of differences in sampling procedures. For walleye and smallmouth bass with scale samples, ages and backcalculated lengths at each annulus were determined following procedures in Carlander (1982). Directly measured total lengths for young-of-the-year smallmouth bass and backcalculated lengths at older ages were compared among sites using analysis of variance (SAS 1990).

Fish Habitat

Data were collected from the grid locations on habitat parameters of importance to fish. The following variables were measured or visually estimated for each grid using standard procedures from Simonson et al. (1994): stream channel macrohabitat type (seven categories), shoreline vegetation/land use type (seven categories), cover types (four categories), cover densities (four levels), amounts of bottom substrates (seven types), depths (six positions), and current velocity (three positions). Mean values or percentage frequency of occurrence from all 26 grids were determined for each habitat variable for each site.

Arthropods

Arthropods, defined here to encompass aquatic insects, amphipods, and isopods, but not other taxa, were collected from each site by wading with a standardized combination of kick-net sampling and timed hand-picking of specific microhabitats (modified from Cuffney et al. 1993a). Microhabitat sampling was not done at the secondary sites. Kick-netting was conducted with

a long-handled D-frame net with number 30 mesh (600 µm). At each site a deep (> 3 ft) riffle/run location away from the shoreline and a shallow riffle/run location (< 2 ft) near the shoreline were sampled until a quart jar could be filled with material (mix of arthropods, plant material, detritus, etc.) from each location. If pools were present, an additional deep sample and shallow sample were collected. Samples of up to four microhabitat types -- rock, wood, silt/sand, and aquatic vegetation -- were then hand-picked for invertebrates for 5 minutes each. Not all microhabitats occurred at all sites.

Arthropod samples were preserved in alcohol and processed in the laboratory using standardized procedures (Cuffney et al. 1993b). For the microhabitat samples, all arthropods collected were identified to the lowest taxonomic level possible (usually genus or species) and counted. For the kick-net samples, a randomly chosen subsample of at least 150 organisms (or all that were present if less than 150 were collected) were identified and counted.

The two types of arthropod sampling will be used to assess different attributes of the overall arthropod community. Microhabitat samples will be used for quantitative comparisons of abundance and community composition and structure among sites. Kick-net samples will be used to calculate a variety of "biotic indices" to assess the quality and health of the community (Plafkin et al. 1989). However, many of these analyses are not yet complete, and only preliminary comparisons among sites for relative abundance, taxa (species and genera) richness, and community composition are presented here.

Mussels

Mussels were collected by hand from about five different locations within each site. Locations were chosen to represent the range of substrate and habitat conditions present in the site. At each location, all areas of the river channel were searched for mussels, and scuba was used in areas deeper than 2.5 ft. Generally, only living mussels were collected, but shells from dead mussels were also picked up if they were from species not yet encountered alive at the site. Bank areas were also surveyed for shells. Two to four people made collections for four to eight hours at each site. A "depletion curve" methodology was followed. Mussels were gathered in groups of 20, with care taken that all mussels, including small individuals embedded in the bottom, were collected from each portion of the bottom surveyed. Once a group of 20 mussels had been collected, each mussel was identified to species, counted, measured for total length and total height, and aged based on external shell characteristics. Excepting a few voucher specimens that were preserved, all specimens were carefully returned after processing to the area

where they had been collected. A cumulative species list was established based on all groups of mussels collected, and sampling continued until six consecutive groups of 20 failed to yield a "new" species of mussel not yet encountered at the site.

The depletion curve methodology yields good estimates of species presence-absence and relative abundance, but provides no data on density or biomass. We compared species richness and relative abundance among sites. The mussel sampling also yielded size and age distributions, but analyses of these data are not yet complete and are not included here.

RESULTS

Fish

For the combined miniboom and grid shocker data, a total of 29 fish species were captured from the five Menominee River sites (28 during July/August), and 33 were found at the Chippewa and St. Croix reference sites (Table 2). There were 21 species in common between the Menominee River and the reference sites. Fourteen to 21 species were encountered at individual Menominee sites, whereas 12 species were captured at the Chippewa site (MC2) and 29 at the St. Croix site (MSC5). No state threatened or endangered species were collected from the Menominee or Chippewa River sites, but three Wisconsin threatened species, river redhorse, greater redhorse, and gilt darter, were captured at the St. Croix reference site. Within the Menominee River, the number of fish, biomass, diversity based on biomass, and modified index of well being (MIWB) were higher in the three sites in the lower study subarea (QF2, SF2, SF1) than in the two stations in the upper subarea (KD1, MF1; Table 3). Species richness, diversity based on number, and evenness based on number and on biomass varied among sites with site MF1 having the lowest values for diversity and evenness. The St. Croix River reference site had a greater species richness, diversity based on number and on biomass, and MIWB than any of the Menominee River sites, and the Chippewa River reference site had a lesser biomass, species richness, and diversity based on number, but a higher evenness based on biomass than any of the Menominee River sites.

Different information about the fish community at each site was provided by the miniboom and grid shockers (Tables 4, 5). The grids tended to catch more fish than the miniboom, but grid-caught fish were usually small and miniboom-caught fish large, so the miniboom yielded nearly all of the biomass from each site. Although species richness values from the miniboom and the grids were similar, each gear type produced species not captured by the other gear type. The miniboom tended to have higher values for diversity and evenness based on number, but, despite an order of magnitude or more difference in total biomass

captured, the miniboom and grid had similar values for diversity and evenness based on biomass.

For gamefish species, variability occurred among sites, but with only limited geographic pattern (Table 3, 4, 5). The St. Croix River reference site had the highest number but the lowest biomass of gamefish, indicating that the St. Croix gamefish were on average much smaller than those at other sites. The fewest gamefish species were captured at the Chippewa River reference site.

Conversely, much stronger geographic patterns were evident for riverine specialist species (Table 3, 4, 5). The lower subarea of the Menominee had substantially higher numbers, biomass, and species richness of riverine specialists than the upper subarea. Four riverine specialist species, northern hog sucker, silver redhorse, golden redhorse, and blackside darter, were common in the lower subarea but absent in the upper (Table 2). The St. Croix River reference site had the highest species richness of riverine specialists (Table 3, 4, 5).

The time period of sampling on the Menominee River appeared to influence most measures of fish community structure (Table 6). Generally, daytime miniboom sampling in July/August yielded fewer individuals, species, and diversity based on number, but higher biomass, diversity based on biomass, and evenness based on biomass than late September sampling. Some exceptions to this pattern occurred at either site KD1 or MF1. Evenness based on number varied little between sampling periods, and the MIWB either did not differ (SF2, SF1) or was higher in late September (QF2, KD1, MF1).

Only the smallmouth bass was numerous enough at all five Menominee River sites to allow for a comparison of size structure and growth rates among sites (Table 2). During July/August 1996, smallmouth bass populations at all sites on the Menominee River except QF2 had relatively high proportions of legal-sized fish (12") compared to the two reference sites (Table 7). The reference sites had higher proportions of fish under 4". Growth rates of smallmouth bass in the Menominee River varied among sites (Table 8). Directly measured total lengths of young-of-the-year smallmouth bass in late September 1996 were greatest at site SF2 and least at KD1, but sample sizes at KD1 and MF1 were small and means for the five sites were not significantly different from each other. Conversely, backcalculated lengths from older smallmouth bass captured in July/August 1996 indicated that growth to age I, II, and III was fastest at KD1 and slowest at SF2, and that means for these two sites were significantly different.

Fish habitat

Habitat conditions were generally similar among sites, although certain cover and substrate characteristics varied (Table 9). All of the Menominee River and reference sites consisted exclusively or primarily of run habitat, but only the two reference sites had pool habitat. Bank vegetation for all sites was a mix of grass and forest with some shrubs. Water depths and velocities were similar among sites, although site MF1 had a relatively high current velocity. The dominant cover type was not consistent among sites, with either aquatic vegetation (i.e., macrophytes), large woody debris, boulders, or overhanging bank vegetation being most important, and no clear longitudinal pattern existed within the Menominee River. Cover density was highest at site MF1 and reference site MSC5 on the St. Croix River. Rocky substrate (sum of bedrock, boulder, rubble/cobble, and gravel substrates) dominated at sites SF2, MF1, and reference site MC2 on the Chippewa River, whereas fine substrate (sum of sand and silt substrate) dominated at the remaining sites.

Arthropods

Macro and microhabitats available for arthropods varied among sites. Pools did not occur at any of the Menominee River primary or secondary sites, but were present at both the St. Croix and Chippewa River reference sites (see Table 9). All four Menominee primary sites had rock and wood microhabitats, but only two had silt/sand and aquatic plants. The St. Croix and Chippewa sites each had rock, wood, and silt/sand microhabitats, but neither had aquatic plants.

A total of 1511 arthropod individuals and 104 identifiable genera or species were collected from the primary and secondary sites of the Menominee River, compared to 498 individuals and 69 genera or species from the St. Croix reference site, but only 22 individuals and 14 genera or species from the Chippewa reference site (Tables 10, 11, 12). A Wisconsin endangered species, the extra-striped dragonfly (*Ophiogomphus anomalus*) was collected from the Paint River secondary site at Crystal Falls, Michigan. This occurrence represents the first record of the species from Michigan (Bill Smith, WDNR, Madison, personal communication).

Differences were apparent in the relative abundance, species richness, and species composition of arthropods among sites (Table 10). Most sites were dominated by Ephemeroptera (mayflies) both in terms of numbers of individuals and numbers of taxa, but site MF1 of the Menominee River and the St. Croix River reference site (MSC5) had the most individuals in the order Diptera (predominantly Chironomidae (midges)). The Chippewa River reference site (MC2) had the lowest numbers of individuals and taxa of all the sites, despite

having the second highest sampling effort. No clear longitudinal patterns were apparent among the four primary Menominee River sites, nor between the primary and secondary sites of the Menominee River system. However, despite being only a few miles apart, with no major differences in flow pattern and no dams or major tributaries between them, the QF1 and SF2 sites on the Menominee were very different. The QF1 site had the second lowest taxa richness and lowest individual abundance within the Menominee River system, whereas the SF2 site the second highest taxa richness and individual abundance.

Mussels

Fourteen species and 1967 individuals (1947 alive, 20 dead) of freshwater mussels (family Unionidae) were collected from the seven sties within the primary study area of the Menominee River (Table 12). Three species of special concern in Wisconsin were collected: elktoe, creek heelsplitter, and round pigtoe. A clear longitudinal pattern in species distribution was evident. The four sites in the lower subarea (QF2, QF1, SF2, SF1) had substantially higher species richness than the three sites in the upper subarea (KD1, TF1, MF1). Although the number of individuals collected at each site is not a valid measure for comparison of abundances among site, the general impression of the field crew during sampling was that mussel density was much higher in the lower than in the upper subarea. Nine species were found only in the lower subarea, one was found only in the upper, and four were found in both. The dominant species found in the upper subarea were either cosmopolitan species found in a wide range of habitats (giant floater, fatmucket) or more characteristic of small streams (cylindrical papershell), whereas some of those from the lower subarea were characteristic of larger rivers (mucket, fluted-shell, black sandshell, round pigtoe) and others were habitat generalists (e.g., threeridge, giant floater, spike, fatmucket; Cummings and Mayer 1992).

DISCUSSION

Patterns within the Menominee

Longitudinal patterns in community structure and composition were evident for fish and mussels but not arthropods within the primary area of the Menominee River. For fish and mussels there were more individuals, greater biomass, and higher species diversity in the lower subarea than in the upper subarea. Modified index of well being scores indicated that fish community "quality" was much better in the lower subarea than in the upper. Conversely, for arthropods, there were greater differences in taxa richness and abundance between the two sites sampled in the lower subarea than between sites in the lower and upper subareas.

Most of the fish community differences between the two subareas were caused by disparities in the species richness, abundance, and biomass of riverine specialist species; riverine specialists such as northern hog sucker, silver redhorse, golden redhorse, and blackside darter were common in the lower subarea, but absent in the upper. Interestingly, the gamefish portion of the fish community differed little between the two subareas. The difference in mussel species richness between the two subareas was caused by the absence of several large river specialists and habitat generalists from the upper subarea.

The differences in fish and mussel communities between the upper and lower subareas could be due to natural factors. Sturgeon Falls was a historical barrier to upstream movement by lake sturgeon and perhaps other fishes migrating out of Green Bay (Thuemler and Schnicke 1992). It and other waterfalls may also have served as barriers to upstream movements of colonizing fish species as glaciers receded from what is now northern Wisconsin and the upper peninsula of Michigan, thus accounting for the current absence of certain species in the upper subarea. Freshwater mussel distribution and colonization opportunities are typically closely tied to those of fish because larval mussels must parasitize fish in order to complete their life cycle (Cummings and Mayer 1992). Many mussel species can only parasitize certain fish species. Further, fish are an important vector for upstream larval mussel movement; once the larvae drop off fish to settle into the substrate and metamorphose into adults, their ability to move upstream is greatly limited. In contrast, many aquatic arthropods have an aerial stage in their life cycle, and waterfalls are much less of a barrier to their colonization of upstream areas.

Unfortunately, data from prior to the 1970s on fish and mussels in the upper portion of the Menominee River are very limited, so historical distribution patterns must be inferred from current data. Judging from present fish distribution patterns (this study; Becker 1983; EA Science and Technology 1987; Thuemler and Schnicke 1992; Greg Seegert, EA Science and Technology, Deerfield, Illinois, personal communication), Sturgeon Falls may have been the historical upstream limit for northern brook lamprey, northern hog sucker, and perhaps green sunfish; Sand Portage Falls may have been the upstream limit for rosyface shiner and silver redhorse; and Little Quinnesec Falls may have been the upstream limit for golden redhorse, shorthead redhorse, and blackside darter. Based on recent mussel distribution patterns (this study; Mathiak 1979), the upstream limit for many species could be somewhere from Sturgeon Falls upstream to Little or Big Quinnesec Falls.

An alternative explanation for current fish and mussel distribution patterns is that at least some of the species now restricted to the lower subarea may have historically occurred in the upper subarea as well, but disappeared because of human impacts. Municipal and industrial pollution formerly caused fish kills downstream of the cities of Iron River (MI), Iron Mountain (MI), and Niagara (WI) (Thuemler and Schnicke 1992), and could have eliminated fish species such as rosyface shiner, northern hog sucker, silver and golden redhorse, and blackside darter and mussel species such as elktoe, spike, fluted-shell, and black sandshell that are sensitive to poor water quality (Starrett 1971; Trautman 1981). Dams and waterfalls would have prevented these species from recolonizing the upper subarea after water quality was improved in the 1970s and 1980s. Another possibility is that impoundment and flow regulation from dams contributed to the disappearance of riverine specialist fish and mussel species. By definition, riverine specialist fish species are absent from impoundments. Kinsolving and Bain (1993) found that riverine specialist fishes were particularly sensitive to short-term flow fluctuations and tended to avoid river areas influenced by daily hydropower peaking. Layzer et al. (1993) documented the significant decline in a mussel fauna below a hydropower peaking operation.

Fish habitat conditions were not closely related to fish community structure in the Menominee River, suggesting that factors other than habitat were of primary importance in determining fish community characteristics. For example, site SF2, which had predominantly rocky substrates, had a fish community very similar to site SF1, which had predominantly fine substrates. Site MF1 had the highest cover density, and thus some of the best fish habitat, and yet had the lowest biomass of fish.

Growth of smallmouth bass varied among the Menominee River sites, without any clear relation to habitat conditions or flow regulation patterns. Growth rates were near the statewide and northern Wisconsin averages at site KD1, but below average at the other sites (WDNR 1991). However, relative abundance of legal-sized fish was well above typical values for Wisconsin streams and rivers (Lyons and Kanehl 1993), suggesting that high smallmouth bass densities may have contributed to reduced growth.

Different values for fish community parameters resulted from sampling in July/August and sampling in late September. Thus, great care should be taken in making quantitative comparisons of fish data collected in different seasons. However, the general pattern of differences between the upper and lower subareas that was apparent from the July/August data was also clear in the late September data, indicating that the two time periods yielded

qualitatively similar results.

Comparisons with the reference sites

Although located in different parts of the state, the reference sites seem to be reasonably similar to the Menominee River sites in terms of fish and arthropod communities and fish habitat. There were many fish and arthropod species in common between the Menominee River and the St. Croix and Chippewa rivers. Some differences in fish and arthropod species composition were apparent between the St Croix River site and the other sites, but values for most measures of fish community structure were similar or overlapped. The gamefish faunas of the Menominee sites and the reference sites were especially similar. Fish habitat conditions also overlapped substantially among sites, although pool habitat was found only at the two reference sites. For fish, the Chippewa River site, which had heavily regulated flows, had a community most similar to that of the highly regulated upper subarea of the Menominee River, whereas the St. Croix River site, which had unregulated flows, had a community most similar to that of the lower subarea of the Menominee River, where flows were less heavily regulated than in the upper subarea. For arthropods, the St. Croix had the highest taxa richness, and the Chippewa the lowest, with the sites from the Menominee River system intermediate.

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Table 1. Location of sampling sites. All primary sites are one mile in length; the location information refers to the downstream end of the site.

Code	River Mile	Location
Primary study area of Menominee River, WI/MI (fish, arthropods, mussels)		
QF2	68.3	4.6 miles below Quivers Falls and 1.2 miles above Pemene Falls, centered on Faithorn Landing (MI)
QF1	71.6	1.3 miles below Quivers Falls, 2.8 miles above Faithorn Landing (MI)
SF2	75.6	7.4 miles below Sturgeon Falls Dam, 2.7 miles above Quivers Falls, 1 mile below Saler Landing (WI)
SF1	81.6	1.4 miles below Sturgeon Falls Dam, 1.3 miles below Sturgeon Falls Dam Landing (MI)
KD1	99.9	1.6 miles below Kingsford Dam, 1.9 miles above Aurora Landing (WI)
TF1	106.7	1.2 miles below Twin Falls Dam, 2.4 miles above Kingsford Flowage Landing (MI)
MF1	116.8	1.8 miles below confluence of Michigamme and Brule rivers, 2.0 miles below Michigamme Falls Dam, and 1.6 miles above landing (WI)
Secondary study area of Menominee River system, WI/MI (arthropods only)		
CTHZ	65.9	Menominee River (WI/MI), at Marinette County (WI) County Highway Z bridge
PIKE	1.6	Pike River (WI), above Pike River road crossing
BRULE	7.9	Brule River (WI/MI), at WI Hwy 141
PAINT	13	Paint River (MI), at MI Hwy 69 near Crystal Falls

Table 1 continued on next page.

Table 1. Continued.

Code	River Mile	Location
Reference sites (fish, arthropods, and mussels(?))		
MC2	95.5	Chippewa River (WI), 2.3 miles below Cornell Dam, 2.8 miles above Willow Island Landing (Old Abe Lake)
MSC5	94.8	St. Croix River (WI/MN), 0.2 miles above Snake River mouth (MN), 0.3 miles above Soderbeck Landing (WI)

Table 2. Fish species captured during July/August (miniboom and grids combined) and in late September 1996 (in parentheses; daytime mini-boom from Menominee River only) from the study sites. An "R" after the scientific name indicates a riverine specialist species, a "G" indicates a gamefish species, and a "T" indicates a state of Wisconsin threatened species.

		Number of fish captured per site						
		Menominee River					Reference	
Common name	Scientific name	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
LAMPREY FAMILY	**PETROMYZONTIDAE**							
Chestnut lamprey	*Ichthyomyzon castaneus* (R)	0	0	0	0	0	0	3
Northern brook lamprey	*Ichthyomyzon fossor* (R)	2	0	0	0	0	0	0
MUDMINNOW FAMILY	**UMBRIDAE**							
Central mudminnow	*Umbra limi*	3	0	0	0	0	0	2
PIKE FAMILY	**ESOCIDAE**							
Northern pike	*Esox lucius* (G)	5(1)	14(2)	5(4)	17(4)	6	0	7
Muskellunge	*Esox masquinongy* (G)	0	0	0	0	1	1	0
MINNOW FAMILY	**CYPRINIDAE**							
Common carp	*Cyprinus carpio*	0	0	0	0	0	0	2
Hornyhead chub	*Nocomis biguttatus* (R)	195(13)	206(46)	14(3)	8(3)	9(5)	0	8
Common shiner	*Luxilus cornutus*	32	3(11)	55(54)	40(2)	5(10)	0	7
Emerald shiner	*Notropis atherinoides*	0	0	0	0	0	1	0
Rosyface shiner	*Notropis rubellus* (R)	0	0	44(19)	0	0	0	0
Mimic shiner	*Notropis volucellus*	0	0	0	0	0	0	2
Northern redbelly dace	*Phoxinus eos*	0	0	0	0	1	0	0
Blacknose dace	*Rhinichthys atratulus*	0	0	0	0(1)	0	0	0
Longnose dace	*Rhinichthys cataractae* (R)	0	0	0	4	2	0	0
SUCKER FAMILY	**CATOSTOMIDAE**							
Quillback	*Carpiodes cyprinus* (R)	0	0	0	0	0	0	9
White sucker	*Catostomus commersoni*	23(9)	54(1)	10(1)	63(4)	232	0	1
Northern hog sucker	*Hypentelium nigricans* (R)	1	7(10)	18(15)	0	0	0	18
Silver redhorse	*Moxostoma anisurum* (R)	35(12)	14(2)	33(1)	0	0	3	18
River redhorse	*Moxostoma carinatum* (R)(T)	0	0	0	0	0	0	1
Golden redhorse	*Moxostoma erythrurum* (R)	49(36)	59(11)	78(36)	0	0	0	51
Shorthead redhorse	*Moxostoma macrolepidotum*	27(6)	81(27)	53(9)	0	0	7	59
Greater redhorse	*Moxostoma valenciennesi* (T)	0	0	0	0	0	0	1

Table 2 continued on next page.

Table 2. Continued.

Common name	Scientific name	Number of fish captured per site						
		Menominee River					Reference	
		QF2	SF2	SF1	KD1	MF1	MC2	MSC5
CATFISH FAMILY	ICTALURIDAE							
Stonecat	*Noturus flavus* (R)	0	0	0	0	0	0	1
Tadpole madtom	*Noturus gyrinus*	1	0	0	0	1	1	0
COD FAMILY	GADIDAE							
Burbot	*Lota lota*	0	0	0	0	2	0	2
SUNFISH FAMILY	CENTRARCHIDAE							
Rock bass	*Ambloplites rupestris* (G)	8(6)	6	4(2)	37(1)	15	1	16
Green sunfish	*Lepomis cyanellus* (G)	1	0	0	0	0	0	0
Bluegill	*Lepomis macrochirus* (G)	5(1)	2	13(1)	3	0	0	0
Smallmouth bass	*Micropterus dolomieu* (G)	35(26)	71(36)	54(27)	20(3)	18(6)	48	81
Largemouth Bass	*Micropterus salmoides* (G)	1(1)	0	0	1	0	0	4
Black crappie	*Pomoxis nigromaculatus* (G)	0	0	2	1	0	0	1
PERCH FAMILY	PERCIDAE							
Rainbow darter	*Etheostoma caeruleum* (R)	0	0	0	0	0	52	0
Johnny darter	*Etheostoma nigrum*	84	30(14)	33(3)	70(7)	22(14)	24	2
Yellow perch	*Perca flavescens* (G)	1(1)	0	0	3	19(1)	0	2
Logperch	*Percina caprodes*	2	7(17)	102(67)	0	4(4)	189	38
Gilt darter	*Percina evides* (R)(T)	0	0	0	0	0	0	1
Blackside darter	*Percina maculata* (R)	22(13)	121(17)	53(25)	0	0	1	44
Slenderhead darter	*Percina phoxocephala* (R)	0	0	0	0	0	0	8
Walleye	*Stizostedion vitreum* (G)	5(7)	5	11(3)	5(1)	3(5)	12	10
DRUM FAMILY	SCIAENIDAE							
Freshwater drum	*Aplodinotus grunniens*	0	0	0	0	0	0	3
SCULPIN FAMILY	COTTIDAE							
Mottled sculpin	*Cottus bairdi*	0(1)	2	0	7(1)	72(24)	0	0

Table 3. Number of individuals, biomass, species richness, diversity and evenness for all species of fish, and number of individuals, biomass, species richness for gamefish and riverine specialist species captured from study sites during July and August 1996. All values are for the combined catch of the miniboom and grid shockers.

	Value for each site						
	Menominee River					Reference	
Variable	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
All species							
Number of individuals	537	682	582	279	412	340	432
Biomass (lbs)	252	425	416	98	73	62	158
Species richness	21	16	17	14	16	12	29
Diversity based on number	2.1	2.1	2.5	2.1	1.6	1.4	2.6
Diversity based on biomass	1.5	1.4	1.6	1.2	1.0	1.6	2.1
Evenness based on number	0.7	0.8	0.9	0.8	0.6	0.6	0.8
Evenness based on biomass	0.5	0.5	0.6	0.5	0.4	0.7	0.6
Gamefish species							
Number of individuals	61	98	89	87	62	62	121
Biomass (lbs)	14	47	39	38	26	28	14
Species richness	8	5	6	8	6	4	7
Riverine specialist species							
Number of individuals	304	407	240	12	11	56	162
Biomass (lbs)	142	203	239	<<1	<<1	17	112
Species richness	6	5	6	2	2	3	11

Table 4. Number of individuals, biomass, species richness, diversity and evenness for all species of fish, and number of individuals, biomass, species richness for gamefish and riverine specialist species captured from study sites during July and August 1996. All values are for the combined miniboom catches, except for the modified index of well being, which was based on daytime miniboom catches only.

	Value for each site						
	Menominee River					Reference	
Variable	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
All species							
Number of individuals	201	227	241	126	57	178	304
Biomass (lbs)	249	423	411	97	71	61	156
Species richness	14	13	15	9	9	9	25
Diversity based on number	2.1	1.8	2.0	1.8	1.8	1.2	2.5
Diversity based on biomass	1.5	1.4	1.6	1.2	0.9	1.6	2.1
Evenness based on number	0.8	0.7	0.7	0.8	0.8	0.5	0.8
Evenness based on biomass	0.6	0.5	0.6	0.5	0.4	0.7	0.6
Modified index of well being	7.3	7.7	8.0	4.4	4.4	4.5	8.3
Gamefish species							
Number of individuals	37	56	48	65	19	37	78
Biomass (lbs)	13	46	39	37	26	28	13
Species richness	5	5	6	7	3	3	7
Riverine specialist species							
Number of individuals	88	83	121	0	3	14	115
Biomass (lbs)	139	202	238	0	<<1	17	111
Species richness	4	4	5	0	2	2	10

Table 5. Number of individuals, biomass, species richness, diversity and evenness for all species of fish, and number of individuals, biomass, species richness for gamefish and riverine specialist species captured from study sites during July and August 1996. All values are for the grid shocker catches only.

	Value for each site						
	Menominee River					Reference	
Variable	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
All species							
Number of individuals	336	455	341	153	355	162	128
Biomass (lbs)	3	2	4	1	1	1	2
Species richness	15	13	14	11	16	6	17
Diversity based on number	1.3	1.6	2.1	1.6	1.4	1.3	2.1
Diversity based on biomass	1.2	2.0	1.6	0.9	2.0	1.4	1.9
Evenness based on number	0.5	0.6	0.8	0.7	0.5	0.7	0.7
Evenness based on biomass	0.4	0.8	0.6	0.4	0.7	0.7	0.7
Gamefish species							
Number of individuals	24	42	41	22	43	25	43
Biomass (lbs)	<1	1	1	1	1	<1	1
Species richness	7	4	5	5	6	2	6
Riverine specialist species							
Number of individuals	216	324	119	12	8	42	47
Biomass (lbs)	3	1	<1	<<1	<<1	<<1	1
Species richness	4	3	4	2	2	2	6

Table 6. Number of individuals, biomass, species richness, diversity, evenness, and modified index of well being for all species of fish captured from the Menominee River by daytime miniboom during July/August and late September 1996.

Variable	Time Period	Value for each site				
		QF2	SF2	SF1	KD1	MF1
Number of individuals	July/August	71	88	117	57	15
	Late September	133	194	270	27	69
Biomass (lbs)	July/August	106	151	188	56	4
	Late September	82	72	106	7	13
Species richness	July/August	9	10	14	5	7
	Late September	14	12	16	10	8
Diversity based on number	July/August	1.9	1.9	1.9	1.2	1.9
	Late September	2.1	2.1	2.2	2.1	1.8
Diversity based on biomass	July/August	1.5	1.4	1.5	0.6	0.8
	Late September	1.3	1.2	1.2	0.9	0.7
Evenness based on number	July/August	0.9	0.8	0.7	0.8	1.0
	Late September	0.8	0.9	0.8	0.9	0.9
Evenness based on biomass	July/August	0.7	0.6	0.6	0.4	0.4
	Late September	0.5	0.5	0.4	0.4	0.3
Modified index of well being	July/August	7.3	7.7	8.0	4.4	4.4
	Late September	7.6	7.7	8.0	5.1	5.4

Table 7. Total length frequency by inch group for smallmouth bass caught by miniboom during July/August 1996. The minimum legal size for harvest was 14" for MC2 and 12" for all other stations.

	Number caught per category						
	Menominee River					Reference	
Inch group	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
< 4.0	5	3	3	1	1	10	32
4.0 - 4.9	0	0	0	1	0	0	0
5.0 - 5.9	0	0	2	0	0	0	7
6.0 - 6.9	2	3	0	0	1	1	8
7.0 - 7.9	1	0	0	1	1	0	1
8.0 - 8.9	3	9	1	1	0	0	0
9.0 - 9.9	4	9	7	1	0	2	1
10.0 - 10.9	2	5	3	0	2	5	4
11.0 - 11.9	0	7	0	0	0	2	0
12.0 - 12.9	0	3	2	0	0	0	0
13.0 - 13.9	1	2	2	2	3	1	0
14.0 - 14.9	0	2	1	3	1	1	1
15.0 - 15.9	0	0	2	2	0	2	0
16.0 - 16.9	0	1	5	1	2	0	0
17.0 - 17.9	0	2	1	0	1	0	0
Total	18	46	29	13	12	24	54
% Legal size	6	22	45	62	58	13	2

Table 8. Mean, standard deviation (SD), and sample size (N) for total lengths (inches) at age for smallmouth bass from the Menominee River. Age 0 lengths were measured directly from fish captured in late September 1996, and lengths at older ages were backcalculated from scales taken from fish captured during July/August 1996. For each age, those means followed by the same letter are not significantly different ($P > 0.05$) from each other.

	Value for each site				
Statistics	QF2	SF2	SF1	KD1	MF1
Age 0					
Mean	2.8 a	3.0 a	3.1 a	2.5 a	2.8 a
SD	0.4	0.5	0.3	0.2	0.1
N	22	35	20	2	4
Age I					
Mean	3.7 a,b	3.4 b	3.8 a,b	4.0 a	3.5 b
SD	0.4	0.5	0.6	0.8	0.5
N	10	40	26	11	14
Age II					
Mean	6.0 a,b	5.6 b	6.0 a,b	6.7 a	5.9 b
SD	0.7	1.0	0.8	1.2	0.3
N	7	37	24	9	11
Age III					
Mean	7.5 c	7.4 c	8.0 b,c	9.4 a	9.0 a,b
SD	0.6	1.1	0.9	1.7	1.0
N	4	24	21	6	9

Table 9. Habitat characteristics of study sites calculated from the 26 electroshocking grid locations. For cover density, "L" = limited and "M" = moderate.

	Value for each site						
	Menominee River					Reference	
Habitat variable	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
Macrohabitat types (%)							
Moderate pool	0	0	0	0	0	15	23
Shallow pool	0	0	0	0	0	0	8
Shallow run	8	0	0	0	46	0	54
Deep run	92	100	100	100	54	85	15
Bank vegetation/land use (%)							
Marsh	0	0	0	0	0	2	0
Grass	40	39	28	13	27	45	48
Shrubs	12	7	16	37	12	10	6
Forest	48	54	56	50	61	43	46
Cover types (%)							
Aquatic vegetation	0	26	0	0	0	7	38
Large woody debris	72	29	33	28	19	24	32
Boulders	22	31	67	3	32	69	30
Overhanging vegetation	6	14	0	69	49	0	0
Median cover density	L	L	L	L	M	L/M	M
Substrate Means (%)							
Detritus	0	0	0	0	0	1	1
Silt	54	4	14	46	1	1	21
Sand	30	16	62	43	25	30	41
Gravel	5	32	9	7	26	11	6
Rubble/cobble	8	42	11	4	39	31	16
Boulder	3	6	0	0	9	22	15
Bedrock	0	0	4	0	0	4	0

Table 9 continued on the next page.

Table 9. Continued.

Habitat variable	Value for each site						
	Menominee River					Reference	
	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
Mean depth (ft)							
Bank side of grid	0.5	0.7	0.9	0.5	0.5	1.0	0.5
Channel side of grid	1.5	1.4	1.9	1.5	1.2	1.9	1.4
Current velocity (ft/sec)	0.2	0.8	0.5	0.4	1.2	0.6	0.3

Table 10. Number of taxa and individuals of arthropods collected from the study sites, by order. Kick-net and microhabitat samples are pooled; effort refers to the number of samples for each station.

	Menominee primary sites				Menominee secondary sites				Reference	
Order	QF1	SF2	KD1	MF1	CTHZ	PIKE	BRULE	PAINT	MC2	MSC5
Ephemeroptera (mayflies)										
Taxa	7	17	12	10	17	16	14	8	6	27
Individuals	57	204	85	60	150	41	147	59	9	131
Trichoptera (caddisflies)										
Taxa	2	4	1	2	9	4	6	4	2	13
Individuals	5	12	4	2	81	5	20	19	6	61
Plecoptera (stoneflies)										
Taxa	1	2	2	1	6	3	4	4	0	6
Individuals	5	6	2	1	15	19	32	10	0	25
Coleoptera (beetles)										
Taxa	5	11	3	2	6	4	2	2	3	7
Individuals	6	36	8	3	30	22	11	17	3	23
Megaloptera (hellgramites)										
Taxa	0	1	0	0	1	1	1	0	0	0
Individuals	0	1	0	0	3	1	1	0	0	0
Heteroptera (water bugs)										
Taxa	1	3	2	2	0	1	0	0	0	2
Individuals	1	3	8	26	0	1	0	0	0	27
Diptera (two-winged flies)										
Taxa	4	3	3	10	5	9	10	3	2	6
Individuals	6	13	6	138	15	24	41	4	3	197
Odoata (dragonflies and damselflies)										
Taxa	6	3	2	6	2	2	1	1	1	7
Individuals	8	4	2	21	3	4	1	2	1	34
Total										
Taxa	26	44	25	33	46	40	38	22	14	69
Individuals	88	279	115	251	297	117	253	111	22	498
Effort	5	5	1	5	5	1	1	1	8	10

Table 11. Aquatic arthropods collected from the primary and secondary study areas of the Menominee River system (all sites combined) and the Chippewa River (MC2) and St. Croix River (MSC5) reference sites.

	Number caught per river			
	Menominee		Chippewa	St. Croix
Taxon	Primary	Secondary	MC2	MSC5
Ephemeroptera (total)	396	393	9	131
Acentrella carolina	5	10	0	1
Acerpenna pygmaea	2	0	0	0
Anthopotamus **sp.**	0	0	0	6
Anthopotamus verticis	0	1	0	9
Baetidae sp.	1	1	0	0
Baetis **sp.**	0	1	0	0
Baetis armillatus	1	1	0	6
Baetis brunneicolor	0	2	0	0
Baetis dubius	0	23	0	19
Baetis flavistriga	12	38	0	0
Baetis intercalaris	3	67	0	23
Baetis tricaudatus	1	0	0	0
Baetisca obesa	0	0	0	1
Brachycercus **sp.**	0	0	0	6
Caenis latipennis	16	0	2	1
Callibaetis **sp.**	0	0	0	1
Centroptilum alamance	1	0	0	2
Epeorus vitrius	0	2	0	1
Ephemera **sp.**	1	0	0	0
Ephemera simulans	3	1	0	0
Ephemerella invaria	0	1	0	3
Ephemerella needhami	0	13	0	3
Ephemerellidae sp.	0	1	0	0
Ephemeridae sp.	0	0	0	4
Ephoron album	5	1	0	0
Eurylophella bicolor	94	3	0	0
Heptageniidae sp.	3	1	0	0
Hexagenia limbata	23	0	0	0
Isonychia **sp.**	3	19	0	5
Labiobaetis propinquus	59	41	0	1
Leptophlebia **sp.**	0	1	0	0
Leucrocuta hebe	37	15	1	4
Paraleptophlebia **sp.**	0	66	0	0
Procloeon **sp.**	0	0	0	1

Table 11 continued on next page.

Table 11. Continued.

Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Ephemeroptera (continued)				
Pseudocloeon sp.	0	0	0	2
Rhithrogena jejuna	0	0	0	8
Serratella deficiens	0	8	0	0
Siphlonurus sp.	0	0	0	1
Stenacron interpunctatum	2	0	1	8
Stenonema sp.	6	11	2	0
Stenonema exiguum	0	0	0	3
Stenonema femoratum	2	0	1	0
Stenonema mediopunctatum	29	25	0	1
Stenonema modestum	0	28	0	2
Stenonema pulchellum	14	5	0	1
Stenonema terminatum	73	8	0	8
Stenonema vicarium	0	1	0	0
Timpanoga simplex	0	1	0	0
Plecoptera				
Acroneuria sp.	1	19	0	3
Agnetina capitata	0	35	0	4
Isoperla dicala	1	1	0	1
Isoperla frisoni	0	2	0	3
Neoperla stewarti	1	3	0	1
Paragnetina media	0	3	0	0
Perlesta decipiens	11	12	0	13
Pteronarcys sp.	0	2	0	0
Trichoptera				
Agraylea sp.	0	0	0	1
Anabolia sp.	1	0	0	0
Brachycentrus americanus	0	2	0	0
Ceratopsyche sp.	2	0	1	0
Ceratopsyche morosa bifida	0	37	1	8
Cheumatopsyche sp.	13	8	3	7
Chimarra socia	0	4	0	0
Chimarra obscura	0	1	0	0
Heliopsyche borealis	0	0	0	2
Hydropsyche phalerata	0	26	0	21

Table 11 continued on next page.

Table 11. Continued.

Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Trichoptera (continued)				
Hydropsyche scalaris	0	4	0	1
Hydropsychidae pupae	0	0	0	1
Lepidostoma sp.	0	4	0	2
Nectopsyche candida	0	0	0	1
Nectopsyche pavida	0	0	0	1
Neophylax sp.	0	0	0	2
Oecetis sp.	0	0	0	3
Oecetis persimilis	0	0	0	3
Paranytiophylax	0	0	0	1
Philopotamidae pupae	0	0	0	1
Polycentropus sp.	1	1	0	0
Pyncnopsyche sp.	5	1	0	4
Setodes sp.	0	1	0	0
Triaenodes injustus	1	1	0	2
Coleoptera				
Coleoptera sp.	3	0	0	0
Curculionidae sp.	7	0	1	1
Dubiraphia sp.	3	0	0	7
Dubiraphia minima	1	0	0	5
Dytiscidae sp.	1	0	0	0
Ectopria sp.	3	0	1	0
Gyrinidae sp.	0	0	0	1
Haliplus immaculicollis	2	0	0	0
Machronychus glabratus	8	1	0	4
Optioservus sp.	0	1	0	0
Optioservus trivittatus	2	17	0	3
Peltodytes edentulus	1	0	0	1
Psephenus herricki	10	10	0	0
Stenelmis sp.	4	35	1	0
Stenelmis bicarinata	8	19	0	0
Stenelmis mera	0	0	0	1
Megaloptera				
Chauliodes	1	5	0	0

Table 11 continued on next page.

Table 11. Continued.

Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Heteroptera				
Corixidae sp.	35	1	0	25
Neoplea striola	1	0	0	0
Notonecta sp.	1	0	0	0
Palmacorixa sp.	0	0	0	2
Ranatra sp.	1	0	0	0
Diptera				
Antocha sp.	9	15	0	0
Atherix sp.	0	9	0	0
Ceratopogonidae sp.	5	2	0	7
Chironomidae (subtotal)	141	40	0	188
Unidentified Chironomidae	(69)	(5)	(0)	(46)
Orthocladinae sp.	(3)	(11)	(0)	(22)
Tanypodinae sp.	(6)	(6)	(0)	(10)
Clinotanypus sp.	(2)	(0)	(0)	(0)
Procladius sp.	(5)	(0)	(0)	(0)
Chironominae - Tanytarsini	(32)	(2)	(0)	(56)
Chironominae - Chironomini	(24)	(16)	(2)	(54)
Chrysops sp.	5	3	0	2
Empididae sp.	0	6	0	0
Hexatoma sp.	0	2	0	0
Simuliidae sp.	4	0	0	0
Stratiomyidae sp.	1	0	0	0
Tipulidae sp.	0	1	1	1
Odonata				
Unidentified Anisoptera	3	1	0	8
Argia sp.	1	1	0	1
Basiaeschna janata	1	0	0	0
Boyeria vinosa	1	0	0	0
Calopteryx sp.	2	0	0	0
Enallagma sp.	3	0	1	8
Gomphorus sp.	0	0	0	1
Gomphurus fraternus	1	0	0	0
Gomphurus vastus	1	0	0	0
Gomphurus ventricosus	2	0	0	1

Table 11 continued on next page.

Table 11. Continued.

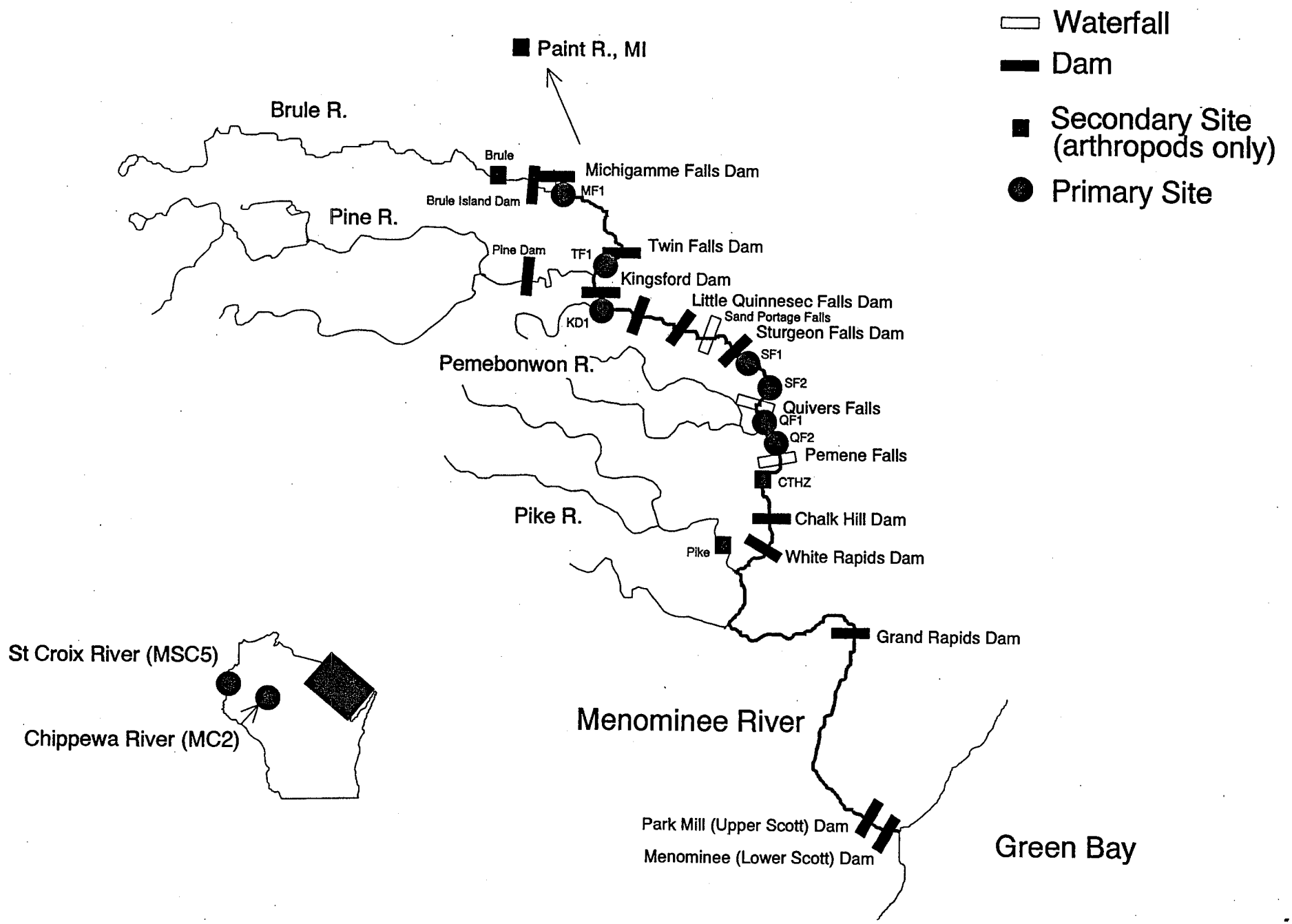
Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Odonata (continued)				
Gomphurus viridifrons	0	0	0	3
Hagenius brevistylus	0	0	0	7
Macromia **sp.**	1	0	0	0
Macromia illinoiensis	1	0	0	0
Ophiogomphus **sp.**	3	0	0	2
Ophiogomphus anomalus	0	2	0	0
Ophiogomphus howei	0	1	0	0
Ophiogomphus rupinsulensis	5	3	0	0
Phanogomphus **sp.**	2	0	0	0
Phanogomphus lividus	6	0	0	0
Phanogomphus quadricolor	2	0	0	3
Stylurus spiniceps	1	0	0	0

Table 12. Freshwater mussels collected from the primary study sites on the Menominee River. The number of individuals combines both live and dead specimens (shells); over 99% were alive. A "SC" indicates a special concern species for Wisconsin; "L" = large river species, "M" = medium stream/small river species, "S" = small stream species, and "G" = habitat generalist.

Common name	Scientific name	Number of individuals per site						
		QF2	QF1	SF2	SF1	KD1	TF1	MF1
Mucket	*Actinonaias ligamentina carinata*(L)	1	1	0	0	0	0	0
Elktoe	*Alasmidonta marginata*(SC/M)	2	3	30	2	0	0	0
Threeridge	*Amblema plicata plicata*(G)	1	3	1	2	0	0	0
Giant floater	*Anodonta grandis* form *grandis*(G)	5	6	0	16	244	105	55
Cylindrical papershell	*Anodontoides ferussacianus*(S)	0	0	0	0	10	0	18
Spike	*Elliptio dilatata*(G)	23	33	3	2	0	0	0
Wabash pigtoe	*Fusconaia flava*(G)	22	12	1	6	0	0	0
Plain pocketbook	*Lampsilis cardium*(G)	18	22	20	4	0	0	0
Fatmucket	*Lampsilis siliquoidea*(G)	86	209	131	168	44	181	64
Creek heelsplitter	*Lasmigona compressa*(SC/S)	1	0	0	0	2	0	0
Fluted-shell	*Lasmigona costata*(L)	104	141	69	14	1	0	0
Black sandshell	*Ligumia recta*(L)	14	25	9	15	0	0	0
Round pigtoe	*Pleurobema coccineum* (SC/L)	11	3	3	1	0	0	0
Squawfoot	*Strophitus undulatus undulatus*(G)	0	0	0	1	0	0	0
Total individuals		288	458	267	231	301	286	137
Total species		12	11	9	11	5	2	3

Figure 1. Map of Menominee River showing study sites, dams, and waterfalls. The inset map of Wisconsin shows the location of the St. Croix River and Chippewa River reference sites.

1996 Sampling



Effects of Flow Regulation and Restriction of Passage Due to Hydroelectric Project Operation on the Structure of Fish and Invertebrate Communities in Wisconsin's Large River Systems

1997 Progress Report

Phase II: Menominee River

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SUMMARY

Fish, arthropod, and mussel data were collected during 1996 and 1997 to evaluate how planned changes in river flow regulation from hydroelectric dams will affect the biota of the Menominee River in northeastern Wisconsin. Eight permanent study sites were established within riverine portions of the uppermost 51.5 miles of the Menominee River, and these were sampled using standardized techniques for habitat, fish, arthropods, and mussels. Five additional sites were sampled for arthropods on tributaries and a downstream area of the Menominee, and single reference sites on the St. Croix River and on the Chippewa River in northwestern Wisconsin were sampled for habitat, fish, arthropods and mussels. Fish community structure and composition patterns were similar between 1996-1997. In 1997, 29 fish species were captured from the Menominee River sites (14-21 per site), 29 from the St. Croix, and 12 from the Chippewa. Within the Menominee River, fish abundance, biomass, diversity, and MIWB scores were higher in the lower portion of the study area. Several fish species were widespread and common in the lower portion but absent in the upper. Differences in habitat, primarily bottom substrate and cover, existed among sites, but these were unrelated to geographic patterns in fish community structure. Growth rates of smallmouth bass at most Menominee River sites were at or above northern Wisconsin averages, and abundance of legal-sized fish was relatively high. For aquatic insects, major differences in abundance and order-level community composition were observed among sites. The order Ephemeroptera (mayflies) or Diptera dominated at all sites, and the Chippewa River site had the lowest insect abundance, but no longitudinal patterns were evident within the Menominee River. Full identification of 1997 arthropod samples is not yet complete. For mussels, 14 species were collected in the Menominee River (2-12 per site), 18 were found in the St. Croix, and 2 were found in the Chippewa. The Chippewa site had very few live mussels, all of which were > 23 years old. Sites in the lower portion of the Menominee River study area had higher species richness than sites in the upper portion. Nine species were restricted to the lower portion, but only one was restricted to the upper. The absence of many fish and mussel species from the upper portion of the Menominee study area could be due to natural barriers that restricted historical colonization, or, alternatively, to recent extirpations.

INTRODUCTION

In 1995, the Wisconsin Department of Natural Resources (WDNR) began a research study to quantify the effects of hydroelectric power dams on biological communities in Wisconsin's larger rivers. This study focuses on riverine fish, aquatic arthropod, and mussel faunas, and has two phases:

I. Comparisons between river reaches with flows heavily regulated by dams and river reaches with few dams (1995-2000).

1. Intensive comparison between the heavily regulated Chippewa/Flambeau River system and the relatively unregulated St. Croix River system.
2. Extensive statewide comparison among river reaches for the development of an index of biotic integrity based on fish communities. This index will be used for the rapid bioassessment of human impacts, including flow regulation, on large river ecosystem health.

II. Evaluation of the changes in biota following a shift in flow regulation patterns in the Menominee River system (1996-2008).

The study emphasizes both the site-specific effects of flow regulation from individual dams and the system-wide cumulative effects of riverine habitat modification and fragmentation from multiple dams and impoundments. The rationale, goals, and design of the study are presented in detail in the formal research study proposal, available from John Lyons.

Phase II of the study, the subject of this report, has a before-and-after-control-impact (BACI) design (Underwood 1994), with intensive sampling of the biota of the Menominee River system scheduled for 1996-2000, before the planned shifts in flow regulation in 2001, and again in 2004-2006, after the biotic community has had a chance to adjust to the shifts in flows. A site on the relatively unregulated St. Croix River and another site on the heavily regulated Chippewa River will be used as references ("control") for comparison with the Menominee River ("impact") sites.

This progress report summarizes results from the 1997 sampling in the Menominee River system, the second year of the "before" portion of Phase II. 1997 data are also compared with results from the more limited 1996 sampling.

STUDY AREA

The primary study area for phase II encompasses the upper portion of the Menominee River in northeastern Wisconsin, from Pemene Falls (River Mile (RM)

67.1) upstream 51.5 miles to the source of the Menominee at the confluence of the Michigamme and Brule rivers (RM 118.6) (Figure 1). Within this stretch of river are five hydroelectric dams: Sturgeon Falls (RM 83.0), Little Quinnesec (Niagara)(RM 91.4), Big Quinnesec (RM 96.0), Kingsford (Henry Ford)(RM 101.5), and Twin Falls (RM 107.9) (Thuemler and Schnicke 1992). Just upstream of the start of the Menominee River are Michigamme Falls Dam, located on the Michigamme River at RM 0.2, and Brule Island Dam, located on the Brule River at RM 1.7. Flow through the Michigamme Falls Dam is heavily influenced by flows from three additional dams, Peavy, Hemlock, and Way, located further upstream in the Michigamme River system. Three waterfalls remain within the primary study area (several others were inundated by the hydroelectric dams): Pemene, Quivers (RM 72.9), and Sand Portage (Pier's Gorge)(RM 89.6).

The primary study area can be split into two subareas based on the planned shifts in flow regulation. The upper subarea extends from the Little Quinnesec Dam upstream to the Michigamme-Brule confluence (27.2 miles). This subarea is currently influenced by daily peaking operations at the Michigamme Falls, Twin Falls, Kingsford, and Big Quinnesec dams (Thuemler and Schnicke 1992). Peaking operations at all four dams are scheduled to change in 2001, when a new operating regime will be initiated. This regime mandates run-of-river flows during the spring, and for the rest of the year allows peaking operations only if the daily maximum flow does not exceed twice the daily minimum. The new regime should result in greatly reduced daily fluctuations in flow, and probably higher minimum flows as well. The lower subarea extends from Pemene Falls to the Little Quinnesec Dam (23.9 miles). This subarea is currently influenced by daily peaking operations at the Little Quinnesec Dam. The future operating regime of this dam has not yet been determined, but whatever the flow patterns, beginning in 2001 daily fluctuations in discharge from the Little Quinnesec Dam will be "re-regulated" at the Sturgeon Falls Dam to provide more stable flows downstream.

Based on reconnaissance in 1996, we established eight sampling sites in riverine segments within the primary study area (Table 1). At these sites data on habitat, fish, arthropods, and mussels were collected. Each site contained one continuous mile of riverine (i.e., non-impounded) habitat. Locations were chosen based on proximity to dams and waterfalls and ease of access. In the lower subarea, two sites were between Quivers and Pemene Falls (QF1 and QF2) and two are below Sturgeon Falls Dam (SF1 and SF2). In the upper subarea, one site was below Kingsford Dam (KD1), one was below Twin Falls Dam (TF1), and two were below Michigamme Falls Dam (MF0 and MF1). Insufficient riverine habitat existed for a sampling site below the Big Quinnesec Dam, and we chose not to sample the riverine area below Little

Quinnesec Dam because of uncertainty regarding future flow regulation patterns and concerns about the confounding impacts of historical point-source pollution problems. Although they appear to be riverine, analyses of flow gage data indicate that sites TF1 and KD1 experience backwater effects from impoundments that are located just downstream (Tom Thuemler, WDNR, Peshtigo, personal communication).

Five additional ("secondary") sampling sites were established for arthropods outside of the primary study area (Table 1, Figure 1). One (CTHZ) was on the Menominee River below Pemene Falls, and four (PIKE, BRULE, PINE, PAINT) were on tributaries.

Two reference sites were established, one on the relatively unregulated St. Croix River (MSC5), where daily peaking flows are absent, and the other on the Chippewa River below Cornell Dam (MC2), where major daily peaking occurs (Table 1, Figure 1). These sites were sampled for habitat, fish, arthropods, and mussels.

METHODS

Fish

Fish were sampled once per year throughout each study site between early June and Late August. Two electrofishing techniques were employed, a boat-mounted "mini-boom" shocker and a pre-positioned bottom electrofishing grid. The mini-boom, used to capture medium- to large-bodied fishes, was a standard WDNR unit, with a 3500 W AC generator that passed output through a transformer and pulsar unit to provide pulsed-DC current (60 Hertz, 25% duty cycle). Power output was kept between 7.5-10.5 A and 275-400 V for a total of about 3000 W. The anode was a single boom with a Wisconsin ring and 12-16 droppers, and the aluminum boat hull was the cathode. A single netter attempted to catch all fish observed that were large enough to be retained by a 19 mm stretch-mesh dip net. The mini-boom was operated in a downstream direction over the entire length of each station (one mile). One shoreline and the middle of the channel were shocked during the daytime, and the remaining shoreline was shocked at night, for a total of three miles of mini-boom sampling. Preliminary studies in 1995 on the St. Croix, Chippewa, and Wisconsin rivers indicated that one mile of daytime shoreline shocking gave a reasonably accurate and precise picture of fish community structure and composition, but that night shocking yielded great numbers and biomass and a wider size range of fish. The mid-channel shocking was included to capture fishes not closely associated with shoreline habitat.

Electrofishing grids (Bain et al. 1985) were used to capture small-bodied

fishes in shallow shoreline habitats that could not be adequately sampled with the mini-boom. The grids were 2 X 8 m, covering a rectangular bottom area of 16 m^2. The long axes of the grid were made of steel wire and served as the electrodes; the ends of these wires were joined by ropes to form a rectangle. The electrodes were powered by a 3500 W generator that produced AC current at 7-11 A and 250-500 V. Girds were positioned on the bottom within 0.3 m of shore in water less than 1 m deep, with their long axis parallel to the shoreline. Grids were set and then left undisturbed for at least 15 minutes prior to activation, which allowed sufficient time for small fishes to recover from any disturbance caused by the setting of the grid (Bain et al. 1985). Power was then applied to grids for 30 seconds, and all stunned fish were collected with dip nets. In fast current, a small seine was held just downstream of the grid during sampling to catch drifting fish. Grids were set in pairs (each member of the pair separated by 10 m) at 13 randomly chosen locations over the entire length of each one mile site, for a total of 26 grid samples per site. Preliminary work in 1995 on the St. Croix and Wisconsin rivers indicated that 26 grid samples gave a reasonably accurate and precise estimate of the community structure and composition of small shoreline fishes.

All captured fishes were identified to species, counted, and weighed in aggregate. Gamefish (Table 2) were measured for total length to the nearest mm. Scales were taken from a subsample of smallmouth bass for aging. Voucher specimens of difficult to identify or rare species were preserved for later examination in the laboratory, but most captured fish were returned to the river after processing.

The following summary statistics were calculated for each site (see Fausch et al. 1990 for formulae): total number of fish, total biomass, total species richness, species diversity (Shannon index) based on number and on biomass, evenness based on number and on biomass, and the number of individuals, biomass, and species richness of gamefish species and of riverine specialist species (require riverine habitat for entire life cycle, Kinsolving and Bain 1993; Table 2). Data from both fish sampling methods were analyzed separately and aggregately by sampling site. We also calculated a modified index of well being from the mini-boom data (Ohio EPA 1988). The MIWB combined information on fish abundance, biomass, and species diversity to produce an index of fish community quality. The MIWB values calculated here were not directly comparable to those from Ohio and other states because of differences in sampling effort. For smallmouth bass with scale samples, ages and backcalculated lengths at each annulus were determined following procedures in Carlander (1982).

Fish Habitat

The following variables were measured or visually estimated for each grid using standard procedures from Simonson et al. (1994): stream channel macrohabitat type (seven categories), shoreline vegetation/land use type (seven categories), cover types (four categories), cover densities (four levels), amounts of bottom substrates (seven types), depths (six positions), and current velocity (three positions). Mean values or percentage frequency of occurrence from all 26 grids were determined for each habitat variable for each site.

Arthropods

Arthropods were collected by three different methods -- kick nets, Hess samplers, and hand-picked microhabitats -- at one location within each site (modified from Cuffney et al. 1993a). Kick-netting was conducted with a long-handled D-frame net with 600 Ãm mesh. At each site a deep (0.75-1.25 m) riffle/run location away from the shoreline and a shallow riffle/run location (< 0.5 m) near the shoreline were sampled until a quart jar could be filled with material (mix of arthropods, plant material, detritus, etc.) from each location. At sites without deep habitats two shallow samples were taken. The Hess stovepipe sampler, equipped with 500 Ãm mesh neeting, provided a quantitative sample of 0.084 m^2 of the bottom. A single Hess sample was collected at each site, except SF2, where three were taken, and PIKE, PINE, and PAINT, where the sampler was not used. The sampler was placed on the bottom and then the top 5 cm of the substrate within the sampler was disturbed by hand to flush out arthropods. Any rocks within the sampler were examined and scraped to remove attached organisms. Four different microhabitat types -- rock, wood, silt/sand, and aquatic vegetation -- were sampled by hand-picking. Not all microhabitats occurred at all sites, and no microhabitats were sampled at PIKE and PINE. At each site sampled, a representative sample of each microhabitat was gathered until a shallow 30 X 40 cm tray had been filled. The sample was then hand-picked in the tray for three minutes using a modified random encounter approach that maximized the variety of invertebrates selected. In richly populated samples this approach only yielded a subsample of the organisms present.

Arthropod samples were preserved in alcohol and processed in the laboratory using standardized procedures (Cuffney et al. 1993b). For the Hess and microhabitat samples all arthropods collected were identified to the lowest taxonomic level possible (usually genus or species) and counted. For the kick-net samples, all specimens were identified to order and counted. Then a randomly chosen subsample of 150 organisms were identified to the lowest taxonomic level possible.

Arthropod data were compared among sites for density (Hess), relative abundance (kicknet, microhabitat), and community composition (all sampling methods). Because 1997 samples have not yet been completely processed, only preliminary comparisons are presented here.

Arthropod Habitat

Data were collected from one location within each site for water chemistry, qualitative water level and velocity, and bottom substrates. Velocity and substrate were assessed separately for deep and shallow areas. Substrate (10 categories) was visually estimated to the nearest 5% for the entire area within 10-20 m of the point where arthropods were collected. Conductivity and pH were measured with electronic meters that were calibrated daily; water temperature was measured with a hand thermometer.

Mussels

Mussels (family Unionidae) were collected by hand from about five different locations within each site. Locations were chosen to represent the range of substrate and habitat conditions present in the site. At each location, all areas of the river channel were searched for mussels, and scuba was used in areas deeper than 0.6 m. Generally, only living mussels were collected, but shells from dead mussels were also picked up if they were from species not yet encountered alive at the site. Bank areas were also surveyed for shells. Two to four people made collections for at least two hours at each site. A "depletion curve" methodology was followed. Mussels were gathered in groups of 20, with care taken that all mussels, including small individuals embedded in the bottom, were collected from each portion of the bottom surveyed. Once a group of 20 mussels had been collected, each mussel was identified to species, counted, measured for total length and total height, and aged based on external shell characteristics. Excepting a few voucher specimens that were preserved, all specimens were carefully returned after processing to the area where they had been collected. A cumulative species list was established based on all groups of mussels collected, and sampling continued until six consecutive groups of 20 failed to yield a "new" species of mussel not yet encountered at the site.

The depletion curve methodology yields good estimates of species presence-absence and proportional abundance for comparisons among sites, but provides no data on density or biomass. The mussel sampling also yielded size and age distributions, but analyses of these data are not yet complete and are not included here.

At three Menominee River sites (MF0, TF1, KD1) an additional shoreline mussel

"midden" search was carried out. At each site most of the length of both shorelines was viewed from a boat in an attempt to locate middens, concentrations of shells created by humans or other predators such as racoons. When middens were encountered, shells were identified to species and counted. As some shell middens can be greater than 100 years old, this sampling could provide insight into the mussel community in the river prior to hydroelectric dam construction.

RESULTS

Fish

In 1997 all eight Menominee River primary sites and both reference sites were sampled for fish. In 1996 only five Menominee sites (QF2, SF2, SF1, KD1, MF1) and the two reference sites had been sampled. For those sites sampled in both 1996 and 1997, summary statistics were generally similar between years (Table 2). Values for species richness, diversity based on number and on biomass, and evenness based on number and biomass showed little difference between years. Site MF1 on the Menominee and the Chippewa reference site yielded fewer individuals but higher biomass in 1997, whereas the St. Croix reference site had higher numbers and biomass in 1997. The remainder of this section will cover only 1997 results.

For the combined 1997 miniboom and grid shocker data, a total of 29 fish species were captured from the eight Menominee River sites (12-19 per site), 28 were found in the St. Croix reference site, and 14 were encountered at the Chippewa reference site (Table 3). The Menominee River and 18 species in common with the St. Croix site and 8 with the Chippewa site. No state threatened or endangered species were collected from the Menominee or Chippewa River sites, but two Wisconsin threatened species, river redhorse and greater redhorse, were captured in the St. Croix.

Within the Menominee River, the number of fish, biomass, diversity based on biomass, and modified index of well being (MIWB) were higher in the four sites in the lower study subarea (QF2, QF1, SF2, SF1) than in the four stations in the upper subarea (KD1, TF1, MF1, MF0) (Tables 4, 5). Species richness, diversity, and evenness varied among sites with site TF1 having the lowest values. The St. Croix reference site had the highest number of fish, species richness, diversity, and MIWB.

Different information about the fish community at each site was provided by the miniboom and grid shockers (Tables 5, 6). The grids tended to catch more fish than the miniboom, but grid-caught fish were usually small and miniboom-caught fish large, so the miniboom yielded nearly all of the biomass from each

site. Species richness, diversity, and evenness values from the miniboom and the grids were similar, but each gear type produced species not captured by the other.

For gamefish species, variability among sites had no obvious geographic pattern (Table 4, 5, 6). The St Croix reference site had the most individuals, site TF1 on the Menominee had the highest biomass, and site MF1 had them most species. Most the St. Croix specimens were small young-of-year smallmouth bass, and biomass was realitvely low. The Chippewa reference site had the fewest individuals and species, but site QF1 on the Menominee had the lowest overall biomass.

Conversely, strong geographic patterns were evident for riverine specialist species (Table 4, 5, 6). The lower subarea of the Menominee had substantially higher numbers, biomass, and species richness of riverine specialists than the upper subarea. Four riverine specialist species, northern hog sucker, silver redhorse, golden redhorse, and blackside darter, were ubiquitous and common in the lower subarea but absent in the upper (Table 3). The St. Croix River reference site had the greatest number of individuals and highest species richness of riverine specialists (Table 4, 5, 6).

Only the smallmouth bass was numerous enough at all ten study study sites to allow for a comparison of size structure and growth rates among sites (Table 3). A wide size range of smallmouth bass was present at all sites, including legal-sized fish for sport harvest. Relative abundance of legal-sized individuals was highest in the four stations of the upper subarea of the Menominee. Growth rates of smallmouth bass varied relatively little among most sites, although TF1 had much slower growing age II and III fish than the other sites (Table 8).

Fish habitat

1997 habitat conditions in electroshocking grids were generally variable among sites, with little geographic pattern in values (Table 9). Pool habitat dominated the St. Croix reference site but was rare or absent in the other sites, where run habitat dominated. Bank vegetation for all sites was a mix of grass and forest, with some sites having shrubs. Nearshore water depths and velocities varied little among sites, although sites MF1 and MF0 had relatively high current velocities. The dominant cover type was not consistent among sites, with either aquatic vegetation (i.e., macrophytes), large woody debris, boulders, or overhanging bank vegetation being most important. No clear longitudinal pattern existed in cover type or density within the Menominee River. Similarly, there were no obvious longitudinal

patterns in substrates, with some sites dominated by rocky material, others by fines (sand and silt), and others by a near even mix of rocks and fines.

Arthropods

In 1997, aquatic arthropods were sampled at six (QF2, QF1, SF2, SF1, KD1, MF0) of the eight Menominee River primary sites, all five of the secondary sites, and both of the reference sites. In 1996, arthropods had been sampled at four of the primary sites (QF1, SF2, KD1, MF1), four of the secondary sites (CTHZ, PIKE, BRULE, PAINT), and both reference sites.

Locations sampled for arthropods generally had similar characteristics, with a few exceptions (Tables 10, 11). Values for pH and condicutivity varied only slightly among the Menominee primary and secondary sites and the St. Croix reference site, but were relatively low for the Chippewa reference site. Most locations had a mix of rocky and sand substrates, although the proportions of different rock types varied. Menominee site MF0 and the Chippewa reference had almost no sand or silt. Aquatic vegetation was absent from most locations, and where present was scarce and limited to shoreline areas.

Based on the quantitative Hess sampler, the insect orders Ephemeroptera (mayflies) and diptera (midges) dominated at most sites, although the relative proportion of each varied (Table 12). A substantial proportion of the order Coleoptera (beetles) occurred at Menominee primary site SF1 and secondary sites CTHZ and Brule. Densities varied varied greatly among sites from 210/m^2 at CTHZ (possible sample problems) to 870 at the Chippewa reference site to 3950 at Menominee primary site MF0. No clear longitudinal or geographic trends were evident in either composition by order or density.

The orders Ephemeroptera and Plecoptera were also dominant in composite kick-net sampling, with Coleoptera as the third most abundant order at most sites (Table 13). The Chippewa reference site had the fewest individuals collected. Again, no clear longitudinal or geographic trends were evident among sites, nor were there consistent distribution patterns between shoreline and deep across sites.

Although the general overall pattern was similar between Hess and composite samples, for individual sites the two methods sometimes gave very different pictures of the insect community. For example, at Menominee primary site KD1, Hess sampling indicated that Diptera was dominant (83%) and Ephemeroptera relatively unimportant (6%). But in composite sampling Ephemeroptera was dominant (57-63%) and Diptera was secondary in importance (11-20%).

For microhabitat sampling, only rocks were present at all sites, although wood was lacking from only Menominee primary site SF1 and the Chippewa reference site (Table 14). For rock microhabitats, relative abundances were generally similar among sites, although the Chippewa reference site again had the lowest number. Ephemeroptera was the most common order at most sites, but excepting Menominee primary site QF2 and the Chippewa reference site, Diptera were relatively uncommon. Trichoptera (caddisflies) Plecoptera (stoneflies) were often numerous. For wood microhabitats, Ephemeroptera, Trichoptera, and Plecoptera were again the most numerous groups, with Diptera common at the St. Croix reference site.

Mussels

Mussel depletion sampling took place over two years, with seven of the Menominee sites sampled in 1996. The remaining Menominee site (MF0) and the St. Croix and Chippewa reference sites were sampled in 1997.

The number of mussel species varied substantially among rivers and sites (Table 16). The eight Menominee sites yielded a total of 14 species (2-12 per site), compared to two from the Chippewa reference site and 18 from the St. Croix. Of the 14 Menominee species, 12 were encountered in the St. Croix and one in the Chippewa. Three Wisconsin special concern species -- elktoe, creek heelsplitter, and round pigtoe -- were found in the Menominee and the St. Croix. One WI endangered species, the purple wartyback, was found in the Chippewa and St. Croix sites. The depletion methodology give only a qualitative idea of mussel abundance, but the Chippewa site clearly has a very low density mussel population. This site yielded only four live mussels, all of which were at least 23 years old.

Within the Menominee River, a clear difference was evident between the mussel faunas of the upper and lower subareas. The four sites in the lower subarea (QF2, QF1, SF2, SF1) had substantially higher species richness than the four in the upper subarea (KD1, TF1, MF1, MF0). The general impression of the field crew during sampling was that mussel density was higher in the lower than in the upper subarea. Nine species were found only in the lower subarea, one was found only in the upper, and four were found in both. The dominant species found in the upper subarea were either cosmopolitan species found in a wide range of habitats (giant floater, fatmucket) or more characteristic of small streams (cylindrical papershell), whereas some of those from the lower subarea were characteristic of larger rivers (mucket, fluted-shell, black sandshell, round pigtoe) and others were habitat generalists (e.g., threeridge, giant floater, spike, fatmucket; Cummings and Mayer 1992).

The midden search of three sites in the upper subarea yielded few old shells. No shells, new or old, were found on the shoreline of MF0. At TF1, 263 giant floater, 63 fatmucket, and 1 creek heelsplitter shells were found. One historic midden pile of 50 apparently very old fatmucket shells were found, but the remaining shells looked recently dead. The giant floater and fatmucket were found alive at this site in depletion sampling. The creek heelsplitter had not been found in depletion sampling, but given the freshness of the shell, probably occurs alive at the site in low numbers. At KD1, one elktoe, 95 giant floaters, and six fatmucket shells were found. No historic midden piles were found, and all shells appeared to be recently dead. The giant floater and fatmucket had been previously found at this site in depletion sampling, but the elktoe had not. Given the condition of the elktoe shell, the species probably occurs alive at the site in low numbers.

DISCUSSION

Patterns within the Menominee

In 1997, as in 1996, longitudinal patterns in community structure and composition were evident for fish and mussels but not arthropods within the primary area of the Menominee River. For fish and mussels there was higher species richness in the lower subarea than in the upper subarea. Fish biomass was also higher in the lower subarea. Complete data on arthropod taxa richness are not yet available, but no clear longitudinal trends were apparent in abundance or composition by order.

Most of the differences in the fish assemblages between the upper and lower subareas were caused by disparities in the species richness, abundance, and especially biomass of riverine specialist species; riverine specialists such as northern hog sucker, silver redhorse, golden redhorse, and blackside darter were common in the lower subarea, but absent in the upper. Interestingly, the gamefish portion of the fish community differed little between the two subareas. The difference in mussel species richness between the two subareas was caused by the absence of several large river specialists and habitat generalists from the upper subarea.

The differences in fish and mussel communities between the upper and lower subareas could be due to natural factors. Sturgeon Falls was a historical barrier to upstream movement by lake sturgeon and perhaps other fishes migrating out of Green Bay (Thuemler and Schnicke 1992). It and other waterfalls may also have served as barriers to upstream movements of colonizing fish species as glaciers receded from what is now northern Wisconsin and the upper peninsula of Michigan, thus accounting for the current absence of certain species in the upper subarea. Freshwater mussel

distribution and colonization opportunities are typically closely tied to those of fish because larval mussels must parasitize fish in order to complete their life cycle (Cummings and Mayer 1992). Many mussel species can only parasitize certain fish species. Further, fish are an important vector for upstream larval mussel movement; once the larvae drop off fish to settle into the substrate and metamorphose into adults, their ability to move upstream is greatly limited. In contrast, many aquatic arthropods have an aerial stage in their life cycle, and waterfalls are much less of a barrier to their colonization of upstream areas.

Unfortunately, data from prior to the 1970s on fish and mussels in the upper portion of the Menominee River are very limited, so historical distribution patterns must be inferred from current data. Judging from present fish distribution patterns (this study; Becker 1983; EA Science and Technology 1987; Thuemler and Schnicke 1992; Greg Seegert, EA Science and Technology, Deerfield, Illinois, personal communication), Sturgeon Falls may have been the historical upstream limit for northern brook lamprey, northern hog sucker, and perhaps green sunfish; Sand Portage Falls may have been the upstream limit for rosyface shiner and silver redhorse; and Little Quinnesec Falls may have been the upstream limit for golden redhorse, shorthead redhorse, and blackside darter. Based on recent mussel distribution patterns (this study; Mathiak 1979), the upstream limit for many species could be somewhere from Sturgeon Falls upstream to Little or Big Quinnesec Falls.

An alternative explanation for current fish and mussel distribution patterns is that at least some of the species now restricted to the lower subarea may have historically occurred in the upper subarea as well, but disappeared because of human impacts. Municipal and industrial pollution formerly caused fish kills downstream of the cities of Iron River (MI), Iron Mountain (MI), and Niagara (WI) (Thuemler and Schnicke 1992), and could have eliminated fish species such as rosyface shiner, northern hog sucker, silver and golden redhorse, and blackside darter and mussel species such as elktoe, spike, fluted-shell, and black sandshell that are sensitive to poor water quality (Starrett 1971; Trautman 1981). Dams and waterfalls would have prevented these species from recolonizing the upper subarea after water quality was improved in the 1970s and 1980s. Another possibility is that impoundment and flow regulation from dams contributed to the disappearance of riverine specialist fish and mussel species. By definition, riverine specialist fish species are absent from impoundments. Kinsolving and Bain (1993) found that riverine specialist fishes were particularly sensitive to short-term flow fluctuations and tended to avoid river areas influenced by daily hydropower peaking. Layzer et al. (1993) documented the significant decline in a mussel

fauna below a hydropower peaking operation.

Fish habitat conditions were not closely related to fish community structure in the Menominee River, suggesting that factors other than habitat were of primary importance in determining fish community characteristics. For example, site SF2, which had predominantly rocky substrates, had a fish community very similar to site SF1, which had predominantly fine substrates. Site MF1 had the highest cover density, and thus some of the best fish habitat, and yet had the lowest biomass of fish.

Growth of smallmouth bass varied relatively little among study sites, without any clear relation to habitat conditions or flow regulation patterns. Growth rates were at or above northern Wisconsin averages (WDNR 1991), and relative abundance of legal-sized fish in the upper subarea was well above typical values for Wisconsin streams and rivers (Lyons and Kanehl 1993). The slowest growth was observed at TF1, which had the most smallmouth bass individuals (excluding young-of-year), suggesting that high densities may have contributed to reduced growth.

Comparisons with the reference sites

Although located in different parts of the state, the reference sites seem to be reasonably similar to the Menominee River sites in terms of biotic communities and habitat. There were many fish, arthropod (based on 1996 data), and mussel species in common between the Menominee River and the St. Croix and Chippewa rivers. The St. Croix generally had the richest fauna for all three groups, but values for most measures of community structure overlapped. The gamefish faunas of the Menominee sites and the reference sites were especially similar. Habitat conditions also overlapped substantially among sites, although pool habitat was found only at the two reference sites. For fish and mussels, the Chippewa River site, which had heavily regulated flows, had a community most similar to that of the highly regulated upper subarea of the Menominee River, whereas the St. Croix River site, which had unregulated flows, had a community most similar to that of the lower subarea of the Menominee River, where flows were less heavily regulated than in the upper subarea. For arthropods (1996 data; Appendix 3, 4), the St. Croix had the highest taxa richness, and the Chippewa the lowest, with the sites from the Menominee River system intermediate.

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Table 1. Location of sampling sites. All primary sites are one mile in length; the location information refers to the downstream end of the site.

Code	River Mile	Location
Primary study area of Menominee River, WI/MI (fish, arthropods, mussels)		
QF2	68.3	4.6 miles below Quivers Falls and 1.2 miles above Pemene Falls, centered on Faithorn Landing (MI)
QF1	71.6	1.3 miles below Quivers Falls, 2.8 miles above Faithorn Landing (MI)
SF2	75.6	7.4 miles below Sturgeon Falls Dam, 2.7 miles above Quivers Falls, 1 mile below Saler Landing (WI)
SF1	81.6	1.4 miles below Sturgeon Falls Dam, 1.3 miles below Sturgeon Falls Dam Landing (MI)
KD1	99.9	1.6 miles below Kingsford Dam, 1.9 miles above Aurora Landing (WI)
TF1	106.7	1.2 miles below Twin Falls Dam, 2.4 miles above Kingsford Flowage Landing (MI)
MF1	116.8	2 miles below confluence of Michigamme and Brule rivers, 2.0 miles below Michigamme Falls Dam, and 1.6 miles above landing (WI)
MF0	118.0	0.8 miles below confluence of Michigamme and Brule rivers, 1.0 miles below Michigamme Falls Dam (site extends 0.2 miles into Michigamme River to the base of the dam)

Table 1 continued on next page.

Table 1. Continued.

Code	River Mile	Location
Secondary study area of Menominee River system, WI/MI (arthropods only)		
CTHZ	65.9	Menominee River (WI/MI), at Marinette County (WI) County Highway Z bridge
PIKE	1.6	Pike River (WI), above Pike River road crossing
BRULE	7.9	Brule River (WI/MI), at WI Hwy 141
PINE	10.3	Pine River (WI), at County Highway N bridge
PAINT	13	Paint River (MI), at MI Hwy 69 near Crystal Falls
Reference sites (fish, arthropods, and mussels)		
MC2	95.5	Chippewa River (WI), 2.3 miles below Cornell Dam, 2.8 miles above Willow Island Landing (Old Abe Lake)
MSC5	94.8	St. Croix River (WI/MN), 0.2 miles above Snake River mouth (MN), 0.3 miles above Soderbeck Landing (WI)

Table 2. Comparison of number of individuals, biomass, species richness, diversity, and evenness for fish captured from study sites by combined miniboom and grid shockers during 1996 and 1997.

		Value for each site						
		Menominee					Reference	
Variable	Year	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
Number of individuals	1996	537	682	582	279	412	340	432
	1997	679	780	539	225	155	170	1199
Biomass (kg)	1996	114	193	188	44	32	28	72
	1997	180	176	225	77	38	71	94
Species richness	1996	21	16	17	14	16	12	29
	1997	19	17	17	15	17	14	28
Diversity - number	1996	2.1	2.1	2.5	2.1	1.6	1.4	2.6
	1997	2.2	2.2	2.3	2.0	2.2	1.9	2.3
Diversity - biomass	1996	1.5	1.4	1.6	1.2	1.0	1.6	2.1
	1997	1.5	1.3	1.5	1.2	1.0	1.4	1.8
Evenness - number	1996	0.7	0.8	0.9	0.8	0.6	0.6	0.8
	1997	0.7	0.8	0.8	0.8	0.8	0.7	0.7
Evenness - biomass	1996	0.5	0.5	0.6	0.5	0.4	0.7	0.6
	1997	0.5	0.5	0.5	0.4	0.4	0.5	0.5

Table 3. Fish species captured during 1997 (combined miniboom and grid sampling). An "R" after the name indicates a riverine specialist species, a "G" a gamefish species, and a "T" a Wisconsin threatened species.

	Number of fish captured per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
LAMPREY FAMILY										
Chestnut lamprey (R)	0	0	0	0	0	0	0	0	0	6
Northern brook lamprey (R)	6	4	0	0	0	0	0	0	0	0
STURGEON FAMILY										
Lake sturgeon (G)	0	0	0	0	0	0	0	0	0	1
SALMON FAMILY										
Brown Trout	0	0	0	0	0	0	0	1	0	0
Brook trout	0	0	0	0	0	0	10	3	0	0
MUDMINNOW FAMILY										
Central mudminnow	1	0	0	0	0	0	0	1	1	1
PIKE FAMILY										
Northern pike (G)	5	2	7	3	7	1	1	0	0	4
Muskellunge (G)	0	2	0	0	0	3	0	0	4	0
MINNOW FAMILY										
Spotfin shiner	0	0	0	0	0	0	0	0	0	5
Common carp	0	0	0	0	0	0	0	0	3	0
Brassy minnow	0	0	0	0	0	0	1	0	0	0
Hornyhead chub (R)	140	37	232	3	13	56	6	2	0	42
Golden shiner	0	0	0	0	0	0	2	0	0	0
Common shiner	7	3	2	4	8	54	7	13	0	3
Emerald shiner	0	0	0	0	0	0	0	0	25	0
Spottail shiner	0	0	0	0	0	0	0	0	0	1
Rosyface shiner (R)	0	0	0	0	0	0	0	0	0	0
Mimic shiner	0	0	0	0	0	0	0	0	0	0
Northern redbelly dace	0	0	0	0	0	0	0	3	0	0
Blacknose dace (R)	6	10	6	0	0	0	0	0	0	0
Longnose dace (R)	0	0	0	0	0	0	0	0	0	0
Creek chub (R)	0	0	0	0	1	0	0	0	0	13

Table 3 continued on next page.

Table 3. Continued.

Common name	Number of fish captured per site									
	Menominee River								Reference	
	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
SUCKER FAMILY										
Quillback (R)	0	0	0	0	0	0	0	0	0	0
White sucker	163	151	86	8	48	214	26	36	2	31
Northern hog sucker (R)	1	4	11	45	0	0	0	0	0	185
Silver redhorse (R)	49	13	14	50	0	0	0	0	14	72
River redhorse (R)	0	0	0	0	0	0	0	0	0	1
Golden redhorse (R)	44	30	61	94	0	0	0	0	0	75
Shorthead redhorse	35	12	75	47	0	0	0	0	1	33
Greater redhorse (T)	0	0	0	0	0	0	0	0	0	2
CATFISH FAMILY										
Channel catfish (G)	0	0	0	0	0	0	0	0	0	2
Stonecat (R)	0	0	0	0	0	0	0	0	0	0
Tadpole madtom	0	0	0	0	0	0	2	1	0	0
TROUTPERCH FAMILY										
Troutperch	0	0	0	0	0	0	0	0	3	0
COD FAMILY										
Burbot	0	0	0	0	0	0	0	0	1	2
SUNFISH FAMILY										
Rock bass (G)	22	5	10	18	62	31	4	2	0	12
Green sunfish (G)	0	0	0	0	0	0	0	0	0	0
Bluegill (G)	0	0	0	2	3	0	0	0	0	0
Smallmouth bass (G)	35	27	61	80	35	96	13	16	7	355
Largemouth Bass (G)	2	1	1	0	0	0	1	0	0	9
Black crappie (G)	1	0	0	2	2	0	2	0	0	0

Table 3 continued on next page.

Table 3. Continued.

Common name	Number of fish captured per site									
	Menominee River								Reference	
	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
PERCH FAMILY										
Rainbow darter (R)	0	0	0	0	0	0	0	0	57	0
Fantail darter (R)	0	0	0	0	0	0	0	0	3	0
Johnny darter	42	30	89	81	32	97	42	23	0	37
Yellow perch (G)	0	0	0	0	3	2	1	4	0	17
Logperch	2	17	24	60	1	9	12	11	43	19
Gilt darter (R)(T)	0	0	0	0	0	0	0	0	0	0
Blackside darter (R)	76	31	99	31	0	0	0	0	0	232
Slenderhead darter (R)	0	0	0	0	0	0	0	0	0	7
Walleye (G)	0	1	1	10	4	7	2	4	4	29
DRUM FAMILY										
Freshwater drum	0	0	0	0	0	0	0	0	0	3
SCULPIN FAMILY										
Mottled sculpin	1	0	1	1	6	18	23	3	0	0

1997 Fish Sampling Dates:
QF2: 7, 8, 9 July
QF1: 30 June, 1, 2 July
SF2: 14, 15, 16 July
SF1: 16 July, 23, 24 July
KD1: 17 July, 23, 24 July
TF1: 18, 25, 30 June
MF1: 4, 9, 10 June
MF0: 11, 16, 17 June
MC2: 2, 3, 4 June
MSC5: 21, 22, 23 July

Table 4. Number of individuals, biomass, species richness, diversity and evenness for all species of fish, and number of individuals, biomass, species richness for gamefish and riverine specialist species captured from study sites during 1997. All values are for the combined catch of the miniboom and grid shockers.

	Value for each site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
<u>All species</u>										
Number of individuals	679	380	780	539	225	588	155	123	170	1199
Biomass (kg)	180	81	177	225	77	45	38	54	71	94
Species richness	19	19	17	17	15	12	17	15	14	28
Diversity based on number	2.2	2.1	2.2	2.3	2.0	1.8	2.2	2.1	1.9	2.3
Diversity based on biomass	1.5	1.4	1.3	1.4	1.2	0.6	1.0	0.8	1.4	1.8
Evenness based on number	0.7	0.7	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.7
Evenness based on biomass	0.5	0.5	0.5	0.5	0.4	0.2	0.4	0.3	0.5	0.5
<u>Gamefish species</u>										
Number of individuals	106	38	80	115	115	140	34	30	15	428
Biomass (kg)	11	6	12	18	34	42	13	14	24	11
Species richness	5	6	5	6	7	6	8	6	3	7
<u>Riverine specialist species</u>										
Number of individuals	322	127	423	223	14	56	6	2	76	638
Biomass (kg)	112	56	93	153	<<1	<<1	<<1	<<1	29	73
Species richness	7	7	6	5	2	1	1	1	3	10

Table 5. Number of individuals, biomass, species richness, diversity and evenness for all species of fish, and number of individuals, biomass, species richness for gamefish and riverine specialist species captured from study sites during 1997. All values are for the combined miniboom catches.

	Value for each site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
<u>All species</u>										
Number of individuals	198	98	228	301	134	181	67	77	110	547
Biomass (kg)	178	80	176	224	75	45	36	53	71	93
Species richness	11	9	14	15	12	9	12	8	13	24
Diversity based on number	1.9	1.9	1.8	2.1	1.8	1.5	1.9	1.5	1.9	2.0
Diversity based on biomass	1.5	1.4	1.3	1.4	1.2	0.5	0.9	0.8	1.4	1.8
Evenness based on number	0.8	0.9	0.7	0.8	0.7	0.7	0.8	0.7	0.7	0.6
Evenness based on biomass	0.6	0.6	0.5	0.5	0.5	0.2	0.4	0.4	0.6	0.6
Modified Index of Well Being	8.5	7.7	8.4	9.0	7.1	6.5	6.0	5.5	7.6	9.2
<u>Gamefish species</u>										
Number of individuals	39	18	34	52	90	115	22	20	15	278
Biomass (kg)	11	6	12	18	33	42	12	14	24	11
Species richness	3	3	4	5	7	4	8	4	3	7
<u>Riverine specialist species</u>										
Number of individuals	94	45	97	166	2	13	0	0	18	203
Biomass (kg)	112	56	93	153	<<1	<<1	0	0	29	72
Species richness	4	3	5	5	1	1	0	0	3	7

Table 6. Number of individuals, biomass, species richness, diversity and evenness for all species of fish, and number of individuals, biomass, species richness for gamefish and riverine specialist species captured from study sites during 1997. All values are for the grid shocker catches only.

	Value for each site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
All species										
Number of individuals	481	281	552	238	91	407	88	46	60	652
Biomass (kg)	2.5	0.2	0.7	0.3	1.0	0.6	1.4	0.8	0.1	0.9
Species richness	15	16	14	12	10	9	13	10	4	22
Diversity based on number	1.8	1.7	1.7	1.7	1.7	1.4	1.7	1.8	0.3	2.1
Diversity based on biomass	1.2	2.2	2.0	2.0	1.0	1.9	1.2	0.6	0.4	2.2
Evenness based on number	0.7	0.6	0.6	0.7	0.7	0.6	0.7	0.8	0.2	0.7
Evenness based on biomass	0.4	0.8	0.8	0.8	0.4	0.8	0.5	0.3	0.3	0.7
Gamefish species										
Number of individuals	67	20	46	63	25	25	12	10	0	150
Biomass (kg)	0.2	0.1	0.3	0.2	0.9	0.2	1.2	0.7	0	0.3
Species richness	4	6	4	5	3	4	4	4	0	6
Riverine specialist species										
Number of individuals	228	82	326	57	12	43	6	2	58	435
Biomass (kg)	1.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.4
Species richness	5	4	4	3	2	1	1	1	2	9

Table 7. Total length frequency by inch group for smallmouth bass caught from study sites during 1997. The minimum legal size for harvest was 14" for MC2 and 12" for all other stations.

	Catch of smallmouth bass									
	Menominee River								Reference	
Inch group	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
< 4.0	53	16	34	60	1	9	2	1	0	174
4.0 - 4.9	2	1	1	4	0	0	0	0	0	2
5.0 - 5.9	0	0	0	2	0	4	1	1	0	14
6.0 - 6.9	1	0	0	0	1	3	0	0	1	2
7.0 - 7.9	0	1	3	0	1	8	0	0	0	0
8.0 - 8.9	1	0	4	0	0	9	0	0	0	2
9.0 - 9.9	1	1	1	0	4	12	0	1	1	3
10.0 - 10.9	7	3	3	1	6	9	0	1	1	0
11.0 - 11.9	4	1	8	3	6	6	1	1	1	1
12.0 - 12.9	1	2	2	1	2	1	0	0	2	1
13.0 - 13.9	1	0	0	0	2	9	0	1	0	0
14.0 - 14.9	3	1	2	1	4	13	2	4	0	0
15.0 - 15.9	0	0	2	4	2	3	2	5	0	0
16.0 - 16.9	1	0	1	2	2	4	0	1	0	0
17.0 - 17.9	0	1	0	1	4	6	3	0	1	0
18.0 - 18.9	0	0	0	1	0	0	2	0	0	0
19.0 - 19.5	0	0	0	0	0	0	0	1	0	0
Total	77	27	61	80	35	96	13	17	7	199
% Legal size	8	15	11	13	46	38	69	71	14	0.5

1997 Fish Sampling Dates:
QF2: 7, 8, 9 July
QF1: 30 June, 1, 2 July
SF2: 14, 15, 16 July
SF1: 16 July, 23, 24 July
KD1: 17 July, 23, 24 July
TF1: 18, 25, 30 June
MF1: 4, 9, 10 June
MF0: 11, 16, 17 June
MC2: 2, 3, 4 June
MSC5: 21, 22, 23 July

Table 8. Mean, standard deviation (SD), and sample size (N) for backcalculated total lengths (inches) at age for smallmouth bass from the study sites sites in 1997.

	Value for each site									
	Menominee River								Reference	
Inch group	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
Age I										
Mean	3.4	3.9	3.5	3.6	3.8	3.5	3.5	3.7	3.5	3.5
SD	0.4	1.0	0.3	0.5	1.1	0.6	0.7	0.4	0.7	0.4
N	14	11	27	20	32	78	9	14	6	25
Age II										
Mean	7.2	7.4	7.3	6.9	7.2	6.2	6.9	7.1	6.9	7.1
SD	0.8	1.2	0.9	1.4	1.2	1.0	1.3	1.2	1.3	0.3
N	21	10	26	14	33	77	9	14	6	7
Age III										
Mean	10.4	10.5	10.7	9.8	10.4	8.9	10.2	10.0	10.6	10.5
SD	1.0	1.2	0.9	1.5	1.2	1.2	1.2	1.1	1.1	0.1
N	19	8	18	14	32	69	8	14	5	2

Table 9. Habitat characteristics of study sites calculated from the 26 electroshocking grid locations. For cover density, "L" = limited and "M" = moderate.

	Value for each site									
	Menominee River								Reference	
Habitat variable	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
Macrohabitat types (%)										
Moderate pool	0	0	0	0	0	8	0	0	0	62
Shallow pool	0	0	0	0	0	0	0	0	0	15
Shallow run	0	69	31	8	0	15	77	73	60	19
Deep run	100	31	69	92	100	77	23	27	32	4
Bank vegetation/land use (%)										
Marsh	0	0	0	0	7	0	0	0	0	0
Grass	31	7	47	43	3	18	17	9	10	44
Shrubs	11	0	14	0	15	4	0	9	10	0
Forest	58	93	42	57	75	78	83	82	65	56
Cover types (%)										
Aquatic vegetation	10	14	0	0	0	0	14	3	0	40
Large woody debris	55	69	59	70	35	25	31	27	0	29
Boulders	17	14	35	6	13	36	21	17	100	31
Overhanging vegetation	17	3	6	24	52	39	34	53	0	0
Median cover density	L	L	M	L/M	L	M	L	L/M	L/M	M
Substrate Means (%)										
Detritus	<1	<1	0	0	0	3	0	0	<1	8
Silt	41	36	2	24	50	7	4	11	<1	7
Sand	34	37	8	46	33	40	23	38	21	53
Gravel	3	6	29	12	7	27	15	14	27	7
Rubble/cobble	11	16	51	11	6	19	51	26	31	14
Boulder	10	3	10	4	<1	4	7	11	18	11
Bedrock	0	1	0	4	0	0	0	0	2	1
Mean depth (m)										
Bank side of grid	0.18	0.14	0.13	0.14	0.20	0.20	0.23	0.15	0.14	0.14
Channel side of grid	0.49	0.39	0.35	0.45	0.60	0.50	0.46	0.44	0.36	0.40
Current velocity (m/sec)	0.12	0.10	0.15	0.11	0.10	0.09	0.34	0.33	0.07	0.11

ble 10. Physical and chemical measurements at Menominee River macroinvertebrate collection sites during June 1997. Primary sites TF1 and MF1 were not sampled. Codes for water level stage are: N = normal bankfull, L = low, exposed banks, and V = very low, large expanses of exposed bank. "ns" indicates "not sampled".

	Menominee River primary sites						Menominee River basin secondary sites					Reference sites	
Attribute	QF2	QF1	SF2	SF1	KD1	MFO	CTHZ	PIKE	BRULE	PINE	PAINT	MC2	MSC5
Stage	N	L	N	N/L	L	L	N	N	N	N	L	L*	V
Temp (°C)	24.5	25.0	23.9	ns	22.8	22.0	24.0	22.9	24.0	23.3	24.0	20.8	17.0
pH (units)	8.02	8.01	7.99	7.87	8.02	8.01	8.06	8.26	8.33	7.96	8.00	7.48	8.42
Conductivity (umhos/cm)	174	194	193	181	126	221	179	208	278	143	136	79	157
Date - June	24	24	24	24	24	23	24	23	23	23	23	19	17

* Water level was much higher a few hours earlier.

Table 11. Habitat attributes and summary of microhabitat samples at macroinvertebrate collection sites during June 1997. Flow codes are: VS = very slow, S = slow, M/S = moderate to slow, M = moderate, F = fast, and VF = very fast. Substrate data represent percent cover; totals may exceed 100% due to mixed or layered substrates. Primary sites TF1 and MF1 were not sampled. "nd" indicates no data.

	Menominee River primary sites						Menominee River basin secondary sites					Reference sites	
Attribute	QF2	QF1	SF2	SF1	KD1	MFO	CTHZ	PIKE	BRULE	PINE	PAINT	MC2	MSC5
Deep Water Run or Riffle													
Flow	M	F	F	VF	S	VF	F	VF	F	F	M	S	M/S
Substrate (%)													
Bedrock	0	0	0	0	0	5	0	5	0	0	0	15	0
Boulder	5	5	1	15	5	15	5	10	10	5	15	50	0
Rubble	10	15	25	45	25	50	50	50	40	50	35	30	25
Gravel	25	50	50	30	15	20	25	20	30	25	40	5	35
Sand	40	15	10	10	30	5	10	10	5	10	0	1	15
Silt	10	10	10	0	25	1	10	5	5	10	5	1	15
Clay	0	0	0	0	0	0	0	0	0	0	0	0	0
Detritus	10	5	5	0	5	1	0	0	10	0	5	0	1
Muck	10	0	0	0	0	0	0	0	0	0	0	0	10
Vegetation	0	0	0	0	0	0	0	0	0	0	0	0	1
Shoreline Channel Border													
Flow	S	M	S	F	VS	F	F	ns	M/S	ns	M/S	VS	S
Substrate (%)													
Bedrock	0	0	0	0	0	5	0	ns	0	ns	0	20	0
Boulder	5	5	25	5	5	5	15	ns	5	ns	25	30	0
Rubble	10	15	15	50	5	50	35	ns	50	ns	35	20	10
Gravel	5	25	35	25	10	20	15	ns	25	ns	25	15	30
Sand	40	25	15	20	55	10	10	ns	25	ns	25	10	20
Silt	25	15	10	5	25	0	5	ns	5	ns	5	5	35
Clay	5	5	0	0	0	0	0	ns	0	ns	0	0	0
Detritus	5	5	1	1	1	0	5	ns	5	ns	5	1	5
Muck	5	0	0	0	0	0	5	ns	0	ns	0	0	0
Vegetation	0	5	0	0	0	0	10	ns	5	ns	5	0	1
Number of microhabitat samples													
Wood	3	3	3	0	1	1	1	ns	1	ns	1	0	3
Rock	3	3	3	3	3	3	1	ns	1	ns	1	3	3
Vegetation	0	0	0	0	0	0	1	ns	1	ns	1	0	3
Sand-silt	1	1	0	0	3	1	0	ns	0	ns	0	4	0

ɔle 12. Abundance and relative composition (% of total insects) of aquatic insects by order sites during June 1997 as recorded in quantitative 0.084 m^2 Hess samples. Also shown are the relative abundances of various other aquatic fauna. Primary sites TF1 and MF1 were not sampled. "ns" equals "not sampled"; "sd" equals "sample destroyed" owing to poor preservation.

	Menominee River primary sites						Menominee River basin secondary sites					Reference sites	
Order	QF2	QF1	SF2	SF1	KD1	MFO	CTHZ	PIKE	BRULE	PINE	PAINT	MC2	MSC5
Ephemeroptera	30	58	24	38	6	46	39	ns	55	ns	sd	15	52
Plecoptera	1	5	1	9	0	8	0	ns	3	ns	sd	1	1
Trichoptera	3	8	1	3	0	2	11	ns	5	ns	sd	0	6
Odonata	0	0	1	0	0	0	0	ns	0	ns	sd	0	1
Megaloptera	0	0	0	0	0	0	0	ns	1	ns	sd	0	0
Coleoptera	6	4	8	36	2	8	17	ns	14	ns	sd	4	9
Diptera	55	25	66	14	83	36	33	ns	22	ns	sd	79	32
Heteroptera	6	0	0	0	8	0	0	ns	0	ns	sd	0	0
Total Abundance (per sample)	105	251	127±19	159	241	332	18*	ns	153	ns	sd	73	130±20
No. sq. meter	1250	2990	1510	1890	2870	3950	210	ns	1820	ns	sd	870	1550

ʼ ɯ abundance may be partially due to large rocks in sample area that resulted in a poor seal with the sediments and a loss of ɔ.ɟanisms.

Table 13. Relative abundance and composition (% of total insects) of aquatic insects by order during June 1997 as recorded in semiquantitative, composite, D-frame kicknet samples. Numbers in parentheses represent combined composites of mixed deep and shoreline habitats. Primary sites TF1 and MF1 were not sampled.

	Menominee River primary sites						Menominee River basin secondary sites					Reference sites	
Order/Location	QF2	QF1	SF2	SF1	KD1	MFO	CTHZ	PIKE	BRULE	PINE	PAINT	MC2	MSC5
Ephemeroptera													
Deep	35	62	49-62	49	63	58	62	[33]	41	[67]	90	33-100	45-56
Shoreline	46	55	17-45	32	57	58	27		55		61	0-29	3-26
Plecoptera													
Deep	3	5	0-1	26	1	4	6	[3]	4	[4]	1	0	1-7
Shoreline	0	0	0-1	3	5	0	1		5		0	0-7	0-1
Trichoptera													
Deep	3	4	3-12	9	2	13	4	[16]	22	[4]	1	0-25	20-21
Shoreline	0	2	0-1	0	0	4	2		12		0	0	1-6
Odonata													
Deep	1	1	1-6	2	1	0	4	[3]	1	[2]	1	0	1
Shoreline	1	0	0-1	0	0	0	0		3		6	0	1-8
Megaloptera													
Deep	0	0	1-8	0	1	0	0	[0]	2	[2]	0	0	0
Shoreline	0	0	0	0	0	0	0		5		0	0	0
Coleoptera													
Deep	6	6	0-8	5	9	2	11	[18]	6	[7]	3	0-17	1-11
Shoreline	1	7	6-33	6	2	4	2		2		0	3-20	4-23
Diptera													
Deep	38	22	12-33	9	11	22	14	[26]	22	[13]	5	0-50	7-26
Shoreline	49	36	12-69	42	20	31	65		6		17	20-94	35-92
Heteroptera													
Deep	13	0	0	0	13	0	0	[0]	0	[1]	0	0	0-1
Shoreline	4	0	7-16	16	14	4	4		12		17	3-40	1
Total numbers in sample:													
Deep	68	311	24-77	57	213	372	84	[208]	203	[285]	427	3-6	177-360
Shoreline	138	44	95-163	31	44	26	251		65		18	5-36	112-414

. ɔle 14. Relative abundance and community composition of aquatic insect orders by microhabitat type during June 1997. Data represent number of samples of each microhabitat type (N), the mean number (X) and standard error (SE) of insects at each site by microhabitat type, and the relative percentage of the three dominant aquatic insect orders in each microhabitat, where E = Ephemeroptera, P = Plecoptera, T = Trichoptera, O = Odonata, M = Megaloptera, C = Coleoptera, D = Diptera, and H = Heteroptera (Hemiptera). Primary sites TF1 and MF1 were not sampled.

	Wood		Rock		Vegetation		Silt and sand	
Site	(N)X̄±SE	% Composition	(N)X̄±SE	% Composition	(N)X̄±SE	% Composition	(N)X̄±1SE	% Composition
Primary sites:								
QF2	(3)12.3±1.9	59E-19T-8D	(3)11.0±0.6	52D-35E-10T	Not present		(1)11.0	55E-27H-9P/O
QF1	(3)28.3±1.5	76E-13P-8T	(3)21.3±5.5	81E-12T-3P	Not present		(1)3.0	100E
SF2	(3)20.3±9.4	54T-26E-7P	(3)16.7±5.2	69E-10D-8T	Not present		Not present	
SF1	Not present		(3)17.3±1.9	42P-23E-17T	Not present		Not present	
KD1	(1)29.0	90E-7T-3C	(3)15.0±0.7	68E-14T-14C	Not present		(3)10.0±0.6	70E-23D-3OM
MFO	(1)7.0	57P-29E-14C	(3)21.0±2.6	68E-19T-6P	Not present		(1)4.0	50D-25E
Secondary sites:								
CTHZ	(1)19.0	42E-32P-21T	(1)25.0	48E-40T-8P	(1)51.0	92E-8P	Not present	
P[illegible]	Not sampled		Not sampled		Not sampled		Not sampled	
[illegible]	(1)40.0	75T-12E-8D	(1)15.0	44T-25P-19E	(1)23.0	39T-35O-22E	Not present	
PINE	Not sampled		Not sampled		Not sampled		Not sampled	
PAINT	(1) 8.0	50E-50T	(1)21.0	81E-5T-5O	(1) 6.0	50D-25E-25H	Not present	
Reference sites:								
MC2	Not present		(3)9.0±1.0	72E-17D-11T	Not present		(4)9.8±4.3	58H-29E-10D
MSC5	(3)17.7±3.8	46E-15D-13C	(3)11.7±0.9	53E-24T-15P	(3)16.3±1.5	36E-17D-15C	(3)14.3±2.0	57E-26D-5T/H

Table 15. Community composition (% of total individuals) represented by EPT (Ephemeroptera-Plecoptera-Trichoptera) taxa by collection technique during June 1997. Primary sites TF1 and MF1 were not sampled. [] indicates a pooled deep and shallow composite sample; "ns" equals "not sampled"; "sd" equals "sampled destroyed" owing to poor preservation; "none" indicates that the microhabitat was not present at the site.

	Menominee River primary sites						Menominee River basin secondary sites					Reference sites	
Attribute	QF2	QF1	SF2	SF1	KD1	MFO	CTHZ	PIKE	BRULE	PINE	PAINT	MC2	MSC5
Quantitative ($0.084\ m^2$ Hess)	29	65	22	50	6	55	50	ns	60	ns	sd	15	57
Composites (D-frame net)													
Deep	41	71	53-75	84	66	76	71	[52]	68	[75]	91	*	66-84
Shoreline	46	57	17-47	35	61	62	30		72		61	0-36	4-33
Timed hand-picks of microhabitats;													
Wood	81	98	87	none	93	86	95	ns	92	ns	100	none	68
Rock	45	97	78	83	80	94	96	ns	87	ns	86	56	90
Vegetation	none	none	none	none	none	none	100	ns	61	ns	17	none	59
Silt & Sand	58	33	none	none	70	25	none	ns	none	ns	none	23	63
Pooled composite and microhabitat samples													
1996 **	ns	76	80	ns	79	ns	83	56	79	ns	79	68	44

* too few insects collected to calculate

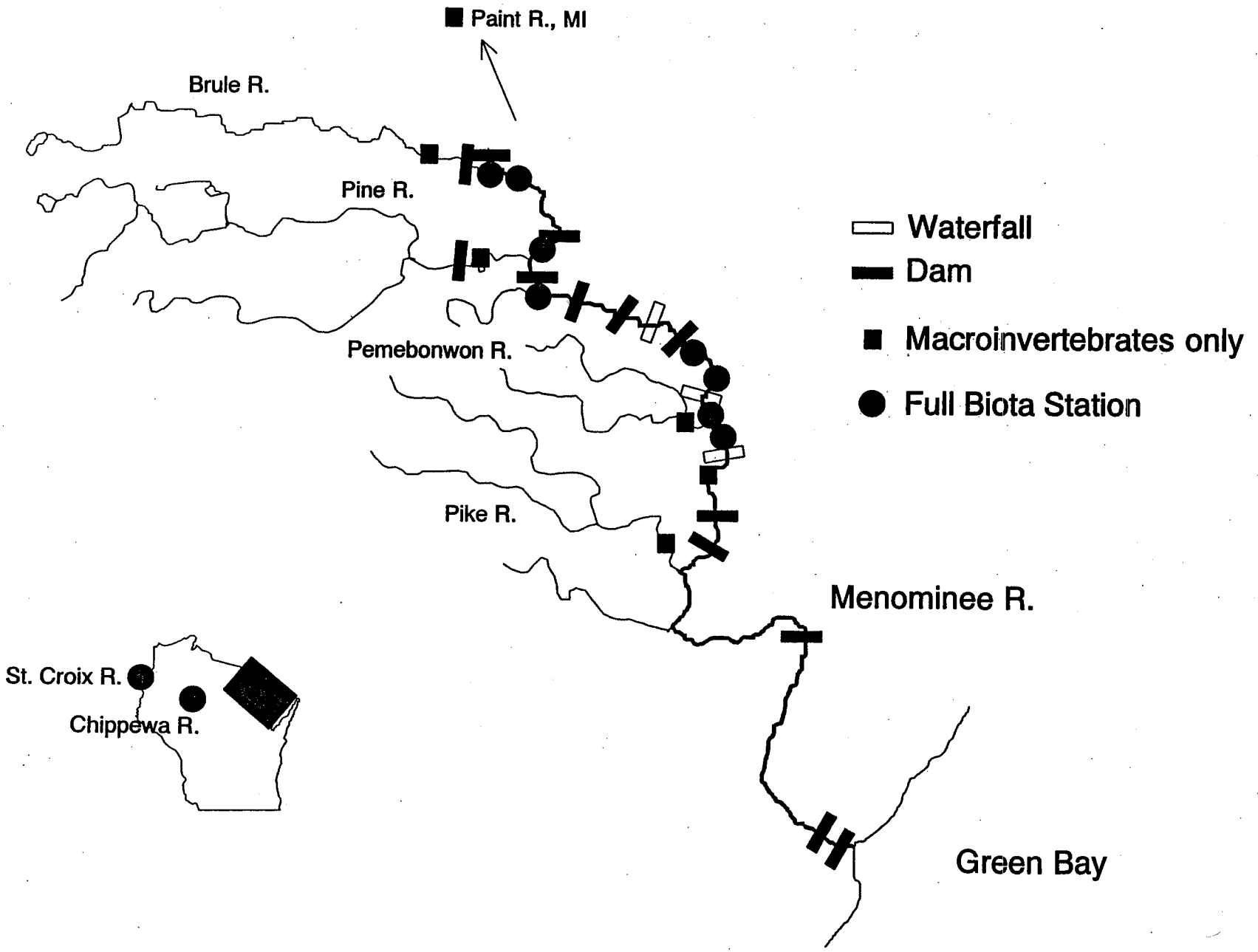
** from Table 10, 1996 Progress Report

Table 16. Freshwater mussels collected from the primary study sites on the Menominee River. The number of individuals combines both live and dead specimens (shells); over 99% were alive. A "SC" indicates a special concern and "E" and endangered species for Wisconsin; "L" = large river species, "M" = medium stream/small river species, "S" = small stream species, and "G" = habitat generalist (from Cummins and Mayer 1992).

	Number of individuals per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
Mucket (L)	1	1	0	0	0	0	0	0	0	221
Elktoe (SC/M)	2	3	30	2	0	0	0	0	0	1
Threeridge (G)	1	3	1	2	0	0	0	0	0	3
Giant floater (G)	5	6	0	16	244	105	55	137	0	0
Cylindr. papershell (S)	0	0	0	0	10	0	18	2	0	0
Purple wartyback (L/E)	0	0	0	0	0	0	0	0	3	1
Spike (G)	23	33	3	2	0	0	0	0	0	85
Wabash pigtoe (G)	22	12	1	6	0	0	0	0	0	6
Plain pocketbook (G)	18	22	20	4	0	0	0	0	0	33
Cr. heelsplitter (SC/S)	1	0	0	0	2	0	0	0	0	2
Fluted-shell (L)	104	141	69	14	1	0	0	0	0	4
Fatmucket (G)	86	209	131	168	44	181	64	14	0	22
Fragile papershell (S)	0	0	0	0	0	0	0	0	0	3
Black sandshell (L)	14	25	9	15	0	0	0	0	0	23
Hickory nut (L)	0	0	0	0	0	0	0	0	0	14
Round pigtoe (SC/L)	11	3	3	1	0	0	0	0	1	3
Pink heelspliter (L)	0	0	0	0	0	0	0	0	0	3
Pimpleback (L)	0	0	0	0	0	0	0	0	0	10
Squawfoot (G)	0	0	0	1	0	0	0	0	0	3
Deertoe (L)	0	0	0	0	0	0	0	0	0	1
Total individuals	288	458	267	231	301	286	137	153	4	438
Total species	12	11	9	11	5	2	3	3	2	18
Rear sampled	96	96	96	96	96	96	96	97	97	97

Figure 1. Map of Menominee River showing study sites, dams, and waterfalls. The inset map of Wisconsin shows the location of the St. Croix River and Chippewa River reference sites.

1996-97 Sampling



Appendix 1 - Scientific names of fishes and mussels mentioned in this report.

FISHES	
LAMPREY FAMILY	PETROMYZONTIDAE
Chestnut lamprey	*Ichthyomyzon castaneus*
Northern brook lamprey	*Ichthyomyzon fossor*
STURGEON FAMILY	ACIPENSIRIDAE
Lake sturgeon	*Acipenser fulvescens*
SALMON FAMILY	SALMONIDAE
Brown trout	*Salmo trutta*
Brook trout	*Salvelinus fontinalis*
MUDMINNOW FAMILY	UMBRIDAE
Central mudminnow	*Umbra limi*
PIKE FAMILY	ESOCIDAE
Northern pike	*Esox lucius*
Muskellunge	*Esox masquinongy*
MINNOW FAMILY	CYPRINIDAE
Spotfin shiner	*Cyprinella spiloptera*
Common carp	*Cyprinus carpio*
Brassy minnow	*Hybognathus hankinsoni*
Golden shiner	*Notemigonus crysoleucas*
Hornyhead chub	*Nocomis biguttatus*
Golden shiner	*Notemigonus crysoleucas*
Common shiner	*Luxilus cornutus*
Emerald shiner	*Notropis atherinoides*
Spottail shiner	*Notropis hudsonius*
Rosyface shiner	*Notropis rubellus*
Mimic shiner	*Notropis volucellus*
Northern redbelly dace	*Phoxinus eos*
Blacknose dace	*Rhinichthys atratulus*
Longnose dace	*Rhinichthys cataractae*
Creek chub	*Semotilus atromaculatus*

Appendix 1 continued on next page.

Appendix 1. Continued.

SUCKER FAMILY	CATOSTOMIDAE
Quillback	*Carpiodes cyprinus*
White sucker	*Catostomus commersoni*
Northern hog sucker	*Hypentelium nigricans*
Silver redhorse	*Moxostoma anisurum*
River redhorse	*Moxostoma carinatum*
Golden redhorse	*Moxostoma erythrurum*
Shorthead redhorse	*Moxostoma macrolepidotum*
Greater redhorse	*Moxostoma valenciennesi*
CATFISH FAMILY	ICTALURIDAE
Channel catfish	*Ictalurus punctatus*
Stonecat	*Noturus flavus*
Tadpole madtom	*Noturus gyrinus*
TROUTPERCH FAMILY	PERCOPSIDAE
Troutperch	*Percopsis omiscomaycus*
COD FAMILY	GADIDAE
Burbot	*Lota lota*
SUNFISH FAMILY	CENTRARCHIDAE
Rock bass	*Ambloplites rupestris*
Green sunfish	*Lepomis cyanellus*
Bluegill	*Lepomis macrochirus*
Smallmouth bass	*Micropterus dolomieu*
Largemouth Bass	*Micropterus salmoides*
Black crappie	*Pomoxis nigromaculatus*
PERCH FAMILY	PERCIDAE
Rainbow darter	*Etheostoma caeruleum*
Fantail darter	*Etheostoma flabellare*
Johnny darter	*Etheostoma nigrum*
Yellow perch	*Perca flavescens*
Logperch	*Percina caprodes*
Gilt darter	*Percina evides*

Appendix 1 continued on next page.

Appendix 1. Continued.

PERCH FAMILY	PERCIDAE (continued)
Blackside darter	*Percina maculata*
Slenderhead darter	*Percina phoxocephala*
Walleye	*Stizostedion vitreum*
DRUM FAMILY	SCIAENIDAE
Freshwater drum	*Aplodinotus grunniens*
SCULPIN FAMILY	COTTIDAE
Mottled sculpin	*Cottus bairdi*
MUSSELS	UNIONIDAE
Mucket	*Actinonaias ligamentina*
Elktoe	*Alasmidonta marginata*
Threeridge	*Amblema plicata*
Giant floater	*Anodonta grandis*
Cylindrical papershell	*Anodontoides ferussacianus*
Purple wartyback	*Cyclonaias tuberculata*
Spike	*Elliptio dilatata*
Wabash pigtoe	*Fusconaia flava*
Plain pocketbook	*Lampsilis cardium*
Creek heelsplitter	*Lasmigona compressa*
Fluted-shell	*Lasmigona costata*
Fatmucket	*Lampsilis siliquoidea*
Fragile papershell	*Leptodea fragilis*
Black sandshell	*Ligumia recta*
Hickorynut	*Obovaria olivaria*
Round pigtoe	*Pleurobema coccineum (=sintoxia)*
Pink heelspliter	*Potamilus alatus*
Pimpleback	*Quadrula pustulosa*
Squawfoot	*Strophitus undulatus*
Deertoe	*Truncilla truncata*

Appendix 2. Fish species captured during July/August 1996 (combined miniboom and grid sampling) and in late September 1996 (in parentheses; daytime mini-boom from Menominee River only) from the study sites. An "R" after the scientific name indicates a riverine specialist species, a "G" indicates a gamefish species, and a "T" indicates a state of Wisconsin threatened species.

		Number of fish captured per site						
		Menominee River					Reference	
Common name	Scientific name	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
LAMPREY FAMILY	PETROMYZONTIDAE							
Chestnut lamprey	*Ichthyomyzon castaneus* (R)	0	0	0	0	0	0	3
Northern brook lamprey	*Ichthyomyzon fossor* (R)	2	0	0	0	0	0	0
MUDMINNOW FAMILY	UMBRIDAE							
Central mudminnow	*Umbra limi*	3	0	0	0	0	0	2
PIKE FAMILY	ESOCIDAE							
Northern pike	*Esox lucius* (G)	5(1)	14(2)	5(4)	17(4)	6	0	7
Muskellunge	*Esox masquinongy* (G)	0	0	0	0	1	1	0
MINNOW FAMILY	CYPRINIDAE							
Common carp	*Cyprinus carpio*	0	0	0	0	0	0	2
Hornyhead chub	*Nocomis biguttatus* (R)	195(13)	206(46)	14(3)	8(3)	9(5)	0	8
Common shiner	*Luxilus cornutus*	32	3(11)	55(54)	40(2)	5(10)	0	7
Emerald shiner	*Notropis atherinoides*	0	0	0	0	0	1	0
Rosyface shiner	*Notropis rubellus* (R)	0	0	44(19)	0	0	0	0
Mimic shiner	*Notropis volucellus*	0	0	0	0	0	0	2
Northern redbelly dace	*Phoxinus eos*	0	0	0	0	1	0	0
Blacknose dace	*Rhinichthys atratulus*	0	0	0	0(1)	0	0	0
Longnose dace	*Rhinichthys cataractae* (R)	0	0	0	4	2	0	0
SUCKER FAMILY	CATOSTOMIDAE							
Quillback	*Carpiodes cyprinus* (R)	0	0	0	0	0	0	9
White sucker	*Catostomus commersoni*	23(9)	54(1)	10(1)	63(4)	232	0	1
Northern hog sucker	*Hypentelium nigricans* (R)	1	7(10)	18(15)	0	0	0	18
Silver redhorse	*Moxostoma anisurum* (R)	35(12)	14(2)	33(1)	0	0	3	18
River redhorse	*Moxostoma carinatum* (R)(T)	0	0	0	0	0	0	1
Golden redhorse	*Moxostoma erythrurum* (R)	49(36)	59(11)	78(36)	0	0	0	51
Shorthead redhorse	*Moxostoma macrolepidotum*	27(6)	81(27)	53(9)	0	0	7	59
Greater redhorse	*Moxostoma valenciennesi* (T)	0	0	0	0	0	0	1

Appenidx 2 continued on next page.

Appendix 2. Continued.

Common name	Scientific name	Number of fish captured per site						
		Menominee River					Reference	
		QF2	SF2	SF1	KD1	MF1	MC2	MSC5
CATFISH FAMILY	**ICTALURIDAE**							
Stonecat	*Noturus flavus* (R)	0	0	0	0	0	0	1
Tadpole madtom	*Noturus gyrinus*	1	0	0	0	1	1	0
COD FAMILY	**GADIDAE**							
Burbot	*Lota lota*	0	0	0	0	2	0	2
SUNFISH FAMILY	**CENTRARCHIDAE**							
Rock bass	*Ambloplites rupestris* (G)	8(6)	6	4(2)	37(1)	15	1	16
Green sunfish	*Lepomis cyanellus* (G)	1	0	0	0	0	0	0
Bluegill	*Lepomis macrochirus* (G)	5(1)	2	13(1)	3	0	0	0
Smallmouth bass	*Micropterus dolomieu* (G)	35(26)	71(36)	54(27)	20(3)	18(6)	48	81
Largemouth Bass	*Micropterus salmoides* (G)	1(1)	0	0	1	0	0	4
Black crappie	*Pomoxis nigromaculatus* (G)	0	0	2	1	0	0	1
PERCH FAMILY	**PERCIDAE**							
Rainbow darter	*Etheostoma caeruleum* (R)	0	0	0	0	0	52	0
Johnny darter	*Etheostoma nigrum*	84	30(14)	33(3)	70(7)	22(14)	24	2
Yellow perch	*Perca flavescens* (G)	1(1)	0	0	3	19(1)	0	2
Logperch	*Percina caprodes*	2	7(17)	102(67)	0	4(4)	189	38
Gilt darter	*Percina evides* (R)(T)	0	0	0	0	0	0	1
Blackside darter	*Percina maculata* (R)	22(13)	121(17)	53(25)	0	0	1	44
Slenderhead darter	*Percina phoxocephala* (R)	0	0	0	0	0	0	8
Walleye	*Stizostedion vitreum* (G)	5(7)	5	11(3)	5(1)	3(5)	12	10
DRUM FAMILY	**SCIAENIDAE**							
Freshwater drum	*Aplodinotus grunniens*	0	0	0	0	0	0	3
SCULPIN FAMILY	**COTTIDAE**							
Mottled sculpin	*Cottus bairdi*	0(1)	2	0	7(1)	72(24)	0	0

Appendix 3. Aquatic arthropods collected from the primary and secondary study areas of the Menominee River system (all sites combined) and the Chippewa River (MC2) and St. Croix River (MSC5) reference sites in 1996.

	Number caught per river			
	Menominee		Chippewa	St. Croix
Taxon	Primary	Secondary	MC2	MSC5
Ephemeroptera				
Acentrella carolina	5	10	0	1
Acerpenna pygmaea	2	0	0	0
Anthopotamus **sp.**	0	0	0	6
Anthopotamus verticis	0	1	0	9
Baetidae sp.	1	1	0	0
Baetis **sp.**	0	1	0	0
Baetis armillatus	1	1	0	6
Baetis brunneicolor	0	2	0	0
Baetis dubius	0	23	0	19
Baetis flavistriga	12	38	0	0
Baetis intercalaris	3	67	0	23
Baetis tricaudatus	1	0	0	0
Baetisca obesa	0	0	0	1
Brachycercus **sp.**	0	0	0	6
Caenis latipennis	16	0	2	1
Callibaetis **sp.**	0	0	0	1
Centroptilum alamance	1	0	0	2
Epeorus vitrius	0	2	0	1
Ephemera **sp.**	1	0	0	0
Ephemera simulans	3	1	0	0
Ephemerella invaria	0	1	0	3
Ephemerella needhami	0	13	0	3
Ephemerellidae sp.	0	1	0	0
Ephemeridae sp.	0	0	0	4
Ephoron album	5	1	0	0
Eurylophella bicolor	94	3	0	0
Heptageniidae sp.	3	1	0	0
Hexagenia limbata	23	0	0	0
Isonychia **sp.**	3	19	0	5
Labiobaetis propinquus	59	41	0	1
Leptophlebia **sp.**	0	1	0	0
Leucrocuta hebe	37	15	1	4
Paraleptophlebia **sp.**	0	66	0	0
Procloeon **sp.**	0	0	0	1

Appendix 3 continued on next page.

Appendix 3. Continued.

Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Ephemeroptera (continued)				
Pseudocloeon sp.	0	0	0	2
Rhithrogena jejuna	0	0	0	8
Serratella deficiens	0	8	0	0
Siphlonurus sp.	0	0	0	1
Stenacron interpunctatum	2	0	1	8
Stenonema sp.	6	11	2	0
Stenonema exiguum	0	0	0	3
Stenonema femoratum	2	0	1	0
Stenonema mediopunctatum	29	25	0	1
Stenonema modestum	0	28	0	2
Stenonema pulchellum	14	5	0	1
Stenonema terminatum	73	8	0	8
Stenonema vicarium	0	1	0	0
Timpanoga simplex	0	1	0	0
Plecoptera				
Acroneuria sp.	1	19	0	3
Agnetina capitata	0	35	0	4
Isoperla dicala	1	1	0	1
Isoperla frisoni	0	2	0	3
Neoperla stewarti	1	3	0	1
Paragnetina media	0	3	0	0
Perlesta decipiens	11	12	0	13
Pteronarcys sp.	0	2	0	0
Trichoptera				
Agraylea sp.	0	0	0	1
Anabolia sp.	1	0	0	0
Brachycentrus americanus	0	2	0	0
Ceratopsyche sp.	2	0	1	0
Ceratopsyche morosa bifida	0	37	1	8
Cheumatopsyche sp.	13	8	3	7
Chimarra socia	0	4	0	0
Chimarra obscura	0	1	0	0
Heliopsyche borealis	0	0	0	2
Hydropsyche phalerata	0	26	0	21

Appendix 3 continued on next page.

Appendix 3. Continued.

Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Trichoptera (continued)				
Hydropsyche scalaris	0	4	0	1
Hydropsychidae pupae	0	0	0	1
Lepidostoma **sp.**	0	4	0	2
Nectopsyche candida	0	0	0	1
Nectopsyche pavida	0	0	0	1
Neophylax **sp.**	0	0	0	2
Oecetis **sp.**	0	0	0	3
Oecetis persimilis	0	0	0	3
Paranytiophylax	0	0	0	1
Philopotamidae pupae	0	0	0	1
Polycentropus **sp.**	1	1	0	0
Pyncnopsyche **sp.**	5	1	0	4
Setodes **sp.**	0	1	0	0
Triaenodes injustus	1	1	0	2
Coleoptera				
Coleoptera sp.	3	0	0	0
Curculionidae sp.	7	0	1	1
Dubiraphia **sp.**	3	0	0	7
Dubiraphia minima	1	0	0	5
Dytiscidae sp.	1	0	0	0
Ectopria **sp.**	3	0	1	0
Gyrinidae sp.	0	0	0	1
Haliplus immaculicollis	2	0	0	0
Machronychus glabratus	8	1	0	4
Optioservus **sp.**	0	1	0	0
Optioservus trivittatus	2	17	0	3
Peltodytes edentulus	1	0	0	1
Psephenus herricki	10	10	0	0
Stenelmis **sp.**	4	35	1	0
Stenelmis bicarinata	8	19	0	0
Stenelmis mera	0	0	0	1
Megaloptera				
Chauliodes	1	5	0	0

Appendix 3 continued on next page.

Appendix 3. Continued.

Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Heteroptera				
Corixidae sp.	35	1	0	25
Neoplea striola	1	0	0	0
Notonecta sp.	1	0	0	0
Palmacorixa sp.	0	0	0	2
Ranatra sp.	1	0	0	0
Diptera				
Antocha sp.	9	15	0	0
Atherix sp.	0	9	0	0
Ceratopogonidae sp.	5	2	0	7
Chironomidae (subtotal)	141	40	0	188
Unidentified Chironomidae	(69)	(5)	(0)	(46)
Orthocladinae sp.	(3)	(11)	(0)	(22)
Tanypodinae sp.	(6)	(6)	(0)	(10)
Clinotanypus sp.	(2)	(0)	(0)	(0)
Procladius sp.	(5)	(0)	(0)	(0)
Chironominae - Tanytarsini	(32)	(2)	(0)	(56)
Chironominae - Chironomini	(24)	(16)	(2)	(54)
Chrysops sp.	5	3	0	2
Empididae sp.	0	6	0	0
Hexatoma sp.	0	2	0	0
Simuliidae sp.	4	0	0	0
Stratiomyidae sp.	1	0	0	0
Tipulidae sp.	0	1	1	1
Odonata				
Unidentified Anisoptera	3	1	0	8
Argia sp.	1	1	0	1
Basiaeschna janata	1	0	0	0
Boyeria vinosa	1	0	0	0
Calopteryx sp.	2	0	0	0
Enallagma sp.	3	0	1	8
Gomphorus sp.	0	0	0	1
Gomphurus fraternus	1	0	0	0
Gomphurus vastus	1	0	0	0
Gomphurus ventricosus	2	0	0	1

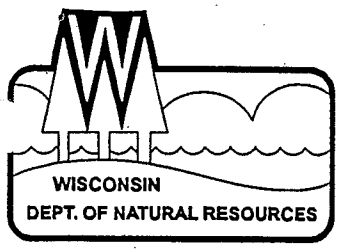
Appendix 3 continued on next page.

Appendix 3. Continued.

Taxon	Number caught per river			
	Menominee		Chippewa	St. Croix
	Primary	Secondary	MC2	MSC5
Odonata (continued)				
Gomphurus viridifrons	0	0	0	3
Hagenius brevistylus	0	0	0	7
Macromia sp.	1	0	0	0
Macromia illinoiensis	1	0	0	0
Ophiogomphus sp.	3	0	0	2
Ophiogomphus anomalus	0	2	0	0
Ophiogomphus howei	0	1	0	0
Ophiogomphus rupinsulensis	5	3	0	0
Phanogomphus sp.	2	0	0	0
Phanogomphus lividus	6	0	0	0
Phanogomphus quadricolor	2	0	0	3
Stylurus spiniceps	1	0	0	0

Appendix 4. Number of taxa and individuals of arthropods collected from the study sites in 1996, by order. Kick-net and microhabitat samples are pooled; effort refers to the number of samples for each station.

	Menominee primary sites				Menominee secondary sites				Reference	
Order	QF1	SF2	KD1	MF1	CTHZ	PIKE	BRULE	PAINT	MC2	MSC5
Ephemeroptera (mayflies)										
Taxa	7	17	12	10	17	16	14	8	6	27
Individuals	57	204	85	60	150	41	147	59	9	131
Trichoptera (caddisflies)										
Taxa	2	4	1	2	9	4	6	4	2	13
Individuals	5	12	4	2	81	5	20	19	6	61
Plecoptera (stoneflies)										
Taxa	1	2	2	1	6	3	4	4	0	6
Individuals	5	6	2	1	15	19	32	10	0	25
Coleoptera (beetles)										
Taxa	5	11	3	2	6	4	2	2	3	7
Individuals	6	36	8	3	30	22	11	17	3	23
Megaloptera (hellgramites)										
Taxa	0	1	0	0	1	1	1	0	0	0
Individuals	0	1	0	0	3	1	1	0	0	0
Heteroptera (water bugs)										
Taxa	1	3	2	2	0	1	0	0	0	2
Individuals	1	3	8	26	0	1	0	0	0	27
Diptera (two-winged flies)										
Taxa	4	3	3	10	5	9	10	3	2	6
Individuals	6	13	6	138	15	24	41	4	3	197
Odoata (dragonflies and damselflies)										
Taxa	6	3	2	6	2	2	1	1	1	7
Individuals	8	4	2	21	3	4	1	2	1	34
Total										
Taxa	26	44	25	33	46	40	38	22	14	69
Individuals	88	279	115	251	297	117	253	111	22	498
Effort	5	5	1	5	5	1	1	1	8	10



Response of a riverine mussel community to a change in flow regulation

1999 Progress Report

Phase I: Menominee River

Prepared by

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Summary

Mussel and habitat data were collected during 1999 to evaluate how planned changes in river flow regulation from hydroelectric dams will affect the mussel biota in the Menominee River in northeastern Wisconsin. Currently, water levels during peaking operations fluctuate from 0.4 m to 1.1 m daily. Eight permanent study sites 80-100 m in length were established within riverine portions of the uppermost 36.4 km of the Menominee River. Study sites ranged in mean width from 26 m to 141 m. Maximum water depths at sites ranged from 0.5 to 5.3 m. Maximum water flows measured near the bottom ranged from 0.4 to 1.0 m/s and maximum mid-water column velocities ranged from 0.8 to 1.8 m/s. Snorkeling and SCUBA were used to collect quantitative mussel and habitat data at 1,714 quadrat locations along 80 transects (10 per site) using a stratified random sampling procedure. A total of 590 live individuals and seven species were captured. Giant Floater (*Anodonta grandis* form grandis) and fat mucket (*Lampsilis siliquoidea*) comprised 96 % of the mussels captured. Age of giant floaters ranged from 0-12 years and age of fat muckets ranged from 0-17 years. Growth rates were similar between giant floater and fat mucket with giant floater being slightly faster. The number of live mussels captured per site ranged from 0-315. Mussel density ranged from 0.0 to 10.0 per m^2 and was greatest in pool habitat. Mussel density was highest between 3 to 10 m from the ordinary high water mark (OHWM) along the bank. Suitable habitat for mussels decreased with increasing distance from the OHWM.

Introduction

Freshwater mussels are the most imperiled of all faunas globally, 73 % of the mussel fauna are considered extinct or imperiled (Master 1992). In the United States and Canada, nearly half of the 297 mussel species are considered threatened, endangered, or extinct and in Wisconsin, 19 of the 51 known species are listed as threatened or endangered (WDNR 1999).

River flow regulation for hydroelectric power generation has a major influence on freshwater mussel communities. Indeed, mussels may be among the aquatic animals most sensitive to artificial fluctuations in river flow. It is estimated that 30-60 % of the mussel fauna in rivers is destroyed by dams (Layzer et al. 1993; Williams et al. 1992). Causes may include dewatering, siltation, scouring, habitat alterations in general, or loss of fish hosts (Williams et al. 1993). As mussels play a key role in energy flow and habitat structuring in rivers, flow-induced changes in their communities may affect entire river ecosystems. However, few studies have documented flow-regulation impacts on mussels, particularly in north temperate rivers. More quantitative information on the relation between flow-regulation and mussel communities is urgently needed to help guide management decisions for many rivers, particularly during FERC relicensing of hydroelectric dams.

In 1999 the Wisconsin Department of Natural Resources (WDNR) began a research study to quantify the effects of hydroelectric power dams on the mussel communities in the Menominee River in northeast Wisconsin. This study is jointly funded by the WDNR and the Wisconsin Electric Power Company, owners of the hydroelectric dams in the study area. This mussel project compliments ongoing data collection for fish, macroinvertebrates, and habitat, and will provide an unprecedented large-scale study to test relations between river ecosystems and flow regulation. The recently signed "Wilderness Shores Agreement for the upper Menominee River system, Wisconsin and Michigan", provides a unique opportunity to better understand effects of flow regulation on mussels and to document how a return to more natural flow regimes may benefit mussel communities. Beginning in 2001, several hydroelectric dams in the system will substantially modify their operating regimes, leading to a fundamentally different and presumably more ecologically beneficial pattern of flow regulation. Quantification of the response of the mussel community to this change will provide unprecedented insight into the impacts of flow regulation on mussel communities and restoration strategies necessary to recover the biodiversity of multiple stream taxa, concurrently.

This study focuses on the riverine mussel fauna, and has two phases:

I. Pre-phase (1999 and 2000). Collect quantitative mussel population dynamics and habitat data on river reaches currently experiencing heavy peaking flows and quantify mussel habitat interactions.

II. Post-phase (after 2004). Collect quantitative mussel population dynamics and habitat data on river reaches after flow regulation changes occur. Compare pre-flow mussel population dynamics and habitat interactions with post-flow changes in mussel population dynamics and habitat interactions.

OBJECTIVES: Evaluate the response of the Menominee River mussel community to the changes in flow regulation that will occur as a result of the Wilderness Shores Agreement. Document changes in mussel species composition, density, biomass, and size and age structure associated with flow changes. Develop models that relate distribution and abundance of mussel species to in-river habitat variables that are influenced by flow regulation, such as water depth, velocity, and bottom substrate.

Study Area

The Menominee River in northeastern Wisconsin (Figure 1), from Big Quinnesec Dam (River km (RK) 154.5) upstream 36.4 km to the source of the Menominee River at the confluence of the Michigamme and Brule Rivers (RK 190.8) was selected as the study area. Four hydroelectric dams influence flows within the study area: Michigamme Falls Dam (RK 0.3) on the Michigamme River, Brule Island Dam (RK 2.7) on the Brule River, and Twin Falls Dam (RK 173.6) and the Kingsford Dam (RK 163.3) on the Menominee River (Thuemler and Schnicke 1992). Eight dams and two natural waterfalls prevent upstream fish migration below the study area. Eight sampling sites were located on the upper 36.4 km of the Menominee River in non-impounded riverine reaches only (Fig. 1). Two sites, MF1 (RK 190.0) and MF2 (RK 190.6) were located below the Michigamme Falls Dam and Brule River confluence. Four sites TF1 (RK 172.6), TF2 and TF3 (RK 172.9), and TF4 (RK 172.4) were located below the Twin Falls Dam. Sites TF2 and TF3 are adjacent channels separated by a long narrow island 80 m in length. Site TF2 is nearly completely dewatered at voluntary base flow levels (22.7cms) and completely dewatered at mandatory base flow levels (11.3 cms). The remaining two sites KD1 (RK 162.7) and KD2 (RK 161.9) were below the Kingsford Dam. All three dams presently have major daily peaking flows, but will go to much less dramatic daily flow fluctuations in 2001.

Currently, the upstream Michigamme Falls Dam may alter flows from 0 to 56.4 cms in a matter of hours, producing a change in river stage downstream as great as 1.1 m (WEPCO data for summer 1997). Flow through the Michigamme Falls Dam is heavily influenced by upstream flows from three additional dams, Peavy, Hemlock and Way. The Brule River enters about 0.3 km below the dam, and delivers 9.9-11.3 cms during summer low flows, somewhat dampening the flow extremes. Below the Brule confluence the Menominee River channel is wide and shallow, and despite the input from the Brule, large areas are dewatered during the low-flow phase of the peaking cycle (personal observations).

The Twin Falls Dam has peaking discharges that may fluctuate from 22.7 cms at voluntary base flows to 65.1 cms in the course of a day, creating a change in stage of up to 0.36 m downstream. About 0.16 km below the dam the river passes through a small island complex with several shallow side channels. During the low-flow phase of the peaking cycle these side channels have almost no flow and are partially dewatered.

The Kingsford Dam has flows that may vary from 25.5 to 85 cms during peaking operations, with a fluctuation in stage of up to 0.46 m downstream. The channel below the dam is fairly uniform in width and depth, and only relatively small areas along the channel margins are dewatered during the low flow phase of the peaking cycle.

Previously, the three Menominee River reaches were sampled semi-quantitatively for mussels in either 1996 or 1997. Mussel species composition and distribution were purported to be similar among the three river reaches (D. Heath, WDNR, pers. communication). Three (Michigamme Falls, Twin Falls) to six (Kingsford) species were present, and giant floater (*Adononta grandis*) and fatmucket (*Lampsilis siliquoidea*), both habitat generalists, dominated at all sites. In a statewide survey of mussels during 1973-1977, Mathiak (1979) found fat mucket and giant floater to be the most abundant mussels, and both were widely distributed across the state.

No reference sites (i.e., upstream unregulated sites) were found upstream of the study reaches. The Brule River reference site was dropped due to lack of mussels. Five additional sites on the Pike, lower Peshtigo, and lower Oconto Rivers were examined for use as a reference sites but also dropped, due to lack of similar species or recent changes in flow patterns below dams. A search for a suitable reference site will continue in 2000.

Methods

Mussel and habitat data were collected using a stratified random sampling procedure; strata were runs, riffle/rapids and pools. This design allowed extrapolation of mussel population parameters to the entire site and mapping of the distribution and abundance of individual mussel species in relation to habitat features and flow characteristics. Eight sites were quantitatively sampled on the Menominee River within the study area in 1999. A suitable reference site (i.e., a site located above all the hydroelectric dams) could not be located during the 1999 sampling season. Site locations were selected to represent available habitat within the river reach under normal mean daily flows. Sites were classified as pool, run, or riffle/rapids. Sample sites were 100 m in length, except sites TF2 and TF3, which were 80 m in length. Ten transects were sampled within each site. River width was measured at each transect location using a hand-held laser range finder. Transect lengths were one-half the river width or a maximum of 50 m in length starting at the ordinary high water mark (OHWM). Transect were randomly located from the downstream starting point of the site and randomly selected for left or right bank looking upstream. The transect line was a low stretch cord was marked every meter using a waterproof marker and a short piece of colored plastic ribbon. Transect lines were laid perpendicular to the main flow using a boat to drop a heavy anchor beyond the halfway point in the river, the transect line was then pulled tight and tied to a metal stake located at the OHWM. A 0.5 m square metal quadrat with an area of 0.25 m^2 was used to quantitatively sample mussels and habitat along each transect line (Strayer et al. 1995; Vaughn et al. 1995). Quadrats were located every meter for the first 10 m starting 1 m from the OHWM and every 2 m thereafter. Snorkeling and SCUBA gear were then used to collect quantitative mussel and habitat data (Miller et al. 1992; Miller and Nelson 1983; Isom and Gooch 1986).

From each quadrat data on habitat parameters of importance to mussels were collected. Total water depth (centimeters) and two velocity measurements (m/s) were recorded at each quadrat location. Depth was measured using an extendible staff gauge made from PVC pipe marked in 1 cm increments. Water velocities were measured at the substrate (within 2 cm) and at approximately 0.6 the total water depth (measured from the surface) using a hand-held flow meter (Global Water Flow Probe). A boat, positioned along the transect line, was used to measure mid-column water velocity at depths greater than 1.5 m. A SCUBA diver used a modified and water proofed hand-held flow meter to record bottom velocities in water greater than 1.8 m deep. Substrate (12 categories), macrophytes, and algae were recorded to the nearest 5 percent. Substrate embeddedness, the presence/absence of armored bottom, and upstream obstructions were also recorded.

Mussel data were collected after habitat data were recorded so that habitat would not be disturbed. The numbers of live, dead, embedded, and exposed mussels were recorded for each quadrat. Quadrats were visually observed and the number of embedded and exposed mussels recorded. Mussels were considered exposed if they were entirely out of the substrate and not in their normal upright position. All visible mussels and dead shells were then collected and placed in a mesh bag. The quadrat was then lightly fanned and large substrate excavated to expose any buried mussels, and then vigorously fanned to a depth of 10 cm to expose any deeply buried mussels. All captured mussels were taken to the boat and kept in water until processing. Mussels were identified to species using Stern (1990) and Cummings and Mayer (1992), individually measured for height and length, weighed, aged, and coded for shell wear before being returned to their original locations. Codes used to assess shell wear were: 0 = no wear, 1 = 0-25%, 2 = 25-50%, 3 = 50-75% and 4 = 75-100% of shell showing signs of wear.

Two-way analysis of variance will be used to compare mussel community and habitat data between the impact and reference sites before and after the change in flow regulation. Non linear models will be used to construct length at age curves. Univariate and multivariate statistical models will relate mussel abundance and distribution to habitat and flow characteristics.

Relationships between mussels and microhabitat variables will be examined using multivariate direct gradient analysis. Canonical correspondence analysis (CCA) is a direct gradient analysis that will be used to relate mussel species data to environmental data (ter Braak 1988) after the 2000 sampling season.

Initial Results

Mussels were sampled at eight sites on the upper Menominee River, two sites below Michigamme Falls Dam (MF1, MF2), four sites below Twin Falls Dam (TF1, TF2, TF3, TF4) and two sites below Kingsford Dam (KD1, KD2). Mussel sampling was conducted on 41 days from mid June to early October during 1999 (Table 1). Habitats sampled included runs, pools and riffle/rapids.

A total 1,717 quadrats were sampled along 80 transects at eight sites (Table 2). Seven species were captured during 1999 sampling; four species were habitat generalists, two species were indicative of small streams, one species was indicative of medium streams and small rivers. Two of the species are of special concern in Wisconsin (Table 3). A total of 590 live and 195 dead mussels were captured. Giant floater and fat mucket were the most frequently captured mussels at all sites. Total biomass of live mussels captured at all sites was 23.4 kg. Site TF4 had the highest number and biomass of mussels (315 live, 89 dead, 11,727 g live mussels) while site KD2 had the highest number of species (6 species)(Table 4). No live mussels were captured during sampling at site MF2, but live mussels were seen in the vicinity of the sampling area.

Mussel Density

Mussel density per square meter was calculated for each quadrat and assessed relative to the distance from the OHWM for pool and run/riffle habitats. Only one site, TF4, was considered as pool habitat, sites MF2 and TF2 were riffle/rapid habitat, and the remaining sites varied from moderate to fast run habitat depending on discharge. Mussels were not evenly distributed from the bank to the center of the channel nor were they evenly distributed between habitat types. Mussel density for site TF4 ranged from 1.0 to 10.0 per m^2 and was greater than sites with riffle or run habitat, which ranged from 0.0 to 2.0 per m^2 (Figure 2). Mussel density for site TF4 was highest 4 m from the OHWM and markedly reduced beyond 30 m from the OHWM. Mussel density in riffle and run habitat peaked at 5 m from the OHWM and was reduced beyond 10 m. No live mussels were found at site MF2 and only three giant floaters were found at site TF2. Both sites experience extensive de-watering at base flows. Across all sites, few mussels were found within 3 m of the OHWM for both pool and run habitat unless there was sufficient depth to prevent de-watering at base flows.

Age and Size Structure

Giant floater and fat mucket were the only mussel species abundant enough to plot age distribution, mean lenght, height, and weight. Giant floaters ranged in age from 0 to 12 years and fat muckets from 0 to 17 years old (Figure 3). The number of giant floaters beyond age 5 was sharply reduced indicating a change in recruitment or survival after 1994. As for the remaining species, elktoe mussels ranged from 4 to 12 years of age, Cylindrical papershell 2 to 9 years, wabash pigtoe 2 to 4 years, creek heelsplitter 2 to 8 years, and fluted-shell 9 to 16 years old.

Growth curves for giant floater and fat mucket (Figures 4, 5, and 6) showed the same overall nonlinear growth pattern, with giant floater having a slightly faster growth in height, length and weight than fat mucket. Fastest growth occurred in the first four years of life and declined thereafter.

Habitat

The site means for habitat variables grouped by distance from the OHWM are given in Table 5. Depth and velocity were directly influenced by discharge from the upstream dams at each site. Sampling was conducted when discharge was considered within normal mean daily flow for the time of year, but varied between sites. Mean river width ranged from 26 m (TF2) to 141 m (KD1). Site TF4 was the deepest site sampled and site TF2 the shallowest.

Suitable habitat for mussels decreased with increasing distance from the bank. The percent of fine substrates decreased as the distance from the OHWM and bottom velocities increased and were greatest in the first 10 m from the OHWM. Fine and large gravel were the dominant substrate type at intermediate and center portions of the river at all sites. Fine and coarse sand substrates suitable for mussels, were observed in the center portions of the channel beneath gravel substrate, indicating that sediment starved water released from the dams had scoured away the available fine substrates. The percent of quadrats with armored substrate increased substantially with distance from the OHWM, only three mussels were found in the 186 armored quadrats sampled.

Sites KD1 and MF1 had the greatest percentage of macrophytes; predominantly water celery (*Vallisneria americana*). Mussels were observed within the macrophyte beds. Site MF2 had the greatest percentage of algae covering the substrate.

Discussion

The distribution of mussels across the channel at each site was somewhat unusual. Mussels were concentrated at an intermediate distance from the banks, and were rare or absent from nearshore areas and also from the middle of the channel. In unregulated river reaches, mussels are usually common across the entire channel, whereas in reaches experiencing daily peaking they are often scarce along the margins of the channel but widespread throughout the intermediate and center zones. Lack of mussels at the edges is probably due to de-watering of some areas during the low-flow phase of the peaking cycle couple with dramatic fluctuations in velocity and depth in those nearshore areas that are not de-watered. The absence of mussels from the edges of the Menominee sites is thus not unexpected, but their absence from the center of the channel is. Absence in the center is more difficult to explain, and may be caused by particularly high velocities occurring at a critical time in the life stage of young mussels.

Suitable substrate for mussel colonization consisting of fine and coarse sands and loose fine gravel is limited in the center channel portions of the river. High velocities in the center of the channel have created an armored-like substrate and this substrate matrix may be impenetrable to mussels. Aggradation is universal below dams as fine substrates are scoured but the reservoir and dam proper block upstream sources. After flow changes occur in 2001, more stable flows should allow re-colonization of habitats currently being avoided by mussels where suitable substrate exists, but may not increase available habitat overall.

It is unlikely that any new species will enter the study area due to downstream dams preventing upstream movement of host fishes, but those species currently in the area should increase in number and biomass under more stable flows.

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Table 1. Menominee River habitat types and 1999 mussel sampling dates.

Site	Habitat	Dates
MF1	Run	Aug 3, 4, 9, 10, 11
MF2	Riffle/rapid	Oct 4, 5
TF1	Run	June 15, 16, 17, 21, 22, 23
TF2	Riffle/rapid	June 24, 28, Aug 5
TF3	Run	June 29, 30, July 1, 21
TF4	Pool	July 19, 20, 21, 22, 26, 27, 28, 29, Aug 2
KD1	Run	Sept 8, 9, 10, 13, 14, 15
KD2	Run	Sept 20, 21, 22, 23, 27, 28, 29

Table 2. Distance from ordinary high water mark (OHWM) in meters and number of quadrats sampled per site during 1999 at Menominee River sites (An * indicates sampling could not be conducted safely beyond the distance).

Distance from OHWM	Number of samples per site								
	MF1	MF2	TF1	TF2	TF3	TF4	KD1	KD2	Total
1	10	10	10	10	10	10	10	10	80
2	10	10	10	10	10	10	10	10	80
3	10	10	10	10	10	10	10	10	80
4	10	10	10	10	10	10	10	10	80
5	10	10	10	10	10	10	10	10	80
6	10	10	10	10	10	10	10	10	80
7	10	10	10	10	10	10	10	10	80
8	10	10	10	10	10	10	10	10	80
9	10	10	10	10	10	10	10	10	80
10	10	10	10	10	10	10	10	10	80
12	10	10	10	10	10	10	10	10	80
14	10	10	10	4	10	10	10	10	74
16	10	10	10	2	10	10	10	10	72
18	10	10	10	1	10	10	10	10	71
20	10	10	10		9	10	10	10	69
22	10	*	8		7	10	10	10	55
24	10		7		2	10	10	10	49
26	10		7			10	10	10	47
28	10		7			10	10	10	47
30	10		5			10	10	10	45
32	10		2			10	10	10	42
34	10					9	10	10	39
36	10					10	10	10	40
38	10					10	10	10	40
40	8					9	10	10	37
42	7					6	10	10	33
44	3					4	10	9	26
46	2					4	10	3	19
48	1					4	10		15
50						4	10		14
Total	261	150	186	117	158	270	300	272	1714

Table 3. Common and scientific names of mussel species captured during 1999 Menominee River sampling and number of live and dead mussels captured. A "SC" indicates a species of special concern for Wisconsin (WDNR 1999); "L"= large river species, "M"= medium stream/small river species, "S"= small stream species, and "G"= habitat generalist (from Cummings and Mayer 1992).

Common name	Scientific name	Status/habitat	Live	Dead
Elktoe	*Alasmidonta marginata*	SC/M	4	0
Giant floater	*Anodonta grandis* form grandis	G	358	152
Cylindrical papershell	*Anodontoides ferussacianus*	S	8	0
Wabash pigtoe	*Fusconaia flava*	G	4	0
Fat mucket	*Lampsilis siliquoidea*	G	206	40
Creek heelsplitter	*Lasmigona compressa*	SC/S	7	3
Fluted-shell	*Lasmigona costata*	G	3	0
		Totals	590	195

Table 4. Number of mussels captured and weight (g), by species for Menominee River sites.

Site	Species		Live	Weight (g)	Dead
MF1	Cylindrical papershell		1	24	0
	Fat Mucket		2	79	0
	Giant Floater		23	1022	0
		Site total	26	1125	0
MF2	Fat Mucket		0	0	1
		Site total	0	0	1
TF1	Fat Mucket		13	727	2
	Giant Floater		47	1755	16
	Wabash pigtoe		2	23	0
		Site total	62	2505	18
TF2	Giant Floater		3	81	3
		Site total	3	81	3
TF3	Creek heelsplitter		3	144	0
	Fat Mucket		18	863	3
	Giant Floater		27	1586	7
	Wabash pigtoe		1	17	0
		Site total	49	2610	10
TF4	Creek heelsplitter		1	53	0
	Fat Mucket		146	5694	10
	Fluted Shell		1	61	0
	Giant Floater		166	5901	79
	Wabash pigtoe		1	18	0
		Site total	315	11727	89
KD1	Creek heelsplitter		2	56	3
	Cylindrical papershell		2	80	0
	Elktoe		3	125	0
	Fat Mucket		23	968	17
	Giant Floater		52	2409	26
		Site total	82	3638	46
KD2	Creek heelsplitter		1	4	0
	Cylindrical papershell		5	102	0
	Elktoe		1	18	0
	Fat Mucket		4	120	7
	Fluted shell		2	92	0
	Giant floater		40	1438	21
		Site total	53	1774	28

Table 5. Site means for habitat variables grouped by distance from ordinary high water mark (OHWM). N=number of samples, rwidth=river width (m), bvel=bottom velocity and tvel=top velocity (m/sec), mk=muck/silt, fs=fine sand, cs=coarse sand, fg=fine gravel, lg=large gravel, cr=cobble/rubble, bld=boulder, br=bedrock, cl=clay, hp=hardpan, dt=detritus, fw=fine wood, lwd=large wood, alg=algae, and mac=macrophytes as mean percentage of quadrat area.

site	N	rwidth	depth	bvel	tvel	mk	fs	cs	fg	lg	cr	bld	br	cl	hp	dt	fw	lwd	alg	mac
1 - 10 meters from OHWM																				
MF1	100	83	0.6	0.2	0.3	8	25	14	26	18	8	1	0	0	0	1	0	0	0	14
MF2	100	71	0.4	0.2	0.5	0	1	6	22	35	28	9	0	0	0	0	0	0	4	0
TF1	100	57	0.5	0.3	0.4	0	19	10	16	33	7	14	0	0	0	0	0	0	0	0
TF2	100	26	0.3	0.4	0.6	1	11	8	39	35	3	1	0	0	0	0	0	2	2	0
TF3	100	43	0.6	0.4	0.7	0	18	9	32	22	10	9	0	0	0	0	1	0	0	0
TF4	100	94	1.0	0.1	0.2	4	43	18	8	6	4	8	0	0	0	1	4	3	0	2
KD1	100	141	0.6	0.2	0.4	1	40	20	20	8	4	4	0	0	0	0	2	1	0	19
KD2	100	87	0.7	0.1	0.2	14	36	6	16	16	8	1	0	0	0	0	2	2	0	0
12 - 20 meters from OHWM																				
MF1	50	83	1.2	0.3	0.8	0	8	5	43	30	11	2	0	0	0	0	0	0	0	11
MF2	50	71	0.6	0.3	0.7	0	0	6	22	39	25	9	0	0	0	0	0	0	28	0
TF1	50	57	1.1	0.5	0.9	0	0	6	17	42	17	18	0	0	0	0	0	0	0	0
TF2	17	26	0.3	0.5	0.9	0	0	3	49	46	3	0	0	0	0	0	0	0	0	0
TF3	50	43	0.7	0.6	0.9	0	1	6	42	38	11	2	0	0	0	0	0	0	0	1
TF4	50	94	1.8	0.2	0.5	1	3	35	27	24	3	5	0	0	0	0	0	0	8	0
KD1	50	141	0.8	0.2	0.5	0	12	27	36	12	5	7	0	0	0	0	0	1	0	35
KD2	50	87	1.5	0.2	0.4	0	1	37	32	14	12	3	0	0	0	0	0	1	4	2
22 - 50 meters from OHWM																				
MF1	111	83	1.2	0.4	0.9	0	0	2	45	44	8	1	0	0	0	0	0	0	5	0
MF2	0*	71																		
TF1	37	57	1.2	0.4	0.9	0	0	8	18	39	27	8	0	0	0	0	0	0	0	0
TF2	0	26																		
TF3	9	43	0.6	0.5	0.9	0	0	4	38	50	6	1	0	0	0	0	0	0	0	0
TF4	120	94	2.4	0.3	0.6	0	0	11	38	35	14	2	0	0	0	0	0	0	2	0
KD1	150	141	0.8	0.2	0.5	0	6	9	51	26	6	3	0	0	0	0	0	0	1	35
KD2	122	87	1.9	0.2	0.5	0	0	12	48	20	16	4	0	0	0	0	0	0	0	0

* Site MF2 not sampled beyond 20 m due to hazardous conditions.

Figure 1. 1999 sampling locations on the Menominee River in northeastern Wisconsin. Two sites were located below the Michigamme Falls Dam (MF), four sites below the Twin Falls Dam (TF) and two sites below the Kingsford Dam (KD).

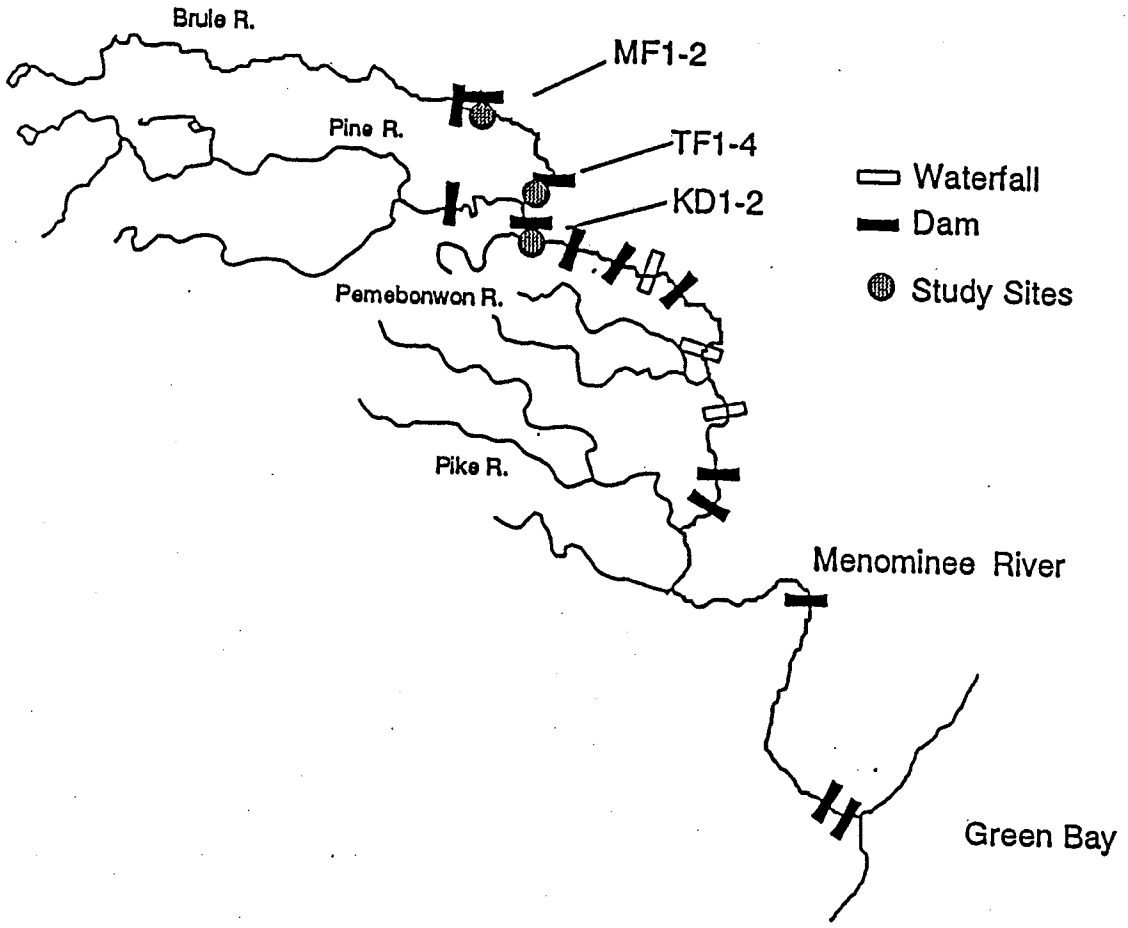


Figure 2. Mussel density per square meter related to distance from the ordinary high water mark. Quadrats were sampled every meter for the first 10 meters and every 2 meters thereafter. Pool habitat is for site TF4 only. Riffle and run habitat are combined and include sites MF1, MF2, TF1, TF2, TF3, KD1 and KD2.

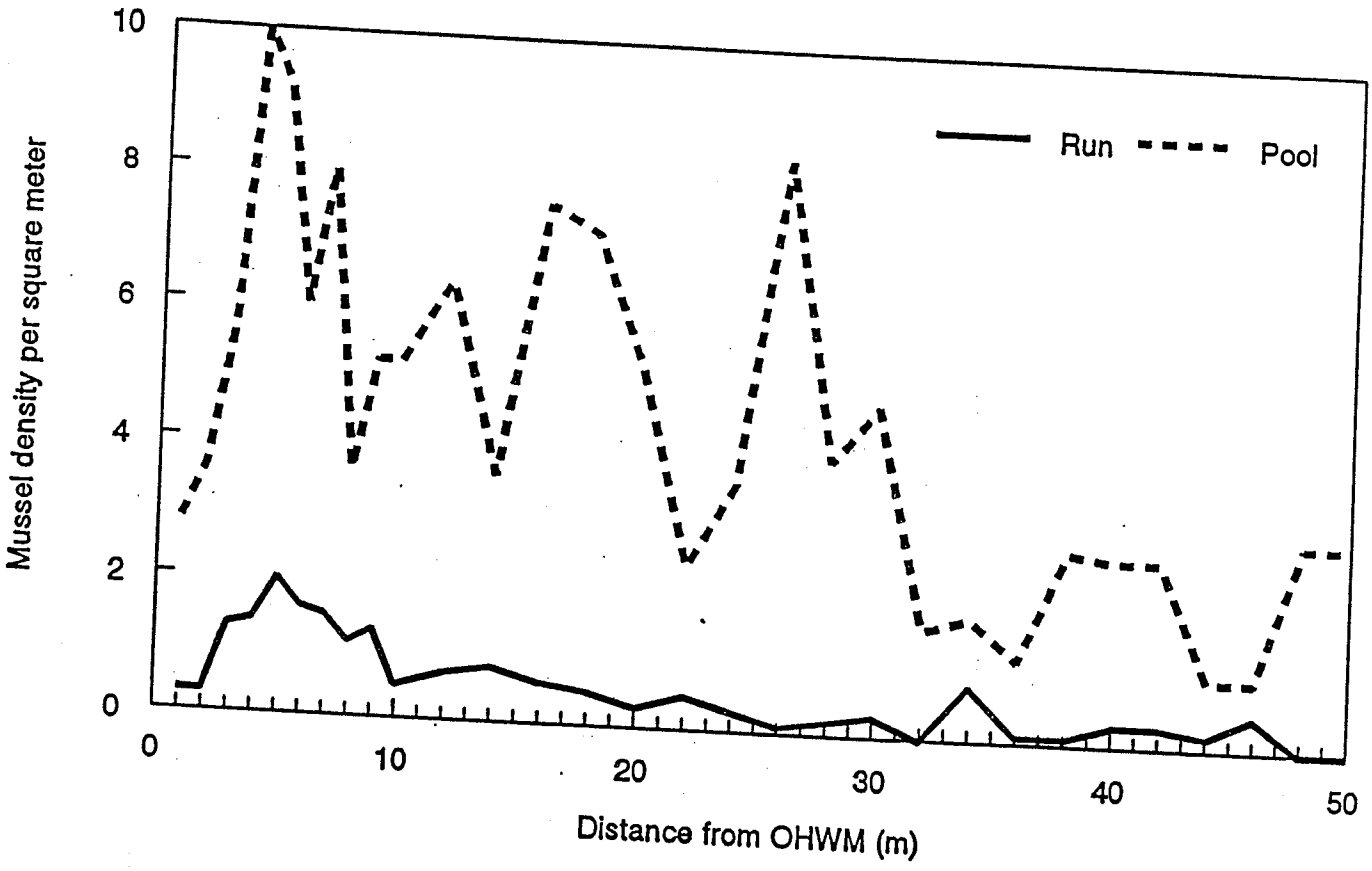


Figure 3. Age structure of giant floaters (n=358) and fat muckets (n=206) captured on the Menominee River in 1999.

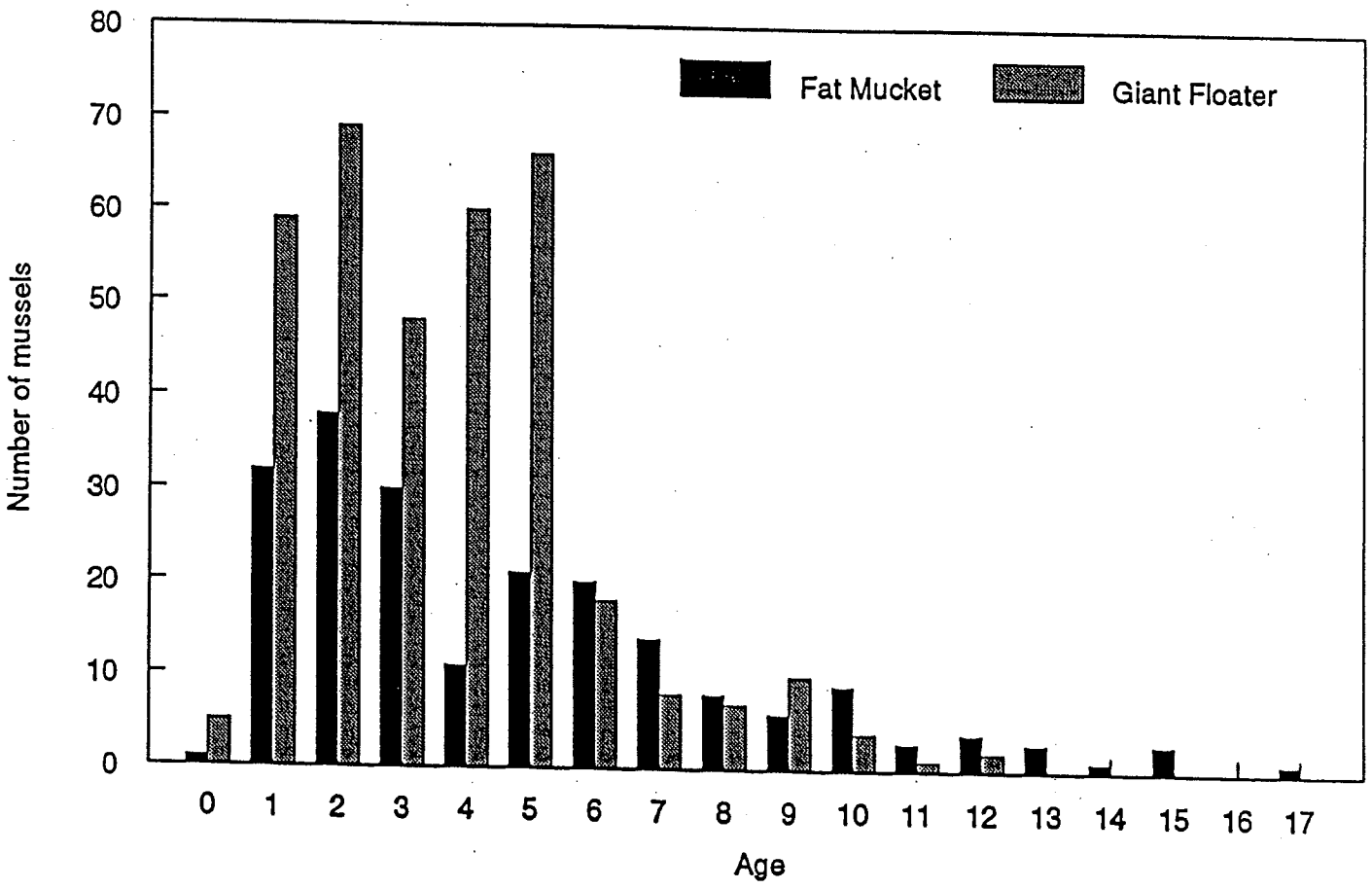


Figure 4. Height and age relationship of giant floaters and fat muckets captured on the Menominee River in 1999.

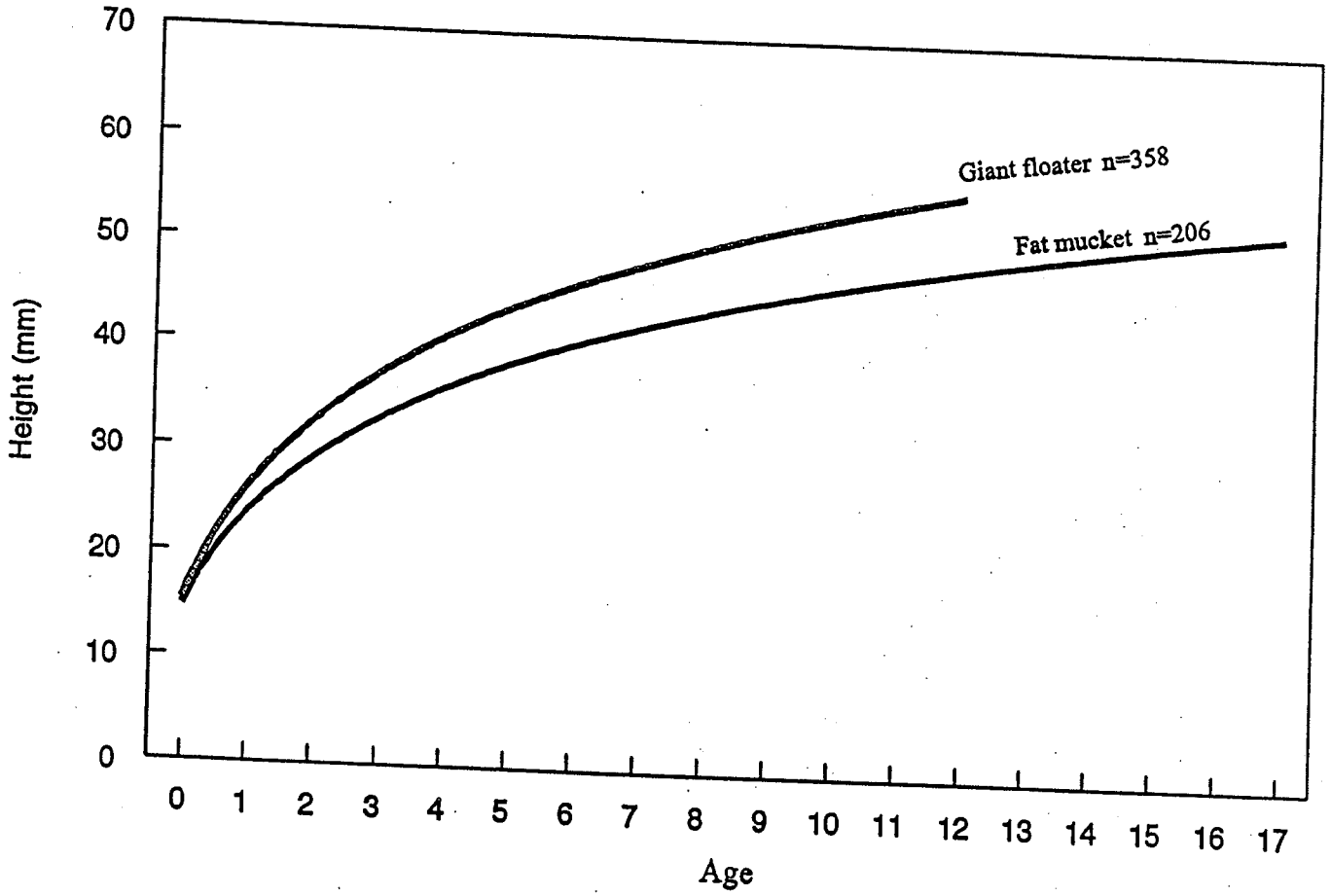


Figure 5. Length and age relationship of giant floaters and fat muckets captured on the Menominee River in 1999.

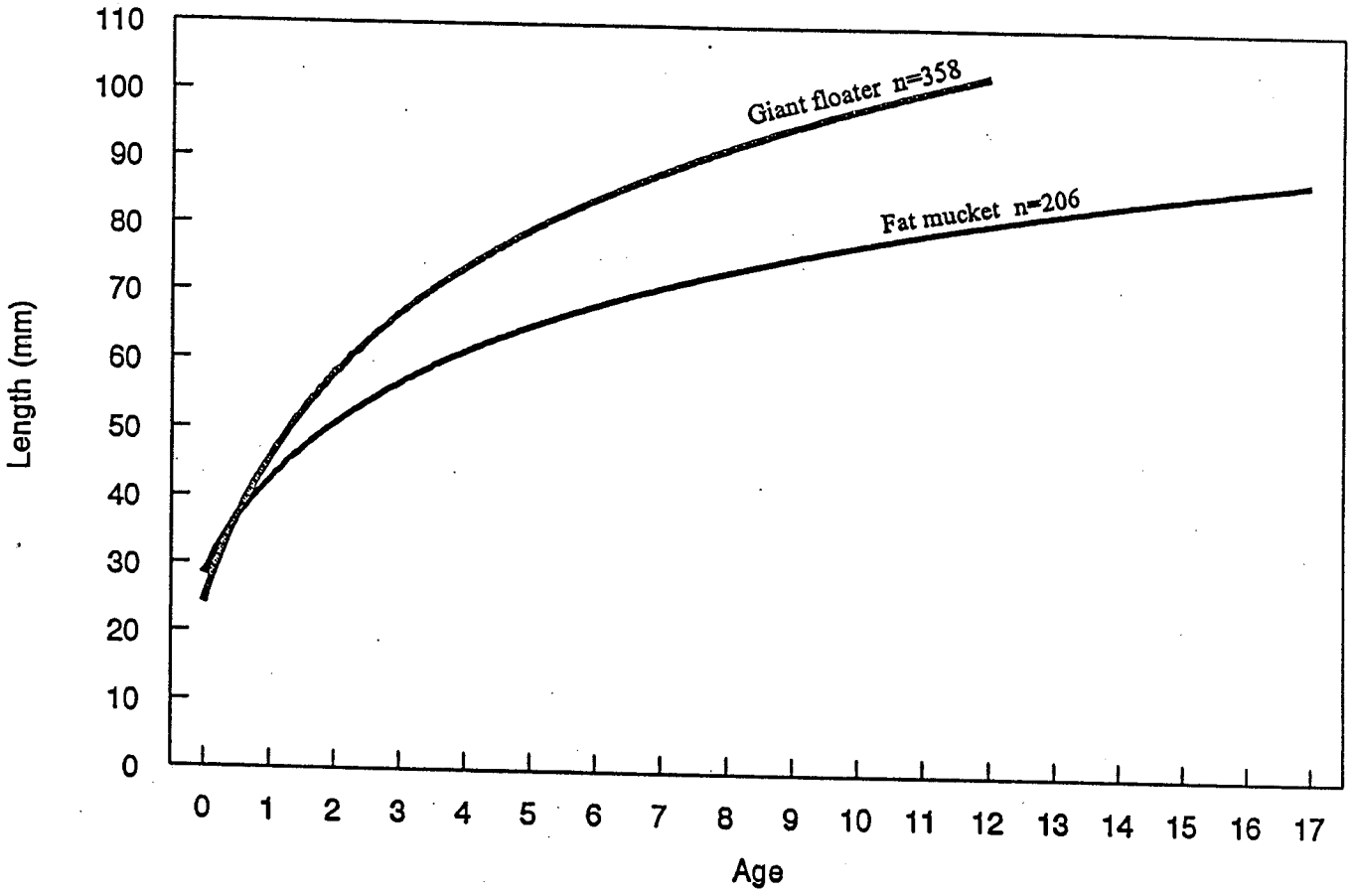
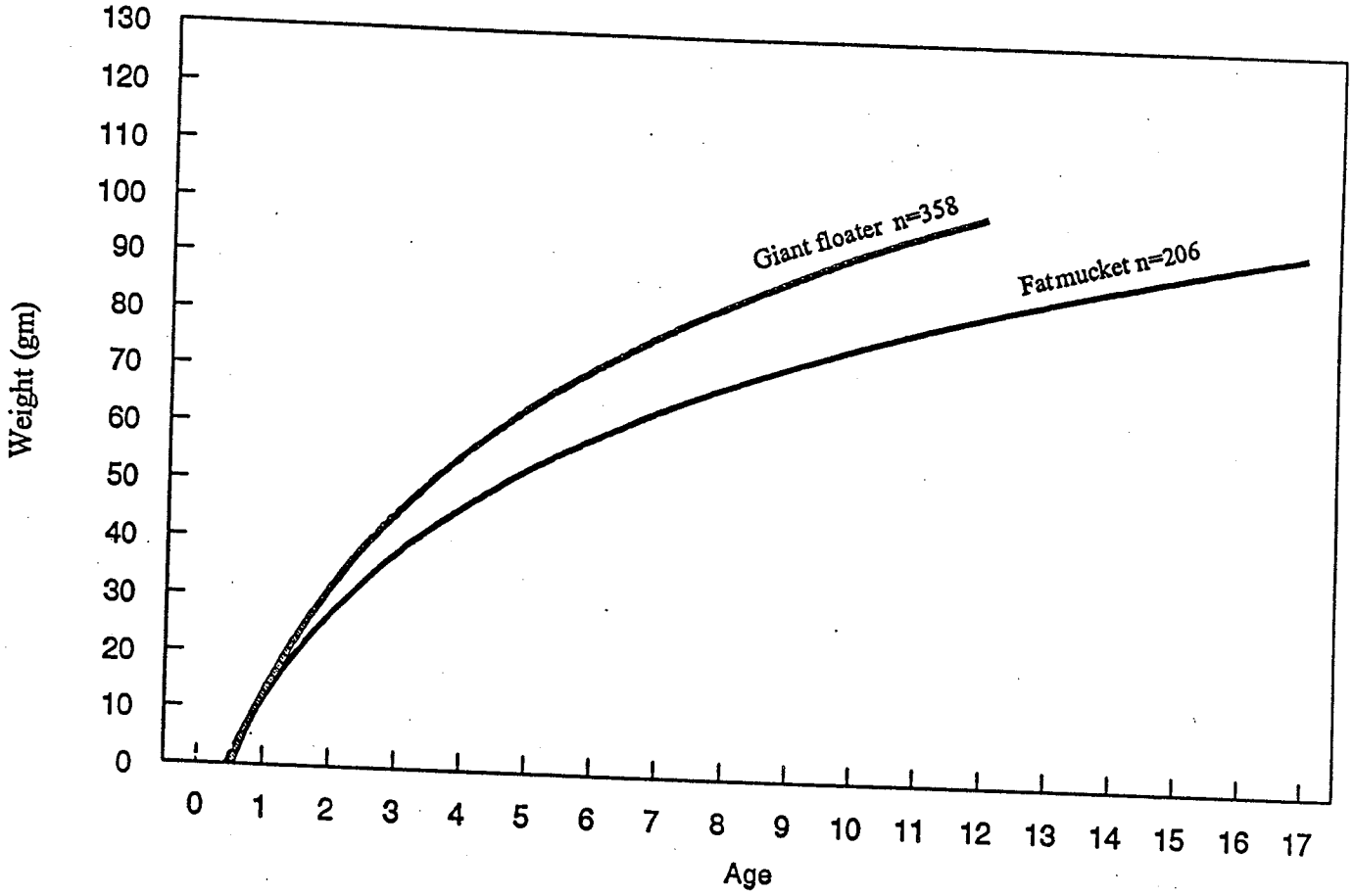
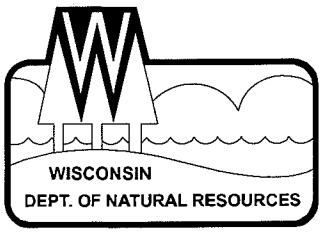


Figure 6. Weight and age relationship of giant floaters and fat muckets captured on the Menominee River in 1999.





Response of a riverine mussel community to a change in flow regulation

Progress Report

Phase I: Menominee River

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Summary

Mussels (family Unionidae) and habitat data were collected during 1999 and 2000 to evaluate how planned changes in river flow regulation from hydroelectric dams will affect the mussel biota in the Menominee River in northeastern Wisconsin. Currently, water levels during peaking operations fluctuate from 0.4 m to 1.1 m daily. Eight permanent study sites 80-100 m in length were established within riverine portions of the uppermost 36.4 km of the Menominee River. Mean river width at study sites ranged from 26 m at TF2 to 141 m at KD1. Maximum water depths at sites ranged from 0.5 to 5.3 m. Maximum water flows measured near the bottom ranged from 0.4 to 1.0 m/s and maximum mid-water column velocities ranged from 0.8 to 1.8 m/s. Snorkeling and SCUBA were used to collect quantitative mussel and habitat data at 1,716 quadrat locations in 1999 and 1748 locations in 2000 along 160 transects (10 per site per year) using a stratified random sampling procedure. Mussel species richness and density was highly variable between sites. Mussel species richness increased with increasing distance downstream. Seven species and a total of 1,101 live individuals (590 in 1999 and 511 in 2000) were collected. All seven species observed were collected in each year but not all species were collected at all sites. *Pyganodon grandis* (Giant Floater) comprised 63 % of mussels collected and *Lampsilis siliquoidea* (fat mucket) comprised 33 % of the mussels collected. Age of *P. grandis* ranged from 0-12 years and age of *L. siliquoidea* ranged from 0-17 years. Survival rate for *P. grandis* averaged 63% and for *L. siliquoidea* was 79%. Growth rates were similar between *P. grandis* and *L. siliquoidea* with *P. grandis* being slightly faster. The number of live mussels collected per site ranged from 0-315. Mussel density ranged from 0.0 to 10.0 per m^2 and was greatest in run/pool habitat at site TF4. Mussel density was highest between 3 to 10 m from the ordinary high water mark (OHWM) along the bank and decreased with increasing distance form bank. Suitable habitat for mussels decreased with increasing distance from the OHWM.

Introduction

Freshwater mussels are the most imperiled of all faunas globally, 73 % of the mussel fauna are considered extinct or imperiled (Master 1992). In the United States and Canada, nearly half of the 297 mussel species are considered threatened, endangered, or extinct and in Wisconsin, 19 of the 51 known species are listed as threatened or endangered (WDNR 1999).

River flow regulation for hydroelectric power generation has a major influence on freshwater mussel communities. Indeed, mussels may be among the aquatic animals most sensitive to artificial fluctuations in river flow. It is estimated that 30-60 % of the mussel fauna in rivers is destroyed by dams (Layzer et al. 1993; Williams et al. 1992). Causes may include dewatering, siltation, scouring, habitat alterations in general, or loss of fish hosts (Williams et al. 1993). As mussels play a key role in energy flow and habitat structuring in rivers, flow-induced changes in their communities may affect entire river ecosystems. However, few studies have documented flow-regulation impacts on mussels, particularly in north temperate rivers. More quantitative information on the relation between flow-regulation and mussel communities is urgently needed to help guide management decisions for many rivers, particularly during FERC relicensing of hydroelectric dams.

In 1999 the Wisconsin Department of Natural Resources (WDNR) began a research study to quantify the effects of hydroelectric power dams on the mussel communities in the Menominee River in northeast Wisconsin. This study is jointly funded by the WDNR and the Wisconsin Electric Power Company, owners of the hydroelectric dams in the study area. This mussel project compliments ongoing data collection for fish, macroinvertebrates, and habitat, and will provide an unprecedented large-scale study to test relations between river ecosystems and flow regulation. The recently signed "Wilderness Shores Agreement for the upper Menominee River system, Wisconsin and Michigan", provides a unique opportunity to better understand effects of flow regulation on mussels and to document how a return to more natural flow regimes may benefit mussel communities. Beginning in 2001, several hydroelectric dams in the system will substantially modify their operating regimes, leading to a fundamentally different and presumably more ecologically beneficial pattern of flow regulation. Quantification of the response of the mussel community to this change will provide unprecedented insight into the impacts of flow regulation on mussel communities and restoration strategies necessary to recover the biodiversity of multiple stream taxa, concurrently.

This study focuses on the riverine mussel fauna, and has two phases:

I. Pre-phase (1999 and 2000). Collect quantitative mussel population dynamics and habitat data on river reaches currently experiencing heavy peaking flows and quantify mussel habitat interactions.

II. Post-phase (after 2004). Collect quantitative mussel population dynamics and habitat data on river reaches after flow regulation changes occur. Compare pre-flow mussel population dynamics and habitat interactions with post-flow changes in mussel population dynamics and habitat interactions.

OBJECTIVES: Evaluate the response of the Menominee River mussel community to the changes in flow regulation that will occur as a result of the Wilderness Shores Agreement. Document changes in mussel species composition, density, biomass, and size and age structure associated with flow changes. Develop models that relate distribution and abundance of mussel species to in-river habitat variables that are influenced by flow regulation, such as water depth, velocity, and bottom substrate.

Study Area

The Menominee River in northeastern Wisconsin (Figure 1), from Big Quinnesec Dam (River km (RK) 154.5) upstream 36.4 km to the source of the Menominee River at the confluence of the Michigamme and Brule Rivers (RK 190.8) was selected as the study area. Four hydroelectric dams influence flows within the study area: Michigamme Falls Dam (RK 0.3) on the Michigamme River, Brule Island Dam (RK 2.7) on the Brule River, Twin Falls Dam (RK 173.6) and the Kingsford Dam (RK 163.3) on the Menominee River (Thuemler and Schnicke 1992). Eight dams and two natural waterfalls prevent upstream fish migration below the study area. Eight sampling sites were located on the upper 36.4 km of the Menominee River in non-impounded riverine reaches only (Figure 1). Two sites, MF1 (RK 190.0) and MF2 (RK 190.6) were located below the Michigamme Falls Dam and Brule River confluence. Four sites TF1 (RK 172.6), TF2 and TF3 (RK 172.9), and TF4 (RK 172.4) were located below the Twin Falls Dam. Sites TF2 and TF3 are adjacent channels separated by a long narrow island 80 m in length. Site TF2 is nearly completely dewatered at voluntary base flow levels (22.7cms) and completely dewatered at mandatory base flow levels (11.3 cms). The remaining two sites KD1 (RK 162.7) and KD2 (RK 161.9) were below the Kingsford Dam. All three dams presently have major daily peaking flows, but will go to much less dramatic daily flow fluctuations scheduled to begin in 2001.

Currently, the upstream Michigamme Falls Dam may alter flows from 0 to 56.4 cms in a matter of hours, producing a change in river stage downstream as great as 1.1 m (WEPCO data for summer 1997). Flow through the Michigamme Falls Dam is heavily influenced by upstream flows from three additional dams, Peavy, Hemlock and Way. The Brule River enters about 0.3 km below the dam, and delivers 9.9-11.3 cms during summer low flows, somewhat dampening the flow extremes. Below the Brule confluence the Menominee River channel is wide and shallow, and despite the input from the Brule, large areas are dewatered during the low-flow phase of the peaking cycle (personal observations). The Twin Falls Dam has peaking discharges that may fluctuate from 22.7 cms at voluntary base flows to 65.1 cms in the course of a day, creating a change in stage of up to 0.36 m downstream. About 0.16 km below the dam the river passes through a small island complex with several shallow side channels. During the low-flow phase of the peaking cycle these side channels have almost no flow and are partially dewatered. The Kingsford Dam has flows that may vary from 25.5 to 85 cms during peaking operations, with a fluctuation in stage of up to 0.46 m downstream. The channel below the dam is fairly uniform in width and depth, and only relatively small areas along the channel margins are dewatered during the low flow phase of the peaking cycle.

Previously, the three Menominee River reaches were sampled semi-quantitatively for mussels in either 1996 or 1997 using a depletion curve methodology. Within the Menominee River, there was a clear difference between the upper and lower subareas separated by the Sturgeon Falls Dam. Mussel species richness was substantially higher at sites downstream of Sturgeon Falls compared to sites upstream. Mussel species composition and distribution were purported to be similar among the Michigamme, Twin Falls and Kingsford river reaches (WDNR 1997, unpublished). Three (Michigamme Falls, Twin Falls) to six (Kingsford) species were present, and *Pyganodon grandis* and *Lampsilis siliquoidea*, both habitat generalists, dominated at all sites. In a statewide survey of mussels during 1973-1977, Mathiak (1979) found *Pyganodon grandis* and *Lampsilis siliquoidea* to be the most abundant mussels, and both were widely distributed across the state.

No suitable reference sites (i.e., upstream unregulated sites) were found upstream of the study reaches. The Brule River reference site was dropped due to lack of mussels. Five additional sites on the Pike, lower Peshtigo, and lower Oconto Rivers were examined for use as a reference sites but also dropped, due to lack of similar species or recent changes in flow patterns below dams. No suitable reference site was located during 2000.

Methods

Mussel and habitat data were collected using a stratified random sampling procedure; strata were runs, riffle/rapids and pools. This design allowed extrapolation of mussel population parameters to the entire site and mapping of the distribution and abundance of individual mussel species in relation to habitat features and flow characteristics. Eight sites were quantitatively sampled on the Menominee River within the study area each year during in 1999 and 2000. A suitable reference site (i.e., a site located above all the hydroelectric dams or nearby river) could not be located. Site locations were selected to represent available habitat within the river reach under normal mean daily flows. Sites were classified as pool, run, or riffle/rapids. Sample sites were 100 m in length, except sites TF2 and TF3, which were 80 m in length and separated by a narrow island. Ten transects were sampled within each site each year. River width was measured at each transect location using a hand-held laser range finder. Transect lengths were one-half the river width or a maximum of 50 m in length starting at the ordinary high water mark (OHWM). Transect locations were randomly located from the downstream starting point of the site and randomly selected for left or right bank looking upstream. The transect line was a low stretch cord was marked every meter using a waterproof marker and a short piece of colored plastic ribbon. Transect lines were laid perpendicular to the main flow using a boat to drop a heavy anchor beyond the halfway point in the river, the transect line was then pulled tight and tied to a metal stake located at the OHWM. Additional weights were tied to the transect line if needed to keep the line near the bottom. A 0.5 m square metal quadrat with an area of 0.25 m^2 was used to quantitatively sample mussels and habitat along each transect line (Strayer et al. 1995; Vaughn et al. 1995). Quadrats were located every meter for the first 10 m starting 1 m from the OHWM and every 2 m thereafter. Snorkeling and SCUBA gear were then used to collect quantitative mussel and habitat data (Miller et al. 1992; Miller and Nelson 1983; Isom and Gooch 1986).

From each quadrat, data on habitat parameters of importance to mussels were collected. Total water depth (centimeters) and two velocity measurements (m/s) were recorded at each quadrat location. Depth was measured using an extendible staff gauge made from PVC pipe marked in 1 cm increments. Water velocities were measured at the substrate (within 2 cm) and at approximately 0.6 the total water depth (measured from the surface) using a hand-held flow meter (Global Water Flow Probe). A boat, positioned along the transect line, was used to measure mid-column water velocity at depths greater than 1.5 m. A SCUBA diver used a modified and water proofed hand-held flow meter to record bottom velocities in water greater than 1.8 m deep. Substrate (12 categories), macrophytes, and algae were recorded to the nearest 5 percent. Substrate embeddedness, the presence/absence of armored bottom, and upstream obstructions were also recorded.

Mussel data were collected after habitat data were recorded so that habitat would not be disturbed. The numbers of live, dead, embedded, and exposed mussels were recorded for each quadrat. Quadrats were visually observed and the number of embedded and exposed mussels recorded. Mussels were considered exposed if they were entirely out of the substrate and not in their normal upright position. All visible mussels and dead shells were then collected and placed in a mesh bag. The quadrat was then lightly fanned and large substrate excavated to expose any buried mussels, and then vigorously fanned to a depth of 10 cm to expose any deeply buried mussels. All collected mussels were taken to the boat and kept in water until processing. Mussels were identified to species using Stern (1990) and Cummings and Mayer (1992), individually measured for height and length, weighed, aged, and coded for shell wear before being returned to their original locations. Codes used to assess shell wear were: 0 = no wear, 1 = 0-25%, 2 = 25-50%, 3 = 50-75% and 4 = 75-100% of shell showing signs of wear.

A total of 18 habitat variables related to water depth, velocity, substrate type and cover were considered for inclusion into a habitat model relating the presence of live mussels. Analyses were conducted on 3,461 quadrat locations across all eight sites within the study area. Correlation coefficients (Pearson's >

0.60) were conducted on habitat variables to determine if any strong correlations existed between variables and if a single representative variable could be used. Logistic regression using stepwise analyses ($\alpha < 0.05$) was used to fit a model predicting the presence of live mussels to habitat variables. Two-way analysis of variance will be used to compare mussel community and habitat data between the impact sites before and after the change in flow regulation.

Results

Mussels were sampled at eight sites on the upper Menominee River, two sites below Michigamme Falls Dam (MF1, MF2), four sites below Twin Falls Dam (TF1, TF2, TF3, TF4) and two sites below Kingsford Dam (KD1, KD2). Habitats sampled were representative of the general river reach and included runs, pools and riffle/rapids if present. Mussel sampling was conducted on 41 days in 1999 and 33 days in 2000 from mid June to early October (Table 1).

A total of 3,464 quadrats were sampled along 160 transect lines at eight sites consisting of ten transects per site per year. A total of seven species in all were collected during 1999 and 2000 sampling; three species were habitat generalists, two species were indicative of small streams, one species was indicative of medium streams and small rivers, and one indicative of large rivers. Two species *Alasmidonta marginata* and *Lasmigona compressa* are listed as species of special concern in Wisconsin (Table 2). Species richness within reaches increased with increasing distance downstream, three species were found in the Michigamme Falls reach, five within the Twin Falls reach and six within the Kingsford reach. The number of live species found at sites ranged from 0 at MF2 in 1999 and 2000 to 6 at KD2 in 1999. The mean number of live species found per site was 3.4 in 1999 and 3.0 in 2000. A total of 1,101 live mussels and 476 dead shells were collected, *P. grandis* and *L. siliquoidea* were the most frequently collected mussels at all sites. The mean number of live mussels collected per site was highly variable between sites averaging of 73.8 in 1999 and 63.9 in 2000 and ranging from 0 at MF2 to 315 at TF4. Total biomass of live mussels collected at all sites was 46.3 kg. Mean mussel biomass averaged 2.9 kg per site in both 1999 and 2000. However, biomass was highly variable between sites ranging from 0 kg at MF2 to 11.7 kg at site TF4. Site TF4 had the highest number and biomass of mussels both years while site KD2 had the highest number of species (Table 3). No live mussels were collected during sampling at site MF2 in 1999 and 2000 or at TF2 in 2000 however, live mussels were observed in the vicinity of the sampling quadrats but their densities were too low to be collected during random sampling.

Mussel density per square meter was calculated for each quadrat and assessed relative to the distance from the OHWM for each site. Mussels were not evenly distributed from the bank to the center of the channel nor were they evenly distributed between habitat types (Figure 2). Mean mussel density for the combined sampling years was highest at site TF4 with 3.9 mussels/m^2 and lowest at site MF2 with 0.0 mussels/m^2 (Table 4). Mussel density for site TF4 ranged from 0.7 to 7.6 mussels/m^2 and peaked 4 m from the OHWM and was markedly reduced beyond 30 m from the OHWM (Table 5). Mussel density for the remaining sites peaked between 4 to 7 m from the OHWM and rapidly decreased beyond 10 m from the OHWM except for site MF1 which had a peak density at 16 m from the OHWM. No live mussels were found at site MF2 and only three *P. grandis* were found at site TF2, both sites experience extensive de-watering at base flows. Across all sites, few mussels were found within 3 m of the OHWM for both pool and run habitat unless there was sufficient depth to prevent de-watering at base flows.

Age and Size Structure

P. grandis and *L. siliquoidea* were the only mussel species abundant enough to plot age distribution and mean length at age. *P. grandis* ranged in age from 0 to 12 years (Figure 3) and *L. siliquoidea* from 0 to 17 years old (Figure 4). *P. grandis* and *L. siliquoidea* exihibited good age distribution when combined

across all sites. Estimation of survival rate and mortality rate were calculated from age composition for *P. grandis* and *L. siliquoidea* (Table 6). Survival rates for age 2 and older *P. grandis* were 69% in 1999 and 58% in 2000 (Figure 5). Survival rates for age 2 and older *L.siliquoidea* were 80% in 1999 and 78% in 2000 (Figure 6). Juvenile mussels less than 2 years old comprised 37 % and 33% of the *P. grandis* population and 36% and 26% of the *L. siliquoidea* population in 1999 and 2000 respectively (Table 7). The number of *P. grandis* beyond age 5 was sharply reduced indicating a change in recruitment or survival after 1994. The remaining species were collected in insufficient numbers to accurately plot age distribution indicating low recruitment to their populations. As for the remaining species, six *A. marginata* ranged from 4 to 12 years of age, 11 *A. ferussacianus*l ranged from 2 to 9 years, eight *F. flava* ranged from 2 to 4 years, 12 *L. compressa* ranged from 2 to 8 years, and five *L. costata*l ranged from 9 to 16 years old.

Growth curves for *P. grandis* and *L. siliquoidea* showed the same overall curvilinear growth pattern, with *P. grandis* having a faster growth in length and weight than *L. siliquoidea* (Figure 7). Fastest growth occurred in the first four years of life and declined thereafter. Abrasion of the periostracum was evident on many of the mussels collected, 17 % of mussels collected had 50% or greater erosion on the shell. Shell erosion was most prominent on the umbo portion of the shell then extending onto anterior and posterior regions of the shell. Abrasion was more prominent on older mussels and mussels located in swifter flows.

Habitat

The site means for habitat variables are given in Table (8). Depth and velocity were directly influenced by discharge from the upstream dams at each site. Sampling was conducted when discharge was considered within normal mean daily flow for the time of year, but varied between sites. Water levels below the dams varied daily as much as 1.1 m at MF, 0.36 m at TF and 0.46 m at KD sites (WEPCO data for summer 1997). Mean river width ranged from 26 m (TF2) to 141 m (KD1). Site TF4 was the deepest site sampled and site TF2 the shallowest. Site TF2 was nearly completely dewatered on a regular basis at voluntary minimum flow events except for a small trickle of water down the right center portion of the channel. Live *P. grandis* and *L. siliquoidea* were observed stranded and attempting to reach deeper water on several occasions especially after periods of prolonged high water followed by sudden flow changes down to voluntary minimums.

Suitable substrate for mussels decreased with increasing distance from the bank. The percentage of fine substrates were greatest in the first 10 m from the OHWM and decreased as the distance from the OHWM and bottom velocities increased. Fine and large gravel were the dominant substrate type at intermediate and center portions of the river at all sites. Fine and coarse sand substrates suitable for mussels, were observed in the center portions of the channel beneath gravel substrate, indicating that sediment starved water released from the dams had scoured away the available fine substrates. The percent of quadrats with armored substrate increased substantially with distance from the OHWM, only three mussels were found in the 343 armored quadrats sampled. Mussel presence was positively related to macrophyte density. Sites KD1 and MF1 had the greatest percentage of macrophytes; predominantly water celery (*Vallisneria americana*). Bottom water velocities were lower and the percentage of fine substrates greater within macrophyte beds. Site MF2 had the greatest percentage of algae covering the substrate.

Ten variables were statistically significant to the occurrence of live mussels. The best model for predicting the presence of live mussels includes variables related to water depth, velocity, substrate type and presence of macrophytes, with mussel presence increasing as depth increases, increasing percentages of finer substrates of sands, muck and fine wood and macrophytes (Table 9). The presence of mussels decreased with distance from bank, increasing water velocity, cobble substrate and substrate embeddedness. Model concordance was 79.3 percent providing a reasonable relationship of mussel

presence to available habitat from a biological aspect. Top water column velocity was strongly correlated to bottom water column velocity however both velocities were weakly correlated with distance from bank.

Discussion

Mussel species richness and density in the upper Menominee River appear to be substantially reduced from what would be expected in a large river system. Species richness and density varied considerably between the three reaches and between sites within reaches. Species richness within reaches increased with increasing distance downstream, three species were found below Michigamme Falls, five below Twin Falls and six below Kingsford. Quantitative sampling during this study produced greater species richness within two of the three study reaches compared to semi-qualitative sampling during preliminary studies in 1996 and 1997. Quantitative sampling captured the same three species, *P.grandis*, *L. siliquoidea* and *A. ferussacianus*, the same as semi-qualitative sampling below Michigamme Falls, while three additional species, *F. flava, L. compressa* and *L. costata* were collected below Twin Falls, and one additional species, *A. marginata* below Kingsford. Depletion curve methodology yields good estimates of species presence and proportional abundance for comparison among sites, but provides limited data on density or biomass that can be used for long term monitoring (Strayer et al. 1995, Smith et al. 1999). Within the Menominee River watershed, mussel species richness is considerably reduced above Sturgeon Falls Dam. Thirteen species were recorded below Sturgeon Falls during preliminary a study of which four were considered large river species, one medium streams, two small stream and seven were habitat generalist. Only one large river species, L. costata, was collected at KD2 during this study.

Historical information on fish and mussel distribution in the upper Menominee River prior to the 1970's is very limited, so historical patterns must be inferred from recent data. Several explanations could explain the current distribution of mussel in the upper Menominee River. One plausible explanation for current mussel distribution may be the result of past geology in the region. As glaciers receded, Sturgeon Falls and other waterfalls upstream may have been barriers to fish movement, thus accounting for the low mussel species richness observed in the upper reaches. Sturgeon Falls is considered a historical barrier to upstream fish movement in the Menominee River and many fish species from the lower river are absent from above, especially riverine specialist species (Becker 1983; EA Science and Technology 1987; Thuemler and Schnicke 1992). The distribution of mussel species is typically closely tied to the distribution and diversity of fish species (Watters 1993). The glochidia of freshwater mussels must parasitize certain fish species in order to complete their life cycle. Many of the mussels have only a specific fish host, while some may use multiple species as hosts (Watters 1994; Cumming and Mayer 1992). Fish play an important role in the upstream distribution of mussels, once the glochidia develop and fall off of the fish host upstream movement is limited. It is unlikely that a particular mussel species will be present if the host fish species is absent.

A second explanation for mussel distribution in the upper Menominee River is that some of the mussel species now restricted below Sturgeon Falls may have been present above, but were extirpated from the upper reaches by human impacts. Municipal and industrial pollution downstream of the cities of Iron River (MI), Iron Mountain (MI) and Niagara (WI) formally caused fishkill in the upper reaches (Thuemler and Schnicke 1992) that may have eliminated mussels such as *Amblema plicata, Elliptio dilatata, Ligumia recta* and *Lampsilis cardium* and their fish host species. Dams and waterfalls would have prevented fish movements and the transport of glochidia into the upper reaches allowing mussel species to recolonize.

Another possibility is that impoundments and flow regulation due to the operation of hydroelectric facilities have led to a decline in mussel species richness and their host fish species. Significant declines in mussel fauna as a result of damming have been well documented (Isom 1969; Williams et al. 1992) as

have declines below dams as a result of peaking hydropower operations (Layzer et al 1993). In addition to direct impacts on mussels, short-term flow fluctuations below daily peaking hydropower projects have been documented to have negative impacts on host fish species especially riverine specialist species (Kinsolving and Bain 1993). It is unlikely that any new species will enter the study area due to downstream dams preventing upstream movement of host fishes. I suspect that the altered flow patterns on the upper Menominee River have likely led to the depressed mussel species richness and density through a combination of factors. Changes in flow patterns may be affecting the distribution, abundance, and habitat use of host fishes thereby affecting mussels and that dramatic flow fluctuations have led to a decrease in suitable habitat for adult and juvenile mussels. Mussel species currently present in the study area should increase in number and biomass under more stable flows.

The distribution of mussels across the channel at each site was somewhat unusual. Mussels were concentrated at an intermediate distance from the banks, and were rare or absent from nearshore areas and also from the middle of the channel. In unregulated river reaches, mussels are usually common across the entire channel, whereas in reaches experiencing daily peaking they are often scarce along the margins of the channel but widespread throughout the intermediate and center zones. Lack of mussels at the edges is probably due to de-watering of some areas during the low-flow phase of the peaking cycle couple with dramatic fluctuations in velocity and depth in those nearshore areas that are not de-watered. Given adequate time, many mussels are capable of limited movement and will generally retreat towards deeper water as water levels recede. Current water flow changes on the Menominee River below the dams occur too rapidly to allow mussels safe retreat to deeper water as witnessed by stranding of mussels and fish at MF2 and TF2. Mussels can survive for short periods of time in dewatered areas if they can burrow down into the substrate to reach the water level however, larger substrate in many of the areas prevented mussels from being able dig in. Mussels unable to dig in are vulnerable to predation or desiccation. The absence of mussels from the edges of the Menominee sites is thus not unexpected, but their absence from the center of the channel is. Absence in the center is more difficult to explain, and may be caused by particularly high velocities that scour away fine sediments needed for mussels to burrow into. High velocities in the center of the channel have created an armored-like substrate and this substrate matrix may be impenetrable to mussels. Any mussels not able to dig into the substrate would be quickly washed away downstream especially juveniles. Suitable substrate for mussel colonization consisting of fine and coarse sands and loose fine gravel is limited in the center channel portions of the river. Aggradation is universal below dams as fine substrates are scoured but the reservoir and dam proper block upstream sources. High scour occurring at a critical time in the life stage of young mussels will prevent their colonization of the substrate. Under present flow conditions, loosely compacted fine sediments suitable for mussels is limited to areas near the inside of bends or protected by upstream obstructions big enough to create large areas of finer substrate. After flow changes occur in 2001, more stable flows should allow re-colonization of habitats currently being avoided by mussels where suitable substrate exists, but may not increase available habitat overall.

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Table 1. Sampling site location in river kilometers above mouth (RK), habitat type and sampling dates.

Site	RK	Habitat	Dates 1999	Dates 2000
MF1	190.0	Run	Aug 3, 4, 9-11	Aug 14-16, 21, 22
MF2	190.6	Riffle/rapid	Oct 4, 5	June 20, Aug 1, 2
TF1	172.6	Run	June 15-17, 21-23	June 12, July 13, 17-19
TF2	172.9	Riffle/rapid	June 24, 28, Aug 5	June 6, 7
TF3	172.9	Run	June 29, 30, July 1, 21	June 7, 8, 13, 15, 19
TF4	172.4	Pool	July 19-22, 26-29, Aug 2	July 24, 25, 31, Aug 2, 3, 8, 9
KD1	162.7	Run	Sept 8-10, 13-15	Aug 22-24, 28, 29
KD2	161.9	Run	Sept 20-23, 27-29	Aug 30, 31, Sept 18, 19

Table 2. Scientific and common names of mussel species collected during 1999 and 2000 Menominee River sampling and number of live and dead mussels captured. A "SC" indicates a species of special concern for Wisconsin (WDNR 1999); "L"= large river species, "M"= medium stream/small river species, "S"= small stream species, and "G"= habitat generalist (from Cummings and Mayer 1992).

Scientific name	Common Name	Habitat	Live	Dead	Live	Dead
Anodontoides ferussacianus	Cylindrical papershell	S	8	0	3	2
Alasmidonta marginata	Elktoe	SC/M	4	0	2	0
Fusconaia flava	Wabash pigtoe	G	4	0	4	1
Pyganodon grandis	Giant floater	G	358	152	334	187
Lasmigona compressa	Creek heelsplitter	SC/S	7	3	5	6
Lasmigona costata	Fluted-shell	L	3	0	2	1
Lampsilis siliquoidea	Fat mucket	G	206	40	161	84
	Totals		590	195	511	281

Table 3. Number of mussels collected and weight (g), by species for Menominee River sites.

		1999			2000		
Site	Species	Live	Weight (g)	Dead	Live	Weight	Dead
MF1	*A. ferussacianus*	1	24	0	1	10	0
	L. siliquoidea	2	79	0	3	68	1
	P. grandis	23	1022	0	26	1490	0
	Site total	26	1125	0	30	1568	1
MF2	*L. siliquoidea*	0	0	1			
	P. grandis				0	0	1
	Site total	0	0	1	0	0	1
TF1	*F. flava*	2	23	0	2	89	1
	L. compressa				1	17	0
	L. siliquoidea	13	727	2	5	213	2
	P. grandis	47	1755	16	50	2385	13
	Site total	62	2505	18	58	2704	16
TF2	*P. grandis*	3	81	3	0	0	3
	Site total	3	81	3	0	0	3
TF3	*F. flava*	1	17	0			
	L. compressa	3	144	0	3	185	5
	L. siliquoidea	18	863	3	17	731	8
	P. grandis	27	1586	7	31	1793	34
	Site total	49	2610	10	51	2709	47
TF4	*F. flava*	1	18	0	2	98	0
	L. compressa	1	53	0	0	0	1
	L. costata	1	61	0			
	L. siliquoidea	146	5694	10	103	4651	66
	P. grandis	166	5901	79	123	5282	83
	Site total	315	11727	89	228	10031	150
KD1	*A. ferussacianus*	2	80	0			
	A. marginata	3	125	0	2	126	0
	L. compressa	2	56	3	1	37	0
	L. costata				2	121	0
	L. siliquoidea	23	968	17	21	840	4
	P. grandis	52	2409	26	51	2063	28
	Site total	82	3638	46	77	3187	32
KD2	*A. ferussacianus*	5	102	0	2	31	2
	A. marginata	1	18	0			
	L. compressa	1	4	0			
	L. costata	2	92	0	0	0	1
	L. siliquoidea	4	120	7	12	518	3
	P. grandis	40	1438	21	53	2088	25
	Site total	53	1774	28	67	2637	31

Table 4. Number of quadrats sampled, number of live mussels collected, mean mussel density and maximum density of mussel (mussels/m^2) for combine sampling years 1999 and 2000.

Site	Quadrats sampled	Number Live	Mean Density	Maximum Density
MF1	521	55	0.4	20.0
MF2	300	0	0.0	0.0
TF1	385	121	1.3	36.0
TF2	235	3	0.1	4.0
TF3	327	100	1.2	32.0
TF4	555	544	3.9	48.0
KD1	600	157	1.0	28.0
KD2	541	115	0.9	16.0

Table 5. Total number of live mussels collected per site during 1999 and 2000 relative to distance (m) from Ordinary High Water Mark. Number of mussels collected is combined for both sampling years.

DisBank	MF1	MF2	TF1	TF2	TF3	TF4	KD1	KD2
1	0	0	0	0	5	11	0	0
2	0	0	3	0	5	22	0	0
3	0	0	20	0	8	26	0	7
4	0	0	22	0	20	38	11	8
5	2	0	12	1	17	38	18	7
6	3	0	16	0	21	25	21	11
7	1	0	15	1	5	30	19	13
8	8	0	10	1	6	22	8	11
9	5	0	9	0	3	26	16	9
10	6	0	3	0	2	26	5	6
12	4	0	3	0	7	30	5	8
14	7	0	1	0	1	19	6	3
16	9	0	0	0	0	29	6	3
18	6	0	2	0	0	27	5	3
20	1	0	2		0	18	0	6
22	1		0		0	15	4	3
24	0		0		0	17	5	1
26	0		2			27	1	3
28	0		1			12	6	0
30	1		0			16	3	1
32	0		0			10	2	2
34	0		0			6	3	6
36	0					8	1	0
38	1					12	0	2
40	0					9	2	1
42	0					4	4	0
44	0					2	3	0
46	0					7	1	1
48	0					8	1	
50						4	1	
Total	55	0	121	3	100	544	157	115

Table 6. Estimated survival rates and mortality rates from age composition for *P. grandis* and *L. siliquoidea* for 1999 and 2000. Z=instantaneous rate of total mortality, A=annual mortality rate and S=survival rate (Ricker 1975).

		Lower 95%CI	Upper 95%CI	R Square	SE
P. grandis					
1999					
Z	0.3751	0.2330	0.5171	0.8478	0.4653
A	0.3128	0.2079	0.4038		
S	0.6872	0.5962	0.7921		
2000					
Z	0.5413	0.3177	0.7649	0.8240	0.7323
A	0.4180	0.2722	0.5346		
S	0.5820	0.4654	0.7278		
L. siliquoidea					
1999					
Z	0.2223	0.1594	0.2851	0.8613	0.3372
A	0.1993	0.1474	0.2481		
S	0.8007	0.7519	0.8526		
2000					
Z	0.2471	0.1609	0.3334	0.8030	0.4630
A	0.2190	0.1486	0.2835		
S	0.7810	0.7165	0.8514		

Table 7. Number of mussels aged by species and percent of age class in mussel population.

Age	P. grandis		L. siliquoidea		L. compressa		A. ferussacianus		F. Flava		A. marginata		L. costata	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0	7	1.0	2	0.5										
1	80	11.6	47	12.8										
2	157	22.7	64	17.5	1	8.3	1	9.1	1	12.5				
3	131	19.0	69	18.9			1	9.1	2	25.0				
4	111	16.1	30	8.2	3	25.0	2	18.2	3	37.5	1	16.7		
5	106	15.3	31	8.5	1	8.3	2	18.2						
6	42	6.1	30	8.2	5	41.7	1	9.1			2	33.3		
7	22	3.2	20	5.5			1	9.1	1	12.5				
8	11	1.6	21	5.7	2	16.7	2	18.2	1	12.5	1	16.7		
9	15	2.2	16	4.4			1	9.1					1	20
10	6	0.9	11	3.0										
11	1	0.1	6	1.6									1	20
12	2	0.3	6	1.6							1	16.7		
13			6	1.6									1	20
14			2	0.5							1	16.7		
15			4	1.1									1	20
16													1	20
17			1	0.3										
Totals	691		366		12		11		8		6		5	

Table 8. Site means for measured habitat variables for 1999 and 2000. N=number of samples, rwidth=river width (m), depth=mean depth (m), tvel=mid column water velocity (m/sec), bvel=bottom water velocity m/sec, br=bedrock, bld=boulder, cr=cobble/rubble, lg=large gravel, fg=fine gravel, cs=coarse sand, fs=fine sand, mk=muck, cl=clay, dt=detritus, lwd=large woody debris, fwd=fine woody debris, mac=macrophytes and alg=algae as percentage of quadrat area.

SITE	YEAR	N	rwidth	depth	tvel	bvel	Br	bld	cr	lg	fg	cs	fs	mk	cl	dt	lwd	fw	mac	alg
KD1	1999	300	141	0.71	0.48	0.23	0.0	3.8	5.5	17.4	38.0	15.6	18.1	0.2	0	0.1	0.8	0.6	29.7	0.3
	2000	300	141	0.69	0.43	0.15	0.0	3.5	5.1	21.4	38.3	14.6	14.9	0.3	0	0.2	1.0	0.8	24.7	1.4
KD2	1999	272	87	1.39	0.38	0.15	0.1	2.5	12.5	17.2	33.1	14.3	13.6	5.1	0	0.1	0.8	0.7	0.4	0.7
	2000	269	87	1.30	0.23	0.09	0.0	3.0	12.1	16.5	29.3	12.3	12.1	11.8	0	0.2	1.0	1.2	1.4	0.0
MF1	1999	261	83	0.95	0.69	0.30	0.0	1.0	8.5	31.5	37.2	7.2	11.0	3.2	0	0.3	0.0	0.0	7.5	2.3
	2000	260	83	0.89	0.50	0.22	0.0	2.3	9.9	32.6	37.3	5.7	6.1	5.9	0	0.0	0.0	0.2	7.8	6.4
MF2	1999	150	71	0.42	0.56	0.27	0.0	8.6	26.6	36.6	21.6	5.8	0.7	0.0	0	0.0	0.0	0.1	0.0	11.6
	2000	150	74	0.38	0.49	0.22	0.0	8.2	27.8	33.4	21.9	4.8	2.7	0.0	0	0.3	0.8	0.2	0.0	8.5
TF1	1999	187	58	0.80	0.67	0.34	0.0	13.7	13.8	36.5	17.0	8.1	10.5	0.1	0	0.1	0.0	0.1	0.0	0.0
	2000	198	58	0.86	0.71	0.31	0.0	10.3	13.3	25.2	37.3	8.2	4.9	0.3	0	0.0	0.4	0.0	0.0	1.2
TF2	1999	117	26	0.29	0.64	0.40	0.0	0.5	3.3	36.5	40.3	7.5	9.1	0.4	0	0.0	1.3	0.0	0.1	1.4
	2000	118	26	0.02	0.08	0.07	0.0	0.1	3.9	25.7	55.0	6.5	8.3	0.1	0	0.0	0.3	0.2	0.1	0.0
TF3	1999	159	43	0.65	0.78	0.43	0.0	6.6	9.6	28.7	35.4	7.8	11.5	0.0	0	0.0	0.0	0.3	0.6	0.0
	2000	168	45	0.48	0.48	0.23	0.0	2.3	6.7	15.4	46.3	12.1	15.8	0.3	0	0.0	0.7	0.4	0.0	7.9
TF4	1999	270	95	1.77	0.45	0.19	0.0	4.8	8.4	22.6	24.8	17.8	16.8	1.8	0	0.3	1.2	1.5	0.6	2.3
	2000	285	106	1.83	0.27	0.11	0.0	4.0	8.8	23.1	29.0	22.6	5.0	5.3	0	0.1	0.6	1.7	1.0	1.3

Table 9. Habitat variables retained in the logistic regression model (α=0.05) to predict presence of live mussels in relation to available habitat at Menominee River sites in 1999 and 2000.

Parameter	Estimate	Standard Error	Pr > ChiSq
Intercept	-1.8281	0.2047	<.0001
Distance to bank	-0.0288	0.0060	<.0001
Depth	1.0201	0.0735	<.0001
Top water velocity	-0.6269	0.2049	0.0022
Cobble	-0.0212	0.0048	<.0001
Coarse sand	0.0208	0.0030	<.0001
Fine sand	0.0173	0.0027	<.0001
Muck	0.0131	0.0039	0.0007
Fine wood	0.0798	0.0153	<.0001
Macrophytes	0.0068	0.0021	0.0009
Substrate embeddedness	-0.2331	0.0721	0.0012

Figure 1. 1999 and 2000 sampling locations on the Menominee River in northeastern Wisconsin. Two sites were located below the Michigamme Falls Dam (MF), four sites below the Twin Falls Dam (TF) and two sites below the Kingsford Dam (KD).

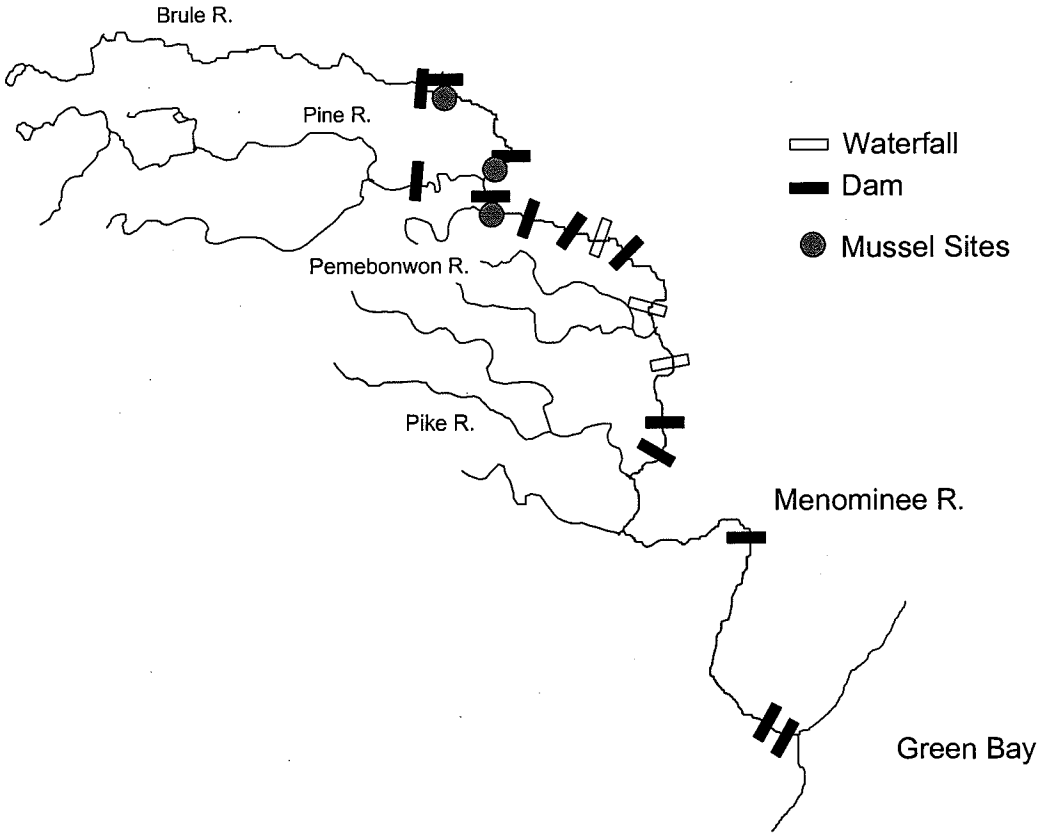


Figure 2. Number of mussels collected relative to distance from the ordinary high water mark for combine 1999 and 2000 sampling years (Polynomial smoothed trend line X^4). Quadrats were sampled every meter for the first 10 meters and every 2 meters thereafter. Sites MF2 and TF2 excluded due to lack of mussels.

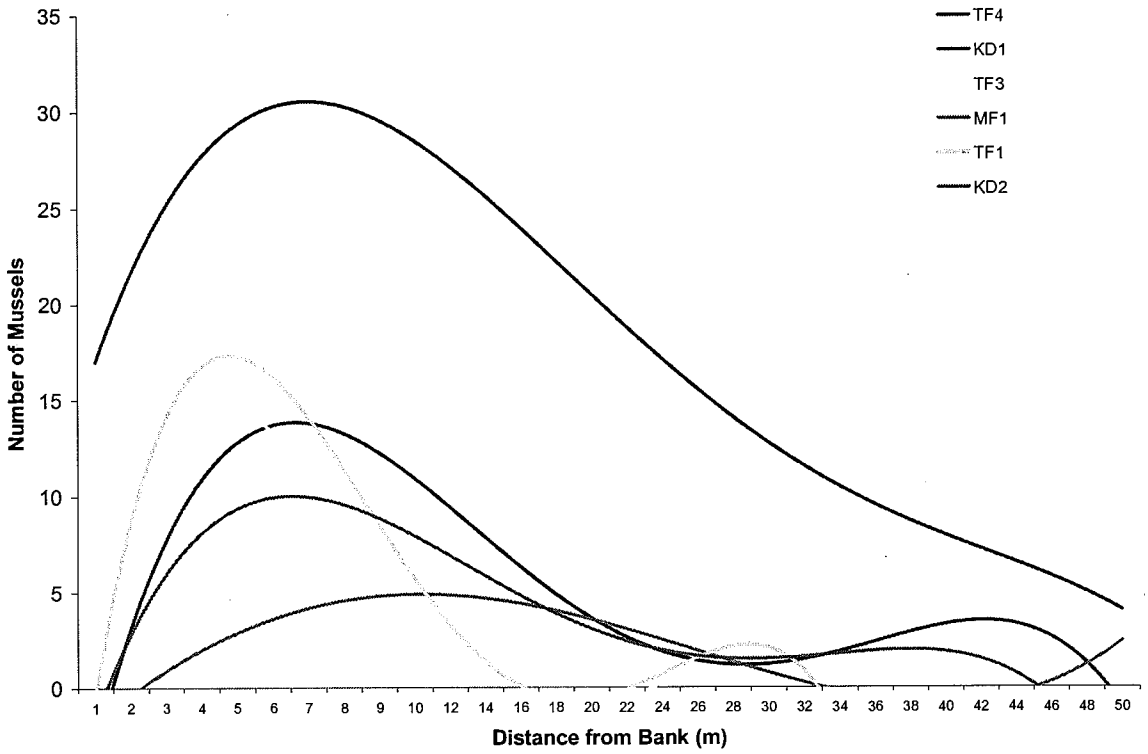


Figure 3. Age structure of *P. grandis* collected on the Menominee River in 1999 and 2000.

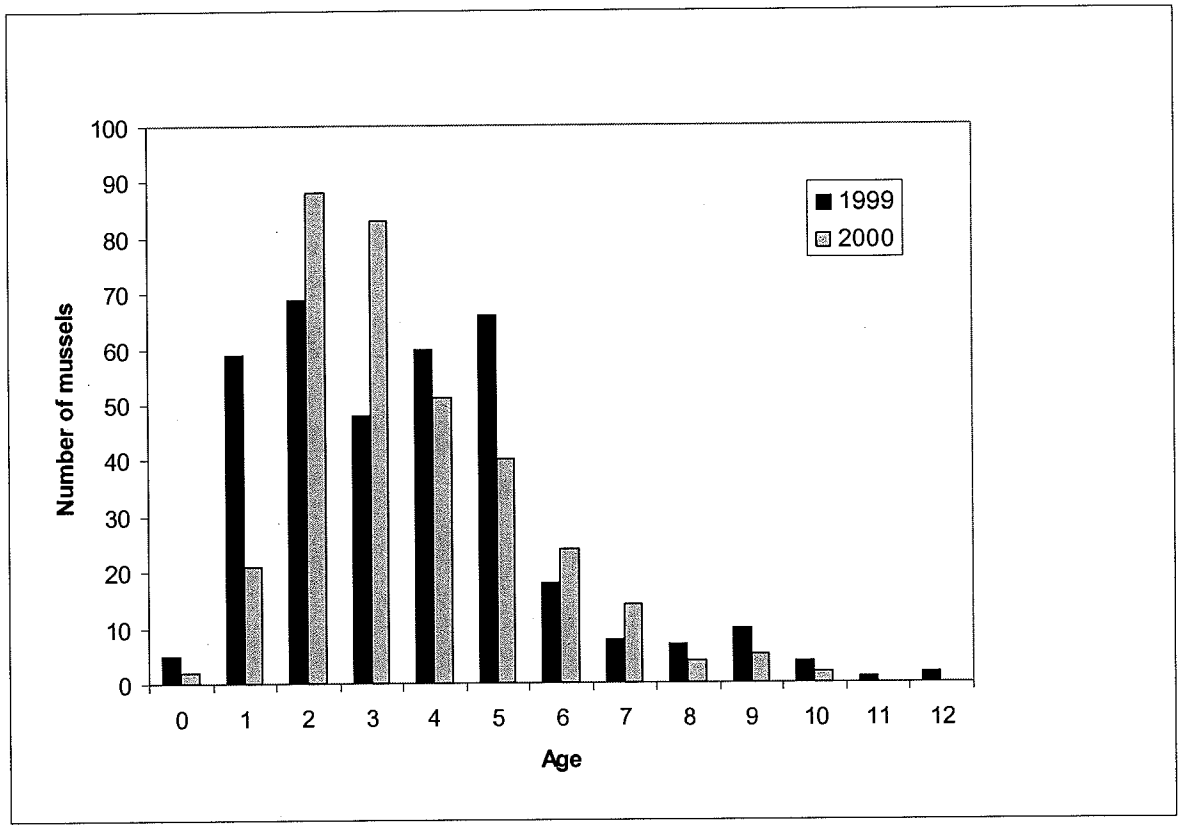


Figure 4. Age structure of *L.siliquoidea* collected on the Menominee River in 1999 and 2000.

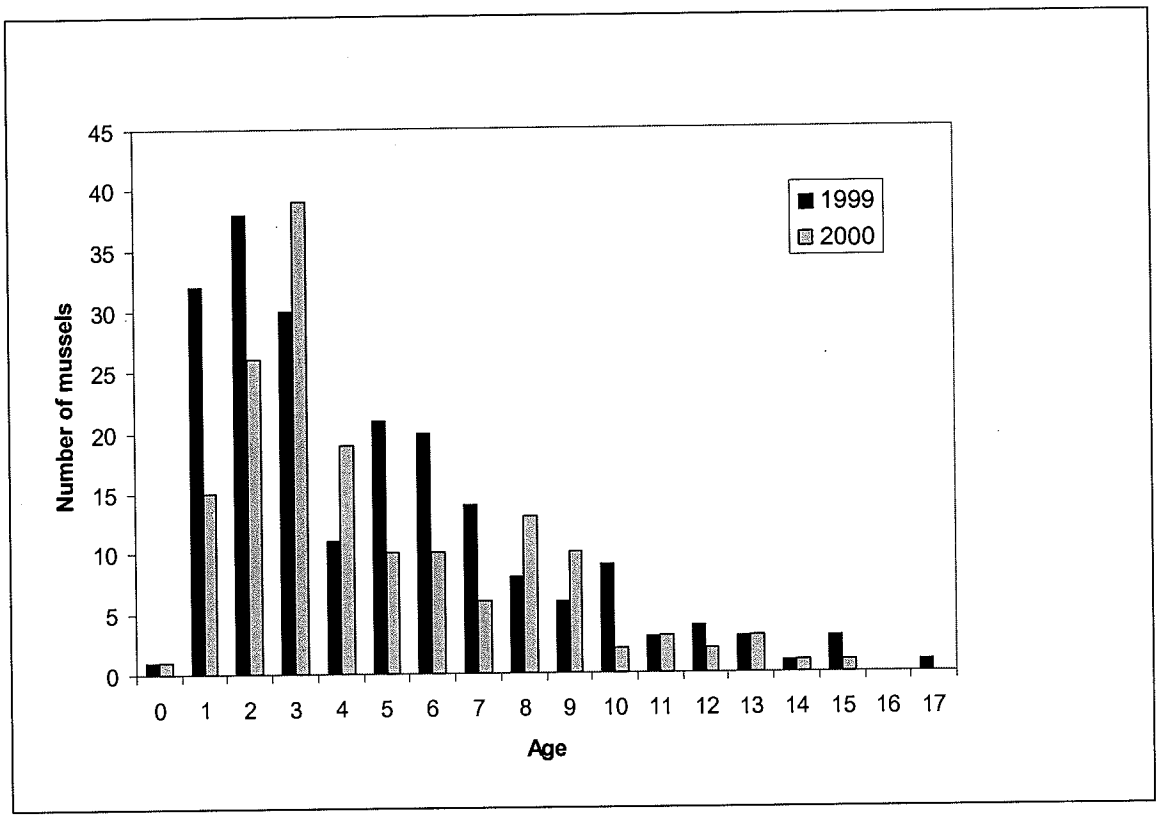


Figure 5. Catch curve for *P.grandis* collected on the Menominee River during 1999 and 2000 sampling.

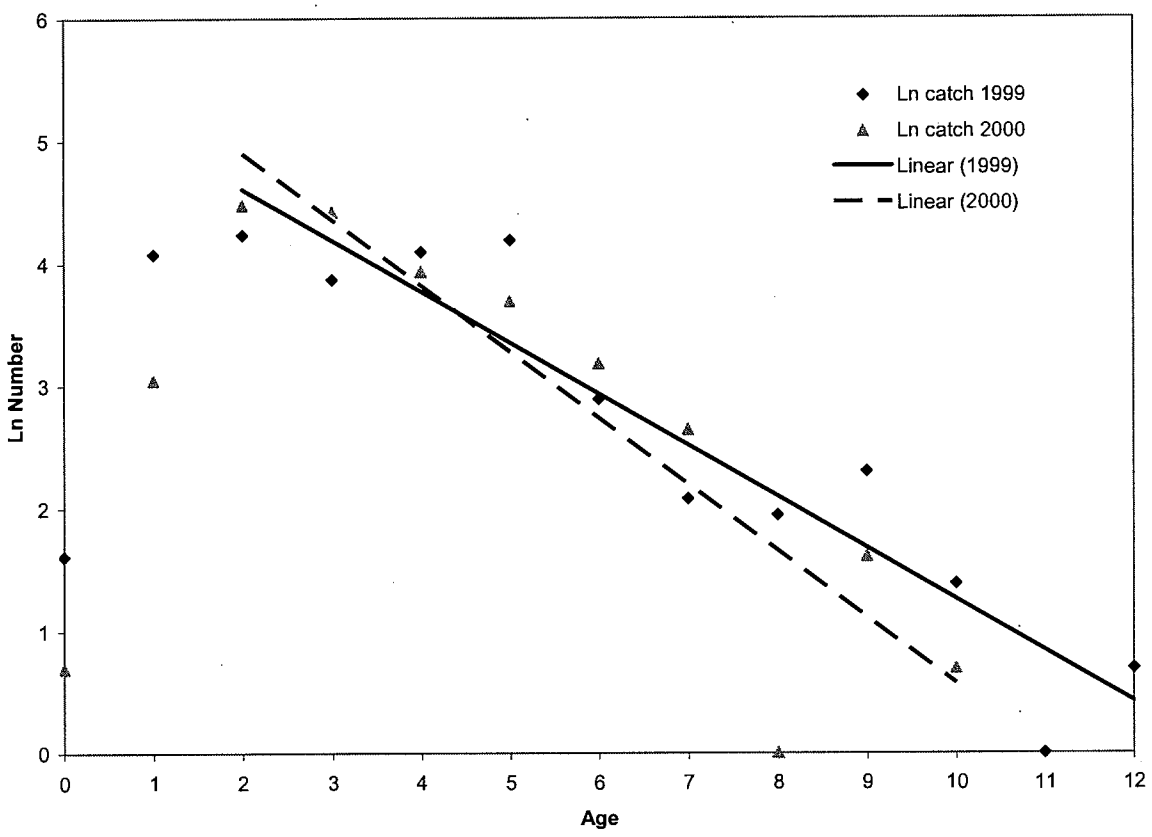


Figure 6. Catch curve for *L.siliquoidea* collected on the Menominee River during 1999 and 2000 sampling.

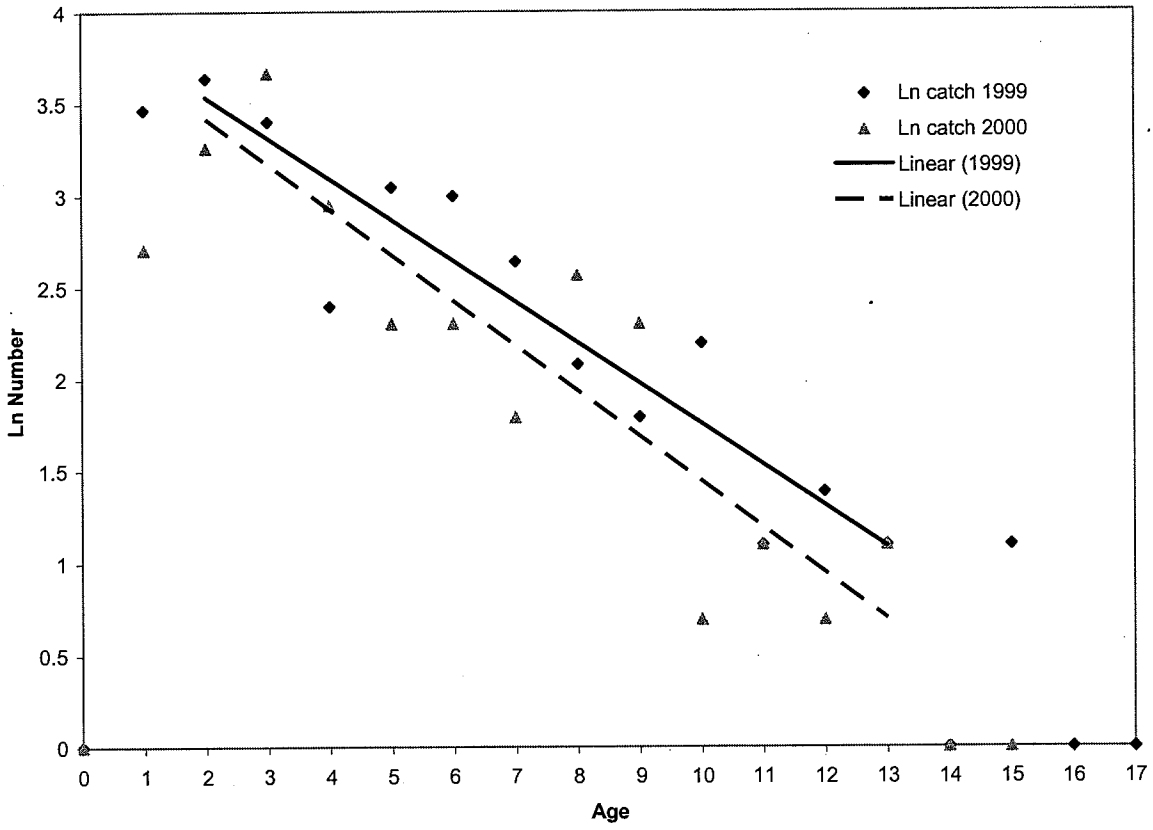
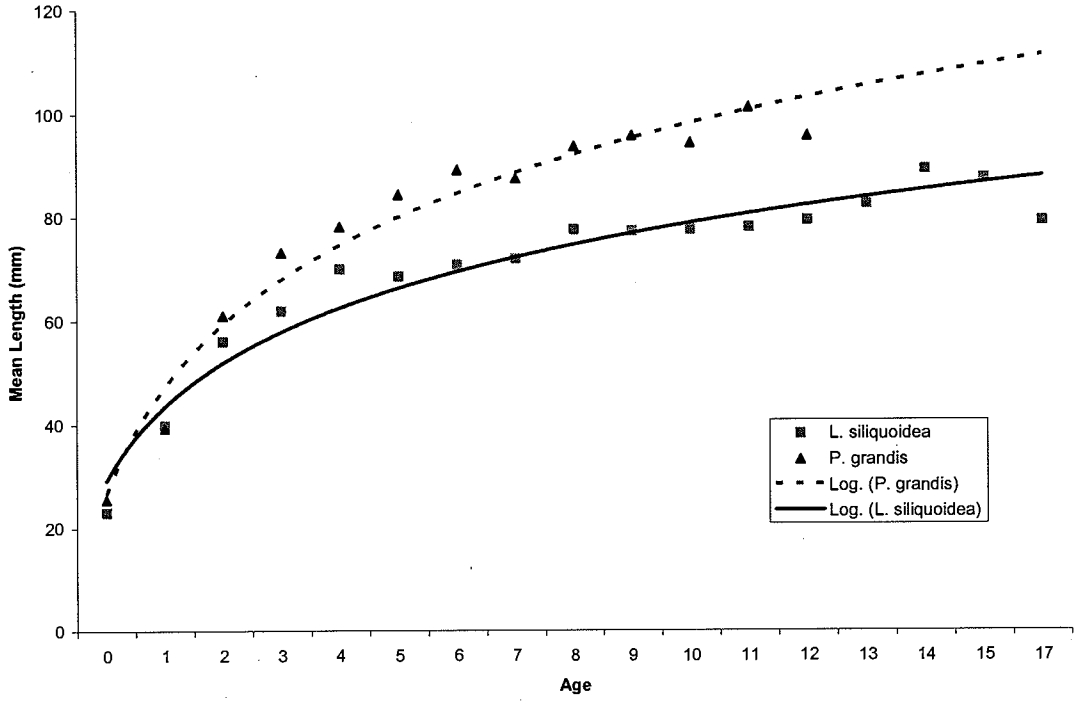


Figure 7. Mean length at age for *P. grandis* (n = 691) and *L. siliquoidea* (n = 366) collected on the Menominee River in 1999 and 2000.



State of Wisconsin/Department of Natural Resources

Study SSDM: Effects of Flow Regulation and Restriction of Passage
Due to Hydroelectric Project Operation on the Structure of
Fish and Invertebrate Communities in Wisconsin's Large River Systems

FINAL REPORT

Phase II: Menominee River
Fish and Habitat Conditions Prior to Flow Regulation Changes

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SUMMARY

The Wisconsin Department of Natural Resources is evaluating how changes in flow regulation at hydroelectric dams on the Menominee River in northeastern Wisconsin will effect fish communities. This report summarizes fish and habitat conditions from 1996-1998, prior to flow regulation changes, which were implemented in 2001. Future sampling, scheduled to begin in 2007, will examine conditions in the river after the fish community has had time to adjust to the new flow regime. In 1996, eight permanent study sites were established within riverine portions of the uppermost 51.5 miles of the Menominee River, and these were sampled for fish and habitat once per year through 1998 using standardized techniques. Single reference sites on the St. Croix River (relatively unregulated) and on the Chippewa River (heavily regulated) in northwestern Wisconsin, where flow regulation did not change, were also sampled for fish and habitat in the same manner during the same time period. The eight Menominee River sites yielded a total of 36 species and 16,259 individuals over the three years of sampling, compared with 24 species and 720 individuals from the Chippewa River site and 36 species and 2,233 individuals from the St. Croix River site. The Menominee sites had 16 species in common with the Chippewa site and 21 in common with the St. Croix site. Smallmouth bass were the most common gamefish at all sites. The St. Croix site had three state-threatened species, river redhorse, greater redhorse, and gilt darter, but no threatened or endangered fishes were taken at the Menominee or Chippewa sites. Most fish and habitat variables were stable enough over time to be useful for assessing responses to flow regime changes in the Menominee. Year-to-year variation at individual sites usually did not exceed 20% for fish species richness, 15% for fish diversity and evenness, 30% for the index of biotic integrity (IBI) score, and 20% for habitat characteristics. However, fish number and biomass had annual variation that often surpassed 100%, and these two measures will be less sensitive indicators of fish community response. Fish community characteristics had a strong longitudinal pattern in the Menominee River. The four downstream-most sites, located in the lower subarea where flow regulation was not as pronounced, had higher biomass, species richness, diversity, and IBI scores than the four upstream-most sites, located in the upper subarea where flow regulation was much greater. In particular, the abundance, biomass, and species richness of riverine specialists (obligate river dwellers) was much higher in the lower subarea. Four riverine specialists, northern hog sucker, silver redhorse, golden redhorse, and blackside darter, were common in the lower subarea but absent from the upper subarea. These species may have always been absent from the upper area because waterfalls prevented post-glacial colonization, or they may have been present historically but eliminated because of water pollution or flow regulation. Habitat varied among sites, but did not differ between the upper and lower subareas. The fish community at the Chippewa site was most similar to the community at Menominee River sites in the upper subarea whereas the St. Croix fish community was most similar site to Menominee River sites in the lower subarea. Based on findings to date, the fish community in the lower subarea will probably show less of a response to changes in flow regime than the upper subarea. The fish community in the upper subarea has great potential for improvement, but this potential may not be fully realized because dams and waterfalls will prevent species from entering the subarea in response to the changes in flow regime.

INTRODUCTION

In 1995, the Wisconsin Department of Natural Resources (WDNR) began a research study to quantify the effects of hydroelectric power dams on biological communities in Wisconsin's larger rivers (Low 1995). This study focused on riverine fish and had two phases:

I. Comparisons between river reaches with flows heavily regulated by dams and river reaches with few dams (1995-2004).

1. Intensive comparison between the heavily regulated Chippewa/Flambeau River system and the relatively unregulated St. Croix River system (Piette 2004).

2. Extensive statewide comparison among river reaches for the development of an index of biotic integrity based on fish communities, to be used for the rapid bioassessment of human impacts, including flow regulation, on large river ecosystem health (Lyons et al. 2001).

II. Evaluation of the changes in biota following a shift in flow regulation patterns in the Menominee River system (1996-2010) (This report).

The study emphasized both the site-specific effects of flow regulation from individual dams and the system-wide cumulative effects of riverine habitat modification and fragmentation from multiple dams and impoundments.

Phase II of the study, the subject of this report, has a before-and-after-control-impact (BACI) design (Underwood 1994). Intensive sampling of the biota of the Menominee River system took place in 1996-1998, before shifts in flow regulation in 2001, and are scheduled again for 2007-2010, after the biotic community has had a chance to adjust to the shifts in flows. A site on the relatively unregulated St. Croix River and another site on the heavily regulated Chippewa River were sampled as references ("control") for comparison with the Menominee River ("impact") sites. Flow regulation will not change at these two sites over the study period.

This final report summarizes results from the 1996-1998 sampling in the Menominee River system, the "before" portion of Phase II. It serves to close out the study initiated in 1995. A separate study proposal will be developed to guide the "after" portion of Phase II in 2007-2010.

STUDY AREA

The primary study area for phase II encompassed the upper portion of the Menominee River in northeastern Wisconsin, from Pemene Falls (River Mile (RM) 67.1) upstream 51.5 miles to the source of the Menominee at the confluence of the Michigamme and Brule rivers (RM 118.6) (Figure 1). The Menominee River forms the border between Wisconsin and Michigan and empties into Green Bay, Lake Michigan. Within the study area were five

hydroelectric dams: Sturgeon Falls (RM 83.0), Little Quinnesec (Niagara)(RM 91.4), Big Quinnesec (RM 96.0), Kingsford (Henry Ford)(RM 101.5), and Twin Falls (RM 107.9) (Thuemler and Schnicke 1992). Just upstream of the start of the Menominee River were Michigamme Falls Dam, located on the Michigamme River at RM 0.2, and Brule Island Dam, located on the Brule River at RM 1.7. Flow through the Michigamme Falls Dam was heavily influenced by flows from three additional dams, Peavy, Hemlock, and Way, located further upstream in the Michigamme River system. Three waterfalls remained within the primary study area (several others were inundated by the hydroelectric dams): Pemene, Quivers (RM 72.9), and Sand Portage (Pier's Gorge)(RM 89.6).

The primary study area could be split into two subareas based on the shifts in flow regulation. The upper subarea extended from the Little Quinnesec Dam upstream to the Michigamme-Brule confluence (27.2 miles; Figure 1). This subarea was influenced by daily peaking operations at the Michigamme Falls, Twin Falls, Kingsford, and Big Quinnesec dams (Thuemler and Schnicke 1992). Prior to 2001, peaking caused daily variations of over 3.3 ft in river depth, and in some areas, particularly immediately below the Michigamme Falls Dam, extensive areas of the channel were alternately dewatered and inundated over a 24-hour period. Peaking operations at all four dams changed in 2001, when a new operating regime was initiated. This regime mandated run-of-river flows during the spring, and for the rest of the year allowed peaking operations only if the daily maximum flow did not exceed twice the daily minimum. The new regime resulted in reduced daily fluctuations in flow and generally higher minimum flows. The lower subarea extended from Pemene Falls to the Little Quinnesec Dam (23.9 miles). This subarea was influenced by daily peaking operations at the Little Quinnesec Dam, although variations in depth and current were much less than in the upper subarea. Since 2001 daily fluctuations in discharge from the Little Quinnesec Dam have been "re-regulated" at the Sturgeon Falls Dam to provide more stable flows downstream.

Based on reconnaissance in 1996, we established eight sampling sites in riverine segments within the primary study area (Table 1, Figure 1). At these sites data on fish and habitat were collected (only five of the sites were sampled in 1996). Each site contained one continuous mile of riverine (i.e., non-impounded) habitat. Locations were chosen based on proximity to dams and waterfalls and ease of access. In the lower subarea, two sites were between Quivers and Pemene Falls (QF1 and QF2) and two were below Sturgeon Falls Dam (SF1 and SF2). In the upper subarea, one site was below Kingsford Dam (KD1), one was below Twin Falls Dam (TF1), and two were below Michigamme Falls Dam (MF0 and MF1). Insufficient riverine habitat existed for a sampling site below the Big Quinnesec Dam, and we chose not to sample the riverine area below Little Quinnesec Dam because of concerns about the confounding impacts of historical point-source pollution problems. Although they appeared to be riverine, analyses of flow gage data indicate that sites TF1 and KD1 experienced backwater effects from impoundments that were located just downstream (Tom Thuemler, WDNR, retired, personal communication). The Menominee River had a basin area of 1,760 square miles at MF0, the upper most site, and 3,100 square miles at QF2, the lowermost site. Mean annual flows were 1,797 ft^3/sec at TF1, 2,187 ft^3/sec below the Little Quinnesec Dam, 2,519 ft^3/sec at SF1, and 2,895 ft^3/sec below

Pemene Falls, 4.0 river miles below QF2 (Waschbusch et al. 2003). Conductivities during sampling ranged from 120-250 S/cm (WDNR, unpublished data).

Two reference sites were established in northwestern Wisconsin, one on the relatively unregulated St. Croix River, where daily peaking flows were absent, and the other on the Chippewa River below Cornell Dam, where major daily peaking occurred (Table 1, Figure 1). The St. Croix River forms the border between Wisconsin and Minnesota and the Chippewa River is wholly within Wisconsin. Both rivers empty into the Mississippi River. The two reference sites were sampled for fish and habitat in the same manner and during the same years as the Menominee River sites. At the St. Croix study site (MSC5; RM 94.8), the basin area was 4,000 square miles, and the nearest dams were 62.4 river miles upstream (Gordon Dam) and 40.0 river miles downstream (St. Croix Falls Dam). Mean annual flows were 1,322 ft^3/sec at the town of Danbury, 26.3 river miles upstream from the study site, and 4,398 ft^3/sec at St. Croix Falls, 40.2 river miles downstream (Waschbusch et al. 2003). Conductitives during sampling averaged about 150 S/cm (WDNR unpublished data). At the Chippewa River study site (MC2; RM 95.5), basin area was 4,780 square miles, and the nearest dams were 2.3 river miles upstream (Cornell Dam) and 8.2 river miles downstream (Jim Falls Dam). Mean annual flow was 5,117 ft^3/sec at the city of Chippewa Falls, 23.3 river miles downstream, and 1,818 ft^3/sec near the town of Bruce on the Flambeau River (a Chippewa River tributary larger than the Chippewa where the two met at RM 114.0), 24.5 river miles upstream. Flows at the study site fluctuated greatly because of peaking operations at the Cornell Dam. Depths varied by more than 3.3 ft and extensive areas of the channel were dewatered and inundated on a daily basis. Conductivites during sampling averaged about 90 S/cm.

METHODS

Fish

Fish were sampled throughout each study site once per year between early June and late August. Two electrofishing techniques were employed, a boat-mounted "mini-boom" shocker and a pre-positioned bottom electrofishing grid. The mini-boom, which was most efficient for medium- to large-bodied fishes, was a standard WDNR unit, with a 3500 W AC generator that passed output through a transformer and pulsar unit to provide pulsed-DC current (60 Hertz, 25% duty cycle). Power output was kept between 7.5-10.5 A and 275-400 V for a total of about 3000 W. The anode was a single boom with a Wisconsin ring and 12-16 droppers, and the aluminum boat hull was the cathode. A single netter with a 0.75-inch stretch-mesh dip net attempted to catch all fish observed (Lyons et al. 2001). The mini-boom was operated in a downstream direction over the entire length of each station (one mile). One shoreline and the middle of the channel were shocked during the daytime, and the remaining shoreline was shocked at night, for a total of three miles of mini-boom sampling. Preliminary studies in 1995 on the St. Croix, Chippewa, and Wisconsin rivers indicated that one mile of daytime shoreline shocking gave a reasonably accurate and precise picture of fish community structure and composition, but that night shocking yielded great numbers and biomass and a wider size range of fish. The mid-channel shocking was included to capture fishes not closely associated with shoreline habitat.

Electrofishing grids (Bain et al. 1985) were used to capture small-bodied fishes in shallow shoreline habitats that could not be adequately sampled with the mini-boom. The grids were 6.6 X 26.2 ft, covering a rectangular bottom area of 173 ft^2. The long axes of the grid were made of steel wire and served as the electrodes; the ends of these wires were joined by ropes to form a rectangle. The electrodes were powered by a 3500 W generator that produced AC current at 7-11 A and 250-500 V. Girds were positioned on the bottom within 1 foot of shore in water less than 3.3 ft deep, with their long axis parallel to the shoreline. Grids were set and then left undisturbed for at least 15 minutes prior to activation, which allowed sufficient time for small fishes to recover from any disturbance caused by the setting of the grid. Power was then applied to grids for 30 seconds, and all stunned fish were collected with dip nets. In fast current, a small-mesh seine was held just downstream of the grid during sampling to catch drifting fish. Grids were set in pairs (each member of the pair separated by 33 ft) at 13 randomly chosen locations over the entire length of each one-mile site, for a total of 26 grid samples per site. Preliminary work in 1995 on the St. Croix and Wisconsin rivers indicated that 26 grid samples gave a reasonably accurate and precise estimate of the community structure and composition of small shoreline fishes.

All captured fishes were identified to species, counted, and weighed in aggregate. Scientific names are given in Appendix 1. Gamefish (listed in Appendix 1) were measured for total length to the nearest mm. Scales were taken from a subsample of smallmouth bass for aging, but these aging data have not yet been fully analyzed and are not included in this report. Voucher specimens of difficult to identify or rare species were preserved for later examination in the laboratory, but most captured fish were returned to the river after processing.

The following summary statistics were calculated for each site for all miniboom and grid samples pooled, except as noted (see Fausch et al. 1990 for formulae): total number of fish, total biomass, total species richness, species diversity (Shannon index) based on number and on biomass, evenness based on number and on biomass, index of biotic integrity (IBI) score and rating (based only on daytime shoreline miniboom sample; Lyons et al. 2001), and the number of individuals, biomass, and species richness of gamefish species and of riverine specialist species (require riverine habitat for entire life cycle, Kinsolving and Bain 1993; listed in Appendix 1).

Habitat

The following variables were measured or visually estimated for each grid using standard procedures from Simonson et al. (1994): stream channel macrohabitat type (seven categories), shoreline vegetation/land use type (seven categories), cover types (four categories), cover densities (four levels), amounts of bottom substrates (seven types), depths (six positions), and current velocity (three positions). Mean values or percentage frequency of occurrence from all 26 grids were determined for each habitat variable for each site.

RESULTS

Fish

Over the three years of the study, the eight Menominee River sites yielded a total of 36 fish species and 16,259 individuals. Recall that only five of the eight sites were sampled in 1996. The Chippewa River reference site (MC2) produced 24 species and 720 individuals and the St. Croix reference site (MSC5) 36 species and 2,233 individuals. The Menominee River had 16 species in common with the Chippewa and 21 with the St. Croix. No state threatened or endangered species were collected from the Menominee or Chippewa River sites, but three Wisconsin threatened species, river redhorse, greater redhorse, and gilt darter, were captured in the St. Croix (Appendices 1-3).

Variation among years – In the Menominee River, year-to-year variation at individual sites was high for two of the fish summary statistics, but limited for the rest. The total number of fish and total biomass fluctuated substantially (> $\pm$100%) among years at some sites, but values for species richness, diversity, evenness, and IBI score and rating were generally much more stable (Table 2). For seven of the eight Menominee River sites the total number of fish was much greater in 1998 than in other years because of the catch of large numbers of young-of-the-year (YOY) white sucker and smallmouth bass (Tables 3-5; Appendices 1-3). However, for only four of these sites was total biomass highest in 1998 (Table 2). At most sites, annual variation did not exceed three species (< $\pm$20%) for species richness, 0.3 units (< $\pm$15%) for diversity, and 0.1 units (< $\pm$15%) for evenness. Index of biotic integrity (IBI) scores usually changed by less than 15 points (< $\pm$30%) and the overall quality rating remained constant across the three years. Major exceptions to this pattern occurred at Menominee River sites KD1 and MF0, where particularly high catches of YOY white sucker in 1998 dropped diversity values based on number by 1.3 to 1.5 units and evenness based on number by 0.5 to 0.6 units. At site KD1 diversity and evenness based on biomass changed little in 1998, but at MF0 diversity based on biomass increased by 0.7 units and evenness based on biomass by 0.3 units. The IBI score at Menominee River site MF1 jumped by 25 points and the quality rating improved from poor to fair in 1998 as a consequence of an elevated number of YOY smallmouth bass and the capture of longnose sucker and brook trout. Longnose sucker and brook trout are intolerant coldwater species not normally found in the warmwater Menominee.

Subsets of the total species pool varied in essentially the same manner (Table 2). For gamefish species, there were substantial year-to-year fluctuations in total number at all sites and in biomass at about half the Menominee River sites (Table 2). However, species richness at the sites did not vary by more than three species. Most of the differences over time in number and biomass were caused by changes in YOY smallmouth bass numbers, particularly the relatively high catches in 1998 (Tables 3-5). For riverine specialist species, total number and biomass fluctuated substantially at about half the sites, but species richness did not vary by more than three species (Table 2).

The St. Croix and Chippewa River reference sites had annual variation patterns generally similar to the Menominee River. Numbers and biomass of all fish, gamefish, and riverine specialists varied substantially over time, but

diversity, evenness, and IBI scores and ratings changed relatively little (Table 2). Species richness of all species, gamefish, and riverine specialists was stable across years in the St. Croix but was higher in 1998 than in 1996 or 1997 in the Chippewa.

Variation among sites – In the Menominee River, most of the fish summary statistics differed between the upper and lower subareas (Table 2). With but a few exceptions, total biomass, total species richness and diversity were higher in the four sites in the lower study subarea (QF2, QF1, SF2, SF1) than in the four sites in the upper subarea (KD1, TF1, MF1, MF0). Index of biotic integrity ratings were always excellent in the lower subarea sites but usually poor and never better than fair in the upper subarea sites. Total number of fish and evenness did not show as clear a difference between the two subareas, although the lowest values occurred in the upper subarea. There were no apparent longitudinal trends in summary statistics within either subarea.

Number of fish, biomass, and species richness differed between the upper and lower subareas for riverine specialists but not for gamefish (Table 2). For riverine specialists, all three summary statistics were much higher in the lower subarea. In particular, biomass of riverine specialists was always at least 1000 times greater in the lower subarea than the upper. Four riverine specialist species, northern hog sucker, silver redhorse, golden redhorse, and blackside darter, were consistently common in the lower subarea sites, but absent from the upper subarea sites (Appendices 1-3). Hornyhead chub was the only riverine specialist species taken at all eight sites. For gamefish, there were no longitudinal trends in number of fish, biomass, or species richness, nor any clear differences between the upper and lower subareas. The highest number and biomass occurred at site TF1 in the upper subarea. Smallmouth bass were the most numerous gamefish and occurred at all eight sites. Rock bass and walleye were also captured at all sites, and northern pike were found at all sites except MF0.

Most of the fish summary statistic values for the two reference sites overlapped with those of the Menominee sites (Table 2). Values for the Chippewa site always fell within the range of Menominee site values except in 1996, when total species richness and diversity based on number were lower than Menominee values. Chippewa values for riverine specialist number, biomass, and species richness were higher than values from the upper subarea of the Menominee but lower than values from the lower subarea. Chippewa IBI scores and ratings (poor to fair) were similar to scores and ratings for the upper subarea of the Menominee. The St. Croix site consistently had the highest values for total species richness, diversity, and riverine specialist species richness. However, values for total number of individuals, total biomass, evenness, number and biomass of gamefish, and number and biomass of riverine specialists usually fell within the range of Menominee values. St. Croix values for IBI score and rating (always excellent) and number and biomass of riverine specialists were similar to values from the lower subarea of the Menominee and higher than values from the upper subarea. Among riverine specialist species, the St. Croix and Chippewa sites both had northern hog sucker, silver redhorse, and blackside darter (Appendices 1-3). The St. Croix

site also had hornyhead chub and golden redhorse, but these two species were not captured at the Chippewa site. The smallmouth bass was the most common gamefish species at both the Chippewa and St. Croix sites, but the two reference sites usually had smaller numbers of legal-sized smallmouth bass than the Menominee sites (Table 3-5). Rock bass and walleye occurred at both the St. Croix and Chippewa sites, but northern pike were encountered only at the St. Croix site.

Habitat

Habitat was collected only from shallow, near-shore margins of each study site. All sites had shorelines of natural vegetation and bottoms of natural substrates with a range of cover types.

Variation among years – In the Menominee River, year-to-year variation in most habitat characteristics was low (Table 7). Macrohabitat classifications were stable over time, and depths and current velocities at sampling points changed relatively little. Percentage measures of shoreline vegetation, cover, and substrate usually fluctuated less than 20%. Major exceptions were for site SF1, where relative amounts of large woody debris, boulder, and overhanging vegetation cover shifted from 1996 to 1997, and for sites QF2, SF2, and SF1 where percentages of forest shoreline increased substantially from 1997 to 1998.

The Chippewa and St. Croix reference sites also had relatively stable habitat values, and variation in most habitat characteristics was comparable to that observed in the Menominee (Table 7). In the St. Croix and Chippewa, as in the Menominee, habitat variables usually changed less than 20% from year to year. At the Chippewa site the relative amounts of grass shoreline decreased and forest shoreline increased by more than 20% between 1996 and 1997, and the relative proportions of large woody debris and boulder cover fluctuated substantially over all three years. In the St. Croix, the amount of grass shoreline declined and forest increased from 1997 to 1998. At both reference sites, macrohabitat classifications varied more than in the Menominee, with values in 1997 distinct from 1996 and 1998, which were more similar to each other.

Variation among sites – In the Menominee River there were no clear geographic patterns in habitat conditions (Table 7). Habitat varied among sites, but no longitudinal trends were evident, and values for sites in the lower subarea did not differ consistently from values in the upper subarea. Over all eight sites, pool habitat was scarce. Deep run was present at all sites, and sites QF1, SF2 TF1, MF1, and MF0 also had substantial shallow run/riffle habitat. Bank vegetation for all eight sites was predominantly forest, although grass and shrub banks also occurred. Cover at all sites was provided in the form of large woody debris, boulders, and overhanging vegetation. Sand was a common substrate at all sites. At sites QF2, QF1, SF1, and KD1 silt was common, whereas at SF2, TF1, MF1, and MF0 gravel and rubble/cobble were common.

Habitat conditions at the St. Croix and Chippewa reference sites were generally similar to conditions at the Menominee sites (Table 7). Both sites had predominantly forested banks with substantial amounts of grass banks. Boulders and large woody debris were important cover types, and sand and rubble/cobble were major substrates. The Chippewa site had predominantly deep run and shallow run/riffle macrohabitat and substantial gravel substrate. Differences between the reference sites and the Menominee were the presence of pool macrohabitat at the Chippewa and particularly the St. Croix sites, the scarcity of overhanging vegetation cover at both reference sites, the occurrence of substantial aquatic vegetation cover at the St. Croix site, and the greater amounts of boulder substrate and cover at both reference sites.

DISCUSSION

Variation among years

Fish and habitat variables appeared to be sufficiently stable over time to be useful in assessing responses to changes in flow regime in the Menominee River. Most variables fluctuated by 15-30% over the first three years of the study, prior to reductions in peaking flows that were initiated in 2001. Number and biomass of fish changed by a much greater amount from year to year, often more than 100%. Abundance and size structure of smallmouth bass also fluctuated widely. Given how much they changed annually even in the absence of flow changes, number and biomass of fish and smallmouth bass population characteristics will be less sensitive indicators of fish community response to flow regulation change than will the other fish variables. The observed levels of variation are typical of fish and habitat data from Wisconsin rivers and were probably caused by a combination of sampling error and natural fluctuations in fish and habitat conditions at the sites (Simonson et al. 1994; Lyons et al. 2001).

Variation among sites

Strong longitudinal patterns were evident in the fish community within the Menominee River. The upper subarea, where flow regulation was greatest, had lower total fish number, biomass, diversity, and biotic integrity than the lower subarea, where flow regulation was lesser. Much of the difference between subareas was caused by great disparities in the species richness, abundance, and especially biomass of riverine specialist species; riverine specialists such as northern hog sucker, silver redhorse, golden redhorse, and blackside darter were common in the lower subarea, but absent in the upper. Interestingly, the gamefish portion of the fish community differed little between the two subareas.

The differences in fish communities between the upper and lower subareas could be due to natural factors. Sturgeon Falls was a historical barrier to upstream movement by lake sturgeon and perhaps other fishes migrating out of Green Bay (Thuemler and Schnicke 1992). It and other waterfalls may also have served as barriers to upstream movements of colonizing fish species as glaciers receded from what is now northern Wisconsin and the upper peninsula of Michigan, thus causing the absence of certain species in the upper subarea.

Unfortunately, data from prior to the 1970s on fish in the upper portion of the Menominee River are very limited, so historical distribution patterns must be inferred from current data. Judging from present fish distribution patterns (this study; Becker 1983; EA Science and Technology 1987; Thuemler and Schnicke 1992; Greg Seegert, EA Science and Technology, Deerfield, Illinois, personal communication), Sturgeon Falls may have been the historical upstream limit for northern brook lamprey, northern hog sucker, and perhaps green sunfish; Sand Portage Falls may have been the upstream limit for rosyface shiner and silver redhorse; and Little Quinnesec Falls may have been the upstream limit for golden redhorse, shorthead redhorse, and blackside darter.

An alternative explanation for current fish distribution patterns is that at least some of the species now restricted to the lower subarea may have historically occurred in the upper subarea as well, but disappeared because of human impacts. Municipal and industrial pollution formerly caused fish kills downstream of the cities of Iron River (MI), Iron Mountain (MI), and Niagara (WI) (Thuemler and Schnicke 1992), and could have eliminated fish species such as rosyface shiner, northern hog sucker, silver and golden redhorse, and blackside darter that are sensitive to poor water quality (Lyons et al. 2001). Dams and waterfalls would have prevented these species from recolonizing the upper subarea after water quality was improved in the 1970s and 1980s. Another possibility is that impoundment and flow regulation from dams contributed to the disappearance of riverine specialist fish species. By definition, riverine specialist fish species are absent from impoundments. Kinsolving and Bain (1993) found that riverine specialist fishes were particularly sensitive to short-term flow fluctuations and tended to avoid river areas influenced by daily hydropower peaking.

Habitat conditions did not vary longitudinally and were not closely related to fish community structure in the Menominee River, suggesting that factors other than habitat were of primary importance in determining fish community characteristics. For example, site SF2, which had predominantly rocky substrates, had a fish community similar to site SF1, which had predominantly fine (silt and sand) substrates. Site MF1 had relatively high cover density and variety, and thus some of the best fish habitat, and yet had a relatively low number, biomass, and diversity of fish.

Although located in a different part of the state, the reference sites seemed to be reasonably similar to the Menominee River sites in terms of fish communities and habitat. There were many fish species in common between the Menominee River and the St. Croix and Chippewa sites. The St. Croix site had the richest fauna, but values for most measures of community structure overlapped. The gamefish faunas of the Menominee sites and the two reference sites were similar. Habitat conditions also overlapped substantially among sites, although pool habitat was common only at the two reference sites. The Chippewa site, which had heavily regulated flows, had a fish community most similar to that of the highly regulated upper subarea of the Menominee River, whereas the St. Croix site, which had

unregulated flows, had a community most similar to that of the lower subarea of the Menominee River, where flows were less heavily regulated than in the upper subarea.

Predicted responses to flow regime changes in the Menominee River

Based on results gathered thus far, two predictions can be made concerning fish community changes in the Menominee River in response to the reduced daily peaking flows begun in 2001. First, changes in the lower subarea of the Menominee River are likely to be smaller than changes in the upper subarea. In the lower subarea, the modifications in flow regime since 2001 have been less dramatic than in the upper subarea, and the fish community in the lower subarea was already in relatively good condition in 1996-1998 and had less room for improvement. Of the fish variables that have been measured, species richness and diversity have the greatest potential to increase in the lower subarea.

Second, the upper subarea has great potential for improvement, but may not fully realize this potential because of isolation. The modifications in flow regime in the upper subarea since 2001 have been large, and the fish community there in 1996-1998 was well below expectations for a relatively unregulated system. Species richness and diversity, particularly for riverine specialist species, and IBI scores have the greatest room for improvement. However, many species that might survive or even thrive under the new flow regime are blocked from entering the upper subarea by dams and waterfalls. Riverine specialist species already present in the upper subarea, such as hornyhead chub and longnose dace, will probably increase in abundance in response to the reduced peaking flows. However, other riverine specialists that would likely benefit from reduced peaking, such as northern hog sucker, silver redhorse, golden redhorse, and blackside darter, cannot access the upper subarea. Thus, barring direct introductions of currently absent riverine specialists, the upper subarea fish community will not change as much as it would if there were no barriers to upstream fish movement.

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Table 1. Location of sampling sites. All sites were one mile in length; the river mile and location refer to the downstream end of the site.

Code	River Mile	Location
Menominee River sites		
QF2	68.3	4.6 miles below Quivers Falls and 1.2 miles above Pemene Falls, centered on Faithorn Landing (MI)
QF1	71.6	1.3 miles below Quivers Falls, 2.8 miles above Faithorn Landing (MI)
SF2	75.6	7.4 miles below Sturgeon Falls Dam, 2.7 miles above Quivers Falls, 1 mile below Saler Landing (WI)
SF1	81.6	1.4 miles below Sturgeon Falls Dam, 1.3 miles below Sturgeon Falls Dam Landing (MI)
KD1	99.9	1.6 miles below Kingsford Dam, 1.9 miles above Aurora Landing (WI)
TF1	106.7	1.2 miles below Twin Falls Dam, 2.4 miles above Kingsford Flowage Landing (MI)
MF1	116.8	2 miles below confluence of Michigamme and Brule rivers, 2.0 miles below Michigamme Falls Dam, and 1.6 miles above landing (WI)
MF0	118.0	0.8 miles below confluence of Michigamme and Brule rivers, 1.0 miles below Michigamme Falls Dam (site extends 0.2 miles into Michigamme River to the base of the dam)
Reference sites		
MC2	95.5	Chippewa River (WI), 2.3 miles below Cornell Dam, 2.8 miles above Willow Island Landing (Old Abe Lake)
MSC5	94.8	St. Croix River (WI/MN), 0.2 miles above Snake River mouth (MN), 0.3 miles above Soderbeck Landing (WI)

Table 2. Number of individuals, biomass (lbs), species richness, diversity, evenness, and index of biotic integrity (IBI) score and rating for all species of fish, and number of individuals, biomass, and species richness for gamefish and riverine specialist species captured from study sites during 1996-1998. "NS" indicates not sampled. Ratings for the IBI score are "E" = excellent, "F" = fair, and "P" = poor. All values are for the combined catch of the miniboom and grid shockers, except for the IBI value and score, which is based on the daytime shoreline miniboom shocking only.

		Value for each site									
		Menominee River								Reference	
Common name	Year	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
All species											
Number of individuals	1996	537	NS	682	582	279	NS	412	NS	340	432
	1997	679	380	780	539	225	588	155	123	170	1199
	1998	591	1640	1487	973	1809	965	928	1905	210	602
Biomass (lbs)	1996	251	NS	425	414	97	NS	70	NS	62	158
	1997	396	178	389	495	169	99	84	119	156	207
	1998	191	436	541	350	99	220	106	48	139	103
Species Richness	1996	21	NS	16	17	14	NS	16	NS	12	29
	1997	19	19	17	17	15	12	17	15	14	28
	1998	18	26	20	17	12	15	15	12	18	28
Diversity based on number	1996	2.1	NS	2.1	2.5	2.1	NS	1.6	NS	1.4	2.6
	1997	2.2	2.1	2.2	2.3	2.0	1.8	2.2	2.1	1.9	2.3
	1998	2.3	2.4	2.1	2.1	0.5	2.0	1.7	0.8	1.8	2.6
Diversity based on biomass	1996	1.5	NS	1.4	1.6	1.2	NS	1.0	NS	1.6	2.1
	1997	1.5	1.4	1.3	1.4	1.2	0.6	1.0	0.8	1.4	1.8
	1998	1.5	1.6	1.5	1.5	1.2	1.2	0.9	1.5	1.6	2.1
Evenness based on number	1996	0.7	NS	0.8	0.9	0.8	NS	0.6	NS	0.6	0.8
	1997	0.7	0.7	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.7
	1998	0.8	0.7	0.7	0.7	0.2	0.8	0.6	0.3	0.6	0.8

Table 2. Continued.

Common name	Year	Value for each site: Menominee River QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	Reference MC2	MSC5
All species											
Evenness based on biomass	1996	0.5	NS	0.5	0.6	0.5	NS	0.4	NS	0.7	0.6
	1997	0.5	0.5	0.5	0.5	0.4	0.2	0.4	0.3	0.5	0.5
	1998	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.6	0.6	0.6
IBI score/rating	1996	80/E	NS	90/E	100/E	31/P	NS	25/P	NS	30/P	95/E
	1997	80/E	85/E	80/E	95/E	25/P	31/P	25/P	25/P	40/F	90/E
	1998	90/E	100/E	85/E	100/E	25/P	44/F	50/F	25/P	35/P	90/E
Gamefish species											
Number of individuals	1996	61	NS	98	89	87	NS	62	NS	62	121
	1997	106	38	80	115	115	140	34	30	15	428
	1998	218	274	172	252	83	556	109	191	119	82
Biomass (lbs)	1996	13	NS	46	40	37	NS	26	NS	29	13
	1997	24	13	26	40	75	92	29	31	53	24
	1998	24	22	35	26	62	216	57	33	37	2
Species richness	1996	8	NS	5	6	8	NS	6	NS	4	7
	1997	5	6	5	6	7	6	8	6	3	7
	1998	6	6	5	5	5	8	6	5	7	6
Riverine specialist species											
Number of individuals	1996	304	NS	407	240	12	NS	11	NS	56	162
	1997	322	127	423	223	14	56	6	2	76	638
	1998	169	431	519	168	37	66	21	5	30	366

Table 2. Continued.

Common name	Year	Value for each site: Menominee River QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	Reference MC2	MSC5
Riverine specialist species											
Biomass (lbs)	1996	141	NS	202	238	< < 1	NS	< < 1	NS	18	112
	1997	246	123	205	337	< < 1	< < 1	< < 1	< < 1	64	161
	1998	139	253	326	233	< < 1	< < 1	< < 1	< < 1	37	68
Species richness	1996	6	NS	5	6	2	NS	2	NS	3	11
	1997	7	7	6	5	2	1	1	1	3	10
	1998	6	10	8	6	2	2	3	1	5	11

Table 3. Total length frequency by inch group for smallmouth bass caught during 1996. The minimum legal size for harvest was 14" for MC2 and 12" for other stations. Menominee River sites QF1, TF1 and MF0 were not sampled in 1996.

	Catch of smallmouth bass						
	Menominee River					Reference	
Inch group	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
< 4.0	22	28	28	8	7	34	59
4.0 - 4.9	0	0	0	1	0	0	0
5.0 - 5.9	0	0	2	0	0	0	7
6.0 - 6.9	2	3	0	0	1	1	8
7.0 - 7.9	1	0	0	1	1	0	1
8.0 - 8.9	3	9	1	1	0	0	0
9.0 - 9.9	4	9	7	1	0	2	1
10.0 - 10.9	2	5	3	0	2	5	4
11.0 - 11.9	0	7	0	0	0	2	0
12.0 - 12.9	0	3	2	0	0	0	0
13.0 - 13.9	1	2	2	2	3	1	0
14.0 - 14.9	0	2	1	3	1	1	1
15.0 - 15.9	0	0	2	2	0	2	0
16.0 - 16.9	0	1	5	1	2	0	0
17.0 - 17.9	0	2	1	0	1	0	0
18.0 - 18.9	0	0	0	0	0	0	0
19.0 - 19.9	0	0	0	0	0	0	0
Total	35	71	54	20	18	48	81
Number of legal size	1	10	13	8	7	3	1

Table 4. Total length frequency by inch group for smallmouth bass caught from study sites during 1997. The minimum legal size for harvest was 14" for MC2 and 12" for other stations.

	Catch of smallmouth bass									
	Menominee River								Reference	
Inch group	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
< 4.0	53	16	34	60	1	9	2	1	0	174
4.0 - 4.9	2	1	1	4	0	0	0	0	0	2
5.0 - 5.9	0	0	0	2	0	4	1	1	0	14
6.0 - 6.9	1	0	0	0	1	3	0	0	1	2
7.0 - 7.9	0	1	3	0	1	8	0	0	0	0
8.0 - 8.9	1	0	4	0	0	9	0	0	0	2
9.0 - 9.9	1	1	1	0	4	12	0	1	1	3
10.0 - 10.9	7	3	3	1	6	9	0	1	1	0
11.0 - 11.9	4	1	8	3	6	6	1	1	1	1
12.0 - 12.9	1	2	2	1	2	1	0	0	2	1
13.0 - 13.9	1	0	0	0	2	9	0	1	0	0
14.0 - 14.9	3	1	2	1	4	13	2	4	0	0
15.0 - 15.9	0	0	2	4	2	3	2	5	0	0
16.0 - 16.9	1	0	1	2	2	4	0	1	0	0
17.0 - 17.9	0	1	0	1	4	6	3	0	1	0
18.0 - 18.9	0	0	0	1	0	0	2	0	0	0
19.0 - 19.9	0	0	0	0	0	0	0	1	0	0
Total	77	27	61	80	35	96	13	17	7	199
Number of legal size	6	4	7	10	16	36	9	12	1	1

Table 5. Total length frequency by inch group for smallmouth bass caught from study sites during 1998. The minimum legal size for harvest was 14" for MC2 and 12" for other stations.

	Catch of smallmouth bass									
	Menominee River								Reference	
Inch group	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
< 4.0	140	170	134	181	4	80	25	13	90	39
4.0 - 4.9	3	6	4	0	0	92	4	0	0	4
5.0 - 5.9	15	11	0	3	0	60	2	0	3	8
6.0 - 6.9	10	3	1	1	0	13	0	0	0	0
7.0 - 7.9	3	0	1	0	0	10	1	0	0	0
8.0 - 8.9	1	4	2	0	0	6	0	0	0	2
9.0 - 9.9	0	1	0	0	2	7	0	0	0	0
10.0 - 10.9	0	0	6	0	4	0	0	0	0	0
11.0 - 11.9	0	2	4	3	8	4	1	0	0	1
12.0 - 12.9	3	1	4	2	5	10	5	1	1	0
13.0 - 13.9	1	1	3	2	6	10	5	3	2	0
14.0 - 14.9	1	1	1	1	1	5	3	0	2	1
15.0 - 15.9	1	1	1	0	3	12	3	1	0	0
16.0 - 16.9	0	0	0	0	5	8	4	1	0	0
17.0 - 17.9	0	0	2	0	1	3	4	2	0	0
18.0 - 18.9	0	0	0	1	0	1	2	0	1	0
19.0 - 19.9	0	0	0	0	0	1	0	0	0	0
Total	168	201	163	193	37	326	57	21	99	54
Number of legal size	6	4	9	6	21	50	26	8	3	1

Table 6. Habitat characteristics of study sites calculated from the 26 grid locations, 1996-1998. Cover density: "L" = limited and "M" = moderate. "NS" indicates that the site was not sampled.

		Value for each site									
		Menominee River								Reference	
Habitat variable	Year	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
Macrohabitat types (%)											
Moderate/deep pool	1996	0	NS	0	0	0	NS	0	NS	15	23
	1997	0	0	0	0	0	8	0	0	0	62
	1998	0	0	0	0	8	8	0	0	30	31
Shallow pool	1996	0	NS	0	0	0	NS	0	NS	0	8
	1997	0	0	0	0	0	0	0	0	0	15
	1998	0	0	0	0	0	0	0	0	0	8
Shallow run/riffle	1996	8	NS	0	0	0	NS	46	NS	0	54
	1997	0	69	31	8	0	15	77	73	60	19
	1998	0	77	38	8	0	23	54	73	0	27
Deep run	1996	92	NS	100	100	100	NS	54	NS	85	15
	1997	100	31	69	92	100	77	23	27	32	4
	1998	100	23	62	92	92	69	46	27	70	35
Bank vegetation/land use (%)											
Marsh	1996	0	NS	0	0	0	NS	0	NS	2	0
	1997	0	0	0	0	7	0	0	0	0	0
	1998	0	0	0	0	0	0	0	0	0	7
Grass	1996	40	NS	39	28	13	NS	27	NS	45	48
	1997	31	7	47	43	3	18	17	9	10	44
	1998	0	0	22	0	10	28	0	0	32	13
Shrubs	1996	12	NS	7	16	37	NS	12	NS	10	6
	1997	11	0	14	0	15	4	0	9	10	0
	1998	0	0	6	0	0	16	0	0	0	0
Forest	1996	48	NS	54	56	50	NS	61	NS	43	46
	1997	58	93	42	57	75	78	83	82	65	56
	1998	100	100	72	100	90	56	100	100	68	80

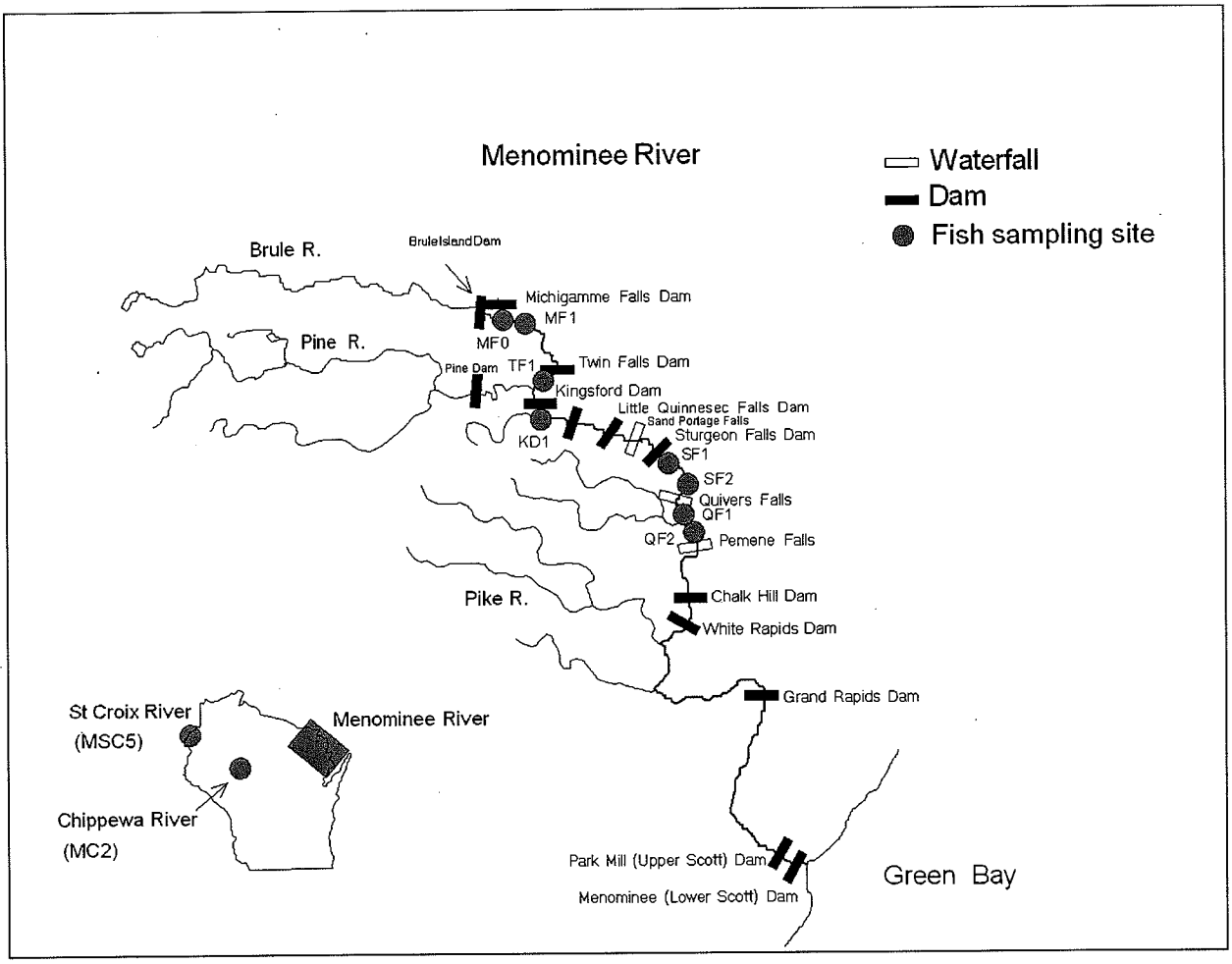
Table 6. Continued.

Habitat variable	Year	Value for each site: Menominee River QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	Reference MC2	MSC5
Cover types (%)											
Aquatic vegetation	1996	0	NS	26	0	0	NS	0	NS	7	38
	1997	10	14	0	0	0	0	14	3	0	40
	1998	5	4	5	0	0	0	8	6	0	36
Large woody debris	1996	72	NS	29	33	28	NS	19	NS	24	32
	1997	55	69	59	70	35	25	31	27	0	29
	1998	73	71	41	64	25	40	16	50	19	26
Boulders	1996	22	NS	31	67	3	NS	32	NS	69	30
	1997	17	14	35	6	13	36	21	17	100	31
	1998	0	8	27	0	25	29	12	11	76	36
Overhanging vegetation	1996	6	NS	14	0	69	NS	49	NS	0	0
	1997	17	3	6	24	52	39	34	53	0	0
	1998	22	17	27	36	50	31	64	33	5	2
Median cover density	1996	L	NS	L	L	L	NS	M	NS	L/M	M
	1997	L	L	M	L/M	L	M	L	L/M	L/M	M
	1998	L	L/M	L/M	L/M	L	M	L/M	L	L/M	M
Substrate Means (%)											
Detritus	1996	0	NS	0	0	0	NS	0	NS	1	1
	1997	<1	<1	0	0	0	3	0	0	<1	8
	1998	3	4	2	1	0	1	<1	1	0	1
Silt	1996	54	NS	4	14	46	NS	1	NS	1	1
	1997	41	36	2	24	50	7	4	11	<1	7
	1998	28	33	8	32	38	12	4	13	0	21
Sand	1996	30	NS	16	62	43	NS	25	NS	30	41
	1997	34	37	8	46	33	40	23	38	21	53
	1998	46	34	27	47	42	39	17	33	32	37

Table 6. Continued.

Habitat variable	Year	Value for each site: Menominee River QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	Reference MC2	MSC5
Substrate Means (%) (continued)											
Gravel	1996	5	NS	32	9	7	NS	26	NS	11	6
	1997	3	6	29	12	7	27	15	14	27	7
	1998	14	20	35	13	6	14	41	26	40	9
Rubble/cobble	1996	8	NS	42	11	4	NS	39	NS	31	16
	1997	11	16	51	11	6	19	51	26	31	14
	1998	8	9	27	6	12	12	27	25	13	10
Boulder	1996	3	NS	6	0	0	NS	9	NS	22	15
	1997	10	3	10	4	<1	4	7	11	18	11
	1998	<1	2	2	0	1	21	6	3	11	16
Bedrock	1996	0	NS	0	4	0	NS	0	NS	4	0
	1997	0	1	0	4	0	0	0	0	2	1
	1998	0	0	0	0	0	1	5	0	4	7
Mean depth (ft)											
Bank side of grid	1996	0.5	NS	0.7	0.9	0.5	NS	0.5	NS	1.0	0.5
	1997	0.6	0.5	0.4	0.5	0.7	0.7	0.8	0.5	0.5	0.5
	1998	0.3	0.5	0.7	0.5	0.4	0.6	0.4	0.5	0.7	0.4
Channel side of grid	1996	1.5	NS	1.4	1.9	1.5	NS	1.2	NS	1.9	1.4
	1997	1.6	1.3	1.2	1.5	2.0	1.7	1.5	1.5	1.2	1.3
	1998	0.5	1.2	1.3	1.4	1.7	1.8	1.2	1.4	1.8	1.0
Current velocity (ft/sec)	1996	0.2	NS	0.8	0.5	0.4	NS	1.2	NS	0.6	0.3
	1997	0.4	0.3	0.5	0.4	0.3	0.3	1.1	1.1	0.2	0.4
	1998	0.03	0.5	0.7	0.3	0.2	0.2	0.8	0.9	0.7	0.1

Figure 1. Map of Menominee River showing study sites, dams, and waterfalls. The inset map of Wisconsin shows the location of the St. Croix River and Chippewa River reference sites.



Appendix 1. Fish species captured during 1996 (combined miniboom and grid sampling) from the study sites. An "R" after the scientific name indicates a riverine specialist species, a "G" a gamefish species, and a "T" a state of Wisconsin threatened species. Menominee River sites QF1, TF1 and MF0 were not sampled in 1996.

		Number of fish captured per site						
		Menominee River					Reference	
Common name	Scientific name	QF2	SF2	SF1	KD1	MF1	MC2	MSC5
LAMPREY FAMILY	PETROMYZONTIDAE							
Chestnut lamprey	*Ichthyomyzon castaneus* (R)	0	0	0	0	0	0	3
Northern brook lamprey	*Ichthyomyzon fossor* (R)	2	0	0	0	0	0	0
STURGEON FAMILY	ACIPENSERIDAE							
Lake sturgeon	*Acipenser fulvescens* (G)	0	0	0	0	0	0	0
MINNOW FAMILY	CYPRINIDAE							
Spotfin shiner	*Cyprinella spiloptera*	0	0	0	0	0	0	0
Common carp	*Cyprinus carpio*	0	0	0	0	0	0	2
Brassy minnow	*Hybognathus hankinsoni*	0	0	0	0	0	0	0
Hornyhead chub	*Nocomis biguttatus* (R)	195	206	14	8	9	0	8
Common shiner	*Luxilus cornutus*	32	3	55	40	5	0	7
Golden shiner	*Notemigonus crysoleucas*	0	0	0	0	0	0	0
Emerald shiner	*Notropis atherinoides*	0	0	0	0	0	1	0
Spottail shiner	*Notropis hudsonius*	0	0	0	0	0	0	0
Rosyface shiner	*Notropis rubellus* (R)	0	0	44	0	0	0	0
Mimic shiner	*Notropis volucellus*	0	0	0	0	0	0	2
Northern redbelly dace	*Phoxinus eos*	0	0	0	0	1	0	0
Fathead minnow	*Pimephales promelas*	0	0	0	0	0	0	0
Blacknose dace	*Rhinichthys atratulus* (R)	0	0	0	0	0	0	0
Longnose dace	*Rhinichthys cataractae* (R)	0	0	0	4	2	0	0
Creek chub	*Semotilus atromaculatus* (R)	0	0	0	0	0	0	0
SUCKER FAMILY	CATOSTOMIDAE							
Quillback	*Carpiodes cyprinus* (R)	0	0	0	0	0	0	9
Longnose sucker	*Catostomus catostomus*	0	0	0	0	0	0	0
White sucker	*Catostomus commersoni*	23	54	10	63	232	0	1

Northern hog sucker	*Hypentelium nigricans* (R)	1	7	18	0	0	0	18
Silver redhorse	*Moxostoma anisurum* (R)	35	14	33	0	0	3	18

Appendix 1. Continued.

Common name	Scientific name	Number of fish captured per site						
		Menominee River					Reference	
		QF2	SF2	SF1	KD1	MF1	MC2	MSC5
River redhorse	*Moxostoma carinatum* (R)(T)	0	0	0	0	0	0	1
Golden redhorse	*Moxostoma erythrurum* (R)	49	59	78	0	0	0	51
Shorthead redhorse	*Moxostoma macrolepidotum*	27	81	53	0	0	7	59
Greater redhorse	*Moxostoma valenciennesi* (T)	0	0	0	0	0	0	1
CATFISH FAMILY	ICTALURIDAE							
Yellow bullhead	*Ameiurus natalis*	0	0	0	0	0	0	0
Channel catfish	*Ictalurus punctatus* (G)	0	0	0	0	0	0	0
Stonecat	*Noturus flavus* (R)	0	0	0	0	0	0	1
Tadpole madtom	*Noturus gyrinus*	1	0	0	0	1	1	0
Flathead catfish	*Pylodictis olivaris*	0	0	0	0	0	0	0
MUDMINNOW FAMILY	UMBRIDAE							
Central mudminnow	*Umbra limi*	3	0	0	0	0	0	2
PIKE FAMILY	ESOCIDAE							
Northern pike	*Esox lucius* (G)	5	14	5	17	6	0	7
Muskellunge	*Esox masquinongy* (G)	0	0	0	0	1	1	0
SALMON FAMILY	SALMONIDAE							
Brown Trout	*Salmo trutta* (G)	0	0	0	0	0	0	0
Brook trout	*Salvelinus fontinalis* (G)	0	0	0	0	0	0	0
TROUTPERCH FAMILY	PERCOPSIDAE							
Troutperch	*Percopsis omiscomaycus*	0	0	0	0	0	0	0
COD FAMILY	GADIDAE							
Burbot	*Lota lota*	0	0	0	0	2	0	2
SCULPIN FAMILY	COTTIDAE							

Mottled sculpin	*Cottus bairdi*	0	2	0	7	72	0	0

Appendix 1. Continued.

Common name	Scientific name	Number of fish captured per site						
		Menominee River					Reference	
		QF2	SF2	SF1	KD1	MF1	MC2	MSC5
SUNFISH FAMILY	CENTRARCHIDAE							
Rock bass	*Ambloplites rupestris* (G)	8	6	4	37	15	1	16
Green sunfish	*Lepomis cyanellus* (G)	1	0	0	0	0	0	0
Bluegill	*Lepomis macrochirus* (G)	5	2	13	3	0	0	0
Smallmouth bass	*Micropterus dolomieu* (G)	35	7	54	20	18	48	81
Largemouth Bass	*Micropterus salmoides* (G)	1	0	0	1	0	0	4
Black crappie	*Pomoxis nigromaculatus* (G)	0	0	2	1	0	0	1
PERCH FAMILY	PERCIDAE							
Rainbow darter	*Etheostoma caeruleum* (R)	0	0	0	0	0	52	0
Fantail darter	*Etheostoma flabellare* (R)	0	0	0	0	0	0	0
Johnny darter	*Etheostoma nigrum*	84	30	33	70	22	24	2
Yellow perch	*Perca flavescens* (G)		1	0	0	3	19	0
2								
Logperch	*Percina caprodes*	2	7	102	0	4	189	38
Gilt darter	*Percina evides* (R)(T)		0	0	0	0	0	0
1								
Blackside darter	*Percina maculata* (R)	22	121	53	0	0	1	44
Slenderhead darter	*Percina phoxocephala* (R)	0	0	0	0	0	0	8
Walleye	*Stizostedion vitreum* (G)	5	5	11	5	3	12	10
DRUM FAMILY	SCIAENIDAE							
Freshwater drum	*Aplodinotus grunniens*	0	0	0	0	0	0	3

1996 Fish Sampling Dates:

QF2: 26-28 August; SF2: 19-21 August; SF1: 5-7 August; KD1: 29-31 July; MF1: 8-10 July; MC2: 24-26 June; MSC5:12-14 August

Appendix 2. Fish species captured during 1997 (combined miniboom and grid sampling) from the study sites. An "R" after the name indicates a riverine specialist species, a "G" a gamefish species, and a "T" a state of Wisconsin threatened species.

	Number of fish captured per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
LAMPREY FAMILY										
Chestnut lamprey (R)	0	0	0	0	0	0	0	0	0	6
Northern brook lamprey (R)	6	4	0	0	0	0	0	0	0	0
STURGEON FAMILY										
Lake sturgeon (G)	0	0	0	0	0	0	0	0	0	1
MINNOW FAMILY										
Spotfin shiner	0	0	0	0	0	0	0	0	0	5
Common carp	0	0	0	0	0	0	0	0	3	0
Brassy minnow	0	0	0	0	0	0	1	0	0	0
Common shiner	7	3	2	4	8	54	7	13	0	3
Hornyhead chub (R)	140	37	232	3	13	56	6	2	0	42
Golden shiner	0	0	0	0	0	0	2	0	0	0
Emerald shiner	0	0	0	0	0	0	0	0	25	0
Spottail shiner	0	0	0	0	0	0	0	0	0	1
Rosyface shiner (R)	0	0	0	0	0	0	0	0	0	0
Mimic shiner	0	0	0	0	0	0	0	0	0	0
Northern redbelly dace	0	0	0	0	0	0	0	3	0	0
Fathead minnow	0	0	0	0	0	0	0	0	0	0
Blacknose dace (R)	6	10	6	0	0	0	0	0	0	0
Longnose dace (R)	0	0	0	0	0	0	0	0	0	0
Creek chub (R)	0	0	0	0	1	0	0	0	0	13
SUCKER FAMILY										
Quillback (R)	0	0	0	0	0	0	0	0	0	0
Longnose sucker	0	0	0	0	0	0	0	0	0	0
White sucker	163	151	86	8	48	214	26	36	2	31
Northern hog sucker (R)	1	4	11	45	0	0	0	0	0	185
Silver redhorse (R)	49	13	14	50	0	0	0	0	14	72

Appendix 2. Continued.

	Number of fish captured per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
River redhorse (R)	0	0	0	0	0	0	0	0	0	1
Golden redhorse (R)	44	30	61	94	0	0	0	0	0	75
Shorthead redhorse	35	12	75	47	0	0	0	0	1	33
Greater redhorse (T)		0	0	0	0	0	0	0	0	0
CATFISH FAMILY										
Yellow bullhead	0	0	0	0	0	0	0	0	0	0
Channel catfish (G)	0	0	0	0	0	0	0	0	0	2
Stonecat (R)	0	0	0	0	0	0	0	0	0	0
Tadpole madtom	0	0	0	0	0	0	2	1	0	0
Flathead catfish	0	0	0	0	0	0	0	0	0	0
MUDMINNOW FAMILY										
Central mudminnow	1	0	0	0	0	0	0	1	1	1
PIKE FAMILY										
Northern pike (G)	5	2	7	3	7	1	1	0	0	4
Muskellunge (G)	0	2	0	0	0	3	0	0	4	0
SALMON FAMILY										
Brown Trout (G)	0	0	0	0	0	0	0	1	0	0
Brook trout (G)	0	0	0	0	0	0	10	3	0	0
TROUTPERCH FAMILY										
Troutperch	0	0	0	0	0	0	0	0	3	0
COD FAMILY										
Burbot	0	0	0	0	0	0	0	0	1	2
SCULPIN FAMILY										
Mottled sculpin	1	0	1	1	6	18	23	3	0	0

Appendix 2. Continued.

	Number of fish captured per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
SUNFISH FAMILY										
Rock bass (G)	22	5	10	18	62	31	4	2	0	12
Green sunfish (G)	0	0	0	0	0	0	0	0	0	0
Bluegill (G)	0	0	0	2	3	0	0	0	0	0
Smallmouth bass (G)		35	27	61	80	35	96	13	16	7
Largemouth Bass (G)	2	1	1	0	0	0	1	0	0	9
Black crappie (G)	1	0	0	2	2	0	2	0	0	0
PERCH FAMILY										
Rainbow darter (R)	0	0	0	0	0	0	0	0	57	0
Fantail darter (R)	0	0	0	0	0	0	0	0	3	0
Johnny darter	42	30	89	81	32	97	42	23	0	37
Yellow perch (G)	0	0	0	0	3	2	1	4	0	17
Logperch	2	17	24	60	1	9	12	11	43	19
Gilt darter (R)(T)	0	0	0	0	0	0	0	0	0	0
Blackside darter (R)	76	31	99	31	0	0	0	0	0	232
Slenderhead darter (R)	0	0	0	0	0	0	0	0	0	7
Walleye (G)	0	1	1	10	4	7	2	4	4	29
DRUM FAMILY										
Freshwater drum	0	0	0	0	0	0	0	0	0	3

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1997 Fish Sampling Dates:

QF2: 7-9 July; QF1: 30 June, 1, 2 July; SF2: 14-16 July; SF1: 16, 23, 24 July; KD1: 17, 23, 24 July; TF1: 18, 25, 30 June; MF1: 4, 9, 10 June; MF0: 11, 16, 17 June; MC2: 2-4 June; MSC5: 21- 23 July

Appendix 3. Fish species captured during 1998 (combined miniboom and grid sampling) from the study sites. An "R" after the name indicates a riverine specialist species, a "G" a gamefish species, and a "T" a state of Wisconsin threatened species.

	Number of fish captured per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
LAMPREY FAMILY										
Chestnut lamprey (R)	0	0	0	0	0	0	0	0	0	1
Northern brook lamprey (R)	5	5	0	0	0	0	0	0	0	0
STURGEON FAMILY										
Lake sturgeon (G)	0	0	0	0	0	0	0	0	0	0
MINNOW FAMILY										
Spotfin shiner	0	0	0	0	0	0	0	0	1	0
Common carp	0	0	0	0	0	0	0	0	4	0
Brassy minnow	0	0	0	0	0	0	0	0	0	2
Common shiner	17	64	3	37	8	41	6	23	0	3
Hornyhead chub (R)	27	140	24	8	4	60	13	0	0	65
Golden shiner	0	21	0	1	0	0	0	0	0	0
Emerald shiner	0	6	0	0	0	0	0	0	0	0
Spottail shiner	0	0	0	0	0	0	0	0	0	0
Rosyface shiner (R)	0	1	0	0	0	0	0	0	0	0
Mimic shiner	0	0	0	0	0	0	0	0	1	0
Northern redbelly dace	0	1	2	0	0	0	0	1	0	0
Fathead minnow	0	0	0	0	0	0	0	0	1	1
Blacknose dace (R)	0	3	192	0	33	6	1	0	0	0
Longnose dace (R)	0	14	4	1	0	0	7	5	0	0
Creek chub (R)	0	1	34	0	0	0	0	0	0	23
SUCKER FAMILY										
Quillback (R)	0	0	0	0	0	0	0	0	0	1
Longnose sucker	0	0	0	0	0	0	17	0	0	0
White sucker	71	439	579	309	1627	7	349	1531	0	42
Northern hog sucker (R)	8	68	48	20	0	0	0	0	4	38
Silver redhorse (R)	28	41	41	25	0	0	0	0	6	33

Appendix 3. Continued.

	Number of fish captured per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
River redhorse (R)	0	0	0	0	0	0	0	0	0	1
Golden redhorse (R)	30	50	77	71	0	0	0	0	0	50
Shorthead redhorse	12	47	70	30	0	0	0	0	2	38
Greater redhorse (T)		0	0	0	0	0	0	0	0	0
CATFISH FAMILY										
Yellow bullhead	0	1	0	0	0	0	0	0	0	0
Channel catfish (G)	0	0	0	0	0	0	0	0	1	0
Stonecat (R)	0	0	0	0	0	0	0	0	1	0
Tadpole madtom	0	0	0	0	0	0	0	0	0	0
Flathead catfish	0	0	0	0	0	0	0	0	1	0
MUDMINNOW FAMILY										
Central mudminnow	0	0	0	0	0	0	0	0	0	2
PIKE FAMILY										
Northern pike (G)	5	7	2	2	2	9	0	3	0	1
Muskellunge (G)	0	0	0	0	0	3	0	0	2	0
SALMON FAMILY										
Brown Trout (G)	0	0	0	0	0	0	0	2	0	0
Brook trout (G)	0	0	0	0	0	0	3	0	0	0
TROUTPERCH FAMILY										
Troutperch	0	0	0	0	0	0	0	0	0	0
COD FAMILY										
Burbot	2	1	3	0	0	0	0	0	0	1
SCULPIN FAMILY										
Mottled sculpin	0	0	0	0	18	49	134	83	0	0

Appendix 3. Continued.

	Number of fish captured per site									
	Menominee River								Reference	
Common name	QF2	QF1	SF2	SF1	KD1	TF1	MF1	MF0	MC2	MSC5
SUNFISH FAMILY										
Rock bass (G)	15	11	3	23	33	138	1	0	1	11
Green sunfish (G)	0	0	0	0	0	0	0	0	0	0
Bluegill (G)	0	0	0	0	0	7	0	0	1	0
Smallmouth bass (G)		168	202	163	194	37	328	57	22	100
Largemouth Bass (G)	8	7	1	0	0	10	2	0	0	6
Black crappie (G)	0	0	0	0	0	0	0	0	0	0
PERCH FAMILY										
Rainbow darter (R)	0	0	0	0	0	0	0	0	18	0
Fantail darter (R)	0	0	0	0	0	0	0	0	0	0
Johnny darter	45	260	31	54	34	141	246	28	7	28
Yellow perch (G)	2	1	0	2	10	49	43	154	0	7
Logperch	57	95	108	122	2	105	46	43	42	33
Gilt darter (R)(T)	0	0	0	0	0	0	0	0	0	3
Blackside darter (R)	71	108	99	43	0	0	0	0	0	131
Slenderhead darter (R)	0	0	0	0	0	0	0	0	0	20
Walleye (G)	20	46	3	31	1	12	3	10	13	3
DRUM FAMILY										
Freshwater drum	0	0	0	0	0	0	0	0	0	3

1998Fish Sampling Dates:

QF2: 20-21 July; QF1: 29-30 June, 7-8 July; SF2: 10, 15, 16 June; SF1: 1, 7, 8 July; KD1: 8-9 June; TF1: 27-29 July; MF1: 13-15 July; MF0: 17, 22-24 June, 28 July; MC2: 8, 13 July, 3 August; MSC5: 6-7 July

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Appendix Q

Screening Level Risk Evaluation

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Appendix Q Screening Level Risk Evaluation

The following outlines a risk evaluation for the constituents detected in the Riverside Disposal Area (RDA) soil data. The methodology is consistent with guidance from the U.S. Environmental Protection Agency (U.S. EPA) and the Michigan Department of Environmental Quality (MDEQ). Specifically, MDEQ (1998a) exposure assumptions or constituent-specific parameters were used unless more recent U.S. EPA guidance was available. The deviations with the MDEQ guidance are noted below.

Data

The available data were reviewed and compared with the MDEQ Residential Direct Contact Criteria (DCC) for soil (1998b). All but three of the samples were detected at concentrations less than the residential DCC for soil. The three exceedences were sample SSRIV-1, SSRIV-7, and SSRIV-10. The first two had arsenic concentrations of 8.5 milligrams per kilogram (mg/kg) and 16 mg/kg, respectively, exceeding the residential DCC of 6.6 mg/kg. Sample SSRIV-10 contained lead (detected at 610 mg/kg) in excess of the residential DCC of 400 mg/kg. All of the soil samples contained constituent concentrations less than the industrial DCC indicating there is no risk to industrial workers from direct contact exposure to the constituents in soil. Based on this analysis, potential exposure to arsenic and lead were evaluated further.

Exposure Assessment

The RDA was closed, is currently fenced, and is covered by vegetation. Individuals should have no reason to be on the property. However, it is possible that a trespasser could walk across the property. Near the RDA are both a residential neighborhood and a school. It is possible that a child attending the Woodland Elementary school could walk across the RDA on their way to or from school. Therefore, this analysis focused on the potential exposure of a child attending Kindergarten through Fifth Grade at the school.

Several exposure assumptions were used to evaluate this potential exposure. The MDEQ (1998a) equations for industrial exposure were consulted. MDEQ evaluates only ingestion and dermal (skin) contact for soil direct contact exposures. Although the site is well vegetated, it is possible that fugitive dust emissions could occur from the RDA. Therefore, the MDEQ equations were not used in this evaluation and U.S. EPA (1996) equations were used instead. It should be noted that the MDEQ combined exposure evaluations into one equation and U.S. EPA uses three. The U.S. EPA approach allows the risk assessor to identify the primary exposure route contributing to risk.

The child was assumed to range in age from 5 years to 10 years, for a 6 year exposure period. MDEQ (1998a) does not provide body weights or skin surface areas for children these ages; therefore, U.S. EPA (1997) guidance was consulted to obtain appropriate exposure parameters. A body weight of 37.5 kilograms (kg) was calculated based on the 95th percentile of body weights of male children ages 5 through 10 (U.S. EPA, 1997). The skin surface area was calculated using the rationale used by MDEQ in their guidance (1998a). Twenty-five percent of the average of the 50th percentile for the total skin surface area for male children (9,742 square centimeters [cm^2]) was calculated to be 2,435 cm^2. This corresponds to the hands, arms, legs, neck, and head (MDEQ, 1998a).

Soil ingestion is greatest for young children. Since the potentially exposed individuals would not be playing at the RDA, but would only be walking across the RDA, a soil ingestion rate of 50 milligrams per day (mg/day) was selected. U.S. EPA (1997) recommends the use of a median soil ingestion rate of 100 mg/day for young children and 50 mg/day for older children and adults. The use of the 50 mg/kg is consistent with this recommendation.

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As the child walks across the property, soil may be kicked up and adhere to the child's skin. The MDEQ (1998a) uses a soil adherence factor of 1 milligram per square centimeter (mg/cm^2). This value was obtained from a U.S. EPA (1991) reference. U.S. EPA (1997) provides soil adherence data for various outdoor activities. The data were reviewed and the soccer player and groundskeeper data seemed to correspond to the level of exposure that the individual at the RDA might encounter. These values were less than or equal to 0.1 mg/cm^2. As a conservative measure, a value of 0.2 mg/cm^2 was selected since this value corresponds to a slightly higher level of exposure, although this level of exposure is not likely to occur for the trespasser at the RDA.

MDEQ (1998a,b) indicates that ingestion and dermal contact exposures should be modified using an absorption efficiency. This accounts for the fact that the compound might not be completely absorbed by the body either through the gut or the skin. The oral absorption factor of 0.5 and the dermal absorption factor of 0.01 provided by MDEQ (1998b) were used in the calculations. Table L-8 provides the equations used to calculate exposure and risk for the site.

The exposure period evaluated in this risk assessment was developed assuming that the school year was 200 days. The MDEQ (1998a) guidance indicates that for four months of the year, the ground is frozen and direct contact exposure with soil would not be expected to occur. This would account for 80 days (5 days per week for 16 weeks) of the 200 day school year. Therefore, it was assumed that the individual might be exposed to soil for 120 days each year. This is a conservative assumption since it does not account for rainy days when contact with soil also might not occur.

Toxicity Assessment

Toxicity values for arsenic were obtained from the MDEQ (1998b). The U.S. EPA Integrated Risk Information System (IRIS), a database of toxicity data, was consulted to ensure that the values included in the MDEQ table were the most recent values available. Whenever possible, route-specific toxicity values are used. However, toxicity values for dermal exposure have not yet been developed by U.S. EPA; therefore, the oral toxicity values and the oral absorption efficiency were used to derive adjusted toxicity values (adjusted to the absorbed dose for use in assessing dermal exposure (U.S. EPA, 1995). A value of 0.95 was used in the adjustment, based on information provided by the Agency for Toxic Substances and Disease Registry (ATSDR; 1997).

Toxicity values are not available for lead. This is due to the fact that there is a strong correlation between exposure and resulting blood lead levels. Exposure to lead is discussed below.

Risk Characterization

The information presented in the Exposure and Toxicity Assessments were combined to characterize risk. A distinction is made between non-carcinogenic and carcinogenic endpoints, and two general criteria are used to describe risk: the hazard quotient (HQ) for non-carcinogenic effects and excess lifetime cancer risk (ELCR) for constituents evaluated as human carcinogens.

Hazard Quotient for Non-Cancer Risk

Exposure doses are averaged over the expected exposure period to evaluate non-carcinogenic effects. The HQ is the ratio of the estimated exposure dose and the RfD (for oral and dermal exposures) or the ratio of the exposure-weighted air concentration and the RfC (for inhalation exposures). An HQ greater than 1 indicates that the estimated exposure level for that constituent exceeds the RfD or RfC. This ratio does not provide the probability of an adverse effect. Although an HQ less than 1 indicates that health effects should not occur, an HQ that slightly exceeds 1 does not imply that health effects will occur, but that health effects are potentially possible. The sum of the HQs is the hazard index (HI). Both U.S. EPA

and MDEQ use an HI equal to 1 as the benchmark. HIs greater than 1 may indicate a potential risk to human health.

Excess Lifetime Cancer Risk

The ELCR is an estimate of the potential increased risk of cancer which results from lifetime exposure, at specified average daily dosages, to constituents detected in media at a site. Estimated doses or intakes for each constituent are averaged over the hypothesized lifetime of 70 years. It is assumed that a large dose received over a short period is equal to a smaller dose received over a longer period, as long as the total doses are equivalent. The ELCR is equal to the product of the exposure dose and the CSF (for oral/dermal exposure) or the product of the exposure-weighted air concentration and the UR_i (for inhalation exposure). The risk values provided in this report are an indication of the potential increased risk, above that applying to the general population, which may result from the exposure scenarios described in the Exposure Assessment. The risk estimate is considered to be an upper-bound estimate; therefore, it is likely that the true risk is far less than that predicted by the model.

Current U.S. EPA (1989) agency guidance states that a cumulative site cancer risk level of 10^{-4} is used as a remediation "trigger," meaning that risk levels below this level generally do not warrant remediation. Constituents are not considered as significant contributors to risk if their individual carcinogenic risk contribution is less than 10^{-6} (U.S. EPA, 1989). The acceptable risk level for carcinogenic risk is 10^{-6}; therefore, 10^{-6} is used as the agency benchmark in considering the potentially acceptable risk levels for cancer effects (U.S. EPA, 1989). The MDEQ uses 10^{-5} as their benchmark for excess cancer risks.

Calculated Risk Estimates for Arsenic

Risk estimates for exposure to arsenic in soil are presented in Table P-2. Table P-2 provides the results of the calculations presented in Table P-1. As seen in the table, the ELCR for exposure to arsenic is 5×10^{-7}. This ELCR is well below the MDEQ benchmark of 1×10^{-5}. The HI was 0.01, well below the MDEQ benchmark. Therefore, there is no risk from exposure to arsenic under these exposure assumptions.

Exposure to Lead

Exposure to lead is evaluated by estimating the blood lead levels that would result in the potentially exposed individual from exposure to lead. The U.S. EPA has developed several models for the evaluation of exposure to lead. One is the Integrated Exposure Uptake Biokinetic (IEUBK) model (U.S. EPA, 1994). The IEUBK model is used to assess blood lead levels in children up to age 7 chronically exposed to lead. The IEUBK model integrates exposure to lead in air, water, soil, dust, and diet with pharmacokinetic modeling to predict blood lead levels in children. Children exposed to lead in soil at the RDA are ages 5 years old to 10 years old. The youngest of these children are thought to be the most susceptible to lead exposure. Additionally, the IEUBK model can be used to evaluate exposure for children ages 5 to 6 years old and ages 6 to 7 years old.

The IEUBK model was run using the maximum detected lead concentration of 610 mg/kg. The model using its default parameters assumes that the soil lead concentration also would be detected in dust in the home. The area of impacted lead is not large and it is likely that any dust adhering to the child's clothing or shoes would be deposited prior to arriving home. Therefore, the model was run assuming that the lead level in dust was 0 mg/kg. Using this approach, the resulting blood lead concentrations for children ages 5 to 6 years old and ages 6 to 7 years old were 3.5 micrograms per deciliter (µg/dL) and 3.2 µg/dL, respectively. Compared with the U.S. EPA benchmark of 10 µg/dL, there is no risk from exposure to these lead levels. If dust exposure at this maximum level were included in the calculations, then the resulting blood lead concentrations for children ages 5 to 6 years old and ages 6 to 7 years old would increase to 6.0 µg/dL and 5.4 µg/dL, respectively, again below the U.S. EPA benchmark.

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Summary and Conclusions

Surface soil data were collected at the RDA. The data were compared with the MDEQ screening values for residential exposures. Three samples contained constituent concentrations exceeding these values. Arsenic and lead were identified as constituents of potential concern in that they exceeded the MDEQ screening values in one or more samples.

Exposure was evaluated for a child walking over the RDA to attend the Woodland Elementary School. The school has grades Kindergarten through Fifth Grade. Therefore, it was assumed that the individual might be exposed for a maximum of a 6 year period. Exposure to arsenic and lead does not pose a risk to this individual, based on the exposure assumptions considered in this risk assessment.

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Table Q-1. Risk Equations for Trespasser Exposure to Soil, Riverside Disposal Area, Ford/Kingsford Site, Kingsford, Michigan.

ROUTE-SPECIFIC RISKS:

Oral:

$$\begin{matrix} ELCR_o \\ or\ HQ_o \end{matrix} = \frac{EPC_S \times SC \times IR_S \times ABS_o \times EF \times EP}{(10^6\ mg/kg) \times BW \times (AP_C\ or\ AP_{NC}) \times [(1/CSF_o)\ or\ RfD_o]}$$

Dermal:

$$\begin{matrix} ELCR_d \\ or\ HQ_d \end{matrix} = \frac{EPC_S \times SC \times SSA \times SAR \times ABS_d \times EF \times EP}{(10^6\ mg/kg) \times BW \times (AP_C\ or\ AP_{NC}) \times [(1/CSF_a)\ or\ RfD_a]}$$

Inhalation:

$$\begin{matrix} ELCR_i \\ or\ HQ_i \end{matrix} = \frac{EPC_{air} \times IRC \times EF \times EP}{(AP_C\ or\ AP_{NC}) \times \left[\left(\frac{0.001\ mg/\mu g}{UR_i}\right)\ or\ RfC\right]}$$

where:

$$EPC_{air} = \frac{EPC_S}{PEF} \quad \text{(for particulates)}$$

$$PEF = Q/C \times \frac{3{,}600\ sec/hr}{RPF \times (1-V) \times (Um/Ut)^3 \times F_X}$$

CANCER RISK:

$$ELCR = ELCR_o + ELCR_d + ELCR_i$$

NON-CANCER RISK:

$$HI = HQ_o + HQ_d + HQ_i\ 1$$

where:

ABS_d	Dermal absorption efficiency (0.01 for arsenic; MDEQ 1998b).
ABS_o	Oral absorption efficiency (0.5 for arsenic; MDEQ 1998b).
AP_C	Averaging period for cancer effects (25,550 days [70 years]).
AP_{NC}	Averaging period for non-cancer effects (2,190 days [6 years]).
BW	Body weight (37.5 kg) (USEPA, 1997).
CSF	Cancer slope factor for oral (CSF_o) or dermal (CSF_a) exposure (kg-day/mg; inverse of mg/kg/day) (1.5 kg-day/mg for oral exposure and 1.6 kg-day/mg for dermal exposure) .
EF	Exposure frequency (120 days/year).
ELCR	Excess lifetime cancer risk (unitless).
EPCair	Exposure point concentration in air (1.36×10^{11} mg/m^3).
EPCs	Exposure point concentration in soil (16 mg/kg which is the maximum arsenic concentration detected).
EP	Exposure period (6 years).
F_X	Function of Ut/Um (unitless); $F_X = 0.18 \times [\ 8x^3 + 12x\ ] \times \exp[-(x^2)]$, where $x = 0.886 \times (Ut/Um)$.
HI	Hazard index (unitless); sum of the HQs.
HQ	Hazard quotient (unitless).
IR_S	Ingestion rate of soil (50 mg/day).

Table Q-1. Risk Equations for Trespasser Exposure to Soil, Riverside Disposal Area, Ford/Kingsford Site, Kingsford, Michigan.

IRC Inhalation rate correction factor (1; unitless).
PEF Particulate emission factor (m^3/kg).
Q/C Emission flux per unit concentration [90.8 (g/m^2/sec)/(kg/m^3), USEPA (1996) value for a 0.5-acre site in Minneapolis, MN].
RfC Reference concentration for inhalation exposure (mg/m^3) (Not available for arsenic).
RfD Reference dose for oral (RfD_o) or dermal (RfD_a) exposure (mg/kg/day) (3.0×10^{-4} mg/kg/day for oral exposure and 2.9×10^{-4} for dermal exposure).
RPF Respirable particle fraction (0.036 g/m^2/hr) (USEPA 1996).
SAR Soil adherence rate (0.2 mg/cm^2/day) (USEPA 1997).
SC Source contribution (1; unitless).
SSA Exposed skin surface area (2,435 cm^2).
UR_i Unit cancer risk for inhalation exposure (m^3/mg) (4.3×10^{-3} m^3/mg for arsenic).
U_m Wind speed (3.7 m/sec) (for Marquette, MI; NOAA 1975).
U_t Equivalent threshold value of windspeed at 7 meters (12.94 m/sec) (Cowherd 1984).
V Fraction of vegetative cover (unitless) (0.9).
x Intermediate value in calculation of PEF; x = 0.886 × (Ut/Um).

SAMPLE CALCULATION: Arsenic

$$x = 0.886 \times (12.94 \text{ m/sec})/(3.7 \text{ m/sec}) = 3.099$$

$$F_X = 0.18 \times \left[\left(8 \times 3.099^3\right) + \left(12 \times 3.099\right)\right] \times \exp\left[-\left(3.099^2\right)\right] = 0.0033$$

$$PEF = 90.8 \frac{\text{g/m}^2\text{/sec}}{\text{kg/m}^3} \times \frac{3{,}600 \text{ sec/hr}}{(0.036 \text{ g/m}^2\text{/hr}) \times (1 - 0.9) \times \left(\frac{3.7 \text{ m/sec}}{12.94 \text{ m/sec}}\right)^3 \times 0.0033} = 1.18 \times 10^{12} \text{ m}^3/\text{kg}$$

CANCER RISK:

$$ELCR_o = \frac{(16 \text{ mg/kg}) \times (1) \times (50 \text{ mg/day}) \times (0.5) \times (120 \text{ days/yr}) \times (6 \text{ yr})}{(10^6 \text{ mg/kg}) \times (37.5 \text{ kg}) \times (25{,}550 \text{ days}) \times [1/(1.5 \text{ kg} \cdot \text{day/mg})]}$$

$$= 4.5 \times 10^{-7}$$

$$ELCR_d = \frac{(16 \text{ mg/kg}) \times (1) \times (2{,}435 \text{ cm}^2) \times (0.2 \text{ mg/cm}^2\text{/day}) \times 0.01 \times (120 \text{ days/yr}) \times (6 \text{ yr})}{(10^6 \text{ mg/kg}) \times (37.5 \text{ kg}) \times (25{,}550 \text{ days}) \times [1/(1.6 \text{ kg} \cdot \text{day/mg})]}$$

$$= 9.3 \times 10^{-8}$$

Table Q-1. Risk Equations for Trespasser Exposure to Soil, Riverside Disposal Area, Ford/Kingsford Site, Kingsford, Michigan.

$$ELCR_i = \frac{(16\ mg/kg) \times (1) \times [1/(1.18\times10^{12}\ m^3/kg)] \times (120\ days/yr) \times (6\ yr)}{(25{,}550\ days) \times \left(\frac{0.001 mg/\mu g}{4.3\times10^{-3}\ m^3/\mu g}\right)}$$

$$= 1.6\times10^{-12}$$

$$ELCR = (4.5\times10^{-7}) + (9.3\times10^{-8}) + (1.6\times10^{-12}) = 5\times10^{-7}$$

NON-CANCER RISK:

$$HQ_o = \frac{(16\ mg/kg) \times (1) \times (50\ mg/day) \times (0.5) \times (120\ days/yr) \times (6\ yr)}{(10^6\ mg/kg) \times (37.5\ kg) \times (2{,}190\ days) \times (0.0003\ mg/kg/day)}$$

$$= 0.012$$

$$HQ_d = \frac{(16\ mg/kg) \times (1) \times (2{,}435\ cm^2) \times (0.2\ mg/cm^2/day) \times 0.01 \times (120\ days/yr) \times (6\ yr)}{(10^6\ mg/kg) \times (37.5\ kg) \times (2{,}190\ days) \times (0.00029\ mg/kg/day)}$$

$$= 0.0024$$

$$HQ_i = \frac{(16\ mg/kg) \times (1) \times [1/(1.18\times10^{12}\ m^3/kg)] \times (120\ days/yr) \times (6\ yr)}{(2{,}190\ days) \times (NA)}$$

= Not applicable; an RfC is not available for arsenic

$$HI = (0.012) + (0.0024) + (NA) = 0.01$$

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Table Q-2. Risk Calculations for Exposure to Soil, Trespasser, Riverside Disposal Area, Ford/Kingsford Site, Kingsford, Michigan.

Constituent	EPCs (mg/kg)	VF (m^3/kg)	EPCair (mg/m^3)	CANCER RISK: Route-Specific Risks Oral	Dermal	Inhalation	Calculated Risk	NON-CANCER RISK: Route-Specific Risks Oral	Dermal	Inhalation	Calculated Risk
				ELCRo	ELCRd	ELCRi	ELCR	HQo	HQd	HQi	HI
Metals											
Arsenic	16	NV	1.36E-11	4.5E-07	9.4E-08	1.6E-12	5.4E-07	1.2E-02	2.4E-03	NA	1.4E-02
						TOTAL ELC	5E-07			TOTAL HI	0.01

ELCR Excess lifetime cancer risk.
EPCair Estimated exposure point concentration in air (mg/m^3).
EPCs Exposure point concentration in soil (mg/kg).
HI Hazard index (sum of the HQs).
HQ Hazard quotient.
NA Not available; insufficient toxicity data.
NV Not significantly volatile.
NC Not a suspected carcinogen.
TPH Total petroleum hydrocarbons.
VOCs Volatile organic compounds.

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Appendix R

Soil Vapor Data

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
BR-4	12/15/98	3:45 PM	28.84	37	-	6	83.9	2.5	0.4	--	--	--	78.9
BR-4	12/18/98	8:43 AM	28.43	28	0.04	6	83.6	2.6	0.4	--	--	--	--
BR-4	12/29/98	7:55 AM	28.53	15	T	0.53	68	2	3.4	--	--	--	78.39
BR-4	06/15/99	--	--	--	--	10	81.1	2.1	0	--	--	--	--
BR-4	06/16/99	--	--	--	--	10	80.8	2.4	1	--	--	--	--
BR-4	06/17/99	--	--	--	--	11	75.5	2	0	--	--	--	--
BR-4	06/18/99	--	--	--	--	17	77.4	2	0	--	--	--	--
BR-4	06/19/99	--	--	--	--	20	75.3	2	0	--	--	--	--
BR-4	06/20/99	--	--	--	--	13	73.7	1.8	0.6	--	--	--	--
BR-4	06/21/99	6:17 PM	28.87	75	-	17.52	76.8	1.9	2.4	--	--	--	--
BR-4	06/22/99	4:37 PM	28.65	79	-	15.4	80.2	2	0	--	--	--	--
BR-4	06/23/99	4:35 PM	28.47	69.1	T	16.8	83.7	2.2	0	--	--	--	--
BR-4	06/24/99	3:20 PM	28.58	82.9	-	0.3	79.3	2	0	--	--	--	--
BR-4	06/25/99	3:09 PM	28.64	86	-	14	83.2	2	1.4	--	--	--	--
BR-4	06/26/99	4:01 PM	28.54	87.1	-	15	80.7	2.1	0	--	--	--	--
BR-4	06/27/99	1:45 PM	28.51	72	-	12.7	81.3	2	0	--	--	--	--
BR-4	06/28/99	2:10 PM	28.45	63	0.05	15	81.7	2.2	0	--	--	--	78.36
BR-4	06/29/99	4:55 PM	28.56	70	-	16	77.7	2.2	0.9	--	--	--	--
BR-4	06/30/99	4:28 PM	28.57	62.1	0.08	14	76.6	2.2	1.1	--	--	--	--
BR-4	07/01/99	1:58 PM	28.42	66.9	T	13	76.9	2.2	1.1	--	--	--	--
BR-4	07/02/99	3:14 PM	28.62	80.1	-	13	76.9	2	0	--	--	--	--
BR-4	07/03/99	2:30 PM	28.62	73	-	3.39	73.8	2	0	--	--	--	--
BR-4	07/04/99	1:23 PM	28.66	87.1	-	3.76	54.6	1.3	4.6	--	--	--	--
BR-4	07/05/99	12:20 PM	28.61	79	-	15	83.5	2.2	0	--	--	--	--
BR-4	07/06/99	2:11 PM	28.68	80.1	-	2.76	54.4	1.3	4.7	--	--	--	--
BR-4	07/07/99	1:50 PM	28.73	78.1	-	16	80	2.1	0	--	--	--	--
BR-4	07/08/99	1:50 PM	28.68	57.9	0.1	15	77.6	2.1	0	--	--	--	--
BR-4	07/09/99	3:22 PM	28.55	63	-	1.72	80.2	1.8	3.5	--	--	--	--
BR-4	07/10/99	6:26 PM	28.91	71.1	-	45	88.6	2.2	0	--	--	--	--
BR-4	07/11/99	10:30 AM	28.94	75	-	6.53	89.9	1.9	0.2	--	--	--	--
BR-4	07/12/99	2:36 PM	28.83	79	-	18	93.4	2.2	0	--	--	--	--
BR-4	11/04/99	10:32 AM	28.68	48	-	3.5	81.7	2.3	0	--	--	--	77.94
BR-4	11/06/99	12:58 PM	29.08	46.9	-	2.16	82.6	2.3	0	--	--	--	78.68
Emmet Well	09/01/05	12:14 PM	28.59	77	-	0.1	0	0	19.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
Emmet Well	09/02/05	12:50 PM	28.86	71.06	-	0.1	0	0	19.7	--	--	--	--
Emmet Well	09/07/05	8:15 AM	29.04	64.04	-	0.1	0	0	19.6	--	--	--	--
Emmet Well	09/08/05	8:48 AM	28.98	59	-	0	0.9	0.4	19.1	--	--	--	--
Emmet Well	09/09/05	10:20 AM	28.94	69.08	-	0	0	0	19.5	--	--	--	--
GM-2A	09/11/97	9:17 AM	28.76	59	-	0.3	--	--	--	--	--	--	49.4
GM-2A	09/12/97	12:26 PM	28.83	66	-	0.14	--	--	--	--	--	--	49.4
GM-2A	09/12/97	7:23 PM	28.81	55	-	0.01	--	--	--	--	--	--	49.42
GM-2A	09/13/97	11:46 AM	28.84	72	-	0.17	--	--	--	--	--	--	49.4
GM-2A	09/13/97	6:10 PM	28.82	66	-	0.3	36.1	1.2	2.5	--	--	--	49.4
GM-2A	09/14/97	8:18 AM	28.87	64	-	-0.38	0	0	21	--	--	--	49.44
GM-2A	09/14/97	2:46 PM	28.81	80.1	-	0.32	6.8	0.2	16.9	--	--	--	--
GM-2A	09/15/97	9:10 AM	--	--	--	-0.2	21.6	0.9	9.8	--	--	--	49.43
GM-2A	09/15/97	7:00 PM	--	--	--	0.25	14.2	0.5	14	--	--	--	49.42
GM-2A	09/16/97	7:54 AM	--	--	--	0.75	43.2	1.5	0	--	--	--	49.38
GM-2A	09/16/97	7:01 PM	--	--	--	>2	42	1.4	0	--	--	--	--
GM-2A	09/17/97	8:35 AM	--	--	--	-0.65	33.2	1.2	3.4	--	--	--	49.39
GM-2A	09/17/97	2:03 PM	--	--	--	-0.5	0	0	20.7	--	--	--	49.36
GM-2A	09/17/97	6:54 PM	--	--	--	-0.77	0	0	21.2	--	--	--	49.43
GM-2A	09/18/97	7:45 AM	--	--	--	0.08	3	0.5	18.7	--	--	--	49.4
GM-2A	09/18/97	7:14 PM	--	--	--	1.05	35.1	1.2	2	--	--	--	49.33
GM-2A	09/22/97	12:14 PM	--	--	--	0.7	38	0.9	1.5	--	--	--	49.47
GM-2A	09/22/97	5:15 PM	--	--	--	0.43	40.5	1.3	0	--	--	--	49.42
GM-2A	09/23/97	8:32 AM	--	--	--	1.25	19.7	0.7	11	--	--	--	49.57
GM-2A	09/23/97	5:46 PM	--	--	--	-0.05	4.8	0.1	18.3	--	--	--	49.53
GM-2A	09/24/97	7:51 AM	--	--	--	0.95	20.4	0.7	10.3	--	--	--	49.46
GM-2A	09/24/97	7:15 PM	--	--	--	2.1	41.7	1.2	0	--	--	--	49.27
GM-2A	09/25/97	8:30 AM	--	--	--	-0.45	24.1	0.7	8.6	--	--	--	49.41
GM-2A	09/25/97	7:00 PM	--	--	--	-1.29	3.3	0.1	19.4	--	--	--	49.5
GM-2A	09/26/97	8:32 AM	--	--	--	-0.75	0	0	21.1	--	--	--	49.54
GM-2A	09/26/97	5:28 PM	--	--	--	0.35	16.7	0.2	12.5	--	--	--	49.46
GM-2A	09/27/97	8:29 AM	--	--	--	0.67	21.3	0.6	0.5	--	--	--	49.45
GM-2A	09/27/97	5:23 PM	--	--	--	1.2	30.1	0.9	5.8	--	--	--	49.38
GM-2A	09/28/97	8:27 AM	--	--	--	0.93	38.8	1	1.3	--	--	--	49.33
GM-2A	09/28/97	6:31 PM	--	--	--	0.85	39.9	1.3	1.2	--	--	--	49.31

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2A	09/29/97	8:54 AM	--	--	--	1.45	39	1.3	1.7	--	--	--	49.21
GM-2A	09/29/97	7:16 PM	--	--	--	-0.3	37.9	1.4	2.9	--	--	--	49.32
GM-2A	09/30/97	9:30 AM	--	--	--	-2.5	0	0	21.1	--	--	--	49.5
GM-2A	09/30/97	6:33 PM	--	--	--	-1.8	1	0	20.6	--	--	--	49.6
GM-2A	10/01/97	8:50 AM	28.94	44.1	-	-1.05	0	0	21.1	--	--	--	49.6
GM-2A	10/01/97	6:12 PM	28.8	46.9	-	0.75	37.1	1.3	1.7	--	--	--	49.53
GM-2A	10/02/97	6:50 AM	28.59	45	-	1.05	38.4	1.5	0.8	--	--	--	49.47
GM-2A	10/02/97	6:25 PM	28.48	62.1	-	0.55	41.3	1.1	0.2	--	--	--	49.43
GM-2A	10/03/97	7:28 AM	28.51	45	-	0.03	39.1	1.6	1.1	--	--	--	49.46
GM-2A	10/06/97	9:10 AM	--	--	--	-1.25	0	0	21.4	--	--	--	49.6
GM-2A	10/06/97	5:36 PM	--	--	--	0.02	0	0	21.2	--	--	--	--
GM-2A	10/07/97	7:49 AM	0	55.9	-	-0.3	2.1	0	19.8	--	--	--	49.6
GM-2A	10/07/97	6:01 PM	28.79	59	-	0.38	4	0.1	18.3	--	--	--	49.55
GM-2A	10/08/97	7:40 AM	28.75	59	-	0.2	31.5	1	5	--	--	--	49.55
GM-2A	10/08/97	5:19 PM	0	73.9	-	0.9	37	1.1	1.9	--	--	--	49.48
GM-2A	10/09/97	7:33 AM	0	68	-	0.85	37.4	1.4	1.3	--	--	--	49.47
GM-2A	10/09/97	5:35 PM	28.72	51.1	-	-0.9	0	0	21.3	--	--	--	49.6
GM-2A	10/10/97	7:29 AM	29.06	37.9	-	-0.75	0	0	21.1	--	--	--	49.72
GM-2A	10/10/97	5:48 PM	29.06	50	-	-0.04	0	0	21.4	--	--	--	49.63
GM-2A	10/11/97	7:49 AM	28.99	48.9	-	0.34	23.4	0.8	9	--	--	--	49.6
GM-2A	10/11/97	5:30 PM	28.76	60.1	-	1.35	35.1	1.3	2.7	--	--	--	49.5
GM-2A	10/12/97	7:28 AM	28.65	54	-	0.5	39.9	0.8	1.4	--	--	--	49.49
GM-2A	10/12/97	6:26 PM	28.48	61	0.04	0.8	42.1	0.7	1.3	--	--	--	49.4
GM-2A	10/13/97	7:33 AM	28.22	57.9	0.03	0.77	9.8	0.2	16.5	--	--	--	49.37
GM-2A	10/13/97	6:20 PM	28.52	43	T	-1.65	0	0	21.2	--	--	--	49.56
GM-2A	10/14/97	8:45 AM	28.71	36	-	-1.2	0	0	21.2	--	--	--	49.5
GM-2A	10/14/97	6:41 PM	28.93	39.9	-	1.65	0	0	20.6	--	--	--	49.64
GM-2A	10/15/97	9:33 AM	29.09	46	-	-0.75	5.1	0.2	18.1	--	--	--	--
GM-2A	10/15/97	10:04 AM	29.09	46	-	--	--	--	--	--	--	--	49.68
GM-2A	10/21/97	8:22 AM	28.71	33.1	T	0.55	42.4	1.5	0.2	--	--	--	49.54
GM-2A	10/22/97	8:40 AM	28.91	27	-	0	40	1.3	1.6	--	--	--	49.65
GM-2A	10/22/97	5:00 PM	28.81	30	-	0	0	0	21.4	--	--	--	49.58
GM-2A	10/23/97	8:30 AM	28.71	27	-	0.4	54.3	1.4	1	--	--	--	48.58
GM-2A	10/23/97	6:22 PM	28.63	32	-	0.55	54.2	1.3	0.6	--	--	--	49.56

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2A	10/24/97	8:09 AM	28.74	28	-	-0.6	0	0	20.7	--	--	--	49.63
GM-2A	10/29/97	7:39 AM	28.64	34	-	-0.43	--	--	--	--	--	--	53.72
GM-2A	10/29/97	12:00 PM	28.62	45	-	-0.09	0	0	20.4	--	--	--	53.7
GM-2A	10/30/97	7:29 AM	28.61	35.1	-	0.75	33.2	0.2	5	--	--	--	53.66
GM-2A	10/30/97	5:46 PM	28.35	54	-	1.25	37.6	0.4	2.9	--	--	--	53.59
GM-2A	10/31/97	7:03 AM	28.29	43	-	0.33	40	0.4	2	--	--	--	53.61
GM-2A	12/02/97	8:55 AM	28.89	27	-	0.95	9	0.1	14.5	--	--	--	--
GM-2A	12/12/97	9:50 AM	28.66	26	-	1.27	25	1.7	2.8	--	--	--	--
GM-2A	01/21/98	3:00 PM	28.97	22	-	0.01	3.1	0.2	18.5	--	--	--	54.28
GM-2A	01/22/98	8:00 AM	29.03	14	T	-0.35	0.1	0	20.1	--	--	--	54.29
GM-2A	02/18/98	4:00 PM	28.49	35.1	-	-0.21	10.4	1	13.8	--	--	--	54.29
GM-2A	02/19/98	8:01 AM	28.59	32	-	-0.53	0	0	21.1	--	--	--	54.28
GM-2A	03/30/98	2:25 PM	28.38	39.9	0.01	-0.55	0	0	20.7	--	--	--	54.29
GM-2A	03/31/98	8:16 AM	28.49	34	T	-0.28	0	0	20.8	--	--	--	54.28
GM-2A	04/14/98	3:03 PM	28.45	59	-	-0.21	0	0	21	--	--	--	--
GM-2A	04/15/98	5:20 PM	28.61	45	-	0.5	5.7	0.4	17.3	--	--	--	--
GM-2A	04/16/98	8:25 AM	28.48	30.9	0.01	0.7	18.2	2.1	7.6	--	--	--	50.19
GM-2A	04/16/98	3:17 PM	28.43	34	T	0.8	20.5	2.4	4.6	--	--	--	--
GM-2A	04/17/98	8:03 AM	28.55	37	-	-0.46	0	0	20.8	--	--	--	50.2
GM-2A	04/30/98	4:17 PM	28.58	70	-	1.1	21.8	2.5	4.1	--	--	--	50.18
GM-2A	05/01/98	7:57 AM	28.48	54	-	0.34	26.2	2.9	1.3	--	--	--	50.19
GM-2A	05/07/98	3:27 PM	28.52	66.9	T	0.55	19.8	6.2	2.1	--	--	--	50.17
GM-2A	05/08/98	8:20 AM	28.65	54	-	-0.7	0	0	20.7	--	--	--	50.19
GM-2A	05/14/98	3:38 PM	28.72	77	-	0.5	5.1	0.6	16.7	--	--	--	50.15
GM-2A	05/15/98	7:36 AM	28.69	66.9	-	0	0	0	20.9	--	--	--	50.17
GM-2A	05/20/98	4:20 PM	28.74	70	-	0.12	0	0.1	20.6	--	--	--	50.16
GM-2A	05/21/98	7:54 AM	28.84	52	-	-0.6	0	0	20.9	--	--	--	50.17
GM-2A	05/28/98	3:59 PM	28.49	86	-	0.08	24.2	2.9	0.9	--	--	--	--
GM-2A	05/29/98	9:49 AM	28.62	73.9	-	-0.3	0	0	20.8	--	--	--	50.17
GM-2A	06/02/98	5:17 PM	28.49	54	-	-0.7	0	0	20.7	--	--	--	--
GM-2A	06/05/98	7:50 AM	28.76	48	-	-0.2	0	0	21	--	--	--	--
GM-2A	06/11/98	10:53 AM	28.57	59	-	0.6	18.1	2.4	4.5	--	--	--	--
GM-2A	06/12/98	8:40 AM	28.29	62.1	-	-0.6	0	0	20.8	--	--	--	50.22
GM-2A	06/13/98	7:53 AM	28.53	63	-	-0.6	0	0	20.7	--	--	--	50.22

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2A	06/14/98	11:47 AM	28.43	77	-	0.4	10.5	1	1.5	--	--	--	50.17
GM-2A	06/15/98	9:37 AM	28.31	79	-	0.42	14.7	1.7	7.7	--	--	--	50.18
GM-2A	06/16/98	5:30 PM	28.51	73.9	-	-0.56	0	0	20.7	--	--	--	50.18
GM-2A	06/17/98	1:53 PM	28.73	80.1	-	-0.58	0	0	20.6	--	--	--	50.18
GM-2A	06/22/98	4:15 PM	28.67	82.9	-	0.28	13.5	1.7	8.1	--	--	--	50.18
GM-2A	06/23/98	9:00 AM	28.83	69.1	-	-0.73	0	0	20.9	--	--	--	50.19
GM-2A	06/24/98	2:14 PM	28.58	82	-	0.91	24.1	2.7	0	--	--	--	--
GM-2A	06/26/98	3:46 PM	--	--	--	-0.01	2.9	0.7	17.2	--	--	--	50.2
GM-2A	06/27/98	1:47 PM	28.62	73.9	-	-0.06	2.7	1	16.9	--	--	--	50.21
GM-2A	06/28/98	12:05 PM	28.55	81	-	0.16	24.1	2.5	0	--	--	--	--
GM-2A	07/06/98	6:02 PM	28.78	64.9	0.02	-0.7	0	0	20.7	9.5	5.5	3	--
GM-2A	07/07/98	8:19 AM	28.76	57.9	-	-0.76	0	0	20.6	5	5	3	--
GM-2A	07/08/98	7:29 PM	28.73	73.9	-	0.21	18.4	2.6	2.9	--	--	--	--
GM-2A	07/09/98	5:19 PM	28.78	75	-	-0.08	18.3	2.3	3.6	--	--	--	--
GM-2A	07/10/98	4:18 PM	28.89	75	-	0.21	0	0	21.3	--	--	--	--
GM-2A	07/11/98	7:25 PM	28.76	75.9	-	0.75	22.5	2.2	2.2	--	--	--	--
GM-2A	07/12/98	10:09 AM	28.72	80.1	-	0.16	19.5	2.4	1.2	--	--	--	--
GM-2A	07/14/98	6:26 PM	28.66	82.9	-	0.8	17.1	2.2	3.9	--	--	--	50.18
GM-2A	07/15/98	11:25 AM	28.65	73.9	-	-0.16	13	1.8	8.2	--	--	--	50.18
GM-2A	07/21/98	6:34 PM	28.61	75.9	-	-0.92	0	0	21.2	--	--	--	--
GM-2A	07/22/98	6:29 PM	28.61	75	-	0.43	5.5	0.9	15.2	--	--	--	--
GM-2A	07/23/98	6:54 PM	28.71	64.9	-	-0.27	7.3	1	14.7	--	--	--	--
GM-2A	07/24/98	6:37 PM	28.87	66	-	-0.25	0	0	20.7	--	--	--	50.19
GM-2A	07/26/98	2:10 PM	28.73	82	-	1.26	15.4	1.5	7.4	--	--	--	--
GM-2A	07/27/98	5:50 PM	28.6	77	-	0.19	27	2.6	0	--	--	--	--
GM-2A	07/28/98	1:52 PM	28.49	79	-	0.13	26.6	2.5	0	--	--	--	50.14
GM-2A	07/29/98	12:10 PM	28.7	75.9	-	-0.37	0.1	0	20.8	2.5	2.5	2.5	--
GM-2A	08/31/98	2:00 PM	28.81	75	-	0.01	0	1.5	20.8	275	275	7	--
GM-2A	09/01/98	2:38 PM	28.51	69.1	-	0.85	0.1	1.7	20	4000	4000	6	--
GM-2A	09/02/98	1:35 PM	28.51	64.9	-	-0.22	0	1.8	19.2	1500	950	1.75	--
GM-2A	09/03/98	1:30 PM	28.56	71.1	-	0.28	0	1.6	19.8	--	--	--	--
GM-2A	09/04/98	12:31 PM	28.7	81	-	0.18	0	1.6	20	190	190	3	--
GM-2A	09/09/98	12:30 PM	28.89	71.1	-	-0.08	0	1.6	19	50	50	2	49.78
GM-2A	09/10/98	5:40 PM	28.65	77	-	0.95	0	1.6	18.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2A	09/11/98	12:06 PM	28.6	93	-	0.42	0	1.7	18.9	750	750	4.5	--
GM-2A	09/12/98	6:02 PM	28.7	73	-	0.2	0	1.2	18.9	--	--	--	--
GM-2A	09/14/98	2:05 PM	28.57	66	-	0.35	0	1.8	17.6	600	600	2.5	--
GM-2A	09/16/98	10:15 AM	28.94	66.9	-	0.28	0	2.2	16.2	460	460	9	--
GM-2A	09/21/98	4:03 PM	28.78	55	-	-0.99	0	1.5	18.2	225	225	2.25	--
GM-2A	09/22/98	1:23 PM	28.88	61	-	0.19	0	1.4	19	950	950	2	--
GM-2A	09/23/98	10:38 AM	28.89	62.1	-	0.17	0	2.1	16.3	2750	2750	2.5	--
GM-2A	09/25/98	6:26 PM	28.55	69.1	-	-0.3	0	2	16.9	2000	2000	3	--
GM-2A	09/28/98	10:09 AM	28.77	63	-	-0.57	0.5	2.2	14.9	--	--	--	--
GM-2A	10/07/98	10:00 AM	28.65	53.1	-	0.6	0	0.4	19.4	1100	1100	3	--
GM-2A	10/14/98	7:44 AM	28.87	39	-	-0.61	0	0.3	20.1	<2.5	<2.5	2.5	--
GM-2A	10/27/98	10:00 AM	28.77	52	-	0.49	0	1.9	19.9	--	--	--	--
GM-2A	11/17/98	9:12 AM	28.81	30.9	-	-1.03	0	0	19.9	9.5	9	6	--
GM-2A	12/16/98	1:32 PM	28.64	34	-	0.76	0	1.8	16	1100	1050	0	49.79
GM-2A	01/20/99	11:40 AM	28.63	28.9	-	-0.21	0	0.3	20	2	2.5	2.5	--
GM-2A	02/10/99	11:54 AM	28.8	34	-	0.3	0	1.8	13.5	39	39	3	49.8
GM-2A	03/13/99	11:14 AM	29.09	33.1	-	0.08	0	1.6	17.8	<1	<1	1	49.82
GM-2A	04/13/99	8:00 AM	28.97	42.1	-	0.23	0	0.6	18	20	5	3	--
GM-2A	07/26/99	4:10 PM	28.65	84	-	0.09	0	2.3	9.6	30	--	5.5	--
GM-2A	10/09/99	2:26 PM	28.69	71.1	-	0.67	0	3.1	1.7	15	0	1.5	49.81
GM-2A	01/19/00	11:24 AM	28.66	14	-	0.46	0	3.4	5.3	--	--	1	49.81
GM-2A	04/18/00	10:01 AM	28.71	40	-	0.71	0	3	2.5	12.22	--	12.22	49.92
GM-2A	07/22/00	7:49 AM	28.9	55	-	-0.74	0	0	19.7	4	4	4	49.8
GM-2A	10/20/00	9:36 AM	28.61	67	-	0.24	0.7	4	0	--	--	--	49.81
GM-2A	01/26/01	1:55 PM	28.48	20	0.02	1.3	2.9	3	0	--	--	--	49.86
GM-2A	01/27/01	9:45 AM	28.91	12	-	-0.97	0	0	20.3	0.34	0.32	0.1	49.86
GM-2A	04/23/01	9:54 AM	28.32	67	-	1.58	0	3.3	2.1	182	--	-1	--
GM-2A	07/11/01	9:50 AM	28.82	70	-	-0.28	0	0	20.6	0.66	0.56	0	49.79
GM-2A	09/20/01	11:40 AM	28.64	64	-	-0.4	0	0	20.6	4.4	4.2	0	--
GM-2A	11/02/01	1:50 PM	28.7	49	-	-1.43	0	0	21	18.67	12.85	0.53	--
GM-2A	11/07/01	10:55 AM	29.01	45	-	-0.09	0	0	21.1	2.87	2.29	-0.44	--
GM-2A	11/13/01	1:40 PM	28.75	48	-	0.92	0	0.3	19.4	15.58	12.63	-0.48	--
GM-2A	02/16/02	9:37 AM	28.55	32	-	-0.91	0	0	20.6	-0.53	-0.62	-0.71	--
GM-2A	05/15/02	9:15 AM	28.73	50	-	0.95	0	1.3	17.4	5.08	4.33	-0.28	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2A	10/11/02	10:16 AM	28.92	61	-	0.1	0	1.5	11.9	8.99	8.8	0	--
GM-2A	01/07/03	11:21 AM	28.44	34	-	1.8	0	2.1	5.5	0.7	--	0.2	49.16
GM-2A	04/01/03	2:00 PM	28.51	48	-	-0.3	0	0.5	17.8	0.01	0	0	49.74
GM-2A	07/21/03	9:19 AM	28.56	61	-	-0.1	0	2.3	5.9	2	Flame out	0	49.04
GM-2A	10/10/03	12:13 PM	28.83	73	-	0	0	1.7	7.2	3.01	Flameout	0	49.38
GM-2A	01/28/04	11:40 AM	28.65	10	T	0	0	0	19.7	-0.9	-0.04	-0.5	49.75
GM-2A	04/20/04	1:10 PM	28.76	42	-	1.3	0	2	6.9	--	--	--	--
GM-2A	06/05/04	11:47 AM	28.76	72	-	0	0	2.3	6.4	--	--	--	--
GM-2A	06/05/04	2:22 PM	28.73	70	-	0	0	0	20.1	--	--	--	--
GM-2A	06/07/04	7:41 AM	28.66	69	-	-0.7	0	0	20.2	--	--	--	--
GM-2A	06/08/04	8:56 AM	28.66	80	-	-1.1	0	0	19.8	--	--	--	--
GM-2A	07/08/04	5:05 PM	28.76	65	-	-0.641	0	0	19.7	79.37	52.2	1.4	48.85
GM-2A	09/29/04	2:11 PM	28.88	67	-	0.7	0	1	18.2	--	--	--	--
GM-2A	10/08/04	2:08 PM	28.56	67	-	0.9	0	0.9	18.4	0.04	0	-1.03	48.52
GM-2A	01/14/05	2:17 PM	29.22	15	-	-0.7	0	0	20.1	1.68	1.5	0.92	--
GM-2A	04/11/05	11:30 AM	28.92	54	-	-4.3	0	0	20.1	--	--	--	--
GM-2A	07/21/05	9:08 AM	28.83	77	-	-0.3	0	0	19.6	--	--	--	--
GM-2A	10/18/05	10:40 AM	28.64	53	-	-0.25	0	0	19.9	--	--	--	49.85
GM-2A	03/07/06	3:13 PM	28.85	37	-	1.3	0	0.6	18.2	--	--	--	49.9
GM-2A	07/12/06	11:11 AM	28.83	81	-	0	0	0	18.7	--	--	--	49.97
GM-2A	10/22/06	10:55 AM	28.66	38	-	0	0	0.9	17.7	--	--	--	49.95
GM-2A	01/29/07	12:00 PM	28.55	10	T	0.6	0	1	18.7	--	--	--	49.95
GM-2A	04/16/07	11:05 AM	28.85	56	-	0	0	0	20.3	--	--	--	49.82
GM-2A	07/13/07	11:19 AM	30.03	67	-	-0.3	0	0	19.7	--	--	--	49.85
GM-2A	10/15/07	1:38 PM	30.11	48	-	0	0	0.4	17.9	--	--	--	49.91
GM-2B	09/11/97	9:15 AM	28.76	59	-	--	--	--	--	--	--	--	74.1
GM-2B	09/12/97	12:34 PM	28.82	68	-	0.01	--	--	--	--	--	--	74.12
GM-2B	09/13/97	12:50 PM	28.83	71.1	-	0	--	--	--	--	--	--	73.95
GM-2B	09/13/97	6:01 PM	28.82	66	-	0.03	6.1	0.1	18.9	--	--	--	73.92
GM-2B	09/14/97	8:15 AM	28.87	64	-	>0.5	0.1	6.6	19.1	--	--	--	74.06
GM-2B	09/14/97	2:41 PM	28.81	80.1	-	0.19	5.7	0	18.8	--	--	--	73.95
GM-2B	09/15/97	9:15 AM	--	--	--	-0.04	4.3	0	19.5	--	--	--	74.15
GM-2B	09/15/97	6:55 PM	--	--	--	0	6.6	0.1	18.9	--	--	--	74
GM-2B	09/16/97	8:31 AM	--	--	--	0.03	9	0.2	18.7	--	--	--	74.07

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2B	09/16/97	7:06 PM	--	--	--	0.07	4.8	0.1	19.4	--	--	--	--
GM-2B	09/17/97	8:45 AM	--	--	--	0.55	6	0.1	19.1	--	--	--	73.8
GM-2B	09/17/97	2:05 PM	--	--	--	0.18	4.5	0	19.4	--	--	--	--
GM-2B	09/17/97	7:00 PM	--	--	--	-0.3	5	0	19.7	--	--	--	73.94
GM-2B	09/18/97	7:49 AM	--	--	--	0	5.1	0	19.6	--	--	--	74.02
GM-2B	09/18/97	7:17 PM	--	--	--	0.13	5.2	0	19.4	--	--	--	73.88
GM-2B	09/22/97	12:20 PM	--	--	--	1	8.6	0	18.5	--	--	--	74.07
GM-2B	09/22/97	5:11 PM	--	--	--	0.04	8.3	0	18.7	--	--	--	74.05
GM-2B	09/23/97	8:45 AM	--	--	--	0.15	11.1	0.1	18	--	--	--	74.18
GM-2B	09/23/97	5:40 PM	--	--	--	0	2.9	0	20.2	--	--	--	74.25
GM-2B	09/24/97	7:45 AM	--	--	--	0	3.2	0	20.1	--	--	--	74.15
GM-2B	09/24/97	7:10 PM	--	--	--	0	8	0.1	18.9	--	--	--	73.8
GM-2B	09/25/97	8:33 AM	--	--	--	0.13	6.3	0	19.4	--	--	--	73.69
GM-2B	09/25/97	6:57 PM	--	--	--	0	7.2	0	19.6	--	--	--	73.96
GM-2B	09/26/97	8:28 AM	--	--	--	0.15	10.7	0.1	18.3	--	--	--	74.15
GM-2B	09/26/97	5:24 PM	--	--	--	0.04	7.9	0	18.9	--	--	--	74.1
GM-2B	09/27/97	8:34 AM	--	--	--	0.12	11.7	0.1	18.2	--	--	--	74.08
GM-2B	09/27/97	5:20 PM	--	--	--	0	6.3	0	19.4	--	--	--	73.92
GM-2B	09/28/97	8:25 AM	--	--	--	0.16	8.4	0	19	--	--	--	73.75
GM-2B	09/28/97	6:34 PM	--	--	--	0.2	10.4	0	18.4	--	--	--	73.57
GM-2B	09/29/97	9:07 AM	--	--	--	0.16	0	1.4	19.8	--	--	--	73.54
GM-2B	09/29/97	7:19 PM	--	--	--	0	10	0.1	18.6	--	--	--	73.56
GM-2B	09/30/97	9:35 AM	--	--	--	0	11.6	0.1	19.8	--	--	--	73.98
GM-2B	09/30/97	6:59 PM	--	--	--	0.11	9	0	19.2	--	--	--	74.2
GM-2B	10/01/97	9:05 AM	28.94	44.1	-	0	8.5	0	19	--	--	--	74.43
GM-2B	10/01/97	6:25 PM	28.8	46.9	-	0.07	8	0	19.3	--	--	--	74.35
GM-2B	10/02/97	6:55 AM	28.59	45	-	0.35	8.4	0.1	19	--	--	--	74.18
GM-2B	10/02/97	6:27 PM	28.48	62.1	-	0	8	0	18.8	--	--	--	74.06
GM-2B	10/03/97	7:31 AM	28.51	48.9	-	0	9.8	0.1	18.7	--	--	--	74.07
GM-2B	10/06/97	10:03 AM	--	--	--	0	9.3	0	18.8	--	--	--	74.36
GM-2B	10/06/97	5:31 PM	--	--	--	0.14	9.6	0	18.2	--	--	--	--
GM-2B	10/07/97	7:45 AM	0	55.9	-	0.05	10.2	0	18.5	--	--	--	74.37
GM-2B	10/07/97	5:58 PM	28.79	59	-	0.05	9.9	0.1	18.1	--	--	--	74.33
GM-2B	10/08/97	7:38 AM	28.75	59	-	0.05	9	0	19.1	--	--	--	74.27

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2B	10/08/97	5:17 PM	0	73.9	-	0	7.3	0	19	--	--	--	74.2
GM-2B	10/09/97	7:32 AM	0	68	-	0	8.5	0	18.8	--	--	--	74.01
GM-2B	10/09/97	5:32 PM	28.72	51.1	-	0	3.7	0	20.2	--	--	--	74.16
GM-2B	10/10/97	7:26 AM	29.06	37.9	-	0	4.3	0	20	--	--	--	74.46
GM-2B	10/10/97	5:47 PM	29.06	50	-	0	0	0	22.8	--	--	--	74.65
GM-2B	10/11/97	7:47 AM	28.99	48.9	-	0	2.4	0	20.7	--	--	--	74.43
GM-2B	10/11/97	5:26 PM	28.76	63	-	0	0	0	20.7	--	--	--	74.59
GM-2B	10/12/97	8:07 AM	28.65	57.9	-	0	2.2	0.2	20.8	--	--	--	74.12
GM-2B	10/12/97	6:37 PM	28.46	62.1	0.02	0.2	--	--	--	--	--	--	73.96
GM-2B	10/13/97	8:19 AM	28.22	57.9	0.03	0.38	0	0	19.6	--	--	--	73.7
GM-2B	10/13/97	6:27 PM	28.52	43	T	0	3.3	0	20.4	--	--	--	73.93
GM-2B	10/14/97	9:25 AM	28.71	36	-	0	6.7	0.1	19.3	--	--	--	74.09
GM-2B	10/14/97	6:46 PM	28.93	39.9	-	-0.12	6.6	0.1	19	--	--	--	74.21
GM-2B	10/15/97	9:40 AM	29.09	46	-	0.05	7.4	0.1	19	--	--	--	--
GM-2B	10/15/97	10:06 AM	29.09	46	-	--	--	--	--	--	--	--	74.43
GM-2B	10/21/97	8:10 AM	28.71	33.1	T	0	7.4	0.1	19.2	--	--	--	74.12
GM-2B	10/22/97	8:33 AM	28.91	27	-	0	1.9	0.1	20.7	--	--	--	14.32
GM-2B	10/22/97	6:38 PM	28.79	28.9	-	0	0	0	0	--	--	--	74.28
GM-2B	10/23/97	8:22 AM	28.72	24.1	-	0	4.3	0	20.5	--	--	--	74.17
GM-2B	10/23/97	6:14 PM	28.63	32	-	0	6.4	0	19.6	--	--	--	74.09
GM-2B	10/24/97	8:01 AM	28.74	28	-	0	6.9	0.1	19.6	--	--	--	74.17
GM-2B	10/29/97	7:42 AM	28.64	34	-	0	--	--	--	--	--	--	74.15
GM-2B	10/29/97	11:49 AM	28.62	45	-	0.15	6.5	0.1	18.9	--	--	--	74.15
GM-2B	10/30/97	7:15 AM	28.61	35.1	-	0.13	5.8	0.1	19.1	--	--	--	74.15
GM-2B	10/30/97	4:51 PM	28.35	55.9	-	0.06	4	0	19.7	--	--	--	73.96
GM-2B	10/31/97	6:53 AM	28.29	43	-	0.09	4.7	0	19.2	--	--	--	73.9
GM-2B	11/18/97	4:05 PM	28.6	30	-	0	9.2	0.2	17.6	--	--	--	74.11
GM-2B	11/19/97	4:05 PM	28.62	26.1	-	0.11	7.1	0.1	18.4	--	--	--	74.35
GM-2B	11/20/97	4:40 PM	28.62	28.9	-	0	4.5	0	19.1	--	--	--	74.34
GM-2B	11/21/97	9:45 AM	28.81	23	-	0.08	2.2	0	18.7	--	--	--	74.47
GM-2B	12/02/97	8:50 AM	28.89	27	-	0.14	3.4	2.1	17.9	--	--	--	74.35
GM-2B	12/12/97	9:50 AM	28.66	26	-	0.2	13	0.7	17.2	--	--	--	76.47
GM-2B	01/21/98	4:30 PM	28.98	22	-	0	2.1	0.2	19.5	--	--	--	74.72
GM-2B	01/22/98	8:40 AM	29.03	15	T	0	2	0.2	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2B	02/18/98	4:55 PM	28.51	34	-	0	5.2	0.7	18.5	--	--	--	74.6
GM-2B	02/19/98	9:21 AM	28.6	33.1	-	-0.05	5	0.5	19.8	--	--	--	74.38
GM-2B	03/30/98	3:21 PM	28.4	39	T	0	0.9	0.1	20.2	--	--	--	74.47
GM-2B	03/31/98	9:07 AM	28.48	34	T	0	1	0.1	20.4	--	--	--	74.4
GM-2B	04/14/98	4:15 PM	28.47	57.9	-	-0.17	2.3	0.1	20.3	--	--	--	73.92
GM-2B	04/15/98	5:37 PM	28.61	41	-	0.15	2.5	0.1	20.2	--	--	--	74.03
GM-2B	04/16/98	9:17 AM	28.47	30.9	0.05	0	1.9	0.2	19.7	--	--	--	74.12
GM-2B	04/16/98	3:46 PM	28.47	34	-	0	0.6	0	20.3	--	--	--	--
GM-2B	04/17/98	8:54 AM	28.57	39	-	0	0.4	0	20.2	--	--	--	74.11
GM-2B	04/30/98	4:57 PM	28.58	69.1	-	0	0.9	0.3	20.1	--	--	--	74.49
GM-2B	05/01/98	8:43 AM	28.47	60.1	-	0	0.9	0.2	20.4	--	--	--	74.41
GM-2B	05/07/98	4:05 PM	28.53	69.1	-	0	0.5	0.4	20.3	--	--	--	74.45
GM-2B	05/08/98	9:12 AM	28.66	57.9	-	0	0.3	0.3	20.5	--	--	--	74.49
GM-2B	05/14/98	4:10 PM	28.72	77	-	0	0.6	0.6	19.5	--	--	--	74.61
GM-2B	05/15/98	8:10 AM	28.69	66.9	-	0	0.4	0.4	20.2	--	--	--	74.63
GM-2B	05/20/98	4:54 PM	28.73	69.1	-	0	0.5	0.4	20.2	--	--	--	74.64
GM-2B	05/21/98	8:27 AM	28.84	52	-	0	0	0	20.9	--	--	--	74.67
GM-2B	05/28/98	4:35 PM	28.49	86	-	0	0.5	0.3	19.7	--	--	--	--
GM-2B	05/29/98	10:22 AM	28.62	73.9	-	-0.09	0.5	0.3	20	--	--	--	74.57
GM-2B	06/02/98	5:25 PM	28.49	54	-	-0.4	1.2	0.5	19.4	--	--	--	--
GM-2B	06/05/98	8:12 AM	28.76	48	-	0	0.5	0.4	20.3	--	--	--	--
GM-2B	06/11/98	11:26 AM	28.57	59	-	0	0.2	0.3	20.6	--	--	--	--
GM-2B	06/12/98	9:13 AM	28.29	62.1	-	0	0.3	0.3	19.7	--	--	--	74.56
GM-2B	06/13/98	8:26 AM	28.53	63	-	0	0.3	0.3	20	--	--	--	74.51
GM-2B	06/14/98	11:51 AM	28.43	77	-	0	0.1	0	20.6	--	--	--	74.48
GM-2B	06/15/98	9:41 AM	28.31	79	-	0	0.5	0.2	20.1	--	--	--	74.42
GM-2B	06/16/98	5:35 PM	28.51	73.9	-	-0.19	0.3	0.1	20.4	--	--	--	74.37
GM-2B	06/17/98	1:57 PM	28.73	80.1	-	-0.01	0.4	0	20.3	--	--	--	74.45
GM-2B	06/22/98	4:19 PM	28.67	82.9	-	0	0.5	0.2	20.2	--	--	--	74.62
GM-2B	06/23/98	9:03 AM	28.83	69.1	-	0	0.3	0.1	20.4	--	--	--	74.7
GM-2B	06/24/98	2:18 PM	28.58	82	-	0	0.4	0.1	20.1	--	--	--	--
GM-2B	06/26/98	3:51 PM	--	--	--	0	0.6	0.2	19.8	--	--	--	74.68
GM-2B	06/27/98	1:47 PM	28.62	73.9	-	0	0.4	0.1	20.2	--	--	--	--
GM-2B	06/27/98	1:50 PM	28.62	73.9	-	0	0.4	0.1	20.2	--	--	--	74.69

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2B	06/28/98	12:09 PM	28.55	81	-	0.01	0.5	0	20	--	--	--	--
GM-2B	07/06/98	6:06 PM	28.78	64.9	0.02	0	0.2	0.1	20.2	--	--	--	--
GM-2B	07/07/98	8:25 AM	28.76	57.9	-	0	0.3	0.1	20.3	--	--	--	--
GM-2B	07/08/98	7:32 PM	28.73	66.9	-	0.03	0.5	0.2	20.1	7300	7300	3.5	--
GM-2B	07/09/98	5:22 PM	28.78	75	-	0	0.7	0.2	20.1	--	--	--	--
GM-2B	07/10/98	4:23 PM	28.89	75	-	0	0.4	0	20.9	--	--	--	--
GM-2B	07/11/98	7:30 PM	28.75	72	-	0	0.3	0	20.8	--	--	--	--
GM-2B	07/12/98	10:14 AM	28.72	80.1	-	0	0.4	0	20.2	--	--	--	--
GM-2B	07/14/98	7:10 PM	28.73	69.1	-	--	--	--	--	--	--	--	74.66
GM-2B	07/15/98	11:29 AM	28.65	73.9	-	0	0.5	0.1	20.2	--	--	--	74.69
GM-2B	07/21/98	6:40 PM	28.61	75.9	-	-0.03	0.8	0.1	20.1	--	--	--	--
GM-2B	07/22/98	6:33 PM	28.61	72	-	0.12	0.4	0.1	20.2	--	--	--	--
GM-2B	07/23/98	6:57 PM	28.71	64.9	-	0	0.4	0.1	20.2	--	--	--	--
GM-2B	07/24/98	6:41 PM	28.87	66	-	0.07	0.5	0.1	20.3	--	--	--	74.85
GM-2B	07/26/98	2:13 PM	28.73	82	-	0	0.6	0	20.2	--	--	--	--
GM-2B	07/27/98	5:55 PM	28.6	77	-	0	0.1	0	20.2	--	--	--	74.85
GM-2B	07/28/98	1:55 PM	28.49	79	-	0	0.3	0	20.3	2000	2000	2	74.71
GM-2B	07/29/98	12:12 PM	28.7	75.9	-	0.02	0.3	0	20.3	1500	1500	2.5	--
GM-2B	08/04/98	1:04 PM	28.92	77	-	0	0.5	0	20.2	--	--	--	74.98
GM-2B	08/12/98	12:49 PM	28.97	75.9	-	0	0.4	0	21.7	--	--	--	74.96
GM-2B	08/13/98	1:27 PM	28.82	79	-	0	8.3	2.2	9	--	--	--	--
GM-2B	08/14/98	12:42 PM	28.57	78.1	-	0	0.3	2.2	21.2	--	--	--	74.97
GM-2B	08/15/98	12:30 PM	28.77	69.1	-	0	0.4	0	21.5	--	--	--	--
GM-2B	08/16/98	12:34 PM	28.76	75.9	-	0	0.3	0	21.8	--	--	--	--
GM-2B	08/17/98	12:35 PM	28.74	64.9	T	0.1	0.3	0	21.3	--	--	--	--
GM-2B	08/18/98	1:13 PM	29.03	68	-	0	0.3	0	21.6	--	--	--	--
GM-2B	08/19/98	12:09 PM	28.99	66.9	-	0.28	0.3	0	21	--	--	--	--
GM-2B	08/20/98	12:18 PM	28.86	81	-	-0.09	0.3	0	21.7	--	--	--	--
GM-2B	08/21/98	1:27 PM	28.95	81	-	0.23	0.2	0	22.2	--	--	--	--
GM-2B	08/22/98	12:12 PM	28.89	68	-	0.12	0.3	0	21	--	--	--	--
GM-2B	08/23/98	12:36 PM	28.47	77	-	0	0.3	0	21.2	--	--	--	--
GM-2B	08/24/98	12:19 PM	28.43	77	-	-0.1	0.2	0	21.6	--	--	--	--
GM-2B	08/25/98	12:13 PM	28.61	75.9	-	-0.21	0.2	0	21.5	--	--	--	--
GM-2B	09/03/98	1:45 PM	28.56	71.1	-	0	0.5	0	21.5	--	--	--	77.82

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2B	09/09/98	10:30 AM	28.93	66.9	-	0	1.5	0.2	20.4	--	--	--	75.1
GM-2B	10/09/99	2:06 PM	28.69	71.1	-	-0.02	19.3	0.2	16.1	--	--	--	74.59
GM-2B	01/19/00	12:05 PM	28.63	15	T	0.11	28.7	0.3	14	--	--	--	74.65
GM-2B	04/18/00	10:20 AM	28.71	40	-	0	18.8	0.3	13.9	--	--	--	74.71
GM-2B	07/22/00	8:13 AM	28.9	55	-	0.16	1.5	12.8	--	--	--	--	74.9
GM-2B	10/20/00	9:42 AM	28.61	67	-	0.08	14.4	1.2	15.9	--	--	--	74.4
GM-2B	01/26/01	2:05 PM	28.48	20	0.02	0	5.5	0.5	18.3	--	--	--	74.28
GM-2B	04/23/01	8:32 AM	28.36	65	-	0.02	1.5	0.1	19	--	--	--	--
GM-2B	07/11/01	9:54 AM	28.82	70	-	0	1.3	0.4	19.7	--	--	--	74.6
GM-2B	09/20/01	11:47 AM	28.64	64	-	0	6.3	0.6	18.4	--	--	--	74.71
GM-2B	02/16/02	9:40 AM	28.55	32	-	0.25	11.2	0.6	17.3	--	--	--	74.82
GM-2B	06/05/04	11:51 AM	28.76	72	-	0	14.6	0.7	17	--	--	--	--
GM-2B	06/05/04	2:26 PM	28.73	70	-	0	17.5	0.4	16	--	--	--	--
GM-2B	06/07/04	7:45 AM	28.66	69	-	-0.6	18.2	0.5	16.1	--	--	--	--
GM-2B	04/14/06	10:23 AM	28.35	66	-	0	12.6	5.9	5.8	--	--	--	74.18
GM-2C	07/28/98	7:15 PM	28.57	71.1	-	--	--	--	--	--	--	--	50.5
GM-2C	10/09/99	1:38 PM	28.69	71.1	-	0.02	0	0.1	20.7	1.5	1.5	1.5	50.41
GM-2C	01/19/00	3:08 PM	28.59	16	T	0	0	0	20	115	35	<1	50.9
GM-2C	04/18/00	10:40 AM	28.72	43	-	0	0	0	18.5	56.6	16.2	12.25	51.02
GM-2C	07/22/00	8:17 AM	28.9	55	-	0.08	0	0.1	19.4	35	35	4	51.09
GM-2C	10/20/00	9:46 AM	28.61	67	-	0.08	0	1.1	18.9	1500	23.6	0.09	50.9
GM-2C	01/26/01	2:10 PM	28.48	20	0.02	0	0	0.2	19.8	8.41	1	0.28	50.08
GM-2C	04/23/01	8:35 AM	28.36	65	-	0.01	0	0	19.5	1068	2.4	-1	--
GM-2C	07/11/01	9:56 AM	28.82	70	-	-0.01	0	0	20.5	33.29	0.48	0	50.16
GM-2C	09/20/01	11:54 AM	28.64	64	-	0	0	0	20.7	0	0	0	50.33
GM-2C	02/16/02	9:44 AM	28.55	32	-	-0.03	0	0	20.6	156	17.11	-0.85	51.03
GM-5	12/17/98	4:31 PM	28.73	20	-	0	0.9	0.1	18.9	--	--	--	86.03
GM-5	12/21/98	9:35 AM	28.75	15	-	--	--	--	--	--	--	--	86.05
GM-5	12/22/98	9:12 AM	28.99	-9	-	--	--	--	--	--	--	--	86.19
GM-5	01/05/99	9:58 AM	28.79	-7.1	-	--	--	--	--	--	--	--	85.97
GM-5	01/07/99	9:46 AM	28.92	-7.1	-	--	--	--	--	--	--	--	85.94
GM-5	01/11/99	3:13 PM	28.47	-0.9	T	--	--	--	--	--	--	--	85.5
GM-5	01/15/99	9:44 AM	28.62	-6	T	--	--	--	--	--	--	--	85.61
GM-5	01/19/99	9:00 AM	28.6	24.1	-	--	--	--	--	--	--	--	85.87

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-5	01/22/99	11:11 AM	28.68	27	-	--	--	--	--	--	--	--	85.68
GM-5	01/29/99	7:49 AM	29	21.9	-	--	--	--	--	--	--	--	85.84
GM-5	02/02/99	9:20 AM	28.25	32	0.03	--	--	--	--	--	--	--	85.44
GM-5	02/09/99	9:39 AM	28.52	35.1	-	--	--	--	--	--	--	--	85.67
GM-5	02/22/99	3:30 PM	29.08	24.1	-	--	--	--	--	--	--	--	85.63
GM-5	02/26/99	9:40 AM	28.81	27	-	--	--	--	--	--	--	--	85.61
GM-5	03/09/99	9:28 AM	28.9	24.1	T	--	--	--	--	--	--	--	85.46
GM-5	03/22/99	3:57 PM	28.75	36	-	--	--	--	--	--	--	--	85.58
GM-5	05/16/99	11:41 AM	28.66	68	T	--	--	--	--	--	--	--	84.84
GM-6	03/10/99	9:34 AM	29.05	27	-	--	--	--	--	--	--	--	84.73
GM-12	12/18/98	10:07 AM	28.38	30	0.04	0	0	0	19.8	100	100	1.5	68.02
GM-12	10/04/99	4:10 PM	28.91	48	-	0.05	0	0	21	8	7.5	1.75	67.8
GM-12	10/11/99	11:44 AM	29.07	57.9	-	-0.05	0	0	21	2	2	2	67.98
GM-12	02/16/00	12:54 PM	28.99	18	-	0.02	0	0	20.3	1	<1	<1	68.12
GM-12	09/06/00	12:33 PM	28.97	69	-	0.29	0	0	19.7	120	3.8	-0.08	--
GM-12	09/06/00	6:00 PM	28.89	62	-	0.28	--	--	--	--	--	--	--
GM-12	09/08/00	8:25 AM	28.78	56	-	0.22	0	0	19.7	5.44	5.3	0.78	--
GM-12	09/09/00	10:03 AM	28.71	65	-	0.19	0	0	19.6	4.55	4.55	0.76	--
GM-12	09/11/00	3:35 PM	28.35	74	-	0.14	0	0	19.7	150	4500	3.5	--
GM-12	09/20/00	8:55 AM	28.29	57	-	0.01	0	0	21.5	5	4.5	=>1	--
GM-12	09/21/00	8:01 AM	28.6	45	T	0.13	0	0	21.4	325	30	1.5	--
GM-12	07/10/01	1:46 PM	28.68	76	-	0.08	0	0	20.4	98	3.9	0	67.31
GM-12	07/10/01	6:17 PM	28.72	70	-	0	0	0	21.1	1521	319	0	--
GM-12	07/12/01	8:09 AM	28.9	65	-	0	0	0	20.3	3.25	2.1	0	--
GM-12	07/12/01	5:43 PM	28.88	74	-	0	0	0	21	15100	12.7	0	--
GM-12	07/13/01	1:38 PM	28.89	83	-	0	0	0	21.1	94.8	21.4	0	--
GM-12	07/16/01	10:07 AM	28.77	71	-	0	0	0	20.3	2600	4.47	0	--
GM-12	07/17/01	10:25 AM	28.76	70	-	0	0	0	20.1	578	22	0	--
GM-12	07/18/01	8:48 AM	28.76	69	-	0	0	0	20.2	6.5	1.47	0	--
GM-12	07/19/01	1:40 PM	28.79	83	-	0.1	0	0.6	20.3	30.23	0	-0.56	--
GM-12	07/20/01	2:32 PM	28.75	83	T	0	0.3	1	19.6	1503	21.32	-0.98	--
GM-12	07/24/01	9:45 AM	28.68	76	-	-0.05	0	0	20.1	4.35	2.53	0	--
GM-12	07/26/01	8:13 AM	29.06	61	-	0.03	0	0	20	0.74	0.6	0	--
GM-12	08/02/01	5:12 PM	28.92	84	-	0.11	0	0	19.9	38.42	37.77	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-12	08/09/01	8:33 AM	28.54	83	-	0	0	0	19.7	36.23	7.21	0	--
GM-12	08/16/01	2:45 PM	28.55	71	-	0.01	0	0	20.2	2000	100	3.5	--
GM-12	08/20/01	4:05 PM	28.81	78	-	0.01	0	0	20.2	6.5	1.5	-0.58	--
GM-12	10/28/03	12:43 PM	28.09	45	T	0	0	0	19.3	--	--	--	--
GM-12	10/30/03	12:58 PM	28.61	43	T	0.1	0	0	19.6	--	--	--	--
GM-12	11/04/03	10:47 AM	28.65	33	-	0.1	0	0	19.4	--	--	--	--
GM-12	11/07/03	10:04 AM	29	21	-	0	0	0	19.7	--	--	--	--
GM-12	11/10/03	10:17 AM	28.95	32	-	0	0	0	19.6	--	--	--	--
GM-12	11/12/03	9:48 AM	28.35	38	T	0.1	0	0.4	19.5	--	--	--	--
GM-12	11/17/03	2:25 PM	28.73	46	-	0	0	0	19.3	--	--	--	--
GM-12	11/24/03	1:44 PM	28.33	17	T	0	0	0	19.6	--	--	--	--
GM-12	12/03/03	10:22 AM	29.25	22	-	0.1	0	0	19.5	--	--	--	--
GM-12	12/08/03	10:37 AM	28.66	37	-	--	0	0	19.5	--	--	--	--
GM-12	12/15/03	2:12 PM	28.5	25	-	0.1	0	0	19.4	--	--	--	--
GM-12	12/22/03	9:19 AM	28.57	31	-	0.1	0	0	19.5	--	--	--	--
GM-12	12/30/03	12:31 PM	28.71	29	-	0	0	0	19.6	--	--	--	--
GM-12	01/08/04	12:19 PM	29.05	17	-	0	0	0	19.7	--	--	--	--
GM-12	01/12/04	12:19 PM	28.7	28	T	0	0	0	19.5	--	--	--	--
GM-12	01/22/04	11:15 AM	28.79	-6	-	0	0	0	19	--	--	--	--
GM-12	02/27/04	10:04 AM	29.17	22	-	0	0	0	19.6	--	--	--	--
GM-12	03/19/04	10:03 AM	28.95	31	-	0.1	0	0	19.5	--	--	--	--
GM-12	03/29/04	3:20 PM	--	--	--	0.2	0	0	19.4	--	--	--	--
GM-12	04/09/04	9:13 AM	28.8	37	-	0	0	0	19.5	--	--	--	--
GM-12	04/19/04	2:23 PM	28.82	-	-	-0.2	0	0	18.1	--	--	--	--
GM-12	04/22/04	10:44 AM	29	43	-	0	0	0	21.4	--	--	--	--
GM-12	04/23/04	8:17 AM	28.95	34	-	0	0	0	21.4	--	--	--	--
GM-12	04/28/04	2:39 PM	28.28	73	-	2.2	0	0	20.1	--	--	--	--
GM-12	05/05/04	10:15 AM	28.75	48	-	0	0	0	21.2	--	--	--	--
GM-12	05/24/04	9:05 AM	28.69	43	-	0	0	0	20.3	--	--	--	--
GM-12	06/02/04	1:57 PM	28.8	66	-	0	0	0	20.2	--	--	--	--
GM-12	06/08/04	4:08 PM	28.69	84	-	0	0	0	20	--	--	--	--
GM-12	06/16/04	9:20 AM	28.79	73	-	0.72	0	0	20.2	--	--	--	--
GM-12	06/24/04	2:09 PM	28.76	54	0.01	-0.015	0	0	20	--	--	--	--
GM-12	06/29/04	5:12 PM	28.83	69	0.01	-0.015	0	0	20.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-12	07/07/04	12:08 PM	28.57	55	-	0.002	0	0	19.6	--	--	--	--
GM-12	07/15/04	4:15 PM	28.63	80	-	0	0	0.2	18.5	--	--	--	--
GM-12	07/21/04	5:05 PM	28.46	82	-	-0.006	0	0	19.5	--	--	--	--
GM-12	07/26/04	11:02 AM	28.96	79	-	0.011	0	0	19.5	--	--	--	--
GM-12	08/06/04	2:10 PM	28.91	77	-	0.017	0	0	19.7	--	--	--	--
GM-12	08/10/04	3:29 PM	28.58	58	T	0.013	0	0	19.7	--	--	--	--
GM-12	08/20/04	11:49 AM	28.76	61	-	0	0	0	20.1	--	--	--	--
GM-12	08/27/04	11:25 AM	28.65	77	-	0.002	0	0	19.9	--	--	--	--
GM-12	08/30/04	1:55 PM	28.77	72	-	0	0	0	19.6	--	--	--	--
GM-12	09/09/04	12:57 PM	28.93	69	-	0.116	0	0	20.4	--	--	--	--
GM-12	09/16/04	11:10 AM	28.7	63	-	0	0	0	20.2	--	--	--	--
GM-12	09/28/04	3:19 PM	29.03	62	-	0	0	0	20.2	--	--	--	--
GM-12	10/07/04	11:38 AM	28.95	70	-	0.1	0	0	20.1	--	--	--	--
GM-12	10/11/04	12:19 PM	29.02	64	-	0	0	0	20	--	--	--	--
GM-12	10/20/04	11:46 AM	28.9	52	-	0	0	0	20	--	--	--	--
GM-12	10/26/04	2:44 PM	29.03	47	-	0	0	0	20.1	--	--	--	--
GM-12	11/02/04	8:43 AM	28.87	40	-	0	0	0	20	--	--	--	--
GM-12	11/11/04	11:17 AM	29.23	32	-	0	0	0	20.2	--	--	--	--
GM-12	11/17/04	8:53 AM	28.9	47	-	0	0	0	20	--	--	--	--
GM-12	12/09/04	8:47 AM	28.6	34	-	0	0	0	19.7	--	--	--	--
GM-12	01/18/05	12:13 PM	29.04	5	-	0	0	0	19.6	1.9	1.8	0.68	--
GM-12	02/28/05	10:36 AM	28.46	25	T	0	0	0	19.8	--	--	--	--
GM-12	03/14/05	1:43 PM	28.77	33	-	0.1	0	0	20.2	--	--	--	--
GM-12	04/05/05	10:10 AM	28.57	59	-	0	0	0	19.7	--	--	--	--
GM-12	05/11/05	2:05 PM	29.1	46	-	0	0	0	20.4	--	--	--	--
GM-12	06/10/05	10:19 AM	28.73	77	-	0.1	0	0	19.9	--	--	--	--
GM-12	07/01/05	11:25 AM	28.66	59	-	0.1	0	0	19.9	--	--	--	--
GM-12	08/12/05	9:03 AM	28.6	69	-	0	0	0	19.7	--	--	--	--
GM-12	09/13/05	5:01 PM	28.5	78.08	-	0	0	0	19.7	--	--	--	--
GM-12	10/20/05	4:20 PM	28.87	51	-	0.04	0	0	20	--	--	--	--
GM-12	11/02/05	3:50 PM	28.53	51	-	0.7	0.3	7.7	2	--	--	--	--
GM-12	12/05/05	2:38 PM	28.71	10	-	0	0	0	19.3	--	--	--	--
GM-12	02/13/06	11:50 AM	28.41	-	-	0	0	0	18.6	--	--	--	--
GM-12	04/13/06	11:32 AM	28.75	64	-	0	0	0	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GM-12	07/18/06	1:19 PM	28.92	82	-	0.1	0	0	18.6	--	--	--	--
GM-12	10/05/06	3:27 PM	29.13	58	-	0	0	0	20.5	--	--	--	--
GM-12	01/19/07	11:45 AM	28.82	15	T	0	0	0	20.5	--	--	--	--
GM-12	04/16/07	1:29 PM	28.81	61	-	0	0	0	20.7	--	--	--	--
GM-12	07/16/07	10:57 AM	29.99	74	-	0	0	0	19.6	--	--	--	--
GM-12	10/16/07	2:18 PM	29.87	54	T	0	0	7.9	0.4	--	--	--	--
GM-19	11/30/98	2:22 PM	28.41	39	-	-0.02	0	0	19.6	--	--	--	54.99
GM-21	07/13/98	9:03 AM	28.61	78.1	-	3.2	90.4	2.6	0.4	--	--	--	--
GM-21	07/14/98	11:02 AM	28.69	75	T	3.5	88.6	2.4	0.5	--	--	--	--
GM-21	07/15/98	11:18 AM	28.65	73.9	-	-0.06	0	0	20.7	--	--	--	--
GM-21	09/11/00	3:42 PM	28.35	74	-	0.35	0.8	7.5	0	--	--	--	--
GM-21	09/20/00	9:03 AM	28.29	57	-	-2.7	0	0	21.5	1.25	1.1	1.25	--
GM-21	09/21/00	8:10 AM	28.6	45	T	-3.55	0	0	21.4	100	1	1	--
GM-24A	11/02/98	3:55 PM	29.03	37	-	>150	96.9	0	0.2	--	--	--	51.8
GM-24A	11/03/98	10:31 AM	28.96	34	-	>150	--	--	--	--	--	--	--
GM-24A	11/03/98	2:05 PM	28.96	34	-	>150	--	--	--	--	--	--	--
GM-24A	11/04/98	9:21 AM	28.99	30.9	-	>150	--	--	--	--	--	--	--
GM-24A	11/04/98	12:15 PM	28.98	35.1	-	>150	--	--	--	--	--	--	--
GM-24A	11/04/98	4:01 PM	28.95	33.1	-	>150	--	--	--	--	--	--	--
GM-24A	11/05/98	8:48 AM	28.92	32	-	>150	--	--	--	--	--	--	--
GM-24A	11/05/98	1:00 PM	28.89	34	-	>150	--	--	--	--	--	--	--
GM-24A	12/29/98	2:14 PM	28.67	7	T	>150	86.1	0	0	--	--	--	49.8
GM-24A	01/07/99	2:10 PM	28.9	3.9	-	100	90.5	0.1	0	--	--	--	57.77
GM-24A	02/04/99	12:18 PM	28.75	12.9	-	0.02	69.6	0	2.5	--	--	--	59.36
GM-24A	03/10/99	8:26 AM	29.04	17.1	-	46	79.2	0	0.7	--	--	--	--
GM-24A	03/10/99	11:05 AM	29.04	28	-	--	--	--	--	--	--	--	59.04
GM-24A	04/30/99	7:50 AM	29.18	55	-	3.48	--	--	--	--	--	--	--
GM-24A	04/30/99	7:55 AM	29.18	55	-	4.08	--	--	--	--	--	--	--
GM-24A	04/30/99	8:04 AM	29.18	55	-	--	62.9	0.1	5.2	--	--	--	--
GM-24A	05/18/99	10:35 AM	28.64	54	-	0.2	32.3	0	10.4	--	--	--	--
GM-24A	06/03/99	3:03 PM	28.89	70	-	0.3	34.3	0	10.7	--	--	--	58.66
GM-24A	06/15/99	--	--	--	--	1.47	47.2	0	5	--	--	--	--
GM-24A	06/16/99	--	--	--	--	4.5	73.8	0	0.4	--	--	--	--
GM-24A	06/17/99	--	--	--	--	5.73	78.8	0	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GM-24A	06/18/99	--	--	--	--	5.48	79.1	0	0	--	--	--	--
GM-24A	06/19/99	--	--	--	--	0.1	68	0	0	--	--	--	--
GM-24A	06/20/99	--	--	--	--	0.72	79.6	0	0	--	--	--	--
GM-24A	06/21/99	2:00 PM	28.89	79	-	8.24	57.7	0	4.6	--	--	--	--
GM-24A	06/22/99	10:45 AM	28.76	79	-	0.07	22.4	0	14.1	--	--	--	--
GM-24A	06/23/99	10:57 AM	28.51	78.1	-	0.38	22	0	13.8	--	--	--	--
GM-24A	06/24/99	8:13 AM	28.58	72	-	0.1	24	0	13	--	--	--	--
GM-24A	06/25/99	8:25 AM	28.7	75	-	0.07	24.1	0	13.2	--	--	--	--
GM-24A	06/26/99	9:25 AM	28.62	81	-	0	22.4	0	14.9	--	--	--	--
GM-24A	06/27/99	8:20 AM	28.54	77	-	0.16	22.1	0	13.6	--	--	--	--
GM-24A	06/28/99	8:45 AM	28.49	69.1	-	2	12.4	0	16.7	--	--	--	58.95
GM-24A	06/29/99	8:25 AM	28.57	57	-	3.95	22.9	0	12.8	--	--	--	--
GM-24A	06/30/99	8:43 AM	28.58	66.9	-	2.55	18.2	0	14.4	--	--	--	--
GM-24A	07/01/99	8:20 AM	28.48	57.9	0.03	4.26	71.5	0	0	--	--	--	--
GM-24A	07/02/99	8:04 AM	28.62	66.9	-	0.48	25.4	0	13.9	--	--	--	--
GM-24A	07/03/99	8:48 AM	28.67	68	0.09	0.49	36.1	0	9	--	--	--	--
GM-24A	07/04/99	8:21 AM	28.66	81	-	0.37	28	0	11.8	--	--	--	--
GM-24A	07/05/99	8:08 AM	28.66	77	T	0.38	22.6	0	13.2	--	--	--	--
GM-24A	07/06/99	8:12 AM	28.67	69.1	-	0.98	18.1	0	14.8	--	--	--	--
GM-24A	07/07/99	8:10 AM	28.72	72	-	1.73	18.3	0	14.6	--	--	--	--
GM-24A	07/08/99	8:34 AM	28.78	64	-	0.64	27.6	0	11.7	--	--	--	--
GM-24A	07/09/99	9:05 AM	28.42	63	-	3.51	77.7	0	0	--	--	--	--
GM-24A	07/10/99	9:52 AM	28.91	69.1	-	6.53	10.3	0	18.6	--	--	--	--
GM-24A	07/11/99	7:55 AM	28.95	66.9	-	3.05	21.5	0	15.2	--	--	--	--
GM-24A	07/12/99	8:10 AM	28.91	70	-	7.15	78	0	0	--	--	--	--
GM-24A	07/18/99	3:20 PM	28.85	77	-	1.05	85	0	0	--	--	--	57.91
GM-24A	08/09/99	1:45 PM	28.59	64.9	-	0.07	25.5	0	14.2	--	--	--	58.68
GM-24A	08/18/99	9:41 AM	28.84	57.9	-	1.7	81.5	0	0	--	--	--	58.75
GM-24A	10/26/99	9:40 AM	28.78	41	-	2.2	26.2	0	14	--	--	--	59.21
GM-24A	11/04/99	2:15 PM	28.63	55.9	-	3.69	29.3	0	11.5	--	--	--	58.92
GM-24A	11/08/99	11:13 AM	28.65	55	-	1.85	23.5	0	13.5	--	--	--	58.9
GM-24A	01/31/00	3:30 PM	28.49	26	-	>150	108.8	1.6	0	--	--	--	--
GM-24A	02/17/00	11:15 AM	29.13	10.9	T	0	16.8	0	16.7	--	--	--	--
GM-24A	03/05/00	12:38 PM	28.72	52	-	0.45	--	--	--	--	--	-0.73	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-24A	03/31/00	1:53 PM	28.76	64.9	-	0.56	39	0	10.1	--	--	--	--
GM-24A	06/03/00	4:08 PM	28.9	67	-	0.21	73.6	0	0	--	--	--	--
GM-24A	06/19/00	4:56 PM	28.8	72	-	1.93	67.9	0	0	--	--	--	59.09
GM-24A	06/29/00	5:10 PM	28.64	70	-	0.09	39.7	0	7.2	--	--	--	--
GM-24A	07/10/00	2:12 PM	28.71	76	-	1.44	72.8	0	0	--	--	--	58.44
GM-24A	09/12/02	2:10 PM	28.73	77	-	0.07	31.1	0	13	--	--	--	--
GM-24A	10/14/02	2:22 PM	28.76	55	-	0	37.5	0	6.2	--	--	--	--
GM-24A	04/02/03	1:20 PM	28.81	34	-	0	75.4	0	3.8	--	--	--	--
GM-24A	10/15/03	10:30 AM	28.6	49	-	0.1	68	0	5.3	--	--	--	--
GM-24A	04/04/04	11:20 AM	28.94	34	-	-0.1	69.9	0	5.3	--	--	--	--
GM-24A	10/27/04	2:12 PM	29.1	45	-	0	78.2	0	3.1	--	--	--	--
GM-24A	04/13/05	1:00 PM	29.04	61	-	0	32.5	0	11.7	--	--	--	58.21
GM-24A	10/19/05	4:20 PM	28.8	53	-	0	52.5	0	5.1	--	--	--	59.1
GM-24A	04/13/06	2:13 PM	28.72	65	-	0	44.3	0	8.1	--	--	--	58.52
GM-24A	10/05/06	2:03 PM	29.15	58	-	0	26.2	0	13.9	--	--	--	59.73
GM-24A	04/16/07	3:07 PM	28.77	64	-	0	55	0	8.4	--	--	--	59.25
GM-24A	10/16/07	3:02 PM	29.86	54	T	0.3	20.2	0.1	14.1	--	--	--	59.81
GM-24B	11/02/98	4:26 PM	29.03	37	-	>150	>100	0	0	--	--	--	22.4
GM-24B	11/03/98	10:35 AM	28.96	34	-	>150	--	--	--	--	--	--	--
GM-24B	11/03/98	2:06 PM	28.96	34	-	>150	--	--	--	--	--	--	--
GM-24B	11/04/98	9:23 AM	28.99	30.9	-	>150	--	--	--	--	--	--	--
GM-24B	11/04/98	12:16 PM	28.98	35.1	-	>150	--	--	--	--	--	--	--
GM-24B	11/04/98	4:03 PM	28.95	33.1	-	>150	--	--	--	--	--	--	--
GM-24B	11/05/98	8:51 AM	28.92	32	-	>150	--	--	--	--	--	--	--
GM-24B	11/05/98	1:02 PM	28.89	34	-	>150	--	--	--	--	--	--	--
GM-24B	12/29/98	2:23 PM	28.67	7	T	>150	102.1	1.2	0	--	--	--	--
GM-24B	01/07/99	2:14 PM	28.9	3.9	-	>150	106.9	1.8	0	--	--	--	49.3
GM-24B	02/04/99	12:26 PM	28.75	12.9	-	>150	103.2	1.8	0	--	--	--	49.9
GM-24B	03/10/99	8:30 AM	29.04	23	-	>150	101.2	1.6	0.3	--	--	--	--
GM-24B	03/10/99	11:06 AM	29.04	28	-	--	--	--	--	--	--	--	49.64
GM-24B	04/30/99	8:12 AM	29.18	55	-	>150	95.7	1.5	0.1	--	--	--	--
GM-24B	04/30/99	8:19 AM	29.18	55	-	--	--	--	--	--	--	--	--
GM-24B	04/30/99	8:21 AM	29.18	55	-	--	--	--	--	--	--	--	--
GM-24B	04/30/99	8:23 AM	29.18	55	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-24B	05/18/99	10:45 AM	28.64	54	-	40	--	--	--	--	--	--	--
GM-24B	06/03/99	3:11 PM	28.89	70	-	85	91.2	1.2	0	--	--	--	47.9
GM-24B	06/15/99	--	--	--	--	65	93.1	1.3	0	--	--	--	--
GM-24B	06/16/99	--	--	--	--	74	88.6	1.3	0	--	--	--	--
GM-24B	06/17/99	--	--	--	--	45	93.5	1.3	0	--	--	--	--
GM-24B	06/18/99	--	--	--	--	55	94.6	1.3	0	--	--	--	--
GM-24B	06/19/99	--	--	--	--	35	92.5	1.2	0	--	--	--	--
GM-24B	06/20/99	--	--	--	--	65	95	1.2	0	--	--	--	--
GM-24B	06/21/99	2:20 PM	28.89	79	-	1.9	88.1	1.3	0	--	--	--	--
GM-24B	06/22/99	10:00 AM	28.78	77	-	9	89.9	1.2	0	--	--	--	--
GM-24B	06/23/99	11:15 AM	28.51	78.1	-	10.4	59.3	1.2	0	--	--	--	--
GM-24B	06/24/99	8:32 AM	28.58	75	-	4	91.3	1.3	0	--	--	--	--
GM-24B	06/25/99	8:38 AM	28.69	78.1	-	6	90.8	1.2	0	--	--	--	--
GM-24B	06/26/99	9:45 AM	28.6	82	-	4.4	81.3	1.3	0	--	--	--	--
GM-24B	06/27/99	8:36 AM	28.52	82	-	5.4	89.6	1.3	0	--	--	--	--
GM-24B	06/28/99	9:11 AM	28.49	69.1	-	12.2	89.6	1.2	0	--	--	--	46
GM-24B	06/29/99	8:50 AM	28.58	61	-	9	89.9	1.3	0	--	--	--	--
GM-24B	06/30/99	9:09 AM	28.58	66.9	-	4.1	88.1	1.2	0	--	--	--	--
GM-24B	07/01/99	8:34 AM	28.47	59	0.02	40	82	1.1	0	--	--	--	--
GM-24B	07/02/99	8:22 AM	28.62	66.9	-	42	98.7	1.2	0	--	--	--	--
GM-24B	07/03/99	8:59 AM	28.67	68	0.09	65	89	1.2	0	--	--	--	--
GM-24B	07/04/99	8:30 AM	28.66	82.9	-	60	88	1.3	0	--	--	--	--
GM-24B	07/05/99	8:20 AM	28.66	77	T	70	88.3	1.2	0	--	--	--	--
GM-24B	07/06/99	8:38 AM	28.66	73	-	82	88.9	1.2	0	--	--	--	--
GM-24B	07/07/99	8:16 AM	28.72	72	-	>150	89.7	1.1	0	--	--	--	--
GM-24B	07/08/99	8:47 AM	28.78	64	-	102	91.5	1.2	0	--	--	--	--
GM-24B	07/09/99	9:25 AM	28.42	63	-	91	92.9	1.1	0.1	--	--	--	--
GM-24B	07/10/99	10:30 AM	28.92	71.1	-	91	96.8	1.2	0.2	--	--	--	--
GM-24B	07/11/99	7:58 AM	28.95	66.9	-	105	90.5	1.2	0	--	--	--	--
GM-24B	07/12/99	8:21 AM	28.91	70	-	96	90.7	1.1	0	--	--	--	--
GM-24B	07/12/99	4:16 PM	28.81	80.1	-	--	97.5	1.3	0	--	--	--	--
GM-24B	07/18/99	3:30 PM	28.83	78.1	-	>150	110	1.4	0	--	--	--	51
GM-24B	08/09/99	2:21 PM	28.59	64.9	-	25	108.3	1.3	0	--	--	--	48.6
GM-24B	08/18/99	9:47 AM	28.84	57.9	-	>150	110.5	1.5	0	--	--	--	48

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-24B	09/28/99	2:17 PM	28.91	55	-	>150	115.8	1.6	0	--	--	--	45.9
GM-24B	10/26/99	9:45 AM	28.78	41	-	>150	123.9	1.7	0	--	--	--	--
GM-24B	11/04/99	2:38 PM	28.62	54	-	0.03	91.9	1.4	0	--	--	--	--
GM-24B	11/08/99	11:40 AM	28.62	61	-	13	106.8	1.6	0	--	--	--	--
GM-24B	11/17/99	1:35 PM	28.7	48	-	--	--	--	--	--	--	--	--
GM-24B	02/06/00	11:55 AM	28.79	28.9	T	>150	109.5	1.6	0	--	--	--	--
GM-24B	02/07/00	8:38 AM	28.99	18	-	>150	108.9	1.5	0	--	--	--	--
GM-24B	02/17/00	11:05 AM	29.13	10.9	T	30	93.8	1.4	0	--	--	--	--
GM-24B	02/22/00	2:29 PM	28.61	46	-	40	94.5	1.4	0	--	--	--	--
GM-24B	03/05/00	11:15 AM	28.75	46.9	-	>150	--	--	--	--	--	-0.49	--
GM-24B	03/31/00	2:01 PM	28.76	64.9	-	55	89.3	1.3	0.4	--	--	--	--
GM-24B	06/03/00	4:15 PM	28.9	67	-	50	90.4	1.3	0	--	--	--	--
GM-24B	06/06/00	11:01 AM	28.91	-	-	70	91.5	1.3	0	--	--	--	--
GM-24B	06/19/00	5:20 PM	28.8	72	-	0.5	86.1	1.2	0	--	--	--	--
GM-24B	06/28/00	3:14 PM	28.67	56	0.16	30	88.8	1.3	0	--	--	--	--
GM-24B	06/29/00	5:19 PM	28.64	70	-	15	85.8	1.3	0	--	--	--	--
GM-24B	07/10/00	2:25 PM	28.71	76	-	>150	85.7	1.1	0	--	--	--	--
GM-24B	07/23/00	9:45 AM	28.99	66	-	>150	118.1	1.5	0	--	--	--	--
GM-24B	08/28/00	3:22 PM	28.67	74	-	>150	106	1.4	0	--	--	--	--
GM-24B	09/11/00	10:41 AM	28.48	72	-	>150	112.7	0.6	0	--	--	--	--
GM-24B	10/24/00	4:50 PM	29.05	53	-	30	93.7	1.3	0	--	--	--	--
GM-24B	11/22/00	11:05 AM	28.94	18	-	28	100.4	1.4	0	--	--	--	--
GM-24B	12/04/00	3:55 PM	28.57	31	-	>150	101.4	1.4	0	--	--	--	--
GM-24B	01/10/01	9:47 AM	28.61	32	-	33	99.5	1.6	1.2	--	--	--	--
GM-24B	02/21/01	11:15 AM	29.23	5	-	>150	107.6	1.5	0	--	--	--	--
GM-24B	03/20/01	11:05 AM	29.02	41	-	1	93.4	1.3	0	--	--	--	--
GM-24B	04/19/01	10:07 AM	28.76	56	-	>150	110.8	1.4	0	--	--	--	--
GM-24B	04/21/01	11:25 AM	28.37	54	-	--	--	--	--	--	--	--	--
GM-24B	05/15/01	10:17 AM	28.51	55	-	>150	118.3	1.1	0	--	--	--	--
GM-24B	06/13/01	4:08 PM	28.54	81	-	>150	115.1	1.2	0	--	--	--	--
GM-24B	07/12/01	5:00 PM	28.87	77	-	>150	99.8	1	0.5	--	--	--	--
GM-24B	08/10/01	8:21 AM	28.84	62	-	>150	107.8	1.2	0.2	--	--	--	--
GM-24B	09/08/01	4:20 PM	28.5	76	-	>150	109.9	1.2	0	--	--	--	--
GM-24B	10/07/01	12:20 PM	29.01	51	-	>150	117.6	1.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-24B	11/14/01	11:15 AM	28.79	57	-	>150	108.7	1.3	0	--	--	--	--
GM-24B	12/19/01	9:34 AM	28.51	28	T	>150	115.4	1.3	0	--	--	--	--
GM-24B	01/11/02	9:10 AM	28.64	27	-	>150	130	1.4	0	--	--	--	--
GM-24B	02/16/02	2:52 PM	28.61	32	-	>150	128.9	1.3	0	--	--	--	--
GM-24B	03/14/02	9:15 AM	28.88	26	-	>150	130	1.4	0	--	--	--	--
GM-24B	04/19/02	9:04 AM	28.83	41	-	>150	123	1.3	0	--	--	--	--
GM-24B	05/17/02	8:25 AM	29.01	37	-	>150	>150	1.6	0	--	--	--	--
GM-24B	06/03/02	9:43 AM	28.81	50	-	>150	105.6	1.1	0	--	--	--	--
GM-24B	07/12/02	4:12 PM	28.82	83	-	>150	115.8	1.3	0	--	--	--	--
GM-24B	08/14/02	4:55 PM	28.56	74	-	>200	>150	1.9	0	--	--	--	--
GM-24B	09/24/02	10:56 AM	29.07	50	-	>200	94.5	1.2	0.8	--	--	--	--
GM-24B	10/14/02	10:32 AM	28.91	50	-	>200	107.5	1.2	0	--	--	--	--
GM-24B	11/19/02	9:49 AM	28.57	30	-	>200	112.4	1.2	0	--	--	--	--
GM-24B	12/02/02	2:00 PM	28.9	19	-	>200	116.9	1.4	0	--	--	--	--
GM-24B	01/03/03	1:43 PM	28.76	31	-	>200	124	1.4	0	--	--	--	--
GM-24B	02/12/03	10:41 AM	28.68	1	-	>200	112.9	1.1	0	--	--	--	--
GM-24B	03/06/03	2:02 PM	28.73	21	-	>200	100	1	0	--	--	--	--
GM-24B	04/02/03	1:10 PM	28.81	34	-	>200	100	1	0	--	--	--	--
GM-24B	05/01/03	11:14 AM	28.68	62	-	>200	94.2	0.9	0	--	--	--	--
GM-24B	06/05/03	10:55 AM	28.71	75	-	>200	99.2	0.9	0	--	--	--	--
GM-24B	07/16/03	12:38 PM	28.84	83	-	>200	94.1	1.1	0.4	--	--	--	--
GM-24B	08/05/03	1:50 PM	28.7	81	-	>200	93.3	0.9	0.2	--	--	--	--
GM-24B	09/26/03	1:28 PM	28.39	54	-	>200	94.9	1	0	--	--	--	--
GM-24B	10/15/03	10:19 AM	28.6	48	-	>200	98.5	1.1	0	--	--	--	--
GM-24B	11/11/03	12:31 PM	28.48	46	-	>200	104.1	1.1	0	--	--	--	--
GM-24B	12/17/03	1:06 PM	28.54	26	-	>200	115.1	1.1	0	--	--	--	--
GM-24B	01/22/04	9:00 AM	28.76	-11	-	20.3	110.5	1.2	0	--	--	--	--
GM-24B	02/04/04	1:13 PM	29.13	20	-	12.6	97.1	1.2	0	--	--	--	--
GM-24B	03/01/04	--	--	--	--	--	--	--	--	--	--	--	--
GM-24B	04/04/04	11:20 AM	28.94	34	-	--	--	--	--	--	--	--	--
GM-24B	05/26/04	7:45 AM	28.57	50	-	5	93.4	1.1	0	--	--	--	--
GM-24B	06/08/04	2:50 PM	28.68	87	-	1.6	87.4	0.9	0.2	--	--	--	--
GM-24B	07/08/04	3:30 PM	28.75	65	-	9.1	94.5	1	0	--	--	--	--
GM-24B	08/05/04	5:30 PM	28.96	69	-	7.7	89.8	1	0.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-24B	09/17/04	1:30 PM	28.85	66	-	9.3	88.9	1	0.3	--	--	--	--
GM-24B	10/27/04	4:05 PM	29.11	44	-	8.1	105.2	1.1	0	--	--	--	--
GM-24B	11/12/04	2:22 PM	29.23	39	-	10.3	99	1.1	0	--	--	--	--
GM-24B	01/06/05	12:11 PM	28.61	15	T	8.6	109.1	1.1	0	--	--	--	--
GM-24B	01/18/05	2:32 PM	28.79	11	-	6.3	92.5	1.1	0.1	--	--	--	--
GM-24B	02/08/05	11:47 AM	28.99	20	-	8.3	107.2	1.1	0	--	--	--	--
GM-24B	03/15/05	11:10 AM	28.91	28	-	3.5	115.9	1.1	0	--	--	--	--
GM-24B	04/04/05	1:10 PM	28.76	58	-	8.1	94.1	0.9	0	--	--	--	--
GM-24B	05/12/05	9:33 AM	29.27	40	-	6	90.1	1.1	0	--	--	--	--
GM-24B	06/15/05	8:55 AM	28.51	58	-	7.3	98.7	1	0	--	--	--	--
GM-24B	07/05/05	11:25 AM	28.88	62	-	7.3	100.5	1	0	--	--	--	--
GM-24B	08/12/05	1:45 PM	28.64	76	-	7	89.7	0.9	0.4	--	--	--	--
GM-24B	09/08/05	9:08 AM	28.98	59	-	7.2	98.8	1.1	0	--	--	--	--
GM-24B	10/20/05	3:00 PM	28.87	50	-	1.9	91.6	1	0.1	--	--	--	--
GM-24B	11/03/05	2:55 PM	28.63	51	-	3.9	90.3	1	0	--	--	--	--
GM-24B	11/14/05	9:18 AM	29.06	29	-	--	97.3	1.1	0.2	--	--	--	--
GM-24B	11/23/05	2:35 PM	27.98	33	0.01	7	97.2	1.1	0	--	--	--	--
GM-24B	12/05/05	3:32 PM	28.72	8	-	--	99.2	1.2	0	--	--	--	--
GM-24B	12/06/05	3:20 PM	28.85	13	-	9	--	--	--	--	--	--	--
GM-24B	02/01/06	12:28 PM	28.21	35	-	16.2	96	1.1	0	--	--	--	--
GM-24B	02/13/06	3:18 PM	28.39	27	-	7.2	104.4	1.2	0	--	--	--	--
GM-24B	03/08/06	2:56 PM	28.42	38	-	8.9	98.4	1.1	0	--	--	--	--
GM-24B	04/13/06	3:16 PM	28.71	63	-	2.4	89.5	0.9	0	--	--	--	--
GM-24B	05/17/06	11:26 AM	28.39	60	T	6.2	93.7	0.9	0	--	--	--	--
GM-24B	06/02/06	3:32 PM	28.81	72	-	5.1	85.3	0.9	0.2	--	--	--	--
GM-24B	07/18/06	1:34 PM	28.91	84	-	6	86.5	0.9	0.3	--	--	--	--
GM-24B	08/16/06	12:12 PM	28.97	80	-	100.1	86.6	1	0	--	--	--	--
GM-24B	09/07/06	2:43 PM	28.68	73	0.01	122.4	88.1	1.6	0	--	--	--	--
GM-24B	10/05/06	1:58 PM	29.15	58	-	96.8	107.3	1.5	0	--	--	--	--
GM-24B	11/07/06	1:03 PM	28.57	50	-	91.4	115.7	1.5	0	--	--	--	--
GM-24B	12/18/06	1:54 PM	29.07	32	-	41.8	112.6	1.6	0	--	--	--	--
GM-24B	01/18/07	1:51 PM	28.63	21	-	16.8	121.6	2	0	--	--	--	--
GM-24B	02/07/07	10:49 AM	28.86	8	-	21.9	115.2	1.6	0	--	--	--	--
GM-24B	03/09/07	12:13 PM	28.59	40	-	10	114.7	1.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GM-24B	04/16/07	3:37 PM	28.76	64	-	13.2	118.1	1.5	0.2	--	--	--	--
GM-24B	05/25/07	2:14 PM	29	68	-	41.9	91.1	9.9	0	--	--	--	--
GM-24B	06/15/07	11:10 AM	28.82	87	-	81.7	93.8	1.1	0	--	--	--	--
GM-24B	07/13/07	9:46 AM	30.04	66	-	73.9	89.3	1.3	0	--	--	--	--
GM-24B	08/29/07	2:38 PM	30.13	76	-	124.2	97.1	1.2	0	--	--	--	--
GM-24B	09/19/07	1:55 PM	30.1	74	-	107.9	93.4	1.2	0	--	--	--	--
GM-24B	10/16/07	2:55 PM	29.86	54	T	156.5	99.7	1.3	0	--	--	--	--
GM-24B	11/21/07	10:17 AM	30.14	34	-	110.4	100.6	1.4	0	--	--	--	--
GM-24B	12/27/07	1:32 PM	30	27	-	150.2	114.6	1.4	0	--	--	--	--
GM-24C	11/02/98	4:36 PM	29.04	33.1	-	12.04	0	0	19.5	--	--	--	59.2
GM-24C	07/18/99	3:45 PM	28.83	78.1	-	0.01	0	0	20.7	--	--	--	57.37
GM-24C	02/17/00	11:26 AM	29.13	10.9	T	0	0	0	21	--	--	--	--
GM-24C	03/31/00	2:12 PM	28.76	64.9	-	0	0	0	21.5	865	35.94	-0.06	--
GM-30	07/09/98	11:26 AM	28.76	79	-	5.4	89	4.9	0.6	--	--	--	--
GM-30	08/12/98	2:55 PM	28.94	77	-	2.75	83.6	4.6	0.2	--	--	--	--
GM-30	08/14/98	9:15 AM	28.62	75.9	-	7.28	86.7	5	0	--	--	--	--
GM-30	08/15/98	9:35 AM	28.77	69.1	-	5.51	85.7	4.9	0	--	--	--	--
GM-30	08/16/98	9:29 AM	28.82	68	0.01	4.45	87.3	5	0	--	--	--	--
GM-30	08/17/98	8:09 AM	28.65	64.9	-	6.77	87.1	5	0	--	--	--	--
GM-30	08/18/98	8:31 AM	29.02	59	-	1.93	88.1	5.1	0	--	--	--	80.72
GM-30	08/19/98	8:30 AM	29.02	63	-	2.13	88	5.1	0	--	--	--	80.7
GM-30	08/21/98	6:00 PM	28.93	75	-	3.81	85.6	4.8	0	--	--	--	80.83
GM-30	08/23/98	2:36 PM	28.43	80.1	-	9.64	84.7	4.8	0	--	--	--	80.17
GM-30	08/24/98	2:35 PM	28.44	77	-	9.11	82.6	4.7	0.1	--	--	--	80.11
GM-30	08/25/98	3:34 PM	28.63	75.9	-	6.13	84.6	4.8	0	--	--	--	80.31
GM-30	08/26/98	9:01 AM	28.79	72	-	3.54	86.8	5.1	0	--	--	--	80.48
GM-30	08/27/98	2:52 PM	28.76	80.1	-	3.76	84.4	4.7	0.1	--	--	--	80.45
GM-30	08/28/98	5:48 PM	28.64	75.9	-	5.26	84.2	4.8	0.2	--	--	--	80.68
GM-30	08/29/98	3:45 PM	28.68	75	-	3.67	84.1	5.1	0	--	--	--	79.25
GM-30	08/31/98	9:14 AM	28.86	66	-	2.35	86.5	5	0	--	--	--	80.64
GM-30	09/09/98	8:40 AM	28.96	60.1	-	0.31	88.4	5.3	0	--	--	--	80.7
GM-30	09/10/98	--	--	--	--	--	--	--	--	--	--	--	80.5
GM-30	09/10/98	12:20 PM	28.74	80.1	-	3.34	84.6	4.8	0	--	--	--	80.64
GM-30	09/11/98	2:05 PM	28.57	97	-	5.42	82.2	4.6	0.2	--	--	--	80.59

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-30	09/12/98	8:32 AM	28.76	64.9	-	2.87	87.5	5.1	0	--	--	--	80.64
GM-30	09/13/98	8:47 AM	28.69	68	-	3.48	87.2	5.1	0	--	--	--	80.86
GM-30	09/14/98	6:20 PM	28.59	66	-	5.05	86.4	5	0	--	--	--	80.77
GM-30	09/23/98	8:52 AM	28.94	54	-	0.25	83.9	5.1	0	--	--	--	80.69
GM-30	09/24/98	2:40 PM	28.58	70	-	5.22	84.2	5	0	--	--	--	80.51
GM-30	09/25/98	1:25 PM	28.51	73	-	5.56	83.3	4.9	0	--	--	--	80.57
GM-30	09/28/98	8:40 AM	28.78	55.9	-	0.86	87.5	5.4	0	--	--	--	80.7
GM-30	09/30/98	10:59 AM	28.63	46	0.06	2.69	86.7	5.3	0	--	--	--	--
GM-30	10/05/98	4:23 PM	28.82	51.1	0.01	2.9	70.7	4.9	0.5	--	--	--	80.55
GM-30	10/06/98	9:00 AM	28.55	62.1	0.04	6.11	73.3	5	0	--	--	--	80.7
GM-30	10/08/98	11:50 AM	29.04	50	-	-1.47	0	0	20.5	6	6	2	80.71
GM-30	10/09/98	9:12 AM	28.94	50	-	0.6	25.3	0.6	13.1	--	--	--	80.69
GM-30	10/10/98	1:25 PM	28.87	68	-	2.09	56.9	2.8	4.2	--	--	--	80.52
GM-30	10/13/98	5:22 PM	28.8	42.1	-	3.13	84.1	5.3	0	--	--	--	80.53
GM-30	10/19/98	3:09 PM	28.72	54	-	2.94	83.6	5.1	0	--	--	--	80.52
GM-30	10/23/98	8:26 AM	28.97	53.1	-	1.41	29.7	0.7	11.9	--	--	--	80.56
GM-30	10/25/98	9:53 AM	28.94	46	-	2.06	63.3	3.3	2.4	--	--	--	80.55
GM-30	11/02/98	1:06 PM	29.05	39	-	0.98	82	5.2	0	--	--	--	--
GM-30	11/06/98	8:48 AM	28.92	35.1	-	2.58	--	--	--	--	--	--	--
GM-30	11/06/98	12:20 PM	28.93	37.9	-	1.65	--	--	--	--	--	--	--
GM-30	11/06/98	4:17 PM	28.94	37	-	0.57	--	--	--	--	--	--	--
GM-30	11/07/98	8:15 AM	29.08	34	-	-0.38	--	--	--	--	--	--	--
GM-30	11/07/98	11:56 AM	29.07	41	-	-1.66	--	--	--	--	--	--	--
GM-30	11/07/98	4:49 PM	29.05	37	-	-2.74	--	--	--	--	--	--	--
GM-30	11/18/98	8:29 AM	28.9	33.1	T	0.36	89.3	5.5	0	--	--	--	80.65
GM-30	11/30/98	1:38 PM	28.41	39	-	6.11	87.8	5.4	0	--	--	--	69.85
GM-30	12/03/98	11:11 AM	28.4	54	-	5.69	86.4	5.1	0	--	--	--	80.46
GM-30	12/08/98	2:23 PM	28.72	41	-	2	82.8	5	0	--	--	--	80.61
GM-30	12/10/98	11:15 AM	29.03	30	-	-1.06	0	0	19.4	17	17	1	80.71
GM-30	12/17/98	3:05 PM	28.71	26	-	0.58	88.3	5	0	--	--	--	87.97
GM-30	12/18/98	12:31 PM	28.33	32	0.01	3.88	89	5	0	--	--	--	86.66
GM-30	12/19/98	3:37 PM	29	20	T	-3.65	0	0	19.6	15	12.5	3	88.27
GM-30	12/20/98	4:12 PM	28.98	19	T	0.27	0	0	27.9	--	--	--	89.97
GM-30	12/21/98	8:45 AM	28.76	14	-	1.76	20.8	0.5	12.9	--	--	--	87.86

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-30	12/22/98	8:42 AM	28.99	-9	-	-1.49	0	0	18.3	--	--	--	88.1
GM-30	12/30/98	12:08 PM	28.75	3	-	-0.31	0	0	17.1	1.5	1.5	1.5	87.93
GM-30	01/05/99	9:20 AM	28.8	-11	-	0.02	0	0	16.6	--	--	--	87.89
GM-30	01/07/99	8:11 AM	28.89	-11.9	-	-1.34	0	0	16.8	5	5	1.5	88.01
GM-30	01/11/99	2:11 PM	28.49	-2	0.01	3.65	84.1	5	0.2	--	--	--	87.6
GM-30	01/15/99	9:06 AM	28.65	-13	T	3.93	37.2	1.8	9.3	--	--	--	87.51
GM-30	01/19/99	8:18 AM	28.57	24.1	-	-2.46	0	0	20.1	--	--	--	87.98
GM-30	01/22/99	9:45 AM	28.68	27	-	1.19	1.5	0	19.9	--	--	--	87.68
GM-30	01/28/99	3:13 PM	28.87	27	-	-0.9	0	0	19	<1	<1	<1	87.13
GM-30	01/29/99	9:26 AM	28.98	23	-	-0.72	0	0	19.2	1.25	1.25	1	87.8
GM-30	02/02/99	8:26 AM	28.26	32	0.02	7.55	68.5	4.1	2.1	--	--	--	87.17
GM-30	02/09/99	8:40 AM	28.49	34	-	1.03	77.1	4.9	1.1	--	--	--	87.64
GM-30	02/22/99	2:09 PM	29.1	24.1	-	0.72	0	0	21.1	1250	1250	1.75	87.71
GM-30	02/26/99	8:40 AM	28.8	27	-	1.71	73.8	4.9	1.1	--	--	--	87.57
GM-30	03/09/99	8:41 AM	28.9	24.1	T	3.35	22	1	12.9	--	--	--	87.46
GM-30	03/22/99	2:59 PM	28.75	37.9	-	1.3	55.7	3.7	6.1	--	--	--	87.55
GM-30	04/09/99	12:37 PM	28.66	50	-	1.3	87.3	5.7	0	--	--	--	87.36
GM-30	04/21/99	8:35 AM	28.62	42.1	-	1.59	75.9	5.2	0	--	--	--	--
GM-30	05/01/99	9:20 AM	29.03	70	-	1	57.3	2.3	6.7	--	--	--	--
GM-30	05/16/99	10:48 AM	28.67	66.9	-	3.49	74.9	5.4	0	--	--	--	86.81
GM-30	07/13/99	3:10 PM	28.67	73	-	3.41	85.1	5.5	0	--	--	--	--
GM-30	07/14/99	2:20 PM	28.58	75	-	3.92	87	5.5	0	--	--	--	86.71
GM-30	07/16/99	4:35 PM	28.7	72	0.04	3.24	90.5	5.6	0	--	--	--	86.64
GM-30	07/19/99	3:00 PM	28.84	77	-	2.44	93.5	5.5	0	--	--	--	86.58
GM-30	07/20/99	1:55 PM	28.86	73.9	-	2.34	92.7	5.5	0	--	--	--	86.57
GM-30	07/23/99	3:56 PM	28.59	87.1	-	4.15	94.3	5.5	0	--	--	--	86.46
GM-30	07/28/99	8:38 AM	28.56	78.1	-	3.56	89.4	5.3	0	--	--	--	86.63
GM-30	08/02/99	4:57 PM	28.93	73.9	-	-1.2	0	0	21.1	--	--	--	87.14
GM-30	08/03/99	2:40 PM	28.77	73	-	-41	33.1	1.2	12	--	--	--	--
GM-30	08/03/99	3:04 PM	28.77	73	-	-40	38.3	1.4	11	--	--	--	--
GM-30	08/03/99	3:38 PM	28.75	73	-	-7.8	42.3	1.7	9.6	--	--	--	--
GM-30	08/03/99	4:05 PM	28.75	73	-	-76	44.6	1.9	9.2	--	--	--	--
GM-30	08/03/99	6:15 PM	28.74	70	-	-46	65.5	4.1	4.3	--	--	--	--
GM-30	08/04/99	2:34 PM	28.65	73.9	T	-30	103.5	5.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-30	08/05/99	5:55 PM	28.6	72	-	-29	102.8	5.3	0	--	--	--	--
GM-30	08/06/99	6:49 PM	28.74	64.9	-	-29	82.3	4.6	1.4	--	--	--	--
GM-30	08/07/99	11:15 AM	28.56	72	-	-26	104.4	5.5	0	--	--	--	--
GM-30	08/08/99	9:38 AM	28.84	64	-	-27	103.5	5.5	0	--	--	--	--
GM-30	08/09/99	1:33 PM	28.59	64.9	-	-30	97.1	5.1	0	--	--	--	--
GM-30	08/10/99	9:23 AM	28.44	64	-	-29	96.5	5.4	0	--	--	--	--
GM-30	08/11/99	9:55 AM	28.65	72	-	-28	96.9	5.2	0	--	--	--	--
GM-30	08/16/99	5:12 PM	28.61	82.9	-	-25	85	4.9	0	--	--	--	--
GM-30	08/20/99	11:59 AM	28.89	75	-	-27	86.5	4.9	0	--	--	--	--
GM-30	08/23/99	5:43 PM	28.61	66.9	-	-26	87.5	5.2	0	--	--	--	--
GM-30	08/30/99	3:30 PM	29	66	-	-27	85.7	4.9	0	--	--	--	--
GM-30	09/02/99	4:07 PM	28.78	82.9	-	-26	81.9	4.8	0	--	--	--	--
GM-30	09/14/99	4:05 PM	28.66	55.9	-	1.28	81.2	5.5	0	--	--	--	--
GM-30	09/20/99	2:53 PM	28.89	48.9	T	0.72	84.7	5.8	0	--	--	--	--
GM-30	10/06/99	3:07 PM	29.02	46.9	-	0.93	85.3	5	0	--	--	--	--
GM-30	10/26/99	1:25 PM	28.83	39.9	-	2.05	99.3	5.2	0	--	--	--	80.21
GM-30	11/01/99	3:42 PM	28.47	53.1	-	5.38	89.1	5.2	0	--	--	--	79.94
GM-30	11/05/99	3:00 PM	28.78	51.1	-	2.09	91.8	5.2	0	--	--	--	80.17
GM-30	12/09/99	2:36 PM	28.73	35	-	5.04	97.9	4.9	0	--	--	--	--
GM-30	01/21/00	1:37 PM	28.79	5	T	1.5	91	5.3	0	--	--	--	--
GM-30	03/17/00	2:58 PM	29.14	30	-	0.08	3	0.5	19	--	--	--	79.95
GM-30	04/01/00	10:30 AM	28.72	48	-	2.89	90.8	4.6	0	--	--	--	79.9
GM-30	07/17/00	4:00 PM	28.69	69	-	5.76	87.1	4.2	0	--	--	--	--
GM-30	07/19/00	8:05 AM	28.86	54	-	-26	95.7	4.6	0	--	--	--	--
GM-30	07/23/00	9:22 AM	28.98	63	-	1.1	93.1	4.5	0	--	--	--	--
GM-30	07/25/00	9:48 AM	28.77	75	-	4.45	84.7	4.3	0	--	--	--	--
GM-30	07/31/00	4:16 PM	28.67	81	-	6.79	88.6	3.8	0	--	--	--	--
GM-30	08/06/00	10:45 AM	28.36	71	-	0.52	83.6	4.2	0	--	--	--	--
GM-30	08/09/00	10:17 AM	28.67	65	-	-23	83.9	4.3	0	--	--	--	--
GM-30	08/19/00	5:40 PM	29	66	-	-22	90.4	4.5	0	--	--	--	--
GM-30	08/29/00	4:00 PM	28.79	75	-	-25	82.9	4.9	0	--	--	--	--
GM-30	09/10/00	12:00 PM	28.6	74	-	-3.5	63.8	4.5	0.8	--	--	--	--
GM-30	09/19/00	12:40 PM	28.2	69	-	-28	77.8	5	0	--	--	--	--
GM-30	09/20/00	8:10 AM	28.29	54	-	--	--	--	--	--	--	--	79.2

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-30	09/25/00	3:35 PM	28.78	60	-	-8.03	0	0	21.1	--	--	--	80.26
GM-30	09/26/00	1:45 PM	28.62	72	-	29	64.7	4.8	0	--	--	--	--
GM-30	10/02/00	4:04 PM	28.48	54	-	-3.06	0	0	20.5	--	--	--	79.92
GM-30	10/06/00	11:35 AM	28.85	40	-	28	24	4.6	6	--	--	--	--
GM-30	10/09/00	2:32 PM	28.99	59	-	-27	76.6	5.1	0.6	--	--	--	--
GM-30	10/13/00	8:43 AM	28.7	57	-	-27	--	--	--	--	--	--	--
GM-30	10/16/00	3:20 PM	28.89	51	-	-26	60.1	4	4.6	--	--	--	--
GM-30	10/23/00	12:30 PM	29.06	58	-	-27	79.3	5.3	0	--	--	--	--
GM-30	10/31/00	9:14 AM	28.92	51	-	-27	83.9	5.4	0	--	--	--	--
GM-30	11/14/00	9:26 AM	28.42	31	T	-26	89.4	5.1	0	--	--	--	--
GM-30	12/05/00	1:12 PM	28.89	11	-	-25	80.1	5.5	0.1	--	--	--	--
GM-30	02/24/01	12:05 PM	28.78	24	T	-19	--	--	--	--	--	--	79.76
GM-30	03/22/01	12:10 PM	28.82	47	-	-29	46.1	2.7	9.8	--	--	--	--
GM-30	04/09/01	9:16 AM	28.75	39	-	-25	82.1	5	4.8	--	--	--	--
GM-30	04/09/01	2:52 PM	28.76	42	-	--	--	--	--	--	--	--	79.64
GM-30	05/01/01	2:09 PM	28.57	71	-	-18	82.3	4.7	1.7	--	--	--	78.65
GM-30	05/29/01	12:38 PM	28.91	63	-	-30	74.5	4.1	4.7	--	--	--	79.54
GM-30	07/20/01	8:40 AM	28.82	74	-	-32	95.8	1.8	0	--	--	--	79.81
GM-30	08/17/01	9:50 AM	28.74	70	-	--	--	--	--	--	--	--	--
GM-30	08/17/01	11:14 AM	28.74	73	-	-31	59	3	7.4	--	--	--	79.6
GM-30	08/17/01	1:43 PM	28.73	73	-	-32	64	3.3	6	--	--	--	79.6
GM-30	08/17/01	2:22 PM	28.73	73	-	-30	43.5	2.3	10.9	--	--	--	79.6
GM-30	08/17/01	3:05 PM	28.72	77	-	-30	35.1	1.7	13.1	--	--	--	79.6
GM-30	08/17/01	4:02 PM	28.72	76	-	-30	34.4	1.8	12.9	--	--	--	79.6
GM-30	08/18/01	9:17 AM	28.7	69	-	-32	30.1	1.5	13.1	--	--	--	79.5
GM-30	08/19/01	8:00 AM	28.77	65	-	--	--	--	--	--	--	--	80
GM-30	08/20/01	8:14 AM	28.87	63	-	-34	12.5	0.8	16.2	--	--	--	79.6
GM-30	09/09/01	8:50 AM	28.71	59	-	-32	78.5	4.6	3.9	--	--	--	79.8
GM-30	10/06/01	3:10 PM	28.85	38	-	-34	67.7	4.2	3.1	--	--	--	79.8
GM-30	11/07/01	4:07 PM	28.88	44	T	-70	63.5	4	4.1	--	--	--	80.5
GM-30	12/18/01	3:27 PM	28.48	40	-	-73	0	0	20.1	--	--	--	79.62
GM-30	01/10/02	3:04 PM	28.55	36	T	-70	39	5.2	6.1	--	--	--	79.62
GM-30	01/28/02	2:05 PM	28.75	26	-	-83	31.6	3.3	11.5	--	--	--	79.6
GM-30	03/22/02	2:27 PM	28.73	25	-	-88	0	0	21.2	--	--	--	79.53

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-30	04/12/02	11:05 AM	28.86	47	-	--	5.9	2.7	15.3	--	--	--	--
GM-30	04/29/02	10:52 AM	28.6	38	T	-84	32.6	4.7	7.2	--	--	--	77.47
GM-30	05/29/02	9:15 AM	28.65	71	-	-1.75	0	0.4	20.2	610	603	0	77.93
GM-30	06/06/02	9:27 AM	28.85	64	-	-3	0	0	20.8	1.96	1.26	0	78.56
GM-30	07/10/02	5:55 PM	29.05	71	-	--	--	--	--	--	--	--	--
GM-30	07/10/02	6:10 PM	29.05	71	-	-95	5.6	5.8	13.4	--	--	--	--
GM-30	10/15/02	1:54 PM	28.75	42	-	--	--	--	--	--	--	--	79.03
GM-30	10/15/03	2:23 PM	28.61	48	-	-95.9	1.2	0.1	19.2	--	--	--	80.56
GM-30	11/19/03	11:16 AM	28.33	41	-	-117	13.5	3.6	4.5	--	--	--	--
GM-30	05/06/04	11:06 AM	28.67	64	-	-90.4	--	--	--	--	--	--	78.31
GM-30	06/18/04	8:40 PM	28.99	52	-	-0.31	--	--	--	--	--	--	--
GM-30	06/22/04	6:15 AM	28.57	50	-	0	--	--	--	--	--	--	--
GM-30	06/22/04	6:58 AM	28.59	53	-	0	--	--	--	--	--	--	--
GM-30	06/22/04	10:44 AM	28.61	64	-	--	0	0	21.2	--	--	--	--
GM-30	06/27/04	2:58 PM	28.84	64	-	-11.3	--	--	--	--	--	--	--
GM-30	07/07/04	6:01 PM	28.57	55	-	-6.8	--	--	--	--	--	--	--
GM-30	07/19/04	2:00 PM	28.55	83	-	-0.993	--	--	--	--	--	--	--
GM-30	08/21/04	10:02 AM	28.81	60	-	-0.8	--	--	--	--	--	--	--
GM-30	08/21/04	10:51 AM	28.81	62	-	-0.9	--	--	--	--	--	--	--
GM-30	08/21/04	11:22 AM	28.81	62	-	-1.3	--	--	--	--	--	--	--
GM-30	08/21/04	12:29 PM	28.8	64	-	-1.1	--	--	--	--	--	--	--
GM-30	08/21/04	1:02 PM	28.79	66	-	-1.4	--	--	--	--	--	--	--
GM-30	08/21/04	1:36 PM	28.77	67	-	-1.4	--	--	--	--	--	--	--
GM-30	08/21/04	2:10 PM	28.77	67	-	-1.5	--	--	--	--	--	--	--
GM-30	08/21/04	2:35 PM	28.76	69	-	-3.2	--	--	--	--	--	--	--
GM-30	08/21/04	3:24 PM	28.76	69	-	-4.3	--	--	--	--	--	--	--
GM-30	08/21/04	4:25 PM	28.75	69	-	-4.6	--	--	--	--	--	--	--
GM-30	08/21/04	4:54 PM	28.74	67	-	-4.8	--	--	--	--	--	--	--
GM-30	08/21/04	5:35 PM	28.73	64	-	-5.4	--	--	--	--	--	--	--
GM-30	08/21/04	6:02 PM	28.73	64	-	-5.3	--	--	--	--	--	--	--
GM-30	08/21/04	6:36 PM	28.72	56	-	-5.3	--	--	--	--	--	--	--
GM-30	08/22/04	7:38 AM	28.53	54	T	0.1	--	--	--	--	--	--	--
GM-30	08/22/04	8:09 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-30	08/22/04	8:37 AM	28.53	57	T	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-30	08/22/04	9:08 AM	28.53	57	T	-0.1	--	--	--	--	--	--	--
GM-30	08/22/04	9:40 AM	28.51	65	-	-0.5	--	--	--	--	--	--	--
GM-30	08/22/04	10:06 AM	28.51	65	-	-0.6	--	--	--	--	--	--	--
GM-30	08/22/04	10:45 AM	28.5	74	-	0.7	--	--	--	--	--	--	--
GM-30	08/22/04	11:06 AM	28.5	74	-	-0.7	--	--	--	--	--	--	--
GM-30	08/22/04	11:42 AM	28.48	75	-	-0.9	--	--	--	--	--	--	--
GM-30	08/22/04	12:32 PM	28.48	76	-	-1.1	--	--	--	--	--	--	--
GM-30	08/22/04	1:07 PM	28.48	76	-	-1.1	--	--	--	--	--	--	--
GM-30	08/22/04	1:39 PM	28.48	78	-	-1.4	--	--	--	--	--	--	--
GM-30	08/22/04	2:37 PM	28.48	79	-	-1.8	--	--	--	--	--	--	--
GM-30	08/22/04	3:12 PM	28.48	79	-	-1.6	--	--	--	--	--	--	--
GM-30	09/27/04	3:12 PM	28.83	59	0.07	0.7	--	--	--	--	--	--	--
GM-30	09/28/04	9:05 AM	29.09	50	-	-1.7	--	--	--	--	--	--	--
GM-30	09/28/04	9:42 AM	29.11	52	-	-1.1	--	--	--	--	--	--	--
GM-30	09/28/04	10:08 AM	29.11	52	-	-0.9	--	--	--	--	--	--	--
GM-30	09/28/04	10:42 AM	29.09	54	-	-0.9	--	--	--	--	--	--	--
GM-30	09/28/04	11:17 AM	29.09	54	-	-0.9	--	--	--	--	--	--	--
GM-30	09/28/04	11:43 AM	29.07	57	-	-0.8	--	--	--	--	--	--	--
GM-30	09/28/04	12:12 PM	29.07	57	-	-0.7	--	--	--	--	--	--	--
GM-30	09/28/04	12:41 PM	29.05	60	-	-0.6	--	--	--	--	--	--	--
GM-30	09/29/04	1:59 PM	28.88	67	-	-1.6	--	--	--	--	--	--	--
GM-30A	08/19/04	8:49 AM	28.74	55	-	-1.2	--	--	--	--	--	--	--
GM-30A	08/21/04	10:01 AM	28.81	60	-	-1	--	--	--	--	--	--	--
GM-30A	08/21/04	10:50 AM	28.81	62	-	-1.2	--	--	--	--	--	--	--
GM-30A	08/21/04	11:21 AM	28.81	62	-	-1.3	--	--	--	--	--	--	--
GM-30A	08/21/04	12:01 PM	28.8	64	-	-1.6	--	--	--	--	--	--	--
GM-30A	08/21/04	12:28 PM	28.8	64	-	-1.5	--	--	--	--	--	--	--
GM-30A	08/21/04	1:35 PM	28.77	67	-	-1.6	--	--	--	--	--	--	--
GM-30A	08/21/04	2:09 PM	28.77	67	-	-1.6	--	--	--	--	--	--	--
GM-30A	08/22/04	7:37 AM	28.53	54	T	0.1	--	--	--	--	--	--	--
GM-30A	08/22/04	8:08 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-30A	08/22/04	8:38 AM	28.53	57	T	-0.1	--	--	--	--	--	--	--
GM-30A	08/22/04	9:09 AM	28.53	57	T	-0.1	--	--	--	--	--	--	--
GM-30A	08/22/04	9:41 AM	28.51	65	-	-0.5	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-30A	08/22/04	10:06 AM	28.51	65	-	-0.6	--	--	--	--	--	--	--
GM-30A	08/22/04	10:44 AM	28.5	74	-	0.7	--	--	--	--	--	--	--
GM-30A	08/22/04	11:06 AM	28.5	74	-	-0.8	--	--	--	--	--	--	--
GM-30A	08/22/04	11:41 AM	28.48	75	-	-0.9	--	--	--	--	--	--	--
GM-30A	08/22/04	12:31 PM	28.48	76	-	-1.1	--	--	--	--	--	--	--
GM-30A	08/22/04	1:06 PM	28.48	76	-	-1.1	--	--	--	--	--	--	--
GM-30A	08/22/04	1:38 PM	28.48	78	-	-1.4	--	--	--	--	--	--	--
GM-30A	08/22/04	2:36 PM	28.48	79	-	-1.8	--	--	--	--	--	--	--
GM-30A	08/22/04	3:11 PM	28.48	79	-	-1.6	--	--	--	--	--	--	--
GM-30A	09/27/04	3:06 PM	28.83	59	0.07	0.9	--	--	--	--	--	--	--
GM-30A	09/28/04	9:06 AM	29.09	50	-	-1.7	--	--	--	--	--	--	--
GM-30A	09/28/04	9:43 AM	29.11	52	-	-1.2	--	--	--	--	--	--	--
GM-30A	09/28/04	10:09 AM	29.11	52	-	-1.1	--	--	--	--	--	--	--
GM-30A	09/28/04	10:42 AM	29.09	54	-	-1.1	--	--	--	--	--	--	--
GM-30A	09/28/04	11:17 AM	29.09	54	-	-1	--	--	--	--	--	--	--
GM-30A	09/28/04	11:43 AM	29.07	57	-	-1	--	--	--	--	--	--	--
GM-30A	09/28/04	12:13 PM	29.07	57	-	-0.8	--	--	--	--	--	--	--
GM-30A	09/28/04	12:41 PM	29.05	60	-	-0.7	--	--	--	--	--	--	--
GM-30A	09/29/04	1:57 PM	28.88	67	-	-1.6	--	--	--	--	--	--	--
GM-30A	10/29/07	9:49 AM	30.21	50	-	-41.4	6.1	3.5	13.6	--	--	--	--
GM-31	12/17/98	4:34 PM	28.73	20	-	0.12	0	0	19.2	--	--	--	71.55
GM-31	12/18/98	12:43 PM	28.33	32	0.01	0.41	0	0	19.9	160	160	1.25	82.05
GM-31	12/19/98	3:47 PM	29	20	T	0	0	0	19.2	9	9	1.5	84.48
GM-31	12/21/98	9:32 AM	28.75	15	-	0	0	0	17.4	20	17	1.5	84.51
GM-31	12/22/98	9:10 AM	28.99	-9	-	--	--	--	--	--	--	--	--
GM-31	01/05/99	9:56 AM	28.79	-7.1	-	0	0	0	16.4	--	--	--	84.46
GM-31	01/07/99	9:44 AM	28.92	-7.1	-	0.18	0	0	15.5	10	10	1.75	84.52
GM-31	01/11/99	3:09 PM	28.47	-0.9	T	0	0	0	16.3	40	40	2	83.97
GM-31	01/15/99	9:43 AM	28.62	-6	T	0	0	0	19.3	32	32	4	84.09
GM-31	01/19/99	8:56 AM	28.6	24.1	-	0	0	0	19.8	--	--	--	84.41
GM-31	01/22/99	11:07 AM	28.68	27	-	0.01	0	0	34.5	5	5	1	84.18
GM-31	01/29/99	7:47 AM	29	21.9	-	--	--	--	--	--	--	--	84.36
GM-31	02/02/99	9:17 AM	28.25	32	0.03	--	--	--	--	--	--	--	83.83
GM-31	02/09/99	9:36 AM	28.52	35.1	-	--	--	--	--	--	--	--	84.15

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-31	02/22/99	3:28 PM	29.1	25	-	--	--	--	--	--	--	--	84.17
GM-31	02/26/99	9:38 AM	28.81	27	-	--	--	--	--	--	--	--	84.1
GM-31	03/09/99	9:26 AM	28.9	24.1	T	--	--	--	--	--	--	--	83.99
GM-31	03/22/99	3:55 PM	28.75	36	-	--	--	--	--	--	--	--	84.08
GM-31	05/16/99	11:39 AM	28.66	68	T	0	0	0	20.2	900	40	7	83.34
GM-33	07/13/98	9:42 AM	28.61	82	-	0	0.1	0.1	16.6	--	--	--	--
GM-33	09/09/98	3:30 PM	28.84	73.9	-	35	85.3	3.1	0	--	--	--	75.9
GM-33	09/10/98	3:30 PM	28.66	82	-	40	84.9	3.1	0.1	--	--	--	76.19
GM-33	09/11/98	4:48 PM	28.55	93	-	15	82.3	2.9	0.2	--	--	--	75.9
GM-33	09/12/98	3:00 PM	28.69	78.1	-	30	83.9	3.1	0	--	--	--	76.16
GM-33	09/14/98	4:55 PM	28.58	66.9	-	23	86.8	3.4	0	--	--	--	76.18
GM-33	09/24/98	4:30 PM	28.59	68	-	39	83.7	3.3	0	--	--	--	75.84
GM-33	09/25/98	2:05 PM	28.5	75	-	25	81.7	3.2	0.1	--	--	--	75.85
GM-33	10/07/98	4:48 PM	28.76	50	-	35	88.2	3.9	0	--	--	--	75.8
GM-33	10/09/98	10:31 AM	28.91	57	-	50	87.4	3.9	0	--	--	--	75.81
GM-33	10/09/98	4:41 PM	28.84	57.9	-	--	--	--	--	--	--	--	--
GM-33	10/11/98	2:35 PM	28.9	63	-	45	85.5	3.6	0	--	--	--	77.49
GM-33	10/14/98	10:30 AM	28.86	44.1	-	50	89	3.8	0	--	--	--	77.45
GM-33	10/20/98	11:10 AM	28.94	45	-	41	89.7	4	0	--	--	--	78.04
GM-33	11/18/98	3:35 PM	28.62	37.9	-	79	93.2	0.2	0	--	--	--	83.28
GM-33	12/03/98	10:06 AM	28.39	49	-	82	91.5	3.2	0	--	--	--	--
GM-33	12/04/98	11:57 AM	28.75	45	-	77	93	2.9	0	--	--	--	80.6
GM-33	12/09/98	12:18 PM	28.92	39	-	75	94.4	2.8	0	--	--	--	80.6
GM-33	12/15/98	3:12 PM	28.82	38	-	76	93.2	3.3	0	--	--	--	78.7
GM-33	12/18/98	8:28 AM	28.47	27	0.03	80	94.8	3.8	0	--	--	--	80.78
GM-33	12/29/98	7:45 AM	28.53	15	T	85	81.6	2.3	0.2	--	--	--	81.8
GM-33	01/06/99	3:25 PM	28.63	6.1	T	80	97.7	3.5	0	--	--	--	82
GM-33	01/21/99	3:13 PM	28.79	26.1	-	79	90.8	0.2	1.4	--	--	--	81.1
GM-33	01/26/99	3:20 AM	28.93	8.1	-	77	89.6	0.2	0	--	--	--	79.8
GM-33	02/03/99	2:47 PM	28.14	32	0.02	88	92.8	2.8	0	--	--	--	79.9
GM-33	02/25/99	2:21 PM	28.84	30	-	82	87.8	0.3	0	--	--	--	80.7
GM-33	03/10/99	7:47 AM	29.04	17.1	-	80	85.5	0.2	1.7	--	--	--	--
GM-33	03/10/99	11:15 AM	29.04	28	-	--	--	--	--	--	--	--	77.65
GM-33	03/23/99	2:49 PM	28.52	41	-	81	88.6	1.8	0.2	--	--	--	79.85

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-33	04/07/99	2:15 PM	28.46	55	-	19.97	94.1	3.5	0	--	--	--	76.5
GM-33	04/21/99	11:26 AM	28.62	44.1	-	74	93.4	3.5	0	--	--	--	77.3
GM-33	05/01/99	11:05 AM	29	75.9	-	75	85.1	1.2	0	--	--	--	--
GM-33	05/16/99	4:10 PM	28.61	71.1	-	87	84.5	0.2	0	--	--	--	79.48
GM-33	06/02/99	5:14 PM	28.72	57	-	90	90	2.6	0	--	--	--	81.6
GM-33	06/15/99	--	--	--	--	85	94.3	1.3	0	--	--	--	--
GM-33	06/16/99	--	--	--	--	82	88.1	3	0	--	--	--	--
GM-33	06/17/99	--	--	--	--	70	90.2	2.5	0	--	--	--	--
GM-33	06/18/99	--	--	--	--	75	90.4	1.7	0	--	--	--	--
GM-33	06/19/99	--	--	--	--	63	88.9	0.8	0	--	--	--	--
GM-33	06/20/99	--	--	--	--	70	88.2	1.7	0	--	--	--	--
GM-33	06/21/99	6:09 PM	28.87	75	-	82	89.8	2.3	0	--	--	--	--
GM-33	06/22/99	4:22 PM	28.66	79	-	84	86.6	0.8	0	--	--	--	--
GM-33	06/23/99	4:20 PM	28.47	69.1	T	84	93.1	3.2	0	--	--	--	--
GM-33	06/24/99	3:07 PM	28.58	82.9	-	84	90.5	2.6	0	--	--	--	--
GM-33	06/25/99	2:55 PM	28.64	86	-	82	91.1	3.1	0	--	--	--	--
GM-33	06/26/99	3:52 PM	28.54	87.1	-	82	90	2.8	0	--	--	--	--
GM-33	06/27/99	1:36 PM	28.51	72	-	84	87.8	2.7	0	--	--	--	--
GM-33	06/28/99	2:05 PM	28.45	63	0.05	82	90	1.4	0	--	--	--	80
GM-33	06/29/99	4:50 PM	28.56	70	-	79	83.6	3.1	0	--	--	--	--
GM-33	06/30/99	4:23 PM	28.57	62.1	0.08	90	85.1	2.3	0	--	--	--	--
GM-33	07/01/99	1:52 PM	28.42	66.9	T	82	85.5	3.2	0	--	--	--	--
GM-33	07/02/99	3:06 PM	28.62	80.1	-	80	89.6	2.6	0	--	--	--	--
GM-33	07/03/99	2:27 PM	28.62	73	-	80	91	3.2	0	--	--	--	--
GM-33	07/04/99	1:18 PM	28.66	87.1	-	78	91.2	3.1	0	--	--	--	--
GM-33	07/05/99	12:14 PM	28.61	79	-	78	87.2	1.3	0	--	--	--	--
GM-33	07/06/99	2:05 PM	28.68	80.1	-	80	89.2	1.9	0	--	--	--	--
GM-33	07/07/99	1:40 PM	28.73	78.1	-	74	90	3.1	0	--	--	--	--
GM-33	07/08/99	1:42 PM	28.68	57.9	0.1	75	89.4	1.1	0	--	--	--	--
GM-33	07/09/99	3:11 PM	28.55	63	-	74	91.8	3	0.1	--	--	--	--
GM-33	07/10/99	6:45 PM	28.91	68	-	75	94.1	3.1	0	--	--	--	--
GM-33	07/11/99	10:15 AM	28.95	75.9	-	73	93.5	3.1	0	--	--	--	--
GM-33	07/12/99	2:27 PM	28.85	81	-	76	98.6	3.2	0	--	--	--	--
GM-33	07/13/99	2:24 PM	28.68	73.9	-	70	96.2	3.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-33	07/14/99	9:47 AM	28.59	73	-	74	94.5	3.4	0	--	--	--	--
GM-33	07/15/99	4:00 PM	28.68	84	-	71	97.8	3.4	0	--	--	--	--
GM-33	07/16/99	1:55 PM	28.68	73	T	72	100.5	3.2	0	--	--	--	--
GM-33	07/17/99	12:50 PM	28.86	77	-	74	100.5	3.3	0	--	--	--	--
GM-33	07/18/99	11:20 AM	28.9	73	-	76	99.5	3.5	0	--	--	--	--
GM-33	07/19/99	11:00 AM	28.85	70	-	70	97.5	3.5	0	--	--	--	--
GM-33	07/20/99	10:39 AM	28.9	75	-	76	96.7	3.6	0	--	--	--	--
GM-33	07/21/99	10:07 AM	28.76	66.9	0.03	73	93.1	3.5	0	--	--	--	--
GM-33	07/22/99	3:30 PM	28.74	87.1	-	70	93.3	3.3	0	--	--	--	--
GM-33	07/23/99	1:30 PM	28.61	84.9	-	80	98.3	3.6	0	--	--	--	--
GM-33	07/24/99	9:40 AM	28.62	84	-	76	97.2	3.6	0	--	--	--	--
GM-33	07/25/99	10:30 AM	28.74	82.9	-	74	97.6	3.6	0	--	--	--	--
GM-33	07/26/99	9:43 AM	28.62	75.9	-	75	94.8	3.7	0	--	--	--	--
GM-33	07/27/99	1:50 PM	28.71	80.1	-	76	97.7	3.8	0	--	--	--	--
GM-33	08/10/99	8:55 AM	28.44	64	-	75	107.1	3.9	0	--	--	--	77.25
GM-33	09/13/99	--	--	--	--	--	88.5	0	4.1	--	--	--	--
GM-33	10/01/99	8:39 AM	28.66	46	-	88	80.1	0.7	0	--	--	--	79.81
GM-33	10/05/99	2:13 PM	28.68	55.9	-	86	88.3	2.7	0	--	--	--	79.6
GM-33	10/08/99	1:28 PM	28.52	55.9	T	70	88.7	3.8	0	--	--	--	78.1
GM-33	10/11/99	2:25 PM	29.04	60.1	-	65	89.1	3.7	0	--	--	--	78.7
GM-33	10/17/99	8:20 AM	28.84	41	-	68	100	4.3	0	--	--	--	--
GM-33	10/24/99	11:18 AM	28.85	45	-	21	98.2	3.1	0	--	--	--	--
GM-33	11/04/99	10:15 AM	28.69	42.1	-	81	97.6	3.2	0	--	--	--	--
GM-33	11/04/99	1:30 PM	28.63	55.9	-	--	--	--	--	--	--	--	--
GM-33	11/04/99	3:05 PM	28.62	54	-	70	92.9	3.3	0	--	--	--	--
GM-33	11/04/99	4:29 PM	28.62	51.1	-	75	97	3.4	0	--	--	--	--
GM-33	11/05/99	10:09 AM	28.7	52	-	65	94.1	3.6	0	--	--	--	--
GM-33	11/06/99	12:52 PM	29.08	46.9	-	61	106.9	4.1	0	--	--	--	--
GM-33	11/07/99	8:09 AM	29.16	27	-	63	109.1	4.5	0	--	--	--	--
GM-33	11/08/99	9:30 AM	28.68	48.9	-	75	108.5	4.4	0	--	--	--	--
GM-33	11/09/99	8:00 AM	28.44	60.1	-	72	108.3	4.5	0	--	--	--	--
GM-33	11/10/99	8:03 AM	28.65	39.9	-	70	93.5	3.9	0	--	--	--	--
GM-33	11/11/99	6:00 PM	29.01	36	-	--	--	--	--	--	--	--	--
GM-33	12/21/99	1:30 PM	28.89	7	-	8	96	3.7	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-33	12/29/99	12:45 PM	27.94	31	-	4.08	97.1	4.5	0	--	--	--	--
GM-33	01/25/00	9:00 AM	28.76	9	-	86	101.4	2.6	0	--	--	--	--
GM-33	01/25/00	9:05 AM	28.76	9	-	--	--	--	--	--	--	--	--
GM-33	01/25/00	4:15 PM	28.85	11	-	--	--	--	--	--	--	--	--
GM-33	01/26/00	11:30 AM	29.02	15	T	71	96.6	3.5	0	--	--	--	--
GM-33	01/31/00	2:25 PM	28.44	25	T	74	96	3.9	0	--	--	--	--
GM-33	02/03/00	3:24 PM	28.41	27	T	15.2	93	3.9	0	--	--	--	--
GM-33	02/04/00	2:31 PM	28.89	23	-	69	93.6	3.9	0	--	--	--	--
GM-33	02/06/00	10:00 AM	28.89	19	-	55	95.9	3.9	0	--	--	--	--
GM-33	02/08/00	8:22 AM	28.92	12	-	68	97.2	4	0	--	--	--	--
GM-33	02/10/00	9:55 AM	28.69	18	T	--	--	--	--	--	--	--	--
GM-33	02/15/00	8:14 AM	28.71	10	-	75	100.7	2.9	0	--	--	--	--
GM-33	02/22/00	1:58 PM	28.61	46	-	80	96.6	3	0	--	--	--	--
GM-33	03/17/00	10:33 AM	29.22	23	T	81	97	3.3	0	--	--	--	--
GM-33	03/27/00	1:05 PM	27.91	45	-	103	92.5	2.8	0	--	--	--	--
GM-33	03/27/00	5:33 PM	28	37.9	-	85	95.6	3.4	0	--	--	--	--
GM-33	03/28/00	9:05 AM	28.29	34	T	80	94.4	3.4	0	--	--	--	--
GM-33	03/29/00	9:34 AM	28.66	34	-	75	93.7	3.5	0	--	--	--	--
GM-33	03/30/00	3:07 PM	28.78	53.1	-	70	92	3.6	0	--	--	--	--
GM-33	04/04/00	8:50 AM	28.54	30	T	74	97.3	3.7	0	--	--	--	--
GM-33	04/19/00	8:14 AM	28.8	41	-	--	--	--	--	--	--	--	--
GM-33	04/29/00	3:33 PM	28.93	59	-	82	84.7	2.7	0	--	--	--	--
GM-33	05/11/00	4:35 PM	28.31	53	0.03	94	94.8	2.9	0	--	--	--	--
GM-33	06/05/00	3:14 PM	28.91	66	-	55	86.8	3.8	0	--	--	--	--
GM-33	06/06/00	9:35 AM	28.92	71	-	60	92.2	4	0	--	--	--	--
GM-33	06/28/00	2:44 PM	28.67	56	0.16	61	89.1	4	0	--	--	--	--
GM-33	07/19/00	1:21 PM	28.81	69	-	57	89	3.7	0	--	--	--	--
GM-33	07/23/00	7:57 AM	29	57	-	60	109.7	4.2	0	--	--	--	--
GM-33	08/28/00	2:05 PM	28.67	75	-	53	95.7	3.8	0	--	--	--	--
GM-33	09/11/00	10:05 AM	28.48	69	-	--	98.3	4	0	--	--	--	--
GM-33	09/11/00	2:20 PM	28.41	74	-	70	--	--	--	--	--	--	--
GM-33	10/24/00	3:25 PM	29.07	59	-	61	91.1	3.9	0	--	--	--	--
GM-33	11/22/00	8:25 AM	28.9	13	-	51	98	4	0	--	--	--	--
GM-33	12/04/00	2:33 PM	28.58	31	-	67	97	4.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-33	01/10/01	8:25 AM	28.61	28	-	8	92.3	3.9	0	--	--	--	--
GM-33	02/21/01	9:22 AM	29.22	-1	-	55	96.3	4	0	--	--	--	--
GM-33	03/20/01	9:30 AM	29.03	40	-	8	94.3	3.9	0	--	--	--	--
GM-33	04/19/01	8:30 AM	28.77	52	-	75	101.9	3.9	0	--	--	--	--
GM-33	05/15/01	9:05 AM	28.51	54	-	75	108.9	3.9	0	--	--	--	--
GM-33	06/13/01	2:36 PM	28.53	79	-	74	106.1	3.8	0	--	--	--	--
GM-33	07/12/01	3:31 PM	28.86	78	-	68	100	3.8	0.4	--	--	--	--
GM-33	08/10/01	10:20 AM	28.87	68	-	70	106.8	3.8	0.1	--	--	--	--
GM-33	09/08/01	4:53 PM	28.51	74	-	70	97	3.5	0	--	--	--	--
GM-33	10/07/01	12:35 PM	29	49	-	64	103.1	3.9	0	--	--	--	--
GM-33	11/14/01	10:00 AM	28.8	55	-	67	103.1	3.9	0	--	--	--	--
GM-33	12/19/01	8:40 AM	28.51	29	T	66	109.5	3.8	0	--	--	--	--
GM-33	01/11/02	8:36 AM	28.64	27	-	68	112	3.8	0	--	--	--	--
GM-33	02/16/02	2:25 PM	28.59	32	-	66	118.1	3.9	0	--	--	--	--
GM-33	03/14/02	8:37 AM	28.88	26	-	62	115.6	3.8	0	--	--	--	--
GM-33	04/19/02	8:34 AM	28.83	41	-	85	111.8	3.7	0	--	--	--	--
GM-33	05/17/02	9:55 AM	29.02	42	-	95	114.3	3.6	0	--	--	--	--
GM-33	06/03/02	10:10 AM	28.81	50	-	87	106.4	3.7	0	--	--	--	--
GM-33	07/12/02	3:45 PM	28.82	83	-	80	109.2	3.5	0	--	--	--	--
GM-33	08/14/02	3:42 PM	28.57	76	-	80.6	103.8	3.6	0	--	--	--	--
GM-33	09/23/02	11:37 AM	28.85	48	0.03	57.1	91	3.5	0	--	--	--	--
GM-33	10/11/02	11:34 AM	28.88	69	-	81.5	103.1	3.5	0	--	--	--	--
GM-33	11/15/02	11:29 AM	28.99	26	T	68.2	113.5	3.7	0	--	--	--	--
GM-33	12/05/02	1:41 PM	28.76	21	-	78	116.5	3.9	0	--	--	--	--
GM-33	01/03/03	12:12 PM	28.78	26	-	74.7	120.4	3.8	0	--	--	--	--
GM-33	02/11/03	12:42 PM	28.2	11	-	81.8	111.6	3.9	0	--	--	--	--
GM-33	03/05/03	1:32 PM	28.73	13	T	76.8	100.9	3.6	0	--	--	--	--
GM-33	04/14/03	11:13 AM	28.58	77	-	83.7	97.7	3.3	0.1	--	--	--	--
GM-33	05/07/03	10:10 AM	28.78	59	-	87.6	95.7	3.4	0	--	--	--	--
GM-33	06/02/03	10:35 AM	28.79	70	-	89.3	94.8	3.3	0	--	--	--	--
GM-33	07/16/03	11:08 AM	28.86	79	-	80	91.5	3.3	0.1	--	--	--	--
GM-33	08/07/03	10:21 AM	28.84	70	-	76.8	93.7	3.4	0	--	--	--	--
GM-33	09/26/03	12:38 PM	28.39	54	-	81.8	92.4	2.7	0	--	--	--	--
GM-33	10/13/03	10:30 AM	28.58	62	-	78.6	93.8	3.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-33	11/11/03	10:42 AM	28.49	43	-	73.2	101.7	3.3	0	--	--	--	--
GM-33	12/17/03	10:53 AM	28.57	25	-	77.4	102.5	3.6	0	--	--	--	--
GM-33	01/21/04	3:55 PM	28.37	19	T	82.1	98.3	3.7	0	--	--	--	--
GM-33	02/04/04	11:44 AM	29.15	17	-	73.4	100.6	3.7	0	--	--	--	--
GM-33	03/02/04	11:41 AM	28.75	37	-	79.2	102.6	3.5	0	--	--	--	--
GM-33	04/02/04	1:42 PM	28.88	55	-	80.3	96.1	2.5	0.3	--	--	--	--
GM-33	05/28/04	11:15 AM	28.73	56	-	97.1	91.7	2.3	0.4	--	--	--	--
GM-33	06/29/04	12:08 PM	28.81	77	-	88.7	95.1	2.9	0	--	--	--	--
GM-33	07/22/04	12:47 PM	28.72	68	-	86.1	98.6	3	0.2	--	--	--	--
GM-33	08/12/04	12:07 PM	28.83	64	-	82	85.4	2.4	0.6	--	--	--	--
GM-33	09/17/04	1:58 PM	28.85	66	-	79.4	91.7	3.2	0.2	--	--	--	--
GM-33	10/13/04	10:56 AM	28.49	61	-	83.7	98.7	3.2	0	--	--	--	--
GM-33	11/23/04	10:36 AM	28.57	39	-	82.2	104.5	3.3	0	--	--	--	--
GM-33	12/22/04	12:27 PM	28.91	5	-	74.2	110.9	3.5	0	--	--	--	--
GM-33	01/19/05	10:28 AM	28.72	19	T	81.6	109.8	3.4	0	--	--	--	--
GM-33	02/08/05	1:32 PM	28.97	21	-	79.4	110.9	3.4	0	--	--	--	--
GM-33	03/16/05	9:55 AM	28.82	23	T	70.6	120.8	3.2	0	--	--	--	--
GM-33	04/04/05	10:45 AM	28.8	56	-	79.7	95.6	3	0	--	--	--	--
GM-33R	06/14/05	1:39 PM	28.27	71	-	0.4	60.8	0	5.8	--	--	--	--
GM-33R	06/14/05	5:20 PM	28.27	65	T	5.3	62	0	5.5	--	--	--	--
GM-33R	06/20/05	3:15 PM	28.85	88	-	63.7	98.4	2.4	0	--	--	--	--
GM-33R	06/21/05	11:05 AM	28.88	81	-	66.9	100.9	2.6	0	--	--	--	--
GM-33R	06/22/05	2:35 PM	28.9	81	-	66.1	92.3	2.6	0	--	--	--	--
GM-33R	06/23/05	4:00 PM	28.61	92	-	70.9	91.3	2.6	0	--	--	--	--
GM-33R	06/24/05	3:00 PM	28.69	83	-	68.1	104	2.5	0.1	--	--	--	--
GM-33R	06/29/05	9:08 AM	28.84	61	-	69.4	93.5	2.6	0	--	--	--	--
GM-33R	07/01/05	3:20 PM	28.72	67	-	68.7	90.1	2.5	0.1	--	--	--	--
GM-33R	07/14/05	4:17 PM	28.81	86	-	67	89.3	2.5	0	--	--	--	--
GM-33R	07/19/05	5:08 PM	28.77	81	-	66.9	93.4	2.5	0	--	--	--	--
GM-33R	07/29/05	9:30 AM	29.03	66	-	65.6	95.6	2.6	0	--	--	--	--
GM-33R	08/11/05	12:50 PM	28.81	71	-	63.8	94.3	2.5	0	--	--	--	--
GM-33R	08/17/05	1:37 PM	28.83	75	-	64.1	94.1	2.5	0	--	--	--	--
GM-33R	09/08/05	2:23 PM	28.93	71.06	-	65.7	95	2.6	0	--	--	--	--
GM-33R	10/19/05	10:32 AM	28.82	48	-	69	98.6	2.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-33R	11/04/05	11:05 AM	28.45	43	-	72	93.4	2.6	0	--	--	--	--
GM-33R	12/06/05	9:30 AM	28.82	4	-	78.6	97.6	2.5	0	--	--	--	--
GM-33R	01/31/06	2:09 PM	28.6	32	-	68.7	100	3	0	--	--	--	--
GM-33R	02/20/06	10:17 AM	28.62	15	-	58.7	101.5	3.1	0	--	--	--	--
GM-33R	03/09/06	12:42 PM	28.15	39	-	75.1	104.8	2.7	0	--	--	--	--
GM-33R	04/12/06	3:56 PM	28.69	67	-	67.6	91.6	2.5	0	--	--	--	--
GM-33R	05/17/06	2:54 PM	28.38	62	-	71.1	97.3	2.6	0	--	--	--	--
GM-33R	06/06/06	11:40 AM	28.59	66	0.25	70.5	89.4	2.4	0	--	--	--	--
GM-33R	07/26/06	1:21 PM	28.5	83	-	68.5	88.9	2.5	0	--	--	--	--
GM-33R	08/16/06	12:35 PM	28.97	81	-	58.6	84.4	2.5	0.3	--	--	--	--
GM-33R	09/18/06	1:37 PM	28.39	57	-	70.2	105.8	3.2	0	--	--	--	--
GM-33R	10/23/06	2:14 PM	28.7	39	-	66.5	112	3.2	0	--	--	--	--
GM-33R	11/14/06	10:12 AM	28.7	35	-	66.5	115.6	3.3	0	--	--	--	--
GM-33R	12/21/06	10:18 AM	29.05	26	-	64.8	119.6	3.3	0	--	--	--	--
GM-33R	01/19/07	10:35 AM	28.83	16	-	73.2	116.3	3.4	0	--	--	--	--
GM-33R	02/08/07	10:08 AM	28.84	5	-	68	117	3.1	0	--	--	--	--
GM-33R	03/12/07	11:49 AM	28.73	43	-	68.4	116.6	3.2	0	--	--	--	--
GM-33R	04/19/07	2:27 PM	28.93	65	-	64.1	92.3	2.9	0.3	--	--	--	--
GM-33R	05/29/07	10:44 AM	28.88	79	-	63.5	91.6	2.7	0.2	--	--	--	--
GM-33R	06/13/07	11:20 AM	28.97	82	-	61.2	92.8	2.7	0	--	--	--	--
GM-33R	07/16/07	10:24 AM	29.99	72	-	63.2	92.4	2.7	0	--	--	--	--
GM-33R	08/30/07	10:32 AM	30.26	70	-	59.4	93.2	2.9	0	--	--	--	--
GM-33R	09/20/07	11:30 AM	30.23	61	-	60.1	88.9	2.7	0	--	--	--	--
GM-33R	10/17/07	10:52 AM	29.9	56	-	65.1	91.4	3	0	--	--	--	--
GM-33R	11/21/07	11:42 AM	30.14	33	T	62.9	96.7	3	0	--	--	--	--
GM-33R	12/27/07	12:54 PM	29.97	26	-	66.3	105.8	3.3	0	--	--	--	--
GM-35	09/10/98	10:20 AM	28.8	73	-	0.29	5.2	6	0.8	--	--	--	49.28
GM-35	09/12/98	9:48 AM	28.76	68	-	-0.16	0	0	20.9	12	12	5.5	49.31
GM-35	09/13/98	10:08 AM	28.69	71.1	-	0.11	3.7	3.2	6.8	--	--	--	49.3
GM-35	09/24/98	4:45 PM	28.59	68	-	0.09	4.8	6.7	0	--	--	--	49.35
GM-35	09/25/98	2:50 PM	28.5	77	-	0.15	4.6	6.8	0	--	--	--	49.35
GM-35	09/28/98	9:42 AM	28.77	63	-	-0.03	0	0	20.5	10	7	4.5	49.44
GM-35	10/08/98	9:18 AM	29.03	46	-	-0.19	0	0	20.5	6	4	3	49.31
GM-35	10/09/98	10:11 AM	28.91	55	-	0.15	3.9	5.9	0	--	--	--	49.31

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-35	10/10/98	5:30 PM	28.88	57	-	-0.01	0	0	21.2	175	175	2	49.54
GM-35	10/14/98	12:00 PM	28.83	46	-	0.13	0.5	0.3	17.9	--	--	--	49.55
GM-35	10/25/98	11:17 AM	28.93	48	-	0	0	0	20.3	22	22	4.5	--
GM-35	11/02/98	3:58 PM	29.03	37	-	0.07	4.6	6.3	0.8	--	--	--	49.71
GM-35	11/18/98	5:00 PM	28.59	39	-	0.7	4.3	6.6	0	--	--	--	49.71
GM-35	12/01/98	3:16 PM	28.67	49	-	0.48	2.9	4.1	3.4	--	--	--	--
GM-35	12/04/98	11:09 AM	28.76	43	-	0.02	0	0	20.3	65	4	1.25	49.83
GM-35	12/10/98	8:01 AM	29.01	29	-	-0.09	0	0	19.9	11	9	1.25	49.9
GM-35	12/28/98	3:41 PM	28.53	24	-	0.45	3.8	5.6	4.3	--	--	--	49.89
GM-35	01/07/99	3:30 PM	28.91	3.9	-	-0.01	2	1.9	8.4	--	--	--	50.03
GM-35	01/22/99	1:28 PM	28.61	28	0.07	0.5	3.6	6.1	1.9	--	--	--	50.05
GM-35	01/27/99	2:58 PM	28.55	27	T	-0.25	0	0.2	18.6	160	160	1	50.09
GM-35	02/09/99	3:52 PM	28.65	39	-	-0.61	0	0.1	19.6	--	--	--	50.28
GM-35	02/24/99	3:14 PM	28.75	25	T	0.34	4.4	7.2	0	--	--	--	50.34
GM-35	03/10/99	11:56 AM	29.03	30.9	-	0.17	1.9	1.6	10.4	--	--	--	50.52
GM-35	03/24/99	2:20 PM	28.86	37	-	-0.05	0	0	19.9	4.5	3.5	1	50.65
GM-35	04/08/99	5:11 PM	28.6	55	-	0.04	3.1	4	12	--	--	--	50.69
GM-35	04/09/99	8:57 AM	28.61	43	-	-0.2	0	0.1	21.2	8.5	6.5	1.25	50.72
GM-35	04/20/99	4:48 PM	28.62	50	-	0.12	4.3	6.6	0.6	--	--	--	50.71
GM-35	05/01/99	11:45 AM	28.97	78.1	-	0.27	3.8	5.9	0	--	--	--	--
GM-35	05/16/99	2:45 PM	28.63	71.1	-	0.18	4.5	7.2	0	--	--	--	50.54
GM-35	07/10/99	3:37 PM	28.91	73	-	0.1	0	0	19.5	125	65	1.5	49.91
GM-35	08/10/99	7:28 AM	28.4	60.1	-	-0.03	0	0.1	20.2	1500	1300	2	48.71
GM-35	09/30/99	3:12 PM	28.4	59	T	0.13	3.2	7.8	0	--	--	--	48.34
GM-35	10/04/99	4:02 PM	28.91	48	-	0.31	2.7	6.7	0	--	--	--	48.45
GM-35	10/11/99	11:29 AM	29.08	55.9	-	-0.02	0	0	21.3	2	2	1.75	48.57
GM-35	10/26/99	1:57 PM	28.85	39.9	-	-0.25	0	0	20.9	300	175	1.5	48.62
GM-35	11/05/99	11:09 AM	28.72	53.1	-	-0.4	0	0	20.8	230	115	1.25	48.63
GM-35	11/09/99	9:49 AM	28.44	64.9	-	-0.05	0	0.1	20.3	250	12	1.75	48.56
GM-35	02/16/00	12:39 PM	28.99	18	-	-0.08	0	0	20.4	<1	<1	<1	49.64
GM-35	03/31/00	4:14 PM	28.71	64	-	0.3	2.3	5.7	2.4	--	--	--	49.88
GM-35	06/05/00	4:45 PM	28.89	68	-	0.27	2.7	6.4	0	--	--	--	--
GM-35	06/16/00	11:40 AM	28.33	63	-	-0.77	0	0	20.1	--	--	--	--
GM-35	06/17/00	10:00 AM	28.88	56	-	-0.27	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-35	06/17/00	11:00 AM	28.87	59	-	-0.23	--	--	--	--	--	--	--
GM-35	06/17/00	12:00 PM	28.86	60	-	-0.1	--	--	--	--	--	--	--
GM-35	06/17/00	1:00 PM	28.88	62	-	-0.1	--	--	--	--	--	--	--
GM-35	06/17/00	2:00 PM	28.89	64	-	-0.2	--	--	--	--	--	--	--
GM-35	06/17/00	3:00 PM	28.88	65	-	-0.19	--	--	--	--	--	--	--
GM-35	06/17/00	4:00 PM	28.86	65	-	-0.19	--	--	--	--	--	--	--
GM-35	06/17/00	5:00 PM	28.86	65	-	-0.17	--	--	--	--	--	--	--
GM-35	06/18/00	8:55 AM	28.81	63	-	0.04	--	--	--	--	--	--	--
GM-35	06/30/00	8:22 AM	28.68	60	0.01	-0.18	0	0	19.6	--	--	--	--
GM-35	07/05/00	4:16 PM	28.74	75	-	0.04	2.3	6.8	0	--	--	--	--
GM-35	07/06/00	5:55 PM	28.89	69	-	-0.02	0	0	19.8	-0.04	-1.02	-0.36	--
GM-35	07/07/00	9:20 AM	28.98	65	-	-0.09	0	0	19.8	-1.25	-0.19	-0.48	--
GM-35	07/08/00	11:40 AM	28.72	65	-	0.2	2.6	6.7	0	--	--	--	--
GM-35	07/09/00	8:42 AM	28.52	78	-	-0.01	0	0	19.3	140	140	-0.2	--
GM-35	07/10/00	9:14 AM	28.7	70	-	-0.22	0	0	19.8	0.09	0	-0.22	--
GM-35	07/11/00	9:19 AM	28.85	69	-	-0.02	0	0	20	78	0.15	-0.18	--
GM-35	07/12/00	8:20 AM	28.79	62	T	0.13	1.8	4.6	3.1	--	--	--	--
GM-35	09/06/00	12:20 PM	29	66	-	0.48	2.6	6.8	0	--	--	--	--
GM-35	10/10/00	11:38 AM	28.84	62	-	0.02	1.1	7.6	0	--	--	--	47.98
GM-35	10/22/00	12:11 PM	29.16	58	-	0	0	0	20.6	5240	5240	0.1	48.09
GM-35	05/20/01	8:36 AM	28.66	70	-	0.11	0.9	5	4.8	--	--	--	--
GM-35	07/10/01	1:42 PM	28.68	76	-	-0.05	0	0	20.4	419	329	0	48.79
GM-35	07/10/01	6:14 PM	28.72	70	-	-0.09	0	0	20.8	1126	379	0	--
GM-35	07/12/01	8:05 AM	28.9	65	-	-0.2	0	0	20.3	8.89	6.82	0	--
GM-35	07/12/01	5:37 PM	28.88	74	-	0.02	0.8	6.3	3.9	3423	--	0	--
GM-35	07/13/01	1:35 PM	28.89	83	-	0.05	1	6.5	3.4	--	--	--	--
GM-35	07/16/01	10:03 AM	28.77	71	-	-0.12	1.2	0.2	19.9	--	--	--	--
GM-35	07/17/01	10:22 AM	28.76	70	-	-0.07	4.9	0.4	18.8	--	--	--	--
GM-35	07/18/01	8:42 AM	28.76	69	-	0.04	0	0	20.3	816	396	0	--
GM-35	07/19/01	1:35 PM	28.79	83	-	0.05	0.9	5	6	--	--	--	--
GM-35	07/20/01	2:30 PM	28.75	83	T	0.15	3.6	2.4	1.9	--	--	--	--
GM-35	07/24/01	9:40 AM	28.68	76	-	-0.11	0	0	20.2	900	337	0	--
GM-35	07/26/01	8:08 AM	29.06	61	-	-0.22	0	0	19.9	0	0	0	--
GM-35	08/02/01	5:09 PM	28.92	84	-	0.06	2.4	2.8	12.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-35	08/09/01	8:26 AM	28.54	79	-	0.2	1.7	8.7	0.2	--	--	--	--
GM-35	08/16/01	2:36 PM	28.55	71	-	0.12	1.3	7.8	1.6	--	--	--	--
GM-35	08/20/01	4:00 PM	28.81	78	-	0.02	1	6.7	2.9	--	--	--	--
GM-35	07/31/03	10:14 AM	28.74	71	-	0	1.1	6.6	5	--	--	--	--
GM-35	10/28/03	12:37 PM	28.09	45	T	0	1.9	8.7	0	--	--	--	--
GM-35	11/10/03	10:23 AM	28.95	32	-	0	0.4	7.4	1.1	--	--	--	--
GM-35	11/12/03	9:43 AM	28.35	38	T	0.3	0.2	7.3	1.4	--	--	--	--
GM-35	11/17/03	2:21 PM	28.73	46	-	0.3	0.3	6.6	3.5	--	--	--	--
GM-35	11/24/03	1:41 PM	28.33	17	T	-0.1	0	0	19.6	--	--	--	--
GM-35	12/03/03	10:19 AM	29.25	22	-	0	0	0	19.5	--	--	--	--
GM-35	12/08/03	10:33 AM	28.66	37	-	0.1	0.2	7.7	0.7	--	--	--	--
GM-35	12/15/03	2:08 PM	28.5	25	-	0.1	0.4	7.7	1.5	--	--	--	--
GM-35	12/22/03	9:16 AM	28.57	31	-	0	0	0	19.5	--	--	--	--
GM-35	12/30/03	12:28 PM	28.72	28	-	0.1	0	0	19.6	--	--	--	--
GM-35	01/08/04	12:15 PM	29.05	17	-	0	0	0	19.5	--	--	--	--
GM-35	01/12/04	12:14 PM	28.7	28	T	0.1	0	3.9	8.1	--	--	--	--
GM-35	01/22/04	11:19 AM	28.79	-6	-	0	0	0	18.9	--	--	--	--
GM-35	02/27/04	10:00 AM	29.17	22	-	0	0	0	19.6	--	--	--	--
GM-35	03/19/04	9:57 AM	28.95	31	-	0.2	0.2	2.5	10.8	--	--	--	--
GM-35	03/29/04	3:25 PM	--	--	--	0	0	0	19.5	--	--	--	--
GM-35	04/09/04	9:19 AM	28.8	37	-	0	0	0	19.7	--	--	--	--
GM-35	04/19/04	2:30 PM	28.85	-	-	-0.1	0	0	18.2	--	--	--	--
GM-35	04/22/04	10:37 AM	29	43	-	0	0	0	21.4	--	--	--	--
GM-35	04/23/04	8:24 AM	28.95	34	-	0	0	0	21.5	--	--	--	--
GM-35	04/28/04	2:34 PM	28.28	73	-	0.2	0.5	6.9	2.7	--	--	--	--
GM-35	05/05/04	10:20 AM	28.75	48	-	0.1	0	0	21.2	--	--	--	--
GM-35	05/24/04	8:55 AM	28.69	43	-	-0.2	0	0	20.3	--	--	--	--
GM-35	06/02/04	1:53 PM	28.8	66	-	-0.1	0	0	20.2	--	--	--	--
GM-35	06/08/04	4:11 PM	28.69	84	-	0.1	0	0	20	--	--	--	--
GM-35	06/16/04	9:25 AM	28.79	73	-	0.365	0.4	6.1	4.6	--	--	--	--
GM-35	06/24/04	2:03 PM	28.76	54	0.01	-0.339	0	0	20.1	--	--	--	--
GM-35	06/29/04	5:19 PM	28.83	69	0.01	-0.129	0	0	20.5	--	--	--	--
GM-35	07/07/04	12:05 PM	28.57	55	-	-0.019	0	0.2	19.1	--	--	--	--
GM-35	07/15/04	4:19 PM	28.63	80	-	0	0.4	8	1.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-35	07/21/04	5:02 PM	28.46	82	-	0.076	0.2	7.7	1.6	--	--	--	--
GM-35	07/26/04	11:06 AM	28.96	79	-	0.105	0	7	2.5	--	--	--	--
GM-35	08/06/04	2:12 PM	28.91	77	-	0.111	0	7.7	2.9	--	--	--	--
GM-35	08/10/04	3:36 PM	28.6	56	-	-0.083	0	0	19.9	--	--	--	--
GM-35	08/20/04	11:53 AM	28.76	61	-	0	0	0	20.1	--	--	--	--
GM-35	08/27/04	11:33 AM	28.66	79	-	-0.049	0	0	19.8	--	--	--	--
GM-35	08/30/04	2:01 PM	28.77	72	-	0	0	7.2	2.5	--	--	--	--
GM-35	09/09/04	1:02 PM	28.93	69	-	0.152	0	5.1	6.3	--	--	--	--
GM-35	09/16/04	11:12 AM	28.7	63	-	0	0	0	20.3	--	--	--	--
GM-35	09/28/04	3:29 PM	29.03	62	-	0	0	3.7	9.3	--	--	--	--
GM-35	10/07/04	11:40 AM	28.95	70	-	0.1	0	2	12.1	--	--	--	--
GM-35	10/11/04	12:24 PM	29.02	64	-	0	0	2.4	11.4	--	--	--	--
GM-35	10/20/04	11:41 AM	28.9	52	-	0	0	0	20	--	--	--	--
GM-35	10/26/04	2:39 PM	29.03	47	-	0	0	2.9	9.9	--	--	--	--
GM-35	11/02/04	8:38 AM	28.87	40	-	0	0	0	20	--	--	--	--
GM-35	11/11/04	11:12 AM	29.23	32	-	0	0	0	20.1	--	--	--	--
GM-35	11/17/04	8:47 AM	28.9	47	-	0	0	0	20	--	--	--	--
GM-35	12/09/04	8:39 AM	28.6	34	-	0	0	0	19.5	--	--	--	--
GM-35	01/18/05	12:04 PM	29.04	5	-	0.6	0	5.4	5.7	--	--	--	--
GM-35	02/28/05	10:39 AM	28.46	25	T	0	0	0.2	19.3	--	--	--	--
GM-35	03/14/05	1:41 PM	28.77	33	-	0	0	0	20.2	--	--	--	--
GM-35	04/05/05	10:05 AM	28.57	59	-	0	0.1	0.6	18.2	--	--	--	--
GM-35	05/11/05	1:55 PM	29.1	46	-	-0.4	0	0	20.4	--	--	--	--
GM-35	06/10/05	10:21 AM	28.73	77	-	0	0	0	20	--	--	--	--
GM-35	07/01/05	11:22 AM	28.66	59	-	-0.1	0	0	19.9	--	--	--	--
GM-35	08/12/05	8:59 AM	28.6	69	-	0	0	0	19.8	--	--	--	--
GM-35	09/13/05	4:55 PM	28.5	78.08	-	0	0.3	7.1	3.3	--	--	--	--
GM-35	10/20/05	4:25 PM	28.87	51	-	0.07	0	4.2	8	--	--	--	--
GM-35	11/02/05	3:45 PM	28.53	51	-	0.01	0	0	19.3	--	--	--	--
GM-35	02/13/06	11:56 AM	28.41	-	-	0.2	0.2	6.7	4	--	--	--	--
GM-35	04/13/06	11:35 AM	28.75	64	-	0	0	0	19.4	--	--	--	--
GM-35	07/18/06	1:22 PM	28.92	82	-	0	0	0	18.7	--	--	--	--
GM-35	10/05/06	3:31 PM	29.13	58	-	0	0	3.5	10.2	--	--	--	--
GM-35	01/19/07	11:43 AM	28.82	15	T	0	0	0	20.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-35	04/16/07	1:23 PM	28.81	61	-	0	0	4	9.1	--	--	--	--
GM-35	07/16/07	11:00 AM	29.99	74	-	0	0	0	19.6	--	--	--	--
GM-35	10/16/07	2:09 PM	29.87	54	T	0	0	6.9	2.8	--	--	--	--
GM-36	11/18/98	5:24 PM	28.59	39	-	0.03	0	0.8	18.8	35	20	5	43.31
GM-40A	09/10/98	10:50 AM	28.77	77	-	0	0	0	21.1	48	3	4.5	43.5
GM-40A	09/12/98	10:16 AM	28.76	68	-	0	0	0	20.8	22	22	4	43.56
GM-40A	10/25/98	11:48 AM	28.92	48	-	0.14	0	0.1	20.1	150	140	4	--
GM-40A	12/01/98	3:49 PM	28.65	48	-	0	0	0	19.7	6	6	2.5	--
GM-40A	12/10/98	8:51 AM	29.02	29	-	0.15	0	0.1	19.2	55	55	1.25	44.11
GM-40A	06/30/00	8:51 AM	28.67	62	T	0.1	0	0.5	18.9	--	--	--	--
GM-40A	07/05/00	3:37 PM	28.74	75	-	0.02	0	0.4	19.2	64	0.2	-0.35	--
GM-40A	07/06/00	5:04 PM	28.88	69	-	0	0	0.5	18.9	-0.1	-0.32	-0.16	--
GM-40A	07/07/00	8:30 AM	28.98	65	-	0.08	0	0.4	19	-0.63	-0.22	-0.27	--
GM-40A	07/08/00	11:05 AM	28.75	64	-	0.04	0	0.5	18.9	2.8	0.25	-0.17	--
GM-40A	07/09/00	8:06 AM	28.54	74	-	0.01	0	0.05	18.8	-0.63	-0.11	-0.06	--
GM-40A	07/10/00	8:06 AM	28.68	66	-	0	0	0	19.6	-0.9	-0.14	-0.3	--
GM-40A	07/11/00	8:35 AM	28.85	69	-	0.01	0	0	19.7	475	0.3	-0.08	--
GM-40A	07/12/00	7:46 AM	28.79	62	T	0.04	0	0	19.7	3.5	3.5	3.5	--
GM-41	09/10/98	10:40 AM	28.77	77	-	0.3	43.2	6.1	0	--	--	--	43.01
GM-41	09/12/98	10:07 AM	28.76	68	-	0	2.8	4.4	11	--	--	--	43.04
GM-41	09/13/98	10:17 AM	28.69	71.1	-	0.09	30.3	6.3	0.5	--	--	--	43.01
GM-41	09/24/98	5:10 PM	28.59	68	-	0.05	26.4	6.2	0.2	--	--	--	43.07
GM-41	09/25/98	3:10 PM	28.5	77	-	0.07	29	6.1	0.2	--	--	--	43.09
GM-41	09/28/98	4:46 PM	28.67	68	-	0.16	23.7	7.8	0.5	--	--	--	43.12
GM-41	10/08/98	9:39 AM	29.04	48.9	-	-0.06	1.6	6.3	6.2	--	--	--	43.1
GM-41	10/09/98	10:21 AM	28.91	55	-	0.12	11.5	5.3	7.5	--	--	--	43.1
GM-41	10/10/98	6:15 PM	28.88	57	-	0.01	25.8	6.1	3.1	--	--	--	43.19
GM-41	10/14/98	12:25 PM	28.83	46	-	0.05	39.6	6.6	0	--	--	--	43.2
GM-41	10/22/98	4:54 PM	29.03	55	-	0.26	47	6.9	0	--	--	--	43.22
GM-41	10/25/98	11:39 AM	28.92	48	-	0.2	51.1	6.7	0	--	--	--	--
GM-41	11/02/98	4:19 PM	29.03	37	-	0.06	49.6	7.3	0	--	--	--	43.27
GM-41	11/18/98	4:50 PM	28.59	39	-	0.48	57.5	7.5	0	--	--	--	--
GM-41	12/01/98	3:26 PM	28.67	49	-	0.13	0	0	19.8	12	12	2.5	--
GM-41	12/04/98	11:44 AM	28.75	45	-	0.19	48.8	6.6	0.2	--	--	--	43.25

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-41	12/10/98	8:39 AM	29.02	29	-	0.06	45.8	7.5	0	--	--	--	43.31
GM-41	12/18/98	9:57 AM	28.38	30	0.04	0.44	44.2	7.7	0	--	--	--	43.24
GM-41	12/28/98	3:30 PM	28.53	24	-	0.35	48.8	7.1	3.4	--	--	--	43.3
GM-41	01/07/99	4:03 PM	28.91	3.9	-	0.08	41.5	6.4	2.3	--	--	--	43.42
GM-41	01/22/99	1:45 PM	28.61	28	0.08	0.18	45.4	7.6	0.5	--	--	--	43.45
GM-41	01/27/99	3:43 PM	28.58	28	0.01	-0.14	12.2	2.5	14.9	--	--	--	43.53
GM-41	02/09/99	4:37 PM	28.69	37	-	-0.29	0	0.4	18.9	1500	1500	2	43.72
GM-41	02/24/99	3:53 PM	28.73	26.1	0.01	0.26	46.7	6.9	0	--	--	--	43.83
GM-41	03/10/99	12:32 PM	29.02	32	-	0.16	49.8	6.4	0.2	--	--	--	43.96
GM-41	03/24/99	3:06 PM	28.87	36	-	0.05	50.7	6.7	0	--	--	--	44.1
GM-41	04/08/99	5:33 PM	28.59	52	-	0.06	49.9	7.2	1.9	--	--	--	44.16
GM-41	04/20/99	5:03 PM	28.62	50	-	0.16	50.2	7.2	0	--	--	--	44.2
GM-41	05/01/99	12:09 PM	28.97	78.1	-	0.05	47.8	6.5	0	--	--	--	--
GM-41	05/16/99	3:30 PM	28.61	71.1	-	0.14	49.2	6.5	0	--	--	--	44.15
GM-41	07/10/99	3:27 PM	28.91	73	-	0.18	54.1	5.8	0	--	--	--	43.69
GM-41	08/09/99	11:50 AM	28.67	63	0.01	-3.85	0	0	20.9	--	--	--	82.3
GM-41	08/10/99	7:52 AM	28.42	61	-	0.05	55.8	6.2	0	--	--	--	42.75
GM-41	09/30/99	3:47 PM	28.42	60.1	-	0.07	34.4	6.8	0	--	--	--	42.6
GM-41	10/04/99	5:00 PM	28.91	46	-	0.15	32.8	7	0	--	--	--	42.65
GM-41	10/11/99	12:52 PM	29.06	59	-	0.13	34	7	0	--	--	--	42.71
GM-41	10/26/99	2:38 PM	28.87	39.9	-	-0.06	22.9	4.7	5	--	--	--	42.75
GM-41	11/05/99	11:53 AM	28.73	53.1	-	-0.07	19.5	3.9	5	--	--	--	42.73
GM-41	11/09/99	10:35 AM	28.43	66.9	-	0.05	29.6	5.9	0.2	--	--	--	42.69
GM-41	02/16/00	2:34 PM	29.02	18	-	0	5.6	0.9	16.9	--	--	--	--
GM-41	03/19/00	11:22 AM	28.86	30.9	-	0.05	43.1	7.2	0	--	--	--	--
GM-41	03/31/00	4:52 PM	28.71	62.1	-	0.09	32	7.5	0	--	--	--	43.45
GM-41	06/05/00	5:12 PM	28.89	68	-	0.24	44.7	6.3	0	--	--	--	43.67
GM-41	06/30/00	8:05 AM	28.68	60	0.01	-0.12	0	0.5	18.7	--	--	--	--
GM-41	07/05/00	4:47 PM	28.72	74	-	0.06	27.8	7.7	0	--	--	--	--
GM-41	07/12/00	8:58 AM	28.8	67	-	0	0	0	19.6	490	490	3.5	--
GM-41	09/06/00	1:15 PM	28.97	69	-	0.35	16.9	9.3	0	--	--	--	--
GM-41	09/06/00	6:10 PM	28.89	62	-	0.35	--	--	--	--	--	--	--
GM-41	09/08/00	8:42 AM	28.8	61	-	-0.06	0	1.9	16.4	1.17	1.15	0.72	--
GM-41	09/09/00	10:17 AM	28.71	65	-	0.07	17.8	8.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-41	09/11/00	3:50 PM	28.35	74	-	0.15	19.1	9.6	0	--	--	--	--
GM-41	09/20/00	9:40 AM	28.28	58	-	0.07	16.3	9.9	0.1	--	--	--	--
GM-41	09/21/00	9:05 AM	28.63	48	-	-0.35	0	6.8	12.9	1.5	1.25	1	--
GM-41	10/10/00	11:50 AM	28.84	62	-	0.02	21.2	8.2	1.9	--	--	--	42.36
GM-41	10/22/00	12:38 PM	29.14	60	-	0.01	24.5	8.4	0	--	--	--	42.41
GM-41	05/20/01	8:30 AM	28.66	70	-	0.19	41.2	7.9	0	--	--	--	--
GM-41	07/10/01	2:17 PM	28.68	76	-	0.06	42.1	7.7	0.6	--	--	--	42.93
GM-41	07/10/01	6:07 PM	28.72	70	-	0	37.2	6.6	2.8	--	--	--	--
GM-41	07/11/01	5:14 PM	28.78	74	-	0.07	46.1	7.7	0.1	--	--	--	--
GM-41	07/12/01	7:50 AM	28.9	65	-	-0.09	0.3	0.2	19.8	26100	24000	0	--
GM-41	07/12/01	5:31 PM	28.88	74	-	0.03	25.1	6.1	5.4	--	--	--	--
GM-41	07/13/01	1:25 PM	28.9	82	-	0.08	35.7	7.6	1.3	--	--	--	--
GM-41	07/16/01	9:57 AM	28.77	71	-	-0.03	17	4.3	10.6	--	--	--	--
GM-41	07/17/01	10:15 AM	28.76	70	-	0.07	40.4	7.9	0.1	--	--	--	--
GM-41	07/18/01	8:12 AM	28.78	67	-	0.13	38.8	8.1	0	--	--	--	--
GM-41	07/19/01	1:30 PM	28.79	83	-	0.13	37.8	8.1	0.6	--	--	--	--
GM-41	07/20/01	2:25 PM	28.77	78	-	0.5	37.3	8	0.6	--	--	--	--
GM-41	07/24/01	9:13 AM	28.67	73	-	0.1	34.5	8.8	0	--	--	--	--
GM-41	07/26/01	7:54 AM	29.06	61	-	-0.12	0	4.6	15.1	4	0.24	0	--
GM-41	08/02/01	5:02 PM	28.92	84	-	0.13	34.8	8.4	0.2	--	--	--	--
GM-41	08/09/01	8:18 AM	28.54	79	-	0.2	37.3	8.3	0.4	--	--	--	--
GM-41	08/16/01	3:10 PM	28.55	71	-	0.22	39.5	8.1	0.3	--	--	--	--
GM-41	08/20/01	4:13 PM	28.81	78	-	0.15	34.2	8.5	0.5	--	--	--	--
GM-41	09/10/01	12:58 PM	28.77	65	0.05	0	23.2	8.3	1.7	--	--	--	42.64
GM-41	07/31/03	10:27 AM	28.74	71	-	0	34.2	7.8	0	--	--	--	--
GM-41	10/28/03	12:06 PM	28.1	44	T	0	42.6	7.4	0	--	--	--	--
GM-41	10/30/03	1:05 PM	28.61	43	T	0.1	31.6	8.1	0	--	--	--	--
GM-41	11/04/03	10:39 AM	28.65	33	-	0.2	35	7.8	0	--	--	--	--
GM-41	11/07/03	10:15 AM	29	21	-	0	0	0	19.6	--	--	--	--
GM-41	11/10/03	9:32 AM	28.95	32	-	0	36.5	7.8	0	--	--	--	--
GM-41	12/30/03	12:40 PM	28.71	29	-	0	0.7	0.5	18	--	--	--	--
GM-41	01/08/04	12:41 PM	29.05	15	-	0	10.3	2.4	12.9	--	--	--	--
GM-41	01/12/04	12:30 PM	28.67	28	T	0.2	26.1	2.1	5.7	--	--	--	--
GM-41	01/22/04	11:31 AM	28.79	-4	-	0	0	0	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-41	02/27/04	10:18 AM	29.17	22	-	0	0	0.1	19.3	--	--	--	--
GM-41	03/19/04	10:20 AM	28.95	31	-	0	12.6	6.4	6.4	--	--	--	--
GM-41	04/09/04	9:25 AM	28.8	37	-	0	0	0	19.6	--	--	--	--
GM-41	04/19/04	3:17 PM	28.85	-	-	0	0	0	17.9	--	--	--	--
GM-41	04/22/04	10:55 AM	29	43	-	0	0	0.1	21.3	--	--	--	--
GM-41	04/23/04	7:58 AM	28.95	34	-	-8	--	--	--	--	--	--	--
GM-41	05/05/04	10:47 AM	28.74	52	-	0.1	1.5	2.8	14.3	--	--	--	--
GM-41	05/06/04	10:05 AM	28.68	60	-	-0.3	0	0	21.1	--	--	--	--
GM-41	05/24/04	9:11 AM	28.69	43	-	-0.2	0	0	20.2	--	--	--	--
GM-41	06/02/04	1:43 PM	28.8	66	-	0	0	0	20.1	--	--	--	--
GM-41	06/08/04	4:18 PM	28.69	84	-	0.2	0	0.1	19.5	--	--	--	--
GM-41	06/16/04	9:33 AM	28.8	77	-	0.269	21.7	7.1	3.3	--	--	--	--
GM-41	06/29/04	5:35 PM	28.83	67	0.01	-0.04	0	0.4	19.6	--	--	--	--
GM-41	07/07/04	12:17 PM	28.57	55	-	0.033	22.3	6.6	3.3	--	--	--	--
GM-41	07/15/04	4:32 PM	28.63	81	-	0.1	25.2	8.7	0.4	--	--	--	--
GM-41	07/21/04	4:50 PM	28.46	82	-	0.131	29.4	8.2	0	--	--	--	--
GM-41	07/22/04	2:03 PM	28.74	67	-	-0.187	0	0.4	19.2	--	--	--	--
GM-41	07/23/04	11:07 AM	28.97	66	-	-0.009	0.4	0.8	17.6	--	--	--	--
GM-41	07/26/04	11:12 AM	28.96	79	-	0.173	30.9	8.7	0.2	--	--	--	--
GM-41	07/27/04	8:40 AM	28.87	73	-	0.116	33.9	8.4	0.2	--	--	--	--
GM-41	07/28/04	4:47 PM	28.71	79	-	0.17	47.2	12.3	0	--	--	--	--
GM-41	08/06/04	2:20 PM	28.91	77	-	0.177	26.2	8.8	0.2	--	--	--	--
GM-41	08/10/04	3:07 PM	28.58	58	T	-0.038	21.7	5.5	6.4	--	--	--	--
GM-41	08/20/04	12:00 PM	28.76	61	-	0	0	0	20.3	--	--	--	--
GM-41	08/27/04	11:42 AM	28.66	79	-	0.076	17.5	5.2	7.7	--	--	--	--
GM-41	08/30/04	1:06 PM	28.78	71	-	0	34.7	8.2	0	--	--	--	--
GM-41	09/09/04	1:24 PM	28.93	69	-	0.192	27.8	7.9	0.6	--	--	--	--
GM-41	09/16/04	11:23 AM	28.7	63	-	-0.2	0	0	20.1	--	--	--	--
GM-41	09/28/04	3:40 PM	29.03	61	-	0	26.4	0.2	0	--	--	--	--
GM-41	09/29/04	12:27 PM	28.92	64	-	-12.7	--	--	--	--	--	--	--
GM-42	09/10/98	10:30 AM	28.77	77	-	0	0	0	20.8	20	20	3	44.19
GM-42	09/12/98	9:56 AM	28.76	68	-	0	0	0	20.8	9.5	9.5	5	44.21
GM-42	09/24/98	5:00 PM	28.59	68	-	0	0	0	20.4	100	90	5	44.06
GM-42	09/25/98	3:00 PM	28.5	77	-	-0.02	0	0	21.2	18	18	4	44.07

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-42	09/28/98	4:35 PM	28.67	68	-	0.05	0	0	20.5	3.5	3.5	1.5	44.06
GM-42	10/10/98	5:55 PM	28.88	57	-	0	0	0	20.6	25	25	2	44.25
GM-42	10/25/98	11:28 AM	28.93	48	-	0.14	0	0	20.3	12	12	4	--
GM-42	11/02/98	4:06 PM	29.03	37	-	0.02	0	0	19.5	32	32	6.5	44.44
GM-42	11/18/98	5:10 PM	28.59	39	-	0.17	0	0.1	19	36	36	5	44.4
GM-42	12/04/98	11:20 AM	28.76	43	-	-0.25	0	0	20.1	1.5	<1	1.25	44.69
GM-42	12/10/98	8:12 AM	29.01	29	-	0	0	0	19.5	4.5	4.5	1	44.73
GM-42	12/18/98	10:32 AM	28.36	31	0.02	0	0	0	19.2	200	5	1.5	44.55
GM-42	12/28/98	3:58 PM	28.53	24	-	0	0	0	18.2	--	--	--	44.64
GM-42	01/07/99	3:40 PM	28.91	3.9	-	0.2	0	0	16	18	15	2	44.87
GM-42	01/22/99	1:59 PM	28.61	28	0.08	0.25	0	0	10.2	--	--	--	44.78
GM-42	01/27/99	3:11 PM	28.55	27	T	0	0	0	18.7	6.5	5	1	44.88
GM-42	02/09/99	4:08 PM	28.65	39	-	0	0	0	19.4	--	--	--	45.07
GM-42	02/24/99	3:25 PM	28.75	25	T	0.05	0	0	19.6	24	24	1	45.01
GM-42	03/10/99	12:08 PM	29.03	30.9	-	0	0	0	20	4	4	<1	45.19
GM-42	03/24/99	2:37 PM	28.87	36	-	0	0	0	19.6	2	2	<1	45.3
GM-42	05/01/99	12:01 PM	28.97	78.1	-	0	0	0	20.2	5.5	5.5	2	--
GM-42	05/16/99	3:03 PM	28.63	71.1	-	0	0	0	20.6	13	4.5	1.5	44.93
GM-42	07/10/99	3:56 PM	28.91	73	-	0.08	0	0	19.8	20	20	2.5	44.39
GM-42	09/30/99	3:22 PM	28.4	59	T	0.17	0	0	20.7	12	12	3	42.98
GM-42	10/04/99	4:34 PM	28.91	46	-	-0.01	0	0	21	8.5	3.5	1.5	43.06
GM-42	10/11/99	12:08 PM	29.07	57.9	-	0.02	0	0	21.3	3.5	2	1.5	43.15
GM-42	10/26/99	2:22 PM	28.85	39.9	-	0.03	0	0	20.6	2	2	2	43.04
GM-42	11/05/99	11:26 AM	28.72	53.1	-	0.01	0	0	20.9	150	4.75	1.25	42.93
GM-42	11/09/99	10:10 AM	28.44	64.9	-	-0.01	0	0	20.4	4.25	1.5	<1	42.77
GM-42	02/16/00	1:36 PM	28.99	18	-	0	0	0	19.6	1.75	1.25	<1	44
GM-42	03/19/00	10:57 AM	28.86	30.9	-	0	0	0	20.1	-0.3	-0.15	0.05	44.03
GM-42	03/31/00	4:31 PM	28.71	62.1	-	-0.01	0	0	21	18.36	2.95	-0.02	44.04
GM-42	06/05/00	4:53 PM	28.89	68	-	0	0	0.2	19.8	6.69	6.36	-0.71	49.12
GM-42	06/17/00	10:00 AM	28.88	56	-	0	--	--	--	--	--	--	--
GM-42	06/17/00	11:00 AM	28.87	59	-	0	--	--	--	--	--	--	--
GM-42	06/17/00	12:00 PM	28.86	60	-	0	--	--	--	--	--	--	--
GM-42	06/17/00	1:00 PM	28.88	62	-	0	--	--	--	--	--	--	--
GM-42	06/17/00	1:20 PM	28.88	62	-	0.01	0	0.1	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-42	06/17/00	2:00 PM	28.89	64	-	0	--	--	--	--	--	--	--
GM-42	06/17/00	3:00 PM	28.88	65	-	0	--	--	--	--	--	--	--
GM-42	06/17/00	4:00 PM	28.86	65	-	0	--	--	--	--	--	--	--
GM-42	06/17/00	5:00 PM	28.86	65	-	0	--	--	--	--	--	--	--
GM-42	06/18/00	8:55 AM	28.81	63	-	0	--	--	--	--	--	--	--
GM-42	06/30/00	8:31 AM	28.67	62	T	0	0	0.3	18.9	--	--	--	--
GM-42	07/06/00	5:42 PM	28.89	69	-	-0.02	0	0.3	18.9	-0.63	-0.57	-0.2	--
GM-42	07/07/00	9:08 AM	28.98	65	-	0.01	0	0.2	19.1	-0.78	-0.69	-0.49	--
GM-42	07/08/00	11:30 AM	28.72	65	-	0	0	0.2	18.9	-1.2	-0.3	-0.09	--
GM-42	07/09/00	8:32 AM	28.52	78	-	0	0	0.1	18.7	-0.57	-0.27	-0.2	--
GM-42	07/10/00	9:04 AM	28.7	70	-	0.16	0	0.2	18.9	-0.89	-0.65	-0.42	--
GM-42	07/11/00	9:08 AM	28.85	69	-	0	0	0	19.8	257	0.02	-0.06	--
GM-42	07/12/00	8:11 AM	28.79	62	T	0	0	0	19.7	3.5	3.5	3.5	--
GM-42	09/06/00	2:59 PM	28.93	67	-	0	0	0.2	19.3	0.33	0.15	-0.05	--
GM-42	09/06/00	6:20 PM	28.89	62	-	0.13	--	--	--	--	--	--	--
GM-42	09/08/00	9:06 AM	28.8	61	-	0	0	0.3	18.5	0.76	0.76	0.59	--
GM-42	09/09/00	10:42 AM	28.7	69	-	0	0	0.3	18.8	1.77	0.9	0.55	--
GM-42	09/11/00	4:06 PM	28.35	74	-	0.01	0	0.2	18.9	75	17	3	--
GM-42	09/20/00	9:15 AM	28.29	57	-	0.08	0	0.3	20.4	1.1	1.1	1.1	--
GM-42	09/21/00	8:22 AM	28.6	45	T	0.13	0	0.3	20.6	1	1	1	--
GM-42	10/10/00	11:24 AM	28.87	60	-	-2.18	0	0.2	19.5	1.15	0.32	-0.4	42.66
GM-42	10/22/00	11:58 AM	29.16	58	-	0	0	0.1	20.2	0.33	0.33	0.08	42.87
GM-42	05/20/01	8:58 AM	28.66	70	-	0.07	0	0	18.4	92.34	68.87	0	--
GM-42	07/10/01	2:08 PM	28.68	76	-	-0.01	0	0	20.4	1.23	0	0	43.84
GM-42	07/10/01	6:31 PM	28.74	68	-	0.06	0	0	20.6	2.5	1.79	0	--
GM-42	07/12/01	8:37 AM	28.9	69	-	-0.01	0	0	20.2	0	0	0	--
GM-42	07/12/01	6:28 PM	28.88	74	-	0	0	0	20.6	2.25	0	0	--
GM-42	07/13/01	2:06 PM	28.89	83	-	0	0	0	21	0	0	0	--
GM-42	07/16/01	10:32 AM	28.77	75	-	0	0	0	20.2	0	0	0	--
GM-42	07/17/01	10:48 AM	28.76	75	-	0	0	0.1	19.9	4.77	1.12	0	--
GM-42	07/18/01	8:34 AM	28.76	69	-	0	0	0.1	19.9	2000	5.24	0	--
GM-42	07/19/01	2:05 PM	28.79	83	-	0	0	0	20.2	19.38	0	-0.73	--
GM-42	07/20/01	2:42 PM	28.75	83	T	0	0	0.1	20.1	53.21	7.02	-0.66	--
GM-42	07/24/01	10:02 AM	28.68	76	-	0.04	0	0.1	19.7	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-42	07/26/01	8:34 AM	29.06	64	-	0	0	0.1	19.7	0	0	0	--
GM-42	08/02/01	5:30 PM	28.92	80	-	0.06	0	0.2	19.7	2.5	1.04	0	--
GM-42	08/09/01	8:59 AM	28.54	83	-	0	0	0	19.8	0.56	0.41	0	--
GM-42	08/16/01	3:00 PM	28.55	71	-	0	0	0	20	150	8.5	6.5	--
GM-42	08/20/01	4:16 PM	28.81	78	-	0	0	0	20	21.61	8	-0.6	--
GM-43	08/12/98	2:40 PM	28.94	77	-	2.69	84.7	3.4	0.2	--	--	--	--
GM-43	08/14/98	8:40 AM	28.62	75.9	-	7.11	88.3	3.4	0	--	--	--	--
GM-43	08/15/98	9:05 AM	28.76	64.9	-	5.6	87.8	2	0	--	--	--	--
GM-43	08/16/98	9:10 AM	28.82	68	0.01	4.35	89.5	3.2	0	--	--	--	--
GM-43	08/17/98	7:48 AM	28.65	64.9	-	6.96	89.3	2.4	0	--	--	--	--
GM-43	08/18/98	7:45 AM	29.01	57	-	1.97	90.4	1.8	0	--	--	--	77.17
GM-43	08/19/98	8:02 AM	29.02	61	-	2.11	90.6	3.1	0	--	--	--	77.16
GM-43	08/21/98	5:28 PM	28.92	79	-	3.86	87.3	1.9	0	--	--	--	77.32
GM-43	08/23/98	1:58 PM	28.46	77	-	9.75	86.6	2.7	0	--	--	--	74.47
GM-43	08/24/98	2:05 PM	28.44	79	-	9.5	85.9	3.5	0	--	--	--	76.87
GM-43	08/25/98	3:05 PM	28.62	77	-	6.25	87.6	3.9	0	--	--	--	77.01
GM-43	08/26/98	8:29 AM	28.78	64.9	-	3.64	89.1	4.5	0	--	--	--	71.11
GM-43	08/27/98	2:20 PM	28.78	82	-	3.65	86.4	3.9	0	--	--	--	77.14
GM-43	08/28/98	5:17 PM	28.64	79	-	5.25	84.9	4.1	0	--	--	--	77.15
GM-43	08/29/98	3:07 PM	28.67	77	-	3.9	84.4	3.9	0	--	--	--	73.25
GM-43	08/31/98	8:40 AM	28.86	66	-	2.27	88.9	4.4	0	--	--	--	77.15
GM-43	09/09/98	8:20 AM	28.96	53.1	-	0.24	90	3.9	0	--	--	--	--
GM-43	09/10/98	--	--	--	--	--	--	--	--	--	--	--	--
GM-43	09/10/98	12:00 PM	28.74	80.1	-	3.22	85.6	4.1	0	--	--	--	--
GM-43	09/11/98	1:52 PM	28.57	97	-	5.31	83.5	4.1	0.1	--	--	--	--
GM-43	09/12/98	8:19 AM	28.76	64	-	2.87	87.9	4.5	0	--	--	--	--
GM-43	09/13/98	8:35 AM	28.69	68	-	3.41	87.6	4.5	0	--	--	--	--
GM-43	09/14/98	5:59 PM	28.59	66	-	5.05	86.8	4.5	0	--	--	--	--
GM-43	09/23/98	8:33 AM	28.94	54	-	-0.25	0	0	20.3	950	950	3	--
GM-43	09/24/98	3:00 PM	28.58	70	-	5.16	83.6	4.5	0	--	--	--	--
GM-43	09/25/98	1:15 PM	28.51	73	-	5.33	84.2	4.5	0	--	--	--	--
GM-43	09/28/98	8:28 AM	28.78	48.9	-	0.81	88	4.8	0	--	--	--	--
GM-43	09/30/98	10:47 AM	28.63	46	0.06	2.64	86.9	4.7	0	--	--	--	--
GM-43	10/05/98	4:11 PM	28.82	51.1	0.01	2.84	65.2	3.1	3.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-43	10/06/98	8:42 AM	28.55	62.1	0.04	6.03	77.3	4.2	0.5	--	--	--	--
GM-43	10/08/98	11:15 AM	29.05	50	-	-1.56	2.6	1.2	18.1	--	--	--	--
GM-43	10/09/98	8:59 AM	28.94	50	-	0.6	29.1	0.6	13.2	--	--	--	--
GM-43	10/10/98	1:10 PM	28.87	68	-	2.08	70.1	3.7	2.2	--	--	--	--
GM-43	10/13/98	5:09 PM	28.8	42.1	-	3.18	84.2	4.7	0	--	--	--	--
GM-43	10/19/98	3:03 PM	28.72	54	-	2.93	84.4	4.7	0	--	--	--	--
GM-43	10/22/98	5:12 PM	29.03	55	-	0	0	0	20.7	125	110	5	44.32
GM-43	10/23/98	8:10 AM	28.97	53.1	-	1.52	52.9	2.6	6.5	--	--	--	--
GM-43	10/25/98	9:36 AM	28.94	46	-	2.1	80.8	4.6	0.2	--	--	--	--
GM-43	11/02/98	2:37 PM	29.03	39	-	1.02	51.5	1.9	8	--	--	--	--
GM-43	11/06/98	8:37 AM	28.92	35.1	-	2.52	--	--	--	--	--	--	--
GM-43	11/06/98	12:11 PM	28.93	37.9	-	1.41	--	--	--	--	--	--	--
GM-43	11/06/98	4:10 PM	28.94	37	-	0.4	--	--	--	--	--	--	--
GM-43	11/07/98	8:38 AM	29.08	36	-	-0.74	0	0	20.7	--	--	--	--
GM-43	11/07/98	4:24 PM	29.05	37.9	-	-2.14	--	--	--	--	--	--	--
GM-43	11/18/98	8:18 AM	28.9	33.1	T	-0.16	0	0	20.1	130	130	15	77.14
GM-43	11/30/98	1:24 PM	28.38	39.9	-	6.25	87.5	4.8	0	--	--	--	--
GM-43	12/03/98	11:00 AM	28.4	54	-	5.56	86.5	4.9	0	--	--	--	--
GM-43	12/08/98	2:15 PM	28.72	41	-	1.9	72.7	3.9	2.2	--	--	--	--
GM-43	12/10/98	11:07 AM	29.03	30	-	-1.1	0	0	19.4	30	30	1	--
GM-43	12/10/98	11:26 AM	29.03	30	-	-0.89	0	0	20.3	20	20	1	80.38
GM-43	12/17/98	2:27 PM	28.7	25	-	0.62	87.5	5	0	--	--	--	84.45
GM-43	12/18/98	11:37 AM	28.33	32	0.02	3.88	89.5	4.4	1.1	--	--	--	84.45
GM-43	12/19/98	2:40 PM	28.97	21	T	-3.45	0	0	20	--	--	--	84.44
GM-43	12/20/98	3:08 PM	29	19	T	0.05	0	0	25	--	--	--	84.46
GM-43	12/21/98	8:35 AM	28.76	14	-	1.55	1.5	0.1	22	--	--	--	84.46
GM-43	12/22/98	8:22 AM	28.96	-10	-	-1.45	0	0	20	--	--	--	--
GM-43	12/30/98	12:20 PM	28.75	3	-	-0.05	0	0	17	--	--	--	84.52
GM-43	01/05/99	9:08 AM	28.8	-11	-	0	0	0	16.7	--	--	--	84.42
GM-43	01/07/99	9:07 AM	28.9	-9.9	-	-1.66	0	0	16.1	3	3	1.5	84.44
GM-43	01/11/99	1:58 PM	28.49	-2	0.01	3.39	76.4	4.6	1.9	--	--	--	84.44
GM-43	01/15/99	8:44 AM	28.65	-13	T	3.76	7.7	0.4	18.3	--	--	--	84.44
GM-43	01/19/99	8:07 AM	28.57	24.1	-	-2.33	0	0	20.4	--	--	--	84.44
GM-43	01/22/99	10:23 AM	28.68	27	-	0.9	0	0	20	100	100	1.5	84.45

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-43	01/28/99	2:48 PM	28.87	27	-	-0.87	0	0	19.3	<1	<1	<1	84.4
GM-43	01/29/99	9:04 AM	28.98	23	-	-0.79	0	0	19.4	2	2	1	84.44
GM-43	02/02/99	7:57 AM	28.26	32	0.02	7.4	37.1	2.4	11.2	--	--	--	84.23
GM-43	02/09/99	8:12 AM	28.47	33.1	-	0.99	68.3	4.3	3.2	--	--	--	84.4
GM-43	02/22/99	1:47 PM	29.1	24.1	-	0.64	0	0	21.5	12	12	1.75	84.41
GM-43	02/26/99	8:13 AM	28.8	26.1	-	1.61	51.2	3.2	7.5	--	--	--	84.31
GM-43	03/09/99	8:15 AM	28.9	23	T	3.3	0.1	0	19.9	--	--	--	82.22
GM-43	03/22/99	2:39 PM	28.75	37.9	-	1.03	8.5	0.3	18.6	--	--	--	84.32
GM-43	04/09/99	11:25 AM	28.64	50	-	1.3	79	4.8	1.5	--	--	--	84.09
GM-43	04/21/99	9:00 AM	28.62	42.1	-	1.58	62.6	3.7	2.6	--	--	--	--
GM-43	05/01/99	9:03 AM	29.03	70	-	0.79	6.6	0.1	18.7	--	--	--	--
GM-43	05/16/99	10:38 AM	28.67	66.9	-	3.33	40.7	2.3	8.8	--	--	--	83.38
GM-43	07/14/99	2:00 PM	28.58	75	-	2	90.8	5.2	0	--	--	--	82.98
GM-43	07/16/99	4:05 PM	28.68	73	0.11	1.51	92.4	5.2	0	--	--	--	83.1
GM-43	07/19/99	2:45 PM	28.84	77	-	0.55	93	5.1	0	--	--	--	83.2
GM-43	07/20/99	1:33 PM	28.86	73.9	-	0.72	92.9	5	0	--	--	--	82.86
GM-43	07/23/99	3:30 PM	28.59	87.1	-	4.25	94.8	5.2	0	--	--	--	82.79
GM-43	07/28/99	8:18 AM	28.56	75.9	-	3.95	99.4	5.1	0	--	--	--	82.91
GM-43	08/02/99	3:30 PM	28.93	75	-	-1.57	0	0	21.4	--	--	--	88.85
GM-43	08/03/99	5:22 PM	28.75	72	-	1.42	0	0	21.1	--	--	--	76.21
GM-43	08/04/99	2:01 PM	28.65	66	0.04	1.4	0	0	20.9	--	--	--	76.29
GM-43	08/05/99	5:26 PM	28.61	75	-	0.66	0	0	20.6	--	--	--	76.17
GM-43	08/06/99	6:24 PM	28.74	72	-	-2.12	0	0	20.5	--	--	--	76.04
GM-43	08/07/99	10:33 AM	28.56	72	-	-0.71	0	0	20.1	--	--	--	76
GM-43	08/08/99	8:52 AM	28.83	62.1	-	-4.8	0	0	20.6	--	--	--	76
GM-43	08/09/99	12:57 PM	28.62	64.9	T	-3.6	0	0	20.7	--	--	--	75.97
GM-43	08/10/99	8:46 AM	28.44	64	-	-0.73	0	0	20.7	--	--	--	75.92
GM-43	08/11/99	9:00 AM	28.64	69.1	-	-4.25	0	0	20.6	--	--	--	76
GM-43	08/16/99	4:25 PM	28.61	82.9	-	-4.89	0	0	20.2	3.5	3.5	4	75.93
GM-43	08/20/99	11:18 AM	28.9	73	-	-10.04	0	0	20.2	2.5	2.5	2	75.95
GM-43	08/23/99	5:13 PM	28.61	70	-	-6.36	0	0	20.5	1.5	1.5	1.5	76.91
GM-43	08/30/99	2:52 PM	29.01	68	-	-12.72	0	0	20.3	2.5	2.5	2.5	77.01
GM-43	09/02/99	3:40 PM	28.78	82.9	-	-8.88	0	0	20.3	2.5	2.5	2.5	77.05
GM-43	09/14/99	3:40 PM	28.66	55.9	-	1.35	81.1	0.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-43	09/20/99	2:16 PM	28.89	50	0.02	0.83	90.2	1.3	0	--	--	--	--
GM-43	10/06/99	2:25 PM	29.01	45	-	0.89	84.6	2.1	0	--	--	--	76.99
GM-43	10/26/99	1:06 PM	28.83	39.9	-	2.27	102	3.4	0	--	--	--	76.7
GM-43	11/01/99	3:08 PM	28.42	62.1	-	5.75	90.3	3.1	0	--	--	--	75.4
GM-43	11/05/99	2:43 PM	28.78	51.1	-	2.24	89.4	1.9	0	--	--	--	76.8
GM-43	12/09/99	1:52 PM	28.74	35	-	3.06	94	2.4	0	--	--	--	--
GM-43	01/21/00	11:38 AM	28.81	3	-	2.51	86.5	0.3	0	--	--	--	75.5
GM-43	03/17/00	2:04 PM	29.16	28.9	-	0.23	88	2	0.4	--	--	--	77
GM-43	04/01/00	9:45 AM	28.75	44	-	2.74	92.8	2.1	0	--	--	--	75.9
GM-43	07/17/00	3:50 PM	28.69	69	-	5.86	79.4	0.4	0	--	--	--	--
GM-43	07/23/00	9:16 AM	28.98	63	-	1.1	85.6	1.1	0	--	--	--	--
GM-43	07/25/00	9:41 AM	28.77	75	-	3.52	84	1	0	--	--	--	--
GM-43	07/31/00	3:52 PM	28.67	81	-	6.64	87.5	0.3	0	--	--	--	--
GM-43	08/06/00	10:10 AM	28.38	68	-	2.95	82.8	0.2	0	--	--	--	--
GM-43	08/09/00	9:28 AM	28.65	65	-	-2.27	0	0	21.5	--	--	5	--
GM-43	08/09/00	10:01 AM	28.67	65	-	--	28	13.7	0	--	--	--	76.51
GM-43	08/19/00	3:00 PM	29.02	68	-	-12.88	0	0	20.9	300	7	8	76.8
GM-43	08/29/00	2:53 PM	28.79	75	-	-9.91	0	0	20.4	--	--	--	76.88
GM-43	09/10/00	11:43 AM	28.6	74	-	3.37	80	0	10.7	--	--	--	75.12
GM-43	09/23/00	2:15 PM	28.68	55	-	-26	97.6	4.2	0	--	--	--	--
GM-43	09/25/00	3:40 PM	28.78	60	-	-26	93.8	4.9	0	--	--	--	75.78
GM-43	10/02/00	4:12 PM	28.48	54	-	26	93.2	4.8	0	--	--	--	--
GM-43	10/06/00	11:28 AM	28.85	40	-	28	64.9	3.5	3.5	--	--	--	--
GM-43	10/09/00	2:25 PM	29	59	-	-27	90.4	4.6	0	--	--	--	--
GM-43	10/13/00	8:39 AM	28.7	57	-	-26	--	--	--	--	--	--	--
GM-43	10/16/00	3:13 PM	28.89	51	-	-27	85.3	4.6	0	--	--	--	--
GM-43	10/23/00	3:22 PM	29.04	59	-	-27	86.2	4.2	0	--	--	--	--
GM-43	10/31/00	9:07 AM	28.92	51	-	-27	90	4.2	0	--	--	--	--
GM-43	11/14/00	9:17 AM	28.42	31	T	-26	92.5	3.8	0	--	--	--	--
GM-43	12/05/00	11:03 AM	28.89	9	-	-25	88.3	3.5	0.3	--	--	--	--
GM-43	02/24/01	11:45 AM	28.78	24	T	-25	--	--	--	--	--	--	--
GM-43	03/22/01	11:20 AM	28.84	45	-	-29	63.3	4.9	0	--	--	--	--
GM-43	04/09/01	9:09 AM	28.75	39	-	-25	81.5	6.7	0.6	--	--	--	--
GM-43	04/09/01	2:40 PM	28.76	42	-	--	--	--	--	--	--	--	76.7

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-43	05/01/01	2:02 PM	28.57	71	-	-13	60.4	5.3	0	--	--	--	76.43
GM-43	05/29/01	1:08 PM	28.91	63	-	-32	60.9	5.9	0.4	--	--	--	77.55
GM-43	07/20/01	9:00 AM	28.82	74	-	-32	43.7	4.6	4.7	--	--	--	75.45
GM-43	08/17/01	9:43 AM	28.74	70	-	--	--	--	--	--	--	--	--
GM-43	08/17/01	10:56 AM	28.74	73	-	-31	0	0	20.4	--	--	3	74.6
GM-43	08/17/01	11:05 AM	28.74	73	-	--	52.9	6.2	1.6	--	--	--	--
GM-43	08/17/01	1:35 PM	28.73	73	-	-30	50.5	6.5	1.9	--	--	--	74.5
GM-43	08/17/01	2:12 PM	28.73	73	-	-30	50.6	6.4	1.8	--	--	--	74.5
GM-43	08/17/01	2:51 PM	28.72	77	-	-30	50.4	6.4	1.9	--	--	--	74.4
GM-43	08/17/01	3:55 PM	28.72	76	-	-34	50.8	6.4	1.9	--	--	--	74.5
GM-43	08/18/01	9:09 AM	28.7	69	-	-30	53.1	6.5	1.9	--	--	--	74.3
GM-43	08/19/01	7:51 AM	28.77	65	-	-34	56	6	1.6	--	--	--	72.4
GM-43	08/20/01	8:05 AM	28.87	63	-	-34	51.4	6.5	1.8	--	--	--	77.1
GM-43	09/09/01	8:37 AM	28.71	59	-	-32	48.1	6.7	2.7	--	--	--	--
GM-43	10/06/01	3:05 PM	28.85	38	-	-32	59.3	6.4	1.1	--	--	--	74
GM-43	11/07/01	4:31 PM	28.87	43	T	-75	50.4	6.4	1.9	--	--	--	74.3
GM-43	12/18/01	3:15 PM	28.48	40	-	-76	0	0	20.1	--	--	--	73.97
GM-43	01/10/02	2:55 PM	28.55	36	T	-50	0	4.1	15	--	--	--	69.15
GM-43	01/28/02	2:15 PM	28.75	26	-	-83	28.2	3.6	11	--	--	--	72.2
GM-43	03/22/02	1:59 PM	28.73	25	-	-68	3.8	2.1	14	--	--	--	70.96
GM-43	04/12/02	11:30 AM	28.87	50	-	--	3	2.6	15.4	--	--	--	--
GM-43	04/29/02	10:40 AM	28.6	38	T	-88	0	2.7	17.1	180	158	0	73.17
GM-43	05/29/02	9:06 AM	28.65	71	-	-3.45	0	0	20.8	4.24	3.23	0	72.01
GM-43	06/06/02	9:15 AM	28.85	64	-	-5	0	0	20.9	3.28	2.03	0	71.66
GM-43	07/10/02	6:22 PM	29.05	71	-	--	--	--	--	--	--	--	--
GM-43	07/10/02	6:35 PM	29.06	70	-	-71	15.4	4.6	13.2	--	--	--	--
GM-43	10/15/03	2:43 PM	28.64	45	-	-95.1	1.2	0.4	18.6	--	--	--	75.41
GM-43	11/19/03	11:02 AM	28.33	41	-	-99	5.4	4.8	11.4	--	--	--	--
GM-43	06/18/04	8:36 PM	28.99	52	-	-0.08	--	--	--	--	--	--	--
GM-43	06/22/04	6:00 AM	28.57	50	-	0	--	--	--	--	--	--	--
GM-43	06/22/04	6:55 AM	28.59	53	-	0	--	--	--	--	--	--	--
GM-43	06/22/04	10:10 AM	28.6	61	-	--	0	0	20.1	--	--	--	--
GM-43	06/27/04	2:46 PM	28.84	64	-	-11.2	--	--	--	--	--	--	--
GM-43	07/07/04	6:07 PM	28.57	55	-	-6.8	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-43	07/19/04	1:47 PM	28.55	83	-	-0.909	--	--	--	--	--	--	--
GM-43	08/21/04	10:08 AM	28.81	60	-	-0.3	--	--	--	--	--	--	--
GM-43	08/21/04	10:59 AM	28.81	62	-	-0.6	--	--	--	--	--	--	--
GM-43	08/21/04	11:28 AM	28.81	62	-	-0.5	--	--	--	--	--	--	--
GM-43	08/21/04	12:34 PM	28.79	66	-	-0.9	--	--	--	--	--	--	--
GM-43	08/21/04	1:07 PM	28.79	66	-	-0.2	--	--	--	--	--	--	--
GM-43	08/21/04	1:42 PM	28.77	67	-	-0.8	--	--	--	--	--	--	--
GM-43	08/21/04	2:16 PM	28.77	67	-	-0.8	--	--	--	--	--	--	--
GM-43	08/21/04	2:44 PM	28.76	69	-	-0.7	--	--	--	--	--	--	--
GM-43	08/21/04	3:32 PM	28.75	69	-	-1.2	--	--	--	--	--	--	--
GM-43	08/21/04	4:23 PM	28.75	69	-	-1.4	--	--	--	--	--	--	--
GM-43	08/21/04	5:02 PM	28.74	67	-	-1.8	--	--	--	--	--	--	--
GM-43	08/21/04	5:42 PM	28.73	64	-	-2.2	--	--	--	--	--	--	--
GM-43	08/21/04	6:09 PM	28.73	64	-	-2.1	--	--	--	--	--	--	--
GM-43	08/21/04	6:42 PM	28.72	56	-	-2.1	--	--	--	--	--	--	--
GM-43	08/22/04	7:39 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-43	08/22/04	8:10 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-43	08/22/04	8:39 AM	28.53	57	T	-0.2	--	--	--	--	--	--	--
GM-43	08/22/04	9:10 AM	28.53	57	T	-0.2	--	--	--	--	--	--	--
GM-43	08/22/04	9:43 AM	28.51	65	-	-0.6	--	--	--	--	--	--	--
GM-43	08/22/04	10:08 AM	28.51	65	-	-0.8	--	--	--	--	--	--	--
GM-43	08/22/04	10:45 AM	28.5	74	-	-0.6	--	--	--	--	--	--	--
GM-43	08/22/04	11:07 AM	28.5	74	-	-0.8	--	--	--	--	--	--	--
GM-43	08/22/04	11:43 AM	28.48	75	-	-0.7	--	--	--	--	--	--	--
GM-43	08/22/04	12:33 PM	28.48	76	-	-0.9	--	--	--	--	--	--	--
GM-43	08/22/04	1:10 PM	28.48	76	-	-0.9	--	--	--	--	--	--	--
GM-43	08/22/04	1:40 PM	28.48	78	-	-1.2	--	--	--	--	--	--	--
GM-43	08/22/04	2:38 PM	28.48	79	-	-1.7	--	--	--	--	--	--	--
GM-43	08/22/04	3:13 PM	28.48	79	-	-1.5	--	--	--	--	--	--	--
GM-43	09/27/04	3:10 PM	28.83	59	0.07	0.1	--	--	--	--	--	--	--
GM-43	09/28/04	8:59 AM	29.09	50	-	-1.7	--	--	--	--	--	--	--
GM-43	09/28/04	9:41 AM	29.11	52	-	-0.7	--	--	--	--	--	--	--
GM-43	09/28/04	10:07 AM	29.11	52	-	-1.2	--	--	--	--	--	--	--
GM-43	09/28/04	10:40 AM	29.09	54	-	-0.9	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-43	09/28/04	11:15 AM	29.09	54	-	-1.1	--	--	--	--	--	--	--
GM-43	09/28/04	11:41 AM	29.07	57	-	-0.9	--	--	--	--	--	--	--
GM-43	09/28/04	12:11 PM	29.07	57	-	-0.9	--	--	--	--	--	--	--
GM-43	09/28/04	12:37 PM	29.05	60	-	-0.7	--	--	--	--	--	--	--
GM-43	09/29/04	2:02 PM	28.88	67	-	-1	--	--	--	--	--	--	--
GM-43A	10/29/07	10:06 AM	30.21	50	-	-19.7	16.4	0.9	16.3	--	--	--	--
GM-44	08/12/98	2:45 PM	28.94	77	-	2.63	82.4	4.3	0.3	--	--	--	--
GM-44	08/14/98	8:55 AM	28.62	75.9	-	6.97	86.4	4.9	0	--	--	--	--
GM-44	08/15/98	9:15 AM	28.76	64.9	-	5.35	85.9	4.8	0	--	--	--	--
GM-44	08/16/98	9:19 AM	28.82	68	0.01	4.17	87.4	5	0	--	--	--	--
GM-44	08/17/98	8:00 AM	28.65	64.9	-	6.48	86.9	5	0	--	--	--	--
GM-44	08/18/98	8:06 AM	29.01	57	-	1.75	87.8	5	0	--	--	--	80.14
GM-44	08/19/98	8:09 AM	29.02	61	-	2.05	87.2	5	0	--	--	--	80.13
GM-44	08/21/98	5:38 PM	28.93	75	-	3.75	84.5	4.6	0.1	--	--	--	80.15
GM-44	08/23/98	2:05 PM	28.46	77	-	9.5	83.7	4.6	0.1	--	--	--	79.47
GM-44	08/24/98	2:10 PM	28.44	79	-	9.17	84.4	4.7	0	--	--	--	79.54
GM-44	08/25/98	3:12 PM	28.62	77	-	5.55	86.4	4.9	0	--	--	--	79.8
GM-44	08/26/98	8:31 AM	28.79	72	-	3.48	87.4	5.1	0	--	--	--	80.02
GM-44	08/27/98	2:27 PM	28.78	82	-	3.57	85.3	4.7	0	--	--	--	79.98
GM-44	08/28/98	5:25 PM	28.64	79	-	5.02	81.9	4.6	0.5	--	--	--	79.87
GM-44	08/29/98	3:15 PM	28.67	77	-	3.14	81.8	4.5	0.4	--	--	--	80.15
GM-44	08/31/98	8:47 AM	28.86	66	-	2.16	80.7	4.7	1	--	--	--	80.1
GM-44	09/09/98	8:30 AM	28.96	60.1	-	0.28	86.8	4.9	0	--	--	--	80.27
GM-44	09/10/98	--	--	--	--	--	--	--	--	--	--	--	79.99
GM-44	09/10/98	12:10 PM	28.74	80.1	-	3.19	82.2	4.6	0.3	--	--	--	80.03
GM-44	09/11/98	1:57 PM	28.57	97	-	5.19	82.3	4.5	0.2	--	--	--	79.85
GM-44	09/12/98	8:25 AM	28.76	64	-	2.65	85.9	4.9	0	--	--	--	80.06
GM-44	09/13/98	8:41 AM	28.69	68	-	3.29	86.2	4.9	0	--	--	--	80.03
GM-44	09/14/98	6:15 PM	28.59	66	-	4.78	85.3	4.9	0	--	--	--	80.09
GM-44	09/23/98	8:42 AM	28.94	54	-	-0.04	0	0	20.3	650	650	3	80.29
GM-44	09/24/98	2:50 PM	28.58	70	-	5.17	81.1	4.7	0	--	--	--	79.85
GM-44	09/25/98	1:20 PM	28.51	73	-	5.36	80.8	4.7	0.2	--	--	--	79.82
GM-44	09/28/98	8:34 AM	28.78	55.9	-	0.8	82.6	5	0.2	--	--	--	80.23
GM-44	09/30/98	10:50 AM	28.63	46	0.06	2.55	83.2	5	0	--	--	--	80.08

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-44	10/05/98	4:17 PM	28.82	51.1	0.01	2.88	78.4	4.6	0.8	--	--	--	79.99
GM-44	10/06/98	8:47 AM	28.55	62.1	0.04	5.9	81.8	4.9	0	--	--	--	80.04
GM-44	10/08/98	11:35 AM	29.04	50	-	-1.34	0	0	20.4	250	250	3	80.1
GM-44	10/09/98	9:05 AM	28.94	50	-	0.88	72.8	4	1.9	--	--	--	80.11
GM-44	10/10/98	1:15 PM	28.87	68	-	2.12	78.6	4.5	0.8	--	--	--	80.02
GM-44	10/13/98	5:13 PM	28.8	42.1	-	3.07	82	5.1	0	--	--	--	79.93
GM-44	10/19/98	3:17 PM	28.72	54	-	2.75	81.9	5	0.1	--	--	--	79.99
GM-44	10/23/98	8:18 AM	28.97	53.1	-	1.6	73	4.3	1.9	--	--	--	80.08
GM-44	10/25/98	9:45 AM	28.94	46	-	2.09	82.6	5.2	0	--	--	--	80.05
GM-44	11/02/98	2:44 PM	29.03	39	-	1.19	87.1	5.3	0	--	--	--	80.15
GM-44	11/06/98	8:38 AM	28.92	35.1	-	2.57	--	--	--	--	--	--	--
GM-44	11/06/98	12:13 PM	28.93	37.9	-	1.76	--	--	--	--	--	--	--
GM-44	11/06/98	4:11 PM	28.94	37	-	0.62	--	--	--	--	--	--	--
GM-44	11/07/98	8:09 AM	29.08	34	-	-0.68	--	--	--	--	--	--	--
GM-44	11/07/98	11:49 AM	29.07	41	-	-1.79	--	--	--	--	--	--	--
GM-44	11/07/98	4:21 PM	29.05	37.9	-	-2.5	--	--	--	--	--	--	--
GM-44	11/18/98	8:56 AM	28.89	33.1	-	0.41	88.3	5.6	0	--	--	--	80.24
GM-44	11/30/98	1:30 PM	28.41	39	-	6.2	87.2	5.6	0	--	--	--	54.18
GM-44	12/03/98	11:06 AM	28.4	54	-	5.58	85.9	5.4	0	--	--	--	79.82
GM-44	12/08/98	2:31 PM	28.74	41	-	1.94	83.3	5.4	0.2	--	--	--	80.15
GM-44	12/17/98	2:44 PM	28.71	26	-	0.62	86.7	5.7	0	--	--	--	80.26
GM-44	12/18/98	11:47 AM	28.33	32	0.02	4	88.6	6.1	0	--	--	--	79.95
GM-44	12/19/98	2:54 PM	28.97	21	T	-3.52	0	0	19.4	10	10	4	80.55
GM-44	12/20/98	3:18 PM	29	19	T	0.14	0	0	17.4	--	--	--	80.27
GM-44	12/21/98	8:58 AM	28.76	14	-	2.04	62.6	3.4	6	--	--	--	80.13
GM-44	12/22/98	8:35 AM	28.99	-9	-	-1.35	0	0	18.5	--	--	--	80.39
GM-44	12/30/98	11:35 AM	28.75	3	-	-0.24	0	0	16.7	70	50	1.25	80.25
GM-44	01/05/99	8:13 AM	28.8	-18.9	-	0.04	0	0	17.3	40	40	2	80.21
GM-44	01/07/99	8:26 AM	28.89	-11.9	-	-1.57	0	0	16.4	25	25	1.5	80.33
GM-44	01/11/99	2:23 PM	28.49	-2	0.01	3.72	88.4	6.1	0	--	--	--	79.88
GM-44	01/15/99	8:56 AM	28.65	-13	T	4.24	73.3	4.9	2.7	--	--	--	79.8
GM-44	01/19/99	7:44 AM	28.57	24.1	-	-2.33	0	0	20	--	--	--	80.32
GM-44	01/22/99	9:57 AM	28.68	27	-	1.43	62.7	4	5	--	--	--	80
GM-44	01/28/99	2:59 PM	28.87	27	-	-0.86	0	0	19	80	80	<1	80.16

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-44	01/29/99	9:15 AM	28.98	23	-	-0.74	0	0	19.1	2.75	2.75	1	80.15
GM-44	02/02/99	8:10 AM	28.26	32	0.02	7.78	80.3	5.6	0.9	--	--	--	79.42
GM-44	02/09/99	8:26 AM	28.47	33.1	-	0.94	84.1	5.9	0.1	--	--	--	79.98
GM-44	02/22/99	1:57 PM	29.1	24.1	-	0.94	54.9	3.1	6.7	--	--	--	79.99
GM-44	02/26/99	8:26 AM	28.8	26.1	-	1.82	84	5.9	0	--	--	--	79.92
GM-44	03/09/99	8:28 AM	28.9	23	T	3.65	67	4.6	3.6	--	--	--	79.8
GM-44	03/22/99	2:48 PM	28.75	37.9	-	1.43	80	5.7	1.9	--	--	--	79.85
GM-44	04/09/99	12:53 PM	28.66	50	-	1.3	89.3	6.3	0	--	--	--	79.83
GM-44	04/21/99	8:49 AM	28.62	42.1	-	1.66	85.1	6	0	--	--	--	--
GM-44	05/01/99	9:13 AM	29.03	70	-	1.18	79.8	5.7	0	--	--	--	--
GM-44	05/16/99	11:00 AM	28.67	66.9	-	3.6	84.3	6	0	--	--	--	79.11
GM-44	07/14/99	2:10 PM	28.58	75	-	4.01	89.3	6.3	0	--	--	--	78.67
GM-44	07/16/99	4:20 PM	28.68	73	0.11	3.44	90.2	6.2	0	--	--	--	72.82
GM-44	07/19/99	2:55 PM	28.84	77	-	2.31	94	6.3	0	--	--	--	78.55
GM-44	07/20/99	1:44 PM	28.86	73.9	-	2.28	93.9	6.4	0	--	--	--	78.54
GM-44	07/23/99	3:43 PM	28.59	87.1	-	3.77	94	6.3	0	--	--	--	78.38
GM-44	07/28/99	8:28 AM	28.56	75.9	-	3.61	88.3	6.1	0	--	--	--	78.26
GM-44	08/02/99	4:31 PM	28.93	73.9	-	-1.38	0	0	21.4	--	--	--	78.24
GM-44	08/03/99	5:33 PM	28.74	70	-	1.7	73.9	4.4	3.8	--	--	--	78.37
GM-44	08/04/99	2:10 PM	28.65	66	0.04	1.81	81.9	4.4	0.8	--	--	--	78.51
GM-44	08/05/99	5:34 PM	28.6	72	-	1.02	63.9	3.7	4.9	--	--	--	78.41
GM-44	08/06/99	6:55 PM	28.74	64.9	-	-2.04	0	0	21.1	--	--	--	78.44
GM-44	08/07/99	10:42 AM	28.56	72	-	-0.62	0	0	19.9	--	--	--	78.39
GM-44	08/08/99	9:06 AM	28.83	62.1	-	-4.76	0	0	20.6	--	--	--	78.3
GM-44	08/09/99	1:05 PM	28.62	64.9	T	-3.5	0	0	20.6	--	--	--	78.22
GM-44	08/10/99	8:55 AM	28.44	64	-	-0.66	0	0	20.6	--	--	--	78.22
GM-44	08/11/99	9:11 AM	28.64	69.1	-	-4.22	0	0	20.6	--	--	--	78.17
GM-44	08/16/99	4:36 PM	28.61	82.9	-	-5.1	0	0	20.3	4	4	4	78.12
GM-44	08/20/99	11:28 AM	28.9	73	-	-9.96	0	0	20.4	2.5	2.5	2	78.15
GM-44	08/23/99	5:21 PM	28.61	70	-	-6.29	0	0	20.6	1.5	1.5	1.5	77.76
GM-44	08/30/99	3:01 PM	29.01	68	-	-12.61	0	0	20.5	2.5	2.5	2.5	77.81
GM-44	09/02/99	3:47 PM	28.78	82.9	-	-8.79	0	0	20.5	2.5	2.5	2.5	77.84
GM-44	09/14/99	3:58 PM	28.66	55.9	-	1.33	81.7	4.1	0	--	--	--	--
GM-44	09/20/99	2:24 PM	28.89	50	0.02	0.83	86.6	5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-44	10/06/99	2:35 PM	29.02	46.9	-	0.9	81.5	4.5	0	--	--	--	77.91
GM-44	10/26/99	1:13 PM	28.83	39.9	-	2.18	95.5	5.9	0	--	--	--	78.2
GM-44	11/01/99	3:13 PM	28.42	62.1	-	5.53	89.8	1.7	0	--	--	--	78.32
GM-44	11/05/99	2:50 PM	28.78	51.1	-	2.17	89.2	3.9	0	--	--	--	78.42
GM-44	12/09/99	1:56 PM	28.74	35	-	4.88	97.8	4.4	0	--	--	--	--
GM-44	01/21/00	11:52 AM	28.81	3	-	3.94	97	5.7	0.7	--	--	--	79.3
GM-44	03/17/00	2:17 PM	29.16	28.9	-	0.41	84.6	2.3	1.1	--	--	--	78.91
GM-44	04/01/00	9:51 AM	28.75	44	-	2.68	91.8	1.6	0	--	--	--	78.95
GM-44	07/17/00	3:54 PM	28.69	69	-	5.78	84.2	4	0	--	--	--	--
GM-44	07/23/00	9:19 AM	28.98	63	-	1.1	93.2	3.9	0	--	--	--	--
GM-44	07/25/00	9:44 AM	28.77	75	-	4.24	83.3	4	0	--	--	--	--
GM-44	07/31/00	3:56 PM	28.67	81	-	6.64	93.1	3.8	0	--	--	--	--
GM-44	08/06/00	10:15 AM	28.38	68	-	4.6	82.9	4.2	0	--	--	--	--
GM-44	08/09/00	10:05 AM	28.67	65	-	-2.43	4.2	0.1	20.6	--	--	--	79.28
GM-44	08/19/00	3:37 PM	29.02	67	-	-12.17	0	0	20.7	30	8	9	79.11
GM-44	08/29/00	3:45 PM	28.79	75	-	-8.88	0	0	20.6	6.5	6.5	6.5	79.84
GM-44	09/10/00	11:50 AM	28.6	74	-	3.58	83.5	4.7	0	--	--	--	78.91
GM-44	09/25/00	3:29 PM	28.79	60	-	-8.07	0	0	21.1	--	--	--	79.2
GM-44	09/25/00	5:00 PM	28.77	58	-	-26	57.8	3.6	5	--	--	--	--
GM-44	09/25/00	5:45 PM	28.76	49	-	-27	89.3	5.6	0	--	--	--	--
GM-44	09/26/00	8:45 AM	28.67	59	-	--	--	--	--	--	--	--	--
GM-44	10/02/00	3:55 PM	28.48	54	-	-12.19	0	0	20.5	--	--	--	79.96
GM-44	10/06/00	11:40 AM	28.85	40	-	27	56.1	4.7	4.5	--	--	--	--
GM-44	10/09/00	2:40 PM	28.99	59	-	-28	82.8	5.9	0.6	--	--	--	--
GM-44	10/13/00	8:42 AM	28.7	57	-	-26	--	--	--	--	--	--	--
GM-44	10/16/00	3:25 PM	28.89	51	-	-27	74.3	6.2	1.1	--	--	--	--
GM-44	10/23/00	12:36 PM	29.06	58	-	-28	74	6.1	1.2	--	--	--	--
GM-44	11/14/00	9:31 AM	28.43	31	-	-26	87.7	3.7	0.4	--	--	--	--
GM-44	12/05/00	1:25 PM	28.89	11	-	-27	81.8	5.3	1.6	--	--	--	--
GM-44	02/24/01	11:53 AM	28.78	24	T	-24	--	--	--	--	--	--	80.28
GM-44	03/22/01	12:00 PM	28.82	47	-	-29	86.7	5.3	0.4	--	--	--	--
GM-44	04/09/01	9:26 AM	28.75	39	-	-24	104.6	6.3	2.3	--	--	--	--
GM-44	04/09/01	2:48 PM	28.76	42	-	--	--	--	--	--	--	--	79.92
GM-44	05/01/01	2:12 PM	28.57	71	-	-20	91.9	0.1	1.1	--	--	--	78.85

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-44	05/29/01	12:57 PM	28.91	63	-	-30	104	5.3	0.7	--	--	--	79.62
GM-44	07/20/01	8:45 AM	28.82	74	-	-32	70.4	1.6	0	--	--	--	80.2
GM-44	08/17/01	9:45 AM	28.74	70	-	--	--	--	--	--	--	--	--
GM-44	08/17/01	11:20 AM	28.74	73	-	-34	99.8	4.8	0.7	--	--	--	79.8
GM-44	08/17/01	1:46 PM	28.73	73	-	-30	95.7	4.7	0.8	--	--	--	79.8
GM-44	08/17/01	2:28 PM	28.73	73	-	-32	95.7	4.7	0.7	--	--	--	79.8
GM-44	08/17/01	3:08 PM	28.72	77	-	-33	95.3	4.7	0.8	--	--	--	79.8
GM-44	08/17/01	4:05 PM	28.72	76	-	-31	92.4	4.6	1.5	--	--	--	79.7
GM-44	08/18/01	9:20 AM	28.7	69	-	-30	109.4	4.8	0.9	--	--	--	79.7
GM-44	08/19/01	8:03 AM	28.77	65	-	-30	111.5	4.8	0.7	--	--	--	79.7
GM-44	08/20/01	8:16 AM	28.87	63	-	-33	96.8	5	0.6	--	--	--	79.8
GM-44	09/09/01	8:48 AM	28.71	59	-	-32	103.8	5.5	0.2	--	--	--	80.14
GM-44	10/06/01	3:15 PM	28.85	38	-	-32	54.1	2.9	7.3	--	--	--	80
GM-44	11/07/01	4:09 PM	28.88	44	T	-70	89.1	5.1	0	--	--	--	81.57
GM-44	12/18/01	3:33 PM	28.46	37	-	-74	0	0	20.2	--	--	--	79.55
GM-44	01/10/02	3:10 PM	28.55	36	T	-72	34.4	4.5	7.3	--	--	--	76.15
GM-44	01/28/02	2:10 PM	28.75	26	-	-83	38.2	4.9	6.5	--	--	--	76.4
GM-44	03/22/02	2:13 PM	28.73	25	-	-90	0	0	21.2	--	--	--	77.56
GM-44	04/12/02	11:15 AM	28.86	47	-	--	37.7	4.6	6.3	--	--	--	--
GM-44	04/29/02	11:08 AM	28.6	38	T	-92	3	2	16.7	--	--	--	76.95
GM-44	05/29/02	9:24 AM	28.65	71	-	-3.55	0	1.4	19	9.12	9	0	77.66
GM-44	06/06/02	9:34 AM	28.84	68	-	-5	0	2.3	17.6	12.77	12.51	0	77.78
GM-44	07/10/02	6:13 PM	29.05	71	-	--	--	--	--	--	--	--	--
GM-44	07/10/02	6:18 PM	29.05	71	-	-71	74.2	5.8	1.4	--	--	--	--
GM-44	10/15/03	2:13 PM	28.61	48	-	-92.6	12.6	1	16.2	--	--	--	76.97
GM-44	11/19/03	11:45 AM	28.34	43	-	-113	40.3	5.5	5.8	--	--	--	--
GM-44	05/06/04	10:53 AM	28.67	64	-	-90.5	--	--	--	--	--	--	76.48
GM-44	06/18/04	8:37 PM	28.99	52	-	-0.087	--	--	--	--	--	--	--
GM-44	06/22/04	6:10 AM	28.57	50	-	0	--	--	--	--	--	--	--
GM-44	06/22/04	8:15 AM	28.59	57	-	-105	--	--	--	--	--	--	--
GM-44	06/22/04	10:26 AM	28.6	61	-	--	0	0	20.9	--	--	--	--
GM-44	06/27/04	2:52 PM	28.84	64	-	-115.7	--	--	--	--	--	--	--
GM-44	07/07/04	5:55 PM	28.57	55	-	-46.6	--	--	--	--	--	--	--
GM-44	07/19/04	1:52 PM	28.55	83	-	-85.9	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-44	08/21/04	10:03 AM	28.81	60	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	10:54 AM	28.81	62	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	11:24 AM	28.81	62	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	12:31 PM	28.79	66	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	1:04 PM	28.79	66	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	1:39 PM	28.77	67	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	2:12 PM	28.77	67	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	2:40 PM	28.76	69	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	3:28 PM	28.76	69	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	4:58 PM	28.74	67	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	5:39 PM	28.73	64	-	-0.7	--	--	--	--	--	--	--
GM-44	08/21/04	6:05 PM	28.73	64	-	0	--	--	--	--	--	--	--
GM-44	08/21/04	6:38 PM	28.72	56	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	7:33 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-44	08/22/04	8:07 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-44	08/22/04	8:36 AM	28.53	57	T	0	--	--	--	--	--	--	--
GM-44	08/22/04	9:07 AM	28.53	57	T	0	--	--	--	--	--	--	--
GM-44	08/22/04	9:40 AM	28.51	65	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	10:05 AM	28.51	65	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	10:06 AM	28.51	65	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	10:43 AM	28.5	74	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	11:40 AM	28.48	75	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	12:30 PM	28.48	76	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	1:05 PM	28.48	76	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	1:37 PM	28.48	78	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	2:34 PM	28.48	79	-	0	--	--	--	--	--	--	--
GM-44	08/22/04	3:10 PM	28.48	79	-	0	--	--	--	--	--	--	--
GM-44	09/27/04	3:16 PM	28.83	59	0.07	0	--	--	--	--	--	--	--
GM-44	09/29/04	1:50 PM	28.88	67	-	-55.7	--	--	--	--	--	--	--
GM-44A	10/29/07	9:54 AM	30.21	50	-	-41.5	1.1	3.8	13.6	--	--	--	--
GM-45	08/12/98	2:50 PM	28.94	77	-	2.72	83.8	4.9	0.2	--	--	--	--
GM-45	08/14/98	9:07 AM	28.62	75.9	-	7.23	87.6	4.6	0	--	--	--	--
GM-45	08/15/98	9:26 AM	28.76	64.9	-	5.59	87.3	3.8	0	--	--	--	--
GM-45	08/16/98	9:39 AM	28.81	71.1	-	4.53	88.4	3.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-45	08/17/98	8:17 AM	28.65	64.9	-	6.74	88.2	4.1	0	--	--	--	--
GM-45	08/18/98	8:20 AM	29.01	57	-	2	89.4	2.5	0	--	--	--	83.53
GM-45	08/19/98	8:21 AM	29.02	61	-	2.11	86.1	1	0	--	--	--	83.51
GM-45	08/21/98	5:50 PM	28.93	75	-	3.89	86.9	3.2	0	--	--	--	83.56
GM-45	08/23/98	2:14 PM	28.46	77	-	9.72	85.7	4.4	0	--	--	--	82.95
GM-45	08/24/98	2:16 PM	28.44	79	-	9.43	85	4.7	0	--	--	--	82.99
GM-45	08/25/98	3:18 PM	28.62	77	-	6.28	86.8	4.8	0	--	--	--	83.3
GM-45	08/26/98	8:36 AM	28.79	72	-	3.72	89.7	2.9	0	--	--	--	83.36
GM-45	08/27/98	2:34 PM	28.76	80.1	-	3.81	85.8	4.3	0	--	--	--	83.29
GM-45	08/28/98	5:32 PM	28.64	75.9	-	5.27	85.1	5	0	--	--	--	83.2
GM-45	08/29/98	3:25 PM	28.67	77	-	3.98	84.7	3	0.2	--	--	--	83.72
GM-45	08/31/98	8:55 AM	28.86	66	-	2.37	89.5	3.8	0	--	--	--	83.47
GM-45	09/09/98	8:50 AM	28.96	60.1	-	0.37	88.9	4.2	0	--	--	--	83.61
GM-45	09/10/98	--	--	--	--	--	--	--	--	--	--	--	83.36
GM-45	09/10/98	12:30 PM	28.72	81	-	3.4	84.6	5.1	0	--	--	--	83.4
GM-45	09/11/98	2:12 PM	28.57	97	-	5.43	82.4	4.9	0.2	--	--	--	83.27
GM-45	09/12/98	8:39 AM	28.76	64.9	-	2.91	88.8	3.7	0	--	--	--	83.46
GM-45	09/13/98	8:54 AM	28.69	68	-	3.53	87.8	4.6	0	--	--	--	83.4
GM-45	09/14/98	6:25 PM	28.59	66	-	5	86.6	5.4	0	--	--	--	83.38
GM-45	09/23/98	9:02 AM	28.94	54	-	0.35	84.8	1.7	0	--	--	--	83.61
GM-45	09/24/98	2:32 PM	28.58	70	-	5.13	84.8	5	0	--	--	--	83.27
GM-45	09/25/98	1:30 PM	28.5	75	-	5.53	83.6	5.1	0	--	--	--	83.33
GM-45	09/28/98	8:48 AM	28.78	55.9	-	0.94	85.1	1.4	0	--	--	--	83.56
GM-45	09/30/98	11:02 AM	28.63	46	0.06	2.75	87.5	4.4	0	--	--	--	83.39
GM-45	10/06/98	9:07 AM	28.55	62.1	0.04	5.93	81.8	5.5	0	--	--	--	83.51
GM-45	10/08/98	12:04 PM	29.04	50	-	-1.3	0	0	20.5	5	5	2	83.5
GM-45	10/09/98	9:18 AM	28.94	50	-	0.53	6.7	0.3	18.5	--	--	--	83.49
GM-45	10/10/98	1:30 PM	28.86	70	-	2.14	63.6	4.1	3.9	--	--	--	83.35
GM-45	10/13/98	5:28 PM	28.8	42.1	-	3.18	81.8	3.7	0.2	--	--	--	83.35
GM-45	10/19/98	3:26 PM	28.72	54	-	2.87	82	5.6	0	--	--	--	83.36
GM-45	10/23/98	8:36 AM	28.95	57	-	1.71	82.2	3.4	0	--	--	--	83.43
GM-45	10/25/98	10:03 AM	28.94	46	-	2.21	85.5	5.9	0	--	--	--	83.42
GM-45	11/02/98	2:50 PM	29.03	39	-	1.27	90.2	1.8	0	--	--	--	83.48
GM-45	11/06/98	8:44 AM	28.92	35.1	-	2.48	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-45	11/06/98	12:16 PM	28.93	37.9	-	1.83	--	--	--	--	--	--	--
GM-45	11/06/98	4:13 PM	28.94	37	-	0.8	--	--	--	--	--	--	--
GM-45	11/07/98	8:12 AM	29.08	34	-	-0.27	--	--	--	--	--	--	--
GM-45	11/07/98	11:53 AM	29.07	41	-	-1.53	--	--	--	--	--	--	--
GM-45	11/18/98	8:38 AM	28.89	33.1	-	0.45	87.4	1.7	0	--	--	--	83.54
GM-45	11/30/98	1:46 PM	28.41	39	-	5.92	88.8	5.1	0	--	--	--	83.22
GM-45	12/03/98	11:18 AM	28.4	54	-	5.66	86.5	5.3	0	--	--	--	83.2
GM-45	12/08/98	2:40 PM	28.74	41	-	2.02	89.6	3.1	0	--	--	--	83.46
GM-45	12/10/98	11:37 AM	29	32	-	-0.76	0	0	20.2	6	6	1	83.65
GM-45	12/17/98	2:55 PM	28.71	26	-	0.6	87.4	5.8	0	--	--	--	89.99
GM-45	12/18/98	12:16 PM	28.33	32	0.02	3.66	88.9	6.1	0	--	--	--	90.66
GM-45	12/19/98	3:22 PM	28.97	21	T	-3.35	0	0	19.8	500	15	3	91.26
GM-45	12/20/98	4:00 PM	28.98	19	T	0.26	0	0.1	20.4	--	--	--	91.1
GM-45	12/21/98	9:10 AM	28.76	14	-	1.5	5.7	0.6	16.9	--	--	--	90.97
GM-45	12/22/98	8:53 AM	28.99	-9	-	-1.28	0	0	17.9	--	--	--	91.2
GM-45	12/30/98	11:55 AM	28.75	3	-	-0.11	0	0	17.1	7	7	1.5	90.6
GM-45	01/05/99	9:32 AM	28.79	-7.1	-	0.1	0	0.3	16.4	--	--	--	90.89
GM-45	01/07/99	9:19 AM	28.9	-9.9	-	-1.48	0	0	15.9	5	5	1.75	91.01
GM-45	01/11/99	2:50 PM	28.47	-0.9	T	2.59	86.5	5.2	0.2	--	--	--	--
GM-45	01/15/99	9:19 AM	28.65	-13	T	3.51	54	3	6.3	--	--	--	--
GM-45	01/19/99	8:28 AM	28.57	24.1	-	0	0	0	19.9	--	--	--	--
GM-45	01/22/99	10:55 AM	28.68	27	-	0	0	0	19.9	16	14	1.5	--
GM-45	01/28/99	3:27 PM	28.87	27	-	0	0	0	19	<1	<1	<1	--
GM-45	01/29/99	9:37 AM	28.98	25	-	0	0	0	19	1	1	1	--
GM-45	02/02/99	8:41 AM	28.25	32	0.03	0.01	0	0	19.8	--	--	--	--
GM-45	02/09/99	8:58 AM	28.49	34	-	0	0	0	20.2	50	50	2	--
GM-45	02/22/99	2:22 PM	29.1	24.1	-	0.03	0	0	21.2	5	3	1.75	--
GM-45	02/26/99	8:57 AM	28.8	27	-	0	0	0	19.6	50	40	1	--
GM-45	03/09/99	8:55 AM	28.9	24.1	T	0	0	0	20.2	33	27	1	--
GM-45	03/22/99	3:16 PM	28.75	37.9	-	1.25	40.7	2.4	10.6	--	--	--	90.48
GM-45	04/09/99	12:00 PM	28.64	50	-	1.3	90	5.6	0	--	--	--	89.93
GM-45	04/21/99	8:23 AM	28.62	42.1	0.01	1.63	75.9	4.6	0	--	--	--	--
GM-45	05/01/99	9:32 AM	29.02	73	-	1.02	26.6	1.2	12.9	--	--	--	--
GM-45	05/16/99	11:13 AM	28.67	66.9	-	3.6	63.7	3.9	1.8	--	--	--	89.34

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-45	07/14/99	2:26 PM	28.58	75	-	2.75	91.3	5	0	--	--	--	89
GM-45	07/16/99	5:00 PM	28.7	72	0.04	0.44	92.4	5	0	--	--	--	88.8
GM-45	07/19/99	3:10 PM	28.84	77	-	0.6	95	5	0	--	--	--	88.6
GM-45	07/20/99	2:09 PM	28.86	73.9	-	0.55	92.7	5	0.2	--	--	--	88.52
GM-45	07/23/99	4:07 PM	28.59	87.1	-	2.6	95.7	5	0	--	--	--	88.46
GM-45	07/28/99	8:46 AM	28.56	78.1	-	2.3	90.5	4.8	0	--	--	--	88.59
GM-45	08/02/99	5:25 PM	28.93	73.9	-	-1.3	0	0	21.3	--	--	--	89.91
GM-45	08/03/99	5:38 PM	28.74	70	-	1.51	0.2	0.5	19.7	--	--	--	81.85
GM-45	08/04/99	2:18 PM	28.65	66	0.04	1.44	0.1	0.3	19.7	--	--	--	81.03
GM-45	08/05/99	5:41 PM	28.6	72	-	0.27	0	0.2	20.3	--	--	--	81.26
GM-45	08/06/99	6:32 PM	28.74	64.9	-	-1.2	0	0	20.5	--	--	--	81.02
GM-45	08/07/99	10:52 AM	28.56	72	-	0.16	0	0	19.9	--	--	--	81.4
GM-45	08/08/99	9:17 AM	28.83	62.1	-	-4.51	0	0	20.5	--	--	--	81
GM-45	08/09/99	1:14 PM	28.62	64.9	T	-3.45	0	0	20.6	--	--	--	81.1
GM-45	08/10/99	9:04 AM	28.44	64	-	-0.65	0	0	20.8	--	--	--	81.1
GM-45	08/11/99	9:23 AM	28.64	69.1	-	-3.62	0	0	20.6	--	--	--	81.1
GM-45	08/16/99	4:48 PM	28.61	82.9	-	-5.05	0	0	20.2	4	4	4	81
GM-45	08/20/99	11:37 AM	28.89	75	-	-9.9	0	0	20.3	2.5	2.5	2	81
GM-45	08/23/99	5:28 PM	28.61	70	-	-6.28	0	0	20.5	1.25	1.25	1.25	81.42
GM-45	08/30/99	3:10 PM	29.01	68	-	-12.45	0	0	20.4	2	2	2	81.54
GM-45	09/02/99	3:53 PM	28.78	82.9	-	-8.8	0	0	20.2	2.5	2.5	2.5	81.55
GM-45	09/14/99	4:13 PM	28.66	55.9	-	0	0	0	20.9	1250	900	2	--
GM-45	09/20/99	2:33 PM	28.89	48.9	T	0.41	7.7	0.8	17.7	--	--	--	--
GM-45	10/06/99	2:44 PM	29.02	46.9	-	0.23	56.6	2.2	4.7	--	--	--	82.89
GM-45	10/26/99	1:34 PM	28.85	39.9	-	0.38	83.9	2.9	0.6	--	--	--	82.15
GM-45	11/01/99	3:21 PM	28.42	62.1	-	3.42	78.3	2.5	9	--	--	--	81.1
GM-45	11/05/99	3:11 PM	28.78	51.1	-	0.16	87	4.4	0	--	--	--	82.12
GM-45	12/09/99	2:02 PM	28.74	35	-	3.72	94.4	4.7	0	--	--	--	--
GM-45	01/21/00	12:28 PM	28.81	3	-	3.13	96.6	4.2	0	--	--	--	81.7
GM-45	03/17/00	2:31 PM	29.14	30	-	0	58.2	2.7	6.2	--	--	--	81.55
GM-45	04/01/00	10:03 AM	28.75	44	-	0.74	78.8	3.2	0	--	--	--	81.18
GM-45	07/17/00	4:04 PM	28.69	69	-	4.51	82.8	2.8	0	--	--	--	--
GM-45	07/23/00	9:25 AM	28.98	63	-	-0.1	65.6	2.3	2.7	--	--	--	--
GM-45	07/25/00	9:50 AM	28.77	75	-	2.34	80	2.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-45	07/31/00	4:01 PM	28.67	81	-	4.68	71.3	1.6	0	--	--	--	--
GM-45	08/06/00	10:20 AM	28.38	68	-	2.7	61.4	1.4	1	--	--	--	--
GM-45	08/09/00	10:22 AM	28.67	65	-	-2.05	17.7	0.4	16	--	--	--	83.11
GM-45	08/19/00	4:15 PM	29.02	67	-	-3.09	0	0	20.7	4	4	4	81.52
GM-45	08/29/00	4:08 PM	28.79	75	-	-9.6	0	0	20.5	60	16	5	82.55
GM-45	09/10/00	12:07 PM	28.6	74	-	-2.99	0	0	19.9	10000	350	3	82.13
GM-45	09/25/00	3:44 PM	28.78	60	-	-7.83	0	0	21	--	--	--	82.55
GM-45	10/02/00	4:20 PM	28.48	54	-	-2.98	0	0	20.5	--	--	--	81.93
GM-45	10/09/00	2:47 PM	28.99	59	-	-18.76	0	0	21.2	1.5	1.5	1.5	81.61
GM-45	10/13/00	8:46 AM	28.7	57	-	-19.24	--	--	--	--	--	--	--
GM-45	10/16/00	4:00 PM	28.89	50	-	-21	--	--	--	--	--	--	--
GM-45	10/23/00	12:43 PM	29.06	58	-	-23	--	--	--	--	--	--	--
GM-45	10/31/00	9:17 AM	28.92	51	-	-26	79.4	6	0.8	--	--	--	--
GM-45	10/31/00	9:27 AM	28.92	51	-	-21	--	--	--	--	--	--	--
GM-45	11/14/00	9:51 AM	28.43	31	-	-19	--	--	--	--	--	--	--
GM-45	12/05/00	1:37 PM	28.9	10	-	-18	--	--	--	--	--	--	--
GM-45	02/24/01	12:15 PM	28.78	24	T	-18	--	--	--	--	--	--	--
GM-45	03/22/01	12:18 PM	28.82	47	-	-21	0.4	0.1	20	75.9	50.2	-0.4	--
GM-45	04/09/01	9:35 AM	28.76	40	-	-19	0	0	20.3	37.4	34.52	-0.12	--
GM-45	04/09/01	2:57 PM	28.76	42	-	--	--	--	--	--	--	--	82.03
GM-45	05/01/01	2:16 PM	28.57	71	-	-11.03	0	0	20.1	0	0	0	--
GM-45	05/29/01	10:33 AM	28.92	60	-	-27	0	0	19.2	0.2	0.09	0.08	--
GM-45	07/20/01	8:30 AM	28.82	74	-	-10	0	0	20.1	32.68	25.52	-0.6	--
GM-45	08/20/01	10:22 AM	28.87	75	-	-24	0	0	20.3	-0.68	-0.98	-0.68	81.04
GM-45	09/09/01	9:53 AM	28.7	60	-	-22	0	0	20.4	45	30	0	81.45
GM-45	10/06/01	11:05 AM	28.78	43	-	22	0	0	20.3	0	0	0.3	81.98
GM-45	11/07/01	2:33 PM	28.9	44	-	-54	0	0	20.7	-0.07	-1.34	-0.07	83.3
GM-45	12/18/01	3:41 PM	28.46	37	-	-39	0	0	20.2	--	--	--	79.95
GM-45	01/10/02	3:20 PM	28.55	36	T	-34	0	0	20.3	--	--	--	80.35
GM-45	01/28/02	1:27 PM	28.77	24	-	-40	0	0	20.8	--	--	--	80.32
GM-45	03/19/02	12:49 PM	28.95	35	T	-22	0	0	20.7	0	0	0	--
GM-45	04/29/02	9:46 AM	28.61	36	0.01	-8.92	0	0	20.5	0.84	0	0	79.28
GM-45	05/29/02	9:39 AM	28.65	74	-	-3.49	0	0	20.8	37.95	31	0	80.06
GM-45	06/06/02	9:52 AM	28.84	68	-	-5	0	0	21	0.46	0.23	0	80.31

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-45	06/21/02	2:23 PM	29.11	75	T	-5	0	0	21.6	0	0	0	--
GM-45	06/24/02	8:38 AM	28.87	71	T	-0.6	87.9	2.3	0	129900	--	0	--
GM-45	07/10/02	2:18 PM	29.07	73	-	4	0	0	21	14300	14300	-1.46	81.7
GM-45	07/12/02	9:00 AM	28.91	70	-	-12	0	0	21	4.91	4.57	0.02	80.96
GM-45	08/14/02	10:10 AM	28.61	72	-	-12.5	0	0	21	-1.12	-1.32	-0.27	81.25
GM-45	10/15/03	2:59 PM	28.64	45	-	-5.6	0	0	19.5	--	--	--	83.18
GM-45	05/04/04	7:37 AM	28.52	44	T	-0.3	0	0	21	--	--	--	--
GM-45	05/04/04	11:45 AM	28.46	61	-	-0.3	0	0	21	--	--	--	--
GM-45	05/04/04	4:07 PM	28.55	52	-	0	0	0	21.5	--	--	--	--
GM-45	05/05/04	7:58 AM	28.78	40	-	-0.4	0	0	21.5	--	--	--	--
GM-45	06/18/04	8:39 PM	28.99	52	-	-0.011	--	--	--	--	--	--	--
GM-45	06/22/04	6:17 AM	28.57	50	-	0	--	--	--	--	--	--	--
GM-45	06/22/04	7:02 AM	28.59	53	-	0	--	--	--	--	--	--	--
GM-45	06/22/04	10:50 AM	28.61	64	-	--	0	0	20.9	--	--	--	--
GM-45	06/27/04	2:55 PM	28.84	64	-	-0.006	--	--	--	--	--	--	--
GM-45	07/07/04	5:58 PM	28.57	55	-	0	--	--	--	--	--	--	--
GM-45	07/19/04	1:56 PM	28.55	83	-	-0.024	--	--	--	--	--	--	--
GM-45	08/21/04	9:59 AM	28.81	60	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	10:47 AM	28.81	62	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	11:19 AM	28.81	62	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	12:27 PM	28.8	64	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	1:00 PM	28.79	66	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	1:34 PM	28.77	67	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	2:08 PM	28.77	67	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	2:37 PM	28.76	69	-	0.1	--	--	--	--	--	--	--
GM-45	08/21/04	3:27 PM	28.76	69	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	4:14 PM	28.75	69	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	4:56 PM	28.74	67	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	5:36 PM	28.73	64	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	6:03 PM	28.73	64	-	0	--	--	--	--	--	--	--
GM-45	08/21/04	6:34 PM	28.72	56	-	0	--	--	--	--	--	--	--
GM-45	08/22/04	7:35 AM	28.53	54	T	0.2	--	--	--	--	--	--	--
GM-45	09/27/04	3:18 PM	28.83	59	0.07	0	--	--	--	--	--	--	--
GM-45	09/28/04	9:07 AM	29.09	50	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-45	09/28/04	9:45 AM	29.11	52	-	0.1	--	--	--	--	--	--	--
GM-45	09/28/04	10:10 AM	29.11	52	-	0	--	--	--	--	--	--	--
GM-45	09/28/04	10:43 AM	29.09	54	-	0	--	--	--	--	--	--	--
GM-45	09/28/04	11:19 AM	29.09	54	-	0	--	--	--	--	--	--	--
GM-45	09/28/04	11:44 AM	29.07	57	-	0	--	--	--	--	--	--	--
GM-45	09/28/04	12:14 PM	29.07	57	-	0	--	--	--	--	--	--	--
GM-45	09/28/04	12:42 PM	29.05	60	-	0	--	--	--	--	--	--	--
GM-45	09/29/04	1:55 PM	28.88	67	-	0.1	--	--	--	--	--	--	--
GM-45A	08/19/04	8:55 AM	28.74	55	-	-1.2	--	--	--	--	--	--	--
GM-45A	08/21/04	10:00 AM	28.81	60	-	-0.7	--	--	--	--	--	--	--
GM-45A	08/21/04	2:38 PM	28.76	69	-	-0.8	--	--	--	--	--	--	--
GM-45A	08/21/04	3:26 PM	28.76	69	-	-2.2	--	--	--	--	--	--	--
GM-45A	08/21/04	4:17 PM	28.75	69	-	-2	--	--	--	--	--	--	--
GM-45A	08/21/04	4:57 PM	28.74	67	-	-2.6	--	--	--	--	--	--	--
GM-45A	08/21/04	5:37 PM	28.73	64	-	-2.9	--	--	--	--	--	--	--
GM-45A	08/21/04	6:04 PM	28.73	64	-	-2.4	--	--	--	--	--	--	--
GM-45A	08/21/04	6:35 PM	28.72	56	-	-2.5	--	--	--	--	--	--	--
GM-45A	08/22/04	7:34 AM	28.53	54	T	0.1	--	--	--	--	--	--	--
GM-45A	09/27/04	3:07 PM	28.83	59	0.07	0.9	--	--	--	--	--	--	--
GM-45A	09/28/04	9:08 AM	29.09	50	-	-0.2	--	--	--	--	--	--	--
GM-45A	09/28/04	9:44 AM	29.11	52	-	-1	--	--	--	--	--	--	--
GM-45A	09/28/04	10:11 AM	29.11	52	-	-0.9	--	--	--	--	--	--	--
GM-45A	09/28/04	10:43 AM	29.09	54	-	-1.1	--	--	--	--	--	--	--
GM-45A	09/28/04	11:19 AM	29.09	54	-	-1.2	--	--	--	--	--	--	--
GM-45A	09/28/04	11:44 AM	29.07	57	-	-0.9	--	--	--	--	--	--	--
GM-45A	09/28/04	12:14 PM	29.07	57	-	-0.8	--	--	--	--	--	--	--
GM-45A	09/28/04	12:43 PM	29.05	60	-	-0.6	--	--	--	--	--	--	--
GM-45A	09/29/04	1:53 PM	28.88	67	-	-1.5	--	--	--	--	--	--	--
GM-45A	10/29/07	9:40 AM	30.21	50	-	-36.6	0.2	1.3	12.2	--	--	--	--
GM-46	08/12/98	2:35 PM	28.94	77	-	0	0	0	21.8	--	--	--	--
GM-46	08/14/98	8:19 AM	28.65	68	-	0	0	0	20.8	--	--	--	65.71
GM-46	08/15/98	8:55 AM	28.76	64.9	-	0	0	0	20.8	6	6	4	--
GM-46	08/16/98	9:00 AM	28.82	68	0.01	0	0	0	20.3	10	9	4	--
GM-46	08/17/98	7:40 AM	28.65	64.9	-	0	0	0	20.6	6	6	3	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-46	08/18/98	7:30 AM	29.01	57	-	0	0	0	20.3	11	11	3	65.72
GM-46	08/19/98	7:52 AM	29.02	61	-	0	0	0	20.6	5.5	5	3.5	66.09
GM-46	08/21/98	5:15 PM	28.92	79	-	3.75	86.1	2.8	0.1	--	--	--	72.24
GM-46	08/23/98	1:43 PM	28.46	77	-	9.34	85	3.2	0	--	--	--	69.19
GM-46	08/24/98	1:55 PM	28.44	79	-	9.48	86	3.4	0	--	--	--	71.61
GM-46	08/25/98	2:58 PM	28.62	77	-	6.22	87.5	3.6	0	--	--	--	71.85
GM-46	08/26/98	8:22 AM	28.78	64.9	-	3.57	87.5	5.5	0	--	--	--	70.1
GM-46	08/27/98	2:12 PM	28.78	82	-	3.64	84.7	3	0.2	--	--	--	71.97
GM-46	08/28/98	5:10 PM	28.64	79	-	5.19	83.8	3.1	0.2	--	--	--	71.98
GM-46	08/29/98	3:02 PM	28.67	77	-	3.87	84.5	3	0.1	--	--	--	71.44
GM-46	08/31/98	8:32 AM	28.86	66	-	2.2	86.9	3.1	0	--	--	--	72.26
GM-46	09/09/98	8:10 AM	28.96	53.1	-	0.18	90.2	3.6	0	--	--	--	73.91
GM-46	09/10/98	--	--	--	--	--	--	--	--	--	--	--	75.57
GM-46	09/10/98	11:50 AM	28.74	80.1	-	3.15	85.9	3.8	0	--	--	--	73.45
GM-46	09/11/98	1:46 PM	28.57	97	-	5.25	83.7	3.5	0.1	--	--	--	73.7
GM-46	09/12/98	8:13 AM	28.76	64	-	2.83	88.2	4.1	0	--	--	--	73.81
GM-46	09/13/98	8:26 AM	28.69	64.9	-	3.36	87.8	4.1	0	--	--	--	73.81
GM-46	09/14/98	5:50 PM	28.59	66	-	5	86.6	4	0	--	--	--	73.79
GM-46	09/23/98	8:22 AM	28.96	48	-	-0.22	0	0	20.6	200	200	3	73.91
GM-46	09/24/98	3:08 PM	28.58	70	-	5.22	83	3.9	0	--	--	--	73.49
GM-46	09/25/98	1:10 PM	28.51	73	-	5.36	83.7	3.9	0	--	--	--	73.49
GM-46	09/28/98	8:21 AM	28.78	48.9	-	0.77	88.5	4.3	0	--	--	--	73.87
GM-46	09/30/98	10:39 AM	28.63	46	0.06	2.66	87.2	4.2	0	--	--	--	73.76
GM-46	10/06/98	8:34 AM	28.55	62.1	0.04	5.96	71.8	3.3	2.3	--	--	--	74.1
GM-46	10/08/98	10:54 AM	29.05	50	-	-1.59	0	0	20.3	5	5	3	73.76
GM-46	10/09/98	8:53 AM	28.94	50	-	0.59	36.6	0.9	11.3	--	--	--	73.73
GM-46	10/10/98	1:00 PM	28.87	68	-	2.06	71.2	3.2	2.5	--	--	--	73.6
GM-46	10/13/98	5:03 PM	28.8	42.1	-	3.16	84.2	4.1	0	--	--	--	--
GM-46	10/19/98	2:55 PM	28.72	54	-	2.92	84.8	4.1	0	--	--	--	73.6
GM-46	10/23/98	8:01 AM	28.97	53.1	-	1.51	52	2.2	7	--	--	--	73.67
GM-46	10/25/98	9:27 AM	28.94	45	-	2.09	81.3	3.9	0.3	--	--	--	73.61
GM-46	11/02/98	12:59 PM	29.05	39	-	0.67	33.5	0.8	11.9	--	--	--	--
GM-46	11/06/98	8:35 AM	28.92	35.1	-	2.51	--	--	--	--	--	--	--
GM-46	11/06/98	12:10 PM	28.93	37.9	-	0.8	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-46	11/06/98	4:09 PM	28.94	37	-	0.34	--	--	--	--	--	--	--
GM-46	11/07/98	8:18 AM	29.08	34	-	-0.76	--	--	--	--	--	--	--
GM-46	11/07/98	11:58 AM	29.07	41	-	-1.91	--	--	--	--	--	--	--
GM-46	11/07/98	4:26 PM	29.05	37.9	-	-1.82	--	--	--	--	--	--	--
GM-46	11/18/98	8:03 AM	28.9	33.1	T	-0.2	0	0	20.4	800	45	10	73.66
GM-46	11/30/98	1:14 PM	28.38	39.9	-	6.22	87.5	4.3	0	--	--	--	43
GM-46	12/03/98	10:53 AM	28.4	54	-	5.67	87	4.2	0	--	--	--	73.35
GM-46	12/08/98	2:06 PM	28.72	41	-	1.9	72.3	3.6	2.5	--	--	--	73.62
GM-46	12/10/98	10:56 AM	29.03	30	-	-1.23	0	0	19.3	2.5	2	1	73.63
GM-46	12/17/98	3:17 PM	28.71	26	-	0.62	87.8	4.3	0	--	--	--	80.79
GM-46	12/18/98	11:22 AM	28.36	31	0.02	4.06	88.7	4.7	0	--	--	--	85.56
GM-46	12/19/98	2:17 PM	28.92	21	T	-3.57	0	0	20.4	--	--	--	80.99
GM-46	12/20/98	2:59 PM	29	19	T	-0.08	0	0	26.3	--	--	--	80.82
GM-46	12/21/98	8:20 AM	28.74	15	T	1.79	34.4	1.2	18.7	--	--	--	80.72
GM-46	12/22/98	8:10 AM	28.96	-10	-	-1.46	0	0	22	--	--	--	80.75
GM-46	12/30/98	12:32 PM	28.73	6	-	0	0	0	12	--	--	--	80.52
GM-46	01/05/99	8:57 AM	28.8	-11	-	-0.01	0	0	16.7	--	--	--	80.48
GM-46	01/07/99	8:55 AM	28.9	-9.9	-	-1.62	0	0	16.2	4	4	1.5	80.44
GM-46	01/11/99	1:48 PM	28.49	-2	0.01	0.63	66	3	4.2	--	--	--	--
GM-46	01/15/99	8:17 AM	28.66	-16.1	-	4.03	57.1	2.1	6.1	--	--	--	--
GM-46	01/19/99	7:56 AM	28.57	24.1	-	0	0	0	20.6	--	--	--	--
GM-46	01/22/99	10:10 AM	28.68	27	-	0	0	0	20.1	1120	90	1.5	--
GM-46	01/28/99	2:37 PM	28.87	27	-	0	0	0	19.3	3	2.5	1.5	--
GM-46	01/29/99	8:53 AM	28.98	23	-	0	0	0	19.7	3.5	3.5	1.25	--
GM-46	02/02/99	7:44 AM	28.26	32	0.02	0	0	0	20.2	<1	<1	<1	--
GM-46	02/09/99	8:01 AM	28.47	33.1	-	0.01	0	0	20.2	1	1	1	--
GM-46	02/09/99	10:12 AM	28.52	35.1	-	0	4.2	0.1	19.6	--	--	--	87.7
GM-46	02/22/99	1:36 PM	29.1	24.1	-	0	0	0	20.1	1.5	1.5	1.5	--
GM-46	02/26/99	8:02 AM	28.8	26.1	-	0	0	0	20.1	1.25	1.25	1.25	--
GM-46	03/09/99	8:01 AM	28.9	23	T	0	5.8	0	18.4	--	--	--	--
GM-46	03/22/99	2:25 PM	28.77	36	-	1.28	62.7	2.5	4.7	--	--	--	74.2
GM-46	04/09/99	11:45 AM	28.64	50	-	1.42	83.1	3.9	0.2	--	--	--	78.95
GM-46	04/21/99	9:15 AM	28.62	42.1	-	1.6	74.4	3.5	0	--	--	--	--
GM-46	05/01/99	8:51 AM	29.03	70	-	1.01	56.3	2.4	3.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-46	05/16/99	10:23 AM	28.69	64.9	-	3.52	74.5	3.5	0	--	--	--	77.38
GM-46	07/14/99	1:50 PM	28.58	75	-	3.9	87.2	3.7	0	--	--	--	77.38
GM-46	07/16/99	3:55 PM	28.68	73	0.11	3.44	92.1	3.6	0	--	--	--	76
GM-46	07/19/99	2:30 PM	28.84	77	-	1	91	3	0	--	--	--	77.65
GM-46	07/20/99	1:15 PM	28.87	73.9	-	1.51	89.9	2.2	0.2	--	--	--	77.61
GM-46	07/23/99	3:16 PM	28.58	87.1	-	4.3	92.9	3.5	0	--	--	--	77.5
GM-46	07/28/99	8:05 AM	28.56	75.9	-	3.65	90.4	3.2	0	--	--	--	77.8
GM-46	08/02/99	2:30 PM	28.94	75	-	-1.76	0	0	20.5	--	--	--	78.11
GM-46	08/03/99	2:35 PM	28.77	73	-	-40	70.1	2.8	4.3	--	--	--	--
GM-46	08/03/99	3:01 PM	28.77	73	-	-40	75	3	3.7	--	--	--	--
GM-46	08/03/99	3:31 PM	28.75	73	-	-79	7.9	0.2	20.3	--	--	--	--
GM-46	08/03/99	4:01 PM	28.75	73	-	-77	82.8	3.3	2.6	--	--	--	--
GM-46	08/03/99	6:06 PM	28.74	70	-	-46	90.1	3.6	1.4	--	--	--	--
GM-46	08/04/99	2:52 PM	28.65	73.9	T	-30	104.9	4.1	0	--	--	--	--
GM-46	08/05/99	6:11 PM	28.6	72	-	-30	103.3	4.1	0	--	--	--	--
GM-46	08/06/99	7:03 PM	28.74	64.9	-	-30	72.9	3.1	3.1	--	--	--	--
GM-46	08/07/99	11:22 AM	28.56	72	-	-27	103.8	4.2	0	--	--	--	--
GM-46	08/08/99	9:49 AM	28.84	64	-	-29	103.1	4.2	0	--	--	--	--
GM-46	08/09/99	1:41 PM	28.59	64.9	-	-30	93.9	3.9	0	--	--	--	--
GM-46	08/10/99	9:32 AM	28.44	64.9	-	-30	96.4	4.1	0	--	--	--	--
GM-46	08/11/99	10:11 AM	28.65	72	-	-29	94.3	3.9	0	--	--	--	--
GM-46	08/16/99	5:20 PM	28.61	82.9	-	-26	85.6	3.8	0	--	--	--	--
GM-46	08/20/99	12:06 PM	28.89	75	-	-28	86.8	3.9	0	--	--	--	--
GM-46	08/23/99	5:49 PM	28.61	66.9	-	-27.5	79.2	3.9	0	--	--	--	--
GM-46	08/30/99	3:38 PM	29	66	-	-28	87.4	3.8	0	--	--	--	--
GM-46	09/02/99	4:42 PM	28.79	82	-	-27	83.7	3.7	0	--	--	--	--
GM-46	09/14/99	3:30 PM	28.66	55.9	-	0.87	54	0	3	--	--	--	--
GM-46	09/20/99	2:59 PM	28.89	48.9	T	0	24.5	1.5	13.4	--	--	--	--
GM-46	10/06/99	3:26 PM	29.02	46.9	-	0	77.2	3.1	0	--	--	--	--
GM-46	10/26/99	12:50 PM	28.83	39.9	-	0.19	92.8	3.3	0	--	--	--	70.53
GM-46	11/01/99	3:00 PM	28.42	62.1	-	3.45	89.3	3.9	0	--	--	--	70.3
GM-46	11/05/99	2:31 PM	28.78	51.1	-	0.08	80.4	3.2	0	--	--	--	70.53
GM-46	12/09/99	2:45 PM	28.73	35	-	0.84	92.6	4.3	0	--	--	--	--
GM-46	01/21/00	10:15 AM	28.82	-4	T	2.08	84.5	4.4	1.4	--	--	--	69.2

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-46	03/17/00	1:50 PM	29.16	28.9	-	0	35.1	1.1	12.2	--	--	--	71.46
GM-46	04/01/00	9:29 AM	28.77	42	-	0.31	84.2	1.8	1.2	--	--	--	70.29
GM-46	07/17/00	3:46 PM	28.69	69	-	4.78	83.7	0.5	0	--	--	--	--
GM-46	07/19/00	7:55 AM	28.86	54	-	-28	97.4	4.4	0	--	--	--	--
GM-46	07/23/00	9:12 AM	28.98	63	-	0.25	85	4.1	0	--	--	--	--
GM-46	07/25/00	9:37 AM	28.77	75	-	1.82	71	2.5	0	--	--	--	--
GM-46	07/31/00	3:28 PM	28.67	81	-	4.08	82.9	0	0	--	--	--	--
GM-46	08/06/00	10:50 AM	28.36	71	-	0.32	83	4.1	0	--	--	--	--
GM-46	08/09/00	9:20 AM	28.65	65	-	-25	85.2	4.4	0	--	--	--	--
GM-46	08/19/00	2:45 PM	29.02	68	-	-25	88.6	4.2	0	--	--	--	--
GM-46	08/29/00	2:44 PM	28.79	75	-	-25	89.6	4.2	0	--	--	--	--
GM-46	09/11/00	8:55 AM	28.5	65	-	2.19	65.7	6.4	0.2	--	--	--	--
GM-46	09/19/00	12:30 PM	28.2	69	-	-2.8	95.4	3.6	0	--	--	--	--
GM-46	09/20/00	8:00 AM	28.29	54	-	--	--	--	--	--	--	--	69.8
GM-46	09/23/00	2:00 PM	28.68	55	-	-26	97.8	4.7	0	--	--	--	--
GM-46	09/25/00	2:16 PM	28.8	60	-	-26	95.4	4.2	0	--	--	--	71.48
GM-46	09/25/00	6:00 PM	28.76	49	-	-27	93.7	4.2	0	--	--	--	--
GM-46	10/02/00	2:28 PM	28.41	55	-	26	95.7	4.1	0	--	--	--	70.88
GM-46	10/06/00	11:22 AM	28.85	40	-	30	104.2	3.9	0	--	--	--	--
GM-46	10/09/00	2:18 PM	29	59	-	-28	90	3.8	0	--	--	--	--
GM-46	10/13/00	8:38 AM	28.7	57	-	-27	--	--	--	--	--	--	--
GM-46	10/16/00	2:46 PM	28.89	51	-	-27	87.4	3.7	0	--	--	--	--
GM-46	10/23/00	11:52 AM	29.06	58	-	-28	89	3.4	0	--	--	--	--
GM-46	10/31/00	8:41 AM	28.92	51	-	-27	92.4	3.1	0	--	--	--	--
GM-46	11/14/00	8:52 AM	28.42	31	T	-26	94.1	2.6	0	--	--	--	--
GM-46	12/05/00	10:30 AM	28.89	9	-	-26	88.4	2.3	0.3	--	--	--	--
GM-46	02/24/01	11:32 AM	28.78	24	T	-30	0	0	20.2	--	--	--	--
GM-46	03/22/01	10:30 AM	28.84	45	-	-29	55.6	1.8	0	--	--	--	--
GM-46	04/09/01	9:02 AM	28.75	39	-	-29	46.2	2.5	0.7	--	--	--	--
GM-46	04/09/01	2:33 PM	28.76	42	-	--	--	--	--	--	--	--	70.76
GM-46	05/01/01	1:42 PM	28.57	71	-	-30	35.2	1.4	3.3	--	--	--	69.81
GM-46	05/29/01	1:12 PM	28.91	63	-	-33	8.1	1.7	0.6	--	--	--	70.26
GM-46	07/20/01	9:15 AM	28.82	74	-	-32	4.5	2.3	0.1	--	--	--	69.62
GM-46	08/17/01	9:30 AM	28.74	70	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-46	08/17/01	10:45 AM	28.74	73	-	-34	0	0	20.7	--	--	2.5	71
GM-46	08/17/01	11:35 AM	28.74	74	-	--	1	2.7	7.2	--	--	--	--
GM-46	08/17/01	1:30 PM	28.73	73	-	--	--	--	--	--	--	--	72.9
GM-46	08/17/01	2:10 PM	28.73	73	-	--	--	--	--	--	--	--	72.6
GM-46	08/17/01	3:02 PM	28.72	77	-	--	--	--	--	--	--	--	72.4
GM-46	08/17/01	3:48 PM	28.72	76	-	--	--	--	--	--	--	--	72.6
GM-46	08/18/01	9:05 AM	28.7	69	-	--	--	--	--	--	--	--	72.3
GM-46	08/19/01	7:45 AM	28.77	65	-	--	--	--	--	--	--	--	72.2
GM-46	08/20/01	7:50 AM	28.87	63	-	-34	0	0	19.3	291	151	-0.71	73.7
GM-46	09/09/01	8:15 AM	28.72	56	-	-23	0	4.7	16	3577	3577	-0.5	73.52
GM-46	09/09/01	11:35 AM	28.7	59	-	-42	5.3	4.5	0.6	--	--	--	--
GM-46	10/06/01	3:00 PM	28.85	38	-	-32	0	0	20.8	4230	4210	0.5	71.1
GM-46	11/07/01	4:40 PM	28.87	43	T	-72	0.4	6.5	4.2	--	--	--	72.5
GM-46	12/18/01	3:06 PM	28.48	40	-	-79	0	4.8	11.1	--	--	0.56	71
GM-46	01/10/02	2:47 PM	28.55	36	T	-83	0	0	20.5	--	--	--	69.9
GM-46	01/28/02	2:22 PM	28.75	26	-	-83	76.4	2.1	5	--	--	--	69.9
GM-46	03/22/02	10:14 AM	28.83	18	-	--	4.7	4	11.7	--	--	--	--
GM-46	04/12/02	10:47 AM	28.86	47	-	--	31.5	4.3	6.5	--	--	--	--
GM-46	04/29/02	10:17 AM	28.61	36	0.01	-87	>137	4.3	9.4	--	--	--	67.74
GM-46	05/29/02	8:48 AM	28.65	71	-	0	0	0	20	928	923	0	64.59
GM-46	06/06/02	9:05 AM	28.85	64	-	0	0	0	19.8	1058	1041	0	64.56
GM-46	07/10/02	6:38 PM	29.06	70	-	--	--	--	--	--	--	--	--
GM-46	07/10/02	6:43 PM	29.06	70	-	-91	0	1.5	17.2	--	--	--	--
GM-46	10/14/02	12:45 PM	28.81	55	-	--	--	--	--	--	--	--	67.61
GM-46	10/15/02	1:59 PM	28.75	42	-	--	--	--	--	--	--	--	66.92
GM-46	10/09/03	10:00 AM	28.86	71	-	91.9	0	0	19.6	--	--	--	--
GM-46	10/15/03	1:54 PM	28.61	48	-	-96.1	0.1	0	19.6	--	--	--	68.32
GM-46	11/19/03	10:51 AM	28.33	41	-	-111	1.7	0.5	17.3	--	--	--	--
GM-46	06/18/04	8:34 PM	28.99	52	-	0	--	--	--	--	--	--	--
GM-46	06/22/04	5:55 AM	28.57	50	-	0	--	--	--	--	--	--	--
GM-46	06/22/04	6:50 AM	28.59	53	-	0	--	--	--	--	--	--	--
GM-46	06/22/04	9:15 AM	28.59	59	-	--	0	0	20.8	--	--	--	--
GM-46	06/27/04	3:01 PM	28.84	64	-	-0.003	--	--	--	--	--	--	--
GM-46	07/07/04	6:09 PM	28.57	55	-	0.002	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-46	07/19/04	2:02 PM	28.55	83	-	0.034	--	--	--	--	--	--	--
GM-47	08/21/98	6:13 PM	28.93	75	-	3.73	70	0.3	0.5	--	--	--	82.95
GM-47	08/23/98	2:48 PM	28.43	80.1	-	9.64	78.8	1.3	0.2	--	--	--	75.4
GM-47	08/24/98	2:41 PM	28.44	77	-	9.21	84.6	2	0	--	--	--	81.89
GM-47	08/25/98	3:43 PM	28.63	75.9	-	5.93	85.7	2	0	--	--	--	82.48
GM-47	08/26/98	9:08 AM	28.79	72	-	3.51	87.5	2.7	0	--	--	--	75.43
GM-47	08/27/98	3:00 PM	28.76	80.1	-	3.75	85.1	1.6	0	--	--	--	82.95
GM-47	08/28/98	5:55 PM	28.64	75.9	-	4.97	87.7	1.4	0	--	--	--	82.96
GM-47	08/29/98	4:00 PM	28.68	75	-	3.78	85.8	1.7	0	--	--	--	80.17
GM-47	08/31/98	9:26 AM	28.86	66	-	2.27	81.4	0.3	0	--	--	--	80.96
GM-47	09/09/98	8:00 AM	28.96	53.1	-	0.21	90.5	2.4	0	--	--	--	82.98
GM-47	09/10/98	--	--	--	--	--	--	--	--	--	--	--	--
GM-47	09/10/98	11:40 AM	28.74	80.1	-	3.07	81.8	0.4	0	--	--	--	--
GM-47	09/11/98	1:39 PM	28.57	97	-	5.24	83.3	0.2	0.1	--	--	--	--
GM-47	09/12/98	7:51 AM	28.76	64	-	2.91	88.7	0.8	0	--	--	--	--
GM-47	09/13/98	8:21 AM	28.69	64.9	-	3.39	88.8	1.2	0	--	--	--	--
GM-47	09/14/98	5:43 PM	28.59	66	-	5.02	87	0.2	0	--	--	--	--
GM-47	09/23/98	8:11 AM	28.96	48	-	-0.08	21.4	0.1	14.9	--	--	--	--
GM-47	09/24/98	3:15 PM	28.58	70	-	5.22	84.5	1.7	0	--	--	--	--
GM-47	09/25/98	1:05 PM	28.51	73	-	5.32	84.5	2.6	0	--	--	--	--
GM-47	09/28/98	8:15 AM	28.78	48.9	-	0.77	88.9	3.1	0	--	--	--	--
GM-47	09/30/98	10:34 AM	28.63	46	0.06	2.65	87.2	3.1	0	--	--	--	--
GM-47	10/05/98	3:59 PM	28.82	51.1	0.01	2.9	67.1	2.3	2.8	--	--	--	--
GM-47	10/06/98	8:26 AM	28.56	61	T	5.95	74.4	2.9	0.7	--	--	--	--
GM-47	10/08/98	10:13 AM	29.04	48.9	-	-1.56	0	0	20.3	2000	2000	3	--
GM-47	10/09/98	8:45 AM	28.94	50	-	0.66	29.2	0.6	11.6	--	--	--	--
GM-47	10/10/98	12:10 PM	28.88	66.9	-	1.97	79.2	2	0	--	--	--	--
GM-47	10/13/98	4:57 PM	28.8	42.1	-	3.18	81.4	2.1	0	--	--	--	--
GM-47	10/19/98	3:57 PM	28.73	52	-	2.78	82.2	2.9	0	--	--	--	--
GM-47	10/23/98	9:17 AM	28.95	57	-	1.6	62.2	0.7	3.5	--	--	--	--
GM-47	10/25/98	9:02 AM	28.94	45	-	2.01	72.9	2.5	1.4	--	--	--	--
GM-47	11/02/98	2:31 PM	29.03	39	-	0.95	56.7	1.9	5.8	--	--	--	--
GM-47	11/06/98	8:54 AM	28.92	35.1	-	2.49	77.9	2.7	1	--	--	--	--
GM-47	11/06/98	3:50 PM	28.94	37	-	0.39	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-47	11/07/98	8:21 AM	29.08	34	-	-0.8	--	--	--	--	--	--	--
GM-47	11/07/98	12:01 PM	29.07	41	-	-1.7	--	--	--	--	--	--	--
GM-47	11/07/98	4:29 PM	29.05	37.9	-	-1.72	--	--	--	--	--	--	--
GM-47	11/18/98	9:15 AM	28.89	33.1	-	0.37	86.1	0.9	0	--	--	--	82.99
GM-47	11/30/98	1:08 PM	28.38	39.9	-	6.12	86.7	3.1	0	--	--	--	--
GM-47	12/03/98	10:46 AM	28.4	54	-	5.62	86.5	3	0	--	--	--	--
GM-47	12/08/98	1:57 PM	28.72	41	-	1.98	70.3	1.2	2.5	--	--	--	--
GM-47	12/10/98	10:29 AM	29.04	29	-	-1.35	0	0	19.4	200	200	1.25	--
GM-47	12/17/98	3:41 PM	28.72	24	-	0.45	88.5	1.5	0	--	--	--	83.03
GM-47	12/18/98	1:08 PM	28.33	32	0.01	4.53	88.6	2.9	0.5	--	--	--	82.99
GM-47	12/19/98	4:27 PM	29	20	T	-4.2	0	0	19.4	9	8	2.5	82.97
GM-47	12/20/98	4:58 PM	28.95	19	T	0.49	30.2	0.5	16.7	--	--	--	82.89
GM-47	12/21/98	9:58 AM	28.75	15	-	2.04	56.6	1.5	6.1	--	--	--	82.75
GM-47	12/22/98	9:27 AM	28.99	-9	-	-1.77	0	0	17	--	--	--	82.75
GM-47	12/30/98	12:44 PM	28.73	6	-	0.1	0	0	16.9	--	--	--	81.85
GM-47	01/05/99	8:44 AM	28.8	-11	-	-0.02	0	0	16.8	--	--	--	81.42
GM-47	01/07/99	10:14 AM	28.92	-7.1	-	-2.05	0	0	16.2	3.5	3.5	2	81.21
GM-47	01/11/99	3:43 PM	28.45	-0.9	T	3.86	77	3	0	--	--	--	80.83
GM-47	01/15/99	10:08 AM	28.62	-6	T	4.73	52.8	1.7	5.6	--	--	--	80.8
GM-47	01/19/99	9:29 AM	28.6	24.1	-	-2.76	0	0	19.9	--	--	--	81.28
GM-47	01/22/99	11:44 AM	28.65	27	T	1.45	34.9	0.9	12.9	--	--	--	81.74
GM-47	01/28/99	4:00 PM	28.89	27	-	-1.1	0	0	18.8	70	70	<1	82.14
GM-47	01/29/99	10:06 AM	28.98	25	-	-0.84	0	0	19	3	3	1	82.22
GM-47	02/02/99	9:31 AM	28.25	32	0.01	7.94	68.9	2	0	--	--	--	81.3
GM-47	02/09/99	9:51 AM	28.52	35.1	-	0.63	73.1	0.7	1.5	--	--	--	82.44
GM-47	02/22/99	3:42 PM	29.08	24.1	-	1.25	48	0.3	7.3	--	--	--	82.45
GM-47	02/26/99	9:54 AM	28.81	27	-	1.82	77.8	0.4	0	--	--	--	82.42
GM-47	03/09/99	9:46 AM	28.91	25	T	3.81	55.3	0.3	5.2	--	--	--	82.39
GM-47	03/22/99	4:10 PM	28.75	36	-	1.46	83.3	1.9	0	--	--	--	82.49
GM-47	04/09/99	10:53 AM	28.64	50	-	1.52	85.3	2	0.2	--	--	--	82.25
GM-47	04/21/99	10:07 AM	28.62	42.1	-	1.64	84.8	1.8	0	--	--	--	--
GM-47	05/01/99	8:39 AM	29.03	70	-	1.08	82.4	0.6	0	--	--	--	--
GM-47	05/16/99	12:08 PM	28.66	68	T	3.57	76.4	0	0	--	--	--	81.9
GM-47	07/14/99	3:20 PM	28.6	75.9	-	3.87	88.5	1.6	0	--	--	--	81.62

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-47	07/16/99	5:20 PM	28.7	72	0.04	2.98	88.8	1.8	0	--	--	--	82.1
GM-47	07/19/99	3:50 PM	28.84	77	-	2.4	90.8	1.6	0	--	--	--	81.6
GM-47	07/20/99	4:36 PM	28.82	71.1	-	2.91	89.2	1.1	0	--	--	--	73
GM-47	07/23/99	6:18 PM	28.58	84.9	-	4.23	93.4	1.7	0	--	--	--	81.51
GM-47	07/28/99	9:27 AM	28.56	78.1	-	3.53	85.2	0.1	0	--	--	--	81.85
GM-47	08/02/99	6:30 PM	28.92	68	-	-1.32	0	0	21.5	--	--	--	82.27
GM-47	08/03/99	5:05 PM	28.75	72	-	1.72	85.1	1.2	1.2	--	--	--	82.11
GM-47	08/04/99	1:38 PM	28.65	66	0.04	1.87	89.8	1.7	1.2	--	--	--	82.11
GM-47	08/05/99	5:09 PM	28.61	75	-	1.04	88	2	0.5	--	--	--	82.15
GM-47	08/06/99	5:53 PM	28.74	72	-	-1.72	57.6	0.9	5.4	--	--	--	82.23
GM-47	08/07/99	9:46 AM	28.58	70	-	0.13	29.2	0	13.1	--	--	--	82.2
GM-47	08/08/99	8:25 AM	28.83	57.9	-	-4.67	0	0	20.5	--	--	--	82.35
GM-47	08/09/99	11:50 AM	28.67	63	0.01	-3.85	0	0	20.9	--	--	--	82.3
GM-47	08/10/99	8:09 AM	28.42	61	-	-0.37	26.5	0.1	13.3	--	--	--	82.19
GM-47	08/11/99	8:27 AM	28.65	66	-	-4.35	0	0	20.5	--	--	--	82.71
GM-47	08/16/99	4:00 PM	28.61	82.9	-	-4.8	0	0	20.2	4	4	4	82.66
GM-47	08/20/99	10:53 AM	28.9	73	-	-9.94	0	0	20.2	17.5	17.5	2	82.63
GM-47	08/23/99	4:55 PM	28.61	70	-	-6.15	0	0	20.4	2.5	2.5	1.5	82.18
GM-47	08/30/99	2:31 PM	29.01	68	-	-12.74	0	0	20.3	3	3	3	82.25
GM-47	09/02/99	3:19 PM	28.78	87.1	-	-8.76	0	0	20.5	3	2.5	2.5	82.3
GM-47	09/14/99	3:12 PM	28.65	57	-	1.2	66.8	0.3	1	--	--	--	--
GM-47	09/20/99	1:56 PM	28.89	50	0.02	0.83	74.9	0.3	0	--	--	--	--
GM-47	10/06/99	2:04 PM	29.01	45	-	0.77	82.9	1.4	0	--	--	--	82.46
GM-47	10/26/99	12:33 PM	28.83	39.9	-	2.3	98.1	1.5	0	--	--	--	82.35
GM-47	11/01/99	2:52 PM	28.42	62.1	-	5.96	87.8	1.3	0	--	--	--	81.6
GM-47	11/05/99	2:22 PM	28.75	52	-	2.2	87.8	0.9	0	--	--	--	82.2
GM-47	12/09/99	1:47 PM	28.74	35	-	4.9	94.5	1.2	0	--	--	--	--
GM-47	01/21/00	2:57 PM	28.78	5	-	1.15	91	1	1.1	--	--	--	81.35
GM-47	03/17/00	1:30 PM	29.16	28.9	-	0.08	82.5	0.1	0.3	--	--	--	76.41
GM-47	04/01/00	9:18 AM	28.77	42	-	2.4	90.8	0.4	0.4	--	--	--	81.2
GM-47	05/17/00	12:33 PM	28.61	61	-	4.34	79.2	0.2	0	--	--	--	80.86
GM-47	05/18/00	9:14 AM	28.77	44	-	2.76	92.1	1.5	0	--	--	--	81.16
GM-47	05/18/00	1:54 PM	28.82	49	-	1.78	--	--	--	--	--	--	--
GM-47	05/18/00	2:52 PM	28.83	50	-	1.8	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-47	05/18/00	4:12 PM	28.82	50	-	1.7	--	--	--	--	--	--	--
GM-47	05/18/00	5:52 PM	28.88	46	-	1.64	--	--	--	--	--	--	--
GM-47	05/18/00	6:55 PM	28.88	44	-	1.09	--	--	--	--	--	--	--
GM-47	05/19/00	8:46 AM	28.95	48	-	0.05	--	--	--	--	--	--	--
GM-47	05/19/00	11:12 AM	28.92	52	-	0.67	--	--	--	--	--	--	--
GM-47	05/20/00	8:48 AM	28.81	57	-	2.45	89.7	0.5	0	--	--	--	81.1
GM-47	05/20/00	1:07 PM	28.76	67	-	3.25	--	--	--	--	--	--	--
GM-47	05/20/00	2:02 PM	28.74	68	-	3.48	--	--	--	--	--	--	--
GM-47	05/20/00	3:06 PM	28.73	68	-	3.56	--	--	--	--	--	--	--
GM-47	05/20/00	4:00 PM	28.71	69	-	3.16	--	--	--	--	--	--	--
GM-47	05/20/00	4:59 PM	28.71	67	-	1.29	--	--	--	--	--	--	--
GM-47	05/21/00	9:01 AM	28.66	60	-	4.48	--	--	--	--	--	--	--
GM-47	05/30/00	4:08 PM	28.58	59	-	5.08	80.6	0	0	--	--	--	80.76
GM-47	05/31/00	10:36 AM	28.76	73	-	0.03	--	--	--	--	--	--	--
GM-47	05/31/00	11:34 AM	28.75	72	-	2.62	--	--	--	--	--	--	--
GM-47	05/31/00	12:38 PM	28.75	76	-	2.85	--	--	--	--	--	--	--
GM-47	05/31/00	1:34 PM	28.76	76	-	2.85	--	--	--	--	--	--	--
GM-47	05/31/00	2:35 PM	28.76	77	-	2.6	--	--	--	--	--	--	--
GM-47	05/31/00	3:40 PM	28.76	76	-	2.62	--	--	--	--	--	--	--
GM-47	06/01/00	8:12 AM	28.83	54	-	0.12	--	--	--	--	--	--	--
GM-47	06/01/00	11:24 AM	28.86	52	0.04	2.09	--	--	--	--	--	--	--
GM-47	07/05/00	4:06 PM	28.74	75	-	0.01	0	0	19.4	-0.06	-0.22	-0.25	--
GM-47	07/17/00	4:19 PM	28.69	69	-	5.53	65.6	0.3	2.2	--	--	--	--
GM-47	07/23/00	8:13 AM	29	57	-	0.95	74.5	0.4	0	--	--	--	--
GM-47	07/25/00	8:40 AM	28.78	73	-	4.39	70.4	0.4	0	--	--	--	--
GM-47	07/31/00	2:22 PM	28.67	83	-	6.36	79.5	0.3	0	--	--	--	--
GM-47	08/06/00	8:50 AM	28.39	65	-	4.85	82.5	0.9	0	--	--	--	--
GM-47	08/09/00	8:54 AM	28.65	65	-	-1.92	58.8	0.2	5.7	--	--	--	81.2
GM-47	08/19/00	10:25 AM	29.06	60	-	-13.28	0	0	20.3	6.5	6	6.5	81.97
GM-47	08/29/00	1:31 PM	28.79	75	-	-9.94	0	0	20.5	0.98	0.98	0.9	81.32
GM-47	09/10/00	11:05 AM	28.61	72	-	3.47	74.9	0.2	0	--	--	--	72.95
GM-47	09/25/00	2:24 PM	28.8	60	-	-8.29	0	0	20.5	--	--	--	80.83
GM-47	09/26/00	1:42 PM	28.62	72	-	-29	69.5	1.8	1.6	--	--	--	--
GM-47	09/27/00	8:00 AM	28.9	43	-	-28	90.4	2.3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-47	10/02/00	2:48 PM	28.45	55	-	-11.64	0	0	20.4	--	--	--	80.58
GM-47	10/06/00	11:15 AM	28.85	40	-	31	66.7	2	2.3	--	--	--	--
GM-47	10/09/00	5:07 PM	28.97	53	-	-28	76.4	2.3	1.2	--	--	--	--
GM-47	10/13/00	8:53 AM	28.7	57	-	-27	--	--	--	--	--	--	--
GM-47	10/16/00	2:54 PM	28.89	51	-	-27	81.6	2.2	0	--	--	--	--
GM-47	10/19/00	4:34 PM	28.68	63	-	-27	85.8	2.1	0.6	--	--	--	--
GM-47	10/23/00	12:04 PM	29.06	58	-	-28	83.4	2.3	0.2	--	--	--	--
GM-47	10/31/00	8:52 AM	28.92	51	-	-27	88.1	2.4	0.1	--	--	--	--
GM-47	11/14/00	9:00 AM	28.42	31	T	-26	90.5	2.4	0.1	--	--	--	--
GM-47	12/05/00	10:42 AM	28.89	9	-	-26	51.1	1.7	8	--	--	--	--
GM-47	02/24/01	11:25 AM	28.83	23	T	-24	0	0	20.4	-2.8	-2.8	-2.4	--
GM-47	03/22/01	10:00 AM	28.85	43	-	-29	69.5	1.1	4.3	--	--	--	--
GM-47	04/09/01	8:35 AM	28.75	39	-	-32	26	1	11.8	--	--	--	--
GM-47	04/09/01	9:00 AM	28.75	39	-	--	30.7	1.6	7.2	--	--	--	--
GM-47	04/09/01	2:28 PM	28.76	42	-	--	--	--	--	--	--	--	81.44
GM-47	05/01/01	1:48 PM	28.57	71	-	-32	16.8	0.6	12.3	--	--	--	80.24
GM-47	05/29/01	1:29 PM	28.91	63	-	-33	0	0	19.3	1802	1784	-0.28	79.92
GM-47	07/20/01	11:42 AM	28.78	85	-	-32	0	0	20.2	-0.51	-0.58	-0.58	78.64
GM-47	08/17/01	9:00 AM	28.74	67	-	--	--	--	--	--	--	--	--
GM-47	08/17/01	10:11 AM	28.74	70	-	-31	51.4	1.2	1.9	--	--	--	78
GM-47	08/17/01	1:20 PM	28.74	73	-	-30	54.7	1.1	1.1	--	--	--	78.1
GM-47	08/17/01	2:02 PM	28.73	73	-	-33	53.1	1.1	1.2	--	--	--	78
GM-47	08/17/01	2:44 PM	28.72	77	-	-30	53.2	1.1	1.3	--	--	--	78
GM-47	08/17/01	3:39 PM	28.72	76	-	-31	52	1.1	1.5	--	--	--	78
GM-47	08/18/01	8:57 AM	28.7	69	-	-30	58.1	1.2	1.2	--	--	--	78
GM-47	08/19/01	7:34 AM	28.77	65	-	-32	54.5	1.2	1.6	--	--	--	78.3
GM-47	08/20/01	7:35 AM	28.87	63	-	-34	54.9	1.3	0.7	--	--	--	82.2
GM-47	09/09/01	9:17 AM	28.71	59	-	-23	0	0	20.4	0	0	0	82.18
GM-47	09/09/01	11:17 AM	28.7	60	-	-43	65.3	1.8	0.4	--	--	--	--
GM-47	10/06/01	9:15 AM	28.74	39	-	-32	36.5	0.9	5	--	--	--	81.2
GM-47	11/07/01	4:48 PM	28.87	43	T	-72	35	3.2	0	--	--	--	81.1
GM-47	12/18/01	4:00 PM	28.46	37	-	-78	33	3.5	3.2	--	--	--	84.22
GM-47	01/10/02	2:25 PM	28.54	36	T	-42	0	0	20.5	--	--	--	--
GM-47	01/28/02	2:18 PM	28.75	26	-	-83	31.5	2.6	4.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-47	03/22/02	1:34 PM	28.73	25	-	--	20	3.4	13.1	--	--	--	--
GM-47	04/12/02	10:50 AM	28.86	47	-	--	20.6	4	5.5	--	--	--	--
GM-47	04/29/02	10:28 AM	28.61	36	0.01	-87	>128	2.8	12.3	--	--	--	78.82
GM-47	05/29/02	10:38 AM	28.64	76	-	-3.22	0	0	21	2.08	1.66	0	80.22
GM-47	06/06/02	8:52 AM	28.85	64	-	-5	0	0	20.8	2.6	0	0	80.72
GM-47	07/10/02	6:45 PM	29.06	70	-	--	--	--	--	--	--	--	--
GM-47	07/10/02	6:56 PM	29.06	70	-	-90	9.3	5	0.5	--	--	--	--
GM-47	10/09/03	9:55 AM	28.86	71	-	-111.9	4.8	0.6	14.3	--	--	--	--
GM-47	10/15/03	1:57 PM	28.61	48	-	-94.1	3.4	0.5	16.8	--	--	--	78.48
GM-47	11/19/03	10:45 AM	28.33	41	-	-112	11.7	3.1	6.7	--	--	--	--
GM-47	05/06/04	11:18 AM	28.67	64	-	-100.7	--	--	--	--	--	--	74.65
GM-47	06/19/04	9:30 AM	29.05	62	-	-0.046	--	--	--	--	--	--	--
GM-47	06/22/04	5:50 AM	28.57	50	-	0	--	--	--	--	--	--	--
GM-47	06/22/04	8:15 AM	28.59	57	-	-103	--	--	--	--	--	--	--
GM-47	06/22/04	9:27 AM	28.59	59	-	--	0	0	20.2	--	--	--	--
GM-47	06/27/04	3:04 PM	28.84	64	-	-149.4	--	--	--	--	--	--	--
GM-47	07/07/04	6:11 PM	28.57	55	-	-3.017	--	--	--	--	--	--	--
GM-47	07/19/04	2:06 PM	28.55	83	-	-89.8	--	--	--	--	--	--	--
GM-47	08/21/04	10:16 AM	28.81	60	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	7:40 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-47	08/22/04	8:13 AM	28.53	54	T	0.1	--	--	--	--	--	--	--
GM-47	08/22/04	8:42 AM	28.53	57	T	0	--	--	--	--	--	--	--
GM-47	08/22/04	9:13 AM	28.53	57	T	0	--	--	--	--	--	--	--
GM-47	08/22/04	9:47 AM	28.51	65	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	10:12 AM	28.51	65	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	10:49 AM	28.5	74	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	11:10 AM	28.5	74	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	11:45 AM	28.48	75	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	12:36 PM	28.48	76	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	1:13 PM	28.48	76	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	1:42 PM	28.48	78	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	2:40 PM	28.48	79	-	0	--	--	--	--	--	--	--
GM-47	08/22/04	3:16 PM	28.48	79	-	0	--	--	--	--	--	--	--
GM-47A	10/29/07	10:11 AM	30.21	50	-	-39.1	0.5	0.3	26.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-48	08/19/98	4:43 PM	28.89	73.9	-	3.92	84.4	1.8	0	--	--	--	79
GM-48	08/21/98	6:23 PM	28.93	75	-	3.71	85.6	5.3	0	--	--	--	81.35
GM-48	08/23/98	2:42 PM	28.43	80.1	-	9.64	84	5.1	0	--	--	--	77.7
GM-48	08/24/98	2:48 PM	28.44	77	-	9.11	83.6	5.3	0	--	--	--	80.6
GM-48	08/24/98	3:23 PM	28.44	77	-	5.2	82.1	5.4	0	--	--	--	81.14
GM-48	08/25/98	3:55 PM	28.63	75.9	-	5.93	84.9	5.3	0	--	--	--	79.9
GM-48	08/26/98	9:14 AM	28.79	72	-	3.47	87	5.3	0	--	--	--	72.25
GM-48	08/27/98	3:07 PM	28.76	80.1	-	3.68	84.1	5.1	0	--	--	--	81.27
GM-48	08/28/98	6:00 PM	28.64	75.9	-	5.1	84.9	5.4	0	--	--	--	81.15
GM-48	08/29/98	4:10 PM	28.68	75	-	3.7	84.7	4.7	0	--	--	--	81.07
GM-48	08/31/98	9:20 AM	28.86	66	-	2.28	86.6	5.3	0	--	--	--	81.47
GM-48	09/09/98	7:50 AM	28.96	53.1	-	0.22	90.5	3.8	0	--	--	--	81.61
GM-48	09/10/98	--	--	--	--	--	--	--	--	--	--	--	81.3
GM-48	09/10/98	11:30 AM	28.74	80.1	-	3.05	85.7	4.8	0	--	--	--	81.36
GM-48	09/11/98	1:30 PM	28.57	97	-	5.17	83.7	5.1	0	--	--	--	81.1
GM-48	09/12/98	7:57 AM	28.76	64	-	2.86	87.5	5.5	0	--	--	--	81.39
GM-48	09/13/98	8:14 AM	28.69	64.9	-	3.35	87.4	5.6	0	--	--	--	81.34
GM-48	09/14/98	5:36 PM	28.59	66	-	4.97	86.1	5.5	0	--	--	--	81.36
GM-48	09/23/98	7:59 AM	28.96	48	-	-0.36	0	0	20.8	80	80	3	81.66
GM-48	09/25/98	1:00 PM	28.51	73	-	5.45	83.1	5.5	0	--	--	--	81.14
GM-48	09/28/98	8:08 AM	28.78	48.9	-	0.84	88.4	5.4	0	--	--	--	81.56
GM-48	09/30/98	10:30 AM	28.63	46	0.06	2.76	86.5	5.6	0	--	--	--	81.39
GM-48	10/05/98	3:53 PM	28.82	51.1	0.01	2.93	62.7	3.4	4	--	--	--	81.34
GM-48	10/06/98	8:17 AM	28.56	61	T	5.93	72.5	4.5	1.4	--	--	--	81.41
GM-48	10/08/98	9:59 AM	29.04	48.9	-	-1.53	0	0	20.5	200	200	3	81.4
GM-48	10/09/98	8:39 AM	28.94	50	-	0.46	15.5	0.1	16.6	--	--	--	81.41
GM-48	10/10/98	12:00 PM	28.88	66.9	-	1.93	75.2	5	1.1	--	--	--	81.38
GM-48	10/13/98	4:50 PM	28.8	42.1	-	3.22	84.9	5.6	0	--	--	--	--
GM-48	10/19/98	2:42 PM	28.72	54	-	2.94	84.1	5.3	0	--	--	--	73
GM-48	10/23/98	7:49 AM	28.97	53.1	-	1.39	32.6	1	12.4	--	--	--	81.44
GM-48	10/25/98	8:51 AM	28.94	45	-	2.05	80.2	5.3	0.2	--	--	--	81.36
GM-48	11/02/98	12:53 PM	29.05	39	-	0.57	14	0.2	16.5	--	--	--	--
GM-48	11/06/98	8:33 AM	28.92	35.1	-	2.49	--	--	--	--	--	--	--
GM-48	11/06/98	12:23 PM	28.93	37.9	-	1.39	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-48	11/07/98	8:19 AM	29.08	34	-	-0.76	--	--	--	--	--	--	--
GM-48	11/07/98	12:00 PM	29.07	41	-	-1.72	--	--	--	--	--	--	--
GM-48	11/07/98	4:27 PM	29.05	37.9	-	-1.84	--	--	--	--	--	--	--
GM-48	11/18/98	9:05 AM	28.89	33.1	-	0	0.3	0	19.7	--	--	--	81.64
GM-48	11/30/98	12:52 PM	28.38	39.9	-	6.24	87.2	5.3	0	--	--	--	76.4
GM-48	12/03/98	10:37 AM	28.4	54	-	5.63	86.5	5.2	0	--	--	--	80.6
GM-48	12/08/98	1:44 PM	28.72	41	-	1.97	66.5	1.8	3.5	--	--	--	76
GM-48	12/10/98	10:18 AM	29.04	29	-	-1.33	0	0	19.3	60	60	1.25	81.76
GM-48	12/17/98	3:29 PM	28.71	26	-	0.65	86.5	2	0	--	--	--	89.24
GM-48	12/18/98	1:15 PM	28.33	32	0.01	4.35	88.3	5.9	0.2	--	--	--	84
GM-48	12/19/98	4:44 PM	29.03	19	T	-4.06	0	0	19.6	1000	6.5	2.5	89.6
GM-48	12/20/98	2:45 PM	29	19	T	-0.2	0	0	28.5	--	--	--	89.92
GM-48	12/21/98	10:10 AM	28.75	15	-	1.97	11.7	0.4	14.9	--	--	--	83.6
GM-48	12/22/98	7:35 AM	28.96	-10	-	-1.4	0	0	25.7	--	--	--	89.4
GM-48	12/30/98	12:58 PM	28.73	6	-	0.09	0	0	16.8	--	--	--	89.17
GM-48	01/05/99	8:30 AM	28.8	-11	-	0	0	0	17.2	--	--	--	89.11
GM-48	01/07/99	8:41 AM	28.9	-9.9	-	-1.4	0	0	16.4	2	2	1.5	89.18
GM-48	01/11/99	2:33 PM	28.47	-0.9	T	1.73	73.4	4.5	2.5	--	--	--	88.26
GM-48	01/15/99	10:21 AM	28.62	-6	T	2.1	34.8	1.8	11.7	--	--	--	88.54
GM-48	01/19/99	9:45 AM	28.61	23	-	-2.67	0	0	19.9	--	--	--	88.87
GM-48	01/22/99	11:56 AM	28.65	27	T	0	2.7	0	14.3	--	--	--	88.32
GM-48	01/28/99	4:17 AM	28.71	23	-	-1.53	0	0	18.8	<1	<1	<1	88.5
GM-48	01/29/99	10:26 AM	28.98	25	-	-0.52	0	0	18.9	1.25	1.25	1	88.39
GM-48	02/02/99	9:51 AM	28.25	32	0.01	7.83	72.2	4.8	2.4	--	--	--	87.27
GM-48	02/22/99	2:52 PM	29.1	25	-	0	2.2	0	19.7	--	--	--	87.37
GM-48	02/26/99	10:12 AM	28.81	27	-	0	2.3	0.1	22.6	--	--	--	86.73
GM-48	03/09/99	9:58 AM	28.91	25	T	3.48	53.9	2.9	13.4	--	--	--	85
GM-48	03/22/99	4:25 PM	28.75	36	-	0.04	1.7	0	19.9	--	--	--	84.4
GM-48	04/09/99	1:36 PM	28.66	48.9	-	0.02	13.8	0.2	18.5	--	--	--	76
GM-48	04/21/99	10:20 AM	28.62	42.1	-	0.2	0	0	19.5	7.5	7.5	7.5	--
GM-48	05/01/99	5:32 PM	28.89	73	-	0.15	57.8	0.3	0	--	--	--	--
GM-48	05/16/99	9:55 AM	28.69	64.9	-	1.68	85.6	1.7	10.5	--	--	--	83.99
GM-48	05/16/99	10:15 AM	28.69	64.9	-	--	82.3	1.4	0	--	--	--	--
GM-48	07/14/99	1:40 PM	28.58	75	-	1.63	92.5	2.6	0	--	--	--	82.5

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-48	07/16/99	3:35 AM	28.66	73.9	-	1.23	93.4	1.9	0	--	--	--	82.5
GM-48	07/19/99	1:45 PM	28.84	77	-	-0.01	27.5	0	14.7	--	--	--	82.5
GM-48	07/20/99	2:40 PM	28.85	73	-	0.05	21.9	0	13.7	--	--	--	82
GM-48	07/23/99	4:46 PM	28.58	86	-	2.29	96.4	3	0	--	--	--	82
GM-48	07/28/99	10:17 AM	28.56	79	-	1.34	90.7	2.6	0	--	--	--	82.21
GM-48	08/02/99	6:56 PM	28.92	68	-	0.28	0	0	21.3	--	--	--	83
GM-48	08/03/99	5:12 PM	28.75	72	-	0.1	0	0	21.2	--	--	--	73.91
GM-48	08/04/99	1:44 PM	28.65	66	0.04	-0.12	0	0	21.1	--	--	--	74.1
GM-48	08/05/99	5:16 PM	28.61	75	-	-0.2	0	0	20.9	--	--	--	74.39
GM-48	08/06/99	6:15 PM	28.74	72	-	-1.93	0	0	20.6	--	--	--	74.5
GM-48	08/07/99	10:22 AM	28.58	70	-	-0.54	0	0	20.2	--	--	--	74.1
GM-48	08/08/99	8:39 AM	28.83	62.1	-	-3.53	0	0	20.5	--	--	--	74.8
GM-48	08/09/99	12:01 PM	28.67	63	0.01	-4.1	0	0	20.9	--	--	--	75.1
GM-48	08/10/99	8:35 AM	28.44	64	-	-1.44	0	0	20.7	--	--	--	74.6
GM-48	08/11/99	8:44 AM	28.64	69.1	-	-1.32	0	0	20.6	--	--	--	75.6
GM-48	08/16/99	4:13 PM	28.61	82.9	-	-3.2	0	0	20.1	4	4	4	75.5
GM-48	08/20/99	11:03 AM	28.9	73	-	-7.02	0	0	20.2	2	2	2	75
GM-48	08/23/99	5:02 PM	28.61	70	-	-3.8	0	0	20.5	2.5	2.5	1.5	71
GM-48	08/30/99	2:42 PM	29.01	68	-	-10.21	0	0	20.4	2.5	2.5	2.5	71
GM-48	09/02/99	3:30 PM	28.78	82.9	-	-6.85	0	0	20.5	2.5	2.5	2.5	71
GM-48	09/14/99	4:28 PM	28.66	55.9	-	0.01	0	0	21.1	7	7	7	--
GM-48	09/20/99	2:07 PM	28.89	50	0.02	0.11	0	0	20.7	3	3	3	--
GM-48	10/06/99	2:13 PM	29.01	45	-	-0.49	25.7	0	12.7	--	--	--	72.16
GM-48	10/26/99	1:50 PM	28.85	39.9	-	0	59.6	0.9	4.7	--	--	--	70.8
GM-48	11/01/99	4:40 PM	28.51	48	-	0.48	77.5	1	0	--	--	--	--
GM-48	11/05/99	3:35 PM	28.81	48.9	-	0	25.6	0.3	14.2	--	--	--	69
GM-48	12/09/99	1:48 PM	28.74	35	-	2.13	60.1	0	0	--	--	--	--
GM-48	01/21/00	3:15 PM	28.78	5	-	0.7	35.2	0	9	--	--	--	71.7
GM-48	04/01/00	11:33 AM	28.71	50	-	0.25	44.6	0	9.2	--	--	--	70.6
GM-48	05/17/00	12:26 PM	28.61	63	-	1.16	64.5	0	0	--	--	--	70.41
GM-48	05/18/00	9:08 AM	28.77	44	-	0.38	68.6	0.8	2.8	--	--	--	71.11
GM-48	05/18/00	1:51 PM	28.82	49	-	0	--	--	--	--	--	--	--
GM-48	05/18/00	2:50 PM	28.83	50	-	0	--	--	--	--	--	--	--
GM-48	05/18/00	4:09 PM	28.82	50	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-48	05/18/00	5:50 PM	28.88	46	-	1.64	--	--	--	--	--	--	--
GM-48	05/18/00	6:51 PM	28.88	44	-	0	--	--	--	--	--	--	--
GM-48	05/19/00	8:43 AM	28.95	48	-	0.16	--	--	--	--	--	--	--
GM-48	05/19/00	11:07 AM	28.92	52	-	0.16	--	--	--	--	--	--	--
GM-48	05/20/00	8:40 AM	28.81	57	-	0.13	38.8	0.3	10.3	--	--	--	68.5
GM-48	05/20/00	12:00 PM	28.78	66	-	0.22	--	--	--	--	--	--	--
GM-48	05/20/00	1:05 PM	28.76	67	-	0.55	--	--	--	--	--	--	--
GM-48	05/20/00	1:58 PM	28.74	68	-	0.76	--	--	--	--	--	--	--
GM-48	05/20/00	3:02 PM	28.73	68	-	0.85	--	--	--	--	--	--	--
GM-48	05/20/00	3:57 PM	28.71	69	-	0.02	--	--	--	--	--	--	--
GM-48	05/20/00	4:57 PM	28.71	67	-	0.47	--	--	--	--	--	--	--
GM-48	05/21/00	8:58 AM	28.66	60	-	0.62	--	--	--	--	--	--	--
GM-48	05/30/00	4:04 PM	28.58	59	-	2.64	72.3	2.2	1.5	--	--	--	70.21
GM-48	05/31/00	10:38 AM	28.76	73	-	2.33	--	--	--	--	--	--	--
GM-48	05/31/00	11:32 AM	28.75	72	-	0.17	--	--	--	--	--	--	--
GM-48	05/31/00	12:34 PM	28.75	76	-	0.25	--	--	--	--	--	--	--
GM-48	05/31/00	1:32 PM	28.76	76	-	0.24	--	--	--	--	--	--	--
GM-48	05/31/00	2:33 PM	28.76	77	-	0.2	--	--	--	--	--	--	--
GM-48	05/31/00	3:33 PM	28.76	76	-	0.24	--	--	--	--	--	--	--
GM-48	06/01/00	8:16 AM	28.83	54	-	2.25	--	--	--	--	--	--	--
GM-48	06/01/00	11:20 AM	28.86	52	0.04	0.07	--	--	--	--	--	--	--
GM-48	06/01/00	12:21 PM	28.74	52	0.06	0.01	--	--	--	--	--	--	--
GM-48	06/01/00	1:33 PM	28.74	54	-	2.05	--	--	--	--	--	--	--
GM-48	06/01/00	2:19 PM	28.74	54	-	1.47	--	--	--	--	--	--	--
GM-48	06/01/00	3:18 PM	28.68	54	T	1.84	--	--	--	--	--	--	--
GM-48	06/01/00	4:17 PM	28.66	54	-	1.68	--	--	--	--	--	--	--
GM-48	06/02/00	8:32 AM	28.84	52	-	0	--	--	--	--	--	--	--
GM-48	07/17/00	4:25 PM	28.69	69	-	3.2	83.1	3.1	0.4	--	--	--	--
GM-48	07/23/00	8:06 AM	29	57	-	0	34.9	0.1	10.5	--	--	--	--
GM-48	07/25/00	8:33 AM	28.78	73	-	0.98	72.8	0.1	0	--	--	--	--
GM-48	07/31/00	2:15 PM	28.67	83	-	0.82	89.8	0.4	0	--	--	--	--
GM-48	08/06/00	8:40 AM	28.39	65	-	0.49	60.7	0	0	--	--	--	--
GM-48	08/09/00	11:40 AM	28.71	67	-	0.01	25	0	14.6	--	--	--	71.58
GM-48	08/19/00	9:38 AM	29.06	60	-	0.02	10.8	0	17	--	--	--	74.9

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-48	09/10/00	10:25 AM	28.61	72	-	-0.07	0	0	19.6	--	--	--	69.5
GM-48	09/25/00	3:22 PM	28.79	60	-	0.07	39.6	0	10.4	--	--	--	73.15
GM-48	10/02/00	3:38 PM	28.48	54	-	-1.09	26.7	0	13.2	--	--	--	68.28
GM-48	10/09/00	3:27 PM	28.99	59	-	-1.75	0	0	21.1	225	20	4	68.18
GM-48	10/13/00	8:17 AM	28.71	56	-	-1.64	--	--	--	--	--	--	--
GM-48	10/16/00	2:36 PM	28.89	51	-	-3.5	--	--	--	--	--	--	--
GM-48	10/23/00	11:40 AM	29.06	58	-	-4.26	--	--	--	--	--	--	--
GM-48	10/31/00	8:34 AM	28.92	51	-	0	--	--	--	--	--	--	--
GM-48	11/14/00	8:45 AM	28.42	31	T	0.03	--	--	--	--	--	--	--
GM-48	12/05/00	10:25 AM	28.89	8	-	-0.08	--	--	--	--	--	--	--
GM-48	02/24/01	11:12 AM	28.83	23	T	0.05	0	0	20.5	-2.1	-2.4	-3	--
GM-48	03/22/01	9:45 AM	28.85	43	-	-0.21	0	0	20.6	3.2	2	-0.2	--
GM-48	04/09/01	8:21 AM	28.76	37	-	0.01	0	0	20.7	4.45	4.2	0	--
GM-48	04/09/01	2:24 PM	28.76	42	-	--	--	--	--	--	--	--	69.95
GM-48	05/01/01	1:36 PM	28.57	71	-	0	0	0	19.8	9.71	4.56	0	--
GM-48	05/29/01	10:08 AM	28.95	57	-	0.07	0	0	19.5	0.04	0	0	--
GM-48	07/20/01	10:50 AM	28.8	81	-	0	0	0	18.6	103	89	-0.58	--
GM-48	08/20/01	10:06 AM	28.87	75	-	0	0	0	18.9	98.28	50.77	-0.75	69.52
GM-48	09/09/01	9:35 AM	28.7	60	-	0	0	0	20.3	9.5	5.5	0	68.09
GM-48	10/06/01	10:45 AM	28.78	43	-	-0.01	0	0	20.2	6.1	5	0.3	68.46
GM-48	11/07/01	2:10 PM	28.94	44	-	-1.54	0	0	20.7	0.04	-0.15	-0.15	71.71
GM-48	12/18/01	2:40 PM	28.48	40	-	-1	0	0	20.4	0.34	0.34	0.55	69.1
GM-48	01/10/02	2:38 PM	28.55	36	T	0	0	0	20.6	4.93	4.84	1.03	69.1
GM-48	01/28/02	1:05 PM	28.77	24	-	0	0	0	20.9	-0.36	-0.38	-0.48	72.1
GM-48	03/19/02	11:20 AM	28.97	33	-	0	0	0	20.5	20.9	0	0	--
GM-48	04/29/02	9:34 AM	28.61	36	0.01	0.1	0	0	20.6	11.43	10.05	0	67.17
GM-48	05/29/02	10:51 AM	28.64	76	-	0.65	0	0	18.4	175	173	0.2	66.78
GM-48	06/06/02	10:14 AM	28.84	68	-	0.05	0	0	18.8	250	205	0	66.6
GM-48	06/21/02	2:48 PM	29.08	74	-	0	0	0	19.7	128	82	0	--
GM-48	06/24/02	11:07 AM	28.84	75	-	0	0	0	19.4	73.21	50	0	--
GM-48	06/25/02	10:59 AM	28.77	85	-	0	0	0	21	26	20	0	--
GM-48	07/10/02	4:46 PM	29.04	70	-	0	0	0	21.7	30.1	0.36	-0.85	67.6
GM-48	07/12/02	9:15 AM	28.91	70	-	0	0	0	20.7	31.17	31.17	-0.15	67.68
GM-48	08/14/02	11:45 AM	28.6	74	-	0	0	0	20.5	77.35	76.08	-0.28	67.58

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-48	10/15/02	2:05 PM	28.75	42	-	--	--	--	--	--	--	--	67.68
GM-48	10/16/03	10:30 AM	28.8	49	-	0	0	0	19.8	0	0	0	75.71
GM-48	06/18/04	8:57 PM	28.99	52	-	0	--	--	--	--	--	--	--
GM-48	06/22/04	9:35 AM	28.6	61	-	--	0	0	20.7	--	--	--	--
GM-48	06/27/04	3:09 PM	28.84	64	-	-0.008	--	--	--	--	--	--	--
GM-48	07/07/04	6:15 PM	28.57	55	-	0.012	--	--	--	--	--	--	--
GM-48	07/19/04	2:10 PM	28.55	83	-	0.011	--	--	--	--	--	--	--
GM-48	08/21/04	10:12 AM	28.81	60	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	7:43 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-48	08/22/04	8:15 AM	28.53	54	T	0	--	--	--	--	--	--	--
GM-48	08/22/04	8:44 AM	28.53	57	T	0	--	--	--	--	--	--	--
GM-48	08/22/04	9:15 AM	28.53	57	T	0	--	--	--	--	--	--	--
GM-48	08/22/04	9:49 AM	28.51	65	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	10:14 AM	28.51	65	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	10:52 AM	28.5	74	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	11:13 AM	28.5	74	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	11:49 AM	28.48	75	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	12:38 PM	28.48	76	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	1:15 PM	28.48	76	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	1:45 PM	28.48	78	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	2:42 PM	28.48	79	-	0	--	--	--	--	--	--	--
GM-48	08/22/04	3:19 PM	28.48	79	-	0	--	--	--	--	--	--	--
GM-48	09/27/04	3:03 PM	28.83	59	0.07	0	--	--	--	--	--	--	--
GM-48	09/28/04	8:56 AM	29.09	50	-	0	--	--	--	--	--	--	--
GM-48	09/28/04	9:38 AM	29.11	52	-	0.1	--	--	--	--	--	--	--
GM-48	09/28/04	10:05 AM	29.11	52	-	0	--	--	--	--	--	--	--
GM-48	09/28/04	10:38 AM	29.09	54	-	0	--	--	--	--	--	--	--
GM-48	09/28/04	11:13 AM	29.09	54	-	0	--	--	--	--	--	--	--
GM-48	09/28/04	11:39 AM	29.07	57	-	0	--	--	--	--	--	--	--
GM-48	09/28/04	12:08 PM	29.07	57	-	0.1	--	--	--	--	--	--	--
GM-48	09/28/04	12:34 PM	29.05	60	-	0	--	--	--	--	--	--	--
GM-49	08/23/98	2:23 PM	28.46	77	-	0	0	0	21.2	150	85	4	78.91
GM-49	08/24/98	2:24 PM	28.44	79	-	0	0	0	21.7	500	500	2	79.81
GM-49	08/25/98	3:25 PM	28.62	77	-	0	0	0	21.4	250	250	3	80.14

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-49	08/26/98	8:42 AM	28.79	72	-	0.01	0.1	0	20.8	3000	420	5	80.38
GM-49	08/27/98	2:42 PM	28.76	80.1	-	0.02	0.1	0	21.6	4000	475	5.25	80.41
GM-49	08/28/98	5:40 PM	28.64	75.9	-	0.03	0	0	21.6	3000	150	4	80.2
GM-49	08/29/98	3:33 PM	28.68	75	-	0.03	0	0	21.6	1500	200	5	78.72
GM-49	08/31/98	9:08 AM	28.86	66	-	0	0.1	0	21	>10000	500	5	80.5
GM-49	09/09/98	9:00 AM	28.96	60.1	-	0.15	0.2	0	20.4	1300	1300	4.5	82.98
GM-49	09/10/98	--	--	--	--	--	--	--	--	--	--	--	82.7
GM-49	09/10/98	12:40 PM	28.72	81	-	0.07	0.2	0	21	--	--	--	82.64
GM-49	09/11/98	2:19 PM	28.57	97	-	0.14	0.4	0	21.2	--	--	--	82.48
GM-49	09/12/98	8:47 AM	28.76	64.9	-	0.09	0.3	0	20.8	--	--	--	82.74
GM-49	09/13/98	9:01 AM	28.69	68	-	0.14	0.4	0	20.5	--	--	--	82.64
GM-49	09/14/98	6:32 PM	28.6	64.9	-	0.06	0.5	0	20.6	--	--	--	82.7
GM-49	09/23/98	9:18 AM	28.94	54	-	0.11	0.1	0	20.3	2750	2750	2	82.96
GM-49	09/24/98	2:25 PM	28.59	70	-	0	0.4	0	20.2	--	--	--	82.56
GM-49	09/25/98	1:35 PM	28.5	75	-	0.2	1.5	0	19.7	--	--	--	82.56
GM-49	09/28/98	8:56 AM	28.78	55.9	-	0	2	0.1	18.9	--	--	--	82.81
GM-49	09/30/98	11:07 AM	28.63	46	0.06	0	2.5	0.2	18.8	--	--	--	82.65
GM-49	10/06/98	9:15 AM	28.55	62.1	0.04	0.2	2.5	0.1	19	--	--	--	82.76
GM-49	10/08/98	12:17 PM	29.04	50	-	0	2.2	0.1	19.1	--	--	--	82.75
GM-49	10/09/98	9:25 AM	28.94	50	-	0	2.9	0.2	18.5	--	--	--	82.54
GM-49	10/10/98	1:40 PM	28.86	70	-	0.19	2	0	19.8	--	--	--	82.69
GM-49	10/13/98	5:34 PM	28.81	42.1	-	0.19	2.2	0.1	18.9	--	--	--	82.53
GM-49	10/19/98	3:34 PM	28.73	52	-	0.2	1.5	0	19.9	--	--	--	82.67
GM-49	10/23/98	8:52 AM	28.95	57	-	0.19	2.3	0.1	19	--	--	--	82.76
GM-49	10/25/98	10:13 AM	28.94	46	-	0.18	2.2	0.1	18.9	--	--	--	82.74
GM-49	11/02/98	2:57 PM	29.03	39	-	0.01	2.8	0.1	18.7	--	--	--	82.82
GM-49	11/06/98	8:45 AM	28.92	35.1	-	0.04	--	--	--	--	--	--	--
GM-49	11/06/98	12:18 PM	28.93	37.9	-	0.13	--	--	--	--	--	--	--
GM-49	11/06/98	4:15 PM	28.94	37	-	0.01	--	--	--	--	--	--	--
GM-49	11/07/98	8:14 AM	29.08	34	-	0.15	--	--	--	--	--	--	--
GM-49	11/07/98	11:54 AM	29.07	41	-	0.16	--	--	--	--	--	--	--
GM-49	11/07/98	4:19 PM	29.05	37.9	-	0.09	--	--	--	--	--	--	--
GM-49	11/18/98	8:45 AM	28.89	33.1	-	-0.01	2.6	0.1	18.5	--	--	--	82.87
GM-49	11/30/98	1:54 PM	28.41	39	-	0	1.6	0.1	18.9	--	--	--	82.44

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-49	12/03/98	11:26 AM	28.4	54	-	0.13	2.9	0	19.2	--	--	--	82.4
GM-49	12/08/98	2:48 PM	28.74	41	-	0.17	4	0.2	17.9	--	--	--	82.7
GM-49	12/10/98	11:55 AM	29	32	-	0.15	2.2	0.1	18.7	--	--	--	82.96
GM-49	12/18/98	11:59 AM	28.33	32	0.02	0	3	0.1	18.1	--	--	--	82.4
GM-49	12/19/98	3:05 PM	28.97	21	T	0	2	0.1	18.5	--	--	--	83.06
GM-49	12/20/98	3:51 PM	28.98	19	T	0.09	2.8	0.2	15.8	--	--	--	84.92
GM-49	12/21/98	9:21 AM	28.76	14	-	0	1.6	0.1	17.1	--	--	--	82.75
GM-49	12/22/98	9:00 AM	28.99	-9	-	0.23	1	0	16.8	--	--	--	83
GM-49	12/30/98	11:45 AM	28.75	3	-	0	1.9	0.1	16.1	--	--	--	82.77
GM-49	01/05/99	9:43 AM	28.79	-7.1	-	0	1.8	0.1	15.8	--	--	--	82.7
GM-49	01/07/99	9:30 AM	28.92	-7.1	-	0.14	1	0	15.2	--	--	--	82.13
GM-49	01/11/99	2:58 PM	28.47	-0.9	T	0	1.9	0.1	15.6	--	--	--	82.35
GM-49	01/15/99	9:31 AM	28.62	-6	T	0	1.6	0.1	18.8	--	--	--	82.4
GM-49	01/19/99	8:41 AM	28.6	24.1	-	0	1.1	0	19.4	--	--	--	82.67
GM-49	01/22/99	10:50 AM	28.68	27	-	0	1.7	0.1	18.9	--	--	--	82.5
GM-49	01/28/99	3:42 PM	28.89	27	-	0	2.7	0.1	17.5	--	--	--	82.63
GM-49	01/29/99	9:52 AM	28.98	25	-	0	2.4	0.1	17.5	--	--	--	82.7
GM-49	02/02/99	8:50 AM	28.25	32	0.03	0	3.2	0.1	18	--	--	--	81.87
GM-49	02/09/99	9:11 AM	28.49	34	-	0	1.4	0	22.3	--	--	--	82.43
GM-49	02/22/99	2:30 PM	29.1	25	-	0	2.7	0.1	19	--	--	--	82.6
GM-49	02/26/99	9:12 AM	28.8	27	-	0	2.7	0.1	18	--	--	--	82.35
GM-49	03/09/99	9:05 AM	28.9	24.1	T	0	2.4	0.1	13.6	--	--	--	82.32
GM-49	03/22/99	3:29 PM	28.75	37.9	-	0	2.9	0	19.5	--	--	--	82.35
GM-49	04/09/99	12:16 PM	28.64	50	-	0.1	1.8	0	20.6	--	--	--	81.87
GM-49	04/21/99	8:08 AM	28.62	42.1	0.01	0.16	1.6	0	19	--	--	--	--
GM-49	05/01/99	9:42 AM	29.02	73	-	0.01	2.7	0.1	19.1	--	--	--	--
GM-49	05/16/99	11:24 AM	28.67	66.9	-	0	2.5	0	18.8	--	--	--	81.54
GM-49	07/14/99	2:42 PM	28.6	75.9	-	0.02	4.5	0.1	19	--	--	--	81.5
GM-49	07/16/99	5:10 PM	28.7	72	0.04	0	0.4	0	21	--	--	--	81.1
GM-49	07/19/99	3:20 PM	28.84	77	-	-0.01	2.6	0	19.5	--	--	--	81.21
GM-49	07/20/99	2:18 PM	28.86	73.9	-	0	0.2	0	21	--	--	--	81.28
GM-49	07/23/99	4:17 PM	28.59	87.1	-	0	0.3	0	20.5	450	240	1.75	81.19
GM-49	07/28/99	8:56 AM	28.56	78.1	-	0.02	4.9	0.1	19	--	--	--	81.47
GM-49	08/02/99	5:52 PM	28.92	73	-	0	0	0	21.3	9750	6000	6	81.99

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-49	08/03/99	5:47 PM	28.74	70	-	0.29	0.3	0	20.7	--	--	--	81.76
GM-49	08/04/99	2:27 PM	28.65	66	0.04	0.3	4.9	0.1	18.5	--	--	--	81.75
GM-49	08/05/99	5:48 PM	28.6	72	-	1.41	5.7	0.1	18.4	--	--	--	81.72
GM-49	08/06/99	6:41 PM	28.74	64.9	-	0.64	1.2	0	19.7	--	--	--	81.9
GM-49	08/07/99	11:03 AM	28.56	72	-	0.34	0.8	0	19.3	--	--	--	81.77
GM-49	08/08/99	9:27 AM	28.83	62.1	-	0.07	5	0.1	18.1	--	--	--	82.14
GM-49	08/09/99	1:25 PM	28.62	64.9	T	0.6	8.4	0.2	16.3	--	--	--	81.96
GM-49	08/10/99	9:14 AM	28.44	64	-	1.05	8.2	0.2	16.8	--	--	--	81.76
GM-49	08/11/99	9:39 AM	28.65	72	-	0.05	1.1	0	19.6	--	--	--	82.04
GM-49	08/16/99	4:59 PM	28.61	82.9	-	0.09	14.6	0.3	14.2	--	--	--	82.01
GM-49	08/20/99	11:48 AM	28.89	75	-	0.13	13.8	0.3	14.4	--	--	--	82.1
GM-49	08/23/99	5:35 PM	28.61	66.9	-	0.03	14.1	0.5	14.7	--	--	--	81.92
GM-49	08/30/99	3:21 PM	29.01	68	-	0.42	18.1	0.5	12.3	--	--	--	82.01
GM-49	09/02/99	3:59 PM	28.78	82.9	-	0.82	17	0.4	12.3	--	--	--	82.1
GM-49	09/14/99	4:20 PM	28.66	55.9	-	0.07	19.4	0.7	11.8	--	--	--	--
GM-49	09/20/99	2:43 PM	28.89	48.9	T	0.43	27.4	1	8.5	--	--	--	--
GM-49	10/06/99	2:51 PM	29.02	46.9	-	0.96	23.6	0.7	11.1	--	--	--	82.55
GM-49	10/26/99	1:40 PM	28.85	39.9	-	0.12	16.9	0.5	13.7	--	--	--	82.51
GM-49	11/01/99	3:27 PM	28.42	62.1	-	0.44	16.8	0.3	12.9	--	--	--	82.02
GM-49	11/05/99	3:20 PM	28.78	51.1	-	0.04	14.5	0.3	16.6	--	--	--	82.4
GM-49	12/09/99	2:08 PM	28.74	35	-	5.25	63.6	1.5	0.4	--	--	--	--
GM-49	01/21/00	2:10 PM	28.79	5	T	0.01	15.8	0.4	12.9	--	--	--	82.3
GM-49	03/17/00	2:44 PM	29.14	30	-	0.5	16.4	0.4	12	--	--	--	82.02
GM-49	04/01/00	10:15 AM	28.75	44	-	0.92	10.4	0.3	15	--	--	--	82
GM-49	07/17/00	4:08 PM	28.69	69	-	8.12	27	0.9	2.8	--	--	--	--
GM-49	07/23/00	9:33 AM	28.99	66	-	2.1	1	0	19.1	--	--	--	--
GM-49	07/25/00	10:01 AM	28.77	75	-	1.71	22.6	0.8	5.7	--	--	--	--
GM-49	07/31/00	4:05 PM	28.67	81	-	0.17	11.2	0.2	13.5	--	--	--	--
GM-49	08/06/00	10:30 AM	28.36	71	-	0.12	8.2	0.3	15.7	--	--	--	--
GM-49	08/09/00	10:43 AM	28.69	66	-	0.02	8.3	0	16	--	--	--	82.53
GM-49	08/19/00	4:52 PM	29.01	67	-	-0.01	4.3	0	17.3	--	--	--	82.78
GM-49	08/29/00	4:25 PM	28.79	75	-	0.02	0	0	20.4	4	4	4	82.61
GM-49	09/10/00	12:20 PM	28.6	74	-	-0.73	9.2	15.1	0.1	--	--	--	82.17
GM-49	09/25/00	3:52 PM	28.78	60	-	5.38	31.8	0.9	3.1	--	--	--	82.64

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-49	10/02/00	4:30 PM	28.5	55	-	-1.11	25.6	0.6	6	--	--	--	82.52
GM-49	10/09/00	3:00 PM	28.99	59	-	0.37	26.7	0.6	8.3	--	--	--	82.89
GM-49	10/13/00	8:49 AM	28.7	57	-	0.42	--	--	--	--	--	--	--
GM-49	10/16/00	3:32 PM	28.89	50	-	1.84	--	--	--	--	--	--	--
GM-49	10/23/00	12:48 PM	29.06	58	-	0.08	--	--	--	--	--	--	--
GM-49	10/31/00	9:34 AM	28.91	54	-	-0.01	--	--	--	--	--	--	--
GM-49	11/14/00	9:55 AM	28.43	31	-	0.04	--	--	--	--	--	--	--
GM-49	12/05/00	1:42 PM	28.9	10	-	-0.02	--	--	--	--	--	--	--
GM-49	02/24/01	12:25 PM	28.78	24	T	0.15	14.7	0.4	13	--	--	--	--
GM-49	03/22/01	12:30 PM	28.78	46	-	0.4	28.1	0.6	10.3	--	--	--	--
GM-49	04/09/01	9:41 AM	28.76	40	-	0.1	24.2	0.5	13.4	--	--	--	--
GM-49	04/09/01	3:02 PM	28.76	42	-	--	--	--	--	--	--	--	81.78
GM-49	05/01/01	2:21 PM	28.57	71	-	1.81	34.2	0.7	5.9	--	--	--	--
GM-49	05/29/01	10:43 AM	28.92	60	-	0.01	26.7	0.5	9.7	--	--	--	--
GM-49	07/20/01	8:20 AM	28.84	68	-	7	42.8	1.2	1.4	--	--	--	--
GM-49	08/20/01	10:30 AM	28.86	76	-	0.82	22.8	0.6	8.8	--	--	--	82.42
GM-49	09/09/01	11:45 AM	28.7	59	-	2.1	1.7	0	19.4	--	--	--	82.11
GM-49	10/06/01	11:20 AM	28.78	43	-	0.01	2.4	0	18.9	--	--	--	82.45
GM-49	11/07/01	2:45 PM	28.9	44	-	0.1	2.7	0	19.2	--	--	--	83.31
GM-49	12/18/01	3:49 PM	28.46	37	-	1.2	5.1	0.1	18.1	--	--	--	81.95
GM-49	01/10/02	3:31 PM	28.56	35	T	0.64	17	0.5	13.4	--	--	--	82.18
GM-49	01/28/02	1:34 PM	28.75	26	-	0.56	26	0.6	10.3	--	--	--	82.6
GM-49	03/19/02	1:01 PM	28.95	35	T	0.04	44	1.3	3	--	--	--	82.08
GM-49	04/29/02	10:00 AM	28.61	36	0.01	0.01	43.9	0.8	6.3	--	--	--	78.94
GM-49	05/29/02	9:50 AM	28.65	74	-	0	30.5	0.6	9	--	--	--	80.4
GM-49	06/06/02	10:04 AM	28.84	68	-	0.92	31	0.6	7.1	--	--	--	81.05
GM-49	07/12/02	8:47 AM	28.91	70	-	0	33.5	0.6	6.9	--	--	-0.19	81.97
GM-49	08/14/02	10:30 AM	28.6	73	-	-0.5	37	0.8	5.8	--	--	--	81.87
GM-50	09/09/98	3:40 PM	28.84	73.9	-	70	88.5	4.7	0	--	--	--	77.9
GM-50	09/10/98	3:40 PM	28.66	82	-	64	86.7	4.2	0.1	--	--	--	78.11
GM-50	09/11/98	4:57 PM	28.55	93	-	60	84.5	3.9	0.2	--	--	--	77.9
GM-50	09/12/98	3:11 PM	28.69	78.1	-	55	86	4.1	0	--	--	--	78.5
GM-50	09/14/98	5:04 PM	28.58	66.9	-	55	89.5	4.4	0	--	--	--	--
GM-50	09/24/98	4:04 PM	28.58	70	-	65	87.7	4.9	0	--	--	--	77.2

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-50	09/25/98	1:55 PM	28.5	75	-	60	85.6	4.3	0	--	--	--	78.8
GM-50	10/07/98	4:54 PM	28.76	50	-	55	90.4	4.6	0	--	--	--	--
GM-50	10/09/98	10:39 AM	28.91	57	-	56	88.6	4.6	0	--	--	--	--
GM-50	10/11/98	2:45 PM	28.9	63	-	67	87.5	4.9	0	--	--	--	78
GM-50	10/14/98	10:20 AM	28.86	41	-	60	90.5	4.6	0	--	--	--	77.8
GM-50	10/20/98	11:21 AM	28.94	45	-	59	91.1	4.8	0	--	--	--	78.8
GM-50	11/18/98	4:01 PM	28.62	37.9	-	61	97.3	5.1	0	--	--	--	--
GM-50	12/03/98	10:16 AM	28.39	49	-	75	91.6	4.8	0	--	--	--	77.2
GM-50	12/04/98	12:06 PM	28.75	45	-	70	92.6	5.2	0	--	--	--	78
GM-50	12/09/98	12:27 PM	28.92	39	-	70	94.9	5.3	0	--	--	--	78
GM-50	12/15/98	3:55 PM	28.84	37	-	69	94.2	5.4	0	--	--	--	77.8
GM-50	12/18/98	9:00 AM	28.43	28	0.04	70	94.4	4.4	0	--	--	--	79.25
GM-50	12/29/98	8:10 AM	28.53	15	T	70	84.8	4.7	0.2	--	--	--	76.6
GM-50	01/06/99	3:35 PM	28.67	3.9	-	75	100.9	5.2	0	--	--	--	77.4
GM-50	01/21/99	3:26 PM	28.79	26.1	-	71	97	4.9	1	--	--	--	78.6
GM-50	01/26/99	3:35 PM	28.89	28	-	70	95.9	4.9	0	--	--	--	78.55
GM-50	02/03/99	2:59 PM	28.14	32	0.02	80	94.6	5	0	--	--	--	75.9
GM-50	02/25/99	2:36 PM	28.85	30	-	78	94.7	5	0	--	--	--	77.5
GM-50	03/10/99	7:59 AM	29.04	17.1	-	65	90.5	4.4	1.2	--	--	--	--
GM-50	03/10/99	11:18 AM	29.04	28	-	--	--	--	--	--	--	--	78.64
GM-50	03/23/99	2:59 PM	28.52	41	-	78	91.9	4.8	0	--	--	--	76.5
GM-50	04/07/99	2:35 PM	28.44	57	-	18.82	94.4	4.9	0	--	--	--	74.9
GM-50	04/21/99	11:38 AM	28.62	46	-	67	92.4	4.4	0	--	--	--	76.62
GM-50	05/01/99	10:56 AM	29	75.9	-	55	89.7	4.3	0	--	--	--	--
GM-50	05/16/99	4:22 PM	28.61	71.1	-	80	89.7	4.5	0	--	--	--	79
GM-50	06/02/99	4:58 PM	28.72	57	-	85	90	4.1	0	--	--	--	72.9
GM-50	06/15/99	--	--	--	--	75	93.1	4.4	0	--	--	--	--
GM-50	06/16/99	--	--	--	--	64	87.9	4.3	0	--	--	--	--
GM-50	06/17/99	--	--	--	--	63	90.3	4	0	--	--	--	--
GM-50	06/18/99	--	--	--	--	60	91	4	0	--	--	--	--
GM-50	06/19/99	--	--	--	--	65	89.6	4	0	--	--	--	--
GM-50	06/20/99	--	--	--	--	62	90.9	3.9	0	--	--	--	--
GM-50	06/21/99	6:35 PM	28.86	73	-	62	90.3	4.2	0	--	--	--	--
GM-50	06/22/99	5:00 PM	28.65	79	-	65	91	4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-50	06/23/99	5:10 PM	28.47	69.1	T	66	92.7	4.2	0	--	--	--	--
GM-50	06/24/99	3:36 PM	28.58	81	-	66	88.9	3.8	0	--	--	--	--
GM-50	06/25/99	3:36 PM	28.64	88	-	65	92.1	4.2	0.1	--	--	--	--
GM-50	06/26/99	4:24 PM	28.54	87.1	-	65	89	4	0	--	--	--	--
GM-50	06/27/99	2:50 PM	28.52	71.1	-	65	88.6	3.9	0	--	--	--	--
GM-50	06/28/99	2:45 PM	28.44	63	0.01	64	90.2	4.1	0	--	--	--	--
GM-50	06/29/99	4:13 PM	28.56	69.1	-	61	83	4.2	0	--	--	--	--
GM-50	06/30/99	6:00 PM	28.55	64	-	56	83.1	4.2	0	--	--	--	--
GM-50	07/01/99	2:14 PM	28.42	66.9	T	62	83.6	4.3	0	--	--	--	--
GM-50	07/02/99	3:25 PM	28.62	80.1	-	58	88.5	3.9	0	--	--	--	--
GM-50	07/03/99	2:44 PM	28.62	73	-	58	88.4	3.9	0	--	--	--	--
GM-50	07/04/99	1:37 PM	28.63	88	-	55	88.7	3.9	0	--	--	--	--
GM-50	07/05/99	12:33 PM	28.6	84.9	-	58	88.9	4	0	--	--	--	--
GM-50	07/06/99	2:23 PM	28.68	80.1	-	59	87.4	3.8	0	--	--	--	--
GM-50	07/07/99	2:00 PM	28.73	78.1	-	60	87.1	3.8	0	--	--	--	--
GM-50	07/08/99	2:05 PM	28.68	57.9	0.1	60	90.1	4.1	0	--	--	--	--
GM-50	07/09/99	3:45 PM	28.57	59	T	61	91.7	4	0.2	--	--	--	--
GM-50	07/10/99	6:40 PM	28.91	68	-	59	92.9	4	0	--	--	--	--
GM-50	07/11/99	10:55 AM	28.94	75	-	59	95.4	4	0	--	--	--	--
GM-50	07/12/99	3:05 PM	28.83	79	-	62	98.7	4.2	0	--	--	--	--
GM-50	07/17/99	4:40 PM	28.85	78.1	-	74	102	4.8	0	--	--	--	76.3
GM-50	08/10/99	9:07 AM	28.44	64	-	71	108	4	0	--	--	--	77.5
GM-50	09/28/99	3:22 PM	28.92	55	-	68	105.1	4.2	0	--	--	--	78.45
GM-50	10/11/99	2:40 PM	29.03	60.1	-	65	91.5	3.8	0	--	--	--	79.1
GM-50	10/12/99	8:52 AM	28.73	53.1	-	66	100.4	4.1	0	--	--	--	80.5
GM-50	10/13/99	12:33 PM	28.79	46.9	-	65	93.3	4.1	0	--	--	--	80.2
GM-50	10/24/99	11:34 AM	28.81	48.9	-	12.5	98.4	4.3	0	--	--	--	--
GM-50	11/04/99	9:52 AM	28.69	42.1	-	80	98.1	4.3	0	--	--	--	--
GM-50	11/04/99	1:32 PM	28.63	55.9	-	--	--	--	--	--	--	--	--
GM-50	11/04/99	3:15 PM	28.62	54	-	65	94.1	4.2	0	--	--	--	--
GM-50	11/04/99	4:38 PM	28.61	48	-	60	96.8	4.2	0	--	--	--	--
GM-50	11/05/99	10:17 AM	28.7	52	-	61	93.5	3.8	0	--	--	--	--
GM-50	11/06/99	1:05 PM	29.08	46.9	-	54	107.9	4.3	0	--	--	--	--
GM-50	11/07/99	8:17 AM	29.16	27	-	53	110.6	4.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-50	11/08/99	9:49 AM	28.68	48.9	-	64	108.5	4.2	0	--	--	--	--
GM-50	11/09/99	8:07 AM	28.44	60.1	-	66	107.9	4.3	0	--	--	--	--
GM-50	11/10/99	8:09 AM	28.65	39.9	-	61	94.6	3.8	0	--	--	--	--
GM-50	11/12/99	8:00 AM	28.85	39.9	-	--	--	--	--	--	--	--	--
GM-50	12/21/99	2:05 PM	28.89	7	-	--	--	--	--	--	--	--	--
GM-50	12/29/99	1:20 PM	27.94	31	-	--	--	--	--	--	--	--	--
GM-50	01/22/00	3:40 PM	28.48	13	T	72	95.2	4.5	0	--	--	--	--
GM-50	01/23/00	8:27 AM	28.49	3	-	68	93.6	4	0	--	--	--	--
GM-50	01/25/00	8:25 AM	28.74	7	-	56	96.8	3.8	0	--	--	--	--
GM-50	01/26/00	11:40 AM	29.02	15	T	57	95.8	3.8	0	--	--	--	--
GM-50	01/31/00	2:00 PM	28.44	25	T	61	95.1	3.8	0	--	--	--	--
GM-50	02/03/00	5:08 PM	28.48	25	T	7.2	92.6	3.7	0	--	--	--	--
GM-50	02/04/00	2:42 PM	28.89	23	-	50	94.1	3.8	0	--	--	--	--
GM-50	02/06/00	9:50 AM	28.89	19	-	57	96	3.8	0	--	--	--	--
GM-50	02/08/00	8:10 AM	28.92	12	-	59	97.6	3.9	0	--	--	--	--
GM-50	02/11/00	3:30 PM	28.9	16	-	--	--	--	--	--	--	--	--
GM-50	02/15/00	8:00 AM	28.71	10	-	70	99.4	4.5	0	--	--	--	--
GM-50	02/22/00	1:40 PM	28.61	46	-	80	97.5	4.4	0	--	--	--	--
GM-50	03/17/00	10:05 AM	29.22	21.9	-	82	96.9	4.2	0	--	--	--	--
GM-50	03/22/00	12:14 PM	29.05	53.1	-	85	94.7	4.2	0	--	--	--	--
GM-50	03/22/00	4:31 PM	29	53.1	-	14.2	94.1	4	0	--	--	--	--
GM-50	03/29/00	9:24 AM	28.65	32	-	63	93.8	3.6	0	--	--	--	--
GM-50	03/30/00	2:55 PM	28.78	53.1	-	14.55	60	93	3.6	--	--	--	--
GM-50	03/30/00	2:55 PM	28.78	53.1	-	60	93	3.6	0	--	--	--	--
GM-50	04/04/00	8:34 AM	28.54	30	T	62	98	3.9	0	--	--	--	--
GM-50	04/11/00	8:02 AM	29	25	0.01	--	--	--	--	--	--	--	--
GM-50	04/29/00	3:41 PM	28.93	59	-	81	89.4	3.9	0	--	--	--	--
GM-50	05/11/00	4:47 PM	28.31	53	0.03	90	95.1	4.2	0	--	--	--	--
GM-50	06/05/00	3:27 PM	28.91	66	-	47	86.8	3.5	0	--	--	--	--
GM-50	06/06/00	10:20 AM	28.92	71	-	52	91.2	3.7	0	--	--	--	--
GM-50	06/28/00	2:52 PM	28.67	56	0.16	55	89	3.9	0	--	--	--	--
GM-50	07/19/00	1:12 PM	28.81	69	-	58	91.1	3.7	0	--	--	--	--
GM-50	07/23/00	8:04 AM	29	57	-	54	109.4	4.1	0	--	--	--	--
GM-50	08/28/00	2:10 PM	28.67	75	-	57	95.3	3.7	0.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-50	09/11/00	9:45 AM	28.48	69	-	--	99.1	3.2	0	--	--	--	--
GM-50	09/11/00	2:27 PM	28.41	74	-	60	--	--	--	--	--	--	--
GM-50	10/24/00	3:35 PM	29.06	58	-	47	92.1	3.8	0	--	--	--	--
GM-50	11/22/00	8:35 AM	28.93	16	-	54	96	3.8	0	--	--	--	--
GM-50	12/04/00	2:40 PM	28.58	31	-	61	97.1	4	0	--	--	--	--
GM-50	01/10/01	8:32 AM	28.61	30	-	6	93.5	3.7	0.7	--	--	--	--
GM-50	02/21/01	9:40 AM	29.22	3	-	47	97.7	3.8	0	--	--	--	--
GM-50	03/20/01	9:40 AM	29.03	40	-	6	95.4	3.6	0	--	--	--	--
GM-50	04/19/01	8:42 AM	28.77	52	-	64	101.9	3.6	0	--	--	--	--
GM-50	05/15/01	9:14 AM	28.51	54	-	66	108.9	3.6	0	--	--	--	--
GM-50	06/13/01	3:00 PM	28.53	79	-	62	106.2	3.4	0	--	--	--	--
GM-50	07/12/01	3:21 PM	28.86	77	-	60	101.3	3.5	0.3	--	--	--	--
GM-50	08/10/01	10:36 AM	28.87	68	-	60	107.7	3.4	0.3	--	--	--	--
GM-50	09/08/01	4:39 PM	28.51	74	-	62	98.6	3.4	0	--	--	--	--
GM-50	10/07/01	12:45 PM	29	49	-	52	101.8	3.6	0	--	--	--	--
GM-50	11/14/01	10:10 AM	28.8	55	-	47	101.6	3.6	0	--	--	--	--
GM-50	12/19/01	8:49 AM	28.51	29	T	57	109.3	3.5	0	--	--	--	--
GM-50	01/11/02	9:00 AM	28.64	27	-	--	--	--	--	--	--	--	--
GM-50	03/14/02	8:51 AM	28.88	26	-	0	112.9	3.4	0	--	--	--	--
GM-50	04/19/02	8:44 AM	28.83	41	-	0	107.2	3.3	0	--	--	--	--
GM-50	05/17/02	10:10 AM	29.02	42	-	89	114.9	3.3	0	--	--	--	--
GM-50	06/03/02	10:27 AM	28.81	50	-	80	107.1	3.4	0	--	--	--	--
GM-50	07/12/02	3:50 PM	28.82	83	-	70	107.1	3.2	0	--	--	--	--
GM-50	08/14/02	3:10 PM	28.58	75	-	73.3	105.9	3.1	0	--	--	--	--
GM-50	09/23/02	11:49 AM	28.85	48	0.03	65.1	90.7	3.3	0	--	--	--	--
GM-50	10/11/02	12:12 PM	28.88	69	-	82.8	104.4	3.7	0	--	--	--	--
GM-50	11/15/02	11:48 AM	28.99	28	T	67	116	3.5	0	--	--	--	--
GM-50	12/05/02	12:27 PM	28.8	19	-	69.2	117.6	3.7	0	--	--	--	--
GM-50	01/03/03	12:30 PM	28.76	30	-	65.8	120.9	3.6	0	--	--	--	--
GM-50	02/11/03	2:00 PM	28.2	12	T	74.1	112.1	3.7	0	--	--	--	--
GM-50	03/05/03	1:53 PM	28.73	13	T	69.5	101.9	3.5	0	--	--	--	--
GM-50	04/14/03	11:06 AM	28.58	77	-	67.3	98.2	3.3	0.1	--	--	--	--
GM-50	05/07/03	10:18 AM	28.78	59	-	82.2	95.8	3.2	0	--	--	--	--
GM-50	06/02/03	10:40 AM	28.79	70	-	83.8	95.9	3.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-50	07/16/03	11:14 AM	28.86	79	-	73.9	91.8	3	0.2	--	--	--	--
GM-50	08/07/03	10:27 AM	28.84	70	-	70.9	94.2	3.2	0	--	--	--	--
GM-50	09/26/03	12:44 PM	28.39	54	-	76.8	92.6	3.3	0	--	--	--	--
GM-50	10/13/03	10:35 AM	28.58	62	-	72.3	94.2	3.3	0	--	--	--	--
GM-50	11/11/03	10:48 AM	28.49	43	-	74.1	103.1	3.4	0	--	--	--	--
GM-50	12/17/03	10:58 AM	28.57	25	-	71.6	108.2	3.5	0	--	--	--	--
GM-50	01/21/04	4:04 PM	28.37	19	T	78.9	99.6	3.6	0	--	--	--	--
GM-50	02/04/04	11:51 AM	29.15	17	-	66.6	101.2	3.6	0	--	--	--	--
GM-50	03/02/04	11:47 AM	28.75	37	-	72.2	102.9	3.4	0	--	--	--	--
GM-50	04/02/04	2:08 PM	28.88	55	-	44.4	93.9	3.1	0.01	--	--	--	--
GM-50	05/28/04	11:20 AM	28.73	56	-	86.3	91.2	2.6	0.5	--	--	--	--
GM-50	06/29/04	12:13 PM	28.81	77	-	83.2	94.7	2.6	0	--	--	--	--
GM-50	07/22/04	12:42 PM	28.72	68	-	38.2	96.2	2.6	0	--	--	--	--
GM-50	08/12/04	12:05 PM	28.83	64	-	49	83.6	2.6	0.6	--	--	--	--
GM-50	09/17/04	2:45 PM	28.85	66	-	52.6	91.7	2.7	0.4	--	--	--	--
GM-50	10/13/04	10:51 AM	28.49	61	-	55	97.6	2.9	0	--	--	--	--
GM-50	11/23/04	10:42 AM	28.57	39	-	53.9	103.1	3	0	--	--	--	--
GM-50	12/22/04	12:37 PM	28.92	7	-	34.3	108.8	3.1	0	--	--	--	--
GM-50	01/19/05	11:44 AM	28.77	17	T	18.6	108.7	3.1	0	--	--	--	--
GM-50	02/08/05	1:37 PM	28.97	21	-	22.1	108.9	3.1	0	--	--	--	--
GM-50	03/16/05	9:45 AM	28.82	23	T	18.8	119.9	3	0	--	--	--	--
GM-50	04/04/05	10:50 AM	28.8	56	-	12.2	94.1	2.6	0	--	--	--	--
GM-50	05/27/05	9:44 AM	28.56	58	-	9.6	97.1	2.5	0	--	--	--	--
GM-50	06/09/05	10:20 AM	28.65	79	-	13.6	91.6	2.2	0	--	--	--	--
GM-50	07/01/05	12:45 PM	28.7	65	-	13.6	90.9	2.5	0	--	--	--	--
GM-50	08/11/05	12:56 PM	28.81	71	-	13.7	93	2.5	0	--	--	--	--
GM-50	09/08/05	2:29 PM	28.93	71.06	-	18.4	94.2	2.5	0	--	--	--	--
GM-50	10/19/05	11:47 AM	28.81	50	-	18	94.3	2.6	0.1	--	--	--	--
GM-50	11/03/05	3:20 PM	28.63	51	-	10	90.7	2.6	0	--	--	--	--
GM-50	12/05/05	9:50 AM	28.76	4	-	15.2	95.2	2.8	0	--	--	--	--
GM-50	01/31/06	2:22 PM	28.6	32	-	9.9	100	2.8	0	--	--	--	--
GM-50	02/20/06	10:39 AM	28.6	18	-	14.5	101.2	3	0	--	--	--	--
GM-50	03/09/06	12:50 PM	28.15	39	-	12.7	102.8	2.7	0	--	--	--	--
GM-50	04/12/06	4:02 PM	28.69	67	-	16.8	90.3	2.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-50	05/17/06	3:00 PM	28.38	62	-	11.6	95.7	2.5	0	--	--	--	--
GM-50	06/06/06	11:34 AM	28.59	66	0.25	12.5	89	2.4	0	--	--	--	--
GM-50	07/26/06	1:28 PM	28.5	83	-	15	86.8	2.4	0	--	--	--	--
GM-50	08/16/06	12:41 PM	28.97	81	-	20.1	83.5	2.3	0.2	--	--	--	--
GM-50	09/18/06	1:32 PM	28.39	57	-	11	104.1	3.2	0	--	--	--	--
GM-50	10/23/06	2:19 PM	28.7	39	-	11.3	110.5	3.2	0	--	--	--	--
GM-50	11/14/06	10:17 AM	28.7	35	-	8.4	114.1	3.3	0	--	--	--	--
GM-50	12/21/06	10:24 AM	29.05	26	-	16.1	117.8	3.3	0	--	--	--	--
GM-50	01/19/07	10:41 AM	28.83	16	-	6.5	115.5	3.3	0	--	--	--	--
GM-50	02/08/07	10:13 AM	28.84	5	-	0	1.4	0.1	20.2	--	--	--	--
GM-50	03/12/07	11:45 AM	28.73	43	-	15.4	115.7	2.5	0	--	--	--	--
GM-50	04/19/07	2:34 PM	28.92	66	-	11.9	90.8	3	0	--	--	--	--
GM-50	05/29/07	10:38 AM	28.88	79	-	56.7	94.8	2.7	0.1	--	--	--	--
GM-50	06/13/07	11:25 AM	28.97	82	-	41.1	92.5	2.4	0	--	--	--	--
GM-50	07/16/07	10:15 AM	29.99	72	-	37.7	92.1	2.5	0	--	--	--	--
GM-50	08/30/07	10:27 AM	30.27	69	-	47.5	93.6	2.8	0	--	--	--	--
GM-50	09/20/07	11:24 AM	30.26	56	-	47.7	89.8	2.7	0	--	--	--	--
GM-50	10/17/07	10:47 AM	29.9	56	-	41.4	90.9	2.9	0	--	--	--	--
GM-50	11/21/07	11:37 AM	30.14	33	T	28.8	96.7	2.8	0	--	--	--	--
GM-50	12/27/07	12:59 PM	29.97	26	-	35.9	105.1	3.1	0	--	--	--	--
GM-51	09/09/98	9:10 AM	28.96	60.1	-	0.12	0	1	18.7	170	170	2	57.58
GM-51	09/10/98	--	--	--	--	--	--	--	--	--	--	--	57.34
GM-51	09/10/98	12:50 PM	28.72	81	-	0	0	0.7	19.2	95	95	7	57.35
GM-51	09/11/98	2:29 PM	28.57	97	-	0.06	0	0.8	18.9	60	60	6	57.22
GM-51	09/12/98	8:55 AM	28.76	64.9	-	0.07	0	0.4	19.7	100	100	5.5	57.45
GM-51	09/13/98	9:08 AM	28.69	68	-	0.09	0	0	19.8	2.25	2.25	5	57.35
GM-51	09/14/98	6:41 PM	28.6	64.9	-	0	89.7	0.7	19.2	250	125	3.5	57.43
GM-51	09/24/98	2:05 PM	28.59	70	-	0.12	0	0	20.5	45	45	4	57.28
GM-51	09/25/98	1:45 PM	28.5	75	-	0	0	0.8	19.2	150	150	3.5	57.3
GM-51	09/28/98	9:04 AM	28.78	55.9	-	0.02	0	0	20.3	5.5	5	3.5	57.54
GM-51	09/30/98	11:16 AM	28.63	46	0.06	0.14	0	1.6	17.5	--	--	--	57.32
GM-51	10/06/98	9:25 AM	28.55	62.1	0.04	0	0	1.5	17.5	150	100	3	57.19
GM-51	10/08/98	12:27 PM	29.04	50	-	0	0	0.5	19.5	85	85	2	57.19
GM-51	10/09/98	4:45 PM	28.84	57.9	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-51	10/10/98	--	--	--	--	--	--	--	--	150	150	4	--
GM-51	10/10/98	1:50 PM	28.86	70	-	0.02	0	0.7	19.2	--	--	--	57.3
GM-51	10/13/98	5:43 PM	28.81	42.1	-	0.16	0	1.9	16.8	110	110	3	57.29
GM-51	10/19/98	3:45 PM	28.73	52	-	0.21	0	1.2	18.7	55	55	2	57.38
GM-51	10/23/98	9:04 AM	28.95	57	-	0.21	0	0.3	19.6	100	100	9	57.39
GM-51	10/25/98	10:23 AM	28.94	46	-	0.19	0	0.6	19.1	115	115	4.5	57.43
GM-51	11/02/98	3:07 PM	29.03	39	-	0.22	0	0.9	18.2	450	425	8	57.48
GM-51	11/06/98	8:30 AM	28.92	35.1	-	0.2	--	--	--	--	--	--	--
GM-51	11/06/98	12:07 PM	28.93	37.9	-	-0.01	--	--	--	--	--	--	--
GM-51	11/06/98	4:05 PM	28.94	37	-	0	--	--	--	--	--	--	--
GM-51	11/07/98	8:36 AM	29.08	36	-	0.18	--	--	--	--	--	--	--
GM-51	11/07/98	12:16 PM	29.07	41	-	0.15	--	--	--	--	--	--	--
GM-51	11/07/98	4:44 PM	29.05	37	-	0.13	--	--	--	--	--	--	--
GM-51	11/30/98	2:03 PM	28.41	39	-	0.16	0	0.5	18.7	--	--	--	57.33
GM-51	12/03/98	11:37 AM	28.39	57	-	0.09	0	0.2	20.2	42	42	1.5	57.24
GM-51	12/08/98	3:00 PM	28.74	41	-	0.15	0	0.3	19	60	60	1.25	57.39
GM-51	12/10/98	12:03 PM	29	32	-	0.24	0	0.1	19.4	3.5	3.5	1	57.59
GM-51	12/17/98	4:18 PM	28.72	24	-	0.01	0	0.3	18.7	--	--	--	57.53
GM-51	12/18/98	12:53 PM	28.33	32	0.01	0.14	0	0.2	19.3	350	125	2.5	57.19
GM-51	12/19/98	4:10 PM	29	20	T	0	0	0.2	18.9	31	31	2	57.75
GM-51	12/20/98	4:24 PM	28.98	19	T	0.27	0	0.1	24.6	--	--	--	57.47
GM-51	12/21/98	9:45 AM	28.75	15	-	0.15	0	0.3	16.7	8	8	1.5	57.42
GM-51	12/22/98	9:17 AM	28.99	-9	-	0.01	0	0	16.8	--	--	--	57.67
GM-51	12/30/98	11:23 AM	28.77	0	-	0.21	0	0	16.6	250	150	1.25	57.44
GM-51	01/05/99	10:08 AM	28.79	-7.1	-	0.32	0	0.1	16.3	--	--	--	57.39
GM-51	01/07/99	9:56 AM	28.92	-7.1	-	0.25	0	0.1	15.7	4	4	1.75	57.46
GM-51	01/11/99	3:23 PM	28.47	-0.9	T	0	0	0	16	3.5	3.5	1.25	86.96
GM-51	01/15/99	9:53 AM	28.62	-6	T	0	0	0	19.1	28	28	3.5	56.99
GM-51	01/19/99	9:09 AM	28.6	24.1	-	0	0	0	19.8	--	--	--	57.4
GM-51	01/22/99	11:22 AM	28.68	27	-	0	0	0	16.7	8	2	2	51.1
GM-51	01/29/99	7:41 AM	29	21.9	-	--	--	--	--	--	--	--	57.28
GM-51	02/02/99	9:11 AM	28.25	32	0.03	--	--	--	--	--	--	--	56.74
GM-51	02/09/99	9:30 AM	28.52	35.1	-	--	--	--	--	--	--	--	57.15
GM-51	02/22/99	3:23 PM	29.1	25	-	--	--	--	--	--	--	--	57.11

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-51	02/26/99	9:33 AM	28.81	27	-	--	--	--	--	--	--	--	57.07
GM-51	03/09/99	9:21 AM	28.9	24.1	T	--	--	--	--	--	--	--	56.9
GM-51	03/22/99	3:50 PM	28.75	36	-	--	--	--	--	--	--	--	57.02
GM-51	04/09/99	1:11 PM	28.66	50	-	0.1	0	0	21.1	60	55	1.25	56.41
GM-51	04/21/99	7:47 AM	28.62	42.1	0.01	0.21	0	0.1	19.4	8	8	8	56.73
GM-51	05/01/99	9:53 AM	29.02	73	-	0	0	0.2	20	<2	<2	2.5	--
GM-51	05/16/99	11:50 AM	28.66	68	T	0.03	0	0.3	18.8	3	3	1.25	56.33
GM-51	07/14/99	3:00 PM	28.6	75.9	-	-0.02	0	3	15.5	--	--	--	56.1
GM-51	07/16/99	6:00 PM	28.71	72	0.21	0	0	2.8	16.1	--	--	--	55.51
GM-51	07/19/99	4:05 PM	28.84	77	-	0	0	0.2	20.5	85	85	3	55.83
GM-51	07/20/99	3:49 PM	28.83	73	-	0.08	0	0.3	19.1	70	11	1.5	55.93
GM-51	07/23/99	5:20 PM	28.58	86	-	0.11	0	0.5	19.9	--	--	--	55.93
GM-51	07/28/99	9:13 AM	28.56	78.1	-	0	0	0.1	20.8	--	--	--	56.25
GM-51	08/02/99	6:13 PM	28.92	73	-	0.02	0	0.3	20.6	16	9	7	56.62
GM-51	08/03/99	4:26 PM	28.75	73	-	0.16	0	1	19.8	--	--	--	56.43
GM-51	08/04/99	1:03 PM	28.67	71.1	T	0.01	0	0.1	21	--	--	--	56.46
GM-51	08/05/99	4:58 PM	28.61	75	-	0.23	0	0.6	19.9	--	--	--	56.48
GM-51	08/06/99	5:23 PM	28.74	73	-	0.01	0	0.3	19.9	--	--	--	56.62
GM-51	08/07/99	9:02 AM	28.6	64.9	-	0.15	0	0.1	20.2	--	--	--	56.55
GM-51	08/08/99	7:37 AM	28.83	57.9	-	0.21	0	0.3	19.9	--	--	--	56.88
GM-51	08/09/99	11:14 AM	28.7	64	0.01	0.15	0	2.1	17.2	--	--	--	56.71
GM-51	08/10/99	7:34 AM	28.42	61	-	0.24	0	0.9	18.9	--	--	--	56.5
GM-51	08/11/99	7:37 AM	28.65	66	-	-0.01	0	0.1	20.3	--	--	--	56.71
GM-51	08/16/99	3:15 PM	28.61	82.9	-	0	0	1.2	18.1	15	10	4	56.59
GM-51	08/20/99	10:20 AM	28.9	71.1	-	-0.04	0	0.1	20.4	3	3	3	56.6
GM-51	08/23/99	4:27 PM	28.61	68	-	-0.18	0	0.7	18.7	2	2	2	56.64
GM-51	08/30/99	2:21 PM	29.04	69.1	-	0.03	0	0.7	18.7	3	3	3	56.68
GM-51	09/02/99	3:08 PM	28.78	87.1	-	0.09	0	0	20.7	3	3	3	56.7
GM-51	09/14/99	2:54 PM	28.65	57	-	0	0	0.7	18.7	1.75	1.75	1.25	--
GM-51	09/20/99	1:42 PM	28.89	50	0.02	0	0	0.7	18.4	3	3	3	--
GM-51	10/06/99	1:48 PM	29.01	45	-	0.06	0	0	20.6	1000	225	2	--
GM-51	10/26/99	12:22 PM	28.82	39.9	-	0	0	0.2	20.3	2.75	2.75	2.5	57.21
GM-51	11/01/99	2:42 PM	28.42	62.1	-	0.25	0	0.1	19.8	1000	300	2.5	56.74
GM-51	11/05/99	2:11 PM	28.75	52	-	0.01	0	0.1	20.1	250	130	1	57.11

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-51	12/09/99	1:35 PM	28.74	35	-	0.22	0	0	20.4	1.5	1.5	1.5	--
GM-51	01/21/00	3:52 PM	28.8	5	-	0.1	0	0	19.1	--	--	--	56.85
GM-51	03/17/00	1:16 PM	29.18	27	-	0	0	0	19.9	0.23	0.2	-0.18	56.63
GM-51	04/01/00	9:00 AM	28.77	42	-	0.1	0	0	20.6	1.5	1.25	1.5	56.62
GM-51	07/17/00	3:34 PM	28.69	69	-	0.21	0	2.2	17.6	50	48	5	--
GM-51	07/23/00	8:42 AM	28.98	63	-	0	0	0.2	19.1	90	25	5	--
GM-51	07/25/00	9:07 AM	28.78	73	-	0.23	0	0.6	20.1	50	30	3	--
GM-51	08/06/00	9:50 AM	28.38	68	-	0	0	0	22.1	12.5	12.5	4.5	--
GM-51	08/09/00	8:41 AM	28.65	65	-	-0.14	0	0	21.3	175	25	5	57.21
GM-51	08/19/00	1:45 PM	29.04	67	-	-0.01	0	0.2	19.4	4	4	8	57.51
GM-51	08/29/00	2:22 PM	28.79	75	-	0	0	0	19.8	0.18	0.1	-0.3	57.31
GM-51	09/11/00	9:30 AM	28.48	69	-	0.07	0	0.4	18.1	9	8.5	6.5	56.77
GM-51	09/25/00	4:02 PM	28.78	60	-	0.26	0	0	21.2	--	--	--	84.42
GM-51	10/02/00	4:45 PM	28.5	55	-	-0.48	0	0.2	18.9	--	--	--	57.41
GM-51	10/09/00	3:13 PM	28.99	59	-	-0.09	0	0.1	19.8	2500	200	3	57.67
GM-51	10/13/00	8:56 AM	28.7	57	-	0.18	--	--	--	--	--	--	--
GM-51	10/16/00	3:43 PM	28.89	50	-	0.07	--	--	--	--	--	--	--
GM-51	10/23/00	12:55 PM	29.06	58	-	0.11	--	--	--	--	--	--	--
GM-51	10/31/00	8:26 AM	28.92	48	-	0	--	--	--	--	--	--	--
GM-51	11/14/00	10:07 AM	28.43	31	-	0.01	--	--	--	--	--	--	--
GM-51	12/05/00	1:49 PM	28.9	10	-	-0.03	--	--	--	--	--	--	--
GM-51	02/24/01	1:32 PM	28.7	25	T	-0.01	0	0	19.1	1.9	1.4	1.9	--
GM-51	03/22/01	12:50 PM	28.78	46	-	0.02	2.2	0	0.5	122	41	-0.4	--
GM-51	04/09/01	9:50 AM	28.76	40	-	0.11	0	0	20	39.87	15.2	0	--
GM-51	04/09/01	3:09 PM	28.76	42	-	--	--	--	--	--	--	--	56.14
GM-51	05/01/01	2:29 PM	28.57	71	-	0.11	0	0	19.6	6.95	0	0	--
GM-51	05/29/01	11:00 AM	28.92	60	-	0.06	0	0	18.9	0	-0.05	-0.05	--
GM-51	07/20/01	9:45 AM	28.81	77	-	0.05	0	1.5	18.4	4023	29	-0.53	--
GM-51	08/20/01	11:29 AM	28.86	76	-	0	0	0.3	19.3	0.25	0.18	-0.12	57.1
GM-51	09/09/01	12:10 PM	28.7	59	-	0	0	0	19.4	625	1.75	0	57.08
GM-51	10/06/01	11:45 AM	28.8	43	-	-0.01	0	0.3	19.8	0.4	0.3	0.2	57.11
GM-51	11/07/01	3:14 PM	28.9	44	-	-0.01	0	0.2	19.9	1.03	0.5	-0.17	58.08
GM-51	12/18/01	2:27 PM	28.48	39	-	0.3	0	0	20.2	0.2	0.2	0.48	56.61
GM-51	01/10/02	2:18 PM	28.54	36	T	0	0	0	20.1	-0.11	-0.08	-0.11	56.68

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-51	01/28/02	12:52 PM	28.77	24	-	0.02	0	0	19.7	-0.6	-0.6	-0.6	57.22
GM-51	03/19/02	11:03 AM	28.97	33	-	0	0	0	19.9	0	0	0	--
GM-51	04/29/02	9:18 AM	28.61	36	T	0.1	0	0	20.2	7.8	1.61	0	53.53
GM-51	05/29/02	10:24 AM	28.65	74	-	0	0	0	19.6	13.38	11.3	0	55
GM-51	06/06/02	8:29 AM	28.87	60	-	0	0	0	19.6	0	0	0	55.62
GM-51	07/12/02	--	--	--	--	0	0	0	19.4	0.01	-0.02	-0.34	56.84
GM-51	08/14/02	10:40 AM	28.6	73	-	0	0	0	19	45.45	-0.08	-0.46	56.5
GM-52	09/09/98	3:50 PM	28.84	73.9	-	60	89	3.2	0	--	--	--	78.3
GM-52	09/10/98	3:50 PM	28.66	82	-	60	87.1	3.7	0	--	--	--	78.3
GM-52	09/11/98	5:05 PM	28.55	93	-	63	85.2	3.3	0.2	--	--	--	77
GM-52	09/12/98	3:18 PM	28.69	78.1	-	59	86.4	3.6	0	--	--	--	--
GM-52	09/14/98	5:11 PM	28.58	66.9	-	58	98.7	3.9	0	--	--	--	--
GM-52	09/24/98	4:12 PM	28.58	70	-	65	87.2	3.6	0	--	--	--	79
GM-52	09/25/98	2:00 PM	28.5	75	-	60	85.6	3.5	0	--	--	--	78.55
GM-52	10/07/98	5:00 PM	28.76	50	-	60	90.7	4.1	0	--	--	--	--
GM-52	10/09/98	10:45 AM	28.91	57	-	55	88.8	4.2	0	--	--	--	--
GM-52	10/11/98	2:55 PM	28.9	63	-	60	87.5	3.9	0	--	--	--	80
GM-52	10/14/98	10:10 AM	28.86	41	-	60	90.3	4.1	0	--	--	--	57.5
GM-52	10/20/98	11:31 AM	28.93	46	-	59	91.5	4.3	0	--	--	--	45.4
GM-52	11/18/98	4:07 PM	28.62	37.9	-	66	97.3	4.6	0	--	--	--	62.32
GM-52	12/03/98	10:25 AM	28.39	49	-	68	91	3.9	0	--	--	--	77.6
GM-52	12/04/98	12:14 PM	28.75	45	-	60	91.9	4.1	0	--	--	--	79
GM-52	12/09/98	12:31 PM	28.9	42	-	60	94.5	4.3	0	--	--	--	79
GM-52	12/15/98	4:27 PM	28.84	37	-	64	93.7	4.3	0	--	--	--	77.7
GM-52	12/18/98	9:13 AM	28.43	28	0.04	66	94.5	4.3	0	--	--	--	82.7
GM-52	12/29/98	9:24 AM	28.58	12	T	69	86.1	4.2	5.3	--	--	--	75.1
GM-52	01/06/99	3:45 PM	28.67	3.9	-	--	--	--	--	--	--	--	--
GM-52	01/21/99	3:37 PM	28.78	25	-	57	96.5	4.2	0.5	--	--	--	83.6
GM-52	01/26/99	3:47 PM	28.89	28	-	60	95.7	4.2	0	--	--	--	83.6
GM-52	02/03/99	3:12 PM	28.14	32	0.02	67	93.5	4.3	0	--	--	--	--
GM-52	02/25/99	2:49 PM	28.85	30	-	60	94	4.2	0	--	--	--	83.5
GM-52	03/10/99	8:10 AM	29.04	17.1	-	64	91.3	4.1	1.4	--	--	--	--
GM-52	03/10/99	11:26 AM	29.04	28	-	--	--	--	--	--	--	--	79.31
GM-52	03/23/99	3:10 PM	28.52	41	-	61	91.7	4	0	--	--	--	83.5

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-52	04/07/99	2:45 PM	28.44	57	-	66	94.1	4.1	0.4	--	--	--	77.2
GM-52	04/21/99	11:06 AM	28.62	44.1	-	64	90.9	3.8	0	--	--	--	79.3
GM-52	05/01/99	10:47 AM	29	75.9	-	26	88	3.6	0	--	--	--	--
GM-52	05/16/99	4:30 PM	28.58	71.1	-	30	87.8	3.5	0	--	--	--	82.88
GM-52	06/02/99	5:07 PM	28.72	57	-	48	88.8	3.5	0	--	--	--	75.1
GM-52	06/15/99	--	--	--	--	37	90.6	3.5	0	--	--	--	--
GM-52	06/16/99	--	--	--	--	32	86.4	3.8	0	--	--	--	--
GM-52	06/17/99	--	--	--	--	30	89	3.4	0	--	--	--	--
GM-52	06/18/99	--	--	--	--	30	89.3	3.4	0	--	--	--	--
GM-52	06/19/99	--	--	--	--	30	88.2	3.4	0	--	--	--	--
GM-52	06/20/99	--	--	--	--	30	89.3	3.5	0	--	--	--	--
GM-52	06/21/99	7:20 PM	28.86	73	-	29	88.1	3.7	0	--	--	--	--
GM-52	06/22/99	5:17 PM	28.65	79	-	31	89.4	3.5	0	--	--	--	--
GM-52	06/23/99	5:37 PM	28.46	70	0.01	33	90.4	3.6	0	--	--	--	--
GM-52	06/24/99	3:58 PM	28.58	81	-	32	87.8	3.3	0	--	--	--	--
GM-52	06/25/99	3:58 PM	28.64	88	-	31	91	3.6	0.2	--	--	--	--
GM-52	06/26/99	4:45 PM	28.54	86	-	31	88.6	3.4	0	--	--	--	--
GM-52	06/27/99	2:17 PM	28.51	72	-	31	87.8	3.4	0	--	--	--	--
GM-52	06/28/99	3:06 PM	28.44	63	0.01	30	88.5	3.6	0	--	--	--	90
GM-52	06/29/99	5:47 PM	28.57	68	-	29	81.7	3.6	0.2	--	--	--	--
GM-52	06/30/99	2:14 PM	28.57	66	-	40	89.1	3.7	0	--	--	--	--
GM-52	07/01/99	2:35 PM	28.43	68	-	30	82.6	3.8	0	--	--	--	--
GM-52	07/02/99	3:38 PM	28.62	79	-	30	85.5	3.4	0	--	--	--	--
GM-52	07/03/99	3:01 PM	28.62	73	-	27	86.7	3.5	0	--	--	--	--
GM-52	07/04/99	2:02 PM	28.63	88	-	27	86.4	3.4	0	--	--	--	--
GM-52	07/05/99	12:56 PM	28.6	84.9	-	27	86.5	3.5	0	--	--	--	--
GM-52	07/06/99	2:43 PM	28.68	79	-	26	85.6	3.4	0	--	--	--	--
GM-52	07/07/99	2:16 PM	28.73	78.1	-	26	86.4	3.4	0	--	--	--	--
GM-52	07/08/99	2:17 PM	28.68	57.9	0.1	28	88.4	3.6	0	--	--	--	--
GM-52	07/09/99	4:10 PM	28.57	59	T	28	90.3	3.5	0.2	--	--	--	--
GM-52	07/10/99	6:55 PM	28.91	68	-	26	91.6	3.5	0	--	--	--	--
GM-52	07/11/99	11:15 AM	28.94	75	-	27	95.2	3.4	0	--	--	--	--
GM-52	07/12/99	3:24 PM	28.83	79	-	28	97.4	3.6	0	--	--	--	--
GM-52	07/17/99	4:25 PM	28.86	79	-	30	100	3.6	0	--	--	--	90

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-52	08/10/99	10:15 AM	28.44	64.9	-	4.21	97.9	3	0.5	--	--	--	87
GM-52	09/28/99	4:09 PM	28.92	54	-	0.45	89	2.3	0	--	--	--	80.33
GM-52	10/11/99	3:01 PM	29.03	60.1	-	0.35	38	0.2	11.9	--	--	--	--
GM-52	10/24/99	12:06 PM	28.81	48.9	-	0.28	0	0	20.7	--	--	--	76.69
GM-52	11/04/99	7:35 AM	28.68	24.1	-	0.01	0	0	21	1300	1200	2	79.38
GM-52	11/06/99	4:32 PM	29.09	42.1	-	0.18	0	2.1	20.1	1400	1400	1.75	80.28
GM-52	01/31/00	2:10 PM	28.44	25	T	--	--	--	--	--	--	--	--
GM-52	02/07/00	9:15 AM	28.99	18	-	0	0	0	20.1	601	560	0.61	80.71
GM-52	02/22/00	3:50 PM	28.61	50	-	0	0	0	20.2	6500	325	1.5	--
GM-52	03/17/00	10:15 AM	29.22	21.9	-	0	0	0	20.7	720	715	-0.35	79.7
GM-52	04/30/00	9:16 AM	28.92	57	-	0.01	0	0	18.5	3462	3450	-0.2	79.54
GM-52	06/05/00	3:40 PM	28.9	70	-	0.16	0	0	21.1	--	--	--	81.1
GM-52	06/06/00	11:38 AM	28.91	-	-	0.19	0.2	0	20.9	5010	4080	0.31	--
GM-52	06/28/00	5:10 PM	28.64	58	-	0.02	0	0	19.9	--	--	--	--
GM-52	07/23/00	9:06 AM	28.98	63	-	0	0	0	21.1	--	--	--	81.18
GM-52	08/28/00	4:28 PM	28.66	73	-	0	0	0	20.2	1100	500	2.3	--
GM-52	09/11/00	11:10 AM	28.48	72	-	0.3	1.5	0	19.9	=>10000	=>10000	6.5	--
GM-52	10/24/00	5:30 PM	29.05	52	-	0.14	0.2	0	20.5	25600	--	0.25	--
GM-52	11/22/00	10:25 AM	28.95	17	-	-0.2	0.4	0	20	21600	5784	0.43	--
GM-52	12/04/00	4:10 PM	28.57	31	-	0.26	0	0	20.1	25600	25600	-0.25	--
GM-52	01/10/01	11:15 AM	28.6	35	-	0.08	0.2	0	19.7	32800	32800	0.56	--
GM-52	02/21/01	12:05 PM	29.21	7	-	0	0.4	0	18.9	1.2	6000	350	--
GM-52	03/20/01	11:35 AM	29	42	-	0	0	0	20.6	32000	31700	-0.2	--
GM-52	04/19/01	10:37 AM	28.75	59	-	0.16	0.4	0	19.7	22200	12000	-0.5	--
GM-52	05/15/01	11:35 AM	28.51	54	-	0.15	0	0	18.8	4350	2225	0	--
GM-52	06/13/01	5:10 PM	28.52	81	-	0.05	1.6	0	20.4	--	--	--	--
GM-52	07/12/01	5:05 PM	28.87	77	-	-0.01	0	0	20.8	22700	22700	0	--
GM-52	08/10/01	12:03 PM	28.88	67	-	0	0	0	20.7	15900	15700	0	--
GM-52	09/07/01	1:43 PM	28.42	68	0.08	-2.15	0.7	0	20.3	--	--	--	--
GM-52	09/21/01	4:50 PM	28.69	65	-	0	0	0	20.7	--	155	--	--
GM-53A	03/12/04	12:55 PM	28.91	19	-	7.3	97	0.5	0.5	--	--	--	--
GM-53A	03/16/04	2:19 PM	28.86	33	-	2.2	--	--	--	--	--	--	--
GM-53A	02/14/06	2:44 PM	28.39	35	-	0	36.7	0	11.8	--	--	--	--
GM-53A	02/14/06	2:47 PM	28.39	35	-	--	28.5	0	13.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-53A	02/14/06	2:48 PM	28.39	35	-	--	27	0	13.7	--	--	--	--
GM-53A	02/14/06	2:52 PM	28.39	35	-	0	0	0	19.6	--	--	--	--
GM-54	09/26/98	6:26 PM	28.4	66	-	-0.27	0	0	20.9	--	--	--	--
GM-54	09/29/98	6:01 PM	28.7	54	-	7.02	0	0	20.3	2.5	2.5	2	60.48
GM-54	10/05/98	4:32 PM	28.81	52	0.01	0.1	0	0	20.1	--	--	--	60.56
GM-54	10/10/98	12:40 PM	28.87	68	-	-0.04	0.7	0	20.9	--	--	--	58.56
GM-54	10/19/98	2:06 PM	28.71	55	-	0.09	3.7	0	19.3	--	--	--	58.15
GM-54	10/22/98	5:43 PM	29.02	52	-	0.1	2.8	0	19.5	--	--	--	58.04
GM-54	10/24/98	4:27 PM	28.77	71.1	-	0.16	0.1	0	21.1	--	--	--	57.55
GM-54	10/25/98	10:36 AM	28.93	48	-	-0.98	0.2	0	20.2	--	--	--	--
GM-54	11/02/98	4:38 PM	29.04	33.1	-	-1	2.2	0	19	--	--	--	58.05
GM-54	11/06/98	8:15 AM	28.91	33.1	-	0.48	--	--	--	--	--	--	--
GM-54	11/06/98	12:26 PM	28.93	37.9	-	0.28	--	--	--	--	--	--	--
GM-54	11/06/98	3:52 PM	28.94	37	-	0.34	--	--	--	--	--	--	--
GM-54	11/07/98	8:23 AM	29.08	34	-	0	--	--	--	--	--	--	--
GM-54	11/07/98	12:04 PM	29.07	41	-	0.27	--	--	--	--	--	--	--
GM-54	11/07/98	4:31 PM	29.05	37	-	0.32	--	--	--	--	--	--	--
GM-54	11/18/98	9:23 AM	28.89	33.1	-	0.13	4	0	18.5	--	--	--	58.33
GM-54	12/01/98	7:27 AM	28.79	33	-	0.13	3.2	0	19.3	--	--	--	58.22
GM-54	12/03/98	4:32 PM	28.48	55	-	0.26	3	0	19.4	--	--	--	58.32
GM-54	12/08/98	4:10 PM	28.75	39	-	-0.26	3.5	0	18.8	--	--	--	57.86
GM-54	12/10/98	7:10 AM	29	30	-	-0.34	1.9	0	20	--	--	--	58.18
GM-54	12/17/98	4:05 PM	28.72	24	-	0	3.1	0	18.8	--	--	--	85.28
GM-54	12/18/98	3:58 PM	28.32	32	T	0.02	2.1	0	20.3	--	--	--	56.87
GM-54	12/19/98	5:15 PM	29.03	19	T	0	1.1	0	18.6	--	--	--	58.49
GM-54	12/20/98	4:47 PM	28.95	19	T	0.22	1.2	0	23.5	--	--	--	58.47
GM-54	12/22/98	11:33 AM	29.02	-3	-	--	0.6	0	15.7	--	--	--	58.36
GM-54	12/30/98	10:54 AM	28.77	0	-	0.14	2.3	0	16.6	--	--	--	58.4
GM-54	01/06/99	4:11 PM	28.67	3.9	-	0	2.5	0	15.4	--	--	--	58.59
GM-54	01/07/99	7:20 AM	28.88	-11.9	-	0.08	1.7	0	16.8	--	--	--	59.03
GM-54	01/15/99	7:29 AM	28.69	-17	-	0.04	1.4	0	19.7	--	--	--	58.8
GM-54	01/19/99	4:43 PM	28.64	26.1	-	-0.2	2	0	18.8	--	--	--	58.05
GM-54	01/22/99	7:25 AM	28.74	26.1	-	0	1.3	0	20	--	--	--	58.02
GM-54	01/29/99	8:37 AM	28.98	23	-	-0.3	1.4	0	19.1	--	--	--	58.02

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-54	02/08/99	4:25 PM	28.35	36	-	0.21	1.7	0	17.9	--	--	--	58.34
GM-54	02/22/99	4:58 PM	29.07	23	-	-1.2	1.5	0	19.5	--	--	--	58.1
GM-54	03/09/99	4:55 PM	28.91	28.9	-	0.46	0.6	0	10.9	--	--	--	59.04
GM-54	03/22/99	5:27 PM	28.76	36	-	-0.21	2.1	0	18.3	--	--	--	58.44
GM-54	04/09/99	10:07 AM	28.62	46.9	-	0.24	1.4	0	23.1	--	--	--	58.64
GM-54	04/21/99	9:30 AM	28.62	42.1	-	0	0	0	19.6	900	550	4	58.76
GM-54	05/01/99	8:06 AM	29.05	64.9	-	-0.03	0.3	0	19.8	--	--	--	--
GM-54	05/16/99	1:41 PM	28.63	72	-	0.24	0.1	0	20.1	42.5	37.5	1.5	58.3
GM-54	07/14/99	3:30 PM	28.58	79	-	-0.02	0.2	0.6	19.5	--	--	--	57.6
GM-54	07/16/99	5:35 PM	28.71	72	0.21	0	0	0	21.3	--	--	--	57.35
GM-54	07/19/99	4:20 PM	28.84	77	-	0	0	0	21.1	70	60	4	56.96
GM-54	07/20/99	4:07 PM	28.83	73	-	0.01	0.1	0	19.2	54	54	1.25	56.82
GM-54	07/23/99	5:33 PM	28.58	84.9	-	0	0	0.2	20.2	--	--	--	56.67
GM-54	07/28/99	10:29 AM	28.56	79	-	0.05	0	1	19.5	5000	3000	2.5	56.11
GM-54	08/03/99	4:41 PM	28.75	72	-	-0.21	0	0.5	20	--	--	--	56.14
GM-54	08/04/99	1:15 PM	28.67	71.1	T	0.18	0	0.1	20.7	--	--	--	56.14
GM-54	08/06/99	5:35 PM	28.74	72	-	-0.22	0	0	21	--	--	--	56.45
GM-54	08/07/99	9:17 AM	28.6	64.9	-	0.14	0	0.1	19.9	--	--	--	56.06
GM-54	08/08/99	7:52 AM	28.83	57.9	-	-0.53	0	0.1	20.3	--	--	--	56
GM-54	08/09/99	11:25 AM	28.7	64	0.01	0.2	0	0.3	19.8	--	--	--	55.9
GM-54	08/10/99	7:46 AM	28.42	61	-	0.35	0	0.2	20	--	--	--	55.95
GM-54	08/11/99	7:55 AM	28.65	66	-	-0.25	0	0	20.3	--	--	--	56.05
GM-54	08/16/99	3:49 PM	28.61	82.9	-	-0.06	0.4	0.3	19.3	--	--	--	56
GM-54	08/20/99	10:40 AM	28.9	73	-	-1.28	0.3	0.3	19.2	--	--	--	56.03
GM-54	08/23/99	4:46 PM	28.61	70	-	0.12	0.3	0.2	19.9	--	--	--	55.98
GM-54	08/30/99	4:13 PM	29	66	-	-0.89	0.01	0.5	19.8	1500	1500	4	56.1
GM-54	09/02/99	4:19 PM	28.78	82.9	-	-0.75	0.01	0.5	19.7	--	--	--	56.12
GM-54	09/14/99	5:26 PM	28.7	51.1	0.04	0.41	0	0.3	20	800	800	8	--
GM-54	09/20/99	3:48 PM	28.9	55	T	0.45	0	0.6	19.9	650	650	3	--
GM-54	10/06/99	4:10 PM	29	46	-	-0.2	0	0	21.2	200	200	4	56.3
GM-54	10/26/99	4:03 PM	28.89	39.9	-	0.17	0	0.2	20.6	2	2	2	56.41
GM-54	11/01/99	3:55 PM	28.47	53.1	-	0.2	0	0.1	20.3	175	175	2.25	56.35
GM-54	11/05/99	4:01 PM	28.81	48.9	-	0.12	0	0.2	20.8	95	75	1.25	56.43
GM-54	12/09/99	4:00 PM	28.73	35	-	0.22	0	0	20.3	65	65	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-54	03/17/00	4:42 PM	29.12	30	-	--	--	--	--	--	--	--	--
GM-54	03/19/00	10:17 AM	28.87	30.9	-	0.05	0	0	20	8.8	3.2	0.2	57.03
GM-54	04/01/00	10:45 AM	28.72	48	-	0.29	0	0	20.1	36.07	19.68	-0.21	57.3
GM-54	05/18/00	7:00 PM	28.88	44	-	0	--	--	--	--	--	--	--
GM-54	05/19/00	10:28 AM	28.94	52	-	0.26	--	--	--	--	--	--	--
GM-54	05/20/00	8:54 AM	28.81	57	-	0	0	0.6	19.4	140	140	<1	57.38
GM-54	05/20/00	1:09 PM	28.76	67	-	0	--	--	--	--	--	--	--
GM-54	05/20/00	2:04 PM	28.74	68	-	0	--	--	--	--	--	--	--
GM-54	05/20/00	3:08 PM	28.73	68	-	0	--	--	--	--	--	--	--
GM-54	05/20/00	4:02 PM	28.71	69	-	0	--	--	--	--	--	--	--
GM-54	05/20/00	5:02 PM	28.71	67	-	0.02	--	--	--	--	--	--	--
GM-54	05/21/00	9:04 AM	28.66	60	-	0.28	--	--	--	--	--	--	--
GM-54	05/30/00	4:14 PM	28.58	59	-	0	0	0.6	19.4	1350	1000	0	57.45
GM-54	07/17/00	3:15 PM	28.66	73	-	0.25	0	0.5	20.9	90	12	6.5	--
GM-54	07/23/00	8:19 AM	29	57	-	0	0	0	19.3	150	150	9	--
GM-54	07/25/00	8:48 AM	28.78	73	-	0.26	0	0.1	21.2	280	150	3.5	--
GM-54	07/31/00	2:29 PM	28.67	83	-	0.51	0	0	21.9	950	950	4.5	--
GM-54	08/06/00	9:00 AM	28.39	65	-	0.56	0	0.2	21.3	600	80	9.5	--
GM-54	08/09/00	10:57 AM	28.69	66	-	-0.49	0	0	21.7	1050	22	5	56.77
GM-54	08/19/00	11:18 AM	29.06	64	-	-1.4	0	0.2	19.8	4.5	4.5	5.5	56.79
GM-54	08/29/00	4:52 PM	28.8	75	-	-0.08	0	0.1	19.8	60	28	4	56.79
GM-54	09/10/00	11:15 AM	28.61	72	-	-0.27	0	0	20	10000	500	4	56.56
GM-54	09/25/00	4:26 PM	28.78	60	-	0.03	0	0.8	19.2	--	--	--	56.44
GM-54	10/02/00	5:00 PM	28.5	55	-	-0.58	0	0.6	18.8	--	--	--	56.38
GM-54	10/09/00	4:37 PM	28.97	53	-	-12.64	0	0.5	19	6	6	2.5	56.44
GM-54	10/13/00	9:02 AM	28.7	57	-	0.45	--	--	--	--	--	--	--
GM-54	10/16/00	1:30 PM	28.89	52	-	-0.11	--	--	--	--	--	--	--
GM-54	10/23/00	11:34 AM	29.06	58	-	-0.21	--	--	--	--	--	--	--
GM-54	10/31/00	7:29 AM	28.92	47	-	0.15	--	--	--	--	--	--	--
GM-54	11/14/00	7:45 AM	28.42	30	0.01	0.01	--	--	--	--	--	--	--
GM-54	02/27/01	4:45 PM	29.06	15	-	-0.02	0	0	19.3	2.35	1.8	1.7	--
GM-54	04/09/01	4:20 PM	28.76	43	-	0.02	0	0	19.9	2.03	1.24	-0.4	--
GM-54	04/09/01	4:24 PM	28.76	43	-	--	--	--	--	--	--	--	58.17
GM-54	05/01/01	4:23 PM	28.53	72	-	0.05	0	0	19.4	0.15	0.14	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-54	05/29/01	4:10 PM	28.91	65	-	0	0	0	18.7	2.2	1.8	-0.15	--
GM-54	07/20/01	10:13 AM	28.81	77	-	-0.05	0	0.2	19.4	3.62	0.89	-0.58	--
GM-54	08/20/01	10:42 AM	28.86	76	-	0.1	0	0.1	19.6	67.21	7.04	-0.38	58
GM-54	09/09/01	9:56 AM	28.7	60	-	0	0	0	20.1	2.5	0.25	0	58.18
GM-54	10/06/01	12:10 PM	28.8	43	-	-0.01	0	0	20	1.2	0.8	0.3	58.13
GM-54	11/07/01	3:51 PM	28.88	44	T	0.37	0	0.2	17.5	0.81	0.77	0.02	58.34
GM-54	12/18/01	4:20 PM	28.46	37	-	0.74	0	0.1	17.8	2.1	1.95	1.26	58
GM-54	01/10/02	4:04 PM	28.56	35	T	0.1	0	0.4	19	11.69	10.99	-0.5	58.5
GM-54	01/28/02	3:50 PM	28.76	24	-	0	0	0	20.5	27	12.5	-0.64	58.6
GM-54	03/19/02	4:25 PM	28.9	36	-	--	--	--	--	--	--	--	--
GM-54	04/29/02	4:15 PM	28.51	46	-	0.38	0	0.1	17.8	1.61	0.99	0	56.68
GM-54	05/30/02	4:58 PM	28.36	74	-	1.07	0	0	18.2	2.62	2	0.8	56.3
GM-54	06/06/02	3:13 PM	28.79	74	-	0.16	0	0.2	18.9	0.3	0	0	56.25
GM-54	06/21/02	2:41 PM	29.08	74	-	0	0	0.6	19	0.06	0	0	--
GM-54	06/24/02	10:45 AM	28.84	75	-	0.05	0.1	0.4	18.6	19.01	13	0	--
GM-54	06/25/02	10:49 AM	28.77	85	-	0	0	0.5	20.1	0	0	0	--
GM-54	07/12/02	9:25 AM	28.91	70	-	0.1	0	0.3	19.8	-0.69	-0.71	-1.55	56.2
GM-54	08/14/02	11:10 AM	28.6	73	-	0	0	0.3	19.8	5.3	0.54	-0.3	56.93
GM-55	09/26/98	6:35 PM	28.42	64.9	-	-3.94	0	0	20.8	--	--	--	--
GM-55	09/29/98	6:21 PM	28.7	54	-	0.69	1.5	0	19.7	--	--	--	75.2
GM-55	10/05/98	4:39 PM	28.81	52	0.01	0.94	11.1	0	17.3	--	--	--	75.14
GM-55	10/08/98	5:40 PM	28.98	45	-	-0.19	28.4	0.3	13.2	--	--	--	75.51
GM-55	10/10/98	12:20 PM	28.88	66.9	-	0.27	33.4	0.3	12.1	--	--	--	75.3
GM-55	10/12/98	12:00 AM	28.72	45	-	--	--	--	--	--	--	--	--
GM-55	10/19/98	2:20 PM	28.71	55	-	0.65	52.3	0.4	6.5	--	--	--	75.14
GM-55	10/22/98	6:01 PM	29.02	52	-	0.05	33.5	0.5	11.3	--	--	--	75.41
GM-55	10/24/98	4:50 PM	28.78	66.9	-	0.99	4.2	0	20.1	--	--	--	--
GM-55	10/25/98	10:50 AM	28.93	48	-	0.82	32.7	0.4	12	--	--	--	--
GM-55	11/02/98	4:50 PM	29.04	33.1	-	0.35	62	1.1	4.7	--	--	--	75.38
GM-55	11/06/98	8:17 AM	28.91	33.1	-	1.38	--	--	--	--	--	--	--
GM-55	11/06/98	12:28 PM	28.93	37.9	-	1.06	--	--	--	--	--	--	--
GM-55	11/06/98	3:55 PM	28.94	37	-	0.57	--	--	--	--	--	--	--
GM-55	11/07/98	8:29 AM	29.08	34	-	0	--	--	--	--	--	--	--
GM-55	11/07/98	12:07 PM	29.07	41	-	-0.34	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-55	11/07/98	4:35 PM	29.05	37	-	-0.28	--	--	--	--	--	--	--
GM-55	11/18/98	9:40 AM	28.87	34	-	0.09	55	0.9	6.2	--	--	--	75.51
GM-55	12/01/98	7:35 AM	28.81	33	-	0.04	55.5	0.8	5.5	--	--	--	75.53
GM-55	12/03/98	4:38 PM	28.48	55	-	1.28	55.1	0.8	5.5	--	--	--	75.1
GM-55	12/08/98	4:20 PM	28.75	39	-	0.35	61	1	3.9	--	--	--	75.45
GM-55	12/10/98	7:18 AM	29	30	-	-0.12	55.7	0.8	5.1	--	--	--	75.61
GM-55	12/17/98	3:54 PM	28.72	24	-	0	56.6	0.9	4.9	--	--	--	85.45
GM-55	12/18/98	4:10 PM	28.32	32	T	0.3	22.3	0.3	18.7	--	--	--	75.17
GM-55	12/19/98	5:00 PM	29.03	19	T	-0.01	33.5	0.6	11.3	--	--	--	75.86
GM-55	12/20/98	4:34 PM	28.95	19	T	0.4	23.1	0.6	18.6	--	--	--	75.55
GM-55	12/22/98	11:39 AM	29.02	-3	-	--	20.9	0.5	11.5	--	--	--	76.69
GM-55	12/30/98	11:07 AM	28.77	0	-	-0.04	51.2	1.2	5.5	--	--	--	75.55
GM-55	01/06/99	3:54 PM	28.67	3.9	-	0.14	60.6	1.6	4.4	--	--	--	75.51
GM-55	01/07/99	7:09 AM	28.88	-11.9	-	-0.08	47.4	1	7	--	--	--	75.61
GM-55	01/15/99	7:16 AM	28.69	-17	-	0.48	46.4	1	8.4	--	--	--	75.01
GM-55	01/19/99	4:28 PM	28.62	27	-	-0.07	59.5	0.9	5.7	--	--	--	75.56
GM-55	01/22/99	7:15 AM	28.74	26.1	-	0.07	47.7	0.5	10	--	--	--	75.36
GM-55	01/29/99	7:23 AM	29	21.9	-	0	50.9	0.8	7.9	--	--	--	75.52
GM-55	02/08/99	4:13 PM	28.35	36	-	0.05	21.7	0.4	14.4	--	--	--	75.14
GM-55	02/22/99	4:44 PM	29.07	23	-	0.15	58.3	1.2	4.6	--	--	--	75.31
GM-55	03/09/99	4:34 PM	28.91	28.9	-	0.14	26.7	0.4	7.2	--	--	--	75.21
GM-55	03/22/99	5:13 PM	28.76	36	-	0.25	64.1	1	8.2	--	--	--	75.29
GM-55	04/09/99	10:31 AM	28.64	50	-	0.67	47.7	0.7	9.6	--	--	--	75.16
GM-55	04/21/99	9:41 AM	28.62	42.1	-	0	0.6	0	19.3	7000	200	6	74.95
GM-55	05/01/99	7:55 AM	29.05	64.9	-	0	32.3	0.4	10.6	--	--	--	--
GM-55	05/16/99	1:24 PM	28.63	73	T	0.15	0	0.4	19.1	90	90	5	74.78
GM-55	07/14/99	3:42 PM	28.58	79	-	-0.05	0	0.7	19.6	--	--	--	74.7
GM-55	07/16/99	5:50 PM	28.71	72	0.21	0	0	0.8	19.8	--	--	--	74.72
GM-55	07/19/99	4:40 PM	28.85	77	-	0	0.1	0.6	19.8	1500	1500	4	74.72
GM-55	07/20/99	4:21 PM	28.83	73	-	0	0.2	0.2	18.8	8.5	6.5	1.5	74.71
GM-55	07/23/99	5:40 PM	28.58	84.9	-	0.13	0.1	0.2	19.9	--	--	--	74.56
GM-55	07/28/99	10:39 AM	28.55	80.1	-	0.03	0	0.2	20	3000	2000	2.5	74.62
GM-55	08/03/99	4:53 PM	28.75	72	-	0.15	0	1.3	19.3	--	--	--	74.78
GM-55	08/04/99	1:25 PM	28.67	71.1	T	0.26	0	0.1	20.7	--	--	--	74.73

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-55	08/06/99	5:43 PM	28.74	72	-	-0.41	0	0.3	20.1	--	--	--	74.89
GM-55	08/07/99	9:32 AM	28.58	70	-	0	0	0	20.3	--	--	--	74.91
GM-55	08/08/99	8:05 AM	28.83	57.9	-	-0.77	0	0.2	20	--	--	--	75.22
GM-55	08/09/99	11:34 AM	28.67	63	0.01	0.65	0	0.2	19.9	--	--	--	75.11
GM-55	08/10/99	7:56 AM	28.42	61	-	1.39	0	0.3	20	--	--	--	74.83
GM-55	08/11/99	8:09 AM	28.65	66	-	-0.03	0	0.1	20.1	--	--	--	75.21
GM-55	08/16/99	3:35 PM	28.61	82.9	-	0	0.3	0.3	18.7	--	--	--	75.16
GM-55	08/20/99	10:31 AM	28.9	73	-	-0.19	0	1.8	18.2	200	200	3	75.14
GM-55	08/23/99	4:37 PM	28.61	70	-	-1.03	0	0.6	19.5	500	500	1.5	75.08
GM-55	08/30/99	4:07 PM	29	66	-	-0.96	0.02	0.5	19.6	--	--	--	75.12
GM-55	09/02/99	4:15 PM	28.78	82.9	-	-0.85	0.01	0.5	19.5	--	--	--	75.19
GM-55	09/14/99	5:43 PM	28.71	51.1	T	0.75	0	0.7	19.5	225	225	8	--
GM-55	09/20/99	3:35 PM	28.9	55	T	0.69	0	0.4	20	700	700	3	--
GM-55	10/06/99	4:26 PM	29	46	-	-0.11	0	0.2	20.7	625	475	3	75.2
GM-55	10/26/99	4:15 PM	28.89	39.9	-	0.05	0	0.1	20.7	5	5	2	75.34
GM-55	11/01/99	4:03 PM	28.47	53.1	-	0.1	0	0	20.4	300	300	2	75
GM-55	11/05/99	4:15 PM	28.81	48.9	-	0.06	0	0	20.9	105	60	1	75.31
GM-55	12/09/99	3:54 PM	28.73	35	-	0.05	14.9	0.4	13.9	--	--	--	--
GM-55	03/17/00	4:31 PM	29.12	30	-	0	10.9	0.3	16.2	--	--	--	75.05
GM-55	04/01/00	11:00 AM	28.72	48	-	0.19	3.6	0	19.4	--	--	--	74.88
GM-55	05/19/00	10:31 AM	28.92	52	-	0.2	--	--	--	--	--	--	--
GM-55	05/20/00	9:03 AM	28.81	57	-	0	10.2	1.4	14.3	--	--	--	74.89
GM-55	05/20/00	1:11 PM	28.76	67	-	0.05	--	--	--	--	--	--	--
GM-55	05/20/00	2:06 PM	28.74	68	-	0.28	--	--	--	--	--	--	--
GM-55	05/20/00	3:09 PM	28.73	68	-	0	--	--	--	--	--	--	--
GM-55	05/20/00	4:04 PM	28.71	69	-	0	--	--	--	--	--	--	--
GM-55	05/20/00	5:04 PM	28.71	67	-	0.02	--	--	--	--	--	--	--
GM-55	05/21/00	9:10 AM	28.66	60	-	0	--	--	--	--	--	--	--
GM-55	05/30/00	4:23 PM	28.58	59	-	0	6.8	1.3	15.5	--	--	--	74.8
GM-55	07/17/00	3:25 PM	28.66	73	-	0.07	6.7	2.5	15.8	--	--	--	--
GM-55	07/23/00	8:29 AM	29	57	-	-1.5	1.6	0.5	18.1	--	--	--	--
GM-55	07/25/00	8:58 AM	28.78	73	-	0.8	4.5	0.8	18.8	--	--	--	--
GM-55	07/31/00	2:41 PM	28.67	81	-	0.59	7.1	1	16.83	--	--	--	--
GM-55	08/06/00	9:15 AM	28.39	65	-	0.9	6.7	1.4	16.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-55	08/09/00	11:15 AM	28.69	66	-	-0.25	5.6	1	18.2	--	--	--	75.26
GM-55	08/19/00	12:09 PM	29.04	65	-	-3.46	3	0.4	18.8	--	--	--	75.78
GM-55	08/29/00	5:05 PM	28.8	75	-	0.03	4.9	0.6	16.9	--	--	--	75.46
GM-55	09/10/00	11:25 AM	28.61	72	-	-1.05	1.2	1.4	17.5	--	--	--	74.7
GM-55	09/25/00	4:34 PM	28.77	58	-	-0.89	0.9	0.4	19.7	--	--	--	75.4
GM-55	10/02/00	5:14 PM	28.5	55	-	-1.96	3	0.8	17.8	--	--	--	75.53
GM-55	10/09/00	4:53 PM	28.97	53	-	-10.33	2.4	0.5	19.2	--	--	--	75.91
GM-55	10/13/00	9:06 AM	28.7	57	-	-2.24	--	--	--	--	--	--	--
GM-55	10/16/00	1:34 PM	28.89	52	-	-4.14	--	--	--	--	--	--	--
GM-55	10/23/00	11:19 AM	29.07	55	T	-4.84	--	--	--	--	--	--	--
GM-55	10/31/00	7:35 AM	28.92	48	-	-2.35	--	--	--	--	--	--	--
GM-55	11/14/00	7:50 AM	28.42	30	0.01	0.02	--	--	--	--	--	--	--
GM-55	02/27/01	4:25 PM	29.06	16	T	-0.17	0.6	0	19.9	--	--	--	--
GM-55	03/22/01	3:45 PM	28.76	47	-	0.17	0	0.1	20.1	14.1	9	-0.4	--
GM-55	04/09/01	4:30 PM	28.76	42	-	0.15	0	0	20.7	56.52	20.22	-0.3	75.04
GM-55	05/01/01	4:14 PM	28.53	72	-	0.17	0	0.1	19.6	26.2	13.4	0	--
GM-55	05/29/01	4:19 PM	28.91	65	-	0.03	0	1.5	17.7	12.87	9.15	0	--
GM-55	07/20/01	10:25 AM	28.81	77	-	0.05	0	4.1	16.9	21.23	12.5	-0.57	--
GM-55	08/20/01	11:00 AM	28.86	76	-	-0.27	0	0.5	19.6	31.25	30.72	-0.81	75.42
GM-55	09/09/01	10:06 AM	28.7	60	-	0.15	0	0.5	19.6	0.75	0	0	75.47
GM-55	10/06/01	2:20 PM	28.83	41	-	-0.01	0	0	20.5	3	2.3	0.6	75.56
GM-55	11/07/01	3:35 PM	28.88	44	T	-7.25	0	0	20.5	0.4	-0.8	-0.11	76.81
GM-55	12/18/01	4:31 PM	28.47	31	-	-5.17	0	4.4	13.1	1.26	-0.8	1.26	76.74
GM-55	01/10/02	3:58 PM	28.56	35	T	-1.95	0	0	20.2	58.91	55.99	-0.5	75.81
GM-55	01/28/02	4:03 PM	28.76	24	-	-0.45	0	0	20.7	4.57	4.57	-0.59	76.39
GM-55	03/19/02	4:15 PM	28.9	36	-	--	--	--	--	--	--	--	--
GM-55	04/29/02	4:33 PM	28.53	44	0.04	0.68	0	0.4	20	78.3	70.3	0	73.84
GM-55	05/30/02	4:48 PM	28.36	74	-	0.1	0	3.3	15.5	1.21	1.15	1.34	73.46
GM-55	06/06/02	3:03 PM	28.79	74	-	0	0	2.5	17.1	4.15	3.32	0	74.02
GM-55	06/21/02	2:32 PM	29.08	74	-	0	0	2.7	17.8	1.54	1.11	0	--
GM-55	06/24/02	10:56 AM	28.84	75	-	0	0	3.7	15.9	5.77	4.8	0	--
GM-55	06/25/02	10:36 AM	28.77	85	-	0	0	2.3	18	0.84	0.77	0	--
GM-55	07/12/02	--	--	--	--	0	0	2.6	18.4	0.96	0.9	-0.3	74.82
GM-55	08/14/02	11:25 AM	28.6	73	-	0	0	4.7	16.7	1.8	1.67	-0.4	75.21

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-55	04/22/04	9:10 AM	28.99	39	-	0	0	0.1	21.4	--	--	--	--
GM-55	05/04/04	8:06 AM	28.52	44	T	0	0	0	20.9	--	--	--	--
GM-55	05/04/04	12:49 PM	28.46	63	-	0	0	0	20.9	--	--	--	--
GM-55	05/04/04	4:20 PM	28.55	52	-	0	0	0.5	20.3	--	--	--	--
GM-55	05/05/04	7:24 AM	28.78	37	-	0	0	0.2	20.4	--	--	--	--
GM-56	10/08/98	8:44 AM	29.03	46	-	0	0	0.2	19.5	35	35	3	43.27
GM-56	10/10/98	6:05 PM	28.88	57	-	0	0	0.3	20.1	19	19	2	43.25
GM-56	10/14/98	12:20 PM	28.83	46	-	0	0	0.5	19	--	--	--	43.27
GM-56	10/22/98	5:27 PM	29.03	55	-	0	0	0.3	20.3	1000	23	5	43.29
GM-56	11/02/98	4:27 PM	29.03	37	-	-0.01	0	0.6	19.2	700	300	6	43.37
GM-56	12/01/98	3:39 PM	28.65	48	-	0	0	0.7	19.4	25	14	2.5	--
GM-56	12/04/98	11:31 AM	28.75	45	-	0	0	0.3	20	2	2	1	43.44
GM-56	12/10/98	8:26 AM	29.01	29	-	0	0	0	19.6	11	1.5	1	43.47
GM-56	12/18/98	10:50 AM	28.36	31	0.02	0	0	0.5	19.1	500	400	1.5	43.43
GM-56	12/28/98	4:12 PM	28.53	24	-	0	0	0.1	17.8	--	--	--	43.38
GM-56	01/07/99	3:52 PM	28.91	3.9	-	0.01	0	0.1	15.9	5	5	1.75	43.6
GM-56	01/22/99	2:13 PM	28.61	28	0.08	0	0	0	10.6	--	--	--	43.62
GM-56	01/27/99	3:28 PM	28.55	27	T	0	0	0	18.8	1.5	1.5	1	43.66
GM-56	02/09/99	4:25 PM	28.65	39	-	-0.03	0	0	19.6	--	--	--	43.79
GM-56	02/24/99	3:42 PM	28.73	26.1	0.01	0.01	0	0.9	18.8	2.5	1.5	1	43.85
GM-56	03/10/99	12:20 PM	29.03	30.9	-	0	0	0.3	19.6	--	--	--	43.96
GM-56	03/24/99	2:53 PM	28.87	36	-	0	0	0	20	1.5	<1	<1	44.06
GM-56	05/01/99	11:52 AM	28.97	78.1	-	0.01	0	0.6	19.9	5.5	5.5	3	--
GM-56	05/16/99	3:17 PM	28.63	71.1	-	0	0	0.4	19.1	1	1	1.3	43.95
GM-56	07/10/99	4:08 PM	28.91	73	-	0	0	0.2	19.8	3	1.5	1.25	43.48
GM-56	07/16/99	6:10 PM	28.71	72	0.21	-0.01	0	0.1	19.1	--	--	--	77.85
GM-56	09/30/99	3:35 PM	28.42	60.1	-	0	0	0.8	19.2	6.5	2.5	2	42.34
GM-56	10/04/99	4:46 PM	28.91	46	-	0	0	0.5	20.2	4.25	3.75	4.25	42.38
GM-56	10/11/99	12:30 PM	29.06	59	-	0.02	0	0.5	20.1	2	<1	1.5	42.43
GM-56	10/26/99	2:30 PM	28.87	39.9	-	0	0	0	20.9	12	7	2	42.4
GM-56	11/05/99	11:38 AM	28.73	53.1	-	0	0	0	20.9	7.5	3	1	42.3
GM-56	11/09/99	10:21 AM	28.44	64.9	-	0.01	0	1	18.8	1	<1	1	42.26
GM-56	02/16/00	2:06 PM	28.99	18	-	0	0	0	19.6	--	--	--	43.06
GM-56	03/19/00	11:10 AM	28.86	30.9	-	0	0	0.6	19	105	-1.38	0.05	43.17

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-56	03/31/00	4:39 PM	28.71	62.1	-	0	0	0.5	19.8	2.1	-0.2	0	43.21
GM-56	06/05/00	5:01 PM	28.89	68	-	0	0	0.4	19.8	1.91	-0.21	-0.68	43.21
GM-56	06/16/00	1:10 PM	28.35	63	-	0	0	0	20	--	--	--	--
GM-56	06/17/00	10:00 AM	28.88	56	-	0	--	--	--	--	--	--	--
GM-56	06/17/00	11:00 AM	28.87	59	-	0	--	--	--	--	--	--	--
GM-56	06/17/00	12:00 PM	28.86	60	-	0	--	--	--	--	--	--	--
GM-56	06/17/00	1:00 PM	28.88	62	-	0	--	--	--	--	--	--	--
GM-56	06/17/00	2:00 PM	28.89	64	-	0	--	--	--	--	--	--	--
GM-56	06/17/00	3:00 PM	28.88	65	-	0	--	--	--	--	--	--	--
GM-56	06/17/00	4:00 PM	28.86	65	-	0	--	--	--	--	--	--	--
GM-56	06/17/00	5:00 PM	28.86	65	-	0	--	--	--	--	--	--	--
GM-56	06/18/00	8:55 AM	28.81	63	-	0	--	--	--	--	--	--	--
GM-56	06/30/00	8:41 AM	28.67	62	T	0	0	0	19.8	--	--	--	--
GM-56	07/05/00	3:55 PM	28.74	75	-	0	0	0.5	18.9	1.69	1.56	-0.3	--
GM-56	07/06/00	5:30 PM	28.89	69	-	0	0	0	20	-0.12	-0.12	-0.22	--
GM-56	07/07/00	9:00 AM	28.98	65	-	0.02	0	0	18.6	-1.26	-0.26	-0.45	--
GM-56	07/08/00	11:20 AM	28.75	64	-	0.01	0	0.5	18.6	2.67	-1	-0.05	--
GM-56	07/09/00	8:18 AM	28.54	74	-	0	0	0	19.6	0.1	0.07	-0.18	--
GM-56	07/10/00	8:52 AM	28.7	70	-	0.02	0	0	19.9	-0.17	-0.22	-0.37	--
GM-56	07/11/00	8:57 AM	28.85	69	-	0	0	0	20	483	0.22	-0.12	--
GM-56	07/12/00	8:00 AM	28.79	62	T	0.03	0	0.5	18.6	<1	<1	3.5	--
GM-56	09/06/00	2:48 PM	28.93	67	-	0	0	0.5	19.3	46	-0.17	0.09	--
GM-56	09/06/00	6:15 PM	28.89	62	-	-0.04	--	--	--	--	--	--	--
GM-56	09/08/00	8:55 AM	28.8	61	-	0	0	0	19.6	0.97	0.97	0.61	--
GM-56	09/09/00	10:27 AM	28.71	65	-	0	0	0.5	18.3	4.9	0.92	0.55	--
GM-56	09/11/00	3:56 PM	28.35	74	-	0	0	0.6	18.5	>=10000	75	3	--
GM-56	09/20/00	9:25 AM	28.29	57	-	0.01	0	0.5	20.6	1.1	>=1	1.1	--
GM-56	09/21/00	8:32 AM	28.63	48	-	-0.01	0	0	21.4	1.25	1	1	--
GM-56	10/10/00	11:09 AM	28.87	60	-	0	0	0.8	18.7	65.35	2.25	-0.49	42.91
GM-56	10/22/00	11:43 AM	29.16	58	-	0	0	0	20.6	570	1.57	0.1	41.97
GM-56	05/20/01	8:50 AM	28.66	70	-	0	0	0.6	17.8	1548	2.62	0	--
GM-56	07/10/01	2:00 PM	28.68	76	-	-0.01	0	0	20.6	1.32	0	0	42.71
GM-56	07/10/01	6:25 PM	28.72	70	-	0	0	0	21	16	3.38	0	--
GM-56	07/12/01	8:20 AM	28.9	65	-	-0.01	0	0	20.2	25	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-56	07/12/01	6:24 PM	28.88	74	-	0	0	0	20.8	3.7	0	0	--
GM-56	07/13/01	2:01 PM	28.89	83	-	0	0	0.1	21	2.3	0	0	--
GM-56	07/16/01	10:21 AM	28.77	71	-	0.05	0	0	20.3	50	0.2	0	--
GM-56	07/17/01	10:39 AM	28.76	75	-	-0.04	0	0	20.3	16.38	3	0	--
GM-56	07/18/01	8:27 AM	28.78	67	-	0.05	3.3	0.2	20.1	--	--	--	--
GM-56	07/19/01	2:00 PM	28.79	83	-	0	0	0.5	19.7	25.2	0	-0.82	--
GM-56	07/20/01	2:47 PM	28.75	83	T	0	0	0.5	19.8	92.53	-0.1	-0.75	--
GM-56	07/24/01	9:58 AM	28.68	76	-	0.05	0	0	20.2	2.71	0	0	--
GM-56	07/26/01	8:25 AM	29.06	61	-	-0.05	0	0	20.1	0	0	0	--
GM-56	08/02/01	5:36 PM	28.92	80	-	0	0	0.5	18.9	0.31	0	0	--
GM-56	08/09/01	8:50 AM	28.54	83	-	0	0	0.4	19	25.71	0	0	--
GM-56	08/16/01	9:26 AM	28.59	61	T	0	0	0.6	18.7	5.8	1.01	1.22	--
GM-57	10/28/98	7:35 AM	28.77	44.1	-	-0.4	0	0	20.4	--	--	--	78.86
GM-57	11/02/98	3:31 PM	29.03	37	-	-2.64	0	0	19.8	425	425	8	78.3
GM-57	11/18/98	9:51 AM	28.87	34	-	-3.92	0	0	19.4	700	150	6.5	78.32
GM-57	12/30/98	10:24 AM	28.76	-5	-	-2.1	0	0	16	150	150	2.5	78.37
GM-57	01/19/99	9:58 AM	28.61	23	-	0	0	0	18.1	--	--	--	78.26
GM-57	01/22/99	12:07 PM	28.65	27	T	0	0	0	14.8	2	<1	2	78.1
GM-57	01/28/99	4:37 PM	28.9	26.1	-	0	0	0	17.1	6.5	6.5	<1	78.36
GM-57	01/29/99	10:38 AM	28.99	28	-	0	0	0	17.8	4	3	<1	78.3
GM-57	02/02/99	10:06 AM	28.25	32	0.01	0	0	0	18.4	300	275	1.25	77.57
GM-57	02/09/99	10:24 AM	28.52	35.1	-	0	0	0	18.7	75	30	1	78.16
GM-57	02/22/99	4:06 PM	29.08	24.1	-	-1.72	0	0	18.1	38	38	1.75	78.21
GM-57	02/26/99	10:24 AM	28.81	27	-	-0.13	0	0	19.3	50	40	1.25	78.11
GM-57	03/09/99	10:25 AM	28.91	25	T	-0.03	0	0	15.5	2.5	2.5	<1	77.94
GM-57	03/22/99	4:43 PM	28.76	36	-	-0.32	0	0	17	19	18	2.25	78.13
GM-57	04/09/99	2:04 PM	28.66	48.9	-	-2.5	0	0	19.2	42.5	21	1.5	--
GM-57	04/21/99	10:35 AM	28.62	44.1	-	0.12	0	0	19.5	7.5	7.5	7.5	77.94
GM-57	05/01/99	10:09 AM	29.02	73	-	0	0	0	19.8	2	2	2	--
GM-57	05/16/99	2:07 PM	28.63	72	-	-0.92	0	0	17.6	24	24	1.25	77.73
GM-57	07/14/99	3:57 PM	28.58	79	-	-0.12	0	0.2	16.3	--	--	--	77.73
GM-57	07/16/99	6:30 PM	28.72	72	0.06	2.3	36	0	5	--	--	--	77.83
GM-57	07/19/99	4:55 PM	28.85	77	-	-0.01	0	0	21.2	5	5	4	77.82
GM-57	07/20/99	5:15 PM	28.82	71.1	-	-0.02	0	0	21.3	2000	4	1.5	77.83

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-57	07/23/99	6:28 PM	28.58	84.9	-	0.14	0	0	19.6	--	--	--	77.62
GM-57	07/28/99	10:54 AM	28.55	80.1	-	-0.08	0	0	17.6	--	--	--	77.68
GM-57	08/11/99	10:47 AM	28.64	73	-	-1.58	--	--	--	--	--	--	--
GM-57	08/16/99	5:35 PM	28.61	81	-	-0.07	--	--	--	--	--	--	--
GM-57	08/20/99	12:27 PM	28.89	75	-	-2.91	--	--	--	--	--	--	--
GM-57	08/23/99	6:02 PM	28.61	66.9	-	0.52	--	--	--	--	--	--	--
GM-57	08/30/99	3:51 PM	29	66	-	-3.59	--	--	--	--	--	--	--
GM-57	09/02/99	4:28 PM	28.78	82.9	-	0	0	0	15.7	2.5	2.5	2.5	--
GM-57	09/14/99	2:18 PM	28.65	55.9	T	-0.8	0	0	16.8	125	100	1.5	--
GM-57	09/20/99	3:04 PM	28.89	48.9	T	-2.44	0	0	17.2	3	3	3	--
GM-57	10/06/99	11:52 AM	29.04	42.1	-	-0.67	0	0	20.4	>10000	27	2	--
GM-57	10/26/99	5:13 PM	28.89	37.9	-	0	0	0.1	19.6	6.25	6	2.25	78.24
GM-57	11/01/99	2:23 PM	28.41	64	-	0.04	0	0	19.4	4	4	4	77.74
GM-57	11/05/99	1:40 PM	28.75	52	-	0	0	0	20.8	29	2	1	78.19
GM-57	12/09/99	2:59 PM	28.73	35	-	0.04	0	0	20.2	150	150	2	--
GM-57	01/21/00	4:20 PM	28.8	5	-	0.04	0	0	18.4	--	--	--	78.02
GM-57	03/17/00	12:25 PM	29.21	25	T	0	0	0	20.3	1499	22.55	-0.3	78.15
GM-57	04/01/00	11:39 AM	28.71	50	-	-0.18	0	0	20.6	39.1	13.11	-0.17	77.83
GM-57	05/18/00	9:56 AM	28.8	47	-	0	0	0	19.5	--	--	--	77.93
GM-57	05/20/00	9:12 AM	28.81	57	-	1.52	69	0.8	2.4	--	--	--	--
GM-57	05/20/00	1:15 PM	28.76	67	-	1.65	--	--	--	--	--	--	--
GM-57	05/20/00	2:10 PM	28.74	68	-	2.18	--	--	--	--	--	--	--
GM-57	05/20/00	3:13 PM	28.73	68	-	0.01	--	--	--	--	--	--	--
GM-57	05/20/00	4:07 PM	28.71	69	-	0.09	--	--	--	--	--	--	--
GM-57	05/20/00	5:08 PM	28.71	67	-	0.39	--	--	--	--	--	--	--
GM-57	05/21/00	9:19 AM	28.66	60	-	2.76	--	--	--	--	--	--	--
GM-57	05/30/00	4:32 PM	28.58	59	-	3.89	76.8	0	0	--	--	--	77.78
GM-57	05/31/00	10:41 AM	28.76	73	-	0.1	--	--	--	--	--	--	--
GM-57	05/31/00	11:37 AM	28.75	72	-	1.1	--	--	--	--	--	--	--
GM-57	05/31/00	12:41 PM	28.75	76	-	0.26	--	--	--	--	--	--	--
GM-57	05/31/00	1:37 PM	28.76	76	-	0.08	--	--	--	--	--	--	--
GM-57	05/31/00	2:38 PM	28.76	77	-	0.09	--	--	--	--	--	--	--
GM-57	05/31/00	3:43 PM	28.76	76	-	1.17	--	--	--	--	--	--	--
GM-57	06/01/00	8:20 AM	28.83	54	-	1.2	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-57	06/01/00	11:28 AM	28.86	52	0.04	0.84	--	--	--	--	--	--	--
GM-57	06/01/00	12:24 PM	28.74	52	0.06	0.55	--	--	--	--	--	--	--
GM-57	06/01/00	1:38 PM	28.74	54	-	2.1	--	--	--	--	--	--	--
GM-57	06/01/00	2:22 PM	28.74	54	-	2.64	--	--	--	--	--	--	--
GM-57	06/01/00	3:24 PM	28.68	54	T	2.05	--	--	--	--	--	--	--
GM-57	06/01/00	4:19 PM	28.66	54	-	2.78	--	--	--	--	--	--	--
GM-57	06/02/00	8:37 AM	28.84	52	-	0	--	--	--	--	--	--	--
GM-57	06/04/00	8:45 AM	28.92	59	-	0.27	--	--	--	--	--	--	--
GM-57	07/17/00	3:00 PM	28.66	73	-	4.85	55.6	0.3	6.6	--	--	--	--
GM-57	07/23/00	7:40 AM	29	57	-	0.25	46.8	0.2	6.3	--	--	--	--
GM-57	07/25/00	8:00 AM	28.77	69	-	2.7	51.8	0.3	6.3	--	--	--	--
GM-57	07/31/00	2:05 PM	28.67	83	-	0.45	55.1	0.2	5.4	--	--	--	--
GM-57	08/06/00	8:10 AM	28.39	63	-	3.91	79.7	0	0	--	--	--	--
GM-57	08/09/00	8:15 AM	28.65	63	-	0.32	20.1	0.4	16.4	--	--	--	78.13
GM-57	08/19/00	8:18 AM	29.06	55	-	-10.73	0	0.1	19.9	5	5	5	78.81
GM-57	08/29/00	11:03 AM	28.79	71	-	-1.77	0	0	20.3	0.1	0.03	0.1	78.5
GM-57	08/30/00	2:00 PM	28.84	69	-	-8.5	0	0	19.8	2.46	2	0.14	78.55
GM-57	08/31/00	9:50 AM	28.61	80	-	-5.75	0	0	19.7	0.37	0.32	0.28	78.31
GM-57	09/10/00	9:32 AM	28.61	72	-	-2.73	0.7	0	17.6	2055	1.66	-0.09	77.7
GM-57	09/25/00	2:46 PM	28.79	60	-	-4.78	3	0	18.6	--	--	--	78.2
GM-57	10/02/00	3:07 PM	28.45	55	-	-5.58	5	0	17.1	--	--	--	78.37
GM-57	10/09/00	3:40 PM	28.98	59	-	-13.38	1.8	0	19.8	--	--	--	78.8
GM-57	10/13/00	9:12 AM	28.7	57	-	-9.19	--	--	--	--	--	--	--
GM-57	10/16/00	2:10 PM	28.89	52	-	-16.24	--	--	--	--	--	--	--
GM-57	10/23/00	10:33 AM	29.07	55	T	-15.26	--	--	--	--	--	--	--
GM-57	10/31/00	7:44 AM	28.92	48	-	-0.63	--	--	--	--	--	--	--
GM-57	11/14/00	7:55 AM	28.42	30	0.01	-0.06	--	--	--	--	--	--	--
GM-57	12/05/00	9:15 AM	28.87	7	-	-1.95	--	--	--	--	--	--	--
GM-57	02/27/01	4:53 PM	29.06	15	-	-2.93	0	0	20	4.7	2.5	2	--
GM-57	03/22/01	9:20 AM	28.86	37	-	-1.16	0	0	20.2	1	0	-0.2	--
GM-57	04/09/01	8:02 AM	28.76	37	-	-0.35	0	0	20.5	0.39	0.25	0	--
GM-57	04/09/01	2:10 PM	28.76	42	-	--	--	--	--	--	--	--	78.02
GM-57	05/01/01	1:22 PM	28.58	69	-	0.1	0	0	19.5	7.59	3.53	-0.33	--
GM-57	05/29/01	9:40 AM	28.95	57	-	1.1	0	0	19	-1.48	-1.65	-2.07	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-57	07/20/01	11:03 AM	28.8	81	-	-8	0	0	20.4	0	0	-0.49	--
GM-57	08/20/01	9:29 AM	28.87	71	-	-4.18	0	0	20.2	98.72	77.25	-0.52	78.18
GM-57	09/09/01	10:45 AM	28.7	60	-	-0.5	0	0	20.2	0	0	0	78.27
GM-57	10/06/01	9:40 AM	28.76	42	-	-0.4	0	0	20.4	0	0	0	78.38
GM-57	11/07/01	1:06 PM	28.96	48	-	-18.32	0	0	20.8	0.15	-0.12	0.15	78.66
GM-57	12/18/01	2:01 PM	28.48	39	-	-8.2	0	0	20.3	--	--	--	78.1
GM-57	01/10/02	2:08 PM	28.54	36	T	-5.24	0	0	20.6	--	--	--	78.5
GM-57	01/28/02	12:41 PM	28.77	24	-	-9.86	0	0	21	-0.21	-0.21	-0.64	78.65
GM-57	03/19/02	10:25 AM	28.98	33	-	-0.1	0	0	21.1	0	0	0	--
GM-57	04/29/02	8:40 AM	28.61	36	T	0.04	0	0	20.5	10.46	9.5	0	77.32
GM-57	05/29/02	1:43 PM	28.64	79	-	0.02	0	0.3	20.6	0.54	0.15	0.3	76.61
GM-57	06/06/02	10:27 AM	28.84	68	-	0	0	0.5	19.8	5.4	4.22	0	76.97
GM-57	06/14/02	11:52 AM	28.56	58	T	0	0	0.6	19.5	0.8	0.7	0	--
GM-57	06/21/02	2:57 PM	29.08	74	-	0	0	0.8	19.6	1.68	1.05	0	--
GM-57	06/24/02	11:17 AM	28.84	75	-	0	0	0.6	19.5	2.99	2.53	0	--
GM-57	06/25/02	11:11 AM	28.77	85	-	0	0	0.4	20.4	1.5	1.41	0	--
GM-57	06/25/02	1:35 PM	28.75	81	-	0	0	0	20.2	0.6	0	0	76.83
GM-57	07/12/02	--	--	--	--	0	0	0.4	20.1	1.92	1.81	-0.35	77.4
GM-57	08/14/02	9:40 AM	28.61	72	-	1.1	0	0.4	20.7	-1.2	-1.25	-0.02	77.86
GM-57	10/16/03	10:09 AM	28.79	46	-	-1.3	0	0	19.8	0	0	0	77.71
GM-57	04/22/04	8:47 AM	28.99	39	-	0	0	0.1	21	--	--	--	--
GM-57	05/04/04	7:57 AM	28.52	44	T	0	0	0.1	20.4	--	--	--	--
GM-57	05/04/04	11:54 AM	28.46	61	-	0	0	0	20.9	--	--	--	--
GM-57	05/04/04	4:28 PM	28.55	52	-	0	0	0	21.2	--	--	--	--
GM-57	05/05/04	8:07 AM	28.78	40	-	0	0	0	21.2	--	--	--	--
GM-57	06/11/04	10:00 AM	28.8	57	-	-0.035	0	0	19.8	--	--	--	76.98
GM-57	06/11/04	11:30 AM	28.79	58	-	0	0	0	20	--	--	--	--
GM-57	06/11/04	12:04 PM	28.79	58	-	-0.002	0	0	19.8	--	--	--	--
GM-57	06/11/04	12:41 PM	28.76	59	-	0.002	0	0	19.9	--	--	--	--
GM-57	06/11/04	1:23 PM	28.76	59	-	0	0	0	19.8	--	--	--	--
GM-58	11/02/98	1:12 PM	29.05	39	-	0.11	17.7	0	15.5	--	--	--	78.5
GM-58	11/18/98	10:08 AM	28.87	34	-	-0.34	18.3	0	13.5	--	--	--	78.55
GM-58	12/30/98	10:41 AM	28.77	0	-	-1.09	29.7	0	6.2	--	--	--	78.68
GM-58	01/19/99	10:15 AM	28.61	23	-	-2.42	21.4	0	9.3	--	--	--	78.75

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-58	01/22/99	12:20 PM	28.65	27	T	1.05	21.8	0	8.2	--	--	--	78.43
GM-58	01/28/99	4:54 PM	28.9	26.1	-	-1.15	21.3	0	8.4	--	--	--	78.68
GM-58	01/29/99	10:52 AM	28.99	28	-	-0.75	6	0	16.1	--	--	--	78.65
GM-58	02/02/99	10:22 AM	28.25	32	0.01	9.24	20.3	0	11.8	--	--	--	77.88
GM-58	02/09/99	10:41 AM	28.55	36	-	0.68	33.6	0	4	--	--	--	78.53
GM-58	02/22/99	4:27 PM	29.08	24.1	-	0.48	35.3	0	3.8	--	--	--	78.7
GM-58	02/26/99	10:40 AM	28.8	27	-	1.82	35.4	0	5.8	--	--	--	78.42
GM-58	03/09/99	10:42 AM	28.9	26.1	T	3.01	37.3	0	7.2	--	--	--	78.3
GM-58	03/22/99	4:59 PM	28.76	36	-	1.13	38.1	0	9.9	--	--	--	78.43
GM-58	04/09/99	2:28 PM	28.66	48.9	-	0.71	42.5	0	1.7	--	--	--	--
GM-58	04/21/99	10:50 AM	28.62	44.1	-	1.17	33.5	0	1.8	--	--	--	78.02
GM-58	05/01/99	10:23 AM	29.02	73	-	0.14	58.5	0.3	4.2	--	--	--	--
GM-58	05/16/99	1:54 PM	28.63	72	-	3.69	65.3	0.3	2	--	--	--	77.81
GM-58	07/14/99	4:10 PM	28.58	79	-	3.74	44	0	3.8	--	--	--	77.77
GM-58	07/19/99	5:10 PM	28.85	77	-	0.1	47	0	2	--	--	--	77.82
GM-58	07/20/99	5:44 PM	28.8	70	-	0.18	46.2	0	0.5	--	--	--	77.78
GM-58	07/23/99	6:53 PM	28.59	81	-	0.59	51.8	0.1	0.6	--	--	--	77.63
GM-58	07/28/99	11:06 AM	28.55	80.1	-	3.14	50.5	0	2.9	--	--	--	77.72
GM-58	08/11/99	10:49 AM	28.64	73	-	-1.27	--	--	--	--	--	--	--
GM-58	08/16/99	5:42 PM	28.61	81	-	-2.2	--	--	--	--	--	--	--
GM-58	08/20/99	12:31 PM	28.89	75.9	-	-6.19	--	--	--	--	--	--	--
GM-58	08/23/99	6:12 PM	28.61	66.9	-	-2.93	--	--	--	--	--	--	--
GM-58	08/30/99	3:56 PM	29	66	-	-8.26	--	--	--	--	--	--	--
GM-58	09/02/99	4:33 PM	28.79	82	-	-5.01	14.8	0	14.6	--	--	--	--
GM-58	09/14/99	1:58 PM	28.65	55.9	T	0.53	22.4	0	11.4	--	--	--	--
GM-58	09/20/99	3:11 PM	28.89	48.9	T	-0.02	23.1	0	10.7	3	3	3	--
GM-58	10/06/99	12:06 PM	29.04	42.1	-	-0.03	3	0	18.6	--	--	--	78.34
GM-58	10/26/99	5:20 PM	28.89	37.9	-	0.1	69.7	0.1	1.8	--	--	--	78.47
GM-58	11/01/99	2:30 PM	28.42	62.1	-	1.46	71.5	0	0	--	--	--	77.95
GM-58	11/05/99	1:54 PM	28.75	52	-	0.24	71.2	0	0	--	--	--	78.33
GM-58	12/09/99	3:08 PM	28.73	35	-	3.2	88.7	0.7	0	--	--	--	--
GM-58	01/21/00	4:34 PM	28.8	2	-	1.12	73.7	0	0	--	--	--	78.12
GM-58	03/17/00	12:43 PM	29.18	27	-	-0.6	36	0	11.1	--	--	--	78.2
GM-58	04/01/00	11:54 AM	28.71	50	-	1.65	54.7	0	4.7	--	--	--	77.92

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-58	05/17/00	12:42 PM	28.61	61	-	2.77	40.2	0	0.6	--	--	--	77.81
GM-58	05/18/00	9:22 AM	28.77	44	-	0.66	55.1	0	0	--	--	--	78.01
GM-58	05/18/00	1:58 PM	28.82	49	-	0.37	--	--	--	--	--	--	--
GM-58	05/18/00	2:25 PM	28.82	49	-	0.61	--	--	--	--	--	--	--
GM-58	05/18/00	3:46 PM	28.82	50	-	0.27	--	--	--	--	--	--	--
GM-58	05/18/00	5:27 PM	28.83	48	-	0.05	--	--	--	--	--	--	--
GM-58	05/18/00	6:30 PM	28.88	44	-	0	--	--	--	--	--	--	--
GM-58	05/19/00	8:17 AM	28.97	45	-	-0.76	--	--	--	--	--	--	--
GM-58	05/19/00	10:39 AM	28.92	52	-	-0.32	--	--	--	--	--	--	--
GM-58	05/20/00	9:28 AM	28.81	57	-	1.32	62.5	0.4	3.4	--	--	--	77.9
GM-58	05/30/00	4:38 PM	28.58	59	-	3.53	--	78.8	0	0	--	--	77.85
GM-58	05/31/00	10:44 AM	28.76	73	-	0.72	--	--	--	--	--	--	--
GM-58	05/31/00	11:39 AM	28.75	72	-	1.01	--	--	--	--	--	--	--
GM-58	05/31/00	12:43 PM	28.75	76	-	0.54	--	--	--	--	--	--	--
GM-58	05/31/00	1:39 PM	28.76	76	-	0.3	--	--	--	--	--	--	--
GM-58	05/31/00	2:41 PM	28.76	77	-	1.01	--	--	--	--	--	--	--
GM-58	05/31/00	3:46 PM	28.76	76	-	1.37	--	--	--	--	--	--	--
GM-58	06/01/00	8:23 AM	28.83	54	-	1.1	--	--	--	--	--	--	--
GM-58	06/01/00	11:31 AM	28.74	52	0.06	0.52	--	--	--	--	--	--	--
GM-58	06/01/00	12:26 PM	28.74	52	0.06	0.55	--	--	--	--	--	--	--
GM-58	06/01/00	1:41 PM	28.74	54	-	2.1	--	--	--	--	--	--	--
GM-58	06/01/00	2:25 PM	28.74	54	-	2.55	--	--	--	--	--	--	--
GM-58	06/01/00	3:26 PM	28.68	54	T	2.07	--	--	--	--	--	--	--
GM-58	06/01/00	4:23 PM	28.66	54	-	2.67	--	--	--	--	--	--	--
GM-58	06/02/00	8:39 AM	28.84	52	-	0	--	--	--	--	--	--	--
GM-58	07/17/00	3:07 PM	28.66	73	-	4.15	53.1	0.1	5.8	--	--	--	--
GM-58	07/23/00	7:31 AM	29	57	-	0	40.8	0	6.2	--	--	--	--
GM-58	07/25/00	8:06 AM	28.77	69	-	0.89	48.4	0.1	5	--	--	--	--
GM-58	07/31/00	2:09 PM	28.67	83	-	2.23	50.2	0	3.9	--	--	--	--
GM-58	08/06/00	8:25 AM	28.39	63	-	5.24	46.5	0	1.7	--	--	--	--
GM-58	08/09/00	8:21 AM	28.65	63	-	-0.14	37.5	0	4.9	--	--	--	78.19
GM-58	08/19/00	8:36 AM	29.06	58	-	-9.23	40.4	0	2.5	--	--	--	78.78
GM-58	08/29/00	11:18 AM	28.79	71	-	-0.51	0	0	20.5	0.1	0.06	0	78.51
GM-58	08/30/00	2:27 PM	28.84	69	-	-7.15	0	0	19.8	0.18	0.18	0.18	78.57

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-58	08/31/00	10:25 AM	28.61	80	-	-4.28	0	0.2	19.4	8.96	--	0.3	78.31
GM-58	09/10/00	9:45 AM	28.61	72	-	-2.88	4.3	0	16.3	16.6	11.88	-0.13	77.77
GM-58	09/25/00	2:56 PM	28.79	60	-	-3.81	0	0	21.3	--	--	--	78.32
GM-58	10/02/00	3:20 PM	28.45	55	-	-5.86	14.2	0	13.1	--	--	--	78.41
GM-58	10/09/00	3:55 PM	28.98	59	-	-11.36	3.5	0	19.1	--	--	--	78.71
GM-58	10/13/00	9:27 AM	28.7	57	-	-10.65	--	--	--	--	--	--	--
GM-58	10/16/00	1:57 PM	28.89	52	-	-15.27	--	--	--	--	--	--	--
GM-58	10/23/00	10:58 AM	29.07	55	T	-15.89	--	--	--	--	--	--	--
GM-58	10/31/00	7:57 AM	28.92	48	-	-4.61	--	--	--	--	--	--	--
GM-58	11/14/00	8:38 AM	28.42	31	T	-0.07	--	--	--	--	--	--	--
GM-58	12/05/00	9:23 AM	28.87	7	-	-2.52	--	--	--	--	--	--	--
GM-58	02/27/01	5:05 PM	29.06	15	-	-3.53	0	0	19.8	3.9	3.3	3.1	--
GM-58	03/22/01	9:28 AM	28.86	37	-	-9.61	0	0	20.4	0	-0.5	-0.2	--
GM-58	04/09/01	8:11 AM	28.76	37	-	-7.92	0	0	20.7	0.58	0	0	--
GM-58	04/09/01	2:19 PM	28.76	42	-	--	--	--	--	--	--	--	78.05
GM-58	05/01/01	1:27 PM	28.58	69	-	-2.15	0	0	19.9	0	0	0	--
GM-58	05/29/01	9:48 AM	28.95	57	-	-10	0	0	19.4	0.008	-0.005	0.005	--
GM-58	07/20/01	10:57 AM	28.8	81	-	-4	0	0	20.5	1.27	1.24	-0.51	--
GM-58	08/20/01	9:37 AM	28.87	75	-	-9.54	0	0	20.2	10.72	10.33	-0.76	78.26
GM-58	09/09/01	10:55 AM	28.7	60	-	-6	0	0	20.1	0	0	0	78.32
GM-58	10/06/01	10:10 AM	28.76	42	-	-0.62	0	0	20.4	0.5	0.4	0.3	78.44
GM-58	11/07/01	1:26 PM	28.96	48	-	-23	0	0	20.8	0.04	-0.34	0.04	78.48
GM-58	12/18/01	1:45 PM	28.48	39	-	-17.54	0	0	20.8	--	--	--	78.45
GM-58	01/10/02	2:00 PM	28.54	36	T	-12.82	0	0	20.7	--	--	--	78.5
GM-58	01/28/02	12:35 PM	28.77	24	-	-16	0	0	21	-0.94	-0.94	-0.74	78.52
GM-58	03/19/02	10:46 AM	28.97	33	-	-1.6	0	0	20.9	0	0	0	--
GM-58	04/29/02	8:50 AM	28.61	36	T	-6.54	0	0	20.6	504	230	0	77.01
GM-58	05/29/02	1:54 PM	28.64	79	-	-0.46	0	0.3	21.4	0.22	0.06	0.16	76.76
GM-58	06/06/02	10:39 AM	28.83	71	-	-1.42	0	0.6	20.2	0.09	0.03	0	77.08
GM-58	06/21/02	3:04 PM	29.08	74	-	-5	0	0.9	20.1	0	0	0	--
GM-58	06/24/02	11:28 AM	28.84	75	-	-0.83	0	0.9	19.9	0	0	0	--
GM-58	06/25/02	11:21 AM	28.77	85	-	0	0	0.5	20.7	1.05	1	0	--
GM-58	07/12/02	--	--	--	--	4.4	0	0	21.2	0.71	0.58	-0.31	77.48
GM-58	08/14/02	8:50 AM	28.6	68	-	-13.6	0	0	20.9	-0.63	-0.75	-0.33	78.05

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-58	10/16/03	9:53 AM	28.79	46	-	-14.6	0	0	19.8	0	0	0	78.62
GM-58	04/16/04	10:16 AM	28.63	68	-	0.1	13	0	6.8	--	--	--	--
GM-58	04/16/04	4:01 PM	28.65	74	-	0	14.9	0.1	5.9	--	--	--	--
GM-58	04/22/04	9:00 AM	28.99	39	-	0	0	0	21.4	--	--	--	--
GM-58	05/04/04	7:48 AM	28.52	44	T	0	0	0	20.8	--	--	--	--
GM-58	05/04/04	12:02 PM	28.46	61	-	0	0	0	20.8	--	--	--	--
GM-58	05/04/04	4:35 PM	28.57	51	-	0	0	0	21.5	--	--	--	--
GM-58	05/05/04	8:12 AM	28.78	40	-	0	0	0	21.3	--	--	--	--
GM-58	06/11/04	10:00 AM	28.8	57	-	0.141	0	0	19.9	--	--	--	76.87
GM-58	06/11/04	3:00 PM	28.76	60	-	0	0	0	19.8	--	--	--	--
GM-58	06/11/04	3:45 PM	28.77	61	-	-0.029	0	0	20	--	--	--	--
GM-58	06/11/04	4:47 PM	28.77	-	-	-0.021	0	0	20	--	--	--	--
GM-60	11/21/98	8:06 AM	28.85	19	-	-0.9	3.8	0	20.3	--	--	--	--
GM-60	12/08/98	1:30 PM	28.72	41	-	0.86	11.4	0.3	16.3	--	--	--	106.97
GM-60	12/10/98	10:02 AM	29.04	29	-	-2.15	0	0.3	18.8	125	125	1	106.08
GM-60	12/22/98	11:18 AM	29.01	-5	-	0.38	14	0.5	12.5	--	--	--	--
GM-60	12/28/98	12:38 PM	28.61	20	-	0.5	32.6	0.7	9.3	--	--	--	105.4
GM-60	12/30/98	8:33 AM	28.76	-9	-	0.14	58	1	4.8	--	--	--	105.47
GM-60	01/07/99	12:05 PM	28.91	0	-	-0.96	8.4	0.4	14.5	--	--	--	--
GM-60	01/14/99	2:08 PM	28.97	6.1	-	0.06	0.2	1.4	16.9	--	--	--	--
GM-60	01/15/99	11:56 AM	28.56	12.9	-	1.54	34.1	1.1	9.3	--	--	--	--
GM-60	01/18/99	4:07 PM	28.05	33.1	T	2.2	67.6	1.1	1.7	--	--	--	--
GM-60	01/19/99	2:01 PM	28.61	27	-	-1.34	17.5	0.3	15.3	--	--	--	--
GM-60	01/22/99	9:11 AM	28.69	27	-	0.22	0.6	0.8	19.2	--	--	--	--
GM-60	01/25/99	3:19 PM	28.94	26.1	-	-1.67	0	0	18.8	--	--	--	--
GM-60	01/27/99	2:14 PM	28.52	28	-	1.8	39.9	1.1	7.9	--	--	--	--
GM-60	01/29/99	11:26 AM	28.99	28	-	-0.03	0	0	18.8	475	150	1	--
GM-60	02/01/99	3:58 PM	28.65	30.9	-	1.65	23.7	0.7	12.1	--	--	--	--
GM-60	02/02/99	12:17 PM	28.25	33.1	T	1.6	67.8	1.3	1.4	--	--	--	--
GM-60	02/05/99	10:13 AM	28.81	19	-	-0.17	0	0.1	19.7	275	200	1.5	--
GM-60	02/08/99	4:00 PM	28.35	36	-	0.23	39	0.7	7.2	--	--	--	--
GM-60	02/09/99	1:46 PM	28.59	39	-	0.54	68.6	1.2	1.3	--	--	--	--
GM-60	02/24/99	12:46 PM	28.79	24.1	0.04	2.81	71.4	1.6	0.4	--	--	--	--
GM-60	02/26/99	11:06 AM	28.8	27	-	1.28	62.6	1.2	3.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-60	03/14/99	12:22 PM	28.89	37.9	-	1.58	50.9	1.1	5.4	--	--	--	--
GM-60	03/24/99	1:40 PM	28.86	37	-	-0.02	56.2	1.4	3.1	--	--	--	--
GM-60	04/13/99	2:49 PM	28.83	63	-	-0.02	22.9	0.8	10.7	--	--	--	--
GM-60	05/13/99	2:34 PM	28.81	61	-	0.09	2	0	19.3	--	--	--	--
GM-60	06/13/99	10:07 AM	28.84	66	-	0	6.4	0.4	16.3	--	--	--	101.12
GM-60	06/16/99	10:39 AM	28.96	46.9	T	0	3.2	0.2	17.8	--	--	--	101.04
GM-60	06/17/99	5:50 PM	28.96	68	-	0.13	0	0.2	20	<1	--	1.5	101.27
GM-60	06/18/99	9:15 AM	29.04	69.1	-	0.01	2.3	0.1	18.9	--	--	--	101.25
GM-60	06/19/99	3:15 PM	28.99	69.1	-	0.03	2.2	0.2	18.8	--	--	--	101.27
GM-60	06/20/99	12:30 PM	28.97	75.9	-	0.18	1.7	0.1	19.3	--	--	--	102.29
GM-60	06/25/99	4:52 PM	28.63	88	-	--	4.8	0.1	17.9	--	--	--	101.16
GM-60	06/26/99	5:50 PM	28.54	82.9	-	--	2.8	0.2	18.8	--	--	--	101.17
GM-60	06/28/99	3:38 PM	28.42	61	0.21	0.05	3.5	0.3	17.8	--	--	--	101.14
GM-60	06/30/99	5:24 PM	28.55	64	-	0.01	3.3	0.1	18.7	--	--	--	101.11
GM-60	07/01/99	3:56 PM	28.41	72	-	0.16	1.9	0.1	19	--	--	--	101.17
GM-60	07/02/99	4:31 PM	28.62	78.1	-	0.22	2.7	0.2	18.7	--	--	--	101.31
GM-60	07/03/99	4:15 PM	28.62	73	0.01	-0.05	0	0	20.2	500	500	1.5	101.37
GM-60	07/04/99	3:06 PM	28.64	91	-	-0.19	0.4	0.1	19.7	9000	9000	2	101.34
GM-60	07/05/99	1:51 PM	28.6	86	-	0.28	1.1	0.1	19.3	--	--	--	101.28
GM-60	07/06/99	5:15 PM	28.7	77	-	0	0	0	20.5	4200	4200	4	101.38
GM-60	07/07/99	3:15 PM	28.73	78.1	-	0	0.3	0	20.1	>10000	>10000	1.75	101.32
GM-60	07/10/99	6:17 PM	28.91	71.1	-	-0.16	2.8	0.2	18.8	--	--	--	101.34
GM-60	07/14/99	4:50 PM	28.6	80.1	-	0.01	0.3	0.1	20.5	--	--	--	101.16
GM-60	07/19/99	6:10 PM	28.85	75	-	-0.21	2.6	0.2	19.5	--	--	--	101.12
GM-60	07/27/99	7:52 AM	28.79	66.9	-	-0.07	1	0.1	20.6	--	--	--	101.32
GM-60	08/07/99	2:07 PM	28.52	77	-	0.2	2.5	2.4	14.8	--	--	--	101.26
GM-60	08/25/99	10:53 AM	28.73	77	-	0	3.5	1.9	15.7	--	--	--	--
GM-60	09/30/99	4:58 PM	28.47	55	-	0	3.6	0.9	17.4	--	--	--	101.28
GM-60	10/11/99	10:01 AM	29.08	54	-	0.04	0.8	0.3	19.8	--	--	--	101.39
GM-60	10/26/99	2:52 PM	28.87	39.9	-	-0.29	0.6	0.3	19.9	2	2	2	101.33
GM-60	11/05/99	8:38 AM	28.67	50	-	0.06	1.3	0.2	19.4	--	--	--	101.34
GM-60	11/09/99	8:35 AM	28.44	62.1	-	0.06	1.4	0.4	18.9	--	--	--	101.12
GM-60	02/08/00	4:58 PM	28.6	30	-	0	0.4	0.1	19	8500	8500	3.25	--
GM-60	02/22/00	10:42 AM	28.65	37	-	0.03	0.4	0	19.9	7000	7000	1.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-60	03/16/00	3:48 PM	28.95	27	-	0.75	0.7	0.3	19	2.2	2.1	-0.15	102.4
GM-60	03/29/00	3:30 PM	28.67	39.9	-	0.13	0	0	20.6	--	--	--	--
GM-60	05/01/00	11:14 AM	28.57	63	-	0.01	1.7	0.5	16.6	--	--	--	102.46
GM-60	05/17/00	12:19 PM	28.61	63	-	0.03	10.5	3.8	8.6	--	--	--	--
GM-60	05/18/00	8:59 AM	28.77	44	-	0	13.1	3.9	6.9	--	--	--	--
GM-60	05/18/00	1:48 PM	28.82	49	-	0.06	--	--	--	--	--	--	--
GM-60	05/18/00	2:46 PM	28.83	50	-	0	--	--	--	--	--	--	--
GM-60	05/18/00	4:06 PM	28.82	50	-	0	--	--	--	--	--	--	--
GM-60	05/18/00	5:47 PM	28.88	46	-	0	--	--	--	--	--	--	--
GM-60	05/18/00	6:48 PM	28.88	44	-	0.18	--	--	--	--	--	--	--
GM-60	05/19/00	8:40 AM	28.95	48	-	0.16	--	--	--	--	--	--	--
GM-60	05/19/00	11:02 AM	28.92	52	-	0.19	--	--	--	--	--	--	--
GM-60	05/20/00	8:25 AM	28.83	53	-	0	4.7	1.8	13.8	--	--	--	--
GM-60	05/20/00	11:56 AM	28.78	66	-	0.17	--	--	--	--	--	--	--
GM-60	05/20/00	1:01 PM	28.76	67	-	0.22	--	--	--	--	--	--	--
GM-60	05/20/00	1:55 PM	28.74	68	-	0.21	--	--	--	--	--	--	--
GM-60	05/20/00	2:53 PM	28.73	68	-	0.05	--	--	--	--	--	--	--
GM-60	05/20/00	3:53 PM	28.71	69	-	0	--	--	--	--	--	--	--
GM-60	05/20/00	4:54 PM	28.71	67	-	0.05	--	--	--	--	--	--	--
GM-60	05/21/00	8:51 AM	28.66	60	-	0.11	--	--	--	--	--	--	--
GM-60	05/30/00	3:45 PM	28.58	59	-	-0.05	0.9	0.5	18.4	--	--	--	103.08
GM-60	06/01/00	9:58 AM	28.83	53	0.02	0.53	--	--	--	--	--	--	--
GM-60	06/01/00	10:43 AM	28.86	52	0.04	0.43	--	--	--	--	--	--	--
GM-60	06/01/00	11:14 AM	28.86	52	0.04	0.47	--	--	--	--	--	--	--
GM-60	06/01/00	12:15 PM	28.74	52	0.06	0.42	--	--	--	--	--	--	--
GM-60	06/01/00	1:17 PM	28.69	55	T	3.18	--	--	--	--	--	--	--
GM-60	06/01/00	2:13 PM	28.74	54	-	2.51	--	--	--	--	--	--	--
GM-60	06/01/00	3:13 PM	28.68	54	T	2.55	--	--	--	--	--	--	--
GM-60	06/01/00	4:11 PM	28.66	54	-	2.57	--	--	--	--	--	--	--
GM-60	06/02/00	8:24 AM	28.82	50	-	0.58	--	--	--	--	--	--	--
GM-60	06/04/00	8:37 AM	28.92	59	-	0.18	--	--	--	--	--	--	--
GM-60	06/19/00	9:40 AM	28.84	67	-	-0.69	0	0	19.8	20.21	19.9	-0.23	105.84
GM-60	07/07/00	5:05 PM	28.91	66	-	0.84	8.1	1.5	11	--	--	--	105.61
GM-60	08/20/00	8:00 AM	29.09	54	-	-6.43	0	0.3	19.3	500	50	13	105.1

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-60	08/30/00	2:43 PM	28.81	71	-	4	0.01	0.3	19.2	800	800	0.16	105.05
GM-60	08/31/00	10:50 AM	28.6	83	-	-1.96	0	2.8	14.4	770	610	0.3	105.08
GM-60	09/10/00	9:05 AM	28.59	71	-	-1.45	0	1.5	16.7	--	550	-0.15	107.03
GM-60	09/25/00	3:07 PM	28.79	60	-	-0.92	25.5	1	10.6	--	--	--	105.06
GM-60	10/02/00	5:30 PM	28.51	48	-	-0.45	24.8	0.8	11.1	--	--	--	105.1
GM-60	10/08/00	10:51 AM	29.2	39	-	-9.49	14.6	0.5	15.3	--	--	--	--
GM-60	10/09/00	4:09 PM	28.98	59	-	-8.09	0	0.6	18.8	300	5.5	2.5	105.11
GM-60	10/13/00	11:14 AM	28.66	65	-	-4.34	--	--	--	--	--	--	--
GM-60	10/16/00	2:16 PM	28.89	52	-	-10.5	--	--	--	--	--	--	--
GM-60	10/18/00	4:28 PM	28.84	61	-	-9.36	0	0	20.5	3406	--	-2.5	--
GM-60	10/23/00	11:07 AM	29.07	55	T	-11.68	--	--	--	--	--	--	--
GM-60	10/31/00	8:03 AM	28.92	48	-	-8.06	--	--	--	--	--	--	--
GM-60	11/14/00	8:16 AM	28.42	30	0.01	0	--	--	--	--	--	--	--
GM-60	12/05/00	9:35 AM	28.89	8	-	-7.52	--	--	--	--	--	--	--
GM-60	12/07/00	11:50 AM	28.49	11	T	-1.15	20.5	3.9	11	138000	--	0.77	--
GM-60	01/11/01	1:25 PM	28.8	30	-	-0.62	0	0.1	19.6	1658	1642	1	102.92
GM-60	01/12/01	10:45 AM	28.9	32	-	-0.64	0	0.5	19.2	720	500	0.1	102.86
GM-60	01/14/01	8:10 AM	28.79	32	-	0.11	0	0.8	18.5	57000	56000	0	102.72
GM-60	01/23/01	11:35 AM	28.76	32	-	-0.01	1.2	1.7	16	20500	20000	0.2	101.46
GM-60	01/24/01	8:35 AM	28.87	21	0.01	-43	0	0	20.4	-1.02	-0.98	-0.14	103.46
GM-60	01/25/01	8:35 AM	29	7	-	-52	0	0	20.5	0.16	--	0.16	--
GM-60	01/26/01	8:25 AM	28.58	13	-	-50	0	0	20.4	0.49	0.44	0.44	--
GM-60	01/30/01	9:30 AM	28.15	34	-	-50	0	0	20.4	1.05	--	-0.65	99.98
GM-60	02/06/01	9:46 AM	28.68	26	-	-0.74	3.2	0	19.1	--	--	--	104.24
GM-60	02/13/01	10:00 AM	28.98	23	-	-5	16.7	0.4	15.1	--	--	--	106.01
GM-60	02/22/01	9:48 AM	28.69	7	T	-6.74	0	0	20	3.1	2	1.8	105.94
GM-60	03/21/01	10:10 AM	28.95	39	-	-1.24	0	0	20.4	0.7	0.6	-0.3	98.08
GM-60	04/06/01	2:41 PM	28.73	47	-	0	0	0	21	2.6	1.34	-0.49	101.18
GM-60	05/15/01	1:45 PM	28.46	56	-	0.1	0	0	18.3	135	97	0	--
GM-60	05/16/01	8:02 AM	28.43	62	-	-0.01	0	0	18.8	4.91	2.43	0	--
GM-60	05/19/01	8:40 AM	28.77	69	-	0	0	0	18.8	1.67	0.88	0	--
GM-60	05/23/01	10:37 AM	28.44	46	T	0	0	0	18.9	3.84	3.5	0	--
GM-60	06/13/01	11:22 AM	28.6	73	-	-0.08	0	0	20.4	17.01	15.11	-1.92	--
GM-60	07/13/01	12:03 PM	28.91	81	-	-0.01	0	0	21	21	2.62	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-60	08/07/01	3:15 PM	28.84	95	-	0	0	0	20.4	20.1	1	0	--
GM-60	09/10/01	8:46 AM	28.73	59	-	-0.3	0	0	20.1	3.75	2.25	1.5	--
GM-60	10/03/01	8:48 AM	28.46	56	-	-17.73	0	0	20.4	4.9	4.8	5.5	100.38
GM-60	11/07/01	1:43 PM	28.94	44	-	-17.17	0	0	20.8	1.73	-0.1	-0.02	101.8
GM-60	11/12/01	10:43 AM	29.11	46	-	-18	0	0	20.9	0.23	-0.69	-0.61	107
GM-60	12/12/01	11:00 AM	28.76	37	-	-13.25	0	0	20.7	0.5	0.2	0.21	106.94
GM-60	12/18/01	1:42 PM	28.48	39	-	-10.3	0	0	20.8	--	--	--	106.91
GM-60	01/08/02	10:20 AM	28.33	29	-	-13.31	0	0	20.7	-0.9	-0.78	-0.5	106.96
GM-60	01/10/02	1:50 PM	28.54	36	T	-9.83	0	0	20.6	2.54	0.35	0.54	--
GM-60	01/28/02	12:25 PM	28.79	25	-	-14	0	0	20.6	-0.55	-0.55	-0.73	106.45
GM-60	02/15/02	9:45 AM	28.52	34	T	-9.04	0	0	20.9	-0.62	-0.67	-0.86	--
GM-60	03/13/02	10:42 AM	28.46	41	-	--	--	--	--	--	--	--	--
GM-60	03/19/02	1:10 PM	28.95	35	T	--	--	--	--	--	--	--	--
GM-60	04/15/02	11:15 AM	28.48	77	-	-7.11	0	0	21.5	0	0	0	105.51
GM-60	04/29/02	1:32 PM	28.57	44	-	0	0	0	20	200	5.7	0	105.53
GM-60	05/21/02	11:32 AM	29.05	60	-	-1.62	0	0	21	153	11	0	104.77
GM-60	06/04/02	2:43 PM	28.68	52	0.01	0	0	0.6	17.4	59.29	28.8	0	105.48
GM-60	06/14/02	12:04 PM	28.56	58	T	0.07	0	0.2	19.9	2.23	1.96	0	--
GM-60	06/21/02	3:29 PM	29.08	74	-	-0.4	0	0	21	9.95	9.1	0	--
GM-60	06/24/02	11:48 AM	28.83	78	-	0	0	0.6	18.8	1.8	1.56	0	--
GM-60	06/25/02	10:21 AM	28.76	85	-	0	0	1.2	18.5	1.63	1.5	0	--
GM-60	07/11/02	8:46 AM	29.13	72	-	14	0	0	20.7	7.04	6.64	-0.15	105.43
GM-60	07/12/02	--	--	--	--	0	0	0	21.6	2.33	0.5	-0.27	105.4
GM-60	08/14/02	12:00 PM	28.6	74	-	-0.1	0	0.3	20.6	-0.55	-0.63	-0.2	--
GM-60	10/16/03	11:00 AM	28.8	49	-	-11.5	0	0	19.8	0	0	0	106.69
GM-60	04/16/04	10:24 AM	28.63	68	-	0.2	--	--	--	--	--	--	--
GM-60	04/16/04	4:13 PM	28.65	74	-	0.1	0	0	19	--	--	--	--
GM-60	04/22/04	8:05 AM	28.98	36	-	0	0	0	21.2	--	--	--	--
GM-60	04/22/04	8:08 AM	28.98	36	-	--	0	0	21.2	--	--	--	--
GM-60	05/04/04	8:42 AM	28.49	49	-	0.1	0	1	18.1	--	--	--	--
GM-60	05/04/04	12:20 PM	28.46	61	-	0.1	0	1.2	17	--	--	--	--
GM-60	05/04/04	4:54 PM	28.57	51	-	--	0	0.1	20.6	--	--	--	--
GM-60	05/05/04	8:31 AM	28.78	43	-	0	0	0	21.1	--	--	--	--
GM-60	06/11/04	10:00 AM	28.8	57	-	1.237	0	0	20.1	--	--	--	106.01

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-60	06/11/04	11:42 AM	28.79	58	-	-0.977	0	0	20.1	--	--	--	--
GM-60	06/11/04	12:18 PM	28.79	58	-	-0.897	0	0	20	--	--	--	--
GM-60	06/11/04	12:52 PM	28.76	59	-	-1.69	0	0	20	--	--	--	--
GM-60	06/11/04	1:35 PM	28.74	62	-	-0.675	0	0	19.9	--	--	--	--
GM-60	06/11/04	3:10 PM	28.76	60	-	-1.426	0	0	19.9	--	--	--	--
GM-60	06/11/04	4:10 PM	28.77	61	-	-1.985	0	0	20.1	--	--	--	--
GM-60	06/11/04	5:10 PM	28.77	-	-	-1.316	0	0	19.9	--	--	--	--
GM-68	08/29/00	12:48 PM	28.78	75	-	0	0	0	20.8	--	--	--	69.91
GM-82A	06/09/04	4:55 PM	28.91	53	T	59	94.7	4.9	0	--	--	--	--
GM-82A	06/12/04	1:02 PM	28.68	72	-	--	--	--	--	--	--	--	--
GM-82A	06/12/04	4:18 PM	28.65	78	-	--	--	--	--	--	--	--	--
GM-82A	06/13/04	8:08 AM	28.57	65	-	--	--	--	--	--	--	--	--
GM-82A	06/13/04	3:02 PM	28.49	69	-	--	--	--	--	--	--	--	--
GM-82A	06/13/04	6:45 PM	28.49	59	0.24	--	--	--	--	--	--	--	--
GM-82A	07/11/04	3:23 PM	28.76	72	-	95.3	107.8	5.1	0	--	--	--	--
GM-82A	07/12/04	12:30 PM	28.71	82	-	--	100	--	--	--	--	--	--
GM-82A	07/12/04	12:30 PM	28.71	82	-	--	--	--	--	--	--	--	--
GM-82A	07/12/04	2:15 PM	28.7	82	-	85.9	107.6	5.2	0	--	--	--	--
GM-82A	07/13/04	3:46 PM	28.52	70	0.01	84.5	98.1	5.1	0	--	--	--	--
GM-82A	07/14/04	1:45 PM	28.67	78	-	84.6	102.2	5	0	--	--	--	--
GM-82A	07/15/04	10:28 AM	28.68	78	-	84.1	103.2	5.1	0	--	--	--	--
GM-82A	07/19/04	1:12 PM	28.55	81	-	86.7	92.7	5	0	--	--	--	--
GM-82A	07/20/04	8:49 AM	28.69	74	-	85.1	94.2	5.1	0	--	--	--	--
GM-82A	07/21/04	2:10 PM	28.46	83	-	86.2	91.7	4.9	0	--	--	--	--
GM-82A	07/22/04	1:39 PM	28.74	67	-	82.4	96.6	4.7	0.2	--	--	--	--
GM-82A	07/23/04	10:11 AM	28.97	66	-	83.1	96.6	4.9	0.1	--	--	--	--
GM-82A	07/26/04	10:16 AM	28.98	76	-	80	93.6	5	0	--	--	--	--
GM-82A	07/27/04	9:15 AM	28.87	73	-	80.9	95.3	5	0.1	--	--	--	--
GM-82A	07/28/04	4:33 PM	28.71	79	-	82.2	89.7	4.7	0.2	--	--	--	--
GM-82A	07/29/04	4:26 PM	28.63	76	-	82.7	93	4.8	0.1	--	--	--	--
GM-82A	08/02/04	11:04 AM	28.68	79	0.04	82.2	94.6	4.9	0.2	--	--	--	--
GM-82A	08/07/04	2:36 PM	28.83	70	-	86	91.7	5	0	--	--	--	--
GM-82A	08/10/04	2:44 PM	28.58	58	T	83.9	93	4.9	0.1	--	--	--	--
GM-82A	08/12/04	9:34 AM	28.81	61	-	82.3	90.2	5.2	0.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-82A	08/20/04	1:32 PM	28.75	64	-	79.3	100	4.8	0.5	--	--	--	--
GM-82A	08/27/04	10:58 AM	28.65	77	-	79.6	97.7	4.8	0.2	--	--	--	--
GM-82A	08/30/04	12:53 PM	28.78	71	-	82.5	99.8	4.9	0	--	--	--	--
GM-82A	09/09/04	10:08 AM	28.97	63	-	72.1	94.9	4.9	0.1	--	--	--	--
GM-82A	10/08/04	11:57 AM	28.59	66	-	76	98.4	4.9	0	--	--	--	--
GM-82A	11/23/04	10:59 AM	28.57	39	-	72.8	102.6	5	0	--	--	--	--
GM-82A	12/21/04	12:43 PM	28.37	27	-	77.1	99.4	5.1	0	--	--	--	--
GM-82A	01/24/05	11:31 AM	28.63	24	-	81.2	104.7	5.1	0	--	--	--	--
GM-82A	02/14/05	3:02 PM	28.26	34	-	61.8	107.1	5.1	0	--	--	--	--
GM-82A	03/14/05	2:25 PM	28.77	33	-	80.2	101.9	4.9	0.2	--	--	--	--
GM-82A	04/04/05	2:25 PM	28.74	58	-	84.4	95	4.7	0	--	--	--	--
GM-82A	05/12/05	10:27 AM	29.27	40	-	84.3	88.5	4.8	0	--	--	--	--
GM-82A	06/09/05	12:39 PM	28.65	85	-	85.3	91.4	4.7	0.1	--	--	--	--
GM-82A	07/07/05	11:15 AM	28.95	76	-	81.2	101.5	5	0	--	--	--	--
GM-82A	08/12/05	12:53 PM	28.63	78	-	90	91.9	4.8	0	--	--	--	--
GM-82A	09/08/05	10:17 AM	28.98	64.94	-	83.2	96.9	5	0	--	--	--	--
GM-82A	10/18/05	3:05 PM	28.57	57	-	77	92.3	4.9	0.2	--	--	--	--
GM-82A	11/02/05	2:26 PM	28.65	53	-	74	94	5	0	--	--	--	--
GM-82A	12/02/05	3:20 PM	28.84	17	T	78.7	99.1	5.1	0	--	--	--	--
GM-82A	01/31/06	4:02 PM	28.61	33	-	60.4	100	5.4	0	--	--	--	--
GM-82A	02/13/06	2:06 PM	28.37	24	-	77.6	103.5	5.4	0	--	--	--	--
GM-82A	03/08/06	1:32 PM	28.42	37	-	78.1	97.4	5.1	0	--	--	--	--
GM-82A	04/13/06	11:04 AM	28.78	62	-	76.4	91	4.5	0	--	--	--	--
GM-82A	05/17/06	10:04 AM	28.4	56	-	82.7	97.1	4.7	0	--	--	--	--
GM-82A	06/02/06	1:53 PM	28.81	72	-	76.1	89.1	4.6	0.2	--	--	--	--
GM-82A	07/17/06	3:48 PM	28.67	86	-	69.8	89.2	4.6	0	--	--	--	--
GM-82A	08/15/06	11:40 AM	28.81	73	-	67.3	82.9	4.6	0	--	--	--	--
GM-82A	09/18/06	9:13 AM	28.41	57	-	73.8	104.8	5	0	--	--	--	--
GM-82A	10/05/06	10:38 AM	29.19	53	-	61.9	105.8	5	0	--	--	--	--
GM-82A	11/07/06	12:35 PM	28.57	50	-	69.4	112.4	5	0	--	--	--	--
GM-82A	12/18/06	12:18 PM	29.08	29	-	62.6	110.5	4.7	0	--	--	--	--
GM-82A	01/18/07	10:44 AM	28.73	18	-	69	122.3	5.1	0	--	--	--	--
GM-82A	02/06/07	2:36 PM	28.81	8	-	69.7	119	4.9	0	--	--	--	--
GM-82A	03/09/07	10:35 AM	28.61	36	-	66.4	113.5	5.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-82A	04/16/07	2:15 PM	28.79	62	-	63.8	116.8	4.8	0	--	--	--	--
GM-82A	05/25/07	11:48 AM	29.01	65	-	61	89.6	4.8	0	--	--	--	--
GM-82A	06/15/07	10:17 AM	28.83	86	-	64.1	92.4	4.7	0	--	--	--	--
GM-82A	07/11/07	10:26 AM	29.88	68	-	67.2	90.9	4.9	0	--	--	--	--
GM-82A	08/29/07	10:35 AM	30.14	71	-	57.6	90.9	4.9	0	--	--	--	--
GM-82A	09/20/07	2:36 PM	30.13	65	-	56.5	88	5	0	--	--	--	--
GM-82A	10/16/07	11:02 AM	29.92	52	0.08	60.2	90.1	5	0	--	--	--	--
GM-82A	11/20/07	2:14 PM	30	38	-	58.9	94.6	5.2	0	--	--	--	--
GM-82A	12/26/07	11:23 AM	29.97	28	-	58.5	101.4	5.3	0	--	--	--	--
GM-82B	06/09/04	4:55 PM	28.91	53	T	59	94.7	4.9	0	--	--	--	--
GM-82B	06/09/04	5:05 PM	28.91	53	T	5	96.4	5.5	0	--	--	--	--
GM-82B	06/12/04	1:03 PM	28.68	72	-	--	--	--	--	--	--	--	--
GM-82B	06/12/04	4:20 PM	28.65	78	-	--	--	--	--	--	--	--	--
GM-82B	06/13/04	8:11 AM	28.57	65	-	--	--	--	--	--	--	--	--
GM-82B	06/13/04	3:04 PM	28.49	69	-	--	--	--	--	--	--	--	--
GM-82B	06/13/04	6:46 PM	28.49	59	0.24	--	--	--	--	--	--	--	--
GM-82B	07/11/04	3:20 PM	28.76	72	-	149.6	112.5	6	0	--	--	--	--
GM-82B	07/12/04	2:10 PM	28.7	82	-	146.9	110.7	6	0	--	--	--	--
GM-82B	07/13/04	3:48 PM	28.52	70	0.01	127.6	104.8	5.6	0	--	--	--	--
GM-82B	07/14/04	1:48 PM	28.67	78	-	138.8	99.7	5.4	0.1	--	--	--	--
GM-82B	07/15/04	10:32 AM	28.68	79	-	130.2	101.6	5.5	0	--	--	--	--
GM-82B	07/19/04	1:15 PM	28.55	81	-	113.5	93.9	5.4	0	--	--	--	--
GM-82B	07/20/04	8:38 AM	28.69	74	-	112.8	97.7	5.7	0	--	--	--	--
GM-82B	07/21/04	2:05 PM	28.46	83	-	107.6	90.7	5.4	0	--	--	--	--
GM-82B	07/22/04	1:35 PM	28.74	67	-	91.9	93.6	5.2	0.3	--	--	--	--
GM-82B	07/23/04	10:17 AM	28.97	66	-	96.7	94.1	5.5	0	--	--	--	--
GM-82B	07/26/04	10:21 AM	28.98	76	-	91.1	92.7	5.5	0	--	--	--	--
GM-82B	07/27/04	9:20 AM	28.87	73	-	82.8	95.5	5.5	0	--	--	--	--
GM-82B	07/28/04	4:37 PM	28.71	79	-	80.3	90.3	5.4	0.2	--	--	--	--
GM-82B	07/29/04	4:30 PM	28.63	75	-	81.7	94	5.4	0.1	--	--	--	--
GM-82B	08/02/04	11:10 AM	28.68	79	0.04	45.2	89.2	5.3	0.1	--	--	--	--
GM-82B	08/07/04	2:42 PM	28.83	70	-	92.7	90.9	5.8	0	--	--	--	--
GM-82B	08/10/04	2:51 PM	28.58	58	T	56.5	90.5	5.6	0.1	--	--	--	--
GM-82B	08/12/04	9:38 AM	28.81	61	-	43.3	89	5.5	0.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-82B	08/20/04	12:45 PM	28.76	62	-	15.3	97.1	5.3	0.4	--	--	--	--
GM-82B	08/27/04	10:56 AM	28.65	77	-	59.4	96.6	5.4	0	--	--	--	--
GM-82B	08/30/04	12:47 PM	28.78	71	-	58.2	98	5.5	0	--	--	--	--
GM-82B	09/09/04	10:01 AM	28.97	63	-	50.2	93.7	5.6	0	--	--	--	--
GM-82B	10/08/04	11:52 AM	28.59	66	-	48.6	98.8	5.8	0	--	--	--	--
GM-82B	11/23/04	10:53 AM	28.57	39	-	7.9	98.5	5.7	0	--	--	--	--
GM-82B	12/21/04	12:25 PM	28.36	23	-	5.4	98.2	5.9	0	--	--	--	--
GM-82B	01/24/05	1:44 PM	28.66	26	-	25.9	106.9	6	0	--	--	--	--
GM-82B	02/14/05	3:00 PM	28.26	34	-	6.2	105.2	6	0	--	--	--	--
GM-82B	03/31/05	3:12 PM	28.45	42	T	5.8	94.7	6	0	--	--	--	--
GM-82B	04/04/05	2:27 PM	28.74	58	-	6.1	91	5.6	0	--	--	--	--
GM-82B	05/12/05	10:33 AM	29.26	43	-	0.8	85.8	5.7	0	--	--	--	--
GM-82B	06/09/05	12:44 PM	28.65	85	-	0.5	55.8	3.5	7	--	--	--	--
GM-82B	07/07/05	11:20 AM	28.95	76	-	0.7	98.1	5.6	0	--	--	--	--
GM-82B	08/12/05	12:59 PM	28.63	78	-	0.7	81.4	5.2	0	--	--	--	--
GM-82B	09/08/05	10:22 AM	28.98	64.94	-	0.7	91.2	5.6	0	--	--	--	--
GM-82B	10/18/05	2:50 PM	28.57	57	-	1.2	89.6	5.5	0.2	--	--	--	--
GM-82B	11/02/05	2:34 PM	28.58	52	-	2.9	89.4	5.8	0.1	--	--	--	--
GM-82B	12/02/05	3:27 PM	28.84	17	T	2.8	98.5	6	0	--	--	--	--
GM-82B	01/31/06	4:08 PM	28.61	33	-	0.9	100	6	0	--	--	--	--
GM-82B	02/13/06	2:12 PM	28.37	24	-	6.2	100	6	0.1	--	--	--	--
GM-82B	03/08/06	1:38 PM	28.42	37	-	8.5	93.7	5.9	0	--	--	--	--
GM-82B	04/13/06	11:09 AM	28.78	62	-	2.8	87.4	5.3	0.6	--	--	--	--
GM-82B	05/17/06	10:08 AM	28.4	56	-	3	93	5.4	0	--	--	--	--
GM-82B	06/02/06	1:58 PM	28.81	72	-	0	85.3	5.1	0.2	--	--	--	--
GM-82B	07/17/06	3:53 PM	28.67	86	-	0.5	81.9	5.1	1.2	--	--	--	--
GM-82B	08/15/06	11:45 AM	28.81	73	-	1.3	78.8	5.3	0.7	--	--	--	--
GM-82B	09/18/06	9:17 AM	28.41	57	-	5	102	5.5	0	--	--	--	--
GM-82B	10/05/06	10:43 AM	29.19	53	-	3.3	102	5.5	0.4	--	--	--	--
GM-82B	11/07/06	12:37 PM	28.57	50	-	2.8	111.3	5.7	0	--	--	--	--
GM-82B	12/18/06	12:22 PM	29.08	29	-	3.8	108.9	5.5	0	--	--	--	--
GM-82B	01/18/07	10:47 AM	28.73	18	-	5.8	119.4	5.6	0	--	--	--	--
GM-82B	02/06/07	2:30 PM	28.81	8	-	11.5	118.9	5.7	0	--	--	--	--
GM-82B	03/09/07	10:39 AM	28.61	36	-	6.5	111.9	5.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-82B	04/16/07	2:20 PM	28.79	62	-	2.8	115.4	15.5	0	--	--	--	--
GM-82B	05/25/07	11:52 AM	29.01	65	-	3.3	88.6	5.4	0	--	--	--	--
GM-82B	06/15/07	10:22 AM	28.83	86	-	1.2	90.3	5.4	0	--	--	--	--
GM-82B	07/11/07	10:30 AM	29.88	69	-	6.3	88.6	5.5	0	--	--	--	--
GM-82B	08/29/07	10:39 AM	30.14	71	-	10.8	89.2	5.5	0	--	--	--	--
GM-82B	08/30/07	--	--	70 F	--	--	88.9	5.2	0	--	--	--	--
GM-82B	09/20/07	2:40 PM	30.13	65	-	8	87	5.4	0	--	--	--	--
GM-82B	10/16/07	11:06 AM	29.92	52	0.08	5.6	88.7	5.2	0	--	--	--	--
GM-82B	11/20/07	2:18 PM	30	38	-	7.1	93.2	5.6	0	--	--	--	--
GM-82B	12/26/07	11:27 AM	29.97	28	-	6.7	99.7	5.7	0	--	--	--	--
GM-83	06/09/04	1:47 PM	28.91	54	T	0.1	85.6	9	0.4	--	--	--	--
GM-83	06/09/04	5:46 PM	28.9	52	-	0.1	87.1	5.9	0.4	--	--	--	--
GM-83	06/10/04	8:06 AM	28.91	56	-	0.1	89.6	9.2	0	--	--	--	--
GM-83	06/10/04	11:33 AM	28.86	65	-	0	85	8.8	0.2	--	--	--	--
GM-83	06/10/04	2:07 PM	28.83	67	-	0	84.7	8.9	0	--	--	--	--
GM-83	06/10/04	4:45 PM	28.8	65	-	0.1	84.6	8.5	0	--	--	--	--
GM-83	06/11/04	7:52 AM	28.77	55	-	0	85.6	8.9	0.4	--	--	--	--
GM-83	06/11/04	2:50 PM	28.76	60	-	0	--	--	--	--	--	--	--
GM-83	06/12/04	8:52 AM	28.74	55	-	0	--	--	--	--	--	0	--
GM-83	06/12/04	2:00 PM	28.66	75	-	0	82.4	8.6	0.3	--	--	--	--
GM-83	06/12/04	4:36 PM	28.65	79	-	0.046	80.7	8.4	0.4	--	--	--	--
GM-83	06/13/04	7:40 AM	28.57	65	-	0	85.3	8.9	0	--	--	--	--
GM-83	06/13/04	2:36 PM	28.49	69	-	0	88.1	9.1	0	--	--	--	--
GM-83	06/13/04	6:03 PM	28.45	73	-	0.049	83.3	8.6	0	--	--	--	--
GM-83	06/14/04	9:27 AM	28.58	64	-	0	80.2	8.8	0.1	--	--	--	--
GM-83	06/14/04	11:44 AM	28.59	68	0.01	0	80.5	9	0.3	--	--	--	--
GM-83	06/14/04	2:39 PM	28.57	70	T	0	78.8	8.9	0.3	--	--	--	--
GM-83	06/14/04	7:55 PM	28.67	64	-	0	79.1	9	0.6	--	--	--	--
GM-83	06/15/04	7:40 AM	28.85	58	-	0.038	82.6	9.3	0.2	--	--	--	--
GM-83	06/15/04	11:38 AM	28.86	67	-	0.39	84.4	9.3	0.1	--	--	--	--
GM-83	06/15/04	3:02 PM	28.84	70	-	0.042	76.5	0.7	8.6	--	--	--	--
GM-83	06/16/04	7:44 AM	28.82	67	-	0.029	82	9.2	0.5	--	--	--	--
GM-83	06/16/04	11:48 AM	28.77	81	-	0.042	74.8	8.5	0.7	--	--	--	--
GM-83	06/16/04	1:48 PM	28.76	82	-	0.04	83.3	9.6	0.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-83	06/17/04	7:20 AM	28.82	58	-	0.041	82.7	9.5	0.3	--	--	--	--
GM-83	06/17/04	1:53 PM	28.81	75	-	-0.003	73.5	8.5	0.7	--	--	--	--
GM-83	06/17/04	5:43 PM	28.81	71	-	-0.005	74	8.4	0.3	--	--	--	--
GM-83	06/18/04	7:30 AM	28.85	69	-	0.035	80.8	9.1	0.2	--	--	--	--
GM-83	06/18/04	10:48 AM	28.82	74	-	0.036	81.2	9.2	0.4	--	--	--	--
GM-83	06/18/04	7:55 PM	28.96	53	-	0.03	81.3	9.2	0.5	--	--	--	--
GM-83	06/19/04	8:40 AM	29.06	60	-	0	79.5	9.2	9.2	--	--	--	--
GM-83	06/19/04	11:32 AM	29.03	65	-	0.03	79.6	9.2	0.2	--	--	--	--
GM-83	06/19/04	3:14 PM	28.97	69	-	0.034	75.7	8.8	0.4	--	--	--	--
GM-83	06/20/04	8:15 AM	28.8	64	-	0.03	79.9	9.2	0.2	--	--	--	--
GM-83	06/20/04	1:21 PM	28.7	73	-	0.044	76	8.7	0.6	--	--	--	--
GM-83	06/21/04	8:08 AM	28.49	66	-	0.034	87	9.1	0.1	--	--	--	--
GM-83	06/21/04	12:11 PM	28.44	74	-	0.041	89.2	9.1	0.2	--	--	--	--
GM-83	06/21/04	4:55 PM	28.43	59	0.13	0.032	83.6	8.9	0.7	--	--	--	--
GM-83	06/22/04	7:37 AM	28.59	57	-	0.045	91.1	9.4	0.1	--	--	--	--
GM-83	06/22/04	1:28 PM	28.61	65	T	-0.017	85.4	8.6	0.6	--	--	--	--
GM-83	06/22/04	4:58 PM	28.6	67	-	0.039	83	8.7	0.5	--	--	--	--
GM-83	06/25/04	5:30 PM	28.76	60	T	0.005	87.7	9	0.1	--	--	--	--
GM-83	06/26/04	7:39 AM	28.84	56	-	0.011	87.4	9	0	--	--	--	--
GM-83	06/26/04	11:45 AM	28.83	61	-	0.031	87.1	8.8	0	--	--	--	--
GM-83	06/26/04	1:05 PM	28.82	64	-	0.033	87.1	8.8	0	--	--	--	--
GM-83	06/26/04	5:08 PM	28.81	66	-	-0.154	83.9	8.5	0	--	--	--	--
GM-83	06/27/04	10:43 AM	28.87	66	-	0.032	84.7	8.6	0.2	--	--	--	--
GM-83	06/27/04	3:23 PM	28.84	64	-	0.033	84.6	8.7	0.1	--	--	--	--
GM-83	06/28/04	10:37 AM	28.83	72	-	0.083	83.9	8.5	0	--	--	--	--
GM-83	06/28/04	1:38 PM	28.8	72	-	0.028	82.6	8.3	0.5	--	--	--	--
GM-100	07/27/98	10:13 AM	28.6	73.9	-	37.2	95	1	0	--	--	--	--
GM-100	01/07/99	12:25 PM	28.91	0	-	--	--	--	--	--	--	--	--
GM-100	02/05/99	8:50 AM	28.85	15.1	-	27	90.6	0.8	0.2	--	--	--	75.7
GM-100	02/08/99	2:48 PM	28.34	36	-	32	90.2	0.8	0	--	--	--	75.75
GM-100	02/09/99	11:04 AM	28.55	36	-	30	90.8	0.8	0	--	--	--	75.7
GM-100	02/10/99	4:13 PM	28.67	36	-	29	92.4	0.9	0	--	--	--	75.7
GM-100	02/24/99	9:10 AM	28.85	15.1	-	30	92.9	0.9	0	--	--	--	74.55
GM-100	02/26/99	11:23 AM	28.8	27	-	31	93.2	0.9	0.2	--	--	--	74.5

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-100	03/10/99	5:32 PM	29.03	27	-	29	90	0.7	0	--	--	--	71.5
GM-100	03/23/99	4:44 PM	28.61	33.1	-	30	91	0.8	0	--	--	--	74.5
GM-100	04/09/99	9:35 AM	28.62	46.9	-	40	97.6	0.8	0	--	--	--	69.3
GM-100	04/19/99	1:30 PM	28.68	46	-	33	91.3	0.6	0	--	--	--	70
GM-100	04/29/99	6:14 PM	29.12	64	-	25	94.6	0.6	6	--	--	--	71.7
GM-100	05/17/99	1:13 PM	28.5	71.1	-	40	88.7	0.6	0	--	--	--	70.6
GM-100	06/02/99	11:21 AM	28.63	55	-	42	90.5	0.6	0	--	--	--	69.5
GM-100	06/15/99	--	--	--	--	35	89	0.6	0	--	--	--	--
GM-100	06/16/99	--	--	--	--	34	85.6	0.7	0	--	--	--	--
GM-100	06/17/99	--	--	--	--	35	88.3	0.6	0	--	--	--	--
GM-100	06/18/99	--	--	--	--	30	88.9	0.6	0	--	--	--	--
GM-100	06/19/99	--	--	--	--	32	88.2	0.6	0	--	--	--	--
GM-100	06/20/99	--	--	--	--	32	86.5	0.5	0	--	--	--	--
GM-100	06/21/99	4:33 PM	28.87	78.1	-	32	89.3	0.6	0	--	--	--	--
GM-100	06/22/99	2:50 PM	28.68	80.1	-	32	86.4	0.5	0	--	--	--	--
GM-100	06/23/99	2:26 PM	28.49	72	0.02	34	88.7	0.6	0	--	--	--	--
GM-100	06/24/99	11:25 AM	28.59	79	-	32	89.5	0.5	0	--	--	--	--
GM-100	06/25/99	11:45 AM	28.67	84	-	31	85.5	0.4	0	--	--	--	--
GM-100	06/26/99	1:43 PM	28.58	87.1	-	32	88.3	0.6	0	--	--	--	--
GM-100	06/27/99	11:17 AM	28.51	87.1	-	33	86.8	0.5	0	--	--	--	--
GM-100	06/28/99	11:25 AM	28.5	70	-	32	85.9	0.6	0	--	--	--	71.5
GM-100	06/29/99	11:37 AM	28.59	66	-	32	90.6	0.7	0	--	--	--	--
GM-100	06/30/99	12:14 PM	28.58	61	0.07	32	87	0.7	0	--	--	--	--
GM-100	07/01/99	11:29 AM	28.46	61	-	32	81.1	0.7	0	--	--	--	--
GM-100	07/02/99	11:10 AM	28.62	75.9	-	10.6	92.9	0.7	0	--	--	--	--
GM-100	07/03/99	11:10 AM	28.62	68	0.14	32	87.3	0.6	0	--	--	--	--
GM-100	07/04/99	10:59 AM	28.66	84	-	30	85.9	0.6	0	--	--	--	--
GM-100	07/05/99	10:05 AM	28.66	78.1	-	35	85.2	0.6	0	--	--	--	--
GM-100	07/06/99	11:19 AM	28.68	75.9	-	32	86.1	0.6	0	--	--	--	--
GM-100	07/07/99	10:25 AM	28.73	75.9	-	35	85.8	0.6	0	--	--	--	--
GM-100	07/08/99	11:05 AM	28.78	61	0.03	34	84.3	0.6	0	--	--	--	--
GM-100	07/09/99	12:15 PM	28.47	64	-	22	90.2	0.6	0.1	--	--	--	--
GM-100	07/10/99	1:45 PM	28.92	73	-	39	112.1	0.1	0	--	--	--	--
GM-100	07/11/99	9:30 AM	28.95	75.9	-	37	90.4	0.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-100	07/12/99	11:10 AM	28.89	77	-	39	93	0.6	0	--	--	--	--
GM-100	07/12/99	5:55 PM	28.81	77	-	--	93.6	0.6	0	--	--	--	--
GM-100	07/13/99	1:22 PM	28.68	75	-	42	93.7	0.6	0	--	--	--	--
GM-100	07/14/99	11:05 AM	28.58	73.9	-	42	93.2	0.7	0	--	--	--	--
GM-100	07/15/99	5:10 PM	28.67	84.9	-	50	98.5	0	0	--	--	--	--
GM-100	07/16/99	2:30 PM	28.67	75.9	0.01	54	99.4	0.6	0	--	--	--	--
GM-100	07/17/99	2:40 PM	28.85	78.1	-	50	102	0.5	0	--	--	--	75
GM-100	07/18/99	12:15 PM	28.89	73.9	-	47	97.5	0.6	0	--	--	--	--
GM-100	07/19/99	11:40 AM	28.85	73	-	46	96.5	0.7	0	--	--	--	--
GM-100	07/20/99	11:30 AM	28.88	73.9	-	42	96.1	0.7	0	--	--	--	--
GM-100	07/21/99	10:55 AM	28.76	68	0.01	0.35	91.2	0.7	0	--	--	--	--
GM-100	07/22/99	4:12 PM	28.74	87.1	-	42	91.3	0.6	0	--	--	--	--
GM-100	07/23/99	2:07 PM	28.61	84.9	-	44	98.1	0.7	0	--	--	--	--
GM-100	07/24/99	9:09 AM	28.61	82	-	45	94.2	0.6	0	--	--	--	--
GM-100	07/25/99	10:02 AM	28.74	81	-	43	96.4	0.6	0	--	--	--	--
GM-100	07/26/99	9:15 AM	28.64	73	-	42	92.3	0.6	0	--	--	--	--
GM-100	07/27/99	3:00 PM	28.71	81	-	40	96.1	0.6	0	--	--	--	--
GM-100	08/09/99	10:17 AM	28.71	66	-	38	107.3	0.6	0	--	--	--	67.8
GM-100	09/30/99	1:31 PM	28.4	59	T	37	81.3	0.6	0	--	--	--	71.3
GM-100	10/21/99	1:45 PM	28.28	61	-	46	99.4	0.8	0	--	--	--	63
GM-100	03/15/00	9:15 AM	28.52	27	0.04	--	--	--	--	--	--	--	--
GM-118D	09/14/98	10:18 AM	28.61	66	0.02	--	--	--	--	--	--	--	50.15
GM-118D	09/24/98	6:45 PM	28.61	61	-	-0.04	0.4	0.2	18.6	5500	5500	5	50.2
GM-118D	09/25/98	12:00 PM	28.52	69.1	-	0	0.1	0.1	19.5	1250	1250	4	50.2
GM-118D	09/26/98	6:08 PM	28.4	66	-	0	0.1	0	19.3	--	--	--	50.18
GM-118D	09/28/98	4:25 PM	28.68	71.1	-	0	0	0.3	19.8	425	425	2	50.2
GM-118D	09/29/98	2:58 PM	28.63	66	-	0	1.1	0.8	18.9	--	--	--	50.26
GM-118D	10/07/98	2:47 PM	28.72	52	-	0	0.9	1.7	4.4	--	--	--	50.14
GM-118D	10/09/98	2:22 PM	28.84	61	-	0	0	1.4	15.7	475	475	3.5	50.14
GM-118D	10/11/98	1:30 PM	28.92	62.1	-	0	0	0.7	18.3	1700	1700	3	50.28
GM-118D	10/14/98	11:10 AM	28.86	44.1	-	0	0	0.6	16.8	--	--	--	50.31
GM-118D	10/20/98	10:33 AM	28.94	45	-	0.23	0	0.9	16.5	220	220	2	50.34
GM-118D	10/23/98	5:17 PM	28.88	64	-	0	0	0	21.2	300	250	5.5	50.32
GM-118D	11/21/98	11:27 AM	28.85	33.1	-	--	--	--	--	--	--	--	50.56

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-118D	12/01/98	10:34 AM	28.81	46	-	0	0	0.7	17.4	--	--	--	50.52
GM-118D	12/03/98	2:54 PM	28.41	62	-	0	0	0.4	18.9	300	150	1.5	50.53
GM-118D	12/09/98	10:17 AM	28.96	29	-	0	0	0.9	16.8	200	200	1	50.59
GM-118D	12/15/98	12:29 PM	28.78	40	-	-0.21	0	6	20.7	490	490	1.5	80.64
GM-118D	12/19/98	10:50 AM	28.84	22	-	0	0	0.6	17.7	--	--	--	50.7
GM-118D	12/21/98	4:05 PM	28.75	11	-	-0.01	0	0.7	14.8	125	125	5.5	50.68
GM-118D	12/29/98	10:05 AM	28.61	10	T	0	0.1	0.7	25.6	400	400	2.5	50.75
GM-118D	01/06/99	1:59 PM	28.6	8.1	T	0	0	0.6	15.1	105	105	<1	50.76
GM-118D	01/15/99	1:28 PM	28.53	15.1	T	0	0	0.6	18.3	175	175	3	50.7
GM-118D	01/21/99	2:24 PM	28.77	25	-	0	0	0.7	20.5	48	45	1	50.61
GM-118D	01/26/99	2:27 PM	28.89	28	-	0	0	0.8	17.3	35	35	1.25	50.81
GM-118D	02/03/99	1:31 PM	28.14	33.1	0.01	0	0	0.8	17.4	10	10	1.25	50.78
GM-118D	02/11/99	2:19 PM	28.1	41	0.02	0	0	0	20.4	--	--	--	58.75
GM-118D	02/23/99	3:32 PM	28.98	24.1	-	0.03	0	1	16.9	16	13	1.25	51.02
GM-118D	03/11/99	4:14 PM	29.05	36	-	0	0	1.1	16.8	23	23	7	51.07
GM-118D	03/23/99	2:11 PM	28.48	45	-	0	0	1.1	16.7	35	35	2.25	51.15
GM-118D	04/08/99	1:23 PM	28.66	57.9	-	-0.01	0	1	18.2	23	5	1.25	51.2
GM-118D	04/20/99	1:58 PM	28.63	53.1	-	0.2	0	0.4	19.8	4	4	4	--
GM-118D	04/30/99	8:58 AM	29.17	62.1	-	0.09	0	0.1	20.2	9.5	9.5	4	51.32
GM-118D	05/17/99	2:45 PM	28.48	66.9	0.02	0	0	0	17.9	18	12	3	51.3
GM-118D	06/02/99	4:08 PM	28.71	59	-	0.01	0	1.1	16.8	2	8	8	51.31
GM-118D	07/08/99	1:23 PM	28.72	59	0.07	0	0	0.1	21.4	80	9.5	1	51.07
GM-118D	07/17/99	5:40 PM	28.86	77	-	0	0	1.8	16.6	10	10	3	51.02
GM-118D	08/09/99	8:03 AM	28.73	57.9	-	0.02	0	0.2	19.7	8	3.5	2	50.64
GM-118D	09/30/99	11:29 AM	28.43	59	-	0	0	0.9	18.7	8	8	1.2	49.94
GM-118D	10/07/99	11:42 AM	28.84	43	T	0.12	0	0.5	20.2	30	6	1.25	49.95
GM-118D	10/23/99	12:40 PM	28.84	36	T	0	0	0.3	20.4	225	30	5.5	49.91
GM-118D	11/03/99	4:58 PM	28.69	30.9	-	0.01	0	0.3	20.2	100	8	1.5	49.83
GM-118D	11/06/99	2:53 PM	29.07	46.9	-	-0.01	0	0.1	20.6	95	17	1.25	49.81
GM-118D	02/15/00	10:05 AM	28.67	21	-	0	0	0	19.6	180	17	1.5	50.31
GM-118D	03/16/00	11:01 AM	29	23	-	0	0	0	20.4	350	30	0.15	50.53
GM-118D	03/31/00	9:01 AM	28.84	46.9	-	-0.02	0	0	20.4	11.4	1.82	0.44	50.58
GM-118D	04/30/00	12:00 PM	28.86	66	-	0	0	0	18.9	8.5	8.5	-0.35	50.65
GM-118D	06/05/00	1:44 PM	28.94	65	-	0	0	0	21.1	1.3	-0.34	-0.75	50.64

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-118D	07/19/00	3:50 PM	28.75	72	-	0	0	0	21.5	500	66	3.5	50.5
GM-118D	04/15/04	2:50 PM	28.73	59	-	0	0	0.4	18.4	--	--	--	--
GM-118D	04/15/04	4:49 PM	28.71	54	-	0	0	0.4	17.9	--	--	--	--
GMPZB-1	05/24/05	5:45 PM	28.77	71	-	31	--	--	--	--	--	--	--
GMPZB-1	05/24/05	6:15 PM	28.77	71	-	9	--	--	--	--	--	--	--
GMPZB-1	05/25/05	6:00 AM	28.87	49	-	36	72	9.2	3.3	--	--	--	--
GMPZB-1	05/25/05	6:10 AM	28.87	49	-	--	73	9.8	3.1	--	--	--	--
GMPZB-1	05/25/05	6:20 AM	28.87	49	-	--	--	--	--	--	--	--	--
GMPZB-1	05/25/05	7:05 AM	28.87	57	-	--	--	--	--	--	--	--	--
GMPZB-1	05/25/05	8:30 AM	28.88	-	-	--	--	--	--	--	--	--	--
GMPZB-1	05/25/05	11:10 AM	28.84	71	-	0	--	--	--	--	--	--	--
GMPZB-1	05/25/05	1:05 PM	28.81	72	-	0	--	--	--	--	--	--	--
GMPZB-1	05/25/05	3:00 PM	28.76	72	-	0	--	--	--	--	--	--	--
GMPZB-1	05/25/05	5:00 PM	28.74	69	-	0	--	--	--	--	--	--	--
GMPZB-1	05/26/05	7:30 AM	28.6	57	-	0	9.1	1.1	17.7	--	--	--	--
GMPZB-1	05/26/05	4:45 PM	28.59	65	-	0	18	2.4	15.6	--	--	--	--
GMPZB-1	05/27/05	6:55 AM	28.56	51	-	0	32.9	4.5	12.3	--	--	--	--
GMPZB-1	05/27/05	7:15 AM	28.56	51	-	--	--	--	--	--	--	--	--
GMPZB-1	05/27/05	8:35 AM	28.56	56	-	7	--	--	--	--	--	--	--
GMPZB-1	05/27/05	10:45 AM	28.55	59	-	0	--	--	--	--	--	--	--
GMPZB-1	05/27/05	2:00 PM	28.53	62	-	0	--	--	--	--	--	--	--
GMPZB-1	05/27/05	3:30 PM	28.53	62	-	0	--	--	--	--	--	--	--
GMPZB-1	05/31/05	7:10 AM	28.96	56	-	0	31.5	4.1	12.6	--	--	--	--
GMPZB-1	05/31/05	5:00 PM	28.88	76	-	0	89.4	11.5	0	--	--	--	--
GMPZB-1	06/01/05	6:50 AM	28.93	58	-	0	93.7	6.3	0	--	--	--	--
GMPZB-1	06/20/05	9:33 AM	28.88	83	-	0	0	0	19.7	--	--	--	--
GMPZB-1	07/05/05	8:16 AM	28.83	60	-	0	52.7	7.3	7.7	--	--	--	--
GMPZB-1	08/17/05	10:40 AM	28.89	71	-	0	86.2	10.6	0	--	--	--	--
GMPZB-1	09/09/05	9:56 AM	28.94	69.08	-	0	88.9	10.9	0	--	--	--	--
GMPZB-1	10/21/05	11:20 AM	28.9	44	-	1.8	85.8	11.2	0	--	--	--	--
GMPZB-1	10/25/05	11:30 AM	28.93	44	-	--	--	--	--	--	--	--	--
GMPZB-1	11/04/05	2:15 PM	28.49	46	-	--	87.5	11.4	0	--	--	--	--
GMPZB-1	12/06/05	11:15 AM	28.83	7	-	--	90	11.6	0.2	--	--	--	--
GMPZB-1	01/06/06	11:42 AM	28.74	23	-	--	90.6	11.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMPZB-1	02/13/06	3:51 PM	28.42	26	-	--	96.9	11.9	0	--	--	--	--
GMPZB-1	03/08/06	11:09 AM	28.46	34	-	--	89.9	11.2	0	--	--	--	--
GMPZB-1	04/14/06	10:02 AM	28.35	66	-	--	83	10	0	--	--	--	--
GMPZB-1	05/18/06	9:06 AM	28.43	46	T	--	91.9	10.4	0	--	--	--	--
GMPZB-1	06/02/06	3:08 PM	28.81	73	-	--	80.2	9.6	0.4	--	--	--	--
GMPZB-1	07/12/06	10:19 AM	28.83	79	-	--	81.8	10.4	0	--	--	--	--
GMPZB-1	08/15/06	1:34 PM	28.81	76	-	--	76.9	10.2	0	--	--	--	--
GMPZB-1	08/16/06	2:42 PM	28.94	82	-	--	--	--	--	--	--	--	--
GMPZB-1	08/18/06	9:41 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMPZB-1	08/18/06	9:43 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMPZB-1	09/18/06	11:09 AM	28.39	62	-	--	97.2	10.3	0	--	--	--	--
GMPZB-1	10/05/06	10:29 AM	29.21	52	-	--	99.4	10.2	0	--	--	--	--
GMPZB-1	11/07/06	1:51 PM	28.56	50	-	--	105.6	10.5	0	--	--	--	--
GMPZB-1	12/18/06	12:44 PM	29.08	31	-	--	103.4	10.2	0	--	--	--	--
GMPZB-1	01/18/07	2:42 PM	28.65	22	-	--	113.8	10.3	0	--	--	--	--
GMPZB-1	02/06/07	1:10 PM	28.85	5	-	--	108.2	10.4	0	--	--	--	--
GMPZB-1	03/09/07	9:41 AM	28.64	32	-	--	106.1	10.4	0	--	--	--	--
GMPZB-1	04/16/07	10:21 AM	28.88	53	-	--	109.3	10.1	0	--	--	--	--
GMPZB-1	05/29/07	11:37 AM	28.86	83	-	--	83.2	9.9	0.4	--	--	--	--
GMPZB-1	06/01/07	10:30 AM	28.76	79	-	--	--	--	--	--	--	--	--
GMPZB-1	06/01/07	11:02 AM	28.76	79	-	--	--	--	--	--	--	--	--
GMPZB-1	06/01/07	11:30 AM	28.76	79	-	--	--	--	--	--	--	--	--
GMPZB-1	06/01/07	12:00 PM	28.76	79	-	--	--	--	--	--	--	--	--
GMPZB-1	06/01/07	12:30 PM	28.75	77	-	--	--	--	--	--	--	--	--
GMPZB-1	06/01/07	12:57 PM	28.75	77	-	--	--	--	--	--	--	--	--
GMPZB-1	06/01/07	1:33 PM	28.74	71	T	--	--	--	--	--	--	--	--
GMPZB-1	06/01/07	2:09 PM	28.74	71	T	--	--	--	--	--	--	--	--
GMPZB-1	06/04/07	1:30 PM	28.38	64	-	--	--	--	--	--	--	--	--
GMPZB-1	06/04/07	1:35 PM	28.38	64	-	--	--	--	--	--	--	--	--
GMPZB-1	06/05/07	3:09 PM	28.6	58	-	--	--	--	--	--	--	--	--
GMPZB-1	06/15/07	9:09 AM	28.84	82	-	--	86.4	11	0	--	--	--	--
GMPZB-1	07/11/07	9:06 AM	29.87	66	-	--	85	10.7	0	--	--	--	--
GMPZB-1	08/29/07	12:32 PM	30.14	74	-	33	85.6	0.3	0	--	--	--	--
GMPZB-1	09/19/07	2:17 PM	30.1	74	-	24.5	82.4	10.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMPZB-1	10/16/07	9:19 AM	29.92	51	0.01	14.3	85.8	10.6	0	--	--	--	--
GMPZB-1	11/20/07	1:24 PM	30	38	-	24.5	89	10.7	0	--	--	--	--
GMPZB-1	12/26/07	9:50 AM	30	27	-	21.1	93.9	10.9	0	--	--	--	--
GMSG-1	09/12/97	9:05 AM	28.83	57	-	0	--	--	--	--	--	--	--
GMSG-1	09/12/97	7:26 PM	28.81	55	-	0	--	--	--	--	--	--	--
GMSG-1	09/13/97	11:44 AM	28.84	72	-	0	--	--	--	--	--	--	--
GMSG-1	09/13/97	5:59 PM	28.82	66	-	0	0	0.2	20.5	--	--	--	--
GMSG-1	09/14/97	8:03 AM	28.87	64	-	0	0	0.9	20.1	--	--	--	--
GMSG-1	09/14/97	2:34 PM	28.81	80.1	-	0	0	0.9	19.9	--	--	--	--
GMSG-1	09/15/97	6:41 PM	--	--	--	0	0	0	19.8	--	--	--	--
GMSG-1	09/16/97	7:53 AM	--	--	--	0	0	0	21	--	--	--	--
GMSG-1	09/16/97	6:36 PM	--	--	--	0	0	1.1	19.8	--	--	--	--
GMSG-1	09/17/97	8:14 AM	--	--	--	0	0	1	20	--	--	--	--
GMSG-1	09/17/97	6:38 PM	--	--	--	0	0	1	20.1	--	--	--	--
GMSG-1	09/18/97	7:06 AM	--	--	--	0.03	0	1.1	20.1	--	--	--	--
GMSG-1	09/18/97	6:44 PM	--	--	--	0	0	1	20	--	--	--	--
GMSG-1	09/22/97	12:06 PM	--	--	--	0	0	1.1	19.9	--	--	--	--
GMSG-1	09/22/97	5:05 PM	--	--	--	0	0	1.1	20.2	--	--	--	--
GMSG-1	09/23/97	8:10 AM	--	--	--	0	0	1.2	20.2	--	--	--	--
GMSG-1	09/23/97	6:32 PM	--	--	--	0	0	1.2	1.2	--	--	--	--
GMSG-1	09/24/97	8:22 AM	--	--	--	0	0	1.2	20	--	--	--	--
GMSG-1	09/24/97	6:45 PM	--	--	--	0	0	1.1	20.4	--	--	--	--
GMSG-1	09/25/97	7:57 AM	--	--	--	0	0	1.1	20.1	--	--	--	--
GMSG-1	09/25/97	6:53 PM	--	--	--	0	0	1.1	20.3	--	--	--	--
GMSG-1	09/26/97	8:24 AM	--	--	--	0	0	1.2	19.9	--	--	--	--
GMSG-1	09/26/97	6:10 PM	--	--	--	0	0	1	20.6	--	--	--	--
GMSG-1	09/27/97	8:30 AM	--	--	--	0	0	1.2	20	--	--	--	--
GMSG-1	09/27/97	6:00 PM	--	--	--	0	0	1	20.4	--	--	--	--
GMSG-1	09/28/97	8:23 AM	--	--	--	0	0	1.1	20.1	--	--	--	--
GMSG-1	09/28/97	6:18 PM	--	--	--	0	0	1.1	19.9	--	--	--	--
GMSG-1	09/29/97	8:25 AM	--	--	--	0	0	1.1	20.4	--	--	--	--
GMSG-1	09/29/97	6:55 PM	--	--	--	0	0	1.3	19.3	--	--	--	--
GMSG-1	09/30/97	8:15 AM	--	--	--	0	0	1.2	19.9	--	--	--	--
GMSG-1	09/30/97	6:32 PM	--	--	--	0	0	1.1	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-1	10/01/97	8:43 AM	28.94	44.1	-	0	0	1.3	20	--	--	--	--
GMSG-1	10/01/97	6:08 PM	28.8	46.9	-	0	0	1.2	19.8	--	--	--	--
GMSG-1	10/02/97	7:12 AM	28.59	45	-	0	0	1.1	20.2	--	--	--	--
GMSG-1	10/02/97	7:01 PM	28.49	59	-	0	0	1.1	20.2	--	--	--	--
GMSG-1	10/03/97	7:35 AM	28.51	48.9	-	0	0	1.2	20.1	--	--	--	--
GMSG-1	10/06/97	8:30 AM	--	--	--	0	0	1.2	20.4	--	--	--	--
GMSG-1	10/07/97	8:40 AM	0	57	-	0	0	1.1	20.5	--	--	--	--
GMSG-1	10/07/97	6:40 PM	28.8	59	-	0	0	1.2	19.9	--	--	--	--
GMSG-1	10/08/97	8:19 AM	28.75	59	-	0	0	1.1	20.9	--	--	--	--
GMSG-1	10/08/97	5:53 PM	0	72	-	0	0	1	20.3	--	--	--	--
GMSG-1	10/09/97	8:08 AM	0	68	-	0	0	1.1	20.3	--	--	--	--
GMSG-1	10/09/97	6:18 PM	28.72	51.1	-	0	0	1.1	22.2	--	--	--	--
GMSG-1	10/10/97	8:05 AM	29.08	43	-	0	0	1.3	20.4	--	--	--	--
GMSG-1	10/10/97	6:26 PM	29.06	50	-	0	0	1.2	20.3	--	--	--	--
GMSG-1	10/11/97	8:28 AM	28.99	48.9	-	0	0	1.2	20.3	--	--	--	--
GMSG-1	10/11/97	6:10 PM	28.76	60.1	-	0	0	1.1	20.2	--	--	--	--
GMSG-1	10/12/97	8:05 AM	28.65	57.9	-	0	0	1.2	20.4	--	--	--	--
GMSG-1	10/12/97	6:01 PM	28.48	61	0.04	0	0	1.1	21.7	--	--	--	--
GMSG-1	10/13/97	8:17 AM	28.22	57.9	0.03	0	0	1.1	20.3	--	--	--	--
GMSG-1	10/13/97	5:56 PM	28.52	43	T	0	0	1.2	20.1	--	--	--	--
GMSG-1	10/14/97	8:20 AM	28.68	35.1	-	0	0	1.2	19.8	--	--	--	--
GMSG-1	10/15/97	8:37 AM	29.08	42.1	-	0	0	1.3	19.5	--	--	--	--
GMSG-1	10/21/97	8:08 AM	28.71	33.1	T	0	0	1.3	20.2	--	--	--	--
GMSG-1	10/22/97	8:31 AM	28.91	27	-	0	0	1.2	20.4	--	--	--	--
GMSG-1	10/22/97	6:48 PM	28.79	28.9	-	0	0	0	21.1	--	--	--	--
GMSG-1	10/23/97	8:20 AM	28.72	24.1	-	0	0	0.2	19.5	--	--	--	--
GMSG-1	10/23/97	6:12 PM	28.63	32	-	0	0	1.1	19.8	--	--	--	--
GMSG-1	10/24/97	7:59 AM	28.74	28	-	0	0	1.3	19.9	--	--	--	--
GMSG-1	10/29/97	7:42 AM	28.64	34	-	0	0	0.5	19.1	--	--	--	--
GMSG-1	10/29/97	11:49 AM	28.62	45	-	0	0	0.4	19.2	--	--	--	--
GMSG-1	10/30/97	7:15 AM	28.61	35.1	-	0	0	0.4	19.1	--	--	--	--
GMSG-1	10/30/97	4:51 PM	28.35	55.9	-	0	0	0.4	19.1	--	--	--	--
GMSG-1	10/31/97	6:53 AM	28.29	43	-	0	0	1.4	18.4	--	--	--	--
GMSG-1	11/18/97	4:05 PM	28.6	30	-	0	0	1.2	18.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-1	11/19/97	4:05 PM	28.62	26.1	-	0	0	1.2	19.2	--	--	--	--
GMSG-1	11/20/97	4:40 PM	28.62	28.9	-	0	0	1.2	19.1	--	--	--	--
GMSG-1	11/21/97	9:45 AM	28.81	23	-	0	0	1.2	18.5	--	--	--	--
GMSG-1	12/02/97	8:50 AM	28.89	27	-	0	0	1.2	18.3	--	--	--	--
GMSG-1	12/12/97	9:50 AM	28.66	26	-	0	0	1.2	19.7	--	--	--	--
GMSG-1	01/21/98	4:30 PM	28.98	22	-	0	0.1	1.1	19.2	--	--	--	--
GMSG-1	01/22/98	9:00 AM	29.03	15	T	0	0.1	0.1	19.9	--	--	--	--
GMSG-1	02/18/98	4:51 PM	28.51	34	-	--	--	--	--	--	--	--	--
GMSG-1	02/19/98	9:15 AM	28.6	33.1	-	0.02	0	1.1	20.7	--	--	--	--
GMSG-1	03/30/98	3:15 PM	28.4	39	T	0.02	0	0.8	19.5	--	--	--	--
GMSG-1	03/31/98	9:05 AM	28.48	34	T	0.02	0	0.4	20.2	--	--	--	--
GMSG-1	04/14/98	3:00 PM	28.45	59	-	0	0	0.7	19.7	--	--	--	--
GMSG-1	04/15/98	5:15 PM	28.61	45	-	0.01	0	0.7	20	--	--	--	--
GMSG-1	04/16/98	3:44 PM	28.47	34	-	0	0	0.8	19.5	--	--	--	--
GMSG-1	04/16/98	7:13 PM	28.49	30.9	T	0	0	0.8	19.2	--	--	--	--
GMSG-1	04/17/98	8:49 AM	28.57	39	-	0	0	0.8	19.4	--	--	--	--
GMSG-1	04/30/98	4:54 PM	28.58	69.1	-	0	0	0.7	19.9	--	--	--	--
GMSG-1	05/01/98	8:39 AM	28.47	60.1	-	0	0	0.8	19.9	--	--	--	--
GMSG-1	05/07/98	3:42 PM	28.53	69.1	-	0	0	1	19.8	--	--	--	--
GMSG-1	05/08/98	8:45 AM	28.66	57.9	-	0	0	1.2	19.6	--	--	--	--
GMSG-1	05/14/98	4:08 PM	28.72	77	-	0	0	0.9	19.5	--	--	--	--
GMSG-1	05/15/98	8:03 AM	28.69	66.9	-	0	0	0.8	20.1	--	--	--	--
GMSG-1	05/20/98	4:50 PM	28.73	69.1	-	0	0	0.9	19.9	--	--	--	--
GMSG-1	05/21/98	8:16 AM	28.84	52	-	0	0	0.9	20.2	--	--	--	--
GMSG-1	05/28/98	4:32 PM	28.49	86	-	0	0	0.7	19.9	--	--	--	--
GMSG-1	05/29/98	10:18 AM	28.62	73.9	-	0	0	0.4	20.5	--	--	--	--
GMSG-1	06/02/98	5:45 PM	28.5	52	-	0.3	0	1.1	20.1	--	--	--	--
GMSG-1	06/05/98	8:47 AM	28.74	52	-	0.2	0	1.2	20.1	--	--	--	--
GMSG-1	06/11/98	11:22 AM	28.57	59	-	0	0	1	20.2	--	--	--	--
GMSG-1	06/12/98	9:10 AM	28.29	62.1	-	0	0	1	19.9	--	--	--	--
GMSG-1	06/13/98	8:23 AM	28.53	63	-	0	0	0.3	20.5	--	--	--	--
GMSG-1	06/14/98	11:43 AM	28.43	77	-	0	0	0.8	20.2	--	--	--	--
GMSG-1	06/15/98	9:34 AM	28.31	79	-	0	0	1	19.9	--	--	--	--
GMSG-1	06/16/98	5:40 PM	28.51	73.9	-	0.05	0	1.1	19.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-1	06/17/98	1:30 PM	28.73	80.1	-	0	0	0.9	19.6	--	--	--	--
GMSG-1	06/22/98	4:12 PM	28.67	82.9	-	0	0	0.6	20	--	--	--	--
GMSG-1	06/23/98	8:58 AM	28.83	69.1	-	0	0	0	20	--	--	--	--
GMSG-1	06/24/98	2:10 PM	28.58	82	-	0.01	0	0.8	19.8	--	--	--	--
GMSG-1	06/26/98	3:44 PM	--	--	--	0	0	0.8	19.7	--	--	--	--
GMSG-1	06/27/98	1:44 PM	28.62	73.9	-	0	0	0.8	19.8	140	70	3.5	--
GMSG-1	06/28/98	12:03 PM	28.55	81	-	0	0	0.7	19.8	175	65	--	--
GMSG-1	07/06/98	5:59 PM	28.78	64.9	0.02	0	0	1	19.7	100	15	3	--
GMSG-1	07/07/98	8:16 AM	28.76	57.9	-	0	0	1.1	19.8	--	--	--	--
GMSG-1	07/08/98	7:26 PM	28.73	73.9	-	0	0	0.9	19.8	250	45	3.5	--
GMSG-1	07/09/98	5:16 PM	28.78	75	-	0	0	0.9	20	100	60	6.5	--
GMSG-1	07/10/98	4:16 PM	28.89	75	-	0	0	0.6	20.6	--	--	--	--
GMSG-1	07/11/98	7:22 PM	28.76	75.9	-	0	0	0.7	20.2	100	60	--	--
GMSG-1	07/12/98	9:34 AM	28.72	80.1	-	0	0	1	19.5	25	15	--	--
GMSG-1	07/14/98	6:31 PM	28.73	69.1	-	0	0	0.7	19.9	50	10	--	--
GMSG-1	07/15/98	11:22 AM	28.65	73.9	-	0	0	1	19.7	--	--	--	--
GMSG-1	07/21/98	6:31 PM	28.61	75.9	-	0	0	0.5	20.3	3.5	3.5	4	--
GMSG-1	07/22/98	6:16 PM	28.61	75	-	0	0	0.7	20.1	4	1.5	1.5	--
GMSG-1	07/23/98	6:46 PM	28.71	64.9	-	0	0	1	19.9	5	4	4	--
GMSG-1	07/24/98	6:34 PM	28.87	66	-	0	0	0.9	19.9	--	--	--	--
GMSG-1	07/26/98	2:07 PM	28.73	82	-	0	0.1	0.5	20.2	150	110	4	--
GMSG-1	07/27/98	5:48 PM	28.6	77	-	0	0	0	19.7	125	40	2	--
GMSG-1	07/28/98	1:48 PM	28.49	79	-	0	0.1	0.9	19.6	100	50	2	--
GMSG-1	07/29/98	12:59 PM	28.69	78.1	-	0	0.1	0.8	19.7	22	22	2.5	--
GMSG-1	08/04/98	12:58 PM	28.92	77	-	0	0	0.5	20.1	4	<4	<4	--
GMSG-1	08/05/98	12:04 PM	28.94	73.9	-	0	0	1	19.6	120	58	2.5	--
GMSG-1	08/05/98	7:09 PM	28.9	72	-	0	--	--	--	--	--	--	--
GMSG-1	08/06/98	8:07 AM	28.84	66.9	T	0.01	--	--	--	--	--	--	--
GMSG-1	08/07/98	10:02 AM	28.79	69.1	-	0	0	1.1	19.2	30	6	5.5	--
GMSG-1	08/09/98	8:15 AM	28.83	73	-	0	0	1	19.4	<1.5	<1.5	1.5	--
GMSG-1	08/10/98	8:35 AM	28.73	72	-	0	0	0.7	20.2	<1.5	<1.5	1.5	--
GMSG-1	08/11/98	4:18 PM	28.92	73	-	0	0	0.7	20.1	<3	<3	3	--
GMSG-1	08/12/98	12:42 PM	28.97	75.9	-	0	0	0.5	21.5	28	6	5	--
GMSG-1	08/13/98	1:09 PM	28.82	79	-	0	0	0.5	21.4	1.9	1.9	4.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-1	08/14/98	12:33 PM	28.57	78.1	-	0	0	0.6	20.8	1	1	4	--
GMSG-1	08/15/98	12:22 PM	28.78	71.1	-	0	0	0.6	20.8	1.7	1.7	4.5	--
GMSG-1	08/16/98	12:24 PM	28.8	75	-	0	0	0.6	21.4	1.5	1.5	4	--
GMSG-1	08/17/98	12:26 PM	28.71	72	-	0	0	0.6	20.9	1.4	1.4	4	--
GMSG-1	08/18/98	1:09 PM	29.03	68	-	0	0	0.6	21.2	2.1	2.1	6	--
GMSG-1	08/19/98	12:04 PM	28.99	66.9	-	0	0	0.7	20.4	1	1	1.5	--
GMSG-1	08/20/98	12:10 PM	28.86	81	-	0	0	0.6	21.2	2.2	2.2	4	--
GMSG-1	08/21/98	1:20 PM	28.95	81	-	0	0	0.5	21.7	3.7	3.7	5	--
GMSG-1	08/22/98	12:05 PM	28.89	68	-	0	0	0.7	20.4	1	1	2.5	--
GMSG-1	08/23/98	12:21 PM	28.47	75.9	-	0	0	0.7	20.5	<1	<1	<1	--
GMSG-1	08/24/98	12:09 PM	28.43	77	-	0	0	0.6	21.1	<2.25	<2.25	2.25	--
GMSG-1	08/25/98	12:06 PM	28.61	75.9	-	-0.04	0	0.6	21	<2	<2	2	--
GMSG-1	08/26/98	11:05 AM	28.78	79	-	0	0	0.6	21.1	10	9	8.5	--
GMSG-1	08/26/98	4:36 PM	28.78	81	-	0.01	0	0.5	21	5	3.5	4	--
GMSG-1	08/27/98	11:41 AM	28.82	82	-	0.02	0	0.6	20.8	<1	<1	2.25	--
GMSG-1	08/28/98	12:13 PM	28.66	81	-	0	0	0.6	20.9	5.5	5.5	6.5	--
GMSG-1	08/29/98	10:40 AM	28.67	75.9	-	0.02	0	0.6	20.5	<1	<1	2.25	--
GMSG-1	08/30/98	10:24 AM	28.74	72	-	0.02	0	0.7	20.5	<1	<1	1.75	--
GMSG-1	08/31/98	10:45 AM	28.85	72	-	0.02	0	0.7	20.6	10	10	10	--
GMSG-1	09/01/98	12:10 PM	28.57	71.1	T	-0.01	0	0.8	20.2	3.5	<1	2	--
GMSG-1	09/02/98	11:08 AM	28.54	61	-	0	0	0.8	20.2	2.25	<1	2.25	--
GMSG-1	09/03/98	1:23 PM	28.56	70	-	0	0	0.6	21.2	1	1	3	--
GMSG-1	09/04/98	12:22 PM	28.71	78.1	-	0	0	0.6	21.3	1	1	3	--
GMSG-1	09/09/98	10:40 AM	28.93	66.9	-	0	0	0.7	20.4	1	1	2.5	--
GMSG-1	09/11/98	12:03 PM	28.6	93	-	0	0	0.5	19	1	1	3.5	--
GMSG-1	09/14/98	1:58 PM	28.57	66	-	0	0	0.7	20.3	8	4.5	4.5	--
GMSG-1	09/21/98	3:57 PM	28.78	55	-	0	0	0.7	20.1	12	4.25	2.25	--
GMSG-1	09/22/98	1:15 PM	28.88	61	-	0	0	0.7	20.9	6	4.5	2.5	--
GMSG-1	09/23/98	12:47 PM	28.84	66	-	0	0	0.6	20.8	2.5	2.5	2.5	--
GMSG-1	09/28/98	12:41 PM	28.72	69.1	-	0	0	0.6	20.9	4	3	2	--
GMSG-1	10/07/98	12:41 PM	28.68	53.1	-	0	0	0.6	20.9	4	3	2	--
GMSG-1	10/14/98	9:50 AM	28.86	41	-	0	0	0.9	19.2	3	3	3	--
GMSG-1	10/24/98	3:50 PM	28.77	71.1	-	0	0	0.6	20.5	<3	<3	3	--
GMSG-1	10/27/98	11:52 AM	28.72	57.9	-	0	0	0.7	19.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-1	12/16/98	1:55 PM	28.64	34	-	0	0	0.8	19.7	0	0	0	--
GMSG-1	01/20/99	3:56 PM	28.67	27	-	0	0	0.7	19.6	12	6	2	--
GMSG-1	02/10/99	2:36 PM	28.7	36	-	-0.01	0	0.7	19.6	6.5	3.5	2.5	--
GMSG-1	04/13/99	8:25 AM	28.97	42.1	-	0	0	0.4	19.3	0	0	3	--
GMSG-1	07/26/99	4:26 PM	28.65	84	-	0.02	0	0.7	19.3	4	1.25	4	--
GMSG-1	10/09/99	2:16 PM	28.69	71.1	-	0	0	0.7	20.1	80	28	1.5	--
GMSG-1	01/19/00	4:50 PM	28.6	15	-	-0.01	0	0.4	19.5	--	--	--	--
GMSG-1	04/18/00	10:27 AM	28.71	40	-	0	0	0.2	18	54.49	16.43	11.34	--
GMSG-1	07/22/00	10:15 AM	28.91	62	-	0	0	0.9	19.1	<4	<4	4	--
GMSG-1	10/20/00	9:54 AM	28.61	67	-	-0.02	0	0.8	19.5	58.64	2.31	0.1	--
GMSG-1	01/26/01	2:20 PM	28.48	20	0.02	0	0	0.4	19.5	18.4	--	0.38	--
GMSG-1	04/23/01	8:46 AM	28.36	65	-	0.02	0	0.3	19.1	1.72	-0.68	-1	--
GMSG-1	07/11/01	10:00 AM	28.82	70	-	-0.01	0	0.6	19.8	0	0	0	--
GMSG-1	09/20/01	11:25 AM	28.64	65	-	0	0	0.4	20.1	0	0	0	--
GMSG-1	02/16/02	9:49 AM	28.55	32	-	0	0	0.3	20.2	-0.9	-0.94	-1.16	--
GMSG-2A	09/12/97	7:29 PM	28.81	55	-	0.01	--	--	--	--	--	--	--
GMSG-2A	09/13/97	12:01 PM	28.84	72	-	0	--	--	--	--	--	--	--
GMSG-2A	09/13/97	5:53 PM	28.82	66	-	0	0	0.5	20.3	--	--	--	--
GMSG-2A	09/14/97	7:57 AM	28.87	64	-	0	0	0	21	--	--	--	--
GMSG-2A	09/14/97	2:58 PM	28.81	80.1	-	0	0	0	20.8	--	--	--	--
GMSG-2A	09/15/97	8:55 AM	--	--	--	0	0	0.9	20.1	--	--	--	--
GMSG-2A	09/15/97	6:44 PM	--	--	--	0	0.1	1.2	19.6	--	--	--	--
GMSG-2A	09/16/97	8:01 AM	--	--	--	0	0.1	1.3	19.8	--	--	--	--
GMSG-2A	09/16/97	1:56 PM	--	--	--	0	0	1.4	19.4	--	--	--	--
GMSG-2A	09/16/97	6:52 PM	--	--	--	0.01	0	1.4	19.7	--	--	--	--
GMSG-2A	09/17/97	8:08 AM	--	--	--	0	0	1.4	19.7	--	--	--	--
GMSG-2A	09/17/97	1:47 PM	--	--	--	0	0	1.3	19.4	--	--	--	--
GMSG-2A	09/17/97	6:31 PM	--	--	--	0	0	1.3	19.9	--	--	--	--
GMSG-2A	09/18/97	7:24 AM	--	--	--	0	0	1.4	20	--	--	--	--
GMSG-2A	09/18/97	6:59 PM	--	--	--	0	0	1.3	19.8	--	--	--	--
GMSG-2A	09/22/97	12:43 PM	--	--	--	0	0	1.2	20	--	--	--	--
GMSG-2A	09/22/97	5:35 PM	--	--	--	0	0	1.3	20	--	--	--	--
GMSG-2A	09/23/97	8:20 AM	--	--	--	0	0	1.5	20.1	--	--	--	--
GMSG-2A	09/23/97	6:15 PM	--	--	--	-0.02	0	1.4	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2A	09/24/97	8:16 AM	--	--	--	0	0	1.5	19.9	--	--	--	--
GMSG-2A	09/24/97	6:50 PM	--	--	--	0	0	1.3	20.1	--	--	--	--
GMSG-2A	09/25/97	7:50 AM	--	--	--	-0.01	0	1.2	20.1	--	--	--	--
GMSG-2A	09/25/97	6:34 PM	--	--	--	0	0	1.3	20.3	--	--	--	--
GMSG-2A	09/26/97	8:05 AM	--	--	--	-0.01	0	1.5	19.7	--	--	--	--
GMSG-2A	09/26/97	5:44 PM	--	--	--	0	0	1.3	20	--	--	--	--
GMSG-2A	09/27/97	8:37 AM	--	--	--	0.03	0	1.5	19.8	--	--	--	--
GMSG-2A	09/27/97	5:36 PM	--	--	--	0	0	1.3	20	--	--	--	--
GMSG-2A	09/28/97	8:40 AM	--	--	--	-0.03	0	1.3	20.2	--	--	--	--
GMSG-2A	09/28/97	6:15 PM	--	--	--	0	0	1.4	19.6	--	--	--	--
GMSG-2A	09/29/97	8:56 AM	--	--	--	0	0	1.4	20.1	--	--	--	--
GMSG-2A	09/29/97	6:58 PM	--	--	--	0	0	0.1	20.7	--	--	--	--
GMSG-2A	09/30/97	8:30 AM	--	--	--	0	0	1.5	19.8	--	--	--	--
GMSG-2A	09/30/97	6:29 PM	--	--	--	0	0	1.4	19.9	--	--	--	--
GMSG-2A	10/01/97	8:55 AM	28.94	44.1	-	0	0	1.6	19.9	--	--	--	--
GMSG-2A	10/01/97	6:26 PM	28.8	46.9	-	0.01	0	1.5	20.1	--	--	--	--
GMSG-2A	10/02/97	7:18 AM	28.59	45	-	0	0	1.5	19.9	--	--	--	--
GMSG-2A	10/02/97	6:31 PM	28.49	59	-	0	0	1.4	19.9	--	--	--	--
GMSG-2A	10/03/97	7:39 AM	28.51	48.9	-	0	0	1.5	20	--	--	--	--
GMSG-2A	10/06/97	9:03 AM	--	--	--	-0.02	0	1.3	20.2	--	--	--	--
GMSG-2A	10/06/97	5:47 PM	--	--	--	0.03	0	1.3	18.2	--	--	--	--
GMSG-2A	10/07/97	8:00 AM	0	55.9	-	0	0	1.4	20	--	--	--	--
GMSG-2A	10/07/97	6:11 PM	28.79	59	-	0	0	1.5	19.4	--	--	--	--
GMSG-2A	10/08/97	7:50 AM	28.75	59	-	0	0	1.3	20.2	--	--	--	--
GMSG-2A	10/08/97	5:19 PM	0	73.9	-	0	0	1.3	20	--	--	--	--
GMSG-2A	10/09/97	7:42 AM	0	68	-	0	0	1.3	20.2	--	--	--	--
GMSG-2A	10/09/97	5:50 PM	28.72	51.1	-	0	0	1.5	20.4	--	--	--	--
GMSG-2A	10/10/97	7:39 AM	29.08	43	-	0	0	1.6	20.5	--	--	--	--
GMSG-2A	10/10/97	6:02 PM	29.06	50	-	0	0	1.4	20	--	--	--	--
GMSG-2A	10/11/97	7:59 AM	28.99	48.9	-	0.01	0	1.5	20	--	--	--	--
GMSG-2A	10/11/97	5:39 PM	28.76	60.1	-	0	0	1.4	19.6	--	--	--	--
GMSG-2A	10/12/97	7:38 AM	28.65	57.9	-	0	0	1.4	20.2	--	--	--	--
GMSG-2A	10/12/97	6:04 PM	28.48	61	0.04	0	0	0.4	20.4	--	--	--	--
GMSG-2A	10/13/97	7:47 AM	28.22	57.9	0.03	0	0	1.4	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2A	10/13/97	5:54 PM	28.52	43	T	0	0	1.5	19.8	--	--	--	--
GMSG-2A	10/14/97	8:24 AM	28.68	35.1	-	0	0	1.6	19.5	--	--	--	--
GMSG-2A	10/15/97	8:44 AM	29.08	42.1	-	-0.005	0	0	20.7	--	--	--	--
GMSG-2A	10/21/97	7:39 AM	28.71	33.1	T	0	0	1.5	19.8	--	--	--	--
GMSG-2A	10/22/97	8:03 AM	28.91	27	-	0	0	1.5	19.8	--	--	--	--
GMSG-2A	10/22/97	6:08 PM	28.79	28.9	-	0	0	0	21.4	--	--	--	--
GMSG-2A	10/23/97	7:54 AM	28.72	24.1	-	0	0	0.2	19.9	--	--	--	--
GMSG-2A	10/23/97	5:48 PM	28.63	32	-	0	0	0.9	19.3	--	--	--	--
GMSG-2A	10/24/97	7:35 AM	28.74	28	-	0	0	1.5	19.3	--	--	--	--
GMSG-2A	10/29/97	7:10 AM	28.64	32	-	0	--	--	--	--	--	--	--
GMSG-2A	10/29/97	11:12 AM	28.63	43	-	0	0	0.7	18.3	--	--	--	--
GMSG-2A	10/30/97	6:42 AM	28.61	35.1	-	0	0	0.6	18.8	--	--	--	--
GMSG-2A	10/30/97	5:53 PM	28.35	54	-	0	0	0.6	19	--	--	--	--
GMSG-2A	10/31/97	6:18 AM	28.29	42.1	-	0	0	0.7	18.6	--	--	--	--
GMSG-2A	11/13/97	7:45 AM	28.65	19.9	-	0	0	1.6	18.2	--	--	--	--
GMSG-2A	11/18/97	4:16 PM	28.6	30	-	0	0	1.5	18.3	--	--	--	--
GMSG-2A	11/19/97	4:07 PM	28.62	26.1	-	0	0	1.6	18.7	--	--	--	--
GMSG-2A	11/20/97	5:08 PM	28.62	28.9	-	0	0	1.6	18.6	--	--	--	--
GMSG-2A	11/21/97	9:35 AM	28.81	23	-	0	0	1.5	18.2	--	--	--	--
GMSG-2A	12/02/97	9:03 AM	28.89	27	-	0	0	1.5	18.1	--	--	--	--
GMSG-2A	12/12/97	10:20 AM	28.66	26	-	0	0	1.5	19.3	--	--	--	--
GMSG-2A	01/21/98	3:30 PM	28.97	22	-	0	0	1.4	19.2	--	--	--	--
GMSG-2A	01/22/98	7:55 AM	29.03	14	T	-0.01	0	1.4	19	--	--	--	--
GMSG-2A	02/18/98	4:08 PM	28.49	35.1	-	-0.01	0	1.4	19.4	--	--	--	--
GMSG-2A	02/19/98	8:13 AM	28.59	32	-	0.01	0	1.2	19.9	--	--	--	--
GMSG-2A	03/30/98	2:33 PM	28.4	39	T	0.03	0	0.5	20.3	--	--	--	--
GMSG-2A	03/31/98	8:39 AM	28.48	34	T	0.02	0	0.7	19.8	--	--	--	--
GMSG-2A	04/14/98	3:35 PM	28.47	57.9	-	0.01	0	0.9	19.9	--	--	--	--
GMSG-2A	04/15/98	5:40 PM	28.61	41	-	0	0	1	19.9	--	--	--	--
GMSG-2A	04/16/98	8:32 AM	28.47	30.9	0.05	0	0	1	19.5	--	--	--	--
GMSG-2A	04/16/98	3:21 PM	28.43	34	T	0	0	1	19.7	--	--	--	--
GMSG-2A	04/17/98	8:09 AM	28.55	37	-	0	0	1	19.8	--	--	--	--
GMSG-2A	04/30/98	4:23 PM	28.58	70	-	0	0	1	19.9	--	--	--	--
GMSG-2A	05/01/98	8:02 AM	28.48	54	-	0	0	0.8	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2A	05/07/98	3:33 PM	28.53	69.1	-	0	0	1.3	19.6	--	--	--	--
GMSG-2A	05/08/98	8:37 AM	28.66	57.9	-	0	0	1.5	19.4	--	--	--	--
GMSG-2A	05/14/98	3:04 PM	28.73	79	-	0	0	1.3	19.3	--	--	--	--
GMSG-2A	05/15/98	7:41 AM	28.69	66.9	-	0	0	1.4	19.6	--	--	--	--
GMSG-2A	05/20/98	4:24 PM	28.74	70	-	0	0	1.1	19.7	--	--	--	--
GMSG-2A	05/21/98	8:20 AM	28.84	52	-	0	0	1.5	19.6	--	--	--	--
GMSG-2A	05/28/98	4:04 PM	28.49	86	-	0	0	1.3	19.3	--	--	--	--
GMSG-2A	05/29/98	9:53 AM	28.62	73.9	-	0	0	2.2	19.7	--	--	--	--
GMSG-2A	06/02/98	6:44 PM	28.52	50	-	0	0	1.3	20.1	--	--	--	--
GMSG-2A	06/05/98	8:52 AM	28.74	52	-	0.1	0	1.5	19.9	--	--	--	--
GMSG-2A	06/11/98	11:00 AM	28.57	59	-	0	0	1.6	19.7	--	--	--	--
GMSG-2A	06/12/98	8:45 AM	28.29	62.1	-	0	0	1.1	19.9	--	--	--	--
GMSG-2A	06/13/98	7:58 AM	28.53	63	-	0	0	1.5	19.6	--	--	--	--
GMSG-2A	06/14/98	11:10 AM	28.45	75.9	-	0	0	1.3	19.5	--	--	--	--
GMSG-2A	06/15/98	9:11 AM	28.32	75	-	0	0	1.6	19.5	--	--	--	--
GMSG-2A	06/16/98	6:00 PM	28.51	73.9	-	0.04	0	1	20.1	--	--	--	--
GMSG-2A	06/17/98	1:25 PM	28.75	80.1	-	0	0	1.2	19.5	--	--	--	--
GMSG-2A	06/22/98	3:43 PM	28.67	82.9	-	0	0	1.3	19.5	--	--	--	--
GMSG-2A	06/23/98	8:35 AM	28.83	69.1	-	0	0	1.4	19.6	--	--	--	--
GMSG-2A	06/24/98	1:42 PM	28.58	82	-	0	0	1.3	19.2	--	--	--	--
GMSG-2A	06/26/98	3:23 PM	--	--	--	0	0	1.4	19.2	--	--	--	--
GMSG-2A	06/27/98	1:19 PM	28.62	72	-	0	0	1.4	19.4	9	4.5	3.5	--
GMSG-2A	06/28/98	11:36 AM	28.55	81	-	0	0	1.3	19.3	18	9	--	--
GMSG-2A	07/06/98	5:37 PM	28.78	64.9	0.02	0	0	1.6	19.4	20	6.5	3	--
GMSG-2A	07/07/98	7:49 AM	28.76	57.9	-	0	0	1.5	19.5	7	3.5	3	--
GMSG-2A	07/08/98	7:02 PM	28.73	73.9	-	0	0	1.5	19.3	10	10	3.5	--
GMSG-2A	07/09/98	4:54 PM	28.78	75	-	0	0	1.4	19.6	6.5	6.5	6.5	--
GMSG-2A	07/10/98	3:39 PM	28.89	75	-	0	0	1.1	19.8	13	6	--	--
GMSG-2A	07/11/98	7:01 PM	28.76	75.9	-	0	0	1.1	19.8	18	8	--	--
GMSG-2A	07/12/98	9:56 AM	28.72	80.1	-	0	0	1.3	19.3	80	45	--	--
GMSG-2A	07/14/98	6:46 PM	28.73	69.1	-	-0.01	0	1.4	19.2	60	0	--	--
GMSG-2A	07/15/98	10:43 AM	28.65	73.9	-	0	0	1.4	19.4	50	33	1.75	--
GMSG-2A	07/21/98	5:53 PM	28.59	79	-	0	0	1.1	19.8	100	45	5	--
GMSG-2A	07/22/98	5:49 PM	28.61	75	-	0	0	1.3	19.6	500	50	1.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2A	07/23/98	6:22 PM	28.7	66.9	-	0	0	1.4	19.9	40	17	4	--
GMSG-2A	07/24/98	6:13 PM	28.86	69.1	-	0	0	1.4	19.5	--	--	--	--
GMSG-2A	07/26/98	1:34 PM	28.73	82	-	0	0.1	1	19.5	33	33	4	--
GMSG-2A	07/27/98	5:40 PM	28.6	77	-	0	0	1.4	19.3	120	9	2	--
GMSG-2A	07/28/98	1:08 PM	28.47	78.1	-	0	0.1	1.4	19.1	150	17	2	--
GMSG-2A	07/29/98	11:44 AM	28.7	75.9	-	0	0.1	1.2	19.3	140	30	1.7	--
GMSG-2A	08/04/98	11:58 AM	28.93	75.9	-	0	0	1.3	19.5	60	27	4	--
GMSG-2A	08/05/98	1:20 PM	28.94	75.9	-	0	0	1.3	19.4	2	2	3.5	--
GMSG-2A	08/05/98	6:58 PM	28.9	72	-	0	--	--	--	--	--	--	--
GMSG-2A	08/06/98	7:42 AM	28.84	66.9	T	0	--	--	--	--	--	--	--
GMSG-2A	08/07/98	10:54 AM	28.79	72	-	0	0	1.4	19.1	2	2	5.5	--
GMSG-2A	08/09/98	8:05 AM	28.83	73	-	0.6	0	1.5	19	<2	<2	2	--
GMSG-2A	08/10/98	8:23 AM	28.73	66.9	-	0	0	1.1	20.2	<1.75	<1.75	1.75	--
GMSG-2A	08/11/98	4:10 PM	28.92	73	-	0	0	1.1	20.1	<3.5	<3.5	3.5	--
GMSG-2A	08/12/98	10:55 AM	28.99	71.1	-	0	0	1	20.6	2.8	1.3	2.8	--
GMSG-2A	08/13/98	11:12 AM	28.86	78.1	-	0	0	1	20.6	2.5	2.5	4.5	--
GMSG-2A	08/14/98	10:51 AM	28.61	77	-	0	0	1	20.8	2.6	2.6	5	--
GMSG-2A	08/15/98	10:50 AM	28.78	69.1	-	0	0	1	20.6	2.5	2.5	5	--
GMSG-2A	08/16/98	10:50 AM	28.82	73	-	0	0	1	20.7	2.2	2.2	4	--
GMSG-2A	08/17/98	10:54 AM	28.69	73.9	-	0	0	1	20.5	1.6	1.6	4	--
GMSG-2A	08/18/98	10:54 AM	29.03	63	-	0	0	1	20.6	1.4	1.4	3.5	--
GMSG-2A	08/19/98	10:44 AM	28.99	64.9	-	0	0	1.1	20	1	1	1.7	--
GMSG-2A	08/20/98	10:52 AM	28.87	78.1	-	0	0	1.1	20.6	1.6	1.6	3.5	--
GMSG-2A	08/21/98	11:59 AM	28.97	78.1	-	0	0	1	20.4	2.7	2.7	4	--
GMSG-2A	08/22/98	10:45 AM	28.89	66.9	-	0	0	1.1	20.2	1	1	3	--
GMSG-2A	08/23/98	10:40 AM	28.46	73.9	0.01	0	0	1.1	20	<1	<1	<1	--
GMSG-2A	08/24/98	10:41 AM	28.43	75.9	-	0	0	1	20.6	<2	<2	2	--
GMSG-2A	08/25/98	10:40 AM	28.6	73	-	0	0	1.1	20.1	<1.75	<1.75	1.75	--
GMSG-2A	08/26/98	10:47 AM	28.78	79	-	0	0	1	20.9	15	11	11	--
GMSG-2A	08/26/98	3:13 PM	28.75	82.9	-	0	0	0.9	21	7	7	9	--
GMSG-2A	08/27/98	10:23 AM	28.84	79	-	0	0	1.1	20.3	<1	<1	2.25	--
GMSG-2A	08/28/98	10:28 AM	28.68	75	-	0	0	1.1	20.1	<1	<1	2	--
GMSG-2A	08/29/98	10:24 AM	28.65	73	-	0.03	0	1	20.3	<1	<1	2.5	--
GMSG-2A	08/30/98	10:45 AM	28.75	72	-	0	0	1	20.4	3	<1	2.25	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2A	08/31/98	11:05 AM	28.85	72	-	0.03	0	1	20.3	<1	<1	2.25	--
GMSG-2A	09/01/98	12:30 PM	28.54	73	T	0.02	0	1.1	20	2	<1	2	--
GMSG-2A	09/02/98	11:39 AM	28.53	63	T	0	0	1.1	20	2	<1	1.75	--
GMSG-2A	09/03/98	11:43 AM	28.57	68	-	-0.02	0	1.1	20.1	1	1	1.7	--
GMSG-2A	09/04/98	10:50 AM	28.73	73.9	-	0	0	1.1	20.4	1.5	1.5	3.7	--
GMSG-2A	09/09/98	11:00 AM	28.93	66.9	-	0	0	1	20.5	<1	<1	2.5	--
GMSG-2A	09/11/98	10:32 AM	28.62	89.1	-	0	0	1	20.9	<4	<4	4	--
GMSG-2A	09/14/98	11:16 AM	28.61	66.9	T	0	0	1.1	19.9	<3	<3	3	--
GMSG-2A	09/21/98	1:51 PM	28.77	55	-	-0.01	0	1.1	20.2	<2.5	<2.5	2.5	--
GMSG-2A	09/22/98	10:38 AM	28.89	55	-	0	0	1.1	20	<3	<3	3	--
GMSG-2A	09/23/98	11:19 AM	28.89	62.1	-	0	0	1	20.3	<2	<2	2	--
GMSG-2A	09/28/98	11:00 AM	28.76	64.9	-	0	0	1.1	20	<2	<2	2.5	--
GMSG-2A	10/07/98	10:59 AM	28.66	54	-	0.01	0	1.1	19.5	<4	<4	4	--
GMSG-2A	10/14/98	8:39 AM	28.87	39.9	-	-0.01	0	1.2	19	<3	<3	3	--
GMSG-2A	10/24/98	2:25 PM	28.76	72	-	0	0	1	20.2	23	23	3	--
GMSG-2A	10/24/98	3:51 PM	28.77	71.1	-	0.49	0	0	21.2	16	16	6	--
GMSG-2A	10/27/98	9:32 AM	28.77	52	-	0.14	0	1.1	19.7	18	18	2.5	--
GMSG-2A	12/16/98	2:58 PM	28.64	33	-	0.08	0	1.1	18.9	0	0	0	--
GMSG-2A	01/20/99	12:59 PM	28.63	28.9	-	0	0	0.9	20.3	<1	<1	2	--
GMSG-2A	02/10/99	11:04 AM	28.83	30.9	-	0.02	0	0.8	17.5	1	1	3	--
GMSG-2A	03/13/99	3:03 PM	29.03	37	-	0.01	0	0.7	19.4	<1	<1	1.25	--
GMSG-2A	04/13/99	9:40 AM	28.95	51.1	-	0	0	0.7	19	0	0	3	--
GMSG-2A	10/09/99	1:15 PM	28.71	70	-	-2.4	0	1.5	19.4	2.25	2.25	3	--
GMSG-2A	01/19/00	5:48 PM	28.62	13	-	2.73	0	0	19.4	--	--	--	--
GMSG-2A	04/18/00	10:54 AM	28.72	43	-	0	0	0.2	18	16.34	13.06	12.25	--
GMSG-2A	07/22/00	10:26 AM	28.91	62	-	-0.11	0	0.6	19.1	<4	<4	4	--
GMSG-2A	10/20/00	10:06 AM	28.61	67	-	-0.01	0	1	19.4	88.63	-0.4	0.12	--
GMSG-2A	01/26/01	2:50 PM	28.48	22	T	0	0	0.9	18.6	23.7	0.1	0.39	--
GMSG-2A	04/23/01	8:52 AM	28.36	65	-	0.01	0	0.4	19.1	-0.8	-1.7	-1	--
GMSG-2A	07/11/01	10:29 AM	28.82	70	-	0	0	0.4	20.1	0	0	0	--
GMSG-2A	09/20/01	11:15 AM	28.64	65	-	0	0	0.4	20	0	0	0	--
GMSG-2A	02/16/02	9:59 AM	28.55	32	-	3.21	0	0	20.4	-1.16	-1.18	-1.19	--
GMSG-2A	04/14/06	10:17 AM	28.35	66	-	0.9	0	0.5	17.8	--	--	--	49.88
GMSG-2B	09/12/97	7:28 PM	28.81	55	-	0.06	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2B	09/13/97	11:59 AM	28.84	72	-	0.14	--	--	--	--	--	--	--
GMSG-2B	09/13/97	5:50 PM	28.82	66	-	0.28	37.7	0.7	0.8	--	--	--	--
GMSG-2B	09/14/97	7:59 AM	28.87	64	-	-0.23	0	0	21	--	--	--	--
GMSG-2B	09/14/97	2:41 PM	28.81	80.1	-	0.19	5.7	0	18.8	--	--	--	--
GMSG-2B	09/14/97	2:56 PM	28.81	80.1	-	0.36	30.9	0.5	4.1	--	--	--	--
GMSG-2B	09/15/97	8:10 AM	--	--	--	-0.22	0	0	20.8	--	--	--	--
GMSG-2B	09/15/97	12:50 PM	--	--	--	0.11	0	0	20.6	--	--	--	--
GMSG-2B	09/15/97	5:30 PM	--	--	--	0.22	39.4	0.7	0.4	--	--	--	--
GMSG-2B	09/15/97	6:40 PM	--	--	--	0.25	39.7	0.8	0	--	--	--	--
GMSG-2B	09/16/97	7:57 AM	--	--	--	0.65	39.5	0.9	0	--	--	--	--
GMSG-2B	09/16/97	1:54 PM	--	--	--	1.4	39.5	0.9	0	--	--	--	--
GMSG-2B	09/16/97	6:50 PM	--	--	--	1.75	39.6	0.9	0	--	--	--	--
GMSG-2B	09/17/97	8:10 AM	--	--	--	-0.65	0	0	20.9	--	--	--	--
GMSG-2B	09/17/97	1:45 PM	--	--	--	-0.35	0	0	20.6	--	--	--	--
GMSG-2B	09/17/97	6:34 PM	--	--	--	-0.6	0	0	21.1	--	--	--	--
GMSG-2B	09/18/97	7:27 AM	--	--	--	0	0	0	21	--	--	--	--
GMSG-2B	09/18/97	6:57 PM	--	--	--	0.8	34.9	0.7	0.6	--	--	--	--
GMSG-2B	09/22/97	12:40 PM	--	--	--	0.6	34.5	0.7	0.5	--	--	--	--
GMSG-2B	09/22/97	5:40 PM	--	--	--	0.24	34.7	0.7	0.4	--	--	--	--
GMSG-2B	09/23/97	8:15 AM	--	--	--	-1	0	0	21.4	--	--	--	--
GMSG-2B	09/23/97	6:19 PM	--	--	--	-0.04	0	0	21.2	--	--	--	--
GMSG-2B	09/24/97	8:19 AM	--	--	--	0.85	37	0.9	0.4	--	--	--	--
GMSG-2B	09/24/97	6:55 PM	--	--	--	1.6	35.5	0.7	0.2	--	--	--	--
GMSG-2B	09/25/97	7:51 AM	--	--	--	-0.23	3.3	0.1	18.8	--	--	--	--
GMSG-2B	09/25/97	6:37 PM	--	--	--	-1.05	0	0	21.5	--	--	--	--
GMSG-2B	09/26/97	8:09 AM	--	--	--	-0.65	0	0	20.8	--	--	--	--
GMSG-2B	09/26/97	5:46 PM	--	--	--	0.3	0.1	0	20.2	--	--	--	--
GMSG-2B	09/27/97	8:39 AM	--	--	--	0.62	36.7	0.8	0.5	--	--	--	--
GMSG-2B	09/27/97	5:38 PM	--	--	--	0.85	36	0.7	0.5	--	--	--	--
GMSG-2B	09/28/97	8:42 AM	--	--	--	0.65	36.6	0.8	0.3	--	--	--	--
GMSG-2B	09/28/97	6:16 PM	--	--	--	0.65	37.9	0.8	0.2	--	--	--	--
GMSG-2B	09/29/97	8:58 AM	--	--	--	1.25	38	0.7	0.3	--	--	--	--
GMSG-2B	09/29/97	6:56 PM	--	--	--	-0.19	1.1	0.1	20	--	--	--	--
GMSG-2B	09/30/97	8:35 AM	--	--	--	-1.75	0	0	21.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2B	09/30/97	6:31 PM	--	--	--	-1.5	0	0	21.1	--	--	--	--
GMSG-2B	10/01/97	9:00 AM	28.94	44.1	-	-0.8	0	0	21.1	--	--	--	--
GMSG-2B	10/01/97	6:26 PM	28.8	46.9	-	0.65	35.2	0.6	1.5	--	--	--	--
GMSG-2B	10/02/97	7:22 AM	28.59	45	-	0.85	36.4	0.8	0.5	--	--	--	--
GMSG-2B	10/02/97	6:32 PM	28.49	59	-	0.4	35.4	0.7	0.5	--	--	--	--
GMSG-2B	10/03/97	7:42 AM	28.51	48.9	-	0.05	37.5	0.8	0.3	--	--	--	--
GMSG-2B	10/06/97	9:04 AM	--	--	--	-0.9	0	0	21.3	--	--	--	--
GMSG-2B	10/06/97	5:48 PM	--	--	--	-0.35	0	0	21.4	--	--	--	--
GMSG-2B	10/07/97	8:02 AM	0	55.9	-	-0.27	0	0	21.3	--	--	--	--
GMSG-2B	10/07/97	6:12 PM	28.79	59	-	0.3	0	0.1	20.3	--	--	--	--
GMSG-2B	10/08/97	7:51 AM	28.75	59	-	0.1	5	0.1	17.8	--	--	--	--
GMSG-2B	10/08/97	5:29 PM	0	73.9	-	0.7	15.9	0.2	11.1	--	--	--	--
GMSG-2B	10/09/97	7:43 AM	0	68	-	0.65	28.9	0.5	3.7	--	--	--	--
GMSG-2B	10/09/97	5:52 PM	28.72	51.1	-	-0.75	33.4	0.7	1.3	--	--	--	--
GMSG-2B	10/10/97	7:40 AM	29.08	43	-	-1.35	0	0	21.7	--	--	--	--
GMSG-2B	10/10/97	6:03 PM	29.06	50	-	0.02	26	0.7	4.5	--	--	--	--
GMSG-2B	10/11/97	8:00 AM	28.99	48.9	-	0.47	33.4	0.9	1.1	--	--	--	--
GMSG-2B	10/11/97	5:41 PM	28.76	60.1	-	1.1	34.5	0.9	0.3	--	--	--	--
GMSG-2B	10/12/97	7:39 AM	28.65	57.9	-	0.6	35.8	0.9	0.3	--	--	--	--
GMSG-2B	10/12/97	6:02 PM	28.48	61	0.04	0.62	36.1	0.7	1.4	--	--	--	--
GMSG-2B	10/13/97	7:49 AM	28.22	57.9	0.03	1.15	28.5	0.6	3.6	--	--	--	--
GMSG-2B	10/13/97	5:55 PM	28.52	43	T	-1.2	34.4	0.9	0.1	--	--	--	--
GMSG-2B	10/14/97	8:24 AM	28.68	35.1	-	-0.9	32.7	1.1	0	--	--	--	--
GMSG-2B	10/15/97	8:46 AM	29.08	42.1	-	-0.6	0	0	20.8	--	--	--	--
GMSG-2B	10/21/97	7:42 AM	28.71	33.1	T	0.6	27.9	0.7	3.5	--	--	--	--
GMSG-2B	10/22/97	8:05 AM	28.91	27	-	0	30	0.7	2.5	--	--	--	--
GMSG-2B	10/22/97	6:08 PM	28.79	28.9	-	0.6	0	0	21.3	--	--	--	--
GMSG-2B	10/23/97	7:56 AM	28.72	24.1	-	0.36	0.8	0	19.5	--	--	--	--
GMSG-2B	10/23/97	5:50 PM	28.63	32	-	0.5	13.4	0.2	13.9	--	--	--	--
GMSG-2B	10/24/97	7:37 AM	28.74	28	-	-0.39	33.1	0.7	5.4	--	--	--	--
GMSG-2B	10/29/97	7:11 AM	28.64	32	-	-0.36	--	--	--	--	--	--	--
GMSG-2B	10/29/97	11:14 AM	28.63	43	-	0.02	36.8	0.7	0.9	--	--	--	--
GMSG-2B	10/30/97	6:42 AM	28.61	35.1	-	0.7	36.5	0.2	0.4	--	--	--	--
GMSG-2B	10/30/97	5:51 PM	28.35	54	-	0.93	37.4	0.01	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2B	10/31/97	6:20 AM	28.29	42.1	-	0.35	38.5	0.2	0	--	--	--	--
GMSG-2B	11/13/97	7:50 AM	28.65	19.9	-	0.06	39.4	1.1	0	--	--	--	--
GMSG-2B	11/18/97	4:14 PM	28.6	30	-	-0.29	40.1	1	0	--	--	--	--
GMSG-2B	11/19/97	4:10 PM	28.62	26.1	-	0.36	38.4	1	0	--	--	--	--
GMSG-2B	11/20/97	5:08 PM	28.62	28.9	-	-0.11	39.9	1	0	--	--	--	--
GMSG-2B	11/21/97	9:37 AM	28.81	23	-	-0.55	35.9	0.9	0.8	--	--	--	--
GMSG-2B	12/02/97	9:08 AM	28.89	27	-	0.9	37.5	1	0	--	--	--	--
GMSG-2B	12/12/97	10:25 AM	28.66	26	-	1.1	33.9	1	0	--	--	--	--
GMSG-2B	01/21/98	3:35 PM	28.97	22	-	0.1	37.9	1	0	--	--	--	--
GMSG-2B	01/22/98	8:00 AM	29.03	14	T	-0.19	37.9	1	0	--	--	--	--
GMSG-2B	02/18/98	4:15 PM	28.49	35.1	-	--	--	--	--	--	--	--	--
GMSG-2B	02/19/98	8:25 AM	28.59	32	-	--	--	--	--	--	--	--	--
GMSG-2B	03/30/98	2:38 PM	28.4	39	T	-0.38	10.1	0.3	14.1	--	--	--	--
GMSG-2B	03/31/98	8:41 AM	28.48	34	T	-0.09	18.7	0.5	7.3	--	--	--	--
GMSG-2B	04/14/98	3:37 PM	28.47	57.9	-	-0.07	0	0	20.9	--	--	--	--
GMSG-2B	04/15/98	5:45 PM	28.61	41	-	0.45	32.7	0.7	0.1	--	--	--	--
GMSG-2B	04/16/98	8:35 AM	28.47	30.9	0.05	0.6	33.9	0.7	0	--	--	--	--
GMSG-2B	04/16/98	3:23 PM	28.43	34	T	0.7	32.8	0.7	0	--	--	--	--
GMSG-2B	04/17/98	8:14 AM	28.55	37	-	-0.27	32.5	0.7	0.3	--	--	--	--
GMSG-2B	04/30/98	4:23 PM	28.58	70	-	0.9	30.7	0.7	0	--	--	--	--
GMSG-2B	05/01/98	8:05 AM	28.48	54	-	0.32	31	0.7	0	--	--	--	--
GMSG-2B	05/07/98	3:35 PM	28.53	69.1	-	0.48	31	0.9	0	--	--	--	--
GMSG-2B	05/08/98	8:39 AM	28.66	57.9	-	-0.5	28.4	1.1	0	--	--	--	--
GMSG-2B	05/14/98	3:47 PM	28.72	77	-	0.55	27.1	0.9	0.1	--	--	--	--
GMSG-2B	05/15/98	7:44 AM	28.69	66.9	-	0.09	29.7	1	0	--	--	--	--
GMSG-2B	05/20/98	4:27 PM	28.74	70	-	0.2	26.8	0.9	0	--	--	--	--
GMSG-2B	05/21/98	8:22 AM	28.84	52	-	-0.39	29	1.1	0	--	--	--	--
GMSG-2B	05/28/98	4:07 PM	28.49	86	-	0.08	26.6	0.9	0	--	--	--	--
GMSG-2B	05/29/98	9:55 AM	28.62	73.9	-	-0.19	31	0.9	0	--	--	--	--
GMSG-2B	06/02/98	6:38 PM	28.52	50	-	-0.6	27.5	1	0	--	--	--	--
GMSG-2B	06/05/98	8:56 AM	28.74	52	-	0	25.7	1	0	--	--	--	--
GMSG-2B	06/11/98	11:02 AM	28.57	59	-	0.6	28.1	1	0	--	--	--	--
GMSG-2B	06/12/98	8:48 AM	28.29	62.1	-	-0.3	28.3	1	0	--	--	--	--
GMSG-2B	06/13/98	8:01 AM	28.53	63	-	-0.2	27.3	1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2B	06/14/98	11:11 AM	28.45	75.9	-	0.6	26.3	0.9	0	--	--	--	--
GMSG-2B	06/15/98	9:14 AM	28.32	75	-	0.41	28.8	1	0	--	--	--	--
GMSG-2B	06/16/98	6:02 PM	28.51	73.9	-	-0.53	27.8	0.9	0	--	--	--	--
GMSG-2B	06/17/98	1:20 PM	28.75	80.1	-	-0.39	25.2	0.8	0	--	--	--	--
GMSG-2B	06/22/98	3:45 PM	28.67	82.9	-	0.24	0	0	20.6	--	--	--	--
GMSG-2B	06/23/98	8:37 AM	28.83	69.1	-	-0.41	0	0.1	20.6	--	--	--	--
GMSG-2B	06/24/98	1:44 PM	28.58	82	-	0.9	26.2	0.9	0	--	--	--	--
GMSG-2B	06/26/98	3:25 PM	--	--	--	-0.01	27.2	0.9	0	--	--	--	--
GMSG-2B	06/27/98	1:21 PM	28.62	72	-	-0.16	26.9	0.9	0	--	--	--	--
GMSG-2B	06/27/98	1:23 PM	28.62	72	-	-0.16	26.9	0.9	0	--	--	--	--
GMSG-2B	06/28/98	11:41 AM	28.55	81	-	0.12	27.4	0.8	0	--	--	--	--
GMSG-2B	07/06/98	5:39 PM	28.78	64.9	0.02	-0.48	27.6	1	0	--	--	--	--
GMSG-2B	07/07/98	7:52 AM	28.76	57.9	-	-0.51	25.5	1	0	--	--	--	--
GMSG-2B	07/08/98	7:07 PM	28.73	73.9	-	0.19	25.3	0.9	0	--	--	--	--
GMSG-2B	07/09/98	4:57 PM	28.78	75	-	-0.06	26.4	0.9	0	--	--	--	--
GMSG-2B	07/10/98	3:42 PM	28.89	75	-	0.25	27.2	0.6	0	--	--	--	--
GMSG-2B	07/11/98	7:03 PM	28.76	75.9	-	0.69	27.6	0.6	0	--	--	--	--
GMSG-2B	07/12/98	9:58 AM	28.72	80.1	-	0.18	26.1	0.7	0	--	--	--	--
GMSG-2B	07/14/98	6:46 PM	28.73	69.1	-	0.18	26.6	0.9	0	--	--	--	--
GMSG-2B	07/15/98	10:45 AM	28.65	73.9	-	-0.06	26.1	0.9	0	--	--	--	--
GMSG-2B	07/21/98	5:55 PM	28.59	79	-	-0.66	0	0	20.9	900	150	5	--
GMSG-2B	07/22/98	5:51 PM	28.61	75	-	0.5	23.3	0.7	0	--	--	--	--
GMSG-2B	07/23/98	6:24 PM	28.7	66.9	-	-0.24	0.5	0.1	20.1	--	--	--	--
GMSG-2B	07/24/98	6:15 PM	28.86	69.1	-	-0.22	0	0	20.9	--	--	--	--
GMSG-2B	07/26/98	1:37 PM	28.73	82	-	1.09	24.6	0.6	0	--	--	--	--
GMSG-2B	07/27/98	5:45 PM	28.6	77	-	0.19	25.2	1	0	--	--	--	--
GMSG-2B	07/28/98	1:12 PM	28.47	78.1	-	0.52	27	1	0	--	--	--	--
GMSG-2B	07/29/98	11:47 AM	28.7	75.9	-	-0.4	0	0	20.6	40	40	4	--
GMSG-2B	08/04/98	12:06 PM	28.93	75.9	-	-0.21	24.8	0.9	0	--	--	--	--
GMSG-2B	08/05/98	1:32 PM	28.92	77	-	-0.01	23.4	0.8	0	--	--	--	--
GMSG-2B	08/05/98	6:58 PM	28.9	72	-	-2.97	--	--	--	--	--	--	--
GMSG-2B	08/06/98	7:43 AM	28.84	66.9	T	-6.28	--	--	--	--	--	--	--
GMSG-2B	08/06/98	9:30 AM	28.85	64.9	0.16	--	18.7	0.8	2.8	--	--	--	--
GMSG-2B	08/07/98	11:01 AM	28.79	72	-	-6.85	7.5	0.4	11.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2B	08/07/98	7:04 PM	28.78	73	-	-6.59	7	0.4	11.8	--	--	--	--
GMSG-2B	08/08/98	11:22 AM	28.82	75.9	-	-6.85	5.4	0.3	12.3	--	--	--	--
GMSG-2B	08/09/98	10:06 AM	28.8	79	-	-6.49	3.5	0.2	12.5	--	--	--	--
GMSG-2B	08/10/98	9:05 AM	28.73	72	-	-6.65	5.3	0.5	5.8	--	--	--	--
GMSG-2B	08/11/98	4:44 PM	28.91	72	-	-6.49	0.8	0.7	8.3	4000	--	--	--
GMSG-2B	08/12/98	11:02 AM	28.99	71.1	-	-6.13	0.2	1.2	8.2	--	--	--	--
GMSG-2B	08/13/98	11:20 AM	28.86	78.1	-	-5.66	0	1.8	13.7	350	150	4.5	--
GMSG-2B	08/14/98	10:59 AM	28.61	77	-	-5.04	0	2.2	17.1	320	320	6	--
GMSG-2B	08/15/98	10:57 AM	28.78	69.1	-	-6.37	0	3.4	18.6	100	100	4.5	--
GMSG-2B	08/16/98	10:57 AM	28.82	73	-	-5.63	0	3.9	19.7	70	70	5	--
GMSG-2B	08/17/98	11:02 AM	28.69	73.9	-	-6.2	0	2.9	20.3	78	78	4	--
GMSG-2B	08/18/98	10:59 AM	29.03	63	-	-5.89	0	3.3	20.6	54	54	3.5	--
GMSG-2B	08/19/98	10:51 AM	28.99	64.9	-	-5.43	0	1.1	21.3	35	35	1.7	--
GMSG-2B	08/20/98	10:58 AM	28.87	78.1	-	-5.45	0	0.8	21.8	55	55	4	--
GMSG-2B	08/21/98	12:05 PM	28.97	78.1	-	-4.96	0	0.5	22.3	21	21	5	--
GMSG-2B	08/22/98	10:51 AM	28.89	66.9	-	-5.05	0	0.8	21.8	48	48	3	--
GMSG-2B	08/23/98	10:46 AM	28.46	73.9	0.01	-5.3	0	1.2	21.1	500	--	1	--
GMSG-2B	08/24/98	10:46 AM	28.43	75.9	-	-5.52	0	1	22.3	55	55	2	--
GMSG-2B	08/25/98	10:48 AM	28.6	73	-	-6.01	0	0.9	21.9	1.75	1.75	1.75	--
GMSG-2B	08/26/98	12:00 PM	28.79	81	-	-5.59	0	0.4	21.2	75	50	50	--
GMSG-2B	08/26/98	3:22 PM	28.75	82.9	-	-3.22	0	0	22.3	9.5	9	9	--
GMSG-2B	08/27/98	10:30 AM	28.83	81	-	-0.43	0	0.4	21	5.5	3.5	2.25	--
GMSG-2B	08/28/98	10:39 AM	28.66	79	-	-0.15	0	1.2	20	20	6.5	1.75	--
GMSG-2B	08/29/98	10:32 AM	28.67	75.9	-	-0.25	0	0	21.4	15	5.75	2.5	--
GMSG-2B	08/30/98	10:51 AM	28.75	72	-	-0.23	0	0	21.7	15	5	2.25	--
GMSG-2B	08/31/98	11:09 AM	28.85	72	-	-0.32	0	0	21.3	10	5.5	2.25	--
GMSG-2B	09/01/98	12:40 PM	28.54	73	T	0.6	0.2	1.6	18.2	2000	2000	2	--
GMSG-2B	09/02/98	11:52 AM	28.53	63	T	-0.16	0	0.8	19.9	300	250	1.75	--
GMSG-2B	09/03/98	11:50 AM	28.57	68	-	-0.31	0	1.1	20.4	1.8	1.8	1.8	--
GMSG-2B	09/04/98	10:58 AM	28.73	73.9	-	-0.43	0	1.1	21.3	8	8	4	--
GMSG-2B	09/09/98	11:08 AM	28.93	66.9	-	-0.21	0	0	21.6	4.5	4.5	2.5	--
GMSG-2B	09/10/98	6:00 PM	28.65	77	-	0.71	0.2	1.4	18.6	--	--	--	--
GMSG-2B	09/11/98	10:38 AM	28.62	89.1	-	0.15	0	1.5	20.8	110	85	4	--
GMSG-2B	09/12/98	5:11 PM	28.69	77	-	0.26	0	0.9	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2B	09/14/98	11:23 AM	28.61	66.9	T	0.07	0	1.5	19.3	60	60	3	--
GMSG-2B	09/16/98	10:47 AM	28.92	71.1	-	-0.15	0	1	20.4	2.5	2.5	2.5	--
GMSG-2B	09/21/98	1:58 PM	28.77	55	-	-0.87	0	0.2	20.8	2.5	2.5	2.5	--
GMSG-2B	09/22/98	10:43 AM	28.89	55	-	-0.46	0	0.5	20.4	2.5	2.5	2.5	--
GMSG-2B	09/23/98	11:25 AM	28.89	62.1	-	0.29	0	0	20.9	4.5	4.5	2	--
GMSG-2B	09/28/98	11:07 AM	28.76	64.9	-	-0.23	0	1	19.8	<1.5	<1.5	2.25	--
GMSG-2B	10/07/98	11:06 AM	28.66	54	-	-0.6	0	1.3	19	<3.5	<3.5	3.5	--
GMSG-2B	10/14/98	8:43 AM	28.87	39.9	-	-0.52	0	1.2	18.6	<3	<3	3	--
GMSG-2B	10/24/98	2:31 PM	28.77	72	-	0.5	0	1.4	19.2	45	45	3	--
GMSG-2B	10/27/98	9:40 AM	28.77	52	-	0.36	0	1.6	18.8	18	18	3	--
GMSG-2B	11/17/98	8:19 AM	28.79	28.9	-	-0.93	0	0	20.2	--	--	6.5	--
GMSG-2B	12/16/98	3:06 PM	28.64	33	-	0.46	0	1	17.1	43	25	0	--
GMSG-2B	01/20/99	1:06 PM	28.63	28.9	-	-0.13	0	1.6	18.4	<1	<1	2	--
GMSG-2B	02/10/99	11:12 AM	28.83	30.9	-	0.09	0	1.5	15.3	1.5	1.5	2.75	--
GMSG-2B	03/13/99	3:02 PM	29.03	37	-	0.54	0	1.7	16.7	<1	<1	1.25	--
GMSG-2B	04/13/99	9:47 AM	28.95	51.1	-	0	0	0.1	19.4	0	0	3	--
GMSG-2B	07/26/99	5:06 PM	28.67	82.9	-	0.02	0	1.4	8.2	22	--	3	--
GMSG-2B	10/09/99	1:23 PM	28.71	70	-	0.4	0	0	20.8	3.25	3.25	2.5	--
GMSG-2B	01/19/00	5:52 PM	28.62	13	-	-0.32	0	1	12	--	--	--	--
GMSG-2B	04/18/00	10:59 AM	28.72	43	-	0.86	0	1.3	9.3	12.23	11.65	12.23	--
GMSG-2B	07/22/00	10:32 AM	28.92	62	-	-0.45	0	0	20.1	4	4	4	--
GMSG-2B	10/20/00	10:12 AM	28.61	67	-	0.08	0	1	7.5	0.28	--	0.16	--
GMSG-2B	01/26/01	2:45 PM	28.48	22	T	0.21	0	1.2	7.4	0.43	--	0.43	--
GMSG-2B	04/23/01	8:56 AM	28.36	65	-	1.29	0	0.6	10.1	-1	-2.3	-1	--
GMSG-2B	07/11/01	10:22 AM	28.82	70	-	-0.18	0	0	20.4	0	0	0	--
GMSG-2B	09/20/01	11:18 AM	28.64	65	-	-0.4	0	0	20.4	0.5	0	0	--
GMSG-2B	09/25/01	3:35 PM	28.86	56	-	-5.1	0	0	20.6	12.9	12.9	0	--
GMSG-2B	10/02/01	10:40 AM	28.67	70	-	-5.95	0	0	20.4	6	5.7	3.5	--
GMSG-2B	10/10/01	8:25 AM	28.59	57	T	-5.35	0	0	19.6	0	0	0	--
GMSG-2B	10/18/01	8:24 AM	28.62	39	-	-4.94	0	0	19	0.75	0.7	0.8	--
GMSG-2B	10/23/01	10:05 AM	28.21	49	-	-4.76	0	0	20.9	0.1	0.07	0.03	--
GMSG-2B	11/02/01	12:32 PM	28.68	50	-	-1.07	0	0	21.1	0.85	0.55	0.63	--
GMSG-2B	11/07/01	9:38 AM	29.03	43	-	-0.34	0	0	20.8	1.04	-0.09	-0.13	--
GMSG-2B	11/13/01	1:00 PM	28.76	46	-	0.7	0	0.6	18.4	-0.59	-2	-0.59	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-2B	02/16/02	9:55 AM	28.55	32	-	-0.79	0	0.4	19.6	-0.91	-0.94	-1.15	--
GMSG-2B	10/11/02	9:56 AM	28.92	61	-	0	0	0.4	19.3	9.71	0	0	--
GMSG-2B	01/07/03	10:46 AM	28.44	34	-	1.6	0	0.5	16.8	0	0	0	--
GMSG-2B	04/01/03	1:42 PM	28.51	48	-	0	0	0	19.9	0	0	0	--
GMSG-2B	07/21/03	9:02 AM	28.56	61	-	0	0	0.5	14.9	0	0	0	--
GMSG-2B	10/10/03	11:56 AM	28.83	73	-	0	0	0.2	19.3	0	0	0	--
GMSG-2B	01/28/04	10:20 AM	28.65	12	-	0	0	0	19.7	0.34	0.05	0.17	--
GMSG-2B	04/20/04	1:30 PM	28.72	43	-	0.1	0.1	0.4	17.3	582	0	0	--
GMSG-2B	06/08/04	9:00 AM	28.66	80	-	-2.8	0	0	19.6	--	--	--	--
GMSG-2B	07/08/04	5:23 PM	28.76	65	-	-0.543	0	0.5	17.6	24.7	4.2	2.67	--
GMSG-2B	10/08/04	1:48 PM	28.56	67	-	0.8	0	0	19.9	16	3.65	-0.36	--
GMSG-2B	01/14/05	12:19 PM	29.22	12	-	-0.3	0	0	20.1	-3.31	-4	-0.33	--
GMSG-2B	04/11/05	12:15 PM	28.92	54	-	-3.2	0	0	20.1	--	--	--	--
GMSG-2B	07/21/05	9:51 AM	28.83	81	-	-0.2	0	0	19.4	--	--	--	--
GMSG-2B	10/18/05	9:55 AM	28.64	51	-	-0.55	0	0	19.8	--	--	--	--
GMSG-2B	03/07/06	2:27 PM	28.89	37	-	1.2	0	0.4	18.5	--	--	--	--
GMSG-2B	04/14/06	10:49 AM	28.34	70	-	0.7	0	0.5	17.6	--	--	--	--
GMSG-2B	07/12/06	10:58 AM	28.83	81	-	0	0	0.1	18.7	--	--	--	--
GMSG-2B	10/22/06	10:30 AM	28.66	38	-	0	0	0.9	19.1	--	--	--	--
GMSG-2B	01/29/07	11:41 AM	28.55	10	T	0.3	0	1	19.1	--	--	--	--
GMSG-2B	04/16/07	10:40 AM	28.85	56	-	-0.1	0	0	20.4	--	--	--	--
GMSG-2B	07/13/07	10:56 AM	30.03	67	-	-0.2	0	0.2	19.6	--	--	--	--
GMSG-2B	10/15/07	1:15 PM	30.14	49	-	0	0	0.2	19.3	--	--	--	--
GMSG-3A	09/13/97	5:56 PM	28.82	66	-	0	0	0	20.8	--	--	--	--
GMSG-3A	09/14/97	8:08 AM	28.87	64	-	0	0	0.1	20.9	--	--	--	--
GMSG-3A	09/14/97	2:50 PM	28.81	80.1	-	0	0	0.4	20.3	--	--	--	--
GMSG-3A	09/15/97	9:06 AM	--	--	--	0.01	0	0.6	20.5	--	--	--	--
GMSG-3A	09/15/97	7:05 PM	--	--	--	0	0	0.6	20.5	--	--	--	--
GMSG-3A	09/16/97	7:47 AM	--	--	--	0	0	0.7	20.5	--	--	--	--
GMSG-3A	09/16/97	1:52 PM	--	--	--	0	0	0.7	19.9	--	--	--	--
GMSG-3A	09/16/97	6:37 PM	--	--	--	0.01	0	0.7	20.1	--	--	--	--
GMSG-3A	09/17/97	8:28 AM	--	--	--	0	0	0.6	20.5	--	--	--	--
GMSG-3A	09/17/97	1:57 PM	--	--	--	0	0	0	20.6	--	--	--	--
GMSG-3A	09/17/97	6:48 PM	--	--	--	0	0	0.5	20.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3A	09/18/97	7:16 AM	--	--	--	0	0	0.7	20.6	--	--	--	--
GMSG-3A	09/18/97	6:51 PM	--	--	--	0	0	0.5	20.4	--	--	--	--
GMSG-3A	09/22/97	12:30 PM	--	--	--	0	0	0.1	20.7	--	--	--	--
GMSG-3A	09/22/97	5:23 PM	--	--	--	0	0	0.5	20.6	--	--	--	--
GMSG-3A	09/23/97	8:03 AM	--	--	--	0	0	0.7	20.5	--	--	--	--
GMSG-3A	09/23/97	6:00 PM	--	--	--	0	0	0.7	20.5	--	--	--	--
GMSG-3A	09/24/97	8:00 AM	--	--	--	0	0	0.7	20.5	--	--	--	--
GMSG-3A	09/24/97	6:30 PM	--	--	--	0	0	0.6	20.7	--	--	--	--
GMSG-3A	09/25/97	8:01 AM	--	--	--	0	0	0.6	20.7	--	--	--	--
GMSG-3A	09/25/97	6:20 PM	--	--	--	0	0	0.6	20.6	--	--	--	--
GMSG-3A	09/26/97	8:38 AM	--	--	--	0	0	0.7	20.8	--	--	--	--
GMSG-3A	09/26/97	5:33 PM	--	--	--	0	0	0.6	20.7	--	--	--	--
GMSG-3A	09/27/97	8:24 AM	--	--	--	0	0	0.7	20.5	--	--	--	--
GMSG-3A	09/27/97	5:27 PM	--	--	--	0	0	0.6	20.6	--	--	--	--
GMSG-3A	09/28/97	8:31 AM	--	--	--	0	0	0.6	20.6	--	--	--	--
GMSG-3A	09/28/97	6:24 PM	--	--	--	0	0	0.6	20.4	--	--	--	--
GMSG-3A	09/29/97	8:29 AM	--	--	--	0	0	0.6	20.7	--	--	--	--
GMSG-3A	09/29/97	6:45 PM	--	--	--	0	0	0.7	20.1	--	--	--	--
GMSG-3A	09/30/97	8:20 AM	--	--	--	0	0	0.6	20.4	--	--	--	--
GMSG-3A	09/30/97	6:41 PM	--	--	--	0	0	0.6	20.8	--	--	--	--
GMSG-3A	10/01/97	8:30 AM	28.94	44.1	-	0	0	0.7	20.3	--	--	--	--
GMSG-3A	10/01/97	6:20 PM	28.8	46.9	-	0	0	0.7	20.6	--	--	--	--
GMSG-3A	10/02/97	7:00 AM	28.59	45	-	0	0	0.6	20.4	--	--	--	--
GMSG-3A	10/02/97	6:59 PM	28.49	59	-	0	0	0.6	20.7	--	--	--	--
GMSG-3A	10/03/97	7:45 AM	28.51	48.9	-	0	0	0.7	20.8	--	--	--	--
GMSG-3A	10/06/97	8:51 AM	--	--	--	0	0	0.7	20.8	--	--	--	--
GMSG-3A	10/06/97	5:40 PM	--	--	--	-0.05	0	0.6	20.6	--	--	--	--
GMSG-3A	10/07/97	7:52 AM	0	55.9	-	0	0	0.5	20.7	--	--	--	--
GMSG-3A	10/07/97	6:04 PM	28.79	59	-	0	0	0.7	19.9	--	--	--	--
GMSG-3A	10/08/97	7:43 AM	28.75	59	-	0	0	0.6	20.9	--	--	--	--
GMSG-3A	10/08/97	5:22 PM	0	73.9	-	-0.02	0	0.6	20.7	--	--	--	--
GMSG-3A	10/09/97	7:36 AM	0	68	-	0	0	0.5	20.8	--	--	--	--
GMSG-3A	10/09/97	5:44 PM	28.72	51.1	-	0	0	0.6	20.8	--	--	--	--
GMSG-3A	10/10/97	7:32 AM	29.08	43	-	0	0	0.7	20.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3A	10/10/97	5:54 PM	29.06	50	-	0	0	0.7	20.7	--	--	--	--
GMSG-3A	10/11/97	7:52 AM	28.99	48.9	-	0	0	0.7	20.7	--	--	--	--
GMSG-3A	10/11/97	5:32 PM	28.76	60.1	-	0	0	0.6	20.1	--	--	--	--
GMSG-3A	10/12/97	7:31 AM	28.65	57.9	-	0	0	0.6	21	--	--	--	--
GMSG-3A	10/12/97	6:29 PM	28.48	61	0.04	0	0	0.6	21	--	--	--	--
GMSG-3A	10/13/97	7:36 AM	28.22	57.9	0.03	0	0	0.6	20.6	--	--	--	--
GMSG-3A	10/13/97	6:20 PM	28.52	43	T	0	0	0.7	20.7	--	--	--	--
GMSG-3A	10/14/97	8:46 AM	28.71	36	-	-0.02	0	0.7	20.6	--	--	--	--
GMSG-3A	10/15/97	9:43 AM	29.09	46	-	0	0	0.8	20.3	--	--	--	--
GMSG-3A	10/21/97	8:13 AM	28.71	33.1	T	0	0	0.7	20.8	--	--	--	--
GMSG-3A	10/22/97	8:36 AM	28.91	27	-	0	0	0.7	20.7	--	--	--	--
GMSG-3A	10/22/97	6:38 PM	28.79	28.9	-	0	0	0	21.3	--	--	--	--
GMSG-3A	10/23/97	8:24 AM	28.72	24.1	-	0	0	0.1	20.9	--	--	--	--
GMSG-3A	10/23/97	6:16 PM	28.63	32	-	0	0	0.5	20.1	--	--	--	--
GMSG-3A	10/24/97	8:03 AM	28.74	28	-	0	0	0.7	20.2	--	--	--	--
GMSG-3A	10/29/97	7:34 AM	28.64	34	-	0	--	--	--	--	--	--	--
GMSG-3A	10/29/97	11:53 AM	28.62	45	-	0	0	0	19.5	--	--	--	--
GMSG-3A	10/30/97	7:20 AM	28.61	35.1	-	0	0	0.6	19.6	--	--	--	--
GMSG-3A	10/30/97	4:38 PM	28.35	55.9	-	0	0	0.6	19.7	--	--	--	--
GMSG-3A	10/31/97	6:57 AM	28.29	43	-	0	0	0	19.5	--	--	--	--
GMSG-3A	11/13/97	7:32 AM	28.65	19.9	-	0	0	0.8	18.8	--	--	--	--
GMSG-3A	11/18/97	3:52 PM	28.6	30	-	0	0	0.7	19.2	--	--	--	--
GMSG-3A	11/19/97	3:50 PM	28.62	26.1	-	0	0	0.7	19.6	--	--	--	--
GMSG-3A	11/20/97	4:50 PM	28.62	28.9	-	0	0	0.7	19.5	--	--	--	--
GMSG-3A	11/21/97	9:20 AM	28.81	19.9	-	0	0	0.7	19	--	--	--	--
GMSG-3A	12/02/97	9:12 AM	28.89	27	-	0	0	0.7	18.6	--	--	--	--
GMSG-3A	12/12/97	10:05 AM	28.66	26	-	0	0	0.7	20.1	--	--	--	--
GMSG-3A	01/21/98	3:10 PM	28.97	22	-	0.03	0.2	0.2	19.9	--	--	--	--
GMSG-3A	01/22/98	7:30 AM	29.03	14	T	0.02	0.1	0	19.8	--	--	--	--
GMSG-3A	02/18/98	3:40 PM	28.49	35.1	-	--	--	--	--	--	--	--	--
GMSG-3A	02/19/98	7:40 AM	28.59	32	-	--	--	--	--	--	--	--	--
GMSG-3A	03/30/98	2:05 PM	28.38	39.9	0.01	0.02	0	0.2	20.5	--	--	--	--
GMSG-3A	03/31/98	7:57 AM	28.49	34	T	0	0	0.3	20.2	--	--	--	--
GMSG-3A	04/14/98	3:10 PM	28.45	59	-	0.02	0	0.5	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3A	04/15/98	5:23 PM	28.61	45	-	0	0.1	0.5	20.4	--	--	--	--
GMSG-3A	04/16/98	8:03 AM	28.48	30.9	0.01	0	0.1	0.5	20.2	--	--	--	--
GMSG-3A	04/16/98	3:00 PM	28.43	34	T	0	0.1	0.5	20	--	--	--	--
GMSG-3A	04/17/98	7:40 AM	28.55	37	-	0	0.1	0.5	19.8	--	--	--	--
GMSG-3A	04/30/98	3:53 PM	28.58	70	-	0	0.1	0.6	19.8	--	--	--	--
GMSG-3A	05/01/98	7:35 AM	28.48	54	-	0	0.3	0.6	19.7	--	--	--	--
GMSG-3A	05/07/98	3:05 PM	28.52	66.9	T	0	0.1	0.9	19.6	--	--	--	--
GMSG-3A	05/08/98	7:59 AM	28.65	54	-	0	0	1	19.8	--	--	--	--
GMSG-3A	05/14/98	3:20 PM	28.73	79	-	0	0	0.9	19.7	--	--	--	--
GMSG-3A	05/15/98	7:16 AM	28.68	61	-	0	0	1	19.8	--	--	--	--
GMSG-3A	05/20/98	4:00 PM	28.74	70	-	0	0	0.9	19.8	--	--	--	--
GMSG-3A	05/21/98	7:30 AM	28.84	52	-	0	0.1	1.1	19.8	--	--	--	--
GMSG-3A	05/28/98	3:38 PM	28.49	86	-	0	0	0.8	19.8	--	--	--	--
GMSG-3A	05/29/98	9:29 AM	28.6	73	-	0	0	0.8	20	--	--	--	--
GMSG-3A	06/02/98	7:02 PM	28.52	50	-	0	0	1	19.9	--	--	--	--
GMSG-3A	06/05/98	8:18 AM	28.76	48	-	0.1	0	1.1	19.9	--	--	--	--
GMSG-3A	06/11/98	10:35 AM	28.57	59	-	0	0	1	20.2	--	--	--	--
GMSG-3A	06/12/98	8:22 AM	28.28	60.1	-	0	0	1	20	--	--	--	--
GMSG-3A	06/13/98	7:35 AM	28.53	63	-	0	0	1	19.8	--	--	--	--
GMSG-3A	06/14/98	10:50 AM	28.45	75.9	-	0	0.2	1	19.7	--	--	--	--
GMSG-3A	06/15/98	8:54 AM	28.32	75	-	0	0	1.1	19.8	--	--	--	--
GMSG-3A	06/16/98	5:46 PM	28.51	73.9	-	0.05	0	0.9	19.8	--	--	--	--
GMSG-3A	06/17/98	1:02 PM	28.75	80.1	-	0	0	1	19.6	--	--	--	--
GMSG-3A	06/22/98	3:20 PM	28.68	82	-	0	0	0.9	19.6	--	--	--	--
GMSG-3A	06/23/98	8:15 AM	28.83	66.9	-	0	0	1	20	--	--	--	--
GMSG-3A	06/24/98	1:18 PM	28.59	78.1	-	0	0	1	19.9	--	--	--	--
GMSG-3A	06/26/98	3:04 PM	--	--	--	0	0	1	19.7	--	--	--	--
GMSG-3A	06/27/98	12:57 PM	28.62	72	-	0	0	1	19.6	500	500	3.5	--
GMSG-3A	06/28/98	11:07 AM	28.56	78.1	-	0	0	1	19.7	175	175	--	--
GMSG-3A	07/06/98	5:19 PM	28.77	64.9	0.02	0	0	1.1	19.8	400	400	3	--
GMSG-3A	07/07/98	7:26 AM	28.76	57.9	0.01	0	0	1.1	19.6	950	950	3	--
GMSG-3A	07/08/98	6:45 PM	28.73	73.9	-	0	0.1	1	19.5	250	250	3.5	--
GMSG-3A	07/09/98	4:33 PM	28.78	75	-	0	0	1	20	250	250	6.5	--
GMSG-3A	07/10/98	11:35 AM	28.93	72	-	0	0.1	1	16.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3A	07/10/98	3:19 PM	28.89	75.9	-	0	0	0.6	19.9	40	40	--	--
GMSG-3A	07/11/98	10:38 AM	28.87	77	-	0	0.1	0.3	16.8	--	--	--	--
GMSG-3A	07/11/98	6:50 PM	28.76	75.9	-	0	0	0.6	20.1	50	50	--	--
GMSG-3A	07/12/98	9:18 AM	28.72	78.1	-	0	0	0.9	19.5	650	650	--	--
GMSG-3A	07/13/98	9:56 AM	28.61	82	-	0	0.1	0.7	16.3	--	--	--	--
GMSG-3A	07/14/98	11:23 AM	28.69	75	T	0	0	0.6	16.7	--	--	--	--
GMSG-3A	07/14/98	6:54 PM	28.73	69.1	-	-0.01	0.1	0.9	19.3	1100	1100	--	--
GMSG-3A	07/15/98	10:23 AM	28.66	75	-	0	0	1	19.4	500	500	1.75	--
GMSG-3A	07/21/98	5:29 PM	28.56	81	-	0	0	0.5	20	500	500	5.5	--
GMSG-3A	07/22/98	5:27 PM	28.61	75	-	0	0	0.9	19.7	650	650	3	--
GMSG-3A	07/23/98	6:02 PM	28.7	66.9	-	0	0	0.9	19.6	250	250	3	--
GMSG-3A	07/24/98	5:52 PM	28.86	69.1	-	0	0	0.8	19.9	--	--	--	--
GMSG-3A	07/26/98	1:07 PM	28.77	80.1	-	0	0.1	0.7	19.8	70	70	3.5	--
GMSG-3A	07/27/98	6:00 PM	28.6	77	-	0	0.1	0.8	19.8	1500	1500	2	--
GMSG-3A	07/28/98	12:45 PM	28.47	78.1	-	0	0.1	1	19.3	1500	1500	2	--
GMSG-3A	07/29/98	11:20 AM	28.71	75	-	0	0.2	0.8	19.4	1200	1100	2	--
GMSG-3A	08/04/98	11:28 AM	28.92	75.9	-	0	0	0.6	19.9	300	300	2.5	--
GMSG-3A	08/05/98	1:45 PM	28.92	77	-	0	0	0.7	19.9	250	225	3.5	--
GMSG-3A	08/05/98	6:45 PM	28.9	72	-	0	0	0.9	19.7	--	--	--	--
GMSG-3A	08/06/98	7:38 AM	28.84	66.9	T	0.01	--	--	--	--	--	--	--
GMSG-3A	08/07/98	10:08 AM	28.79	69.1	-	0	0	0.9	19.5	45	45	5.5	--
GMSG-3A	08/09/98	7:49 AM	28.83	73	-	0	0	0.9	19.5	20	15	2	--
GMSG-3A	08/10/98	8:05 AM	28.73	66.9	-	0	0	0.6	20.4	<2.5	<2.5	2.5	--
GMSG-3A	08/11/98	4:00 PM	28.92	73	-	0	0	0.4	20.6	3	3	4	--
GMSG-3A	08/12/98	10:00 AM	29	66.9	-	0	7.6	0	19.3	--	--	--	--
GMSG-3A	08/13/98	10:00 AM	28.87	75	-	0	0	0.6	20.4	60	--	1.7	--
GMSG-3A	08/14/98	10:00 AM	28.61	75.9	-	0	0	0.5	20.3	2.7	2.7	5	--
GMSG-3A	08/15/98	10:00 AM	28.77	69.1	-	0	0	0.5	20.6	2.4	2.4	5	--
GMSG-3A	08/16/98	10:00 AM	28.81	71.1	-	0	0	0.6	20.5	1	1	3	--
GMSG-3A	08/17/98	10:00 AM	28.68	73.9	-	0	0	0.5	20.2	1.6	1.6	4	--
GMSG-3A	08/18/98	10:00 AM	29.02	62.1	-	0	0	0.5	20.7	1.6	1.6	3.5	--
GMSG-3A	08/19/98	10:00 AM	29.01	63	T	0	0	0.6	20.3	1	1	3.1	--
GMSG-3A	08/20/98	10:00 AM	28.85	75	0.03	0	0	0.6	20.4	1	1	3.5	--
GMSG-3A	08/21/98	11:10 AM	28.98	75	-	0	0	0.6	20.4	1.6	1.6	3.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3A	08/22/98	10:00 AM	28.89	66	-	0	0	0.6	20.4	1	1	3	--
GMSG-3A	08/23/98	10:00 AM	28.48	75	-	0	0	0.5	20.5	<1	<1	<1	--
GMSG-3A	08/24/98	10:00 AM	28.42	75	-	0	0	0.6	20.5	<2.25	<2.25	2.25	--
GMSG-3A	08/25/98	10:00 AM	28.59	72	-	0	0	0.6	20.5	<2	<2	2	--
GMSG-3A	08/26/98	10:36 AM	28.78	79	-	0.01	0	0.4	21.3	8.5	8.5	12	--
GMSG-3A	08/26/98	2:44 PM	28.75	82.9	-	0.01	0	0.4	21.4	20	10	10	--
GMSG-3A	08/27/98	9:55 AM	28.84	79	-	0.01	0	0.6	20.8	<1	<1	2.5	--
GMSG-3A	08/28/98	9:56 AM	28.68	75	-	0.01	0	0.6	20.4	<1	<1	2.25	--
GMSG-3A	08/29/98	10:06 AM	28.65	73	-	0.01	0	0.4	20.8	<1	<1	2.5	--
GMSG-3A	08/30/98	10:04 AM	28.74	72	-	-0.01	0	0.5	20.7	<1	<1	2.25	--
GMSG-3A	08/31/98	10:25 AM	28.85	71.1	-	0.02	0	0.5	20.7	<1	<1	2.5	--
GMSG-3A	09/01/98	12:02 PM	28.57	71.1	T	-0.02	0	0.6	20.4	5	<1	2	--
GMSG-3A	09/02/98	10:50 AM	28.54	61	-	-0.01	0	0.6	20.3	2.25	1	2.25	--
GMSG-3A	09/03/98	11:00 AM	28.57	68	-	0	0	0.6	20	1	1	3.2	--
GMSG-3A	09/04/98	10:03 AM	28.74	71.1	-	0	0	0.7	20.2	40	30	2	--
GMSG-3A	09/09/98	10:10 AM	28.95	62.1	-	0	0	0.5	20.3	1.5	1.5	2.5	--
GMSG-3A	09/11/98	9:56 AM	28.62	84	-	0	0	0.5	20.8	<3.5	<3.5	3.5	--
GMSG-3A	09/14/98	10:33 AM	28.61	66.9	T	0	0	0.5	20.4	10	8	2.5	--
GMSG-3A	09/21/98	1:10 PM	28.76	55	-	0	0	0.6	20.5	1	1	2.5	--
GMSG-3A	09/22/98	10:00 AM	28.89	53.1	-	0	0	0.6	20.2	25	20	3.5	--
GMSG-3A	09/23/98	10:20 AM	28.92	57.9	-	0	0	0.6	20.2	<3	<3	3	--
GMSG-3A	09/23/98	3:32 PM	28.77	66	-	0	0	0.5	20.7	20	2.25	2	--
GMSG-3A	09/28/98	10:35 AM	28.76	64.9	-	0	0	0.5	20.7	<4	<4	4	--
GMSG-3A	10/07/98	10:16 AM	28.65	53.1	-	-0.01	0	0.6	20	<4.5	<4.5	4.5	--
GMSG-3A	10/14/98	8:01 AM	28.87	39	-	-0.61	0	0.6	19.9	<3	<3	3	--
GMSG-3A	10/24/98	1:46 PM	28.76	72	-	0	0	0.4	20.6	2.5	2.5	2.5	--
GMSG-3A	10/27/98	8:30 AM	28.77	51.1	-	0	0	0.5	20.1	<3	<3	3	--
GMSG-3A	12/16/98	2:20 PM	28.64	34	-	0	0	0.4	19.7	2.25	2	0	--
GMSG-3A	01/20/99	12:10 PM	28.63	28.9	-	0	0	0.3	21.8	2	2	2	--
GMSG-3A	02/10/99	10:20 AM	28.86	28	-	0.01	0	0.3	19.4	2.5	2.5	3	--
GMSG-3A	03/13/99	11:32 AM	29.09	35.1	-	0	0	0.3	20.4	<1	<1	1	--
GMSG-3A	04/13/99	8:33 AM	28.95	48	-	-0.16	0	0.3	19.5	0	0	3	--
GMSG-3A	10/09/99	1:56 PM	28.69	71.1	-	-3.23	0	0.8	19.9	1.5	1.5	1.5	--
GMSG-3A	01/19/00	3:40 PM	28.58	16	T	-0.13	0	0	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3A	04/18/00	9:38 AM	28.71	40	-	0.14	0	0.2	18.1	14.01	12.39	12.01	--
GMSG-3A	07/22/00	7:40 AM	28.9	55	-	0	0	0.4	18.8	6	6	4	--
GMSG-3A	10/20/00	9:26 AM	28.6	65	-	-0.16	0	0.8	19.2	25.57	25.5	0.25	--
GMSG-3A	01/26/01	1:45 PM	28.48	20	0.02	0.28	0	0.3	19.7	44.2	2.69	0.3	--
GMSG-3A	04/23/01	8:27 AM	28.39	60	-	0.02	0	0.1	19.2	13.78	2.5	-1	--
GMSG-3A	07/11/01	9:45 AM	28.82	70	-	0	0	0.3	19.9	0	0	0	--
GMSG-3A	09/20/01	1:25 PM	28.63	67	-	0.2	0	0.5	20.3	17	0	0	--
GMSG-3A	02/16/02	9:29 AM	28.52	32	-	-0.13	0	0	20.7	1.4	--	-1.17	--
GMSG-3B	09/16/97	1:50 PM	--	--	--	1.6	49.4	0.1	0	--	--	--	--
GMSG-3B	09/16/97	6:35 PM	--	--	--	1.85	49.1	0.1	0	--	--	--	--
GMSG-3B	09/17/97	8:29 AM	--	--	--	0.65	42.1	0	0	--	--	--	--
GMSG-3B	09/17/97	1:56 PM	--	--	--	-0.38	37.9	0	2.6	--	--	--	--
GMSG-3B	09/17/97	6:46 PM	--	--	--	-0.65	32.9	0	1.6	--	--	--	--
GMSG-3B	09/18/97	7:18 AM	--	--	--	0	33.4	0	5.6	--	--	--	--
GMSG-3B	09/18/97	6:48 PM	--	--	--	0.88	36.5	0	2.5	--	--	--	--
GMSG-3B	09/22/97	12:25 PM	--	--	--	0.65	15.7	0.1	12.5	--	--	--	--
GMSG-3B	09/22/97	5:28 PM	--	--	--	0.4	40.9	0	0.2	--	--	--	--
GMSG-3B	09/23/97	8:01 AM	--	--	--	-1.1	41.6	0	1.7	--	--	--	--
GMSG-3B	09/23/97	6:03 PM	--	--	--	0.01	38.2	0	1.9	--	--	--	--
GMSG-3B	09/24/97	8:03 AM	--	--	--	0.97	45.3	0.1	0	--	--	--	--
GMSG-3B	09/24/97	6:35 PM	--	--	--	2	43.3	0	0.1	--	--	--	--
GMSG-3B	09/25/97	8:06 AM	--	--	--	-0.26	42.1	0	0	--	--	--	--
GMSG-3B	09/25/97	6:23 PM	--	--	--	-1.16	40.5	0	0.2	--	--	--	--
GMSG-3B	09/26/97	8:40 AM	--	--	--	-0.56	42.1	0	1.3	--	--	--	--
GMSG-3B	09/26/97	5:35 PM	--	--	--	0.4	44.3	0	0.2	--	--	--	--
GMSG-3B	09/27/97	8:26 AM	--	--	--	0.7	45.7	0.1	0.3	--	--	--	--
GMSG-3B	09/27/97	5:29 PM	--	--	--	1.15	44.8	0	0.3	--	--	--	--
GMSG-3B	09/28/97	8:33 AM	--	--	--	0.87	45	0	0	--	--	--	--
GMSG-3B	09/28/97	6:25 PM	--	--	--	0.82	43	0	0	--	--	--	--
GMSG-3B	09/29/97	8:29 AM	--	--	--	1.33	41	0	0.8	--	--	--	--
GMSG-3B	09/29/97	6:40 PM	--	--	--	-0.15	44.1	0	0	--	--	--	--
GMSG-3B	09/30/97	8:23 AM	--	--	--	-2.2	0	0	21.1	--	--	--	--
GMSG-3B	09/30/97	6:38 PM	--	--	--	-1.8	0	0	21.4	--	--	--	--
GMSG-3B	10/01/97	8:33 AM	28.94	44.1	-	-1	0	0.2	20.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3B	10/01/97	6:14 PM	28.8	46.9	-	0.6	0	0.1	21.1	--	--	--	--
GMSG-3B	10/02/97	7:03 AM	28.59	45	-	1.02	45	0.1	0.2	--	--	--	--
GMSG-3B	10/02/97	7:00 PM	28.49	59	-	0.34	43.9	0	0.2	--	--	--	--
GMSG-3B	10/03/97	7:47 AM	28.51	48.9	-	0	45.2	0	0	--	--	--	--
GMSG-3B	10/06/97	8:52 AM	--	--	--	-0.9	26.4	0.1	9	--	--	--	--
GMSG-3B	10/06/97	5:42 PM	--	--	--	-0.2	13.7	0.2	14.2	--	--	--	--
GMSG-3B	10/07/97	7:54 AM	0	55.9	-	-0.25	20.3	0.2	10.5	--	--	--	--
GMSG-3B	10/07/97	6:06 PM	28.79	59	-	0.43	27.7	0.1	6.6	--	--	--	--
GMSG-3B	10/08/97	7:44 AM	28.75	59	-	0.23	34.4	0	3.9	--	--	--	--
GMSG-3B	10/08/97	5:23 PM	0	73.9	-	0.85	39.7	0	1.4	--	--	--	--
GMSG-3B	10/09/97	7:37 AM	0	68	-	0.77	43.8	0	0.5	--	--	--	--
GMSG-3B	10/09/97	5:45 PM	28.72	51.1	-	-0.92	43.9	0	0.8	--	--	--	--
GMSG-3B	10/10/97	7:33 AM	29.08	43	-	-0.7	5.5	0	18	--	--	--	--
GMSG-3B	10/10/97	5:55 PM	29.06	50	-	0	6.9	0.2	17.3	--	--	--	--
GMSG-3B	10/11/97	7:53 AM	28.99	48.9	-	0.46	16.3	0.2	11.8	--	--	--	--
GMSG-3B	10/11/97	5:34 PM	28.76	60.1	-	1.37	32.6	0	3.7	--	--	--	--
GMSG-3B	10/12/97	7:32 AM	28.65	57.9	-	0.65	42.2	0	1	--	--	--	--
GMSG-3B	10/12/97	6:01 PM	28.48	61	0.04	2.85	44.2	0	0.5	--	--	--	--
GMSG-3B	10/13/97	7:40 AM	28.22	57.9	0.03	1.63	42.6	0.2	0	--	--	--	--
GMSG-3B	10/13/97	6:21 PM	28.52	43	T	-1.47	36.1	0.1	4.5	--	--	--	--
GMSG-3B	10/14/97	8:46 AM	28.71	36	-	-1.15	46.4	0.1	0	--	--	--	--
GMSG-3B	10/15/97	9:47 AM	29.09	46	-	-0.75	0	0.4	20.5	--	--	--	--
GMSG-3B	10/21/97	8:14 AM	28.71	33.1	T	0.47	5.1	0.2	18.2	--	--	--	--
GMSG-3B	10/22/97	8:38 AM	28.91	27	-	-0.3	16.4	0.2	12.8	--	--	--	--
GMSG-3B	10/22/97	5:51 PM	28.79	28.9	-	0.65	0	0	21.4	--	--	--	--
GMSG-3B	10/23/97	8:26 AM	28.72	24.1	-	0.36	0	0	20.6	--	--	--	--
GMSG-3B	10/23/97	6:18 PM	28.63	32	-	0.5	7.2	0	17.6	--	--	--	--
GMSG-3B	10/24/97	8:05 AM	28.74	28	-	-0.5	29.4	0.1	9.2	--	--	--	--
GMSG-3B	10/29/97	7:35 AM	28.64	34	-	-0.39	--	--	--	--	--	--	--
GMSG-3B	10/29/97	11:54 AM	28.62	45	-	-0.02	0.1	0	20.1	--	--	--	--
GMSG-3B	10/30/97	7:21 AM	28.61	35.1	-	0.7	11	0.1	15.3	--	--	--	--
GMSG-3B	10/30/97	4:39 PM	28.35	55.9	-	1.4	47.9	0	0	--	--	--	--
GMSG-3B	10/31/97	6:59 AM	28.29	43	-	0.36	47.6	0	0	--	--	--	--
GMSG-3B	11/13/97	7:30 AM	28.65	19.9	-	0.12	48	0.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3B	11/18/97	3:54 PM	28.6	30	-	-0.19	47.8	0.1	0	--	--	--	--
GMSG-3B	11/19/97	3:55 PM	28.62	26.1	-	0.4	44.5	0	0.9	--	--	--	--
GMSG-3B	11/20/97	4:55 PM	28.62	28.9	-	-0.08	47.7	0	0	--	--	--	--
GMSG-3B	11/21/97	9:24 AM	28.81	19.9	-	-0.65	47.4	0.1	0	--	--	--	--
GMSG-3B	12/02/97	9:20 AM	28.89	27	-	1	46.9	0	0	--	--	--	--
GMSG-3B	12/12/97	10:10 AM	28.66	26	-	1.25	40.1	0.1	0	--	--	--	--
GMSG-3B	01/21/98	3:15 PM	28.97	22	-	0.12	27	0.2	9.4	--	--	--	--
GMSG-3B	01/22/98	7:35 AM	29.03	14	T	-0.21	25.1	0.3	9.6	--	--	--	--
GMSG-3B	02/18/98	3:47 PM	28.49	35.1	-	-0.14	34.3	0.3	5.1	--	--	--	--
GMSG-3B	02/19/98	7:41 AM	28.59	32	-	-0.44	1.6	0.5	19.6	--	--	--	--
GMSG-3B	03/30/98	2:10 PM	28.38	39.9	0.01	-0.5	5.4	0.1	17.9	--	--	--	--
GMSG-3B	03/31/98	8:02 AM	28.49	34	T	-0.32	4.1	0.2	18.8	--	--	--	--
GMSG-3B	04/14/98	3:12 PM	28.45	59	-	-0.12	42	0.1	0.5	--	--	--	--
GMSG-3B	04/15/98	5:25 PM	28.61	45	-	0.55	43.5	0.2	0.1	--	--	--	--
GMSG-3B	04/16/98	8:06 AM	28.48	30.9	0.01	0.85	44.5	0.2	0	--	--	--	--
GMSG-3B	04/16/98	3:04 PM	28.43	34	T	0.85	44.7	0.1	0	--	--	--	--
GMSG-3B	04/17/98	7:45 AM	28.55	37	-	-0.41	42.7	0.1	0.9	--	--	--	--
GMSG-3B	04/30/98	3:56 PM	28.58	70	-	1.05	41.6	0.1	0	--	--	--	--
GMSG-3B	05/01/98	7:39 AM	28.48	54	-	0.42	42.5	0	0	--	--	--	--
GMSG-3B	05/07/98	3:08 PM	28.52	66.9	T	0.55	17.7	0.6	11.9	--	--	--	--
GMSG-3B	05/08/98	8:02 AM	28.65	54	-	-0.55	32.5	0.5	20.9	--	--	--	--
GMSG-3B	05/14/98	3:22 PM	28.73	79	-	0.53	9.9	0.7	14.7	--	--	--	--
GMSG-3B	05/15/98	7:19 AM	28.68	61	-	0.04	38.6	0.4	0	--	--	--	--
GMSG-3B	05/20/98	4:03 PM	28.74	70	-	0.13	15.9	0.8	11.3	--	--	--	--
GMSG-3B	05/21/98	7:35 AM	28.84	52	-	-0.6	2.7	1.1	17.9	--	--	--	--
GMSG-3B	05/28/98	3:41 PM	28.49	86	-	0.15	33.5	0.3	1.2	--	--	--	--
GMSG-3B	05/29/98	9:32 AM	28.62	73.9	-	-0.19	31.3	0.4	3.1	--	--	--	--
GMSG-3B	06/02/98	6:56 PM	28.52	50	-	-0.8	1.3	0.9	18.7	--	--	--	--
GMSG-3B	06/05/98	8:23 AM	28.76	48	-	-0.1	2.3	0.9	18.7	--	--	--	--
GMSG-3B	06/11/98	10:38 AM	28.57	59	-	0.5	27.4	0.6	3.5	--	--	--	--
GMSG-3B	06/12/98	8:25 AM	28.28	60.1	-	-0.6	36.5	0.3	0	--	--	--	--
GMSG-3B	06/13/98	7:38 AM	28.53	63	-	-0.6	7.8	1	14.2	--	--	--	--
GMSG-3B	06/14/98	10:54 AM	28.45	75.9	-	0.5	3.3	0.8	17.6	--	--	--	--
GMSG-3B	06/15/98	8:57 AM	28.32	75	-	0.5	38.6	0.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3B	06/16/98	5:44 PM	28.51	73.9	-	-0.55	0	0	20.8	--	--	--	--
GMSG-3B	06/17/98	1:06 PM	28.75	80.1	-	-0.64	0	0.9	19.8	--	--	--	--
GMSG-3B	06/22/98	3:24 PM	28.68	82	-	0.24	0.3	0.9	19	--	--	--	--
GMSG-3B	06/23/98	8:18 AM	28.83	66.9	-	-0.47	25.2	0.7	6.5	--	--	--	--
GMSG-3B	06/24/98	1:22 PM	28.59	78.1	-	1.15	37.2	0.4	0	--	--	--	--
GMSG-3B	06/26/98	3:07 PM	--	--	--	-0.12	23.5	0.8	5.9	--	--	--	--
GMSG-3B	06/27/98	12:59 PM	28.62	72	-	-0.25	9.9	0.9	14.7	--	--	--	--
GMSG-3B	06/28/98	11:11 AM	28.56	78.1	-	0.1	39.1	0.3	0	--	--	--	--
GMSG-3B	07/06/98	5:21 PM	28.77	64.9	0.02	-0.59	30.2	0.7	2.8	--	--	--	--
GMSG-3B	07/07/98	7:29 AM	28.76	57.9	0.01	-0.75	6	1	15.3	--	--	--	--
GMSG-3B	07/08/98	6:48 PM	28.73	73.9	-	0.21	17.1	0.8	10.9	>10000	>10000	3.5	--
GMSG-3B	07/09/98	4:36 PM	28.78	75	-	-0.11	17.6	0.9	7.9	--	--	--	--
GMSG-3B	07/10/98	11:37 AM	28.93	72	-	-0.2	0	0	17	--	--	--	--
GMSG-3B	07/10/98	3:21 PM	28.89	75.9	-	0.14	14.4	0.5	12.6	--	--	--	--
GMSG-3B	07/11/98	10:40 AM	28.87	77	-	0.1	16	10.7	10.7	--	--	--	--
GMSG-3B	07/11/98	6:52 PM	28.76	75.9	-	0.8	37.2	0.1	0	--	--	--	--
GMSG-3B	07/12/98	9:20 AM	28.72	78.1	-	0.23	36.7	0.3	0	--	--	--	--
GMSG-3B	07/13/98	9:54 AM	28.61	82	-	0.2	26.9	0.2	4.6	--	--	--	--
GMSG-3B	07/14/98	11:21 AM	28.69	75	T	0	0	0	17.1	--	--	--	--
GMSG-3B	07/14/98	6:55 PM	28.73	69.1	-	0.17	27	0.2	3.9	--	--	--	--
GMSG-3B	07/15/98	10:25 AM	28.66	75	-	-0.13	33.9	0.5	0	--	--	--	--
GMSG-3B	07/21/98	5:33 PM	28.59	79	-	-0.6	19.4	0.4	7.8	--	--	--	--
GMSG-3B	07/22/98	5:30 PM	28.61	75	-	0.67	35.6	0.2	0	--	--	--	--
GMSG-3B	07/23/98	6:04 PM	28.7	66.9	-	-0.31	34.6	0.6	0.2	--	--	--	--
GMSG-3B	07/24/98	5:55 PM	28.86	69.1	-	-0.16	0.2	1	19.5	--	--	--	--
GMSG-3B	07/26/98	1:12 PM	28.77	80.1	-	1.12	36.6	0.3	0	--	--	--	--
GMSG-3B	07/27/98	6:05 PM	28.6	77	-	0.22	36	0.3	0	--	--	--	--
GMSG-3B	07/28/98	12:50 PM	28.47	78.1	-	-0.61	37	0.3	0	--	--	--	--
GMSG-3B	07/29/98	11:22 AM	28.71	75	-	-0.48	30.6	0.3	2.6	--	--	--	--
GMSG-3B	08/04/98	11:33 AM	28.93	75.9	-	-0.26	18.4	0.8	8.5	--	--	--	--
GMSG-3B	08/05/98	1:57 PM	28.92	77	-	0.09	34.1	0.4	0	>10000	>10000	3.5	--
GMSG-3B	08/05/98	6:57 PM	28.9	72	-	-3.81	25.6	0.7	4	--	--	--	--
GMSG-3B	08/06/98	7:39 AM	28.84	66.9	T	-8.38	--	--	--	--	--	--	--
GMSG-3B	08/06/98	9:12 AM	28.85	64.9	0.04	--	31.8	0.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3B	08/07/98	10:29 AM	28.79	69.1	-	-9.08	23.9	0.5	0.3	--	--	--	--
GMSG-3B	08/07/98	6:40 PM	28.78	73	-	-8.88	22.3	0.6	0.2	--	--	--	--
GMSG-3B	08/08/98	11:06 AM	28.82	75.9	-	-9.23	18.8	0.7	0	--	--	--	--
GMSG-3B	08/09/98	8:35 AM	28.81	77	-	-8.96	13.1	0.9	0.6	--	--	--	--
GMSG-3B	08/10/98	8:48 AM	28.73	72	-	-9.03	8.4	0.9	3.9	--	--	--	--
GMSG-3B	08/11/98	4:28 PM	28.92	73	-	-8.93	3.2	1.3	3.9	--	--	--	--
GMSG-3B	08/12/98	10:10 AM	29	66.9	-	-8.6	1.2	1.7	3.8	--	--	--	--
GMSG-3B	08/13/98	10:23 AM	28.87	75	-	-7.98	1.6	2.1	5.1	--	--	--	--
GMSG-3B	08/14/98	10:07 AM	28.61	75.9	-	-6.79	0	0	22.6	25	6	4	--
GMSG-3B	08/15/98	10:07 AM	28.77	69.1	-	-8.14	0	0	22.7	15	11	4	--
GMSG-3B	08/16/98	10:07 AM	28.81	71.1	-	-7.4	0	0	22.8	4	4	4	--
GMSG-3B	08/17/98	10:07 AM	28.68	73.9	-	-7.95	0	0	22.5	12	6	4	--
GMSG-3B	08/18/98	10:07 AM	29.02	62.1	-	-8.06	0	0	22.8	7	6	3.5	--
GMSG-3B	08/19/98	10:07 AM	29.01	63	T	-7.26	0	0	22.4	3.5	3.5	3.5	--
GMSG-3B	08/20/98	10:12 AM	28.85	75	0.03	-7.38	0	0	22.3	7.5	6.5	4	--
GMSG-3B	08/21/98	11:20 AM	28.98	75	-	-6.88	0	0	22.3	6	5	3	--
GMSG-3B	08/22/98	10:08 AM	28.89	66	-	-7.27	0	0	22.4	11	6	3	--
GMSG-3B	08/23/98	10:02 AM	28.48	75	-	-6.68	0	0	22.3	2.5	2.5	<1	--
GMSG-3B	08/24/98	10:06 AM	28.42	75	-	-7.22	0	0	22.6	4	4	2.25	--
GMSG-3B	08/25/98	10:06 AM	28.59	72	-	-7.58	0	0	22.4	6.5	6.5	3	--
GMSG-3B	08/26/98	11:28 AM	28.78	79	-	-7.44	0	0	22.2	11	10	10	--
GMSG-3B	08/26/98	2:48 PM	28.75	82.9	-	-4.82	0	0.4	21.5	9.5	8.5	9.5	--
GMSG-3B	08/26/98	4:55 PM	28.78	81	-	--	0	0	21.8	30	30	4.5	--
GMSG-3B	08/27/98	9:59 AM	28.84	79	-	-0.75	0	0.6	20.9	12	10	2.5	--
GMSG-3B	08/28/98	10:05 AM	28.68	75	-	-0.27	0	0.4	19.5	225	225	2.25	--
GMSG-3B	08/29/98	10:11 AM	28.65	73	-	-0.41	0	0.3	17.9	275	275	2.25	--
GMSG-3B	08/30/98	10:15 AM	28.74	72	-	-0.41	0	0.7	17.5	225	225	2.25	--
GMSG-3B	08/31/98	10:33 AM	28.85	72	-	-0.45	0	1	17.1	125	125	2.5	--
GMSG-3B	09/01/98	11:56 AM	28.57	71.1	T	0.63	0.1	1.3	15.8	>10000	>10000	2	--
GMSG-3B	09/02/98	11:00 AM	28.54	61	-	-0.13	0.9	0.7	12.7	9000	1	2.25	--
GMSG-3B	09/03/98	11:10 AM	28.57	68	-	-0.44	0.2	1.2	16	350	350	2	--
GMSG-3B	09/04/98	10:13 AM	28.74	71.1	-	-0.66	0	1.5	16.5	140	140	2	--
GMSG-3B	09/09/98	10:17 AM	28.95	62.1	-	-0.49	0	1.7	16.2	50	50	2.5	--
GMSG-3B	09/10/98	5:45 PM	28.65	77	-	0.9	1.2	1	11	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3B	09/11/98	10:02 AM	28.62	84	-	0.12	0	1.3	16.1	1500	1500	3.5	--
GMSG-3B	09/12/98	4:59 PM	28.69	77	-	0.27	0	0	21.2	--	--	--	--
GMSG-3B	09/14/98	10:41 AM	28.61	66.9	T	0.07	0.4	1.1	12.6	--	--	--	--
GMSG-3B	09/16/98	10:21 AM	28.94	66.9	-	-0.25	0	1.8	15.5	100	100	2	--
GMSG-3B	09/21/98	1:17 PM	28.76	55	-	-1.21	0	1.7	15.9	45	45	2.5	--
GMSG-3B	09/22/98	10:05 AM	28.89	53.1	-	-0.63	0	1.8	15.7	55	55	3.5	--
GMSG-3B	09/23/98	10:26 AM	28.92	57.9	-	0.09	0	1.8	15.5	200	200	2	--
GMSG-3B	09/28/98	10:42 AM	28.76	64.9	-	-0.5	0	1.8	15.8	35	35	4	--
GMSG-3B	10/07/98	10:25 AM	28.65	53.1	-	-0.66	0	1.8	14.6	625	625	4.5	--
GMSG-3B	10/14/98	8:08 AM	28.87	39	-	-0.6	0	2	14.6	2.5	2.5	2.5	--
GMSG-3B	10/24/98	1:52 PM	28.76	72	-	0.62	0.7	1.2	6.2	--	--	--	--
GMSG-3B	10/27/98	8:49 AM	28.77	51.1	-	--	0	1.8	13.4	2250	2250	3	--
GMSG-3B	11/17/98	9:01 AM	28.81	30.9	-	-1.06	0	0.2	19.7	17.5	11	10	--
GMSG-3B	12/16/98	2:27 PM	28.64	34	-	0.68	0.5	1.6	7.9	--	--	--	--
GMSG-3B	01/20/99	12:00 PM	28.63	28.9	-	-0.17	0	0.7	19.8	1000	--	2.5	--
GMSG-3B	02/10/99	10:35 AM	28.83	30.9	-	0	0	1.7	12.1	50	--	3	--
GMSG-3B	03/13/99	11:40 AM	29.09	35.1	-	0.06	0	2	12.9	50	--	1	--
GMSG-3B	04/13/99	8:40 AM	28.95	48	-	0.37	0.1	2	10.3	--	--	--	--
GMSG-3B	07/26/99	4:38 PM	28.67	82.9	-	0.03	1.3	2	0	--	--	--	--
GMSG-3B	10/09/99	1:46 PM	28.69	71.1	-	0.61	0	0.3	20.7	4.5	2.5	1.25	--
GMSG-3B	01/19/00	3:15 PM	28.59	16	T	0.69	0.9	2.8	1.3	<1	<1	<1	--
GMSG-3B	04/18/00	9:30 AM	28.71	40	-	0.12	0.2	1.6	7.1	>10000	--	12.16	--
GMSG-3B	07/22/00	7:42 AM	28.9	55	-	-0.81	0	0.6	18.8	4	4	4	--
GMSG-3B	10/20/00	9:31 AM	28.61	67	-	0.27	3	1.4	0	--	--	--	--
GMSG-3B	01/26/01	1:35 PM	28.48	20	0.02	0.35	3.1	1.8	0	--	--	--	--
GMSG-3B	04/23/01	8:24 AM	28.39	60	-	1.7	1.9	1.4	3.7	--	--	--	--
GMSG-3B	07/11/01	9:42 AM	28.82	70	-	-0.14	0	0.6	19.9	0	0	0	--
GMSG-3B	09/20/01	1:28 PM	28.63	67	-	0	0	0.3	20.4	100.2	0	0	--
GMSG-3B	09/25/01	4:07 PM	28.86	56	-	-10.8	0	0.2	20.7	0	0	0	--
GMSG-3B	10/02/01	3:25 PM	28.57	70	-	-6.89	0	0.2	20.8	4.43	4.36	4.3	--
GMSG-3B	10/10/01	9:35 AM	28.57	59	-	-6.94	0	0.2	19.2	0	0	0	--
GMSG-3B	10/18/01	9:15 AM	28.6	43	-	-6.84	0	0.1	18.8	0.4	0	0.6	--
GMSG-3B	10/23/01	11:10 AM	28.21	52	-	-6.17	0	0.1	20.5	-0.1	-1.15	0.01	--
GMSG-3B	11/02/01	1:20 PM	28.68	50	-	-1.21	0	0.3	20.6	0.56	-1.19	0.56	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-3B	11/07/01	9:21 AM	29.04	40	-	-0.57	0	0.3	20.5	-0.33	-1.47	-0.33	--
GMSG-3B	11/13/01	1:50 PM	28.75	48	-	0.9	0	1	17.4	7	6.6	-0.2	--
GMSG-3B	02/16/02	9:23 AM	28.52	32	-	-0.8	0	0.5	19.7	-0.97	-2.14	-1.17	--
GMSG-3B	05/15/02	8:30 AM	28.73	50	-	0.72	0	1	17.9	-1.2	-2.3	-1.2	--
GMSG-3B	10/11/02	10:06 AM	28.92	61	-	0	0	0.5	17.3	0	0	0	--
GMSG-3B	01/07/03	10:34 AM	28.44	34	-	1.9	0	1	10.8	0	0	0	--
GMSG-3B	04/01/03	1:30 PM	28.51	48	-	0.3	--	--	--	--	--	--	--
GMSG-3B	07/21/03	8:50 AM	28.56	61	-	0	0	0.7	9.8	0	0	0	--
GMSG-3B	10/10/03	11:46 AM	28.83	73	-	0	0	0.4	15.7	1.58	0	0	--
GMSG-3B	01/28/04	12:30 PM	28.64	11	-	--	0	0	19.2	0.03	0.12	0.12	--
GMSG-3B	04/20/04	1:45 PM	28.72	43	-	0	0	1	10.5	0	0	0	--
GMSG-3B	06/05/04	12:06 PM	28.76	72	-	0.8	0	1.2	9	--	--	--	--
GMSG-3B	06/05/04	2:47 PM	28.73	66	T	-0.8	0	0.9	16.2	--	--	--	--
GMSG-3B	06/07/04	7:50 AM	28.66	69	-	-3.7	0	0.2	19.7	--	--	--	--
GMSG-3B	06/08/04	9:05 AM	28.66	80	-	-1.8	0	0	19.7	--	--	--	--
GMSG-3B	07/08/04	5:12 PM	28.76	65	-	-0.467	0	0.3	19.4	34.59	30.22	2.62	--
GMSG-3B	10/08/04	2:02 PM	28.56	67	-	0.9	0	0.4	17.4	0.53	0	-1.11	--
GMSG-3B	01/14/05	12:29 PM	29.22	12	-	-0.6	0	0	20.3	7.11	5.4	0	--
GMSG-3B	04/11/05	12:05 PM	28.92	54	-	-3.4	0	0	20	--	--	--	--
GMSG-3B	07/21/05	9:19 AM	28.83	77	-	-0.1	0	0.1	19.3	--	--	--	--
GMSG-3B	10/18/05	10:07 AM	28.64	51	-	-0.6	0	0	19.9	--	--	--	--
GMSG-3B	03/07/06	3:06 PM	28.85	37	-	1.4	0	0.4	18.3	--	--	--	--
GMSG-3B	04/14/06	10:40 AM	28.34	70	-	1	0	0.8	18	--	--	--	--
GMSG-3B	07/12/06	11:21 AM	28.83	81	-	0	0	0.1	18.5	--	--	--	--
GMSG-3B	10/23/06	11:05 AM	28.71	39	-	0	0	0.4	19.8	--	--	--	--
GMSG-3B	01/29/07	12:08 PM	28.55	10	T	0	0	0.5	19.3	--	--	--	--
GMSG-3B	04/16/07	11:11 AM	28.85	56	-	0	0	0.1	20.3	--	--	--	--
GMSG-3B	07/13/07	11:27 AM	30.03	67	-	0	0	0.3	19.4	--	--	--	--
GMSG-3B	10/15/07	1:47 PM	30.11	48	-	0	0	0.6	18.9	--	--	--	--
GMSG-4A	09/13/97	5:45 PM	28.82	66	-	0.01	0	0.2	20.4	--	--	--	--
GMSG-4A	09/14/97	8:05 AM	28.87	64	-	0	0	0.8	20.2	--	--	--	--
GMSG-4A	09/14/97	2:36 PM	28.81	80.1	-	0	0	0.9	20	--	--	--	--
GMSG-4A	09/15/97	8:59 AM	--	--	--	0	0	1	20.1	--	--	--	--
GMSG-4A	09/15/97	6:50 PM	--	--	--	0	0	0.9	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4A	09/16/97	8:04 AM	--	--	--	0	0	1	20.3	--	--	--	--
GMSG-4A	09/16/97	4:01 PM	--	--	--	0	0	1.1	19.6	--	--	--	--
GMSG-4A	09/16/97	6:42 PM	--	--	--	0.01	0	0.1	19.8	--	--	--	--
GMSG-4A	09/17/97	8:22 AM	--	--	--	0	0	1.1	20.1	--	--	--	--
GMSG-4A	09/17/97	6:21 PM	--	--	--	-0.04	0	1	20.1	--	--	--	--
GMSG-4A	09/18/97	7:37 AM	--	--	--	0	0	1.1	20.2	--	--	--	--
GMSG-4A	09/18/97	7:03 PM	--	--	--	0	0	0.9	20.1	--	--	--	--
GMSG-4A	09/22/97	12:50 PM	--	--	--	0	0	0.7	20.3	--	--	--	--
GMSG-4A	09/22/97	5:45 PM	--	--	--	0	0	0.9	20.9	--	--	--	--
GMSG-4A	09/23/97	8:29 AM	--	--	--	0	0	0	21.2	--	--	--	--
GMSG-4A	09/23/97	6:24 PM	--	--	--	0	0	0.2	20.7	--	--	--	--
GMSG-4A	09/24/97	8:27 AM	--	--	--	0	0	1	20.2	--	--	--	--
GMSG-4A	09/24/97	6:57 PM	--	--	--	0	0	1	20.3	--	--	--	--
GMSG-4A	09/25/97	8:15 AM	--	--	--	0	0	1	20.1	--	--	--	--
GMSG-4A	09/25/97	6:47 PM	--	--	--	0	0	1	20.4	--	--	--	--
GMSG-4A	09/26/97	8:15 AM	--	--	--	0	0	1.1	20	--	--	--	--
GMSG-4A	09/26/97	6:06 PM	--	--	--	0	0	1	20.4	--	--	--	--
GMSG-4A	09/27/97	8:46 AM	--	--	--	0.02	0	0	21.2	--	--	--	--
GMSG-4A	09/27/97	5:49 PM	--	--	--	0	0	0.9	20.4	--	--	--	--
GMSG-4A	09/28/97	8:11 AM	--	--	--	0	0	1	20.1	--	--	--	--
GMSG-4A	09/29/97	8:20 AM	--	--	--	0	0	1	20.2	--	--	--	--
GMSG-4A	09/29/97	7:19 PM	--	--	--	0	0	1.2	19.8	--	--	--	--
GMSG-4A	09/30/97	9:10 AM	--	--	--	0	0	1.1	20.1	--	--	--	--
GMSG-4A	09/30/97	6:47 PM	--	--	--	0	0	1.1	20.4	--	--	--	--
GMSG-4A	10/01/97	9:34 AM	28.93	45	-	0	0	1.1	20.7	--	--	--	--
GMSG-4A	10/01/97	6:48 PM	28.78	43	-	0	0	1.1	20.5	--	--	--	--
GMSG-4A	10/02/97	7:42 AM	28.57	50	-	0	0	1.1	20.4	--	--	--	--
GMSG-4A	10/02/97	6:50 PM	28.49	59	-	0	0	1	20.3	--	--	--	--
GMSG-4A	10/03/97	7:54 AM	28.51	48.9	-	0	0	1.1	20.3	--	--	--	--
GMSG-4A	10/06/97	9:41 AM	--	--	--	0	0	0.9	20.5	--	--	--	--
GMSG-4A	10/06/97	6:20 PM	--	--	--	-0.05	0	1.1	20.3	--	--	--	--
GMSG-4A	10/07/97	8:27 AM	0	55.9	-	0	0	1.1	20.8	--	--	--	--
GMSG-4A	10/07/97	6:29 PM	28.79	59	-	0	0	1.1	19.8	--	--	--	--
GMSG-4A	10/08/97	8:07 AM	28.75	59	-	0	0	1	15.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4A	10/08/97	5:43 PM	0	72	-	0	0	0.9	20.5	--	--	--	--
GMSG-4A	10/09/97	7:58 AM	0	68	-	0	0	1	20.4	--	--	--	--
GMSG-4A	10/09/97	6:06 PM	28.72	51.1	-	0	0	1.1	20.4	--	--	--	--
GMSG-4A	10/10/97	7:54 AM	29.08	43	-	0	0	0.9	20.7	--	--	--	--
GMSG-4A	10/10/97	6:17 PM	29.06	50	-	0	0	1.1	20.4	--	--	--	--
GMSG-4A	10/11/97	8:18 AM	28.99	48.9	-	0	0	1.1	20.4	--	--	--	--
GMSG-4A	10/11/97	5:56 PM	28.76	60.1	-	0	0	1	20.2	--	--	--	--
GMSG-4A	10/12/97	7:54 AM	28.65	57.9	-	0	0	1.1	20.5	--	--	--	--
GMSG-4A	10/12/97	6:23 PM	28.48	61	0.04	0	0	1	20.4	--	--	--	--
GMSG-4A	10/13/97	8:05 AM	28.22	57.9	0.03	0	0	1	20.4	--	--	--	--
GMSG-4A	10/13/97	6:11 PM	28.52	43	T	0	0	1.1	20.3	--	--	--	--
GMSG-4A	10/14/97	8:44 AM	28.71	36	-	0	0	1.2	20.2	--	--	--	--
GMSG-4A	10/15/97	9:10 AM	29.08	42.1	-	0	0	1.2	19.9	--	--	--	--
GMSG-4A	10/21/97	8:18 AM	28.71	33.1	T	0	0	1.2	20.3	--	--	--	--
GMSG-4A	10/22/97	8:21 AM	28.91	27	-	0	0	1.1	20.4	--	--	--	--
GMSG-4A	10/22/97	6:30 PM	28.79	28.9	-	0	0	0	21.8	--	--	--	--
GMSG-4A	10/23/97	8:09 AM	28.72	24.1	-	0	0	0	20.7	--	--	--	--
GMSG-4A	10/23/97	6:04 PM	28.63	32	-	0	0	0.1	20.7	--	--	--	--
GMSG-4A	10/24/97	7:51 AM	28.74	28	-	0	0	0.9	19.9	--	--	--	--
GMSG-4A	10/29/97	7:23 AM	28.64	32	-	0	--	--	--	--	--	--	--
GMSG-4A	10/29/97	11:34 AM	28.62	45	-	0	0	0.3	18.9	--	--	--	--
GMSG-4A	10/30/97	7:02 AM	28.61	35.1	-	0	0	0.3	19.3	--	--	--	--
GMSG-4A	10/30/97	5:24 PM	28.35	55.9	-	0	0	0.3	19.6	--	--	--	--
GMSG-4A	10/31/97	6:40 AM	28.29	43	-	0	0	0.4	19.2	--	--	--	--
GMSG-4A	11/13/97	8:06 AM	28.65	19.9	-	0	0	1.4	18	--	--	--	--
GMSG-4A	11/18/97	4:37 PM	28.61	28	-	0	0	1.2	18.2	--	--	--	--
GMSG-4A	11/19/97	4:43 PM	28.61	21.9	-	0	0	1.2	18.4	--	--	--	--
GMSG-4A	11/20/97	5:40 PM	28.62	28.9	-	0	0	1.2	18.4	--	--	--	--
GMSG-4A	11/21/97	9:05 AM	28.81	19.9	-	0	0	1.1	18.8	--	--	--	--
GMSG-4A	12/02/97	9:30 AM	28.9	28	-	0	0	1.1	18	--	--	--	--
GMSG-4A	12/12/97	10:30 AM	28.61	28	-	0	0	1.1	19.6	--	--	--	--
GMSG-4A	01/21/98	4:15 PM	28.97	22	-	0	0.1	1	19.3	--	--	--	--
GMSG-4A	01/22/98	8:25 AM	29.03	14	T	0	0	1	19.3	--	--	--	--
GMSG-4A	02/18/98	4:30 PM	28.51	34	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4A	02/19/98	9:00 AM	28.6	33.1	-	--	--	--	--	--	--	--	--
GMSG-4A	03/30/98	3:09 PM	28.4	39	T	0.02	0	0.7	19.9	--	--	--	--
GMSG-4A	03/31/98	8:57 AM	28.48	34	T	0.02	0	0.4	20.2	--	--	--	--
GMSG-4A	04/14/98	4:00 PM	28.47	57.9	-	0.02	0	0.6	20.2	--	--	--	--
GMSG-4A	04/15/98	5:50 PM	28.61	41	-	0	0	0.7	20.1	--	--	--	--
GMSG-4A	04/16/98	8:43 AM	28.47	30.9	0.05	0	0	0.8	19.6	--	--	--	--
GMSG-4A	04/16/98	3:36 PM	28.47	34	-	0	0	0.8	19.9	--	--	--	--
GMSG-4A	04/17/98	8:20 AM	28.55	37	-	0	0	0.7	19.8	--	--	--	--
GMSG-4A	04/30/98	4:43 PM	28.58	69.1	-	0	0	0.7	20.1	--	--	--	--
GMSG-4A	05/01/98	8:30 AM	28.47	60.1	-	0	0	0.7	20	--	--	--	--
GMSG-4A	05/07/98	3:45 PM	28.53	69.1	-	0	0	1	20	--	--	--	--
GMSG-4A	05/08/98	8:48 AM	28.66	57.9	-	0	0	1.1	19.7	--	--	--	--
GMSG-4A	05/14/98	4:00 PM	28.72	77	-	0	0	0.9	19.6	--	--	--	--
GMSG-4A	05/15/98	7:57 AM	28.69	66.9	-	0	0	1	20	--	--	--	--
GMSG-4A	05/20/98	4:41 PM	28.73	69.1	-	0	0	0.9	20	--	--	--	--
GMSG-4A	05/21/98	8:09 AM	28.84	52	-	0	0	1.3	20	--	--	--	--
GMSG-4A	05/28/98	4:25 PM	28.49	86	-	0	0	0.8	19.8	--	--	--	--
GMSG-4A	05/29/98	10:10 AM	28.62	73.9	-	0	0	0.9	19.8	--	--	--	--
GMSG-4A	06/02/98	5:56 PM	28.5	52	-	0.2	0	1.1	20.1	--	--	--	--
GMSG-4A	06/05/98	9:00 AM	28.74	52	-	0.2	0	1.1	20.2	--	--	--	--
GMSG-4A	06/11/98	11:16 AM	28.57	59	-	0	0	1	20.2	--	--	--	--
GMSG-4A	06/12/98	9:04 AM	28.29	62.1	-	0	0	1.1	19.9	--	--	--	--
GMSG-4A	06/13/98	8:15 AM	28.53	63	-	0	0	0.8	20.1	--	--	--	--
GMSG-4A	06/14/98	11:32 AM	28.43	77	-	0.3	0	0.4	20.1	--	--	--	--
GMSG-4A	06/15/98	9:27 AM	28.32	75	-	0	0	1	19.9	--	--	--	--
GMSG-4A	06/16/98	6:06 PM	28.51	73.9	-	0.05	0	1	20.1	--	--	--	--
GMSG-4A	06/17/98	1:37 PM	28.73	80.1	-	0	0	0.9	19.7	--	--	--	--
GMSG-4A	06/22/98	4:00 PM	28.67	82.9	-	0	0	0.8	19.9	--	--	--	--
GMSG-4A	06/23/98	8:50 AM	28.83	69.1	-	0	0	1	19.9	--	--	--	--
GMSG-4A	06/24/98	2:01 PM	28.58	82	-	0.01	0	0.6	19.9	--	--	--	--
GMSG-4A	06/26/98	3:38 PM	--	--	--	0	0	0.9	19.6	--	--	--	--
GMSG-4A	06/27/98	12:36 PM	28.62	72	-	-0.01	0	0.9	19.7	<3.5	<3.5	3.5	--
GMSG-4A	06/28/98	11:56 AM	28.55	81	-	0	0	0.9	19.8	12	5.5	--	--
GMSG-4A	07/06/98	5:52 PM	28.78	64.9	0.02	0	0	1.1	19.7	25	9	3	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4A	07/07/98	8:08 AM	28.76	57.9	-	0	0	1.1	19.9	<3	<3	3	--
GMSG-4A	07/08/98	7:17 PM	28.73	73.9	-	0	0	1	19.6	60	18	3.5	--
GMSG-4A	07/09/98	5:10 PM	28.78	75	-	0	0	0.9	19.9	22	9	6.5	--
GMSG-4A	07/10/98	3:59 PM	28.89	75	-	0	0	0.7	20.5	--	--	--	--
GMSG-4A	07/11/98	7:17 PM	28.76	75.9	-	0	0	0.7	20.2	22	9	--	--
GMSG-4A	07/12/98	9:37 AM	28.72	80.1	-	0	0	1	19.6	16	9	--	--
GMSG-4A	07/14/98	6:36 PM	28.73	69.1	-	0	0	1.1	19.4	10	0	--	--
GMSG-4A	07/15/98	11:13 AM	28.65	73.9	-	0	0	1	19.7	--	--	--	--
GMSG-4A	07/21/98	6:20 PM	28.59	79	-	0	0	0.7	20.1	5.5	4.5	4	--
GMSG-4A	07/22/98	6:13 PM	28.61	75	-	0	0	0.9	19.9	12	5.5	1.5	--
GMSG-4A	07/23/98	6:44 PM	28.71	64.9	-	0	0	1	19.8	4	4	4	--
GMSG-4A	07/24/98	6:29 PM	28.86	69.1	-	0	0	1	19.8	--	--	--	--
GMSG-4A	07/26/98	1:56 PM	28.73	82	-	0	0	0.7	19.9	13	7	4	--
GMSG-4A	07/27/98	5:00 PM	28.59	79	-	0.01	0	1.1	19.5	80	5	3	--
GMSG-4A	07/28/98	1:35 PM	28.49	79	-	0	0.1	1	19.3	10	1	2	--
GMSG-4A	07/29/98	12:54 PM	28.69	78.1	-	0	0.1	0.8	19.7	2.5	2.5	2.5	--
GMSG-4A	08/04/98	12:38 PM	28.92	77	-	0	0	0.8	20	<3.5	<3.5	3.5	--
GMSG-4A	08/05/98	12:13 PM	28.94	73.9	-	0	0	0.8	19.8	50	22	2.5	--
GMSG-4A	08/05/98	7:06 PM	28.9	72	-	0	--	--	--	--	--	--	--
GMSG-4A	08/06/98	8:05 AM	28.84	66.9	T	0	--	--	--	--	--	--	--
GMSG-4A	08/07/98	11:44 AM	28.79	73	-	0	0	1.1	19.2	320	85	5.5	--
GMSG-4A	08/09/98	8:11 AM	28.83	73	-	0	0	1.1	19.3	<1.5	<1.5	1.5	--
GMSG-4A	08/10/98	8:29 AM	28.73	66.9	-	0	0	0.8	20.2	<1.5	<1.5	1.5	--
GMSG-4A	08/11/98	4:16 PM	28.92	73	-	0	0	0.8	20.5	<3	<3	3	--
GMSG-4A	08/12/98	12:12 PM	28.97	73.9	-	0	0	0.7	21.4	6	2	6	--
GMSG-4A	08/13/98	12:40 PM	28.82	79	-	0	0	0.7	21.3	1.7	1.7	4.5	--
GMSG-4A	08/14/98	12:00 PM	28.61	72	0.03	0	0	0.7	21	1.7	1.7	5	--
GMSG-4A	08/15/98	11:52 AM	28.78	71.1	-	0	0	0.7	21	1.7	1.7	4	--
GMSG-4A	08/16/98	11:58 AM	28.8	75	-	0	0	0.7	21	1	1	4	--
GMSG-4A	08/17/98	11:59 AM	28.71	72	-	0	0	0.8	20.7	1.4	1.4	3.5	--
GMSG-4A	08/18/98	12:46 PM	29.03	68	-	0	0	0.7	21.5	2.6	2.6	5.5	--
GMSG-4A	08/19/98	11:52 AM	28.99	66.9	-	0	0	0.9	20.4	1	1	1.5	--
GMSG-4A	08/20/98	11:55 AM	28.86	81	-	0	0	0.7	21.1	1	1	3.1	--
GMSG-4A	08/21/98	1:06 PM	28.95	81	-	0	0	0.6	21.5	3.6	3.6	6	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4A	08/22/98	11:47 AM	28.89	68	-	0	0	0.8	20.6	1	1	2.5	--
GMSG-4A	08/23/98	12:07 PM	28.47	75.9	-	0	0	0.8	20.4	<1	<1	<1	--
GMSG-4A	08/24/98	11:51 AM	28.43	77	-	0	0	0.7	21	<2.25	<2.25	2.25	--
GMSG-4A	08/25/98	11:49 AM	28.61	75.9	-	0	0	0.8	20.9	<2	<2	2	--
GMSG-4A	08/26/98	10:59 AM	28.78	79	-	0.01	0	2.7	21.1	10	6.5	8.5	--
GMSG-4A	08/26/98	4:22 PM	28.76	82.9	-	0	0	0.7	21	5	2.5	2	--
GMSG-4A	08/27/98	11:28 AM	28.83	81	-	0.01	0	0.7	20.6	2.25	2.25	2	--
GMSG-4A	08/28/98	12:00 PM	28.66	81	-	0.01	0	0.8	20.7	5	5	7.5	--
GMSG-4A	08/29/98	11:50 AM	28.66	77	-	0	0	0.7	21.1	2.5	<1	2.25	--
GMSG-4A	08/30/98	11:46 AM	28.74	73	-	0.01	0	0.7	21	<1	<1	2.25	--
GMSG-4A	08/31/98	12:38 PM	28.83	75	-	0.02	0	0.8	20.9	<1	<1	2.5	--
GMSG-4A	09/01/98	1:51 PM	28.51	73	-	0	0	0.8	20.3	2	<1	2	--
GMSG-4A	09/02/98	12:55 PM	28.52	63	-	0	0	0.9	20.2	2	<1	1.75	--
GMSG-4A	09/03/98	1:06 PM	28.56	70	-	0	0	0.8	21	1	1	3	--
GMSG-4A	09/04/98	12:05 PM	28.71	78.1	-	0	0	0.7	21.2	1	1	3.1	--
GMSG-4A	09/09/98	12:00 PM	28.91	69.1	-	0	0	0.8	21	<1	<1	2	--
GMSG-4A	09/11/98	11:45 AM	28.6	93	-	0.15	0	0.7	21.1	<3.5	<3.5	3.5	--
GMSG-4A	09/14/98	1:25 PM	28.59	68	0.01	0	0	0.9	20.2	<3	<3	3	--
GMSG-4A	09/21/98	3:14 PM	28.78	55.9	-	0	0	0.9	20.3	<2.25	<2.25	2.25	--
GMSG-4A	09/22/98	12:37 PM	28.88	61	-	0	0	0.9	20.2	<2.5	<2.5	2.5	--
GMSG-4A	09/23/98	12:41 PM	28.84	66	-	0	0	0.8	20.8	<3.5	<3.5	3.5	--
GMSG-4A	09/28/98	12:24 PM	28.74	66.9	-	0	0	0.8	20.9	5	<2	2	--
GMSG-4A	10/07/98	11:56 AM	28.67	54	-	-0.01	0	0.9	19.8	<3	<3	3	--
GMSG-4A	10/14/98	9:31 AM	28.86	41	-	0	0	1	19.2	<3	<3	3	--
GMSG-4A	10/24/98	3:56 PM	28.77	71.1	-	0	0	0.8	20.4	<3	<3	<3	--
GMSG-4A	10/27/98	11:12 AM	28.75	54	-	0	0	0.8	19.9	--	--	--	--
GMSG-4A	12/16/98	3:35 PM	28.64	32	-	0	0	0.8	19.2	0	0	0	--
GMSG-4A	01/20/99	1:53 PM	28.63	28	-	0	0	0.6	20	<1	<1	2	--
GMSG-4A	02/10/99	1:08 PM	28.77	35.1	-	0	0	0.6	20	<1	<1	2	--
GMSG-4A	03/13/99	1:33 PM	29.06	37	-	0	0	0.5	19.3	<1	<1	1.25	--
GMSG-4A	04/13/99	10:35 AM	28.92	54	-	0	0	0.3	20.3	0	0	3	--
GMSG-4A	10/09/99	2:33 PM	28.67	71.1	-	0	0	0.8	19.6	42	5	1.75	--
GMSG-4A	01/19/00	2:57 PM	28.59	16	T	0	0	0.5	19.5	<1	<1	<1	--
GMSG-4A	04/18/00	1:38 PM	28.68	44	-	-1.1	0	0.4	17.6	12.12	11.52	12.12	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4A	07/22/00	9:44 AM	28.91	62	-	0	0	0.6	18.7	<4	<4	4	--
GMSG-4A	10/20/00	10:47 AM	28.61	69	-	0	0	0	19.3	0.12	--	0.12	--
GMSG-4A	01/26/01	4:40 PM	28.51	23	T	0	0	0.6	19.2	2.79	--	0.23	--
GMSG-4A	04/23/01	9:28 AM	28.36	65	-	-0.02	0	0.4	19.3	-1.3	-2.8	-1.3	--
GMSG-4A	07/11/01	10:58 AM	28.82	74	-	0	0	0.6	19.8	0	0	0	--
GMSG-4A	09/20/01	2:05 PM	28.64	67	-	0	0	0.6	20.2	0	0	0	--
GMSG-4A	02/16/02	10:41 AM	28.57	31	-	-0.03	0	0.5	19.5	0.15	-2.43	-0.59	--
GMSG-4B	09/16/97	8:20 AM	--	--	--	0.85	53	0.1	0	--	--	--	--
GMSG-4B	09/16/97	1:58 PM	--	--	--	1.95	53.2	0.1	0	--	--	--	--
GMSG-4B	09/16/97	6:40 PM	--	--	--	>2	52.2	0	0	--	--	--	--
GMSG-4B	09/17/97	8:20 AM	--	--	--	-0.7	49.9	0	0	--	--	--	--
GMSG-4B	09/17/97	6:25 PM	--	--	--	-0.6	0	0	21.1	--	--	--	--
GMSG-4B	09/18/97	7:40 AM	--	--	--	0	0	0	21.1	--	--	--	--
GMSG-4B	09/18/97	7:05 PM	--	--	--	1.05	48.7	0	0.2	--	--	--	--
GMSG-4B	09/22/97	12:46 PM	--	--	--	0.86	47.4	0	--	--	--	--	--
GMSG-4B	09/22/97	5:50 PM	--	--	--	0.4	48.7	0	0.2	--	--	--	--
GMSG-4B	09/23/97	8:27 AM	--	--	--	-1.25	50.6	0.1	0	--	--	--	--
GMSG-4B	09/23/97	6:27 PM	--	--	--	0.06	50.1	0.1	0	--	--	--	--
GMSG-4B	09/24/97	8:31 AM	--	--	--	1.17	51.3	0.1	0	--	--	--	--
GMSG-4B	09/24/97	7:00 PM	--	--	--	2.1	50.1	0.1	0.2	--	--	--	--
GMSG-4B	09/25/97	8:12 AM	--	--	--	-0.29	49.8	0.1	0	--	--	--	--
GMSG-4B	09/25/97	6:49 PM	--	--	--	-1.33	50.4	0.1	0.2	--	--	--	--
GMSG-4B	09/26/97	8:18 AM	--	--	--	0.74	50.5	0.1	0	--	--	--	--
GMSG-4B	09/26/97	6:08 PM	--	--	--	0.43	49.1	0	0.2	--	--	--	--
GMSG-4B	09/27/97	8:48 AM	--	--	--	0.7	23.8	0	11.2	--	--	--	--
GMSG-4B	09/27/97	5:50 PM	--	--	--	1.15	49.8	0	0.2	--	--	--	--
GMSG-4B	09/28/97	8:13 AM	--	--	--	1.2	51.2	0.1	0.1	--	--	--	--
GMSG-4B	09/28/97	6:35 PM	--	--	--	0.95	51.2	0.1	0	--	--	--	--
GMSG-4B	09/29/97	8:16 AM	--	--	--	1.47	49.8	0.1	0.5	--	--	--	--
GMSG-4B	09/29/97	7:16 PM	--	--	--	0.23	52.7	0.2	0	--	--	--	--
GMSG-4B	09/30/97	9:15 AM	--	--	--	-2.2	51.8	0.1	0	--	--	--	--
GMSG-4B	09/30/97	6:50 PM	--	--	--	-1.9	52	0.1	0	--	--	--	--
GMSG-4B	10/01/97	9:37 AM	28.93	45	-	-1.05	52	0.1	0	--	--	--	--
GMSG-4B	10/01/97	6:48 PM	28.78	43	-	0.75	52	0.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4B	10/02/97	7:45 AM	28.57	50	-	1.25	52.1	0.1	0	--	--	--	--
GMSG-4B	10/02/97	6:52 PM	28.49	59	-	0.55	50.3	0.1	0.1	--	--	--	--
GMSG-4B	10/03/97	7:56 AM	28.51	48.9	-	0	51.6	0.1	0	--	--	--	--
GMSG-4B	10/06/97	9:43 AM	--	--	--	-1.2	50.1	0.1	0.1	--	--	--	--
GMSG-4B	10/06/97	6:23 PM	--	--	--	-0.4	0	0	21.3	--	--	--	--
GMSG-4B	10/07/97	8:29 AM	0	55.9	-	-0.15	0	0	21.7	--	--	--	--
GMSG-4B	10/07/97	6:31 PM	28.8	59	-	0.42	0	0	20.8	--	--	--	--
GMSG-4B	10/08/97	8:09 AM	28.75	59	-	0.05	0	0	15.8	--	--	--	--
GMSG-4B	10/08/97	5:44 PM	0	72	-	0.85	1.4	0	20.3	--	--	--	--
GMSG-4B	10/09/97	7:59 AM	0	68	-	0.8	14.9	0	14.2	--	--	--	--
GMSG-4B	10/09/97	6:07 PM	28.72	51.1	-	-1.05	29.1	0	8.6	--	--	--	--
GMSG-4B	10/10/97	7:55 AM	29.08	43	-	-1.85	0	0	21.4	--	--	--	--
GMSG-4B	10/10/97	6:18 PM	29.06	50	-	-0.1	0	0	21.4	--	--	--	--
GMSG-4B	10/11/97	8:20 AM	28.99	48.9	-	0.42	4.5	0	18.8	--	--	--	--
GMSG-4B	10/11/97	5:58 PM	28.76	60.1	-	1.45	27.6	0	8.8	--	--	--	--
GMSG-4B	10/12/97	7:55 AM	28.65	57.9	-	0.7	44.6	0.1	2.4	--	--	--	--
GMSG-4B	10/12/97	6:22 PM	28.48	61	0.04	0.9	45.9	0	2.2	--	--	--	--
GMSG-4B	10/13/97	8:06 AM	28.22	57.9	0.03	1.5	45.1	0.1	1.7	--	--	--	--
GMSG-4B	10/13/97	6:12 PM	28.52	43	T	-1.7	45.3	0.1	1.3	--	--	--	--
GMSG-4B	10/14/97	8:42 AM	28.71	36	-	-1.3	0	0	21.1	--	--	--	--
GMSG-4B	10/15/97	9:19 AM	29.08	42.1	-	-0.89	47.7	0.1	0.6	--	--	--	--
GMSG-4B	10/21/97	8:19 AM	28.71	33.1	T	0.6	29.6	0.1	7.5	--	--	--	--
GMSG-4B	10/22/97	8:23 AM	28.91	27	-	-0.25	30.9	0.1	7.2	--	--	--	--
GMSG-4B	10/22/97	6:28 PM	28.79	28.9	-	0.75	0	0	21.3	--	--	--	--
GMSG-4B	10/23/97	8:11 AM	28.72	24.1	-	0.49	11.1	0	16.3	--	--	--	--
GMSG-4B	10/23/97	6:06 PM	28.63	32	-	0.68	53.4	0.1	2.9	--	--	--	--
GMSG-4B	10/24/97	7:53 AM	28.74	28	-	-0.53	57.9	0.2	1.4	--	--	--	--
GMSG-4B	10/29/97	7:24 AM	28.64	32	-	-0.45	--	--	--	--	--	--	--
GMSG-4B	10/29/97	11:36 AM	28.62	45	-	-0.03	22.9	0.2	11	--	--	--	--
GMSG-4B	10/30/97	7:04 AM	28.61	35.1	-	0.83	38.8	0.2	4.5	--	--	--	--
GMSG-4B	10/30/97	5:22 PM	28.35	55.9	-	1.45	53	0.2	0	--	--	--	--
GMSG-4B	10/31/97	6:42 AM	28.29	43	-	0.45	53.8	0.2	0	--	--	--	--
GMSG-4B	11/13/97	8:07 AM	28.65	19.9	-	0	52.6	0.4	0	--	--	--	--
GMSG-4B	11/18/97	4:36 PM	28.61	28	-	-0.32	51	0.3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4B	11/19/97	4:50 PM	28.61	21.9	-	0.51	54.3	0.3	0	--	--	--	--
GMSG-4B	11/20/97	5:40 PM	28.62	28.9	-	-0.08	54.6	0.3	0	--	--	--	--
GMSG-4B	11/21/97	9:08 AM	28.81	19.9	-	-0.75	54.1	0.2	0	--	--	--	--
GMSG-4B	12/02/97	9:40 AM	28.9	28	-	1.1	51.3	0.2	0	--	--	--	--
GMSG-4B	12/12/97	10:35 AM	28.61	28	-	1.6	46.5	0.3	0	--	--	--	--
GMSG-4B	01/21/98	4:10 PM	28.97	22	-	0.1	53.9	0.2	0	--	--	--	--
GMSG-4B	01/22/98	8:30 AM	29.03	15	T	-0.23	54.3	0.3	0	--	--	--	--
GMSG-4B	02/18/98	4:37 PM	28.51	34	-	-0.2	51	0.4	0.5	--	--	--	--
GMSG-4B	02/19/98	8:45 AM	28.6	33.1	-	-0.4	51.4	0.3	4.6	--	--	--	--
GMSG-4B	03/30/98	3:04 PM	28.4	39	T	-0.45	14.1	0.1	14.4	--	--	--	--
GMSG-4B	03/31/98	8:59 AM	28.48	34	T	-0.16	0	0	20.7	--	--	--	--
GMSG-4B	04/14/98	4:04 PM	28.47	57.9	-	-0.28	47.1	0.1	0.4	--	--	--	--
GMSG-4B	04/15/98	5:55 PM	28.61	41	-	0.5	51	0.2	0	--	--	--	--
GMSG-4B	04/16/98	8:46 AM	28.47	30.9	0.05	0.8	51.4	0.2	0	--	--	--	--
GMSG-4B	04/16/98	3:39 PM	28.47	34	-	0.85	50.7	0.2	0.1	--	--	--	--
GMSG-4B	04/17/98	8:25 AM	28.55	37	-	-0.29	49.7	0.2	0.4	--	--	--	--
GMSG-4B	04/30/98	4:45 PM	28.58	69.1	-	1.15	49.7	0.1	0	--	--	--	--
GMSG-4B	05/01/98	8:33 AM	28.47	60.1	-	0.49	49.4	0.1	0	--	--	--	--
GMSG-4B	05/07/98	3:47 PM	28.53	69.1	-	0.6	48.7	0.2	0	--	--	--	--
GMSG-4B	05/08/98	8:50 AM	28.66	57.9	-	-0.6	45.7	0.3	0	--	--	--	--
GMSG-4B	05/14/98	4:03 PM	28.72	77	-	0.7	35.2	0.1	2.5	--	--	--	--
GMSG-4B	05/15/98	7:59 AM	28.69	66.9	-	0.21	45.9	0.2	0	--	--	--	--
GMSG-4B	05/20/98	4:43 PM	28.73	69.1	-	0.24	45.4	0.2	0	--	--	--	--
GMSG-4B	05/21/98	8:11 AM	28.84	52	-	-0.5	47.1	0.3	0	--	--	--	--
GMSG-4B	05/28/98	4:27 PM	28.49	86	-	0.1	34.4	0	2.6	--	--	--	--
GMSG-4B	05/29/98	10:13 AM	28.62	73.9	-	-0.25	45.1	0.1	0	--	--	--	--
GMSG-4B	06/02/98	6:00 PM	28.5	52	-	-0.6	45.3	0.2	0	--	--	--	--
GMSG-4B	06/05/98	9:10 AM	28.74	52	-	0	38.6	0.2	1.7	--	--	--	--
GMSG-4B	06/11/98	11:18 AM	28.57	59	-	0.6	42.9	0.2	0	--	--	--	--
GMSG-4B	06/12/98	9:07 AM	28.29	62.1	-	-0.5	44.2	0.2	0	--	--	--	--
GMSG-4B	06/13/98	8:17 AM	28.53	63	-	-0.6	8.5	0	16.2	--	--	--	--
GMSG-4B	06/14/98	11:35 AM	28.43	77	-	0.8	39.3	0	0	--	--	--	--
GMSG-4B	06/15/98	9:30 AM	28.31	79	-	0.55	44.5	0.2	0	--	--	--	--
GMSG-4B	06/16/98	6:10 PM	28.51	73.9	-	-0.63	43.9	0.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4B	06/17/98	1:40 PM	28.73	80.1	-	-0.55	42.6	0.1	0	--	--	--	--
GMSG-4B	06/22/98	4:03 PM	28.67	82.9	-	0.37	38.5	0	0	--	--	--	--
GMSG-4B	06/23/98	8:52 AM	28.83	69.1	-	-0.55	43.5	0.2	0	--	--	--	--
GMSG-4B	06/24/98	2:03 PM	28.58	82	-	1.11	40.8	0.1	0	--	--	--	--
GMSG-4B	06/26/98	3:40 PM	--	--	--	0.02	42.7	0	0	--	--	--	--
GMSG-4B	06/27/98	1:39 PM	28.62	73.9	-	-0.21	42.9	0.1	0	--	--	--	--
GMSG-4B	06/28/98	11:58 AM	28.55	81	-	0.18	40.5	0	0	--	--	--	--
GMSG-4B	07/06/98	5:54 PM	28.78	64.9	0.02	-0.62	41.7	0.2	0	--	--	--	--
GMSG-4B	07/07/98	8:10 AM	28.76	57.9	-	-0.74	0.2	0	20.3	20	15	3	--
GMSG-4B	07/08/98	7:21 PM	28.73	73.9	-	0.21	12	0	14.2	>10000	10000	3.5	--
GMSG-4B	07/09/98	5:12 PM	28.78	75	-	-0.02	41.5	0.1	0	--	--	--	--
GMSG-4B	07/10/98	4:01 PM	28.89	75	-	0.38	42.3	0	0.1	--	--	--	--
GMSG-4B	07/11/98	7:19 PM	28.76	75.9	-	0.88	42.9	0.1	0	--	--	--	--
GMSG-4B	07/12/98	9:39 AM	28.72	80.1	-	0.29	41.2	0.1	0	--	--	--	--
GMSG-4B	07/14/98	6:36 PM	28.73	69.1	-	0.35	42.7	0.1	0.1	--	--	--	--
GMSG-4B	07/15/98	11:15 AM	28.65	73.9	-	-0.1	41.1	0.2	0	--	--	--	--
GMSG-4B	07/21/98	6:21 PM	28.59	79	-	--	--	--	--	--	--	--	--
GMSG-4B	07/26/98	1:59 PM	28.73	82	-	1.26	0.9	0	20.2	--	--	--	--
GMSG-4B	07/27/98	5:05 PM	28.59	79	-	0.14	15.2	0	12.9	--	--	--	--
GMSG-4B	07/28/98	1:38 PM	28.49	79	-	0.61	14.6	0	12.5	--	--	--	--
GMSG-4B	07/29/98	12:56 PM	28.69	78.1	-	-0.34	13.6	0	13.1	--	--	--	--
GMSG-4B	08/04/98	12:48 PM	28.92	77	-	-0.25	27.4	0.2	3.4	--	--	--	--
GMSG-4B	08/05/98	12:25 PM	28.94	73.9	-	-0.08	29	0.2	3.1	--	--	--	--
GMSG-4B	08/05/98	7:06 PM	28.9	72	-	-3.66	--	--	--	--	--	--	--
GMSG-4B	08/06/98	8:05 AM	28.84	66.9	T	-8.44	--	--	--	--	--	--	--
GMSG-4B	08/06/98	9:40 AM	28.85	64.9	0.16	--	28	0.4	3.5	--	--	--	--
GMSG-4B	08/07/98	11:59 AM	28.79	73	-	-9.07	17.7	0.2	10	--	--	--	--
GMSG-4B	08/07/98	7:43 PM	28.8	72	-	-8.89	19.1	0.2	9.2	--	--	--	--
GMSG-4B	08/08/98	11:56 AM	28.81	79	-	-9.26	17.3	0.1	10.2	--	--	--	--
GMSG-4B	08/09/98	9:18 AM	28.81	77	-	-8.97	16	0.1	10.6	--	--	--	--
GMSG-4B	08/10/98	9:26 AM	28.73	72	-	-9.06	25.1	0.1	3.4	--	--	--	--
GMSG-4B	08/11/98	5:04 PM	28.91	72	-	-8.99	20.9	0.1	3.1	--	--	--	--
GMSG-4B	08/12/98	12:18 PM	28.97	73.9	-	-8.23	18.9	0	3.1	--	--	--	--
GMSG-4B	08/13/98	12:57 PM	28.82	79	-	-7.56	17.3	0	3.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4B	08/14/98	12:10 PM	28.61	72	0.03	-7.11	16.5	0	3.7	--	--	--	--
GMSG-4B	08/15/98	11:59 AM	28.78	71.1	-	-8.65	15.4	0.1	3.5	--	--	--	--
GMSG-4B	08/16/98	12:04 PM	28.8	75	-	-7.78	14.1	0.1	3.5	--	--	--	--
GMSG-4B	08/17/98	12:07 PM	28.71	72	-	-8.47	13.2	0.1	3.5	--	--	--	--
GMSG-4B	08/18/98	12:38 PM	29.03	68	-	-7.94	0	0	23.8	9.5	7	5.5	--
GMSG-4B	08/19/98	11:40 AM	28.99	66.9	-	-7.21	0	0	22.6	5	--	1.7	--
GMSG-4B	08/20/98	11:49 AM	28.86	81	-	-7.66	0	0	23.1	7	6	3.5	--
GMSG-4B	08/21/98	12:56 PM	28.95	81	-	-7.13	0	0	23.6	7.5	7.5	6	--
GMSG-4B	08/22/98	11:38 AM	28.89	68	-	-7.03	0	0	22.3	14	14	2.5	--
GMSG-4B	08/23/98	12:14 PM	28.47	75.9	-	-6.63	0	0	22.7	2	2	<1	--
GMSG-4B	08/24/98	11:45 AM	28.43	77	-	-7.41	0	0	23.2	4	4	2.25	--
GMSG-4B	08/25/98	11:42 AM	28.61	75.9	-	-7.86	0	0	23	5	4	2	--
GMSG-4B	08/26/98	1:15 PM	28.78	82	-	-7.57	0	0	22.6	11	11	11	--
GMSG-4B	08/26/98	4:30 PM	28.78	81	-	-3.99	0	0	22	6	6	5	--
GMSG-4B	08/27/98	11:36 AM	28.82	82	-	-0.79	0	0	21.6	9	9	2	--
GMSG-4B	08/28/98	11:55 AM	28.66	81	-	0	2.4	0	13.8	--	--	--	--
GMSG-4B	08/29/98	12:00 PM	28.66	77	-	-0.46	0	0	22.1	>10000	>10000	2.5	--
GMSG-4B	08/30/98	12:00 PM	28.74	73	-	-0.32	3.5	0	10.9	>10000	--	2.25	--
GMSG-4B	08/31/98	12:50 PM	28.83	75	-	-0.3	0	0	16.9	>10000	70	2.25	--
GMSG-4B	09/01/98	2:03 PM	28.51	73	-	0.95	4.1	0	7.6	>10000	--	2.25	--
GMSG-4B	09/02/98	1:12 PM	28.52	63	-	-0.16	4	0	8.4	--	--	--	--
GMSG-4B	09/03/98	12:59 PM	28.56	70	-	-0.37	3.4	0	8.8	--	--	--	--
GMSG-4B	09/04/98	12:00 PM	28.71	78.1	-	-0.38	3.7	0	7.7	--	--	--	--
GMSG-4B	09/09/98	12:50 PM	28.89	71.1	-	0.02	3.2	0.2	5.3	--	--	--	--
GMSG-4B	09/10/98	5:30 PM	28.65	77	-	1.08	3.8	0.2	4.9	--	--	--	--
GMSG-4B	09/11/98	11:34 AM	28.6	93	-	0.41	3.2	0.2	5.4	--	--	--	--
GMSG-4B	09/12/98	5:40 PM	28.7	73	-	0.24	3.2	0.3	4.8	--	--	--	--
GMSG-4B	09/14/98	1:31 PM	28.57	66	-	0.32	3.1	0.4	4.1	--	--	--	--
GMSG-4B	09/16/98	11:36 AM	28.89	75	-	-0.28	2.4	0.4	4.1	--	--	--	--
GMSG-4B	09/21/98	3:31 PM	28.78	55	-	-1.26	1.8	0.5	5.5	--	--	--	--
GMSG-4B	09/22/98	12:43 PM	28.88	61	-	-0.46	1.8	0.6	4	--	--	--	--
GMSG-4B	09/23/98	12:29 PM	28.87	64	-	0.64	1.8	0.6	3.1	--	--	--	--
GMSG-4B	09/25/98	6:43 PM	28.58	66	-	-0.29	2.3	0.7	3.1	--	--	--	--
GMSG-4B	09/28/98	12:13 PM	28.74	66.9	-	-0.21	1.6	0.8	2.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4B	10/07/98	12:05 PM	28.67	54	-	-0.83	0.9	1.4	0.7	--	--	--	--
GMSG-4B	10/14/98	9:36 AM	28.86	41	-	-0.68	0.4	1.8	0.9	--	--	--	--
GMSG-4B	10/24/98	3:35 PM	28.77	71.1	-	0.56	0.3	1.8	0	--	--	--	--
GMSG-4B	10/27/98	11:17 AM	28.75	54	-	0.59	0.1	2	0	--	--	--	--
GMSG-4B	11/17/98	9:40 AM	28.81	33.1	-	-1.12	0.2	2.6	0.5	--	--	--	--
GMSG-4B	12/16/98	3:42 PM	28.64	32	-	0.59	0.1	3	0	--	--	--	--
GMSG-4B	01/20/99	2:02 PM	28.63	28	-	-0.1	0	2.8	2.1	110	--	2.5	--
GMSG-4B	02/10/99	1:17 PM	28.77	35.1	-	0.73	0	2.9	1.9	10	--	2	--
GMSG-4B	03/13/99	1:42 PM	29.06	37	-	0.37	0	3.1	2.4	3	--	1.25	--
GMSG-4B	07/26/99	5:35 PM	28.66	81	-	0.03	0	3.3	0	0.03	--	2.5	--
GMSG-4B	10/09/99	2:36 PM	28.67	71.1	-	0.2	3.2	2.3	0	--	--	--	--
GMSG-4B	01/19/00	12:50 PM	28.61	17	T	0.81	4.4	2.7	0	--	--	--	--
GMSG-4B	04/18/00	1:43 PM	28.68	44	-	0.51	2.8	2.7	0	--	--	--	--
GMSG-4B	07/22/00	9:52 AM	28.91	62	-	-0.58	0	0	20.4	6	6	4	--
GMSG-4B	10/20/00	10:52 AM	28.61	69	-	0.1	4.4	2.7	0	--	--	--	--
GMSG-4B	01/26/01	4:45 PM	28.51	23	T	0.14	7.3	2.5	0	--	--	--	--
GMSG-4B	01/27/01	10:20 AM	28.91	12	-	-0.91	6.5	2.2	--	50800	--	0.18	--
GMSG-4B	04/23/01	10:10 AM	28.32	67	-	1.88	6.4	2.1	0	--	--	--	--
GMSG-4B	07/11/01	11:02 AM	28.82	74	-	-0.32	0	0	21.1	0	0	0	--
GMSG-4B	09/20/01	2:10 PM	28.64	67	-	-0.2	0	0	21	16.6	9.9	0	--
GMSG-4B	09/25/01	3:55 PM	28.86	56	-	-7.3	0	0	20.9	0	0	0	--
GMSG-4B	10/02/01	2:40 PM	28.57	70	-	-7.14	0	0	21.2	4.31	4.25	4.5	--
GMSG-4B	10/10/01	9:20 AM	28.57	58	T	-7.44	0	0	19.5	0.4	0.3	0.2	--
GMSG-4B	10/18/01	9:00 AM	28.6	43	-	-6.99	0	0	19	0	0	0.8	--
GMSG-4B	10/23/01	10:50 AM	28.21	52	-	-7.2	0	0	20.9	-1.2	-1.25	0.03	--
GMSG-4B	11/02/01	1:05 PM	28.68	50	-	-1.49	0	0.2	20.8	0.46	-0.95	0.44	--
GMSG-4B	11/07/01	10:21 AM	29.03	43	-	-0.38	0	0.2	20.6	0.12	-1.29	-0.18	--
GMSG-4B	11/13/01	1:17 PM	28.76	46	-	0.96	0	1.8	7.1	-0.56	--	-0.56	--
GMSG-4B	02/16/02	10:43 AM	28.57	31	-	-1.12	0	0	20	0.82	0.73	-0.56	--
GMSG-4B	05/15/02	9:06 AM	28.73	50	-	0.99	0	1.4	13.5	18.6	<-0.23	-0.23	--
GMSG-4B	10/11/02	10:11 AM	28.92	61	-	0.1	0	0.8	18.7	0.95	0	0	--
GMSG-4B	01/07/03	11:09 AM	28.44	34	-	2.1	0	2.6	0.5	0.3	--	0.1	--
GMSG-4B	04/01/03	1:55 PM	28.51	48	-	0.5	0	0	20.2	0	0	0	--
GMSG-4B	07/21/03	9:13 AM	28.56	61	-	0	0.2	3.1	1	1200	Flame out	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-4B	10/10/03	12:04 PM	28.83	73	-	0	0	0.5	19.2	0	0	0	--
GMSG-4B	01/28/04	12:07 PM	28.65	10	T	0	0	0	19.5	0.07	0.03	0.02	--
GMSG-4B	04/20/04	2:03 PM	28.72	43	-	1.1	0	3.1	0	--	--	--	--
GMSG-4B	06/05/04	12:10 PM	28.76	72	-	1	0.1	3.2	0	--	--	--	--
GMSG-4B	06/05/04	2:33 PM	28.73	66	T	-0.9	0.1	2.5	30	--	--	--	--
GMSG-4B	06/07/04	7:54 AM	28.66	69	-	-1.6	0	0	20.1	--	--	--	--
GMSG-4B	06/08/04	9:09 AM	28.66	80	-	-3.7	0	0.3	19.3	--	--	--	--
GMSG-4B	07/08/04	5:32 PM	28.77	64	-	-0.781	0	0	19.9	6.54	5.11	3.94	--
GMSG-4B	10/08/04	2:12 PM	28.56	67	-	1	0	1	12.7	-0.25	-0.3	-0.3	--
GMSG-4B	01/14/05	1:49 PM	29.22	15	-	-0.8	0	0	19.8	0.69	0.4	0	--
GMSG-4B	04/11/05	12:25 PM	28.92	54	-	-4.7	0	0.6	16.4	--	--	--	--
GMSG-4B	07/21/05	9:31 AM	28.83	81	-	-0.3	0	0.1	19.2	--	--	--	--
GMSG-4B	10/18/05	10:20 AM	28.64	51	-	-0.85	0	0	20	--	--	--	--
GMSG-4B	03/07/06	2:41 PM	28.85	37	-	1.5	0	0.2	19.4	--	--	--	--
GMSG-4B	04/14/06	10:57 AM	28.34	70	-	1	0	0.8	15.1	--	--	--	--
GMSG-4B	07/12/06	11:06 AM	28.83	81	-	0	0	0.2	18.7	--	--	--	--
GMSG-4B	10/22/06	10:38 AM	28.66	38	-	0	0	0.3	20.5	--	--	--	--
GMSG-4B	01/29/07	11:53 AM	28.55	10	T	0.6	0	1.4	16.3	--	--	--	--
GMSG-4B	04/16/07	10:50 AM	28.85	56	-	0.4	0	0	20.1	--	--	--	--
GMSG-4B	07/13/07	11:06 AM	30.03	67	-	-0.3	0	0.3	19.7	--	--	--	--
GMSG-4B	10/15/07	1:24 PM	30.14	49	-	0	0	0.3	19.3	--	--	--	--
GMSG-5	09/17/97	6:42 PM	--	--	--	0	0	0.1	20.7	--	--	--	--
GMSG-5	09/18/97	7:12 AM	--	--	--	0	0	0.4	20.6	--	--	--	--
GMSG-5	09/18/97	6:53 PM	--	--	--	0	0	0.4	20.4	--	--	--	--
GMSG-5	09/22/97	12:35 PM	--	--	--	0	0	0.5	20.6	--	--	--	--
GMSG-5	09/22/97	5:30 PM	--	--	--	0	0	0.5	20.6	--	--	--	--
GMSG-5	09/23/97	8:06 AM	--	--	--	0.1	0	0.5	20.7	--	--	--	--
GMSG-5	09/23/97	6:10 PM	--	--	--	0	0	0.5	20.6	--	--	--	--
GMSG-5	09/24/97	8:10 AM	--	--	--	0	0	0.6	20.6	--	--	--	--
GMSG-5	09/24/97	6:40 PM	--	--	--	0	0	0.5	20.6	--	--	--	--
GMSG-5	09/25/97	8:07 AM	--	--	--	0	0	0.5	20.6	--	--	--	--
GMSG-5	09/25/97	6:30 PM	--	--	--	0	0	0.5	20.6	--	--	--	--
GMSG-5	09/26/97	8:47 AM	--	--	--	0	0	0.6	20.8	--	--	--	--
GMSG-5	09/26/97	5:41 PM	--	--	--	0	0	0.5	20.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-5	09/27/97	8:20 AM	--	--	--	0	0	0.6	20.3	--	--	--	--
GMSG-5	09/27/97	5:33 PM	--	--	--	0	0	0.5	20.5	--	--	--	--
GMSG-5	09/28/97	8:37 AM	--	--	--	0	0	0.6	20.5	--	--	--	--
GMSG-5	09/28/97	6:27 PM	--	--	--	0	0	0.6	20.3	--	--	--	--
GMSG-5	09/29/97	8:32 AM	--	--	--	0	0	0.7	20.5	--	--	--	--
GMSG-5	09/29/97	6:50 PM	--	--	--	0	0	0.7	19.9	--	--	--	--
GMSG-5	09/30/97	8:27 AM	--	--	--	0	0	0.6	20.4	--	--	--	--
GMSG-5	09/30/97	6:45 PM	--	--	--	0	0	0.6	20.8	--	--	--	--
GMSG-5	10/01/97	8:40 AM	28.94	44.1	-	0	0	0.7	20.5	--	--	--	--
GMSG-5	10/01/97	6:23 PM	28.8	46.9	-	0	0	0.6	20.6	--	--	--	--
GMSG-5	10/02/97	7:08 AM	28.59	45	-	0	0	0.6	20.3	--	--	--	--
GMSG-5	10/02/97	6:56 PM	28.49	59	-	0	0	0.6	20.6	--	--	--	--
GMSG-5	10/03/97	7:50 AM	28.51	48.9	-	0	0	0.6	20.6	--	--	--	--
GMSG-5	10/06/97	8:59 AM	--	--	--	0	0	0.6	20.6	--	--	--	--
GMSG-5	10/06/97	5:44 PM	--	--	--	0	0	0.5	20.7	--	--	--	--
GMSG-5	10/07/97	7:57 AM	0	55.9	-	0	0	0.6	20.5	--	--	--	--
GMSG-5	10/07/97	6:08 PM	28.79	59	-	0	0	0.7	19.8	--	--	--	--
GMSG-5	10/08/97	7:47 AM	28.75	59	-	0	0	0.6	20.7	--	--	--	--
GMSG-5	10/08/97	5:25 PM	0	73.9	-	0	0	0.6	20.4	--	--	--	--
GMSG-5	10/09/97	7:39 AM	0	68	-	0	0	0.6	20.6	--	--	--	--
GMSG-5	10/09/97	5:48 PM	28.72	51.1	-	0	0	0.6	21.3	--	--	--	--
GMSG-5	10/10/97	7:36 AM	29.08	43	-	0	0	0.7	21	--	--	--	--
GMSG-5	10/10/97	5:58 PM	29.06	50	-	0	0	0.7	20.5	--	--	--	--
GMSG-5	10/11/97	7:56 AM	28.99	48.9	-	0	0	0.7	20.5	--	--	--	--
GMSG-5	10/11/97	5:36 PM	28.76	60.1	-	0	0	0.7	20.1	--	--	--	--
GMSG-5	10/12/97	7:35 AM	28.65	57.9	-	0	0	0.7	20.7	--	--	--	--
GMSG-5	10/12/97	6:32 PM	28.46	62.1	0.02	0	0	0.7	20.6	--	--	--	--
GMSG-5	10/13/97	7:44 AM	28.22	57.9	0.03	0	0	0.7	20.5	--	--	--	--
GMSG-5	10/13/97	6:26 PM	28.52	43	T	0	0	0.7	20.6	--	--	--	--
GMSG-5	10/14/97	8:48 AM	28.71	36	-	0	0	0.8	20.3	--	--	--	--
GMSG-5	10/15/97	9:53 AM	29.09	46	-	0	0	0.9	20.1	--	--	--	--
GMSG-5	10/21/97	8:17 AM	28.71	33.1	T	0	0	0.9	20.6	--	--	--	--
GMSG-5	10/22/97	8:40 AM	28.91	27	-	0	0	0.9	20.6	--	--	--	--
GMSG-5	10/22/97	5:59 PM	28.79	28.9	-	0	0	0	21.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-5	10/23/97	8:28 AM	28.72	24.1	-	0	0	0.2	20.7	--	--	--	--
GMSG-5	10/23/97	6:18 PM	28.63	32	-	0	0	0.9	19.8	--	--	--	--
GMSG-5	10/24/97	8:07 AM	28.74	28	-	0	0	0.9	19.9	--	--	--	--
GMSG-5	10/29/97	7:37 AM	28.64	34	-	0	--	--	--	--	--	--	--
GMSG-5	10/29/97	11:57 AM	28.62	45	-	0.02	0	0	19.5	--	--	--	--
GMSG-5	10/30/97	7:25 AM	28.61	35.1	-	0	0	0.1	19.4	--	--	--	--
GMSG-5	10/30/97	4:47 PM	28.35	55.9	-	0	0	0	19.6	--	--	--	--
GMSG-5	10/31/97	7:01 AM	28.29	43	-	0	0	0.1	19.4	--	--	--	--
GMSG-5	11/13/97	7:25 AM	28.64	19	-	0	0	0.8	18.9	--	--	--	--
GMSG-5	11/18/97	3:58 PM	28.6	30	-	0	0.1	0.7	19	--	--	--	--
GMSG-5	11/19/97	4:00 PM	28.62	26.1	-	0	0	0.9	19.2	--	--	--	--
GMSG-5	11/20/97	5:00 PM	28.62	28.9	-	0	0	0.9	19.2	--	--	--	--
GMSG-5	11/21/97	9:30 AM	28.81	23	-	0	0	1	18.5	--	--	--	--
GMSG-5	12/02/97	9:25 AM	28.89	27	-	0	0	1	18.4	--	--	--	--
GMSG-5	12/12/97	10:15 AM	28.66	26	-	0	0	0.9	20	--	--	--	--
GMSG-5	01/21/98	3:20 PM	28.97	22	-	0	0.1	0.6	19.8	--	--	--	--
GMSG-5	01/22/98	7:40 AM	29.03	14	T	0	0.1	0.8	19.6	--	--	--	--
GMSG-5	02/18/98	3:55 PM	28.49	35.1	-	0.02	0	0.7	20.1	--	--	--	--
GMSG-5	02/19/98	7:53 AM	28.59	32	-	0.02	0	0.1	21.1	--	--	--	--
GMSG-5	03/30/98	2:18 PM	28.38	39.9	0.01	0.01	0	0	20.9	--	--	--	--
GMSG-5	03/31/98	8:09 AM	28.49	34	T	0	0	0.5	20.2	--	--	--	--
GMSG-5	04/14/98	3:25 PM	28.45	59	-	0.01	0	0.2	20.6	--	--	--	--
GMSG-5	04/15/98	5:30 PM	28.61	41	-	0	0	0.1	21	--	--	--	--
GMSG-5	04/16/98	8:17 AM	28.48	30.9	0.01	0	0	0.1	20.7	--	--	--	--
GMSG-5	04/16/98	3:13 PM	28.43	34	T	0	0	0	20.7	--	--	--	--
GMSG-5	04/17/98	7:56 AM	28.55	37	-	0	0	0	20.7	--	--	--	--
GMSG-5	04/30/98	4:12 PM	28.58	70	-	0	0	0	20.8	--	--	--	--
GMSG-5	05/01/98	7:52 AM	28.48	54	-	0	0	0	20.7	--	--	--	--
GMSG-5	05/07/98	3:24 PM	28.52	66.9	T	0	0	0	20.7	--	--	--	--
GMSG-5	05/08/98	8:16 AM	28.65	54	-	0	0	0.1	20.5	--	--	--	--
GMSG-5	05/14/98	3:34 PM	28.72	77	-	0	0	0.1	20.3	--	--	--	--
GMSG-5	05/15/98	7:32 AM	28.69	66.9	-	0	0	0.1	20.7	--	--	--	--
GMSG-5	05/20/98	4:16 PM	28.74	70	-	0	0	0	20.6	--	--	--	--
GMSG-5	05/21/98	7:50 AM	28.84	52	-	0	0	0.1	20.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-5	05/28/98	3:55 PM	28.49	86	-	0	0	0.1	20.3	--	--	--	--
GMSG-5	05/29/98	9:45 AM	28.62	73.9	-	0	0	0	20.6	--	--	--	--
GMSG-5	06/02/98	7:07 PM	28.52	50	-	-0.2	0	0.1	20.9	--	--	--	--
GMSG-5	06/05/98	8:29 AM	28.76	48	-	0	0	0	20.9	--	--	--	--
GMSG-5	06/11/98	10:50 AM	28.57	59	-	0	0	0.1	20.7	--	--	--	--
GMSG-5	06/12/98	8:36 AM	28.29	62.1	-	0	0	0.1	20.7	--	--	--	--
GMSG-5	06/13/98	7:49 AM	28.53	63	-	0	0	0	20.6	--	--	--	--
GMSG-5	06/14/98	11:05 AM	28.45	75.9	-	0.2	0	0	20.3	--	--	--	--
GMSG-5	06/15/98	9:08 AM	28.32	75	-	0	0	0	20.6	--	--	--	--
GMSG-5	06/16/98	5:50 PM	28.51	73.9	-	0.08	0	0	20.7	--	--	--	--
GMSG-5	06/17/98	1:18 PM	28.75	80.1	-	0	0	0	20	--	--	--	--
GMSG-5	06/22/98	3:38 PM	28.67	82.9	-	0.11	0	0	20.2	--	--	--	--
GMSG-5	06/23/98	8:32 AM	28.83	69.1	-	-0.07	0	0	20.5	--	--	--	--
GMSG-5	06/24/98	1:37 PM	28.58	82	-	0.23	0	0	20.2	--	--	--	--
GMSG-5	06/26/98	3:19 PM	--	--	--	0.03	0	0	20.2	--	--	--	--
GMSG-5	06/27/98	1:15 PM	28.62	72	-	-0.05	0	0	20.5	9	9	3.5	--
GMSG-5	06/28/98	11:32 AM	28.55	81	-	0	0	0	20.3	28	25	--	--
GMSG-5	07/06/98	5:33 PM	28.78	64.9	0.02	-0.14	0	0.1	20.5	30	12	3	--
GMSG-5	07/07/98	7:45 AM	28.76	57.9	-	-0.09	0	0	20.6	5.5	5.5	3	--
GMSG-5	07/08/98	6:58 PM	28.73	73.9	-	0.4	0	0.1	20.3	14	14	3.5	--
GMSG-5	07/09/98	4:51 PM	28.78	75	-	-0.05	0	0	20.5	0	0	6.5	--
GMSG-5	07/10/98	3:35 PM	28.89	75	-	0.14	0	0	20.7	13	13	--	--
GMSG-5	07/11/98	6:59 PM	28.76	75.9	-	0.16	0	0	20.8	18	16	--	--
GMSG-5	07/12/98	9:31 AM	28.72	80.1	-	0.02	0	0	20.3	25	25	--	--
GMSG-5	07/14/98	6:58 PM	28.73	69.1	-	0.04	0	0	20.9	700	8	--	--
GMSG-5	07/15/98	10:37 AM	28.65	73.9	-	-0.15	0	0	20.4	30	25	1.75	--
GMSG-5	07/21/98	5:43 PM	28.59	79	-	-0.25	0	0	20.9	20	20	5	--
GMSG-5	07/22/98	5:41 PM	28.61	75	-	0.16	0	0	20.4	80	21	1.75	--
GMSG-5	07/23/98	6:13 PM	28.7	66.9	-	0	0	0.1	20.5	65	27	2.5	--
GMSG-5	07/24/98	6:05 PM	28.86	69.1	-	0	0	0.1	20.5	--	--	--	--
GMSG-5	07/26/98	1:26 PM	28.77	80.1	-	0.01	0.1	0	20.2	35	22	3.5	--
GMSG-5	07/27/98	6:10 PM	28.6	77	-	0	0	0.2	20.1	3.5	3.5	1.5	--
GMSG-5	07/28/98	1:00 PM	28.47	78.1	-	0	0	0.3	20	11	11	2	--
GMSG-5	07/29/98	11:33 AM	28.7	75.9	-	0	0.1	0.3	20.1	11	11	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-5	08/04/98	11:40 AM	28.93	75.9	-	0	0	0.5	20	25	5	4	--
GMSG-5	08/05/98	2:01 PM	28.92	77	-	0	0	0.4	20	65	55	4	--
GMSG-5	08/05/98	7:11 PM	28.9	72	-	0	--	--	--	--	--	--	--
GMSG-5	08/06/98	7:40 AM	28.84	66.9	T	0	--	--	--	--	--	--	--
GMSG-5	08/07/98	10:33 AM	28.79	72	-	-0.01	0	0.8	19.5	300	85	5.5	--
GMSG-5	08/09/98	8:01 AM	28.83	73	-	0	0	1	19.4	2	2	1.75	--
GMSG-5	08/10/98	8:19 AM	28.73	66.9	-	0	0	0.6	20.3	1.75	1.75	1.75	--
GMSG-5	08/11/98	4:07 PM	28.92	73	-	0	0	0.5	20.5	3	3	3.5	--
GMSG-5	08/12/98	10:33 AM	28.99	71.1	-	0	0	0.6	20.7	2.5	2.2	2.2	--
GMSG-5	08/13/98	10:52 AM	28.86	78.1	-	0	0	0.6	20.6	4.5	3.5	3.5	--
GMSG-5	08/14/98	10:32 AM	28.61	77	-	0	0	0.6	21	2.8	2.8	5	--
GMSG-5	08/15/98	10:32 AM	28.78	69.1	-	0	0	0.6	20.8	2.1	2.1	5	--
GMSG-5	08/16/98	10:31 AM	28.82	73	-	0	0	0.6	20.6	1.5	1.5	3	--
GMSG-5	08/17/98	10:33 AM	28.69	73.9	-	0	0	0.6	20.8	1.8	1.8	5	--
GMSG-5	08/18/98	10:33 AM	29.03	63	-	0	0	0.6	20.6	1.2	1.2	3.5	--
GMSG-5	08/19/98	10:28 AM	29.01	63	T	0	0	0.6	20.4	1	1	2.7	--
GMSG-5	08/20/98	10:36 AM	28.87	78.1	-	0	0	0.6	20.2	1.3	1.3	3.5	--
GMSG-5	08/21/98	11:42 AM	28.97	78.1	-	0	0	0.5	20.6	1.7	1.7	3.5	--
GMSG-5	08/22/98	10:27 AM	28.89	66	-	0	0	0.6	20.5	1	1	3	--
GMSG-5	08/23/98	10:21 AM	28.48	75	-	0	0	0.6	20.5	<1	<1	<1	--
GMSG-5	08/24/98	10:24 AM	28.42	75	-	0	0	0.6	20.9	<2	<2	2	--
GMSG-5	08/25/98	10:25 AM	28.59	72	-	0	0	0.6	20.7	<1.75	<1.75	1.75	--
GMSG-5	08/26/98	10:41 AM	28.78	79	-	0	0	0.4	21.2	20	16	11	--
GMSG-5	08/26/98	3:02 PM	28.75	82.9	-	0	0	0.4	21.3	10	9	10	--
GMSG-5	08/27/98	10:06 AM	28.84	79	-	0	0	0.6	20.8	<1	<1	2.5	--
GMSG-5	08/28/98	9:50 AM	28.68	75	-	0	0	0.6	20.3	5	2.5	5	--
GMSG-5	08/29/98	9:56 AM	28.65	73	-	0.01	0	0.5	20.6	2	2	4.75	--
GMSG-5	08/30/98	9:55 AM	28.74	72	-	0.01	0	0.5	20.5	2	<1	<1	--
GMSG-5	08/31/98	10:20 AM	28.85	71.1	-	0.02	0	0.5	20.6	<1	<1	2.5	--
GMSG-5	09/01/98	11:32 AM	28.57	71.1	T	0	0	0.7	20.1	2.75	<1	2.75	--
GMSG-5	09/02/98	10:43 AM	28.54	61	-	0	0	0.7	20.2	10	<1	2.5	--
GMSG-5	09/03/98	11:23 AM	28.57	68	-	0	0	0.6	20.3	1	1	1.7	--
GMSG-5	09/04/98	10:25 AM	28.74	71.1	-	0	0	0.6	20.5	2	2	2.5	--
GMSG-5	09/09/98	10:00 AM	28.95	62.1	-	0	0	0.6	20.1	7	4	4	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-5	09/11/98	10:10 AM	28.62	84	-	0	0	0.5	20.6	<3.5	<3.5	3.5	--
GMSG-5	09/14/98	10:52 AM	28.61	66.9	T	0	0	0.6	20.2	20	2.5	3.5	--
GMSG-5	09/21/98	1:30 PM	28.77	55	-	0	0	0.6	20.5	<2.5	<2.5	2.5	--
GMSG-5	09/22/98	10:16 AM	28.89	53.1	-	0	0	0.7	20.1	6	2	3	--
GMSG-5	09/23/98	11:12 AM	28.89	62.1	-	0	0	0.6	20.6	<2	<2	2	--
GMSG-5	09/28/98	10:53 AM	28.76	64.9	-	0	0	0.6	20.5	<3	<3	3	--
GMSG-5	10/07/98	10:38 AM	28.66	54	-	0	0	0.7	19.8	<4	<4	4	--
GMSG-5	10/14/98	8:17 AM	28.87	39	-	0	0	0.8	19.5	3	3	3	--
GMSG-5	10/24/98	2:04 PM	28.76	72	-	0	0	0.6	20.3	6	4	3.5	--
GMSG-5	10/27/98	9:04 AM	28.77	51.1	-	0	0	0.7	20.1	<3	<3	3	--
GMSG-5	12/16/98	2:35 PM	28.64	33	-	0	0	0.7	19.4	0	0	0	--
GMSG-5	01/20/99	12:22 PM	28.63	28.9	-	0	0	0.5	21.7	<1	<1	2.5	--
GMSG-5	02/10/99	10:48 AM	28.83	30.9	-	0	0	0.4	18	<1	<1	3	--
GMSG-5	03/13/99	10:13 AM	29.11	28	-	-0.07	0	0.4	19.5	2	2	4	--
GMSG-5	04/13/99	8:50 AM	28.95	48	-	0	0	0.4	19.3	0	0	3	--
GMSG-5	07/26/99	4:46 PM	28.67	82.9	-	0	0	1.5	18.9	11	5.75	7	--
GMSG-5	10/09/99	2:01 PM	28.69	71.1	-	-0.94	0	0.4	20.3	1.5	1.5	1.5	--
GMSG-5	01/19/00	4:56 PM	28.6	15	-	0	0	0.4	19.5	--	--	--	--
GMSG-5	04/18/00	9:22 AM	28.72	38	-	0	0	0.4	18	12.34	11.4	12.22	--
GMSG-5	07/22/00	7:34 AM	28.9	55	-	0	0	0.8	18.7	4	4	4	--
GMSG-5	10/20/00	9:20 AM	28.6	65	-	-0.13	0	0.6	19.5	0.27	-0.42	0.27	--
GMSG-5	01/26/01	1:25 PM	28.49	19	T	-0.01	0	0.3	19.8	0.23	--	0.23	--
GMSG-5	04/23/01	8:20 AM	28.39	60	-	0.08	0	0.4	19.1	0	-1.9	-1	--
GMSG-5	07/11/01	9:37 AM	28.82	70	-	0.01	0	0.5	19.7	0	0	0	--
GMSG-5	09/20/01	2:25 PM	28.64	67	-	0	0	0.5	20.1	0	0	0	--
GMSG-5	02/16/02	9:17 AM	28.52	32	-	-1.2	0	0	20.7	--	--	-1.24	--
GMSG-6A	09/24/97	7:05 PM	--	--	--	0	0	0.2	19.5	--	--	--	--
GMSG-6A	09/25/97	8:21 AM	--	--	--	0	0	0.2	19.5	--	--	--	--
GMSG-6A	09/25/97	6:41 PM	--	--	--	0	0	0	21.6	--	--	--	--
GMSG-6A	09/26/97	7:55 AM	--	--	--	-0.01	0	0.2	19.5	--	--	--	--
GMSG-6A	09/26/97	6:03 PM	--	--	--	0	0	0	21.8	--	--	--	--
GMSG-6A	09/27/97	9:02 AM	--	--	--	0	0	0	21.3	--	--	--	--
GMSG-6A	09/27/97	5:40 PM	--	--	--	0	0	0	21.3	--	--	--	--
GMSG-6A	09/28/97	8:00 AM	--	--	--	0	0	0.2	20.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-6A	09/28/97	6:36 PM	--	--	--	0	0	1	20.2	--	--	--	--
GMSG-6A	09/28/97	6:58 PM	--	--	--	0	0	0.7	20.5	--	--	--	--
GMSG-6A	09/29/97	8:43 AM	--	--	--	0	0	1	20.8	--	--	--	--
GMSG-6A	09/29/97	7:02 PM	--	--	--	0	0	1.1	19.6	--	--	--	--
GMSG-6A	09/30/97	8:40 AM	--	--	--	0	0	1.1	20.1	--	--	--	--
GMSG-6A	09/30/97	7:00 PM	--	--	--	0	0	1.1	20.3	--	--	--	--
GMSG-6A	10/01/97	9:10 AM	28.94	44.1	-	0	0	1.2	19.9	--	--	--	--
GMSG-6A	10/01/97	6:33 PM	28.78	43	-	0	0	1.1	20.1	--	--	--	--
GMSG-6A	10/02/97	7:25 AM	28.59	45	-	0	0	1.1	20.1	--	--	--	--
GMSG-6A	10/02/97	6:36 PM	28.49	59	-	0	0	1.1	20.1	--	--	--	--
GMSG-6A	10/03/97	7:59 AM	28.51	48.9	-	0	0	1.2	20.2	--	--	--	--
GMSG-6A	10/06/97	9:24 AM	--	--	--	-0.01	0	1	20.5	--	--	--	--
GMSG-6A	10/06/97	5:51 PM	--	--	--	0	0	1.1	18.2	--	--	--	--
GMSG-6A	10/07/97	8:06 AM	0	55.9	-	0	0	1.1	20.3	--	--	--	--
GMSG-6A	10/07/97	6:16 PM	28.79	59	-	0	0	1.2	19.7	--	--	--	--
GMSG-6A	10/08/97	7:54 AM	28.75	59	-	0	0	1	20.6	--	--	--	--
GMSG-6A	10/08/97	5:31 PM	0	72	-	0	0	1	20.1	--	--	--	--
GMSG-6A	10/09/97	7:46 AM	0	68	-	0	0	1	20.4	--	--	--	--
GMSG-6A	10/09/97	5:55 PM	28.72	51.1	-	0	0	1.1	20.6	--	--	--	--
GMSG-6A	10/10/97	7:43 AM	29.08	43	-	0	0	1.2	20.6	--	--	--	--
GMSG-6A	10/10/97	6:06 PM	29.06	50	-	0	0	1.1	20.3	--	--	--	--
GMSG-6A	10/11/97	8:04 AM	28.99	48.9	-	0	0	1.2	20.4	--	--	--	--
GMSG-6A	10/11/97	5:44 PM	28.76	60.1	-	0	0	1.1	19.9	--	--	--	--
GMSG-6A	10/12/97	7:42 AM	28.65	57.9	-	0	0	1.1	20.7	--	--	--	--
GMSG-6A	10/12/97	6:07 PM	28.48	61	0.04	0	0	1.1	20.8	--	--	--	--
GMSG-6A	10/13/97	7:53 AM	28.22	57.9	0.03	0	0	0.6	20.6	--	--	--	--
GMSG-6A	10/13/97	6:00 PM	28.52	43	T	0	0	0	21.6	--	--	--	--
GMSG-6A	10/14/97	8:29 AM	28.68	35.1	-	0	0	0	21.2	--	--	--	--
GMSG-6A	10/15/97	8:50 AM	29.08	42.1	-	0	0	0.5	20.3	--	--	--	--
GMSG-6A	10/21/97	7:46 AM	28.71	33.1	T	0	0	0.7	20.4	--	--	--	--
GMSG-6A	10/22/97	8:07 AM	28.91	27	-	0	0	0.8	20.4	--	--	--	--
GMSG-6A	10/22/97	6:13 PM	28.79	28.9	-	0	0	0	21.3	--	--	--	--
GMSG-6A	10/23/97	7:58 AM	28.72	24.1	-	0	0	0.1	20.2	--	--	--	--
GMSG-6A	10/23/97	5:52 PM	28.63	32	-	0	0	0.7	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-6A	10/24/97	7:39 AM	28.74	28	-	0	0	1.1	19.6	--	--	--	--
GMSG-6A	10/29/97	7:14 AM	28.64	32	-	0	--	--	--	--	--	--	--
GMSG-6A	10/29/97	11:20 AM	28.63	43	-	0	0	0.2	19	--	--	--	--
GMSG-6A	10/30/97	6:48 AM	28.61	35.1	-	0	0	0.4	19.2	--	--	--	--
GMSG-6A	10/30/97	5:00 PM	28.35	55.9	-	0	0	0.4	19.5	--	--	--	--
GMSG-6A	10/31/97	6:23 AM	28.29	42.1	-	0	0	0.4	19	--	--	--	--
GMSG-6A	11/13/97	7:55 AM	28.65	19.9	-	0	0	1	18.5	--	--	--	--
GMSG-6A	11/18/97	4:20 PM	28.6	30	-	-0.01	0	0.8	18.8	--	--	--	--
GMSG-6A	11/19/97	4:15 PM	28.62	26.1	-	0	0	1.1	18.9	--	--	--	--
GMSG-6A	11/20/97	5:18 PM	28.62	28.9	-	0	0	1.1	18.7	--	--	--	--
GMSG-6A	11/21/97	8:37 AM	28.81	19.9	-	0	0	1.2	19.2	--	--	--	--
GMSG-6B	09/24/97	7:07 PM	--	--	--	0	0	0	21.3	--	--	--	--
GMSG-6B	09/25/97	8:20 AM	--	--	--	0	0	0	21.1	--	--	--	--
GMSG-6B	09/25/97	6:43 PM	--	--	--	0	0	0	21.6	--	--	--	--
GMSG-6B	09/26/97	7:58 AM	--	--	--	0	0	0	21	--	--	--	--
GMSG-6B	09/27/97	9:00 AM	--	--	--	0	0	0	21.1	--	--	--	--
GMSG-6B	09/27/97	5:42 PM	--	--	--	0	0	0	21.1	--	--	--	--
GMSG-6B	09/28/97	8:03 AM	--	--	--	0	0	0	20.9	--	--	--	--
GMSG-6B	09/28/97	6:57 PM	--	--	--	0.06	0	0	21.2	--	--	--	--
GMSG-6B	09/29/97	8:42 AM	--	--	--	-1.75	0	0.2	21	--	--	--	--
GMSG-6B	09/29/97	7:04 PM	--	--	--	-0.06	0	0.5	20.4	--	--	--	--
GMSG-6B	09/30/97	8:43 AM	--	--	--	-1.45	0	0.2	20.9	--	--	--	--
GMSG-6B	09/30/97	7:02 PM	--	--	--	-4.5	0	0	21.2	--	--	--	--
GMSG-6B	10/01/97	9:12 AM	28.94	44.1	-	-2.5	0	0.1	21	--	--	--	--
GMSG-6B	10/01/97	6:33 PM	28.78	43	-	-3.5	0	0	21.1	--	--	--	--
GMSG-6B	10/02/97	7:27 AM	28.59	45	-	-0.35	0	0	21.1	--	--	--	--
GMSG-6B	10/02/97	6:38 PM	28.49	59	-	-0.03	0	0	21.1	--	--	--	--
GMSG-6B	10/03/97	8:01 AM	28.51	48.9	-	0	0	0	21.2	--	--	--	--
GMSG-6B	10/06/97	9:25 AM	--	--	--	-0.06	0	0	21.1	--	--	--	--
GMSG-6B	10/06/97	5:55 PM	--	--	--	-0.9	0	0	24.6	--	--	--	--
GMSG-6B	10/07/97	8:07 AM	0	55.9	-	-2	0	0	21.1	--	--	--	--
GMSG-6B	10/07/97	6:17 PM	28.79	59	-	-4	0	0.2	20.3	--	--	--	--
GMSG-6B	10/08/97	7:55 AM	28.75	59	-	-2.5	0	0	21.5	--	--	--	--
GMSG-6B	10/08/97	5:32 PM	0	72	-	-3	0	0.1	20.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-6B	10/09/97	7:47 AM	0	68	-	-0.29	0	0	21.2	--	--	--	--
GMSG-6B	10/09/97	5:56 PM	28.72	51.1	-	-10	0	0.4	21.1	--	--	--	--
GMSG-6B	10/10/97	7:44 AM	29.08	43	-	-8	0	0.6	20.6	--	--	--	--
GMSG-6B	10/10/97	6:08 PM	29.06	50	-	-3	0	0.1	21.1	--	--	--	--
GMSG-6B	10/11/97	8:06 AM	28.99	48.9	-	-2	0	0.1	21.1	--	--	--	--
GMSG-6B	10/11/97	5:45 PM	28.76	60.1	-	-5.5	0	0.4	20.3	--	--	--	--
GMSG-6B	10/12/97	7:44 AM	28.65	57.9	-	-8.7	0	0.6	20.9	--	--	--	--
GMSG-6B	10/12/97	6:07 PM	28.48	61	0.04	-1.4	0	0.6	24.2	--	--	--	--
GMSG-6B	10/13/97	7:51 AM	28.22	57.9	0.03	0	0	0.6	20.3	--	--	--	--
GMSG-6B	10/13/97	6:00 PM	28.52	43	T	-0.44	0	0.1	21	--	--	--	--
GMSG-6B	10/14/97	8:30 AM	28.71	36	-	-1.32	0	0.2	20.6	--	--	--	--
GMSG-6B	10/15/97	8:52 AM	29.08	42.1	-	-2.6	0	0.1	20.4	--	--	--	--
GMSG-6B	10/21/97	7:48 AM	28.71	33.1	T	0	0	0.2	19.4	--	--	--	--
GMSG-6B	10/22/97	8:09 AM	28.91	27	-	-0.46	0	0.1	19.7	--	--	--	--
GMSG-6B	10/22/97	6:13 PM	28.79	28.9	-	-0.06	0	0	21.2	--	--	--	--
GMSG-6B	10/23/97	8:00 AM	28.72	24.1	-	0.59	0	0.2	18.6	--	--	--	--
GMSG-6B	10/23/97	5:54 PM	28.63	32	-	0	0	0.1	18.8	--	--	--	--
GMSG-6B	10/24/97	7:41 AM	28.74	28	-	-0.5	0	0.1	19.1	--	--	--	--
GMSG-6B	10/29/97	7:15 AM	28.64	32	-	-0.23	--	--	--	--	--	--	--
GMSG-6B	10/29/97	11:21 AM	28.63	43	-	-0.09	0	0.2	17.9	--	--	--	--
GMSG-6B	10/30/97	6:50 AM	28.61	35.1	-	0.25	0	0	19.1	--	--	--	--
GMSG-6B	10/30/97	5:01 PM	28.35	55.9	-	0.5	0	0	19.4	--	--	--	--
GMSG-6B	10/31/97	6:25 AM	28.29	42.1	-	0.2	0	0.1	18.4	--	--	--	--
GMSG-6B	11/13/97	7:57 AM	28.65	19.9	-	0.02	0	0.6	14.4	--	--	--	--
GMSG-6B	11/18/97	4:21 PM	28.6	30	-	-0.14	0.2	0.2	16.8	--	--	--	--
GMSG-6B	11/19/97	4:18 PM	28.62	26.1	-	0.09	0.5	0.6	15.4	--	--	--	--
GMSG-6B	11/20/97	5:19 PM	28.62	28.9	-	-0.1	0.2	0.2	18.1	--	--	--	--
GMSG-6B	11/21/97	8:40 AM	28.81	19.9	-	-0.32	0.5	0.5	15.7	--	--	--	--
GMSG-6C	09/28/97	6:54 PM	--	--	--	0.34	0	0	21.3	--	--	--	--
GMSG-6C	09/29/97	8:40 AM	--	--	--	0.91	0	0	21.2	--	--	--	--
GMSG-6C	09/29/97	7:00 PM	--	--	--	-0.3	0	0	20.8	--	--	--	--
GMSG-6C	09/30/97	8:45 AM	--	--	--	-1.55	15.5	0.6	2.8	--	--	--	--
GMSG-6C	09/30/97	7:03 PM	--	--	--	-1.25	16.5	0.7	1.7	--	--	--	--
GMSG-6C	10/01/97	9:15 AM	28.94	44.1	-	-0.65	17.4	0.7	1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-6C	10/01/97	6:34 PM	28.78	43	-	0.55	17.8	0.7	0.5	--	--	--	--
GMSG-6C	10/02/97	7:30 AM	28.57	50	-	0.75	18	0.7	0.6	--	--	--	--
GMSG-6C	10/02/97	6:39 PM	28.49	59	-	0.24	17.2	0.7	0.6	--	--	--	--
GMSG-6C	10/03/97	8:02 AM	28.51	48.9	-	-0.04	17.6	0.8	0.7	--	--	--	--
GMSG-6C	10/06/97	9:26 AM	--	--	--	-0.95	0	0	21.4	--	--	--	--
GMSG-6C	10/06/97	5:59 PM	--	--	--	-0.35	0	0	22.8	--	--	--	--
GMSG-6C	10/07/97	8:11 AM	0	55.9	-	-0.15	0.1	0	20.6	--	--	--	--
GMSG-6C	10/07/97	6:19 PM	28.79	59	-	0.31	3.6	0.1	15.8	--	--	--	--
GMSG-6C	10/08/97	7:57 AM	28.75	59	-	0	9.1	0.4	9.2	--	--	--	--
GMSG-6C	10/08/97	5:34 PM	0	72	-	0.63	13.5	0.6	3.4	--	--	--	--
GMSG-6C	10/09/97	7:49 AM	0	68	-	0.5	15.8	0.7	0.9	--	--	--	--
GMSG-6C	10/09/97	5:57 PM	28.72	51.1	-	-0.75	14.3	0.9	1.4	--	--	--	--
GMSG-6C	10/10/97	7:45 AM	29.08	43	-	-0.33	0	0	21.5	--	--	--	--
GMSG-6C	10/10/97	6:09 PM	29.06	50	-	0	0	0	21.3	--	--	--	--
GMSG-6C	10/11/97	8:09 AM	28.99	48.9	-	0.32	0	0	21.3	--	--	--	--
GMSG-6C	10/11/97	5:46 PM	28.76	60.1	-	0.95	14.2	0.9	1.7	--	--	--	--
GMSG-6C	10/12/97	7:45 AM	28.65	57.9	-	0.48	15.4	0.8	1	--	--	--	--
GMSG-6C	10/12/97	6:08 PM	28.48	61	0.04	0.5	16.2	0.9	0.8	--	--	--	--
GMSG-6C	10/13/97	7:55 AM	28.22	57.9	0.03	1	15.7	0.9	0.1	--	--	--	--
GMSG-6C	10/13/97	6:01 PM	28.52	43	T	-1.1	15.7	0.9	0.4	--	--	--	--
GMSG-6C	10/14/97	8:31 AM	28.71	36	-	-0.85	16.9	1	0.1	--	--	--	--
GMSG-6C	10/15/97	8:56 AM	29.08	42.1	-	-0.62	0	0	20.9	--	--	--	--
GMSG-6C	10/21/97	7:50 AM	28.71	33.1	T	0.45	10.3	1	4.1	--	--	--	--
GMSG-6C	10/22/97	8:11 AM	28.91	27	-	-0.06	0	0	21	--	--	--	--
GMSG-6C	10/22/97	6:14 PM	28.79	28.9	-	0.45	0	0	21.4	--	--	--	--
GMSG-6C	10/23/97	8:02 AM	28.72	24.1	-	0.27	4.9	0.2	14	--	--	--	--
GMSG-6C	10/23/97	5:56 PM	28.63	32	-	0.37	18.9	0.9	2.5	--	--	--	--
GMSG-6C	10/24/97	7:43 AM	28.74	28	-	-0.4	5.2	0.1	13.3	--	--	--	--
GMSG-6C	10/29/97	7:17 AM	28.64	32	-	-0.39	--	--	--	--	--	--	--
GMSG-6C	10/29/97	11:23 AM	28.63	43	-	-0.05	0	0	19.6	--	--	--	--
GMSG-6C	10/30/97	6:51 AM	28.61	35.1	-	0.55	0	0	20	--	--	--	--
GMSG-6C	10/30/97	5:03 PM	28.35	55.9	-	0.8	18.2	0.2	0.5	--	--	--	--
GMSG-6C	10/31/97	6:27 AM	28.29	42.1	-	0.2	19.1	0.2	0	--	--	--	--
GMSG-6C	11/13/97	7:59 AM	28.65	19.9	-	-0.04	17.6	1.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-6C	11/18/97	4:22 PM	28.6	30	-	-0.39	17.8	1.2	0.5	--	--	--	--
GMSG-6C	11/19/97	4:25 PM	28.62	26.1	-	0.25	10.8	1.2	7	--	--	--	--
GMSG-6C	11/20/97	5:20 PM	28.62	28.9	-	-0.19	15.8	1.2	2	--	--	--	--
GMSG-6C	11/21/97	8:45 AM	28.81	19.9	-	-0.65	0.2	1	19	--	--	--	--
GMSG-7A	09/26/97	5:51 PM	--	--	--	0	0	0	20.6	--	--	--	--
GMSG-7A	09/27/97	8:54 AM	--	--	--	0	0	0.2	19.9	--	--	--	--
GMSG-7A	09/27/97	5:44 PM	--	--	--	0	0	0.2	19.3	--	--	--	--
GMSG-7A	09/28/97	8:06 AM	--	--	--	0	0	0.6	19.4	--	--	--	--
GMSG-7A	09/28/97	6:48 PM	--	--	--	0	0	0.2	21	--	--	--	--
GMSG-7A	09/29/97	8:50 AM	--	--	--	0	0	1	20.2	--	--	--	--
GMSG-7A	09/29/97	7:15 PM	--	--	--	0	0	1.1	19.7	--	--	--	--
GMSG-7A	09/30/97	8:55 AM	--	--	--	0	0	1.1	19.9	--	--	--	--
GMSG-7A	09/30/97	6:53 PM	--	--	--	0	0	1.1	20.6	--	--	--	--
GMSG-7A	10/01/97	9:20 AM	28.94	44.1	-	0	0	1.1	19.9	--	--	--	--
GMSG-7A	10/01/97	6:40 PM	28.78	43	-	0	0	1.1	20	--	--	--	--
GMSG-7A	10/02/97	7:35 AM	28.57	50	-	0	0	1.1	21.6	--	--	--	--
GMSG-7A	10/02/97	6:44 PM	28.49	59	-	-0.02	0	1	20	--	--	--	--
GMSG-7A	10/03/97	8:05 AM	28.51	48.9	-	0	0	1.1	20.4	--	--	--	--
GMSG-7A	10/06/97	9:33 AM	--	--	--	0	0	1	20.3	--	--	--	--
GMSG-7A	10/07/97	8:15 AM	0	55.9	-	0	0	1	19.5	--	--	--	--
GMSG-7A	10/07/97	6:23 PM	28.79	59	-	0	0	1.1	19.7	--	--	--	--
GMSG-7A	10/08/97	8:01 AM	28.75	59	-	0	0	1	20.5	--	--	--	--
GMSG-7A	10/08/97	5:37 PM	0	72	-	0	0	0.9	20.3	--	--	--	--
GMSG-7A	10/09/97	7:53 AM	0	68	-	0	0	0.9	20.4	--	--	--	--
GMSG-7A	10/09/97	6:02 PM	28.72	51.1	-	0	0	1.1	20.6	--	--	--	--
GMSG-7A	10/10/97	7:49 AM	29.08	43	-	0	0	1.2	20.3	--	--	--	--
GMSG-7A	10/10/97	6:12 PM	29.06	50	-	0	0	1.1	20.4	--	--	--	--
GMSG-7A	10/11/97	8:12 AM	28.99	48.9	-	0	0	1.1	20.4	--	--	--	--
GMSG-7A	10/11/97	5:50 PM	28.76	60.1	-	0	0	1	20.1	--	--	--	--
GMSG-7A	10/12/97	7:49 AM	28.65	57.9	-	0	0	1.1	20.5	--	--	--	--
GMSG-7A	10/12/97	6:17 PM	28.48	61	0.04	0	0	1	20.5	--	--	--	--
GMSG-7A	10/13/97	7:58 AM	28.22	57.9	0.03	-0.03	0	1	20.3	--	--	--	--
GMSG-7A	10/13/97	6:06 PM	28.52	43	T	0	0	1.1	20.4	--	--	--	--
GMSG-7A	10/14/97	8:37 AM	28.71	36	-	0	0	1.1	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7A	10/15/97	9:00 AM	29.08	42.1	-	0	0	1.1	19.9	--	--	--	--
GMSG-7A	10/21/97	7:53 AM	28.71	33.1	T	0	0	1.1	20.6	--	--	--	--
GMSG-7A	10/22/97	8:15 AM	28.91	27	-	0	0	1.1	20.2	--	--	--	--
GMSG-7A	10/22/97	6:22 PM	28.79	28.9	-	0	0	0	21.3	--	--	--	--
GMSG-7A	10/23/97	8:03 AM	28.72	24.1	-	0	0	0.2	20.4	--	--	--	--
GMSG-7A	10/23/97	5:58 PM	28.63	32	-	0	0	0.7	15.3	--	--	--	--
GMSG-7A	10/24/97	7:45 AM	28.74	28	-	0	0	1.1	19.8	--	--	--	--
GMSG-7A	10/29/97	7:19 AM	28.64	32	-	0.03	--	--	--	--	--	--	--
GMSG-7A	10/29/97	11:28 AM	28.63	43	-	0	0	0	18.7	--	--	--	--
GMSG-7A	10/30/97	6:56 AM	28.61	35.1	-	0	0	0.3	19.2	--	--	--	--
GMSG-7A	10/30/97	5:12 PM	28.35	55.9	-	0	0	0.3	19.6	--	--	--	--
GMSG-7A	10/31/97	6:33 AM	28.29	43	-	0	0	0.3	19.2	--	--	--	--
GMSG-7A	11/13/97	8:05 AM	28.65	19.9	-	0	0	1.4	17.8	--	--	--	--
GMSG-7A	11/18/97	4:29 PM	28.6	30	-	0	0	1.2	18.4	--	--	--	--
GMSG-7A	11/19/97	4:30 PM	28.61	21.9	-	0	0	1.1	18.6	--	--	--	--
GMSG-7A	11/20/97	5:25 PM	28.62	28.9	-	0	0	1.1	18.6	--	--	--	--
GMSG-7A	11/21/97	8:50 AM	28.81	19.9	-	0	0	1.1	19.1	--	--	--	--
GMSG-7A	12/02/97	10:05 AM	28.9	28	-	0	0	1.1	18	--	--	--	--
GMSG-7A	12/12/97	10:40 AM	28.61	28	-	0	0	1.1	19.5	--	--	--	--
GMSG-7A	01/21/98	3:50 PM	28.97	22	-	0.02	0.1	0.9	19.4	--	--	--	--
GMSG-7A	01/22/98	8:10 AM	29.03	14	T	0.01	0	0.9	19.3	--	--	--	--
GMSG-7A	02/18/98	4:21 PM	28.49	35.1	-	0	0	0.9	19.7	--	--	--	--
GMSG-7A	02/19/98	8:27 AM	28.59	32	-	0.02	0	0.8	20.2	--	--	--	--
GMSG-7A	03/30/98	2:47 PM	28.4	39	T	0.01	0	0.1	20.7	--	--	--	--
GMSG-7A	03/31/98	8:47 AM	28.48	34	T	0	0	0.2	20.1	--	--	--	--
GMSG-7A	04/14/98	3:46 PM	28.47	57.9	-	0	0	0.4	20.2	--	--	--	--
GMSG-7A	04/15/98	6:00 PM	28.61	41	-	0	0	0.5	20	--	--	--	--
GMSG-7A	04/16/98	8:54 AM	28.47	30.9	0.05	0	0	0.5	19.6	--	--	--	--
GMSG-7A	04/16/98	3:28 PM	28.43	34	T	0	0	0.5	19.9	--	--	--	--
GMSG-7A	04/17/98	8:32 AM	28.57	39	-	0	0	0.5	19.8	--	--	--	--
GMSG-7A	04/30/98	4:30 PM	28.58	69.1	-	0	0	0.5	20	--	--	--	--
GMSG-7A	05/01/98	8:11 AM	28.48	54	-	0	0	0.5	19.9	--	--	--	--
GMSG-7A	05/07/98	3:52 PM	28.53	69.1	-	0	0	0.8	19.9	--	--	--	--
GMSG-7A	05/08/98	8:55 AM	28.66	57.9	-	0	0	1	19.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7A	05/14/98	3:52 PM	28.72	77	-	0	0	0.8	19.5	--	--	--	--
GMSG-7A	05/15/98	7:48 AM	28.69	66.9	-	0	0	0.7	19.6	--	--	--	--
GMSG-7A	05/20/98	4:32 PM	28.73	69.1	-	0	0	0.8	19.9	--	--	--	--
GMSG-7A	05/21/98	8:00 AM	28.84	52	-	0	0	0.9	20.1	--	--	--	--
GMSG-7A	05/28/98	4:13 PM	28.49	86	-	0	0	0.8	19.4	--	--	--	--
GMSG-7A	05/29/98	10:01 AM	28.62	73.9	-	0	0	0.8	19.6	--	--	--	--
GMSG-7A	06/02/98	6:12 PM	28.5	52	-	0	0	1	20.1	--	--	--	--
GMSG-7A	06/05/98	9:14 AM	28.74	52	-	0	0	1	20.1	--	--	--	--
GMSG-7A	06/11/98	11:08 AM	28.57	59	-	0	0	1	20	--	--	--	--
GMSG-7A	06/12/98	8:54 AM	28.29	62.1	-	0	0	1	19.8	--	--	--	--
GMSG-7A	06/13/98	8:06 AM	28.53	63	-	0	0	1.1	19.8	--	--	--	--
GMSG-7A	06/14/98	11:15 AM	28.45	75.9	-	0	0	0.9	19.6	--	--	--	--
GMSG-7A	06/15/98	9:19 AM	28.32	75	-	0	0	1	19.8	--	--	--	--
GMSG-7A	06/16/98	6:15 PM	28.51	73.9	-	0.05	0	0.9	19.9	--	--	--	--
GMSG-7A	06/17/98	1:45 PM	28.73	80.1	-	0	0	0.8	19.7	--	--	--	--
GMSG-7A	06/22/98	3:50 PM	28.67	82.9	-	0	0	0.9	19.5	--	--	--	--
GMSG-7A	06/23/98	8:43 AM	28.83	69.1	-	0	0	1	19.7	--	--	--	--
GMSG-7A	06/24/98	1:52 PM	28.58	82	-	0	0	0.9	19.6	--	--	--	--
GMSG-7A	06/26/98	3:31 PM	--	--	--	0	0	0.9	19.2	--	--	--	--
GMSG-7A	06/27/98	1:27 PM	28.62	72	-	0	0	0.9	19.7	60	22	3.5	--
GMSG-7A	06/28/98	11:47 AM	28.55	81	-	0	0	0.8	19.5	60	22	--	--
GMSG-7A	07/06/98	5:44 PM	28.78	64.9	0.02	0	0	1.1	19.7	60	35	3	--
GMSG-7A	07/07/98	7:59 AM	28.76	57.9	-	0	0	1.1	19.6	65	35	3	--
GMSG-7A	07/08/98	7:11 PM	28.73	73.9	-	0	0	1	19.4	175	55	3.5	--
GMSG-7A	07/09/98	5:01 PM	28.78	75	-	0	0	1	19.6	50	27	6.5	--
GMSG-7A	07/10/98	3:48 PM	28.89	75	-	0	0	0.6	25.1	70	30	--	--
GMSG-7A	07/11/98	7:10 PM	28.76	75.9	-	0	0	0.7	20.1	50	30	--	--
GMSG-7A	07/12/98	9:44 AM	28.72	80.1	-	0	0	0.9	19.3	120	80	--	--
GMSG-7A	07/14/98	6:40 PM	28.73	69.1	-	0	0	1	19.2	50	0	--	--
GMSG-7A	07/15/98	11:02 AM	28.65	73.9	-	0	0	1	19.7	15	6	1.75	--
GMSG-7A	07/21/98	6:12 PM	28.59	79	-	0	0	0.7	20	>4	>4	>4	--
GMSG-7A	07/22/98	6:05 PM	28.61	75	-	0	0	0.8	19.7	200	22	1.5	--
GMSG-7A	07/23/98	6:35 PM	28.71	64.9	-	-0.01	0	1	19.7	4	4	4	--
GMSG-7A	07/24/98	6:23 PM	28.86	69.1	-	0	0	1	19.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7A	07/26/98	1:47 PM	28.73	82	-	0	0.6	0.7	19.5	30	24	4	--
GMSG-7A	07/27/98	5:10 PM	28.59	79	-	0	0	1	19.3	4	--	--	--
GMSG-7A	07/28/98	1:25 PM	28.47	78.1	-	0	0.1	1	19.2	30	20	2	--
GMSG-7A	07/29/98	12:45 PM	28.69	78.1	-	0	0	0.9	19.5	2.5	--	2.5	--
GMSG-7A	08/04/98	12:30 PM	28.92	77	-	0	0	0.9	19.6	<3.5	<3.5	3.5	--
GMSG-7A	08/05/98	12:29 PM	28.94	73.9	-	0	0	1	19.5	140	55	2	--
GMSG-7A	08/05/98	7:03 PM	28.9	72	-	0	--	--	--	--	--	--	--
GMSG-7A	08/06/98	8:03 AM	28.84	66.9	T	0	--	--	--	--	--	--	--
GMSG-7A	08/07/98	11:50 AM	28.79	73	-	0	0	1	19.2	150	30	5.5	--
GMSG-7A	08/09/98	8:08 AM	28.83	73	-	0	0	1.1	19.2	<1.75	<1.75	1.75	--
GMSG-7A	08/10/98	8:27 AM	28.73	66.9	-	0	0	0.8	20.2	<1.75	<1.75	1.75	--
GMSG-7A	08/11/98	4:14 PM	28.92	73	-	0	0	0.7	20.3	<3	<3	3	--
GMSG-7A	08/12/98	11:37 AM	28.97	73.9	-	0	0	0.6	21.3	2.5	2.5	5	--
GMSG-7A	08/13/98	12:05 PM	28.84	80.1	-	0	0	0.6	21.1	2.2	2.2	4.5	--
GMSG-7A	08/14/98	11:49 AM	28.61	72	0.03	0	0	0.7	21.1	2.5	2.5	5	--
GMSG-7A	08/15/98	11:44 AM	28.78	71.1	-	0	0	0.7	21	1.7	1.7	4	--
GMSG-7A	08/16/98	11:44 AM	28.8	75	-	0	0	0.6	21.4	1.5	1.5	4	--
GMSG-7A	08/17/98	11:51 AM	28.71	72	-	0	0	0.7	20.7	1.2	1.2	3.5	--
GMSG-7A	08/18/98	12:33 PM	29.03	68	-	0	0	0.7	21.2	2.3	2.3	5	--
GMSG-7A	08/19/98	11:34 AM	28.99	66.9	-	0	0	0.8	20.4	1	1	1.7	--
GMSG-7A	08/20/98	11:42 AM	28.86	81	-	0	0	0.7	21	1	1	3.5	--
GMSG-7A	08/21/98	12:50 PM	28.95	81	-	0	0	0.6	21	3.2	3.2	6	--
GMSG-7A	08/22/98	11:30 AM	28.89	68	-	0	0	0.8	20.2	1	1	2.5	--
GMSG-7A	08/23/98	11:46 AM	28.47	75.9	-	0	0	0.8	20.4	<1	<1	<1	--
GMSG-7A	08/24/98	11:36 AM	28.43	77	-	0	0	0.7	21.1	<2.25	<2.25	2.25	--
GMSG-7A	08/25/98	11:35 AM	28.61	75.9	-	0	0	0.7	20.9	<1.75	<1.75	1.75	--
GMSG-7A	08/26/98	10:54 AM	28.78	79	-	0	0	0.7	21	16	9	9.5	--
GMSG-7A	08/26/98	3:58 PM	28.76	82.9	-	0.01	0	0.6	20.8	3.5	3.5	5	--
GMSG-7A	08/27/98	11:04 AM	28.83	81	-	0	0	0.7	20.6	<1	<1	2.25	--
GMSG-7A	08/28/98	11:14 AM	28.66	79	-	0.01	0	0.7	20.5	<1	<1	2.25	--
GMSG-7A	08/29/98	11:20 AM	28.67	75.9	-	0.03	0	0.7	20.8	3.25	<1	3.25	--
GMSG-7A	08/30/98	11:22 AM	28.75	72	-	0.01	0	0.7	20.8	2.25	<1	2	--
GMSG-7A	08/31/98	12:14 PM	28.83	75	-	0.03	0	0.7	20.5	1.75	1.75	4.5	--
GMSG-7A	09/01/98	1:24 PM	28.54	73	T	-0.01	0	0.8	20.2	1.75	<1	1.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7A	09/02/98	12:29 PM	28.53	63	T	-0.03	0	0.9	20	1.75	<1	1.75	--
GMSG-7A	09/03/98	12:52 PM	28.56	70	-	0	0	0.7	20.6	1	1	3	--
GMSG-7A	09/04/98	11:51 AM	28.71	78.1	-	0	0	0.7	21	1	1	2.7	--
GMSG-7A	09/09/98	11:40 AM	28.91	69.1	-	0	0	0.8	20.7	<1	<1	2.5	--
GMSG-7A	09/11/98	11:13 AM	28.62	89.1	-	0	0	0.6	20.9	<3.5	<3.5	3.5	--
GMSG-7A	09/14/98	1:18 PM	28.59	68	0.01	0	0	0.8	20.2	<3	<3	3	--
GMSG-7A	09/21/98	2:37 PM	28.78	55.9	-	0	0	0.8	20.3	<2.25	<2.25	2.25	--
GMSG-7A	09/22/98	11:25 AM	28.89	55	-	0	0	0.8	20.2	<2.5	<2.5	2.5	--
GMSG-7A	09/23/98	12:00 PM	28.87	64	-	0	0	0.7	20.5	<2.5	<2.5	2.5	--
GMSG-7A	09/28/98	11:45 AM	28.74	66.9	-	0	0	0.8	20.7	<2.5	<2.5	2.5	--
GMSG-7A	10/07/98	11:36 AM	28.67	54	-	0	0	0.9	19.7	<3.5	<3.5	3.5	--
GMSG-7A	10/14/98	9:13 AM	28.87	39.9	-	0	0	1	19.1	<3	<3	3	--
GMSG-7A	10/24/98	3:10 PM	28.77	72	-	-0.1	0	0.7	20.2	<3	<3	3	--
GMSG-7A	10/27/98	10:45 AM	28.75	54	-	0	0	0.8	19.8	--	--	--	--
GMSG-7A	12/16/98	3:52 PM	28.64	32	-	0	0	0.8	19.1	0	0	0	--
GMSG-7A	01/20/99	1:23 PM	28.63	28.9	-	0	0	0.6	20.7	2	2	2	--
GMSG-7A	02/10/99	12:36 PM	28.77	35.1	-	0	0	0.5	16.1	2.5	2.5	3	--
GMSG-7A	03/13/99	10:25 AM	29.11	28	-	0	0	0.4	19.6	<1	<1	1.25	--
GMSG-7A	04/13/99	10:05 AM	28.95	51.1	-	0	0	0.3	19.7	0	0	3	--
GMSG-7A	10/09/99	6:49 PM	28.66	59	-	-0.66	0.3	0.3	0.4	1.5	1.5	1.5	--
GMSG-7A	01/19/00	2:36 PM	28.59	16	T	0.93	0	0.1	16.8	1.25	<1	1	--
GMSG-7A	04/18/00	1:20 PM	28.69	44	-	-0.78	0	0	15	12.5	11.42	11.96	--
GMSG-7A	07/22/00	9:25 AM	28.9	59	-	-0.94	0	0.2	19.3	7	7	7	--
GMSG-7A	10/20/00	10:35 AM	28.61	69	-	1.08	0	0	8	0.8	--	0.23	--
GMSG-7A	01/26/01	5:05 PM	28.51	23	T	2.15	0	0.1	5.7	3.74	--	0.43	--
GMSG-7A	04/23/01	9:15 AM	28.36	65	-	2.71	0	0	13.4	-2	-3.5	-2	--
GMSG-7A	07/11/01	10:54 AM	28.82	74	-	-0.58	0	0.3	20.5	0	0	0	--
GMSG-7A	09/20/01	1:53 PM	28.64	67	-	0.24	0	0	11.4	0	0	0	--
GMSG-7A	02/16/02	10:56 AM	28.57	31	-	3.82	0	0	19.9	-0.48	--	-0.48	--
GMSG-7B	09/26/97	5:49 PM	--	--	--	0	0	0	21.2	--	--	--	--
GMSG-7B	09/27/97	8:54 AM	--	--	--	0	0	0	21	--	--	--	--
GMSG-7B	09/27/97	5:47 PM	--	--	--	0	0	0.1	21	--	--	--	--
GMSG-7B	09/28/97	8:08 AM	--	--	--	0	0	0.4	20.9	--	--	--	--
GMSG-7B	09/28/97	6:49 PM	--	--	--	0	0	0.9	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-7B	09/29/97	8:48 AM	--	--	--	0	0	0.5	20.9	--	--	--	--
GMSG-7B	09/29/97	7:12 PM	--	--	--	0	0	0.7	20.3	--	--	--	--
GMSG-7B	09/30/97	8:57 AM	--	--	--	0	0	0.5	20.8	--	--	--	--
GMSG-7B	09/30/97	6:55 PM	--	--	--	-0.01	0	0.4	21.1	--	--	--	--
GMSG-7B	10/01/97	9:25 AM	28.94	44.1	-	0	0	0.5	20.7	--	--	--	--
GMSG-7B	10/01/97	6:40 PM	28.78	43	-	0	0	0.5	20.7	--	--	--	--
GMSG-7B	10/02/97	7:37 AM	28.57	50	-	0	0	0.6	22	--	--	--	--
GMSG-7B	10/02/97	6:45 PM	28.49	59	-	0	0	0.5	20.7	--	--	--	--
GMSG-7B	10/03/97	8:06 AM	28.51	48.9	-	0	0	0.6	20.7	--	--	--	--
GMSG-7B	10/06/97	9:35 AM	--	--	--	0	0	0.6	20.8	--	--	--	--
GMSG-7B	10/07/97	8:16 AM	0	55.9	-	0	0	0.6	22.1	--	--	--	--
GMSG-7B	10/07/97	6:24 PM	28.79	59	-	0	0	0.5	20.2	--	--	--	--
GMSG-7B	10/08/97	8:03 AM	28.75	59	-	0	0	0.4	21.2	--	--	--	--
GMSG-7B	10/08/97	5:38 PM	0	72	-	0	0	0.2	20.7	--	--	--	--
GMSG-7B	10/09/97	7:54 AM	0	68	-	0	0	0.4	20.8	--	--	--	--
GMSG-7B	10/09/97	6:03 PM	28.72	51.1	-	0	0	0.5	20.9	--	--	--	--
GMSG-7B	10/10/97	7:50 AM	29.08	43	-	0	0	0.6	20.9	--	--	--	--
GMSG-7B	10/10/97	6:13 PM	29.06	50	-	0	0	0.5	20.9	--	--	--	--
GMSG-7B	10/11/97	8:13 AM	28.99	48.9	-	0	0	0.5	21	--	--	--	--
GMSG-7B	10/11/97	5:51 PM	28.76	60.1	-	0	0	0.5	20.5	--	--	--	--
GMSG-7B	10/12/97	7:52 AM	28.65	57.9	-	0	0	0.5	20.9	--	--	--	--
GMSG-7B	10/12/97	6:17 PM	28.48	61	0.04	0	0.2	0.5	20.8	--	--	--	--
GMSG-7B	10/13/97	7:59 AM	28.22	57.9	0.03	0	0	0.5	20.8	--	--	--	--
GMSG-7B	10/13/97	6:06 PM	28.52	43	T	0	0	0.6	20.5	--	--	--	--
GMSG-7B	10/14/97	8:36 AM	28.71	36	-	0	0	0.6	20.8	--	--	--	--
GMSG-7B	10/15/97	9:02 AM	29.08	42.1	-	0	0	0.6	20.3	--	--	--	--
GMSG-7B	10/21/97	7:54 AM	28.71	33.1	T	0	0	0.6	20.4	--	--	--	--
GMSG-7B	10/22/97	8:17 AM	28.91	27	-	0	0	0.5	20.5	--	--	--	--
GMSG-7B	10/22/97	6:22 PM	28.79	28.9	-	0	0	0	21.3	--	--	--	--
GMSG-7B	10/23/97	6:00 PM	28.63	32	-	0	0	0.4	17.7	--	--	--	--
GMSG-7B	10/24/97	7:47 AM	28.74	28	-	0	0	0.7	19.9	--	--	--	--
GMSG-7B	10/29/97	7:20 AM	28.64	32	-	0	--	--	--	--	--	--	--
GMSG-7B	10/29/97	11:30 AM	28.62	45	-	0	0	0	18.7	--	--	--	--
GMSG-7B	10/30/97	6:57 AM	28.61	35.1	-	0	0	0.6	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7B	10/30/97	5:13 PM	28.35	55.9	-	0.02	0	0.4	20.1	--	--	--	--
GMSG-7B	10/31/97	6:34 AM	28.29	43	-	0.01	0	0.6	19.4	--	--	--	--
GMSG-7B	11/13/97	8:03 AM	28.65	19.9	-	0	0	0.8	18.2	--	--	--	--
GMSG-7B	11/18/97	4:30 PM	28.61	28	-	0	0	0.7	17.8	--	--	--	--
GMSG-7B	11/19/97	4:35 PM	28.61	21.9	-	0	0	0.6	18.6	--	--	--	--
GMSG-7B	11/20/97	5:25 PM	28.62	28.9	-	0	0	0.6	19	--	--	--	--
GMSG-7B	11/21/97	8:53 AM	28.81	19.9	-	0	0	0.5	19.4	--	--	--	--
GMSG-7B	12/02/97	9:55 AM	28.9	28	-	0	0	0.6	17.3	--	--	--	--
GMSG-7B	12/12/97	10:45 AM	28.61	28	-	0	0	0.7	18.4	--	--	--	--
GMSG-7B	01/21/98	3:15 PM	28.97	22	-	--	--	--	--	--	--	--	--
GMSG-7B	01/22/98	8:15 AM	29.03	14	T	--	--	--	--	--	--	--	--
GMSG-7B	02/18/98	4:24 PM	28.49	35.1	-	--	--	--	--	--	--	--	--
GMSG-7B	02/19/98	8:34 AM	28.6	33.1	-	0	0	0.3	20.4	--	--	--	--
GMSG-7B	03/30/98	2:52 PM	28.4	39	T	0.03	0	0	20.5	--	--	--	--
GMSG-7B	03/31/98	8:50 AM	28.48	34	T	0.01	0	0	20.3	--	--	--	--
GMSG-7B	04/14/98	3:48 PM	28.47	57.9	-	0.01	0	0.6	20.3	--	--	--	--
GMSG-7B	04/15/98	6:05 PM	28.61	41	-	0	0	0.6	19.9	--	--	--	--
GMSG-7B	04/16/98	8:58 AM	28.47	30.9	0.05	0	0	0.7	19.8	--	--	--	--
GMSG-7B	04/16/98	3:32 PM	28.47	34	-	0	0	0.6	19.6	--	--	--	--
GMSG-7B	04/17/98	8:35 AM	28.57	39	-	0	0	0.7	19.9	--	--	--	--
GMSG-7B	04/30/98	4:35 PM	28.58	69.1	-	0	0	0.5	19.3	--	--	--	--
GMSG-7B	05/01/98	8:14 AM	28.48	54	-	0	0	0.6	20	--	--	--	--
GMSG-7B	05/07/98	3:54 PM	28.53	69.1	-	0	0	0.8	19.8	--	--	--	--
GMSG-7B	05/08/98	8:57 AM	28.66	57.9	-	0	0	1	19.5	--	--	--	--
GMSG-7B	05/14/98	3:54 PM	28.72	77	-	0	0	0.7	18.2	--	--	--	--
GMSG-7B	05/15/98	7:50 AM	28.69	66.9	-	0	0	0.9	19	--	--	--	--
GMSG-7B	05/20/98	4:34 PM	28.73	69.1	-	0	0	0.8	18.6	--	--	--	--
GMSG-7B	05/21/98	8:02 AM	28.84	52	-	0	0	1	19.4	--	--	--	--
GMSG-7B	05/28/98	4:17 PM	28.49	86	-	0	0	0.7	17.7	--	--	--	--
GMSG-7B	05/29/98	10:03 AM	28.62	73.9	-	0	0	0.6	19.1	--	--	--	--
GMSG-7B	06/02/98	6:24 PM	28.5	52	-	0	0	0	20.5	--	--	--	--
GMSG-7B	06/05/98	9:20 AM	28.74	52	-	-0.8	0	0.7	20.6	--	--	--	--
GMSG-7B	06/11/98	11:10 AM	28.57	59	-	0	0	0.7	18.9	--	--	--	--
GMSG-7B	06/12/98	8:57 AM	28.29	62.1	-	0	0	0.7	19.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7B	06/13/98	8:09 AM	28.53	63	-	0	0	0.7	19.5	--	--	--	--
GMSG-7B	06/14/98	11:19 AM	28.45	75.9	-	0.4	0	0.4	19.4	--	--	--	--
GMSG-7B	06/15/98	9:21 AM	28.32	75	-	0	0	0.3	19.4	--	--	--	--
GMSG-7B	06/16/98	6:18 PM	28.51	73.9	-	0.04	0	0.4	19.6	--	--	--	--
GMSG-7B	06/17/98	1:47 PM	28.73	80.1	-	0	0	0.4	19.6	--	--	--	--
GMSG-7B	06/22/98	3:53 PM	28.67	82.9	-	0	0	0.4	19	--	--	--	--
GMSG-7B	06/23/98	8:45 AM	28.83	69.1	-	-0.03	0	0.4	19.6	--	--	--	--
GMSG-7B	06/24/98	1:54 PM	28.58	82	-	-0.01	0	0.4	19.4	--	--	--	--
GMSG-7B	06/26/98	3:33 PM	--	--	--	-0.18	0	0.4	18.9	--	--	--	--
GMSG-7B	06/27/98	1:29 PM	28.62	72	-	-0.01	0	0.5	19.3	30	14	3.5	--
GMSG-7B	06/28/98	11:49 AM	28.55	81	-	0	0	0.4	19.4	22	17	--	--
GMSG-7B	07/06/98	5:46 PM	28.78	64.9	0.02	0	0	0.7	19.4	35	27	3	--
GMSG-7B	07/07/98	8:01 AM	28.76	57.9	-	-0.01	0	0.6	19.6	40	25	3	--
GMSG-7B	07/08/98	7:12 PM	28.73	73.9	-	-0.1	0	0.8	18.4	6	5	3.5	--
GMSG-7B	07/09/98	5:03 PM	28.78	75	-	-0.53	0	0.6	18.9	35	23	6.5	--
GMSG-7B	07/10/98	3:51 PM	28.89	75	-	0.22	0	0.4	19.7	22	18	--	--
GMSG-7B	07/11/98	7:12 PM	28.76	75.9	-	0	0	0.4	19.8	33	17	--	--
GMSG-7B	07/12/98	9:46 AM	28.72	80.1	-	0.03	0	0.5	19.1	60	45	--	--
GMSG-7B	07/14/98	6:41 PM	28.73	69.1	-	0	0	0.4	19.3	450	90	--	--
GMSG-7B	07/15/98	11:04 AM	28.65	73.9	-	-0.03	0	0.7	19.7	5	1.75	1.75	--
GMSG-7B	07/21/98	6:15 PM	28.59	79	-	-0.02	0	0.3	19.3	6.5	5.5	4	--
GMSG-7B	07/22/98	6:08 PM	28.61	75	-	0	0	0.4	19.7	14	6	1.5	--
GMSG-7B	07/23/98	6:37 PM	28.71	64.9	-	-0.02	0	0.4	19.6	10	5.5	4	--
GMSG-7B	07/24/98	6:25 PM	28.86	69.1	-	-0.01	0	0.4	19.9	--	--	--	--
GMSG-7B	07/26/98	1:50 PM	28.73	82	-	0	0	0.2	19.4	27	16	4	--
GMSG-7B	07/27/98	5:15 PM	28.59	79	-	0	0	0.5	19.1	35	25	2	--
GMSG-7B	07/28/98	1:27 PM	28.47	78.1	-	0	0.1	0.4	19.2	2.5	2	2	--
GMSG-7B	07/29/98	12:47 PM	28.69	78.1	-	0.11	0	0	19.8	2.5	2.5	2.5	--
GMSG-7B	08/04/98	12:32 PM	28.92	77	-	0	0	0.3	19.2	7	4	3.5	--
GMSG-7B	08/05/98	12:33 PM	28.94	75.9	-	-0.01	0	0.5	19.9	40	36	2	--
GMSG-7B	08/05/98	7:04 PM	28.9	72	-	0	--	--	--	--	--	--	--
GMSG-7B	08/06/98	8:04 AM	28.84	66.9	T	-0.1	--	--	--	--	--	--	--
GMSG-7B	08/07/98	11:54 AM	28.79	73	-	0.04	0	0.5	19.1	60	20	5.5	--
GMSG-7B	08/09/98	9:26 AM	28.81	77	-	0	0	0.4	19.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7B	08/10/98	9:41 AM	28.74	77	-	0	0	0.3	21.3	--	--	--	--
GMSG-7B	08/11/98	5:11 PM	28.91	72	-	-0.09	0	0.3	21.9	--	--	--	--
GMSG-7B	08/12/98	11:43 AM	28.97	73.9	-	-0.24	0	0.2	22.5	7	<1	3	--
GMSG-7B	08/13/98	12:13 PM	28.84	80.1	-	0	0	0.4	21.3	1.8	1.8	4	--
GMSG-7B	08/14/98	11:44 AM	28.61	72	0.03	-0.44	0	0.2	22.4	4.5	4.5	5	--
GMSG-7B	08/15/98	11:37 AM	28.78	71.1	-	-0.04	0	0.4	21.3	1.7	1.7	4	--
GMSG-7B	08/16/98	11:36 AM	28.8	75	-	-0.54	0	0.2	22.7	2.2	2.2	4	--
GMSG-7B	08/17/98	11:44 AM	28.71	72	-	-0.4	0	0.3	22.2	3.5	3.5	3.5	--
GMSG-7B	08/18/98	12:21 PM	29.03	66.9	-	-0.37	0	0.2	22.8	4.2	4.2	5	--
GMSG-7B	08/19/98	11:29 AM	28.99	64.9	-	-0.01	0	0.5	20.7	1	1	1.7	--
GMSG-7B	08/20/98	11:36 AM	28.86	81	-	-0.66	0	0.2	22.4	2.8	2.8	3.5	--
GMSG-7B	08/21/98	12:43 PM	28.95	81	-	0	0	0.4	21.3	6	6	6	--
GMSG-7B	08/22/98	11:25 AM	28.89	66.9	-	-0.86	0	0.3	21.6	6	4.8	2.5	--
GMSG-7B	08/23/98	11:52 AM	28.47	75.9	-	0	0	0.3	22	1.5	<1	<1	--
GMSG-7B	08/24/98	11:30 AM	28.43	77	-	-0.48	0	0.2	22.6	2	2	2	--
GMSG-7B	08/25/98	11:28 AM	28.6	73	-	-1.15	0	0.3	22.3	3	1.75	1.75	--
GMSG-7B	08/26/98	12:50 PM	28.78	82	-	-0.05	0	0.4	21.8	11	11	11	--
GMSG-7B	08/26/98	4:04 PM	28.76	82.9	-	-0.31	0	0.4	21.4	3.5	3.5	5	--
GMSG-7B	08/27/98	11:12 AM	28.83	81	-	-0.14	0	0.4	21	<1	<1	2.25	--
GMSG-7B	08/28/98	11:24 AM	28.66	79	-	0.01	0	0.4	20.9	3	<1	2.25	--
GMSG-7B	08/29/98	11:30 AM	28.66	77	-	-0.02	0	0.4	21.1	2.75	<1	2.75	--
GMSG-7B	08/30/98	11:30 AM	28.74	73	-	-0.02	0	0.4	21.1	2	<1	2	--
GMSG-7B	08/31/98	12:20 PM	28.83	75	-	-0.07	0	0.4	20.9	1.5	1.5	4	--
GMSG-7B	09/01/98	1:32 PM	28.51	73	-	0.07	0	0.5	20.8	1.75	<1	1.5	--
GMSG-7B	09/02/98	12:39 PM	28.52	63	-	0.01	0	0.5	20.1	50	47.5	1.75	--
GMSG-7B	09/03/98	12:45 PM	28.56	70	-	-0.16	0	0.4	21.1	3.5	3.5	3.5	--
GMSG-7B	09/04/98	11:44 AM	28.71	78.1	-	-0.41	0	0.3	21.4	1	1	2.7	--
GMSG-7B	09/09/98	11:45 AM	28.91	69.1	-	-0.06	0	0.3	21.2	<1	<1	2.5	--
GMSG-7B	09/11/98	11:16 AM	28.62	89.1	-	0.05	0	0.2	21.3	3.5	3.5	3.5	--
GMSG-7B	09/14/98	1:11 PM	28.59	68	0.01	0.01	0	0.4	20.6	3	3	3	--
GMSG-7B	09/16/98	11:17 AM	28.92	71.1	-	-0.09	0	0.3	20.9	2	2	2	--
GMSG-7B	09/21/98	2:45 PM	28.78	55.9	-	-0.16	0	0.3	20.9	10	10	2.25	--
GMSG-7B	09/22/98	12:11 PM	28.89	57.9	-	-0.13	0	0.3	20.4	2.5	2.5	2.5	--
GMSG-7B	09/23/98	12:06 PM	28.87	64	-	0	0	0.2	21	2	2	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7B	09/28/98	11:53 AM	28.74	66.9	-	-0.08	0	0.3	21.2	2	2	2	--
GMSG-7B	10/07/98	11:42 AM	28.67	54	-	-0.13	0	0.4	20.1	3	3	3	--
GMSG-7B	10/14/98	9:19 AM	28.87	39.9	-	0	0	0.4	19.5	3	3	3	--
GMSG-7B	10/24/98	3:16 PM	28.77	72	-	0.07	0	0	20.2	3	3	3	--
GMSG-7B	10/27/98	10:52 AM	28.75	54	-	0.04	0	0.4	20.1	--	--	--	--
GMSG-7B	11/17/98	8:44 AM	28.81	30.9	-	-0.2	0	0.4	19.4	22	16	17.5	--
GMSG-7B	12/16/98	4:00 PM	28.64	32	-	0.1	0	0.4	19.2	2	2	0	--
GMSG-7B	01/20/99	1:31 PM	28.63	28	-	-0.17	0	0.3	20.7	2	2	2	--
GMSG-7B	02/10/99	12:44 PM	28.77	35.1	-	-0.06	0	0.3	19.9	3	3	3	--
GMSG-7B	03/13/99	10:34 AM	29.09	33.1	-	0	0	0.2	19.7	1.5	1.5	1.5	--
GMSG-7B	04/13/99	10:12 AM	28.95	51.1	-	0.16	0	0	20.3	0	0	3	--
GMSG-7B	07/26/99	5:51 PM	28.66	81	-	0.11	0	0.1	13.2	15	5	2.5	--
GMSG-7B	10/09/99	2:46 PM	28.67	71.1	-	0.01	0	0.3	18.1	1.5	1.5	1.5	--
GMSG-7B	01/19/00	2:40 PM	28.59	16	T	0.12	0	0	18.8	<1	<1	<1	--
GMSG-7B	04/18/00	1:25 PM	28.69	44	-	-0.42	0	0	17.5	12.37	11.68	12.06	--
GMSG-7B	07/22/00	9:33 AM	28.91	62	-	-0.11	0	0	19.6	4	4	4	--
GMSG-7B	10/20/00	10:39 AM	28.61	69	-	-0.14	0	0	18.2	0.06	-1.32	0	--
GMSG-7B	01/26/01	5:00 PM	28.51	23	T	1.46	0	0	13.7	0.54	--	0.41	--
GMSG-7B	04/23/01	9:20 AM	28.36	65	-	0.17	0	0	17.1	-5.3	-1.9	-2	--
GMSG-7B	07/11/01	10:50 AM	28.82	74	-	-0.05	0	0.1	20.7	0	0	0	--
GMSG-7B	09/20/01	1:57 PM	28.64	67	-	0	0	0	20.3	0	0	0	--
GMSG-7B	09/25/01	3:48 PM	28.86	56	-	-5	0	0.1	20.7	46.7	0	0	--
GMSG-7B	10/02/01	2:07 PM	28.56	75	-	-0.65	0	0.2	20.6	6.15	5.5	5.2	--
GMSG-7B	10/10/01	8:55 AM	28.57	58	T	-0.65	0	0.3	19.3	0.6	0	0.1	--
GMSG-7B	10/18/01	8:44 AM	28.6	43	-	-0.24	0	0.3	18.6	0	0	0.8	--
GMSG-7B	10/23/01	10:30 AM	28.21	52	-	-0.16	0	0.2	20.6	0.1	0.05	0.01	--
GMSG-7B	11/02/01	12:54 PM	28.68	50	-	-0.3	0	0.1	20.8	0.43	-0.85	0.43	--
GMSG-7B	11/07/01	10:07 AM	29.03	43	-	-0.27	0	0.1	20.6	-0.16	-1.2	-0.21	--
GMSG-7B	11/13/01	1:06 PM	28.76	46	-	0.45	0	0.1	20	-0.52	-1.9	-0.52	--
GMSG-7B	02/16/02	10:53 AM	28.57	31	-	-0.32	0	0.2	19.2	-0.08	-2.73	-0.45	--
GMSG-7B	05/15/02	8:56 AM	28.73	50	-	0.51	0	0	14.7	-3	-2.08	-3	--
GMSG-7C	09/28/97	6:46 PM	--	--	--	>2	0	0.1	20.6	--	--	--	--
GMSG-7C	09/29/97	8:46 AM	--	--	--	0.25	0	0.9	20.6	--	--	--	--
GMSG-7C	09/29/97	7:09 PM	--	--	--	0	0.2	0.1	20.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7C	09/30/97	9:00 AM	--	--	--	-0.25	0	0	20.6	--	--	--	--
GMSG-7C	09/30/97	6:57 PM	--	--	--	-0.11	0	0	20.9	--	--	--	--
GMSG-7C	10/01/97	9:30 AM	28.93	45	-	-0.02	0.1	0.2	20.1	--	--	--	--
GMSG-7C	10/01/97	6:41 PM	28.78	43	-	0.18	0	0.2	20.1	--	--	--	--
GMSG-7C	10/02/97	7:40 AM	28.57	50	-	0.12	0	0.2	20.3	--	--	--	--
GMSG-7C	10/02/97	6:42 PM	28.49	59	-	-0.09	0	0	20.8	--	--	--	--
GMSG-7C	10/03/97	8:08 AM	28.51	48.9	-	0	0	0.1	20.4	--	--	--	--
GMSG-7C	10/06/97	9:35 AM	--	--	--	-0.18	0	0.1	20.4	--	--	--	--
GMSG-7C	10/07/97	8:17 AM	0	55.9	-	0	0	0.1	21.1	--	--	--	--
GMSG-7C	10/07/97	6:25 PM	28.79	59	-	0.05	0	0.1	19.9	--	--	--	--
GMSG-7C	10/08/97	8:04 AM	28.75	59	-	-0.05	0	0.1	20.9	--	--	--	--
GMSG-7C	10/08/97	5:39 PM	0	72	-	0.05	0	0.2	20.4	--	--	--	--
GMSG-7C	10/09/97	7:55 AM	0	68	-	0	0	0.1	20.4	--	--	--	--
GMSG-7C	10/09/97	6:04 PM	28.72	51.1	-	-0.28	0	0.4	20	--	--	--	--
GMSG-7C	10/10/97	7:51 AM	29.08	43	-	-0.29	0	0.4	19.7	--	--	--	--
GMSG-7C	10/10/97	6:14 PM	29.06	50	-	0.09	0	0.4	19.5	--	--	--	--
GMSG-7C	10/11/97	8:14 AM	28.99	48.9	-	0.04	0	0.4	19.6	--	--	--	--
GMSG-7C	10/11/97	5:52 PM	28.76	60.1	-	0.08	0	0.4	19.7	--	--	--	--
GMSG-7C	10/12/97	7:53 AM	28.65	57.9	-	0.4	0	0.1	20.9	--	--	--	--
GMSG-7C	10/12/97	6:17 PM	28.48	61	0.04	0	0	0.3	20.4	--	--	--	--
GMSG-7C	10/13/97	8:01 AM	28.22	57.9	0.03	0	0	0.4	19.8	--	--	--	--
GMSG-7C	10/13/97	6:07 PM	28.52	43	T	-0.55	0	0.4	19.4	--	--	--	--
GMSG-7C	10/14/97	8:35 AM	28.71	36	-	-0.4	0	0.4	18.9	--	--	--	--
GMSG-7C	10/15/97	9:05 AM	29.08	42.1	-	-0.1	0	0.5	19.2	--	--	--	--
GMSG-7C	10/21/97	7:55 AM	28.71	33.1	T	0.1	0	0.3	20.4	--	--	--	--
GMSG-7C	10/22/97	8:19 AM	28.91	27	-	0	0	0.1	20.9	--	--	--	--
GMSG-7C	10/22/97	6:22 PM	28.79	28.9	-	0.09	0	0	21.1	--	--	--	--
GMSG-7C	10/23/97	8:07 AM	28.72	24.1	-	0.15	0	0	20.5	--	--	--	--
GMSG-7C	10/23/97	6:02 PM	28.63	32	-	-0.53	0	0	21	--	--	--	--
GMSG-7C	10/24/97	7:49 AM	28.74	28	-	-0.26	0	0	20.6	--	--	--	--
GMSG-7C	10/29/97	7:21 AM	28.64	32	-	-0.05	--	--	--	--	--	--	--
GMSG-7C	10/29/97	11:32 AM	28.62	45	-	0.07	0	0.2	19.4	--	--	--	--
GMSG-7C	10/30/97	6:58 AM	28.61	35.1	-	0.21	0	0.1	19.9	--	--	--	--
GMSG-7C	10/30/97	5:15 PM	28.35	55.9	-	0	0	0.1	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7C	10/31/97	6:36 AM	28.29	43	-	-0.13	0	0.3	19.4	--	--	--	--
GMSG-7C	11/13/97	8:00 AM	28.65	19.9	-	-0.07	0	0.6	16	--	--	--	--
GMSG-7C	11/18/97	4:32 PM	28.61	28	-	-0.26	0	0.2	16.7	--	--	--	--
GMSG-7C	11/19/97	4:40 PM	28.61	21.9	-	0.06	0	0.5	16.2	--	--	--	--
GMSG-7C	11/20/97	5:26 PM	28.62	28.9	-	-0.14	0	0.5	15.6	--	--	--	--
GMSG-7C	11/21/97	9:00 AM	28.81	19.9	-	-0.38	0	0.4	17.3	--	--	--	--
GMSG-7C	12/02/97	9:50 AM	28.9	28	-	0.45	0	0.6	17.1	--	--	--	--
GMSG-7C	12/12/97	10:50 AM	28.61	28	-	1	0	0.6	17.4	--	--	--	--
GMSG-7C	01/21/98	4:00 PM	28.97	22	-	0.05	0.1	0.2	15.6	--	--	--	--
GMSG-7C	01/22/98	8:20 AM	29.03	14	T	-0.22	0.1	0.1	17.9	--	--	--	--
GMSG-7C	02/18/98	4:25 PM	28.49	35.1	-	0	0	0.4	16.5	--	--	--	--
GMSG-7C	02/19/98	8:39 AM	28.6	33.1	-	-0.7	0	0.4	26.5	--	--	--	--
GMSG-7C	03/30/98	2:57 PM	28.4	39	T	-0.4	0	0	20.4	--	--	--	--
GMSG-7C	03/31/98	8:52 AM	28.48	34	T	-0.21	0	0.1	19.7	--	--	--	--
GMSG-7C	04/14/98	3:51 PM	28.47	57.9	-	0	0	0.1	16.4	--	--	--	--
GMSG-7C	04/15/98	6:10 PM	28.61	41	-	0.19	0	0.2	15.4	--	--	--	--
GMSG-7C	04/16/98	9:03 AM	28.47	30.9	0.05	0	0	0.1	17.7	--	--	--	--
GMSG-7C	04/16/98	3:33 PM	28.47	34	-	0	0	0	20.6	--	--	--	--
GMSG-7C	04/17/98	8:42 AM	28.57	39	-	-0.33	0	0.1	18.1	--	--	--	--
GMSG-7C	04/30/98	4:38 PM	28.58	69.1	-	0.48	0	0	17.9	--	--	--	--
GMSG-7C	05/01/98	8:21 AM	28.48	54	-	-0.12	0	0.1	16.1	--	--	--	--
GMSG-7C	05/07/98	3:57 PM	28.53	69.1	-	0.16	0	0	18.1	--	--	--	--
GMSG-7C	05/08/98	9:02 AM	28.66	57.9	-	-0.4	0	0	19.1	--	--	--	--
GMSG-7C	05/14/98	3:56 PM	28.72	77	-	0.25	0	0	17.2	--	--	--	--
GMSG-7C	05/15/98	7:53 AM	28.69	66.9	-	-0.11	0	0.1	18.2	--	--	--	--
GMSG-7C	05/20/98	4:38 PM	28.73	69.1	-	0	0	0	17.9	--	--	--	--
GMSG-7C	05/21/98	8:05 AM	28.84	52	-	-0.41	0	0.1	20	--	--	--	--
GMSG-7C	05/28/98	4:20 PM	28.49	86	-	-0.12	0	0	17.1	--	--	--	--
GMSG-7C	05/29/98	10:00 AM	28.62	73.9	-	-0.26	0	0.8	18.3	--	--	--	--
GMSG-7C	06/02/98	6:30 PM	28.52	50	-	-0.9	0	0.2	15.2	--	--	--	--
GMSG-7C	06/05/98	9:26 AM	28.74	52	-	-0.1	0	0.1	16.9	--	--	--	--
GMSG-7C	06/11/98	11:12 AM	28.57	59	-	0	0	0.1	18.8	--	--	--	--
GMSG-7C	06/12/98	8:59 AM	28.29	62.1	-	0	0	0.1	18.6	--	--	--	--
GMSG-7C	06/13/98	8:12 AM	28.53	63	-	0	0	0	18.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7C	06/14/98	11:22 AM	28.45	75.9	-	0.5	0	0	18.6	--	--	--	--
GMSG-7C	06/15/98	9:23 AM	28.32	75	-	0.04	0	0.1	18	--	--	--	--
GMSG-7C	06/16/98	8:21 AM	28.41	69.1	-	-0.79	0	0	18.1	--	--	--	--
GMSG-7C	06/17/98	1:50 PM	28.73	80.1	-	-0.79	0	0	19.4	--	--	--	--
GMSG-7C	06/22/98	3:56 PM	28.67	82.9	-	0.22	0	0	18.4	--	--	--	--
GMSG-7C	06/23/98	8:47 AM	28.83	69.1	-	-0.76	0	0	19	--	--	--	--
GMSG-7C	06/24/98	1:57 PM	28.58	82	-	0.84	0	0	18.8	--	--	--	--
GMSG-7C	06/26/98	3:35 PM	--	--	--	-0.37	0	0	17.9	--	--	--	--
GMSG-7C	06/27/98	1:21 PM	28.62	72	-	-0.71	0	0	18.7	20	10	3.5	--
GMSG-7C	06/28/98	11:52 AM	28.55	81	-	-0.17	0	0	18.5	14	14	--	--
GMSG-7C	07/06/98	5:49 PM	28.78	64.9	0.02	-1.33	0	0.1	18.5	18	18	3	--
GMSG-7C	07/07/98	8:04 AM	28.76	57.9	-	-1.3	0	0	19.4	30	28	3	--
GMSG-7C	07/08/98	7:14 PM	28.73	73.9	-	0.06	0	0.1	17.8	30	30	3.5	--
GMSG-7C	07/09/98	5:06 PM	28.78	75	-	-0.53	0	0	18.5	25	16	6.5	--
GMSG-7C	07/10/98	3:53 PM	28.89	75	-	0.2	0	0	19	16	12	--	--
GMSG-7C	07/11/98	7:14 PM	28.76	75.9	-	0.43	0	0	19.8	--	--	--	--
GMSG-7C	07/12/98	9:49 AM	28.72	80.1	-	-0.38	0	0	18.7	40	32	--	--
GMSG-7C	07/14/98	6:41 PM	28.73	69.1	-	0	0	0	18.2	7	6	--	--
GMSG-7C	07/15/98	11:06 AM	28.65	73.9	-	-1.73	0	0.1	17.6	3	3	1.75	--
GMSG-7C	07/21/98	6:18 PM	28.59	79	-	-0.94	0	0	17.9	4	4	4	--
GMSG-7C	07/22/98	6:11 PM	28.61	75	-	0.2	0	0	18.9	20	10	1.5	--
GMSG-7C	07/23/98	6:40 PM	28.71	64.9	-	-0.3	0	0	18.9	4	4	4	--
GMSG-7C	07/24/98	6:27 PM	28.86	69.1	-	-0.73	0	0	19.5	--	--	--	--
GMSG-7C	07/26/98	1:53 PM	28.73	82	-	1.06	0	0	19.1	25	12	3.5	--
GMSG-7C	07/27/98	5:20 PM	28.59	79	-	-0.09	0	0.1	17.3	2.2	2	2	--
GMSG-7C	07/28/98	1:29 PM	28.47	78.1	-	-0.66	0.1	0	18	8	8	2	--
GMSG-7C	07/29/98	12:49 PM	28.69	78.1	-	-3	0.1	0	18.3	2.5	2.5	2.5	--
GMSG-7C	08/04/98	12:34 PM	28.92	77	-	-0.34	0	0	17.7	4.5	4.5	3.5	--
GMSG-7C	08/05/98	12:46 PM	28.94	75.9	-	-1.57	0	0	10.2	9.5	9	2.5	--
GMSG-7C	08/05/98	7:05 PM	28.9	72	-	-0.31	--	--	--	--	--	--	--
GMSG-7C	08/06/98	8:04 AM	28.84	66.9	T	-1.13	--	--	--	--	--	--	--
GMSG-7C	08/06/98	9:48 AM	28.85	64.9	0.16	--	1.4	0	11	--	--	--	--
GMSG-7C	08/07/98	12:08 PM	28.79	73	-	-3.48	5.4	0	0	--	--	--	--
GMSG-7C	08/07/98	7:25 PM	28.78	73	-	-3.92	5.7	0.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7C	08/08/98	11:49 AM	28.81	79	-	-5.1	5.3	0.1	0.7	--	--	--	--
GMSG-7C	08/09/98	9:28 AM	28.81	77	-	-5.04	4.6	0.1	2.2	--	--	--	--
GMSG-7C	08/10/98	9:46 AM	28.74	77	-	-4.65	3.1	0	6.9	--	--	--	--
GMSG-7C	08/11/98	5:13 PM	28.91	72	-	-6.12	0.1	0	20.8	--	--	--	--
GMSG-7C	08/12/98	11:51 AM	28.97	73.9	-	-2.05	0	0	22.5	6	6	6	--
GMSG-7C	08/13/98	12:23 PM	28.84	80.1	-	-0.76	0	0	22.5	500	500	4.5	--
GMSG-7C	08/14/98	11:36 AM	28.61	72	0.03	-0.42	0	0	21.9	1100	900	5	--
GMSG-7C	08/15/98	11:29 AM	28.78	69.1	-	0	0	0	21.8	3.5	3.5	5	--
GMSG-7C	08/16/98	11:29 AM	28.82	73	-	-1.49	0	0	22.9	150	130	5	--
GMSG-7C	08/17/98	11:33 AM	28.71	72	-	-1.05	0	0	21.9	300	220	3.5	--
GMSG-7C	08/18/98	12:14 PM	29.03	66.9	-	-1.32	0	0	22.1	450	200	6	--
GMSG-7C	08/19/98	11:20 AM	28.99	64.9	-	0	0	0	21.2	2.2	2.2	1.7	--
GMSG-7C	08/20/98	11:29 AM	28.87	78.1	-	-0.77	0	0	22.1	90	90	3	--
GMSG-7C	08/21/98	12:37 PM	28.95	81	-	-0.01	0	0	22.1	6	6	6	--
GMSG-7C	08/22/98	11:20 AM	28.89	66.9	-	-0.81	0	0	21.8	25	20	2.5	--
GMSG-7C	08/23/98	11:58 AM	28.47	75.9	-	0	0	0	21.6	30	12	<1	--
GMSG-7C	08/24/98	11:23 AM	28.43	75.9	-	0	0	0	21.7	80	55	2.5	--
GMSG-7C	08/25/98	11:21 AM	28.6	73	-	0	0	0	21.2	225	150	1.75	--
GMSG-7C	08/26/98	1:02 PM	28.78	82	-	0.01	0	0	22.3	11	11	11	--
GMSG-7C	08/26/98	4:15 PM	28.76	82.9	-	0.19	0	0	22.1	42	42	4.5	--
GMSG-7C	08/27/98	11:24 AM	28.83	81	-	-1.87	0	0	21.7	25	10	2.25	--
GMSG-7C	08/28/98	11:35 AM	28.66	81	-	-0.32	0	0	21.5	5	3.75	2.25	--
GMSG-7C	08/29/98	11:45 AM	28.66	77	-	-0.37	0	0	21.1	3	2.5	2.5	--
GMSG-7C	08/30/98	11:42 AM	28.74	73	-	-0.75	0	0	21.9	2.75	2	2	--
GMSG-7C	08/31/98	12:34 PM	28.83	75	-	-1.02	0	0	21.8	3	3	2.5	--
GMSG-7C	09/01/98	1:45 PM	28.51	73	-	0.9	0	0	19.5	9	9	1.75	--
GMSG-7C	09/02/98	12:51 PM	28.52	63	-	0.13	0	0	18.1	350	200	2	--
GMSG-7C	09/03/98	12:31 PM	28.56	70	-	-0.35	0	0	17.8	3.5	3.5	2.5	--
GMSG-7C	09/04/98	11:34 AM	28.71	78.1	-	-1.13	0	0	22	2.7	2.7	2.7	--
GMSG-7C	09/09/98	11:50 AM	28.91	69.1	-	-1.41	0	0	21.6	2	2	2	--
GMSG-7C	09/10/98	6:15 PM	28.65	77	-	1.07	0	0	21.6	--	--	--	--
GMSG-7C	09/11/98	11:21 AM	28.62	89.1	-	0.35	0	0	20	3.5	3.5	3	--
GMSG-7C	09/12/98	5:34 PM	28.7	73	-	-0.15	0	0	21.4	--	--	--	--
GMSG-7C	09/14/98	12:03 PM	28.6	66.9	-	0.24	0	0	17.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7C	09/16/98	11:24 AM	28.92	71.1	-	-1.34	0	0	19.9	1.5	1.5	2	--
GMSG-7C	09/21/98	2:56 PM	28.78	55.9	-	-2.49	0	0	16.6	2.25	2.25	2.25	--
GMSG-7C	09/22/98	12:23 PM	28.89	57.9	-	-2.35	0	0	19.3	2.5	2.5	2.5	--
GMSG-7C	09/23/98	12:17 PM	28.87	64	-	1.16	0	0	21.4	2	2	2	--
GMSG-7C	09/28/98	12:01 PM	28.74	66.9	-	-2.98	0	0	18.5	2	2	2	--
GMSG-7C	10/07/98	11:50 AM	28.67	54	-	-0.36	0	0	20.5	3	3	3	--
GMSG-7C	10/14/98	9:24 AM	28.87	39.9	-	-0.96	0	0	19.9	3	3	3	--
GMSG-7C	10/24/98	3:22 PM	28.77	72	-	0.19	0	0	19.3	4	4	4	--
GMSG-7C	10/27/98	10:59 AM	28.75	54	-	-2.77	0	0	18.5	--	--	--	--
GMSG-7C	11/17/98	8:51 AM	28.81	30.9	-	-1.7	0	0	19.9	19	17	12	--
GMSG-7C	12/16/98	4:07 PM	28.64	32	-	-2.66	0	0.2	17	600	500	0	--
GMSG-7C	01/20/99	1:41 PM	28.63	28	-	-4.45	0	0	20.5	<1	<1	2	--
GMSG-7C	02/10/99	1:00 PM	28.77	35.1	-	--	0	0	18.9	2	2	2	--
GMSG-7C	03/13/99	10:48 AM	29.09	33.1	-	-2.27	0	0.1	17	2	2	1.5	--
GMSG-7C	04/13/99	10:20 AM	28.95	51.1	-	0.37	0	0	20.5	0	0	3	--
GMSG-7C	07/26/99	6:03 PM	28.66	81	-	0	0	0.7	19.9	8	--	2.25	--
GMSG-7C	10/09/99	2:43 PM	28.67	71.1	-	0.02	0	0.7	20.7	<1	<1	1.5	--
GMSG-7C	01/19/00	2:47 PM	28.59	16	T	0	0	0.2	19.9	<1	<1	<1	--
GMSG-7C	04/18/00	1:29 PM	28.69	44	-	0.01	0	0.3	17.9	12.12	11.75	12.12	--
GMSG-7C	07/22/00	9:36 AM	28.91	62	-	0	0	0.8	18.5	<4	<4	4	--
GMSG-7C	10/20/00	10:43 AM	28.61	69	-	0	0	0.8	19.6	0.5	-1.4	0.5	--
GMSG-7C	01/26/01	4:55 PM	28.51	23	T	0	0	0.3	19.2	0.47	--	0.43	--
GMSG-7C	04/23/01	9:23 AM	28.36	65	-	0.02	0	0.3	19.3	-1.5	-2	-1.9	--
GMSG-7C	07/11/01	10:46 AM	28.82	74	-	0	0	0.9	19.7	0	0	0	--
GMSG-7C	09/20/01	1:59 PM	28.64	67	-	0	0	0.6	20.1	0	0	0	--
GMSG-7C	09/25/01	3:51 PM	28.86	56	-	-3.3	0	0.5	20.1	0	0	0	--
GMSG-7C	10/02/01	2:16 PM	28.56	75	-	0	0	0.9	20.1	2.8	2.8	4.83	--
GMSG-7C	10/10/01	9:05 AM	28.57	58	T	0	0	0.5	19	1.8	1.4	0.1	--
GMSG-7C	10/18/01	8:52 AM	28.6	43	-	0	0	0.5	18.6	0.6	0.5	0.5	--
GMSG-7C	10/23/01	10:40 AM	28.21	52	-	0	0	0.5	20.4	1.15	1.1	0.05	--
GMSG-7C	11/02/01	12:59 PM	28.68	50	-	-0.01	0	0.5	20.3	0.45	-1.29	0.45	--
GMSG-7C	11/07/01	10:13 AM	29.03	43	-	0	0	0.6	20.1	-0.24	-1.51	-0.24	--
GMSG-7C	11/13/01	1:11 PM	28.76	46	-	0	0	0.6	20.1	-0.53	-2.2	-0.53	--
GMSG-7C	02/16/02	10:49 AM	28.57	31	-	-0.01	0	0.2	19.8	-0.16	-2.23	-0.45	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-7C	05/15/02	9:00 AM	28.73	50	-	0.03	0	0.5	20.1	-0.25	-2.2	-0.25	--
GMSG-8A	09/26/97	5:58 PM	--	--	--	0	0	0.9	17.9	--	--	--	--
GMSG-8A	09/27/97	9:15 AM	--	--	--	0	0	0.9	18.4	--	--	--	--
GMSG-8A	09/27/97	5:54 PM	--	--	--	0	0	1.5	18.8	--	--	--	--
GMSG-8A	09/28/97	8:17 AM	--	--	--	0	0	1.7	19.2	--	--	--	--
GMSG-8A	09/28/97	7:06 PM	--	--	--	0	0	1.4	19.3	--	--	--	--
GMSG-8A	09/29/97	9:15 AM	--	--	--	0	0	1.7	19.2	--	--	--	--
GMSG-8A	09/29/97	7:23 PM	--	--	--	0	0	1.6	19.6	--	--	--	--
GMSG-8A	09/30/97	9:20 AM	--	--	--	-0.02	0	1.8	19.2	--	--	--	--
GMSG-8A	09/30/97	7:03 PM	--	--	--	0	0	1.5	19.2	--	--	--	--
GMSG-8A	10/01/97	9:45 AM	28.93	45	-	-0.01	0	1.5	19.3	--	--	--	--
GMSG-8A	10/01/97	6:54 PM	28.78	43	-	-0.01	0	1.6	19.2	--	--	--	--
GMSG-8A	10/02/97	7:50 AM	28.57	50	-	0	0	1.8	19.2	--	--	--	--
GMSG-8A	10/02/97	7:20 PM	28.49	59	-	-0.03	0	1.7	19.5	--	--	--	--
GMSG-8A	10/03/97	8:13 AM	28.51	48.9	-	0	0	1.6	19.4	--	--	--	--
GMSG-8A	10/06/97	9:52 AM	--	--	--	-0.03	0	1.1	19.3	--	--	--	--
GMSG-8A	10/07/97	8:33 AM	0	57	-	0	0	1.1	19.8	--	--	--	--
GMSG-8A	10/07/97	6:34 PM	28.8	59	-	0	0	1.4	18.9	--	--	--	--
GMSG-8A	10/08/97	8:12 AM	28.75	59	-	0	0	1.3	21.5	--	--	--	--
GMSG-8A	10/08/97	5:48 PM	0	72	-	0	0	1.4	19.5	--	--	--	--
GMSG-8A	10/09/97	8:02 AM	0	68	-	0.03	0	1.4	19.5	--	--	--	--
GMSG-8A	10/09/97	6:13 PM	28.72	51.1	-	0	0	1.4	15.5	--	--	--	--
GMSG-8A	10/10/97	7:59 AM	29.08	43	-	0	0	1.4	19.4	--	--	--	--
GMSG-8A	10/10/97	6:22 PM	29.06	50	-	0	0	1.8	19.5	--	--	--	--
GMSG-8A	10/11/97	8:23 AM	28.99	48.9	-	0	0	1.6	19.5	--	--	--	--
GMSG-8A	10/11/97	5:59 PM	28.76	60.1	-	0	0	1.6	19.1	--	--	--	--
GMSG-8A	10/12/97	8:00 AM	28.65	57.9	-	0	0	1.6	19.6	--	--	--	--
GMSG-8A	10/12/97	6:44 PM	28.46	62.1	0.02	0	0	1.7	19.6	--	--	--	--
GMSG-8A	10/13/97	8:12 AM	28.22	57.9	0.03	0	0	1.9	19.3	--	--	--	--
GMSG-8A	10/13/97	6:16 PM	28.52	43	T	0	0	1.8	19.6	--	--	--	--
GMSG-8A	10/14/97	8:51 AM	28.71	36	-	0	0	2.2	19.3	--	--	--	--
GMSG-8A	10/15/97	9:24 AM	29.08	42.1	-	0.06	0	2	19.1	--	--	--	--
GMSG-8A	10/21/97	8:04 AM	28.71	33.1	T	0	0	0	21.3	--	--	--	--
GMSG-8A	10/22/97	8:27 AM	28.91	27	-	0	0	2.1	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-8A	10/22/97	6:46 PM	28.79	28.9	-	0	--	--	--	--	--	--	--
GMSG-8A	10/23/97	8:15 AM	28.72	24.1	-	0	0	2.3	19.1	--	--	--	--
GMSG-8A	10/23/97	6:08 PM	28.63	32	-	0	0	2.3	18.5	--	--	--	--
GMSG-8A	10/24/97	7:55 AM	28.74	28	-	0	0	2.2	19.2	--	--	--	--
GMSG-8A	10/29/97	7:26 AM	28.64	32	-	0.02	--	--	--	--	--	--	--
GMSG-8A	10/29/97	11:41 AM	28.62	45	-	0.02	0	2.2	17.9	--	--	--	--
GMSG-8A	10/30/97	7:08 AM	28.61	35.1	-	0	0	2.2	18.2	--	--	--	--
GMSG-8A	10/30/97	5:30 PM	28.35	54	-	0.01	0	2.1	18.4	--	--	--	--
GMSG-8A	10/31/97	6:45 AM	28.29	43	-	0	0	2.1	18.4	--	--	--	--
GMSG-8A	11/13/97	8:12 AM	28.65	19.9	-	0	0	2.4	16.8	--	--	--	--
GMSG-8A	11/18/97	4:44 PM	28.61	28	-	0	0	2.2	17.4	--	--	--	--
GMSG-8A	11/19/97	4:55 PM	28.61	21.9	-	0	0	2.2	17.4	--	--	--	--
GMSG-8A	11/20/97	5:45 PM	28.62	28.9	-	0	0	2.1	17.6	--	--	--	--
GMSG-8A	11/21/97	8:30 AM	28.81	19.9	-	0	0	1.8	18.7	--	--	--	--
GMSG-8B	09/26/97	5:56 PM	--	--	--	-0.44	0	0	20.9	--	--	--	--
GMSG-8B	09/27/97	9:14 AM	--	--	--	0.7	1.8	0	20.2	--	--	--	--
GMSG-8B	09/27/97	5:55 PM	--	--	--	1.43	2.7	0	19.7	--	--	--	--
GMSG-8B	09/28/97	8:19 AM	--	--	--	1.4	7.9	0	17.8	--	--	--	--
GMSG-8B	09/28/97	7:04 PM	--	--	--	1	32.6	0	11.3	--	--	--	--
GMSG-8B	09/29/97	7:25 PM	--	--	--	-0.16	51.2	0	0.6	--	--	--	--
GMSG-8B	09/30/97	9:25 AM	--	--	--	-2	0	0	21.2	--	--	--	--
GMSG-8B	09/30/97	7:04 PM	--	--	--	-2.5	0	0	21.3	--	--	--	--
GMSG-8B	10/01/97	9:50 AM	28.93	45	-	-1.45	0	0	21	--	--	--	--
GMSG-8B	10/01/97	6:58 PM	28.78	43	-	0.75	0	0	21.2	--	--	--	--
GMSG-8B	10/02/97	7:53 AM	28.57	50	-	0.35	45	0	7.7	--	--	--	--
GMSG-8B	10/02/97	7:23 PM	28.49	59	-	0.55	49.7	0	6.1	--	--	--	--
GMSG-8B	10/03/97	8:14 AM	28.51	48.9	-	0.08	56.9	0	4.5	--	--	--	--
GMSG-8B	10/06/97	9:53 AM	--	--	--	-1.45	57.4	0	3.6	--	--	--	--
GMSG-8B	10/07/97	8:35 AM	0	57	-	-0.05	54.5	0	4.6	--	--	--	--
GMSG-8B	10/07/97	6:36 PM	28.8	59	-	0.65	5.9	0	18.2	--	--	--	--
GMSG-8B	10/08/97	8:13 AM	28.75	59	-	0.26	55.2	0	4.3	--	--	--	--
GMSG-8B	10/08/97	5:50 PM	0	72	-	1.15	54.7	0	2.8	--	--	--	--
GMSG-8B	10/09/97	8:04 AM	0	68	-	1.15	53.8	0	3.4	--	--	--	--
GMSG-8B	10/09/97	6:14 PM	28.72	51.1	-	-1.25	61.1	0	6.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-8B	10/10/97	8:00 AM	29.08	43	-	-2	62.1	0.1	1.1	--	--	--	--
GMSG-8B	10/10/97	6:23 PM	29.06	50	-	0	0	1.8	19.6	--	--	--	--
GMSG-8B	10/11/97	8:25 AM	28.99	48.9	-	0.6	50.6	0.1	3.4	--	--	--	--
GMSG-8B	10/11/97	6:01 PM	28.76	60.1	-	1.9	56.7	0	1.1	--	--	--	--
GMSG-8B	10/12/97	8:01 AM	28.65	57.9	-	0.9	59.8	0.1	0.5	--	--	--	--
GMSG-8B	10/12/97	6:43 PM	28.46	62.1	0.02	1.2	60.4	0	1.1	--	--	--	--
GMSG-8B	10/13/97	8:13 AM	28.22	57.9	0.03	1.45	61.8	0	0.1	--	--	--	--
GMSG-8B	10/13/97	6:16 PM	28.52	43	T	-1.95	60.4	0	0.6	--	--	--	--
GMSG-8B	10/14/97	8:54 AM	28.71	36	-	-1.35	63.4	0.1	0.1	--	--	--	--
GMSG-8B	10/15/97	9:28 AM	29.08	42.1	-	-0.9	67.2	0.1	0	--	--	--	--
GMSG-8B	10/21/97	8:04 AM	28.71	33.1	T	0.8	61.7	0.1	1.7	--	--	--	--
GMSG-8B	10/22/97	8:29 AM	28.91	27	-	-0.01	59.5	0.1	2.5	--	--	--	--
GMSG-8B	10/22/97	6:46 PM	28.79	28.9	-	0.93	0	0	21	--	--	--	--
GMSG-8B	10/23/97	8:17 AM	28.72	24.1	-	0.55	0.2	0	20.7	--	--	--	--
GMSG-8B	10/23/97	6:10 PM	28.63	32	-	0.84	11.1	0	17.4	--	--	--	--
GMSG-8B	10/24/97	7:57 AM	28.74	28	-	-0.6	39.2	0	10.9	--	--	--	--
GMSG-8B	10/29/97	7:27 AM	28.64	32	-	-0.5	--	--	--	--	--	--	--
GMSG-8B	10/29/97	11:42 AM	28.62	45	-	-0.05	47.1	0.2	5.4	--	--	--	--
GMSG-8B	10/30/97	7:10 AM	28.61	35.1	-	0.95	52.3	0.1	3.6	--	--	--	--
GMSG-8B	10/30/97	5:32 PM	28.35	54	-	1.8	61.2	0.1	0.1	--	--	--	--
GMSG-8B	10/31/97	6:47 AM	28.29	43	-	0.5	61.4	0.1	0	--	--	--	--
GMSG-8B	11/13/97	8:14 AM	28.65	19.9	-	0	60.8	0.2	0	--	--	--	--
GMSG-8B	11/18/97	4:45 PM	28.61	28	-	-0.25	68.2	0.2	0	--	--	--	--
GMSG-8B	11/19/97	4:57 PM	28.61	21.9	-	0.7	69.8	0.2	0	--	--	--	--
GMSG-8B	11/20/97	5:50 PM	28.62	28.9	-	0	72	0.2	0	--	--	--	--
GMSG-8B	11/21/97	8:33 AM	28.81	19.9	-	-0.9	68.1	0.1	0	--	--	--	--
GMSG-9	12/03/97	10:35 AM	28.56	29	0.02	0	0	2.6	16.6	--	--	--	--
GMSG-9	12/12/97	11:00 AM	28.61	28	-	0	0	2.6	18.1	--	--	--	--
GMSG-9	01/22/98	9:30 AM	29.02	16	T	0	0	1.8	18.5	--	--	--	--
GMSG-9	02/18/98	5:45 PM	28.53	34	-	0	0	2.1	18.9	--	--	--	--
GMSG-9	02/19/98	10:16 AM	28.61	34	-	0	0	2	21	--	--	--	--
GMSG-9	03/30/98	4:18 PM	28.4	37.9	0.03	0	0	1.8	19.2	--	--	--	--
GMSG-9	03/31/98	9:57 AM	28.47	34	-	0	0	0.9	20.1	--	--	--	--
GMSG-9	04/14/98	4:31 PM	28.49	57	-	0	0	1.2	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-9	04/16/98	9:50 AM	28.48	30.9	0.05	0	0	1.4	18.9	--	--	--	--
GMSG-9	04/17/98	9:15 AM	28.57	39	-	0	0	1.3	19.3	--	--	--	--
GMSG-9	04/30/98	5:11 PM	28.58	69.1	-	0	0	1	20	--	--	--	--
GMSG-9	05/01/98	10:43 AM	28.46	66	-	0	0	1.3	19.7	--	--	--	--
GMSG-9	05/07/98	4:27 PM	28.53	69.1	-	0	0	1.5	19.9	--	--	--	--
GMSG-9	05/08/98	9:26 AM	28.66	57.9	-	0	0	1.7	19.5	--	--	--	--
GMSG-9	05/14/98	4:26 PM	28.72	77	-	0	0	1.3	19.8	--	--	--	--
GMSG-9	05/15/98	8:22 AM	28.69	66.9	-	0	0	1.7	19.6	--	--	--	--
GMSG-9	05/20/98	5:10 PM	28.73	69.1	-	0	0	1.4	19.6	--	--	--	--
GMSG-9	05/21/98	8:42 AM	28.86	53.1	-	0	0	1.8	19.5	--	--	--	--
GMSG-9	05/29/98	10:41 AM	28.63	75	-	0	0	1.4	19.5	--	--	--	--
GMSG-9	06/02/98	7:33 PM	28.53	48.9	-	0	0	2.1	19.3	--	--	--	--
GMSG-9	06/05/98	9:33 AM	28.74	53.1	-	0.1	0	2	19.1	--	--	--	--
GMSG-9	06/11/98	11:39 AM	28.53	59	0.01	0	0	1.7	19.7	--	--	--	--
GMSG-9	06/12/98	9:31 AM	28.31	63	-	0	0	1.9	19	--	--	--	--
GMSG-9	06/13/98	8:42 AM	28.53	66.9	-	0	0	1.9	19	--	--	--	--
GMSG-9	06/14/98	12:01 PM	28.43	77	-	0	0	1.6	19.3	--	--	--	--
GMSG-9	06/24/98	2:30 PM	28.58	80.1	-	0	0	1.6	19	--	--	--	--
GMSG-9	07/08/98	7:37 PM	28.73	66.9	-	0	0	2.1	18.4	70	6.5	3.5	--
GMSG-9	07/09/98	5:28 PM	28.78	75	-	0	0	2.2	18.3	30	12	6.5	--
GMSG-9	07/14/98	7:21 PM	28.73	69.1	-	0	0	0	20.3	900	125	--	--
GMSG-9	07/21/98	6:48 PM	28.61	75.9	-	0	0	2	18.5	--	--	--	--
GMSG-9	07/27/98	6:35 PM	28.6	73.9	-	0	0	2.2	18	6	2.5	1.5	--
GMSG-9	07/28/98	2:09 PM	28.49	79	-	0	0	2.5	17.6	5	1.5	2	--
GMSG-9	07/29/98	11:13 AM	28.71	75	-	0	0.1	2.5	17.4	2.2	2	2	--
GMSG-9	08/04/98	1:12 PM	28.92	77	-	0	0	2.2	18.1	<4	<4	4	--
GMSG-9	08/12/98	5:33 PM	28.93	75.9	-	0	0	2.7	18.6	4.5	1.2	1.2	--
GMSG-9	08/18/98	3:50 PM	28.98	69.1	-	0	0	2.8	18.2	1	1	4	--
GMSG-10	12/03/97	10:25 AM	28.59	29	0.03	0	0	0.5	18.2	--	--	--	--
GMSG-10	12/12/97	11:30 AM	28.57	30	-	0	0	0.6	19.8	--	--	--	--
GMSG-10	02/19/98	10:30 AM	28.61	35.1	-	-0.01	0	0.5	25.7	--	--	--	--
GMSG-10	03/30/98	4:32 PM	28.42	37.9	0.02	0	0	0.4	20	--	--	--	--
GMSG-10	03/31/98	10:03 AM	28.47	34	-	0	0	0.2	20.4	--	--	--	--
GMSG-10	04/14/98	10:40 AM	28.45	46.9	-	0	0	0.3	20.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-10	04/16/98	9:41 AM	28.48	30.9	0.05	0	0	0.4	19.8	--	--	--	--
GMSG-10	04/17/98	9:22 AM	28.57	39	-	0	0	0.4	20	--	--	--	--
GMSG-10	04/30/98	5:20 PM	28.58	69.1	-	0	0	0.2	21.7	--	--	--	--
GMSG-10	05/01/98	10:51 AM	28.46	66	-	0	0	0.4	20.5	--	--	--	--
GMSG-10	05/07/98	4:29 PM	28.53	69.1	-	0	0	0.4	20.6	--	--	--	--
GMSG-10	05/08/98	9:31 AM	28.67	61	-	0	0	0.6	20.4	--	--	--	--
GMSG-10	05/14/98	4:30 PM	28.72	73	-	0	0	0.3	20.7	--	--	--	--
GMSG-10	05/15/98	8:27 AM	28.69	66.9	-	0	0	0	22.9	--	--	--	--
GMSG-10	05/20/98	5:15 PM	28.73	69.1	-	0	0	0	20.5	--	--	--	--
GMSG-10	05/21/98	8:47 AM	28.86	53.1	-	0	0	0.4	20.6	--	--	--	--
GMSG-10	05/29/98	10:47 AM	28.63	75	-	0	0	0.8	20.5	--	--	--	--
GMSG-10	06/02/98	7:28 PM	28.52	50	-	-0.1	0	0.4	20.4	--	--	--	--
GMSG-11	12/03/97	10:45 AM	28.56	29	0.02	0	0	1.2	17.9	--	--	--	--
GMSG-11	12/12/97	11:45 AM	28.57	30	-	0	0	1.2	19.3	--	--	--	--
GMSG-11	01/21/98	2:45 PM	28.97	22	-	0	0	1.4	18.9	--	--	--	--
GMSG-11	01/22/98	9:15 AM	29.03	15	T	0	0	1.4	18.8	--	--	--	--
GMSG-11	02/18/98	5:30 PM	28.53	34	-	0.02	0	1.3	19.1	--	--	--	--
GMSG-11	02/19/98	10:02 AM	28.61	34	-	0	0	1.2	23.6	--	--	--	--
GMSG-11	03/30/98	4:07 PM	28.4	37.9	0.03	0	0	1.6	18.6	--	--	--	--
GMSG-11	03/31/98	9:50 AM	28.47	34	-	0	0	1	19.4	--	--	--	--
GMSG-11	04/14/98	4:23 PM	28.47	57.9	-	0.01	0	1.3	19.9	--	--	--	--
GMSG-11	04/16/98	9:33 AM	28.48	30.9	0.05	0	0	1.4	18.9	--	--	--	--
GMSG-11	04/17/98	9:07 AM	28.57	39	-	0	0	1.4	19.1	--	--	--	--
GMSG-11	04/30/98	5:08 PM	28.58	69.1	-	0	0	1.3	19.7	--	--	--	--
GMSG-11	05/01/98	10:37 AM	28.46	66	-	0	0	1.7	19.4	--	--	--	--
GMSG-11	05/07/98	4:16 PM	28.53	69.1	-	0	0	2	19.2	--	--	--	--
GMSG-11	05/08/98	9:22 AM	28.66	57.9	-	0	0	2.2	19.2	--	--	--	--
GMSG-11	05/14/98	4:21 PM	28.72	77	-	0	0	1.9	19.1	--	--	--	--
GMSG-11	05/15/98	8:16 AM	28.69	66.9	-	0	0	2.2	19.2	--	--	--	--
GMSG-11	05/20/98	4:05 PM	28.74	70	-	0	0	2.2	19.2	--	--	--	--
GMSG-11	05/21/98	8:33 AM	28.86	53.1	-	0	0	2.5	19	--	--	--	--
GMSG-11	05/29/98	10:35 AM	28.63	75	-	0	0	2	19.2	--	--	--	--
GMSG-11	06/02/98	7:41 PM	28.53	48.9	-	-0.2	0	2.3	19.4	--	--	--	--
GMSG-11	06/05/98	9:39 AM	28.74	53.1	-	0.2	0	2	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-11	06/11/98	11:33 AM	28.53	59	0.01	0	0	1.9	19.7	--	--	--	--
GMSG-11	06/12/98	9:25 AM	28.29	62.1	-	0	0	1.9	19.2	--	--	--	--
GMSG-11	06/13/98	8:36 AM	28.53	66.9	-	0	0	2	18.9	--	--	--	--
GMSG-11	06/14/98	11:59 AM	28.43	77	-	0	0	1.7	18.9	--	--	--	--
GMSG-11	06/24/98	2:24 PM	28.58	82	-	0	0	2	18.8	--	--	--	--
GMSG-11	07/08/98	7:42 PM	28.73	66.9	-	0	0	2.5	18.3	8	3.5	3.5	--
GMSG-11	07/09/98	5:33 PM	28.8	72	-	0	0	2.3	18.4	13	6.5	6.5	--
GMSG-11	07/14/98	7:28 PM	28.73	69.1	-	0	0	2.4	18.4	100	60	--	--
GMSG-11	07/21/98	6:53 PM	28.61	75.9	-	0	0	2.1	19.1	--	--	--	--
GMSG-11	07/27/98	6:40 PM	28.6	73.9	-	0	0	1.9	19.1	8	5.5	5.5	--
GMSG-11	07/28/98	2:03 PM	28.49	79	-	0	0.1	1.9	19	10	2	3.5	--
GMSG-11	07/29/98	10:57 AM	28.71	75	-	0	0.1	2	19.1	2	--	2	--
GMSG-11	08/04/98	1:17 PM	28.92	77	-	0	0	1.7	19.3	<4	<4	4	--
GMSG-11	08/12/98	5:45 PM	28.93	75.9	-	0	0	1.8	19.8	5	2.7	2.7	--
GMSG-11	08/18/98	4:01 PM	28.98	69.1	-	0	0	1.8	19.7	1.8	1.8	1.8	--
GMSG-12	06/27/98	1:11 PM	28.62	72	-	0	0	1.1	19.6	35	12	3.5	--
GMSG-12	06/28/98	11:27 AM	28.56	78.1	-	0	0	1.1	19.3	140	35	--	--
GMSG-12	07/06/98	5:30 PM	28.78	64.9	0.02	0	0	1.4	19.7	45	18	3	--
GMSG-12	07/07/98	7:41 AM	28.76	57.9	-	0	0	1.3	19.5	18	7.5	3	--
GMSG-12	07/08/98	6:55 PM	28.73	73.9	-	0	0.1	1.4	19.3	0	0	3.5	--
GMSG-12	07/09/98	4:48 PM	28.78	75	-	0	0	1.3	19.6	45	20	6.5	--
GMSG-12	07/10/98	3:32 PM	28.89	75	-	0	0	0.9	19.8	70	17	--	--
GMSG-12	07/11/98	6:56 PM	28.76	75.9	-	0	0	0.9	20	35	20	--	--
GMSG-12	07/12/98	9:27 AM	28.72	78.1	-	0	0	1.3	19.4	60	38	--	--
GMSG-12	07/14/98	6:59 PM	28.73	69.1	-	-0.01	0	1.3	19.4	50	20	--	--
GMSG-12	07/15/98	10:34 AM	28.65	73.9	-	0	0	1.4	19.4	100	30	1.75	--
GMSG-12	07/21/98	5:40 PM	28.59	79	-	0	0	0.9	20.3	55	25	5	--
GMSG-12	07/22/98	5:38 PM	28.61	75	-	0	0	1.3	19.8	90	30	2	--
GMSG-12	07/23/98	6:10 PM	28.7	66.9	-	0	0	1.4	19.5	45	9	2	--
GMSG-12	07/24/98	6:03 PM	28.86	69.1	-	0	0	1.4	19.6	--	--	--	--
GMSG-12	07/26/98	1:23 PM	28.77	80.1	-	0	0.1	1.1	19.6	120	30	3.5	--
GMSG-12	07/27/98	6:14 PM	28.6	77	-	0	0	1.3	19.7	--	--	--	--
GMSG-12	07/28/98	12:57 PM	28.47	78.1	-	0	0	1.4	19.4	70	15	2	--
GMSG-12	07/29/98	11:30 AM	28.7	75.9	-	0	0.1	1.1	19.5	50	14	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-12	08/04/98	11:37 AM	28.93	75.9	-	0	0	0.3	19.5	300	4	4	--
GMSG-12	08/05/98	2:06 PM	28.92	77	-	0	0	1.1	19.6	95	19	3	--
GMSG-12	08/09/98	7:58 AM	28.83	73	-	0	0	1.4	19.1	<2	<2	2	--
GMSG-12	08/10/98	8:16 AM	28.73	66.9	-	0	0	1	20.1	<2	<2	2	--
GMSG-12	08/11/98	4:05 PM	28.92	73	-	0	0	1	20.1	<4	<4	4	--
GMSG-12	08/12/98	10:27 AM	29	66.9	-	0	0	1	20.5	2.2	--	2	--
GMSG-12	08/13/98	10:44 AM	28.86	78.1	-	0	0	1	20.3	7	1.7	6	--
GMSG-12	08/14/98	10:25 AM	28.61	75.9	-	0	0	1	20.8	2.4	2.4	5	--
GMSG-12	08/15/98	10:24 AM	28.77	69.1	-	0	0	1	20.5	1.7	1.7	4.5	--
GMSG-12	08/16/98	10:24 AM	28.81	71.1	-	0	0	1	20.6	1	1	3	--
GMSG-12	08/17/98	10:24 AM	28.68	73.9	-	0	0	1	20.2	1.2	1.2	4	--
GMSG-12	08/18/98	10:27 AM	29.02	62.1	-	0	0	1	20.4	1	1	3.5	--
GMSG-12	08/19/98	10:23 AM	29.01	63	T	0	0	1.1	20	1	1	2.7	--
GMSG-12	08/20/98	10:31 AM	28.87	78.1	-	0	0	1.1	20	1	1	3	--
GMSG-12	08/21/98	11:37 AM	28.97	78.1	-	0	0	1	20.2	1	1	3	--
GMSG-12	08/22/98	10:22 AM	28.89	66	-	0	0	1.1	20	1	1	3	--
GMSG-12	08/23/98	10:17 AM	28.48	75	-	0	0	1.1	20.1	<1	<1	<1	--
GMSG-12	08/24/98	10:19 AM	28.42	75	-	0	0	1.1	20.4	<2	<2	2	--
GMSG-12	08/25/98	10:19 AM	28.59	72	-	0	0	1.1	20.1	<1.75	<1.75	1.75	--
GMSG-13	06/27/98	1:08 PM	28.62	72	-	0	0	1.1	19.8	50	18	3.5	--
GMSG-13	06/28/98	11:24 AM	28.56	78.1	-	0	0	1	19.7	200	70	--	--
GMSG-13	07/06/98	5:27 PM	28.77	64.9	0.02	0	0	1.3	19.7	175	30	3	--
GMSG-13	07/07/98	7:37 AM	28.76	57.9	-	0	0	1.2	19.5	90	20	3	--
GMSG-13	07/08/98	6:53 PM	28.73	73.9	-	0	0	1.2	19.5	150	30	3.5	--
GMSG-13	07/09/98	4:44 PM	28.78	75	-	0	0	1.1	19.9	200	30	6.5	--
GMSG-13	07/10/98	3:29 PM	28.89	75.9	-	0	0	0.8	20	90	35	--	--
GMSG-13	07/11/98	6:54 PM	28.76	75.9	-	0	0	0.8	20	100	55	--	--
GMSG-13	07/12/98	9:24 AM	28.72	78.1	-	0	0	1.1	19.6	225	95	--	--
GMSG-13	07/14/98	7:04 PM	28.73	69.1	-	-0.01	0	0	20.1	1000	150	--	--
GMSG-13	07/15/98	10:30 AM	28.65	73.9	-	0	0	1.2	19.7	400	100	1.75	--
GMSG-13	07/21/98	5:37 PM	28.59	79	-	0	0	0.9	20.3	140	60	5	--
GMSG-13	07/22/98	5:34 PM	28.61	75	-	0	0	1.1	20.1	275	75	1.75	--
GMSG-13	07/23/98	6:07 PM	28.7	66.9	-	0	0	1.2	19.6	350	80	2	--
GMSG-13	07/24/98	6:00 PM	28.86	69.1	-	0	0	1.1	19.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-13	07/26/98	1:20 PM	28.77	80.1	-	0	0.1	1	19.8	250	80	3.5	--
GMSG-13	07/27/98	6:18 PM	28.6	77	-	0	0	1.1	19.9	3	--	--	--
GMSG-13	07/28/98	12:53 PM	28.47	78.1	-	0	0	1.2	19.6	105	50	2	--
GMSG-13	07/29/98	11:26 AM	28.71	75	-	0	0.1	1	19.7	85	42	2	--
GMSG-13	08/04/98	11:35 AM	28.93	75.9	-	0	0	0.3	20.4	2.5	<2	2	--
GMSG-13	08/05/98	2:10 PM	28.92	77	-	0	0	0.9	19.9	25	17	3	--
GMSG-13	08/09/98	7:54 AM	28.83	73	-	0	0	1.2	19.2	<2	<2	2	--
GMSG-13	08/10/98	8:13 AM	28.73	66.9	-	0	0	0.9	20.2	2	2	2	--
GMSG-13	08/11/98	4:02 PM	28.92	73	-	0	0	0.8	20.3	<4	<4	4	--
GMSG-13	08/12/98	10:19 AM	29	66.9	-	0	0	0.8	20.7	7	2.2	2.4	--
GMSG-13	08/13/98	10:35 AM	28.86	78.1	-	0	0	0.8	20.5	11	5	2.7	--
GMSG-13	08/14/98	10:16 AM	28.61	75.9	-	0	0	0.8	20.8	8	5	5	--
GMSG-13	08/15/98	10:15 AM	28.77	69.1	-	0	0	0.8	20.9	3.8	3.8	6	--
GMSG-13	08/16/98	10:16 AM	28.81	71.1	-	0	0	0.8	20.8	1	1	3	--
GMSG-13	08/17/98	10:17 AM	28.68	73.9	-	0	0	0.8	20.4	2.5	2.5	4	--
GMSG-13	08/18/98	10:16 AM	29.02	62.1	-	0	0	0.8	20.6	1	1	3.5	--
GMSG-13	08/19/98	10:17 AM	29.01	63	T	0	0	0.9	20.3	1	1	3.1	--
GMSG-13	08/20/98	10:25 AM	28.85	75	0.03	0	0	0.8	20.2	1.3	1.3	4	--
GMSG-13	08/21/98	11:31 AM	28.97	78.1	-	0	0	0.8	20.3	1.5	1.5	3.5	--
GMSG-13	08/22/98	10:17 AM	28.89	66	-	0	0	0.9	20.3	1	1	3	--
GMSG-13	08/23/98	10:11 AM	28.48	75	-	0	0	0.9	20.4	<1	<1	<1	--
GMSG-13	08/24/98	10:14 AM	28.42	75	-	0	0	0.9	20.6	<2	<2	2	--
GMSG-13	08/25/98	10:15 AM	28.59	72	-	0	0	0.9	20.6	<2	<2	2	--
GMSG-14	07/09/98	12:09 PM	28.76	82	-	0	1	2.9	13.4	--	--	--	--
GMSG-14	07/10/98	10:52 AM	28.94	71.1	-	0	0.3	2.8	14.9	--	--	--	--
GMSG-14	07/11/98	11:01 AM	28.87	77	-	0	3.1	5.4	10.1	--	--	--	--
GMSG-14	07/13/98	8:26 AM	28.61	77	0.01	0	4.7	8.1	6.5	--	--	--	--
GMSG-14	07/14/98	11:43 AM	28.65	75	T	0	2.2	5.1	10.7	--	--	--	--
GMSG-14	07/14/98	7:36 PM	28.72	66	-	0.36	10.5	6.4	0	2500	600	--	--
GMSG-14	07/15/98	9:56 AM	28.66	75	-	-0.02	7.3	11.6	0	--	--	--	--
GMSG-14	07/21/98	4:53 PM	28.56	81	-	-0.05	5.1	8	2.2	--	--	--	--
GMSG-14	07/22/98	4:58 PM	28.61	75	-	0.04	7.1	11.5	0	--	--	--	--
GMSG-14	07/23/98	5:38 PM	28.7	66.9	-	0	6.8	11.5	0	--	--	--	--
GMSG-14	07/24/98	5:25 PM	28.85	68	-	0	6.5	11.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-14	07/26/98	11:50 AM	28.8	80.1	-	0	6.5	10.6	0	--	--	--	--
GMSG-14	07/27/98	6:55 PM	28.6	73.9	-	0	5.9	10.3	0	--	--	--	--
GMSG-14	07/28/98	11:37 AM	28.48	70	0.03	0	7.2	12.2	0	--	--	--	--
GMSG-14	07/29/98	9:20 AM	28.7	70	-	0	7.3	11.7	0	--	--	--	--
GMSG-14	08/04/98	10:40 AM	28.92	75.9	-	-0.04	6.3	11.2	0	--	--	--	--
GMSG-14	08/12/98	3:15 PM	28.94	77	-	0.05	6.2	13.3	0.1	--	--	--	--
GMSG-14	08/18/98	8:49 AM	29.02	59	-	0	6.8	14	0	--	--	--	--
GMSG-14	08/29/98	7:54 AM	28.64	64	-	0.4	6.3	12.9	1.4	--	--	--	--
GMSG-14	08/30/98	2:15 PM	28.73	73	-	0.04	6.4	12.9	0	--	--	--	--
GMSG-14	08/31/98	2:45 PM	28.8	75.9	-	0.02	6.4	13.9	0	--	--	--	--
GMSG-14	09/08/98	3:50 PM	28.86	64	-	0	6.6	14.2	0	--	--	--	--
GMSG-14	09/10/98	9:45 AM	28.8	73	-	0.01	6.5	14.2	0	--	--	--	--
GMSG-14	09/12/98	9:09 AM	28.76	64.9	-	-0.02	6.7	14.5	0	--	--	--	--
GMSG-14	09/13/98	9:35 AM	28.69	71.1	-	0	6.6	14.3	0	--	--	--	--
GMSG-14	09/24/98	5:25 PM	28.59	68	-	0	5.8	14.4	0	--	--	--	--
GMSG-14	09/25/98	2:15 PM	28.5	75	-	0	5.6	14.2	0	--	--	--	--
GMSG-14	10/08/98	8:04 AM	29.02	43	-	-0.04	4.8	12.4	2.2	--	--	--	--
GMSG-14	10/09/98	11:00 AM	28.91	57	-	0.07	5.5	14.2	0.2	--	--	--	--
GMSG-14	10/10/98	2:10 PM	28.86	70	-	0	5.6	14.3	0	--	--	--	--
GMSG-14	10/14/98	11:35 AM	28.83	46	-	0.02	5.5	13.2	0	--	--	--	--
GMSG-14	10/22/98	4:26 PM	29.04	59	-	0.02	5.5	14.3	0	--	--	--	--
GMSG-14	10/25/98	8:00 AM	28.93	44.1	-	0	5.4	14.6	0	--	--	--	--
GMSG-14	11/18/98	4:18 PM	28.62	37.9	-	0.15	6.6	13.9	0.7	--	--	--	--
GMSG-14	12/01/98	2:43 PM	28.67	49	-	0.07	6.7	14.2	0	--	--	--	--
GMSG-14	12/04/98	10:23 AM	28.77	40	-	0	6.9	14.7	0	--	--	--	--
GMSG-14	12/09/98	4:22 PM	28.89	41	-	-0.09	6.7	14.6	0	--	--	--	--
GMSG-14	12/15/98	2:38 PM	28.82	38	-	-0.04	6.2	13.9	0	--	--	--	--
GMSG-14	12/18/98	7:48 AM	28.47	27	0.03	0.01	5.7	13.1	1.1	--	--	--	--
GMSG-14	12/28/98	2:53 PM	28.56	24	-	0.05	5.7	11.9	1.7	--	--	--	--
GMSG-14	01/07/99	2:46 PM	28.9	6.1	-	0	5.1	10.5	3.8	--	--	--	--
GMSG-14	01/22/99	1:04 PM	28.61	28	0.07	0.16	5.8	11.5	4.8	--	--	--	--
GMSG-14	01/25/99	3:54 PM	28.93	25	-	0	0.4	2.1	13.5	--	--	--	--
GMSG-14	02/09/99	3:06 PM	28.61	39	-	-0.1	5.5	11.1	2	--	--	--	--
GMSG-14	02/24/99	2:18 PM	28.77	25	0.02	0.06	2.5	12.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-14	03/14/99	8:50 AM	28.94	23	-	0.01	4.8	11.9	0	--	--	--	--
GMSG-14	03/24/99	3:23 PM	28.87	36	-	0.03	5.1	11.6	0.4	--	--	--	--
GMSG-14	04/09/99	2:48 PM	28.68	46	-	-0.02	5.8	11.1	0.8	--	--	--	--
GMSG-14	04/20/99	3:46 PM	28.62	51.1	-	0.01	6.5	11.5	0	--	--	--	--
GMSG-14	05/01/99	11:12 AM	29	75.9	-	0	6.3	10.9	0	--	--	--	--
GMSG-14	05/16/99	3:41 PM	28.61	71.1	-	0	6.5	10.3	0	--	--	--	--
GMSG-14	08/10/99	8:09 AM	28.42	61	-	-0.02	7.8	11.4	0	--	--	--	--
GMSG-14	10/01/99	8:09 AM	28.64	45	-	0.03	2.1	5.4	10.1	--	--	--	--
GMSG-14	10/24/99	12:18 PM	28.81	48.9	-	0.03	8.1	11.9	0	--	--	--	--
GMSG-14	11/04/99	4:10 PM	28.62	51.1	-	0	8.3	11.8	0	--	--	--	--
GMSG-14	11/08/99	1:51 PM	28.57	72	-	0.01	9	12.4	0	--	--	--	--
GMSG-14	01/20/00	2:50 PM	28.71	8	T	-0.01	7.5	12	0	--	--	--	--
GMSG-14	02/16/00	3:40 PM	29.05	17.1	-	-0.09	0	0.4	19.4	--	--	--	--
GMSG-14	03/17/00	10:53 AM	29.22	23	T	0	0	0	20.2	3.55	3.5	-0.15	--
GMSG-14	03/31/00	3:41 PM	28.71	64	-	0	6.8	11.1	0	--	--	--	--
GMSG-14	06/05/00	4:04 PM	28.9	70	-	0.04	3.4	5.1	9.6	--	--	--	--
GMSG-14	06/12/00	5:47 PM	28.83	62	-	0.07	7.4	11.2	0	--	--	--	--
GMSG-14	06/13/00	10:33 AM	28.64	67	-	0	--	--	--	--	--	--	--
GMSG-14	06/13/00	10:33 AM	28.64	67	-	0	--	--	--	--	--	--	--
GMSG-14	06/13/00	11:33 AM	28.62	70	-	0	--	--	--	--	--	--	--
GMSG-14	06/13/00	11:33 AM	28.62	70	-	0	--	--	--	--	--	--	--
GMSG-14	06/13/00	12:33 PM	28.6	71	-	-0.08	--	--	--	--	--	--	--
GMSG-14	06/13/00	1:33 PM	28.6	72	-	0.17	--	--	--	--	--	--	--
GMSG-14	06/13/00	2:33 PM	28.59	67	-	0	--	--	--	--	--	--	--
GMSG-14	06/13/00	3:33 PM	28.61	62	-	0	--	--	--	--	--	--	--
GMSG-14	06/13/00	4:33 PM	28.62	61	-	0	--	--	--	--	--	--	--
GMSG-14	06/13/00	5:33 PM	28.62	60	-	0	--	--	--	--	--	--	--
GMSG-14	06/14/00	9:33 AM	28.35	67	-	0	--	--	--	--	--	--	--
GMSG-14	06/15/00	9:45 AM	28.26	61	-	0	--	--	--	--	--	--	--
GMSG-14	06/15/00	11:15 AM	28.28	64	-	0	--	--	--	--	--	--	--
GMSG-14	06/15/00	12:20 PM	28.29	69	-	0	--	--	--	--	--	--	--
GMSG-14	06/15/00	1:20 PM	28.31	69	-	0	--	--	--	--	--	--	--
GMSG-14	06/15/00	2:20 PM	28.29	70	-	-0.01	--	--	--	--	--	--	--
GMSG-14	06/15/00	3:20 PM	28.3	68	T	-0.03	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-14	06/15/00	4:20 PM	28.31	66	T	-0.01	--	--	--	--	--	--	--
GMSG-14	06/15/00	5:20 PM	28.3	66	-	0.01	--	--	--	--	--	--	--
GMSG-14	06/16/00	8:43 AM	28.18	59	T	0	--	--	--	--	--	--	--
GMSG-14	06/18/00	11:55 AM	28.78	67	-	0.01	2.6	4.3	11.7	--	--	--	--
GMSG-14	07/18/00	2:38 PM	28.87	57	-	0.02	7.9	11.5	0	--	--	--	--
GMSG-14	07/19/00	1:27 PM	28.81	69	-	0	--	--	--	--	--	--	--
GMSG-14	07/19/00	2:25 PM	28.77	69	-	0	--	--	--	--	--	--	--
GMSG-14	07/19/00	3:25 PM	28.77	71	-	0.05	--	--	--	--	--	--	--
GMSG-14	07/19/00	4:18 PM	28.75	72	-	0.01	--	--	--	--	--	--	--
GMSG-14	07/19/00	5:20 PM	28.74	72	-	0.07	--	--	--	--	--	--	--
GMSG-14	07/20/00	9:22 AM	28.62	62	T	0.2	8.2	12.1	0	--	--	--	--
GMSG-14	07/20/00	9:22 AM	28.62	62	T	0.02	8.2	12.1	0	--	--	--	--
GMSG-14	07/21/00	12:17 PM	28.72	59	-	-0.01	--	--	--	--	--	--	--
GMSG-14	07/21/00	1:19 PM	28.72	60	-	0	--	--	--	--	--	--	--
GMSG-14	07/21/00	2:21 PM	28.72	62	-	0	--	--	--	--	--	--	--
GMSG-14	07/21/00	3:19 PM	28.73	61	-	0	--	--	--	--	--	--	--
GMSG-14	07/21/00	4:20 PM	28.74	61	-	-0.02	--	--	--	--	--	--	--
GMSG-14	07/22/00	8:50 AM	28.9	59	-	0	--	--	--	--	--	--	--
GMSG-14	07/23/00	11:50 AM	28.95	72	-	0	--	--	--	--	--	--	--
GMSG-14	07/23/00	12:50 PM	-	-	-	0	--	--	--	--	--	--	--
GMSG-14	07/23/00	1:45 PM	28.94	72	T	0	--	--	--	--	--	--	--
GMSG-14	07/23/00	2:49 PM	28.93	74	-	0	--	--	--	--	--	--	--
GMSG-14	07/23/00	3:51 PM	28.92	72	-	0	--	--	--	--	--	--	--
GMSG-14	07/24/00	9:19 AM	28.89	73	-	0	--	--	--	--	--	--	--
GMSG-14	10/10/00	9:49 AM	28.87	56	-	0	9	10.9	1	--	--	--	--
GMSG-14	10/22/00	10:09 AM	29.18	53	-	-0.01	9.3	11.7	0	--	--	--	--
GMSG-14	01/10/01	2:10 PM	28.56	42	-	-0.05	6	7.3	6.2	--	--	--	--
GMSG-14	01/11/01	10:05 AM	28.82	23	-	-0.01	8.6	10.8	10.4	--	--	--	--
GMSG-14	01/12/01	8:05 AM	28.89	31	-	-0.01	9	11.3	0.1	--	--	--	--
GMSG-14	01/13/01	8:50 AM	28.91	33	-	0	8	10.1	2.7	--	--	--	--
GMSG-14	02/07/01	10:42 AM	29.06	20	-	-0.02	9	11.4	1.8	--	--	--	--
GMSG-14	02/08/01	8:48 AM	28.93	22	T	0.1	8.3	11.4	0	--	--	--	--
GMSG-14	02/10/01	9:46 AM	29.09	8	-	-0.05	6.3	8.6	4	--	--	--	--
GMSG-14	02/13/01	12:34 PM	28.93	27	-	0	2.4	2.9	13.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-14	02/23/01	10:10 AM	29.03	14	-	-0.05	6.1	8.7	3.3	--	--	--	--
GMSG-14	03/06/01	10:35 AM	28.96	26	-	-0.01	6.8	10.4	1.1	--	--	--	--
GMSG-14	03/13/01	4:20 PM	28.19	31	-	-0.08	7.1	11.3	0	--	--	--	--
GMSG-14	06/28/01	4:27 PM	28.89	87	-	0.07	7.1	11.4	0.9	--	--	--	--
GMSG-14	07/19/01	11:15 AM	28.84	75	-	-0.12	6.7	11	1.8	--	--	--	--
GMSG-14	08/09/01	9:23 AM	28.54	83	-	0.15	4	8	5.8	--	--	--	--
GMSG-14	09/10/01	12:12 PM	28.76	66	-	0	8	11.8	0	--	--	--	--
GMSG-14	10/07/01	9:40 AM	29.01	41	-	-0.03	2	5.6	12.1	--	--	--	--
GMSG-14	11/12/01	1:25 PM	29.05	52	-	0.04	1.3	4.5	13.3	>4200	--	-0.23	--
GMSG-14	12/12/01	8:25 AM	28.8	35	-	0.04	6.5	11.5	0.4	--	--	--	--
GMSG-14	01/07/02	2:32 PM	28.6	30	-	0.15	6.7	12.1	0	--	--	--	--
GMSG-14	01/26/02	2:50 PM	28.62	37	-	0	6.1	11.7	0	--	--	--	--
GMSG-14	03/05/02	3:34 PM	28.78	25	-	0	0	2.5	16.4	17400	--	0	--
GMSG-14	03/06/02	8:18 AM	28.89	16	-	--	2.6	11.2	0.3	--	--	--	--
GMSG-14	04/16/02	2:34 PM	28.49	83	-	0.06	4.4	9.4	0	--	--	--	--
GMSG-14	05/23/02	9:36 AM	28.44	73	-	0	6.7	10.5	0	--	--	--	--
GMSG-14	06/03/02	1:09 PM	28.81	52	-	0	8.3	10.9	0	--	--	--	--
GMSG-14	07/12/02	11:41 AM	28.88	78	-	0	3.1	5	11.5	--	--	-0.93	--
GMSG-14	08/12/02	3:20 PM	28.63	77	-	0.2	0	0	21	--	--	--	--
GMSG-14	09/24/02	1:10 PM	29.04	54	-	0	8.5	12.2	0	--	--	--	--
GMSG-14	10/28/02	10:25 AM	29	38	-	0	9.3	12	0	--	--	--	--
GMSG-14	11/11/02	2:24 PM	28.76	30	-	0	11.1	11.9	0	--	--	--	--
GMSG-14	12/02/02	12:00 PM	28.86	16	T	0	11.2	11.8	0	--	--	--	--
GMSG-14	01/08/03	11:51 AM	28	45	-	0.4	9	11.6	0	--	--	--	--
GMSG-14	02/06/03	2:02 PM	28.91	16	T	0	0	0.1	19.8	--	--	0	--
GMSG-14	03/07/03	10:24 AM	28.63	26	-	0	3.3	8.4	5.6	--	--	--	--
GMSG-14	04/15/03	12:17 PM	28.56	56	-	0	0	0	20.5	108	25	0	--
GMSG-14	05/01/03	9:50 AM	28.67	62	-	0	6.5	11.2	0.2	--	--	--	--
GMSG-14	05/23/03	10:34 AM	29	64	-	--	7.5	11.1	0	--	--	--	--
GMSG-14	06/05/03	12:19 PM	28.71	76	-	0	8.1	11.2	0.1	--	--	--	--
GMSG-14	07/16/03	1:41 PM	28.83	86	-	0	7.9	11.6	0.5	--	--	--	--
GMSG-14	08/08/03	8:56 AM	28.93	65	-	0	8.6	12.7	0	--	--	--	--
GMSG-14	09/29/03	10:13 AM	28.82	48	-	0	8.8	12.7	0	--	--	--	--
GMSG-14	10/10/03	1:12 PM	28.81	73	-	0	8.4	12.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-14	11/07/03	12:42 PM	29.05	21	-	0	8.2	12.5	0.7	--	--	--	--
GMSG-14	12/09/03	11:55 AM	28.74	36	-	0	8.5	12.4	0	--	--	--	--
GMSG-14	01/12/04	1:15 PM	28.67	28	T	0	6.9	12.2	0	--	--	--	--
GMSG-14	02/03/04	10:03 AM	28.63	23	-	0	3.5	9	6	--	--	--	--
GMSG-14	03/01/04	10:52 AM	28.51	36	0.04	1.8	4.4	12	0	--	--	--	--
GMSG-14	04/01/04	12:25 PM	28.92	43	-	0	1.1	0.9	2.6	--	--	--	--
GMSG-14	04/01/04	4:17 PM	28.87	50	-	-1.5	1.1	1.1	2.5	--	--	--	--
GMSG-14	04/02/04	7:55 AM	28.94	35	-	0	0	0	19.5	--	--	--	--
GMSG-14	04/03/04	9:06 AM	28.65	40	-	0	0	0	19.5	--	--	--	--
GMSG-14	04/05/04	1:00 PM	28.87	44	-	--	0.4	11.8	0	--	--	--	--
GMSG-14	04/06/04	8:15 AM	28.56	34	-	0	0.4	10	4	--	--	--	--
GMSG-14	04/07/04	8:26 AM	28.67	46	-	0	0	0	19.6	--	--	--	--
GMSG-14	04/13/04	9:35 AM	28.87	42	-	0	0	11.4	1.2	--	--	--	--
GMSG-14	04/16/04	11:41 AM	28.64	74	-	0	0	10.6	2.2	--	--	--	--
GMSG-14	04/19/04	4:55 PM	28.92	-	-	0	0	0.3	17.6	--	--	--	--
GMSG-14	04/20/04	4:55 PM	28.58	39	-	0	0	0..3	17.6	--	--	--	--
GMSG-14	04/22/04	1:21 PM	28.99	47	-	0	0	9.8	2	--	--	--	--
GMSG-14	04/28/04	2:09 PM	28.29	71	-	0	0	10.4	1.5	--	--	--	--
GMSG-14	05/01/04	4:17 PM	28.84	50	-	0	0	0.4	20.2	--	--	--	--
GMSG-14	05/10/04	10:44 AM	28.68	74	-	0	0	0.4	19.9	--	--	--	--
GMSG-14	05/24/04	8:05 AM	28.69	42	-	0	0	6.1	10.9	--	--	--	--
GMSG-14	06/08/04	2:24 PM	28.69	87	-	0	0	0.3	19.6	--	--	--	--
GMSG-14	06/15/04	1:28 PM	28.86	69	-	-0.015	0	0.9	19.1	--	--	--	--
GMSG-14	06/21/04	12:09 PM	28.44	74	-	0.025	0	7.7	9.5	--	--	--	--
GMSG-14	06/22/04	2:39 PM	28.6	66	-	-0.045	0	0.3	19.9	--	--	--	--
GMSG-14	06/26/04	12:40 PM	28.82	64	-	-0.065	0	0.4	19.1	--	--	--	--
GMSG-14	06/28/04	12:00 PM	28.82	73	-	-0.025	0	0.4	19.4	--	--	--	--
GMSG-14	06/29/04	2:37 PM	28.81	80	-	-0.02	0	5.2	12.5	--	--	--	--
GMSG-14	06/30/04	10:41 AM	28.76	82	-	0.011	0	6.5	11	--	--	--	--
GMSG-14	07/02/04	10:52 AM	28.93	71	-	0	0	5.7	11.6	--	--	--	--
GMSG-14	07/06/04	10:14 AM	28.68	53	0.03	0	0	7.3	9.8	--	--	--	--
GMSG-14	07/07/04	11:35 AM	28.57	55	-	-0.025	0	6.6	11	--	--	--	--
GMSG-14	07/08/04	2:03 PM	28.74	63	-	-0.034	0	6.1	11	--	--	--	--
GMSG-14	07/09/04	7:50 AM	28.88	62	-	0.033	0	7.1	9.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-14	07/12/04	4:08 PM	28.69	84	-	-0.005	0	7.5	9.1	--	--	--	--
GMSG-14	07/14/04	8:20 AM	28.66	69	-	0	0	0.9	18.6	-1.49	-1.43	-0.82	--
GMSG-14	07/19/04	2:46 PM	28.54	79	T	-0.008	0	7.6	7.5	--	--	--	--
GMSG-14	07/28/04	9:02 AM	28.79	75	-	0.011	0	1.7	17	--	--	--	--
GMSG-14	08/04/04	2:14 PM	28.83	72	-	-0.015	0	8.6	4.4	--	--	--	--
GMSG-14	08/10/04	2:14 PM	28.58	57	T	-0.016	0	9.3	4	--	--	--	--
GMSG-14	09/02/04	12:17 PM	28.85	74	-	0	1.8	12.5	0	--	--	--	--
GMSG-14	09/09/04	10:48 AM	28.96	66	-	0	0	9.5	5.8	--	--	--	--
GMSG-14	09/13/04	11:06 AM	28.8	78	-	0	0	9.3	7.5	--	--	--	--
GMSG-14	09/16/04	9:21 AM	28.66	57	-	0	0	7.2	10.4	--	--	--	--
GMSG-14	09/24/04	2:54 PM	28.78	61	-	0	0	7.4	10.3	--	--	--	--
GMSG-14	10/07/04	1:18 PM	28.91	71	-	0	0	7.3	10.4	--	--	--	--
GMSG-14	10/11/04	1:32 PM	28.98	66	-	0	0	6.5	11.7	--	--	--	--
GMSG-14	10/12/04	2:26 PM	28.7	64	-	0	0	6.8	11.3	356	0	0	--
GMSG-14	10/25/04	4:37 PM	28.89	46	-	0	0	3.3	15.7	--	--	--	--
GMSG-14	11/02/04	12:29 PM	28.88	45	T	0	0	4.4	14.5	--	--	--	--
GMSG-14	11/11/04	1:30 PM	29.14	38	-	0	0	5.1	13.9	--	--	--	--
GMSG-14	11/18/04	10:52 AM	28.96	51	-	0	0	4.2	14.8	--	--	--	--
GMSG-14	12/04/04	2:37 PM	28.43	38	-	-0.3	0	0.1	19.5	--	--	--	--
GMSG-14	12/09/04	9:24 AM	28.6	34	-	0	0	3.3	15.4	--	--	--	--
GMSG-14	12/14/04	1:47 PM	29.12	21	-	0	0	3.7	15.1	--	--	--	--
GMSG-14	12/22/04	11:34 AM	28.91	5	-	0	0	3.7	14.9	--	--	--	--
GMSG-14	01/04/05	3:21 PM	29.1	19	-	-0.1	0	0	19.8	--	--	--	--
GMSG-14	01/11/05	11:38 AM	28.81	22	-	0	0	4.2	14.1	--	--	--	--
GMSG-14	01/18/05	9:45 AM	29.14	0	-	0.2	0	4.6	14.4	--	--	--	--
GMSG-14	01/19/05	10:03 AM	28.72	19	T	0	0	4	15.1	-4.12	-4.25	-3.75	--
GMSG-14	01/24/05	11:53 AM	28.63	24	-	0	0	4.2	14.9	--	--	--	--
GMSG-14	02/03/05	3:29 PM	28.87	48	-	0	0	4.6	14.1	--	--	--	--
GMSG-14	02/07/05	1:30 PM	28.87	28	-	0	0	4.8	14	--	--	--	--
GMSG-14	02/11/05	3:37 PM	28.58	41	-	-0.3	0	5	13.6	--	--	--	--
GMSG-14	04/06/05	8:35 AM	28.77	38	0.23	0	0	1.3	15.5	--	--	--	--
GMSG-14	09/29/05	10:15 AM	28.84	48.92	-	0	0	0.6	18.8	--	--	--	--
GMSG-14	10/18/05	4:20 PM	28.55	56	-	-0.02	0	0.8	18.7	--	--	--	--
GMSG-14	02/02/06	2:20 PM	28.39	33	-	0	0	4.5	13.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-14	04/11/06	4:38 PM	28.54	66	-	0	0	4.1	13.5	--	--	--	--
GMSG-14	07/19/06	10:15 AM	28.84	79	-	0	0	5.1	11.4	--	--	--	--
GMSG-14	10/31/06	2:15 PM	28.64	37	-	0	0	1	19.6	--	--	--	--
GMSG-14	01/24/07	9:08 AM	28.81	2	-	0	0	4.8	14.1	--	--	--	--
GMSG-14	04/19/07	3:49 PM	28.92	66	-	0	0	2.2	17.2	--	--	--	--
GMSG-14	07/18/07	9:34 AM	29.9	73	-	0	0	4.5	13.2	--	--	--	--
GMSG-14	10/17/07	11:59 AM	29.89	57	-	0	0	2.5	16.6	--	--	--	--
GMSG-15	07/09/98	--	--	--	--	--	--	--	--	--	--	--	--
GMSG-15	07/10/98	--	--	--	--	--	--	--	--	--	--	--	--
GMSG-15	07/11/98	--	--	--	--	--	--	--	--	--	--	--	--
GMSG-15	07/13/98	9:33 AM	28.61	82	-	0	15.2	15.7	7.3	--	--	--	--
GMSG-15	07/14/98	11:47 AM	28.65	75	T	0	10.4	11	10.6	--	--	--	--
GMSG-15	07/14/98	7:44 PM	28.72	66	-	0	30.2	28.6	0	>10000	--	--	--
GMSG-15	07/15/98	10:05 AM	28.66	75	-	0	34.4	31.1	0	--	--	--	--
GMSG-15	07/21/98	5:00 PM	28.56	81	-	-0.03	30.8	29.9	0	--	--	--	--
GMSG-15	07/22/98	5:04 PM	28.61	75	-	0.01	34	34.3	0	--	--	--	--
GMSG-15	07/23/98	5:45 PM	28.7	66.9	-	0	34.4	33.1	0	--	--	--	--
GMSG-15	07/24/98	5:33 PM	28.86	69.1	-	-0.01	33	32.1	0	--	--	--	--
GMSG-15	07/26/98	11:57 AM	28.8	80.1	-	0.03	32.5	32.1	0	--	--	--	--
GMSG-15	07/27/98	7:00 PM	28.6	73.9	-	0	32	32	0	--	--	--	--
GMSG-15	07/28/98	12:02 PM	28.48	70	0.03	0	36.3	38.8	0	--	--	--	--
GMSG-15	07/29/98	9:28 AM	28.7	70	-	-0.01	35	34.6	0	--	--	--	--
GMSG-15	08/04/98	10:55 AM	28.92	75.9	-	0	32.5	33.2	0	--	--	--	--
GMSG-15	08/12/98	3:31 PM	28.93	79	-	0.03	34.6	4.3	0.3	--	--	--	--
GMSG-15	08/18/98	9:03 AM	29.02	59	-	-0.02	32.7	38	0.6	--	--	--	--
GMSG-15	08/29/98	8:14 AM	28.64	64	-	0.02	44.6	45	0	--	--	--	--
GMSG-15	08/30/98	2:30 PM	28.73	75	-	0.04	23.3	30.4	5.5	--	--	--	--
GMSG-15	08/31/98	3:10 PM	28.8	75.9	-	0.02	23	30	5.6	--	--	--	--
GMSG-15	09/08/98	4:00 PM	28.86	64	-	0	21	27.1	6.8	--	--	--	--
GMSG-15	09/10/98	9:55 AM	28.8	73	-	0.02	34.7	40.2	0	--	--	--	--
GMSG-15	09/12/98	9:20 AM	28.76	64.9	-	0	43.4	44	0	--	--	--	--
GMSG-15	09/13/98	9:43 AM	28.69	71.1	-	0.01	43.3	44.7	0	--	--	--	--
GMSG-15	09/24/98	5:35 PM	28.6	64	-	0	45	48.1	0	--	--	--	--
GMSG-15	09/25/98	2:25 PM	28.5	75	-	0.02	43.6	48.4	0.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-15	10/08/98	8:11 AM	29.02	43	-	-0.01	39	44.6	0	--	--	--	--
GMSG-15	10/09/98	11:07 AM	28.91	57	-	0.05	38.5	45	0	--	--	--	--
GMSG-15	10/10/98	2:30 PM	28.86	70	-	-0.01	39.6	46.7	0	--	--	--	--
GMSG-15	10/14/98	11:40 AM	28.83	46	-	0.02	40.8	40.2	0	--	--	--	--
GMSG-15	10/22/98	4:35 PM	29.03	55	-	0.01	35.3	43.9	0	--	--	--	--
GMSG-15	10/25/98	8:10 AM	28.93	44.1	-	0	40.1	45.8	0	--	--	--	--
GMSG-15	11/18/98	4:25 PM	28.62	37.9	-	0.13	42.1	46.5	0	--	--	--	--
GMSG-15	12/01/98	2:51 PM	28.67	49	-	0.04	38.9	45.2	0	--	--	--	--
GMSG-15	12/04/98	10:32 AM	28.76	43	-	0	41.3	46.1	0	--	--	--	--
GMSG-15	12/09/98	4:29 PM	28.89	41	-	0	38.1	45.2	0	--	--	--	--
GMSG-15	12/15/98	3:00 PM	28.82	38	-	0.02	40.9	45.5	0	--	--	--	--
GMSG-15	12/18/98	8:15 AM	28.47	27	0.03	0.06	40.6	43.8	0.5	--	--	--	--
GMSG-15	12/28/98	3:04 PM	28.56	24	-	0.03	16.3	18.9	6.3	--	--	--	--
GMSG-15	01/07/99	3:06 PM	28.9	6.1	-	-0.01	0.3	2.1	15.3	--	--	--	--
GMSG-15	01/25/99	4:09 PM	28.93	25	-	0	0	0.6	18.6	--	--	--	--
GMSG-15	02/09/99	3:19 PM	28.61	39	-	-0.04	0	0.8	19.7	--	--	--	--
GMSG-15	02/24/99	2:32 PM	28.75	25	T	0.05	26.9	29	0.5	--	--	--	--
GMSG-15	03/14/99	9:06 AM	28.94	23	-	0	15.6	19.6	4.5	--	--	--	--
GMSG-15	03/24/99	3:30 PM	28.88	36	-	--	--	--	--	--	--	--	--
GMSG-15	04/09/99	3:05 PM	28.68	46	-	--	--	--	--	--	--	--	--
GMSG-15	04/20/99	4:04 PM	28.62	51.1	-	-1.96	0	0.6	20.3	12	6	2.75	14.95
GMSG-15	05/01/99	11:20 AM	29	75.9	-	0	0.8	0.2	19.7	--	--	--	--
GMSG-15	05/16/99	3:51 PM	28.61	71.1	-	-0.14	0	2.1	16.1	--	--	--	--
GMSG-15	08/10/99	8:25 AM	28.42	61	-	2.4	0	0.8	19.6	8	5	2.25	12.7
GMSG-15	10/01/99	8:19 AM	28.64	45	-	-2.95	9	8.6	15.6	--	--	--	--
GMSG-15	10/24/99	12:29 PM	28.81	48.9	-	0	30.1	36.9	0	--	--	--	--
GMSG-15	11/04/99	4:22 PM	28.62	51.1	-	0	32.2	47.1	0	--	--	--	--
GMSG-15	11/08/99	1:59 PM	28.57	72	-	0.2	35.8	44.8	0	--	--	--	--
GMSG-15	01/20/00	3:10 PM	28.71	8	T	0	0.3	3.5	18.4	--	--	--	--
GMSG-15	02/16/00	4:30 PM	29.07	15.1	-	-0.1	0	0	19.6	--	--	--	--
GMSG-15	03/17/00	11:07 AM	29.22	23	T	--	--	--	--	--	--	--	--
GMSG-15	03/31/00	3:55 PM	28.71	64	-	-6.88	0	0.4	11.8	10300	--	-0.02	--
GMSG-15	06/05/00	4:15 PM	28.9	70	-	0	0.9	1	15.4	--	--	--	--
GMSG-15	06/12/00	4:54 PM	28.83	64	-	0	3.9	5	14.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-15	06/13/00	10:33 AM	28.64	67	-	-0.15	--	--	--	--	--	--	--
GMSG-15	06/13/00	10:33 AM	28.64	67	-	-0.15	--	--	--	--	--	--	--
GMSG-15	06/13/00	11:33 AM	28.62	70	-	-0.2	--	--	--	--	--	--	--
GMSG-15	06/13/00	11:33 AM	28.62	70	-	-0.2	--	--	--	--	--	--	--
GMSG-15	06/13/00	12:33 PM	28.6	71	-	-0.21	--	--	--	--	--	--	--
GMSG-15	06/13/00	1:33 PM	28.6	72	-	-0.19	--	--	--	--	--	--	--
GMSG-15	06/13/00	2:33 PM	28.59	67	-	-0.57	--	--	--	--	--	--	--
GMSG-15	06/13/00	3:33 PM	28.61	62	-	-0.42	--	--	--	--	--	--	--
GMSG-15	06/13/00	4:33 PM	28.62	61	-	-0.37	--	--	--	--	--	--	--
GMSG-15	06/13/00	5:33 PM	28.62	60	-	-0.44	--	--	--	--	--	--	--
GMSG-15	06/14/00	9:33 AM	28.35	67	-	-0.49	--	--	--	--	--	--	--
GMSG-15	06/15/00	9:45 AM	28.26	61	-	-0.04	--	--	--	--	--	--	--
GMSG-15	06/15/00	11:15 AM	28.28	64	-	0	--	--	--	--	--	--	--
GMSG-15	06/15/00	12:20 PM	28.29	69	-	0	--	--	--	--	--	--	--
GMSG-15	06/15/00	1:20 PM	28.31	69	-	-0.01	--	--	--	--	--	--	--
GMSG-15	06/15/00	2:20 PM	28.29	70	-	-0.05	--	--	--	--	--	--	--
GMSG-15	06/15/00	3:20 PM	28.3	68	T	-0.08	--	--	--	--	--	--	--
GMSG-15	06/15/00	4:20 PM	28.31	66	T	-0.07	--	--	--	--	--	--	--
GMSG-15	06/15/00	5:20 PM	28.3	66	-	-0.06	--	--	--	--	--	--	--
GMSG-15	06/16/00	8:43 AM	28.18	59	T	-0.11	--	--	--	--	--	--	--
GMSG-15	06/18/00	12:25 PM	28.78	67	-	0.01	0.3	1.9	16.8	2.48	--	-0.17	--
GMSG-15	07/18/00	3:14 PM	28.87	57	-	0.03	11.7	15.7	5	--	--	--	--
GMSG-15	07/19/00	1:45 PM	28.77	69	-	-0.06	--	--	--	--	--	--	--
GMSG-15	07/19/00	2:39 PM	28.77	71	-	0	--	--	--	--	--	--	--
GMSG-15	07/19/00	3:35 PM	28.75	72	-	-0.01	--	--	--	--	--	--	--
GMSG-15	07/19/00	4:31 PM	28.74	72	-	-0.03	--	--	--	--	--	--	--
GMSG-15	07/19/00	5:29 PM	28.74	72	-	-0.02	--	--	--	--	--	--	--
GMSG-15	07/20/00	10:24 AM	28.61	64	0.01	-0.01	0	0.6	18.9	--	--	-0.2	--
GMSG-15	07/20/00	10:24 AM	28.61	64	0.01	-0.01	0	0.6	18.9	--	--	-0.2	--
GMSG-15	07/20/00	11:02 AM	28.61	64	0.09	--	17.3	20.8	1.8	--	--	--	--
GMSG-15	07/21/00	12:26 PM	28.72	59	-	-0.45	--	--	--	--	--	--	--
GMSG-15	07/21/00	1:26 PM	28.72	60	-	-0.52	--	--	--	--	--	--	--
GMSG-15	07/21/00	2:31 PM	28.73	61	-	-0.45	--	--	--	--	--	--	--
GMSG-15	07/21/00	3:26 PM	28.73	61	-	-0.43	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-15	07/21/00	4:28 PM	28.74	61	-	-0.51	--	--	--	--	--	--	--
GMSG-15	07/22/00	9:12 AM	28.9	59	-	-0.12	--	--	--	--	--	--	--
GMSG-15	07/23/00	12:03 PM	28.95	72	-	-0.5	--	--	--	--	--	--	--
GMSG-15	07/23/00	12:59 PM	-	-	-	-0.54	--	--	--	--	--	--	--
GMSG-15	07/23/00	1:57 PM	28.94	72	T	-0.5	--	--	--	--	--	--	--
GMSG-15	07/23/00	3:00 PM	28.93	74	-	-0.47	--	--	--	--	--	--	--
GMSG-15	07/23/00	3:59 PM	28.92	72	-	-0.47	--	--	--	--	--	--	--
GMSG-15	07/24/00	9:28 AM	28.89	73	-	-0.57	--	--	--	--	--	--	--
GMSG-15	10/10/00	10:20 AM	28.87	56	-	-10.72	5	12.4	0	--	--	--	14.08
GMSG-15	10/22/00	10:54 AM	29.17	55	-	0	0	0	20.4	120	20.5	0.09	14.74
GMSG-15	01/11/01	10:30 AM	28.82	31	-	-0.01	0	0.5	18.8	2680	--	0.2	--
GMSG-15	01/12/01	8:25 AM	28.89	31	-	0.01	26	33.5	0.7	--	--	--	--
GMSG-15	01/13/01	9:08 AM	28.91	33	-	-0.04	25	30.7	2.5	--	--	--	--
GMSG-15	02/07/01	11:11 AM	29.06	20	-	-1	33.9	33.8	0.3	--	--	--	--
GMSG-15	02/08/01	9:14 AM	28.93	22	T	-0.8	32.5	33	0.7	--	--	--	--
GMSG-15	02/10/01	11:20 AM	29.11	10	-	-0.92	32.2	32.9	1.2	--	--	--	--
GMSG-15	02/13/01	12:50 PM	28.93	27	-	-1.15	23.8	33	0	--	--	--	--
GMSG-15	02/23/01	10:45 AM	29.05	15	-	-1.25	13.4	33.1	0	--	--	--	--
GMSG-15	03/06/01	11:26 AM	28.96	26	-	-0.39	0	0	20.3	0.77	0.6	0.52	--
GMSG-15	03/13/01	5:00 PM	28.23	30	-	-1.62	1	17.3	1.2	--	--	--	--
GMSG-15	05/15/01	2:55 PM	28.46	57	-	--	--	--	--	--	--	--	15.38
GMSG-15	06/28/01	3:40 PM	28.89	87	-	0.04	0	0.3	20.7	1.28	1.21	0.1	16
GMSG-15	07/19/01	11:46 AM	28.82	80	-	0	0.1	0.6	19.8	5371	5270	0	16.1
GMSG-15	08/09/01	9:50 AM	28.54	86	-	-0.5	0	0.1	19.8	0	0	0	16.44
GMSG-15	09/10/01	11:30 AM	28.76	66	-	0	0	1	18.9	0	0	0	--
GMSG-15	10/07/01	10:50 AM	29.01	48	-	-0.08	0	0	20.4	0	0	0.2	--
GMSG-15	11/12/01	1:50 PM	29.03	52	-	0.04	20.7	23.6	0	--	--	--	--
GMSG-15	12/12/01	9:00 AM	28.78	35	-	0.04	40.9	31.8	0	--	--	--	--
GMSG-15	01/07/02	2:58 PM	28.6	30	-	0.12	50.1	33.3	0	--	--	--	--
GMSG-15	01/26/02	3:23 PM	28.62	37	-	-0.58	0	0	21	3.13	1.57	-0.4	--
GMSG-15	03/05/02	2:48 PM	28.79	25	-	0.3	0	0	21.1	0	--	0	--
GMSG-15	04/16/02	3:05 PM	28.49	83	-	3.83	13.2	20	0	--	--	--	--
GMSG-15	05/23/02	10:04 AM	28.44	73	-	0	3.8	7.2	14.3	--	--	--	--
GMSG-15	06/03/02	1:39 PM	28.8	51	-	0	0	2.5	19.3	646	300	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-15	07/12/02	12:02 PM	28.88	78	-	0	0	0.1	21.3	21.3	9.7	-1.08	--
GMSG-15	08/12/02	3:45 PM	28.64	79	0.03	0	10.5	13.4	11	--	--	--	--
GMSG-16	07/09/98	12:03 PM	28.76	82	-	0	0.9	2.5	14.5	--	--	--	--
GMSG-16	07/10/98	11:02 AM	28.94	71.1	-	0	4.2	12.4	6.9	--	--	--	--
GMSG-16	07/11/98	11:08 AM	28.87	77	-	0	2.5	8.7	10.7	--	--	--	--
GMSG-16	07/13/98	9:37 AM	28.61	82	-	0	3.6	13.4	7.5	--	--	--	--
GMSG-16	07/14/98	11:51 AM	28.65	75	T	0	2.7	10	10	--	--	--	--
GMSG-16	07/14/98	7:50 PM	28.72	66	-	0.01	60.2	21.1	0	>10000	--	--	--
GMSG-16	07/15/98	10:13 AM	28.66	75	-	-0.02	7.5	23	0	--	--	--	--
GMSG-16	07/21/98	5:09 PM	28.56	81	-	0	6.7	19.5	0	--	--	--	--
GMSG-16	07/22/98	5:11 PM	28.61	75	-	0.01	7.6	22.9	0	--	--	--	--
GMSG-16	07/23/98	5:51 PM	28.7	66.9	-	--	--	--	--	--	--	--	--
GMSG-16	07/26/98	12:08 PM	28.8	80.1	-	0.03	7.6	22.5	0	--	--	--	--
GMSG-16	07/27/98	7:10 PM	28.6	73.9	-	0	7.6	22	0	--	--	--	--
GMSG-16	07/28/98	12:13 PM	28.48	70	0.03	0	9.1	24.1	0	--	--	--	--
GMSG-16	07/29/98	9:39 AM	28.7	71.1	-	0	8.4	23.3	0	--	--	--	--
GMSG-16	08/04/98	11:00 AM	28.92	75.9	-	0	7.1	22.4	0	--	--	--	--
GMSG-16	08/12/98	3:41 PM	28.93	79	-	0	7.1	26.3	0.2	--	--	--	--
GMSG-16	08/18/98	9:19 AM	29.02	59	-	0	7.1	25.8	0	--	--	--	--
GMSG-16	08/27/98	5:00 PM	28.74	75	T	0.03	8.3	26.4	0	--	--	--	--
GMSG-16	08/28/98	6:12 PM	28.64	75.9	-	0.03	7.1	25.8	0.6	--	--	--	--
GMSG-16	08/29/98	8:24 AM	28.64	64	-	0.04	8.8	27.1	0	--	--	--	--
GMSG-16	08/30/98	2:46 PM	28.73	75	-	0.03	8.2	27.1	0	--	--	--	--
GMSG-16	08/31/98	3:00 PM	28.8	75.9	-	0.02	7.8	27.1	0	--	--	--	--
GMSG-16	09/08/98	4:15 PM	28.86	64	-	0	7.8	26.7	0	--	--	--	--
GMSG-16	09/10/98	10:05 AM	28.8	73	-	0.02	8	27.3	0	--	--	--	--
GMSG-16	09/12/98	9:28 AM	28.76	64.9	-	-0.01	8	26.9	0.1	--	--	--	--
GMSG-16	09/13/98	9:51 AM	28.69	71.1	-	0	8.3	27.6	0	--	--	--	--
GMSG-16	09/24/98	5:45 PM	28.6	64	-	0	7.2	27.4	0	--	--	--	--
GMSG-16	09/25/98	2:35 PM	28.5	77	-	0	7.2	28	0	--	--	--	--
GMSG-16	10/08/98	8:20 AM	29.02	43	-	0	3.9	19.9	3.2	--	--	--	--
GMSG-16	10/09/98	11:14 AM	28.91	57	-	0	5.7	26.4	0	--	--	--	--
GMSG-16	10/10/98	2:45 PM	28.86	70	-	0	6.2	26.7	0	--	--	--	--
GMSG-16	10/14/98	11:50 AM	28.83	46	-	0	6.5	24	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-16	10/22/98	4:43 PM	29.03	55	-	0.01	6.3	26.5	0	--	--	--	--
GMSG-16	10/25/98	8:19 AM	28.93	44.1	-	-0.02	6.5	26.9	0	--	--	--	--
GMSG-16	11/18/98	4:35 PM	28.59	39	-	-0.04	9.2	27.3	0	--	--	--	--
GMSG-16	12/01/98	3:00 PM	28.67	49	-	0.01	8.3	26.3	0	--	--	--	--
GMSG-16	12/04/98	10:42 AM	28.76	43	-	0.01	7.7	26.2	0	--	--	--	--
GMSG-16	12/09/98	4:39 PM	28.89	39	-	0	6.9	26	0	--	--	--	--
GMSG-16	12/15/98	2:48 PM	28.82	38	-	0.04	6.5	24.6	0.2	--	--	--	--
GMSG-16	12/18/98	8:01 AM	28.47	27	0.03	0.02	8.1	26	0	--	--	--	--
GMSG-16	12/28/98	3:30 PM	28.53	24	-	0.01	7.6	21.4	0.7	--	--	--	--
GMSG-16	01/07/99	2:57 PM	28.9	6.1	-	0	7.5	21.8	0	--	--	--	--
GMSG-16	01/25/99	4:22 PM	28.93	25	-	0.02	6	21.1	0	--	--	--	--
GMSG-16	02/09/99	3:29 PM	28.61	39	-	-0.03	0	0	20.1	--	--	--	--
GMSG-16	02/24/99	2:41 PM	28.75	25	T	0.01	3.3	20.2	0	--	--	--	--
GMSG-16	03/14/99	9:18 AM	28.94	23	-	0.02	2.1	19.1	0	--	--	--	--
GMSG-16	03/24/99	3:41 PM	28.88	36	-	0	2.3	18.8	0.5	--	--	--	--
GMSG-16	04/09/99	3:03 PM	28.68	46	-	0	7.5	21.9	0	--	--	--	--
GMSG-16	04/20/99	4:20 PM	28.62	51.1	-	0	7.3	22.4	0	--	--	--	--
GMSG-16	05/01/99	11:28 AM	29	75.9	-	0.01	5.2	21.4	0	--	--	--	--
GMSG-16	05/16/99	4:00 PM	28.61	71.1	-	-0.58	6.3	21.8	0	--	--	--	--
GMSG-16	08/10/99	8:42 AM	28.44	64	-	-1.23	14	24.7	0	--	--	--	--
GMSG-16	10/01/99	8:27 AM	28.64	45	-	0	12.8	25.2	0	--	--	--	--
GMSG-16	10/24/99	12:34 PM	28.78	51.1	-	0.02	11.4	22.8	0	--	--	--	--
GMSG-16	11/04/99	4:27 PM	28.62	51.1	-	0.02	8.2	16.5	2.3	--	--	--	--
GMSG-16	11/08/99	2:05 PM	28.57	72	-	0	13.5	22.3	0	--	--	--	--
GMSG-16	01/20/00	3:56 PM	28.71	8	T	0	7.1	21.1	1	--	--	--	--
GMSG-16	02/16/00	4:15 PM	29.05	17.1	-	0	0	0.1	19.1	--	--	--	--
GMSG-16	03/17/00	11:15 AM	29.22	23	T	0	2.4	9.5	8.9	--	--	--	--
GMSG-16	03/31/00	4:05 PM	28.71	64	-	0.01	8.7	21.7	0	--	--	--	--
GMSG-16	06/05/00	4:24 PM	28.9	70	-	0.01	7.9	1.3	0	--	--	--	--
GMSG-16	06/12/00	5:30 PM	28.83	62	-	-0.12	8	22	0	--	--	--	--
GMSG-16	06/13/00	10:33 AM	28.64	67	-	0	--	--	--	--	--	--	--
GMSG-16	06/13/00	10:33 AM	28.64	67	-	0	--	--	--	--	--	--	--
GMSG-16	06/13/00	11:33 AM	28.62	70	-	0	--	--	--	--	--	--	--
GMSG-16	06/13/00	11:33 AM	28.62	70	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-16	06/13/00	12:33 PM	28.6	71	-	0.03	--	--	--	--	--	--	--
GMSG-16	06/13/00	1:33 PM	28.6	72	-	0.07	--	--	--	--	--	--	--
GMSG-16	06/13/00	2:33 PM	28.59	67	-	0	--	--	--	--	--	--	--
GMSG-16	06/13/00	3:33 PM	28.61	62	-	0	--	--	--	--	--	--	--
GMSG-16	06/13/00	4:33 PM	28.62	61	-	0	--	--	--	--	--	--	--
GMSG-16	06/13/00	5:33 PM	28.62	60	-	-0.02	--	--	--	--	--	--	--
GMSG-16	06/14/00	9:33 AM	28.35	67	-	0	--	--	--	--	--	--	--
GMSG-16	06/15/00	9:45 AM	28.26	61	-	0	--	--	--	--	--	--	--
GMSG-16	06/15/00	11:15 AM	28.28	64	-	0	--	--	--	--	--	--	--
GMSG-16	06/15/00	12:20 PM	28.29	69	-	0	--	--	--	--	--	--	--
GMSG-16	06/15/00	1:20 PM	28.31	69	-	-0.01	--	--	--	--	--	--	--
GMSG-16	06/15/00	2:20 PM	28.29	70	-	0	--	--	--	--	--	--	--
GMSG-16	06/15/00	3:20 PM	28.3	68	T	0	--	--	--	--	--	--	--
GMSG-16	06/15/00	4:20 PM	28.31	66	T	0	--	--	--	--	--	--	--
GMSG-16	06/15/00	5:20 PM	28.3	66	-	0.01	--	--	--	--	--	--	--
GMSG-16	06/16/00	8:43 AM	28.18	59	T	0	--	--	--	--	--	--	--
GMSG-16	06/18/00	12:47 PM	28.77	63	0.1	0	7.4	22	0	--	--	--	--
GMSG-16	07/18/00	3:57 PM	28.87	58	-	0.02	8.7	22.6	0	--	--	--	--
GMSG-16	07/19/00	1:51 PM	28.77	69	-	-0.01	--	--	--	--	--	--	--
GMSG-16	07/19/00	2:52 PM	28.77	71	-	0	--	--	--	--	--	--	--
GMSG-16	07/19/00	3:42 PM	28.75	72	-	0.01	--	--	--	--	--	--	--
GMSG-16	07/19/00	4:44 PM	28.74	72	-	0	--	--	--	--	--	--	--
GMSG-16	07/19/00	5:36 PM	28.74	71	-	0	--	--	--	--	--	--	--
GMSG-16	07/20/00	10:53 AM	28.61	64	0.09	-0.01	8.6	22.6	0.2	--	--	--	--
GMSG-16	07/20/00	10:53 AM	28.61	64	0.09	-0.01	8.6	22.6	0.2	--	--	--	--
GMSG-16	07/21/00	12:31 PM	28.72	60	-	-0.09	--	--	--	--	--	--	--
GMSG-16	07/21/00	1:31 PM	28.72	62	-	-0.08	--	--	--	--	--	--	--
GMSG-16	07/21/00	2:35 PM	28.73	61	-	-0.08	--	--	--	--	--	--	--
GMSG-16	07/21/00	3:32 PM	28.74	61	-	-0.09	--	--	--	--	--	--	--
GMSG-16	07/21/00	4:32 PM	28.76	59	-	-0.12	--	--	--	--	--	--	--
GMSG-16	07/22/00	9:15 AM	28.9	59	-	-0.02	--	--	--	--	--	--	--
GMSG-16	07/23/00	12:05 PM	28.95	72	-	-0.09	--	--	--	--	--	--	--
GMSG-16	07/23/00	1:03 PM	-	-	-	-0.09	--	--	--	--	--	--	--
GMSG-16	07/23/00	2:00 PM	28.94	72	T	-0.08	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-16	07/23/00	3:04 PM	28.93	74	-	-0.06	--	--	--	--	--	--	--
GMSG-16	07/23/00	4:02 PM	28.92	72	-	-0.07	--	--	--	--	--	--	--
GMSG-16	07/24/00	9:38 AM	28.87	76	-	-0.1	--	--	--	--	--	--	--
GMSG-16	10/10/00	10:58 AM	28.87	60	-	0.01	9.6	22.7	0	--	--	--	--
GMSG-16	10/22/00	11:28 AM	29.17	55	-	0.02	8.3	21.4	0	--	--	--	--
GMSG-16	01/11/01	11:40 AM	28.82	29	-	2.5	3.8	10.3	9.8	--	--	--	--
GMSG-16	01/12/01	9:50 AM	28.91	32	-	-0.01	8.5	21.1	0	--	--	--	--
GMSG-16	01/13/01	10:05 AM	28.92	34	-	-0.02	8.2	21.1	0	--	--	--	--
GMSG-16	02/07/01	12:00 PM	29.05	23	-	-0.09	0	0	19.6	1.21	0.75	-0.03	--
GMSG-16	02/08/01	9:49 AM	28.91	23	-	0	0	0	19.8	2.5	1.5	0.5	--
GMSG-16	02/10/01	11:55 AM	29.11	11	-	-0.09	0	0	19.8	10.8	9.3	1	--
GMSG-16	02/13/01	1:04 PM	28.93	27	-	-0.01	0	0	19.1	20	11.5	0.4	--
GMSG-16	02/23/01	11:35 AM	29.05	18	-	-0.12	0	0	19.5	2.6	1.9	1.9	--
GMSG-16	03/06/01	12:20 PM	28.96	26	-	-0.07	0	0	19.7	2.38	2.2	2.2	--
GMSG-16	03/13/01	5:50 PM	28.26	30	-	-4.45	0	0	19.4	3.36	3	3.2	--
GMSG-16	06/28/01	3:20 PM	28.9	87	-	-0.15	0	0	21.1	0.72	0	0	--
GMSG-16	07/19/01	11:33 AM	28.82	80	-	-0.15	0	0	20.6	3.57	0.73	0	--
GMSG-16	08/09/01	10:17 AM	28.54	86	-	-0.09	0	0	20.2	0	0	0	--
GMSG-16	09/10/01	12:00 PM	28.76	66	-	0	0	0	20.3	10	0	0	--
GMSG-16	10/07/01	11:00 AM	29.01	48	-	-0.07	0	0.3	20.3	5	4	0.2	--
GMSG-16	11/12/01	2:18 PM	29.03	52	-	0.01	0	1.6	15.4	1.88	1.5	-0.31	--
GMSG-16	12/12/01	9:25 AM	28.78	35	-	0	0	4.6	11.3	11.2	4.21	0.12	--
GMSG-16	01/07/02	3:58 PM	28.59	29	-	0.04	0	10.7	3.5	2	-1.1	-0.58	--
GMSG-16	01/26/02	4:00 PM	28.62	37	-	-1.31	0	2.6	18.3	-3.21	-1.74	-0.55	--
GMSG-16	03/05/02	3:03 PM	28.79	25	-	0.3	0	0.5	19.9	0	0	0	--
GMSG-16	04/16/02	3:30 PM	28.48	83	-	-0.03	0	1.9	14.3	9	0	0	--
GMSG-16	05/23/02	10:41 AM	28.44	73	-	0	0	6.8	6.4	0	0	0	--
GMSG-16	06/03/02	2:08 PM	28.8	51	-	0	0	8	5.8	0.64	0	0	--
GMSG-16	07/12/02	12:25 PM	28.88	78	-	0	0	1.5	18.3	1.11	0.88	-0.26	--
GMSG-16	08/12/02	4:45 PM	28.64	78	-	-0.2	0	8.6	6.7	--	--	--	--
GMSG-16	09/24/02	1:27 PM	29.04	54	-	0	0	2.6	18.5	32	0	0	--
GMSG-16	10/28/02	11:04 AM	29	40	-	0.3	0	2.7	15.9	2.67	0	0	--
GMSG-16	11/11/02	2:37 PM	28.78	30	-	0.1	0	6.6	10.2	6.8	0	0	--
GMSG-16	12/02/02	12:25 PM	28.86	16	T	0	0	1.7	17.6	22	0.1	0.1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-16	01/08/03	12:00 PM	28	45	-	0.1	0	0.6	19.7	3.8	2.4	0	--
GMSG-16	02/06/03	2:28 PM	28.91	16	T	0	0	0.4	19.7	0.3	0	0.2	--
GMSG-16	03/07/03	11:02 AM	28.65	26	-	0	0	0.3	20.2	3.05	0	0	--
GMSG-16	04/15/03	1:29 PM	28.58	53	-	0	0	0.3	19.3	0.94	0	0.9	--
GMSG-16	05/01/03	10:06 AM	28.67	62	-	0	0	1.1	16.6	3.03	0.3	0.9	--
GMSG-16	06/05/03	1:18 PM	28.7	78	-	0	0	0.4	19	20	10	0	--
GMSG-16	07/16/03	2:52 PM	28.82	85	-	0	0	0.2	19	37	4	1.4	--
GMSG-16	08/08/03	10:31 AM	28.93	67	-	0	0	0.7	18.4	12	0	0	--
GMSG-16	09/29/03	11:29 AM	28.81	49	-	0	0.1	1.2	18	53	13	0	--
GMSG-16	10/10/03	2:20 PM	28.79	74	-	0	0	1	18.5	39	0	0	--
GMSG-16	11/07/03	12:17 PM	29.04	22	-	0.5	0	1.2	17.6	0.39	0.3	0.17	--
GMSG-16	12/09/03	1:32 PM	28.73	36	-	-0.7	0	5.6	11.2	5	0	0.2	--
GMSG-16	01/12/04	1:27 PM	28.67	28	T	0	0	4.8	14.4	1.5	0	0.26	--
GMSG-16	02/03/04	10:28 AM	28.63	23	-	0	0	1.8	17.7	0.62	0	0.15	--
GMSG-16	03/01/04	11:04 AM	28.51	36	0.04	0	0	0.8	18.5	6.3	0	0	--
GMSG-16	04/20/04	11:45 AM	28.78	40	-	0	0	0.4	17	0	0	0	--
GMSG-16	07/14/04	9:15 AM	28.66	69	-	-0.1	0	1.4	16.5	-0.58	-0.49	-0.65	--
GMSG-16	10/12/04	2:20 PM	28.7	64	-	0	0	10.6	8.4	6.93	0	-0.88	--
GMSG-16	01/19/05	9:28 AM	28.68	18	T	0	0	0	20.1	-0.68	-0.73	-0.75	--
GMSG-16	04/06/05	3:43 PM	28.76	40	T	0	0	0	20.1	--	--	--	--
GMSG-16	09/29/05	11:22 AM	28.83	51.98	-	0.3	0	13.2	6.7	--	--	--	--
GMSG-16	10/18/05	4:35 PM	28.52	54	-	-0.1	0	9.3	10.4	--	--	--	--
GMSG-16	02/02/06	1:48 PM	28.39	33	-	0	0	8.2	11.6	--	--	--	--
GMSG-16	04/11/06	4:34 PM	28.54	66	-	0	0	2.1	17.5	--	--	--	--
GMSG-16	07/19/06	9:58 AM	28.84	79	-	0.1	0	8.1	9.7	--	--	--	--
GMSG-16	10/31/06	2:59 PM	28.66	36	-	0	0	10.3	9.1	--	--	--	--
GMSG-16	01/24/07	8:52 AM	28.81	2	-	0	0	7	13.7	--	--	--	--
GMSG-16	04/19/07	3:39 PM	28.92	66	-	0	0	2.6	17.4	--	--	--	--
GMSG-16	07/18/07	9:19 AM	29.91	69	-	0	0	9.2	9.1	--	--	--	--
GMSG-16	10/17/07	11:49 AM	29.89	57	-	0	0	12.3	6.5	--	--	--	--
GMSG-17	07/11/98	10:46 AM	28.87	77	-	0.1	11.8	0.3	8.7	--	--	--	--
GMSG-17	07/11/98	7:06 PM	28.76	75.9	-	0.66	19	0.3	1.8	--	--	--	--
GMSG-17	07/12/98	9:53 AM	28.72	80.1	-	0.18	19	4	0	--	--	--	--
GMSG-17	07/13/98	10:02 AM	28.61	82	-	0	13.7	0.4	6.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-17	07/14/98	11:30 AM	28.65	75	T	0	0	0	17.1	--	--	--	--
GMSG-17	07/14/98	6:44 PM	28.73	69.1	-	0.18	19.6	0.3	1	--	--	--	--
GMSG-17	07/15/98	10:57 AM	28.65	73.9	-	-0.09	1.9	0.1	18	--	--	--	--
GMSG-17	07/21/98	6:07 PM	28.59	79	-	-0.68	0	0	21.1	8	8	4	--
GMSG-17	07/22/98	6:01 PM	28.61	75	-	0.4	9.4	0.3	8.5	--	--	--	--
GMSG-17	07/23/98	6:31 PM	28.71	64.9	-	-0.23	0	0	20.5	7	7	4	--
GMSG-17	07/24/98	6:20 PM	28.86	69.1	-	-0.22	0	0	20.7	--	--	--	--
GMSG-17	07/26/98	1:44 PM	28.73	82	-	1.05	15.8	0.6	0.4	--	--	--	--
GMSG-17	07/27/98	5:30 PM	28.6	77	-	0.12	17.1	1	0	--	--	--	--
GMSG-17	07/28/98	1:21 PM	28.47	78.1	-	0.46	17.8	1	0	--	--	--	--
GMSG-17	07/29/98	12:02 PM	28.7	75.9	-	-0.38	0	0	20.5	2700	22	4	--
GMSG-17	08/04/98	12:27 PM	28.93	75.9	-	-0.23	0	0	20.5	27.5	27.5	3.5	--
GMSG-17	08/05/98	12:59 PM	28.94	75.9	-	-0.04	0	0	20.5	21	21	3.5	--
GMSG-17	08/05/98	7:02 PM	28.9	72	-	-1.69	--	--	--	--	--	--	--
GMSG-17	08/06/98	8:02 AM	28.84	66.9	T	-4.7	--	--	--	--	--	--	--
GMSG-17	08/06/98	9:58 AM	28.85	64.9	0.16	--	0.2	0.1	20.2	--	--	--	--
GMSG-17	08/07/98	12:14 PM	28.79	73	-	-4.98	0.1	0	20.1	--	--	--	--
GMSG-17	08/07/98	7:22 PM	28.78	73	-	-4.88	0	0	20.3	--	--	--	--
GMSG-17	08/08/98	11:44 AM	28.81	79	-	-5.17	0.1	0	20.2	--	--	--	--
GMSG-17	08/09/98	9:34 AM	28.8	79	-	-4.85	0	0	20.4	--	--	--	--
GMSG-17	08/10/98	9:52 AM	28.74	77	-	-4.87	9.2	0.4	6.7	--	--	--	--
GMSG-17	08/11/98	5:23 PM	28.91	72	-	-4.81	7.7	0.4	6.9	--	--	--	--
GMSG-17	08/12/98	11:23 AM	28.99	71.1	-	-4.18	0	0	23.2	6	6	6	--
GMSG-17	08/13/98	11:50 AM	28.84	80.1	-	-3.76	0	0	23.5	5	5	5	--
GMSG-17	08/14/98	11:22 AM	28.61	77	-	-3.33	0	0	23.3	10	8	5	--
GMSG-17	08/15/98	11:19 AM	28.78	69.1	-	-4.66	0	0	23.3	6	6	4.5	--
GMSG-17	08/16/98	11:18 AM	28.82	73	-	-3.95	0	0	23.6	5	5	5	--
GMSG-17	08/17/98	11:24 AM	28.69	73.9	-	-4.61	0	0	22.9	8	5.5	3.5	--
GMSG-17	08/18/98	11:22 AM	29.03	63	-	-4.31	0	0	23.1	13	13	6	--
GMSG-17	08/19/98	11:11 AM	28.99	64.9	-	-3.75	0	0	22.6	3.7	3.7	1.7	--
GMSG-17	08/20/98	11:17 AM	28.87	78.1	-	-3.97	0	0	23	6	5.5	3	--
GMSG-17	08/21/98	12:29 PM	28.97	78.1	-	-3.62	0	0	23.3	6.5	5.5	4	--
GMSG-17	08/22/98	11:10 AM	28.89	66.9	-	-3.45	0	0	22.4	8	8	2.5	--
GMSG-17	08/23/98	11:34 AM	28.47	75.9	-	-3.23	0	0	22.7	1.5	1.5	<1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-17	08/24/98	11:13 AM	28.43	75.9	-	-3.73	0	0	23.3	4.5	4.5	2.5	--
GMSG-17	08/25/98	11:12 AM	28.6	73	-	-4.18	0	0	23.1	4	4	1.75	--
GMSG-17	08/26/98	12:37 PM	28.78	82	-	-3.9	0	0	22.6	13	13	13	--
GMSG-17	08/26/98	3:51 PM	28.76	82.9	-	-2.55	0	0	22.2	9	5	5	--
GMSG-17	08/27/98	10:59 AM	28.83	81	-	-0.28	0	0	21.5	9	2.5	2.25	--
GMSG-17	08/28/98	11:08 AM	28.66	79	-	0	0	0	21.4	7	3	2.5	--
GMSG-17	08/29/98	11:14 AM	28.67	75.9	-	-0.3	0	0	21.6	10	3.25	3.25	--
GMSG-17	08/30/98	11:18 AM	28.75	72	-	-0.17	0	0	21.7	10	2.5	2	--
GMSG-17	08/31/98	11:55 AM	28.83	75	-	-0.28	0	0	21.3	10	5	4.5	--
GMSG-17	09/01/98	1:18 PM	28.54	73	T	0.67	0	0	9.3	6	<1	2	--
GMSG-17	09/02/98	12:25 PM	28.53	63	T	-0.25	0	0	21	3	2.25	1.75	--
GMSG-17	09/03/98	12:20 PM	28.57	68	-	-0.33	0	0	21.6	2.7	2.7	2.7	--
GMSG-17	09/04/98	11:21 AM	28.73	73.9	-	-0.28	0	0	21.8	2.5	2.5	2.5	--
GMSG-17	09/09/98	11:30 AM	28.91	69.1	-	-0.08	0	0	21.5	2.5	2.5	2.5	--
GMSG-17	09/10/98	6:10 PM	28.65	77	-	0.75	0	0.4	5.2	--	--	--	--
GMSG-17	09/11/98	10:58 AM	28.62	89.1	-	0.29	0	0.3	5.2	<3.5	<3.5	3.5	--
GMSG-17	09/12/98	5:25 PM	28.69	77	-	0.26	0	0.3	5.9	--	--	--	--
GMSG-17	09/14/98	11:50 AM	28.6	66.9	-	0.14	0	0.4	4.2	<3	<3	3	--
GMSG-17	09/16/98	11:06 AM	28.92	71.1	-	-0.11	0	0.4	6.7	--	--	2.5	--
GMSG-17	09/21/98	2:24 PM	28.77	55	-	-0.85	0	0	21.1	2.5	2.5	2.5	--
GMSG-17	09/22/98	11:10 AM	28.89	55	-	-0.36	0	0	21.1	2.5	2.5	2.5	--
GMSG-17	09/23/98	11:47 AM	28.87	64	-	0.47	0	0.5	5.6	<2.5	<2.5	2.5	--
GMSG-17	09/28/98	11:34 AM	28.74	66.9	-	-0.14	0	0.5	8.3	<2.5	<2.5	2.5	--
GMSG-17	10/07/98	11:26 AM	28.66	54	-	-0.63	0	0.6	10.5	<3.5	<3.5	3.5	--
GMSG-17	10/14/98	9:04 AM	28.87	39.9	-	-0.52	0	0.9	8.9	<2.5	<2.5	2.5	--
GMSG-17	10/24/98	2:57 PM	28.77	72	-	0.5	0	1.1	4.3	3.5	3.5	3.5	--
GMSG-17	10/27/98	10:29 AM	28.77	52	-	0.4	0	1.3	4.6	--	--	--	--
GMSG-17	11/17/98	8:08 AM	28.79	28.9	-	-0.78	0	0.7	14	7	--	8.5	--
GMSG-17	12/16/98	3:26 PM	28.64	33	-	0.41	0	2.1	5.3	1	--	0	--
GMSG-17	01/20/99	2:24 PM	28.63	28	-	-0.32	0	1.7	15.5	2.25	2.25	2.25	--
GMSG-17	02/10/99	3:25 PM	28.7	36	-	0.99	0	2.1	7.8	<1	<1	2.75	--
GMSG-17	03/13/99	2:24 PM	29.06	37	-	0.51	0	2.7	7.6	--	--	1.5	--
GMSG-17	04/13/99	9:55 AM	28.95	51.1	-	-0.03	0	2.1	5.8	4	<3	3	--
GMSG-17	07/26/99	5:25 PM	28.67	82.9	-	0.01	0	1.4	5.5	15	--	2.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-17	10/09/99	2:52 PM	28.67	71.1	-	0.69	0	0.9	12.8	4.5	--	1.5	--
GMSG-17	01/19/00	5:59 PM	28.62	13	-	-0.04	0	0	19.5	--	--	--	--
GMSG-17	04/18/00	11:06 AM	28.72	43	-	-0.63	0	1.3	4.7	12.21	--	12.21	--
GMSG-17	07/22/00	10:46 AM	28.92	62	-	-0.34	0	0.1	19.9	4	<4	4	--
GMSG-17	10/20/00	10:29 AM	28.61	67	-	0.07	0	0.5	11.2	1.2	-0.15	0.2	--
GMSG-17	01/26/01	4:30 PM	28.51	23	T	0.07	0	1	4.2	1.47	--	0.12	--
GMSG-17	04/23/01	9:07 AM	28.36	65	-	1.27	0	0.9	4.8	-1	--	-1	--
GMSG-17	07/11/01	10:40 AM	28.82	74	-	-0.25	0	0	20.6	0	0	0	--
GMSG-17	09/20/01	1:43 PM	28.64	67	-	-0.29	0	0.7	4.3	0.6	0	0	--
GMSG-17	09/25/01	3:42 PM	28.86	56	-	-7	0	0	20.8	0	0	0	--
GMSG-17	10/02/01	11:06 AM	28.67	70	-	-4.2	0	0	20.4	5.4	5.3	5	--
GMSG-17	10/10/01	8:45 AM	28.57	58	T	-3.69	0	0	19.5	1	0	0	--
GMSG-17	10/18/01	8:38 AM	28.6	43	-	-3.24	0	0	19.1	7.1	0.63	0.7	--
GMSG-17	10/23/01	10:20 AM	28.21	49	-	-3.34	0	0	20.9	0.1	0.05	0.01	--
GMSG-17	11/02/01	12:46 PM	28.68	50	-	-1.15	0	0	20.7	0.63	-0.47	0.63	--
GMSG-17	11/07/01	9:58 AM	29.03	43	-	-0.26	0	0.6	20.1	-0.04	-0.96	-0.21	--
GMSG-17	11/13/01	12:55 PM	28.76	46	-	0.67	0	1.9	15.1	-0.58	-2.5	-0.58	--
GMSG-17	02/16/02	10:33 AM	28.57	31	-	-0.98	0	1.6	14.9	-0.48	-2.2	-0.48	--
GMSG-17	05/15/02	8:50 AM	28.73	50	-	0.73	0	1.3	14.8	-0.2	-2.4	-0.2	--
GMSG-17	10/11/02	9:45 AM	28.92	61	-	0	0	0.2	20.7	0.07	0.04	0	--
GMSG-17	01/07/03	11:02 AM	28.44	34	-	1.8	0	0.9	11.6	0.05	0	0	--
GMSG-17	04/01/03	1:47 PM	28.51	48	-	-0.1	0	0	20.2	0	0	0	--
GMSG-17	07/21/03	9:08 AM	28.56	61	-	0	0	0.4	17	0	0	0	--
GMSG-17	10/10/03	12:00 PM	28.83	73	-	0	0	0.6	18.8	0	0	0	--
GMSG-17	01/28/04	11:05 AM	28.66	11	-	0	0	0	19.6	-0.2	-0.15	-0.07	--
GMSG-17	04/20/04	1:58 PM	28.72	43	-	0	0	0.6	11.2	0	0	0	--
GMSG-17	06/05/04	12:15 PM	28.76	72	-	0.6	0	0.5	12.1	--	--	--	--
GMSG-17	06/05/04	2:39 PM	28.73	66	T	0	0	0.5	12.3	--	--	--	--
GMSG-17	06/07/04	7:58 AM	28.66	69	-	-1.8	0	0	20.1	--	--	--	--
GMSG-17	06/08/04	9:12 AM	28.66	80	-	-5	0	0	19.9	--	--	--	--
GMSG-17	07/08/04	5:27 PM	28.76	65	-	-0.52	0	0	19.9	12.34	10.55	0.91	--
GMSG-17	10/08/04	1:42 PM	28.56	67	-	0.6	0	0.5	13.4	-0.22	-0.43	-0.39	--
GMSG-17	01/14/05	12:11 PM	29.22	12	-	-0.7	0	0	20.1	26.5	26.42	0.56	--
GMSG-17	04/11/05	12:20 PM	28.92	54	-	-2.2	0	0	20.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-17	07/21/05	9:36 AM	28.83	81	-	-0.5	0	0	19.5	--	--	--	--
GMSG-17	10/18/05	10:00 AM	28.64	51	-	-0.5	0	0	19.9	--	--	--	--
GMSG-17	03/07/06	2:35 PM	28.85	37	-	1.3	0	0.8	16.3	--	--	--	--
GMSG-17	04/14/06	10:53 AM	28.34	70	-	0	0	0.7	15.4	--	--	--	--
GMSG-17	07/12/06	11:02 AM	28.83	81	-	0	0	0	18.7	--	--	--	--
GMSG-17	10/22/06	10:34 AM	28.66	38	-	0	0	1	17	--	--	--	--
GMSG-17	01/29/07	11:47 AM	28.55	10	T	0.4	0	1	17.2	--	--	--	--
GMSG-17	04/16/07	10:44 AM	28.85	56	-	-0.2	0	0.1	20.4	--	--	--	--
GMSG-17	07/13/07	11:00 AM	30.03	67	-	-0.2	0	0.1	19.6	--	--	--	--
GMSG-17	10/15/07	1:20 PM	30.14	49	-	0	0	0.2	19.3	--	--	--	--
GMSG-18	07/11/98	7:38 PM	28.75	72	-	0.19	0.4	4.9	1.1	--	--	--	--
GMSG-18	07/12/98	10:04 AM	28.72	80.1	-	0.04	0.5	4.3	0	--	--	--	--
GMSG-18	07/13/98	9:50 AM	28.61	82	-	0	0.5	3.5	7.2	--	--	--	--
GMSG-18	07/14/98	11:18 AM	28.69	75	T	0	0	0	16.8	--	--	--	--
GMSG-18	07/15/98	10:49 AM	28.65	73.9	-	-0.04	0.5	4.6	0	--	--	--	--
GMSG-18	07/21/98	6:01 PM	28.59	79	-	-0.32	0	0.2	19.8	1000	300	4	--
GMSG-18	07/22/98	5:54 PM	28.61	75	-	0.15	0	1.3	14.9	1500	--	1.75	--
GMSG-18	07/23/98	6:27 PM	28.7	66.9	-	-0.09	0	0.2	20.5	8	8	4	--
GMSG-18	07/24/98	6:17 PM	28.86	69.1	-	-0.1	0	0.1	20.6	--	--	--	--
GMSG-18	07/26/98	1:40 PM	28.73	82	-	0.45	0	0.1	20.1	1000	1000	5	--
GMSG-18	07/27/98	5:35 PM	28.6	77	-	0.05	0.4	5.2	0	--	--	--	--
GMSG-18	07/28/98	1:15 PM	28.47	78.1	-	0.18	0.5	4.8	0	3000	--	2	--
GMSG-18	07/29/98	11:55 AM	28.7	75.9	-	-0.12	0.1	0.1	20.2	1500	1500	1.7	--
GMSG-18	08/04/98	12:20 PM	28.93	75.9	-	-0.05	0.3	5.5	0	--	--	--	--
GMSG-18	08/05/98	1:11 PM	28.94	75.9	-	0.01	0.3	5.6	0	--	--	--	--
GMSG-18	08/05/98	7:00 PM	28.9	72	-	-0.36	--	--	--	--	--	--	--
GMSG-18	08/06/98	8:00 AM	28.84	66.9	T	-1.21	--	--	--	--	--	--	--
GMSG-18	08/06/98	10:08 AM	28.85	64.9	0.16	--	0	6.1	0.7	--	--	--	--
GMSG-18	08/07/98	12:23 PM	28.79	73	-	-1.25	0	5.3	4.2	--	--	--	--
GMSG-18	08/07/98	7:20 PM	28.78	73	-	-1.23	0	5.8	6.6	--	--	--	--
GMSG-18	08/08/98	11:39 AM	28.81	79	-	-1.35	0	4.3	8.9	--	--	--	--
GMSG-18	08/09/98	9:46 AM	28.8	79	-	-4.46	0	3.5	12.8	--	--	--	--
GMSG-18	08/10/98	10:05 AM	28.74	77	-	-1.21	0	3	17.2	--	--	--	--
GMSG-18	08/11/98	5:35 PM	28.91	70	-	-1.15	0	2.2	19.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-18	08/12/98	11:11 AM	28.99	71.1	-	-6.96	0	0	23.1	5	5	5	--
GMSG-18	08/13/98	11:32 AM	28.84	80.1	-	-1	0	0	23.3	10	6	6	--
GMSG-18	08/14/98	11:09 AM	28.61	77	-	-0.88	0	0	23	8.5	5.5	5	--
GMSG-18	08/15/98	11:09 AM	28.78	69.1	-	-1.39	0	0	23.3	9	6	4.5	--
GMSG-18	08/16/98	11:06 AM	28.82	73	-	-1.09	0	0	23.7	4.5	4.5	5	--
GMSG-18	08/17/98	11:12 AM	28.69	73.9	-	-1.28	0	0	22.9	7	6	3.5	--
GMSG-18	08/18/98	11:10 AM	29.03	63	-	-1.11	0	0	22.9	12	10	4.5	--
GMSG-18	08/19/98	11:02 AM	28.99	64.9	-	-0.89	0	0	22.5	5.5	3.5	1.7	--
GMSG-18	08/20/98	11:08 AM	28.87	78.1	-	-1.11	0	0	22.9	8	6	3	--
GMSG-18	08/21/98	12:17 PM	28.97	78.1	-	-0.88	0	0	23.3	5	5	4	--
GMSG-18	08/22/98	11:00 AM	28.89	66.9	-	-0.66	0	0	22.7	7	6	2.5	--
GMSG-18	08/23/98	11:23 AM	28.46	73.9	0.01	-0.7	0	0	22.7	1.5	1.5	<1	--
GMSG-18	08/24/98	11:01 AM	28.43	75.9	-	-0.89	0	0	23.3	4	4	2	--
GMSG-18	08/25/98	11:02 AM	28.6	73	-	-1.05	0	0	23.1	4.5	4.5	2	--
GMSG-18	08/26/98	12:20 PM	28.79	81	-	-0.92	0	0	22.4	14	14	14	--
GMSG-18	08/26/98	3:36 PM	28.76	82.9	-	-0.63	0	0	22.3	5.5	5.5	5.5	--
GMSG-18	08/27/98	10:45 AM	28.83	81	-	-0.01	0	0	21.7	2.5	2.5	2.25	--
GMSG-18	08/28/98	10:53 AM	28.66	79	-	0	0	0.2	21	<1	<1	2	--
GMSG-18	08/29/98	10:58 AM	28.67	75.9	-	-0.07	0	0.3	20.9	<1	<1	2.25	--
GMSG-18	08/30/98	11:05 AM	28.75	72	-	0	0	0.4	21	2.5	<1	2	--
GMSG-18	08/31/98	11:25 AM	28.85	72	-	-0.07	0	0.3	21.3	<1	<1	2.5	--
GMSG-18	09/01/98	12:58 PM	28.54	73	T	0.46	0	0.7	20	2	<1	2	--
GMSG-18	09/02/98	12:10 PM	28.53	63	T	-0.08	0	0.7	19.9	1.75	<1	1.75	--
GMSG-18	09/03/98	12:15 PM	28.57	68	-	-0.23	0	0	21.4	2.7	2.7	2.7	--
GMSG-18	09/04/98	11:06 AM	28.73	73.9	-	-0.07	0	0.7	20.5	1	1	3	--
GMSG-18	09/09/98	11:20 AM	28.93	66.9	-	0	0	0	21.4	2.5	2.5	2.5	--
GMSG-18	09/10/98	6:05 PM	28.65	77	-	0.26	0	1	20	--	--	--	--
GMSG-18	09/11/98	10:45 AM	28.62	89.1	-	0.14	0	0.9	20.7	<2.5	<2.5	2.5	--
GMSG-18	09/12/98	5:18 PM	28.69	77	-	0.09	0	0.6	20.4	--	--	--	--
GMSG-18	09/14/98	11:36 AM	28.6	66.9	-	0.04	0	1	19.8	<3	<3	3	--
GMSG-18	09/16/98	10:57 AM	28.92	71.1	-	0	0	1	20.3	--	--	2.5	--
GMSG-18	09/21/98	2:11 PM	28.77	55	-	-0.28	0	1	19.9	<2.5	<2.5	<2.5	--
GMSG-18	09/22/98	10:56 AM	28.89	55	-	-0.08	0	1.1	19.8	<2.5	<2.5	<2.5	--
GMSG-18	09/23/98	11:35 AM	28.87	64	-	0.21	0	1.1	20.1	<2.5	<2.5	<2.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-18	09/28/98	11:23 AM	28.76	64.9	-	0	0	1.2	19.5	<2.5	<2.5	2.5	--
GMSG-18	10/07/98	11:15 AM	28.66	54	-	-0.22	0	1.4	18.8	<3.5	<3.5	3.5	--
GMSG-18	10/14/98	8:52 AM	28.87	39.9	-	-0.2	0	1.6	18.2	<2.5	<2.5	2.5	--
GMSG-18	10/24/98	2:44 PM	28.77	72	-	0.18	0	1.4	19.2	<4.5	<4.5	4.5	--
GMSG-18	10/27/98	10:16 AM	28.77	52	-	0.15	0	1.6	20	--	--	--	--
GMSG-18	11/17/98	7:40 AM	28.79	28.9	-	-0.2	0	1.6	18.5	14	1.5	7	--
GMSG-18	12/16/98	3:17 PM	28.64	33	-	0.12	0	2.1	17.6	1	0	0	--
GMSG-18	01/20/99	2:45 PM	28.66	28	-	-0.21	0	2	20.6	2	2	2.5	--
GMSG-18	02/10/99	3:07 PM	28.7	36	-	0.48	0	2	17.4	<1	<1	3	--
GMSG-18	03/13/99	2:37 PM	29.03	37	-	0.27	0	2.1	18.3	1.25	1.25	1.25	--
GMSG-18	04/13/99	9:25 AM	28.95	48	-	0	0	1.2	17.5	0	0	3	--
GMSG-18	07/26/99	5:16 PM	28.67	82.9	-	-0.03	0	1.8	16.3	2.75	1.2	2.5	--
GMSG-18	10/09/99	1:31 PM	28.69	71.1	-	0.36	0	1.1	17.8	<1	<1	2	--
GMSG-18	01/19/00	5:18 PM	28.6	15	-	0.08	0	2.2	15.2	--	--	--	--
GMSG-18	04/18/00	9:15 AM	28.72	38	-	0.1	0	2.2	13.6	12.2	11.32	12.2	--
GMSG-18	07/22/00	7:23 AM	28.9	50	-	-0.25	0	0.4	19.3	5	5	5	--
GMSG-18	10/20/00	9:11 AM	28.6	65	-	0	0	2.1	13.2	0.4	-1.75	0.35	--
GMSG-18	01/26/01	1:15 PM	28.49	19	T	0.36	0	2.1	13.2	0.26	--	0.26	--
GMSG-18	04/23/01	8:12 AM	28.39	60	-	0.37	0	1.8	13.4	-0.8	-1.32	-0.8	--
GMSG-18	07/11/01	9:31 AM	28.82	70	-	-0.07	0	0.3	20.2	0	0	0	--
GMSG-18	09/20/01	2:50 PM	28.64	65	-	0.3	0	0	20.9	197	52	0	--
GMSG-18	09/25/01	3:38 PM	28.86	56	-	-0.72	0	0	20.9	0	0	0	--
GMSG-18	10/02/01	10:55 AM	28.67	70	-	-1	0	0	20.4	6.5	6.42	6	--
GMSG-18	10/10/01	8:35 AM	28.57	58	T	-0.75	0	0.2	19.6	0	0	0	--
GMSG-18	10/18/01	8:32 AM	28.6	43	-	-0.61	0	0.1	18.9	0	0	0.6	--
GMSG-18	10/23/01	10:15 AM	28.21	49	-	-0.71	0	0	20.8	0.1	0.1	0.1	--
GMSG-18	11/02/01	12:24 PM	28.65	51	-	-0.43	0	0.3	20.7	1.43	-0.53	0.7	--
GMSG-18	11/07/01	9:49 AM	29.03	43	-	-0.04	0	0.2	20.7	-0.13	-1.21	-0.13	--
GMSG-18	11/13/01	12:50 PM	28.76	46	-	0.25	0	0.8	19.9	-0.47	-2.15	-0.47	--
GMSG-18	02/16/02	9:08 AM	28.52	32	-	-0.31	0	0	20.7	-1.86	-1.99	-2.26	--
GMSG-18	05/15/02	8:43 AM	28.73	50	-	0.26	0	0.6	19.9	-0.2	-2.3	-0.2	--
GMSG-19	07/13/98	9:59 AM	28.61	82	-	0	4.3	0.3	13.7	--	--	--	--
GMSG-19	07/14/98	11:26 AM	28.69	75	T	0	1.2	0.1	15.8	--	--	--	--
GMSG-19	07/14/98	6:50 PM	28.73	69.1	-	0.13	19.8	0.8	1.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-19	07/15/98	10:40 AM	28.65	73.9	-	-0.09	19.7	1.3	0	--	--	--	--
GMSG-19	07/21/98	5:46 PM	28.59	79	-	-0.5	17	1	0.8	--	--	--	--
GMSG-19	07/22/98	5:44 PM	28.61	75	-	0.43	19.1	1.4	0	--	--	--	--
GMSG-19	07/23/98	6:15 PM	28.7	66.9	-	-0.17	21.2	1.5	0	--	--	--	--
GMSG-19	07/24/98	6:07 PM	28.86	69.1	-	-0.14	19.1	1.4	0	--	--	--	--
GMSG-19	07/26/98	1:30 PM	28.73	82	-	0.87	19.8	1.2	0	--	--	--	--
GMSG-19	07/27/98	6:25 PM	28.6	77	-	0.14	19.6	1.5	0	--	--	--	--
GMSG-19	07/28/98	1:04 PM	28.47	78.1	-	0.41	20.6	1.6	0	--	--	--	--
GMSG-19	07/29/98	11:37 AM	28.7	75.9	-	-0.32	19.9	1.3	0	--	--	--	--
GMSG-19	08/04/98	11:42 AM	28.93	75.9	-	-0.19	17.5	1.3	1.2	--	--	--	--
GMSG-19	08/05/98	1:41 PM	28.92	77	-	0.1	18.8	1.3	0	--	--	--	--
GMSG-19	08/05/98	6:57 PM	28.9	72	-	-2.24	--	--	--	--	--	--	--
GMSG-19	08/06/98	7:41 AM	28.84	66.9	T	-4.92	--	--	--	--	--	--	--
GMSG-19	08/06/98	9:20 AM	28.85	64.9	0.04	--	14.1	2.6	0	--	--	--	--
GMSG-19	08/07/98	10:51 AM	28.79	72	-	-5.35	5.4	4.4	0	--	--	--	--
GMSG-19	08/07/98	6:53 PM	28.78	73	-	-5.14	2.7	5.1	0	--	--	--	--
GMSG-19	08/08/98	11:14 AM	28.82	75.9	-	-5.37	0.2	6.3	6.1	--	--	--	--
GMSG-19	08/09/98	8:45 AM	28.81	77	-	-5.04	0	4.3	16.5	--	--	--	--
GMSG-19	08/10/98	8:56 AM	28.73	72	-	-5.11	0	2.5	19.5	--	--	--	--
GMSG-19	08/11/98	4:36 PM	28.91	72	-	-5.03	0	1.4	21.4	3	3	3	--
GMSG-19	08/12/98	10:42 AM	28.99	71.1	-	-4.8	0	1.2	21	105	105	4	--
GMSG-19	08/13/98	11:06 AM	28.86	78.1	-	-4.29	0	1.1	21.7	200	200	4	--
GMSG-19	08/14/98	10:42 AM	28.61	77	-	-3.8	0	1	22	180	180	6	--
GMSG-19	08/15/98	10:43 AM	28.78	69.1	-	-4.88	0	0.9	22.2	145	145	4	--
GMSG-19	08/16/98	10:42 AM	28.82	73	-	-4.22	0	0.8	22.4	75	75	4	--
GMSG-19	08/17/98	10:42 AM	28.69	73.9	-	-4.74	0	0.8	22.2	92	92	4	--
GMSG-19	08/18/98	10:44 AM	29.03	63	-	-4.55	0	0	23	12	10	6	--
GMSG-19	08/19/98	10:36 AM	28.99	64.9	-	-4.16	0	0	22.4	3.5	3.5	2.1	--
GMSG-19	08/20/98	10:44 AM	28.87	78.1	-	-4.18	0	0	22.2	7	6	3	--
GMSG-19	08/21/98	11:50 AM	28.97	78.1	-	-3.75	0	0	23.4	6	5	4	--
GMSG-19	08/22/98	10:36 AM	28.89	66.9	-	-4	0	0	22.3	8	6	3	--
GMSG-19	08/23/98	10:32 AM	28.46	73.9	0.01	-4.02	0	0	22.3	1.5	1.5	<1	--
GMSG-19	08/24/98	10:33 AM	28.43	75.9	-	-4.15	0	0	22.7	4	4	2	--
GMSG-19	08/25/98	10:32 AM	28.6	73	-	-4.43	0	0	22.6	4	4	1.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-19	08/26/98	11:40 AM	28.79	81	-	-4.15	0	0	22.2	10	10	10	--
GMSG-19	08/26/98	3:09 PM	28.75	82.9	-	2.58	0	0	22.3	11	11	10	--
GMSG-19	08/27/98	10:13 AM	28.84	79	-	-0.3	0	0	21.3	10	10	2.5	--
GMSG-19	08/28/98	10:20 AM	28.68	75	-	-0.16	0	0.3	20.5	11	11	2	--
GMSG-19	08/29/98	10:20 AM	28.65	73	-	-0.19	0	0.2	20.8	12.5	11	2.25	--
GMSG-19	08/30/98	10:37 AM	28.75	72	-	-0.2	0	0.3	20.8	15	15	2.25	--
GMSG-19	08/31/98	10:55 AM	28.85	72	-	-0.25	0	0.4	20.4	17.5	17.5	2	--
GMSG-19	09/01/98	12:23 PM	28.57	71.1	T	0.36	0	0.5	20.3	9.5	9.5	2	--
GMSG-19	09/02/98	11:35 AM	28.53	63	T	-0.11	0	0.6	21.5	12.5	5	2	--
GMSG-19	09/03/98	11:34 AM	28.57	68	-	-0.32	0	0.6	21	5.5	5.5	2.8	--
GMSG-19	09/04/98	10:35 AM	28.73	73.9	-	-0.38	0	0.6	21.3	4	4	3	--
GMSG-19	09/09/98	1:10 PM	28.89	71.1	-	0.13	0	0.7	20.5	2	2	2	--
GMSG-19	09/10/98	5:50 PM	28.65	77	-	0.56	0	0.7	20.6	--	--	--	--
GMSG-19	09/11/98	10:17 AM	28.62	84	-	0.12	0	0.7	21	7	7	4	--
GMSG-19	09/12/98	5:05 PM	28.69	77	-	0.22	0	0.6	20.4	--	--	--	--
GMSG-19	09/14/98	11:01 AM	28.61	66.9	T	0.02	0	0.8	19.9	8	8	3.5	--
GMSG-19	09/16/98	10:30 AM	28.92	71.1	-	-0.1	0	0.9	20.5	5	5	2	--
GMSG-19	09/21/98	1:38 PM	28.77	55	-	-0.64	0	0.8	20.1	11	11	2.5	--
GMSG-19	09/22/98	10:25 AM	28.89	53.1	-	-0.33	0	0.9	19.6	7	7	3	--
GMSG-19	09/23/98	10:59 AM	28.89	62.1	-	0.21	0	0.9	19.7	3.25	3.25	2	--
GMSG-19	09/25/98	6:35 PM	28.58	66	-	-0.23	0	0.9	19.9	20	20	2.5	--
GMSG-19	09/28/98	10:21 AM	28.77	63	-	-0.28	0	1	19.4	5.5	5.5	4.5	--
GMSG-19	10/07/98	10:47 AM	28.66	54	-	-0.52	0	1.1	18.9	5	5	4	--
GMSG-19	10/14/98	8:28 AM	28.87	39	-	-0.4	0	1.2	18.2	4	4	4	--
GMSG-19	10/24/98	2:12 PM	28.76	72	-	0.4	0	1	19.6	4.5	4.5	4.5	--
GMSG-19	10/27/98	9:15 AM	28.77	51.1	-	0.33	0	1.2	18.5	<2.5	<2.5	2.5	--
GMSG-19	11/17/98	9:27 AM	28.81	30.9	-	-0.64	0	1.5	17.6	8	1.5	4	--
GMSG-19	12/16/98	2:47 PM	28.64	33	-	0.37	0	1.7	17.2	1	0	0	--
GMSG-19	01/20/99	12:39 PM	28.63	28.9	-	-0.07	0	1.7	17.6	<1	<1	2	--
GMSG-19	02/10/99	11:28 AM	28.83	30.9	-	0.2	0	1.8	14.1	1.75	1.75	2.75	--
GMSG-19	03/13/99	11:57 AM	29.09	35.1	-	0.06	0	2.1	16.8	<1	<1	1	--
GMSG-19	04/13/99	9:02 AM	28.95	48	-	0.05	0	2.1	14.7	0	0	3	--
GMSG-19	07/26/99	4:57 PM	28.67	82.9	-	0	0	1.7	15.4	7	1.25	3.25	--
GMSG-19	10/09/99	1:26 PM	28.71	70	-	0.42	0	1	17.2	3	3	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-19	01/19/00	5:05 PM	28.6	15	-	0.06	0	0.6	18.4	--	--	--	--
GMSG-19	04/18/00	9:53 AM	28.71	40	-	0.42	0	1.3	12.8	12.83	12.83	12.3	--
GMSG-19	07/22/00	10:22 AM	28.91	62	-	-0.31	0	0.8	18.4	<4	<4	4	--
GMSG-19	10/20/00	10:20 AM	28.61	67	-	0.03	0	1.2	14.8	0.08	-0.6	0.07	--
GMSG-19	01/26/01	3:00 PM	28.48	22	T	0	0	1.2	14	0.47	--	0.47	--
GMSG-19	04/23/01	9:00 AM	28.36	65	-	1.01	0	0.5	16.8	-1	-1.6	-1	--
GMSG-19	07/11/01	10:32 AM	28.82	74	-	-0.19	0	1	16.8	0	0	0	--
GMSG-19	09/20/01	1:37 PM	28.64	67	-	0	0	0	20.3	0	0	0	--
GMSG-19	09/25/01	4:11 PM	28.86	56	-	-6.7	0	0	20.7	0	0	0	--
GMSG-19	10/02/01	3:09 PM	28.57	70	-	-3.79	0	0	21.2	4.2	4.1	4.3	--
GMSG-19	10/10/01	9:45 AM	28.57	59	-	-4.03	0	0	19.4	0	0	0	--
GMSG-19	10/18/01	9:24 AM	28.6	43	-	-3.76	0	0	18.9	0.7	0.54	0.6	--
GMSG-19	10/23/01	11:15 AM	28.21	52	-	-3.93	0	0	20.7	-0.05	-0.1	0.03	--
GMSG-19	11/02/01	1:13 PM	28.68	50	-	-0.91	0	0	21	0.61	0.52	0.58	--
GMSG-19	11/07/01	9:31 AM	29.03	43	-	-0.29	0	0.1	20.8	-0.24	-1.12	-0.28	--
GMSG-19	11/13/01	1:55 PM	28.75	48	-	0.6	0	0.4	20.3	2.56	2.4	-0.38	--
GMSG-19	02/16/02	10:05 AM	28.55	32	-	-0.7	0	0	20.3	1.13	0.9	-0.65	--
GMSG-19	05/15/02	8:36 AM	28.73	50	-	0.51	0	0.6	19.9	-0.2	-2.1	-0.2	--
GMSG-19	10/11/02	9:51 AM	28.92	61	-	0	0	0.5	20.2	0	0	0	--
GMSG-19	01/07/03	10:40 AM	28.44	34	-	1.4	0	0.6	18.4	0	0	0	--
GMSG-19	04/01/03	1:38 PM	28.51	48	-	-0.2	0	0.3	19.7	0	0	0	--
GMSG-19	07/21/03	8:57 AM	28.56	61	-	0	0	0.3	19.1	0	0	0	--
GMSG-19	10/10/03	11:52 AM	28.83	73	-	0	0	0.5	19.2	0	0	0	--
GMSG-19	01/28/04	9:40 AM	28.65	12	-	0	0	0.5	18.8	0.19	0.15	0.12	--
GMSG-19	04/20/04	1:50 PM	28.72	43	-	0.8	0	0.8	14.6	0	0	0	--
GMSG-19	06/05/04	12:20 PM	28.76	72	-	0.4	0	0.7	15.8	--	--	--	--
GMSG-19	06/05/04	2:43 PM	28.73	66	T	0	0	0.6	15.9	--	--	--	--
GMSG-19	06/07/04	8:05 AM	28.66	69	-	-1	0	0	20.1	--	--	--	--
GMSG-19	06/08/04	9:17 AM	28.66	80	-	-2.2	0	0	19.9	--	--	--	--
GMSG-19	07/08/04	5:18 PM	28.76	65	-	-0.393	0	0.5	19.2	16.33	6.2	2.22	--
GMSG-19	10/08/04	1:55 PM	28.56	67	-	0.6	0	0.5	19.1	0.67	0.6	-0.96	--
GMSG-19	01/14/05	12:37 PM	29.22	13	-	-0.9	0	0	20.2	1.11	0.5	0.3	--
GMSG-19	04/11/05	12:10 PM	28.92	54	-	-1.2	0	0.8	19.1	--	--	--	--
GMSG-19	07/21/05	9:25 AM	28.83	77	-	0	0	0	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-19	10/18/05	9:25 AM	28.63	48	-	-0.45	0	0.4	19.3	--	--	--	--
GMSG-19	03/07/06	2:21 PM	28.89	37	-	0.8	0	0.5	18.6	--	--	--	--
GMSG-19	04/14/06	10:45 AM	28.34	70	-	0.5	0	0.5	18.4	--	--	--	--
GMSG-19	07/12/06	10:54 AM	28.83	81	-	0	0	0.1	18.7	--	--	--	--
GMSG-19	10/22/06	10:28 AM	28.66	36	-	0	0	0.9	19.3	--	--	--	--
GMSG-19	01/29/07	11:28 AM	28.56	9	T	0	0	0.9	19.3	--	--	--	--
GMSG-19	04/16/07	10:37 AM	28.85	56	-	0	0	0.6	20.1	--	--	--	--
GMSG-19	07/13/07	10:51 AM	30.03	67	-	-0.2	0	0.3	19.4	--	--	--	--
GMSG-19	10/15/07	1:11 PM	30.14	49	-	0	0	0.7	19	--	--	--	--
GMSG-20	07/13/98	12:59 PM	28.61	87.1	T	0.2	38.6	0	7	--	--	--	--
GMSG-20	07/14/98	11:35 AM	28.65	75	T	0	14	0.7	13.4	--	--	--	--
GMSG-20	07/21/98	6:27 PM	28.59	79	-	-0.05	0	0	21.1	13	13	4	--
GMSG-20	07/22/98	6:22 PM	28.61	75	-	0.66	36.9	0.4	4.9	--	--	--	--
GMSG-20	07/23/98	6:50 PM	28.71	64.9	-	-0.24	30.1	1.4	10.9	--	--	--	--
GMSG-20	07/24/98	6:31 PM	28.87	66	-	-0.28	2.1	1.9	18.4	--	--	--	--
GMSG-20	07/26/98	2:01 PM	28.73	82	-	1.66	62	0	0	--	--	--	--
GMSG-20	07/27/98	6:30 PM	28.6	73.9	-	0.33	64.4	0	0	--	--	--	--
GMSG-20	07/28/98	1:45 PM	28.49	79	-	0.91	64.5	0	0	--	--	--	--
GMSG-20	07/29/98	1:03 PM	28.69	78.1	-	-0.39	0.1	0.4	19.9	300	300	3	--
GMSG-20	08/04/98	12:55 PM	28.92	77	-	-0.2	61.5	0	0	--	--	--	--
GMSG-20	08/05/98	11:55 AM	28.94	73.9	-	-0.08	63.6	0.1	0	--	--	--	--
GMSG-20	08/05/98	7:08 PM	28.9	72	-	-3.08	--	--	--	--	--	--	--
GMSG-20	08/06/98	8:06 AM	28.84	66.9	T	-9.36	--	--	--	--	--	--	--
GMSG-20	08/06/98	10:41 AM	28.85	64.9	0.02	--	54.2	0.2	1.6	--	--	--	--
GMSG-20	08/07/98	11:38 AM	28.79	73	-	-10.41	59.4	0.2	0	--	--	--	--
GMSG-20	08/07/98	7:53 PM	28.8	72	-	-10.21	58	0.3	0.4	--	--	--	--
GMSG-20	08/08/98	12:05 PM	28.81	79	-	-10.69	58.1	0.1	0.5	--	--	--	--
GMSG-20	08/09/98	9:02 AM	28.81	77	-	-10.45	56.1	0.2	0.4	--	--	--	--
GMSG-20	08/10/98	9:19 AM	28.73	72	-	-10.54	55	0	3.1	--	--	--	--
GMSG-20	08/11/98	4:56 PM	28.91	72	-	-10.51	56.7	0	3.1	--	--	--	--
GMSG-20	08/12/98	12:27 PM	28.97	73.9	-	-9.25	0	0	23.3	12	12	6	--
GMSG-20	08/13/98	12:57 PM	28.82	79	-	-8.31	0	0	23.5	22	22	4.7	--
GMSG-20	08/14/98	12:23 PM	28.61	72	0.03	-7.59	0	0	22.9	23	23	5	--
GMSG-20	08/15/98	12:09 PM	28.78	71.1	-	-9.57	0	0	22.8	35	30	4	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-20	08/16/98	12:13 PM	28.8	75	-	-8.32	0	0	23.5	12	12	3.5	--
GMSG-20	08/17/98	12:17 PM	28.71	72	-	-9.35	0	0	22.9	18	18	4	--
GMSG-20	08/18/98	12:55 PM	29.03	68	-	-8.82	0	0	23.6	6	4	4	--
GMSG-20	08/19/98	11:55 AM	28.99	66.9	-	-8.04	0	0	22.6	3.3	3.3	1.5	--
GMSG-20	08/20/98	12:03 PM	28.86	81	-	-8.46	0	0	23.2	6	6	3.5	--
GMSG-20	08/21/98	1:12 PM	28.95	81	-	-7.82	0	0	23.7	7	7	5	--
GMSG-20	08/22/98	11:54 AM	28.89	68	-	-7.71	0	0	22.7	7.5	7.5	2.5	--
GMSG-20	08/23/98	12:28 PM	28.47	75.9	-	-7.34	0	0	22.8	1.75	1.75	<1	--
GMSG-20	08/24/98	12:00 PM	28.43	77	-	-8.19	0	0	23.3	4.5	4.5	2.25	--
GMSG-20	08/25/98	11:57 AM	28.61	75.9	-	-8.71	0	0	23.2	4	4	2	--
GMSG-20	08/26/98	1:30 PM	28.77	82.9	-	8.41	0	0	22.5	150	10	9.5	--
GMSG-20	08/26/98	4:46 PM	28.78	81	-	5.38	0	0	22	5	5	4.5	--
GMSG-20	08/27/98	12:11 PM	28.82	82	-	-1.01	0	0	21.6	30	30	2.25	--
GMSG-20	08/28/98	12:31 PM	28.65	80.1	-	-0.05	0	0	21.5	225	9.5	9.5	--
GMSG-20	08/29/98	12:15 PM	28.66	77	-	-0.59	0	0	22	275	275	2.25	--
GMSG-20	08/30/98	12:15 PM	28.74	73	-	-0.41	0	0	22.6	2500	2500	2.25	--
GMSG-20	08/31/98	1:05 PM	28.83	75	-	-0.15	0.1	0	22.2	1750	1750	2.5	--
GMSG-20	09/01/98	2:25 PM	28.51	73	-	1.05	0.3	0	22.1	7500	7500	2.75	--
GMSG-20	09/02/98	1:47 PM	28.51	64.9	-	-0.12	0.2	0	20.8	6000	6000	1.75	--
GMSG-20	09/03/98	1:15 PM	28.56	70	-	-0.45	0.3	0	21.9	--	--	--	--
GMSG-20	09/04/98	12:15 PM	28.71	78.1	-	-0.26	0.3	0	22.1	--	--	--	--
GMSG-20	09/09/98	10:50 AM	28.93	66.9	-	-0.7	0	0.1	21.3	7.5	7.5	2.5	--
GMSG-20	09/10/98	6:20 PM	28.65	77	-	1.25	1	0	19.3	--	--	--	--
GMSG-20	09/11/98	11:51 AM	28.6	93	-	0.42	1.5	0	19	--	--	--	--
GMSG-20	09/12/98	5:51 PM	28.7	73	-	0.23	0	0	21.1	--	--	--	--
GMSG-20	09/14/98	1:42 PM	28.57	66	-	0.36	1.5	0	18.3	--	--	--	--
GMSG-20	09/16/98	11:47 AM	28.89	75	-	-0.46	1.6	0	18.2	--	--	--	--
GMSG-20	09/21/98	3:37 PM	28.78	55	-	-1.54	2.7	0.1	17.1	--	--	--	--
GMSG-20	09/22/98	12:56 PM	28.88	61	-	-0.57	2.9	0.1	17.5	--	--	--	--
GMSG-20	09/23/98	12:55 PM	28.84	66	-	0.71	3.3	0.1	17	--	--	--	--
GMSG-20	09/28/98	12:30 PM	28.72	69.1	-	-0.22	4.7	0.1	15.8	--	--	--	--
GMSG-20	10/07/98	12:11 PM	28.67	54	-	-1.03	7.6	0.4	13	--	--	--	--
GMSG-20	10/14/98	9:42 AM	28.86	41	-	-0.86	9.5	0.5	11.6	--	--	--	--
GMSG-20	10/24/98	3:55 PM	28.77	71.1	-	0.68	12.3	0.5	9.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-20	10/27/98	11:39 AM	28.72	57.9	-	0.87	13.2	0.6	8.7	--	--	--	--
GMSG-20	11/17/98	7:56 AM	28.79	28.9	-	-1.35	16.8	1	6.1	--	--	--	--
GMSG-20	12/16/98	4:15 PM	28.64	32	-	0.07	21.7	1.9	0	--	--	--	--
GMSG-20	01/20/99	3:43 PM	28.67	27	-	-0.72	19.4	1.9	1.1	--	--	--	--
GMSG-20	02/10/99	2:19 PM	28.72	36	-	0.9	19.3	1.9	0	--	--	--	--
GMSG-20	03/13/99	2:08 PM	29.06	37	-	-0.76	15.2	1.2	4.5	--	--	--	--
GMSG-20	04/13/99	11:10 AM	28.92	54	-	-0.03	0	0	20.3	0	0	3	--
GMSG-20	05/10/99	2:09 PM	28.89	60.1	-	-0.16	14.2	2.4	0.5	--	--	--	--
GMSG-20	07/26/99	6:35 PM	28.67	77	-	0.22	20	1.6	0	--	--	--	--
GMSG-20	10/09/99	2:20 PM	28.69	71.1	-	0.77	2.1	0.5	17.7	--	--	--	--
GMSG-20	10/09/99	3:47 PM	28.65	70	-	--	30.5	1.3	0	--	--	--	--
GMSG-20	01/19/00	12:20 PM	28.63	15	T	0.95	31.4	1.5	0	--	--	--	--
GMSG-20	04/18/00	11:16 AM	28.72	43	-	-0.56	24.8	1.3	0	--	--	--	--
GMSG-20	07/22/00	10:55 AM	28.92	62	-	-0.74	25.5	1.2	0	--	--	--	--
GMSG-20	10/20/00	10:56 AM	28.61	69	-	0.35	31.7	0.8	0	--	--	--	--
GMSG-20	01/26/01	5:15 PM	28.51	23	T	0	39.6	0.9	0	--	--	--	--
GMSG-20	01/27/01	10:00 AM	28.91	12	-	-1.38	38	1	0	--	--	0.12	--
GMSG-20	04/23/01	10:29 AM	28.32	67	-	1.35	35.7	0.6	0	--	--	--	--
GMSG-20	07/11/01	11:07 AM	28.82	74	-	-0.41	0	1.7	19.2	201500	--	0	--
GMSG-20	09/20/01	2:32 PM	28.64	65	-	0.33	36	0.6	0.7	--	--	--	--
GMSG-20	09/25/01	4:00 PM	28.86	56	-	-11.3	0	0	21	0	0	0	--
GMSG-20	10/02/01	3:00 PM	28.57	70	-	-8.41	0	0	21.1	4.39	4.2	4.3	--
GMSG-20	10/10/01	9:25 AM	28.57	58	T	-8.7	0	0	19.5	0	0	0	--
GMSG-20	10/18/01	9:10 AM	28.6	43	-	-8.14	0	0	19	0.5	0.4	0.7	--
GMSG-20	10/23/01	11:00 AM	28.21	52	-	-8.05	0	0	20.8	-0.15	-0.1	0.05	--
GMSG-20	11/02/01	1:46 PM	28.7	49	-	-1.81	36.1	1.7	0	--	--	--	--
GMSG-20	11/07/01	10:29 AM	29.03	43	-	-0.56	27.9	1.6	2.8	--	--	--	--
GMSG-20	11/13/01	1:23 PM	28.76	46	-	1.23	33.5	1.6	0	--	--	--	--
GMSG-20	02/16/02	10:21 AM	28.55	32	-	-1.21	2.6	1	16.7	--	--	--	--
GMSG-20	05/15/02	9:27 AM	28.73	50	-	0.34	19.7	1.4	0	--	--	--	--
GMSG-20	10/11/02	10:31 AM	28.9	66	-	0.3	35.3	1	0	--	--	--	--
GMSG-20	01/07/03	11:36 AM	28.39	35	-	2.9	43	0.8	0	--	--	--	--
GMSG-20	04/01/03	2:13 PM	28.51	48	-	-0.6	38.9	1	0	--	--	--	--
GMSG-20	07/21/03	9:38 AM	28.56	63	-	-0.4	36	0.9	0.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-20	10/10/03	12:19 PM	28.83	73	-	0	34.7	0.8	0	--	--	--	--
GMSG-20	01/28/04	1:20 PM	28.64	11	-	0	32	0.9	0	--	--	--	--
GMSG-20	04/15/04	10:40 AM	28.82	54	-	--	28.1	0.9	0	--	--	--	--
GMSG-20	04/15/04	11:21 AM	28.82	54	-	-22.5	0	19.2	0	--	--	--	--
GMSG-20	04/15/04	11:30 AM	28.8	57	-	-5.5	0	0	19.5	--	--	--	--
GMSG-20	04/15/04	11:45 AM	28.8	57	-	-5.6	0	0	19.3	--	--	--	--
GMSG-20	04/15/04	11:59 AM	28.8	57	-	-5.7	0	0	19.3	--	--	--	--
GMSG-20	04/15/04	12:15 PM	28.8	57	-	-5.6	0.2	0	19.3	--	--	--	--
GMSG-20	04/20/04	2:10 PM	28.72	43	-	1.5	23.8	1.2	0	--	--	--	--
GMSG-20	06/05/04	12:30 PM	28.75	71	-	1.1	4.4	0.5	14.3	--	--	--	--
GMSG-20	06/05/04	2:53 PM	28.73	66	T	-34.3	0	0.3	19.7	--	--	--	--
GMSG-20	06/07/04	8:10 AM	28.66	69	-	-8.8	0	0.2	19.7	--	--	--	--
GMSG-20	06/29/04	2:06 PM	28.8	79	-	-1	0	0.8	19.1	--	--	--	--
GMSG-20	06/30/04	8:57 AM	28.78	77	-	0	0	1.4	17.9	--	--	--	--
GMSG-20	07/01/04	8:55 AM	28.9	63	-	-0.9	0	1.3	17.9	--	--	--	--
GMSG-20	07/02/04	11:15 AM	28.93	71	-	0	0	1.2	18.2	--	--	--	--
GMSG-20	07/06/04	1:55 PM	28.64	55	0.04	1.157	0	0.9	13.6	--	--	--	--
GMSG-20	07/07/04	7:36 AM	28.55	52	-	0.362	0	1.2	16	--	--	--	--
GMSG-20	07/08/04	5:36 PM	28.77	64	-	-1.043	0	0	20	20.59	10.81	1.27	--
GMSG-20	07/09/04	9:29 AM	28.89	64	-	-0.572	0	0	19	--	--	--	--
GMSG-20	07/13/04	8:15 AM	28.64	71	-	0.656	0	1.8	17.4	--	--	--	--
GMSG-20	07/21/04	5:45 PM	28.45	81	-	0.974	0	1.2	13.8	--	--	--	--
GMSG-20	07/28/04	8:39 AM	28.79	75	-	0.001	0	1.3	13.2	--	--	--	--
GMSG-20	08/03/04	3:51 PM	28.72	77	-	0	0	1.8	18.2	--	--	--	--
GMSG-20	08/04/04	2:50 PM	28.84	69	-	-0.054	0	0	19.9	--	--	--	--
GMSG-20	09/29/04	1:05 PM	28.9	65	-	0	0	1.2	18.7	--	--	--	--
GMSG-20	10/08/04	2:17 PM	28.56	67	-	0	0	0.5	19.4	-0.27	-0.36	-0.36	--
GMSG-20	11/12/04	12:04 PM	29.24	38	-	0	0	1.1	19.1	26.05	25.74	-0.66	--
GMSG-20	01/11/05	2:32 PM	28.8	25	-	0.9	0	3.9	0	--	--	--	--
GMSG-20	04/11/05	10:30 AM	28.96	51	-	-34.3	0	0	20.1	--	--	--	--
GMSG-20	05/11/05	1:44 PM	29.1	46	-	-1.8	0	0.2	19.9	--	--	--	--
GMSG-20	06/15/05	8:34 AM	28.51	58	-	-1.3	0	1.1	18.3	--	--	--	--
GMSG-20	07/21/05	8:55 AM	28.83	77	-	-0.3	0	0.6	18.9	--	--	--	--
GMSG-20	08/12/05	10:08 AM	28.61	74	-	0.2	0	1.1	15.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-20	09/09/05	11:00 AM	28.92	71.96	-	0	0	1	18.5	--	--	--	--
GMSG-20	10/18/05	10:15 AM	28.64	51	-	-0.9	0	0.5	19	--	--	--	--
GMSG-20	03/07/06	2:47 PM	28.85	37	-	1.7	0	1.2	13.9	--	--	--	--
GMSG-20	04/14/06	11:01 AM	28.34	70	-	1.1	0	1.9	15.2	--	--	--	--
GMSG-20	07/12/06	11:25 AM	28.83	81	-	0	0	1	17.9	--	--	--	--
GMSG-20	10/22/06	10:41 AM	28.66	38	-	0	0	0.5	20.4	--	--	--	--
GMSG-20	01/29/07	12:23 PM	28.55	10	T	-0.5	0	1.8	14.2	--	--	--	--
GMSG-20	04/16/07	10:58 AM	28.85	56	-	-0.4	0	0.6	20	--	--	--	--
GMSG-20	07/13/07	11:14 AM	30.03	67	-	-0.6	0	0.1	19.7	--	--	--	--
GMSG-20	10/15/07	1:33 PM	30.11	48	-	0	0	0.8	18.7	--	--	--	--
GMSG-21	07/15/98	12:50 PM	28.66	75.9	-	0	2.2	4.2	0	--	--	--	--
GMSG-21	07/21/98	5:18 PM	28.56	81	-	-0.36	1.6	4.3	0	--	--	--	--
GMSG-21	07/22/98	5:19 PM	28.61	75	-	0.23	1.4	6	0	--	--	--	--
GMSG-21	07/23/98	5:55 PM	28.7	66.9	-	-0.05	1.5	6.4	0	--	--	--	--
GMSG-21	07/24/98	5:44 PM	28.86	69.1	-	0	1.7	6.3	0	--	--	--	--
GMSG-21	07/26/98	12:18 PM	28.8	80.1	-	0.45	1.8	5.6	0	--	--	--	--
GMSG-21	07/27/98	7:20 PM	28.6	73.9	-	-0.06	1.6	6	0	--	--	--	--
GMSG-21	07/28/98	12:25 PM	28.48	70	0.03	-0.12	1.8	6.2	0	--	--	--	--
GMSG-21	07/29/98	8:00 AM	28.7	66	-	-0.11	1.7	6.7	0	--	--	--	--
GMSG-21	08/04/98	1:25 PM	28.92	77	-	0.01	1.6	5.8	0	--	--	--	--
GMSG-21	08/09/98	11:08 AM	28.8	82	-	0.19	1.2	6	0	--	--	--	--
GMSG-21	08/12/98	3:56 PM	28.93	79	-	0.18	1.4	7	0.2	--	--	--	--
GMSG-21	08/18/98	9:34 AM	29.02	62.1	-	-0.2	0	0.1	21.2	12	12	3.5	--
GMSG-21	08/28/98	4:57 PM	28.64	79	-	0	2.1	6.9	0.1	100	--	5.5	--
GMSG-21	08/31/98	3:20 PM	28.8	75.9	-	0.2	0.2	1.3	14.9	350	<1	3	--
GMSG-21	09/08/98	4:30 PM	28.86	64	-	-0.05	0	0	0	--	--	--	--
GMSG-21	09/10/98	10:15 AM	28.8	73	-	0.29	2.4	7.3	0	--	--	--	--
GMSG-21	09/12/98	9:39 AM	28.76	68	-	-0.19	0	0	21	15	12	8	--
GMSG-21	09/13/98	10:01 AM	28.69	71.1	-	0.12	0.9	6.8	0.1	--	--	--	--
GMSG-21	09/24/98	4:50 PM	28.59	68	-	0.07	2	0	7.4	--	--	--	--
GMSG-21	09/25/98	2:45 PM	28.5	77	-	0.15	1.7	1.7	0	--	--	--	--
GMSG-21	09/28/98	9:31 AM	28.77	63	-	-0.06	0.7	7.3	0	--	--	--	--
GMSG-21	10/08/98	9:02 AM	29.03	46	-	-0.2	0.4	6.8	0	--	--	--	--
GMSG-21	10/09/98	10:05 AM	28.91	55	-	0.14	0.9	7.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-21	10/10/98	5:40 PM	28.88	57	-	-0.01	2	7.4	0	--	--	--	--
GMSG-21	10/14/98	12:10 PM	28.83	46	-	0.02	0	0	20	--	--	--	--
GMSG-21	10/22/98	5:03 PM	29.03	55	-	0.32	1.9	7.6	0	--	--	--	--
GMSG-21	10/25/98	11:09 AM	28.93	48	-	0	0	0.1	20.3	15	15	4.5	--
GMSG-21	11/02/98	3:49 PM	29.03	37	-	0	2.5	8.1	0	--	--	--	--
GMSG-21	11/18/98	5:05 PM	28.59	39	-	0.69	2.4	8.3	0	--	--	--	--
GMSG-21	12/01/98	3:10 PM	28.67	49	-	0.49	1.8	7.6	0	--	--	--	--
GMSG-21	12/04/98	10:56 AM	28.76	43	-	0.03	0.6	7.3	0	--	--	--	--
GMSG-21	12/10/98	7:52 AM	29.01	29	-	-0.16	0	0	19.8	20	20	1.5	--
GMSG-21	12/18/98	10:15 AM	28.38	30	0.04	0.69	2.2	8.2	0	--	--	--	--
GMSG-21	12/28/98	3:47 PM	28.53	24	-	0.49	2.3	7.7	2	--	--	--	--
GMSG-21	01/07/99	3:20 PM	28.9	6.1	-	-0.01	0.9	7.3	0	--	--	--	--
GMSG-21	01/22/99	1:21 PM	28.61	28	0.07	0.45	1.8	7.6	1.4	--	--	--	--
GMSG-21	01/27/99	2:52 PM	28.55	27	T	-0.24	2	7.2	0.1	--	--	--	--
GMSG-21	02/09/99	3:45 PM	28.65	39	-	-0.6	0.7	4.8	6.8	--	--	--	--
GMSG-21	02/24/99	3:07 PM	28.75	25	T	0.33	0.6	5.3	3.9	--	--	--	--
GMSG-21	03/14/99	9:33 AM	28.93	30	-	0.14	0.3	2.8	11.4	--	--	--	--
GMSG-21	03/24/99	2:12 PM	28.86	37	-	0	0.8	6.6	0.4	--	--	--	--
GMSG-21	04/08/99	5:02 PM	28.6	55	-	0.21	1.6	7.1	0	--	--	--	--
GMSG-21	04/20/99	4:39 PM	28.62	50	-	0.12	1.8	7.6	0	--	--	--	36.5
GMSG-21	05/01/99	11:38 AM	28.97	78.1	-	0.24	1.6	7.2	0	--	--	--	--
GMSG-21	05/16/99	2:43 PM	28.63	71.1	-	0.21	1.5	7.3	0	--	--	--	--
GMSG-21	07/10/99	3:43 PM	28.91	73	-	0.07	1	6.5	0	--	--	--	--
GMSG-21	08/10/99	7:38 AM	28.42	61	-	-0.01	0.6	7.4	0	>10000	--	2	--
GMSG-21	09/30/99	3:06 PM	28.4	59	T	0.07	1.2	7.5	0	--	--	--	--
GMSG-21	10/04/99	4:21 PM	28.91	48	-	0.32	1	7.6	0	--	--	--	--
GMSG-21	10/11/99	11:55 AM	29.07	57.9	-	-0.02	0	0.1	21	2	1.25	1.25	--
GMSG-21	10/26/99	2:03 PM	28.85	39.9	-	-0.26	0	0.1	20.7	70	45	1.5	36.49
GMSG-21	11/05/99	11:18 AM	28.72	53.1	-	-0.41	0	0	20.8	15	4.5	1.25	36.47
GMSG-21	11/09/99	9:58 AM	28.44	64.9	-	-0.03	1.3	8	0	--	--	--	36.47
GMSG-21	02/16/00	1:04 PM	28.99	18	-	0	0	0	20.2	<1	<1	<1	--
GMSG-21	03/19/00	10:46 AM	28.86	30.9	-	0	0	0.4	19.2	417	285	-0.5	36.44
GMSG-21	03/31/00	4:21 PM	28.71	64	-	0.28	0.9	6.7	0	--	--	45	--
GMSG-21	06/05/00	4:38 PM	28.89	68	-	0.27	0.8	6.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-21	06/16/00	11:30 AM	28.33	63	-	-0.83	0	0	20	--	--	--	--
GMSG-21	06/17/00	10:00 AM	28.88	56	-	-0.34	--	--	--	--	--	--	--
GMSG-21	06/17/00	11:00 AM	28.87	59	-	-0.25	--	--	--	--	--	--	--
GMSG-21	06/17/00	12:00 PM	28.86	60	-	-0.14	--	--	--	--	--	--	--
GMSG-21	06/17/00	1:00 PM	28.88	62	-	-0.13	--	--	--	--	--	--	--
GMSG-21	06/17/00	2:00 PM	28.89	64	-	-0.19	--	--	--	--	--	--	--
GMSG-21	06/17/00	3:00 PM	28.88	65	-	-0.15	--	--	--	--	--	--	--
GMSG-21	06/17/00	4:00 PM	28.86	65	-	-0.16	--	--	--	--	--	--	--
GMSG-21	06/17/00	5:00 PM	28.86	65	-	-0.14	--	--	--	--	--	--	--
GMSG-21	06/18/00	8:55 AM	28.81	63	-	0.06	--	--	--	--	--	--	--
GMSG-21	06/30/00	8:16 AM	28.68	60	0.01	-0.13	0	0.3	19.4	--	--	--	--
GMSG-21	07/05/00	4:19 PM	28.74	75	-	0.03	0.9	7.7	0	--	--	--	--
GMSG-21	07/06/00	6:05 PM	28.89	69	-	-0.03	0	0.1	19.7	-1.56	-1.52	-0.25	--
GMSG-21	07/07/00	9:32 AM	28.97	68	-	-0.07	0	0.1	19.2	-1.82	-1.82	-0.53	--
GMSG-21	07/08/00	11:50 AM	28.72	65	-	0.2	0.4	7.4	0	--	--	--	--
GMSG-21	07/09/00	8:50 AM	28.52	78	-	0.04	0	1.1	17.2	2000	--	-0.2	--
GMSG-21	07/09/00	9:02 AM	28.52	78	-	0.4	7.2	12	0	--	--	--	--
GMSG-21	07/10/00	9:18 AM	28.7	70	-	-0.24	0	0	19.8	-0.86	-0.86	-0.22	--
GMSG-21	07/10/00	9:23 AM	28.7	70	-	--	0.1	5.5	1.7	--	--	--	--
GMSG-21	07/11/00	9:27 AM	28.85	69	-	-0.02	0	0.1	19.7	--	--	-0.14	--
GMSG-21	07/11/00	11:45 AM	28.82	75	-	--	0.3	6.9	0	250	--	5	--
GMSG-21	07/12/00	8:27 AM	28.79	62	T	0.04	0.5	7.3	0	500	--	3.5	--
GMSG-21	09/06/00	1:08 PM	28.97	69	-	0.55	0.9	7.7	0	--	--	--	--
GMSG-21	09/06/00	6:05 PM	28.89	62	-	-1.6	--	--	--	--	--	--	--
GMSG-21	09/08/00	8:31 AM	28.8	61	-	-1.88	0	0	19.6	0.79	0.2	0.79	--
GMSG-21	09/09/00	10:09 AM	28.71	65	-	-1.64	0	0	19.7	0.11	0.11	0.66	--
GMSG-21	10/10/00	11:45 AM	28.84	62	-	0.01	0.4	7.6	0	--	--	--	--
GMSG-21	10/22/00	12:30 PM	29.14	60	-	0.01	0	0	20.4	0.09	-0.12	0.09	--
GMSG-21	05/20/01	8:44 AM	28.66	70	-	0.15	0	0.4	18.3	2950	--	0	--
GMSG-21	07/10/01	1:52 PM	28.68	76	-	-0.05	0	0.2	20.1	0	0	0	--
GMSG-21	07/10/01	6:21 PM	28.72	70	-	-0.16	0	0	21	13.28	12.96	0	--
GMSG-21	07/12/01	8:12 AM	28.9	65	-	-0.25	0	0	20.2	0	0	0	--
GMSG-21	07/12/01	6:02 PM	28.88	74	-	-0.01	0	7.5	1.6	680	--	0	--
GMSG-21	07/13/01	1:40 PM	28.89	83	-	0.15	0	7.5	0.7	663	--	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-21	07/16/01	10:13 AM	28.77	71	-	-0.15	0	0.1	20.1	2.67	0.51	0	--
GMSG-21	07/17/01	10:30 AM	28.76	75	-	-0.11	0	0.1	20	10.25	8.88	0	--
GMSG-21	07/18/01	8:55 AM	28.76	69	-	0	0	0.2	19.7	2.39	0.57	0	--
GMSG-21	07/19/01	1:55 PM	28.79	83	-	0.12	0	6.4	3.1	1023	0	-0.55	--
GMSG-21	07/20/01	2:35 PM	28.75	83	T	0.15	0	6.9	1.7	1032	--	-0.76	--
GMSG-21	07/24/01	9:51 AM	28.68	76	-	-0.16	0	0.2	19.8	1.04	0	0	--
GMSG-21	07/26/01	8:18 AM	29.06	61	-	-0.17	0	0.1	19.9	0	0	0	--
GMSG-21	08/02/01	5:15 PM	28.92	84	-	0.1	0	7.7	0.5	600	--	0	--
GMSG-21	08/09/01	8:39 AM	28.54	83	-	0.2	0	8.1	0.3	1260	--	0	--
GMSG-21	08/16/01	2:55 PM	28.55	71	-	0.16	0	8	0.1	2100	--	6.5	--
GMSG-21	08/20/01	4:07 PM	28.81	78	-	0.15	0	7.8	0.4	>1500	--	-0.6	--
GMSG-21	10/28/03	1:14 PM	28.09	45	T	0	0.3	8	0	--	--	--	--
GMSG-21	10/30/03	1:00 PM	28.61	43	T	-1.6	0	0	19.6	--	--	--	--
GMSG-21	11/04/03	10:50 AM	28.65	33	-	0.3	0.8	6.7	1.4	--	--	--	--
GMSG-21	11/07/03	10:06 AM	29	21	-	-0.3	0	0	19.6	--	--	--	--
GMSG-21	11/10/03	10:20 AM	28.95	32	-	0.1	0.9	7.4	0	--	--	--	--
GMSG-21	11/12/03	9:50 AM	28.35	38	T	0.4	0.9	7.7	0.5	--	--	--	--
GMSG-21	11/17/03	2:28 PM	28.73	46	-	0.4	0.7	8.1	0	--	--	--	--
GMSG-21	11/24/03	1:48 PM	28.33	17	T	-0.1	0	0.1	19.6	--	--	--	--
GMSG-21	12/03/03	10:24 AM	29.25	22	-	0	0	0.2	19.3	--	--	--	--
GMSG-21	12/08/03	10:41 AM	28.66	37	-	0	0.3	8.2	0	--	--	--	--
GMSG-21	12/15/03	2:15 PM	28.5	25	-	0.1	0.3	8.5	0	--	--	--	--
GMSG-21	12/22/03	9:23 AM	28.57	31	-	0	0	0.2	19.4	--	--	--	--
GMSG-21	12/30/03	12:33 PM	28.71	29	-	0	0	7	2.4	--	--	--	--
GMSG-21	01/08/04	12:26 PM	29.05	17	-	0	0	1.2	15.7	--	--	--	--
GMSG-21	01/12/04	12:22 PM	28.7	28	T	0.1	0	5.4	5.6	--	--	--	--
GMSG-21	01/22/04	11:07 AM	28.79	-6	-	0	0	0.9	17.9	--	--	--	--
GMSG-21	02/27/04	--	--	--	--	--	--	--	--	--	--	--	--
GMSG-21	03/19/04	--	--	--	--	--	--	--	--	--	--	--	--
GMSG-21	03/29/04	--	--	--	--	--	--	--	--	--	--	--	--
GMSG-21	04/09/04	8:55 AM	28.8	37	-	0	0	0	19.5	--	--	--	--
GMSG-21	04/19/04	2:35 PM	28.85	-	-	-1.1	0	0	18.1	--	--	--	--
GMSG-21	04/22/04	10:48 AM	29	43	-	0	0	0	21.3	--	--	--	--
GMSG-21	04/23/04	8:10 AM	28.95	34	-	0	0	0.3	21	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-21	04/28/04	2:42 PM	28.28	73	-	0.1	0	7.6	0.5	--	--	--	--
GMSG-21	05/05/04	10:24 AM	28.75	48	-	0.1	0	2.5	11.8	--	--	--	--
GMSG-21	05/24/04	9:07 AM	28.69	43	-	-0.01	0	0	20.2	--	--	--	--
GMSG-21	06/02/04	2:00 PM	28.8	66	-	-0.1	0	0	20.2	--	--	--	--
GMSG-21	06/08/04	4:14 PM	28.69	84	-	0	0	3.1	9.2	--	--	--	--
GMSG-21	06/16/04	9:29 AM	28.79	73	-	0.248	0	0	0.6	--	--	--	--
GMSG-21	06/24/04	2:14 PM	28.76	54	0.01	-0.285	0	0	20	--	--	--	--
GMSG-21	06/29/04	5:25 PM	28.83	69	0.01	-0.095	0	0	20.2	--	--	--	--
GMSG-21	07/07/04	12:12 PM	28.57	55	-	-0.019	0	0.2	19.5	--	--	--	--
GMSG-21	07/15/04	4:12 PM	28.63	80	-	0	0	6.8	2.1	--	--	--	--
GMSG-21	07/21/04	5:10 PM	28.46	82	-	0.023	0	6.6	1.9	--	--	--	--
GMSG-21	07/26/04	11:08 AM	28.96	79	-	0.053	0	6	1.4	--	--	--	--
GMSG-21	08/06/04	2:14 PM	28.91	77	-	0.06	0	5.3	1.7	--	--	--	--
GMSG-21	08/10/04	3:40 PM	28.6	56	-	-0.042	0	0	19.6	--	--	--	--
GMSG-21	08/20/04	11:56 AM	28.76	61	-	0	0	0	20	--	--	--	--
GMSG-21	08/27/04	11:36 AM	28.66	79	-	-0.028	0	0	19.7	--	--	--	--
GMSG-21	08/30/04	2:08 PM	28.77	72	-	0	0	6.1	1.7	--	--	--	--
GMSG-21	09/09/04	1:12 PM	28.93	69	-	0.127	0	7.5	1.2	--	--	--	--
GMSG-21	09/16/04	11:16 AM	28.7	63	-	0	0	0	20.2	--	--	--	--
GMSG-21	09/28/04	3:32 PM	29.03	61	-	0	0	3.3	9.5	--	--	--	--
GMSG-21	10/07/04	11:44 AM	28.95	70	-	0	0	2.9	8.8	--	--	--	--
GMSG-21	10/11/04	12:26 PM	29.02	64	-	0.1	0	3.3	7.3	--	--	--	--
GMSG-21	10/20/04	11:56 AM	28.9	52	-	0	0	0	19.9	--	--	--	--
GMSG-21	10/26/04	2:50 PM	29.03	47	-	0	0	0.7	17.4	--	--	--	--
GMSG-21	11/02/04	8:47 AM	28.87	40	-	0	0	0	20	--	--	--	--
GMSG-21	11/11/04	11:21 AM	29.23	32	-	0	0	0	20.2	--	--	--	--
GMSG-21	11/17/04	8:57 AM	28.9	47	-	0	0	0	20	--	--	--	--
GMSG-21	12/09/04	8:51 AM	28.6	34	-	0	0	0.1	19.4	--	--	--	--
GMSG-21	01/18/05	12:22 PM	29.04	5	-	0	0	5.7	2.6	--	--	--	--
GMSG-21	02/28/05	3:16 PM	28.46	26	T	0	0	0	19.9	--	--	--	--
GMSG-21	03/14/05	1:50 PM	28.77	33	-	--	--	--	--	--	--	--	--
GMSG-21	04/05/05	10:15 AM	28.57	59	-	0	0	0	19.5	--	--	--	--
GMSG-21	05/11/05	2:09 PM	29.1	46	-	-0.3	0	0	20.4	--	--	--	--
GMSG-21	06/10/05	10:22 AM	28.73	77	-	0	0	1.6	13.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-21	07/01/05	11:30 AM	28.68	63	-	0	0	0	19.8	--	--	--	--
GMSG-21	08/12/05	9:06 AM	28.6	69	-	0	0	0	19.7	--	--	--	--
GMSG-21	09/13/05	5:06 PM	28.5	78.08	-	0	0	0.9	17.6	--	--	--	--
GMSG-21	10/20/05	4:30 PM	28.88	45	-	--	--	--	--	--	--	--	--
GMSG-21	10/21/05	1:43 PM	28.83	49	-	0.28	0	6	4.2	--	--	--	--
GMSG-21	11/02/05	3:55 PM	28.53	51	-	0.65	0	8.2	1.2	--	--	--	--
GMSG-21	12/05/05	2:50 PM	28.71	10	-	0	0	2.6	12.9	--	--	--	--
GMSG-21	02/13/06	12:02 PM	28.41	-	-	0.3	0	8.7	0.9	--	--	--	--
GMSG-21	04/13/06	11:38 AM	28.75	64	-	0	0	0.5	17.9	--	--	--	--
GMSG-21	07/18/06	1:26 PM	28.92	82	-	0	0	0	18.7	--	--	--	--
GMSG-21	10/05/06	3:36 PM	29.13	58	-	0	0	4.5	7.5	--	--	--	--
GMSG-21	01/19/07	11:48 AM	28.82	15	T	0	0	0.3	20.5	--	--	--	--
GMSG-21	04/16/07	1:32 PM	28.79	62	-	0	0	4.4	8.7	--	--	--	--
GMSG-21	07/16/07	11:04 AM	29.99	74	-	0	0	0.2	19.3	--	--	--	--
GMSG-21	10/16/07	2:14 PM	29.87	54	T	0	0	0	19.4	--	--	--	--
GMSG-22	06/13/99	7:33 AM	28.83	64	-	0	0	0.4	19.2	1.25	--	1.25	--
GMSG-22	06/16/99	7:53 AM	28.96	45	T	0	0	0.6	19.1	10	--	2.3	--
GMSG-22	06/17/99	2:36 PM	28.97	66.9	-	0	0	0.4	19.9	<1	<1	3	--
GMSG-22	06/18/99	8:00 AM	29.04	66	-	0	0	0.4	19.9	5	2	2.5	--
GMSG-22	06/19/99	11:30 AM	29.01	70	-	0	0	0.4	19.9	15	<1	<1	--
GMSG-22	06/20/99	11:15 AM	29.01	73	-	0	0	0.4	19.9	7	<1	<1	--
GMSG-22	07/10/99	4:20 PM	28.91	73	-	0	0	0.6	19.5	1.25	--	1.25	--
GMSG-22	07/27/99	2:33 PM	28.71	81	-	0.01	0	0.7	19.6	4	3.5	4	--
GMSG-22	08/07/99	2:48 PM	28.49	78.1	-	0.01	0	0.8	19.3	3	--	3	--
GMSG-22	09/24/99	8:50 AM	28.69	51.1	-	0	0	0.7	20.1	3	3	3	--
GMSG-22	10/06/99	10:38 AM	29.05	41	-	0	0	0.6	19.2	8	3.25	4	--
GMSG-22	10/27/99	8:43 AM	28.99	36	-	0	0	0.3	20.6	1	<1	1	--
GMSG-22	11/05/99	12:38 PM	28.74	53.1	-	-0.01	0	0.2	20.6	7.5	<1	1	--
GMSG-22	11/09/99	12:30 PM	28.42	72	-	-0.01	0	0.4	20.1	9.5	1.5	1	--
GMSG-22	02/18/00	10:37 AM	28.92	19	-	0	0	0	20.8	1	1	1	--
GMSG-22	03/19/00	9:43 AM	28.87	30.9	-	-0.02	0	0	20.5	-0.09	-1.27	-0.09	--
GMSG-22	04/03/00	9:29 AM	28.34	41	-	0	0	0.1	18	1.25	--	1.25	--
GMSG-22	10/10/00	2:43 PM	28.79	67	-	0	0	0.5	20.8	2352	1.6	-1.53	--
GMSG-22	05/20/01	9:23 AM	28.66	70	-	0	0	0.3	18.5	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-22	09/11/01	4:19 PM	28.94	63	-	0	0	0	20.4	0	0	0	--
GMSG-22	09/24/01	3:37 PM	29.08	48	-	--	0	0.3	20.5	--	0	--	--
GMSG-22	10/22/01	9:08 AM	28.82	45	-	--	0	0.2	20.5	-1.4	-1.5	0.39	--
GMSG-22	11/13/01	10:52 AM	28.79	44	-	--	0	0.1	20.2	-0.44	-2.1	-0.44	--
GMSG-22	02/13/02	10:51 AM	28.9	19	-	--	0	0	19.7	-0.24	-1.42	-0.24	--
GMSG-22	06/26/02	10:39 AM	28.59	80	-	--	0	0.5	20.4	--	--	--	--
GMSG-22	09/30/02	12:16 PM	28.56	73	-	--	0	0.4	20.5	--	--	--	--
GMSG-22	11/21/02	10:13 AM	28.68	32	-	--	0	0	20.4	--	--	--	--
GMSG-22	01/29/03	12:20 PM	29.1	13	-	--	0	0	20.1	--	--	--	--
GMSG-22	04/22/03	10:49 AM	28.86	45	-	--	0	0	20	--	--	--	--
GMSG-22	08/05/03	9:38 AM	28.72	77	-	--	0	0.3	19.1	--	--	--	--
GMSG-22	11/03/03	2:30 PM	29.02	32	T	--	0	0.1	19.4	--	--	--	--
GMSG-22	01/21/04	9:13 AM	28.46	13	T	--	0	0	19	--	--	--	--
GMSG-22	04/18/04	3:34 PM	28.35	58	-	--	0	0.1	17.5	--	--	--	--
GMSG-22	07/14/04	11:20 AM	28.68	75	-	--	0	0.4	19	--	--	--	--
GMSG-22	10/29/04	2:23 PM	28.35	57	-	--	0	0.2	19.8	--	--	--	--
GMSG-22	01/28/05	1:25 PM	29.18	24	-	--	--	--	--	--	--	--	--
GMSG-22	04/05/05	7:39 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-22	07/05/05	2:07 PM	28.87	68	-	--	--	--	--	--	--	--	--
GMSG-22	10/11/05	2:37 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-22	02/28/06	11:38 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-22	04/10/06	11:15 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-22	07/13/06	1:24 PM	28.76	92	-	--	--	--	--	--	--	--	--
GMSG-22	10/11/06	7:48 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-22	02/03/07	9:38 AM	28.46	-1	-	--	--	--	--	--	--	--	--
GMSG-22	04/05/07	11:16 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-22	07/18/07	2:47 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-22	10/23/07	9:29 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-23	06/13/99	8:00 AM	28.83	64	-	0	0	3.4	16.8	1.5	--	1.5	--
GMSG-23	06/16/99	8:09 AM	28.96	45	T	0	0	3.1	16.7	2	--	2	--
GMSG-23	06/17/99	2:40 PM	28.97	66.9	-	-0.01	0	2.2	18	<1	<1	1.5	--
GMSG-23	06/18/99	12:00 PM	29.01	73.9	-	0.01	0	3	17.3	1.5	1.5	2.5	--
GMSG-23	06/19/99	2:45 PM	28.99	69.1	-	0.02	0	3.2	17.2	<1	<1	<1	--
GMSG-23	06/20/99	2:45 PM	28.98	73	-	0.01	0	3.2	17.2	1	<1	1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-23	07/10/99	5:14 PM	28.91	73	-	0	0	3.3	17	1.5	--	1.25	--
GMSG-23	07/27/99	3:01 PM	28.71	81	-	0	0	3.2	17.1	3	3	2.5	--
GMSG-23	08/07/99	3:07 PM	28.49	78.1	-	-0.01	0	3.8	16.9	3.5	1.5	3.5	--
GMSG-23	09/02/99	3:29 PM	28.78	87.1	-	-0.01	--	--	--	--	--	--	--
GMSG-23	09/14/99	3:51 PM	28.66	55.9	-	-0.01	0	1.5	19.1	1500	425	1.5	--
GMSG-23	09/20/99	3:20 PM	28.89	48.9	T	0.01	0	1.8	18.8	25	40	3	--
GMSG-23	09/24/99	9:12 AM	28.69	51.1	-	0	0	2.2	18.4	3.5	3.5	3	--
GMSG-23	10/06/99	11:40 AM	29.04	42.1	-	-0.01	0	3	17.6	<1	<1	2	--
GMSG-23	10/27/99	8:19 AM	28.98	32	-	-0.02	0	2.3	18.3	1.5	<1	1.5	--
GMSG-23	11/05/99	12:19 PM	28.73	53.1	-	-0.09	0	1.3	19.4	30	7.5	1	--
GMSG-23	11/09/99	12:51 PM	28.42	72	-	-0.01	0	3.1	17	1	<1	1	--
GMSG-23	12/09/99	3:13 PM	28.73	35	-	0	0	2.7	17.9	2	2	2	--
GMSG-23	03/17/00	1:00 PM	29.18	27	-	0.4	0	2.9	17.7	17.55	8.69	-0.2	--
GMSG-23	04/03/00	9:03 AM	28.34	41	-	0.01	0	2.7	15.8	1.75	--	1.75	--
GMSG-23	10/10/00	3:28 PM	28.79	67	-	0	0	3	17.9	1.89	-1.99	-0.68	--
GMSG-23	05/20/01	9:58 AM	28.64	73	-	0.02	0	2.5	17.1	0	0	0	--
GMSG-23	09/11/01	3:07 PM	28.96	64	T	0	0	2.4	18.1	0	0	0	--
GMSG-23	09/24/01	3:13 PM	29.08	49	-	--	0	2	18.5	--	0	--	--
GMSG-23	10/21/01	9:31 AM	28.82	46	-	--	0	0.5	18.5	-0.1	-0.3	0.5	--
GMSG-23	11/13/01	8:51 AM	28.81	41	0.01	--	0	2.2	18.5	-0.6	-1.6	-0.6	--
GMSG-23	02/13/02	9:05 AM	28.94	11	-	--	0	1.9	18.5	-1.51	-1.51	-0.41	--
GMSG-23	06/26/02	9:15 AM	28.61	74	-	--	0	2.9	18	--	--	--	--
GMSG-23	09/27/02	12:33 PM	28.7	62	-	--	0	2.7	18.3	--	--	--	--
GMSG-23	11/20/02	10:58 AM	28.71	35	-	--	0	2.5	17.7	--	--	--	--
GMSG-23	01/28/03	10:43 AM	28.74	21	T	--	0	2.1	18	--	--	--	--
GMSG-23	04/15/03	2:13 PM	28.58	54	-	--	0	2.4	18	--	--	--	--
GMSG-23	08/04/03	8:58 AM	28.75	65	-	--	0	2.6	17.1	--	--	--	--
GMSG-23	11/01/03	10:00 AM	29.11	35	-	--	0	1.3	18.3	--	--	--	--
GMSG-23	01/19/04	2:30 PM	28.92	8	-	--	0	1.3	17.5	--	--	--	--
GMSG-23	04/16/04	4:55 PM	28.7	66	T	--	0	2	17.6	--	--	--	--
GMSG-23	07/13/04	8:05 AM	28.64	71	-	--	0	2.3	17.6	--	--	--	--
GMSG-23	10/17/04	2:15 PM	28.63	43	-	--	0	1.4	18.5	--	--	--	--
GMSG-23	01/26/05	11:51 AM	28.99	14	T	--	--	--	--	--	--	--	--
GMSG-23	04/01/05	8:08 AM	28.8	42	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-23	07/05/05	8:55 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-23	10/13/05	3:38 PM	28.79	57	0.02	--	--	--	--	--	--	--	--
GMSG-23	02/22/06	1:42 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-23	04/03/06	10:03 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-23	07/06/06	3:16 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-23	10/02/06	10:15 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-23	01/02/07	10:13 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-23	04/03/07	10:06 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-23	07/17/07	10:44 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-23	10/18/07	11:41 AM	29.22	65	-	--	--	--	--	--	--	--	--
GMSG-24	06/13/99	8:16 AM	28.83	64	-	0	0	0.7	18.7	1	--	1	--
GMSG-24	06/16/99	8:22 AM	28.96	45	T	0	0	0.2	19.2	1.5	--	1.5	--
GMSG-24	06/17/99	2:50 PM	28.97	66.9	-	0	0	0.6	19.1	<1	<1	1.75	--
GMSG-24	06/18/99	10:45 AM	29.02	71.1	-	0	0	0.6	19.1	5	<1	2.5	--
GMSG-24	06/19/99	2:00 PM	29	73	-	0	0	0.7	19.2	1	<1	1	--
GMSG-24	06/20/99	2:00 PM	28.98	73	-	0	0	0.7	19.1	8	<1	<1	--
GMSG-24	07/10/99	4:47 PM	28.91	73	-	-0.02	0	0.9	18.8	1	1	1	--
GMSG-24	07/23/99	5:47 PM	28.58	84.9	-	-0.72	0	0.9	19	--	--	--	--
GMSG-24	07/27/99	3:09 PM	28.71	81	-	-0.01	0	0.8	18.4	2.5	2	2.5	--
GMSG-24	08/07/99	3:20 PM	28.49	78.1	-	0	0	1	18.3	3.5	--	3.5	--
GMSG-24	09/02/99	4:25 PM	28.78	82.9	-	-0.01	--	--	--	--	--	--	--
GMSG-24	09/14/99	5:53 PM	28.71	51.1	T	0	0	1.6	18.9	7	7	7	--
GMSG-24	09/20/99	3:28 PM	28.89	48.9	T	0	0	1.5	18.6	3	3	3	--
GMSG-24	09/29/99	5:04 PM	28.78	54	-	-0.83	0	1.1	19.7	<1	<1	1.75	--
GMSG-24	10/06/99	4:22 PM	29	46	-	-0.2	0	1.3	19.8	1	1	3.5	--
GMSG-24	10/26/99	4:10 PM	28.89	39.9	-	0	0	0.8	20.1	2	--	2	--
GMSG-24	11/01/99	4:15 PM	28.47	53.1	-	0.01	0	0.7	19.7	48	22	2	--
GMSG-24	11/05/99	4:09 PM	28.81	48.9	-	0.07	0	0.8	19.9	70	25	1	--
GMSG-24	12/09/99	4:07 PM	28.73	35	-	0	0	1.5	18.7	2	2	2	--
GMSG-24	02/18/00	4:25 PM	28.84	26.1	-	-1.24	0	0	19.6	1.5	1.5	1.75	--
GMSG-24	03/17/00	3:45 PM	29.13	30	-	0	0	0.2	19.8	0	-0.9	0	--
GMSG-24	04/03/00	4:24 PM	28.37	41	-	0.01	0	0.3	17.9	2	--	2	--
GMSG-24	08/09/00	11:10 AM	28.69	66	-	0.02	0	1.2	19.8	18	3.5	3.5	--
GMSG-24	08/19/00	1:10 PM	29.04	64	-	0.12	0	1.2	18.3	9	3.5	5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-24	10/10/00	4:18 PM	28.8	66	-	0.02	0	1	19.7	-0.12	-2.45	-1.11	--
GMSG-24	04/09/01	4:40 PM	28.76	42	-	-0.02	0	0.1	20.3	-0.1	-1.23	-0.2	--
GMSG-24	05/20/01	10:15 AM	28.64	73	-	0.07	0	0.5	18.3	0	0	0	--
GMSG-24	07/20/01	10:20 AM	28.81	77	-	0.1	0	0.6	19.3	-0.78	-0.78	-0.6	--
GMSG-24	08/20/01	10:52 AM	28.86	76	-	0.01	0	1.1	19.1	1.01	0.37	-0.62	--
GMSG-24	09/09/01	10:00 AM	28.7	60	-	0	0	1.2	18.9	0	0	0	--
GMSG-24	09/25/01	5:01 PM	28.85	54	-	--	0	1	19.5	--	0	--	--
GMSG-24	10/06/01	12:25 PM	28.8	43	-	-0.01	0	1	19.3	-1.5	-1.5	0.3	--
GMSG-24	10/21/01	8:44 AM	28.81	42	-	--	0	0.9	18.3	-1.2	-1.2	0.4	--
GMSG-24	11/13/01	4:00 PM	28.75	48	-	--	0	0.5	19.9	-0.53	-2.3	-0.53	--
GMSG-24	02/14/02	4:45 PM	28.44	42	-	--	0	0.2	20.1	-1.31	-5.23	-1.31	--
GMSG-24	06/26/02	8:47 AM	28.61	74	-	--	0	0.9	19.7	--	--	--	--
GMSG-24	08/14/02	1:50 PM	28.58	76	-	0	0	1.2	19	-1.7	-1.78	-0.4	--
GMSG-24	09/28/02	9:20 AM	28.96	51	-	--	0	1.3	18.8	--	--	--	--
GMSG-24	11/24/02	8:51 AM	28.84	25	-	--	0	0.5	20.4	--	--	--	--
GMSG-24	02/03/03	10:05 AM	28.42	28	T	--	0	0.1	20.4	--	--	--	--
GMSG-24	04/15/03	9:57 AM	28.51	64	-	--	0	0.2	19.6	--	--	--	--
GMSG-24	08/04/03	8:48 AM	28.75	65	-	--	0	0.9	18.3	--	--	--	--
GMSG-24	11/01/03	9:30 AM	29.11	35	-	--	0	0.7	18.7	--	--	--	--
GMSG-24	01/22/04	10:15 AM	28.77	-9	-	--	0	0	18.7	--	--	--	--
GMSG-24	04/09/04	10:30 AM	28.8	39	-	--	0	0	19.7	--	--	--	--
GMSG-24R	07/12/04	6:10 PM	28.69	83	-	--	0	0.2	18.1	--	--	--	--
GMSG-24R	10/17/04	1:40 PM	28.63	43	-	--	0	0.1	19.7	--	--	--	--
GMSG-24R	02/16/05	7:25 AM	28.74	-2	-	--	--	--	--	--	--	--	--
GMSG-24R	04/01/05	8:57 AM	28.8	44	-	--	--	--	--	--	--	--	--
GMSG-24R	07/05/05	7:40 AM	28.83	60	-	--	--	--	--	--	--	--	--
GMSG-24R	10/14/05	4:10 PM	28.61	66	T	--	--	--	--	--	--	--	--
GMSG-24R	03/13/06	3:18 PM	27.95	32	0.01	--	--	--	--	--	--	--	--
GMSG-24R	04/05/06	4:53 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-24R	07/06/06	2:06 PM	29.02	81	-	--	--	--	--	--	--	--	--
GMSG-24R	10/03/06	4:13 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-24R	02/06/07	8:01 AM	28.94	-10	-	--	--	--	--	--	--	--	--
GMSG-24R	04/09/07	11:40 AM	28.82	34	-	--	--	--	--	--	--	--	--
GMSG-24R	07/17/07	10:18 AM	29.96	78	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-24R	11/01/07	4:24 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-25	06/13/99	8:30 AM	28.84	64.9	-	-0.01	0	1.9	17.1	1	--	1	--
GMSG-25	06/16/99	8:30 AM	28.96	46	T	0	0	2.1	16.6	1.5	--	1.5	--
GMSG-25	06/17/99	3:00 PM	28.97	66.9	-	0	0	2	17.5	<1	<1	1.75	--
GMSG-25	06/18/99	11:15 AM	29.02	71.1	-	0.01	0	2	17.6	6	<1	2.25	--
GMSG-25	06/19/99	2:15 PM	29	73	-	0	0	2	17.5	<1	<1	<1	--
GMSG-25	06/20/99	2:15 PM	28.98	73	-	0.01	0	2	17.6	<1	<1	1	--
GMSG-25	07/10/99	4:56 PM	28.91	73	-	0.02	0	2.5	17.2	1	--	1	--
GMSG-25	07/23/99	5:58 PM	28.58	84.9	-	0	0	2.6	17.5	--	--	--	--
GMSG-25	07/27/99	3:16 PM	28.71	81	-	0	0	2.2	16.9	2.5	1.5	2.5	--
GMSG-25	08/07/99	3:27 PM	28.49	78.1	-	0.02	0	2.7	16.6	3.5	--	3.5	--
GMSG-25	09/14/99	6:01 PM	28.71	51.1	T	0	0	2.8	17.6	7.5	7.5	7.5	--
GMSG-25	09/29/99	5:15 PM	28.78	54	-	0	0	2.6	17.6	<1	<1	1.5	--
GMSG-25	10/06/99	4:38 PM	29.01	45	-	0.02	0	2.7	17.8	2.75	<1	2.75	--
GMSG-25	10/26/99	4:23 PM	28.89	39.9	-	0	0	2.6	17.3	2	--	2	--
GMSG-25	11/01/99	4:32 PM	28.51	48	-	-0.02	0	2.1	17.4	2	1.25	2	--
GMSG-25	11/05/99	4:25 PM	28.81	48.9	-	-0.02	0	2.6	17.1	19	5.5	1	--
GMSG-25	12/09/99	4:11 PM	28.73	35	-	0	0	2	17.9	2	2	2	--
GMSG-25	03/17/00	4:02 PM	29.13	30	-	0	0	1.4	18.1	0.08	-1.11	0.08	--
GMSG-25	04/03/00	4:34 PM	28.4	38	-	-0.01	0	1.4	16.5	1.5	--	1.5	--
GMSG-25	08/09/00	11:25 AM	28.69	66	-	-0.1	0	2.7	18.2	24	4.5	3	--
GMSG-25	08/19/00	1:25 PM	29.04	64	-	-0.09	0	2.7	16.7	15	1.5	4	--
GMSG-25	10/10/00	4:33 PM	28.8	63	-	-0.01	0	2.6	17.7	0.08	-2.5	-0.98	--
GMSG-25	04/09/01	4:58 PM	28.76	42	-	0.07	0	1.6	18.5	0.12	-1.56	0	--
GMSG-25	05/20/01	10:24 AM	28.64	73	-	0.05	0	1.7	17.2	0	0	0	--
GMSG-25	07/20/01	11:33 AM	28.78	85	-	0.05	0	1.8	18.4	-0.98	-0.98	-0.48	--
GMSG-25	08/20/01	11:08 AM	28.86	76	-	0.12	0	1.5	18.8	-0.52	-1.38	-0.52	9.22
GMSG-25	09/09/01	10:20 AM	28.7	60	-	0	0	2	18.3	0	0	0	9.31
GMSG-25	09/25/01	5:07 PM	28.85	54	-	--	0	2.1	18.1	--	0	--	--
GMSG-25	10/06/01	2:00 PM	28.83	41	-	-0.01	0	2.1	18.2	0.3	0	0.7	--
GMSG-25	10/21/01	8:48 AM	28.81	42	-	--	0	2.1	16.8	-1.2	-1.2	0.4	--
GMSG-25	11/13/01	4:07 PM	28.75	48	-	--	0	1.8	18.3	-0.48	-2.22	-0.54	--
GMSG-25	06/26/02	8:53 AM	28.61	74	-	--	0	2.2	18.3	--	--	--	--
GMSG-25	08/14/02	2:10 PM	28.58	76	-	0	0	1.8	18.5	-1.9	-1.97	-0.24	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-25	09/28/02	9:14 AM	28.96	51	-	--	0	2.5	17.4	--	--	--	--
GMSG-25	11/24/02	8:57 AM	28.84	25	-	--	0	1.6	18.4	--	--	--	--
GMSG-25	02/03/03	10:29 AM	28.42	28	T	--	0	1.3	18.3	--	--	--	--
GMSG-25	04/15/03	10:04 AM	28.51	64	-	--	0	1	18.5	--	--	--	--
GMSG-25	08/04/03	8:40 AM	28.75	65	-	--	0	1.7	17.7	--	--	--	--
GMSG-25	11/01/03	9:37 AM	29.11	35	-	--	0	1.7	17.4	--	--	--	--
GMSG-25	01/22/04	10:23 AM	28.77	-9	-	--	0	1.2	17.4	--	--	--	--
GMSG-25	01/27/04	5:20 PM	28.59	16	T	--	0	0	19.9	--	--	--	--
GMSG-25	04/06/04	2:05 PM	28.57	62	-	--	0	0.1	19.5	--	--	--	--
GMSG-25	07/12/04	5:55 PM	28.69	83	-	--	0	1.7	17.2	--	--	--	--
GMSG-25	10/17/04	1:32 PM	28.63	43	-	--	0	2.2	17.2	--	--	--	--
GMSG-25	02/01/05	4:48 PM	29.11	35	-	--	--	--	--	--	--	--	--
GMSG-25	04/01/05	8:51 AM	28.8	44	-	--	--	--	--	--	--	--	--
GMSG-25	07/05/05	7:57 AM	28.83	60	-	--	--	--	--	--	--	--	--
GMSG-25	10/14/05	4:36 PM	28.62	66	-	--	--	--	--	--	--	--	--
GMSG-25	03/13/06	3:40 PM	28	31	T	--	--	--	--	--	--	--	--
GMSG-25	04/05/06	4:43 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-25	07/06/06	2:28 PM	29.02	81	-	--	--	--	--	--	--	--	--
GMSG-25	10/03/06	4:05 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-25	02/04/07	8:55 AM	28.78	-13	-	--	--	--	--	--	--	--	--
GMSG-25	02/08/07	7:39 AM	28.86	-2	-	--	--	--	--	--	--	--	--
GMSG-25	04/09/07	11:28 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-25	07/17/07	10:07 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-25	11/01/07	4:02 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-26	06/13/99	8:59 AM	28.84	64.9	-	0	0	1.3	18.3	2.5	2.5	2.5	--
GMSG-26	06/16/99	8:40 AM	28.96	46	T	0	0	1.3	17.7	1.3	--	1.3	--
GMSG-26	06/17/99	3:10 PM	28.97	66.9	-	0	0	1.3	18.5	<1	<1	1.75	--
GMSG-26	06/18/99	11:00 AM	29.02	71.1	-	0	0	1.3	18.4	10	1.5	2.5	--
GMSG-26	06/19/99	2:30 PM	28.99	69.1	-	0	0	1.2	18.5	1.2	<1	<1	--
GMSG-26	06/20/99	2:30 PM	28.98	73	-	0	0	1.3	18.5	1.5	<1	1	--
GMSG-26	07/10/99	5:05 PM	28.91	73	-	0	0	1.7	18	1	--	1	--
GMSG-26	07/23/99	6:08 PM	28.58	84.9	-	0	0	1.7	18.6	--	--	--	--
GMSG-26	07/27/99	3:24 PM	28.71	81	-	0	0	1.4	17.8	2.5	2.5	2.5	--
GMSG-26	08/07/99	3:50 PM	28.51	75.9	-	0	0	1.8	17.4	3.5	--	3.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-26	09/14/99	6:17 PM	28.71	51.1	T	0	0	2.1	18.1	7.5	7.5	7.5	--
GMSG-26	09/29/99	5:27 PM	28.78	54	-	0	0	1.8	18.7	<1	<1	1.5	--
GMSG-26	10/06/99	4:44 PM	29.01	45	-	0.02	0	1.9	18.7	<1	<1	2.75	--
GMSG-26	10/26/99	4:31 PM	28.89	37.9	-	0	0	1.6	18.6	2	<1	2	--
GMSG-26	11/01/99	4:24 PM	28.47	53.1	-	0.05	0	1.5	18.4	2	1.5	2	--
GMSG-26	11/05/99	4:31 PM	28.84	46	-	-0.01	0	1.7	18.4	12	2.75	1	--
GMSG-26	12/09/99	4:15 PM	28.73	35	-	0	0	2.2	18.5	2	2	2	--
GMSG-26	02/18/00	4:15 PM	28.84	26.1	-	0	0	1	18.7	2.75	--	1.5	--
GMSG-26	03/17/00	3:24 PM	29.14	30	-	0	0	0.9	19	-0.46	-1.15	-0.51	9
GMSG-26	04/03/00	4:45 PM	28.4	38	-	0.01	0	1	17	1.5	--	1.5	--
GMSG-26	08/09/00	11:32 AM	28.71	67	-	-0.12	0	1.8	19.2	6	2	2	--
GMSG-26	08/19/00	1:30 PM	29.04	67	-	0	0	1.7	17.9	0.25	0.25	3.5	--
GMSG-26	10/10/00	4:44 PM	28.8	63	-	0	0	1.4	18.5	-0.45	-2.04	-0.8	--
GMSG-26	04/09/01	4:50 PM	28.76	42	-	0	0	1	19.6	0	-1.8	-0.1	--
GMSG-26	05/20/01	10:10 AM	28.64	73	-	0.05	0	1.2	17.7	0	0	0	--
GMSG-26	07/20/01	10:07 AM	28.81	77	-	0.1	0	1.5	18.3	0.79	0.33	-0.48	--
GMSG-26	08/20/01	11:16 AM	28.86	76	-	-1.52	0	1.6	18.3	-0.23	-0.58	-0.38	--
GMSG-26	09/09/01	10:31 AM	28.7	60	-	0	0	2.1	18	0	0	0	9.04
GMSG-26	09/25/01	5:16 PM	28.85	54	-	--	0	1.7	18.6	--	0	--	--
GMSG-26	10/06/01	1:40 PM	28.83	41	-	-0.01	0	0	20.9	0.2	0.2	0	--
GMSG-26	10/21/01	8:54 AM	28.81	42	-	--	0	1.5	17.6	-1.1	-1.2	0.3	--
GMSG-26	11/13/01	3:55 PM	28.75	48	-	--	0	1.2	19.1	-0.62	-2	-0.62	--
GMSG-26	02/14/02	4:20 PM	28.45	43	-	--	0	0	19.6	-0.61	-3.67	-0.8	--
GMSG-26	06/26/02	9:03 AM	28.61	74	-	--	0	1.3	19.2	--	--	--	--
GMSG-26	08/14/02	2:00 PM	28.58	76	-	0	0	2.3	18.1	-1.94	-1.95	-0.31	--
GMSG-26	09/28/02	9:07 AM	28.96	51	-	--	0	1.8	17.9	--	--	--	--
GMSG-26	11/24/02	8:44 AM	28.84	25	-	--	0	1.1	19.1	--	--	--	--
GMSG-26	02/03/03	9:48 AM	28.42	28	T	--	0	0.9	19.7	--	--	--	--
GMSG-26	04/15/03	9:50 AM	28.51	64	-	--	0	0.9	19.1	--	--	--	--
GMSG-26	08/04/03	8:34 AM	28.75	65	-	--	0	1.8	17.7	--	--	--	--
GMSG-26	11/01/03	9:50 AM	29.11	35	-	--	0	1.2	18	--	--	--	--
GMSG-26	01/22/04	10:33 AM	28.79	-6	-	--	0	0	19.1	--	--	--	--
GMSG-26	01/27/04	4:45 PM	28.59	16	T	--	0	0	19.9	--	--	--	--
GMSG-26	04/06/04	2:10 PM	28.57	62	-	--	0	0.5	18.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-26	07/12/04	6:05 PM	28.69	83	-	--	0	1	18	--	--	--	--
GMSG-26	10/17/04	1:23 PM	28.62	41	-	--	0	1.3	18.1	--	--	--	--
GMSG-26	02/01/05	4:15 PM	29.11	35	-	--	--	--	--	--	--	--	--
GMSG-26	04/01/05	8:45 AM	28.8	44	-	--	--	--	--	--	--	--	--
GMSG-26	07/05/05	7:49 AM	28.83	60	-	--	--	--	--	--	--	--	--
GMSG-26	10/14/05	4:47 PM	28.62	66	-	--	--	--	--	--	--	--	--
GMSG-26	03/02/06	3:07 PM	28.8	29	-	--	--	--	--	--	--	--	--
GMSG-26	04/05/06	4:31 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-26	07/06/06	2:45 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-26	10/03/06	3:56 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-26	02/04/07	9:01 AM	28.78	-13	-	--	--	--	--	--	--	--	--
GMSG-26	04/09/07	11:20 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-26	07/17/07	9:54 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-26	11/01/07	4:16 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-27	06/13/99	9:09 AM	28.84	64.9	-	0	0	2.7	16.4	30	30	2.5	--
GMSG-27	06/16/99	9:05 AM	28.96	46	T	0	0	2.9	15.9	25	25	1.5	--
GMSG-27	06/17/99	3:20 PM	28.97	66.9	-	0	0	2.7	16.6	25	25	2	--
GMSG-27	06/18/99	11:30 AM	29.01	73.9	-	0.01	0	2.7	16.7	15	15	2.25	--
GMSG-27	06/19/99	3:00 PM	28.99	69.1	-	0	0	2.8	16.7	8	8	<1	--
GMSG-27	06/20/99	3:00 PM	28.98	73	-	0	0	2.7	16.8	15	15	1.5	--
GMSG-27	07/10/99	5:24 PM	28.91	73	-	0.01	0	3.6	15.4	15	15	1	--
GMSG-27	07/27/99	2:53 PM	28.71	81	-	0	0	3.7	15.4	45	45	2.5	--
GMSG-27	08/07/99	2:57 PM	28.49	78.1	-	0.01	0	4.4	14.9	70	70	3.5	--
GMSG-27	09/14/99	2:35 PM	28.65	57	-	0	0	13.9	15.1	40	40	1.5	--
GMSG-27	09/24/99	9:04 AM	28.69	51.1	-	0	0	3.6	15.8	45	45	3	--
GMSG-27	10/06/99	11:27 AM	29.05	41	-	0	0	4.4	14.8	25	25	3	--
GMSG-27	10/27/99	8:30 AM	28.99	36	-	0	0	3.9	15.9	25	25	1	--
GMSG-27	11/05/99	12:28 PM	28.73	53.1	-	0	0	3.4	16.1	40	32.5	1.25	--
GMSG-27	11/09/99	12:42 PM	28.42	72	-	0	0	3.8	15.6	14	14	<1	--
GMSG-27	02/18/00	11:05 AM	28.92	19	-	0	0	1.7	19.3	--	--	--	--
GMSG-27	03/19/00	10:10 AM	28.87	30.9	-	0	0	1	19.3	5.5	5.5	-0.15	--
GMSG-27	04/03/00	9:14 AM	28.34	41	-	0.01	0	1.7	16.7	15	15	1.5	--
GMSG-27	10/10/00	3:15 PM	28.79	67	-	0.01	0	3.1	17	17.14	15.78	-0.83	--
GMSG-27	05/20/01	10:40 AM	28.62	75	-	0.07	0	1.9	17.5	11.73	11.73	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-27	09/11/01	3:48 PM	28.94	63	-	0	0	2.8	17.2	1750	150	0	--
GMSG-27	09/24/01	2:53 PM	29.08	49	-	--	0	2.6	17.8	--	22.2	--	--
GMSG-27	10/21/01	9:23 AM	28.81	42	-	--	0	1.6	17.6	15.3	15	0.5	--
GMSG-27	11/13/01	8:41 AM	28.81	41	0.01	--	0	1.6	19.1	12.91	12.8	-0.54	--
GMSG-27	02/13/02	9:28 AM	28.94	11	-	--	0	1.4	18.6	6.78	6.6	-0.29	--
GMSG-27	06/10/02	9:54 AM	28.68	80	-	--	0	0	21	0	0	0	--
GMSG-27	07/22/02	3:29 PM	28.7	81	-	--	0	2.5	18.2	-0.63	-0.85	-0.63	--
GMSG-27	07/31/02	10:37 AM	28.73	82	-	--	0	2.6	17.7	10.61	--	-0.54	--
GMSG-27	09/27/02	12:54 PM	28.7	62	-	--	0	2.6	17.9	--	--	--	--
GMSG-27	11/20/02	11:38 AM	28.7	37	-	--	0	1.6	18.2	--	--	--	--
GMSG-27	01/28/03	10:30 AM	28.74	21	T	--	0	0.5	20.1	--	--	--	--
GMSG-27	04/15/03	2:06 PM	28.58	54	-	--	0	0.6	19.7	--	--	--	--
GMSG-27	08/04/03	10:03 AM	28.75	69	-	--	0	1.9	17.1	--	--	--	--
GMSG-27	11/01/03	10:47 AM	29.1	35	-	--	0	0.9	18.3	--	--	--	--
GMSG-27	01/19/04	3:10 PM	28.92	8	-	--	0	0.5	18.3	--	--	--	--
GMSG-27	04/17/04	9:45 AM	28.92	56	-	--	0	0.8	16.9	--	--	--	--
GMSG-27	06/14/04	10:46 AM	28.61	66	-	--	--	--	--	--	--	--	--
GMSG-27	07/13/04	8:45 AM	28.63	73	T	--	0	1.3	17.7	--	--	--	--
GMSG-27	10/17/04	2:38 PM	28.65	41	-	--	0	1.6	18	--	--	--	--
GMSG-27	01/27/05	9:57 AM	29.36	-2	T	--	--	--	--	--	--	--	--
GMSG-27	04/01/05	8:24 AM	28.8	42	-	--	--	--	--	--	--	--	--
GMSG-27	07/05/05	9:02 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-27	10/14/05	10:53 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-27	02/22/06	2:55 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-27	04/05/06	4:25 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-27	07/07/06	9:21 AM	29.05	79	-	--	--	--	--	--	--	--	--
GMSG-27	10/02/06	2:24 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-27	02/03/07	1:32 PM	28.52	1	T	--	--	--	--	--	--	--	--
GMSG-27	04/03/07	10:30 AM	28.67	36	T	--	--	--	--	--	--	--	--
GMSG-28	06/13/99	9:25 AM	28.84	64.9	-	0	0	0.2	19.7	2	--	2	--
GMSG-28	06/16/99	9:27 AM	28.96	46	T	0	0	0.2	19.4	1.3	--	1.3	--
GMSG-28	06/17/99	3:30 PM	28.96	68	-	0	0	0.2	19.9	<1	<1	1.5	--
GMSG-28	06/18/99	8:15 AM	29.04	66	-	0.01	0	0.2	20	1.25	1.25	2.5	--
GMSG-28	06/19/99	11:45 AM	29.01	70	-	-0.02	0	0.2	20.2	3	<1	<1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-28	06/20/99	11:30 AM	28.99	75.9	-	0	0	0.1	20.3	11	<1	<1	--
GMSG-28	07/10/99	4:37 PM	28.91	73	-	0.01	0	0.3	19.6	1	--	1	--
GMSG-28	07/27/99	2:44 PM	28.71	81	-	0	0	0.5	19.6	4	2.25	4	--
GMSG-28	08/07/99	3:42 PM	28.51	75.9	-	0	0	0.6	19.3	3	--	3	--
GMSG-28	09/24/99	9:30 AM	28.69	52	-	0	0	0.2	20.3	3	3	3	--
GMSG-28	10/06/99	10:50 AM	29.05	41	-	-0.01	0	0.2	19.6	6	1	3	--
GMSG-28	10/27/99	8:08 AM	28.98	32	-	-0.01	0	0.1	20.9	2	<1	2	--
GMSG-28	11/05/99	12:10 PM	28.73	53.1	-	0	0	0.1	20.6	85	23	1.25	--
GMSG-28	11/09/99	1:00 PM	28.42	72	-	0	0	0.3	20.2	1	<1	<1	--
GMSG-28	02/18/00	11:23 AM	28.92	19	-	-0.03	0	0	20.6	90	3.5	2.25	--
GMSG-28	03/19/00	9:24 AM	28.85	30.9	-	-0.03	0	0	20.7	-0.1	-1.25	-0.1	--
GMSG-28	04/03/00	8:52 AM	28.34	41	-	-0.01	0	0	18.3	2	--	2	--
GMSG-28	10/10/00	3:00 PM	28.79	67	-	0	0	0.4	20.6	22.98	-1.84	-1.03	--
GMSG-28	05/20/01	9:40 AM	28.64	73	-	0.1	0	0.1	18.7	0	0	0	--
GMSG-28	09/11/01	5:10 PM	28.93	62	-	0	0	0.5	19.9	0	0	0	--
GMSG-28	09/25/01	2:30 PM	28.88	57	-	--	0	0.2	20.2	--	0	--	--
GMSG-28	10/21/01	12:05 PM	28.81	51	-	--	0	0	20.4	-1.1	-1.1	0.3	--
GMSG-28	11/13/01	11:00 AM	28.79	44	-	--	0	0	20.3	-0.45	-2.1	-0.45	--
GMSG-28	02/13/02	11:21 AM	28.9	19	-	--	0	0	19.6	-0.17	-1.31	-0.17	--
GMSG-28	06/26/02	9:27 AM	28.61	74	-	--	0	0.2	20.4	--	--	--	--
GMSG-28	09/27/02	1:30 PM	28.7	63	-	--	0	0.1	20.9	--	--	--	--
GMSG-28	11/20/02	1:32 PM	28.68	32	0.01	--	0	0	19.8	--	--	--	--
GMSG-28	01/28/03	1:01 PM	28.74	23	T	--	0	0	19.7	--	--	--	--
GMSG-28	04/21/03	10:34 AM	28.48	40	T	--	0	0.1	19.9	--	--	--	--
GMSG-28	08/04/03	11:02 AM	28.75	70	-	--	0	0.3	19.2	--	--	--	--
GMSG-28	11/01/03	11:45 AM	29.08	37	-	--	0	0	19.6	--	--	--	--
GMSG-28	01/19/04	3:30 PM	28.94	7	-	--	0	0	18.5	--	--	--	--
GMSG-28	04/17/04	11:45 AM	28.92	63	-	--	0	0	17.9	--	--	--	--
GMSG-28	07/13/04	9:20 AM	28.63	73	T	--	0	0.4	19.1	--	--	--	--
GMSG-28	10/20/04	12:32 PM	28.88	54	-	--	0	0.1	19.7	--	--	--	--
GMSG-28	01/27/05	10:10 AM	29.36	-2	T	--	--	--	--	--	--	--	--
GMSG-28	04/01/05	9:08 AM	28.8	44	-	--	--	--	--	--	--	--	--
GMSG-28	07/05/05	8:17 AM	28.83	60	-	--	--	--	--	--	--	--	--
GMSG-28	10/10/05	8:45 AM	29.01	41	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-28	02/22/06	3:22 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-28	04/05/06	3:28 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-28	07/07/06	1:17 PM	29.01	84	-	--	--	--	--	--	--	--	--
GMSG-28	10/03/06	3:39 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-28	02/03/07	1:50 PM	28.52	1	T	--	--	--	--	--	--	--	--
GMSG-28	04/02/07	11:25 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-28	07/18/07	10:26 AM	29.9	73	-	--	--	--	--	--	--	--	--
GMSG-28	10/23/07	11:19 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-29	06/12/00	4:32 PM	28.83	64	-	0	36.1	34.5	0	--	--	--	--
GMSG-29	06/15/00	9:45 AM	28.26	61	-	0	--	--	--	--	--	--	--
GMSG-29	06/15/00	11:15 AM	28.28	64	-	0	--	--	--	--	--	--	--
GMSG-29	06/15/00	12:20 PM	28.29	69	-	0	--	--	--	--	--	--	--
GMSG-29	06/15/00	1:20 PM	28.31	69	-	0	--	--	--	--	--	--	--
GMSG-29	06/15/00	2:20 PM	28.29	70	-	-0.1	--	--	--	--	--	--	--
GMSG-29	06/15/00	3:20 PM	28.3	68	T	-0.12	--	--	--	--	--	--	--
GMSG-29	06/15/00	4:20 PM	28.31	66	T	-0.1	--	--	--	--	--	--	--
GMSG-29	06/15/00	5:20 PM	28.3	66	-	-0.1	--	--	--	--	--	--	--
GMSG-29	06/16/00	8:43 AM	28.18	59	T	-0.14	--	--	--	--	--	--	--
GMSG-29	06/18/00	12:35 PM	28.77	63	0.1	0.02	13.3	16	4.3	--	--	--	18.1
GMSG-29	07/18/00	3:08 PM	28.87	57	-	0.01	30.6	32.6	0	--	--	--	--
GMSG-29	07/19/00	1:41 PM	28.77	69	-	-0.07	--	--	--	--	--	--	--
GMSG-29	07/19/00	2:32 PM	28.77	71	-	-0.04	--	--	--	--	--	--	--
GMSG-29	07/19/00	3:33 PM	28.75	72	-	-0.02	--	--	--	--	--	--	--
GMSG-29	07/19/00	4:29 PM	28.75	72	-	-0.02	--	--	--	--	--	--	--
GMSG-29	07/19/00	5:27 PM	28.74	72	-	-0.02	--	--	--	--	--	--	--
GMSG-29	07/20/00	10:08 AM	28.61	64	0.01	-0.04	29.2	33.8	0	--	--	--	--
GMSG-29	07/20/00	10:08 AM	28.61	64	0.01	-0.04	29.2	33.8	0	--	--	--	--
GMSG-29	07/21/00	12:23 PM	28.72	59	-	-0.43	--	--	--	--	--	--	--
GMSG-29	07/21/00	1:25 PM	28.72	60	-	-0.43	--	--	--	--	--	--	--
GMSG-29	07/21/00	2:28 PM	28.72	62	-	-0.43	--	--	--	--	--	--	--
GMSG-29	07/21/00	3:25 PM	28.73	61	-	-0.41	--	--	--	--	--	--	--
GMSG-29	07/21/00	4:26 PM	28.74	61	-	-0.45	--	--	--	--	--	--	--
GMSG-29	07/22/00	9:10 AM	28.9	59	-	-0.1	--	--	--	--	--	--	--
GMSG-29	07/23/00	12:00 PM	28.95	72	-	-0.43	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-29	07/23/00	12:57 PM	-	-	-	-0.46	--	--	--	--	--	--	--
GMSG-29	07/23/00	1:54 PM	28.94	72	T	-0.42	--	--	--	--	--	--	--
GMSG-29	07/23/00	2:58 PM	28.93	74	-	-0.39	--	--	--	--	--	--	--
GMSG-29	07/23/00	3:58 PM	28.92	72	-	-0.37	--	--	--	--	--	--	--
GMSG-29	07/24/00	9:26 AM	28.89	73	-	-0.47	--	--	--	--	--	--	--
GMSG-29	10/10/00	10:14 AM	28.87	56	-	0	4	5.2	17.6	--	--	--	15.25
GMSG-29	10/22/00	10:45 AM	29.17	55	-	0	33.3	37.4	0.1	--	--	--	15.94
GMSG-29	01/11/01	10:45 AM	28.82	31	-	-0.01	42.9	37	2.5	--	--	--	18.9
GMSG-29	01/12/01	8:48 AM	28.89	31	-	0	38.3	32.1	3.9	--	--	--	18.88
GMSG-29	01/13/01	9:12 AM	28.91	33	-	0	38.6	33.1	3.7	--	--	--	18.95
GMSG-29	02/07/01	11:16 AM	29.06	20	-	-10.3	0	0	19.7	=>15000	=>15000	-0.17	18.21
GMSG-29	02/08/01	9:17 AM	28.93	22	T	-9.45	0	0	20.4	0.22	0.22	-0.09	19.02
GMSG-29	02/10/01	11:27 AM	29.11	10	-	-10.7	0	0	20.2	4.2	-1	-1	--
GMSG-29	02/13/01	12:54 PM	28.93	27	-	-10	0	0	18.9	0.67	0.55	0.4	--
GMSG-29	02/23/01	10:38 AM	29.05	15	-	-10	0	0	20.2	0.57	0	-0.6	--
GMSG-29	03/06/01	11:21 AM	28.96	26	-	2.98	0	0	20.1	0.75	0.65	0.76	--
GMSG-29	03/13/01	4:44 PM	28.23	30	-	-11.76	0	0	19.8	1.39	1.36	1.39	--
GMSG-29	05/15/01	2:58 PM	28.46	57	-	--	--	--	--	--	--	--	16.54
GMSG-29	06/28/01	3:46 PM	28.89	87	-	-0.56	0	0	21	2487	--	0	--
GMSG-29	07/19/01	11:51 AM	28.82	80	-	-0.46	0	0	20.8	0.95	0.85	0	17.32
GMSG-29	08/09/01	9:40 AM	28.54	86	-	-0.1	0	0	20.2	0	0	0	17.49
GMSG-29	09/10/01	11:44 AM	28.76	66	-	-0.5	0	0	20.3	10.5	10.5	0	18.56
GMSG-29	10/07/01	10:45 AM	29.01	48	-	-12.9	0	0	20.3	0	0	0.2	18.4
GMSG-29	11/12/01	1:45 PM	29.03	52	-	0.02	8.8	12	4.7	>8000	--	-0.3	--
GMSG-29	12/12/01	8:50 AM	28.78	35	-	0.3	44.2	29.7	0	--	--	--	22.41
GMSG-29	01/07/02	2:54 PM	28.6	30	-	0.1	49.4	32	0	--	--	--	22.26
GMSG-29	01/26/02	3:15 PM	28.62	37	-	-4.01	0	0	20.9	-1.21	-0.51	-1.13	22.2
GMSG-29	03/05/02	2:40 PM	28.79	25	-	-5	0	0	21.2	0	0	0	20.15
GMSG-29	04/16/02	3:00 PM	28.49	83	-	3.88	13.6	16.6	0	--	--	--	11.86
GMSG-29	05/23/02	9:56 AM	28.44	73	-	0	11.9	12	4.6	--	--	--	13.01
GMSG-29	06/03/02	1:31 PM	28.8	51	-	-6	0	0	20.9	2.09	1.74	0	13.78
GMSG-29	07/12/02	11:56 AM	28.88	78	-	0	4.2	17.1	4.1	--	--	-0.31	15.88
GMSG-29	08/12/02	3:35 PM	28.64	79	0.03	0	18	29.4	0.2	--	--	--	16.9
GMSG-29	10/28/02	10:40 AM	29	40	-	0.2	0.2	8	6.9	5100	--	0	15.71

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-29	04/15/03	1:10 PM	28.58	53	-	0	0.9	7.3	1.3	--	--	--	--
GMSG-29	11/07/03	12:08 PM	29.04	22	-	0	0	0	19.4	1.04	1	0.14	--
GMSG-29	12/09/03	1:11 PM	28.73	36	-	0	22.9	21	2.5	--	--	--	--
GMSG-29	04/01/04	2:10 PM	28.88	48	-	0	--	--	--	--	--	--	--
GMSG-29	04/07/04	8:11 AM	28.67	46	-	0	0	4.8	8.2	--	--	--	--
GMSG-29	10/17/07	12:07 PM	29.89	57	-	-7.3	0	0.1	19.2	--	--	--	--
GMSG-29	10/31/07	2:55 PM	--	--	--	0	0.7	3.6	16.1	--	--	--	--
GMSG-30	06/12/00	5:30 PM	28.83	62	-	0.03	0	6.6	10.6	--	--	--	--
GMSG-30	06/12/00	5:38 PM	28.83	62	-	0.03	0	6.6	10.6	450	--	2	--
GMSG-30	06/13/00	10:33 AM	28.64	67	-	0	--	--	--	--	--	--	--
GMSG-30	06/13/00	10:33 AM	28.64	67	-	0	--	--	--	--	--	--	--
GMSG-30	06/13/00	11:33 AM	28.62	70	-	0	--	--	--	--	--	--	--
GMSG-30	06/13/00	11:33 AM	28.62	70	-	0	--	--	--	--	--	--	--
GMSG-30	06/13/00	12:33 PM	28.6	71	-	0.03	--	--	--	--	--	--	--
GMSG-30	06/13/00	1:33 PM	28.6	72	-	0.09	--	--	--	--	--	--	--
GMSG-30	06/13/00	2:33 PM	28.59	67	-	0	--	--	--	--	--	--	--
GMSG-30	06/13/00	3:33 PM	28.61	62	-	0	--	--	--	--	--	--	--
GMSG-30	06/13/00	4:33 PM	28.62	61	-	0	--	--	--	--	--	--	--
GMSG-30	06/13/00	5:33 PM	28.62	60	-	0	--	--	--	--	--	--	--
GMSG-30	06/14/00	9:33 AM	28.35	67	-	0	--	--	--	--	--	--	--
GMSG-30	06/18/00	12:05 PM	28.78	67	-	0	0	0.2	19.5	240	238	-0.16	--
GMSG-30	07/18/00	2:55 PM	28.87	57	-	0	0	10.4	5.4	31	--	-0.17	--
GMSG-30	07/19/00	1:37 PM	28.77	69	-	-0.01	--	--	--	--	--	--	--
GMSG-30	07/19/00	2:29 PM	28.77	69	-	0	--	--	--	--	--	--	--
GMSG-30	07/19/00	3:30 PM	28.75	72	-	0	--	--	--	--	--	--	--
GMSG-30	07/19/00	4:21 PM	28.75	72	-	0	--	--	--	--	--	--	--
GMSG-30	07/19/00	5:25 PM	28.74	72	-	-0.02	--	--	--	--	--	--	--
GMSG-30	07/20/00	9:38 AM	28.61	64	0.01	0.1	0	2.8	11.9	2.1	2.1	-0.21	--
GMSG-30	07/20/00	9:38 AM	28.61	64	0.01	0.01	0	2.8	16.9	2.1	2.1	-0.21	--
GMSG-30	07/21/00	12:21 PM	28.72	59	-	-0.05	--	--	--	--	--	--	--
GMSG-30	07/21/00	1:23 PM	28.72	60	-	-0.05	--	--	--	--	--	--	--
GMSG-30	07/21/00	2:26 PM	28.72	62	-	-0.03	--	--	--	--	--	--	--
GMSG-30	07/21/00	3:22 PM	28.73	61	-	-0.05	--	--	--	--	--	--	--
GMSG-30	07/21/00	4:24 PM	28.74	61	-	-0.06	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-30	07/22/00	9:08 AM	28.9	59	-	-0.02	--	--	--	--	--	--	--
GMSG-30	07/23/00	11:58 AM	28.95	72	-	-0.2	--	--	--	--	--	--	--
GMSG-30	07/23/00	12:52 PM	-	-	-	-0.2	--	--	--	--	--	--	--
GMSG-30	07/23/00	1:48 PM	28.94	72	T	-0.2	--	--	--	--	--	--	--
GMSG-30	07/23/00	2:54 PM	28.93	74	-	-0.06	--	--	--	--	--	--	--
GMSG-30	07/23/00	3:56 PM	28.92	72	-	-0.06	--	--	--	--	--	--	--
GMSG-30	07/24/00	9:23 AM	28.89	73	-	-0.07	--	--	--	--	--	--	--
GMSG-30	10/10/00	10:00 AM	28.87	56	-	0	0	12.5	4.5	400	--	-1.32	--
GMSG-30	10/22/00	10:30 AM	29.17	55	-	0	0	13.2	4.2	0.36	--	0.1	--
GMSG-30	01/10/01	2:35 PM	28.58	43	-	0	0	12	4.9	0.28	--	0.28	--
GMSG-30	01/11/01	10:18 AM	28.82	23	-	-0.01	0	10.2	7.2	30.87	2.1	0	--
GMSG-30	01/12/01	8:15 AM	28.89	31	-	0	0	7.1	11.2	3.85	0.6	0	--
GMSG-30	01/13/01	8:58 AM	28.91	33	-	-0.02	0	0	20.4	0.7	0.6	0	--
GMSG-30	02/07/01	10:52 AM	29.06	20	-	-0.13	0	0	19.6	0.07	0.07	0.05	--
GMSG-30	02/08/01	9:02 AM	28.93	22	T	-0.05	0	0	20.5	8.15	-0.09	-0.09	--
GMSG-30	02/10/01	11:12 AM	29.11	10	-	-0.16	0	0	20	14	13.8	-2.2	--
GMSG-30	02/13/01	12:38 PM	28.93	27	-	-0.05	0	0	19	4.6	3.3	0.2	--
GMSG-30	02/23/01	10:22 AM	29.03	14	-	-0.15	0	0	20.2	22	18	-0.6	--
GMSG-30	03/06/01	11:10 AM	28.96	26	-	-0.03	0	0	19.7	131	101	0.5	--
GMSG-30	03/13/01	4:32 PM	28.23	30	-	-0.15	0	0	19.8	1.12	1	1.02	--
GMSG-30	06/28/01	2:59 PM	28.9	87	-	-0.08	0	0	21.5	17.13	1.19	0	--
GMSG-30	07/19/01	11:58 AM	28.82	80	-	-0.11	0	0	20.4	0.18	0.04	0	--
GMSG-30	08/09/01	9:32 AM	28.54	86	-	0	0	0	20	1.01	0.71	0	--
GMSG-30	09/10/01	12:05 PM	28.76	66	-	0	0	0	20.6	0	0	0	--
GMSG-30	10/07/01	9:50 AM	29.01	41	-	-0.07	0	0	20.3	0.9	0.8	0.3	--
GMSG-30	11/12/01	1:40 PM	29.03	52	-	0.03	0	0.8	19.7	0.64	0.52	-0.32	--
GMSG-30	12/12/01	8:40 AM	28.78	35	-	0.04	0	1.2	18	1.52	1.48	0.24	--
GMSG-30	01/07/02	3:30 PM	28.59	29	-	0.04	0	2	15	8.5	8.1	-1.47	--
GMSG-30	01/26/02	3:05 PM	28.62	37	-	0	0	0	21	1.4	-0.3	-1.38	--
GMSG-30	03/05/02	11:42 AM	28.81	21	-	-0.14	0	0	20.7	0	0	0	--
GMSG-30	04/16/02	2:53 PM	28.49	83	-	0.02	0	0.2	20.1	4.27	4.16	0	--
GMSG-30	05/23/02	9:45 AM	28.44	73	-	0	0	2.1	14.7	2.46	1.45	0	--
GMSG-30	06/03/02	1:23 PM	28.81	52	-	0	0	0.6	20.1	28	6.75	0	--
GMSG-30	07/12/02	11:50 AM	28.88	78	-	0	0	1.1	19.3	2.26	2.24	-0.36	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-30	08/12/02	3:30 PM	28.64	79	0.03	0	0	1.5	18.5	--	--	--	--
GMSG-31	07/21/00	12:33 PM	28.72	60	-	-0.11	--	--	--	--	--	--	--
GMSG-31	07/21/00	1:33 PM	28.72	62	-	-0.09	--	--	--	--	--	--	--
GMSG-31	07/21/00	2:38 PM	28.73	61	-	-0.11	--	--	--	--	--	--	--
GMSG-31	07/21/00	3:35 PM	28.74	61	-	-0.17	--	--	--	--	--	--	--
GMSG-31	07/21/00	4:35 PM	28.76	59	-	-0.14	--	--	--	--	--	--	--
GMSG-31	07/22/00	9:17 AM	28.9	59	-	-0.02	--	--	--	--	--	--	--
GMSG-31	07/23/00	12:08 PM	28.95	72	-	-0.09	--	--	--	--	--	--	--
GMSG-31	07/23/00	1:06 PM	-	-	-	-0.09	--	--	--	--	--	--	--
GMSG-31	07/23/00	2:03 PM	28.94	72	T	-0.1	--	--	--	--	--	--	--
GMSG-31	07/23/00	3:07 PM	28.93	74	-	-0.08	--	--	--	--	--	--	--
GMSG-31	07/23/00	4:05 PM	28.92	72	-	-0.08	--	--	--	--	--	--	--
GMSG-31	07/24/00	9:34 AM	28.87	76	-	-0.09	--	--	--	--	--	--	--
GMSG-31	10/10/00	10:53 AM	28.87	60	-	-0.22	5.8	20.4	0	--	--	--	--
GMSG-31	10/22/00	11:15 AM	29.17	55	-	0	2.8	14.6	3	--	--	--	--
GMSG-31	01/11/01	11:20 AM	28.82	31	-	0	0.1	7.8	12.1	3400	1940	0	--
GMSG-31	01/12/01	9:18 AM	28.89	31	-	-0.02	0.1	8.7	9.5	14.5	--	0.4	--
GMSG-31	01/13/01	9:50 AM	28.92	34	-	0.03	0.2	8.1	9.8	1950	--	0.2	--
GMSG-31	02/07/01	11:51 AM	29.05	23	-	-6.12	0	0	19.6	9100	--	-0.05	--
GMSG-31	02/08/01	9:40 AM	28.91	23	-	-5.55	0.4	8.9	12.7	--	--	--	--
GMSG-31	02/10/01	11:46 AM	29.11	11	-	-5.6	0.1	4.6	16.5	--	--	--	--
GMSG-31	02/13/01	12:59 PM	28.93	27	-	-6	0	2.9	17.2	0.83	0.6	0.5	--
GMSG-31	02/23/01	11:25 AM	29.05	15	-	-6	0	0	19.4	2.3	1.9	2.3	--
GMSG-31	03/06/01	12:45 PM	28.95	27	-	-1.39	0	1.5	18	1.8	1.27	1.75	--
GMSG-31	03/13/01	5:39 PM	28.26	30	-	-5.5	0	0.6	18.5	3.16	3	3	--
GMSG-31	05/15/01	3:12 PM	28.46	57	-	--	--	--	--	--	--	--	19.69
GMSG-31	06/28/01	3:12 PM	28.9	87	-	-10	0	0	21.1	1.73	1.02	0	--
GMSG-31	07/19/01	11:28 AM	28.84	75	-	-10	0	0	20.4	9.28	3.71	0	19.72
GMSG-31	08/09/01	10:22 AM	28.54	86	-	-8.2	0	0	20.4	0	0	0	19.62
GMSG-31	09/10/01	11:50 AM	28.76	66	-	-8	0	0	20.4	0.5	0	0	19.63
GMSG-31	10/07/01	10:35 AM	29.01	48	-	-9.04	0	0	20.3	0.1	0	0.2	19.69
GMSG-31	11/12/01	2:14 PM	29.03	52	-	0	0	0.5	19.9	19.56	7.1	-0.24	--
GMSG-31	12/12/01	9:35 AM	28.79	36	-	0.02	0	4.6	6.9	2.78	2.78	-0.26	--
GMSG-31	01/07/02	3:36 PM	28.59	29	-	0.02	0	5.9	4.6	10	2.81	-0.89	19.82

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-31	01/26/02	3:45 PM	28.62	37	-	-1.21	0	0	20.9	-0.46	-0.41	-0.39	19.6
GMSG-31	03/05/02	3:20 PM	28.79	25	-	--	--	--	--	--	--	--	--
GMSG-31	04/16/02	3:37 PM	28.48	83	-	0	0	0.2	19.8	0.1	0.02	0	19.68
GMSG-31	05/23/02	10:32 AM	28.44	73	-	0	0	5.4	5.9	0	0	0	19.68
GMSG-31	06/03/02	2:00 PM	28.8	51	-	-3.9	0	0	20.9	0	0	0	19.67
GMSG-31	07/12/02	12:21 PM	28.88	78	-	0	1.4	12.1	4	--	--	-0.26	19.67
GMSG-31	08/12/02	4:35 PM	28.64	78	-	0	3.6	18.5	0.2	--	--	--	19.7
GMSG-31	10/28/02	10:52 AM	29	40	-	0.1	0	5.3	11.8	52	47.5	0	19.7
GMSG-31	04/15/03	1:20 PM	28.58	53	-	0	0	1.6	15.6	17.49	13	1	--
GMSG-31	11/07/03	12:17 PM	29.04	22	-	0	0	0	19.3	2.52	2.5	0.1	--
GMSG-31	12/09/03	1:20 PM	28.73	36	-	0	0	3.5	13.8	54	16.8	0	--
GMSG-31	04/01/04	2:30 PM	28.86	50	-	0	--	--	--	--	--	--	--
GMSG-31	04/07/04	7:55 AM	28.67	46	-	0	0	0.4	18.4	--	--	--	--
GMSG-31	10/31/07	3:09 PM	--	--	--	0	0	0	20.7	--	--	--	--
GMSG-32	07/18/00	3:52 PM	28.87	58	-	0.01	24.3	19.1	0	--	--	--	--
GMSG-32	07/19/00	1:49 PM	28.77	69	-	-0.02	--	--	--	--	--	--	--
GMSG-32	07/19/00	2:45 PM	28.77	71	-	-0.06	--	--	--	--	--	--	--
GMSG-32	07/19/00	3:39 PM	28.75	72	-	-0.02	--	--	--	--	--	--	--
GMSG-32	07/19/00	4:40 PM	28.74	72	-	-0.05	--	--	--	--	--	--	--
GMSG-32	07/19/00	5:33 PM	28.74	71	-	-0.05	--	--	--	--	--	--	--
GMSG-32	07/20/00	10:41 AM	28.61	64	0.09	-0.06	25.4	20	0	--	--	--	--
GMSG-32	07/20/00	10:41 AM	28.61	64	0.09	-0.06	25.4	20	0	--	--	--	--
GMSG-32	07/23/00	12:10 PM	28.95	72	-	-1.12	--	--	--	--	--	--	--
GMSG-32	07/23/00	1:08 PM	-	-	-	-0.99	--	--	--	--	--	--	--
GMSG-32	07/23/00	2:06 PM	28.94	72	T	-0.91	--	--	--	--	--	--	--
GMSG-32	07/23/00	3:09 PM	28.93	74	-	-0.89	--	--	--	--	--	--	--
GMSG-32	07/23/00	4:07 PM	28.92	72	-	-0.73	--	--	--	--	--	--	--
GMSG-32	07/24/00	9:31 AM	28.87	76	-	-0.81	--	--	--	--	--	--	--
GMSG-32	01/11/01	11:05 AM	28.82	31	-	0	2.2	0.3	19.8	--	--	--	--
GMSG-32	01/12/01	9:08 AM	28.89	31	-	0	3.4	0.4	19.8	--	--	--	--
GMSG-32	01/13/01	9:32 AM	28.92	34	-	0	2.1	1.3	18.4	--	--	--	--
GMSG-32	02/07/01	11:37 AM	29.05	23	-	-8.17	0	0	19.8	0.65	0.65	-0.15	--
GMSG-32	02/08/01	9:30 AM	28.91	23	-	-7.12	0	0	20.3	0.4	0.4	0.41	--
GMSG-32	02/10/01	11:39 AM	29.11	11	-	-8.65	0	0	20.1	13.8	1.7	0.2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-32	02/13/01	12:43 PM	28.93	27	-	-7	0	0	19.1	0.7	0.6	0.4	--
GMSG-32	02/23/01	11:05 AM	29.05	15	-	-8	0	0	19.6	--	--	-4.4	--
GMSG-32	03/06/01	11:51 AM	28.96	26	-	2.38	0	0	19.9	2.11	1.98	1.7	--
GMSG-32	03/13/01	5:17 PM	28.23	30	-	-9.5	0	0	19.4	2.8	2.6	2.7	--
GMSG-32	05/15/01	3:08 PM	28.46	57	-	--	--	--	--	--	--	--	--
GMSG-32	06/28/01	4:40 PM	28.88	86	-	-14	0	0	21.5	5.68	5.21	0	--
GMSG-32	07/19/01	11:39 AM	28.82	80	-	-13	0	0	20.4	55.3	53.31	0	--
GMSG-32	08/09/01	10:06 AM	28.54	86	-	-12.2	0	0	20.1	0	0	0	--
GMSG-32	09/10/01	11:38 AM	28.76	66	-	-10	0	0	20.3	0	0	0	--
GMSG-32	10/07/01	10:05 AM	29.01	41	-	-11.6	0	0	20.4	0.2	0	0.2	--
GMSG-32	11/12/01	2:08 PM	29.03	52	-	0	0	5	11.1	970	965	-0.32	--
GMSG-32	12/12/01	9:20 AM	28.78	35	-	0.12	1.8	12.9	0.6	--	--	--	--
GMSG-32	01/07/02	3:21 PM	28.6	30	-	0.07	3.9	13.8	0	--	--	--	--
GMSG-32	01/26/02	3:37 PM	28.62	37	-	-4.06	0	10	7.2	10.51	10.1	-0.45	--
GMSG-32	03/05/02	2:28 PM	28.79	23	T	-5	0	0	21.2	0	0	0	--
GMSG-32	04/16/02	3:18 PM	28.49	83	-	0	0	3	0	274	--	0	--
GMSG-32	05/23/02	10:17 AM	28.44	73	-	0	0	4.2	6.2	4000	--	0	--
GMSG-32	06/03/02	1:52 PM	28.8	51	-	-5.8	0	0	20.9	0	0	0	--
GMSG-32	07/12/02	12:13 PM	28.88	78	-	0	3	15.6	2.4	--	--	-0.32	--
GMSG-32	08/12/02	4:25 PM	28.64	79	0.03	0	1.2	13.5	4.6	--	--	--	--
GMSG-32	04/01/04	2:20 PM	28.88	48	-	-0.1	--	--	--	--	--	--	--
GMSG-32	04/07/04	8:08 AM	28.67	46	-	1	0	0	19.7	--	--	--	--
GMSG-32	10/31/07	3:04 PM	--	--	--	0	0.8	1.1	19.4	--	--	--	--
GMSG-33	07/18/00	3:47 PM	28.87	58	-	0.01	18.2	19.3	0	--	--	--	--
GMSG-33	07/19/00	1:47 PM	28.77	69	-	-0.08	--	--	--	--	--	--	--
GMSG-33	07/19/00	2:41 PM	28.77	71	-	0	--	--	--	--	--	--	--
GMSG-33	07/19/00	3:37 PM	28.75	72	-	-0.02	--	--	--	--	--	--	--
GMSG-33	07/19/00	4:34 PM	28.74	72	-	-0.07	--	--	--	--	--	--	--
GMSG-33	07/19/00	5:31 PM	28.74	71	-	-0.04	--	--	--	--	--	--	--
GMSG-33	07/20/00	10:30 AM	28.61	64	0.09	-0.05	10.1	20.9	0	--	--	--	--
GMSG-33	07/20/00	10:30 AM	28.61	64	0.09	-0.05	10.1	20.9	0	--	--	--	--
GMSG-33	07/21/00	12:28 PM	28.72	59	-	-0.98	--	--	--	--	--	--	--
GMSG-33	07/21/00	1:28 PM	28.72	60	-	-0.97	--	--	--	--	--	--	--
GMSG-33	07/21/00	2:33 PM	28.73	61	-	-0.98	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-33	07/21/00	3:29 PM	28.73	61	-	-0.96	--	--	--	--	--	--	--
GMSG-33	07/21/00	4:30 PM	28.76	59	-	-1.02	--	--	--	--	--	--	--
GMSG-33	07/22/00	9:13 AM	28.9	59	-	-0.25	--	--	--	--	--	--	--
GMSG-33	10/22/00	11:06 AM	29.17	55	-	0	23.9	20.5	0	--	--	--	14.39
GMSG-33	01/11/01	10:50 AM	28.82	31	-	0.25	0.1	1.6	19.2	3000	1160	-0.4	--
GMSG-33	01/12/01	9:00 AM	28.89	31	-	0.02	0.1	2.2	17.5	8080	6830	0.2	17.64
GMSG-33	01/13/01	9:25 AM	28.91	33	-	0	0.4	1.8	16.8	6150	6033	0.2	17.67
GMSG-33	02/07/01	11:30 AM	29.05	23	-	-9.41	0	0	19.8	1.7	1.7	0.05	--
GMSG-33	02/08/01	9:26 AM	28.93	22	T	-8.77	0	0	20.4	0.2	0.2	0.34	--
GMSG-33	02/10/01	11:34 AM	29.11	11	-	-9.3	0	0	20.3	4.2	1.5	1.8	--
GMSG-33	02/13/01	12:47 PM	28.93	27	-	-9	0	0	19.1	0.62	0.45	0.3	--
GMSG-33	02/23/01	10:56 AM	29.05	15	-	-8	0	0	19.9	2.7	2.4	2.3	--
GMSG-33	03/06/01	11:40 AM	28.96	26	-	2.55	0	0	20.3	1.55	1.39	1.14	--
GMSG-33	03/13/01	5:09 PM	28.23	30	-	-10.2	0	0	19.6	2.63	2.5	2.5	--
GMSG-33	05/15/01	3:03 PM	28.46	57	-	--	--	--	--	--	--	--	15.16
GMSG-33	06/28/01	3:31 PM	28.89	87	-	-16	0	0	21.5	0	0	0	--
GMSG-33	07/19/01	11:43 AM	28.82	80	-	-15	0	0	20.7	0	0	0	14.99
GMSG-33	08/09/01	10:00 AM	28.54	86	-	-14	0	0	20.2	0	0	0	15.32
GMSG-33	09/10/01	11:35 AM	28.76	66	-	-12	0	0	20.1	0	0	0	16.14
GMSG-33	10/07/01	10:15 AM	29.01	41	-	-12.4	0	0	20.5	0.1	0	0.2	16.87
GMSG-33	11/12/01	2:00 PM	29.03	52	-	0	0.5	9.1	4.2	>2500	--	-1.5	--
GMSG-33	12/12/01	9:15 AM	28.78	35	-	0	7.2	17.7	0	--	--	--	18.57
GMSG-33	01/07/02	3:01 PM	28.6	30	-	0.1	9.6	18.7	0	--	--	--	18.52
GMSG-33	01/26/02	3:30 PM	28.62	37	-	-5.55	0	0	20.9	-0.4	-0.37	-0.46	18.21
GMSG-33	03/05/02	2:12 PM	28.79	23	T	-5	0	0	21.3	0	0	0	--
GMSG-33	04/16/02	3:11 PM	28.49	83	-	0.01	0	1.3	0	42	--	0	--
GMSG-33	05/23/02	10:08 AM	28.44	73	-	0	0	7.9	1.4	4	--	0	12.13
GMSG-33	06/03/02	1:45 PM	28.8	51	-	-6	0	0	20.9	0.06	0	0	12.61
GMSG-33	07/12/02	12:08 PM	28.88	78	-	0	0.2	11.1	4.3	--	--	-0.3	14.75
GMSG-33	08/12/02	4:15 PM	28.64	79	0.03	-0.1	2.1	12.9	4.7	--	--	--	15.75
GMSG-33	10/17/07	12:13 PM	29.89	57	-	-7.2	0	0	19.4	--	--	--	--
GMSG-33	10/31/07	2:59 PM	--	--	--	0	0	0.1	20.6	--	--	--	--
GMSG-34	05/06/01	3:10 PM	28.89	63	-	0.08	1.5	12.6	0	--	--	--	--
GMSG-34	05/07/01	4:13 PM	28.74	60	-	-0.08	0.6	11	1.4	1414	--	-0.43	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-34	05/08/01	3:02 PM	28.67	69	-	0.05	1.1	12.3	0	--	--	--	--
GMSG-34	05/09/01	11:15 AM	28.81	69	-	0.02	0.6	12.6	0	--	--	--	--
GMSG-34	05/20/01	8:20 AM	28.67	66	-	0.05	1.5	12.6	0	--	--	--	--
GMSG-34	07/10/01	1:34 PM	28.68	76	-	-0.01	3.4	13.7	0	--	--	--	--
GMSG-34	07/10/01	6:00 PM	28.72	70	-	-2.56	0	0	20.8	9870	--	0	--
GMSG-34	07/11/01	5:00 PM	28.78	74	-	-2.45	0	4.5	12.3	5600	--	0	--
GMSG-34	07/12/01	8:44 AM	28.9	69	-	-2.57	0	3.6	13.3	150	150	0	--
GMSG-34	07/12/01	5:26 PM	28.87	77	-	-2.56	0	0	20.4	233	231	0	--
GMSG-34	07/13/01	1:18 PM	28.9	82	-	-2.54	0	0	21.3	0	0	0	--
GMSG-34	07/16/01	9:45 AM	28.77	71	-	-3	0	1	18.7	0.45	0.33	0	--
GMSG-34	07/17/01	10:56 AM	28.76	75	-	-3	0	0.6	18.9	4.82	4.51	0	--
GMSG-34	07/18/01	8:01 AM	28.78	67	-	-3	0	0.6	19.1	0.5	0.49	0.65	--
GMSG-34	07/19/01	1:17 PM	28.8	84	-	-2.75	0	0	20.7	4.78	1.5	-0.1	--
GMSG-34	07/20/01	2:17 PM	28.77	78	-	-3	0	0	20.6	-0.32	-0.58	-0.72	--
GMSG-34	07/24/01	9:25 AM	28.67	73	-	-3	0	0.4	19.4	64	25.41	0	--
GMSG-34	07/26/01	7:45 AM	29.06	61	-	-3.1	0	0.4	19.4	1.63	1.28	0	--
GMSG-34	08/02/01	4:56 PM	28.92	84	-	-2.9	0	0	20	0	0	0	--
GMSG-34	08/09/01	8:06 AM	28.54	79	-	-2.6	0	0	20	0	0	0	--
GMSG-34	08/16/01	3:15 PM	28.55	71	-	0.03	0	1.9	16.1	1500	100	4	--
GMSG-34	08/20/01	3:55 PM	28.81	78	-	0	0	2.6	15.3	10.2	9.6	-0.7	--
GMSG-34	08/21/01	9:05 AM	28.82	72	-	0	0	2.8	14.7	11.5	11.5	-0.4	--
GMSG-34	09/10/01	12:45 PM	28.77	65	0.05	0	0	4.8	10.6	55	10.5	0.5	--
GMSG-34	09/11/01	8:40 AM	29.05	61	-	0	0	5.6	6.9	4.25	4	0.5	--
GMSG-34	09/24/01	4:30 PM	29.08	47	-	--	0	6.6	8.3	--	0	--	--
GMSG-34	10/21/01	10:17 AM	28.82	46	-	--	0	8.1	4.3	-0.2	-0.3	0.3	--
GMSG-34	11/13/01	9:28 AM	28.81	41	0.01	--	0	9.5	1.4	-0.42	--	-0.42	--
GMSG-34	03/15/02	12:15 PM	28.62	30	-	-0.1	0	10.9	1.6	0	--	0	--
GMSG-34	03/25/02	3:30 PM	29.17	30	-	0.03	0	10.5	3	--	--	--	--
GMSG-34	04/16/02	12:02 PM	28.52	85	-	-0.03	0	12.9	0.2	--	--	--	--
GMSG-34	05/16/02	1:04 PM	28.74	49	-	0.05	0	12.8	0	--	--	--	--
GMSG-34	06/10/02	9:20 AM	28.7	73	-	0	0	13.3	0	--	--	--	--
GMSG-34	06/20/02	1:45 PM	28.97	81	-	0	0	13.6	0	--	--	--	--
GMSG-34	06/24/02	1:40 PM	28.79	84	-	0	0.3	13.6	0	--	--	--	--
GMSG-34	07/14/02	10:34 AM	28.78	84	-	--	0.6	13.5	0.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-34	07/22/02	9:19 AM	28.65	78	-	--	0	0	21	--	--	--	--
GMSG-34	08/12/02	7:50 AM	28.69	70	-	-0.3	0	0	21	--	--	--	--
GMSG-34	10/18/02	1:13 PM	28.46	33	0.04	-2.1	0	0	20	--	--	--	--
GMSG-34	12/17/02	11:30 AM	28.88	31	-	--	0	0.2	20.3	--	--	--	--
GMSG-34	01/30/03	10:34 AM	28.75	26	-	--	0	1.8	15.1	--	--	--	--
GMSG-34	02/06/03	12:28 PM	28.91	17	-	--	0	1.8	15.4	--	--	--	--
GMSG-34	03/04/03	1:13 PM	28.63	14	T	--	0	2.5	13.6	--	--	--	--
GMSG-34	04/03/03	10:42 AM	28.86	25	T	--	0	3.4	12	--	--	--	--
GMSG-34	05/01/03	12:14 PM	28.68	64	-	--	0.2	4.1	10.4	--	--	--	--
GMSG-34	07/21/03	12:34 PM	28.59	66	0.01	--	0	7.8	6.4	--	--	--	--
GMSG-34	10/28/03	10:42 AM	28.11	42	T	0	0	11	0.1	--	--	--	--
GMSG-34	10/30/03	1:17 PM	28.61	43	T	0	--	--	--	--	--	--	--
GMSG-34	11/12/03	9:18 AM	28.37	37	-	0	--	--	--	--	--	--	--
GMSG-34	11/24/03	1:57 PM	28.33	17	T	0	0	10.5	1.9	--	--	--	--
GMSG-34	12/03/03	11:14 AM	29.24	31	-	0	0	8.9	5.6	--	--	--	--
GMSG-34	12/08/03	11:01 AM	28.66	37	-	0	0	9.9	2.2	--	--	--	--
GMSG-34	12/15/03	1:36 PM	28.5	25	-	0	0	10.1	2.4	--	--	--	--
GMSG-34	12/22/03	9:35 AM	28.58	33	-	0	0	9.8	3.5	--	--	--	--
GMSG-34	12/30/03	12:21 PM	28.72	28	-	0	0	10.1	4.7	--	--	--	--
GMSG-34	01/08/04	12:07 PM	29.05	17	-	0	0	8.7	5.6	--	--	--	--
GMSG-34	01/12/04	12:05 PM	28.7	28	T	0	0	9.6	4.3	--	--	--	--
GMSG-34	01/22/04	11:40 AM	28.79	-4	-	0	0	9.6	6.3	--	--	--	--
GMSG-34	02/27/04	9:51 AM	29.17	22	-	0	0	9.3	3.6	--	--	--	--
GMSG-34	03/19/04	9:44 AM	28.95	31	-	0	0.1	10.9	1.6	--	--	--	--
GMSG-34	03/29/04	3:43 PM	--	--	--	0	0	10.3	1.1	--	--	--	--
GMSG-34	04/09/04	9:32 AM	28.8	39	-	0	0	10.7	2.7	--	--	--	--
GMSG-34	04/19/04	2:45 PM	28.85	-	-	0	0	10.8	1.3	--	--	--	--
GMSG-34	04/22/04	10:23 AM	29	41	-	0	0	10.3	4.1	--	--	--	--
GMSG-34	04/23/04	8:31 AM	28.94	38	-	0	0	10.6	3.1	--	--	--	--
GMSG-34	04/28/04	2:49 PM	28.28	73	-	0	0	10.9	0.5	--	--	--	--
GMSG-34	05/05/04	10:01 AM	28.75	48	-	0	0	11.8	1.7	--	--	--	--
GMSG-34	05/24/04	9:26 AM	28.69	43	-	0	0	11.8	0.8	--	--	--	--
GMSG-34	06/02/04	2:05 PM	28.8	66	-	0	0	11.2	1.9	--	--	--	--
GMSG-34	06/08/04	4:24 PM	28.69	84	-	0	0	0.1	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-34	06/16/04	9:42 AM	28.8	77	-	0.05	0	9.5	4.7	--	--	--	--
GMSG-34	06/17/04	2:37 PM	28.8	75	-	0.013	0	11	1.4	--	--	--	--
GMSG-34	06/18/04	10:19 AM	28.83	74	-	0.025	0.2	11.7	0.4	--	--	--	--
GMSG-34	06/19/04	9:40 AM	29.05	62	-	0.117	0	11.8	1.2	--	--	--	--
GMSG-34	06/20/04	9:25 AM	28.77	66	-	-0.004	0	12	0.6	--	--	--	--
GMSG-34	06/21/04	5:51 PM	28.41	59	0.03	0.022	0	11.6	0.9	--	--	--	--
GMSG-34	06/22/04	2:24 PM	28.61	66	-	-0.043	0	11.9	0.6	--	--	--	--
GMSG-34	06/23/04	8:29 AM	28.68	56	-	0.015	0	12.2	0.6	--	--	--	--
GMSG-34	06/24/04	2:25 PM	28.76	54	0.01	-0.026	0	11.8	0.5	--	--	--	--
GMSG-34	06/25/04	4:49 PM	28.76	61	-	0.021	0	11.9	0.6	--	--	--	--
GMSG-34	06/26/04	4:07 PM	28.8	66	-	-0.021	0	11.9	6.8	--	--	--	--
GMSG-34	06/28/04	3:42 PM	28.78	74	-	0.027	0	11.4	0.8	--	--	--	--
GMSG-34	06/29/04	5:50 PM	28.83	67	0.01	0.021	0.2	4.8	18.4	--	--	--	--
GMSG-34	06/30/04	7:48 AM	28.8	73	-	0.005	0	11.9	0.4	--	--	--	--
GMSG-34	07/01/04	8:24 AM	28.91	62	-	-0.016	0	11.8	0.8	--	--	--	--
GMSG-34	07/02/04	1:46 PM	28.88	73	-	0	0	11.5	1	--	--	--	--
GMSG-34	07/06/04	9:12 AM	28.68	51	0.1	0.021	0	12.4	0	--	--	--	--
GMSG-34	07/07/04	11:56 AM	28.57	55	-	0.016	0.3	12.4	0	--	--	--	--
GMSG-34	07/08/04	12:18 PM	28.72	61	-	-0.011	0	12	0	--	--	--	--
GMSG-34	07/09/04	8:37 AM	28.89	64	-	-0.024	0	11.7	0.8	--	--	--	--
GMSG-34	07/11/04	9:09 AM	28.82	67	-	0.01	0	13.3	0.1	--	--	--	--
GMSG-34	07/12/04	4:58 PM	28.68	84	-	0.006	0	13	0.2	--	--	--	--
GMSG-34	07/15/04	3:50 PM	28.63	80	-	0	1.2	11	0	--	--	--	--
GMSG-34	07/16/04	12:45 PM	28.68	67	0.06	0	0	12.6	0	--	--	--	--
GMSG-34	07/21/04	4:43 PM	28.46	82	-	-0.041	0.2	12.2	0	--	--	--	--
GMSG-34	07/26/04	10:54 AM	28.96	79	-	0.006	0	12	0	--	--	--	--
GMSG-34	07/30/04	6:16 PM	28.59	72	-	0.016	0	12.4	0	--	--	--	--
GMSG-34	08/04/04	3:08 PM	28.84	69	-	0.004	0	12.2	0.2	--	--	--	--
GMSG-34	08/06/04	2:03 PM	28.91	77	-	0.011	0	11.7	0	--	--	--	--
GMSG-34	08/10/04	3:57 PM	28.6	56	-	0.006	0.6	12.5	0	--	--	--	--
GMSG-34	08/12/04	8:20 AM	28.8	56	-	0.013	0.5	12.7	0	--	--	--	--
GMSG-34	08/20/04	12:14 PM	28.76	61	-	0	0	12.6	0.5	--	--	--	--
GMSG-34	08/27/04	11:11 AM	28.65	77	-	0.006	0	12.4	0.1	--	--	--	--
GMSG-34	08/30/04	1:45 PM	28.77	72	-	0	0.2	12.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-34	09/09/04	12:44 PM	28.93	69	-	0.022	0.1	11.9	0.3	--	--	--	--
GMSG-34	09/16/04	10:42 AM	28.7	63	-	-0.111	0.3	12.7	0	--	--	--	--
GMSG-34	09/29/04	12:12 PM	28.92	64	-	-1.7	0	0	20.1	--	--	--	--
GMSG-34	10/15/04	1:05 PM	28.14	44	T	-2.1	0	0.1	19.7	--	--	--	--
GMSG-34	03/10/05	11:11 AM	28.26	21	T	0	0	0.9	16.3	--	--	--	--
GMSG-34	03/14/05	1:10 PM	28.78	31	-	0	0	1	16.4	--	--	--	--
GMSG-34	03/21/05	1:27 PM	29.02	32	-	0	0	1	16.4	--	--	--	--
GMSG-34	03/31/05	11:30 AM	28.33	40	T	0	0	1.2	15.2	--	--	--	--
GMSG-34	04/04/05	3:35 PM	28.72	55	-	0	0	0.9	15.6	--	--	--	--
GMSG-34	04/05/05	12:42 PM	28.56	71	-	0	0	0.9	15.2	--	--	--	--
GMSG-34	05/09/05	9:36 AM	28.57	65	T	0	0	2	13.3	--	--	--	--
GMSG-34	07/01/05	9:50 AM	28.64	56	-	0	0	4.9	9.4	--	--	--	--
GMSG-34	08/02/05	2:45 PM	28.78	91	-	0	0	6	7.5	--	--	--	--
GMSG-34	09/09/05	11:57 AM	28.9	75.02	-	0	0	7.3	5.8	--	--	--	--
GMSG-34	10/17/05	4:25 PM	28.41	62	-	0	0	8.6	3.7	--	--	--	--
GMSG-34	11/04/05	2:40 PM	28.52	46	-	-0.03	0	3.7	13.1	--	--	--	--
GMSG-34	12/05/05	3:00 PM	28.71	10	-	0.1	0	8.1	6.2	--	--	--	--
GMSG-34	01/10/06	10:58 AM	28.93	20	-	0	0	8.5	4.6	--	--	--	--
GMSG-34	02/13/06	11:28 AM	28.43	19	-	0	0	9.8	2.4	--	--	--	--
GMSG-34	08/16/06	10:49 AM	28.99	78	-	0	0	0.5	17.8	--	--	--	--
GMSG-34	09/18/06	10:43 AM	28.39	62	-	0	0	2.3	16.4	--	--	--	--
GMSG-34	10/05/06	11:26 AM	29.19	53	-	0	0	2.3	16.4	--	--	--	--
GMSG-34	11/06/06	2:07 PM	28.78	52	-	0	0	4.1	13.9	--	--	--	--
GMSG-34	12/18/06	2:32 PM	29.08	32	-	0	0	2.3	15.5	--	--	--	--
GMSG-34	01/18/07	11:33 AM	28.7	20	-	0	0	4.2	10	--	--	--	--
GMSG-34	02/06/07	3:12 PM	28.81	8	-	0	0	4.5	11.4	--	--	--	--
GMSG-34	03/09/07	11:15 AM	28.61	36	-	0	0	8.5	2.6	--	--	--	--
GMSG-34	04/16/07	11:44 AM	28.82	58	-	0	0	5.5	8.7	--	--	--	--
GMSG-34	05/25/07	11:40 AM	29.01	65	-	0	0	5.6	9.9	--	--	--	--
GMSG-34	06/15/07	10:09 AM	28.83	86	-	0	0	6.8	6.3	--	--	--	--
GMSG-34	07/11/07	11:15 AM	29.88	69	-	0	0	7.3	6.6	--	--	--	--
GMSG-34	08/29/07	10:56 AM	30.14	71	-	0	0	7.2	6.7	--	--	--	--
GMSG-34	09/19/07	11:42 AM	30.06	70	-	0	0	7.7	5.9	--	--	--	--
GMSG-34	10/15/07	3:24 PM	30.12	49	-	0	0	9.2	3.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-34	10/16/07	8:37 AM	29.92	51	0.01	0	0	9.2	2.8	--	--	--	--
GMSG-34	10/17/07	2:31 PM	29.86	60	-	0	0	9.4	2.3	--	--	--	--
GMSG-34	10/18/07	12:07 PM	29.22	65	-	0	0	10	0.7	--	--	--	--
GMSG-34	10/22/07	8:45 AM	30.04	47	-	0	0	8.7	5.1	--	--	--	--
GMSG-34	11/20/07	2:44 PM	30.02	38	-	0	0	9.1	3.2	--	--	--	--
GMSG-34	12/26/07	11:49 AM	29.94	29	-	0	0	9.1	3.7	--	--	--	--
GMSG-35	05/08/01	1:07 PM	28.66	68	-	0	0	0	18.7	0	0	-0.84	--
GMSG-35	05/20/01	9:33 AM	28.64	73	-	0	0	0	18.9	0	0	0	--
GMSG-35	08/01/01	9:22 AM	28.92	74	T	0	0	0.1	19.7	0	0	0	--
GMSG-35	08/09/01	2:26 PM	28.55	84	-	0	0	0.1	20	0	0	0	--
GMSG-35	09/11/01	2:52 PM	28.96	64	T	0	0	0.2	20	0	0	0	--
GMSG-35	09/24/01	4:10 PM	29.08	48	-	--	0	0	20.5	--	0	--	--
GMSG-35	10/21/01	10:06 AM	28.82	46	-	--	0	0	19.1	0.6	0.2	0.3	--
GMSG-35	11/13/01	9:18 AM	28.81	41	0.01	--	0	0	20.5	-0.43	-1.7	-0.44	--
GMSG-35	02/13/02	1:35 PM	28.78	33	-	--	0	0	20.5	-0.16	-1.22	-0.19	--
GMSG-35	06/26/02	1:05 PM	28.57	81	-	--	0	0.2	20.5	--	--	--	--
GMSG-35	09/28/02	9:36 AM	28.97	54	-	--	0	0	20.3	--	--	--	--
GMSG-35	11/20/02	1:59 PM	28.68	32	0.01	--	0	0.1	19.5	--	--	--	--
GMSG-35	01/28/03	1:45 PM	28.75	23	T	--	0	0	19.7	--	--	--	--
GMSG-35	04/21/03	11:02 AM	28.48	40	T	--	0	0	19.9	--	--	--	--
GMSG-35	07/21/03	2:08 PM	28.61	70	-	--	0	0	19.8	--	--	--	--
GMSG-35	11/03/03	12:05 PM	29.05	32	-	--	0	0	19.2	--	--	--	--
GMSG-35	01/20/04	2:57 PM	29.01	13	-	--	0	0	18.7	--	--	--	--
GMSG-35	04/19/04	9:46 AM	28.66	43	-	--	--	0.1	17.8	--	--	--	--
GMSG-35	04/19/04	11:09 AM	28.73	44	-	--	0	0	17.7	--	--	--	--
GMSG-35	07/14/04	10:10 AM	28.67	72	-	--	0	0.7	18.9	--	--	--	--
GMSG-35	10/28/04	8:41 AM	28.98	46	-	--	0	0.1	19.7	--	--	--	--
GMSG-35	02/01/05	12:44 PM	29.11	33	-	--	--	--	--	--	--	--	--
GMSG-35	04/02/05	3:10 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-35	07/01/05	3:40 PM	28.73	66	-	--	--	--	--	--	--	--	--
GMSG-35	10/11/05	1:00 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-35	12/05/05	2:44 PM	28.71	10	-	0	0	5.4	6.9	--	--	--	--
GMSG-35	02/28/06	10:11 AM	28.79	12	-	--	--	--	--	--	--	--	--
GMSG-35	04/03/06	3:28 PM	28.67	42	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-35	07/07/06	3:04 PM	28.97	84	-	--	--	--	--	--	--	--	--
GMSG-35	10/03/06	3:23 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-35	02/02/07	2:52 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-35	04/02/07	10:21 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-35	07/18/07	11:43 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-35	10/23/07	9:08 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-36	05/08/01	1:11 PM	28.66	68	-	-0.01	0	0	18.9	-0.34	-0.6	-0.72	--
GMSG-36	08/09/01	2:20 PM	28.55	84	-	0	0	0.1	20.3	0	0	0	--
GMSG-36	09/11/01	2:48 PM	28.96	64	T	0	0	0.7	19.7	0	0	0	--
GMSG-36	09/25/01	1:57 PM	28.9	57	-	--	0	0.9	19.4	--	0	--	--
GMSG-36	10/22/01	9:35 AM	28.81	49	-	--	0	0.4	20	-0.7	-0.8	0.37	--
GMSG-36	11/13/01	3:40 PM	28.75	48	-	--	0	0.6	19.9	-0.62	-2	-0.71	--
GMSG-36	02/13/02	1:38 PM	28.78	33	-	--	0	0.4	20	-0.26	-1.38	-0.26	--
GMSG-36	06/26/02	1:11 PM	28.57	81	-	--	0	0.6	20.1	--	--	--	--
GMSG-36	09/30/02	2:20 PM	28.55	73	-	--	0	0	21.2	--	--	--	--
GMSG-36	11/20/02	2:08 PM	28.68	32	0.01	--	0	0.9	18.6	--	--	--	--
GMSG-36	01/28/03	1:57 PM	28.75	23	T	--	0	0	19.8	--	--	--	--
GMSG-36	04/22/03	10:24 AM	28.86	41	-	--	0	0.4	19.7	--	--	--	--
GMSG-36	07/22/03	10:25 AM	28.81	63	-	--	0	0.4	19.1	--	--	--	--
GMSG-36	11/03/03	11:55 AM	29.05	32	-	--	0	0.3	18.9	--	--	--	--
GMSG-36	02/02/04	1:23 PM	28.86	27	-	--	0	0.8	17.8	--	--	--	--
GMSG-36	04/19/04	10:09 AM	28.66	43	-	--	0	0.5	17.5	--	--	--	--
GMSG-36	04/19/04	11:00 AM	28.73	44	-	--	0	0.4	17.6	--	--	--	--
GMSG-36	07/13/04	1:20 PM	28.5	79	-	--	0	0.3	19.1	--	--	--	--
GMSG-36	10/28/04	8:36 AM	28.98	46	-	--	0	0.8	18.8	--	--	--	--
GMSG-36	02/01/05	12:34 PM	29.11	33	-	--	--	--	--	--	--	--	--
GMSG-36	04/02/05	3:18 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-36	07/07/05	8:40 AM	28.96	73	-	--	--	--	--	--	--	--	--
GMSG-36	10/11/05	1:10 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-36	02/28/06	10:27 AM	28.79	12	-	--	--	--	--	--	--	--	--
GMSG-36	04/03/06	3:35 PM	28.7	42	-	--	--	--	--	--	--	--	--
GMSG-36	07/07/06	3:27 PM	28.97	84	-	--	--	--	--	--	--	--	--
GMSG-36	10/03/06	3:21 PM	28.84	70	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-36	02/06/07	3:40 PM	28.81	9	-	--	--	--	--	--	--	--	--
GMSG-36	04/02/07	10:26 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-36	07/18/07	11:49 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-36	10/23/07	9:16 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-37	07/10/01	1:30 PM	28.68	76	-	0.02	3.8	13.2	0.5	--	--	--	--
GMSG-37	09/20/01	10:40 AM	28.64	65	-	0	0	6.4	8.5	0	0	0	--
GMSG-37	09/22/01	9:40 AM	28.79	62	-	0	0	9.3	18.1	18.9	16.2	18.9	--
GMSG-37	09/24/01	4:33 PM	29.08	47	-	--	0	7.3	5.8	--	0	--	--
GMSG-37	10/16/01	8:50 PM	28.95	32	-	0	0	6.3	7	0	0	0.3	--
GMSG-37	10/21/01	10:14 AM	28.82	46	-	--	0	0.1	20.1	0.5	0.5	0.3	--
GMSG-37	11/13/01	9:34 AM	28.8	42	0.01	--	0	11	0	310	--	-1.34	--
GMSG-37	02/14/02	1:45 PM	28.46	41	-	--	1.3	10	0.8	--	--	--	--
GMSG-37	03/14/02	1:54 PM	28.78	28	T	0.1	1.1	12.1	0	--	--	--	--
GMSG-37	03/15/02	12:22 PM	28.62	30	-	-0.14	0	11.5	0.7	0	--	0	--
GMSG-37	03/25/02	3:37 PM	29.17	30	-	0.04	0.6	12.4	0	--	--	--	--
GMSG-37	04/16/02	12:07 PM	28.52	85	-	0	1	12.5	0	--	--	--	--
GMSG-37	05/16/02	1:11 PM	28.74	49	-	0.01	0.7	12.6	0	--	--	--	--
GMSG-37	06/10/02	9:25 AM	28.7	73	-	0	2.7	12.5	0	--	--	--	--
GMSG-37	06/20/02	1:51 PM	28.97	81	-	0	0.2	13.5	0	--	--	--	--
GMSG-37	06/24/02	1:49 PM	28.79	84	-	0	3.1	12.6	0	--	--	--	--
GMSG-37	07/14/02	10:47 AM	28.78	84	-	--	1	12.8	0.5	--	--	--	--
GMSG-37	12/17/02	11:30 AM	28.88	31	-	--	0	4	13.2	--	--	--	--
GMSG-37	01/30/03	10:42 AM	28.75	26	-	--	0	4.9	10.4	--	--	--	--
GMSG-37	02/06/03	12:32 PM	28.92	16	T	--	0	1.9	15.8	--	--	--	--
GMSG-37	03/04/03	1:17 PM	28.63	14	T	--	0	3.3	13.1	--	--	--	--
GMSG-37	04/03/03	10:51 AM	28.86	25	T	--	0	5.2	9.2	--	--	--	--
GMSG-37	05/01/03	12:20 PM	28.68	64	-	--	0	5.3	9.3	--	--	--	--
GMSG-37	07/21/03	12:38 PM	28.59	66	0.01	--	0	8.7	5	--	--	--	--
GMSG-37	10/28/03	1:17 PM	28.09	45	T	0	0	1.8	11.3	--	--	--	--
GMSG-37	10/30/03	1:13 PM	28.61	43	T	0.1	1.2	11.3	0	--	--	--	--
GMSG-37	11/04/03	10:31 AM	28.65	33	-	0.1	2.2	11.2	0	--	--	--	--
GMSG-37	11/07/03	10:22 AM	29	21	-	0	0	9.5	4.6	--	--	--	--
GMSG-37	11/10/03	10:10 AM	28.95	32	-	0	1.4	11.5	0	--	--	--	--
GMSG-37	11/12/03	9:20 AM	28.37	37	-	0	2.5	11.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-37	11/17/03	2:35 PM	28.7	45	-	0	2.5	11.8	0	--	--	--	--
GMSG-37	11/24/03	1:54 PM	28.33	17	T	0	0	6.9	8.4	--	--	--	--
GMSG-37	12/03/03	10:41 AM	29.24	31	-	0	0.4	11.1	0.7	--	--	--	--
GMSG-37	12/08/03	10:57 AM	28.66	37	-	0	1.3	11.5	0	--	--	--	--
GMSG-37	12/15/03	1:32 PM	28.5	25	-	0	2	11.4	0	--	--	--	--
GMSG-37	12/22/03	9:29 AM	28.57	31	-	0	0	10.2	2.5	--	--	--	--
GMSG-37	12/30/03	12:17 PM	28.72	28	-	0	0	10.3	2.8	--	--	--	--
GMSG-37	01/08/04	12:01 PM	29.05	17	-	0	0	9.4	5.3	--	--	--	--
GMSG-37	01/12/04	11:58 AM	28.7	28	T	0	1.4	11.5	0	--	--	--	--
GMSG-37	01/22/04	11:45 AM	28.79	-4	-	0	0	10	4.7	--	--	--	--
GMSG-37	02/27/04	9:47 AM	29.17	22	-	0	0	10	3.5	--	--	--	--
GMSG-37	03/19/04	9:48 AM	28.95	31	-	0.1	1.2	11.8	0	--	--	--	--
GMSG-37	03/29/04	3:40 PM	--	--	--	0	0	0	19.4	--	--	--	--
GMSG-37	04/09/04	9:36 AM	28.8	39	-	0	0	11.1	1.9	--	--	--	--
GMSG-37	04/19/04	2:54 PM	28.85	-	-	0	1.2	11.5	0	--	--	--	--
GMSG-37	04/22/04	10:27 AM	29	41	-	0	0.2	11.2	1.2	--	--	--	--
GMSG-37	04/23/04	8:34 AM	28.94	38	-	0	0.2	11	1.9	--	--	--	--
GMSG-37	04/28/04	2:54 PM	28.28	73	-	0	--	--	--	--	--	--	--
GMSG-37	05/05/04	10:07 AM	28.75	48	-	0	0.1	12.2	0.7	--	--	--	--
GMSG-37	05/24/04	9:20 AM	28.69	43	-	0	0.8	11.7	0.8	--	--	--	--
GMSG-37	06/02/04	2:11 PM	28.8	66	-	0	0	11.6	0.8	--	--	--	--
GMSG-37	06/08/04	4:29 PM	28.69	84	-	0.1	0	10.7	2	--	--	--	--
GMSG-37	06/16/04	9:45 AM	28.8	77	-	0.044	2.1	11.2	0.2	--	--	--	--
GMSG-37	06/17/04	2:33 PM	28.8	75	-	0.027	0.8	10.3	1.5	--	--	--	--
GMSG-37	06/18/04	10:13 AM	28.83	74	-	0.05	1.8	11.3	0	--	--	--	--
GMSG-37	06/19/04	9:45 AM	29.05	62	-	0.079	0.1	11.9	0.8	--	--	--	--
GMSG-37	06/20/04	9:30 AM	28.76	68	-	0.009	2.2	11.6	0	--	--	--	--
GMSG-37	06/21/04	5:46 PM	28.41	59	0.03	0.021	2	11.1	0.6	--	--	--	--
GMSG-37	06/22/04	2:13 PM	28.61	66	-	-0.027	0	11.7	0.2	--	--	--	--
GMSG-37	06/23/04	8:16 AM	28.68	56	-	-0.008	0	12.5	0	--	--	--	--
GMSG-37	06/24/04	2:20 PM	28.76	54	0.01	-0.031	0	0.7	18.7	--	--	--	--
GMSG-37	06/25/04	4:55 PM	28.76	61	-	0.037	0.4	12.1	0	--	--	--	--
GMSG-37	06/26/04	4:25 PM	28.8	66	-	-0.02	0.9	11.3	0	--	--	--	--
GMSG-37	06/28/04	3:34 PM	28.78	74	-	0.002	2.2	11	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-37	06/29/04	5:44 PM	28.83	67	0.01	0.04	0	2.1	18.4	--	--	--	--
GMSG-37	06/30/04	7:53 AM	28.8	73	-	0.027	0.5	11.7	0.4	--	--	--	--
GMSG-37	07/01/04	8:29 AM	28.91	62	-	-0.03	0.4	11.8	0.3	--	--	--	--
GMSG-37	07/02/04	1:50 PM	28.88	73	-	0	0.6	10.8	1	--	--	--	--
GMSG-37	07/06/04	9:18 AM	28.68	51	0.1	0.071	2.6	11.9	0	--	--	--	--
GMSG-37	07/07/04	11:48 AM	28.57	55	-	0.015	1	12.1	0	--	--	--	--
GMSG-37	07/08/04	12:19 PM	28.72	61	-	-0.014	0	0	19.6	--	--	--	--
GMSG-37	07/09/04	8:43 AM	28.89	64	-	-0.025	0	10.1	3.1	--	--	--	--
GMSG-37	07/11/04	9:14 AM	28.82	67	-	0.023	2.6	12.7	0	--	--	--	--
GMSG-37	07/12/04	5:02 PM	28.68	84	-	0.017	2.3	12.3	0	--	--	--	--
GMSG-37	07/15/04	4:00 PM	28.63	80	-	0	8	9.1	0	--	--	--	--
GMSG-37	07/16/04	12:49 PM	28.68	67	0.06	0	0.8	11.9	0.4	--	--	--	--
GMSG-37	07/21/04	4:37 PM	28.46	82	-	0.009	2.8	11.1	0.2	--	--	--	--
GMSG-37	07/26/04	10:59 AM	28.96	79	-	0.005	1.1	11.5	0	--	--	--	--
GMSG-37	07/30/04	6:28 PM	28.59	72	-	0.011	1.7	11.6	0	--	--	--	--
GMSG-37	08/04/04	3:01 PM	28.84	69	-	-0.042	0.4	11.8	0.2	--	--	--	--
GMSG-37	08/06/04	1:58 PM	28.91	77	-	0.009	0.2	11.2	0	--	--	--	--
GMSG-37	08/10/04	3:47 PM	28.6	56	-	0.012	1.2	12	0	--	--	--	--
GMSG-37	08/12/04	8:30 AM	28.81	59	-	-0.024	0.3	10.2	3.4	--	--	--	--
GMSG-37	08/20/04	12:17 PM	28.76	61	-	0	0.7	12	0.6	--	--	--	--
GMSG-37	08/27/04	11:16 AM	28.65	77	-	0.004	1.1	11.7	0.6	--	--	--	--
GMSG-37	08/30/04	1:38 PM	28.77	72	-	0	1.6	11.8	0.3	--	--	--	--
GMSG-37	09/09/04	12:50 PM	28.93	69	-	0.034	1.2	10.7	1.6	--	--	--	--
GMSG-37	09/16/04	11:01 AM	28.7	63	-	0	1.8	12	0.6	--	--	--	--
GMSG-37	03/10/05	11:18 AM	28.26	21	T	0	0	3.6	12.8	--	--	--	--
GMSG-37	03/11/05	12:01 PM	28.15	25	T	0	0	2.7	13.8	--	--	--	--
GMSG-37	03/14/05	1:00 PM	28.78	31	-	0	0	1.1	16.4	--	--	--	--
GMSG-37	03/21/05	1:21 PM	29.02	32	-	0	0	1	16.1	--	--	--	--
GMSG-37	03/31/05	11:34 AM	28.33	40	T	0	0	2.2	14.1	--	--	--	--
GMSG-37	04/04/05	3:31 PM	28.72	55	-	0	0	2	13.9	--	--	--	--
GMSG-37	04/05/05	12:41 PM	28.56	71	-	0	0	2.5	13.6	--	--	--	--
GMSG-37	04/07/05	4:18 PM	28.77	62	-	0	0	1.9	14.4	--	--	--	--
GMSG-37	04/19/05	7:55 AM	28.66	65	-	0	0	3.6	11.8	--	--	--	--
GMSG-37	05/03/05	9:50 AM	28.82	43	-	0	0	2	14	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-37	05/09/05	9:34 AM	28.57	65	T	0	0	3.6	11.2	--	--	--	--
GMSG-37	05/17/05	8:35 AM	28.86	45	-	0	0	3	12.1	--	--	--	--
GMSG-37	05/23/05	8:58 AM	28.52	51	T	0	0	4.3	10.2	--	--	--	--
GMSG-37	06/02/05	7:47 AM	28.85	64	-	0	0	3.9	11	--	--	--	--
GMSG-37	06/07/05	7:44 AM	28.66	64	-	0	0	3.7	11.6	--	--	--	--
GMSG-37	07/01/05	9:45 AM	28.64	56	-	0	0	4.8	9.8	--	--	--	--
GMSG-37	08/02/05	2:40 PM	28.78	91	-	0	0	7	5.9	--	--	--	--
GMSG-37	09/09/05	11:53 AM	28.9	75.02	-	0	0	7.8	5	--	--	--	--
GMSG-37	10/18/05	12:05 PM	28.63	54	-	-0.1	0	8.2	4.6	--	--	--	--
GMSG-37	11/04/05	12:30 PM	28.46	46	-	-0.1	0.1	9.8	2	--	--	--	--
GMSG-37	12/05/05	3:05 PM	28.71	10	-	0.2	0.2	3.3	13.5	--	--	--	--
GMSG-37	01/10/06	10:52 AM	28.93	20	-	0	0.3	10.3	1.4	--	--	--	--
GMSG-37	02/13/06	11:18 AM	28.43	19	-	0	2.5	11.5	0.2	--	--	--	--
GMSG-37	02/14/06	11:00 AM	28.38	28	-	--	1.2	11	0.2	--	--	--	--
GMSG-37	08/16/06	10:44 AM	28.99	78	-	0	0	0.8	17.4	--	--	--	--
GMSG-37	09/18/06	10:38 AM	28.39	62	-	0	0	2.8	15.7	--	--	--	--
GMSG-37	10/05/06	11:23 AM	29.19	53	-	0	0	2.9	15.2	--	--	--	--
GMSG-37	11/06/06	2:03 PM	28.78	52	-	0	0	4.1	11.4	--	--	--	--
GMSG-37	12/18/06	2:29 PM	29.07	32	-	0	0	2.3	15.8	--	--	--	--
GMSG-37	01/18/07	11:20 AM	28.73	18	-	0	0	7.4	3.6	--	--	--	--
GMSG-37	02/06/07	3:09 PM	28.81	8	-	0	0	7.4	4.4	--	--	--	--
GMSG-37	03/09/07	11:22 AM	28.61	36	-	0	0	5	9.5	--	--	--	--
GMSG-37	04/16/07	11:41 AM	28.82	58	-	0	0	5.8	8.1	--	--	--	--
GMSG-37	05/29/07	11:08 AM	28.88	79	-	0	0.1	6.6	6.6	--	--	--	--
GMSG-37	06/15/07	10:06 AM	28.83	86	-	0	0	7.4	5.3	--	--	--	--
GMSG-37	07/11/07	11:10 AM	29.88	69	-	0	0	7.8	5.3	--	--	--	--
GMSG-37	08/29/07	10:49 AM	30.14	71	-	0	0	7.9	5.5	--	--	--	--
GMSG-37	09/19/07	11:34 AM	30.06	70	-	0	0.2	9	3.5	--	--	--	--
GMSG-37	10/15/07	3:13 PM	30.12	49	-	0	1.3	10.9	0	--	--	--	--
GMSG-37	10/16/07	8:30 AM	29.92	51	0.01	0	1.9	10.9	0	--	--	--	--
GMSG-37	10/17/07	2:25 PM	29.86	58	-	0	0.3	9.9	1.4	--	--	--	--
GMSG-37	10/18/07	11:59 AM	29.22	65	-	0	2.7	10.7	0	--	--	--	--
GMSG-37	10/22/07	8:40 AM	30.04	47	-	0	0	9.4	3.7	--	--	--	--
GMSG-37	10/26/07	9:49 AM	30.19	43	-	0	0.2	10.6	1.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-37	11/20/07	2:39 PM	30.02	38	-	0	0.1	10.1	1.7	--	--	--	--
GMSG-37	12/26/07	11:58 AM	29.94	29	-	0	0	9.1	3.7	--	--	--	--
GMSG-38	08/01/01	8:42 AM	28.92	74	T	-0.03	0	0	20	0	0	0	--
GMSG-38	08/09/01	2:47 PM	28.57	83	-	0	0	0	20.6	0	0	0	--
GMSG-38	09/11/01	2:28 PM	28.98	61	0.01	0	0	0.5	19.8	0	0	0	--
GMSG-38	09/24/01	3:53 PM	29.08	48	-	--	0	0.5	18.9	--	0	--	--
GMSG-38	10/21/01	9:47 AM	28.82	46	-	--	0	0	19.1	0.6	0.5	0.6	--
GMSG-38	11/13/01	3:30 PM	28.75	48	-	--	0	2.5	16.4	0.63	0.5	-0.75	--
GMSG-38	02/14/02	3:12 PM	28.45	43	-	--	0	2.81	15.5	-2	-4.07	-2	--
GMSG-38	06/26/02	9:35 AM	28.61	77	-	--	0	1.4	18.1	--	--	--	--
GMSG-38	09/30/02	2:43 PM	28.53	74	-	--	0	4.6	13	--	--	--	--
GMSG-38	11/20/02	1:06 PM	28.7	35	T	--	0	0.9	18.8	--	--	--	--
GMSG-38	01/29/03	2:02 PM	29.06	16	-	--	0	1.5	17.2	--	--	--	--
GMSG-38	04/22/03	11:39 AM	28.86	48	-	--	0	0	19.9	--	--	--	--
GMSG-38	07/21/03	12:58 PM	28.59	66	0.01	--	0	0.5	18.5	--	--	--	--
GMSG-38	11/03/03	10:45 AM	29.05	35	-	--	0	0	19.4	--	--	--	--
GMSG-38	01/21/04	11:35 AM	28.36	22	T	--	0	4.1	13.4	--	--	--	--
GMSG-38	04/17/04	12:56 PM	28.91	64	-	--	0	1.6	15.4	--	--	--	--
GMSG-38	07/13/04	11:00 AM	28.6	75	-	--	0	3.9	13.5	--	--	--	--
GMSG-38	10/29/04	11:40 AM	28.4	56	-	--	0	3.9	12.9	--	--	--	--
GMSG-38	02/07/05	12:31 PM	28.87	28	T	--	--	--	--	--	--	--	--
GMSG-38	04/02/05	1:45 PM	28.79	51	-	--	--	--	--	--	--	--	--
GMSG-38	07/07/05	8:01 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-38	10/11/05	12:15 PM	29.01	60	-	--	--	--	--	--	--	--	--
GMSG-38	02/22/06	1:17 PM	28.49	29	-	--	--	--	--	--	--	--	--
GMSG-38	04/05/06	3:41 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-38	07/07/06	2:33 PM	28.97	84	-	--	--	--	--	--	--	--	--
GMSG-38	10/09/06	12:29 PM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-38	02/07/07	2:05 PM	28.81	15	-	--	--	--	--	--	--	--	--
GMSG-38	04/02/07	11:40 AM	28.65	42	-	--	--	--	--	--	--	--	--
GMSG-38	07/20/07	9:53 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-38	10/19/07	12:32 PM	28.99	53	0.01	--	--	--	--	--	--	--	--
GMSG-39	08/01/01	11:31 AM	28.89	74	T	0.05	0	0.1	19.9	0	0	0	--
GMSG-39	08/09/01	1:25 PM	28.55	81	-	0	0	0.2	20.2	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-39	09/11/01	1:48 PM	28.98	61	0.01	0	0	0.1	20	2	0	0	--
GMSG-39	09/25/01	11:51 AM	28.96	56	-	--	0	0	20.6	--	0	--	--
GMSG-39	10/21/01	10:24 AM	28.82	46	-	--	0	0	20.4	0.2	0.1	-0.1	--
GMSG-39	11/13/01	9:42 AM	28.8	42	0.01	--	0	0	20.5	-0.8	-0.9	-1.55	--
GMSG-39	02/14/02	4:10 PM	28.45	43	-	--	0	0	20.5	2.34	0.06	-0.91	--
GMSG-39	06/26/02	2:22 PM	28.54	82	-	--	0	0.2	20.8	--	--	--	--
GMSG-39	09/30/02	10:20 AM	28.6	68	-	--	0	0	20.8	--	--	--	--
GMSG-39	11/21/02	10:35 AM	28.67	34	-	--	0	0	20.3	--	--	--	--
GMSG-39	01/29/03	10:12 AM	29.12	7	T	--	0	0	20.7	--	--	--	--
GMSG-39	04/21/03	12:03 PM	28.51	40	-	--	0.1	0	20	--	--	--	--
GMSG-39	07/22/03	8:54 AM	28.81	62	-	--	0.1	0	19.7	--	--	--	--
GMSG-39	02/02/04	11:37 AM	28.92	27	T	--	0	0	19.2	--	--	--	--
GMSG-39	04/17/04	5:02 PM	28.91	64	-	--	0	0	18.2	--	--	--	--
GMSG-39	07/15/04	9:15 AM	28.68	75	-	--	0	0	19.4	--	--	--	--
GMSG-39	10/31/04	11:52 AM	--	--	--	--	0	0	20.2	--	--	--	--
GMSG-39	02/08/05	12:49 PM	28.98	21	-	--	--	--	--	--	--	--	--
GMSG-39	04/05/05	12:09 PM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-39	07/06/05	7:43 AM	28.95	62	-	--	--	--	--	--	--	--	--
GMSG-39	10/13/05	11:09 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-39	02/24/06	1:49 PM	28.88	20	T	--	--	--	--	--	--	--	--
GMSG-39	04/11/06	10:11 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-39	07/11/06	2:40 PM	28.78	75	-	--	--	--	--	--	--	--	--
GMSG-39	10/10/06	1:10 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-39	02/05/07	3:29 PM	29.07	5	-	--	--	--	--	--	--	--	--
GMSG-39	04/03/07	2:53 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-39	07/19/07	10:23 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-39	10/23/07	2:22 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-40	08/01/01	11:38 AM	28.89	74	T	0	0	0.1	20	0	0	0	--
GMSG-40	08/09/01	3:15 PM	28.57	83	-	0	0	0	20.6	0	0	0	--
GMSG-40	09/11/01	1:45 PM	28.98	61	0.01	0	0	0	19.9	0	0	0	--
GMSG-40	09/25/01	1:41 PM	28.9	57	-	--	0	0	20.6	--	0	--	--
GMSG-40	10/21/01	10:29 AM	28.82	46	-	--	0	0	20.5	0.6	0.4	0.3	--
GMSG-40	11/13/01	9:52 AM	28.8	42	0.01	--	0	0	20.4	0	-0.1	-0.47	--
GMSG-40	02/14/02	4:02 PM	28.45	43	-	--	0	0	20.6	0.84	0.43	-0.71	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-40	06/26/02	2:28 PM	28.54	82	-	--	0	0.3	20.2	--	--	--	--
GMSG-40	09/30/02	10:27 AM	28.6	68	-	--	0	0.5	19.2	--	--	--	--
GMSG-40	11/21/02	10:51 AM	28.67	34	-	--	0	0	20.2	--	--	--	--
GMSG-40	01/29/03	10:29 AM	29.12	7	T	--	0	0	20.9	--	--	--	--
GMSG-40	04/21/03	11:15 AM	28.48	40	T	--	0	0.5	20.1	--	--	--	--
GMSG-40	07/22/03	8:44 AM	28.81	62	-	--	0.1	0	19.8	--	--	--	--
GMSG-40	04/17/04	5:10 PM	28.91	64	-	--	0	0.2	17.3	--	--	--	--
GMSG-40	07/15/04	8:28 AM	28.7	70	-	--	0	1	17.5	--	--	--	--
GMSG-40	10/31/04	12:25 PM	--	--	--	--	0	0.1	19.8	--	--	--	--
GMSG-40	02/08/05	3:08 PM	28.96	21	-	--	--	--	--	--	--	--	--
GMSG-40	04/05/05	12:02 PM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-40	07/06/05	7:50 AM	28.95	62	-	--	--	--	--	--	--	--	--
GMSG-40	10/13/05	11:01 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-40	02/24/06	12:11 PM	28.97	20	-	--	--	--	--	--	--	--	--
GMSG-40	04/11/06	9:44 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-40	07/11/06	3:26 PM	28.78	75	-	--	--	--	--	--	--	--	--
GMSG-40	10/10/06	12:54 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-40	02/05/07	2:28 PM	29.07	4	-	--	--	--	--	--	--	--	--
GMSG-40	04/03/07	2:28 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-40	07/19/07	9:59 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-40	10/23/07	2:52 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-41	08/01/01	11:45 AM	28.89	74	T	-0.07	0	0	20.2	0	0	0	--
GMSG-41	08/09/01	3:05 PM	28.57	83	-	0	0	0	20.6	0	0	0	--
GMSG-41	09/11/01	1:15 PM	29.01	64	T	0	0	0	19.8	0	0	0	--
GMSG-41	09/25/01	11:57 AM	28.96	56	-	--	0	0	20.4	--	0	--	--
GMSG-41	10/21/01	10:34 AM	28.81	49	-	--	0	0	20.6	0.1	0	0.3	--
GMSG-41	11/13/01	9:58 AM	28.8	42	0.01	--	0	0	20.4	-0.32	-0.5	-0.32	--
GMSG-41	02/14/02	1:54 PM	28.46	41	-	--	0	0	20.6	-0.37	-1.87	-0.9	--
GMSG-41	06/26/02	2:35 PM	28.55	77	-	--	0	0	21.1	--	--	--	--
GMSG-41	09/30/02	10:46 AM	28.59	70	-	--	0	0	20.5	--	--	--	--
GMSG-41	11/21/02	11:04 AM	28.67	34	-	--	0	0	20.3	--	--	--	--
GMSG-41	01/29/03	10:44 AM	29.12	10	T	--	0	0	20.6	--	--	--	--
GMSG-41	04/21/03	12:26 PM	28.51	40	-	--	0	0	20	--	--	--	--
GMSG-41	07/22/03	9:08 AM	28.81	62	-	--	0	0	19.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-41	02/02/04	10:53 AM	28.94	26	-	--	0	0	19.1	--	--	--	--
GMSG-41	04/17/04	5:16 PM	28.91	64	-	--	0	0	18.1	--	--	--	--
GMSG-41	07/15/04	7:45 AM	28.7	70	-	--	0	0.1	19.3	--	--	--	--
GMSG-41	02/08/05	1:25 PM	28.98	21	-	--	--	--	--	--	--	--	--
GMSG-41	04/05/05	11:55 AM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-41	07/06/05	8:17 AM	28.95	62	-	--	--	--	--	--	--	--	--
GMSG-41	10/13/05	10:53 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-41	03/06/06	10:25 AM	28.97	30	T	--	--	--	--	--	--	--	--
GMSG-41	04/11/06	9:52 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-41	07/11/06	3:15 PM	28.78	75	-	--	--	--	--	--	--	--	--
GMSG-41	10/10/06	12:44 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-41	02/05/07	2:06 PM	29.07	4	-	--	--	--	--	--	--	--	--
GMSG-41	04/03/07	2:34 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-41	07/19/07	10:05 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-41	10/23/07	3:00 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-42	08/01/01	8:52 AM	28.92	74	T	-0.02	0	0.5	19.5	0	0	0	--
GMSG-42	08/09/01	2:39 PM	28.57	83	-	0	0	1.7	18.7	0	0	0	--
GMSG-42	09/11/01	2:33 PM	28.96	64	T	0	0	1.7	18.7	0	0	0	--
GMSG-42	09/24/01	4:00 PM	29.08	48	-	--	0	2.2	18.1	--	0	--	--
GMSG-42	10/21/01	9:52 AM	28.82	46	-	--	0	0.9	18.3	-0.7	-0.8	0.3	--
GMSG-42	11/13/01	9:05 AM	28.81	41	0.01	--	0	1	19.3	-0.43	-1.7	-0.43	--
GMSG-42	02/13/02	2:15 PM	28.78	33	-	--	0	1.2	19.3	-0.36	-1.48	-0.36	--
GMSG-42	06/26/02	12:59 PM	28.57	81	-	--	0	0	20.9	--	--	--	--
GMSG-42	09/30/02	2:30 PM	28.53	74	-	--	0	0	21	--	--	--	--
GMSG-42	11/20/02	1:41 PM	28.68	32	0.01	--	0	1.6	17.9	--	--	--	--
GMSG-42	01/28/03	1:25 PM	28.74	23	T	--	0	0.4	19.4	--	--	--	--
GMSG-42	04/21/03	10:47 AM	28.48	40	T	--	0	0	19.9	--	--	--	--
GMSG-42	07/21/03	2:47 PM	28.63	68	-	--	0	0.7	18.9	--	--	--	--
GMSG-42	11/03/03	11:00 AM	29.05	35	-	--	0	1.3	17.9	--	--	--	--
GMSG-42	01/20/04	1:45 PM	29.02	14	-	--	0	1.4	17.5	--	--	--	--
GMSG-42	04/17/04	2:44 PM	28.91	67	-	--	0	0.8	17.2	--	--	--	--
GMSG-42	07/13/04	11:38 AM	28.55	75	-	--	0	0.2	19.5	--	--	--	--
GMSG-42	10/29/04	12:03 PM	28.4	56	-	--	0	1.4	18.1	--	--	--	--
GMSG-42	02/07/05	12:47 PM	28.87	28	T	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-42	04/02/05	2:06 PM	28.79	51	-	--	--	--	--	--	--	--	--
GMSG-42	07/01/05	2:45 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-42	10/10/05	4:15 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-42	02/22/06	1:03 PM	28.49	29	-	--	--	--	--	--	--	--	--
GMSG-42	04/03/06	3:04 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-42	07/10/06	1:51 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-42	10/03/06	2:16 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-42	01/17/07	11:33 AM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-42	04/02/07	10:43 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-42	07/18/07	10:57 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-42	10/18/07	4:22 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-43	08/01/01	9:48 AM	28.83	73	T	0	0	0.1	19.8	0.58	0.5	0	--
GMSG-43	08/09/01	1:47 PM	28.55	84	-	0	0	0.1	20.1	2.53	2.13	0	--
GMSG-43	10/21/01	11:40 AM	28.81	51	-	--	0	0.1	20.2	3.5	3.3	0.3	--
GMSG-43	11/13/01	10:32 AM	28.79	44	-	--	0	0	20.3	2.62	1.6	-0.41	--
GMSG-43	02/13/02	10:13 AM	28.92	15	-	--	0	0	19.9	-0.17	-0.17	-0.21	--
GMSG-43	06/26/02	1:37 PM	28.54	82	-	--	0	0.1	20.7	--	--	--	--
GMSG-43	09/30/02	11:28 AM	28.59	70	-	--	0	0.1	20.6	--	--	--	--
GMSG-43	11/20/02	2:07 PM	28.68	32	0.01	--	0	0.1	19.5	--	--	--	--
GMSG-43	01/28/03	2:50 PM	28.76	23	T	--	0	0	19.6	--	--	--	--
GMSG-43	04/21/03	2:58 PM	28.59	37	T	--	0	0	19.9	--	--	--	--
GMSG-43	07/22/03	9:58 AM	28.81	63	-	--	0	0.3	19.2	--	--	--	--
GMSG-43	11/02/03	3:05 PM	28.91	43	-	--	0	0.1	19.4	--	--	--	--
GMSG-43	02/02/04	11:52 AM	28.92	27	T	--	0	0	18.9	--	--	--	--
GMSG-43	04/18/04	1:56 PM	28.42	52	-	--	0	0	17.7	--	--	--	--
GMSG-43	07/13/04	2:03 PM	28.51	69	0.1	--	0	0	19	--	--	--	--
GMSG-43	10/29/04	12:47 PM	28.37	57	T	--	0	0	19.9	--	--	--	--
GMSG-43	01/28/05	10:35 AM	29.25	21	-	--	--	--	--	--	--	--	--
GMSG-43	02/07/05	1:13 PM	28.87	28	T	--	--	--	--	--	--	--	--
GMSG-43	04/02/05	3:55 PM	28.77	51	-	--	--	--	--	--	--	--	--
GMSG-43	07/07/05	8:24 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-43	10/11/05	10:35 AM	29.04	54	-	--	--	--	--	--	--	--	--
GMSG-43	02/22/06	3:37 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-43	04/06/06	12:45 PM	28.54	56	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-43	07/10/06	3:55 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-43	10/09/06	9:28 AM	29.13	46	-	--	--	--	--	--	--	--	--
GMSG-43	02/01/07	12:14 PM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-43	04/04/07	2:21 PM	28.66	21	T	--	--	--	--	--	--	--	--
GMSG-43	07/18/07	1:01 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-43	11/01/07	2:30 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-44	08/01/01	9:43 AM	28.83	73	T	0	0	0	20.1	0	0	0	--
GMSG-44	08/09/01	1:38 PM	28.55	84	-	0	0	0	20.8	0	0	0	--
GMSG-44	09/11/01	1:55 PM	28.98	61	0.01	0	0	0.3	20.2	0	0	0	--
GMSG-44	09/25/01	8:24 AM	29.03	43	-	--	0	0	0	--	0	--	--
GMSG-44	10/21/01	11:56 AM	28.81	51	-	--	0	0	20.8	0.4	0.4	0.3	--
GMSG-44	11/13/01	10:27 AM	28.8	42	0.01	--	0	0	20.3	-0.1	-0.15	-0.33	--
GMSG-44	02/13/02	10:18 AM	28.92	15	-	--	0	0	19.8	-0.29	-0.31	-0.18	--
GMSG-44	06/26/02	1:31 PM	28.54	82	-	--	0	0.3	20.7	--	--	--	--
GMSG-44	09/30/02	11:32 AM	28.56	73	-	--	0	0.5	20	--	--	--	--
GMSG-44	11/21/02	10:03 AM	28.68	32	-	--	0	0	20.7	--	--	--	--
GMSG-44	01/28/03	3:04 PM	28.76	23	T	--	0	0	19.6	--	--	--	--
GMSG-44	04/21/03	3:03 PM	28.59	37	T	--	0	0	20.1	--	--	--	--
GMSG-44	07/22/03	9:50 AM	28.81	63	-	--	0	0.3	19.3	--	--	--	--
GMSG-44	11/02/03	3:15 PM	28.91	43	-	--	0	0.3	19.2	--	--	--	--
GMSG-44	01/20/04	4:05 PM	28.99	14	-	--	0	0.1	18.8	--	--	--	--
GMSG-44	04/18/04	1:44 PM	28.42	52	-	--	0	0.4	17.2	--	--	--	--
GMSG-44	07/13/04	2:08 PM	28.51	69	0.1	--	0	0.3	18.8	--	--	--	--
GMSG-44	10/29/04	12:53 PM	28.37	57	T	--	0	0.3	19.5	--	--	--	--
GMSG-44	10/31/04	12:16 PM	--	--	--	--	0	0	20.1	--	--	--	--
GMSG-44	01/28/05	10:42 AM	29.25	21	-	--	--	--	--	--	--	--	--
GMSG-44	04/02/05	3:52 PM	28.77	51	-	--	--	--	--	--	--	--	--
GMSG-44	07/07/05	8:20 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-44	10/11/05	10:30 AM	29.04	54	-	--	--	--	--	--	--	--	--
GMSG-44	02/22/06	3:42 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-44	04/06/06	12:48 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-44	07/10/06	3:44 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-44	10/09/06	2:32 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-44	02/01/07	12:20 PM	28.38	15	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-44	04/04/07	2:34 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-44	07/18/07	1:32 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-44	11/01/07	2:37 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-45	08/01/01	11:14 AM	28.84	78	T	0	0	0.1	19.9	0	0	0	--
GMSG-45	08/09/01	1:20 PM	28.55	81	-	0	0	0.1	20.3	0.03	0	0	--
GMSG-45	09/11/01	2:00 PM	28.98	61	0.01	0	0	0.2	20.2	0	0	0	--
GMSG-45	09/24/01	4:44 PM	29.08	47	-	--	0	0	20.4	--	0	--	--
GMSG-45	10/21/01	10:57 AM	28.81	49	-	--	0	0	20.4	0.4	0.4	0.4	--
GMSG-45	11/13/01	10:08 AM	28.8	42	0.01	--	0	0	20.4	-0.43	-0.45	-0.43	--
GMSG-45	02/13/02	10:27 AM	28.92	15	-	--	0	0	19.7	-0.25	-0.51	-0.25	--
GMSG-45	06/26/02	1:58 PM	28.54	82	-	--	0	0	20.9	--	--	--	--
GMSG-45	09/30/02	11:07 AM	28.59	70	-	--	0	0	20.7	--	--	--	--
GMSG-45	11/21/02	9:35 AM	28.68	32	-	--	0	0	20.7	--	--	--	--
GMSG-45	01/29/03	11:16 AM	29.12	10	T	--	0	0	19.9	--	--	--	--
GMSG-45	04/21/03	3:10 PM	28.59	37	T	--	0	0	19.9	--	--	--	--
GMSG-45	07/22/03	9:22 AM	28.81	62	-	--	0	0	19.5	--	--	--	--
GMSG-45	11/02/03	2:25 PM	28.9	42	-	--	0	0	19.6	--	--	--	--
GMSG-45	01/20/04	4:20 PM	28.99	14	-	--	0	0.1	18.7	--	--	--	--
GMSG-45	04/18/04	2:05 PM	28.42	52	-	--	0	0.1	17.6	--	--	--	--
GMSG-45	07/14/04	10:26 AM	28.67	72	-	--	0	0	19.5	--	--	--	--
GMSG-45	10/29/04	1:11 PM	28.37	57	T	--	0	0	19.9	--	--	--	--
GMSG-45	01/28/05	11:15 AM	29.25	21	-	--	--	--	--	--	--	--	--
GMSG-45	04/05/05	8:12 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-45	07/06/05	10:25 AM	28.96	69	-	--	--	--	--	--	--	--	--
GMSG-45	10/11/05	10:55 AM	29.04	54	-	--	--	--	--	--	--	--	--
GMSG-45	02/22/06	3:55 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-45	04/06/06	1:02 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-45	07/11/06	10:12 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-45	10/09/06	1:28 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-45	02/04/07	10:10 AM	28.79	-9	-	--	--	--	--	--	--	--	--
GMSG-45	04/04/07	12:00 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-45	07/19/07	12:38 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-45	11/02/07	1:58 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-46	08/01/01	11:22 AM	28.84	78	T	0	0	1	19.5	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-46	08/09/01	1:29 PM	28.55	81	-	0	0	0	20.5	0	0	0	--
GMSG-46	09/11/01	2:13 PM	28.98	61	0.01	0	0	1	19.6	0	0	0	--
GMSG-46	09/25/01	8:42 AM	29.01	48	-	--	0	1.4	19.2	--	0	--	--
GMSG-46	10/21/01	11:10 AM	28.81	49	-	--	0	0	20.5	0.1	0.1	0.4	--
GMSG-46	11/13/01	10:13 AM	28.8	42	0.01	--	0	0.6	19.6	-0.35	-1.45	-0.35	--
GMSG-46	02/13/02	10:40 AM	28.9	19	-	--	0	0	19.6	-0.21	-0.83	-0.21	--
GMSG-46	06/26/02	2:13 PM	28.54	82	-	--	0	0.6	20.1	--	--	--	--
GMSG-46	09/30/02	11:20 AM	28.59	70	-	--	0	0.9	19.8	--	--	--	--
GMSG-46	11/21/02	9:53 AM	28.68	32	-	--	0	0	20.7	--	--	--	--
GMSG-46	01/29/03	11:30 AM	29.1	13	-	--	0	0	19.8	--	--	--	--
GMSG-46	04/22/03	10:42 AM	28.86	45	-	--	0	0	20.4	--	--	--	--
GMSG-46	07/22/03	9:28 AM	28.81	62	-	--	0	0	19.5	--	--	--	--
GMSG-46	11/02/03	2:35 PM	28.91	43	-	--	0	0.5	19	--	--	--	--
GMSG-46	01/20/04	4:36 PM	28.97	12	-	--	0	0.5	18.2	--	--	--	--
GMSG-46	04/18/04	3:00 PM	28.38	55	-	--	0	1.2	15.5	--	--	--	--
GMSG-46	07/14/04	10:35 AM	28.68	75	-	--	0	0.5	19.3	--	--	--	--
GMSG-46	10/29/04	1:33 PM	28.35	57	-	--	0	1.4	18.2	--	--	--	--
GMSG-46	01/28/05	11:35 AM	29.22	22	-	--	--	--	--	--	--	--	--
GMSG-46	04/05/05	8:18 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-46	07/06/05	10:31 AM	28.95	70	-	--	--	--	--	--	--	--	--
GMSG-46	10/11/05	11:04 AM	29.04	54	-	--	--	--	--	--	--	--	--
GMSG-46	02/22/06	4:05 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-46	04/06/06	1:23 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-46	07/11/06	10:25 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-46	10/09/06	1:56 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-46	02/04/07	11:53 AM	28.82	-7	-	--	--	--	--	--	--	--	--
GMSG-46	04/04/07	12:08 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-46	07/19/07	12:50 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-46	11/02/07	2:10 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-47	08/01/01	9:01 AM	28.92	74	T	0	0	0	19.9	0	0	0	--
GMSG-47	08/09/01	2:29 PM	28.55	84	-	0	0	0	20.5	0	0	0	--
GMSG-47	09/11/01	2:39 PM	28.96	64	T	0	0	0	20.3	0	0	0	--
GMSG-47	09/24/01	4:20 PM	29.08	48	-	--	0	0	20.3	--	0	--	--
GMSG-47	10/21/01	9:58 AM	28.82	46	-	--	0	0	19.2	0.6	0.5	0.4	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-47	11/13/01	9:12 AM	28.81	41	0.01	--	0	0	20.3	-0.15	-0.4	-0.2	--
GMSG-47	02/13/02	2:05 PM	28.78	33	-	--	0	0	20.7	-0.31	-0.31	-0.37	--
GMSG-47	06/26/02	1:20 PM	28.57	81	-	--	0	0	20.8	--	--	--	--
GMSG-47	09/30/02	1:59 PM	28.55	73	-	--	0	0.2	20.6	--	--	--	--
GMSG-47	11/20/02	2:50 PM	28.69	32	T	--	0	0	19.8	--	--	--	--
GMSG-47	01/28/03	2:26 PM	28.75	23	T	--	0	0	19.8	--	--	--	--
GMSG-47	04/21/03	11:19 AM	28.48	40	T	--	0	0	20.1	--	--	--	--
GMSG-47	07/21/03	2:29 PM	28.61	70	-	--	0	0	19.7	--	--	--	--
GMSG-47	11/03/03	11:30 AM	29.05	32	-	--	0	0.2	19.1	--	--	--	--
GMSG-47	01/20/04	2:37 PM	29.01	13	-	--	0	0.1	18.8	--	--	--	--
GMSG-47	04/17/04	3:20 PM	28.91	67	-	--	0	0.1	17.9	--	--	--	--
GMSG-47	07/15/04	1:00 PM	28.65	81	-	--	0	0.3	19.2	--	--	--	--
GMSG-47	10/29/04	12:19 PM	28.4	56	-	--	0	0.2	19.5	--	--	--	--
GMSG-47	01/25/05	12:24 PM	28.35	25	-	--	0	0.1	19.9	--	--	--	--
GMSG-47	04/02/05	3:28 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-47	07/01/05	3:25 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-47	10/11/05	10:00 AM	29.05	45	-	--	--	--	--	--	--	--	--
GMSG-47	02/22/06	12:00 PM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-47	04/03/06	3:23 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-47	07/07/06	3:44 PM	28.96	84	-	--	--	--	--	--	--	--	--
GMSG-47	10/03/06	3:02 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-47	01/17/07	12:26 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-47	04/02/07	9:52 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-47	07/18/07	11:37 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-47	10/22/07	4:28 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-48	08/01/01	8:33 AM	28.92	74	T	0	0	0	19.9	1.4	0	0	--
GMSG-48	08/09/01	2:57 PM	28.57	83	-	0	0	0	20.6	0	0	0	--
GMSG-48	09/11/01	4:44 PM	28.93	62	-	0	0	0.5	19.7	8	0	0	--
GMSG-48	09/24/01	2:41 PM	29.08	49	-	--	0	0.4	19.8	--	9	--	--
GMSG-48	10/21/01	9:13 AM	28.81	42	-	--	0	0	19.3	0.6	0.6	0.4	--
GMSG-48	11/13/01	8:32 AM	28.81	41	0.01	--	0	1.3	18.2	0.2	-0.6	0.2	--
GMSG-48	02/13/02	8:30 AM	28.94	11	-	--	0	0	20.3	0.15	-0.35	-0.45	--
GMSG-48	06/26/02	10:09 AM	28.61	77	-	--	0	0	21	--	--	--	--
GMSG-48	09/27/02	1:37 PM	28.7	63	-	--	0	0.5	20	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-48	11/20/02	12:38 PM	28.7	35	T	--	0	0	19.9	--	--	--	--
GMSG-48	01/29/03	1:53 PM	29.06	16	-	--	0	0	19.6	--	--	--	--
GMSG-48	04/22/03	11:45 AM	28.86	48	-	--	0	0	20	--	--	--	--
GMSG-48	07/21/03	1:14 PM	28.59	66	0.01	--	0	0	19.5	--	--	--	--
GMSG-48	10/28/03	10:34 AM	28.11	42	T	0	0	3.3	14.5	--	--	--	--
GMSG-48	10/30/03	1:58 PM	28.6	44	T	0	--	--	--	--	--	--	--
GMSG-48	11/12/03	9:30 AM	28.35	38	T	0	--	--	--	--	--	--	--
GMSG-48	11/24/03	2:29 PM	28.33	17	T	0	--	--	--	--	--	--	--
GMSG-48	12/08/03	11:07 AM	28.66	37	-	0.1	--	--	--	--	--	--	--
GMSG-48	12/15/03	1:25 PM	28.52	25	-	0	--	--	--	--	--	--	--
GMSG-48	01/20/04	9:12 AM	29.06	-3	-	--	0	0	18.7	--	--	--	--
GMSG-48	04/17/04	1:29 AM	28.73	48	-	--	0	0.4	17.5	--	--	--	--
GMSG-48	07/13/04	10:00 AM	28.59	73	-	--	0	0	19.7	--	--	--	--
GMSG-48	10/25/04	2:48 PM	28.85	55	-	--	0	0.7	19.5	--	--	--	--
GMSG-48	01/27/05	2:33 PM	29.31	17	-	--	--	--	--	--	--	--	--
GMSG-48	02/07/05	8:38 AM	28.89	28	T	--	--	--	--	--	--	--	--
GMSG-48	04/01/05	3:35 PM	28.74	46	T	--	--	--	--	--	--	--	--
GMSG-48	07/05/05	11:07 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-48	10/10/05	3:40 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-48	02/24/06	9:59 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-48	04/11/06	1:40 PM	28.56	73	-	--	--	--	--	--	--	--	--
GMSG-48	07/05/06	3:18 PM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-48	10/16/06	1:05 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-48	02/06/07	4:10 PM	28.81	9	-	--	--	--	--	--	--	--	--
GMSG-48	04/02/07	1:32 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-48	07/20/07	9:43 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-48	10/22/07	3:40 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-49	08/01/01	10:58 AM	28.84	78	T	0.03	0	0.8	19.4	0	0	0	--
GMSG-49	08/09/01	1:59 PM	28.55	84	-	0	0	0.3	20.2	0	0	0	--
GMSG-49	09/11/01	4:10 PM	28.94	63	-	0	0	1.8	18.6	0	0	0	--
GMSG-49	09/24/01	3:27 PM	29.08	49	-	--	0	1.7	19	--	0	--	--
GMSG-49	10/22/01	8:20 AM	28.83	39	-	--	0	0.6	20	-1.3	-1.4	0.3	--
GMSG-49	11/13/01	10:45 AM	28.79	44	-	--	0	0.4	20	-0.38	-2.2	-0.38	--
GMSG-49	02/13/02	11:03 AM	28.9	19	-	--	0	0	19.7	-0.22	-1.2	-0.22	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-49	06/26/02	10:20 AM	28.61	77	-	--	0	1.5	19.5	--	--	--	--
GMSG-49	09/30/02	12:28 PM	28.56	73	-	--	0	1.1	19.9	--	--	--	--
GMSG-49	11/21/02	10:25 AM	28.68	32	-	--	0	0.6	19.8	--	--	--	--
GMSG-49	01/29/03	12:38 PM	29.08	15	T	--	0	0.2	20	--	--	--	--
GMSG-49	04/22/03	11:01 AM	28.86	45	-	--	0	0.6	19.4	--	--	--	--
GMSG-49	08/05/03	9:50 AM	28.72	77	-	--	0	1	18.3	--	--	--	--
GMSG-49	11/03/03	2:00 PM	29.04	32	T	--	0	0.8	18.8	--	--	--	--
GMSG-49	01/21/04	8:49 AM	28.46	13	T	--	0	0.3	18.8	--	--	--	--
GMSG-49	04/18/04	3:50 PM	28.35	58	-	--	0	0.5	17.1	--	--	--	--
GMSG-49	07/14/04	11:06 AM	28.68	75	-	--	0	1.2	18.3	--	--	--	--
GMSG-49	10/29/04	2:04 PM	28.35	57	-	--	0	1	18.7	--	--	--	--
GMSG-49	01/28/05	12:59 PM	29.18	24	-	--	--	--	--	--	--	--	--
GMSG-49	04/05/05	7:47 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-49	07/05/05	1:47 PM	28.87	68	-	--	--	--	--	--	--	--	--
GMSG-49	10/11/05	1:55 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-49	02/28/06	12:09 PM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-49	04/10/06	10:55 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-49	07/13/06	2:00 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-49	10/11/06	8:06 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-49	02/03/07	11:04 AM	28.47	1	-	--	--	--	--	--	--	--	--
GMSG-49	04/05/07	11:06 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-49	07/18/07	3:02 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-49	10/23/07	9:45 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-50	08/01/01	11:04 AM	28.84	78	T	0.03	0	0.8	19.4	0	0	0	--
GMSG-50	08/09/01	2:07 PM	28.55	84	-	0	0	0.7	19.7	0	0	0	--
GMSG-50	09/11/01	4:15 PM	28.94	63	-	0	0	0.5	19.9	0	0	0	--
GMSG-50	09/24/01	3:33 PM	29.08	48	-	--	0	0.5	20.2	--	0	--	--
GMSG-50	10/22/01	9:00 AM	28.82	45	-	--	0	0	20	-0.7	-0.5	0.2	--
GMSG-50	11/13/01	10:40 AM	28.79	44	-	--	0	0	20.8	-0.35	-1	-0.35	--
GMSG-50	02/13/02	10:58 AM	28.9	19	-	--	0	0.1	19.5	-0.23	-1.25	-0.23	--
GMSG-50	06/26/02	10:29 AM	28.61	77	-	--	0	0.4	20.4	--	--	--	--
GMSG-50	09/30/02	12:23 PM	28.56	73	-	--	0	0.6	20	--	--	--	--
GMSG-50	11/21/02	10:19 AM	28.68	32	-	--	0	0.3	20.3	--	--	--	--
GMSG-50	01/29/03	12:30 PM	29.08	15	T	--	0	0.2	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-50	04/22/03	10:55 AM	28.86	45	-	--	0	0.2	19.7	--	--	--	--
GMSG-50	08/05/03	9:44 AM	28.72	77	-	--	0	0.5	18.9	--	--	--	--
GMSG-50	11/03/03	2:20 PM	29.04	32	T	--	0	0.5	19.1	--	--	--	--
GMSG-50	01/21/04	9:06 AM	28.46	13	T	--	0	0.2	18.9	--	--	--	--
GMSG-50	04/18/04	3:41 PM	28.35	58	-	--	0	0.2	17.5	--	--	--	--
GMSG-50	07/14/04	11:12 AM	28.68	75	-	--	0	0.4	19	--	--	--	--
GMSG-50	10/29/04	2:16 PM	28.35	57	-	--	0	0.4	19.5	--	--	--	--
GMSG-50	01/28/05	1:19 PM	29.18	24	-	--	--	--	--	--	--	--	--
GMSG-50	02/11/05	3:20 PM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-50	04/05/05	7:43 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-50	07/05/05	1:55 PM	28.87	68	-	--	--	--	--	--	--	--	--
GMSG-50	10/17/05	2:40 PM	28.39	61	-	--	--	--	--	--	--	--	--
GMSG-50	02/28/06	11:52 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-50	04/10/06	11:05 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-50	07/13/06	2:19 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-50	10/16/06	10:45 AM	28.66	45	0.02	--	--	--	--	--	--	--	--
GMSG-50	02/03/07	10:06 AM	28.46	-1	-	--	--	--	--	--	--	--	--
GMSG-50	02/05/07	12:19 PM	29.1	3	-	--	--	--	--	--	--	--	--
GMSG-50	04/05/07	10:59 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-50	07/18/07	2:58 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-50	10/23/07	9:57 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-51	09/25/01	2:39 PM	28.88	57	-	--	6.1	11.9	12.1	--	--	--	--
GMSG-52	09/11/01	3:15 PM	28.96	64	T	0	10	26	5.9	--	--	--	--
GMSG-52	09/25/01	2:40 PM	28.88	57	-	--	38.9	36.6	0.2	--	--	--	--
GMSG-52	10/03/01	1:55 PM	28.56	53	T	--	34.5	35.8	0.1	--	--	--	--
GMSG-52	10/21/01	12:16 PM	28.81	51	-	--	35.6	33.7	0	--	--	--	--
GMSG-53	09/11/01	3:18 PM	28.96	64	T	0	0.7	11.9	12.2	>10000	>10000	0	--
GMSG-53	09/25/01	2:37 PM	28.88	57	-	--	6.2	22.1	0.5	--	--	--	--
GMSG-53	10/21/01	12:13 PM	28.81	51	-	--	0	19	0.6	243	--	0.4	--
GMSG-54	09/11/01	2:08 PM	28.98	61	0.01	0	0	0.9	19.2	0	0	0	--
GMSG-54	09/25/01	8:35 AM	29.01	48	-	--	0	2.3	17.6	--	0	--	--
GMSG-54	10/21/01	11:01 AM	28.81	49	-	--	0	0	20.6	0.4	0.3	0.4	--
GMSG-54	11/13/01	10:18 AM	28.8	42	0.01	--	0	1	19	-0.3	-2.2	-0.3	--
GMSG-54	02/13/02	10:33 AM	28.9	19	-	--	0	0	19.8	-0.18	-1.01	-0.22	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-54	06/26/02	2:04 PM	28.54	82	-	--	0	1.5	19.4	--	--	--	--
GMSG-54	09/30/02	11:12 AM	28.59	70	-	--	0	1.8	18.3	--	--	--	--
GMSG-54	11/21/02	9:44 AM	28.68	32	-	--	0	0.6	19.8	--	--	--	--
GMSG-54	01/29/03	11:23 AM	29.12	10	T	--	0	0	19.9	--	--	--	--
GMSG-54	04/22/03	10:36 AM	28.86	45	-	--	0	0	20.2	--	--	--	--
GMSG-54	07/22/03	9:37 AM	28.81	63	-	--	0	1.4	18.1	--	--	--	--
GMSG-54	11/02/03	2:50 PM	28.91	43	-	--	0	0.1	19.3	--	--	--	--
GMSG-54	01/20/04	4:44 PM	28.97	12	-	--	0	0	18.8	--	--	--	--
GMSG-54	04/18/04	2:51 PM	28.38	55	-	--	0	1.4	15.8	--	--	--	--
GMSG-54	07/14/04	10:40 AM	28.68	75	-	--	0	1	18.3	--	--	--	--
GMSG-54	10/29/04	1:28 PM	28.37	57	T	--	0	1	18.3	--	--	--	--
GMSG-54	01/28/05	11:22 AM	29.25	21	-	--	--	--	--	--	--	--	--
GMSG-54	04/05/05	8:15 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-54	07/06/05	10:38 AM	28.95	70	-	--	--	--	--	--	--	--	--
GMSG-54	10/11/05	11:10 AM	29.04	54	-	--	--	--	--	--	--	--	--
GMSG-54	02/22/06	4:00 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-54	04/06/06	1:30 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-54	07/11/06	10:41 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-54	10/09/06	1:50 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-54	02/04/07	10:50 AM	28.82	-8	-	--	--	--	--	--	--	--	--
GMSG-54	04/04/07	12:17 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-54	07/19/07	12:58 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-54	11/02/07	2:18 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-55	09/11/01	4:42 PM	28.93	62	-	0	0	13.5	3.3	--	--	--	--
GMSG-55	09/24/01	2:34 PM	29.08	49	-	--	0	13.8	3.3	--	0	--	--
GMSG-55	10/21/01	9:07 AM	28.81	42	-	--	0	0.2	19	0.3	0.3	0	--
GMSG-55	11/13/01	8:24 AM	28.82	39	0.02	--	0	11.4	5.9	-0.26	--	-0.7	--
GMSG-55	02/13/02	8:46 AM	28.94	11	-	--	0	7.6	13	0.19	-0.3	-0.44	--
GMSG-55	06/26/02	9:59 AM	28.61	77	-	--	0	12.5	2.7	--	--	--	--
GMSG-55	09/27/02	1:49 PM	28.7	63	-	--	0	12.2	3.2	--	--	--	--
GMSG-55	11/20/02	12:25 PM	28.7	37	-	--	0	11.3	5	--	--	--	--
GMSG-55	01/29/03	1:42 PM	29.06	16	-	--	0	7.8	10.6	--	--	--	--
GMSG-55	04/22/03	11:51 AM	28.86	48	-	--	0	7.3	6	--	--	--	--
GMSG-55	08/04/03	11:38 AM	28.75	68	T	--	0	10.8	5.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-55	11/01/03	12:05 PM	29.08	37	-	--	0	10.6	7.7	--	--	--	--
GMSG-55	01/20/04	9:24 AM	29.06	-3	-	--	0	7.5	11.4	--	--	--	--
GMSG-55	04/17/04	11:30 AM	28.92	63	-	--	0	5.6	3.6	--	--	--	--
GMSG-55	07/13/04	9:42 AM	28.59	73	-	--	0	12.9	2.4	--	--	--	--
GMSG-55	10/25/04	2:56 PM	28.85	55	-	--	0	10.6	3.8	--	--	--	--
GMSG-55	01/27/05	2:42 PM	29.31	17	-	--	--	--	--	--	--	--	--
GMSG-55	04/01/05	3:39 PM	28.74	46	T	--	--	--	--	--	--	--	--
GMSG-55	07/05/05	11:15 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-55	10/11/05	9:05 AM	29.05	40	-	--	--	--	--	--	--	--	--
GMSG-55	10/13/05	8:35 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-55	10/18/05	11:20 AM	28.64	53	-	--	--	--	--	--	--	--	--
GMSG-55	10/20/05	12:30 PM	28.88	48	-	--	--	--	--	1.22	0.63	-0.22	--
GMSG-55	10/25/05	1:35 PM	28.9	45	-	--	--	--	--	--	--	--	--
GMSG-55	10/25/05	2:30 PM	28.89	44	-	--	--	--	--	-1.61	--	--	--
GMSG-55	10/25/05	3:15 PM	28.89	44	-	--	0	11.6	1.5	--	--	--	--
GMSG-55	11/08/05	10:55 AM	28.88	44	-	--	0	10.1	2.3	--	--	--	--
GMSG-55	11/08/05	11:00 AM	28.88	44	-	--	--	--	--	--	--	--	--
GMSG-55	11/14/05	3:19 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-55	11/28/05	11:47 AM	28.16	44	T	--	--	--	--	--	--	--	--
GMSG-55	12/07/05	9:59 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-55	02/24/06	10:24 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-55	04/05/06	3:15 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-55	04/11/06	1:20 PM	28.59	73	-	--	0	7.7	5.6	--	--	--	--
GMSG-55	07/05/06	2:43 PM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-55	10/16/06	1:13 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-55	02/07/07	8:58 AM	28.85	0	-	--	--	--	--	--	--	--	--
GMSG-55	04/02/07	1:05 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-55	07/20/07	9:19 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-55	10/22/07	3:25 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-56	09/11/01	4:35 PM	28.93	62	-	0	0	12.3	3	--	--	--	--
GMSG-56	09/24/01	2:29 PM	29.08	50	-	--	0	13.1	3	--	0	--	--
GMSG-56	10/21/01	9:02 AM	28.81	42	-	--	0	13.7	2.4	-2.1	-2.1	0.4	--
GMSG-56	11/13/01	8:20 AM	28.82	39	0.02	0	0	12.1	4	-0.5	--	-0.5	--
GMSG-56	02/13/02	8:40 AM	28.94	11	-	--	0	10.2	7.2	0.98	-1.28	-0.48	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-56	06/26/02	9:52 AM	28.61	77	-	--	0	13	2.7	--	--	--	--
GMSG-56	09/27/02	1:44 PM	28.7	63	-	--	0	13.6	2.4	--	--	--	--
GMSG-56	11/20/02	12:17 PM	28.7	37	-	--	0	13.7	2	--	--	--	--
GMSG-56	01/29/03	1:35 PM	29.06	16	-	--	0	13.4	2.6	--	--	--	--
GMSG-56	04/24/03	11:26 AM	28.8	61	-	--	0	11.7	5.2	--	--	--	--
GMSG-56	08/04/03	11:30 AM	28.75	68	T	--	0	11	6.3	--	--	--	--
GMSG-56	11/01/03	11:58 AM	29.08	37	-	--	0	11	7.7	--	--	--	--
GMSG-56	01/20/04	9:32 AM	29.08	3	-	--	0	11.9	7	--	--	--	--
GMSG-56	04/17/04	11:21 AM	28.92	60	-	--	0	11	4.6	--	--	--	--
GMSG-56	07/13/04	9:35 AM	28.59	73	-	--	0	13.1	3.6	--	--	--	--
GMSG-56	10/25/04	3:06 PM	28.85	55	-	--	0	11.6	4.6	--	--	--	--
GMSG-56	01/27/05	2:56 PM	29.31	17	-	--	--	--	--	--	--	--	--
GMSG-56	04/01/05	3:40 PM	28.74	46	T	--	--	--	--	--	--	--	--
GMSG-56	07/05/05	11:20 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-56	10/11/05	9:10 AM	29.05	40	-	--	--	--	--	--	--	--	--
GMSG-56	10/13/05	8:40 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-56	10/18/05	11:25 AM	28.64	53	-	--	--	--	--	--	--	--	--
GMSG-56	10/20/05	12:40 PM	28.88	48	-	--	--	--	--	-2.3	-2.11	-0.79	--
GMSG-56	10/25/05	1:40 PM	28.9	45	-	--	--	--	--	--	--	--	--
GMSG-56	10/25/05	2:33 PM	28.89	44	-	--	--	--	--	-1.35	--	--	--
GMSG-56	10/25/05	3:20 PM	28.89	44	-	--	0	13.1	3.2	--	--	--	--
GMSG-56	11/08/05	11:00 AM	28.88	44	-	--	0	10.2	4.8	--	--	--	--
GMSG-56	11/08/05	11:05 AM	28.88	44	-	--	--	--	--	--	--	--	--
GMSG-56	11/14/05	3:16 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-56	11/28/05	11:49 AM	28.16	44	T	--	--	--	--	--	--	--	--
GMSG-56	12/07/05	9:54 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-56	02/24/06	10:20 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-56	04/05/06	3:09 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-56	04/11/06	1:11 PM	28.59	73	-	--	0	10	5.5	--	--	--	--
GMSG-56	07/05/06	3:07 PM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-56	10/16/06	1:16 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-56	02/07/07	8:29 AM	28.85	-3	-	--	--	--	--	--	--	--	--
GMSG-56	04/02/07	1:03 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-56	07/20/07	9:17 AM	30.25	65	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-56	10/22/07	3:22 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-57	02/13/02	8:12 AM	28.94	10	-	--	0	1.7	19.3	-0.2	-1.12	-0.49	--
GMSG-57	02/16/02	12:47 PM	28.58	32	-	--	0	1.7	18.6	-0.84	-2.74	-0.84	--
GMSG-57	03/01/02	2:31 PM	29.07	19	-	--	0	1.6	19.5	0	0	0	--
GMSG-57	03/12/02	9:53 AM	28.79	26	-	--	0	1.5	19.3	0	0	0	--
GMSG-57	04/15/02	9:25 AM	28.5	65	-	--	0	2.1	18.3	0	0	0	--
GMSG-57	05/16/02	11:00 AM	28.73	44	-	--	0	2.8	18.8	0	0	0	--
GMSG-57	09/27/02	1:19 PM	28.7	62	-	--	0	6	15.7	--	--	--	--
GMSG-57	11/20/02	1:17 PM	28.7	35	T	--	0	3.8	16.5	--	--	--	--
GMSG-57	01/28/03	12:43 PM	28.74	23	T	--	0	1.9	17.8	--	--	--	--
GMSG-57	04/21/03	10:18 AM	28.46	38	T	--	0	2.2	17.7	--	--	--	--
GMSG-57	08/04/03	10:53 AM	28.75	70	-	--	0	6.2	14.2	--	--	--	--
GMSG-57	11/01/03	12:23 PM	29.08	37	-	--	0	3.8	16.5	--	--	--	--
GMSG-57	01/20/04	9:04 AM	29.06	-3	-	--	0	2.1	17.5	--	--	--	--
GMSG-57	04/15/04	4:02 PM	28.72	57	-	-0.02	--	--	--	--	--	--	--
GMSG-57	04/17/04	11:10 AM	28.92	60	-	--	0	2	15.8	--	--	--	--
GMSG-57	05/18/04	--	--	--	--	0	0	0.2	19.5	--	--	--	--
GMSG-57	07/13/04	10:25 AM	28.59	73	-	--	0	5.2	15	--	--	--	--
GMSG-57	10/25/04	2:39 PM	28.85	55	-	--	0	3.7	16.7	--	--	--	--
GMSG-57	01/31/05	9:33 AM	29.07	28	-	--	--	--	--	--	--	--	--
GMSG-57	02/01/05	5:01 PM	29.11	35	-	--	--	--	--	--	--	--	--
GMSG-57	04/01/05	3:21 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-57	04/05/05	12:37 PM	28.56	71	-	--	--	--	--	--	--	--	--
GMSG-57	07/05/05	10:57 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-57	10/10/05	3:20 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-57	02/24/06	9:08 AM	29.03	6	-	--	--	--	--	--	--	--	--
GMSG-57	04/03/06	2:38 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-57	07/06/06	9:43 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-57	07/10/06	10:59 AM	28.8	66	-	--	--	--	--	-5.89	-5.7	-2.2	--
GMSG-57	10/02/06	2:10 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-57	10/09/06	9:54 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-57	01/17/07	3:40 PM	28.98	26	-	--	--	--	--	--	--	--	--
GMSG-57	04/02/07	1:50 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-57	07/17/07	3:06 PM	29.91	81	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-57	10/18/07	4:07 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-58	02/13/02	8:05 AM	28.94	10	-	--	0	0.5	20	1.76	-0.73	-0.4	--
GMSG-58	02/16/02	12:42 PM	28.58	32	-	--	0	0.5	19.5	-0.93	-2.63	-0.93	--
GMSG-58	03/01/02	2:26 PM	29.07	17	-	--	0	0.5	20.3	0	0	0	--
GMSG-58	03/12/02	10:00 AM	28.79	26	-	--	0	0.6	20.1	0	0	0	--
GMSG-58	04/15/02	9:29 AM	28.5	65	-	--	0	0.6	19.8	0	0	0	--
GMSG-58	05/16/02	11:04 AM	28.73	44	-	--	0	0.6	20	0	0	0	--
GMSG-58	09/27/02	1:24 PM	28.7	62	-	--	0	1.4	19.3	--	--	--	--
GMSG-58	11/20/02	1:22 PM	28.7	35	T	--	0	1.1	18.5	--	--	--	--
GMSG-58	01/28/03	12:49 PM	28.74	23	T	--	0	0.8	19.2	--	--	--	--
GMSG-58	04/21/03	10:24 AM	28.46	38	T	--	0	0.6	19.5	--	--	--	--
GMSG-58	08/04/03	10:47 AM	28.75	70	-	--	0	1.1	18.1	--	--	--	--
GMSG-58	11/01/03	12:15 PM	29.08	37	-	--	0	1	18.3	--	--	--	--
GMSG-58	01/20/04	8:55 AM	29.06	-3	-	--	0	0.8	18.4	--	--	--	--
GMSG-58	04/15/04	4:10 PM	28.72	57	-	0.08	--	--	--	--	--	--	--
GMSG-58	04/17/04	11:03 AM	28.92	60	-	--	0	0.4	17.3	--	--	--	--
GMSG-58	05/18/04	--	--	--	--	0	0	0.1	20.1	--	--	--	--
GMSG-58	07/13/04	10:18 AM	28.59	73	-	--	0	1	18.4	--	--	--	--
GMSG-58	10/25/04	2:32 PM	28.85	55	-	--	0	1	18.7	--	--	--	--
GMSG-58	01/31/05	9:38 AM	29.07	28	-	--	--	--	--	--	--	--	--
GMSG-58	02/01/05	5:03 PM	29.11	35	-	--	--	--	--	--	--	--	--
GMSG-58	04/01/05	3:16 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-58	07/05/05	11:01 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-58	10/10/05	3:15 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-58	02/24/06	9:27 AM	29.03	6	-	--	--	--	--	--	--	--	--
GMSG-58	04/03/06	2:35 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-58	07/06/06	9:37 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-58	10/02/06	2:12 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-58	10/09/06	9:50 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-58	01/17/07	3:37 PM	28.98	26	-	--	--	--	--	--	--	--	--
GMSG-58	04/02/07	1:52 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-58	07/17/07	3:08 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-58	10/18/07	4:03 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-59	02/13/02	10:02 AM	28.92	15	-	--	0	0.4	19.5	-0.21	-0.21	-0.2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-59	02/16/02	1:48 PM	28.59	32	-	--	0	0.4	19.4	0.09	0	-0.57	--
GMSG-59	03/01/02	3:17 PM	29.07	19	-	--	0	0.3	20	0	0	0	--
GMSG-59	03/12/02	10:57 AM	28.76	29	-	--	0	0.3	20.2	0	0	0	--
GMSG-59	04/15/02	10:00 AM	28.49	74	-	--	0	0.3	20.1	0	0	0	--
GMSG-59	05/16/02	11:48 AM	28.74	48	-	--	0	0.4	20.2	0	0	0	--
GMSG-59	09/30/02	11:39 AM	28.56	73	-	--	0	0.4	20.3	--	--	--	--
GMSG-59	11/20/02	3:00 PM	28.69	32	T	--	0	0.3	19.3	--	--	--	--
GMSG-59	01/28/03	2:37 PM	28.76	23	T	--	0	0.3	18.9	--	--	--	--
GMSG-59	04/21/03	2:50 PM	28.59	37	T	--	0	0.3	19.8	--	--	--	--
GMSG-59	07/22/03	10:13 AM	28.81	63	-	--	0	0.2	19.4	--	--	--	--
GMSG-59	11/02/03	3:25 PM	28.91	43	-	--	0	0.1	19.4	--	--	--	--
GMSG-59	01/20/04	3:55 PM	28.99	14	-	--	0	0.2	18.7	--	--	--	--
GMSG-59	04/18/04	1:26 PM	28.5	50	-	--	0	0.1	17.6	--	--	--	--
GMSG-59	07/13/04	1:54 PM	28.51	69	0.1	--	0	0	19.5	--	--	--	--
GMSG-59	10/29/04	12:40 PM	28.37	57	T	--	0	0.1	19.8	--	--	--	--
GMSG-59	01/28/05	10:22 AM	29.26	13	-	--	--	--	--	--	--	--	--
GMSG-59	04/02/05	4:01 PM	28.77	51	-	--	--	--	--	--	--	--	--
GMSG-59	07/06/05	10:07 AM	28.96	69	-	--	--	--	--	--	--	--	--
GMSG-59	10/11/05	10:25 AM	29.05	45	-	--	--	--	--	--	--	--	--
GMSG-59	02/22/06	3:49 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-59	04/06/06	12:53 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-60	02/13/02	1:18 PM	28.82	30	-	--	0	0	20.5	-0.13	-1	-0.18	--
GMSG-60	02/16/02	1:37 PM	28.59	32	-	--	0	0	19.8	-0.56	-2.7	-0.56	--
GMSG-60	03/01/02	2:55 PM	29.07	19	-	--	--	--	--	--	--	--	--
GMSG-60	03/12/02	10:21 AM	28.79	26	-	--	0	0	20.5	0	0	0	--
GMSG-60	04/15/02	9:38 AM	28.49	74	-	--	0	0.1	20.2	0	0	0	--
GMSG-60	05/16/02	11:12 AM	28.73	44	-	--	0	0.2	20.5	0	0	0	--
GMSG-60	09/28/02	9:30 AM	28.97	54	-	--	0	0.5	19.6	--	--	--	--
GMSG-60	11/20/02	1:50 PM	28.68	32	0.01	--	0	0.3	19.3	--	--	--	--
GMSG-60	01/28/03	1:35 PM	28.75	23	T	--	0	0.1	19.6	--	--	--	--
GMSG-60	04/21/03	10:55 AM	28.48	40	T	--	0	0.2	19.7	--	--	--	--
GMSG-60	07/21/03	2:22 PM	28.61	70	-	--	0	0.4	19.3	--	--	--	--
GMSG-60	11/03/03	12:20 PM	29.05	32	-	--	0	0.3	19	--	--	--	--
GMSG-60	01/20/04	3:20 PM	29.01	13	-	--	0	0.2	18.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-60	04/15/04	4:18 PM	28.72	57	-	0.03	--	--	--	--	--	--	--
GMSG-60	04/19/04	9:55 AM	28.66	43	-	--	--	0.2	17.5	--	--	--	--
GMSG-60	04/19/04	11:18 AM	28.73	44	-	--	0	0.2	17.5	--	--	--	--
GMSG-60	05/18/04	--	--	--	--	--	0	--	--	--	--	--	--
GMSG-60	07/13/04	1:28 PM	28.5	79	-	--	0	0.5	18.7	--	--	--	--
GMSG-60	10/28/04	8:46 AM	28.98	46	-	--	0	0.3	19.4	--	--	--	--
GMSG-60	02/01/05	12:53 PM	29.11	33	-	--	--	--	--	--	--	--	--
GMSG-60	04/02/05	3:14 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-60	07/01/05	3:30 PM	28.73	66	-	--	--	--	--	--	--	--	--
GMSG-60	10/11/05	1:05 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-60	02/28/06	10:02 AM	28.79	12	-	--	--	--	--	--	--	--	--
GMSG-60	04/03/06	3:41 PM	28.7	42	-	--	--	--	--	--	--	--	--
GMSG-60	07/07/06	3:11 PM	28.97	84	-	--	--	--	--	--	--	--	--
GMSG-60	10/03/06	3:27 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-60	02/02/07	2:32 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-60	04/02/07	10:18 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-60	07/18/07	11:46 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-60	10/23/07	9:12 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-61	02/13/02	1:46 PM	28.78	33	-	--	0	0	20.4	0.65	0.63	-0.31	--
GMSG-61	02/16/02	1:30 PM	28.59	32	-	--	0	0.1	19.7	5.02	4.82	-0.44	--
GMSG-61	03/01/02	3:00 PM	29.07	19	-	--	0	0	20.2	0.08	0	0	--
GMSG-61	03/12/02	10:45 AM	28.76	29	-	--	0	0	20.2	0	0	0	--
GMSG-61	04/15/02	9:50 AM	28.49	74	-	--	0	0.4	19.7	14.83	14.69	0	--
GMSG-61	05/16/02	11:25 AM	28.73	44	-	--	0	0	20.8	4.42	4.42	0	--
GMSG-61	09/30/02	2:10 PM	28.55	73	-	--	0	2.8	17.6	--	--	--	--
GMSG-61	11/20/02	2:39 PM	28.69	32	T	--	0	0.9	18.9	--	--	--	--
GMSG-61	01/28/03	2:10 PM	28.75	23	T	--	0	0.4	19.2	--	--	--	--
GMSG-61	04/21/03	11:13 AM	28.48	40	T	--	0	0.4	19.1	--	--	--	--
GMSG-61	07/22/03	10:46 AM	28.82	65	-	--	0	1.4	18.3	--	--	--	--
GMSG-61	11/03/03	11:25 AM	29.05	35	-	--	0	1.1	18.5	--	--	--	--
GMSG-61	01/20/04	2:27 PM	29.02	14	-	--	0	0.2	18.8	--	--	--	--
GMSG-61	04/17/04	3:37 PM	28.91	66	-	--	0	0.3	17.5	--	--	--	--
GMSG-61	07/13/04	1:12 PM	28.5	79	-	--	0	1.9	17.3	--	--	--	--
GMSG-61	10/28/04	9:00 AM	28.98	46	-	--	0	0.3	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-61	01/25/05	12:16 PM	28.35	25	-	--	0	0.2	19.9	--	--	--	--
GMSG-61	04/02/05	3:01 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-61	07/01/05	3:19 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-61	10/10/05	5:00 PM	28.96	60	-	--	--	--	--	--	--	--	--
GMSG-61	02/22/06	11:51 AM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-61	04/03/06	3:19 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-61	07/07/06	3:59 PM	28.96	84	-	--	--	--	--	--	--	--	--
GMSG-62	02/13/02	1:52 PM	28.78	33	-	--	0	0.3	20.2	1.63	1.6	-0.38	--
GMSG-62	02/16/02	1:25 PM	28.58	32	-	--	0	0.2	19.6	11.04	11	-0.58	--
GMSG-62	03/01/02	3:06 PM	29.07	19	-	--	0	0.1	20.3	5.62	5.45	0	--
GMSG-62	03/12/02	10:36 AM	28.76	29	-	--	0	0.3	20	2.67	2.55	0	--
GMSG-62	04/15/02	9:44 AM	28.49	74	-	--	0	0.4	19.5	22.95	22.83	0	--
GMSG-62	05/16/02	11:18 AM	28.73	44	-	--	0	0.5	19.9	25.62	25.5	0	--
GMSG-62	09/30/02	2:05 PM	28.55	73	-	--	0	2.6	17.6	--	--	--	--
GMSG-62	11/20/02	2:17 PM	28.68	32	0.01	--	0	0.9	18.8	--	--	--	--
GMSG-62	01/28/03	2:17 PM	28.75	23	T	--	0	0.2	19.4	--	--	--	--
GMSG-62	04/21/03	11:09 AM	28.48	40	T	--	0	0.4	19.3	--	--	--	--
GMSG-62	07/22/03	10:40 AM	28.82	65	-	--	0	2.1	17.3	--	--	--	--
GMSG-62	11/03/03	11:20 AM	29.05	35	-	--	0	1	18.2	--	--	--	--
GMSG-62	01/20/04	2:20 PM	29.02	14	-	--	0	0.4	18.5	--	--	--	--
GMSG-62	04/17/04	3:29 PM	28.91	67	-	--	0	0.3	17.6	--	--	--	--
GMSG-62	07/13/04	1:07 PM	28.5	79	-	--	0	1.2	17.7	--	--	--	--
GMSG-62	10/29/04	12:12 PM	28.4	56	-	--	0	1.2	18.5	--	--	--	--
GMSG-62	01/25/05	12:08 PM	28.35	25	-	--	0	0.3	19.7	--	--	--	--
GMSG-62	04/02/05	2:58 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-62	07/01/05	3:15 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-62	10/10/05	5:00 PM	28.96	60	-	--	--	--	--	--	--	--	--
GMSG-62	02/22/06	11:44 AM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-62	04/03/06	3:16 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-62	07/07/06	3:54 PM	28.96	84	-	--	--	--	--	--	--	--	--
GMSG-63	02/13/02	8:57 AM	28.94	11	-	--	0	1	19.5	-1.5	-1.5	-0.48	--
GMSG-63	02/16/02	12:56 PM	28.58	32	-	--	0	0.9	19.2	-0.9	-3.17	-0.9	--
GMSG-63	03/01/02	2:15 PM	29.07	17	-	--	0	0.6	20.4	0	0	0	--
GMSG-63	03/12/02	8:27 AM	28.82	13	-	--	0	1.3	19.5	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-63	04/15/02	9:00 AM	28.5	65	-	--	0	1.3	19.2	0	0	0	--
GMSG-63	05/16/02	10:32 AM	28.73	44	-	--	0	1.4	19.6	0	0	0	--
GMSG-63	09/27/02	12:26 PM	28.71	61	-	--	0	1.3	19.4	--	--	--	--
GMSG-63	11/20/02	11:08 AM	28.71	35	-	--	0	1.3	18.8	--	--	--	--
GMSG-63	01/28/03	10:55 AM	28.74	21	T	--	0	1.1	19.3	--	--	--	--
GMSG-63	04/15/03	2:21 PM	28.58	54	-	--	0	1.2	18.8	--	--	--	--
GMSG-63	08/04/03	9:07 AM	28.75	65	-	--	0	1.2	18.2	--	--	--	--
GMSG-63	11/01/03	10:16 AM	29.11	35	-	--	0	0.7	19.1	--	--	--	--
GMSG-63	01/29/04	10:00 AM	28.8	-5	-	--	0	1.3	17.7	--	--	--	--
GMSG-63	04/16/04	4:45 PM	28.7	66	T	--	0	0.8	18.3	--	--	--	--
GMSG-63	07/13/04	7:55 AM	28.64	71	-	--	0	1.1	18.3	--	--	--	--
GMSG-63	10/17/04	2:06 PM	28.63	43	-	--	0	1.1	18.9	--	--	--	--
GMSG-63	01/26/05	11:40 AM	28.99	14	T	--	0	0.6	20.6	--	--	--	--
GMSG-63	04/01/05	8:04 AM	28.8	42	-	--	--	--	--	--	--	--	--
GMSG-63	07/05/05	8:35 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-63	10/13/05	3:31 PM	28.79	57	0.02	--	--	--	--	--	--	--	--
GMSG-63	02/22/06	1:37 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-63	04/03/06	9:54 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-63	07/06/06	3:25 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-63	10/02/06	10:08 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-63	01/02/07	10:03 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-63	04/03/07	9:57 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-63	07/17/07	10:36 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-63	10/18/07	11:28 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-64	10/29/02	10:17 AM	28.99	38	-	--	0	2.8	16.7	--	--	--	--
GMSG-64	11/04/02	1:55 PM	28.85	38	-	--	0	1.7	18.1	--	--	--	--
GMSG-64	11/19/02	11:44 AM	28.54	44	-	--	0	1.4	18.7	--	--	--	--
GMSG-64	12/10/02	1:41 PM	28.73	46	-	--	0	2.2	17.5	--	--	--	--
GMSG-64	01/02/03	10:18 AM	29.02	19	-	--	0	1.9	17.7	--	--	--	--
GMSG-64	01/28/03	11:02 AM	28.74	21	T	--	0	1	19	--	--	--	--
GMSG-64	04/15/03	2:26 PM	28.58	54	-	--	0	0.9	19.4	--	--	--	--
GMSG-64	08/04/03	9:13 AM	28.75	65	-	--	0	2.6	16	--	--	--	--
GMSG-64	11/01/03	10:25 AM	29.11	35	-	--	0	0.7	18.7	--	--	--	--
GMSG-64	01/28/04	3:45 PM	28.67	6	-	--	0	0.3	19.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-64	04/16/04	4:36 PM	28.7	66	T	--	0	0.7	18.6	--	--	--	--
GMSG-64	07/13/04	7:50 AM	28.64	71	-	--	0	1.8	17.6	--	--	--	--
GMSG-64	10/17/04	1:58 PM	28.63	43	-	--	0	0.2	19.7	--	--	--	--
GMSG-64	01/26/05	11:19 AM	28.98	15	T	--	0	0.2	20.6	--	--	--	--
GMSG-64	04/01/05	7:59 AM	28.8	42	-	--	--	--	--	--	--	--	--
GMSG-64	07/05/05	8:47 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-64	10/14/05	11:14 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-64	03/13/06	2:31 PM	27.95	32	0.01	--	--	--	--	--	--	--	--
GMSG-64	04/05/06	4:05 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-64	07/06/06	3:31 PM	29.02	83	-	--	--	--	--	--	--	--	--
GMSG-64	10/02/06	10:44 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-64	01/02/07	10:45 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-64	04/03/07	10:19 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-64	07/17/07	11:09 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-64	10/18/07	11:22 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-65	02/14/02	3:28 PM	28.45	43	-	--	0	0.1	20.5	-0.71	-4.18	-0.71	--
GMSG-65	02/16/02	12:25 PM	28.57	33	-	--	0	0.1	20	-1.61	-3.93	-1.61	--
GMSG-65	03/01/02	3:28 PM	29.07	19	-	--	0	0.1	19.9	0	0	0	--
GMSG-65	03/12/02	11:09 AM	28.76	29	-	--	0	0.1	20.3	0	0	0	--
GMSG-65	04/15/02	10:08 AM	28.49	74	-	--	0	0.1	20.2	0	0	0	--
GMSG-65	05/16/02	12:47 PM	28.74	49	-	--	0	0.1	20.3	0	0	0	--
GMSG-65	09/30/02	3:08 PM	28.53	74	-	--	0	0.9	19.6	--	--	--	--
GMSG-65	11/20/02	12:48 PM	28.7	35	T	--	0	0.4	19.4	--	--	--	--
GMSG-65	01/29/03	2:20 PM	29.06	16	-	--	0	0.1	19.5	--	--	--	--
GMSG-65	04/21/03	12:56 PM	28.54	41	T	--	0	0.2	19.5	--	--	--	--
GMSG-65	08/04/03	12:50 PM	28.74	69	0.04	--	0	0.6	18.6	--	--	--	--
GMSG-65	10/28/03	12:23 PM	28.1	44	T	0	0	0.5	18.6	--	--	--	--
GMSG-65	10/30/03	1:51 PM	28.6	44	T	0	--	--	--	--	--	--	--
GMSG-65	11/12/03	9:59 AM	28.35	38	T	0	--	--	--	--	--	--	--
GMSG-65	11/24/03	2:42 PM	28.35	16	T	-0.7	--	--	--	--	--	--	--
GMSG-65	12/08/03	10:23 AM	28.69	35	-	0	--	--	--	--	--	--	--
GMSG-65	12/15/03	2:33 PM	28.49	26	-	0	--	--	--	--	--	--	--
GMSG-65	01/20/04	9:50 AM	29.08	3	-	--	0	0.2	18.6	--	--	--	--
GMSG-65	04/18/04	9:56 AM	28.57	45	T	--	0	0.3	17.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-65	07/14/04	5:25 PM	28.67	77	-	--	0	0.4	18.7	--	--	--	--
GMSG-65	10/30/04	11:25 AM	27.95	49	T	--	0	0.5	19	--	--	--	--
GMSG-65	01/25/05	3:36 PM	28.26	27	-	--	0	0.3	19.1	--	--	--	--
GMSG-65	04/05/05	9:01 AM	28.58	52	-	--	--	--	--	--	--	--	--
GMSG-65	07/01/05	1:57 PM	28.71	64	-	--	--	--	--	--	--	--	--
GMSG-65	10/14/05	2:09 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-65	02/28/06	1:49 PM	28.74	26	-	--	--	--	--	--	--	--	--
GMSG-65	04/05/06	3:48 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-65	04/14/06	3:30 PM	28.38	68	-	--	--	--	--	--	--	--	--
GMSG-65	07/17/06	10:49 AM	28.59	89	-	--	--	--	--	--	--	--	--
GMSG-65	10/10/06	7:49 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-65	02/02/07	1:38 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-65	04/06/07	12:50 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-65	07/20/07	10:09 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-65	10/19/07	12:11 PM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-66	02/14/02	3:20 PM	28.45	43	-	--	0	3.3	15.6	-0.82	-2.7	-0.82	--
GMSG-66	02/16/02	12:18 PM	28.57	33	-	--	0	1.5	18.3	-2.97	-4.35	-2.97	--
GMSG-66	03/01/02	3:35 PM	29.05	18	-	--	--	--	--	--	--	--	--
GMSG-66	03/12/02	11:15 AM	28.76	29	-	--	--	--	--	--	--	--	--
GMSG-66	04/15/02	10:14 AM	28.49	74	-	--	0	2.1	16	0	0	0	--
GMSG-66	05/16/02	12:54 PM	28.74	49	-	--	0	3.4	15	0	0	0	--
GMSG-66	09/30/02	3:19 PM	28.53	74	-	--	0	4.7	13.9	--	--	--	--
GMSG-66	11/20/02	12:55 PM	28.7	35	T	--	0	4	13.9	--	--	--	--
GMSG-66	01/29/03	2:32 PM	29.05	18	-	--	0	3.6	14.8	--	--	--	--
GMSG-66	04/21/03	1:03 PM	28.54	41	T	--	0	1.6	15.4	--	--	--	--
GMSG-66	08/05/03	8:39 AM	28.73	73	-	--	0	4.4	13.8	--	--	--	--
GMSG-66	10/28/03	12:29 PM	28.1	44	T	0	0	4.2	14.1	--	--	--	--
GMSG-66	10/30/03	1:53 PM	28.6	44	T	0	--	--	--	--	--	--	--
GMSG-66	11/12/03	10:03 AM	28.35	38	T	0.2	--	--	--	--	--	--	--
GMSG-66	11/24/03	2:46 PM	28.35	16	T	0	--	--	--	--	--	--	--
GMSG-66	12/08/03	10:26 AM	28.69	35	-	0	--	--	--	--	--	--	--
GMSG-66	12/15/03	2:28 PM	28.5	25	-	0	--	--	--	--	--	--	--
GMSG-66	01/20/04	1:00 PM	29.04	12	-	--	0	3.1	15.4	--	--	--	--
GMSG-66	04/17/04	12:20 PM	28.92	63	-	--	0	2.3	14.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-66	07/13/04	11:15 AM	28.6	75	-	--	0	3.7	14.5	--	--	--	--
GMSG-66	10/29/04	11:51 AM	28.4	56	-	--	0	3.4	14.9	--	--	--	--
GMSG-66	02/01/05	1:12 PM	29.11	33	-	--	--	--	--	--	--	--	--
GMSG-66	04/02/05	1:50 PM	28.79	51	-	--	--	--	--	--	--	--	--
GMSG-66	07/01/05	2:09 PM	28.71	64	-	--	--	--	--	--	--	--	--
GMSG-66	10/14/05	3:29 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-66	02/22/06	1:37 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-66	07/07/06	2:45 PM	28.97	84	-	--	--	--	--	--	--	--	--
GMSG-66	10/09/06	12:20 PM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-66	02/02/07	1:09 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-66	04/02/07	11:47 AM	28.65	42	-	--	--	--	--	--	--	--	--
GMSG-66	07/20/07	9:57 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-66	10/19/07	12:21 PM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-67	02/13/02	9:18 AM	28.94	11	-	--	0	0.5	19.7	11.59	11.49	-0.4	--
GMSG-67	02/16/02	1:14 PM	28.58	32	-	--	0	0.4	19.4	36.12	34.8	-0.71	--
GMSG-67	03/01/02	1:30 PM	29.07	17	-	--	0	0	20.6	23.27	23.18	0	--
GMSG-67	03/12/02	8:41 AM	28.81	23	T	--	0	0.1	20.7	13.96	13.34	0	--
GMSG-67	04/15/02	9:08 AM	28.5	65	-	--	0	0.1	20	30.34	23.22	0	--
GMSG-67	05/16/02	10:41 AM	28.73	44	-	--	0	0.3	20.1	38.48	33.41	0	--
GMSG-67	06/10/02	9:42 AM	28.68	80	-	--	0	1.6	18.1	18.62	18.11	0	--
GMSG-67	07/22/02	3:14 PM	28.7	81	-	--	0	2.7	16.9	-0.26	-1.03	-0.26	--
GMSG-67	07/31/02	10:20 AM	28.74	77	-	--	0	2.9	16.5	24.35	24.35	-0.52	--
GMSG-67	09/27/02	12:40 PM	28.7	62	-	--	0	2.5	16.4	--	--	--	--
GMSG-67	11/20/02	11:17 AM	28.71	35	-	--	0	2.6	16.8	--	--	--	--
GMSG-67	01/28/03	10:06 AM	28.75	18	T	--	0	0.4	20.4	--	--	--	--
GMSG-67	04/15/03	2:42 PM	28.59	51	-	--	0	0.7	19.3	--	--	--	--
GMSG-67	08/04/03	9:31 AM	28.75	69	-	--	0	1.2	16.2	--	--	--	--
GMSG-67	11/01/03	10:58 AM	29.1	35	-	--	0	1.6	17.4	--	--	--	--
GMSG-67	01/19/04	2:45 PM	28.92	8	-	--	0	1	18.2	--	--	--	--
GMSG-67	04/17/04	9:37 AM	28.92	56	-	--	0	0.5	17.3	--	--	--	--
GMSG-67	06/14/04	10:34 AM	28.61	66	-	--	--	--	--	--	--	--	--
GMSG-67	07/13/04	8:25 AM	28.64	71	-	--	0	2.1	16.5	--	--	--	--
GMSG-67	10/17/04	2:27 PM	28.63	43	-	--	0	3.7	15.6	--	--	--	--
GMSG-67	01/27/05	9:28 AM	29.35	-7	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-67	04/01/05	8:28 AM	28.8	42	-	--	--	--	--	--	--	--	--
GMSG-67	07/05/05	9:09 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-67	10/14/05	10:37 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-67	02/22/06	2:41 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-67	04/05/06	4:18 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-67	07/07/06	9:15 AM	29.05	79	-	--	--	--	--	--	--	--	--
GMSG-67	10/02/06	2:28 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-67	02/03/07	11:40 AM	28.48	1	T	--	--	--	--	--	--	--	--
GMSG-67	04/03/07	10:34 AM	28.67	36	T	--	--	--	--	--	--	--	--
GMSG-67	07/17/07	11:16 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-67	10/22/07	12:14 PM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-68	02/13/02	9:35 AM	28.92	15	-	--	0	0.3	19.7	-1.07	-1.07	-0.31	--
GMSG-68	02/16/02	1:07 PM	28.58	32	-	--	0	0.3	19.7	-0.71	-2.59	-0.71	--
GMSG-68	03/01/02	1:38 PM	29.07	17	-	--	0	0.1	20.9	0	0	0	--
GMSG-68	03/12/02	8:52 AM	28.81	23	T	--	0	0.2	20.7	0	0	0	--
GMSG-68	04/15/02	9:16 AM	28.5	65	-	--	0	0.3	20.2	0	0	0	--
GMSG-68	05/16/02	10:50 AM	28.73	44	-	--	0	0.4	20.4	0	0	0	--
GMSG-68	06/10/02	10:02 AM	28.68	80	-	--	0	0.5	20.1	0.27	0	0	--
GMSG-68	07/22/02	3:21 PM	28.7	81	-	--	0	0.6	20.4	-0.68	-0.94	-0.75	--
GMSG-68	07/31/02	10:50 AM	28.73	82	-	--	0	1	19.9	-0.68	-0.84	-0.44	--
GMSG-68	09/27/02	12:46 PM	28.7	62	-	--	0	1.6	19.4	--	--	--	--
GMSG-68	11/20/02	11:28 AM	28.71	35	-	--	0	0.6	19.2	--	--	--	--
GMSG-68	01/28/03	10:18 AM	28.75	18	T	--	0	0.3	20.5	--	--	--	--
GMSG-68	04/15/03	2:50 PM	28.59	51	-	--	0	0.4	19.6	--	--	--	--
GMSG-68	08/04/03	9:40 AM	28.75	69	-	--	0	1.3	17.8	--	--	--	--
GMSG-68	11/01/03	11:05 AM	29.1	35	-	--	0	1.1	18.4	--	--	--	--
GMSG-68	01/19/04	2:55 PM	28.92	8	-	--	0	0.4	18.6	--	--	--	--
GMSG-68	04/17/04	9:30 AM	28.92	56	-	--	0	0.5	17.2	--	--	--	--
GMSG-68	06/14/04	10:52 AM	28.61	66	-	--	--	--	--	--	--	--	--
GMSG-68	07/13/04	8:15 AM	28.64	71	-	--	0	1.3	18.1	--	--	--	--
GMSG-68	10/17/04	2:57 PM	28.65	41	-	--	0	1.3	18.3	--	--	--	--
GMSG-68	01/27/05	9:37 AM	29.36	-2	T	--	--	--	--	--	--	--	--
GMSG-68	04/01/05	8:18 AM	28.8	42	-	--	--	--	--	--	--	--	--
GMSG-68	07/05/05	9:15 AM	28.84	60	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-68	10/14/05	10:44 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-68	02/22/06	2:51 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-68	04/05/06	4:20 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-68	07/07/06	9:29 AM	29.05	79	-	--	--	--	--	--	--	--	--
GMSG-68	10/02/06	2:31 PM	28.63	81	-	--	--	--	--	--	--	--	--
GMSG-68	02/03/07	1:20 PM	28.5	0	T	--	--	--	--	--	--	--	--
GMSG-68	04/03/07	10:26 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-68	07/17/07	11:19 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-68	10/22/07	12:18 PM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-69	06/10/02	9:11 AM	28.7	73	-	--	0	2.8	16.2	0	0	0	--
GMSG-69	06/20/02	1:31 PM	28.97	81	-	--	0	2.5	17.4	0	0	0	--
GMSG-69	06/26/02	3:00 PM	28.55	77	-	--	0	2.8	16.3	--	--	--	--
GMSG-69	07/13/02	9:45 AM	28.79	79	-	--	0	3	16.3	--	--	--	--
GMSG-69	09/30/02	10:57 AM	28.59	70	-	--	0	3.4	15.4	--	--	--	--
GMSG-69	11/21/02	11:19 AM	28.67	34	-	--	0	2.8	15.9	--	--	--	--
GMSG-69	01/29/03	11:02 AM	29.12	10	T	--	0	0.8	18.8	--	--	--	--
GMSG-69	04/21/03	12:40 PM	28.54	41	T	--	0	1.2	14.3	--	--	--	--
GMSG-69	08/05/03	10:34 AM	28.72	79	-	--	0	3.2	14.9	--	--	--	--
GMSG-69	11/02/03	12:00 PM	28.92	40	-	--	0	2.8	15.7	--	--	--	--
GMSG-69	01/21/04	8:36 AM	28.46	13	T	--	0	2.1	16.4	--	--	--	--
GMSG-69	04/18/04	9:00 AM	28.7	45	-	--	0	1.4	14.6	--	--	--	--
GMSG-69	07/15/04	8:08 AM	28.7	70	-	--	0	1.7	17.3	--	--	--	--
GMSG-69	10/31/04	12:03 PM	--	--	--	--	0	0.8	17.9	--	--	--	--
GMSG-69	02/08/05	3:25 PM	28.96	21	-	--	--	--	--	--	--	--	--
GMSG-69	04/05/05	12:29 PM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-69	07/06/05	8:55 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-69	10/21/05	9:05 AM	28.91	35	-	--	--	--	--	--	--	--	--
GMSG-69	02/27/06	10:41 AM	28.86	18	-	--	--	--	--	--	--	--	--
GMSG-69	04/11/06	11:08 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-69	07/12/06	11:23 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-69	10/10/06	11:57 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-69	02/06/07	9:52 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-69	04/03/07	1:24 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-69	07/19/07	9:28 AM	29.96	67	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-69	10/23/07	1:23 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-69B	08/08/05	2:13 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-69B	08/17/05	10:13 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-69B	08/24/05	11:45 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-69B	09/12/05	3:36 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-69B	10/13/05	9:45 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-69B	11/14/05	9:44 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-69B	02/27/06	10:43 AM	28.86	18	-	--	--	--	--	--	--	--	--
GMSG-69B	04/11/06	11:09 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-69B	07/12/06	11:19 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-69B	10/10/06	11:53 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-69B	02/06/07	9:59 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-69B	04/03/07	1:25 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-69B	07/19/07	9:30 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-69B	10/23/07	1:25 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-69C	08/08/05	2:15 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-69C	08/17/05	10:15 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-69C	08/24/05	11:47 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-69C	09/12/05	3:38 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-69C	10/13/05	9:46 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-69C	11/14/05	9:45 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-69C	02/27/06	10:44 AM	28.86	18	-	--	--	--	--	--	--	--	--
GMSG-69C	04/11/06	11:10 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-69C	07/12/06	11:21 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-69C	10/10/06	11:55 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-69C	02/06/07	10:00 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-69C	04/03/07	1:26 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-69C	07/19/07	9:31 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-69C	10/23/07	1:25 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-70	06/10/02	9:03 AM	28.7	73	-	--	0	0.5	20	0	0	0	--
GMSG-70	06/20/02	1:25 PM	28.97	80	-	--	0	0.6	20	0.14	0	0	--
GMSG-70	06/26/02	2:40 PM	28.55	77	-	--	0	0.6	20.3	--	--	--	--
GMSG-70	07/13/02	9:51 AM	28.79	79	-	--	0	0.8	19.8	--	--	--	--
GMSG-70	09/30/02	10:51 AM	28.59	70	-	--	0	0.9	18.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-70	11/21/02	11:12 AM	28.67	34	-	--	0	0.4	19.5	--	--	--	--
GMSG-70	01/29/03	10:31 AM	29.12	10	T	--	0	0.2	20	--	--	--	--
GMSG-70	04/21/03	12:33 PM	28.54	41	T	--	0	0.2	19.6	--	--	--	--
GMSG-70	08/05/03	10:28 AM	28.72	77	-	--	0	0.6	17.9	--	--	--	--
GMSG-70	11/02/03	12:08 PM	28.92	40	-	--	0	0.4	18.4	--	--	--	--
GMSG-70	01/21/04	8:27 AM	28.48	11	T	--	0	0.4	18.3	--	--	--	--
GMSG-70	04/17/04	5:25 PM	28.91	64	-	--	0	0.3	17.5	--	--	--	--
GMSG-70	07/15/04	7:55 AM	28.7	70	-	--	0	0.4	18.8	--	--	--	--
GMSG-70	10/31/04	12:10 PM	--	--	--	--	0	0.4	19.5	--	--	--	--
GMSG-70	02/08/05	1:35 PM	28.97	21	-	--	--	--	--	--	--	--	--
GMSG-70	04/05/05	12:23 PM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-70	07/06/05	8:35 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-70	10/13/05	10:10 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-70	03/06/06	2:39 PM	29.01	36	-	--	--	--	--	--	--	--	--
GMSG-70	04/11/06	10:45 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-70	07/12/06	10:43 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-70	10/10/06	11:21 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-70	02/06/07	10:40 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-70	04/03/07	12:59 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-70	07/19/07	9:07 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-70	10/23/07	1:44 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-70B	08/08/05	5:36 PM	28.68	87	-	--	--	--	--	--	--	--	--
GMSG-70B	08/17/05	9:30 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-70B	08/24/05	10:10 AM	29.05	68	-	--	--	--	--	--	--	--	--
GMSG-70B	09/12/05	4:23 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-70B	10/13/05	10:05 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-70B	11/14/05	9:25 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-70B	03/06/06	2:43 PM	29.01	36	-	--	--	--	--	--	--	--	--
GMSG-70B	04/11/06	10:46 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-70B	07/12/06	10:39 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-70B	10/10/06	11:17 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-70B	02/06/07	10:41 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-70B	04/03/07	1:01 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-70B	07/19/07	9:08 AM	29.96	67	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-70B	10/23/07	1:45 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-70C	08/08/05	5:38 PM	28.68	87	-	--	--	--	--	--	--	--	--
GMSG-70C	08/17/05	9:33 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-70C	08/24/05	10:12 AM	29.05	68	-	--	--	--	--	--	--	--	--
GMSG-70C	09/12/05	4:25 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-70C	10/13/05	10:07 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-70C	11/14/05	9:26 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-70C	03/06/06	2:45 PM	29.01	36	-	--	--	--	--	--	--	--	--
GMSG-70C	04/11/06	10:47 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-70C	07/12/06	10:41 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-70C	10/10/06	11:19 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-70C	02/06/07	10:42 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-70C	04/03/07	1:02 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-70C	07/19/07	9:09 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-70C	10/23/07	1:45 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-71	06/10/02	8:49 AM	28.7	73	-	--	0	0.2	20.7	0	0	0	--
GMSG-71	06/20/02	1:10 PM	28.97	80	-	--	0	0.1	20.6	0	0	0	--
GMSG-71	06/26/02	2:54 PM	28.55	77	-	--	0	0.3	20.7	--	--	--	--
GMSG-71	07/13/02	10:03 AM	28.79	79	-	--	0	0.2	20.4	--	--	--	--
GMSG-71	09/30/02	10:32 AM	28.59	70	-	--	0	0.1	20.4	--	--	--	--
GMSG-71	11/21/02	10:43 AM	28.67	34	-	--	0	0	20	--	--	--	--
GMSG-71	01/29/03	10:22 AM	29.12	7	T	--	0	0	20.8	--	--	--	--
GMSG-71	04/21/03	12:10 PM	28.51	40	-	--	0	0.1	19.8	--	--	--	--
GMSG-71	08/05/03	10:14 AM	28.72	77	-	--	0	0.3	18.7	--	--	--	--
GMSG-71	11/02/03	2:10 PM	28.9	42	-	--	0	0.1	19.4	--	--	--	--
GMSG-71	04/18/04	9:15 AM	28.7	45	-	--	0	0.2	17.7	--	--	--	--
GMSG-71	07/15/04	8:18 AM	28.7	70	-	--	0	0.4	18.9	--	--	--	--
GMSG-71	10/31/04	11:58 AM	--	--	--	--	0	0.1	19.9	--	--	--	--
GMSG-71	02/08/05	2:29 PM	28.97	21	-	--	--	--	--	--	--	--	--
GMSG-71	04/05/05	12:16 PM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-71	07/06/05	8:47 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-71	02/27/06	8:42 AM	28.88	11	-	--	--	--	--	--	--	--	--
GMSG-71	04/11/06	10:27 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-71	07/12/06	10:08 AM	28.83	79	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-71	10/10/06	12:15 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-71	02/06/07	11:15 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-71	04/03/07	12:39 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-71	07/19/07	8:50 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-71	10/23/07	2:02 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-71A	10/13/05	8:56 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-71B	08/08/05	3:31 PM	28.71	91	-	--	--	--	--	--	--	--	--
GMSG-71B	08/17/05	9:01 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-71B	08/24/05	11:01 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-71B	09/12/05	4:49 PM	28.65	82.94	-	--	--	--	--	--	--	--	--
GMSG-71B	10/13/05	9:00 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-71B	11/14/05	9:08 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-71B	02/27/06	8:47 AM	28.88	11	-	--	--	--	--	--	--	--	--
GMSG-71B	04/11/06	10:29 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-71B	07/12/06	10:06 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-71B	10/10/06	12:13 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-71B	02/06/07	11:16 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-71B	04/03/07	12:41 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-71B	07/19/07	8:52 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-71B	10/23/07	2:03 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-72	06/10/02	8:56 AM	28.7	73	-	--	0	0.5	19.9	0	0	0	--
GMSG-72	06/20/02	1:18 PM	28.97	80	-	--	0	0.5	20.1	0	0	0	--
GMSG-72	06/26/02	2:48 PM	28.55	77	-	--	0	0.8	20.1	--	--	--	--
GMSG-72	07/13/02	9:56 AM	28.79	79	-	--	0	0.8	19.8	--	--	--	--
GMSG-72	09/30/02	10:40 AM	28.59	70	-	--	0	0.8	19.3	--	--	--	--
GMSG-72	11/21/02	10:58 AM	28.67	34	-	--	0	0.4	19.7	--	--	--	--
GMSG-72	01/29/03	10:36 AM	29.12	10	T	--	0	0	20.5	--	--	--	--
GMSG-72	04/21/03	12:21 PM	28.51	40	-	--	0	0.4	19.2	--	--	--	--
GMSG-72	08/05/03	10:22 AM	28.72	77	-	--	0	1.1	17.6	--	--	--	--
GMSG-72	11/02/03	12:15 PM	28.92	40	-	--	0	0.5	18.8	--	--	--	--
GMSG-72	04/17/04	5:31 PM	28.93	59	-	--	0	0.3	17.6	--	--	--	--
GMSG-72	07/15/04	8:34 AM	28.68	75	-	--	0	0.7	18.4	--	--	--	--
GMSG-72	10/31/04	12:20 PM	--	--	--	--	0	0.2	19.9	--	--	--	--
GMSG-72	02/08/05	2:43 PM	28.96	21	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-72	04/05/05	12:19 PM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-72	07/06/05	8:40 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-72	02/27/06	9:13 AM	28.88	11	-	--	--	--	--	--	--	--	--
GMSG-72	04/11/06	10:37 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-72	07/12/06	10:26 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-72	10/10/06	12:22 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-72	02/06/07	10:58 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-72	04/03/07	12:49 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-72	07/19/07	8:59 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-72	10/23/07	1:54 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-72A	10/13/05	9:04 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-72A	02/06/07	10:59 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-72B	08/08/05	3:47 PM	28.71	91	-	--	--	--	--	--	--	--	--
GMSG-72B	08/17/05	9:15 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-72B	08/24/05	11:10 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-72B	09/12/05	4:36 PM	28.65	82.94	-	--	--	--	--	--	--	--	--
GMSG-72B	10/13/05	9:07 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-72B	11/14/05	9:15 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-72B	02/27/06	9:18 AM	28.88	11	-	--	--	--	--	--	--	--	--
GMSG-72B	04/11/06	10:39 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-72B	07/12/06	10:23 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-72B	10/10/06	12:24 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-72B	04/03/07	12:51 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-72B	07/19/07	9:01 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-72B	10/23/07	1:55 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-73	07/13/02	10:08 AM	28.79	79	-	--	0	0.6	18.6	--	--	--	--
GMSG-73	07/22/02	9:00 AM	28.65	78	-	--	0	0.6	20	--	--	--	--
GMSG-73	08/12/02	8:25 AM	28.69	70	-	0	0	1.2	19.4	--	--	--	--
GMSG-73	10/18/02	12:28 PM	28.48	33	0.04	0	0	1	18.6	--	--	--	--
GMSG-73	01/23/03	1:38 PM	29.17	10	-	--	0	0.4	20.2	--	--	--	--
GMSG-73	01/30/03	10:53 AM	28.75	26	-	--	0	0.6	19.4	--	--	--	--
GMSG-73	02/06/03	12:09 PM	28.91	17	-	--	0	0.4	20.4	--	--	--	--
GMSG-73	03/04/03	1:03 PM	28.63	14	T	--	0	0.5	19.6	--	--	--	--
GMSG-73	04/03/03	10:33 AM	28.86	25	T	--	0	0.5	19.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-73	05/01/03	12:29 PM	28.68	64	-	--	0	0.4	19.5	--	--	--	--
GMSG-73	08/05/03	11:58 AM	28.71	80	-	--	0	0.7	18.5	--	--	--	--
GMSG-73	11/03/03	10:10 AM	29.06	35	-	--	0	0.7	18.6	--	--	--	--
GMSG-73	01/20/04	11:34 AM	29.05	13	-	--	0	0.9	18	--	--	--	--
GMSG-73	04/18/04	10:37 AM	28.6	49	0.01	--	0	0.4	17	--	--	--	--
GMSG-73	07/14/04	3:30 PM	28.67	78	-	--	0	0.5	18.5	--	--	--	--
GMSG-73	10/30/04	10:55 AM	27.95	49	T	--	0	0.7	19	--	--	--	--
GMSG-73	02/01/05	2:27 PM	29.1	34	-	--	--	--	--	--	--	--	--
GMSG-73	04/05/05	10:50 AM	28.58	65	-	--	--	--	--	--	--	--	--
GMSG-73	07/01/05	10:58 AM	28.66	59	-	--	--	--	--	--	--	--	--
GMSG-73	10/14/05	3:05 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-73	03/14/06	3:12 PM	28.63	25	T	--	--	--	--	--	--	--	--
GMSG-73	04/14/06	1:49 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-73	07/17/06	10:32 AM	28.59	89	-	--	--	--	--	--	--	--	--
GMSG-73	10/10/06	8:43 AM	28.97	40	-	--	--	--	--	--	--	--	--
GMSG-73	02/02/07	8:26 AM	28.33	2	-	--	--	--	--	--	--	--	--
GMSG-73	04/09/07	9:08 AM	28.86	28	-	--	--	--	--	--	--	--	--
GMSG-73	07/20/07	10:29 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-73	10/23/07	10:46 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-74	07/13/02	10:15 AM	28.79	79	-	--	0	0.9	18	--	--	--	--
GMSG-74	07/22/02	9:08 AM	28.65	78	-	--	0	1.2	19.1	--	--	--	--
GMSG-74	08/12/02	8:35 AM	28.64	67	0.08	0	0	1.5	18.8	--	--	--	--
GMSG-74	10/18/02	12:36 PM	28.46	33	0.04	0.6	0	1.4	18.1	--	--	--	--
GMSG-74	01/23/03	1:44 PM	29.17	10	-	--	0	0.6	19.8	--	--	--	--
GMSG-74	01/30/03	11:01 AM	28.75	26	-	--	0	1.2	18.7	--	--	--	--
GMSG-74	02/06/03	11:59 AM	28.91	17	-	--	0	0.6	20	--	--	--	--
GMSG-74	03/04/03	12:55 PM	28.63	14	T	--	0	0.9	19.2	--	--	--	--
GMSG-74	04/03/03	10:26 AM	28.89	25	0.01	--	0	0.6	19.4	--	--	--	--
GMSG-74	05/01/03	12:34 PM	28.69	66	-	--	0	0.7	19.1	--	--	--	--
GMSG-74	08/05/03	12:06 PM	28.71	80	-	--	0	0.9	18	--	--	--	--
GMSG-74	10/28/03	11:36 AM	28.1	44	T	0	0	1.3	18	--	--	--	--
GMSG-74	10/30/03	1:21 PM	28.61	43	T	0	--	--	--	--	--	--	--
GMSG-74	11/12/03	9:15 AM	28.37	37	-	0	--	--	--	--	--	--	--
GMSG-74	11/24/03	2:06 PM	28.33	17	T	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-74	12/08/03	10:53 AM	28.66	37	-	0	--	--	--	--	--	--	--
GMSG-74	12/15/03	1:44 PM	28.5	25	-	0	--	--	--	--	--	--	--
GMSG-74	01/20/04	11:24 AM	29.07	9	-	--	0	0.7	18.3	--	--	--	--
GMSG-74	04/18/04	10:26 AM	28.57	45	T	--	0	0.4	16.8	--	--	--	--
GMSG-74	07/14/04	3:38 PM	28.67	78	-	--	0	1	18.3	--	--	--	--
GMSG-74	10/30/04	11:05 AM	27.95	49	T	--	0	1.2	18.4	--	--	--	--
GMSG-74	02/01/05	1:47 PM	29.1	34	-	--	--	--	--	--	--	--	--
GMSG-74	04/05/05	10:55 AM	28.58	65	-	--	--	--	--	--	--	--	--
GMSG-74	07/01/05	11:03 AM	28.66	59	-	--	--	--	--	--	--	--	--
GMSG-74	10/14/05	3:00 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-74	03/01/06	10:59 AM	28.76	23	-	--	--	--	--	--	--	--	--
GMSG-74	04/14/06	1:45 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-74	07/17/06	10:25 AM	28.56	83	T	--	--	--	--	--	--	--	--
GMSG-74	10/16/06	11:10 AM	28.66	45	0.02	--	--	--	--	--	--	--	--
GMSG-74	02/02/07	8:21 AM	28.33	2	-	--	--	--	--	--	--	--	--
GMSG-74	04/09/07	9:04 AM	28.86	28	-	--	--	--	--	--	--	--	--
GMSG-74	07/20/07	10:26 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-74	10/23/07	10:40 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-75	07/13/02	10:19 AM	28.79	79	-	--	0	1	19.2	--	--	--	--
GMSG-75	07/22/02	9:12 AM	28.65	78	-	--	0	0.5	20	--	--	--	--
GMSG-75	08/12/02	8:45 AM	28.64	67	0.08	0	0	1.5	19.2	--	--	--	--
GMSG-75	10/18/02	1:06 PM	28.46	33	0.04	0	0	0.5	18.7	--	--	--	--
GMSG-75	01/23/03	1:49 PM	29.17	10	-	--	0	0.2	20.4	--	--	--	--
GMSG-75	01/30/03	11:10 AM	28.75	26	-	--	0	0.3	19.7	--	--	--	--
GMSG-75	02/06/03	11:52 AM	28.91	17	-	--	0	0.2	20.3	--	--	--	--
GMSG-75	03/04/03	12:45 PM	28.63	14	T	--	0	0.3	19.6	--	--	--	--
GMSG-75	04/03/03	10:20 AM	28.89	25	0.01	--	0	0.4	19.2	--	--	--	--
GMSG-75	05/01/03	12:39 PM	28.69	66	-	--	0	0.3	19.6	--	--	--	--
GMSG-75	08/05/03	8:47 AM	28.73	73	-	--	0	0.8	17.7	--	--	--	--
GMSG-75	10/28/03	12:13 PM	28.1	44	T	0	0	0.7	18.7	--	--	--	--
GMSG-75	10/30/03	1:35 PM	28.6	44	T	0	--	--	--	--	--	--	--
GMSG-75	11/12/03	9:35 AM	28.35	38	T	0	--	--	--	--	--	--	--
GMSG-75	11/24/03	2:17 PM	28.33	17	T	0	--	--	--	--	--	--	--
GMSG-75	12/08/03	10:44 AM	28.66	37	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-75	12/15/03	2:04 PM	28.5	25	-	0	--	--	--	--	--	--	--
GMSG-75	01/20/04	11:18 AM	29.07	9	-	--	0	0.5	18.3	--	--	--	--
GMSG-75	04/18/04	10:21 AM	28.57	45	T	--	0	0.3	17.1	--	--	--	--
GMSG-75	07/14/04	3:45 PM	28.67	78	-	--	0	0.4	18.6	--	--	--	--
GMSG-75	10/30/04	11:12 AM	27.95	49	T	--	0	0.4	19.1	--	--	--	--
GMSG-75	02/01/05	1:23 PM	29.11	33	-	--	--	--	--	--	--	--	--
GMSG-75	04/05/05	10:45 AM	28.58	65	-	--	--	--	--	--	--	--	--
GMSG-75	07/01/05	10:50 AM	28.66	59	-	--	--	--	--	--	--	--	--
GMSG-75	10/14/05	2:55 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-75	03/01/06	10:51 AM	28.76	23	-	--	--	--	--	--	--	--	--
GMSG-75	04/14/06	1:41 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-75	07/17/06	10:18 AM	28.56	83	T	--	--	--	--	--	--	--	--
GMSG-75	10/10/06	8:36 AM	28.97	40	-	--	--	--	--	--	--	--	--
GMSG-75	02/02/07	8:17 AM	28.33	2	-	--	--	--	--	--	--	--	--
GMSG-75	04/09/07	8:59 AM	28.86	28	-	--	--	--	--	--	--	--	--
GMSG-75	07/20/07	10:22 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-75	10/23/07	10:31 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-76	07/13/02	10:22 AM	28.79	79	-	--	0	2.3	17.2	--	--	--	--
GMSG-76	07/22/02	2:06 PM	28.68	82	-	--	0	1.4	18.5	--	--	--	--
GMSG-76	08/12/02	11:30 AM	28.66	80	-	0	0	2.3	16.4	--	--	--	--
GMSG-76	09/30/02	3:03 PM	28.53	74	-	--	0	2.5	15.6	--	--	--	--
GMSG-76	10/29/02	1:15 PM	28.95	42	-	--	0	2.8	14.6	--	--	--	--
GMSG-76	11/19/02	12:22 PM	28.54	44	-	--	0	2.7	15.9	--	--	--	--
GMSG-76	01/29/03	2:11 PM	29.06	16	-	--	0	2.1	17.4	--	--	--	--
GMSG-76	04/21/03	12:50 PM	28.54	41	T	--	0	0.5	19	--	--	--	--
GMSG-76	08/04/03	11:51 AM	28.75	68	T	--	0	2.2	15.7	--	--	--	--
GMSG-76	10/28/03	12:17 PM	28.1	44	T	0	0	2.9	14.5	--	--	--	--
GMSG-76	10/30/03	1:38 PM	28.6	44	T	0	--	--	--	--	--	--	--
GMSG-76	11/12/03	9:55 AM	28.35	38	T	0	--	--	--	--	--	--	--
GMSG-76	11/24/03	2:37 PM	28.35	16	T	0	--	--	--	--	--	--	--
GMSG-76	12/08/03	10:30 AM	28.66	37	-	0	--	--	--	--	--	--	--
GMSG-76	12/15/03	2:22 PM	28.5	25	-	0	--	--	--	--	--	--	--
GMSG-76	02/02/04	9:45 AM	28.95	25	-	--	0	0.7	18.4	--	--	--	--
GMSG-76	04/18/04	10:06 AM	28.57	45	T	--	0	0.9	16.1	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-76	07/14/04	5:15 PM	28.67	77	-	--	0	0.6	18.7	--	--	--	--
GMSG-76	10/30/04	11:16 AM	27.95	49	T	--	0	1.2	17.1	--	--	--	--
GMSG-76	01/25/05	3:25 PM	28.25	27	-	--	0	1	18.2	--	--	--	--
GMSG-76	04/05/05	8:55 AM	28.58	52	-	--	--	--	--	--	--	--	--
GMSG-76	07/01/05	1:45 PM	28.71	64	-	--	--	--	--	--	--	--	--
GMSG-76	10/14/05	2:25 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-76	02/28/06	2:22 PM	28.74	26	-	--	--	--	--	--	--	--	--
GMSG-76	04/14/06	3:37 PM	28.38	68	-	--	--	--	--	--	--	--	--
GMSG-76	07/17/06	11:10 AM	28.59	89	-	--	--	--	--	--	--	--	--
GMSG-76	10/10/06	7:34 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-76	02/02/07	1:25 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-76	04/06/07	1:00 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-76	07/20/07	10:02 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-76	10/19/07	11:58 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-77	07/13/02	10:40 AM	28.8	81	-	--	0	1.6	17.7	--	--	--	--
GMSG-77	07/22/02	1:09 PM	28.66	82	-	--	0	1.9	17	--	--	--	--
GMSG-77	08/12/02	8:55 AM	28.64	67	0.08	0	0	2.1	17.4	--	--	--	--
GMSG-77	09/30/02	1:02 PM	28.56	75	-	--	0	2.3	16.7	--	--	--	--
GMSG-77	10/29/02	11:52 AM	28.96	43	-	--	0	1.1	18	--	--	--	--
GMSG-77	11/19/02	12:31 PM	28.53	46	-	--	0	1	18.3	--	--	--	--
GMSG-77	01/29/03	2:44 PM	29.05	18	-	--	0	0.5	18.8	--	--	--	--
GMSG-77	04/21/03	1:19 PM	28.54	41	T	--	0	0.3	18.6	--	--	--	--
GMSG-77	08/05/03	8:55 AM	28.73	73	-	--	0	2	15.8	--	--	--	--
GMSG-77	10/28/03	11:41 AM	28.1	44	T	0	0	1.1	17.1	--	--	--	--
GMSG-77	10/30/03	1:24 PM	28.61	43	T	0	--	--	--	--	--	--	--
GMSG-77	11/12/03	9:38 AM	28.35	38	T	0	--	--	--	--	--	--	--
GMSG-77	11/24/03	2:33 PM	28.35	16	T	0	--	--	--	--	--	--	--
GMSG-77	12/08/03	10:47 AM	28.66	37	-	0	--	--	--	--	--	--	--
GMSG-77	01/20/04	10:58 AM	29.07	9	-	--	0	0.1	18.7	--	--	--	--
GMSG-77	04/18/04	12:17 PM	28.54	49	-	--	0	0.5	16.5	--	--	--	--
GMSG-77	07/14/04	3:58 PM	28.67	78	-	--	0	0.9	17.9	--	--	--	--
GMSG-77	10/30/04	11:40 AM	27.97	49	0.01	--	--	--	--	--	--	--	--
GMSG-77	10/31/04	12:53 PM	--	--	--	--	0	0	19.9	--	--	--	--
GMSG-77	02/01/05	1:32 PM	29.1	34	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-77	04/05/05	9:39 AM	28.57	59	-	--	--	--	--	--	--	--	--
GMSG-77	07/01/05	11:14 AM	28.66	59	-	--	--	--	--	--	--	--	--
GMSG-77	10/13/05	1:15 PM	28.8	59	-	--	--	--	--	--	--	--	--
GMSG-77	02/28/06	3:46 PM	28.73	27	-	--	--	--	--	--	--	--	--
GMSG-77	04/14/06	1:59 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-77	07/13/06	2:51 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-77	10/10/06	8:08 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-77	02/01/07	2:39 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-77	04/06/07	1:27 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-77	07/20/07	10:54 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-77	10/19/07	11:14 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-78	07/13/02	10:28 AM	28.79	79	-	--	0	2.4	18.9	--	--	--	--
GMSG-78	07/22/02	2:12 PM	28.68	82	-	--	0	1.8	19	--	--	--	--
GMSG-78	08/12/02	11:45 AM	28.66	80	-	0	0	2.7	18.1	--	--	--	--
GMSG-78	09/30/02	2:26 PM	28.55	73	-	--	0	2.3	18.1	--	--	--	--
GMSG-78	10/29/02	12:59 PM	28.95	42	-	--	0	2.1	17.7	--	--	--	--
GMSG-78	11/19/02	12:14 PM	28.54	44	-	--	0	2.1	17.9	--	--	--	--
GMSG-78	01/28/03	1:18 PM	28.74	23	T	--	0	2	17.7	--	--	--	--
GMSG-78	04/21/03	10:42 AM	28.48	40	T	--	0	1.6	18.1	--	--	--	--
GMSG-78	07/21/03	3:00 PM	28.63	68	-	--	0	2	17.8	--	--	--	--
GMSG-78	11/03/03	10:55 AM	29.05	35	-	--	0	2.1	17.3	--	--	--	--
GMSG-78	01/20/04	1:35 PM	29.02	14	-	--	0	2.3	16.9	--	--	--	--
GMSG-78	04/17/04	1:56 PM	28.91	66	-	--	0	1.4	16.7	--	--	--	--
GMSG-78	07/13/04	11:43 AM	28.55	75	-	--	0	0.1	19.6	--	--	--	--
GMSG-78	10/28/04	9:25 AM	28.98	46	-	--	0	1.6	18	--	--	--	--
GMSG-78	01/25/05	2:03 PM	28.26	26	-	--	0	2	17.7	--	--	--	--
GMSG-78	04/02/05	2:45 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-78	07/01/05	2:39 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-78	10/10/05	4:25 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-78	02/22/06	12:36 PM	28.49	29	-	--	--	--	--	--	--	--	--
GMSG-78	04/03/06	3:02 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-78	07/10/06	1:43 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-78	10/03/06	2:13 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-78	01/17/07	11:38 AM	29.05	23	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-78	04/02/07	10:46 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-78	07/18/07	10:59 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-78	10/18/07	4:17 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-78	11/02/07	3:58 PM	29.99	52	-	--	--	--	--	--	--	--	--
GMSG-79	07/13/02	10:45 AM	28.8	81	-	--	0	16.8	1.6	--	--	--	--
GMSG-79	07/22/02	1:17 PM	28.66	82	-	--	0	18.5	0.6	--	--	--	--
GMSG-79	08/12/02	9:55 AM	28.66	71	T	0	0	17.6	1.5	--	--	--	--
GMSG-79	09/30/02	1:19 PM	28.56	75	-	--	0	16.3	0	--	--	--	--
GMSG-79	10/29/02	12:08 PM	28.96	43	-	--	0	13.5	0	--	--	--	--
GMSG-79	11/19/02	12:40 PM	28.53	46	-	--	0	13	0	--	--	--	--
GMSG-79	01/29/03	3:04 PM	29.05	18	-	--	0	13.5	0	--	--	--	--
GMSG-79	04/21/03	1:24 PM	28.54	41	T	--	0	12.7	1.7	--	--	--	--
GMSG-79	08/05/03	9:03 AM	28.73	73	-	--	0	18.2	0	--	--	--	--
GMSG-79	10/28/03	11:48 AM	28.1	44	T	0	0	15.4	0	--	--	--	--
GMSG-79	10/30/03	1:27 PM	28.61	43	T	0	--	--	--	--	--	--	--
GMSG-79	11/12/03	9:11 AM	28.37	37	-	0	--	--	--	--	--	--	--
GMSG-79	11/24/03	2:08 PM	28.33	17	T	0	--	--	--	--	--	--	--
GMSG-79	12/08/03	10:50 AM	28.66	37	-	0	--	--	--	--	--	--	--
GMSG-79	12/15/03	1:55 PM	28.5	25	-	0	--	--	--	--	--	--	--
GMSG-79	01/20/04	10:09 AM	29.08	3	-	--	0	12.5	2.1	--	--	--	--
GMSG-79	04/18/04	12:25 PM	28.54	49	-	--	0	13.6	0.5	--	--	--	--
GMSG-79	04/19/04	11:36 AM	28.76	44	-	--	0	13	2.1	--	--	--	--
GMSG-79	07/14/04	4:13 PM	28.67	78	-	--	0	17.4	1	--	--	--	--
GMSG-79	10/30/04	11:50 AM	27.97	49	0.01	--	0	15	0.2	--	--	--	--
GMSG-79	02/10/05	2:29 PM	28.85	30	-	--	--	--	--	--	--	--	--
GMSG-79	04/05/05	9:48 AM	28.57	59	-	--	--	--	--	--	--	--	--
GMSG-79	07/01/05	11:25 AM	28.66	59	-	--	--	--	--	--	--	--	--
GMSG-79	10/13/05	1:49 PM	28.79	59	T	--	--	--	--	--	--	--	--
GMSG-79	02/28/06	3:24 PM	28.72	27	-	--	--	--	--	--	--	--	--
GMSG-79	04/14/06	2:05 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-79	07/13/06	2:59 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-79	10/10/06	8:20 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-79	02/01/07	2:51 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-79	04/06/07	1:37 PM	28.74	19	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-79	07/20/07	11:02 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-79	10/19/07	10:47 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-80	07/13/02	10:50 AM	28.8	81	-	--	0	1.4	19.2	--	--	--	--
GMSG-80	07/22/02	1:12 PM	28.66	82	-	--	0	1.4	19	--	--	--	--
GMSG-80	08/12/02	9:45 AM	28.66	71	T	0	0	1	20	--	--	--	--
GMSG-80	09/30/02	1:25 PM	28.56	75	-	--	0	1	19.3	--	--	--	--
GMSG-80	10/29/02	12:16 PM	28.96	43	-	--	0	0.2	20	--	--	--	--
GMSG-80	11/19/02	12:55 PM	28.53	46	-	--	0	0.9	18.8	--	--	--	--
GMSG-80	01/30/03	11:19 AM	28.75	26	-	--	0	0	20.2	--	--	--	--
GMSG-80	04/21/03	1:32 PM	28.56	40	T	--	0	0.5	18.7	--	--	--	--
GMSG-80	08/05/03	9:10 AM	28.73	73	-	--	0	1.2	17.5	--	--	--	--
GMSG-80	11/03/03	9:20 AM	29.06	35	-	--	0	0.4	18.9	--	--	--	--
GMSG-80	01/20/04	10:03 AM	29.08	3	-	--	0	0.3	18.6	--	--	--	--
GMSG-80	04/18/04	12:36 PM	28.5	50	-	--	0	0.3	17	--	--	--	--
GMSG-80	07/14/04	4:25 PM	28.67	78	-	--	0	1	17.7	--	--	--	--
GMSG-80	10/31/04	11:09 AM	--	--	--	--	0	0.3	19.3	--	--	--	--
GMSG-80	02/01/05	2:51 PM	29.1	35	-	--	--	--	--	--	--	--	--
GMSG-80	04/05/05	10:18 AM	28.57	59	-	--	--	--	--	--	--	--	--
GMSG-80	07/01/05	11:32 AM	28.68	63	-	--	--	--	--	--	--	--	--
GMSG-80	10/13/05	2:00 PM	28.79	59	T	--	--	--	--	--	--	--	--
GMSG-80	02/28/06	3:33 PM	28.73	27	-	--	--	--	--	--	--	--	--
GMSG-80	04/14/06	2:03 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-80	07/13/06	3:13 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-80	10/10/06	8:28 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-80	02/01/07	2:45 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-80	04/06/07	1:31 PM	28.74	19	T	--	--	--	--	--	--	--	--
GMSG-80	07/20/07	10:57 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-80	10/19/07	10:40 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-81	07/13/02	10:54 AM	28.8	81	-	--	0	0.2	20.7	--	--	--	--
GMSG-81	07/22/02	1:31 PM	28.68	82	-	--	0	0	21.3	--	--	--	--
GMSG-81	08/12/02	10:15 AM	28.66	71	T	0	0	0.5	20.1	--	--	--	--
GMSG-81	09/30/02	1:31 PM	28.55	73	-	--	0	0.3	20.1	--	--	--	--
GMSG-81	10/29/02	12:19 PM	28.96	43	-	--	0	0.1	19.9	--	--	--	--
GMSG-81	11/19/02	1:04 PM	28.53	46	-	--	0	0	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-81	01/30/03	11:36 AM	28.74	28	-	--	0	0	19.8	--	--	--	--
GMSG-81	04/21/03	1:41 PM	28.56	40	T	--	0	0	20	--	--	--	--
GMSG-81	08/05/03	9:17 AM	28.73	73	-	--	0	0.4	18.6	--	--	--	--
GMSG-81	11/03/03	9:28 AM	29.06	35	-	--	0	0.1	19.3	--	--	--	--
GMSG-81	01/20/04	10:29 AM	29.08	3	-	--	0	0	18.7	--	--	--	--
GMSG-81	04/18/04	12:52 PM	28.5	50	-	--	0	0.2	17.1	--	--	--	--
GMSG-81	07/14/04	4:30 PM	28.67	77	-	--	0	0.3	19.1	--	--	--	--
GMSG-81	10/31/04	12:58 PM	--	--	--	--	0	0	19.9	--	--	--	--
GMSG-81	02/01/05	3:52 PM	29.11	35	-	--	--	--	--	--	--	--	--
GMSG-81	04/05/05	10:36 AM	28.58	65	-	--	--	--	--	--	--	--	--
GMSG-81	07/01/05	12:05 PM	28.68	63	-	--	--	--	--	--	--	--	--
GMSG-81	10/14/05	11:45 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-81	03/06/06	1:19 PM	29	34	-	--	--	--	--	--	--	--	--
GMSG-81	04/14/06	2:54 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-81	07/14/06	1:24 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-81	10/10/06	10:05 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-81	02/01/07	3:10 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-81	04/09/07	10:24 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-81	07/20/07	1:42 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-81	10/19/07	10:07 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-81B	08/26/05	3:05 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-81B	08/31/05	3:50 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-81B	09/09/05	1:39 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-81B	10/14/05	11:41 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-81B	11/14/05	10:44 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-81B	12/15/05	10:06 AM	28.46	30	-	--	--	--	--	--	--	--	--
GMSG-81B	03/06/06	1:40 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-81B	04/14/06	2:56 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-81B	07/14/06	1:20 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-81B	10/10/06	10:01 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-81B	02/09/07	9:41 AM	28.95	10	-	--	--	--	--	--	--	--	--
GMSG-81B	04/09/07	10:26 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-81B	07/20/07	1:43 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-81B	10/19/07	10:08 AM	28.98	53	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-81C	08/26/05	3:08 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-81C	08/31/05	3:53 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-81C	09/09/05	1:41 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-81C	10/14/05	11:42 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-81C	11/14/05	10:45 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-81C	12/15/05	10:08 AM	28.46	30	-	--	--	--	--	--	--	--	--
GMSG-81C	03/06/06	1:45 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-81C	04/14/06	2:57 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-81C	07/14/06	1:22 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-81C	10/10/06	10:03 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-81C	02/09/07	9:42 AM	28.95	10	-	--	--	--	--	--	--	--	--
GMSG-81C	04/09/07	10:27 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-81C	07/20/07	1:44 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-81C	10/19/07	10:09 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-82	07/13/02	11:01 AM	28.8	81	-	--	0	1.1	19.5	--	--	--	--
GMSG-82	07/22/02	1:42 PM	28.68	82	-	--	0	1.4	19.2	--	--	--	--
GMSG-82	08/12/02	10:45 AM	28.65	77	-	0	0	1.4	19.1	--	--	--	--
GMSG-82	09/30/02	1:42 PM	28.55	73	-	--	0	1	19.5	--	--	--	--
GMSG-82	10/29/02	12:42 PM	28.95	42	-	--	0	0.5	19.7	--	--	--	--
GMSG-82	11/19/02	1:17 PM	28.53	46	-	--	0	0.4	19.8	--	--	--	--
GMSG-82	01/30/03	12:37 PM	28.7	30	-	--	0	0.3	19.8	--	--	--	--
GMSG-82	04/21/03	2:40 PM	28.59	37	T	--	0	0.4	19.4	--	--	--	--
GMSG-82	08/05/03	12:43 PM	28.7	82	-	--	0	0.9	17.8	--	--	--	--
GMSG-82	11/03/03	9:40 AM	29.06	35	-	--	0	0.8	18.4	--	--	--	--
GMSG-82	01/20/04	10:46 AM	29.07	9	-	--	0	0.4	18.2	--	--	--	--
GMSG-82	04/18/04	1:05 PM	28.5	50	-	--	0	0.2	17.2	--	--	--	--
GMSG-82	07/14/04	4:44 PM	28.67	77	-	--	0	0.6	18.4	--	--	--	--
GMSG-82	10/31/04	1:06 PM	--	--	--	--	0	0.5	19.5	--	--	--	--
GMSG-82	02/01/05	3:34 PM	29.11	35	-	--	--	--	--	--	--	--	--
GMSG-82	04/05/05	10:33 AM	28.58	65	-	--	--	--	--	--	--	--	--
GMSG-82	07/01/05	11:50 AM	28.68	63	-	--	--	--	--	--	--	--	--
GMSG-82	10/17/05	3:40 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-82	03/14/06	11:39 AM	28.59	26	-	--	--	--	--	--	--	--	--
GMSG-82	04/14/06	2:26 PM	28.35	72	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-82	07/14/06	2:16 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-82	10/25/06	3:09 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-82	02/01/07	3:49 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-82	04/17/07	11:29 AM	28.84	51	-	--	--	--	--	--	--	--	--
GMSG-82	07/20/07	11:28 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-82	10/19/07	8:45 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-82B	08/17/05	10:47 AM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-82B	08/26/05	2:27 PM	28.67	78	-	--	--	--	--	--	--	--	--
GMSG-82B	09/01/05	1:22 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-82B	09/09/05	2:44 PM	28.87	78.08	-	--	--	--	--	--	--	--	--
GMSG-82B	10/17/05	3:41 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-82B	11/14/05	11:26 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-82B	12/13/05	3:37 PM	28.88	23	-	--	--	--	--	--	--	--	--
GMSG-82B	03/14/06	11:51 AM	28.59	26	-	--	--	--	--	--	--	--	--
GMSG-82B	04/14/06	2:28 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-82B	07/14/06	2:09 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-82B	10/25/06	3:12 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-82B	02/01/07	3:50 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-82B	04/17/07	11:24 AM	28.84	51	-	--	--	--	--	--	--	--	--
GMSG-82B	07/20/07	11:25 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-82B	10/19/07	8:46 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-82C	08/17/05	10:49 AM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-82C	08/26/05	2:30 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-82C	09/01/05	1:24 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-82C	09/09/05	2:46 PM	28.87	78.08	-	--	--	--	--	--	--	--	--
GMSG-82C	10/17/05	3:43 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-82C	11/14/05	11:27 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-82C	12/13/05	3:39 PM	28.88	23	-	--	--	--	--	--	--	--	--
GMSG-82C	03/14/06	11:53 AM	28.59	26	-	--	--	--	--	--	--	--	--
GMSG-82C	04/14/06	2:29 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-82C	07/14/06	2:11 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-82C	10/25/06	3:14 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-82C	02/01/07	3:51 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-82C	04/17/07	11:25 AM	28.84	51	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-82C	07/20/07	11:26 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-82C	10/19/07	8:47 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-83	07/13/02	11:07 AM	28.8	81	-	--	0	0.3	20.5	--	--	--	--
GMSG-83	07/22/02	1:36 PM	28.68	82	-	--	0	0.4	20.1	--	--	--	--
GMSG-83	08/12/02	10:30 AM	28.65	77	-	0	0	0.5	20	--	--	--	--
GMSG-83	09/30/02	1:37 PM	28.55	73	-	--	0	0.4	20.1	--	--	--	--
GMSG-83	10/29/02	12:35 PM	28.95	42	-	--	0	0.2	19.8	--	--	--	--
GMSG-83	11/19/02	1:12 PM	28.53	46	-	--	0	0.1	19.9	--	--	--	--
GMSG-83	01/30/03	12:30 PM	28.7	30	-	--	0	0	20	--	--	--	--
GMSG-83	04/21/03	12:00 AM	28.74	35	-	--	0	0.1	19.8	--	--	--	--
GMSG-83	08/05/03	9:25 AM	28.73	73	-	--	0	0.4	18.6	--	--	--	--
GMSG-83	11/03/03	9:45 AM	29.06	35	-	--	0	0.2	19	--	--	--	--
GMSG-83	01/20/04	10:39 AM	29.07	9	-	--	0	0	18.6	--	--	--	--
GMSG-83	04/18/04	12:59 PM	28.5	50	-	--	0	0.1	17.3	--	--	--	--
GMSG-83	07/14/04	4:38 PM	28.67	77	-	--	0	0.3	18.6	--	--	--	--
GMSG-83	10/31/04	1:12 PM	--	--	--	--	0	0.3	19.7	--	--	--	--
GMSG-83	02/01/05	3:18 PM	29.1	35	-	--	--	--	--	--	--	--	--
GMSG-83	04/05/05	10:28 AM	28.57	59	-	--	--	--	--	--	--	--	--
GMSG-83	07/01/05	11:40 AM	28.68	63	-	--	--	--	--	--	--	--	--
GMSG-83	10/14/05	1:05 PM	28.64	68	-	--	--	--	--	--	--	--	--
GMSG-83	10/17/05	3:55 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-83	03/01/06	1:50 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-83	04/14/06	2:32 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-83	07/14/06	2:02 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-83	10/25/06	3:18 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-83	02/01/07	3:38 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-83	04/10/07	11:06 AM	28.85	36	-	--	--	--	--	--	--	--	--
GMSG-83	07/20/07	1:51 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-83	10/19/07	8:55 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-83B	08/26/05	3:22 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-83B	08/31/05	3:25 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-83B	09/09/05	1:21 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-83B	10/14/05	11:26 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-83B	10/17/05	3:58 PM	28.41	62	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-83B	11/14/05	10:52 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-83B	12/15/05	10:30 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-83B	03/01/06	1:54 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-83B	04/14/06	2:34 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-83B	07/14/06	1:56 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-83B	10/25/06	3:20 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-83B	02/01/07	3:39 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-83B	04/10/07	11:08 AM	28.85	36	-	--	--	--	--	--	--	--	--
GMSG-83B	07/20/07	1:53 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-83B	10/19/07	8:50 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-83C	08/26/05	3:24 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-83C	08/31/05	3:23 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-83C	09/09/05	1:24 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-83C	10/14/05	11:28 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-83C	10/17/05	4:00 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-83C	11/14/05	10:53 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-83C	12/15/05	10:32 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-83C	03/01/06	1:56 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-83C	04/14/06	2:35 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-83C	07/14/06	1:58 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-83C	10/25/06	3:21 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-83C	02/01/07	3:40 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-83C	04/10/07	11:09 AM	28.85	36	-	--	--	--	--	--	--	--	--
GMSG-83C	07/20/07	1:54 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-83C	10/19/07	8:50 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-84	07/13/02	11:22 AM	28.8	81	-	--	0	2	17.2	--	--	--	--
GMSG-84	07/22/02	1:24 PM	28.66	82	-	--	0	2.6	16.4	--	--	--	--
GMSG-84	08/12/02	10:05 AM	28.66	71	T	0	0	2.4	16.6	--	--	--	--
GMSG-84	09/30/02	1:11 PM	28.56	75	-	--	0	2.2	16.6	--	--	--	--
GMSG-84	10/29/02	12:02 PM	28.96	43	-	--	0	1.4	17.2	--	--	--	--
GMSG-84	11/19/02	12:47 PM	28.53	46	-	--	0	1.5	17.3	--	--	--	--
GMSG-84	01/29/03	2:53 PM	29.05	18	-	--	0	1.6	17.5	--	--	--	--
GMSG-84	04/21/03	1:11 PM	28.54	41	T	--	0	1.8	16.9	--	--	--	--
GMSG-84	08/04/03	11:59 AM	28.75	68	T	--	0	2.4	15.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-84	10/28/03	11:58 AM	28.1	44	T	0	0	1.7	16.6	--	--	--	--
GMSG-84	10/30/03	1:30 PM	28.6	44	T	0	--	--	--	--	--	--	--
GMSG-84	11/12/03	9:06 AM	28.37	37	-	0	--	--	--	--	--	--	--
GMSG-84	11/24/03	2:13 PM	28.33	17	T	0	--	--	--	--	--	--	--
GMSG-84	12/08/03	10:19 AM	28.69	35	-	0	--	--	--	--	--	--	--
GMSG-84	12/15/03	2:00 PM	28.5	25	-	0	--	--	--	--	--	--	--
GMSG-84	01/22/04	9:35 AM	28.77	-9	-	--	0	1.1	17.1	--	--	--	--
GMSG-84	04/19/04	3:50 PM	28.89	-	-	--	0	1.2	16.2	--	--	--	--
GMSG-84	07/14/04	4:08 PM	28.67	78	-	--	0	1	17.9	--	--	--	--
GMSG-84	10/30/04	11:36 AM	27.97	49	0.01	--	0	0.3	19.7	--	--	--	--
GMSG-84	02/01/05	1:40 PM	29.1	34	-	--	--	--	--	--	--	--	--
GMSG-84	04/05/05	9:43 AM	28.57	59	-	--	--	--	--	--	--	--	--
GMSG-84	07/01/05	11:20 AM	28.66	59	-	--	--	--	--	--	--	--	--
GMSG-84	10/13/05	1:35 PM	28.79	59	T	--	--	--	--	--	--	--	--
GMSG-84	02/28/06	3:05 PM	28.72	27	-	--	--	--	--	--	--	--	--
GMSG-84	04/14/06	2:08 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-84	07/13/06	3:19 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-84	10/10/06	8:15 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-84	02/01/07	2:05 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-84	04/06/07	1:18 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-84	07/20/07	10:43 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-84	10/19/07	11:31 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-85	07/13/02	11:29 AM	28.8	81	-	--	0	1.4	19.8	--	--	--	--
GMSG-85	07/22/02	1:52 PM	28.68	82	-	--	0	1.6	19.1	--	--	--	--
GMSG-85	08/12/02	11:15 AM	28.65	77	-	0	0	1.5	19.5	--	--	--	--
GMSG-85	09/30/02	12:40 PM	28.56	75	-	--	0	1.3	19.2	--	--	--	--
GMSG-85	10/29/02	11:33 AM	28.96	43	-	--	0	1.1	18.7	--	--	--	--
GMSG-85	11/19/02	1:54 PM	28.54	47	-	--	0	1.2	18.6	--	--	--	--
GMSG-85	01/30/03	10:03 AM	28.77	23	-	--	0	1.4	18.7	--	--	--	--
GMSG-85	04/24/03	11:42 AM	28.77	63	-	--	0	0.3	19	--	--	--	--
GMSG-85	08/05/03	11:46 AM	28.71	80	-	--	0	1.1	17.9	--	--	--	--
GMSG-85	11/03/03	10:25 AM	29.06	35	-	--	0	0.9	18.4	--	--	--	--
GMSG-85	01/20/04	11:46 AM	29.05	13	-	--	0	1.3	17.4	--	--	--	--
GMSG-85	04/18/04	12:05 PM	28.54	49	-	--	0	1	16.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-85	04/19/04	11:51 AM	28.76	44	-	--	0	1	16.7	--	--	--	--
GMSG-85	07/14/04	3:17 PM	28.67	78	-	--	0	0.9	18.4	--	--	--	--
GMSG-85	10/30/04	10:37 AM	27.95	49	T	--	0	0.7	18.6	--	--	--	--
GMSG-85	02/01/05	2:11 PM	29.1	34	-	--	--	--	--	--	--	--	--
GMSG-85	04/05/05	11:07 AM	28.58	65	-	--	--	--	--	--	--	--	--
GMSG-85	07/01/05	10:12 AM	28.64	56	-	--	--	--	--	--	--	--	--
GMSG-85	10/13/05	12:59 PM	28.8	59	-	--	--	--	--	--	--	--	--
GMSG-85	02/24/06	3:38 PM	28.76	18	0.01	--	--	--	--	--	--	--	--
GMSG-85	04/11/06	8:51 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-85	07/11/06	1:43 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-85	10/10/06	1:23 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-85	02/05/07	9:25 AM	29.07	-9	-	--	--	--	--	--	--	--	--
GMSG-85	04/04/07	10:21 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-85	07/19/07	11:01 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-85	11/01/07	3:23 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-86	07/13/02	11:36 AM	28.79	84	-	--	0	0.6	20.3	--	--	--	--
GMSG-86	07/22/02	1:58 PM	28.68	82	-	--	0	0.4	20.1	--	--	--	--
GMSG-86	08/12/02	2:15 PM	28.63	82	-	0	0	1.3	19.6	--	--	--	--
GMSG-86	09/30/02	2:54 PM	28.53	74	-	--	0	1.4	18.8	--	--	--	--
GMSG-86	10/29/02	11:43 AM	28.96	43	-	--	0	1.4	18.2	--	--	--	--
GMSG-86	11/19/02	1:47 PM	28.54	47	-	--	0	0.5	19.3	--	--	--	--
GMSG-86	01/30/03	10:18 AM	28.77	23	-	--	0	1.2	18.7	--	--	--	--
GMSG-86	04/24/03	11:50 AM	28.77	63	-	--	0	0.8	18.7	--	--	--	--
GMSG-86	08/05/03	11:37 AM	28.71	80	-	--	0	1.2	17.8	--	--	--	--
GMSG-86	11/03/03	10:20 AM	29.06	35	-	--	0	1	18.2	--	--	--	--
GMSG-86	01/20/04	12:21 PM	29.05	13	-	--	0	1.6	17.2	--	--	--	--
GMSG-86	04/18/04	10:44 AM	28.6	49	0.01	--	0	1.2	16.1	--	--	--	--
GMSG-86	07/14/04	3:23 PM	28.67	78	-	--	0	0.4	19.1	--	--	--	--
GMSG-86	10/30/04	10:40 AM	27.95	49	T	--	--	--	--	--	--	--	--
GMSG-86	10/31/04	11:02 AM	--	--	--	--	0	0.4	19.6	--	--	--	--
GMSG-86	02/07/05	1:55 PM	28.87	28	-	--	--	--	--	--	--	--	--
GMSG-86	04/05/05	11:01 AM	28.58	65	-	--	--	--	--	--	--	--	--
GMSG-86	07/01/05	10:20 AM	28.64	56	-	--	--	--	--	--	--	--	--
GMSG-86	10/13/05	1:01 PM	28.8	59	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-86	02/24/06	3:04 PM	28.83	18	0.01	--	--	--	--	--	--	--	--
GMSG-86	04/11/06	8:46 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-86	07/11/06	1:34 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-86	10/10/06	3:16 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-86	02/05/07	9:10 AM	29.07	-9	-	--	--	--	--	--	--	--	--
GMSG-86	04/04/07	10:26 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-86	07/19/07	10:56 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-86	11/01/07	3:27 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-87	07/13/02	11:15 AM	28.8	81	-	--	0	1	19.5	--	--	--	--
GMSG-87	07/22/02	1:45 PM	28.68	82	-	--	0	1.1	19.5	--	--	--	--
GMSG-87	08/12/02	11:00 AM	28.65	77	-	0	0	1.1	19.4	--	--	--	--
GMSG-87	09/30/02	1:50 PM	28.55	73	-	--	0	0.6	19.6	--	--	--	--
GMSG-87	10/29/02	12:50 PM	28.95	42	-	--	0	0.5	19.7	--	--	--	--
GMSG-87	11/19/02	1:25 PM	28.53	46	-	--	0	0.3	19.8	--	--	--	--
GMSG-87	01/30/03	12:48 PM	28.7	30	-	--	0	0.3	19.4	--	--	--	--
GMSG-87	04/24/03	12:03 PM	28.77	63	-	--	0	0.2	19.5	--	--	--	--
GMSG-87	08/05/03	12:35 PM	28.7	82	-	--	0	0.8	18	--	--	--	--
GMSG-87	11/03/03	9:55 AM	29.06	35	-	--	0	0.5	18.6	--	--	--	--
GMSG-87	01/29/04	11:20 AM	28.79	-1	-	--	0	0.2	19.1	--	--	--	--
GMSG-87	04/18/04	1:12 PM	28.5	50	-	--	0	0.4	17	--	--	--	--
GMSG-87	07/14/04	4:50 PM	28.67	77	-	--	0	0.2	19.3	--	--	--	--
GMSG-87	10/31/04	11:20 AM	--	--	--	--	0	0.7	19	--	--	--	--
GMSG-87	02/22/05	11:45 AM	28.94	24	T	--	--	--	--	--	--	--	--
GMSG-87	04/05/05	10:25 AM	28.57	59	-	--	--	--	--	--	--	--	--
GMSG-87	07/07/05	8:10 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-87	10/17/05	3:50 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-87	03/14/06	3:26 PM	28.63	25	T	--	--	--	--	--	--	--	--
GMSG-87	04/14/06	2:38 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-87	07/14/06	2:23 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-87	10/10/06	9:40 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-87	02/08/07	1:34 PM	28.76	18	-	--	--	--	--	--	--	--	--
GMSG-87	04/09/07	9:34 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-87	07/20/07	11:52 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-87	10/19/07	9:27 AM	28.98	53	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-87B	08/17/05	10:55 AM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-87B	08/26/05	2:35 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-87B	09/01/05	1:27 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-87B	09/09/05	2:50 PM	28.87	78.08	-	--	--	--	--	--	--	--	--
GMSG-87B	10/17/05	3:53 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-87B	11/28/05	10:50 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-87B	03/14/06	3:29 PM	28.63	25	T	--	--	--	--	--	--	--	--
GMSG-87B	04/14/06	2:39 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-87B	07/14/06	2:28 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-87B	10/10/06	9:43 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-87B	02/02/07	9:55 AM	28.32	2	-	--	--	--	--	--	--	--	--
GMSG-87B	04/09/07	9:37 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-87B	07/20/07	11:54 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-87B	10/19/07	9:30 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-88	07/15/02	10:44 AM	28.86	87	-	--	0	1.3	19.9	--	--	--	--
GMSG-88	07/22/02	2:20 PM	28.68	82	-	--	0	1.5	19.3	--	--	--	--
GMSG-88	08/12/02	12:05 PM	28.66	80	-	0	0	2.6	18.1	--	--	--	--
GMSG-88	09/27/02	1:04 PM	28.7	62	-	--	0	3.8	16.4	--	--	--	--
GMSG-88	10/29/02	10:34 AM	28.99	39	-	--	0	3.4	17	--	--	--	--
GMSG-88	11/19/02	12:04 PM	28.54	44	-	--	0	5.4	14.3	--	--	--	--
GMSG-88	01/28/03	12:16 PM	28.76	22	-	--	0	3.4	17.4	--	--	--	--
GMSG-88	04/15/03	3:05 PM	28.59	51	-	--	0	3.5	17.1	--	--	--	--
GMSG-88	08/04/03	10:12 AM	28.75	69	-	--	0	2.4	16.8	--	--	--	--
GMSG-88	11/01/03	11:30 AM	29.08	37	-	--	0	1.7	18	--	--	--	--
GMSG-88	01/20/04	8:23 AM	29.06	-13	-	--	0	1	18.6	--	--	--	--
GMSG-88	04/17/04	10:10 AM	28.92	56	-	--	0	1.2	17.3	--	--	--	--
GMSG-88	06/07/04	10:11 AM	28.62	80	-	0	0	2.5	17.4	--	--	--	--
GMSG-88	06/07/04	1:56 PM	28.54	84	-	0	0	2.6	17.1	--	--	--	--
GMSG-88	06/07/04	5:32 PM	28.5	84	-	0	0	1.4	18.5	--	--	--	--
GMSG-88	06/08/04	8:35 AM	28.66	80	-	0	0	1.8	18.2	--	--	--	--
GMSG-88	06/08/04	1:49 PM	28.69	87	-	0	0	0.8	19.3	--	--	--	--
GMSG-88	06/08/04	5:43 PM	28.72	82	-	0	0	0.8	19.5	--	--	--	--
GMSG-88	06/09/04	7:42 AM	28.86	57	0.01	0	0	1.1	18.9	--	--	--	--
GMSG-88	06/09/04	10:13 AM	28.9	55	0.04	0	0	1	19.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-88	06/09/04	2:12 PM	28.91	54	T	0	0	0.3	19.4	--	--	--	--
GMSG-88	06/09/04	6:09 PM	28.9	52	-	0	0	1	18.8	--	--	--	--
GMSG-88	06/10/04	8:47 AM	28.9	59	-	0	0	1	18.8	--	--	--	--
GMSG-88	06/10/04	11:56 AM	28.86	65	-	0	0	3.1	16.9	--	--	--	--
GMSG-88	06/10/04	2:28 PM	28.83	67	-	0	0	2.9	16.6	--	--	--	--
GMSG-88	06/10/04	4:19 PM	28.81	65	-	0	0	2.8	16.8	--	--	--	--
GMSG-88	06/11/04	8:24 AM	28.77	55	-	0	0	1.9	17.8	--	--	--	--
GMSG-88	06/11/04	11:52 AM	28.79	58	-	0	--	--	--	23	1	0	--
GMSG-88	06/11/04	3:43 PM	28.77	61	-	0	--	--	--	130	6	0	--
GMSG-88	06/12/04	9:13 AM	28.74	55	-	0	--	--	--	20.31	1.68	0	--
GMSG-88	06/12/04	1:27 PM	28.68	72	-	0.08	0	3	16.7	--	--	--	--
GMSG-88	06/12/04	4:27 PM	28.65	78	-	0	0	2.3	17.5	--	--	--	--
GMSG-88	06/13/04	7:30 AM	28.57	65	-	0	0	2.3	17.6	--	--	--	--
GMSG-88	06/13/04	2:28 PM	28.49	64	-	0	0	4	15.7	--	--	--	--
GMSG-88	06/13/04	5:54 PM	28.45	73	-	0	0	2.7	16.8	--	--	--	--
GMSG-88	06/14/04	9:45 AM	28.59	67	-	0	0	1.4	18.3	--	--	--	--
GMSG-88	06/14/04	12:00 PM	28.59	68	0.01	0	0	1.1	19.3	--	--	--	--
GMSG-88	06/14/04	2:28 PM	28.57	72	T	0	0	1.3	18.7	--	--	--	--
GMSG-88	06/14/04	8:09 PM	28.67	64	-	0	0	0.9	19.4	--	--	--	--
GMSG-88	06/15/04	8:03 AM	28.85	58	-	-0.018	0	0.9	19.5	--	--	--	--
GMSG-88	06/15/04	11:59 AM	28.86	67	-	-0.021	0	0	19.6	--	--	--	--
GMSG-88	06/15/04	3:23 PM	28.84	70	-	0.007	0	2	18.2	--	--	--	--
GMSG-88	06/16/04	8:05 AM	28.82	67	-	-0.005	0	1.1	19	--	--	--	--
GMSG-88	06/16/04	11:29 AM	28.8	79	-	0	0	1.2	19	--	--	--	--
GMSG-88	06/16/04	2:14 PM	28.76	82	-	-0.11	0	1	19.2	--	--	--	--
GMSG-88	06/17/04	7:45 AM	28.82	59	T	-0.015	0	1.1	19.1	--	--	--	--
GMSG-88	06/17/04	2:12 PM	28.81	75	-	0.014	0	2.3	17.6	--	--	--	--
GMSG-88	06/17/04	6:02 PM	28.81	71	-	0.008	0	2.1	17.9	--	--	--	--
GMSG-88	06/18/04	7:50 AM	28.85	69	-	-0.002	0	1.2	18.7	--	--	--	--
GMSG-88	06/18/04	11:06 AM	28.82	74	-	-0.009	0	1.2	18.6	--	--	--	--
GMSG-88	06/18/04	8:09 PM	28.96	53	-	-0.022	0	0.9	19.4	--	--	--	--
GMSG-88	06/19/04	8:10 AM	29.07	55	-	0	0	1	19.3	--	--	--	--
GMSG-88	06/19/04	11:50 AM	29.03	65	-	0.019	0	2.2	18	--	--	--	--
GMSG-88	06/19/04	3:36 PM	28.95	66	-	0.01	0	3.2	17.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-88	06/20/04	8:33 AM	28.77	66	-	0.012	0	3.3	17	--	--	--	--
GMSG-88	06/20/04	1:35 PM	28.68	74	-	0.007	0	2.1	17.9	--	--	--	--
GMSG-88	06/21/04	8:33 AM	28.48	69	-	0.009	0	2	18.4	--	--	--	--
GMSG-88	06/21/04	12:29 PM	28.44	74	-	0	0	1.6	18.2	--	--	--	--
GMSG-88	06/21/04	5:17 PM	28.43	59	0.13	-0.028	0	1.9	18.4	--	--	--	--
GMSG-88	06/22/04	8:02 AM	28.59	57	-	-0.001	0	2.1	18	--	--	--	--
GMSG-88	06/22/04	2:00 PM	28.61	66	-	-0.007	0	0.8	19.9	--	--	--	--
GMSG-88	06/22/04	4:53 PM	28.6	67	-	0.013	0	0.8	19.9	--	--	--	--
GMSG-88	06/23/04	7:51 AM	28.68	56	-	-0.007	0	1.1	19.4	--	--	--	--
GMSG-88	06/23/04	2:12 PM	28.65	66	-	0.004	0	1.4	18.8	--	--	--	--
GMSG-88	06/24/04	7:50 AM	28.63	52	-	0.001	0	1.4	18.7	--	--	--	--
GMSG-88	06/24/04	1:25 PM	28.74	55	-	-0.009	0	0.7	19.5	--	--	--	--
GMSG-88	06/24/04	3:14 PM	28.78	55	T	-0.022	0	0.7	19.6	--	--	--	--
GMSG-88	06/25/04	7:44 AM	28.79	58	-	-0.002	0	1.9	17.9	--	--	--	--
GMSG-88	06/25/04	2:05 PM	28.76	62	-	-0.009	0	1.7	18.1	--	--	--	--
GMSG-88	06/25/04	5:07 PM	28.76	61	-	0.001	0	1	18.7	--	--	--	--
GMSG-88	06/26/04	8:04 AM	28.84	56	-	-0.004	0	1.1	18.7	--	--	--	--
GMSG-88	06/26/04	12:14 PM	28.83	61	-	0	0	0.7	19.1	--	--	--	--
GMSG-88	06/26/04	1:25 PM	28.82	64	-	0	0	0.7	19.1	--	--	--	--
GMSG-88	06/26/04	5:29 PM	28.81	66	-	-0.04	0	0.8	19.1	--	--	--	--
GMSG-88	06/27/04	10:04 AM	28.88	66	-	0	0	0.9	19	--	--	--	--
GMSG-88	06/27/04	3:37 PM	28.84	64	T	0	0	0.9	19	--	--	--	--
GMSG-88	06/28/04	10:56 AM	28.83	72	-	-0.001	0	0.8	19	--	--	--	--
GMSG-88	06/28/04	1:44 PM	28.8	72	-	0.004	0	1	18.5	--	--	--	--
GMSG-88	06/29/04	6:14 PM	28.83	67	0.01	0.005	0	1.4	19.1	--	--	--	--
GMSG-88	06/30/04	8:14 AM	28.8	73	-	0	0	1.2	18.4	--	--	--	--
GMSG-88	07/02/04	10:35 AM	28.93	71	-	0	0	2.1	17.1	--	--	--	--
GMSG-88	07/06/04	10:55 AM	28.66	54	0.08	-0.002	0	2.1	17.4	--	--	--	--
GMSG-88	07/07/04	5:14 PM	28.57	56	T	-0.01	0	1.3	18.2	--	--	--	--
GMSG-88	07/08/04	11:45 AM	28.72	61	-	-0.012	0	0.9	18.6	--	--	--	--
GMSG-88	07/09/04	11:42 AM	28.88	70	-	0.003	0	1.3	18.4	--	--	--	--
GMSG-88	07/11/04	9:42 AM	28.82	70	-	0.007	0	1.4	18.2	--	--	--	--
GMSG-88	07/12/04	2:50 PM	28.7	82	-	-0.001	0	1.8	17.7	--	--	--	--
GMSG-88	08/03/04	5:28 PM	28.71	75	-	0.003	0	0.6	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-88	08/04/04	1:38 PM	28.83	72	-	-0.002	0	0.7	19	--	--	--	--
GMSG-88	08/07/04	3:10 PM	28.83	70	-	0.003	0	0.7	18.6	--	--	--	--
GMSG-88	08/08/04	1:53 PM	28.81	66	T	-0.004	0	0.5	18.5	--	--	--	--
GMSG-88	08/17/04	12:48 PM	28.69	70	-	0.004	0	2.4	17.3	--	--	--	--
GMSG-88	08/18/04	11:38 AM	28.37	77	-	0.026	0	2.4	17.5	--	--	--	--
GMSG-88	10/20/04	12:57 PM	28.88	54	-	--	0	1.8	17.9	--	--	--	--
GMSG-88	01/27/05	12:21 PM	29.34	10	-	--	--	--	--	--	--	--	--
GMSG-88	04/01/05	2:39 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-88	07/05/05	10:11 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-88	10/10/05	9:55 AM	29	51	-	--	--	--	--	--	--	--	--
GMSG-88	02/22/06	9:35 AM	28.5	26	-	--	--	--	--	--	--	--	--
GMSG-88	04/03/06	10:39 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-88	07/07/06	11:16 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-88	10/02/06	12:25 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-88	01/02/07	11:34 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-88	04/02/07	4:00 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-88	07/17/07	12:48 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-88	10/22/07	1:30 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-89	07/15/02	10:37 AM	28.86	87	-	--	0	1.5	19.8	--	--	--	--
GMSG-89	07/22/02	2:26 PM	28.68	82	-	--	0	2.2	18.3	--	--	--	--
GMSG-89	08/12/02	12:00 PM	28.66	80	-	0	0	4.3	16.2	--	--	--	--
GMSG-89	09/27/02	1:10 PM	28.7	62	-	--	0	2.7	17.3	--	--	--	--
GMSG-89	10/29/02	10:26 AM	28.99	38	-	--	0	3.8	16.3	--	--	--	--
GMSG-89	11/19/02	11:57 AM	28.54	44	-	--	0	4.6	15.4	--	--	--	--
GMSG-89	01/28/03	12:28 PM	28.76	22	-	--	0	2.5	17.5	--	--	--	--
GMSG-89	04/15/03	2:58 PM	28.59	51	-	--	0	2.5	17.4	--	--	--	--
GMSG-89	08/04/03	10:22 AM	28.75	69	-	--	0	1.7	16.9	--	--	--	--
GMSG-89	10/14/03	6:15 PM	28.54	46	-	--	0	1.9	17.6	--	--	--	--
GMSG-89	01/20/04	8:17 AM	29.06	-13	-	--	0	0.5	18.8	--	--	--	--
GMSG-89	04/17/04	10:03 AM	28.92	56	-	--	0	0.8	17.4	--	--	--	--
GMSG-89	06/07/04	10:08 AM	28.62	80	-	0	0	3.8	16.3	--	--	--	--
GMSG-89	06/07/04	1:50 PM	28.54	84	-	0	0	4.2	15.7	--	--	--	--
GMSG-89	06/07/04	5:28 PM	28.51	84	-	0	0	3.9	16.2	--	--	--	--
GMSG-89	06/08/04	8:31 AM	28.66	80	-	0	0	1.7	18.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-89	06/08/04	1:45 PM	28.69	87	-	0	0	0	20	--	--	--	--
GMSG-89	06/08/04	5:47 PM	28.72	82	-	0	0	1.2	18.8	--	--	--	--
GMSG-89	06/09/04	7:38 AM	28.86	57	0.01	0	0	1.3	18.6	--	--	--	--
GMSG-89	06/09/04	10:11 AM	28.9	55	0.04	0	0	1.2	18.7	--	--	--	--
GMSG-89	06/09/04	2:16 PM	28.91	54	T	0	0	1.1	18.5	--	--	--	--
GMSG-89	06/09/04	6:13 PM	28.9	52	-	0	0	1.1	18.5	--	--	--	--
GMSG-89	06/10/04	8:42 AM	28.9	59	-	0	0	1.2	18.3	--	--	--	--
GMSG-89	06/10/04	11:51 AM	28.86	65	-	0	0	1.3	18.6	--	--	--	--
GMSG-89	06/10/04	2:24 PM	28.83	67	-	0	0	1.3	18.9	--	--	--	--
GMSG-89	06/10/04	4:14 PM	28.81	65	-	0	0	1.2	18.1	--	--	--	--
GMSG-89	06/11/04	8:20 AM	28.77	55	-	0	0	1.6	18.1	--	--	--	--
GMSG-89	06/11/04	11:48 AM	28.79	58	-	0	--	--	--	87	13	0	--
GMSG-89	06/11/04	3:38 PM	28.77	61	-	0	--	--	--	103	20	0	--
GMSG-89	06/12/04	9:09 AM	28.74	55	-	0	--	--	--	16.4	3.12	0	--
GMSG-89	06/12/04	1:29 PM	28.68	72	-	0.006	0	3.4	16.6	--	--	--	--
GMSG-89	06/12/04	4:31 PM	28.65	79	-	0	0	2.3	17.7	--	--	--	--
GMSG-89	06/13/04	7:34 AM	28.57	65	-	0	0	2.5	17.4	--	--	--	--
GMSG-89	06/13/04	2:31 PM	28.49	69	-	0	0	3.3	16.7	--	--	--	--
GMSG-89	06/13/04	5:59 PM	28.45	73	-	0.002	0	3	16.9	--	--	--	--
GMSG-89	06/14/04	9:49 AM	28.59	67	-	0	0	1.2	19	--	--	--	--
GMSG-89	06/14/04	11:57 AM	28.59	68	0.01	0	0	1.4	18.6	--	--	--	--
GMSG-89	06/14/04	2:25 PM	28.57	72	T	0	0	1.6	18.4	--	--	--	--
GMSG-89	06/14/04	8:05 PM	28.67	64	-	0	0	1.3	18.8	--	--	--	--
GMSG-89	06/15/04	7:58 AM	28.85	58	-	-0.02	0	1.3	18.8	--	--	--	--
GMSG-89	06/15/04	11:54 AM	28.86	67	-	-0.011	0	1.7	19.7	--	--	--	--
GMSG-89	06/15/04	3:19 PM	28.84	70	-	0	0	1.3	18.7	--	--	--	--
GMSG-89	06/16/04	8:01 AM	28.82	67	-	-0.003	0	1.4	18.4	--	--	--	--
GMSG-89	06/16/04	11:33 AM	28.77	81	-	-0.001	0	1.5	18.4	--	--	--	--
GMSG-89	06/16/04	2:09 PM	28.76	82	-	-0.001	0	1.5	18.4	--	--	--	--
GMSG-89	06/17/04	7:41 AM	28.82	59	T	0	0	1.6	18.3	--	--	--	--
GMSG-89	06/17/04	2:08 PM	28.81	75	-	0.007	0	1.1	18.8	--	--	--	--
GMSG-89	06/17/04	5:58 PM	28.81	71	-	0.001	0	1	18.9	--	--	--	--
GMSG-89	06/18/04	7:55 AM	28.85	69	-	-0.012	0	1.3	18.4	--	--	--	--
GMSG-89	06/18/04	11:04 AM	28.82	74	-	-0.003	0	1.6	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-89	06/18/04	8:05 PM	28.96	53	-	-0.096	0	1.2	19.1	--	--	--	--
GMSG-89	06/19/04	8:02 AM	29.07	55	-	0	0	1.2	18.8	--	--	--	--
GMSG-89	06/19/04	11:44 AM	29.03	65	-	-0.021	0	1.2	18.9	--	--	--	--
GMSG-89	06/19/04	3:20 PM	28.97	69	-	-0.005	0	1.1	19.3	--	--	--	--
GMSG-89	06/20/04	8:26 AM	28.8	64	-	0.012	0	1.9	18.4	--	--	--	--
GMSG-89	06/20/04	1:31 PM	28.68	74	-	0.008	0	2.3	17.9	--	--	--	--
GMSG-89	06/21/04	8:29 AM	28.49	66	-	0	0	1.4	18.6	--	--	--	--
GMSG-89	06/21/04	12:25 PM	28.44	74	-	-0.001	0	0.6	19.4	--	--	--	--
GMSG-89	06/21/04	5:13 PM	28.43	59	0.13	-0.019	0	0.7	19.2	--	--	--	--
GMSG-89	06/22/04	7:58 AM	28.59	57	-	-0.003	0	2.4	17.6	--	--	--	--
GMSG-89	06/22/04	1:55 PM	28.61	66	-	-0.03	0	1.1	19.3	--	--	--	--
GMSG-89	06/22/04	4:50 PM	28.6	67	-	0.007	0	1.1	19.3	--	--	--	--
GMSG-89	06/23/04	7:44 AM	28.68	56	-	-0.024	0	1.3	18.9	--	--	--	--
GMSG-89	06/23/04	2:07 PM	28.65	66	-	0.006	0	1.4	18.9	--	--	--	--
GMSG-89	06/24/04	7:55 AM	28.63	52	-	0.003	0	1.4	18.8	--	--	--	--
GMSG-89	06/24/04	1:29 PM	28.74	55	-	-0.032	0	1.2	18.6	--	--	--	--
GMSG-89	06/24/04	3:10 PM	28.78	55	T	-0.083	0	1.2	18.7	--	--	--	--
GMSG-89	06/25/04	7:43 AM	28.79	58	-	-0.005	0	1.2	18.6	--	--	--	--
GMSG-89	06/25/04	2:00 PM	28.76	62	-	0.001	0	1.4	18.5	--	--	--	--
GMSG-89	06/25/04	5:03 PM	28.76	61	-	-0.021	0	1.3	18.2	--	--	--	--
GMSG-89	06/26/04	8:00 AM	28.84	56	-	-0.019	0	1.3	18.2	--	--	--	--
GMSG-89	06/26/04	12:11 PM	28.83	61	-	0.006	0	1.1	18.6	--	--	--	--
GMSG-89	06/26/04	1:20 PM	28.82	64	-	0.006	0	1.1	18.5	--	--	--	--
GMSG-89	06/26/04	5:24 PM	28.81	66	-	-0.002	0	1.1	18.9	--	--	--	--
GMSG-89	06/27/04	10:01 AM	28.88	66	-	-0.005	0	1.1	18.9	--	--	--	--
GMSG-89	06/27/04	3:32 PM	28.84	64	T	-0.005	0	1.1	18.8	--	--	--	--
GMSG-89	06/28/04	10:52 AM	28.83	72	-	-0.005	0	1.2	18.8	--	--	--	--
GMSG-89	06/28/04	1:41 PM	28.8	72	-	0.008	0	1.1	18.7	--	--	--	--
GMSG-89	06/29/04	6:10 PM	28.83	67	0.01	0.007	0	1.2	18.6	--	--	--	--
GMSG-89	06/30/04	8:09 AM	28.8	73	-	-0.004	0	1.1	18.6	--	--	--	--
GMSG-89	07/02/04	10:40 AM	28.93	71	-	0	0	1.1	18.2	--	--	--	--
GMSG-89	07/06/04	10:49 AM	28.66	54	0.08	-0.008	0	1.6	17.7	--	--	--	--
GMSG-89	07/07/04	5:10 PM	28.57	56	T	-0.016	0	1.2	18.2	--	--	--	--
GMSG-89	07/08/04	11:49 AM	28.72	61	-	-0.02	0	1	18.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-89	07/09/04	11:38 AM	28.88	70	-	0	0	1.1	18.7	--	--	--	--
GMSG-89	07/11/04	9:37 AM	28.82	70	-	-0.006	0	1.3	18.3	--	--	--	--
GMSG-89	07/12/04	2:54 PM	28.7	82	-	-0.009	0	1.4	18	--	--	--	--
GMSG-89	08/03/04	5:23 PM	28.71	75	-	-0.009	0	0.8	19.3	--	--	--	--
GMSG-89	08/04/04	1:33 PM	28.83	72	-	-0.021	0	1	18.8	--	--	--	--
GMSG-89	08/07/04	3:05 PM	28.83	70	-	-0.018	0	1	18.3	--	--	--	--
GMSG-89	08/08/04	1:49 PM	28.81	66	T	-0.027	0	0.5	18.3	--	--	--	--
GMSG-89	08/17/04	12:43 PM	28.69	70	-	-0.188	0	1.1	18.8	--	--	--	--
GMSG-89	08/18/04	11:30 AM	28.37	77	-	0.023	0	3.3	16.9	--	--	--	--
GMSG-89	10/20/04	1:03 PM	28.88	54	-	--	0	1.4	18.1	--	--	--	--
GMSG-89	01/27/05	12:12 PM	29.34	10	-	--	--	--	--	--	--	--	--
GMSG-89	04/01/05	2:41 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-89	07/05/05	10:07 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-89	10/10/05	9:50 AM	29	51	-	--	--	--	--	--	--	--	--
GMSG-89	02/22/06	9:25 AM	28.49	23	-	--	--	--	--	--	--	--	--
GMSG-89	04/03/06	10:36 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-89	07/07/06	11:11 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-89	10/02/06	12:21 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-89	01/02/07	11:31 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-89	04/02/07	3:56 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-89	07/17/07	12:44 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-89	10/22/07	1:26 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-90	09/11/02	10:53 AM	28.9	72	-	0.01	0	2.1	18.7	--	--	--	--
GMSG-90	09/17/02	8:35 AM	28.81	66	-	0	0	1.7	19.1	--	--	--	--
GMSG-90	10/29/02	10:46 AM	28.99	39	-	--	0	2.2	18.3	--	--	--	--
GMSG-90	11/19/02	2:03 PM	28.54	47	-	--	0	2.5	17.4	--	--	--	--
GMSG-90	12/10/02	1:17 PM	28.74	44	-	--	0	2.5	17.9	--	--	--	--
GMSG-90	01/29/03	1:03 PM	29.08	15	T	--	0	2.3	17.1	--	--	--	--
GMSG-90	04/22/03	11:21 AM	28.86	45	-	--	0	2.5	17.3	--	--	--	--
GMSG-90	08/05/03	10:42 AM	28.72	79	-	--	0	2.5	16.8	--	--	--	--
GMSG-90	11/01/03	2:55 PM	29.05	39	-	--	0	2.1	17.5	--	--	--	--
GMSG-90	02/02/04	9:58 AM	28.95	25	-	--	0	1.4	17.9	--	--	--	--
GMSG-90	04/18/04	9:25 AM	28.7	45	-	--	0	2.4	15.7	--	--	--	--
GMSG-90	07/14/04	5:34 PM	28.67	74	-	--	0	2.1	17.1	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-90	10/31/04	11:33 AM	--	--	--	--	0	1.4	18.3	--	--	--	--
GMSG-90	02/10/05	2:37 PM	28.84	31	-	--	--	--	--	--	--	--	--
GMSG-90	04/05/05	11:46 AM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-90	07/06/05	9:17 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-90	10/21/05	9:10 AM	28.91	35	-	--	--	--	--	--	--	--	--
GMSG-90	02/24/06	2:25 PM	28.88	20	T	--	--	--	--	--	--	--	--
GMSG-90	04/11/06	9:11 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-90	07/11/06	1:55 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-90	10/10/06	3:53 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-90	02/05/07	10:40 AM	29.1	1	-	--	--	--	--	--	--	--	--
GMSG-90	04/03/07	3:23 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-90	07/19/07	10:30 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-90	10/23/07	3:30 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-91	09/11/02	10:39 AM	28.9	72	-	0	0	1.7	19.3	--	--	--	--
GMSG-91	09/17/02	8:25 AM	28.82	59	-	0	0	2.2	19.1	--	--	--	--
GMSG-91	10/29/02	10:53 AM	28.99	39	-	--	0	2.4	18.1	--	--	--	--
GMSG-91	11/19/02	2:10 PM	28.54	47	-	--	0	1.9	18.5	--	--	--	--
GMSG-91	12/10/02	1:23 PM	28.74	44	-	--	0	2.2	18.8	--	--	--	--
GMSG-91	01/29/03	1:17 PM	29.08	15	T	--	0	1.8	18.3	--	--	--	--
GMSG-91	04/22/03	11:26 AM	28.86	45	-	--	0	0.3	19.7	--	--	--	--
GMSG-91	08/05/03	10:47 AM	28.72	79	-	--	0	1.4	17.9	--	--	--	--
GMSG-91	11/01/03	3:15 PM	29.05	39	-	--	0	1.2	18.4	--	--	--	--
GMSG-91	01/21/04	8:05 AM	28.48	11	T	--	0	1.8	17.8	--	--	--	--
GMSG-91	04/18/04	9:33 AM	28.57	45	T	--	0	1.4	16.6	--	--	--	--
GMSG-91	07/14/04	5:48 PM	28.67	74	-	--	0	0	19.3	--	--	--	--
GMSG-91	10/31/04	11:38 AM	--	--	--	--	0	0.9	19.4	--	--	--	--
GMSG-91	02/10/05	2:45 PM	28.84	31	-	--	--	--	--	--	--	--	--
GMSG-91	04/05/05	11:50 AM	28.57	69	-	--	--	--	--	--	--	--	--
GMSG-91	07/06/05	9:21 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-91	10/21/05	9:15 AM	28.91	35	-	--	--	--	--	--	--	--	--
GMSG-91	02/24/06	2:40 PM	28.83	18	0.01	--	--	--	--	--	--	--	--
GMSG-91	04/11/06	9:02 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-91	07/11/06	2:04 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-91	10/10/06	3:59 PM	28.71	51	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-91	02/05/07	11:15 AM	29.1	1	-	--	--	--	--	--	--	--	--
GMSG-91	04/03/07	3:29 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-91	07/19/07	10:35 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-91	10/23/07	3:36 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-92	10/28/02	3:04 PM	28.95	43	-	--	0	3.2	16.1	--	--	--	--
GMSG-92	11/04/02	2:01 PM	28.85	38	-	--	0	2.9	16.6	--	--	--	--
GMSG-92	11/19/02	11:36 AM	28.54	44	-	--	0	3	16.3	--	--	--	--
GMSG-92	12/10/02	1:35 PM	28.73	46	-	--	0	2.8	17.1	--	--	--	--
GMSG-92	01/02/03	10:10 AM	29.02	19	-	--	0	2.8	17	--	--	--	--
GMSG-92	01/28/03	11:13 AM	28.74	21	T	--	0	2.7	17.2	--	--	--	--
GMSG-92	04/15/03	2:33 PM	28.59	51	-	--	0	1.8	17.9	--	--	--	--
GMSG-92	08/04/03	9:23 AM	28.75	65	-	--	0	3.4	15.9	--	--	--	--
GMSG-92	11/01/03	10:35 AM	29.1	35	-	--	0	2.5	16.4	--	--	--	--
GMSG-92	01/29/04	12:15 PM	28.77	2	-	--	0	2.5	16.3	--	--	--	--
GMSG-92	04/16/04	4:30 PM	28.7	66	T	--	0	1.8	17	--	--	--	--
GMSG-92	07/13/04	7:40 AM	28.64	71	-	--	0	2.5	17.6	--	--	--	--
GMSG-92	10/17/04	1:50 PM	28.63	43	-	--	0	2.9	16.3	--	--	--	--
GMSG-92	01/26/05	11:06 AM	28.98	15	T	--	0	1.5	19	--	--	--	--
GMSG-92	04/01/05	7:57 AM	28.8	42	-	--	--	--	--	--	--	--	--
GMSG-92	07/05/05	8:42 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-92	10/14/05	11:08 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-92	02/22/06	2:16 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-92	04/05/06	4:08 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-92	07/06/06	3:35 PM	29.02	83	-	--	--	--	--	--	--	--	--
GMSG-92	10/02/06	10:40 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-92	01/02/07	10:41 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-92	04/03/07	10:15 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-92	07/17/07	11:06 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-92	10/18/07	11:18 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-93	11/15/02	11:07 AM	28.99	26	T	--	0	0.2	20.5	--	--	--	--
GMSG-93	11/19/02	2:19 PM	28.54	47	-	--	0	0.2	20	--	--	--	--
GMSG-93	11/26/02	1:32 PM	29.13	29	-	--	0	0.1	20.8	--	--	--	--
GMSG-93	01/02/03	10:58 AM	28.99	21	-	--	0	0.1	19.6	--	--	--	--
GMSG-93	01/29/03	12:47 PM	29.08	15	T	--	0	0.1	19.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-93	03/04/03	12:32 PM	28.63	14	T	--	0	0.1	20	--	--	--	--
GMSG-93	04/22/03	11:10 AM	28.86	45	-	--	0	0.3	19.8	--	--	--	--
GMSG-93	08/05/03	9:58 AM	28.72	77	-	--	0	0.2	19.2	--	--	--	--
GMSG-93	11/03/03	2:45 PM	29.02	32	T	--	0	0.2	19.3	--	--	--	--
GMSG-93	01/21/04	9:30 AM	28.43	14	T	--	0	0.2	18.8	--	--	--	--
GMSG-93	04/19/04	9:16 AM	28.59	41	-	--	0	0.3	17.4	--	--	--	--
GMSG-93	07/14/04	3:00 PM	28.67	78	-	--	0	0.2	19.6	--	--	--	--
GMSG-93	10/30/04	10:29 AM	27.92	55	T	--	0	0.3	19.6	--	--	--	--
GMSG-93	02/08/05	10:04 AM	28.99	17	-	--	--	--	--	--	--	--	--
GMSG-93	04/04/05	3:08 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-93	07/05/05	1:37 PM	28.87	68	-	--	--	--	--	--	--	--	--
GMSG-93	10/11/05	3:25 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-93	02/27/06	12:41 PM	28.84	20	-	--	--	--	--	--	--	--	--
GMSG-93	04/06/06	3:10 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-93	07/13/06	10:23 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-93	10/10/06	4:32 PM	28.67	49	-	--	--	--	--	--	--	--	--
GMSG-93	02/03/07	8:37 AM	28.44	-6	-	--	--	--	--	--	--	--	--
GMSG-93	04/05/07	11:52 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-93	07/19/07	1:49 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-93	10/18/07	8:42 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-94	11/19/02	2:31 PM	28.56	46	-	--	0	1.7	16.7	--	--	--	--
GMSG-94	11/26/02	2:04 PM	29.13	29	-	--	0	1.5	18.1	--	--	--	--
GMSG-94	12/02/02	10:42 AM	28.83	15	-	--	0	1.5	17.7	--	--	--	--
GMSG-94	01/02/03	10:31 AM	28.99	21	-	--	0	1.4	18.1	--	--	--	--
GMSG-94	01/28/03	11:58 AM	28.76	22	-	--	0	1.8	17	--	--	--	--
GMSG-94	03/04/03	12:06 PM	28.64	14	T	--	0	1.7	17.3	--	--	--	--
GMSG-94	04/21/03	10:03 AM	28.46	38	T	--	0	1.8	15.4	--	--	--	--
GMSG-94	08/04/03	10:37 AM	28.75	70	-	--	0	1.1	17.7	--	--	--	--
GMSG-94	10/14/03	6:08 PM	28.54	46	-	--	0	2	16.3	--	--	--	--
GMSG-94	02/02/04	9:22 AM	28.96	24	-	--	0	0	19.6	--	--	--	--
GMSG-94	04/17/04	10:26 AM	28.92	56	-	--	0	0.4	17.5	--	--	--	--
GMSG-94	06/07/04	10:22 AM	28.62	80	-	0	0	0.7	18.7	--	--	--	--
GMSG-94	06/07/04	2:01 PM	28.54	84	-	0	0	0.7	18.8	--	--	--	--
GMSG-94	06/08/04	8:23 AM	28.63	80	-	0	0	0.7	18.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-94	06/08/04	1:35 PM	28.69	87	-	0	0	0	19.1	--	--	--	--
GMSG-94	06/08/04	5:50 PM	28.72	82	-	0	0	0.4	19.6	--	--	--	--
GMSG-94	06/09/04	7:53 AM	28.86	57	0.01	0	0	0.7	19	--	--	--	--
GMSG-94	06/09/04	10:19 AM	28.9	55	0.04	0	0	0.6	19.2	--	--	--	--
GMSG-94	06/09/04	2:25 PM	28.91	54	T	0	0	0.6	19.2	--	--	--	--
GMSG-94	06/09/04	6:20 PM	28.9	52	-	0	0	0.6	19.2	--	--	--	--
GMSG-94	06/10/04	8:53 AM	28.9	59	-	0	0	0.6	19.2	--	--	--	--
GMSG-94	06/10/04	12:07 PM	28.86	65	-	0	0	0.5	19.5	--	--	--	--
GMSG-94	06/10/04	2:39 PM	28.82	67	-	0	0	0.6	19.3	--	--	--	--
GMSG-94	06/10/04	4:30 PM	28.8	65	-	0	0	0.5	19.3	--	--	--	--
GMSG-94	06/11/04	8:35 AM	28.78	56	-	0	0	0.6	18.9	--	--	--	--
GMSG-94	06/11/04	12:01 PM	28.79	58	-	0	--	--	--	1	0	0	--
GMSG-94	06/11/04	3:45 PM	28.77	61	-	0	--	--	--	137	0	0	--
GMSG-94	06/12/04	9:25 AM	28.74	55	-	0	--	--	--	9.8	0	0	--
GMSG-94	06/12/04	2:28 PM	28.66	75	-	0.013	0	0.5	19.2	--	--	--	--
GMSG-94	06/12/04	4:57 PM	28.65	79	-	0	0	0.5	19.5	--	--	--	--
GMSG-94	06/13/04	8:00 AM	28.57	65	-	0	0	0.5	19.2	--	--	--	--
GMSG-94	06/13/04	2:54 PM	28.49	69	-	0	0	0.6	19.1	--	--	--	--
GMSG-94	06/13/04	6:25 PM	28.45	73	-	0.005	0	0.5	19.2	--	--	--	--
GMSG-94	06/14/04	9:53 AM	28.59	67	-	0	0	0.6	19.9	--	--	--	--
GMSG-94	06/14/04	12:08 PM	28.59	68	0.01	0	0	0.8	18.7	--	--	--	--
GMSG-94	06/14/04	2:17 PM	28.57	72	T	0	0	0.6	19.5	--	--	--	--
GMSG-94	06/14/04	8:17 PM	28.67	64	-	0	0	0.5	19.7	--	--	--	--
GMSG-94	06/15/04	8:12 AM	28.85	58	-	-0.015	0	0.6	19.4	--	--	--	--
GMSG-94	06/15/04	12:07 PM	28.86	67	-	-0.01	0	2.6	19	--	--	--	--
GMSG-94	06/15/04	3:32 PM	28.83	71	-	-0.009	0	0.3	19.9	--	--	--	--
GMSG-94	06/16/04	8:13 AM	28.82	67	-	0	0	0.5	19.5	--	--	--	--
GMSG-94	06/16/04	11:18 AM	28.8	79	-	-0.011	0	0.5	20.1	--	--	--	--
GMSG-94	06/16/04	2:23 PM	28.76	82	-	0.001	0	0.6	19.4	--	--	--	--
GMSG-94	06/17/04	7:54 AM	28.82	59	T	0.004	0	0.7	19.3	--	--	--	--
GMSG-94	06/17/04	2:21 PM	28.81	75	-	0.002	0	0.4	20.4	--	--	--	--
GMSG-94	06/17/04	6:11 PM	28.81	71	-	-0.006	0	0.4	20	--	--	--	--
GMSG-94	06/18/04	7:58 AM	28.85	69	-	-0.006	0	0.5	19.7	--	--	--	--
GMSG-94	06/18/04	11:16 AM	28.82	74	-	-0.007	0	0.7	19.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-94	06/18/04	8:17 PM	28.96	53	-	-0.018	0	0.3	19.9	--	--	--	--
GMSG-94	06/19/04	8:24 AM	29.07	55	-	0	0	0.6	19.3	--	--	--	--
GMSG-94	06/19/04	12:05 PM	29.03	65	-	0.004	0	0.5	19.7	--	--	--	--
GMSG-94	06/19/04	3:49 PM	28.95	66	-	0.01	0	0.4	20.3	--	--	--	--
GMSG-94	06/20/04	8:42 AM	28.77	66	-	-0.001	0	0.5	19.5	--	--	--	--
GMSG-94	06/20/04	1:45 PM	28.68	74	-	0.005	0	0.5	19.8	--	--	--	--
GMSG-94	06/21/04	8:41 AM	28.48	69	-	0.005	0	0.5	19.5	--	--	--	--
GMSG-94	06/21/04	12:37 PM	28.42	74	-	0.002	0	0.6	19.4	--	--	--	--
GMSG-94	06/21/04	5:25 PM	28.43	59	0.13	-0.009	0	0.4	19.6	--	--	--	--
GMSG-94	06/22/04	8:10 AM	28.59	57	-	-0.009	0	0.6	19.4	--	--	--	--
GMSG-94	06/22/04	1:45 PM	28.61	66	-	-0.007	0	0.5	19.8	--	--	--	--
GMSG-94	06/22/04	4:41 PM	28.6	67	-	0.026	0	0.5	20	--	--	--	--
GMSG-94	06/23/04	8:05 AM	28.68	56	-	-0.002	0	0.7	19.5	--	--	--	--
GMSG-94	06/23/04	2:20 PM	28.65	66	-	0.004	0	0.5	20	--	--	--	--
GMSG-94	06/24/04	7:41 AM	28.63	52	-	0	0	0.4	20.1	--	--	--	--
GMSG-94	06/24/04	1:16 PM	28.74	55	-	-0.016	0	0.5	19.5	--	--	--	--
GMSG-94	06/24/04	3:23 PM	28.78	55	T	-0.037	0	0.5	19.6	--	--	--	--
GMSG-94	06/25/04	7:50 AM	28.79	58	-	-0.002	0	0.6	19	--	--	--	--
GMSG-94	06/25/04	2:20 PM	28.76	62	-	-0.002	0	0.6	19	--	--	--	--
GMSG-94	06/25/04	5:16 PM	28.76	61	-	-0.014	0	0.5	19	--	--	--	--
GMSG-94	06/26/04	8:12 AM	28.84	56	-	-0.008	0	0.5	19.1	--	--	--	--
GMSG-94	06/26/04	12:03 PM	28.83	61	-	0	0	0.5	19.2	--	--	--	--
GMSG-94	06/26/04	1:34 PM	28.81	65	-	0	0	0.5	19.2	--	--	--	--
GMSG-94	06/26/04	5:39 PM	28.81	63	-	-0.003	0	0.5	19.7	--	--	--	--
GMSG-94	06/27/04	10:13 AM	28.88	66	-	0.001	0	0.5	19.4	--	--	--	--
GMSG-94	06/28/04	11:05 AM	28.83	72	-	0	0	0.5	19.3	--	--	--	--
GMSG-94	06/28/04	1:53 PM	28.8	72	-	0	0	0.5	19.4	--	--	--	--
GMSG-94	06/29/04	6:24 PM	28.83	67	0.01	0	0	0.5	19.7	--	--	--	--
GMSG-94	06/30/04	8:27 AM	28.8	73	-	0	0	0.5	19	--	--	--	--
GMSG-94	07/02/04	10:25 AM	28.93	68	-	0	0	0.4	18.8	--	--	--	--
GMSG-94	07/06/04	11:10 AM	28.66	54	0.08	0.015	0	0.5	18.9	--	--	--	--
GMSG-94	07/07/04	4:58 PM	28.57	56	T	-0.007	0	0	19.5	--	--	--	--
GMSG-94	07/08/04	11:34 AM	28.72	61	-	-0.007	0	0.4	19.2	--	--	--	--
GMSG-94	07/09/04	11:29 AM	28.88	68	-	0.001	0	0.4	19.6	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-94	07/11/04	9:55 AM	28.82	70	-	-0.002	0	0.5	19.2	--	--	--	--
GMSG-94	07/12/04	2:58 PM	28.7	82	-	-0.005	0	0.2	19.6	--	--	--	--
GMSG-94	08/03/04	5:37 PM	28.69	72	-	0	0	0.5	19.7	--	--	--	--
GMSG-94	08/04/04	1:49 PM	28.83	72	-	-0.005	0	0.4	19.7	--	--	--	--
GMSG-94	08/07/04	3:19 PM	28.83	70	-	-0.001	0	0.4	19.2	--	--	--	--
GMSG-94	08/08/04	2:01 PM	28.81	66	T	-0.01	0	0.4	19.1	--	--	--	--
GMSG-94	08/17/04	12:58 PM	28.69	70	-	-0.006	0	0.4	19.5	--	--	--	--
GMSG-94	08/18/04	11:49 AM	28.37	77	-	0.015	0	0.4	19.7	--	--	--	--
GMSG-94	10/20/04	1:20 PM	28.88	54	-	--	0	0.4	19.6	--	--	--	--
GMSG-94	01/27/05	10:35 AM	29.36	4	T	--	--	--	--	--	--	--	--
GMSG-94	04/01/05	2:47 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-94	07/05/05	10:37 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-94	10/10/05	10:15 AM	29	51	-	--	--	--	--	--	--	--	--
GMSG-94	02/22/06	10:00 AM	28.5	26	-	--	--	--	--	--	--	--	--
GMSG-94	04/03/06	10:23 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-94	07/07/06	10:42 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-94	10/02/06	11:20 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-94	01/02/07	11:47 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-94	04/03/07	9:21 AM	28.7	36	-	--	--	--	--	--	--	--	--
GMSG-94	07/17/07	1:00 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-94	10/22/07	12:56 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-95	11/19/02	2:39 PM	28.56	46	-	--	0	1.4	18	--	--	--	--
GMSG-95	11/26/02	1:57 PM	29.13	29	-	--	0	1.2	18.8	--	--	--	--
GMSG-95	12/02/02	10:47 AM	28.83	15	-	--	0	0.9	19.4	--	--	--	--
GMSG-95	01/02/03	10:40 AM	28.99	21	-	--	0	1	18.6	--	--	--	--
GMSG-95	01/28/03	12:06 PM	28.76	22	-	--	0	0.9	19.2	--	--	--	--
GMSG-95	03/04/03	12:17 PM	28.64	14	T	--	0	1	18.8	--	--	--	--
GMSG-95	04/21/03	10:08 AM	28.46	38	T	--	0	1.2	17.7	--	--	--	--
GMSG-95	08/04/03	10:30 AM	28.75	70	-	--	0	1.8	16.9	--	--	--	--
GMSG-95	10/14/03	6:03 PM	28.54	46	-	--	0	2	17.1	--	--	--	--
GMSG-95	01/19/04	3:55 PM	28.94	7	-	--	0	0.2	18.5	--	--	--	--
GMSG-95	04/17/04	10:20 AM	28.92	56	-	--	0	0.2	17.8	--	--	--	--
GMSG-95	06/07/04	10:27 AM	28.62	80	-	0	0	0.7	19	--	--	--	--
GMSG-95	06/07/04	2:05 PM	28.54	84	-	0	0	0.7	18.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-95	06/07/04	5:48 PM	28.5	84	-	0	0	0.8	18.9	--	--	--	--
GMSG-95	06/08/04	8:11 AM	28.63	80	-	0	0	0	19.8	--	--	--	--
GMSG-95	06/08/04	1:39 PM	28.69	87	-	0	0	0.6	19.2	--	--	--	--
GMSG-95	06/08/04	5:46 PM	28.72	82	-	0	0	0.6	19.5	--	--	--	--
GMSG-95	06/09/04	7:48 AM	28.86	57	0.01	0	0	0.8	19.2	--	--	--	--
GMSG-95	06/09/04	10:16 AM	28.9	55	0.04	0	0	0.7	19.2	--	--	--	--
GMSG-95	06/09/04	2:21 PM	28.91	54	T	0	0	0.7	19	--	--	--	--
GMSG-95	06/09/04	6:16 PM	28.9	52	-	0	0	0	19.6	--	--	--	--
GMSG-95	06/10/04	8:56 AM	28.9	59	-	0	0	0	19.6	--	--	--	--
GMSG-95	06/10/04	12:03 PM	28.86	65	-	0	0	0.5	19.5	--	--	--	--
GMSG-95	06/10/04	2:34 PM	28.82	67	-	0	0	0.7	19.5	--	--	--	--
GMSG-95	06/10/04	4:26 PM	28.81	65	-	0	0	0.8	19.5	--	--	--	--
GMSG-95	06/11/04	8:29 AM	28.77	55	-	0	0	0.5	19.3	--	--	--	--
GMSG-95	06/11/04	11:56 AM	28.79	58	-	0	--	--	--	12	0	0	--
GMSG-95	06/11/04	3:47 PM	28.77	61	-	0	--	--	--	46	0	0	--
GMSG-95	06/12/04	9:20 AM	28.74	55	-	0	--	--	--	5.5	0	0	--
GMSG-95	06/12/04	2:36 PM	28.65	78	-	0	0	0.4	19.5	--	--	--	--
GMSG-95	06/12/04	5:01 PM	28.65	79	-	0	0	0.4	19.7	--	--	--	--
GMSG-95	06/13/04	8:04 AM	28.57	65	-	0	0	0.5	19.4	--	--	--	--
GMSG-95	06/13/04	2:58 PM	28.49	69	-	0	0	0.4	19.4	--	--	--	--
GMSG-95	06/13/04	6:28 PM	28.45	73	-	0.002	0	0.5	19.4	--	--	--	--
GMSG-95	06/14/04	9:57 AM	28.59	67	-	0	0	0.4	19.5	--	--	--	--
GMSG-95	06/14/04	12:04 PM	28.59	68	0.01	0	0	0	20.3	--	--	--	--
GMSG-95	06/14/04	2:21 PM	28.57	72	T	0	0	0.4	19.7	--	--	--	--
GMSG-95	06/14/04	8:13 PM	28.67	64	-	0	0	0.4	19.8	--	--	--	--
GMSG-95	06/15/04	8:08 AM	28.85	58	-	0	0	0.4	19.8	--	--	--	--
GMSG-95	06/15/04	12:03 PM	28.86	67	-	0.003	0	0.6	19.6	--	--	--	--
GMSG-95	06/15/04	3:28 PM	28.84	70	-	-0.015	0	0.3	19.8	--	--	--	--
GMSG-95	06/16/04	8:09 AM	28.82	67	-	0	0	0.4	19	--	--	--	--
GMSG-95	06/16/04	11:24 AM	28.8	79	-	0.005	0	0.4	19.9	--	--	--	--
GMSG-95	06/16/04	2:19 PM	28.76	82	-	0	0	0.4	19.6	--	--	--	--
GMSG-95	06/17/04	7:50 AM	28.82	59	T	0	0	0.4	19.7	--	--	--	--
GMSG-95	06/17/04	2:17 PM	28.81	75	-	0.011	0	0.4	20.3	--	--	--	--
GMSG-95	06/17/04	6:06 PM	28.81	71	-	0.003	0	0.4	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-95	06/18/04	7:54 AM	28.85	69	-	-0.003	0	0.4	19.7	--	--	--	--
GMSG-95	06/18/04	11:12 AM	28.82	74	-	-0.006	0	0.4	18.9	--	--	--	--
GMSG-95	06/18/04	8:13 PM	28.96	53	-	-0.006	0	0.5	19.9	--	--	--	--
GMSG-95	06/19/04	8:20 AM	29.07	55	-	0	0	0.5	19.6	--	--	--	--
GMSG-95	06/19/04	12:00 PM	29.03	65	-	0.002	0	0.5	19.6	--	--	--	--
GMSG-95	06/19/04	3:45 PM	28.95	66	-	0.009	0	0.5	20.4	--	--	--	--
GMSG-95	06/20/04	8:32 AM	28.77	66	-	0.004	0	0.6	19.3	--	--	--	--
GMSG-95	06/20/04	1:41 PM	28.68	74	-	0.005	0	0.5	19.4	--	--	--	--
GMSG-95	06/21/04	8:37 AM	28.48	69	-	0.008	0	0.5	19.5	--	--	--	--
GMSG-95	06/21/04	12:34 PM	28.42	74	-	0.004	0	2.2	18	--	--	--	--
GMSG-95	06/21/04	5:21 PM	28.43	59	0.13	-0.011	0	2.4	18.2	--	--	--	--
GMSG-95	06/22/04	8:06 AM	28.59	57	-	-0.008	0	0.3	19.4	--	--	--	--
GMSG-95	06/22/04	1:49 PM	28.61	66	-	-0.003	0	0.5	20	--	--	--	--
GMSG-95	06/22/04	4:45 PM	28.6	67	-	0	0	0.5	19.9	--	--	--	--
GMSG-95	06/23/04	7:59 AM	28.68	56	-	0.006	0	0.6	19.6	--	--	--	--
GMSG-95	06/23/04	2:16 PM	28.65	66	-	0.001	0	0.5	20	--	--	--	--
GMSG-95	06/24/04	7:49 AM	28.63	52	-	-0.003	0	0.5	20	--	--	--	--
GMSG-95	06/24/04	1:20 PM	28.74	55	-	0.006	0	0.5	19.4	--	--	--	--
GMSG-95	06/24/04	3:18 PM	28.78	55	T	-0.009	0	0.5	19.4	--	--	--	--
GMSG-95	06/25/04	7:54 AM	28.79	58	-	0	0	0.5	19	--	--	--	--
GMSG-95	06/25/04	2:11 PM	28.76	62	-	-0.006	0	0.6	19	--	--	--	--
GMSG-95	06/25/04	5:11 PM	28.76	61	-	-0.011	0	0.5	19.1	--	--	--	--
GMSG-95	06/26/04	8:08 AM	28.84	56	-	-0.016	0	0.5	19.1	--	--	--	--
GMSG-95	06/26/04	12:07 PM	28.83	61	-	0	0	0.5	19.1	--	--	--	--
GMSG-95	06/26/04	1:30 PM	28.81	65	-	0	0	0.5	19.3	--	--	--	--
GMSG-95	06/26/04	5:33 PM	28.81	63	-	0.003	0	0.5	19.5	--	--	--	--
GMSG-95	06/27/04	10:09 AM	28.88	66	-	0.005	0	0.5	19.3	--	--	--	--
GMSG-95	06/28/04	11:01 AM	28.83	72	-	0	0	0.5	19.4	--	--	--	--
GMSG-95	06/28/04	1:49 PM	28.8	72	-	0	0	0.5	19.4	--	--	--	--
GMSG-95	06/29/04	6:19 PM	28.83	67	0.01	0.001	0	0.5	19.7	--	--	--	--
GMSG-95	06/30/04	8:21 AM	28.8	73	-	-0.001	0	0.5	19.1	--	--	--	--
GMSG-95	07/02/04	10:20 AM	28.93	68	-	0	0	0.5	18.6	--	--	--	--
GMSG-95	07/06/04	11:03 AM	28.66	54	0.08	-0.012	0	0.6	18.7	--	--	--	--
GMSG-95	07/07/04	5:05 PM	28.57	56	T	-0.003	0	0.5	18.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-95	07/08/04	11:39 AM	28.72	61	-	-0.002	0	0.5	19.1	--	--	--	--
GMSG-95	07/09/04	11:34 AM	28.88	70	-	-0.006	0	0.4	19.7	--	--	--	--
GMSG-95	07/11/04	9:47 AM	28.82	70	-	-0.004	0	0.5	19.2	--	--	--	--
GMSG-95	07/12/04	3:00 PM	28.7	82	-	-0.002	0	0.5	19.3	--	--	--	--
GMSG-95	08/03/04	5:32 PM	28.69	72	-	0.002	0	0.5	19.6	--	--	--	--
GMSG-95	08/04/04	1:43 PM	28.83	72	-	0	0	0.5	19.4	--	--	--	--
GMSG-95	08/07/04	3:15 PM	28.83	70	-	0.004	0	0.5	18.9	--	--	--	--
GMSG-95	08/08/04	1:57 PM	28.81	66	T	-0.002	0	0.6	18.8	--	--	--	--
GMSG-95	08/17/04	12:54 PM	28.69	70	-	-0.001	0	0.5	19.5	--	--	--	--
GMSG-95	08/18/04	11:45 AM	28.37	77	-	0.021	0	0.5	19.5	--	--	--	--
GMSG-95	10/20/04	1:27 PM	28.88	54	-	--	0	0.4	19.8	--	--	--	--
GMSG-95	01/27/05	10:44 AM	29.36	4	T	--	--	--	--	--	--	--	--
GMSG-95	04/01/05	2:44 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-95	07/05/05	10:32 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-95	10/10/05	10:25 AM	29	51	-	--	--	--	--	--	--	--	--
GMSG-95	02/22/06	10:11 AM	28.5	26	-	--	--	--	--	--	--	--	--
GMSG-95	04/03/06	10:17 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-95	07/07/06	10:56 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-95	10/02/06	11:14 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-95	01/02/07	11:41 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-95	04/03/07	9:14 AM	28.7	36	-	--	--	--	--	--	--	--	--
GMSG-95	07/17/07	12:55 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-95	10/22/07	12:49 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-96	05/23/03	10:45 AM	29	64	-	--	10.1	7.5	6.6	--	--	--	--
GMSG-96	05/23/03	10:52 AM	29	64	-	--	11.2	8	7	--	--	--	--
GMSG-96	05/23/03	10:57 AM	29	64	-	--	12.6	8.8	5.2	--	--	--	--
GMSG-96	05/23/03	11:02 AM	29	64	-	--	14.1	9.3	3.6	--	--	--	--
GMSG-96	05/23/03	11:07 AM	29	64	-	--	15.2	9.9	2.3	--	--	--	--
GMSG-96	05/23/03	11:12 AM	29	64	-	--	16	10.3	1.3	--	--	--	--
GMSG-96	06/05/03	12:43 PM	28.7	78	-	0	17.5	10.8	0.1	--	--	--	--
GMSG-96	07/16/03	1:59 PM	28.83	86	-	0	0.5	1.1	17.2	6.60%	Flame out	1.2	--
GMSG-96	08/08/03	9:14 AM	28.93	65	-	0	16.1	10.9	0	--	--	--	--
GMSG-96	09/29/03	10:26 AM	28.82	48	-	0	16.9	10.8	0	--	--	--	--
GMSG-96	10/10/03	12:23 PM	28.83	73	-	0	16.3	10.7	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-96	11/07/03	1:02 PM	29.05	21	-	0	0	0.2	19.1	7.04	--	0.45	--
GMSG-96	12/09/03	12:09 PM	28.74	36	-	0	17.7	11.1	0	--	--	--	--
GMSG-96	04/01/04	12:48 PM	28.9	47	-	-0.2	17.8	1.1	2.6	--	--	--	--
GMSG-96	06/26/04	12:52 PM	28.82	64	-	-0.329	0	0	20	--	--	--	--
GMSG-96	06/28/04	12:16 PM	28.82	73	-	-0.393	0	0	20.3	--	--	--	--
GMSG-96	06/30/04	11:10 AM	28.76	82	-	0.024	0.2	2.5	13	--	--	--	--
GMSG-96	07/02/04	10:55 AM	28.93	71	-	0	0	3.2	11.8	--	--	--	--
GMSG-96	07/06/04	10:00 AM	28.68	53	0.03	0.159	1.5	5.8	6.9	--	--	--	--
GMSG-96	07/07/04	11:33 AM	28.57	55	-	-0.014	0	0.5	18.8	--	--	--	--
GMSG-96	07/08/04	2:22 PM	28.74	63	-	-0.051	0	0	19.6	--	--	--	--
GMSG-96	07/09/04	8:04 AM	28.88	62	-	0.077	0	0.2	19.4	--	--	--	--
GMSG-96	07/12/04	4:12 PM	28.69	84	-	-0.017	0.7	7.3	5.5	--	--	--	--
GMSG-96	07/19/04	2:51 PM	28.54	79	T	0.053	0.7	6.2	6.3	--	--	--	--
GMSG-96	07/28/04	9:07 AM	28.79	75	-	0.034	0	0.8	17.5	--	--	--	--
GMSG-96	08/04/04	2:37 PM	28.84	69	-	-0.062	0	1.7	15.1	--	--	--	--
GMSG-96	08/10/04	2:25 PM	28.58	57	T	-0.067	0	3.2	11.8	--	--	--	--
GMSG-96	09/02/04	12:37 PM	28.83	80	-	0	0.4	6.9	5	--	--	--	--
GMSG-96	09/02/04	2:59 PM	28.8	82	-	--	2.4	10.5	0.7	--	--	--	--
GMSG-96	09/09/04	10:38 AM	28.96	66	-	0.4	0.4	7.8	4.6	--	--	--	--
GMSG-96	09/13/04	10:52 AM	28.8	78	-	0	0.4	3	13.2	--	--	--	--
GMSG-96	09/16/04	9:39 AM	28.68	60	-	-1.6	0.5	6.5	7.7	--	--	--	--
GMSG-96	09/24/04	3:17 PM	28.78	61	-	0	0.6	5.8	8	--	--	--	--
GMSG-96	10/07/04	1:38 PM	28.9	72	-	0	0	0.3	19.7	--	--	--	--
GMSG-96	10/07/04	1:40 PM	28.9	72	-	--	0.4	9.1	2.4	--	--	--	--
GMSG-96	10/11/04	1:51 PM	28.98	66	-	0	1	7.4	5	--	--	--	--
GMSG-96	10/25/04	4:42 PM	28.89	46	-	-0.2	0	0	20.1	--	--	--	--
GMSG-96	10/28/04	8:10 AM	28.98	45	-	0	1.7	3.8	10.7	--	--	--	--
GMSG-96	11/02/04	1:30 PM	28.88	45	T	-0.2	0.5	6.7	6.4	--	--	--	--
GMSG-96	11/11/04	1:58 PM	29.14	38	-	-0.3	0	9.8	1.8	--	--	--	--
GMSG-96	11/18/04	10:43 AM	28.96	51	-	--	1.4	11.1	0.6	--	--	--	--
GMSG-96	11/21/04	10:10 AM	29.01	36	-	0	0	2.3	14.3	--	--	--	--
GMSG-96	12/04/04	3:00 PM	28.43	38	-	-0.6	3.6	10.8	1.1	--	--	--	--
GMSG-96	12/09/04	9:56 AM	28.59	35	-	-0.9	4.2	11.3	0.7	--	--	--	--
GMSG-96	12/14/04	2:38 PM	29.12	20	-	0	1.3	8.9	4.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-96	12/22/04	2:30 PM	28.95	7	-	0	2.1	11.2	1.2	--	--	--	--
GMSG-96	01/03/05	11:18 AM	29.11	14	-	-0.2	1.9	11.6	0.6	--	--	--	--
GMSG-96	01/11/05	11:03 AM	28.85	20	-	0	0.3	0.5	17.5	--	--	--	--
GMSG-96	01/18/05	10:30 AM	29.09	4	-	0	1.1	7.6	5.5	--	--	--	--
GMSG-96	01/24/05	1:17 PM	28.64	26	-	-0.4	3.5	9.6	2.6	--	--	--	--
GMSG-96	02/10/05	12:12 PM	28.9	25	-	0.1	0	0.9	17.9	--	--	--	--
GMSG-96	02/11/05	4:05 PM	28.58	41	-	0	0	0.5	18.6	--	--	--	--
GMSG-96A	06/30/04	10:58 AM	28.76	82	-	0.005	0	2.5	16.5	--	--	--	--
GMSG-96A	07/02/04	11:00 AM	28.93	71	-	0	0	1.2	17	--	--	--	--
GMSG-96A	07/06/04	10:07 AM	28.68	53	0.03	0.04	0	2.3	16.1	--	--	--	--
GMSG-96A	07/07/04	1:11 PM	28.57	55	-	-0.044	0	2.6	15.4	--	--	--	--
GMSG-96A	07/08/04	2:16 PM	28.74	63	-	-0.035	0	2.5	15.6	--	--	--	--
GMSG-96A	07/09/04	8:18 AM	28.88	62	-	-0.051	0	2.6	15.5	--	--	--	--
GMSG-96A	07/12/04	4:18 PM	28.69	84	-	-0.006	0	3.1	14.4	--	--	--	--
GMSG-96A	07/19/04	2:55 PM	28.54	79	T	0.041	0	3.8	12.9	--	--	--	--
GMSG-96A	07/28/04	9:12 AM	28.79	75	-	0.005	0	2.6	12.2	--	--	--	--
GMSG-96A	08/04/04	2:27 PM	28.83	72	-	-0.008	0	4.6	11	--	--	--	--
GMSG-96A	08/10/04	2:30 PM	28.58	58	T	-0.097	0	4.9	11	--	--	--	--
GMSG-96A	09/02/04	3:20 PM	28.8	82	-	0	0	6.7	8.3	--	--	--	--
GMSG-96A	09/24/04	3:28 PM	28.78	61	-	0	0	4.2	14.2	--	--	--	--
GMSG-96A	02/03/05	3:10 PM	28.87	48	-	0	0	0.2	19.8	--	--	--	--
GMSG-96A	02/07/05	1:15 PM	28.87	28	T	0	0	0.2	19.7	--	--	--	--
GMSG-96A	02/10/05	12:32 PM	28.87	28	-	0	0	0.2	19.7	--	--	--	--
GMSG-96A	02/11/05	5:03 PM	28.57	40	-	0	2.2	4.9	11	--	--	--	--
GMSG-96A	10/18/05	4:25 PM	28.55	56	-	0.12	0	0	20	--	--	--	--
GMSG-96A	02/02/06	2:06 PM	28.39	33	-	0	0	0	19.3	--	--	--	--
GMSG-96A	04/11/06	4:52 PM	28.54	66	-	0	0	0.5	18.7	--	--	--	--
GMSG-96A	07/19/06	10:09 AM	28.84	79	-	0	0	0	19.2	--	--	--	--
GMSG-96A	10/31/06	2:10 PM	28.64	37	-	-0.1	0	0	20.4	--	--	--	--
GMSG-96A	01/24/07	9:03 AM	28.81	2	-	0	0	0	20.9	--	--	--	--
GMSG-96A	04/19/07	3:44 PM	28.92	66	-	0	0	0	20.9	--	--	--	--
GMSG-96A	07/18/07	9:28 AM	29.91	69	-	0	0	0.6	18.2	--	--	--	--
GMSG-96A	10/17/07	11:51 AM	29.89	57	-	0	0	1	18.2	--	--	--	--
GMSG-97	06/05/03	2:08 PM	28.68	79	-	--	0	0.5	19.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-97	06/13/03	1:06 PM	28.62	77	-	--	0	0.9	18.6	--	--	--	--
GMSG-97	06/19/03	12:33 PM	28.97	68	-	--	0	0.8	18.8	--	--	--	--
GMSG-97	07/21/03	11:52 AM	28.57	71	-	--	0	0.9	18.5	--	--	--	--
GMSG-97	08/05/03	2:28 PM	28.7	81	-	--	0	1.1	17.8	--	--	--	--
GMSG-97	09/26/03	1:58 PM	28.36	54	T	--	0	0.5	18.5	--	--	--	--
GMSG-97	11/02/03	3:55 PM	28.91	42	-	--	0	0.4	19	--	--	--	--
GMSG-97	01/29/04	4:05 PM	28.76	5	-	--	0	0	19.3	--	--	--	--
GMSG-97	04/19/04	8:56 AM	28.59	41	-	--	0	0.4	17.2	--	--	--	--
GMSG-97	07/14/04	2:41 PM	28.67	78	-	--	0	0.6	19	--	--	--	--
GMSG-97	10/30/04	9:41 AM	27.92	55	T	--	0	0.7	19	--	--	--	--
GMSG-97	02/08/05	9:24 AM	28.99	15	-	--	--	--	--	--	--	--	--
GMSG-97	04/04/05	2:58 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-97	07/05/05	1:27 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-97	10/11/05	3:40 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-97	02/27/06	1:27 PM	28.84	20	-	--	--	--	--	--	--	--	--
GMSG-97	04/06/06	3:02 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-97	07/13/06	10:55 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-97	10/11/06	11:15 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-97	02/01/07	9:47 AM	28.4	11	-	--	--	--	--	--	--	--	--
GMSG-97	04/05/07	2:20 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-97	07/19/07	2:06 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-97	10/17/07	3:10 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-98	06/05/03	2:03 PM	28.68	79	-	--	0	0.2	20.1	--	--	--	--
GMSG-98	06/13/03	1:11 PM	28.62	77	-	--	0	0.3	19.5	--	--	--	--
GMSG-98	06/19/03	12:39 PM	28.97	68	-	--	0	0.3	19.4	--	--	--	--
GMSG-98	07/21/03	11:57 AM	28.57	71	-	--	0	0.3	19.4	--	--	--	--
GMSG-98	08/05/03	2:23 PM	28.7	81	-	--	0	0.2	19.2	--	--	--	--
GMSG-98	09/26/03	1:49 PM	28.36	54	T	--	0	0.4	18.9	--	--	--	--
GMSG-98	11/02/03	3:50 PM	28.91	42	-	--	0	0.2	19.2	--	--	--	--
GMSG-98	01/21/04	11:00 AM	28.4	20	T	--	0	0.2	18.8	--	--	--	--
GMSG-98	04/19/04	8:50 AM	28.59	41	-	--	0	0.1	17.7	--	--	--	--
GMSG-98	07/14/04	2:38 PM	28.67	78	-	--	0	0	20	--	--	--	--
GMSG-98	10/30/04	9:36 AM	27.92	55	T	--	0	0.1	19.4	--	--	--	--
GMSG-98	02/08/05	9:12 AM	28.99	15	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-98	04/04/05	2:56 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-98	07/05/05	1:20 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-98	10/11/05	4:05 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-98	02/27/06	1:12 PM	28.84	20	-	--	--	--	--	--	--	--	--
GMSG-98	04/06/06	3:00 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-98	07/13/06	11:04 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-98	10/11/06	11:17 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-98	01/31/07	4:16 PM	28.46	19	-	--	--	--	--	--	--	--	--
GMSG-98	04/05/07	2:17 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-98	07/19/07	2:02 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-98	10/17/07	3:04 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-99	06/05/03	3:54 PM	28.69	74	-	--	0.3	0.2	20.1	--	--	--	--
GMSG-99	06/06/03	9:01 AM	28.69	71	-	--	0.2	0.2	19.8	0	0	0	--
GMSG-99	06/13/03	12:57 PM	28.62	77	-	--	0.1	0.4	19.3	--	--	--	--
GMSG-99	06/19/03	12:46 PM	28.97	68	-	--	0	0.3	19.2	--	--	--	--
GMSG-99	07/21/03	11:45 AM	28.57	71	-	--	0	0.4	19.4	--	--	--	--
GMSG-99	08/05/03	2:17 PM	28.7	81	-	--	0	0.6	18.8	--	--	--	--
GMSG-99	09/26/03	1:45 PM	28.36	54	T	--	0.1	0.4	19.1	--	--	--	--
GMSG-99	11/02/03	4:05 PM	28.91	42	-	--	0	0.4	19	--	--	--	--
GMSG-99	01/21/04	10:34 AM	28.4	20	T	--	0	0	18.8	--	--	--	--
GMSG-99	04/19/04	8:22 AM	28.5	41	T	--	0	0.2	17.5	--	--	--	--
GMSG-99	06/07/04	5:44 PM	28.5	84	-	0	0	0.8	18.7	--	--	--	--
GMSG-99	07/14/04	2:13 PM	28.67	78	-	--	0	0.4	19.4	--	--	--	--
GMSG-99	10/30/04	9:11 AM	27.94	55	-	--	0	0.4	19.5	--	--	--	--
GMSG-99	02/07/05	3:46 PM	28.88	25	-	--	--	--	--	--	--	--	--
GMSG-99	04/04/05	3:23 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-99	07/05/05	1:04 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-99	10/11/05	4:22 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-99	02/27/06	2:27 PM	28.83	22	-	--	--	--	--	--	--	--	--
GMSG-99	04/06/06	3:30 PM	28.49	54	-	--	--	--	--	--	--	--	--
GMSG-99	07/13/06	9:58 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-99	10/11/06	10:46 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-99	01/31/07	2:59 PM	28.49	22	-	--	--	--	--	--	--	--	--
GMSG-99	04/05/07	2:47 PM	28.87	25	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-99	07/19/07	3:12 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-99	10/22/07	11:56 AM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-100	07/11/98	9:59 AM	28.87	75	-	0.2	4.7	0	16.7	--	--	--	--
GMSG-100	07/11/98	4:10 PM	28.79	79	-	37	88.5	1	0.5	--	--	--	--
GMSG-100	07/13/98	8:48 AM	28.61	78.1	-	39.8	92.1	1.2	0.3	--	--	--	--
GMSG-100	07/14/98	10:46 AM	28.69	75	T	44.9	89.3	1	0.5	--	--	--	--
GMSG-100	07/14/98	6:05 PM	28.66	82.9	-	>100	91.3	0.7	0	--	--	--	--
GMSG-100	07/15/98	9:36 AM	28.66	75	-	>100	93	1.1	0	--	--	--	--
GMSG-100	07/21/98	8:10 AM	28.45	78.1	-	>24	90.1	0.9	0	--	--	--	--
GMSG-100	07/21/98	4:11 PM	28.52	86	-	82.5	86.6	0.5	0	--	--	--	--
GMSG-100	07/22/98	4:30 PM	28.61	75	-	83.4	91.2	1	0	--	--	--	--
GMSG-100	07/23/98	5:34 PM	28.7	66.9	-	--	--	--	--	--	--	--	--
GMSG-100	07/24/98	4:44 PM	28.85	68	-	71.1	94.5	0.9	0	--	--	--	--
GMSG-100	07/25/98	5:25 PM	28.92	72	-	>100	93.1	0.7	0	--	--	--	63.2
GMSG-100	07/26/98	11:15 AM	28.83	77	-	26.5	94.2	0.7	0	--	--	--	--
GMSG-100	07/27/98	10:08 AM	28.6	73.9	-	35.6	95.3	0.9	0	--	--	--	--
GMSG-100	07/28/98	10:43 AM	28.47	64	0.06	29.6	95	0.8	0	--	--	--	--
GMSG-100	07/29/98	8:35 AM	28.7	70	-	27.2	95.7	0.8	0	--	--	--	--
GMSG-100	08/04/98	8:29 AM	28.9	71.1	-	26.4	94.3	0.8	0	--	--	--	61.71
GMSG-100	08/09/98	11:25 AM	28.8	82	-	27.4	87.8	0.5	0	--	--	--	--
GMSG-100	08/12/98	8:43 AM	29.01	61	-	26	88.3	0.5	0	--	--	--	65.3
GMSG-100	08/18/98	8:04 PM	29.01	62.1	-	79	93.3	0.5	0	--	--	--	69.4
GMSG-100	08/24/98	3:32 PM	28.44	78.1	-	90	90.4	0.5	0	--	--	--	57.45
GMSG-100	08/25/98	6:45 PM	28.67	66.9	-	80	91.3	0.5	0	--	--	--	--
GMSG-100	08/26/98	11:45 AM	28.79	81	-	82	81.5	0.4	0.2	--	--	--	--
GMSG-100	08/27/98	5:56 PM	28.73	73.9	T	84	92.3	0.5	0	--	--	--	--
GMSG-100	08/28/98	6:35 PM	28.65	68	-	--	90.6	0.5	0	--	--	--	--
GMSG-100	08/29/98	1:50 PM	28.67	75.9	-	--	93.3	0.8	0	--	--	--	--
GMSG-100	08/30/98	8:11 AM	28.75	63	-	--	96.7	0.8	0	--	--	--	--
GMSG-100	08/31/98	6:35 PM	28.76	63	-	--	92.8	0.6	0	--	--	--	--
GMSG-100	09/01/98	9:51 AM	28.59	66.9	-	87	--	--	--	--	--	--	--
GMSG-100	09/01/98	9:57 AM	28.59	66.9	-	87	--	--	--	--	--	--	--
GMSG-100	09/01/98	12:00 PM	28.57	71.1	T	87	--	--	--	--	--	--	--
GMSG-100	09/01/98	12:00 PM	28.57	71.1	T	87	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-100	09/01/98	2:01 PM	28.51	73	-	87	--	--	--	--	--	--	--
GMSG-100	09/01/98	2:01 PM	28.51	73	-	87	--	--	--	--	--	--	--
GMSG-100	09/01/98	4:00 PM	28.5	68	-	88	--	--	--	--	--	--	--
GMSG-100	09/01/98	5:55 PM	28.52	66	-	87	--	--	--	--	--	--	--
GMSG-100	09/01/98	5:55 PM	28.52	66	-	87	--	--	--	--	--	--	--
GMSG-100	09/02/98	6:15 AM	28.52	51.1	-	86	--	--	--	--	--	--	--
GMSG-100	09/02/98	6:15 AM	28.52	51.1	-	86	--	--	--	--	--	--	--
GMSG-100	09/02/98	8:50 AM	28.53	60.1	-	86	--	--	--	--	--	--	--
GMSG-100	09/02/98	8:50 AM	28.53	60.1	-	86	--	--	--	--	--	--	--
GMSG-100	09/02/98	9:00 AM	28.53	60.1	-	86	95.6	0.8	0	--	--	--	--
GMSG-100	09/02/98	11:00 AM	28.54	61	-	86	--	--	--	--	--	--	--
GMSG-100	09/02/98	11:00 AM	28.54	61	-	86	--	--	--	--	--	--	--
GMSG-100	09/02/98	1:00 PM	28.52	63	-	87	--	--	--	--	--	--	--
GMSG-100	09/02/98	1:00 PM	28.52	63	-	87	--	--	--	--	--	--	--
GMSG-100	09/02/98	3:14 PM	28.5	64.9	-	3.98	--	--	--	--	--	--	--
GMSG-100	09/02/98	3:14 PM	28.5	64.9	-	3.98	--	--	--	--	--	--	--
GMSG-100	09/02/98	5:06 PM	28.52	64	-	--	--	--	--	--	--	--	--
GMSG-100	09/02/98	6:55 PM	28.53	55	-	59	--	--	--	--	--	--	--
GMSG-100	09/02/98	6:55 PM	28.53	55	-	59	--	--	--	--	--	--	--
GMSG-100	09/08/98	1:50 PM	28.85	64	-	84	93.7	0.7	0	--	--	--	--
GMSG-100	09/09/98	8:00 AM	28.96	53.1	-	82	91.6	0.7	0	--	--	--	--
GMSG-100	09/09/98	5:00 PM	28.83	72	-	85	92.2	0.6	0	--	--	--	--
GMSG-100	09/09/98	6:20 PM	28.84	66.9	-	86	94.7	0.5	0.2	--	--	--	--
GMSG-100	09/10/98	4:40 PM	28.66	80.1	-	85	90.7	0.5	0	--	--	--	--
GMSG-100	09/11/98	6:07 PM	28.57	89.1	-	87	89.1	0.5	0.1	--	--	--	--
GMSG-100	09/12/98	4:44 PM	28.69	77	-	86	89.5	0.6	0	--	--	--	--
GMSG-100	09/13/98	11:51 AM	28.66	71.1	-	85	90.5	0.6	0	--	--	--	--
GMSG-100	09/22/98	2:09 PM	28.87	59	-	82	89.8	0.7	0	--	--	--	--
GMSG-100	09/23/98	6:30 PM	28.74	57.9	-	85	91.3	0.8	0	--	--	--	--
GMSG-100	09/25/98	9:33 AM	28.52	66.9	-	86	92.9	0.8	0	--	--	--	--
GMSG-100	09/28/98	1:48 PM	28.7	70	-	85	89.1	0.7	0.8	--	--	--	--
GMSG-100	10/07/98	3:27 PM	28.72	52	-	82	92.7	0.8	0	--	--	--	--
GMSG-100	10/11/98	4:00 PM	28.89	62.1	-	83	90.6	0.8	0	--	--	--	--
GMSG-100	10/14/98	8:45 AM	28.87	39.9	-	82	91.5	0.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-100	10/20/98	8:05 AM	28.94	41	-	80	93.6	0.9	0	--	--	--	--
GMSG-100	10/23/98	6:14 PM	28.88	60.1	-	80	91.3	0.8	0	--	--	--	--
GMSG-100	11/18/98	12:09 PM	28.81	34	-	82	97.1	0.9	0	--	--	--	--
GMSG-100	11/20/98	3:55 PM	28.71	30.9	-	81	88.6	0.8	0	--	--	--	--
GMSG-100	11/21/98	8:34 AM	28.86	23	-	80	97.4	0.9	2.1	--	--	--	--
GMSG-100	12/01/98	11:25 AM	28.81	46	-	80	94	0.9	0	--	--	--	--
GMSG-100	12/03/98	3:54 PM	28.43	59	-	85	94.5	0.9	0	--	--	--	--
GMSG-100	12/09/98	11:36 AM	28.92	39	-	80	97.3	0.9	0	--	--	--	--
GMSG-100	12/15/98	8:29 AM	28.74	37	-	80	96	0.9	0	--	--	--	--
GMSG-100	12/19/98	12:35 PM	28.89	21	T	19	91.2	0.7	0	--	--	--	53.62
GMSG-100	12/20/98	10:47 AM	29.12	17	T	20	85.6	0.6	0.1	--	--	--	--
GMSG-100	12/28/98	10:29 AM	28.74	11	T	25	86.5	0.9	0	--	--	--	82
GMSG-100	01/06/99	4:37 PM	28.7	1.9	-	25	99.3	1	0	--	--	--	--
GMSG-100	01/14/99	4:36 PM	28.92	6.1	-	55	100.2	1	0	--	--	--	--
GMSG-100	01/21/99	4:19 PM	28.78	25	-	--	--	--	--	--	--	--	--
GMSG-100	02/03/99	4:31 PM	28.13	32	0.02	15	90.7	0.8	0	--	--	--	--
GMSG-100	02/11/99	4:28 PM	28.07	37	0.13	--	89.3	0.7	0	--	--	--	--
GMSG-100	02/24/99	8:41 AM	28.85	15.1	-	--	21.1	0.8	14.9	--	--	--	--
GMSG-100	03/23/99	4:20 PM	28.56	37.9	-	--	--	--	--	--	--	--	--
GMSG-100	04/07/99	10:07 AM	28.59	45	-	--	--	--	--	--	--	--	--
GMSG-100	04/19/99	1:55 PM	28.68	46	-	1.4	89.8	0.4	0	--	--	--	61.5
GMSG-100	04/29/99	6:07 PM	29.12	64	-	23	92.8	0.5	8.3	--	--	--	62.68
GMSG-100	05/17/99	1:05 PM	28.5	71.1	-	25	86.4	0.4	0	--	--	--	64.89
GMSG-100	06/02/99	11:11 AM	28.63	55	-	20	90.1	0.4	0	--	--	--	59.9
GMSG-100	07/08/99	1:10 PM	28.72	59	0.07	35	90	0.6	0.1	--	--	--	60.85
GMSG-100	07/17/99	3:10 PM	28.85	78.1	-	49	102	0.5	0	--	--	--	62
GMSG-100	07/22/99	8:28 AM	28.8	75.9	-	30	90.9	0.6	0	--	--	--	--
GMSG-100	07/27/99	10:03 AM	28.77	73.9	-	39	78.5	0.6	0	--	--	--	--
GMSG-100	08/04/99	7:54 AM	28.72	64	-	37	105.8	0.6	0	--	--	--	--
GMSG-100	08/10/99	10:19 AM	28.44	64.9	-	39	100.1	0.7	0	--	--	--	--
GMSG-100	08/17/99	2:35 PM	28.81	70	-	35	101.3	0.6	0	--	--	--	--
GMSG-100	08/20/99	4:56 PM	28.86	75	-	34	88.5	0.6	0	--	--	--	--
GMSG-100	08/24/99	9:13 AM	28.7	71.1	-	--	90.7	0.8	0	--	--	--	--
GMSG-100	08/31/99	5:09 PM	28.86	73	-	34	91.8	0.8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-100	09/03/99	8:02 AM	28.8	69.1	-	31	88.8	0.8	0	--	--	--	--
GMSG-100	09/08/99	3:58 PM	28.47	70	-	35	88.1	0.8	0	--	--	--	--
GMSG-100	09/14/99	11:00 AM	28.64	54	-	--	89.1	0.9	0	--	--	--	--
GMSG-100	09/21/99	1:21 PM	28.89	59	-	15	90.1	0.9	0	--	--	--	--
GMSG-100	09/28/99	1:12 PM	28.91	55	-	28	104.9	0.8	0	--	--	--	--
GMSG-100	09/30/99	10:35 AM	28.43	59	-	35	83.3	0.7	0	--	--	--	83.9
GMSG-100	10/05/99	10:34 AM	28.69	54	-	32	89.8	1	0	--	--	--	--
GMSG-100	10/07/99	3:48 PM	28.7	48.9	-	31	82	0.8	0	--	--	--	67.8
GMSG-100	10/12/99	10:06 AM	28.69	55	-	32	99	0.8	0	--	--	--	--
GMSG-100	10/19/99	8:16 AM	28.81	37.9	T	48	101.4	0.9	0	--	--	--	--
GMSG-100	10/23/99	4:41 PM	28.91	34	-	41	102.1	1.1	0	--	--	--	67.9
GMSG-100	10/25/99	7:56 AM	28.55	45	-	48	102.2	1	0	--	--	--	--
GMSG-100	11/03/99	9:35 AM	28.7	30.9	-	42	98.1	0.8	0	--	--	--	67.9
GMSG-100	11/06/99	3:45 PM	29.08	46	-	39	109	0.9	0	--	--	--	67.9
GMSG-100	11/22/99	10:50 AM	28.67	46.9	-	30	100.4	0.5	0	--	--	--	--
GMSG-100	01/25/00	12:25 PM	28.79	14	-	81	108.7	0.6	0	--	--	--	--
GMSG-100	02/07/00	2:00 PM	29.04	24.1	-	77	99.8	0.5	0	--	--	--	--
GMSG-100	02/15/00	12:50 PM	28.6	21	0.06	75	101.2	0.5	0	--	--	--	--
GMSG-100	03/04/00	2:38 PM	28.53	55.9	-	70	94.3	0.5	0	--	--	--	--
GMSG-100	03/05/00	11:41 AM	28.74	51.1	-	70	95.8	0.5	0	--	--	--	--
GMSG-100	03/06/00	11:40 AM	28.77	57.9	-	70	93.8	0.5	0	--	--	--	--
GMSG-100	03/14/00	5:12 PM	28.67	30	T	55	101	0.4	0	--	--	--	--
GMSG-100	03/30/00	11:19 AM	28.82	45	-	32	89.9	0.3	0	--	--	--	63.41
GMSG-100	04/02/00	1:05 PM	28.48	61	-	34	91.1	0.5	0	--	--	--	--
GMSG-100	04/27/00	2:25 PM	28.64	69	-	36	90.5	0.5	0	--	--	--	--
GMSG-100	06/03/00	1:17 PM	28.96	65	-	25	6.7	0.5	0	--	--	--	--
GMSG-100	06/05/00	12:38 PM	28.95	65	-	25	84.8	0.4	0	--	--	--	--
GMSG-100	06/29/00	4:15 PM	28.65	70	-	31	85.6	0.5	0	--	--	--	--
GMSG-100	07/19/00	8:10 AM	28.86	54	-	30	93.7	0.6	0	--	--	--	--
GMSG-100	07/23/00	10:36 AM	28.97	69	-	26	110.3	0.5	0	--	--	--	--
GMSG-100	08/20/00	11:30 AM	29.05	67	-	25	96	0.5	0	--	--	--	--
GMSG-100	08/28/00	3:49 PM	28.66	73	-	30	93.6	0.5	0	--	--	--	--
GMSG-100	09/11/00	11:23 AM	28.48	72	-	5.02	95.6	0.5	0	--	--	--	--
GMSG-100	09/12/00	10:30 AM	28.66	63	-	32	100.4	0.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-100	09/23/00	11:07 AM	28.66	54	-	30	107.1	0.6	0	--	--	--	--
GMSG-100	10/21/00	10:00 AM	29.01	48	-	26	93.2	0.6	0	--	--	--	65.5
GMSG-100	10/24/00	4:37 PM	29.05	53	-	27	91.6	0.5	0	--	--	--	--
GMSG-100	11/18/00	11:30 AM	28.59	22	T	47	98.2	0.7	0	--	--	--	54.58
GMSG-100	11/22/00	9:55 AM	28.95	17	-	50	100.1	0.7	0	--	--	--	--
GMSG-100	12/04/00	3:38 PM	28.57	31	-	51	93.5	0.5	0	--	--	--	--
GMSG-100	12/18/00	10:18 AM	28.75	10	-	30	94.5	0.5	0	--	--	--	--
GMSG-100	01/09/01	9:10 AM	28.82	15	-	65	97.2	0.5	0.8	--	--	--	--
GMSG-100	01/10/01	9:35 AM	28.61	32	-	66	101.4	0.5	1	--	--	--	--
GMSG-100	02/08/01	1:35 PM	28.83	24	-	48	103.5	0.6	0	--	--	--	--
GMSG-100	02/10/01	8:28 AM	29.04	2	-	40	--	--	--	--	--	--	--
GMSG-100	02/12/01	12:54 PM	28.87	24	0.01	31	--	--	--	--	--	--	--
GMSG-100	02/13/01	8:04 AM	29.01	21	-	26	96.4	0.5	0	--	--	--	--
GMSG-100	02/21/01	10:50 AM	29.23	5	-	6	97.6	0.5	0	--	--	--	--
GMSG-100	03/07/01	10:32 AM	28.69	33	-	9.52	94.9	0.4	0	--	--	--	--
GMSG-100	03/20/01	10:35 AM	29.02	41	-	48	95.7	0.4	0	--	--	--	--
GMSG-100	04/08/01	9:24 AM	28.49	41	-	37	113.8	0.4	0	--	--	--	62.91
GMSG-100	04/19/01	9:42 AM	28.76	56	-	49	100	0.4	0	--	--	--	--
GMSG-100	04/21/01	11:07 AM	28.37	54	-	--	--	--	--	--	--	--	--
GMSG-100	05/05/01	9:50 AM	29.09	58	-	40	108.8	0.5	0	--	--	--	--
GMSG-100	05/15/01	9:55 AM	28.51	55	-	39	105.1	0.5	0	--	--	--	--
GMSG-100	05/31/01	8:26 AM	28.93	56	-	36	119	0.5	0	--	--	--	63.4
GMSG-100	06/13/01	5:23 PM	28.52	81	-	10	99.7	0.4	0.2	--	--	--	--
GMSG-100	06/28/01	9:00 AM	28.99	77	-	35	106.9	0.5	0	--	--	--	63.76
GMSG-100	07/12/01	4:22 PM	28.86	78	-	1.15	93.7	0.4	0.6	--	--	--	--
GMSG-100	07/19/01	8:17 AM	28.82	68	-	32	108	0.5	0	--	--	--	67.9
GMSG-100	08/08/01	4:10 PM	28.64	95	-	34	94.9	0.4	0.7	--	--	--	64.9
GMSG-100	09/08/01	9:58 AM	28.39	72	-	31	109	0.7	0	--	--	--	64.11
GMSG-100	10/04/01	4:45 PM	28.66	55	-	30	97.5	0.5	0	--	--	--	64.5
GMSG-100	11/14/01	8:18 AM	28.81	53	-	26	98.8	0.5	0	--	--	--	65.1
GMSG-100	12/18/01	11:07 AM	28.54	32	-	-31	108.9	0.5	0	--	--	--	67.87
GMSG-100	01/10/02	10:05 AM	28.55	37	-	54	114.2	0.5	0	--	--	--	68.75
GMSG-100	02/15/02	1:26 PM	28.52	33	-	61	115.8	0.5	0	--	--	--	--
GMSG-100	03/18/02	10:39 AM	28.99	38	-	43	112.5	0.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-100	04/26/02	8:40 AM	29.03	37	-	70	115.6	0.5	0	--	--	--	--
GMSG-100	05/22/02	9:08 AM	28.88	-	-	50	111.5	0.5	0	--	--	--	--
GMSG-100	06/05/02	8:52 AM	28.77	56	-	39.9	108.7	0.5	0	--	--	--	--
GMSG-100	06/05/02	10:02 AM	28.77	61	-	0	0	0.4	20.4	3300	17	0	54.4
GMSG-100	07/11/02	12:13 PM	29.09	76	-	40	105.9	0.4	0	--	--	-0.29	--
GMSG-100	08/10/02	2:35 PM	28.68	81	-	37.2	105.6	0.4	0	--	--	--	--
GMSG-101	07/10/98	10:37 AM	28.94	71.1	-	0	0.1	0	17.2	--	--	--	--
GMSG-101	07/11/98	9:53 AM	28.87	75	-	0	0.2	0	16.8	--	--	--	--
GMSG-101	07/13/98	8:51 AM	28.61	78.1	-	0	0.1	0	16.9	--	--	--	--
GMSG-101	07/14/98	10:49 AM	28.69	75	T	0	0	0	17.2	--	--	--	--
GMSG-101	07/14/98	6:07 PM	28.66	82.9	-	--	--	--	--	--	--	--	50.62
GMSG-101	07/15/98	9:47 AM	28.66	75	-	--	--	--	--	--	--	--	50.44
GMSG-101	07/21/98	7:42 AM	28.45	78.1	-	--	0	0	20.4	--	--	--	--
GMSG-101	07/21/98	4:27 PM	28.52	86	-	0	0	0	21.3	150	100	6	50.51
GMSG-101	07/22/98	4:20 PM	28.61	78.1	-	--	--	--	--	--	--	--	--
GMSG-101	07/26/98	10:55 AM	28.83	77	-	--	--	--	--	--	--	--	--
GMSG-101	07/27/98	10:14 AM	28.6	73.9	-	--	--	--	--	--	--	--	--
GMSG-101	07/28/98	10:29 AM	28.45	73	-	--	--	--	--	--	--	--	--
GMSG-101	07/29/98	8:44 AM	28.7	70	-	0.8	0.1	0	20.2	65	55	2	50.6
GMSG-101	08/04/98	8:17 AM	28.9	71.1	-	0	0	0	20.2	110	110	2	--
GMSG-101	08/12/98	8:02 AM	29.02	53.1	-	0	0	0	17.1	2	2	2	50.78
GMSG-101	08/18/98	7:34 PM	29.01	62.1	-	0	0	0	21.1	98	98	5	50.83
GMSG-101	08/26/98	11:45 AM	28.79	81	-	0.04	0	0	20.5	150	150	2	--
GMSG-101	09/08/98	1:10 PM	28.85	63	-	0	0	0	20.4	7	7	7	50.85
GMSG-101	09/09/98	4:10 PM	28.84	73.9	-	-0.02	0	0	21	5	5	5	50.86
GMSG-101	09/10/98	4:30 PM	28.66	80.1	-	0	0	0	21.5	25	15	10	50.86
GMSG-101	09/11/98	5:57 PM	28.57	89.1	-	0	0	0	21.3	10	10	4	50.86
GMSG-101	09/12/98	4:24 PM	28.69	79	-	0	0	0	21.5	125	95	4	49.8
GMSG-101	09/25/98	10:05 AM	28.52	66.9	-	0	0	0	20.3	70	70	4	50.87
GMSG-101	10/08/98	2:33 PM	28.99	53.1	-	-0.84	--	--	--	--	--	--	50.65
GMSG-101	10/11/98	3:15 PM	28.9	63	-	-0.05	0	0	20.7	70	70	2	50.62
GMSG-101	10/23/98	6:24 PM	28.88	60.1	-	--	--	--	--	--	--	--	50.43
GMSG-101	11/20/98	4:15 PM	28.71	30.9	-	-3.42	0	0	19.8	1.25	1.25	1.25	50.02
GMSG-101	11/21/98	8:56 AM	28.86	23	-	0.07	0	0.1	20.5	250	200	1.5	50.16

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-101	12/01/98	11:50 AM	28.78	48	-	-1.14	0	0	20.4	--	--	--	49.88
GMSG-101	12/03/98	4:18 PM	28.43	59	-	0	0	0	20.6	13	8.5	1.5	49.86
GMSG-101	12/09/98	12:04 PM	28.92	39	-	0	0	0	20.2	5	4.5	1	49.79
GMSG-101	12/15/98	7:44 AM	28.74	37	-	0	0	0	20.8	2	2	2.5	51.74
GMSG-101	12/19/98	11:48 AM	28.86	22	T	0	0	0	20.1	5	5	5	49.68
GMSG-101	12/28/98	8:11 AM	28.72	3	-	0.01	0	0	16.9	150	5	3.5	49.61
GMSG-101	01/06/99	5:00 PM	28.7	1.9	-	-0.1	0	0.1	15.6	10	10	<1	49.52
GMSG-101	01/14/99	7:58 AM	29.13	-0.9	-	0	0	0	20.4	6	6	5	49.42
GMSG-101	01/21/99	4:35 PM	28.8	24.1	-	-0.09	0	0	19.7	18	18	1.25	49.34
GMSG-101	01/26/99	4:26 PM	28.89	28	-	0.88	0	0	18.6	1.5	--	1.5	49.27
GMSG-101	02/03/99	3:49 PM	28.13	32	0.01	0	0	0	19.4	5	5	4	49.17
GMSG-101	02/11/99	4:13 PM	28.07	37	0.13	2.9	0	0	20.1	5	5	3	49.05
GMSG-101	02/24/99	9:39 AM	28.84	19	-	0	0	0	19.8	30	22	1.25	48.9
GMSG-101	03/12/99	7:52 AM	29.18	9	-	0	0	0	21	35	35	1.5	48.69
GMSG-101	03/23/99	3:44 PM	28.56	37.9	-	0	0	0	18.6	70	25	2.25	48.53
GMSG-101	04/07/99	9:26 AM	28.64	42.1	T	-2.72	0	0	21	9	--	4	48.2
GMSG-101	04/19/99	2:33 PM	28.67	46.9	T	0	0	0	20.1	4	4	4	47.9
GMSG-101	04/29/99	5:29 PM	29.12	66	-	0	0	0	20.1	7	7	2	47.63
GMSG-101	05/17/99	10:58 AM	28.52	70	-	0.3	0	0	20.2	27.5	27.5	2	47.15
GMSG-101	06/02/99	11:53 AM	28.64	57.9	-	-1.66	0	0	20.2	5.5	5.5	3.5	46.69
GMSG-101	07/08/99	11:39 AM	28.74	60.1	0.05	0.02	0	0	22.1	1.1	1.1	1.5	45.52
GMSG-101	07/17/99	3:50 PM	28.86	79	-	-2.37	0	0	20.6	3	3	3	45.2
GMSG-101	08/09/99	9:36 AM	28.71	66	-	0.41	0	0.7	19.3	28	3.5	3.5	45.56
GMSG-101	09/30/99	10:13 AM	28.47	55	-	0	0	0	20.8	75	75	1.5	43.96
GMSG-101	10/07/99	2:53 PM	28.73	46.9	T	0.03	0	0	21	12	3	2	43.66
GMSG-101	10/23/99	3:55 PM	28.89	34	-	-0.7	0	0	20.6	550	15	5.75	43.16
GMSG-101	11/03/99	9:03 AM	28.7	30	-	0	0	0	20.3	3.5	2	1	42.88
GMSG-101	11/06/99	4:16 PM	29.08	46	-	0	0	0.1	20.2	1	1	1	42.8
GMSG-101	02/15/00	1:15 PM	28.6	21	0.06	0.02	0	0.3	19.3	--	--	--	--
GMSG-101	03/14/00	5:03 PM	28.67	30	T	0	0	0	19.8	21.37	6.18	-0.1	--
GMSG-101	03/30/00	11:45 AM	28.81	46.9	-	0	0	0	20.6	36.6	18.3	16.35	40.31
GMSG-101	04/30/00	9:57 AM	28.91	61	-	0	0	0	18	-0.32	-0.8	-0.32	40.02
GMSG-101	06/05/00	11:50 AM	28.96	64	-	0.04	0	0	21.2	9	2.7	-0.68	39.86
GMSG-101	07/19/00	8:27 AM	28.86	54	-	0	0	0	21.3	24	15	3.5	39.33

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-101	08/20/00	11:24 AM	29.07	64	-	0	0	0	20.1	2.5	2.5	2.5	--
GMSG-101	09/12/00	9:52 AM	28.65	61	-	0	0	0	19.8	4	2.5	2.5	39.71
GMSG-101	09/08/01	1:45 PM	28.47	74	-	2.6	0.1	0	21.4	--	--	--	39.46
GMSG-101	10/04/01	3:45 PM	28.64	58	-	0	0	0	20.7	11.85	11.85	5.8	59.44
GMSG-102	07/10/98	3:06 PM	28.89	75.9	-	0	0	0	17	--	--	--	--
GMSG-102	07/11/98	9:49 AM	28.87	75	-	0	0.1	0	16.8	--	--	--	--
GMSG-102	07/13/98	8:56 AM	28.61	78.1	-	-0.4	0.1	0	16.8	--	--	--	--
GMSG-102	07/14/98	10:56 AM	28.69	75	T	-0.6	0	0	17.1	--	--	--	--
GMSG-102	07/15/98	9:44 AM	28.66	75	-	-2.39	0	0.1	20.4	--	--	--	--
GMSG-102	07/21/98	7:30 AM	28.45	78.1	-	-2.13	0	0	20.4	40	--	--	--
GMSG-102	07/21/98	3:54 PM	28.52	86	-	-2.22	0	0	20.9	13	13	12	--
GMSG-102	07/22/98	4:14 PM	28.61	78.1	-	-2.22	0	0	20.3	3.3	3.3	3	--
GMSG-102	07/23/98	5:01 PM	28.7	68	-	-2.36	0	0	20.5	3	3	3	--
GMSG-102	07/24/98	4:35 PM	28.85	68	-	-2.35	0	0	20.5	--	--	--	--
GMSG-102	07/25/98	4:57 PM	28.92	72	-	-2.29	0	0	20.5	12.5	12.5	6	--
GMSG-102	07/26/98	10:50 AM	28.83	77	-	-2.09	0	0	20.5	5	4.5	4.5	--
GMSG-102	07/27/98	10:27 AM	28.6	73.9	-	-2.3	0	0	20.2	2	2	2	--
GMSG-102	07/28/98	10:25 AM	28.45	73	-	-2.19	0	0	20.6	18	16	2.2	--
GMSG-102	07/29/98	8:22 AM	28.7	66	-	-2.34	0	0	20.3	3.5	3.5	2.5	--
GMSG-102	08/04/98	8:07 AM	28.9	71.1	-	-2.3	0	0.1	20.3	50	30	4	--
GMSG-102	08/09/98	11:53 AM	28.78	81	-	-2.2	0	0	20.1	8	8	2.5	--
GMSG-102	09/01/98	9:53 AM	28.59	66.9	-	-2.14	--	--	--	--	--	--	--
GMSG-102	09/01/98	9:53 AM	28.59	66.9	-	-2.14	--	--	--	--	--	--	--
GMSG-102	09/01/98	12:02 PM	28.57	71.1	T	-4	--	--	--	--	--	--	--
GMSG-102	09/01/98	12:02 PM	28.57	71.1	T	-4	--	--	--	--	--	--	--
GMSG-102	09/01/98	2:05 PM	28.51	73	-	-3.06	--	--	--	--	--	--	--
GMSG-102	09/01/98	2:05 PM	28.51	73	-	-3.06	--	--	--	--	--	--	--
GMSG-102	09/01/98	4:04 PM	28.5	68	-	-3.28	--	--	--	--	--	--	--
GMSG-102	09/01/98	5:58 PM	28.52	66	-	-1.41	--	--	--	--	--	--	--
GMSG-102	09/01/98	5:58 PM	28.52	66	-	-1.41	--	--	--	--	--	--	--
GMSG-102	09/02/98	6:19 AM	28.52	51.1	-	-2.69	--	--	--	--	--	--	--
GMSG-102	09/02/98	6:19 AM	28.52	51.1	-	-2.69	--	--	--	--	--	--	--
GMSG-102	09/02/98	8:55 AM	28.53	60.1	-	-0.93	--	--	--	--	--	--	--
GMSG-102	09/02/98	8:55 AM	28.53	60.1	-	-0.93	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-102	09/02/98	11:03 AM	28.54	61	-	0.03	--	--	--	--	--	--	--
GMSG-102	09/02/98	11:03 AM	28.54	61	-	0.03	--	--	--	--	--	--	--
GMSG-102	09/02/98	1:06 PM	28.52	63	-	-0.02	--	--	--	--	--	--	--
GMSG-102	09/02/98	1:06 PM	28.52	63	-	-0.02	--	--	--	--	--	--	--
GMSG-102	09/02/98	3:16 PM	28.5	64.9	-	-0.41	--	--	--	--	--	--	--
GMSG-102	09/02/98	3:16 PM	28.5	64.9	-	-0.41	--	--	--	--	--	--	--
GMSG-102	09/02/98	5:09 PM	28.52	64	-	-1.18	--	--	--	--	--	--	--
GMSG-102	09/02/98	5:09 PM	28.52	64	-	-1.18	--	--	--	--	--	--	--
GMSG-102	09/02/98	6:58 PM	28.53	55	-	-1.44	--	--	--	--	--	--	--
GMSG-102	09/02/98	6:58 PM	28.53	55	-	-1.44	--	--	--	--	--	--	--
GMSG-102	09/08/98	1:00 PM	28.85	63	-	-0.16	0	0	20.5	1000	9.5	7	--
GMSG-102	09/09/98	4:00 PM	28.84	73.9	-	-2.34	0	0	21.4	12	3	5	--
GMSG-102	09/10/98	4:10 PM	28.66	82	-	-2.4	0	0	21.5	25	9	5	--
GMSG-102	09/12/98	4:31 PM	28.69	77	-	-2.57	0	0	21.5	35	35	3	--
GMSG-102	09/22/98	2:01 PM	28.87	59	-	-2.5	0	0	21.3	55	45	2.5	--
GMSG-102	09/28/98	2:08 PM	28.7	70	-	-2.52	0	0	21.8	150	60	6	--
GMSG-102	10/08/98	2:38 PM	28.99	53.1	-	-2	--	--	--	--	--	--	--
GMSG-102	10/11/98	11:15 AM	29	55	-	-2.78	0	0	20.7	3	3	2.5	--
GMSG-102	10/23/98	6:07 PM	28.88	60.1	-	-2.62	0	0	20.9	52	52	15	--
GMSG-102	11/18/98	12:14 PM	28.81	34	-	-2.33	0	0	20.3	--	--	--	--
GMSG-102	11/20/98	4:30 PM	28.73	30	-	-1.63	0	0	20.8	150	11	2	--
GMSG-102	11/21/98	8:59 AM	28.86	23	-	-2.74	0	0	20.2	12	10	8	--
GMSG-102	12/01/98	11:19 AM	28.81	46	-	-2.55	0	0	20.6	--	--	--	--
GMSG-102	12/03/98	3:45 PM	28.43	59	-	-2.8	0	0	20.7	13	13	1.5	--
GMSG-102	12/09/98	11:27 AM	28.93	34	-	-2.53	0	0	20.1	1	1	1	--
GMSG-102	12/15/98	7:37 AM	28.74	37	-	2.75	0	0	20.8	18	12	2.5	--
GMSG-102	12/19/98	11:38 AM	28.86	22	T	-2.71	0	0	20.4	--	--	--	--
GMSG-102	12/20/98	10:52 AM	29.12	17	T	-2.43	0	0	17	--	--	--	--
GMSG-102	12/28/98	8:20 AM	28.72	3	-	-2.51	0	0	16.8	3	2.5	0.5	--
GMSG-102	01/06/99	4:26 PM	28.67	3.9	-	-2.72	0	0	15.9	<1	<1	<1	--
GMSG-102	01/12/99	12:09 PM	28.72	1.9	-	0.34	40	1.4	10.4	--	--	--	--
GMSG-102	01/12/99	3:44 PM	28.79	3.9	T	0.34	40	1.4	10.4	--	--	--	--
GMSG-102	01/13/99	1:11 PM	29.22	1	T	0.32	65.4	2.4	4.4	--	--	--	--
GMSG-102	01/14/99	8:17 AM	29.13	-0.9	-	-0.07	4.3	2.2	6.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-102	01/15/99	3:03 PM	28.47	17.1	-	-2.19	0	0	19.9	--	--	--	--
GMSG-102	01/21/99	4:05 PM	28.78	25	-	-2.56	0	0	20.1	19	19	1.25	--
GMSG-102	01/26/99	4:15 PM	28.89	28	-	-2.51	0	0	18.7	16	15	3.5	--
GMSG-102	02/03/99	3:40 PM	28.13	32	0.01	-2.69	0	0	19.5	10	10	1	--
GMSG-102	02/11/99	3:45 PM	28.07	37	0.13	-3.25	0	0	20.1	12	11	6	--
GMSG-102	02/24/99	8:40 AM	28.85	15.1	-	-2.95	6.5	0.2	18.5	--	--	--	--
GMSG-102	03/12/99	7:41 AM	29.18	9	-	-3.09	53.1	1.9	6.8	--	--	--	--
GMSG-102	03/23/99	3:36 PM	28.56	37.9	-	-3.39	60.3	2.1	5	--	--	--	--
GMSG-102	04/07/99	9:09 AM	28.64	42.1	T	-3.07	0	0	21.2	300	>10000	2.5	--
GMSG-102	04/19/99	3:35 PM	28.68	44.1	T	-2.7	0	0	20.1	2.25	2.25	2.25	--
GMSG-102	04/29/99	5:22 PM	29.12	66	-	-2.75	0	0	20.4	18	18	2.5	--
GMSG-102	05/17/99	10:50 AM	28.52	70	-	-2.99	0	0	20.5	70	70	2.5	--
GMSG-102	06/02/99	12:02 PM	28.64	57.9	-	-3.08	0	0	20.2	3	3	3	--
GMSG-102	07/08/99	11:25 AM	28.78	61	0.03	-3.5	0	0	22	1.25	1.25	1.5	--
GMSG-102	07/17/99	4:00 PM	28.86	79	-	-3.8	0	0	20.4	3	3	3	--
GMSG-102	07/22/99	8:23 AM	28.8	75.9	-	-3.69	0	0	21.4	--	--	--	--
GMSG-102	07/27/99	10:06 AM	28.77	73.9	-	-4.45	0	0.1	20	--	--	--	--
GMSG-102	08/04/99	7:58 AM	28.72	64	-	-4.56	0	0	21.1	--	--	--	--
GMSG-102	08/09/99	9:23 AM	28.72	62.1	-	-4.24	0	0	20.4	22	20	2	--
GMSG-102	08/10/99	10:23 AM	28.44	64.9	-	-4.5	0	0	20.6	--	--	--	--
GMSG-102	08/17/99	2:42 PM	28.81	70	-	-3.91	0	0	20.4	--	--	--	--
GMSG-102	08/20/99	5:04 PM	28.86	75	-	-3.88	0	0	20.9	--	--	--	--
GMSG-102	08/24/99	9:20 AM	28.7	71.1	-	-3.83	0.2	0	20.3	--	--	--	--
GMSG-102	08/31/99	5:12 PM	28.86	73	-	-2.88	0	0	20.6	400	400	3	--
GMSG-102	09/03/99	8:06 AM	28.8	69.1	-	-2.72	0	0	20.5	250	200	2.5	--
GMSG-102	09/08/99	4:06 PM	28.47	70	-	-3.52	0	0	20.6	200	175	10	--
GMSG-102	09/14/99	11:05 AM	28.64	54	-	-3.61	0	0	20.3	175	175	3	--
GMSG-102	09/21/99	1:23 PM	28.89	59	-	-2.98	0	0	20.8	250	250	1.5	--
GMSG-102	09/28/99	9:58 AM	28.92	52	-	-3.82	0	0	20.9	5.5	3	3	--
GMSG-102	09/30/99	10:45 AM	28.43	59	-	-3.2	0	0.1	20.9	70	70	1.2	--
GMSG-102	10/05/99	10:24 AM	28.71	48	-	-3.49	0	0.1	20	2	2	2	--
GMSG-102	10/07/99	2:45 PM	28.73	46.9	T	-3.32	0	0.1	21	1.5	1.5	1.5	--
GMSG-102	10/12/99	9:55 AM	28.69	55	-	-2.73	0	0	20.4	2.25	2.25	2.25	--
GMSG-102	10/19/99	8:07 AM	28.81	37.9	T	-3.31	0	0	20.7	1.75	1.75	1.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-102	10/23/99	3:00 PM	28.89	35.1	T	-3	0	0	20.8	67	67	3.75	--
GMSG-102	10/25/99	8:00 AM	28.55	45	-	-3.2	0	0.1	20.7	7	7	7	--
GMSG-102	11/03/99	8:52 AM	28.7	30	-	-2.56	0	0	20.4	6.5	4.5	1	--
GMSG-102	11/06/99	3:38 PM	29.08	46	-	-2.61	0	0.1	20.4	5.5	4	1.25	--
GMSG-102	11/22/99	10:55 AM	28.67	46.9	-	-2.59	0	0	20.4	79	34	3	--
GMSG-102	01/25/00	12:31 PM	28.8	16	-	-2.78	7.2	0.1	17.4	--	--	--	--
GMSG-102	02/07/00	2:04 PM	29.04	24.1	-	-1.12	21.5	0.3	16	--	--	--	--
GMSG-102	02/15/00	12:30 PM	28.6	21	0.06	-2.4	35.2	0.9	11.8	--	--	--	--
GMSG-102	03/04/00	2:12 PM	28.54	55	-	-2.62	84.2	2.7	1.2	--	--	--	--
GMSG-102	03/05/00	11:30 AM	28.74	51.1	-	-2.96	0	0	20.6	20	17	1.25	--
GMSG-102	03/06/00	11:10 AM	28.8	55	-	-2.76	0	0	20.8	88	6	0	--
GMSG-102	03/14/00	4:49 PM	28.67	30	T	-0.5	0	0	19.9	59.56	24.33	0.27	--
GMSG-102	03/30/00	11:10 AM	28.82	45	-	-2.62	0	0	20.7	17.97	17.5	16.31	--
GMSG-102	04/02/00	11:49 AM	28.49	57	-	-2.71	0	0	18.6	27.33	18.5	15.05	--
GMSG-102	04/27/00	2:34 PM	28.63	70	-	-1.95	0	0	18.4	9508	1050	0.58	--
GMSG-102	06/03/00	1:10 PM	28.96	65	-	-2.62	0	0	21	0.7	0.7	0.52	--
GMSG-102	06/05/00	11:40 AM	28.96	64	-	-2.73	0	0	21.2	62	13.5	-1.04	--
GMSG-102	06/29/00	4:08 PM	28.65	70	-	-2.87	0	0	20.6	5	5	5	--
GMSG-102	07/19/00	8:01 AM	28.86	54	-	-3.15	0	0	21.3	3.5	3.5	3.5	--
GMSG-102	07/23/00	10:30 AM	28.97	69	-	-2.89	0	0	21.3	20	20	6	--
GMSG-102	08/20/00	11:15 AM	29.07	64	-	-2.96	0	0	20.4	3	3	4	--
GMSG-102	08/28/00	4:02 PM	28.66	73	-	2.66	0	0	21.6	1800	120	2.66	--
GMSG-102	09/12/00	9:45 AM	28.65	61	-	-3.46	0	0	19.8	2.5	2.5	2.5	--
GMSG-102	09/23/00	11:00 AM	28.66	54	-	-3	0	0	20.4	5	4.5	5	--
GMSG-102	10/21/00	9:46 AM	29.01	48	-	-2.74	0	0	20.5	1.12	1.06	0.61	--
GMSG-102	11/18/00	11:20 AM	28.62	21	T	-1.78	0	0	20.6	0.16	0.16	0.02	--
GMSG-102	12/18/00	10:45 AM	28.73	12	T	-2.21	0	0	20	31.5	31.3	1.5	--
GMSG-102	01/09/01	9:15 AM	28.82	15	-	-2.32	0.3	0	19.9	620	230	1	--
GMSG-102	02/08/01	1:41 PM	28.83	24	-	-1.32	0	0.13	19.4	29	24	0.58	--
GMSG-102	02/10/01	8:33 AM	29.06	5	-	-1.9	--	--	--	--	--	--	--
GMSG-102	02/12/01	12:57 PM	28.87	24	0.01	-0.8	--	--	--	--	--	--	--
GMSG-102	02/13/01	8:07 AM	29.01	21	-	-1.5	0	0	20.3	-0.34	-0.4	-0.4	--
GMSG-102	03/07/01	10:40 AM	28.69	33	-	0.3	0	0.3	19.7	0.7	0	0.08	--
GMSG-102	03/08/01	12:52 PM	28.57	32	T	--	--	--	--	1.76	1.48	1.16	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-102	04/08/01	9:31 AM	28.53	43	-	-1.93	0	0	20.6	27.98	19.94	-0.1	--
GMSG-102	05/05/01	9:56 AM	29.09	58	-	-1.5	0	0	18.5	30.8	15.51	-0.01	--
GMSG-102	05/31/01	8:34 AM	28.92	58	-	-0.5	0	0	18.6	468	114	0	--
GMSG-102	06/28/01	1:07 PM	28.94	86	-	-0.96	0	0	21.4	0	0	0	--
GMSG-102	07/19/01	8:16 AM	28.82	68	-	-1.4	0	0	20.4	0.49	0	0	--
GMSG-102	08/08/01	4:02 PM	28.64	95	-	-1.25	0	0	21	16.51	0	0	--
GMSG-102	09/08/01	3:55 PM	28.5	76	-	-1.7	0.1	0	20.6	--	--	--	--
GMSG-102	10/04/01	3:36 PM	28.64	58	-	-1.39	0	0	20.5	9.5	6.25	5.8	--
GMSG-102	11/14/01	8:20 AM	28.81	53	-	-1.41	0	0	20.9	183	26.26	-0.5	--
GMSG-102	12/18/01	11:09 AM	28.54	32	-	-1.3	0	0	21	72.2	30.5	0.75	--
GMSG-102	01/10/02	10:10 AM	28.55	37	-	-1.57	0	0	20.5	344	344	-0.82	--
GMSG-102	02/15/02	1:33 PM	28.51	35	-	-1.28	0	0	20.2	178	160	-0.62	--
GMSG-102	03/18/02	10:45 AM	28.99	38	-	-2.02	0	0	20.9	132	132	0	--
GMSG-102	04/26/02	8:34 AM	29.03	37	-	-1.65	0	0	21	2.01	0.09	0	--
GMSG-102	05/22/02	9:00 AM	28.88	-	-	-1.43	0	0	21	4.76	0.05	0	--
GMSG-102	06/05/02	8:45 AM	28.77	56	-	-1.47	0	0	20.9	1.59	0.04	0	--
GMSG-102	07/11/02	12:07 PM	29.09	76	-	-1.25	0	0	21.7	-0.43	-0.52	-0.74	--
GMSG-102	08/10/02	2:15 PM	28.7	80	-	-0.9	0	0	21.2	0.25	-0.3	-0.6	--
GMSG-103	07/21/98	4:42 PM	28.56	81	-	-0.02	0	5.7	9.6	<6	<6	6	--
GMSG-103	07/22/98	4:42 PM	28.61	75	-	0	0	6.2	10.6	100	--	2	--
GMSG-103	07/23/98	5:33 PM	28.7	66.9	-	--	--	--	--	--	--	--	--
GMSG-103	07/24/98	5:04 PM	28.85	68	-	0	0	7.4	9.3	--	--	--	--
GMSG-103	07/25/98	5:40 PM	28.91	71.1	-	0	0	7.4	9	300	--	5	--
GMSG-103	07/26/98	11:22 AM	28.83	77	-	0	0	5.6	11.3	70	--	2	--
GMSG-103	07/27/98	7:30 PM	28.61	66	-	0	0	7.5	8.7	35	25	2	--
GMSG-103	07/28/98	11:03 AM	28.47	64	0.06	0	0	8.1	8.5	27	--	2	--
GMSG-103	07/29/98	8:56 AM	28.7	70	-	0	0	8.2	8.8	18	--	2	--
GMSG-103	08/04/98	9:07 AM	28.91	73	-	0	0	5.7	11.8	2	2	2	--
GMSG-103	08/09/98	12:30 PM	28.75	84	-	0	0	7.1	8.5	500	--	--	--
GMSG-103	08/12/98	9:05 AM	29.01	61	-	0	0	8.9	9.7	27	--	2	--
GMSG-103	08/18/98	6:24 PM	28.99	66.9	-	0	0	8.7	10.1	4	--	4	--
GMSG-103	09/08/98	2:30 PM	28.85	63	T	0	0	9	10.2	20	15	2	--
GMSG-103	09/09/98	2:18 PM	28.87	72	-	0	0	8.7	10.6	15	9	5	--
GMSG-103	09/10/98	2:00 PM	28.69	82.9	-	0	0	8.7	10.3	25	6	8	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-103	09/11/98	3:38 PM	28.55	95	-	0	0	8.4	10.8	22	--	5	--
GMSG-103	09/12/98	1:47 PM	28.7	80.1	-	0.01	0	8.8	10.3	6	6	4	--
GMSG-103	09/14/98	3:15 PM	28.57	66.9	-	-0.01	0	9.1	10.1	<4	<4	4	--
GMSG-103	09/25/98	10:30 AM	28.52	66.9	-	0	0	9.1	10.3	60	20	3	--
GMSG-103	10/08/98	3:17 PM	28.99	53.1	-	0	--	--	--	--	--	--	--
GMSG-103	10/11/98	12:05 PM	28.98	57	-	0.03	0	7.9	11.3	15	8.5	2	--
GMSG-103	10/23/98	3:39 PM	28.87	68	-	0.02	0	6.9	12	28	13	9.5	--
GMSG-103	11/21/98	9:40 AM	28.85	28.9	-	0	0	6.3	12.4	50	20	2	--
GMSG-103	12/01/98	8:55 AM	28.8	36	-	0	0	5.1	13.3	--	--	--	--
GMSG-103	12/03/98	1:16 PM	28.38	60	-	0	0	5.9	12.4	15	11	1.5	--
GMSG-103	12/09/98	8:08 AM	28.94	17	-	0	0	5.1	13.1	90	37	1.25	--
GMSG-103	12/15/98	9:25 AM	28.76	38	-	0.03	0	5.4	12.7	>10000	9000	2000	--
GMSG-103	12/18/98	3:31 PM	28.32	32	T	0	0	6	24.9	50	--	1.5	--
GMSG-103	12/21/98	1:51 PM	28.73	14	-	0.03	0	5	17.8	17	--	1.5	--
GMSG-103	12/28/98	8:57 AM	28.74	7	-	-0.01	0	5	10.8	45	20	1.5	--
GMSG-103	01/06/99	9:26 AM	28.49	3.9	T	-0.01	0	5.1	10.6	22	17	<1	--
GMSG-103	01/14/99	3:13 PM	28.94	7	-	0	0	5.1	11.9	13	--	1.5	--
GMSG-103	01/21/99	10:26 AM	28.78	21.9	-	0.03	0	4.3	14.1	15	15	1.25	--
GMSG-103	01/26/99	10:45 AM	28.93	19.9	-	0	0	4.6	12.4	18	12	1	--
GMSG-103	02/03/99	9:44 AM	28.19	30.9	-	-0.01	0	5.1	12.7	13	--	1	--
GMSG-103	02/11/99	10:17 AM	28.26	39	-	0.06	0	5.1	13.4	20	--	2.5	--
GMSG-103	02/23/99	11:10 AM	29.01	23	T	--	0	0	19.7	<1	<1	1.25	--
GMSG-103	03/11/99	10:22 AM	29.11	27	-	--	--	--	--	--	--	--	--
GMSG-103	03/23/99	10:30 AM	28.47	44.1	-	0	0	0	20	6	4	2	--
GMSG-103	04/08/99	10:50 AM	28.69	55.9	-	-0.03	0	4.2	14.8	1.75	<1	1.25	--
GMSG-103	04/08/99	11:03 AM	28.69	55.9	-	--	--	--	--	--	--	--	--
GMSG-103	04/20/99	9:04 AM	28.71	46	-	0	0	4.9	12.3	--	--	--	--
GMSG-103	04/29/99	4:17 PM	29.12	69.1	-	0	0	4.4	12.7	8.5	8.5	2.5	--
GMSG-103	05/17/99	8:19 AM	28.52	63	-	-0.01	0	5.6	10.1	10	--	1.5	--
GMSG-103	06/03/99	9:30 AM	28.93	63	-	0.02	0	5.7	10.7	25	--	25	--
GMSG-103	07/08/99	8:35 AM	28.78	64	-	0	0	6.4	12.2	2	--	1.1	--
GMSG-103	07/17/99	6:45 PM	28.87	73.9	-	-1.05	0	8	10.5	30	10	3	--
GMSG-103	08/08/99	11:35 AM	28.83	66.9	-	0	0	9.7	8	8.5	--	8.5	--
GMSG-103	09/30/99	8:23 AM	28.55	39.9	T	0	0	9	6	25	--	1.25	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-103	10/07/99	5:04 PM	28.69	50	-	0.05	0	7.8	9.4	60	--	<1	--
GMSG-103	10/24/99	9:25 AM	28.88	35.1	-	0.01	0	6.9	10.5	650	--	3.25	--
GMSG-103	11/03/99	12:38 PM	28.69	35.1	-	0	0	6.7	9.6	40	10	<1	--
GMSG-103	11/07/99	9:40 AM	29.16	41	-	0	0	7.5	6.1	100	15	<1	--
GMSG-103	03/14/00	2:28 PM	28.67	33.1	-	0	0	4.1	12.4	--	--	--	--
GMSG-103	03/30/00	10:30 AM	28.82	45	-	0	0	3.5	13	47.53	25.11	16.58	--
GMSG-103	04/29/00	12:40 PM	28.93	56	-	0	0	4.6	9.7	--	--	--	--
GMSG-103	06/05/00	10:46 AM	28.96	63	-	0	0	3.7	11.7	12	4	-4.7	--
GMSG-103	06/20/00	8:19 AM	28.54	62	0.01	0.01	0	6.4	10.3	-1.73	-1.64	-1.29	--
GMSG-103	07/19/00	11:05 AM	28.83	65	-	0	0	5.4	12.2	100	--	3.75	--
GMSG-103	09/12/00	12:28 PM	28.66	64	-	0	0	6.5	8.3	30	--	3	--
GMSG-104	07/13/98	9:00 AM	28.61	78.1	-	0	0	0	16.8	--	--	--	--
GMSG-104	07/14/98	10:59 AM	28.69	75	T	0	0	0	17	--	--	--	--
GMSG-104	07/14/98	6:14 PM	28.66	82.9	-	--	--	--	--	--	--	--	32.71
GMSG-104	07/21/98	7:47 AM	28.45	78.1	-	0	0	0	20.3	--	--	--	--
GMSG-104	07/21/98	4:03 PM	28.52	86	-	0	0	0	21.3	10	10	9	--
GMSG-104	07/22/98	4:19 PM	28.61	78.1	-	-0.01	0	0	20.2	8	8	2.25	--
GMSG-104	07/23/98	5:05 PM	28.7	68	-	0	0	0	20.4	2.5	2.5	2.5	--
GMSG-104	07/24/98	4:38 PM	28.85	68	-	0	0	0	20.4	--	--	--	--
GMSG-104	07/25/98	5:11 PM	28.92	72	-	-0.02	0	0	20	10	10	10	32.06
GMSG-104	07/26/98	10:59 AM	28.83	77	-	0.04	0	0	20.1	6	5	3	--
GMSG-104	07/27/98	10:45 AM	28.6	75.9	-	0	0	0	20	9	5.5	2	--
GMSG-104	07/28/98	10:33 AM	28.47	64	0.06	0	0	0.1	20.5	20	10	3	--
GMSG-104	07/29/98	8:26 AM	28.7	66	-	0	0	0	20.3	4	4	2	--
GMSG-104	08/04/98	8:21 AM	28.9	71.1	-	0	0	0.1	20.3	4.5	4.5	2	32.35
GMSG-104	08/09/98	11:47 AM	28.78	81	-	0	0	0	20	30	25	2.5	32.63
GMSG-104	08/12/98	8:12 AM	29.02	53.1	-	0	0	0	20.8	1.7	1.7	1.3	32.89
GMSG-104	08/18/98	7:42 PM	29.01	62.1	-	0	0	0	21.1	4	4	2.5	33.25
GMSG-104	08/26/98	12:01 PM	28.79	81	-	0.04	0	0	20.1	2.25	2.25	2.25	33.69
GMSG-104	09/08/98	1:18 PM	28.85	63	-	0	0	0	20.5	5	5	5	34.24
GMSG-104	09/09/98	4:40 PM	28.83	72	-	0	0	0	21.5	200	100	3	34.28
GMSG-104	09/10/98	5:10 PM	28.66	80.1	-	0	0	0	21.6	6	6	3	34.34
GMSG-104	09/11/98	5:48 PM	28.57	89.1	-	0	0	0	21.6	100	22	4.5	34.39
GMSG-104	09/12/98	4:09 PM	28.69	79	-	0	0	0	21.6	12	12	4	34.44

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-104	09/14/98	2:42 PM	28.57	66.9	-	0	0	0	21	3	3	3	54.65
GMSG-104	09/25/98	9:50 AM	28.52	66.9	-	0	0	0	20.8	12.5	12.5	5	54.73
GMSG-104	10/08/98	2:28 PM	29.01	52	-	0	--	--	--	--	--	--	54.8
GMSG-104	10/11/98	3:30 PM	28.89	62.1	-	0.01	0	0	20.8	70	20	2	54.81
GMSG-104	10/23/98	6:26 PM	28.88	60.1	-	--	--	--	--	--	--	--	54.89
GMSG-104	11/20/98	4:26 PM	28.71	30.9	-	0.01	0	0	20.1	1.75	1	1.25	55.02
GMSG-104	11/21/98	9:07 AM	28.86	23	-	0	0	0	20.2	150	45	1.5	55.15
GMSG-104	12/01/98	11:44 AM	28.78	48	-	0	0	0	20.5	--	--	--	55.06
GMSG-104	12/03/98	4:11 PM	28.43	59	-	0	0	0	20.6	35	20	3	55.07
GMSG-104	12/09/98	11:57 AM	28.92	39	-	0	0	0	20	11	1	11	54.09
GMSG-104	12/15/98	7:56 AM	28.74	37	-	0	0	0	20.5	1.25	1.25	1.5	55.14
GMSG-104	12/19/98	12:10 PM	28.86	22	T	0.01	0	0	19.9	4	4	4	55.14
GMSG-104	12/28/98	7:59 AM	28.72	3	-	-0.01	0	0	17	7	5	3	55.2
GMSG-104	01/15/99	2:17 PM	28.5	16	-	0	0	0	19.4	4	9	3	55.25
GMSG-104	01/21/99	4:47 PM	28.8	24.1	-	-6.33	0	0	19.7	6	6	1	55.25
GMSG-104	02/03/99	4:03 PM	28.13	32	0.01	3.68	0	0	19.3	4	4	4	55.27
GMSG-104	02/24/99	9:50 AM	28.84	19	-	0.02	0	0	19.5	8.5	8	1.25	54.92
GMSG-104	03/12/99	8:14 AM	29.18	9	-	0	0	0	20.4	6.2	6.2	1.25	54.74
GMSG-104	03/23/99	4:00 PM	28.56	37.9	-	0.01	0	0	18.3	35	12	1.75	54.78
GMSG-104	04/07/99	10:32 AM	28.56	45	0.01	0.01	0	0	20.7	6.5	4	4	54.84
GMSG-104	04/19/99	3:00 PM	28.67	46.9	T	0	0	0	20.1	2.5	2.5	2.5	54.87
GMSG-104	04/29/99	5:38 PM	29.12	64	-	0.01	0	0	19.8	4	3.6	1.8	54.89
GMSG-104	05/17/99	11:08 AM	28.52	70	-	0	0	0	20.5	9.5	9.5	2	54.95
GMSG-104	06/02/99	11:44 AM	28.64	57.9	-	-0.45	0	0	20	5	4.5	4.5	54.92
GMSG-104	07/08/99	11:58 AM	28.74	60.1	0.05	0	0	0	22	1.25	1.25	1.4	54.91
GMSG-104	07/17/99	3:40 PM	28.86	79	-	0	0	0	20.8	5	5	3	54.9
GMSG-104	08/09/99	9:48 AM	28.71	66	-	0.06	0	0.1	19.9	52	45	2	56.88
GMSG-104	09/30/99	9:39 AM	28.47	55	-	0	0	0.1	20.7	13	12	1.25	56.9
GMSG-104	10/07/99	3:18 PM	28.73	46.9	T	0.02	0	0.1	20.8	1.5	1.5	1.5	56.92
GMSG-104	10/23/99	4:22 PM	28.89	34	-	-0.01	0	0.1	20.5	225	225	4.5	56.92
GMSG-104	11/03/99	9:12 AM	28.7	30	-	0.57	0	0	20.3	2	1.5	1	56.93
GMSG-104	11/06/99	4:25 PM	29.08	46	-	-0.04	0	0.2	20.1	100	100	2	56.96
GMSG-104	02/15/00	1:28 PM	28.6	21	0.06	2	0	0	19.9	--	--	--	--
GMSG-104	03/15/00	9:30 AM	28.52	27	0.02	0	0	0	20.6	101	43.5	-0.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-104	03/30/00	11:56 AM	28.81	46.9	-	-0.02	0	0	20.7	22	17.7	16.28	56.92
GMSG-104	04/30/00	10:15 AM	28.91	61	-	0	0	0	17.9	114	50	-0.38	56.92
GMSG-104	06/05/00	12:01 PM	28.96	64	-	0	0	0	21	6.5	1.4	-0.59	56.93
GMSG-104	07/19/00	8:37 AM	28.86	58	-	0	0	0	21.2	16	8	3.5	56.26
GMSG-104	09/12/00	10:07 AM	28.65	61	-	0	0	0.1	19.3	2.75	2.75	2	57.06
GMSG-104	09/08/01	11:05 AM	28.41	74	-	0	0	0	21.5	<1	<1	<1	56.8
GMSG-104	10/04/01	4:10 PM	28.64	58	-	-0.03	0	0	20.3	7.8	6.8	5.3	56.78
GMSG-105	07/14/98	11:05 AM	28.69	75	T	0	0	0	17.1	--	--	--	--
GMSG-105	07/14/98	6:10 PM	28.66	82.9	-	--	--	--	--	--	--	--	56.07
GMSG-105	07/14/98	6:16 PM	28.66	82.9	-	--	--	--	--	--	--	--	56.07
GMSG-105	07/21/98	8:00 AM	28.45	78.1	-	0	0	0	20.3	--	--	--	--
GMSG-105	07/21/98	4:07 PM	28.52	86	-	0	0	0	21	8	8	8	--
GMSG-105	07/22/98	4:24 PM	28.61	78.1	-	0	0	0	20.3	<=2.25	<=2.25	<=2.25	--
GMSG-105	07/23/98	5:09 PM	28.7	68	-	0	0	0	20.5	2.2	2.2	2.2	--
GMSG-105	07/24/98	4:41 PM	28.85	68	-	0	0	0	20.3	--	--	--	--
GMSG-105	07/25/98	5:17 PM	28.92	72	-	-0.02	0	0	20.2	10	10	10	--
GMSG-105	07/26/98	11:05 AM	28.83	77	-	0	0	0	20	3	3	3	--
GMSG-105	07/27/98	10:49 AM	28.6	75.9	-	0	0	0	20.2	2	2	2	--
GMSG-105	07/28/98	10:37 AM	28.47	64	0.06	0.03	0	0	20.3	4.7	4.5	2	--
GMSG-105	07/29/98	8:31 AM	28.7	70	-	0	0	0	20.1	2.2	2.2	2.2	--
GMSG-105	08/04/98	8:25 AM	28.9	71.1	-	0	0	0	20.3	2.25	2.25	2.25	57.05
GMSG-105	08/09/98	11:41 AM	28.78	81	-	0	0	0	20.2	55	55	2.75	56.91
GMSG-105	08/12/98	8:21 AM	29.02	53.1	-	0	0	0	20.9	1.2	1.2	1.2	57.22
GMSG-105	08/18/98	7:49 PM	29.01	62.1	-	0	0	0	21.1	2.7	2.7	4	57.09
GMSG-105	08/26/98	12:06 PM	28.79	81	-	0	0	0	20	9.5	9.5	2.25	57.04
GMSG-105	09/08/98	1:30 PM	28.85	64	-	0	0	0	20.5	3.5	3.5	3.5	57.2
GMSG-105	09/09/98	4:50 PM	28.83	72	-	0	0	0	21.6	40	22	2	57.15
GMSG-105	09/10/98	5:00 PM	28.66	80.1	-	0	0	0	21.6	15	10	2	57.04
GMSG-105	09/11/98	5:41 PM	28.57	89.1	-	0	0	0	21.7	95	50	4.5	57.06
GMSG-105	09/12/98	4:01 PM	28.69	79	-	0	0	0	21.6	30	30	3.5	57.12
GMSG-105	09/14/98	2:34 PM	28.57	66.9	-	0	0	0	21.1	3	3	3	57.15
GMSG-105	09/25/98	9:45 AM	28.52	66.9	-	0	0	0	20.8	27	25	5	57.08
GMSG-105	10/08/98	2:22 PM	29.01	52	-	0	--	--	--	--	--	--	57.31
GMSG-105	10/11/98	3:40 PM	28.89	62.1	-	0	0	0	20.8	30	8	2	57.15

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-105	10/23/98	6:28 PM	28.88	60.1	-	--	--	--	--	--	--	--	57.2
GMSG-105	11/20/98	4:30 PM	28.73	30	-	0.01	0	0	--	1	0	0	57.06
GMSG-105	11/21/98	9:10 AM	28.86	23	-	0	0	0	20.3	1.5	1	1	57.32
GMSG-105	12/01/98	11:37 AM	28.78	48	-	0	0	0	20.5	--	--	--	57.2
GMSG-105	12/03/98	4:06 PM	28.43	59	-	0	0	0	20.7	40	30	1.5	57.01
GMSG-105	12/09/98	11:49 AM	28.92	39	-	0	0	0	20	24	24	1	57.33
GMSG-105	12/15/98	8:08 AM	28.74	37	-	0.02	0	0	20.3	300	300	100	57.18
GMSG-105	12/19/98	12:23 PM	28.86	22	T	0	0	0	20.1	3.5	3.5	3.5	57.44
GMSG-105	12/28/98	7:43 AM	28.72	3	-	0	0	0	17.7	3	3	3	57.14
GMSG-105	01/06/99	4:51 PM	28.7	1.9	-	0	0	0	15.8	18	18	<1	57.09
GMSG-105	01/15/99	2:10 PM	28.5	16	-	0	0	0	19.6	14	14	3	56.74
GMSG-105	01/21/99	4:59 PM	28.8	24.1	-	0	0	0	19.7	2.7	2.7	1	57.14
GMSG-105	02/03/99	4:15 PM	28.13	32	0.01	0	0	0	19.4	1.3	1.3	<1	56.51
GMSG-105	02/24/99	10:17 AM	28.84	19	-	0.22	0	0	19.6	2.5	2.5	1	56.82
GMSG-105	03/12/99	8:26 AM	29.18	9	-	0	0	0	20.4	2.5	2.5	1	57.03
GMSG-105	03/23/99	4:12 PM	28.56	37.9	-	0	0	0	20.1	6	4.5	1.5	--
GMSG-105	04/07/99	12:03 PM	28.53	50	T	0	0	0	20.2	<1	<1	3.5	56.27
GMSG-105	04/19/99	3:16 PM	28.67	46.9	T	0	0	0	20.1	2.5	2.5	2.5	56.7
GMSG-105	04/29/99	5:48 PM	29.12	64	-	0	0	0	20.1	2.2	2.2	1.75	57.07
GMSG-105	05/17/99	11:18 AM	28.52	70	-	0	0	0	20.3	4.25	4.25	1.75	56.2
GMSG-105	06/02/99	11:34 AM	28.64	57.9	-	-0.01	0	0	19.9	550	450	3	55.8
GMSG-105	07/08/99	12:15 PM	28.74	60.1	0.05	0	0	0	21.9	1.1	1.1	1.1	56.38
GMSG-105	07/17/99	3:25 PM	28.85	78.1	-	0.01	0	0	20.9	50	20	4	55.47
GMSG-105	08/09/99	9:58 AM	28.71	66	-	0.02	0	0	20.2	39	33	3	58.05
GMSG-105	09/30/99	9:28 AM	28.5	45	T	0	0	0	20.9	25	25	1.25	58.3
GMSG-105	10/07/99	3:38 PM	28.7	48.9	-	0.01	0	0.1	20.8	2	2	1.75	58.57
GMSG-105	10/23/99	4:32 PM	28.91	34	-	-0.01	0	0	20.5	65	65	4.5	58.7
GMSG-105	11/03/99	9:21 AM	28.7	30	-	0	0	0	20.2	1	1	<1	58.45
GMSG-105	11/06/99	4:34 PM	29.09	42.1	-	-0.03	0	0.1	20.1	280	29	1.5	58.91
GMSG-105	02/15/00	1:45 PM	28.55	21.9	0.04	3.74	0	0	19.8	--	--	--	--
GMSG-105	03/15/00	9:42 AM	28.52	27	0.02	0	0	0	20.4	39.25	12.15	-0.21	57.74
GMSG-105	03/30/00	12:07 PM	28.81	46.9	-	0.01	0	0	20.5	17.02	16.33	16.22	58.5
GMSG-105	04/30/00	10:23 AM	28.91	61	-	0	0	0	18	36	9	-0.45	58.27
GMSG-105	06/05/00	12:10 PM	28.96	64	-	0	0	0	20.6	0.75	0.3	-0.54	58.96

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-105	07/19/00	8:45 AM	28.86	58	-	0	0	0	21.6	125	9	3.25	58.65
GMSG-105	09/12/00	10:20 AM	28.65	61	-	0	0	0	19.5	2	2	2	58.56
GMSG-105	09/08/01	10:40 AM	28.41	74	-	0	0	0	21.2	5.64	1.1	1	58.55
GMSG-105	10/04/01	3:25 PM	28.63	59	-	-0.02	0	0	20.6	20	7	5.9	58.78
GMSG-106	07/21/98	8:37 AM	28.47	80.1	-	-0.03	64	0	3.1	--	--	--	--
GMSG-106	07/21/98	4:16 PM	28.52	86	-	2.41	63.2	0	2.6	--	--	--	--
GMSG-106	07/22/98	4:37 PM	28.61	75	-	3.51	84.1	0	0	--	--	--	--
GMSG-106	07/23/98	5:25 PM	28.7	68	-	3.28	86	0	0	--	--	--	--
GMSG-106	07/24/98	4:55 PM	28.85	68	-	0.4	71	0	1.9	--	--	--	--
GMSG-106	07/25/98	5:49 PM	28.91	71.1	-	0.68	69.4	0	2.2	--	--	--	50.06
GMSG-106	07/26/98	11:40 AM	28.8	80.1	-	0	59.9	0	6	--	--	--	--
GMSG-106	07/27/98	7:40 PM	28.61	66	-	0.02	56	0	8.3	--	--	--	--
GMSG-106	07/28/98	11:27 AM	28.47	64	0.06	1.3	60.2	0	6	--	--	--	--
GMSG-106	07/29/98	9:12 AM	28.7	70	-	0.06	87	0	0	--	--	--	--
GMSG-106	08/04/98	8:56 AM	28.91	73	-	0.22	83.7	0	0	--	--	--	49.25
GMSG-106	08/09/98	12:10 PM	28.78	81	-	0.05	7.7	0	18.3	--	--	--	--
GMSG-106	08/12/98	9:42 AM	29	66.9	-	0	7.6	0	19.3	--	--	--	49.3
GMSG-106	08/18/98	6:45 PM	28.98	63	-	0.03	11.7	0	18.4	--	--	--	49.3
GMSG-106	08/24/98	4:01 PM	28.44	78.1	-	0.06	7.4	0	19.7	--	--	--	49.37
GMSG-106	08/25/98	4:58 PM	28.64	75.9	-	0.21	24.7	0	6.5	--	--	--	49.08
GMSG-106	08/26/98	1:05 PM	28.78	82	-	0.25	16.1	0	16.1	--	--	--	49.17
GMSG-106	08/27/98	3:30 PM	28.74	78.1	-	0.2	11.7	0	18.4	--	--	--	49.3
GMSG-106	08/28/98	3:39 PM	28.63	81	-	0.2	27.6	0	14.5	--	--	--	48.99
GMSG-106	08/29/98	2:58 PM	28.67	77	-	0.19	9.6	0	18.2	--	--	--	49.11
GMSG-106	08/30/98	9:11 AM	28.76	69.1	-	-0.18	16.8	0	16.8	--	--	--	49.25
GMSG-106	08/31/98	4:00 PM	28.78	75.9	-	-0.1	20.3	0	16.5	--	--	--	49.2
GMSG-106	09/01/98	10:03 AM	28.59	66.9	-	2.98	--	--	--	--	--	--	--
GMSG-106	09/01/98	10:03 AM	28.59	66.9	-	2.98	--	--	--	--	--	--	--
GMSG-106	09/01/98	12:16 PM	28.57	71.1	T	2.4	--	--	--	--	--	--	--
GMSG-106	09/01/98	12:16 PM	28.57	71.1	T	2.4	--	--	--	--	--	--	--
GMSG-106	09/01/98	2:16 PM	28.51	73	-	0.08	--	--	--	--	--	--	--
GMSG-106	09/01/98	2:16 PM	28.51	73	-	0.08	--	--	--	--	--	--	--
GMSG-106	09/01/98	4:14 PM	28.5	68	-	0.06	--	--	--	--	--	--	--
GMSG-106	09/01/98	6:09 PM	28.52	66	-	0.1	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-106	09/01/98	6:09 PM	28.52	66	-	0.1	--	--	--	--	--	--	--
GMSG-106	09/02/98	6:31 AM	28.53	53.1	-	0.3	--	--	--	--	--	--	--
GMSG-106	09/02/98	6:31 AM	28.53	53.1	-	0.3	--	--	--	--	--	--	--
GMSG-106	09/02/98	9:07 AM	28.53	60.1	-	0.24	--	--	--	--	--	--	--
GMSG-106	09/02/98	9:07 AM	28.53	60.1	-	0.24	--	--	--	--	--	--	--
GMSG-106	09/02/98	11:13 AM	28.54	61	-	0.03	--	--	--	--	--	--	--
GMSG-106	09/02/98	11:13 AM	28.54	61	-	0.03	--	--	--	--	--	--	--
GMSG-106	09/02/98	1:14 PM	28.52	63	-	0.01	--	--	--	--	--	--	--
GMSG-106	09/02/98	1:14 PM	28.52	63	-	0.01	--	--	--	--	--	--	--
GMSG-106	09/02/98	3:24 PM	28.5	64.9	-	0.07	--	--	--	--	--	--	--
GMSG-106	09/02/98	3:24 PM	28.5	64.9	-	0.07	--	--	--	--	--	--	--
GMSG-106	09/02/98	5:17 PM	28.52	64	-	0.06	--	--	--	--	--	--	--
GMSG-106	09/02/98	5:17 PM	28.52	64	-	0.06	--	--	--	--	--	--	--
GMSG-106	09/02/98	7:05 PM	28.53	55	-	0.06	--	--	--	--	--	--	--
GMSG-106	09/02/98	7:05 PM	28.53	55	-	0.06	--	--	--	--	--	--	--
GMSG-106	09/08/98	2:50 PM	28.85	63	T	0.06	10.2	0	18.6	--	--	--	49.35
GMSG-106	09/09/98	2:30 PM	28.85	73.9	-	0.04	4.4	0	20.6	--	--	--	49.3
GMSG-106	09/10/98	2:20 PM	28.69	82.9	-	0	5.2	0	20.7	--	--	--	49.15
GMSG-106	09/11/98	3:52 PM	28.55	95	-	0.06	6.5	0	20.5	--	--	--	49.1
GMSG-106	09/12/98	2:05 PM	28.7	80.1	-	0.03	6.2	0	19.9	--	--	--	49.33
GMSG-106	09/13/98	11:22 AM	28.68	71.1	-	0.04	10.9	0	18.7	--	--	--	49.2
GMSG-106	09/14/98	4:06 PM	28.57	66	-	0.04	6	0	19.5	--	--	--	49.11
GMSG-106	09/22/98	9:16 AM	28.89	53.1	-	0.11	9.2	0	18.1	--	--	--	49.42
GMSG-106	09/23/98	5:26 PM	28.76	64	-	4.94	2.8	0	20.2	--	--	--	49.29
GMSG-106	09/25/98	10:50 AM	28.52	66.9	-	0.88	7	0	19.1	--	--	--	49.12
GMSG-106	09/28/98	2:59 PM	28.69	71.1	-	3.24	4.6	0	19.8	--	--	--	49.31
GMSG-106	10/07/98	1:43 PM	28.71	51.1	-	3.13	7	0	18.6	--	--	--	49.26
GMSG-106	10/09/98	1:15 PM	28.86	61	-	0.35	6.8	0	18.8	--	--	--	49.27
GMSG-106	10/11/98	12:20 PM	28.98	57	-	0.12	4	0	19.8	--	--	--	49.35
GMSG-106	10/14/98	9:40 AM	28.86	41	-	4.75	33.5	0	11.5	--	--	--	49.35
GMSG-106	10/20/98	9:16 AM	28.93	43	-	0.22	14.1	0	16.5	--	--	--	49.43
GMSG-106	10/23/98	3:56 PM	28.87	68	-	0.44	3.2	0	20.5	--	--	--	49.21
GMSG-106	11/18/98	1:52 PM	28.73	36	-	0.2	6.1	0	18.4	--	--	--	--
GMSG-106	11/21/98	10:04 AM	28.85	28.9	-	0.01	4	0	18.9	--	--	--	49.43

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-106	12/01/98	9:18 AM	28.8	36	-	0.12	7	0	18.3	--	--	--	49.45
GMSG-106	12/03/98	1:45 PM	28.39	62	-	2.41	5.9	0	19.5	--	--	--	49.11
GMSG-106	12/09/98	8:36 AM	28.95	23	-	17.79	87.2	0	0	--	--	--	49.41
GMSG-106	12/15/98	10:10 AM	28.79	39	-	-0.1	12.3	0	17	--	--	--	49.48
GMSG-106	12/19/98	8:38 AM	28.77	22	-	0.42	16	0	16.2	--	--	--	49.5
GMSG-106	12/20/98	2:23 PM	29.02	19	0.02	0.06	9.7	0	16.2	--	--	--	--
GMSG-106	12/21/98	2:17 PM	28.73	14	-	0.02	8.3	0	17.3	--	--	--	49.4
GMSG-106	12/28/98	9:28 AM	28.74	7	-	0.05	11.2	0	14.4	--	--	--	49.34
GMSG-106	01/06/99	10:04 AM	28.53	8.1	-	0.05	8.5	0	15.5	--	--	--	49.2
GMSG-106	01/14/99	4:22 PM	28.94	7	-	0.05	11.2	0	16.8	--	--	--	49.09
GMSG-106	01/21/99	11:43 AM	28.76	25	-	0	10.6	0	17.7	--	--	--	49.24
GMSG-106	01/26/99	12:28 PM	28.91	24.1	-	0.05	7.8	0	17.4	--	--	--	49.35
GMSG-106	01/28/99	10:49 AM	28.81	27	T	-0.04	0	0.1	19.3	<1	<1	<1	--
GMSG-106	02/03/99	11:03 AM	28.19	33.1	-	1.17	13.8	0	16.6	--	--	--	48.84
GMSG-106	02/11/99	12:04 PM	28.22	39	0.31	11.56	37.2	0	11.6	--	--	--	48.94
GMSG-106	02/23/99	1:40 PM	28.98	25	T	8.07	84.9	0	0	--	--	--	--
GMSG-106	03/11/99	11:58 AM	29.09	33.1	-	32	76.8	0	10.6	--	--	--	--
GMSG-106	03/23/99	11:44 AM	28.46	46	-	0	35.2	0	11.7	--	--	--	--
GMSG-106	04/08/99	4:30 PM	28.6	55	-	0	3	0	21.2	--	--	--	--
GMSG-106	04/08/99	4:48 PM	28.6	55	-	--	--	--	--	--	--	--	48.15
GMSG-106	04/29/99	5:11 PM	29.12	66	-	0	7.7	0	18.3	--	--	--	49.3
GMSG-106	05/17/99	9:12 AM	28.5	66	-	0	4.5	0	19.1	--	--	--	48.55
GMSG-106	06/03/99	10:40 AM	28.92	64.9	-	0.02	10	0	17.5	--	--	--	48.46
GMSG-106	07/08/99	9:52 AM	28.78	64	T	0.04	23.2	0	15.7	--	--	--	48.42
GMSG-106	07/17/99	7:40 PM	28.89	69.1	-	0.01	6.5	0	20	--	--	--	47.35
GMSG-106	07/22/99	9:41 AM	28.78	82.9	-	2.43	17.2	0	16.7	--	--	--	--
GMSG-106	07/27/99	11:23 AM	28.75	77	-	6	6.9	0	17.6	--	--	--	--
GMSG-106	08/04/99	9:23 AM	28.72	69.1	-	9.23	6.2	0	19.4	--	--	--	--
GMSG-106	08/08/99	12:06 PM	28.83	66.9	-	14.1	89.4	0	1.4	--	--	--	48.7
GMSG-106	08/10/99	11:42 AM	28.46	71.1	-	11	0	0	20.7	--	--	--	--
GMSG-106	08/17/99	4:17 PM	28.81	69.1	-	12.8	88.5	0	0	--	--	--	--
GMSG-106	08/20/99	4:51 PM	28.86	75	-	0.89	83.1	0	0	--	--	--	--
GMSG-106	08/24/99	10:52 AM	28.7	73.9	-	0.1	85.1	0	0	--	--	--	--
GMSG-106	08/31/99	6:16 PM	28.85	70	-	11.4	86.4	0	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-106	09/03/99	9:01 AM	28.81	73	-	1.03	83.7	0	0	--	--	--	--
GMSG-106	09/08/99	5:19 PM	28.48	68	-	1.22	84.3	0	0	--	--	--	--
GMSG-106	09/14/99	12:51 PM	28.65	55	T	5.07	85.1	0	0	--	--	--	--
GMSG-106	09/21/99	2:11 PM	28.87	69.1	-	12.28	85.1	0	0	--	--	--	--
GMSG-106	09/28/99	10:34 AM	28.9	53.1	-	13.57	98.9	0	0	--	--	--	--
GMSG-106	09/30/99	9:05 AM	28.5	45	T	9.85	65.3	0	1.7	--	--	--	48.78
GMSG-106	10/05/99	12:48 PM	28.68	55.9	-	0.02	14	0.1	16	--	--	--	--
GMSG-106	10/07/99	5:35 PM	28.67	50	-	0.05	11.8	0.1	17.8	1.25	1.25	1.25	48.9
GMSG-106	10/12/99	11:22 AM	28.65	57	-	0.04	14.6	0	17.2	--	--	--	--
GMSG-106	10/19/99	12:07 PM	28.75	44.1	-	4.12	12.8	0	17.3	--	--	--	--
GMSG-106	10/24/99	9:57 AM	28.87	41	-	1.53	34.9	0	12.1	--	--	--	49.04
GMSG-106	10/25/99	8:46 AM	28.52	48	-	0.53	15.6	0	16.4	--	--	--	--
GMSG-106	11/03/99	1:50 PM	28.68	36	-	10.04	19.2	0	15.1	--	--	--	48.35
GMSG-106	11/07/99	10:10 AM	29.16	41	-	12.8	7.8	0.1	18.3	--	--	--	49.17
GMSG-106	11/22/99	11:39 AM	28.69	48	-	1.1	5	0	19.1	--	--	--	--
GMSG-106	01/25/00	1:35 PM	28.81	15	-	0.8	83.5	0	2.7	--	--	--	--
GMSG-106	02/16/00	8:33 AM	28.92	16	T	0.07	12.1	0	17.1	--	--	--	--
GMSG-106	03/04/00	3:12 PM	28.53	55.9	-	12.56	85.8	0	0	--	--	--	--
GMSG-106	03/05/00	8:52 AM	28.73	37	-	9.43	91	0	0	--	--	--	--
GMSG-106	03/06/00	9:17 AM	28.82	39.9	-	17.61	16	0	16.8	--	--	--	--
GMSG-106	03/14/00	1:26 PM	28.69	32	-	4.32	38.8	0	10.9	--	--	--	--
GMSG-106	03/30/00	9:00 AM	28.82	37	-	4.33	28.4	0	13.3	--	--	--	48.92
GMSG-106	04/27/00	4:13 PM	28.63	70	-	14.44	84.3	0	0	--	--	--	--
GMSG-106	06/03/00	1:39 PM	28.93	67	-	20	81.8	0	0	--	--	--	--
GMSG-106	06/05/00	11:27 AM	28.96	63	-	22	82.5	0	0	--	--	--	--
GMSG-106	06/29/00	3:05 PM	28.66	69	-	10.36	87.7	0	0	--	--	--	--
GMSG-106	07/19/00	10:10 AM	28.84	63	-	2.6	85.7	0	0	--	--	--	--
GMSG-106	07/23/00	1:57 PM	28.94	72	T	26	85.5	0	1.5	--	--	--	--
GMSG-106	08/20/00	12:58 PM	29.05	68	-	9.76	87.3	0	0	--	--	--	--
GMSG-106	09/12/00	2:07 PM	28.67	64	-	1.65	96	0	0	--	--	--	48.96
GMSG-106	09/24/00	11:15 AM	28.87	48	-	5.23	0.6	0	20.2	--	--	--	48.12
GMSG-106	10/21/00	2:26 PM	29	53	-	2.38	82.1	0	0.8	--	--	--	49.36
GMSG-106	11/19/00	9:25 AM	28.49	19	T	4.34	88.2	0	0	--	--	--	48.82
GMSG-106	12/18/00	2:55 PM	28.68	17	0.02	0.01	64.2	0	14.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-106	01/09/01	12:20 PM	28.78	26	-	2.85	95.6	0	1	--	--	--	--
GMSG-106	02/08/01	4:11 PM	28.79	25	-	1.55	97	0	0	--	--	--	--
GMSG-106	02/10/01	10:13 AM	29.09	8	-	41	--	--	--	--	--	--	--
GMSG-106	02/12/01	1:30 PM	28.87	24	T	--	--	--	--	--	--	--	--
GMSG-106	04/08/01	11:03 AM	28.56	45	-	0.7	103.3	0	0.6	--	--	--	--
GMSG-106	05/05/01	11:20 AM	29.1	60	-	0.16	88.7	0	2.7	--	--	--	--
GMSG-106	05/31/01	10:45 AM	28.88	62	-	0.28	108	0	5	--	--	--	48.51
GMSG-106	06/28/01	2:19 PM	28.92	87	-	0.07	51.8	0	10.7	--	--	--	48.52
GMSG-106	07/19/01	10:00 AM	28.84	77	-	0.35	98.9	0	1.6	--	--	--	48.99
GMSG-106	08/08/01	10:32 AM	28.75	87	-	0.15	35	0	14.5	--	--	--	48.78
GMSG-106	09/08/01	5:28 PM	28.51	74	-	0.1	18.4	0	16.1	--	--	--	49.02
GMSG-106	10/04/01	11:20 AM	28.69	58	-	0.35	86	0	1.5	--	--	--	49.09
GMSG-106	11/14/01	8:35 AM	28.82	54	-	1.4	94	0	0	--	--	--	49.28
GMSG-106	12/18/01	11:26 AM	28.54	32	-	5.7	103.1	0	0	--	--	--	48.85
GMSG-106	01/10/02	10:41 AM	28.55	37	-	0.04	90.2	0	1.4	--	--	--	49.34
GMSG-106	02/15/02	2:17 PM	28.51	35	-	0.88	76.4	0	2.9	--	--	--	--
GMSG-106	03/18/02	11:47 AM	28.99	39	-	0.19	105.2	0	0.9	--	--	--	--
GMSG-106	04/26/02	9:31 AM	29.03	40	-	1.02	109.1	0	0	--	--	--	45.33
GMSG-106	05/22/02	9:45 AM	28.87	62	-	0.18	85.1	0	3.9	--	--	--	47.56
GMSG-106	06/05/02	9:56 AM	28.77	61	-	3.99	103.5	0	0	--	--	--	48.31
GMSG-106	07/11/02	2:46 PM	29.04	79	-	0	33	0	11.9	--	--	-0.31	48.83
GMSG-106	08/10/02	4:35 PM	28.66	80	-	0.1	58.7	0	7.3	--	--	--	48.48
GMSG-106	10/15/02	10:04 AM	28.7	44	T	2.6	96.6	0	1	--	--	--	47.75
GMSG-106	04/14/03	3:14 PM	28.49	84	-	0.3	85.8	0	1.7	--	--	--	48.3
GMSG-106	10/13/03	2:11 PM	28.56	65	-	0	83.6	0	1.5	--	--	--	48.98
GMSG-106	04/02/04	12:10 PM	28.91	52	-	5.1	91.2	0	0.2	--	--	--	48.1
GMSG-106	10/12/04	1:21 PM	28.72	66	-	0.2	83.2	0	1.2	--	--	--	48.83
GMSG-106	04/05/05	2:54 PM	28.56	74	-	0.9	14	0	17.2	--	--	--	48.05
GMSG-107	07/25/98	5:54 PM	28.91	71.1	-	10.2	86.8	0	0	--	--	--	49.17
GMSG-107	07/26/98	11:35 AM	28.8	80.1	-	9.72	86.7	0	0	--	--	--	--
GMSG-107	07/27/98	7:35 PM	28.61	66	-	5.9	86	0	0	--	--	--	--
GMSG-107	07/28/98	11:22 AM	28.47	64	0.06	7.7	89.9	0	0	--	--	--	--
GMSG-107	07/29/98	9:09 AM	28.7	70	-	7.45	89.9	0	0	--	--	--	--
GMSG-107	08/04/98	8:52 AM	28.91	73	-	4.15	89.3	0	0	--	--	--	48.99

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-107	08/09/98	12:05 PM	28.78	81	-	4	83.3	0	0	--	--	--	48.81
GMSG-107	08/12/98	9:31 AM	29	66.9	-	6.4	83.7	0	0	--	--	--	49.13
GMSG-107	08/18/98	6:38 PM	28.98	63	-	8.24	84.4	0	0	--	--	--	49.1
GMSG-107	08/24/98	3:54 PM	28.44	78.1	-	7.54	82.7	0	0	--	--	--	48.99
GMSG-107	08/25/98	4:52 PM	28.64	75.9	-	5.58	82.6	0	0	--	--	--	46.82
GMSG-107	08/26/98	1:00 PM	28.78	82	-	--	75	0	0.4	--	--	--	49.1
GMSG-107	08/27/98	3:22 PM	28.76	80.1	-	10.38	83	0	0	--	--	--	48.6
GMSG-107	08/28/98	3:29 PM	28.63	82.9	-	11.05	83.1	0	0	--	--	--	48.77
GMSG-107	08/29/98	2:50 PM	28.67	77	-	8.68	87.6	0	0	--	--	--	49.6
GMSG-107	08/31/98	3:48 PM	28.78	75.9	-	7.27	81.8	0	0	--	--	--	49.1
GMSG-107	09/01/98	10:05 AM	28.59	66.9	-	6.84	--	--	--	--	--	--	--
GMSG-107	09/01/98	10:05 AM	28.59	66.9	-	'+6.84 - +4.72	--	--	--	--	--	--	--
GMSG-107	09/01/98	12:18 PM	28.57	71.1	T	6.45	--	--	--	--	--	--	--
GMSG-107	09/01/98	12:18 PM	28.57	71.1	T	6.45	--	--	--	--	--	--	--
GMSG-107	09/01/98	2:18 PM	28.51	73	-	6.78	--	--	--	--	--	--	--
GMSG-107	09/01/98	2:18 PM	28.51	73	-	6.78	--	--	--	--	--	--	--
GMSG-107	09/01/98	4:16 PM	28.5	68	-	'+6.28-+5.17	--	--	--	--	--	--	--
GMSG-107	09/01/98	6:11 PM	28.52	66	-	6.77	--	--	--	--	--	--	--
GMSG-107	09/01/98	6:11 PM	28.52	66	-	'+6.77-+5.21	--	--	--	--	--	--	--
GMSG-107	09/02/98	6:33 AM	28.53	53.1	-	6.77	--	--	--	--	--	--	--
GMSG-107	09/02/98	6:33 AM	28.53	53.1	-	'+6.77-+5.53	--	--	--	--	--	--	--
GMSG-107	09/02/98	9:09 AM	28.53	60.1	-	6.5	--	--	--	--	--	--	--
GMSG-107	09/02/98	9:09 AM	28.53	60.1	-	'+6.5-+5.32	--	--	--	--	--	--	--
GMSG-107	09/02/98	11:15 AM	28.54	61	-	6.46	--	--	--	--	--	--	--
GMSG-107	09/02/98	11:15 AM	28.54	61	-	'+6.46-+5.03	--	--	--	--	--	--	--
GMSG-107	09/02/98	1:15 PM	28.52	63	-	6.63	--	--	--	--	--	--	--
GMSG-107	09/02/98	1:15 PM	28.52	63	-	'+6.63-+5.08	--	--	--	--	--	--	--
GMSG-107	09/02/98	3:26 PM	28.5	64.9	-	9.54	--	--	--	--	--	--	--
GMSG-107	09/02/98	3:26 PM	28.5	64.9	-	2.25	--	--	--	--	--	--	--
GMSG-107	09/02/98	5:20 PM	28.52	64	-	7.53	--	--	--	--	--	--	--
GMSG-107	09/02/98	5:20 PM	28.52	64	-	'+7.53-+5.85	--	--	--	--	--	--	--
GMSG-107	09/02/98	7:07 PM	28.53	55	-	6.74	--	--	--	--	--	--	--
GMSG-107	09/02/98	7:07 PM	28.53	55	-	'+6.74-+5.08	--	--	--	--	--	--	--
GMSG-107	09/08/98	2:40 PM	28.85	63	T	5	85.1	0	0	--	--	--	49.22

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-107	09/09/98	7:47 AM	28.96	53.1	-	6.51	83	0	0	--	--	--	--
GMSG-107	09/09/98	2:25 PM	28.87	72	-	5.9	83.5	0	0	--	--	--	49.2
GMSG-107	09/09/98	6:05 PM	28.84	66.9	-	6	84.8	0	0.2	--	--	--	--
GMSG-107	09/10/98	2:10 PM	28.69	82.9	-	5.8	82.4	0	0	--	--	--	49
GMSG-107	09/11/98	3:44 PM	28.55	95	-	6.6	80.3	0	0.3	--	--	--	48.92
GMSG-107	09/12/98	1:57 PM	28.7	80.1	-	7.1	82.8	0	0	--	--	--	49.08
GMSG-107	09/13/98	11:15 AM	28.68	71.1	-	7.76	83.4	0	0	--	--	--	49.1
GMSG-107	09/14/98	3:56 PM	28.57	66	-	8.23	84.1	0	0	--	--	--	49.05
GMSG-107	09/22/98	9:06 AM	28.89	53.1	-	8.73	83.6	0	0	--	--	--	49.3
GMSG-107	09/23/98	5:16 PM	28.76	64	-	4.85	83.2	0	0	--	--	--	49.2
GMSG-107	09/25/98	10:40 AM	28.52	66.9	-	8.8	82.8	0	0	--	--	--	49.03
GMSG-107	09/28/98	2:35 PM	28.69	71.1	-	7.05	82.2	0	0	--	--	--	49.21
GMSG-107	10/07/98	1:36 PM	28.71	51.1	-	5.6	84.1	0	0	--	--	--	49.15
GMSG-107	10/09/98	1:09 PM	28.86	61	-	12.83	83.5	0	0	--	--	--	49.12
GMSG-107	10/11/98	12:15 PM	28.98	57	-	7.6	83.6	0	0	--	--	--	49.25
GMSG-107	10/14/98	9:30 AM	28.86	41	-	6.95	85	0	0	--	--	--	49.15
GMSG-107	10/20/98	9:09 AM	28.93	43	-	9.45	86.5	0	0	--	--	--	49.32
GMSG-107	10/23/98	3:48 PM	28.87	68	-	10.45	82.6	0	0	--	--	--	49.09
GMSG-107	11/18/98	1:45 PM	28.73	36	-	20	89.2	0	0	--	--	--	--
GMSG-107	11/21/98	10:01 AM	28.85	28.9	-	17.69	91	0	0	--	--	--	49.36
GMSG-107	12/01/98	9:11 AM	28.8	36	-	26	88.5	0	0	--	--	--	49.3
GMSG-107	12/03/98	1:38 PM	28.39	62	-	23	85.4	0	0	--	--	--	48.93
GMSG-107	12/09/98	8:30 AM	28.95	23	-	14.3	88.3	0	0	--	--	--	49.35
GMSG-107	12/15/98	10:01 AM	28.79	39	-	10	88.9	0	0	--	--	--	49.42
GMSG-107	12/19/98	8:25 AM	28.71	24	T	26	81.8	0	0.6	--	--	--	49.5
GMSG-107	12/20/98	2:18 PM	29.02	19	0.02	20	82	0	1.3	--	--	--	--
GMSG-107	12/21/98	2:11 PM	28.73	14	-	21	81.2	0	3.3	--	--	--	49.26
GMSG-107	12/28/98	9:21 AM	28.74	7	-	4.53	82.2	0	0	--	--	--	49.25
GMSG-107	01/06/99	9:58 AM	28.53	8.1	-	2.62	89.1	0	0	--	--	--	49.35
GMSG-107	01/14/99	4:14 PM	28.94	7	-	2.7	93	0	0	--	--	--	49.45
GMSG-107	01/21/99	11:32 AM	28.76	25	-	2.16	89	0	0	--	--	--	49.3
GMSG-107	01/26/99	12:15 PM	28.91	24.1	-	4.27	88.9	0	0	--	--	--	49.4
GMSG-107	02/03/99	10:51 AM	28.19	33.1	-	10.9	87.2	0	0	--	--	--	48.71
GMSG-107	02/11/99	11:54 AM	28.22	39	0.31	13.91	84.9	0	0.1	--	--	--	48.75

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-107	02/23/99	1:22 PM	28.98	25	T	13.01	90	0	0	--	--	--	49.2
GMSG-107	03/11/99	11:46 AM	29.09	33.1	-	11.26	84.8	0	12.3	--	--	--	49.1
GMSG-107	03/23/99	11:31 AM	28.46	46	-	25	88.5	0	0	--	--	--	48.8
GMSG-107	04/08/99	12:32 PM	28.66	57.9	-	17.3	88.8	0	0	--	--	--	--
GMSG-107	04/08/99	12:43 PM	28.66	57.9	-	--	--	--	--	--	--	--	48.21
GMSG-107	04/20/99	10:22 AM	28.71	48	-	6	91.3	0	0	--	--	--	47.9
GMSG-107	04/29/99	5:03 PM	29.12	66	-	6.72	88.5	0	1.4	--	--	--	49.2
GMSG-107	05/17/99	9:28 AM	28.5	66	-	10	85.5	0	0	--	--	--	48.45
GMSG-107	06/03/99	9:58 AM	28.93	63	-	13.1	86.4	0	0	--	--	--	48.41
GMSG-107	07/08/99	10:03 AM	28.78	64	T	12	87.6	0	0.2	--	--	--	48.35
GMSG-107	07/17/99	8:00 PM	28.89	69.1	-	7.4	94.5	0	0	--	--	--	47.3
GMSG-107	07/22/99	9:39 AM	28.78	82.9	-	17	89.7	0	0	--	--	--	--
GMSG-107	07/27/99	11:19 AM	28.75	77	-	20	68.4	0	0	--	--	--	--
GMSG-107	08/04/99	9:39 AM	28.71	72	-	19.75	105.7	0	0	--	--	--	--
GMSG-107	08/08/99	12:00 PM	28.83	66.9	-	22	103.6	0	0	--	--	--	48.6
GMSG-107	08/10/99	11:54 AM	28.46	71.1	-	13	95.6	0	0	--	--	--	--
GMSG-107	08/17/99	4:12 PM	28.81	69.1	-	5.22	92.7	0	0	--	--	--	--
GMSG-107	08/20/99	4:47 PM	28.86	75	-	7.66	86.3	0	0	--	--	--	--
GMSG-107	08/24/99	10:46 AM	28.7	73.9	-	8.15	81.6	0	0	--	--	--	--
GMSG-107	08/31/99	6:20 PM	28.85	70	-	10.09	88.7	0	0	--	--	--	--
GMSG-107	09/03/99	9:04 AM	28.81	73	-	10.05	85.1	--	--	--	--	--	--
GMSG-107	09/08/99	5:21 PM	28.48	68	-	14.33	86.5	0	0	--	--	--	--
GMSG-107	09/14/99	12:56 PM	28.65	55	T	9.67	86.7	0	0	--	--	--	--
GMSG-107	09/21/99	2:13 PM	28.87	69.1	-	10.06	85.8	0	0	--	--	--	--
GMSG-107	09/28/99	10:38 AM	28.9	53.1	-	8.63	100.1	0	0	--	--	--	--
GMSG-107	09/30/99	8:56 AM	28.5	45	T	12.73	85.8	0	0	--	--	--	48.75
GMSG-107	10/05/99	12:45 PM	28.68	55.9	-	15.2	86.7	0	0	--	--	--	--
GMSG-107	10/07/99	5:31 PM	28.67	50	-	14.02	79.8	0	0	--	--	--	48.9
GMSG-107	10/12/99	11:18 AM	28.65	57	-	10.29	96.3	0	0	--	--	--	--
GMSG-107	10/19/99	11:59 AM	28.75	44.1	-	12.42	96.9	0	0	--	--	--	--
GMSG-107	10/24/99	9:51 AM	28.87	41	-	19.5	99	0	0	--	--	--	49
GMSG-107	10/25/99	9:03 AM	28.52	48	-	11.25	89.5	0	0	--	--	--	--
GMSG-107	11/03/99	2:03 PM	28.68	36	-	16.64	94.2	0	0	--	--	--	--
GMSG-107	11/07/99	10:26 AM	29.16	41	-	16.82	103.9	0	0	--	--	--	49.3

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-107	11/22/99	11:55 AM	28.69	48	-	12.5	95.6	0	0	--	--	--	--
GMSG-107	01/25/00	1:40 PM	28.81	15	-	15	97.2	0	0	--	--	--	--
GMSG-107	02/16/00	9:28 AM	28.92	16	T	8.36	98.5	0	0.3	--	--	--	48.9
GMSG-107	03/04/00	3:08 PM	28.53	55.9	-	7.58	88.1	0	0	--	--	--	48.25
GMSG-107	03/05/00	8:43 AM	28.73	37	-	1.92	96.7	0	0	--	--	--	48.4
GMSG-107	03/06/00	9:10 AM	28.82	39.9	-	5.6	91.4	0	0	--	--	--	48.5
GMSG-107	03/14/00	11:57 AM	28.7	32	-	2	94	0	0	--	--	--	48.15
GMSG-107	03/30/00	9:45 AM	28.83	42.1	-	2.32	89.4	0	0	--	--	--	48.86
GMSG-107	04/27/00	4:16 PM	28.63	70	-	18.1	86.3	0	0	--	--	--	--
GMSG-107	06/03/00	1:35 PM	28.93	67	-	16.29	84.5	0	0	--	--	--	--
GMSG-107	06/05/00	11:33 AM	28.96	64	-	16.34	84.8	0	0	--	--	--	49.21
GMSG-107	06/29/00	2:59 PM	28.66	69	-	7.5	85.1	0	0	--	--	--	--
GMSG-107	07/19/00	10:23 AM	28.84	63	-	10	88.5	0	0	--	--	--	--
GMSG-107	07/23/00	2:20 PM	28.94	72	T	13	97.5	0	0.2	--	--	--	--
GMSG-107	08/20/00	1:02 PM	29.05	68	-	9.75	90.1	0	0	--	--	--	--
GMSG-107	09/12/00	1:55 PM	28.67	64	-	11.96	95.7	0	0	--	--	--	48.85
GMSG-107	09/24/00	11:05 AM	28.87	48	-	15.92	88.8	0	0	--	--	--	49.21
GMSG-107	10/21/00	2:13 PM	29	53	-	12.92	85.7	0	0	--	--	--	48.46
GMSG-107	11/19/00	9:08 AM	28.49	19	T	19.38	89.1	0	0	--	--	--	48.7
GMSG-107	12/18/00	3:05 PM	28.68	17	0.02	-3.4	93.7	0	0.5	--	--	--	--
GMSG-107	01/09/01	12:10 PM	28.78	26	-	-0.15	96.2	0	0.5	--	--	--	--
GMSG-107	02/08/01	4:06 PM	28.79	25	-	21	97.7	0	0	--	--	--	--
GMSG-107	02/10/01	10:10 AM	29.09	8	-	26	--	--	--	--	--	--	--
GMSG-107	02/12/01	1:35 PM	28.87	24	T	21	--	--	--	--	--	--	--
GMSG-107	02/13/01	8:52 AM	29.01	22	-	19.5	96.3	0	0	--	--	--	--
GMSG-107	03/07/01	3:41 PM	28.63	34	-	10	96	0	0	--	--	--	--
GMSG-107	04/08/01	10:55 AM	28.56	45	-	16.62	111.2	0	0	--	--	--	48.45
GMSG-107	05/05/01	11:16 AM	29.1	60	-	16.17	99	0	0	--	--	--	--
GMSG-107	05/31/01	10:34 AM	28.88	62	-	11.12	110	0	0	--	--	--	48.46
GMSG-107	06/28/01	2:09 PM	28.92	87	-	9.5	94.3	0	0.7	--	--	--	66.5
GMSG-107	07/19/01	9:55 AM	28.84	77	-	9	104	0	0.5	--	--	--	49.05
GMSG-107	08/08/01	10:45 AM	28.75	87	-	7.5	95.7	0	0.6	--	--	--	47.8
GMSG-107	09/08/01	5:24 PM	28.51	74	-	18	106	8	0	--	--	--	48.97
GMSG-107	10/04/01	11:48 AM	28.67	59	-	13.39	95.4	0	0	--	--	--	49.24

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-107	11/14/01	8:43 AM	28.82	54	-	30	95.5	0	0	--	--	--	49.31
GMSG-107	12/18/01	11:34 AM	28.52	35	-	7.36	105.4	0	0	--	--	--	48.85
GMSG-107	01/10/02	10:47 AM	28.55	37	-	2.03	109.4	0	0	--	--	--	49.21
GMSG-107	02/15/02	2:09 PM	28.51	35	-	3.23	102.4	0	0.3	--	--	--	49.03
GMSG-107	03/18/02	12:10 PM	28.99	39	-	3.6	106.4	0	0	--	--	--	49.21
GMSG-107	04/26/02	9:54 AM	29.03	40	-	1.47	108.7	0	0	--	--	--	45.31
GMSG-107	05/22/02	10:05 AM	28.87	62	-	3.41	105.6	0	0	--	--	--	47.48
GMSG-107	06/05/02	10:15 AM	28.77	61	-	2.4	103.6	0	0	--	--	--	48.13
GMSG-107	07/11/02	3:05 PM	29.04	79	-	3.7	94	0	0.4	--	--	--	48.73
GMSG-107	08/10/02	5:26 PM	28.66	80	-	3.3	99.3	0	0	--	--	--	47.42
GMSG-107	10/15/02	9:59 AM	28.7	44	T	5.6	101.4	0	0	--	--	--	47.71
GMSG-107	04/14/03	3:11 PM	28.49	84	-	9.4	89	0	0.6	--	--	--	--
GMSG-107	10/13/03	2:35 PM	28.56	65	-	7.7	86.6	0	0	--	--	--	48.86
GMSG-107	04/02/04	11:40 AM	28.91	52	-	5.1	90.8	0	0.3	--	--	--	48.39
GMSG-107	10/12/04	1:28 PM	28.72	66	-	5.5	86.2	0	0.4	--	--	--	48.74
GMSG-107	04/05/05	3:20 PM	28.56	74	-	6	88.8	0	0	--	--	--	--
GMSG-107	04/14/05	1:05 PM	29.08	66	-	--	--	--	--	--	--	--	48.31
GMSG-107	04/22/05	11:10 AM	28.65	51	-	--	--	--	--	--	--	--	48.03
GMSG-108	07/23/98	5:14 PM	28.7	68	-	0.34	0	0	20.5	2.2	2.2	2.2	--
GMSG-108	07/24/98	4:47 PM	28.85	68	-	-0.04	0	0	20.4	--	--	--	--
GMSG-108	07/25/98	5:28 PM	28.92	72	-	-0.02	0	0	20.4	125	10	10	71.35
GMSG-108	07/26/98	11:10 AM	28.83	77	-	0.05	0	0	19.2	30	30	3	--
GMSG-108	07/27/98	10:17 AM	28.6	73.9	-	0	0	0	20.4	5	5	3	--
GMSG-108	07/28/98	10:47 AM	28.47	64	0.06	0.79	0	0	20.4	130	130	2	--
GMSG-108	07/29/98	8:40 AM	28.7	70	-	-0.1	0	0	20.2	115	115	2	--
GMSG-108	08/04/98	8:35 AM	28.91	73	-	0	0	0	20.3	100	100	2	73.39
GMSG-108	08/09/98	11:30 AM	28.78	81	-	0.35	0.1	0	19.9	350	150	3.5	70.24
GMSG-108	08/12/98	8:31 AM	29.01	61	-	0	0	0	20.8	2	2	1.8	69.84
GMSG-108	08/18/98	7:56 PM	29.01	62.1	-	-0.25	0	0	21.1	2.6	2.6	4	70.38
GMSG-108	08/24/98	3:41 PM	28.44	78.1	-	-0.31	0	0	21.2	85	85	2.5	72.18
GMSG-108	08/25/98	6:38 PM	28.67	66.9	-	0	0	0	21.3	2	2	2	70.1
GMSG-108	08/26/98	11:53 AM	28.79	81	-	0.04	0	0	20	2.25	2.25	2.25	70.3
GMSG-108	08/27/98	6:01 PM	28.73	73.9	T	0	0	0	21.2	700	65	2.5	69.76
GMSG-108	08/28/98	6:22 PM	28.64	75.9	-	0	0	0	21.1	150	50	2.5	70.38

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-108	08/29/98	1:40 PM	28.67	75.9	-	0.01	0	0	20.5	75	70	2.5	70.05
GMSG-108	08/30/98	7:56 AM	28.75	63	-	0.01	0	0	20.9	60	60	6	69.71
GMSG-108	08/31/98	6:40 PM	28.76	63	-	0.03	0	0	21.2	50	50	2	69.67
GMSG-108	09/08/98	1:40 PM	28.85	64	-	0	0	0	20.6	4	3.5	3	70.4
GMSG-108	09/09/98	5:05 PM	28.83	72	-	-0.18	0	0	21.3	130	130	2	70.45
GMSG-108	09/10/98	4:50 PM	28.66	80.1	-	0.03	0	0	21.7	250	55	2	70.2
GMSG-108	09/11/98	5:31 PM	28.57	89.1	-	0.07	0	0	21.7	175	175	7	70.25
GMSG-108	09/12/98	3:51 PM	28.69	79	-	0	0	0	21.5	450	100	3.5	70.37
GMSG-108	09/15/98	11:10 AM	28.82	71.1	-	0	0	0	20.7	22	9	3	70.55
GMSG-108	09/15/98	12:10 PM	28.84	71.1	-	0	4.5	0	19.3	--	--	--	70.77
GMSG-108	09/22/98	2:36 PM	28.88	55.9	-	0	2.4	0	19.9	--	--	--	70.59
GMSG-108	09/25/98	9:38 AM	28.52	66.9	-	0	0.1	0	20.6	45	45	6	70.35
GMSG-108	09/28/98	1:54 PM	28.7	70	-	-0.16	3.1	0	20.5	--	--	--	70.51
GMSG-108	10/07/98	3:32 PM	28.74	51.1	-	1.43	10.1	0	17.3	--	--	--	70.04
GMSG-108	10/11/98	4:10 PM	28.89	62.1	-	0	5.8	0	19	--	--	--	70.5
GMSG-108	10/14/98	8:55 AM	28.87	39.9	-	0	2	0	19.4	--	--	--	70.5
GMSG-108	10/20/98	8:22 AM	28.94	41	-	-0.32	8.9	0	17.5	--	--	--	70.59
GMSG-108	10/23/98	6:20 PM	28.88	60.1	-	0.11	9.5	0	17.9	--	--	--	70.56
GMSG-108	11/20/98	4:03 PM	28.71	30.9	-	-0.37	0	0	20.2	3	3	3	70.31
GMSG-108	11/21/98	8:37 AM	28.86	23	-	-1.42	29.1	0.2	13.3	--	--	--	70.58
GMSG-108	12/01/98	11:29 AM	28.81	46	-	2.45	13.4	0	16.6	--	--	--	70.4
GMSG-108	12/03/98	3:59 PM	28.43	59	-	0	8.2	0	18.4	--	--	--	70.33
GMSG-108	12/09/98	11:40 AM	28.92	39	-	0	12.6	0	16.5	--	--	--	70.65
GMSG-108	12/15/98	8:20 AM	28.74	37	-	0.13	10.4	0	16.7	--	--	--	70.54
GMSG-108	12/19/98	12:50 PM	28.89	21	T	0	9.5	0	17.6	--	--	--	70.73
GMSG-108	12/28/98	7:31 AM	28.72	3	-	0	10.6	0	15.2	--	--	--	70.47
GMSG-108	01/06/99	4:42 PM	28.7	1.9	-	-0.02	7	0.1	14.6	--	--	--	70.39
GMSG-108	01/14/99	4:41 PM	28.92	6.1	-	0	0.5	0	18.7	--	--	--	70.38
GMSG-108	01/21/99	4:24 PM	28.78	25	-	-1.7	16.4	0.2	15.6	--	--	--	70.42
GMSG-108	01/26/99	4:45 PM	28.88	28	-	-0.21	10.9	0.1	15.9	--	--	--	70.43
GMSG-108	02/03/99	4:35 PM	28.13	32	0.02	0	10.6	0.1	16.6	--	--	--	69.83
GMSG-108	02/11/99	4:33 PM	27.99	39	0.05	3.2	11.5	0.1	16.9	--	--	--	69.77
GMSG-108	02/24/99	9:26 AM	28.85	15.1	-	0.01	8.5	0.1	17.4	--	--	--	70.12
GMSG-108	03/12/99	8:38 AM	29.17	19.9	-	0	1.7	0	19.9	--	--	--	70.38

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-108	03/23/99	4:32 PM	28.61	33.1	-	0	2	0	19.2	--	--	--	70.05
GMSG-108	04/07/99	10:15 AM	28.59	45	-	0.75	7	0.1	18.6	--	--	--	69.62
GMSG-108	04/19/99	2:20 PM	28.68	46	-	-0.01	1.3	0	19.4	--	--	--	70.01
GMSG-108	04/29/99	6:19 PM	29.12	64	-	0	1.4	0	14.9	--	--	--	70.4
GMSG-108	05/17/99	1:35 PM	28.48	70	T	-0.47	1.8	0	19.3	--	--	--	69.5
GMSG-108	06/02/99	11:03 AM	28.63	55	-	-0.13	1.1	0	19.2	--	--	--	69.1
GMSG-108	06/15/99	--	--	--	--	-0.12	0.1	0	20.2	--	--	--	--
GMSG-108	06/16/99	--	--	--	--	0.02	0.2	0	19.2	--	--	--	--
GMSG-108	06/17/99	--	--	--	--	0.02	0	0	19.9	--	--	--	--
GMSG-108	06/18/99	--	--	--	--	0.02	0.2	0	20	--	--	--	--
GMSG-108	06/19/99	--	--	--	--	0.01	0.3	0	20.1	--	--	--	--
GMSG-108	06/20/99	--	--	--	--	0.05	0.2	0	19.9	--	--	--	--
GMSG-108	06/21/99	4:26 PM	28.88	79	-	0.02	0.6	0	19.3	--	--	--	--
GMSG-108	06/22/99	2:37 PM	28.68	80.1	-	0.07	0.5	0	19.9	--	--	--	--
GMSG-108	06/23/99	2:15 PM	28.49	72	0.02	-0.02	0.2	0	20.2	--	--	--	--
GMSG-108	06/24/99	11:10 AM	28.59	79	-	-1.58	1.4	0	19.5	--	--	--	--
GMSG-108	06/25/99	11:00 AM	28.67	82.9	-	0.03	0.2	0	20.2	--	--	--	--
GMSG-108	06/26/99	1:30 PM	28.58	87.1	-	0.01	0	0	20.5	--	--	--	--
GMSG-108	06/27/99	11:07 AM	28.51	87.1	-	0.02	0.2	0	20	--	--	--	--
GMSG-108	06/28/99	11:16 AM	28.5	70	-	-0.11	0.2	0	20.3	--	--	--	69.86
GMSG-108	06/29/99	11:25 AM	28.58	64.9	-	-0.28	0.1	0	20.2	--	--	--	--
GMSG-108	06/30/99	11:55 AM	28.58	61	0.07	-0.05	0.3	0	20.2	--	--	--	--
GMSG-108	07/01/99	11:17 AM	28.46	61	-	0.36	1.8	0	19.7	--	--	--	--
GMSG-108	07/02/99	10:51 AM	28.62	75.9	-	-0.73	0	0	20.9	--	--	--	--
GMSG-108	07/03/99	10:58 AM	28.62	68	0.14	0.06	1.4	0	19.3	--	--	--	--
GMSG-108	07/04/99	10:37 AM	28.66	84	-	-0.33	0	0	20.1	--	--	--	--
GMSG-108	07/05/99	9:43 AM	28.66	78.1	-	0	0	0	20.1	--	--	--	--
GMSG-108	07/06/99	10:46 AM	28.68	75.9	-	-0.18	0	0	20.5	--	--	--	--
GMSG-108	07/07/99	10:20 AM	28.73	75.9	-	0	0	0	20.6	--	--	--	--
GMSG-108	07/08/99	10:30 AM	28.78	61	0.03	0	0	0	20.3	--	--	--	--
GMSG-108	07/09/99	11:19 AM	28.47	63	-	2.79	0	0	21.9	--	--	--	--
GMSG-108	07/10/99	1:20 PM	28.92	73	-	-0.02	0.2	0	19.6	--	--	--	--
GMSG-108	07/11/99	9:07 AM	28.95	72	-	0.01	0	0	21.1	--	--	--	--
GMSG-108	07/12/99	10:38 AM	28.89	77	-	0.12	0	0	20.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-108	07/17/99	2:50 PM	28.85	78.1	-	-0.45	0.2	0	20.3	--	--	--	68.7
GMSG-108	08/09/99	10:06 AM	28.71	66	-	0.01	0.1	0.1	19.7	23	23	2	70.79
GMSG-108	09/30/99	10:25 AM	28.47	55	-	-0.14	2.8	0.5	18.7	--	--	--	71
GMSG-108	10/07/99	3:55 PM	28.7	48.9	-	-3.94	0.9	0.3	20	125	95	1	71.3
GMSG-108	10/23/99	4:49 PM	28.91	34	-	-2.82	0	0.1	20.4	3	3	3.75	71.45
GMSG-108	11/06/99	3:51 PM	29.08	46	-	-0.01	0	0.1	20.4	175	25	2	71.64
GMSG-108	03/14/00	5:20 PM	28.67	30	T	0	0	0	19.5	36.51	26.87	0.1	--
GMSG-108	03/30/00	11:30 AM	28.81	46.9	-	0	0.1	0	20.4	5000	431	16.28	71.28
GMSG-108	04/30/00	10:32 AM	28.89	63	-	0	0	0	17.9	2900	2900	-0.45	71.03
GMSG-108	06/03/00	1:21 PM	28.96	65	-	-0.08	0	0	21	98	40	0.61	--
GMSG-108	06/05/00	12:20 PM	28.96	64	-	0.05	0.1	0	10.5	2754	56	-1.2	71.68
GMSG-108	07/19/00	8:14 AM	28.86	54	-	-0.2	0	0.3	20.9	400	225	3.5	--
GMSG-108	09/12/00	10:38 AM	28.66	63	-	4.28	0.8	0.5	17.9	--	--	--	72.13
GMSG-108	09/08/01	10:15 AM	28.39	72	-	0.1	0	0	22.7	5429	500	2.13	71.32
GMSG-108	10/04/01	4:57 PM	28.66	55	-	4.94	0	3	19.4	38	25	5.4	71.48
GMSG-109	07/23/98	5:30 PM	28.7	66.9	-	21	85.9	0	0	--	--	--	--
GMSG-109	07/24/98	4:59 PM	28.85	68	-	112.4	84	0	0	--	--	--	--
GMSG-109	07/25/98	5:59 PM	28.91	71.1	-	>100	60.1	0	0	--	--	--	41.2
GMSG-109	07/26/98	11:28 AM	28.83	77	-	112.7	60.2	0	0	--	--	--	--
GMSG-109	07/27/98	11:12 AM	28.6	75.9	-	113	61.1	0	0	--	--	--	--
GMSG-109	07/28/98	11:10 AM	28.47	64	0.06	113	71	0	0	--	--	--	--
GMSG-109	07/29/98	9:03 AM	28.7	70	-	112.7	72.4	0	0	--	--	--	--
GMSG-109	08/04/98	9:00 AM	28.91	73	-	112.5	71.5	0	0	--	--	--	--
GMSG-109	08/09/98	12:24 PM	28.78	81	-	112.4	66.3	0	0	--	--	--	--
GMSG-109	08/12/98	9:17 AM	29.01	61	-	124	80	0	0	--	--	--	57.98
GMSG-109	08/18/98	5:55 PM	28.99	66.9	-	112	84.2	0	0	--	--	--	56.8
GMSG-109	08/26/98	12:45 PM	28.78	82	-	117	71	0	0.4	--	--	--	--
GMSG-109	08/31/98	4:50 PM	28.78	75	-	--	78	0	0	--	--	--	--
GMSG-109	09/01/98	10:09 AM	28.59	66.9	-	116	--	--	--	--	--	--	--
GMSG-109	09/01/98	10:09 AM	28.59	66.9	-	116	--	--	--	--	--	--	--
GMSG-109	09/01/98	12:21 PM	28.57	71.1	T	116	--	--	--	--	--	--	--
GMSG-109	09/01/98	12:21 PM	28.57	71.1	T	116	--	--	--	--	--	--	--
GMSG-109	09/01/98	2:23 PM	28.51	73	-	117	--	--	--	--	--	--	--
GMSG-109	09/01/98	2:23 PM	28.51	73	-	117	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-109	09/01/98	4:19 PM	28.5	68	-	117	--	--	--	--	--	--	--
GMSG-109	09/01/98	6:16 PM	28.52	66	-	117	--	--	--	--	--	--	--
GMSG-109	09/01/98	6:16 PM	28.52	66	-	117	--	--	--	--	--	--	--
GMSG-109	09/02/98	6:37 AM	28.53	53.1	-	114	--	--	--	--	--	--	--
GMSG-109	09/02/98	6:37 AM	28.53	53.1	-	114	--	--	--	--	--	--	--
GMSG-109	09/02/98	9:14 AM	28.53	60.1	-	115	--	--	--	--	--	--	--
GMSG-109	09/02/98	9:14 AM	28.53	60.1	-	115	--	--	--	--	--	--	--
GMSG-109	09/02/98	11:18 AM	28.54	61	-	114	--	--	--	--	--	--	--
GMSG-109	09/02/98	11:18 AM	28.54	61	-	114	--	--	--	--	--	--	--
GMSG-109	09/02/98	1:18 PM	28.52	63	-	116	--	--	--	--	--	--	--
GMSG-109	09/02/98	1:18 PM	28.52	63	-	116	--	--	--	--	--	--	--
GMSG-109	09/02/98	3:29 PM	28.5	64.9	-	114	--	--	--	--	--	--	--
GMSG-109	09/02/98	3:29 PM	28.5	64.9	-	114	--	--	--	--	--	--	--
GMSG-109	09/02/98	5:23 PM	28.52	64	-	111	--	--	--	--	--	--	--
GMSG-109	09/02/98	5:23 PM	28.52	64	-	111	--	--	--	--	--	--	--
GMSG-109	09/02/98	7:11 PM	28.53	55	-	111	--	--	--	--	--	--	--
GMSG-109	09/02/98	7:11 PM	28.53	55	-	111	--	--	--	--	--	--	--
GMSG-109	09/08/98	2:00 PM	28.85	64	-	110	80.7	0	0	--	--	--	48.8
GMSG-109	09/09/98	7:30 AM	28.96	53.1	-	104	81.7	0	0	--	--	--	--
GMSG-109	09/09/98	9:05 AM	28.96	60.1	-	11	77.4	0	0	--	--	--	--
GMSG-109	09/09/98	10:55 AM	28.93	66.9	-	9	79.4	0	0	--	--	--	--
GMSG-109	09/09/98	1:30 PM	28.87	72	-	9	77	0	0.2	--	--	--	--
GMSG-109	09/09/98	3:05 PM	28.85	73.9	-	30	76.5	0	0	--	--	--	47.2
GMSG-109	09/09/98	4:00 PM	28.84	73.9	-	9	76.5	0	0.2	--	--	--	--
GMSG-109	09/09/98	5:35 PM	28.84	66.9	-	9	77.7	0	0.2	--	--	--	--
GMSG-109	09/09/98	6:30 PM	28.84	61	-	11	79.7	0	0.2	--	--	--	--
GMSG-109	09/09/98	6:44 PM	28.84	61	-	16	--	--	--	--	--	--	--
GMSG-109	09/09/98	6:45 PM	28.84	61	-	22	--	--	--	--	--	--	--
GMSG-109	09/09/98	6:46 PM	28.84	61	-	28	--	--	--	--	--	--	--
GMSG-109	09/09/98	6:47 PM	28.84	61	-	32	--	--	--	--	--	--	--
GMSG-109	09/09/98	6:48 PM	28.84	61	-	36	--	--	--	--	--	--	--
GMSG-109	09/09/98	6:49 PM	28.84	61	-	39	--	--	--	--	--	--	--
GMSG-109	09/09/98	6:50 PM	28.84	61	-	41	--	--	--	--	--	--	--
GMSG-109	09/09/98	6:55 PM	28.84	61	-	48	80	0	0.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-109	09/09/98	7:00 PM	28.84	61	-	49	--	--	--	--	--	--	--
GMSG-109	09/09/98	7:05 PM	28.84	61	-	51	--	--	--	--	--	--	--
GMSG-109	09/09/98	7:10 PM	28.84	61	-	51	--	--	--	--	--	--	--
GMSG-109	09/09/98	7:15 PM	28.84	61	-	51	--	--	--	--	--	--	--
GMSG-109	09/09/98	7:20 PM	28.84	61	-	51	80.5	0	0.1	--	--	--	--
GMSG-109	09/10/98	7:15 AM	28.86	57	-	90.5	78.8	0	0	--	--	--	--
GMSG-109	09/10/98	1:30 PM	28.69	82.9	-	91	77.4	0	0	--	--	--	--
GMSG-109	09/10/98	1:30 PM	28.69	82.9	-	45	77.4	0	0	--	--	--	48.1
GMSG-109	09/10/98	6:30 PM	28.65	75	-	106	81	0	0.1	--	--	--	--
GMSG-109	09/11/98	7:50 AM	28.64	73.9	-	106	80.5	0	0	--	--	--	--
GMSG-109	09/11/98	3:13 PM	28.55	96.1	-	100	77.3	0	0.2	--	--	--	48.1
GMSG-109	09/12/98	1:23 PM	28.72	75.9	-	30	76.8	0	0	--	--	--	49.34
GMSG-109	09/13/98	11:00 AM	28.68	71.1	-	33	76.6	0	0	--	--	--	48.5
GMSG-109	09/22/98	9:43 AM	28.89	53.1	-	20	76.2	0	0	--	--	--	49.25
GMSG-109	09/23/98	5:01 PM	28.76	64	-	25	77.3	0	0	--	--	--	49.65
GMSG-109	09/25/98	10:10 AM	28.52	66.9	-	20	75.8	0	0	--	--	--	48.8
GMSG-109	09/28/98	2:24 PM	28.7	70	-	85	76.6	0	0.2	--	--	--	--
GMSG-109	10/07/98	1:17 PM	28.68	53.1	-	15	76.1	0	0	--	--	--	--
GMSG-109	10/09/98	12:43 PM	28.86	61	-	8.93	76.5	0	0	--	--	--	--
GMSG-109	10/11/98	11:30 AM	28.98	57	-	11.4	76.6	0	0	--	--	--	49.2
GMSG-109	10/14/98	9:15 AM	28.87	39.9	-	14.5	78.1	0	0	--	--	--	49.15
GMSG-109	10/20/98	8:52 AM	28.93	43	-	7.72	77.9	0	0	--	--	--	49.26
GMSG-109	10/23/98	3:01 PM	28.88	70	-	16.66	75	0	0	--	--	--	48.9
GMSG-109	11/18/98	1:27 PM	28.78	35.1	-	16	78.1	0	0	--	--	--	--
GMSG-109	11/21/98	9:27 AM	28.86	23	-	20	78.9	0	0	--	--	--	49.44
GMSG-109	12/01/98	8:33 AM	28.8	36	-	19.06	76.4	0	0	--	--	--	49.53
GMSG-109	12/03/98	12:52 PM	28.38	60	-	25	74.7	0	0	--	--	--	49.4
GMSG-109	12/09/98	7:42 AM	28.94	17	-	30	74.7	0	0	--	--	--	50.31
GMSG-109	12/15/98	8:52 AM	28.76	38	-	13	75.4	0	0	--	--	--	49.15
GMSG-109	12/18/98	2:51 PM	28.32	32	0.01	28	74.9	0	14.7	--	--	--	48.94
GMSG-109	12/20/98	2:12 PM	29.02	19	0.02	15	71.3	0	1.3	--	--	--	--
GMSG-109	12/21/98	1:24 PM	28.74	15	-	21	70.5	0	0	--	--	--	49.68
GMSG-109	12/28/98	8:31 AM	28.74	7	-	16.6	69.8	0	0	--	--	--	49.3
GMSG-109	01/06/99	8:52 AM	28.49	3.9	T	13.11	74	0	0	--	--	--	48.99

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-109	01/14/99	2:40 PM	28.94	7	-	20	76.3	0	0	--	--	--	49.39
GMSG-109	01/21/99	9:39 AM	28.78	21.9	-	14.04	62.7	0	8.5	--	--	--	49.17
GMSG-109	01/26/99	10:00 AM	28.93	17.1	-	55	73	0	0	--	--	--	49.8
GMSG-109	02/03/99	9:03 AM	28.2	28.9	-	32	71.4	0	2.3	--	--	--	48.8
GMSG-109	02/11/99	9:33 AM	28.26	39	-	15	68	0	0.6	--	--	--	48.8
GMSG-109	02/23/99	9:56 AM	29.01	19.9	-	35	71.1	0	0	--	--	--	49.1
GMSG-109	03/11/99	9:16 AM	29.1	21	-	25	51	0	6.9	--	--	--	48.98
GMSG-109	03/23/99	9:32 AM	28.49	42.1	-	39	70.9	0	0	--	--	--	48.63
GMSG-109	04/08/99	9:20 AM	28.68	50	-	17.8	63.3	0	1.6	--	--	--	--
GMSG-109	04/08/99	9:54 AM	28.69	53.1	-	--	--	--	--	--	--	--	48.29
GMSG-109	04/20/99	8:00 AM	28.72	41	-	12.6	56.8	0	3.7	--	--	--	--
GMSG-109	04/29/99	3:40 PM	29.12	69.1	-	11.55	50.3	0	7	--	--	--	49.19
GMSG-109	05/17/99	7:40 AM	28.52	63	-	10.76	48.3	0	3.4	--	--	--	--
GMSG-109	06/03/99	9:02 AM	28.93	60.1	-	12.64	62.6	0	0	--	--	--	48.2
GMSG-109	06/15/99	--	--	--	--	5	39	0	6.2	--	--	--	--
GMSG-109	06/16/99	--	--	--	--	10	64.7	0	0.7	--	--	--	--
GMSG-109	06/17/99	--	--	--	--	12	66.1	0	0	--	--	--	--
GMSG-109	06/18/99	--	--	--	--	14	66.4	0	0	--	--	--	--
GMSG-109	06/19/99	--	--	--	--	32	66.8	0	0	--	--	--	--
GMSG-109	06/20/99	--	--	--	--	6.99	66.6	0	0	--	--	--	--
GMSG-109	06/21/99	4:03 PM	28.88	79	-	19	67.7	0	0	--	--	--	--
GMSG-109	06/22/99	1:35 PM	28.72	77	0.11	12	45.3	0	3.8	--	--	--	--
GMSG-109	06/23/99	1:15 PM	28.48	78.1	T	12	50.7	0	2.2	--	--	--	--
GMSG-109	06/24/99	10:33 AM	28.59	79	-	6.4	51.9	0	2	--	--	--	--
GMSG-109	06/25/99	10:15 AM	28.68	81	-	9.87	43.5	0	4.9	--	--	--	--
GMSG-109	06/26/99	11:50 AM	28.59	84.9	-	21	54.6	0	1.2	--	--	--	--
GMSG-109	06/27/99	10:27 AM	28.52	84.9	-	14	24.9	0	11.8	--	--	--	--
GMSG-109	06/28/99	10:42 AM	28.5	70	-	42	65.5	0	0	--	--	--	49
GMSG-109	06/29/99	10:35 AM	28.58	64.9	-	7	47.4	0	3.3	--	--	--	--
GMSG-109	06/30/99	11:07 AM	28.57	66	-	5.1	41.2	0	4.7	--	--	--	--
GMSG-109	07/01/99	10:23 AM	28.47	60.1	-	10.74	44	0	5.8	--	--	--	--
GMSG-109	07/02/99	10:29 AM	28.62	71.1	-	15.22	68.3	0	0.1	--	--	--	--
GMSG-109	07/03/99	10:23 AM	28.57	66.9	0.14	11.73	31.5	0	8.7	--	--	--	--
GMSG-109	07/04/99	9:54 AM	28.66	82.9	-	6.45	40.4	0	5.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-109	07/05/99	9:10 AM	28.65	79	-	3.93	39.4	0	5.3	--	--	--	--
GMSG-109	07/06/99	9:48 AM	28.66	75	-	13.42	45.3	0	3.5	--	--	--	--
GMSG-109	07/07/99	9:27 AM	28.72	73.9	-	10.52	33.3	0	8.7	--	--	--	--
GMSG-109	07/08/99	10:08 AM	28.78	64	T	26	37.8	0	6	--	--	--	--
GMSG-109	07/09/99	10:56 AM	28.47	63	-	11.18	66.8	0	0.2	--	--	--	--
GMSG-109	07/10/99	12:16 PM	28.92	73	-	32	44.5	0	7	--	--	--	--
GMSG-109	07/11/99	8:48 AM	28.95	72	-	10	55.4	0	2.5	--	--	--	--
GMSG-109	07/12/99	9:53 AM	28.9	77	-	14.2	44.5	0	6.3	--	--	--	--
GMSG-109	07/13/99	12:15 PM	28.68	75	-	3.9	83.6	0	11	--	--	--	--
GMSG-109	07/14/99	8:50 AM	28.6	70	-	27	67.6	0	0	--	--	--	--
GMSG-109	07/15/99	12:45 PM	28.7	84	-	8.3	71.5	0	0	--	--	--	--
GMSG-109	07/16/99	1:00 PM	28.64	89.1	-	3.28	74.5	0	0	--	--	--	--
GMSG-109	07/17/99	11:40 AM	28.85	75.9	-	4.74	33	0	11.6	--	--	--	47.35
GMSG-109	07/18/99	12:40 PM	28.87	75.9	-	13.67	27.2	0	13	--	--	--	--
GMSG-109	07/19/99	9:40 AM	28.85	66.9	-	14.78	38.5	0	9.2	--	--	--	--
GMSG-109	07/20/99	9:30 AM	28.9	73.9	-	5.6	44.9	0	6.4	--	--	--	--
GMSG-109	07/21/99	9:00 AM	28.76	66.9	0.01	11.6	31.5	0	11.2	--	--	--	--
GMSG-109	07/22/99	9:33 AM	28.78	82.9	-	12	68	0	0	--	--	--	--
GMSG-109	07/22/99	2:15 PM	28.78	87.1	-	38	36.2	0	9.8	--	--	--	--
GMSG-109	07/23/99	11:25 AM	28.61	81	-	13	49.1	0	5.5	--	--	--	--
GMSG-109	07/24/99	8:38 AM	28.61	82	-	12.79	46.8	0	5.7	--	--	--	--
GMSG-109	07/25/99	9:33 AM	28.74	81	-	18.8	56.2	0	3.5	--	--	--	--
GMSG-109	07/26/99	8:42 AM	28.64	73	-	20	39.4	0	8.3	--	--	--	--
GMSG-109	07/27/99	10:30 AM	28.75	77	-	20	31.9	0	8.5	--	--	--	--
GMSG-109	07/27/99	1:24 PM	28.72	80.1	-	21	51.1	0	4.6	--	--	--	--
GMSG-109	08/04/99	8:29 AM	28.72	64	-	14.14	50.2	0	5.6	--	--	--	--
GMSG-109	08/08/99	1:10 AM	28.68	54	-	31	41.1	0	8.6	--	--	--	48.5
GMSG-109	08/10/99	10:54 AM	28.45	66.9	-	10	51.6	0	3	--	--	--	--
GMSG-109	08/17/99	3:16 PM	28.81	70	-	5.71	59.2	0	1.9	--	--	--	--
GMSG-109	08/20/99	3:57 PM	28.86	77	-	9.39	65.7	0	0	--	--	--	--
GMSG-109	08/24/99	9:47 AM	28.71	73.9	-	8.8	66.6	0	0	--	--	--	--
GMSG-109	08/31/99	5:30 PM	28.85	70	-	9.85	66.9	0	0	--	--	--	--
GMSG-109	09/03/99	8:23 AM	28.8	69.1	-	12.35	65.9	0	0	--	--	--	--
GMSG-109	09/08/99	4:35 PM	28.48	68	-	14.31	64.7	0	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-109	09/14/99	11:51 AM	28.64	55.9	-	8.7	64.6	0	0	--	--	--	--
GMSG-109	09/21/99	1:42 PM	28.87	69.1	-	10.1	65.5	0	0	--	--	--	--
GMSG-109	09/28/99	10:52 AM	28.9	53.1	-	9.83	66.6	0	0	--	--	--	--
GMSG-109	09/30/99	7:51 AM	28.55	39.9	T	11.8	40.4	0	5.2	--	--	--	48.5
GMSG-109	10/05/99	12:30 PM	28.68	55.9	-	11.5	64.4	0	0	--	--	--	--
GMSG-109	10/07/99	4:35 PM	28.69	50	-	18	35.3	0	6.1	--	--	--	48.6
GMSG-109	10/12/99	11:37 AM	28.62	59	-	10.86	66.5	0	0	--	--	--	--
GMSG-109	10/19/99	9:15 AM	28.8	39	-	6.85	68.7	0	0	--	--	--	--
GMSG-109	10/24/99	8:49 AM	28.88	35.1	-	9.5	61	0	0.7	--	--	--	49
GMSG-109	10/25/99	9:10 AM	28.52	48	-	12.51	56.6	0	1.4	--	--	--	--
GMSG-109	11/03/99	11:52 AM	28.7	33.1	-	11.85	52.2	0	0.9	--	--	--	48.85
GMSG-109	11/07/99	8:54 AM	29.18	34	-	8.87	52.7	0	0.7	--	--	--	49.18
GMSG-109	11/22/99	1:00 PM	28.69	51.1	-	30	39.1	0	4.8	--	--	--	--
GMSG-109	01/25/00	1:55 PM	28.81	15	-	35	69.1	0	0	--	--	--	--
GMSG-109	02/08/00	12:47 PM	28.71	30.9	-	15.5	67.2	0	0	--	--	--	--
GMSG-109	02/15/00	2:49 PM	28.48	23	0.06	17.34	63.6	0	0.8	--	--	--	48.4
GMSG-109	03/14/00	3:51 PM	28.66	33.1	-	22.5	67.7	0	0	--	--	--	48.16
GMSG-109	03/30/00	9:57 AM	28.83	42.1	-	16.5	64.3	0	0	--	--	--	48.91
GMSG-109	04/02/00	12:52 PM	28.48	61	-	25	63.5	0	0	--	--	--	--
GMSG-109	04/27/00	4:07 PM	28.63	70	-	21.5	62.3	0	0	--	--	--	--
GMSG-109	06/03/00	12:25 PM	28.98	65	-	32	62.6	0	0	--	--	--	--
GMSG-109	06/05/00	10:15 AM	28.97	62	-	20	62.8	0	0	--	--	--	49.26
GMSG-109	06/29/00	2:49 PM	28.66	69	-	16.83	61.6	0	0	4.5	4.5	4.5	--
GMSG-109	07/19/00	10:34 AM	28.83	65	-	10	62.1	0	0	--	--	--	48.94
GMSG-109	07/23/00	1:51 PM	28.94	72	T	35	69.7	0	0	--	--	--	--
GMSG-109	08/20/00	12:30 PM	29.05	68	-	12.77	65.3	0	0	--	--	--	--
GMSG-109	09/12/00	11:59 AM	28.66	64	-	2.38	67.9	0	0	--	--	--	48.97
GMSG-109	09/24/00	10:44 AM	28.87	48	-	14.89	63.9	0	0	--	--	--	49.36
GMSG-109	10/21/00	1:46 PM	29	53	-	10.11	61.2	0	0	--	--	--	48.54
GMSG-109	11/18/00	3:30 PM	28.55	22	T	8.2	67.1	0	0	--	--	--	48.7
GMSG-109	12/18/00	12:20 PM	28.72	15	0.01	-1.6	65	0	0	--	--	--	--
GMSG-109	01/09/01	11:50 AM	28.78	26	-	-4.5	67.2	0	0.3	--	--	--	--
GMSG-109	02/08/01	3:21 PM	28.81	25	-	24	68.1	0	0	--	--	--	--
GMSG-109	02/10/01	10:01 AM	29.09	8	-	35	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-109	02/12/01	1:43 PM	28.87	24	T	22	--	--	--	--	--	--	--
GMSG-109	02/13/01	8:49 AM	29.01	22	-	19	66.6	0	0	--	--	--	--
GMSG-109	03/07/01	3:27 PM	28.61	37	-	11.5	65	0	0	--	--	--	--
GMSG-109	04/08/01	10:42 AM	28.56	45	-	25	75.8	0	0	--	--	--	49
GMSG-109	05/05/01	11:13 AM	29.1	60	-	32	67.9	0	0	--	--	--	--
GMSG-109	05/31/01	10:50 AM	28.88	62	-	22	74.3	0	0.1	--	--	--	49.04
GMSG-109	06/28/01	1:53 PM	28.92	87	-	7	66	0	0.7	--	--	--	66.61
GMSG-109	07/19/01	9:37 AM	28.84	77	-	12	70.3	0	0.1	--	--	--	49.29
GMSG-109	08/08/01	12:52 PM	28.71	89	-	17	68.6	0	0.6	--	--	--	47.96
GMSG-109	09/08/01	5:17 PM	28.51	74	-	15	44.7	0	8.1	--	--	--	49.55
GMSG-109	10/04/01	2:20 PM	28.64	58	-	9.46	58.5	0	2.1	--	--	--	49.02
GMSG-109	11/14/01	8:48 AM	28.82	54	-	11.52	66	0	0	--	--	--	49.45
GMSG-109	12/18/01	11:42 AM	28.52	35	-	21	71.5	0	0	--	--	--	49.2
GMSG-109	01/10/02	11:04 AM	28.55	37	-	19	74.5	0	0	--	--	--	49.77
GMSG-109	02/15/02	2:39 PM	28.51	37	-	17	74.5	0	0	--	--	--	49.17
GMSG-109	03/18/02	12:49 PM	28.99	41	-	17	72.4	0	0	--	--	--	49.46
GMSG-109	04/26/02	10:09 AM	29.03	40	-	5.59	74.2	0	0	--	--	--	45.46
GMSG-109	05/22/02	10:34 AM	28.84	66	-	12.9	71.3	0	0	--	--	--	47.51
GMSG-109	06/05/02	10:44 AM	28.77	65	-	10	70.9	0	0	--	--	--	47.39
GMSG-109	07/11/02	3:12 PM	29.04	79	-	7.2	65	0	0.6	--	--	1.3	48.7
GMSG-109	08/10/02	5:55 PM	28.67	78	-	9.7	69.3	0	0	--	--	--	48.45
GMSG-109	10/15/02	10:14 AM	28.7	44	T	3.6	69.2	0	0.3	--	--	--	47.7
GMSG-109	04/14/03	2:56 PM	28.49	84	-	10.4	65.3	0	0.6	--	--	--	48.41
GMSG-109	10/13/03	2:43 PM	28.56	65	-	7.6	65.2	0	0	--	--	--	48.88
GMSG-109	04/02/04	11:30 AM	28.91	52	-	4.8	68.9	0	0.5	--	--	--	48.29
GMSG-109	10/12/04	1:39 PM	28.7	64	-	12	64.5	0	0.4	--	--	--	48.82
GMSG-109	04/05/05	3:33 PM	28.58	73	-	7.8	68.2-68.5	0	0	--	--	--	48.1
GMSG-110	08/14/98	3:47 PM	28.55	72	T	0	0	0	20.8	--	--	--	--
GMSG-110	08/15/98	8:40 AM	28.76	64.9	-	0	0	0	20.8	27	8	5	--
GMSG-110	08/16/98	1:41 PM	28.71	78.1	-	0	0	0	21.8	10	6.5	4	--
GMSG-110	08/17/98	9:30 AM	28.68	73.9	-	0	0	0	20.9	15	6	3.5	--
GMSG-110	08/18/98	6:54 PM	28.98	63	-	0	0	0	21.1	110	40	5	55.24
GMSG-110	08/19/98	9:45 AM	29.01	63	T	0	0	0	20.8	1.2	1.2	1.2	--
GMSG-110	08/24/98	4:13 PM	28.44	78.1	-	0	0	0	21.5	65	35	3	55.05

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-110	08/25/98	5:07 PM	28.64	75.9	-	0	0	0	21.7	2.5	2.5	2.5	55.06
GMSG-110	08/27/98	3:36 PM	28.74	78.1	-	0	0	0	20.8	108	40	2.5	55.24
GMSG-110	08/28/98	3:54 PM	28.63	81	-	0	0	0	21.4	300	125	7	55.05
GMSG-110	08/29/98	2:40 PM	28.67	77	-	0.01	0	0	20.8	19	5	5	55.8
GMSG-110	08/30/98	9:00 AM	28.76	69.1	-	0.04	0	0	20.7	9	2.5	2.25	55.05
GMSG-110	08/31/98	4:10 PM	28.78	75.9	-	0.01	0	0	21.8	6	4	3.5	55.05
GMSG-110	09/08/98	3:00 PM	28.85	63	T	0	0	0	21	80	40	2	55.12
GMSG-110	09/09/98	2:45 PM	28.85	73.9	-	0	0	0	21.7	60	35	6	55.13
GMSG-110	09/10/98	2:35 PM	28.67	82	-	0	0	0	22.2	120	50	9	55.12
GMSG-110	09/11/98	4:04 PM	28.55	95	-	0	0	0	22.4	250	30	5	55.12
GMSG-110	09/12/98	2:18 PM	28.7	80.1	-	0	0	0	21.4	3	3	3	55.12
GMSG-110	09/14/98	4:20 PM	28.57	66	-	0	0	0	21	300	32	3.5	55.12
GMSG-110	09/14/98	6:53 PM	28.6	64.9	-	0	0	0	21	--	--	--	55.73
GMSG-110	09/22/98	8:37 AM	28.89	53.1	-	0	0	0	20.8	125	45	2.5	55.33
GMSG-110	09/25/98	11:05 AM	28.52	66.9	-	0	0	0	21.4	80	30	6	55.19
GMSG-110	10/08/98	3:23 PM	28.99	53.1	-	0	--	--	--	--	--	--	55.2
GMSG-110	10/11/98	12:35 PM	28.96	59	-	0	0	0	20.9	35	25	2	55.21
GMSG-110	10/23/98	4:12 PM	28.87	68	-	0	0	0	21.3	110	37	7	55.11
GMSG-110	11/21/98	10:07 AM	28.85	28.9	-	0	0	0	20	3.5	3	2	55.38
GMSG-110	12/01/98	9:34 AM	28.82	40	-	0	0	0	19.9	--	--	--	55.43
GMSG-110	12/03/98	1:59 PM	28.39	62	-	0	0	0	21.1	40	24	1.5	55.11
GMSG-110	12/09/98	8:44 AM	28.95	23	-	0	0	0	19.7	70	40	1.25	54.38
GMSG-110	12/15/98	10:26 AM	28.79	39	-	0.03	0	0	19.8	50	30	1.5	55.43
GMSG-110	12/19/98	8:54 AM	28.77	22	-	0	0	0	20	--	--	--	54.43
GMSG-110	12/21/98	2:30 PM	28.74	13	-	0.01	0	0	18.5	90	40	1.5	55.31
GMSG-110	12/28/98	9:38 AM	28.74	11	T	0	0	0	16.5	30	25	0.5	55.3
GMSG-110	01/06/99	10:15 AM	28.53	8.1	-	0	0	0	16.9	60	14	<1	55.18
GMSG-110	01/14/99	4:02 PM	28.94	7	-	0	0	0	19	2	1.5	1.5	55.14
GMSG-110	01/21/99	11:18 AM	28.77	24.1	-	0	0	0	20.2	1.25	1	1	55.2
GMSG-110	01/26/99	12:00 PM	28.91	24.1	-	0	0	0	19	1	1	1	55.22
GMSG-110	02/03/99	10:35 AM	28.19	33.1	-	0	0	0	19.8	1.25	<1	<1	54.81
GMSG-110	02/11/99	11:44 AM	28.22	39	0.31	0	0	0	20.3	8	8	8	54.8
GMSG-110	02/23/99	1:10 PM	28.98	25	T	0.01	0	0	19.7	1.25	1.25	1.25	54.94
GMSG-110	03/11/99	11:35 AM	29.09	33.1	-	0	0	0	16.9	1.25	<1	<1	55.06

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-110	03/23/99	11:17 AM	28.47	44.1	-	0	0	0	20.1	3.5	2	1.25	54.71
GMSG-110	04/08/99	12:55 PM	28.66	57.9	-	0	0	0	21.8	8	1.25	1.5	--
GMSG-110	04/08/99	1:04 PM	28.66	57.9	-	--	--	--	--	--	--	--	54.09
GMSG-110	04/20/99	10:54 AM	28.69	50	-	-0.01	0	0	21.7	11	11	11	54.93
GMSG-110	04/29/99	4:49 PM	29.12	66	-	0	0	0	20	2.75	2.3	2	55.18
GMSG-110	05/17/99	9:02 AM	28.5	66	-	0	0	0	20.3	3	2.25	2.25	54.48
GMSG-110	06/03/99	10:15 AM	28.93	63	-	0	0	0	20.3	25	12.5	3	54.41
GMSG-110	07/08/99	9:40 AM	28.78	64	T	0	0	0	21.9	8	8	8	54.28
GMSG-110	07/17/99	7:30 PM	28.89	69.1	-	0	0	0	21.2	3	3	3	53.17
GMSG-110	08/08/99	12:10 PM	28.83	66.9	-	0	0	0	20.2	1600	420	9.5	54.66
GMSG-110	09/30/99	9:14 AM	28.5	45	T	0	0	0	21.1	250	80	1.25	54.71
GMSG-110	10/07/99	5:50 PM	28.67	50	-	0.02	0	0	21	1.25	1.25	2	--
GMSG-110	10/24/99	10:15 AM	28.87	41	-	-0.01	0	0	21	650	175	3	54.92
GMSG-110	11/03/99	1:40 PM	28.68	36	-	0	0	0	20.8	1.25	--	<1	54.73
GMSG-110	11/07/99	10:05 AM	29.16	41	-	-0.02	0	0.1	20.1	22	3	<1	55.07
GMSG-110	02/16/00	8:14 AM	28.9	15.1	-	0	0	0	20	--	--	--	54.81
GMSG-110	03/14/00	11:32 AM	28.7	32	-	0	0	0	20.4	-0.11	-0.2	-0.34	54.11
GMSG-110	03/30/00	8:50 AM	28.82	37	-	0	0	0	20.3	16.48	16.48	16.48	54.77
GMSG-110	04/29/00	2:15 PM	28.94	59	-	0	0	0	19	1.9	-0.08	-0.45	54.61
GMSG-110	06/05/00	11:20 AM	28.96	63	-	0	0	0	20.8	0.35	-0.33	-0.51	55.1
GMSG-110	07/19/00	9:59 AM	28.84	63	-	0	0	0	21.3	400	28	4	--
GMSG-110	11/19/00	9:40 AM	28.47	20	0.01	0.06	0	0	20.2	920	13.87	0.18	54.65
GMSG-110	01/09/01	1:50 PM	28.74	31	-	0.01	0	0	20.1	0.83	0.66	0.83	--
GMSG-110	05/31/01	1:00 PM	28.83	64	-	0	0	0	19.4	0	0	0	54.39
GMSG-110	06/28/01	2:26 PM	28.92	87	-	0	0	0.1	21.4	2300	23.35	0	--
GMSG-110	07/19/01	10:08 AM	28.84	77	-	0	0.7	0.8	19.6	54	16.2	0	54.91
GMSG-110	08/08/01	10:56 AM	28.75	87	-	0	0	0	20.3	120	40	0	54.69
GMSG-110	10/04/01	11:35 AM	28.67	59	-	0.01	0	0	20.5	85.28	85.01	4.8	55.38
GMSG-110	11/14/01	8:40 AM	28.82	54	-	0	0	0	20.8	-0.4	-0.7	-0.7	55.14
GMSG-110	12/18/01	11:29 AM	28.54	32	-	0.01	0	0	21	3.5	3.2	0.31	54.77
GMSG-110	01/10/02	10:44 AM	28.55	37	-	0.1	0	0	20.5	40.1	38.48	0.33	55.14
GMSG-110	02/15/02	2:25 PM	28.51	35	-	0	0	0	20	-1	-1.02	-1.33	54.98
GMSG-110	03/18/02	11:56 AM	28.99	39	-	2.1	1.2	0.1	20.3	--	--	--	55.3
GMSG-110	04/26/02	9:40 AM	29.03	40	-	0	0	0	21.2	31	10.2	0	51.24

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-110	05/22/02	9:53 AM	28.87	62	-	0	0	0	21.3	29	7.61	0	53.39
GMSG-110	07/11/02	2:55 PM	29.04	79	-	0	0	0	21.4	5.88	5.7	-0.26	54.66
GMSG-110	08/10/02	4:52 PM	28.66	80	-	0	0	0	21.6	3.71	2.2	-1.27	54.4
GMSG-111	08/12/98	5:17 PM	28.94	78.1	-	0	0	0	21.3	3.5	3.5	3.5	49.45
GMSG-111	08/14/98	3:40 PM	28.55	72	T	0	0	0	20.6	--	--	--	--
GMSG-111	08/15/98	8:29 AM	28.75	63	-	0	0	0.1	20.7	40	16	4	--
GMSG-111	08/16/98	1:31 PM	28.71	78.1	-	0	0	0	21.8	23	18	5	--
GMSG-111	08/17/98	9:20 AM	28.66	68	-	0	0	0	20.8	27	12	3.5	--
GMSG-111	08/18/98	7:08 PM	28.98	63	-	0	0	0	21.1	57	11	4.5	49.81
GMSG-111	08/19/98	4:23 PM	28.89	73.9	-	0	0	0	21	10	10	2.5	--
GMSG-111	08/24/98	4:21 PM	28.44	78.1	-	0	0	0.1	21.3	13	13	2.25	49.8
GMSG-111	08/25/98	5:13 PM	28.64	75.9	-	0	0	0	21.7	2.25	2.25	2.25	49.6
GMSG-111	08/27/98	3:15 PM	28.76	80.1	-	0	0	0	21	10	10	2.5	49.91
GMSG-111	08/28/98	4:09 PM	28.63	81	-	0.01	0	0	21.8	6	4	5.5	49.54
GMSG-111	08/29/98	2:34 PM	28.67	77	-	0	0	0	20.8	8	4	5	49.6
GMSG-111	08/30/98	8:48 AM	28.76	69.1	-	0.03	0	0	20.6	12	3	2.5	49.71
GMSG-111	08/31/98	4:16 PM	28.78	75.9	-	0.03	0	0	22	4.5	3.5	2.25	49.68
GMSG-111	09/08/98	3:10 PM	28.85	63	T	0	0	0	21.1	12	10	1.5	49.82
GMSG-111	09/09/98	2:55 PM	28.85	73.9	-	0	0	0	21.8	20	13	5	49.83
GMSG-111	09/10/98	2:50 PM	28.67	82	-	0	0	0	22.2	23	20	8	48.61
GMSG-111	09/11/98	4:11 PM	28.55	95	-	0	0	0	22.4	18	12	5	49.59
GMSG-111	09/12/98	2:27 PM	28.7	80.1	-	0	0	0	21.4	15	8	3	49.38
GMSG-111	09/14/98	4:28 PM	28.57	66	-	0	0	0	21	20	15	2.5	49.53
GMSG-111	09/15/98	9:50 AM	28.81	66	-	0	0	0	20.8	2.5	2.5	2.5	49.85
GMSG-111	09/15/98	10:50 AM	28.82	71.1	-	0	0	0	20.7	2.5	2.5	2.5	50.24
GMSG-111	09/22/98	9:31 AM	28.89	53.1	-	0	0	0	20.7	75	60	3	50.02
GMSG-111	09/25/98	11:15 AM	28.52	66.9	-	0	0	0	21.2	12	12	3	49.8
GMSG-111	10/08/98	3:28 PM	28.99	53.1	-	0	--	--	--	--	--	--	49.83
GMSG-111	10/11/98	12:45 PM	28.96	59	-	0.01	0	0	20.9	3	2	2	49.55
GMSG-111	10/23/98	4:20 PM	28.87	68	-	0	0	0	21.2	17	17	6.5	49.47
GMSG-111	11/21/98	10:20 AM	28.85	28.9	-	0	0	0	20.1	70	12.5	1.5	49.69
GMSG-111	12/01/98	9:40 AM	28.82	40	-	0	0	0	19.9	--	--	--	49.71
GMSG-111	12/03/98	2:08 PM	28.39	62	-	0	0	0	21	10	10	1.5	49.41
GMSG-111	12/09/98	8:54 AM	28.95	23	-	0.03	0	0	19.7	125	17	1.25	49.77

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-111	12/15/98	10:40 AM	28.79	40	-	0	0	0	19.8	12.5	10	1.5	49.76
GMSG-111	12/19/98	9:06 AM	28.77	22	-	0	0	0	19.9	--	--	--	49.84
GMSG-111	12/21/98	1:49 PM	28.73	14	-	0	0	0	18	125	25	1.5	49.71
GMSG-111	12/28/98	9:46 AM	28.74	11	T	0	0	0	16.3	--	--	--	49.59
GMSG-111	01/06/99	10:27 AM	28.53	8.1	-	0	0	0	16.6	6.5	5.5	<1	49.92
GMSG-111	01/14/99	3:48 PM	28.94	7	-	0	0	0	19.1	1.75	1.5	1.25	49.62
GMSG-111	01/21/99	11:03 AM	28.77	24.1	-	0	0	0	19.8	2.5	1.5	1	49.56
GMSG-111	01/26/99	11:43 AM	28.91	24.1	-	0	0	0	18	1.25	1.25	1.25	49.6
GMSG-111	02/03/99	10:18 AM	28.19	30.9	-	0	0	0	20	10	1.25	1	49.12
GMSG-111	02/11/99	10:46 AM	28.24	39	0.01	0	0	0	20.7	6	5.5	3.5	49.15
GMSG-111	02/23/99	12:45 PM	28.98	25	T	0.2	0	0	19.6	1.25	1.25	1.25	49.37
GMSG-111	03/11/99	11:22 AM	29.1	30.9	-	-0.05	0	0	16.6	1	1	1	49.37
GMSG-111	03/23/99	11:01 AM	28.47	44.1	-	0.01	0	0	20.2	12	12	2	49.05
GMSG-111	04/08/99	11:25 AM	28.69	55.9	-	-0.05	0	0	21.9	8	<1	1.5	--
GMSG-111	04/08/99	11:40 AM	28.68	57	-	--	--	--	--	--	--	--	48.48
GMSG-111	04/20/99	10:00 AM	28.71	48	-	0	0	0	21.3	2.5	2.5	2.5	49.25
GMSG-111	04/29/99	4:38 PM	29.12	66	-	0	0	0	20	4	3.5	2.25	49.52
GMSG-111	05/17/99	8:44 AM	28.5	66	-	0	0	0	20.1	2.75	2.5	2	48.75
GMSG-111	06/03/99	10:06 AM	28.93	63	-	0	0	0	20.3	40	40	2.5	48.7
GMSG-111	07/08/99	9:08 AM	28.78	64	-	0	0	0	21.8	10	8.5	8	48.68
GMSG-111	07/17/99	7:20 PM	28.87	73.9	-	0	0	0.1	20.9	3	3	3	47.57
GMSG-111	08/08/99	11:54 AM	28.83	66.9	-	0	0	0	20.1	70	37	9	48.96
GMSG-111	09/30/99	8:44 AM	28.5	45	T	0	0	0	21.1	15	10	1.25	49.06
GMSG-111	10/07/99	5:19 PM	28.69	50	-	0.01	0	0.1	20.1	120	13	<1	49.21
GMSG-111	10/24/99	9:41 AM	28.87	41	-	0	0	0.1	20.5	350	35	3.25	49.32
GMSG-111	11/03/99	1:26 PM	28.69	35.1	-	0.02	0	0	20.7	1.5	--	<1	49.1
GMSG-111	11/07/99	9:58 AM	29.16	41	-	-0.02	0	0.1	20.1	35	8	<1	49.47
GMSG-111	02/16/00	7:54 AM	28.9	15.1	-	0.15	0	0	20.4	--	--	--	49.28
GMSG-111	03/14/00	11:45 AM	28.7	32	-	0	0	0	20.2	0.3	0.27	0.24	48.47
GMSG-111	03/30/00	8:41 AM	28.82	37	-	0	0	0	20.3	16.47	16.35	16.47	49.15
GMSG-111	04/29/00	1:57 PM	28.94	59	-	0	0	0	18.8	5	1.7	-0.4	49
GMSG-111	06/05/00	11:10 AM	28.96	63	-	0	0	0	20.7	4	0.33	-0.51	49.48
GMSG-111	07/19/00	9:45 AM	28.84	63	-	0	0	0	21.3	400	20	4	--
GMSG-112	08/12/98	5:00 PM	28.94	78.1	-	0.84	12.8	0	17.4	--	--	--	48.66

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-112	08/14/98	3:30 PM	28.55	72	T	0.45	12	0	16.9	--	--	--	--
GMSG-112	08/15/98	8:17 AM	28.75	63	-	0.45	10.8	0	17.5	--	--	--	--
GMSG-112	08/16/98	1:21 PM	28.76	75.9	-	0.45	10.6	0	18	--	--	--	--
GMSG-112	08/17/98	9:07 AM	28.66	68	-	0.43	8.8	0	18	--	--	--	--
GMSG-112	08/18/98	6:07 PM	28.99	66.9	-	0.44	9.2	0	18.1	--	--	--	49.1
GMSG-112	08/19/98	4:10 PM	28.89	73.9	-	0.09	8.2	0	18.3	--	--	--	--
GMSG-112	08/24/98	4:32 PM	28.44	77	-	0.09	9.4	0	18.2	--	--	--	49.02
GMSG-112	08/25/98	4:32 PM	28.64	75.9	-	0.1	9.1	0	18.5	--	--	--	49
GMSG-112	08/26/98	12:40 PM	28.78	82	-	0.1	7.4	0	16.9	--	--	--	49.22
GMSG-112	08/27/98	3:57 PM	28.74	78.1	-	0.1	9.2	0	18.1	--	--	--	49.1
GMSG-112	08/28/98	4:34 PM	28.64	79	-	0.1	9.6	0	18.2	--	--	4	49.15
GMSG-112	08/29/98	2:23 PM	28.67	75.9	-	0.1	13.3	0	16.2	--	--	--	49.22
GMSG-112	08/30/98	8:36 AM	28.76	69.1	-	0.1	16.1	0	14.7	--	--	--	49.2
GMSG-112	08/31/98	4:45 PM	28.78	75	-	0.18	13.4	0	16.9	--	--	--	49.15
GMSG-112	09/08/98	2:10 PM	28.85	64	-	0.05	8.5	0	18.2	--	--	--	49.37
GMSG-112	09/09/98	7:40 AM	28.96	53.1	-	-0.04	8	0	13.6	--	--	--	--
GMSG-112	09/09/98	2:00 PM	28.87	72	-	0.1	9.2	0	18.2	--	--	--	49.3
GMSG-112	09/09/98	6:25 PM	28.84	66.9	-	0.1	10.8	0	14.9	--	--	--	--
GMSG-112	09/10/98	1:40 PM	28.69	82.9	-	0.1	7.1	0	19.1	--	--	--	48.3
GMSG-112	09/11/98	3:21 PM	28.55	96.1	-	0.07	7.8	0	19.1	--	--	--	49.02
GMSG-112	09/12/98	1:29 PM	28.72	75.9	-	0.08	7.9	0	18.4	--	--	--	49.35
GMSG-112	09/13/98	11:06 AM	28.68	71.1	-	0.02	8	0	18.4	--	--	--	49.21
GMSG-112	09/14/98	2:53 PM	28.57	66.9	-	0.14	8.8	0	18.1	--	--	--	49.03
GMSG-112	09/14/98	3:28 PM	28.57	66.9	-	16.6	54.9	0.1	0	--	--	--	42.14
GMSG-112	09/14/98	7:00 PM	28.6	64.9	-	10.71	--	--	--	--	--	--	43.8
GMSG-112	09/15/98	7:42 AM	28.76	64	-	13.2	57.3	0.4	0	--	--	--	43.4
GMSG-112	09/22/98	8:28 AM	28.89	46	-	13.41	59.1	0.4	0	--	--	--	44
GMSG-112	09/23/98	5:08 PM	28.76	64	-	15.91	59.2	0.3	0	--	--	--	44.5
GMSG-112	09/25/98	10:15 AM	28.52	66.9	-	12.6	59.3	0.4	0	--	--	--	43.3
GMSG-112	09/28/98	2:31 PM	28.69	71.1	-	13.09	59.7	0.3	0	--	--	--	44.9
GMSG-112	10/07/98	1:24 PM	28.68	53.1	-	11.75	61.8	0.4	0	--	--	--	44.78
GMSG-112	10/09/98	12:49 PM	28.86	61	-	11	61.7	0.4	0	--	--	--	44.77
GMSG-112	10/11/98	11:40 AM	28.98	57	-	8.6	62.3	0.4	0	--	--	--	46.3
GMSG-112	10/14/98	9:20 AM	28.87	39.9	-	7.2	63	0.4	0	--	--	--	46.5

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-112	10/20/98	9:00 AM	28.93	43	-	9.7	63.1	0.4	0	--	--	--	46.92
GMSG-112	10/23/98	3:12 PM	28.88	70	-	2.3	61.4	0.3	0	--	--	--	47.25
GMSG-112	11/21/98	9:30 AM	28.85	28.9	-	18.51	61.8	0.4	0	--	--	--	45.9
GMSG-112	12/01/98	8:40 AM	28.8	36	-	40	63.7	0.4	0	--	--	--	46.45
GMSG-112	12/03/98	1:00 PM	28.38	60	-	40	63.9	0.3	0	--	--	--	46.2
GMSG-112	12/09/98	7:51 AM	28.94	17	-	59	64	0.4	0	--	--	--	47.4
GMSG-112	12/15/98	9:02 AM	28.76	38	-	24	64.4	0.4	0	--	--	--	47.3
GMSG-112	12/18/98	3:00 PM	28.32	32	0.01	63	65.3	0.4	14.7	--	--	--	46.05
GMSG-112	12/21/98	1:32 PM	28.73	14	-	40	60.5	0.4	0	--	--	--	47
GMSG-112	12/28/98	8:39 AM	28.74	7	-	40	60.4	0.4	0	--	--	--	46.1
GMSG-112	01/06/99	9:02 AM	28.49	3.9	T	21	64.1	0.4	0	--	--	--	46.85
GMSG-112	01/14/99	2:49 PM	28.94	7	-	20	66.5	0.5	0	--	--	--	47.45
GMSG-112	01/21/99	9:58 AM	28.78	21.9	-	16.37	64.4	0.4	1.9	--	--	--	48.6
GMSG-112	01/26/99	10:14 AM	28.93	17.1	-	20	64.6	0.4	0	--	--	--	51
GMSG-112	02/03/99	9:16 AM	28.2	28.9	-	20	62.6	0.3	1.5	--	--	--	48
GMSG-112	02/11/99	9:45 AM	28.26	39	-	15	62.4	0.3	0	--	--	--	49
GMSG-112	02/23/99	10:29 AM	29.01	19.9	-	108	67.5	0.4	0	--	--	--	--
GMSG-112	03/11/99	9:30 AM	29.11	27	-	--	--	--	--	--	--	--	--
GMSG-112	03/23/99	9:50 AM	28.49	42.1	-	12.93	62.2	0.2	0	--	--	--	48.3
GMSG-112	04/08/99	9:59 AM	28.69	53.1	-	11.2	63.6	0.3	0	--	--	--	--
GMSG-112	04/08/99	10:15 AM	28.69	53.1	-	--	--	--	--	--	--	--	47.6
GMSG-112	04/20/99	8:30 AM	28.71	46	-	14	64.6	0.3	0	--	--	--	48.2
GMSG-112	04/29/99	3:54 PM	29.12	69.1	-	14.51	63.4	0.1	2	--	--	--	48.65
GMSG-112	05/17/99	7:50 AM	28.52	63	-	6.23	57.3	0.1	0	--	--	--	48.22
GMSG-112	06/03/99	9:12 AM	28.93	60.1	-	5.42	58.1	0	0	--	--	--	48.2
GMSG-112	06/15/99	--	--	--	--	0.87	55.2	0	0	--	--	--	--
GMSG-112	06/16/99	--	--	--	--	0.84	56.2	0.1	0.3	--	--	--	--
GMSG-112	06/17/99	--	--	--	--	1.74	58.1	0.1	0	--	--	--	--
GMSG-112	06/18/99	--	--	--	--	2.23	58.8	0.1	0	--	--	--	--
GMSG-112	06/19/99	--	--	--	--	9.7	58.5	0.1	0	--	--	--	--
GMSG-112	06/20/99	--	--	--	--	1.76	59.5	0.1	0	--	--	--	--
GMSG-112	06/21/99	4:12 PM	28.88	79	-	1	60.4	0	0	--	--	--	--
GMSG-112	06/22/99	1:58 PM	28.72	77	0.11	2.3	58.3	0.1	0	--	--	--	--
GMSG-112	06/23/99	1:37 PM	28.49	72	0.02	0.42	58.7	0.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-112	06/24/99	10:56 AM	28.59	79	-	0.19	60	0.1	0	--	--	--	--
GMSG-112	06/25/99	10:43 AM	28.67	82.9	-	0.5	58.4	0.1	0	--	--	--	--
GMSG-112	06/26/99	12:17 PM	28.59	84.9	-	0.5	59.7	0.1	0	--	--	--	--
GMSG-112	06/27/99	10:53 AM	28.51	87.1	-	0.35	59	0.1	0.9	--	--	--	--
GMSG-112	06/28/99	10:54 AM	28.5	70	-	1.8	57.8	0.1	0	--	--	--	--
GMSG-112	06/28/99	10:54 AM	28.5	70	-	1.8	57.8	0.1	0.01	--	--	--	48.33
GMSG-112	06/29/99	11:04 AM	28.58	64.9	-	2.1	60.7	0.2	0	--	--	--	--
GMSG-112	06/30/99	11:20 AM	28.57	66	-	2.7	58	0.1	0	--	--	--	--
GMSG-112	07/01/99	10:37 AM	28.46	61	-	2.88	56.1	0.1	0	--	--	--	--
GMSG-112	07/02/99	10:43 AM	28.62	75.9	-	0.8	62.4	0.1	0	--	--	--	--
GMSG-112	07/03/99	10:33 AM	28.62	68	0.14	4.37	58.2	0.2	0	--	--	--	--
GMSG-112	07/04/99	10:10 AM	28.66	82.9	-	1.02	58.2	0.1	0	--	--	--	--
GMSG-112	07/05/99	9:19 AM	28.65	79	-	0.48	57.5	0.1	0	--	--	--	--
GMSG-112	07/06/99	9:56 AM	28.66	75	-	0.35	53.5	0.1	0	--	--	--	--
GMSG-112	07/07/99	9:44 AM	28.73	75.9	-	0.64	46.6	0.1	1.6	--	--	--	--
GMSG-112	07/08/99	10:23 AM	28.78	64	T	1.1	42.8	0	2.6	--	--	--	--
GMSG-112	07/09/99	11:05 AM	28.47	63	-	0.74	60	0.1	0.1	--	--	--	--
GMSG-112	07/10/99	12:45 PM	28.92	73	-	1.56	44.9	0.1	4.2	--	--	--	--
GMSG-112	07/11/99	9:00 AM	28.95	72	-	2.25	29.9	0	10.1	--	--	--	--
GMSG-112	07/12/99	10:25 AM	28.9	77	-	1.72	44	0	4.5	--	--	--	--
GMSG-112	07/13/99	12:31 PM	28.68	75	-	2.75	47.5	0	4.3	--	--	--	--
GMSG-112	07/14/99	8:59 AM	28.6	70	-	3.7	47.9	0	3.6	--	--	--	--
GMSG-112	07/15/99	1:00 PM	28.7	84	-	1.93	50.1	0	4	--	--	--	--
GMSG-112	07/16/99	1:25 PM	28.64	89.1	-	0.22	26.8	0	12.2	--	--	--	--
GMSG-112	07/17/99	12:05 PM	28.85	75.9	-	0.55	28.9	0	12	--	--	--	47.6
GMSG-112	07/18/99	10:30 AM	28.9	73	-	1.25	29	0	11.1	--	--	--	--
GMSG-112	07/19/99	10:20 AM	28.85	66.9	-	2.55	31.5	0	10	--	--	--	--
GMSG-112	07/20/99	9:56 AM	28.9	73.9	-	0.1	33.6	0	9.4	--	--	--	--
GMSG-112	07/21/99	9:23 AM	28.76	66.9	0.01	0.3	36.9	0	6.8	--	--	--	--
GMSG-112	07/22/99	2:36 PM	28.76	87.1	-	0.17	43.6	0	5.5	--	--	--	--
GMSG-112	07/23/99	11:50 AM	28.61	84.9	-	0.4	46.2	0	4.4	--	--	--	--
GMSG-112	07/24/99	8:51 AM	28.61	82	-	0.36	46.1	0	4.6	--	--	--	--
GMSG-112	07/25/99	9:44 AM	28.74	81	-	0.5	46.3	0	4.5	--	--	--	--
GMSG-112	07/26/99	8:59 AM	28.64	73	-	0.52	46.7	0	4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-112	07/27/99	1:40 PM	28.71	80.1	-	0.96	52.1	0	2.4	--	--	--	--
GMSG-112	08/08/99	11:22 AM	28.84	64.9	-	1	53.7	0	2.7	--	--	--	48.6
GMSG-112	09/30/99	8:03 AM	28.55	39.9	T	0.95	41.2	0.1	3.2	--	--	--	48.85
GMSG-112	10/07/99	4:48 PM	28.69	50	-	1.39	46.2	0.1	0	--	--	--	48.9
GMSG-112	10/24/99	9:05 AM	28.88	35.1	-	9.8	62.3	0.2	0	--	--	--	49
GMSG-112	11/03/99	12:12 PM	28.7	33.1	-	3.62	61.8	0.1	0	--	--	--	49.7
GMSG-112	11/07/99	9:13 AM	29.18	34	-	4.5	67.2	0.3	0	--	--	--	49.4
GMSG-112	02/15/00	3:25 PM	28.48	23	0.06	0.75	61	0.1	0	--	--	--	48.45
GMSG-112	03/14/00	4:06 PM	28.66	33.1	-	1.77	60.8	0	0	--	--	--	48.1
GMSG-112	03/30/00	10:08 AM	28.83	42.1	-	1.28	59	0.1	0	--	--	--	48.51
GMSG-112	04/29/00	1:06 PM	28.93	56	-	0.45	57.5	0	0	--	--	--	48.57
GMSG-112	06/05/00	10:27 AM	28.97	62	-	0.65	57.9	0.1	0	--	--	--	48.98
GMSG-112	07/19/00	10:46 AM	28.83	65	-	1.95	59.4	0	0	--	--	--	48.67
GMSG-112	09/12/00	12:07 PM	28.66	64	-	2.27	62.3	0	0	--	--	--	86.61
GMSG-112	10/15/02	10:22 AM	28.7	44	T	2.1	64.5	0	0	--	--	--	48.09
GMSG-112	04/14/03	3:04 PM	28.49	84	-	0.1	60.1	0	0.6	--	--	--	48.35
GMSG-112	10/13/03	2:50 PM	28.56	65	-	4.2	58.6	0	0	--	--	--	48.88
GMSG-112	04/02/04	11:10 AM	28.93	49	-	0.3	63.6	0.1	0	--	--	--	48.02
GMSG-112	10/12/04	1:47 PM	28.7	64	-	2.7	58.7	0	0.4	--	--	--	48.62
GMSG-112	04/05/05	3:43 PM	28.58	73	-	0.5	62.9-63.1	0	0	--	--	--	47.92
GMSG-113	08/24/98	4:41 PM	28.44	77	-	-0.38	0	0	21.4	12	12	2	51.23
GMSG-113	08/25/98	4:40 PM	28.64	75.9	-	0	0	0	21.7	1	1	1	61.37
GMSG-113	08/26/98	12:47 PM	28.78	82	-	0	--	0	19.9	23	23	4	61.53
GMSG-113	08/27/98	3:44 PM	28.74	78.1	-	0.02	0	0	21.5	20	5	2.5	61.25
GMSG-113	08/28/98	4:25 PM	28.63	81	-	0.12	0	0	21.7	4	4	4	61.15
GMSG-113	08/29/98	2:12 PM	28.67	75.9	-	0	0	0	20.5	3.5	3.5	3.5	61.11
GMSG-113	08/30/98	8:19 AM	28.75	63	-	0.04	0	0.1	20.5	2.5	2.5	3.75	60.95
GMSG-113	08/31/98	4:25 PM	28.78	75.9	-	0.03	0	0	21.5	2	1.75	2	61.27
GMSG-113	09/08/98	2:20 PM	28.85	64	-	0	0	0	20.7	35	35	2	61.52
GMSG-113	09/09/98	2:10 PM	28.87	72	-	0.03	0	0	21.3	4	4	4	61.45
GMSG-113	09/10/98	1:50 PM	28.69	82.9	-	0.03	0	0	21.6	17	17	8.5	61.22
GMSG-113	09/11/98	3:30 PM	28.55	95	-	0	0	0	22.2	28	24	6	61.17
GMSG-113	09/12/98	1:38 PM	28.7	80.1	-	0.06	0	0	21.2	11	11	3	61
GMSG-113	09/14/98	3:03 PM	28.57	66.9	-	0.04	0	0	20.9	3	3	3	61.07

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-113	09/15/98	8:25 AM	28.76	64	-	0	0	0	20.6	8	8	2.5	61.22
GMSG-113	09/15/98	9:30 AM	28.81	66	-	0	0	0	20.8	3	3	3	63.21
GMSG-113	09/22/98	8:55 AM	28.89	53.1	-	0	0	0	20.6	9.5	9.5	2.5	61.24
GMSG-113	09/25/98	10:25 AM	28.52	66.9	-	0	0	0	20.7	55	55	3	61.73
GMSG-113	10/08/98	3:12 PM	28.99	53.1	-	0	--	--	--	--	--	--	62.2
GMSG-113	10/11/98	12:00 PM	28.98	57	-	0.01	0	0	20.6	20	20	2	61.72
GMSG-113	10/23/98	3:21 PM	28.88	70	-	0	0	0	20.9	70	70	12	61.44
GMSG-113	11/21/98	9:52 AM	28.85	28.9	-	0	0	0	19.8	4	4	1.5	61.98
GMSG-113	12/01/98	8:47 AM	28.8	36	-	-3.3	0	0.6	19.1	--	--	--	60.85
GMSG-113	12/03/98	1:07 PM	28.38	60	-	0	0	0.2	20.5	25	25	1.5	50.81
GMSG-113	12/09/98	7:58 AM	28.94	17	-	0	0	0	20.1	70	70	1.5	61.71
GMSG-113	12/15/98	9:11 AM	28.76	38	-	0.03	0	0.2	19.4	10	<1	4.5	60.73
GMSG-113	12/18/98	3:12 PM	28.32	32	0.01	0	0	0	32.1	65	65	2	60.78
GMSG-113	12/21/98	1:40 PM	28.73	14	-	0.19	0	0.2	20.7	25	25	1.5	61.05
GMSG-113	12/28/98	9:07 AM	28.74	7	-	-0.04	0	0.2	16.3	15	12	1.5	61.31
GMSG-113	01/06/99	9:12 AM	28.49	3.9	T	0	0	0	16.9	300	17	<1	61.28
GMSG-113	01/14/99	2:58 PM	28.94	7	-	0	0	0	19.3	16	16	2	61.3
GMSG-113	01/21/99	10:13 AM	28.78	21.9	-	0	0	0	21	45	45	1.5	61.19
GMSG-113	01/26/99	10:31 AM	28.93	19.9	-	0	0	0	18.9	35	35	1.25	51.2
GMSG-113	02/03/99	9:31 AM	28.19	30.9	-	0.01	0	0	20.7	25	20	1	60.61
GMSG-113	02/11/99	9:59 AM	28.26	39	-	0	0	0	22.6	33	27	3	60.2
GMSG-113	02/23/99	10:40 AM	29.01	23	T	-3.4	0	0.1	19.5	22	22	1.25	60.45
GMSG-113	03/11/99	9:52 AM	29.11	27	-	-2.18	0	0.1	18	5.3	4.5	<1	59.35
GMSG-113	03/23/99	10:02 AM	28.49	42.1	-	3.64	0	0	20.1	65	65	3	60.48
GMSG-113	04/08/99	10:22 AM	28.69	53.1	-	0	0	0	25	3	1.25	1.75	--
GMSG-113	04/08/99	10:43 AM	28.69	55.9	-	--	--	--	--	--	--	--	61.08
GMSG-113	04/20/99	8:45 AM	28.71	46	-	0	0	0	20.9	130	130	2.5	60.92
GMSG-113	04/29/99	4:04 PM	29.12	69.1	-	0	0	0	17.4	50	35	2.75	51.12
GMSG-113	05/17/99	8:00 AM	28.52	63	-	0	0	0.1	19.8	45	41	2.5	60.58
GMSG-113	06/03/99	9:39 AM	28.93	63	-	0.01	0	0.4	19.4	9	7	2.5	61.1
GMSG-113	06/20/99	11:35 AM	28.99	75.9	-	--	--	--	--	4	4	4	--
GMSG-113	07/08/99	8:15 AM	28.79	61	-	0	0	0.9	20.7	--	1.25	1.25	59.9
GMSG-113	07/17/99	7:00 PM	28.87	73.9	-	-0.02	0	0.9	19.5	10	5	3	52.95
GMSG-113	08/08/99	11:27 AM	28.84	64.9	-	0	0	1.9	18.3	610	610	8.5	60.83

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-113	09/30/99	8:12 AM	28.55	39.9	T	0	0	0.6	20.5	60	60	1.75	60.07
GMSG-113	10/07/99	4:55 PM	28.69	50	-	0.01	0	1	19.8	95	95	<1	61.1
GMSG-113	10/24/99	9:14 AM	28.88	35.1	-	0.08	0	1.5	19.2	1400	250	4.5	61.5
GMSG-113	11/03/99	12:25 PM	28.7	33.1	-	0.01	0	0.4	19.9	40	40	<1	61.34
GMSG-113	11/07/99	9:30 AM	29.16	41	-	0.02	0	0.2	20	65	65	<1	61.89
GMSG-113	02/16/00	11:00 AM	28.97	16	T	-0.08	0	0.1	19.7	80	30	7	--
GMSG-113	03/14/00	2:14 PM	28.67	33.1	-	-0.08	0	0.4	19.1	1.53	0.34	-0.24	50.14
GMSG-113	03/30/00	10:18 AM	28.83	42.1	-	0	0	0	20.5	112	38.88	16.56	62.2
GMSG-113	04/29/00	1:19 PM	28.93	56	-	0	0	0.2	18.1	-0.24	-0.29	-0.28	60.94
GMSG-113	06/05/00	10:35 AM	28.96	63	-	0	0	0	20.6	190	14.3	-0.69	61.8
GMSG-113	07/19/00	10:54 AM	28.83	65	-	0	0	0	21.5	100	50	3.75	61.52
GMSG-113	09/12/00	12:39 PM	28.68	64	-	0	0	0.3	19.4	18	5.5	3.5	61.39
GMSG-116	08/26/98	2:04 PM	28.77	82.9	-	12.5	72.5	0	0.4	--	--	--	--
GMSG-116	09/08/98	3:20 PM	28.85	63	T	12.1	87	0	0	--	--	--	71.42
GMSG-116	09/09/98	3:15 PM	28.85	73.9	-	5.34	71.9	0	2.8	--	--	--	71.35
GMSG-116	09/10/98	3:00 PM	28.67	82	-	4.69	72.5	0	3.7	--	--	--	71.32
GMSG-116	09/11/98	4:37 PM	28.55	93	-	2.98	60	0	6	--	--	--	70.99
GMSG-116	09/12/98	2:37 PM	28.69	78.1	-	3.62	61	0	5.4	--	--	--	71.18
GMSG-116	09/13/98	11:30 AM	28.66	71.1	-	4.47	66.7	0	3.8	--	--	--	71.25
GMSG-116	09/14/98	4:43 PM	28.58	66.9	-	3.3	67	0	3.7	--	--	--	71.17
GMSG-116	09/22/98	1:35 PM	28.87	59	-	2.67	53	0	8	--	--	--	71.28
GMSG-116	09/23/98	5:44 PM	28.75	61	-	2.84	52.5	0	7.8	--	--	--	71.05
GMSG-116	09/25/98	11:30 AM	28.52	69.1	-	2.85	55.2	0	6.9	--	--	--	70.89
GMSG-116	09/25/98	6:17 PM	28.55	69.1	-	52	86.8	0.4	0	--	--	--	--
GMSG-116	09/28/98	3:35 PM	28.68	71.1	-	55	87.3	0.9	0	--	--	--	--
GMSG-116	10/07/98	1:52 PM	28.71	51.1	-	60	89.3	1.5	0	--	--	--	--
GMSG-116	10/09/98	1:31 PM	28.84	61	-	55	87.7	1.1	0	--	--	--	--
GMSG-116	10/11/98	1:00 PM	28.96	59	-	55	88.3	1.4	0	--	--	--	76.3
GMSG-116	10/12/98	12:00 AM	28.72	45	-	--	--	--	--	--	--	--	--
GMSG-116	10/14/98	9:50 AM	28.86	41	-	60	90.5	1.8	0	--	--	--	76.7
GMSG-116	10/20/98	9:39 AM	28.93	44.1	-	58	92.5	1.8	0	--	--	--	76.65
GMSG-116	10/23/98	4:32 PM	28.88	64	-	60	87.6	1.6	0	--	--	--	76.66
GMSG-116	11/21/98	10:39 AM	28.85	33.1	-	60	96.7	2.1	0	--	--	--	76.7
GMSG-116	12/01/98	9:55 AM	28.82	40	-	60	94.4	2.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-116	12/03/98	2:21 PM	28.39	62	-	65	90.9	1.9	0	--	--	--	--
GMSG-116	12/09/98	9:32 AM	28.96	29	-	55	96.7	2.3	0	--	--	--	--
GMSG-116	12/15/98	11:00 AM	28.79	40	-	60	94.9	2	0	--	--	--	76.7
GMSG-116	12/19/98	9:24 AM	28.77	22	-	64	95.2	1.9	0	--	--	--	76.6
GMSG-116	12/21/98	3:30 PM	28.75	11	-	60	90.2	2.5	0.2	--	--	--	--
GMSG-116	12/28/98	10:51 AM	28.71	15	T	64	88.5	2.5	0	--	--	--	77.65
GMSG-116	01/06/99	1:07 PM	28.58	8.1	T	41	95.1	2.1	0	--	--	--	75
GMSG-116	01/15/99	12:55 PM	28.53	15.1	T	60	97.3	2.2	0	--	--	--	--
GMSG-116	01/21/99	1:39 PM	28.77	25	-	60	95.7	2.4	1.6	--	--	--	--
GMSG-116	01/26/99	1:42 PM	28.89	28	-	55	96.5	2.1	0.3	--	--	--	--
GMSG-116	02/03/99	12:26 PM	28.15	35.1	-	32	91.7	2.2	0	--	--	--	75.8
GMSG-116	02/11/99	1:40 PM	28.1	41	0.02	61	92	2.2	0	--	--	--	--
GMSG-116	02/23/99	2:06 PM	28.98	25	T	60	96.2	2.7	0	--	--	--	--
GMSG-116	03/11/99	1:32 PM	29.07	36	-	60	93.5	2.9	0.4	--	--	--	--
GMSG-116	03/23/99	1:21 PM	28.46	46.9	-	68	94.5	2.1	0	--	--	--	--
GMSG-116	04/07/99	1:15 PM	28.49	55	T	15.93	95.6	2.6	0	--	--	--	--
GMSG-116	04/20/99	1:00 PM	28.65	52	-	65	97.2	2.4	0	--	--	--	76.6
GMSG-116	04/30/99	8:05 AM	29.18	55	-	55	93.9	2.3	0	--	--	--	76.45
GMSG-116	05/17/99	1:47 PM	28.48	70	T	72	90	2.2	0	--	--	--	76.67
GMSG-116	06/02/99	3:22 PM	28.68	60.1	-	73	91.1	2.2	0	--	--	--	--
GMSG-116	06/15/99	--	--	--	--	70	91.1	2.2	0	--	--	--	--
GMSG-116	06/16/99	--	--	--	--	66	88	2.5	0	--	--	--	--
GMSG-116	06/17/99	--	--	--	--	65	90.9	2.2	0	--	--	--	--
GMSG-116	06/18/99	--	--	--	--	65	91.7	2.2	0	--	--	--	--
GMSG-116	06/19/99	--	--	--	--	62	91.1	2.2	0	--	--	--	--
GMSG-116	06/20/99	--	--	--	--	62	91	2.2	0	--	--	--	--
GMSG-116	06/21/99	5:00 PM	28.87	78.1	-	62	91.9	2.3	0.1	--	--	--	--
GMSG-116	06/22/99	3:13 PM	28.68	80.1	-	62	90.9	2.2	0	--	--	--	--
GMSG-116	06/23/99	3:26 PM	28.47	69.1	0.22	65	91.4	1.9	0	--	--	--	--
GMSG-116	06/24/99	1:05 PM	28.59	82	-	63	91.3	2.3	0	--	--	--	--
GMSG-116	06/25/99	12:03 PM	28.67	84	-	60	88.8	2.1	0	--	--	--	--
GMSG-116	06/26/99	2:38 PM	28.56	87.1	-	62	90.5	2.2	0	--	--	--	--
GMSG-116	06/27/99	12:15 PM	28.48	88	-	62	90.7	2.2	0	--	--	--	--
GMSG-116	06/28/99	12:56 PM	28.45	66.9	T	59	90.1	2.3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-116	06/29/99	12:58 PM	28.57	69.1	-	59	93.7	2.4	0	--	--	--	--
GMSG-116	06/30/99	2:33 PM	28.57	63	-	60	92.7	2.5	0	--	--	--	--
GMSG-116	07/01/99	1:02 PM	28.44	63	T	60	82.5	2.4	0	--	--	--	--
GMSG-116	07/02/99	1:01 PM	28.63	75.9	-	60	90.1	2.3	0	--	--	--	--
GMSG-116	07/03/99	12:35 PM	28.62	69.1	0.06	58	90.1	2.4	0	--	--	--	--
GMSG-116	07/04/99	12:15 PM	28.66	84.9	-	60	88.9	2.2	0	--	--	--	--
GMSG-116	07/05/99	10:34 AM	28.6	72	0.01	60	88.7	2.2	0	--	--	--	--
GMSG-116	07/06/99	11:40 AM	28.67	78.1	-	60	89.1	2.1	0	--	--	--	--
GMSG-116	07/07/99	11:16 AM	28.74	77	-	60	89.7	2.2	0	--	--	--	--
GMSG-116	07/08/99	11:41 AM	28.74	60.1	0.05	61	91.2	2.2	0	--	--	--	--
GMSG-116	07/09/99	1:28 PM	28.5	63	T	65	92.1	2	0.1	--	--	--	--
GMSG-116	07/10/99	3:00 PM	28.91	73	-	60	108.3	2.2	0	--	--	--	--
GMSG-116	07/11/99	9:50 AM	28.95	75.9	-	61	92.4	1.9	0	--	--	--	--
GMSG-116	07/12/99	11:23 AM	28.89	77	-	61	96.1	2.1	0	--	--	--	--
GMSG-116	07/13/99	1:54 PM	28.68	73.9	-	52	95.2	1.9	0	--	--	--	--
GMSG-116	07/14/99	9:19 AM	28.6	70	-	14	91.6	0.9	0	--	--	--	--
GMSG-116	07/15/99	4:50 PM	28.67	84.9	-	46	96.9	1.9	0	--	--	--	--
GMSG-116	07/16/99	1:40 PM	28.68	73	T	43	99	1.9	0	--	--	--	--
GMSG-116	07/17/99	12:30 PM	28.86	77	-	41	99.5	1.8	0	--	--	--	--
GMSG-116	07/18/99	11:00 AM	28.9	73	-	54	97	2.2	0	--	--	--	--
GMSG-116	07/19/99	10:40 AM	28.85	70	-	46	94.1	1.9	0	--	--	--	--
GMSG-116	07/20/99	10:15 AM	28.9	73.9	-	45	95.5	2.2	0	--	--	--	--
GMSG-116	07/21/99	9:45 AM	28.76	66.9	0.03	45	92.3	2	0	--	--	--	--
GMSG-116	07/22/99	3:16 PM	28.76	87.1	-	46	90.6	2	0	--	--	--	--
GMSG-116	07/23/99	12:53 PM	28.61	86	-	48	96	2.2	0	--	--	--	--
GMSG-116	07/24/99	9:24 AM	28.61	82	-	49	94.7	2.2	0	--	--	--	--
GMSG-116	07/25/99	10:18 AM	28.74	81	-	54	95.3	2.2	0	--	--	--	--
GMSG-116	07/26/99	9:31 AM	28.62	75.9	-	54	93.6	2.2	0	--	--	--	--
GMSG-116	07/27/99	2:05 PM	28.71	80.1	-	54	95.4	2.3	0	--	--	--	--
GMSG-116	08/09/99	7:35 AM	28.73	57.9	-	75	109.7	2.3	0	--	--	--	--
GMSG-116	09/28/99	3:49 PM	28.92	54	-	75	106.5	2.2	0	--	--	--	76.7
GMSG-116	09/30/99	10:59 AM	28.43	59	-	80	84.6	2.2	0	--	--	--	--
GMSG-116	10/06/99	7:32 AM	29.03	34	-	72	90.3	2.5	0	--	--	--	--
GMSG-116	10/07/99	1:32 PM	28.76	46	0.09	46	85.4	2.3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-116	10/08/99	2:01 PM	28.53	57	-	46	88.8	2.3	0	--	--	--	--
GMSG-116	10/11/99	1:52 PM	29.04	60.1	-	49	91.4	2.1	0	--	--	--	--
GMSG-116	10/21/99	1:55 PM	28.28	61	-	65	99.2	2.6	0	--	--	--	--
GMSG-116	10/23/99	2:20 PM	28.86	36	T	5.9	99.9	2.4	0	--	--	--	--
GMSG-116	11/04/99	11:07 AM	28.68	48	-	45	93.3	2.3	0	--	--	--	--
GMSG-116	11/06/99	1:21 PM	29.08	46.9	-	50	107.6	2.6	0	--	--	--	--
GMSG-116	01/31/00	3:05 PM	28.46	26	T	58	100.4	2.7	0	--	--	--	--
GMSG-116	02/06/00	10:45 AM	28.85	26.1	T	52	99.3	2.8	0	--	--	--	--
GMSG-116	02/07/00	8:12 AM	28.96	12.9	-	51	96.2	2.7	0	--	--	--	--
GMSG-116	02/14/00	3:28 PM	28.62	25	-	55	94	2.7	0	--	--	--	--
GMSG-116	02/15/00	8:48 AM	28.69	14	-	46	101.7	2.8	0.5	--	--	--	--
GMSG-116	02/17/00	7:50 AM	29.16	-11	-	46	101	2.8	0	--	--	--	--
GMSG-116	02/18/00	9:05 AM	28.92	7	-	45	102.4	2.6	0	--	--	--	--
GMSG-116	02/22/00	3:22 PM	28.61	48.9	-	50	94.6	2.5	0	--	--	--	--
GMSG-116	02/23/00	9:55 AM	28.79	35.1	T	45	101.8	2.7	0	--	--	--	--
GMSG-116	02/24/00	5:09 PM	28.66	42.1	-	--	--	--	--	--	--	--	--
GMSG-116	03/14/00	11:14 AM	28.71	30.9	-	80	98	2.8	0	--	--	--	--
GMSG-116	03/14/00	12:10 PM	28.7	32	-	59	100.1	2.7	0	--	--	--	--
GMSG-116	03/14/00	1:05 PM	28.69	32	-	59	102	2.7	0	--	--	--	--
GMSG-116	03/14/00	5:34 PM	28.69	28.9	0.01	35	100.5	2.4	0	--	--	--	--
GMSG-116	03/14/00	5:38 PM	28.69	28.9	0.01	35	100.5	2.4	0	--	--	--	--
GMSG-116	03/15/00	4:40 PM	28.73	27	T	40	100.6	2.6	0	--	--	--	--
GMSG-116	03/17/00	9:53 AM	29.22	21.9	-	6.05	95.2	2.5	0	--	--	--	--
GMSG-116	03/19/00	10:34 AM	28.86	30.9	-	40	96.3	2.5	0	--	--	--	--
GMSG-116	03/29/00	9:57 AM	28.66	34	-	40	93.5	2.4	0	--	--	--	--
GMSG-116	03/30/00	3:40 PM	28.77	54	-	39	91.8	2.4	0	--	--	--	--
GMSG-116	04/04/00	9:28 AM	28.54	30	T	44	99.7	2.8	0	--	--	--	--
GMSG-116	04/29/00	3:13 PM	28.94	59	-	50	88.6	2.6	0	--	--	--	--
GMSG-116	06/05/00	1:28 PM	28.95	65	-	30	88.1	2.6	0	--	--	--	--
GMSG-116	06/06/00	10:39 AM	28.91	-	-	41	90.1	2.7	0	--	--	--	--
GMSG-116	06/28/00	4:20 PM	28.64	56	0.06	40	88.6	2.6	0	--	--	--	--
GMSG-116	07/19/00	1:45 PM	28.77	69	-	48	89.2	2.6	0	--	--	--	--
GMSG-116	07/23/00	8:22 AM	29	57	-	42	109.6	3	0	--	--	--	--
GMSG-116	08/28/00	2:53 PM	28.67	74	-	45	96.01	2.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-116	09/11/00	10:30 AM	28.48	72	-	--	98.7	2.7	0	--	--	--	--
GMSG-116	09/11/00	2:40 PM	28.4	74	-	50	--	--	--	--	--	--	--
GMSG-116	09/12/00	10:30 AM	28.66	63	-	50	98.7	2.7	0	--	--	--	--
GMSG-116	10/24/00	4:20 PM	29.06	58	-	35	92.4	2.7	0	--	--	--	--
GMSG-116	11/22/00	9:02 AM	28.93	16	-	28	99.2	2.7	0	--	--	--	--
GMSG-116	12/04/00	3:20 PM	28.58	31	-	10.45	95.5	2.6	0	--	--	--	--
GMSG-116	01/10/01	9:07 AM	28.61	30	-	2.5	97.5	2.4	0.3	--	--	--	--
GMSG-116	02/21/01	10:04 AM	29.22	3	-	28	98.4	2.4	0	--	--	--	--
GMSG-116	03/20/01	10:15 AM	29.03	40	-	4	95.1	2.2	0	--	--	--	--
GMSG-116	04/19/01	9:13 AM	28.77	52	-	54	103.5	2.2	0	--	--	--	--
GMSG-116	04/21/01	9:18 AM	28.42	48	-	--	--	--	--	--	--	--	--
GMSG-116	05/15/01	9:35 AM	28.51	55	-	38	106.7	2.1	0	--	--	--	--
GMSG-116	06/13/01	3:35 PM	28.54	81	-	50	103.5	1.7	0.1	--	--	--	--
GMSG-116	07/12/01	4:00 PM	28.86	78	-	15	95.6	1.7	0.3	--	--	--	--
GMSG-116	08/10/01	9:22 AM	28.86	66	-	8	106	1.7	0.1	--	--	--	--
GMSG-116	09/08/01	5:20 PM	28.51	74	-	5.05	95.6	1.5	0	--	--	--	--
GMSG-116	10/07/01	12:02 PM	29.01	51	-	1.1	102.7	1.7	0	--	--	--	--
GMSG-116	11/14/01	10:40 AM	28.79	57	-	47	101	1.4	0	--	--	--	--
GMSG-116	12/19/01	9:04 AM	28.51	29	T	54	110.2	1.3	0	--	--	--	--
GMSG-116	01/11/02	9:37 AM	28.65	30	-	6	114	1.4	0	--	--	--	--
GMSG-116	02/16/02	2:45 PM	28.61	32	-	0	57.6	0.2	7.2	--	--	--	--
GMSG-116	03/14/02	10:30 AM	28.87	27	-	0	101.9	0.1	0	--	--	--	--
GMSG-116	04/19/02	10:21 AM	28.89	41	-	-0.98	107	0.1	0	--	--	--	--
GMSG-116	05/17/02	10:39 AM	28.99	45	-	-0.02	105.8	0.1	0	--	--	--	--
GMSG-116	06/03/02	10:51 AM	28.82	50	-	0	69.1	0.3	3.6	--	--	--	--
GMSG-116	07/12/02	3:10 PM	28.83	83	-	0	22.2	0.4	15.3	--	--	--	--
GMSG-116	08/14/02	5:30 PM	28.56	72	-	0	40.7	1.6	7	--	--	--	--
GMSG-116	09/23/02	11:05 AM	28.87	52	-	0	83.3	0.1	0	--	--	--	--
GMSG-116	10/11/02	2:10 PM	28.84	70	-	0	91.5	0	0	--	--	--	--
GMSG-116	11/15/02	12:18 PM	28.99	28	T	0	95.2	0.1	0	--	--	--	--
GMSG-116	12/05/02	1:03 PM	28.78	20	-	0	77.2	0.4	2.1	--	--	--	--
GMSG-116	01/03/03	11:25 AM	28.82	23	-	0.1	25.5	0.2	13.5	--	--	--	--
GMSG-116	02/11/03	1:11 PM	28.2	11	-	0	52.3	0	9.5	--	--	--	--
GMSG-116	03/05/03	1:00 PM	28.75	11	T	0.1	17.5	0	16	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-116	03/06/03	12:57 PM	28.74	21	-	0.1	51.7	0.3	7.3	--	--	--	--
GMSG-116	04/14/03	11:20 AM	28.58	77	-	0	69	1.2	2.2	--	--	--	--
GMSG-116	05/07/03	11:12 AM	28.77	60	-	0	53.5	0.5	6.3	--	--	--	--
GMSG-116	06/02/03	10:49 AM	28.79	70	-	0	70.5	0	4.2	--	--	--	--
GMSG-116	07/16/03	10:48 AM	28.86	79	-	0	1.4	0.2	19.7	1.01%	450	0.5	--
GMSG-116	08/07/03	11:49 AM	28.87	68	-	0	0.2	0	19.7	--	--	--	--
GMSG-116	09/26/03	12:07 PM	28.42	53	-	0	2.4	0.5	18.4	--	--	--	--
GMSG-116	10/13/03	11:25 AM	28.58	62	-	0	1.3	0.3	19.1	2600	220	0	--
GMSG-116	11/11/03	11:44 AM	28.48	45	-	0.2	89.6	0	3.6	--	--	--	--
GMSG-116	12/17/03	10:22 AM	28.58	24	T	0.1	8.7	0.2	17.5	--	--	--	--
GMSG-116	01/21/04	4:45 PM	28.39	16	T	0	28.3	0.7	11	--	--	--	--
GMSG-116	02/04/04	11:14 AM	29.16	11	-	0	12.9	0.4	15.8	--	--	--	--
GMSG-116	03/02/04	11:17 AM	28.72	37	-	0	14.2	0.8	14.9	--	--	--	--
GMSG-116	04/02/04	9:50 AM	28.95	47	-	0	28.2	0.2	7.9	--	--	--	--
GMSG-116	05/28/04	12:26 PM	28.72	58	-	0	1.8	0.6	19.3	--	--	--	--
GMSG-116	06/29/04	11:44 AM	28.81	77	-	0	3.2	1	18.4	--	--	--	--
GMSG-116	07/22/04	12:55 PM	28.72	68	-	-0.01	0	0	20	5257	439	0.67	--
GMSG-116	08/12/04	10:19 AM	28.81	61	-	0.002	0	0	20.2	--	--	--	--
GMSG-116	09/17/04	8:42 AM	28.91	53	-	0	0.2	1.6	18.3	6722	230	-0.7	--
GMSG-116	10/13/04	11:23 AM	28.49	61	-	0	30.4	0	13.7	--	--	--	--
GMSG-116	11/23/04	9:17 AM	28.52	41	-	0.1	3.8	0.4	19.4	26400	17800	-3.2	--
GMSG-116	01/07/05	8:51 AM	28.76	5	-	2.6	23.3	2.1	9.5	--	--	--	--
GMSG-116	01/19/05	12:06 PM	28.77	17	T	0	2.3	0.3	18.3	1568	1130	0.56	--
GMSG-116	02/08/05	12:59 PM	28.98	21	-	0	2.9	0.4	18	--	--	--	70.29
GMSG-116	03/16/05	11:21 AM	28.81	24	T	0	1	0.2	18.8	--	--	--	--
GMSG-116	04/04/05	10:27 AM	28.8	52	-	0	24.8	0.5	12.5	--	--	--	--
GMSG-116	04/04/05	10:31 AM	28.8	56	-	-3.5	4.8	0	18.9	--	--	--	--
GMSG-116	04/04/05	11:00 AM	28.8	56	-	-4.2	0.8	0	19.8	--	--	--	69.75
GMSG-116	05/09/05	3:08 PM	28.46	74	T	0	1.6	0	19.5	--	--	--	--
GMSG-116	05/11/05	10:15 AM	29.03	44	-	--	--	--	--	--	--	--	70
GMSG-116	06/09/05	8:55 AM	28.65	77	-	0	0	0.1	19.6	--	--	--	--
GMSG-116	07/01/05	2:05 PM	28.71	64	-	0	0	0	19.7	--	--	--	70
GMSG-116	08/11/05	12:34 PM	28.81	71	-	0	0.4	0.1	19.5	--	--	--	70.03
GMSG-116	09/08/05	3:20 PM	28.9	69.98	-	-1.3	8.6	0.5	16.2	--	--	--	70.24

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-116	10/19/05	1:15 PM	28.81	52	-	0.5	15.6	0.8	15.2	--	--	--	--
GMSG-116	10/21/05	1:20 PM	28.85	48	-	--	--	--	--	--	--	--	70.3
GMSG-116	11/04/05	11:40 AM	28.46	44	-	0	42.3	1.3	0.6	--	--	--	69.86
GMSG-116	12/05/05	12:00 PM	28.74	9	-	0	36	0.5	10.4	--	--	--	70.8
GMSG-116	01/31/06	1:51 PM	28.6	32	-	-0.9	61.2	1	3.8	--	--	--	69.96
GMSG-116	02/20/06	11:15 AM	28.6	18	-	0	63.5	0.1	6	--	--	--	70.45
GMSG-116	03/09/06	2:27 PM	28.14	38	-	0.1	32.6	0.4	10.6	--	--	--	69.98
GMSG-116	04/12/06	4:31 PM	28.7	66	-	0	3.8	0	18.3	--	--	--	70.28
GMSG-116	05/17/06	2:37 PM	28.38	62	-	0	0	0	19.4	--	--	--	70.22
GMSG-116	06/06/06	11:55 AM	28.59	66	0.25	0	0	0.1	18.8	--	--	--	70.13
GMSG-116	07/26/06	1:48 PM	28.49	84	-	0	4.7	0.1	16.8	--	--	--	70.49
GMSG-116	08/16/06	1:07 PM	28.97	81	-	0	0.2	0.2	18.8	--	--	--	70.71
GMSG-116	09/18/06	1:54 PM	28.39	57	-	0	0	0.2	20	--	--	--	70.3
GMSG-116	10/23/06	2:35 PM	28.73	33	T	0	0	0	20.4	--	--	--	71.04
GMSG-116	11/14/06	10:31 AM	28.7	36	-	0	0	0.1	20.1	--	--	--	71.34
GMSG-116	12/21/06	10:36 AM	29.05	29	-	0	66.7	0.6	5.9	--	--	--	70.96
GMSG-116	01/19/07	11:31 AM	28.82	15	T	0	0	0.1	20.5	--	--	--	70.99
GMSG-116	02/08/07	10:35 AM	28.83	10	-	0	0	0.1	20.4	--	--	--	70.94
GMSG-116	03/12/07	12:05 PM	28.73	43	-	0	0	0	20.3	--	--	--	71.04
GMSG-116	04/19/07	3:00 PM	28.92	66	-	0	6.5	0.6	17.3	--	--	--	--
GMSG-116	05/29/07	10:57 AM	28.88	79	-	0	0.1	0.3	19	--	--	--	71.21
GMSG-116	06/13/07	11:37 AM	28.95	84	-	0	0.1	0.2	18.8	--	--	--	71.42
GMSG-116	07/16/07	10:36 AM	29.99	74	-	0	23.1	0.3	13.5	--	--	--	71.41
GMSG-116	08/30/07	10:43 AM	30.26	70	-	0	10.5	0.8	15.5	--	--	--	71.1
GMSG-116	09/20/07	11:41 AM	30.23	61	-	0	8.2	0.9	15.9	--	--	--	71.28
GMSG-116	10/17/07	11:05 AM	29.9	56	-	0	11.3	1.2	14.7	--	--	--	70.4
GMSG-116	11/21/07	11:54 AM	30.14	33	T	0	87.6	0.2	0	--	--	--	71.87
GMSG-116	12/27/07	12:47 PM	29.97	26	-	0	12.8	0.1	17.3	--	--	--	71.28
GMSG-117	09/08/98	3:40 PM	28.86	64	-	69	91.5	1.7	0	--	--	--	80.9
GMSG-117	09/09/98	3:25 PM	28.85	73.9	-	70	89	1.6	0	--	--	--	81
GMSG-117	09/10/98	3:10 PM	28.67	82	-	70	87.5	1.5	0.1	--	--	--	80.1
GMSG-117	09/11/98	4:24 PM	28.55	95	-	72	85.4	1.4	0.2	--	--	--	79.9
GMSG-117	09/12/98	2:48 PM	28.69	78.1	-	70	87.4	1.5	0	--	--	--	78.96
GMSG-117	09/13/98	11:37 AM	28.66	71.1	-	70	89	1.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-117	09/14/98	4:49 PM	28.58	66.9	-	70	90.5	1.7	0	--	--	--	--
GMSG-117	09/22/98	1:45 PM	28.87	59	-	66	88.1	1.7	0	--	--	--	--
GMSG-117	09/23/98	5:57 PM	28.75	61	-	68	89.2	1.8	0	--	--	--	--
GMSG-117	09/25/98	11:35 AM	28.52	69.1	-	70	88.3	1.7	0	--	--	--	78.27
GMSG-117	09/28/98	3:42 PM	28.68	71.1	-	67	88.1	1.7	0	--	--	--	--
GMSG-117	10/07/98	1:58 PM	28.71	51.1	-	67	90	1.9	0	--	--	--	--
GMSG-117	10/09/98	1:39 PM	28.84	61	-	65	88.3	1.8	0	--	--	--	--
GMSG-117	10/11/98	1:10 PM	28.96	59	-	65	89	1.8	0	--	--	--	78.85
GMSG-117	10/12/98	12:00 AM	28.72	45	-	--	--	--	--	--	--	--	--
GMSG-117	10/14/98	9:55 AM	28.86	41	-	56	91	2	0	--	--	--	79.8
GMSG-117	10/20/98	9:30 AM	28.93	44.1	-	64	93	2	0	--	--	--	79.3
GMSG-117	10/23/98	4:43 PM	28.88	64	-	65	88.1	1.8	0	--	--	--	78.53
GMSG-117	11/21/98	11:50 AM	28.82	36	-	65	93	2.2	0	--	--	--	--
GMSG-117	12/01/98	10:01 AM	28.82	40	-	65	94.8	2.1	0	--	--	--	80.4
GMSG-117	12/03/98	2:29 PM	28.39	62	-	75	91.4	2	0	--	--	--	--
GMSG-117	12/09/98	9:40 AM	28.96	29	-	65	97.4	2.3	0	--	--	--	--
GMSG-117	12/15/98	11:22 AM	28.79	40	-	68	95.3	2.1	0	--	--	--	79.2
GMSG-117	12/19/98	9:53 AM	28.81	22	-	67	96.6	2.1	0	--	--	--	79.62
GMSG-117	12/21/98	3:37 PM	28.75	11	-	67	91.1	2.4	0.1	--	--	--	79.7
GMSG-117	12/29/98	8:29 AM	28.53	15	T	72	86.3	2.1	4.4	--	--	--	80.55
GMSG-117	01/06/99	1:17 PM	28.58	8.1	T	72	97.1	2.1	0	--	--	--	78.6
GMSG-117	01/15/99	1:04 PM	28.53	15.1	T	75	98.4	2.3	0	--	--	--	79
GMSG-117	01/21/99	1:50 PM	28.77	25	-	68	96.4	2.1	0.8	--	--	--	--
GMSG-117	01/26/99	1:54 PM	28.89	28	-	66	96.7	2	0	--	--	--	79.7
GMSG-117	02/03/99	12:58 PM	28.15	33.1	T	76	94.1	2	0	--	--	--	--
GMSG-117	02/11/99	1:50 PM	28.1	41	0.02	75	93	2	2	--	--	--	--
GMSG-117	02/23/99	2:42 PM	28.97	25	T	50	96.8	2.1	0	--	--	--	--
GMSG-117	03/11/99	2:11 PM	29.07	36	-	15	93.4	1.9	0	--	--	--	--
GMSG-117	03/23/99	1:34 PM	28.48	45	-	74	92.9	1.8	4.6	--	--	--	78.6
GMSG-117	04/07/99	1:28 PM	28.49	55	T	17.43	96.3	1.9	0	--	--	--	76.8
GMSG-117	04/20/99	1:30 PM	28.63	53.1	-	71	96.7	1.9	0	--	--	--	77.7
GMSG-117	04/30/99	8:15 AM	29.18	55	-	64	93.9	1.8	0	--	--	--	78.49
GMSG-117	05/17/99	2:11 PM	28.48	70	T	79	90.8	1.7	0	--	--	--	78.1
GMSG-117	06/02/99	3:28 PM	28.68	60.1	-	80	90.9	1.6	0	--	--	--	79.6

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-117	06/15/99	--	--	--	--	75	92.4	1.7	0	--	--	--	--
GMSG-117	06/16/99	--	--	--	--	63	87.5	2	0	--	--	--	--
GMSG-117	06/17/99	--	--	--	--	58	90.9	2	0	--	--	--	--
GMSG-117	06/18/99	--	--	--	--	55	91.1	2.2	0	--	--	--	--
GMSG-117	06/19/99	--	--	--	--	55	91.8	2.2	0	--	--	--	--
GMSG-117	06/20/99	--	--	--	--	55	91.2	2.2	0	--	--	--	--
GMSG-117	06/21/99	5:20 PM	28.87	78.1	-	57	90.9	2.3	0.1	--	--	--	--
GMSG-117	06/22/99	3:25 PM	28.68	80.1	-	60	90.9	2.4	0	--	--	--	--
GMSG-117	06/23/99	3:40 PM	28.47	69.1	T	62	91.9	2.5	0	--	--	--	--
GMSG-117	06/24/99	1:25 PM	28.59	82	-	59	92.1	2.4	0	--	--	--	--
GMSG-117	06/25/99	12:15 PM	28.67	84	-	60	89	2.3	0	--	--	--	--
GMSG-117	06/26/99	2:52 PM	28.56	87.1	-	58	90.6	2.4	0	--	--	--	--
GMSG-117	06/27/99	12:31 PM	28.51	79	-	59	89.6	2.4	0	--	--	--	--
GMSG-117	06/28/99	1:08 PM	28.45	66.9	T	60	89.6	2.6	0	--	--	--	--
GMSG-117	06/29/99	1:11 PM	28.57	69.1	-	58	95.2	2.7	0	--	--	--	--
GMSG-117	06/30/99	2:44 PM	28.57	63	-	56	93.2	2.8	0	--	--	--	--
GMSG-117	07/01/99	1:15 PM	28.44	63	T	50	82.3	2.7	0	--	--	--	--
GMSG-117	07/02/99	1:23 PM	28.63	75.9	-	52	89.2	2.6	0	--	--	--	--
GMSG-117	07/03/99	12:52 PM	28.62	69.1	0.06	53	89.4	2.6	0	--	--	--	--
GMSG-117	07/04/99	12:27 PM	28.66	84.9	-	55	89.2	2.6	0	--	--	--	--
GMSG-117	07/05/99	10:43 AM	28.6	72	0.01	50	87.8	2.6	0	--	--	--	--
GMSG-117	07/06/99	11:52 AM	28.67	78.1	-	55	89.5	2.6	0	--	--	--	--
GMSG-117	07/07/99	11:25 AM	28.74	77	-	50	89.1	2.7	0	--	--	--	--
GMSG-117	07/08/99	11:53 AM	28.74	60.1	0.05	54	89.6	2.7	0	--	--	--	--
GMSG-117	07/09/99	1:40 PM	28.52	64	-	59	91.6	2.6	0.2	--	--	--	--
GMSG-117	07/10/99	3:15 PM	28.91	73	-	56	96	2.6	0	--	--	--	--
GMSG-117	07/11/99	9:59 AM	28.95	75.9	-	54	93.1	2.7	0	--	--	--	--
GMSG-117	07/12/99	11:35 AM	28.87	75.9	-	56	93.5	2.8	0	--	--	--	--
GMSG-117	07/17/99	4:50 PM	28.85	78.1	-	67	102	2.7	0	--	--	--	78.8
GMSG-117	08/09/99	7:41 AM	28.73	57.9	-	75	109.7	2.8	0	--	--	--	77.9
GMSG-117	09/28/99	4:21 PM	28.92	54	-	75	104.4	2.8	0	--	--	--	79
GMSG-117	09/30/99	11:04 AM	28.43	59	-	82	85.1	2.6	0	--	--	--	--
GMSG-117	10/05/99	3:06 PM	28.7	54	-	80	89.3	2.8	0	--	--	--	78.2
GMSG-117	10/07/99	1:12 PM	28.81	45	0.02	67	86.6	3.6	0	--	--	--	77.5

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-117	10/08/99	1:50 PM	28.53	57	-	65	89.9	2.9	0	--	--	--	78.1
GMSG-117	10/09/99	11:33 AM	28.75	68	-	64	92.8	2.8	0	--	--	--	78.1
GMSG-117	10/23/99	2:12 PM	28.86	36	T	72	101.3	2.9	0	--	--	--	--
GMSG-117	11/04/99	11:00 AM	28.68	48	-	78	97.5	2.6	0	--	--	--	--
GMSG-117	11/04/99	1:34 PM	28.63	55.9	-	--	--	--	--	--	--	--	--
GMSG-117	11/04/99	3:26 PM	28.62	54	-	63	94.1	2.6	0	--	--	--	--
GMSG-117	11/04/99	4:46 PM	28.61	48	-	64	99	2.8	0	--	--	--	--
GMSG-117	11/05/99	10:33 AM	28.72	53.1	-	65	93	2.6	0	--	--	--	--
GMSG-117	11/06/99	1:14 PM	29.08	46.9	-	59	108.8	3.2	0	--	--	--	--
GMSG-117	11/07/99	8:04 AM	29.16	27	-	56	109.8	3.4	0	--	--	--	--
GMSG-117	12/29/99	1:15 PM	27.94	31	-	60	98.6	3.5	0	--	--	--	--
GMSG-117	01/02/00	7:00 AM	28.47	25	0.07	--	--	--	--	--	--	--	--
GMSG-117	01/29/00	1:50 PM	29.18	29	-	67	98.4	2.8	0	--	--	--	--
GMSG-117	01/31/00	2:50 PM	28.46	26	T	64	99	2.9	0	--	--	--	--
GMSG-117	02/04/00	2:57 PM	28.89	23	-	6.4	94.1	2.8	0	--	--	--	--
GMSG-117	02/06/00	10:20 AM	28.89	19	-	56	98.2	2.9	0	--	--	--	--
GMSG-117	02/06/00	1:45 PM	28.68	33.1	T	--	--	--	--	--	--	--	--
GMSG-117	02/15/00	9:10 AM	28.69	14	-	70	103.3	3	0.1	--	--	--	--
GMSG-117	02/22/00	3:09 PM	28.61	48.9	-	75	95.5	2.9	0	--	--	--	--
GMSG-117	03/16/00	1:15 PM	28.96	26.1	-	77	97.6	2.7	0	--	--	--	--
GMSG-117	03/27/00	1:27 PM	27.91	45	-	87	94	2.6	0	--	--	--	--
GMSG-117	03/27/00	5:41 PM	28	37.9	-	75	95.4	2.7	0	--	--	--	--
GMSG-117	03/28/00	9:15 AM	28.29	34	T	73	95	2.7	0	--	--	--	--
GMSG-117	03/29/00	10:07 AM	28.66	34	-	65	94.7	2.8	0	--	--	--	--
GMSG-117	03/30/00	3:21 PM	28.78	53.1	-	64	92.7	2.7	0	--	--	--	--
GMSG-117	04/04/00	9:14 AM	28.54	30	T	63	99.9	3	0	--	--	--	--
GMSG-117	04/05/00	7:42 AM	28.51	32	-	--	--	--	--	--	--	--	--
GMSG-117	04/29/00	3:20 PM	28.94	59	-	75	88.5	2.6	0	--	--	--	--
GMSG-117	05/11/00	4:27 PM	28.31	54	0.01	77	94.5	2.7	0	--	--	--	--
GMSG-117	06/06/00	11:29 AM	28.91	-	-	51	90.6	2.9	0	--	--	--	--
GMSG-117	06/28/00	4:27 PM	28.64	56	0.06	50	88.8	3	0	--	--	--	--
GMSG-117	07/19/00	1:36 PM	28.77	69	-	45	89.4	2.9	0	--	--	--	--
GMSG-117	07/23/00	8:14 AM	29	57	-	46	109.3	3.4	0	--	--	--	--
GMSG-117	08/28/00	2:33 PM	28.67	74	-	32	96.3	3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-117	09/11/00	10:15 AM	28.48	69	-	--	99.3	3.2	0	--	--	--	--
GMSG-117	09/11/00	2:45 PM	28.4	74	-	54	--	--	--	--	--	--	--
GMSG-117	09/12/00	10:15 AM	28.65	61	-	54	99.3	3.2	0	--	--	--	--
GMSG-117	10/24/00	3:45 PM	29.06	58	-	50	89.4	3.2	0	--	--	--	--
GMSG-117	11/22/00	8:47 AM	28.93	16	-	46	97.9	3.4	0	--	--	--	--
GMSG-117	12/04/00	3:12 PM	28.58	31	-	54	97.3	3.5	0	--	--	--	--
GMSG-117	01/10/01	8:42 AM	28.61	30	-	54	98.7	3.3	1.3	--	--	--	--
GMSG-117	02/21/01	10:20 AM	29.22	3	-	46	98.7	3.3	0	--	--	--	--
GMSG-117	03/20/01	10:00 AM	29.03	40	-	48	96.2	3	0	--	--	--	--
GMSG-117	04/19/01	9:00 AM	28.77	52	-	60	104.3	3.1	0	--	--	--	--
GMSG-117	04/21/01	11:33 AM	28.32	67	T	--	--	--	--	--	--	--	--
GMSG-117	05/15/01	9:22 AM	28.51	54	-	32	106	2.9	0	--	--	--	--
GMSG-117	06/13/01	3:15 PM	28.53	79	-	60	104.7	2.9	0.1	--	--	--	--
GMSG-117	07/12/01	3:52 PM	28.86	78	-	52	96.9	2.9	0.5	--	--	--	--
GMSG-117	08/10/01	10:07 AM	28.87	68	-	51	106.9	2.9	0	--	--	--	--
GMSG-117	09/08/01	5:05 PM	28.51	74	-	53	97.6	2.9	0	--	--	--	--
GMSG-117	10/07/01	11:50 AM	29.01	51	-	49	104.3	3.1	0	--	--	--	--
GMSG-117	11/14/01	10:27 AM	28.8	55	-	51	101.4	3	0	--	--	--	--
GMSG-117	12/19/01	9:23 AM	28.51	29	T	52	110.5	2.9	0	--	--	--	--
GMSG-117	01/11/02	9:50 AM	28.65	30	-	50	116	3	0	--	--	--	--
GMSG-117	02/16/02	2:35 PM	28.61	32	-	50	118.4	3.2	0	--	--	--	--
GMSG-117	03/14/02	1:17 PM	28.81	28	-	51	115.4	3	0	--	--	--	--
GMSG-117	04/19/02	9:56 AM	28.89	41	-	68	114.5	3	0	--	--	--	--
GMSG-117	05/17/02	10:27 AM	29.02	42	-	75	112.8	2.8	0	--	--	--	--
GMSG-117	06/03/02	10:00 AM	28.81	50	-	68	106.4	2.9	0	--	--	--	--
GMSG-117	07/12/02	3:28 PM	28.83	83	-	60	107.5	2.8	0	--	--	--	--
GMSG-117	08/14/02	4:10 PM	28.57	76	-	60.2	102.4	2.7	0	--	--	--	--
GMSG-117	09/23/02	11:27 AM	28.87	52	-	52	91.4	2.7	0	--	--	--	--
GMSG-117	10/11/02	2:00 PM	28.84	70	-	54.3	102.4	2.7	0	--	--	--	--
GMSG-117	11/15/02	12:04 PM	28.99	28	T	58.2	115.9	2.9	0	--	--	--	--
GMSG-117	12/05/02	12:48 PM	28.78	20	-	58.6	117.5	2.9	0	--	--	--	--
GMSG-117	01/03/03	11:53 AM	28.78	26	-	56.6	122	2.9	0	--	--	--	--
GMSG-117	02/11/03	1:24 PM	28.2	11	-	62.8	111.6	3	0	--	--	--	--
GMSG-117	03/05/03	1:12 PM	28.75	11	T	58.9	101.4	3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-117	04/14/03	1:32 PM	28.51	83	-	61.6	97.1	2.6	0.1	--	--	--	--
GMSG-117	05/07/03	10:50 AM	28.77	60	-	66.9	95	2.6	0	--	--	--	--
GMSG-117	06/02/03	11:20 AM	28.79	70	-	66.2	95.3	2.5	0.1	--	--	--	--
GMSG-117	07/16/03	10:23 AM	28.85	76	-	56.6	90.3	2.6	0	--	--	--	--
GMSG-117	08/07/03	10:39 AM	28.85	69	-	55.7	93.5	2.6	0	--	--	--	--
GMSG-117	09/26/03	12:22 PM	28.42	53	-	60.6	92.2	2.7	0	--	--	--	--
GMSG-117	10/13/03	11:11 AM	28.58	62	-	56.8	93.3	2.7	0	--	--	--	--
GMSG-117	11/11/03	11:50 AM	28.48	45	-	58.9	104.7	2.8	0	--	--	--	--
GMSG-117	12/17/03	10:34 AM	28.57	25	-	55.5	107.7	3	0	--	--	--	--
GMSG-117	01/21/04	4:55 PM	28.39	16	T	63	97.8	3.1	0	--	--	--	--
GMSG-117	02/04/04	11:37 AM	29.15	17	-	52.1	100.8	3.1	0	--	--	--	--
GMSG-117	03/02/04	11:35 AM	28.75	37	-	57.3	102.2	2.9	0	--	--	--	--
GMSG-117	04/02/04	9:40 AM	28.95	47	-	58.7	95.9	2.7	0.1	--	--	--	--
GMSG-117	05/28/04	11:30 AM	28.72	58	-	70.9	94.2	2.4	0	--	--	--	--
GMSG-117	06/29/04	12:03 PM	28.81	77	-	65.7	94.9	2.4	0	--	--	--	--
GMSG-117	07/22/04	1:21 PM	28.72	68	-	62.8	97.7	2.3	0.2	--	--	--	--
GMSG-117	08/12/04	10:16 AM	28.81	61	-	61.6	89.2	2.5	0.5	--	--	--	--
GMSG-117	09/17/04	2:54 PM	28.85	66	-	52.5	90.6	2.5	0.4	--	--	--	--
GMSG-117	10/13/04	11:10 AM	28.49	61	-	58.4	95.1	2.5	0	--	--	--	--
GMSG-117	11/23/04	11:26 AM	28.57	39	-	55.4	104.4	2.6	0	--	--	--	--
GMSG-117	01/07/05	11:00 AM	28.76	14	-	55.7	109.9	3	0	--	--	--	--
GMSG-117	01/19/05	11:59 AM	28.77	17	T	51.9	111.2	2.9	0	--	--	--	--
GMSG-117	02/08/05	1:20 PM	28.98	21	-	52.4	109.8	2.9	0	--	--	--	--
GMSG-117	03/16/05	3:00 PM	28.75	27	T	50.1	118.5	2.6	0	--	--	--	--
GMSG-117	04/04/05	9:30 AM	28.8	52	-	52.4	96.2	2.5	0	--	--	--	--
GMSG-117	05/10/05	11:15 AM	28.46	66	-	57.8	90	2.5	0	--	--	--	--
GMSG-117	06/09/05	9:03 AM	28.65	77	-	54	93.3	2.4	0	--	--	--	--
GMSG-117	07/01/05	2:32 PM	28.72	67	-	56.3	90.1	2.4	0.2	--	--	--	--
GMSG-117	08/11/05	12:40 PM	28.81	71	-	58.4	91.5	2.4	0	--	--	--	--
GMSG-117	09/08/05	3:32 PM	28.91	71.06	-	55.9	94.3	2.4	0	--	--	--	--
GMSG-117	10/19/05	9:30 AM	28.82	46	-	58	96.8	2.5	0	--	--	--	--
GMSG-117	11/04/05	11:30 AM	28.46	44	-	52	92.4	2.5	0	--	--	--	--
GMSG-117	12/05/05	11:45 AM	28.74	9	-	51.3	100	3	0	--	--	--	--
GMSG-117	01/31/06	1:37 PM	28.6	32	-	48.9	100	2.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-117	02/20/06	10:57 AM	28.6	18	-	50.9	102.2	2.8	0	--	--	--	--
GMSG-117	03/09/06	2:15 PM	28.14	38	-	52.1	104.5	2.6	0	--	--	--	--
GMSG-117	04/12/06	4:13 PM	28.69	67	-	52.2	90.8	2.4	0	--	--	--	--
GMSG-117	05/17/06	2:46 PM	28.38	62	-	55.7	97.3	2.5	0	--	--	--	--
GMSG-117	06/06/06	11:46 AM	28.59	66	0.25	55.2	89.7	2.4	0	--	--	--	--
GMSG-117	07/26/06	1:36 PM	28.49	84	-	44.5	87.1	2.4	0	--	--	--	--
GMSG-117	08/16/06	12:53 PM	28.97	81	-	42.3	82.4	2.3	0.3	--	--	--	--
GMSG-117	09/18/06	1:46 PM	28.39	57	-	52.4	106	3.1	0	--	--	--	--
GMSG-117	10/23/06	2:24 PM	28.7	39	-	43.5	112	3.2	0	--	--	--	--
GMSG-117	11/14/06	10:24 AM	28.7	35	-	46.4	115.5	3.2	0	--	--	--	--
GMSG-117	12/21/06	10:30 AM	29.05	29	-	25.2	118.5	3.2	0	--	--	--	--
GMSG-117	01/19/07	11:21 AM	28.83	16	-	44.2	117.6	3.3	0	--	--	--	--
GMSG-117	02/08/07	10:24 AM	28.84	5	-	19.8	116.6	3.3	0	--	--	--	--
GMSG-117	03/12/07	11:56 AM	28.73	43	-	46.2	117.6	3.2	0	--	--	--	--
GMSG-117	04/19/07	2:48 PM	28.92	66	-	43.2	91.5	2.8	0.2	--	--	--	--
GMSG-117	05/29/07	10:51 AM	28.88	79	-	42	91.2	2.5	0	--	--	--	--
GMSG-117	06/13/07	11:31 AM	28.95	84	-	39.2	92.5	2.5	0	--	--	--	--
GMSG-117	07/16/07	10:31 AM	29.99	74	-	40.8	91.9	2.7	0	--	--	--	--
GMSG-117	08/30/07	10:37 AM	30.26	70	-	37.2	92.7	2.8	0	--	--	--	--
GMSG-117	09/20/07	11:36 AM	30.23	61	-	37.7	89.4	2.8	0	--	--	--	--
GMSG-117	10/17/07	10:58 AM	29.9	56	-	41.7	90.5	2.9	0	--	--	--	--
GMSG-117	11/21/07	11:47 AM	30.14	33	T	27.3	97	2.8	0	--	--	--	--
GMSG-117	12/27/07	12:40 PM	29.97	26	-	37.5	103.2	3.1	0	--	--	--	--
GMSG-118A	09/14/98	10:08 AM	28.61	66	0.02	0	0	2.7	17.6	60	60	5	--
GMSG-118A	09/16/98	8:06 AM	28.97	51.1	-	0	0	2.7	17.3	38	38	3.5	--
GMSG-118A	09/22/98	5:12 PM	28.9	55.9	-	0	0	3.1	16.3	300	300	3	--
GMSG-118A	09/23/98	6:04 PM	28.75	61	-	0	0.1	3.4	15.2	2250	2250	2	--
GMSG-118A	09/24/98	6:25 PM	28.6	64	-	0	0.2	4.2	13.7	5500	5500	5	--
GMSG-118A	09/25/98	11:40 AM	28.52	69.1	-	0	0	4	14.1	3500	3500	3	--
GMSG-118A	09/26/98	5:50 PM	28.4	66	-	0	0.4	4.6	12.8	--	--	--	--
GMSG-118A	09/28/98	3:48 PM	28.68	71.1	-	0	0	3.6	15.2	300	330	2	--
GMSG-118A	09/29/98	2:37 PM	28.63	66	-	0	0.6	3.9	13.6	1750	1750	2	--
GMSG-118A	10/07/98	2:22 PM	28.71	51.1	-	0	0	4.5	13.4	4000	4000	4.5	--
GMSG-118A	10/09/98	1:46 PM	28.84	61	-	0	0	4	14.4	600	600	4	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118A	10/10/98	6:40 PM	28.89	53.1	-	0	0.4	4	13.9	600	600	5	--
GMSG-118A	10/11/98	1:25 PM	28.96	59	-	0	0	4	14.3	150	130	3	--
GMSG-118A	10/14/98	11:00 AM	28.86	44.1	-	0	0	4.3	13.4	--	--	--	--
GMSG-118A	10/20/98	9:52 AM	28.93	44.1	-	0	0	4.7	13.2	>10000	>10000	5.5	--
GMSG-118A	10/23/98	4:53 PM	28.88	64	-	0	0	4.5	18.2	2500	2500	6.5	--
GMSG-118A	11/21/98	11:31 AM	28.82	36	-	0	0.1	5.2	12.2	3000	3000	3	--
GMSG-118A	12/01/98	10:11 AM	28.82	40	-	0	0	5.1	12.3	--	--	--	--
GMSG-118A	12/03/98	2:35 PM	28.41	62	-	0	0.3	5.7	11.2	--	--	--	--
GMSG-118A	12/09/98	9:47 AM	28.96	29	-	0	0	5.1	12.5	950	950	1.25	--
GMSG-118A	12/15/98	11:59 AM	28.78	40	-	0	0.1	5.4	11.9	2000	--	1.5	--
GMSG-118A	12/19/98	10:26 AM	28.81	22	-	0	0.2	5.2	12.1	--	--	--	--
GMSG-118A	12/21/98	3:46 PM	28.75	11	-	0	0.4	6	9.3	--	--	--	--
GMSG-118A	12/29/98	9:40 AM	28.61	10	T	0.01	0.6	5.5	11	2500	2500	4.5	--
GMSG-118A	01/06/99	1:28 PM	28.58	8.1	T	0	0.4	5.6	9.3	--	--	--	--
GMSG-118A	01/15/99	1:14 PM	28.53	15.1	T	0.01	0.5	6.4	8.8	--	--	--	--
GMSG-118A	01/21/99	1:59 PM	28.77	25	-	0	0.2	4.6	13.6	--	--	--	--
GMSG-118A	01/26/99	2:06 PM	28.89	28	-	0	0.1	4.5	13	--	--	--	--
GMSG-118A	02/03/99	1:09 PM	28.15	33.1	T	0	0.6	6.4	9.3	--	--	--	--
GMSG-118A	02/11/99	1:58 PM	28.1	41	0.02	0	0.6	6.4	8.7	--	--	--	--
GMSG-118A	02/23/99	2:57 PM	28.97	25	T	0	0	3.9	13.4	600	600	1.25	--
GMSG-118A	03/11/99	2:32 PM	29.06	36	-	0	0	4.2	11.2	800	800	3	--
GMSG-118A	03/23/99	1:47 PM	28.48	45	-	0	0.5	5.8	9.7	--	--	--	--
GMSG-118A	04/08/99	1:53 PM	28.63	57.9	-	0	0.3	5	12.6	--	--	--	--
GMSG-118A	04/08/99	1:56 PM	28.63	57.9	-	--	--	--	--	--	--	--	--
GMSG-118A	04/20/99	2:15 PM	28.63	53.1	-	0	0	5.2	12.8	--	--	--	--
GMSG-118A	04/30/99	8:26 AM	29.18	55	-	0	0	4.2	12.9	750	750	9	--
GMSG-118A	05/10/99	3:12 PM	28.89	61	-	0	0.1	4.8	14.1	--	--	--	--
GMSG-118A	05/17/99	2:25 PM	28.48	70	T	0	0.2	6.1	8.6	2000	--	5.5	--
GMSG-118A	06/02/99	3:49 PM	28.71	59	-	0	0	6.2	8.9	2000	--	4.5	--
GMSG-118A	07/08/99	1:42 PM	28.68	57.9	0.1	0	0	5.5	13.4	105	--	1	--
GMSG-118A	07/17/99	5:30 PM	28.86	77	-	0	0.2	7	10.5	--	--	--	--
GMSG-118A	08/09/99	8:11 AM	28.73	57.9	-	0	0	8.4	7.1	900	--	2.25	--
GMSG-118A	09/30/99	11:10 AM	28.43	59	-	0	0.3	9.2	2.6	2000	--	--	--
GMSG-118A	10/07/99	11:06 AM	28.89	41	0.05	0	0	6.7	10.6	4	--	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118A	10/23/99	12:30 PM	28.84	36	T	0	0	6.9	9	500	--	5	--
GMSG-118A	11/03/99	4:52 PM	28.69	30.9	-	0	0	7.5	5.7	50	--	1.5	--
GMSG-118A	11/06/99	2:49 PM	29.07	46.9	-	-0.01	0	5.8	11.1	75	29	1.5	--
GMSG-118A	02/15/00	10:15 AM	28.67	21	-	0	0	4.6	13.2	170	40	1.5	--
GMSG-118A	03/16/00	11:10 AM	29	23	-	0	0	4.2	13.4	310	94	-0.1	--
GMSG-118A	03/31/00	8:53 AM	28.84	46.9	-	-0.03	0	4.4	13.5	133	133	0.44	--
GMSG-118A	04/30/00	11:40 AM	28.86	66	-	0	0	4.5	11.4	45	37	-0.45	--
GMSG-118A	06/05/00	1:38 PM	28.94	65	-	0	0	5.1	12.4	1000	21	-1.75	--
GMSG-118A	07/19/00	3:58 PM	28.75	72	-	0	0	6.1	12.9	100	--	3.75	--
GMSG-118A	09/12/00	3:07 PM	28.67	65	-	0	0	8.1	5.3	15	--	3	--
GMSG-118A	10/15/02	11:04 AM	28.71	43	-	0	0	7.6	7	128	--	0.1	--
GMSG-118A	04/14/03	1:52 PM	28.51	83	-	0	0.1	6	8.6	1000	Flame out	1.2	--
GMSG-118A	10/13/03	11:53 AM	28.56	65	-	-0.6	0	5.7	11.7	9	0	0.1	--
GMSG-118A	03/30/04	9:40 AM	--	--	--	0	0	5	9.2	--	--	--	--
GMSG-118A	03/30/04	1:45 PM	--	--	--	0	0	0	19.7	--	--	--	--
GMSG-118A	03/30/04	3:30 PM	--	--	--	0	0	0	19.5	--	--	--	--
GMSG-118A	03/30/04	4:00 PM	--	--	--	0	0	0	19.6	--	--	--	--
GMSG-118A	03/30/04	4:40 PM	--	--	--	0	0	0	19.2	--	--	--	--
GMSG-118A	03/30/04	5:20 PM	--	--	--	0	0	0	19.1	--	--	--	--
GMSG-118A	03/30/04	6:10 PM	--	--	--	0	--	--	--	--	--	--	--
GMSG-118A	03/30/04	6:48 PM	--	--	--	0	0	0	19.3	--	--	--	--
GMSG-118A	03/31/04	9:08 AM	--	--	--	0	0	0	19.1	--	--	--	--
GMSG-118A	03/31/04	10:05 AM	--	--	--	0	0	0.9	16.5	--	--	--	--
GMSG-118A	03/31/04	10:56 AM	--	--	--	-0.1	--	--	--	--	--	--	--
GMSG-118A	03/31/04	11:34 AM	--	--	--	0	0	3.3	11.9	--	--	--	--
GMSG-118A	03/31/04	12:12 PM	--	--	--	0	0	0	19.3	--	--	--	--
GMSG-118A	04/02/04	10:35 AM	28.93	49	-	0	0	4	9.8	--	--	--	--
GMSG-118A	04/15/04	2:56 PM	28.73	59	-	0	0	2.4	3.6	--	--	--	--
GMSG-118A	04/15/04	4:51 PM	28.71	54	-	0	0	4.1	10.3	--	--	--	--
GMSG-118A	06/12/04	9:44 AM	28.74	57	-	0	0	5.5	11.2	--	--	--	--
GMSG-118A	06/12/04	12:10 PM	28.7	67	-	-0.023	0	0	19.6	--	--	--	--
GMSG-118A	06/12/04	3:08 PM	28.65	78	-	-0.038	0	0	20	--	--	--	--
GMSG-118A	06/12/04	5:24 PM	28.65	79	-	-0.048	0	0	20.3	--	--	--	--
GMSG-118A	06/13/04	9:43 AM	28.58	64	-	-0.051	0	3.5	16.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118A	06/13/04	3:37 PM	28.48	72	-	-0.047	0	3	16.2	--	--	--	--
GMSG-118A	06/14/04	6:57 PM	28.64	67	-	0	0	2.4	17.9	--	--	--	--
GMSG-118A	06/15/04	2:09 PM	28.85	69	-	-0.054	0	0.6	19.3	--	--	--	--
GMSG-118A	06/16/04	10:20 AM	28.8	77	-	-0.056	0	1.2	18.8	--	--	--	--
GMSG-118A	06/17/04	8:13 AM	28.82	59	T	-0.56	0	1.3	18.5	--	--	--	--
GMSG-118A	06/22/04	3:18 PM	28.6	66	-	0.031	0	1.2	18.8	--	--	--	--
GMSG-118A	06/24/04	9:33 AM	28.64	55	-	-0.051	0	1	18.8	--	--	--	--
GMSG-118A	06/28/04	6:28 PM	28.76	73	-	-0.041	0	0.7	19.2	--	--	--	--
GMSG-118A	07/02/04	11:40 AM	28.92	73	-	0	0	0.5	19.1	--	--	--	--
GMSG-118A	07/07/04	8:23 AM	28.55	52	-	-0.038	0	0.1	19.4	--	--	--	--
GMSG-118A	07/09/04	10:24 AM	28.89	67	-	-0.045	0	0.7	19.2	--	--	--	--
GMSG-118A	07/13/04	6:03 PM	28.52	72	-	-0.048	0	1.4	21.7	--	--	--	--
GMSG-118A	07/15/04	5:20 PM	28.63	81	-	-0.059	0	0.8	19	--	--	--	--
GMSG-118A	07/20/04	9:31 AM	28.69	77	-	-0.052	0	0.7	19.2	--	--	--	--
GMSG-118A	07/30/04	5:21 PM	28.59	74	-	-0.74	0	0.8	19.1	--	--	--	--
GMSG-118A	08/05/04	12:03 PM	28.99	71	-	-0.04	0	0.5	19.2	--	--	--	--
GMSG-118A	08/11/04	4:27 PM	28.61	54	T	-0.048	0	0.7	19	--	--	--	--
GMSG-118A	08/23/04	2:33 PM	28.84	67	-	0	0	0	20.1	--	--	--	--
GMSG-118A	08/24/04	1:23 PM	28.74	70	-	0	0	0.5	19.4	--	--	--	--
GMSG-118A	08/25/04	11:41 AM	28.64	75	-	0	0	0.8	18.8	--	--	--	--
GMSG-118A	08/26/04	11:44 AM	28.57	76	-	0	0	0.7	18.6	--	--	--	--
GMSG-118A	08/27/04	12:24 PM	28.66	79	-	0	0	0.7	18.6	--	--	--	--
GMSG-118A	08/30/04	10:15 AM	28.8	57	-	0	0	1.1	18.4	--	--	--	--
GMSG-118A	09/02/04	3:57 PM	28.79	82	-	0	0	1	18.9	--	--	--	--
GMSG-118A	09/09/04	11:28 AM	28.96	66	-	0	0	0	20.1	--	--	--	--
GMSG-118A	09/16/04	10:06 AM	28.68	60	-	0	0	0	20.3	--	--	--	--
GMSG-118A	09/24/04	3:53 PM	28.79	59	-	-0.3	0	0.3	19.8	--	--	--	--
GMSG-118A	09/29/04	11:37 AM	28.92	64	-	0	0	0.7	19.1	--	--	--	--
GMSG-118A	10/08/04	12:23 PM	28.59	66	-	0	0	0.9	18.6	--	--	--	--
GMSG-118A	10/12/04	12:20 PM	28.75	64	-	0	0	1	18.4	-1.55	-1.6	-0.4	--
GMSG-118A	10/19/04	11:38 AM	28.83	45	-	0	0	1.4	17.5	--	--	--	--
GMSG-118A	10/28/04	11:16 AM	28.93	47	-	0	0	1.6	17.4	--	--	--	--
GMSG-118A	11/02/04	11:50 AM	28.88	45	T	0	0	1.8	16.8	--	--	--	--
GMSG-118A	11/12/04	10:36 AM	29.25	36	-	0	0	1.8	17	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118A	11/18/04	1:17 PM	28.95	53	-	0	0	1.8	16.8	--	--	--	--
GMSG-118A	12/09/04	10:35 AM	28.57	37	-	0	0	2.2	15.5	--	--	--	--
GMSG-118A	01/27/05	12:51 PM	29.31	13	-	0	0	0	20.1	--	--	--	--
GMSG-118A	04/05/05	2:30 PM	28.56	74	-	0	0	0.1	20	--	--	--	--
GMSG-118A	08/17/05	11:04 AM	28.89	71	-	0	0	1.2	17.9	--	--	--	--
GMSG-118A	09/08/05	3:57 PM	28.91	71.06	-	0	0	1	18.3	--	--	--	--
GMSG-118A	10/19/05	1:47 PM	28.79	53	-	0	0	1.4	17.4	--	--	--	--
GMSG-118A	03/15/06	12:54 PM	28.91	32	-	0	0	1.1	17.8	--	--	--	--
GMSG-118A	04/12/06	11:47 AM	28.64	60	-	0	0	1.3	16.3	--	--	--	--
GMSG-118A	07/26/06	10:51 AM	28.48	79	-	-0.1	0	0	17.7	--	--	--	--
GMSG-118A	10/05/06	1:19 PM	29.16	56	-	0	0	0	20.6	--	--	--	--
GMSG-118A	12/18/06	1:05 PM	29.08	31	-	0	0	0.8	19.5	--	--	--	--
GMSG-118A	01/18/07	1:01 PM	28.66	21	-	0	0	1	18.4	--	--	--	--
GMSG-118A	02/07/07	10:19 AM	28.86	4	-	0	0	1	19.8	--	--	--	--
GMSG-118A	03/09/07	2:06 PM	28.55	44	-	0	0	1	19	--	--	--	--
GMSG-118A	04/16/07	12:59 PM	28.81	61	-	0	0	0	20.6	--	--	--	--
GMSG-118A	07/13/07	10:14 AM	30.04	66	-	0	0	1.2	18.5	--	--	--	--
GMSG-118A	10/15/07	2:00 PM	30.11	48	-	0	0	1.3	18	--	--	--	--
GMSG-118A	10/16/07	8:06 AM	29.95	51	0.05	0	0	1.3	18.1	--	--	--	--
GMSG-118A	10/17/07	2:01 PM	29.86	58	-	0	0	1.2	17.9	--	--	--	--
GMSG-118A	10/18/07	11:34 AM	29.22	65	-	0	0	1.3	17.5	--	--	--	--
GMSG-118A	10/19/07	9:27 AM	28.98	53	T	0	0	1.5	17.6	--	--	--	--
GMSG-118A	10/22/07	8:24 AM	30.02	47	-	0	0	0.8	18.8	--	--	--	--
GMSG-118B	09/14/98	10:11 AM	28.61	66	0.02	0.01	10.7	11	0	--	--	--	--
GMSG-118B	09/16/98	8:15 AM	28.97	51.1	-	-0.01	8.1	11.4	0	--	--	--	--
GMSG-118B	09/22/98	5:19 PM	28.9	55.9	-	-0.08	8	11.3	0	--	--	--	--
GMSG-118B	09/23/98	6:10 PM	28.75	61	-	0.2	9.8	11.2	0	--	--	--	--
GMSG-118B	09/24/98	6:34 PM	28.61	61	-	-0.03	10.4	10.9	0	--	--	--	--
GMSG-118B	09/25/98	11:46 AM	28.52	69.1	-	0.04	10	10.9	0	--	--	--	--
GMSG-118B	09/26/98	5:56 PM	28.4	66	-	0.07	11.1	11.1	0	--	--	--	--
GMSG-118B	09/28/98	3:57 PM	28.68	71.1	-	0.19	8.3	11.1	0	--	--	--	--
GMSG-118B	09/29/98	2:43 PM	28.63	66	-	-0.04	11.2	10.1	0	--	--	--	--
GMSG-118B	10/07/98	2:30 PM	28.72	52	-	-0.18	8.6	10.7	0.7	--	--	--	--
GMSG-118B	10/09/98	1:53 PM	28.84	61	-	0.31	6.9	11.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118B	10/10/98	6:35 PM	28.89	53.1	-	-0.08	7.3	11.1	0	--	--	--	--
GMSG-118B	10/11/98	1:20 PM	28.96	59	-	0.2	6.8	11.2	0	--	--	--	--
GMSG-118B	10/14/98	10:50 AM	28.86	44.1	-	-0.02	6.9	10.8	0	--	--	--	--
GMSG-118B	10/20/98	10:08 AM	28.93	44.1	-	-0.4	6.2	11.8	0	--	--	--	--
GMSG-118B	10/23/98	4:59 PM	28.88	64	-	0.1	6.5	11.4	1.7	--	--	--	--
GMSG-118B	11/21/98	11:30 AM	28.82	36	-	0.1	5.5	12.1	0	--	--	--	--
GMSG-118B	12/01/98	10:15 AM	28.82	40	-	-0.1	4.8	11.6	0.5	--	--	--	--
GMSG-118B	12/03/98	2:41 PM	28.41	62	-	-0.08	5.2	11.3	0.8	--	--	--	--
GMSG-118B	12/09/98	9:54 AM	28.96	29	-	-0.08	5	12.3	0	--	--	--	--
GMSG-118B	12/15/98	12:10 PM	28.78	40	-	0.03	3.9	9.9	3.2	--	--	--	--
GMSG-118B	12/19/98	10:34 AM	28.84	22	-	-0.36	0	0.2	19.7	--	--	--	--
GMSG-118B	12/21/98	3:53 PM	28.75	11	-	-0.06	1.3	3.4	11.7	--	--	--	--
GMSG-118B	12/29/98	9:47 AM	28.61	10	T	-0.47	4.2	9	16.3	--	--	--	--
GMSG-118B	01/06/99	1:34 PM	28.6	8.1	T	-0.17	5.4	11.1	0	--	--	--	--
GMSG-118B	01/15/99	1:02 PM	28.53	15.1	T	0.35	4.7	10	1.7	--	--	--	--
GMSG-118B	01/21/99	2:05 PM	28.77	25	-	-0.07	4.8	10.7	1.1	--	--	--	--
GMSG-118B	01/26/99	2:14 PM	28.89	28	-	0.13	4.3	10.8	1.1	--	--	--	--
GMSG-118B	02/03/99	1:16 PM	28.15	33.1	T	0.11	5.1	11	0.1	--	--	--	--
GMSG-118B	02/11/99	2:05 PM	28.1	41	0.02	0.61	4.4	10.4	1.2	--	--	--	--
GMSG-118B	02/23/99	3:07 PM	28.97	25	T	0.04	4	11.2	0	--	--	--	--
GMSG-118B	03/11/99	3:55 PM	29.05	36	-	0.04	3.6	10.9	0.2	--	--	--	--
GMSG-118B	03/23/99	1:54 PM	28.48	45	-	-0.04	3.8	10.4	1.4	--	--	--	--
GMSG-118B	04/08/99	1:58 PM	28.63	57.9	-	0	4.2	10.5	4.6	--	--	--	--
GMSG-118B	04/08/99	2:06 PM	28.63	57.9	-	--	--	--	--	--	--	--	--
GMSG-118B	04/20/99	2:23 PM	28.63	53.1	-	0.15	4.4	11.4	0.2	--	--	--	--
GMSG-118B	04/30/99	8:33 AM	29.17	62.1	-	-0.03	0	0.4	19.1	>10000	>10000	6.5	--
GMSG-118B	04/30/99	8:34 AM	29.17	62.1	-	--	2.6	10.5	0	--	--	--	--
GMSG-118B	05/10/99	3:22 PM	28.89	61	-	0.17	3.7	10.5	5.3	--	--	--	--
GMSG-118B	05/17/99	2:32 PM	28.48	66.9	0.02	0.1	4.5	11	0	--	--	--	--
GMSG-118B	06/02/99	3:56 PM	28.71	59	-	-0.1	0	2.5	13.4	2.5	4500	4500	--
GMSG-118B	06/15/99	--	--	--	--	0.04	0	3.4	12.2	--	--	--	--
GMSG-118B	06/16/99	--	--	--	--	-0.08	4.6	10.9	1.2	--	--	--	--
GMSG-118B	06/17/99	--	--	--	--	0.05	4.6	10.4	0	--	--	--	--
GMSG-118B	06/18/99	--	--	--	--	0.07	0	0.4	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118B	06/19/99	--	--	--	--	0.06	3.9	9.6	0	--	--	--	--
GMSG-118B	06/20/99	--	--	--	--	0	0.4	2.3	14.7	--	--	--	--
GMSG-118B	06/21/99	5:39 PM	28.87	75	-	0.14	5.6	11.8	0.2	--	--	--	--
GMSG-118B	06/22/99	3:50 PM	28.66	79	-	0.31	5.4	10.9	0	--	--	--	--
GMSG-118B	06/23/99	3:10 PM	28.47	69.1	0.22	0.1	5.9	11.1	0	--	--	--	--
GMSG-118B	06/24/99	1:47 PM	28.59	82.9	-	-0.01	6.2	10.9	0	--	--	--	--
GMSG-118B	06/25/99	12:40 PM	28.67	86	-	0.01	5.3	9.7	0	--	--	--	--
GMSG-118B	06/26/99	3:11 PM	28.56	87.1	-	0.09	5.4	10.7	0	--	--	--	--
GMSG-118B	06/27/99	12:53 PM	28.51	79	-	0.16	5.7	10.6	0	--	--	--	--
GMSG-118B	06/28/99	1:30 PM	28.45	63	0.05	0.23	5.6	11	0	--	--	--	--
GMSG-118B	06/29/99	1:39 PM	28.58	68	-	0	6.8	12.1	0	--	--	--	--
GMSG-118B	06/30/99	3:18 PM	28.57	63	-	-0.01	5.9	10.9	0	--	--	--	--
GMSG-118B	07/01/99	1:29 PM	28.44	63	T	0.14	6.1	11.1	0	--	--	--	--
GMSG-118B	07/02/99	1:43 PM	28.62	79	-	-0.02	4.9	10.1	0	--	--	--	--
GMSG-118B	07/03/99	1:09 PM	28.62	69.1	0.06	-0.04	5.1	10.5	0	--	--	--	--
GMSG-118B	07/04/99	12:40 PM	28.66	87.1	-	0	5.4	10.3	0	--	--	--	--
GMSG-118B	07/05/99	11:52 AM	28.61	79	-	0.27	5.2	10.6	0	--	--	--	--
GMSG-118B	07/06/99	1:03 PM	28.68	79	-	-0.01	5.5	10.5	0	--	--	--	--
GMSG-118B	07/07/99	11:45 AM	28.74	78.1	-	-0.02	5.4	10.3	0	--	--	--	--
GMSG-118B	07/08/99	12:55 PM	28.72	59	0.07	0.17	5.1	10.7	0	--	--	--	--
GMSG-118B	07/09/99	2:12 PM	28.52	64	-	-0.15	4.9	9.7	1.1	--	--	--	--
GMSG-118B	07/10/99	3:50 PM	28.91	73	-	0.05	4.2	10.3	1.4	--	--	--	--
GMSG-118B	07/11/99	10:04 AM	28.95	75.9	-	0	4.6	10.1	0	--	--	--	--
GMSG-118B	07/12/99	12:30 PM	28.86	77	-	0.12	5.3	11.7	0.2	--	--	--	--
GMSG-118B	07/17/99	5:20 PM	28.85	78.1	-	0	6	12	0	--	--	--	--
GMSG-118B	08/09/99	8:15 AM	28.73	57.9	-	0.16	4.8	10.9	0	--	--	--	--
GMSG-118B	09/30/99	11:17 AM	28.43	59	-	0.51	5.6	10.6	0	--	--	--	--
GMSG-118B	10/07/99	11:00 AM	28.89	41	0.05	0.25	6.2	11.1	0	--	--	--	--
GMSG-118B	10/23/99	12:25 PM	28.84	37	T	-0.22	1.7	6.2	10.8	--	--	--	--
GMSG-118B	11/03/99	4:45 PM	28.69	30.9	-	-0.02	0.2	18	1.8	>10000	>10000	2	--
GMSG-118B	11/06/99	2:38 PM	29.07	46.9	-	0.03	5.5	11	0	--	--	--	--
GMSG-118B	02/15/00	10:28 AM	28.67	21	-	0.12	5	11.1	0	--	--	--	--
GMSG-118B	03/16/00	11:15 AM	29	23	-	0	1.6	4.4	11	--	--	--	--
GMSG-118B	03/31/00	8:37 AM	28.84	46.9	-	0	3.5	10.8	0.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118B	04/30/00	11:45 AM	28.86	66	-	0.04	3.9	10.7	0	--	--	--	--
GMSG-118B	06/05/00	1:39 PM	28.94	65	-	0.04	4.5	10.4	0	--	--	--	--
GMSG-118B	07/19/00	4:05 PM	28.75	72	-	0.2	5	10	0.9	--	--	--	--
GMSG-118B	09/12/00	3:14 PM	28.67	65	-	-0.03	4.7	9.8	0	--	--	--	--
GMSG-118B	10/15/02	11:11 AM	28.71	43	-	0	0	0.1	20.7	5000	--	0	--
GMSG-118B	04/14/03	2:00 PM	28.51	83	-	0.1	6.2	7.5	1.5	--	--	--	--
GMSG-118B	10/13/03	11:58 AM	28.56	65	-	0	7.9	10.5	0	--	--	--	--
GMSG-118B	03/30/04	9:35 AM	--	--	--	0	5.7	11	0	--	--	--	--
GMSG-118B	03/30/04	1:42 PM	--	--	--	-2	0	0	19.7	--	--	--	--
GMSG-118B	03/30/04	3:25 PM	--	--	--	-4	0	0	19.3	--	--	--	--
GMSG-118B	03/30/04	3:58 PM	--	--	--	-1.9	0	0	19.6	--	--	--	--
GMSG-118B	03/30/04	4:43 PM	--	--	--	-0.4	0	0	19.2	--	--	--	--
GMSG-118B	03/30/04	5:25 PM	--	--	--	0	0	0	19.1	--	--	--	--
GMSG-118B	03/30/04	6:11 PM	--	--	--	-0.2	--	--	--	--	--	--	--
GMSG-118B	03/30/04	6:50 PM	--	--	--	0	0	0.3	18.3	--	--	--	--
GMSG-118B	03/31/04	9:10 AM	--	--	--	0	0	0	19.3	--	--	--	--
GMSG-118B	03/31/04	10:08 AM	--	--	--	0	5.6	10.5	1.2	--	--	--	--
GMSG-118B	03/31/04	10:58 AM	--	--	--	-0.2	--	--	--	--	--	--	--
GMSG-118B	03/31/04	11:36 AM	--	--	--	-0.1	5.7	10.5	1.4	--	--	--	--
GMSG-118B	03/31/04	12:14 PM	--	--	--	-0.2	5.7	10.5	1.5	--	--	--	--
GMSG-118B	04/02/04	10:40 AM	28.93	49	-	0	5.7	10.4	1.3	--	--	--	--
GMSG-118B	04/15/04	2:55 PM	28.73	59	-	0	5.3	10	1.5	--	--	--	--
GMSG-118B	04/15/04	4:57 PM	28.71	54	-	-9	0	0	19.4	--	--	--	--
GMSG-118B	06/12/04	9:40 AM	28.74	57	-	0	8	4.5	0	--	--	--	--
GMSG-118B	06/12/04	12:06 PM	28.7	67	-	-6.7	0	0	19.6	--	--	--	--
GMSG-118B	06/12/04	3:00 PM	28.65	78	-	-7.3	0	0	19.7	--	--	--	--
GMSG-118B	06/12/04	5:20 PM	28.65	79	-	-9.6	0	0	20.1	--	--	--	--
GMSG-118B	06/13/04	9:35 AM	28.58	64	-	-9.6	0	0	20	--	--	--	--
GMSG-118B	06/13/04	3:25 PM	28.49	69	-	-9.6	0	0	19.5	--	--	--	--
GMSG-118B	06/14/04	7:00 PM	28.64	67	-	-10.2	0	0	20.1	--	--	--	--
GMSG-118B	06/15/04	2:02 PM	28.85	69	-	-9.7	0	0	19.8	--	--	--	--
GMSG-118B	06/16/04	10:26 AM	28.8	77	-	-10.8	0	0	20.2	--	--	--	--
GMSG-118B	06/17/04	8:20 AM	28.82	59	T	-9.7	0	0.2	20	--	--	--	--
GMSG-118B	06/22/04	3:29 PM	28.6	66	-	-9.6	0	0	20.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118B	06/24/04	9:22 AM	28.63	55	-	-9.8	0	0	19.7	--	--	--	--
GMSG-118B	06/28/04	6:34 PM	28.76	70	-	-9.9	0	0	20.3	--	--	--	--
GMSG-118B	07/02/04	11:38 AM	28.92	73	-	-9.9	0	0	19.9	--	--	--	--
GMSG-118B	07/07/04	8:34 AM	28.55	54	-	-10.2	0	0	19.7	--	--	--	--
GMSG-118B	07/09/04	10:36 AM	28.88	68	-	-9.6	0	0	19.9	--	--	--	--
GMSG-118B	07/13/04	5:58 PM	28.52	72	-	-10.1	0	0	22.7	--	--	--	--
GMSG-118B	07/15/04	5:15 PM	28.63	81	-	-9.8	0	0	19.6	--	--	--	--
GMSG-118B	07/20/04	9:37 AM	28.69	77	-	-9.6	0	0	19.7	--	--	--	--
GMSG-118B	07/30/04	5:16 PM	28.59	74	-	-9.9	0	0	20	--	--	--	--
GMSG-118B	08/05/04	12:13 PM	28.99	71	-	-9.8	0	0	19.9	--	--	--	--
GMSG-118B	08/11/04	4:34 PM	28.63	53	-	-10.2	0	0.2	19.3	--	--	--	--
GMSG-118B	08/23/04	2:35 PM	28.84	67	-	-3	0.1	1	18.1	--	--	--	--
GMSG-118B	08/24/04	1:28 PM	28.74	70	-	0	0	0	19.9	--	--	--	--
GMSG-118B	08/25/04	11:47 AM	28.64	75	-	0	0	0.4	19.1	--	--	--	--
GMSG-118B	08/26/04	11:50 AM	28.57	76	-	0.1	0	0	19.5	--	--	--	--
GMSG-118B	08/27/04	12:31 PM	28.67	79	-	0	0	0.2	18.6	--	--	--	--
GMSG-118B	08/30/04	10:20 AM	28.8	57	-	0	0.1	0.7	18.4	--	--	--	--
GMSG-118B	09/02/04	4:00 PM	28.79	82	-	0	0.1	0.9	17.9	--	--	--	--
GMSG-118B	09/09/04	11:26 AM	28.96	66	-	-9.9	0	0	20.3	--	--	--	--
GMSG-118B	09/16/04	10:04 AM	28.68	60	-	-10.6	0	0	20.2	--	--	--	--
GMSG-118B	09/24/04	3:52 PM	28.79	59	-	-4.8	0	0	20.1	--	--	--	--
GMSG-118B	09/29/04	11:35 AM	28.92	64	-	0	0	0.5	18.9	--	--	--	--
GMSG-118B	10/08/04	12:19 PM	28.59	66	-	0.2	0	1.2	17	--	--	--	--
GMSG-118B	10/12/04	12:14 PM	28.75	64	-	0.2	0	2.1	14.9	1228	1210	-0.5	--
GMSG-118B	10/19/04	11:43 AM	28.83	45	-	0	0	2.9	13.4	--	--	--	--
GMSG-118B	10/28/04	11:14 AM	28.93	47	-	0.1	0	3.1	13.5	--	--	--	--
GMSG-118B	11/02/04	11:54 AM	28.88	45	T	0	0	3.3	13.2	--	--	--	--
GMSG-118B	11/12/04	10:40 AM	29.25	36	-	0	0	3.4	13.1	--	--	--	--
GMSG-118B	11/18/04	1:12 PM	28.95	53	-	0	0	1	17.4	--	--	--	--
GMSG-118B	12/09/04	10:39 AM	28.57	37	-	0	0	3.8	11.4	--	--	--	--
GMSG-118B	01/27/05	2:00 PM	29.3	15	-	0	0	4.8	10.4	--	--	--	--
GMSG-118B	04/05/05	2:26 PM	28.56	72	-	1.6	0	0.1	19.4	--	--	--	--
GMSG-118B	08/17/05	11:08 AM	28.89	71	-	0	0	1.4	16	--	--	--	--
GMSG-118B	09/08/05	4:00 PM	28.91	71.06	-	0.1	0	1.7	15.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118B	10/19/05	1:40 PM	28.79	53	-	0	0	0	19.7	--	--	--	--
GMSG-118B	03/15/06	1:02 PM	28.91	32	-	0	0	1.3	17.3	--	--	--	--
GMSG-118B	04/12/06	11:52 AM	28.64	60	-	-0.1	0	0	19.4	--	--	--	--
GMSG-118B	07/26/06	10:55 AM	28.48	79	-	-9.1	0	0	17.9	--	--	--	--
GMSG-118B	10/05/06	1:22 PM	29.16	56	-	-1.1	0	0	20.6	--	--	--	--
GMSG-118B	12/18/06	1:08 PM	29.08	31	-	0	0	0	20.4	--	--	--	--
GMSG-118B	01/18/07	1:05 PM	28.66	21	-	0	0	1.4	17.6	--	--	--	--
GMSG-118B	02/07/07	10:21 AM	28.86	4	-	0	0	0	21	--	--	--	--
GMSG-118B	03/09/07	2:11 PM	28.55	44	-	0	0	2.1	16.6	--	--	--	--
GMSG-118B	04/16/07	1:02 PM	28.81	61	-	0	0	0.3	19.8	--	--	--	--
GMSG-118B	07/13/07	10:10 AM	30.04	66	-	0	0	0	19.6	--	--	--	--
GMSG-118B	10/15/07	2:04 PM	30.11	48	-	0	0	0.1	19.4	--	--	--	--
GMSG-118B	10/16/07	8:11 AM	29.95	51	0.05	0	0	3.9	11.7	--	--	--	--
GMSG-118B	10/17/07	2:05 PM	29.86	58	-	0	0	0	19.4	--	--	--	--
GMSG-118B	10/18/07	11:38 AM	29.22	65	-	0	0	4	11.1	--	--	--	--
GMSG-118B	10/19/07	9:29 AM	28.98	53	T	0	0	4.2	11.2	--	--	--	--
GMSG-118B	10/22/07	8:26 AM	30.02	47	-	0	0	0	19.8	--	--	--	--
GMSG-118C	09/14/98	10:24 AM	28.61	66	0.02	0.01	10.8	10.7	0	--	--	--	--
GMSG-118C	09/16/98	8:32 AM	28.96	59	-	-0.02	10.4	11.1	0	--	--	--	--
GMSG-118C	09/22/98	5:30 PM	28.92	51.1	-	-0.1	9.2	10.8	0	--	--	--	--
GMSG-118C	09/23/98	6:21 PM	28.75	61	-	0.15	9.8	10.9	0	--	--	--	--
GMSG-118C	09/24/98	6:40 PM	28.61	61	-	-0.05	9.2	10.9	0	--	--	--	--
GMSG-118C	09/25/98	11:55 AM	28.52	69.1	-	0.03	8.8	10.8	0	--	--	--	--
GMSG-118C	09/26/98	6:01 PM	28.4	66	-	0.03	8.7	11.1	0	--	--	--	--
GMSG-118C	09/28/98	4:09 PM	28.68	71.1	-	0.13	9.4	10.9	0	--	--	--	--
GMSG-118C	09/29/98	2:52 PM	28.63	66	-	-0.09	10.4	10	0.2	--	--	--	--
GMSG-118C	10/07/98	2:36 PM	28.72	52	-	-0.22	7	11.2	0	--	--	--	--
GMSG-118C	10/09/98	2:02 PM	28.84	61	-	0.29	7.5	11.1	0	--	--	--	--
GMSG-118C	10/10/98	6:30 PM	28.89	53.1	-	-0.07	8.9	10.8	0	--	--	--	--
GMSG-118C	10/11/98	1:15 PM	28.96	59	-	0.18	8.2	10.9	0	--	--	--	--
GMSG-118C	10/14/98	10:40 AM	28.86	44.1	-	0.01	8	10.4	0	--	--	--	--
GMSG-118C	10/20/98	10:21 AM	28.93	44.1	-	-0.81	9.8	11.3	0	--	--	--	--
GMSG-118C	10/23/98	5:08 PM	28.88	64	-	0.09	8.2	10.7	1	--	--	--	--
GMSG-118C	11/21/98	11:29 AM	28.85	33.1	-	0.1	9.2	10.3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-118C	12/01/98	10:24 AM	28.82	40	-	-0.1	6.6	10.2	2.2	--	--	--	--
GMSG-118C	12/03/98	2:47 PM	28.41	62	-	-0.08	6.9	11.4	0	--	--	--	--
GMSG-118C	12/09/98	10:05 AM	28.96	29	-	-0.06	6.1	12	0	--	--	--	--
GMSG-118C	12/15/98	12:19 PM	28.78	40	-	0	6.3	11.3	8.4	--	--	--	--
GMSG-118C	12/19/98	10:43 AM	28.84	22	-	-0.39	0	8.1	18.2	--	--	--	--
GMSG-118C	12/21/98	3:59 PM	28.75	11	-	-0.02	0.2	0.7	15.8	--	--	--	--
GMSG-118C	12/29/98	9:55 AM	28.61	10	T	-0.51	4	6.9	18.7	--	--	--	--
GMSG-118C	01/06/99	1:45 PM	28.6	8.1	T	-0.22	5.9	10.8	0.8	--	--	--	--
GMSG-118C	01/15/99	1:24 PM	28.53	15.1	T	0.36	9.2	11.1	0	--	--	--	--
GMSG-118C	01/21/99	2:13 PM	28.77	25	-	-0.05	0	1	21.1	350	350	1.5	--
GMSG-118C	01/26/99	2:20 PM	28.89	28	-	0.13	5.7	10.5	0	--	--	--	--
GMSG-118C	02/03/99	1:23 PM	28.15	33.1	T	0.11	6.8	11	0	--	--	--	--
GMSG-118C	02/11/99	2:12 PM	28.1	41	0.02	0.61	8	10.4	0.6	--	--	--	--
GMSG-118C	02/23/99	3:28 PM	28.97	25	T	0.02	4.2	10.3	1.7	--	--	--	--
GMSG-118C	03/11/99	4:04 PM	29.05	36	-	-0.23	7.4	10.9	0	--	--	--	--
GMSG-118C	03/23/99	2:04 PM	28.48	45	-	-0.14	3.3	8.8	5.3	--	--	--	--
GMSG-118C	04/08/99	2:09 PM	28.63	57.9	-	0.08	1.8	4.7	11.9	--	--	--	--
GMSG-118C	04/08/99	2:18 PM	28.63	57.9	-	--	--	--	--	--	--	--	--
GMSG-118C	04/20/99	2:31 PM	28.63	52	-	0.16	4.7	10.5	1.7	--	--	--	--
GMSG-118C	04/30/99	8:47 AM	29.17	62.1	-	-0.02	0.1	3.4	14	--	--	--	--
GMSG-118C	04/30/99	8:48 AM	29.17	62.1	-	--	4.5	10.8	0	--	--	--	--
GMSG-118C	05/10/99	3:31 PM	28.88	60.1	-	0.16	6.9	11.2	2.2	--	--	--	--
GMSG-118C	05/17/99	2:38 PM	28.48	66.9	0.02	0.09	6.4	10.9	0	--	--	--	--
GMSG-118C	06/02/99	4:02 PM	28.71	59	-	-0.11	1.3	4.1	10.4	--	--	--	--
GMSG-118C	06/15/99	--	--	--	--	0.05	0	1.9	16.5	--	--	--	--
GMSG-118C	06/16/99	--	--	--	--	-0.06	7.5	10.9	0.8	--	--	--	--
GMSG-118C	06/17/99	--	--	--	--	0.05	6.2	10.2	0	--	--	--	--
GMSG-118C	06/18/99	--	--	--	--	0.06	5.5	10	0	--	--	--	--
GMSG-118C	06/19/99	--	--	--	--	0.08	6.5	10.3	0	--	--	--	--
GMSG-118C	06/20/99	--	--	--	--	0	7	10.5	0	--	--	--	--
GMSG-118C	06/21/99	5:47 PM	28.87	75	-	0.15	7.8	11.5	0.3	--	--	--	--
GMSG-118C	06/22/99	3:55 PM	28.66	79	-	0.32	6.8	10.7	0	--	--	--	--
GMSG-118C	06/23/99	3:15 PM	28.47	69.1	0.22	0.08	9.1	10.8	0	--	--	--	--
GMSG-118C	06/24/99	1:55 PM	28.59	82.9	-	0	9	10.6	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118C	06/25/99	12:48 PM	28.67	86	-	0.02	6.4	9.4	0	--	--	--	--
GMSG-118C	06/26/99	3:15 PM	28.56	87.1	-	0.1	8	10.5	0	--	--	--	--
GMSG-118C	06/27/99	12:57 PM	28.51	79	-	0.2	7.5	10.3	0	--	--	--	--
GMSG-118C	06/28/99	1:33 PM	28.45	63	0.05	0.25	7.6	10.3	0	--	--	--	--
GMSG-118C	06/29/99	1:49 PM	28.58	68	-	0	10.2	11.9	0	--	--	--	--
GMSG-118C	06/30/99	3:24 PM	28.57	63	-	0.01	8.2	10.9	0	--	--	--	--
GMSG-118C	07/01/99	1:32 PM	28.42	66.9	T	0.14	8.1	11	0	--	--	--	--
GMSG-118C	07/02/99	1:51 PM	28.62	79	-	-0.01	7.7	10.4	0	--	--	--	--
GMSG-118C	07/03/99	1:14 PM	28.62	69.1	0.06	-0.05	6.4	10.3	0	--	--	--	--
GMSG-118C	07/04/99	12:45 PM	28.66	87.1	-	0	6.6	10.2	0	--	--	--	--
GMSG-118C	07/05/99	11:56 AM	28.61	79	-	0.32	6.7	10.5	0	--	--	--	--
GMSG-118C	07/06/99	1:08 PM	28.68	79	-	0.02	6.2	9.9	0	--	--	--	--
GMSG-118C	07/07/99	11:46 AM	28.74	78.1	-	-0.04	6.5	9.7	0	--	--	--	--
GMSG-118C	07/08/99	12:58 PM	28.72	59	0.07	0.19	6.6	10.7	0	--	--	--	--
GMSG-118C	07/09/99	2:15 PM	28.52	64	-	-0.15	8	9.9	0	--	--	--	--
GMSG-118C	07/10/99	4:20 PM	28.91	73	-	0.05	7.2	10.5	0	--	--	--	--
GMSG-118C	07/11/99	10:15 AM	28.95	75.9	-	-0.01	7.3	10.7	0	--	--	--	--
GMSG-118C	07/12/99	1:25 PM	28.86	77	-	0.16	7	12	0	--	--	--	--
GMSG-118C	07/17/99	5:05 PM	28.85	78.1	-	0	7.3	12	0	--	--	--	--
GMSG-118C	08/09/99	8:27 AM	28.73	57.9	-	0.24	8.9	10.4	0	--	--	--	--
GMSG-118C	09/30/99	11:23 AM	28.43	59	-	0.47	4.7	9.4	0.8	--	--	--	--
GMSG-118C	10/07/99	11:30 AM	28.84	43	T	0.39	8.6	10.6	0	--	--	--	--
GMSG-118C	10/23/99	12:03 PM	28.84	37	T	-0.31	4	10.9	0	--	--	--	--
GMSG-118C	11/03/99	4:30 PM	28.69	30.9	-	0	8.5	11.2	0	--	--	--	--
GMSG-118C	11/06/99	2:24 PM	29.07	46.9	-	0	8	11.1	0	--	--	--	--
GMSG-118C	02/15/00	10:42 AM	28.64	19.9	0.02	0.17	5.4	10.8	0	--	--	--	--
GMSG-118C	03/16/00	11:25 AM	29	23	-	0	5.9	10.6	0.2	--	--	--	--
GMSG-118C	03/31/00	8:32 AM	28.84	46.9	-	-0.12	5.3	10.9	0	--	--	--	--
GMSG-118C	04/30/00	11:50 AM	28.86	66	-	-0.09	4.4	10.4	0	--	--	--	--
GMSG-118C	06/05/00	1:41 PM	28.94	65	-	0.13	0.8	1.5	17.1	--	--	--	--
GMSG-118C	07/19/00	4:11 PM	28.75	72	-	0.2	9.3	11.1	0	--	--	--	--
GMSG-118C	09/12/00	3:18 PM	28.67	65	-	-1.21	5.2	9.5	0	--	--	--	--
GMSG-118C	10/15/02	11:18 AM	28.71	43	-	0	6	10.5	0	--	--	--	--
GMSG-118C	04/14/03	2:03 PM	28.51	83	-	0.1	6.8	10.5	0.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118C	10/13/03	12:02 PM	28.56	65	-	0	4.1	7.2	5.7	--	--	--	--
GMSG-118C	03/30/04	9:30 AM	--	--	--	0	0	0	19.6	--	--	--	--
GMSG-118C	03/30/04	3:55 PM	--	--	--	-3.1	0	0	19.7	--	--	--	--
GMSG-118C	03/30/04	4:45 PM	--	--	--	-0.3	0	0	19.3	--	--	--	--
GMSG-118C	03/30/04	5:28 PM	--	--	--	-0.5	0	0	19.2	--	--	--	--
GMSG-118C	03/30/04	6:12 PM	--	--	--	-0.2	--	--	--	--	--	--	--
GMSG-118C	03/30/04	6:53 PM	--	--	--	0	0	0	19.3	--	--	--	--
GMSG-118C	03/31/04	9:12 AM	--	--	--	0	1.7	3.7	9.7	--	--	--	--
GMSG-118C	03/31/04	10:10 AM	--	--	--	0	2	3.8	9.5	--	--	--	--
GMSG-118C	03/31/04	11:00 AM	--	--	--	-0.1	--	--	--	--	--	--	--
GMSG-118C	03/31/04	11:38 AM	--	--	--	-0.2	2.2	3.9	9.4	--	--	--	--
GMSG-118C	03/31/04	12:15 PM	--	--	--	-0.1	2.1	3.9	9.4	--	--	--	--
GMSG-118C	04/02/04	10:45 AM	28.93	49	-	0.1	4.3	7.9	4	--	--	--	--
GMSG-118C	04/15/04	2:56 PM	28.73	59	-	0.1	0	10.6	0	--	--	--	--
GMSG-118C	04/15/04	5:06 PM	28.71	54	-	-9	0	0	19.2	--	--	--	--
GMSG-118C	06/12/04	9:35 AM	28.74	57	-	-0.022	0	0.2	19.5	--	--	--	--
GMSG-118C	06/12/04	12:02 PM	28.7	67	-	-6.2	0	0	19.9	--	--	--	--
GMSG-118C	06/12/04	2:55 PM	28.65	78	-	-7.2	0	0	20	--	--	--	--
GMSG-118C	06/12/04	5:15 PM	28.65	79	-	-9.2	0	0	20.1	--	--	--	--
GMSG-118C	06/13/04	9:27 AM	28.54	63	-	-9.2	0	0	19.9	--	--	--	--
GMSG-118C	06/13/04	3:15 PM	28.49	69	-	-9.3	0	0	19.7	--	--	--	--
GMSG-118C	06/14/04	7:03 PM	28.64	67	-	-9.9	0	0	20	--	--	--	--
GMSG-118C	06/15/04	2:13 PM	28.85	69	-	-9.4	0	0	20	--	--	--	--
GMSG-118C	06/16/04	10:36 AM	28.8	79	-	-10.3	0	0	20.2	--	--	--	--
GMSG-118C	06/17/04	8:26 AM	28.82	59	T	-10	0	0	20.1	--	--	--	--
GMSG-118C	06/22/04	3:39 PM	28.6	69	-	-9.2	0	0	20.5	--	--	--	--
GMSG-118C	06/24/04	9:11 AM	28.63	55	-	-10.3	0	0	19.8	--	--	--	--
GMSG-118C	06/28/04	6:39 PM	28.76	70	-	-9.2	0	0	20.1	--	--	--	--
GMSG-118C	07/02/04	11:36 AM	28.92	73	-	-9.3	0	0	19.9	--	--	--	--
GMSG-118C	07/07/04	8:47 AM	28.55	54	-	-9.2	0	0	19.6	--	--	--	--
GMSG-118C	07/09/04	10:48 AM	28.88	68	-	-8.7	0	0	19.8	--	--	--	--
GMSG-118C	07/13/04	5:50 PM	28.52	72	-	-9.3	0	0	19.5	--	--	--	--
GMSG-118C	07/15/04	5:11 PM	28.63	81	-	-9.1	0	0	19.7	--	--	--	--
GMSG-118C	07/20/04	9:40 AM	28.69	77	-	-8.8	0	0	19.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118C	07/30/04	5:12 PM	28.59	74	-	-9.7	0	0	20	--	--	--	--
GMSG-118C	08/05/04	12:18 PM	28.99	71	-	-9.7	0	0	19.9	--	--	--	--
GMSG-118C	08/11/04	4:37 PM	28.63	53	-	-9.3	0	0	19.9	--	--	--	--
GMSG-118C	08/23/04	2:40 PM	28.84	67	-	-2.4	0	0	20.2	--	--	--	--
GMSG-118C	08/24/04	1:31 PM	28.72	71	-	0	0	0	20	--	--	--	--
GMSG-118C	08/25/04	11:50 AM	28.64	75	-	0	0	0.3	19.1	--	--	--	--
GMSG-118C	08/26/04	11:57 AM	28.57	76	-	0	0	0.6	18.6	--	--	--	--
GMSG-118C	08/27/04	12:35 PM	28.67	79	-	0	0	0.2	19.2	--	--	--	--
GMSG-118C	08/30/04	10:28 AM	28.8	57	-	0	0	0.6	19	--	--	--	--
GMSG-118C	09/02/04	4:06 PM	28.79	82	-	0	0	0.8	19	--	--	--	--
GMSG-118C	09/09/04	11:21 AM	28.96	66	-	-9.8	0	0	20.3	--	--	--	--
GMSG-118C	09/16/04	10:02 AM	28.68	60	-	-10.1	0	0	20.2	--	--	--	--
GMSG-118C	09/24/04	3:50 PM	28.79	59	-	-8.3	0	0	20.1	--	--	--	--
GMSG-118C	09/29/04	11:32 AM	28.92	64	-	-1	0	0.3	19.5	--	--	--	--
GMSG-118C	10/08/04	12:16 PM	28.59	66	-	0.3	0	0.4	19.2	--	--	--	--
GMSG-118C	10/12/04	12:10 PM	28.75	64	-	0.2	0	0.5	19	19.42	19.25	-1.06	--
GMSG-118C	10/19/04	11:47 AM	28.83	45	-	0	0	0.8	18.3	--	--	--	--
GMSG-118C	10/28/04	11:11 AM	28.93	47	-	0.2	0	1.1	17.4	--	--	--	--
GMSG-118C	11/02/04	11:58 AM	28.88	45	T	0	0	1.2	17.2	--	--	--	--
GMSG-118C	11/12/04	10:49 AM	29.25	36	-	0	0	1.3	16.8	--	--	--	--
GMSG-118C	11/18/04	1:07 PM	28.95	53	-	0	0	1.2	17	--	--	--	--
GMSG-118C	12/09/04	10:43 AM	28.57	37	-	0	0	2	15	--	--	--	--
GMSG-118C	01/27/05	1:57 PM	29.3	15	-	0	0	4.1	10.7	--	--	--	--
GMSG-118C	04/05/05	2:21 PM	28.56	72	-	-9	--	--	--	--	--	--	--
GMSG-118C	08/17/05	11:12 AM	28.89	71	-	0	0	0.2	19.3	--	--	--	--
GMSG-118C	09/08/05	4:02 PM	28.91	71.06	-	0.1	0	0.2	19.1	--	--	--	--
GMSG-118C	10/19/05	1:35 PM	28.79	53	-	-0.02	0	0.2	19.6	--	--	--	--
GMSG-118C	03/15/06	1:12 PM	28.91	32	-	0	0	0	19.6	--	--	--	--
GMSG-118C	04/12/06	11:54 AM	28.64	60	-	-0.1	0	0	19.3	--	--	--	--
GMSG-118C	07/26/06	10:58 AM	28.48	79	-	-7.9	0	0	17.9	--	--	--	--
GMSG-118C	10/05/06	1:25 PM	29.16	56	-	-1	0	0	20.5	--	--	--	--
GMSG-118C	12/18/06	1:11 PM	29.08	31	-	0	0	0.2	20.3	--	--	--	--
GMSG-118C	01/18/07	1:09 PM	28.66	21	-	0	0	2.8	14.7	--	--	--	--
GMSG-118C	02/07/07	10:24 AM	28.86	4	-	0	0	0	21.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-118C	03/09/07	2:15 PM	28.55	44	-	0	0	3.1	14.7	--	--	--	--
GMSG-118C	04/16/07	1:06 PM	28.81	61	-	0	0	2.7	14.4	--	--	--	--
GMSG-118C	07/13/07	10:06 AM	30.04	66	-	0	0	0.3	19.4	--	--	--	--
GMSG-118C	10/15/07	2:08 PM	30.11	48	-	0	0	0.3	19.1	--	--	--	--
GMSG-118C	10/16/07	8:15 AM	29.95	51	0.05	0	0	9	3	--	--	--	--
GMSG-118C	10/17/07	2:08 PM	29.86	58	-	0	0	0.4	19.1	--	--	--	--
GMSG-118C	10/18/07	11:43 AM	29.22	65	-	0	0.4	10.2	0.4	--	--	--	--
GMSG-118C	10/19/07	9:32 AM	28.98	53	T	0	0.4	10	2	--	--	--	--
GMSG-118C	10/22/07	8:28 AM	30.02	47	-	0	0	0	19.7	--	--	--	--
GMSG-119	09/28/98	4:58 PM	28.67	68	-	0	0	0	21.2	2	2	2	77.91
GMSG-119	10/11/98	3:05 PM	28.9	63	-	0.01	0	0	20.7	200	180	2	78.11
GMSG-119	10/23/98	5:59 PM	28.88	60.1	-	0	0	0	20.7	70	60	6	78.1
GMSG-119	11/21/98	10:30 AM	28.85	33.1	-	0	0	0.3	19.7	3	3	3	78.07
GMSG-119	12/01/98	11:12 AM	28.81	46	-	0	0	0.1	20.3	--	--	--	78.05
GMSG-119	12/03/98	3:36 PM	28.43	59	-	0	0	0.3	20.3	40	40	1.5	77.68
GMSG-119	12/09/98	11:17 AM	28.93	34	-	0.01	0	0.3	19.6	1.5	1.5	1	78.08
GMSG-119	12/15/98	11:11 AM	28.79	40	-	0.02	0	0.3	19.6	60	60	2.5	69.98
GMSG-119	12/19/98	9:37 AM	28.81	22	-	-0.01	0	0.3	19.5	--	--	--	78.14
GMSG-119	12/28/98	10:40 AM	28.71	15	T	0	0	0.3	16.1	--	--	--	77.94
GMSG-119	01/06/99	3:05 PM	28.63	6.1	T	0	0	0.3	16	3	1.5	<1	77.82
GMSG-119	01/15/99	2:00 PM	28.5	16	-	0	0	0.2	19.5	35	30	5	77.6
GMSG-119	01/21/99	3:52 PM	28.78	25	-	0	0	0.3	20.2	43	43	1.25	78.12
GMSG-119	01/26/99	4:00 PM	28.89	28	-	0	0	0.3	18.7	35	35	1.5	70.1
GMSG-119	02/03/99	3:27 PM	28.14	32	0.02	0	0	0.2	19.3	28	25	1.25	77.36
GMSG-119	02/11/99	3:58 PM	28.07	37	0.13	0	0	0.4	20	7	5	3	77.25
GMSG-119	02/24/99	8:28 AM	28.87	6.1	-	0	0	0.3	19.6	7	6.5	1	78.15
GMSG-119	03/11/99	5:35 PM	29.08	32	-	0.01	0	0	19.5	40	13	6.5	78.04
GMSG-119	03/23/99	3:23 PM	28.52	41	-	0.44	0	0	18.7	250	40	2.25	--
GMSG-119	04/07/99	12:47 PM	28.49	55	T	0	0	0.2	20.3	3	<1	3.5	77.72
GMSG-119	04/20/99	12:42 PM	28.65	52	-	0	0	0.1	20.8	3.5	3.5	3.5	77.81
GMSG-119	04/30/99	9:44 AM	29.16	64.9	-	0	0	0.1	20.6	3.5	3.5	3.5	78.12
GMSG-119	05/17/99	3:35 PM	28.47	64.9	0.05	0	0	0.1	20	175	28	1.75	76.96
GMSG-119	06/02/99	3:12 PM	28.68	60.1	-	0.01	0	0.2	19.3	4.5	4.5	4.5	76.52
GMSG-119	07/17/99	4:10 PM	28.86	79	-	0.01	0	0	20.8	3	3	3	76.75

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-119	08/09/99	7:26 AM	28.75	54	-	-0.01	0	0.5	19.9	4.5	2.5	2.75	76.95
GMSG-119	09/30/99	12:14 PM	28.4	62.1	-	0	0	0.1	20.7	45	45	1.25	76.45
GMSG-119	10/07/99	1:56 PM	28.76	46	0.09	0.02	0	0.2	20.8	120	25	2	--
GMSG-119	10/23/99	2:39 PM	28.89	35.1	T	-2.88	0	0.1	20.8	160	160	4.5	77.69
GMSG-119	11/01/99	2:03 PM	28.41	64	-	0.01	0	0	20.3	--	--	--	77.28
GMSG-119	11/03/99	8:18 AM	28.69	30	-	0.01	0	0	20.6	1.5	1.5	1.5	76.6
GMSG-119	11/06/99	3:17 PM	29.07	46.9	-	0.21	0	0.2	20.1	19	19	1.25	78.1
GMSG-119	02/15/00	8:25 AM	28.71	10	-	-0.01	0	0	19.9	1.75	1.75	1.75	77.54
GMSG-119	03/15/00	10:03 AM	28.52	27	0.02	2.3	0	0	20.2	--	--	-0.26	77.22
GMSG-119	03/30/00	8:27 AM	28.82	32	-	-0.03	0	0.1	19.8	15.98	15.63	15.98	77.42
GMSG-119	04/30/00	9:45 AM	28.91	61	-	0.78	0	0	17.9	0.03	-0.5	-0.5	77.27
GMSG-119	06/05/00	2:36 PM	28.91	66	-	0.03	0	0.3	20.5	--	--	--	77.95
GMSG-119	07/19/00	7:52 AM	28.86	54	-	0	0	0.2	21	4	4	4	--
GMSG-119	09/12/00	9:30 AM	28.65	61	-	0	0	0.1	19.4	2	2	2	79.94
GMSG-119	09/08/01	2:25 PM	28.47	74	-	-0.1	0	0	21.4	<1	<1	<1	78.1
GMSG-119	10/04/01	4:20 PM	28.64	58	-	-0.01	0	0.8	19.2	5.8	5.7	5.7	77.54
GMSG-120	01/02/03	2:06 PM	28.92	27	-	--	2.8	7.2	8.8	--	--	--	--
GMSG-120	10/28/03	1:57 PM	28.08	44	T	0	19.9	11.7	0	--	--	--	--
GMSG-120	11/13/03	10:25 AM	28.92	27	T	0	0.2	4.7	13.5	--	--	--	--
GMSG-120	11/21/03	11:29 AM	28.87	32	-	0	0	0	19.6	--	--	--	--
GMSG-120	12/03/03	9:31 AM	29.25	22	-	0	0	3	15.5	--	--	--	--
GMSG-120	12/04/03	8:56 AM	29.05	18	-	0	0.6	2.6	15.5	--	--	--	--
GMSG-120	12/05/03	1:50 PM	29	39	-	0	1.3	6.2	9.5	--	--	--	--
GMSG-120	12/06/03	8:18 AM	29.11	19	-	0	0.1	6.7	9	--	--	--	--
GMSG-120	12/08/03	9:20 AM	28.69	33	-	0	8.3	11.2	1	--	--	--	--
GMSG-120	03/03/04	9:53 AM	28.99	34	-	0	0	2.5	16.1	1065	1060	0.02	--
GMSG-120	03/03/04	2:13 PM	28.88	35	-	0	1.1	3.8	13.8	--	--	--	--
GMSG-120	03/04/04	8:40 AM	28.89	31	-	0	0	0	19.6	0.43	0.39	0.29	--
GMSG-120	03/05/04	10:20 AM	28.22	30	0.06	0	24.8	10.5	0.5	--	--	--	--
GMSG-120	03/06/04	8:07 AM	28.57	25	T	0	7.5	3.5	13	--	--	--	--
GMSG-120	03/07/04	8:26 AM	28.34	29	T	0	15.1	8.6	5	--	--	--	--
GMSG-120	03/08/04	9:16 AM	28.78	24	-	0	3.9	3.9	11.8	--	--	--	--
GMSG-120	03/09/04	1:59 PM	28.98	34	-	0	6.2	6.4	6.8	--	--	--	--
GMSG-120	03/10/04	9:30 AM	28.75	35	-	0	9.4	10.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-120	03/11/04	9:17 AM	28.42	30	0.01	0	18.4	10.5	0	--	--	--	--
GMSG-120	03/12/04	11:39 AM	28.91	17	-	0	14.7	4	8.8	--	--	--	--
GMSG-120	03/13/04	7:51 AM	29.06	2	-	0	1.2	1.3	16.6	--	--	--	--
GMSG-120	03/14/04	1:55 PM	28.41	31	-	0	19.6	10.2	0	--	--	--	--
GMSG-120	03/15/04	9:51 AM	29.11	26	-	0	5.9	3.6	12.4	--	--	--	--
GMSG-120	03/16/04	10:06 AM	28.97	26	-	0	10.5	10.1	0	--	--	--	--
GMSG-120	03/17/04	9:58 AM	28.68	27	-	0	14	9.9	0	--	--	--	--
GMSG-120	03/18/04	9:13 AM	28.7	30	-	0	7.1	5.5	8.4	--	--	--	--
GMSG-120	03/19/04	9:25 AM	28.98	28	-	0	6.6	6	7.8	--	--	--	--
GMSG-120	03/20/04	8:08 AM	28.52	44	-	0	18.2	9.6	0.3	--	--	--	--
GMSG-120	03/21/04	11:42 AM	29.25	20	-	0	11.5	6.7	5.8	--	--	--	--
GMSG-120	03/22/04	8:53 AM	29.08	18	-	0	8.7	9.7	0	--	--	--	--
GMSG-120	03/23/04	3:51 PM	28.9	38	-	0	7.3	9.5	0.1	--	--	--	--
GMSG-120	03/24/04	2:52 PM	28.65	41	-	0	14.7	9.5	0.7	--	--	--	--
GMSG-120	03/26/04	11:58 AM	--	--	--	0	11	8.2	3.1	4852	--	-0.05	--
GMSG-120	03/28/04	5:50 PM	--	--	--	--	20.5	9.5	0.3	--	--	--	--
GMSG-120	03/29/04	2:20 PM	--	--	--	0	0.2	0.3	17.9	--	--	--	--
GMSG-120	03/30/04	3:10 PM	--	--	--	0	1	1.7	14.2	--	--	--	--
GMSG-120	03/31/04	5:18 PM	--	--	--	0	0	0	19.4	--	--	--	--
GMSG-120	04/01/04	5:41 PM	28.88	45	-	0	8.5	7.7	4.2	--	--	--	--
GMSG-120	04/02/04	10:18 AM	28.95	47	-	0	9.2	9	1.3	--	--	--	--
GMSG-120	04/03/04	8:50 AM	28.65	40	-	0	15	8	4	--	--	--	--
GMSG-120	04/04/04	9:55 AM	28.94	34	-	0	13.5	9.5	0.6	--	--	--	--
GMSG-120	04/05/04	8:25 AM	28.96	29	-	-0.1	12.7	8.9	3.1	--	--	--	--
GMSG-120	04/06/04	8:05 AM	28.56	34	-	0	19	9.6	0.2	--	--	--	--
GMSG-120	05/01/04	3:42 PM	28.84	50	-	0	0	1.6	18.2	--	--	--	--
GMSG-120	05/02/04	10:29 AM	28.9	36	T	0	0	0.1	20.4	--	--	--	--
GMSG-120	05/19/04	12:00 PM	28.91	71	-	0	1.6	7.7	3.2	--	--	--	--
GMSG-120	06/28/04	4:08 PM	28.78	74	-	-7.3	0	0	20.2	--	--	--	--
GMSG-122	09/28/98	2:41 PM	28.69	71.1	-	0	0	0	21.3	--	--	--	51.17
GMSG-122	10/07/98	1:27 PM	28.68	53.1	-	0.17	0	0	20.5	225	225	4.5	51.05
GMSG-122	10/09/98	12:57 PM	28.86	61	-	0	0	0	20.7	125	125	4	51.05
GMSG-122	10/11/98	11:50 AM	28.98	57	-	0	0	0	20.7	150	130	2	51.15
GMSG-122	10/23/98	3:30 PM	28.87	68	-	0	0	0	21	240	225	12	51

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-122	11/21/98	9:36 AM	28.85	28.9	-	0	0	0	19.6	900	525	1.5	51.23
GMSG-122	12/01/98	9:01 AM	28.8	36	-	0	0	0	19	--	--	--	51.28
GMSG-122	12/03/98	1:25 PM	28.38	60	-	0	0	0	20.6	22	15	1.5	50.95
GMSG-122	12/09/98	8:16 AM	28.94	17	-	0	0	0	19.2	150	150	1.25	51.29
GMSG-122	12/15/98	9:43 AM	28.79	39	-	0	0	0	19.1	250	125	3	51.27
GMSG-122	12/18/98	3:40 PM	28.32	32	T	0	0	0	24.5	20	50	1.5	50.92
GMSG-122	12/21/98	1:59 PM	28.73	14	-	2.97	0.1	0	20	--	--	--	51.2
GMSG-122	12/28/98	8:49 AM	28.74	7	-	0.04	4.8	0	5.9	--	--	--	51.18
GMSG-122	01/06/99	9:37 AM	28.53	8.1	-	0	0	0	16.8	110	20	<1	51.03
GMSG-122	01/14/99	3:24 PM	28.94	7	-	0	0	0	19.2	1000	900	1.5	51.05
GMSG-122	01/21/99	10:39 AM	28.77	24.1	-	0	0	0	20.2	38	25	1.25	51.11
GMSG-122	01/26/99	11:00 AM	28.93	19.9	-	0	0	0	19	20	10	1.5	51.16
GMSG-122	02/03/99	9:58 AM	28.19	30.9	-	0	0	0	20.7	9.5	6.5	1	50.51
GMSG-122	02/11/99	10:29 AM	28.26	39	-	3.95	0.5	0	17.8	--	--	--	50.69
GMSG-122	02/23/99	11:33 AM	28.99	23	T	8.95	0.6	0	16.1	--	--	--	--
GMSG-122	03/11/99	10:31 AM	29.1	30.9	-	0	6.4	0	2.7	--	--	--	--
GMSG-122	03/23/99	10:44 AM	28.47	44.1	-	1.17	3.3	0	10.5	--	--	--	--
GMSG-122	04/08/99	4:10 PM	28.61	57.9	-	3.19	6	0	2.7	--	--	--	--
GMSG-122	04/08/99	4:21 PM	28.61	57.9	-	--	--	--	--	--	--	--	49.95
GMSG-122	04/20/99	9:16 AM	28.71	46	-	0.2	0.1	0	20.4	85	5	1.75	50.79
GMSG-122	04/29/99	4:25 PM	29.12	69.1	-	0	2.1	0	14.3	--	--	--	51.09
GMSG-122	05/17/99	8:28 AM	28.52	63	-	0.05	1.4	0	13.2	--	--	--	50.29
GMSG-122	06/03/99	9:20 AM	28.93	60.1	-	0.14	2.8	0	6.8	--	--	--	50.3
GMSG-122	07/08/99	8:50 AM	28.78	64	-	0.08	3.9	0	8.9	--	--	--	50.21
GMSG-122	07/17/99	6:30 PM	28.87	73.9	-	-0.08	4.4	0	10	--	--	--	49.2
GMSG-122	08/08/99	11:45 AM	28.83	66.9	-	0.21	4.9	0	5.8	--	--	--	50.47
GMSG-122	09/30/99	8:32 AM	28.5	45	T	4.85	3.2	0	12.2	--	--	--	50.63
GMSG-122	10/07/99	5:10 PM	28.69	50	-	0.38	7.9	0.1	0	--	--	--	50.76
GMSG-122	10/24/99	9:32 AM	28.87	41	-	5.49	10.6	0.1	0	--	--	--	50.9
GMSG-122	11/03/99	12:50 PM	28.69	35.1	-	6.84	10.2	0	0	--	--	--	50.7
GMSG-122	11/07/99	9:49 AM	29.16	41	-	4.86	9.4	0.1	0	--	--	--	51.06
GMSG-122	02/16/00	10:30 AM	28.97	16	T	--	--	--	--	--	--	--	--
GMSG-122	03/14/00	4:22 PM	28.66	33.1	-	0.51	0.6	0	18.8	560	33.07	-0.25	--
GMSG-122	03/30/00	10:38 AM	28.82	45	-	0.59	0.5	0	19.6	5100	--	16.4	50.65

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-122	04/29/00	1:30 PM	28.94	59	-	0.28	0.8	0	16.8	5000	15	0	--
GMSG-122	06/05/00	10:52 AM	28.96	63	-	0.26	5.8	0	12.5	15.9	--	--	51.07
GMSG-122	06/20/00	8:33 AM	28.52	61	0.07	0.02	0.5	0	19	501.1	464	-0.24	50.82
GMSG-122	07/19/00	11:14 AM	28.83	65	-	0.1	0.6	0	20.5	--	--	--	50.78
GMSG-122	09/12/00	12:15 PM	28.66	64	-	1.26	20.1	0	0	--	--	--	50.66
GMSG-123	09/30/98	9:00 AM	28.65	45	T	0.01	0	0	20.3	--	--	--	--
GMSG-123	10/07/98	2:07 PM	28.71	51.1	-	--	--	--	--	--	--	--	52.85
GMSG-123	10/08/98	1:52 PM	29.01	52	-	-0.88	0	0.4	19.5	3	3	2	51.41
GMSG-123	10/11/98	2:25 PM	28.92	62.1	-	0.09	1	0.7	19.9	--	--	--	51.37
GMSG-123	10/23/98	5:49 PM	28.88	60.1	-	0.63	29.2	1.5	12.3	--	--	--	51.39
GMSG-123	11/21/98	10:57 AM	28.85	33.1	-	-0.68	39.5	2.3	7	--	--	--	51.66
GMSG-123	12/01/98	11:02 AM	28.81	46	-	-0.63	0	0	20.6	--	--	--	51.65
GMSG-123	12/03/98	3:28 PM	28.41	62	-	0.1	49.7	2	5.3	--	--	--	51.57
GMSG-123	12/09/98	10:50 AM	28.93	34	-	-0.38	0	0.9	19.9	5.5	5.5	1	51.7
GMSG-123	12/15/98	12:41 PM	28.79	40	-	0.74	0.7	0.4	20.4	--	--	--	51.7
GMSG-123	12/19/98	11:02 AM	28.84	22	-	-3.3	0	0.1	19.9	--	--	--	51.79
GMSG-123	12/21/98	4:36 PM	28.77	10	-	0.37	33	2.4	6.7	--	--	--	51.71
GMSG-123	12/29/98	10:27 AM	28.61	10	T	-2.22	4.9	0.7	21	--	--	--	51.79
GMSG-123	01/06/99	2:53 PM	28.63	6.1	T	-1.05	0.8	0.4	15.7	--	--	--	51.82
GMSG-123	01/15/99	1:52 PM	28.5	16	-	2.79	40.5	3	5	--	--	--	51.7
GMSG-123	01/21/99	2:56 PM	28.79	26.1	-	-0.55	0	0.9	19.9	310	310	1.25	51.89
GMSG-123	01/26/99	3:01 PM	28.89	30	-	0.42	10.1	1.5	14.4	--	--	--	51.86
GMSG-123	02/03/99	2:28 PM	28.14	33.1	0.01	1.25	49.7	4.2	0.1	--	--	--	51.75
GMSG-123	02/11/99	3:17 PM	28.09	37.9	0.37	--	33	3.4	5.9	--	--	--	51.74
GMSG-123	02/24/99	8:01 AM	28.87	6.1	-	1.35	46.7	4.2	1.9	--	--	--	51.97
GMSG-123	03/11/99	5:14 PM	29.06	35.1	-	0.18	36.7	4	4.3	--	--	--	52.08
GMSG-123	03/23/99	2:35 PM	28.52	41	-	1.21	40.9	4	3.1	--	--	--	--
GMSG-123	04/08/99	3:45 PM	28.61	57.9	-	-0.05	0.6	0.6	20.7	10000	1.5	--	--
GMSG-123	04/08/99	4:00 PM	28.61	57.9	-	--	--	--	--	--	--	--	52.13
GMSG-123	04/20/99	3:28 PM	28.63	52	-	0.95	51.3	4.8	0	--	--	--	52.15
GMSG-123	04/30/99	9:34 AM	29.16	64.9	-	-0.25	0	0.1	20.7	3.8	3.8	3.25	52.28
GMSG-123	05/17/99	3:23 PM	28.48	66.9	0.02	0.78	52.5	5.3	0	--	--	--	52.16
GMSG-123	06/02/99	4:46 PM	28.72	57	-	-0.84	0.4	2.4	16.6	8000	8000	3	52.21
GMSG-123	06/15/99	--	--	--	--	-0.02	0	1.3	18.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-123	06/16/99	--	--	--	--	-0.39	0.3	1.3	17.5	--	--	--	--
GMSG-123	06/17/99	--	--	--	--	-0.16	0	0.7	19.8	--	--	--	--
GMSG-123	06/18/99	--	--	--	--	-0.02	0	0.3	19.7	--	--	--	--
GMSG-123	06/19/99	--	--	--	--	0.02	0.3	1.6	16.8	--	--	--	--
GMSG-123	06/20/99	--	--	--	--	0.07	51.6	4.8	0	--	--	--	--
GMSG-123	06/21/99	6:01 PM	28.87	75	-	1.05	59.4	5.7	0	--	--	--	--
GMSG-123	06/22/99	4:13 PM	28.66	79	-	1.51	60.8	5.2	0	--	--	--	--
GMSG-123	06/23/99	4:10 PM	28.47	69.1	T	1.5	63.1	5.5	0	--	--	--	--
GMSG-123	06/24/99	2:28 PM	28.59	82.9	-	-0.23	62.6	4	0	--	--	--	--
GMSG-123	06/25/99	2:25 PM	28.65	88	-	0.07	67.5	4.1	0.6	--	--	--	--
GMSG-123	06/26/99	3:31 PM	28.54	87.1	-	0.89	65.5	4.4	0	--	--	--	--
GMSG-123	06/27/99	1:12 PM	28.51	79	-	0.71	66.2	4.3	0	--	--	--	--
GMSG-123	06/28/99	1:46 PM	28.45	63	0.05	1.27	66.8	4.5	0	--	--	--	51.95
GMSG-123	06/29/99	3:16 PM	28.57	70	-	-0.15	60.7	3.4	0.6	--	--	--	--
GMSG-123	06/30/99	3:47 PM	28.57	62.1	0.08	0.42	65.1	4.3	0	--	--	--	--
GMSG-123	07/01/99	1:42 PM	28.42	66.9	T	0.92	65.9	4.6	0	--	--	--	--
GMSG-123	07/02/99	2:22 PM	28.62	79	-	-0.4	0	1	19.1	--	--	--	--
GMSG-123	07/03/99	1:30 PM	28.62	73	-	0.12	46.6	4	0	--	--	--	--
GMSG-123	07/04/99	1:06 PM	28.66	87.1	-	0.02	48.4	3.8	0	--	--	--	--
GMSG-123	07/05/99	12:06 PM	28.61	79	-	0.82	55.8	4.5	0	--	--	--	--
GMSG-123	07/06/99	1:47 PM	28.68	80.1	-	-0.23	49.3	4.1	0	--	--	--	--
GMSG-123	07/07/99	1:05 PM	28.73	78.1	-	0.13	48.6	3.6	0.9	--	--	--	--
GMSG-123	07/08/99	1:21 PM	28.72	59	0.07	0.94	43.3	4.3	1	--	--	--	--
GMSG-123	07/09/99	2:55 PM	28.55	63	-	-0.13	48.8	4.2	2.6	--	--	--	--
GMSG-123	07/10/99	5:21 PM	28.91	73	-	-0.61	24	2.7	9.7	--	--	--	--
GMSG-123	07/11/99	10:35 AM	28.94	75	-	-0.14	21.4	2.1	10.9	--	--	--	--
GMSG-123	07/12/99	1:42 PM	28.85	81	-	0.68	48.9	4.5	1	--	--	--	--
GMSG-123	07/17/99	6:10 PM	28.86	77	-	-0.15	0.1	8.6	11	--	--	--	51.91
GMSG-123	08/09/99	8:45 AM	28.72	62.1	-	0.96	79.3	3.9	0	--	--	--	51.52
GMSG-123	09/30/99	12:04 PM	28.4	62.1	-	3.22	57.1	4.7	0	--	--	--	51
GMSG-123	10/07/99	9:22 AM	28.97	37.9	0.12	0.68	32.6	3.6	4.3	--	--	--	51
GMSG-123	10/23/99	11:24 AM	28.83	37	T	-2.46	0	0	21	25	8	5.75	51.05
GMSG-123	11/03/99	3:38 PM	28.69	35.1	-	0.37	62.9	5	0	--	--	--	50.91
GMSG-123	11/06/99	1:22 PM	29.08	46.9	-	-1.04	26.5	4	1.6	--	--	--	50.96

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-123	02/15/00	9:27 AM	28.69	14	-	0.02	10.4	4.6	10.8	--	--	--	51.39
GMSG-123	03/16/00	11:55 AM	28.98	25	-	-0.95	0	0.2	20.4	38.52	38.05	-0.05	52.59
GMSG-123	03/30/00	3:53 PM	28.77	54	-	0.05	23.1	4.5	4.7	--	--	--	51.57
GMSG-123	04/29/00	3:06 PM	28.94	59	-	-0.09	0	1.6	18.1	--	--	--	51.68
GMSG-123	05/01/00	8:50 AM	28.57	58	-	0.34	63	4.6	0	--	--	--	51.57
GMSG-123	06/05/00	2:26 PM	28.94	65	-	1.3	0	4.1	16.2	--	--	--	51.6
GMSG-123	07/19/00	2:58 PM	28.77	71	-	0.85	62	4.1	0	--	--	--	51.48
GMSG-123	09/12/00	3:30 PM	28.68	66	-	-0.96	0	0	19.9	5000	12	2	52.2
GMSG-123	10/15/02	12:27 PM	28.73	41	-	0.1	66.6	5.2	0	--	--	--	49.86
GMSG-123	04/14/03	2:40 PM	28.49	84	-	2	21.6	5.6	3.1	--	--	--	49.44
GMSG-123	10/13/03	1:00 PM	28.56	67	-	0.9	44.9	6.7	0.7	--	--	--	48.98
GMSG-123	03/30/04	10:00 AM	--	--	--	0	44.8	6.6	0.1	--	--	--	37.3
GMSG-123	03/30/04	2:10 PM	--	--	--	0	18	1.9	12.2	--	--	--	--
GMSG-123	03/30/04	3:45 PM	--	--	--	0	23.5	2.4	9.5	--	--	--	--
GMSG-123	03/30/04	4:15 PM	--	--	--	0	32	3.4	6	--	--	--	--
GMSG-123	03/30/04	4:52 PM	--	--	--	0	37	4.5	3.9	--	--	--	--
GMSG-123	03/30/04	5:33 PM	--	--	--	0	56.8	5.7	1.9	--	--	--	--
GMSG-123	03/30/04	6:18 PM	--	--	--	-0.1	--	--	--	--	--	--	--
GMSG-123	03/30/04	7:00 PM	--	--	--	0	23.9	5.4	3.1	--	--	--	--
GMSG-123	03/31/04	9:30 AM	--	--	--	0	12.2	6.3	4.8	--	--	--	--
GMSG-123	03/31/04	10:17 AM	--	--	--	0	11.8	6.8	4.2	--	--	--	--
GMSG-123	03/31/04	11:06 AM	--	--	--	-0.1	--	--	--	--	--	--	--
GMSG-123	03/31/04	11:50 AM	--	--	--	0	11.2	7.3	3.7	--	--	--	--
GMSG-123	03/31/04	12:28 PM	--	--	--	0	10.7	7.3	3.9	--	--	--	--
GMSG-123	04/02/04	9:55 AM	28.95	47	-	0.7	53.1	5.4	0	--	--	--	50.1
GMSG-123	04/15/04	3:27 PM	28.73	59	-	1.2	55.1	4	0.5	--	--	--	--
GMSG-123	04/15/04	5:19 PM	28.71	54	-	1.4	55	4.2	0.3	--	--	--	--
GMSG-123	06/12/04	10:02 AM	28.74	57	-	0.473	62.3	5.1	0	--	--	--	--
GMSG-123	06/12/04	12:47 PM	28.68	72	-	0.788	67.6	4.3	0	--	--	--	--
GMSG-123	06/12/04	3:47 PM	28.65	78	-	1.036	62.7	4.4	0.1	--	--	--	--
GMSG-123	06/12/04	5:58 PM	28.65	77	-	0.709	63.1	4.4	0	--	--	--	--
GMSG-123	06/13/04	10:25 AM	28.58	64	-	0.403	74.9	4	0	--	--	--	--
GMSG-123	06/13/04	4:15 PM	28.48	72	-	0.91	72.2	3.8	0	--	--	--	--
GMSG-123	06/14/04	7:30 PM	28.67	64	-	-0.5	65.9	3.8	1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-123	06/15/04	2:30 PM	28.84	70	-	-0.5	65.9	3.7	0.9	--	--	--	--
GMSG-123	06/16/04	10:54 AM	28.8	79	-	0.083	67.4	3.8	0.6	--	--	--	--
GMSG-123	06/17/04	8:54 AM	28.82	62	-	-0.05	67	3.9	0.9	--	--	--	--
GMSG-123	06/22/04	4:01 PM	28.6	69	-	0.403	69.2	4	0.2	--	--	--	--
GMSG-123	06/24/04	8:39 AM	28.63	55	-	-0.452	49.4	3.5	4.3	--	--	--	--
GMSG-123	06/28/04	5:59 PM	28.76	73	-	0.14	0	1.7	17.6	--	--	--	--
GMSG-123	07/02/04	11:55 AM	28.92	73	-	0	0	2	17.1	--	--	--	--
GMSG-123	07/07/04	7:59 AM	28.55	52	-	0.156	10.5	3.7	9.6	--	--	--	--
GMSG-123	07/09/04	9:45 AM	28.89	67	-	-0.606	0	0.1	19.6	--	--	--	--
GMSG-123	07/13/04	5:00 PM	28.52	72	-	0.535	59.7	4.5	0	--	--	--	--
GMSG-123	07/15/04	7:58 PM	28.62	65	-	-0.02	0	1.2	18	--	--	--	--
GMSG-123	07/20/04	8:54 AM	28.69	74	-	-0.812	0	0	19.7	--	--	--	--
GMSG-123	07/30/04	4:37 PM	28.59	74	-	-0.043	0	3.2	16	--	--	--	--
GMSG-123	08/05/04	11:17 AM	29.01	68	-	-0.784	0	0	19.8	--	--	--	--
GMSG-123	08/11/04	3:53 PM	28.61	54	T	-0.301	0	0.3	19.2	--	--	--	--
GMSG-123	08/23/04	3:08 PM	28.84	67	-	-0.3	0	0.4	19.1	--	--	--	--
GMSG-123	08/24/04	2:16 PM	28.72	71	-	0	0	3.8	14	--	--	--	--
GMSG-123	08/25/04	12:32 PM	28.63	76	-	0	0	0.9	18.1	--	--	--	--
GMSG-123	08/26/04	12:21 PM	28.57	76	-	0	0	3	16.2	--	--	--	--
GMSG-123	08/27/04	1:18 PM	28.67	79	-	0	0	0.8	18.3	--	--	--	--
GMSG-123	08/30/04	10:59 AM	28.79	62	-	0.3	2.4	4.1	6.1	--	--	--	--
GMSG-123	09/02/04	12:51 PM	28.83	80	-	0.4	17.8	5.6	0.6	--	--	--	--
GMSG-123	09/09/04	11:48 AM	28.94	67	-	0	0	0	20.3	--	--	--	--
GMSG-123	09/16/04	10:25 AM	28.68	60	-	-0.6	0	0	20.4	--	--	--	--
GMSG-123	09/24/04	4:10 PM	28.79	59	-	0	0	0.4	19.5	--	--	--	--
GMSG-123	09/29/04	11:46 AM	28.92	64	-	0.1	0	1	18.4	--	--	--	--
GMSG-123	10/08/04	12:03 PM	28.59	66	-	0	0	4.6	11.8	--	--	--	--
GMSG-123	10/12/04	12:42 PM	28.72	66	-	0	0	0.5	19	1907	1800	-0.52	48.46
GMSG-123	10/19/04	1:01 PM	28.84	46	-	0	0	0.6	19.3	--	--	--	--
GMSG-123	10/28/04	11:22 AM	28.93	47	-	0.5	6	5.6	6.2	--	--	--	48.72
GMSG-123	11/02/04	12:20 PM	28.88	45	T	0	0	0.5	19.1	--	--	--	--
GMSG-123	11/12/04	11:20 AM	29.25	36	-	-0.3	0	0	20.1	--	--	--	--
GMSG-123	11/18/04	1:34 PM	28.95	53	-	0	36.3	5	3.3	--	--	--	48.87
GMSG-123	11/21/04	10:23 AM	29.01	36	-	-0.3	0	0	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-123	11/22/04	10:27 AM	28.79	34	-	0	0	4.1	12.9	--	--	--	48.71
GMSG-123	11/29/04	3:12 PM	28.91	31	-	0.1	0	0.3	19.7	--	--	--	48.83
GMSG-123	11/29/04	3:13 PM	28.91	31	-	--	0	0.2	20	--	--	--	--
GMSG-123	11/30/04	4:04 PM	28.68	32	-	0	0.5	1.1	19	--	--	--	48.7
GMSG-123	11/30/04	4:05 PM	28.68	32	-	--	--	--	--	--	--	--	48.7
GMSG-123	12/01/04	4:25 PM	28.71	30	T	-0.7	0.7	0.6	17.8	--	--	--	48.85
GMSG-123	12/02/04	3:48 PM	28.49	29	T	0.3	0.3	0.5	18.4	--	--	--	48.65
GMSG-123	12/09/04	1:14 PM	28.52	40	-	0	0	0	20	--	--	--	48.73
GMSG-123	12/14/04	1:30 PM	29.12	21	-	0	0	0	19.5	--	--	--	48.99
GMSG-123	12/15/04	2:40 PM	28.66	37	-	1.3	--	--	--	--	--	--	48.72
GMSG-123	12/16/04	12:40 PM	28.74	24	T	0	--	--	--	--	--	--	48.9
GMSG-123	12/17/04	8:48 AM	29.05	4	-	-0.2	0	0	20	--	--	--	49
GMSG-123	12/20/04	3:10 PM	28.31	12	T	2	0	0	19.4	--	--	--	48.59
GMSG-123	12/20/04	3:11 PM	28.31	12	T	2	--	--	--	--	--	--	48.59
GMSG-123	12/21/04	1:26 PM	28.37	27	-	0	0.4	0.2	18	--	--	--	49.91
GMSG-123	12/22/04	2:00 PM	28.92	7	-	-0.8	0	0	19.3	--	--	--	49.02
GMSG-123	01/03/05	3:38 PM	29.07	17	-	0.1	0	0.5	18.9	--	--	--	48.99
GMSG-123	01/04/05	3:02 PM	29.1	19	-	0.1	0	0	19.7	--	--	--	49
GMSG-123	01/11/05	12:01 PM	28.81	22	-	3	--	--	--	--	--	--	48.85
GMSG-123	01/11/05	12:07 PM	28.81	22	-	0.6	0	0	19.2	--	--	--	48.85
GMSG-123	01/21/05	11:39 AM	28.98	13	-	-1.8	0	0	20.4	--	--	--	--
GMSG-123	01/27/05	11:40 AM	29.34	10	-	-0.2	0	0	19.8	--	--	--	49.18
GMSG-123	02/02/05	2:59 PM	28.97	40	-	0.7	0	0	19.1	--	--	--	48.81
GMSG-123	02/03/05	7:26 AM	28.79	32	-	0.9	--	--	--	--	--	--	--
GMSG-123	02/04/05	1:25 PM	28.83	43	-	0	3.8	1.1	16.8	--	--	--	49.25
GMSG-123	02/07/05	2:55 PM	28.88	27	-	-0.1	0.2	1.1	17.8	--	--	--	49.05
GMSG-123	02/08/05	2:45 PM	28.96	21	-	-0.2	--	--	--	--	--	--	--
GMSG-123	02/10/05	10:46 AM	28.93	23	-	-0.3	0.2	3.4	15.1	--	--	--	49.13
GMSG-123	02/11/05	3:10 PM	28.59	41	-	0.1	3.5	3.4	10.3	--	--	--	48.95
GMSG-123	02/14/05	1:24 PM	28.23	32	T	0.1	2.1	1.8	15.1	--	--	--	48.88
GMSG-123	02/15/05	3:00 PM	28.72	25	-	-0.7	5.8	1.9	13.2	--	--	--	49.09
GMSG-123	03/11/05	11:47 AM	28.15	25	T	--	--	--	--	--	--	--	--
GMSG-123	03/21/05	1:52 PM	29.01	33	-	--	--	--	--	--	--	--	--
GMSG-123	03/31/05	1:15 PM	28.36	42	T	-0.8	12	4.9	3.6	--	--	--	49.2

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-123	04/05/05	2:01 PM	28.56	72	-	2	1.5	0.5	17.7	--	--	--	49.14
GMSG-124	10/07/98	2:15 PM	28.71	51.1	-	-0.77	0.6	0.7	18.9	--	--	--	--
GMSG-124	10/11/98	2:10 PM	28.92	62.1	-	0.6	31.5	3	1.7	--	--	--	--
GMSG-124	10/23/98	5:40 PM	28.88	60.1	-	0.63	34.8	3.5	0	--	--	--	--
GMSG-124	11/21/98	10:48 AM	28.85	33.1	-	-0.37	0	1	19.2	450	450	1.5	47.6
GMSG-124	12/01/98	10:53 AM	28.81	46	-	-0.65	0	0.2	20.4	--	--	--	--
GMSG-124	12/03/98	3:18 PM	28.41	62	-	-0.11	35.5	3.7	0	--	--	--	--
GMSG-124	12/09/98	11:05 AM	28.93	34	-	-0.16	0	0.4	19.4	450	450	1	--
GMSG-124	12/15/98	12:54 PM	28.79	40	-	0.44	6	0.9	16.6	--	--	--	--
GMSG-124	12/19/98	11:25 AM	28.84	22	-	-2.18	0	0.1	20.4	--	--	--	--
GMSG-124	12/21/98	4:29 PM	28.75	11	-	-0.04	33.9	4.4	0	--	--	--	--
GMSG-124	12/29/98	10:40 AM	28.64	9	T	-2.1	0	0	21.1	400	400	1.5	--
GMSG-124	01/06/99	2:39 PM	28.63	6.1	T	-1.07	0.1	0.2	16.1	--	--	--	--
GMSG-124	01/15/99	1:46 PM	28.5	16	-	1.92	33.7	4.4	0	--	--	--	--
GMSG-124	01/21/99	2:39 PM	28.79	26.1	-	-0.4	0	0.2	20.7	10	10	1.5	--
GMSG-124	01/26/99	2:46 PM	28.89	30	-	0.48	32.1	4.1	0	--	--	--	--
GMSG-124	02/03/99	2:11 PM	28.14	33.1	0.01	0.67	33.5	4.2	0	--	--	--	--
GMSG-124	02/11/99	3:05 PM	28.09	37.9	0.37	2.41	32.5	4.2	0	--	--	--	--
GMSG-124	02/24/99	7:43 AM	28.87	6.1	-	0.69	31.8	3.9	0	--	--	--	--
GMSG-124	03/11/99	5:00 PM	29.06	35.1	-	0.06	19.2	3.9	3	--	--	--	--
GMSG-124	03/23/99	2:24 PM	28.48	45	-	0.11	14.9	2.1	9	--	--	--	--
GMSG-124	04/08/99	2:51 PM	28.63	59	-	0.31	1.3	1.3	19.6	--	--	--	--
GMSG-124	04/08/99	3:05 PM	28.63	59	-	--	--	--	--	--	--	--	47.31
GMSG-124	04/20/99	3:07 PM	28.63	52	-	0.68	30.4	4.3	0	--	--	--	--
GMSG-124	04/30/99	9:24 AM	29.17	62.1	-	-0.15	0	0.3	20.2	350	240	3.5	--
GMSG-124	05/17/99	3:12 PM	28.48	66.9	0.02	0.53	28.2	3.8	0	--	--	--	--
GMSG-124	06/02/99	4:34 PM	28.72	57	-	-0.77	0	1.3	18.9	200	200	3.5	--
GMSG-124	06/15/99	--	--	--	--	0.1	0	1.1	14.2	--	--	--	--
GMSG-124	06/16/99	--	--	--	--	-0.41	0	0.8	18.6	--	--	--	--
GMSG-124	06/17/99	--	--	--	--	-0.01	0	0.4	20.2	--	--	--	--
GMSG-124	06/18/99	--	--	--	--	-0.1	0	0.4	19.7	--	--	--	--
GMSG-124	06/19/99	--	--	--	--	0.06	0	0.9	19.3	--	--	--	--
GMSG-124	06/20/99	--	--	--	--	0	0.4	0.9	18.8	--	--	--	--
GMSG-124	06/21/99	5:55 PM	28.87	75	-	0.89	30.1	4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-124	06/22/99	4:05 PM	28.66	79	-	1.27	29.2	3.8	0	--	--	--	--
GMSG-124	06/23/99	4:00 PM	28.47	69.1	T	0.7	29.8	4	0	--	--	--	--
GMSG-124	06/24/99	2:06 PM	28.59	82.9	-	-0.2	29.2	3.4	0	--	--	--	--
GMSG-124	06/25/99	1:00 PM	28.67	86	-	--	26.2	3.1	0	--	--	--	--
GMSG-124	06/26/99	3:23 PM	28.56	87.1	-	0.6	28.8	3.7	0	--	--	--	--
GMSG-124	06/27/99	1:04 PM	28.51	79	-	0.68	29.2	3.6	0	--	--	--	--
GMSG-124	06/28/99	1:40 PM	28.45	63	0.05	0.7	28.2	3.9	0	--	--	--	--
GMSG-124	06/29/99	2:03 PM	28.58	68	-	-0.18	24.6	3.3	0.7	--	--	--	--
GMSG-124	06/30/99	3:34 PM	28.57	62.1	0.08	0.15	28.6	3.7	0	--	--	--	--
GMSG-124	07/01/99	1:37 PM	28.42	66.9	T	0.66	28.7	3.9	0	--	--	--	--
GMSG-124	07/02/99	2:03 PM	28.62	79	-	-0.29	21.6	2.8	2.4	--	--	--	--
GMSG-124	07/03/99	1:21 PM	28.62	69.1	0.06	0.09	25.9	3.3	0	--	--	--	--
GMSG-124	07/04/99	12:52 PM	28.66	87.1	-	-0.05	28.8	3.6	0	--	--	--	--
GMSG-124	07/05/99	12:01 PM	28.61	79	-	0.77	28.5	3.6	0	--	--	--	--
GMSG-124	07/06/99	1:30 PM	28.68	80.1	-	-0.21	26.4	3.4	0	--	--	--	--
GMSG-124	07/07/99	12:49 PM	28.73	78.1	-	-0.01	28.1	3.6	0	--	--	--	--
GMSG-124	07/08/99	1:05 PM	28.72	59	0.07	0.38	28.1	3.9	0	--	--	--	--
GMSG-124	07/09/99	2:40 PM	28.55	63	-	-0.47	28.2	3.8	0.1	--	--	--	--
GMSG-124	07/10/99	4:40 PM	28.91	73	-	-0.18	25.1	3.2	1.9	--	--	--	--
GMSG-124	07/11/99	10:22 AM	28.95	75.9	-	-0.04	28	3.3	0	--	--	--	--
GMSG-124	07/12/99	1:35 PM	28.85	81	-	0.57	30.1	3.8	0	--	--	--	--
GMSG-124	07/13/99	2:17 PM	28.68	73.9	-	0.86	30	4	0	--	--	--	--
GMSG-124	07/14/99	9:40 AM	28.59	73	-	0.52	29.6	4.1	0	--	--	--	--
GMSG-124	07/15/99	4:15 PM	28.68	84	-	0.12	30.2	4	0	--	--	--	--
GMSG-124	07/16/99	2:10 PM	28.68	73	T	0.1	32.5	3.8	0	--	--	--	--
GMSG-124	07/17/99	1:05 PM	28.86	77	-	-0.2	29	3.4	2	--	--	--	--
GMSG-124	07/18/99	11:40 AM	28.89	73.9	-	0.26	30	4	0.1	--	--	--	--
GMSG-124	07/19/99	11:15 AM	28.85	70	-	-0.21	30.5	3.7	0	--	--	--	--
GMSG-124	07/20/99	10:55 AM	28.9	75	-	0.09	30.8	3.9	0	--	--	--	--
GMSG-124	07/21/99	10:20 AM	28.76	66.9	0.03	0.18	29.8	3.7	0	--	--	--	--
GMSG-124	07/22/99	3:49 PM	28.74	87.1	-	0.41	30.9	3.4	0	--	--	--	--
GMSG-124	07/23/99	1:46 PM	28.61	84.9	-	0.75	31.1	3.9	0	--	--	--	--
GMSG-124	07/24/99	9:45 AM	28.62	84	-	-0.03	32.4	3.5	0	--	--	--	--
GMSG-124	07/25/99	10:34 AM	28.74	82.9	-	-0.29	29.9	3.4	1.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-124	07/26/99	9:48 AM	28.62	75.9	-	0.01	30.1	4.1	0	--	--	--	--
GMSG-124	07/27/99	2:35 PM	28.71	81	-	0	30.5	3.7	0.1	--	--	--	--
GMSG-124	08/09/99	8:56 AM	28.72	62.1	-	0.85	30.6	3.5	0	--	--	--	--
GMSG-124	09/30/99	11:55 AM	28.4	62.1	-	2.04	29.3	3.9	0	--	--	--	--
GMSG-124	10/07/99	9:34 AM	28.95	39.9	0.19	0.66	29	4.7	0	--	--	--	--
GMSG-124	10/23/99	11:54 AM	28.84	37	T	-1.49	30.6	4	0	--	--	--	--
GMSG-124	11/03/99	3:52 PM	28.69	35.1	-	0	33.4	4.9	0	--	--	--	--
GMSG-124	11/06/99	2:18 PM	29.07	46.9	-	-0.12	28.2	3.9	0	--	--	--	--
GMSG-124	02/15/00	9:48 AM	28.67	21	-	0.02	11.8	1.6	11.6	--	--	--	--
GMSG-124	03/16/00	11:38 AM	28.98	25	-	-0.04	21.2	2.8	4.7	--	--	--	--
GMSG-124	03/30/00	4:24 PM	28.77	54	-	-0.05	0	0.5	19.9	>10000	--	15.88	--
GMSG-124	05/01/00	9:13 AM	28.57	58	-	0.12	25.9	4.4	0	--	--	--	--
GMSG-124	06/05/00	2:17 PM	28.94	65	-	0.32	0	1.8	19.7	--	--	--	--
GMSG-124	07/19/00	2:48 PM	28.77	71	-	0.05	24.8	3.9	1	--	--	--	--
GMSG-124	09/12/00	2:57 PM	28.67	65	-	-0.53	0	4	13.8	5000	250	3	--
GMSG-124	10/15/02	12:37 PM	28.74	42	-	-0.1	20.5	5.2	0	--	--	--	--
GMSG-124	04/14/03	2:47 PM	28.49	84	-	1	17.5	5.2	0.5	--	--	--	--
GMSG-124	10/13/03	12:44 PM	28.56	67	-	0.2	17.1	5.2	0	--	--	--	47.24
GMSG-124	03/30/04	9:55 AM	--	--	--	0	0	1.1	16.6	--	--	--	47.3
GMSG-124	03/30/04	1:55 PM	--	--	--	0	0	0	19.5	--	--	--	--
GMSG-124	03/30/04	3:42 PM	--	--	--	0	0	0	19.4	--	--	--	--
GMSG-124	03/30/04	4:08 PM	--	--	--	0	0	0	19.6	--	--	--	--
GMSG-124	03/30/04	4:48 PM	--	--	--	-0.1	0	0	19.3	--	--	--	--
GMSG-124	03/30/04	5:30 PM	--	--	--	-0.4	0	0	19.1	--	--	--	--
GMSG-124	03/30/04	6:15 PM	--	--	--	-0.3	--	--	--	--	--	--	--
GMSG-124	03/30/04	6:55 PM	--	--	--	-0.2	0	0	19.3	--	--	--	--
GMSG-124	03/31/04	9:05 AM	--	--	--	0	0	0	19.3	--	--	--	--
GMSG-124	03/31/04	12:05 PM	--	--	--	-13.8	0	0	19.3	--	--	--	--
GMSG-124	04/02/04	10:10 AM	28.95	47	-	0.1	12.1	3.9	6.5	--	--	--	47.26
GMSG-124	04/15/04	3:22 PM	28.73	59	-	0.1	11.2	4.7	3.3	--	--	--	--
GMSG-124	04/15/04	5:12 PM	28.71	54	-	0.4	10.9	5.2	2.6	--	--	--	--
GMSG-124	06/12/04	9:55 AM	28.74	57	-	0.032	9.7	6.7	0	--	--	--	--
GMSG-124	06/12/04	12:35 PM	28.68	72	-	0.275	15.1	5.1	0.4	--	--	--	--
GMSG-124	06/12/04	3:35 PM	28.65	78	-	0.255	14.6	4.9	0.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-124	06/12/04	5:51 PM	28.65	77	-	0.155	12.4	5.2	0.2	--	--	--	--
GMSG-124	06/13/04	10:15 AM	28.58	64	-	0.109	16	3.9	2.7	--	--	--	--
GMSG-124	06/13/04	4:05 PM	28.48	72	-	0.206	10.9	4.1	3.1	--	--	--	--
GMSG-124	06/14/04	7:13 PM	28.64	67	-	-0.6	0	0	20	--	--	--	--
GMSG-124	06/15/04	2:25 PM	28.85	69	-	-0.411	0	0.8	19.2	--	--	--	--
GMSG-124	06/16/04	10:53 AM	28.8	79	-	-0.062	0	2.4	17.4	--	--	--	--
GMSG-124	06/17/04	8:59 AM	28.82	62	-	-0.506	0	0.8	19.2	--	--	--	--
GMSG-124	06/17/04	11:10 AM	28.84	68	-	--	1	1.3	16.2	--	--	--	--
GMSG-124	06/22/04	3:54 PM	28.6	69	-	0.109	0	2.4	17.7	--	--	--	--
GMSG-124	06/24/04	8:53 AM	28.63	55	-	-0.485	0	0.3	19.2	--	--	--	--
GMSG-124	06/28/04	6:05 PM	28.76	73	-	0.009	0	0.7	19.1	--	--	--	--
GMSG-124	07/02/04	11:50 AM	28.92	73	-	0	0	0.4	19.3	--	--	--	--
GMSG-124	07/07/04	9:04 AM	28.55	54	-	-0.128	0	0.6	18.5	--	--	--	--
GMSG-124	07/09/04	11:04 AM	28.88	68	-	-0.458	0.2	0.9	16.7	--	--	--	--
GMSG-124	07/13/04	5:16 PM	28.52	72	-	0.008	2	3.7	5.9	--	--	--	--
GMSG-124	07/15/04	5:46 PM	28.62	79	-	0.001	0	2	17.7	--	--	--	--
GMSG-124	07/20/04	9:49 AM	28.69	77	-	-0.564	0	0.2	19.5	--	--	--	--
GMSG-124	07/30/04	5:36 PM	28.59	72	-	0	0	2.2	17.5	--	--	--	--
GMSG-124	08/05/04	12:39 PM	28.99	71	-	-0.011	0	0	19.9	--	--	--	--
GMSG-124	08/11/04	4:46 PM	28.63	53	-	-1.025	0	0.3	19.5	--	--	--	--
GMSG-124	08/23/04	3:03 PM	28.84	67	-	0	0	0.9	19.2	--	--	--	--
GMSG-124	08/24/04	2:11 PM	28.72	71	-	0.2	0	2.4	12.8	--	--	--	--
GMSG-124	08/25/04	12:24 PM	28.64	75	-	0	0	1.6	17.2	--	--	--	--
GMSG-124	08/26/04	11:34 AM	28.57	76	-	0.1	0	3.8	8.7	--	--	--	--
GMSG-124	08/27/04	1:03 PM	28.67	79	-	0	0	1.1	18.4	--	--	--	--
GMSG-124	08/30/04	10:51 AM	28.79	62	-	0.1	0	4.4	6.2	--	--	--	--
GMSG-124	09/02/04	4:11 PM	28.79	82	-	0.2	0	3.7	8.5	--	--	--	--
GMSG-124	09/09/04	11:39 AM	28.94	67	-	0	0	1	19.1	--	--	--	--
GMSG-124	09/16/04	10:10 AM	28.68	60	-	-0.8	0	0.9	19.2	--	--	--	--
GMSG-124	09/24/04	4:05 PM	28.79	59	-	-0.2	0	0.5	19.6	--	--	--	--
GMSG-124	09/29/04	11:40 AM	28.92	64	-	0.2	0	3	11.4	--	--	--	--
GMSG-124	10/08/04	12:26 PM	28.59	66	-	0.6	0	1	18.8	--	--	--	--
GMSG-124	10/12/04	12:24 PM	28.75	64	-	0.5	0	4	7.5	144	143	-0.53	47.3
GMSG-124	10/19/04	11:32 AM	28.83	45	-	0	0	4.1	6.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-124	10/28/04	11:19 AM	28.93	47	-	0.5	0	5.1	4.5	--	--	--	--
GMSG-124	11/02/04	11:40 AM	28.88	45	T	0	0	4.9	5.2	--	--	--	--
GMSG-124	11/12/04	10:31 AM	29.25	36	-	-0.1	0	0.3	19.7	--	--	--	--
GMSG-124	11/18/04	1:30 PM	28.95	53	-	0	0	0.4	19.6	--	--	--	--
GMSG-124	12/09/04	10:30 AM	28.57	37	-	0	0	4.1	8.2	--	--	--	--
GMSG-124	01/27/05	12:31 PM	29.31	13	-	-0.1	0	0.4	19.3	--	--	--	--
GMSG-124	04/05/05	2:11 PM	28.56	72	-	0	0	---	12.9	--	--	--	47.37
GMSG-124	04/20/05	12:46 PM	28.87	47	-	-0.2	0	0	20.2	--	--	--	--
GMSG-124	08/17/05	11:28 AM	28.89	71	-	0	0	1.8	14.1	--	--	--	--
GMSG-124	09/08/05	4:14 PM	28.91	71.06	-	0.1	0	2.4	12.7	--	--	--	--
GMSG-124	10/19/05	3:00 PM	28.79	53	-	-0.17	0	0	19.9	--	--	--	47.49
GMSG-124	03/15/06	2:38 PM	28.91	34	-	0	0	0	18.9	--	--	--	47.32
GMSG-124	04/12/06	11:58 AM	28.64	60	-	-0.4	0	0	19.4	--	--	--	47.3
GMSG-124	07/26/06	10:37 AM	28.48	79	-	0	0	0	17.9	--	--	--	47.48
GMSG-124	10/05/06	1:31 PM	29.15	58	-	0	0	1.4	19.4	--	--	--	47.49
GMSG-124	12/18/06	1:17 PM	29.08	31	-	0	0	0.1	20.4	--	--	--	--
GMSG-124	01/18/07	1:27 PM	28.66	21	-	0	0	2.4	16.5	--	--	--	--
GMSG-124	02/07/07	10:28 AM	28.86	4	-	0	0	1.2	20	--	--	--	--
GMSG-124	03/09/07	2:27 PM	28.55	44	-	0.2	0	2.2	17.1	--	--	--	--
GMSG-124	04/16/07	1:09 PM	28.81	61	-	0	0	1.4	18.4	--	--	--	--
GMSG-124	07/13/07	10:34 AM	30.03	67	-	-0.2	0	1	19	--	--	--	--
GMSG-124	10/15/07	2:31 PM	30.12	49	-	0	0	1.4	18.2	--	--	--	--
GMSG-124	10/16/07	8:22 AM	29.95	51	0.05	0	0	1.4	18.2	--	--	--	--
GMSG-124	10/17/07	2:12 PM	29.86	58	-	0	0	1.4	18.8	--	--	--	--
GMSG-124	10/18/07	11:51 AM	29.22	65	-	0	0	1.6	17.5	--	--	--	--
GMSG-124	10/19/07	9:37 AM	28.98	53	T	0	0	1.8	16.8	--	--	--	--
GMSG-124	10/22/07	8:31 AM	30.04	47	-	0	0	1.8	17.2	--	--	--	--
GMSG-125A	10/09/98	2:30 PM	28.83	62.1	-	0.01	0	8.1	10.6	40	--	3.5	--
GMSG-125A	10/10/98	7:00 PM	28.89	53.1	-	0	31.7	7.2	1.2	--	--	--	--
GMSG-125A	10/11/98	1:50 PM	28.92	62.1	-	0	0	8.2	10.5	100	--	2	--
GMSG-125A	10/14/98	11:20 AM	28.86	44.1	-	0	0	8.2	9.5	--	--	--	--
GMSG-125A	10/20/98	10:45 AM	28.94	45	-	0	0	8.4	10.1	30	1.75	1	--
GMSG-125A	10/23/98	5:25 PM	28.88	64	-	0	0	8	10.6	50	15	4	--
GMSG-125A	11/21/98	11:14 AM	28.85	33.1	-	0	0.1	8.2	7.7	6	3	2.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125A	12/01/98	10:41 AM	28.81	46	-	0	0	7.7	9.1	--	--	--	--
GMSG-125A	12/03/98	3:02 PM	28.41	62	-	0	0	8.7	6.4	15	--	1.5	--
GMSG-125A	12/09/98	10:28 AM	28.96	29	-	0	0	7.6	9.6	7	--	1	--
GMSG-125A	12/15/98	11:34 AM	28.78	40	-	0.02	0	7.9	8.7	200	--	1.5	--
GMSG-125A	12/19/98	10:05 AM	28.81	22	-	0	0	7.7	8.9	--	--	--	--
GMSG-125A	12/21/98	4:15 PM	28.75	11	-	0	0	7.7	7.3	--	--	--	--
GMSG-125A	12/29/98	10:55 AM	28.64	9	T	0.02	0	6.8	9.9	1.5	1.5	1.5	--
GMSG-125A	01/06/99	2:14 PM	28.6	8.1	T	0	0	7.2	6.5	<1	<1	<1	--
GMSG-125A	01/15/99	1:36 PM	28.5	16	-	0.02	0	6.7	8.5	70	--	3.5	--
GMSG-125A	02/03/99	1:48 PM	28.14	33.1	0.01	0	0	9	1.5	80	--	1.5	--
GMSG-125A	02/11/99	2:40 PM	28.09	37.9	0.37	-0.06	0	8.9	2	90	--	5	--
GMSG-125A	02/23/99	3:53 PM	28.98	24.1	-	0	0	6	9.8	--	<1	1.25	--
GMSG-125A	03/11/99	4:32 PM	29.06	35.1	-	-0.01	0	6.2	8.7	9.5	9	5.5	--
GMSG-125A	04/08/99	2:25 PM	28.63	57.9	-	0	0	7.9	6.3	--	--	--	--
GMSG-125A	04/20/99	2:45 PM	28.63	52	-	0	0	8.4	6.4	--	--	--	--
GMSG-125A	04/30/99	9:09 AM	29.17	62.1	-	0	0	7.1	8.1	8.5	3.5	3.75	--
GMSG-125A	05/17/99	2:55 PM	28.48	66.9	0.02	0	0	11.9	0	80	--	2.25	--
GMSG-125A	06/02/99	4:17 PM	28.71	59	-	-0.01	0	11.6	0.7	100	--	3.5	--
GMSG-125A	07/08/99	1:50 PM	28.68	57.9	0.1	0	0	10.9	4.7	4	--	1	--
GMSG-125A	07/17/99	6:00 PM	28.86	77	-	0	0	14	2.1	10	--	3	--
GMSG-125A	08/09/99	7:51 AM	28.73	57.9	-	0	0	14.6	0	100	--	2.5	--
GMSG-125A	09/30/99	11:40 AM	28.4	62.1	-	0	0.7	13.8	0	--	--	--	--
GMSG-125A	10/07/99	12:04 PM	28.84	43	T	0.03	0	12.6	1.8	50	--	1.5	--
GMSG-125A	10/23/99	1:41 PM	28.86	36	T	0	0	10.6	3.9	6.25	--	6.25	--
GMSG-125A	11/03/99	3:08 PM	28.69	36	-	0	0	10.6	1.2	--	--	--	--
GMSG-125A	11/06/99	3:07 PM	29.07	46.9	-	-0.01	0	9.7	3.2	50	--	1.25	--
GMSG-125A	02/15/00	11:02 AM	28.64	19.9	0.02	0	0	8.6	6.3	190	--	1.5	--
GMSG-125A	03/16/00	10:43 AM	29	23	-	0	0	2.8	14.2	0.86	-0.13	0.86	--
GMSG-125A	03/31/00	9:18 AM	28.84	46.9	-	0.01	0	7.8	6.6	12.7	--	0.08	--
GMSG-125A	05/01/00	9:26 AM	28.57	58	-	0	1.2	10.7	0	--	--	-0.22	--
GMSG-125A	06/05/00	2:05 PM	28.94	65	-	0	0	8.5	6.4	0.39	--	-0.75	--
GMSG-125A	07/19/00	3:15 PM	28.77	71	-	0	0	13.9	2.2	70	--	3	--
GMSG-125A	09/12/00	2:47 PM	28.67	65	-	0.01	1.1	12.8	0	--	--	--	--
GMSG-125A	10/15/02	11:36 AM	28.73	41	-	0	0	14	0	400	--	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125A	04/14/03	2:13 PM	28.51	83	-	0	2.7	10.2	0.1	--	--	--	13.1
GMSG-125A	10/13/03	12:07 PM	28.56	65	-	0	0.1	14	0	--	--	--	0
GMSG-125A	03/30/04	9:50 AM	--	--	--	0	2	9.5	0	--	--	--	12.51
GMSG-125A	03/30/04	1:50 PM	--	--	--	0	2	9.5	0	--	--	--	--
GMSG-125A	03/30/04	3:40 PM	--	--	--	0	2.1	9.6	0	--	--	--	--
GMSG-125A	03/30/04	4:05 PM	--	--	--	0	2.3	9.6	0	--	--	--	--
GMSG-125A	03/30/04	4:38 PM	--	--	--	0	2.1	9.4	1.3	--	--	--	--
GMSG-125A	03/30/04	5:18 PM	--	--	--	0	2.1	2.3	11	--	--	--	--
GMSG-125A	03/30/04	6:08 PM	--	--	--	0	--	--	--	--	--	--	--
GMSG-125A	03/30/04	6:43 PM	--	--	--	0	2	9.3	1.5	--	--	--	--
GMSG-125A	03/31/04	9:17 AM	--	--	--	0	1.1	9.4	0.8	--	--	--	--
GMSG-125A	03/31/04	10:14 AM	--	--	--	0	0.8	9.6	0.8	--	--	--	--
GMSG-125A	03/31/04	11:04 AM	--	--	--	0	--	--	--	--	--	--	--
GMSG-125A	03/31/04	11:46 AM	--	--	--	-0.1	0.5	9.2	2.5	--	--	--	--
GMSG-125A	03/31/04	12:18 PM	--	--	--	0	0.3	9.6	1.1	--	--	--	--
GMSG-125A	04/02/04	10:25 AM	28.95	47	-	0	0.2	9.3	0.6	--	--	--	12.46
GMSG-125A	04/15/04	3:13 PM	28.73	59	-	0	0	8.9	0	--	--	--	--
GMSG-125A	04/15/04	5:34 PM	28.7	52	T	0	0.3	9	0	--	--	--	--
GMSG-125A	06/12/04	10:15 AM	28.74	57	-	0.01	0.3	8.1	6.7	--	--	--	--
GMSG-125A	06/12/04	12:20 PM	28.7	67	-	-0.004	0.3	11.6	1.2	--	--	--	--
GMSG-125A	06/12/04	3:28 PM	28.65	78	-	-0.017	0.2	11.5	0.8	--	--	--	--
GMSG-125A	06/12/04	5:45 PM	28.65	77	-	-0.016	0	12.6	0.2	--	--	--	--
GMSG-125A	06/13/04	10:03 AM	28.58	64	-	-0.003	0.01	10.6	4.9	--	--	--	--
GMSG-125A	06/13/04	3:53 PM	28.48	72	-	0.004	0	9.8	5.9	--	--	--	--
GMSG-125A	06/14/04	6:46 PM	28.64	67	-	0	0	9.1	7.9	--	--	--	--
GMSG-125A	06/15/04	1:45 PM	28.85	69	-	-0.023	0	5.7	13.7	--	--	--	--
GMSG-125A	06/16/04	10:48 AM	28.8	79	-	-0.017	0	4.7	15.2	--	--	--	--
GMSG-125A	06/17/04	8:34 AM	28.82	62	-	-0.017	0	4.9	15.2	--	--	--	--
GMSG-125A	06/22/04	3:08 PM	28.6	66	-	-0.003	0	4.8	16.2	--	--	--	--
GMSG-125A	06/24/04	9:53 AM	28.64	55	-	0.037	0	1.1	18.7	--	--	--	--
GMSG-125A	06/28/04	6:21 PM	28.76	73	-	-0.015	0	2	18	--	--	--	--
GMSG-125A	07/02/04	11:48 AM	28.92	73	-	0	0	0	20	--	--	--	--
GMSG-125A	07/07/04	8:15 AM	28.55	52	-	-0.012	0	1.8	18	--	--	--	--
GMSG-125A	07/09/04	10:20 AM	28.89	67	-	-0.023	0	1.2	18.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125A	07/13/04	5:45 PM	28.52	72	-	-0.01	0	2.2	20.8	--	--	--	--
GMSG-125A	07/15/04	5:37 PM	28.62	79	-	-0.014	0	1.4	18.2	--	--	--	--
GMSG-125A	07/20/04	9:24 AM	28.69	74	-	-0.017	0	1.3	18.3	--	--	--	--
GMSG-125A	07/30/04	5:04 PM	28.59	74	-	-0.023	0	1.4	18.4	--	--	--	--
GMSG-125A	08/05/04	11:53 AM	28.99	71	-	-0.02	0	0.9	18.8	--	--	--	--
GMSG-125A	08/11/04	4:16 PM	28.61	54	T	-0.018	0	1.1	18.6	--	--	--	--
GMSG-125A	08/23/04	2:45 PM	28.84	67	-	0	0	0	19.8	--	--	--	--
GMSG-125A	08/24/04	1:36 PM	28.72	71	-	0	0	1.2	18.6	--	--	--	--
GMSG-125A	08/25/04	12:07 PM	28.64	75	-	0	0	1.3	17.9	--	--	--	--
GMSG-125A	08/26/04	12:08 PM	28.57	76	-	0	0	1.3	17.7	--	--	--	--
GMSG-125A	08/27/04	12:48 PM	28.67	79	-	0	0	1.4	17.3	--	--	--	--
GMSG-125A	08/30/04	10:33 AM	28.79	62	-	0	0	2.5	15.9	--	--	--	--
GMSG-125A	09/02/04	3:35 PM	28.79	82	-	0	0	3.2	14.8	--	--	--	--
GMSG-125A	09/09/04	11:35 AM	28.94	67	-	0	0	0.4	19.6	--	--	--	--
GMSG-125A	09/16/04	10:17 AM	28.68	60	-	0	0	0.5	19.6	--	--	--	--
GMSG-125A	09/24/04	4:01 PM	28.79	59	-	0	0	0.3	19.6	--	--	--	--
GMSG-125A	09/29/04	11:50 AM	28.92	64	-	0.1	0	1	18.4	--	--	--	--
GMSG-125A	10/08/04	12:37 PM	28.57	66	-	0	0	1.7	17.3	--	--	--	--
GMSG-125A	10/12/04	1:05 PM	28.72	66	-	0	0	2.5	16.2	-1.94	-2.11	-0.66	--
GMSG-125A	10/19/04	11:51 AM	28.83	45	-	0	0	3.5	15.1	--	--	--	--
GMSG-125A	10/28/04	11:28 AM	28.93	47	-	0.1	0	2.2	16.6	--	--	--	--
GMSG-125A	11/02/04	12:06 PM	28.88	45	T	0	0	4.1	14.2	--	--	--	--
GMSG-125A	11/12/04	11:03 AM	29.25	36	-	0	0	3.9	14.7	--	--	--	--
GMSG-125A	11/18/04	1:21 PM	28.95	53	-	0	0	2.5	16.1	--	--	--	--
GMSG-125A	12/09/04	10:51 AM	28.57	37	-	0	0	4.6	12.9	--	--	--	--
GMSG-125A	01/27/05	2:29 PM	29.3	15	-	0	0	0.1	20	--	--	--	--
GMSG-125A	04/05/05	2:40 PM	28.56	74	-	0	0	1	18.7	--	--	--	--
GMSG-125A	04/14/05	12:55 PM	29.08	66	-	--	--	--	--	--	--	--	--
GMSG-125A	04/22/05	11:00 AM	28.65	51	-	--	--	--	--	--	--	--	--
GMSG-125A	08/17/05	11:17 AM	28.89	71	-	0	0	2.4	16.5	--	--	--	--
GMSG-125A	09/08/05	4:07 PM	28.91	71.06	-	0	0	1.8	17.6	--	--	--	--
GMSG-125A	10/19/05	2:10 PM	28.79	53	-	0	0	4.3	14.1	--	--	--	13.1
GMSG-125A	03/15/06	1:34 PM	28.91	33	-	0	0	2.4	15.1	--	--	--	--
GMSG-125A	04/12/06	12:04 PM	28.64	60	-	0	0	2.5	13.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125A	07/26/06	11:05 AM	28.48	79	-	-0.1	0	0.2	17.6	--	--	--	--
GMSG-125A	10/05/06	1:01 PM	29.16	56	-	0	0	0.7	20.3	--	--	--	--
GMSG-125A	12/18/06	12:56 PM	29.08	31	-	0	0	0.9	19.3	--	--	--	--
GMSG-125A	01/18/07	1:15 PM	28.66	21	-	0	0	1.4	17.9	--	--	--	--
GMSG-125A	02/07/07	10:12 AM	28.86	4	-	0	0	0.9	19.8	--	--	--	--
GMSG-125A	03/09/07	1:44 PM	28.55	44	-	0	0	1.3	17.7	--	--	--	--
GMSG-125A	04/16/07	12:49 PM	28.81	61	-	0	0	2	16.7	--	--	--	--
GMSG-125A	07/13/07	10:18 AM	30.04	66	-	0	0	3.9	14.3	--	--	--	--
GMSG-125A	10/15/07	2:12 PM	30.11	48	-	0	0	3.2	15.4	--	--	--	--
GMSG-125A	10/16/07	7:47 AM	29.95	51	0.05	0	0	3.6	15.2	--	--	--	--
GMSG-125A	10/17/07	1:36 PM	29.86	58	-	0	0	3.9	14.1	--	--	--	--
GMSG-125A	10/18/07	11:18 AM	29.23	62	0.01	0	0	4.9	12	--	--	--	--
GMSG-125A	10/19/07	9:12 AM	28.98	53	T	0	0	6.3	8.5	--	--	--	--
GMSG-125A	10/22/07	8:04 AM	30.02	47	-	0	0	0.4	18.9	--	--	--	--
GMSG-125B	10/09/98	2:37 PM	28.83	62.1	-	0.18	34	7.5	0	--	--	--	--
GMSG-125B	10/10/98	6:50 PM	28.89	53.1	-	-0.02	0	8.5	9.8	100	--	5	--
GMSG-125B	10/11/98	1:40 PM	28.92	62.1	-	0.16	32.8	7.9	0	--	--	--	--
GMSG-125B	10/14/98	11:25 AM	28.86	44.1	-	0.04	28	8.3	0	--	--	--	--
GMSG-125B	10/20/98	10:53 AM	28.94	45	-	-0.01	22.6	10.1	0	--	--	--	--
GMSG-125B	10/23/98	5:31 PM	28.88	60.1	-	0.07	33.3	7.8	0	--	--	--	--
GMSG-125B	11/21/98	11:15 AM	28.85	33.1	-	0.06	0	0	19.9	150	80	1.5	--
GMSG-125B	12/01/98	10:45 AM	28.81	46	-	-0.03	0	0.1	20.7	--	--	--	--
GMSG-125B	12/03/98	3:08 PM	28.41	62	-	-0.02	31.8	7.7	0.5	--	--	--	--
GMSG-125B	12/09/98	10:34 AM	28.93	34	-	0.03	23.4	9.9	0	--	--	--	--
GMSG-125B	12/15/98	11:44 AM	28.78	40	-	0.06	0	0.3	19.5	>10000	>10000	1.5	--
GMSG-125B	12/19/98	10:17 AM	28.81	22	-	-0.29	0	0	19.9	--	--	--	--
GMSG-125B	12/21/98	4:20 PM	28.75	11	-	-0.02	30.6	8.5	0.5	--	--	--	--
GMSG-125B	12/29/98	11:03 AM	28.64	9	T	-0.21	0	0	19.2	80	80	1.5	--
GMSG-125B	01/06/99	2:21 PM	28.6	8.1	T	-0.16	16.3	7.9	2.9	--	--	--	--
GMSG-125B	01/15/99	1:40 PM	28.5	16	-	0.32	33.8	0	0	--	--	--	--
GMSG-125B	02/03/99	1:57 PM	28.14	33.1	0.01	0.11	33.8	7.6	0	--	--	--	--
GMSG-125B	02/11/99	2:51 PM	28.09	37.9	0.37	0.26	32.7	7.5	0	--	--	--	--
GMSG-125B	02/23/99	4:00 PM	28.98	24.1	-	0.03	29.1	8.1	0	--	--	--	--
GMSG-125B	03/11/99	4:43 PM	29.06	35.1	-	0.02	16.3	8	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125B	04/08/99	2:34 PM	28.63	59	-	-0.01	31.5	7.1	0.3	--	--	--	--
GMSG-125B	04/20/99	2:57 PM	28.63	52	-	0.17	35	7.2	0	--	--	--	--
GMSG-125B	04/30/99	9:15 AM	29.17	62.1	-	0.05	22.2	7.4	0	--	--	--	--
GMSG-125B	05/17/99	3:02 PM	28.48	66.9	0.02	0.14	32.5	6.5	0	--	--	--	--
GMSG-125B	06/02/99	4:24 PM	28.71	59	-	0	0.5	3.7	13.3	>10000	--	3.5	--
GMSG-125B	06/15/99	--	--	--	--	0.06	32.2	6.9	0	--	--	--	--
GMSG-125B	06/16/99	--	--	--	--	0	20.4	7.6	1.7	--	--	--	--
GMSG-125B	06/17/99	--	--	--	--	0.03	30.8	6.9	0	--	--	--	--
GMSG-125B	06/18/99	--	--	--	--	0.05	31.2	6.9	0	--	--	--	--
GMSG-125B	06/19/99	--	--	--	--	0.08	32.6	6.7	0	--	--	--	--
GMSG-125B	06/20/99	--	--	--	--	0.01	30.8	7	0	--	--	--	--
GMSG-125B	06/21/99	5:34 PM	28.87	75	-	0.16	36.5	7.1	0	--	--	--	--
GMSG-125B	06/22/99	3:40 PM	28.66	79	-	0.27	35.8	6.6	0	--	--	--	--
GMSG-125B	06/23/99	2:59 PM	28.47	69.1	0.22	0.07	35.4	6.7	0	--	--	--	--
GMSG-125B	06/24/99	1:40 PM	28.59	82.9	-	0.01	35.5	6.6	0	--	--	--	--
GMSG-125B	06/25/99	12:30 PM	28.67	86	-	0.05	30.5	6.6	0	--	--	--	--
GMSG-125B	06/26/99	3:04 PM	28.56	87.1	-	0.11	35.3	6.6	0	--	--	--	--
GMSG-125B	06/27/99	12:45 PM	28.51	79	-	0.14	34.7	6.5	0	--	--	--	--
GMSG-125B	06/28/99	1:22 PM	28.45	66.9	T	0.24	35.2	6.7	0	--	--	--	--
GMSG-125B	06/29/99	1:26 PM	28.57	69.1	-	0.01	34	7.8	0	--	--	--	--
GMSG-125B	06/30/99	2:57 PM	28.57	63	-	0.01	37.5	8.4	0	--	--	--	--
GMSG-125B	07/01/99	1:25 PM	28.44	63	T	0.16	33.6	6.9	0	--	--	--	--
GMSG-125B	07/02/99	1:32 PM	28.62	79	-	0	27.4	7.2	0	--	--	--	--
GMSG-125B	07/03/99	1:04 PM	28.62	69.1	0.06	0.16	31.2	6.9	0	--	--	--	--
GMSG-125B	07/04/99	12:36 PM	28.66	87.1	-	0.03	32.3	6.6	0	--	--	--	--
GMSG-125B	07/05/99	11:49 AM	28.61	79	-	0.27	32.3	6.8	0	--	--	--	--
GMSG-125B	07/06/99	12:56 PM	28.68	79	-	0.01	30.1	6.8	0	--	--	--	--
GMSG-125B	07/07/99	11:37 AM	28.74	78.1	-	0	32.1	6.7	0	--	--	--	--
GMSG-125B	07/08/99	12:49 PM	28.72	59	0.07	0.2	33.7	6.8	0	--	--	--	--
GMSG-125B	07/09/99	1:58 PM	28.52	64	-	-0.06	25.8	6.9	0.2	--	--	--	--
GMSG-125B	07/10/99	3:35 PM	28.91	73	-	-0.45	27.7	7.8	0	--	--	--	--
GMSG-125B	07/11/99	9:59 AM	28.95	75.9	-	0	30.7	7.8	0	--	--	--	--
GMSG-125B	07/12/99	12:45 PM	28.86	77	-	0.15	32.5	7.8	0	--	--	--	--
GMSG-125B	07/17/99	5:50 PM	28.86	77	-	0.07	37.3	7.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Depth to Water (ft btc)
GMSG-125B	08/09/99	7:58 AM	28.73	57.9	-	0.16	37.5	7.1	0	--	--	--	--
GMSG-125B	09/30/99	11:45 AM	28.4	62.1	-	0.32	31	6.6	0	--	--	--	--
GMSG-125B	10/07/99	11:57 AM	28.84	43	T	0.36	34.1	7.6	0	--	--	--	--
GMSG-125B	10/23/99	1:52 PM	28.86	36	T	-0.08	14.3	9.5	0	--	--	--	--
GMSG-125B	11/03/99	3:21 PM	28.69	36	-	0.05	34.9	7.6	0	--	--	--	--
GMSG-125B	11/06/99	3:02 PM	29.07	46.9	-	0.04	22.5	24	0	--	--	--	--
GMSG-125B	02/15/00	11:14 AM	28.64	19.9	0.02	0.25	30.9	7.7	0	--	--	--	--
GMSG-125B	03/16/00	10:49 AM	29	23	-	0	25.9	6.9	1.1	--	--	--	--
GMSG-125B	05/01/00	9:38 AM	28.57	61	-	0.01	34.1	6.5	0	--	--	--	--
GMSG-125B	06/05/00	2:07 PM	28.94	65	-	0.12	26.3	7.1	0	--	--	--	--
GMSG-125B	07/19/00	3:23 PM	28.77	71	-	0.15	37	6.9	0	--	--	--	--
GMSG-125B	09/12/00	2:40 PM	28.67	65	-	0	0	8.5	3.6	50	--	3	--
GMSG-125B	10/15/02	11:41 AM	28.73	41	-	0	0	1	19.6	21800	--	0	--
GMSG-125B	04/14/03	2:22 PM	28.51	83	-	0.1	35.3	6.3	0.2	--	--	--	--
GMSG-125B	10/13/03	12:16 PM	28.56	65	-	0	34.4	7.1	0	--	--	--	0
GMSG-125B	03/30/04	9:45 AM	--	--	--	0	13.2	6.9	0	--	--	--	21.74
GMSG-125B	03/30/04	1:52 PM	--	--	--	0	29.6	6.8	0	--	--	--	--
GMSG-125B	03/30/04	3:35 PM	--	--	--	0	29.3	6.8	0	--	--	--	--
GMSG-125B	03/30/04	4:03 PM	--	--	--	0	25.7	7	0.8	--	--	--	--
GMSG-125B	03/30/04	6:40 PM	--	--	--	-0.7	0	0	19.4	--	--	--	--
GMSG-125B	03/31/04	9:15 AM	--	--	--	0	0	0	19.4	--	--	--	--
GMSG-125B	03/31/04	10:12 AM	--	--	--	0	0	0.1	19.3	--	--	--	--
GMSG-125B	03/31/04	11:02 AM	--	--	--	-0.1	--	--	--	--	--	--	--
GMSG-125B	03/31/04	11:40 AM	--	--	--	-0.2	1.5	0.5	17.4	--	--	--	--
GMSG-125B	03/31/04	12:16 PM	--	--	--	--	14	3.9	--	--	--	--	--
GMSG-125B	04/02/04	10:30 AM	28.93	49	-	0	26.4	6.1	1	--	--	--	--
GMSG-125B	04/15/04	3:07 PM	28.73	59	-	0	27.3	6.3	1.3	--	--	--	--
GMSG-125B	04/15/04	5:24 PM	28.71	54	-	-0.1	34.2	6.7	0	--	--	--	--
GMSG-125B	06/12/04	10:08 AM	28.74	57	-	0.063	33.5	6.5	0.2	--	--	--	--
GMSG-125B	06/12/04	12:15 PM	28.7	67	-	-0.158	0	0	19.6	--	--	--	--
GMSG-125B	06/12/04	3:17 PM	28.65	78	-	-0.359	26.7	5.9	0.8	--	--	--	--
GMSG-125B	06/12/04	5:30 PM	28.65	77	-	-0.547	24.8	6.4	0.4	--	--	--	--
GMSG-125B	06/13/04	9:50 AM	28.58	64	-	-0.621	1.5	9.4	0.6	--	--	--	--
GMSG-125B	06/13/04	3:42 PM	28.48	72	-	-0.669	0.6	9.6	0.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125B	06/14/04	6:48 PM	28.64	67	-	-0.6	0.4	8.9	3	--	--	--	--
GMSG-125B	06/15/04	1:51 PM	28.85	69	-	-0.83	0.1	8.2	9.1	--	--	--	--
GMSG-125B	06/16/04	10:44 AM	28.8	79	-	-0.716	0	7.6	10.7	--	--	--	--
GMSG-125B	06/17/04	8:39 AM	28.82	62	-	-0.875	0	7.3	11.1	--	--	--	--
GMSG-125B	06/17/04	12:25 PM	28.82	71	-	--	0	5.4	13.6	--	--	--	--
GMSG-125B	06/22/04	2:57 PM	28.6	66	-	-0.802	0	7.9	10.2	--	--	--	--
GMSG-125B	06/24/04	9:43 AM	28.64	55	-	-0.803	0	3.6	16.1	--	--	--	--
GMSG-125B	06/28/04	6:10 PM	28.76	73	-	-0.29	0	3.1	16.1	--	--	--	--
GMSG-125B	07/02/04	11:45 AM	28.92	73	-	-0.5	0	0	19.9	--	--	--	--
GMSG-125B	07/07/04	8:05 AM	28.55	52	-	-0.703	0	3	16.1	--	--	--	--
GMSG-125B	07/09/04	10:04 AM	28.89	67	-	-0.781	0	1.2	18.4	--	--	--	--
GMSG-125B	07/13/04	5:25 PM	28.52	72	-	-0.635	0	2.6	15.7	--	--	--	--
GMSG-125B	07/15/04	5:32 PM	28.62	79	-	-0.606	0	0.9	18.6	--	--	--	--
GMSG-125B	07/20/04	9:14 AM	28.69	74	-	-0.779	0	2.2	17.4	--	--	--	--
GMSG-125B	07/30/04	4:57 PM	28.59	74	-	-0.673	0	0.8	18.7	--	--	--	--
GMSG-125B	08/05/04	11:37 AM	28.99	71	-	-0.639	0	1.6	18.2	--	--	--	--
GMSG-125B	08/11/04	4:04 PM	28.61	54	T	-0.742	0	1.6	18	--	--	--	--
GMSG-125B	08/23/04	2:48 PM	28.84	67	-	-0.2	0	0	20.1	--	--	--	--
GMSG-125B	08/24/04	1:45 PM	28.72	71	-	0	0	2.1	17.6	--	--	--	--
GMSG-125B	08/25/04	12:14 PM	28.64	75	-	0	0	2	17.5	--	--	--	--
GMSG-125B	08/26/04	12:14 PM	28.57	76	-	0	0	2.2	17.3	--	--	--	--
GMSG-125B	08/27/04	12:53 PM	28.67	79	-	0	0	2.1	17.1	--	--	--	--
GMSG-125B	08/30/04	10:39 AM	28.79	62	-	0	0	3.1	15.8	--	--	--	--
GMSG-125B	09/02/04	3:43 PM	28.79	82	-	0	0	3.1	15.7	--	--	--	--
GMSG-125B	09/09/04	11:32 AM	28.94	67	-	-0.4	0	0.4	19.6	--	--	--	--
GMSG-125B	09/16/04	10:15 AM	28.68	60	-	-0.4	0	0.4	19.7	--	--	--	--
GMSG-125B	09/24/04	3:59 PM	28.79	59	-	-0.6	0	0.1	19.9	--	--	--	--
GMSG-125B	09/29/04	11:53 AM	28.92	64	-	0.1	0	1.2	18.2	--	--	--	--
GMSG-125B	10/08/04	12:35 PM	28.57	66	-	0	0	2.3	16.5	--	--	--	--
GMSG-125B	10/12/04	1:00 PM	28.72	66	-	0.4	0	2.6	16.1	16.68	16.52	-0.52	--
GMSG-125B	10/19/04	11:57 AM	28.83	45	-	0	0	3.7	14.6	--	--	--	--
GMSG-125B	10/28/04	11:30 AM	28.9	47	-	0.2	0	3.7	14.5	--	--	--	--
GMSG-125B	11/02/04	12:16 PM	28.88	45	T	0	0	4	14.2	--	--	--	--
GMSG-125B	11/12/04	11:12 AM	29.25	36	-	0	0	3.1	15.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125B	11/18/04	1:24 PM	28.95	53	-	0	0	3	15.8	--	--	--	--
GMSG-125B	12/09/04	11:01 AM	28.57	37	-	0	0	7.8	5.8	--	--	--	--
GMSG-125B	01/27/05	2:21 PM	29.3	15	-	0	0	3.7	11.2	--	--	--	--
GMSG-125B	04/05/05	2:36 PM	28.56	74	-	-0.1	0	0.2	19.6	--	--	--	--
GMSG-125B	08/17/05	11:22 AM	28.89	71	-	0	0	2.3	15.8	--	--	--	--
GMSG-125B	09/08/05	4:09 PM	28.91	71.06	-	0.1	0	2.4	15.9	--	--	--	--
GMSG-125B	10/19/05	2:15 PM	28.79	53	-	0.02	0.1	6.8	8.7	--	--	--	22.5
GMSG-125B	03/15/06	1:37 PM	28.91	33	-	0	0.6	3.6	13.7	--	--	--	--
GMSG-125B	03/20/06	9:25 AM	29.14	26	-	0	0	2.4	15.6	--	--	--	--
GMSG-125B	03/29/06	8:58 AM	28.98	45	-	0	0	2.1	15.5	--	--	--	--
GMSG-125B	04/12/06	9:36 AM	28.59	55	-	0	0	3.4	12.3	--	--	--	--
GMSG-125B	04/17/06	10:57 AM	28.86	56	-	0	0	2.3	14.7	--	--	--	--
GMSG-125B	05/05/06	10:12 AM	28.76	45	T	0	0	3.7	12.7	--	--	--	--
GMSG-125B	06/05/06	10:51 AM	28.78	78	-	--	14.9	8.4	0	--	--	--	--
GMSG-125B	06/06/06	3:43 PM	28.56	65	0.07	-0.1	0	3.8	12.9	--	--	--	--
GMSG-125B	06/15/06	10:40 AM	28.89	75	-	-0.1	0	0.8	18.1	--	--	--	--
GMSG-125B	07/18/06	12:09 PM	28.93	81	-	-0.1	0	0	18.8	--	--	--	--
GMSG-125B	08/09/06	9:42 AM	28.85	74	-	0.0/-0.1	0	0.7	17.9	--	--	--	--
GMSG-125B	09/18/06	10:10 AM	28.4	59	-	-0.2	0	0.9	19.7	--	--	--	--
GMSG-125B	10/05/06	1:05 PM	29.16	56	-	-0.2	0	0.5	20.3	--	--	--	--
GMSG-125B	11/08/06	8:43 AM	28.3	48	-	-0.2	0	0.4	20.1	--	--	--	--
GMSG-125B	12/18/06	12:59 PM	29.08	31	-	0	0	1.4	19	--	--	--	--
GMSG-125B	01/18/07	1:20 PM	28.66	21	-	0	0	3.1	13.8	--	--	--	--
GMSG-125B	02/07/07	10:15 AM	28.86	4	-	0	0	2.6	15.6	--	--	--	--
GMSG-125B	03/09/07	1:48 PM	28.55	44	-	0	0	8.7	1.1	--	--	--	--
GMSG-125B	04/16/07	12:52 PM	28.81	61	-	0.2	0	2.4	16.3	--	--	--	--
GMSG-125B	07/13/07	10:24 AM	30.04	66	-	0	0.1	3.3	15.1	--	--	--	--
GMSG-125B	10/15/07	2:17 PM	30.11	48	-	0	15.6	10	0	--	--	--	--
GMSG-125B	10/15/07	3:01 PM	30.12	49	-	0	15.8	10	0	--	--	--	--
GMSG-125B	10/16/07	7:51 AM	29.95	51	0.05	0	18.6	9.6	0	--	--	--	--
GMSG-125B	10/17/07	1:42 PM	29.86	58	-	0	16.6	9.8	0	--	--	--	--
GMSG-125B	10/18/07	11:24 AM	29.23	62	0.01	0	19.4	9.2	0	--	--	--	--
GMSG-125B	10/19/07	9:17 AM	28.98	53	T	0	20.5	9.6	0	--	--	--	--
GMSG-125B	10/22/07	8:07 AM	30.02	47	-	0	0	3.8	14.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-125B	10/26/07	9:33 AM	30.19	43	-	0	13.7	10	0	--	--	--	--
GMSG-125B	10/29/07	1:15 PM	30.19	59	-	0	8.8	4.5	12.6	--	--	--	--
GMSG-125B	10/30/07	12:55 PM	29.93	62	-	0	0	2.6	16.5	--	--	--	--
GMSG-125B	11/20/07	3:13 PM	30.02	38	-	-0.2	0	0.7	20	--	--	--	--
GMSG-125B	12/26/07	1:45 PM	29.9	31	-	0	0	0.3	20.1	--	--	--	--
GMSG-126	04/15/04	10:30 AM	28.82	54	-	--	24.4	0.4	4.5	--	--	--	--
GMSG-126	04/20/04	3:46 PM	28.62	40	-	2.4	25.3	1.2	0	--	--	--	--
GMSG-126	06/05/04	12:33 PM	28.75	71	-	1.1	4.9	0.3	10.8	--	--	--	--
GMSG-126	06/05/04	2:58 PM	28.73	66	T	-47.3	0	0	20.2	--	--	--	--
GMSG-126	06/07/04	8:20 AM	28.66	69	-	-14.6	0	0	20	--	--	--	--
GMSG-126	06/28/04	3:55 PM	28.78	74	-	-7.6	0	0.5	19.1	--	--	--	--
GMSG-126	06/29/04	2:19 PM	28.8	79	-	-0.7	0	0	20.2	--	--	--	--
GMSG-126	06/30/04	9:00 AM	28.78	77	-	0	0	0	19.6	--	--	--	--
GMSG-126	07/01/04	9:01 AM	28.9	63	-	-0.9	0	0	19.5	--	--	--	--
GMSG-126	07/02/04	11:17 AM	28.93	71	-	0	0	0	19.8	--	--	--	--
GMSG-126	07/06/04	1:50 PM	28.64	55	0.04	1.175	0	0.7	18.7	--	--	--	--
GMSG-126	07/07/04	7:39 AM	28.55	52	-	0.364	0	1.3	8.7	--	--	--	--
GMSG-126	07/08/04	5:42 PM	28.77	64	-	-0.924	0	0	20	1.98	1.45	1.33	--
GMSG-126	07/09/04	9:20 AM	28.89	64	-	-0.632	0	0.2	18.6	--	--	--	--
GMSG-126	07/13/04	8:10 AM	28.64	71	-	0.642	0	1.6	9.1	--	--	--	--
GMSG-126	07/21/04	5:42 PM	28.45	81	-	1.034	0	1	9.2	--	--	--	--
GMSG-126	07/28/04	8:45 AM	28.79	75	-	0.033	0	1.2	6.6	--	--	--	--
GMSG-126	08/03/04	3:42 PM	28.72	77	-	0	0	1.6	5.2	--	--	--	--
GMSG-126	08/04/04	2:56 PM	28.84	69	-	-0.533	0	1.6	17.9	--	--	--	--
GMSG-126	10/08/04	2:20 PM	28.56	67	-	1.4	0	1.7	3.4	274	270	-0.36	--
GMSG-126	11/12/04	11:34 AM	29.24	38	-	-0.5	0.3	1.1	7.9	--	--	--	--
GMSG-126	01/11/05	2:43 PM	28.8	25	-	0.5	1	1.2	5.5	--	--	--	--
GMSG-126	02/03/05	10:30 AM	28.82	41	-	0	0.3	3	8	--	--	--	--
GMSG-126	02/07/05	2:00 PM	28.87	28	-	--	--	--	--	--	--	--	--
GMSG-126	02/10/05	10:20 AM	28.92	20	-	0	0	0	19.9	--	--	--	--
GMSG-126	02/14/05	2:45 PM	28.26	34	-	--	--	--	--	--	--	--	--
GMSG-126	04/14/05	11:26 AM	29.12	62	-	-0.9	0	0	20.3	--	--	--	--
GMSG-126	04/16/05	2:20 PM	29.05	60	T	-0.6	0	0	20.1	--	--	--	--
GMSG-126	04/17/05	11:42 AM	29.01	64	-	-0.8	0	0	20.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-126	04/19/05	7:45 AM	28.66	65	-	0	0	0.7	18.8	--	--	--	--
GMSG-126	05/03/05	10:00 AM	28.82	43	-	-0.4	0	0	20	--	--	--	--
GMSG-126	05/11/05	1:47 PM	29.1	46	-	-1.7	0	0	20.2	--	--	--	--
GMSG-126	05/17/05	8:41 AM	28.86	45	-	-0.5	0	0	20	--	--	--	--
GMSG-126	05/23/05	9:32 AM	28.57	55	-	-1	0	0	19.9	--	--	--	--
GMSG-126	06/02/05	7:56 AM	28.85	64	-	0	0	0.7	18.4	--	--	--	--
GMSG-126	06/07/05	7:55 AM	28.66	64	-	-0.5	0	0	19.7	--	--	--	--
GMSG-126	06/15/05	8:33 AM	28.51	58	-	-1.5	0	0	19.6	--	--	--	--
GMSG-126	07/21/05	8:58 AM	28.83	77	-	-0.3	0	0	19.5	--	--	--	--
GMSG-126	08/12/05	10:11 AM	28.61	74	-	0.2	0	1	15.8	--	--	--	--
GMSG-126	09/09/05	10:57 AM	28.92	71.96	-	0	0	0.2	18.2	--	--	--	--
GMSG-126	10/18/05	10:30 AM	28.64	53	-	-1	0	0	19.8	--	--	--	--
GMSG-126	11/04/05	1:40 PM	28.49	46	-	-0.4	0	0	19.5	--	--	--	--
GMSG-126	12/05/05	3:55 PM	28.72	8	-	-0.1	0	1.1	14.2	--	--	--	--
GMSG-126	01/10/06	12:00 PM	28.89	25	-	0.7	0	0.9	14.9	--	--	--	--
GMSG-126	02/13/06	10:58 AM	28.43	19	-	1.6	0	1.4	12.4	--	--	--	--
GMSG-126	03/07/06	2:55 PM	28.85	37	-	1.7	0	1.2	13.5	--	--	--	--
GMSG-126	04/14/06	11:05 AM	28.34	70	-	1.1	0	3	15.1	--	--	--	--
GMSG-126	05/17/06	10:45 AM	28.39	60	T	0.6	0	1.3	12	--	--	--	--
GMSG-126	06/02/06	2:37 PM	28.81	73	-	0.3	0	1.1	13.2	--	--	--	--
GMSG-126	07/12/06	11:28 AM	28.83	81	-	0	0	0.8	13.6	--	--	--	--
GMSG-126	08/15/06	2:12 PM	28.81	76	-	-0.5	0	0	19.1	--	--	--	--
GMSG-126	09/18/06	10:27 AM	28.4	59	-	0.2	0	2	11.5	--	--	--	--
GMSG-126	10/22/06	10:43 AM	28.66	38	-	0	0	1.6	14.2	--	--	--	--
GMSG-126	11/06/06	1:56 PM	28.78	52	-	0.5	0	1.9	12.2	--	--	--	--
GMSG-126	12/18/06	2:10 PM	29.07	32	-	-0.7	0	0	20.3	--	--	--	--
GMSG-126	01/29/07	12:18 PM	28.55	10	T	-0.7	0	1.8	13.7	--	--	--	--
GMSG-126	02/07/07	11:06 AM	28.86	8	-	-0.1	0	0.6	18.8	--	--	--	--
GMSG-126	03/15/07	2:50 PM	29.13	26	-	-0.6	0	0	20.3	--	--	--	--
GMSG-126	04/16/07	10:54 AM	28.85	56	-	-0.3	0	0	20.4	--	--	--	--
GMSG-126	05/25/07	1:34 PM	29	68	-	-0.6	0	0.1	20.2	--	--	--	--
GMSG-126	06/15/07	10:38 AM	28.82	87	-	0	0	0.8	17.4	--	--	--	--
GMSG-126	07/13/07	11:11 AM	30.03	67	-	-0.6	0	0.2	19.5	--	--	--	--
GMSG-126	08/29/07	11:08 AM	30.14	71	-	-1.3	0	0.1	19.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-126	09/19/07	1:05 PM	30.08	73	-	-1.7	0	0.1	19.5	--	--	--	--
GMSG-126	10/15/07	1:28 PM	30.14	49	-	0	0	0.7	18.8	--	--	--	--
GMSG-126	11/20/07	3:23 PM	30.02	38	-	-0.1	0	0	20.1	--	--	--	--
GMSG-126	12/28/07	1:05 PM	29.96	23	-	1.8	0	1	15.4	--	--	--	--
GMSG-127	04/19/04	3:45 PM	28.89	-	-	0	0	0	17.9	--	--	--	--
GMSG-127	04/22/04	11:00 AM	29	43	-	0	0	1.7	16.6	--	--	--	--
GMSG-127	05/06/04	9:55 AM	28.68	60	-	0	0	0	21	--	--	--	--
GMSG-127	06/02/04	1:46 PM	28.8	66	-	0	0	0	20.1	--	--	--	--
GMSG-127	06/16/04	9:36 AM	28.8	77	-	0.214	2.1	3.4	11.7	--	--	--	--
GMSG-127	06/24/04	3:00 PM	28.78	55	T	-0.044	0	0	19.9	--	--	--	--
GMSG-127	07/21/04	4:50 PM	28.46	82	-	0.045	2.9	6.1	5.2	--	--	--	--
GMSG-127	07/26/04	11:15 AM	28.96	79	-	0.091	3.6	7.6	2.9	--	--	--	--
GMSG-127	08/06/04	2:22 PM	28.91	77	-	0.098	2.7	7.3	3.3	--	--	--	--
GMSG-127	08/10/04	3:16 PM	28.58	58	T	-0.071	0	0.1	17.8	--	--	--	--
GMSG-127	08/20/04	12:04 PM	28.76	61	-	0	1.4	2.4	12.7	--	--	--	--
GMSG-127	08/27/04	11:49 AM	28.66	79	-	0.01	2.3	4.2	8.8	--	--	--	--
GMSG-127	08/30/04	1:12 PM	28.78	71	-	0	5.5	9	1.4	--	--	--	--
GMSG-127	09/09/04	1:19 PM	28.93	69	-	0.118	4.9	8.8	1.4	--	--	--	--
GMSG-127	09/16/04	11:21 AM	28.7	63	-	0	0	2	20.1	--	--	--	--
GMSG-127	09/28/04	3:38 PM	29.03	61	-	0	7.4	10.1	0.6	--	--	--	--
GMSG-128	12/19/98	1:05 PM	28.89	21	T	105	99.7	0.7	0	--	--	--	58.55
GMSG-128	12/21/98	2:52 PM	28.74	13	-	105	93.7	0.8	1.2	--	--	--	58.6
GMSG-128	12/28/98	11:11 AM	28.71	15	T	106	93	0.8	0	--	--	--	58.5
GMSG-128	01/06/99	11:11 AM	28.55	9	T	105	97.4	0.7	0	--	--	--	58
GMSG-128	01/14/99	9:07 AM	29.1	1	-	5.17	47.6	0.3	9	--	--	--	--
GMSG-128	01/21/99	8:51 AM	28.76	21	-	101	97	0.7	0	--	--	--	57.35
GMSG-128	01/26/99	9:16 AM	28.94	12	-	107	97.5	0.5	0	--	--	--	58.8
GMSG-128	02/03/99	8:17 AM	28.2	28	-	112	93.7	0.5	0	--	--	--	58.8
GMSG-128	02/11/99	8:32 AM	28.3	37.9	-	110	93.3	0.5	0.1	--	--	--	58.8
GMSG-128	02/23/99	8:37 AM	29.01	10	-	104	98.5	0.8	0	--	--	--	58.05
GMSG-128	03/11/99	8:05 AM	29.11	12.9	-	110	95.3	0.5	0	--	--	--	58.6
GMSG-128	03/23/99	8:49 AM	28.53	39	-	115	103.8	0.5	0	--	--	--	58.7
GMSG-128	04/07/99	5:21 PM	28.43	60.1	-	122	99.1	0.5	--	--	--	--	57.3
GMSG-128	04/19/99	6:25 PM	28.69	44.1	-	115	96.6	0.4	0	--	--	--	57

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-128	04/29/99	2:59 PM	29.12	69.1	-	110	100.8	0.4	9.4	--	--	--	57.5
GMSG-128	05/17/99	10:25 AM	28.52	68	-	119	94.7	0.4	0	--	--	--	58.3
GMSG-128	06/03/99	8:24 AM	28.94	57	-	120	98.5	0.4	0	--	--	--	18.4
GMSG-128	06/15/99	--	--	--	--	120	95.4	0.4	0	--	--	--	--
GMSG-128	06/16/99	--	--	--	--	100	90.1	0.7	0	--	--	--	--
GMSG-128	06/17/99	--	--	--	--	110	96.2	0.6	0	--	--	--	--
GMSG-128	06/18/99	--	--	--	--	110	97	0.6	0	--	--	--	--
GMSG-128	06/19/99	--	--	--	--	100	96.4	0.6	0	--	--	--	--
GMSG-128	06/20/99	--	--	--	--	105	96.2	0.6	0	--	--	--	--
GMSG-128	06/21/99	3:13 PM	28.89	78.1	-	108	96.1	0.6	0	--	--	--	--
GMSG-128	06/22/99	1:00 PM	28.71	82.9	-	108	95.4	0.5	0	--	--	--	--
GMSG-128	06/23/99	12:32 PM	28.48	78.1	T	109	95.6	0.6	0	--	--	--	--
GMSG-128	06/24/99	9:54 AM	28.59	78.1	-	108	94.7	0.6	0	--	--	--	--
GMSG-128	06/25/99	9:40 AM	28.68	81	-	105	95.9	0.5	0	--	--	--	--
GMSG-128	06/26/99	11:07 AM	28.6	82.9	-	108	95.8	0.6	0	--	--	--	--
GMSG-128	06/27/99	9:50 AM	28.52	84.9	-	109	95.5	0.6	0	--	--	--	--
GMSG-128	06/28/99	10:08 AM	28.51	68	-	105	93.9	0.6	0	--	--	--	57.3
GMSG-128	06/29/99	10:01 AM	28.58	63	-	104	99.2	0.7	0	--	--	--	--
GMSG-128	06/30/99	10:35 AM	28.57	66	-	105	96.3	0.6	0	--	--	--	--
GMSG-128	07/01/99	9:55 AM	28.47	60.1	-	105	86.1	0.6	0	--	--	--	--
GMSG-128	07/02/99	10:00 AM	28.62	71.1	-	105	95.6	0.7	0	--	--	--	--
GMSG-128	07/03/99	9:54 AM	28.57	66.9	0.14	108	96.9	0.6	0	--	--	--	--
GMSG-128	07/04/99	9:32 AM	28.66	82.9	-	110	96.1	0.6	0	--	--	--	--
GMSG-128	07/05/99	8:50 AM	28.65	79	-	110	96.8	0.6	0	--	--	--	--
GMSG-128	07/06/99	9:21 AM	28.66	73	-	115	97.5	0.6	0	--	--	--	--
GMSG-128	07/07/99	9:00 AM	28.72	73.9	-	114	96.4	0.6	0	--	--	--	--
GMSG-128	07/08/99	9:46 AM	28.78	64	T	110	96.1	0.6	0	--	--	--	--
GMSG-128	07/09/99	10:20 AM	28.45	62.1	-	116	96	0.6	0.1	--	--	--	--
GMSG-128	07/10/99	11:30 AM	28.92	73	-	114	101.9	0.3	0.2	--	--	--	--
GMSG-128	07/11/99	8:35 AM	28.95	72	-	116	97.1	0.6	0	--	--	--	--
GMSG-128	07/12/99	9:15 AM	28.9	73.9	-	113	98.9	0.7	0	--	--	--	--
GMSG-128	07/13/99	11:48 AM	28.68	75	-	121	101.7	0.3	0	--	--	--	--
GMSG-128	07/14/99	8:29 AM	28.61	66.9	-	121	99.3	0.3	0	--	--	--	--
GMSG-128	07/15/99	12:00 PM	28.69	84	-	127	101.9	0.3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-128	07/16/99	12:30 PM	28.64	89.1	-	135	108.2	0.3	0	--	--	--	--
GMSG-128	07/17/99	11:00 AM	28.86	73.9	-	130	103	0.3	0	--	--	--	58.6
GMSG-128	07/18/99	9:20 AM	28.93	68	-	126	102.5	0.5	0	--	--	--	--
GMSG-128	07/19/99	8:55 AM	28.86	64	-	125	101.5	0.5	0	--	--	--	--
GMSG-128	07/20/99	8:57 AM	28.9	-	-	122	98.7	0.5	0	--	--	--	--
GMSG-128	07/21/99	8:32 AM	28.76	66.9	0.01	123	99	0.5	0	--	--	--	--
GMSG-128	07/22/99	1:35 PM	28.78	87.1	-	122	103.2	0.3	0	--	--	--	--
GMSG-128	07/23/99	10:54 AM	28.61	81	-	122	102.6	0.5	0	--	--	--	--
GMSG-128	07/24/99	8:20 AM	28.61	80.1	-	124	100.1	0.3	0	--	--	--	--
GMSG-128	07/25/99	9:15 AM	28.73	78.1	-	121	99.1	0.3	0	--	--	--	--
GMSG-128	07/26/99	8:25 AM	28.64	72	-	121	99.1	0.3	0	--	--	--	--
GMSG-128	07/27/99	1:00 PM	28.72	80.1	-	120	101.3	0.3	0	--	--	--	--
GMSG-128	08/08/99	10:58 AM	28.84	64.9	-	110	114.3	0.7	0	--	--	--	57
GMSG-128	09/28/99	1:26 PM	28.91	55	-	102	110.3	0.7	0	--	--	--	38.1
GMSG-128	10/07/99	4:20 PM	28.7	48.9	-	101	86.7	0.7	0	--	--	--	59.6
GMSG-128	10/21/99	1:31 PM	28.28	61	-	112	100.4	0.8	0	--	--	--	--
GMSG-128	10/23/99	5:18 PM	28.91	34	-	105	102.6	1	0	--	--	--	--
GMSG-128	11/07/99	8:43 AM	29.18	34	-	100	115.3	0.9	0	--	--	--	--
GMSG-128	01/31/00	3:15 PM	28.46	26	T	108	106	0.6	0	--	--	--	--
GMSG-128	02/06/00	11:25 AM	28.85	26.1	T	107	106.5	0.6	0.1	--	--	--	--
GMSG-128	02/07/00	8:20 AM	28.96	12.9	-	104	102.7	0.6	0	--	--	--	--
GMSG-128	02/16/00	10:02 AM	28.96	16	T	0.7	98.6	0.6	0	--	--	--	--
GMSG-128	02/22/00	2:16 PM	28.61	46	-	110	101	0.6	0	--	--	--	--
GMSG-128	03/14/00	3:38 PM	28.66	33.1	-	110	106.2	0.6	0	--	--	--	--
GMSG-128	03/30/00	1:50 PM	28.79	51.1	-	108	96.5	0.5	0.1	--	--	--	--
GMSG-128	03/31/00	9:09 AM	28.84	46.9	-	0.07	21.2	7.8	0	--	--	--	--
GMSG-128	04/30/00	11:17 AM	28.89	63	-	108	95.3	0.5	0	--	--	--	--
GMSG-128	06/05/00	9:55 AM	28.97	62	-	105	95.6	0.5	0	--	--	--	--
GMSG-128	06/06/00	10:30 AM	28.91	-	-	105	94.2	0.5	0	--	--	--	--
GMSG-128	06/28/00	3:06 PM	28.67	56	0.16	110	94.2	0.5	0	--	--	--	--
GMSG-128	07/19/00	9:26 AM	28.86	58	-	100	97.6	0.6	0	--	--	--	--
GMSG-128	07/23/00	8:27 AM	29	57	-	103	113.6	0.7	0	--	--	--	--
GMSG-128	08/28/00	3:05 PM	28.67	74	-	105	101.4	0.5	0	--	--	--	--
GMSG-128	09/11/00	10:35 AM	28.48	72	-	--	103.7	0.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-128	09/11/00	2:35 PM	28.4	74	-	120	--	--	--	--	--	--	--
GMSG-128	09/12/00	10:35 AM	28.66	63	-	120	103.7	0.5	0	--	--	--	--
GMSG-128	10/24/00	4:30 PM	29.05	53	-	104	96.3	0.5	0	--	--	--	--
GMSG-128	11/22/00	9:40 AM	28.95	17	-	104	101.8	0.7	0	--	--	--	--
GMSG-128	12/04/00	3:30 PM	28.57	31	-	107	99.3	0.7	0	--	--	--	--
GMSG-128	01/10/01	9:20 AM	28.61	30	-	3	98	0.5	0.5	--	--	--	--
GMSG-128	02/21/01	10:35 AM	29.23	5	-	105	104.3	0.6	0	--	--	--	--
GMSG-128	03/20/01	10:25 AM	29.03	40	-	6	95.4	0.5	0	--	--	--	--
GMSG-128	04/19/01	9:32 AM	28.76	56	-	125	109.2	0.5	0	--	--	--	--
GMSG-128	04/21/01	11:03 AM	28.37	54	-	--	--	--	--	--	--	--	--
GMSG-128	05/15/01	9:45 AM	28.51	55	-	115	113.1	0.5	0	--	--	--	--
GMSG-128	06/13/01	3:53 PM	28.54	81	-	116	110	0.4	0	--	--	--	--
GMSG-128	07/12/01	4:12 PM	28.86	78	-	102	101.4	0.4	0.5	--	--	--	--
GMSG-128	08/10/01	8:10 AM	28.84	62	-	107	114.5	0.5	0.1	--	--	--	--
GMSG-128	09/08/01	3:16 PM	28.48	75	-	109	118.4	0.5	0.3	--	--	--	--
GMSG-128	10/07/01	12:15 PM	29.01	51	-	102	106.4	0.5	0	--	--	--	--
GMSG-128	11/14/01	11:00 AM	28.79	57	-	102	106.1	0.5	0	--	--	--	--
GMSG-128	12/19/01	10:17 AM	28.51	28	T	104	114	0.5	0	--	--	--	--
GMSG-128	01/11/02	9:30 AM	28.65	30	-	104	121	0.5	0	--	--	--	--
GMSG-128	02/16/02	3:32 PM	28.64	30	-	100	124.5	0.5	0	--	--	--	--
GMSG-128	03/14/02	9:33 AM	28.88	27	-	101	121.4	0.5	0	--	--	--	--
GMSG-128	04/19/02	8:54 AM	28.83	41	-	>150	122.5	0.5	0	--	--	--	--
GMSG-128	05/17/02	8:15 AM	29.01	37	-	128	120.9	0.4	0	--	--	--	--
GMSG-128	06/03/02	10:39 AM	28.82	50	-	118	110.4	0.5	0	--	--	--	--
GMSG-128	07/12/02	4:02 PM	28.82	83	-	115	111.6	0.4	0	--	--	--	--
GMSG-128	08/14/02	4:42 PM	28.56	74	-	111.9	107.7	0.4	0	--	--	--	--
GMSG-128	09/23/02	10:03 AM	28.88	52	-	106.9	87.5	0.4	0.3	--	--	--	--
GMSG-128	10/11/02	1:29 PM	28.85	70	-	122.4	109.1	0.4	0	--	--	--	--
GMSG-128	11/15/02	1:13 PM	28.99	28	T	109.9	122.2	0.5	0	--	--	--	--
GMSG-128	12/05/02	11:10 AM	28.83	18	-	107.2	120.5	0.5	0	--	--	--	--
GMSG-128	01/03/03	11:10 AM	28.82	23	-	107.1	123.1	0.5	0	--	--	--	--
GMSG-128	02/11/03	12:14 PM	28.22	8	T	111.6	116.6	0.5	0	--	--	--	--
GMSG-128	03/05/03	12:46 PM	28.75	11	T	109.4	103.1	0.5	0	--	--	--	--
GMSG-128	04/14/03	10:58 AM	28.58	77	-	115.3	101.4	0.4	0.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-128	05/07/03	10:00 AM	28.78	59	-	119	99.2	0.4	0	--	--	--	--
GMSG-128	06/02/03	10:21 AM	28.8	68	-	119.9	98.5	0.4	0	--	--	--	--
GMSG-128	07/16/03	9:53 AM	28.85	76	-	108.1	94.3	0.4	0	--	--	--	--
GMSG-128	08/07/03	10:13 AM	28.84	70	-	107.8	96.9	0.4	0	--	--	--	--
GMSG-128	09/26/03	11:53 AM	28.42	53	-	108.8	95.4	0.4	0	--	--	--	--
GMSG-128	10/13/03	10:23 AM	28.58	58	-	106.9	96.5	0.4	0	--	--	--	--
GMSG-128	11/11/03	10:35 AM	28.49	43	-	108.3	105.9	0.4	0	--	--	--	--
GMSG-128	12/17/03	10:15 AM	28.58	24	T	103.8	109.8	0.5	0	--	--	--	--
GMSG-128	01/21/04	5:10 PM	28.39	16	T	112.6	102.3	0.5	0	--	--	--	--
GMSG-128	02/04/04	11:03 AM	29.16	11	-	103.3	103.1	0.5	0	--	--	--	--
GMSG-128	03/02/04	11:03 AM	28.72	37	-	106.7	105.5	0.4	0	--	--	--	--
GMSG-128	04/02/04	3:45 PM	28.84	56	-	106.1	97.4	0.4	0.1	--	--	--	--
GMSG-128	05/28/04	10:30 AM	28.73	56	-	123.8	92	0.4	0.2	--	--	--	--
GMSG-128	06/29/04	11:37 AM	28.81	77	-	114.7	100.9	0.3	0	--	--	--	--
GMSG-128	07/22/04	1:28 PM	28.72	68	-	114.2	100	0	0	--	--	--	--
GMSG-128	08/12/04	11:38 AM	28.83	64	-	110.4	88.9	0.3	0.6	--	--	--	--
GMSG-128	09/22/04	10:24 AM	28.9	57	-	103	101.3	0.4	0.2	--	--	--	--
GMSG-128	10/13/04	12:17 PM	28.48	63	-	110.6	98.4	0.4	0	--	--	--	--
GMSG-128	11/23/04	10:17 AM	28.55	41	-	105.5	106.8	0.4	0.2	--	--	--	--
GMSG-128	01/06/05	4:17 PM	28.62	17	T	109.9	110.3	0.5	0	--	--	--	--
GMSG-128	01/19/05	11:33 AM	28.77	17	T	107	114.8	0.5	0	--	--	--	--
GMSG-128	02/08/05	11:03 AM	29.01	19	-	105.5	111.5	0.5	0	--	--	--	--
GMSG-128	03/16/05	11:45 AM	28.79	24	T	107.5	125.3	0.4	0	--	--	--	--
GMSG-128	04/04/05	10:15 AM	28.8	52	-	113.8	100	0.4	0	--	--	--	--
GMSG-128	05/10/05	11:04 AM	28.46	66	-	113.8	94.3	0.4	0	--	--	--	--
GMSG-128	06/09/05	8:42 AM	28.65	77	-	111.9	97.5	0.4	0	--	--	--	--
GMSG-128	07/01/05	1:49 PM	28.71	64	-	109.8	95.6	0.4	0	--	--	--	--
GMSG-128	08/11/05	11:24 AM	28.85	69	-	105.1	98.7	0.4	0	--	--	--	--
GMSG-128	09/08/05	3:05 PM	28.9	69.98	-	105.6	98.4	0.4	0	--	--	--	--
GMSG-128	10/19/05	11:35 AM	28.81	50	-	10	99.8	0.4	0	--	--	--	--
GMSG-128	11/03/05	4:10 PM	28.63	50	-	>80	96.4	0.4	0	--	--	--	--
GMSG-128	12/05/05	10:51 AM	28.76	8	-	107.6	100	0.5	0	--	--	--	--
GMSG-128	01/31/06	12:27 PM	28.63	30	-	98.1	100	0.4	0	--	--	--	--
GMSG-128	02/20/06	9:49 AM	28.62	15	-	96.2	103.7	0.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-128	03/09/06	11:21 AM	28.17	37	-	91.5	100.4	0.4	0	--	--	--	--
GMSG-128	04/12/06	3:48 PM	28.69	67	-	106.7	95.9	0.4	0	--	--	--	--
GMSG-128	05/17/06	2:29 PM	28.38	63	-	116	103.4	0.4	0	--	--	--	--
GMSG-128	06/06/06	10:47 AM	28.6	70	-	104.6	94.5	0.4	0	--	--	--	--
GMSG-128	07/26/06	1:15 PM	28.5	83	-	96.8	91.6	0.3	0	--	--	--	--
GMSG-128	08/16/06	12:03 PM	28.97	80	-	85	87.4	0.3	0.2	--	--	--	--
GMSG-128	09/18/06	1:25 PM	28.38	59	-	102.1	108.3	0.7	0	--	--	--	--
GMSG-128	10/23/06	2:07 PM	28.7	39	-	98.1	114.8	0.8	0	--	--	--	--
GMSG-128	11/14/06	10:04 AM	28.7	35	-	99.9	118.6	0.5	0	--	--	--	--
GMSG-128	12/21/06	10:09 AM	29.05	26	-	96.2	121.1	0.8	0	--	--	--	22.8
GMSG-128	01/19/07	10:23 AM	28.82	15	-	100.7	113.1	0.8	0	--	--	--	--
GMSG-128	02/08/07	9:58 AM	28.84	5	-	110.6	119	0.8	0	--	--	--	--
GMSG-128	03/12/07	11:32 AM	28.73	43	-	102.1	120.3	1.8	0	--	--	--	--
GMSG-128	04/19/07	2:19 PM	28.93	65	-	98.4	95.2	0.7	0.2	--	--	--	--
GMSG-128	05/29/07	10:31 AM	28.88	79	-	96	94.3	0.4	0	--	--	--	--
GMSG-128	06/13/07	11:12 AM	28.97	82	-	95.1	96.4	0.4	0	--	--	--	--
GMSG-128	07/16/07	10:09 AM	29.99	72	-	94.4	94.7	0.4	0	--	--	--	--
GMSG-128	08/30/07	10:02 AM	30.27	69	-	92.1	96.2	0.6	0	--	--	--	--
GMSG-128	09/20/07	11:17 AM	30.26	56	-	97.6	91.9	0.4	0	--	--	--	--
GMSG-128	10/17/07	10:38 AM	29.9	56	-	95.4	93.9	0.6	0	--	--	--	--
GMSG-128	11/21/07	11:29 AM	30.15	34	-	94.7	96.4	0.6	0	--	--	--	--
GMSG-128	12/27/07	12:21 PM	29.96	26	-	93.8	104.1	0.8	0	--	--	--	--
GMSG-129	12/19/98	1:20 PM	28.89	21	T	-3.36	0	0	19.6	125	90	5	--
GMSG-129	12/21/98	3:15 PM	28.74	13	-	-3.32	0	0	16.9	41	41	2.5	--
GMSG-129	12/28/98	11:24 AM	28.71	15	T	-3.07	0	0	16.4	1.5	1.5	1.5	--
GMSG-129	01/06/99	11:35 AM	28.56	9	T	-3.14	0	0	16.6	32	32	<1	--
GMSG-129	01/12/99	11:15 AM	28.73	0	-	0.04	0	0	20.3	--	--	--	--
GMSG-129	01/13/99	1:32 PM	29.23	1	T	-0.02	8.7	0.1	17.6	--	--	--	--
GMSG-129	01/14/99	8:34 AM	29.1	1	-	-0.37	0.1	0.3	19.1	--	--	--	--
GMSG-129	01/15/99	3:15 PM	28.47	17.1	-	-2.93	0	0	20	--	--	--	--
GMSG-129	01/21/99	8:23 AM	28.75	21	-	-3.06	0	0	21.4	<1	<1	<1	--
GMSG-129	01/26/99	8:51 AM	28.94	12	-	-3.14	0	0	20.2	3.5	3.5	3	--
GMSG-129	02/03/99	7:48 AM	28.2	28	-	-3.16	0	0	20.3	1	1	1	--
GMSG-129	02/11/99	8:05 AM	28.33	37.9	-	-3.19	0	0	21.1	6	4	4	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-129	02/23/99	7:44 AM	29	3	-	-3.49	0	0	21.3	1.25	1.25	1.25	--
GMSG-129	03/11/99	8:40 AM	29.1	21	-	-3.52	0	0	15.8	<1	<1	<1	--
GMSG-129	03/23/99	8:26 AM	28.56	35.1	-	-3.46	0	0	20.2	1.75	1.75	1.75	--
GMSG-129	04/07/99	4:38 PM	28.43	60.1	-	-3.58	0	0	21.4	--	60	10	--
GMSG-129	04/19/99	4:22 PM	28.68	44.1	T	-3.38	0	0	20.2	10	2.5	2.5	--
GMSG-129	04/29/99	2:34 PM	29.12	69.1	-	-3.21	0	0	22.6	2.5	2.5	2.5	--
GMSG-129	05/17/99	10:05 AM	28.52	68	-	-3.55	0	0	20.4	16	16	2.75	--
GMSG-129	06/03/99	8:39 AM	28.93	60.1	-	-3.39	0	0	20	50	20	3.5	--
GMSG-129	07/08/99	10:16 AM	28.78	64	T	-3.8	0	0	21.9	150	50	8	--
GMSG-129	07/17/99	8:25 PM	28.89	69.1	-	-4.4	0	0	21.2	100	30	3	--
GMSG-129	08/08/99	10:31 AM	28.84	64.9	-	4.88	0	0	20.5	125	39	35	--
GMSG-129	09/30/99	1:49 PM	28.4	59	T	-3.9	0	0	21.5	38	38	1.5	--
GMSG-129	11/03/99	11:24 AM	28.7	33.1	-	-0.49	0	0	20.4	2.5	2.5	1.25	--
GMSG-129	11/07/99	8:33 AM	29.18	34	-	-3.1	0	0.1	20.1	180	180	2.25	--
GMSG-129	02/16/00	10:26 AM	28.96	16	T	-3	0	0	20.2	--	--	--	--
GMSG-129	03/14/00	3:04 PM	28.67	33.1	-	-0.68	0	0	20	15.05	4.33	1.24	--
GMSG-129	03/30/00	1:29 PM	28.8	48.9	-	-2.92	0	0	21.2	186	44.65	15.47	--
GMSG-129	04/30/00	10:59 AM	28.89	63	-	-0.76	0	0	18.8	143	28	-0.36	--
GMSG-129	06/03/00	11:34 AM	28.98	65	-	-2.91	0	0	20.8	0.8	0.8	0.8	--
GMSG-129	06/05/00	9:44 AM	28.97	62	-	-2.94	0	0	20.4	-1	-1	-1	--
GMSG-129	07/19/00	9:07 AM	28.86	58	-	-3.3	0	0	21.6	650	650	8	--
GMSG-129	09/12/00	11:05 AM	28.66	63	-	-3.35	0	0.6	18.8	80	9.5	3	--
GMSG-129	09/08/01	4:17 PM	28.5	76	-	-1.6	0	0.2	19.7	<1	<1	<1	--
GMSG-129	10/04/01	10:30 AM	28.69	58	-	-1.48	0	0	20.3	7.6	7.3	5.3	--
GMSG-129	11/14/01	9:10 AM	28.82	54	-	-1.45	0	0	20.8	1894	1430	-0.5	--
GMSG-129	12/18/01	12:00 PM	28.52	35	-	-1.35	0	0	20.5	15.98	13.87	0.68	--
GMSG-129	01/10/02	11:42 AM	28.54	36	-	-1.43	0	0.2	20	15.05	7.57	0.05	--
GMSG-129	02/15/02	3:47 PM	28.5	38	-	-1.67	0	0	20.1	0.13	-0.03	-0.34	--
GMSG-129	03/18/02	2:22 PM	28.97	42	-	-2.09	0	0	21.4	0	0	0	--
GMSG-129	04/26/02	1:35 PM	29.01	48	-	-0.27	0	0	21.6	0.38	0.34	0	--
GMSG-129	05/22/02	1:37 PM	28.75	70	-	-0.35	0	0	21.7	0	0	0	--
GMSG-129	06/05/02	1:23 PM	28.76	71	-	-0.4	0	0	21.7	0.03	0	0	--
GMSG-129	07/11/02	4:10 PM	29.02	79	-	-1.35	0	0	22.3	9.09	1	0.18	--
GMSG-129	08/11/02	11:10 AM	28.72	81	-	1.4	0	0	22	1.94	-0.2	-0.45	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-130	12/19/98	1:33 PM	28.92	21	T	0.01	0	0	19.2	28	25	4	49.78
GMSG-130	12/21/98	3:07 PM	28.74	13	-	0.02	0	0	17.1	85	85	4.5	50.14
GMSG-130	12/28/98	11:33 AM	28.67	18	-	0.21	9.8	0	14.2	--	--	--	49.81
GMSG-130	01/06/99	11:24 AM	28.55	9	T	0.17	10.2	0	14.7	--	--	--	49.81
GMSG-130	01/12/99	4:34 PM	28.82	3.9	T	0.12	41.1	0	93	--	--	--	--
GMSG-130	01/14/99	10:49 AM	29.08	3	T	0.21	12.2	0	16.3	--	--	--	49.94
GMSG-130	01/21/99	9:07 AM	28.76	21	-	0.37	10.3	0	18.3	--	--	--	49.95
GMSG-130	02/03/99	8:40 AM	28.2	28.9	-	0.51	13.8	0	16.6	--	--	--	49.42
GMSG-130	02/11/99	8:56 AM	28.3	37.9	-	3.25	19.9	0	16.6	--	--	--	49.3
GMSG-130	02/23/99	9:20 AM	29.01	10	-	36	93.3	0	0	--	--	--	--
GMSG-130	03/23/99	9:11 AM	28.53	39	-	47	91.3	0.2	0	--	--	--	50.9
GMSG-130	04/07/99	4:15 PM	28.43	60.1	-	35	92.9	0.2	1.8	--	--	--	49.11
GMSG-130	04/19/99	4:05 PM	28.68	44.1	T	32	89.7	0.2	0	--	--	--	50
GMSG-130	04/29/99	3:23 PM	29.12	69.1	-	23	91.8	0.2	5.1	--	--	--	50.64
GMSG-130	05/17/99	10:40 AM	28.52	70	-	40	87.4	0.2	0	--	--	--	49.9
GMSG-130	06/03/99	8:17 AM	28.94	57	-	14.53	91.4	0.2	0	--	--	--	49.72
GMSG-130	06/15/99	--	--	--	--	10.5	89.2	0.2	0	--	--	--	--
GMSG-130	06/16/99	--	--	--	--	10	86.1	0.2	0	--	--	--	--
GMSG-130	06/17/99	--	--	--	--	21	90.7	0.2	0	--	--	--	--
GMSG-130	06/18/99	--	--	--	--	56	92	0.2	0	--	--	--	--
GMSG-130	06/19/99	--	--	--	--	45	92	0.2	0	--	--	--	--
GMSG-130	06/20/99	--	--	--	--	35	90.9	0.2	0	--	--	--	--
GMSG-130	06/21/99	3:43 PM	28.88	79	-	60	89.8	0.1	0	--	--	--	--
GMSG-130	06/22/99	1:24 PM	28.71	82.9	-	33	89.3	0.2	0	--	--	--	--
GMSG-130	06/23/99	12:54 PM	28.48	78.1	T	20	89.1	0.2	0	--	--	--	--
GMSG-130	06/24/99	10:20 AM	28.59	78.1	-	20	90	0.2	0	--	--	--	--
GMSG-130	06/25/99	10:00 AM	28.68	81	-	37	89.7	0.2	0	--	--	--	--
GMSG-130	06/26/99	11:39 AM	28.59	84.9	-	26	89.7	0.2	0	--	--	--	--
GMSG-130	06/27/99	10:11 AM	28.52	84.9	-	30	89.3	0.2	0	--	--	--	--
GMSG-130	06/28/99	10:28 AM	28.51	68	-	19	88	0.2	0	--	--	--	49.7
GMSG-130	06/29/99	10:20 AM	28.58	63	-	16	89.3	0.2	0	--	--	--	--
GMSG-130	06/30/99	10:55 AM	28.57	66	-	18	86.8	0.2	0	--	--	--	--
GMSG-130	07/01/99	10:06 AM	28.47	60.1	-	11.69	81.3	0.2	0	--	--	--	--
GMSG-130	07/02/99	10:13 AM	28.62	71.1	-	15.72	91.2	0.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-130	07/03/99	9:57 AM	28.57	66.9	0.14	15	87.1	0.2	0	--	--	--	--
GMSG-130	07/04/99	9:39 AM	28.66	82.9	-	15.03	86	0.2	0	--	--	--	--
GMSG-130	07/05/99	8:56 AM	28.65	79	-	52	87.5	0.2	0	--	--	--	--
GMSG-130	07/06/99	9:29 AM	28.66	73	-	40	87.4	0.2	0	--	--	--	--
GMSG-130	07/07/99	9:12 AM	28.72	73.9	-	51	87.8	0.2	0	--	--	--	--
GMSG-130	07/08/99	9:53 AM	28.78	64	T	70	88	0.2	0	--	--	--	--
GMSG-130	07/09/99	10:35 AM	28.47	63	-	46	90.6	0.2	0.2	--	--	--	--
GMSG-130	07/10/99	11:54 AM	28.92	73	-	74	97	0.2	0.2	--	--	--	--
GMSG-130	07/11/99	8:50 AM	28.95	72	-	100	92.7	0.2	0	--	--	--	--
GMSG-130	07/12/99	9:30 AM	28.9	77	-	51	92.3	0.3	0	--	--	--	--
GMSG-130	07/13/99	11:58 AM	28.68	75	-	50	96.5	0.2	0	--	--	--	--
GMSG-130	07/14/99	8:37 AM	28.6	70	-	57	92.8	0.2	0	--	--	--	--
GMSG-130	07/15/99	12:15 PM	28.69	84	-	10	96	0.2	0	--	--	--	--
GMSG-130	07/16/99	12:40 PM	28.64	89.1	-	5.63	98.7	0.1	0	--	--	--	--
GMSG-130	07/17/99	11:10 AM	28.86	73.9	-	52	95.5	0.2	0	--	--	--	48.7
GMSG-130	07/18/99	9:30 AM	28.92	70	-	46	95.7	0.2	0	--	--	--	--
GMSG-130	07/19/99	9:05 AM	28.86	64	-	33	94.4	0.2	0	--	--	--	--
GMSG-130	07/20/99	9:20 AM	28.9	-	-	25	93.5	0.2	0	--	--	--	--
GMSG-130	07/21/99	8:52 AM	28.76	66.9	0.01	25	91.8	0.2	0	--	--	--	--
GMSG-130	07/22/99	2:02 PM	28.78	87.1	-	21	97	0.1	0	--	--	--	--
GMSG-130	07/23/99	11:15 AM	28.61	81	-	13	95.1	0.2	0	--	--	--	--
GMSG-130	07/24/99	8:25 AM	28.61	80.1	-	48	93.4	0.2	0	--	--	--	--
GMSG-130	07/25/99	9:21 AM	28.73	78.1	-	55	94.2	0.2	0	--	--	--	--
GMSG-130	07/26/99	8:30 AM	28.64	73	-	27	92.9	0.2	0	--	--	--	--
GMSG-130	07/27/99	1:17 PM	28.72	80.1	-	34	94.7	0.2	0	--	--	--	--
GMSG-130	08/08/99	10:40 AM	28.84	64.9	-	19	107.4	0.2	0	--	--	--	50
GMSG-130	09/30/99	2:13 PM	28.4	59	T	69	83.6	0.2	0	--	--	--	50.25
GMSG-130	10/07/99	4:07 PM	28.7	48.9	-	62	83.1	0.3	0	--	--	--	49.98
GMSG-130	11/03/99	2:17 PM	28.68	36	-	25	97.7	0.3	0	--	--	--	50.7
GMSG-130	11/07/99	8:27 AM	29.16	27	-	29	109.2	0.4	0	--	--	--	51
GMSG-130	02/16/00	10:37 AM	28.97	16	T	45	100.8	0.3	0.2	--	--	--	50.1
GMSG-130	03/14/00	3:14 PM	28.67	33.1	-	56	99.2	0.2	0	--	--	--	49.45
GMSG-130	03/30/00	1:15 PM	28.8	48.9	-	45	91.7	0.2	0	--	--	--	50.07
GMSG-130	04/30/00	10:48 AM	28.89	63	-	15	93	0.02	0	--	--	--	52

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-130	06/05/00	10:06 AM	28.97	62	-	70	90.1	0.2	0	--	--	--	50.5
GMSG-130	07/19/00	8:58 AM	28.86	58	-	105	95.3	0.3	0	--	--	--	58.47
GMSG-130	09/12/00	11:37 AM	28.66	64	-	110	107.6	0.2	0	--	--	--	59.46
GMSG-130	09/08/01	6:15 PM	28.53	70	-	10	40.7	0	12	--	--	--	49.34
GMSG-130	10/04/01	10:40 AM	28.69	58	-	11.38	97.8	0	0	--	--	--	49.42
GMSG-131	12/21/98	3:00 PM	28.74	13	-	4.65	82.1	0	1.6	--	--	--	50.7
GMSG-131	12/28/98	11:05 AM	28.71	15	T	6.55	83.3	0	0	--	--	--	50.55
GMSG-131	01/06/99	11:19 AM	28.55	9	T	1.39	91	0	0	--	--	--	50.51
GMSG-131	01/12/99	4:31 PM	28.82	3.9	T	2.76	90.6	0	0	--	--	--	--
GMSG-131	01/14/99	9:33 AM	29.1	1	-	2.6	82.1	0	1.1	--	--	--	--
GMSG-131	01/21/99	8:56 AM	28.76	21	-	4.02	70.8	0	3.6	--	--	--	50.55
GMSG-131	01/26/99	9:29 AM	28.94	12	-	4.69	80	0	1.5	--	--	--	49.62
GMSG-131	02/03/99	8:27 AM	28.2	28	-	1.12	82	0	0.9	--	--	--	50
GMSG-131	02/11/99	8:45 AM	28.3	37.9	-	3.59	82.6	0	0.9	--	--	--	50.2
GMSG-131	02/23/99	8:15 AM	29	3	-	8.31	79.3	0	1.4	--	--	--	50.65
GMSG-131	03/11/99	8:50 AM	29.1	21	-	5.47	78.1	0	3.9	--	--	--	50.4
GMSG-131	03/23/99	8:59 AM	28.53	39	-	5.24	75.9	0	2.3	--	--	--	50.15
GMSG-131	04/07/99	3:57 PM	28.43	60.1	-	1.93	90.4	0	5.1	--	--	--	49.36
GMSG-131	04/19/99	3:50 PM	28.68	44.1	T	1	76.5	0	0	--	--	--	50.08
GMSG-131	04/29/99	3:12 PM	29.12	69.1	-	1.05	79.4	0	7.7	--	--	--	50.52
GMSG-131	05/17/99	10:32 AM	28.52	70	-	6.1	80.5	0	0	--	--	--	49.63
GMSG-131	06/03/99	8:49 AM	28.93	60.1	-	1.56	72.8	0	0.6	--	--	--	49.55
GMSG-131	06/15/99	--	--	--	--	3.6	77	0	0	--	--	--	--
GMSG-131	06/16/99	--	--	--	--	4.34	75.8	0	1.8	--	--	--	--
GMSG-131	06/17/99	--	--	--	--	1.54	73.2	0	0.7	--	--	--	--
GMSG-131	06/18/99	--	--	--	--	3.98	89.2	0	0	--	--	--	--
GMSG-131	06/19/99	--	--	--	--	3.65	89	0	0	--	--	--	--
GMSG-131	06/20/99	--	--	--	--	4.42	88.5	0	0	--	--	--	--
GMSG-131	06/21/99	3:32 PM	28.88	79	-	3.8	78.5	0	2.2	--	--	--	--
GMSG-131	06/22/99	1:14 PM	28.71	82.9	-	3.67	73	0	0.9	--	--	--	--
GMSG-131	06/23/99	12:45 PM	28.48	78.1	T	2.6	73.5	0	0.4	--	--	--	--
GMSG-131	06/24/99	10:10 AM	28.59	78.1	-	0.83	76.9	0	0	--	--	--	--
GMSG-131	06/25/99	9:53 AM	28.68	81	-	1.44	72.8	0	0	--	--	--	--
GMSG-131	06/26/99	11:30 AM	28.59	84.9	-	1.33	71.4	0	1.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-131	06/27/99	10:02 AM	28.52	84.9	-	4.2	72	0	0.6	--	--	--	--
GMSG-131	06/28/99	10:19 AM	28.51	68	-	1.38	72	0	0.6	--	--	--	49.95
GMSG-131	06/29/99	10:12 AM	28.58	63	-	4.28	74	0	0	--	--	--	--
GMSG-131	06/30/99	10:45 AM	28.57	66	-	1.58	65.7	0	1.4	--	--	--	--
GMSG-131	07/01/99	10:13 AM	28.47	60.1	-	2.37	72.3	0	1.9	--	--	--	--
GMSG-131	07/02/99	10:18 AM	28.62	71.1	-	3.9	77.6	0	2.5	--	--	--	--
GMSG-131	07/03/99	10:06 AM	28.57	66.9	0.14	4.39	67.2	0	1.2	--	--	--	--
GMSG-131	07/04/99	9:43 AM	28.66	82.9	-	0.93	61.7	0	2.7	--	--	--	--
GMSG-131	07/05/99	9:00 AM	28.65	79	-	1.06	62.5	0	2.5	--	--	--	--
GMSG-131	07/06/99	9:33 AM	28.66	75	-	1.34	61.9	0	2.7	--	--	--	--
GMSG-131	07/07/99	9:17 AM	28.72	73.9	-	2.66	60.6	0	2.8	--	--	--	--
GMSG-131	07/08/99	10:01 AM	28.78	64	T	3.22	61.9	0	2.5	--	--	--	--
GMSG-131	07/09/99	10:44 AM	28.47	63	-	2.54	74	0	2.7	--	--	--	--
GMSG-131	07/10/99	12:03 PM	28.92	73	-	3.62	76.5	0	3.2	--	--	--	--
GMSG-131	07/11/99	8:49 AM	28.95	72	-	1.74	78.4	0	1.2	--	--	--	--
GMSG-131	07/12/99	9:36 AM	28.9	77	-	1.73	75.6	0	2.4	--	--	--	--
GMSG-131	07/13/99	12:03 PM	28.68	75	-	2.31	77.9	0	2.6	--	--	--	--
GMSG-131	07/14/99	8:45 AM	28.6	70	-	4.26	90.1	0	0	--	--	--	--
GMSG-131	07/15/99	12:30 PM	28.7	84	-	3.93	76.5	0	3.3	--	--	--	--
GMSG-131	07/16/99	12:00 PM	28.64	87.1	-	1.09	82	0	2	--	--	--	--
GMSG-131	07/17/99	11:20 AM	28.86	73.9	-	2.19	83	0	2	--	--	--	48.63
GMSG-131	07/18/99	9:45 AM	28.92	70	-	2.48	86.5	0	0.9	--	--	--	--
GMSG-131	07/19/99	9:20 AM	28.86	64	-	4.47	82.6	0	1.4	--	--	--	--
GMSG-131	07/20/99	9:08 AM	28.9	-	-	4	82.2	0	1.3	--	--	--	--
GMSG-131	07/21/99	8:43 AM	28.76	66.9	0.01	1.8	80.3	0	1.3	--	--	--	--
GMSG-131	07/22/99	3:46 AM	28.78	61	-	4.16	91.4	0	0.1	--	--	--	--
GMSG-131	07/23/99	11:02 AM	28.61	81	-	4.49	83.5	0	1.5	--	--	--	--
GMSG-131	07/24/99	8:30 AM	28.61	82	-	4.4	82.1	0	1.4	--	--	--	--
GMSG-131	07/25/99	9:25 AM	28.73	78.1	-	2.16	82.7	0	1.5	--	--	--	--
GMSG-131	07/26/99	8:33 AM	28.64	73	-	2.41	81.3	0	1.3	--	--	--	--
GMSG-131	07/27/99	1:08 PM	28.72	80.1	-	2.47	85.7	0	0.9	--	--	--	--
GMSG-131	08/08/99	11:03 AM	28.84	64.9	-	2.7	89.7	0	2.1	--	--	--	49.9
GMSG-131	09/30/99	2:05 PM	28.4	59	T	3.66	71.2	0	0.5	--	--	--	49.75
GMSG-131	10/07/99	4:27 PM	28.7	48.9	-	2.4	68.1	0	0.9	--	--	--	50.1

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-131	10/23/99	5:11 PM	28.91	34	-	7.14	100.1	0	0	--	--	--	50.4
GMSG-131	11/03/99	2:32 PM	28.69	36	-	8.96	95.2	0	0	--	--	--	50.1
GMSG-131	11/07/99	8:48 AM	29.18	34	-	9.38	106	0	0	--	--	--	50.49
GMSG-131	03/30/00	2:00 PM	28.79	51.1	-	3.41	88.5	0	0	--	--	--	--
GMSG-131	04/30/00	11:22 AM	28.89	63	-	1	88.4	0	0	--	--	--	49.9
GMSG-131	06/05/00	10:01 AM	28.97	62	-	2.71	88.4	0	0	--	--	--	50.56
GMSG-131	07/19/00	9:33 AM	28.84	63	-	4.4	88.5	0	0	--	--	--	--
GMSG-131	09/12/00	11:20 AM	28.66	63	-	3.31	97.5	0	0	--	--	--	50.27
GMSG-131	09/08/01	4:50 PM	28.51	74	-	4.4	100	0	0.7	--	--	--	50.22
GMSG-131	10/04/01	9:31 AM	28.69	57	-	3.7	100.3	0	0	--	--	--	--
GMSG-131	11/14/01	8:57 AM	28.82	54	-	10.26	96.4	0	0	--	--	--	50.62
GMSG-131	12/18/01	11:50 AM	28.52	35	-	8.15	108.1	0	0	--	--	--	50.15
GMSG-131	01/10/02	11:17 AM	28.55	37	-	-7.2	112.6	0	0	--	--	--	50.5
GMSG-131	02/15/02	4:27 PM	28.5	38	-	2.5	104.7	0	0.2	--	--	--	50.32
GMSG-131	03/18/02	1:23 PM	28.99	41	-	3.21	107.4	0	0	--	--	--	50.55
GMSG-131	04/26/02	10:40 AM	29.03	43	-	0.8	107.5	0	0	--	--	--	46.61
GMSG-131	05/22/02	11:09 AM	28.84	66	-	3.42	106.7	0	0	--	--	--	48.52
GMSG-131	06/05/02	11:14 AM	28.77	65	-	3.5	104.3	0	0	--	--	--	49.36
GMSG-131	07/11/02	3:43 PM	29.02	79	-	2.8	92.1	0	0.7	--	--	--	49.75
GMSG-131	08/11/02	8:45 AM	28.72	76	-	3.2	100	0	0	--	--	--	49.81
GMSG-132	12/28/98	11:14 AM	28.71	15	T	-0.25	0	0	16.5	30	10	1.5	52.59
GMSG-132	01/06/99	10:57 AM	28.55	9	T	-0.1	0	0	16.6	1.25	1.25	<1	52.47
GMSG-132	01/12/99	11:18 AM	28.73	0	-	0.06	0	0	20.4	--	--	--	--
GMSG-132	01/14/99	8:48 AM	29.1	1	-	0	0	0	19.6	12	12	4	52.63
GMSG-132	01/21/99	8:37 AM	28.76	21	-	0.03	0	0	20.9	4	4	4	52.6
GMSG-132	01/26/99	9:01 AM	28.94	12	-	0	0	0	20	<1	<1	1.5	52.66
GMSG-132	01/26/99	9:41 AM	28.93	17.1	-	0.36	11.5	0	17	--	--	--	49.98
GMSG-132	02/03/99	8:00 AM	28.2	28	-	-0.35	0	0	20.2	1	1	1	52.08
GMSG-132	02/11/99	8:15 AM	28.33	37.9	-	-0.43	0	0	20.9	3	3	3	52.19
GMSG-132	02/23/99	7:51 AM	29	3	-	-1.25	0	0	20.7	<1	<1	1.25	52.43
GMSG-132	03/23/99	8:35 AM	28.53	39	-	0	0	0	20.2	5.5	4	2.5	52.12
GMSG-132	04/07/99	4:57 PM	28.43	60.1	-	0.11	0	0	21	15	<1	4	51.53
GMSG-132	04/19/99	6:10 PM	28.69	44.1	-	-1.94	0	0	19.5	3	3	3	52.2
GMSG-132	04/29/99	2:42 PM	29.12	69.1	-	0.06	0	0	20.7	4	4	4.5	52.54

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-132	05/17/99	10:14 AM	28.52	68	-	0.01	0	0	20.3	7	7	2	31.71
GMSG-132	06/03/99	8:30 AM	28.93	60.1	-	-0.06	0	0	19.8	20	20	10	51.71
GMSG-132	07/08/99	10:28 AM	28.78	64	T	0	0	0	21.7	37	37	8	51.76
GMSG-132	07/17/99	8:15 PM	28.89	69.1	-	2.67	0	0	21.1	100	60	3	50.82
GMSG-132	08/08/99	10:46 AM	28.84	64.9	-	0	0	0	20.5	3000	450	13	51.87
GMSG-132	09/30/99	1:56 PM	28.4	59	T	3.83	0	0	21.3	<1	<1	1.25	51.8
GMSG-132	11/03/99	11:33 AM	28.7	33.1	-	-1.69	0	0	20	<1	<1	<1	--
GMSG-132	11/07/99	8:38 AM	29.18	34	-	-5.89	0	0.2	19.9	95	80	1.25	52.49
GMSG-132	02/16/00	10:13 AM	28.96	16	T	-1.34	0	0	19.7	--	--	--	--
GMSG-132	03/14/00	3:27 PM	28.67	33.1	-	0	0	0	20.1	805	30.25	3.25	--
GMSG-132	03/30/00	1:40 PM	28.79	51.1	-	-0.21	0	0	20.7	31.2	26.82	16.15	--
GMSG-132	04/30/00	11:07 AM	28.89	63	-	0	0	0	18.7	14.5	10	-0.45	52.93
GMSG-132	06/05/00	9:47 AM	28.97	62	-	0.01	0	0	20.4	-0.1	-0.1	-0.1	52.57
GMSG-132	07/19/00	9:16 AM	28.86	58	-	0	0	0	21.7	210	38	3.5	52.28
GMSG-132	09/12/00	11:47 AM	28.66	64	-	-0.06	0	0	20.1	900	175	3	52.17
GMSG-132	09/08/01	6:05 PM	28.53	70	-	0	0	0	20.2	--	--	--	52.29
GMSG-132	10/04/01	10:50 AM	28.69	58	-	-0.06	0	0	20.4	5.96	5.65	5.38	58.08
GMSG-132	11/14/01	9:15 AM	28.82	54	-	-0.04	0	0	20.7	13.15	11.2	-0.4	52.57
GMSG-132	12/18/01	12:10 PM	28.52	35	-	0	0	0	21	14.1	6.63	0.21	52.11
GMSG-132	01/10/02	11:48 AM	28.54	36	-	-0.21	0	0	20.3	5.34	3.62	-0.06	52.44
GMSG-132	02/15/02	3:35 PM	28.5	38	-	-0.06	0	0	20.1	1.7	1.61	-0.28	--
GMSG-132	03/18/02	2:40 PM	28.98	42	-	-0.26	0	0	21.2	0	0	0	52.55
GMSG-132	04/26/02	1:51 PM	29.01	48	-	-0.57	0	0	21.4	0	0	0	48.77
GMSG-132	05/22/02	2:05 PM	28.75	70	-	0	0	0	21.1	0	0	0	50.52
GMSG-132	06/05/02	1:41 PM	28.76	71	-	0	0	0	21.4	0	0	0	51.38
GMSG-132	07/11/02	4:19 PM	29.02	79	-	0	0	0	22.3	0.45	0.36	0.22	51.84
GMSG-132	08/11/02	11:30 AM	28.72	83	-	0	0	0	21.7	0.6	-0.3	-0.3	51.82
GMSG-133	06/05/03	4:16 PM	28.69	74	-	--	0	0.3	19.8	--	--	--	--
GMSG-133	06/13/03	1:17 PM	28.62	77	-	--	0	0.4	19.2	--	--	--	--
GMSG-133	06/19/03	1:01 PM	28.97	68	-	--	0	0.5	19.1	--	--	--	--
GMSG-133	07/21/03	12:05 PM	28.57	71	-	--	0	0.4	19.3	--	--	--	--
GMSG-133	08/05/03	2:35 PM	28.69	76	T	--	0	0.4	19	--	--	--	--
GMSG-133	09/26/03	2:07 PM	28.36	54	T	--	0	0.8	18.7	--	--	--	--
GMSG-133	11/03/03	2:40 PM	29.02	32	T	--	0	0.4	19.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-133	01/21/04	9:20 AM	28.46	13	T	--	0	0.1	19	--	--	--	--
GMSG-133	04/18/04	3:27 PM	28.38	55	-	--	0	0.1	17.5	--	--	--	--
GMSG-133	07/14/04	11:26 AM	28.68	75	-	--	0	0.7	18.7	--	--	--	--
GMSG-133	10/31/04	12:33 PM	--	--	--	--	0	0.4	19.6	--	--	--	--
GMSG-133	02/07/05	1:41 PM	28.87	28	-	--	--	--	--	--	--	--	--
GMSG-133	04/05/05	7:38 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-133	07/05/05	2:12 PM	28.87	68	-	--	--	--	--	--	--	--	--
GMSG-133	10/11/05	3:00 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-133	02/28/06	12:19 PM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-133	04/10/06	10:50 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-133	07/13/06	1:15 PM	28.76	92	-	--	--	--	--	--	--	--	--
GMSG-133	10/11/06	7:38 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-133	02/03/07	9:07 AM	28.44	-6	-	--	--	--	--	--	--	--	--
GMSG-133	04/05/07	10:27 AM	28.88	20	T	--	--	--	--	--	--	--	--
GMSG-133	07/18/07	2:41 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-133	10/18/07	9:49 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-134	06/13/03	12:50 PM	28.62	77	-	--	0	1.2	18.6	--	--	--	--
GMSG-134	06/19/03	12:53 PM	28.97	68	-	--	0	1.2	18.2	--	--	--	--
GMSG-134	06/24/03	10:44 AM	28.73	77	-	--	0	1.3	18.2	--	--	--	--
GMSG-134	07/21/03	11:38 AM	28.57	71	-	--	0	1.9	18	--	--	--	--
GMSG-134	08/05/03	2:10 PM	28.7	81	-	--	0	1.7	17.7	--	--	--	--
GMSG-134	09/26/03	1:39 PM	28.36	54	T	--	0.1	1.8	17.8	--	--	--	--
GMSG-134	11/02/03	4:20 PM	28.91	42	-	--	0	1.2	18.2	--	--	--	--
GMSG-134	04/19/04	7:46 AM	28.5	41	T	--	0	0.4	17.1	--	--	--	--
GMSG-134	07/14/04	12:00 PM	28.67	76	-	--	0	1.2	17.9	--	--	--	--
GMSG-134	10/30/04	8:50 AM	27.94	55	-	--	0	0.9	18.9	--	--	--	--
GMSG-134	02/08/05	10:25 AM	28.99	17	-	--	--	--	--	--	--	--	--
GMSG-134	03/29/05	12:55 PM	28.49	61	-	--	--	--	--	--	--	--	--
GMSG-134	04/04/05	3:37 PM	28.72	55	-	--	--	--	--	--	--	--	--
GMSG-134	07/05/05	12:55 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-134	10/11/05	4:34 PM	29	55	-	--	--	--	--	--	--	--	--
GMSG-134	03/13/06	10:14 AM	28.08	32	0.07	--	--	--	--	--	--	--	--
GMSG-134	04/06/06	2:27 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-134	07/13/06	8:47 AM	28.78	83	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-134	10/11/06	10:14 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-134	01/31/07	11:36 AM	28.61	15	-	--	--	--	--	--	--	--	--
GMSG-134	04/06/07	11:03 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-134	07/19/07	2:28 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-134	10/17/07	12:29 PM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-135	04/15/04	2:40 PM	28.73	59	-	0.3	6	5.8	6.8	--	--	--	--
GMSG-135	06/12/04	9:50 AM	28.74	57	-	-0.001	5.2	6.5	6.9	--	--	--	--
GMSG-135	06/12/04	12:00 PM	28.7	67	-	26.5	11.6	9.4	0	--	--	--	--
GMSG-135	06/12/04	2:50 PM	28.65	78	-	27.5	9.5	8.8	0.7	--	--	--	--
GMSG-135	06/12/04	5:10 PM	28.65	79	-	-36.8	7.5	7.2	4	--	--	--	--
GMSG-135	08/24/04	2:04 PM	28.72	71	-	0	0	0	20.1	--	--	--	--
GMSG-135	08/25/04	11:58 AM	28.64	75	-	0	0	0.3	19.1	--	--	--	--
GMSG-135	08/26/04	12:04 PM	28.57	76	-	0	0	0	19.5	--	--	--	--
GMSG-135	08/27/04	12:40 PM	28.67	79	-	0	0	0.1	19.3	--	--	--	--
GMSG-135	08/30/04	10:12 AM	28.8	57	-	0	0	0.4	19.1	--	--	--	--
GMSG-135	09/02/04	3:52 PM	28.79	82	-	0	0	0.4	19.2	--	--	--	--
GMSG-135	10/19/04	1:15 PM	28.84	46	-	0	0	0.8	18.4	--	--	--	--
GMSG-135	11/02/04	12:02 PM	28.88	45	T	0	0	1.3	17.3	--	--	--	--
GMSG-135	11/12/04	10:53 AM	29.25	36	-	0	0	1.4	17	--	--	--	--
GMSG-135	11/18/04	1:10 PM	28.95	53	-	0	0	1.3	16.8	--	--	--	--
GMSG-135	12/09/04	10:46 AM	28.57	37	-	0	0	2.2	15.2	--	--	--	--
GMSG-135	01/27/05	2:09 PM	29.3	15	-	0	.0.	3.5	13.6	--	--	--	--
GMSG-135	02/10/05	3:22 PM	28.84	31	-	--	--	--	--	--	--	--	--
GMSG-135	02/22/05	10:50 AM	28.94	23	T	--	--	--	--	--	--	--	--
GMSG-135	06/22/05	8:45 AM	29.01	72	-	0	0	0	19.7	--	--	--	--
GMSG-135	06/29/05	8:43 AM	28.84	61	-	0	0	0.1	19.4	--	--	--	--
GMSG-135	07/06/05	9:20 AM	28.96	65	-	0	0	0	19.5	--	--	--	--
GMSG-135	07/14/05	2:13 PM	28.82	86	-	0.2	0	0.5	18.5	--	--	--	--
GMSG-135	07/19/05	3:24 PM	28.78	81	-	0.1	0	0	18.2	--	--	--	--
GMSG-135	07/29/05	8:40 AM	29.03	63	-	0	0	0	19.6	--	--	--	--
GMSG-135	08/11/05	2:17 PM	28.79	70	-	0.1	0	0.9	17.9	--	--	--	--
GMSG-135	08/17/05	11:00 AM	28.89	71	-	0	0	1	17.5	--	--	--	--
GMSG-135	09/08/05	3:51 PM	28.91	71.06	-	0.1	0	1.2	16.7	--	--	--	--
GMSG-135	10/20/05	1:35 PM	28.88	51	-	0.11	0	1.9	15.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-135	11/02/05	3:05 PM	28.58	52	-	0.65	0	2.1	15	--	--	--	--
GMSG-135	12/05/05	12:30 PM	28.72	10	-	-0.1	0.1	3.1	13.7	--	--	--	--
GMSG-135	01/10/06	3:55 PM	28.81	28	-	0.1	0	3.5	12.6	--	--	--	--
GMSG-135	02/13/06	10:31 AM	28.43	19	-	0	0	4.1	11.4	--	--	--	--
GMSG-135	03/08/06	10:31 AM	28.46	34	-	0.1	0	4.3	11	--	--	--	--
GMSG-135	03/15/06	2:06 PM	28.91	33	-	0	0	4.4	10.8	--	--	--	--
GMSG-135	04/13/06	1:53 PM	28.72	65	-	0	0	3.9	11.3	--	--	--	--
GMSG-135	05/17/06	11:12 AM	28.39	60	T	0	0	3.9	11.1	--	--	--	--
GMSG-135	06/02/06	2:29 PM	28.81	72	-	0	0	4.2	10.4	--	--	--	--
GMSG-135	11/08/06	8:39 AM	28.3	48	-	-1.7	0	0	20.3	--	--	--	--
GMSG-135	12/18/06	1:34 PM	29.07	32	-	0	0	0.8	19.5	--	--	--	--
GMSG-135	01/18/07	12:57 PM	28.66	21	-	0	0	1.4	17.8	--	--	--	--
GMSG-135	02/06/07	3:41 PM	28.81	9	-	0	0	1.7	17.9	--	--	--	--
GMSG-135	03/09/07	2:02 PM	28.55	44	-	0	0	2.6	16.2	--	--	--	--
GMSG-135	04/16/07	11:30 AM	28.82	58	-	0	0	1.7	17.6	--	--	--	--
GMSG-135	05/25/07	1:25 PM	29	66	-	0	0	1.6	16.7	--	--	--	--
GMSG-135	06/13/07	2:52 PM	28.91	85	-	0	0.1	1.8	15.3	--	--	--	42.08
GMSG-135	07/11/07	11:31 AM	29.88	70	-	0	0	2.1	14.8	--	--	--	--
GMSG-135	08/29/07	2:14 PM	30.13	75	-	0	0	2.3	13.8	--	--	--	--
GMSG-135	09/19/07	1:32 PM	30.1	74	-	-0.1	0	2.7	13.2	--	--	--	--
GMSG-135	10/15/07	2:26 PM	30.11	48	-	0	0	3.7	11.4	--	--	--	--
GMSG-135	10/16/07	8:00 AM	29.95	51	0.05	0	0	4.1	10.7	--	--	--	--
GMSG-135	10/16/07	11:28 AM	29.92	52	0.08	0	0	4.6	10.2	--	--	--	--
GMSG-135	10/17/07	1:56 PM	29.86	58	-	0	0.2	4.6	9.9	--	--	--	42.11
GMSG-135	10/18/07	11:30 AM	29.22	65	-	0.1	0.1	4.9	9.5	--	--	--	--
GMSG-135	10/19/07	9:23 AM	28.98	53	T	0	0.1	5.2	9.7	--	--	--	--
GMSG-135	10/22/07	8:18 AM	30.02	47	-	-0.1	0	4.5	11.1	--	--	--	--
GMSG-135	11/20/07	2:52 PM	30.02	38	-	--	--	--	--	--	--	--	--
GMSG-136	07/02/04	12:59 PM	28.91	74	-	0	0	0	19.7	--	--	--	--
GMSG-136	07/09/04	1:04 PM	28.87	70	-	-7.6	3.5	0.5	17.2	--	--	--	--
GMSG-136	07/11/04	10:10 AM	28.82	70	-	-1.3	0.5	0.1	19.1	--	--	--	--
GMSG-136	07/12/04	3:03 PM	28.7	82	-	0.2	2.8	1.9	15.7	--	--	--	--
GMSG-136	07/13/04	3:00 PM	28.53	70	T	-1.9	3.2	1.6	18	--	--	--	--
GMSG-136	07/14/04	6:00 PM	28.67	74	-	8.4	2.2	1.2	16.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-136	07/15/04	10:06 AM	28.68	78	-	8	2.9	1.3	16.8	--	--	--	--
GMSG-136	07/19/04	3:16 PM	28.54	79	T	>200	45.5	3.6	10.4	--	--	--	--
GMSG-136	07/20/04	8:43 AM	28.69	74	-	>200	120.5	12.8	0.1	--	--	--	--
GMSG-136	07/20/04	5:24 PM	28.67	81	-	6 (psi)	87.3	10.3	0	--	--	--	--
GMSG-136	07/21/04	1:43 PM	28.46	83	-	11 (psi)	86.8	10.6	0.2	--	--	--	--
GMSG-136	07/21/04	3:44 PM	28.47	83	-	12 (psi)	97.5	11.3	0	--	--	--	--
GMSG-136	07/23/04	10:50 AM	28.97	66	-	15 (psi)	87.2	11.1	0	--	--	--	--
GMSG-136	07/26/04	12:26 PM	28.95	81	-	14 (psi)	--	--	--	--	--	--	--
GMSG-136	07/27/04	4:40 PM	28.79	80	-	0 psi	--	--	--	--	--	--	--
GMSG-136	07/28/04	3:27 PM	28.73	82	-	10 psi	72.2	9.1	1.6	--	--	--	--
GMSG-136	07/29/04	4:37 PM	28.63	75	-	11 psi	87.2	12.1	0	--	--	--	--
GMSG-136	07/30/04	6:00 PM	28.59	72	-	2.2	90.1	14.2	0	--	--	--	--
GMSG-136	08/02/04	10:32 AM	28.68	79	0.04	9 psi	82.7	10.1	0.2	--	--	--	--
GMSG-136	08/03/04	5:02 PM	28.71	75	-	17 psi	--	--	--	--	--	--	--
GMSG-136	08/04/04	1:00 PM	28.82	72	-	17 psi	--	--	--	--	--	--	--
GMSG-136	08/05/04	12:00 PM	28.99	71	-	17 psi	--	--	--	--	--	--	--
GMSG-136	08/06/04	3:04 PM	28.9	77	-	17 psi	--	--	--	--	--	--	--
GMSG-136	08/08/04	3:00 PM	28.79	67	-	17 psi	--	--	--	--	--	--	--
GMSG-136	08/09/04	3:03 PM	28.55	66	0.25	17 psi	--	--	--	--	--	--	--
GMSG-136	08/10/04	10:50 AM	28.56	61	-	19 psi	81.6	10.7	0	--	--	--	--
GMSG-136	08/11/04	2:00 PM	28.57	58	-	19 psi	84.1	10.9	0	--	--	--	--
GMSG-136	08/12/04	7:53 AM	28.8	56	-	19 psi	83.1	10.8	0	--	--	--	--
GMSG-136	08/13/04	9:06 AM	28.94	61	-	18 psi	84.7	11.1	0	--	--	--	--
GMSG-136	08/16/04	8:59 AM	28.95	68	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/17/04	7:15 AM	28.76	59	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/17/04	9:15 AM	28.75	62	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/17/04	10:58 AM	28.72	63	-	10 psi	--	--	--	--	--	--	--
GMSG-136	08/18/04	11:15 AM	28.41	75	-	17 psi	--	--	--	--	--	--	--
GMSG-136	08/18/04	12:45 PM	28.32	74	-	10 psi	--	--	--	--	--	--	--
GMSG-136	08/19/04	8:12 AM	28.75	51	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/19/04	10:43 AM	28.72	60	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/19/04	1:40 PM	28.67	65	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/19/04	3:44 PM	28.65	66	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/19/04	6:40 PM	28.64	59	-	18 psi	138	14.1	0.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-136	08/20/04	9:00 AM	28.75	57	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/20/04	11:13 AM	28.76	60	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/20/04	12:54 PM	28.76	62	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/23/04	8:00 AM	28.87	54	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/23/04	12:18 PM	28.87	63	-	10 psi	--	--	--	--	--	--	--
GMSG-136	08/24/04	8:35 AM	28.8	59	T	18 psi	--	--	--	--	--	--	--
GMSG-136	08/25/04	9:40 AM	28.63	73	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/26/04	7:02 AM	28.57	68	-	18 psi	--	--	--	--	--	--	--
GMSG-136	08/27/04	10:46 AM	28.65	77	-	>200	126.2	13.2	0.1	--	--	--	--
GMSG-136	08/30/04	7:49 AM	28.8	52	0.01	18 psi	--	--	--	--	--	--	--
GMSG-136	09/01/04	7:57 AM	29.05	54	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/01/04	10:00 AM	29.04	56	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/01/04	6:34 PM	28.98	60	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/03/04	12:26 PM	28.84	83	-	18 psi	81.9	10.5	0.1	--	--	--	--
GMSG-136	09/07/04	7:30 AM	28.8	56	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/08/04	8:17 AM	29.08	55	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/09/04	9:49 AM	28.97	63	-	>200	126.1	13.4	0.2	--	--	--	--
GMSG-136	09/13/04	10:00 AM	28.82	75	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/14/04	9:05 AM	28.67	71	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/15/04	10:28 AM	28.54	69	T	18 psi	--	--	--	--	--	--	--
GMSG-136	09/20/04	11:45 AM	28.95	73	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/20/04	2:15 PM	28.92	75	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/21/04	9:31 AM	28.9	73	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/21/04	1:00 PM	28.88	79	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/22/04	9:30 AM	29.03	73	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/23/04	8:52 AM	28.95	63	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/24/04	12:18 PM	28.76	61	-	18 psi	--	--	--	--	--	--	--
GMSG-136	09/27/04	8:28 AM	28.8	57	-	17 psi	--	--	--	--	--	--	--
GMSG-136	09/28/04	1:35 PM	29.04	62	-	12 psi	--	--	--	--	--	--	--
GMSG-136	09/29/04	12:04 PM	28.92	64	-	17 psi	--	--	--	--	--	--	--
GMSG-136	09/30/04	11:16 AM	28.8	66	-	17 psi	--	--	--	--	--	--	--
GMSG-136	10/01/04	9:22 AM	28.63	57	-	17 psi	--	--	--	--	--	--	--
GMSG-136	10/04/04	11:48 AM	29.04	42	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/05/04	9:32 AM	29.03	49	-	10 (psi)	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-136	10/06/04	9:04 AM	28.92	61	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/07/04	9:21 AM	29.01	67	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/08/04	1:17 PM	28.57	66	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/11/04	9:48 AM	29.05	56	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/13/04	10:38 AM	28.49	61	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/15/04	1:02 PM	28.14	44	T	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/18/04	2:40 PM	28.8	45	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/19/04	11:17 AM	28.85	42	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/20/04	11:03 AM	28.91	50	-	--	--	--	--	--	--	--	--
GMSG-136	10/25/04	3:37 PM	28.87	53	-	18 (psi)	86.7	10.2	0	--	--	--	--
GMSG-136	10/26/04	9:25 AM	29.06	42	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/27/04	4:57 PM	29.1	44	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/28/04	9:11 AM	28.98	46	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	10/29/04	10:15 AM	28.44	54	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	11/02/04	8:55 AM	28.87	40	-	19 (psi)	--	--	--	--	--	--	--
GMSG-136	11/03/04	8:02 AM	29.07	30	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	11/04/04	10:20 AM	28.5	39	-	19 (psi)	142.6	14.6	0	--	--	--	--
GMSG-136	11/09/04	7:05 AM	29.18	26	-	8 (psi)	--	--	--	--	--	--	--
GMSG-136	11/10/04	8:28 AM	28.66	45	T	19 (psi)	--	--	--	--	--	--	--
GMSG-136	11/11/04	10:56 AM	29.23	32	-	18 (psi)	--	--	--	--	--	--	--
GMSG-136	11/12/04	9:20 AM	29.24	29	-	16 (psi)	--	--	--	--	--	--	--
GMSG-136	11/12/04	5:00 PM	29.26	31	-	--	--	--	--	--	--	--	--
GMSG-136	11/13/04	5:30 PM	29.36	34	-	--	--	--	--	--	--	--	--
GMSG-136	11/16/04	4:00 PM	28.95	47	-	--	--	--	--	--	--	--	--
GMSG-136	11/17/04	4:04 PM	28.88	54	-	--	--	--	--	--	--	--	--
GMSG-136	11/18/04	11:35 AM	28.95	52	-	--	--	--	--	--	--	--	--
GMSG-136	11/19/04	1:48 PM	28.83	45	-	--	--	--	--	--	--	--	--
GMSG-136	11/20/04	1:25 PM	28.61	45	-	--	--	--	--	--	--	--	--
GMSG-136	11/21/04	8:25 AM	29	30	-	--	--	--	--	--	--	--	--
GMSG-136	11/22/04	2:46 PM	28.69	38	-	--	--	--	--	--	--	--	--
GMSG-136	12/04/04	10:51 AM	28.25	40	-	0.2	88.2	10	0	--	--	--	--
GMSG-136	12/09/04	1:40 PM	28.53	40	-	0.1	96.1	10.1	0	--	--	--	--
GMSG-136	12/14/04	3:22 PM	29.12	20	-	0.2	95	10.1	0	--	--	--	--
GMSG-136	12/21/04	12:11 PM	28.36	23	-	0.4	90.6	10	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-136	01/07/05	4:18 PM	28.75	24	-	--	87.9	9.8	0	--	--	--	--
GMSG-136	01/15/05	1:45 PM	29.33	-2	-	--	92.3	10.5	0	--	--	--	--
GMSG-136	01/17/05	2:39 PM	29.44	0	-	0.1	90.7	10	0	--	--	--	--
GMSG-136	01/24/05	10:48 AM	28.63	22	-	--	91.5	9.9	0.1	--	--	--	--
GMSG-136	02/03/05	2:20 PM	28.85	46	-	--	92.8	10.1	0	--	--	--	--
GMSG-136	02/07/05	3:45 PM	28.88	25	-	--	103.9	10.5	0	--	--	--	--
GMSG-136	02/14/05	3:21 PM	28.26	34	-	--	--	--	--	--	--	--	--
GMSG-136	02/22/05	11:48 AM	28.94	24	T	--	--	--	--	--	--	--	--
GMSG-136	03/14/05	2:40 PM	28.78	34	-	--	90.3	10.1	0.2	--	--	--	--
GMSG-136	03/21/05	12:52 PM	29.02	32	-	--	--	--	--	--	--	--	--
GMSG-136	04/19/05	3:24 PM	28.57	68	0.01	--	--	--	--	--	--	--	--
GMSG-136	04/22/05	11:15 AM	28.65	51	-	--	--	--	--	--	--	--	--
GMSG-136	04/25/05	8:41 AM	28.21	50	-	--	--	--	--	--	--	--	--
GMSG-136	04/26/05	3:17 PM	28.19	45	-	--	82.4	10.5	0	--	--	--	--
GMSG-136	05/05/05	12:47 PM	28.91	66	-	--	--	--	--	--	--	--	--
GMSG-136	05/11/05	3:21 PM	29.1	47	-	--	--	--	--	--	--	--	--
GMSG-136	05/17/05	12:05 PM	28.85	54	-	--	88.4	10.4	0	--	--	--	--
GMSG-136	06/09/05	12:16 PM	28.66	84	-	--	99.7	10.8	0.1	--	--	--	--
GMSG-136	06/15/05	12:44 PM	28.59	64	-	--	--	--	--	--	--	--	--
GMSG-136	07/07/05	8:35 AM	28.96	73	-	--	92.4	10.5	0	--	--	--	--
GMSG-136	08/12/05	11:40 AM	28.61	77	-	--	95.1	11.2	0	--	--	--	--
GMSG-136	09/08/05	10:30 AM	28.96	66.92	-	--	102.7	11.9	0	--	--	--	--
GMSG-136	10/18/05	2:35 PM	28.57	57	-	--	108.1	12	0.1	--	--	--	--
GMSG-136	11/02/05	2:12 PM	28.65	53	-	--	95.8	11.4	0	--	--	--	--
GMSG-136	12/02/05	3:05 PM	28.84	17	T	--	100	12.4	0	--	--	--	--
GMSG-136	12/14/05	12:38 PM	28.69	28	0.01	--	--	--	--	--	--	--	--
GMSG-136	01/31/06	3:55 PM	28.61	33	-	--	100	12.3	0	--	--	--	--
GMSG-136	02/13/06	1:33 PM	28.37	24	-	--	114.2	12.5	0	--	--	--	--
GMSG-136	03/08/06	1:20 PM	28.43	36	-	--	105.1	12	0	--	--	--	--
GMSG-136	04/13/06	10:48 AM	28.78	62	-	--	90.5	10.2	0	--	--	--	--
GMSG-136	05/17/06	9:20 AM	28.41	53	0.01	--	103.8	11	0	--	--	--	--
GMSG-136	06/02/06	1:07 PM	28.81	76	-	--	88.1	10.1	0	--	--	--	--
GMSG-136	07/17/06	3:39 PM	28.67	86	-	--	87	10.1	0	--	--	--	--
GMSG-136	08/15/06	11:32 AM	28.81	73	-	--	83.8	10.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-136	09/18/06	9:01 AM	28.41	57	-	--	111.6	10.6	0	--	--	--	--
GMSG-136	10/05/06	10:04 AM	29.21	52	-	--	115.6	10.9	0	--	--	--	--
GMSG-136	11/07/06	12:28 PM	28.59	50	-	--	117.1	10.5	0	--	--	--	--
GMSG-136	12/18/06	12:10 PM	29.08	29	-	--	118.9	10.5	0	--	--	--	--
GMSG-136	01/18/07	10:35 AM	28.73	18	-	--	132	10.7	0	--	--	--	--
GMSG-136	02/06/07	2:13 PM	28.83	7	-	--	131.8	11.1	0	--	--	--	--
GMSG-136	03/09/07	10:26 AM	28.64	32	-	--	123.4	11	0	--	--	--	--
GMSG-136	04/16/07	2:06 PM	28.79	62	-	--	111.2	9.6	0	--	--	--	--
GMSG-136	05/25/07	11:12 AM	29.02	62	-	--	90.4	10	0	--	--	--	--
GMSG-136	06/15/07	9:43 AM	28.83	86	-	--	91.7	10.3	0	--	--	--	--
GMSG-136	07/11/07	10:17 AM	29.88	68	-	--	92	10.3	0	--	--	--	--
GMSG-136	08/29/07	10:27 AM	30.13	69	-	--	109.9	11.9	0	--	--	--	--
GMSG-136	09/20/07	2:48 PM	30.13	65	-	--	111.4	12.6	0	--	--	--	--
GMSG-136	10/16/07	10:51 AM	29.92	52	0.08	--	120.8	13.6	0	--	--	--	--
GMSG-136	11/20/07	2:09 PM	30	38	-	--	126	12.9	0	--	--	--	--
GMSG-136	12/26/07	11:16 AM	29.97	28	-	--	137.4	13.7	0	--	--	--	--
GMSG-136 (N-Stack)	06/28/04	9:49 AM	28.85	70	-	0.1	52.5	6.1	6.9	--	--	--	--
GMSG-136 (N-Stack)	06/30/04	9:20 AM	28.78	77	-	-0.004	5.1	0.5	18.1	--	--	--	--
GMSG-136 (N-Stack)	07/01/04	8:41 AM	28.9	63	-	-0.014	3.5	0.4	18.7	--	--	--	--
GMSG-136 (N-Stack)	07/06/04	9:38 AM	28.68	53	0.03	-0.004	0	0	19.5	--	--	--	--
GMSG-136 (N-Stack)	07/29/04	4:37 PM	28.63	75	-	--	--	--	--	--	--	--	--
GMSG-136 (N-Tank)	06/30/04	9:30 AM	28.77	79	-	--	--	--	--	--	--	--	--
GMSG-136 (N-Tank)	07/20/04	5:25 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-136 (N-Tank)	07/21/04	1:45 PM	28.46	83	-	--	--	--	--	--	--	--	--
GMSG-136 (N-Tank)	07/21/04	3:45 PM	28.47	83	-	--	--	--	--	--	--	--	--
GMSG-136 (S-Stack)	06/28/04	9:49 AM	28.85	70	-	6	0	0	19.8	--	--	--	--
GMSG-136 (S-Stack)	06/30/04	9:30 AM	28.77	79	-	0	0	0	19.8	--	--	--	--
GMSG-136 (S-Stack)	07/01/04	8:45 AM	28.9	63	-	-0.007	0	0	19.6	--	--	--	--
GMSG-136 (S-Stack)	07/06/04	9:42 AM	28.68	53	0.03	0	0	0	19.6	--	--	--	--
GMSG-136 (S-Stack)	07/29/04	4:37 PM	28.63	75	-	--	--	--	--	--	--	--	--
GMSG-136 (S-Tank)	06/30/04	9:30 AM	28.77	79	-	--	--	--	--	--	--	--	--
GMSG-136 (S-Tank)	07/20/04	5:25 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-136 (S-Tank)	07/21/04	1:45 PM	28.46	83	-	--	--	--	--	--	--	--	--
GMSG-136 (S-Tank)	07/21/04	3:45 PM	28.47	83	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-137	08/19/04	8:44 AM	28.74	55	-	-1.3	--	--	--	--	--	--	--
GMSG-137	08/21/04	10:05 AM	28.81	60	-	-0.8	--	--	--	--	--	--	--
GMSG-137	08/21/04	10:56 AM	28.81	62	-	-0.9	--	--	--	--	--	--	--
GMSG-137	08/21/04	11:25 AM	28.81	62	-	-1.1	--	--	--	--	--	--	--
GMSG-137	08/21/04	12:32 PM	28.79	66	-	-1.3	--	--	--	--	--	--	--
GMSG-137	08/21/04	1:05 PM	28.79	66	-	-1.2	--	--	--	--	--	--	--
GMSG-137	08/21/04	1:40 PM	28.77	67	-	-1.3	--	--	--	--	--	--	--
GMSG-137	08/21/04	2:13 PM	28.77	67	-	-1.4	--	--	--	--	--	--	--
GMSG-137	08/21/04	2:41 PM	28.76	69	-	-1.3	--	--	--	--	--	--	--
GMSG-137	08/21/04	3:30 PM	28.75	69	-	-1.5	--	--	--	--	--	--	--
GMSG-137	08/21/04	4:20 PM	28.75	69	-	-1.9	--	--	--	--	--	--	--
GMSG-137	08/21/04	4:59 PM	28.74	67	-	-2.2	--	--	--	--	--	--	--
GMSG-137	08/21/04	5:40 PM	28.73	64	-	-2.7	--	--	--	--	--	--	--
GMSG-137	08/21/04	6:06 PM	28.73	64	-	-2.6	--	--	--	--	--	--	--
GMSG-137	08/21/04	6:39 PM	28.72	56	-	-2.5	--	--	--	--	--	--	--
GMSG-137	08/22/04	7:32 AM	28.53	54	T	0	--	--	--	--	--	--	--
GMSG-137	08/22/04	8:06 AM	28.53	54	T	-0.5	--	--	--	--	--	--	--
GMSG-137	08/22/04	8:35 AM	28.53	57	T	-0.6	--	--	--	--	--	--	--
GMSG-137	08/22/04	9:06 AM	28.53	57	T	-0.7	--	--	--	--	--	--	--
GMSG-137	08/22/04	9:39 AM	28.51	65	-	-1.1	--	--	--	--	--	--	--
GMSG-137	08/22/04	10:05 AM	28.51	65	-	-1.3	--	--	--	--	--	--	--
GMSG-137	08/22/04	10:42 AM	28.5	74	-	-1.4	--	--	--	--	--	--	--
GMSG-137	08/22/04	11:04 AM	28.5	74	-	-1.4	--	--	--	--	--	--	--
GMSG-137	09/27/04	3:10 PM	28.83	59	0.07	1.3	--	--	--	--	--	--	--
GMSG-137	09/28/04	8:53 AM	29.09	50	-	-1.6	--	--	--	--	--	--	--
GMSG-137	09/28/04	9:36 AM	29.11	52	-	-1.6	--	--	--	--	--	--	--
GMSG-137	09/28/04	10:02 AM	29.11	52	-	-1.3	--	--	--	--	--	--	--
GMSG-137	09/28/04	10:36 AM	29.09	54	-	-1.4	--	--	--	--	--	--	--
GMSG-137	09/28/04	11:10 AM	29.09	54	-	-1.2	--	--	--	--	--	--	--
GMSG-137	09/28/04	11:37 AM	29.07	57	-	-1.2	--	--	--	--	--	--	--
GMSG-137	09/28/04	12:06 PM	29.07	57	-	-1.1	--	--	--	--	--	--	--
GMSG-137	09/28/04	12:32 PM	29.05	60	-	-0.7	--	--	--	--	--	--	--
GMSG-137	09/29/04	1:47 PM	28.88	67	-	-1.6	--	--	--	--	--	--	--
GMSG-137	10/29/07	9:57 AM	30.21	50	-	-41.9	1.4	1.6	16.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-138	08/19/04	8:45 AM	28.74	55	-	-1.4	--	--	--	--	--	--	--
GMSG-138	08/21/04	10:06 AM	28.81	60	-	-0.8	--	--	--	--	--	--	--
GMSG-138	08/21/04	10:57 AM	28.81	62	-	-1	--	--	--	--	--	--	--
GMSG-138	08/21/04	11:26 AM	28.81	62	-	-1.3	--	--	--	--	--	--	--
GMSG-138	08/21/04	12:33 PM	28.79	66	-	-1.1	--	--	--	--	--	--	--
GMSG-138	08/21/04	1:06 PM	28.79	66	-	-1.1	--	--	--	--	--	--	--
GMSG-138	08/21/04	1:41 PM	28.77	67	-	-1.1	--	--	--	--	--	--	--
GMSG-138	08/21/04	2:14 PM	28.77	67	-	-1.2	--	--	--	--	--	--	--
GMSG-138	08/21/04	2:43 PM	28.76	69	-	-1.2	--	--	--	--	--	--	--
GMSG-138	08/21/04	3:31 PM	28.75	69	-	-1.4	--	--	--	--	--	--	--
GMSG-138	08/21/04	4:21 PM	28.75	69	-	-1.7	--	--	--	--	--	--	--
GMSG-138	08/21/04	5:00 PM	28.74	67	-	-2	--	--	--	--	--	--	--
GMSG-138	08/21/04	5:41 PM	28.73	64	-	-2.4	--	--	--	--	--	--	--
GMSG-138	08/21/04	6:07 PM	28.73	64	-	-2.3	--	--	--	--	--	--	--
GMSG-138	08/21/04	6:40 PM	28.72	56	-	-2.3	--	--	--	--	--	--	--
GMSG-138	08/22/04	11:50 AM	28.48	75	-	-1	--	--	--	--	--	--	--
GMSG-138	08/22/04	12:40 PM	28.48	76	-	-1.5	--	--	--	--	--	--	--
GMSG-138	08/22/04	1:16 PM	28.48	76	-	-1.3	--	--	--	--	--	--	--
GMSG-138	08/22/04	1:46 PM	28.48	78	-	-1.7	--	--	--	--	--	--	--
GMSG-138	08/22/04	2:44 PM	28.48	79	-	-2.1	--	--	--	--	--	--	--
GMSG-138	08/22/04	3:20 PM	28.48	79	-	-1.9	--	--	--	--	--	--	--
GMSG-138	09/27/04	3:14 PM	28.83	59	0.07	1	--	--	--	--	--	--	--
GMSG-138	09/28/04	8:54 AM	29.09	50	-	-1.5	--	--	--	--	--	--	--
GMSG-138	09/28/04	9:37 AM	29.11	52	-	-1.5	--	--	--	--	--	--	--
GMSG-138	09/28/04	10:03 AM	29.11	52	-	-1.3	--	--	--	--	--	--	--
GMSG-138	09/28/04	10:36 AM	29.09	54	-	-1.3	--	--	--	--	--	--	--
GMSG-138	09/28/04	11:11 AM	29.09	54	-	-1	--	--	--	--	--	--	--
GMSG-138	09/28/04	11:37 AM	29.07	57	-	-0.9	--	--	--	--	--	--	--
GMSG-138	09/28/04	12:07 PM	29.07	57	-	-0.8	--	--	--	--	--	--	--
GMSG-138	09/28/04	12:33 PM	29.05	60	-	-0.6	--	--	--	--	--	--	--
GMSG-138	09/29/04	1:46 PM	28.88	67	-	-1.5	--	--	--	--	--	--	--
GMSG-138	10/29/07	10:03 AM	30.21	50	-	-40.9	17.8	2.3	14	--	--	--	--
GMSG-200	07/27/98	6:45 PM	28.6	73.9	-	-0.41	0	0.6	19.1	10	10	6	--
GMSG-200	07/29/98	9:51 AM	28.7	71.1	-	-0.44	0	0.1	20.1	16	16	2.5	43.74

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-200	08/04/98	9:21 AM	28.91	73	-	-0.44	0	0.3	19.9	17	17	2.5	43.77
GMSG-200	08/05/98	9:10 AM	28.95	70	-	-0.36	0	0.3	19.9	5000	5000	3.5	--
GMSG-200	08/05/98	9:32 AM	28.95	72	-	--	0.4	1.8	15.1	6700	6700	3.5	--
GMSG-200	08/05/98	9:39 AM	28.95	72	-	--	0.5	1.8	14.7	7500	7500	3	--
GMSG-200	08/09/98	12:55 PM	28.75	84	-	-0.18	0	0.3	20.4	2.5	2.5	2.5	43.75
GMSG-200	08/12/98	5:55 PM	28.93	75.9	-	-1.53	0	0.2	12	4	4	4	43.93
GMSG-200	08/18/98	5:12 PM	28.98	69.1	-	-0.25	0	0.2	21	3.5	3.5	3.5	43.99
GMSG-200	08/24/98	5:23 PM	28.44	77	-	-0.36	0	0	21.1	3.5	3.5	1.75	43.91
GMSG-200	08/25/98	5:48 PM	28.65	73	-	-0.44	0	0	21.5	2.25	2.25	2	43.95
GMSG-200	08/26/98	1:40 PM	28.77	82.9	-	-0.35	0	0	19.6	4.75	4.75	3	44.04
GMSG-200	08/27/98	4:38 PM	28.74	75	T	-0.35	0	0	20.3	2.25	2.25	2.25	43.96
GMSG-200	08/28/98	7:46 AM	28.69	66.9	-	-0.37	0	0.2	20.6	4	3.5	3.75	44.15
GMSG-200	08/29/98	9:11 AM	28.65	70	-	-0.45	0	0.3	20.7	3.5	2.25	2.25	43.97
GMSG-200	08/30/98	9:27 AM	28.76	69.1	-	-0.41	0	0.2	20.6	3.5	3	2.75	43.98
GMSG-200	08/31/98	6:00 PM	28.76	73	-	-0.27	0	0.2	21	3	2.5	2.5	43.98
GMSG-200	09/08/98	5:30 PM	28.87	60.1	-	-0.44	0	0	20.6	15	14	4	44.05
GMSG-200	09/09/98	6:50 PM	28.84	61	-	-0.29	0	0.3	20.6	17	15	4	44.05
GMSG-200	09/10/98	8:15 AM	28.84	63	-	-0.28	0	0.2	20.4	35	35	3	44.05
GMSG-200	09/11/98	9:13 AM	28.64	79	-	-0.32	0	0.1	21.2	17	17	3.5	44.05
GMSG-200	09/12/98	11:00 AM	28.75	72	-	-0.37	0	0.1	21.1	20	20	2.75	44.06
GMSG-200	09/14/98	8:20 AM	28.61	66	-	-0.36	0	0.2	20.6	1000	20	3.5	44.1
GMSG-200	09/22/98	3:34 PM	28.89	57.9	-	-1.7	0	0	20.9	18	12	4	44.19
GMSG-200	09/23/98	2:43 PM	28.79	64.9	-	-0.1	0	0	21	1.5	1.5	1.5	44.17
GMSG-200	09/25/98	5:00 PM	28.54	75	-	-0.46	0	0	21.2	24	24	2.5	44.22
GMSG-200	09/29/98	4:13 PM	28.65	64	-	-0.52	0	0	20.1	2	2	2	44.27
GMSG-200	10/10/98	4:15 PM	28.87	69.1	-	-0.09	0	0.1	20.8	2.5	2.5	2.5	44.36
GMSG-200	10/22/98	1:10 PM	29.1	57	-	-0.08	0	0.2	20	15	4.5	3.5	44.5
GMSG-200	10/24/98	10:20 AM	28.83	61	-	-0.26	0	0	20.6	7.5	50	6	44.5
GMSG-200	11/03/98	9:00 AM	28.96	33.1	-	-0.22	0	0	19.8	9	9	9	--
GMSG-200	11/03/98	1:35 PM	28.96	34	-	-2.36	--	--	--	--	--	--	--
GMSG-200	11/03/98	3:06 PM	28.96	33.1	-	-0.96	0	0	19.9	9	9	2.5	--
GMSG-200	11/04/98	8:50 AM	28.99	30.9	-	-0.34	0	0	19.8	20	17.5	3.5	--
GMSG-200	11/04/98	3:40 PM	28.95	33.1	-	-1	--	--	--	--	--	--	--
GMSG-200	11/04/98	5:30 PM	28.95	32	-	-0.67	0	0	19.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-200	11/05/98	8:19 AM	28.93	30.9	-	-0.39	0	0	20.2	1.25	1.25	1.25	--
GMSG-200	11/05/98	12:43 PM	28.89	34	-	-0.24	--	--	--	--	--	--	--
GMSG-200	11/05/98	4:50 PM	28.89	33.1	-	-0.36	0	0.1	19.8	--	--	--	--
GMSG-200	11/08/98	3:31 PM	28.89	36	T	-0.34	0	0	20.7	5.5	5.5	5.5	44.68
GMSG-200	11/19/98	3:01 PM	28.41	32	T	-0.6	0	0	20.4	1.5	1.5	1.5	44.78
GMSG-200	12/02/98	2:57 PM	28.53	55	-	-0.29	0	0.2	20.4	17	17	1.5	44.91
GMSG-200	12/04/98	8:10 AM	28.76	27	-	-0.59	0	0	20.1	13	13	1.25	48.98
GMSG-200	12/09/98	1:34 PM	28.89	43	-	-0.19	0	0.1	19.9	15	15	1	45
GMSG-200	12/14/98	1:58 PM	28.73	52	-	-0.03	0	0	20.8	9	9	1.5	45.02
GMSG-200	12/16/98	9:34 AM	28.72	31	-	-0.28	0	0	20.5	--	--	--	45.07
GMSG-200	12/29/98	1:05 PM	28.65	8	T	-0.49	0	0	17.1	1.25	1.25	1.25	45.2
GMSG-200	01/05/99	2:29 PM	28.67	9	-	-0.09	0	0	17.3	8	1.25	<1	--
GMSG-200	01/19/99	3:05 PM	28.61	28	-	-0.48	0	0	19.6	3.5	3.5	2	--
GMSG-200	01/28/99	8:54 AM	28.78	24.1	0.01	-0.5	0	0.1	19.6	1.75	1.75	1.5	--
GMSG-200	02/04/99	8:42 AM	28.63	12	T	-0.93	0	0	19.4	<1	<1	<1	--
GMSG-200	02/25/99	8:29 AM	28.83	23	-	-0.45	0	0	20.7	4	4	1	--
GMSG-200	03/12/99	1:44 PM	29.11	35.1	-	-0.08	0	0	28.7	6	6	2.75	--
GMSG-200	03/24/99	8:26 AM	28.82	25	-	-0.48	0	0	20.6	1.5	1.5	1.25	--
GMSG-200	04/12/99	2:02 PM	28.93	55.9	-	-0.3	0	0.2	21.8	9	8	5	--
GMSG-200	04/21/99	9:53 AM	28.62	42.1	-	-0.39	0	0.2	34.2	7	7	2	--
GMSG-200	04/30/99	5:00 PM	29.02	73.9	-	-0.06	0	0.2	20.4	8.5	8.5	3.5	--
GMSG-200	05/18/99	8:18 AM	28.59	55	T	-0.59	0	1.3	18.1	1.75	1.75	1.75	--
GMSG-200	06/03/99	1:16 PM	28.91	68	-	-0.31	0	1.1	19.2	4	4	4	--
GMSG-200	07/08/99	3:52 PM	28.68	55.9	0.28	-0.04	0	1.6	20.1	1.25	1.25	1.25	45.03
GMSG-200	07/18/99	2:25 PM	28.87	77	-	-0.22	0	1	18.8	50	50	3	44.92
GMSG-200	08/09/99	2:40 PM	28.58	64.9	0.01	0	0	3.4	16.8	1.5	1.5	1.5	44.15
GMSG-200	08/18/99	10:01 AM	28.84	57.9	-	0	0	0	20.5	325	75	1.25	44.17
GMSG-200	09/29/99	9:29 AM	28.89	50	-	-0.33	0	1.3	19.7	1.75	1.75	1.75	43.74
GMSG-200	10/26/99	10:06 AM	28.78	41	-	-0.73	0	0.5	20.3	3.25	3.25	3.25	43.92
GMSG-200	11/04/99	2:46 PM	28.62	54	-	-0.34	0	0.1	20.7	1200	175	1.25	43.94
GMSG-200	11/08/99	12:55 PM	28.6	70	-	-0.04	0	0.4	19.9	1.5	<1	<1	43.94
GMSG-200	02/17/00	10:00 AM	29.15	1.9	T	--	--	--	--	--	--	--	--
GMSG-200	03/05/00	10:36 AM	28.75	46.9	-	-0.5	--	--	--	-0.7	-0.7	-1.25	--
GMSG-200	03/15/00	3:23 PM	28.64	28.9	-	-0.19	0	0.3	19.5	0.19	0.04	0.15	44.51

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-200	03/31/00	2:24 PM	28.76	64.9	-	-0.3	0	0	21.2	10.06	5.28	-0.15	44.52
GMSG-200	05/01/00	3:39 PM	28.66	56	-	-0.67	0	0.2	18.1	-0.06	-0.06	-0.06	44.5
GMSG-200	06/03/00	3:34 PM	28.9	67	-	-0.05	0	0.1	20.8	0.57	0.57	0.51	--
GMSG-200	06/19/00	3:03 PM	28.81	72	-	-0.2	0	1.2	18.8	-0.52	-0.51	-0.33	44.4
GMSG-200	06/29/00	4:44 PM	28.64	70	-	-0.25	0	0	20.5	9.9	--	4.5	--
GMSG-200	07/10/00	1:59 PM	28.71	76	-	-0.39	0	1.8	18	--	--	--	44.5
GMSG-200	10/07/00	5:33 PM	29.17	37	-	-0.5	0	1.2	18.9	2.55	-0.35	0.3	43.71
GMSG-200	05/18/01	10:39 AM	28.75	70	-	-0.51	0	0	19.1	0	0	0	--
GMSG-200	09/08/01	10:32 AM	28.41	74	-	-0.46	0	0.6	19.3	1.25	1.25	0	44.5
GMSG-202	07/27/98	6:50 PM	28.6	73.9	-	-0.43	14.7	2.6	9.2	>10000	>10000	6	--
GMSG-202	07/29/98	10:03 AM	28.7	71.1	-	-0.44	0	0.1	20	5.2	5.2	2	--
GMSG-202	08/04/98	9:25 AM	28.91	73	-	-0.41	0	0.4	19.6	12	12	2	--
GMSG-202	08/05/98	9:20 AM	28.95	70	-	-0.41	15.8	3.2	7.9	>10000	>10000	2	--
GMSG-202	08/09/98	1:02 PM	28.75	84	-	-0.2	16.3	3.2	8.8	--	--	--	--
GMSG-202	08/12/98	6:09 PM	28.93	75.9	-	-0.3	16.4	3.2	8.8	--	--	--	--
GMSG-202	08/18/98	5:21 PM	28.98	69.1	-	-0.24	16.4	3.4	8.3	--	--	--	--
GMSG-202	08/24/98	5:39 PM	28.45	75	-	-0.39	12.9	2.1	11.1	--	--	--	--
GMSG-202	08/25/98	5:57 PM	28.65	73	-	-0.43	0.1	0	21.2	>10000	--	--	--
GMSG-202	08/25/98	6:00 PM	28.65	73	-	--	11.4	2	12.6	--	--	--	--
GMSG-202	08/26/98	1:47 PM	28.77	82.9	-	-0.35	11.3	2.5	9.2	--	--	--	--
GMSG-202	08/27/98	4:48 PM	28.74	75	T	-0.34	0	0.3	20.5	>10000	--	2.25	--
GMSG-202	08/28/98	7:55 AM	28.69	66.9	-	-0.38	10.4	3.5	8.5	--	--	--	--
GMSG-202	08/29/98	9:19 AM	28.65	70	-	-0.42	16.6	3.6	8.1	--	--	--	--
GMSG-202	08/30/98	9:38 AM	28.74	72	-	-0.38	16.1	3.4	8.3	--	--	--	--
GMSG-202	08/31/98	6:10 PM	28.76	73	-	-0.2	16.5	3.5	8	--	--	--	--
GMSG-202	09/08/98	5:20 PM	28.86	64	-	-0.4	16.8	3.8	6.8	--	--	--	--
GMSG-202	09/09/98	6:15 PM	28.84	66.9	-	-0.29	17	3.9	7.7	--	--	--	--
GMSG-202	09/10/98	8:05 AM	28.84	63	-	-0.29	16.5	4	7.8	--	--	--	--
GMSG-202	09/11/98	9:02 AM	28.64	79	-	-0.3	16.7	3.9	7.6	--	--	--	--
GMSG-202	09/12/98	10:53 AM	28.75	72	-	-0.35	16.7	3.8	7.7	--	--	--	--
GMSG-202	09/13/98	10:42 AM	28.68	71.1	-	-0.33	16.3	3.8	7.7	--	--	--	--
GMSG-202	09/14/98	8:09 AM	28.61	66	-	-0.36	16.7	4.1	7	--	--	--	--
GMSG-202	09/22/98	3:13 PM	28.88	55.9	-	-0.34	15.3	4	7.5	--	--	--	--
GMSG-202	09/23/98	2:31 PM	28.79	64.9	-	-0.04	15.5	3.9	7.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-202	09/25/98	4:45 PM	28.54	75	-	-0.41	15.6	3.9	6.9	--	--	--	--
GMSG-202	09/29/98	3:36 PM	28.65	64	-	-0.47	16.6	3.8	7.1	--	--	--	--
GMSG-202	10/07/98	3:21 PM	28.72	52	-	-0.05	15.1	4.1	6.5	--	--	--	--
GMSG-202	10/09/98	2:57 PM	28.83	62.1	-	-0.15	14.9	4.1	6.7	--	--	--	--
GMSG-202	10/10/98	4:35 PM	28.87	64.9	-	-0.09	15.3	4.1	6.8	--	--	--	--
GMSG-202	10/14/98	8:30 AM	28.87	39.9	-	-0.43	15.2	4.3	7	--	--	--	--
GMSG-202	10/22/98	1:57 PM	29.08	57.9	-	-0.05	14.5	4	7.6	--	--	--	--
GMSG-202	10/24/98	10:08 AM	28.83	61	-	-0.3	15.8	4.3	6.4	--	--	--	--
GMSG-202	11/03/98	9:27 AM	29.01	34	-	-0.3	0.3	0.1	19.5	450	450	9	--
GMSG-202	11/03/98	3:14 PM	28.96	33.1	-	-0.8	10.8	2.4	11.8	--	--	--	--
GMSG-202	11/04/98	8:30 AM	28.99	30.9	-	-0.47	16.4	4.1	6.9	--	--	--	--
GMSG-202	11/04/98	11:57 AM	28.98	35.1	-	-1.99	--	--	--	--	--	--	--
GMSG-202	11/04/98	3:38 PM	28.95	33.1	-	-1.03	--	--	--	--	--	--	--
GMSG-202	11/04/98	5:16 PM	28.95	32	-	-0.71	8.1	2.9	12.4	--	--	--	--
GMSG-202	11/05/98	8:27 AM	28.93	30.9	-	-0.38	10	3.2	11	--	--	--	--
GMSG-202	11/05/98	12:42 PM	28.89	34	-	-0.24	--	--	--	--	--	--	--
GMSG-202	11/05/98	4:56 PM	28.89	33.1	-	-0.38	10.8	3.5	10.2	--	--	--	--
GMSG-202	11/08/98	4:09 PM	28.89	36	T	-0.39	0.1	0.4	19.8	1750	1750	2	--
GMSG-202	11/19/98	3:50 PM	28.44	32	T	-0.67	12	4.2	8.1	--	--	--	--
GMSG-202	12/02/98	2:47 PM	28.53	55	-	-0.29	12.6	4.7	6.6	--	--	--	--
GMSG-202	12/04/98	7:59 AM	28.76	27	-	-0.56	11.9	4.8	6.4	--	--	--	--
GMSG-202	12/09/98	1:24 PM	28.9	42	-	-0.21	11.7	5	6.2	--	--	--	--
GMSG-202	12/14/98	1:51 PM	28.73	52	-	-0.06	11	4.8	6.2	--	--	--	--
GMSG-202	12/16/98	9:55 AM	28.72	31	-	-0.25	8.6	4.3	9.5	--	--	--	--
GMSG-202	12/29/98	1:32 PM	28.67	7	T	-1.41	4.5	2.1	12.6	--	--	--	--
GMSG-202	01/05/99	2:20 PM	28.67	9	-	-0.06	0.6	0.8	16.6	--	--	--	--
GMSG-202	01/19/99	2:54 PM	28.61	28	-	-0.44	1.7	1.4	16.7	--	--	--	--
GMSG-202	01/28/99	8:38 AM	28.78	24.1	0.01	-0.67	0.7	0.8	18	--	--	--	--
GMSG-202	02/04/99	8:16 AM	28.58	12.9	T	-1.04	0.5	0.7	18.7	--	--	--	--
GMSG-202	02/25/99	8:19 AM	28.83	23	-	-0.51	4.3	2.1	13.6	--	--	--	--
GMSG-202	03/12/99	1:34 PM	29.11	35.1	-	-0.1	6.5	4	19.4	--	--	--	--
GMSG-202	03/24/99	8:17 AM	28.82	25	-	-0.45	0.9	1.1	17.5	--	--	--	--
GMSG-202	04/12/99	1:50 PM	28.93	55.9	-	-0.25	3.4	1.2	6.6	--	--	--	--
GMSG-202	04/21/99	9:39 AM	28.62	42.1	-	-0.45	8.7	2.3	5.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-202	04/30/99	4:52 PM	29.02	73.9	-	-0.11	5.8	0.8	4	--	--	--	--
GMSG-202	05/18/99	8:07 AM	28.59	55	T	0.49	0	1	16.7	4000	3500	2.25	--
GMSG-202	06/03/99	1:24 PM	28.91	68	-	-0.34	1.6	1	2.3	--	--	--	--
GMSG-202	06/15/99	--	--	--	--	-0.41	0	1.2	15.8	--	--	--	--
GMSG-202	06/16/99	--	--	--	--	-4.2	0.4	1	9.4	--	--	--	--
GMSG-202	06/17/99	--	--	--	--	-0.48	0.3	1	4.6	--	--	--	--
GMSG-202	06/18/99	--	--	--	--	-0.42	0.1	1	8.9	--	--	--	--
GMSG-202	06/19/99	--	--	--	--	-0.38	0.2	1	8.3	--	--	--	--
GMSG-202	06/20/99	--	--	--	--	-0.32	0.2	1	6	--	--	--	--
GMSG-202	06/21/99	2:40 PM	28.89	78.1	-	-0.15	0.5	0.9	8.8	--	--	--	--
GMSG-202	06/22/99	11:40 AM	28.74	80.1	-	-0.2	2.4	1.1	1.5	--	--	--	--
GMSG-202	06/23/99	11:26 AM	28.51	78.1	-	-0.27	2.1	1.1	3.8	--	--	--	--
GMSG-202	06/24/99	8:50 AM	28.58	75	-	-0.49	2	1.1	6	--	--	--	--
GMSG-202	06/25/99	8:47 AM	28.69	78.1	-	-0.41	2.5	1	5.6	--	--	--	--
GMSG-202	06/26/99	10:00 AM	28.6	82	-	-0.28	2.4	0.9	10.1	--	--	--	--
GMSG-202	06/27/99	8:45 AM	28.52	82	-	-0.34	2.2	1	7.1	--	--	--	--
GMSG-202	06/28/99	9:21 AM	28.49	69.1	-	-0.09	4.4	1.4	0	--	--	--	--
GMSG-202	06/29/99	9:17 AM	28.58	61	-	-0.46	4.2	1.6	0	--	--	--	--
GMSG-202	06/30/99	9:37 AM	28.58	68	-	-0.33	4.3	1.6	0	--	--	--	--
GMSG-202	07/01/99	8:51 AM	28.47	59	0.02	-0.26	3.2	1.6	3.5	--	--	--	--
GMSG-202	07/02/99	8:30 AM	28.62	72	-	-0.4	3.5	1.6	2.3	--	--	--	--
GMSG-202	07/03/99	9:08 AM	28.67	68	0.09	-0.87	1.7	1.1	6	--	--	--	--
GMSG-202	07/04/99	8:39 AM	28.66	82.9	-	-0.02	1.3	0.9	9.6	--	--	--	--
GMSG-202	07/05/99	8:27 AM	28.66	77	T	0.07	2.4	1.4	3.4	--	--	--	--
GMSG-202	07/06/99	8:45 AM	28.66	73	-	0.04	2.7	1.8	2.3	--	--	--	--
GMSG-202	07/07/99	8:42 AM	28.72	73.9	-	-0.34	2.8	1.9	2.6	--	--	--	--
GMSG-202	07/08/99	9:02 AM	28.78	64	-	-0.28	2.6	1.7	3.3	--	--	--	--
GMSG-202	07/09/99	9:50 AM	28.45	62.1	-	-0.06	3.1	1.9	3	--	--	--	--
GMSG-202	07/10/99	10:59 AM	28.92	71.1	-	-0.1	1.8	2.5	3.7	--	--	--	--
GMSG-202	07/11/99	8:27 AM	28.95	66.9	-	0.22	2.2	2.7	1.8	--	--	--	--
GMSG-202	07/12/99	8:40 AM	28.9	73.9	-	-0.39	2.9	3	1.9	--	--	--	--
GMSG-202	07/18/99	3:55 PM	28.83	78.1	-	-0.02	0.2	2.6	11.7	--	--	--	--
GMSG-202	08/09/99	3:20 PM	28.58	64.9	0.01	0.11	3.8	2.4	1.7	--	--	--	--
GMSG-202	08/18/99	9:34 AM	28.84	57.9	-	-0.37	0.2	1.7	13.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-202	09/29/99	9:19 AM	28.89	50	-	-0.29	0	3	14.9	150	--	1.75	--
GMSG-202	10/26/99	9:12 AM	28.75	41	-	-0.83	0.7	10.3	0	45	45	2.5	--
GMSG-202	11/04/99	2:01 PM	28.63	55.9	-	-0.29	0.3	9.4	0	10000	--	1.25	--
GMSG-202	11/08/99	10:58 AM	28.65	55	-	-0.13	0.1	10.2	0	2600	--	<1	--
GMSG-202	02/17/00	1:39 PM	29.04	19.9	T	-0.12	0	1.5	17	175	175	2	--
GMSG-202	03/05/00	10:27 AM	28.74	43	-	-0.43	--	--	--	130	--	-0.38	--
GMSG-202	03/15/00	4:11 PM	28.68	28.9	-	-0.18	0	1.3	12.1	--	--	--	--
GMSG-202	03/31/00	1:25 PM	28.79	63	-	-0.22	0	0.2	21.4	-0.63	-1	-0.63	--
GMSG-202	05/01/00	3:50 PM	28.66	56	-	-0.7	0	0.2	18	0	0	0	--
GMSG-202	06/03/00	3:25 PM	28.9	67	-	-0.02	0	0.5	20.1	0.4	0.4	0.4	--
GMSG-202	06/29/00	4:37 PM	28.64	70	-	-0.25	0	1.6	16.8	13	13	4.5	--
GMSG-202	07/10/00	2:34 PM	28.73	75	-	-0.38	0	0.6	19	--	--	--	--
GMSG-202	10/07/00	5:43 PM	29.17	37	-	-0.84	0	0	20.2	7.65	-0.49	0.4	--
GMSG-202	11/13/00	2:35 PM	28.37	32	0.07	-0.41	0	0.3	18.8	14.86	-0.29	0.25	--
GMSG-202	11/21/00	8:19 AM	28.86	15	-	-0.45	0	0	17.8	0.36	0.36	-0.13	--
GMSG-202	11/29/00	3:34 PM	28.8	33	-	-0.64	0	0.3	17.4	23.1	0.81	0.07	--
GMSG-202	12/04/00	11:43 AM	28.61	30	-	-0.55	0	0.2	18.7	1.8	1.8	0.6	--
GMSG-202	12/11/00	3:08 PM	28.76	10	-	-17.8	0	0	20.7	-0.04	--	-0.04	--
GMSG-202	12/20/00	9:45 AM	28.68	12	-	-7.86	0	0	20.4	2.8	--	0.8	--
GMSG-202	12/26/00	3:18 PM	28.97	13	T	2.7	0	0	20.5	1.65	1.65	1.53	--
GMSG-202	05/18/01	11:15 AM	28.75	70	-	-0.45	0	0	19	0	0	0	--
GMSG-202	09/08/01	12:50 PM	28.46	72	-	-0.5	0	0.3	19.1	1.3	1.3	0	--
GMSG-202	10/14/02	2:17 PM	28.76	55	-	0.3	0	0.4	20.3	13	4	0.5	--
GMSG-202	04/02/03	2:00 PM	28.83	33	-	0	0	7	3.6	7.3	Flame out	1.4	--
GMSG-202	10/15/03	11:49 AM	28.61	44	T	-0.1	0	0	19.3	43.5	21	0	--
GMSG-202	04/04/04	1:25 PM	28.91	38	-	0	0	1.1	16.1	--	--	--	--
GMSG-202	10/29/04	10:52 AM	28.43	54	-	0	2	8.4	0.2	--	--	--	--
GMSG-202	01/12/05	10:00 AM	28.39	32	T	0.1	0	0.4	18.4	--	--	--	--
GMSG-202	02/04/05	10:31 AM	28.88	34	-	-1.9	0	2.3	16.3	--	--	--	--
GMSG-202	02/08/05	2:12 PM	28.97	21	-	-1.6	0	2.3	15.8	--	--	--	--
GMSG-202	02/14/05	11:45 AM	28.23	30	T	-0.8	0	1.3	16.3	--	--	--	--
GMSG-202	03/23/05	4:50 PM	28.77	39	-	--	--	--	--	--	--	--	--
GMSG-202	04/13/05	12:53 PM	29.04	61	-	-0.8	0	0.1	19	--	--	--	--
GMSG-202	04/20/05	12:52 PM	28.87	47	-	-0.7	0	0.4	18.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-202	05/04/05	11:39 AM	28.98	61	-	-0.9	0	0	20.2	--	--	--	--
GMSG-202	05/17/05	9:15 AM	28.86	45	-	-1.2	0	0	19.9	--	--	--	--
GMSG-202	05/23/05	9:22 AM	28.52	51	T	-1.6	0	0	19.8	--	--	--	--
GMSG-202	06/02/05	8:07 AM	28.85	64	-	-1.2	0	0	20.2	--	--	--	--
GMSG-202	06/07/05	8:02 AM	28.66	64	-	-1.1	0	0	19.6	--	--	--	--
GMSG-202	06/15/05	7:59 AM	28.49	56	-	-0.9	0	1	17.5	--	--	--	--
GMSG-202	07/06/05	9:56 AM	28.96	69	-	-0.7	0	0.1	19.5	--	--	--	--
GMSG-202	08/12/05	9:54 AM	28.61	74	-	-0.7	0	1	18.3	--	--	--	--
GMSG-202	09/01/05	12:25 PM	28.59	77	-	0.1	0	0.3	19.1	--	--	--	--
GMSG-202	09/02/05	12:45 PM	28.86	71.06	-	0.1	0	0.4	19.2	--	--	--	--
GMSG-202	09/07/05	8:24 AM	29.04	64.04	-	0.1	0	0.3	19.1	--	--	--	--
GMSG-202	09/08/05	9:00 AM	28.98	59	-	0	0	0.4	18.9	--	--	--	--
GMSG-202	09/09/05	10:28 AM	28.94	69.08	-	0	0	0.4	19.2	--	--	--	--
GMSG-202	09/15/05	10:39 AM	29	66.02	-	-0.6	0	0	19.8	--	--	--	--
GMSG-202	10/19/05	4:40 PM	28.81	49	-	-0.9	0	0	19.9	--	--	--	--
GMSG-202	10/20/05	1:05 PM	28.88	48	-	-0.77	0	0	19.9	--	--	--	--
GMSG-202	11/04/05	12:15 PM	28.46	44	-	-1.1	0	0	19.5	--	--	--	--
GMSG-202	12/06/05	11:05 AM	28.83	7	-	-0.7	0	0	19.2	--	--	--	--
GMSG-202	02/03/06	2:36 PM	28.39	34	0.01	-1.1	0	0	19.7	--	--	--	--
GMSG-202	02/13/06	3:08 PM	28.39	27	-	-1	0	0	18.8	--	--	--	--
GMSG-202	03/08/06	3:34 PM	28.41	37	-	-0.4	0	0	18.9	--	--	--	--
GMSG-202	04/11/06	2:43 PM	28.55	69	-	-0.5	0	0	19.7	--	--	--	--
GMSG-202	04/13/06	2:24 PM	28.72	65	-	-0.4	0	0	19.5	--	--	--	--
GMSG-202	05/17/06	10:38 AM	28.39	60	T	-0.6	0	0	19	--	--	--	--
GMSG-202	06/02/06	3:29 PM	28.81	73	-	-0.6	0	0	19.1	--	--	--	--
GMSG-202	10/05/06	2:17 PM	29.15	58	-	-0.5	0	0	20.5	--	--	--	--
GMSG-202	04/16/07	3:18 PM	28.77	64	-	-0.4	0	1.6	14.7	--	--	--	--
GMSG-202	10/16/07	3:11 PM	29.86	54	T	0	0	0	19.4	--	--	--	--
GMSG-202	11/21/07	10:10 AM	30.14	34	-	-0.8	0	0	20.5	--	--	--	--
GMSG-202	12/27/07	1:49 PM	30	27	-	-0.8	0	0	20.1	--	--	--	--
GMSG-204	07/29/98	9:57 AM	28.7	71.1	-	-0.24	0.1	0.6	19.2	7.5	7.5	2	--
GMSG-204	08/04/98	9:17 AM	28.91	73	-	-0.27	0	0	20.5	25	25	2.5	--
GMSG-204	08/09/98	12:37 PM	28.75	84	-	-0.15	0	0	21.2	2.5	2.5	2.5	--
GMSG-204	08/12/98	6:21 PM	28.93	75.9	-	-0.2	0	0	21.5	4	4	4	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-204	08/18/98	5:31 PM	28.99	66.9	-	-0.16	0	0	21.4	18	18	3.5	--
GMSG-204	08/24/98	5:50 PM	28.45	75	-	0.2	0	0	21.4	9	9	1.75	--
GMSG-204	08/25/98	6:08 PM	28.65	73	-	-0.27	0	0	21.5	1.75	1.75	1.75	--
GMSG-204	08/26/98	1:55 PM	28.77	82.9	-	-0.24	0	0	20	50	15	3	--
GMSG-204	08/27/98	4:53 PM	28.74	75	T	-0.19	0	0	20.9	4	2	2	--
GMSG-204	08/28/98	8:12 AM	28.69	66.9	-	-0.21	0.1	0	20.7	4	2.5	2.5	--
GMSG-204	08/29/98	9:30 AM	28.65	73	-	-0.25	0	0	21.4	20	7	2	--
GMSG-204	08/30/98	9:45 AM	28.74	72	-	-0.2	0	0	21.4	7	6	4	--
GMSG-204	08/31/98	6:20 PM	28.76	73	-	-0.17	0	0.5	20.2	1	1	2	--
GMSG-204	09/08/98	5:10 PM	28.86	64	-	-0.24	0	0	20.8	5	5	4.5	--
GMSG-204	09/09/98	6:40 PM	28.84	61	-	-0.16	0	0	20.9	70	30	4.5	--
GMSG-204	09/10/98	7:55 AM	28.84	63	-	-0.2	0	0	20.7	8	8	7.5	--
GMSG-204	09/11/98	8:47 AM	28.64	79	-	-0.18	0	0	21.3	40	40	3.5	--
GMSG-204	09/12/98	10:38 AM	28.75	72	-	-0.19	0	0	20.8	3.5	3.5	3	--
GMSG-204	09/14/98	7:54 AM	28.61	66	-	-0.23	0	0	20.8	3.5	3.5	3.5	--
GMSG-204	09/22/98	2:50 PM	28.88	55.9	-	-0.21	0	0	21.2	6	6	2.5	--
GMSG-204	09/23/98	2:24 PM	28.82	64.9	-	-0.11	0	0	21.1	1.25	1.25	2	--
GMSG-204	09/25/98	4:25 PM	28.51	77	-	-0.24	0	0	21.5	2.5	2.5	2.5	--
GMSG-204	09/29/98	3:19 PM	28.63	66	-	-0.26	0	0	20.2	7	7	2.25	--
GMSG-204	10/10/98	4:10 PM	28.87	69.1	-	-0.05	0	0.1	20.8	2.5	2.5	2.5	--
GMSG-204	10/22/98	2:05 PM	29.08	57.9	-	-0.11	0	0.5	20.3	1.5	1.5	4	--
GMSG-204	10/24/98	9:51 AM	28.83	61	-	-0.18	0	0	22.1	6	--	3	--
GMSG-204	11/03/98	9:07 AM	28.96	32	-	0.17	0	0	19.8	9	9	9	--
GMSG-204	11/03/98	1:31 PM	28.96	34	-	-0.92	--	--	--	--	--	--	--
GMSG-204	11/03/98	3:42 PM	28.96	32	-	-0.37	0	0	19.5	8	4.5	2.5	--
GMSG-204	11/04/98	8:08 AM	28.99	30	-	-0.25	0	0	20.4	4.5	4.5	4.5	--
GMSG-204	11/04/98	11:54 AM	28.98	35.1	-	-0.69	--	--	--	--	--	--	--
GMSG-204	11/04/98	3:35 PM	28.95	33.1	-	-0.45	--	--	--	--	--	--	--
GMSG-204	11/04/98	5:00 PM	28.95	32	-	-0.39	0	0	20.3	150	150	5	--
GMSG-204	11/05/98	8:03 AM	28.93	30.9	-	-0.23	0	0.3	28.1	2.5	2.5	3	--
GMSG-204	11/05/98	12:39 PM	28.89	34	-	-0.17	--	--	--	--	--	--	--
GMSG-204	11/05/98	4:36 PM	28.89	33.1	-	-0.22	0	0.7	19.5	--	--	--	--
GMSG-204	11/08/98	3:14 PM	28.89	36	0.01	-0.22	0	0.3	20.5	12	12	10	--
GMSG-204	11/19/98	2:43 PM	28.41	32	T	-0.31	0	0	20.8	2	2	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-204	12/02/98	2:30 PM	28.53	55	-	-0.2	0	0	20.6	1.25	1.25	1.25	--
GMSG-204	12/04/98	7:50 AM	28.76	27	-	-0.29	0	0.3	20.1	<1	<1	1	--
GMSG-204	12/09/98	1:07 PM	28.9	42	-	-0.14	0	0.3	19.7	80	80	1.25	--
GMSG-204	12/14/98	1:35 PM	28.73	52	-	-0.05	0	0.1	20.5	3	3	1.5	--
GMSG-204	12/16/98	9:46 AM	28.72	31	-	-0.17	0	0	20.1	--	--	--	--
GMSG-204	12/29/98	12:54 PM	28.65	8	T	-0.28	0	0	17	1.25	1.25	1.25	--
GMSG-204	01/05/99	1:56 PM	28.67	9	-	-0.09	0	0	18.9	<1	<1	<1	--
GMSG-204	01/19/99	2:29 PM	28.61	27	-	-0.23	0	0	19.6	5	5	2	--
GMSG-204	01/28/99	7:52 AM	28.77	21.9	0.02	-0.31	0	0	20.1	<1	<1	1	--
GMSG-204	02/04/99	7:50 AM	28.58	12.9	T	-0.5	0	0	20.5	<1	<1	<1	--
GMSG-204	02/25/99	7:43 AM	28.83	23	-	-0.3	0	0	21	1.25	1.25	1.25	--
GMSG-204	03/12/99	1:15 PM	29.13	34	-	-0.09	0	0	20.4	2	2	2	--
GMSG-204	03/24/99	7:56 AM	28.82	25	-	-0.25	0	0	20.7	1.5	1.5	1.5	--
GMSG-204	04/12/99	1:35 PM	28.93	55.9	-	-0.16	0	0	21.5	6	4.5	4.5	--
GMSG-204	04/21/99	9:18 AM	28.62	42.1	-	-0.24	0	0.1	17.8	2	2	2	--
GMSG-204	04/30/99	4:36 PM	29.02	73.9	-	-0.12	0	0	20.8	3	3	3	--
GMSG-204	05/18/99	7:59 AM	28.59	55	T	-0.36	0	0.3	19.7	1.8	1.8	1.8	--
GMSG-204	06/03/99	1:47 PM	28.91	70	-	-0.24	0	0.4	20	3.5	3.5	3.5	--
GMSG-204	07/08/99	4:25 PM	28.68	55.9	0.28	-0.25	0	0.3	20.8	--	--	--	--
GMSG-204	07/10/99	2:06 PM	28.92	73	-	-0.2	0	0	20.7	2	1.5	1.25	--
GMSG-204	07/18/99	2:15 PM	28.87	77	-	-0.12	0	0.6	20.2	3	3	3	--
GMSG-204	08/09/99	1:20 PM	28.62	64.9	T	-0.01	0	0.5	19.7	6.25	6.25	2	--
GMSG-204	08/18/99	9:21 AM	28.85	55.9	-	-0.23	0	1.2	19	17	17	1.5	--
GMSG-204	09/29/99	9:11 AM	28.89	50	-	-0.2	0	0.3	20.8	2	1.75	1.75	--
GMSG-204	10/26/99	10:23 AM	28.78	41	-	-0.38	0	0.1	20.7	115	115	2.25	--
GMSG-204	11/04/99	1:42 PM	28.63	55.9	-	-0.14	0	0	20.9	2	2	2	--
GMSG-204	11/08/99	10:35 AM	28.65	55	-	-0.1	0	0.1	20.3	<1	<1	<1	--
GMSG-204	02/17/00	9:54 AM	29.15	1.9	T	-0.12	0	0	21	4.5	4.5	1	--
GMSG-204	03/05/00	10:12 AM	28.74	43	-	0.25	--	--	--	0.04	-2.08	-0.38	--
GMSG-204	03/15/00	3:12 PM	28.64	28.9	-	-0.1	0	0	20.1	0.1	-0.1	0.11	--
GMSG-204	03/31/00	11:16 AM	28.81	60.1	-	-0.16	0	0	21.1	-0.04	-0.11	-0.04	--
GMSG-204	05/01/00	3:16 PM	28.62	56	-	-0.38	0	0.2	18	-0.1	-0.1	-0.1	--
GMSG-204	06/03/00	3:19 PM	28.9	67	-	-0.04	0	0.2	20.7	0.25	0.25	0.41	--
GMSG-204	06/19/00	3:15 PM	28.81	72	-	-0.11	0	0.3	19.6	-0.85	-0.85	-0.24	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-204	06/29/00	4:32 PM	28.64	70	-	-0.14	0	1.1	19	35	35	5	--
GMSG-204	07/10/00	2:46 PM	28.73	75	-	-0.04	0	0.4	19.7	--	--	--	--
GMSG-204	10/07/00	5:20 PM	29.16	37	-	-0.31	0	0.2	20.1	0.31	-0.24	0.24	--
GMSG-204	05/18/01	11:22 AM	28.75	70	-	-0.24	0	0	18.8	0	0	0	--
GMSG-204	09/08/01	10:20 AM	28.39	72	-	-0.19	0	0.4	20	1	0	0	--
GMSG-204	10/14/02	2:09 PM	28.76	55	-	0.2	0	1	19.8	10.89	8.7	0.1	--
GMSG-204	04/02/03	1:36 PM	28.83	33	-	0	0.8	0.3	13.6	500	80	1.1	--
GMSG-204	10/15/03	10:39 AM	28.6	49	-	-0.7	0.1	0.8	18.6	84.7	46	0	--
GMSG-204	04/04/04	12:45 PM	28.91	38	-	0	0.2	0.4	19.1	--	--	--	--
GMSG-204	10/27/04	3:42 PM	29.11	44	-	0	0	0.4	19.4	0.61	-0.43	-0.3	--
GMSG-204	04/13/05	12:50 PM	29.04	61	-	-0.5	0	0	20.2	--	--	--	--
GMSG-204	10/19/05	4:45 PM	28.81	49	-	-0.5	0	0.2	19.6	--	--	--	--
GMSG-204	04/13/06	2:29 PM	28.72	65	-	-0.2	0	0	19.5	--	--	--	--
GMSG-204	10/05/06	2:23 PM	29.15	58	-	-0.3	0	0.6	20	--	--	--	--
GMSG-204	04/16/07	3:24 PM	28.77	64	-	-0.1	0	0.2	20.4	--	--	--	--
GMSG-204	10/16/07	3:16 PM	29.86	54	T	-0.1	0	0.4	18.9	--	--	--	--
GMSG-205	07/29/98	10:07 AM	28.7	71.1	-	-0.2	0	0	20.6	3.1	3.1	2	--
GMSG-205	08/04/98	9:12 AM	28.91	73	-	-2.2	0	0.3	20	2.5	2.5	2.5	--
GMSG-205	08/09/98	1:14 PM	28.75	84	-	-0.11	0	0.4	20.6	15	15	2.5	--
GMSG-205	08/12/98	6:39 PM	28.92	70	-	-0.12	0	1.2	19.7	3.5	3.5	3.5	--
GMSG-205	08/18/98	5:39 PM	28.99	66.9	-	-0.16	0	0.5	20.5	9.2	7	3.5	--
GMSG-205	09/08/98	5:00 PM	28.86	64	-	-0.44	0	0.3	20.5	6	5	4.5	--
GMSG-205	09/09/98	7:00 PM	28.84	61	-	-0.14	0	0.1	20.7	12	7	4	--
GMSG-205	09/10/98	7:45 AM	28.84	63	-	-0.14	0	0.1	20.4	5	5	5	--
GMSG-205	09/11/98	8:55 AM	28.64	79	-	-0.12	0	0.3	20.3	25	20	3.5	--
GMSG-205	09/12/98	10:46 AM	28.75	72	-	-0.16	0	0.3	20.5	3.5	3.5	3	--
GMSG-205	09/14/98	8:01 AM	28.61	66	-	-0.13	0	0.3	20.5	5	5	5	--
GMSG-205	09/22/98	3:04 PM	28.88	55.9	-	-0.43	0	0.1	21	3	3	3	--
GMSG-205	09/23/98	2:13 PM	28.82	64.9	-	-0.02	0	0	21.1	2.25	2	2	--
GMSG-205	09/25/98	4:35 PM	28.54	75	-	-0.2	0	1.3	19.6	3.5	3.5	2.5	--
GMSG-205	09/29/98	3:27 PM	28.63	66	-	-0.24	0	0.9	19	3.5	3.5	2	--
GMSG-205	10/10/98	4:45 PM	28.87	64.9	-	-0.04	0	1.8	19.2	5.5	5.5	2	--
GMSG-205	10/22/98	2:18 PM	29.08	57.9	-	-0.15	0	1.7	19.1	12.5	12.5	12.5	--
GMSG-205	10/24/98	9:57 AM	28.83	61	-	-0.14	0	1.2	20.6	3	3	2.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-205	11/03/98	9:16 AM	28.96	32	-	-0.15	0	2	17.9	9	9	9	--
GMSG-205	11/03/98	1:33 PM	28.96	34	-	-0.66	--	--	--	--	--	--	--
GMSG-205	11/03/98	4:17 PM	28.96	32	-	-0.19	0	2.3	17.8	4	4	2.5	--
GMSG-205	11/04/98	8:22 AM	28.99	30	-	-0.21	0	2	18.2	6	6	3.5	--
GMSG-205	11/04/98	11:56 AM	28.98	35.1	-	-0.58	--	--	--	--	--	--	--
GMSG-205	11/04/98	3:37 PM	28.95	33.1	-	-0.3	--	--	--	--	--	--	--
GMSG-205	11/04/98	5:09 PM	28.95	32	-	-0.25	0	2	18.2	--	--	--	--
GMSG-205	11/05/98	8:11 AM	28.93	30.9	-	-0.19	0	2	18.3	3	2.5	2	--
GMSG-205	11/05/98	12:40 PM	28.89	34	-	-0.12	--	--	--	--	--	--	--
GMSG-205	11/05/98	4:42 PM	28.89	33.1	-	-0.2	0	2.1	18	--	--	--	--
GMSG-205	11/08/98	3:23 PM	28.89	36	0.01	-0.2	0	0.2	20.6	9	9	9	--
GMSG-205	11/19/98	2:51 PM	28.41	32	T	-0.25	0	1.1	18.3	1.5	1.5	1.5	--
GMSG-205	12/02/98	2:39 PM	28.53	55	-	-0.17	0	0.9	19.3	<1	<1	1.25	--
GMSG-205	12/04/98	7:40 AM	28.76	27	-	-0.26	0	0.4	19.8	<1	<1	1.5	--
GMSG-205	12/09/98	1:15 PM	28.9	42	-	-0.11	0	1	19.1	35	35	1	--
GMSG-205	12/14/98	1:43 PM	28.73	52	-	0	0	1.3	19.3	<1	<1	1.5	--
GMSG-205	12/16/98	11:24 AM	28.69	33	-	-0.06	0	1.6	18.2	--	--	--	--
GMSG-205	12/29/98	1:53 PM	28.67	7	T	-0.28	0	0.7	26.4	--	--	--	--
GMSG-205	01/05/99	2:08 PM	28.67	9	-	-0.05	0	0.5	17.5	<1	<1	<1	--
GMSG-205	01/19/99	2:41 PM	28.61	28	-	-0.16	0	1.1	18.3	2.75	2.75	1.75	--
GMSG-205	01/28/99	8:06 AM	28.77	21.9	0.02	-0.27	0	0.9	19	<1	<1	1	--
GMSG-205	02/04/99	8:02 AM	28.58	12.9	T	-0.51	0	0.7	19.1	1.5	1.5	1.5	--
GMSG-205	02/25/99	7:59 AM	28.83	23	-	-0.25	0	0	21	<1	<1	<1	--
GMSG-205	03/12/99	1:26 PM	29.13	34	-	-0.03	0	0.7	22	9	9	5	--
GMSG-205	03/24/99	8:06 AM	28.82	25	-	-0.22	0	0	20.7	1	1	1	--
GMSG-205	04/12/99	1:44 PM	28.93	55.9	-	-0.28	0	0.5	20.5	4	4	4	--
GMSG-205	04/21/99	9:29 AM	28.62	42.1	-	0	0	0.1	23.7	2	2	2	--
GMSG-205	04/30/99	4:44 PM	29.02	73.9	-	-0.08	0	0.4	19.5	2.5	2.5	2.5	--
GMSG-205	05/18/99	7:50 AM	28.59	55	T	-0.32	0	0.4	17.4	<1	<1	2.25	--
GMSG-205	06/03/99	1:39 PM	28.91	70	-	-0.18	0	0.7	19.3	3	3	3	--
GMSG-205	07/08/99	4:10 PM	28.68	55.9	0.28	-0.18	0	1.1	20.2	--	--	1.75	--
GMSG-205	07/18/99	2:00 PM	28.87	77	-	-0.09	0	0.9	18.8	3	3	3	--
GMSG-205	08/09/99	1:22 PM	28.62	64.9	T	0.05	0	2.6	17.5	7.25	6	2	--
GMSG-205	08/18/99	9:29 AM	28.85	55.9	-	-0.19	0	2	18.2	11	11	1.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-205	09/29/99	9:00 AM	28.89	50	-	-0.15	0	1.1	19.8	4	4	2	--
GMSG-205	11/04/99	1:55 PM	28.63	55.9	-	-0.13	0	0	20.9	3	3	1.5	--
GMSG-205	11/08/99	10:53 AM	28.65	55	-	-0.05	0	0.1	20.3	1.25	1	<1	--
GMSG-205	02/17/00	3:47 PM	29.02	21	T	-0.19	0	0	20.1	--	--	--	--
GMSG-205	03/05/00	10:20 AM	28.74	43	-	-0.2	--	--	--	-0.3	-1.85	-0.4	--
GMSG-205	03/16/00	9:27 AM	29.02	19.9	-	-0.04	0	0	20.5	0.4	0.4	0	26.28
GMSG-205	03/31/00	11:25 AM	28.81	60.1	-	1.75	0	0	21	-0.06	-1.13	-0.06	--
GMSG-205	05/01/00	4:00 PM	28.66	56	-	-0.36	0	0	18.2	-0.13	-0.13	-0.13	--
GMSG-205	06/03/00	3:57 PM	28.9	67	-	-0.06	0	1	19.8	0.19	0.19	0.51	--
GMSG-205	06/19/00	3:25 PM	28.81	72	-	-0.1	0	1.6	17.9	-1.62	-1.58	-0.4	--
GMSG-205	06/19/00	3:30 PM	28.81	74	-	-0.13	0	1.6	18	-1.92	-1.92	-0.41	--
GMSG-205	06/29/00	5:27 PM	28.64	70	-	-0.09	0	1.9	17.8	160	160	5	--
GMSG-205	07/10/00	2:55 PM	28.73	75	-	-0.15	0	0.4	19.7	--	--	--	--
GMSG-205	10/07/00	5:06 PM	29.16	37	-	-0.27	0	1.1	19.5	0.13	-1.57	0.13	--
GMSG-205	05/18/01	11:09 AM	28.75	70	-	-0.22	0	0.4	18.3	0	0	0	--
GMSG-205	09/08/01	2:55 PM	28.48	75	-	-0.18	0	0.6	20.1	--	--	--	--
GMSG-206	07/29/98	10:21 AM	28.7	71.1	-	0	0.1	0	20.7	2.7	2.7	2.7	33.45
GMSG-206	08/04/98	9:31 AM	28.91	75.9	-	0	0	0	20.2	11	5.5	2	33.48
GMSG-206	08/09/98	1:47 PM	28.73	84.9	-	0.01	0	0	20.4	3	3	2	33.44
GMSG-206	08/12/98	7:15 PM	28.92	70	-	0	0	0.1	21	4	2.2	2.2	33.65
GMSG-206	08/14/98	2:36 PM	28.55	64.9	0.31	0.02	0	0.1	20.7	1.6	1.6	4	--
GMSG-206	08/15/98	7:45 AM	28.75	63	-	-0.01	0	0.2	20.5	4.7	4.7	4.7	--
GMSG-206	08/16/98	12:55 PM	28.76	75.9	-	0.02	0	0	21.6	2.5	2.5	5	--
GMSG-206	08/17/98	8:37 AM	28.66	68	-	-0.01	0	0.1	20.7	1.2	1.2	3	--
GMSG-206	08/18/98	4:17 PM	28.98	69.1	-	0.02	0	0.1	21.2	1.3	1.3	4	33.7
GMSG-206	08/19/98	8:48 AM	29.02	63	-	0	0	0.2	20.6	1	1	2.5	--
GMSG-206	09/08/98	6:40 PM	28.88	54	-	-0.22	0	0.1	20.6	3	3	3	--
GMSG-206	09/09/98	5:50 PM	28.84	66.9	-	0.01	0	0	21.1	3.5	3.5	3	33.8
GMSG-206	09/10/98	8:50 AM	28.82	69.1	-	0.03	0	0	20.8	1.5	2.5	1.5	--
GMSG-206	09/11/98	9:41 AM	28.62	84	-	0	0	0	21.1	3	3	3	--
GMSG-206	09/12/98	11:28 AM	28.75	72	-	0	0	0.1	21.2	2.75	2.75	2.75	--
GMSG-206	09/14/98	8:50 AM	28.62	64.9	0.05	0.01	0	0.2	20.6	3	3	3	--
GMSG-206	09/22/98	4:08 PM	28.89	57.9	-	0	0	0.2	20.7	3	3	3	--
GMSG-206	09/25/98	3:45 PM	28.51	77	-	0	0	0.1	20.8	2	2	4	33.98

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-206	09/29/98	4:47 PM	28.68	59	-	-0.05	0	0	20.3	1.5	1.5	1.5	--
GMSG-206	10/10/98	3:15 PM	28.86	70	-	0	0	0	21.1	5	4.5	4	--
GMSG-206	10/22/98	1:45 PM	29.08	57.9	-	-0.11	0	0.2	20.2	1	1	4	34.26
GMSG-206	10/24/98	12:00 PM	28.79	70	-	0.02	0	0.1	20.5	7	7	2.5	--
GMSG-206	11/08/98	5:21 PM	28.89	36	0.01	0	0	0.3	19.9	150	175	2.5	34.46
GMSG-206	11/19/98	3:11 PM	28.41	32	T	-0.06	0	0.2	19.9	2	2	2	--
GMSG-206	12/02/98	2:04 PM	28.52	54	-	0	0	0	20.6	1.5	1.5	2.25	--
GMSG-206	12/04/98	8:48 AM	28.76	34	-	-0.01	0	0	20	1.5	1	1	--
GMSG-206	12/09/98	2:14 PM	28.89	43	-	0	0	0.2	19.8	<1	<1	<1	--
GMSG-206	12/14/98	2:41 PM	28.73	51	-	-0.01	0	0.2	20.4	<1	<1	1	--
GMSG-206	12/16/98	10:28 AM	28.72	31	-	0.06	0	0.2	19.8	--	--	--	--
GMSG-206	12/29/98	2:57 PM	28.7	6	T	-0.06	0	0.3	16.5	3	1.5	1.5	--
GMSG-206	01/05/99	3:21 PM	28.64	8.1	-	0.02	0	0.1	17	<1	<1	<1	--
GMSG-206	01/19/99	4:07 PM	28.62	27	-	0	0	0.2	19.5	<1	<1	2.5	--
GMSG-206	02/04/99	9:56 AM	28.69	12	T	-0.19	0	0.1	19	1.5	1.5	1.5	--
GMSG-206	02/25/99	9:36 AM	28.84	26.1	-	-0.02	0	0	20.3	1	1	1	--
GMSG-206	03/12/99	12:58 PM	29.13	34	-	0.06	0	0.2	20.4	8	<1	4	--
GMSG-206	03/24/99	9:32 AM	28.85	30.9	-	0	0	0.3	20	<1	<1	1	--
GMSG-206	04/12/99	2:21 PM	28.93	55.9	-	0.03	0	0.1	22.2	4	3	4	--
GMSG-206	04/21/99	10:35 AM	28.62	44.1	-	0	0	0.3	28.9	2	2	2	--
GMSG-206	04/30/99	5:19 PM	29.02	73.9	-	0.05	0	0.2	20.4	<2	<2	2	--
GMSG-206	05/18/99	8:50 AM	28.61	54	0.01	-0.02	0	0.2	20	--	--	1.6	--
GMSG-206	06/03/99	12:33 PM	28.91	68	-	-0.18	0	0.1	20.2	3.5	3	3	--
GMSG-206	07/08/99	3:02 PM	28.67	57.9	0.12	0	0	0.2	21.4	--	--	1.1	--
GMSG-206	07/18/99	3:10 PM	28.85	77	-	0	0	0.1	20.2	3	3	3	--
GMSG-206	08/09/99	3:02 PM	28.58	64.9	0.01	-0.02	0	0.2	20.1	1.5	--	1.5	33.8
GMSG-206	08/18/99	10:20 AM	28.84	57.9	-	0.12	0	0.2	20.1	10	9	1.5	36.62
GMSG-206	09/29/99	11:15 AM	28.88	53.1	-	-0.33	0	0.2	21	2.25	<1	1.75	33.37
GMSG-206	10/26/99	11:19 AM	28.8	41	-	-0.13	0	0.1	20.3	3.5	1.75	2.5	--
GMSG-206	11/04/99	4:02 PM	28.62	51.1	-	0.14	0	0	20.6	12.5	4.5	1	33.6
GMSG-206	11/08/99	1:26 PM	28.6	70	-	0.02	0	0.1	20.4	<1	<1	<1	33.6
GMSG-206	02/17/00	3:25 PM	29.03	19.9	T	0	0	0	21	--	--	--	--
GMSG-206	03/16/00	10:13 AM	29.01	21.9	-	-0.23	0	0	20.2	1	-2.15	-0.15	34.26
GMSG-206	03/31/00	10:53 AM	28.81	60.1	-	0.17	0	0	20.9	-0.39	-0.39	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-206	05/01/00	4:35 PM	28.7	53	-	0	0	0.2	18.2	-0.1	-0.1	-0.1	34.24
GMSG-206	06/19/00	3:41 PM	28.81	74	-	0.01	0	0.2	19.8	-1.62	-1.62	-0.23	34.07
GMSG-206	07/10/00	1:11 PM	28.71	74	-	0.12	0	0.5	19	--	--	--	34.2
GMSG-206	10/07/00	4:44 PM	29.16	37	-	-0.06	0	0.3	20	-1.79	-1.75	0	33.36
GMSG-206	05/18/01	11:03 AM	28.75	70	-	-0.05	0	0.2	18.7	0	0	0	--
GMSG-206	09/08/01	12:30 PM	28.46	72	-	-0.01	0	0.1	20.2	0	0	0	34.19
GMSG-207	08/04/98	9:35 AM	28.91	75.9	-	--	--	--	--	--	--	--	34.14
GMSG-207	08/09/98	2:04 PM	28.73	84.9	-	0	0	0	21.8	--	--	--	--
GMSG-207	08/12/98	7:39 PM	28.92	66	-	0.09	0	0	21.1	5	4	4	32.87
GMSG-207	08/14/98	2:53 PM	28.55	64.9	0.31	-0.11	0	0	20.9	4.2	4.2	4.5	--
GMSG-207	08/15/98	8:02 AM	28.75	63	-	-0.14	0	0.2	20.2	4.5	4.5	4.5	--
GMSG-207	08/16/98	1:09 PM	28.76	75.9	-	0.05	0	0.1	21.6	5	5	5	--
GMSG-207	08/17/98	8:55 AM	28.66	68	-	-0.1	0	0	20.9	3.5	3.5	3.5	--
GMSG-207	08/18/98	4:33 PM	28.98	69.1	-	-0.05	0	0	21.2	4.5	4.5	4.5	32.92
GMSG-207	08/19/98	9:10 AM	29.02	63	-	-0.11	0	0	20.6	--	--	--	--
GMSG-207	09/08/98	6:20 PM	28.87	60.1	-	-0.12	0	0.1	20.5	3	3	3	--
GMSG-207	09/09/98	5:30 PM	28.84	66.9	-	-0.02	0	0	20.8	20	5.5	3	--
GMSG-207	09/10/98	8:30 AM	28.82	69.1	-	-0.02	0	0.1	20.5	9	5	1.75	--
GMSG-207	09/11/98	9:29 AM	28.64	79	-	-0.05	0	0	21.3	3.25	3.25	3.25	--
GMSG-207	09/12/98	11:15 AM	28.75	72	-	0.04	0	0	21.3	2.75	2.75	2.75	--
GMSG-207	09/14/98	8:37 AM	28.62	64.9	0.05	-0.04	0	0	20.7	7	5.5	3.5	--
GMSG-207	09/22/98	3:52 PM	28.89	57.9	-	-0.13	0	0	20.9	4	4	3	--
GMSG-207	09/25/98	3:30 PM	28.51	77	-	-0.09	0	0	20.8	4	4	4	--
GMSG-207	09/29/98	4:31 PM	28.68	59	-	-0.23	0	0	19.9	1.5	1.5	1.5	--
GMSG-207	10/10/98	3:30 PM	28.87	69.1	-	-0.01	0	0.1	20.8	3.5	3.5	3.5	--
GMSG-207	10/22/98	1:25 PM	29.1	57	-	-0.55	0	0.2	19.9	1.5	1.5	4.5	33.57
GMSG-207	10/24/98	11:44 AM	28.79	70	-	0	0	0.1	20.5	85	65	3	--
GMSG-207	11/03/98	9:44 AM	28.96	34	-	-0.42	--	--	--	--	--	--	--
GMSG-207	11/03/98	1:41 PM	28.96	34	-	-1.2	--	--	--	--	--	--	--
GMSG-207	11/04/98	9:04 AM	28.99	30.9	-	-0.08	--	--	--	--	--	--	--
GMSG-207	11/04/98	12:03 PM	28.98	35.1	-	-0.44	--	--	--	--	--	--	--
GMSG-207	11/04/98	3:46 PM	28.95	33.1	-	-0.19	--	--	--	--	--	--	--
GMSG-207	11/05/98	8:43 AM	28.92	32	-	-0.01	--	--	--	--	--	--	--
GMSG-207	11/05/98	12:47 PM	28.89	34	-	-0.04	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-207	11/08/98	3:49 PM	28.89	36	T	-0.11	0	0.1	20.2	2	2	2	--
GMSG-207	11/19/98	3:28 PM	28.41	32	T	-0.34	0	0.2	19.5	2	2	2	--
GMSG-207	12/02/98	2:13 PM	28.52	54	-	-0.08	0	0.1	20.6	1.25	1.25	2	--
GMSG-207	12/04/98	8:32 AM	28.76	34	-	-0.19	0	0.1	19.9	2.75	2.75	1	--
GMSG-207	12/09/98	1:55 PM	28.89	43	-	-0.01	0	0.1	19.9	2.75	2.75	1	--
GMSG-207	12/14/98	2:23 PM	28.73	52	-	-0.05	0	0	20.8	1.5	1.5	1.25	--
GMSG-207	12/16/98	10:08 AM	28.72	31	-	0.02	0	0	20.2	--	--	--	--
GMSG-207	12/29/98	3:15 PM	28.7	6	T	-0.35	0	0.1	16.9	1.5	1.5	1.5	--
GMSG-207	01/05/99	2:59 PM	28.64	8.1	-	0	0	0	17.1	<1	<1	<1	--
GMSG-207	01/19/99	3:41 PM	28.62	27	-	-0.18	0	0	19.6	2	2	2.5	--
GMSG-207	01/28/99	10:22 AM	28.79	26.1	T	-0.31	0	0	19.3	<1	<1	<1	--
GMSG-207	02/04/99	9:27 AM	28.63	12	T	2.25	0	0	19.1	<1	<1	<1	--
GMSG-207	02/25/99	9:13 AM	28.83	25	-	-0.2	0	0	20.3	<1	<1	<1	--
GMSG-207	03/12/99	12:39 PM	29.13	34	-	0.01	0	0	19.8	5	5	4	--
GMSG-207	03/24/99	9:10 AM	28.84	28	-	-0.16	0	0.2	19.4	1.5	1.5	1.25	--
GMSG-207	04/12/99	2:40 PM	28.91	57.9	-	-0.01	0	0	23.4	4	4	4	--
GMSG-207	04/21/99	10:16 AM	28.62	42.1	-	-0.05	0	0.1	30.6	2	2	2	--
GMSG-207	04/30/99	5:35 PM	29.02	73	-	-0.02	0	0.2	20.5	2	2	2	--
GMSG-207	05/18/99	8:31 AM	28.61	54	0.01	-0.28	0	0.4	18.1	1.75	1.75	1.75	--
GMSG-207	06/03/99	12:56 PM	28.91	68	-	-0.09	0	0.8	19.4	3.5	3.5	3.5	--
GMSG-207	07/08/99	3:35 PM	28.68	55.9	0.28	-0.15	0	0.8	21	--	--	1.1	--
GMSG-207	07/18/99	2:50 PM	28.85	77	-	0	0	0.2	16.8	4	3	3	--
GMSG-207	08/09/99	2:50 PM	28.58	64.9	0.01	0.21	0	1	18.2	1.75	1.5	1.75	33.08
GMSG-207	08/18/99	10:08 AM	28.84	57.9	-	0.01	0	0.3	19.9	40	32	1.25	32.9
GMSG-207	09/29/99	10:54 AM	28.88	53.1	-	-0.15	0	0.2	20.6	13	13	1.75	32.54
GMSG-207	10/26/99	10:51 AM	28.8	41	-	-0.82	0	0.2	20.2	210	7	3.5	32.81
GMSG-207	11/04/99	3:49 PM	28.62	51.1	-	-0.09	0	0	20.6	30	7	1.25	32.85
GMSG-207	11/08/99	1:12 PM	28.6	70	-	-0.87	0	0.1	20.4	<1	<1	<1	32.87
GMSG-207	02/17/00	2:50 PM	29.03	19.9	T	3.57	0	0.2	19.5	3	3	3	--
GMSG-207	03/05/00	10:45 AM	28.75	46.9	-	-0.2	--	--	--	-0.22	-0.26	-0.42	--
GMSG-207	03/16/00	9:45 AM	29.01	21.9	-	-0.03	0	0	19.8	-0.02	-0.6	-0.02	33.48
GMSG-207	03/31/00	10:32 AM	28.81	60.1	-	-0.05	0	0.2	28.3	11.3	1.44	-0.05	--
GMSG-207	05/01/00	4:15 PM	28.66	56	-	-0.33	0	0	17.8	-0.05	-0.05	-0.05	33.44
GMSG-207	06/03/00	3:49 PM	28.9	67	-	0.05	0	0	20.7	0.5	0.5	0.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-207	06/19/00	4:01 PM	28.81	74	-	-0.02	0	0	19.8	-1.43	-1.36	-0.21	33.32
GMSG-207	06/29/00	5:02 PM	28.64	70	-	0.18	0	0.1	20	7	4.5	4.5	--
GMSG-207	07/10/00	1:31 PM	28.71	76	-	-1.28	0	0.1	19.4	--	--	--	33.45
GMSG-207	10/07/00	3:55 PM	29.15	37	-	-0.26	0	0.4	20	-1.84	-1.82	-0.13	32.63
GMSG-207	05/18/01	10:53 AM	28.75	70	-	-0.21	0	0	18.8	0	0	0	--
GMSG-207	09/08/01	11:15 AM	28.41	74	-	-0.17	0	0.5	19.5	0	0	0	33.41
GMSG-208	08/09/98	1:56 PM	28.73	84.9	-	0.04	0	0.1	21.4	2.5	2.5	2.5	29.83
GMSG-208	08/12/98	7:24 PM	28.92	70	-	0	0	0.1	21.2	5	2	2	30.07
GMSG-208	08/14/98	2:45 PM	28.55	64.9	0.31	-0.08	0	0.1	20.8	1.4	1.4	4	--
GMSG-208	08/15/98	7:53 AM	28.75	63	-	-0.06	0	0	20.7	4	4	4	--
GMSG-208	08/16/98	1:02 PM	28.76	75.9	-	0.04	0	0	21.8	2.5	2.5	4.5	--
GMSG-208	08/17/98	8:45 AM	28.66	68	-	-0.02	0	0	20.9	3.5	3.5	3.5	--
GMSG-208	08/18/98	4:25 PM	28.98	69.1	-	0.03	0	0.1	21	1.3	1.3	4	30.13
GMSG-208	08/19/98	9:01 AM	29.02	63	-	-0.05	0	0	20.9	1	1	2.5	--
GMSG-208	09/08/98	6:30 PM	28.88	54	-	-0.07	0	0.1	20.7	3	3	3	30.21
GMSG-208	09/09/98	5:40 PM	28.84	66.9	-	0.02	0	0.1	20.8	2	2	3	30.2
GMSG-208	09/10/98	8:40 AM	28.82	69.1	-	0	0	0.1	20.7	3	3	1.75	--
GMSG-208	09/11/98	9:34 AM	28.62	84	-	0	0	0	21.4	3.25	3.25	3.25	--
GMSG-208	09/12/98	11:21 AM	28.75	72	-	0	0	0	21.2	2.75	2.75	2.75	--
GMSG-208	09/14/98	8:43 AM	28.62	64.9	0.05	0	0	0.1	20.7	4.5	3.5	3	--
GMSG-208	09/22/98	4:00 PM	28.89	57.9	-	-0.06	0	0	21	3	3	3	--
GMSG-208	09/25/98	3:40 PM	28.51	77	-	-0.04	0	0	21.4	4	4	4	30.37
GMSG-208	09/29/98	4:40 PM	28.68	59	-	-0.06	0	0.2	19.9	1.5	1.5	1.5	30.43
GMSG-208	10/10/98	3:30 PM	28.87	69.1	-	0	0	0.2	21	3.5	3.5	3.5	30.52
GMSG-208	10/22/98	1:33 PM	29.08	57.9	-	0.09	0	0.2	20.2	1	1	4	30.66
GMSG-208	10/24/98	11:52 AM	28.79	70	-	0.02	0	0.1	20.7	22	22	3	30.67
GMSG-208	11/03/98	9:47 AM	28.96	33.1	-	0.57	--	--	--	--	--	--	--
GMSG-208	11/03/98	1:36 PM	28.96	34	-	0.31	--	--	--	--	--	--	--
GMSG-208	11/04/98	9:02 AM	28.99	30.9	-	0	--	--	--	--	--	--	--
GMSG-208	11/04/98	12:01 PM	28.98	35.1	-	-0.05	--	--	--	--	--	--	--
GMSG-208	11/04/98	3:44 PM	28.95	33.1	-	0	--	--	--	--	--	--	--
GMSG-208	11/05/98	8:42 AM	28.92	32	-	0	--	--	--	--	--	--	--
GMSG-208	11/05/98	12:45 PM	28.89	34	-	0.01	--	--	--	--	--	--	--
GMSG-208	11/08/98	3:39 PM	28.89	36	T	-0.05	0	0.2	20.4	2.5	2.5	2.5	30.87

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-208	11/19/98	3:20 PM	28.41	32	T	-0.17	0	0.1	19.8	2	2	2	31.02
GMSG-208	12/02/98	2:20 PM	28.52	54	-	0	0	0.1	20.4	<1	<1	2	31.15
GMSG-208	12/04/98	8:40 AM	28.76	34	-	-0.07	0	0	20	2	2	1	31.19
GMSG-208	12/09/98	2:04 PM	28.89	43	-	0.01	0	0.1	19.9	1.5	1.25	1	31.23
GMSG-208	12/14/98	2:32 PM	28.73	51	-	-0.02	0	0.2	20.5	<1	<1	1.25	31.27
GMSG-208	12/16/98	10:18 AM	28.72	31	-	0.06	0	0	19.7	--	--	--	31.29
GMSG-208	12/29/98	3:05 PM	28.7	6	T	-0.24	0	0.1	17	1.5	1.5	1.5	31.45
GMSG-208	01/05/99	3:11 PM	28.64	8.1	-	0.04	0	0.3	16.8	<1	<1	1.25	31.53
GMSG-208	01/19/99	3:54 PM	28.62	27	-	-0.04	0	0	19.6	2	2	2.5	31.7
GMSG-208	01/28/99	10:35 AM	28.81	27	T	-0.09	0	0	19.3	<1	<1	<1	31.8
GMSG-208	02/04/99	9:42 AM	28.69	12	T	-0.24	0	0	19.1	1	1	1	31.9
GMSG-208	02/25/99	9:27 AM	28.83	25	-	-0.06	0	0.1	20.1	<1	<1	<1	--
GMSG-208	03/12/99	12:49 PM	29.13	34	-	0.06	0	0.3	20.1	<1	<1	1.25	--
GMSG-208	03/24/99	9:21 AM	28.84	28	-	-0.04	0	0.2	19.9	<1	<1	1	--
GMSG-208	04/12/99	2:31 PM	28.91	57.9	-	0.02	0	0	25.1	5	4	4.5	32.25
GMSG-208	04/21/99	10:26 AM	28.62	42.1	-	-0.03	0	0.2	29.3	2	2	2	--
GMSG-208	04/30/99	5:26 PM	29.02	73.9	-	0.02	0	0.1	20.8	<2	<2	2	--
GMSG-208	05/18/99	8:40 AM	28.61	54	0.01	-0.13	0	0.4	19.4	1.3	1.3	1.6	32.05
GMSG-208	06/03/99	12:43 PM	28.91	68	-	0.03	0	0.4	19.8	4	4	4	31.7
GMSG-208	07/08/99	3:15 PM	28.67	57.9	0.12	0	0	0.2	21.7	--	--	1.1	31.26
GMSG-208	07/18/99	3:00 PM	28.85	77	-	0	0	1	18.9	3	3	3	31.02
GMSG-208	08/09/99	3:10 PM	28.58	64.9	0.01	0.31	0	0.2	20.1	1.25	--	1.25	30.22
GMSG-208	08/18/99	10:14 AM	28.84	57.9	-	0.05	0	1.7	18.6	20	20	1.25	30.04
GMSG-208	09/29/99	11:05 AM	28.88	53.1	-	-0.03	0	0.7	20.3	8.5	3.25	1.75	29.78
GMSG-208	10/26/99	11:12 AM	28.8	41	-	-0.15	0	0.3	20.1	3.25	3.25	2.5	--
GMSG-208	11/04/99	3:55 PM	28.62	51.1	-	-0.07	0	0.2	20.4	60	9	1	30.03
GMSG-208	11/08/99	1:20 PM	28.6	70	-	0.07	0	0.3	20.2	<1	<1	<1	30.01
GMSG-208	02/17/00	3:10 PM	29.03	19.9	T	0.04	0	0.2	19.8	2.5	2.5	2.5	31.08
GMSG-208	03/16/00	9:58 AM	29.01	21.9	-	0	0	0	20.2	0.03	0.02	0	30.65
GMSG-208	03/31/00	10:41 AM	28.81	60.1	-	0.03	0	0	21	1.79	0.72	0.8	30.68
GMSG-208	05/01/00	4:25 PM	28.66	56	-	-0.36	0	0.5	17.7	0	0	-0.05	30.64
GMSG-208	06/19/00	3:53 PM	28.81	74	-	0.02	0	1.5	18.5	-1.56	-1.54	-0.18	30.51
GMSG-208	07/10/00	1:46 PM	28.71	76	-	-0.03	0	0	20.1	--	--	--	30.63
GMSG-208	10/07/00	3:26 PM	29.13	38	-	-0.1	0	0.1	20.3	0.14	-0.3	-0.05	29.79

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-208	05/18/01	10:59 AM	28.75	70	-	-0.08	0	0.4	18.3	0	0	0	--
GMSG-208	09/08/01	12:20 PM	28.45	73	-	-0.17	0	0.7	19.5	2	0	0	30.62
GMSG-209	08/24/98	5:31 PM	28.45	75	-	0	0	0	21.5	1.75	1.75	1.75	44.1
GMSG-209	08/25/98	5:40 PM	28.65	73	-	0	0	0	21.5	5	4	2.5	44.14
GMSG-209	08/26/98	1:34 PM	28.77	82.9	-	0	0	0	19.8	20	12	2.5	44.29
GMSG-209	08/27/98	4:30 PM	28.74	75	T	0	0	0	21.5	2.5	2.5	2	44.22
GMSG-209	08/28/98	7:30 AM	28.69	66.9	-	0	0	0	20.9	2	2	2	44.12
GMSG-209	08/29/98	8:55 AM	28.65	70	-	0.03	0	0	20.9	6	5	5	44.2
GMSG-209	08/30/98	9:18 AM	28.76	69.1	-	0.01	0	0	20.8	3.5	3.5	3.5	44.2
GMSG-209	08/31/98	5:50 PM	28.76	73	-	0.01	0	0	21.4	3.75	3.75	4.5	44.26
GMSG-209	09/08/98	6:10 PM	28.87	60.1	-	0	0	0	20.7	3	3	3	44.3
GMSG-209	09/09/98	6:05 PM	28.84	66.9	-	0	0	0	20.9	2	2	2	44.3
GMSG-209	09/10/98	8:25 AM	28.84	63	-	0	0	0	20.6	15	15	2.25	44.3
GMSG-209	09/11/98	9:20 AM	28.64	79	-	0	0	0	20.9	3.5	3.5	3.25	44.27
GMSG-209	09/12/98	11:08 AM	28.75	72	-	0	0	0	21.1	2.75	2.75	2.75	44.31
GMSG-209	09/14/98	8:26 AM	28.61	66	-	0	0	0	20.5	3.5	3.5	3.5	44.31
GMSG-209	09/22/98	3:43 PM	28.89	57.9	-	0	0	0	20.8	6.5	6.5	3	44.43
GMSG-209	09/25/98	5:10 PM	28.54	75	-	0	0	0	21.2	8.5	8.5	2.5	44.45
GMSG-209	09/29/98	4:21 PM	28.65	64	-	-0.38	0	0	19.7	2	2	2	44.52
GMSG-209	10/10/98	4:25 PM	28.87	69.1	-	0	0	0	20.2	2.5	2.5	2	44.6
GMSG-209	10/22/98	12:53 PM	29.1	57	-	0	0	0	20.1	450	8	2.5	44.7
GMSG-209	10/24/98	10:28 AM	28.83	61	-	0	0	0	20.8	25	9	3	44.72
GMSG-209	11/03/98	10:00 AM	28.96	34	-	0.4	--	--	--	--	--	--	--
GMSG-209	11/03/98	1:48 PM	28.96	34	-	0.13	--	--	--	--	--	--	--
GMSG-209	11/04/98	8:59 AM	28.99	30.9	-	0.01	--	--	--	--	--	--	--
GMSG-209	11/04/98	11:58 AM	28.98	35.1	-	-0.34	--	--	--	--	--	--	--
GMSG-209	11/04/98	3:42 PM	28.95	33.1	-	0.13	--	--	--	--	--	--	--
GMSG-209	11/05/98	8:40 AM	28.92	32	-	0.41	--	--	--	--	--	--	--
GMSG-209	11/05/98	12:44 PM	28.89	34	-	0.77	--	--	--	--	--	--	--
GMSG-209	11/08/98	4:00 PM	28.89	36	T	0	0	0	20	2	2	2	44.92
GMSG-209	11/19/98	4:03 PM	28.44	32	T	-0.55	0	0	19	2	1.5	1.5	45.02
GMSG-209	12/02/98	3:07 PM	28.53	55	-	-0.39	0	0	21	6	6	1.5	45.15
GMSG-209	12/04/98	8:20 AM	28.76	27	-	-0.82	0	0	20	5	5	1	45.2
GMSG-209	12/09/98	1:43 PM	28.89	43	-	-0.45	0	0	20	6	6	1	45.22

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-209	12/14/98	2:10 PM	28.73	52	-	1.18	0	0	20.8	3	3	1.25	45.29
GMSG-209	12/16/98	9:29 AM	28.73	29	-	0.09	0	0	20.6	--	--	--	45.32
GMSG-209	12/29/98	1:15 PM	28.65	8	T	0.5	0	0	16.9	1.25	1.25	1.25	45.47
GMSG-209	01/05/99	2:44 PM	28.64	8.1	-	0	0	0	17.2	1.5	<1	<1	45.52
GMSG-209	01/19/99	3:22 PM	28.61	28	-	0	0	0	19.6	5	5	5	--
GMSG-209	01/28/99	9:09 AM	28.78	24.1	0.01	0	0	0	19.5	<1	<1	<1	45.77
GMSG-209	02/04/99	8:27 AM	28.58	12.9	T	0	0	0	19.7	3	1.5	1.25	45.9
GMSG-209	02/25/99	8:58 AM	28.83	25	-	0	0	0	20.5	1	<1	<1	46.05
GMSG-209	03/12/99	1:53 PM	29.11	35.1	-	0	0	0	19.3	5.5	3.5	3	--
GMSG-209	03/24/99	8:37 AM	28.84	28	-	0	0	0	20.5	1.5	1.5	1	46.27
GMSG-209	04/12/99	2:10 PM	28.93	55.9	-	0	0	0	22.2	11	5	4	46.19
GMSG-209	04/21/99	10:00 AM	28.62	42.1	-	-0.1	0	0.1	34.3	2	2	2	--
GMSG-209	04/30/99	5:08 PM	29.02	73.9	-	0	0	0	20.8	7	3.5	2	--
GMSG-209	06/03/99	1:07 PM	28.91	68	-	0	0	0	20.5	4.5	4.5	4.5	45.58
GMSG-209	07/10/99	2:15 PM	28.92	73	-	0.1	0	0	20.6	1.25	1.25	1.25	45.34
GMSG-209	07/18/99	2:40 PM	28.85	77	-	0	0	0	20.8	3	3	3	45.12
GMSG-209	08/09/99	2:31 PM	28.58	64.9	0.01	0	0	0	20.4	2	2	1.75	44.35
GMSG-209	08/18/99	9:55 AM	28.84	57.9	-	-0.29	0	3	16.9	150	150	15	43.99
GMSG-209	09/29/99	9:39 AM	28.88	52	-	0	0	0	21.1	1.75	1.75	1.75	43.95
GMSG-209	10/26/99	10:15 AM	28.78	41	-	0	0	0	20.6	330	200	2.25	44.16
GMSG-209	11/04/99	2:55 PM	28.62	54	-	0	0	0	21	220	60	1.25	44.15
GMSG-209	11/08/99	1:03 PM	28.6	70	-	-0.01	0	0	20.5	<1	<1	<1	44.13
GMSG-209	02/17/00	10:30 AM	29.13	10.9	T	--	--	--	--	--	--	--	--
GMSG-209	03/05/00	10:40 AM	28.75	46.9	-	0	--	--	--	-0.36	-0.36	-0.45	--
GMSG-209	03/15/00	3:37 PM	28.68	28.9	-	0	0	0	19.8	0.2	0.15	0.07	44.76
GMSG-209	03/31/00	2:39 PM	28.73	66	-	-0.01	0	0	21.4	3.8	1.28	-0.13	44.69
GMSG-209	05/01/00	3:30 PM	28.66	56	-	0	0	0	18.4	0.1	0.1	-0.08	44.7
GMSG-209	06/03/00	3:41 PM	28.9	67	-	0	0	0	21.1	0.63	0.63	0.57	--
GMSG-209	06/19/00	2:57 PM	28.81	72	-	0	0	0	20	0.38	0.47	0.41	44.59
GMSG-209	06/29/00	4:51 PM	28.64	70	-	0	0	0	20.5	6.5	5.5	4.5	--
GMSG-209	07/10/00	12:51 PM	28.71	74	-	0	0	0	20.1	--	--	--	44.71
GMSG-209	05/18/01	10:44 AM	28.75	70	-	0	0	0	19	0	0	0	--
GMSG-209	09/08/01	10:52 AM	28.41	74	-	0.01	0	0	20.3	1.3	1.3	0	44.72
GMSG-210	08/24/98	6:00 PM	28.45	75	-	4.83	0	0	21.3	13	5	1.5	37.75

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-210	08/25/98	6:20 PM	28.65	73	-	0	0	0	21.4	4.75	4	1.75	37.93
GMSG-210	08/26/98	1:24 PM	28.78	82	-	0.02	0	0	19.8	80	35	3	38.13
GMSG-210	08/27/98	4:21 PM	28.74	78.1	-	0.01	0	0	20.8	35	35	2	37.53
GMSG-210	08/28/98	8:27 AM	28.69	66.9	-	0.01	0	0	21.1	5	5	2.5	37.83
GMSG-210	08/29/98	9:40 AM	28.65	73	-	0	0	0	21.2	20	5	1.75	37.8
GMSG-210	08/30/98	1:40 PM	28.73	73	-	0.01	0	0	21	4.5	4.5	2.5	37.9
GMSG-210	08/31/98	5:10 PM	28.78	75	-	0.03	0	0	21.6	4	4	2	37
GMSG-210	09/08/98	5:50 PM	28.87	60.1	-	0	0	0	20.7	8	6	3.5	38.4
GMSG-210	09/09/98	7:20 PM	28.84	61	-	0	0	0	20.8	4	4	4	38.45
GMSG-210	09/10/98	9:10 AM	28.82	69.1	-	0	0	0	20.9	2	2	1.5	38.52
GMSG-210	09/11/98	8:11 AM	28.64	73.9	-	0	0	0	21	5.5	5.5	5.5	38.51
GMSG-210	09/12/98	11:43 AM	28.75	77	-	0	0	0	21.4	2.5	2.5	2.5	38.52
GMSG-210	09/14/98	9:06 AM	28.62	64.9	0.05	0.01	0	0	20.8	3	3	2.5	38.57
GMSG-210	09/15/98	1:10 PM	28.85	73	-	0	0	0	20.8	3	3	3	38.65
GMSG-210	09/15/98	2:15 PM	28.85	73	-	0	0	0	20.9	--	--	--	43.7
GMSG-210	09/22/98	4:26 PM	28.89	57.9	-	-0.02	0	0	20.9	2.5	2.5	2.5	45.92
GMSG-210	09/25/98	4:05 PM	28.51	77	-	0	0	0	21.3	3	3	3	46.23
GMSG-210	09/29/98	5:12 PM	28.68	59	-	-0.01	0	0	20.4	1.5	1.5	1.5	46.27
GMSG-210	10/10/98	3:50 PM	28.87	69.1	-	0	0	0	21.2	2.5	2.5	2.5	--
GMSG-210	10/22/98	2:46 PM	29.05	60.1	-	0	0	0	20.9	5	4	3.5	46.38
GMSG-210	10/24/98	11:16 AM	28.81	64.9	-	0	0	0	21.1	2.5	2.5	2.5	46.45
GMSG-210	11/03/98	10:08 AM	28.96	34	-	0	--	--	--	--	--	--	--
GMSG-210	11/03/98	1:52 PM	28.96	34	-	-0.38	--	--	--	--	--	--	--
GMSG-210	11/04/98	9:10 AM	28.99	30.9	-	-0.07	--	--	--	--	--	--	--
GMSG-210	11/04/98	12:06 PM	28.98	35.1	-	-0.36	--	--	--	--	--	--	--
GMSG-210	11/04/98	3:51 PM	28.95	33.1	-	-0.36	--	--	--	--	--	--	--
GMSG-210	11/05/98	8:56 AM	28.92	32	-	-0.05	--	--	--	--	--	--	--
GMSG-210	11/05/98	12:50 PM	28.89	34	-	-0.02	--	--	--	--	--	--	--
GMSG-210	11/08/98	4:41 PM	28.89	36	0.01	-0.04	0	0	20.1	3	2.5	2.5	46.96
GMSG-210	11/19/98	4:23 PM	28.44	32	T	-0.23	0	0	19.5	175	175	1.5	46.8
GMSG-210	12/02/98	3:32 PM	28.51	50	-	-0.1	0	0	20.6	2.5	2	2	46.85
GMSG-210	12/04/98	9:07 AM	28.76	34	-	-0.29	0	0	20	1	1	1	46.88
GMSG-210	12/09/98	2:36 PM	28.89	44	-	-0.05	0	0.1	19.9	<1	<1	<1	46.91
GMSG-210	12/14/98	2:57 PM	28.73	51	-	-0.09	0	0	20.2	<1	<1	1	46.96

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-210	12/16/98	11:00 AM	28.69	33	-	-0.01	0	0	19.9	--	--	--	46.97
GMSG-210	12/29/98	3:32 PM	28.73	4	T	-0.57	0	0	16.9	2.5	2.5	1.5	47.1
GMSG-210	01/05/99	3:44 PM	28.64	7	-	0	8.6	0.3	13.2	--	--	--	47.11
GMSG-210	01/20/99	8:41 AM	28.61	23	-	-0.25	0	0	20.9	17	17	2.5	47.22
GMSG-210	01/28/99	11:46 AM	28.82	28	T	-0.38	0	0	19	<1	<1	<1	47.15
GMSG-210	02/04/99	10:46 AM	28.73	12	T	-0.92	0	0	18.8	9	9	1	47.18
GMSG-210	02/25/99	11:54 AM	28.84	28.9	-	-0.33	0	0	20.1	7.5	7.5	1	--
GMSG-210	03/12/99	9:43 AM	29.17	25	-	-0.37	0	0.1	22	6.3	6.3	<1	--
GMSG-210	03/24/99	10:08 AM	28.85	30.9	-	-0.45	0	0	19.9	1.75	1.75	1.5	--
GMSG-210	04/12/99	2:58 PM	28.91	57.9	-	-0.1	0	0	22.8	4.5	4.5	4.5	--
GMSG-210	04/21/99	9:00 AM	28.62	42.1	-	0	0	0	17.8	2	2	2	--
GMSG-210	04/30/99	4:11 PM	29.03	75	-	0	0	0.1	20.4	150	50	3	--
GMSG-210	05/18/99	9:15 AM	28.61	54	0.01	-0.38	0	0.6	19.2	1.2	1.2	1.75	47.11
GMSG-210	06/03/99	2:15 PM	28.91	70	-	-0.24	0	0.3	20.3	4.5	4.5	4.5	47.14
GMSG-210	07/10/99	2:36 PM	28.91	73	-	-0.3	0	0.8	19.9	1.25	1	1.25	--
GMSG-210	07/18/99	1:30 PM	28.87	77	-	-0.03	0	0.3	20.6	--	--	--	--
GMSG-210	08/09/99	1:03 PM	28.62	64.9	T	0.06	0	0.9	19.3	10	8.5	2	46.56
GMSG-210	08/18/99	9:08 AM	28.85	55.9	-	-0.4	0	0.7	19.8	150	60	1.5	46.38
GMSG-210	09/29/99	10:01 AM	28.88	52	-	-0.02	0	0	21.4	1.6	1.6	1.6	45.11
GMSG-210	10/26/99	8:38 AM	28.75	41	-	-0.67	0	0.2	20.6	3.5	3	2.5	46.22
GMSG-210	11/04/99	12:01 PM	28.65	52	-	0	0	0.2	20.4	710	205	1.75	57.98
GMSG-210	11/08/99	1:42 PM	28.57	72	-	0	0	0.1	20.4	3.5	2.75	<1	46.3
GMSG-210	02/17/00	9:00 AM	29.17	-5.1	T	-0.1	0	0	20.6	110	40	1.25	47
GMSG-210	03/15/00	10:56 AM	28.56	26.1	-	-0.12	0	0	19.7	23.35	7.1	-0.75	47.03
GMSG-210	03/31/00	11:48 AM	28.8	62.1	-	-0.1	0	0	21	-0.08	-0.08	-0.08	--
GMSG-210	05/01/00	2:28 PM	28.59	59	-	-0.17	0	0	18.7	18	7	-0.05	46.94
GMSG-210	06/19/00	2:33 PM	28.81	72	-	-0.05	0	0	20	-0.48	0.48	-0.42	46.81
GMSG-210	07/10/00	12:30 PM	28.71	74	-	-0.51	0	0.6	19.1	--	--	--	46.83
GMSG-210	10/07/00	2:11 PM	29.11	38	-	-0.23	0	0	20.4	16	0.76	-0.1	46.16
GMSG-210	09/08/01	1:15 PM	28.46	72	-	-0.44	0	0	20.4	10	1.5	0	46.76
GMSG-211	08/24/98	5:56 PM	28.45	75	-	--	--	--	--	--	--	--	46.48
GMSG-211	08/25/98	6:33 PM	28.67	66.9	-	--	--	--	--	--	--	--	46.5
GMSG-211	08/26/98	1:20 PM	28.78	82	-	--	--	--	--	--	--	--	45.93
GMSG-211	08/27/98	4:14 PM	28.74	78.1	-	-0.19	0	0.1	19.8	1.75	1.5	1.75	45.82

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-211	08/28/98	8:36 AM	28.69	70	-	-0.21	0	0	21.2	2.5	2.25	2.25	45.86
GMSG-211	08/29/98	9:49 AM	28.65	73	-	-0.27	0	0	20.7	7	2	2	45.82
GMSG-211	08/30/98	1:55 PM	28.73	73	-	-0.18	0	0	20.6	5	5	5	45.92
GMSG-211	08/31/98	6:30 PM	28.76	63	-	-0.15	0	0	20.3	2.5	2	2	--
GMSG-211	09/08/98	6:00 PM	28.87	60.1	-	-0.3	0	0	20.5	3	3	3	45.92
GMSG-211	09/09/98	7:30 PM	28.85	60.1	-	-0.24	0	0.2	20.3	3	3	3	45.93
GMSG-211	09/10/98	9:15 AM	28.82	69.1	-	-0.07	0	0.1	20.5	1	1	1.5	45.93
GMSG-211	09/11/98	8:38 AM	28.64	79	-	-0.17	0	0.1	20.8	175	125	4	45.94
GMSG-211	09/12/98	11:50 AM	28.75	77	-	-0.14	0	0	21.1	2.5	2.5	2.5	45.95
GMSG-211	09/14/98	9:13 AM	28.62	64.9	0.05	-0.16	0	0.2	20.4	--	--	--	47.07
GMSG-211	09/22/98	4:36 PM	28.9	55.9	-	-0.28	0	0.1	20.7	2.5	2.5	2.5	46.07
GMSG-211	09/25/98	4:15 PM	28.51	77	-	-0.28	0	0.1	20.8	2.5	2.5	2.5	46.1
GMSG-211	09/29/98	5:20 PM	28.68	59	-	-0.41	0	0.1	20	1.5	1.5	1.5	46.16
GMSG-211	10/10/98	4:00 PM	28.87	69.1	-	-0.05	0	0.2	20.8	2.5	2.5	2.5	46.25
GMSG-211	10/22/98	2:35 PM	29.05	60.1	-	0	0	0.1	20.7	3	3	3.5	46.36
GMSG-211	10/24/98	11:24 AM	28.81	64.9	-	-0.17	0	0	21	2.5	2.5	2.5	46.39
GMSG-211	11/03/98	10:10 AM	28.96	34	-	-0.21	--	--	--	--	--	--	--
GMSG-211	11/03/98	1:53 PM	28.96	34	-	-1.32	--	--	--	--	--	--	--
GMSG-211	11/04/98	9:11 AM	28.99	30.9	-	-0.22	--	--	--	--	--	--	--
GMSG-211	11/04/98	12:07 PM	28.98	35.1	-	-1.6	--	--	--	--	--	--	--
GMSG-211	11/04/98	4:07 PM	28.95	33.1	-	-0.78	--	--	--	--	--	--	--
GMSG-211	11/05/98	8:57 AM	28.92	32	-	-0.21	--	--	--	--	--	--	--
GMSG-211	11/05/98	12:51 PM	28.89	34	-	-0.14	--	--	--	--	--	--	--
GMSG-211	11/08/98	4:21 PM	28.89	36	T	-0.24	0	0.1	20	2	2	2	46.57
GMSG-211	11/19/98	4:33 PM	28.47	30.9	T	-0.53	0	0.1	19.2	3	1.5	1.5	46.72
GMSG-211	12/02/98	3:41 PM	28.51	50	-	-0.18	0	0.1	20.5	<1	<1	1.5	46.63
GMSG-211	12/09/98	2:45 PM	28.89	44	-	-0.15	0	0.1	19.8	<1	<1	<1	46.92
GMSG-211	12/14/98	3:06 PM	28.73	51	-	-0.14	0	0	20.2	<1	<1	1	46.99
GMSG-211	12/16/98	11:37 AM	28.66	33	-	-0.03	0	0	19.8	--	--	--	47
GMSG-211	12/29/98	4:33 PM	28.75	3	-	-0.5	0.1	0.1	16.4	650	450	1.5	47.18
GMSG-211	01/05/99	4:32 PM	28.62	6.1	T	-0.07	0	0	16.8	28	26	<1	47.24
GMSG-211	01/20/99	9:00 AM	28.61	23	-	-0.23	0	0	20.8	2	2	2	47.27
GMSG-211	01/28/99	12:27 PM	28.82	28	T	-0.25	0	0	19	<1	<1	<1	47.29
GMSG-211	02/04/99	11:02 AM	28.73	12	T	-0.56	0	0	18.9	<1	<1	<1	47.33

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-211	02/25/99	10:45 AM	28.85	28	-	-0.3	0	0.1	19.8	1	1	5	--
GMSG-211	03/12/99	10:02 AM	29.17	25	-	-0.16	0	0.1	22.2	<1	<1	<1	--
GMSG-211	03/24/99	10:22 AM	28.85	30.9	-	-0.31	0	0.2	19.7	1.5	1.5	1.5	47.3
GMSG-211	04/12/99	3:08 PM	28.91	57.9	-	-0.07	0	0	22.6	4	4	4	--
GMSG-211	04/21/99	9:10 AM	28.62	42.1	-	-0.31	0	0.1	19.2	2	2	2	--
GMSG-211	04/30/99	4:26 PM	29.03	75	-	-0.05	0	0.1	20.6	7	7	3	--
GMSG-211	05/18/99	9:25 AM	28.61	54	0.01	-0.35	0	0.4	18.5	1.5	1.5	1.6	--
GMSG-211	06/03/99	2:05 PM	28.91	70	-	-0.11	0	0.1	20.4	5	5	5	--
GMSG-211	07/10/99	2:44 PM	28.91	73	-	-0.28	0	0.7	19.7	1.25	--	1.25	--
GMSG-211	07/18/99	4:25 PM	28.83	78.1	-	-0.01	0	1.4	18.9	--	--	--	--
GMSG-211	08/09/99	1:07 PM	28.62	64.9	T	0.07	0	1.5	18.7	9	9	2	46.46
GMSG-211	08/18/99	9:15 AM	28.85	55.9	-	-0.25	0	1.4	19	35	35	1.5	46.36
GMSG-211	09/29/99	10:11 AM	28.88	52	-	-0.17	0	0.5	20.7	1	1	1.6	46.17
GMSG-211	10/26/99	11:27 AM	28.8	41	-	-0.6	0	0.1	20.6	2.25	2.25	2	46.33
GMSG-211	11/04/99	3:40 PM	28.62	51.1	-	-0.16	0	0	20.6	53	45	1.25	46.3
GMSG-211	11/08/99	10:28 AM	28.68	48.9	-	-0.03	0	0.3	20.2	1.25	<1	1.25	46.31
GMSG-211	02/17/00	12:55 PM	29.05	18	T	0.09	0	0	20.8	2.75	2	2.75	47.04
GMSG-211	03/15/00	2:58 PM	28.64	28.9	-	-0.12	0	0	19.4	0.1	0	0.1	47.15
GMSG-211	03/31/00	11:03 AM	28.81	60.1	-	-0.12	0	0	20.8	0.09	0.03	0.06	47.14
GMSG-211	05/01/00	2:17 PM	28.59	59	-	-0.22	0	0	18.5	72	24	-0.15	47.01
GMSG-211	06/19/00	2:22 PM	28.84	72	-	-0.16	0	0	20.2	-0.27	-0.65	-0.36	46.92
GMSG-211	07/10/00	11:33 AM	28.71	75	-	-0.37	0	1.1	18.8	--	--	--	46.92
GMSG-211	10/07/00	1:49 PM	29.11	38	-	-0.41	0	0.4	20.2	4.1	3.25	0	46.1
GMSG-211	05/18/01	11:27 AM	28.75	70	-	-0.36	0	0	18.9	0	0	0	--
GMSG-211	09/08/01	1:05 PM	28.46	72	-	-0.42	0	0.5	19.6	0	0	0	46.84
GMSG-212	09/08/98	5:40 PM	28.87	60.1	-	0	0	0.6	19.6	6	6	4	58
GMSG-212	09/09/98	7:10 PM	28.84	61	-	0	0	0.8	19.7	4.5	4.5	3	58
GMSG-212	09/10/98	9:00 AM	28.82	69.1	-	0.01	0	0.6	20	2	2	1.5	49.99
GMSG-212	09/11/98	8:21 AM	28.64	73.9	-	0	0	0.7	20	5	5	5	57.9
GMSG-212	09/12/98	11:35 AM	28.75	77	-	0	0	0.8	20	2.5	2.5	2.5	50.03
GMSG-212	09/14/98	8:58 AM	28.62	64.9	0.05	0	0	0.9	19.8	2.5	2.5	2.5	57.9
GMSG-212	09/22/98	4:18 PM	28.89	57.9	-	0	0	0	20.9	3	3	3	58.41
GMSG-212	09/25/98	3:55 PM	28.51	77	-	0	0	0	21.2	3	3	3	--
GMSG-212	09/29/98	5:04 PM	28.68	59	-	0	0	0.2	19.5	1.5	1.5	5	58.4

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-212	10/10/98	3:45 PM	28.87	69.1	-	0	0	0.4	20.7	4	4	3	58.35
GMSG-212	10/22/98	2:58 PM	29.05	60.1	-	0	0	0.4	20.4	4.5	3.5	3.5	58.39
GMSG-212	10/24/98	11:07 AM	28.81	64.9	-	0	0	0.4	20.5	3	3	3	58.3
GMSG-212	11/03/98	10:04 AM	28.96	34	-	0.05	--	--	--	--	--	--	--
GMSG-212	11/03/98	1:50 PM	28.96	34	-	0.05	--	--	--	--	--	--	--
GMSG-212	11/04/98	9:07 AM	28.99	30.9	-	0	--	--	--	--	--	--	--
GMSG-212	11/04/98	12:05 PM	28.98	35.1	-	0	--	--	--	--	--	--	--
GMSG-212	11/04/98	3:50 PM	28.95	33.1	-	0	--	--	--	--	--	--	--
GMSG-212	11/05/98	8:54 AM	28.92	32	-	0	--	--	--	--	--	--	--
GMSG-212	11/05/98	12:49 PM	28.89	34	-	0	--	--	--	--	--	--	--
GMSG-212	11/08/98	4:31 PM	28.89	36	0.01	0	0	0.5	19.7	2.5	2.5	2.5	58.38
GMSG-212	11/19/98	4:14 PM	28.44	32	T	0	0	0.3	18.9	9	4	1.5	58.28
GMSG-212	12/02/98	3:27 PM	28.53	55	-	0	0	0.2	20.5	1.5	1.5	1.75	58.33
GMSG-212	12/04/98	8:58 AM	28.76	34	-	0	0	0.3	19.5	1.25	1.25	1.25	58.61
GMSG-212	12/09/98	2:26 PM	28.89	43	-	0	0	0.2	19.6	1.5	1.25	1.25	58.52
GMSG-212	12/14/98	2:51 PM	28.73	51	-	0.02	0	0.1	20.4	1	1	1	58.42
GMSG-212	12/16/98	11:11 AM	28.69	33	-	0	0	0.2	19.8	--	--	--	58.53
GMSG-212	12/29/98	4:45 PM	28.75	3	-	0	0	0.5	16.2	1.5	1.5	1.5	58.57
GMSG-212	01/05/99	3:34 PM	28.64	7	-	0	0	0.3	16.8	<1	<1	<1	58.35
GMSG-212	01/20/99	8:27 AM	28.61	21.9	-	0	0	0	21.3	2.5	2.5	2.5	58.35
GMSG-212	01/28/99	11:32 AM	28.82	28	T	0	0	0.2	18.9	<1	<1	<1	58.34
GMSG-212	02/04/99	10:20 AM	28.69	12	T	0	0	0	18.7	<1	<1	1	58.54
GMSG-212	03/12/99	9:26 AM	29.17	19.9	-	0	0	0.8	21.8	1	1	<1	--
GMSG-212	03/24/99	9:50 AM	28.85	30.9	-	0	0	0.9	18.7	1	1	1.25	--
GMSG-212	04/12/99	2:51 PM	28.91	57.9	-	0	0	0.1	22.7	4	4	4.5	57.79
GMSG-212	04/21/99	8:51 AM	28.62	42.1	-	0.06	0	0.4	18.3	2.5	2.5	2	--
GMSG-212	04/30/99	4:19 PM	29.03	75	-	-0.01	0	0.8	19.8	40	25	3	--
GMSG-212	05/18/99	9:04 AM	28.61	54	0.01	-0.18	0	0.8	18.2	1.5	1.5	1.75	57.9
GMSG-212	06/03/99	2:23 PM	28.91	70	-	0	0	1.4	19.2	4.5	4.5	4.5	57.83
GMSG-212	07/10/99	2:26 PM	28.92	73	-	0.04	0	1.5	18.9	1.25	1.25	1.25	56.96
GMSG-212	07/18/99	1:15 PM	28.87	75.9	-	0	0	2.5	19	--	--	--	56.94
GMSG-212	08/09/99	12:52 PM	28.62	64.9	T	0	0	4.6	16.8	20	15	2.5	57.75
GMSG-212	08/18/99	8:59 AM	28.85	55.9	-	0	0	2.9	17.4	400	200	5	57.74
GMSG-212	09/29/99	9:52 AM	28.88	52	-	0	0	1.8	19.7	1.75	1.75	1.75	58.08

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-212	10/26/99	9:18 AM	28.75	41	-	0	0	1.4	19.8	4.25	3.5	3	58.21
GMSG-212	11/04/99	12:09 PM	28.65	52	-	0	0	0	20.8	270	80	1.5	46.29
GMSG-212	11/08/99	1:34 PM	28.57	72	-	-0.01	0	0.9	19.5	1	<1	1	57.86
GMSG-212	02/17/00	8:35 AM	29.17	-5.1	T	0	0	0.3	20.2	1600	110	1	58.13
GMSG-212	03/15/00	2:46 PM	28.64	28.9	-	-0.19	0	0	20.1	-0.8	-1.1	-0.8	--
GMSG-212	03/31/00	11:38 AM	28.8	62.1	-	-0.04	0	0.5	20.2	-0.01	-0.2	-0.01	57.9
GMSG-212	05/01/00	2:41 PM	28.62	56	-	0	0	1.4	17	10	1.5	-0.1	57.77
GMSG-212	06/19/00	2:45 PM	28.81	72	-	0	0	3.4	15.7	-0.32	-0.29	-0.23	58.25
GMSG-212	07/10/00	12:38 PM	28.71	74	-	0	0	4.2	16.1	--	--	--	57.57
GMSG-212	10/07/00	2:28 PM	29.11	38	-	0	0	1.4	19	0.92	-0.22	0.17	58.41
GMSG-212	05/18/01	11:58 AM	28.74	72	-	-0.2	0	1.7	17.5	0	0	0	--
GMSG-212	09/08/01	1:25 PM	28.46	72	-	0.03	0	3	16.7	1.5	1	0	58.1
GMSG-214	09/09/98	8:00 PM	28.85	60.1	-	0.06	80.4	0	0.2	--	--	--	45.11
GMSG-214	09/10/98	9:35 AM	28.8	73	-	0.37	81	0	0	--	--	--	45.09
GMSG-214	09/11/98	8:30 AM	28.64	79	-	0.19	81	0	0.1	--	--	--	45.13
GMSG-214	09/12/98	11:58 AM	28.75	77	-	0.02	73.9	0	1.4	--	--	--	45.11
GMSG-214	09/13/98	10:27 AM	28.69	71.1	-	0.21	77.5	0	0.6	--	--	--	45.12
GMSG-214	09/14/98	9:51 AM	28.61	66	0.02	0.09	79.9	0	0.2	--	--	--	45.13
GMSG-214	09/22/98	4:44 PM	28.9	55.9	-	-0.25	72.8	0	0.8	--	--	--	45.11
GMSG-214	09/23/98	3:01 PM	28.79	64.9	-	0.66	75.3	0	0.1	--	--	--	45.08
GMSG-214	09/25/98	5:30 PM	28.55	69.1	-	-0.17	75.2	0	0.3	--	--	--	45.09
GMSG-214	09/29/98	5:36 PM	28.7	54	-	-0.63	15.4	0.3	15.5	--	--	--	45.09
GMSG-214	10/07/98	3:54 PM	28.74	51.1	-	-0.23	0	0.2	20.4	--	--	--	44.95
GMSG-214	10/09/98	3:08 PM	28.83	62.1	-	0.21	0	0.4	19.8	--	--	--	45.1
GMSG-214	10/10/98	4:55 PM	28.87	64.9	-	-0.05	0	0.3	20.4	250	250	2	45
GMSG-214	10/14/98	8:20 AM	28.87	39	-	-0.45	0	0.4	19.7	--	--	--	44.97
GMSG-214	10/22/98	3:10 PM	29.05	60.1	-	0.55	74.2	0	0	--	--	--	44.91
GMSG-214	10/24/98	10:49 AM	28.81	64.9	-	0.04	74.4	0	0	--	--	--	44.9
GMSG-214	11/03/98	10:13 AM	28.96	34	-	-0.12	--	--	--	--	--	--	--
GMSG-214	11/03/98	1:55 PM	28.96	34	-	-1.77	--	--	--	--	--	--	--
GMSG-214	11/04/98	9:12 AM	28.99	30.9	-	-0.25	--	--	--	--	--	--	--
GMSG-214	11/04/98	12:08 PM	28.98	35.1	-	-1.5	--	--	--	--	--	--	--
GMSG-214	11/04/98	1:05 PM	28.96	35.1	-	-1.25	0	0	20.6	9	9	5	--
GMSG-214	11/05/98	8:59 AM	28.92	32	-	-0.28	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214	11/05/98	12:53 PM	28.89	34	-	-0.04	--	--	--	--	--	--	--
GMSG-214	11/08/98	4:53 PM	28.89	36	0.01	-0.04	13	0.4	0	--	--	--	44.93
GMSG-214	11/19/98	4:43 PM	28.47	30.9	T	-0.87	0	0	19.6	1.5	1.5	1.5	44.93
GMSG-214	12/02/98	3:50 PM	28.51	50	-	0.01	78.2	0.1	0	--	--	--	44.93
GMSG-214	12/04/98	9:17 AM	28.76	34	-	-0.33	84.7	0.2	0	--	--	--	44.94
GMSG-214	12/09/98	2:56 PM	28.89	44	-	0.03	37.4	0.3	9.6	--	--	--	44.94
GMSG-214	12/14/98	3:14 PM	28.73	51	-	0.18	75.7	0.5	0	--	--	--	44.91
GMSG-214	12/16/98	10:52 AM	28.69	33	-	0.36	82.6	0.3	0	--	--	--	44.92
GMSG-214	12/29/98	3:42 PM	28.73	4	T	-0.89	0.1	0	16.9	450	450	1.5	44.91
GMSG-214	01/05/99	4:01 PM	28.64	7	-	0.33	78.3	0.5	0.2	--	--	--	44.89
GMSG-214	01/20/99	9:16 AM	28.61	23	-	-0.17	55.5	0.3	5.1	--	--	--	44.88
GMSG-214	01/28/99	12:51 PM	28.83	28	T	-0.51	0	0	19	1.5	1.5	<1	44.89
GMSG-214	02/04/99	11:25 AM	28.73	12	T	-1.09	0	0	18.8	1.5	1.25	<1	44.88
GMSG-214	02/25/99	12:10 PM	28.84	28.9	-	-0.16	47.5	0.3	7.8	--	--	--	--
GMSG-214	03/12/99	2:14 PM	29.11	35.1	-	0.1	33.8	0.2	12	--	--	--	--
GMSG-214	03/24/99	10:45 AM	28.85	33.1	-	-0.4	0.5	0.3	18.4	--	--	--	--
GMSG-214	04/12/99	3:32 PM	28.91	57.9	-	-0.27	56.1	0	17.9	--	--	--	44.1
GMSG-214	04/21/99	7:57 AM	28.62	42.1	0.01	0.03	85.8	0	20.7	--	--	--	--
GMSG-214	04/30/99	3:58 PM	29.03	75	-	0.17	77.7	0.1	0	--	--	--	--
GMSG-214	05/18/99	9:35 AM	28.63	53.1	-	-0.39	72.3	0	0	--	--	--	44.81
GMSG-214	06/03/99	2:35 PM	28.89	70	-	0.18	33.9	0	10.2	--	--	--	44.77
GMSG-214	06/15/99	--	--	--	--	-0.2	80.8	0	0	--	--	--	--
GMSG-214	06/16/99	--	--	--	--	-0.05	78.4	0	0	--	--	--	--
GMSG-214	06/17/99	--	--	--	--	-0.14	85	0	0	--	--	--	--
GMSG-214	06/18/99	--	--	--	--	-0.21	84.1	0	0	--	--	--	--
GMSG-214	06/19/99	--	--	--	--	-0.21	79.5	0	0	--	--	--	--
GMSG-214	06/20/99	--	--	--	--	-0.03	84.1	0	0	--	--	--	--
GMSG-214	06/21/99	1:35 PM	28.89	79	-	0.26	78.8	0	0	--	--	--	--
GMSG-214	06/22/99	11:15 AM	28.76	79	-	0.24	84	0	0	--	--	--	--
GMSG-214	06/23/99	10:30 AM	28.51	78.1	-	0.22	83.7	0	0	--	--	--	--
GMSG-214	06/24/99	7:50 AM	28.58	72	-	-0.01	86	0	0	--	--	--	--
GMSG-214	06/25/99	7:37 AM	28.7	75	-	-0.48	82.2	0	0	--	--	--	--
GMSG-214	06/26/99	8:47 AM	28.62	81	-	0.05	74.5	0	0	--	--	--	--
GMSG-214	06/27/99	7:40 AM	28.54	77	-	-0.17	83.8	0.1	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214	06/28/99	8:15 AM	28.52	66	-	-0.17	82	0.1	0	--	--	--	--
GMSG-214	06/29/99	7:53 AM	28.57	57	-	-0.55	83.3	0.1	0	--	--	--	--
GMSG-214	06/30/99	8:00 AM	28.58	64	-	-0.34	80.1	0.1	0	--	--	--	--
GMSG-214	07/01/99	7:40 AM	28.48	57.9	0.03	-0.03	73.7	0.1	0	--	--	--	--
GMSG-214	07/02/99	7:37 AM	28.62	66.9	-	-0.59	88.9	0.1	0	--	--	--	--
GMSG-214	07/03/99	8:09 AM	28.62	68	0.11	-0.31	79.2	0.1	0	--	--	--	--
GMSG-214	07/04/99	7:52 AM	28.66	81	-	-0.34	74.5	0	0	--	--	--	--
GMSG-214	07/05/99	7:33 AM	28.66	77	T	-0.44	77.6	0	0	--	--	--	--
GMSG-214	07/06/99	7:39 AM	28.67	69.1	-	-0.27	77.5	0	0	--	--	--	--
GMSG-214	07/07/99	7:41 AM	28.72	72	-	0	80.3	0.1	0	--	--	--	--
GMSG-214	07/08/99	8:01 AM	28.79	61	-	0.04	79.3	0.1	0	--	--	--	--
GMSG-214	07/09/99	8:20 AM	28.41	63	-	-0.37	81.3	0	0	--	--	--	--
GMSG-214	07/10/99	9:03 AM	28.91	66	-	-0.61	81.5	0	0	--	--	--	--
GMSG-214	07/11/99	7:36 AM	28.95	66.9	-	-0.36	96.8	0.2	0	--	--	--	--
GMSG-214	07/12/99	7:25 AM	28.92	64	-	-0.41	79.8	0	0	--	--	--	--
GMSG-214	07/13/99	10:58 AM	28.7	77	-	0.02	81.2	0	0	--	--	--	--
GMSG-214	07/14/99	7:51 AM	28.61	66.9	-	-0.19	84.6	0	0	--	--	--	--
GMSG-214	07/15/99	10:30 AM	28.7	81	-	-0.25	83.5	0	0	--	--	--	--
GMSG-214	07/16/99	11:00 AM	28.64	87.1	-	-0.04	85	0	0	--	--	--	--
GMSG-214	07/17/99	10:00 AM	28.87	72	-	-0.5	81.5	0.1	0	--	--	--	--
GMSG-214	07/18/99	8:30 AM	28.93	68	-	-0.3	84	0.1	0	--	--	--	--
GMSG-214	07/19/99	8:00 AM	28.84	64	-	-0.45	81.7	0	0	--	--	--	--
GMSG-214	07/20/99	7:55 AM	28.9	-	-	-0.48	82.4	0.1	0	--	--	--	--
GMSG-214	07/21/99	7:30 AM	28.75	66	-	-0.28	81	0.1	0	--	--	--	--
GMSG-214	07/22/99	12:30 PM	28.78	86	-	-0.42	84.3	0	0	--	--	--	--
GMSG-214	07/23/99	10:02 AM	28.62	79	-	0	82.4	0.1	0	--	--	--	--
GMSG-214	07/24/99	7:48 AM	28.61	80.1	-	-0.25	83.7	0.1	0	--	--	--	--
GMSG-214	07/25/99	8:38 AM	28.73	78.1	-	-0.41	82.4	0	0	--	--	--	--
GMSG-214	07/26/99	7:33 AM	28.64	72	-	-0.75	81.3	0	0	--	--	--	--
GMSG-214	07/27/99	10:56 AM	28.75	77	-	-0.06	81.5	0	0	--	--	--	--
GMSG-214	08/09/99	11:36 AM	28.67	63	0.01	-0.08	84.5	0.5	0.2	--	--	--	44.61
GMSG-214	08/18/99	8:52 AM	28.85	55.9	-	-0.4	84.9	0.3	0	--	--	--	44.6
GMSG-214	09/29/99	10:21 AM	28.88	52	-	-0.8	0	0.2	19.2	>10000	>10000	>10000	--
GMSG-214	09/29/99	10:28 AM	28.88	52	-	--	68	0.2	0	--	--	--	44.63

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214	10/26/99	7:56 AM	28.72	39.9	-	-1.05	77.1	0.1	0	--	--	--	44.7
GMSG-214	11/04/99	11:36 AM	28.65	52	-	0.01	71.1	0	0	--	--	--	44.64
GMSG-214	11/08/99	10:10 AM	28.68	48.9	-	0	74	0.3	0	--	--	--	44.63
GMSG-214	02/17/00	9:15 AM	29.17	-5.1	T	--	--	--	--	--	--	--	--
GMSG-214	03/15/00	10:45 AM	28.56	26.1	-	1.19	9.5	0	14.2	--	--	--	--
GMSG-214	03/31/00	9:32 AM	28.82	55.9	-	-0.02	46.1	0.3	0	--	--	--	44.31
GMSG-214	05/01/00	1:46 PM	28.59	59	-	-0.5	51.5	0.2	0	--	--	--	44.25
GMSG-214	06/19/00	2:14 PM	28.84	72	-	-0.18	1.2	0	18.9	--	--	--	43.86
GMSG-214	07/10/00	10:45 AM	28.71	74	-	-0.57	45.7	0.1	0	--	--	--	43.85
GMSG-214	10/07/00	12:53 PM	29.09	38	T	-0.51	45.7	0.3	1.3	--	--	--	--
GMSG-214	11/13/00	2:50 PM	28.37	32	0.07	0.04	50	0.2	0	--	--	--	43.95
GMSG-214	11/21/00	8:30 AM	28.86	15	-	-0.32	54.3	0.1	1.5	--	--	--	43.91
GMSG-214	11/29/00	3:41 PM	28.8	33	-	-0.81	6.8	0	18.8	--	--	--	43.57
GMSG-214	12/04/00	11:50 AM	28.61	30	-	-0.4	32.5	0	8.6	--	--	--	43.9
GMSG-214	12/11/00	3:25 PM	28.76	10	-	-0.07	41.5	0	4.4	--	--	--	--
GMSG-214	12/20/00	9:30 AM	28.68	12	-	-0.36	47.6	0	2.4	--	--	--	--
GMSG-214	12/26/00	3:27 PM	28.97	13	T	-0.18	48.1	0	2.4	--	--	--	--
GMSG-214	05/18/01	11:47 AM	28.74	72	-	-0.27	0	0	19	0	0	0	--
GMSG-214	09/08/01	1:45 PM	28.47	74	-	-0.96	62.2	0.6	0	--	--	--	43.8
GMSG-214	10/14/02	2:33 PM	28.74	55	-	0.5	47	0.2	5.7	--	--	--	--
GMSG-214	04/02/03	2:27 PM	28.83	33	-	0	85.2	0	0	--	--	--	--
GMSG-214	10/15/03	10:56 AM	28.6	49	-	0	62	1	0.9	--	--	--	--
GMSG-214	04/04/04	12:20 PM	28.93	35	-	0	77	0.1	0.1	--	--	--	--
GMSG-214	10/27/04	2:53 PM	29.11	45	-	0	74.1	0	0	--	--	--	--
GMSG-214	01/13/05	4:29 PM	28.62	14	-	-1	87.7	0	1.3	--	--	--	--
GMSG-214	02/04/05	11:09 AM	28.88	34	-	-1.3	45.7	0.8	5.6	--	--	--	--
GMSG-214	02/08/05	2:21 PM	28.97	21	-	-1.1	82.4	0.9	0.2	--	--	--	43.25
GMSG-214	02/10/05	9:30 AM	28.92	20	-	-1.2	82.1	0.7	0.8	--	--	--	43.36
GMSG-214	02/14/05	10:59 AM	28.23	29	T	-1.6	84.5	0.4	1.1	--	--	--	--
GMSG-214	03/23/05	4:59 PM	28.77	39	-	--	--	--	--	--	--	--	--
GMSG-214	04/04/05	11:43 AM	28.77	57	-	-1.8	71.2	0	3.6	--	--	--	--
GMSG-214	04/13/05	11:35 AM	29.04	60	-	--	--	--	--	--	--	--	--
GMSG-214	04/13/05	3:08 PM	29.03	62	-	-0.3	87.2	0	0.8	--	--	--	42.85
GMSG-214	04/15/05	1:30 PM	29.08	66	-	-1.9	70.7	0	3.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214	04/15/05	6:34 PM	29.05	53	-	-0.7	8.6	0	18.4	--	--	--	--
GMSG-214	04/16/05	11:07 AM	29.05	60	-	-0.3	0	0	20	--	--	--	--
GMSG-214	04/16/05	6:40 PM	29.04	51	T	-0.2	0.1	0	20.2	--	--	--	--
GMSG-214	04/17/05	10:13 AM	29.04	57	-	-0.9	0.1	0	20.2	--	--	--	--
GMSG-214	04/17/05	10:34 AM	29.03	60	-	--	--	--	--	--	--	--	--
GMSG-214	04/17/05	5:35 PM	28.93	64	-	-0.8	0	0	20	--	--	--	--
GMSG-214	04/20/05	8:57 AM	28.83	41	-	-1.5	72	0.4	2.3	--	--	--	43
GMSG-214	05/05/05	9:00 AM	28.98	61	-	-0.6	82.4	0	0.9	--	--	--	43
GMSG-214	05/17/05	11:26 AM	28.85	51	-	-0.7	87.6	0	0.9	--	--	--	42.94
GMSG-214	05/27/05	9:54 AM	28.56	58	-	-0.9	61.1	0.2	4.7	--	--	--	--
GMSG-214	05/31/05	2:08 PM	28.9	79	-	--	--	--	--	--	--	--	--
GMSG-214	06/01/05	8:14 AM	28.93	65	-	0.8	35.1	0.3	10.6	--	--	--	--
GMSG-214	06/02/05	7:04 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-214	06/03/05	7:04 AM	28.73	61	-	--	--	--	--	--	--	--	--
GMSG-214	06/06/05	7:07 AM	28.45	65	-	--	--	--	--	--	--	--	--
GMSG-214	06/08/05	7:10 AM	28.63	54	-	-14.3	--	--	--	--	--	--	--
GMSG-214	06/08/05	7:12 AM	28.63	54	-	-14.3	--	--	--	--	--	--	--
GMSG-214	06/09/05	7:08 AM	28.64	66	-	-14.1	--	--	--	--	--	--	--
GMSG-214	11/28/05	1:16 PM	28.09	45	-	--	77.5	0.4	1.4	--	--	--	43.18
GMSG-214	12/06/05	10:40 AM	28.83	7	-	-17.4	--	--	--	--	--	--	--
GMSG-214	12/19/05	2:48 PM	28.79	22	-	0	0.5	0.1	19.2	--	--	--	42.77
GMSG-214	12/22/05	1:17 PM	28.36	31	-	0	0.7	0.1	18.8	--	--	--	42.72
GMSG-214	12/22/05	1:23 PM	28.36	31	-	-20	71.8	0.1	3.1	--	--	--	--
GMSG-214	12/27/05	1:30 PM	28.46	29	-	-0.1	0	0.1	19.7	--	--	--	--
GMSG-214	12/27/05	1:43 PM	28.46	29	-	-10	67.8	0.3	4.1	--	--	--	--
GMSG-214	12/27/05	2:10 PM	28.46	29	-	--	--	--	--	--	--	--	43.5
GMSG-214	12/30/05	1:15 PM	28.5	28	-	0	0	0.4	19.4	--	--	--	43.5
GMSG-214	12/30/05	1:28 PM	28.5	28	-	-10	76	0.4	2.5	--	--	--	43.5
GMSG-214	01/13/06	2:15 PM	28.5	30	-	-0.5	0	0.2	19.1	--	--	--	--
GMSG-214	01/13/06	3:08 PM	28.52	30	-	-10	66.5	0.2	5.2	--	--	--	--
GMSG-214	03/29/06	12:55 PM	28.91	52	-	0	--	--	--	--	--	--	--
GMSG-214	03/29/06	3:32 PM	28.87	53	-	0	0	0.9	18.5	--	--	--	43.4
GMSG-214	03/30/06	10:30 AM	28.76	51	-	-1.2	--	--	--	--	--	--	--
GMSG-214	03/30/06	10:45 AM	28.76	51	-	--	--	--	--	--	--	--	43.26

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214	03/30/06	2:10 PM	28.67	57	-	0	--	--	--	--	--	--	--
GMSG-214	04/11/06	2:37 PM	28.55	69	-	-0.1	--	--	--	--	--	--	--
GMSG-214	04/26/06	1:43 PM	28.59	69	-	-0.1	0	0	19.3	--	--	--	--
GMSG-214	04/26/06	2:09 PM	28.59	69	-	-10.3	0	0	19.5	--	--	--	--
GMSG-214	04/26/06	2:50 PM	28.59	70	-	--	--	--	--	--	--	--	43.4
GMSG-214	05/14/06	2:02 PM	28.83	53	-	0	2.4	0.1	18.3	--	--	--	--
GMSG-214	05/14/06	2:19 PM	28.83	53	-	-4	0	0	19.2	--	--	--	--
GMSG-214	05/14/06	2:35 PM	28.84	54	T	--	--	--	--	--	--	--	43.42
GMSG-214	06/05/06	11:17 AM	28.78	78	-	0.3	0.4	0.1	18.4	--	--	--	--
GMSG-214	06/05/06	11:35 AM	28.77	81	-	-6.1	0	0	19.3	--	--	--	--
GMSG-214	06/05/06	11:44 AM	28.77	81	-	--	--	--	--	--	--	--	43.35
GMSG-214	07/20/06	10:21 AM	28.78	83	-	-0.2	0	0	18.9	--	--	--	--
GMSG-214	07/20/06	10:37 AM	28.78	85	-	-25.4	0	0	19	--	--	--	--
GMSG-214	07/20/06	10:54 AM	28.78	85	-	--	--	--	--	--	--	--	43.4
GMSG-214	08/17/06	1:07 PM	28.9	72	-	0	0.2	0	18.8	--	--	--	43.32
GMSG-214	08/17/06	1:17 PM	28.9	72	-	-8.2	0	0	19.1	--	--	--	--
GMSG-214	09/20/06	11:28 AM	28.77	51	-	0	0	0	20.1	--	--	--	43.43
GMSG-214	09/20/06	11:34 AM	28.76	51	-	-8	0	0	20.5	--	--	--	--
GMSG-214	10/23/06	11:15 AM	28.71	39	-	-0.3	0	0	20.7	--	--	--	--
GMSG-214	10/23/06	11:35 AM	28.71	39	-	-8.6	0	0	21	--	--	--	--
GMSG-214	10/23/06	11:43 AM	28.71	39	-	--	--	--	--	--	--	--	43.34
GMSG-214	11/08/06	10:55 AM	28.25	52	-	0	0	0	19.7	--	--	--	--
GMSG-214	11/08/06	11:05 AM	28.25	52	-	-7.6	0	0	20.2	--	--	--	43.29
GMSG-214	12/21/06	11:16 AM	29.05	29	-	0	0	0.3	19.3	--	--	--	--
GMSG-214	12/21/06	11:28 AM	29.05	29	-	-7.6	0	0	20.7	--	--	--	43.23
GMSG-214	01/19/07	2:13 PM	28.82	17	-	0	0	0	20.5	--	--	--	--
GMSG-214	01/19/07	2:24 PM	28.82	17	-	-8.2	0	0	20.8	--	--	--	43.25
GMSG-214	02/08/07	1:09 PM	28.78	16	-	0	0	0	20.3	--	--	--	--
GMSG-214	02/08/07	1:18 PM	28.78	16	-	-8	0	0	20.8	--	--	--	43.25
GMSG-214	03/15/07	10:39 AM	29.18	20	-	0	0	0.6	20.5	--	--	--	42.18
GMSG-214	03/15/07	10:53 AM	29.18	20	-	-8	0	0	20.8	--	--	--	--
GMSG-214	04/20/07	10:28 AM	29.07	61	-	0	0	0	20.4	--	--	--	--
GMSG-214	04/20/07	10:40 AM	29.06	64	-	-7.9	0	0	20.7	--	--	--	43.15
GMSG-214	05/25/07	2:41 PM	28.99	70	-	0	0	0	20	--	--	--	43.1

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214	05/25/07	2:51 PM	28.99	70	-	-8	0	0	20.6	--	--	--	--
GMSG-214	06/15/07	1:51 PM	28.77	89	-	0	0	0	18.9	--	--	--	--
GMSG-214	06/15/07	2:00 PM	28.77	89	-	-8.3	0	0	19.3	--	--	--	42.72
GMSG-214	07/16/07	11:07 AM	29.99	74	-	0	0	0	19.3	--	--	--	--
GMSG-214	07/16/07	11:36 AM	29.98	75	-	-8.2	0	0	19.3	--	--	--	42.56
GMSG-214	08/31/07	9:04 AM	30.19	68	-	0	0	0.1	19.4	--	--	--	42.68
GMSG-214	08/31/07	9:15 AM	30.19	68	-	-27.8	0	0	19.5	--	--	--	--
GMSG-214	09/21/07	2:02 PM	29.64	82	-	0	0	0	19.2	--	--	--	--
GMSG-214	09/21/07	2:13 PM	29.64	82	-	-9.7	0	0	19.4	--	--	--	42.41
GMSG-214	10/18/07	9:11 AM	29.27	60	0.04	0	0	0.3	18.6	--	--	--	43.09
GMSG-214	10/18/07	9:20 AM	29.27	60	0.04	-8	81.1	0.1	0	--	--	--	--
GMSG-214	10/18/07	1:52 PM	29.16	68	-	0	71.3	0.1	1.8	--	--	--	--
GMSG-214	10/18/07	2:08 PM	29.16	68	-	-8	79.8	0.1	0	--	--	--	43.15
GMSG-214	10/19/07	9:42 AM	28.98	53	T	0.0-0.1	8.7	0.1	17.6	--	--	--	--
GMSG-214	10/19/07	1:39 PM	29.01	53	T	0	45.7	0.1	7.8	--	--	--	--
GMSG-214	10/26/07	10:32 AM	30.18	47	-	0	40.2	0.3	2.8	--	--	--	--
GMSG-214	10/31/07	11:52 AM	--	--	--	0	8.6	0.2	18.7	--	--	--	--
GMSG-214	11/21/07	10:25 AM	30.14	34	-	-0.5	0	0.2	20.4	--	--	--	--
GMSG-214	12/27/07	2:00 PM	30	27	-	-0.7	--	--	--	--	--	--	--
GMSG-214R	11/28/05	1:17 PM	28.09	45	-	--	0	0	19.7	--	--	--	42.7
GMSG-214R	12/19/05	3:00 PM	28.79	22	-	0	0.5	0.1	19.2	--	--	--	41.29
GMSG-214R	12/22/05	1:13 PM	28.36	31	-	0	0.1	0	19.2	--	--	--	41.75
GMSG-214R	12/22/05	1:30 PM	28.36	33	-	-2.4	0.4	0.1	19.4	--	--	--	--
GMSG-214R	12/27/05	1:35 PM	28.46	29	-	0	0	0	19.8	--	--	--	--
GMSG-214R	12/27/05	1:55 PM	28.46	29	-	-10.1	0	0	19.8	--	--	--	--
GMSG-214R	12/27/05	2:16 PM	28.46	29	-	--	--	--	--	--	--	--	41.54
GMSG-214R	12/30/05	1:22 PM	28.5	28	-	0	0.8	0	19.2	--	--	--	41.28
GMSG-214R	12/30/05	1:41 PM	28.47	29	-	-10	0	0	19.4	--	--	--	41.28
GMSG-214R	01/04/06	7:43 AM	28.47	31	0.02	0	2.6	0	18.5	--	--	--	45.44
GMSG-214R	01/04/06	8:30 AM	28.47	32	0.02	-10	0	0	19.8	--	--	--	45.44
GMSG-214R	01/13/06	2:23 PM	28.5	30	-	0	0	0	19.4	--	--	--	--
GMSG-214R	01/13/06	3:17 PM	28.52	30	-	-0.5	0.1	0	19.2	--	--	--	--
GMSG-214R	03/29/06	3:42 PM	28.87	53	-	-21.8	--	--	--	--	--	--	39.68
GMSG-214R	03/30/06	10:30 AM	28.76	51	-	-22.2	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214R	03/30/06	10:45 AM	28.76	51	-	--	--	--	--	--	--	--	40.7
GMSG-214R	04/26/06	1:49 PM	28.59	69	-	0	0	0	18.6	--	--	--	--
GMSG-214R	04/26/06	2:20 PM	28.59	69	-	-0.3	0	0	19.4	--	--	--	--
GMSG-214R	04/26/06	2:55 PM	28.59	70	-	--	--	--	--	--	--	--	41.76
GMSG-214R	05/14/06	2:08 PM	28.83	53	-	0	0	0	19.3	--	--	--	--
GMSG-214R	05/14/06	2:26 PM	28.83	53	-	-0.1	0	0	19.1	--	--	--	--
GMSG-214R	05/14/06	2:38 PM	28.84	54	T	--	--	--	--	--	--	--	41.64
GMSG-214R	06/05/06	11:28 AM	28.78	78	-	0	0	0.5	17.2	--	--	--	--
GMSG-214R	06/05/06	11:39 AM	28.77	81	-	-0.3	0	0	19.4	--	--	--	--
GMSG-214R	06/05/06	11:47 AM	28.77	81	-	--	--	--	--	--	--	--	42.09
GMSG-214R	07/20/06	10:31 AM	28.78	85	-	0	0	0	18.8	--	--	--	--
GMSG-214R	07/20/06	10:45 AM	28.78	85	-	-0.3	0.2	0	19.3	--	--	--	--
GMSG-214R	07/20/06	10:51 AM	28.78	85	-	--	--	--	--	--	--	--	43.27
GMSG-214R	08/17/06	1:12 PM	28.9	72	-	0	0	0	19	--	--	--	43.65
GMSG-214R	08/17/06	1:22 PM	28.9	72	-	-0.2	0.1	0	19.1	--	--	--	--
GMSG-214R	09/20/06	11:40 AM	28.76	51	-	0	0	0	20.4	--	--	--	43.67
GMSG-214R	09/20/06	11:44 AM	28.76	51	-	-0.1	0	0	20.4	--	--	--	--
GMSG-214R	10/23/06	11:23 AM	28.71	39	-	0	0	0	20.9	--	--	--	--
GMSG-214R	10/23/06	11:29 AM	28.71	39	-	-0.3	0	0	20.8	--	--	--	--
GMSG-214R	10/23/06	11:40 AM	28.71	39	-	--	--	--	--	--	--	--	43.67
GMSG-214R	11/08/06	11:00 AM	28.25	52	-	0	0	0.8	19.7	--	--	--	--
GMSG-214R	11/08/06	11:10 AM	28.25	52	-	-0.4	0	0	20.3	--	--	--	43.71
GMSG-214R	12/21/06	11:22 AM	29.05	29	-	0	0	0	20.7	--	--	--	--
GMSG-214R	12/21/06	11:35 AM	29.04	32	-	-0.1	0	0	20.7	--	--	--	43.71
GMSG-214R	01/19/07	2:17 PM	28.82	17	-	0	0	0	20.8	--	--	--	--
GMSG-214R	01/19/07	2:29 PM	28.82	17	-	-9	0	0	20.8	--	--	--	43.55
GMSG-214R	02/08/07	1:14 PM	28.78	16	-	0	0	0	20.7	--	--	--	43.71
GMSG-214R	02/08/07	1:24 PM	28.78	16	-	-0.1	0	0	20.9	--	--	--	--
GMSG-214R	03/15/07	10:47 AM	29.18	20	-	0	0	0	20.7	--	--	--	43.46
GMSG-214R	03/15/07	11:00 AM	29.18	20	-	-0.1	0	0	20.7	--	--	--	--
GMSG-214R	04/20/07	10:32 AM	29.06	64	-	0	0	0.5	20.2	--	--	--	--
GMSG-214R	04/20/07	10:45 AM	29.06	64	-	-0.1	0	0	20.7	--	--	--	43.23
GMSG-214R	05/25/07	2:46 PM	28.99	70	-	0	0	0.3	19.7	--	--	--	43.37
GMSG-214R	05/25/07	2:56 PM	28.99	70	-	0	0	0.2	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214R	06/15/07	1:55 PM	28.77	89	-	0	0	0.6	18.5	--	--	--	--
GMSG-214R	06/15/07	2:05 PM	28.77	89	-	-0.1	0	0.1	19.1	--	--	--	43.4
GMSG-214R	07/16/07	11:11 AM	29.99	74	-	0	0	0.4	18.2	--	--	--	--
GMSG-214R	07/16/07	11:42 AM	29.98	75	-	-0.2	0	0	19.3	--	--	--	43.7
GMSG-214R	08/31/07	9:08 AM	30.19	68	-	0	0.1	0.4	18.3	--	--	--	42.77
GMSG-214R	08/31/07	9:23 AM	30.19	68	-	-0.2	0.2	0	19.5	--	--	--	--
GMSG-214R	09/21/07	2:18 AM	29.97	58	0.07	-0.2	0.2	0.1	19.1	--	--	--	43.79
GMSG-214R	09/21/07	2:06 PM	29.64	82	-	0	0	0.4	18.7	--	--	--	--
GMSG-214R	10/18/07	9:14 AM	29.27	60	0.04	0	0	0.5	18.4	--	--	--	43.8
GMSG-214R	10/18/07	9:29 AM	29.27	60	0.04	-0.2	0.2	0	19.2	--	--	--	--
GMSG-214R	10/18/07	2:02 PM	29.16	68	-	0	0	0	19.4	--	--	--	--
GMSG-214R	10/18/07	2:16 PM	29.16	68	-	-0.3	0	0	19.4	--	--	--	43.81
GMSG-214R	10/19/07	9:51 AM	28.98	53	T	0	0	0	19.4	--	--	--	--
GMSG-214R	10/19/07	1:39 PM	29.01	53	T	-22.1	--	--	--	--	--	--	42.5
GMSG-214R	10/26/07	10:37 AM	30.18	47	-	-18.4	--	--	--	--	--	--	--
GMSG-214R	10/31/07	12:02 PM	--	--	--	-16.2	--	--	--	--	--	--	--
GMSG-215	09/09/98	7:40 PM	28.85	60.1	-	0	0	0	20.9	30	15	3	38.46
GMSG-215	09/10/98	9:25 AM	28.82	69.1	-	0	0	0	21.1	10	10	1.5	38.59
GMSG-215	09/11/98	8:01 AM	28.64	73.9	-	0	0	0	21.1	35	35	6	38.45
GMSG-215	09/12/98	12:20 PM	28.75	77	-	140	91.2	0	0	--	--	--	--
GMSG-215	09/13/98	10:55 AM	28.68	71.1	-	140	91.4	0	0	--	--	--	--
GMSG-215	09/14/98	9:58 AM	28.61	66	0.02	137	93.2	0	0	--	--	--	--
GMSG-215	09/22/98	5:05 PM	28.9	55.9	-	130	91.3	0	0	--	--	--	--
GMSG-215	09/23/98	2:56 PM	28.79	64.9	-	130	89.6	0	0	--	--	--	--
GMSG-215	09/25/98	5:20 PM	28.54	75	-	132	89.2	0	0	--	--	--	--
GMSG-215	09/29/98	5:30 PM	28.7	54	-	125	92.9	0	0	--	--	--	--
GMSG-215	10/07/98	3:49 PM	28.74	51.1	-	122	91.8	0	0	--	--	--	--
GMSG-215	10/09/98	3:13 PM	28.83	62.1	-	124	90.2	0	0	--	--	--	--
GMSG-215	10/09/98	5:17 PM	28.84	57.9	-	--	--	--	--	--	--	--	--
GMSG-215	10/10/98	5:15 PM	28.87	64.9	-	120	89.9	0	0	--	--	--	--
GMSG-215	10/12/98	12:00 AM	28.72	45	-	--	--	--	--	--	--	--	--
GMSG-215	10/14/98	8:15 AM	28.87	39	-	125	92.2	0	0	--	--	--	--
GMSG-215	10/22/98	3:27 PM	29.05	60.1	-	127	91	0	0	--	--	--	51.13
GMSG-215	10/24/98	11:36 AM	28.79	70	-	120	89.3	0	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-215	11/03/98	10:21 AM	28.96	34	-	116	--	--	--	--	--	--	--
GMSG-215	11/03/98	1:59 PM	28.96	34	-	116	--	--	--	--	--	--	--
GMSG-215	11/04/98	9:15 AM	28.99	30.9	-	120	--	--	--	--	--	--	--
GMSG-215	11/04/98	12:11 PM	28.98	35.1	-	119	--	--	--	--	--	--	--
GMSG-215	11/04/98	3:55 PM	28.95	33.1	-	120	--	--	--	--	--	--	--
GMSG-215	11/05/98	9:02 AM	28.92	32	-	121	96.9	0	0	--	--	--	--
GMSG-215	11/08/98	5:12 PM	28.89	36	0.01	115	96.3	0	0	--	--	--	51.09
GMSG-215	11/19/98	5:05 PM	28.47	30.9	T	114	98.7	0	0	--	--	--	51.21
GMSG-215	12/02/98	4:14 PM	28.51	50	-	120	94.5	0	0	--	--	--	--
GMSG-215	12/04/98	9:44 AM	28.77	40	-	117	97.3	0	0	--	--	--	--
GMSG-215	12/09/98	3:20 PM	28.89	44	-	120	98.1	0	0	--	--	--	--
GMSG-215	12/14/98	3:33 PM	28.71	50	-	122	95.5	0	0	--	--	--	--
GMSG-215	12/16/98	11:47 AM	28.66	33	-	119	96.2	0	0	--	--	--	52.45
GMSG-215	12/29/98	4:03 PM	28.73	4	T	128	87.6	0	0	--	--	--	--
GMSG-215	01/05/99	4:23 PM	28.64	7	-	123	98.7	0	0	--	--	--	--
GMSG-215	01/20/99	9:43 AM	28.61	24.1	-	124	96.2	0	0.1	--	--	--	--
GMSG-215	01/28/99	1:29 PM	28.83	28	T	122	97.1	0	0	--	--	--	--
GMSG-215	02/04/99	12:05 PM	28.75	12.9	-	120	99.5	0	0	--	--	--	--
GMSG-215	03/12/99	10:16 AM	29.17	25	-	117	97.3	0	0	--	--	--	--
GMSG-215	03/24/99	11:13 AM	28.85	33.1	-	109	98.3	0	0	--	--	--	--
GMSG-215	04/12/99	3:28 PM	28.91	57.9	-	118	97	0	--	--	--	--	52.4
GMSG-215	04/21/99	7:50 AM	28.62	42.1	0.01	112	96.6	0	4.2	--	--	--	--
GMSG-215	04/30/99	3:44 PM	29.03	75	-	100	92.7	0	0	--	--	--	--
GMSG-215	05/18/99	9:55 AM	28.63	53.1	-	101	92.1	0	0	--	--	--	50.7
GMSG-215	06/03/99	2:54 PM	28.89	70	-	100	90.6	0	0	--	--	--	43.3
GMSG-215	06/15/99	--	--	--	--	105	94.2	0	0	--	--	--	--
GMSG-215	06/16/99	--	--	--	--	100	87.5	0	0	--	--	--	--
GMSG-215	06/17/99	--	--	--	--	50	89.7	0	0	--	--	--	--
GMSG-215	06/18/99	--	--	--	--	95	93.7	0	0	--	--	--	--
GMSG-215	06/19/99	--	--	--	--	100	94.2	0	0	--	--	--	--
GMSG-215	06/20/99	--	--	--	--	103	95.1	0	0	--	--	--	--
GMSG-215	06/21/99	1:47 PM	28.89	79	-	105	87.8	0	0	--	--	--	--
GMSG-215	06/22/99	11:27 AM	28.76	79	-	104	91.4	0	0	--	--	--	--
GMSG-215	06/23/99	10:40 AM	28.51	78.1	-	99	93.2	0	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-215	06/24/99	8:01 AM	28.58	72	-	97	93.7	0	0	--	--	--	--
GMSG-215	06/25/99	8:12 AM	28.7	75	-	90	91.7	0	0	--	--	--	--
GMSG-215	06/26/99	9:11 AM	28.62	81	-	88	82.2	0	0	--	--	--	--
GMSG-215	06/27/99	7:49 AM	28.54	77	-	92	93.6	0	0	--	--	--	--
GMSG-215	06/28/99	8:34 AM	28.49	69.1	-	91	91.7	0	0	--	--	--	50.4
GMSG-215	06/29/99	8:13 AM	28.57	57	-	91	96.2	0	0	--	--	--	--
GMSG-215	06/30/99	8:19 AM	28.58	64	-	91	93.5	0	0	--	--	--	--
GMSG-215	07/01/99	8:03 AM	28.48	57.9	0.03	95	80.9	0	0	--	--	--	--
GMSG-215	07/02/99	7:51 AM	28.62	66.9	-	70	94.5	0	0	--	--	--	--
GMSG-215	07/03/99	8:30 AM	28.67	68	0.09	65	86.9	0	0	--	--	--	--
GMSG-215	07/04/99	8:06 AM	28.66	81	-	80	87.2	0	0	--	--	--	--
GMSG-215	07/05/99	7:52 AM	28.66	77	T	82	87.4	0	0	--	--	--	--
GMSG-215	07/06/99	7:56 AM	28.67	69.1	-	82	90.6	0	0	--	--	--	--
GMSG-215	07/07/99	7:55 AM	28.72	72	-	82	90.1	0	0	--	--	--	--
GMSG-215	07/08/99	8:21 AM	28.79	61	-	81	90.9	0	0	--	--	--	--
GMSG-215	07/09/99	8:37 AM	28.42	63	-	87	89.9	0	0	--	--	--	--
GMSG-215	07/10/99	9:22 AM	28.91	66	-	80	89.6	0	0	--	--	--	--
GMSG-215	07/11/99	7:35 AM	28.95	66.9	-	84	92	0	0	--	--	--	--
GMSG-215	07/12/99	7:47 AM	28.91	70	-	85	90.5	0	0	--	--	--	--
GMSG-215	07/13/99	11:18 AM	28.7	77	-	85	95.2	0	0	--	--	--	--
GMSG-215	07/14/99	8:01 AM	28.61	66.9	-	85	92.5	0	0	--	--	--	--
GMSG-215	07/15/99	10:50 AM	28.7	81	-	79	94	0	0	--	--	--	--
GMSG-215	07/16/99	11:30 AM	28.64	87.1	-	84	97	0	0	--	--	--	--
GMSG-215	07/17/99	10:25 AM	28.87	72	-	79	94	0	8	--	--	--	--
GMSG-215	07/18/99	8:50 AM	28.93	68	-	80	94.5	0	0	--	--	--	50.5
GMSG-215	07/19/99	8:30 AM	28.86	64	-	77	94.3	0	0	--	--	--	--
GMSG-215	07/20/99	8:18 AM	28.9	-	-	65	92.2	0	0	--	--	--	--
GMSG-215	07/21/99	7:52 AM	28.75	66	-	71	91.6	0	0	--	--	--	--
GMSG-215	07/22/99	12:52 PM	28.78	86	-	69	95.9	0	0	--	--	--	--
GMSG-215	07/23/99	10:25 AM	28.62	79	-	79	93.5	0	0	--	--	--	--
GMSG-215	07/24/99	8:05 AM	28.61	80.1	-	74	92.5	0	0	--	--	--	--
GMSG-215	07/25/99	9:02 AM	28.73	78.1	-	75	91.2	0	0	--	--	--	--
GMSG-215	07/26/99	8:01 AM	28.64	72	-	74	90.4	0	0	--	--	--	--
GMSG-215	07/27/99	12:38 PM	28.72	80.1	-	74	91.2	0	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-215	08/09/99	11:14 AM	28.7	64	0.01	70	106	0	0	--	--	--	50.1
GMSG-215	08/18/99	8:26 AM	28.87	55	-	69	100.6	0	0	--	--	--	50
GMSG-215	09/28/99	2:28 PM	28.91	55	-	62	101.4	0	0	--	--	--	38.45
GMSG-215	10/26/99	8:26 AM	28.72	39.9	-	39	100.3	0	0	--	--	--	--
GMSG-215	11/04/99	11:21 AM	28.68	48	-	12	89.1	0	0	--	--	--	--
GMSG-215	11/08/99	10:01 AM	28.68	48.9	-	18	103.2	0	0	--	--	--	--
GMSG-215	01/31/00	3:20 PM	28.46	26	T	50	96.6	0	0	--	--	--	--
GMSG-215	02/06/00	11:05 AM	28.85	26.1	T	62	98.6	0	0	--	--	--	--
GMSG-215	02/07/00	8:30 AM	28.99	18	-	45	95.2	0	0	--	--	--	--
GMSG-215	02/17/00	8:18 AM	29.16	-11	-	25	95.7	0	0	--	--	--	--
GMSG-215	02/22/00	2:43 PM	28.61	48.9	-	25	90.3	0	0	--	--	--	--
GMSG-215	03/15/00	10:29 AM	28.52	27	0.02	12.2	94.7	0	0	--	--	--	--
GMSG-215	03/31/00	9:59 AM	28.82	55.9	-	25	88.7	0	0	--	--	--	--
GMSG-215	05/01/00	1:32 PM	28.59	59	-	50	89	0	0	--	--	--	--
GMSG-215	06/06/00	10:51 AM	28.91	-	-	18	87.5	0	0	--	--	--	--
GMSG-215	06/19/00	1:43 PM	28.84	72	-	5.45	84.4	0	0	--	--	--	--
GMSG-215	06/28/00	4:40 PM	28.64	58	-	7	84.7	0	0	--	--	--	--
GMSG-215	07/10/00	11:10 AM	28.71	74	-	13	82.2	0	0	--	--	--	--
GMSG-215	07/23/00	9:58 AM	28.99	66	-	14	107.6	0	0	--	--	--	--
GMSG-215	08/28/00	3:36 PM	28.66	73	-	30	92.6	0	0	--	--	--	--
GMSG-215	09/11/00	10:50 AM	28.48	72	-	--	94.9	0	0	--	--	--	--
GMSG-215	09/11/00	3:00 PM	28.4	74	-	24	--	--	--	--	--	--	--
GMSG-215	10/07/00	1:16 PM	29.09	38	T	6.8	89.7	0	0	--	--	--	--
GMSG-215	10/24/00	5:00 PM	29.05	53	-	11	88.8	0	0	--	--	--	--
GMSG-215	11/22/00	10:55 AM	28.94	18	-	18	95.3	0	0	--	--	--	--
GMSG-215	12/04/00	3:47 PM	28.57	31	-	30	93.7	0	0	--	--	--	--
GMSG-215	01/10/01	10:15 AM	28.61	32	-	6.3	95.1	0	0	--	--	--	--
GMSG-215	02/21/01	11:32 AM	29.21	7	-	93	97.6	0	0	--	--	--	--
GMSG-215	03/20/01	10:50 AM	29.02	41	-	3	90.4	0	0	--	--	--	--
GMSG-215	04/19/01	9:52 AM	28.76	56	-	15	95.6	0	0	--	--	--	--
GMSG-215	04/21/01	11:21 AM	28.37	54	-	--	--	--	--	--	--	--	--
GMSG-215	05/15/01	10:05 AM	28.51	55	-	20	101.3	0	0	--	--	--	--
GMSG-215	06/13/01	4:30 PM	28.52	81	-	95	102.3	0	0	--	--	--	--
GMSG-215	07/12/01	4:52 PM	28.87	77	-	21	92.8	0	0.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-215	08/10/01	11:24 AM	28.87	68	-	50	103.2	0	0.1	--	--	--	--
GMSG-215	09/08/01	2:30 PM	28.48	75	-	7.82	90.1	0	0	--	--	--	--
GMSG-215	10/07/01	12:10 PM	29.01	51	-	30	99.3	0	0	--	--	--	--
GMSG-215	11/14/01	11:30 AM	28.79	57	-	85	99.7	0	0	--	--	--	--
GMSG-215	12/19/01	10:01 AM	28.51	28	T	97	108.7	0	0	--	--	--	--
GMSG-215	01/11/02	10:00 AM	28.65	30	-	56	114	0	0	--	--	--	--
GMSG-215	02/16/02	3:11 PM	28.61	32	-	12	113.1	0	0	--	--	--	--
GMSG-215	03/14/02	9:51 AM	28.88	27	-	89	120.3	0	0	--	--	--	--
GMSG-215	04/19/02	9:23 AM	28.83	41	-	106	114	0	0	--	--	--	--
GMSG-215	05/17/02	9:05 AM	29.02	39	-	100	115	0	0	--	--	--	--
GMSG-215	06/03/02	9:24 AM	28.81	46	-	110	100.9	0	0	--	--	--	--
GMSG-215	07/12/02	4:26 PM	28.82	83	-	25	101.7	0	0	--	--	--	--
GMSG-215	08/14/02	5:00 PM	28.56	74	-	126.5	110.4	0	0	--	--	--	--
GMSG-215	09/24/02	11:13 AM	29.07	50	-	121	95.7	0	0.7	--	--	--	--
GMSG-215	10/14/02	10:55 AM	28.91	50	-	126.5	109.4	0	0	--	--	--	--
GMSG-215	11/19/02	10:37 AM	28.55	40	-	124.9	115.4	0	0	--	--	--	--
GMSG-215	12/05/02	11:28 AM	28.83	18	-	113.1	118.2	0	0	--	--	--	--
GMSG-215	01/03/03	1:52 PM	28.76	31	-	118.8	123.1	0	0	--	--	--	--
GMSG-215	02/12/03	10:57 AM	28.68	1	-	122.5	116.6	0	0	--	--	--	--
GMSG-215	03/06/03	2:53 PM	28.71	22	-	126.2	101.6	0	0	--	--	--	--
GMSG-215	04/02/03	2:20 PM	28.83	33	-	122.2	105.3	0	0	--	--	--	--
GMSG-215	05/01/03	11:58 AM	28.68	64	-	132.8	97.5	0	0	--	--	--	--
GMSG-215	06/05/03	11:30 AM	28.71	76	-	118.9	96.2	0	0	--	--	--	--
GMSG-215	07/16/03	12:30 PM	28.84	83	-	122	91.5	0	0.3	--	--	--	--
GMSG-215	08/05/03	1:59 PM	28.7	81	-	122.8	92.8	0	0.2	--	--	--	--
GMSG-215	09/26/03	1:07 PM	28.39	54	-	120.4	95.3	0	0	--	--	--	--
GMSG-215	10/15/03	11:06 AM	28.6	49	-	115.1	97	0	0	--	--	--	--
GMSG-215	11/11/03	12:41 PM	28.48	46	-	121.1	105.1	0	0	--	--	--	--
GMSG-215	12/17/03	1:21 PM	28.54	26	-	118	107.5	0	0	--	--	--	--
GMSG-215	01/22/04	9:10 AM	28.76	-11	-	101.3	102.3	0	0	--	--	--	--
GMSG-215	02/04/04	1:50 PM	29.14	23	-	106.3	101.4	0	0	--	--	--	--
GMSG-215	03/01/04	10:35 AM	28.51	36	0.04	115.4	100.5	0	0	--	--	--	--
GMSG-215	04/04/04	10:40 AM	28.94	34	-	106.7	98.3	0	0.5	--	--	--	--
GMSG-215	04/20/04	11:54 AM	28.78	40	-	115.4	99.7	0	0	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-215	05/26/04	8:10 AM	28.57	50	-	26.6	90.5	0	0	--	--	--	--
GMSG-215	06/08/04	2:40 PM	28.68	87	-	68.3	87.9	0	0.1	--	--	--	--
GMSG-215	07/08/04	3:20 PM	28.74	65	-	122.9	99.1	0	0	--	--	--	--
GMSG-215	08/05/04	5:36 PM	28.96	69	-	120.8	95.3	0	0	--	--	--	--
GMSG-215	09/17/04	1:12 PM	28.86	65	-	121.3	92.7	0	0.4	--	--	--	--
GMSG-215	10/27/04	4:15 PM	29.11	44	-	117.4	109.9	0	0	--	--	--	--
GMSG-215	11/12/04	1:41 PM	29.23	39	-	117.6	100.9	0	0	--	--	--	--
GMSG-215	01/06/05	12:05 PM	28.61	15	T	125.8	112	0	0	--	--	--	--
GMSG-215	01/18/05	2:21 PM	28.88	9	-	27.8	88.9	0	0.1	--	--	--	--
GMSG-215	02/08/05	11:54 AM	28.99	20	-	116.7	112.5	0	0	--	--	--	--
GMSG-215	03/15/05	10:55 AM	28.91	28	-	113.6	119.2	0	0	--	--	--	--
GMSG-215	04/04/05	1:05 PM	28.76	58	-	120.4	98.5	0	0	--	--	--	--
GMSG-215	05/12/05	9:23 AM	29.29	38	-	66.4	92.4	0	0	--	--	--	--
GMSG-215	06/15/05	9:02 AM	28.51	58	-	115.6	99.5	0	0	--	--	--	--
GMSG-215	07/05/05	12:20 PM	28.88	64	-	96.4	99.8	0	0	--	--	--	--
GMSG-215	08/12/05	10:19 AM	28.61	74	-	76.4	91.4	0	0	--	--	--	--
GMSG-215	09/08/05	10:00 AM	28.98	64.94	-	110.4	98.5	0	0	--	--	--	--
GMSG-215	10/19/05	5:00 PM	28.81	49	-	>80	95	0	0.1	--	--	--	--
GMSG-215	11/03/05	3:10 PM	28.63	51	-	>80	92.6	0	0	--	--	--	--
GMSG-215	12/05/05	3:45 PM	28.72	8	-	--	96.4	0	0	--	--	--	--
GMSG-215	12/06/05	3:45 PM	28.88	12	-	60.9	--	--	--	--	--	--	--
GMSG-215	12/23/05	1:45 PM	28.36	33	T	--	--	--	--	--	--	--	--
GMSG-215	02/01/06	2:46 PM	28.29	33	-	117.8	96.9	0	0	--	--	--	--
GMSG-215	02/13/06	3:29 PM	28.39	27	-	37	100.9	0	0	--	--	--	--
GMSG-215	02/17/06	11:04 AM	29.09	11	-	30.5	--	--	--	--	--	--	--
GMSG-215	02/17/06	11:07 AM	29.09	11	-	--	--	--	--	--	--	--	--
GMSG-215	03/08/06	3:05 PM	28.42	38	-	13.8	95.9	0	0	--	--	--	--
GMSG-215	04/13/06	3:25 PM	28.71	63	-	15.7	87.4	0	0	--	--	--	--
GMSG-215	05/17/06	11:21 AM	28.39	60	T	9.8	91.4	0	0	--	--	--	--
GMSG-215	06/02/06	3:39 PM	28.81	72	-	0	48.8	0	6.9	--	--	--	--
GMSG-215	07/18/06	2:00 PM	28.91	84	-	0	10.7	0.2	15.5	--	--	--	--
GMSG-215	08/16/06	12:19 PM	28.97	80	-	0	3	0.1	17.8	--	--	--	40.88
GMSG-215	09/07/06	2:36 PM	28.68	73	0.01	0	5.4	0.8	17.8	--	--	--	--
GMSG-215	10/05/06	2:56 PM	29.13	58	-	0	43.2	0	10.6	--	--	--	41.39

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-215	11/07/06	1:21 PM	28.57	50	-	5.4	67.4	0.7	2.1	--	--	--	41.18
GMSG-215	12/18/06	2:00 PM	29.07	32	-	0	27.1	0.6	16.4	--	--	--	41.89
GMSG-215	01/18/07	2:20 PM	28.63	21	-	0	17.3	0.9	13.3	--	--	--	41.45
GMSG-215	02/07/07	10:54 AM	28.86	8	-	0	0	0	20.5	--	--	--	41.84
GMSG-215	03/09/07	11:57 AM	28.59	40	-	0	1	0.2	9.9	--	--	--	41.63
GMSG-215	04/16/07	3:45 PM	28.76	64	-	0	0	0	20.3	--	--	--	--
GMSG-215	05/25/07	2:25 PM	29	68	-	2.6	85.5	0.1	0.4	--	--	--	42.23
GMSG-215	06/15/07	11:00 AM	28.82	87	-	0.2	30.2	0.3	10.6	--	--	--	42.08
GMSG-215	07/11/07	9:54 AM	29.88	68	-	1.2	49.5	0.1	6.8	--	--	--	--
GMSG-215	08/29/07	2:50 PM	30.13	76	-	76.4	91.7	0	0	--	--	--	34
GMSG-215	09/19/07	2:05 PM	30.1	74	-	26.8	87	0	0	--	--	--	--
GMSG-215	10/16/07	3:34 PM	29.86	54	T	24.7	89.4	0.1	0	--	--	--	--
GMSG-215	11/21/07	10:33 AM	30.15	34	-	18.6	94.8	0.1	0	--	--	--	--
GMSG-215	12/27/07	2:06 PM	30	27	-	11.7	102.3	0.2	0	--	--	--	--
GMSG-216	10/08/98	1:38 PM	29.01	52	-	0	0	0.7	19.7	<2	<2	2	44.08
GMSG-216	10/10/98	5:05 PM	28.87	64.9	-	0	0	0.4	20.8	4	2	2	44.13
GMSG-216	10/22/98	3:20 PM	29.05	60.1	-	0.01	0	0.7	20.2	7	2	3.5	44.19
GMSG-216	10/24/98	10:56 AM	28.81	64.9	-	-0.02	0	0.6	20.2	3	2.5	2.5	44.23
GMSG-216	11/03/98	10:18 AM	28.96	34	-	-0.04	--	--	--	--	--	--	--
GMSG-216	11/03/98	1:57 PM	28.96	34	-	-0.11	--	--	--	--	--	--	--
GMSG-216	11/04/98	9:13 AM	28.99	30.9	-	-0.03	--	--	--	--	--	--	--
GMSG-216	11/04/98	12:09 PM	28.98	35.1	-	-0.14	--	--	--	--	--	--	--
GMSG-216	11/04/98	3:53 PM	28.95	33.1	-	-0.38	--	--	--	--	--	--	--
GMSG-216	11/05/98	9:00 AM	28.92	32	-	-0.02	--	--	--	--	--	--	--
GMSG-216	11/05/98	12:54 PM	28.89	34	-	-0.01	--	--	--	--	--	--	--
GMSG-216	11/08/98	5:03 PM	28.89	36	0.01	-0.03	0	0.9	19.3	90	55	2	44.41
GMSG-216	11/19/98	4:55 PM	28.47	30.9	T	-0.09	0	1	18.7	1.5	1.5	1.5	44.56
GMSG-216	12/02/98	4:04 PM	28.51	50	-	-0.01	0	0.9	19.4	85	70	1.5	44.5
GMSG-216	12/04/98	9:32 AM	28.77	40	-	-0.05	0	1	19.2	60	50	1.25	44.36
GMSG-216	12/09/98	3:10 PM	28.89	44	-	0	0	0.8	19.1	45	40	1	44.69
GMSG-216	12/14/98	3:22 PM	28.73	51	-	0	0	0.8	19.6	35	35	1	44.71
GMSG-216	12/16/98	10:42 AM	28.69	33	-	0.03	0	0.9	19.2	--	--	--	44.72
GMSG-216	12/29/98	3:56 PM	28.73	4	T	-0.13	0	0.8	16.4	1.5	1.5	1.5	44.92
GMSG-216	01/05/99	4:11 PM	28.64	7	-	0	0	0.7	16.4	26	22	<1	44.9

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-216	01/20/99	9:27 AM	28.61	23	-	-0.07	0	0.6	26.1	35	30	1.75	45.05
GMSG-216	01/28/99	1:10 PM	28.83	28	T	-0.09	0	0.4	18.8	<1	<1	<1	45.14
GMSG-216	02/04/99	11:48 AM	28.75	12.9	-	-0.17	0	0.7	18.6	<1	<1	1.25	45.25
GMSG-216	02/25/99	12:29 PM	28.84	28.9	-	-0.06	0	0.7	19.6	12	5	1	--
GMSG-216	03/12/99	2:39 PM	29.11	37	-	0	0	0.6	15.6	4.5	4	3	--
GMSG-216	03/24/99	11:03 AM	28.85	33.1	-	-0.06	0	0.7	18.9	1.75	1.75	1.75	--
GMSG-216	04/12/99	3:17 PM	28.91	57.9	-	0.01	0	0.2	22.3	4	4	4	45.52
GMSG-216	04/21/99	8:06 AM	28.62	42.1	0.01	-0.2	0	0.7	39.3	45	45	4	--
GMSG-216	04/30/99	3:50 PM	29.03	75	-	-0.08	0	0.2	20.1	100	40	2.5	--
GMSG-216	05/18/99	9:45 AM	28.63	53.1	-	-0.26	0	0.2	19.8	30	28	1.5	45.5
GMSG-216	06/03/99	2:44 PM	28.89	70	-	-0.05	0	0	20.7	80	45	5	45.16
GMSG-216	07/10/99	2:52 PM	28.91	73	-	-0.12	0	0	20.7	1	1	1	44.95
GMSG-216	07/18/99	4:10 PM	28.83	78.1	-	-0.01	0	0.2	20.3	--	--	--	44.8
GMSG-216	09/29/99	10:38 AM	28.88	53.1	-	-0.05	0	0.1	20.7	--	--	--	43.86
GMSG-216	06/19/00	1:52 PM	28.84	72	-	-0.08	0	0	19.8	-0.4	-0.57	-0.57	44.45
GMSG-216	07/10/00	11:21 AM	28.71	74	-	-0.19	0	0.3	19.8	--	--	--	45.48
GMSG-216	05/18/01	11:52 AM	28.74	72	-	0	0	0.3	18.7	0	0	0	--
GMSG-216	09/08/01	1:35 PM	28.47	74	-	-0.24	0	0.8	19.9	0	0	0	44.47
GMSG-216	10/14/02	2:53 PM	28.74	55	-	0.1	0.7	0.6	19.4	900	103	0.1	--
GMSG-216	04/02/03	2:36 PM	28.82	32	-	0.3	5.4	0	18.6	--	--	--	--
GMSG-216	10/15/03	11:36 AM	28.61	44	T	0	0.3	0.5	19.1	2.76	1.3	0	--
GMSG-216	04/04/04	12:35 PM	28.91	38	-	-1.6	2.6	0	19	--	--	--	--
GMSG-216	10/27/04	3:00 PM	29.11	45	-	0	0	0.4	19.3	12.68	8.16	-0.23	--
GMSG-216	04/13/05	11:45 AM	29.04	60	-	0	0	0	19.9	--	--	--	--
GMSG-216	04/15/05	2:18 PM	29.08	66	-	0	0	0	20	--	--	--	--
GMSG-216	04/15/05	3:53 PM	29.06	64	-	0	--	--	--	--	--	--	--
GMSG-216	04/15/05	4:53 PM	29.06	61	-	0	--	--	--	--	--	--	--
GMSG-216	04/15/05	5:50 PM	29.05	57	-	0	--	--	--	--	--	--	--
GMSG-216	04/15/05	6:23 PM	29.05	57	-	-0.1	0	0	20.1	--	--	--	--
GMSG-216	04/16/05	11:09 AM	29.05	60	-	0	0	0	20	--	--	--	--
GMSG-216	04/16/05	11:25 AM	29.05	60	-	0	--	--	--	--	--	--	--
GMSG-216	04/16/05	12:20 PM	29.05	62	-	0	--	--	--	--	--	--	--
GMSG-216	04/16/05	1:26 PM	29.05	62	-	0	0	0	20.1	--	--	--	--
GMSG-216	04/16/05	2:27 PM	29.05	60	T	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-216	04/16/05	3:21 PM	29.05	56	T	0	--	--	--	--	--	--	--
GMSG-216	04/16/05	4:29 PM	29.05	53	T	0	--	--	--	--	--	--	--
GMSG-216	04/16/05	5:24 PM	29.04	53	T	0	--	--	--	--	--	--	--
GMSG-216	04/16/05	6:29 PM	29.04	52	T	0	0	0	20.3	--	--	--	--
GMSG-216	04/16/05	6:43 PM	29.04	51	T	0	0	0	20.2	--	--	--	--
GMSG-216	04/17/05	10:16 AM	29.04	57	-	-0.1	0	0	20.1	--	--	--	--
GMSG-216	04/17/05	10:43 AM	29.03	60	-	0	--	--	--	--	--	--	--
GMSG-216	04/17/05	11:42 AM	29.01	64	-	0	--	--	--	--	--	--	--
GMSG-216	04/17/05	12:35 PM	29	66	-	-0.1	--	--	--	--	--	--	--
GMSG-216	04/17/05	1:38 PM	28.98	66	-	-0.1	--	--	--	--	--	--	--
GMSG-216	04/17/05	2:25 PM	28.98	66	-	0	--	--	--	--	--	--	--
GMSG-216	04/17/05	3:40 PM	28.95	67	-	0	--	--	--	--	--	--	--
GMSG-216	04/17/05	4:34 PM	28.94	67	-	0	--	--	--	--	--	--	--
GMSG-216	04/17/05	5:16 PM	28.94	67	-	-0.1	--	--	--	--	--	--	--
GMSG-216	04/17/05	5:29 PM	28.94	67	-	-0.1	0	0.1	19.9	--	--	--	--
GMSG-216	04/17/05	5:39 PM	28.93	64	-	-0.1	0	0	20.2	--	--	--	--
GMSG-216	10/20/05	3:15 PM	28.87	50	-	-0.15	0	0.1	19.9	--	--	--	--
GMSG-216	04/13/06	2:50 PM	28.71	63	-	0	0	0	19.3	--	--	--	--
GMSG-216	10/05/06	2:47 PM	29.13	58	-	0	0	1.2	19.7	--	--	--	--
GMSG-216	04/16/07	3:50 PM	28.76	64	-	0	0	0	20.4	--	--	--	--
GMSG-216	10/16/07	3:23 PM	29.86	54	T	0	0	0.7	18.7	--	--	--	--
GMSG-300	11/21/98	8:20 AM	28.85	19	-	-0.11	4	13.4	3.5	--	--	--	--
GMSG-300	12/01/98	2:31 PM	28.67	49	-	0.14	4.6	13.1	0	--	--	--	--
GMSG-300	12/04/98	1:50 PM	28.75	48	-	-0.07	4.8	13.3	0	--	--	--	--
GMSG-300	12/08/98	1:27 PM	28.72	40	-	--	2.6	10.3	3.4	--	--	--	--
GMSG-300	12/10/98	9:56 AM	29.04	29	-	-0.1	2.7	12.1	1.2	--	--	--	--
GMSG-300	12/21/98	11:51 AM	28.75	16	-	0.04	3.4	11.3	1.2	--	--	--	--
GMSG-300	12/22/98	11:06 AM	29.01	-5	-	-0.05	3.8	10.1	3.8	--	--	--	--
GMSG-300	12/28/98	12:44 PM	28.61	20	-	0.25	3.8	11.3	1.5	--	--	--	--
GMSG-300	12/30/98	8:40 AM	28.76	-9	-	0.03	4.3	11.2	1.5	--	--	--	--
GMSG-300	01/05/99	12:15 PM	28.73	6.1	-	0.16	3	11.6	15.9	--	--	--	--
GMSG-300	01/07/99	11:51 AM	28.91	0	-	0	3.3	11.2	2	--	--	--	--
GMSG-300	01/14/99	2:02 PM	28.97	6.1	-	0.13	2.2	11.5	0.7	--	--	--	--
GMSG-300	01/15/99	11:48 AM	28.56	12.9	-	0.27	4.5	11.9	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-300	01/18/99	3:56 PM	28.05	33.1	T	-0.08	5.3	11.7	0	--	--	--	--
GMSG-300	01/19/99	1:46 PM	28.61	27	-	-0.06	0	0	19.7	1000	1000	2	--
GMSG-300	01/21/99	1:16 PM	28.77	25	-	-0.05	0.4	4.3	11.8	--	--	--	--
GMSG-300	01/22/99	9:03 AM	28.69	27	-	0.18	0.3	3.5	13.4	--	--	--	--
GMSG-300	01/25/99	3:06 PM	28.94	26.1	-	-0.1	2.7	10.9	1.2	--	--	--	--
GMSG-300	01/27/99	2:01 PM	28.52	28	-	0	3.4	11.5	0.8	--	--	--	--
GMSG-300	01/29/99	11:14 AM	28.99	28	-	-0.01	2.2	10	3.1	--	--	--	--
GMSG-300	02/01/99	3:45 PM	28.65	30.9	-	0.16	2.9	11.4	0.5	--	--	--	--
GMSG-300	02/02/99	12:05 PM	28.25	33.1	T	0.1	4.9	12.1	0	--	--	--	--
GMSG-300	02/05/99	9:53 AM	28.81	19	-	0.12	2.7	11.6	0	--	--	--	--
GMSG-300	02/08/99	3:24 PM	28.34	36	-	-0.03	3.3	11.6	7.9	--	--	--	--
GMSG-300	02/09/99	1:35 PM	28.59	39	-	-0.08	0	0	19.6	--	--	--	--
GMSG-300	02/24/99	12:35 PM	28.79	24.1	0.04	0.09	2.4	12	0	--	--	--	--
GMSG-300	02/26/99	10:54 AM	28.8	27	-	0.07	2.8	12	1.3	--	--	--	--
GMSG-300	03/14/99	12:10 PM	28.89	37.9	-	0.15	1.8	11.5	0.8	--	--	--	--
GMSG-300	03/24/99	1:22 PM	28.86	36	-	-0.07	1.7	11.6	0.2	--	--	--	--
GMSG-300	04/13/99	2:35 PM	28.83	63	-	-0.11	3.1	11.8	0	--	--	--	--
GMSG-300	05/13/99	2:21 PM	28.81	62.1	-	0	5.7	11.8	0	--	--	--	--
GMSG-300	06/13/99	10:11 AM	28.84	66	-	0	2.6	12.8	0	--	--	--	--
GMSG-300	06/16/99	10:49 AM	28.96	46.9	T	0	2	12.4	0	--	--	--	--
GMSG-300	06/17/99	3:40 PM	28.96	68	-	0.04	2.8	11.5	0	--	--	--	--
GMSG-300	06/18/99	8:30 AM	29.04	69.1	-	0.08	0	0.9	18.9	425	425	2.5	--
GMSG-300	06/19/99	12:00 PM	29.01	70	-	0.04	1.4	7.2	15.3	--	--	--	--
GMSG-300	06/20/99	11:45 AM	28.99	75.9	-	0.07	2.2	10.2	1.3	--	--	--	--
GMSG-300	06/25/99	5:03 PM	28.63	88	-	--	4.1	13.3	0.8	--	--	--	--
GMSG-300	06/26/99	6:00 PM	28.54	82.9	-	--	2.9	13.1	0	--	--	--	--
GMSG-300	06/28/99	3:48 PM	28.42	61	0.21	--	0	0.1	19.3	130	50	3	--
GMSG-300	06/30/99	5:29 PM	28.55	64	-	0.03	0.4	3.1	14.9	4500	4500	1.5	--
GMSG-300	07/01/99	4:02 PM	28.41	72	-	0.02	1.7	8.4	6.6	--	--	--	--
GMSG-300	07/02/99	4:36 PM	28.62	78.1	-	-0.02	2.5	10.4	0.6	--	--	--	--
GMSG-300	07/03/99	4:21 PM	28.62	73	0.01	0	2.3	12.1	0	--	--	--	--
GMSG-300	07/04/99	3:12 PM	28.64	91	-	0.03	2.6	12.4	0	--	--	--	--
GMSG-300	07/05/99	1:56 PM	28.6	86	-	0.05	2.8	12.7	0	--	--	--	--
GMSG-300	07/06/99	5:20 PM	28.7	77	-	-0.04	3.8	12.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-300	07/07/99	3:20 PM	28.73	78.1	-	0.01	2.8	12.4	0	--	--	--	--
GMSG-300	07/10/99	6:23 PM	28.91	71.1	-	-0.12	3	15	0	--	--	--	--
GMSG-300	07/14/99	5:00 PM	28.6	80.1	-	0.02	3	14.5	0	--	--	--	--
GMSG-300	07/19/99	6:00 PM	28.85	75	-	0	2.4	14.8	0	--	--	--	--
GMSG-300	07/22/99	5:00 PM	28.74	87.1	-	0.1	3.1	13.7	0	--	--	--	--
GMSG-300	07/27/99	7:46 AM	28.79	66.9	-	-0.04	3	13.7	0	--	--	--	--
GMSG-300	08/07/99	2:10 PM	28.52	77	-	0.13	2.4	15.4	0	--	--	--	--
GMSG-300	08/25/99	10:56 AM	28.73	77	-	0	3.4	13.3	0	--	--	--	--
GMSG-300	09/30/99	4:51 PM	28.47	55	-	0	2.9	14.6	0	--	--	--	--
GMSG-300	10/11/99	10:12 AM	29.08	54	-	-0.07	2.6	11.9	1.2	--	--	--	--
GMSG-300	10/26/99	2:49 PM	28.87	39.9	-	-0.13	2.3	12.9	0	--	--	--	--
GMSG-300	11/05/99	8:22 AM	28.64	46	-	-0.08	2.4	12.4	0	--	--	--	--
GMSG-300	02/08/00	5:07 PM	28.6	30	-	0.21	4.8	12.4	0	--	--	--	--
GMSG-300	02/22/00	10:36 AM	28.65	37	-	0.05	3.9	12.5	0	--	--	--	--
GMSG-300	03/16/00	4:00 PM	28.95	27	-	0.01	2.8	11.6	1.4	--	--	--	--
GMSG-300	03/29/00	3:38 PM	28.67	39.9	-	-0.05	0.4	2.7	15.6	--	--	--	--
GMSG-300	05/01/00	11:25 AM	28.57	63	-	0	3.3	12.1	0	--	--	--	--
GMSG-300	05/17/00	12:16 PM	28.61	63	-	0.13	4.3	12.4	0	--	--	--	--
GMSG-300	05/18/00	8:57 AM	28.77	44	-	-0.19	0	0	20	--	--	--	--
GMSG-300	05/18/00	1:47 PM	28.82	49	-	0	--	--	--	--	--	--	--
GMSG-300	05/18/00	2:45 PM	28.83	50	-	-0.04	--	--	--	--	--	--	--
GMSG-300	05/18/00	4:04 PM	28.82	50	-	0	--	--	--	--	--	--	--
GMSG-300	05/18/00	5:46 PM	28.88	46	-	0.04	--	--	--	--	--	--	--
GMSG-300	05/18/00	6:47 PM	28.88	44	-	-0.2	--	--	--	--	--	--	--
GMSG-300	05/19/00	8:39 AM	28.95	48	-	-0.07	--	--	--	--	--	--	--
GMSG-300	05/19/00	11:01 AM	28.92	52	-	0.05	--	--	--	--	--	--	--
GMSG-300	05/20/00	8:23 AM	28.83	53	-	0	0.1	1.4	17.1	--	--	--	--
GMSG-300	05/20/00	11:55 AM	28.78	66	-	0.03	--	--	--	--	--	--	--
GMSG-300	05/20/00	1:00 PM	28.76	67	-	0.07	--	--	--	--	--	--	--
GMSG-300	05/20/00	1:54 PM	28.74	68	-	-0.1	--	--	--	--	--	--	--
GMSG-300	05/20/00	2:51 PM	28.73	68	-	0.1	--	--	--	--	--	--	--
GMSG-300	05/20/00	3:50 PM	28.71	69	-	0.1	--	--	--	--	--	--	--
GMSG-300	05/20/00	4:53 PM	28.71	67	-	0.01	--	--	--	--	--	--	--
GMSG-300	05/21/00	8:50 AM	28.66	60	-	0.05	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-300	05/30/00	3:41 PM	28.58	59	-	0.07	3.8	12.4	0	--	--	--	--
GMSG-300	05/31/00	10:28 AM	28.78	71	-	-0.19	--	--	--	--	--	--	--
GMSG-300	05/31/00	11:28 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-300	05/31/00	12:29 PM	28.75	72	-	-0.01	--	--	--	--	--	--	--
GMSG-300	05/31/00	1:28 PM	28.75	76	-	0.01	--	--	--	--	--	--	--
GMSG-300	05/31/00	2:29 PM	28.76	76	-	-0.07	--	--	--	--	--	--	--
GMSG-300	05/31/00	3:29 PM	28.76	77	-	-0.03	--	--	--	--	--	--	--
GMSG-300	06/01/00	8:07 AM	28.83	54	-	0	--	--	--	--	--	--	--
GMSG-300	06/01/00	9:58 AM	28.83	53	0.02	-0.08	--	--	--	--	--	--	--
GMSG-300	06/01/00	10:44 AM	28.86	52	0.04	-0.21	--	--	--	--	--	--	--
GMSG-300	06/01/00	11:15 AM	28.86	52	0.04	-0.21	--	--	--	--	--	--	--
GMSG-300	06/01/00	12:17 PM	28.74	52	0.06	-0.16	--	--	--	--	--	--	--
GMSG-300	06/01/00	1:19 PM	28.69	55	T	0.94	--	--	--	--	--	--	--
GMSG-300	06/01/00	2:14 PM	28.74	54	-	-0.16	--	--	--	--	--	--	--
GMSG-300	06/01/00	3:14 PM	28.68	54	T	0.19	--	--	--	--	--	--	--
GMSG-300	06/01/00	4:13 PM	28.66	54	-	-0.15	--	--	--	--	--	--	--
GMSG-300	06/02/00	8:26 AM	28.82	50	-	-0.32	--	--	--	--	--	--	--
GMSG-300	06/04/00	8:35 AM	28.92	59	-	-0.03	--	--	--	--	--	--	--
GMSG-300	06/19/00	9:51 AM	28.84	67	-	-0.04	2.1	13.9	0	--	--	--	--
GMSG-300	07/07/00	5:10 PM	28.91	66	-	0.01	1.1	14.6	0	--	--	--	--
GMSG-300	10/08/00	11:04 AM	29.2	39	-	-0.05	0.5	15	0	--	--	--	--
GMSG-300	10/13/00	11:16 AM	28.66	65	-	0.13	--	--	--	--	--	--	--
GMSG-300	10/16/00	2:29 PM	28.89	52	-	0	--	--	--	--	--	--	--
GMSG-300	10/18/00	4:38 PM	28.85	56	-	-0.3	0.7	14.6	0.1	--	--	--	--
GMSG-300	10/23/00	10:12 AM	29.07	52	-	0	--	--	--	--	--	--	--
GMSG-300	10/31/00	8:15 AM	28.92	48	-	-0.01	--	--	--	--	--	--	--
GMSG-300	11/14/00	8:14 AM	28.42	30	0.01	0.01	--	--	--	--	--	--	--
GMSG-300	12/05/00	9:33 AM	28.89	8	-	-0.17	--	--	--	--	--	--	--
GMSG-300	12/07/00	12:05 PM	28.49	11	T	0.09	39.6	6.9	5.3	--	--	--	--
GMSG-300	01/11/01	1:10 PM	28.8	30	-	-0.02	0.5	12.9	1.3	6000	--	1	--
GMSG-300	01/12/01	10:20 AM	28.91	32	-	-0.06	0	0	20.1	2700	2590	0.4	--
GMSG-300	01/14/01	8:05 AM	28.79	32	-	0	2.1	6.8	7	--	--	--	--
GMSG-300	01/23/01	11:30 AM	28.76	32	-	0.01	1.1	8.7	5.7	4300	--	-0.28	--
GMSG-300	01/23/01	11:30 AM	28.76	32	-	0.01	1.1	8.7	5.7	4300	--	-0.28	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-300	01/24/01	8:15 AM	28.84	20	-	-1.23	0	0	20.3	1420	750	-0.15	--
GMSG-300	01/24/01	8:15 AM	28.84	20	-	-1.23	0	0	20.3	1420	750	-0.15	--
GMSG-300	01/25/01	8:45 AM	29	7	-	-10.87	0	0	20.3	0.32	0.28	0.22	--
GMSG-300	01/25/01	8:45 AM	29	7	-	-0.87	0	0	20.3	0.32	0.28	0.22	--
GMSG-300	01/26/01	8:30 AM	28.57	14	-	-0.24	0	0	20.4	0.33	0.31	0.26	--
GMSG-300	01/26/01	8:30 AM	28.57	14	-	-0.24	0	0	20.4	0.33	0.31	0.26	--
GMSG-300	01/30/01	9:35 AM	28.15	34	-	-0.58	0	0	20.4	4.1	1.42	-0.65	--
GMSG-300	01/30/01	9:35 AM	28.15	34	-	-0.88	0	0	20.4	4.1	1.42	-0.65	--
GMSG-300	02/06/01	11:18 AM	28.71	27	T	-0.3	0	0	19.9	7.7	-0.17	0.2	--
GMSG-300	02/13/01	10:11 AM	28.98	23	-	-0.15	0	0	19.5	88	60	1	--
GMSG-300	02/22/01	10:04 AM	28.69	7	T	0	0	0	19.7	9.3	6.2	3.1	--
GMSG-300	03/21/01	10:20 AM	28.95	39	-	-0.22	0	0	20.5	0.35	0.3	-0.3	--
GMSG-300	04/06/01	2:36 PM	28.73	47	-	-0.18	0	0	21.1	4.56	1.75	-0.33	--
GMSG-300	05/15/01	1:37 PM	28.46	56	-	0	0	1.8	15.3	4340	2260	0	--
GMSG-300	05/23/01	10:31 AM	28.44	46	T	-0.1	0	0	18.8	5.7	2.3	0	--
GMSG-300	06/13/01	11:27 AM	28.6	73	-	-0.17	0	0	20.3	478	350	-1.88	--
GMSG-300	09/10/01	8:53 AM	28.73	59	-	-76	0	0	20	0	0	0.5	23.44
GMSG-300	10/03/01	9:35 AM	28.47	56	-	-77	0	0	20.3	4.27	4.21	5	23.62
GMSG-300	11/12/01	10:55 AM	29.11	46	-	-68	0	0	20.8	-2.69	-2.4	-0.42	24.28
GMSG-300	12/12/01	11:07 AM	28.76	37	-	-0.15	0	0.5	18.5	1.45	1.28	0.21	24.58
GMSG-300	01/08/02	9:50 AM	28.33	29	-	0.13	0	0.6	16.6	-4.65	-3.32	0.7	24.57
GMSG-300	02/15/02	9:40 AM	28.52	34	T	-0.07	0	0	20.9	-0.52	-0.65	-0.83	--
GMSG-300	03/13/02	10:39 AM	28.46	41	-	--	--	--	--	--	--	--	--
GMSG-300	04/15/02	12:06 PM	28.46	78	-	0.09	0	1.7	16.9	0	0	0	24.58
GMSG-300	05/21/02	10:21 AM	29.1	53	-	0.04	0	0.2	20	0.57	0	0	24.59
GMSG-300	06/04/02	1:47 PM	28.65	52	-	0	0	2.1	15.5	0.37	0	0	24.61
GMSG-300	07/11/02	8:33 AM	29.13	72	-	0	0	0	20.9	-0.4	-0.08	-0.82	24.56
GMSG-300	10/08/02	11:54 AM	28.74	49	-	0	0	0	20.8	2.6	2.55	0	24.6
GMSG-300	10/28/02	1:42 PM	28.96	43	-	0	0	2.9	11.9	0	0	0	24.61
GMSG-300	11/20/02	10:26 AM	28.72	32	-	0	0	0.2	19.6	0.06	0	0	--
GMSG-300	12/02/02	1:14 PM	28.88	17	T	-0.1	0	0	19.1	0.7	0.27	0.1	--
GMSG-300	01/06/03	1:08 PM	29.05	27	-	0	0	6.3	11.9	0	0	0	--
GMSG-300	04/01/03	12:44 PM	28.5	45	-	0	0	0.4	19.3	0.57	0.5	0.44	--
GMSG-300	07/18/03	2:05 PM	28.92	79	-	0	0	5.1	11.9	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-300	10/10/03	11:08 AM	28.85	71	-	0	0	0	19.7	0.14	0.08	0	--
GMSG-300	01/27/04	1:55 PM	28.5	20	T	0	0	7.2	11.6	1	-2.3	-0.03	--
GMSG-300	04/02/04	10:55 AM	28.93	49	-	0	0	0.4	14.5	9.75	0.5	-0.4	--
GMSG-300	04/22/04	8:14 AM	28.98	36	-	0	0	0	21.2	--	--	--	--
GMSG-300	05/04/04	8:45 AM	28.49	49	-	0	0	6.1	14.4	--	--	--	--
GMSG-300	05/04/04	12:14 PM	28.46	61	-	0.1	0	0	20.6	--	--	--	--
GMSG-300	05/04/04	4:48 PM	28.57	51	-	--	0	0	21.4	--	--	--	--
GMSG-300	05/05/04	8:25 AM	28.78	40	-	0	0	0	21.2	--	--	--	--
GMSG-300	10/27/04	11:11 AM	29.14	42	-	0	0	0	20.2	-0.16	-0.29	-0.6	--
GMSG-301	12/21/98	11:54 AM	28.75	16	-	1.01	24.1	0.4	6.2	--	--	--	--
GMSG-301	12/22/98	11:15 AM	29.01	-5	-	-1.89	0	0	16.4	--	--	--	--
GMSG-301	12/28/98	12:29 PM	28.67	18	-	0.46	6	0.4	13.5	--	--	--	--
GMSG-301	12/30/98	8:23 AM	28.76	-10	-	-0.59	10.1	0.3	14.6	--	--	--	--
GMSG-301	01/05/99	12:20 PM	28.73	6.1	-	0.66	0.6	0.9	29.1	--	--	--	--
GMSG-301	01/07/99	11:58 AM	28.91	0	-	-1.56	0.1	0	16.1	1100	1100	2	--
GMSG-301	01/14/99	2:05 PM	28.97	6.1	-	1.32	4.6	0.4	16.4	--	--	--	--
GMSG-301	01/15/99	11:52 AM	28.56	12.9	-	3.05	28.7	0.9	8.6	--	--	--	--
GMSG-301	01/18/99	4:03 PM	28.05	33.1	T	0.9	44.3	1.8	2.2	--	--	--	--
GMSG-301	01/19/99	1:53 PM	28.61	27	-	-2.21	1.2	0.2	18.9	--	--	--	--
GMSG-301	01/21/99	1:22 PM	28.77	25	-	-0.87	0.4	0.9	17.9	--	--	--	--
GMSG-301	01/22/99	9:07 AM	28.69	27	-	0.7	0.5	0.7	18.4	--	--	--	--
GMSG-301	01/25/99	3:13 PM	28.94	26.1	-	-1.62	0.6	3.3	13.6	--	--	--	--
GMSG-301	01/27/99	2:07 PM	28.52	28	-	1.67	34.9	2.2	4.3	--	--	--	--
GMSG-301	01/29/99	11:20 AM	28.99	28	-	-0.78	0.2	0.3	18	--	--	--	--
GMSG-301	02/01/99	3:52 PM	28.65	30.9	-	3.06	34.2	2.5	3.5	--	--	--	--
GMSG-301	02/02/99	12:11 PM	28.25	33.1	T	3.15	44.6	2.8	1.3	--	--	--	--
GMSG-301	02/05/99	10:06 AM	28.81	19	-	0.05	0.1	1.1	15.2	--	--	--	--
GMSG-301	02/08/99	3:30 PM	28.35	36	-	1.74	48	3.3	6.6	--	--	--	--
GMSG-301	02/09/99	1:40 PM	28.59	39	-	-1.11	16.4	1.2	13	--	--	--	--
GMSG-301	02/24/99	12:40 PM	28.79	24.1	0.04	1.67	35.7	6	0	--	--	--	--
GMSG-301	02/26/99	11:00 AM	28.8	27	-	0.53	32.6	5.2	1.8	--	--	--	--
GMSG-301	03/14/99	12:15 PM	28.89	37.9	-	1.35	29.6	2.3	4.7	--	--	--	--
GMSG-301	03/24/99	1:32 PM	28.86	37	-	-1.19	0	0.1	19.8	300	200	2	--
GMSG-301	04/13/99	2:42 PM	28.83	63	-	-0.43	5.5	3.7	8.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-301	05/13/99	2:27 PM	28.81	62.1	-	0.21	9.4	3.9	5.7	--	--	--	--
GMSG-301	06/13/99	10:04 AM	28.84	66	-	-0.14	0	2.5	15.4	125	125	2	--
GMSG-301	06/16/99	10:29 AM	28.96	46.9	T	-0.8	0	0	19.7	1.3	1.3	1.3	--
GMSG-301	06/17/99	4:00 PM	28.96	68	-	-0.11	0	2.5	15.6	3.25	3.25	1.5	--
GMSG-301	06/18/99	8:45 AM	29.04	69.1	-	-0.06	0	2.3	15.5	9	7.5	2.5	--
GMSG-301	06/19/99	12:15 PM	29.01	70	-	-0.07	0	0.7	18.8	3.5	2.5	<1	--
GMSG-301	06/20/99	12:00 PM	28.99	75.9	-	0.16	0	2.1	15.7	14	14	1	--
GMSG-301	06/25/99	5:08 PM	28.63	88	-	--	1.5	3	13	--	--	--	--
GMSG-301	06/26/99	6:04 PM	28.54	82.9	-	--	38.5	5.7	0	--	--	--	--
GMSG-301	06/28/99	4:00 PM	28.42	61	0.21	0.9	42.4	5.2	0	--	--	--	--
GMSG-301	06/30/99	5:19 PM	28.55	64	-	0.36	40.1	5.4	0	--	--	--	--
GMSG-301	07/01/99	3:45 PM	28.41	72	-	0.79	37.9	5.6	0	--	--	--	--
GMSG-301	07/02/99	4:21 PM	28.62	79	-	-0.64	0.3	0.8	18.5	4500	4500	1.5	--
GMSG-301	07/03/99	4:00 PM	28.62	73	0.01	-0.13	2.4	10.8	0.6	--	--	--	--
GMSG-301	07/04/99	2:54 PM	28.64	91	-	0.06	0.2	4.2	12.8	5000	5000	2	--
GMSG-301	07/05/99	1:41 PM	28.6	86	-	0.41	16.6	3.4	5.5	--	--	--	--
GMSG-301	07/06/99	5:03 PM	28.7	77	-	-0.61	0	0	20.4	8.5	8.5	4	--
GMSG-301	07/07/99	3:08 PM	28.73	78.1	-	-0.2	0	0.1	20	90	50	1.75	--
GMSG-301	07/10/99	6:08 PM	28.91	71.1	-	-1.11	2.4	0.7	18.4	--	--	--	--
GMSG-301	07/14/99	4:40 PM	28.6	80.1	-	0.9	32.4	5.7	1.5	--	--	--	--
GMSG-301	07/19/99	6:20 PM	28.85	75	-	-0.01	8.7	10.2	2.5	--	--	--	--
GMSG-301	07/22/99	5:08 PM	28.74	87.1	-	0.56	35	6.8	0	--	--	--	--
GMSG-301	07/27/99	8:01 AM	28.79	66.9	-	-0.87	0	0	21.5	24	15	3.5	--
GMSG-301	08/07/99	2:04 PM	28.52	77	-	1.66	21	2.9	10.3	--	--	--	--
GMSG-301	08/25/99	10:49 AM	28.73	77	-	-0.17	21.9	3	9	--	--	--	--
GMSG-301	09/30/99	5:03 PM	28.47	55	-	1.67	30.8	6.7	0	--	--	--	--
GMSG-301	10/11/99	9:49 AM	29.08	54	-	-1.95	0	0	21	2000	2000	1.5	--
GMSG-301	10/26/99	3:00 PM	28.87	39.9	-	-1.96	19.4	2.8	10.2	--	--	--	--
GMSG-301	11/05/99	8:57 AM	28.67	50	-	-0.73	0	0	20.8	18	18	1.25	--
GMSG-301	11/09/99	8:23 AM	28.44	60.1	-	1.3	35.8	4.9	0	--	--	--	--
GMSG-301	02/08/00	4:51 PM	28.6	30	-	0.71	10.9	2.5	10.9	--	--	--	--
GMSG-301	02/22/00	11:00 AM	28.65	37	-	0.94	30.2	5.6	0	--	--	--	--
GMSG-301	03/16/00	3:10 PM	28.95	27	-	-0.13	21.3	4.9	5	--	--	--	--
GMSG-301	03/29/00	3:07 PM	28.66	39.9	-	-1.22	0	0	20.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-301	05/01/00	11:10 AM	28.57	63	-	0.56	39.9	5.1	0	--	--	--	--
GMSG-301	05/17/00	12:14 PM	28.61	63	-	0.26	20.8	5.2	0.8	--	--	--	--
GMSG-301	05/18/00	8:55 AM	28.77	44	-	-0.8	0.4	0.3	19.1	--	--	--	--
GMSG-301	05/18/00	1:45 PM	28.82	49	-	-0.75	--	--	--	--	--	--	--
GMSG-301	05/18/00	2:44 PM	28.83	50	-	-0.68	--	--	--	--	--	--	--
GMSG-301	05/18/00	4:03 PM	28.82	50	-	-0.69	--	--	--	--	--	--	--
GMSG-301	05/18/00	5:45 PM	28.88	46	-	-0.47	--	--	--	--	--	--	--
GMSG-301	05/18/00	6:46 PM	28.88	44	-	-0.47	--	--	--	--	--	--	--
GMSG-301	05/19/00	8:38 AM	28.95	48	-	-0.81	--	--	--	--	--	--	--
GMSG-301	05/19/00	10:59 AM	28.92	52	-	-0.45	--	--	--	--	--	--	--
GMSG-301	05/20/00	8:20 AM	28.83	53	-	0.01	7.3	1.1	12.7	--	--	--	--
GMSG-301	05/20/00	11:54 AM	28.78	66	-	0.1	--	--	--	--	--	--	--
GMSG-301	05/20/00	12:59 PM	28.76	67	-	0.3	--	--	--	--	--	--	--
GMSG-301	05/20/00	1:53 PM	28.74	68	-	0.37	--	--	--	--	--	--	--
GMSG-301	05/20/00	2:50 PM	28.73	68	-	0.45	--	--	--	--	--	--	--
GMSG-301	05/20/00	3:49 PM	28.71	69	-	0.29	--	--	--	--	--	--	--
GMSG-301	05/20/00	4:52 PM	28.71	67	-	0.1	--	--	--	--	--	--	--
GMSG-301	05/21/00	8:49 AM	28.66	60	-	0.04	--	--	--	--	--	--	--
GMSG-301	05/30/00	3:39 PM	28.58	59	-	0.15	15.5	2.5	5.1	--	--	--	--
GMSG-301	05/31/00	10:27 AM	28.78	71	-	-0.48	--	--	--	--	--	--	--
GMSG-301	05/31/00	11:27 AM	28.76	73	-	-0.34	--	--	--	--	--	--	--
GMSG-301	05/31/00	12:28 PM	28.75	72	-	-0.16	--	--	--	--	--	--	--
GMSG-301	05/31/00	1:27 PM	28.75	76	-	-0.17	--	--	--	--	--	--	--
GMSG-301	05/31/00	2:28 PM	28.76	76	-	-0.25	--	--	--	--	--	--	--
GMSG-301	05/31/00	3:28 PM	28.76	77	-	-0.24	--	--	--	--	--	--	--
GMSG-301	06/01/00	8:06 AM	28.83	54	-	-0.14	--	--	--	--	--	--	--
GMSG-301	06/04/00	8:33 AM	28.92	59	-	-0.42	--	--	--	--	--	--	--
GMSG-301	06/19/00	9:27 AM	28.82	67	-	2.7	--	0	19.3	191	190	-0.13	--
GMSG-301	07/07/00	5:00 PM	28.91	66	-	0.01	16.9	2.5	8.8	--	--	--	--
GMSG-301	10/08/00	9:58 AM	29.21	38	-	-1.54	0	0	20.6	74.8	68.5	-0.26	--
GMSG-301	10/13/00	11:12 AM	28.66	65	-	0.95	--	--	--	--	--	--	--
GMSG-301	10/16/00	2:30 PM	28.89	51	-	-0.51	--	--	--	--	--	--	--
GMSG-301	10/18/00	4:11 PM	28.84	61	-	-0.18	21.3	3.5	8.2	2322	--	-0.5	--
GMSG-301	10/23/00	10:13 AM	29.07	52	-	-0.54	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-301	10/31/00	8:16 AM	28.92	48	-	0.11	--	--	--	--	--	--	--
GMSG-301	11/14/00	8:17 AM	28.42	30	0.01	0.09	--	--	--	--	--	--	--
GMSG-301	12/05/00	9:37 AM	28.89	8	-	-1.3	--	--	--	--	--	--	--
GMSG-301	12/07/00	11:40 AM	28.49	11	T	0.93	22.8	8.4	1	--	--	--	--
GMSG-301	01/11/01	1:45 PM	28.8	32	-	-0.94	0	0	19.7	1596	1588	0.1	--
GMSG-301	01/12/01	10:50 AM	28.9	32	-	-1.11	0.4	0	20.1	13.5	12.8	0.1	--
GMSG-301	01/14/01	8:30 AM	28.78	32	T	0.4	5.3	7.1	4.3	--	--	--	--
GMSG-301	01/23/01	11:40 AM	28.76	32	-	-0.02	5.7	3.7	7.3	--	--	--	--
GMSG-301	01/23/01	11:40 AM	28.76	32	-	-0.02	5.7	3.7	7.3	--	--	--	--
GMSG-301	01/24/01	8:40 AM	28.87	21	0.01	--	--	--	--	--	--	--	--
GMSG-301	01/30/01	9:25 AM	28.14	33	-	--	--	--	--	--	--	--	--
GMSG-301	02/06/01	9:41 AM	28.68	26	-	-70	--	--	--	--	--	--	--
GMSG-301	02/13/01	9:58 AM	28.98	23	-	-85	--	--	--	--	--	--	--
GMSG-301	03/21/01	10:05 AM	28.95	39	-	-64	--	--	--	--	--	--	--
GMSG-301	05/15/01	1:49 PM	28.46	56	-	0	0.1	1.8	14.4	32900	32900	0	--
GMSG-301	06/13/01	11:16 AM	28.6	73	-	-50	--	--	--	--	--	--	--
GMSG-301	09/10/01	8:33 AM	28.73	59	-	-76	0	0	20.1	0	0	0	--
GMSG-301	10/03/01	8:30 AM	28.46	56	-	-76	0	0	20.6	5.69	5.51	5.5	--
GMSG-301	11/12/01	10:35 AM	29.11	46	-	-60	0	0	20.9	-2.65	-2.3	-0.67	--
GMSG-301	12/12/01	10:55 AM	28.76	37	-	0.36	0	0	20.1	26.47	26.47	-0.15	82.85
GMSG-301	01/08/02	10:30 AM	28.31	33	-	1.54	0	3.9	11.1	18.11	17.71	-0.5	82.87
GMSG-301	02/15/02	9:52 AM	28.52	34	T	-0.36	0	0	21	-0.66	-0.7	-0.85	--
GMSG-301	03/13/02	11:02 AM	28.46	41	-	0.31	0	3.9	11.3	0	0	0	--
GMSG-301	04/15/02	11:08 AM	28.48	77	-	-0.1	0	2.2	12.5	33.6	32.1	0	--
GMSG-301	05/21/02	10:27 AM	29.1	53	-	-0.02	0	1.4	18.2	0	0	0	--
GMSG-301	06/04/02	1:36 PM	28.65	52	-	0.62	0	4.7	9.2	2.81	--	0	--
GMSG-301	07/11/02	8:52 AM	29.13	72	-	0.8	0	0	21.2	0.1	-0.51	-0.11	--
GMSG-301	10/08/02	12:01 PM	28.74	49	-	0.1	0	3.7	15.8	0.6	0	0	--
GMSG-301	10/28/02	1:48 PM	28.96	43	-	0	0	4.2	14.1	0	0	0.1	--
GMSG-301	11/20/02	10:32 AM	28.71	35	-	-0.1	0	4	15	0	0	0	--
GMSG-301	12/02/02	1:18 PM	28.88	17	T	-2.3	0	0	19.2	0.16	0.08	0.1	--
GMSG-301	01/06/03	1:27 PM	29.05	27	-	-0.8	0	0	20.7	0.54	0.54	0	--
GMSG-301	04/01/03	12:38 PM	28.5	45	-	0.1	0	2.2	12.7	0.7	0.4	0.55	--
GMSG-301	07/18/03	2:13 PM	28.92	79	-	0	0	1.1	18.2	0.18	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-301	10/10/03	11:18 AM	28.85	71	-	-0.5	0	7.2	11.5	0	0	0	--
GMSG-301	01/27/04	2:20 PM	28.5	20	T	-1.5	0	3.6	9.9	-7	-3.4	-0.06	--
GMSG-301	04/02/04	11:05 AM	28.93	49	-	0	0	0	19.5	12.48	0.42	-0.1	--
GMSG-301	04/22/04	8:04 AM	28.98	36	-	-2.9	0	0	21.1	--	--	--	--
GMSG-301	05/04/04	8:35 AM	28.49	49	-	1.9	0	2.6	13.5	--	--	--	--
GMSG-301	05/04/04	12:29 PM	28.46	61	-	1.8	0	3	12.3	--	--	--	--
GMSG-301	05/04/04	5:02 PM	28.57	51	-	0.5	0	3.2	11.9	--	--	--	--
GMSG-301	05/05/04	8:38 AM	28.78	43	-	-0.5	0	0	21	--	--	--	--
GMSG-301	10/27/04	11:15 AM	29.14	42	-	-1	0	0	20.3	-0.16	-0.21	-0.32	--
GMSG-302	06/13/99	9:54 AM	28.84	66	-	0	2.7	14.1	0	--	--	--	--
GMSG-302	06/16/99	10:20 AM	28.96	46.9	T	0	1.1	14.5	0	--	--	--	--
GMSG-302	06/17/99	4:15 PM	28.96	68	-	0.01	1	14.7	0	--	--	--	--
GMSG-302	06/18/99	9:00 AM	29.04	69.1	-	0.03	0.7	14.7	0	2500	--	2.5	--
GMSG-302	06/19/99	12:30 PM	29	71.1	-	0.01	0.4	14.4	0	--	--	--	--
GMSG-302	06/20/99	12:15 PM	28.99	75.9	-	0.03	0.5	14.6	0	--	--	--	--
GMSG-302	06/25/99	5:13 PM	28.63	88	-	--	5.2	16.5	0	--	--	--	--
GMSG-302	06/26/99	6:22 PM	28.54	82.9	-	--	3.4	15	0	--	--	--	--
GMSG-302	06/28/99	4:25 PM	28.42	61	0.21	--	2.5	15	0	--	--	--	--
GMSG-302	06/30/99	5:13 PM	28.55	64	-	-0.12	2.2	15.5	0	--	--	--	--
GMSG-302	07/01/99	3:51 PM	28.41	72	-	0.1	1.8	16.4	0	--	--	--	--
GMSG-302	07/02/99	4:26 PM	28.62	79	-	-0.02	3.2	14.9	0	--	--	--	--
GMSG-302	07/03/99	4:05 PM	28.62	73	0.01	0.02	0.5	13.8	0	5000	--	1.5	--
GMSG-302	07/04/99	2:59 PM	28.64	91	-	0.03	1.5	14.4	0	--	--	--	--
GMSG-302	07/05/99	1:46 PM	28.6	86	-	0.01	1.7	14.7	0	--	--	--	--
GMSG-302	07/06/99	5:09 PM	28.7	77	-	-0.09	0	21	16.7	275	275	3	--
GMSG-302	07/07/99	3:10 PM	28.73	78.1	-	0	0.5	14.6	0	3000	--	2	--
GMSG-302	07/10/99	6:13 PM	28.91	71.1	-	0	0.6	17.4	0.8	5000	--	1	--
GMSG-302	07/14/99	4:35 PM	28.6	80.1	-	0.02	1	16.9	0	--	--	--	--
GMSG-302	07/19/99	6:30 PM	28.85	72	-	-0.01	2.6	19.3	0	--	--	--	--
GMSG-302	07/22/99	5:14 PM	28.74	87.1	-	0.04	4.6	16.1	0	--	--	--	--
GMSG-302	07/27/99	8:12 AM	28.79	66.9	-	-0.02	4.2	15.9	0	--	--	--	--
GMSG-302	08/07/99	2:00 PM	28.52	77	-	0.06	1.3	16.9	0	--	--	--	--
GMSG-302	08/25/99	10:45 AM	28.73	77	-	0	0.5	16.4	0	--	--	--	--
GMSG-302	09/30/99	5:09 PM	28.47	55	-	0	14.3	11.9	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-302	10/11/99	8:10 AM	29.06	44.1	-	-0.08	7.5	12.5	0	--	--	--	--
GMSG-302	10/26/99	3:10 PM	28.87	39.9	-	-0.08	0.2	12.8	0	3500	3500	2	--
GMSG-302	11/05/99	9:08 AM	28.67	50	-	-0.07	1.8	11.7	0	--	--	--	--
GMSG-302	11/09/99	8:17 AM	28.44	60.1	-	0	1.6	12.7	0	--	--	--	--
GMSG-302	02/08/00	4:45 PM	28.6	30	-	0.01	0.7	12.6	0	1000	--	3.5	--
GMSG-302	02/22/00	11:08 AM	28.65	37	-	0	0	11.9	0.3	1750	--	1	--
GMSG-302	03/16/00	2:56 PM	28.95	27	-	1.63	0	0.1	18.1	12.1	12.1	-0.15	--
GMSG-302	03/29/00	3:00 PM	28.66	39.9	-	-0.15	0	0	20.8	800	--	1.25	--
GMSG-302	05/01/00	11:04 AM	28.57	63	-	0.03	1.3	12.8	0	--	--	--	--
GMSG-302	05/17/00	12:12 PM	28.61	63	-	0.06	3.7	12.4	0	--	--	--	--
GMSG-302	05/18/00	8:53 AM	28.77	44	-	-0.08	2.9	2	15.5	--	--	--	--
GMSG-302	05/18/00	1:43 PM	28.82	49	-	0.01	--	--	--	--	--	--	--
GMSG-302	05/18/00	2:42 PM	28.83	50	-	0	--	--	--	--	--	--	--
GMSG-302	05/18/00	4:02 PM	28.82	50	-	0	--	--	--	--	--	--	--
GMSG-302	05/18/00	5:43 PM	28.88	46	-	-0.03	--	--	--	--	--	--	--
GMSG-302	05/18/00	6:44 PM	28.88	44	-	-0.11	--	--	--	--	--	--	--
GMSG-302	05/19/00	8:36 AM	28.95	48	-	-0.03	--	--	--	--	--	--	--
GMSG-302	05/19/00	10:57 AM	28.92	52	-	0.02	--	--	--	--	--	--	--
GMSG-302	05/20/00	8:18 AM	28.83	53	-	0	2.1	11.3	1.6	--	--	--	--
GMSG-302	05/20/00	11:52 AM	28.78	66	-	0.01	--	--	--	--	--	--	--
GMSG-302	05/20/00	12:57 PM	28.76	67	-	0.05	--	--	--	--	--	--	--
GMSG-302	05/20/00	1:51 PM	28.74	68	-	0.03	--	--	--	--	--	--	--
GMSG-302	05/20/00	2:49 PM	28.73	68	-	0.05	--	--	--	--	--	--	--
GMSG-302	05/20/00	3:48 PM	28.71	69	-	0.05	--	--	--	--	--	--	--
GMSG-302	05/20/00	4:50 PM	28.71	67	-	0.04	--	--	--	--	--	--	--
GMSG-302	05/21/00	8:47 AM	28.66	60	-	0.03	--	--	--	--	--	--	--
GMSG-302	05/30/00	3:36 PM	28.58	59	-	0.08	1	14	0	--	--	--	--
GMSG-302	05/31/00	10:26 AM	28.78	71	-	-0.1	--	--	--	--	--	--	--
GMSG-302	05/31/00	11:26 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-302	05/31/00	12:27 PM	28.75	72	-	0	--	--	--	--	--	--	--
GMSG-302	05/31/00	1:26 PM	28.75	76	-	0	--	--	--	--	--	--	--
GMSG-302	05/31/00	2:27 PM	28.76	76	-	-0.03	--	--	--	--	--	--	--
GMSG-302	05/31/00	3:27 PM	28.76	77	-	-0.02	--	--	--	--	--	--	--
GMSG-302	06/01/00	8:05 AM	28.83	54	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-302	06/01/00	9:57 AM	28.83	53	0.02	-0.02	--	--	--	--	--	--	--
GMSG-302	06/01/00	10:42 AM	28.86	52	0.04	-0.09	--	--	--	--	--	--	--
GMSG-302	06/01/00	11:13 AM	28.86	52	0.04	-0.08	--	--	--	--	--	--	--
GMSG-302	06/01/00	12:13 PM	28.74	52	0.06	-0.08	--	--	--	--	--	--	--
GMSG-302	06/01/00	1:17 PM	28.69	55	T	0.59	--	--	--	--	--	--	--
GMSG-302	06/01/00	2:12 PM	28.74	54	-	-0.01	--	--	--	--	--	--	--
GMSG-302	06/01/00	3:12 PM	28.68	54	T	0.11	--	--	--	--	--	--	--
GMSG-302	06/01/00	4:11 PM	28.66	54	-	-0.08	--	--	--	--	--	--	--
GMSG-302	06/02/00	8:23 AM	28.82	50	-	-0.22	--	--	--	--	--	--	--
GMSG-302	06/04/00	8:32 AM	28.92	59	-	-0.01	--	--	--	--	--	--	--
GMSG-302	06/19/00	9:20 AM	28.82	67	-	-0.01	5.6	15	0	--	--	--	9.11
GMSG-302	07/07/00	4:55 PM	28.91	66	-	0.03	0	16.2	0	--	--	-0.45	--
GMSG-302	10/08/00	9:40 AM	29.21	38	-	-0.04	0	14.9	0	18.6	--	-0.68	--
GMSG-302	10/13/00	11:10 AM	28.66	65	-	0.06	--	--	--	--	--	--	--
GMSG-302	10/16/00	2:32 PM	28.89	51	-	0	--	--	--	--	--	--	--
GMSG-302	10/18/00	4:23 PM	28.84	61	-	-0.01	0	14.7	0	180	--	-0.5	--
GMSG-302	10/23/00	10:15 AM	29.07	52	-	0	--	--	--	--	--	--	--
GMSG-302	10/31/00	8:16 AM	28.92	48	-	0	--	--	--	--	--	--	--
GMSG-302	11/14/00	8:23 AM	28.42	30	0.01	0	--	--	--	--	--	--	--
GMSG-302	12/05/00	9:48 AM	28.89	8	-	0	--	--	--	--	--	--	--
GMSG-302	12/07/00	11:25 AM	28.51	11	0.01	0.01	0	2.4	16.4	34000	--	2.64	--
GMSG-302	01/11/01	2:00 PM	28.8	32	-	0.68	0.9	1.4	17.6	--	--	--	--
GMSG-302	01/12/01	10:59 AM	28.9	32	-	0	0	1	19.1	14.65	3.7	0.4	--
GMSG-302	01/14/01	8:40 AM	28.78	32	T	0	1.2	4.7	12	17200	2100	0.7	--
GMSG-302	01/23/01	11:45 AM	28.76	32	-	-0.01	0	3.2	14.6	2098	280	0.06	--
GMSG-302	01/24/01	8:50 AM	28.87	21	0.01	-0.03	0	0	20.2	16.8	1.72	-0.25	--
GMSG-302	01/25/01	8:25 AM	29.01	3	-	-0.04	0	0	20.4	1.67	--	0.12	--
GMSG-302	01/26/01	8:20 AM	28.58	13	-	0	0	0	20.4	1.55	0.45	0.33	--
GMSG-302	01/30/01	9:15 AM	28.14	33	-	-0.09	0	0	20.4	88.2	3.65	-0.81	--
GMSG-302	02/06/01	9:35 AM	28.68	26	-	-0.02	0	0	20.3	49	--	-0.2	--
GMSG-302	02/13/01	9:55 AM	28.98	23	-	0	0	0	19.6	74	41	0.9	--
GMSG-302	02/22/01	9:42 AM	28.69	7	T	0	0	0	20.1	89	12	1.6	--
GMSG-302	03/21/01	1:20 PM	28.92	45	-	0.01	0	0	20.7	-0.4	-2	-0.4	--
GMSG-302	04/06/01	2:47 PM	28.73	47	-	-2.35	0	0	20.9	-0.09	-1.34	-0.09	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-302	05/15/01	1:54 PM	28.46	56	-	-0.18	0	1.4	15.8	25.1	25.1	0	--
GMSG-302	05/16/01	8:06 AM	28.43	62	-	-0.88	0	0	18.7	0.54	0.54	0	--
GMSG-302	05/19/01	8:37 AM	28.77	69	-	-1.4	0	0	18.8	2.5	2.4	0	--
GMSG-302	05/23/01	10:40 AM	28.44	46	T	-0.2	0	0	18.6	0.25	0	0	--
GMSG-302	06/13/01	11:11 AM	28.6	73	-	-0.36	0	1.8	17.7	155	155	-1.6	--
GMSG-302	07/13/01	12:07 PM	28.91	81	-	-0.94	0	0	20.7	6.15	6	0	--
GMSG-302	08/07/01	3:22 PM	28.84	95	-	-2.5	0	0	20	0	0	0	--
GMSG-302	09/10/01	8:40 AM	28.73	59	-	-0.8	0	1.4	18.5	7.5	2	0	--
GMSG-302	10/03/01	8:41 AM	28.46	56	-	-0.83	0	0	20.6	6.9	6.5	5.58	--
GMSG-302	11/12/01	10:30 AM	29.11	46	-	-0.89	0	0.1	20.8	-0.38	-0.8	-0.43	--
GMSG-302	12/12/01	10:50 AM	28.76	37	-	0.04	0	0.6	17.4	-0.3	-0.3	-0.2	--
GMSG-302	01/08/02	10:40 AM	28.31	33	-	0.12	0	0.9	17.1	-2.9	-2.15	-1.4	--
GMSG-302	02/15/02	9:56 AM	28.52	34	T	-0.02	0	0.6	18.3	-0.52	-0.56	-0.86	--
GMSG-302	03/13/02	10:45 AM	28.46	41	-	--	--	--	--	--	--	--	--
GMSG-302	04/15/02	11:05 AM	28.48	77	-	0.08	0	1.3	17.6	0	0	0	--
GMSG-302	05/21/02	10:37 AM	29.08	57	-	0	0	1.7	16.6	0	0	0	--
GMSG-302	06/04/02	1:30 PM	28.65	52	-	0	0	2.7	14.6	0	0	0	--
GMSG-302	07/11/02	9:01 AM	29.13	72	-	0	0	6.3	10.6	0	0	0	--
GMSG-302	10/08/02	12:04 PM	28.74	49	-	0	0	9.1	7.2	0	--	0	--
GMSG-302	10/28/02	1:36 PM	28.96	43	-	0	0	8	9.6	0	--	0	--
GMSG-302	11/20/02	10:20 AM	28.72	32	-	0	0	6.7	11.5	0	0	0	--
GMSG-302	12/02/02	1:10 PM	28.88	17	T	0	0	5.9	13.7	0.2	0	0.1	--
GMSG-302	01/06/03	1:12 PM	29.05	27	-	0	0	5.1	15.3	0	0	0	--
GMSG-302	04/01/03	12:34 PM	28.5	45	-	0	0	0	20.1	0	0	0.3	--
GMSG-302	07/18/03	2:01 PM	28.92	79	-	0	0	7.9	10.3	0	0	0	--
GMSG-302	10/10/03	11:05 AM	28.85	71	-	0	0	7.9	10.1	0	0	0	--
GMSG-302	01/27/04	2:45 PM	28.53	20	-	0	0	5.8	14.1	-2.67	-2.5	-0.5	--
GMSG-302	04/02/04	11:10 AM	28.93	49	-	0	0	4.6	14.9	0.28	-1.78	-0.2	--
GMSG-302	04/22/04	7:58 AM	28.98	36	-	0	0	2.2	18.4	--	--	--	--
GMSG-302	05/04/04	8:25 AM	28.52	44	T	0	0	5.3	15.2	--	--	--	--
GMSG-302	05/04/04	12:34 PM	28.46	63	-	0	0	4.5	14.8	--	--	--	--
GMSG-302	05/04/04	5:12 PM	28.57	51	-	0.1	0	3.1	14.1	--	--	--	--
GMSG-302	05/05/04	8:42 AM	28.78	43	-	0	0	0.1	20.6	--	--	--	--
GMSG-302	10/27/04	11:18 AM	29.14	42	-	0	0	5	14.2	-1.75	-1.8	-0.32	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-303	06/13/99	10:26 AM	28.84	66	-	0	0	1.1	18	35	7.5	2	--
GMSG-303	06/16/99	10:10 AM	28.96	46.9	T	0	0	1	18.2	1.3	--	1.3	--
GMSG-303	06/17/99	4:30 PM	28.95	70	-	0	0	1.2	18.2	<1	<1	1.5	--
GMSG-303	06/18/99	9:30 AM	29.03	72	-	0.02	0	1.2	18.2	2000	16	2	--
GMSG-303	06/19/99	12:45 PM	29	71.1	-	0	0	1.2	18.3	8	<1	<1	--
GMSG-303	06/20/99	12:45 PM	28.97	75.9	-	0.01	0	1.2	18.3	400	4	1	--
GMSG-303	06/25/99	5:21 PM	28.63	88	-	--	0.3	1.2	18	1	1	1	--
GMSG-303	06/26/99	6:27 PM	28.54	82.9	-	--	0	1.3	18.1	60	11	2	--
GMSG-303	06/28/99	4:32 PM	28.42	57.9	0.12	--	--	--	--	--	--	--	--
GMSG-303	07/01/99	3:36 PM	28.41	72	-	0	0	1.5	17.9	10	4.5	1.5	--
GMSG-303	07/02/99	4:15 PM	28.62	79	-	0	0	1.3	18.2	3	1.5	1.5	--
GMSG-303	07/03/99	3:51 PM	28.62	73	0.01	0	0	1.3	18	15	5.5	1.5	--
GMSG-303	07/04/99	2:46 PM	28.64	91	-	0.04	0	1.2	18.1	5	2	3	--
GMSG-303	07/05/99	1:32 PM	28.6	86	-	0.01	0	1.3	17.7	5	5	3	--
GMSG-303	07/06/99	4:53 PM	28.7	77	-	-0.01	0	1.4	17.7	6	6	4	--
GMSG-303	07/07/99	3:00 PM	28.73	78.1	-	0.01	0	1.4	17.7	4	--	2	--
GMSG-303	07/10/99	5:49 PM	28.91	71.1	-	0.02	0	1.6	17.8	1	--	1	--
GMSG-303	07/19/99	6:40 PM	28.85	72	-	0.01	0	1.5	18.5	150	55	4	--
GMSG-303	07/27/99	8:22 AM	28.79	66.9	-	-0.01	0	1.7	18.4	45	4	3	--
GMSG-303	08/07/99	1:55 PM	28.52	77	-	0.03	0	1.7	17.4	45	9	4	--
GMSG-303	08/25/99	11:21 AM	28.73	77	-	0	0	2	17.4	12	3.5	2	--
GMSG-303	09/30/99	4:04 PM	28.42	60.1	-	0	0	1.9	18.2	120	28	1.5	--
GMSG-303	10/11/99	8:22 AM	29.06	44.1	-	-0.04	0	1.7	18.9	17	6	1.5	--
GMSG-303	10/26/99	3:16 PM	28.87	39.9	-	-0.05	0	1.5	19.2	2	<1	2	--
GMSG-303	11/05/99	9:15 AM	28.67	50	-	-0.05	0	1.4	18.6	7	3.5	1	--
GMSG-303	11/09/99	8:53 AM	28.44	62.1	-	-0.02	0	1.7	17.9	65	2.25	1	--
GMSG-303	02/08/00	4:32 PM	28.6	30	-	0	0	1.2	18	3.5	1.75	3.25	--
GMSG-303	02/22/00	10:17 AM	28.65	30.9	-	0.02	0	1.2	18.7	1.25	--	1.25	--
GMSG-303	03/16/00	4:13 PM	28.95	27	-	0	0	0.3	19.1	13.15	4.5	-0.15	--
GMSG-303	03/29/00	2:52 PM	28.66	39.9	-	-0.02	0	0.6	19.5	1.5	--	1.5	--
GMSG-303	05/01/00	11:34 AM	28.56	61	-	0.01	0	0.7	17	24	4	-0.1	--
GMSG-303	05/17/00	12:08 PM	28.61	63	-	0.07	0	1	18.8	0	0	0	--
GMSG-303	05/18/00	8:50 AM	28.77	44	-	-0.05	0	1	18.4	--	--	--	--
GMSG-303	05/18/00	1:42 PM	28.82	49	-	0.03	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-303	05/18/00	2:41 PM	28.83	50	-	0	--	--	--	--	--	--	--
GMSG-303	05/18/00	4:00 PM	28.82	50	-	0.02	--	--	--	--	--	--	--
GMSG-303	05/18/00	5:42 PM	28.88	46	-	-0.01	--	--	--	--	--	--	--
GMSG-303	05/18/00	6:43 PM	28.88	44	-	-0.08	--	--	--	--	--	--	--
GMSG-303	05/19/00	8:34 AM	28.95	48	-	0	--	--	--	--	--	--	--
GMSG-303	05/19/00	10:55 AM	28.92	52	-	0.02	--	--	--	--	--	--	--
GMSG-303	05/20/00	8:11 AM	28.83	53	-	-0.01	0	1	18.5	1.5	<1	<1	--
GMSG-303	05/20/00	11:51 AM	28.78	66	-	0.01	--	--	--	--	--	--	--
GMSG-303	05/20/00	12:56 PM	28.76	67	-	0.04	--	--	--	--	--	--	--
GMSG-303	05/20/00	1:49 PM	28.74	68	-	0.05	--	--	--	--	--	--	--
GMSG-303	05/20/00	2:47 PM	28.73	68	-	0.05	--	--	--	--	--	--	--
GMSG-303	05/20/00	3:46 PM	28.71	69	-	0.04	--	--	--	--	--	--	--
GMSG-303	05/20/00	4:48 PM	28.71	67	-	0.03	--	--	--	--	--	--	--
GMSG-303	05/21/00	8:46 AM	28.66	60	-	0.03	--	--	--	--	--	--	--
GMSG-303	05/30/00	3:33 PM	28.58	59	-	0.05	0	1.1	18.2	0	0	0	--
GMSG-303	05/31/00	10:24 AM	28.78	71	-	-0.11	--	--	--	--	--	--	--
GMSG-303	05/31/00	11:25 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-303	05/31/00	12:25 PM	28.75	72	-	0.02	--	--	--	--	--	--	--
GMSG-303	05/31/00	1:24 PM	28.75	76	-	0.02	--	--	--	--	--	--	--
GMSG-303	05/31/00	2:25 PM	28.76	76	-	-0.02	--	--	--	--	--	--	--
GMSG-303	05/31/00	3:26 PM	28.76	77	-	-0.02	--	--	--	--	--	--	--
GMSG-303	06/01/00	8:03 AM	28.83	54	-	0.02	--	--	--	--	--	--	--
GMSG-303	06/01/00	11:11 AM	28.86	52	0.04	-0.04	--	--	--	--	--	--	--
GMSG-303	06/01/00	12:11 PM	28.74	52	0.06	-0.02	--	--	--	--	--	--	--
GMSG-303	06/01/00	1:15 PM	28.69	55	T	0.58	--	--	--	--	--	--	--
GMSG-303	06/01/00	2:10 PM	28.74	54	-	0	--	--	--	--	--	--	--
GMSG-303	06/01/00	3:10 PM	28.68	54	T	0.15	--	--	--	--	--	--	--
GMSG-303	06/01/00	4:09 PM	28.66	54	-	-0.03	--	--	--	--	--	--	--
GMSG-303	06/02/00	8:22 AM	28.82	50	-	-0.05	--	--	--	--	--	--	--
GMSG-303	06/04/00	8:31 AM	28.92	59	-	0	--	--	--	--	--	--	--
GMSG-303	06/19/00	9:52 AM	28.84	67	-	0	0	1.4	17.8	-0.99	-0.95	-0.31	--
GMSG-303	07/07/00	5:25 PM	28.91	66	-	0	0	1.2	17.8	--	--	--	--
GMSG-303	10/08/00	10:07 AM	29.21	38	-	-0.66	0	1.6	18.6	-2.6	-2.55	-0.33	--
GMSG-303	10/18/00	4:51 PM	28.85	56	-	-0.01	0	1.4	18.6	5.72	-1.89	-0.58	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-303	12/07/00	10:05 AM	28.54	9	T	0.01	0	1.2	18.7	0.84	--	0.84	--
GMSG-303	01/11/01	2:30 PM	28.79	33	-	0	0	1.2	18.4	3.3	2	0.3	--
GMSG-303	01/12/01	11:20 AM	28.9	32	-	0.02	0	1.1	18.8	4.4	2.7	0	--
GMSG-303	01/14/01	9:20 AM	28.78	32	T	0.04	0	1.2	18.5	0.9	--	0.7	--
GMSG-303	01/23/01	2:05 PM	28.73	34	-	-0.01	0	1.2	18.5	0	--	0	--
GMSG-303	01/24/01	9:00 AM	28.87	21	0.01	-0.08	0	0	19.8	0.82	--	-0.08	--
GMSG-303	01/25/01	9:20 AM	29	7	-	-0.01	0	0	19.3	0.62	0.27	0.62	--
GMSG-303	01/26/01	9:55 AM	28.57	16	-	0.01	0	1.2	18.8	0.44	--	0.44	--
GMSG-303	01/30/01	11:00 AM	28.14	34	-	0.4	0	1.2	18.5	0.22	--	0.22	--
GMSG-303	01/30/01	11:00 AM	28.14	34	-	0.4	0	1.2	18.5	0.22	--	0.22	--
GMSG-303	02/06/01	9:56 AM	28.68	26	-	-0.05	0	0	19.2	-1	-1	0	--
GMSG-303	02/13/01	10:15 AM	28.98	23	-	0	0	0.8	18.8	60	28	0.8	--
GMSG-303	02/22/01	10:12 AM	28.69	7	T	0	0	1	18.6	3.2	2.4	3.1	--
GMSG-303	03/21/01	11:00 AM	28.94	42	-	0.03	0	0.6	19.6	-0.3	-2	-0.3	--
GMSG-303	04/06/01	3:25 PM	28.73	47	-	-0.89	0	0.8	19.8	0.45	-2.79	-0.45	--
GMSG-303	05/15/01	2:00 PM	28.46	56	-	0.2	0	1	17.6	4.95	2.75	0	--
GMSG-303	05/16/01	8:10 AM	28.43	62	-	-0.02	0	1	17.7	0	0	0	--
GMSG-303	05/19/01	8:45 AM	28.77	69	-	-0.05	0	0.9	17.8	0.92	0	0	--
GMSG-303	05/23/01	10:44 AM	28.44	46	T	-0.05	0	1	17.7	0.67	0	0	--
GMSG-303	06/13/01	11:05 AM	28.6	73	-	0	0	1.2	18.8	-1.6	-3.82	-1.6	--
GMSG-303	07/13/01	12:38 PM	28.9	82	-	-0.01	0	1.6	19.2	0	0	0	--
GMSG-303	08/08/01	8:30 AM	28.76	83	-	0	0	1.6	18.5	0	0	0	--
GMSG-303	09/10/01	10:10 AM	28.74	61	T	0	0	1.5	18.8	3.25	0	0	--
GMSG-303	10/03/01	10:41 AM	28.49	56	-	-0.01	0	1.3	19	2.33	2.29	4.81	--
GMSG-303	11/12/01	10:25 AM	29.13	40	-	0	0	0.6	20.3	-2.26	-2.31	-0.51	--
GMSG-303	12/12/01	10:45 AM	28.76	37	-	0.07	0	0.9	19.8	-1.05	-1.05	-0.15	--
GMSG-303	01/08/02	11:00 AM	28.31	33	-	0.1	0	0.9	19.9	-2.61	-2.45	-1.45	--
GMSG-303	02/15/02	10:03 AM	28.52	34	T	0	0	0.6	20.2	-0.65	-0.69	-0.89	--
GMSG-303	03/13/02	1:50 PM	28.54	39	-	-0.07	0	0	20.6	0	0	0	--
GMSG-303	04/15/02	2:14 PM	28.44	81	-	0	0	0.6	20.4	0	0	0	--
GMSG-303	05/21/02	10:47 AM	29.08	57	-	0.02	0	0.5	20.2	0	0	0	--
GMSG-303	06/04/02	1:57 PM	28.65	52	-	0	0	0.6	20	0	0	0	--
GMSG-303	07/11/02	9:09 AM	29.13	72	-	0	0	1.5	19.3	0	0	0	--
GMSG-304	06/13/99	10:17 AM	28.84	66	-	0	2.5	11.9	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-304	06/16/99	10:00 AM	28.96	46.9	T	0	0	1	18.7	15	1.3	9	--
GMSG-304	06/17/99	4:50 PM	28.95	70	-	0.02	1.6	8.6	0.6	--	--	--	--
GMSG-304	06/18/99	11:45 AM	29.01	73.9	-	0.01	1.3	8	2	4250	4250	2.25	--
GMSG-304	06/19/99	1:00 PM	29	71.1	-	0.02	0.9	9.2	1.3	--	--	--	--
GMSG-304	06/20/99	1:00 PM	28.97	75.9	-	0.02	2.2	12.1	0	--	--	--	--
GMSG-304	06/25/99	5:29 PM	28.63	88	-	--	7.2	15	0	--	--	--	--
GMSG-304	06/26/99	6:33 PM	28.54	80.1	-	--	7.6	13.2	0	--	--	--	--
GMSG-304	06/30/99	5:35 PM	28.55	64	-	0.02	7.2	14	0	--	--	--	--
GMSG-304	07/01/99	4:07 PM	28.41	72	-	0.03	6.9	13.8	0	--	--	--	--
GMSG-304	07/02/99	4:41 PM	28.62	78.1	-	-0.02	3.3	14.8	0	--	--	--	--
GMSG-304	07/03/99	4:26 PM	28.62	73	0.01	0	5.2	14	0	--	--	--	--
GMSG-304	07/04/99	3:18 PM	28.64	91	-	0.03	5.8	13.4	0	--	--	--	--
GMSG-304	07/05/99	2:02 PM	28.6	86	-	0.06	6.6	13	0	--	--	--	--
GMSG-304	07/06/99	5:25 PM	28.7	77	-	-0.03	0	1	18.2	1750	1750	3.5	--
GMSG-304	07/10/99	6:30 PM	28.91	68	-	-0.03	1	18.8	0	--	--	--	--
GMSG-304	07/14/99	5:05 PM	28.6	80.1	-	0	6.7	14.7	0	--	--	--	--
GMSG-304	07/19/99	6:45 PM	28.85	72	-	0.01	5.5	16.7	0	--	--	--	--
GMSG-304	07/22/99	5:18 PM	28.74	87.1	-	0.11	7.9	14.5	0	--	--	--	--
GMSG-304	07/27/99	8:29 AM	28.79	66.9	-	-0.04	4.2	16.6	0	--	--	--	--
GMSG-304	08/07/99	1:47 PM	28.52	77	-	0.14	7.2	14.5	0	--	--	--	--
GMSG-304	08/25/99	11:24 AM	28.73	77	-	0	4.4	15.3	0	--	--	--	--
GMSG-304	09/30/99	5:17 PM	28.47	55	-	0	5.6	13.8	0	--	--	--	--
GMSG-304	10/11/99	9:40 AM	29.08	54	-	-0.25	0	13	3.8	8.5	--	1.25	--
GMSG-304	10/26/99	3:21 PM	28.87	39.9	-	-0.2	0	13	0.3	140	125	2	--
GMSG-304	11/05/99	9:21 AM	28.67	50	-	-0.09	0	0.3	20.3	7.5	2.5	1	--
GMSG-304	11/09/99	8:59 AM	28.44	62.1	-	0.16	5.4	12.7	0	--	--	--	--
GMSG-304	01/04/00	11:40 AM	28.6	19	T	--	1.5	12.6	0	--	--	--	--
GMSG-304	02/08/00	4:13 PM	28.63	30	-	0.14	3.5	11.6	0	--	--	--	--
GMSG-304	02/22/00	9:06 AM	28.66	27	-	0.1	6.3	11.5	0	--	--	--	--
GMSG-304	03/16/00	2:37 PM	28.95	27	-	0.05	0	10.6	2	540	--	-0.14	--
GMSG-304	03/28/00	9:45 AM	28.32	34	T	0.2	7.1	11.1	0	--	--	--	--
GMSG-304	03/29/00	10:00 AM	28.66	34	-	0.1	0.1	11.4	3.6	--	--	--	--
GMSG-304	03/29/00	2:38 PM	28.66	39.9	-	-0.07	0	11.4	3.5	1500	--	1.5	--
GMSG-304	05/01/00	10:56 AM	28.57	63	-	0.04	8.3	11.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-304	05/17/00	11:41 AM	28.61	63	-	0.07	5.3	13.6	0	--	--	--	--
GMSG-304	05/18/00	8:31 AM	28.77	44	-	-0.15	6.2	13.5	0	--	--	--	--
GMSG-304	05/18/00	1:26 PM	28.82	49	-	-0.1	--	--	--	--	--	--	--
GMSG-304	05/18/00	2:30 PM	28.83	50	-	-0.05	--	--	--	--	--	--	--
GMSG-304	05/18/00	3:51 PM	28.82	50	-	-0.02	--	--	--	--	--	--	--
GMSG-304	05/18/00	5:32 PM	28.88	46	-	-0.01	--	--	--	--	--	--	--
GMSG-304	05/18/00	6:34 PM	28.88	44	-	-0.21	--	--	--	--	--	--	--
GMSG-304	05/19/00	8:23 AM	28.97	45	-	-0.04	--	--	--	--	--	--	--
GMSG-304	05/19/00	10:43 AM	28.92	52	-	0.13	--	--	--	--	--	--	--
GMSG-304	05/20/00	7:41 AM	28.83	53	-	0.05	3.3	13.8	0	--	--	--	--
GMSG-304	05/20/00	11:40 AM	28.78	66	-	0.03	--	--	--	--	--	--	--
GMSG-304	05/20/00	12:45 PM	28.76	67	-	0.1	--	--	--	--	--	--	--
GMSG-304	05/20/00	1:39 PM	28.74	68	-	0.09	--	--	--	--	--	--	--
GMSG-304	05/20/00	2:37 PM	28.73	68	-	0.12	--	--	--	--	--	--	--
GMSG-304	05/20/00	3:37 PM	28.71	69	-	0.17	--	--	--	--	--	--	--
GMSG-304	05/20/00	4:39 PM	28.71	67	-	0.08	--	--	--	--	--	--	--
GMSG-304	05/21/00	8:35 AM	28.66	60	-	0.01	--	--	--	--	--	--	--
GMSG-304	05/30/00	3:08 PM	28.57	60	-	0.14	6.1	14.1	0	--	--	--	--
GMSG-304	05/31/00	10:15 AM	28.78	71	-	-0.07	--	--	--	--	--	--	--
GMSG-304	05/31/00	11:15 AM	28.76	73	-	-0.01	--	--	--	--	--	--	--
GMSG-304	05/31/00	12:16 PM	28.75	72	-	0.05	--	--	--	--	--	--	--
GMSG-304	05/31/00	1:15 PM	28.75	76	-	0	--	--	--	--	--	--	--
GMSG-304	05/31/00	2:15 PM	28.76	76	-	-0.03	--	--	--	--	--	--	--
GMSG-304	05/31/00	3:16 PM	28.76	77	-	-0.02	--	--	--	--	--	--	--
GMSG-304	06/01/00	7:52 AM	28.83	54	-	-0.07	--	--	--	--	--	--	--
GMSG-304	06/01/00	11:01 AM	28.86	52	0.04	-0.06	--	--	--	--	--	--	--
GMSG-304	06/01/00	12:00 PM	28.74	52	0.06	-0.19	--	--	--	--	--	--	--
GMSG-304	06/01/00	1:00 PM	28.69	55	T	0.41	--	--	--	--	--	--	--
GMSG-304	06/01/00	2:00 PM	28.74	54	-	-0.01	--	--	--	--	--	--	--
GMSG-304	06/01/00	3:00 PM	28.68	54	T	-0.1	--	--	--	--	--	--	--
GMSG-304	06/01/00	4:00 PM	28.66	54	-	-0.07	--	--	--	--	--	--	--
GMSG-304	06/02/00	8:11 AM	28.82	50	-	-0.4	--	--	--	--	--	--	--
GMSG-304	06/04/00	8:19 AM	28.93	54	-	-0.04	--	--	--	--	--	--	--
GMSG-304	06/19/00	10:07 AM	28.84	67	-	-0.1	0	13.9	4.4	-0.89	-0.8	-0.24	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-304	07/07/00	5:33 PM	28.89	65	-	0	1.2	16	0	--	--	--	--
GMSG-304	10/08/00	12:23 PM	29.19	40	-	0	0	10.7	14.4	59.6	-2.45	-0.15	--
GMSG-304	10/18/00	5:01 PM	28.85	56	-	-0.03	0	14.8	1.7	9.92	--	-0.56	--
GMSG-304	12/07/00	10:20 AM	28.54	9	T	0.02	0	11.4	1.5	0.98	--	0.98	--
GMSG-304	01/11/01	2:15 PM	28.8	32	-	-0.02	0	6.7	12.1	7.8	0.6	0.5	--
GMSG-304	01/12/01	11:03 AM	28.9	32	-	-0.02	0	5.7	14.8	5.7	2.68	0.19	--
GMSG-304	01/14/01	8:45 AM	28.78	32	T	0.01	0	6.1	12.6	9.8	--	0.5	--
GMSG-304	01/23/01	12:00 PM	28.76	32	-	-0.04	0	7.9	7.1	500	--	0.04	--
GMSG-304	01/24/01	9:35 AM	28.91	21	-	-0.3	0	0	19.7	1.26	1.14	0.36	--
GMSG-304	01/25/01	8:55 AM	29	7	-	-0.17	0	0	20.5	0.25	--	0.25	--
GMSG-304	01/26/01	9:30 AM	28.57	16	-	0.04	0	0	20.2	0.23	--	0.23	--
GMSG-304	01/30/01	10:15 AM	28.15	34	-	0.64	0	0.8	19.6	-0.31	--	-0.31	--
GMSG-304	02/06/01	10:03 AM	28.68	26	-	1.86	0	0	20.1	0.03	-0.11	-0.05	--
GMSG-304	02/13/01	10:19 AM	28.98	23	-	0	0	0	19.5	69	13	2	--
GMSG-304	02/22/01	2:15 PM	28.58	17	T	0	0	0	19.6	17	-0.2	1.4	--
GMSG-304	03/21/01	10:35 AM	28.94	42	-	-0.2	0	0.1	20.2	-0.3	-2	-0.3	--
GMSG-304	04/06/01	3:00 PM	28.73	47	-	-0.14	0	0.3	20.3	-0.3	-2.78	-0.52	--
GMSG-304	05/15/01	1:34 PM	28.46	56	-	0.5	0	1.7	14.9	0	0	0	--
GMSG-304	05/16/01	8:21 AM	28.43	62	-	-0.33	0	0	18.6	0.31	0	0	--
GMSG-304	05/19/01	8:54 AM	28.77	69	-	-0.25	0	0.5	18.3	0	0	0	--
GMSG-304	05/23/01	10:55 AM	28.44	46	T	-0.2	0	0	18.8	0	0	0	--
GMSG-304	06/13/01	11:00 AM	28.6	73	-	-0.13	0	1.8	17.8	-1.67	-3.93	-1.74	--
GMSG-304	07/13/01	12:15 PM	28.91	81	-	-0.33	0	0	20.5	1.09	0	0	--
GMSG-304	08/08/01	7:50 AM	28.76	81	-	-0.25	0	1.1	18.6	0	0	0	--
GMSG-304	09/10/01	10:53 AM	28.75	63	-	-0.35	0	1.1	18.9	0	0	0	--
GMSG-304	10/03/01	10:15 AM	28.47	56	-	-0.63	0	0.7	19.6	2.55	2.27	5.03	--
GMSG-304	11/12/01	10:20 AM	29.13	40	-	-0.31	0	0	21	-0.43	-2.2	-0.51	--
GMSG-304	12/12/01	10:40 AM	28.76	37	-	0.1	0	1.1	17.9	-1.7	-1.7	-0.08	--
GMSG-304	01/08/02	11:45 AM	28.27	37	-	0.12	0	1.3	17.4	-1.66	-1.4	-0.11	--
GMSG-304	02/15/02	10:09 AM	28.52	34	T	-0.15	0	1.2	18.2	-0.81	-0.81	-0.98	--
GMSG-304	03/13/02	2:09 PM	28.54	39	-	-0.16	0	1.4	17.5	0	0	0	--
GMSG-304	04/15/02	2:18 PM	28.44	81	-	0.07	0	1.6	17.6	0	0	0	--
GMSG-304	05/21/02	10:52 AM	29.08	57	-	0.04	0	2.8	16.4	0	0	0	--
GMSG-304	06/04/02	2:01 PM	28.65	52	-	0	0	3.5	14.5	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-304	07/11/02	9:14 AM	29.13	72	-	0	0	8.5	12.2	--	--	--	--
GMSG-304	10/08/02	12:14 PM	28.74	49	-	0	0	7.9	10.3	0	--	0	--
GMSG-304	10/28/02	1:59 PM	28.96	43	-	0	0	8.2	9.7	0	0	0.1	--
GMSG-304	11/20/02	10:40 AM	28.71	35	-	0	0	8.2	12	0	0	0	--
GMSG-304	12/02/02	1:26 PM	28.88	17	T	0	0	7.2	13.6	0.3	0	0.3	--
GMSG-304	01/06/03	1:35 PM	29.04	28	-	0	0	4.1	17.7	0.54	0.54	0.36	--
GMSG-304	04/01/03	12:49 PM	28.5	45	-	0	0	3.7	14.1	0.4	0	0.3	--
GMSG-304	07/18/03	2:20 PM	28.92	79	-	0	0	7.8	11.2	0	0	0	--
GMSG-304	10/10/03	11:25 AM	28.85	71	-	0	0	7.4	12.1	0	0	0	--
GMSG-304	01/27/04	1:30 PM	28.5	20	T	0	0	3.3	14.8	-1.08	-0.98	0.58	--
GMSG-304	04/02/04	11:20 AM	28.93	49	-	0	0	1.4	16.1	0.1	-1.63	-0.7	--
GMSG-304	04/22/04	8:18 AM	28.98	36	-	0	0	2.1	17.8	--	--	--	--
GMSG-304	10/27/04	11:24 AM	29.14	42	-	0	0	0	20.3	-0.28	-0.32	-0.41	--
GMSG-305	06/13/99	9:46 AM	28.84	66	-	0	0	1.3	18	2	--	2	--
GMSG-305	06/16/99	9:43 AM	28.96	46.9	T	0	0	1.6	17.6	1	--	1	--
GMSG-305	06/17/99	5:00 PM	28.95	70	-	0	0	1.7	18.1	<1	<1	1.5	--
GMSG-305	06/18/99	10:00 AM	29.03	72	-	0	0	1.5	18.1	200	5.5	2.25	--
GMSG-305	06/19/99	1:15 PM	29	71.1	-	0	0	1.6	18.3	1.5	<1	<1	--
GMSG-305	06/20/99	1:15 PM	28.97	75.9	-	0	0	1.5	18.5	10	2.75	<1	--
GMSG-305	06/25/99	5:34 PM	28.63	84.9	-	--	0.3	1.6	17.9	1	1	1	--
GMSG-305	06/26/99	6:38 PM	28.54	80.1	-	--	0	1.8	18.4	55	13	2	--
GMSG-305	07/01/99	3:24 PM	28.43	68	-	-0.02	0.1	1.8	18	100	20	1.5	--
GMSG-305	07/02/99	4:08 PM	28.62	79	-	-0.02	0	1.9	17.9	10	3	1.5	--
GMSG-305	07/03/99	3:42 PM	28.62	73	0.01	0	0	2	17.7	80	20	1.5	--
GMSG-305	07/04/99	2:38 PM	28.64	91	-	0	0	1.8	17.9	4.5	2.5	2.5	--
GMSG-305	07/05/99	1:24 PM	28.6	84.9	-	0.02	0	1.9	17.6	15	15	3	--
GMSG-305	07/06/99	4:43 PM	28.7	77	-	0	0	2	17.5	4	--	4	--
GMSG-305	07/07/99	2:52 PM	28.73	78.1	-	0.01	0	1.9	17.4	25	3	2.25	--
GMSG-305	07/10/99	5:41 PM	28.91	71.1	-	0	0	2.3	17.3	1	--	1	--
GMSG-305	07/14/99	5:15 PM	28.6	80.1	-	0	0	2	18.4	--	--	--	--
GMSG-305	07/19/99	6:55 PM	28.85	72	-	0	0.1	2.5	18	20	6	4	--
GMSG-305	08/07/99	1:30 PM	28.52	77	-	0.01	0	2.8	17	4	--	4	--
GMSG-305	08/25/99	11:14 AM	28.73	77	-	0	0	2.4	17.5	35	12	2	--
GMSG-305	09/30/99	4:15 PM	28.42	60.1	-	0	0	2.5	18.3	35	7.5	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-305	10/11/99	7:50 AM	29.06	44.1	-	0.01	0	2.1	19.2	1.5	--	1.5	--
GMSG-305	10/26/99	3:31 PM	28.89	39.9	-	0	0	1.7	19.3	2	2	2	--
GMSG-305	11/05/99	9:31 AM	28.7	52	-	-0.02	0	1.5	19.2	2.25	<1	1	--
GMSG-305	11/09/99	9:11 AM	28.44	62.1	-	-0.01	0	1.8	18.6	14	2	<1	--
GMSG-305	02/08/00	3:59 PM	28.63	30	-	0.01	0	0.6	19.1	3	<1	3	--
GMSG-305	02/22/00	10:00 AM	28.65	30.9	-	-0.01	0	0.5	19.5	2	--	1.5	--
GMSG-305	03/16/00	2:25 PM	28.95	27	-	-0.01	0	0.6	19.7	-0.22	-1.03	-0.22	--
GMSG-305	03/29/00	2:21 PM	28.66	41	-	-0.03	0	0.5	20.2	2	--	2	--
GMSG-305	05/01/00	10:35 AM	28.57	63	-	0	0	0.6	17.7	13	4	-0.06	--
GMSG-305	05/17/00	11:50 AM	28.61	63	-	0.05	0	1	19.1	1.5	0	0	--
GMSG-305	05/18/00	8:37 AM	28.77	44	-	0	0	0.8	19.1	--	--	--	--
GMSG-305	05/18/00	1:29 PM	28.82	49	-	-0.01	--	--	--	--	--	--	--
GMSG-305	05/18/00	2:33 PM	28.83	50	-	0	--	--	--	--	--	--	--
GMSG-305	05/18/00	3:53 PM	28.82	50	-	0	--	--	--	--	--	--	--
GMSG-305	05/18/00	5:35 PM	28.88	46	-	0.01	--	--	--	--	--	--	--
GMSG-305	05/18/00	6:36 PM	28.88	44	-	0	--	--	--	--	--	--	--
GMSG-305	05/19/00	8:26 AM	28.97	45	-	-0.04	--	--	--	--	--	--	--
GMSG-305	05/19/00	10:46 AM	28.92	52	-	0	--	--	--	--	--	--	--
GMSG-305	05/20/00	7:48 AM	28.83	53	-	0	0	1.2	19	6	1.25	<1	--
GMSG-305	05/20/00	11:44 AM	28.78	66	-	0	--	--	--	--	--	--	--
GMSG-305	05/20/00	12:48 PM	28.76	67	-	0	--	--	--	--	--	--	--
GMSG-305	05/20/00	1:42 PM	28.74	68	-	0.01	--	--	--	--	--	--	--
GMSG-305	05/20/00	2:40 PM	28.73	68	-	0.01	--	--	--	--	--	--	--
GMSG-305	05/20/00	3:39 PM	28.71	69	-	0	--	--	--	--	--	--	--
GMSG-305	05/20/00	4:41 PM	28.71	67	-	0.08	--	--	--	--	--	--	--
GMSG-305	05/21/00	8:37 AM	28.66	60	-	-0.08	--	--	--	--	--	--	--
GMSG-305	05/30/00	3:15 PM	28.57	60	-	0.06	0	1.3	18.9	2	0	0	--
GMSG-305	05/31/00	10:17 AM	28.78	71	-	0	--	--	--	--	--	--	--
GMSG-305	05/31/00	11:17 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-305	05/31/00	12:18 PM	28.75	72	-	0.01	--	--	--	--	--	--	--
GMSG-305	05/31/00	1:17 PM	28.75	76	-	0.01	--	--	--	--	--	--	--
GMSG-305	05/31/00	2:18 PM	28.76	76	-	-0.01	--	--	--	--	--	--	--
GMSG-305	05/31/00	3:19 PM	28.76	77	-	0.02	--	--	--	--	--	--	--
GMSG-305	06/01/00	7:55 AM	28.83	54	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-305	06/01/00	11:04 AM	28.86	52	0.04	0	--	--	--	--	--	--	--
GMSG-305	06/01/00	12:03 PM	28.74	52	0.06	0	--	--	--	--	--	--	--
GMSG-305	06/01/00	1:07 PM	28.69	55	T	0.02	--	--	--	--	--	--	--
GMSG-305	06/01/00	2:02 PM	28.74	54	-	0	--	--	--	--	--	--	--
GMSG-305	06/01/00	3:02 PM	28.68	54	T	0.01	--	--	--	--	--	--	--
GMSG-305	06/01/00	4:02 PM	28.66	54	-	0.13	--	--	--	--	--	--	--
GMSG-305	06/02/00	8:13 AM	28.82	50	-	-0.01	--	--	--	--	--	--	--
GMSG-305	06/04/00	8:21 AM	28.93	54	-	0	--	--	--	--	--	--	--
GMSG-305	06/19/00	10:29 AM	28.84	67	-	0	0	1.5	18.3	-2.13	-2.13	-0.35	--
GMSG-305	07/07/00	5:55 PM	28.89	65	-	0.02	0	1.8	17.2	--	--	--	--
GMSG-305	10/08/00	11:34 AM	29.19	40	-	0	0	2.4	18.5	3.8	-2.1	-0.1	--
GMSG-305	10/18/00	5:16 PM	28.85	56	-	0	0	2.1	18.6	0.05	-2.7	-0.48	--
GMSG-305	12/07/00	10:38 AM	28.51	11	0.01	0	0	1.2	19.1	0.77	-1.08	0.77	--
GMSG-305	01/11/01	2:45 PM	28.79	33	-	0	0	0.6	19.1	8.98	2	0.25	--
GMSG-305	01/12/01	11:25 AM	28.9	32	-	0	0	0.6	19.4	3.25	2.7	0.4	--
GMSG-305	01/14/01	9:00 AM	28.78	32	T	0.01	0	0.6	19.5	2.4	1.85	0.5	--
GMSG-305	01/23/01	1:45 PM	28.73	34	-	-0.01	0	0.6	19.5	0.08	--	0.09	--
GMSG-305	01/23/01	1:45 PM	28.73	34	-	-0.01	0	0.6	19.5	0.08	--	0.09	--
GMSG-305	01/24/01	9:20 AM	28.87	21	0.01	-0.03	0	0.5	19.2	0.1	--	0.06	--
GMSG-305	01/25/01	9:10 AM	29	7	-	-0.01	0	0.1	19.5	0.48	--	0.44	--
GMSG-305	01/26/01	9:45 AM	28.57	16	-	0	0	0.3	19.9	0.86	--	0.86	--
GMSG-305	01/30/01	9:50 AM	28.15	34	-	-0.04	0	0.6	19.7	2.18	--	-0.67	--
GMSG-305	02/06/01	10:25 AM	28.68	26	-	-0.01	0	0.5	19.6	0.15	-0.89	0.15	--
GMSG-305	02/13/01	10:25 AM	28.98	23	-	0	0	0.5	19.1	49	10	0.8	--
GMSG-305	02/22/01	10:44 AM	28.67	10	T	0	0	0.6	19.1	18	6.2	5.1	--
GMSG-305	03/21/01	11:20 AM	28.94	42	-	0.04	0	0.5	19.5	-0.3	-2	-0.3	--
GMSG-305	04/06/01	3:11 PM	28.73	47	-	0.01	0	0.6	20.3	-0.64	-3.04	-0.64	--
GMSG-305	05/15/01	1:26 PM	28.5	54	-	0	0	1.1	17.8	0	0	0	--
GMSG-305	05/16/01	8:31 AM	28.43	68	-	0	0	1.1	17.8	0	0	0	--
GMSG-305	05/19/01	9:01 AM	28.77	69	-	-0.01	0	1.2	17.8	0	0	0	--
GMSG-305	06/13/01	10:49 AM	28.6	73	-	0	0	1.4	18.5	-1.62	-3.81	-1.62	--
GMSG-305	07/13/01	12:23 PM	28.91	81	-	0	0	1.9	19	0	0	0	--
GMSG-305	08/08/01	8:00 AM	28.76	81	-	0	0	2.3	17.8	0	0	0	--
GMSG-305	09/10/01	10:43 AM	28.75	63	-	0	0	2.4	17.8	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-305	10/03/01	10:30 AM	28.49	56	-	0	0	2.1	18.1	1.47	1.39	4.72	--
GMSG-305	11/12/01	10:05 AM	29.13	40	-	0	0	1.2	19.9	-2.55	-2.6	-0.67	--
GMSG-305	12/12/01	10:36 AM	28.76	37	-	0.01	0	1	19.9	-1.42	-1.42	-0.15	--
GMSG-305	01/08/02	11:30 AM	28.27	37	-	0.2	0	0.8	19.8	-2.1	-1.38	0.4	--
GMSG-305	02/15/02	10:21 AM	28.52	34	T	0	0	0.6	20	-0.91	-0.99	-1.15	--
GMSG-305	03/13/02	1:02 PM	28.52	40	-	-0.05	0	0.6	20.1	0	0	0	--
GMSG-305	04/15/02	2:26 PM	28.44	81	-	0.03	0	0.5	20.3	0	0	0	--
GMSG-305	05/21/02	11:04 AM	29.08	57	-	0	0	0.6	20.2	0	0	0	--
GMSG-305	06/04/02	2:13 PM	28.65	52	-	0	0	1.1	19.5	0	0	0	--
GMSG-305	07/11/02	9:23 AM	29.13	72	-	0	0	2.5	18.9	--	--	--	--
GMSG-306	06/13/99	9:35 AM	28.84	66	-	0	--	3.6	15.5	1.5	1.5	2	--
GMSG-306	06/16/99	9:33 AM	28.96	46.9	T	0	0	3.5	15.6	1.3	--	1.3	--
GMSG-306	06/17/99	5:15 PM	28.95	70	-	0	0	3.5	15.9	<1	<1	1.5	--
GMSG-306	06/18/99	10:15 AM	29.03	72	-	0	0	3.4	16.1	70	1.75	2.5	--
GMSG-306	06/19/99	1:30 PM	29	73	-	0	0	3.3	16.3	1500	3	<1	--
GMSG-306	06/20/99	2:30 PM	28.98	73	-	0	0	3.3	16.2	15	<1	<1	--
GMSG-306	06/25/99	5:41 PM	28.63	84.9	-	--	0.3	3.9	15.4	1	1	1	--
GMSG-306	06/26/99	6:44 PM	28.54	80.1	-	--	0	4	14.6	17	4.5	2	--
GMSG-306	07/01/99	3:15 PM	28.43	68	-	0	0.1	4.2	14.8	150	70	1.5	--
GMSG-306	07/02/99	4:00 PM	28.62	79	-	0	0	3.9	15.2	20	8	1.5	--
GMSG-306	07/03/99	3:34 PM	28.62	73	0.01	0	0	3.9	15.1	300	65	1.5	--
GMSG-306	07/04/99	2:31 PM	28.64	91	-	0.01	0	3.8	14.7	9	5	2	--
GMSG-306	07/05/99	1:15 PM	28.6	84.9	-	0	0	4	14.2	450	20	3	--
GMSG-306	07/06/99	4:33 PM	28.7	77	-	0	0	4	14.2	5	--	5	--
GMSG-306	07/07/99	2:47 PM	28.73	78.1	-	0	0	4	14.4	80	--	2.75	--
GMSG-306	07/10/99	5:34 PM	28.91	71.1	-	0	0	4.2	15.2	1	--	1	--
GMSG-306	07/14/99	5:20 PM	28.6	80.1	-	0	0	4.6	14.5	--	--	--	--
GMSG-306	07/19/99	7:00 PM	28.85	72	-	0	0	5.4	12.4	12	3	3	--
GMSG-306	08/07/99	1:17 PM	28.53	75.9	-	0	0	5.5	13	5	--	5	--
GMSG-306	08/25/99	11:03 AM	28.73	77	-	0	0	4.3	14.6	40	20	1.5	--
GMSG-306	09/30/99	4:31 PM	28.47	55	-	0	0	4.7	14.2	<1	<1	2	--
GMSG-306	10/11/99	9:00 AM	29.09	50	-	0.01	0	4.2	16.6	1.75	--	2.5	--
GMSG-306	10/26/99	3:42 PM	28.89	39.9	-	0	0	3.9	16.3	2	--	2	--
GMSG-306	11/05/99	9:41 AM	28.7	52	-	-0.01	0	3.5	15.2	1	<1	1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-306	11/09/99	9:22 AM	28.44	62.1	-	-0.01	0	4.2	13.7	12	<1	<1	--
GMSG-306	02/08/00	2:18 PM	28.67	30.9	-	0	0	2.5	16.7	--	--	--	--
GMSG-306	02/22/00	8:40 AM	28.66	27	-	0.02	0	2.1	17.7	2.5	1	2.5	--
GMSG-306	03/16/00	1:55 PM	28.95	27	-	0	0	2	17.9	-1.16	-1.16	-0.17	--
GMSG-306	03/29/00	2:00 PM	28.66	41	-	0	0	2.2	18.6	3	1.25	3	--
GMSG-306	05/01/00	10:04 AM	28.57	61	-	0	0	2.6	14.1	16	4	-0.1	--
GMSG-306	05/17/00	11:58 AM	28.61	63	-	0.01	0	2.4	17.1	1	0	0	--
GMSG-306	05/18/00	8:43 AM	28.77	44	-	0	0	2.7	16.4	--	--	--	--
GMSG-306	05/18/00	1:35 PM	28.82	49	-	0	--	--	--	--	--	--	--
GMSG-306	05/18/00	2:36 PM	28.83	50	-	0	--	--	--	--	--	--	--
GMSG-306	05/18/00	3:56 PM	28.82	50	-	0.01	--	--	--	--	--	--	--
GMSG-306	05/18/00	5:38 PM	28.88	46	-	0	--	--	--	--	--	--	--
GMSG-306	05/18/00	6:39 PM	28.88	44	-	-0.01	--	--	--	--	--	--	--
GMSG-306	05/19/00	8:30 AM	28.95	48	-	0	--	--	--	--	--	--	--
GMSG-306	05/19/00	10:50 AM	28.92	52	-	0	--	--	--	--	--	--	--
GMSG-306	05/20/00	8:00 AM	28.83	53	-	0	0	2.3	17.4	5.5	<1	<1	--
GMSG-306	05/20/00	11:47 AM	28.78	66	-	0	--	--	--	--	--	--	--
GMSG-306	05/20/00	12:52 PM	28.76	67	-	0	--	--	--	--	--	--	--
GMSG-306	05/20/00	1:45 PM	28.74	68	-	0	--	--	--	--	--	--	--
GMSG-306	05/20/00	2:43 PM	28.73	68	-	0	--	--	--	--	--	--	--
GMSG-306	05/20/00	3:42 PM	28.71	69	-	0	--	--	--	--	--	--	--
GMSG-306	05/20/00	4:44 PM	28.71	67	-	0.01	--	--	--	--	--	--	--
GMSG-306	05/21/00	8:42 AM	28.66	60	-	0	--	--	--	--	--	--	--
GMSG-306	05/30/00	3:24 PM	28.57	60	-	0	0	2.5	16.9	7	2.5	0	--
GMSG-306	05/31/00	10:20 AM	28.78	71	-	0	--	--	--	--	--	--	--
GMSG-306	05/31/00	11:20 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-306	05/31/00	12:21 PM	28.75	72	-	0	--	--	--	--	--	--	--
GMSG-306	05/31/00	1:20 PM	28.75	76	-	0	--	--	--	--	--	--	--
GMSG-306	05/31/00	2:21 PM	28.76	76	-	-0.01	--	--	--	--	--	--	--
GMSG-306	05/31/00	3:22 PM	28.76	77	-	0	--	--	--	--	--	--	--
GMSG-306	06/01/00	7:59 AM	28.83	54	-	0	--	--	--	--	--	--	--
GMSG-306	06/01/00	11:07 AM	28.86	52	0.04	0	--	--	--	--	--	--	--
GMSG-306	06/01/00	12:07 PM	28.74	52	0.06	0	--	--	--	--	--	--	--
GMSG-306	06/01/00	1:11 PM	28.69	55	T	0.05	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-306	06/01/00	2:06 PM	28.74	54	-	0.01	--	--	--	--	--	--	--
GMSG-306	06/01/00	3:06 PM	28.68	54	T	0.01	--	--	--	--	--	--	--
GMSG-306	06/01/00	4:05 PM	28.66	54	-	0	--	--	--	--	--	--	--
GMSG-306	06/02/00	8:17 AM	28.82	50	-	-0.01	--	--	--	--	--	--	--
GMSG-306	06/04/00	8:26 AM	28.93	54	-	0	--	--	--	--	--	--	--
GMSG-306	06/19/00	10:58 AM	28.84	68	-	0	0	2.6	16.9	-2.08	-2.18	-0.3	--
GMSG-306	07/07/00	6:15 PM	28.89	65	-	0	0	3.7	15	--	--	--	--
GMSG-306	10/08/00	12:11 PM	29.19	40	-	0	0	3.2	17.8	0.01	-2.14	-0.05	--
GMSG-306	10/18/00	5:35 PM	28.86	47	-	0	0	3.4	16.6	-0.55	-3	-0.58	--
GMSG-306	12/07/00	11:05 AM	28.51	11	0.01	0	0	2.7	16.4	2.34	-1.2	0.89	--
GMSG-306	01/11/01	3:10 PM	28.79	33	-	0	0	1.6	17.8	1.96	0.9	0	--
GMSG-306	01/12/01	11:47 AM	28.89	33	-	0	0	1.6	18.3	0.5	--	0.5	--
GMSG-306	01/14/01	9:30 AM	28.77	32	0.03	0	0	1.6	18.2	0.9	--	0.8	--
GMSG-306	01/23/01	1:55 PM	28.73	34	-	0	0	1.7	17.8	-0.06	--	-0.06	--
GMSG-306	01/24/01	9:10 AM	28.87	21	0.01	-0.02	0	1.7	17.7	0.12	--	0.04	--
GMSG-306	01/25/01	10:25 AM	29	18	-	0	0	0	19.8	0.56	--	0.54	--
GMSG-306	01/26/01	10:00 AM	28.57	16	-	0.01	0	1.8	17.8	0.43	--	0.43	--
GMSG-306	01/30/01	10:55 AM	28.14	34	-	0.04	0	2.3	16.8	-0.18	--	-0.18	--
GMSG-306	02/06/01	10:35 AM	28.71	27	T	0	0	1.5	18.3	0.2	-0.83	0.2	--
GMSG-306	02/13/01	10:32 AM	28.96	25	-	0	0	1.4	18.1	14	6	0.8	--
GMSG-306	02/22/01	10:57 AM	28.67	10	T	0	0	1.7	17.6	4.8	4.8	5.7	--
GMSG-306	03/21/01	11:40 AM	28.93	45	-	0.38	0	1.3	18.8	-0.36	-2	-0.36	--
GMSG-306	04/06/01	3:40 PM	28.73	48	-	-0.02	0	1.3	18.8	-0.19	-3.14	-0.19	--
GMSG-306	05/15/01	1:13 PM	28.5	54	-	-0.04	0	2.1	16.6	0	0	0	--
GMSG-306	05/16/01	8:40 AM	28.43	68	-	0	0	2.2	16.5	0	0	0	--
GMSG-306	05/19/01	9:09 AM	28.77	69	-	0.05	0	1.6	17.6	0	0	0	--
GMSG-306	06/13/01	10:31 AM	28.6	73	-	0	0	2.4	17.8	-3.71	-5.12	-3.71	--
GMSG-306	07/13/01	12:31 PM	28.9	82	-	0	0	2.1	18.9	0	0	0	--
GMSG-306	08/08/01	8:15 AM	28.76	81	-	0	0	2.5	17.6	0	0	0	--
GMSG-306	09/10/01	10:57 AM	28.75	63	-	0	0	2.7	17.6	0	0	0	--
GMSG-306	10/03/01	9:45 AM	28.47	56	-	0.13	0	2.8	17.2	2.3	2.17	5.15	--
GMSG-306	11/12/01	9:45 AM	29.13	40	-	-0.01	0	1.6	19.6	-2.54	-2.62	-2.6	--
GMSG-306	12/12/01	10:10 AM	28.79	36	-	0.01	0	1.5	19.3	-1.54	-1.54	-1.1	--
GMSG-306	01/08/02	11:10 AM	28.31	33	-	0.04	0	1.5	18.8	-2.85	-2.4	-0.9	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-306	02/15/02	10:41 AM	28.53	33	-	-0.01	0	1	19.2	-0.32	-3.81	-0.52	--
GMSG-306	03/13/02	9:11 AM	28.41	40	-	0	0	1.3	19.6	0	0	0	--
GMSG-306	04/15/02	2:34 PM	28.42	82	-	0.12	0	1.1	19	0	0	0	--
GMSG-306	05/21/02	11:12 AM	29.08	57	-	0	0	1.4	19.7	0	0	0	--
GMSG-306	06/04/02	2:21 PM	28.65	52	-	0	0	1.9	18.4	0	0	0	--
GMSG-306	07/11/02	9:35 AM	29.11	73	-	0	0	2.8	18.6	--	--	--	--
GMSG-307	06/13/99	10:36 AM	28.84	66.9	-	0	0	4.2	13.8	5	--	2	--
GMSG-307	06/16/99	11:00 AM	28.96	46.9	T	0	0	4.3	13.4	1.5	--	1.5	--
GMSG-307	06/17/99	5:30 PM	28.96	68	-	0	0	9.4	13.6	<1	<1	1.5	--
GMSG-307	06/18/99	10:30 AM	29.02	71.1	-	0	0	4.4	13.6	120	2.75	2	--
GMSG-307	06/19/99	1:45 PM	29	73	-	0	0	4.4	13.7	<1	<1	<1	--
GMSG-307	06/20/99	2:45 PM	28.98	73	-	0	0	4.4	13.9	15	<1	<1	--
GMSG-307	06/26/99	6:51 PM	28.54	80.1	-	--	0	5.1	13.6	12	1.5	1.75	--
GMSG-307	07/01/99	4:14 PM	28.41	72	-	0	0	5.3	14	100	25	1.5	--
GMSG-307	07/02/99	4:49 PM	28.62	78.1	-	0	0	4.9	13.4	1.5	1.5	1.5	--
GMSG-307	07/03/99	4:35 PM	28.61	73	-	0	0	5	13.1	9	2	1	--
GMSG-307	07/04/99	3:25 PM	28.64	91	-	0	0	4.6	12.8	25	5.5	2	--
GMSG-307	07/05/99	2:11 PM	28.6	86	-	0	0	4.9	12.5	200	60	3.5	--
GMSG-307	07/06/99	5:37 PM	28.71	75	-	0	0	5	12.4	3.5	--	3.5	--
GMSG-307	07/07/99	3:41 PM	28.73	77	-	0	0	4.9	12	15	--	1.75	--
GMSG-307	07/10/99	6:41 PM	28.91	68	-	-0.01	0	5.3	11.5	5	--	1	--
GMSG-307	07/14/99	5:35 PM	28.61	78.1	-	0	0	5.5	12.8	--	--	--	--
GMSG-307	07/19/99	6:35 PM	28.85	72	-	0	0	5.8	10.1	25	10	4	--
GMSG-307	08/07/99	2:15 PM	28.52	77	-	0	0	7.6	9.9	2000	--	3.5	--
GMSG-307	08/25/99	10:58 AM	28.73	77	-	0	0	6.9	10.5	250	--	1.5	--
GMSG-307	09/30/99	4:43 PM	28.47	55	-	0	0	7.1	11.4	<1	<1	2	--
GMSG-307	10/11/99	10:30 AM	29.08	55.9	-	0	0	6.5	12.3	15	2.5	1.5	--
GMSG-307	10/26/99	3:54 PM	28.89	39.9	-	0	0	6	12.8	2	--	2	--
GMSG-307	11/05/99	9:52 AM	28.7	52	-	-0.01	0	4.3	14.8	13	4	1	--
GMSG-307	11/09/99	9:33 AM	28.44	64.9	-	-0.01	0	6	12.2	8	4	<1	--
GMSG-307	02/08/00	5:15 PM	28.6	30	-	0.03	0	3.8	16.2	45	30	4	--
GMSG-307	02/22/00	10:28 AM	28.65	30.9	-	0	0	3.5	17	2.25	2.25	2.25	--
GMSG-307	03/16/00	4:38 PM	28.96	26.1	-	0	0	2.6	16.7	1.75	-0.1	-0.15	--
GMSG-307	03/29/00	3:55 PM	28.67	39.9	-	-0.02	0	2.8	17	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-307	05/01/00	11:50 AM	28.56	61	-	0	0	2.9	15.2	5	0.5	-0.05	--
GMSG-307	05/17/00	12:05 PM	28.61	63	-	0	0	3.2	16.3	0	0	0	--
GMSG-307	05/18/00	8:46 AM	28.77	44	-	0	0	3.3	16.3	--	--	--	--
GMSG-307	05/18/00	1:40 PM	28.82	49	-	0	--	--	--	--	--	--	--
GMSG-307	05/18/00	2:38 PM	28.83	50	-	0	--	--	--	--	--	--	--
GMSG-307	05/18/00	3:59 PM	28.82	50	-	0	--	--	--	--	--	--	--
GMSG-307	05/18/00	5:40 PM	28.88	46	-	0.01	--	--	--	--	--	--	--
GMSG-307	05/18/00	6:41 PM	28.88	44	-	0	--	--	--	--	--	--	--
GMSG-307	05/19/00	8:32 AM	28.95	48	-	0	--	--	--	--	--	--	--
GMSG-307	05/19/00	10:53 AM	28.92	52	-	0	--	--	--	--	--	--	--
GMSG-307	05/20/00	8:06 AM	28.83	53	-	0	0	3.4	16.4	1.5	<1	<1	--
GMSG-307	05/20/00	11:49 AM	28.78	66	-	0	--	--	--	--	--	--	--
GMSG-307	05/20/00	12:54 PM	28.76	67	-	0	--	--	--	--	--	--	--
GMSG-307	05/20/00	1:47 PM	28.74	68	-	0.01	--	--	--	--	--	--	--
GMSG-307	05/20/00	2:45 PM	28.73	68	-	0	--	--	--	--	--	--	--
GMSG-307	05/20/00	3:44 PM	28.71	69	-	0	--	--	--	--	--	--	--
GMSG-307	05/20/00	4:46 PM	28.71	67	-	0	--	--	--	--	--	--	--
GMSG-307	05/21/00	8:44 AM	28.66	60	-	0	--	--	--	--	--	--	--
GMSG-307	05/30/00	3:29 PM	28.57	60	-	0	0	3.9	16	2.5	0	0	--
GMSG-307	05/31/00	10:22 AM	28.78	71	-	-0.01	--	--	--	--	--	--	--
GMSG-307	05/31/00	11:23 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-307	05/31/00	12:23 PM	28.75	72	-	0	--	--	--	--	--	--	--
GMSG-307	05/31/00	1:22 PM	28.75	76	-	0	--	--	--	--	--	--	--
GMSG-307	05/31/00	2:23 PM	28.76	76	-	0	--	--	--	--	--	--	--
GMSG-307	05/31/00	3:24 PM	28.76	77	-	0	--	--	--	--	--	--	--
GMSG-307	06/01/00	8:01 AM	28.83	54	-	0	--	--	--	--	--	--	--
GMSG-307	06/01/00	11:09 AM	28.86	52	0.04	-0.01	--	--	--	--	--	--	--
GMSG-307	06/01/00	12:09 PM	28.74	52	0.06	0	--	--	--	--	--	--	--
GMSG-307	06/01/00	1:13 PM	28.69	55	T	0.09	--	--	--	--	--	--	--
GMSG-307	06/01/00	2:08 PM	28.74	54	-	0	--	--	--	--	--	--	--
GMSG-307	06/01/00	3:08 PM	28.68	54	T	0.02	--	--	--	--	--	--	--
GMSG-307	06/01/00	4:07 PM	28.66	54	-	0	--	--	--	--	--	--	--
GMSG-307	06/02/00	8:19 AM	28.82	50	-	0	--	--	--	--	--	--	--
GMSG-307	06/04/00	8:28 AM	28.93	54	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-307	06/19/00	11:10 AM	28.84	68	-	0	0	4.3	14.8	-2.24	-2.24	-0.27	--
GMSG-307	07/07/00	6:35 PM	28.89	64	-	0	0	5.2	12.8	--	--	--	--
GMSG-307	10/08/00	10:40 AM	29.2	39	-	0	0	5.8	13.7	0.23	-2.95	-0.2	--
GMSG-307	10/18/00	5:42 PM	28.86	47	-	0	0	5.4	14.4	-0.42	-2.87	-0.5	--
GMSG-307	12/07/00	11:15 AM	28.51	11	0.01	0.01	0	3.7	15.9	1.43	-1.21	0.85	--
GMSG-307	01/11/01	3:25 PM	28.79	33	-	0.03	0	3.7	16	0.65	0.4	0	--
GMSG-307	01/12/01	11:54 AM	28.89	33	-	0.01	0	3.5	16.6	0.27	--	0.23	--
GMSG-307	01/14/01	9:35 AM	28.77	32	0.03	0	0	3.6	16.1	0.8	0.15	0.8	--
GMSG-307	01/23/01	2:10 PM	28.73	34	-	-0.01	0	2.5	17.4	0.02	--	0.02	--
GMSG-307	01/24/01	9:50 AM	28.91	21	-	0	0	0	19.5	5.92	--	-0.76	--
GMSG-307	01/25/01	10:30 AM	28.97	23	-	0	0	2.7	17.4	0.85	0.48	0.07	--
GMSG-307	01/26/01	10:10 AM	28.57	16	-	0.01	0	3.2	17.1	0.46	--	0.46	--
GMSG-307	01/30/01	11:05 AM	28.14	34	-	0.22	0	3	17	-0.29	--	-0.29	--
GMSG-307	02/06/01	11:08 AM	28.71	27	T	0	0	0	19.9	0.34	-0.11	0.14	--
GMSG-307	02/13/01	10:38 AM	28.96	25	-	0	0	2	17	14	2.4	0.8	--
GMSG-307	02/22/01	11:10 AM	28.67	10	T	0	0	3.3	15.8	7.8	5	5.8	--
GMSG-307	03/21/01	11:50 AM	28.93	45	-	0	0	2.6	17.5	-0.3	-2	-0.3	--
GMSG-307	04/06/01	3:46 PM	28.73	48	-	-0.12	0	2.6	17.7	-0.32	-3.24	-0.32	--
GMSG-307	05/15/01	2:05 PM	28.46	56	-	-0.5	0	2.7	16.1	2.14	1.05	0	--
GMSG-307	05/16/01	8:16 AM	28.43	62	-	0.06	0	2.2	16.7	0	0	0	--
GMSG-307	05/19/01	8:49 AM	28.77	69	-	0.07	0	1.6	17.4	0.3	0	0	--
GMSG-307	05/23/01	10:48 AM	28.44	46	T	0	0	3.6	15.4	0	0	0	--
GMSG-307	06/13/01	11:43 AM	28.59	76	-	0	0	3.9	16	27.17	5.01	-1.55	--
GMSG-307	07/13/01	12:43 PM	28.9	82	-	0	0	4.7	15.6	0	0	0	--
GMSG-307	08/08/01	8:20 AM	28.76	81	-	0.01	0	5	15.4	0	0	0	--
GMSG-307	09/10/01	10:15 AM	28.74	61	T	0	0	4.2	15.8	0	0	0	--
GMSG-307	10/03/01	10:54 AM	28.49	56	-	0.03	0	4.2	16	1.84	1.77	3.69	--
GMSG-307	11/12/01	11:04 AM	29.11	46	-	0.09	0	2.3	18.3	-2.7	-2.85	-1.07	--
GMSG-307	12/12/01	11:20 AM	28.76	37	-	0	0	3.2	16.4	-1.68	-1.68	0.25	--
GMSG-307	01/08/02	10:50 AM	28.31	33	-	0.02	0	2.8	16.9	-3.21	-2.93	-1.45	--
GMSG-307	02/15/02	10:50 AM	28.53	33	-	--	--	--	--	--	--	--	--
GMSG-307	03/13/02	1:15 PM	28.52	40	-	--	--	--	--	--	--	--	--
GMSG-307	04/15/02	10:55 AM	28.48	77	-	-0.04	0	2.8	17.1	0	0	0	--
GMSG-307	05/21/02	11:25 AM	29.08	57	-	-0.01	0	2.8	17.6	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-307	06/04/02	2:33 PM	28.68	52	0.01	0	0	3.3	16.9	0	0	0	--
GMSG-307	07/11/02	9:39 AM	29.11	73	-	0	0	4.4	16.2	--	--	--	--
GMSG-308	07/10/99	6:34 PM	28.91	68	-	0	0	3.2	16.5	3.5	1.25	1	--
GMSG-308	07/19/99	6:50 PM	28.85	72	-	0	0	6	13.3	50	15	4	--
GMSG-308	07/22/99	5:23 PM	28.74	87.1	-	0	--	--	--	500	--	1	--
GMSG-308	07/27/99	8:35 AM	28.79	72	-	-0.02	0	4.7	15.8	70	15	3	--
GMSG-308	08/07/99	1:41 PM	28.52	77	-	0.02	0	10.9	5.8	4.5	--	4.5	--
GMSG-308	08/25/99	11:17 AM	28.73	77	-	0	0	3.6	16.4	25	6.5	2	--
GMSG-308	09/30/99	5:23 PM	28.47	55	-	0	0	6.6	11.6	<1	<1	1.5	--
GMSG-308	10/11/99	7:59 AM	29.06	44.1	-	-0.02	0	2.6	18.5	1.5	--	1.5	--
GMSG-308	10/26/99	3:27 PM	28.87	39.9	-	-0.02	0	3.1	17.6	3	1.75	2	--
GMSG-308	11/05/99	9:26 AM	28.67	50	-	-0.03	0	3.3	16	4.75	<1	1	--
GMSG-308	11/09/99	9:05 AM	28.44	62.1	-	0	0	6.8	6.3	28	6.5	<1	--
GMSG-308	02/08/00	4:20 PM	28.63	30	-	0.04	0	4.2	13.2	8.5	7	3.5	--
GMSG-308	02/22/00	9:47 AM	28.65	30.9	-	0	0	4	13.7	3.5	1.25	1.5	--
GMSG-308	03/16/00	2:47 PM	28.95	27	-	0	0	2.4	17.4	-0.11	-1.06	-0.11	--
GMSG-308	03/29/00	2:30 PM	28.66	39.9	-	-0.02	0	2.4	18.6	1.5	--	1.5	--
GMSG-308	05/01/00	10:46 AM	28.57	63	-	0.01	0	5.1	7.8	5	--	-0.16	--
GMSG-308	05/17/00	11:44 AM	28.61	63	-	0	0	4.3	13.1	82	0	0	--
GMSG-308	05/18/00	8:34 AM	28.77	44	-	-0.02	0	0.6	19	--	--	--	--
GMSG-308	05/18/00	1:28 PM	28.82	49	-	-0.02	--	--	--	--	--	--	--
GMSG-308	05/18/00	2:32 PM	28.83	50	-	-0.02	--	--	--	--	--	--	--
GMSG-308	05/18/00	3:52 PM	28.82	50	-	-0.01	--	--	--	--	--	--	--
GMSG-308	05/18/00	5:33 PM	28.88	46	-	-0.03	--	--	--	--	--	--	--
GMSG-308	05/18/00	6:35 PM	28.88	44	-	-0.03	--	--	--	--	--	--	--
GMSG-308	05/19/00	8:23 AM	28.97	45	-	0	--	--	--	--	--	--	--
GMSG-308	05/19/00	10:45 AM	28.92	52	-	0	--	--	--	--	--	--	--
GMSG-308	05/20/00	7:44 AM	28.83	53	-	0	0	2.9	16.5	20	4	<1	--
GMSG-308	05/20/00	11:42 AM	28.78	66	-	0	--	--	--	--	--	--	--
GMSG-308	05/20/00	12:47 PM	28.76	67	-	0.01	--	--	--	--	--	--	--
GMSG-308	05/20/00	1:41 PM	28.74	68	-	0	--	--	--	--	--	--	--
GMSG-308	05/20/00	2:38 PM	28.73	68	-	0.02	--	--	--	--	--	--	--
GMSG-308	05/20/00	3:38 PM	28.71	69	-	0.01	--	--	--	--	--	--	--
GMSG-308	05/20/00	4:40 PM	28.71	67	-	0.01	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-308	05/21/00	8:36 AM	28.66	60	-	0	--	--	--	--	--	--	--
GMSG-308	05/30/00	3:11 PM	28.57	60	-	0.02	0	4.5	13.3	5	1	-0.25	--
GMSG-308	05/31/00	10:16 AM	28.78	71	-	-0.02	--	--	--	--	--	--	--
GMSG-308	05/31/00	11:16 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-308	05/31/00	12:17 PM	28.75	72	-	0	--	--	--	--	--	--	--
GMSG-308	05/31/00	1:16 PM	28.75	76	-	0	--	--	--	--	--	--	--
GMSG-308	05/31/00	2:17 PM	28.76	76	-	-0.01	--	--	--	--	--	--	--
GMSG-308	05/31/00	3:18 PM	28.76	77	-	0	--	--	--	--	--	--	--
GMSG-308	06/01/00	7:53 AM	28.83	54	-	0	--	--	--	--	--	--	--
GMSG-308	06/01/00	11:02 AM	28.86	52	0.04	-0.01	--	--	--	--	--	--	--
GMSG-308	06/01/00	12:02 PM	28.74	52	0.06	-0.01	--	--	--	--	--	--	--
GMSG-308	06/01/00	1:03 PM	28.69	55	T	0.11	--	--	--	--	--	--	--
GMSG-308	06/01/00	2:01 PM	28.74	54	-	0.01	--	--	--	--	--	--	--
GMSG-308	06/01/00	3:01 PM	28.68	54	T	0	--	--	--	--	--	--	--
GMSG-308	06/01/00	4:01 PM	28.66	54	-	0	--	--	--	--	--	--	--
GMSG-308	06/02/00	8:12 AM	28.82	50	-	-0.04	--	--	--	--	--	--	--
GMSG-308	06/04/00	8:20 AM	28.93	54	-	0	--	--	--	--	--	--	--
GMSG-308	06/19/00	10:19 AM	28.84	67	-	0	0	2	17.7	-2.21	-2.21	-0.33	--
GMSG-308	07/07/00	5:45 PM	28.89	65	-	0	0	3.8	15.7	--	--	--	--
GMSG-308	10/08/00	11:19 AM	29.2	39	-	0	0	1.9	19.1	19.7	-1.6	-0.25	--
GMSG-308	10/18/00	5:10 PM	28.85	56	-	0	0	2.4	18.2	-0.91	-2.8	-0.7	--
GMSG-308	12/07/00	10:30 AM	28.51	11	0.01	0.01	0	3.4	15.7	0.8	-1.26	0.8	--
GMSG-308	01/11/01	3:00 PM	28.79	33	-	0	0	1.5	18	1	0.8	0	--
GMSG-308	01/12/01	11:38 AM	28.89	33	-	0.1	0	1.4	18.5	0.2	--	0.2	--
GMSG-308	01/14/01	9:05 AM	28.78	32	T	0.01	0	2.4	16.8	1.2	--	0.5	--
GMSG-308	01/23/01	1:50 PM	28.73	34	-	-0.02	0	2	17.6	-0.47	--	0	--
GMSG-308	01/24/01	9:30 AM	28.91	21	-	-0.02	0	0	19.7	0.9	--	0.27	--
GMSG-308	01/25/01	9:15 AM	29	7	-	-0.01	0	0	19.7	0.52	--	0.48	--
GMSG-308	01/26/01	9:50 AM	28.57	16	-	0.01	0	1.6	18.8	0.34	--	0.34	--
GMSG-308	01/30/01	10:30 AM	28.14	34	-	0.73	0	1.4	18.9	-0.17	--	-0.23	--
GMSG-308	02/06/01	10:20 AM	28.68	26	-	-0.03	0	0	20.1	0.12	-0.07	-0.05	--
GMSG-308	02/13/01	10:22 AM	28.98	23	-	0	0	0	19.6	33	13.5	1	--
GMSG-308	02/22/01	10:35 AM	28.67	10	T	0	0	0.3	19.2	21.6	4.3	5.1	--
GMSG-308	03/21/01	10:40 AM	28.94	42	-	-0.02	0	0	20.4	-0.2	-1	-0.2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-308	04/06/01	3:05 PM	28.73	47	-	-0.01	0	0	20.9	-0.29	-3.07	-0.29	--
GMSG-308	05/15/01	1:30 PM	28.46	56	-	0.01	0	1	16.7	0	0	0	--
GMSG-308	05/16/01	8:26 AM	28.43	62	-	-0.01	0	0.8	17.2	0	0	0	--
GMSG-308	05/19/01	8:57 AM	28.77	69	-	-0.04	0	0.1	18.6	0	0	0	--
GMSG-308	06/13/01	10:55 AM	28.6	73	-	-0.01	0	1	19	-1.4	-3.89	-1.47	--
GMSG-308	07/13/01	12:18 PM	28.91	81	-	-0.02	0	0.2	20.5	0	0	0	--
GMSG-308	08/08/01	7:55 AM	28.76	81	-	0	0	0.6	19.2	0	0	0	--
GMSG-308	09/10/01	10:48 AM	28.75	63	-	0	0	0.5	19.9	2.25	0	0.5	--
GMSG-308	10/03/01	10:20 AM	28.47	56	-	-0.03	0	0.5	19.7	2.25	2.18	4.91	--
GMSG-308	11/12/01	10:10 AM	29.13	40	-	-0.01	0	0	20.8	-2.37	-2.45	-0.4	--
GMSG-308	12/12/01	10:38 AM	28.76	37	-	0.03	0	0.5	19.8	-1.38	-1.38	-0.15	--
GMSG-308	01/08/02	11:40 AM	28.27	37	-	0.17	0	1.1	18.5	-2.11	-1.88	-0.6	--
GMSG-308	02/15/02	10:15 AM	28.52	34	T	0	0	0.6	19.5	-0.84	-0.89	-1.1	--
GMSG-308	03/13/02	1:08 PM	28.52	40	-	-0.07	0	0.6	19.6	0	0	0	--
GMSG-308	04/15/02	2:22 PM	28.44	81	-	0.06	0	1	18.8	0	0	0	--
GMSG-308	05/21/02	10:57 AM	29.08	57	-	0.03	0	1.2	19.4	0	0	0	--
GMSG-308	06/04/02	2:06 PM	28.65	52	-	0	0	1.8	17.2	0	0	0	--
GMSG-308	07/11/02	9:19 AM	29.13	72	-	0	0	1.6	19.6	--	--	--	--
GMSG-309	07/07/99	3:33 PM	28.73	77	-	0.01	2.8	13.2	0	--	--	--	--
GMSG-309	07/27/99	8:40 AM	28.79	72	-	-0.02	2.3	16.5	0.5	--	--	--	--
GMSG-309	08/07/99	1:36 PM	28.52	77	-	0.07	6.3	17.7	0	--	--	--	--
GMSG-309	08/25/99	11:06 AM	28.73	77	-	0	3.7	17	0	--	--	--	--
GMSG-309	09/30/99	4:23 PM	28.42	60.1	-	0	5.2	15.4	0	--	--	--	--
GMSG-309	10/11/99	9:08 AM	29.09	50	-	0.02	0	5.8	13.1	6.5	1.5	1.5	--
GMSG-309	10/26/99	3:48 PM	28.89	39.9	-	-0.07	0	13.5	0.1	100	--	2	--
GMSG-309	11/05/99	9:46 AM	28.7	52	-	-0.05	2.3	12.5	0	--	--	--	--
GMSG-309	11/09/99	9:28 AM	28.44	62.1	-	-0.02	5.4	13.7	0	--	--	--	--
GMSG-309	02/08/00	3:40 PM	28.63	30	-	-0.11	1.7	12.6	0	--	--	--	--
GMSG-309	02/22/00	8:53 AM	28.66	27	-	0.03	4	12.2	0	--	--	--	--
GMSG-309	03/16/00	2:06 PM	28.95	27	-	0	0	0.4	5.8	5.5	--	-0.18	--
GMSG-309	03/29/00	2:07 PM	28.66	41	-	-0.03	0	12	10.7	48	--	2.5	--
GMSG-309	05/01/00	10:25 AM	28.57	61	-	0.05	5.6	12.9	0	--	--	--	--
GMSG-309	05/17/00	11:54 AM	28.61	63	-	0.07	0.6	15.3	0	--	--	--	--
GMSG-309	05/18/00	8:40 AM	28.77	44	-	-0.06	0	2.2	16.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-309	05/18/00	1:34 PM	28.82	49	-	-0.03	--	--	--	--	--	--	--
GMSG-309	05/18/00	2:35 PM	28.83	50	-	0	--	--	--	--	--	--	--
GMSG-309	05/18/00	3:55 PM	28.82	50	-	-0.01	--	--	--	--	--	--	--
GMSG-309	05/18/00	5:37 PM	28.88	46	-	-0.05	--	--	--	--	--	--	--
GMSG-309	05/18/00	6:38 PM	28.88	44	-	-0.11	--	--	--	--	--	--	--
GMSG-309	05/19/00	8:28 AM	28.97	45	-	-0.03	--	--	--	--	--	--	--
GMSG-309	05/19/00	10:49 AM	28.92	52	-	-0.01	--	--	--	--	--	--	--
GMSG-309	05/20/00	7:55 AM	28.83	53	-	0	0	13.5	2.2	20	--	<1	--
GMSG-309	05/20/00	11:46 AM	28.78	66	-	0	--	--	--	--	--	--	--
GMSG-309	05/20/00	12:50 PM	28.76	67	-	0.06	--	--	--	--	--	--	--
GMSG-309	05/20/00	1:44 PM	28.74	68	-	0.05	--	--	--	--	--	--	--
GMSG-309	05/20/00	2:42 PM	28.73	68	-	0.06	--	--	--	--	--	--	--
GMSG-309	05/20/00	3:41 PM	28.71	69	-	0.05	--	--	--	--	--	--	--
GMSG-309	05/20/00	4:43 PM	28.71	67	-	0.07	--	--	--	--	--	--	--
GMSG-309	05/21/00	8:40 AM	28.66	60	-	0	--	--	--	--	--	--	--
GMSG-309	05/30/00	3:21 PM	28.57	60	-	0.02	2.2	15.8	0	--	--	--	--
GMSG-309	05/31/00	10:19 AM	28.78	71	-	-0.04	--	--	--	--	--	--	--
GMSG-309	05/31/00	11:19 AM	28.76	73	-	-0.01	--	--	--	--	--	--	--
GMSG-309	05/31/00	12:20 PM	28.75	72	-	0.06	--	--	--	--	--	--	--
GMSG-309	05/31/00	1:19 PM	28.75	76	-	0.01	--	--	--	--	--	--	--
GMSG-309	05/31/00	2:20 PM	28.76	76	-	-0.04	--	--	--	--	--	--	--
GMSG-309	05/31/00	3:21 PM	28.76	77	-	-0.01	--	--	--	--	--	--	--
GMSG-309	06/01/00	7:58 AM	28.83	54	-	-0.01	--	--	--	--	--	--	--
GMSG-309	06/01/00	11:06 AM	28.86	52	0.04	-0.05	--	--	--	--	--	--	--
GMSG-309	06/01/00	12:06 PM	28.74	52	0.06	-0.17	--	--	--	--	--	--	--
GMSG-309	06/01/00	1:10 PM	28.69	55	T	0.22	--	--	--	--	--	--	--
GMSG-309	06/01/00	2:05 PM	28.74	54	-	0.01	--	--	--	--	--	--	--
GMSG-309	06/01/00	3:05 PM	28.68	54	T	0.03	--	--	--	--	--	--	--
GMSG-309	06/01/00	4:04 PM	28.66	54	-	-0.01	--	--	--	--	--	--	--
GMSG-309	06/02/00	8:16 AM	28.82	50	-	-0.19	--	--	--	--	--	--	--
GMSG-309	06/04/00	8:24 AM	28.93	54	-	-0.01	--	--	--	--	--	--	--
GMSG-309	06/19/00	10:46 AM	28.84	68	-	0.04	0	12	6.8	-0.35	-0.35	-0.56	--
GMSG-309	07/07/00	6:25 PM	28.89	65	-	0.03	0	16	0	--	--	--	--
GMSG-309	10/08/00	11:56 AM	29.19	40	-	0	0	11.5	11.8	70.3	-2.76	-0.05	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-309	10/18/00	5:29 PM	28.85	56	-	0	0	15	1.4	-0.26	--	-0.4	--
GMSG-309	12/07/00	10:55 AM	28.51	11	0.01	0.04	0	10.4	1.5	0.88	--	0.88	--
GMSG-309	01/11/01	2:20 PM	28.8	32	-	-0.01	0	6.5	12	1.45	1.2	0.12	--
GMSG-309	01/12/01	11:10 AM	28.9	32	-	0	0	5.9	14.3	3.35	1.65	0.13	--
GMSG-309	01/14/01	8:50 AM	28.78	32	T	0.01	0	6.6	11.6	3.2	--	0.4	--
GMSG-309	01/23/01	12:10 PM	28.76	32	-	-0.02	0	8	5.8	0.5	--	0.1	--
GMSG-309	01/23/01	12:10 PM	28.76	32	-	-0.02	0	8	5.8	0.5	--	0.1	--
GMSG-309	01/24/01	9:40 AM	28.91	21	-	-0.13	0	0	19.7	1.4	1.25	0.45	--
GMSG-309	01/25/01	9:00 AM	29	7	-	-0.05	0	0	20	0.65	--	0.7	--
GMSG-309	01/26/01	9:35 AM	28.57	16	-	0	0	0.2	20.2	0.28	--	0.28	--
GMSG-309	01/30/01	10:05 AM	28.15	34	-	-0.05	0	1.6	18.6	-0.55	--	-0.55	--
GMSG-309	02/06/01	10:41 AM	28.71	27	T	-0.1	0	0	19.6	0.41	-0.11	0.21	--
GMSG-309	02/13/01	10:35 AM	28.96	25	-	0	0	0	19	13	5	0.9	--
GMSG-309	02/22/01	2:40 PM	28.56	19	-	0	0	0.5	19.1	1.2	0.8	1.1	--
GMSG-309	03/21/01	2:00 PM	28.9	47	-	-0.03	0	0	20.4	-0.2	-0.2	-0.4	--
GMSG-309	04/06/01	3:20 PM	28.73	47	-	-0.13	0	0	20.7	-0.49	-3.09	-0.49	--
GMSG-309	05/15/01	1:18 PM	28.5	54	-	0.5	0	2.9	12.8	0	0	0	--
GMSG-309	05/16/01	8:45 AM	28.43	68	-	-0.1	0	0.5	17.5	0	0	0	--
GMSG-309	05/19/01	9:12 AM	28.77	69	-	-0.15	0	0.3	18.3	0	0	0	--
GMSG-309	06/13/01	10:38 AM	28.6	73	-	-0.02	0	2.2	17.5	-1.52	-3.52	-1.52	--
GMSG-309	07/13/01	12:34 PM	28.9	82	-	-0.13	0	0.5	20.2	0	0	0	--
GMSG-309	08/08/01	8:10 AM	28.76	81	-	-0.01	0	2.1	17.4	0	0	0	--
GMSG-309	09/10/01	10:34 AM	28.75	63	-	0	0	0.5	19.6	9.5	0	0.5	--
GMSG-309	10/03/01	9:55 AM	28.47	56	-	-0.11	0	0.5	19.1	4.32	3.1	5.07	--
GMSG-309	11/12/01	9:50 AM	29.13	40	-	-0.14	0	0	20.8	-2.46	-2.4	-0.58	--
GMSG-309	12/12/01	10:20 AM	28.79	36	-	0.04	0	1.7	17.7	-1.26	-1.26	-0.15	--
GMSG-309	01/08/02	11:15 AM	28.31	33	-	0.11	0	1.9	16.7	-2.04	-1.71	-0.6	--
GMSG-309	02/15/02	10:31 AM	28.53	33	-	-0.03	0	1.5	17.5	-0.51	-3.82	-0.51	--
GMSG-309	03/13/02	12:50 PM	28.52	40	-	-0.09	0	2	16.9	0	0	0	--
GMSG-309	04/15/02	2:38 PM	28.42	82	-	0.11	0	2.4	16.7	0	0	0	--
GMSG-309	05/21/02	11:18 AM	29.08	57	-	0.03	0	3.6	16	0	0	0	--
GMSG-309	06/04/02	2:27 PM	28.65	52	-	0	0	4.8	13.3	0	0	0	--
GMSG-309	07/11/02	9:30 AM	29.11	73	-	0	0	7.7	12.9	--	--	--	--
GMSG-309	10/08/02	12:21 PM	28.74	49	-	0	0	8.4	12	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-309	10/28/02	2:07 PM	28.96	43	-	0	0	6.9	11	0	0	0.1	--
GMSG-309	11/20/02	10:45 AM	28.71	35	-	0	0	6.4	11.6	0	0	0	--
GMSG-309	12/02/02	1:32 PM	28.9	19	-	0	0	5.7	13.8	0.4	0	0.4	--
GMSG-309	01/06/03	1:44 PM	29.04	28	-	0	0	4.1	16.9	0.2	0	0	--
GMSG-309	04/01/03	12:54 PM	28.5	45	-	0	0	4.7	15.1	0	0	0.1	--
GMSG-309	07/18/03	2:27 PM	28.92	79	-	4	0	6.6	13.4	0	0	0	--
GMSG-309	10/10/03	11:29 AM	28.85	71	-	0	0	7.2	12.6	0	0	0	--
GMSG-309	01/27/04	3:50 PM	28.56	18	T	0	0	5.7	13.2	-1.94	-2.08	-0.54	--
GMSG-309	04/02/04	11:23 AM	28.93	49	-	0	0	3	16.6	0.26	-1.86	-0.6	--
GMSG-309	04/22/04	8:23 AM	28.98	36	-	0	0	0	18.4	--	--	--	--
GMSG-309	10/27/04	11:28 AM	29.14	42	-	0	0	6.5	15.9	-1.74	-1.77	-0.29	--
GMSG-310	07/27/99	8:45 AM	28.79	72	-	0	0	3	18	80	8	3	--
GMSG-310	08/07/99	1:25 PM	28.53	75.9	-	0	0	2.9	17.1	4.5	1.5	4.5	--
GMSG-310	08/25/99	11:11 AM	28.73	77	-	0	0	2.8	17.2	75	25	2	--
GMSG-310	09/30/99	5:31 PM	28.49	50	-	0	0	2.1	18.3	40	27	1.2	--
GMSG-310	10/11/99	7:42 AM	29.06	44.1	-	0	0	1.9	19.6	2.25	--	2.25	--
GMSG-310	10/26/99	3:36 PM	28.89	39.9	-	0	0	0.6	20.5	2	2	2	--
GMSG-310	11/05/99	9:36 AM	28.7	52	-	-0.02	0	1.3	19	1	<1	1	--
GMSG-310	11/09/99	9:16 AM	28.44	62.1	-	-0.01	0	1.3	18.1	3.25	<1	<1	--
GMSG-310	02/08/00	3:48 PM	28.63	30	-	0.01	0	0.5	19	3.5	1.5	3.5	--
GMSG-310	02/22/00	9:35 AM	28.65	30.9	-	0	0	0.5	19.1	18	2.75	2.75	--
GMSG-310	03/16/00	2:19 PM	28.95	27	-	0	0	0	20.4	0	-0.96	-0.77	--
GMSG-310	03/29/00	2:15 PM	28.66	41	-	-0.01	0	0.5	20.1	3.25	--	2.25	--
GMSG-310	05/01/00	10:16 AM	28.57	61	-	0	0	0.6	17.3	6	0	-0.14	--
GMSG-310	05/18/00	1:33 PM	28.82	49	-	0	--	--	--	--	--	--	--
GMSG-310	05/18/00	2:34 PM	28.83	50	-	0	--	--	--	--	--	--	--
GMSG-310	05/18/00	3:54 PM	28.82	50	-	0	--	--	--	--	--	--	--
GMSG-310	05/18/00	5:36 PM	28.88	46	-	0	--	--	--	--	--	--	--
GMSG-310	05/18/00	6:37 PM	28.88	44	-	0	--	--	--	--	--	--	--
GMSG-310	05/19/00	8:27 AM	28.97	45	-	0	--	--	--	--	--	--	--
GMSG-310	05/19/00	10:48 AM	28.92	52	-	0	--	--	--	--	--	--	--
GMSG-310	05/20/00	7:52 AM	28.83	53	-	0	0	0.9	19.3	2.5	0	<1	--
GMSG-310	05/20/00	11:45 AM	28.78	66	-	0	--	--	--	--	--	--	--
GMSG-310	05/20/00	12:49 PM	28.76	67	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-310	05/20/00	1:43 PM	28.74	68	-	0	--	--	--	--	--	--	--
GMSG-310	05/20/00	2:41 PM	28.73	68	-	0	--	--	--	--	--	--	--
GMSG-310	05/20/00	3:40 PM	28.71	69	-	0	--	--	--	--	--	--	--
GMSG-310	05/20/00	4:42 PM	28.71	67	-	0	--	--	--	--	--	--	--
GMSG-310	05/21/00	8:39 AM	28.66	60	-	0	--	--	--	--	--	--	--
GMSG-310	05/30/00	3:18 PM	28.57	60	-	0	0	1	19	0.5	0	0	--
GMSG-310	05/31/00	10:18 AM	28.78	71	-	0	--	--	--	--	--	--	--
GMSG-310	05/31/00	11:18 AM	28.76	73	-	0	--	--	--	--	--	--	--
GMSG-310	05/31/00	12:19 PM	28.75	72	-	0	--	--	--	--	--	--	--
GMSG-310	05/31/00	1:18 PM	28.75	76	-	0	--	--	--	--	--	--	--
GMSG-310	05/31/00	2:19 PM	28.76	76	-	0	--	--	--	--	--	--	--
GMSG-310	05/31/00	3:20 PM	28.76	77	-	0	--	--	--	--	--	--	--
GMSG-310	06/01/00	7:57 AM	28.83	54	-	0	--	--	--	--	--	--	--
GMSG-310	06/01/00	11:05 AM	28.86	52	0.04	0	--	--	--	--	--	--	--
GMSG-310	06/01/00	12:05 PM	28.74	52	0.06	0	--	--	--	--	--	--	--
GMSG-310	06/01/00	1:09 PM	28.69	55	T	0	--	--	--	--	--	--	--
GMSG-310	06/01/00	2:04 PM	28.74	54	-	0.01	--	--	--	--	--	--	--
GMSG-310	06/01/00	3:04 PM	28.68	54	T	0.01	--	--	--	--	--	--	--
GMSG-310	06/01/00	4:03 PM	28.66	54	-	0	--	--	--	--	--	--	--
GMSG-310	06/02/00	8:15 AM	28.82	50	-	0	--	--	--	--	--	--	--
GMSG-310	06/04/00	8:23 AM	28.93	54	-	0	--	--	--	--	--	--	--
GMSG-310	06/19/00	10:38 AM	28.84	68	-	0	0	1	18.9	-2.02	-2.02	-0.34	--
GMSG-310	07/07/00	6:05 PM	28.89	65	-	0	0	1.9	17.8	--	--	--	--
GMSG-310	10/08/00	11:46 AM	29.19	40	-	0	0	1.2	19.7	0.36	-2.08	-0.1	--
GMSG-310	10/18/00	5:21 PM	28.85	56	-	0	0	1.3	19	0.16	-2.85	-0.55	--
GMSG-310	12/07/00	10:45 AM	28.51	11	0.01	0.01	0	0.9	19.2	0.78	-1.1	0.78	--
GMSG-310	01/11/01	2:52 PM	28.79	33	-	0	0	0.5	19.1	3.39	1.2	0	--
GMSG-310	01/12/01	11:32 AM	28.89	33	-	0	0	0	19.9	1	0.55	0.26	--
GMSG-310	01/14/01	8:55 AM	28.78	32	T	0.01	0	0.5	19.6	3.2	2.6	0.5	--
GMSG-310	01/23/01	12:15 PM	28.76	32	-	0	0	0.5	18.9	0.09	--	0.09	--
GMSG-310	01/23/01	12:15 PM	28.76	32	-	0	0	0.5	18.9	0.09	--	0.09	--
GMSG-310	01/24/01	9:25 AM	28.87	21	0.01	0	0	0.5	18.9	0.2	--	0.09	--
GMSG-310	01/25/01	9:05 AM	29	7	-	0	0	0	19.8	0.38	--	0.36	--
GMSG-310	01/26/01	9:40 AM	28.57	16	-	0	0	0.1	20.1	0.29	--	0.29	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-310	01/30/01	9:55 AM	28.15	34	-	0.15	0	0.7	18.7	-0.67	--	-0.67	--
GMSG-310	02/06/01	10:30 AM	28.71	27	T	0	0	0.5	19.3	0.2	-0.9	0.18	--
GMSG-310	02/13/01	10:30 AM	28.96	25	-	0	0	0.4	19.2	12	7.7	0.9	--
GMSG-310	02/22/01	10:50 AM	28.67	10	T	0	0	0	0.4	6	4.4	5.6	--
GMSG-310	03/21/01	11:25 AM	28.94	42	-	0	0	0.3	20	-0.3	-2	-0.3	--
GMSG-310	04/06/01	3:16 PM	28.73	47	-	0	0	0.3	20.3	-0.55	-3.35	-0.55	--
GMSG-310	05/15/01	1:22 PM	28.5	54	-	0	0	0.9	17.8	0	0	0	--
GMSG-310	05/16/01	8:35 AM	28.43	68	-	0	0	0.9	17.4	0	0	0	--
GMSG-310	05/19/01	9:05 AM	28.77	69	-	0.1	0	0	18.8	0.78	0	0	--
GMSG-310	06/13/01	10:43 AM	28.6	73	-	-0.01	0	1	19	-1.45	-3.4	-1.45	--
GMSG-310	07/13/01	12:27 PM	28.91	81	-	-0.01	0	1.1	20.1	0	0	0	--
GMSG-310	08/08/01	8:05 AM	28.76	81	-	0	0	1.2	18.7	0	0	0	--
GMSG-310	09/10/01	10:40 AM	28.75	63	-	0	0	1.2	19.3	0.75	0	0.5	--
GMSG-310	10/03/01	10:05 AM	28.47	56	-	-0.01	0	1.3	19	1.95	1.88	4.9	--
GMSG-310	11/12/01	9:55 AM	29.13	40	-	0	0	0.4	20.5	-2.49	-2.53	-0.67	--
GMSG-310	12/12/01	10:25 AM	28.79	36	-	0	0	0.5	20.3	-1.35	-1.35	-0.2	--
GMSG-310	01/08/02	11:20 AM	28.31	33	-	0.03	0	0.4	19.9	-2.8	-2.08	-0.8	--
GMSG-310	02/15/02	10:28 AM	28.52	34	T	-0.01	0	0.3	20	-1.03	-1.03	-1.2	--
GMSG-310	03/13/02	12:57 PM	28.52	40	-	-0.01	0	0.2	20.3	0	0	0	--
GMSG-310	04/15/02	2:30 PM	28.42	82	-	0	0	0.1	20.3	0	0	0	--
GMSG-310	05/21/02	11:08 AM	29.08	57	-	0	0	0.5	20.6	0	0	0	--
GMSG-310	06/04/02	2:17 PM	28.65	52	-	0	0	0.9	19.9	0	0	0	--
GMSG-310	07/11/02	9:26 AM	29.13	72	-	0	0	1.4	20.1	--	--	--	--
GMSG-401	10/14/03	10:47 AM	28.48	52	-	--	0	1	18.4	--	--	--	--
GMSG-401	10/29/03	2:42 PM	28.51	41	-	--	0	0.6	18.8	--	--	--	--
GMSG-401	11/11/03	2:19 PM	28.48	48	-	--	0	0.8	18.7	--	--	--	--
GMSG-401	11/21/03	11:24 AM	28.87	32	-	0	0	5.9	11.2	--	--	--	--
GMSG-401	12/18/03	10:26 AM	28.58	24	-	--	0	0.5	19	--	--	--	--
GMSG-401	01/21/04	10:15 AM	28.43	14	T	--	0	0.4	18.5	--	--	--	--
GMSG-401	04/19/04	7:29 AM	28.44	42	0.01	--	0	0.4	17.4	--	--	--	--
GMSG-401	07/14/04	11:56 AM	28.67	76	-	--	0	0.9	18.5	--	--	--	--
GMSG-401	10/30/04	8:36 AM	27.94	55	-	--	0	1.1	18.6	--	--	--	--
GMSG-401	02/07/05	3:30 PM	28.88	25	-	--	--	--	--	--	--	--	--
GMSG-401	04/04/05	3:33 PM	28.72	55	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-401	07/05/05	11:50 AM	28.88	64	-	--	--	--	--	--	--	--	--
GMSG-401	07/06/05	9:55 AM	28.96	69	-	--	--	--	--	--	--	--	--
GMSG-401	10/11/05	4:44 PM	29	55	-	--	--	--	--	--	--	--	--
GMSG-401	03/02/06	2:30 PM	28.8	29	-	--	--	--	--	--	--	--	--
GMSG-401	04/06/06	2:24 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-401	07/13/06	9:24 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-401	10/11/06	9:40 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-401	01/31/07	11:56 AM	28.61	15	-	--	--	--	--	--	--	--	--
GMSG-401	04/06/07	11:20 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-401	07/19/07	2:52 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-401	10/17/07	12:14 PM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-402	10/14/03	10:39 AM	28.48	52	-	--	0	0.5	18.6	--	--	--	--
GMSG-402	10/29/03	2:37 PM	28.51	41	-	--	0	0.3	19	--	--	--	--
GMSG-402	11/11/03	2:15 PM	28.48	48	-	--	0	0.1	19.4	--	--	--	--
GMSG-402	12/18/03	10:21 AM	28.58	24	-	--	0	0.1	19.3	--	--	--	--
GMSG-402	01/21/04	10:10 AM	28.43	14	T	--	0	0.1	18.8	--	--	--	--
GMSG-402	04/19/04	7:35 AM	28.5	41	T	--	0	0.3	17.4	--	--	--	--
GMSG-402	07/14/04	11:50 AM	28.67	76	-	--	0	1.1	18.2	--	--	--	--
GMSG-402	10/30/04	8:40 AM	27.94	55	-	--	0	0.4	19	--	--	--	--
GMSG-402	02/07/05	3:21 PM	28.88	27	-	--	--	--	--	--	--	--	--
GMSG-402	04/04/05	3:30 PM	28.72	55	-	--	--	--	--	--	--	--	--
GMSG-402	07/05/05	11:55 AM	28.88	64	-	--	--	--	--	--	--	--	--
GMSG-402	10/11/05	4:40 PM	29	55	-	--	--	--	--	--	--	--	--
GMSG-402	03/02/06	2:46 PM	28.8	29	-	--	--	--	--	--	--	--	--
GMSG-402	04/06/06	2:19 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-402	07/13/06	9:13 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-402	10/11/06	9:33 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-402	01/31/07	11:41 AM	28.61	15	-	--	--	--	--	--	--	--	--
GMSG-402	04/06/07	11:14 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-402	07/19/07	2:57 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-402	10/17/07	12:07 PM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-403	10/14/03	5:13 PM	28.52	49	-	--	0	0.4	19.3	--	--	--	--
GMSG-403	10/29/03	2:27 PM	28.48	43	-	--	0	0.2	19.2	--	--	--	--
GMSG-403	11/11/03	2:44 PM	28.48	48	-	--	0	0.2	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-403	12/18/03	2:03 PM	28.51	25	-	--	0	0.1	19	--	--	--	--
GMSG-403	01/29/04	2:55 PM	28.76	6	-	--	0	0	19.3	--	--	--	--
GMSG-403	04/19/04	8:30 AM	28.59	41	-	--	0	0.2	17.7	--	--	--	--
GMSG-403	07/14/04	2:19 PM	28.67	78	-	--	0	0.2	19.6	--	--	--	--
GMSG-403	10/30/04	9:17 AM	27.94	55	-	--	0	0.5	19.1	--	--	--	--
GMSG-403	02/07/05	3:53 PM	28.88	25	-	--	--	--	--	--	--	--	--
GMSG-403	04/04/05	2:48 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-403	07/05/05	1:09 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-403	10/11/05	4:16 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-403	02/27/06	2:10 PM	28.83	22	-	--	--	--	--	--	--	--	--
GMSG-403	04/06/06	3:27 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-403	07/13/06	10:04 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-403	10/11/06	10:57 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-403	01/31/07	3:14 PM	28.49	22	-	--	--	--	--	--	--	--	--
GMSG-403	04/05/07	2:32 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-403	07/19/07	3:24 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-403	10/17/07	2:30 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-404	10/14/03	5:54 PM	28.54	46	-	--	0	0.5	19.2	--	--	--	--
GMSG-404	10/29/03	2:06 PM	28.48	43	-	--	0	0.3	19.1	--	--	--	--
GMSG-404	11/11/03	2:05 PM	28.48	48	-	--	0	0.3	19.2	--	--	--	--
GMSG-404	12/18/03	9:52 AM	28.58	24	-	--	0	0.2	18.8	--	--	--	--
GMSG-404	01/20/04	4:17 PM	28.99	14	-	--	0	0.2	18.7	--	--	--	--
GMSG-404	04/18/04	3:11 PM	28.38	55	-	--	0	0.3	17.2	--	--	--	--
GMSG-404	07/14/04	11:00 AM	28.68	75	-	--	0	1	18.5	--	--	--	--
GMSG-404	10/29/04	1:04 PM	28.37	57	T	--	0	0.6	19.2	--	--	--	--
GMSG-404	01/28/05	10:54 AM	29.25	21	-	--	--	--	--	--	--	--	--
GMSG-404	04/05/05	8:07 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-404	07/06/05	10:00 AM	28.96	69	-	--	--	--	--	--	--	--	--
GMSG-404	10/11/05	11:25 AM	29.04	54	-	--	--	--	--	--	--	--	--
GMSG-404	03/01/06	9:17 AM	28.77	12	-	--	--	--	--	--	--	--	--
GMSG-404	04/10/06	10:47 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-404	07/11/06	9:37 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-404	10/09/06	3:57 PM	29.09	48	-	--	--	--	--	--	--	--	--
GMSG-404	02/04/07	12:13 PM	28.82	-7	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-404	04/04/07	3:11 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-404	07/18/07	2:27 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-404	10/18/07	10:22 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-405	10/14/03	5:47 PM	28.54	46	-	--	0	0.5	19	--	--	--	--
GMSG-405	10/29/03	2:15 PM	28.48	43	-	--	0	0.4	18.9	--	--	--	--
GMSG-405	11/11/03	2:58 PM	28.48	48	-	--	0	0.3	19.2	--	--	--	--
GMSG-405	12/18/03	2:22 PM	28.51	25	-	--	0	0.2	18.9	--	--	--	--
GMSG-405	01/21/04	11:19 AM	28.4	20	T	--	0	0.1	18.8	--	--	--	--
GMSG-405	04/19/04	9:07 AM	28.59	41	-	--	0	0.3	17.4	--	--	--	--
GMSG-405	07/14/04	2:51 PM	28.67	78	-	--	0	0.6	19	--	--	--	--
GMSG-405	10/30/04	10:20 AM	27.92	55	T	--	0	0.5	19.2	--	--	--	--
GMSG-405	02/08/05	9:51 AM	28.99	17	-	--	--	--	--	--	--	--	--
GMSG-405	04/04/05	3:03 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-405	07/05/05	1:34 PM	28.87	68	-	--	--	--	--	--	--	--	--
GMSG-405	10/11/05	3:35 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-405	02/27/06	12:49 PM	28.84	20	-	--	--	--	--	--	--	--	--
GMSG-405	04/06/06	3:06 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-405	07/13/06	10:48 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-405	10/11/06	11:35 AM	28.05	43	0.01	--	--	--	--	--	--	--	--
GMSG-405	02/01/07	10:47 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-405	04/05/07	2:12 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-405	07/19/07	1:58 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-405	10/18/07	9:05 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-406	10/14/03	5:16 PM	28.52	49	-	--	0	0.6	19	--	--	--	--
GMSG-406	10/29/03	2:20 PM	28.48	43	-	--	0	0.5	18.7	--	--	--	--
GMSG-406	11/11/03	2:48 PM	28.48	48	-	--	0	0	19.6	--	--	--	--
GMSG-406	12/18/03	2:09 PM	28.51	25	-	--	0	0.4	18.7	--	--	--	--
GMSG-406	01/29/04	3:15 PM	28.76	6	-	--	0	0.3	19.1	--	--	--	--
GMSG-406	04/19/04	8:41 AM	28.59	41	-	--	0	0.4	17.2	--	--	--	--
GMSG-406	07/14/04	2:33 PM	28.67	78	-	--	0	0.8	18.8	--	--	--	--
GMSG-406	10/30/04	9:29 AM	27.94	55	-	--	0	0.5	19.1	--	--	--	--
GMSG-406	02/08/05	9:00 AM	28.99	15	-	--	--	--	--	--	--	--	--
GMSG-406	04/04/05	2:45 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-406	07/05/05	1:23 PM	28.88	66	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-406	10/11/05	4:10 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-406	02/27/06	1:41 PM	28.83	22	-	--	--	--	--	--	--	--	--
GMSG-406	04/06/06	2:58 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-406	07/13/06	11:10 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-406	10/11/06	11:19 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-406	01/31/07	3:50 PM	28.46	19	-	--	--	--	--	--	--	--	--
GMSG-406	04/05/07	3:18 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-406	07/19/07	2:08 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-406	10/17/07	2:46 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-407	10/14/03	5:09 PM	28.52	49	-	--	0	0.9	18.7	--	--	--	--
GMSG-407	10/29/03	2:23 PM	28.48	43	-	--	0	0.9	18.4	--	--	--	--
GMSG-407	11/11/03	2:40 PM	28.48	48	-	--	0	0	19.6	--	--	--	--
GMSG-407	12/18/03	2:13 PM	28.51	25	-	--	0	0.3	18.9	--	--	--	--
GMSG-407	01/21/04	10:51 AM	28.4	20	T	--	0	0.8	18.3	--	--	--	--
GMSG-407	04/19/04	8:35 AM	28.59	41	-	--	0	0.5	16.8	--	--	--	--
GMSG-407	07/14/04	2:23 PM	28.67	78	-	--	0	1.3	18.2	--	--	--	--
GMSG-407	10/30/04	9:27 AM	27.94	55	-	--	0	0.9	18.6	--	--	--	--
GMSG-407	02/08/05	8:50 AM	28.99	15	-	--	--	--	--	--	--	--	--
GMSG-407	04/04/05	2:49 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-407	07/05/05	1:15 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-407	10/11/05	3:45 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-407	03/03/06	11:55 AM	29.14	26	-	--	--	--	--	--	--	--	--
GMSG-407	04/06/06	3:25 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-407	07/13/06	10:10 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-407	10/11/06	11:08 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-407	02/01/07	10:25 AM	28.4	11	-	--	--	--	--	--	--	--	--
GMSG-407	04/05/07	2:24 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-407	07/19/07	3:29 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-407	10/17/07	2:41 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-408	10/14/03	10:56 AM	28.48	52	-	--	0	0.4	18.8	--	--	--	--
GMSG-408	10/29/03	2:32 PM	28.51	41	-	--	0	0.4	18.9	--	--	--	--
GMSG-408	11/11/03	2:35 PM	28.48	48	-	--	0	0	19.5	--	--	--	--
GMSG-408	12/18/03	1:57 PM	28.51	25	-	--	0	0	19.2	--	--	--	--
GMSG-408	01/21/04	10:26 AM	28.43	14	T	--	0	0.3	18.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-408	04/19/04	8:15 AM	28.5	41	T	--	0	0.3	17.6	--	--	--	--
GMSG-408	07/14/04	2:06 PM	28.67	78	-	--	0	0.5	19.1	--	--	--	--
GMSG-408	10/30/04	9:07 AM	27.94	55	-	--	0	0.5	19.2	--	--	--	--
GMSG-408	02/07/05	3:38 PM	28.88	25	-	--	--	--	--	--	--	--	--
GMSG-408	04/04/05	3:17 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-408	07/05/05	1:00 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-408	10/11/05	4:26 PM	28.99	56	-	--	--	--	--	--	--	--	--
GMSG-408	02/20/06	1:19 PM	28.52	27	-	--	--	--	--	--	--	--	--
GMSG-408	04/06/06	3:36 PM	28.49	54	-	--	--	--	--	--	--	--	--
GMSG-408	07/13/06	9:41 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-408	10/11/06	10:35 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-408	01/31/07	2:41 PM	28.49	22	-	--	--	--	--	--	--	--	--
GMSG-408	04/05/07	2:54 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-408	07/19/07	3:06 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-408	10/22/07	11:46 AM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-409	10/14/03	5:27 PM	28.52	49	-	--	0	0.3	19.1	--	--	--	--
GMSG-409	10/29/03	2:59 PM	28.51	41	-	--	0	0.4	18.8	--	--	--	--
GMSG-409	11/11/03	2:06 PM	28.48	48	-	--	0	0	19.6	--	--	--	--
GMSG-409	12/18/03	1:44 PM	28.51	25	-	--	0	0.4	19.1	--	--	--	--
GMSG-409	01/21/04	9:40 AM	28.43	14	T	--	0	0.4	18.8	--	--	--	--
GMSG-409	04/19/04	7:58 AM	28.5	41	T	--	0	0.3	17.6	--	--	--	--
GMSG-409	07/14/04	12:10 PM	28.67	76	-	--	0	0.3	19.1	--	--	--	--
GMSG-409	10/30/04	8:55 AM	27.94	55	-	--	0	0.3	19.5	--	--	--	--
GMSG-409	02/07/05	2:53 PM	28.88	27	-	--	--	--	--	--	--	--	--
GMSG-409	04/04/05	3:42 PM	28.72	55	-	--	--	--	--	--	--	--	--
GMSG-409	07/05/05	12:40 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-409	10/12/05	3:12 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-409	02/17/06	11:46 AM	29.09	12	-	--	--	--	--	--	--	--	--
GMSG-409	04/06/06	2:46 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-409	07/13/06	8:58 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-409	10/11/06	9:53 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-409	02/03/07	8:00 AM	28.42	-13	-	--	--	--	--	--	--	--	--
GMSG-409	04/06/07	11:33 AM	28.75	20	T	--	--	--	--	--	--	--	--
GMSG-409	07/19/07	2:48 PM	30.06	62	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-409	10/17/07	1:53 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-410	10/14/03	5:18 PM	28.52	49	-	--	0	0.2	19.5	--	--	--	--
GMSG-410	10/29/03	3:00 PM	28.51	41	-	--	0	0	19.2	--	--	--	--
GMSG-410	11/11/03	2:09 PM	28.48	48	-	--	0	0	19.6	--	--	--	--
GMSG-410	12/18/03	1:49 PM	28.51	25	-	--	0	0	19.4	--	--	--	--
GMSG-410	01/21/04	9:46 AM	28.43	14	T	--	0	0	18.9	--	--	--	--
GMSG-410	04/19/04	8:04 AM	28.5	41	T	--	0	0	17.7	--	--	--	--
GMSG-410	07/14/04	12:06 PM	28.67	76	-	--	0	0	19.4	--	--	--	--
GMSG-410	10/30/04	9:00 AM	27.94	55	-	--	0	0	20	--	--	--	--
GMSG-410	02/07/05	3:08 PM	28.88	27	-	--	--	--	--	--	--	--	--
GMSG-410	04/04/05	3:46 PM	28.72	55	-	--	--	--	--	--	--	--	--
GMSG-410	07/05/05	12:50 PM	28.88	66	-	--	--	--	--	--	--	--	--
GMSG-410	10/12/05	3:20 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-410	02/17/06	12:02 PM	29.09	12	-	--	--	--	--	--	--	--	--
GMSG-410	04/06/06	2:51 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-410	07/13/06	9:07 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-410	10/11/06	10:00 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-410	02/03/07	8:09 AM	28.42	-13	-	--	--	--	--	--	--	--	--
GMSG-410	04/06/07	11:27 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-410	07/19/07	2:43 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-410	10/17/07	2:02 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-411	10/14/03	5:35 PM	28.54	46	-	--	0	0.4	19.1	--	--	--	--
GMSG-411	10/29/03	2:51 PM	28.51	41	-	--	0	0	19.4	--	--	--	--
GMSG-411	11/11/03	2:24 PM	28.48	48	-	--	0	0	19.5	--	--	--	--
GMSG-411	12/18/03	10:37 AM	28.57	24	-	--	0	0.1	19.2	--	--	--	--
GMSG-411	01/21/04	10:01 AM	28.43	14	T	--	0	0.2	18.7	--	--	--	--
GMSG-411	04/18/04	4:22 PM	28.35	58	-	--	0	0.3	17.6	--	--	--	--
GMSG-411	07/14/04	11:35 AM	28.67	76	-	--	0	0.4	19.1	--	--	--	--
GMSG-411	10/29/04	2:34 PM	28.35	58	-	--	0	0.4	19.3	--	--	--	--
GMSG-411	01/28/05	1:37 PM	29.16	26	-	--	--	--	--	--	--	--	--
GMSG-411	04/05/05	7:59 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-411	07/05/05	11:44 AM	28.88	64	-	--	--	--	--	--	--	--	--
GMSG-411	10/12/05	3:25 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-411	02/27/06	3:13 PM	28.83	23	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-411	04/10/06	11:31 AM	28.78	62	-	--	--	--	--	--	--	--	--
GMSG-411	07/13/06	11:28 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-411	10/11/06	11:49 AM	28.05	43	0.01	--	--	--	--	--	--	--	--
GMSG-411	02/01/07	11:11 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-411	04/06/07	11:43 AM	28.75	20	T	--	--	--	--	--	--	--	--
GMSG-411	07/20/07	2:17 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-411	10/17/07	11:35 AM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-412	10/14/03	5:39 PM	28.54	46	-	--	0	0.8	18.7	--	--	--	--
GMSG-412	10/29/03	2:48 PM	28.51	41	-	--	0	0.6	18.8	--	--	--	--
GMSG-412	11/11/03	2:29 PM	28.48	48	-	--	0	0.4	19.1	--	--	--	--
GMSG-412	12/18/03	10:32 AM	28.57	24	-	--	0	0.4	19	--	--	--	--
GMSG-412	01/21/04	9:55 AM	28.43	14	T	--	0	0.3	18.5	--	--	--	--
GMSG-412	04/18/04	4:31 PM	28.3	61	-	--	0	0.3	17.6	--	--	--	--
GMSG-412	07/14/04	11:40 AM	28.67	76	-	--	0	0.7	18.8	--	--	--	--
GMSG-412	10/29/04	2:40 PM	28.35	58	-	--	0	0.5	19.4	--	--	--	--
GMSG-412	01/28/05	1:42 PM	29.16	26	-	--	--	--	--	--	--	--	--
GMSG-412	04/05/05	8:00 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-412	07/05/05	11:40 AM	28.88	64	-	--	--	--	--	--	--	--	--
GMSG-412	10/12/05	3:28 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-412	02/27/06	3:03 PM	28.83	23	-	--	--	--	--	--	--	--	--
GMSG-412	04/10/06	11:33 AM	28.78	62	-	--	--	--	--	--	--	--	--
GMSG-412	07/13/06	11:23 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-412	10/11/06	11:52 AM	28.05	43	0.01	--	--	--	--	--	--	--	--
GMSG-412	02/01/07	11:05 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-412	04/06/07	11:41 AM	28.75	20	T	--	--	--	--	--	--	--	--
GMSG-412	07/20/07	2:15 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-412	10/17/07	11:40 AM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-413	10/14/03	10:27 AM	28.5	51	-	--	0	1.2	18.2	--	--	--	--
GMSG-413	10/29/03	1:46 PM	28.48	43	-	--	0	0.9	18.6	--	--	--	--
GMSG-413	11/12/03	11:55 AM	28.23	40	-	--	0	0.7	19	--	--	--	--
GMSG-413	12/18/03	9:35 AM	28.58	24	-	--	0	0.5	18.5	--	--	--	--
GMSG-413	01/21/04	7:50 AM	28.48	11	T	--	0	0.4	19.1	--	--	--	--
GMSG-413	04/16/04	3:38 PM	28.65	74	-	--	0	0.5	18.9	--	--	--	--
GMSG-413	07/15/04	9:25 AM	28.68	75	-	--	0	1.2	18.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-413	10/31/04	11:48 AM	--	--	--	--	0	1	19.2	--	--	--	--
GMSG-413	02/08/05	10:36 AM	29.01	19	-	--	--	--	--	--	--	--	--
GMSG-413	04/04/05	2:58 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-413	07/06/05	9:09 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-413	10/13/05	11:17 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-413	02/27/06	3:31 PM	28.83	22	-	--	--	--	--	--	--	--	--
GMSG-413	04/06/06	2:11 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-413	07/12/06	9:33 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-413	10/11/06	9:00 AM	28.11	42	0.07	--	--	--	--	--	--	--	--
GMSG-413	02/05/07	11:29 AM	29.1	1	-	--	--	--	--	--	--	--	--
GMSG-413	04/03/07	1:54 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-413	07/20/07	3:32 PM	30.2	73	-	--	--	--	--	--	--	--	--
GMSG-413	10/17/07	11:49 AM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-414	10/14/03	10:31 AM	28.48	52	-	--	0	0.6	18.7	--	--	--	--
GMSG-414	10/29/03	1:41 PM	28.48	43	-	--	0	0.9	18.1	--	--	--	--
GMSG-414	11/12/03	11:58 AM	28.23	40	-	--	0	1	18	--	--	--	--
GMSG-414	12/18/03	9:27 AM	28.58	24	-	--	0	0.2	18.5	--	--	--	--
GMSG-414	01/21/04	7:42 AM	28.48	11	T	--	0	1	18	--	--	--	--
GMSG-414	04/16/04	3:30 PM	28.65	74	-	--	0	0.8	18.7	--	--	--	--
GMSG-414	07/15/04	9:30 AM	28.68	78	-	--	0	1.1	18.1	--	--	--	--
GMSG-414	10/31/04	11:43 AM	--	--	--	--	0	1	18.9	--	--	--	--
GMSG-414	02/08/05	10:47 AM	29.01	19	-	--	--	--	--	--	--	--	--
GMSG-414	04/04/05	2:56 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-414	07/06/05	9:02 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-414	10/13/05	11:15 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-414	03/06/06	1:56 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-414	04/06/06	2:13 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-414	07/12/06	9:24 AM	28.83	75	-	--	--	--	--	--	--	--	--
GMSG-414	10/11/06	8:53 AM	28.11	42	0.07	--	--	--	--	--	--	--	--
GMSG-414	02/04/07	2:28 PM	28.85	-6	T	--	--	--	--	--	--	--	--
GMSG-414	04/03/07	1:49 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-414	07/20/07	3:28 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-414	10/17/07	11:58 AM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-415	10/14/03	5:00 PM	28.52	49	-	--	0	0.4	19.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-415	10/29/03	2:01 PM	28.48	43	-	--	0	0.3	18.8	--	--	--	--
GMSG-415	11/11/03	2:10 PM	28.48	48	-	--	0	0.2	19.1	--	--	--	--
GMSG-415	12/18/03	10:22 AM	28.58	24	-	--	0	0.2	18.7	--	--	--	--
GMSG-415	01/20/04	4:51 PM	28.97	12	-	--	0	0.3	18.7	--	--	--	--
GMSG-415	04/18/04	2:20 PM	28.42	52	-	--	0	0.3	17	--	--	--	--
GMSG-415	07/14/04	10:48 AM	28.68	75	-	--	0	0.8	18.6	--	--	--	--
GMSG-415	10/29/04	1:55 PM	28.35	57	-	--	0	0	18.9	--	--	--	--
GMSG-415	01/28/05	12:41 PM	29.18	24	-	--	--	--	--	--	--	--	--
GMSG-415	04/05/05	8:26 AM	28.57	45	-	--	--	--	--	--	--	--	--
GMSG-415	07/06/05	10:43 AM	28.95	70	-	--	--	--	--	--	--	--	--
GMSG-415	10/11/05	11:15 AM	29.04	54	-	--	--	--	--	--	--	--	--
GMSG-415	10/21/05	9:25 AM	28.91	35	-	--	--	--	--	--	--	--	--
GMSG-415	02/22/06	4:16 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-415	04/11/06	8:19 AM	28.69	53	-	--	--	--	--	--	--	--	--
GMSG-415	07/11/06	11:17 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-415	10/09/06	12:59 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-415	02/04/07	2:05 PM	28.85	-6	T	--	--	--	--	--	--	--	--
GMSG-415	04/04/07	11:23 AM	28.62	19	T	--	--	--	--	--	--	--	--
GMSG-415	07/19/07	11:34 AM	30	69	-	--	--	--	--	--	--	--	--
GMSG-415	10/18/07	10:48 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-416	10/14/03	4:55 PM	28.52	49	-	--	0	0.3	19.3	--	--	--	--
GMSG-416	10/29/03	1:55 PM	28.48	43	-	--	0	0.2	19.3	--	--	--	--
GMSG-416	11/12/03	11:49 AM	28.23	40	-	--	0	1	18.4	--	--	--	--
GMSG-416	12/18/03	9:42 AM	28.58	24	-	--	0	0.2	18.8	--	--	--	--
GMSG-416	01/21/04	7:58 AM	28.48	11	T	--	0	0.5	18.7	--	--	--	--
GMSG-416	04/18/04	9:39 AM	28.57	45	T	--	0	0.9	16.9	--	--	--	--
GMSG-416	07/14/04	3:10 PM	28.67	78	-	--	0	0.4	19.2	--	--	--	--
GMSG-416	10/31/04	11:27 AM	--	--	--	--	0	0.2	19.9	--	--	--	--
GMSG-416	02/08/05	3:44 PM	28.97	21	-	--	--	--	--	--	--	--	--
GMSG-416	04/04/05	2:31 PM	28.72	56	-	--	--	--	--	--	--	--	--
GMSG-416	07/06/05	9:28 AM	28.96	65	-	--	--	--	--	--	--	--	--
GMSG-416	10/13/05	12:30 PM	28.8	59	-	--	--	--	--	--	--	--	--
GMSG-416	03/03/06	12:24 PM	29.14	26	-	--	--	--	--	--	--	--	--
GMSG-416	04/11/06	8:30 AM	28.68	59	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-416	07/11/06	1:09 PM	28.79	73	-	--	--	--	--	--	--	--	--
GMSG-416	10/10/06	3:40 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-416	02/06/07	2:35 PM	28.81	8	-	--	--	--	--	--	--	--	--
GMSG-416	04/04/07	9:47 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-416	07/19/07	11:16 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-416	11/01/07	3:08 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-417	01/02/03	2:10 PM	28.92	27	-	--	0	4.1	15.6	--	--	--	--
GMSG-417	10/14/03	10:05 AM	28.5	51	-	--	10.3	11.5	0	--	--	--	--
GMSG-417	10/14/03	3:30 PM	28.5	50	T	--	10.2	11.3	0	--	--	--	--
GMSG-417	10/27/03	8:21 AM	28.69	30	-	0	8.9	12.3	0	--	--	--	--
GMSG-417	10/28/03	1:53 PM	28.08	44	T	--	12.8	11.1	1.2	--	--	--	--
GMSG-417	10/29/03	8:02 AM	28.36	38	T	0	9.1	12.3	0	--	--	--	--
GMSG-417	10/30/03	10:34 AM	28.69	41	T	0	8.3	12.2	0	--	--	--	--
GMSG-417	10/31/03	2:42 PM	28.81	46	-	0	7.1	12	0	--	--	--	--
GMSG-417	11/01/03	9:05 AM	29.12	34	-	0	6.3	11.8	0	--	--	--	--
GMSG-417	11/02/03	11:10 AM	28.95	38	-	0	5.3	11.8	0	--	--	--	--
GMSG-417	11/03/03	8:45 AM	29.06	35	-	0	4.4	11.6	0	--	--	--	--
GMSG-417	11/04/03	10:13 AM	28.69	33	T	0	3.6	11.7	0	--	--	--	--
GMSG-417	11/05/03	8:47 AM	28.83	35	-	0	3.1	11.7	0	--	--	--	--
GMSG-417	11/06/03	10:12 AM	29.02	25	-	0	2.1	11.4	0	--	--	--	--
GMSG-417	11/07/03	9:46 AM	29	21	-	0	1.2	11.3	0	--	--	--	--
GMSG-417	11/10/03	9:15 AM	28.95	31	-	0	0	11.5	0.2	--	--	--	--
GMSG-417	11/11/03	8:38 AM	28.5	39	-	0	0	11.5	1	--	--	--	--
GMSG-417	11/13/03	10:34 AM	28.93	29	T	0	0	10.7	3.6	--	--	--	--
GMSG-417	11/21/03	11:36 AM	28.87	32	-	0	0	9.1	8.3	--	--	--	--
GMSG-417	12/03/03	9:23 AM	29.25	14	-	0	0	6.8	13.1	--	--	--	--
GMSG-417	12/04/03	8:47 AM	29.05	18	-	0	0	6.8	13.1	--	--	--	--
GMSG-417	12/05/03	1:57 PM	29	39	-	0	0	6.8	13.2	--	--	--	--
GMSG-417	12/06/03	8:21 AM	29.11	19	-	0	0	5	5.8	--	--	--	--
GMSG-417	12/08/03	9:05 AM	28.69	33	-	0	0	6.8	13.3	--	--	--	--
GMSG-417	12/17/03	2:58 PM	28.56	25	-	--	0	5.9	14.4	--	--	--	--
GMSG-417	01/12/04	11:30 AM	28.7	28	T	0	0	3.6	16.3	1.64	1.5	0	--
GMSG-417	01/20/04	7:55 AM	29.06	-13	-	--	0	3.2	16.9	--	--	--	--
GMSG-417	01/22/04	7:55 AM	28.74	-12	-	0	0	3.2	16.9	1.68	1.55	0.9	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-417	01/30/04	10:20 AM	28.65	0	T	0	0	2.3	17.4	2.34	2.3	0.1	--
GMSG-417	02/03/04	11:06 AM	28.66	20	-	0	0	2.2	17.7	3.02	2.9	0.71	--
GMSG-417	02/12/04	1:55 PM	28.88	23	T	0	0	1.8	18.1	1.84	1.7	-0.05	--
GMSG-417	02/19/04	9:55 AM	28.72	26	-	0.5	0	1.6	18.2	1.64	1.6	0.22	--
GMSG-417	02/27/04	11:44 AM	29.16	30	-	0	0	1.4	18.2	0.77	0.66	0.24	--
GMSG-417	03/02/04	1:24 PM	28.76	39	-	0	0	1.4	18.2	1.22	1	0.24	--
GMSG-417	03/03/04	10:12 AM	28.99	34	-	0	0	1.4	18.4	1.03	0.9	0.1	--
GMSG-417	03/03/04	2:27 PM	28.88	35	-	0.1	0	1.6	18.1	2.4	2.2	1.43	--
GMSG-417	03/04/04	8:49 AM	28.89	31	-	0	0	1.3	18.4	0.9	0.86	0.2	--
GMSG-417	03/05/04	10:30 AM	28.2	31	T	0.1	0	1.4	18.4	8.5	5.4	0.22	--
GMSG-417	03/06/04	7:54 AM	28.57	25	T	0	0	1.4	18.2	1.12	1.07	0.45	--
GMSG-417	03/07/04	8:12 AM	28.34	29	T	0	0	1.4	18.2	0.88	0.83	0.22	--
GMSG-417	03/08/04	9:19 AM	28.78	24	-	0	0	1.4	18.2	7	1.95	0.3	--
GMSG-417	03/09/04	2:05 PM	28.98	34	-	0.1	0	1.4	18.2	3.8	2.3	0.33	--
GMSG-417	03/10/04	9:36 AM	28.75	35	-	0	0	1.4	18.3	3.4	3.1	0.5	--
GMSG-417	03/11/04	9:40 AM	28.43	26	0.02	0	0.1	1.6	17.9	100	12.4	0.2	--
GMSG-417	03/12/04	11:25 AM	28.89	17	T	0	0	1.4	18.2	0.87	0.8	0.05	--
GMSG-417	03/13/04	7:43 AM	29.06	2	-	0	0	1.6	18.1	--	--	--	--
GMSG-417	03/14/04	1:45 PM	28.41	31	-	0	0	1.4	18.1	--	--	--	--
GMSG-417	03/15/04	9:58 AM	29.11	26	-	0	0	1.5	18.2	9.9	2.5	0	--
GMSG-417	03/16/04	9:55 AM	28.97	26	-	0	0	1.6	17.6	0.89	0.7	0.08	--
GMSG-417	03/17/04	9:47 AM	28.68	27	-	0	0	1.4	17.9	0.82	0.8	0.05	--
GMSG-417	03/18/04	9:03 AM	28.7	30	-	0	0	1.4	17.8	0.85	0.8	0.16	--
GMSG-417	03/19/04	9:11 AM	28.98	28	-	0	0	1.5	18	1.03	0.95	0.35	--
GMSG-417	03/20/04	8:00 AM	28.52	44	-	0	0	1.4	17.9	--	--	--	--
GMSG-417	03/21/04	11:54 AM	29.25	20	-	0	0	1.5	17.8	--	--	--	--
GMSG-417	03/22/04	8:46 AM	29.08	18	-	0	0	1.6	17.6	2.2	1.3	0.9	--
GMSG-417	03/23/04	3:42 PM	28.9	38	-	0	0	1.4	17.5	--	--	--	--
GMSG-417	03/24/04	2:46 PM	28.65	41	-	0	0	1.4	17.4	--	--	--	--
GMSG-417	03/26/04	11:45 AM	--	--	--	0	0	1.4	17.2	66.8	3.5	1.7	--
GMSG-417	03/28/04	5:40 PM	--	--	--	0	0	1.4	16.8	--	--	--	--
GMSG-417	03/29/04	2:25 PM	--	--	--	0	0	1.4	16.9	--	--	--	--
GMSG-417	03/30/04	3:03 PM	--	--	--	0	0	1.6	16.6	1.92	1.68	0.1	--
GMSG-417	03/31/04	5:10 PM	--	--	--	0	0	1.7	16.3	1.08	1	-0.04	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-417	04/01/04	5:32 PM	28.88	45	-	0	0	1.6	16.3	1.14	1.1	-0.08	--
GMSG-417	04/02/04	10:10 AM	28.95	47	-	0.75	1.6	16.4	--	0.69	-0.95	0.75	--
GMSG-417	04/03/04	8:56 AM	28.65	40	-	0	0	1.6	16.3	0.63	0.56	-0.92	--
GMSG-417	04/04/04	9:42 AM	28.94	34	-	0	0	1.7	16.2	1.26	0.88	-0.24	--
GMSG-417	04/05/04	8:18 AM	28.96	29	-	0	0	1.7	16	1405	2.02	0.34	--
GMSG-417	04/06/04	7:50 AM	28.56	34	-	0	0	1.7	16	10.19	2.31	0.25	--
GMSG-417	04/06/04	10:50 AM	28.58	53	-	0	0	1.7	15.9	8.34	2.6	-0.8	--
GMSG-417	04/07/04	7:26 AM	28.68	38	-	0	0	1.7	16.1	134	1.66	-0.77	--
GMSG-417	04/16/04	11:30 AM	28.64	74	-	0	0	1.4	16.6	--	--	--	--
GMSG-417	04/19/04	4:30 PM	28.92	-	-	0	0	1.6	15.5	--	--	--	--
GMSG-417	04/28/04	3:27 PM	28.28	73	-	0	0	1.3	18.4	--	--	--	--
GMSG-417	04/30/04	8:51 AM	28.86	39	-	0	0	1.7	18.4	--	--	--	--
GMSG-417	05/01/04	4:00 PM	28.84	50	-	0	0	0	20.8	--	--	--	--
GMSG-417	05/02/04	10:16 AM	28.9	36	T	0	0	1.5	18.4	--	--	--	--
GMSG-417	05/03/04	1:33 PM	28.81	50	-	0	0	1.6	18.5	--	--	--	--
GMSG-417	05/04/04	9:57 AM	28.47	55	T	0	0	1.8	18.6	--	--	--	--
GMSG-417	05/05/04	9:40 AM	28.75	48	-	0	0	1.7	18.8	--	--	--	--
GMSG-417	05/14/04	3:31 PM	28.83	43	-	0	0	1.9	17.7	--	--	--	--
GMSG-417	05/17/04	9:05 AM	28.67	63	-	0	0	2	17.4	--	--	--	--
GMSG-417	05/19/04	11:55 AM	28.91	71	-	0	0	2	17.3	--	--	--	--
GMSG-417	05/20/04	6:15 PM	28.85	63	-	0	0	0.2	17.4	--	--	--	--
GMSG-417	05/22/04	4:34 PM	28.6	50	-	0	0	2.1	17.3	--	--	--	--
GMSG-417	05/24/04	9:39 AM	28.7	46	-	0	0	2.1	16.7	--	--	--	--
GMSG-417	05/25/04	4:14 PM	28.47	63	-	0	0	2.1	16.7	--	--	--	--
GMSG-417	05/28/04	1:17 PM	28.72	59	-	0	0	2	16.7	--	--	--	--
GMSG-417	06/01/04	11:30 AM	28.36	56	-	0	0	2.2	16.1	--	--	--	--
GMSG-417	06/06/04	10:12 AM	28.65	71	-	0.2	0	2.2	15.8	--	--	--	--
GMSG-417	06/07/04	10:18 AM	28.62	80	-	0	0	2.1	15.8	--	--	--	--
GMSG-417	06/07/04	2:20 PM	28.54	84	-	0	0	2	16	--	--	--	--
GMSG-417	06/07/04	5:40 PM	28.5	84	-	0	0	2	16	--	--	--	--
GMSG-417	06/08/04	8:17 AM	28.63	80	-	0	0	1.4	16.6	--	--	--	--
GMSG-417	06/08/04	1:31 PM	28.69	87	-	0	0	2	16.1	--	--	--	--
GMSG-417	06/08/04	5:54 PM	28.72	82	-	0	0	1.9	16.2	--	--	--	--
GMSG-417	06/09/04	8:00 AM	28.86	57	0.01	0	0	2	16.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-417	06/09/04	10:22 AM	28.9	55	0.04	0	0	1.3	16.9	--	--	--	--
GMSG-417	06/09/04	2:29 PM	28.91	54	T	0	0	2.3	16	--	--	--	--
GMSG-417	06/09/04	6:24 PM	28.9	52	-	0	0	1.6	16.6	--	--	--	--
GMSG-417	06/10/04	8:33 AM	28.9	59	-	0	0	1.9	16.1	--	--	--	--
GMSG-417	06/10/04	12:13 PM	28.86	65	-	0	0	2.2	16.3	--	--	--	--
GMSG-417	06/10/04	2:51 PM	28.82	67	-	0	0	2.1	16.1	--	--	--	--
GMSG-417	06/10/04	4:36 PM	28.8	65	-	0	0	0.4	19.8	--	--	--	--
GMSG-417	06/11/04	8:40 AM	28.78	56	-	0	0	2.3	15.8	--	--	--	--
GMSG-417	06/11/04	12:06 PM	28.79	58	-	0	--	--	--	2	0	0	--
GMSG-417	06/11/04	3:55 PM	28.77	61	-	0	--	--	--	44	0	0	--
GMSG-417	06/12/04	9:29 AM	28.74	55	-	0	--	--	--	0.8	0.03	0	--
GMSG-417	06/12/04	2:18 PM	28.66	75	-	-0.004	0	2.1	15.9	--	--	--	--
GMSG-417	06/12/04	4:54 PM	28.65	79	-	0	0	2.1	16.2	--	--	--	--
GMSG-417	06/13/04	7:55 AM	28.57	65	-	0	0	2.2	16.2	--	--	--	--
GMSG-417	06/13/04	2:50 PM	28.49	69	-	0	0	2.3	16	--	--	--	--
GMSG-417	06/13/04	6:20 PM	28.45	73	-	-0.033	0	2.2	16.3	--	--	--	--
GMSG-417	06/14/04	10:03 AM	28.59	67	-	0	0	2.3	16.5	--	--	--	--
GMSG-417	06/14/04	12:18 PM	28.59	68	0.01	0	0	2	16.5	--	--	--	--
GMSG-417	06/14/04	2:13 PM	28.57	72	T	0	0	2.3	16.5	--	--	--	--
GMSG-417	06/14/04	8:21 PM	28.67	64	-	0	0	2.2	16.5	--	--	--	--
GMSG-417	06/15/04	8:17 AM	28.85	58	-	-0.07	0	2.4	16.4	--	--	--	--
GMSG-417	06/15/04	12:12 PM	28.86	67	-	-0.05	0	0	20.1	--	--	--	--
GMSG-417	06/15/04	3:37 PM	28.83	71	-	-0.015	0	2.2	16.6	--	--	--	--
GMSG-417	06/16/04	8:17 AM	28.82	67	-	-0.025	0	2.3	16.5	--	--	--	--
GMSG-417	06/16/04	11:14 AM	28.8	79	-	-0.021	0	2.1	16.9	--	--	--	--
GMSG-417	06/16/04	2:28 PM	28.76	82	-	-0.033	0	2.4	16.3	--	--	--	--
GMSG-417	06/17/04	8:04 AM	28.82	59	T	-0.059	0	0	20.4	--	--	--	--
GMSG-417	06/17/04	2:26 PM	28.81	75	-	0.001	0	2.2	19	--	--	--	--
GMSG-417	06/17/04	6:16 PM	28.81	71	-	-0.011	0	2.1	19.5	--	--	--	--
GMSG-417	06/18/04	8:06 AM	28.85	69	-	-0.03	0	2.3	17.9	--	--	--	--
GMSG-417	06/18/04	11:24 AM	28.82	74	-	-0.033	0	0	20	--	--	--	--
GMSG-417	06/18/04	8:25 PM	28.96	53	-	-0.03	0	0	20.4	--	--	--	--
GMSG-417	06/19/04	8:30 AM	29.06	60	-	0	0	2.4	16.5	--	--	--	--
GMSG-417	06/19/04	12:10 PM	29.03	65	-	-0.019	0	2.4	16.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-417	06/19/04	4:00 PM	28.95	66	-	0.012	0	2.3	16.9	--	--	--	--
GMSG-417	06/20/04	8:47 AM	28.77	66	-	-0.038	0	2.5	16.6	--	--	--	--
GMSG-417	06/20/04	1:50 PM	28.68	74	-	-0.036	0	2.2	17.9	--	--	--	--
GMSG-417	06/21/04	8:46 AM	28.48	69	-	0	0	2.4	16.6	--	--	--	--
GMSG-417	06/21/04	12:42 PM	28.42	74	-	0.004	0	0.6	19.4	--	--	--	--
GMSG-417	06/21/04	5:29 PM	28.43	59	0.13	-0.006	0	0.4	19.6	--	--	--	--
GMSG-417	06/22/04	8:14 AM	28.59	57	-	-0.077	0	2.5	16.8	--	--	--	--
GMSG-417	06/22/04	1:39 PM	28.61	66	-	-0.035	0	2.4	16.9	--	--	--	--
GMSG-417	06/22/04	4:37 PM	28.6	67	-	-0.036	0	2.3	17.1	--	--	--	--
GMSG-417	06/25/04	5:26 PM	28.76	61	-	-0.042	0	2.4	16.3	--	--	--	--
GMSG-417	06/26/04	8:16 AM	28.84	56	-	-0.045	0	2.4	16.3	--	--	--	--
GMSG-417	06/26/04	11:59 AM	28.83	61	-	-0.041	0	2.4	16.5	--	--	--	--
GMSG-417	06/26/04	1:36 PM	28.81	65	-	-0.041	0	2.4	16.7	--	--	--	--
GMSG-417	06/26/04	5:43 PM	28.81	63	-	-0.035	0	2.6	16.2	--	--	--	--
GMSG-417	06/27/04	10:17 AM	28.88	66	-	-0.053	0	2.4	16.5	--	--	--	--
GMSG-417	06/28/04	11:10 AM	28.83	72	-	-0.027	0	2.4	16.5	--	--	--	--
GMSG-417	06/28/04	1:57 PM	28.8	72	-	-0.028	0	7.4	16.6	--	--	--	--
GMSG-417	06/29/04	6:20 PM	28.83	67	0.01	-0.021	0	2.4	16.7	--	--	--	--
GMSG-417	06/30/04	8:32 AM	28.78	77	-	-0.29	0	2.5	16.2	--	--	--	--
GMSG-417	07/02/04	9:30 AM	28.93	68	-	0	0	2.5	16.2	--	--	--	--
GMSG-417	07/06/04	11:17 AM	28.66	54	0.08	0.012	0	2.9	16	--	--	--	--
GMSG-417	07/07/04	4:54 PM	28.57	56	T	-0.032	0	2.4	16.7	--	--	--	--
GMSG-417	07/08/04	11:30 AM	28.72	61	-	-0.071	0	2.5	16.5	--	--	--	--
GMSG-417	07/09/04	11:25 AM	28.88	68	-	-0.021	0	2.5	16.8	--	--	--	--
GMSG-417	07/11/04	9:59 AM	28.82	70	-	-0.022	0	2.9	16.3	--	--	--	--
GMSG-417	07/12/04	2:30 PM	28.7	82	-	-0.024	0	2.4	16.7	--	--	--	--
GMSG-417	07/19/04	3:22 PM	28.54	79	T	-0.047	0	2.6	16.5	--	--	--	--
GMSG-417	07/26/04	10:39 AM	28.96	79	-	0.006	0	2.6	16.5	--	--	--	--
GMSG-417	08/02/04	10:55 AM	28.68	79	0.04	-0.055	0	2.7	16.4	--	--	--	--
GMSG-417	08/03/04	5:45 PM	28.69	72	-	-0.027	0	2.8	17.1	--	--	--	--
GMSG-417	08/04/04	1:53 PM	28.83	72	-	-0.046	0	2.8	16.7	--	--	--	--
GMSG-417	08/07/04	3:23 PM	28.83	70	-	-0.041	0	2.8	16.4	--	--	--	--
GMSG-417	08/08/04	2:04 PM	28.81	66	T	-0.049	0	2.7	16.2	--	--	--	--
GMSG-417	08/11/04	3:14 PM	28.59	57	-	-0.065	0	3.3	16.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-417	08/12/04	8:54 AM	28.81	59	-	-0.065	0	3.4	16.5	--	--	--	--
GMSG-417	08/17/04	1:02 PM	28.69	70	-	-0.06	0	2.9	17.1	--	--	--	--
GMSG-417	08/18/04	11:56 AM	28.37	77	-	-0.035	0	2.7	17.3	--	--	--	--
GMSG-417	09/03/04	12:43 PM	28.83	82	-	0	0	3	17	--	--	--	--
GMSG-417	10/20/04	12:46 PM	28.88	54	-	--	0	2.1	17.8	--	--	--	--
GMSG-417	10/26/04	3:16 PM	29.03	47	-	0	0	2	18.1	--	--	--	--
GMSG-417	11/04/04	10:12 AM	28.5	39	-	0	0	0	20.1	--	--	--	--
GMSG-417	11/11/04	11:55 AM	29.2	34	-	0	0	1.6	18.4	--	--	--	--
GMSG-417	11/18/04	11:23 AM	28.96	51	-	0	0	0	20.1	--	--	--	--
GMSG-417	01/27/05	1:24 PM	29.31	13	-	--	--	--	--	--	--	--	--
GMSG-417	03/14/05	2:55 PM	28.78	34	-	0	0	0.4	19.8	--	--	--	--
GMSG-417	04/01/05	2:52 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-417	04/04/05	3:06 PM	28.72	56	-	0	0	0	20.3	--	--	--	--
GMSG-417	05/17/05	11:55 AM	28.85	54	-	0	0	0.8	19	--	--	--	--
GMSG-417	06/09/05	12:03 PM	28.66	84	-	0	0	1.1	18.5	--	--	--	--
GMSG-417	07/05/05	10:27 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-417	07/07/05	8:50 AM	28.96	73	-	0	0	1.8	17.5	--	--	--	--
GMSG-417	08/12/05	11:55 AM	28.61	77	-	0	0	0	19.8	--	--	--	--
GMSG-417	09/08/05	10:42 AM	28.96	66.92	-	0	0	2.3	17.3	--	--	--	--
GMSG-417	10/10/05	10:05 AM	29	51	-	--	--	--	--	--	--	--	--
GMSG-417	03/03/06	10:28 AM	29.13	22	-	--	--	--	--	--	--	--	--
GMSG-417	04/03/06	10:42 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-417	07/07/06	10:36 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-417	10/02/06	11:23 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-417	01/02/07	11:21 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-417	02/09/07	12:53 PM	28.88	15	T	--	--	--	--	--	--	--	--
GMSG-417	04/02/07	3:51 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-417	07/17/07	1:03 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-417	10/22/07	1:03 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-417C	10/29/03	7:55 AM	28.36	38	T	0	0	0	19.6	--	--	--	--
GMSG-417C	10/30/03	10:38 AM	28.69	41	T	0	0	0.1	18.9	--	--	--	--
GMSG-417C	11/21/03	11:31 AM	28.87	32	-	0	0	1.8	13.8	--	--	--	--
GMSG-417C	12/03/03	9:33 AM	29.25	22	-	0	0	4	8.3	--	--	--	--
GMSG-417C	12/04/03	8:59 AM	29.05	18	-	0	0	5	6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-417C	12/05/03	1:54 PM	29	39	-	0	0	5.4	6.3	--	--	--	--
GMSG-417C	12/06/03	8:25 AM	29.11	19	-	0	0	6.9	13.2	--	--	--	--
GMSG-417C	12/08/03	9:22 AM	28.69	33	-	0	0	6	3.9	--	--	--	--
GMSG-418	10/29/03	1:34 PM	28.48	43	-	--	0	0	19.2	--	--	--	--
GMSG-418	11/03/03	3:55 PM	29.02	32	-	--	0	0.1	19.5	--	--	--	--
GMSG-418	11/12/03	12:05 PM	28.23	40	-	--	0	0	19.2	--	--	--	--
GMSG-418	12/17/03	2:50 PM	28.56	25	-	--	0	0	19.4	--	--	--	--
GMSG-418	01/19/04	3:45 PM	28.94	7	-	--	0	0	18.5	--	--	--	--
GMSG-418	04/17/04	12:00 PM	28.92	63	-	--	0	0	17.7	--	--	--	--
GMSG-418	07/12/04	6:16 PM	28.69	83	-	--	0	0.6	18.6	--	--	--	--
GMSG-418	10/20/04	1:39 PM	28.88	55	-	--	0	0.2	19.8	--	--	--	--
GMSG-418	01/27/05	10:21 AM	29.36	-2	T	--	--	--	--	--	--	--	--
GMSG-418	04/01/05	3:02 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-418	07/05/05	10:00 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-418	10/10/05	1:20 PM	28.98	61	-	--	--	--	--	--	--	--	--
GMSG-418	02/22/06	11:17 AM	28.51	28	-	--	--	--	--	--	--	--	--
GMSG-418	04/03/06	9:47 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-418	07/07/06	9:58 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-418	10/02/06	10:31 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-418	01/02/07	10:28 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-418	04/03/07	9:49 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-418	07/17/07	10:50 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-418	10/18/07	2:14 PM	29.16	68	-	--	--	--	--	--	--	--	--
GMSG-419	10/16/03	8:47 AM	28.79	41	-	--	0	1.9	18	--	--	--	--
GMSG-419	10/29/03	1:27 PM	28.45	43	-	--	0	1	19	--	--	--	--
GMSG-419	11/03/03	4:10 PM	29.02	32	-	--	0	0.5	19.1	--	--	--	--
GMSG-419	11/12/03	12:12 PM	28.23	40	-	--	0	1.2	18.6	--	--	--	--
GMSG-419	12/17/03	3:04 PM	28.56	25	-	--	0	0.5	19	--	--	--	--
GMSG-419	01/20/04	8:10 AM	29.06	-13	-	--	0	0.1	19.5	--	--	--	--
GMSG-419	04/17/04	9:56 AM	28.92	56	-	--	0	0.1	18	--	--	--	--
GMSG-419	06/07/04	10:06 AM	28.62	80	-	0	0	0.9	18.6	--	--	--	--
GMSG-419	06/07/04	1:45 PM	28.54	84	-	0	0	1	18.5	--	--	--	--
GMSG-419	06/07/04	5:26 PM	28.51	84	-	0	0	0.8	18.8	--	--	--	--
GMSG-419	06/08/04	8:40 AM	28.66	80	-	0	0	0	19.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-419	06/08/04	1:15 PM	28.69	87	-	0	0	0.5	19.6	--	--	--	--
GMSG-419	06/08/04	5:39 PM	28.72	82	-	0	0	0.8	18.8	--	--	--	--
GMSG-419	06/09/04	7:30 AM	28.86	57	0.01	0	0	0	19.8	--	--	--	--
GMSG-419	06/09/04	10:08 AM	28.9	55	0.04	0	0	0.4	19.4	--	--	--	--
GMSG-419	06/09/04	2:09 PM	28.91	54	T	0	0	0.4	19.4	--	--	--	--
GMSG-419	06/09/04	6:05 PM	28.9	52	-	0	0	0.4	19.3	--	--	--	--
GMSG-419	06/10/04	8:22 AM	28.91	56	-	0.1	0	0.4	19.2	--	--	--	--
GMSG-419	06/10/04	11:45 AM	28.86	65	-	0	0	0.4	19.8	--	--	--	--
GMSG-419	06/10/04	2:20 PM	28.83	67	-	0	0	0.4	19.9	--	--	--	--
GMSG-419	06/10/04	4:08 PM	28.81	65	-	0	0	2	16.1	--	--	--	--
GMSG-419	06/11/04	8:15 AM	28.77	55	-	0	0	0.5	18.9	--	--	--	--
GMSG-419	06/11/04	11:40 AM	28.79	58	-	0	--	--	--	12	0	0	--
GMSG-419	06/11/04	3:35 PM	28.77	61	-	0	--	--	--	282	30	0	--
GMSG-419	06/12/04	9:05 AM	28.74	55	-	0	--	--	--	12.4	5.71	0	--
GMSG-419	06/12/04	2:04 PM	28.66	75	-	0.003	0	0.7	18.8	--	--	--	--
GMSG-419	06/12/04	4:45 PM	28.65	79	-	0	0	0.6	19.2	--	--	--	--
GMSG-419	06/13/04	7:48 AM	28.57	65	-	0	0	0.7	19	--	--	--	--
GMSG-419	06/13/04	2:44 PM	28.49	69	-	0	0	0.8	18.7	--	--	--	--
GMSG-419	06/13/04	6:11 PM	28.45	73	-	0.004	0	0.7	19	--	--	--	--
GMSG-419	06/14/04	9:35 AM	28.59	67	-	0	0	0.2	20	--	--	--	--
GMSG-419	06/14/04	11:53 AM	28.59	68	0.01	0	0	0.1	20.2	--	--	--	--
GMSG-419	06/14/04	2:32 PM	28.57	70	T	0	0	0.3	20	--	--	--	--
GMSG-419	06/14/04	8:02 PM	28.67	64	-	0	0	0.3	20.1	--	--	--	--
GMSG-419	06/15/04	7:54 AM	28.85	58	-	-0.018	0	0.4	19.8	--	--	--	--
GMSG-419	06/15/04	11:50 AM	28.86	67	-	-0.02	0.6	0.4	19.9	--	--	--	--
GMSG-419	06/15/04	3:13 PM	28.84	70	-	-0.02	0	0.4	19.8	--	--	--	--
GMSG-419	06/16/04	7:52 AM	28.82	67	-	-0.014	0	0.3	19.7	--	--	--	--
GMSG-419	06/16/04	11:37 AM	28.77	81	-	-0.006	0	0.4	20	--	--	--	--
GMSG-419	06/16/04	2:00 PM	28.76	82	-	-0.016	0	0.4	19.8	--	--	--	--
GMSG-419	06/17/04	7:33 AM	28.82	59	T	-0.013	0	0.5	19.7	--	--	--	--
GMSG-419	06/17/04	2:03 PM	28.81	75	-	-0.006	0	0.4	20	--	--	--	--
GMSG-419	06/17/04	5:54 PM	28.81	71	-	-0.003	0	0.4	19.9	--	--	--	--
GMSG-419	06/18/04	7:40 AM	28.85	69	-	-0.006	0	0.4	19.7	--	--	--	--
GMSG-419	06/18/04	11:00 AM	28.82	74	-	-0.006	0	0.5	19.7	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-419	06/18/04	8:02 PM	28.96	53	-	-0.006	0	0.2	20.1	--	--	--	--
GMSG-419	06/19/04	7:51 AM	29.07	55	-	0	0	0.3	19.7	--	--	--	--
GMSG-419	06/19/04	11:37 AM	29.03	65	-	-0.002	0	0.4	19.7	--	--	--	--
GMSG-419	06/19/04	3:30 PM	28.95	66	-	0.009	0	0.5	20.1	--	--	--	--
GMSG-419	06/20/04	8:20 AM	28.8	64	-	0.019	0	0.5	19.5	--	--	--	--
GMSG-419	06/20/04	1:26 PM	28.7	73	-	-0.005	0	0.4	19.8	--	--	--	--
GMSG-419	06/21/04	8:20 AM	28.49	66	-	-0.002	0	0.3	19.8	--	--	--	--
GMSG-419	06/21/04	12:21 PM	28.44	74	-	-0.002	0	0.3	19.8	--	--	--	--
GMSG-419	06/21/04	5:09 PM	28.43	59	0.13	-0.017	0	0.3	19.9	--	--	--	--
GMSG-419	06/22/04	7:48 AM	28.59	57	-	-0.023	0	0.5	19.8	--	--	--	--
GMSG-419	06/22/04	2:05 PM	28.61	66	-	-0.008	0	0.2	19.4	--	--	--	--
GMSG-419	06/22/04	5:09 PM	28.6	67	-	-0.014	0	0.4	20.3	--	--	--	--
GMSG-419	06/23/04	7:35 AM	28.68	56	-	-0.021	0	0.5	19.8	--	--	--	--
GMSG-419	06/23/04	1:55 PM	28.65	66	-	0.008	0	0.5	20	--	--	--	--
GMSG-419	06/24/04	7:32 AM	28.63	52	-	0.002	0	0.5	20	--	--	--	--
GMSG-419	06/24/04	1:34 PM	28.76	54	0.01	-0.013	0	0.4	19	--	--	--	--
GMSG-419	06/24/04	3:05 PM	28.78	55	T	-0.007	0	0.4	19.6	--	--	--	--
GMSG-419	06/25/04	7:33 AM	28.79	58	-	-0.003	0	0.4	19.2	--	--	--	--
GMSG-419	06/25/04	1:56 PM	28.76	62	-	-0.005	0	0.4	19.3	--	--	--	--
GMSG-419	06/25/04	4:59 PM	28.76	61	-	-0.006	0	0.4	19.2	--	--	--	--
GMSG-419	06/26/04	7:50 AM	28.84	56	-	-0.006	0	0.4	19.2	--	--	--	--
GMSG-419	06/26/04	12:16 PM	28.83	61	-	-0.008	0	0.4	19.5	--	--	--	--
GMSG-419	06/26/04	1:15 PM	28.82	64	-	-0.008	0	0.4	19.6	--	--	--	--
GMSG-419	06/26/04	5:20 PM	28.81	66	-	-0.006	0	0.4	19.1	--	--	--	--
GMSG-419	06/27/04	10:30 AM	28.87	66	-	-0.017	0	0.3	19.6	--	--	--	--
GMSG-419	06/27/04	3:29 PM	28.84	64	-	-0.008	0	0.3	19.6	--	--	--	--
GMSG-419	06/28/04	10:47 AM	28.83	72	-	-0.009	0	0.4	19.5	--	--	--	--
GMSG-419	06/28/04	2:10 PM	28.8	72	-	-0.004	0	0.2	19.2	--	--	--	--
GMSG-419	06/29/04	6:06 PM	28.83	67	0.01	-0.004	0	0.3	19.9	--	--	--	--
GMSG-419	06/30/04	8:04 AM	28.8	73	-	-0.006	0	0.4	19.3	--	--	--	--
GMSG-419	07/02/04	9:50 AM	28.93	68	-	0	0	0.3	19.3	--	--	--	--
GMSG-419	07/06/04	10:44 AM	28.66	54	0.08	-0.002	0	0.5	18.8	--	--	--	--
GMSG-419	07/07/04	5:17 PM	28.57	56	T	-0.021	0	0.5	19.2	--	--	--	--
GMSG-419	07/08/04	11:55 AM	28.72	61	-	-0.021	0	0.3	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-419	07/09/04	11:46 AM	28.88	70	-	0.001	0	0.2	19.9	--	--	--	--
GMSG-419	07/11/04	9:30 AM	28.82	70	-	-0.011	0	0.3	19.2	--	--	--	--
GMSG-419	07/12/04	2:40 PM	28.7	82	-	-0.17	0	0.4	19.2	--	--	--	--
GMSG-419	08/03/04	5:19 PM	28.71	75	-	-0.001	0	0.4	19.8	--	--	--	--
GMSG-419	08/04/04	1:28 PM	28.82	72	-	-0.004	0	0.4	19.5	--	--	--	--
GMSG-419	08/07/04	3:01 PM	28.83	70	-	0	0	0.4	19.1	--	--	--	--
GMSG-419	08/08/04	1:43 PM	28.81	66	T	-0.005	0	0.4	19.1	--	--	--	--
GMSG-419	08/17/04	12:37 PM	28.69	70	-	-0.004	0	0.4	19.5	--	--	--	--
GMSG-419	08/18/04	11:23 AM	28.41	75	-	-0.044	0	0.4	19.6	--	--	--	--
GMSG-419	10/20/04	12:51 PM	28.88	54	-	--	0	0.4	19.5	--	--	--	--
GMSG-419	01/27/05	1:05 PM	29.31	13	-	--	--	--	--	--	--	--	--
GMSG-419	04/01/05	2:35 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-419	07/05/05	10:17 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-419	10/12/05	2:55 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-419	02/17/06	1:49 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-419	04/03/06	11:06 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-419	07/07/06	10:19 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-419	10/02/06	11:35 AM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-419	01/02/07	11:57 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-419	04/02/07	3:43 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-419	07/17/07	1:16 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-419	10/22/07	1:19 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-420	10/14/03	9:53 AM	28.5	51	-	--	0	1.2	17.2	--	--	--	--
GMSG-420	10/29/03	1:21 PM	28.45	43	-	--	0	0.5	19.1	--	--	--	--
GMSG-420	11/12/03	12:17 PM	28.23	40	-	--	0	0.6	18	--	--	--	--
GMSG-420	12/17/03	3:33 PM	28.59	24	-	--	0	0.5	18.3	--	--	--	--
GMSG-420	01/20/04	8:34 AM	29.06	-3	-	--	0	0.2	18.9	--	--	--	--
GMSG-420	01/29/04	1:40 PM	28.76	6	-	--	0	0.3	18.7	--	--	--	--
GMSG-420	04/17/04	10:38 AM	28.92	60	-	--	0	0.4	17.7	--	--	--	--
GMSG-420	06/08/04	1:22 PM	28.69	87	-	0	0	0.3	19.5	--	--	--	--
GMSG-420	06/09/04	10:06 AM	28.9	55	0.04	0	0	0.4	19.6	--	--	--	--
GMSG-420	06/09/04	2:04 PM	28.91	54	T	0	0	0.5	19.1	--	--	--	--
GMSG-420	06/10/04	8:28 AM	28.91	56	-	0	0	0.5	19	--	--	--	--
GMSG-420	06/12/04	8:50 AM	28.74	55	-	0	--	--	--	12.4	8.9	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-420	06/13/04	6:50 PM	28.49	59	0.24	0.011	0	0.7	18.6	--	--	--	--
GMSG-420	06/14/04	9:40 AM	28.59	67	-	0	0	0.4	19.5	--	--	--	--
GMSG-420	06/15/04	7:36 AM	28.85	58	-	0	0	0.4	19.5	--	--	--	--
GMSG-420	06/16/04	7:55 AM	28.82	67	-	-0.007	0	0.5	19.5	--	--	--	--
GMSG-420	06/16/04	2:04 PM	28.76	82	-	-0.11	0	0.4	19.7	--	--	--	--
GMSG-420	06/17/04	7:37 AM	28.82	59	T	-0.012	0	0.4	19.7	--	--	--	--
GMSG-420	06/18/04	7:45 AM	28.85	69	-	-0.001	0	0.3	19.4	--	--	--	--
GMSG-420	06/21/04	8:24 AM	28.49	66	-	0	0	0.5	19.5	--	--	--	--
GMSG-420	06/22/04	7:53 AM	28.59	57	-	-0.007	0	0.5	19.8	--	--	--	--
GMSG-420	06/23/04	2:01 PM	28.65	66	-	0.009	0	0.5	19.6	--	--	--	--
GMSG-420	06/24/04	7:37 AM	28.63	52	-	0.004	0	0.5	19.7	--	--	--	--
GMSG-420	06/25/04	7:38 AM	28.79	58	-	0.004	0	0.7	18.8	--	--	--	--
GMSG-420	06/26/04	7:55 AM	28.84	56	-	0.003	0	0.8	18.6	--	--	--	--
GMSG-420	06/27/04	10:25 AM	28.88	66	-	-0.004	0	0.4	19.3	--	--	--	--
GMSG-420	06/28/04	2:05 PM	28.8	72	-	0	0	0.5	19.2	--	--	--	--
GMSG-420	07/13/04	10:50 AM	28.6	75	-	--	0	0.5	18.7	--	--	--	--
GMSG-420	10/25/04	2:09 PM	28.82	55	-	--	0	0.3	19.7	--	--	--	--
GMSG-420	01/27/05	1:57 PM	29.3	15	-	--	--	--	--	--	--	--	--
GMSG-420	04/01/05	3:08 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-420	07/05/05	10:43 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-420	10/10/05	2:05 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-420	02/22/06	2:14 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-420	04/03/06	11:19 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-420	07/06/06	11:30 AM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-420	10/02/06	12:46 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-420	10/09/06	11:41 AM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-420	01/02/07	1:31 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-420	04/02/07	3:17 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-420	07/17/07	1:24 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-420	10/18/07	2:50 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-421	10/14/03	9:39 AM	28.5	51	-	--	0	0.4	19	--	--	--	--
GMSG-421	10/29/03	1:16 PM	28.45	43	-	--	0	0.3	18.9	--	--	--	--
GMSG-421	11/12/03	12:22 PM	28.23	40	-	--	0	0.5	18.2	--	--	--	--
GMSG-421	12/05/03	1:46 PM	29	39	-	0	0	5.4	9.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-421	12/17/03	3:47 PM	28.59	24	-	--	0	0.3	18.9	--	--	--	--
GMSG-421	01/20/04	8:41 AM	29.06	-3	-	--	0	0.4	18.5	--	--	--	--
GMSG-421	04/17/04	10:51 AM	28.92	60	-	--	0	0.4	17.3	--	--	--	--
GMSG-421	07/13/04	10:40 AM	28.6	75	-	--	0	0.8	18.5	--	--	--	--
GMSG-421	10/25/04	2:17 PM	28.82	55	-	--	0	0.3	19.5	--	--	--	--
GMSG-421	01/27/05	2:12 PM	29.3	15	-	--	--	--	--	--	--	--	--
GMSG-421	04/01/05	3:28 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-421	07/05/05	10:47 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-421	10/10/05	3:05 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-421	02/17/06	10:41 AM	29.09	11	-	--	--	--	--	--	--	--	--
GMSG-421	04/03/06	2:30 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-421	07/06/06	10:08 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-421	10/02/06	2:01 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-421	10/09/06	10:07 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-421	02/08/07	7:54 AM	28.86	-2	-	--	--	--	--	--	--	--	--
GMSG-421	04/02/07	2:15 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-421	07/17/07	3:00 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-421	10/18/07	3:22 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-422	10/14/03	9:43 AM	28.5	51	-	--	0	2.1	17	--	--	--	--
GMSG-422	10/29/03	1:12 PM	28.45	43	-	--	0	1.3	17.8	--	--	--	--
GMSG-422	11/12/03	12:26 PM	28.23	40	-	--	0	2.3	16.3	--	--	--	--
GMSG-422	12/17/03	3:55 PM	28.59	24	-	--	0	1.7	17.2	--	--	--	--
GMSG-422	01/20/04	8:47 AM	29.06	-3	-	--	0	2	16.8	--	--	--	--
GMSG-422	04/17/04	10:57 AM	28.92	60	-	--	0	1.1	16.6	--	--	--	--
GMSG-422	07/13/04	10:35 AM	28.6	75	-	--	0	1.6	17.5	--	--	--	--
GMSG-422	10/25/04	2:24 PM	28.82	55	-	--	0	1.2	18	--	--	--	--
GMSG-422	01/27/05	2:24 PM	29.3	15	-	--	--	--	--	--	--	--	--
GMSG-422	04/01/05	3:25 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-422	07/05/05	10:52 AM	28.88	62	-	--	--	--	--	--	--	--	--
GMSG-422	10/10/05	3:10 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-422	02/17/06	1:33 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-422	04/03/06	2:21 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-422	07/06/06	10:25 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-422	10/02/06	1:54 PM	28.63	80	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-422	10/09/06	10:21 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-422	02/08/07	8:45 AM	28.85	1	-	--	--	--	--	--	--	--	--
GMSG-422	04/02/07	2:04 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-422	07/17/07	2:56 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-422	10/18/07	3:39 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-423	10/29/03	12:35 PM	28.45	43	-	--	0	0.5	18.9	--	--	--	--
GMSG-423	11/03/03	4:20 PM	29.02	32	-	--	0	0.8	18.3	--	--	--	--
GMSG-423	11/12/03	12:33 PM	28.2	40	-	--	0	0.9	18	--	--	--	--
GMSG-423	12/17/03	4:10 PM	28.59	24	-	--	0	0.5	18.5	--	--	--	--
GMSG-423	01/20/04	1:09 PM	29.04	12	-	--	0	0.8	18.1	--	--	--	--
GMSG-423	04/17/04	1:26 PM	28.91	64	-	--	0	0.5	17.5	--	--	--	--
GMSG-423	07/13/04	10:10 AM	28.59	73	-	--	0	0.7	18.8	--	--	--	--
GMSG-423	10/28/04	9:38 AM	28.94	47	-	--	0	0.7	18.8	--	--	--	--
GMSG-423	01/25/05	2:50 PM	28.25	27	-	--	0	0.9	18.2	--	--	--	--
GMSG-423	04/02/05	1:55 PM	28.79	51	-	--	--	--	--	--	--	--	--
GMSG-423	07/01/05	2:20 PM	28.71	64	-	--	--	--	--	--	--	--	--
GMSG-423	10/10/05	4:00 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-423	03/06/06	4:17 PM	29.04	36	-	--	--	--	--	--	--	--	--
GMSG-423	04/03/06	2:48 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-423	07/07/06	2:53 PM	28.97	84	-	--	--	--	--	--	--	--	--
GMSG-423	10/03/06	1:50 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-423	01/17/07	11:06 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-423	04/02/07	11:09 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-423	07/18/07	10:44 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-423	10/23/07	8:32 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-424	10/29/03	12:42 PM	28.45	43	-	--	0	0.3	18.7	--	--	--	--
GMSG-424	11/03/03	4:30 PM	29.02	32	0.01	--	0	0.4	18.7	--	--	--	--
GMSG-424	11/10/03	1:04 PM	28.86	33	T	--	0	0.2	18.5	--	--	--	--
GMSG-424	12/17/03	4:20 PM	28.59	24	-	--	0	0.5	18.3	--	--	--	--
GMSG-424	01/20/04	1:17 PM	29.04	12	-	--	0	0.8	18.1	--	--	--	--
GMSG-424	02/11/04	4:16 PM	28.78	19	T	--	0	0.8	18.8	--	--	--	--
GMSG-424	04/19/04	1:37 PM	28.82	-	-	--	0	0	17.4	--	--	--	--
GMSG-424	07/13/04	11:24 AM	28.6	75	-	--	0	0.3	19.1	--	--	--	--
GMSG-424	10/28/04	9:34 AM	28.94	47	-	--	0	0.2	19.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-424	01/25/05	2:30 PM	28.25	27	-	--	0	1	18.4	--	--	--	--
GMSG-424	04/02/05	2:02 PM	28.79	51	-	--	--	--	--	--	--	--	--
GMSG-424	07/01/05	2:27 PM	28.71	64	-	--	--	--	--	--	--	--	--
GMSG-424	10/10/05	4:05 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-424	03/13/06	11:13 AM	28.06	32	0.11	--	--	--	--	--	--	--	--
GMSG-424	04/03/06	2:54 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-424	07/10/06	1:35 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-424	10/03/06	2:05 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-424	01/17/07	11:23 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-424	04/02/07	10:54 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-424	07/18/07	10:51 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-424	10/23/07	8:41 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-424	11/02/07	2:35 PM	29.97	52	-	--	--	--	--	--	--	--	--
GMSG-425	10/29/03	12:47 PM	28.45	43	-	--	0	1.4	17.7	--	--	--	--
GMSG-425	11/03/03	4:35 PM	29.02	32	0.01	--	0	1.5	17.5	--	--	--	--
GMSG-425	11/10/03	1:08 PM	28.86	33	T	--	0	1.3	17.8	--	--	--	--
GMSG-425	12/17/03	4:30 PM	28.6	23	-	--	0	1.2	17.7	--	--	--	--
GMSG-425	01/20/04	1:24 PM	29.04	12	-	--	0	1.1	17.8	--	--	--	--
GMSG-425	02/11/04	4:30 PM	28.79	19	T	--	0	1.1	18.3	--	--	--	--
GMSG-425	04/17/04	1:50 PM	28.91	66	-	--	0	0.5	16.8	--	--	--	--
GMSG-425	07/13/04	11:28 AM	28.6	75	-	--	0	0.2	19.3	--	--	--	--
GMSG-425	10/28/04	9:29 AM	28.98	46	-	--	0	1.2	17.6	--	--	--	--
GMSG-425	01/25/05	2:24 PM	28.26	26	-	--	0	1.2	18.2	--	--	--	--
GMSG-425	04/02/05	2:04 PM	28.79	51	-	--	--	--	--	--	--	--	--
GMSG-425	07/01/05	2:32 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-425	10/10/05	4:10 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-425	03/14/06	11:10 AM	28.56	25	T	--	--	--	--	--	--	--	--
GMSG-425	04/03/06	2:57 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-425	07/10/06	1:39 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-425	10/03/06	2:11 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-425	01/17/07	11:29 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-425	04/02/07	10:49 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-425	07/18/07	10:55 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-425	10/23/07	8:47 AM	29.88	44	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-425	11/02/07	2:37 PM	29.97	52	-	--	--	--	--	--	--	--	--
GMSG-426	10/29/03	12:52 PM	28.45	43	-	--	0	0.1	19.1	--	--	--	--
GMSG-426	11/03/03	4:45 PM	29.02	32	0.01	--	0	0.1	19.1	--	--	--	--
GMSG-426	11/12/03	12:39 PM	28.2	40	-	--	0	0	19	--	--	--	--
GMSG-426	12/18/03	8:14 AM	28.58	24	-	--	0	0	19	--	--	--	--
GMSG-426	01/29/04	2:00 PM	28.76	6	-	--	0	0	18.9	--	--	--	--
GMSG-426	04/17/04	2:55 PM	28.91	67	-	--	0	0	17.7	--	--	--	--
GMSG-426	07/13/04	11:48 AM	28.55	75	-	--	0	0.1	19.3	--	--	--	--
GMSG-426	10/28/04	9:16 AM	28.98	46	-	--	0	0.2	19.4	--	--	--	--
GMSG-426	01/25/05	1:33 PM	28.26	26	-	--	0	0.2	19.8	--	--	--	--
GMSG-426	04/02/05	2:48 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-426	07/01/05	2:55 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-426	10/10/05	4:35 PM	28.96	60	-	--	--	--	--	--	--	--	--
GMSG-426	03/29/06	2:51 PM	28.88	52	-	--	--	--	--	--	--	--	--
GMSG-426	04/14/06	11:32 AM	28.34	73	-	--	--	--	--	--	--	--	--
GMSG-426	07/10/06	1:56 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-426	10/03/06	2:19 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-426	01/17/07	11:47 AM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-426	04/02/07	10:34 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-426	07/18/07	11:05 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-426	10/18/07	4:27 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-427	10/29/03	12:57 PM	28.45	43	-	--	0	0.8	17.3	--	--	--	--
GMSG-427	11/03/03	4:55 PM	29.02	32	0.01	--	0	0.6	19.6	--	--	--	--
GMSG-427	11/12/03	12:43 PM	28.2	40	-	--	0	0.4	17.8	--	--	--	--
GMSG-427	12/18/03	8:43 AM	28.58	24	-	--	0	0.5	17.1	--	--	--	--
GMSG-427	01/20/04	2:00 PM	29.02	14	-	--	0	0.5	17.8	--	--	--	--
GMSG-427	04/17/04	3:03 PM	28.91	67	-	--	0	0	16.7	--	--	--	--
GMSG-427	07/13/04	11:53 AM	28.55	75	-	--	0	0	19.7	--	--	--	--
GMSG-427	10/28/04	9:13 AM	28.98	46	-	--	0	0.5	18.3	--	--	--	--
GMSG-427	01/25/05	2:39 PM	28.25	27	-	--	0	0.8	18.2	--	--	--	--
GMSG-427	04/02/05	2:50 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-427	07/01/05	3:00 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-427	10/10/05	4:40 PM	28.96	60	-	--	--	--	--	--	--	--	--
GMSG-427	03/29/06	3:04 PM	28.88	52	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-427	04/14/06	11:35 AM	28.34	73	-	--	--	--	--	--	--	--	--
GMSG-427	07/10/06	2:04 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-427	10/03/06	2:24 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-427	01/17/07	11:53 AM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-427	04/02/07	10:39 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-427	07/18/07	11:10 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-427	10/18/07	4:35 PM	29.15	65	-	--	--	--	--	--	--	--	--
GMSG-428	10/16/03	8:57 AM	28.79	41	-	--	0	1	18.7	--	--	--	--
GMSG-428	10/29/03	1:03 PM	28.45	43	-	--	0	0.8	18.6	--	--	--	--
GMSG-428	11/03/03	5:05 PM	29.02	32	0.01	--	0	0.9	18.5	--	--	--	--
GMSG-428	11/12/03	12:49 PM	28.2	40	-	--	0	0.9	18.4	--	--	--	--
GMSG-428	12/18/03	8:58 AM	28.58	24	-	--	0	1	18.2	--	--	--	--
GMSG-428	01/20/04	2:11 PM	29.02	14	-	--	0	1.1	17.9	--	--	--	--
GMSG-428	04/17/04	3:11 PM	28.91	67	-	--	0	0.5	17.5	--	--	--	--
GMSG-428	07/13/04	12:03 PM	28.55	75	-	--	0	0.5	18.8	--	--	--	--
GMSG-428	10/28/04	9:08 AM	28.98	46	-	--	0	1.1	18.4	--	--	--	--
GMSG-428	01/25/05	12:30 PM	28.3	25	-	--	0	0.9	19	--	--	--	--
GMSG-428	04/02/05	2:53 PM	28.78	52	-	--	--	--	--	--	--	--	--
GMSG-428	07/01/05	3:07 PM	28.72	67	-	--	--	--	--	--	--	--	--
GMSG-428	02/22/06	12:17 PM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-428	04/03/06	3:11 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-428	07/10/06	2:28 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-428	10/03/06	2:34 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-428	01/17/07	11:57 AM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-428	04/02/07	10:08 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-428	07/18/07	11:16 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-428A	10/10/05	4:45 PM	28.96	60	-	--	--	--	--	--	--	--	--
GMSG-428A	10/22/07	4:06 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-428B	08/24/05	1:27 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-428B	08/31/05	2:55 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-428B	09/09/05	12:48 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-428B	10/10/05	4:45 PM	28.96	60	-	--	--	--	--	--	--	--	--
GMSG-428B	11/11/05	1:40 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-428B	11/14/05	9:31 AM	29.07	31	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-428B	12/13/05	3:10 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-428B	02/22/06	12:24 PM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-428B	04/03/06	3:13 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-428B	07/10/06	2:30 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-428B	10/03/06	2:36 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-428B	01/17/07	12:00 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-428B	04/02/07	10:10 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-428B	07/18/07	11:18 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-428B	10/22/07	4:08 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-429	11/02/03	3:40 PM	28.91	42	-	--	0	0.4	18.9	--	--	--	--
GMSG-429	11/10/03	1:20 PM	28.86	33	T	--	0	0.8	18.4	--	--	--	--
GMSG-429	11/17/03	2:00 PM	28.73	46	-	0	0	0.7	18.5	--	--	--	--
GMSG-429	12/18/03	10:10 AM	28.58	24	-	--	0	0.4	18.5	--	--	--	--
GMSG-429	01/20/04	3:34 PM	28.99	14	-	--	0	0.2	18.6	--	--	--	--
GMSG-429	02/11/04	5:10 PM	28.79	19	T	--	0	0.2	18.9	--	--	--	--
GMSG-429	04/18/04	2:38 PM	28.38	55	-	--	0	0.7	16.6	--	--	--	--
GMSG-429	07/13/04	1:47 PM	28.51	69	0.1	--	0	0	19.5	--	--	--	--
GMSG-429	10/29/04	12:27 PM	28.4	56	-	--	0	0.9	18.7	--	--	--	--
GMSG-429	01/28/05	9:53 AM	29.26	13	-	--	--	--	--	--	--	--	--
GMSG-429	04/02/05	3:38 PM	28.77	51	-	--	--	--	--	--	--	--	--
GMSG-429	07/06/05	10:57 AM	28.95	70	-	--	--	--	--	--	--	--	--
GMSG-429	10/11/05	11:40 AM	29.01	60	-	--	--	--	--	--	--	--	--
GMSG-429	03/01/06	9:28 AM	28.77	12	-	--	--	--	--	--	--	--	--
GMSG-429	04/10/06	10:38 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-429	07/10/06	2:57 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-429	10/09/06	3:33 PM	29.09	48	-	--	--	--	--	--	--	--	--
GMSG-429	02/02/07	10:57 AM	28.32	4	-	--	--	--	--	--	--	--	--
GMSG-429	04/04/07	3:18 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-429	07/18/07	12:00 PM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-429	11/01/07	2:20 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-430	11/02/03	3:35 PM	28.91	42	-	--	0	1.2	18.1	--	--	--	--
GMSG-430	11/10/03	1:15 PM	28.86	33	T	--	0	2.2	16.8	--	--	--	--
GMSG-430	11/17/03	1:54 PM	28.73	46	-	0	0	2.1	17.6	--	--	--	--
GMSG-430	12/18/03	10:02 AM	28.58	24	-	--	0	2	16.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-430	01/29/04	9:35 AM	28.8	-5	-	--	0	1.9	17.9	--	--	--	--
GMSG-430	02/11/04	4:50 PM	28.79	19	T	--	0	0.7	18.7	--	--	--	--
GMSG-430	04/18/04	2:31 PM	28.38	55	-	--	0	1.4	15.6	--	--	--	--
GMSG-430	07/13/04	1:42 PM	28.51	69	0.1	--	0	0	19.5	--	--	--	--
GMSG-430	10/29/04	12:33 PM	28.37	57	T	--	0	1.9	17	--	--	--	--
GMSG-430	01/28/05	10:12 AM	29.26	13	-	--	--	--	--	--	--	--	--
GMSG-430	04/02/05	3:43 PM	28.77	51	-	--	--	--	--	--	--	--	--
GMSG-430	07/06/05	10:50 AM	28.95	70	-	--	--	--	--	--	--	--	--
GMSG-430	10/11/05	11:35 AM	29.01	60	-	--	--	--	--	--	--	--	--
GMSG-430	03/01/06	9:47 AM	28.76	19	-	--	--	--	--	--	--	--	--
GMSG-430	04/10/06	10:40 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-430	07/10/06	3:06 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-430	10/09/06	3:24 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-430	02/02/07	10:55 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-430	04/04/07	3:24 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-430	07/18/07	12:05 PM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-430	11/01/07	2:25 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-431	01/02/03	1:59 PM	28.92	27	-	--	2.6	7.2	8.9	--	--	--	--
GMSG-431	10/28/03	1:46 PM	28.08	44	T	0	22	11.5	0	--	--	--	--
GMSG-431	10/29/03	7:58 AM	28.36	38	T	0	1.1	1	16.9	--	--	--	--
GMSG-431	11/13/03	10:09 AM	28.92	27	T	0	0.5	7.4	9.3	--	--	--	--
GMSG-431	12/03/03	9:27 AM	29.25	14	-	0	0	0.4	19.2	--	--	--	--
GMSG-431	12/04/03	8:50 AM	29.05	18	-	0	0.6	8.3	6.2	--	--	--	--
GMSG-431	12/06/03	8:12 AM	29.11	19	-	0	0	1	7.3	--	--	--	--
GMSG-431	12/08/03	9:15 AM	28.69	33	-	0	7.9	10.7	2.1	--	--	--	--
GMSG-431	12/19/03	9:05 AM	28.69	20	-	--	0	4.1	13.8	--	--	--	--
GMSG-431	01/12/04	11:22 AM	28.73	27	T	0	0	0	19.4	2.93	1.6	0	--
GMSG-431	01/20/04	8:02 AM	29.06	-13	-	--	0	0	19.6	--	--	--	--
GMSG-431	01/22/04	8:02 AM	28.74	-12	-	0	0	0	19.6	1.85	1.47	0.8	--
GMSG-431	01/30/04	10:06 AM	28.65	0	T	0	0	0	19.2	0.84	0.7	0.03	--
GMSG-431	02/03/04	10:57 AM	28.66	20	-	0	0	0	19.4	1.95	1.9	0.6	--
GMSG-431	02/12/04	2:10 PM	28.88	23	T	0	0	0	19.4	1.75	1.7	-0.25	--
GMSG-431	02/19/04	9:46 AM	28.72	26	-	-0.1	0	0	19.3	3.17	3	0.34	--
GMSG-431	02/27/04	11:33 AM	29.16	30	-	0	0	0	19.2	0.64	0.52	0.29	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-431	03/02/04	1:12 PM	28.76	39	-	0	0.1	0.1	16	44.49	28.8	0.2	--
GMSG-431	03/03/04	10:00 AM	28.99	34	-	0	0	0.9	15.3	1.8	1.7	0.02	--
GMSG-431	03/03/04	2:19 PM	28.88	35	-	0	0	0.4	15.3	3.83	3.7	1.6	--
GMSG-431	03/04/04	8:35 AM	28.89	31	-	0	0	0.8	15.2	2.03	1.95	0.3	--
GMSG-431	03/05/04	10:13 AM	28.22	30	0.06	0	0	3.1	14	3.66	3.58	0	--
GMSG-431	03/06/04	8:01 AM	28.57	25	T	0	0	2.4	14.8	2.78	2.73	0.45	--
GMSG-431	03/07/04	8:18 AM	28.34	29	T	0	0.1	3.1	14	3.4	3.38	0.34	--
GMSG-431	03/08/04	9:10 AM	28.78	24	-	0	0	2.6	14	1.65	1.62	0.25	--
GMSG-431	03/09/04	1:52 PM	28.98	34	-	0	0	2.9	13.6	2.31	2.15	0.24	--
GMSG-431	03/10/04	9:23 AM	28.77	31	-	0	0	4.4	11.5	2.94	2.7	0.45	--
GMSG-431	03/11/04	9:10 AM	28.42	30	0.01	0	0	0.5	12.2	3.53	3.47	0	--
GMSG-431	03/12/04	11:31 AM	28.91	17	-	0	0	2.2	13.3	1.66	1.6	0.1	--
GMSG-431	03/13/04	7:46 AM	29.06	2	-	0	0	2.5	13.1	--	--	--	--
GMSG-431	03/14/04	1:50 PM	28.41	31	-	0	0	4.7	10.2	--	--	--	--
GMSG-431	03/15/04	9:45 AM	29.11	26	-	0	0	0.7	18	0.53	0.4	0	--
GMSG-431	03/16/04	10:00 AM	28.97	26	-	0	0	4.8	9.7	1.55	0	0	--
GMSG-431	03/17/04	9:51 AM	28.68	27	-	0	0	5.4	9	1.3	--	0.05	--
GMSG-431	03/18/04	9:08 AM	28.7	30	-	0	0	4	11.9	1.82	1.5	0.1	--
GMSG-431	03/19/04	4:16 AM	28.97	14	-	0	0	3.7	11.1	1.73	0	0.2	--
GMSG-431	03/20/04	8:04 AM	28.52	44	-	0	0	5.6	8.1	--	--	--	--
GMSG-431	03/21/04	11:46 AM	29.25	20	-	0	0	2.8	8.8	--	--	--	--
GMSG-431	03/22/04	8:50 AM	29.08	18	-	0	0	5.2	6.3	1.4	--	0.75	--
GMSG-431	03/23/04	3:47 PM	28.9	38	-	0	0	3.4	10.2	--	--	--	--
GMSG-431	03/24/04	2:50 PM	28.65	41	-	0	0	4.2	7	--	--	--	--
GMSG-431	03/26/04	11:53 AM	--	--	--	0	0	0	9.5	10.7	--	-0.2	--
GMSG-431	03/28/04	5:45 PM	--	--	--	0	0	0.1	7.6	--	--	--	--
GMSG-431	03/29/04	2:05 PM	--	--	--	0	0	0.3	7.4	-8.35	-6.321	-0.92	--
GMSG-431	03/30/04	3:07 PM	--	--	--	0	0	1	7.5	--	--	--	--
GMSG-431	03/31/04	5:15 PM	--	--	--	0	0	3.7	7	--	--	--	--
GMSG-431	04/01/04	5:38 PM	28.88	45	-	0	0	4.8	5.6	--	--	--	--
GMSG-431	04/02/04	10:15 AM	28.95	47	-	0	0	4.9	5.7	--	--	--	--
GMSG-431	04/03/04	8:45 AM	28.65	40	-	0	0.2	5.8	4.1	--	--	--	--
GMSG-431	04/04/04	9:45 AM	28.94	34	-	0	0	2	14.1	536	150	0	--
GMSG-431	04/05/04	8:20 AM	28.96	29	-	0	0	4.3	8.9	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-431	04/06/04	7:55 AM	28.56	34	-	0	0.7	8.6	0.7	--	--	--	--
GMSG-431	04/06/04	11:00 AM	28.58	53	-	-0.1	0.4	7.7	3.1	--	--	--	--
GMSG-431	04/07/04	7:40 AM	28.67	46	-	0	0	0.4	19.2	--	--	--	--
GMSG-431	04/16/04	11:26 AM	28.63	72	-	0	0	0	19.1	--	--	--	--
GMSG-431	04/19/04	4:22 PM	28.89	-	-	0	0	0.2	15.9	--	--	--	--
GMSG-431	04/28/04	3:24 PM	28.28	73	-	0	0	0	20.1	--	--	--	--
GMSG-431	04/30/04	8:48 AM	28.86	39	-	0	0	0.4	18.5	--	--	--	--
GMSG-431	05/01/04	3:50 PM	28.84	50	-	0	0	3.1	14.5	--	--	--	--
GMSG-431	05/02/04	10:21 AM	28.9	36	T	0	0	1.9	16	--	--	--	--
GMSG-431	05/03/04	1:25 PM	28.84	52	-	0	0	4.6	13	--	--	--	--
GMSG-431	05/04/04	10:02 AM	28.47	55	T	0	0	5.8	12.4	--	--	--	--
GMSG-431	05/05/04	9:34 AM	28.75	48	-	0.1	0	0.8	18.5	--	--	--	--
GMSG-431	05/14/04	3:34 PM	28.83	43	-	0	0	1	15.9	--	--	--	--
GMSG-431	05/17/04	9:01 AM	28.67	63	-	0	0	7.1	8.2	--	--	--	--
GMSG-431	05/19/04	12:15 PM	28.91	71	-	0	0	4.1	12.1	--	--	--	--
GMSG-431	05/20/04	6:11 PM	28.85	63	-	0	0	0	20.3	--	--	--	--
GMSG-431	05/22/04	4:38 PM	28.6	50	-	0	0	0.4	19.7	--	--	--	--
GMSG-431	05/24/04	9:34 AM	28.7	46	-	0	0	0.2	18.3	--	--	--	--
GMSG-431	05/25/04	4:11 PM	28.47	63	-	0	0	7.7	4.3	--	--	--	--
GMSG-431	05/28/04	1:14 PM	28.72	59	-	0.2	0	3.7	9.9	--	--	--	--
GMSG-431	06/01/04	11:25 AM	28.35	55	-	0	0	0	19.9	--	--	--	--
GMSG-431	06/06/04	10:15 AM	28.65	71	-	0	0	5.5	8.6	--	--	--	--
GMSG-431	06/07/04	10:15 AM	28.62	80	-	0	0	0	19.8	--	--	--	--
GMSG-431	06/07/04	2:11 PM	28.54	84	-	--	0	0	19.8	--	--	--	--
GMSG-431	06/07/04	5:35 PM	28.5	84	-	0	0	0	19.8	--	--	--	--
GMSG-431	06/08/04	8:27 AM	28.63	80	-	0	0	0.7	19.3	--	--	--	--
GMSG-431	06/08/04	1:27 PM	28.69	87	-	0	0	0	19.9	--	--	--	--
GMSG-431	06/08/04	6:00 PM	28.72	82	-	1	0	0.1	19.3	--	--	--	--
GMSG-431	06/09/04	8:05 AM	28.86	57	0.01	0	0	0	19.8	--	--	--	--
GMSG-431	06/09/04	10:26 AM	28.9	55	0.04	0	0	0.1	19.4	--	--	--	--
GMSG-431	06/09/04	2:32 PM	28.91	53	0.01	0	0	0	19.5	--	--	--	--
GMSG-431	06/09/04	6:30 PM	28.9	52	-	0	0	0	19.1	--	--	--	--
GMSG-431	06/10/04	8:37 AM	28.9	59	-	0	0	0	19.6	--	--	--	--
GMSG-431	06/10/04	12:18 PM	28.86	65	-	0	0	0	20	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-431	06/10/04	2:46 PM	28.82	67	-	0	0	0.1	20.1	--	--	--	--
GMSG-431	06/10/04	4:41 PM	28.8	65	-	0	0	0.2	20.1	--	--	--	--
GMSG-431	06/11/04	8:45 AM	28.78	56	-	0	0	0	19.7	--	--	--	--
GMSG-431	06/11/04	12:10 PM	28.79	58	-	0	--	--	--	0	0	0	--
GMSG-431	06/11/04	4:00 PM	28.77	61	-	0	--	--	--	4	0	0	--
GMSG-431	06/12/04	9:35 AM	28.74	57	-	0	--	--	--	0	0	0	--
GMSG-431	06/12/04	2:15 PM	28.66	75	-	-0.022	0	0	19.7	--	--	--	--
GMSG-431	06/12/04	4:50 PM	28.65	79	-	0	0	0	20.3	--	--	--	--
GMSG-431	06/13/04	7:52 AM	28.57	65	-	0	0	0	20	--	--	--	--
GMSG-431	06/13/04	2:47 PM	28.49	69	-	0	0	0	19.7	--	--	--	--
GMSG-431	06/13/04	6:15 PM	28.45	73	-	-0.015	0	0	20.1	--	--	--	--
GMSG-431	06/14/04	10:07 AM	28.59	67	-	0	0	0	20.2	--	--	--	--
GMSG-431	06/14/04	12:14 PM	28.59	68	0.01	0	0	1	18.4	--	--	--	--
GMSG-431	06/14/04	2:09 PM	28.57	72	T	0	0	0	20.4	--	--	--	--
GMSG-431	06/14/04	8:26 PM	28.67	64	-	0	0	0	2.4	--	--	--	--
GMSG-431	06/15/04	8:25 AM	28.85	58	-	-0.049	0	0	20.4	--	--	--	--
GMSG-431	06/15/04	12:16 PM	28.86	67	-	-0.05	0	0	20.4	--	--	--	--
GMSG-431	06/15/04	3:43 PM	28.83	71	-	-0.019	0	0	20.5	--	--	--	--
GMSG-431	06/16/04	8:21 AM	28.82	67	-	-0.05	0	0	20.2	--	--	--	--
GMSG-431	06/16/04	11:10 AM	28.8	79	-	-0.02	0	0	20.3	--	--	--	--
GMSG-431	06/16/04	2:33 PM	28.76	80	-	0.056	0	0	20.4	--	--	--	--
GMSG-431	06/17/04	7:59 AM	28.82	59	T	-0.035	0	2.2	16.4	--	--	--	--
GMSG-431	06/17/04	2:30 PM	28.8	75	-	0	0	0	20.6	--	--	--	--
GMSG-431	06/17/04	6:22 PM	28.81	71	-	-0.007	0	0	20.1	--	--	--	--
GMSG-431	06/18/04	8:02 AM	28.85	69	-	-0.024	0	0	20.1	--	--	--	--
GMSG-431	06/18/04	11:20 AM	28.82	74	-	-0.012	0	2.6	17.6	--	--	--	--
GMSG-431	06/18/04	8:21 PM	28.96	53	-	-0.06	0	0.9	18.8	--	--	--	--
GMSG-431	06/19/04	8:35 AM	29.06	60	-	0	0	0	20	--	--	--	--
GMSG-431	06/19/04	12:13 PM	29.03	65	-	-0.017	0	0	20.4	--	--	--	--
GMSG-431	06/19/04	4:05 PM	28.95	66	-	-0.022	0	0	20.7	--	--	--	--
GMSG-431	06/20/04	8:52 AM	28.77	66	-	-0.022	0	0	20.2	--	--	--	--
GMSG-431	06/20/04	1:55 PM	28.68	74	-	-0.054	0	0	20.5	--	--	--	--
GMSG-431	06/21/04	8:50 AM	28.48	69	-	0.002	0	0	20.2	--	--	--	--
GMSG-431	06/21/04	12:46 PM	28.42	74	-	-0.002	0	0	20.4	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-431	06/21/04	5:54 PM	28.41	59	0.03	-0.027	0	0	20.2	--	--	--	--
GMSG-431	06/22/04	6:33 AM	28.59	53	-	-0.034	0	0	20.8	--	--	--	--
GMSG-431	06/22/04	9:18 AM	28.59	59	-	-0.089	0	0	20.4	--	--	--	--
GMSG-431	06/22/04	1:36 PM	28.61	66	-	-0.029	0	0	20.5	--	--	--	--
GMSG-431	06/25/04	5:21 PM	28.76	61	-	-0.025	0	0	19.8	--	--	--	--
GMSG-431	06/26/04	8:20 AM	28.84	56	-	-0.033	0	0	19.8	--	--	--	--
GMSG-431	06/26/04	11:54 AM	28.83	61	-	-0.03	0	0	19.8	--	--	--	--
GMSG-431	06/26/04	1:43 PM	28.81	65	-	-0.03	0	0	19.8	--	--	--	--
GMSG-431	06/26/04	5:48 PM	28.81	63	-	-0.021	0	0	19.7	--	--	--	--
GMSG-431	06/27/04	10:21 AM	28.88	66	-	-0.027	0	0	19.7	--	--	--	--
GMSG-431	06/28/04	11:15 AM	28.83	72	-	-0.025	0	0	19.8	--	--	--	--
GMSG-431	06/28/04	2:01 PM	28.8	72	-	-0.02	0	0	20	--	--	--	--
GMSG-431	06/29/04	6:36 PM	28.84	65	-	-0.001	0	0	20.1	--	--	--	--
GMSG-431	06/30/04	8:37 AM	28.78	77	-	-0.028	0	0	19.7	--	--	--	--
GMSG-431	07/02/04	10:15 AM	28.93	68	-	0	0	0	19.4	--	--	--	--
GMSG-431	07/06/04	11:22 AM	28.66	54	0.08	-0.017	0	0	19.2	--	--	--	--
GMSG-431	07/07/04	4:48 PM	28.57	56	T	-0.009	0	0	19.7	--	--	--	--
GMSG-431	07/08/04	11:25 AM	28.71	61	-	-0.045	0	0	19.6	--	--	--	--
GMSG-431	07/09/04	11:21 AM	28.88	68	-	-0.017	0	0	20	--	--	--	--
GMSG-431	07/11/04	10:04 AM	28.82	70	-	-0.022	0	0	19.8	--	--	--	--
GMSG-431	07/12/04	2:33 PM	28.7	82	-	-0.34	0	0	19.5	--	--	--	--
GMSG-431	07/19/04	3:18 PM	28.54	79	T	-0.03	0	0	19.7	--	--	--	--
GMSG-431	07/26/04	10:34 AM	28.96	79	-	0.005	0	0.3	19.5	--	--	--	--
GMSG-431	08/02/04	10:51 AM	28.68	79	0.04	-0.054	0	0	19.5	--	--	--	--
GMSG-431	08/03/04	5:41 PM	28.69	72	-	-0.033	0	0	20.6	--	--	--	--
GMSG-431	08/04/04	1:57 PM	28.83	72	-	-0.045	0	0	20	--	--	--	--
GMSG-431	08/07/04	3:28 PM	28.83	70	-	-0.041	0	0	19.7	--	--	--	--
GMSG-431	08/08/04	2:09 PM	28.81	66	T	-0.047	0	0	19.5	--	--	--	--
GMSG-431	08/11/04	3:09 PM	28.59	57	-	-0.048	0	0	19.6	--	--	--	--
GMSG-431	08/12/04	8:50 AM	28.81	59	-	-0.043	0	0	20	--	--	--	--
GMSG-431	08/17/04	1:06 PM	28.69	70	-	-0.044	0	0	20	--	--	--	--
GMSG-431	08/18/04	12:00 PM	28.37	77	-	-0.012	0	0	20.2	--	--	--	--
GMSG-431	09/03/04	3:07 PM	28.81	82	-	0	0	0	20.3	--	--	--	--
GMSG-431	10/20/04	12:40 PM	28.88	54	-	--	0	0	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-431	10/26/04	3:10 PM	29.03	47	-	0	0	0	20.1	--	--	--	--
GMSG-431	11/04/04	10:15 AM	28.5	39	-	0	0	2	18.1	--	--	--	--
GMSG-431	11/11/04	11:51 AM	29.2	34	-	0	0	0	20.1	--	--	--	--
GMSG-431	11/18/04	11:28 AM	28.96	51	-	0	0	1.4	18.5	--	--	--	--
GMSG-431	01/27/05	1:16 PM	29.31	13	-	--	--	--	--	--	--	--	--
GMSG-431	03/14/05	2:50 PM	28.78	34	-	0	0	0	20.3	--	--	--	--
GMSG-431	04/01/05	2:54 PM	28.73	52	-	--	--	--	--	--	--	--	--
GMSG-431	04/04/05	3:00 PM	28.72	56	-	0	0	0	20.4	--	--	--	--
GMSG-431	05/17/05	11:52 AM	28.85	54	-	0	0	0	20	--	--	--	--
GMSG-431	06/09/05	12:09 PM	28.66	84	-	0	0	0	20	--	--	--	--
GMSG-431	07/05/05	10:23 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-431	07/07/05	8:45 AM	28.96	73	-	0	0	0	19.6	--	--	--	--
GMSG-431	08/12/05	11:50 AM	28.61	77	-	0	0	0	19.7	--	--	--	--
GMSG-431	09/08/05	10:37 AM	28.96	66.92	-	0	0	0	19.5	--	--	--	--
GMSG-431	10/10/05	10:00 AM	29	51	-	--	--	--	--	--	--	--	--
GMSG-431	02/22/06	9:42 AM	28.5	26	-	--	--	--	--	--	--	--	--
GMSG-431	04/03/06	10:45 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-431	07/07/06	10:30 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-431	10/02/06	11:26 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-431	01/02/07	11:24 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-431	02/09/07	1:00 PM	28.88	15	T	--	--	--	--	--	--	--	--
GMSG-431	04/02/07	3:49 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-431	07/17/07	1:05 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-431	10/22/07	1:06 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-432	06/06/05	7:31 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-432	06/21/05	10:11 AM	28.89	80	-	--	--	--	--	--	--	--	--
GMSG-432	07/10/05	9:40 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-432	08/01/05	9:40 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-432	09/12/05	8:20 AM	28.8	73.04	-	--	--	--	--	--	--	--	--
GMSG-432	10/11/05	12:40 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-432	02/22/06	1:28 PM	28.49	29	-	--	--	--	--	--	--	--	--
GMSG-432	04/05/06	3:44 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-432	07/07/06	2:38 PM	28.97	84	-	--	--	--	--	--	--	--	--
GMSG-432	10/09/06	12:15 PM	29.13	48	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-432	02/02/07	12:38 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-432	04/02/07	11:44 AM	28.65	42	-	--	--	--	--	--	--	--	--
GMSG-432	07/20/07	9:55 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-432	10/19/07	12:27 PM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-433	06/06/05	7:34 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-433	06/13/05	9:00 AM	28.58	72	-	--	--	--	--	--	--	--	--
GMSG-433	06/21/05	10:14 AM	28.89	80	-	--	--	--	--	--	--	--	--
GMSG-433	07/10/05	9:46 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-433	08/01/05	9:43 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-433	09/12/05	8:23 AM	28.8	73.04	-	--	--	--	--	--	--	--	--
GMSG-433	10/11/05	12:30 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-433	02/22/06	1:22 PM	28.49	29	-	--	--	--	--	--	--	--	--
GMSG-433	04/05/06	3:39 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-433	07/07/06	2:27 PM	28.99	84	-	--	--	--	--	--	--	--	--
GMSG-433	10/09/06	12:33 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-433	02/02/07	1:02 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-433	04/02/07	11:35 AM	28.65	42	-	--	--	--	--	--	--	--	--
GMSG-433	07/20/07	9:50 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-433	10/19/07	12:36 PM	28.99	53	0.01	--	--	--	--	--	--	--	--
GMSG-434	06/06/05	7:38 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-434	06/13/05	9:05 AM	28.58	72	-	--	--	--	--	--	--	--	--
GMSG-434	06/21/05	10:18 AM	28.89	80	-	--	--	--	--	--	--	--	--
GMSG-434	07/10/05	9:49 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-434	08/01/05	9:46 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-434	09/12/05	8:28 AM	28.8	73.04	-	--	--	--	--	--	--	--	--
GMSG-434	10/14/05	2:20 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-434	02/28/06	2:08 PM	28.74	26	-	--	--	--	--	--	--	--	--
GMSG-434	04/14/06	3:35 PM	28.38	68	-	--	--	--	--	--	--	--	--
GMSG-434	07/17/06	11:04 AM	28.59	89	-	--	--	--	--	--	--	--	--
GMSG-434	10/10/06	7:39 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-434	02/02/07	1:16 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-434	04/06/07	12:56 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-434	07/20/07	10:00 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-434	10/19/07	12:02 PM	28.98	53	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-435	06/06/05	7:42 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-435	06/13/05	9:09 AM	28.58	72	-	--	--	--	--	--	--	--	--
GMSG-435	06/21/05	10:21 AM	28.89	80	-	--	--	--	--	--	--	--	--
GMSG-435	07/10/05	9:54 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-435	08/01/05	9:49 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-435	09/12/05	8:31 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-435	10/14/05	2:30 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-435	02/28/06	2:33 PM	28.72	27	-	--	--	--	--	--	--	--	--
GMSG-435	04/14/06	3:40 PM	28.38	68	-	--	--	--	--	--	--	--	--
GMSG-435	07/17/06	11:15 AM	28.59	89	-	--	--	--	--	--	--	--	--
GMSG-435	10/10/06	7:54 AM	29	34	-	--	--	--	--	--	--	--	--
GMSG-435	02/02/07	1:33 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-435	04/06/07	1:03 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-435	07/20/07	10:06 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-435	10/19/07	11:52 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-436	06/06/05	7:46 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-436	06/13/05	9:15 AM	28.58	72	-	--	--	--	--	--	--	--	--
GMSG-436	06/21/05	10:26 AM	28.89	80	-	--	--	--	--	--	--	--	--
GMSG-436	07/10/05	10:00 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-436	08/01/05	9:54 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-436	09/12/05	8:35 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-436	10/14/05	3:24 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-436	02/28/06	1:57 PM	28.74	26	-	--	--	--	--	--	--	--	--
GMSG-436	04/14/06	3:32 PM	28.38	68	-	--	--	--	--	--	--	--	--
GMSG-436	07/17/06	10:58 AM	28.59	89	-	--	--	--	--	--	--	--	--
GMSG-436	10/16/06	11:30 AM	28.64	45	0.05	--	--	--	--	--	--	--	--
GMSG-436	02/02/07	2:00 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-436	04/06/07	12:53 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-436	07/20/07	10:13 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-436	10/23/07	8:05 AM	29.92	37	-	--	--	--	--	--	--	--	--
GMSG-437	06/06/05	8:03 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-437	06/13/05	10:08 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-437	06/20/05	10:04 AM	28.88	83	-	--	--	--	--	--	--	--	--
GMSG-437	06/21/05	10:03 AM	28.89	80	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-437	07/10/05	10:02 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-437	08/01/05	10:00 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-437	09/12/05	8:40 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-437	10/13/05	12:45 PM	28.8	59	-	--	--	--	--	--	--	--	--
GMSG-437	03/01/06	3:30 PM	28.67	31	-	--	--	--	--	--	--	--	--
GMSG-437	04/11/06	8:36 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-437	07/11/06	1:17 PM	28.79	73	-	--	--	--	--	--	--	--	--
GMSG-437	10/10/06	3:00 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-437	02/05/07	8:40 AM	29.07	-9	-	--	--	--	--	--	--	--	--
GMSG-437	04/04/07	10:08 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-437	07/19/07	11:11 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-437	11/01/07	3:17 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-438	06/06/05	8:06 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-438	06/13/05	10:11 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-438	06/20/05	9:58 AM	28.88	83	-	--	--	--	--	--	--	--	--
GMSG-438	07/10/05	10:09 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-438	08/01/05	10:03 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-438	09/12/05	8:43 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-438	10/13/05	12:40 PM	28.8	59	-	--	--	--	--	--	--	--	--
GMSG-438	03/01/06	3:50 PM	28.67	31	-	--	--	--	--	--	--	--	--
GMSG-438	04/11/06	8:38 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-438	07/11/06	1:23 PM	28.79	73	-	--	--	--	--	--	--	--	--
GMSG-438	10/16/06	11:00 AM	28.66	45	0.02	--	--	--	--	--	--	--	--
GMSG-438	02/05/07	8:51 AM	29.07	-9	-	--	--	--	--	--	--	--	--
GMSG-438	04/04/07	10:11 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-438	07/19/07	11:09 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-438	11/01/07	3:13 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-439	06/06/05	7:52 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-439	06/13/05	10:00 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-439	06/21/05	10:07 AM	28.89	80	-	--	--	--	--	--	--	--	--
GMSG-439	07/10/05	10:11 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-439	08/01/05	10:06 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-439	09/12/05	8:46 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-439	10/13/05	12:36 PM	28.8	59	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-439	03/01/06	3:59 PM	28.67	31	-	--	--	--	--	--	--	--	--
GMSG-439	04/11/06	8:40 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-439	07/11/06	1:26 PM	28.79	73	-	--	--	--	--	--	--	--	--
GMSG-439	10/10/06	3:08 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-439	02/05/07	8:55 AM	29.07	-9	-	--	--	--	--	--	--	--	--
GMSG-439	04/04/07	10:01 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-439	07/19/07	11:06 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-439	11/01/07	3:15 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-440	06/06/05	7:59 AM	28.47	65	-	--	--	--	--	--	--	--	--
GMSG-440	06/13/05	10:05 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-440	06/20/05	10:07 AM	28.88	83	-	--	--	--	--	--	--	--	--
GMSG-440	06/21/05	10:05 AM	28.89	80	-	--	--	--	--	--	--	--	--
GMSG-440	07/10/05	10:05 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-440	08/01/05	10:10 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-440	09/12/05	8:49 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-440	10/13/05	12:57 PM	28.8	59	-	--	--	--	--	--	--	--	--
GMSG-440	03/01/06	3:18 PM	28.69	31	-	--	--	--	--	--	--	--	--
GMSG-440	04/11/06	8:33 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-440	07/11/06	1:14 PM	28.79	73	-	--	--	--	--	--	--	--	--
GMSG-440	10/10/06	3:04 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-440	02/05/07	8:26 AM	29.06	-13	-	--	--	--	--	--	--	--	--
GMSG-440	04/04/07	10:04 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-440	07/19/07	11:13 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-440	11/01/07	3:19 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-441	06/06/05	10:34 AM	28.5	71	-	--	--	--	--	--	--	--	--
GMSG-441	06/06/05	12:39 PM	28.51	74	-	--	0	0.8	18.5	--	--	--	--
GMSG-441	06/06/05	12:40 PM	28.51	74	-	--	--	--	--	53.88	53.23	61.3	--
GMSG-441	06/08/05	7:57 AM	28.64	54	-	--	--	--	--	44.79	40.6	32.05	--
GMSG-441	06/08/05	8:01 AM	28.64	54	-	--	--	--	--	--	--	--	--
GMSG-441	06/13/05	9:26 AM	28.58	72	-	--	--	--	--	--	--	--	--
GMSG-441	06/21/05	11:00 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-441	07/10/05	10:43 AM	28.94	89	-	--	--	--	--	--	--	--	--
GMSG-441	08/01/05	1:29 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-441	09/12/05	11:13 AM	28.76	87.08	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-441	10/10/05	9:20 AM	29.01	41	-	--	--	--	--	--	--	--	--
GMSG-441	02/22/06	3:07 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-441	04/05/06	3:25 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-441	07/07/06	2:00 PM	28.99	84	-	--	--	--	--	--	--	--	--
GMSG-441	10/03/06	3:35 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-441	02/03/07	2:31 PM	28.56	0	T	--	--	--	--	--	--	--	--
GMSG-441	04/02/07	11:22 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-441	07/18/07	10:23 AM	29.9	73	-	--	--	--	--	--	--	--	--
GMSG-441	10/23/07	11:04 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-442	06/06/05	10:27 AM	28.49	70	-	--	--	--	--	--	--	--	--
GMSG-442	06/06/05	12:32 PM	28.51	74	-	--	0	0.5	18.4	--	--	--	--
GMSG-442	06/06/05	12:33 PM	28.51	74	-	--	--	--	--	56.84	55.81	61.84	--
GMSG-442	06/08/05	7:42 AM	28.64	54	-	--	--	--	--	35.04	32.71	27.98	--
GMSG-442	06/08/05	7:43 AM	28.64	54	-	--	--	--	--	--	--	--	--
GMSG-442	06/13/05	9:21 AM	28.58	72	-	--	--	--	--	--	--	--	--
GMSG-442	06/21/05	10:55 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-442	07/10/05	10:25 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-442	08/01/05	1:32 PM	28.85	88	-	--	--	--	--	--	--	--	--
GMSG-442	09/12/05	11:17 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-442	10/10/05	8:55 AM	29.01	41	-	--	--	--	--	--	--	--	--
GMSG-442	02/22/06	3:09 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-442	04/05/06	3:21 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-442	07/07/06	1:54 PM	28.99	84	-	--	--	--	--	--	--	--	--
GMSG-442	10/03/06	3:50 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-442	02/03/07	2:24 PM	28.52	1	T	--	--	--	--	--	--	--	--
GMSG-442	04/02/07	11:19 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-442	07/18/07	10:34 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-442	10/23/07	11:08 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-443	06/06/05	9:06 AM	28.48	65	-	--	--	--	--	--	--	--	--
GMSG-443	06/13/05	9:34 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-443	06/21/05	11:09 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-443	07/10/05	10:15 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-443	08/01/05	1:35 PM	28.85	88	-	--	--	--	--	--	--	--	--
GMSG-443	09/12/05	11:20 AM	28.76	87.08	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-443	10/10/05	9:10 AM	29.01	41	-	--	--	--	--	--	--	--	--
GMSG-443	02/22/06	3:25 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-443	04/05/06	3:32 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-443	07/07/06	1:43 PM	28.99	84	-	--	--	--	--	--	--	--	--
GMSG-443	10/03/06	3:44 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-443	02/03/07	2:08 PM	28.52	1	T	--	--	--	--	--	--	--	--
GMSG-443	04/02/07	11:30 AM	28.65	42	-	--	--	--	--	--	--	--	--
GMSG-443	07/18/07	10:31 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-443	10/23/07	11:12 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-444	06/06/05	10:20 AM	28.49	70	-	--	--	--	--	--	--	--	--
GMSG-444	06/06/05	12:25 PM	28.5	74	-	--	0	0	19.9	--	--	--	--
GMSG-444	06/06/05	12:27 PM	28.5	74	-	--	--	--	--	21.91	20.02	76.84	--
GMSG-444	06/08/05	7:33 AM	28.64	54	-	--	--	--	--	28.08	27.59	32.17	--
GMSG-444	06/08/05	7:34 AM	28.64	54	-	--	--	--	--	--	--	--	--
GMSG-444	06/13/05	9:31 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-444	06/21/05	11:06 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-444	07/10/05	10:20 AM	28.93	87	-	--	--	--	--	--	--	--	--
GMSG-444	08/01/05	1:38 PM	28.85	88	-	--	--	--	--	--	--	--	--
GMSG-444	09/12/05	11:24 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-444	10/10/05	9:00 AM	29.01	41	-	--	--	--	--	--	--	--	--
GMSG-444	02/22/06	3:17 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-444	04/05/06	3:30 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-444	07/07/06	1:36 PM	28.99	84	-	--	--	--	--	--	--	--	--
GMSG-444	10/03/06	3:42 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-444	02/03/07	1:57 PM	28.52	1	T	--	--	--	--	--	--	--	--
GMSG-444	04/02/07	11:27 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-444	07/18/07	10:29 AM	29.9	73	-	--	--	--	--	--	--	--	--
GMSG-444	10/23/07	11:15 AM	29.85	50	-	--	--	--	--	--	--	--	--
GMSG-445	06/06/05	10:52 AM	28.5	71	-	--	--	--	--	--	--	--	--
GMSG-445	06/06/05	12:11 PM	28.5	74	-	--	0	0.7	19.2	--	--	--	--
GMSG-445	06/06/05	12:12 PM	28.5	74	-	--	--	--	--	56.32	55.43	60.91	--
GMSG-445	06/08/05	8:18 AM	28.64	54	-	--	--	--	--	123	112	47.18	--
GMSG-445	06/08/05	8:19 AM	28.64	54	-	--	--	--	--	--	--	--	--
GMSG-445	06/13/05	9:48 AM	28.56	77	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-445	06/21/05	11:16 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-445	07/09/05	11:50 AM	28.88	86	-	--	--	--	--	--	--	--	--
GMSG-445	08/01/05	1:16 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-445	09/12/05	10:40 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-445	10/13/05	3:20 PM	28.79	58	T	--	--	--	--	--	--	--	--
GMSG-445	02/22/06	11:33 AM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-445	04/03/06	9:52 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-445	07/06/06	3:21 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-445	10/02/06	10:03 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-445	01/02/07	10:00 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-445	04/03/07	9:54 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-445	07/17/07	10:31 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-445	10/18/07	11:33 AM	29.22	65	-	--	--	--	--	--	--	--	--
GMSG-446	06/06/05	10:47 AM	28.5	71	-	--	--	--	--	--	--	--	--
GMSG-446	06/06/05	11:55 AM	28.5	74	-	--	0	0.3	19.2	--	--	--	--
GMSG-446	06/06/05	11:59 AM	28.5	74	-	--	--	--	--	63.54	60.23	56.43	--
GMSG-446	06/08/05	8:10 AM	28.64	54	-	--	--	--	--	105	99	49.01	--
GMSG-446	06/08/05	8:11 AM	28.64	54	-	--	--	--	--	--	--	--	--
GMSG-446	06/13/05	9:43 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-446	06/21/05	11:20 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-446	07/09/05	11:57 AM	28.88	86	-	--	--	--	--	--	--	--	--
GMSG-446	08/01/05	1:19 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-446	09/12/05	10:45 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-446	10/13/05	3:37 PM	28.79	57	0.02	--	--	--	--	--	--	--	--
GMSG-446	02/22/06	11:53 AM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-446	04/03/06	10:01 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-446	07/06/06	3:12 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-446	10/02/06	10:13 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-446	01/02/07	10:09 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-446	04/03/07	10:03 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-446	07/17/07	10:42 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-446	10/18/07	11:45 AM	29.22	65	-	--	--	--	--	--	--	--	--
GMSG-447	06/06/05	10:11 AM	28.49	70	-	--	--	--	--	--	--	--	--
GMSG-447	06/06/05	12:18 PM	28.5	74	-	--	0	0.9	18.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-447	06/06/05	12:20 PM	28.5	74	-	--	--	--	--	56.14	55.7	57.64	--
GMSG-447	06/08/05	8:25 AM	28.64	54	-	--	--	--	--	31.97	30.36	46.94	--
GMSG-447	06/08/05	8:26 AM	28.64	54	-	--	--	--	--	--	--	--	--
GMSG-447	06/13/05	9:54 AM	28.56	77	-	--	--	--	--	--	--	--	--
GMSG-447	06/21/05	11:29 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-447	07/10/05	10:55 AM	28.94	89	-	--	--	--	--	--	--	--	--
GMSG-447	08/01/05	10:58 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-447	09/12/05	10:09 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-447	10/10/05	10:10 AM	29	51	-	--	--	--	--	--	--	--	--
GMSG-447	02/22/06	10:03 AM	28.5	26	-	--	--	--	--	--	--	--	--
GMSG-447	04/03/06	10:20 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-447	07/07/06	10:50 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-447	10/02/06	11:17 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-447	01/02/07	11:44 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-447	04/03/07	9:18 AM	28.7	36	-	--	--	--	--	--	--	--	--
GMSG-447	07/17/07	12:58 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-447	10/22/07	12:46 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-448	06/13/05	2:20 PM	28.5	83	-	--	--	--	--	--	--	--	--
GMSG-448	06/20/05	9:50 AM	28.88	83	-	--	--	--	--	--	--	--	--
GMSG-448	06/27/05	4:47 PM	28.74	89	-	--	--	--	--	--	--	--	--
GMSG-448	07/11/05	8:22 AM	28.92	79	-	--	--	--	--	--	--	--	--
GMSG-448	08/01/05	10:25 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-448	09/12/05	9:14 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-448	10/11/05	2:33 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-448	02/28/06	11:34 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-448	04/10/06	11:13 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-448	07/13/06	1:28 PM	28.76	92	-	--	--	--	--	--	--	--	--
GMSG-448	10/11/06	8:19 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-448	02/03/07	9:31 AM	28.46	-1	-	--	--	--	--	--	--	--	--
GMSG-448	04/05/07	11:13 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-448	07/18/07	3:10 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-448	10/23/07	9:32 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-449	06/13/05	2:26 PM	28.5	83	-	--	--	--	--	--	--	--	--
GMSG-449	06/20/05	9:46 AM	28.88	83	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-449	06/27/05	4:44 PM	28.74	89	-	--	--	--	--	--	--	--	--
GMSG-449	07/11/05	8:20 AM	28.92	79	-	--	--	--	--	--	--	--	--
GMSG-449	08/01/05	10:28 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-449	09/12/05	9:10 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-449	10/11/05	2:30 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-449	02/28/06	11:29 AM	28.77	17	-	--	--	--	--	--	--	--	--
GMSG-449	04/10/06	11:11 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-449	07/13/06	1:38 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-449	10/16/06	12:38 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-449	02/03/07	11:25 AM	28.47	1	-	--	--	--	--	--	--	--	--
GMSG-449	04/05/07	11:10 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-449	07/18/07	3:08 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-449	10/23/07	9:36 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-450	06/13/05	2:30 PM	28.5	81	-	--	--	--	--	--	--	--	--
GMSG-450	06/13/05	2:50 PM	28.5	81	-	--	0.7	0.3	19.4	--	--	--	--
GMSG-450	06/13/05	2:50 PM	28.5	81	-	--	0	0.3	19.4	--	--	--	--
GMSG-450	06/13/05	2:51 PM	28.5	81	-	--	0.2	0.3	19.4	--	--	--	--
GMSG-450	06/13/05	3:19 PM	28.5	81	-	--	0	0	19.6	--	--	--	--
GMSG-450	06/13/05	3:20 PM	28.5	81	-	--	0	0.1	19.5	--	--	--	--
GMSG-450	06/13/05	3:24 PM	28.5	81	-	--	0	0.3	19.5	--	--	--	--
GMSG-450	06/14/05	7:50 AM	28.33	66	-	--	0	0.4	19.1	--	--	--	--
GMSG-450	06/14/05	7:53 AM	28.33	66	-	--	0	0.2	19.3	--	--	--	--
GMSG-450	06/14/05	7:55 AM	28.33	66	-	--	--	--	--	-97	-115	--	--
GMSG-450	06/20/05	9:42 AM	28.88	83	-	--	--	--	--	--	--	--	--
GMSG-450	06/27/05	4:38 PM	28.74	89	-	--	--	--	--	--	--	--	--
GMSG-450	07/11/05	8:12 AM	28.92	79	-	--	--	--	--	--	--	--	--
GMSG-450	08/01/05	10:31 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-450	09/12/05	8:59 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-450	10/11/05	2:25 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-450	02/28/06	11:45 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-450	04/10/06	11:01 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-450	07/13/06	1:48 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-450	10/11/06	7:56 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-450	02/03/07	9:58 AM	28.46	-1	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-450	04/05/07	10:52 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-450	07/18/07	2:53 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-450	10/23/07	9:50 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-451	06/14/05	8:06 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-451	06/20/05	9:40 AM	28.88	83	-	--	--	--	--	--	--	--	--
GMSG-451	06/27/05	4:33 PM	28.74	89	-	--	--	--	--	--	--	--	--
GMSG-451	07/11/05	8:04 AM	28.92	79	-	--	--	--	--	--	--	--	--
GMSG-451	08/01/05	10:35 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-451	09/12/05	9:20 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-451	10/11/05	2:46 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-451	02/28/06	12:04 PM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-451	04/10/06	11:21 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-451	07/13/06	1:43 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-451	10/11/06	8:35 AM	28.11	42	0.07	--	--	--	--	--	--	--	--
GMSG-451	02/03/07	10:24 AM	28.46	-1	-	--	--	--	--	--	--	--	--
GMSG-451	04/05/07	11:24 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-451	07/18/07	2:51 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-451	10/23/07	10:07 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-452	06/21/05	11:23 AM	28.88	81	-	--	--	--	--	--	--	--	--
GMSG-452	06/27/05	4:25 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-452	07/05/05	9:23 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-452	07/09/05	12:02 PM	28.88	86	-	--	--	--	--	--	--	--	--
GMSG-452	08/01/05	1:23 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-452	09/12/05	10:49 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-452	10/13/05	3:26 PM	28.79	58	T	--	--	--	--	--	--	--	--
GMSG-452	02/22/06	11:45 AM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-452	04/03/06	9:58 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-452	07/06/06	3:07 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-452	10/02/06	10:11 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-452	01/02/07	10:06 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-452	04/03/07	10:00 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-452	07/17/07	10:39 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-452	10/18/07	11:50 AM	29.22	65	-	--	--	--	--	--	--	--	--
GMSG-453	06/21/05	11:35 AM	28.88	82	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-453	06/27/05	4:14 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-453	07/05/05	9:30 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-453	07/09/05	12:18 PM	28.88	86	-	--	--	--	--	--	--	--	--
GMSG-453	08/01/05	11:25 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-453	08/09/05	8:56 AM	28.74	77	-	--	--	--	--	--	--	--	--
GMSG-453	08/17/05	2:21 PM	28.83	75	-	--	--	--	--	--	--	--	--
GMSG-453	08/24/05	1:15 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-453	09/01/05	2:11 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-453	09/07/05	1:40 PM	29.02	68	-	--	--	--	--	--	--	--	--
GMSG-453	09/12/05	11:01 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-453	09/20/05	2:54 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-453	10/21/05	9:40 AM	28.91	41	-	--	--	--	--	--	--	--	--
GMSG-453	02/22/06	9:10 AM	28.49	23	-	--	--	--	--	--	--	--	--
GMSG-453	04/03/06	1:52 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-453	07/07/06	11:24 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-453	10/02/06	11:03 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-453	01/02/07	11:04 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-453	04/03/07	9:33 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-453	07/17/07	12:26 PM	29.95	80	-	--	--	--	--	--	--	--	--
GMSG-453	10/18/07	2:19 PM	29.16	68	-	--	--	--	--	--	--	--	--
GMSG-454	06/21/05	11:37 AM	28.88	82	-	--	--	--	--	--	--	--	--
GMSG-454	06/27/05	4:17 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-454	07/05/05	9:33 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-454	07/09/05	12:20 PM	28.88	86	-	--	--	--	--	--	--	--	--
GMSG-454	08/01/05	11:29 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-454	08/09/05	8:53 AM	28.74	77	-	--	--	--	--	--	--	--	--
GMSG-454	08/17/05	2:25 PM	28.83	75	-	--	--	--	--	--	--	--	--
GMSG-454	08/24/05	1:18 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-454	09/01/05	2:14 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-454	09/07/05	1:43 PM	29.02	68	-	--	--	--	--	--	--	--	--
GMSG-454	09/12/05	11:05 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-454	09/20/05	2:56 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-454	10/10/05	1:45 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-454	02/22/06	--	--	--	--	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-454	04/03/06	1:55 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-454	07/07/06	11:41 AM	29.03	83	-	--	--	--	--	--	--	--	--
GMSG-454	10/02/06	11:05 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-454	01/02/07	11:07 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-454	04/03/07	9:35 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-454	07/17/07	12:29 PM	29.95	80	-	--	--	--	--	--	--	--	--
GMSG-454	10/18/07	2:31 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-455	06/21/05	11:40 AM	28.88	82	-	--	--	--	--	--	--	--	--
GMSG-455	06/21/05	1:35 PM	28.88	83	-	--	--	--	--	--	4631	-0.5	--
GMSG-455	06/21/05	1:40 PM	28.88	83	-	--	0.3	6.8	10.6	--	--	--	--
GMSG-455	06/21/05	4:50 PM	28.88	80	-	--	--	--	--	--	--	--	--
GMSG-455	06/22/05	7:30 AM	29.01	68	-	--	0.6	8.1	8.5	--	--	--	--
GMSG-455	06/22/05	7:32 AM	29.01	68	-	--	0.6	7.2	11.5	--	--	--	--
GMSG-455	06/27/05	4:08 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-455	07/05/05	9:37 AM	28.86	60	-	--	--	--	--	--	--	--	--
GMSG-455	07/09/05	12:10 PM	28.88	86	-	--	--	--	--	--	--	--	--
GMSG-455	08/01/05	11:33 AM	28.85	86	-	--	--	--	--	--	--	--	--
GMSG-455	08/09/05	8:49 AM	28.74	77	-	--	--	--	--	--	--	--	--
GMSG-455	08/17/05	2:29 PM	28.83	75	-	--	--	--	--	--	--	--	--
GMSG-455	08/24/05	1:08 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-455	09/01/05	2:06 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-455	09/07/05	1:34 PM	29.02	68	-	--	--	--	--	--	--	--	--
GMSG-455	09/12/05	10:55 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-455	09/20/05	2:48 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-455	09/29/05	11:33 AM	28.82	53.06	-	--	--	--	--	--	--	--	--
GMSG-455	10/07/05	12:48 PM	29.02	47	T	--	--	--	--	--	--	--	--
GMSG-455	10/10/05	1:30 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-455	10/18/05	11:05 AM	28.64	53	-	--	--	--	--	--	--	--	--
GMSG-455	10/25/05	1:20 PM	28.91	44	-	--	--	--	--	--	--	--	--
GMSG-455	10/25/05	2:02 PM	28.9	45	-	--	--	--	--	5.9	3.98	-0.62	--
GMSG-455	10/25/05	3:40 PM	28.89	43	-	--	--	--	--	4.51	3.9	-0.85	--
GMSG-455	10/31/05	3:45 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-455	12/07/05	10:44 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-455	02/22/06	8:43 AM	28.49	23	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-455	04/03/06	1:47 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-455	07/07/06	11:33 AM	29.03	83	-	--	--	--	--	--	--	--	--
GMSG-455	10/02/06	10:58 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-455	01/02/07	10:59 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-455	04/03/07	9:28 AM	28.7	36	-	--	--	--	--	--	--	--	--
GMSG-455	07/17/07	12:22 PM	29.95	80	-	--	--	--	--	--	--	--	--
GMSG-455	10/18/07	2:26 PM	29.16	68	-	--	--	--	--	--	--	--	--
GMSG-456	06/21/05	11:33 AM	28.88	82	-	--	--	--	--	--	--	--	--
GMSG-456	06/21/05	4:53 PM	28.88	80	-	--	--	--	--	--	--	--	--
GMSG-456	06/27/05	4:11 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-456	07/05/05	9:28 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-456	07/09/05	12:14 PM	28.88	86	-	--	--	--	--	--	--	--	--
GMSG-456	08/01/05	11:36 AM	28.85	86	-	--	--	--	--	--	--	--	--
GMSG-456	08/17/05	2:16 PM	28.83	75	-	--	--	--	--	--	--	--	--
GMSG-456	08/24/05	1:12 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-456	09/01/05	2:09 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-456	09/07/05	1:37 PM	29.02	68	-	--	--	--	--	--	--	--	--
GMSG-456	09/12/05	10:58 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-456	09/20/05	2:51 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-456	10/10/05	1:35 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-456	02/22/06	--	--	--	--	--	--	--	--	--	--	--	--
GMSG-456	04/03/06	1:50 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-456	07/07/06	11:27 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-456	10/02/06	11:01 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-456	01/02/07	11:01 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-456	04/03/07	9:31 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-456	07/17/07	12:24 PM	29.95	80	-	--	--	--	--	--	--	--	--
GMSG-456	10/18/07	2:23 PM	29.16	68	-	--	--	--	--	--	--	--	--
GMSG-457	06/24/05	8:21 AM	28.61	82	-	--	--	--	--	--	--	--	--
GMSG-457	06/27/05	4:36 PM	28.74	89	-	--	--	--	--	--	--	--	--
GMSG-457	07/05/05	9:12 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-457	07/11/05	8:08 AM	28.92	79	-	--	--	--	--	--	--	--	--
GMSG-457	08/01/05	10:40 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-457	09/12/05	9:23 AM	28.78	78.98	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-457	10/11/05	2:50 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-457	02/28/06	1:37 PM	28.74	26	-	--	--	--	--	--	--	--	--
GMSG-457	04/10/06	11:23 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-457	07/13/06	2:25 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-457	10/11/06	8:30 AM	28.11	42	0.07	--	--	--	--	--	--	--	--
GMSG-457	02/03/07	10:31 AM	28.47	1	-	--	--	--	--	--	--	--	--
GMSG-457	04/05/07	11:27 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-457	07/18/07	3:13 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-457	10/23/07	10:10 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-458	06/24/05	8:25 AM	28.61	82	-	--	--	--	--	--	--	--	--
GMSG-458	06/27/05	4:41 PM	28.74	89	-	--	--	--	--	--	--	--	--
GMSG-458	07/05/05	9:15 AM	28.84	60	-	--	--	--	--	--	--	--	--
GMSG-458	07/11/05	8:14 AM	28.92	79	-	--	--	--	--	--	--	--	--
GMSG-458	08/01/05	12:54 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-458	09/12/05	9:04 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-458	10/11/05	2:12 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-458	02/28/06	11:05 AM	28.77	17	-	--	--	--	--	--	--	--	--
GMSG-458	04/10/06	11:03 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-458	07/13/06	1:52 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-458	10/11/06	7:59 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-458	02/03/07	11:18 AM	28.47	1	-	--	--	--	--	--	--	--	--
GMSG-458	04/05/07	10:55 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-458	07/18/07	2:55 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-458	10/23/07	9:54 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-459	07/11/05	8:33 AM	28.92	84	-	--	--	--	--	--	--	--	--
GMSG-459	07/19/05	3:49 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-459	07/25/05	9:43 AM	28.73	85	-	--	--	--	--	--	--	--	--
GMSG-459	09/12/05	10:19 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-459	10/14/05	4:15 PM	28.61	66	T	--	--	--	--	--	--	--	--
GMSG-459	03/02/06	3:48 PM	28.84	27	-	--	--	--	--	--	--	--	--
GMSG-459	04/05/06	4:55 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-459	07/06/06	2:53 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-459	10/03/06	4:18 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-459	02/04/07	8:20 AM	28.78	-16	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-459	04/09/07	11:43 AM	28.82	34	-	--	--	--	--	--	--	--	--
GMSG-459	07/17/07	10:24 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-459	11/01/07	4:21 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-460	07/11/05	8:37 AM	28.92	84	-	--	--	--	--	--	--	--	--
GMSG-460	07/19/05	3:54 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-460	07/25/05	9:47 AM	28.73	85	-	--	--	--	--	--	--	--	--
GMSG-460	08/01/05	12:57 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-460	09/12/05	10:22 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-460	10/14/05	4:26 PM	28.61	66	T	--	--	--	--	--	--	--	--
GMSG-460	03/13/06	3:24 PM	27.95	32	0.01	--	--	--	--	--	--	--	--
GMSG-460	04/05/06	4:49 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-460	07/06/06	2:17 PM	29.02	81	-	--	--	--	--	--	--	--	--
GMSG-460	10/03/06	4:16 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-460	02/04/07	8:16 AM	28.78	-16	-	--	--	--	--	--	--	--	--
GMSG-460	04/09/07	11:37 AM	28.82	34	-	--	--	--	--	--	--	--	--
GMSG-460	07/17/07	10:20 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-460	11/01/07	4:26 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-461	07/11/05	8:43 AM	28.92	84	-	--	--	--	--	--	--	--	--
GMSG-461	07/19/05	3:58 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-461	07/25/05	9:49 AM	28.73	85	-	--	--	--	--	--	--	--	--
GMSG-461	08/01/05	1:02 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-461	09/12/05	10:15 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-461	10/14/05	4:20 PM	28.61	66	T	--	--	--	--	--	--	--	--
GMSG-461	03/02/06	3:42 PM	28.84	27	-	--	--	--	--	--	--	--	--
GMSG-461	04/05/06	5:00 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-461	07/06/06	2:12 PM	29.02	81	-	--	--	--	--	--	--	--	--
GMSG-461	10/03/06	4:10 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-461	02/04/07	8:06 AM	28.78	-16	-	--	--	--	--	--	--	--	--
GMSG-461	04/09/07	11:34 AM	28.82	34	-	--	--	--	--	--	--	--	--
GMSG-461	07/17/07	10:14 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-461	11/01/07	3:55 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-462	07/11/05	8:55 AM	28.92	84	-	--	--	--	--	--	--	--	--
GMSG-462	07/19/05	4:10 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-462	07/25/05	9:40 AM	28.73	85	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-462	08/01/05	12:50 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-462	09/12/05	10:25 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-462	10/14/05	4:32 PM	28.62	66	-	--	--	--	--	--	--	--	--
GMSG-462	03/02/06	3:12 PM	28.8	29	-	--	--	--	--	--	--	--	--
GMSG-462	04/05/06	4:35 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-462	07/06/06	2:40 PM	29.01	82	-	--	--	--	--	--	--	--	--
GMSG-462	10/03/06	3:59 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-462	02/04/07	7:45 AM	28.78	-16	-	--	--	--	--	--	--	--	--
GMSG-462	04/09/07	11:23 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-462	07/17/07	9:59 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-462	11/01/07	4:09 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-463	07/11/05	8:47 AM	28.92	84	-	--	--	--	--	--	--	--	--
GMSG-463	07/19/05	4:02 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-463	07/25/05	9:52 AM	28.73	85	-	--	--	--	--	--	--	--	--
GMSG-463	08/01/05	1:06 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-463	09/12/05	10:29 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-463	10/31/05	4:40 PM	28.73	48	-	--	--	--	--	--	--	--	--
GMSG-463	03/02/06	3:38 PM	28.84	27	-	--	--	--	--	--	--	--	--
GMSG-463	04/05/06	4:45 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-463	07/06/06	2:22 PM	29.02	81	-	--	--	--	--	--	--	--	--
GMSG-463	10/03/06	4:07 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-463	02/04/07	8:01 AM	28.78	-16	-	--	--	--	--	--	--	--	--
GMSG-463	04/09/07	11:31 AM	28.82	34	-	--	--	--	--	--	--	--	--
GMSG-463	07/17/07	10:09 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-463	11/01/07	3:58 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-464	07/11/05	8:50 AM	28.92	84	-	--	--	--	--	--	--	--	--
GMSG-464	07/19/05	4:06 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-464	07/25/05	9:56 AM	28.73	85	-	--	--	--	--	--	--	--	--
GMSG-464	08/01/05	1:09 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-464	09/12/05	10:31 AM	28.76	87.08	-	--	--	--	--	--	--	--	--
GMSG-464	10/14/05	4:40 PM	28.62	66	-	--	--	--	--	--	--	--	--
GMSG-464	03/02/06	3:24 PM	28.8	29	-	--	--	--	--	--	--	--	--
GMSG-464	04/05/06	4:40 PM	28.69	55	-	--	--	--	--	--	--	--	--
GMSG-464	07/06/06	2:33 PM	29.01	82	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-464	10/03/06	4:01 PM	28.82	68	-	--	--	--	--	--	--	--	--
GMSG-464	02/04/07	7:52 AM	28.78	-16	-	--	--	--	--	--	--	--	--
GMSG-464	04/09/07	11:25 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-464	07/17/07	10:02 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-464	11/01/07	4:07 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-465	07/19/05	4:21 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-465	07/25/05	8:38 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-465	08/01/05	10:46 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-465	09/12/05	9:07 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-465	10/11/05	2:28 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-465	11/08/05	2:55 PM	28.81	47	-	--	--	--	--	--	--	--	--
GMSG-465	02/28/06	11:18 AM	28.77	17	-	--	--	--	--	--	--	--	--
GMSG-465	04/10/06	11:08 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-465	07/13/06	2:13 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-465	10/11/06	8:10 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-465	02/03/07	11:11 AM	28.47	1	-	--	--	--	--	--	--	--	--
GMSG-465	04/05/07	11:02 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-465	07/18/07	3:00 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-465	10/23/07	9:41 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-466	07/19/05	4:29 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-466	07/25/05	8:35 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-466	08/01/05	10:49 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-466	09/12/05	8:55 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-466	10/11/05	2:05 PM	28.99	60	-	--	--	--	--	--	--	--	--
GMSG-466	11/08/05	3:00 PM	28.81	47	-	--	--	--	--	--	--	--	--
GMSG-466	02/28/06	10:53 AM	28.77	17	-	--	--	--	--	--	--	--	--
GMSG-466	04/10/06	10:58 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-466	07/13/06	2:07 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-466	10/11/06	8:03 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-466	02/05/07	12:45 PM	29.09	4	-	--	--	--	--	--	--	--	--
GMSG-466	04/05/07	10:49 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-466	07/18/07	3:04 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-466	10/23/07	9:48 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-467	07/19/05	3:25 PM	28.78	81	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-467	07/25/05	9:15 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-467	08/01/05	12:18 PM	28.85	86	-	--	--	--	--	--	--	--	--
GMSG-467	09/12/05	9:45 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-467	10/10/05	1:05 PM	28.98	61	-	--	--	--	--	--	--	--	--
GMSG-467	11/11/05	2:08 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-467	02/22/06	10:52 AM	28.51	28	-	--	--	--	--	--	--	--	--
GMSG-467	04/03/06	11:12 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-467	07/06/06	11:40 AM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-467	10/02/06	12:35 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-467	10/09/06	11:47 AM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-467	01/02/07	12:08 PM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-467	04/02/07	3:33 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-467	07/17/07	1:39 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-467	10/18/07	2:43 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-468	07/19/05	4:25 PM	28.78	82	-	--	--	--	--	--	--	--	--
GMSG-468	07/25/05	8:41 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-468	08/01/05	11:15 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-468	09/12/05	9:17 AM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-468	10/11/05	2:41 PM	28.99	57	-	--	--	--	--	--	--	--	--
GMSG-468	11/08/05	3:10 PM	28.81	47	-	--	--	--	--	--	--	--	--
GMSG-468	02/28/06	11:00 AM	28.77	17	-	--	--	--	--	--	--	--	--
GMSG-468	04/10/06	11:18 AM	28.81	56	-	--	--	--	--	--	--	--	--
GMSG-468	07/13/06	2:30 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-468	10/11/06	7:51 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-468	04/05/07	11:21 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-468	07/18/07	2:49 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-468	10/23/07	10:00 AM	29.86	48	-	--	--	--	--	--	--	--	--
GMSG-469	07/19/05	3:29 PM	28.78	81	-	--	--	--	--	--	--	--	--
GMSG-469	07/25/05	9:09 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-469	08/01/05	11:04 AM	28.86	84	-	--	--	--	--	--	--	--	--
GMSG-469	09/12/05	10:11 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-469	10/10/05	10:30 AM	29	56	-	--	--	--	--	--	--	--	--
GMSG-469	11/08/05	3:55 PM	28.8	46	-	--	--	--	--	--	--	--	--
GMSG-469	02/22/06	10:38 AM	28.51	28	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-469	04/03/06	10:26 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-469	07/07/06	11:05 AM	29.05	80	-	--	--	--	--	--	--	--	--
GMSG-469	10/02/06	11:11 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-469	01/02/07	11:38 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-469	04/03/07	9:11 AM	28.7	36	-	--	--	--	--	--	--	--	--
GMSG-469	07/17/07	12:53 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-469	10/22/07	12:52 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-470	07/19/05	3:20 PM	28.78	81	-	--	--	--	--	--	--	--	--
GMSG-470	07/25/05	9:21 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-470	08/01/05	12:20 PM	28.85	86	-	--	--	--	--	--	--	--	--
GMSG-470	09/12/05	9:52 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-470	10/10/05	2:20 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-470	11/11/05	2:04 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-470	02/22/06	3:26 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-470	04/03/06	11:30 AM	28.6	42	-	--	--	--	--	--	--	--	--
GMSG-470	07/06/06	11:57 AM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-470	10/02/06	12:58 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-470	10/09/06	11:16 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-470	01/02/07	1:54 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-470	04/02/07	2:57 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-470	07/17/07	2:05 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-470	10/18/07	2:57 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-471	07/25/05	9:23 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-471	08/01/05	12:23 PM	28.85	86	-	--	--	--	--	--	--	--	--
GMSG-471	08/09/05	9:24 AM	28.74	77	-	--	--	--	--	--	--	--	--
GMSG-471	09/12/05	9:55 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-471	10/10/05	2:25 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-471	11/11/05	2:00 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-471	02/22/06	3:41 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-471	04/03/06	11:32 AM	28.6	42	-	--	--	--	--	--	--	--	--
GMSG-471	07/06/06	12:00 PM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-471	10/02/06	1:00 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-471	10/09/06	11:14 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-471	01/02/07	1:59 PM	28.83	40	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-471	04/02/07	2:55 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-471	07/17/07	2:03 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-471	10/18/07	2:58 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-472	07/19/05	3:12 PM	28.78	81	-	--	--	--	--	--	--	--	--
GMSG-472	07/25/05	9:26 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-472	08/01/05	12:26 PM	28.85	86	-	--	--	--	--	--	--	--	--
GMSG-472	09/12/05	9:58 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-472	10/10/05	2:30 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-472	11/11/05	1:57 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-472	02/24/06	8:53 AM	29.03	6	-	--	--	--	--	--	--	--	--
GMSG-472	04/03/06	11:34 AM	28.6	42	-	--	--	--	--	--	--	--	--
GMSG-472	07/06/06	11:06 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-472	10/02/06	1:02 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-472	10/09/06	11:10 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-472	01/02/07	2:02 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-472	04/02/07	2:52 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-472	07/17/07	2:00 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-472	10/18/07	3:00 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-473	07/22/05	1:46 PM	28.93	84	-	--	--	--	--	--	--	--	--
GMSG-473	07/25/05	9:35 AM	28.73	85	-	--	--	--	--	--	--	--	--
GMSG-473	08/01/05	12:30 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-473	09/12/05	10:01 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-473	10/10/05	2:45 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-473	11/11/05	1:53 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-473	02/22/06	2:31 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-473	04/03/06	11:39 AM	28.6	42	-	--	--	--	--	--	--	--	--
GMSG-473	07/06/06	11:21 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-473	10/02/06	1:08 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-473	10/09/06	11:31 AM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-473	01/02/07	2:07 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-473	04/02/07	3:01 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-473	07/17/07	1:45 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-473	10/18/07	3:13 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-474	07/19/05	3:16 PM	28.78	81	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-474	07/22/05	1:43 PM	28.93	84	-	--	--	--	--	--	--	--	--
GMSG-474	07/25/05	9:31 AM	28.73	85	-	--	--	--	--	--	--	--	--
GMSG-474	08/01/05	12:34 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-474	09/12/05	10:03 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-474	10/10/05	2:40 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-474	11/11/05	1:48 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-474	03/03/06	1:29 PM	29.14	27	-	--	--	--	--	--	--	--	--
GMSG-474	04/03/06	11:42 AM	28.6	42	-	--	--	--	--	--	--	--	--
GMSG-474	07/06/06	11:16 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-474	10/02/06	1:10 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-474	10/09/06	11:27 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-474	01/02/07	2:10 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-474	04/02/07	3:05 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-474	07/17/07	1:48 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-474	10/18/07	3:09 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-475	07/22/05	1:40 PM	28.93	84	-	--	--	--	--	--	--	--	--
GMSG-475	07/25/05	9:29 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-475	08/01/05	12:38 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-475	09/12/05	10:06 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-475	10/10/05	2:35 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-475	11/11/05	1:45 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-475	02/22/06	3:09 PM	28.48	31	-	--	--	--	--	--	--	--	--
GMSG-475	04/03/06	11:45 AM	28.6	42	-	--	--	--	--	--	--	--	--
GMSG-475	07/06/06	11:12 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-475	10/02/06	1:13 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-475	10/09/06	11:23 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-475	01/02/07	2:13 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-475	04/02/07	3:09 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-475	07/17/07	1:50 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-475	10/18/07	3:04 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-476	07/22/05	2:10 PM	28.93	84	-	--	--	--	--	--	--	--	--
GMSG-476	07/25/05	8:48 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-476	08/01/05	10:15 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-476	09/12/05	11:35 AM	28.74	87.98	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-476	10/13/05	12:17 PM	28.81	61	-	--	--	--	--	--	--	--	--
GMSG-476	11/11/05	3:13 PM	28.63	54	-	--	--	--	--	--	--	--	--
GMSG-476	02/24/06	2:20 PM	28.88	20	T	--	--	--	--	--	--	--	--
GMSG-476	04/11/06	8:59 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-476	07/11/06	2:10 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-476	10/10/06	4:03 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-476	02/08/07	3:58 PM	28.77	17	-	--	--	--	--	--	--	--	--
GMSG-476	04/03/07	3:20 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-476	07/19/07	10:27 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-476	10/23/07	3:26 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-477	07/22/05	2:05 PM	28.93	84	-	--	--	--	--	--	--	--	--
GMSG-477	07/25/05	8:51 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-477	08/01/05	10:18 AM	28.87	81	-	--	--	--	--	--	--	--	--
GMSG-477	09/12/05	11:38 AM	28.74	87.98	-	--	--	--	--	--	--	--	--
GMSG-477	10/13/05	12:24 PM	28.81	61	-	--	--	--	--	--	--	--	--
GMSG-477	11/11/05	3:16 PM	28.63	54	-	--	--	--	--	--	--	--	--
GMSG-477	02/24/06	2:30 PM	28.83	18	0.01	--	--	--	--	--	--	--	--
GMSG-477	04/11/06	9:04 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-477	07/11/06	2:00 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-477	10/10/06	3:56 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-477	02/05/07	10:26 AM	29.08	-3	-	--	--	--	--	--	--	--	--
GMSG-477	04/03/07	3:26 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-477	07/19/07	10:33 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-477	10/23/07	3:33 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-478	07/22/05	1:51 PM	28.93	84	-	--	--	--	--	--	--	--	--
GMSG-478	07/25/05	9:18 AM	28.75	80	-	--	--	--	--	--	--	--	--
GMSG-478	08/01/05	12:42 PM	28.85	85	-	--	--	--	--	--	--	--	--
GMSG-478	09/12/05	9:48 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-478	10/10/05	1:10 PM	28.98	61	-	--	--	--	--	--	--	--	--
GMSG-478	11/11/05	2:13 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-478	02/22/06	10:44 AM	28.51	28	-	--	--	--	--	--	--	--	--
GMSG-478	04/03/06	11:14 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-478	07/06/06	11:51 AM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-478	10/02/06	12:42 PM	28.63	78	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-478	01/02/07	12:02 PM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-478	04/02/07	3:29 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-478	07/17/07	1:35 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-478	10/18/07	2:37 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-479A	08/08/05	2:02 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-479A	08/17/05	10:19 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-479A	08/24/05	11:55 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-479A	09/12/05	2:33 PM	28.67	87.98	-	--	--	--	--	--	--	--	--
GMSG-479A	10/13/05	9:50 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-479A	11/14/05	10:00 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-479A	03/06/06	10:51 AM	28.99	31	-	--	--	--	--	--	--	--	--
GMSG-479A	04/11/06	11:13 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-479A	07/12/06	11:27 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-479A	10/10/06	11:59 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-479A	02/06/07	9:45 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-479A	04/03/07	1:29 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-479A	07/19/07	9:34 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-479A	10/23/07	1:19 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-479B	08/08/05	2:04 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-479B	08/17/05	10:20 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-479B	08/24/05	11:57 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-479B	09/12/05	2:35 PM	28.67	87.98	-	--	--	--	--	--	--	--	--
GMSG-479B	10/21/05	9:00 AM	28.91	35	-	--	--	--	--	--	--	--	--
GMSG-479B	11/14/05	10:02 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-479B	03/06/06	10:53 AM	28.99	31	-	--	--	--	--	--	--	--	--
GMSG-479B	04/11/06	11:14 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-479B	07/12/06	11:29 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-479B	10/10/06	12:01 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-479B	02/06/07	9:46 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-479B	04/03/07	1:30 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-479B	07/19/07	9:35 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-479B	10/23/07	1:19 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-479C	08/08/05	2:06 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-479C	08/17/05	10:22 AM	28.91	69	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-479C	08/24/05	11:59 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-479C	09/12/05	2:37 PM	28.67	87.98	-	--	--	--	--	--	--	--	--
GMSG-479C	10/21/05	9:02 AM	28.91	35	-	--	--	--	--	--	--	--	--
GMSG-479C	11/14/05	10:03 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-479C	03/06/06	10:54 AM	28.99	31	-	--	--	--	--	--	--	--	--
GMSG-479C	04/11/06	11:15 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-479C	07/12/06	11:31 AM	28.81	82	-	--	--	--	--	--	--	--	--
GMSG-479C	10/10/06	12:03 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-479C	02/06/07	9:47 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-479C	04/03/07	1:31 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-479C	07/19/07	9:36 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-479C	10/23/07	1:20 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-480A	08/08/05	2:22 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-480A	08/17/05	9:48 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-480A	08/24/05	11:34 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-480A	09/12/05	3:58 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-480A	10/13/05	10:31 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-480A	11/14/05	9:48 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-480A	02/27/06	10:15 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-480A	04/11/06	10:54 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-480A	07/12/06	11:11 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-480A	10/10/06	11:35 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-480A	02/06/07	10:07 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-480A	04/03/07	1:19 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-480A	07/19/07	9:24 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-480A	10/23/07	1:29 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-480B	08/08/05	2:24 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-480B	08/17/05	9:49 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-480B	08/24/05	11:36 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-480B	09/12/05	4:00 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-480B	10/13/05	10:33 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-480B	11/14/05	9:49 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-480B	02/27/06	10:17 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-480B	04/11/06	10:55 AM	28.64	66	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-480B	07/12/06	11:13 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-480B	10/10/06	11:37 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-480B	02/06/07	10:08 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-480B	04/03/07	1:20 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-480B	07/19/07	9:25 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-480B	10/23/07	1:30 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-480C	08/08/05	2:27 PM	28.74	91	-	--	--	--	--	--	--	--	--
GMSG-480C	08/17/05	9:51 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-480C	08/24/05	11:39 AM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-480C	09/12/05	4:02 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-480C	10/13/05	10:35 AM	28.83	59	-	--	--	--	--	--	--	--	--
GMSG-480C	11/14/05	9:50 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-480C	02/27/06	10:18 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-480C	04/11/06	10:56 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-480C	07/12/06	11:15 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-480C	10/10/06	11:39 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-480C	02/06/07	10:09 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-480C	04/03/07	1:21 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-480C	07/19/07	9:26 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-480C	10/23/07	1:30 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-481A	08/08/05	2:33 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-481A	08/17/05	10:04 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-481A	08/24/05	11:25 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-481A	10/13/05	10:25 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-481A	11/14/05	9:53 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-481A	02/27/06	9:54 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-481A	04/11/06	11:03 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-481A	07/12/06	11:03 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-481A	10/10/06	11:30 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-481A	02/06/07	10:20 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-481A	04/03/07	1:14 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-481A	07/19/07	9:20 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-481A	10/23/07	1:34 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-481B	08/08/05	2:35 PM	28.73	91	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-481B	08/17/05	10:05 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-481B	08/24/05	11:27 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-481B	09/12/05	3:44 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-481B	10/13/05	10:26 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-481B	11/14/05	9:54 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-481B	02/27/06	9:55 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-481B	04/11/06	11:04 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-481B	07/12/06	11:05 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-481B	10/10/06	11:32 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-481B	02/06/07	10:21 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-481B	04/03/07	1:15 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-481B	07/19/07	9:21 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-481B	10/23/07	1:34 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-481C	08/08/05	2:37 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-481C	08/17/05	10:08 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-481C	08/24/05	11:29 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-481C	09/12/05	3:46 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-481C	10/13/05	10:27 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-481C	11/14/05	9:55 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-481C	02/27/06	9:56 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-481C	04/11/06	11:05 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-481C	07/12/06	11:07 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-481C	10/10/06	11:33 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-481C	02/06/07	10:22 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-481C	04/03/07	1:16 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-481C	07/19/07	9:22 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-481C	10/23/07	1:35 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-482A	08/08/05	2:42 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-482A	08/17/05	9:56 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-482A	08/24/05	11:17 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-482A	09/12/05	3:50 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-482A	10/13/05	10:15 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-482A	11/14/05	9:30 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-482A	02/27/06	9:44 AM	28.87	15	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-482A	04/11/06	10:59 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-482A	07/12/06	10:56 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-482A	10/10/06	11:25 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-482A	02/06/07	10:14 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-482A	04/03/07	1:10 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-482A	07/19/07	9:16 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-482A	10/23/07	1:38 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-482B	08/08/05	2:44 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-482B	08/17/05	9:57 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-482B	08/24/05	11:19 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-482B	09/12/05	3:52 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-482B	10/13/05	10:17 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-482B	02/27/06	9:46 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-482B	04/11/06	11:00 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-482B	07/12/06	10:58 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-482B	10/10/06	11:27 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-482B	02/06/07	10:15 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-482B	04/03/07	1:11 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-482B	07/19/07	9:17 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-482B	10/23/07	1:39 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-482C	08/08/05	2:46 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-482C	08/17/05	9:59 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-482C	08/24/05	11:21 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-482C	09/12/05	3:54 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-482C	10/13/05	10:18 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-482C	11/14/05	9:33 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-482C	02/27/06	9:48 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-482C	04/11/06	11:01 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-482C	07/12/06	11:00 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-482C	10/10/06	11:29 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-482C	02/06/07	10:16 AM	28.92	-4	-	--	--	--	--	--	--	--	--
GMSG-482C	04/03/07	1:12 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-482C	07/19/07	9:18 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-482C	10/23/07	1:39 PM	29.73	53	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-483A	08/08/05	2:53 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-483A	08/17/05	9:38 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-483A	08/24/05	12:56 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-483A	09/12/05	4:08 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-483A	10/17/05	3:05 PM	28.39	61	-	--	--	--	--	--	--	--	--
GMSG-483A	11/14/05	9:37 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-483A	03/06/06	2:11 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-483A	04/11/06	10:50 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-483A	07/12/06	10:48 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-483A	10/10/06	11:47 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-483A	02/06/07	10:30 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-483A	04/03/07	1:05 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-483A	07/19/07	9:12 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-483A	10/23/07	2:06 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-483B	08/08/05	2:55 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-483B	08/17/05	9:39 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-483B	08/24/05	12:58 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-483B	09/12/05	4:10 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-483B	10/17/05	3:06 PM	28.39	61	-	--	--	--	--	--	--	--	--
GMSG-483B	11/14/05	9:38 AM	29.07	31	-	--	--	--	--	--	--	--	--
GMSG-483B	03/06/06	2:14 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-483B	04/11/06	10:51 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-483B	07/12/06	10:50 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-483B	10/10/06	11:49 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-483B	02/06/07	10:31 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-483B	04/03/07	1:06 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-483B	07/19/07	9:13 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-483B	10/23/07	2:07 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-483C	08/08/05	2:58 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-483C	08/17/05	9:41 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-483C	08/24/05	1:00 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-483C	09/12/05	4:12 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-483C	10/17/05	3:07 PM	28.39	61	-	--	--	--	--	--	--	--	--
GMSG-483C	11/14/05	9:39 AM	29.07	31	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-483C	03/06/06	2:16 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-483C	04/11/06	10:52 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-483C	07/12/06	10:52 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-483C	10/10/06	11:51 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-483C	02/06/07	10:32 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-483C	04/03/07	1:07 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-483C	07/19/07	9:14 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-483C	10/23/07	2:07 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-484A	08/08/05	5:30 PM	28.68	87	-	--	--	--	--	--	--	--	--
GMSG-484A	08/17/05	9:21 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-484A	08/24/05	10:18 AM	29.05	68	-	--	--	--	--	--	--	--	--
GMSG-484A	09/07/05	1:49 PM	29.02	68	-	--	--	--	--	--	--	--	--
GMSG-484A	09/12/05	4:15 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-484A	09/20/05	2:23 PM	28.79	78.98	-	--	--	--	--	--	--	--	--
GMSG-484A	09/29/05	10:04 AM	28.84	48.92	-	--	--	--	--	--	--	--	--
GMSG-484A	10/07/05	1:30 PM	29.02	45	T	--	--	--	--	--	--	--	--
GMSG-484A	10/13/05	9:12 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-484A	10/18/05	9:15 AM	28.63	48	-	--	--	--	--	--	--	--	--
GMSG-484A	10/25/05	12:55 PM	28.91	44	-	--	--	--	--	--	--	--	--
GMSG-484A	10/31/05	3:24 PM	28.73	51	-	--	--	--	--	--	--	--	--
GMSG-484A	11/14/05	9:19 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-484A	02/27/06	9:28 AM	28.88	11	-	--	--	--	--	--	--	--	--
GMSG-484A	04/11/06	10:41 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-484A	07/12/06	10:31 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-484A	10/10/06	11:41 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-484A	02/06/07	10:48 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-484A	04/03/07	12:53 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-484A	07/19/07	9:03 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-484A	10/23/07	1:49 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-484B	08/08/05	5:32 PM	28.68	87	-	--	--	--	--	--	--	--	--
GMSG-484B	08/17/05	9:23 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-484B	08/24/05	10:19 AM	29.05	68	-	--	--	--	--	--	--	--	--
GMSG-484B	09/07/05	1:51 PM	29.02	68	-	--	--	--	--	--	--	--	--
GMSG-484B	09/12/05	4:17 PM	28.66	86	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-484B	10/13/05	9:13 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-484B	11/14/05	9:20 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-484B	02/27/06	9:30 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-484B	04/11/06	10:42 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-484B	07/12/06	10:33 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-484B	10/10/06	11:43 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-484B	02/06/07	10:49 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-484B	04/03/07	12:54 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-484B	07/19/07	9:04 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-484B	10/23/07	1:50 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-484C	08/08/05	5:35 PM	28.68	87	-	--	--	--	--	--	--	--	--
GMSG-484C	08/17/05	9:25 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-484C	08/24/05	10:22 AM	29.05	68	-	--	--	--	--	--	--	--	--
GMSG-484C	09/07/05	1:54 PM	29.02	68	-	--	--	--	--	--	--	--	--
GMSG-484C	09/12/05	4:19 PM	28.66	86	-	--	--	--	--	--	--	--	--
GMSG-484C	10/13/05	9:14 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-484C	11/14/05	9:22 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-484C	02/27/06	9:31 AM	28.87	15	-	--	--	--	--	--	--	--	--
GMSG-484C	04/11/06	10:43 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-484C	07/12/06	10:35 AM	28.83	81	-	--	--	--	--	--	--	--	--
GMSG-484C	10/10/06	11:45 AM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-484C	02/06/07	10:50 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-484C	04/03/07	12:55 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-484C	07/19/07	9:05 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-484C	10/23/07	1:50 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-485	08/12/05	8:11 AM	28.6	67	-	--	--	--	--	--	--	--	--
GMSG-485	08/17/05	8:26 AM	28.92	63	-	--	--	--	--	--	--	--	--
GMSG-485	08/24/05	12:23 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-485	09/12/05	9:35 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-485	10/10/05	3:00 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-485	11/11/05	2:44 PM	28.63	54	-	--	--	--	--	--	--	--	--
GMSG-485	03/02/06	10:41 AM	28.7	28	-	--	--	--	--	--	--	--	--
GMSG-485	04/03/06	2:08 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-485	07/06/06	10:55 AM	29.03	79	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-485	10/02/06	1:42 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-485	10/09/06	10:38 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-485	01/02/07	2:53 PM	28.8	40	-	--	--	--	--	--	--	--	--
GMSG-485	04/02/07	2:43 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-485	07/17/07	2:44 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-485	10/22/07	2:37 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-486A	08/08/05	3:11 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-486A	08/17/05	9:07 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-486A	08/24/05	11:03 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-486A	09/12/05	4:42 PM	28.65	82.94	-	--	--	--	--	--	--	--	--
GMSG-486A	10/13/05	9:07 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-486A	11/14/05	9:11 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-486A	02/27/06	8:58 AM	28.88	11	-	--	--	--	--	--	--	--	--
GMSG-486A	04/11/06	10:33 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-486A	07/12/06	10:17 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-486A	10/10/06	12:29 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-486A	02/06/07	11:07 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-486A	04/03/07	12:45 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-486A	07/19/07	8:56 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-486A	10/23/07	1:58 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-486B	08/08/05	3:13 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-486B	08/17/05	9:08 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-486B	08/24/05	11:06 AM	29.03	69	-	--	--	--	--	--	--	--	--
GMSG-486B	09/12/05	4:44 PM	28.65	82.94	-	--	--	--	--	--	--	--	--
GMSG-486B	10/13/05	9:09 AM	28.85	55	-	--	--	--	--	--	--	--	--
GMSG-486B	11/14/05	9:13 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-486B	02/27/06	9:00 AM	28.88	11	-	--	--	--	--	--	--	--	--
GMSG-486B	04/11/06	10:34 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-486B	07/12/06	10:19 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-486B	10/10/06	12:30 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-486B	02/06/07	11:08 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-486B	04/03/07	12:46 PM	28.62	36	T	--	--	--	--	--	--	--	--
GMSG-486B	07/19/07	8:57 AM	29.96	67	-	--	--	--	--	--	--	--	--
GMSG-486B	10/23/07	1:58 PM	29.73	53	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-487A	08/08/05	3:19 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-487A	08/17/05	10:25 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-487A	08/24/05	12:05 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-487A	09/12/05	4:53 PM	28.65	82.94	-	--	--	--	--	--	--	--	--
GMSG-487A	10/13/05	9:59 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-487A	11/14/05	9:00 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-487A	02/27/06	11:02 AM	28.86	18	-	--	--	--	--	--	--	--	--
GMSG-487A	04/11/06	11:17 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-487A	07/12/06	9:56 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-487A	10/10/06	12:07 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-487A	02/06/07	11:26 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-487A	04/03/07	1:34 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-487A	07/19/07	9:38 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-487A	10/23/07	1:14 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-487B	08/08/05	3:21 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-487B	08/17/05	10:26 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-487B	08/24/05	12:07 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-487B	09/12/05	4:55 PM	28.65	82.94	-	--	--	--	--	--	--	--	--
GMSG-487B	10/13/05	10:00 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-487B	11/14/05	9:02 AM	29.06	29	-	--	--	--	--	--	--	--	--
GMSG-487B	02/27/06	11:03 AM	28.86	18	-	--	--	--	--	--	--	--	--
GMSG-487B	04/11/06	11:18 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-487B	07/12/06	9:58 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-487B	10/10/06	12:09 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-487B	02/06/07	11:27 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-487B	04/03/07	1:35 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-487B	07/19/07	9:39 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-487B	10/23/07	1:14 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-487C	08/08/05	3:23 PM	28.73	91	-	--	--	--	--	--	--	--	--
GMSG-487C	08/17/05	10:28 AM	28.91	69	-	--	--	--	--	--	--	--	--
GMSG-487C	08/24/05	12:10 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-487C	09/12/05	4:57 PM	28.65	82.94	-	--	--	--	--	--	--	--	--
GMSG-487C	10/13/05	10:02 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-487C	11/14/05	9:05 AM	29.06	29	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-487C	02/27/06	11:04 AM	28.86	18	-	--	--	--	--	--	--	--	--
GMSG-487C	04/11/06	11:19 AM	28.64	66	-	--	--	--	--	--	--	--	--
GMSG-487C	07/12/06	10:00 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-487C	10/10/06	12:11 PM	28.86	50	-	--	--	--	--	--	--	--	--
GMSG-487C	02/06/07	11:28 AM	28.92	1	-	--	--	--	--	--	--	--	--
GMSG-487C	04/03/07	1:36 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-487C	07/19/07	9:40 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-487C	10/23/07	1:15 PM	29.76	52	-	--	--	--	--	--	--	--	--
GMSG-488A	08/17/05	10:38 AM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-488A	08/26/05	2:02 PM	28.67	78	-	--	--	--	--	--	--	--	--
GMSG-488A	09/01/05	1:04 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-488A	09/09/05	1:45 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-488A	10/13/05	2:05 PM	28.79	59	T	--	--	--	--	--	--	--	--
GMSG-488A	11/14/05	11:19 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-488A	12/13/05	3:18 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-488A	03/02/06	12:58 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-488A	04/14/06	2:13 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-488A	07/13/06	3:28 PM	28.76	93	-	--	--	--	--	--	--	--	--
GMSG-488A	10/16/06	11:21 AM	28.66	45	0.02	--	--	--	--	--	--	--	--
GMSG-488A	02/01/07	3:05 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-488A	04/09/07	9:28 AM	28.86	28	-	--	--	--	--	--	--	--	--
GMSG-488A	07/20/07	11:59 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-488A	10/19/07	11:01 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-488B	08/17/05	10:40 AM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-488B	08/26/05	2:04 PM	28.67	78	-	--	--	--	--	--	--	--	--
GMSG-488B	09/01/05	1:06 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-488B	09/09/05	1:47 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-488B	10/13/05	2:06 PM	28.79	59	T	--	--	--	--	--	--	--	--
GMSG-488B	11/14/05	11:20 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-488B	12/13/05	3:20 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-488B	03/02/06	1:00 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-488B	04/14/06	2:14 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-488B	07/13/06	3:30 PM	28.75	91	-	--	--	--	--	--	--	--	--
GMSG-488B	10/16/06	11:22 AM	28.66	45	0.02	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-488B	02/01/07	3:04 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-488B	04/09/07	9:29 AM	28.86	28	-	--	--	--	--	--	--	--	--
GMSG-488B	07/20/07	12:00 PM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-488B	10/19/07	11:02 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-488C	08/17/05	10:42 AM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-488C	08/26/05	2:07 PM	28.67	78	-	--	--	--	--	--	--	--	--
GMSG-488C	09/01/05	1:09 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-488C	09/09/05	1:51 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-488C	10/13/05	2:07 PM	28.79	59	T	--	--	--	--	--	--	--	--
GMSG-488C	11/14/05	11:21 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-488C	12/13/05	3:22 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-488C	03/02/06	1:03 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-488C	04/14/06	2:15 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-488C	07/13/06	3:32 PM	28.75	91	-	--	--	--	--	--	--	--	--
GMSG-488C	10/16/06	11:24 AM	28.66	45	0.02	--	--	--	--	--	--	--	--
GMSG-488C	02/01/07	3:06 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-488C	04/09/07	9:30 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-488C	07/20/07	12:01 PM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-488C	10/19/07	11:03 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-489A	08/17/05	3:54 PM	28.82	72	-	--	--	--	--	--	--	--	--
GMSG-489A	08/26/05	2:12 PM	28.67	78	-	--	--	--	--	--	--	--	--
GMSG-489A	09/01/05	1:13 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-489A	09/09/05	2:30 PM	28.87	78.08	-	--	--	--	--	--	--	--	--
GMSG-489A	11/14/05	12:02 PM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-489A	12/13/05	3:28 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-489A	03/02/06	1:49 PM	28.77	30	-	--	--	--	--	--	--	--	--
GMSG-489A	04/14/06	2:21 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-489A	07/14/06	1:02 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-489A	10/10/06	10:49 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-489A	02/02/07	9:41 AM	28.32	2	-	--	--	--	--	--	--	--	--
GMSG-489A	04/09/07	9:58 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-489A	07/20/07	11:17 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-489A	10/19/07	8:38 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-489B	08/17/05	3:55 PM	28.82	72	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-489B	08/26/05	2:14 PM	28.67	78	-	--	--	--	--	--	--	--	--
GMSG-489B	09/01/05	1:15 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-489B	09/09/05	2:32 PM	28.87	78.08	-	--	--	--	--	--	--	--	--
GMSG-489B	11/14/05	12:03 PM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-489B	12/13/05	3:30 PM	28.88	23	-	--	--	--	--	--	--	--	--
GMSG-489B	03/02/06	1:52 PM	28.77	30	-	--	--	--	--	--	--	--	--
GMSG-489B	04/14/06	2:22 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-489B	07/14/06	1:04 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-489B	10/10/06	10:51 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-489B	02/02/07	9:42 AM	28.32	2	-	--	--	--	--	--	--	--	--
GMSG-489B	04/09/07	9:54 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-489B	07/20/07	11:18 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-489B	10/19/07	8:39 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-489C	08/17/05	3:57 PM	28.82	72	-	--	--	--	--	--	--	--	--
GMSG-489C	08/26/05	2:17 PM	28.67	78	-	--	--	--	--	--	--	--	--
GMSG-489C	09/01/05	1:18 PM	28.58	78.98	-	--	--	--	--	--	--	--	--
GMSG-489C	09/09/05	2:34 PM	28.87	78.08	-	--	--	--	--	--	--	--	--
GMSG-489C	11/14/05	12:05 PM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-489C	12/13/05	3:32 PM	28.88	23	-	--	--	--	--	--	--	--	--
GMSG-489C	03/02/06	1:53 PM	28.77	30	-	--	--	--	--	--	--	--	--
GMSG-489C	04/14/06	2:23 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-489C	07/14/06	1:06 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-489C	10/10/06	10:58 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-489C	02/02/07	9:43 AM	28.32	2	-	--	--	--	--	--	--	--	--
GMSG-489C	04/09/07	9:55 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-489C	07/20/07	11:19 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-489C	10/19/07	8:40 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-490	08/12/05	8:04 AM	28.6	67	-	--	--	--	--	--	--	--	--
GMSG-490	08/17/05	8:36 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-490	08/24/05	12:21 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-490	09/12/05	9:32 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-490	10/11/05	9:45 AM	29.05	45	-	--	--	--	--	--	--	--	--
GMSG-490	11/11/05	2:47 PM	28.63	54	-	--	--	--	--	--	--	--	--
GMSG-490	03/02/06	10:49 AM	28.7	28	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-490	04/03/06	2:11 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-490	07/06/06	12:11 PM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-490	10/02/06	1:35 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-490	10/09/06	10:43 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-490	01/02/07	2:35 PM	28.8	40	-	--	--	--	--	--	--	--	--
GMSG-490	04/02/07	2:46 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-490	07/17/07	2:47 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-490	10/22/07	2:54 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-491	08/17/05	8:45 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-491	08/24/05	12:28 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-491	09/12/05	9:41 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-491	10/10/05	2:55 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-491	11/11/05	2:35 PM	28.63	54	-	--	--	--	--	--	--	--	--
GMSG-491	03/02/06	11:15 AM	28.7	28	-	--	--	--	--	--	--	--	--
GMSG-491	04/03/06	2:02 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-491	07/06/06	10:36 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-491	10/02/06	1:48 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-491	10/09/06	10:30 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-491	01/02/07	2:46 PM	28.8	40	-	--	--	--	--	--	--	--	--
GMSG-491	04/02/07	2:36 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-491	07/17/07	2:37 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-491	10/22/07	2:44 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-492	08/12/05	8:15 AM	28.6	67	-	--	--	--	--	--	--	--	--
GMSG-492	08/17/05	8:41 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-492	08/24/05	12:25 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-492	09/12/05	9:38 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-492	10/11/05	9:40 AM	29.05	45	-	--	--	--	--	--	--	--	--
GMSG-492	11/11/05	2:38 PM	28.63	54	-	--	--	--	--	--	--	--	--
GMSG-492	12/13/05	3:46 PM	28.88	23	-	--	--	--	--	--	--	--	--
GMSG-492	03/06/06	9:40 AM	28.97	30	T	--	--	--	--	--	--	--	--
GMSG-492	04/03/06	2:05 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-492	07/06/06	10:49 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-492	10/02/06	1:44 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-492	10/09/06	10:34 AM	29.14	47	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-492	01/02/07	2:50 PM	28.8	40	-	--	--	--	--	--	--	--	--
GMSG-492	04/02/07	2:40 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-492	07/17/07	2:41 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-492	10/22/07	2:40 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-493	08/12/05	8:00 AM	28.6	67	-	--	--	--	--	--	--	--	--
GMSG-493	08/17/05	8:31 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-493	08/24/05	12:18 PM	29.02	72	-	--	--	--	--	--	--	--	--
GMSG-493	09/12/05	9:30 AM	28.77	82.94	-	--	--	--	--	--	--	--	--
GMSG-493	10/11/05	9:47 AM	29.05	45	-	--	--	--	--	--	--	--	--
GMSG-493	11/11/05	2:51 PM	28.63	54	-	--	--	--	--	--	--	--	--
GMSG-493	03/02/06	11:00 AM	28.7	28	-	--	--	--	--	--	--	--	--
GMSG-493	04/03/06	2:13 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-493	07/06/06	11:01 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-493	10/02/06	1:37 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-493	10/09/06	10:47 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-493	01/02/07	2:43 PM	28.8	40	-	--	--	--	--	--	--	--	--
GMSG-493	04/02/07	2:49 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-493	07/17/07	2:35 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-493	10/22/07	2:51 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-494	08/17/05	8:51 AM	28.91	65	-	--	--	--	--	--	--	--	--
GMSG-494	08/24/05	12:39 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-494	08/31/05	2:43 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-494	09/09/05	12:31 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-494	10/14/05	11:16 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-494	11/11/05	2:27 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-494	03/02/06	11:35 AM	28.73	29	-	--	--	--	--	--	--	--	--
GMSG-494	04/05/06	4:03 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-494	07/06/06	3:47 PM	29.02	83	-	--	--	--	--	--	--	--	--
GMSG-494	10/02/06	10:49 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-494	01/02/07	10:51 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-494	04/03/07	10:22 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-494	07/17/07	11:11 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-494	10/18/07	11:00 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-495	08/24/05	12:42 PM	29.01	72	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-495	08/31/05	2:40 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-495	09/09/05	12:34 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-495	10/13/05	3:50 PM	28.79	57	0.02	--	--	--	--	--	--	--	--
GMSG-495	10/14/05	10:59 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-495	11/11/05	2:24 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-495	12/07/05	10:35 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-495	02/22/06	2:29 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-495	04/05/06	4:16 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-495	07/06/06	3:43 PM	29.02	83	-	--	--	--	--	--	--	--	--
GMSG-495	10/02/06	10:35 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-495	01/02/07	10:55 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-495	04/03/07	10:10 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-495	07/17/07	11:01 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-495	10/18/07	11:06 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-496	08/24/05	12:47 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-496	08/31/05	2:34 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-496	09/09/05	12:38 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-496	10/14/05	11:03 AM	28.72	62	-	--	--	--	--	--	--	--	--
GMSG-496	11/11/05	2:20 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-496	12/07/05	10:39 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-496	02/22/06	2:03 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-496	04/05/06	4:11 PM	28.7	56	-	--	--	--	--	--	--	--	--
GMSG-496	07/06/06	3:40 PM	29.02	83	-	--	--	--	--	--	--	--	--
GMSG-496	10/02/06	10:37 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-496	01/02/07	10:37 AM	28.92	34	-	--	--	--	--	--	--	--	--
GMSG-496	04/03/07	10:13 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-496	07/17/07	11:03 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-496	10/18/07	11:12 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-497A	08/26/05	3:12 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-497A	08/31/05	3:35 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-497A	09/09/05	1:30 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-497A	10/21/05	10:09 AM	28.91	41	-	--	--	--	--	--	--	--	--
GMSG-497A	11/14/05	10:47 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-497A	12/15/05	10:16 AM	28.46	30	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-497A	03/01/06	2:07 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-497A	04/14/06	2:17 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-497A	07/14/06	1:12 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-497A	10/10/06	10:11 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-497A	02/01/07	3:25 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-497A	04/09/07	10:20 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-497A	07/20/07	1:47 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-497A	10/19/07	10:00 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-497B	08/26/05	3:14 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-497B	08/31/05	3:38 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-497B	09/09/05	1:32 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-497B	10/13/05	9:52 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-497B	10/21/05	10:10 AM	28.91	41	-	--	--	--	--	--	--	--	--
GMSG-497B	11/14/05	10:48 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-497B	12/15/05	10:18 AM	28.46	30	-	--	--	--	--	--	--	--	--
GMSG-497B	03/01/06	2:09 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-497B	04/14/06	2:18 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-497B	07/14/06	1:14 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-497B	10/10/06	10:13 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-497B	02/01/07	3:26 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-497B	04/09/07	10:21 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-497B	07/20/07	1:48 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-497B	10/19/07	10:01 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-497C	08/26/05	3:17 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-497C	08/31/05	3:40 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-497C	09/09/05	1:35 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-497C	10/13/05	9:53 AM	28.85	56	-	--	--	--	--	--	--	--	--
GMSG-497C	10/21/05	10:13 AM	28.91	41	-	--	--	--	--	--	--	--	--
GMSG-497C	11/14/05	10:49 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-497C	12/15/05	10:20 AM	28.46	30	-	--	--	--	--	--	--	--	--
GMSG-497C	03/01/06	2:10 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-497C	04/14/06	2:19 PM	28.35	72	-	--	--	--	--	--	--	--	--
GMSG-497C	07/14/06	1:16 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-497C	10/10/06	10:15 AM	28.95	46	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-497C	02/01/07	3:27 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-497C	04/09/07	10:22 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-497C	07/20/07	1:49 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-497C	10/19/07	10:02 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-498A	08/26/05	2:39 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-498A	08/31/05	3:14 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-498A	09/09/05	1:15 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-498A	10/14/05	11:35 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-498A	11/14/05	10:55 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-498A	12/15/05	11:16 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-498A	03/01/06	1:43 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-498A	04/14/06	2:41 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-498A	07/14/06	10:30 AM	28.68	70	0.11	--	--	--	--	--	--	--	--
GMSG-498A	10/10/06	9:49 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-498A	02/02/07	2:16 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-498A	04/12/07	1:46 PM	28.52	34	T	--	--	--	--	--	--	--	--
GMSG-498A	07/20/07	1:26 PM	30.22	73	-	--	--	--	--	--	--	--	--
GMSG-498A	10/19/07	10:29 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-498B	08/26/05	2:41 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-498B	08/31/05	3:16 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-498B	09/09/05	1:17 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-498B	10/14/05	11:37 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-498B	11/14/05	10:57 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-498B	12/15/05	11:18 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-498B	03/01/06	1:45 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-498B	04/14/06	2:42 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-498B	07/14/06	10:32 AM	28.68	70	0.11	--	--	--	--	--	--	--	--
GMSG-498B	10/10/06	9:51 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-498B	02/02/07	2:17 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-498B	04/12/07	1:47 PM	28.52	34	T	--	--	--	--	--	--	--	--
GMSG-498B	07/20/07	1:27 PM	30.22	73	-	--	--	--	--	--	--	--	--
GMSG-498B	10/19/07	10:30 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-499A	08/26/05	2:44 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-499A	08/31/05	4:21 PM	28.65	76	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-499A	09/09/05	1:10 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-499A	10/14/05	1:55 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-499A	11/14/05	11:02 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-499A	12/15/05	10:45 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-499A	03/01/06	1:32 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-499A	04/14/06	2:44 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-499A	07/14/06	1:49 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-499A	10/10/06	9:53 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-499A	02/02/07	11:09 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-499A	04/09/07	11:04 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-499A	07/20/07	1:31 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-499A	10/19/07	10:25 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-499C	08/26/05	2:46 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-499C	08/31/05	4:23 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-499C	09/09/05	1:12 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-499C	10/14/05	1:56 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-499C	11/14/05	11:03 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-499C	12/15/05	10:47 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-499C	03/01/06	1:33 PM	28.7	31	-	--	--	--	--	--	--	--	--
GMSG-499C	04/14/06	2:45 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-499C	07/14/06	1:51 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-499C	10/10/06	9:55 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-499C	02/02/07	11:10 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-499C	04/09/07	11:05 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-499C	07/20/07	1:32 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-499C	10/19/07	10:26 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-500A	08/26/05	2:51 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-500A	08/31/05	4:11 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-500A	09/09/05	1:01 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-500A	10/14/05	11:50 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-500A	11/14/05	11:07 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-500A	12/15/05	10:59 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-500A	03/01/06	2:31 PM	28.69	31	-	--	--	--	--	--	--	--	--
GMSG-500A	04/14/06	2:47 PM	28.36	71	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-500A	07/14/06	1:41 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-500A	10/10/06	10:26 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-500A	02/02/07	11:14 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-500A	04/09/07	11:09 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-500A	07/20/07	1:35 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-500A	10/19/07	10:19 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-500B	08/26/05	2:53 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-500B	08/31/05	4:13 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-500B	09/09/05	1:03 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-500B	10/14/05	11:52 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-500B	11/14/05	11:08 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-500B	12/15/05	11:01 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-500B	03/01/06	2:33 PM	28.69	31	-	--	--	--	--	--	--	--	--
GMSG-500B	04/14/06	2:48 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-500B	07/14/06	1:43 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-500B	10/10/06	10:28 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-500B	02/02/07	11:15 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-500B	04/09/07	11:10 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-500B	07/20/07	1:36 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-500B	10/19/07	10:20 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-500C	08/26/05	2:56 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-500C	08/31/05	4:15 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-500C	09/09/05	1:06 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-500C	10/14/05	11:53 AM	28.67	65	-	--	--	--	--	--	--	--	--
GMSG-500C	11/14/05	11:09 AM	29.06	34	-	--	--	--	--	--	--	--	--
GMSG-500C	12/15/05	11:03 AM	28.45	31	-	--	--	--	--	--	--	--	--
GMSG-500C	03/01/06	2:35 PM	28.69	31	-	--	--	--	--	--	--	--	--
GMSG-500C	04/14/06	2:49 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-500C	07/14/06	1:45 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-500C	10/10/06	10:30 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-500C	02/02/07	11:16 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-500C	04/09/07	11:11 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-500C	07/20/07	1:37 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-500C	10/19/07	10:21 AM	28.98	53	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-501A	08/26/05	3:29 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-501A	09/01/05	1:32 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-501A	09/09/05	1:56 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-501A	10/14/05	1:43 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-501A	11/14/05	11:37 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-501A	12/15/05	12:40 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-501A	03/02/06	1:26 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-501A	04/18/06	1:09 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-501A	07/14/06	11:58 AM	28.67	74	0.02	--	--	--	--	--	--	--	--
GMSG-501A	10/31/06	3:06 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-501A	02/07/07	3:31 PM	28.79	15	-	--	--	--	--	--	--	--	--
GMSG-501A	04/09/07	10:14 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-501A	07/20/07	11:48 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-501A	10/19/07	8:31 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-501B	08/26/05	3:31 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-501B	09/01/05	1:34 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-501B	09/09/05	1:58 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-501B	10/14/05	1:45 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-501B	11/14/05	11:39 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-501B	12/15/05	12:41 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-501B	03/02/06	1:28 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-501B	04/18/06	1:10 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-501B	07/14/06	12:02 PM	28.67	74	0.02	--	--	--	--	--	--	--	--
GMSG-501B	10/31/06	3:07 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-501B	02/07/07	3:32 PM	28.79	15	-	--	--	--	--	--	--	--	--
GMSG-501B	04/09/07	10:15 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-501B	07/20/07	11:49 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-501B	10/19/07	8:32 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-502A	08/26/05	3:42 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-502A	09/01/05	1:52 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-502A	09/09/05	2:08 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-502A	10/14/05	1:30 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-502A	11/14/05	11:49 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-502A	12/15/05	12:59 PM	28.42	32	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-502A	03/02/06	1:08 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-502A	04/18/06	1:14 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-502A	07/14/06	11:27 AM	28.68	70	0.11	--	--	--	--	--	--	--	--
GMSG-502A	10/31/06	3:10 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-502A	02/07/07	3:08 PM	28.8	16	-	--	--	--	--	--	--	--	--
GMSG-502A	04/09/07	10:02 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-502A	07/20/07	11:31 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-502A	10/19/07	8:20 AM	28.98	53	0.02	--	--	--	--	--	--	--	--
GMSG-502B	08/26/05	3:44 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-502B	09/01/05	1:54 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-502B	09/09/05	2:10 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-502B	10/14/05	1:31 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-502B	11/14/05	11:50 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-502B	12/15/05	1:01 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-502B	03/02/06	1:10 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-502B	04/18/06	1:15 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-502B	07/14/06	11:29 AM	28.68	70	0.11	--	--	--	--	--	--	--	--
GMSG-502B	10/31/06	3:11 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-502B	02/07/07	3:09 PM	28.8	16	-	--	--	--	--	--	--	--	--
GMSG-502B	04/09/07	10:03 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-502B	07/20/07	11:32 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-502B	10/19/07	8:21 AM	28.98	53	0.02	--	--	--	--	--	--	--	--
GMSG-502C	08/26/05	3:47 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-502C	09/01/05	1:57 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-502C	09/09/05	2:12 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-502C	10/14/05	1:32 PM	28.62	68	-	--	--	--	--	--	--	--	--
GMSG-502C	11/14/05	11:51 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-502C	12/15/05	1:03 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-502C	03/02/06	1:12 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-502C	04/18/06	1:16 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-502C	07/14/06	11:31 AM	28.67	74	0.02	--	--	--	--	--	--	--	--
GMSG-502C	10/31/06	3:12 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-502C	02/07/07	3:10 PM	28.8	16	-	--	--	--	--	--	--	--	--
GMSG-502C	04/09/07	10:04 AM	28.85	31	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-502C	07/20/07	11:33 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-502C	10/19/07	8:22 AM	28.98	53	0.02	--	--	--	--	--	--	--	--
GMSG-503A	08/26/05	3:55 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-503A	09/01/05	1:44 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-503A	09/09/05	2:16 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-503A	10/17/05	3:31 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-503A	11/14/05	11:55 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-503A	12/15/05	12:54 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-503A	03/14/06	12:11 PM	28.59	26	-	--	--	--	--	--	--	--	--
GMSG-503A	04/18/06	12:54 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-503A	07/14/06	12:48 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-503A	10/31/06	2:54 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-503A	02/07/07	3:15 PM	28.8	16	-	--	--	--	--	--	--	--	--
GMSG-503A	04/09/07	10:06 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-503A	07/20/07	11:41 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-503A	10/19/07	8:28 AM	28.98	53	0.02	--	--	--	--	--	--	--	--
GMSG-503B	08/26/05	3:57 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-503B	09/01/05	1:46 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-503B	09/09/05	2:18 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-503B	10/17/05	3:32 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-503B	11/14/05	11:56 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-503B	12/15/05	12:56 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-503B	03/14/06	12:13 PM	28.59	26	-	--	--	--	--	--	--	--	--
GMSG-503B	04/18/06	12:55 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-503B	07/14/06	12:50 PM	28.67	81	-	--	--	--	--	--	--	--	--
GMSG-503B	10/31/06	2:56 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-503B	02/07/07	3:16 PM	28.8	16	-	--	--	--	--	--	--	--	--
GMSG-503B	04/09/07	10:07 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-503B	07/20/07	11:42 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-503B	10/19/07	8:29 AM	28.98	53	0.02	--	--	--	--	--	--	--	--
GMSG-504A	08/26/05	3:35 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-504A	09/01/05	1:37 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-504A	09/09/05	2:21 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-504A	10/17/05	3:35 PM	28.41	62	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-504A	11/14/05	11:44 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-504A	12/15/05	1:11 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-504A	03/02/06	1:19 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-504A	04/18/06	1:02 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-504A	07/14/06	12:21 PM	28.67	74	0.02	--	--	--	--	--	--	--	--
GMSG-504A	10/31/06	3:00 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-504A	02/07/07	3:22 PM	28.8	16	-	--	--	--	--	--	--	--	--
GMSG-504A	04/09/07	10:10 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-504A	07/20/07	11:45 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-504A	10/19/07	8:25 AM	28.98	53	0.02	--	--	--	--	--	--	--	--
GMSG-504B	08/26/05	3:37 PM	28.64	76	-	--	--	--	--	--	--	--	--
GMSG-504B	09/01/05	1:41 PM	28.57	78.98	-	--	--	--	--	--	--	--	--
GMSG-504B	09/09/05	2:23 PM	28.88	78.08	-	--	--	--	--	--	--	--	--
GMSG-504B	10/17/05	3:36 PM	28.41	62	-	--	--	--	--	--	--	--	--
GMSG-504B	11/14/05	11:45 AM	29.05	35	-	--	--	--	--	--	--	--	--
GMSG-504B	12/15/05	1:12 PM	28.42	32	-	--	--	--	--	--	--	--	--
GMSG-504B	03/02/06	1:20 PM	28.75	29	-	--	--	--	--	--	--	--	--
GMSG-504B	04/18/06	1:03 PM	28.83	63	-	--	--	--	--	--	--	--	--
GMSG-504B	07/14/06	12:23 PM	28.67	74	0.02	--	--	--	--	--	--	--	--
GMSG-504B	10/31/06	3:02 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-504B	02/07/07	3:24 PM	28.8	16	-	--	--	--	--	--	--	--	--
GMSG-504B	04/09/07	10:11 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-504B	07/20/07	11:46 AM	30.21	69	-	--	--	--	--	--	--	--	--
GMSG-504B	10/19/07	8:26 AM	28.98	53	0.02	--	--	--	--	--	--	--	--
GMSG-505A	08/26/05	2:59 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-505A	08/31/05	4:01 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-505A	09/09/05	12:54 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-505A	10/17/05	3:15 PM	28.39	61	-	--	--	--	--	--	--	--	--
GMSG-505A	11/16/05	9:49 AM	28.39	31	T	--	--	--	--	--	--	--	--
GMSG-505A	12/15/05	12:21 PM	28.43	32	-	--	--	--	--	--	--	--	--
GMSG-505A	03/01/06	1:21 PM	28.72	29	-	--	--	--	--	--	--	--	--
GMSG-505A	04/14/06	2:51 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-505A	07/14/06	1:30 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-505A	10/10/06	10:33 AM	28.91	48	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-505A	02/02/07	11:26 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-505A	04/09/07	10:30 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-505A	07/20/07	1:39 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-505A	10/19/07	10:13 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-505C	08/26/05	3:01 PM	28.66	77	-	--	--	--	--	--	--	--	--
GMSG-505C	08/31/05	4:03 PM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-505C	09/09/05	12:56 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-505C	10/17/05	3:18 PM	28.39	61	-	--	--	--	--	--	--	--	--
GMSG-505C	11/16/05	9:51 AM	28.39	31	T	--	--	--	--	--	--	--	--
GMSG-505C	12/15/05	12:23 PM	28.43	32	-	--	--	--	--	--	--	--	--
GMSG-505C	03/01/06	1:23 PM	28.72	29	-	--	--	--	--	--	--	--	--
GMSG-505C	04/14/06	2:52 PM	28.36	71	-	--	--	--	--	--	--	--	--
GMSG-505C	07/14/06	1:32 PM	28.65	83	-	--	--	--	--	--	--	--	--
GMSG-505C	10/10/06	10:35 AM	28.91	48	-	--	--	--	--	--	--	--	--
GMSG-505C	02/02/07	11:27 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-505C	04/09/07	10:31 AM	28.84	33	-	--	--	--	--	--	--	--	--
GMSG-505C	07/20/07	1:40 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-505C	10/19/07	10:14 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-506A	08/24/05	1:21 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-506A	08/31/05	3:00 PM	28.63	76	-	--	--	--	--	--	--	--	--
GMSG-506A	09/09/05	12:42 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-506A	10/12/05	3:05 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-506A	11/11/05	1:30 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-506A	12/07/05	1:55 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-506A	02/22/06	12:11 PM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-506A	04/03/06	3:08 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-506A	07/10/06	2:14 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-506A	10/03/06	2:30 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-506A	01/17/07	12:03 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-506A	04/02/07	10:13 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-506A	07/18/07	11:13 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-506A	10/22/07	4:03 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-506B	08/24/05	1:23 PM	29.01	72	-	--	--	--	--	--	--	--	--
GMSG-506B	08/31/05	3:05 PM	28.63	76	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-506B	09/09/05	12:44 PM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-506B	10/12/05	3:06 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-506B	11/11/05	1:33 PM	28.65	53	-	--	--	--	--	--	--	--	--
GMSG-506B	12/07/05	1:57 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-506B	02/22/06	12:13 PM	28.52	28	-	--	--	--	--	--	--	--	--
GMSG-506B	04/03/06	3:09 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-506B	07/10/06	2:16 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-506B	10/03/06	2:31 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-506B	01/17/07	12:05 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-506B	04/02/07	10:14 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-506B	07/18/07	11:14 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-506B	10/22/07	4:03 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-507	09/09/05	11:06 AM	28.92	71.96	-	--	--	--	--	--	--	--	--
GMSG-507	09/15/05	9:43 AM	29.01	64.94	-	--	--	--	--	--	--	--	--
GMSG-507	09/20/05	2:37 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-507	09/29/05	11:40 AM	28.82	53.06	-	--	--	--	--	--	--	--	--
GMSG-507	10/10/05	2:15 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-507	11/08/05	3:48 PM	28.8	46	-	--	--	--	--	--	--	--	--
GMSG-507	12/07/05	2:09 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-507	02/22/06	2:25 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-507	04/03/06	11:25 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-507	07/06/06	11:26 AM	29.03	79	-	--	--	--	--	--	--	--	--
GMSG-507	10/02/06	12:54 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-507	10/09/06	11:43 AM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-507	01/02/07	1:38 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-507	04/02/07	3:25 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-507	07/17/07	1:32 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-507	10/18/07	2:52 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-508	09/15/05	9:39 AM	29.01	64.94	-	--	--	--	--	--	--	--	--
GMSG-508	09/20/05	2:40 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-508	09/29/05	11:49 AM	28.82	53.06	-	--	--	--	--	--	--	--	--
GMSG-508	10/10/05	2:10 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-508	11/08/05	3:40 PM	28.8	46	-	--	--	--	--	--	--	--	--
GMSG-508	12/07/05	2:06 PM	29.27	23	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-508	02/22/06	2:18 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-508	04/03/06	11:21 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-508	07/06/06	11:34 AM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-508	10/02/06	12:48 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-508	10/09/06	11:39 AM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-508	01/02/07	1:33 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-508	04/02/07	3:20 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-508	07/17/07	1:26 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-508	10/18/07	2:47 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-509	09/15/05	9:48 AM	29.01	64.94	-	--	--	--	--	--	--	--	--
GMSG-509	09/20/05	2:43 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-509	09/29/05	11:45 AM	28.82	53.06	-	--	--	--	--	--	--	--	--
GMSG-509	10/10/05	2:12 PM	28.96	62	-	--	--	--	--	--	--	--	--
GMSG-509	11/08/05	3:44 PM	28.8	46	-	--	--	--	--	--	--	--	--
GMSG-509	12/07/05	2:02 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-509	02/22/06	2:21 PM	28.5	30	-	--	--	--	--	--	--	--	--
GMSG-509	04/03/06	11:23 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-509	07/06/06	11:44 AM	29.03	81	-	--	--	--	--	--	--	--	--
GMSG-509	10/02/06	12:50 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-509	10/09/06	11:36 AM	29.13	48	-	--	--	--	--	--	--	--	--
GMSG-509	01/02/07	1:35 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-509	04/02/07	3:22 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-509	07/17/07	1:28 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-509	10/18/07	2:55 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-510	09/15/05	10:39 AM	29	66.02	-	--	--	--	--	--	--	--	--
GMSG-510	09/20/05	2:15 PM	28.79	78.98	-	--	--	--	--	--	--	--	--
GMSG-510	09/29/05	12:03 PM	28.82	53.06	-	--	--	--	--	--	--	--	--
GMSG-510	10/12/05	3:15 PM	28.87	56	0.02	--	--	--	--	--	--	--	--
GMSG-510	11/08/05	3:20 PM	28.81	47	-	--	--	--	--	--	--	--	--
GMSG-510	12/07/05	11:53 AM	29.26	22	-	--	--	--	--	--	--	--	--
GMSG-510	02/17/06	11:52 AM	29.09	12	-	--	--	--	--	--	--	--	--
GMSG-510	04/06/06	2:48 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-510	07/13/06	9:03 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-510	10/11/06	9:56 AM	28.08	43	0.04	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-510	02/03/07	8:04 AM	28.42	-13	-	--	--	--	--	--	--	--	--
GMSG-510	04/06/07	11:31 AM	28.75	20	T	--	--	--	--	--	--	--	--
GMSG-510	07/19/07	2:46 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-510	10/17/07	2:07 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-511	09/15/05	10:29 AM	29.01	64.94	-	--	--	--	--	--	--	--	--
GMSG-511	09/20/05	2:32 PM	28.78	78.98	-	--	--	--	--	--	--	--	--
GMSG-511	09/29/05	11:55 AM	28.82	53.06	-	--	--	--	--	--	--	--	--
GMSG-511	10/10/05	3:07 PM	28.96	63	-	--	--	--	--	--	--	--	--
GMSG-511	11/08/05	3:33 PM	28.8	46	-	--	--	--	--	--	--	--	--
GMSG-511	12/07/05	2:16 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-511	02/17/06	10:35 AM	29.09	11	-	--	--	--	--	--	--	--	--
GMSG-511	04/03/06	2:27 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-511	07/06/06	10:13 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-511	10/02/06	1:59 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-511	10/09/06	10:09 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-511	02/08/07	7:58 AM	28.86	-2	-	--	--	--	--	--	--	--	--
GMSG-511	04/02/07	2:13 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-511	07/17/07	2:51 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-511	10/18/07	3:19 PM	29.16	66	-	--	--	--	--	--	--	--	--
GMSG-512	10/18/05	9:00 AM	28.63	48	-	--	--	--	--	--	--	--	--
GMSG-512	10/25/05	1:00 PM	28.91	44	-	--	--	--	--	--	--	--	--
GMSG-512	10/25/05	1:30 PM	28.9	45	-	--	--	--	--	--	--	--	--
GMSG-512	10/31/05	3:31 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-512	11/08/05	3:30 PM	28.8	46	-	--	--	--	--	--	--	--	--
GMSG-512	12/07/05	2:13 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-512	02/17/06	10:14 AM	29.08	10	-	--	--	--	--	--	--	--	--
GMSG-512	04/03/06	2:19 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-512	07/06/06	10:29 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-512	10/02/06	1:52 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-512	10/09/06	10:23 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-512	02/08/07	8:55 AM	28.85	1	-	--	--	--	--	--	--	--	--
GMSG-512	04/02/07	2:02 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-512	07/17/07	2:58 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-512	10/18/07	3:32 PM	29.15	67	T	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-513	10/31/05	3:37 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-513	11/08/05	8:40 AM	28.9	36	-	--	--	--	--	--	--	--	--
GMSG-513	11/14/05	1:40 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-513	12/07/05	2:18 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-513	02/17/06	11:30 AM	29.09	12	-	--	--	--	--	--	--	--	--
GMSG-513	03/10/06	9:10 AM	28.44	36	-	--	--	--	--	--	--	--	--
GMSG-513	04/03/06	2:24 PM	28.65	43	-	--	--	--	--	--	--	--	--
GMSG-513	07/06/06	10:20 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-513	10/02/06	1:57 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-513	10/09/06	10:17 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-513	02/09/07	8:44 AM	28.96	5	-	--	--	--	--	--	--	--	--
GMSG-513	04/02/07	2:09 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-513	07/17/07	2:53 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-513	10/18/07	3:44 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-514	10/31/05	3:15 PM	28.73	51	-	--	--	--	--	--	--	--	--
GMSG-514	11/08/05	8:45 AM	28.9	36	-	--	--	--	--	--	--	--	--
GMSG-514	11/14/05	1:46 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-514	11/23/05	9:55 AM	28.02	26	0.01	--	--	--	--	--	--	--	--
GMSG-514	12/07/05	11:48 AM	29.26	22	-	--	--	--	--	--	--	--	--
GMSG-514	02/17/06	11:43 AM	29.09	12	-	--	--	--	--	--	--	--	--
GMSG-514	04/06/06	2:54 PM	28.5	57	-	--	--	--	--	--	--	--	--
GMSG-514	07/13/06	8:53 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-514	10/11/06	10:06 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-514	02/04/07	12:46 PM	28.84	-7	-	--	--	--	--	--	--	--	--
GMSG-514	04/06/07	11:36 AM	28.75	20	T	--	--	--	--	--	--	--	--
GMSG-514	07/19/07	2:40 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-514	10/17/07	1:58 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-515	04/26/06	1:11 PM	28.59	67	-	--	--	--	--	--	--	--	--
GMSG-515	05/05/06	10:29 AM	28.76	45	T	--	--	--	--	--	--	--	--
GMSG-515	05/16/06	9:11 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-515	06/01/06	11:40 AM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-515	07/11/06	11:21 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-515	08/11/06	10:33 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-515	10/09/06	12:54 PM	29.11	49	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-515	02/04/07	2:15 PM	28.85	-6	T	--	--	--	--	--	--	--	--
GMSG-515	04/04/07	11:26 AM	28.62	19	T	--	--	--	--	--	--	--	--
GMSG-515	07/19/07	11:36 AM	30	69	-	--	--	--	--	--	--	--	--
GMSG-515	10/18/07	10:42 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-516	04/26/06	1:07 PM	28.59	67	-	--	--	--	--	--	--	--	--
GMSG-516	05/05/06	10:31 AM	28.76	46	T	--	--	--	--	--	--	--	--
GMSG-516	05/16/06	9:08 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-516	06/01/06	11:38 AM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-516	07/11/06	11:25 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-516	08/11/06	10:36 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-516	10/09/06	12:50 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-516	02/04/07	1:50 PM	28.85	-6	T	--	--	--	--	--	--	--	--
GMSG-516	04/04/07	11:29 AM	28.62	19	T	--	--	--	--	--	--	--	--
GMSG-516	07/19/07	11:38 AM	30	69	-	--	--	--	--	--	--	--	--
GMSG-516	10/18/07	10:38 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-517	05/05/06	10:34 AM	28.76	46	T	--	--	--	--	--	--	--	--
GMSG-517	05/16/06	9:05 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-517	05/25/06	9:01 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-517	06/01/06	11:36 AM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-517	07/11/06	11:12 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-517	08/11/06	10:28 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-517	10/09/06	1:02 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-517	02/04/07	1:58 PM	28.85	-6	T	--	--	--	--	--	--	--	--
GMSG-517	04/04/07	11:20 AM	28.62	19	T	--	--	--	--	--	--	--	--
GMSG-517	07/19/07	11:32 AM	30	69	-	--	--	--	--	--	--	--	--
GMSG-517	10/18/07	10:54 AM	29.23	62	0.01	--	--	--	--	--	--	--	--
GMSG-518	11/08/05	9:36 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-518	11/14/05	2:25 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-518	11/23/05	1:25 PM	27.96	30	-	--	--	--	--	--	--	--	--
GMSG-518	12/08/05	2:06 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-518	02/24/06	11:36 AM	28.97	20	-	--	--	--	--	--	--	--	--
GMSG-518	03/10/06	11:26 AM	28.51	39	-	--	--	--	--	--	--	--	--
GMSG-518	04/11/06	9:34 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-518	07/11/06	3:42 PM	28.78	77	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-518	10/10/06	1:03 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-518	02/05/07	2:50 PM	29.07	5	-	--	--	--	--	--	--	--	--
GMSG-518	04/03/07	2:21 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-518	07/19/07	9:53 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-518	10/23/07	2:32 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-519	11/08/05	9:45 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-519	11/14/05	2:28 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-519	11/23/05	1:30 PM	27.96	31	T	--	--	--	--	--	--	--	--
GMSG-519	12/08/05	2:03 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-519	02/24/06	11:44 AM	28.97	20	-	--	--	--	--	--	--	--	--
GMSG-519	03/10/06	11:28 AM	28.51	39	-	--	--	--	--	--	--	--	--
GMSG-519	04/11/06	9:39 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-519	07/11/06	3:31 PM	28.78	77	-	--	--	--	--	--	--	--	--
GMSG-519	10/10/06	12:58 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-519	02/05/07	3:15 PM	29.07	5	-	--	--	--	--	--	--	--	--
GMSG-519	04/03/07	2:18 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-519	07/19/07	9:51 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-519	10/23/07	2:39 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-520	11/08/05	9:50 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-520	11/14/05	2:30 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-520	11/23/05	1:33 PM	27.96	31	T	--	--	--	--	--	--	--	--
GMSG-520	12/08/05	2:01 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-520	02/24/06	11:39 AM	28.97	20	-	--	--	--	--	--	--	--	--
GMSG-520	03/10/06	11:31 AM	28.5	40	-	--	--	--	--	--	--	--	--
GMSG-520	04/11/06	9:41 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-520	07/11/06	3:35 PM	28.78	77	-	--	--	--	--	--	--	--	--
GMSG-520	10/16/06	12:53 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-520	02/05/07	3:11 PM	29.07	5	-	--	--	--	--	--	--	--	--
GMSG-520	04/03/07	2:16 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-520	07/19/07	9:49 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-520	10/23/07	2:42 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-521	11/08/05	9:33 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-521	11/14/05	2:33 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-521	11/23/05	1:38 PM	27.96	31	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-521	12/08/05	1:58 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-521	02/24/06	11:30 AM	28.97	20	-	--	--	--	--	--	--	--	--
GMSG-521	03/10/06	11:24 AM	28.51	39	-	--	--	--	--	--	--	--	--
GMSG-521	04/11/06	9:32 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-521	07/11/06	3:39 PM	28.78	77	-	--	--	--	--	--	--	--	--
GMSG-521	10/10/06	1:20 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-521	02/05/07	2:59 PM	29.07	5	-	--	--	--	--	--	--	--	--
GMSG-521	04/03/07	2:13 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-521	07/19/07	9:46 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-521	10/23/07	2:47 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-522	11/08/05	9:30 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-522	11/14/05	2:21 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-522	12/01/05	1:10 PM	28.7	22	T	--	--	--	--	--	--	--	--
GMSG-522	12/08/05	1:53 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-522	02/24/06	11:24 AM	28.99	14	-	--	--	--	--	--	--	--	--
GMSG-522	03/10/06	11:21 AM	28.51	39	-	--	--	--	--	--	--	--	--
GMSG-522	04/11/06	9:29 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-522	07/11/06	3:49 PM	28.78	77	-	--	--	--	--	--	--	--	--
GMSG-522	07/17/06	10:01 AM	28.56	83	T	--	--	--	--	--	--	--	--
GMSG-522	10/16/06	12:43 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-522	02/05/07	3:23 PM	29.07	5	-	--	--	--	--	--	--	--	--
GMSG-522	04/03/07	2:10 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-522	07/19/07	9:43 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-522	10/23/07	2:28 PM	29.73	53	-	--	--	--	--	--	--	--	--
GMSG-523	11/08/05	9:40 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-523	11/14/05	2:36 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-523	11/23/05	1:00 PM	27.96	30	-	--	--	--	--	--	--	--	--
GMSG-523	12/08/05	2:09 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-523	03/13/06	10:37 AM	28.06	32	0.11	--	--	--	--	--	--	--	--
GMSG-523	04/11/06	9:37 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-523	10/16/06	12:50 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-523	02/06/07	8:20 AM	28.94	-10	-	--	--	--	--	--	--	--	--
GMSG-523	04/03/07	2:25 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-523	07/19/07	9:56 AM	29.98	65	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-523	10/23/07	2:36 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-524	11/08/05	9:55 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-524	11/14/05	2:41 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-524	11/23/05	1:05 PM	27.96	30	-	--	--	--	--	--	--	--	--
GMSG-524	12/08/05	2:13 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-524	02/24/06	12:17 PM	28.97	20	-	--	--	--	--	--	--	--	--
GMSG-524	03/10/06	11:35 AM	28.5	40	-	--	--	--	--	--	--	--	--
GMSG-524	04/11/06	9:48 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-524	07/11/06	3:20 PM	28.78	75	-	--	--	--	--	--	--	--	--
GMSG-524	10/10/06	12:48 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-524	02/05/07	2:16 PM	29.07	4	-	--	--	--	--	--	--	--	--
GMSG-524	04/03/07	2:28 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-524	04/10/07	11:40 AM	28.83	37	T	--	--	--	--	--	--	--	--
GMSG-524	07/19/07	10:02 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-524	10/23/07	2:56 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-525	11/08/05	10:05 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-525	11/14/05	2:53 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-525	11/23/05	1:15 PM	27.96	30	-	--	--	--	--	--	--	--	--
GMSG-525	12/08/05	2:17 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-525	02/24/06	1:14 PM	28.93	21	-	--	--	--	--	--	--	--	--
GMSG-525	03/10/06	11:58 AM	28.5	40	-	--	--	--	--	--	--	--	--
GMSG-525	04/11/06	10:04 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-525	07/11/06	2:51 PM	28.78	75	-	--	--	--	--	--	--	--	--
GMSG-525	10/10/06	1:36 PM	28.76	52	-	--	--	--	--	--	--	--	--
GMSG-525	02/05/07	1:20 PM	29.09	4	-	--	--	--	--	--	--	--	--
GMSG-525	04/03/07	2:45 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-525	07/19/07	10:15 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-525	10/23/07	3:10 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-526	11/08/05	10:00 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-526	11/14/05	2:47 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-526	11/23/05	1:20 PM	27.96	30	-	--	--	--	--	--	--	--	--
GMSG-526	12/08/05	2:33 PM	29.04	23	-	--	--	--	--	--	--	--	--
GMSG-526	02/24/06	12:48 PM	28.93	21	-	--	--	--	--	--	--	--	--
GMSG-526	03/10/06	11:42 AM	28.5	40	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-526	04/11/06	9:58 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-526	07/11/06	3:09 PM	28.78	75	-	--	--	--	--	--	--	--	--
GMSG-526	10/10/06	1:46 PM	28.76	52	-	--	--	--	--	--	--	--	--
GMSG-526	02/05/07	1:44 PM	29.07	4	-	--	--	--	--	--	--	--	--
GMSG-526	04/03/07	2:37 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-526	07/19/07	10:08 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-526	10/23/07	3:03 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-527	11/08/05	10:10 AM	28.9	41	-	--	--	--	--	--	--	--	--
GMSG-527	11/16/05	9:42 AM	28.39	31	T	--	--	--	--	--	--	--	--
GMSG-527	11/23/05	2:15 PM	27.96	31	T	--	--	--	--	--	--	--	--
GMSG-527	12/08/05	2:37 PM	29.04	23	-	--	--	--	--	--	--	--	--
GMSG-527	02/24/06	1:37 PM	28.88	20	T	--	--	--	--	--	--	--	--
GMSG-527	03/10/06	12:04 PM	28.5	40	-	--	--	--	--	--	--	--	--
GMSG-527	04/11/06	10:08 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-527	07/11/06	2:46 PM	28.78	75	-	--	--	--	--	--	--	--	--
GMSG-527	10/10/06	1:29 PM	28.8	52	-	--	--	--	--	--	--	--	--
GMSG-527	02/06/07	8:58 AM	28.93	-8	-	--	--	--	--	--	--	--	--
GMSG-527	04/03/07	2:48 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-527	07/19/07	10:19 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-527	10/23/07	3:14 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-528	10/31/05	2:31 PM	28.73	51	-	--	--	--	--	249	176	-0.82	--
GMSG-528	10/31/05	2:50 PM	28.73	51	-	--	--	--	--	--	--	--	--
GMSG-528	10/31/05	2:53 PM	28.73	51	-	--	--	--	--	219	159	-1.1	--
GMSG-528	11/04/05	1:05 PM	28.46	46	-	--	--	--	--	87.35	85.26	-2.9	--
GMSG-528	11/04/05	1:07 PM	28.46	46	-	--	--	--	--	83.18	82.37	-68	--
GMSG-528	11/08/05	11:24 AM	28.88	44	-	--	--	--	--	142	140	-0.74	--
GMSG-528	11/08/05	11:28 AM	28.88	44	-	--	--	--	--	32.61	23.78	-0.6	--
GMSG-528	11/08/05	11:30 AM	28.86	45	-	--	--	--	--	--	--	--	--
GMSG-528	11/14/05	3:09 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-528	11/23/05	11:00 AM	28	26	0.02	--	--	--	--	--	--	--	--
GMSG-528	12/07/05	10:09 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-528	02/24/06	9:51 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-528	04/11/06	1:33 PM	28.56	73	-	--	--	--	--	--	--	--	--
GMSG-528	07/05/06	3:35 PM	28.91	74	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-528	10/16/06	1:02 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-528	02/06/07	3:58 PM	28.81	9	-	--	--	--	--	--	--	--	--
GMSG-528	04/02/07	1:25 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-528	07/20/07	9:36 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-528	10/22/07	3:47 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-529	10/31/05	2:40 PM	28.73	51	-	--	--	--	--	--	--	--	--
GMSG-529	11/08/05	11:20 AM	28.88	44	-	--	--	--	--	--	--	--	--
GMSG-529	11/14/05	3:12 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-529	11/23/05	11:06 AM	28	26	0.02	--	--	--	--	--	--	--	--
GMSG-529	12/07/05	10:12 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-529	02/24/06	9:56 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-529	04/11/06	1:37 PM	28.56	73	-	--	--	--	--	--	--	--	--
GMSG-529	07/05/06	3:28 PM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-529	10/16/06	12:58 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-529	02/07/07	1:12 PM	28.83	13	-	--	--	--	--	--	--	--	--
GMSG-529	04/02/07	1:29 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-529	07/20/07	9:33 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-529	10/22/07	3:43 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-530	10/31/05	2:25 PM	28.73	51	-	--	--	--	--	335	286	-0.67	--
GMSG-530	10/31/05	2:44 PM	28.73	51	-	--	--	--	--	263	259	-0.94	--
GMSG-530	10/31/05	2:45 PM	28.73	51	-	--	--	--	--	--	--	--	--
GMSG-530	11/04/05	1:15 PM	28.46	46	-	--	--	--	--	294	243	-4.21	--
GMSG-530	11/04/05	1:20 PM	28.46	46	-	--	--	--	--	255	96	-67	--
GMSG-530	11/08/05	11:10 AM	28.88	44	-	--	--	--	--	163	147	0.36	--
GMSG-530	11/08/05	11:14 AM	28.88	44	-	--	--	--	--	36	30.41	-0.21	--
GMSG-530	11/08/05	11:15 AM	28.88	44	-	--	--	--	--	--	--	--	--
GMSG-530	11/14/05	3:06 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-530	11/23/05	11:10 AM	28	26	0.02	--	--	--	--	--	--	--	--
GMSG-530	12/07/05	10:05 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-530	03/06/06	1:06 PM	29	34	-	--	--	--	--	--	--	--	--
GMSG-530	04/11/06	1:30 PM	28.56	73	-	--	--	--	--	--	--	--	--
GMSG-530	07/05/06	3:42 PM	28.91	74	-	--	--	--	--	--	--	--	--
GMSG-530	10/16/06	1:01 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-530	02/07/07	11:00 AM	28.86	8	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-530	04/02/07	1:23 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-530	07/20/07	9:40 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-530	10/22/07	3:51 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-531	11/23/05	11:40 AM	27.98	28	0.01	--	--	--	--	--	--	--	--
GMSG-531	11/28/05	11:28 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-531	12/07/05	11:21 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-531	02/17/06	2:45 PM	29.12	4	-	--	--	--	--	--	--	--	--
GMSG-531	03/10/06	10:09 AM	28.47	37	-	--	--	--	--	--	--	--	--
GMSG-531	04/06/06	3:40 PM	28.49	54	-	--	--	--	--	--	--	--	--
GMSG-531	07/13/06	9:38 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-531	10/11/06	10:32 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-531	01/31/07	2:51 PM	28.49	22	-	--	--	--	--	--	--	--	--
GMSG-531	04/05/07	2:56 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-531	07/19/07	3:04 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-531	10/22/07	11:42 AM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-532	11/23/05	11:43 AM	27.98	28	0.01	--	--	--	--	--	--	--	--
GMSG-532	11/28/05	11:34 AM	28.16	44	T	--	--	--	--	--	--	--	--
GMSG-532	12/07/05	11:23 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-532	02/20/06	1:12 PM	28.52	27	-	--	--	--	--	--	--	--	--
GMSG-532	03/10/06	10:12 AM	28.47	37	-	--	--	--	--	--	--	--	--
GMSG-532	04/06/06	3:32 PM	28.49	54	-	--	--	--	--	--	--	--	--
GMSG-532	07/13/06	9:49 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-532	10/11/06	10:41 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-532	01/31/07	2:25 PM	28.51	20	-	--	--	--	--	--	--	--	--
GMSG-532	04/05/07	2:49 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-532	07/19/07	3:10 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-532	10/22/07	11:52 AM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-533	11/23/05	11:47 AM	27.98	28	0.01	--	--	--	--	--	--	--	--
GMSG-533	11/28/05	11:38 AM	28.16	44	T	--	--	--	--	--	--	--	--
GMSG-533	12/07/05	11:26 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-533	02/20/06	1:16 PM	28.52	27	-	--	--	--	--	--	--	--	--
GMSG-533	03/10/06	10:17 AM	28.47	37	-	--	--	--	--	--	--	--	--
GMSG-533	04/06/06	3:34 PM	28.49	54	-	--	--	--	--	--	--	--	--
GMSG-533	07/13/06	9:45 AM	28.78	87	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-533	10/11/06	10:38 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-533	01/31/07	2:34 PM	28.49	22	-	--	--	--	--	--	--	--	--
GMSG-533	04/05/07	2:52 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-533	07/19/07	3:08 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-533	10/22/07	11:50 AM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-534	10/31/05	4:23 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-534	11/08/05	9:15 AM	28.9	36	-	--	--	--	--	--	--	--	--
GMSG-534	11/14/05	2:09 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-534	11/23/05	10:05 AM	28.02	26	0.01	--	--	--	--	--	--	--	--
GMSG-534	12/07/05	2:39 PM	29.28	23	-	--	--	--	--	--	--	--	--
GMSG-534	02/24/06	2:52 PM	28.83	18	0.01	--	--	--	--	--	--	--	--
GMSG-534	04/11/06	8:42 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-534	07/11/06	1:30 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-534	10/10/06	3:27 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-534	02/05/07	9:04 AM	29.07	-9	-	--	--	--	--	--	--	--	--
GMSG-534	04/04/07	10:18 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-534	07/19/07	11:04 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-534	11/01/07	3:21 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-535	10/31/05	4:15 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-535	11/08/05	9:20 AM	28.9	36	-	--	--	--	--	--	--	--	--
GMSG-535	11/14/05	2:11 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-535	11/23/05	10:10 AM	28.02	26	0.01	--	--	--	--	--	--	--	--
GMSG-535	12/07/05	2:44 PM	29.28	23	-	--	--	--	--	--	--	--	--
GMSG-535	02/24/06	3:21 PM	28.83	18	0.01	--	--	--	--	--	--	--	--
GMSG-535	04/11/06	8:49 AM	28.68	59	-	--	--	--	--	--	--	--	--
GMSG-535	07/11/06	1:38 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-535	10/10/06	3:20 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-535	02/05/07	9:18 AM	29.07	-9	-	--	--	--	--	--	--	--	--
GMSG-535	04/04/07	10:30 AM	28.62	19	T	--	--	--	--	--	--	--	--
GMSG-535	07/19/07	10:59 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-535	11/01/07	3:25 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-536A	11/14/05	3:00 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-536A	11/23/05	2:20 PM	27.96	31	T	--	--	--	--	--	--	--	--
GMSG-536A	12/08/05	2:23 PM	29.06	24	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-536A	02/24/06	1:04 PM	28.93	21	-	--	--	--	--	--	--	--	--
GMSG-536A	03/10/06	11:51 AM	28.5	40	-	--	--	--	--	--	--	--	--
GMSG-536A	04/11/06	10:01 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-536A	07/17/06	10:08 AM	28.56	83	T	--	--	--	--	--	--	--	--
GMSG-536A	10/10/06	1:42 PM	28.76	52	-	--	--	--	--	--	--	--	--
GMSG-536A	02/05/07	1:30 PM	29.07	4	-	--	--	--	--	--	--	--	--
GMSG-536A	04/03/07	2:41 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-536A	07/19/07	10:12 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-536A	10/23/07	3:03 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-536B	11/14/05	3:01 PM	29	38	-	--	--	--	--	--	--	--	--
GMSG-536B	11/23/05	2:22 PM	27.96	31	T	--	--	--	--	--	--	--	--
GMSG-536B	12/08/05	2:24 PM	29.06	24	-	--	--	--	--	--	--	--	--
GMSG-536B	02/24/06	1:06 PM	28.93	21	-	--	--	--	--	--	--	--	--
GMSG-536B	03/10/06	11:52 AM	28.5	40	-	--	--	--	--	--	--	--	--
GMSG-536B	04/11/06	10:02 AM	28.68	62	-	--	--	--	--	--	--	--	--
GMSG-536B	07/17/06	10:10 AM	28.56	83	T	--	--	--	--	--	--	--	--
GMSG-536B	10/10/06	1:44 PM	28.76	52	-	--	--	--	--	--	--	--	--
GMSG-536B	02/05/07	1:31 PM	29.07	4	-	--	--	--	--	--	--	--	--
GMSG-536B	04/03/07	2:42 PM	28.54	37	-	--	--	--	--	--	--	--	--
GMSG-536B	07/19/07	10:13 AM	29.98	65	-	--	--	--	--	--	--	--	--
GMSG-536B	10/23/07	3:07 PM	29.7	52	-	--	--	--	--	--	--	--	--
GMSG-537	10/31/05	3:57 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-537	11/08/05	9:10 AM	28.9	36	-	--	--	--	--	--	--	--	--
GMSG-537	11/14/05	1:53 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-537	11/23/05	10:13 AM	28.02	26	0.01	--	--	--	--	--	--	--	--
GMSG-537	12/07/05	2:25 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-537	03/03/06	1:07 PM	29.14	27	-	--	--	--	--	--	--	--	--
GMSG-537	04/11/06	8:23 AM	28.69	53	-	--	--	--	--	--	--	--	--
GMSG-537	07/11/06	1:49 PM	28.79	75	-	--	--	--	--	--	--	--	--
GMSG-537	10/10/06	3:37 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-537	02/06/07	2:46 PM	28.81	8	-	--	--	--	--	--	--	--	--
GMSG-537	04/04/07	9:57 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-537	07/19/07	11:22 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-537	11/01/07	3:06 PM	30.14	48	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-538	10/31/05	4:00 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-538	11/08/05	9:05 AM	28.9	36	-	--	--	--	--	--	--	--	--
GMSG-538	11/14/05	2:00 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-538	11/23/05	10:00 AM	28.02	26	0.01	--	--	--	--	--	--	--	--
GMSG-538	12/07/05	2:29 PM	29.27	23	-	--	--	--	--	--	--	--	--
GMSG-538	03/03/06	12:52 PM	29.14	27	-	--	--	--	--	--	--	--	--
GMSG-538	04/11/06	8:26 AM	28.69	53	-	--	--	--	--	--	--	--	--
GMSG-538	07/11/06	1:00 PM	28.79	73	-	--	--	--	--	--	--	--	--
GMSG-538	10/10/06	3:47 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-538	02/05/07	7:58 AM	29.06	-13	-	--	--	--	--	--	--	--	--
GMSG-538	04/04/07	9:43 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-538	07/19/07	11:20 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-538	11/01/07	3:04 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-539	10/31/05	4:03 PM	28.7	51	-	--	--	--	--	--	--	--	--
GMSG-539	11/08/05	9:00 AM	28.9	36	-	--	--	--	--	--	--	--	--
GMSG-539	11/14/05	2:04 PM	29.02	39	-	--	--	--	--	--	--	--	--
GMSG-539	11/23/05	10:45 AM	28	26	0.02	--	--	--	--	--	--	--	--
GMSG-539	12/07/05	2:34 PM	29.28	23	-	--	--	--	--	--	--	--	--
GMSG-539	02/17/06	12:10 PM	29.09	12	-	--	--	--	--	--	--	--	--
GMSG-539	03/10/06	10:30 AM	28.51	39	-	--	--	--	--	--	--	--	--
GMSG-539	04/11/06	8:28 AM	28.69	53	-	--	--	--	--	--	--	--	--
GMSG-539	07/11/06	1:05 PM	28.79	73	-	--	--	--	--	--	--	--	--
GMSG-539	10/10/06	3:44 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-539	02/06/07	2:52 PM	28.81	8	-	--	--	--	--	--	--	--	--
GMSG-539	04/04/07	9:53 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-539	07/19/07	11:18 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-539	11/01/07	3:10 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-540	08/11/06	9:01 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-540	08/18/06	10:09 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-540	08/25/06	10:31 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-540	09/06/06	2:46 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-540	10/03/06	2:42 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-540	11/15/06	12:47 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-540	01/17/07	12:14 PM	29.05	23	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-540	04/02/07	10:01 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-540	07/18/07	11:24 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-540	10/22/07	4:12 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-541	08/18/06	10:17 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-541	08/25/06	10:40 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-541	09/01/06	12:35 PM	29.05	73	-	--	--	--	--	--	--	--	--
GMSG-541	10/03/06	2:51 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-541	11/15/06	12:52 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-541	12/19/06	12:05 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-541	01/17/07	12:18 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-541	04/02/07	10:06 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-541	07/18/07	11:29 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-541	10/22/07	4:18 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-542	11/23/05	11:15 AM	28	26	0.02	--	--	--	--	--	--	--	--
GMSG-542	11/28/05	11:06 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-542	12/07/05	10:54 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-542	02/17/06	1:37 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-542	03/09/06	4:02 PM	28.13	39	-	--	--	--	--	--	--	--	--
GMSG-542	04/03/06	11:00 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-542	07/07/06	10:07 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-542	10/02/06	11:30 AM	28.65	76	-	--	--	--	--	--	--	--	--
GMSG-542	01/02/07	11:52 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-542	04/02/07	3:38 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-542	07/17/07	1:08 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-542	10/22/07	1:12 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-543	11/23/05	11:19 AM	28	26	0.02	--	--	--	--	--	--	--	--
GMSG-543R	12/07/05	11:04 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-543R	12/13/05	2:14 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-543R	12/20/05	11:42 AM	28.92	22	-	--	--	--	--	--	--	--	--
GMSG-543R	02/17/06	1:45 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-543R	03/09/06	4:08 PM	28.13	39	-	--	--	--	--	--	--	--	--
GMSG-543R	04/03/06	11:10 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-543R	07/07/06	10:12 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-543R	10/02/06	11:37 AM	28.65	76	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-543R	01/02/07	11:59 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-543R	04/02/07	3:46 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-543R	07/17/07	1:18 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-543R	10/22/07	1:22 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-544	11/23/05	11:23 AM	28	26	0.02	--	--	--	--	--	--	--	--
GMSG-544	11/28/05	11:09 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-544	12/07/05	10:58 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-544	02/17/06	1:39 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-544	03/09/06	4:05 PM	28.13	39	-	--	--	--	--	--	--	--	--
GMSG-544	04/03/06	11:03 AM	28.59	41	-	--	--	--	--	--	--	--	--
GMSG-544	07/07/06	10:24 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-544	10/02/06	11:03 AM	28.66	73	-	--	--	--	--	--	--	--	--
GMSG-544	01/02/07	11:55 AM	28.89	37	-	--	--	--	--	--	--	--	--
GMSG-544	04/02/07	3:41 PM	28.71	46	-	--	--	--	--	--	--	--	--
GMSG-544	07/17/07	1:14 PM	29.94	81	-	--	--	--	--	--	--	--	--
GMSG-544	10/22/07	1:16 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-545	11/23/05	11:55 AM	27.98	28	0.01	--	--	--	--	--	--	--	--
GMSG-545	11/28/05	11:42 AM	28.16	44	T	--	--	--	--	--	--	--	--
GMSG-545	12/07/05	9:37 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-545	02/24/06	10:11 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-545	03/10/06	11:13 AM	28.51	39	-	--	--	--	--	--	--	--	--
GMSG-545	04/05/06	2:56 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-545	04/11/06	12:54 PM	28.59	73	-	--	0	5.8	10.2	--	--	--	--
GMSG-545	07/05/06	2:57 PM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-545	10/16/06	1:20 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-545	02/07/07	8:08 AM	28.85	-3	-	--	--	--	--	--	--	--	--
GMSG-545	04/02/07	12:58 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-545	07/20/07	9:13 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-545	10/22/07	3:17 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-546	11/23/05	11:58 AM	27.98	28	0.01	--	--	--	--	--	--	--	--
GMSG-546	11/28/05	11:44 AM	28.16	44	T	--	--	--	--	--	--	--	--
GMSG-546	12/07/05	9:46 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-546	02/24/06	10:15 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-546	03/10/06	11:16 AM	28.51	39	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-546	04/05/06	2:58 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-546	04/11/06	1:05 PM	28.59	73	-	--	0	9.4	5.1	--	--	--	--
GMSG-546	07/05/06	3:03 PM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-546	10/16/06	1:18 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-546	02/07/07	8:17 AM	28.85	-3	-	--	--	--	--	--	--	--	--
GMSG-546	04/02/07	1:00 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-546	07/20/07	9:15 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-546	10/22/07	3:19 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-547	12/07/05	9:34 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-547	12/13/05	2:36 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-547	12/20/05	12:22 PM	28.92	22	-	--	--	--	--	--	--	--	--
GMSG-547	02/24/06	10:06 AM	29.01	10	-	--	--	--	--	--	--	--	--
GMSG-547	03/10/06	11:10 AM	28.51	39	-	--	--	--	--	--	--	--	--
GMSG-547	04/05/06	3:13 PM	28.7	58	-	--	--	--	--	--	--	--	--
GMSG-547	04/11/06	1:15 PM	28.59	73	-	--	0	11	3.2	--	--	--	--
GMSG-547	07/05/06	2:52 PM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-547	10/16/06	1:22 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-547	02/07/07	4:03 PM	28.79	15	-	--	--	--	--	--	--	--	--
GMSG-547	04/02/07	12:56 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-547	07/20/07	9:10 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-547	10/22/07	3:14 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-548	11/23/05	11:30 AM	27.98	28	0.01	--	--	--	--	--	--	--	--
GMSG-548	11/28/05	10:59 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-548	12/07/05	10:17 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-548	02/22/06	11:11 AM	28.51	28	-	--	--	--	--	--	--	--	--
GMSG-548	03/09/06	3:48 PM	28.13	39	-	--	--	--	--	--	--	--	--
GMSG-548	04/03/06	9:39 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-548	07/07/06	9:40 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-548	10/02/06	10:22 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-548	01/02/07	10:17 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-548	04/03/07	9:40 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-548	07/17/07	10:54 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-548	10/18/07	2:10 PM	29.16	68	-	--	--	--	--	--	--	--	--
GMSG-549	11/23/05	11:35 AM	27.98	28	0.01	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-549	11/28/05	11:03 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-549	12/07/05	10:24 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-549	02/22/06	11:21 AM	28.51	28	-	--	--	--	--	--	--	--	--
GMSG-549	03/09/06	3:52 PM	28.13	39	-	--	--	--	--	--	--	--	--
GMSG-549	04/03/06	9:45 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-549	07/07/06	9:54 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-549	10/02/06	10:29 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-549	01/02/07	10:25 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-549	04/03/07	9:46 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-549	07/17/07	10:48 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-549	10/18/07	2:00 PM	29.16	68	-	--	--	--	--	--	--	--	--
GMSG-550	12/07/05	10:27 AM	29.26	21	-	--	--	--	--	--	--	--	--
GMSG-550	12/13/05	2:08 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-550	12/20/05	11:35 AM	28.92	22	-	--	--	--	--	--	--	--	--
GMSG-550	02/22/06	11:24 AM	28.51	28	-	--	--	--	--	--	--	--	--
GMSG-550	03/09/06	3:55 PM	28.13	39	-	--	--	--	--	--	--	--	--
GMSG-550	04/03/06	9:42 AM	28.58	40	-	--	--	--	--	--	--	--	--
GMSG-550	07/07/06	9:48 AM	29.05	81	-	--	--	--	--	--	--	--	--
GMSG-550	10/02/06	10:26 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-550	01/02/07	10:19 AM	28.96	29	-	--	--	--	--	--	--	--	--
GMSG-550	04/03/07	9:43 AM	28.67	35	T	--	--	--	--	--	--	--	--
GMSG-550	07/17/07	10:56 AM	29.95	79	-	--	--	--	--	--	--	--	--
GMSG-550	10/18/07	2:05 PM	29.16	68	-	--	--	--	--	--	--	--	--
GMSG-551	11/28/05	11:15 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-551	12/07/05	11:09 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-551	12/13/05	2:20 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-551	02/17/06	2:02 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-551	03/10/06	9:16 AM	28.44	36	-	--	--	--	--	--	--	--	--
GMSG-551	04/03/06	2:40 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-551	07/10/06	1:04 PM	28.78	72	-	--	--	--	--	--	--	--	--
GMSG-551	10/02/06	2:06 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-551	10/09/06	10:00 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-551	01/17/07	3:28 PM	28.99	26	-	--	--	--	--	--	--	--	--
GMSG-551	04/02/07	1:47 PM	28.67	45	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-551	07/17/07	3:04 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-551	10/18/07	3:54 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-552	11/28/05	11:18 AM	28.19	44	0.05	--	--	--	--	--	--	--	--
GMSG-552	12/07/05	11:12 AM	29.27	21	-	--	--	--	--	--	--	--	--
GMSG-552	12/13/05	2:29 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-552	02/17/06	2:08 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-552	03/10/06	9:18 AM	28.44	36	-	--	--	--	--	--	--	--	--
GMSG-552	04/03/06	2:32 PM	28.67	42	-	--	--	--	--	--	--	--	--
GMSG-552	07/06/06	9:32 AM	29.04	76	-	--	--	--	--	--	--	--	--
GMSG-552	10/02/06	2:04 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-552	10/09/06	9:45 AM	29.13	47	-	--	--	--	--	--	--	--	--
GMSG-552	01/17/07	3:33 PM	28.98	26	-	--	--	--	--	--	--	--	--
GMSG-552	04/02/07	1:55 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-552	07/17/07	3:10 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-552	10/18/07	4:00 PM	29.15	67	T	--	--	--	--	--	--	--	--
GMSG-553	12/07/05	11:36 AM	29.26	22	-	--	--	--	--	--	--	--	--
GMSG-553	12/13/05	2:57 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-553	12/20/05	11:58 AM	28.92	22	-	--	--	--	--	--	--	--	--
GMSG-553	03/02/06	2:39 PM	28.8	29	-	--	--	--	--	--	--	--	--
GMSG-553	03/10/06	9:40 AM	28.47	37	-	--	--	--	--	--	--	--	--
GMSG-553	04/06/06	2:22 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-553	05/16/06	8:37 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-553	07/13/06	9:20 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-553	10/11/06	9:38 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-553	01/31/07	11:59 AM	28.61	15	-	--	--	--	--	--	--	--	--
GMSG-553	04/06/07	11:23 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-553	07/19/07	2:54 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-553	10/17/07	12:10 PM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-554	12/07/05	11:31 AM	29.26	22	-	--	--	--	--	--	--	--	--
GMSG-554	12/13/05	2:51 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-554	12/20/05	12:06 PM	28.92	22	-	--	--	--	--	--	--	--	--
GMSG-554	02/17/06	2:20 PM	29.12	6	T	--	--	--	--	--	--	--	--
GMSG-554	03/10/06	9:36 AM	28.47	37	-	--	--	--	--	--	--	--	--
GMSG-554	04/06/06	2:17 PM	28.51	58	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-554	07/13/06	9:28 AM	28.78	83	-	--	--	--	--	--	--	--	--
GMSG-554	10/11/06	9:30 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-554	01/31/07	11:49 AM	28.61	15	-	--	--	--	--	--	--	--	--
GMSG-554	04/06/07	11:17 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-554	07/19/07	2:59 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-554	10/17/07	12:04 PM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-555	12/07/05	11:41 AM	29.26	22	-	--	--	--	--	--	--	--	--
GMSG-555	12/13/05	2:41 PM	28.88	24	-	--	--	--	--	--	--	--	--
GMSG-555	12/20/05	11:51 AM	28.92	22	-	--	--	--	--	--	--	--	--
GMSG-555	03/10/06	9:30 AM	28.47	37	-	--	--	--	--	--	--	--	--
GMSG-555	04/06/06	2:09 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-555	05/16/06	9:01 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-555	07/12/06	9:30 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-555	10/11/06	8:50 AM	28.11	42	0.07	--	--	--	--	--	--	--	--
GMSG-555	02/04/07	2:26 PM	28.85	-6	T	--	--	--	--	--	--	--	--
GMSG-555	04/03/07	1:51 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-555	07/20/07	3:30 PM	30.2	73	-	--	--	--	--	--	--	--	--
GMSG-555	10/17/07	11:53 AM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-556	06/01/06	2:00 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-556	06/06/06	3:24 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-556	06/15/06	1:32 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-556	06/23/06	11:19 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-556	07/12/06	9:37 AM	28.83	79	-	--	--	--	--	--	--	--	--
GMSG-556	08/11/06	10:42 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-556	09/19/06	9:36 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-556	10/11/06	8:56 AM	28.11	42	0.07	--	--	--	--	--	--	--	--
GMSG-556	02/04/07	2:46 PM	28.87	-6	T	--	--	--	--	--	--	--	--
GMSG-556	04/03/07	1:45 PM	28.57	36	T	--	--	--	--	--	--	--	--
GMSG-556	07/20/07	3:34 PM	30.2	73	-	--	--	--	--	--	--	--	--
GMSG-556	10/17/07	11:45 AM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-557A	03/07/06	9:09 AM	29.05	22	-	--	--	--	--	--	--	--	--
GMSG-557A	03/14/06	1:13 PM	28.59	27	T	--	--	--	--	--	--	--	--
GMSG-557A	03/20/06	10:04 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-557A	04/06/06	1:53 PM	28.51	58	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-557A	05/16/06	9:15 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-557A	06/01/06	1:00 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-557A	07/11/06	10:59 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-557A	10/09/06	2:17 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-557A	02/08/07	9:35 AM	28.84	5	-	--	--	--	--	--	--	--	--
GMSG-557A	04/04/07	11:38 AM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-557A	07/19/07	12:34 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-557A	11/02/07	2:26 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-557B	03/07/06	9:11 AM	29.05	22	-	--	--	--	--	--	--	--	--
GMSG-557B	03/14/06	1:14 PM	28.59	27	T	--	--	--	--	--	--	--	--
GMSG-557B	03/20/06	10:05 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-557B	04/06/06	1:54 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-557B	05/16/06	9:16 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-557B	06/01/06	1:01 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-557B	07/11/06	11:01 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-557B	10/09/06	2:19 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-557B	02/09/07	9:21 AM	28.96	5	-	--	--	--	--	--	--	--	--
GMSG-557B	04/04/07	11:39 AM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-557B	07/19/07	12:35 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-557B	11/02/07	2:27 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-558A	03/07/06	9:19 AM	29.05	22	-	--	--	--	--	--	--	--	--
GMSG-558A	03/14/06	1:22 PM	28.59	27	T	--	--	--	--	--	--	--	--
GMSG-558A	03/20/06	10:12 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-558A	04/06/06	12:58 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-558A	05/16/06	9:20 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-558A	06/01/06	1:05 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-558A	07/11/06	9:57 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-558A	10/09/06	1:18 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-558A	02/04/07	9:46 AM	28.79	-9	-	--	--	--	--	--	--	--	--
GMSG-558A	04/04/07	11:44 AM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-558A	07/19/07	12:30 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-558A	11/02/07	1:54 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-558B	03/07/06	9:20 AM	29.05	22	-	--	--	--	--	--	--	--	--
GMSG-558B	03/14/06	1:23 PM	28.59	27	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-558B	03/20/06	10:13 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-558B	04/06/06	12:59 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-558B	05/16/06	9:21 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-558B	06/01/06	1:06 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-558B	07/11/06	9:59 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-558B	10/09/06	1:19 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-558B	02/04/07	9:47 AM	28.79	-9	-	--	--	--	--	--	--	--	--
GMSG-558B	04/04/07	11:45 AM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-558B	07/19/07	12:31 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-558B	11/02/07	1:55 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-559A	03/07/06	3:38 PM	28.83	36	-	--	--	--	--	--	--	--	--
GMSG-559A	03/14/06	1:29 PM	28.59	27	T	--	--	--	--	--	--	--	--
GMSG-559A	03/20/06	10:18 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-559A	04/06/06	1:05 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-559A	05/16/06	9:26 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-559A	06/01/06	1:10 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-559A	07/11/06	10:06 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-559A	10/09/06	1:24 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-559A	02/08/07	3:01 PM	28.75	19	-	--	--	--	--	--	--	--	--
GMSG-559A	04/04/07	11:53 AM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-559A	07/19/07	1:05 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-559A	11/02/07	2:00 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-559B	03/07/06	3:39 PM	28.83	36	-	--	--	--	--	--	--	--	--
GMSG-559B	03/14/06	1:30 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-559B	03/20/06	10:19 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-559B	04/06/06	1:06 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-559B	05/16/06	9:27 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-559B	06/01/06	1:11 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-559B	07/11/06	10:08 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-559B	10/09/06	1:26 PM	29.11	49	-	--	--	--	--	--	--	--	--
GMSG-559B	02/08/07	3:25 PM	28.75	19	-	--	--	--	--	--	--	--	--
GMSG-559B	04/04/07	11:54 AM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-559B	07/19/07	1:06 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-559B	11/02/07	2:01 PM	29.96	53	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-560A	03/07/06	9:27 AM	29.05	22	-	--	--	--	--	--	--	--	--
GMSG-560A	03/14/06	1:35 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-560A	03/20/06	10:23 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-560A	04/06/06	1:10 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-560A	05/16/06	9:32 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-560A	06/01/06	1:14 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-560A	07/11/06	10:17 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-560A	10/09/06	1:34 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-560A	02/04/07	10:22 AM	28.79	-9	-	--	--	--	--	--	--	--	--
GMSG-560A	04/04/07	12:15 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-560A	07/19/07	12:41 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-560A	11/02/07	2:04 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-560B	03/07/06	9:28 AM	29.05	22	-	--	--	--	--	--	--	--	--
GMSG-560B	03/14/06	1:36 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-560B	03/20/06	10:25 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-560B	04/06/06	1:11 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-560B	05/16/06	9:33 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-560B	06/01/06	1:15 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-560B	07/11/06	10:19 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-560B	10/09/06	1:36 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-560B	02/04/07	10:23 AM	28.79	-9	-	--	--	--	--	--	--	--	--
GMSG-560B	04/04/07	12:16 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-560B	07/19/07	12:42 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-560B	11/02/07	2:05 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-561A	03/07/06	3:43 PM	28.83	36	-	--	--	--	--	--	--	--	--
GMSG-561A	03/14/06	1:41 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-561A	03/20/06	10:28 AM	29.14	26	T	--	--	--	--	--	--	--	--
GMSG-561A	04/06/06	1:15 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-561A	05/16/06	9:38 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-561A	06/01/06	1:19 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-561A	07/11/06	10:50 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-561A	10/09/06	1:40 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-561A	02/04/07	10:37 AM	28.82	-8	-	--	--	--	--	--	--	--	--
GMSG-561A	04/04/07	12:03 PM	28.63	20	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-561A	07/19/07	12:46 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-561A	11/02/07	2:07 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-561B	03/07/06	3:45 PM	28.83	36	-	--	--	--	--	--	--	--	--
GMSG-561B	03/14/06	1:42 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-561B	03/20/06	10:30 AM	29.13	27	-	--	--	--	--	--	--	--	--
GMSG-561B	04/06/06	1:16 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-561B	05/16/06	9:40 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-561B	06/01/06	1:20 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-561B	07/11/06	10:52 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-561B	10/09/06	1:42 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-561B	02/04/07	10:38 AM	28.82	-8	-	--	--	--	--	--	--	--	--
GMSG-561B	04/04/07	12:04 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-561B	07/19/07	12:47 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-561B	11/02/07	2:08 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-562A	03/07/06	9:39 AM	29.03	29	-	--	--	--	--	--	--	--	--
GMSG-562A	03/14/06	1:48 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-562A	03/20/06	10:34 AM	29.13	27	-	--	--	--	--	--	--	--	--
GMSG-562A	04/06/06	1:19 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-562A	05/16/06	9:44 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-562A	06/01/06	1:23 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-562A	07/11/06	10:28 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-562A	10/09/06	1:59 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-562A	02/04/07	11:48 AM	28.82	-7	-	--	--	--	--	--	--	--	--
GMSG-562A	04/04/07	12:11 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-562A	07/19/07	12:52 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-562A	11/02/07	2:11 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-562B	03/07/06	9:40 AM	29.03	29	-	--	--	--	--	--	--	--	--
GMSG-562B	03/14/06	1:49 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-562B	03/20/06	10:36 AM	29.13	27	-	--	--	--	--	--	--	--	--
GMSG-562B	04/06/06	1:20 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-562B	05/16/06	9:45 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-562B	06/01/06	1:24 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-562B	07/11/06	10:30 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-562B	10/09/06	2:01 PM	29.11	48	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-562B	02/04/07	11:49 AM	28.82	-7	-	--	--	--	--	--	--	--	--
GMSG-562B	04/04/07	12:12 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-562B	07/19/07	12:53 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-562B	11/02/07	2:12 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-563	03/07/06	9:36 AM	29.03	29	-	--	--	--	--	--	--	--	--
GMSG-563	03/14/06	1:58 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-563	03/20/06	10:40 AM	29.13	27	-	--	--	--	--	--	--	--	--
GMSG-563	04/06/06	1:26 PM	28.54	56	-	--	--	--	--	--	--	--	--
GMSG-563	05/16/06	9:49 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-563	06/01/06	1:28 PM	28.88	74	T	--	--	--	--	--	--	--	--
GMSG-563	07/11/06	10:35 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-563	10/09/06	1:53 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-563	02/04/07	10:48 AM	28.82	-8	-	--	--	--	--	--	--	--	--
GMSG-563	04/04/07	12:18 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-563	07/19/07	12:56 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-563	11/02/07	2:16 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-564	03/08/06	4:04 PM	28.41	37	-	--	--	--	--	--	--	--	--
GMSG-564	03/14/06	2:06 PM	28.6	26	T	--	--	--	--	--	--	--	--
GMSG-564	03/20/06	10:45 AM	29.13	27	-	--	--	--	--	--	--	--	--
GMSG-564	04/06/06	1:37 PM	28.51	58	-	--	--	--	--	--	--	--	--
GMSG-564	05/16/06	9:52 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-564	06/01/06	1:31 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-564	07/11/06	10:45 AM	28.8	71	-	--	--	--	--	--	--	--	--
GMSG-564	10/09/06	1:45 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-564	02/04/07	10:59 AM	28.82	-8	-	--	--	--	--	--	--	--	--
GMSG-564	04/04/07	12:22 PM	28.63	20	T	--	--	--	--	--	--	--	--
GMSG-564	07/19/07	1:03 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-564	11/02/07	2:21 PM	29.96	53	-	--	--	--	--	--	--	--	--
GMSG-565	05/05/06	10:22 AM	28.76	45	T	--	--	--	--	--	--	--	--
GMSG-565	05/16/06	8:51 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-565	05/25/06	9:04 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-565	06/01/06	10:33 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-565	07/13/06	10:20 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-565	08/11/06	11:21 AM	28.97	68	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-565	10/10/06	4:38 PM	28.67	49	-	--	--	--	--	--	--	--	--
GMSG-565	02/03/07	8:44 AM	28.44	-6	-	--	--	--	--	--	--	--	--
GMSG-565	04/05/07	11:54 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-565	07/19/07	1:47 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-565	10/18/07	8:46 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-566	05/05/06	10:23 AM	28.76	45	T	--	--	--	--	--	--	--	--
GMSG-566	05/16/06	8:55 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-566	05/25/06	9:07 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-566	06/01/06	10:34 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-566	07/13/06	10:16 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-566	08/11/06	11:18 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-566	10/10/06	4:36 PM	28.67	49	-	--	--	--	--	--	--	--	--
GMSG-566	02/03/07	8:25 AM	28.42	-13	-	--	--	--	--	--	--	--	--
GMSG-566	04/05/07	11:57 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-566	07/19/07	1:45 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-566	10/18/07	8:32 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-567	05/05/06	10:25 AM	28.76	45	T	--	--	--	--	--	--	--	--
GMSG-567	05/16/06	8:58 AM	28.64	61	-	--	--	--	--	--	--	--	--
GMSG-567	05/25/06	9:09 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-567	06/01/06	10:36 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-567	07/13/06	10:27 AM	28.78	87	-	--	--	--	--	--	--	--	--
GMSG-567	08/11/06	11:23 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-567	10/10/06	4:34 PM	28.67	49	-	--	--	--	--	--	--	--	--
GMSG-567	02/03/07	8:31 AM	28.44	-6	-	--	--	--	--	--	--	--	--
GMSG-567	04/05/07	11:59 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-567	07/19/07	1:43 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-567	10/18/07	8:37 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-568	05/16/06	10:11 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-568	05/25/06	9:47 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-568	06/01/06	11:31 AM	28.89	77	-	--	--	--	--	--	--	--	--
GMSG-568	07/07/06	12:08 PM	29.03	83	-	--	--	--	--	--	--	--	--
GMSG-568	08/11/06	12:05 PM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-568	09/06/06	1:51 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-568	10/02/06	9:58 AM	28.66	70	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-568	02/03/07	2:52 PM	28.56	0	T	--	--	--	--	--	--	--	--
GMSG-568	04/04/07	9:33 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-568	07/17/07	9:49 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-568	10/22/07	12:26 PM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-569	05/16/06	10:06 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-569	05/25/06	9:43 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-569	06/01/06	11:26 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-569	07/07/06	12:01 PM	29.03	83	-	--	--	--	--	--	--	--	--
GMSG-569	08/11/06	11:56 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-569	09/06/06	1:59 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-569	10/02/06	9:54 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-569	02/03/07	3:09 PM	--	--	--	--	--	--	--	--	--	--	--
GMSG-569	02/03/07	3:13 PM	28.56	0	T	--	--	--	--	--	--	--	--
GMSG-569	04/04/07	9:27 AM	28.6	21	T	--	--	--	--	--	--	--	--
GMSG-569	07/17/07	9:45 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-569	10/22/07	12:34 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-570	05/16/06	10:09 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-570	05/25/06	9:45 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-570	06/01/06	11:28 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-570	07/07/06	12:05 PM	29.03	83	-	--	--	--	--	--	--	--	--
GMSG-570	08/11/06	11:59 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-570	09/06/06	1:55 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-570	10/02/06	9:56 AM	28.66	70	-	--	--	--	--	--	--	--	--
GMSG-570	02/03/07	3:09 PM	28.56	0	T	--	--	--	--	--	--	--	--
GMSG-570	04/04/07	9:30 AM	28.61	20	T	--	--	--	--	--	--	--	--
GMSG-570	07/17/07	9:47 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-570	10/22/07	12:30 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-571	05/16/06	10:04 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-571	05/25/06	9:41 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-571	06/01/06	11:21 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-571	07/07/06	11:56 AM	29.03	83	-	--	--	--	--	--	--	--	--
GMSG-571	08/11/06	11:53 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-571	09/06/06	2:04 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-571	10/02/06	9:51 AM	28.66	70	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-571	02/03/07	3:18 PM	28.56	0	T	--	--	--	--	--	--	--	--
GMSG-571	04/04/07	9:24 AM	28.6	21	T	--	--	--	--	--	--	--	--
GMSG-571	07/17/07	9:43 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-571	10/22/07	12:38 PM	29.99	51	-	--	--	--	--	--	--	--	--
GMSG-572	05/16/06	9:57 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-572	05/25/06	9:12 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-572	06/01/06	10:40 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-572	07/10/06	3:11 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-572	08/11/06	9:22 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-572	09/06/06	3:27 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-572	10/09/06	3:36 PM	29.09	48	-	--	--	--	--	--	--	--	--
GMSG-572	02/02/07	11:02 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-572	04/04/07	3:15 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-572	07/18/07	11:58 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-572	11/01/07	2:18 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-573	05/16/06	9:59 AM	28.63	67	-	--	--	--	--	--	--	--	--
GMSG-573	05/25/06	9:14 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-573	06/01/06	10:43 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-573	07/10/06	3:02 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-573	08/11/06	9:27 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-573	09/06/06	3:37 PM	28.86	73	-	--	--	--	--	--	--	--	--
GMSG-573	10/09/06	3:29 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-573	02/02/07	10:47 AM	28.32	4	-	--	--	--	--	--	--	--	--
GMSG-573	04/04/07	3:21 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-573	07/18/07	12:03 PM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-573	11/01/07	2:23 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-574	05/25/06	9:21 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-574	06/01/06	11:12 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-574	06/06/06	2:35 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-574	07/07/06	4:04 PM	28.96	84	-	--	--	--	--	--	--	--	--
GMSG-574	08/11/06	9:09 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-574	09/06/06	2:57 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-574	10/03/06	2:55 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-574	01/17/07	12:35 PM	29.02	25	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-574	04/02/07	9:47 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-574	07/18/07	11:32 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-574	10/22/07	4:35 PM	30.01	49	-	--	--	--	--	--	--	--	--
GMSG-575	05/25/06	9:24 AM	28.33	66	-	--	--	--	--	--	--	--	--
GMSG-575	06/01/06	11:15 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-575	06/06/06	2:33 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-575	07/07/06	3:48 PM	28.96	84	-	--	--	--	--	--	--	--	--
GMSG-575	08/11/06	9:05 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-575	09/06/06	2:50 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-575	10/03/06	2:59 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-575	01/17/07	12:24 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-575	04/02/07	9:50 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-575	07/18/07	11:34 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-575	10/22/07	4:25 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-576	06/01/06	11:10 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-576	06/06/06	2:39 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-576	07/07/06	3:38 PM	28.96	84	-	--	--	--	--	--	--	--	--
GMSG-576	08/11/06	9:13 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-576	09/06/06	2:54 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-576	10/03/06	3:05 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-576	01/17/07	12:30 PM	29.02	25	-	--	--	--	--	--	--	--	--
GMSG-576	04/02/07	9:44 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-576	07/18/07	11:39 AM	29.87	82	-	--	--	--	--	--	--	--	--
GMSG-576	10/22/07	4:32 PM	30.01	49	-	--	--	--	--	--	--	--	--
GMSG-577	05/25/06	10:10 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-577	06/01/06	1:53 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-577	06/06/06	3:06 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-577	07/10/06	3:19 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-577	08/11/06	9:34 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-577	09/19/06	1:22 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-577	10/09/06	2:52 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-577	02/01/07	12:37 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-577	04/04/07	2:50 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-577	07/18/07	1:50 PM	29.84	86	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-577	11/01/07	2:49 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-578A	05/25/06	10:06 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-578A	06/01/06	1:49 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-578A	06/06/06	3:03 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-578A	07/10/06	3:24 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-578A	08/11/06	9:40 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-578A	09/19/06	1:18 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-578A	10/09/06	2:48 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-578A	02/01/07	12:45 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-578A	04/04/07	2:46 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-578A	07/18/07	1:44 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-578A	11/01/07	2:46 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-578B	05/25/06	10:07 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-578B	06/01/06	1:50 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-578B	06/06/06	3:04 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-578B	07/10/06	3:26 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-578B	08/11/06	9:41 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-578B	09/19/06	1:19 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-578B	10/09/06	2:50 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-578B	02/01/07	12:35 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-578B	04/04/07	2:47 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-578B	07/18/07	1:45 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-578B	11/01/07	2:47 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-579A	05/25/06	10:00 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-579A	06/01/06	1:46 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-579A	06/06/06	2:58 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-579A	07/10/06	3:29 PM	28.76	74	-	--	--	--	--	--	--	--	--
GMSG-579A	08/11/06	9:44 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-579A	09/19/06	1:15 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-579A	10/09/06	2:43 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-579A	02/01/07	12:29 PM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-579A	04/04/07	2:41 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-579A	07/18/07	1:39 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-579A	11/01/07	2:43 PM	30.14	48	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-579B	05/25/06	10:01 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-579B	06/01/06	1:47 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-579B	06/06/06	2:59 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-579B	07/10/06	3:31 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-579B	08/11/06	9:45 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-579B	09/19/06	1:16 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-579B	10/09/06	2:45 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-579B	02/01/07	12:30 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-579B	04/04/07	2:42 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-579B	07/18/07	1:40 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-579B	11/01/07	2:44 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-580A	05/25/06	9:56 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-580A	06/01/06	1:43 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-580A	06/06/06	2:55 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-580A	07/10/06	3:36 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-580A	08/11/06	9:49 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-580A	09/19/06	1:12 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-580A	10/09/06	2:36 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-580A	02/01/07	12:23 PM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-580A	04/04/07	2:37 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-580A	07/18/07	1:35 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-580A	11/01/07	2:39 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-580B	05/25/06	9:57 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-580B	06/01/06	1:44 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-580B	06/06/06	2:56 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-580B	07/10/06	3:38 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-580B	08/11/06	9:50 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-580B	09/19/06	1:13 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-580B	10/09/06	2:38 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-580B	02/01/07	12:24 PM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-580B	04/04/07	2:38 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-580B	07/18/07	1:36 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-580B	11/01/07	2:40 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-581A	05/25/06	9:53 AM	28.34	65	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-581A	06/01/06	1:39 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-581A	06/06/06	2:52 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-581A	07/10/06	3:49 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-581A	08/11/06	9:53 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-581A	09/19/06	1:09 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-581A	10/09/06	2:27 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-581A	02/01/07	12:12 PM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-581A	04/04/07	2:30 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-581A	07/18/07	1:07 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-581A	11/01/07	2:34 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-581B	05/25/06	9:54 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-581B	06/01/06	1:40 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-581B	06/06/06	2:53 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-581B	07/10/06	3:51 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-581B	08/11/06	9:54 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-581B	09/19/06	1:10 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-581B	10/09/06	2:29 PM	29.11	48	-	--	--	--	--	--	--	--	--
GMSG-581B	02/01/07	12:13 PM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-581B	04/04/07	2:31 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-581B	07/18/07	1:08 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-581B	11/01/07	2:35 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-582	10/09/06	9:23 AM	29.13	46	-	--	--	--	--	--	--	--	--
GMSG-582	10/20/06	3:20 PM	28.54	44	-	--	--	--	--	--	--	--	--
GMSG-582	10/25/06	2:28 PM	28.95	44	-	--	--	--	--	--	--	--	--
GMSG-582	11/15/06	2:07 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-582	12/19/06	12:29 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-582	02/01/07	12:05 PM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-582	04/04/07	2:27 PM	28.66	21	T	--	--	--	--	--	--	--	--
GMSG-582	07/18/07	1:03 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-582	11/01/07	2:32 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-583	05/25/06	10:15 AM	28.34	65	-	--	--	--	--	--	--	--	--
GMSG-583	06/01/06	1:56 PM	28.86	75	T	--	--	--	--	--	--	--	--
GMSG-583	06/06/06	3:09 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-583	07/10/06	4:01 PM	28.76	75	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-583	08/11/06	10:00 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-583	09/19/06	1:25 PM	28.56	53	T	--	--	--	--	--	--	--	--
GMSG-583	10/09/06	3:06 PM	29.1	48	-	--	--	--	--	--	--	--	--
GMSG-583	02/01/07	12:43 PM	28.38	17	-	--	--	--	--	--	--	--	--
GMSG-583	04/04/07	2:53 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-583	07/18/07	1:54 PM	29.84	86	-	--	--	--	--	--	--	--	--
GMSG-583	11/01/07	3:01 PM	30.14	48	-	--	--	--	--	--	--	--	--
GMSG-584	06/01/06	10:50 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-584	06/06/06	2:25 PM	28.55	68	-	--	--	--	--	--	--	--	--
GMSG-584	06/15/06	12:55 PM	28.85	76	-	--	--	--	--	--	--	--	--
GMSG-584	07/10/06	2:07 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-584	08/11/06	8:48 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-584	09/06/06	2:32 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-584	10/03/06	2:26 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-584	01/17/07	11:42 AM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-584	04/02/07	10:32 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-584	07/18/07	11:02 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-584	10/18/07	4:41 PM	29.15	65	-	--	--	--	--	--	--	--	--
GMSG-585	06/01/06	10:53 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-585	06/06/06	2:28 PM	28.55	68	-	--	--	--	--	--	--	--	--
GMSG-585	06/15/06	12:57 PM	28.85	76	-	--	--	--	--	--	--	--	--
GMSG-585	07/10/06	2:00 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-585	08/11/06	8:51 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-585	09/06/06	2:36 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-585	10/03/06	2:21 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-585	01/17/07	11:50 AM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-585	04/02/07	10:36 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-585	07/18/07	11:07 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-585	10/18/07	4:30 PM	29.15	65	-	--	--	--	--	--	--	--	--
GMSG-586	06/01/06	10:56 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-586	06/06/06	2:22 PM	28.55	68	-	--	--	--	--	--	--	--	--
GMSG-586	06/15/06	12:52 PM	28.85	76	-	--	--	--	--	--	--	--	--
GMSG-586	07/10/06	4:12 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-586	08/11/06	8:38 AM	28.97	64	-	--	--	--	--	--	--	--	--

Footnotes on Page 844

Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-586	09/06/06	2:23 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-586	10/03/06	2:08 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-586	01/17/07	11:26 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-586	04/02/07	10:52 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-586	07/18/07	10:53 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-586	10/23/07	8:43 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-587	06/06/06	2:19 PM	28.55	68	-	--	--	--	--	--	--	--	--
GMSG-587	06/15/06	12:47 PM	28.85	76	-	--	--	--	--	--	--	--	--
GMSG-587	06/23/06	10:02 AM	29.02	67	-	--	--	--	--	--	--	--	--
GMSG-587	07/10/06	4:16 PM	28.76	75	-	--	--	--	--	--	--	--	--
GMSG-587	08/11/06	8:43 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-587	09/06/06	2:27 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-587	10/03/06	2:01 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-587	01/17/07	11:17 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-587	04/02/07	10:57 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-587	07/18/07	10:49 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-587	10/23/07	8:50 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-588	06/01/06	10:59 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-588	06/06/06	2:11 PM	28.55	68	-	--	--	--	--	--	--	--	--
GMSG-588	06/15/06	12:37 PM	28.85	76	-	--	--	--	--	--	--	--	--
GMSG-588	06/23/06	9:54 AM	29.02	67	-	--	--	--	--	--	--	--	--
GMSG-588	07/10/06	1:30 PM	28.76	73	-	--	--	--	--	--	--	--	--
GMSG-588	08/11/06	8:23 AM	28.97	62	-	--	--	--	--	--	--	--	--
GMSG-588	09/06/06	2:18 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-588	10/03/06	1:52 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-588	01/17/07	11:11 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-588	04/02/07	11:01 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-588	07/18/07	10:46 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-588	10/23/07	8:35 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-589	06/01/06	11:02 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-589	06/06/06	2:14 PM	28.55	68	-	--	--	--	--	--	--	--	--
GMSG-589	06/15/06	12:40 PM	28.85	76	-	--	--	--	--	--	--	--	--
GMSG-589	06/23/06	9:50 AM	29.02	67	-	--	--	--	--	--	--	--	--
GMSG-589	07/10/06	1:27 PM	28.78	72	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-589	08/11/06	8:28 AM	28.97	62	-	--	--	--	--	--	--	--	--
GMSG-589	09/06/06	2:15 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-589	10/03/06	1:54 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-589	01/17/07	10:53 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-589	04/02/07	11:03 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-589	07/18/07	10:40 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-589	10/23/07	8:26 AM	29.92	37	-	--	--	--	--	--	--	--	--
GMSG-590	06/01/06	11:05 AM	28.91	75	-	--	--	--	--	--	--	--	--
GMSG-590	06/06/06	2:16 PM	28.55	68	-	--	--	--	--	--	--	--	--
GMSG-590	06/15/06	12:44 PM	28.85	76	-	--	--	--	--	--	--	--	--
GMSG-590	06/23/06	9:47 AM	29.02	67	-	--	--	--	--	--	--	--	--
GMSG-590	07/10/06	1:21 PM	28.78	72	-	--	--	--	--	--	--	--	--
GMSG-590	08/11/06	8:32 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-590	09/06/06	2:12 PM	28.89	71	-	--	--	--	--	--	--	--	--
GMSG-590	10/03/06	1:48 PM	28.87	70	-	--	--	--	--	--	--	--	--
GMSG-590	01/17/07	11:02 AM	29.08	20	-	--	--	--	--	--	--	--	--
GMSG-590	04/02/07	11:06 AM	28.62	41	-	--	--	--	--	--	--	--	--
GMSG-590	07/18/07	10:42 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-590	10/23/07	8:30 AM	29.88	44	-	--	--	--	--	--	--	--	--
GMSG-591	06/06/06	3:15 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-591	06/15/06	1:56 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-591	06/23/06	11:04 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-591	07/13/06	10:33 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-591	08/11/06	11:15 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-591	09/19/06	10:08 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-591	10/11/06	11:32 AM	28.05	43	0.01	--	--	--	--	--	--	--	--
GMSG-591	02/01/07	10:32 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-591	04/05/07	2:05 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-591	07/19/07	1:52 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-591	10/18/07	8:50 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-592	06/06/06	3:17 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-592	06/15/06	2:00 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-592	06/23/06	11:08 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-592	07/13/06	10:37 AM	28.78	89	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-592	08/11/06	11:31 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-592	09/19/06	10:10 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-592	10/11/06	11:42 AM	28.05	43	0.01	--	--	--	--	--	--	--	--
GMSG-592	02/01/07	10:46 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-592	04/05/07	2:08 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-592	07/19/07	1:54 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-592	10/18/07	8:53 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-593	06/06/06	3:19 PM	28.55	65	0.19	--	--	--	--	--	--	--	--
GMSG-593	06/15/06	2:03 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-593	06/23/06	11:12 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-593	07/13/06	10:41 AM	28.78	89	-	--	--	--	--	--	--	--	--
GMSG-593	08/11/06	11:27 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-593	09/19/06	10:13 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-593	10/11/06	11:38 AM	28.05	43	0.01	--	--	--	--	--	--	--	--
GMSG-593	02/01/07	10:49 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-593	04/05/07	2:10 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-593	07/19/07	1:56 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-593	10/18/07	9:00 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-594	06/15/06	1:44 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-594	06/23/06	10:54 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-594	06/27/06	9:46 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-594	07/11/06	9:34 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-594	08/11/06	10:13 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-594	09/19/06	10:42 AM	28.52	51	T	--	--	--	--	--	--	--	--
GMSG-594	10/09/06	4:00 PM	29.09	48	-	--	--	--	--	--	--	--	--
GMSG-594	02/04/07	12:10 PM	28.82	-7	-	--	--	--	--	--	--	--	--
GMSG-594	04/04/07	3:08 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-594	07/18/07	2:30 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-594	10/18/07	10:16 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-595	06/15/06	1:40 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-595	06/23/06	10:51 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-595	06/27/06	9:43 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-595	07/11/06	9:31 AM	28.8	70	-	--	--	--	--	--	--	--	--
GMSG-595	08/11/06	10:10 AM	28.97	65	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-595	09/19/06	10:44 AM	28.52	51	T	--	--	--	--	--	--	--	--
GMSG-595	10/09/06	4:02 PM	29.09	48	-	--	--	--	--	--	--	--	--
GMSG-595	02/03/07	3:50 PM	28.6	-2	-	--	--	--	--	--	--	--	--
GMSG-595	04/04/07	3:06 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-595	07/18/07	2:32 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-595	10/18/07	10:11 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-596	06/15/06	1:37 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-596	06/23/06	10:47 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-596	06/27/06	9:39 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-596	07/11/06	9:28 AM	28.8	67	-	--	--	--	--	--	--	--	--
GMSG-596	08/11/06	10:07 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-596	09/19/06	10:46 AM	28.52	51	T	--	--	--	--	--	--	--	--
GMSG-596	10/09/06	3:53 PM	29.09	48	-	--	--	--	--	--	--	--	--
GMSG-596	02/05/07	12:09 PM	29.1	3	-	--	--	--	--	--	--	--	--
GMSG-596	04/04/07	3:03 PM	28.68	21	T	--	--	--	--	--	--	--	--
GMSG-596	07/18/07	2:34 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-596	10/18/07	10:28 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-597	06/15/06	2:11 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-597	06/23/06	11:26 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-597	06/27/06	10:04 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-597	06/27/06	10:35 AM	28.73	73	-	--	0	15.3	1.7	--	--	--	--
GMSG-597	07/05/06	1:14 PM	28.92	72	T	--	--	--	--	--	--	--	--
GMSG-597	07/05/06	1:30 PM	28.91	74	T	--	0	15	3.3	--	--	--	--
GMSG-597	08/11/06	12:12 PM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-597	09/19/06	2:20 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-597	10/16/06	1:11 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-597	02/07/07	8:53 AM	28.85	0	-	--	--	--	--	--	--	--	--
GMSG-597	04/02/07	1:07 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-597	07/20/07	9:22 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-597	10/22/07	3:35 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-598	06/15/06	2:14 PM	28.84	78	-	--	--	--	--	--	--	--	--
GMSG-598	06/23/06	11:45 AM	28.98	71	-	--	--	--	--	--	--	--	--
GMSG-598	06/27/06	10:08 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-598	06/27/06	10:28 AM	28.73	71	-	--	0.2	4.8	---	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-598	06/27/06	10:32 AM	28.73	71	-	--	0.3	13.1	3.8	--	--	--	--
GMSG-598	07/05/06	1:09 PM	28.92	72	T	--	--	--	--	--	--	--	--
GMSG-598	08/11/06	12:15 PM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-598	08/11/06	12:35 PM	28.95	71	-	--	0	14.2	0.1	--	--	--	--
GMSG-598	09/19/06	2:09 PM	28.58	53	T	--	1.7	17.5	0	--	--	--	--
GMSG-598	09/19/06	2:50 PM	28.6	52	T	--	1.4	17.9	0	--	--	--	--
GMSG-598	09/20/06	9:03 AM	28.78	48	-	--	1.5	17.2	0	--	--	--	--
GMSG-598	09/21/06	10:35 AM	28.77	60	-	--	1.5	18.1	0	--	--	--	--
GMSG-598	09/22/06	12:47 PM	28.46	54	0.02	--	1.4	18.1	0	--	--	--	--
GMSG-598	09/28/06	8:58 AM	28.75	46	-	--	1.3	13.6	0	--	--	--	--
GMSG-598	10/03/06	12:54 PM	28.88	69	-	--	0.9	13.5	0	--	--	--	--
GMSG-598	10/13/06	10:16 AM	28.01	39	-	--	1.1	14	0	--	--	--	--
GMSG-598	10/24/06	2:38 PM	28.91	39	-	--	0.8	10.4	0.3	--	--	--	--
GMSG-598	10/31/06	3:18 PM	28.66	36	-	--	0.4	12.1	0	--	--	--	--
GMSG-598	11/08/06	9:49 AM	28.28	49	-	--	0.6	12.3	0	--	--	--	--
GMSG-598	11/17/06	1:11 PM	28.69	36	-	--	0.6	10.3	0	--	--	--	--
GMSG-598	11/21/06	9:42 AM	28.92	39	-	--	0.3	10.6	0	--	--	--	--
GMSG-598	12/18/06	2:57 PM	29.08	32	-	--	0.4	7.5	0	--	--	--	--
GMSG-598	01/05/07	10:45 AM	28.4	41	-	--	0.3	5.9	0.6	--	--	--	--
GMSG-598	01/19/07	3:02 PM	28.83	15	T	--	0	7.1	0	--	--	--	--
GMSG-598	02/07/07	9:20 AM	28.85	0	-	--	--	--	--	--	--	--	--
GMSG-598	04/02/07	1:14 PM	28.66	45	-	--	--	--	--	--	--	--	--
GMSG-598	07/20/07	9:27 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-598	10/22/07	3:32 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-599	07/05/06	1:03 PM	28.92	72	T	--	--	--	--	--	--	--	--
GMSG-599	07/05/06	1:28 PM	28.92	72	T	--	0	7.8	11.9	--	--	--	--
GMSG-599	07/14/06	2:49 PM	28.67	85	-	--	--	--	--	--	--	--	--
GMSG-599	07/21/06	11:54 AM	28.91	72	-	--	--	--	--	--	--	--	--
GMSG-599	07/28/06	10:12 AM	28.69	80	T	--	--	--	--	--	--	--	--
GMSG-599	08/11/06	12:19 PM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-599	09/19/06	2:07 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-599	10/16/06	1:15 PM	28.63	46	0.09	--	--	--	--	--	--	--	--
GMSG-599	02/07/07	3:53 PM	28.79	15	-	--	--	--	--	--	--	--	--
GMSG-599	04/02/07	1:17 PM	28.66	45	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-599	07/20/07	9:30 AM	30.24	67	-	--	--	--	--	--	--	--	--
GMSG-599	10/22/07	3:28 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-600	06/23/06	10:17 AM	29.02	67	-	--	--	--	--	--	--	--	--
GMSG-600	06/27/06	9:23 AM	28.74	67	-	--	--	--	--	--	--	--	--
GMSG-600	07/05/06	12:26 PM	28.93	67	T	--	--	--	--	--	--	--	--
GMSG-600	07/14/06	10:11 AM	28.68	70	0.06	--	--	--	--	--	--	--	--
GMSG-600	08/04/06	1:39 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-600	09/06/06	3:14 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-600	10/10/06	9:29 AM	28.97	40	-	--	--	--	--	--	--	--	--
GMSG-600	02/02/07	10:25 AM	28.32	2	-	--	--	--	--	--	--	--	--
GMSG-600	04/09/07	9:44 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-600	07/20/07	2:02 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-600	10/19/07	9:46 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-601	06/23/06	10:22 AM	29.02	67	-	--	--	--	--	--	--	--	--
GMSG-601	06/27/06	9:28 AM	28.74	67	-	--	--	--	--	--	--	--	--
GMSG-601	07/05/06	12:32 PM	28.92	72	T	--	--	--	--	--	--	--	--
GMSG-601	07/14/06	10:22 AM	28.68	70	0.06	--	--	--	--	--	--	--	--
GMSG-601	08/04/06	1:45 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-601	09/06/06	3:08 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-601	10/10/06	9:33 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-601	02/02/07	10:02 AM	28.32	2	-	--	--	--	--	--	--	--	--
GMSG-601	04/09/07	9:41 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-601	07/20/07	2:00 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-601	10/19/07	9:40 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-602	06/23/06	10:10 AM	29.02	67	-	--	--	--	--	--	--	--	--
GMSG-602	06/27/06	9:17 AM	28.74	67	-	--	--	--	--	--	--	--	--
GMSG-602	07/05/06	9:27 AM	28.93	-	-	--	--	--	--	--	--	--	--
GMSG-602	07/14/06	10:05 AM	28.68	70	0.06	--	--	--	--	--	--	--	--
GMSG-602	08/04/06	1:34 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-602	09/06/06	3:19 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-602	10/10/06	9:18 AM	28.97	40	-	--	--	--	--	--	--	--	--
GMSG-602	02/02/07	10:34 AM	28.32	4	-	--	--	--	--	--	--	--	--
GMSG-602	04/09/07	9:46 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-602	07/20/07	2:04 PM	30.21	73	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-602	10/19/07	9:52 AM	28.98	53	T	--	0.2 CF	17.7 CF	0 CF	--	--	--	--
GMSG-603	07/21/06	11:40 AM	28.91	72	-	--	--	--	--	--	--	--	--
GMSG-603	07/28/06	9:07 AM	28.7	70	0.05	--	--	--	--	--	--	--	--
GMSG-603	08/04/06	1:29 PM	28.91	81	-	--	--	--	--	--	--	--	--
GMSG-603	09/06/06	3:22 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-603	10/10/06	9:23 AM	28.97	40	-	--	--	--	--	--	--	--	--
GMSG-603	11/15/06	12:57 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-603	02/02/07	10:40 AM	28.32	4	-	--	--	--	--	--	--	--	--
GMSG-603	04/09/07	9:48 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-603	07/20/07	2:10 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-603	07/24/07	9:41 AM	30.04	79	-	--	--	--	--	--	--	--	--
GMSG-603	10/19/07	9:57 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-604	07/21/06	11:47 AM	28.91	72	-	--	--	--	--	--	--	--	--
GMSG-604	07/28/06	9:13 AM	28.7	70	0.05	--	--	--	--	--	--	--	--
GMSG-604	08/04/06	1:50 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-604	09/06/06	3:04 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-604	10/10/06	9:37 AM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-604	11/15/06	1:00 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-604	02/02/07	10:06 AM	28.32	2	-	--	--	--	--	--	--	--	--
GMSG-604	04/09/07	9:39 AM	28.85	31	-	--	--	--	--	--	--	--	--
GMSG-604	07/20/07	1:58 PM	30.21	73	-	--	--	--	--	--	--	--	--
GMSG-604	10/19/07	9:36 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-605	06/23/06	10:40 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-605	06/27/06	9:57 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-605	07/05/06	12:42 PM	28.92	72	T	--	--	--	--	--	--	--	--
GMSG-605	07/13/06	1:20 PM	28.76	92	-	--	--	--	--	--	--	--	--
GMSG-605	08/11/06	10:23 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-605	09/19/06	10:52 AM	28.52	51	T	--	--	--	--	--	--	--	--
GMSG-605	10/11/06	7:41 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-605	02/03/07	9:02 AM	28.44	-6	-	--	--	--	--	--	--	--	--
GMSG-605	04/05/07	10:30 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-605	07/18/07	2:43 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-605	10/18/07	9:54 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-606	06/23/06	10:32 AM	29	69	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-606	06/27/06	9:51 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-606	07/05/06	12:55 PM	28.92	72	T	--	--	--	--	--	--	--	--
GMSG-606	07/13/06	1:12 PM	28.76	92	-	--	--	--	--	--	--	--	--
GMSG-606	08/11/06	10:17 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-606	09/19/06	10:54 AM	28.52	51	T	--	--	--	--	--	--	--	--
GMSG-606	10/11/06	7:34 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-606	02/03/07	9:17 AM	28.44	-6	-	--	--	--	--	--	--	--	--
GMSG-606	04/05/07	10:23 AM	28.88	20	T	--	--	--	--	--	--	--	--
GMSG-606	07/18/07	2:39 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-606	10/18/07	9:44 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-607	06/23/06	10:35 AM	29	69	-	--	--	--	--	--	--	--	--
GMSG-607	06/27/06	9:54 AM	28.73	71	-	--	--	--	--	--	--	--	--
GMSG-607	07/05/06	12:46 PM	28.92	72	T	--	--	--	--	--	--	--	--
GMSG-607	07/13/06	1:08 PM	28.76	92	-	--	--	--	--	--	--	--	--
GMSG-607	08/11/06	10:20 AM	28.97	65	-	--	--	--	--	--	--	--	--
GMSG-607	09/19/06	10:55 AM	28.52	51	T	--	--	--	--	--	--	--	--
GMSG-607	10/11/06	7:44 AM	28.13	43	0.04	--	--	--	--	--	--	--	--
GMSG-607	02/03/07	8:58 AM	28.44	-6	-	--	--	--	--	--	--	--	--
GMSG-607	04/05/07	10:32 AM	28.88	21	T	--	--	--	--	--	--	--	--
GMSG-607	07/18/07	2:37 PM	29.85	83	-	--	--	--	--	--	--	--	--
GMSG-607	10/18/07	10:00 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-608	07/28/06	10:03 AM	28.69	80	T	--	--	--	--	--	--	--	--
GMSG-608	08/04/06	2:38 PM	28.89	82	-	--	--	--	--	--	--	--	--
GMSG-608	08/11/06	11:00 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-608	09/19/06	9:53 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-608	10/11/06	11:03 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-608	11/15/06	1:38 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-608	02/01/07	9:05 AM	28.39	11	-	--	--	--	--	--	--	--	--
GMSG-608	04/05/07	2:26 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-608	07/19/07	3:27 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-608	10/17/07	2:34 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-609	07/28/06	9:43 AM	28.69	80	T	--	--	--	--	--	--	--	--
GMSG-609	08/04/06	2:43 PM	28.89	82	-	--	--	--	--	--	--	--	--
GMSG-609	08/11/06	10:57 AM	28.97	68	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-609	09/19/06	9:47 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-609	10/11/06	11:00 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-609	11/15/06	1:34 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-609	02/01/07	8:37 AM	28.39	11	-	--	--	--	--	--	--	--	--
GMSG-609	04/05/07	2:34 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-609	07/19/07	3:22 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-609	10/17/07	2:37 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-610	07/28/06	9:58 AM	28.69	80	T	--	--	--	--	--	--	--	--
GMSG-610	08/04/06	2:34 PM	28.89	82	-	--	--	--	--	--	--	--	--
GMSG-610	08/11/06	11:03 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-610	09/19/06	9:50 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-610	10/11/06	11:05 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-610	11/15/06	1:36 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-610	02/01/07	10:10 AM	28.4	11	-	--	--	--	--	--	--	--	--
GMSG-610	04/05/07	2:28 PM	28.88	23	T	--	--	--	--	--	--	--	--
GMSG-610	07/19/07	3:25 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-610	10/17/07	2:39 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-611	07/28/06	9:36 AM	28.69	80	T	--	--	--	--	--	--	--	--
GMSG-611	08/04/06	2:06 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-611	08/11/06	11:42 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-611	09/19/06	10:28 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-611	10/11/06	3:46 PM	28.12	36	T	--	--	--	--	--	--	--	--
GMSG-611	11/15/06	1:14 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-611	02/01/07	11:20 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-611	04/05/07	11:41 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-611	07/19/07	1:13 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-611	10/18/07	9:27 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-612	07/28/06	9:32 AM	28.69	80	T	--	--	--	--	--	--	--	--
GMSG-612	08/04/06	2:01 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-612	08/11/06	11:34 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-612	09/19/06	10:23 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-612	10/11/06	3:43 PM	28.12	36	T	--	--	--	--	--	--	--	--
GMSG-612	11/15/06	1:07 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-612	02/01/07	11:23 AM	28.4	13	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-612	04/05/07	11:43 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-612	07/19/07	1:15 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-612	10/18/07	9:24 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-613	07/28/06	9:28 AM	28.7	70	0.05	--	--	--	--	--	--	--	--
GMSG-613	08/04/06	2:15 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-613	08/11/06	11:37 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-613	09/19/06	10:26 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-613	10/11/06	3:40 PM	28.12	36	T	--	--	--	--	--	--	--	--
GMSG-613	11/15/06	1:10 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-613	02/01/07	11:27 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-613	04/05/07	11:46 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-613	07/19/07	1:17 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-613	10/18/07	9:32 AM	29.24	60	0.1	--	--	--	--	--	--	--	--
GMSG-614	07/28/06	9:24 AM	28.7	70	0.05	--	--	--	--	--	--	--	--
GMSG-614	08/04/06	2:10 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-614	08/11/06	11:40 AM	28.96	70	-	--	--	--	--	--	--	--	--
GMSG-614	09/19/06	10:21 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-614	10/11/06	3:37 PM	28.12	36	T	--	--	--	--	--	--	--	--
GMSG-614	11/15/06	1:12 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-614	02/01/07	11:20 AM	28.4	13	-	--	--	--	--	--	--	--	--
GMSG-614	04/05/07	11:48 AM	28.88	22	T	--	--	--	--	--	--	--	--
GMSG-614	07/19/07	1:19 PM	30	68	-	--	--	--	--	--	--	--	--
GMSG-614	10/18/07	9:20 AM	29.27	60	0.04	--	--	--	--	--	--	--	--
GMSG-615	08/04/06	2:50 PM	28.89	82	-	--	--	--	--	--	--	--	--
GMSG-615	08/11/06	8:03 AM	28.97	62	-	--	--	--	--	--	--	--	--
GMSG-615	08/18/06	10:43 AM	28.87	77	-	--	--	--	--	--	--	--	--
GMSG-615	09/19/06	1:32 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-615	10/10/06	2:54 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-615	11/15/06	2:19 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-615	02/05/07	10:12 AM	29.08	-3	-	--	--	--	--	--	--	--	--
GMSG-615	04/03/07	3:49 PM	28.52	37	-	--	--	--	--	--	--	--	--
GMSG-615	07/19/07	10:39 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-615	10/23/07	3:57 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-616	08/04/06	2:56 PM	28.89	82	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-616	08/11/06	8:07 AM	28.97	62	-	--	--	--	--	--	--	--	--
GMSG-616	08/18/06	10:46 AM	28.87	77	-	--	--	--	--	--	--	--	--
GMSG-616	09/19/06	1:35 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-616	10/10/06	2:51 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-616	11/15/06	2:22 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-616	02/05/07	10:20 AM	29.08	-3	-	--	--	--	--	--	--	--	--
GMSG-616	04/03/07	3:31 PM	28.52	37	-	--	--	--	--	--	--	--	--
GMSG-616	07/19/07	10:42 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-616	10/23/07	3:43 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-617	08/04/06	3:00 PM	28.89	82	-	--	--	--	--	--	--	--	--
GMSG-617	08/11/06	8:11 AM	28.97	62	-	--	--	--	--	--	--	--	--
GMSG-617	08/18/06	10:49 AM	28.87	77	-	--	--	--	--	--	--	--	--
GMSG-617	09/19/06	1:37 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-617	10/10/06	2:48 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-617	11/15/06	2:24 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-617	02/05/07	9:32 AM	29.08	-3	-	--	--	--	--	--	--	--	--
GMSG-617	04/03/07	3:34 PM	28.52	37	-	--	--	--	--	--	--	--	--
GMSG-617	07/19/07	10:44 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-617	10/23/07	3:47 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-618	08/04/06	3:06 PM	28.89	82	-	--	--	--	--	--	--	--	--
GMSG-618	08/11/06	7:53 AM	28.97	62	-	--	--	--	--	--	--	--	--
GMSG-618	08/18/06	10:53 AM	28.87	77	-	--	--	--	--	--	--	--	--
GMSG-618	09/19/06	1:41 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-618	10/10/06	2:43 PM	28.74	52	-	--	--	--	--	--	--	--	--
GMSG-618	11/15/06	2:27 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-618	02/05/07	9:45 AM	29.08	-3	-	--	--	--	--	--	--	--	--
GMSG-618	04/03/07	3:37 PM	28.52	37	-	--	--	--	--	--	--	--	--
GMSG-618	07/19/07	10:48 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-618	10/23/07	3:50 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-619	08/04/06	3:11 PM	28.89	82	-	--	--	--	--	--	--	--	--
GMSG-619	08/11/06	7:58 AM	28.97	62	-	--	--	--	--	--	--	--	--
GMSG-619	08/18/06	10:39 AM	28.87	77	-	--	--	--	--	--	--	--	--
GMSG-619	09/19/06	1:45 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-619	10/10/06	2:39 PM	28.74	52	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-619	11/15/06	2:29 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-619	02/05/07	10:01 AM	29.08	-3	-	--	--	--	--	--	--	--	--
GMSG-619	04/03/07	3:42 PM	28.52	37	-	--	--	--	--	--	--	--	--
GMSG-619	07/19/07	10:52 AM	29.99	67	-	--	--	--	--	--	--	--	--
GMSG-619	10/23/07	3:54 PM	29.69	52	-	--	--	--	--	--	--	--	--
GMSG-61R	08/18/06	10:14 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-61R	08/25/06	10:35 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-61R	09/01/06	12:29 PM	29.06	72	-	--	--	--	--	--	--	--	--
GMSG-61R	10/03/06	2:53 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-61R	11/15/06	12:49 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-61R	12/19/06	12:03 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-61R	01/17/07	12:11 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-61R	04/02/07	10:03 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-61R	07/18/07	11:27 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-61R	10/22/07	4:20 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-620	08/04/06	2:22 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-620	08/11/06	11:11 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-620	08/18/06	9:55 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-620	09/19/06	9:59 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-620	10/11/06	11:22 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-620	11/15/06	1:45 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-620	02/01/07	9:40 AM	28.4	11	-	--	--	--	--	--	--	--	--
GMSG-620	04/05/07	3:15 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-620	07/19/07	2:15 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-620	10/17/07	3:00 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-621	08/04/06	2:26 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-621	08/11/06	11:08 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-621	08/18/06	9:50 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-621	09/19/06	9:57 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-621	10/10/06	4:15 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-621	11/15/06	1:42 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-621	02/01/07	10:05 AM	28.4	11	-	--	--	--	--	--	--	--	--
GMSG-621	04/05/07	3:12 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-621	07/19/07	2:12 PM	30.03	66	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-621	10/17/07	2:56 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-622	08/04/06	2:29 PM	28.9	82	-	--	--	--	--	--	--	--	--
GMSG-622	08/11/06	11:06 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-622	08/18/06	9:47 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-622	09/19/06	9:55 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-622	10/10/06	4:11 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-622	11/15/06	1:41 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-622	02/01/07	10:00 AM	28.4	11	-	--	--	--	--	--	--	--	--
GMSG-622	04/05/07	3:09 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-622	07/19/07	2:10 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-622	10/17/07	2:52 PM	29.86	60	-	--	--	--	--	--	--	--	--
GMSG-623	08/11/06	10:47 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-623	08/18/06	9:44 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-623	08/25/06	10:57 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-623	09/19/06	9:42 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-623	10/11/06	10:44 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-623	11/15/06	1:28 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-623	02/01/07	8:30 AM	28.39	11	-	--	--	--	--	--	--	--	--
GMSG-623	04/05/07	2:44 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-623	07/19/07	3:14 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-623	10/22/07	11:54 AM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-624	08/11/06	10:54 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-624	08/18/06	9:37 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-624	08/25/06	10:50 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-624	09/19/06	9:44 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-624	10/11/06	10:49 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-624	11/15/06	1:32 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-624	02/01/07	8:20 AM	28.38	10	-	--	--	--	--	--	--	--	--
GMSG-624	04/05/07	2:37 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-624	07/19/07	3:19 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-624	10/22/07	11:58 AM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-625	08/11/06	10:51 AM	28.97	68	-	--	--	--	--	--	--	--	--
GMSG-625	08/18/06	9:41 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-625	08/25/06	10:54 AM	28.71	61	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-625	09/19/06	9:45 AM	28.5	50	-	--	--	--	--	--	--	--	--
GMSG-625	10/11/06	10:53 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-625	11/15/06	1:30 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-625	02/01/07	8:10 AM	28.38	10	-	--	--	--	--	--	--	--	--
GMSG-625	04/05/07	2:41 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-625	07/19/07	3:17 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-625	10/22/07	12:00 PM	30.03	51	-	--	--	--	--	--	--	--	--
GMSG-626	08/25/06	11:09 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-626	09/01/06	12:59 PM	29.05	73	-	--	--	--	--	--	--	--	--
GMSG-626	09/06/06	3:49 PM	28.86	73	-	--	--	--	--	--	--	--	--
GMSG-626	10/11/06	10:30 AM	28.06	42	0.03	--	--	--	--	--	--	--	--
GMSG-626	11/15/06	1:56 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-626	12/19/06	12:14 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-626	01/31/07	11:17 AM	28.65	11	-	--	--	--	--	--	--	--	--
GMSG-626	04/06/07	11:08 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-626	07/19/07	2:34 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-626	10/17/07	12:24 PM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-627	08/25/06	11:12 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-627	09/01/06	12:49 PM	29.05	73	-	--	--	--	--	--	--	--	--
GMSG-627	09/06/06	3:52 PM	28.86	73	-	--	--	--	--	--	--	--	--
GMSG-627	10/11/06	10:10 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-627	11/15/06	1:51 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-627	12/19/06	12:12 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-627	01/31/07	11:10 AM	28.65	11	-	--	--	--	--	--	--	--	--
GMSG-627	04/06/07	11:05 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-627	07/19/07	2:31 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-627	10/17/07	12:31 PM	29.88	57	-	--	--	--	--	--	--	--	--
GMSG-628	08/25/06	11:04 AM	28.71	61	T	--	--	--	--	--	--	--	--
GMSG-628	09/01/06	1:04 PM	29.05	73	-	--	--	--	--	--	--	--	--
GMSG-628	09/06/06	3:46 PM	28.86	73	-	--	--	--	--	--	--	--	--
GMSG-628	10/11/06	10:17 AM	28.08	43	0.04	--	--	--	--	--	--	--	--
GMSG-628	11/15/06	1:59 PM	28.72	43	-	--	--	--	--	--	--	--	--
GMSG-628	12/19/06	12:16 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-628	01/31/07	11:22 AM	28.65	11	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-628	04/06/07	11:11 AM	28.76	20	-	--	--	--	--	--	--	--	--
GMSG-628	07/19/07	2:36 PM	30.06	62	T	--	--	--	--	--	--	--	--
GMSG-628	10/17/07	12:20 PM	29.89	57	-	--	--	--	--	--	--	--	--
GMSG-629	09/22/06	1:20 PM	28.46	54	0.02	--	--	--	--	--	--	--	--
GMSG-629	09/29/06	11:00 AM	28.59	50	-	--	--	--	--	--	--	--	--
GMSG-629	10/02/06	1:17 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-629	10/09/06	10:51 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-629	11/15/06	12:25 PM	28.76	40	-	--	--	--	--	--	--	--	--
GMSG-629	12/19/06	11:46 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-629	01/02/07	2:20 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-629	04/02/07	2:21 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-629	07/17/07	2:19 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-629	10/22/07	2:47 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-62R	08/11/06	8:58 AM	28.97	64	-	--	--	--	--	--	--	--	--
GMSG-62R	08/18/06	10:06 AM	28.88	74	-	--	--	--	--	--	--	--	--
GMSG-62R	08/25/06	10:26 AM	28.71	60	-	--	--	--	--	--	--	--	--
GMSG-62R	09/06/06	2:43 PM	28.87	73	-	--	--	--	--	--	--	--	--
GMSG-62R	10/03/06	2:39 PM	28.84	70	-	--	--	--	--	--	--	--	--
GMSG-62R	11/15/06	12:45 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-62R	01/17/07	12:07 PM	29.05	23	-	--	--	--	--	--	--	--	--
GMSG-62R	04/02/07	9:58 AM	28.59	40	-	--	--	--	--	--	--	--	--
GMSG-62R	07/18/07	11:21 AM	29.89	79	-	--	--	--	--	--	--	--	--
GMSG-62R	10/22/07	4:15 PM	30.01	51	-	--	--	--	--	--	--	--	--
GMSG-630	09/19/06	1:53 PM	28.58	53	T	--	--	--	--	--	--	--	--
GMSG-630	09/29/06	11:03 AM	28.59	50	-	--	--	--	--	--	--	--	--
GMSG-630	10/02/06	1:23 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-630	10/09/06	10:54 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-630	11/15/06	12:28 PM	28.76	40	-	--	--	--	--	--	--	--	--
GMSG-630	12/19/06	11:48 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-630	01/02/07	2:23 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-630	04/02/07	2:25 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-630	07/17/07	2:24 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-630	10/22/07	2:26 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-631	09/19/06	1:57 PM	28.58	53	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-631	09/29/06	11:05 AM	28.59	50	-	--	--	--	--	--	--	--	--
GMSG-631	10/02/06	1:25 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-631	10/09/06	10:58 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-631	11/15/06	12:31 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-631	12/19/06	11:51 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-631	01/02/07	2:27 PM	28.83	40	-	--	--	--	--	--	--	--	--
GMSG-631	04/02/07	2:28 PM	28.67	45	-	--	--	--	--	--	--	--	--
GMSG-631	07/17/07	2:27 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-631	10/22/07	2:30 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-632	09/29/06	11:07 AM	28.59	50	-	--	--	--	--	--	--	--	--
GMSG-632	10/02/06	1:27 PM	28.63	78	-	--	--	--	--	--	--	--	--
GMSG-632	10/09/06	11:01 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-632	11/15/06	12:34 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-632	12/19/06	11:54 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-632	01/02/07	2:30 PM	28.8	40	-	--	--	--	--	--	--	--	--
GMSG-632	04/02/07	2:31 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-632	07/17/07	2:29 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-632	10/22/07	2:33 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-633	09/29/06	11:09 AM	28.59	50	-	--	--	--	--	--	--	--	--
GMSG-633	10/02/06	1:30 PM	28.63	80	-	--	--	--	--	--	--	--	--
GMSG-633	10/09/06	11:04 AM	29.14	47	-	--	--	--	--	--	--	--	--
GMSG-633	11/15/06	12:38 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-633	12/19/06	11:57 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-633	01/02/07	2:39 PM	28.8	40	-	--	--	--	--	--	--	--	--
GMSG-633	04/02/07	2:34 PM	28.69	48	-	--	--	--	--	--	--	--	--
GMSG-633	07/17/07	2:32 PM	29.91	81	-	--	--	--	--	--	--	--	--
GMSG-633	10/22/07	2:58 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-634	10/10/06	4:19 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-634	10/20/06	3:09 PM	28.54	44	-	--	--	--	--	--	--	--	--
GMSG-634	10/25/06	2:15 PM	28.95	44	-	--	--	--	--	--	--	--	--
GMSG-634	11/15/06	1:25 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-634	12/19/06	12:19 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-634	02/01/07	11:30 AM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-634	04/05/07	3:06 PM	28.87	25	T	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-634	07/19/07	2:25 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-634	10/17/07	2:14 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-635	10/10/06	4:25 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-635	10/20/06	3:13 PM	28.54	44	-	--	--	--	--	--	--	--	--
GMSG-635	10/25/06	2:19 PM	28.95	44	-	--	--	--	--	--	--	--	--
GMSG-635	11/15/06	1:22 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-635	12/19/06	12:23 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-635	02/01/07	11:34 AM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-635	04/05/07	3:01 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-635	07/19/07	2:20 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-635	10/17/07	2:17 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-636	10/10/06	4:27 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-636	10/20/06	3:15 PM	28.54	44	-	--	--	--	--	--	--	--	--
GMSG-636	10/25/06	2:21 PM	28.95	44	-	--	--	--	--	--	--	--	--
GMSG-636	11/15/06	1:20 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-636	12/19/06	12:25 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-636	02/01/07	11:35 AM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-636	04/05/07	2:59 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-636	07/19/07	2:18 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-636	10/17/07	2:21 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-637	10/10/06	4:23 PM	28.71	51	-	--	--	--	--	--	--	--	--
GMSG-637	10/20/06	3:11 PM	28.54	44	-	--	--	--	--	--	--	--	--
GMSG-637	10/25/06	2:17 PM	28.95	44	-	--	--	--	--	--	--	--	--
GMSG-637	11/15/06	1:23 PM	28.74	42	-	--	--	--	--	--	--	--	--
GMSG-637	12/19/06	12:21 PM	29	37	-	--	--	--	--	--	--	--	--
GMSG-637	02/01/07	11:31 AM	28.38	15	-	--	--	--	--	--	--	--	--
GMSG-637	04/05/07	3:03 PM	28.87	25	T	--	--	--	--	--	--	--	--
GMSG-637	07/19/07	2:22 PM	30.03	66	-	--	--	--	--	--	--	--	--
GMSG-637	10/17/07	2:10 PM	29.86	58	-	--	--	--	--	--	--	--	--
GMSG-638	10/25/06	2:48 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-638	10/31/06	2:38 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-638	11/10/06	10:06 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-638	12/19/06	11:27 AM	29.03	33	-	--	--	--	--	--	--	--	--
GMSG-638	03/16/07	2:20 PM	29.08	31	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-638	04/06/07	1:08 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-638	07/20/07	10:54 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-638	07/23/07	11:20 AM	30.11	72	-	--	--	--	--	--	--	--	--
GMSG-638	10/19/07	11:10 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-639	10/25/06	2:45 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-639	10/31/06	2:35 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-639	11/10/06	10:03 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-639	12/19/06	11:23 AM	29.03	33	-	--	--	--	--	--	--	--	--
GMSG-639	02/01/07	2:21 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-639	03/27/07	8:52 AM	29	46	-	--	--	--	--	--	--	--	--
GMSG-639	04/06/07	1:11 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-639	07/20/07	10:54 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-639	07/23/07	10:37 AM	30.11	72	-	--	--	--	--	--	--	--	--
GMSG-639	10/19/07	11:40 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-640	10/25/06	2:42 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-640	10/31/06	2:32 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-640	11/10/06	9:59 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-640	12/19/06	11:19 AM	29.03	33	-	--	--	--	--	--	--	--	--
GMSG-640	02/01/07	2:10 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-640	03/27/07	8:49 AM	29	46	-	--	--	--	--	--	--	--	--
GMSG-640	04/06/07	1:15 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-640	07/20/07	10:46 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-640	10/19/07	11:37 AM	28.98	53	T	--	--	--	--	--	--	--	--
GMSG-641	10/25/06	2:38 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-641	10/31/06	2:29 PM	28.64	37	-	--	--	--	--	--	--	--	--
GMSG-641	11/10/06	9:57 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-641	12/19/06	11:10 AM	29.03	33	-	--	--	--	--	--	--	--	--
GMSG-641	02/01/07	1:55 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-641	03/27/07	8:40 AM	29	46	-	--	--	--	--	--	--	--	--
GMSG-641	04/06/07	1:20 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-641	07/20/07	10:41 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-641	10/25/07	8:50 AM	30.36	36	-	--	--	--	--	--	--	--	--
GMSG-642	10/25/06	2:34 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-642	10/31/06	2:26 PM	28.64	37	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-642	11/10/06	9:53 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-642	12/19/06	11:06 AM	29.03	33	-	--	--	--	--	--	--	--	--
GMSG-642	02/01/07	1:45 PM	28.37	18	-	--	--	--	--	--	--	--	--
GMSG-642	03/27/07	8:35 AM	29	46	-	--	--	--	--	--	--	--	--
GMSG-642	04/06/07	1:23 PM	28.74	20	T	--	--	--	--	--	--	--	--
GMSG-642	07/20/07	10:38 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-642	10/19/07	11:20 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-643	10/25/06	3:00 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-643	10/31/06	2:44 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-643	11/10/06	10:14 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-643	12/19/06	11:34 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-643	02/01/07	2:55 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-643	03/27/07	8:59 AM	29	46	-	--	--	--	--	--	--	--	--
GMSG-643	04/06/07	1:40 PM	28.74	19	T	--	--	--	--	--	--	--	--
GMSG-643	07/20/07	11:05 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-643	10/19/07	10:53 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-644	10/25/06	3:05 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-644	10/31/06	2:46 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-644	11/10/06	10:17 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-644	12/19/06	11:37 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-644	02/01/07	2:58 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-644	03/27/07	9:02 AM	29	46	-	--	--	--	--	--	--	--	--
GMSG-644	04/06/07	1:44 PM	28.74	19	T	--	--	--	--	--	--	--	--
GMSG-644	07/20/07	11:08 AM	30.24	68	-	--	--	--	--	--	--	--	--
GMSG-644	10/19/07	10:37 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-644	10/19/07	10:59 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-645	10/25/06	2:55 PM	28.95	46	-	--	--	--	--	--	--	--	--
GMSG-645	10/31/06	2:41 PM	28.66	36	-	--	--	--	--	--	--	--	--
GMSG-645	11/10/06	10:10 AM	28.89	30	0.09	--	--	--	--	--	--	--	--
GMSG-645	12/19/06	11:30 AM	29	37	-	--	--	--	--	--	--	--	--
GMSG-645	02/01/07	2:50 PM	28.37	19	-	--	--	--	--	--	--	--	--
GMSG-645	03/27/07	8:55 AM	29	46	-	--	--	--	--	--	--	--	--
GMSG-645	04/06/07	1:34 PM	28.74	19	T	--	--	--	--	--	--	--	--
GMSG-645	07/20/07	11:00 AM	30.24	68	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-645	10/19/07	10:44 AM	28.98	54	T	--	--	--	--	--	--	--	--
GMSG-646	04/26/07	1:04 PM	28.66	51	-	--	--	--	--	--	--	--	--
GMSG-646	05/25/07	3:50 PM	28.99	69	-	--	--	--	--	--	--	--	--
GMSG-646	05/31/07	2:21 PM	28.76	78	-	--	--	--	--	--	--	--	--
GMSG-646	06/13/07	3:04 PM	28.91	85	-	--	--	--	--	--	--	--	--
GMSG-646	07/17/07	2:12 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-646	08/06/07	1:25 PM	29.86	82	-	--	--	--	--	--	--	--	--
GMSG-646	10/22/07	2:18 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-647	04/26/07	1:02 PM	28.66	51	-	--	--	--	--	--	--	--	--
GMSG-647	05/25/07	3:52 PM	28.99	69	-	--	--	--	--	--	--	--	--
GMSG-647	05/31/07	2:23 PM	28.76	78	-	--	--	--	--	--	--	--	--
GMSG-647	06/13/07	3:06 PM	28.91	85	-	--	--	--	--	--	--	--	--
GMSG-647	07/17/07	2:09 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-647	08/06/07	1:31 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-647	10/22/07	2:15 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-648	04/26/07	1:05 PM	28.66	51	-	--	--	--	--	--	--	--	--
GMSG-648	05/25/07	3:48 PM	28.99	69	-	--	--	--	--	--	--	--	--
GMSG-648	05/31/07	2:18 PM	28.76	78	-	--	--	--	--	--	--	--	--
GMSG-648	06/13/07	3:01 PM	28.91	85	-	--	--	--	--	--	--	--	--
GMSG-648	07/17/07	2:15 PM	29.92	82	-	--	--	--	--	--	--	--	--
GMSG-648	08/06/07	1:38 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-648	10/22/07	2:22 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-649	06/22/07	10:18 AM	28.97	70	-	--	--	--	--	--	--	--	--
GMSG-649	06/29/07	1:05 PM	28.96	76	-	--	--	--	--	--	--	--	--
GMSG-649	07/03/07	2:17 PM	29.94	79	-	--	--	--	--	--	--	--	--
GMSG-649	07/20/07	8:58 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-649	08/06/07	1:04 PM	29.86	82	-	--	--	--	--	--	--	--	--
GMSG-649	09/17/07	3:52 PM	30	67	-	--	--	--	--	--	--	--	--
GMSG-649	10/22/07	3:13 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-650	06/22/07	10:16 AM	28.97	70	-	--	--	--	--	--	--	--	--
GMSG-650	06/29/07	1:08 PM	28.96	76	-	--	--	--	--	--	--	--	--
GMSG-650	07/03/07	11:14 AM	29.98	76	-	--	--	--	--	--	--	--	--
GMSG-650	07/20/07	9:00 AM	30.25	65	-	--	--	--	--	--	--	--	--
GMSG-650	08/06/07	1:10 PM	29.86	82	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-650	09/17/07	3:55 PM	30	67	-	--	--	--	--	--	--	--	--
GMSG-650	10/22/07	3:10 PM	30.01	52	-	--	--	--	--	--	--	--	--
GMSG-651	07/17/07	10:26 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-651	07/24/07	9:50 AM	30.04	79	-	--	--	--	--	--	--	--	--
GMSG-651	08/06/07	1:45 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-651	09/17/07	3:31 PM	30	67	-	--	--	--	--	--	--	--	--
GMSG-651	11/01/07	4:18 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-651	11/30/07	11:18 AM	30.15	10	-	--	--	--	--	--	--	--	--
GMSG-652	07/03/07	10:56 AM	29.98	76	-	--	--	--	--	--	--	--	--
GMSG-652	07/17/07	10:11 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-652	07/24/07	10:00 AM	30.04	79	-	--	--	--	--	--	--	--	--
GMSG-652	08/06/07	2:08 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-652	09/17/07	3:42 PM	30	67	-	--	--	--	--	--	--	--	--
GMSG-652	11/01/07	3:56 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-653	07/03/07	11:00 AM	29.98	76	-	--	--	--	--	--	--	--	--
GMSG-653	07/17/07	10:05 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-653	07/24/07	9:57 AM	30.04	79	-	--	--	--	--	--	--	--	--
GMSG-653	08/06/07	1:53 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-653	09/17/07	3:37 PM	30	67	-	--	--	--	--	--	--	--	--
GMSG-653	11/01/07	4:04 PM	30.14	45	-	--	--	--	--	--	--	--	--
GMSG-654	07/03/07	11:04 AM	29.98	76	-	--	--	--	--	--	--	--	--
GMSG-654	07/17/07	9:56 AM	29.96	78	-	--	--	--	--	--	--	--	--
GMSG-654	07/24/07	9:53 AM	30.04	79	-	--	--	--	--	--	--	--	--
GMSG-654	08/06/07	2:02 PM	29.85	84	-	--	--	--	--	--	--	--	--
GMSG-654	09/17/07	3:34 PM	30	67	-	--	--	--	--	--	--	--	--
GMSG-654	11/01/07	4:11 PM	30.14	45	-	--	--	--	--	--	--	--	--
GP-1A	09/01/98	2:14 PM	28.51	73	-	-1.66	--	--	--	--	--	--	--
GP-1A	10/08/98	4:52 PM	28.98	51.1	-	-2.08	0	0	20.8	2.5	2.5	2	--
GP-1A	10/12/98	10:42 AM	28.72	53.1	-	-2.05	0	0	20.8	--	--	--	--
GP-1A	01/12/99	4:15 PM	28.79	3.9	T	0	0	0.1	19.5	--	--	--	--
GP-1A	01/14/99	10:59 AM	29.08	3	T	-1.95	0	0	19.2	--	--	--	--
GP-1A	03/15/99	10:00 AM	28.71	37.9	-	-2.52	0	0.1	21.9	--	--	--	--
GP-1A	09/28/99	11:53 AM	28.91	54	-	-1.68	0	0.5	20.9	5	5	4	--
GP-1A	10/05/99	5:30 PM	28.78	46.9	-	-1.4	0	0.7	20.1	6	6	6	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1A	10/12/99	10:32 AM	28.65	57	-	-1.54	0	0.7	19.8	2.25	2.25	2.25	--
GP-1A	10/19/99	11:13 AM	28.77	41	-	-1.69	0	0.1	20.4	1.25	0	1.25	--
GP-1A	11/22/99	2:22 PM	28.73	51.1	-	-1.2	0	0.2	20.2	<1.25	<1.25	<1.25	--
GP-1A	03/04/00	11:19 AM	28.58	48.9	-	0	0	0	21	<1	<1	1	--
GP-1A	03/05/00	10:13 AM	28.74	43	-	-1.56	0	0.1	20.1	<1	<1	<1	--
GP-1A	03/06/00	2:02 PM	28.72	62.1	-	-1.5	0	0	20.6	1.5	1.5	0.25	--
GP-1A	04/02/00	9:27 AM	28.51	50	-	-1.34	0	0.5	17.6	14.44	14.38	14.44	--
GP-1A	09/23/02	9:25 AM	28.88	49	-	-0.2	0	0.6	19.5	0	0	0	--
GP-1A	10/11/02	1:02 PM	28.85	70	-	-0.3	0	1.5	19.3	14.46	6.5	0	--
GP-1A	11/15/02	1:20 PM	28.99	28	T	-0.3	0	0.4	19.8	166	70	0	--
GP-1A	12/05/02	11:19 AM	28.83	18	-	0	0	0	20.2	488	170	0.6	--
GP-1A	01/03/03	10:43 AM	28.82	23	-	-0.5	0	0	20.5	0	0	0	--
GP-1A	02/11/03	11:37 AM	28.22	8	T	-0.5	0	0	19.8	11.82	0.9	1	--
GP-1A	03/05/03	12:12 PM	28.76	9	T	0	0	0	19.8	0	0	0	--
GP-1A	04/14/03	10:27 AM	28.6	74	-	-0.3	0	0.1	19.7	1.18	0.6	0.9	--
GP-1A	05/07/03	9:24 AM	28.78	55	-	-0.2	0	0	19.9	2.36	0.7	1	--
GP-1A	06/02/03	9:58 AM	28.8	68	-	-0.4	0	0	19.7	0	0	0	--
GP-1A	07/16/03	9:32 AM	28.85	76	-	-0.1	0	0	19.5	0.68	0	0.3	--
GP-1A	08/07/03	9:40 AM	28.84	70	-	-0.2	0	0.7	18.6	0	0	1.1	--
GP-1A	09/26/03	11:23 AM	28.46	51	-	-0.3	0	0	19.5	0.5	0	0.4	--
GP-1A	10/13/03	9:59 AM	28.58	58	-	-0.2	0	0.1	19.4	0	0	0	--
GP-1A	11/11/03	10:12 AM	28.49	41	-	-0.3	0	0	19.7	0.1	0	0.01	--
GP-1A	12/17/03	9:33 AM	28.58	24	T	-0.3	0	0	19.6	1.3	0	0.3	--
GP-1A	01/21/04	2:53 PM	28.33	24	T	-0.3	0	0	19.2	0.19	0	0	--
GP-1A	02/04/04	10:22 AM	29.14	4	-	-0.4	0	0	19.1	2.17	0.93	1.4	--
GP-1A	03/02/04	10:22 AM	28.7	37	-	-0.8	0	0	19.5	0.52	0	0.4	--
GP-1A	04/02/04	3:00 PM	28.86	56	-	-0.4	0	0	19.2	0.4	-0.5	-0.01	--
GP-1A	05/28/04	9:50 AM	28.74	54	-	-0.5	0	0	20.1	4.47	4.45	-0.21	--
GP-1A	06/29/04	11:05 AM	28.81	75	-	-0.5	0	0	19.7	2.19	0.6	1.65	--
GP-1A	07/22/04	11:45 AM	28.7	68	-	-0.587	0	0.6	18.9	4.57	0.75	2.47	--
GP-1A	08/12/04	10:34 AM	28.82	64	-	-0.504	0	0.5	19.8	--	--	--	--
GP-1A	09/17/04	3:20 PM	28.85	66	-	-0.3	0	0	20.3	89.3	44.7	0.03	--
GP-1A	10/13/04	11:50 AM	28.48	63	-	-0.2	0	0	20.2	14.03	7.03	-0.55	--
GP-1A	11/23/04	9:46 AM	28.55	41	-	-0.4	0	0	20.2	-0.45	-0.12	-0.9	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1A	01/06/05	3:40 PM	28.62	17	T	-0.2	0	0	18.9	0.06	-0.01	-0.06	--
GP-1A	01/19/05	11:05 AM	28.76	18	T	-0.2	0	0	19.6	0.39	0.21	0.01	--
GP-1A	02/08/05	10:34 AM	29.01	19	-	-0.9	0	0	20.4	--	--	--	--
GP-1A	03/16/05	10:28 AM	28.82	23	T	0	0	0	19.8	--	--	--	--
GP-1A	04/04/05	9:43 AM	28.8	52	-	-0.5	0	0	20.1	--	--	--	--
GP-1A	05/09/05	3:40 PM	28.46	65	T	-0.3	0	0	19.8	--	--	--	--
GP-1A	06/09/05	8:25 AM	28.65	74	-	-0.3	0	0	19.7	--	--	--	--
GP-1A	07/01/05	1:30 PM	28.71	64	-	-0.1	0	0	19.7	--	--	--	--
GP-1A	08/11/05	11:08 AM	28.85	69	-	-0.1	0	0	19.4	--	--	--	--
GP-1A	09/08/05	2:58 PM	28.9	69.98	-	0	0	0	19.6	--	--	--	--
GP-1A	10/19/05	11:00 AM	28.82	48	-	-0.47	0	0	19.5	--	--	--	--
GP-1A	11/03/05	4:00 PM	28.63	50	-	-0.5	0	0	19.6	--	--	--	--
GP-1A	12/08/05	1:32 PM	29.06	24	-	-0.1	0	0	19.9	--	--	--	--
GP-1A	01/31/06	12:14 PM	28.63	30	-	0	0	0	19.8	--	--	--	--
GP-1A	02/20/06	9:16 AM	28.64	9	-	-0.2	0	0	19.1	--	--	--	--
GP-1A	03/09/06	10:52 AM	28.17	37	-	-0.3	0	0	19.5	--	--	--	--
GP-1A	04/12/06	3:33 PM	28.69	67	-	-0.3	0	0	19.3	--	--	--	--
GP-1A	05/17/06	2:16 PM	28.38	63	-	-0.3	0	0	19.2	--	--	--	--
GP-1A	06/06/06	10:33 AM	28.6	70	-	-0.2	0	0	19.2	--	--	--	--
GP-1A	07/26/06	12:54 PM	28.5	83	-	-0.2	0	0.1	17.7	--	--	--	--
GP-1A	08/16/06	11:43 AM	28.97	80	-	-0.1	0	0	18.8	--	--	--	--
GP-1A	09/18/06	1:07 PM	28.38	59	-	-0.1	0	0	20.2	--	--	--	--
GP-1A	10/23/06	1:51 PM	28.7	39	-	-0.2	0	0	20.7	--	--	--	--
GP-1A	11/14/06	9:45 AM	28.7	35	-	-0.2	0	0	20.3	--	--	--	--
GP-1A	12/21/06	9:51 AM	29.05	26	-	-0.1	0	0	20.8	--	--	--	--
GP-1A	01/19/07	10:01 AM	28.82	15	-	-0.4	0	0	21.1	--	--	--	--
GP-1A	02/08/07	9:38 AM	28.84	5	-	-0.5	0	0	20.9	--	--	--	--
GP-1A	03/12/07	11:05 AM	28.73	42	-	-0.8	0	0	20.5	--	--	--	--
GP-1A	04/19/07	2:02 PM	28.93	65	-	-0.4	0	0	20.6	--	--	--	--
GP-1A	05/29/07	10:14 AM	28.9	74	-	-0.2	0	0	20	--	--	--	--
GP-1A	06/13/07	10:51 AM	28.97	82	-	-0.2	0	0	19	--	--	--	--
GP-1A	07/16/07	9:52 AM	29.99	72	-	-0.1	0	0	19.3	--	--	--	--
GP-1A	08/30/07	10:03 AM	30.27	69	-	-0.1	0	0.2	19.2	--	--	--	--
GP-1A	09/20/07	11:00 AM	30.26	56	-	0	0	0	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1A	10/17/07	10:19 AM	29.89	57	-	-0.2	0	0	19.2	--	--	--	--
GP-1A	11/21/07	11:15 AM	30.15	34	-	0	0	0	20.3	--	--	--	--
GP-1A	12/27/07	12:15 PM	29.96	26	-	0	0	0	20.1	--	--	--	--
GP-1B	10/08/98	5:01 PM	28.98	51.1	-	-2.35	0	0	20.7	<2.5	<2.5	2	--
GP-1B	10/12/98	10:44 AM	28.72	53.1	-	-2.31	0	0	20.8	--	--	--	--
GP-1B	01/12/99	4:17 PM	28.79	3.9	T	0.01	0	0	19.1	--	--	--	--
GP-1B	01/14/99	11:01 AM	29.08	3	T	-2.14	0	0	19.2	--	--	--	--
GP-1B	03/15/99	10:05 AM	28.71	37.9	-	-2.68	0	0	21	--	--	--	--
GP-1B	09/28/99	11:55 AM	28.91	54	-	-1.76	0	0	21.3	4	2.75	1.75	--
GP-1B	10/05/99	5:33 PM	28.78	46.9	-	-1.7	0	0	20.8	10.5	10.5	5	--
GP-1B	10/12/99	10:38 AM	28.65	57	-	-1.64	0	0	20.5	2.25	2.25	2.25	--
GP-1B	10/19/99	11:19 AM	28.77	41	-	-1.83	0	0	20.5	<1	<1	<1	--
GP-1B	11/22/99	3:55 PM	28.8	48	-	-1.27	0	0	20.6	<1	<1	<1	--
GP-1B	03/04/00	11:24 AM	28.58	48.9	-	0.01	0	0	20.8	1.5	1.5	1	--
GP-1B	03/05/00	10:16 AM	28.74	43	-	-1.58	0	0	20	--	--	--	--
GP-1B	03/06/00	2:06 PM	28.72	62.1	-	-1.52	0	0	20.6	0.5	0.5	0.25	--
GP-1B	04/02/00	9:31 AM	28.51	56	-	-1.34	0	0	18.2	14.21	14.21	14.21	--
GP-1B	09/23/02	9:30 AM	28.88	52	-	-0.1	0	0	20.5	0.37	0.32	0	--
GP-1B	10/11/02	1:05 PM	28.85	70	-	-0.3	0	0	21.1	9.73	4.9	0	--
GP-1B	11/15/02	1:24 PM	28.99	28	T	-0.4	0	0	20.2	326	38	0.1	--
GP-1B	12/05/02	10:36 AM	28.83	18	-	-0.2	0	0	20.5	0	0	0	--
GP-1B	01/03/03	10:45 AM	28.82	23	-	-0.5	0	0	20.6	0	0	0	--
GP-1B	02/11/03	11:41 AM	28.22	8	T	-0.5	0	0	19.8	1.16	1.1	1	--
GP-1B	03/05/03	12:14 PM	28.76	9	T	0	0	0	20	0	0	0	--
GP-1B	04/14/03	10:30 AM	28.58	77	-	1.2	0	0.2	19.9	0	0	0.9	--
GP-1B	05/07/03	9:28 AM	28.78	55	-	-0.2	0	0	19.9	2.25	0	0.9	--
GP-1B	06/02/03	10:00 AM	28.8	68	-	-0.4	0	0	19.8	0	0	0	--
GP-1B	07/16/03	9:34 AM	28.85	76	-	-0.1	0	0	19.6	0.61	0.44	0.15	--
GP-1B	08/07/03	9:46 AM	28.84	70	-	-0.2	0	0	19.5	2	0.95	2	--
GP-1B	09/26/03	11:26 AM	28.46	51	-	-0.3	0	0	19.6	0.27	0.15	0.2	--
GP-1B	10/13/03	10:02 AM	28.58	58	-	-0.3	0	0	19.6	0	0	0	--
GP-1B	11/11/03	10:14 AM	28.49	41	-	-0.4	0	0	19.5	0.05	0	0	--
GP-1B	12/17/03	9:37 AM	28.58	24	T	-0.3	0	0	19.6	2.2	0.3	2	--
GP-1B	01/21/04	2:56 PM	28.33	24	T	-0.3	0	0	19.3	0.3	0.25	0.1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1B	02/04/04	10:25 AM	29.14	4	-	-0.4	0	0	19.1	1.59	1.53	1.5	--
GP-1B	03/02/04	10:25 AM	28.7	37	-	-0.9	0	0	19.6	1.12	0.6	0.41	--
GP-1B	04/02/04	3:05 PM	28.86	56	-	-0.3	0	0	19.4	1.75	0.65	0.7	--
GP-1B	05/28/04	9:55 AM	28.74	54	-	-0.5	0	0	20	4.05	4.03	0.2	--
GP-1B	06/29/04	11:08 AM	28.81	75	-	-0.4	0	0	19.7	2.51	2.5	1.65	--
GP-1B	07/22/04	11:52 AM	28.7	68	-	-0.611	0	0	19.7	6.07	2.77	4.44	--
GP-1B	08/12/04	10:42 AM	28.82	64	-	-0.57	0	0	20.7	--	--	--	--
GP-1B	09/17/04	3:34 PM	28.86	67	-	-0.2	0	0	20.5	112	28.7	0.03	--
GP-1B	10/13/04	11:54 AM	28.48	63	-	-0.1	0	0	20.1	44.34	4.33	-0.65	--
GP-1B	11/23/04	9:49 AM	28.55	41	-	-0.4	0	0	20.2	-0.65	-0.71	-1.03	--
GP-1B	01/06/05	3:44 PM	28.62	17	T	-0.3	0	0	18.9	0.08	0.05	-0.01	--
GP-1B	01/19/05	11:07 AM	28.76	18	T	0	0	0	19.6	0.41	0.23	0.07	--
GP-1B	02/08/05	10:35 AM	29.01	19	-	-0.8	0	0	20.3	--	--	--	--
GP-1B	03/16/05	1:00 PM	28.76	26	T	0	0	0	19.9	--	--	--	--
GP-1B	04/04/05	9:44 AM	28.8	52	-	-0.5	0	0	20.2	--	--	--	--
GP-1B	05/09/05	3:41 PM	28.46	65	T	-0.3	0	0	19.8	--	--	--	--
GP-1B	06/09/05	8:26 AM	28.65	74	-	-0.3	0	0	19.8	--	--	--	--
GP-1B	07/01/05	1:32 PM	28.71	64	-	-0.2	0	0	19.8	--	--	--	--
GP-1B	08/11/05	11:10 AM	28.85	69	-	-0.1	0	0	19.6	--	--	--	--
GP-1B	09/08/05	3:00 PM	28.9	69.98	-	0	0	0	19.7	--	--	--	--
GP-1B	10/19/05	11:03 AM	28.82	48	-	-0.5	0	0	19.5	--	--	--	--
GP-1B	11/03/05	4:04 PM	28.63	50	-	-0.55	0	0	19.5	--	--	--	--
GP-1B	12/08/05	1:33 PM	29.06	24	-	-0.1	0	0	19.7	--	--	--	--
GP-1B	01/31/06	12:17 PM	28.63	30	-	0	0	0	19.8	--	--	--	--
GP-1B	02/20/06	9:21 AM	28.64	9	-	-0.3	0	0	19.3	--	--	--	--
GP-1B	03/09/06	10:55 AM	28.17	37	-	-0.5	0	0	19.5	--	--	--	--
GP-1B	04/12/06	3:35 PM	28.69	67	-	-0.3	0	0	19.3	--	--	--	--
GP-1B	05/17/06	2:17 PM	28.38	63	-	-0.3	0	0	19.2	--	--	--	--
GP-1B	06/06/06	10:35 AM	28.6	70	-	-0.2	0	0	19.2	--	--	--	--
GP-1B	07/26/06	12:58 PM	28.5	83	-	-0.1	0	0	17.7	--	--	--	--
GP-1B	08/16/06	11:45 AM	28.97	80	-	-0.1	0	0	18.9	--	--	--	--
GP-1B	09/18/06	1:09 PM	28.38	59	-	-0.1	0	0	20.3	--	--	--	--
GP-1B	10/23/06	1:52 PM	28.7	39	-	-0.2	0	0	20.8	--	--	--	--
GP-1B	11/14/06	9:47 AM	28.7	35	-	-0.2	0	0	20.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1B	12/21/06	9:53 AM	29.05	26	-	-0.1	0	0	20.7	--	--	--	--
GP-1B	01/19/07	10:04 AM	28.82	15	-	-0.5	0	0	21.1	--	--	--	--
GP-1B	02/08/07	9:40 AM	28.84	5	-	-0.5	0	0	21	--	--	--	--
GP-1B	03/12/07	11:07 AM	28.73	42	-	-0.8	0	0	20.6	--	--	--	--
GP-1B	04/19/07	2:04 PM	28.93	65	-	-0.4	0	0	20.7	--	--	--	--
GP-1B	05/29/07	10:17 AM	28.9	74	-	-0.3	0	0	20.1	--	--	--	--
GP-1B	06/13/07	10:53 AM	28.97	82	-	-0.2	0	0	19	--	--	--	--
GP-1B	07/16/07	9:54 AM	29.99	72	-	-0.1	0	0.1	19.3	--	--	--	--
GP-1B	08/30/07	10:05 AM	30.27	69	-	-0.2	0	0.1	19.1	--	--	--	--
GP-1B	09/20/07	11:02 AM	30.26	56	-	0	0	0	19.4	--	--	--	--
GP-1B	10/17/07	10:22 AM	29.89	57	-	-0.3	0	0	19.5	--	--	--	--
GP-1B	11/21/07	11:17 AM	30.15	34	-	0	0	0	20.5	--	--	--	--
GP-1B	12/27/07	12:16 PM	29.96	26	-	0	0	0	20.1	--	--	--	--
GP-1C	09/01/98	10:25 AM	28.59	66.9	-	-2.09	--	--	--	--	--	--	--
GP-1C	09/01/98	10:25 AM	28.59	66.9	-	-2.09	--	--	--	--	--	--	--
GP-1C	09/01/98	12:12 PM	28.57	71.1	T	-1.7	--	--	--	--	--	--	--
GP-1C	09/01/98	12:12 PM	28.57	71.1	T	-1.7	--	--	--	--	--	--	--
GP-1C	09/01/98	2:14 PM	28.51	73	-	-1.66	--	--	--	--	--	--	--
GP-1C	09/01/98	4:10 PM	28.5	68	-	-1.66	--	--	--	--	--	--	--
GP-1C	09/01/98	6:06 PM	28.52	66	-	-0.76	--	--	--	--	--	--	--
GP-1C	09/01/98	6:06 PM	28.52	66	-	-0.76	--	--	--	--	--	--	--
GP-1C	09/02/98	6:26 AM	28.52	51.1	-	-2.36	--	--	--	--	--	--	--
GP-1C	09/02/98	6:26 AM	28.52	51.1	-	-2.36	--	--	--	--	--	--	--
GP-1C	09/02/98	9:04 AM	28.53	60.1	-	-0.4	--	--	--	--	--	--	--
GP-1C	09/02/98	9:04 AM	28.53	60.1	-	-0.4	--	--	--	--	--	--	--
GP-1C	09/02/98	11:09 AM	28.54	61	-	-0.09	--	--	--	--	--	--	--
GP-1C	09/02/98	11:09 AM	28.54	61	-	-0.09	--	--	--	--	--	--	--
GP-1C	09/02/98	1:12 PM	28.52	63	-	-0.28	--	--	--	--	--	--	--
GP-1C	09/02/98	1:12 PM	28.52	63	-	-0.28	--	--	--	--	--	--	--
GP-1C	09/02/98	3:22 PM	28.5	64.9	-	-0.92	--	--	--	--	--	--	--
GP-1C	09/02/98	3:22 PM	28.5	64.9	-	-0.92	--	--	--	--	--	--	--
GP-1C	09/02/98	5:15 PM	28.52	64	-	-5.96	--	--	--	--	--	--	--
GP-1C	09/02/98	5:15 PM	28.52	64	-	-5.96	--	--	--	--	--	--	--
GP-1C	09/02/98	7:03 PM	28.53	55	-	-1.27	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1C	09/02/98	7:03 PM	28.53	55	-	-1.27	--	--	--	--	--	--	--
GP-1C	10/08/98	5:07 PM	28.98	51.1	-	-2.52	0	0	20.7	<2.5	<2.5	2	--
GP-1C	10/12/98	10:46 AM	28.72	53.1	-	-2.46	0	0	20.8	--	--	--	--
GP-1C	11/18/98	12:53 PM	28.78	35.1	-	-2.47	0	0	19.5	--	--	--	--
GP-1C	12/20/98	11:47 AM	29.08	18	0.01	-1.57	0	0	19	--	--	--	--
GP-1C	01/12/99	4:18 PM	28.79	3.9	T	0.02	0	0	19.1	--	--	--	--
GP-1C	01/14/99	11:04 AM	29.08	3	T	-2.28	0	0	19.2	--	--	--	--
GP-1C	03/15/99	10:10 AM	28.71	37.9	-	-2.82	0	0	20.2	--	--	--	--
GP-1C	07/22/99	10:14 AM	28.78	82.9	-	-3.22	0	0	20.8	--	--	--	--
GP-1C	07/27/99	11:02 AM	28.75	77	-	-2.5	0	0	20.1	--	--	--	--
GP-1C	08/04/99	8:55 AM	28.72	69.1	-	-2.45	0	0	21.1	--	--	--	--
GP-1C	08/10/99	11:17 AM	28.45	66.9	-	-2.25	0	0	20.6	--	--	--	--
GP-1C	08/17/99	3:37 PM	28.81	69.1	-	-2.26	0	0	20.8	--	--	--	--
GP-1C	08/20/99	4:21 PM	28.86	77	-	-2.09	0	0	20.6	--	--	--	--
GP-1C	08/24/99	10:08 AM	28.71	73.9	-	-2.08	0.2	0	20.4	--	--	--	--
GP-1C	08/31/99	5:50 PM	28.85	70	-	-2.15	0	0	20.7	33	33	2.5	--
GP-1C	09/03/99	8:39 AM	28.81	73	-	-0.77	0	0	20.7	90	90	3	--
GP-1C	09/08/99	4:53 PM	28.48	68	-	-1.79	0	0	20.8	4	4	2	--
GP-1C	09/14/99	12:16 PM	28.64	55.9	-	-1.77	0	0	20.6	75	25	1.5	--
GP-1C	09/21/99	1:56 PM	28.87	69.1	-	-1.63	0	0	20.6	25	25	1.5	--
GP-1C	09/28/99	11:58 AM	28.91	54	-	-1.75	0	0	21.4	14	14	8	--
GP-1C	10/05/99	5:37 PM	28.78	46.9	-	-1.73	0	0	20.8	7	7	3.5	--
GP-1C	10/12/99	10:42 AM	28.65	57	-	-1.61	0	0	20.6	2.25	2.25	2.25	--
GP-1C	10/19/99	11:23 AM	28.77	41	-	-1.8	0	0	20.6	<1	<1	<1	--
GP-1C	10/25/99	10:19 AM	28.51	53.1	-	-1.3	0	0	20.7	4	3.5	2	--
GP-1C	11/22/99	3:58 PM	28.8	48	-	-1.31	0	0	20.6	1.25	1.25	1	--
GP-1C	01/25/00	1:15 PM	28.8	16	-	-1.31	0	0	19.1	3.5	3.5	3.5	--
GP-1C	02/07/00	3:00 PM	29.04	25	-	-1.05	0	0	20	--	--	1.25	--
GP-1C	03/04/00	11:28 AM	28.58	48.9	-	0.04	0	0	20.9	2	2	1	--
GP-1C	03/05/00	10:21 AM	28.74	43	-	-1.61	0	0	20	--	--	--	--
GP-1C	03/06/00	2:09 PM	28.72	62.1	-	-1.5	0	0	20.6	3.5	3.5	0.25	--
GP-1C	04/02/00	9:34 AM	28.51	56	-	-1.3	0	0	18.1	14.22	14.22	14.22	--
GP-1C	04/27/00	3:10 PM	28.63	70	-	-1.37	0	0	18.3	0.53	0.53	0.3	--
GP-1C	06/03/00	12:46 PM	28.96	65	-	-1.19	0	0	20.6	3.1	3.1	0.6	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1C	06/29/00	3:44 PM	28.65	70	-	-1.31	0	0	20.1	6.5	6.5	5.5	--
GP-1C	07/23/00	1:23 PM	-	-	-	-1.23	0	0	21	5	5	5	--
GP-1C	08/20/00	11:40 AM	29.05	67	-	-1.4	0	0	20.4	40	40	2.5	--
GP-1C	09/23/00	12:42 PM	28.67	56	-	-0.32	0	0	20.2	5	1.75	1.75	--
GP-1C	10/21/00	12:05 PM	29.02	51	-	-1.03	0	0	20.5	0.67	0.55	0.43	--
GP-1C	11/18/00	12:05 PM	28.59	22	T	-0.94	0	0	20.4	4.61	2.98	0.1	--
GP-1C	12/18/00	11:20 AM	28.73	12	T	-0.94	0	0	19.9	1.7	1.6	0.5	--
GP-1C	01/09/01	10:00 AM	28.81	20	-	-0.95	0	0	19.9	14.91	2.95	1.43	--
GP-1C	02/08/01	3:49 PM	28.79	25	-	-0.58	0	0	19.3	0.39	0.34	0.3	--
GP-1C	02/10/01	9:00 AM	29.06	5	-	-0.6	--	--	--	--	--	--	--
GP-1C	02/12/01	1:58 PM	28.87	24	T	-0.1	--	--	--	--	--	--	--
GP-1C	02/13/01	9:06 AM	29.01	22	-	-0.6	0	0	19.8	43.8	42	0.6	--
GP-1C	03/07/01	2:38 PM	28.61	37	-	-0.66	0	0	19.7	1.26	0.96	0.9	--
GP-1C	03/08/01	2:33 PM	28.6	31	T	--	--	--	--	2.51	2.04	1.23	--
GP-1C	04/08/01	9:46 AM	28.53	43	-	-0.84	0	0	20.2	6.6	6.5	-0.1	--
GP-1C	05/05/01	10:09 AM	29.09	58	-	-0.61	0	0.1	18.5	3.48	2.4	-0.35	--
GP-1C	05/31/01	9:09 AM	28.92	58	-	-0.61	0	0	18.6	16	2.8	0	--
GP-1C	06/28/01	1:27 PM	28.94	86	-	-0.58	0	0.2	20.8	0	0	0	--
GP-1C	07/19/01	8:45 AM	28.81	74	-	-0.6	0	0	20.2	5.1	1.8	0	--
GP-1C	08/08/01	9:18 AM	28.76	83	-	-0.6	0	0	19.8	0.71	0.55	0	--
GP-1C	09/08/01	2:45 PM	28.48	75	-	-0.6	0.3	0	20	<1	<1	<1	--
GP-1C	10/04/01	9:45 AM	28.69	57	-	-0.55	0	0	20.3	81.1	76	5.38	--
GP-1C	11/14/01	9:03 AM	28.82	54	-	-0.55	0	0	20.8	113	74	-0.5	--
GP-1C	12/18/01	11:55 AM	28.52	35	-	-0.52	0	0	21	100	92	0.53	--
GP-1C	01/10/02	11:27 AM	28.55	37	-	-0.56	0	0	20.5	7.01	4.1	-0.02	--
GP-1C	02/15/02	4:20 PM	28.5	38	-	-0.81	0	0	20.2	-1.05	-2.25	-1.05	--
GP-1C	03/18/02	1:33 PM	28.97	42	-	-0.97	0	0.1	19.8	49	13.8	0	--
GP-1C	04/26/02	10:51 AM	29.03	43	-	-0.76	0	0	20.8	48	8.69	0	--
GP-1C	05/22/02	11:21 AM	28.84	66	-	-0.65	0	0	21.3	37	18	0	--
GP-1C	06/05/02	11:29 AM	28.77	65	-	-0.46	0	0	21.3	44	10	0	--
GP-1C	07/11/02	3:54 PM	29.02	79	-	-0.4	0	0	21.9	16.37	14.05	0.19	--
GP-1C	08/11/02	9:10 AM	28.72	76	-	0.7	0	0	21	310	3.32	-0.99	--
GP-1C	09/23/02	9:35 AM	28.88	52	-	0	0	0	20.4	1.05	0.7	0	--
GP-1C	10/11/02	1:08 PM	28.85	70	-	-0.1	0	0	20.9	7.08	3.56	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1C	11/15/02	1:27 PM	28.99	28	T	-0.4	0	0	20.2	75	25	0	--
GP-1C	12/05/02	10:38 AM	28.83	18	-	-0.2	0	0	20.5	0.01	0	0	--
GP-1C	01/03/03	10:47 AM	28.82	23	-	0	0	0	20.6	0	0	0	--
GP-1C	02/11/03	11:44 AM	28.22	8	T	0	0	0	19.8	0.28	0.2	1	--
GP-1C	03/05/03	12:17 PM	28.76	9	T	0	0	0	20.1	0	0	0	--
GP-1C	04/14/03	10:34 AM	28.58	77	-	-0.5	0	0.1	19.9	8.08	8.08	1	--
GP-1C	05/07/03	9:33 AM	28.78	59	-	-0.4	0	0	19.9	3.86	0	1	--
GP-1C	06/02/03	10:03 AM	28.8	68	-	-0.2	0	0	19.8	0	0	0	--
GP-1C	07/16/03	9:37 AM	28.85	76	-	-0.1	0	0	19.6	0.94	0.9	0.1	--
GP-1C	08/07/03	9:49 AM	28.84	70	-	-0.2	0	0	19.5	0.83	0.65	0	--
GP-1C	09/26/03	11:29 AM	28.46	51	-	-0.3	0	0	19.6	1.62	1.4	0.3	--
GP-1C	10/13/03	10:04 AM	28.58	58	-	-0.3	0	0	19.6	0	0	0	--
GP-1C	11/11/03	10:16 AM	28.49	41	-	-0.3	0	0	19.5	0.13	0	0.05	--
GP-1C	12/17/03	9:40 AM	28.58	24	T	-0.4	0	0	19.8	3.19	0	2.4	--
GP-1C	01/21/04	2:59 PM	28.33	24	T	-0.6	0	0	19.3	0.35	0.3	0.2	--
GP-1C	02/04/04	10:28 AM	29.14	4	-	-0.4	0	0	19.1	3.91	0	1.5	--
GP-1C	03/02/04	10:30 AM	28.72	37	-	-0.8	0	0	19.6	1.66	0	0.7	--
GP-1C	04/02/04	3:10 PM	28.86	56	-	-0.4	0	0.1	19.3	6.02	5.72	-0.1	--
GP-1C	05/28/04	10:00 AM	28.74	54	-	-0.5	0	0	20	3.22	3.21	0.16	--
GP-1C	06/29/04	11:12 AM	28.81	75	-	-0.4	0	0	19.8	2.49	2.3	1.65	--
GP-1C	07/22/04	11:58 AM	28.7	68	-	-0.664	0	0	19.5	3.49	3.41	2.22	--
GP-1C	08/12/04	10:50 AM	28.82	64	-	-0.562	0	0	20.4	--	--	--	--
GP-1C	09/17/04	3:41 PM	28.86	67	-	-0.2	0	0	20.5	20.4	13.1	-0.01	--
GP-1C	10/13/04	11:57 AM	28.48	63	-	-0.2	0	0	20.1	7.51	2.85	-0.63	--
GP-1C	11/23/04	9:52 AM	28.55	41	-	-0.5	0	0	20.3	-0.74	-0.85	-1.04	--
GP-1C	01/06/05	3:46 PM	28.62	17	T	-0.3	0	0	18.9	0.05	0	0.02	--
GP-1C	01/19/05	11:09 AM	28.76	18	T	0	0	0	19.7	0.3	0.26	0.03	--
GP-1C	02/08/05	10:37 AM	29.01	19	-	-0.7	0	0	20.2	--	--	--	--
GP-1C	03/16/05	1:05 PM	28.76	26	T	0	0	0	20	--	--	--	--
GP-1C	04/04/05	9:45 AM	28.8	52	-	-0.6	0	0	20.1	--	--	--	--
GP-1C	05/09/05	3:42 PM	28.46	65	T	-0.3	0	0	19.8	--	--	--	--
GP-1C	06/09/05	8:27 AM	28.65	74	-	-0.4	0	0	19.8	--	--	--	--
GP-1C	07/01/05	1:34 PM	28.71	64	-	-0.2	0	0	19.7	--	--	--	--
GP-1C	08/11/05	11:12 AM	28.85	69	-	-0.1	0	0	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-1C	09/08/05	3:02 PM	28.9	69.98	-	-0.1	0	0	19.5	--	--	--	--
GP-1C	10/19/05	11:05 AM	28.82	48	-	-0.5	0	0	19.7	--	--	--	--
GP-1C	11/03/05	4:07 PM	28.63	50	-	-0.5	0	0	19.6	--	--	--	--
GP-1C	12/08/05	1:34 PM	29.06	24	-	-0.1	0	0	19.9	--	--	--	--
GP-1C	01/31/06	12:19 PM	28.63	30	-	0	0	0	19.8	--	--	--	--
GP-1C	02/20/06	9:23 AM	28.64	9	-	-0.2	0	0	19.3	--	--	--	--
GP-1C	03/09/06	10:56 AM	28.17	37	-	-0.4	0	0	19.5	--	--	--	--
GP-1C	04/12/06	3:36 PM	28.69	67	-	-0.2	0	0	19.3	--	--	--	--
GP-1C	05/17/06	2:18 PM	28.38	63	-	-0.3	0	0	19.2	--	--	--	--
GP-1C	06/06/06	10:36 AM	28.6	70	-	-0.2	0	0	19.1	--	--	--	--
GP-1C	07/26/06	1:01 PM	28.5	83	-	-0.1	0	0	17.9	--	--	--	--
GP-1C	08/16/06	11:47 AM	28.97	80	-	-0.1	0	0	18.9	--	--	--	--
GP-1C	09/18/06	1:11 PM	28.38	59	-	-0.1	0	0	20.2	--	--	--	--
GP-1C	10/23/06	1:54 PM	28.7	39	-	-0.1	0	0	20.8	--	--	--	--
GP-1C	11/14/06	9:48 AM	28.7	35	-	-0.1	0	0	20.2	--	--	--	--
GP-1C	12/21/06	9:55 AM	29.05	26	-	-0.1	0	0	20.8	--	--	--	--
GP-1C	01/19/07	10:06 AM	28.82	15	-	-0.4	0	0	21.1	--	--	--	--
GP-1C	02/08/07	9:42 AM	28.84	5	-	-0.5	0	0	21	--	--	--	--
GP-1C	03/12/07	11:09 AM	28.73	42	-	-0.8	0	0	20.5	--	--	--	--
GP-1C	04/19/07	2:06 PM	28.93	65	-	-0.3	0	0	20.6	--	--	--	--
GP-1C	05/29/07	10:19 AM	28.9	74	-	-0.3	0	0	20	--	--	--	--
GP-1C	06/13/07	10:55 AM	28.97	82	-	-0.3	0	0.1	19.1	--	--	--	--
GP-1C	07/16/07	9:56 AM	29.99	72	-	-0.1	0	0.1	19.3	--	--	--	--
GP-1C	08/30/07	10:07 AM	30.27	69	-	-0.1	0	0.1	19.3	--	--	--	--
GP-1C	09/20/07	11:04 AM	30.26	56	-	0	0	0	19.4	--	--	--	--
GP-1C	10/17/07	10:24 AM	29.89	57	-	-0.2	0	0	19.4	--	--	--	--
GP-1C	11/21/07	11:18 AM	30.15	34	-	0	0	0	20.5	--	--	--	--
GP-1C	12/27/07	12:17 PM	29.96	26	-	0	0	0	20.3	--	--	--	--
GP-2A	10/12/98	11:02 AM	28.72	53.1	-	-2.18	0	0	20.8	--	--	--	--
GP-2A	01/14/99	9:18 AM	29.1	1	-	-1.94	0	0.1	19.3	--	--	--	--
GP-2A	03/15/99	10:53 AM	28.69	39.9	-	-2.29	0	0	18	--	--	--	--
GP-2A	09/28/99	11:18 AM	28.9	53.1	-	-3.15	0	0.1	21.1	7.5	7.5	2.25	--
GP-2A	10/05/99	4:45 PM	28.76	48	-	-3.21	0	0.1	20.4	25	23	2	--
GP-2A	10/12/99	2:52 PM	28.55	62.1	-	-3.08	0	0	20.8	1	1	1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-2A	10/19/99	10:03 AM	28.79	39.9	-	-3.17	0	0	20.7	6.75	6.75	2.75	--
GP-2A	11/22/99	1:41 PM	28.73	51.1	-	-2.36	0	0	20.3	13	13	<1	--
GP-2A	03/04/00	10:53 AM	28.58	48.9	-	0	0	0	20	9.5	9.5	2	--
GP-2A	03/05/00	11:57 AM	28.74	51.1	-	-0.59	0	0	20.5	60	60	1	--
GP-2A	03/06/00	2:45 PM	28.73	62.1	-	-0.63	0	0	20.8	50	0.5	0.5	--
GP-2A	04/02/00	10:40 AM	28.5	56	-	-2.45	0	0	18.4	14.57	14.57	14.3	--
GP-2A	01/31/02	2:32 PM	28.91	23	0.01	--	--	--	--	3.23	-1.15	-0.64	--
GP-2A	09/23/02	9:44 AM	28.88	52	-	-0.9	0	0	20.4	1.48	1.4	0	--
GP-2A	10/11/02	1:15 PM	28.85	70	-	-0.8	0	0	21.1	7.97	7.82	0	--
GP-2A	11/15/02	1:03 PM	28.99	28	T	-0.8	0	0	20.2	61.61	22	0	--
GP-2A	12/05/02	10:50 AM	28.83	18	-	-1	0	0	20.5	1.85	1.65	0.05	--
GP-2A	01/03/03	10:52 AM	28.82	23	-	-1.2	0	0	20.5	1.79	1.73	0	--
GP-2A	02/11/03	11:59 AM	28.22	8	T	-0.3	0	0	19.7	1.12	1.1	1	--
GP-2A	03/05/03	12:22 PM	28.76	9	T	0	0	0	20.1	2.95	0	0	--
GP-2A	04/14/03	10:44 AM	28.58	77	-	-0.9	0	0	20.1	10.65	4.9	0.9	--
GP-2A	05/07/03	9:46 AM	28.78	59	-	-1.1	0	0	19.8	2.84	1.7	1.1	--
GP-2A	06/02/03	10:10 AM	28.8	68	-	-0.9	0	0	19.8	0	0	0	--
GP-2A	07/16/03	9:44 AM	28.85	76	-	-0.8	0	0	19.5	0.16	0.04	0.04	--
GP-2A	08/07/03	9:57 AM	28.84	70	-	-0.9	0	0.2	19.2	0.47	0.4	0	--
GP-2A	09/26/03	11:40 AM	28.42	53	-	-0.9	0	0	19.5	0.31	0	0.1	--
GP-2A	10/13/03	10:11 AM	28.58	58	-	-1	0	0	19.4	0	0	0	--
GP-2A	11/11/03	10:22 AM	28.49	41	-	-0.8	0	0	19.7	0.03	0	0.05	--
GP-2A	12/17/03	9:53 AM	28.58	24	T	-1	0	0	19.5	0.26	0	0.2	--
GP-2A	01/21/04	3:15 PM	28.33	24	T	-1	0	0	19.3	0.64	0.6	0.65	--
GP-2A	02/04/04	10:41 AM	29.16	11	-	-1	0	0	19	2.32	1.7	1.5	--
GP-2A	03/02/04	10:43 AM	28.72	37	-	-1.4	0	0	19.5	2.06	0	0.8	--
GP-2A	04/02/04	3:15 PM	28.86	56	-	-1.1	0	0	19.5	6.97	6.9	-0.15	--
GP-2A	05/28/04	10:10 AM	28.74	54	-	-0.9	0	0	20.2	4.2	4.17	0.25	--
GP-2A	06/29/04	11:20 AM	28.81	75	-	-1.1	0	0	19.6	1.64	1.6	1.6	--
GP-2A	07/22/04	12:08 PM	28.7	68	-	-1.32	0	0	19.6	2	1.65	1.71	--
GP-2A	08/12/04	11:04 AM	28.82	64	-	-1.322	0	0.1	20.3	--	--	--	--
GP-2A	09/17/04	3:58 PM	28.86	67	-	-1	0	0.1	20.3	2.8	2.2	0.03	--
GP-2A	10/13/04	12:07 PM	28.48	63	-	0	0	0	20	1.82	1.35	-0.66	--
GP-2A	11/23/04	9:58 AM	28.55	41	-	-1.2	0	0	20.2	-0.81	-0.92	-1.1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-2A	01/07/05	8:17 AM	28.74	2	-	-0.9	0	0	19.3	8.82	8.66	0.06	--
GP-2A	01/19/05	11:18 AM	28.76	18	T	-0.1	0	0	19.6	0.67	0.43	0.36	--
GP-2A	02/08/05	10:48 AM	29.01	19	-	-1.4	0	0	20.1	--	--	--	--
GP-2A	03/16/05	1:25 PM	28.76	26	T	0	0	0	19.8	--	--	--	--
GP-2A	04/04/05	9:52 AM	28.8	52	-	-1	0	0	20	--	--	--	--
GP-2A	05/10/05	10:45 AM	28.46	66	-	-1.1	0	0	19.7	--	--	--	--
GP-2A	06/09/05	8:33 AM	28.65	77	-	-0.8	0	0.1	19.5	--	--	--	--
GP-2A	07/01/05	1:35 PM	28.71	64	-	-0.9	0	0	19.8	--	--	--	--
GP-2A	08/11/05	11:15 AM	28.85	69	-	-0.7	0	0	19.7	--	--	--	--
GP-2A	09/08/05	3:09 PM	28.9	69.98	-	-0.7	0	0	19.6	--	--	--	--
GP-2A	10/19/05	11:20 AM	28.82	48	-	-1.2	0	0	19.6	--	--	--	--
GP-2A	11/03/05	4:15 PM	28.63	50	-	-1.2	0	0	19.7	--	--	--	--
GP-2A	12/05/05	11:00 AM	28.76	8	-	-0.7	0	0	19.3	--	--	--	--
GP-2A	01/31/06	12:42 PM	28.61	32	-	-0.6	0	0	19.8	--	--	--	--
GP-2A	02/20/06	9:32 AM	28.62	15	-	-0.9	0	0	19.3	--	--	--	--
GP-2A	03/09/06	11:05 AM	28.17	37	-	-0.9	0	0	19.3	--	--	--	--
GP-2A	04/12/06	3:41 PM	28.69	67	-	-0.9	0	0	19.4	--	--	--	--
GP-2A	05/17/06	2:23 PM	28.38	63	-	-0.9	0	0	19.2	--	--	--	--
GP-2A	06/06/06	10:41 AM	28.6	70	-	-0.8	0	0	19.1	--	--	--	--
GP-2A	07/26/06	1:06 PM	28.5	83	-	-0.6	0	0	18.2	--	--	--	--
GP-2A	08/16/06	11:52 AM	28.97	80	-	-0.8	0	0	19	--	--	--	--
GP-2A	09/18/06	1:16 PM	28.38	59	-	-0.7	0	0	20.3	--	--	--	--
GP-2A	10/23/06	1:59 PM	28.7	39	-	-0.7	0	0	20.8	--	--	--	--
GP-2A	11/14/06	9:54 AM	28.7	35	-	-0.6	0	0	20.3	--	--	--	--
GP-2A	12/21/06	10:00 AM	29.05	26	-	-0.9	0	0	20.8	--	--	--	--
GP-2A	01/19/07	10:12 AM	28.82	15	-	-1	0	0	21	--	--	--	--
GP-2A	02/08/07	9:48 AM	28.84	5	-	-1.1	0	0	21.1	--	--	--	--
GP-2A	03/12/07	11:18 AM	28.73	42	-	-1.9	0	0	20.5	--	--	--	--
GP-2A	04/19/07	2:10 PM	28.93	65	-	-1	0	0	20.7	--	--	--	--
GP-2A	05/29/07	10:23 AM	28.9	74	-	-0.9	0	0	20	--	--	--	--
GP-2A	06/13/07	11:01 AM	28.97	82	-	-0.9	0	0	19.1	--	--	--	--
GP-2A	07/16/07	10:01 AM	29.99	72	-	-0.8	0	0	19.4	--	--	--	--
GP-2A	08/30/07	10:12 AM	30.27	69	-	-0.7	0	0	19.3	--	--	--	--
GP-2A	09/20/07	11:10 AM	30.26	56	-	-0.7	0	0	19.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-2A	10/17/07	10:30 AM	29.9	56	-	-0.9	0	0	19.4	--	--	--	--
GP-2A	11/21/07	11:23 AM	30.15	34	-	-0.7	0	0	20.3	--	--	--	--
GP-2A	12/27/07	12:25 PM	29.96	26	-	-0.8	0	0	20.1	--	--	--	--
GP-2B	09/01/98	10:18 AM	28.59	66.9	-	-2.06	--	--	--	--	--	--	--
GP-2B	09/01/98	10:18 AM	28.59	66.9	-	-2.06	--	--	--	--	--	--	--
GP-2B	09/01/98	12:26 PM	28.57	71.1	T	-0.56	--	--	--	--	--	--	--
GP-2B	09/01/98	12:26 PM	28.57	71.1	T	-0.56	--	--	--	--	--	--	--
GP-2B	09/01/98	2:27 PM	28.51	73	-	-1.08	--	--	--	--	--	--	--
GP-2B	09/01/98	2:27 PM	28.51	73	-	-1.08	--	--	--	--	--	--	--
GP-2B	09/01/98	4:24 PM	28.5	68	-	-1.18	--	--	--	--	--	--	--
GP-2B	09/01/98	6:22 PM	28.52	66	-	-2.73	--	--	--	--	--	--	--
GP-2B	09/01/98	6:22 PM	28.52	66	-	-2.73	--	--	--	--	--	--	--
GP-2B	09/02/98	6:44 AM	28.53	53.1	-	-2.5	--	--	--	--	--	--	--
GP-2B	09/02/98	6:44 AM	28.53	53.1	-	-2.5	--	--	--	--	--	--	--
GP-2B	09/02/98	9:19 AM	28.53	60.1	-	-4.99	--	--	--	--	--	--	--
GP-2B	09/02/98	9:19 AM	28.53	60.1	-	-4.99	--	--	--	--	--	--	--
GP-2B	09/02/98	11:23 AM	28.54	61	-	-0.54	--	--	--	--	--	--	--
GP-2B	09/02/98	11:23 AM	28.54	61	-	-0.54	--	--	--	--	--	--	--
GP-2B	09/02/98	1:33 PM	28.51	64.9	-	-1.11	--	--	--	--	--	--	--
GP-2B	09/02/98	1:33 PM	28.51	64.9	-	-1.11	--	--	--	--	--	--	--
GP-2B	09/02/98	3:34 PM	28.51	64	-	-0.72	--	--	--	--	--	--	--
GP-2B	09/02/98	3:34 PM	28.51	64	-	-0.72	--	--	--	--	--	--	--
GP-2B	09/02/98	5:27 PM	28.52	64	-	-0.42	--	--	--	--	--	--	--
GP-2B	09/02/98	5:27 PM	28.52	64	-	-0.42	--	--	--	--	--	--	--
GP-2B	09/02/98	7:15 PM	28.53	55	-	-0.26	--	--	--	--	--	--	--
GP-2B	09/02/98	7:15 PM	28.53	55	-	-0.26	--	--	--	--	--	--	--
GP-2B	10/08/98	5:15 PM	28.98	51.1	-	-0.07	0	0	20.5	<2.5	<2.5	2	--
GP-2B	10/12/98	11:04 AM	28.72	53.1	-	-2.13	0	0	20.8	--	--	--	--
GP-2B	11/18/98	1:04 PM	28.78	35.1	-	-2.06	0	0.8	18.9	--	--	--	--
GP-2B	12/20/98	1:58 PM	29.02	19	0.02	-1.95	0	0	19	--	--	--	--
GP-2B	01/12/99	12:20 PM	28.72	1.9	-	0	0	0.6	19.1	--	--	--	--
GP-2B	01/14/99	9:20 AM	29.1	1	-	-1.91	0	0.6	18.8	--	--	--	--
GP-2B	03/15/99	10:59 AM	28.69	39.9	-	-2.25	0	0.3	17.4	--	--	--	--
GP-2B	07/22/99	10:09 AM	28.78	82.9	-	-3.01	0	0	20.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-2B	07/27/99	10:20 AM	28.77	73.9	-	-4	0	0.1	20.1	--	--	--	--
GP-2B	08/04/99	8:15 AM	28.72	64	-	-4.05	0	0	21.3	--	--	--	--
GP-2B	08/10/99	10:49 AM	28.45	66.9	-	-3.72	0	0	20.6	--	--	--	--
GP-2B	08/17/99	3:01 PM	28.81	70	-	-3.65	0	0	20.5	--	--	--	--
GP-2B	08/20/99	3:45 PM	28.86	77	-	-3.54	0	0	20.4	--	--	--	--
GP-2B	08/24/99	9:33 AM	28.71	73.9	-	-3.49	0.1	0	20.4	--	--	--	--
GP-2B	08/31/99	5:21 PM	28.86	73	-	-3.08	0	0	20.5	70	70	2.5	--
GP-2B	09/03/99	8:13 AM	28.8	69.1	-	-1.56	0	0.1	20.4	75	75	3	--
GP-2B	09/08/99	4:18 PM	28.47	70	-	-0.79	0	0.5	19.8	15	10	3	--
GP-2B	09/14/99	11:36 AM	28.64	55.9	-	-3.21	0	0	20.6	87	87	1.5	--
GP-2B	09/21/99	1:31 PM	28.87	69.1	-	-3.03	0	0	20.5	50	50	1.5	--
GP-2B	09/28/99	11:20 AM	28.9	53.1	-	-3.07	0	0.2	20.9	2	2	2.25	--
GP-2B	10/05/99	4:48 PM	28.76	48	-	-3.11	0	0.5	20.2	15	15	2	--
GP-2B	10/12/99	2:57 PM	28.55	62.1	-	-2.91	0	0.1	20.6	1	1	1	--
GP-2B	10/19/99	10:09 AM	28.79	39.9	-	-3.18	0	0	20.7	3	3	1.25	--
GP-2B	10/25/99	9:32 AM	28.51	53.1	-	-2.53	0	0.3	20.4	3	3	3	--
GP-2B	11/22/99	1:45 PM	28.73	51.1	-	-2.3	0	0.4	19.9	5.75	5.75	<1	--
GP-2B	01/25/00	2:45 PM	28.83	13	-	-2.38	0	0	19.9	3	3	1	--
GP-2B	02/07/00	3:36 PM	29.06	24.1	-	-2.35	0	0	19.9	--	--	--	--
GP-2B	02/08/00	9:15 AM	28.89	16	-	-2.22	0	0	19.6	1000	8	<1	--
GP-2B	03/04/00	10:57 AM	28.58	48.9	-	-0.48	0	0.1	20.9	3.25	3	2.25	--
GP-2B	03/05/00	12:01 PM	28.74	51.1	-	-0.59	0	0	20.6	175	60	1	--
GP-2B	03/06/00	2:49 PM	28.73	62.1	-	-0.6	0	0	20.7	0.5	0.5	0.5	--
GP-2B	04/02/00	10:42 AM	28.5	56	-	-2.41	0	0.2	18.1	14.31	14.31	14.24	--
GP-2B	04/27/00	3:42 PM	28.63	70	-	-2.5	0	0	18.1	0.76	0.76	0.3	--
GP-2B	06/03/00	11:54 AM	28.98	65	-	-2.29	0	0.1	20.1	0.5	0.6	0.63	--
GP-2B	06/29/00	2:28 PM	28.67	69	-	-2.48	0	0.1	19.3	5	5	5	--
GP-2B	07/23/00	11:22 AM	28.97	69	-	-2.33	0	0.1	20.5	6	6	5	--
GP-2B	08/20/00	11:59 AM	29.05	67	-	-2.39	0	0.2	19.5	2.5	2.5	2.5	--
GP-2B	09/23/00	1:32 PM	28.68	55	-	-2.25	0	0.3	19.8	4	2.5	2.5	--
GP-2B	10/21/00	12:35 PM	29.01	52	-	-2.09	0	0.4	20.1	10.02	-0.4	0.26	--
GP-2B	11/18/00	1:40 PM	28.55	24	-	-2	0	0	20.4	0.11	0.11	0.1	--
GP-2B	12/18/00	1:10 PM	28.7	16	0.01	-1.96	0	0.5	19.3	6.3	2.5	1	--
GP-2B	01/09/01	10:25 AM	28.81	20	-	-1.99	0	0	19.6	6.2	1.5	1.72	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-2B	02/08/01	3:07 PM	28.81	25	-	-1.14	0	0.3	19.1	0.2	0.2	0.3	--
GP-2B	02/10/01	9:40 AM	29.09	8	-	-1.3	--	--	--	--	--	--	--
GP-2B	02/12/01	2:09 PM	28.87	24	T	-1.2	--	--	--	--	--	--	--
GP-2B	02/13/01	8:37 AM	29.01	22	-	-1.2	0	0	20	0.75	0.08	0.1	--
GP-2B	03/07/01	12:44 PM	28.64	35	-	-0.91	0	0	19.8	2.78	2.09	2.33	--
GP-2B	03/08/01	2:09 PM	28.58	28	T	--	--	--	--	4.72	3.43	3.33	--
GP-2B	04/08/01	9:59 AM	28.53	43	-	-1.5	0	0	20.5	2.8	2.72	0.02	--
GP-2B	05/05/01	10:19 AM	29.09	58	-	-1.25	0	0	18.5	0.84	0.84	-0.33	--
GP-2B	05/31/01	9:24 AM	28.92	58	-	-1.32	0	0	18.7	1.28	0.4	0	--
GP-2B	06/28/01	1:37 PM	28.92	87	-	-0.23	0	0	21.1	0	0	0	--
GP-2B	07/19/01	8:56 AM	28.81	74	-	-1.13	0	0	20.3	2.16	2	0	--
GP-2B	08/08/01	2:50 PM	28.65	96	-	-1.4	0	0	20.5	19	0	0	--
GP-2B	09/08/01	3:05 PM	28.48	75	-	-1.2	0.3	0	20.1	--	--	--	--
GP-2B	10/04/01	2:47 PM	28.63	59	-	-1.18	0	0	20.7	11.37	9.59	5.42	--
GP-2B	11/14/01	9:21 AM	28.82	54	-	-1.11	0	0.4	20.3	6.31	6	-0.4	--
GP-2B	12/18/01	12:19 PM	28.52	35	-	-1.11	0	0.1	20.7	30	5	-1.32	--
GP-2B	01/10/02	11:55 AM	28.54	36	-	-1.11	0	0.4	19.9	6	5.39	0.05	--
GP-2B	01/31/02	2:33 PM	28.91	23	0.01	--	--	--	--	1.45	1.4	-0.7	--
GP-2B	02/15/02	3:20 PM	28.51	37	-	-1.36	0	0	20.2	-1	-1.03	-1.32	--
GP-2B	03/18/02	2:59 PM	28.98	42	-	-1.76	0	0	21.1	0	0	0	--
GP-2B	04/26/02	2:17 PM	29.01	48	-	-1.21	0	0	21.8	0	0	0	--
GP-2B	05/22/02	2:23 PM	28.75	70	-	-1.05	0	0	21.7	0	0	0	--
GP-2B	06/05/02	2:01 PM	28.76	71	-	-1.08	0	0	21.8	0.42	0	0	--
GP-2B	07/11/02	4:24 PM	29.02	79	-	-1.4	0	0	21.9	0.34	0.29	0.29	--
GP-2B	08/11/02	2:05 PM	28.72	87	-	-1.1	0	0	21.1	0.99	-0.19	-0.25	--
GP-2B	09/23/02	9:48 AM	28.88	52	-	-0.9	0	0.4	19.7	9.88	0	0	--
GP-2B	10/11/02	1:17 PM	28.85	70	-	-0.8	0	0.4	20.3	8.32	7.77	0	--
GP-2B	11/15/02	1:06 PM	28.99	28	T	-0.8	0	0.5	19.6	23.69	17	0	--
GP-2B	12/05/02	10:55 AM	28.83	18	-	-1	0	0.4	19.9	3.95	3.2	0.19	--
GP-2B	01/03/03	10:56 AM	28.82	23	-	-1.1	0	0.4	20.1	3.12	2.75	0	--
GP-2B	02/11/03	11:55 AM	28.22	8	T	-1.1	0	0.3	19.5	3.66	3.4	1	--
GP-2B	03/05/03	12:29 PM	28.76	9	T	-0.5	0	0.3	20	2.5	0	0	--
GP-2B	04/14/03	10:48 AM	28.58	77	-	-0.9	0	0.2	20	3.71	3	1	--
GP-2B	05/07/03	9:51 AM	28.78	59	-	-1	0	0	19.9	1.59	1.55	1.1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-2B	06/02/03	10:12 AM	28.8	68	-	-0.9	0	0	19.8	0	0	0	--
GP-2B	07/16/03	9:46 AM	28.85	76	-	-0.9	0	0	19.6	0.27	0.1	0	--
GP-2B	08/07/03	10:03 AM	28.84	70	-	-0.9	0	0.2	19.3	0.4	0	0	--
GP-2B	09/26/03	11:43 AM	28.42	53	-	-0.9	0	0.2	19.1	5.07	0	0.2	--
GP-2B	10/13/03	10:13 AM	28.58	58	-	-1	0	0.3	19	5.33	0	0	--
GP-2B	11/11/03	10:24 AM	28.49	41	-	-0.8	0	0.4	19.1	4.16	0	0.1	--
GP-2B	12/17/03	9:56 AM	28.58	24	T	-1	0	0.4	19.1	3.03	0	0.3	--
GP-2B	01/21/04	3:20 PM	28.33	24	T	-0.9	0	0.4	19	2.81	2.65	0.65	--
GP-2B	02/04/04	10:46 AM	29.16	11	-	-1	0	0.3	18.8	3.14	0.8	1.4	--
GP-2B	03/02/04	10:50 AM	28.72	37	-	-1.4	0	0.2	19.2	2.5	0	0.5	--
GP-2B	04/02/04	3:20 PM	28.86	56	-	-1.2	0	0.1	19.4	1.62	1.54	-0.25	--
GP-2B	05/28/04	10:15 AM	28.74	54	-	-0.8	0	0	20.3	3.98	3.95	0.27	--
GP-2B	06/29/04	11:23 AM	28.81	75	-	-1.1	0	0	19.3	5.92	5.2	1.5	--
GP-2B	07/22/04	12:13 PM	28.7	68	-	-1.004	0	0.1	19.1	6.49	5.45	1.6	--
GP-2B	08/12/04	11:14 AM	28.82	64	-	-1.289	0	0.1	19.9	--	--	--	--
GP-2B	09/17/04	4:00 PM	28.86	67	-	-0.9	0	0.2	20	6.4	6.2	0.15	--
GP-2B	10/13/04	12:09 PM	28.48	63	-	-0.1	0	0.3	19.5	4.67	4.6	-0.69	--
GP-2B	11/23/04	10:01 AM	28.55	41	-	-1.1	0	0	20.2	-0.83	-0.92	-1.11	--
GP-2B	01/07/05	8:21 AM	28.74	2	-	-0.9	0	0.3	19.2	1.73	1.66	0.06	--
GP-2B	01/19/05	11:20 AM	28.76	18	T	-0.2	0	0.3	19.3	1.68	1.56	0.39	--
GP-2B	02/08/05	10:50 AM	29.01	19	-	-1.3	0	0.3	19.8	--	--	--	--
GP-2B	03/16/05	1:15 PM	28.76	26	T	0	0	0	19.6	--	--	--	--
GP-2B	04/04/05	9:53 AM	28.8	52	-	-1	0	0.1	20	--	--	--	--
GP-2B	05/10/05	10:46 AM	28.46	66	-	-1.1	0	0	19.7	--	--	--	--
GP-2B	06/09/05	8:34 AM	28.65	77	-	-0.8	0	0	19.9	--	--	--	--
GP-2B	07/01/05	1:39 PM	28.71	64	-	-0.9	0	0	19.8	--	--	--	--
GP-2B	08/11/05	11:17 AM	28.85	69	-	-0.7	0	0	19.7	--	--	--	--
GP-2B	09/08/05	3:11 PM	28.9	69.98	-	-0.7	0	0	19.6	--	--	--	--
GP-2B	10/19/05	11:23 AM	28.82	48	-	-1.15	0	0	19.6	--	--	--	--
GP-2B	11/03/05	4:18 PM	28.63	50	-	-1.15	0	0	19.7	--	--	--	--
GP-2B	12/05/05	11:04 AM	28.76	8	-	-0.7	0	0	19.4	--	--	--	--
GP-2B	01/31/06	12:44 PM	28.61	32	-	-0.6	0	0	20	--	--	--	--
GP-2B	02/20/06	9:36 AM	28.62	15	-	-0.8	0	0.3	19.1	--	--	--	--
GP-2B	03/09/06	11:10 AM	28.17	37	-	-0.9	0	0	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-2B	04/12/06	3:43 PM	28.69	67	-	-0.8	0	0	19.4	--	--	--	--
GP-2B	05/17/06	2:24 PM	28.38	63	-	-0.9	0	0	19.2	--	--	--	--
GP-2B	06/06/06	10:42 AM	28.6	70	-	-0.8	0	0	19.1	--	--	--	--
GP-2B	07/26/06	1:08 PM	28.5	83	-	-0.6	0	0	18.2	--	--	--	--
GP-2B	08/16/06	11:55 AM	28.97	80	-	-0.8	0	0	19	--	--	--	--
GP-2B	09/18/06	1:18 PM	28.38	59	-	-0.6	0	0	20.3	--	--	--	--
GP-2B	10/23/06	2:00 PM	28.7	39	-	-0.6	0	0.6	20.2	--	--	--	--
GP-2B	11/14/06	9:56 AM	28.7	35	-	-0.6	0	0	20.3	--	--	--	--
GP-2B	12/21/06	10:02 AM	29.05	26	-	-0.8	0	0	20.8	--	--	--	--
GP-2B	01/19/07	10:14 AM	28.82	15	-	-1	0	0	21.1	--	--	--	--
GP-2B	02/08/07	9:50 AM	28.84	5	-	-1	0	0	21.2	--	--	--	--
GP-2B	03/12/07	11:22 AM	28.73	42	-	-1.8	0	0	20.6	--	--	--	--
GP-2B	04/19/07	2:12 PM	28.93	65	-	-1	0	0	20.7	--	--	--	--
GP-2B	05/29/07	10:25 AM	28.9	74	-	-1	0	0.1	20	--	--	--	--
GP-2B	06/13/07	11:04 AM	28.97	82	-	-1	0	0	19.1	--	--	--	--
GP-2B	07/16/07	10:03 AM	29.99	72	-	-0.8	0	0	19.3	--	--	--	--
GP-2B	08/30/07	10:14 AM	30.27	69	-	-0.7	0	0	19.3	--	--	--	--
GP-2B	09/20/07	11:12 AM	30.26	56	-	-0.7	0	0	19.3	--	--	--	--
GP-2B	10/17/07	10:32 AM	29.9	56	-	-0.9	0	0	19.4	--	--	--	--
GP-2B	11/21/07	11:24 AM	30.15	34	-	-0.6	0	0	20.3	--	--	--	--
GP-2B	12/27/07	12:26 PM	29.96	26	-	-0.8	0	0	20.1	--	--	--	--
GP-3	09/01/98	10:22 AM	28.59	66.9	-	-0.32	--	--	--	--	--	--	--
GP-3	09/01/98	10:22 AM	28.59	66.9	-	-0.32	--	--	--	--	--	--	--
GP-3	09/01/98	12:19 PM	28.57	71.1	T	0	--	--	--	--	--	--	--
GP-3	09/01/98	12:19 PM	28.57	71.1	T	0	--	--	--	--	--	--	--
GP-3	09/01/98	2:21 PM	28.51	73	-	-0.04	--	--	--	--	--	--	--
GP-3	09/01/98	2:21 PM	28.51	73	-	-0.04	--	--	--	--	--	--	--
GP-3	09/01/98	4:18 PM	28.5	68	-	0.04	--	--	--	--	--	--	--
GP-3	09/01/98	6:14 PM	28.52	66	-	-0.1	--	--	--	--	--	--	--
GP-3	09/01/98	6:14 PM	28.52	66	-	-0.1	--	--	--	--	--	--	--
GP-3	09/02/98	6:35 AM	28.53	53.1	-	-0.35	--	--	--	--	--	--	--
GP-3	09/02/98	6:35 AM	28.53	53.1	-	-0.35	--	--	--	--	--	--	--
GP-3	09/02/98	9:12 AM	28.53	60.1	-	-0.34	--	--	--	--	--	--	--
GP-3	09/02/98	9:12 AM	28.53	60.1	-	-0.34	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-3	09/02/98	11:17 AM	28.54	61	-	-1.2	--	--	--	--	--	--	--
GP-3	09/02/98	11:17 AM	28.54	61	-	-1.2	--	--	--	--	--	--	--
GP-3	09/02/98	1:17 PM	28.52	63	-	-0.12	--	--	--	--	--	--	--
GP-3	09/02/98	1:17 PM	28.52	63	-	-0.12	--	--	--	--	--	--	--
GP-3	09/02/98	3:28 PM	28.5	64.9	-	-0.03	--	--	--	--	--	--	--
GP-3	09/02/98	3:28 PM	28.5	64.9	-	-0.03	--	--	--	--	--	--	--
GP-3	09/02/98	5:22 PM	28.52	64	-	-0.02	--	--	--	--	--	--	--
GP-3	09/02/98	5:22 PM	28.52	64	-	-0.02	--	--	--	--	--	--	--
GP-3	09/02/98	7:10 PM	28.53	55	-	0	--	--	--	--	--	--	--
GP-3	09/02/98	7:10 PM	28.53	55	-	0	--	--	--	--	--	--	--
GP-3	10/08/98	3:59 PM	28.99	53.1	-	-0.3	0	0	20.3	<2.5	<2.5	2.5	--
GP-3	10/12/98	10:49 AM	28.72	53.1	-	-0.32	0	0	20.8	--	--	--	--
GP-3	11/18/98	1:20 PM	28.78	35.1	-	-0.29	0	0	19.8	--	--	--	--
GP-3	03/15/99	10:17 AM	28.71	37.9	-	-0.15	0	0	20.8	--	--	--	--
GP-3	07/22/99	9:58 AM	28.78	82.9	-	-0.51	0	0.1	20.7	--	--	--	--
GP-3	07/27/99	10:39 AM	28.75	77	-	-0.25	0	0.1	19.8	--	--	--	--
GP-3	08/04/99	8:42 AM	28.72	69.1	-	-0.25	0	0.1	21	--	--	--	--
GP-3	08/10/99	11:05 AM	28.45	66.9	-	-0.24	0	0.2	20.2	--	--	--	--
GP-3	08/17/99	3:25 PM	28.81	70	-	-0.25	0	0.1	20.3	--	--	--	--
GP-3	08/20/99	4:03 PM	28.86	77	-	-0.2	0	0.2	20.3	--	--	--	--
GP-3	08/24/99	9:51 AM	28.71	73.9	-	-0.21	0.2	0.3	20	--	--	--	--
GP-3	08/31/99	5:33 PM	28.85	70	-	-0.15	0	0.2	20.3	225	225	2.5	--
GP-3	09/03/99	8:27 AM	28.8	69.1	-	-0.06	0	0.2	20.5	300	275	3	--
GP-3	09/08/99	4:38 PM	28.48	68	-	-0.18	0	0.3	20.2	1025	150	3	--
GP-3	09/14/99	11:59 AM	28.64	55.9	-	-0.16	0	0.1	20.5	400	350	1.5	--
GP-3	09/21/99	1:45 PM	28.87	69.1	-	-0.15	0	0.1	20.5	100	100	1.5	--
GP-3	09/28/99	10:44 AM	28.9	53.1	-	-0.18	0	0.1	21	80	80	1.75	--
GP-3	10/05/99	12:38 PM	28.68	55.9	-	0	0	0.1	20.2	--	--	2	--
GP-3	10/12/99	11:32 AM	28.62	59	-	-0.12	0	0.1	20.6	200	70	2.5	--
GP-3	10/19/99	9:26 AM	28.8	39	-	-0.17	0	0.1	20.6	450	140	2.75	--
GP-3	10/25/99	9:23 AM	28.52	48	-	-0.12	0	0.1	20.5	1.75	1.75	3.5	--
GP-3	11/22/99	1:22 PM	28.69	51.1	-	-0.12	0	0	20.3	23	23	<1	--
GP-3	01/25/00	1:50 PM	28.81	15	-	-0.1	0	0	19.5	175	175	1.5	--
GP-3	02/07/00	5:08 PM	29.06	21.9	-	0	0	0	18.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-3	02/08/00	1:05 PM	28.71	30.9	-	-7.54	0	0	19.6	3	<1	1	--
GP-3	02/15/00	2:30 PM	28.48	23	0.06	-0.12	0	0	19.5	5	5	1.75	--
GP-3	03/04/00	11:45 AM	28.57	52	-	-0.03	0	0	20.9	1	<1	1	--
GP-3	03/05/00	10:42 AM	28.75	46.9	-	-0.22	0	0	20.5	1	1	1	--
GP-3	03/06/00	3:15 PM	28.73	62.1	-	-0.04	0	0	20.6	0.5	0.5	0.5	--
GP-3	04/02/00	10:19 AM	28.51	56	-	-0.15	0	0	18.1	14.15	13.85	14.15	--
GP-3	04/27/00	3:56 PM	28.63	70	-	-0.16	0	0	18.3	<0	<0	0.3	--
GP-3	06/03/00	12:13 PM	28.98	65	-	-0.12	0	0	20.6	0.5	0.5	0.64	--
GP-3	06/29/00	2:53 PM	28.66	69	-	-0.14	0	0.3	19.4	225	285	5	--
GP-3	07/23/00	1:40 PM	28.94	72	T	-0.11	0	0.2	20.7	<5	<5	5	--
GP-3	08/20/00	12:35 PM	29.05	68	-	-0.14	0	0.3	28.9	100	98	2.5	--
GP-3	09/24/00	10:31 AM	28.87	48	-	-0.16	0	0.2	19.9	9	0	2.25	--
GP-3	10/21/00	1:30 PM	29	53	-	-0.09	0	0	21.1	0.19	-1.12	0.16	--
GP-3	11/18/00	3:13 PM	28.54	23	T	0	0	0	20.1	0.39	0.39	0.08	--
GP-3	12/18/00	12:10 PM	28.72	15	0.01	-0.07	0	0	19.7	0.6	--	0.6	--
GP-3	01/09/01	11:45 AM	28.78	26	-	-0.1	0	0	19.7	1.43	0	1.24	--
GP-3	02/08/01	3:32 PM	28.79	25	-	2.43	0	0	19.1	0.78	0.21	0.2	--
GP-3	02/10/01	9:56 AM	29.09	8	-	0	--	--	--	--	--	--	--
GP-3	02/12/01	1:45 PM	28.87	24	T	-0.1	--	--	--	--	--	--	--
GP-3	02/13/01	8:55 AM	29.01	22	-	0.15	0	0	19.7	0.7	0.58	0.4	--
GP-3	03/07/01	3:15 PM	28.61	37	-	-0.5	0	0	19.6	0.99	0.24	-0.3	--
GP-3	03/08/01	3:18 PM	28.6	31	T	--	--	--	--	1.26	0.55	0.55	--
GP-3	04/08/01	10:39 AM	28.56	45	-	-0.13	0	0	20.3	0.1	-0.84	0.1	--
GP-3	05/05/01	11:06 AM	29.1	60	-	-0.06	0	0.2	18.6	0	0	-0.45	--
GP-3	05/31/01	10:21 AM	28.91	60	-	-0.06	0	0	19.2	0	0	0	--
GP-3	06/28/01	11:30 AM	28.96	83	-	0.07	0	0.4	19.9	0	0	0	--
GP-3	07/19/01	9:30 AM	28.84	77	-	0.07	0	0.3	19.9	0	0	0	--
GP-3	08/08/01	3:13 PM	28.65	96	-	0	0	0.1	20.4	0	0	0	--
GP-3	09/08/01	5:08 PM	28.51	74	-	0.1	0	0.2	19.5	<1	<1	<1	--
GP-3	10/04/01	2:12 PM	28.64	58	-	-0.05	0	0.3	20.4	4.83	4.43	5.3	--
GP-3	11/14/01	8:51 AM	28.82	54	-	-0.05	0	0	20.8	174	27.33	-0.55	--
GP-3	12/18/01	11:38 AM	28.52	35	-	0.04	0	0	20.8	1.7	-0.05	0.45	--
GP-3	01/10/02	11:08 AM	28.55	37	-	-0.04	0	0	20.4	50.7	48.5	0.27	--
GP-3	01/31/02	2:39 PM	28.91	23	0.01	--	--	--	--	0.83	-1.6	-0.53	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-3	02/15/02	2:48 PM	28.51	37	-	-0.16	0	0	19.7	-0.91	-1.08	-1.33	--
GP-3	03/18/02	1:05 PM	28.99	41	-	-0.15	0	0	21.5	101	50	0	--
GP-3	04/26/02	10:26 AM	29.03	40	-	-0.06	0	0.1	20.9	108	30	0	--
GP-3	05/22/02	10:49 AM	28.84	66	-	-0.05	0	0.2	21	200	61	0	--
GP-3	06/05/02	10:51 AM	28.77	65	-	0	0	0.4	20.7	199	14	0	--
GP-3	07/11/02	3:18 PM	29.04	79	-	0	0	0.3	21.1	29.9	18.78	0.16	--
GP-3	08/10/02	6:07 PM	28.67	78	-	0	0	0.5	20.8	65.8	3.95	-2.02	--
GP-4	10/08/98	4:37 PM	28.98	51.1	-	-0.34	0	0	20.3	<2.5	<2.5	2	--
GP-4	10/12/98	10:12 AM	28.72	55	-	0.01	0	0.5	20.1	--	--	--	--
GP-4	11/18/98	12:43 PM	28.78	35.1	-	0.05	0	1.5	18.9	--	--	--	--
GP-4	09/28/99	10:12 AM	28.92	52	-	0	0	1.6	19.2	<1	<1	2.5	--
GP-4	10/05/99	11:05 AM	28.69	54	-	--	--	--	--	--	--	--	--
GP-5	09/01/98	10:00 AM	28.59	66.9	-	-0.37	--	--	--	--	--	--	--
GP-5	09/01/98	10:00 AM	28.59	66.9	-	-0.37	--	--	--	--	--	--	--
GP-5	09/01/98	12:14 PM	28.57	71.1	T	-0.15	--	--	--	--	--	--	--
GP-5	09/01/98	12:14 PM	28.57	71.1	T	-0.15	--	--	--	--	--	--	--
GP-5	09/01/98	2:15 PM	28.51	73	-	-0.2	--	--	--	--	--	--	--
GP-5	09/01/98	2:15 PM	28.51	73	-	-0.2	--	--	--	--	--	--	--
GP-5	09/01/98	4:12 PM	28.5	68	-	-0.19	--	--	--	--	--	--	--
GP-5	09/01/98	6:08 PM	28.52	66	-	-0.22	--	--	--	--	--	--	--
GP-5	09/01/98	6:08 PM	28.52	66	-	-0.22	--	--	--	--	--	--	--
GP-5	09/02/98	6:29 AM	28.52	51.1	-	-0.42	--	--	--	--	--	--	--
GP-5	09/02/98	6:29 AM	28.52	51.1	-	-0.42	--	--	--	--	--	--	--
GP-5	09/02/98	9:05 AM	28.53	60.1	-	-0.22	--	--	--	--	--	--	--
GP-5	09/02/98	9:05 AM	28.53	60.1	-	-0.22	--	--	--	--	--	--	--
GP-5	09/02/98	11:11 AM	28.54	61	-	-0.1	--	--	--	--	--	--	--
GP-5	09/02/98	11:11 AM	28.54	61	-	-0.1	--	--	--	--	--	--	--
GP-5	09/02/98	1:13 PM	28.52	63	-	-0.36	--	--	--	--	--	--	--
GP-5	09/02/98	1:13 PM	28.52	63	-	-0.36	--	--	--	--	--	--	--
GP-5	09/02/98	3:23 PM	28.5	64.9	-	-0.58	--	--	--	--	--	--	--
GP-5	09/02/98	3:23 PM	28.5	64.9	-	-0.58	--	--	--	--	--	--	--
GP-5	09/02/98	5:16 PM	28.52	64	-	-0.23	--	--	--	--	--	--	--
GP-5	09/02/98	5:16 PM	28.52	64	-	-0.23	--	--	--	--	--	--	--
GP-5	09/02/98	7:04 PM	28.53	55	-	-0.09	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-5	09/02/98	7:04 PM	28.53	55	-	-0.09	--	--	--	--	--	--	--
GP-5	10/08/98	4:04 PM	28.99	53.1	-	-0.4	0	0	20.4	<2.5	<2.5	2.5	--
GP-5	10/12/98	10:38 AM	28.72	53.1	-	-0.38	0	0.1	20.5	--	--	--	--
GP-5	11/18/98	2:11 PM	28.73	36	-	-0.38	0	0.2	19.5	--	--	--	--
GP-5	12/20/98	11:39 AM	29.08	18	0.01	-0.35	0	0.2	16.3	--	--	--	--
GP-5	01/12/99	4:25 PM	28.79	3.9	T	0	0	0.2	19.3	--	--	--	--
GP-5	03/15/99	9:55 AM	28.71	37.9	-	-0.52	0	0.1	24.8	--	--	--	--
GP-5	07/22/99	10:17 AM	28.78	82.9	-	-0.54	0	0.7	20.2	--	--	--	--
GP-5	07/27/99	11:15 AM	28.75	77	-	-0.5	0	0.8	19.3	--	--	--	--
GP-5	08/04/99	9:20 AM	28.72	69.1	-	-0.46	0	1	20.1	--	--	--	--
GP-5	08/10/99	11:39 AM	28.46	71.1	-	-0.45	0	0.6	20.1	--	--	--	--
GP-5	08/17/99	4:07 PM	28.81	69.1	-	-0.44	0	0	20.6	--	--	--	--
GP-5	08/20/99	4:43 PM	28.86	75	-	-0.4	0	0.8	19.7	<3	<3	<3	--
GP-5	08/24/99	10:37 AM	28.7	73.9	-	-0.37	0.2	1.1	19.4	--	--	--	--
GP-5	08/31/99	6:13 PM	28.85	70	-	-0.31	0	0.7	20	6	5.5	2.5	--
GP-5	09/03/99	8:58 AM	28.81	73	-	-0.12	0	0.8	19.6	70	70	3	--
GP-5	09/08/99	5:14 PM	28.48	68	-	-0.02	0	0.8	20.2	--	>1	2	--
GP-5	09/14/99	12:46 PM	28.65	55	T	-0.01	0	0.7	20.2	3.5	<1	1.5	--
GP-5	09/21/99	2:09 PM	28.87	69.1	-	-0.3	0	0.5	20.3	4	3.5	1.5	--
GP-5	09/28/99	10:28 AM	28.92	52	-	-0.3	0	0.4	20.8	1.75	1.75	1.75	--
GP-5	10/05/99	11:26 AM	28.69	54	-	-0.25	0	0.5	20.1	2.25	--	2	--
GP-5	10/12/99	1:26 PM	28.57	60.1	-	-0.24	0	0.3	20.4	4	4	1.25	--
GP-5	10/19/99	8:57 AM	28.8	39	-	-0.32	0	0.4	20.3	17	17	1.25	--
GP-5	10/25/99	8:39 AM	28.52	48	-	-0.24	0	0.2	20.5	--	--	4	--
GP-5	11/22/99	11:34 AM	28.69	48	-	-0.2	0	0.1	20.3	1.25	1.25	<1	--
GP-5	01/25/00	1:25 PM	28.8	16	-	-0.23	0	0	19.2	1.5	1.5	1.5	--
GP-5	02/07/00	2:38 PM	29.04	25	-	-0.23	0	0.1	20.1	20	20	1.25	--
GP-5	03/04/00	1:46 PM	28.54	55	-	-0.36	0	0	21.2	1.75	1.75	1.25	--
GP-5	03/05/00	9:21 AM	28.73	37	-	-0.38	0	0	20	2	2	1.75	--
GP-5	03/06/00	10:05 AM	28.81	48	-	-0.34	0	0.1	20.4	28	2.75	0	--
GP-5	04/02/00	12:19 PM	28.49	57	-	-0.2	0	0.2	18.4	--	--	--	--
GP-5	04/27/00	3:06 PM	28.63	70	-	-0.25	0	0	18.2	0.88	0.88	0.35	--
GP-5	06/03/00	1:56 PM	28.93	67	-	-0.18	0	0.2	20.7	6.9	3	0.61	--
GP-5	06/29/00	3:10 PM	28.66	69	-	-0.85	0	1.1	18.8	225	225	5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-5	07/23/00	10:57 AM	28.97	69	-	-0.23	0	0.7	20.5	40	25	5	--
GP-5	08/20/00	12:50 PM	29.05	68	-	-0.26	0	1.2	19.4	2.5	2.5	2.5	--
GP-5	09/24/00	11:30 AM	28.85	50	-	-0.22	0	0.8	19.6	500	125	3	--
GP-5	10/21/00	2:36 PM	29	54	-	-0.17	0	0.2	20.1	60.21	21.22	0.21	--
GP-5	11/19/00	10:50 AM	28.43	21	T	0.06	0	0.2	20.1	0.25	-0.51	0.25	--
GP-5	12/18/00	2:40 PM	28.68	17	0.02	-0.17	0	0.2	19.8	0.7	--	0.7	--
GP-5	01/09/01	12:30 PM	28.76	28	-	-0.14	0	0	19.5	42.9	-1.1	0.79	--
GP-5	02/08/01	2:09 PM	28.83	24	-	-0.08	0	0	19.4	2.7	2.3	0.47	--
GP-5	02/10/01	8:48 AM	29.06	5	-	-0.1	--	--	--	--	--	--	--
GP-5	02/12/01	1:21 PM	28.87	24	0.01	-0.1	--	--	--	--	--	--	--
GP-5	02/13/01	8:22 AM	29.01	21	-	0	0	0	20.1	26.5	23	0.1	--
GP-5	03/07/01	11:39 AM	28.67	34	-	0.1	0	0	19.8	1.88	0.9	0.9	--
GP-5	03/08/01	1:43 PM	28.58	28	T	--	--	--	--	3.11	2.7	3	--
GP-5	04/08/01	11:12 AM	28.56	45	-	-0.19	0	0.2	20.1	315	32.5	0.12	--
GP-5	05/05/01	11:24 AM	29.1	60	-	-0.18	0	0.4	18.5	302	71.1	-0.45	--
GP-5	05/31/01	11:01 AM	28.88	62	-	-0.11	0	0.4	18.7	180	55	0	--
GP-5	06/28/01	11:39 AM	28.96	83	-	-0.17	0	0.9	19.6	0	0	0	--
GP-5	07/19/01	10:17 AM	28.84	77	-	-0.16	0	0.5	20	7.24	3.27	0	--
GP-5	08/08/01	10:24 AM	28.76	85	-	-0.1	0	0	20.3	0	0	0	--
GP-5	09/08/01	5:34 PM	28.53	70	-	-0.1	0	0.5	19.5	<1	<1	<1	--
GP-5	10/04/01	1:57 PM	28.64	58	-	-0.07	0	0.5	20.1	4.59	4.27	5.29	--
GP-5	11/14/01	8:32 AM	28.82	54	-	-0.09	0	0.3	20.6	-0.5	-1.8	-0.6	--
GP-5	12/18/01	11:24 AM	28.54	32	-	-0.11	0	0.2	20.8	5.6	2.9	0.3	--
GP-5	01/10/02	10:37 AM	28.55	37	-	-0.04	0	0.1	20.2	5.25	1.71	1.25	--
GP-5	01/31/02	2:26 PM	28.91	23	T	--	--	--	--	-0.6	-1.8	-0.65	--
GP-5	02/15/02	1:57 PM	28.51	35	-	-0.17	0	0	20.2	-0.93	-1	-1.17	--
GP-5	03/18/02	11:42 AM	28.99	39	-	-0.4	0	0	21.3	0	0	0	--
GP-5	04/26/02	9:23 AM	29.03	37	-	-0.14	0	0.4	20.3	0.19	0	0	--
GP-5	05/22/02	9:35 AM	28.87	62	-	0.03	0	0.5	20.5	7	1.95	0	--
GP-5	06/05/02	9:43 AM	28.77	61	-	0	0	0.6	20.3	0.06	0	0	--
GP-5	07/11/02	2:37 PM	29.04	79	-	0	0	0	20.6	-0.41	-1.35	-0.41	--
GP-5	08/10/02	4:15 PM	28.67	81	-	0	0	1.1	20	-1.01	-2.72	-1.65	--
GP-6	09/01/98	9:58 AM	28.59	66.9	-	-0.15	--	--	--	--	--	--	--
GP-6	09/01/98	9:58 AM	28.59	66.9	-	-0.15	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-6	09/01/98	12:11 PM	28.57	71.1	T	-0.17	--	--	--	--	--	--	--
GP-6	09/01/98	12:11 PM	28.57	71.1	T	-0.09	--	--	--	--	--	--	--
GP-6	09/01/98	2:11 PM	28.51	73	-	-0.09	--	--	--	--	--	--	--
GP-6	09/01/98	2:11 PM	28.51	73	-	-0.09	--	--	--	--	--	--	--
GP-6	09/01/98	4:08 PM	28.5	68	-	-0.09	--	--	--	--	--	--	--
GP-6	09/01/98	6:04 PM	28.52	66	-	-0.06	--	--	--	--	--	--	--
GP-6	09/01/98	6:04 PM	28.52	66	-	-0.06	--	--	--	--	--	--	--
GP-6	09/02/98	6:25 AM	28.52	51.1	-	-0.17	--	--	--	--	--	--	--
GP-6	09/02/98	6:25 AM	28.52	51.1	-	-0.17	--	--	--	--	--	--	--
GP-6	09/02/98	9:02 AM	28.53	60.1	-	-0.04	--	--	--	--	--	--	--
GP-6	09/02/98	9:02 AM	28.53	60.1	-	-0.04	--	--	--	--	--	--	--
GP-6	09/02/98	11:08 AM	28.54	61	-	0	--	--	--	--	--	--	--
GP-6	09/02/98	11:08 AM	28.54	61	-	0	--	--	--	--	--	--	--
GP-6	09/02/98	1:11 PM	28.52	63	-	0	--	--	--	--	--	--	--
GP-6	09/02/98	1:11 PM	28.52	63	-	0	--	--	--	--	--	--	--
GP-6	09/02/98	3:20 PM	28.5	64.9	-	-0.08	--	--	--	--	--	--	--
GP-6	09/02/98	3:20 PM	28.5	64.9	-	-0.08	--	--	--	--	--	--	--
GP-6	09/02/98	5:13 PM	28.52	64	-	-0.26	--	--	--	--	--	--	--
GP-6	09/02/98	5:13 PM	28.52	64	-	-0.26	--	--	--	--	--	--	--
GP-6	09/02/98	7:01 PM	28.53	55	-	-0.18	--	--	--	--	--	--	--
GP-6	09/02/98	7:01 PM	28.53	55	-	-0.18	--	--	--	--	--	--	--
GP-6	10/08/98	4:14 PM	28.99	53.1	-	-0.19	0	0.1	20.3	<2.5	<2.5	2.5	--
GP-6	10/12/98	10:32 AM	28.72	53.1	-	-0.19	0	0	20.8	--	--	--	--
GP-6	11/18/98	2:10 PM	28.73	36	-	-0.17	0	0.1	19.5	--	--	--	--
GP-6	03/15/99	9:47 AM	28.71	37.9	-	-0.22	0	0	19.6	--	--	--	--
GP-6	07/22/99	10:22 AM	28.78	82.9	-	-0.3	0	0	20.8	--	--	--	--
GP-6	07/27/99	11:12 AM	28.75	77	-	-0.25	0	0.2	19.4	--	--	--	--
GP-6	08/04/99	9:17 AM	28.72	69.1	-	-0.21	0	0.2	20.3	--	--	--	--
GP-6	08/10/99	11:36 AM	28.46	71.1	-	-0.22	0	0.1	19.9	--	--	--	--
GP-6	08/17/99	4:03 PM	28.81	69.1	-	-0.19	0	0	20.5	--	--	--	--
GP-6	08/20/99	4:39 PM	28.86	75	-	-0.16	0	0	20.2	--	--	--	--
GP-6	08/24/99	10:31 AM	28.7	73.9	-	-0.17	0.2	0.1	19.9	--	--	--	--
GP-6	08/31/99	6:11 PM	28.85	70	-	-0.11	0	0.3	20.4	8.5	8.5	2.5	--
GP-6	09/03/99	8:55 AM	28.81	73	-	-0.05	0	0.2	20.4	100	100	3	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-6	09/08/99	5:10 PM	28.48	68	-	-0.02	0	0.6	20.1	--	>1	2	--
GP-6	09/14/99	12:42 PM	28.65	55	T	-0.03	0	0.4	20.1	6	1.5	1.25	--
GP-6	09/21/99	2:07 PM	28.87	69.1	-	-0.1	0	0.2	20.4	7.5	6	1.5	--
GP-6	09/28/99	10:24 AM	28.92	52	-	-0.11	0	0.3	20.9	2	2	3	--
GP-6	10/05/99	11:20 AM	28.69	54	-	-0.09	0	0.3	20.1	6	1.25	1.5	--
GP-6	10/12/99	1:34 PM	28.56	61	-	-0.08	0	0.2	20.5	3.75	1.75	1.25	--
GP-6	10/19/99	8:51 AM	28.8	39	-	-0.14	0	0.2	20.4	60	60	2.5	--
GP-6	10/25/99	8:28 AM	28.55	45	-	-0.1	0	0.1	20.7	4.5	1.5	1.5	--
GP-6	11/22/99	11:29 AM	28.67	46.9	-	-0.1	0	0	20.2	2	1.5	<1	--
GP-6	01/25/00	1:10 PM	28.8	16	-	-0.15	0	0	19.1	4	4	4	--
GP-6	02/07/00	2:33 PM	29.04	25	-	-0.1	0	0	20.2	28	22	1.5	--
GP-6	03/04/00	1:40 PM	28.54	55	-	-0.15	0	0	20.9	1.25	1.25	1.25	--
GP-6	03/05/00	9:29 AM	28.73	37	-	-0.17	0	0	19.9	1	<1	1	--
GP-6	03/06/00	10:30 AM	28.8	55	-	-0.13	0	0	20.6	1	0	0	--
GP-6	04/02/00	12:12 PM	28.49	57	-	-0.1	0	0	18.4	--	--	--	--
GP-6	04/27/00	3:01 PM	28.63	70	-	-0.08	0	0	18.4	1.64	1.64	0.46	--
GP-6	06/03/00	1:50 PM	28.93	67	-	-0.07	0	0	20.5	15	8	0.61	--
GP-6	06/29/00	3:16 PM	28.66	69	-	-0.09	0	0.1	18.8	120	120	5	--
GP-6	07/23/00	10:53 AM	28.97	69	-	-0.08	0	0.4	20.7	25	18	5	--
GP-6	08/20/00	12:55 PM	29.05	68	-	-0.11	0	0.5	19.8	15	15	2.5	--
GP-6	09/24/00	11:45 AM	28.85	50	-	-0.09	0	0.5	19.7	325	37.5	4.5	--
GP-6	10/21/00	2:45 PM	29	54	-	-0.06	0	0.2	20.9	15.52	89.56	0.21	--
GP-6	11/19/00	10:37 AM	28.43	21	T	0.03	0	0.2	20.2	0.08	-0.41	0.08	--
GP-6	12/18/00	2:05 PM	28.68	17	0.01	-0.06	0	0.1	19.5	1	--	1	--
GP-6	01/09/01	2:15 PM	28.74	31	-	-0.05	0	0	20.1	0.9	0.9	0.9	--
GP-6	02/08/01	2:03 PM	28.83	24	-	0	0	0	19.5	7.3	2.7	0.5	--
GP-6	02/10/01	8:44 AM	29.06	5	-	0	--	--	--	--	--	--	--
GP-6	02/12/01	1:18 PM	28.87	24	0.01	-0.05	--	--	--	--	--	--	--
GP-6	02/13/01	8:18 AM	29.01	21	-	0	0	0	20.3	380	60	-0.1	--
GP-6	03/07/01	11:29 AM	28.69	33	-	0	0	0	19.9	1.2	0	0	--
GP-6	03/08/01	1:40 PM	28.58	28	T	--	--	--	--	1.26	0.97	1	--
GP-6	04/08/01	11:18 AM	28.56	45	-	-0.03	0	0	20.3	35.82	17.1	0.15	--
GP-6	05/05/01	11:27 AM	29.1	60	-	-0.12	0	0.3	18.6	330	37.43	-0.44	--
GP-6	05/31/01	11:13 AM	28.88	62	-	-0.03	0	0.4	18.7	55	6	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-6	06/28/01	11:46 AM	28.96	83	-	-0.09	0	0.6	19.7	0	0	0	--
GP-6	07/19/01	10:22 AM	28.84	77	-	-0.1	0	0.4	19.9	6.9	1.41	0	--
GP-6	08/08/01	10:14 AM	28.76	85	-	-0.01	0	0.2	19.6	0	0	0	--
GP-6	09/08/01	5:50 PM	28.53	70	-	0	0	0.4	19.6	--	--	--	--
GP-6	10/04/01	1:51 PM	28.64	58	-	-0.02	0	0.4	20.3	5	4.9	5.5	--
GP-6	11/14/01	8:30 AM	28.82	54	-	-0.04	0	0.1	20.8	-0.5	-2	-0.6	--
GP-6	12/18/01	11:21 AM	28.54	32	-	-0.04	0	0	20.9	-1.43	-1.43	0.23	--
GP-6	01/10/02	10:33 AM	28.55	37	-	0.04	0	0	20.2	7.16	2.98	0.76	--
GP-6	01/31/02	2:23 PM	28.91	23	T	--	--	--	--	-0.65	-1.35	-0.7	--
GP-6	02/15/02	1:53 PM	28.51	35	-	-0.09	0	0	20.2	-1	-1.02	-1.21	--
GP-6	03/18/02	11:38 AM	28.99	39	-	-0.31	0	0	21.3	0	0	0	--
GP-6	04/26/02	9:16 AM	29.03	37	-	-0.06	0	0.3	20.6	1.16	0	0	--
GP-6	05/22/02	9:30 AM	28.87	62	-	-0.02	0	0.3	20.7	21	5.75	0	--
GP-6	06/05/02	9:38 AM	28.77	61	-	0	0	0.5	20.4	0.19	0	0	--
GP-6	07/11/02	2:30 PM	29.04	79	-	0	0	0.5	20.5	-0.35	-1.23	-0.35	--
GP-6	08/10/02	3:30 PM	28.67	81	-	0	0	0.6	20.3	4.48	-1.48	-0.5	--
GP-7	09/01/98	10:15 AM	28.59	66.9	-	0	--	--	--	--	--	--	--
GP-7	09/01/98	10:15 AM	28.59	66.9	-	0	--	--	--	--	--	--	--
GP-7	09/01/98	12:24 PM	28.57	71.1	T	0	--	--	--	--	--	--	--
GP-7	09/01/98	12:24 PM	28.57	71.1	T	0	--	--	--	--	--	--	--
GP-7	09/01/98	2:25 PM	28.51	73	-	0	--	--	--	--	--	--	--
GP-7	09/01/98	2:25 PM	28.51	73	-	0	--	--	--	--	--	--	--
GP-7	09/01/98	4:22 PM	28.5	68	-	0	--	--	--	--	--	--	--
GP-7	09/01/98	6:20 PM	28.52	66	-	0	--	--	--	--	--	--	--
GP-7	09/01/98	6:20 PM	28.52	66	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	6:42 AM	28.53	53.1	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	6:42 AM	28.53	53.1	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	9:17 AM	28.53	60.1	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	9:17 AM	28.53	60.1	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	11:21 AM	28.54	61	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	11:21 AM	28.54	61	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	1:31 PM	28.51	64.9	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	1:31 PM	28.51	64.9	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	3:32 PM	28.51	64	-	0	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-7	09/02/98	3:32 PM	28.51	64	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	5:26 PM	28.52	64	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	5:26 PM	28.52	64	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	7:13 PM	28.53	55	-	0	--	--	--	--	--	--	--
GP-7	09/02/98	7:13 PM	28.53	55	-	0	--	--	--	--	--	--	--
GP-7	10/12/98	10:58 AM	28.72	53.1	-	0	0	0.6	19.8	--	--	--	--
GP-7	07/22/99	2:10 PM	28.78	87.1	-	-0.01	0	2.4	17.6	--	--	--	--
GP-7	07/27/99	10:25 AM	28.77	73.9	-	0	0	2.1	17.4	--	--	--	--
GP-7	08/04/99	8:22 AM	28.72	64	-	0	0	2.8	17.9	--	--	--	--
GP-7	08/10/99	10:42 AM	28.45	66.9	-	0	0	2.6	17.7	--	--	--	--
GP-7	08/17/99	3:20 PM	28.81	70	-	0	0	2.4	17.7	--	--	--	--
GP-7	08/20/99	3:49 PM	28.86	77	-	0	0	2.6	17.9	<2.5	<2.5	-2.5	--
GP-7	08/24/99	9:37 AM	28.71	73.9	-	0	0.1	2.7	17.9	--	--	--	--
GP-7	08/31/99	5:24 PM	28.86	73	-	0	0	2.2	18.8	<2.5	<2.5	2.5	--
GP-7	09/03/99	8:17 AM	28.8	69.1	-	0	0	2.1	19.1	3	3	3	--
GP-7	09/08/99	4:25 PM	28.47	70	-	0	0	1.8	18.9	>1	>1	2	--
GP-7	09/14/99	11:40 AM	28.64	55.9	-	0	0	1.8	19.1	225	52	1.5	--
GP-7	09/21/99	1:35 PM	28.87	69.1	-	0	0	1.4	19.2	<1.5	<1.5	1.5	--
GP-7	09/28/99	11:08 AM	28.9	53.1	-	0	0	1.2	20.1	23	14	3	--
GP-7	10/05/99	4:55 PM	28.76	48	-	0	0	1.3	19.7	25	4	2	--
GP-7	10/12/99	3:08 PM	28.55	62.1	-	0.01	0	1.1	19.9	--	--	1	--
GP-7	10/19/99	9:44 AM	28.79	39.9	-	0.07	0	1.3	19.6	2.5	--	2.5	--
GP-7	10/25/99	9:27 AM	28.52	48	-	0	0	0.8	19.8	--	--	3	--
GP-7	11/22/99	1:37 PM	28.73	51.1	-	0	0	0.4	20	7.5	3.25	<1	--
GP-7	02/07/00	3:45 PM	29.06	24.1	-	0	0	0.3	19.4	--	--	--	--
GP-7	02/08/00	10:59 AM	28.82	28	-	0.01	0	0.3	19.5	70	1.75	<1	--
GP-7	03/04/00	10:40 AM	28.58	48.9	-	0	0	0.4	20.2	7	2.5	1.75	--
GP-7	03/05/00	12:15 PM	28.74	51.1	-	0	0	0.4	20.1	1.25	<1	1	--
GP-7	03/06/00	3:40 PM	28.7	61	-	0	0	0.4	20.2	0.5	0.5	0.5	--
GP-7	04/02/00	10:26 AM	28.51	56	-	0	0	0.5	17.6	14.12	12.78	14.12	--
GP-7	04/27/00	3:51 PM	28.63	70	-	0	0	0.5	17.7	<0	<0	0.37	--
GP-7	06/03/00	12:06 PM	28.98	65	-	0	0	1.2	19.7	<0	<0	0.64	--
GP-7	06/29/00	2:37 PM	28.66	69	-	0	0	1.6	18.1	<1	<1	5	--
GP-7	07/23/00	11:30 AM	28.95	72	-	0	0	1.5	19.9	<5	<5	5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-7	08/20/00	12:20 PM	29.05	67	-	-0.01	0	2.3	18	0	0	2.5	--
GP-7	09/24/00	12:20 PM	28.85	50	-	0	0	2.4	17.8	2.5	0	2.5	--
GP-7	10/21/00	12:51 PM	29.01	52	-	-0.01	0	1.1	19.9	0.31	-1.96	0.31	--
GP-7	11/18/00	2:30 PM	28.54	23	T	0.01	0	0.7	19.6	0.04	-0.57	0.04	--
GP-7	12/18/00	12:40 PM	28.7	16	0.01	0	0	0.5	19.1	46	16	0.7	--
GP-7	01/09/01	10:40 AM	28.8	23	-	0.1	0	0.8	19.1	1.73	-0.2	1.73	--
GP-7	02/08/01	3:14 PM	28.81	25	-	0.09	0	0.5	18.9	0.1	0.1	0.3	--
GP-7	02/10/01	9:45 AM	29.09	8	-	0	--	--	--	--	--	--	--
GP-7	02/12/01	2:11 PM	28.87	24	T	0	--	--	--	--	--	--	--
GP-7	02/13/01	8:43 AM	29.01	22	-	0	0	0.4	19.6	5.7	2.2	0.2	--
GP-7	03/07/01	12:59 PM	28.64	35	-	0	0	0.6	18.8	2.5	1.5	2.5	--
GP-7	03/08/01	2:18 PM	28.58	28	T	--	--	--	--	1.51	-1.01	1.13	--
GP-7	04/08/01	10:11 AM	28.53	43	-	-0.02	0	1.2	18.7	0.1	-1.26	0.08	--
GP-7	05/05/01	10:27 AM	29.09	58	-	0.03	0	1	18	0	0	-0.37	--
GP-7	05/31/01	9:43 AM	28.91	60	-	0	0	1.3	17.8	0	0	0	--
GP-7	06/28/01	10:43 AM	28.98	82	-	0	0	1.7	18.8	0	0	0	8.71
GP-7	07/19/01	9:00 AM	28.81	74	-	0.05	0	1.3	19.1	0	0	0	--
GP-7	08/08/01	1:10 PM	28.71	89	-	0	0	0.6	19.6	16	1.3	0	--
GP-7	09/08/01	2:55 PM	28.48	75	-	0	0.2	0	20.8	--	--	--	--
GP-7	10/04/01	2:25 PM	28.64	58	-	-0.01	0	0.8	19.8	143	23.5	5.5	--
GP-7	11/14/01	9:24 AM	28.82	54	-	0	0	0.4	20.5	-2.15	-0.6	-0.5	--
GP-7	12/18/01	12:23 PM	28.52	35	-	0	0	0.4	20.5	5.2	-0.55	0.37	--
GP-7	01/10/02	11:59 AM	28.54	36	-	0.02	0	0.3	19.9	-1.25	-1.17	0.03	--
GP-7	02/15/02	3:09 PM	28.51	37	-	0	0	0.5	19.3	-0.86	-1.02	-1.25	--
GP-7	03/18/02	3:07 PM	28.98	42	-	0.11	0	0.5	20	0	0	0	--
GP-7	04/26/02	2:34 PM	29	49	-	0	0	0.9	20.8	0	0	0	--
GP-7	05/22/02	2:40 PM	28.69	70	-	0	0	0.8	20.7	0	0	0	--
GP-7	06/05/02	2:11 PM	28.76	71	-	0	0	1	20.6	0.02	0	0	--
GP-7	07/11/02	4:33 PM	29.01	78	-	0	0	1.4	21.2	0.19	-0.95	0.19	--
GP-7	08/11/02	2:30 PM	28.71	88	-	0	0	1.6	20	-1.83	-1.85	-0.1	--
GP-7	09/23/02	9:55 AM	28.88	52	-	0.1	0	0.9	19.6	0	0	0	--
GP-7	10/11/02	1:23 PM	28.85	70	-	0	0	1.4	19.6	1.01	0	0	--
GP-7	11/15/02	1:00 PM	28.99	28	T	0.2	0.3	0.9	19.6	159	50	0	--
GP-7	12/05/02	11:03 AM	28.83	18	-	0	0	0.6	19.8	0	0	0.25	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-7	01/03/03	11:01 AM	28.82	23	-	0	0	0.6	19.6	0	0	0	--
GP-7	02/11/03	12:07 PM	28.22	8	T	0	0	0.9	18.5	1.16	0	1.1	--
GP-7	03/05/03	12:37 PM	28.75	11	T	0	0	0.9	19.1	0	0	0	--
GP-7	04/14/03	10:54 AM	28.58	77	-	0	0	0.8	18.5	0	0	1	--
GP-7	05/07/03	9:57 AM	28.78	59	-	0	0	1.1	18.7	0	0	0.9	--
GP-7	06/02/03	10:16 AM	28.8	68	-	0	0	1.4	18.5	0	0	0	--
GP-7	07/16/03	9:51 AM	28.85	76	-	0	0	1.7	18.2	0.28	0	0	--
GP-7	08/07/03	10:09 AM	28.84	70	-	0	0	1.3	17.9	0	0	0	--
GP-7	09/26/03	11:48 AM	28.42	53	-	0	0	1.4	18	0	0	0.15	--
GP-7	10/13/03	10:19 AM	28.58	58	-	-0.2	0	1.2	18.5	0	0	0	--
GP-7	11/11/03	10:31 AM	28.49	43	-	0	0	0.7	18.9	0.12	0	0.05	--
GP-7	12/17/03	10:07 AM	28.58	24	T	0	0	0.5	18.9	0.59	0	0.45	--
GP-7	01/21/04	3:30 PM	28.37	19	T	0	0	0.5	18.5	0	0	0.75	--
GP-7	02/04/04	10:57 AM	29.16	11	-	0	0	0.7	18.2	0	0	1.4	--
GP-7	03/02/04	10:58 AM	28.72	37	-	0	0	0.7	18.5	0	0	0.4	--
GP-7	04/02/04	3:35 PM	28.84	56	-	-2.3	0	0.1	19.5	1.78	-2.5	-1.51	--
GP-7	05/28/04	10:20 AM	28.74	54	-	0	0	1.1	19	1.31	1.27	0.07	--
GP-7	06/29/04	11:34 AM	28.81	77	-	0	0	1.4	18.1	0	0	1.6	--
GP-7	07/22/04	12:23 PM	28.7	68	-	-0.029	0	1.6	18.3	--	0.17	2.32	--
GP-7	08/12/04	11:25 AM	28.82	64	-	-0.062	0	1	19.5	--	--	--	--
GP-7	09/17/04	3:52 PM	28.86	67	-	-1.3	0	1	19.4	12.9	1.1	0.13	--
GP-7	10/13/04	12:14 PM	28.48	63	-	-1.1	0	0.7	19.3	-1.54	-1.6	-0.75	--
GP-7	11/23/04	10:09 AM	28.55	41	-	0	0	0.6	19.5	-2.94	-3.01	-1.15	--
GP-7	01/06/05	3:54 PM	28.62	17	T	0	0	0.5	18.3	-3.41	-3.12	0.11	--
GP-7	01/19/05	11:29 AM	28.76	18	T	0	0	0.5	18.6	-0.43	-0.55	0.36	--
GP-7	02/08/05	11:25 AM	29.01	19	-	0	0	0.7	18.7	--	--	--	--
GP-7	03/16/05	3:45 PM	28.76	28	T	0	0	1.1	18.2	--	--	--	--
GP-7	04/04/05	9:56 AM	28.8	52	-	0	0	1	18.1	--	--	--	--
GP-7	05/10/05	10:48 AM	28.46	66	-	0	0	1.1	18.8	--	--	--	--
GP-7	06/09/05	8:38 AM	28.65	77	-	-0.2	0	1.4	18.4	--	--	--	--
GP-7	07/01/05	1:45 PM	28.71	64	-	-0.8	0	1.3	18.7	--	--	--	--
GP-7	08/11/05	11:20 AM	28.85	69	-	-1.3	0	1.1	18.6	--	--	--	--
GP-7	09/08/05	3:14 PM	28.9	69.98	-	-1.2	0	0.5	19.2	--	--	--	--
GP-7	10/19/05	11:30 AM	28.81	50	-	0.32	0	1	18.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-7	11/03/05	4:25 PM	28.63	50	-	-0.01	0	0.9	18.7	--	--	--	--
GP-7	12/06/05	2:35 PM	28.85	13	-	-0.8	0	0	19.6	--	--	--	--
GP-7	01/31/06	12:50 PM	28.61	32	-	0	0	0.5	19.1	--	--	--	--
GP-7	02/20/06	9:41 AM	28.62	15	-	0	0	0.5	18.7	--	--	--	--
GP-7	03/09/06	11:15 AM	28.17	37	-	0	0	0	19.4	--	--	--	--
GP-7	04/12/06	3:46 PM	28.69	67	-	0	0	0.4	18.8	--	--	--	--
GP-7	05/17/06	2:27 PM	28.38	63	-	0	0	0.7	18.4	--	--	--	--
GP-7	06/06/06	10:44 AM	28.6	70	-	0	0	1.2	17.6	--	--	--	--
GP-7	07/26/06	1:11 PM	28.5	83	-	0	0	0.5	17.6	--	--	--	--
GP-7	08/16/06	12:00 PM	28.97	80	-	0	0	0.8	18.1	--	--	--	--
GP-7	09/18/06	1:22 PM	28.38	59	-	0	0	1	19.6	--	--	--	--
GP-7	10/23/06	2:05 PM	28.7	39	-	0	0	0.9	20.3	--	--	--	--
GP-7	11/14/06	9:59 AM	28.7	35	-	0	0	0.7	19.9	--	--	--	--
GP-7	12/21/06	10:06 AM	29.05	26	-	0	0	2.1	18.8	--	--	--	--
GP-7	01/19/07	10:27 AM	28.82	15	-	0	0	1.1	19.6	--	--	--	--
GP-7	02/08/07	9:54 AM	28.84	5	-	0	0	1	20.2	--	--	--	--
GP-7	03/12/07	11:26 AM	28.73	42	-	0	0	0	20.4	--	--	--	--
GP-7	04/19/07	2:16 PM	28.93	65	-	0	0	1.1	19.8	--	--	--	--
GP-7	05/29/07	10:28 AM	28.9	74	-	0	0	1.1	19.2	--	--	--	--
GP-7	06/13/07	11:08 AM	28.97	82	-	0	0	1.1	18.1	--	--	--	--
GP-7	07/16/07	10:06 AM	29.99	72	-	0	0	0.8	18.7	--	--	--	--
GP-7	08/30/07	10:17 AM	30.27	69	-	0	0	0.4	18.7	--	--	--	--
GP-7	09/20/07	11:14 AM	30.26	56	-	0	0	0.3	19.1	--	--	--	--
GP-7	10/17/07	10:35 AM	29.9	56	-	0	0	1.1	18.4	--	--	--	--
GP-7	11/21/07	11:26 AM	30.15	34	-	0	0	0.8	19.6	--	--	--	--
GP-7	12/27/07	12:30 PM	29.97	26	-	0	0	2.1	18.6	--	--	--	--
GP-8	09/01/98	10:21 AM	28.59	66.9	-	-0.05	--	--	--	--	--	--	--
GP-8	09/01/98	10:21 AM	28.59	66.9	-	-0.05	--	--	--	--	--	--	--
GP-8	09/01/98	12:28 PM	28.57	71.1	T	-0.03	--	--	--	--	--	--	--
GP-8	09/01/98	12:28 PM	28.57	71.1	T	-0.03	--	--	--	--	--	--	--
GP-8	09/01/98	2:28 PM	28.51	73	-	-0.07	--	--	--	--	--	--	--
GP-8	09/01/98	2:28 PM	28.51	73	-	-0.07	--	--	--	--	--	--	--
GP-8	09/01/98	4:26 PM	28.5	68	-	-0.08	--	--	--	--	--	--	--
GP-8	09/01/98	6:24 PM	28.52	66	-	-0.14	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-8	09/01/98	6:24 PM	28.52	66	-	-0.14	--	--	--	--	--	--	--
GP-8	09/02/98	6:45 AM	28.53	53.1	-	-0.11	--	--	--	--	--	--	--
GP-8	09/02/98	6:45 AM	28.53	53.1	-	-0.11	--	--	--	--	--	--	--
GP-8	09/02/98	9:21 AM	28.53	60.1	-	-0.07	--	--	--	--	--	--	--
GP-8	09/02/98	9:21 AM	28.53	60.1	-	-0.07	--	--	--	--	--	--	--
GP-8	09/02/98	11:24 AM	28.54	61	-	0	--	--	--	--	--	--	--
GP-8	09/02/98	11:24 AM	28.54	61	-	0	--	--	--	--	--	--	--
GP-8	09/02/98	1:34 PM	28.51	64.9	-	-0.01	--	--	--	--	--	--	--
GP-8	09/02/98	1:34 PM	28.51	64.9	-	-0.01	--	--	--	--	--	--	--
GP-8	09/02/98	3:35 PM	28.51	64	-	-0.02	--	--	--	--	--	--	--
GP-8	09/02/98	3:35 PM	28.51	64	-	-0.02	--	--	--	--	--	--	--
GP-8	09/02/98	5:28 PM	28.52	64	-	-0.02	--	--	--	--	--	--	--
GP-8	09/02/98	5:28 PM	28.52	64	-	-0.02	--	--	--	--	--	--	--
GP-8	09/02/98	7:17 PM	28.53	55	-	-0.01	--	--	--	--	--	--	--
GP-8	09/02/98	7:17 PM	28.53	55	-	-0.01	--	--	--	--	--	--	--
GP-8	10/08/98	5:10 PM	28.98	51.1	-	-0.09	0	0	20.3	<2.5	<2.5	2	--
GP-8	10/12/98	11:06 AM	28.72	53.1	-	-0.07	0	0	20.8	--	--	--	--
GP-8	11/18/98	1:11 PM	28.78	35.1	-	-0.07	0	0.4	19.4	--	--	--	--
GP-8	12/20/98	2:05 PM	29.02	19	0.02	-0.1	0	0	18.8	--	--	--	--
GP-8	01/12/99	12:13 PM	28.72	1.9	-	0	0	0.1	19.5	--	--	--	--
GP-8	03/15/99	11:08 AM	28.69	39.9	-	-0.18	0	0.2	19.8	--	--	--	--
GP-8	07/22/99	10:05 AM	28.78	82.9	-	-0.21	0	0	20.8	--	--	--	--
GP-8	07/27/99	10:17 AM	28.77	73.9	-	-0.2	0	0	20.1	--	--	--	--
GP-8	08/04/99	8:13 AM	28.72	64	-	-0.16	0	0	21.3	--	--	--	--
GP-8	08/10/99	10:34 AM	28.45	66.9	-	-0.15	0	0	20.6	--	--	--	--
GP-8	08/17/99	3:04 PM	28.81	70	-	-0.13	0	0	20.5	--	--	--	--
GP-8	08/20/99	3:40 PM	28.86	77	-	-0.13	0	0	20.6	--	--	--	--
GP-8	08/24/99	9:27 AM	28.7	71.1	-	-0.1	0	0	20.3	--	--	--	--
GP-8	08/31/99	5:18 PM	28.86	73	-	-0.05	0	0	20.2	150	85	3	--
GP-8	09/03/99	8:10 AM	28.8	69.1	-	-0.03	0	0	20.5	150	100	3	--
GP-8	09/08/99	4:13 PM	28.47	70	-	-0.08	0	0	20.4	2.5	2.5	3	--
GP-8	09/14/99	11:33 AM	28.64	55.9	-	-0.07	0	0	20.5	500	140	1.5	--
GP-8	09/21/99	1:26 PM	28.89	59	-	-0.04	0	0	20.8	150	85	1.5	--
GP-8	09/28/99	11:24 AM	28.9	53.1	-	-0.06	0	0	21.2	5.5	5.5	2.25	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-8	10/05/99	5:03 PM	28.76	48	-	-0.06	0	0	20.6	4	<1	2	--
GP-8	10/12/99	2:42 PM	28.55	62.1	-	-0.06	0	0	20.8	1.25	1.25	1	--
GP-8	10/25/99	9:36 AM	28.51	53.1	-	-0.05	0	0	20.8	4	3	3	--
GP-8	11/22/99	1:50 PM	28.73	51.1	-	-0.04	0	0	20.5	5.5	<1	<1	--
GP-8	01/25/00	2:35 PM	28.83	13	-	-0.06	0	0	19.9	3.5	3.5	2	--
GP-8	02/07/00	3:40 PM	29.06	24.1	-	-0.06	0	0.1	19.9	--	--	--	--
GP-8	02/08/00	10:10 AM	28.87	24.1	-	-0.04	0	0	19.9	1.25	<1	1.25	--
GP-8	03/04/00	10:47 AM	28.58	48.9	-	0	0	0.2	20.7	3	1.75	1.5	--
GP-8	03/05/00	11:52 AM	28.74	51.1	-	-0.1	0	0	20.5	2.5	2.5	1	--
GP-8	03/06/00	2:30 PM	28.73	62.1	-	-0.03	0	0	20.8	1	0.5	0.5	--
GP-8	04/27/00	3:33 PM	28.63	70	-	-0.15	0	0	18.1	0.41	0.41	0.31	--
GP-8	06/29/00	2:16 PM	28.67	69	-	-0.09	0	0.5	19	1.5	1.5	5	--
GP-8	07/23/00	11:18 AM	28.97	69	-	-0.07	0	1	20.2	6	<5	5	--
GP-8	08/20/00	12:05 PM	29.05	67	-	-0.07	0	0	20.6	4.5	4.5	2.5	--
GP-8	09/23/00	2:25 PM	28.68	55	-	-0.04	0	0	20.5	2.25	2	1.5	9.47
GP-8	10/21/00	12:59 PM	29.01	52	-	-0.03	0	0	20.8	1.96	1.14	0.36	--
GP-8	11/18/00	2:38 PM	28.54	23	T	-0.01	0	0	20.3	0.41	-0.52	0.28	--
GP-8	12/18/00	1:20 PM	28.7	16	0.01	-0.03	0	0.4	19.4	4.1	--	1	--
GP-8	01/09/01	10:48 AM	28.8	23	-	-0.02	0	0	19.5	2.9	-0.1	1.68	--
GP-8	02/08/01	3:04 PM	28.81	25	-	-0.01	0	0	19.4	0.33	0.32	0.3	--
GP-8	02/10/01	9:37 AM	29.09	8	-	0	--	--	--	--	--	--	--
GP-8	02/12/01	2:13 PM	28.87	24	T	0	--	--	--	--	--	--	--
GP-8	02/13/01	8:34 AM	29.01	22	-	0	0	0	20.1	10.3	5.5	0.1	--
GP-8	03/07/01	12:27 PM	28.67	34	-	0	0	0	19.9	2.22	1.88	1.5	--
GP-8	03/08/01	2:04 PM	28.58	28	T	--	--	--	--	5.65	2.51	1.39	--
GP-8	04/08/01	10:14 AM	28.53	43	-	-0.07	0	0	20.6	0.41	0.38	0.07	--
GP-8	05/05/01	10:31 AM	29.1	60	-	-0.05	0	0	18.8	1.02	0.58	-0.37	--
GP-8	05/31/01	9:48 AM	28.91	60	-	-0.02	0	0	19.1	1	0	0	--
GP-8	06/28/01	10:12 AM	28.99	81	-	-0.07	0	0	20.3	0.64	0.57	0	--
GP-8	07/19/01	9:08 AM	28.81	74	-	-0.04	0	0	20.3	0.74	0	0	--
GP-8	08/08/01	3:08 PM	28.65	96	-	0	0	0	20.6	0	0	0	--
GP-8	09/08/01	3:35 PM	28.5	76	-	0	0	0	20.1	10	10	<1	--
GP-8	10/04/01	2:56 PM	28.63	59	-	-0.01	0	0	21	7.5	7.3	5.2	--
GP-8	11/14/01	9:19 AM	28.82	54	-	0	0	0	20.8	26.33	5	-0.6	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-8	12/18/01	12:17 PM	28.52	35	-	-0.01	0	0	21	--	--	--	--
GP-8	01/10/02	11:52 AM	28.54	36	-	-0.02	0	0	20.2	6.6	1.79	-0.03	--
GP-8	01/31/02	2:20 PM	28.91	23	T	--	--	--	--	-0.2	-1.1	-0.7	--
GP-8	02/15/02	3:30 PM	28.5	38	-	-0.04	0	0	20.2	-1.22	-2.03	-1.35	--
GP-8	03/18/02	2:46 PM	28.98	42	-	-0.24	0	0	21.2	0	0	0	--
GP-8	04/26/02	2:13 PM	29.01	48	-	-0.07	0	0	21.9	0	0	0	--
GP-8	05/22/02	2:18 PM	28.75	70	-	0	0	0	21.8	0	0	0	--
GP-8	06/05/02	1:57 PM	28.76	71	-	0	0	0	21.6	0.59	0	0	--
GP-8	07/11/02	4:36 PM	29.01	78	-	0	0	0	22.4	0.9	0.71	0.12	--
GP-9	10/08/98	5:09 PM	28.98	51.1	-	0	0	1.6	19.2	<2	<2	2	--
GP-10	10/08/98	5:17 PM	28.98	51.1	-	0	0	1.5	19.5	<2	<2	2	--
GP-12A	10/08/98	4:45 PM	28.98	51.1	-	-2.02	0	0	20.7	<2.5	<2.5	2	--
GP-12A	10/12/98	10:18 AM	28.72	55	-	-2.02	0	0	20.7	--	--	--	--
GP-12A	01/12/99	3:59 PM	28.79	3.9	T	-0.08	0	0.1	19.6	--	--	--	--
GP-12A	01/14/99	11:32 AM	29.03	3.9	0.01	-1.73	0	0	19	--	--	--	--
GP-12A	03/15/99	9:08 AM	28.73	34	-	-2.28	0	0	20.4	--	--	--	--
GP-12A	09/28/99	10:06 AM	28.92	52	-	-2.25	0	0	20.9	7.5	7.5	7.5	--
GP-12A	10/05/99	10:42 AM	28.69	54	-	-2.04	0	0	20.1	50	45	2	--
GP-12A	10/12/99	1:46 PM	28.56	61	-	-1.76	0	0	20.8	1.25	1.25	1.25	--
GP-12A	10/19/99	8:37 AM	28.8	39	-	-2.1	0	0	20.8	160	160	1.25	--
GP-12A	11/22/99	11:11 AM	28.67	46.9	-	-1.48	0	0	20.4	4.75	4.75	<1	--
GP-12A	03/04/00	1:57 PM	28.54	55	-	-1.68	0	0	21.2	7	7	2.5	--
GP-12A	03/05/00	9:46 AM	28.74	43	-	-1.76	0	0	20.2	1.25	1	1.25	--
GP-12A	03/06/00	10:55 AM	28.8	55	-	-1.57	0	0	20.7	0.75	0.25	0.25	--
GP-12A	04/02/00	11:58 AM	28.49	57	-	-1.57	0	0	18.6	14.91	14.91	14.3	--
GP-12A	01/31/02	2:13 PM	28.91	23	T	--	--	--	--	0.5	-2.07	-0.9	--
GP-12A	02/15/02	1:41 PM	28.51	35	-	-0.83	0	0	20.2	-0.18	-0.23	-0.91	--
GP-12A	03/18/02	10:59 AM	28.99	38	-	-1.22	0	0	20.8	63.8	0	0	--
GP-12A	04/26/02	8:51 AM	29.03	37	-	-0.88	0	0	20.7	26.08	15.31	0	--
GP-12A	05/22/02	9:17 AM	28.88	-	-	-0.73	0	0.3	20.6	63	35	0	--
GP-12A	06/05/02	9:26 AM	28.77	56	-	-0.68	0	0.6	20	2.06	0.41	0	--
GP-12A	07/11/02	2:13 PM	29.05	79	-	-0.5	0	0	20.5	-0.36	-0.91	-0.36	--
GP-12A	08/10/02	3:05 PM	28.68	81	-	0.6	0	1.2	19.8	4.84	2.6	-0.5	--
GP-12A	09/23/02	9:13 AM	28.88	49	-	-0.4	0	0	20.5	0.46	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-12A	10/11/02	12:53 PM	28.85	70	-	-0.2	0	0.8	20	47	24	0	--
GP-12A	11/15/02	1:36 PM	28.99	29	T	-0.6	0	0.2	19.9	13.5	7	0	--
GP-12A	12/05/02	10:26 AM	28.86	16	T	-0.5	0	0.1	20.2	0.01	0	0	--
GP-12A	01/03/03	10:35 AM	28.82	23	-	-0.6	0	0.5	20	0	0	0	--
GP-12A	02/11/03	12:30 PM	28.2	11	-	0	0	0	19.3	186	97	1.1	--
GP-12A	03/05/03	11:48 AM	28.76	9	T	-0.7	0	0	20.2	0	0	0	--
GP-12A	04/14/03	10:19 AM	28.6	74	-	-0.6	0	0.1	19.9	2	1.3	1	--
GP-12A	05/07/03	9:17 AM	28.78	55	-	-0.5	0	0.3	19.7	1.56	0.08	1.1	--
GP-12A	06/02/03	9:51 AM	28.8	68	-	-0.5	0	0.5	19.4	0	0	0	--
GP-12A	07/16/03	9:20 AM	28.86	71	-	-0.5	0	0.9	18.9	0.5	0	0.04	--
GP-12A	08/07/03	9:33 AM	28.84	70	-	-0.6	0	1.4	18	0	0	0	--
GP-12A	09/26/03	11:16 AM	28.46	51	-	-0.5	0	3.1	16.7	0	0	0.4	--
GP-12A	10/13/03	9:47 AM	28.58	58	-	-0.5	0.1	2	17.9	1.1	0	0	--
GP-12A	11/11/03	10:03 AM	28.49	41	-	-0.6	0	1	18.5	3.6	3.55	0.1	--
GP-12A	12/17/03	9:24 AM	28.57	24	T	-0.5	0	0	19.5	2.53	0	0.3	--
GP-12A	01/21/04	2:40 PM	28.33	24	T	-1.1	0	0.1	19	0.25	0	0.1	--
GP-12A	02/04/04	10:02 AM	29.14	4	-	-0.6	0	0	19.1	2.5	2.37	1.5	--
GP-12A	03/02/04	9:55 AM	28.7	37	-	-1	0	0	19.5	1.23	0.63	0.15	--
GP-12A	04/02/04	3:50 PM	28.84	56	-	-0.8	0	0.1	19.3	0.45	0.4	-0.63	--
GP-12A	05/28/04	10:45 AM	28.73	56	-	-0.6	0	0	20.3	2.48	2.45	0.17	--
GP-12A	06/29/04	10:58 AM	28.81	75	-	-0.4	0	0.2	19.5	2.57	1.9	1.8	--
GP-12A	07/22/04	11:32 AM	28.7	68	-	-0.793	0	0	19.7	2.58	2.21	1.85	--
GP-12A	08/12/04	11:55 AM	28.83	64	-	-0.797	0	0	20.6	--	--	--	--
GP-12A	09/17/04	3:30 PM	28.86	67	-	-0.5	0.6	2	18.3	166	110	0	--
GP-12A	09/20/04	9:45 AM	28.99	70	-	-0.4	0	1.2	19.2	0.25	0.18	0	--
GP-12A	10/13/04	12:24 PM	28.48	63	-	0	0	1.3	18.9	62.72	38.3	-0.66	--
GP-12A	11/23/04	9:38 AM	28.55	41	-	-0.6	0	0.6	19.5	0.52	0.33	-0.4	--
GP-12A	01/06/05	3:24 PM	28.6	17	T	-0.8	0	0	19	0.97	-0.04	0.08	--
GP-12A	01/19/05	10:57 AM	28.76	18	T	-0.8	0	0	19.6	-3	-2.83	-3.21	--
GP-12A	02/08/05	11:34 AM	28.99	20	-	-0.6	0	0	19.6	--	--	--	--
GP-12A	03/16/05	12:50 PM	28.76	26	T	0	0	0	20	--	--	--	--
GP-12A	04/04/05	10:20 AM	28.8	52	-	-0.4	0	0.2	19.6	--	--	--	--
GP-12A	05/09/05	2:51 PM	28.46	74	T	-0.5	0	0	19.8	--	--	--	--
GP-12A	06/09/05	8:14 AM	28.65	74	-	-0.6	0	0.7	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-12A	07/01/05	1:18 PM	28.7	65	-	-0.4	0	0	20	--	--	--	--
GP-12A	08/11/05	10:55 AM	28.85	69	-	-0.3	0	2.6	17.4	--	--	--	--
GP-12A	09/08/05	2:49 PM	28.9	69.98	-	-0.3	0	0.6	19.1	--	--	--	--
GP-12A	10/19/05	10:50 AM	28.82	48	-	-0.75	0	2.1	17.6	--	--	--	--
GP-12A	11/03/05	4:30 PM	28.65	46	0.01	-0.75	0	0	19.4	--	--	--	--
GP-12A	12/05/05	10:35 AM	28.76	8	-	-0.2	0	0	19.3	--	--	--	--
GP-12A	01/31/06	1:01 PM	28.61	32	-	-0.5	0	0.2	19.4	--	--	--	--
GP-12A	02/20/06	10:00 AM	28.62	15	-	-0.5	0	0	19.3	--	--	--	--
GP-12A	03/09/06	10:43 AM	28.17	37	-	-0.4	0	0	19.3	--	--	--	--
GP-12A	04/12/06	3:27 PM	28.68	67	-	-0.5	0	0	19.4	--	--	--	--
GP-12A	05/17/06	2:10 PM	28.38	63	-	-0.5	0	0	19.2	--	--	--	--
GP-12A	06/06/06	10:28 AM	28.61	68	-	-0.4	0	0	19.2	--	--	--	--
GP-12A	07/26/06	12:45 PM	28.5	83	-	-0.4	0	1.1	16.9	--	--	--	--
GP-12A	08/16/06	11:36 AM	28.97	80	-	-0.4	0	0	18.8	--	--	--	--
GP-12A	09/18/06	12:59 PM	28.38	59	-	-0.3	0	1.7	19.3	--	--	--	--
GP-12A	10/23/06	1:44 PM	28.7	39	-	-0.4	0	1.6	19.6	--	--	--	--
GP-12A	11/14/06	9:36 AM	28.7	35	-	-0.4	0	1.2	19.5	--	--	--	--
GP-12A	12/21/06	9:42 AM	29.05	26	-	-0.6	0	0.9	20.2	--	--	--	--
GP-12A	01/19/07	9:51 AM	28.82	15	-	-0.9	0	0	21	--	--	--	--
GP-12A	02/08/07	9:31 AM	28.84	5	-	-0.8	0	0	20.9	--	--	--	--
GP-12A	03/12/07	10:56 AM	28.73	42	-	-0.8	0	0	20.5	--	--	--	--
GP-12A	04/19/07	1:54 PM	28.93	65	-	-0.6	0	0.5	20.5	--	--	--	--
GP-12A	05/29/07	10:05 AM	28.9	74	-	-0.4	0	0.8	18.4	--	--	--	--
GP-12A	06/13/07	10:42 AM	28.97	82	-	-0.4	0	0.1	19.3	--	--	--	--
GP-12A	07/16/07	9:42 AM	29.99	72	-	-0.3	0	1.2	18.6	--	--	--	--
GP-12A	08/30/07	9:53 AM	30.27	69	-	-0.4	0	1.1	18.6	--	--	--	--
GP-12A	09/20/07	10:49 AM	30.26	56	-	-0.2	0	0.4	19.1	--	--	--	--
GP-12A	10/17/07	10:11 AM	29.89	57	-	-0.5	0	1.9	17.7	--	--	--	--
GP-12A	11/21/07	11:09 AM	30.15	34	-	-0.3	0	0	20.3	--	--	--	--
GP-12A	12/27/07	12:10 PM	29.96	26	-	-0.6	0	0.4	19.1	--	--	--	--
GP-12B	09/01/98	9:54 AM	28.59	66.9	-	-1.76	--	--	--	--	--	--	--
GP-12B	09/01/98	9:54 AM	28.59	66.9	-	-1.76	--	--	--	--	--	--	--
GP-12B	09/01/98	12:08 PM	28.57	71.1	T	-3.2	--	--	--	--	--	--	--
GP-12B	09/01/98	2:07 PM	28.51	73	-	-1.47	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-12B	09/01/98	2:07 PM	28.51	73	-	-1.47	--	--	--	--	--	--	--
GP-12B	09/01/98	4:06 PM	28.5	68	-	-1.53	--	--	--	--	--	--	--
GP-12B	09/01/98	6:00 PM	28.52	66	-	-0.65	--	--	--	--	--	--	--
GP-12B	09/01/98	6:00 PM	28.52	66	-	-0.12	--	--	--	--	--	--	--
GP-12B	09/02/98	6:21 AM	28.52	51.1	-	-1.94	--	--	--	--	--	--	--
GP-12B	09/02/98	6:21 AM	28.52	51.1	-	-1.94	--	--	--	--	--	--	--
GP-12B	09/02/98	8:57 AM	28.53	60.1	-	-0.29	--	--	--	--	--	--	--
GP-12B	09/02/98	8:57 AM	28.53	60.1	-	-0.29	--	--	--	--	--	--	--
GP-12B	09/02/98	11:05 AM	28.54	61	-	-0.06	--	--	--	--	--	--	--
GP-12B	09/02/98	11:05 AM	28.54	61	-	-0.06	--	--	--	--	--	--	--
GP-12B	09/02/98	1:08 PM	28.52	63	-	-0.08	--	--	--	--	--	--	--
GP-12B	09/02/98	1:08 PM	28.52	63	-	-0.08	--	--	--	--	--	--	--
GP-12B	09/02/98	3:18 PM	28.5	64.9	-	-0.27	--	--	--	--	--	--	--
GP-12B	09/02/98	3:18 PM	28.5	64.9	-	-0.27	--	--	--	--	--	--	--
GP-12B	09/02/98	5:10 PM	28.52	64	-	-1.18	--	--	--	--	--	--	--
GP-12B	09/02/98	5:10 PM	28.52	64	-	-1.18	--	--	--	--	--	--	--
GP-12B	09/02/98	6:59 PM	28.53	55	-	-2.61	--	--	--	--	--	--	--
GP-12B	09/02/98	6:59 PM	28.53	55	-	-2.61	--	--	--	--	--	--	--
GP-12B	10/08/98	4:48 PM	28.98	51.1	-	-2.05	0	0	20.9	2.5	2.5	2	--
GP-12B	10/12/98	10:20 AM	28.72	55	-	-2.02	0	0	20.7	--	--	--	--
GP-12B	11/18/98	12:20 PM	28.81	34	-	-1.85	0	0	20.2	--	--	--	--
GP-12B	12/20/98	11:55 AM	29.08	18	0.01	-1.12	0	0	18.7	--	--	--	--
GP-12B	01/12/99	4:01 PM	28.79	3.9	T	-0.08	0	0.1	19.7	--	--	--	--
GP-12B	01/14/99	11:34 AM	29.03	3.9	0.01	-1.77	0	0	19	--	--	--	--
GP-12B	03/15/99	9:10 AM	28.73	34	-	-2.28	0	0	20.5	--	--	--	--
GP-12B	07/22/99	10:30 AM	28.79	84	-	-2.57	0	0	20.9	--	--	--	--
GP-12B	07/27/99	11:05 AM	28.75	77	-	-2.8	0	0	20.1	--	--	--	--
GP-12B	08/04/99	9:11 AM	28.72	69.1	-	-2.75	0	0.1	21	--	--	--	--
GP-12B	08/10/99	11:30 AM	28.46	71.1	-	-2.6	0	0.2	20.3	--	--	--	--
GP-12B	08/17/99	3:56 PM	28.81	69.1	-	-2.5	0	0	20.5	--	--	--	--
GP-12B	08/20/99	4:32 PM	28.86	75	-	-2.38	0	0.1	20.6	--	--	--	--
GP-12B	08/31/99	6:01 PM	28.85	70	-	-2.04	0	0	20.6	15	15	2.5	--
GP-12B	09/03/99	8:49 AM	28.81	73	-	-0.96	0	0	20.7	60	60	2.5	--
GP-12B	09/08/99	5:03 PM	28.48	68	-	-0.98	0	0	20.8	2	2	2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-12B	09/14/99	12:33 PM	28.65	55	T	-0.76	0	0.1	20.5	11	11	1.5	--
GP-12B	09/21/99	2:03 PM	28.87	69.1	-	-1.96	0	0.1	20.5	12.5	12.5	1.5	--
GP-12B	09/28/99	10:08 AM	28.92	52	-	-2.29	0	0	20.8	3.5	3.5	3.5	--
GP-12B	10/05/99	10:48 AM	28.69	54	-	-2.04	0	0	20.2	65	22	1.75	--
GP-12B	10/12/99	1:50 PM	28.56	61	-	-1.94	0	0	20.8	1.25	1.25	1.25	--
GP-12B	10/19/99	8:41 AM	28.8	39	-	-2.03	0	0	20.7	95	95	2.25	--
GP-12B	10/25/99	8:06 AM	28.55	45	-	-1.75	0	0	20.8	8.5	7.5	5	--
GP-12B	11/22/99	11:15 AM	28.67	46.9	-	-1.5	0	0	20.4	4	4	<1	--
GP-12B	01/25/00	3:15 PM	28.83	13	-	-1.63	0	0	19.7	1.5	1.5	1	--
GP-12B	02/07/00	2:02 PM	29.04	24.1	-	-1.22	0	0	20.2	60	55	2	--
GP-12B	03/04/00	2:05 PM	28.54	55	-	-1.73	0	0.3	20.6	1.5	1.25	1.5	--
GP-12B	03/05/00	9:54 AM	28.74	43	-	-1.77	0	0	20.1	1	<1	1	--
GP-12B	03/06/00	11:05 AM	28.8	55	-	-1.63	0	0.1	20.6	0.25	0.25	0.25	--
GP-12B	04/02/00	12:00 PM	28.49	57	-	-1.58	0	0	18.5	14.77	14.35	14.06	--
GP-12B	04/27/00	2:52 PM	28.63	70	-	-1.46	0	0	18.2	2.26	2.26	0.39	--
GP-12B	06/03/00	1:05 PM	28.96	65	-	-1.41	0	0	20.8	0.84	0.84	0.57	--
GP-12B	06/29/00	3:27 PM	28.66	69	-	-1.57	0	0	20.3	20	20	4.5	--
GP-12B	07/23/00	10:42 AM	28.97	69	-	-1.54	0	0.2	20.9	75	75	5	--
GP-12B	08/20/00	10:38 AM	29.07	64	-	-1.67	0	0.5	19.9	3.5	3.5	3.5	--
GP-12B	09/24/00	12:00 PM	28.85	50	-	-1.46	0	0.4	20	2.5	1.5	2	--
GP-12B	10/21/00	3:02 PM	29	54	-	-1.32	0	0	21.3	1.19	1.06	0.25	--
GP-12B	11/19/00	10:15 AM	28.47	20	0.01	0.15	0	0.2	20.1	0.18	0.18	0.1	--
GP-12B	12/18/00	2:20 PM	28.68	17	0.01	-1.31	0	0	19.6	1	0.9	1	--
GP-12B	01/09/01	2:30 PM	28.73	32	-	-1.29	0	0	19.8	0.95	0.9	0.9	--
GP-12B	02/08/01	1:54 PM	28.83	24	-	-0.67	0	0	19.5	7.4	7.3	0.4	--
GP-12B	02/10/01	8:38 AM	29.06	5	-	-0.9	--	--	--	--	--	--	--
GP-12B	02/12/01	1:01 PM	28.87	24	0.01	-0.6	--	--	--	--	--	--	--
GP-12B	02/13/01	8:11 AM	29.01	21	-	-0.8	0	0	20.3	68	68	-0.2	--
GP-12B	03/07/01	11:11 AM	28.69	33	-	0.45	0	0.1	19.8	1.14	0.42	0.8	--
GP-12B	03/08/01	1:31 PM	28.58	28	T	--	--	--	--	1.29	0.97	1.23	--
GP-12B	04/08/01	11:28 AM	28.56	45	-	-3.06	0	0	20.3	16.2	7.07	0.28	--
GP-12B	05/05/01	11:33 AM	29.09	59	-	-0.88	0	0	19	21.8	13.4	-0.45	--
GP-12B	05/31/01	11:31 AM	28.86	64	-	-0.76	0	0	19.5	17.01	0.67	0	--
GP-12B	06/28/01	1:00 PM	28.94	86	-	-0.4	0	0	21.1	0	0	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-12B	07/19/01	10:31 AM	28.84	75	-	-0.91	0	0.4	20.1	0.7	0	0	--
GP-12B	08/08/01	9:58 AM	28.76	85	-	-0.7	0	0	20.2	0	0	0	--
GP-12B	09/08/01	6:00 PM	28.53	70	-	-0.6	0	2	18.5	--	--	--	--
GP-12B	10/04/01	3:22 PM	28.63	59	-	-0.05	0	0	20.8	85.32	55.88	6.4	--
GP-12B	12/18/01	11:14 AM	28.54	32	-	-0.7	0	0	21.1	0.18	0.18	0.26	--
GP-12B	01/10/02	10:20 AM	28.55	37	-	-0.84	0	0	20.4	0.74	0.69	0.45	--
GP-12B	02/15/02	1:44 PM	28.51	35	-	-0.88	0	0.2	20	-0.69	-0.73	-1.05	--
GP-12B	03/18/02	11:02 AM	28.99	38	-	-1.25	0	0.2	20.5	1.01	0	0	--
GP-12B	04/26/02	8:57 AM	29.03	37	-	-0.9	0	0	20.8	28	11	0	--
GP-12B	05/22/02	9:21 AM	28.88	-	-	-0.74	0	0	21	66	24.45	0	--
GP-12B	06/05/02	9:29 AM	28.77	56	-	-0.68	0	0	20.8	3.19	0.31	0	--
GP-12B	07/11/02	2:20 PM	29.05	79	-	-0.55	0	0	21	-0.31	-0.31	-0.32	--
GP-12B	08/10/02	3:10 PM	28.68	81	-	0.7	0	0	21.1	40.25	1.23	-0.5	--
GP-12B	09/23/02	9:17 AM	28.88	49	-	-0.4	0	1.6	19	0	0	0	--
GP-12B	10/11/02	12:56 PM	28.85	70	-	-0.3	0	0.8	20	30	14	0	--
GP-12B	11/15/02	1:40 PM	28.99	29	T	-0.5	0	0	20.1	11.37	6	0	--
GP-12B	12/05/02	10:29 AM	28.86	16	T	-0.4	0	0	20.5	0	0	0	--
GP-12B	01/03/03	10:38 AM	28.82	23	-	-0.6	0	0.6	19.8	0	0	0	--
GP-12B	02/11/03	12:33 PM	28.2	11	-	0	0	0	19.5	134	56	1.1	--
GP-12B	03/05/03	11:51 AM	28.76	9	T	-0.7	0	0.3	19.8	0	0	0	--
GP-12B	04/14/03	10:22 AM	28.6	74	-	-0.6	0	0	20.1	1.38	1.04	0.9	--
GP-12B	05/07/03	9:20 AM	28.78	55	-	-0.5	0	0	20	1.7	1.3	1.1	--
GP-12B	06/02/03	9:53 AM	28.8	68	-	-0.4	0	0.1	19.9	0	0	0	--
GP-12B	07/16/03	9:24 AM	28.86	71	-	-0.3	0	0.7	19	0.45	0	0.2	--
GP-12B	08/07/03	9:36 AM	28.84	70	-	-0.6	0	0.4	19.3	0	0	0	--
GP-12B	09/26/03	11:19 AM	28.46	51	-	-0.5	0	3.4	16.5	0	0	0.4	--
GP-12B	10/13/03	9:53 AM	28.58	58	-	-0.4	0	1.2	18.6	0	0	0	--
GP-12B	11/11/03	10:06 AM	28.49	41	-	-0.6	0	0.9	18.6	2.51	2.4	0	--
GP-12B	12/17/03	9:26 AM	28.57	24	T	-0.6	0	0.4	19.2	0.36	0	0.2	--
GP-12B	01/21/04	2:44 PM	28.33	24	T	-0.3	0	0	19.2	0.58	0.55	0.15	--
GP-12B	02/04/04	10:11 AM	29.14	4	-	-0.4	0	0	19.2	2.34	2.13	1.5	--
GP-12B	03/02/04	9:58 AM	28.7	37	-	-0.7	0	0	19.5	0.82	0.78	0.17	--
GP-12B	04/02/04	3:52 PM	28.84	56	-	-0.9	0	0	19.6	0.24	0.2	0.03	--
GP-12B	05/28/04	10:50 AM	28.73	56	-	-0.6	0.1	0.1	20.1	3.52	3.45	0.22	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-12B	06/29/04	11:00 AM	28.81	75	-	-0.5	0	0.1	19.6	2.17	1.5	1.75	--
GP-12B	07/22/04	11:38 AM	28.7	68	-	-0.838	0	0	19.7	2.03	1.88	1.52	--
GP-12B	08/12/04	12:01 PM	28.83	64	-	-0.813	0	2.1	18.3	--	--	--	--
GP-12B	09/17/04	3:24 PM	28.85	66	-	-0.5	0	2.1	18.4	337	145	-0.04	--
GP-12B	10/13/04	12:26 PM	28.48	63	-	0	0	1.4	18.8	57.1	24.25	-0.78	--
GP-12B	11/23/04	9:41 AM	28.55	41	-	-0.7	0	0.2	20.1	0.22	0.15	-0.39	--
GP-12B	01/06/05	3:31 PM	28.62	17	T	-0.6	0	0	18.9	0.48	-0.07	0.11	--
GP-12B	01/19/05	10:59 AM	28.76	18	T	-0.9	0	0	19.6	3.58	0.12	0.22	--
GP-12B	02/08/05	11:36 AM	28.99	20	-	-0.1	0	0	19.8	--	--	--	--
GP-12B	03/16/05	12:45 PM	28.76	26	T	0	0	0.5	19.1	--	--	--	--
GP-12B	04/04/05	10:23 AM	28.8	52	-	-0.9	0	0	20.1	--	--	--	--
GP-12B	05/09/05	2:52 PM	28.46	74	T	-0.5	0	0.1	19.8	--	--	--	--
GP-12B	06/09/05	8:14 AM	28.65	74	-	-0.6	0	0.8	19.1	--	--	--	--
GP-12B	07/01/05	1:21 PM	28.7	65	-	-0.4	0	0.1	19.7	--	--	--	--
GP-12B	08/11/05	10:58 AM	28.85	69	-	-0.4	0	2.8	17.2	--	--	--	--
GP-12B	09/08/05	2:52 PM	28.9	69.98	-	-0.3	0	0.1	19.4	--	--	--	--
GP-12B	10/19/05	10:55 AM	28.82	48	-	-0.75	0	0	19.5	--	--	--	--
GP-12B	11/03/05	4:33 PM	28.65	46	0.01	-0.75	0	0.3	19.2	--	--	--	--
GP-12B	12/05/05	10:37 AM	28.76	8	-	-0.2	0	0	19.3	--	--	--	--
GP-12B	01/31/06	1:06 PM	28.61	32	-	-0.4	0	0	19.5	--	--	--	--
GP-12B	02/20/06	10:04 AM	28.62	15	-	-0.5	0	0.1	19.1	--	--	--	--
GP-12B	03/09/06	10:46 AM	28.17	37	-	-0.5	0	0	19.4	--	--	--	--
GP-12B	04/12/06	3:30 PM	28.69	67	-	-0.5	0	0	19.3	--	--	--	--
GP-12B	05/17/06	2:12 PM	28.38	63	-	-0.5	0	0	19.2	--	--	--	--
GP-12B	06/06/06	10:29 AM	28.61	68	-	-0.5	0	0	19.1	--	--	--	--
GP-12B	07/26/06	12:49 PM	28.5	83	-	-0.3	0	1.3	16.5	--	--	--	--
GP-12B	08/16/06	11:39 AM	28.97	80	-	-0.4	0	0	18.8	--	--	--	--
GP-12B	09/18/06	1:03 PM	28.38	59	-	-0.3	0	0	20.3	--	--	--	--
GP-12B	10/23/06	1:47 PM	28.7	39	-	-0.4	0	1.8	19.5	--	--	--	--
GP-12B	11/14/06	9:40 AM	28.7	35	-	-0.4	0	1.3	19.3	--	--	--	--
GP-12B	12/21/06	9:46 AM	29.05	26	-	-0.4	0	0.9	20.2	--	--	--	--
GP-12B	01/19/07	9:54 AM	28.82	15	-	-0.8	0	0	21.1	--	--	--	--
GP-12B	02/08/07	9:34 AM	28.84	5	-	-0.8	0	0	20.8	--	--	--	--
GP-12B	03/12/07	10:59 AM	28.73	42	-	-0.8	0	0.2	20.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-12B	04/19/07	1:56 PM	28.93	65	-	-0.6	0	0.5	20.5	--	--	--	--
GP-12B	05/29/07	10:09 AM	28.9	74	-	-0.6	0	0.6	18.1	--	--	--	--
GP-12B	06/13/07	10:46 AM	28.97	82	-	-0.5	0	1.4	17.7	--	--	--	--
GP-12B	07/16/07	9:46 AM	29.99	72	-	-0.3	0	1.3	18.4	--	--	--	--
GP-12B	08/30/07	9:57 AM	30.27	69	-	-0.4	0	1.3	18.3	--	--	--	--
GP-12B	09/20/07	10:53 AM	30.26	56	-	-0.3	0	0.4	19	--	--	--	--
GP-12B	10/17/07	10:14 AM	29.89	57	-	-0.5	0	2.3	17.4	--	--	--	--
GP-12B	11/21/07	11:12 AM	30.15	34	-	-0.3	0	0	20.4	--	--	--	--
GP-12B	12/27/07	12:12 PM	29.96	26	-	-0.6	0	0.5	19	--	--	--	--
GP-13A	09/01/98	9:55 AM	28.59	66.9	-	-0.33	--	--	--	--	--	--	--
GP-13A	09/01/98	9:56 AM	28.59	66.9	-	-0.33	--	--	--	--	--	--	--
GP-13A	10/08/98	4:22 PM	28.99	53.1	-	-0.32	0	0	20.6	2.5	2.5	2	--
GP-13A	10/12/98	10:27 AM	28.72	55	-	-0.29	0	0	20.8	--	--	--	--
GP-13A	01/12/99	4:07 PM	28.79	3.9	T	-0.01	0	0	19.7	--	--	--	--
GP-13A	01/14/99	11:40 AM	29.03	3.9	0.01	-0.2	0	0	19	--	--	--	--
GP-13A	03/15/99	9:30 AM	28.71	37.9	-	-0.39	0	0	18.5	--	--	--	--
GP-13A	09/28/99	10:16 AM	28.92	52	-	-0.25	0	0.1	20.8	4.5	4.5	4.5	--
GP-13A	10/05/99	11:06 AM	28.69	54	-	-0.22	0	0	20.2	7	7	1.75	--
GP-13A	10/12/99	1:39 PM	28.56	61	-	-0.21	0	0	20.6	<1	<1	1.25	--
GP-13A	10/19/99	10:43 AM	28.77	41	-	-0.26	0	0.1	20.5	1.25	--	1.25	--
GP-13A	11/22/99	11:20 AM	28.67	46.9	-	0.2	0	0	20.3	2.75	1.75	<1	--
GP-13A	03/04/00	1:28 PM	28.55	53.1	-	-0.25	0	0	20.9	1.25	1.25	1.5	--
GP-13A	03/05/00	9:37 AM	28.74	43	-	-0.3	0	0	20	<1	<1	<1	--
GP-13A	03/06/00	10:39 AM	28.8	55	-	-0.21	0	0	20.6	0.5	0.25	0.25	--
GP-13A	04/02/00	12:03 PM	28.49	57	-	-0.16	0	0	18.5	14.16	13.04	14.16	--
GP-13A	01/31/02	2:17 PM	28.91	23	T	--	--	--	--	0.73	-1.45	-0.9	--
GP-13B	09/01/98	9:56 AM	28.59	66.9	-	-0.28	--	--	--	--	--	--	--
GP-13B	09/01/98	9:56 AM	28.59	66.9	-	-0.28	--	--	--	--	--	--	--
GP-13B	09/01/98	12:10 PM	28.57	71.1	T	-0.4	--	--	--	--	--	--	--
GP-13B	09/01/98	2:09 PM	28.51	73	-	-0.14	--	--	--	--	--	--	--
GP-13B	09/01/98	2:09 PM	28.51	73	-	-0.14	--	--	--	--	--	--	--
GP-13B	09/01/98	4:07 PM	28.5	68	-	-0.14	--	--	--	--	--	--	--
GP-13B	09/01/98	6:02 PM	28.52	66	-	-0.12	--	--	--	--	--	--	--
GP-13B	09/02/98	6:23 AM	28.52	51.1	-	-0.31	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-13B	09/02/98	6:23 AM	28.52	51.1	-	-0.31	--	--	--	--	--	--	--
GP-13B	09/02/98	9:00 AM	28.53	60.1	-	-0.04	--	--	--	--	--	--	--
GP-13B	09/02/98	9:00 AM	28.53	60.1	-	-0.04	--	--	--	--	--	--	--
GP-13B	09/02/98	11:07 AM	28.54	61	-	-0.01	--	--	--	--	--	--	--
GP-13B	09/02/98	11:07 AM	28.54	61	-	-0.01	--	--	--	--	--	--	--
GP-13B	09/02/98	1:09 PM	28.52	63	-	-0.02	--	--	--	--	--	--	--
GP-13B	09/02/98	1:09 PM	28.52	63	-	-0.02	--	--	--	--	--	--	--
GP-13B	09/02/98	3:19 PM	28.5	64.9	-	-0.04	--	--	--	--	--	--	--
GP-13B	09/02/98	3:19 PM	28.5	64.9	-	-0.04	--	--	--	--	--	--	--
GP-13B	09/02/98	5:12 PM	28.52	64	-	-0.24	--	--	--	--	--	--	--
GP-13B	09/02/98	5:12 PM	28.52	64	-	-0.24	--	--	--	--	--	--	--
GP-13B	09/02/98	7:00 PM	28.53	55	-	-0.59	--	--	--	--	--	--	--
GP-13B	09/02/98	7:00 PM	28.53	55	-	-0.59	--	--	--	--	--	--	--
GP-13B	10/08/98	4:31 PM	28.98	51.1	-	-0.29	0	0	20.8	2.5	2.8	2	--
GP-13B	10/12/98	10:29 AM	28.72	55	-	-0.33	0	0	20.8	--	--	--	--
GP-13B	11/18/98	12:32 PM	28.78	35.1	-	-0.23	0	0	20.1	--	--	--	--
GP-13B	12/20/98	11:27 AM	29.12	17	T	-0.23	0	0	16.4	--	--	--	--
GP-13B	01/12/99	4:09 PM	28.79	3.9	T	-0.02	0	0	19.7	--	--	--	--
GP-13B	01/14/99	11:42 AM	29.03	3.9	0.01	-0.16	0	0	19	--	--	--	--
GP-13B	03/15/99	9:36 AM	28.71	37.9	-	-0.43	0	0.1	18.2	--	--	--	--
GP-13B	07/22/99	10:26 AM	28.78	82.9	-	-0.53	0	0	20.7	--	--	--	--
GP-13B	07/27/99	11:08 AM	28.75	77	-	-0.5	0	0	19.9	--	--	--	--
GP-13B	08/04/99	9:14 AM	28.72	69.1	-	-0.44	0	0	20.7	--	--	--	--
GP-13B	08/10/99	11:33 AM	28.46	71.1	-	-0.43	0	0	20.3	--	--	--	--
GP-13B	08/17/99	4:00 PM	28.81	69.1	-	-0.4	0	0	20.6	--	--	--	--
GP-13B	08/20/99	4:36 PM	28.86	75	-	-0.33	0	0	20.8	--	--	--	--
GP-13B	08/24/99	10:26 AM	28.71	73.9	-	-0.35	0	0	20.3	--	--	--	--
GP-13B	08/31/99	6:06 PM	28.85	70	-	-0.26	0	0	20.5	12	12	2.5	--
GP-13B	09/03/99	8:52 AM	28.81	73	-	-0.13	0	0	20.3	150	125	2.5	--
GP-13B	09/08/99	5:07 PM	28.48	68	-	-0.15	0	0.2	20.5	--	>1	2	--
GP-13B	09/14/99	12:38 PM	28.65	55	T	-0.13	0	0.1	20.3	6	3.5	1.5	--
GP-13B	09/21/99	2:05 PM	28.87	69.1	-	-0.21	0	0	20.6	8.5	8	1.5	--
GP-13B	09/28/99	10:18 AM	28.92	52	-	-0.28	0	0.1	20.9	4.5	4.5	4.5	--
GP-13B	10/05/99	11:13 AM	28.69	54	-	-0.27	0	0.1	20.2	6	3	1.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-13B	10/12/99	1:42 PM	28.56	61	-	-0.29	0	0	20.7	1	1	1.25	--
GP-13B	10/19/99	10:47 AM	28.77	41	-	-0.28	0	0.1	20.5	<1	<1	<1	--
GP-13B	10/25/99	8:24 AM	28.55	45	-	-0.18	0	0.1	20.7	4.5	4.5	4.5	--
GP-13B	11/22/99	11:25 AM	28.67	46.9	-	-0.25	0	0	20.3	2	1.5	<1	--
GP-13B	01/25/00	1:00 PM	28.8	16	-	-0.2	0	0	19	8	8	2	--
GP-13B	02/07/00	2:27 PM	29.04	24.1	-	-0.18	0	0	20.1	45	38	1.5	--
GP-13B	03/04/00	1:34 PM	28.54	55	-	-0.18	0	0	21.1	1.5	1.5	1.25	--
GP-13B	03/05/00	9:42 AM	28.74	43	-	-0.36	0	0.1	20	1	<1	1	--
GP-13B	03/06/00	10:44 AM	28.8	55	-	-0.22	0	0	20.6	0.75	0.25	0.25	--
GP-13B	04/02/00	12:07 PM	28.49	57	-	-0.19	0	0.1	18.3	14.18	13.44	14.18	--
GP-13B	04/27/00	2:57 PM	28.63	70	-	-0.17	0	0	18.3	11.51	0.4	0.42	--
GP-13B	06/03/00	1:43 PM	28.93	67	-	-0.18	0	0.2	20.8	44	21	0.63	--
GP-13B	06/29/00	3:21 PM	28.66	69	-	-0.2	0	0.1	20	60	60	6	--
GP-13B	07/23/00	10:48 AM	28.97	69	-	-0.21	0	0	20.9	60	30	5	--
GP-13B	08/20/00	10:30 AM	29.07	64	-	-0.25	0	0	20.2	5	5	5	--
GP-13B	09/24/00	11:52 AM	28.85	50	-	-0.19	0	0.2	20	1	1	1	--
GP-13B	10/21/00	2:52 PM	29	54	-	-0.21	0	0	21.1	15.66	2.53	0.26	--
GP-13B	11/19/00	10:30 AM	28.43	21	T	0.13	0	0	20.3	0.18	0.18	0.07	--
GP-13B	12/18/00	3:10 PM	28.68	17	0.02	-0.16	0	0	20	53	17	2	--
GP-13B	01/09/01	2:25 PM	28.74	31	-	-0.14	0	0	19.9	1.3	1.25	0.85	--
GP-13B	02/08/01	1:59 PM	28.83	24	-	0	0	0	19.5	6.2	5.7	0.5	--
GP-13B	02/10/01	8:41 AM	29.06	5	-	-0.1	--	--	--	--	--	--	--
GP-13B	02/12/01	1:15 PM	28.87	24	0.01	-0.1	--	--	--	--	--	--	--
GP-13B	02/13/01	8:15 AM	29.01	21	-	0	0	0	20.4	47.5	46	0.2	--
GP-13B	03/07/01	11:19 AM	28.69	33	-	0.02	0	0	20	4.56	4.1	0.57	--
GP-13B	03/08/01	1:35 PM	28.58	28	T	--	--	--	--	1.59	1.23	1	--
GP-13B	04/08/01	11:23 AM	28.56	45	-	-0.2	0	0.1	20.3	22.45	11	0.16	--
GP-13B	05/05/01	11:30 AM	29.09	59	-	-0.13	0	0.1	18.5	44.7	22.2	-0.47	--
GP-13B	05/31/01	11:27 AM	28.88	62	-	-0.08	0	0	19.1	6.23	2.92	0	--
GP-13B	06/28/01	1:18 PM	28.94	86	-	-0.05	0	0.1	21	0	0	0	--
GP-13B	07/19/01	10:25 AM	28.84	77	-	-0.18	0	0.1	20.3	1.98	0.28	0	--
GP-13B	08/08/01	10:07 AM	28.76	85	-	-0.01	0	0.1	20.1	0	0	0	--
GP-13B	09/08/01	5:55 PM	28.53	70	-	0	0	0	20.4	--	--	--	--
GP-13B	10/04/01	1:40 PM	28.64	58	-	-0.07	0	0	20.6	5.56	5.3	5.19	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-13B	11/14/01	8:27 AM	28.81	53	-	-0.8	0	0	20.9	15.15	7.3	-0.6	--
GP-13B	12/18/01	11:19 AM	28.54	32	-	-0.1	0	0	21.1	15.84	5.43	0.26	--
GP-13B	01/10/02	10:28 AM	28.55	37	-	-0.09	0	0	20.5	24.2	5.03	0.91	--
GP-13B	01/31/02	2:18 PM	28.91	23	T	--	--	--	--	-0.6	-1.55	-0.9	--
GP-13B	02/15/02	1:49 PM	28.51	35	-	-0.14	0	0	20.2	-0.89	-0.93	-1.18	--
GP-13B	03/18/02	11:34 AM	28.99	39	-	-0.3	0	0	21.2	0	0	0	--
GP-13B	04/26/02	9:05 AM	29.03	37	-	-0.15	0	0.2	20.4	9.1	3.84	0	--
GP-13B	05/22/02	9:26 AM	28.88	-	-	-0.07	0	0.2	20.6	38	11.7	0	--
GP-13B	06/05/02	9:34 AM	28.77	61	-	0	0	0.2	20.5	0.4	0	0	--
GP-13B	07/11/02	2:27 PM	29.05	79	-	0	0	0.2	20.9	-0.4	-0.98	-0.4	--
GP-13B	08/10/02	3:20 PM	28.68	81	-	0	0	0.1	21	1.05	-1.58	-0.51	--
GP-18A	09/01/98	10:12 AM	28.59	66.9	-	-0.07	--	--	--	--	--	--	--
GP-18A	09/01/98	10:12 AM	28.59	66.9	-	-0.07	--	--	--	--	--	--	--
GP-18A	10/08/98	3:41 PM	28.99	53.1	-	-1.3	0	0.1	19.3	<3	<3	3	--
GP-18A	10/12/98	10:52 AM	28.72	53.1	-	-0.08	0	0	20.6	--	--	--	--
GP-18A	03/15/99	10:25 AM	28.71	37.9	-	-0.05	0	0.1	19.1	--	--	--	--
GP-18A	09/28/99	10:58 AM	28.9	53.1	-	-0.08	0	0	20.6	70	70	1.75	--
GP-18A	10/05/99	12:15 PM	28.69	55	-	-0.08	0	0	20	4	1.25	2.5	--
GP-18A	10/12/99	1:12 PM	28.57	60.1	-	-0.04	0	0	20.5	85	22	1.25	--
GP-18A	10/19/99	9:07 AM	28.8	39	-	-0.15	0	0	20.1	9.75	9.75	1.25	--
GP-18A	11/22/99	1:10 PM	28.69	51.1	-	-0.07	0	0	19.8	195	55	<1	--
GP-18A	03/04/00	11:57 AM	28.57	52	-	0.01	0	0	20.8	2.5	1.25	1	--
GP-18A	03/05/00	10:47 AM	28.75	46.9	-	-0.13	0	0	20.2	1.5	1.5	1.25	--
GP-18A	03/06/00	3:22 PM	28.73	62.1	-	-0.03	0	0	20.6	1.3	1.3	0.5	--
GP-18A	04/02/00	12:44 PM	28.48	61	-	-0.09	0	0	18.2	14.03	13.45	14.03	--
GP-18A	01/31/02	2:45 PM	28.91	23	0.01	--	--	--	--	-0.6	-1.5	-0.9	--
GP-18B	09/01/98	10:11 AM	28.59	66.9	-	0.78	--	--	--	--	--	--	--
GP-18B	09/01/98	10:12 AM	28.59	66.9	-	0.78	--	--	--	--	--	--	--
GP-18B	09/01/98	12:23 PM	28.57	71.1	T	0.93	--	--	--	--	--	--	--
GP-18B	09/01/98	12:23 PM	28.57	71.1	T	0.93	--	--	--	--	--	--	--
GP-18B	09/01/98	2:24 PM	28.51	73	-	0.88	--	--	--	--	--	--	--
GP-18B	09/01/98	2:24 PM	28.51	73	-	0.88	--	--	--	--	--	--	--
GP-18B	09/01/98	4:20 PM	28.5	68	-	0.16	--	--	--	--	--	--	--
GP-18B	09/01/98	6:18 PM	28.52	66	-	-0.07	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-18B	09/01/98	6:18 PM	28.52	66	-	-0.07	--	--	--	--	--	--	--
GP-18B	09/02/98	6:40 AM	28.53	53.1	-	-0.05	--	--	--	--	--	--	--
GP-18B	09/02/98	6:40 AM	28.53	53.1	-	-0.05	--	--	--	--	--	--	--
GP-18B	09/02/98	9:15 AM	28.53	60.1	-	0.21	--	--	--	--	--	--	--
GP-18B	09/02/98	9:15 AM	28.53	60.1	-	0.21	--	--	--	--	--	--	--
GP-18B	09/02/98	11:19 AM	28.54	61	-	0.09	--	--	--	--	--	--	--
GP-18B	09/02/98	11:19 AM	28.54	61	-	0.09	--	--	--	--	--	--	--
GP-18B	09/02/98	1:19 PM	28.52	63	-	0	--	--	--	--	--	--	--
GP-18B	09/02/98	1:19 PM	28.52	63	-	0	--	--	--	--	--	--	--
GP-18B	09/02/98	3:30 PM	28.51	64	-	0.12	--	--	--	--	--	--	--
GP-18B	09/02/98	3:30 PM	28.51	64	-	0.12	--	--	--	--	--	--	--
GP-18B	09/02/98	5:24 PM	28.52	64	-	-0.04	--	--	--	--	--	--	--
GP-18B	09/02/98	5:24 PM	28.52	64	-	-0.04	--	--	--	--	--	--	--
GP-18B	09/02/98	7:12 PM	28.53	55	-	-0.24	--	--	--	--	--	--	--
GP-18B	09/02/98	7:12 PM	28.53	55	-	-0.24	--	--	--	--	--	--	--
GP-18B	10/08/98	3:50 PM	28.99	53.1	-	-0.06	0	0.6	19.8	4.5	4.5	2.5	--
GP-18B	10/12/98	10:54 AM	28.72	53.1	-	0.02	0	0	20.3	--	--	--	--
GP-18B	11/18/98	1:31 PM	28.73	36	-	0.67	0	0.2	18.2	--	--	--	--
GP-18B	12/20/98	1:44 PM	29.02	19	0.02	0.2	0	0.2	18.5	--	--	--	--
GP-18B	03/15/99	10:31 AM	28.69	39.9	-	-0.03	0	0.1	16.3	--	--	--	--
GP-18B	07/22/99	9:54 AM	28.78	82.9	-	0.2	0	0.2	18.8	--	--	--	--
GP-18B	07/27/99	10:28 AM	28.77	73.9	-	0.1	0	0.1	18.7	--	--	--	--
GP-18B	08/04/99	8:26 AM	28.72	64	-	0.02	0	0.1	20.1	--	--	--	--
GP-18B	08/10/99	10:52 AM	28.45	66.9	-	-0.1	0	0.1	19.5	--	--	--	--
GP-18B	08/17/99	3:13 PM	28.81	70	-	0	0	0	19.4	--	--	--	--
GP-18B	08/20/99	3:53 PM	28.86	77	-	0.04	0	0	19.7	--	--	--	--
GP-18B	08/24/99	9:42 AM	28.71	73.9	-	0	0.1	0.1	19.5	--	--	--	--
GP-18B	08/31/99	5:27 PM	28.86	73	-	0.02	0	0	19.6	32	32	2.5	--
GP-18B	09/03/99	8:20 AM	28.8	69.1	-	-0.01	0	0	19.8	60	45	3	--
GP-18B	09/08/99	4:30 PM	28.48	68	-	0.06	0	0.2	19.3	1.5	1.5	2	--
GP-18B	09/14/99	11:46 AM	28.64	55.9	-	-0.01	10	0.1	19.8	35	35	1.5	--
GP-18B	09/21/99	1:38 PM	28.87	69.1	-	0.3	0	0.1	20	25	25	1.5	--
GP-18B	09/28/99	11:00 AM	28.9	53.1	-	-0.03	0	0.1	20.7	65	60	1.75	--
GP-18B	10/05/99	12:22 PM	28.69	55	-	0.13	0	0.1	19.7	325	150	225	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-18B	10/12/99	1:17 PM	28.57	60.1	-	0.69	0	0	20.3	26	26	1.25	--
GP-18B	10/19/99	9:11 AM	28.8	39	-	0.11	0	0.1	20.3	5	5	1	--
GP-18B	10/25/99	9:20 AM	28.52	48	-	0.19	0	0	19.9	4	3	3	--
GP-18B	11/22/99	1:15 PM	28.69	51.1	-	-0.05	0	0	19.8	<1	<1	<1	--
GP-18B	01/25/00	3:25 PM	28.83	13	-	-0.12	0	0	18.8	--	--	--	--
GP-18B	02/07/00	5:12 PM	29.06	21.9	-	0	0	0	19.1	--	--	--	--
GP-18B	02/08/00	12:56 PM	28.71	30.9	-	0.04	0	0	19	500	55	<1	--
GP-18B	03/04/00	12:02 PM	28.57	52	-	0.06	0	0	20.6	1	1	1	--
GP-18B	03/05/00	10:51 AM	28.75	46.9	-	-0.02	0	0	20	1.25	<1	0.25	--
GP-18B	03/06/00	3:25 PM	28.73	62.1	-	0.05	0	0	20.3	3.8	0.5	0.5	--
GP-18B	04/02/00	12:48 PM	28.48	61	-	-0.01	0	0	17.8	14.15	13.74	14.15	--
GP-18B	04/27/00	4:01 PM	28.63	70	-	0.05	0	0	17.6	0.3	0.3	0.3	--
GP-18B	06/03/00	12:18 PM	28.98	65	-	-0.22	0	0	19.9	1.2	0.8	0.8	--
GP-18B	06/29/00	2:43 PM	28.66	69	-	0	0	0	19.3	11.5	11.5	11.5	--
GP-18B	07/23/00	1:46 PM	28.94	72	T	0.15	0	0	20.4	5	5	5	--
GP-18B	08/20/00	12:28 PM	29.05	67	-	0.18	0	0	20	2.5	2.5	2.5	--
GP-18B	09/24/00	10:51 AM	28.87	48	-	0.19	0	0	20.5	>10000	375	2	28.52
GP-18B	10/21/00	1:53 PM	29	53	-	0.05	0	0	20.5	95.82	19.56	0.16	27.95
GP-18B	11/18/00	3:35 PM	28.55	22	T	0.11	0.1	0.1	19.6	--	--	--	--
GP-18B	11/19/00	8:52 AM	28.49	19	T	0.07	0	0	20.3	0.04	-0.3	0.04	28.52
GP-18B	12/18/00	12:28 PM	28.72	15	0.01	0.15	0	0	19.3	110	52	0.6	--
GP-18B	01/09/01	11:55 AM	28.78	26	-	0.22	0	0	19.6	105	23.6	1.42	--
GP-18B	02/08/01	3:19 PM	28.81	25	-	0	0	0	19.2	0.38	0.32	0.3	--
GP-18B	02/10/01	10:04 AM	29.09	8	-	-0.6	--	--	--	--	--	--	--
GP-18B	02/12/01	1:40 PM	28.87	24	T	0.05	--	--	--	--	--	--	--
GP-18B	02/13/01	8:46 AM	29.01	22	-	0	0	0	20	0.57	0.4	0.4	--
GP-18B	03/07/01	3:22 PM	28.61	37	-	-0.12	0	0	19.4	3.11	2.57	2.34	--
GP-18B	03/08/01	3:25 PM	28.6	31	T	--	--	--	--	5.9	2.14	3.3	--
GP-18B	04/08/01	10:47 AM	28.56	45	-	-0.58	0	0	20	84.32	12	0.06	29.8
GP-18B	05/05/01	11:10 AM	29.1	60	-	0.11	0	0.1	18.5	0	0	-0.4	--
GP-18B	05/31/01	11:00 AM	28.88	62	-	0.19	2	0.1	18.7	1200	224	0	29.42
GP-18B	06/28/01	1:47 PM	28.92	87	-	0.01	0	0.2	20.6	0	0	0	29.32
GP-18B	07/19/01	9:42 AM	28.84	77	-	0.05	0	0.4	19.6	61.32	45.09	0	29.25
GP-18B	08/08/01	12:59 PM	28.71	89	-	0	0	0.6	19.1	62	40	0	29.46

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GP-18B	09/08/01	5:12 PM	28.51	74	-	0	0	0	20	<1	<1	<1	--
GP-18B	10/04/01	2:32 PM	28.63	59	-	0.18	0	0.3	20	50	47.3	4.87	30.16
GP-18B	11/14/01	8:25 AM	28.81	53	-	-0.8	0	0	20.9	-0.3	-0.3	-0.7	--
GP-18B	11/14/01	8:47 AM	28.82	54	-	-0.17	0	0	20.4	56.19	39	-0.55	--
GP-18B	12/18/01	11:43 AM	28.52	35	-	0.04	0	0	20	0.91	0.4	0.37	--
GP-18B	01/10/02	10:58 AM	28.55	37	-	-0.02	0	0	0	11.57	11.57	0.38	--
GP-18B	02/15/02	2:34 PM	28.51	37	-	-0.12	0	0	19.6	-0.91	-0.93	-1.2	--
GP-18B	03/18/02	12:54 PM	28.99	41	-	-0.11	0	0	20.5	71	40	0	--
GP-18B	04/26/02	10:05 AM	29.03	40	-	-0.01	0	0	19.7	21	18.8	0	--
GP-18B	05/22/02	10:29 AM	28.87	62	-	0.05	0	0	20.4	5.51	4.15	0	--
GP-18B	06/05/02	10:39 AM	28.77	65	-	0	0	0.1	20.2	4.93	3.81	0	--
GP-18B	07/11/02	3:10 PM	29.04	79	-	0	0	0.1	21.4	27.56	25.08	0.12	--
GP-18B	08/10/02	5:45 PM	28.67	78	-	0.2	0	0.4	20.8	48.05	3.2	-1.42	--
MH #1	10/09/00	3:54 PM	28.98	59	-	--	0	0.2	20.5	21.24	15.46	0.21	--
MH #1	10/16/00	6:10 PM	28.9	45	-	--	0	0	20.5	12.63	10.64	0.58	--
MH #1	10/23/00	2:48 PM	29.04	59	-	--	0	0.1	20.4	11.8	10.52	1.66	--
MH #1	10/30/00	2:40 PM	28.94	59	-	--	0	0	20.4	10.5	7	0.5	--
MH #1	11/08/00	3:25 PM	28.6	34	-	--	0	0	20.8	--	2.3	0.25	--
MH #1	11/13/00	3:15 PM	28.37	32	0.07	--	0	0	20.2	3.3	3.64	0.33	--
MH #1	11/27/00	4:07 PM	28.45	32	-	--	0	0	20.5	0.91	0.84	0.1	--
MH #1	12/04/00	9:25 AM	28.68	27	-	--	0	0	20.6	2.3	2.2	0.5	--
MH #1	12/11/00	3:33 PM	28.76	10	-	--	0	0	20.4	2.53	2.3	-0.04	--
MH #1	12/20/00	10:45 AM	28.67	14	-	--	0	0	20	9.6	6.5	0.8	--
MH #1	12/27/00	10:15 AM	28.94	1	-	--	0	0	20.1	8.1	5.9	1.1	--
MH #1	01/03/01	10:35 AM	28.65	20	T	--	0	0	20	9.5	7.2	0.95	--
MH #1	01/08/01	2:25 PM	28.85	20	-	--	0	0	20.4	1.1	0.9	0.65	--
MH #1	01/15/01	3:20 PM	28.55	33	-	--	0	0	20.7	3.2	3.2	0	--
MH #1	01/23/01	9:45 AM	28.78	30	-	--	0	0	19.7	-0.35	-0.44	-0.44	--
MH #1	01/30/01	1:40 PM	28.11	34	-	--	0	0	19.8	1.09	0.78	-0.22	--
MH #1	02/05/01	3:03 PM	28.55	28	-	--	0	0	20.1	0.04	0	-0.13	--
MH #1	02/13/01	2:00 PM	28.91	28	-	--	0	0	20.1	0.81	0.79	0.35	--
MH #1	02/19/01	1:25 PM	28.54	28	-	--	--	--	--	0.41	-0.02	-0.2	--
MH #1	02/26/01	10:30 AM	28.99	26	-	--	--	--	--	0.16	-1	-1.2	--
MH #1	03/19/01	3:30 PM	29.06	41	-	--	0	0	20.3	1.4	1.1	-0.2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
MH #1	03/28/01	9:35 AM	28.82	37	-	--	0	0	20.6	0	-0.1	-0.3	--
MH #1	04/02/01	2:22 PM	28.75	36	T	--	0	0	20.4	0.8	0.6	-0.1	--
MH #1	04/05/01	5:38 PM	28.73	38	T	--	0	0	20.6	15.6	8	1	--
MH #1	04/09/01	5:32 PM	28.76	40	-	--	0	0	20.7	7.48	5.06	0	--
MH #1	04/16/01	1:40 PM	28.73	36	-	--	0	0	20.9	0.02	0	-0.3	--
MH #1	04/17/01	3:20 PM	29.09	45	-	--	0	0	20.6	0	-0.02	-0.3	--
MH #1	04/18/01	2:13 PM	28.88	54	-	--	0	0	19.8	0	0	-0.5	--
MH #1	04/20/01	5:00 PM	28.59	49	-	--	0	0	19.6	0	0	-0.88	--
MH #1	04/21/01	1:35 PM	28.33	70	T	--	0	0	19.7	-0.32	-0.6	-0.8	--
MH #1	04/22/01	8:55 AM	29.05	39	-	--	0	0	19.7	0.36	0.25	0	--
MH #1	05/04/01	8:34 AM	29.08	57	-	--	0	0	18.7	0.01	0	-0.12	--
MH #1	05/08/01	10:05 AM	28.68	63	-	--	0	0	18.7	-0.36	-0.36	-0.55	--
MH #1	05/16/01	11:05 AM	28.44	74	-	--	0	0	18.9	-0.35	-0.35	-0.48	--
MH #1	05/30/01	1:52 PM	28.98	68	-	--	0	0	19	0.06	0	-0.53	--
MH #1	06/15/01	7:52 AM	28.56	66	0.04	--	0	0	20.2	-0.8	-0.8	-1.5	--
MH #1	07/18/01	10:35 AM	28.77	76	-	--	0	0	20.3	-0.4	-0.4	-0.65	--
MH #1	07/26/01	1:38 PM	29.06	71	-	--	0	0	20.4	-0.46	-0.51	-0.85	--
MH #1	07/31/01	2:00 PM	28.85	88	-	--	0	0	20.1	-0.01	-0.28	-0.6	--
MH #1	08/07/01	9:50 AM	28.91	88	-	--	0	0	20	0.08	0.04	-1.45	--
MH #1	08/15/01	5:37 PM	28.64	62	-	--	0	0	20	2	2	2	--
MH #1	08/22/01	10:52 AM	28.7	73	-	--	0	0	20.2	0.45	0.43	-0.13	--
MH #2	10/09/00	5:20 PM	28.97	53	-	--	0	0.4	20.2	1228	1150	-0.55	--
MH #2	10/16/00	5:58 PM	28.9	45	-	--	0	0.4	19.9	722	600	0.58	--
MH #2	10/23/00	2:40 PM	29.04	59	-	--	0	0.4	20	434	390	0.3	--
MH #2	10/30/00	2:52 PM	28.94	59	-	--	0	0.4	19.9	390	372	0.25	--
MH #2	11/08/00	3:41 PM	28.61	34	-	--	0	0.2	20.6	--	295	-1.1	--
MH #2	11/13/00	3:25 PM	28.37	32	0.07	--	0	0	20.2	479	444	0.07	--
MH #2	11/27/00	3:58 PM	28.45	32	-	--	0.1	0.3	20.2	--	--	--	--
MH #2	12/04/00	9:20 AM	28.68	27	-	--	0	0.2	20.3	255	251	0.67	--
MH #2	12/11/00	3:44 PM	28.76	10	-	--	0	0.3	20.1	364	205	-0.1	--
MH #2	12/20/00	10:40 AM	28.67	14	-	--	0	0.1	19.9	270	260	0.8	--
MH #2	01/08/01	2:10 PM	28.85	20	-	--	0	0.5	19.9	1047	1040	1	--
MH #2	01/15/01	3:10 PM	28.55	33	-	--	0	0.3	20.1	379	280	0.13	--
MH #2	01/23/01	9:10 AM	28.77	30	-	--	0	0	20.2	232	227	2.86	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
MH #2	01/30/01	1:25 PM	28.12	34	-	--	0	0.1	19.6	184	181	0.13	--
MH #2	02/05/01	3:42 PM	28.54	27	-	--	0	0	19.8	87.02	86.5	0.17	--
MH #2	02/13/01	1:51 PM	28.91	28	-	--	0	0	19.8	54	54	0.52	--
MH #2	02/19/01	1:17 PM	28.54	28	-	--	--	--	--	101	92	-0.2	--
MH #2	02/26/01	10:38 AM	28.99	26	-	--	--	--	--	121	100	-1.2	--
MH #2	03/05/01	4:15 AM	28.8	9	-	--	0	0	20.4	87	31	-0.2	--
MH #2	03/19/01	2:50 PM	29.06	41	-	--	0	0	20.3	20.2	11.5	-0.4	--
MH #2	03/28/01	9:25 AM	28.83	34	-	--	0	0	20.2	140	130	0.1	--
MH #2	04/02/01	2:16 PM	28.75	36	T	--	0	0	20.2	168	168	-0.1	--
MH #2	04/05/01	5:33 PM	28.73	38	T	--	0	0.2	20	119	119	1	--
MH #2	04/09/01	5:28 PM	28.76	42	-	--	0	0.1	20.2	545	510	0	--
MH #2	04/16/01	1:35 PM	28.73	36	-	--	0	0	20.8	112	112	-0.25	--
MH #2	04/17/01	3:10 PM	29.09	45	-	--	0	0	20.6	0.62	0.09	-0.39	--
MH #2	04/18/01	2:05 PM	28.88	54	-	--	0	0	19.5	24.79	5.3	-0.6	--
MH #2	04/20/01	5:07 PM	28.59	49	-	--	0	0	19.5	49	25	-1.02	--
MH #2	04/21/01	1:30 PM	28.33	70	T	--	0	0	19.6	0.32	-0.5	-1	--
MH #2	04/22/01	8:50 AM	29.05	39	-	--	0	0	19.6	80.23	71.93	-0.7	--
MH #2	05/04/01	8:30 AM	29.08	57	-	--	0	0.1	18.6	32.9	21.5	-0.3	--
MH #2	05/08/01	9:52 AM	28.68	63	-	--	0	0	18.7	1.65	1.45	-0.35	--
MH #2	05/16/01	10:15 AM	28.44	71	-	--	0	0	18.8	0.35	0	-0.55	--
MH #2	05/30/01	1:45 PM	28.98	68	-	--	0	0	18.7	208	144	-0.56	--
MH #2	06/15/01	7:47 AM	28.56	66	0.04	--	0	0	20	18.8	8.6	-1.3	--
MH #2	07/18/01	10:30 AM	28.77	76	-	--	0	0	20.4	2.1	1.5	-0.2	--
MH #2	07/26/01	1:25 PM	29.06	72	-	--	0	0	20.2	164	160	-0.4	--
MH #2	07/31/01	1:55 PM	28.85	88	-	--	0	0	20	41.13	40.71	-0.7	--
MH #2	08/07/01	9:43 AM	28.91	88	-	--	0	0	19.7	4.91	3	-1.65	--
MH #2	08/15/01	5:46 PM	28.64	62	-	--	0	0.1	19.6	500	500	1.5	--
MH #2	08/22/01	10:47 AM	28.7	73	-	--	0	0	20	34	30	-0.16	--
MH #3	10/09/00	4:25 PM	28.98	59	-	--	0	0	20.6	17.3	17	-0.25	--
MH #3	10/16/00	5:47 PM	28.9	45	-	--	0	0	20.5	49.19	48.75	1.33	--
MH #3	10/23/00	2:26 PM	29.04	59	-	--	0	0	20.5	22.3	21.9	0.5	--
MH #3	10/30/00	3:02 PM	28.94	59	-	--	0	0	20.5	30.1	30.2	0.17	--
MH #3	11/08/00	3:50 PM	28.61	34	-	--	0	0	20.7	--	24.9	0.24	--
MH #3	11/13/00	3:35 PM	28.37	32	0.06	--	0	0	20.2	76	76	0.44	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
MH #3	11/27/00	3:48 PM	28.45	32	-	--	0	0	20.6	18.92	18.85	0.14	--
MH #3	12/04/00	9:12 AM	28.68	27	-	--	0	0	20.5	14.8	14.4	0.49	--
MH #3	12/11/00	3:55 PM	28.76	10	-	--	0	0	20.3	5.58	5.52	-0.1	--
MH #3	12/20/00	10:20 AM	28.68	12	-	--	0	0	20.2	10.6	10.6	0.7	--
MH #3	12/27/00	10:30 AM	28.93	7	-	--	0	0	20.1	9.8	9.8	0.9	--
MH #3	01/03/01	10:50 AM	28.65	20	T	--	0	0	20.2	4.3	4.3	0.92	--
MH #3	01/08/01	2:00 PM	28.85	20	-	--	0	0	21	10.07	9.94	0.4	--
MH #3	01/15/01	3:00 PM	28.55	33	-	--	0	0	20.5	16.66	16.65	0	--
MH #3	01/23/01	9:00 AM	28.77	30	-	--	0	0	20.4	107	104	2.95	--
MH #3	01/30/01	1:15 PM	28.12	34	-	--	0	0	20	26	22.8	-0.73	--
MH #3	02/05/01	2:40 PM	28.55	28	-	--	0	0	20.3	4.35	4.35	-0.08	--
MH #3	02/13/01	1:41 PM	28.91	28	-	--	0	0	20.3	3.14	2.8	0.7	--
MH #3	02/19/01	1:10 PM	28.54	28	-	--	--	--	--	3.29	2.7	-0.5	--
MH #3	02/26/01	10:49 AM	28.99	26	-	--	--	--	--	3.54	2.1	-1.2	--
MH #3	03/05/01	4:05 PM	28.9	21	-	--	0	0	20.6	1.69	1.31	-0.5	--
MH #3	03/19/01	2:40 PM	29.06	41	-	--	0	0	20.5	29.4	27.2	-0.4	--
MH #3	03/28/01	9:15 AM	28.83	34	-	--	0	0	20.4	7.8	7.6	-0.2	--
MH #3	04/02/01	2:12 PM	28.75	36	T	--	0	0	20.4	15.8	15	-0.1	--
MH #3	04/05/01	5:28 PM	28.76	38	0.04	--	0	0	20.6	18.9	18.9	1	--
MH #3	04/09/01	5:22 PM	28.76	42	-	--	0	0	20.5	3.75	2.5	0	--
MH #3	04/16/01	1:25 PM	28.73	33	-	--	0	0	20.9	9.42	9.4	-0.35	--
MH #3	04/17/01	3:00 PM	29.09	45	-	--	0	0	20.6	1.13	0.25	-0.43	--
MH #3	04/18/01	2:00 PM	28.88	54	-	--	0	0	19.8	1	1	-0.6	--
MH #3	04/20/01	5:12 PM	28.59	49	-	--	0	0	19.6	6.08	2	-1.02	--
MH #3	04/21/01	1:24 PM	28.32	68	T	--	0	0	19.5	15.76	15.7	-0.8	--
MH #3	04/22/01	8:42 AM	29.05	39	-	--	0	0	19.6	9.84	9.75	-0.8	--
MH #3	05/04/01	8:19 AM	29.07	54	-	--	0	0	18.8	2.85	1.3	-0.3	--
MH #3	05/08/01	9:46 AM	28.68	63	-	--	0	0	18.8	1.29	0.9	-0.4	--
MH #3	05/16/01	10:05 AM	28.44	71	-	--	0	0	18.8	0.11	0.04	-0.37	--
MH #3	05/30/01	1:39 PM	28.98	68	-	--	0	0	18.7	86.97	85.45	-0.5	--
MH #3	06/15/01	7:42 AM	28.56	66	0.04	--	0	0	20.2	7.43	4.6	-1.1	--
MH #3	07/18/01	10:20 AM	28.76	76	-	--	0	0	20.3	13.2	5.5	-0.6	--
MH #3	07/26/01	1:14 PM	29.06	72	-	--	0	0	20.2	3.67	3.02	-0.84	--
MH #3	07/31/01	1:45 PM	28.85	88	-	--	0	0	20.2	1.67	1.64	-0.71	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
MH #3	08/07/01	9:33 AM	28.91	88	-	--	0	0	19.9	0.8	0.5	-1.65	--
MH #3	08/15/01	6:00 PM	28.64	62	-	--	0	0	19.9	53	53	1.5	--
MH #3	08/22/01	10:37 AM	28.7	73	-	--	0	0	20	10	6	-0.08	--
MH #4	10/09/00	4:17 PM	28.98	59	-	--	0.3	0.3	20.2	--	--	--	--
MH #4	10/16/00	5:34 PM	28.9	45	-	--	0.2	0.5	19.9	--	--	--	--
MH #4	10/23/00	2:15 PM	29.04	59	-	--	0.1	0.3	20.2	--	--	--	--
MH #4	10/30/00	3:15 PM	28.94	59	-	--	0.1	0.3	20	5016	4991	0.27	--
MH #4	11/08/00	4:10 PM	28.61	34	-	--	0	0	20.4	--	211	0.25	--
MH #4	11/13/00	3:50 PM	28.37	32	0.06	--	0	0	20.1	37.9	35.41	0.29	--
MH #4	11/27/00	3:37 PM	28.45	32	-	--	0	0.1	20.1	199	184	0.1	--
MH #4	12/04/00	9:01 AM	28.68	27	-	--	0	0.2	20.2	265	265	0.09	--
MH #4	12/11/00	4:00 PM	28.76	10	-	--	0	0.1	20	568	450	-0.1	--
MH #4	12/20/00	10:10 AM	28.68	12	-	--	0	0.3	19.7	822	750	0.8	--
MH #4	12/27/00	10:45 AM	28.93	7	-	--	0	0.1	20	799	695	0.9	--
MH #4	01/03/01	11:15 AM	28.65	20	T	--	0	0.2	20.1	812	555	0.94	--
MH #4	01/08/01	1:45 PM	28.85	20	-	--	0	0	20.8	290	290	1	--
MH #4	01/15/01	2:55 PM	28.55	33	-	--	0	0	20.2	120	120	0.1	--
MH #4	01/23/01	8:40 AM	28.77	30	-	--	0	0	20.5	181	175	0.95	--
MH #4	01/30/01	12:55 PM	28.12	34	-	--	0	0	20.1	30.82	30.21	-0.48	--
MH #4	02/05/01	2:21 PM	28.56	26	-	--	0	0	20.3	94.58	91.69	1.54	--
MH #4	02/13/01	1:31 PM	28.91	28	-	--	0	0	20.3	21.3	21.3	0.8	--
MH #4	02/19/01	12:54 PM	28.54	28	-	--	--	--	--	305	296	0.1	--
MH #4	02/26/01	11:00 AM	28.99	26	-	--	--	--	--	40	38	0.3	--
MH #4	03/05/01	3:50 PM	28.9	21	-	--	0	0	20.6	56.3	51.7	0.2	--
MH #4	03/19/01	2:26 PM	29.07	41	-	--	0	0	20.5	64.7	64	-0.3	--
MH #4	03/28/01	9:00 AM	28.83	34	-	--	0	0	20.1	235	140	0.4	--
MH #4	04/02/01	2:03 PM	28.75	36	T	--	0	0	20.3	275	265	-0.2	--
MH #4	04/05/01	5:19 PM	28.76	38	0.04	--	0	0	20.7	270	200	1	--
MH #4	04/09/01	5:12 PM	28.76	42	-	--	0	0	20.3	126	126	0	--
MH #4	04/16/01	1:15 PM	28.73	33	-	--	0	0	20.6	103	103	-0.25	--
MH #4	04/17/01	2:50 PM	29.09	45	-	--	0	0	20.4	105	95	-0.5	--
MH #4	04/18/01	1:50 PM	28.88	54	-	--	0	0.1	19.3	689	650	-0.4	--
MH #4	04/20/01	5:20 PM	28.59	49	-	--	0	0	19.5	47	46	-1.03	--
MH #4	04/21/01	1:16 PM	28.32	68	T	--	0	0	19.4	290	290	-1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
MH #4	04/22/01	8:35 AM	29.05	39	-	--	0	0.2	19.2	517	450	-0.5	--
MH #4	05/04/01	8:12 AM	29.07	54	-	--	0	0.2	18.4	304	206	-0.3	--
MH #4	05/08/01	9:39 AM	28.68	63	-	--	0	0.2	18.4	620	570	-0.3	--
MH #4	05/16/01	9:55 AM	28.44	71	-	--	0	0.2	18.4	125	89.9	-0.3	--
MH #4	05/30/01	1:29 PM	28.97	67	-	--	0	0.2	18.5	196	184	-0.58	--
MH #4	06/15/01	7:32 AM	28.56	66	0.04	--	0	0.4	19.7	1525	1520	-0.19	--
MH #4	07/18/01	10:10 AM	28.76	76	-	--	0	0.2	19.8	450	260	-0.16	--
MH #4	07/26/01	12:56 PM	29.06	72	-	--	0	0.3	19.5	1001	990	1	--
MH #4	07/31/01	1:33 PM	28.85	88	-	--	0	0	20	971	940	0	--
MH #4	08/07/01	9:20 AM	28.91	85	-	--	0	0.2	19.4	718	709	-1.5	--
MH #4	08/15/01	6:10 PM	28.64	62	-	--	0	0.4	19.4	2650	2650	1.5	--
MH #4	08/22/01	11:00 AM	28.7	73	-	--	0	0.2	19.6	1628	1624	0.13	--
MMS-1	04/02/07	12:49 PM	28.66	45	-	--	--	--	--	--	--	--	--
MMS-1	07/20/07	9:02 AM	30.25	65	-	--	--	--	--	--	--	--	--
MMS-1	11/30/07	11:10 AM	30.15	10	-	--	--	--	--	--	--	--	--
MMS-2	04/02/07	12:51 PM	28.66	45	-	--	--	--	--	--	--	--	--
MMS-2	07/20/07	9:04 AM	30.25	65	-	--	--	--	--	--	--	--	--
MMS-2	11/30/07	11:12 AM	30.15	10	-	--	--	--	--	--	--	--	--
MMS-3	04/02/07	12:53 PM	28.66	45	-	--	--	--	--	--	--	--	--
MMS-3	07/20/07	9:05 AM	30.25	65	-	--	--	--	--	--	--	--	--
MMS-3	11/30/07	11:13 AM	30.15	10	-	--	--	--	--	--	--	--	--
MW-7	05/20/00	2:16 PM	28.74	68	-	0.05	--	--	--	--	--	--	--
River Boil	04/14/99	2:30 PM	28.64	64.9	-	--	85.5	0.9	5	--	--	--	--
River Boil	04/15/99	12:00 PM	28.42	60.1	-	--	78.3	5	0	--	--	--	--
River Boil	04/17/99	12:00 PM	28.59	39.9	-	--	85.1	6	0	--	--	--	--
River Boil	04/19/99	12:00 PM	28.67	48.9	-	--	90.5	5.9	0.2	--	--	--	--
River Boil	04/21/99	12:00 PM	28.62	46	-	1	91.5	5.9	2.1	--	--	--	--
River Boil	04/28/99	3:00 AM	28.97	39.9	-	1.9	84.7	5.8	0	--	--	--	--
River Boil	04/30/99	8:54 AM	29.17	62.1	-	1.5	92.5	6.6	0.1	--	--	--	--
River Boil	05/04/99	12:00 PM	28.57	75.9	-	1.8	86.5	5.5	0	--	--	--	--
River Boil	06/15/99	8:00 AM	28.92	53.1	-	1.3	81.5	5.2	0	--	--	--	--
TSG-1	11/24/98	10:35 AM	28.89	39.9	-	--	0	6.3	13.6	--	--	--	--
TSG-1	12/01/98	1:43 PM	28.71	51	-	--	0	6.4	10.4	--	--	4	--
TSG-1	12/04/98	1:10 PM	28.75	47	-	--	0	0.1	20.1	2500	250	1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
TSG-1	12/08/98	12:46 PM	28.72	40	-	--	0	10.8	4	10	--	1.25	--
TSG-1	12/10/98	9:15 AM	29.02	29	-	--	0	4.6	15.2	2250	20	1.25	--
TSG-1	12/21/98	10:57 AM	28.76	16	T	--	0	9.5	5	300	20	1.5	--
TSG-1	12/22/98	10:45 AM	29.01	-5	-	--	0	4.7	12.2	<1	<1	<1	--
TSG-1	12/28/98	2:03 PM	28.58	25	-	--	0	10	4	--	--	--	--
TSG-1	12/30/98	8:52 AM	28.76	-9	-	--	0	7.4	8.8	300	--	1.5	--
TSG-1	01/05/99	11:32 AM	28.73	6.1	-	--	--	--	--	--	--	--	--
TSG-1	04/13/99	3:09 PM	28.83	63	-	-0.03	0	5	8.9	15	<2	2	--
TSG-2	11/24/98	11:47 AM	28.88	41	-	--	0	5.3	13.5	--	--	--	--
TSG-2	12/01/98	1:54 PM	28.71	51	-	--	0	5	14.1	<1	<1	2.5	--
TSG-2	12/04/98	1:20 PM	28.75	47	-	--	0	5	14.1	1500	50	1.25	--
TSG-2	12/04/98	1:54 PM	28.75	48	-	-0.51	2.2	0.1	19.6	--	--	--	--
TSG-2	12/08/98	1:24 PM	28.72	40	-	--	0	5	14.2	3	2.25	1.25	--
TSG-2	12/10/98	9:53 AM	29.04	29	-	--	0	5.3	13.9	20	<1	1	--
TSG-2	12/21/98	11:46 AM	28.75	16	-	--	0	4.7	12.5	35	--	1.5	--
TSG-2	12/22/98	10:59 AM	29.01	-5	-	--	0	4.7	12.2	<1	<1	<1	--
TSG-2	12/28/98	2:23 PM	28.58	25	-	--	0	4.7	12.1	--	--	--	--
TSG-2	12/30/98	8:48 AM	28.76	-9	-	--	0	4.4	13.7	300	250	1.5	--
TSG-2	01/05/99	12:42 PM	28.69	8.1	-	--	0	4.8	23.9	2	<1	<1	--
TSG-2	01/07/99	11:45 AM	28.91	0	-	--	0	4.9	12.7	1.5	<1	1.5	--
TSG-2	01/14/99	1:58 PM	28.97	6.1	-	--	0	4.8	15.1	<1	<1	1.5	--
TSG-2	01/15/99	11:44 AM	28.56	12.9	-	--	0	4.7	15.4	<1	<1	2	--
TSG-2	01/19/99	1:42 PM	28.61	27	-	--	0	4.6	15.4	2	<1	1.75	--
TSG-2	01/22/99	8:59 AM	28.69	27	-	--	0	0.3	19.7	1.5	1.5	1.5	--
TSG-2	01/25/99	--	--	--	--	--	--	--	--	--	--	--	--
TSG-2	04/13/99	3:15 PM	28.83	63	-	-0.85	0	0.1	20.4	2	<2	2	--
TSG-3	11/24/98	10:54 AM	28.89	39.9	-	--	0	3.1	16.2	--	--	--	--
TSG-3	12/01/98	2:04 PM	28.71	51	-	--	0	4.4	14.1	125	<1	2.5	--
TSG-3	12/04/98	1:39 PM	28.75	48	-	--	0	4.3	14.5	250	8	1.25	--
TSG-3	12/08/98	1:10 PM	28.72	40	-	--	0	5	13.7	7	5	1.25	--
TSG-3	12/10/98	9:39 AM	29.04	29	-	--	0	0	19.5	30	1	1	--
TSG-3	12/21/98	11:27 AM	28.76	16	T	--	0	5	10.4	40	30	1.25	--
TSG-3	12/22/98	10:23 AM	29.01	-7	-	--	0	2.8	14.4	2	<1	<1	--
TSG-3	12/28/98	12:52 PM	28.61	20	-	--	0	6	8.8	10	3.5	3.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
TSG-3	12/30/98	9:12 AM	28.76	-9	-	--	0	4	11.4	1.5	1.5	1.5	--
TSG-3	01/05/99	11:56 AM	28.73	6.1	-	--	0	4.8	10.5	20	--	1	--
TSG-3	01/07/99	10:53 AM	28.93	-2.9	-	--	0	3.8	12.3	32	<1	2	--
TSG-3	01/14/99	1:21 PM	29	6.1	T	--	0	3.9	15.3	4.5	--	3	--
TSG-3	01/15/99	11:09 AM	28.59	3	0.02	--	0	5.5	10.4	25	--	4	--
TSG-3	01/19/99	1:03 PM	28.61	25	-	--	0	4.3	13.2	3000	--	2	--
TSG-3	01/22/99	8:28 AM	28.73	26.1	-	--	0	4.7	14.5	175	--	2	--
TSG-3	01/25/99	2:14 PM	28.93	26.1	-	--	0	3.1	16.3	55	<1	1.5	--
TSG-3	01/27/99	1:16 PM	28.52	28	T	--	0	5.2	11.5	11	--	1	--
TSG-3	02/02/99	11:55 AM	28.25	33.1	T	--	0	7.8	3.9	1000	--	<1	--
TSG-3	02/08/99	3:19 PM	28.34	36	-	--	0	6.2	13	600	--	2	--
TSG-3	02/09/99	2:16 PM	28.59	39	-	--	0	4.7	11.6	28	--	2	--
TSG-3	02/24/99	11:39 AM	28.8	23	0.01	--	0	5	12.1	<1	<1	1	--
TSG-3	03/14/99	11:25 AM	28.91	36	-	--	--	--	--	1500	500	1.5	--
TSG-3	03/24/99	12:50 PM	28.86	36	-	--	0	2.9	15.8	25	--	1.5	--
TSG-3	04/13/99	3:25 PM	28.83	63	-	-0.01	0	4	12.5	5	<2	2	--
TSG-3	05/13/99	2:08 PM	28.81	62.1	-	--	0	6.3	12.2	1250	1000	2.5	--
TSG-4	11/24/98	11:00 AM	28.89	39.9	-	--	0	3.3	16.1	--	--	--	--
TSG-4	12/01/98	2:20 PM	28.71	51	-	--	0	3.2	16.2	<1	<1	2.5	--
TSG-4	12/04/98	1:43 PM	28.75	48	-	--	0	3.2	16.2	45	5	1.25	--
TSG-4	12/08/98	1:14 PM	28.72	40	-	--	0	3.3	16.2	1.25	<1	1.25	--
TSG-4	12/10/98	9:44 AM	29.04	29	-	--	0	3.4	16.1	70	2.25	1	--
TSG-4	12/21/98	11:32 AM	28.75	16	-	--	0	3	13	8	<1	1.25	--
TSG-4	12/22/98	10:37 AM	29.01	-5	-	--	0	1.7	15.4	<1	<1	<1	--
TSG-4	12/28/98	1:23 PM	28.61	20	-	--	0	3.4	13.1	1.5	1.5	1.5	--
TSG-4	12/30/98	9:07 AM	28.76	-9	-	--	0	2.6	14.1	1.5	1.5	1.5	--
TSG-4	01/05/99	12:01 PM	28.73	6.1	-	--	0	3.1	13.6	2.75	<1	1	--
TSG-4	01/07/99	11:38 AM	28.91	0	-	--	0	3.1	13.6	2	<1	2	--
TSG-4	01/14/99	1:36 PM	28.97	6.1	-	--	0	2	18	1.75	1	3	--
TSG-4	01/15/99	11:13 AM	28.59	3	0.02	--	0	3	17.1	70	3	3	--
TSG-4	01/19/99	1:08 PM	28.61	25	-	--	0	12.7	16.3	12	<1	2	--
TSG-4	01/22/99	8:32 AM	28.69	27	-	--	0	2.8	16.8	15	1	1.5	--
TSG-4	01/25/99	2:20 PM	28.93	26.1	-	--	0	2.1	17.2	<1	<1	1.5	--
TSG-4	01/27/99	1:20 PM	28.52	28	T	--	0	1.6	17.6	10	1.5	1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
TSG-4	02/02/99	11:43 AM	28.25	33.1	T	--	0	3	15.9	2.75	<1	<1	--
TSG-4	02/09/99	2:21 PM	28.59	39	-	--	0	2.6	16.1	4	1	2	--
TSG-4	02/24/99	11:50 AM	28.8	23	0.01	--	0	0	19.5	1.25	<1	1	--
TSG-4	03/14/99	11:35 AM	28.89	37.9	-	--	--	--	--	--	--	--	--
TSG-4	03/24/99	12:56 PM	28.86	36	-	--	0	2.5	16.2	1.5	<1	<1	--
TSG-4	04/13/99	3:32 PM	28.81	63	-	0	0	2.1	16.5	6	<2	2	--
TSG-4	05/13/99	2:12 PM	28.81	62.1	-	--	0	3	15.1	<1	<1	2.5	--
TSG-5	11/24/98	11:16 AM	28.89	39.9	-	--	0	1.4	18.6	--	--	--	--
TSG-5	12/01/98	1:47 PM	28.71	51	-	--	0	1.4	18.6	<1	<1	3	--
TSG-5	12/04/98	1:16 PM	28.75	47	-	--	0	1.4	18.6	4000	70	1.25	--
TSG-5	12/08/98	12:51 PM	28.72	40	-	--	0	1.4	18.7	1.25	<1	1.25	--
TSG-5	12/10/98	9:20 AM	29.02	29	-	--	0	1.3	18.1	70	10	1.25	--
TSG-5	12/21/98	11:06 AM	28.76	16	T	--	0	1.4	15.7	200	4.5	1.25	--
TSG-5	12/22/98	10:48 AM	29.01	-5	-	--	0	1	15.6	2.5	<1	<1	--
TSG-5	12/28/98	1:04 PM	28.61	20	-	--	0	1.5	15.1	1.5	1.5	1.5	--
TSG-5	12/30/98	9:40 AM	28.76	-5	-	--	0	1.3	15.8	30	15	1.5	--
TSG-5	01/05/99	11:50 AM	28.73	6.1	-	--	0	1.4	15.5	<1	<1	1.25	--
TSG-5	01/07/99	11:32 AM	28.91	0	-	--	0	1.5	14.9	2.5	<1	2	--
TSG-5	01/14/99	1:54 PM	28.97	6.1	-	--	0	1.5	17.9	<1	<1	1.5	--
TSG-5	01/15/99	11:22 AM	28.59	3	0.02	--	0	1.4	18.6	8	<1	2.5	--
TSG-5	01/19/99	1:20 PM	28.61	25	-	--	0	1.2	18.6	5.5	<1	1.75	--
TSG-5	01/22/99	8:48 AM	28.69	27	-	--	0	1.3	18.8	1.5	<1	1.5	--
TSG-5	01/25/99	2:44 PM	28.94	26.1	-	--	0	1.1	18.3	1.75	<1	1.75	--
TSG-5	01/27/99	1:45 PM	28.52	28	-	--	0	0	19.3	1.25	<1	1	--
TSG-5	02/02/99	12:01 PM	28.25	33.1	T	--	0	1.4	18.1	3.75	<1	<1	--
TSG-5	02/09/99	2:33 PM	28.61	39	-	--	0	1.1	18.5	7	<1	2	--
TSG-5	02/24/99	11:56 AM	28.8	23	0.01	--	0	0.4	18.1	<1	<1	1.5	--
TSG-5	03/14/99	11:56 AM	28.89	37.9	-	--	0	1.2	14.8	30	2	1.25	--
TSG-5	03/24/99	1:18 PM	28.86	36	-	--	0	0	20.2	<1	--	--	--
TSG-5	04/13/99	3:00 PM	28.83	63	-	0.25	0	1	18.8	2	<2	2	--
TSG-5	05/13/99	1:55 PM	28.81	62.1	-	--	0	1.1	18.4	5	<1	3.25	--
TSG-6	11/24/98	11:38 AM	28.88	41	-	--	0	1.2	18.9	--	--	--	--
TSG-6	12/01/98	2:12 PM	28.71	51	-	--	0	1.2	18.9	<1	<1	2.5	--
TSG-6	12/04/98	1:30 PM	28.75	48	-	--	0	1.2	19	70	14	1.25	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
TSG-6	12/08/98	1:01 PM	28.72	40	-	--	0	1.2	19.1	50	<1	1.25	--
TSG-6	12/10/98	9:30 AM	29.04	29	-	--	0	1.3	18.3	120	3	1.25	--
TSG-6	12/21/98	11:17 AM	28.76	16	T	--	0	1.2	15.8	400	5.5	1.25	--
TSG-6	12/22/98	10:31 AM	29.01	-5	-	--	0	1.1	16.3	<1	<1	<1	--
TSG-6	12/28/98	1:54 PM	28.58	25	-	--	0	1.3	15.6	1.5	1.5	1.5	--
TSG-6	12/30/98	9:26 AM	28.76	-9	-	--	0	1.1	16.1	3	1.5	1.5	--
TSG-6	01/05/99	11:35 AM	28.73	6.1	-	--	0	1.2	16.1	1.75	--	1	--
TSG-6	01/07/99	11:01 AM	28.93	-2.9	-	--	0	1.3	15.1	3.5	3.5	2	--
TSG-6	01/14/99	1:41 PM	28.97	6.1	-	--	0	1.2	18.5	<1	<1	2.5	--
TSG-6	01/15/99	11:32 AM	28.56	12.9	-	--	0	1.2	18.9	4	<1	2.5	--
TSG-6	01/19/99	1:27 PM	28.61	25	-	--	0	1	19	2	<1	1.75	--
TSG-6	01/22/99	8:43 AM	28.69	27	-	--	0	1.1	19.5	2	<1	1.5	--
TSG-6	01/25/99	2:36 PM	28.94	26.1	-	--	0	0.9	18.9	<1	<1	1.5	--
TSG-6	01/27/99	1:34 PM	28.52	28	-	--	0	1.1	18.4	3.25	<1	1	--
TSG-6	02/02/99	11:28 AM	28.26	33.1	0.01	--	0	1.1	18.7	28	2.25	<1	--
TSG-6	02/09/99	2:42 PM	28.61	39	-	--	0	1	18.5	5	<1	2	--
TSG-6	02/24/99	12:18 PM	28.8	23	0.01	--	0	0	19.6	1.25	1.25	1.25	--
TSG-6	03/14/99	11:49 AM	28.89	37.9	-	--	--	--	--	--	--	--	--
TSG-6	03/24/99	1:06 PM	28.86	36	-	--	0	0.9	19.1	5	--	1	--
TSG-6	04/13/99	3:46 PM	28.81	63	-	-0.04	0	0.3	19.5	2	<2	2	--
TSG-6	05/13/99	2:00 PM	28.81	62.1	-	--	0	1	18.8	<1	<1	2.5	--
TSG-6	05/13/99	2:00 PM	28.81	62.1	-	--	0	1	18.8	1	1	2.5	--
TSG-7	11/24/98	11:32 AM	28.88	41	-	--	0	1.2	19.2	--	--	--	--
TSG-7	12/01/98	2:08 PM	28.71	51	-	--	0	1.1	19.1	<1	<1	2.5	--
TSG-7	12/04/98	1:34 PM	28.75	48	-	--	0	1.1	19.1	400	10	1.25	--
TSG-7	12/08/98	1:06 PM	28.72	40	-	--	0	1.1	19.3	8	<1	1.25	--
TSG-7	12/10/98	9:35 AM	29.04	29	-	--	0	1.2	18.5	50	1.75	1	--
TSG-7	12/21/98	11:22 AM	28.76	16	T	--	0	1.1	16	30	2	1.25	--
TSG-7	12/22/98	10:27 AM	29.01	-7	-	--	0	0.9	16.8	<1	<1	<1	--
TSG-7	12/28/98	1:10 PM	28.61	20	-	--	0	1.1	15.7	--	--	--	--
TSG-7	12/30/98	9:19 AM	28.76	-9	-	--	0	1.1	16.4	1.5	1.5	1.5	--
TSG-7	01/05/99	12:10 PM	28.73	6.1	-	--	0	0.5	28.2	1.25	<1	<1	--
TSG-7	01/07/99	11:09 AM	28.93	-2.9	-	--	0	1.1	15.6	1.75	<1	1.75	--
TSG-7	01/14/99	1:57 PM	28.97	6.1	-	--	0	1	18.9	<1	<1	2.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
TSG-7	01/15/99	11:37 AM	28.56	12.9	-	--	0	0.9	19.2	<1	<1	2.5	--
TSG-7	01/19/99	1:32 PM	28.61	27	-	--	0	0.9	19.1	2.25	<1	2	--
TSG-7	01/22/99	8:38 AM	28.69	27	-	--	0	0.8	19.7	9	<1	1.5	--
TSG-7	01/25/99	2:28 PM	28.93	26.1	-	--	0	0.7	19.1	<1	<1	1.5	--
TSG-7	01/27/99	1:27 PM	28.52	28	T	--	0	0.8	19	2	<1	1	--
TSG-7	02/02/99	11:35 AM	28.25	33.1	T	--	0	0.8	19.1	14	<1	1	--
TSG-7	02/09/99	2:50 PM	28.61	39	-	--	0	0.8	18.8	3.5	<1	1.25	--
TSG-7	02/24/99	12:27 PM	28.8	23	0.01	--	0	0	19.5	<1	<1	1	--
TSG-7	03/14/99	11:39 AM	28.89	37.9	-	--	0	0	16.8	1750	--	1.5	--
TSG-7	03/24/99	1:01 PM	28.86	36	-	--	0	0	20.1	2	1.5	1	--
TSG-7	04/13/99	3:40 PM	28.81	63	-	-0.01	0	0.3	19.6	2	<2	2	--
TSG-7	05/13/99	2:05 PM	28.81	62.1	-	--	0	0.2	19.6	1.5	<1	2.5	--
TSG-8	11/24/98	10:45 AM	28.89	39.9	-	--	0	3	17.2	--	--	--	--
TSG-8	12/01/98	1:58 PM	28.71	51	-	--	0	6.6	8.4	30	5	3	--
TSG-8	12/04/98	1:25 PM	28.75	47	-	--	0	7.2	11.4	550	--	1.25	--
TSG-8	12/08/98	12:57 PM	28.72	40	-	--	0	11.3	0.5	1000	--	1.25	--
TSG-8	12/10/98	9:25 AM	29.02	29	-	--	0	3.3	16.6	45	5.5	1.25	--
TSG-8	12/21/98	11:11 AM	28.76	16	T	--	2.5	11	0.2	1500	--	1.25	--
TSG-8	12/22/98	10:20 AM	29.01	-7	-	--	0	2.5	14.9	350	<1	<1	--
TSG-8	12/28/98	12:49 PM	28.61	20	-	--	0.7	10.9	0	3000	34	2.5	--
TSG-8	12/30/98	9:32 AM	28.76	-5	-	--	0	6.6	7.2	350	--	1.5	--
TSG-8	01/05/99	11:29 AM	28.77	1	-	--	0	9.1	4.8	4	--	--	--
TSG-8	01/07/99	10:49 AM	28.93	-2.9	-	--	0	3.6	13.3	8000	--	2	--
TSG-8	01/14/99	1:17 PM	29	6.1	T	--	0	7.7	6.7	--	--	3	--
TSG-8	01/15/99	11:03 AM	28.59	3	0.02	--	3.3	11.6	0	1500	--	4	--
TSG-8	01/18/99	3:53 PM	28.05	33.1	T	--	3.7	10.1	1.1	--	--	--	--
TSG-8	01/19/99	12:57 PM	28.61	25	-	--	0	3.6	15.7	10	<1	2	--
TSG-8	01/21/99	1:10 PM	28.77	25	-	--	0	3.4	16.7	4	<1	1	--
TSG-8	01/22/99	8:23 AM	28.73	26.1	-	--	0	7.8	8.6	20	--	2	--
TSG-8	01/25/99	2:07 PM	28.93	26.1	-	--	0	2.9	17.2	7.5	<1	2	--
TSG-8	01/27/99	1:11 PM	28.52	28	T	--	2	11.1	0.2	5000	--	1	--
TSG-8	01/29/99	11:10 AM	28.99	28	-	--	0	3.3	15.4	18	<1	1	--
TSG-8	02/01/99	3:42 PM	28.65	30.9	-	--	1.5	10.8	0	1500	--	2	--
TSG-8	02/02/99	11:08 AM	28.26	33.1	0.01	--	6.3	12	0.4	1250	--	1.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
TSG-8	02/05/99	10:02 AM	28.81	19	-	--	0	5.9	13.3	8000	--	1.5	--
TSG-8	02/08/99	3:11 PM	28.34	36	-	--	4.2	11.5	9.6	2000	--	2	--
TSG-8	02/09/99	1:27 PM	28.57	37.9	-	--	--	--	--	--	--	--	--
TSG-8	02/24/99	11:20 AM	28.84	21.9	T	--	0	0	19.3	<1	<1	1	--
TSG-8	03/14/99	11:18 AM	28.91	36	-	--	--	--	--	--	--	--	--
TSG-8	03/24/99	12:46 PM	28.86	36	-	--	--	--	--	--	--	--	--
TSG-9	11/24/98	11:08 AM	28.89	39.9	-	--	0	6.3	11.4	--	--	--	--
TSG-9	12/01/98	2:24 PM	28.71	51	-	--	0	7.3	10.5	<1	<1	2.5	--
TSG-9	12/04/98	1:47 PM	28.75	48	-	--	0	6	13.2	50	3.5	1.25	--
TSG-9	12/08/98	1:19 PM	28.72	40	-	--	0	5.5	13.7	2.5	<1	1.25	--
TSG-9	12/10/98	9:48 AM	29.04	29	-	--	0	4.8	14.9	17	1	1	--
TSG-9	12/21/98	11:38 AM	28.75	16	-	--	0	5.1	11	12	--	1.25	--
TSG-9	12/22/98	11:03 AM	29.01	-5	-	--	0	4.6	11.7	<1	<1	<1	--
TSG-9	12/28/98	12:56 PM	28.61	20	-	--	0	6.5	8.1	15	--	2.5	--
TSG-9	12/30/98	9:00 AM	28.76	-9	-	--	0	5.7	10.5	100	100	1.5	--
TSG-9	01/05/99	12:05 PM	28.73	6.1	-	--	0	0	16.6	2	<1	<1	--
TSG-9	01/07/99	11:48 AM	28.91	0	-	--	0	5.3	11.1	1.5	<1	1.5	--
TSG-9	01/14/99	1:32 PM	28.97	6.1	-	--	0	4.9	14.9	--	--	3	--
TSG-9	01/15/99	11:18 AM	28.59	3	0.02	--	0	5.4	13.3	25	--	2.5	--
TSG-9	01/19/99	1:14 PM	28.61	25	-	--	0	5.4	10.9	125	--	1.75	--
TSG-9	01/22/99	8:53 AM	28.69	27	-	--	0	5	14.4	4	--	2	--
TSG-9	01/25/99	2:57 PM	28.94	26.1	-	--	0	3.8	15	<1	<1	1.25	--
TSG-9	01/27/99	1:40 PM	28.52	28	-	--	0	4.8	13.2	1.25	<1	1	--
TSG-9	02/02/99	11:49 AM	28.25	33.1	T	--	0	5.3	6.8	50	--	<1	--
TSG-9	02/09/99	2:27 PM	28.59	39	-	--	0	4.4	12.3	2	--	2	--
TSG-9	02/24/99	12:04 PM	28.8	23	0.01	--	0	0	19.5	--	--	1.5	--
TSG-9	03/14/99	12:07 PM	28.89	37.9	-	--	--	--	--	--	--	--	--
TSG-9	03/24/99	1:12 PM	28.86	36	-	--	0	3.9	12.8	3.5	--	<1	--
TSG-9	04/13/99	3:21 PM	28.83	63	-	-0.02	0	0	20.5	4	<2	2	--
TSG-9	05/13/99	2:19 PM	28.81	62.1	-	--	0	4	13.6	18	--	2.5	--
USGS-Probe	09/17/97	1:34 PM	--	--	--	10.5	95.5	2.1	0	--	--	--	--
USGS-Probe	09/17/97	7:16 PM	--	--	--	>2	94.9	2.1	0	--	--	--	--
USGS-Probe	09/18/97	6:51 AM	--	--	--	>2	95.8	2.2	0	--	--	--	--
USGS-Probe	09/18/97	6:38 PM	--	--	--	>2	92.3	2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
USGS-Probe	10/08/97	7:20 AM	28.76	57	-	10	94.1	2.1	0.1	--	--	--	--
USGS-Probe	10/10/97	7:30 AM	29.08	43	-	9	95.1	2.2	0.1	--	--	--	--
USGS-Probe	10/14/97	11:20 AM	28.75	39	-	9.2	96.4	2.4	0	--	--	--	--
USGS-Probe	09/09/98	4:20 PM	28.84	73.9	-	7.3	87.3	2	0	--	--	--	--
USGS-Probe	09/10/98	5:20 PM	28.66	80.1	-	9	87.1	2	0	--	--	--	--
USGS-Probe	09/11/98	5:54 PM	28.57	89.1	-	8.8	84.9	1.9	0.2	--	--	--	--
USGS-Probe	09/12/98	4:19 PM	28.69	79	-	6.81	85.5	1.9	0	--	--	--	--
USGS-Probe	09/13/98	11:46 AM	28.66	71.1	-	6.6	86.6	2	0	--	--	--	--
USGS-Probe	09/25/98	10:00 AM	28.52	66.9	-	7.6	87.2	2.1	0	--	--	--	--
USGS-Probe	09/28/98	2:02 PM	28.7	70	-	6.47	85.4	2	0.7	--	--	--	--
USGS-Probe	10/07/98	3:39 PM	28.74	51.1	-	5.44	87.8	2.1	0	--	--	--	--
USGS-Probe	09/14/99	11:18 AM	28.64	54	-	2.23	89.5	2.4	0	--	--	--	--
USGS-Probe	09/30/99	10:04 AM	28.47	55	-	4.5	85.7	2.2	0	--	--	--	--
USGS-Probe	10/07/99	3:45 PM	28.7	48.9	-	3.7	83.3	2.2	0	--	--	--	--
USGS-Probe	10/23/99	4:18 PM	28.89	34	-	1.38	100.9	2.6	0	--	--	--	--
USGS-Probe	11/06/99	4:22 PM	29.08	46	-	2.21	107.2	2.5	0	--	--	--	--
USGS-Probe	03/04/00	2:58 PM	28.53	55.9	-	0.31	91.4	2.1	0	--	--	--	--
USGS-Probe	03/05/00	11:15 AM	28.75	46.9	-	4.55	93.9	2.1	0	--	--	--	--
USGS-Probe	03/06/00	11:32 AM	28.77	57.9	-	4.55	91.7	2	0	--	--	--	--
USGS-Probe	03/15/00	9:23 AM	28.52	27	0.04	6.86	94	2.1	0	--	--	--	--
USGS-Probe	04/30/00	10:08 AM	28.91	61	-	1.09	91.6	2	0	--	--	--	--
GM-2A-influent	09/21/01	2:00 PM	28.67	68	-	-44	3.5	3	0.6	--	--	--	--
GM-2A-influent	09/22/01	10:42 AM	28.79	62	-	-59	2	2.6	2.9	--	--	--	--
GM-2A-influent	09/23/01	9:00 AM	28.83	50	0.12	-64	1.6	2.3	5	--	--	--	--
GM-2A-influent	09/24/01	8:20 AM	29.09	44	-	-68	1.34	2.2	6.9	--	--	--	--
GM-2A-influent	09/25/01	8:13 AM	29.03	43	-	-68	1.1	2.1	9.3	--	--	--	--
GM-2A-influent	09/26/01	7:25 AM	28.73	52	-	-64	1.1	2.1	10.4	--	--	--	--
GM-2A-influent	10/01/01	2:33 PM	28.7	75	-	-63.5	0.4	1.7	15	17400	17400	5.35	--
GM-2A-influent	10/02/01	9:35 AM	28.69	64	-	-72	0.5	1.7	15.1	15300	15300	5.5	--
GM-2A-influent	10/03/01	11:15 AM	28.49	56	-	-70	0.5	1.6	15.4	17300	17200	1.15	--
GM-2A-influent	10/04/01	7:55 AM	28.68	48	-	-72	0.4	1.6	15.8	16500	16300	5.9	--
GM-2A-influent	10/05/01	11:10 AM	28.73	48	-	-72	0.3	1.6	16.7	9800	9750	1	--
GM-2A-influent	10/06/01	8:35 AM	28.74	39	-	-74	0.2	1.5	16.5	9100	9000	0.6	--
GM-2A-influent	10/07/01	9:00 AM	29.01	36	-	-74	0	1.4	17	7600	7500	0.3	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GM-2A-influent	10/08/01	8:00 AM	29.09	35	-	-74	0	1.4	16.1	7000	6900	0.5	--
GM-2A-influent	10/09/01	8:05 AM	28.81	55	-	-72	0	1.3	16.2	6900	6800	0.3	--
GM-2A-influent	10/10/01	10:10 AM	28.57	59	-	-72	0	1.3	16.5	6400	6300	0.3	--
GM-2A-influent	10/12/01	3:15 PM	28.64	53	-	-72	0	1.3	16.6	--	--	--	--
GM-2A-influent	10/13/01	11:35 AM	28.39	52	T	-73	0	1.2	16.6	--	--	--	--
GM-2A-influent	10/14/01	1:22 PM	28.21	55	-	-71	0	1.2	16.7	--	--	--	--
GM-2A-influent	10/15/01	8:10 AM	28.63	44	-	-72	0	1.1	16.9	4200	4100	1	--
GM-2A-influent	10/16/01	8:10 AM	28.84	37	-	-75	0	1.2	16.5	4000	3900	1	--
GM-2A-influent	10/17/01	7:50 AM	28.99	33	-	-76	0	1.2	16.5	3500	3400	2	--
GM-2A-influent	10/18/01	9:38 AM	28.58	48	-	-74	0	1.2	16.4	3900	3800	0.6	--
GM-2A-influent	10/21/01	8:05 AM	28.79	38	-	-74	0	1.1	17	3000	2900	1	--
GM-2A-influent	10/22/01	8:05 AM	28.83	39	-	-74	0	1	18.4	2800	2700	0.7	--
GM-2A-influent	10/23/01	11:25 AM	28.21	52	-	-72	0	1	18.1	3300	3200	0.2	--
EW-1	05/28/98	6:48 PM	28.51	80.1	-	-4.7	0.1	0	21	--	--	--	--
EW-1	07/09/98	1:46 PM	28.75	79	-	-4.8	0	0.2	21	--	--	--	--
EW-1	08/19/98	4:03 PM	28.89	73.9	-	-4.7	0	0.1	21.2	--	--	--	--
EW-1	09/01/98	8:50 AM	28.61	63	0.01	-6.2	0	0	20.3	--	--	--	--
EW-1	09/01/98	8:50 AM	28.61	63	0.01	-6.2	0	0	20.3	--	--	--	--
EW-1	09/01/98	7:24 PM	28.52	60.1	-	-4.36	0	0.1	20.4	--	--	--	--
EW-1	09/01/98	7:24 PM	28.52	60.1	-	-4.36	0	0.1	20.4	--	--	--	--
EW-1	09/02/98	7:27 AM	28.53	53.1	-	-4.83	0	0.2	20	--	--	--	--
EW-1	09/02/98	7:27 AM	28.53	53.1	-	-4.83	0	0.2	20	--	--	--	--
EW-1	09/02/98	5:43 PM	28.53	61	-	--	--	--	--	--	--	--	--
EW-1	09/02/98	7:24 PM	28.53	55	-	-8	0	0.2	20.2	--	--	--	--
EW-1	09/02/98	7:24 PM	28.53	55	-	--	--	--	--	--	--	--	--
EW-1	09/02/98	7:24 PM	28.53	55	-	-8	0	0.2	20.2	--	--	--	--
EW-1	09/02/98	8:01 PM	28.54	51.1	-	-4.72	0	0.2	20.2	--	--	--	--
EW-1	09/02/98	8:01 PM	28.54	51.1	-	-4.72	0	0.2	20.2	--	--	--	--
EW-1	09/16/98	12:57 PM	28.88	75.9	-	-5.09	0	0	22	--	--	--	--
EW-1	10/12/98	10:11 AM	28.72	55	-	-5.23	0	0	20.7	--	--	--	--
EW-1	11/07/98	8:47 AM	29.08	36	-	-5.1	0	0	19.9	--	--	--	--
EW-1	11/17/98	3:38 PM	28.81	35.1	-	-5.3	0	0	19.9	--	--	--	--
EW-1	12/20/98	8:21 AM	29.16	15	-	-4.95	0	0	19.1	--	--	--	--
EW-1	01/12/99	11:42 AM	28.72	1.9	-	0	0.8	0.1	19.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-1	01/14/99	11:13 AM	29.08	3	T	-4.91	0	0.1	19.2	--	--	--	--
EW-1	02/12/99	9:38 AM	28.41	12	T	-5.65	0	0	13.1	--	--	--	--
EW-1	03/14/99	10:45 AM	28.91	36	-	-5.28	0	0	19.4	--	--	--	--
EW-1	04/15/99	8:58 AM	28.49	53.1	-	-5.19	0	0	19.9	--	--	--	--
EW-1	07/22/99	11:02 AM	28.79	84	-	-5.8	0	0	20.5	--	--	--	--
EW-1	07/27/99	10:53 AM	28.75	77	-	-2.3	0	0	20.3	--	--	--	--
EW-1	08/04/99	9:04 AM	28.72	69.1	-	-2.26	0	0	21	--	--	--	--
EW-1	08/10/99	11:23 AM	28.45	66.9	-	-2.1	0	0	20.6	--	--	--	--
EW-1	08/17/99	3:52 PM	28.81	69.1	-	-2.04	0	0	20.6	--	--	--	--
EW-1	08/20/99	4:28 PM	28.86	77	-	-1.93	0	0	20.9	--	--	--	--
EW-1	08/24/99	10:16 AM	28.71	73.9	-	-1.91	0.2	0	20.4	--	--	--	--
EW-1	08/31/99	5:56 PM	28.85	70	-	-1.9	0	0	20.8	7	6	2.5	--
EW-1	09/03/99	8:46 AM	28.81	73	-	-1.69	0	0	20.4	9	7	2.5	--
EW-1	09/08/99	4:59 PM	28.48	68	-	-1.09	0	0	20.9	4	4	2	--
EW-1	09/14/99	12:29 PM	28.64	55.9	-	-0.58	0	0	20.7	8.5	8.5	1.5	--
EW-1	09/21/99	2:01 PM	28.87	69.1	-	-0.54	0	0	20.6	9	9	1.5	--
EW-1	09/28/99	11:44 AM	28.91	54	-	-1.6	0	0	21.4	4.5	4.5	2.25	--
EW-1	10/05/99	5:20 PM	28.76	48	-	-1.67	0	0	20.6	6	6	12	--
EW-1	10/12/99	10:16 AM	28.69	55	-	-1.47	0	0	20.5	2.25	2.25	2.25	--
EW-1	10/19/99	10:57 AM	28.77	41	-	-1.65	0	0	20.5	1	1	1	--
EW-1	10/25/99	10:11 AM	28.51	53.1	-	-1.2	0	0	20.7	3.5	3.5	3	--
EW-1	11/22/99	2:11 PM	28.73	51.1	-	-1.2	0	0	20.6	<1	<1	<1	--
EW-1	02/07/00	3:10 PM	29.04	25	-	-1.22	0	0	20	--	--	1.5	--
EW-1	03/04/00	11:38 AM	28.57	52	-	0	0	0	21.1	1	<1	1	--
EW-1	03/05/00	9:58 AM	28.74	43	-	-1.42	0	0	20.2	1.25	1.25	1	--
EW-1	03/06/00	1:46 PM	28.72	62.1	-	-1.29	0	0	20.8	1.75	1.5	0.25	--
EW-1	04/02/00	9:08 AM	28.51	50	-	-1.21	0	0	18.1	16.12	16.12	14.36	--
EW-1	06/03/00	12:58 PM	28.96	65	-	-1.11	0	0	20.9	1.7	1.7	0.6	--
EW-1	06/29/00	3:32 PM	28.65	70	-	-1.25	0	0	20.4	14	14	5.5	--
EW-1	07/23/00	1:15 PM	-	-	-	-1.18	0	0	21.2	5	5	5	--
EW-1	08/20/00	11:45 AM	29.05	67	-	-1.28	0	0	20.4	3	3	2.5	--
EW-1	09/23/00	12:35 PM	28.67	56	-	-0.31	0	0	20.4	4.5	2	2	39.54
EW-1	10/21/00	11:20 AM	29.02	50	-	-1.03	0	0	20.4	3.11	2.96	0.81	--
EW-1	11/18/00	11:42 AM	28.59	22	T	-0.89	0	0	20.4	1.4	0.75	0.07	39.57

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-1	12/18/00	11:00 AM	28.73	12	T	-0.89	0	0	20.1	2.2	2.15	0.5	--
EW-1	01/09/01	9:45 AM	28.81	20	-	-0.96	0	0	19.9	17.98	14.22	1.4	--
EW-1	02/08/01	3:57 PM	28.79	25	-	-0.68	0	0	19.2	0.35	0.34	0.3	--
EW-1	02/10/01	9:09 AM	29.06	5	-	-0.6	--	--	--	--	--	--	--
EW-1	02/12/01	2:02 PM	28.87	24	T	-0.5	--	--	--	--	--	--	--
EW-1	02/13/01	9:12 AM	29.01	22	-	-0.6	0	0	19.7	23.8	19.4	0.9	--
EW-1	03/07/01	2:10 PM	28.62	36	-	-1.15	0	0	19.7	4.19	3	3	--
EW-1	03/08/01	2:26 PM	28.58	28	T	--	--	--	--	4.68	3.05	2	--
EW-1	04/08/01	9:37 AM	28.53	43	-	-0.78	0	0	20.6	7.7	7.55	-0.2	--
EW-1	05/05/01	10:02 AM	29.09	58	-	-0.63	0	0	18.6	8.6	8.45	-0.3	--
EW-1	05/31/01	9:00 AM	28.92	58	-	-0.58	0	0	18.6	13.21	12.8	0	--
EW-1	06/28/01	12:50 PM	28.94	86	-	-0.21	0	0	21.1	0	0	0	--
EW-1	07/19/01	8:36 AM	28.81	74	-	-0.6	0	0	20.3	31.97	31.87	0	--
EW-1	08/08/01	9:45 AM	28.76	85	-	-0.6	0	0	20.3	0.57	0.45	0	--
EW-1	09/08/01	4:25 PM	28.5	76	-	-0.6	0	0	20	<1	<1	<1	--
EW-1	10/04/01	9:00 AM	28.69	53	-	-0.57	0	0	20.3	5.79	5.79	5.3	--
EW-1	11/14/01	9:06 AM	28.82	54	-	-0.71	0	0	20.9	2.84	2.75	-0.52	--
EW-1	12/18/01	11:58 AM	28.52	35	-	-0.64	0	0	21.1	47.2	42.2	0.56	--
EW-1	01/10/02	11:36 AM	28.54	36	-	-0.67	0	0	20.4	-0.31	-0.23	-0.11	--
EW-1	02/15/02	4:12 PM	28.5	38	-	--	--	--	--	--	--	--	--
EW-1	03/18/02	2:33 PM	28.98	42	-	--	--	--	--	--	--	--	--
EW-1	04/26/02	1:22 PM	29.01	47	-	-0.62	0	0	21.4	0	0	0	--
EW-1	05/22/02	11:31 AM	28.81	68	-	-0.57	0	0	21.7	5.13	4.86	0	--
EW-1	06/05/02	9:21 AM	28.77	56	-	-0.5	0	0	20.7	4.37	4.03	0	--
EW-1	07/11/02	4:01 PM	29.02	79	-	-0.45	0	0	22.5	11.44	11.01	0.15	--
EW-1	08/11/02	10:20 AM	28.71	79	-	0.7	0	0	21.6	1.2	-1.55	-1.92	--
EW-2	05/28/98	6:43 PM	28.51	80.1	-	-4.9	0.2	0.2	20.9	--	--	--	--
EW-2	07/09/98	1:51 PM	28.75	79	-	-4.9	0	0.3	20.8	--	--	--	--
EW-2	08/19/98	5:59 PM	28.89	72	-	-4.85	0	0.2	21	--	--	--	--
EW-2	09/01/98	8:54 AM	28.61	63	0.01	-4.68	0	0.3	19.9	--	--	--	--
EW-2	09/01/98	8:54 AM	28.61	63	0.01	-4.68	0	0.3	19.9	--	--	--	--
EW-2	09/01/98	7:19 PM	28.52	60.1	-	-4.77	0	0.2	20.3	--	--	--	--
EW-2	09/01/98	7:19 PM	28.52	60.1	-	-4.77	0	0.2	20.3	--	--	--	--
EW-2	09/02/98	7:23 AM	28.53	53.1	-	-5.12	0	0.3	19.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-2	09/02/98	7:23 AM	28.53	53.1	-	-5.12	0	0.3	19.9	--	--	--	--
EW-2	09/02/98	3:45 PM	28.51	64	-	--	--	--	--	--	--	--	--
EW-2	09/02/98	5:38 PM	28.53	61	-	-9	0	0.2	20.1	--	--	--	--
EW-2	09/02/98	5:38 PM	28.53	61	-	-9	0	0.2	20.1	--	--	--	--
EW-2	09/02/98	7:58 PM	28.54	51.1	-	-4.36	0	0.3	20	--	--	--	--
EW-2	09/02/98	7:58 PM	28.54	51.1	-	-4.36	0	0.3	20	--	--	--	--
EW-2	09/16/98	12:54 PM	28.88	75.9	-	-5.3	0	0	22.1	--	--	--	--
EW-2	10/12/98	10:07 AM	28.72	55	-	-5.43	0	0	20.7	--	--	--	--
EW-2	11/03/98	8:51 AM	28.96	33.1	-	-2.09	0.6	1.6	17.9	1600	1600	9	--
EW-2	11/03/98	1:30 PM	28.96	34	-	-3.1	--	--	--	--	--	--	--
EW-2	11/03/98	2:55 PM	28.96	33.1	-	-2.67	0.2	1.5	18.3	2900	2900	5	--
EW-2	11/04/98	8:00 AM	28.99	30	-	-2.4	0.4	1.4	18.8	6500	6500	8	--
EW-2	11/04/98	11:52 AM	28.98	35.1	-	-2.86	--	--	--	--	--	--	--
EW-2	11/04/98	3:34 PM	28.95	33.1	-	-2.44	--	--	--	--	--	--	--
EW-2	11/04/98	4:53 PM	28.95	32	-	-2.36	0.1	1.4	18.8	2000	2000	7	--
EW-2	11/05/98	7:57 AM	28.93	30.9	-	-2.22	0.2	1.4	18.9	3400	3400	4.5	--
EW-2	11/05/98	12:38 PM	28.89	34	-	-2.11	--	--	--	--	--	--	--
EW-2	11/05/98	4:28 PM	28.89	33.1	-	-2.18	0.3	1.5	18.4	--	--	--	--
EW-2	11/07/98	8:43 AM	29.08	36	-	-5.5	0	0	20	--	--	--	--
EW-2	11/17/98	3:35 PM	28.81	35.1	-	-5.54	0	0	19.9	--	--	--	--
EW-2	12/20/98	9:15 AM	29.14	17	-	-5.26	0	0	18.6	--	--	--	--
EW-2	01/12/99	11:37 AM	28.72	1.9	-	0	0.6	0.1	19.5	--	--	--	--
EW-2	01/14/99	11:08 AM	29.08	3	T	-5.17	0	0	19.2	--	--	--	--
EW-2	02/12/99	9:33 AM	28.41	12	T	-5.93	0	0	13.8	--	--	--	--
EW-2	03/14/99	10:41 AM	28.91	36	-	-5.5	0	0	19.4	--	--	--	--
EW-2	04/15/99	8:54 AM	28.49	53.1	-	-5.44	0	0	19.9	--	--	--	--
EW-2	07/22/99	9:13 AM	28.77	79	-	-5.96	0	0	21.2	--	--	--	--
EW-2	07/27/99	10:50 AM	28.75	77	-	-2.5	0	0	20.4	--	--	--	--
EW-2	08/04/99	8:59 AM	28.72	69.1	-	-2.44	0	0	21.2	--	--	--	--
EW-2	08/10/99	11:20 AM	28.45	66.9	-	-2.3	0	0	20.6	--	--	--	--
EW-2	08/17/99	3:41 PM	28.81	69.1	-	-2.27	0	0	20.8	--	--	--	--
EW-2	08/20/99	4:24 PM	28.86	77	-	-2.1	0	0	21	--	--	--	--
EW-2	08/24/99	10:12 AM	28.71	73.9	-	-2.08	0.1	0	20.4	--	--	--	--
EW-2	08/31/99	5:53 PM	28.85	70	-	-2.1	0	0	21	6	6	2.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-2	09/03/99	8:42 AM	28.81	73	-	-1.88	0	0	20.4	8	8	3	--
EW-2	09/08/99	4:56 PM	28.48	68	-	-1.82	0	0	20.9	3	3	2	--
EW-2	09/14/99	12:20 PM	28.64	55.9	-	-0.63	0	0	20.7	12	12	1.5	--
EW-2	09/21/99	1:58 PM	28.87	69.1	-	-0.55	0	0	20.5	11	11	1.5	--
EW-2	09/28/99	11:48 AM	28.91	54	-	-1.73	0	0	21.3	17	13	3	--
EW-2	10/05/99	5:26 PM	28.76	48	-	-1.73	0	0	20.8	18	18	15	--
EW-2	10/12/99	10:24 AM	28.69	55	-	-1.55	0	0	20.5	2.25	2.25	2.25	--
EW-2	10/19/99	11:04 AM	28.77	41	-	-1.81	0	0	20.5	<1	<1	<1	--
EW-2	10/25/99	10:16 AM	28.51	53.1	-	-1.29	0	0	20.8	2.5	2.5	2.5	--
EW-2	11/22/99	2:16 PM	28.73	51.1	-	-1.23	0	0	20.5	<1	<1	<1	--
EW-2	02/07/00	3:05 PM	29.04	25	-	-1.27	0	0	20	9.5	3.5	1.25	--
EW-2	03/04/00	11:33 AM	28.57	52	-	0	0	0	20.9	1.5	1.25	1.25	--
EW-2	03/04/00	3:43 PM	28.53	55.9	-	-0.4	0	0	21.1	5	15	10	--
EW-2	03/05/00	10:05 AM	28.74	43	-	-1.58	0	0	20.3	<1	<1	<1	--
EW-2	03/06/00	1:53 PM	28.72	62.1	-	-1.46	0	0	20.9	0.25	0.25	0.25	--
EW-2	04/02/00	9:16 AM	28.51	50	-	-1.35	0	0	18.3	14.5	14.46	14.5	--
EW-2	06/03/00	12:51 PM	28.96	65	-	-0.19	0	0	21	1.6	1.6	0.55	--
EW-2	06/29/00	3:38 PM	28.65	70	-	-1.34	0	0	20.4	8.5	8.5	5.5	--
EW-2	07/23/00	1:20 PM	-	-	-	-1.21	0	0	21.2	5	5	5	--
EW-2	08/20/00	11:40 AM	29.05	67	-	-1.38	0	0	20.5	2.75	2.75	2.5	--
EW-2	09/23/00	12:15 PM	28.67	56	-	-0.32	0	0	20.5	4	2.75	3	39.32
EW-2	10/21/00	12:00 PM	29.02	51	-	-1.06	0	0	20.4	0.98	0.96	0.31	--
EW-2	11/18/00	11:55 AM	28.59	22	T	-0.94	0	0	20.4	0.13	0.08	0.13	39.32
EW-2	12/18/00	11:13 AM	28.73	12	T	-0.92	0	0	20	1	0.9	0.5	--
EW-2	01/09/01	9:55 AM	28.81	20	-	-0.93	0	0	20	14.08	3.87	1.4	--
EW-2	02/08/01	3:54 PM	28.79	25	-	-0.66	0	0	19.3	0.35	0.21	0.3	--
EW-2	02/10/01	9:03 AM	29.06	5	-	-0.6	--	--	--	--	--	--	--
EW-2	02/12/01	2:00 PM	28.87	24	T	-0.6	--	--	--	--	--	--	--
EW-2	02/13/01	9:09 AM	29.01	22	-	-0.55	0	0	19.8	24.6	23	0.8	--
EW-2	03/07/01	2:28 PM	28.62	36	-	-0.63	0	0	19.7	6.28	1.57	2.6	--
EW-2	03/08/01	2:37 PM	28.6	31	T	--	--	--	--	5.57	1.71	1.13	--
EW-2	04/08/01	9:43 AM	28.53	43	-	-0.85	0	0	20.5	0.35	0.1	-0.22	39.33
EW-2	05/05/01	10:06 AM	29.09	58	-	-0.64	0	0	18.7	3.93	3.84	-0.33	--
EW-2	05/31/01	9:05 AM	28.92	58	-	-0.62	0	0	18.6	4.8	4	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-2	06/28/01	9:24 AM	28.99	77	-	-0.63	0	0	20.2	19.02	15.13	0	--
EW-2	07/19/01	8:38 AM	28.81	74	-	-0.5	0	0	20.3	4.04	3.99	0	--
EW-2	08/08/01	9:30 AM	28.76	85	-	-0.6	0	0	20.3	0	0	0	--
EW-2	09/08/01	4:30 PM	28.51	74	-	-0.6	0	0	20	<1	<1	<1	--
EW-2	10/04/01	9:09 AM	28.69	53	-	-0.54	0	0	20.3	5.6	5.5	5.2	--
EW-2	11/14/01	9:04 AM	28.82	54	-	-0.55	0	0	20.9	4.42	4.2	-0.42	--
EW-2	12/18/01	11:57 AM	28.52	35	-	-0.53	0	0	21.1	0.8	0.8	0.55	--
EW-2	01/10/02	11:32 AM	28.54	36	-	-0.55	0	0	20.5	0.13	0.11	0.04	--
EW-2	02/15/02	4:18 PM	28.5	38	-	-0.78	0	0	20.1	-1.18	-1.29	-1.44	--
EW-2	03/18/02	1:43 PM	28.97	42	-	-1.53	0	0.2	21.1	160	--	0	--
EW-2	04/26/02	10:56 AM	29.03	43	-	-0.77	0	0	21.4	6	5.6	0	--
EW-2	05/22/02	11:25 AM	28.84	66	-	-0.69	0	0	21.6	10.91	10.44	0	--
EW-2	06/05/02	11:38 AM	28.76	68	-	-0.5	0	0	21.6	5.38	4.15	0.38	--
EW-2	07/11/02	3:58 PM	29.02	79	-	-0.45	0	0	22.6	12.31	12.06	0.22	--
EW-2	08/11/02	10:48 AM	28.72	81	-	0.9	0	0	21.6	-0.9	-1.15	-1.41	--
EW-3	05/28/98	6:40 PM	28.51	80.1	-	-5.6	0.1	0	20.9	--	--	--	--
EW-3	07/09/98	1:46 PM	28.75	79	-	-5.8	0	0.3	20.7	--	--	--	--
EW-3	08/19/98	5:54 PM	28.89	72	-	-5.84	0	0.2	21	--	--	--	--
EW-3	09/01/98	9:00 AM	28.61	63	0.01	-5.64	0	0.3	20	--	--	--	--
EW-3	09/01/98	9:00 AM	28.61	63	0.01	-5.64	0	0.3	20	--	--	--	--
EW-3	09/01/98	7:14 PM	28.52	60.1	-	-6.57	0	0.2	20.3	--	--	--	--
EW-3	09/01/98	7:14 PM	28.52	60.1	-	-6.57	0	0.2	20.3	--	--	--	--
EW-3	09/02/98	7:19 AM	28.53	53.1	-	-6.97	0	0.3	20	--	--	--	--
EW-3	09/02/98	7:19 AM	28.53	53.1	-	-6.97	0	0.3	20	--	--	--	--
EW-3	09/02/98	1:45 PM	28.51	64.9	-	--	--	--	--	--	--	--	--
EW-3	09/02/98	3:00 PM	28.5	64.9	-	--	--	--	--	--	--	--	--
EW-3	09/02/98	3:42 PM	28.51	64	-	-10	0	0.2	20.2	--	--	--	--
EW-3	09/02/98	3:42 PM	28.51	64	-	-10	0	0.2	20.2	--	--	--	--
EW-3	09/02/98	7:55 PM	28.54	51.1	-	-5.55	0	0.3	20.2	--	--	--	--
EW-3	09/02/98	7:55 PM	28.54	51.1	-	-5.55	0	0.3	20.2	--	--	--	--
EW-3	09/16/98	12:52 PM	28.88	75.9	-	-5.49	0	0	21.8	--	--	--	--
EW-3	10/12/98	10:04 AM	28.72	55	-	-5.66	0	0	20.6	--	--	--	--
EW-3	11/07/98	9:39 AM	29.09	37.9	-	-5.5	0	0.1	19.9	--	--	--	--
EW-3	11/17/98	3:31 PM	28.81	35.1	-	-5.8	0	0	20	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-3	12/20/98	9:18 AM	29.14	17	-	-5.43	0	0	18.1	--	--	--	--
EW-3	01/12/99	11:33 AM	28.72	1.9	-	0.01	0	0	19.9	--	--	--	--
EW-3	01/14/99	9:41 AM	29.1	1	-	-5.45	0	0.1	19.2	--	--	--	--
EW-3	02/12/99	9:27 AM	28.39	12	-	-6.1	0	0	13.7	--	--	--	--
EW-3	03/14/99	10:36 AM	28.91	36	-	-5.75	0	0	20	--	--	--	--
EW-3	04/15/99	8:49 AM	28.49	53.1	-	-5.66	0	0	19.9	--	--	--	--
EW-3	07/22/99	9:09 AM	28.77	79	-	-6.22	0	0	21.2	--	--	--	--
EW-3	07/27/99	10:46 AM	28.75	77	-	-2.2	0	0	20.2	--	--	--	--
EW-3	08/04/99	8:52 AM	28.72	69.1	-	-2.05	0	0	21.1	--	--	--	--
EW-3	08/10/99	11:14 AM	28.45	66.9	-	-1.83	0	0	20.8	--	--	--	--
EW-3	08/17/99	3:33 PM	28.81	69.1	-	-1.93	0	0	20.8	--	--	--	--
EW-3	08/20/99	4:16 PM	28.86	77	-	-1.76	0	0	20.8	--	--	--	--
EW-3	08/24/99	10:04 AM	28.71	73.9	-	-1.69	0.3	0	20.4	--	--	--	--
EW-3	08/31/99	5:45 PM	28.85	70	-	-1.9	0	0	20.6	7	7	2.5	--
EW-3	09/03/99	8:36 AM	28.81	73	-	-1.59	0	0	20.8	5	5	3	--
EW-3	09/08/99	4:49 PM	28.48	68	-	-1.5	0	0	20.9	4	4	2	--
EW-3	09/14/99	12:12 PM	28.64	55.9	-	-1.47	0	0	20.6	45	45	1.5	--
EW-3	09/21/99	1:54 PM	28.87	69.1	-	-1.42	0	0	20.5	35	35	1.5	--
EW-3	09/28/99	12:03 PM	28.91	54	-	-1.41	0	0	21.3	3.25	3.25	2.25	--
EW-3	10/05/99	5:41 PM	28.78	46.9	-	-1.43	0	0	20.8	3	3	2	--
EW-3	10/12/99	10:48 AM	28.65	57	-	-1.3	0	0	20.6	2	2	2.25	--
EW-3	10/19/99	11:28 AM	28.77	41	-	-1.59	0	0	20.5	<1	<1	<1	--
EW-3	10/25/99	10:22 AM	28.51	53.1	-	-1.1	0	0	20.8	3	3	2	--
EW-3	11/22/99	3:40 PM	28.8	48	-	-1	0	0	20.5	<1	<1	<1	--
EW-3	02/07/00	2:55 PM	29.04	25	-	-1.13	0	0	20	1.25	1.25	1.25	--
EW-3	03/04/00	11:10 AM	28.58	48.9	-	0	0	0	20.9	1.5	<1	1.5	--
EW-3	03/05/00	10:26 AM	28.74	43	-	-1.44	0	0	20.3	1	1	1	--
EW-3	04/02/00	9:40 AM	28.51	56	-	-1.15	0	0	18.2	15.8	15.8	14.22	--
EW-3	06/03/00	12:41 PM	28.96	65	-	-1	0	0	20.7	6.5	6.5	0.57	--
EW-3	06/29/00	3:50 PM	28.65	70	-	-1.15	0	0	20.3	8	8	8	--
EW-3	07/23/00	1:28 PM	-	-	-	-1.05	0	0	21	5	5	5	--
EW-3	08/20/00	12:45 PM	29.05	68	-	-1.01	0	0	20.6	30	30	2.5	--
EW-3	09/23/00	4:37 PM	28.77	47	T	-1.13	0	0	20.7	2	1.75	1.5	34.94
EW-3	10/21/00	12:14 PM	29.02	51	-	-0.89	0	0	20.5	2.2	2.2	0.71	34.32

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-3	11/18/00	1:15 PM	28.57	24	-	-0.87	0	0	20.4	0.16	0.16	0.11	34.11
EW-3	12/18/00	11:35 AM	28.72	15	0.01	-0.82	0	0	19.8	0.95	0.85	0.6	--
EW-3	01/09/01	10:08 AM	28.81	20	-	-0.81	0	0	19.8	3.3	3	1.7	35.02
EW-3	02/08/01	3:45 PM	28.79	25	-	-0.51	0	0	19.1	4.3	4.2	0.3	--
EW-3	02/10/01	9:06 AM	29.06	5	-	-0.5	--	--	--	--	--	--	--
EW-3	02/12/01	1:56 PM	28.87	24	T	-0.5	--	--	--	--	--	--	--
EW-3	02/13/01	9:04 AM	29.01	22	-	-0.5	0	0	19.8	41	41	0.6	--
EW-3	03/07/01	2:45 PM	28.61	37	-	-0.54	0	0	19.6	1.11	0.8	1	--
EW-3	03/08/01	2:44 PM	28.6	31	T	--	--	--	--	1.13	1.13	0.69	--
EW-3	04/08/01	9:50 AM	28.53	43	-	-0.76	0	0	20.5	0	0	0	36.15
EW-3	05/05/01	10:13 AM	29.09	58	-	-0.55	0	0	18.6	2.92	2.83	-0.33	--
EW-3	05/31/01	9:14 AM	28.92	58	-	-0.55	0	0	18.5	2.86	2.8	0	--
EW-3	06/28/01	11:18 AM	28.98	82	-	-0.58	0	0	20.4	0.27	0.11	0	--
EW-3	07/19/01	8:50 AM	28.81	74	-	-0.48	0	0	20.2	2.43	2.34	0	--
EW-3	08/08/01	3:30 PM	28.64	95	-	-0.6	0	0	20.6	1.74	1.7	0	--
EW-3	09/08/01	4:40 PM	28.51	74	-	-0.5	0	0.2	19.8	<1	<1	<1	--
EW-3	10/04/01	9:16 AM	28.69	53	-	-0.49	0	0.2	20.1	5.8	5.7	5.4	--
EW-3	11/14/01	9:01 AM	28.82	54	-	-0.43	0	0.2	20.6	6.89	6.6	-0.7	--
EW-3	12/18/01	11:52 AM	28.52	35	-	-0.47	0	0	20.5	-0.55	-0.55	0.63	--
EW-3	01/10/02	11:24 AM	28.55	37	-	-0.45	0	0.1	20.3	-0.71	-0.69	0.2	--
EW-3	02/15/02	4:34 PM	28.5	37	-	-0.73	0	0	20.1	-0.36	-2.27	-0.36	--
EW-3	03/18/02	1:29 PM	28.99	41	-	-0.99	0	0	21.3	55.77	41	0	--
EW-3	04/26/02	10:45 AM	29.03	43	-	-0.6	0	0	21	39.4	32	0	--
EW-3	05/22/02	11:15 AM	28.84	66	-	-0.49	0	0.1	21.1	130	80	0	--
EW-3	06/05/02	11:22 AM	28.77	65	-	-0.38	0	0.2	21.1	139	40	0	--
EW-3	07/11/02	3:55 PM	29.02	79	-	-0.35	0	0.1	21.8	95.02	91.16	0.17	--
EW-3	08/11/02	9:25 AM	28.72	76	-	0.5	0	0	21.3	-0.4	-0.53	-2	--
EW-4	05/28/98	6:32 PM	28.51	80.1	-	-5.2	0.2	0.2	20.9	--	--	--	--
EW-4	07/09/98	1:42 PM	28.75	79	-	-5.2	0	0.3	20.7	--	--	--	--
EW-4	08/19/98	5:49 PM	28.89	72	-	-5.14	0	0.2	21.2	--	--	--	--
EW-4	09/01/98	9:04 AM	28.61	63	0.01	-4.98	0	0.2	20	--	--	--	--
EW-4	09/01/98	9:04 AM	28.61	63	0.01	-4.98	0	0.2	20	--	--	--	--
EW-4	09/01/98	7:10 PM	28.52	60.1	-	-5.16	0	0.2	20.3	--	--	--	--
EW-4	09/01/98	7:10 PM	28.52	60.1	-	-5.16	0	0.2	20.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-4	09/02/98	7:14 AM	28.53	53.1	-	-5.49	0	0.3	20	--	--	--	--
EW-4	09/02/98	7:14 AM	28.53	53.1	-	-5.49	0	0.3	20	--	--	--	--
EW-4	09/02/98	11:35 AM	28.53	63	T	--	--	--	--	--	--	--	--
EW-4	09/02/98	1:00 PM	28.52	63	-	--	--	--	--	--	--	--	--
EW-4	09/02/98	1:40 PM	28.51	64.9	-	-10	0	0.3	20	--	--	--	--
EW-4	09/02/98	1:40 PM	28.51	64.9	-	-10	0	0.3	20	--	--	--	--
EW-4	09/02/98	7:52 PM	28.54	51.1	-	-4.6	0	0.1	20.3	--	--	--	--
EW-4	09/02/98	7:52 PM	28.54	51.1	-	-4.6	0	0.1	20.3	--	--	--	--
EW-4	09/16/98	12:49 PM	28.88	75.9	-	-4.43	0	0	21.7	--	--	--	--
EW-4	10/12/98	10:00 AM	28.72	55	-	-4.52	0	0.1	20.6	--	--	--	--
EW-4	11/07/98	8:35 AM	29.08	36	-	-4.4	0	0.1	20	--	--	--	--
EW-4	11/17/98	3:28 PM	28.8	35.1	-	-4.44	0	0	20	--	--	--	--
EW-4	12/20/98	9:23 AM	29.14	17	-	-4.14	0	0	17.5	--	--	--	--
EW-4	01/12/99	11:28 AM	28.73	0	-	0	0	0	19.8	--	--	--	--
EW-4	01/14/99	9:29 AM	29.1	1	-	-4.19	0	0.1	19.2	--	--	--	--
EW-4	02/12/99	9:18 AM	28.39	12	-	-4.68	0	0	15.5	--	--	--	--
EW-4	03/14/99	10:31 AM	28.91	36	-	-4.45	0	0	18.5	--	--	--	--
EW-4	04/15/99	8:43 AM	28.49	53.1	-	-4.33	0	0	19.9	--	--	--	--
EW-4	07/22/99	9:04 AM	28.77	79	-	-5.32	0	0.2	20.9	--	--	--	--
EW-4	07/27/99	10:43 AM	28.75	77	-	-1.85	0	0.2	20	--	--	--	--
EW-4	08/04/99	8:48 AM	28.72	69.1	-	-1.82	0	0.3	20.7	--	--	--	--
EW-4	08/10/99	11:10 AM	28.45	66.9	-	-1.64	0	0.3	20.2	--	--	--	--
EW-4	08/17/99	3:31 PM	28.81	69.1	-	-1.71	0	0	20.5	--	--	--	--
EW-4	08/20/99	4:12 PM	28.86	77	-	-0.38	0	0	20.7	--	--	--	--
EW-4	08/24/99	10:00 AM	28.71	73.9	-	-1.52	0.1	0	20.2	--	--	--	--
EW-4	08/31/99	5:41 PM	28.85	70	-	-0.46	0	0	20.7	11	9	2.5	--
EW-4	09/03/99	8:33 AM	28.81	73	-	-1.12	0	0	20.4	70	70	3	--
EW-4	09/08/99	4:46 PM	28.48	68	-	-1.35	0	0.1	20.7	10	10	2	--
EW-4	09/14/99	12:07 PM	28.64	55.9	-	-1.31	0	0.2	20.5	75	75	1.5	--
EW-4	09/21/99	1:52 PM	28.87	69.1	-	-1.29	0	0.2	20.5	70	70	1.5	--
EW-4	09/28/99	12:06 PM	28.91	54	-	-1.22	0	0.2	21	3	3	2	--
EW-4	10/05/99	4:32 PM	28.76	48	-	-1.26	0	0.3	20.4	6.25	6.25	2.25	--
EW-4	10/12/99	10:56 AM	28.65	57	-	-1.15	0	0.2	20.5	2.25	2.25	2.25	--
EW-4	10/19/99	11:41 AM	28.75	44.1	-	-1.32	0	0.3	20.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-4	10/25/99	10:26 AM	28.51	53.1	-	-1	0	0.2	20.3	1.25	1.25	2	--
EW-4	11/22/99	3:50 PM	28.8	48	-	-0.93	0	0.1	20.4	<1	<1	<1	--
EW-4	02/07/00	2:50 PM	29.04	25	-	-0.97	0	0	20.2	1.25	1.25	1.25	--
EW-4	03/04/00	11:05 AM	28.58	48.9	-	-0.02	0	0.1	20.8	1.25	<1	1.25	--
EW-4	03/05/00	10:31 AM	28.75	46.9	-	-1.28	0	0	20.2	1	1	<1	--
EW-4	03/06/00	3:05 PM	28.73	62.1	-	-0.28	0	0	20.8	0.5	0.5	0.5	--
EW-4	04/02/00	10:10 AM	28.51	56	-	-1	0	0	18	13.92	13.17	13.92	--
EW-4	06/03/00	12:37 PM	28.96	65	-	-0.92	0	0	20.5	19.6	19.6	0.55	--
EW-4	06/29/00	3:55 PM	28.65	70	-	-1.04	0	0.2	19.9	7	7	5.5	--
EW-4	07/23/00	1:33 PM	28.94	72	T	-0.95	0	0.4	20.2	15	15	5	--
EW-4	08/20/00	12:40 PM	29.05	68	-	-1.02	0	0.4	19.8	5	5	2.5	--
EW-4	09/23/00	4:47 PM	28.77	47	T	-1.03	0	0.5	20	1.25	1.5	1.5	33.91
EW-4	10/21/00	12:20 PM	29.02	51	-	-0.84	0	0.3	20.4	0.73	0.38	0.73	33.69
EW-4	11/18/00	1:30 PM	28.55	24	-	-0.75	0	0.3	20.1	0.14	-0.39	0.14	33.75
EW-4	12/18/00	11:50 AM	28.72	15	0.01	-0.78	0	0.2	19.7	0.5	--	0.5	--
EW-4	01/09/01	10:17 AM	28.81	20	-	-0.74	0	0.1	19.5	1.75	0.7	1.6	--
EW-4	02/08/01	3:40 PM	28.79	25	-	-0.28	0	0.1	19	6.8	6.5	0.3	--
EW-4	02/10/01	8:53 AM	29.06	5	-	-0.4	--	--	--	--	--	--	--
EW-4	02/12/01	1:54 PM	28.87	24	T	-0.4	--	--	--	--	--	--	--
EW-4	02/13/01	9:01 AM	29.01	22	-	-0.4	0	0	19.9	69	60	0.5	--
EW-4	03/07/01	2:52 PM	28.61	37	-	-0.48	0	0	19.7	1.67	1.51	1.41	--
EW-4	03/08/01	2:52 PM	28.6	31	T	--	--	--	--	4.58	4.06	1.13	--
EW-4	04/08/01	9:55 AM	28.53	43	-	-0.65	0	0	20.3	0	-0.8	0.01	36.19
EW-4	05/05/01	10:16 AM	29.09	58	-	-0.55	0	0.1	18.5	1.7	1.63	-0.38	--
EW-4	05/31/01	9:18 AM	28.92	58	-	-0.49	0	0.2	18.4	2.03	1.99	0	--
EW-4	06/28/01	11:02 AM	28.98	82	-	-0.55	0	0.3	20	4.04	3.98	0	--
EW-4	07/19/01	8:52 AM	28.81	74	-	-0.4	0	0.5	19.6	3.83	3.77	0	--
EW-4	08/08/01	3:24 PM	28.65	96	-	-0.5	0	0.2	20.5	9.97	9.51	0	--
EW-4	09/08/01	5:00 PM	28.51	74	-	-0.4	0	0.3	19.5	<1	<1	<1	--
EW-4	10/04/01	9:25 AM	28.69	53	-	-0.43	0	0.5	19.8	6	5.9	5.3	34.91
EW-4	11/14/01	8:55 AM	28.82	54	-	-0.4	0	0	20.6	41.2	12.3	-0.4	--
EW-4	11/14/01	9:22 AM	28.82	54	-	-2.99	0	0.2	20.5	363	286	-0.5	--
EW-4	12/18/01	11:48 AM	28.52	35	-	-0.42	0	0	20.5	-0.62	-0.62	0.3	--
EW-4	01/10/02	11:14 AM	28.55	37	-	-0.4	0	0.2	20.3	-1.79	-1.71	0.2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-4	02/15/02	3:02 PM	28.51	37	-	-0.64	0	0.2	19.9	-0.86	-0.9	-1.22	--
EW-4	03/18/02	1:14 PM	28.99	41	-	-0.76	0	0.3	20.7	55	19.5	0	--
EW-4	04/26/02	10:32 AM	29.03	43	-	-0.52	0	0.2	20.7	26	18	0	--
EW-4	05/22/02	10:59 AM	28.84	66	-	-0.51	0	0.2	20.9	40.69	27	0	--
EW-4	06/05/02	11:06 AM	28.77	65	-	-0.35	0	0.3	20.6	7.97	2.7	0	--
EW-4	07/11/02	3:29 PM	29.04	79	-	-0.3	0	0	21.7	1.2	1.09	0.05	--
EW-4	08/11/02	9:50 AM	28.71	79	-	0.5	0	0.5	20.4	-0.85	-1.14	-0.45	--
EW-5	05/28/98	6:35 PM	28.51	80.1	-	-4.8	0.2	0	21.2	--	--	--	--
EW-5	07/09/98	1:36 PM	28.75	79	-	-4.7	0	0.2	20.9	--	--	--	--
EW-5	08/19/98	5:47 PM	28.89	72	-	-4.64	0	0.1	21.1	--	--	--	--
EW-5	09/01/98	9:09 AM	28.61	63	0.01	-4.47	0	0.1	20.1	--	--	--	--
EW-5	09/01/98	9:09 AM	28.61	63	0.01	-4.47	0	0.1	20.1	--	--	--	--
EW-5	09/01/98	7:06 PM	28.52	60.1	-	-4.62	0	0	20.4	--	--	--	--
EW-5	09/01/98	7:06 PM	28.52	60.1	-	-4.62	0	0	20.4	--	--	--	--
EW-5	09/02/98	7:08 AM	28.53	53.1	-	-4.91	0	0.1	20	--	--	--	--
EW-5	09/02/98	7:08 AM	28.53	53.1	-	-4.91	0	0.1	20	--	--	--	--
EW-5	09/02/98	9:35 AM	28.53	64	-	--	--	--	--	--	--	--	--
EW-5	09/02/98	11:00 AM	28.54	61	-	--	--	--	--	--	--	--	--
EW-5	09/02/98	11:33 AM	28.53	63	T	-9	0	0.2	20.2	--	--	--	--
EW-5	09/02/98	11:33 AM	28.53	63	T	-9	0	0.2	20.2	--	--	--	--
EW-5	09/02/98	7:49 PM	28.54	51.1	-	-4.06	0	0.1	20.3	--	--	--	--
EW-5	09/02/98	7:49 PM	28.54	51.1	-	-4.06	0	0.1	20.3	--	--	--	--
EW-5	09/16/98	12:46 PM	28.88	75.9	-	-4.14	0	0	21.8	--	--	--	--
EW-5	10/12/98	9:56 AM	28.72	55	-	-4.21	0	0.1	20.7	--	--	--	--
EW-5	11/07/98	8:32 AM	29.08	36	-	-4.1	0	0	20.1	--	--	--	--
EW-5	11/17/98	3:25 PM	28.8	35.1	-	-4.44	0	0	20	--	--	--	--
EW-5	12/20/98	9:27 AM	29.14	17	-	-3.82	0	0	16.4	--	--	--	--
EW-5	02/12/99	10:25 AM	28.41	12	T	-4.33	0	0	12.2	--	--	--	--
EW-5	03/14/99	10:25 AM	28.93	30	-	-4.1	0	0	26.9	--	--	--	--
EW-5	04/15/99	8:38 AM	28.49	53.1	-	-4.02	0	0	19.9	--	--	--	--
EW-5	07/22/99	9:01 AM	28.77	79	-	-5.01	0	0.2	20.8	--	--	--	--
EW-5	07/27/99	10:41 AM	28.75	77	-	-0.8	0	0.1	19.9	--	--	--	--
EW-5	08/04/99	8:45 AM	28.72	69.1	-	-0.81	0	0.1	20.9	--	--	--	--
EW-5	08/10/99	11:07 AM	28.45	66.9	-	-0.7	0	0.1	20.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-5	08/17/99	3:27 PM	28.81	70	-	-0.73	0	0.1	20.5	--	--	--	--
EW-5	08/20/99	4:08 PM	28.86	77	-	-0.69	0	0	20.6	--	--	--	--
EW-5	08/24/99	9:56 AM	28.71	73.9	-	-0.66	0.1	0.1	20.2	--	--	--	--
EW-5	08/31/99	5:36 PM	28.85	70	-	-0.41	0	0	20.5	12	10	2.5	--
EW-5	09/03/99	8:30 AM	28.81	73	-	-0.68	0	0	20.3	100	100	3	--
EW-5	09/08/99	4:42 PM	28.48	68	-	-0.58	0	0.2	20.4	5.5	5.5	2	--
EW-5	09/14/99	12:03 PM	28.64	55.9	-	-0.55	0	0.2	20.5	140	140	1.5	--
EW-5	09/21/99	1:49 PM	28.87	69.1	-	-0.51	0	0.1	20.6	50	50	1.5	--
EW-5	09/28/99	10:48 AM	28.9	53.1	-	-0.53	0	0.1	21.1	7	7	1.75	--
EW-5	10/05/99	4:25 PM	28.74	51.1	-	-0.54	0	0.1	20.6	25	23	2.5	--
EW-5	10/12/99	11:01 AM	28.65	57	-	-0.5	0	0.1	20.6	2.75	<1	2.25	--
EW-5	10/19/99	9:35 AM	28.79	39.9	-	-0.57	0	0.1	20.6	43	36	3	--
EW-5	10/25/99	10:31 AM	28.51	55.9	-	-0.42	0	0	20.6	--	--	2	--
EW-5	11/22/99	1:25 PM	28.69	51.1	-	-0.35	0	0	20.4	18	12	<1	--
EW-5	02/07/00	2:44 PM	29.04	25	-	-0.37	0	0	20.2	45	8	1.25	--
EW-5	03/04/00	11:51 AM	28.57	52	-	0.01	0	0	20.9	1	<1	1	--
EW-5	03/05/00	10:37 AM	28.75	46.9	-	-0.56	0	0	20.3	1.25	1.25	1	--
EW-5	03/06/00	3:10 PM	28.73	62.1	-	-0.12	0	0	20.6	0.5	0.5	0.5	--
EW-5	04/02/00	10:15 AM	28.51	56	-	-0.45	0	0	18.1	14.1	13.15	14.1	--
EW-5	06/03/00	12:31 PM	28.96	65	-	-0.4	0	0	20.5	103	96	0.62	--
EW-5	06/29/00	4:00 PM	28.65	70	-	-0.41	0	0	20.6	6	6	6	--
EW-5	07/23/00	1:37 PM	28.94	72	T	-0.41	0	0.1	20.8	9	9	5	--
EW-5	08/20/00	12:25 PM	29.05	67	-	-0.46	0	0.1	20.3	2.5	2.5	2.5	--
EW-5	09/24/00	10:23 AM	28.89	46	-	-0.44	0	0.2	19.8	2.25	0	1.75	31.94
EW-5	10/21/00	1:36 PM	29	53	-	-0.36	0	0	21.1	0.16	0.05	0.16	31.76
EW-5	11/18/00	3:26 PM	28.54	23	T	-0.01	0	0	19.9	0.18	-0.52	0.18	--
EW-5	12/18/00	12:05 PM	28.72	15	0.01	-0.33	0	0	19.8	0.5	--	0.5	--
EW-5	01/09/01	11:35 AM	28.78	26	-	-0.3	0	0	19.6	1.25	0.4	1.25	--
EW-5	02/08/01	3:35 PM	28.79	25	-	-0.05	0	0	19.2	16	11	0.8	--
EW-5	02/10/01	9:50 AM	29.09	8	-	-0.3	--	--	--	--	--	--	--
EW-5	02/12/01	1:50 PM	28.87	24	T	-0.2	--	--	--	--	--	--	--
EW-5	02/13/01	8:58 AM	29.01	22	-	-0.2	0	0	19.9	180	112	0.4	--
EW-5	03/07/01	11:48 AM	28.67	34	-	-0.18	0	0	19.9	1.75	1.5	1.5	--
EW-5	03/08/01	2:59 PM	28.6	31	T	--	--	--	--	2.33	1.85	1.63	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-5	04/08/01	10:34 AM	28.56	45	-	-0.3	0	0	20.5	0.1	-1	0.1	33.6
EW-5	05/05/01	11:02 AM	29.1	60	-	-0.25	0	0	18.8	0	0	-0.45	--
EW-5	05/31/01	10:14 AM	28.91	60	-	-0.24	0	0	19.1	0	0	0	--
EW-5	06/28/01	10:59 AM	28.98	82	-	-0.27	0	0.3	20.2	0	0	0	--
EW-5	07/19/01	9:22 AM	28.81	74	-	-0.2	0	0.3	19.9	0	0	0	--
EW-5	08/08/01	3:21 PM	28.65	96	-	-0.4	0	0	20.8	3.71	3.55	0	--
EW-5	09/08/01	5:05 PM	28.51	74	-	-0.2	0	0	20	<1	<1	<1	--
EW-5	10/04/01	11:55 AM	28.67	59	-	-0.22	0	0.1	20.3	110	92	5.3	33.12
EW-5	11/14/01	8:53 AM	28.82	54	-	-0.15	0	0	20.9	1631	1500	-0.4	--
EW-5	12/18/01	11:46 AM	28.52	35	-	0.15	0	0	21	55.4	50.5	0.54	--
EW-5	01/10/02	11:10 AM	28.55	37	-	-0.13	0	0	20.5	0.3	0.25	0.13	--
EW-5	02/15/02	2:52 PM	28.51	37	-	-0.27	0	0	20	-0.9	-0.93	-1.01	--
EW-5	03/18/02	1:09 PM	28.99	41	-	-0.3	0	0	21.5	28	24.26	0	--
EW-5	04/26/02	10:26 AM	29.03	40	-	-0.22	0	0	21.1	18.92	17	0	--
EW-5	05/22/02	10:54 AM	28.84	66	-	-0.25	0	0	21.6	36	31	0	--
EW-5	06/05/02	11:00 AM	28.77	65	-	-0.07	0	0	21.2	9	6.8	0	--
EW-5	07/11/02	3:25 PM	29.04	79	-	-0.05	0	0	22.1	0.48	0.35	0.07	--
EW-5	08/11/02	10:05 AM	28.71	79	-	0.3	0	0	21.7	-1.21	-1.15	-2	--
EW-6	05/28/98	6:16 PM	28.5	84	-	-5	0.1	0	21.3	--	--	--	--
EW-6	07/09/98	1:09 PM	28.74	82	0.01	-6.2	7.6	0.8	18.7	--	--	--	--
EW-6	08/19/98	5:35 PM	28.89	72	-	-6.03	6.2	0.5	19.3	--	--	--	--
EW-6	09/01/98	9:30 AM	28.59	66.9	-	-5.79	5.6	0.6	18.3	--	--	--	--
EW-6	09/01/98	9:30 AM	28.59	66.9	-	-5.79	5.6	0.6	18.3	--	--	--	--
EW-6	09/01/98	10:30 AM	28.59	69.1	-	--	--	--	--	--	--	--	--
EW-6	09/01/98	12:30 PM	28.54	73	T	-9	8.7	0.7	17.7	--	--	--	--
EW-6	09/01/98	12:30 PM	28.54	73	T	-9	8.7	0.7	17.7	--	--	--	--
EW-6	09/01/98	6:48 PM	28.52	60.1	-	-6.98	0	0	20.6	--	--	--	--
EW-6	09/01/98	6:48 PM	28.52	60.1	-	-6.98	0	0	20.6	--	--	--	--
EW-6	09/02/98	6:52 AM	28.53	53.1	-	-7.45	0	0	20.1	--	--	--	--
EW-6	09/02/98	6:52 AM	28.53	53.1	-	-7.45	0	0	20.1	--	--	--	--
EW-6	09/02/98	7:46 PM	28.54	51.1	-	-4.55	2.1	0.4	18.8	--	--	--	--
EW-6	09/02/98	7:46 PM	28.54	51.1	-	-4.55	2.1	0.4	18.8	--	--	--	--
EW-6	09/16/98	12:48 PM	28.88	75.9	-	-6.41	0.5	0.1	21.4	--	--	--	--
EW-6	10/12/98	9:39 AM	28.72	55	-	-6.57	0.3	0.2	20.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-6	11/07/98	8:14 AM	29.08	34	-	-6.5	0.3	0.1	19.9	--	--	--	--
EW-6	11/17/98	3:42 PM	28.81	35.1	-	-6.88	0.6	0.2	19.5	--	--	--	--
EW-6	12/20/98	9:54 AM	29.15	17	T	-6.45	0.9	0.2	18	--	--	--	--
EW-6	01/12/99	11:12 AM	28.73	0	-	0	1.6	0.1	19.6	--	--	--	--
EW-6	01/13/99	1:28 PM	29.22	1	T	-0.01	0.8	0	19.6	--	--	--	--
EW-6	01/14/99	8:31 AM	29.1	1	-	-0.93	4.2	0.3	18.6	--	--	--	--
EW-6	02/12/99	9:04 AM	28.39	12	-	-7.16	0.3	0	17.8	--	--	--	--
EW-6	03/14/99	10:05 AM	28.93	30	-	-6.8	0.3	0.1	19.6	--	--	--	--
EW-6	04/15/99	8:19 AM	28.5	46	-	-6.73	0	0	19.9	--	--	--	--
EW-6	07/22/99	8:45 AM	28.77	79	-	-7.26	0	0.2	21	--	--	--	--
EW-6	07/27/99	10:09 AM	28.77	73.9	-	-11	0	0.1	20.1	--	--	--	--
EW-6	08/04/99	8:02 AM	28.72	64	-	-12.17	0	0.1	21.2	--	--	--	--
EW-6	08/10/99	10:26 AM	28.44	64.9	-	-11	0	0.1	20.5	--	--	--	--
EW-6	08/17/99	2:47 PM	28.81	70	-	10.81	0	0	20.4	--	--	--	--
EW-6	08/17/99	5:30 PM	28.84	64.9	-	--	--	--	--	5	4	2.5	--
EW-6	08/20/99	5:09 PM	28.86	75	-	-2.67	--	--	--	--	--	--	--
EW-6	08/24/99	12:21 PM	28.7	75	-	-10.68	0.2	0.3	20.3	--	--	--	--
EW-6	08/31/99	6:25 PM	28.85	70	-	-10.05	0	0.2	20.4	225	225	2.5	--
EW-6	08/31/99	6:40 PM	28.85	66	-	-21	--	--	--	--	--	--	--
EW-6	08/31/99	6:50 PM	28.85	66	-	-21	--	--	--	--	--	--	--
EW-6	08/31/99	7:00 PM	28.85	66	-	-21	--	--	--	--	--	--	--
EW-6	08/31/99	7:10 PM	28.85	66	-	-21	--	--	--	--	--	--	--
EW-6	09/03/99	9:08 AM	28.81	73	-	-4.09	0	0.2	20.4	200	200	3	--
EW-6	09/03/99	9:20 AM	28.81	73	-	-10.2	--	--	--	--	--	--	--
EW-6	09/03/99	9:30 AM	28.8	77	-	-10.2	--	--	--	--	--	--	--
EW-6	09/03/99	9:40 AM	28.8	77	-	-10.2	--	--	--	--	--	--	--
EW-6	09/03/99	9:50 AM	28.8	77	-	-10.2	--	--	--	--	--	--	--
EW-6	09/08/99	5:30 PM	28.5	66	-	-9.39	0	0.5	20.5	4	4	2	--
EW-6	09/21/99	2:22 PM	28.87	69.1	-	-9.9	--	--	--	275	275	1.5	--
EW-6	09/28/99	11:40 AM	28.91	54	-	-9.97	0	0.1	21.1	40	12	2.25	--
EW-6	10/05/99	5:16 PM	28.76	48	-	-9.9	0	0.2	20.5	2.5	2.5	2	--
EW-6	10/12/99	2:02 PM	28.56	61	-	-9.4	0	0.1	20.6	1.25	1.25	1.25	--
EW-6	10/19/99	10:31 AM	28.77	41	-	-10.05	0	0.2	20.4	2.5	2.5	2	--
EW-6	10/25/99	9:57 AM	28.51	53.1	-	-7.68	0	0.1	20.7	50	50	3	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-6	11/22/99	2:07 PM	28.73	51.1	-	-7.5	0	0	20.4	0.25	0.25	<1	--
EW-6	01/24/00	--	--	--	--	-5.5	--	--	--	--	--	--	--
EW-6	01/25/00	3:05 PM	28.83	13	-	-7.78	0	0	19.7	--	--	--	--
EW-6	02/07/00	3:20 PM	29.04	25	-	-7.77	0	0	19.8	55	5	2	--
EW-6	02/08/00	8:36 AM	28.89	16	-	-7.58	0	0	20.3	350	210	<1	--
EW-6	03/04/00	9:18 AM	28.58	43	-	-0.22	2.6	0.6	18.1	--	--	--	--
EW-6	03/04/00	3:37 PM	28.53	55.9	-	-7.85	0	0	20.9	20	10.5	1.5	--
EW-6	03/05/00	12:32 PM	28.72	52	-	-7.8	0	0	20.6	1.25	1.25	<1	--
EW-6	03/06/00	2:15 PM	28.72	62.1	-	-7.67	0	0	20.8	1080	650	0.25	--
EW-6	04/02/00	11:10 AM	28.5	56	-	-7.68	0	0	18.6	139	139	14.12	--
EW-6	04/27/00	3:14 PM	28.63	70	-	-7.8	0	0	18.2	7.2	7.2	0.38	--
EW-6	06/03/00	11:26 AM	29	64	-	7.43	0	0	20.8	2.65	2.65	0.5	--
EW-6	06/29/00	2:05 PM	28.67	69	-	-7.53	0	0	20	11	11	6.5	--
EW-6	07/23/00	11:02 AM	28.97	69	-	-7.41	0	0.2	20.9	12	12	5	--
EW-6	08/20/00	11:47 AM	29.05	67	-	-7.18	0	0	20.4	12.5	12.5	2.5	--
EW-6	09/23/00	12:50 PM	28.67	56	-	-6.89	0	0.1	20.3	6	1.25	2	--
EW-6	10/21/00	1:22 PM	29.01	52	-	-6.35	0	0.1	21.1	0.33	-0.11	0.33	--
EW-6	11/18/00	3:05 PM	28.54	23	T	-0.55	0	0	20.5	1.08	1.08	0.41	--
EW-6	12/18/00	1:50 PM	28.68	17	0.01	-6.53	0	0.1	19.6	1	0.5	1	--
EW-6	01/09/01	11:08 AM	28.8	23	-	-6.44	0	0	19.3	2.4	1.4	2	--
EW-6	02/08/01	2:51 PM	28.81	25	-	-4.02	0	0	19.4	0.4	0.3	0.4	--
EW-6	02/10/01	9:16 AM	29.06	5	-	-4.4	--	--	--	--	--	--	--
EW-6	02/12/01	2:04 PM	28.87	24	T	-4	--	--	--	--	--	--	--
EW-6	02/13/01	8:25 AM	29.01	21	-	-4.1	0	0	20.1	0.7	0.68	0.5	--
EW-6	03/07/01	12:05 PM	28.67	34	-	-1	0	0	19.7	2.69	2.27	2.3	--
EW-6	03/08/01	1:49 PM	28.58	28	T	--	--	--	--	10.27	0.44	0.65	--
EW-6	04/08/01	10:29 AM	28.53	43	-	-4.15	0	0	20.4	0.32	0	0.32	--
EW-6	05/05/01	10:45 AM	29.1	60	-	-5.91	0	0	19	-0.39	-0.39	-0.41	--
EW-6	05/31/01	9:59 AM	28.91	60	-	-4.05	0	0	19.2	0	0	0	--
EW-6	06/28/01	9:38 AM	28.99	81	-	-4.25	0	0	20.2	3.41	3.16	0	--
EW-6	07/19/01	9:18 AM	28.81	74	-	-3.6	0	0	20.4	3.54	3.51	0	--
EW-6	08/08/01	3:40 PM	28.64	95	-	-4	0	0	21	15.8	15.1	0	--
EW-6	09/08/01	4:12 PM	28.5	76	-	-3.9	0	0.2	19.8	--	--	--	--
EW-6	10/04/01	10:11 AM	28.69	57	-	-3.79	0	0	20.4	5.6	5.3	6	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-6	11/14/01	9:08 AM	28.82	54	-	-3.8	0	0.1	20.6	6.1	3.35	-0.5	--
EW-6	12/18/01	11:59 AM	28.52	35	-	-3.76	0	0	21.1	440	440	0.7	--
EW-6	01/10/02	11:40 AM	28.54	36	-	-3.81	0	0.2	19.9	14.33	14	0.13	--
EW-6	02/15/02	3:43 PM	28.5	38	-	-4.12	0	0	20	230	101	-0.25	--
EW-6	03/18/02	2:26 PM	28.97	42	-	-4.53	0	0	21.4	0	0	0	--
EW-6	04/26/02	1:27 PM	29.01	47	-	-0.42	0	0.1	20.9	2337	2123	0	--
EW-6	05/22/02	11:37 AM	28.81	68	-	-4.28	0	0.2	21.1	3828	3770	0	--
EW-6	06/05/02	11:44 AM	28.76	68	-	-4.43	0	0.3	20.9	2447	2420	0.09	--
EW-6	07/11/02	4:08 PM	29.02	79	-	3.8	0	0.1	22.2	302	205	0.24	--
EW-6	08/11/02	10:55 AM	28.72	81	-	3.7	0	0.3	21.3	259	256	-1.45	--
EW-7	05/28/98	6:21 PM	28.5	84	-	-3.9	1.3	0.2	20.7	--	--	--	--
EW-7	07/09/98	1:22 PM	28.74	82	0.01	-4.5	1.3	0.4	20.3	--	--	--	--
EW-7	08/19/98	5:39 PM	28.89	72	-	-4.33	0.6	0.2	20.8	--	--	--	--
EW-7	09/01/98	9:25 AM	28.61	63	0.01	-4.15	0.5	0.2	19.7	--	--	--	--
EW-7	09/01/98	9:25 AM	28.61	63	0.01	-4.15	0.5	0.2	19.7	--	--	--	--
EW-7	09/01/98	12:40 PM	28.54	73	T	--	--	--	--	--	--	--	--
EW-7	09/01/98	2:33 PM	28.51	69.1	-	-9	2.9	0.3	19.4	--	--	--	--
EW-7	09/01/98	2:33 PM	28.51	69.1	-	-9	2.9	0.3	19.4	--	--	--	--
EW-7	09/01/98	6:52 PM	28.52	60.1	-	-7.25	0	0	20.6	--	--	--	--
EW-7	09/01/98	6:52 PM	28.52	60.1	-	-7.25	0	0	20.6	--	--	--	--
EW-7	09/02/98	6:56 AM	28.53	53.1	-	-7.59	0	0	20.2	--	--	--	--
EW-7	09/02/98	6:56 AM	28.53	53.1	-	-7.59	0	0	20.2	--	--	--	--
EW-7	09/02/98	7:43 PM	28.54	51.1	-	-5.11	0	0.3	19.8	--	--	--	--
EW-7	09/02/98	7:43 PM	28.54	51.1	-	-5.11	0	0.3	19.8	--	--	--	--
EW-7	09/16/98	12:33 PM	28.88	75.9	-	-6.52	2.9	0.2	20.6	--	--	--	--
EW-7	10/12/98	9:42 AM	28.72	55	-	-6.66	2.7	0.3	19.7	--	--	--	--
EW-7	11/07/98	8:13 AM	29.08	34	-	-7	2	0.2	19.3	--	--	--	--
EW-7	11/17/98	3:11 PM	28.8	35.1	-	-7	0.8	0.1	19.8	--	--	--	--
EW-7	12/20/98	9:49 AM	29.15	17	T	-6.59	1.6	0.1	18.1	--	--	--	--
EW-7	02/12/99	10:19 AM	28.41	12	T	-7.2	0.5	0.1	12.7	--	--	--	--
EW-7	03/14/99	10:11 AM	28.93	30	-	-6.91	1.5	0.1	19.3	--	--	--	--
EW-7	04/15/99	8:25 AM	28.5	46	-	-6.77	0.3	0	19.7	--	--	--	--
EW-7	07/22/99	8:48 AM	28.77	79	-	-7.36	0	0	21.4	--	--	--	--
EW-7	07/27/99	10:12 AM	28.77	73.9	-	-11	0	0	20.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-7	08/04/99	8:06 AM	28.72	64	-	-12.04	0	0	21.4	--	--	--	--
EW-7	08/10/99	10:29 AM	28.44	64.9	-	-10	0	0	20.7	--	--	--	--
EW-7	08/17/99	2:52 PM	28.81	70	-	-10.71	0	0	20.5	--	--	--	--
EW-7	08/17/99	5:38 PM	28.84	64.9	-	--	--	--	--	9	9	8	--
EW-7	08/20/99	5:18 PM	28.86	75	-	-10.1	--	--	--	--	--	--	--
EW-7	08/24/99	12:55 PM	28.7	77	-	-10.48	0.3	0.3	20.4	--	--	--	--
EW-7	08/31/99	6:27 PM	28.85	70	-	-9.85	0	0.1	20.2	100	100	2.5	--
EW-7	08/31/99	7:15 PM	28.85	66	-	-20	--	--	--	--	--	--	--
EW-7	08/31/99	7:25 PM	28.85	66	-	-20	--	--	--	--	--	--	--
EW-7	08/31/99	7:35 PM	28.87	63	-	-20	--	--	--	--	--	--	--
EW-7	08/31/99	7:45 PM	28.87	63	-	-20	--	--	--	--	--	--	--
EW-7	09/03/99	9:10 AM	28.81	73	-	-4.02	0	0.1	20.2	100	100	3	--
EW-7	09/03/99	9:55 AM	28.8	77	-	-10.05	--	--	--	--	--	--	--
EW-7	09/03/99	10:05 AM	28.8	77	-	-10.05	--	--	--	--	--	--	--
EW-7	09/03/99	10:05 AM	28.8	77	-	-10.05	--	--	--	--	--	--	--
EW-7	09/03/99	10:05 AM	28.8	77	-	-10.05	--	--	--	--	--	--	--
EW-7	09/21/99	2:25 PM	28.87	69.1	-	-9.69	--	--	--	200	200	1.5	--
EW-7	09/28/99	11:35 AM	28.91	54	-	-9.8	0	0	21.2	275	275	2.25	--
EW-7	10/05/99	5:12 PM	28.76	48	-	-9.7	0	0	20.8	110	90	1.75	--
EW-7	10/12/99	2:37 PM	28.55	62.1	-	-9.5	0	0	20.8	2	2	1.25	--
EW-7	10/19/99	10:22 AM	28.79	39.9	-	-9.92	0	0	20.5	275	275	1.25	--
EW-7	10/25/99	9:52 AM	28.51	53.1	-	-7.55	0	0	20.7	3500	3500	3.5	--
EW-7	11/22/99	2:02 PM	28.73	51.1	-	-7.3	0	0	20.4	1050	900	<1	--
EW-7	01/24/00	--	--	--	--	-5	--	--	--	--	--	--	--
EW-7	01/25/00	2:55 PM	28.83	13	-	-7.74	0.6	0	19.5	--	--	--	--
EW-7	02/07/00	3:24 PM	29.04	25	-	-7.69	0.3	0	19.8	--	--	--	--
EW-7	02/08/00	8:45 AM	28.89	16	-	-7.54	0.2	0	20.3	1400	1300	<1	--
EW-7	03/04/00	9:45 AM	28.58	46	-	0	10.1	1.8	13.5	--	--	--	--
EW-7	03/04/00	3:49 PM	28.53	55.9	-	-1.92	0.6	0	20.5	4000	4000	<1	--
EW-7	03/05/00	12:23 PM	28.74	51.1	-	-7.73	0.3	0	20.6	3000	2500	1	--
EW-7	03/06/00	2:20 PM	28.72	62.1	-	-7.75	0	0	20.9	3000	1000	0.5	--
EW-7	04/02/00	11:02 AM	28.5	56	-	-7.77	0	0	18.6	14.24	14.02	14.24	--
EW-7	04/27/00	3:21 PM	28.63	70	-	-7.83	0	0	18.6	0.15	0.15	0.31	--
EW-7	06/03/00	11:42 AM	28.98	65	-	-7.4	0	0	21	0.5	0.69	0.69	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-7	06/29/00	2:10 PM	28.67	69	-	-7.5	0	0	20	8	7.5	5.5	--
EW-7	07/23/00	11:08 AM	28.97	69	-	-7.35	0	0	21.3	7	7	5	--
EW-7	08/20/00	11:49 AM	29.05	67	-	-7.16	0	0	20.5	3	2.5	2.5	--
EW-7	09/23/00	12:58 PM	28.67	56	-	-6.89	0	0	20.5	12	2.25	1.75	39.91
EW-7	10/21/00	1:14 PM	29.01	52	-	-6.15	0	0	21.1	0.94	0.81	0.23	--
EW-7	11/18/00	2:58 PM	28.54	23	T	-6.28	0	0	20.2	0.26	0.1	0.26	40
EW-7	12/18/00	1:40 PM	28.68	17	0.01	-6.48	0	0	19.6	1.2	1.15	1	--
EW-7	01/09/01	11:06 AM	28.8	23	-	-6.38	0	0	19.5	2.2	1.2	1.57	--
EW-7	02/08/01	2:56 PM	28.81	25	-	-3.8	0	0	19.4	0.2	0.2	0.3	--
EW-7	02/10/01	9:31 AM	29.09	8	-	-4	--	--	--	--	--	--	--
EW-7	02/12/01	2:06 PM	28.87	24	T	-3.9	--	--	--	--	--	--	--
EW-7	02/13/01	8:28 AM	29.01	21	-	-3.8	0	0	20.2	0.52	0.27	0.3	--
EW-7	03/07/01	12:13 PM	28.67	34	-	-0.31	0	0	19.9	2.66	2.66	2.66	--
EW-7	03/08/01	1:55 PM	28.58	28	T	--	--	--	--	0.41	0	0.47	--
EW-7	04/08/01	10:24 AM	28.53	43	-	-4.01	0	0	20.6	1.07	0.3	0.2	--
EW-7	05/05/01	10:38 AM	29.1	60	-	-7.52	0	0	19	-0.3	-0.3	-0.4	--
EW-7	05/31/01	9:54 AM	28.91	60	-	-3.96	0	0	19.2	0	0	0	39.94
EW-7	06/28/01	9:49 AM	28.99	81	-	-4.2	0	0	20.4	0	0	0	39.97
EW-7	07/19/01	9:16 AM	28.81	74	-	-3.9	0	0	20.3	0.73	0.6	0	--
EW-7	08/08/01	3:48 PM	28.64	95	-	-4	0	0	21	3.1	0.21	0	--
EW-7	09/08/01	4:02 PM	28.5	76	-	-3.9	0	0	20.2	<1	<1	<1	--
EW-7	10/04/01	10:05 AM	28.69	57	-	-3.77	0	0	20.5	5.19	5.08	5.3	--
EW-7	11/14/01	9:13 AM	28.82	54	-	-3.62	0	0	20.9	0.77	0.7	-0.5	--
EW-7	12/18/01	12:09 PM	28.52	35	-	-3.64	0	0	21	0.55	0.55	0.74	--
EW-7	01/10/02	11:45 AM	28.54	36	-	-3.57	0	0	20.2	1.08	0.22	-0.2	--
EW-7	02/15/02	3:38 PM	28.5	38	-	-4.03	0	0	20.3	-0.18	-0.23	-0.37	--
EW-7	03/18/02	2:36 PM	28.98	42	-	-4.51	0	0	21.4	0	0	0	--
EW-7	04/26/02	1:43 PM	29.01	48	-	-0.03	0	0	21.7	1.97	1.8	0	--
EW-7	05/22/02	1:59 PM	28.75	70	-	-4.3	0	0	21.6	0	0	0	--
EW-7	06/05/02	1:31 PM	28.76	71	-	-4.28	0	0	21.9	0.55	0.36	0	--
EW-7	07/11/02	4:17 PM	29.02	79	-	-3.8	0	0	22.8	4.51	4.31	0.29	--
EW-7	08/11/02	11:25 AM	28.72	81	-	-4.4	0	0	22	-0.1	-0.14	-0.3	--
EW-8	05/28/98	6:24 PM	28.5	84	-	-5	0.1	0	21.2	--	--	--	--
EW-8	07/09/98	1:27 PM	28.74	82	0.01	-5.2	0.7	0.4	20.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-8	08/19/98	5:42 PM	28.89	72	-	-5.02	0.7	0.3	20.5	--	--	--	--
EW-8	09/01/98	9:21 AM	28.61	63	0.01	-4.74	0.7	0.4	19.4	--	--	--	--
EW-8	09/01/98	9:21 AM	28.61	63	0.01	-4.74	0.7	0.4	19.4	--	--	--	--
EW-8	09/01/98	4:30 PM	28.51	66	-	--	--	--	--	--	--	--	--
EW-8	09/01/98	5:55 PM	28.52	66	-	--	--	--	--	--	--	--	--
EW-8	09/01/98	6:27 PM	28.52	66	-	-9	1.2	0.3	19.6	--	--	--	--
EW-8	09/01/98	6:27 PM	28.52	66	-	-9	1.2	0.3	19.6	--	--	--	--
EW-8	09/01/98	6:58 PM	28.52	60.1	-	-5.8	1.2	0.3	19.7	--	--	--	--
EW-8	09/01/98	6:58 PM	28.52	60.1	-	-5.8	1.2	0.3	19.7	--	--	--	--
EW-8	09/02/98	7:00 AM	28.53	53.1	-	-6.13	0	0.4	19.7	--	--	--	--
EW-8	09/02/98	7:00 AM	28.53	53.1	-	-6.13	0	0.4	19.7	--	--	--	--
EW-8	09/02/98	7:40 PM	28.54	51.1	-	-6.21	0	0	20.4	--	--	--	--
EW-8	09/02/98	7:40 PM	28.54	51.1	-	-6.21	0	0	20.4	--	--	--	--
EW-8	09/16/98	12:37 PM	28.88	75.9	-	-4.89	0	0	21.8	--	--	--	--
EW-8	10/12/98	9:47 AM	28.72	55	-	-4.99	0	0	20.8	--	--	--	--
EW-8	11/07/98	8:24 AM	29.08	34	-	-4.5	0	0	20.1	--	--	--	--
EW-8	11/17/98	3:17 PM	28.8	35.1	-	-4.93	0	0	20.1	--	--	--	--
EW-8	12/20/98	9:39 AM	29.15	17	T	-4.59	0.1	0	19.3	--	--	--	--
EW-8	01/12/99	11:22 AM	28.73	0	-	0	0	0.4	19.2	--	--	--	--
EW-8	01/14/99	9:03 AM	29.1	1	-	-4.5	0.9	0.2	18.6	--	--	--	--
EW-8	02/12/99	9:12 AM	28.39	12	-	-5.16	0	0	16	--	--	--	--
EW-8	03/14/99	10:15 AM	28.93	30	-	-4.88	0	0	19.9	--	--	--	--
EW-8	04/15/99	8:29 AM	28.5	46	-	-4.77	0	0	20	--	--	--	--
EW-8	07/22/99	8:52 AM	28.77	79	-	-5.77	0	0	21.3	--	--	--	--
EW-8	07/27/99	10:15 AM	28.77	73.9	-	-9	0.01	0	20.1	--	--	--	--
EW-8	08/04/99	8:10 AM	28.72	64	-	-9.97	0	0	21.4	--	--	--	--
EW-8	08/10/99	10:32 AM	28.45	66.9	-	-9	0	0	20.7	--	--	--	--
EW-8	08/17/99	2:56 PM	28.81	70	-	-9.02	0	0	20.5	--	--	--	--
EW-8	08/17/99	5:48 PM	28.84	64.9	-	--	--	--	--	70	23	2.5	--
EW-8	08/20/99	5:23 PM	28.86	75	-	-8.13	--	--	--	--	--	--	--
EW-8	08/24/99	1:25 PM	28.7	77	-	-8.91	0.2	0.2	20.2	--	--	--	--
EW-8	08/31/99	6:29 PM	28.85	70	-	-8.23	0	0	20.3	75	75	2.5	--
EW-8	08/31/99	7:50 PM	28.87	63	-	-21	--	--	--	--	--	--	--
EW-8	08/31/99	8:00 PM	28.87	63	-	-21	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-8	08/31/99	8:10 PM	28.87	63	-	-21	--	--	--	--	--	--	--
EW-8	08/31/99	8:20 PM	28.87	63	-	-21	--	--	--	--	--	--	--
EW-8	09/03/99	9:12 AM	28.81	73	-	-3.62	0	0	20.2	75	75	3	--
EW-8	09/03/99	10:30 AM	28.78	82.9	-	-11.1	--	--	--	--	--	--	--
EW-8	09/03/99	10:40 AM	28.78	82.9	-	-11.1	--	--	--	--	--	--	--
EW-8	09/03/99	10:50 AM	28.78	82.9	-	-11.1	--	--	--	--	--	--	--
EW-8	09/03/99	11:00 AM	28.78	82.9	-	-11.1	--	--	--	--	--	--	--
EW-8	09/21/99	2:27 PM	28.87	69.1	-	-7.65	--	--	--	100	100	1.5	--
EW-8	09/28/99	11:31 AM	28.91	54	-	-8.03	0	0	21.2	2.25	2.25	2.25	--
EW-8	10/05/99	5:08 PM	28.76	48	-	-7.9	0	0	20.7	4	4	2	--
EW-8	10/12/99	2:47 PM	28.55	62.1	-	-7.6	0	0	20.8	1	1	1	--
EW-8	10/19/99	10:14 AM	28.79	39.9	-	-8.05	0	0.1	20.5	75	75	1	--
EW-8	10/25/99	9:46 AM	28.51	53.1	-	-6.33	0	0.1	20.5	1000	900	3	--
EW-8	11/22/99	1:55 PM	28.73	51.1	-	-5.93	0	0	20.4	225	140	<1	--
EW-8	01/24/00	--	--	--	--	-5.5	--	--	--	--	--	--	--
EW-8	01/25/00	2:50 PM	28.83	13	-	-6.23	0.3	0.1	19.5	3500	3500	1	--
EW-8	02/07/00	3:30 PM	29.06	24.1	-	-6.18	0	0	19.6	--	--	--	--
EW-8	02/08/00	8:54 AM	28.89	16	-	-6.12	0	0	20.1	800	800	<1	--
EW-8	03/04/00	10:04 AM	28.58	46	-	0	4	2.8	11	--	--	--	--
EW-8	03/05/00	12:20 PM	28.74	51.1	-	-1.54	0	0	20.6	900	650	1.25	--
EW-8	03/06/00	2:25 PM	28.72	62.1	-	-1.54	0	0	21	300	180	0.5	--
EW-8	04/02/00	10:54 AM	28.5	56	-	-6.24	0	0	18.5	1834	1666	14.12	--
EW-8	04/27/00	3:27 PM	28.63	70	-	-6.44	0	0	18.5	1585	1585	0.31	--
EW-8	06/03/00	11:48 AM	28.98	65	-	-6.2	0	0	20.9	0.5	0.6	0.69	--
EW-8	06/29/00	2:22 PM	28.67	69	-	-6.29	0	0	20	5	5	5	--
EW-8	07/23/00	11:14 AM	28.97	69	-	-6.14	0	0	21.3	8	7	5	--
EW-8	08/20/00	11:51 AM	29.05	67	-	-6.11	0	0	20.6	6	6	2.5	--
EW-8	09/23/00	1:10 PM	28.67	56	-	-5.77	0	0	20.4	100	2.04	1.5	39.72
EW-8	10/21/00	1:06 PM	29.01	52	-	-5.52	0	0	21.1	0.29	0.29	0.18	39.72
EW-8	11/18/00	2:45 PM	28.54	23	T	-5.3	0	0	20.3	0.12	0.12	0.17	40.81
EW-8	12/18/00	1:30 PM	28.68	17	0.01	-5.35	0	0	19.6	1.8	1.7	1	--
EW-8	01/09/01	10:55 AM	28.8	23	-	-5.33	0	0	19.5	750	735	1.4	--
EW-8	02/08/01	3:00 PM	28.81	25	-	-3.2	0	0	19.4	0.3	0.3	0.3	--
EW-8	02/10/01	9:34 AM	29.09	8	-	-3.5	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-8	02/12/01	2:08 PM	28.87	24	T	-3.3	--	--	--	--	--	--	--
EW-8	02/13/01	8:31 AM	29.01	22	-	-3.25	0	0	20.7	0.41	0.29	0.2	--
EW-8	03/07/01	12:21 PM	28.67	34	-	-0.09	0	0	19.7	2.45	2	2	--
EW-8	03/08/01	1:59 PM	28.58	28	T	--	--	--	--	2.07	1.38	1.01	--
EW-8	04/08/01	10:19 AM	28.53	43	-	-3.58	0	0	20.5	0.25	0.2	0.1	--
EW-8	05/05/01	10:34 AM	29.1	60	-	-8	0	0	19	2.6	2.6	-0.4	--
EW-8	05/31/01	10:02 AM	28.91	60	-	-3.47	0	0	19.2	171	171	0	39.94
EW-8	06/28/01	10:00 AM	28.99	81	-	-3.8	0	0	20.3	437	399	0	38.9
EW-8	07/19/01	9:13 AM	28.81	74	-	-3.2	0	0	20.4	6.58	6.56	0	39.92
EW-8	08/08/01	3:00 PM	28.65	96	-	-4	0	0	20.7	211	105	0	40.08
EW-8	09/08/01	3:55 PM	28.5	76	-	-3.4	0	0	20.1	>1000	>1000	<1	--
EW-8	10/04/01	9:55 AM	28.69	57	-	-3.25	0	0	20.4	5.39	4.98	4.9	--
EW-8	11/14/01	9:17 AM	28.82	54	-	-3.09	0	0	20.9	76.05	61.2	-0.5	--
EW-8	12/18/01	12:13 PM	28.52	35	-	-3.08	0	0	21.1	66.5	66.5	0.43	--
EW-8	01/10/02	11:50 AM	28.54	36	-	-3.08	0	0	20.3	4.91	3.75	0.01	--
EW-8	02/15/02	3:25 PM	28.51	37	-	-3.45	0	0	20.3	-1.05	-1.05	-1.35	--
EW-8	03/18/02	2:43 PM	28.98	42	-	-3.93	0	0	21.3	0	0	0	--
EW-8	04/26/02	2:03 PM	29.01	48	-	-3.25	0	0	21.8	59	33	0	--
EW-8	05/22/02	2:13 PM	28.75	70	-	-3.9	0	0	21.8	0	0	0	--
EW-8	06/05/02	1:51 PM	28.76	71	-	-3.92	0	0	21.8	0.78	0	0	--
EW-8	07/11/02	4:22 PM	29.02	79	-	-3.4	0	0	22.1	101	95	0.95	--
EW-8	08/11/02	11:45 AM	28.72	83	-	-3.2	0	0	22	-0.29	-0.5	-0.4	--
EW-9	05/28/98	6:28 PM	28.5	84	-	-4.5	2.1	0.2	20.4	--	--	--	--
EW-9	07/09/98	1:31 PM	28.75	79	-	-4.6	1.7	0.3	20.1	--	--	--	--
EW-9	08/19/98	5:44 PM	28.89	72	-	-4.53	1.2	0.3	20.5	--	--	--	--
EW-9	09/01/98	9:14 AM	28.61	63	0.01	-4.38	1.2	0.4	19.4	--	--	--	--
EW-9	09/01/98	9:14 AM	28.61	63	0.01	-4.38	1.2	0.4	19.4	--	--	--	--
EW-9	09/01/98	7:02 PM	28.52	60.1	-	-4.96	0	0.2	20.2	--	--	--	--
EW-9	09/01/98	7:02 PM	28.52	60.1	-	-4.96	0	0.2	20.2	--	--	--	--
EW-9	09/02/98	7:05 AM	28.53	53.1	-	-5.24	0	0.3	19.7	--	--	--	--
EW-9	09/02/98	7:05 AM	28.53	53.1	-	-5.24	0	0.3	19.7	--	--	--	--
EW-9	09/02/98	7:30 AM	28.53	57	-	--	--	--	--	--	--	--	--
EW-9	09/02/98	8:50 AM	28.53	60.1	-	--	--	--	--	--	--	--	--
EW-9	09/02/98	9:25 AM	28.53	60.1	-	-8	1.7	0.4	18.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-9	09/02/98	9:25 AM	28.53	60.1	-	-8	1.7	0.4	18.9	--	--	--	--
EW-9	09/02/98	7:37 PM	28.54	51.1	-	-6.37	0	0	20.4	--	--	--	--
EW-9	09/02/98	7:37 PM	28.54	51.1	-	-6.37	0	0	20.4	--	--	--	--
EW-9	09/16/98	12:42 PM	28.88	75.9	-	-4.24	0	0	21.7	--	--	--	--
EW-9	10/12/98	9:51 AM	28.72	55	-	-4.34	0	0	20.7	--	--	--	--
EW-9	11/07/98	8:27 AM	29.08	34	-	-4.2	0	0.1	20	--	--	--	--
EW-9	11/17/98	3:21 PM	28.8	35.1	-	-4.24	0	0	20	--	--	--	--
EW-9	12/20/98	9:32 AM	29.15	17	T	-3.93	0	0.1	19.8	--	--	--	--
EW-9	02/12/99	10:23 AM	28.41	12	T	-4.47	0	0.1	12.4	--	--	--	--
EW-9	03/14/99	10:20 AM	28.93	30	-	-4.22	0	0	19.8	--	--	--	--
EW-9	04/15/99	8:33 AM	28.49	53.1	-	-4.15	0	0	19.9	--	--	--	--
EW-9	07/22/99	8:58 AM	28.77	79	-	-5.11	0	0	21.1	--	--	--	--
EW-9	07/27/99	10:22 AM	28.77	73.9	-	-9	0	0	20.1	--	--	--	--
EW-9	08/04/99	8:18 AM	28.72	64	-	-9.49	0	0.1	21.2	--	--	--	--
EW-9	08/10/99	10:39 AM	28.45	66.9	-	-8	0	0.1	20.6	--	--	--	--
EW-9	08/17/99	3:06 PM	28.81	70	-	-8.58	0	0	20.5	--	--	--	--
EW-9	08/17/99	5:55 PM	28.84	64.9	-	--	--	--	--	8	8	3	--
EW-9	08/20/99	5:28 PM	28.86	75	-	-7.2	--	--	--	--	--	--	--
EW-9	08/24/99	1:53 PM	28.7	79	-	-8.33	0.3	0.2	20.1	--	--	--	--
EW-9	08/31/99	6:31 PM	28.85	66	-	-7.79	0	0	20.2	55	55	2.5	--
EW-9	08/31/99	8:25 PM	28.87	63	-	-20	--	--	--	--	--	--	--
EW-9	08/31/99	8:35 PM	28.87	61	-	-20	--	--	--	--	--	--	--
EW-9	08/31/99	8:45 PM	28.87	61	-	-20	--	--	--	--	--	--	--
EW-9	08/31/99	8:55 PM	28.87	61	-	-20	--	--	--	--	--	--	--
EW-9	09/03/99	9:14 AM	28.81	73	-	-3.5	0	0	20.2	70	70	3	--
EW-9	09/03/99	11:10 AM	28.78	82.9	-	-11.35	--	--	--	--	--	--	--
EW-9	09/03/99	11:20 AM	28.78	82.9	-	-11.35	--	--	--	--	--	--	--
EW-9	09/03/99	11:30 AM	28.77	86	-	-11.35	--	--	--	--	--	--	--
EW-9	09/03/99	11:40 AM	28.77	86	-	-11.35	--	--	--	--	--	--	--
EW-9	09/21/99	2:29 PM	28.87	69.1	-	-7.52	--	--	--	85	85	1.5	--
EW-9	09/28/99	11:13 AM	28.9	53.1	-	-7.41	0	0.2	21.1	230	230	1.75	--
EW-9	10/05/99	4:39 PM	28.76	48	-	-7.5	0	0.2	20.4	3250	3250	2.25	--
EW-9	10/12/99	3:01 PM	28.55	62.1	-	-7.18	0	0.2	20.6	45	45	1.25	--
EW-9	10/19/99	9:53 AM	28.79	39.9	-	-7.45	0	0.3	20.3	600	600	1.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-9	10/25/99	9:41 AM	28.51	53.1	-	-6.04	0	0.2	20.4	5000	5000	3	--
EW-9	11/22/99	1:31 PM	28.73	51.1	-	-5.57	0	0.1	20.1	300	300	<1	--
EW-9	01/24/00	--	--	--	--	-5.25	--	--	--	--	--	--	--
EW-9	01/25/00	2:40 PM	28.83	13	-	-5.8	0	0	19.7	800	800	1.5	--
EW-9	02/07/00	3:52 PM	29.06	24.1	-	-5.5	0	0.1	19.7	--	--	--	--
EW-9	02/08/00	10:54 AM	28.82	28	-	-5.63	0	0	19.7	27	25	<1	--
EW-9	03/04/00	10:19 AM	28.58	46	-	0	0	0.4	19	70	70	2	--
EW-9	03/05/00	12:06 PM	28.74	51.1	-	-1.43	0.4	0	20.2	4100	3500	<1	--
EW-9	03/06/00	3:35 PM	28.7	61	-	-1.44	0	0	20.6	1700	1700	0.5	--
EW-9	04/02/00	10:30 AM	28.5	56	-	-5.87	0	0	18.1	3471	34.58	14.19	--
EW-9	04/27/00	3:46 PM	28.63	70	-	-6.08	0	0	18.2	2445	2445	0.4	--
EW-9	06/03/00	11:59 AM	28.98	65	-	-5.89	0	0	20.6	300	300	0.63	--
EW-9	06/29/00	2:33 PM	28.66	69	-	-5.98	0	0	19.9	800	800	5	--
EW-9	07/23/00	11:26 AM	28.97	69	-	-5.81	0	0	21.2	200	200	5	--
EW-9	08/20/00	12:10 PM	29.05	67	-	-5.76	0	0	20.7	45	45	2.5	--
EW-9	09/23/00	1:20 PM	28.67	56	-	-5.45	0	0	20.4	175	175	1.5	--
EW-9	10/21/00	12:43 PM	29.01	52	-	-5.31	0	0.1	20.5	2081	2077	0.11	--
EW-9	11/18/00	1:47 PM	28.55	24	-	-5.06	0	0.2	20.1	210	100	0.33	--
EW-9	12/18/00	12:55 PM	28.7	16	0.01	-5.1	0	0.1	19.5	1270	1250	0.6	--
EW-9	01/09/01	10:35 AM	28.8	23	-	-5.1	0	0	19.4	57.4	56.5	1.68	--
EW-9	02/08/01	3:11 PM	28.81	25	-	-3.13	0	0	19.3	0.44	0.38	0.3	--
EW-9	02/10/01	9:43 AM	29.09	8	-	-3.4	--	--	--	--	--	--	--
EW-9	02/12/01	2:10 PM	28.87	24	T	-3.2	--	--	--	--	--	--	--
EW-9	02/13/01	8:41 AM	29.01	22	-	-3.2	0	0	20	0.5	0.48	0.2	--
EW-9	03/07/01	12:51 PM	28.64	35	-	-3	0	0.1	19.6	3.19	2.87	2.5	--
EW-9	03/08/01	2:14 PM	28.58	28	T	--	--	--	--	0.89	0.77	0.6	--
EW-9	04/08/01	10:05 AM	28.53	43	-	-3.47	0	0.1	20	1216	1216	0.04	--
EW-9	05/05/01	10:22 AM	29.09	58	-	-3.2	0	0	18.7	935	935	-0.28	--
EW-9	05/31/01	9:32 AM	28.91	60	-	-3.38	0	0	18.7	1358	1342	0	--
EW-9	06/28/01	10:27 AM	28.99	81	-	-3.75	0	0	20.3	3918	3844	0	--
EW-9	07/19/01	8:58 AM	28.81	74	-	-3.5	0	0	20.3	497	266	0	--
EW-9	08/08/01	2:37 PM	28.65	96	-	-4	0	0	20.6	3700	3600	0	--
EW-9	09/08/01	3:45 PM	28.5	76	-	-3.3	0	0	20	>1000	>1000	<1	--
EW-9	10/04/01	2:42 PM	28.63	59	-	-3.14	0	0	20.8	5.62	5.4	5.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
EW-9	12/18/01	12:21 PM	28.52	35	-	-3.05	0	0.2	20.5	1250	1220	-0.7	--
EW-9	01/10/02	11:57 AM	28.54	36	-	-2.97	0	0.2	19.9	25.35	25.35	0.35	--
EW-9	02/15/02	3:13 PM	28.51	37	-	-3.33	0	0.1	20	-0.62	-0.65	-1.31	--
EW-9	03/18/02	3:03 PM	28.98	42	-	-3.35	0	0	21	0	0	0	--
EW-9	04/26/02	2:23 PM	29.01	48	-	-3.31	0	0	21.4	4512	4480	0	--
EW-9	05/22/02	2:27 PM	28.75	70	-	-3.8	0	0	21.5	712	699	0	--
EW-9	06/05/02	2:06 PM	28.76	71	-	-3.8	0	0.1	21.5	3.02	1.8	0	--
EW-9	07/11/02	4:27 PM	29.02	79	-	-3.2	0	0	22.5	15.97	15.85	0.1	--
EW-9	08/11/02	2:15 PM	28.72	87	-	-2.9	0	0	21.6	4157	4150	-0.2	--
B-blower inlet	05/07/98	2:30 PM	28.52	66.9	T	-40	1.5	0.3	20.2	--	--	--	--
B-blower inlet	05/15/98	--	--	--	--	-39.8	1	0.3	20.4	--	--	--	--
B-blower inlet	05/21/98	9:12 AM	28.86	53.1	-	-40.2	0.7	0.3	20.8	--	--	--	--
B-blower inlet	05/28/98	5:50 PM	28.5	84	-	-39.6	1.7	0.2	20.5	--	--	--	--
B-blower inlet	06/06/98	9:35 AM	28.82	53.1	-	-39.5	0.5	0.7	20.6	--	--	--	--
B-blower inlet	06/17/98	--	--	--	--	-40.2	0.8	0.5	20.4	--	--	--	--
B-blower inlet	06/24/98	3:46 PM	28.59	81	-	-39.8	1.1	0.3	20.3	--	--	--	--
B-blower inlet	07/01/98	8:55 AM	28.75	69.1	-	-39.6	0.8	0.4	20.1	--	--	--	--
B-blower inlet	07/15/98	11:54 AM	28.66	75	-	-39.5	1.2	0.4	20.1	--	--	--	--
B-blower inlet	07/24/98	12:36 PM	28.84	66.9	-	-39.8	0.9	0.6	19.9	--	--	--	--
B-blower inlet	07/28/98	7:54 AM	28.52	66.9	T	-39.6	1.2	0.6	19.8	--	--	--	--
B-blower inlet	08/03/98	3:10 PM	28.89	77	-	-39.7	0.8	0.4	19.7	--	--	--	--
B-blower inlet	08/10/98	--	--	--	--	-39.5	0.9	0.2	20.3	--	--	--	--
B-blower inlet	08/19/98	5:28 PM	28.89	73.9	-	-41	0.8	0.2	20.6	--	--	--	--
B-blower inlet	08/26/98	10:50 AM	28.78	79	-	-40	1.1	0.3	19.7	--	--	--	--
B-blower inlet	09/01/98	10:32 AM	28.59	69.1	-	-40	0.8	0.3	19.7	--	--	--	--
B-blower inlet	09/10/98	8:55 AM	28.82	69.1	-	-21.3	0.6	0.3	19.8	--	--	--	--
B-blower inlet	09/16/98	9:41 AM	28.94	66.9	-	-10	0.6	0.3	20.3	--	--	--	--
B-blower inlet	09/26/98	3:25 PM	28.38	66.9	-	-22.5	0.6	0.2	20.6	--	--	--	--
B-blower inlet	09/30/98	11:09 AM	28.63	46	0.06	-22.5	0.2	0.2	19.7	--	--	--	--
B-blower inlet	10/08/98	5:10 PM	28.98	51.1	-	-23	0.5	0.2	20	--	--	--	--
B-blower inlet	10/12/98	9:13 AM	28.71	52	-	-23	0.4	0.2	20.4	--	--	--	--
B-blower inlet	10/22/98	9:24 AM	29.19	41	-	-22	0.3	0.2	20.2	--	--	--	--
B-blower inlet	11/07/98	7:56 AM	29.08	34	-	-23.5	0.4	0.1	19.7	--	--	--	--
B-blower inlet	11/17/98	2:19 PM	28.79	35.1	-	-20	0.5	0.1	20.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-blower inlet	12/01/98	4:40 PM	28.61	45	-	-21	0.5	0.1	20.8	--	--	--	--
B-blower inlet	12/09/98	4:03 PM	28.89	41	-	-20	0.5	0.2	19.4	--	--	--	--
B-blower inlet	12/20/98	10:07 AM	29.15	17	T	-21	0.6	0.1	17.5	--	--	--	--
B-blower inlet	12/29/98	11:32 AM	28.64	9	T	-21	0.6	0	17.9	--	--	--	--
B-blower inlet	01/06/99	8:23 AM	28.46	3.9	T	-21	0.7	0	17.2	--	--	--	--
B-blower inlet	01/13/99	11:09 AM	29.22	0	-	0	0.2	0	20.6	--	--	--	--
B-blower inlet	01/14/99	8:50 AM	29.1	1	-	--	--	--	--	--	--	--	--
B-blower inlet	01/19/99	11:02 AM	28.61	24.1	-	-22	0.9	0.2	19.2	--	--	--	--
B-blower inlet	01/27/99	10:49 AM	28.54	27	T	-23	0.7	0	19.9	--	--	--	--
B-blower inlet	02/02/99	3:27 PM	28.26	35.1	-	-22	0.6	0.1	21.8	--	--	--	--
B-blower inlet	02/12/99	8:50 AM	28.39	12	-	-24	0.4	0	19.8	--	--	--	--
B-blower inlet	02/25/99	3:14 PM	28.85	30	-	-23.5	0.4	0.1	19.8	--	--	--	--
B-blower inlet	03/14/99	9:56 AM	28.93	30	-	-24	0.4	0	19.6	--	--	--	--
B-blower inlet	03/24/99	4:09 PM	28.88	36	-	-24	0.3	0.1	19.8	--	--	--	--
B-blower inlet	04/15/99	8:12 AM	28.5	46	-	-21	0.1	0.1	19.7	--	--	--	--
B-blower inlet	05/17/99	4:07 PM	28.47	64.9	0.05	-22.5	0	0.1	20.3	--	--	--	--
B-blower inlet	07/22/99	7:59 AM	28.8	75.9	-	-22	0	0.3	20.9	--	--	--	--
B-blower inlet	07/27/99	11:35 AM	28.74	78.1	-	-29	0	0.3	19.8	--	--	--	--
B-blower inlet	08/04/99	7:44 AM	28.72	64	-	-29	0	0.3	20.9	--	--	--	--
B-blower inlet	08/10/99	10:08 AM	28.44	64.9	-	-27	0	0.4	20.2	--	--	--	--
B-blower inlet	08/11/99	11:06 AM	28.64	73	-	--	--	--	--	425	425	3.5	--
B-blower inlet	08/17/99	2:23 PM	28.8	72	-	-22	0	0.3	19.9	--	--	--	--
B-blower inlet	08/20/99	3:31 PM	28.86	77	-	-22	0.2	0.2	20.1	--	--	--	--
B-blower inlet	08/24/99	9:00 AM	28.7	71.1	-	--	0.1	0.5	20.1	--	--	--	--
B-blower inlet	08/31/99	5:00 PM	28.86	73	-	-22	0	0.2	20.2	--	--	--	--
B-blower inlet	09/03/99	7:54 AM	28.8	69.1	-	-7.6	0	0.4	20.3	1750	1750	3	--
B-blower inlet	09/08/99	3:30 PM	28.47	70	-	-22.2	0.3	0.6	20	--	--	--	--
B-blower inlet	09/14/99	10:41 AM	28.64	54	-	--	0.1	0.5	20	--	--	--	--
B-blower inlet	09/21/99	1:14 PM	28.89	59	-	-22.25	0.2	0.3	20.2	--	--	--	--
B-blower inlet	09/28/99	9:43 AM	28.92	52	-	-22.75	0	0.3	20.5	--	--	--	--
B-blower inlet	10/05/99	7:57 AM	28.72	42.1	-	-22	0.2	0.3	20	7000	7000	13	--
B-blower inlet	10/12/99	9:34 AM	28.69	55	-	-22.5	0.2	0.3	20.1	7750	7750	4.5	--
B-blower inlet	10/19/99	7:48 AM	28.81	37.9	T	-20	0.1	0.3	20.4	--	--	2.25	--
B-blower inlet	10/25/99	7:41 AM	28.55	45	-	-20	0.3	0.3	20.2	>10000	--	8	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-blower inlet	11/22/99	10:35 AM	28.67	46.9	-	-15.2	0.4	0.1	20	1750	--	1.75	--
B-blower inlet	01/25/00	10:18 AM	28.77	12	-	-15.15	0	0	19.5	15	15	1.5	--
B-blower inlet	02/07/00	2:09 PM	29.04	24.1	-	-14.91	0	0	20.3	500	500	1.5	--
B-blower inlet	02/18/00	1:05 PM	28.89	25	-	-15.53	0.4	0.1	20.1	3500	3500	6	--
B-blower inlet	04/27/00	2:38 PM	28.63	70	-	-15.3	0.2	0.1	18.1	5811	5811	2.5	--
B-blower inlet	06/03/00	11:17 AM	29	64	-	-14.6	0.2	0.2	20.7	--	--	--	--
B-blower inlet	06/29/00	1:58 PM	28.67	69	-	-14.58	0	0.4	19.6	--	--	--	--
B-blower inlet	07/23/00	10:22 AM	28.99	66	-	-14.49	0	0.3	20.7	1250	1250	6	--
B-blower inlet	08/20/00	10:55 AM	29.07	64	-	-14.66	0	0.4	19.9	400	400	3	--
B-blower inlet	09/23/00	10:29 AM	28.64	53	-	-13.44	0	0.2	20.4	300	300	5.5	--
B-blower inlet	10/21/00	9:29 AM	29	46	-	-12.46	0	0.2	20.1	1053	1051	0.63	--
B-blower inlet	11/18/00	10:51 AM	28.62	21	T	-12.68	0	0.2	20.2	578	578	0.51	--
B-blower inlet	12/18/00	10:00 AM	28.75	10	-	-11.8	0	0.2	20	753	750	1.1	--
B-blower inlet	01/09/01	8:50 AM	28.82	15	-	-12	0	0	20.5	0.4	0.4	0.7	--
B-blower inlet	02/07/01	1:10 PM	29.04	24	-	-5.89	--	--	--	--	--	--	--
B-blower inlet	02/08/01	1:15 PM	28.87	24	-	-6.45	0	0	19.6	1.1	1.1	1.1	--
B-blower inlet	02/10/01	8:24 AM	29.04	2	-	-6	--	--	--	--	--	--	--
B-blower inlet	02/12/01	12:50 PM	28.87	24	0.01	-9.8	--	--	--	--	--	--	--
B-blower inlet	02/13/01	7:55 AM	29.01	21	-	-8	0	0	20.4	1.57	1.34	1.4	--
B-blower inlet	03/07/01	10:09 AM	28.73	28	-	-2.7	0	0	20.4	4.1	3.8	4.9	--
B-blower inlet	03/08/01	12:44 PM	28.57	32	T	--	--	--	--	0.44	-0.22	-1	--
B-blower inlet	04/08/01	9:14 AM	28.49	41	-	-10	0	0	20.6	2.86	1.72	0.44	--
B-blower inlet	05/05/01	9:42 AM	29.09	58	-	-11.08	0	0	18.6	1325	1310	0.5	--
B-blower inlet	05/31/01	8:05 AM	28.93	56	-	-10	0	0.3	18	639	636	0.3	--
B-blower inlet	06/28/01	8:40 AM	28.99	77	-	-10	0	0.5	19.3	1197	1191	0	--
B-blower inlet	07/19/01	8:07 AM	28.82	68	-	-10	0	0.4	19.8	750	744	0	--
B-blower inlet	08/08/01	4:26 PM	28.64	95	-	-10	0	0	21.1	1.75	1.61	1.5	--
B-blower inlet	09/08/01	6:31 PM	28.56	68	-	-9	0	0	20.3	>1000	>1000	<1	--
B-blower inlet	09/09/01	8:02 AM	28.72	56	-	--	--	--	--	975	975	0	--
B-blower inlet	10/04/01	3:40 PM	28.64	58	-	-10.42	0	0	20.6	6.5	6.4	5.3	--
B-blower inlet	11/14/01	8:05 AM	28.81	53	-	-10.73	0	0.2	20.4	610	580	4	--
B-blower inlet	12/18/01	10:56 AM	28.54	32	-	-11.29	0	0.2	20.3	1430	1430	3.87	--
B-blower inlet	01/10/02	9:52 AM	28.55	37	-	-11.22	0	0.1	20	1957	1940	1.52	--
B-blower inlet	02/15/02	1:15 PM	28.52	33	-	-10.72	0	0	20.3	2595	2586	-1.08	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-blower inlet	03/18/02	10:15 AM	28.98	34	-	-11.43	0	0	21.2	--	--	--	--
B-blower inlet	04/26/02	8:20 AM	29.01	34	-	-12	0	0	21.1	--	--	--	--
B-blower inlet	05/22/02	8:48 AM	28.88	-	-	-11	0	0	21.1	0.3	0	0.3	--
B-blower inlet	06/05/02	8:32 AM	28.77	56	-	-8.2	0	0.3	20.3	668	666	0	--
B-blower inlet	07/11/02	11:47 AM	29.09	76	-	-8	0	0.5	20.9	568	562	0.94	--
B-blower inlet	08/10/02	1:55 PM	28.7	80	-	-9.9	0	0	21.4	0.12	-0.12	0.35	--
B-blower outlet	05/07/98	2:30 PM	28.52	66.9	T	6.3	1.6	0.2	20.3	--	--	--	--
B-blower outlet	05/15/98	--	--	--	--	6	1.4	0.3	20.3	--	--	--	--
B-blower outlet	05/21/98	9:10 AM	28.86	53.1	-	5.9	1.3	1.3	20.4	--	--	--	--
B-blower outlet	05/28/98	5:54 PM	28.5	84	-	5.9	1.7	0.2	20.5	--	--	--	--
B-blower outlet	06/06/98	9:35 AM	28.82	53.1	-	0.9	1.4	0.4	20.3	--	--	--	--
B-blower outlet	06/17/98	12:31 PM	28.75	80.1	-	1.5	0.9	0.5	20.2	--	--	--	--
B-blower outlet	06/24/98	3:47 PM	28.59	81	-	5.7	1.1	0.3	20.3	--	--	--	--
B-blower outlet	07/01/98	8:58 AM	28.75	69.1	-	5.8	0.8	0.4	20.1	--	--	--	--
B-blower outlet	07/15/98	11:57 AM	28.66	75	-	5.6	1	0.4	20.1	--	--	--	--
B-blower outlet	07/24/98	12:38 PM	28.84	66.9	-	5.9	0.9	0.6	19.9	--	--	--	--
B-blower outlet	07/28/98	7:57 AM	28.52	66.9	T	5.9	1.2	0.6	19.8	--	--	--	--
B-blower outlet	08/03/98	3:15 PM	28.89	77	-	5.8	1	0.4	19.7	--	--	--	--
B-blower outlet	08/10/98	--	--	--	--	5.7	0.9	0.2	20.4	--	--	--	--
B-blower outlet	08/19/98	5:30 PM	28.89	72	-	5.72	0.8	0.2	20.7	--	--	--	--
B-blower outlet	08/26/98	10:55 AM	28.78	79	-	6	1.1	0.3	19.9	--	--	--	--
B-blower outlet	09/01/98	10:34 AM	28.59	69.1	-	5.03	0.7	0.3	19.7	--	--	--	--
B-blower outlet	09/10/98	9:00 AM	28.82	69.1	-	4.9	0.6	0.3	19.8	--	--	--	--
B-blower outlet	09/16/98	9:44 AM	28.94	66.9	-	1.4	0.6	0.3	20.3	--	--	--	--
B-blower outlet	09/26/98	3:28 PM	28.38	66.9	-	5.26	0.6	0.2	20.6	--	--	--	--
B-blower outlet	09/30/98	11:10 AM	28.63	46	0.06	5	0.2	0.2	19.7	--	--	--	--
B-blower outlet	10/08/98	5:12 PM	28.98	51.1	-	15	0.6	0.2	20	--	--	--	--
B-blower outlet	10/12/98	9:15 AM	28.71	52	-	5.65	0.4	0.2	20.4	--	--	--	--
B-blower outlet	10/22/98	9:26 AM	29.19	41	-	5.81	0.3	0.2	20.2	--	--	--	--
B-blower outlet	11/07/98	7:58 AM	29.08	34	-	5.5	0.5	0.1	19.7	--	--	--	--
B-blower outlet	11/17/98	2:22 PM	28.79	35.1	-	5.7	0.5	0.1	20.1	--	--	--	--
B-blower outlet	12/01/98	4:42 PM	28.61	45	-	5.43	0.5	0.1	20.6	--	--	--	--
B-blower outlet	12/09/98	4:05 PM	28.89	41	-	5.51	0.5	0.2	19.5	--	--	--	--
B-blower outlet	12/20/98	10:09 AM	29.15	17	T	5.5	0.6	0.1	17.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-blower outlet	12/29/98	11:34 AM	28.64	9	T	5.43	0.7	0	17.9	--	--	--	--
B-blower outlet	01/06/99	8:26 AM	28.46	3.9	T	5.48	0.7	0	17.2	--	--	--	--
B-blower outlet	01/13/99	11:12 AM	29.22	0	-	0	0.5	0	20.5	--	--	--	--
B-blower outlet	01/14/99	8:50 AM	29.1	1	-	--	--	--	--	--	--	--	--
B-blower outlet	01/19/99	11:04 AM	28.61	24.1	-	5.4	0.9	0.2	19.2	--	--	--	--
B-blower outlet	01/27/99	10:52 AM	28.54	27	T	5.36	0.7	0	19.7	--	--	--	--
B-blower outlet	02/02/99	3:30 PM	28.27	34	-	5.54	0.6	0.1	21.8	--	--	--	--
B-blower outlet	02/12/99	8:52 AM	28.39	12	-	5.28	0.4	0	19.7	--	--	--	--
B-blower outlet	02/25/99	3:16 PM	28.85	30	-	5.56	0.4	0.1	19.8	--	--	--	--
B-blower outlet	03/14/99	9:58 AM	28.93	30	-	5.43	0.4	0	19.6	--	--	--	--
B-blower outlet	03/24/99	4:11 PM	28.88	36	-	5.18	0.3	0.1	19.8	--	--	--	--
B-blower outlet	04/15/99	8:14 AM	28.5	46	-	1.74	0.1	0.1	19.7	--	--	--	--
B-blower outlet	05/17/99	4:13 PM	28.47	64.9	0.05	6.68	0.1	0.2	20.2	--	--	--	--
B-blower outlet	07/22/99	8:01 AM	28.8	75.9	-	7.25	0	0.3	21	--	--	--	--
B-blower outlet	07/27/99	11:36 AM	28.74	78.1	-	8	0	0.3	19.9	--	--	--	--
B-blower outlet	08/04/99	7:45 AM	28.72	64	-	7.48	0	0.3	21	--	--	--	--
B-blower outlet	08/10/99	10:10 AM	28.44	64.9	-	7	0	0.4	20.4	--	--	--	--
B-blower outlet	08/11/99	11:08 AM	28.64	73	-	--	--	--	--	2000	2000	3.5	--
B-blower outlet	08/17/99	2:24 PM	28.8	72	-	5.95	0	0.3	19.8	--	--	--	--
B-blower outlet	08/20/99	3:34 PM	28.86	77	-	5.95	0.2	0.2	20.1	--	--	--	--
B-blower outlet	08/24/99	9:02 AM	28.7	71.1	-	5.95	0.1	0.5	20.1	--	--	--	--
B-blower outlet	08/31/99	5:01 PM	28.86	73	-	5.7	0.2	0.3	20.3	2000	2000	8	--
B-blower outlet	09/03/99	7:56 AM	28.8	69.1	-	0.78	0	0.4	20.3	2000	2000	3	--
B-blower outlet	09/08/99	3:34 PM	28.47	70	-	5.6	0.3	0.6	20.1	5000	5000	1	--
B-blower outlet	09/14/99	10:44 AM	28.64	54	-	5.6	0.1	0.5	20	3750	3750	15	--
B-blower outlet	09/21/99	1:17 PM	28.89	59	-	5.8	0.2	0.3	20.1	3750	3750	3	--
B-blower outlet	09/28/99	9:45 AM	28.92	52	-	5.73	0	0.3	20.5	6500	6500	8	--
B-blower outlet	10/05/99	8:02 AM	28.72	42.1	-	5.7	0.2	0.3	20	8000	8000	13	--
B-blower outlet	10/12/99	9:38 AM	28.69	55	-	5.63	0.2	0.3	20	9000	9000	4.25	--
B-blower outlet	10/19/99	7:54 AM	28.81	37.9	T	5.56	0.1	0.3	20.4	5500	5500	2.5	--
B-blower outlet	10/25/99	7:43 AM	28.55	45	-	5.61	0.3	0.3	20.2	>10000	--	9	--
B-blower outlet	11/22/99	10:40 AM	28.67	46.9	-	3.3	0.4	0.1	20	4500	4500	8	--
B-blower outlet	01/25/00	10:20 AM	28.77	12	-	5.05	0.7	0.2	19.1	--	--	--	--
B-blower outlet	02/07/00	2:10 PM	29.04	24.1	-	5.06	0.4	0.2	19.9	850	850	1.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-blower outlet	02/18/00	1:09 PM	28.89	25	-	5.11	0.4	0.1	20.1	8000	8000	4.5	--
B-blower outlet	04/27/00	2:40 PM	28.63	70	-	4.8	0.5	0.1	17.9	10600	10600	2.5	--
B-blower outlet	06/03/00	11:13 AM	29	64	-	4.63	0.2	0.2	20.7	--	--	--	--
B-blower outlet	06/29/00	1:59 PM	28.67	69	-	4.47	0	0.4	19.6	--	--	--	--
B-blower outlet	07/23/00	10:25 AM	28.99	66	-	4.52	0	0.3	20.8	2000	2000	6	--
B-blower outlet	08/20/00	11:00 AM	29.07	64	-	4.56	0	0.4	20	650	650	3.5	--
B-blower outlet	09/23/00	11:15 AM	28.66	54	-	2.31	0	0.4	19.7	275	275	4.5	--
B-blower outlet	10/21/00	9:36 AM	29.01	48	-	2.23	0	0.2	20.2	1391	1381	0.96	--
B-blower outlet	11/18/00	10:55 AM	28.62	21	T	3.42	0	0.2	20.4	822	816	0.28	--
B-blower outlet	12/18/00	10:10 AM	28.75	10	-	3.65	0	0.2	20	1040	1035	1.5	--
B-blower outlet	01/09/01	8:55 AM	28.82	15	-	3	0	0	20.1	1183	1173	0.5	--
B-blower outlet	02/07/01	1:15 PM	29.04	24	-	1.06	--	--	--	--	--	--	--
B-blower outlet	02/08/01	1:18 PM	28.87	24	-	1.1	0	0.1	19.3	145	145	1	--
B-blower outlet	02/10/01	8:25 AM	29.04	2	-	1	--	--	--	--	--	--	--
B-blower outlet	02/12/01	12:51 PM	28.87	24	0.01	1.2	--	--	--	--	--	--	--
B-blower outlet	02/13/01	7:58 AM	29.01	21	-	1.1	0	0	20	930	926	1.1	--
B-blower outlet	03/07/01	10:13 AM	28.73	28	-	0.24	0	0.1	19.9	1380	1310	-0.4	--
B-blower outlet	03/08/01	12:46 PM	28.57	32	T	--	--	--	--	2784	2700	0	--
B-blower outlet	04/08/01	9:17 AM	28.49	41	-	1.1	0	0.1	20.1	3262	3250	1.7	--
B-blower outlet	05/05/01	9:45 AM	29.09	58	-	1.1	0	0.3	18	1480	1475	0.01	--
B-blower outlet	05/31/01	8:08 AM	28.93	56	-	2	0	0.4	18.1	880	880	1	--
B-blower outlet	06/28/01	8:45 AM	28.99	77	-	1.3	0	0.5	19.4	1643	1635	0	--
B-blower outlet	07/19/01	8:10 AM	28.82	68	-	1.3	0	0.4	19.8	1313	1305	0	--
B-blower outlet	08/08/01	4:29 PM	28.64	95	-	1.5	0	0.4	20.5	1531	1524	1.9	--
B-blower outlet	09/08/01	6:28 PM	28.53	70	-	1	0.1	0.5	19.4	>1000	>1000	<1	--
B-blower outlet	09/09/01	8:04 AM	28.72	56	-	--	--	--	--	1050	1050	0	--
B-blower outlet	10/04/01	3:50 PM	28.64	58	-	1.05	0	0.4	19.9	1920	1920	5.3	--
B-blower outlet	11/14/01	8:10 AM	28.81	53	-	1.15	0	0.2	20.4	730	730	4	--
B-blower outlet	12/18/01	10:59 AM	28.54	32	-	1.12	0	0.2	20.4	1820	1820	1.25	--
B-blower outlet	01/10/02	9:55 AM	28.55	37	-	1.23	0	0.1	20.1	2430	2430	1.92	--
B-blower outlet	02/15/02	1:18 PM	28.52	33	-	0.63	0	0.2	19.9	3703	3670	-0.86	--
B-blower outlet	03/18/02	10:19 AM	28.98	34	-	0.71	0	0.1	20.7	1901	1884	0	--
B-blower outlet	04/26/02	8:23 AM	29.01	34	-	0.73	0	0.3	20.3	4823	4823	0	--
B-blower outlet	05/22/02	8:50 AM	28.88	-	-	0.95	0	0.3	20.4	1919	1900	0.54	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-blower outlet	06/05/02	8:35 AM	28.77	56	-	0.63	0	0.3	20.3	1138	1131	0	--
B-blower outlet	07/11/02	11:51 AM	29.09	76	-	0.75	0	0.5	20.9	819	816	0.42	--
B-blower outlet	08/10/02	2:00 PM	28.7	80	-	0.8	0	0.5	20.4	1619	1608	0.45	--
B-effluent	06/06/98	9:35 AM	28.82	53.1	-	1.4	1.5	0.4	20.3	--	--	--	--
B-effluent	06/17/98	--	--	--	--	5.9	0.9	0.5	20.3	--	--	--	--
B-effluent	06/24/98	--	--	--	--	1.4	1.1	0.3	20.3	--	--	--	--
B-effluent	07/01/98	9:01 AM	28.75	69.1	-	1.4	0.8	0.4	20.1	--	--	--	--
B-effluent	07/15/98	11:59 AM	28.66	75	-	1.3	1.2	0.4	20.1	--	--	--	--
B-effluent	07/24/98	12:40 PM	28.84	66.9	-	1.6	1	0.6	19.9	--	--	--	--
B-effluent	07/28/98	8:01 AM	28.52	66.9	T	1.6	1.3	0.5	19.8	--	--	--	--
B-effluent	08/03/98	3:20 PM	28.89	77	-	1.6	1	0.5	19.6	--	--	--	--
B-effluent	08/10/98	--	--	--	--	1.4	0.8	0.2	20.5	--	--	--	--
B-effluent	08/19/98	5:32 PM	28.89	72	-	1.33	0.8	0.2	20.8	--	--	--	--
B-effluent	08/26/98	11:00 AM	28.78	79	-	1.5	1.2	0.3	19.9	--	--	--	--
B-effluent	09/01/98	10:30 AM	28.59	69.1	-	1.35	0.7	0.3	19.3	--	--	--	--
B-effluent	09/10/98	9:05 AM	28.82	69.1	-	1	0.7	0.3	19.8	--	--	--	--
B-effluent	09/16/98	9:43 AM	28.94	66.9	-	5.4	0.6	0.3	20.3	--	--	--	--
B-effluent	09/26/98	3:32 PM	28.38	68	0.01	1.39	0.6	0.2	20.6	--	--	--	--
B-effluent	09/30/98	11:11 AM	28.63	46	0.06	1.5	0.2	0.2	19.7	--	--	--	--
B-effluent	10/08/98	5:14 PM	28.98	51.1	-	1.5	0.5	0.2	20	--	--	--	--
B-effluent	10/12/98	9:17 AM	28.71	52	-	1.5	0.4	0.2	20.2	--	--	--	--
B-effluent	10/22/98	9:28 AM	29.19	41	-	1.51	0.3	0.2	20.2	--	--	--	--
B-effluent	11/07/98	8:01 AM	29.08	34	-	1.5	0.4	0.1	19.7	--	--	--	--
B-effluent	11/17/98	2:22 PM	28.79	35.1	-	5.7	0.5	0.1	20.1	--	--	--	--
B-effluent	12/01/98	4:44 PM	28.61	45	-	1.36	0.5	0.1	20.5	--	--	--	--
B-effluent	12/09/98	4:07 PM	28.89	41	-	1.4	0.5	0.2	19.6	--	--	--	--
B-effluent	12/20/98	10:11 AM	29.15	17	T	1.3	0.6	0.1	17.4	--	--	--	--
B-effluent	12/29/98	11:36 AM	28.64	9	T	1.35	0.6	0	17.9	--	--	--	--
B-effluent	01/06/99	8:28 AM	28.46	3.9	T	1.35	0.7	0	17.2	--	--	--	--
B-effluent	01/13/99	11:18 AM	29.22	0	-	0	3	0.1	19.5	--	--	--	--
B-effluent	01/14/99	8:50 AM	29.1	1	-	--	--	--	--	--	--	--	--
B-effluent	01/19/99	11:06 AM	28.61	24.1	-	0.83	0.9	0.2	19.7	--	--	--	--
B-effluent	01/27/99	10:54 AM	28.54	27	T	0.69	0.7	0	19.8	--	--	--	--
B-effluent	02/02/99	3:32 PM	28.27	34	-	0.77	0.6	0.1	21.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-effluent	02/12/99	8:54 AM	28.39	12	-	0.73	0.4	0	19.4	--	--	--	--
B-effluent	02/25/99	3:18 PM	28.85	30	-	0.66	0.4	0.1	19.8	--	--	--	--
B-effluent	03/14/99	10:00 AM	28.93	30	-	0.65	0.4	0	19.6	--	--	--	--
B-effluent	03/24/99	4:13 PM	28.88	36	-	1.02	0.3	0.1	19.8	--	--	--	--
B-effluent	04/15/99	8:16 AM	28.5	46	-	3.1	0.1	0.1	19.7	--	--	--	--
B-effluent	05/17/99	4:16 PM	28.47	64.9	0.05	2.76	0.1	0.2	20.2	--	--	--	--
B-effluent	07/22/99	8:03 AM	28.8	75.9	-	2.72	0	0.3	21.1	--	--	--	--
B-effluent	07/27/99	9:09 AM	28.79	72	-	--	--	--	--	--	--	--	--
B-effluent	07/27/99	9:11 AM	28.79	72	-	--	--	--	--	--	--	--	--
B-effluent	07/27/99	9:15 AM	28.79	72	-	--	--	--	--	--	--	--	--
B-effluent	07/27/99	11:38 AM	28.74	78.1	-	3	0	0.3	19.9	--	--	--	--
B-effluent	08/04/99	7:47 AM	28.72	64	-	2.87	0	0.3	21	--	--	--	--
B-effluent	08/10/99	10:00 AM	28.44	64.9	-	--	--	--	--	--	--	--	--
B-effluent	08/10/99	10:11 AM	28.44	64.9	-	2.8	0	0.4	20.4	--	--	--	--
B-effluent	08/11/99	11:10 AM	28.64	73	-	--	--	--	--	1875	1875	3.5	--
B-effluent	08/17/99	2:25 PM	28.8	72	-	2.45	0	0.3	20	--	--	--	--
B-effluent	08/17/99	5:24 PM	28.82	66.9	-	--	--	--	--	--	--	--	--
B-effluent	08/20/99	3:36 PM	28.86	77	-	2.49	0.1	0.2	20.3	--	--	--	--
B-effluent	08/24/99	8:50 AM	28.7	71.1	-	--	--	--	--	--	--	--	--
B-effluent	08/24/99	9:03 AM	28.7	71.1	-	2.4	0.1	0.5	20.1	--	--	--	--
B-effluent	08/31/99	4:30 PM	28.86	73	-	--	--	--	--	--	--	--	--
B-effluent	08/31/99	4:36 PM	28.86	73	-	--	--	--	--	--	--	--	--
B-effluent	08/31/99	4:55 PM	28.86	73	-	--	--	--	--	--	--	--	--
B-effluent	08/31/99	5:03 PM	28.86	73	-	2.41	0.2	0.3	20.3	2000	2000	5	--
B-effluent	08/31/99	6:40 PM	28.85	66	-	1.6	--	--	--	15	--	--	--
B-effluent	08/31/99	6:50 PM	28.85	66	-	1.6	--	--	--	4.5	--	--	--
B-effluent	08/31/99	7:00 PM	28.85	66	-	1.6	--	--	--	4.5	--	--	--
B-effluent	08/31/99	7:10 PM	28.85	66	-	1.6	--	--	--	4.5	--	--	--
B-effluent	08/31/99	7:15 PM	28.85	66	-	1.65	--	--	--	5250	--	--	--
B-effluent	08/31/99	7:25 PM	28.85	66	-	1.64	--	--	--	8500	--	--	--
B-effluent	08/31/99	7:35 PM	28.87	63	-	1.64	--	--	--	9500	--	--	--
B-effluent	08/31/99	7:45 PM	28.87	63	-	1.64	--	--	--	9500	--	--	--
B-effluent	08/31/99	7:50 PM	28.87	63	-	-1.4	--	--	--	8	--	--	--
B-effluent	08/31/99	8:00 PM	28.87	63	-	-1.4	--	--	--	5	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-effluent	08/31/99	8:10 PM	28.87	63	-	-1.4	--	--	--	4.5	--	--	--
B-effluent	08/31/99	8:20 PM	28.87	63	-	-1.4	--	--	--	4.5	--	--	--
B-effluent	08/31/99	8:25 PM	28.87	63	-	1.25	--	--	--	<2.5	--	--	--
B-effluent	08/31/99	8:35 PM	28.87	61	-	1.25	--	--	--	<2.5	--	--	--
B-effluent	08/31/99	8:45 PM	28.87	61	-	1.25	--	--	--	<2.5	--	--	--
B-effluent	08/31/99	8:55 PM	28.87	61	-	1.25	--	--	--	<2.5	--	--	--
B-effluent	09/03/99	7:58 AM	28.8	69.1	-	0.5	0	0.4	20.3	2000	2000	3	--
B-effluent	09/03/99	9:20 AM	28.81	73	-	0.4	--	--	--	23	--	--	--
B-effluent	09/03/99	9:30 AM	28.8	77	-	0.4	--	--	--	12.5	--	--	--
B-effluent	09/03/99	9:40 AM	28.8	77	-	0.4	--	--	--	5.5	--	--	--
B-effluent	09/03/99	9:50 AM	28.8	77	-	0.4	--	--	--	5	--	--	--
B-effluent	09/03/99	9:55 AM	28.8	77	-	0.4	--	--	--	6000	--	--	--
B-effluent	09/03/99	10:05 AM	28.8	77	-	0.4	--	--	--	8500	--	--	--
B-effluent	09/03/99	10:15 AM	28.8	77	-	0.4	--	--	--	9500	--	--	--
B-effluent	09/03/99	10:25 AM	28.8	77	-	0.4	--	--	--	9500	--	--	--
B-effluent	09/03/99	10:30 AM	28.78	82.9	-	0.45	--	--	--	7.5	--	--	--
B-effluent	09/03/99	10:40 AM	28.78	82.9	-	0.45	--	--	--	4.5	--	--	--
B-effluent	09/03/99	10:50 AM	28.78	82.9	-	0.45	--	--	--	3.5	--	--	--
B-effluent	09/03/99	11:00 AM	28.78	82.9	-	0.45	--	--	--	3.5	--	--	--
B-effluent	09/03/99	11:10 AM	28.78	82.9	-	0.4	--	--	--	2.5	--	--	--
B-effluent	09/03/99	11:20 AM	28.78	82.9	-	0.4	--	--	--	2.5	--	--	--
B-effluent	09/03/99	11:30 AM	28.77	86	-	0.4	--	--	--	2.5	--	--	--
B-effluent	09/03/99	11:40 AM	28.77	86	-	0.4	--	--	--	2.5	--	--	--
B-effluent	09/08/99	3:40 PM	28.47	70	-	2.4	0.3	0.6	20.1	4750	4750	10	--
B-effluent	09/08/99	5:50 PM	28.5	66	-	1.6	--	--	--	900	--	--	--
B-effluent	09/08/99	6:00 PM	28.5	66	-	1.58	--	--	--	4	--	--	--
B-effluent	09/08/99	6:10 PM	28.5	66	-	1.6	--	--	--	4	--	--	--
B-effluent	09/08/99	6:20 PM	28.5	66	-	1.59	--	--	--	4.5	--	--	--
B-effluent	09/08/99	6:45 PM	28.51	62.1	-	--	1	0.8	19.5	--	--	--	--
B-effluent	09/08/99	6:55 PM	28.51	62.1	-	--	1.4	0.8	19.5	--	--	--	--
B-effluent	09/08/99	7:05 PM	28.51	62.1	-	--	1.7	0.8	19.4	--	--	--	--
B-effluent	09/08/99	7:20 PM	28.51	62.1	-	1.42	--	--	--	6	--	--	--
B-effluent	09/08/99	7:30 PM	28.52	61	-	1.39	--	--	--	2.5	--	--	--
B-effluent	09/08/99	7:40 PM	28.52	61	-	1.42	--	--	--	1.75	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-effluent	09/08/99	7:55 PM	28.52	61	-	1.24	--	--	--	<1	--	--	--
B-effluent	09/08/99	8:05 PM	28.52	61	-	1.27	--	--	--	<1	--	--	--
B-effluent	09/08/99	8:15 PM	28.52	61	-	1.27	--	--	--	<1	--	--	--
B-effluent	09/14/99	10:50 AM	28.64	54	-	2.45	0.1	0.5	19.9	3500	3500	4	--
B-effluent	09/21/99	1:19 PM	28.89	59	-	2.5	0.2	0.3	20.1	3500	3500	3	--
B-effluent	09/21/99	2:40 PM	28.85	64	-	1.6	--	--	--	17.5	--	--	--
B-effluent	09/21/99	2:50 PM	28.85	64	-	1.6	--	--	--	12.5	--	--	--
B-effluent	09/21/99	3:00 PM	28.85	64	-	1.6	--	--	--	5	--	--	--
B-effluent	09/21/99	3:10 PM	28.85	64	-	1.6	--	--	--	4.5	--	--	--
B-effluent	09/21/99	3:20 PM	28.85	64	-	1.7	--	--	--	6000	--	--	--
B-effluent	09/21/99	3:30 PM	28.85	66.9	-	1.7	1	0.5	20.2	>10000	--	--	--
B-effluent	09/21/99	3:40 PM	28.85	66.9	-	1.7	1.2	0.5	20.1	>10000	--	--	--
B-effluent	09/21/99	3:50 PM	28.85	66.9	-	1.7	1.5	0.7	19	>10000	--	--	--
B-effluent	09/21/99	4:00 PM	28.85	66.9	-	1.5	--	--	--	20	--	--	--
B-effluent	09/21/99	4:10 PM	28.85	66.9	-	1.5	--	--	--	6.5	--	--	--
B-effluent	09/21/99	4:20 PM	28.85	66.9	-	1.5	--	--	--	3.5	--	--	--
B-effluent	09/21/99	4:30 PM	28.85	62.1	-	1.5	--	--	--	3.5	--	--	--
B-effluent	09/21/99	4:40 PM	28.85	62.1	-	1.3	--	--	--	2.75	--	--	--
B-effluent	09/21/99	4:50 PM	28.85	62.1	-	1.3	--	--	--	2.5	--	--	--
B-effluent	09/21/99	5:00 PM	28.85	62.1	-	1.3	--	--	--	2.5	--	--	--
B-effluent	09/21/99	5:10 PM	28.85	62.1	-	1.3	--	--	--	2.5	--	--	--
B-effluent	09/28/99	9:47 AM	28.92	52	-	2.43	0	0.3	20.5	6000	6000	8	--
B-effluent	10/05/99	8:05 AM	28.72	42.1	-	2.5	0.2	0.3	20	8000	8000	13	--
B-effluent	10/07/99	2:34 PM	28.73	46.9	T	2.4	0.4	0.3	20.6	6000	6000	3	--
B-effluent	10/12/99	9:42 AM	28.69	55	-	2.51	0.2	0.3	20	8750	8750	4.25	--
B-effluent	10/19/99	7:56 AM	28.81	37.9	T	2.25	0.1	0.3	20.4	4750	4750	4.5	--
B-effluent	10/23/99	3:37 PM	28.89	34	-	2.1	0.2	0.3	20.2	>10000	>10000	4.5	--
B-effluent	10/25/99	7:45 AM	28.55	45	-	2.24	0.3	0.3	20.2	>10000	--	8	--
B-effluent	11/03/99	8:43 AM	28.7	30	-	1.52	0.5	0.2	20	10000	10000	1.25	--
B-effluent	11/06/99	3:31 PM	29.08	46	-	1.48	0.4	0.4	19.8	8250	8250	1.75	--
B-effluent	11/22/99	10:45 AM	28.67	46.9	-	1.6	0.4	0.1	20	4100	4100	2.25	--
B-effluent	01/25/00	10:21 AM	28.77	12	-	3.15	0.8	0.2	19.1	--	--	--	--
B-effluent	02/07/00	2:12 PM	29.04	24.1	-	3.2	0.4	0.1	19.9	625	625	2	--
B-effluent	02/18/00	1:12 PM	28.89	25	-	3.12	0.4	0.1	20.1	6500	6500	4.5	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-effluent	04/27/00	2:42 PM	28.63	70	-	3	0.5	0.1	17.8	10700	10700	2.5	--
B-effluent	06/03/00	11:14 AM	29	64	-	2.82	0.2	0.2	20.7	--	--	--	--
B-effluent	06/29/00	2:01 PM	28.67	69	-	2.71	0	0.4	19.6	--	--	--	--
B-effluent	07/20/00	9:55 AM	28.61	64	0.01	13	5.1	16.9	5.5	--	--	--	--
B-effluent	07/23/00	10:27 AM	28.99	66	-	2.81	0	0.3	20.8	2000	2000	6	--
B-effluent	07/23/00	2:45 PM	28.93	74	-	0	0	1	19.5	1100	1100	5.5	--
B-effluent	08/20/00	11:05 AM	29.07	64	-	2.83	0	0.4	19.9	600	600	3	--
B-effluent	09/23/00	10:32 AM	28.66	54	-	3.78	0	0.4	19.7	400	400	6	--
B-effluent	09/23/00	2:35 PM	28.7	53	T	--	--	--	--	--	--	--	--
B-effluent	10/21/00	9:34 AM	29.01	48	-	3.56	0	0.2	20.1	1425	1411	0.73	--
B-effluent	11/18/00	10:59 AM	28.62	21	T	2.13	0	0.2	20.4	820	773	0.43	--
B-effluent	12/18/00	10:15 AM	28.75	10	-	2.28	0	0.2	20	1020	1015	1.4	--
B-effluent	01/09/01	8:59 AM	28.82	15	-	2	0	0	20.1	1160	1150	0.7	--
B-effluent	02/07/01	1:20 PM	29.04	24	-	1.02	--	--	--	--	--	--	--
B-effluent	02/07/01	4:00 PM	29.06	25	T	--	--	--	--	--	--	--	--
B-effluent	02/08/01	1:21 PM	28.87	24	-	1.02	0	0.1	19.2	150	150	0.9	--
B-effluent	02/10/01	8:26 AM	29.04	2	-	1	--	--	--	--	--	--	--
B-effluent	02/12/01	12:52 PM	28.87	24	0.01	1	--	--	--	--	--	--	--
B-effluent	02/13/01	8:01 AM	29.01	21	-	1	0	0	20.2	1037	1030	0.9	--
B-effluent	03/07/01	10:16 AM	28.73	28	-	0.21	0	0.1	19.9	1570	1275	5.3	--
B-effluent	03/08/01	12:48 PM	28.57	32	T	--	--	--	--	2411	2381	2	--
B-effluent	04/08/01	9:20 AM	28.49	41	-	1	0	0.1	20.1	3254	3245	1	--
B-effluent	05/05/01	9:53 AM	29.09	58	-	1.01	0	0.3	18.2	1560	1560	0.03	--
B-effluent	05/31/01	8:13 AM	28.93	56	-	1	0	0.4	18.1	880	877	0.2	--
B-effluent	06/28/01	8:48 AM	28.99	77	-	1.2	0	0.5	19.4	1647	1641	0	--
B-effluent	07/19/01	8:13 AM	28.82	68	-	1.2	0	0.5	19.8	1289	1287	0	--
B-effluent	08/08/01	4:33 PM	28.64	93	-	1.2	0	0.4	20.5	1530	1526	1.25	--
B-effluent	09/08/01	6:29 PM	28.53	70	-	1	0.2	0.5	19.5	>1000	>1000	<1	--
B-effluent	09/09/01	8:06 AM	28.72	56	-	--	--	--	--	1125	1125	0	--
B-effluent	10/04/01	3:55 PM	28.64	58	-	0.9	0	0.4	19.9	1920	1920	5.5	--
B-effluent	11/14/01	8:13 AM	28.81	53	-	1.06	0	0.2	20.4	760	740	4	--
B-effluent	12/18/01	11:01 AM	28.54	32	-	1	0	0.2	20.4	1860	1860	2.74	--
B-effluent	01/10/02	9:57 AM	28.55	37	-	1.17	0	0.1	20.1	2440	2432	2.01	--
B-effluent	02/15/02	1:22 PM	28.52	33	-	0.5	0	0.2	20.2	3758	3694	-0.74	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-effluent	03/18/02	10:23 AM	28.98	34	-	0.56	0	0.1	20.7	1895	1880	0	--
B-effluent	04/26/02	8:26 AM	29.01	34	-	0.6	0	0.3	20.3	4910	4870	0.6	--
B-effluent	05/22/02	8:54 AM	28.88	-	-	0.79	0	0.3	20.5	1922	1888	0.91	--
B-effluent	06/05/02	8:39 AM	28.77	56	-	0.53	0	0.3	20.3	1122	1115	0	--
B-effluent	07/11/02	11:54 AM	29.09	76	-	0.6	0	0.5	21	805	803	0.2	--
B-effluent	08/10/02	2:09 PM	28.7	80	-	0.7	0	0.5	20.4	1613	1608	0.35	--
B-effluent	09/23/02	9:05 AM	28.88	49	-	0.5	0	0.5	19.7	704	700	0.25	--
B-effluent	10/11/02	12:45 PM	28.85	70	-	0.4	0	0.4	20.5	2042	2028	0.45	--
B-effluent	11/15/02	1:55 PM	28.99	29	T	0.9	0	0.3	19.6	910	902	0.1	--
B-effluent	12/05/02	10:12 AM	28.86	16	T	0.5	0	0.2	20.2	400	358	0.06	--
B-effluent	01/03/03	10:26 AM	28.83	18	-	0.5	0	0.1	20.4	819	815	0	--
B-effluent	02/11/03	11:11 AM	28.25	5	T	0.5	0	0.2	19.8	2308	2290	2.5	--
B-effluent	03/05/03	11:39 AM	28.76	9	T	0.4	0.1	0.2	19.7	1698	1690	0	--
B-effluent	04/14/03	10:07 AM	28.6	74	-	0.5	0.1	0.2	19.8	2325	2310	3.1	--
B-effluent	05/07/03	8:55 AM	28.78	55	-	0.6	0.1	0.3	19.7	1849	1840	2.4	--
B-effluent	06/02/03	9:43 AM	28.8	68	-	0.6	0.1	0.3	19.5	1079	1070	0.3	--
B-effluent	07/16/03	9:10 AM	28.86	71	-	0.5	0.2	0.4	19.3	1327	1320	2	--
B-effluent	08/07/03	9:25 AM	28.83	69	-	0.5	0.1	0.5	18.9	1781	1760	0.2	--
B-effluent	09/26/03	11:07 AM	28.46	51	-	0.5	0.3	0.5	19	3400	3370	1.3	--
B-effluent	10/13/03	9:36 AM	28.58	58	-	0.4	0.4	0.4	19	3537	3500	4.6	--
B-effluent	11/11/03	9:51 AM	28.49	41	-	0.5	0.2	0.3	18.9	4053	4030	1.4	--
B-effluent	12/17/03	9:11 AM	28.57	24	T	0.5	0.2	0.2	19.3	4022	4000	0.4	--
B-effluent	01/21/04	2:14 PM	28.33	25	T	0.4	0.5	0.2	18.6	4541	4460	4.92	--
B-effluent	02/04/04	9:58 AM	29.14	4	-	0.4	0	0.2	18.9	2801	2780	1.7	--
B-effluent	03/02/04	9:38 AM	28.7	37	-	0.5	0.3	0.2	19.1	4012	3980	0.2	--
B-effluent	04/02/04	2:32 PM	28.86	56	-	-0.5	0.3	0.2	19.2	3138	3125	-0.67	--
B-effluent	05/28/04	9:40 AM	28.74	54	-	0.5	0.1	0.3	19.8	3440	3130	2.5	--
B-effluent	06/29/04	10:52 AM	28.81	75	-	0.3	0	0.4	19.2	2678	2620	3.9	--
B-effluent	07/14/04	7:55 AM	28.66	69	-	0.5	0.1	0.4	19.1	2265	2256	0.55	--
B-effluent	07/22/04	11:25 AM	28.67	71	-	0.781	0	0.4	19.4	3574	3551	1.3	--
B-effluent	08/12/04	11:48 AM	28.83	64	-	0.753	0	0.4	20.1	3012	3000	0.5	--
B-effluent	09/17/04	2:14 PM	28.85	66	-	0.6	0	0.4	19.8	3168	3130	0.99	--
B-effluent	10/13/04	11:43 AM	28.48	63	-	0.5	0	0.3	19.6	4675	4620	3.34	--
B-effluent	11/23/04	9:32 AM	28.55	41	-	0.5	0.1	0.2	19.7	3786	3775	-0.57	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-effluent	01/06/05	3:10 PM	28.6	17	T	0.5	0.3	0.3	18.6	7207	7175	-3.25	--
B-effluent	01/19/05	10:47 AM	28.76	18	T	0.4	0.2	0.2	19.2	3567	3540	-3.36	--
B-effluent	02/08/05	10:20 AM	28.99	17	-	0.4	0	0.2	19.9	3391	3360	0.13	--
B-effluent	03/16/05	9:05 AM	28.83	18	T	0.5	0	0.2	19.4	3305	3273	0.2	--
B-effluent	04/04/05	1:46 PM	28.74	58	-	0.4	0.2	0.1	19.9	4180	4056	0.54	--
B-effluent	05/09/05	2:45 PM	28.46	74	T	0.5	0.1	0.2	19.5	3750	3648	-1.64	--
B-effluent	06/09/05	8:02 AM	28.65	74	-	0.5	--	--	--	--	--	--	--
B-effluent	06/15/05	7:47 AM	28.49	56	-	0.6	0.2	0.5	18.9	5490	5430	0.05	--
B-effluent	07/01/05	1:10 PM	28.7	65	-	0.1	0.1	0.4	19.4	5486	5446	-0.09	--
B-effluent	08/11/05	10:46 AM	28.85	69	-	0.7	0.3	0.5	19	7501	7430	-1.41	--
B-effluent	09/08/05	2:43 PM	28.9	69.98	-	0.6	0.3	0.4	19.1	8843	8811	-3.21	--
B-effluent	10/19/05	10:22 AM	28.82	46	-	0.7	0.5	0.4	18.9	9385	9250	0.21	--
B-effluent	11/03/05	3:49 PM	28.63	50	-	0.75	0.5	0.3	18.7	8173	8195	7.43	--
B-effluent	12/05/05	10:25 AM	28.76	4	-	0.2	0.7	0.3	18.7	1.71%	1.70%	-1.9	--
B-effluent	01/31/06	3:11 PM	28.61	34	-	0.3	0.9	0.3	18.7	1.71%	1.68%	26.37	--
B-effluent	02/20/06	8:32 AM	28.64	9	-	0.3	0.8	0.2	19	1.65%	1.60%	28.5	--
B-effluent	03/09/06	10:17 AM	28.17	36	0.01	0.3	0.9	0.2	18.8	1.89%	1.86%	9.06	--
B-effluent	04/12/06	3:22 PM	28.68	67	-	0.4	0.5	0.2	18.9	9656	9513	-1.65	--
B-effluent	05/17/06	2:04 PM	28.38	63	-	0.2	0.4	0.3	18.5	7334	7295	0.21	--
B-effluent	06/06/06	10:22 AM	28.61	68	-	0.4	0.5	0.4	18.3	7734	7693	2.59	--
B-effluent	07/26/06	12:39 PM	28.5	83	-	0.3	0.8	0.3	17.5	1.38%	1.37%	1.32	--
B-effluent	08/16/06	11:30 AM	28.97	80	-	0.3	0.8	0.5	18.1	1.50%	1.48%	6.57	--
B-effluent	09/18/06	12:52 PM	28.38	59	-	0.4	1.2	0.8	19.5	1.65%	1.64%	19.68	--
B-effluent	10/23/06	1:38 PM	28.7	39	-	0.2	0.9	0.6	20	8781	8730	1.56	--
B-effluent	11/14/06	9:28 AM	28.71	34	-	0.2	0.7	0.5	19.6	1.57%	1.53%	2.24	--
B-effluent	12/21/06	9:36 AM	29.05	26	-	0.3	0.5	0.5	20.1	1.68%	1.66%	-0.18	--
B-effluent	01/19/07	9:45 AM	28.82	15	-	0.3	0.6	0.5	20.1	2.09%	2.05%	-1.23	--
B-effluent	02/08/07	9:24 AM	28.85	1	-	0.2	0.6	0.5	20.1	8154	8052	2.38	--
B-effluent	03/12/07	10:50 AM	28.73	42	-	0.4	0.7	0.5	19.6	1.63%	1.60%	-9.04	--
B-effluent	04/19/07	1:49 PM	28.93	65	-	0.2	1	0.5	20.1	1.26%	1.25%	10.39	--
B-effluent	05/29/07	9:59 AM	28.9	74	-	0.3	1.1	0.4	19.4	1.85%	1.84%	-4.63	--
B-effluent	06/13/07	10:35 AM	28.97	82	-	0.2	0.9	0.4	18.4	1.78%	1.73%	9.8	--
B-effluent	07/16/07	9:36 AM	29.99	72	-	0.4	1	0.4	18.7	1.07%	1.05%	8.63	--
B-effluent	08/30/07	9:47 AM	30.27	69	-	0.4	1.2	0.6	18.8	1.20%	1.18%	34.61	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-effluent	09/20/07	10:44 AM	30.26	56	-	0.4	1.1	0.7	18.7	1.36%	1.35%	2.61	--
B-effluent	10/17/07	10:02 AM	29.89	57	-	0.3	1.4	0.6	18.4	--	--	--	--
B-effluent	11/21/07	11:05 AM	30.15	34	-	0.5	0.9	0.4	19.6	1.47%	1.45%	10.28	--
B-effluent	12/27/07	12:06 PM	29.96	26	-	0.4	1.7	0.4	19.3	--	--	--	--
B-influent	05/07/98	2:30 PM	28.52	66.9	T	-15.8	1.5	0.2	20.2	--	--	--	--
B-influent	05/15/98	--	--	--	--	-16	1.4	0.3	20.3	--	--	--	--
B-influent	05/21/98	9:09 AM	28.86	53.1	-	-16.6	0.5	0.1	20.7	--	--	--	--
B-influent	05/28/98	5:48 PM	28.5	84	-	-16.3	1.7	0.2	20.5	--	--	--	--
B-influent	06/06/98	9:35 AM	28.82	53.1	-	-16	0.7	0.2	21.9	--	--	--	--
B-influent	06/17/98	12:24 PM	28.75	79	-	-16.6	0.8	0.5	20.4	--	--	--	--
B-influent	06/24/98	3:43 PM	28.59	81	-	-16.4	1.1	0.3	20.3	--	--	--	--
B-influent	07/01/98	8:52 AM	28.75	69.1	-	-16.4	0.8	0.4	20.1	--	--	--	--
B-influent	07/15/98	11:51 AM	28.66	75	-	-16.5	1.2	0.4	20.1	--	--	--	--
B-influent	07/24/98	12:34 PM	28.84	66.9	-	-16.4	0.9	0.6	19.9	--	--	--	--
B-influent	07/28/98	9:50 AM	28.45	73	-	-16.2	1.1	0.5	19.9	--	--	--	--
B-influent	08/03/98	3:05 PM	28.89	77	-	-16.2	0.7	0.4	19.8	--	--	--	--
B-influent	08/10/98	--	--	--	--	-16.3	0.8	0.2	20.4	--	--	--	--
B-influent	08/19/98	5:24 PM	28.89	73.9	-	-16.02	0.8	0.2	20.6	--	--	--	--
B-influent	08/26/98	10:45 AM	28.78	79	-	-16.5	1.1	0.3	19.7	--	--	--	--
B-influent	09/01/98	10:28 AM	28.59	66.9	-	-15.57	0.8	0.3	19.7	--	--	--	--
B-influent	09/01/98	12:39 PM	28.54	73	T	-9	6.9	0.6	18.4	--	--	--	--
B-influent	09/01/98	2:40 PM	28.51	69.1	-	-10	2	0.3	19.7	--	--	--	--
B-influent	09/01/98	6:35 PM	28.52	60.1	-	-10	0.9	0.2	19.9	--	--	--	--
B-influent	09/02/98	7:28 AM	28.53	53.1	-	-18.57	0.5	0.3	19.6	--	--	--	--
B-influent	09/02/98	7:28 AM	28.53	53.1	-	-18.57	0.5	0.3	19.6	--	--	--	--
B-influent	09/02/98	9:29 AM	28.53	60.1	-	-10	1.2	0.3	19.2	--	--	--	--
B-influent	09/02/98	11:25 AM	28.54	61	-	-11	0	0.2	20.3	--	--	--	--
B-influent	09/02/98	1:35 PM	28.51	64.9	-	-11	0	0.2	20.4	--	--	--	--
B-influent	09/02/98	3:37 PM	28.51	64	-	-11	0	0.1	20.2	--	--	--	--
B-influent	09/02/98	5:32 PM	28.53	61	-	-11	0	0.2	20.1	--	--	--	--
B-influent	09/02/98	7:19 PM	28.53	55	-	-11	0	0.1	20.2	--	--	--	--
B-influent	09/02/98	8:12 PM	28.54	51.1	-	-17.32	0.5	0.3	19.6	--	--	--	--
B-influent	09/02/98	8:12 PM	28.54	51.1	-	-17.32	0.5	0.3	19.6	--	--	--	--
B-influent	09/10/98	--	--	--	--	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	09/16/98	9:38 AM	28.94	66.9	-	-14.93	0.6	0.3	20.2	--	--	--	--
B-influent	09/26/98	3:20 PM	28.38	66.9	-	-14.68	0.6	0.2	20.4	--	--	--	--
B-influent	09/30/98	11:08 AM	28.63	46	0.06	-15	0.2	0.2	19.8	--	--	--	--
B-influent	10/08/98	5:08 PM	28.98	51.1	-	-15	0.5	0.2	20	--	--	--	--
B-influent	10/12/98	8:56 AM	28.71	52	-	-14.97	0.2	0.1	20.5	--	--	--	--
B-influent	10/22/98	9:22 AM	29.19	41	-	-15.25	0.3	0.2	20.2	--	--	--	--
B-influent	11/07/98	7:54 AM	29.08	34	-	-16	0.5	0.1	19.7	--	--	--	--
B-influent	11/17/98	2:15 PM	28.79	35.1	-	-15.7	0.5	0.1	20.1	--	--	--	--
B-influent	12/01/98	4:38 PM	28.61	45	-	-15.2	0.5	0.1	20.8	--	--	--	--
B-influent	12/09/98	4:01 PM	28.89	41	-	-15.41	0.6	0.2	19.4	--	--	--	--
B-influent	12/20/98	10:02 AM	29.15	17	T	-15.9	0.6	0.1	17.6	--	--	--	--
B-influent	12/29/98	11:30 AM	28.64	9	T	-16.14	0.6	0	17.7	--	--	--	--
B-influent	01/06/99	8:21 AM	28.46	3.9	T	-16.45	0.7	0	17.2	--	--	--	--
B-influent	01/13/99	11:05 AM	29.22	0	-	0	0.5	0	20.3	--	--	--	--
B-influent	01/14/99	8:50 AM	29.1	1	-	--	--	--	--	--	--	--	--
B-influent	01/19/99	11:00 AM	28.61	24.1	-	-17	0.9	0.2	19.2	--	--	--	--
B-influent	01/27/99	10:47 AM	28.54	27	T	-16	0.7	0	19.9	--	--	--	--
B-influent	02/02/99	3:25 PM	28.26	35.1	-	-15.71	0.6	0.1	21.9	--	--	--	--
B-influent	02/12/99	8:44 AM	28.39	12	-	-16.65	0.2	0	20	--	--	--	--
B-influent	02/25/99	3:11 PM	28.85	30	-	-15.97	0.4	0.1	19.8	--	--	--	--
B-influent	03/14/99	9:54 AM	28.93	30	-	-16.69	0.4	0	19.6	--	--	--	--
B-influent	03/24/99	4:07 PM	28.88	36	-	-16.24	0.3	0.1	19.7	--	--	--	--
B-influent	04/15/99	8:10 AM	28.5	46	-	-15.57	0.1	0.1	19.7	--	--	--	--
B-influent	05/17/99	4:05 PM	28.47	64.9	0.05	-14.7	0.1	0.1	20.1	--	--	--	--
B-influent	06/15/99	--	--	--	--	-14.96	0	0.2	19.9	--	--	--	--
B-influent	06/16/99	--	--	--	--	-20	0.2	0.2	18.9	--	--	--	--
B-influent	06/17/99	--	--	--	--	-21	0.1	0.2	19.4	--	--	--	--
B-influent	06/18/99	--	--	--	--	-21	0	0.2	19.8	--	--	--	--
B-influent	06/19/99	--	--	--	--	-15	0.1	0.2	20	--	--	--	--
B-influent	06/20/99	--	--	--	--	-15	0.1	0.2	20	--	--	--	--
B-influent	06/21/99	5:12 PM	28.87	78.1	-	-14.7	0.3	0.1	19.6	--	--	--	--
B-influent	06/22/99	3:00 PM	28.68	80.1	-	-14.5	0.1	0.2	20.1	--	--	--	--
B-influent	06/23/99	2:40 PM	28.47	69.1	0.22	-14.6	0.1	0.2	20	--	--	--	--
B-influent	06/24/99	11:40 AM	28.59	81	-	-14.6	0.1	0.2	20.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	06/25/99	11:11 AM	28.67	82.9	-	-14.6	0.1	0.2	20.3	--	--	--	--
B-influent	06/26/99	1:57 PM	28.58	87.1	-	-14.4	0.1	0.2	20.3	--	--	--	--
B-influent	06/27/99	11:30 AM	28.48	88	-	-14.4	0	0.2	20.2	--	--	--	--
B-influent	06/28/99	11:38 AM	28.45	70	-	-14.6	0	0.2	20.1	--	--	--	--
B-influent	06/29/99	11:47 AM	28.59	66	-	-14.8	0.2	0.3	19.8	--	--	--	--
B-influent	06/30/99	12:14 PM	28.58	61	0.07	-14.6	0	0.3	20.1	--	--	--	--
B-influent	07/01/99	11:39 AM	28.44	63	-	-14.76	0.2	0.1	20.1	--	--	--	--
B-influent	07/02/99	11:21 AM	28.62	75.9	-	-14.66	0.1	0.2	20.4	--	--	--	--
B-influent	07/03/99	11:22 AM	28.62	68	0.14	-15.23	0	0.2	19.8	--	--	--	--
B-influent	07/04/99	11:04 AM	28.66	84	-	-14.91	0	0.2	19.9	--	--	--	--
B-influent	07/05/99	10:11 AM	28.66	78.1	-	-14.85	0.1	0.3	19.7	--	--	--	--
B-influent	07/06/99	11:26 AM	28.68	75.9	-	-15.02	0.1	0.2	20	--	--	--	--
B-influent	07/07/99	11:00 AM	28.74	77	-	-14.91	0	0	20.5	--	--	--	--
B-influent	07/08/99	11:07 AM	28.78	61	0.03	-14.84	0	0.3	19.7	--	--	--	--
B-influent	07/09/99	12:35 PM	28.5	63	T	-3.83	0	0.2	21.4	--	--	--	--
B-influent	07/10/99	2:25 PM	28.92	73	-	-3.16	0	0.2	19.1	--	--	--	--
B-influent	07/11/99	9:41 AM	28.95	75.9	-	-15	0	0.3	20.6	--	--	--	--
B-influent	07/12/99	11:20 AM	28.89	77	-	-14.88	0	0.2	20.7	--	--	--	--
B-influent	07/12/99	5:40 PM	28.81	77	-	--	0	0.2	20.9	--	--	--	--
B-influent	07/13/99	1:33 PM	28.68	73.9	-	-14.66	0	0.2	20.9	--	--	--	--
B-influent	07/14/99	11:24 AM	28.58	73.9	-	-14.47	0	0.2	20.9	--	--	--	--
B-influent	07/15/99	5:25 PM	28.67	84.9	-	-15.4	0.1	0.2	20.4	--	--	--	--
B-influent	07/16/99	2:45 PM	28.67	75.9	0.01	-15.4	0.1	0.2	20.4	--	--	--	--
B-influent	07/17/99	2:30 PM	28.85	78.1	-	-15.35	0.2	0.2	20.1	--	--	--	--
B-influent	07/18/99	12:30 PM	28.87	75.9	-	-15.2	0.2	0.3	20.7	--	--	--	--
B-influent	07/19/99	11:55 AM	28.85	73	-	-15.31	0.1	0.3	20.7	--	--	--	--
B-influent	07/20/99	11:43 AM	28.88	73.9	-	-15.25	0	0.3	20.7	--	--	--	--
B-influent	07/21/99	11:07 AM	28.76	68	0.01	-15.25	0	0.3	20.9	--	--	--	--
B-influent	07/22/99	7:58 AM	28.8	75.9	-	-15.25	0	0.3	20.9	--	--	--	--
B-influent	07/23/99	2:23 PM	28.61	84.9	-	-14.85	0.1	0.3	20.4	--	--	--	--
B-influent	07/24/99	9:14 AM	28.61	82	-	-14.88	0.1	0.3	20.8	--	--	--	--
B-influent	07/25/99	10:06 AM	28.74	81	-	-14.92	0	0.3	20.8	--	--	--	--
B-influent	07/26/99	9:20 AM	28.64	73	-	-14.92	0.1	0.3	20.6	--	--	--	--
B-influent	07/27/99	11:34 AM	28.74	78.1	-	-21	0	0.3	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	07/27/99	3:11 PM	28.71	81	-	-19.15	0.1	0.5	20.3	--	--	--	--
B-influent	08/04/99	7:43 AM	28.72	64	-	-20	0	0.3	20.8	--	--	--	--
B-influent	08/10/99	10:07 AM	28.44	64.9	-	-21	0	0.4	20.2	--	--	--	--
B-influent	08/11/99	11:04 AM	28.64	73	-	--	--	--	--	850	850	3.5	--
B-influent	08/17/99	2:22 PM	28.8	72	-	-15	0	0.3	19.9	--	--	--	--
B-influent	08/20/99	3:27 PM	28.87	77	-	-15	0.1	0.2	20	--	--	--	--
B-influent	08/24/99	8:52 AM	28.7	71.1	-	-18.1	0.1	0.6	20	--	--	--	--
B-influent	08/31/99	4:40 PM	28.86	73	-	-3.54	0	0.3	20.3	--	--	--	--
B-influent	08/31/99	6:40 PM	28.85	66	-	-32	--	--	--	--	--	--	--
B-influent	08/31/99	6:50 PM	28.85	66	-	-32	--	--	--	--	--	--	--
B-influent	08/31/99	7:00 PM	28.85	66	-	-32	--	--	--	--	--	--	--
B-influent	08/31/99	7:10 PM	28.85	66	-	-32	--	--	--	--	--	--	--
B-influent	08/31/99	7:15 PM	28.85	66	-	-31	--	--	--	--	--	--	--
B-influent	08/31/99	7:25 PM	28.85	66	-	-31	--	--	--	--	--	--	--
B-influent	08/31/99	7:35 PM	28.87	63	-	-31	--	--	--	--	--	--	--
B-influent	08/31/99	7:45 PM	28.87	63	-	-31	--	--	--	--	--	--	--
B-influent	08/31/99	7:50 PM	28.87	63	-	-36	--	--	--	--	--	--	--
B-influent	08/31/99	8:00 PM	28.87	63	-	-36	--	--	--	--	--	--	--
B-influent	08/31/99	8:10 PM	28.87	63	-	-36	--	--	--	--	--	--	--
B-influent	08/31/99	8:20 PM	28.87	63	-	-36	--	--	--	--	--	--	--
B-influent	08/31/99	8:25 PM	28.87	63	-	-38	--	--	--	--	--	--	--
B-influent	08/31/99	8:35 PM	28.87	61	-	-38	--	--	--	--	--	--	--
B-influent	08/31/99	8:45 PM	28.87	61	-	-38	--	--	--	--	--	--	--
B-influent	08/31/99	8:55 PM	28.87	61	-	-38	--	--	--	--	--	--	--
B-influent	09/03/99	7:50 AM	28.8	69.1	-	-6.02	0	0.4	20.3	1750	1750	3	--
B-influent	09/03/99	9:20 AM	28.81	73	-	-13.3	--	--	--	--	--	--	--
B-influent	09/03/99	9:30 AM	28.8	77	-	-13.3	--	--	--	--	--	--	--
B-influent	09/03/99	9:40 AM	28.8	77	-	-13.3	--	--	--	--	--	--	--
B-influent	09/03/99	9:50 AM	28.8	77	-	-13.3	--	--	--	--	--	--	--
B-influent	09/03/99	9:55 AM	28.8	77	-	-12.75	--	--	--	--	--	--	--
B-influent	09/03/99	10:05 AM	28.8	77	-	-12.75	--	--	--	--	--	--	--
B-influent	09/03/99	10:15 AM	28.8	77	-	-12.75	--	--	--	--	--	--	--
B-influent	09/03/99	10:25 AM	28.8	77	-	-12.75	--	--	--	--	--	--	--
B-influent	09/03/99	10:30 AM	28.78	82.9	-	-16.55	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	09/03/99	10:40 AM	28.78	82.9	-	-16.55	--	--	--	--	--	--	--
B-influent	09/03/99	10:50 AM	28.78	82.9	-	-16.55	--	--	--	--	--	--	--
B-influent	09/03/99	11:00 AM	28.78	82.9	-	-16.55	--	--	--	--	--	--	--
B-influent	09/03/99	11:10 AM	28.78	82.9	-	-17.05	--	--	--	--	--	--	--
B-influent	09/03/99	11:20 AM	28.78	82.9	-	-17.05	--	--	--	--	--	--	--
B-influent	09/03/99	11:30 AM	28.77	86	-	-17.05	--	--	--	--	--	--	--
B-influent	09/03/99	11:40 AM	28.77	86	-	-17.05	--	--	--	--	--	--	--
B-influent	09/08/99	3:21 PM	28.47	73	-	-15.82	0.3	0.6	19.9	--	--	--	--
B-influent	09/08/99	5:50 PM	28.5	66	-	-32	--	--	--	--	--	--	--
B-influent	09/08/99	6:00 PM	28.5	66	-	-32	--	--	--	--	--	--	--
B-influent	09/08/99	6:10 PM	28.5	66	-	-32	--	--	--	--	--	--	--
B-influent	09/08/99	6:20 PM	28.5	66	-	-32	--	--	--	--	--	--	--
B-influent	09/08/99	6:45 PM	28.51	62.1	-	-30	--	--	--	--	--	--	--
B-influent	09/08/99	6:55 PM	28.51	62.1	-	-30	--	--	--	--	--	--	--
B-influent	09/08/99	7:05 PM	28.51	62.1	-	-30	--	--	--	--	--	--	--
B-influent	09/08/99	7:20 PM	28.51	62.1	-	-35	--	--	--	--	--	--	--
B-influent	09/08/99	7:30 PM	28.52	61	-	-36	--	--	--	--	--	--	--
B-influent	09/08/99	7:40 PM	28.52	61	-	-36	--	--	--	--	--	--	--
B-influent	09/08/99	7:55 PM	28.52	61	-	-38	--	--	--	--	--	--	--
B-influent	09/08/99	8:05 PM	28.52	61	-	-39	--	--	--	--	--	--	--
B-influent	09/08/99	8:15 PM	28.52	61	-	-39	--	--	--	--	--	--	--
B-influent	09/14/99	10:37 AM	28.64	54	-	-16.8	0.1	0.5	20	1000	--	2	--
B-influent	09/21/99	1:11 PM	28.89	59	-	-16.71	0.1	0.3	20.2	--	--	--	--
B-influent	09/21/99	2:40 PM	28.85	64	-	-32	--	--	--	--	--	--	--
B-influent	09/21/99	2:50 PM	28.85	64	-	-32	--	--	--	--	--	--	--
B-influent	09/21/99	3:00 PM	28.85	64	-	-32	--	--	--	--	--	--	--
B-influent	09/21/99	3:10 PM	28.85	64	-	-32	--	--	--	--	--	--	--
B-influent	09/21/99	3:20 PM	28.85	64	-	-30	--	--	--	--	--	--	--
B-influent	09/21/99	3:30 PM	28.85	66.9	-	-30	--	--	--	--	--	--	--
B-influent	09/21/99	3:40 PM	28.85	66.9	-	-30	--	--	--	--	--	--	--
B-influent	09/21/99	3:50 PM	28.85	66.9	-	-30	--	--	--	--	--	--	--
B-influent	09/21/99	4:00 PM	28.85	66.9	-	-36	--	--	--	--	--	--	--
B-influent	09/21/99	4:10 PM	28.85	66.9	-	-36	--	--	--	--	--	--	--
B-influent	09/21/99	4:20 PM	28.85	66.9	-	-36	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	09/21/99	4:30 PM	28.85	62.1	-	-36	--	--	--	--	--	--	--
B-influent	09/21/99	4:40 PM	28.85	62.1	-	-38	--	--	--	--	--	--	--
B-influent	09/21/99	4:50 PM	28.85	62.1	-	-38	--	--	--	--	--	--	--
B-influent	09/21/99	5:00 PM	28.85	62.1	-	-38	--	--	--	--	--	--	--
B-influent	09/21/99	5:10 PM	28.85	62.1	-	-38	--	--	--	--	--	--	--
B-influent	09/28/99	9:37 AM	28.92	52	-	-16.79	0	0.3	20.5	--	--	--	--
B-influent	10/05/99	7:54 AM	28.72	42.1	-	-16.4	0.2	0.3	20	7250	7250	10	--
B-influent	10/07/99	2:28 PM	28.76	46	0.09	-16.5	0.3	0.3	20.4	5000	5000	3	--
B-influent	10/12/99	9:28 AM	28.73	53.1	-	-16.14	0.2	0.3	20.1	8500	8500	6	--
B-influent	10/19/99	7:42 AM	28.81	37.9	T	-16.24	0.1	0.3	20.3	--	--	4	--
B-influent	10/23/99	3:10 PM	28.89	35.1	T	-0.1	0	0.1	20.7	>10000	>10000	3.5	--
B-influent	10/25/99	7:38 AM	28.55	45	-	-16.57	0.3	0.3	20.1	>10000	--	10	--
B-influent	11/03/99	8:33 AM	28.7	30	-	-11.77	0.5	0.2	20.1	1700	1700	1.5	--
B-influent	11/06/99	3:27 PM	29.07	46.9	-	-11.7	0.5	0.4	19.9	1250	1250	2	--
B-influent	11/22/99	10:31 AM	28.67	46.9	-	-12.1	0.4	0.1	20	2600	2300	1.75	--
B-influent	01/25/00	10:10 AM	28.77	12	-	-11.6	0.5	0.1	19.1	>5000	>5000	2	--
B-influent	02/07/00	2:06 PM	29.04	24.1	-	-11.3	0	0	20.4	300	300	1.5	--
B-influent	02/18/00	1:00 PM	28.89	25	-	-12.13	0	0	20.5	22	12	5	--
B-influent	04/27/00	2:36 PM	28.63	70	-	-11.93	0	0	18.6	4.5	4.5	2.5	--
B-influent	06/03/00	11:10 AM	29	64	-	-11.47	0.2	0.2	20.6	--	--	--	--
B-influent	06/29/00	1:55 PM	28.67	69	-	-11.5	0	0.4	19.6	--	--	--	--
B-influent	07/20/00	9:48 AM	28.61	64	0.01	-17	5.3	17	5.2	--	--	--	--
B-influent	07/23/00	10:18 AM	28.99	66	-	-11.55	0.1	0.3	20.6	1250	1250	6	--
B-influent	07/23/00	2:42 PM	28.93	74	-	-1.14	0	0.1	21	600	600	5	--
B-influent	08/20/00	10:46 AM	29.07	64	-	-11.65	0	0.4	19.9	400	400	3.5	--
B-influent	09/23/00	10:28 AM	28.64	53	-	-10.78	0	0.2	20	300	275	7.5	--
B-influent	10/21/00	9:31 AM	29.01	48	-	-9.92	0	0.2	20.2	1068	1064	0.82	--
B-influent	11/18/00	10:46 AM	28.62	21	T	-10.26	0	0.2	20.2	597	589	-0.3	--
B-influent	12/18/00	9:55 AM	28.75	10	-	-8.94	0	0.2	20.1	790	785	0.95	--
B-influent	01/09/01	8:45 AM	28.82	15	-	-9	0	0	20.3	877	870	0.65	--
B-influent	02/07/01	1:05 PM	29.04	24	-	-4.41	--	--	--	--	--	--	--
B-influent	02/08/01	1:11 PM	28.87	24	-	-5.45	0	0	19.4	1.1	1.1	1.1	--
B-influent	02/10/01	8:23 AM	29.04	2	-	-6	--	--	--	--	--	--	--
B-influent	02/12/01	12:49 PM	28.87	24	0.01	-5.2	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	02/13/01	7:52 AM	29.01	21	-	-5.5	0	0	20.3	2.4	2.4	3	--
B-influent	03/07/01	10:04 AM	28.73	28	-	-1.38	0	0	20	3.93	2.87	4.2	--
B-influent	03/08/01	12:42 PM	28.57	32	T	--	--	--	--	-1.69	-2.09	-4.5	--
B-influent	04/08/01	9:06 AM	28.49	41	-	-6	0	0.1	20.1	2833	2819	0.52	--
B-influent	05/05/01	9:37 AM	29.09	58	-	-5.46	0	0.3	17.9	1221	1220	0.2	--
B-influent	05/31/01	8:00 AM	28.93	56	-	-6	0	0	18.6	750	745	0.8	--
B-influent	06/28/01	8:30 AM	28.99	77	-	-5.5	0	0.6	18.7	1415	1374	0	--
B-influent	07/19/01	8:00 AM	28.82	68	-	-6	0	0.4	19.8	1010	1008	0	--
B-influent	08/08/01	4:22 PM	28.64	95	-	-6	0	0.1	20.7	1030	1025	0.6	--
B-influent	09/08/01	6:30 PM	28.56	68	-	-5	0.1	0.4	19.5	>1000	>1000	<1	--
B-influent	09/09/01	8:00 AM	28.72	56	-	--	--	--	--	950	950	0	--
B-influent	10/04/01	3:30 PM	28.64	58	-	-5.1	0	0.4	19.8	9.8	8.4	5.5	--
B-influent	11/14/01	8:00 AM	28.81	53	-	-5.27	0	0.2	20.4	660	660	5	--
B-influent	12/18/01	10:52 AM	28.54	32	-	-5.3	0	0.2	20.3	1600	1570	0.62	--
B-influent	01/10/02	9:50 AM	28.55	37	-	-5.3	0	0.2	20.1	2155	2130	0.4	--
B-influent	02/15/02	1:10 PM	28.52	33	-	-5.23	0	0.1	19.9	3069	3045	-1.28	--
B-influent	03/18/02	10:12 AM	28.98	34	-	-6.06	0	0	20.8	1510	1505	0	--
B-influent	04/26/02	8:15 AM	29.01	34	-	-5.8	0	0	21	2450	2450	0	--
B-influent	05/22/02	8:45 AM	28.88	-	-	-5.7	0	0	21.1	0.4	0	0.4	--
B-influent	06/05/02	8:28 AM	28.77	50	-	-4	0	0.3	20.3	826	821	0	--
B-influent	07/11/02	11:43 AM	29.09	76	-	-5	0	0.4	21	626	598	-0.9	--
B-influent	08/10/02	1:48 PM	28.7	80	-	-4.7	0	0.5	20.5	1384	1380	0.3	--
B-influent	09/23/02	9:00 AM	28.88	49	-	-4.9	0	0.5	19.7	604	600	0.25	--
B-influent	10/11/02	12:42 PM	28.85	70	-	-4.2	0	0.4	20.3	1838	1820	0.3	--
B-influent	11/15/02	1:50 PM	28.99	29	T	-5.3	0	0.3	19.6	787	760	0.1	--
B-influent	12/05/02	10:08 AM	28.86	16	T	-5.3	0	0.2	20.3	345	295	0.2	--
B-influent	01/03/03	10:22 AM	28.83	18	-	-5.4	0	0.1	20.4	681	676	0	--
B-influent	02/11/03	11:06 AM	28.25	5	T	-5.5	0	0.1	20	1763	1740	2	--
B-influent	03/05/03	11:32 AM	28.76	9	T	-5.4	0.1	0.2	19.5	1405	1380	0	--
B-influent	04/14/03	10:02 AM	28.6	74	-	-5.3	0.1	0.2	19.7	1780	1750	3.4	--
B-influent	05/07/03	8:59 AM	28.78	55	-	-5.4	0.1	0.3	19.7	1481	1450	1.8	--
B-influent	06/02/03	9:38 AM	28.8	68	-	-5.2	0.1	0.3	19.5	856	840	0.5	--
B-influent	07/16/03	9:07 AM	28.86	71	-	-5	0.1	0.4	19.4	907	900	1	--
B-influent	08/07/03	9:20 AM	28.83	69	-	-4.9	0	0	19.8	176	170	0.2	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	09/26/03	11:03 AM	28.46	51	-	-5.1	0	0	19.8	1.4	1.3	1.2	--
B-influent	10/13/03	9:31 AM	28.58	58	-	-5	0.1	0	19.8	78	50	4	--
B-influent	11/11/03	9:47 AM	28.49	41	-	-5.2	0	0	19.4	0.84	0.8	1	--
B-influent	12/17/03	8:59 AM	28.57	24	T	-5.2	0.2	0.2	19.3	3412	3350	0.15	--
B-influent	01/21/04	2:07 PM	28.33	25	T	-5	0.2	0.3	18.6	3753	3730	4.24	--
B-influent	02/04/04	9:54 AM	29.14	4	-	-5.5	0.3	0.2	18.8	2329	2300	6.1	--
B-influent	03/02/04	9:34 AM	28.7	37	-	-5.9	0.3	0.2	19	3090	3050	0.4	--
B-influent	04/02/04	2:30 PM	28.86	56	-	-5.5	0.2	0.2	19.3	2590	2584	-152	--
B-influent	05/28/04	9:40 AM	28.74	54	-	-5.8	0.1	0.3	19.8	2846	2830	2.55	--
B-influent	06/29/04	10:50 AM	28.81	75	-	-5.3	0	0.4	19.2	2361	2550	3	--
B-influent	07/14/04	7:48 AM	28.66	69	-	-5.3	0.1	0.4	19	2158	2130	-0.25	--
B-influent	07/22/04	11:20 AM	28.67	71	-	-5.4	0	0.4	19.4	2951	2808	1.43	--
B-influent	08/12/04	11:42 AM	28.83	64	-	-11.3	0	0	20.9	2615	2600	2.2	--
B-influent	09/17/04	2:06 PM	28.85	66	-	-5.1	0	0.4	19.7	2730	2670	0.41	--
B-influent	10/13/04	11:34 AM	28.48	63	-	-5.1	0	0.3	19.6	4275	4240	1.53	--
B-influent	11/23/04	9:27 AM	28.52	41	-	-5.4	0.1	0.2	19.7	3319	3300	-1.27	--
B-influent	01/06/05	3:03 PM	28.6	17	T	-5.6	0	0	19.1	-1.21	-2.43	-0.81	--
B-influent	01/19/05	10:44 AM	28.76	18	T	-5.7	0.1	0	19.6	-3.48	-3.54	-3.32	--
B-influent	02/08/05	10:18 AM	28.99	17	-	-6	0	0	20.3	-0.03	-0.1	0.1	--
B-influent	03/16/05	9:02 AM	28.83	18	T	-6	0	0	19.8	16.1	3.27	0.04	--
B-influent	04/04/05	1:45 PM	28.74	58	-	-5.5	0	0	20.5	75.32	57.81	-0.68	--
B-influent	04/05/05	2:00 PM	28.56	72	-	--	--	--	--	--	--	--	--
B-influent	05/09/05	2:43 PM	28.46	74	T	-5.4	0	0	20.1	--	--	--	--
B-influent	06/09/05	8:00 AM	28.65	74	-	-5.4	--	--	--	--	--	--	--
B-influent	06/15/05	7:41 AM	28.49	56	-	-5.3	0.2	0.5	18.7	4801	4780	0.66	--
B-influent	07/01/05	1:00 PM	28.7	65	-	-0.9	0.2	0.4	19.3	3280	3226	-0.05	--
B-influent	08/11/05	10:40 AM	28.85	69	-	-4.9	0.4	0.5	19	6901	6855	-7.12	--
B-influent	09/08/05	2:37 PM	28.9	69.98	-	-4.8	0.6	0.4	18.9	8480	8401	-2.69	--
B-influent	10/19/05	10:00 AM	28.82	46	-	-4	0.6	0.4	18.9	6618	6550	-0.64	--
B-influent	11/03/05	3:42 PM	28.63	50	-	-6	0.5	0.3	18.8	3905	3862	6.48	--
B-influent	12/05/05	10:20 AM	28.76	4	-	-5.7	0.7	0.3	18.6	-3.04	-2.97	-2.29	--
B-influent	01/31/06	3:06 PM	28.61	34	-	-6	0.8	0.2	18.7	8162	7540	22.61	--
B-influent	02/20/06	8:29 AM	28.66	6	-	-5.9	0.6	0.2	19	11.48	10.53	11.35	--
B-influent	03/09/06	10:14 AM	28.17	36	0.01	-5.9	0.8	0.2	18.7	1.19	0.88	0.72	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
B-influent	04/12/06	3:17 PM	28.68	67	-	-5.1	0.5	0.2	18.8	-3.18	-2.96	-3.06	--
B-influent	04/17/06	8:38 AM	28.86	50	-	--	--	--	--	--	--	--	--
B-influent	05/17/06	2:01 PM	28.38	63	-	-5.4	0.5	0.3	18.4	-0.51	-0.39	-0.91	--
B-influent	06/06/06	10:19 AM	28.61	68	-	-5.1	0.5	0.4	18.3	1.36	1.04	1.07	--
B-influent	07/26/06	12:35 PM	28.5	83	-	-4.4	0.6	0.2	17.7	1.07%	1.06%	0.73	--
B-influent	08/16/06	11:27 AM	28.99	78	-	-4.8	0.8	0.5	18.1	3.09%	3.07%	2.46	--
B-influent	09/18/06	12:48 PM	28.38	59	-	-4.7	0.7	0.6	19.8	11.88	9.23	12.88	--
B-influent	10/23/06	1:35 PM	28.7	39	-	-4.4	0.6	0.5	20.2	2671	2652	-0.14	--
B-influent	11/14/06	9:26 AM	28.71	34	-	-4.8	0.1	0.3	19.9	1.21	1.14	-1.33	--
B-influent	12/21/06	9:32 AM	29.05	26	-	-6.2	0	0.1	20.6	-0.26	-0.1	-0.45	--
B-influent	01/19/07	9:41 AM	28.82	15	-	-6.7	0	0.2	20.5	-2.47	-2.38	-2.12	--
B-influent	02/08/07	9:20 AM	28.85	1	-	-6.9	0.4	0.4	20.1	-0.44	0.41	0.13	--
B-influent	03/12/07	10:47 AM	28.73	42	-	-7	0.5	0.5	19.8	-3.66	-3.12	-2.14	--
B-influent	04/19/07	1:45 PM	28.93	65	-	-6.3	0.8	0.5	20.2	9.29	8.7	8.12	--
B-influent	05/29/07	9:56 AM	28.9	74	-	-6	1	0.4	19.4	-5.84	-5.3	-5.6	--
B-influent	06/13/07	10:29 AM	28.98	80	-	-5.9	0.9	0.4	18.3	-3.51	-3.46	-2.18	--
B-influent	07/16/07	9:33 AM	29.99	72	-	-5.9	0.9	0.4	18.8	12.2	9.48	-2.73	--
B-influent	08/30/07	9:44 AM	30.27	69	-	-5.7	1.2	0.6	18.8	27.7	23.82	24.61	--
B-influent	09/20/07	10:41 AM	30.26	56	-	-5.5	1.1	0.4	18.7	6735	6589	9.43	--
B-influent	10/17/07	9:59 AM	29.89	57	-	-5.6	1.3	0.4	18.5	--	--	--	--
B-influent	11/21/07	11:01 AM	30.15	34	-	-5.8	0.8	0.3	19.5	9.34	8.29	8.43	--
B-influent	12/27/07	12:03 PM	29.96	26	-	-6.4	1.6	0.4	19.3	--	--	--	--
E-effluent	05/07/98	2:45 PM	28.52	66.9	T	0.5	1	1.1	19.1	--	--	--	--
E-effluent	05/15/98	10:00 AM	28.66	75	-	-1.5	0.8	1.3	19.2	--	--	--	--
E-effluent	05/21/98	9:33 AM	28.85	57	-	0	0.5	1	20	--	--	--	--
E-effluent	05/28/98	7:17 PM	28.51	80.1	-	0.1	0.6	1.3	19.3	--	--	--	--
E-effluent	06/06/98	9:56 AM	28.82	53.1	-	0.3	0.8	1.6	18.8	--	--	--	--
E-effluent	06/17/98	12:48 PM	28.75	80.1	-	0.4	0.5	1.6	18.9	--	--	--	--
E-effluent	06/24/98	4:00 PM	28.59	81	-	0.2	0.7	1.5	18.8	--	--	--	--
E-effluent	07/01/98	9:14 AM	28.75	69.1	-	0	0.5	1.7	18.6	--	--	--	--
E-effluent	07/09/98	2:27 PM	28.75	79	-	0.3	0.7	1.6	18.7	--	--	--	--
E-effluent	07/15/98	12:12 PM	28.66	75	-	0	0.7	1.8	18.3	--	--	--	--
E-effluent	07/24/98	12:50 PM	28.84	66.9	-	0	0.6	2.1	18.1	--	--	--	--
E-effluent	07/28/98	8:23 AM	28.52	66.9	T	0.4	0.8	2	18	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-effluent	08/03/98	3:30 PM	28.89	75.9	-	0.1	0.7	2	18.1	--	--	--	--
E-effluent	08/10/98	--	--	--	--	0	0.6	1.5	19.1	--	--	--	--
E-effluent	08/19/98	4:07 PM	28.89	73.9	-	0.06	0.7	1.7	18.6	--	--	--	--
E-effluent	08/26/98	11:20 AM	28.78	79	-	0.05	0.6	1.6	18.1	--	--	--	--
E-effluent	09/01/98	12:55 PM	28.54	73	T	0.05	0.4	1.8	18.2	--	--	--	--
E-effluent	09/10/98	8:25 AM	28.84	63	-	0.16	0.4	1.8	18.2	--	--	--	--
E-effluent	09/16/98	9:28 AM	28.96	59	-	0.04	0.4	1.7	18.8	--	--	--	--
E-effluent	09/26/98	3:40 PM	28.38	68	0.01	0.04	0.6	1.5	18.9	--	--	--	--
E-effluent	09/30/98	11:23 AM	28.63	46	0.06	0	0.2	1.6	18.3	--	--	--	--
E-effluent	10/08/98	3:25 PM	28.99	53.1	-	0	0.6	0.6	18.4	--	--	--	--
E-effluent	10/12/98	11:20 AM	28.72	53.1	-	0.03	0.5	1.5	18.6	--	--	--	--
E-effluent	10/22/98	10:31 AM	29.16	51.1	-	0.3	0	0.3	17.8	--	--	--	--
E-effluent	11/07/98	9:08 AM	29.08	36	-	0	0.4	1.4	18.2	--	--	--	--
E-effluent	11/17/98	2:06 PM	28.79	35.1	-	0.04	0.3	1.2	19	--	--	--	--
E-effluent	12/01/98	4:54 PM	28.61	45	-	0.04	0.4	1.1	19	--	--	--	--
E-effluent	12/09/98	4:17 PM	28.89	41	-	0.03	0.4	1.2	18.5	--	--	--	--
E-effluent	12/20/98	8:05 AM	29.16	15	-	-0.06	0.3	1	19.9	--	--	--	--
E-effluent	12/29/98	12:24 PM	28.64	9	T	0.03	0.4	0.9	16.2	--	--	--	--
E-effluent	01/07/99	1:52 PM	28.9	3.9	-	0.03	0.4	1	16	--	--	--	--
E-effluent	01/13/99	--	--	--	--	--	--	--	--	--	--	--	--
E-effluent	01/19/99	11:38 AM	28.61	25	-	0	0.3	0.9	18.5	--	--	--	--
E-effluent	01/27/99	11:09 AM	28.54	27	T	-0.03	0.4	0.8	18.7	--	--	--	--
E-effluent	02/02/99	3:43 PM	28.27	34	-	0.02	0.4	0.9	20.5	--	--	--	--
E-effluent	02/12/99	10:45 AM	28.43	12	T	-0.02	0.3	0.9	10.9	--	--	--	--
E-effluent	02/25/99	3:35 PM	28.85	30	-	-0.01	0.3	0.8	19.9	--	--	--	--
E-effluent	03/14/99	10:54 AM	28.91	36	-	-0.01	0.3	0.7	21.8	--	--	--	--
E-effluent	03/24/99	4:23 PM	28.88	36	-	-0.01	0.2	0.7	19.6	--	--	--	--
E-effluent	04/15/99	7:49 AM	28.5	46	-	-0.01	0.2	0.7	18.6	--	--	--	--
E-effluent	05/17/99	4:33 PM	28.47	62.1	0.15	0	0.2	0.8	18.7	--	--	--	--
E-effluent	07/22/99	7:42 AM	28.8	75.9	-	-0.01	0.1	1.4	19.2	--	--	--	--
E-effluent	08/18/99	8:04 AM	28.87	55	-	-0.01	0	1.9	17.6	--	--	--	--
E-effluent	09/14/99	9:56 AM	28.63	55	-	0	0.1	2.2	17.7	3500	3500	2	--
E-effluent	09/24/99	8:42 AM	28.69	51.1	-	0	0.1	2.1	18.1	--	--	--	--
E-effluent	10/26/99	10:31 AM	28.8	41	-	-0.02	0	1.5	19	1900	1900	2.75	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-effluent	11/04/99	1:52 PM	28.63	55.9	-	-0.02	0.1	1.3	19.2	3500	3500	3.5	--
E-effluent	11/08/99	10:46 AM	28.65	55	-	-0.03	0.2	1.3	18.5	1950	1950	1	--
E-effluent	01/24/00	9:45 AM	28.65	2	-	-0.02	0	0.6	20.2	4500	1500	1.5	--
E-effluent	02/17/00	4:22 PM	29.02	21	T	-0.02	0	0.5	19.3	200	200	2.75	--
E-effluent	03/05/00	10:10 AM	28.74	43	-	0	--	--	--	1394	1394	-0.6	--
E-effluent	03/30/00	4:46 PM	28.79	54	-	--	--	--	--	--	1520	--	--
E-effluent	06/03/00	3:09 PM	28.9	67	-	0	0	0.6	19.8	1279	1279	--	--
E-effluent	06/29/00	4:28 PM	28.65	70	-	0	0	0.7	19.2	--	--	--	--
E-effluent	07/23/00	2:45 PM	28.93	74	-	0	0	1	19.5	1100	1100	5.5	--
E-effluent	08/22/00	4:12 PM	28.78	69	0.18	0	0	1.4	17.9	750	750	15	--
E-effluent	09/23/00	9:56 AM	28.64	53	-	-0.01	0	0	18	4	4	4	--
E-effluent	09/23/00	2:40 PM	28.7	53	T	-0.01	0	0	18	4	4	4	--
E-effluent	10/21/00	9:09 AM	29	46	-	-0.02	0	1.4	18.9	731	642	0.46	--
E-effluent	11/22/00	11:24 AM	28.94	18	-	-0.02	0.2	1.1	19	425	425	2.25	--
E-effluent	12/04/00	11:34 AM	28.61	30	-	0.02	0	1	19.4	670	670	0.7	--
E-effluent	01/09/01	2:45 PM	28.73	32	-	0.03	0	0.6	19	594	505	1	--
E-effluent	02/26/01	9:40 AM	29	24	-	0	0	0.4	19.7	230	230	-1.2	--
E-effluent	03/22/01	2:10 PM	28.77	48	-	0	0	0.4	19.8	233	230	-0.3	--
E-effluent	04/21/01	10:08 AM	28.39	50	-	0	0	0.5	18.6	214	213	-0.85	--
E-effluent	05/15/01	8:37 AM	28.51	54	-	0	0	0.5	17.8	49.4	49.2	0	--
E-effluent	06/14/01	8:22 AM	28.58	74	-	0	0	0.6	19.2	119	118	-1.5	--
E-effluent	07/13/01	10:24 AM	28.93	78	-	0	0	1.2	18.9	64.2	63.8	0	--
E-effluent	08/09/01	11:22 AM	28.55	86	-	0.1	0	1.2	19.1	53.99	53.89	0	--
E-effluent	09/08/01	6:47 PM	28.56	68	-	0.1	0	1.2	18.5	<1	<1	<1	--
E-effluent	10/05/01	4:40 PM	28.68	45	-	-0.02	0	1.2	19.1	28	26	0.6	--
E-effluent	11/12/01	1:05 PM	29.05	52	-	0	0	0.9	19.8	11.98	11.6	-0.62	--
E-effluent	12/12/01	8:00 AM	28.8	35	-	0	0	0.6	19.8	8.6	8.5	0.12	--
E-effluent	01/08/02	12:31 PM	28.25	38	-	0	0	0.6	19.5	9.75	9.61	1.25	--
E-effluent	02/15/02	11:09 AM	28.53	33	-	0	0	0.4	19.6	3.4	3.18	-1.04	--
E-effluent	03/13/02	2:55 PM	28.57	40	-	-0.04	0	0.4	20.2	0	0	0	--
E-effluent	04/17/02	2:33 PM	28.71	74	-	0	0	0.4	20.3	0.54	0.49	0	--
E-effluent	05/21/02	3:23 PM	28.98	65	-	0	0	0.5	20.2	5.5	5.47	0	--
E-effluent	06/03/02	2:36 PM	28.79	51	-	0	0	0.5	20	7.15	7.08	0	--
E-effluent	07/11/02	10:06 AM	29.11	73	-	0	0	1	19.9	13.01	12.94	-0.51	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-effluent	08/12/02	5:20 PM	28.64	78	-	0	0	1.2	20	70.6	70.2	-0.5	--
E-effluent	09/24/02	10:47 AM	29.07	50	-	0	0	1.4	19.5	96.96	96	0	--
E-effluent	10/14/02	10:17 AM	28.96	44	-	0	0	1.4	18.5	191	191	0.5	--
E-effluent	11/19/02	10:07 AM	28.57	30	-	0	0	0.9	19.2	520	518	0	--
E-effluent	12/02/02	1:50 PM	28.9	19	-	0	0	1	18.1	380	311	0.8	--
E-effluent	01/03/03	1:37 PM	28.76	31	-	0	0	0.6	18.7	831	730	1.1	--
E-effluent	02/12/03	10:23 AM	28.67	-3	-	0	0	0.5	19.7	859	850	0	--
E-effluent	03/06/03	1:52 PM	28.73	21	-	0	0	0.5	19	1191	1170	0.2	--
E-effluent	04/02/03	1:47 PM	28.83	33	-	0	0.1	0.5	19.1	1396	1380	1.8	--
E-effluent	05/01/03	11:00 AM	28.68	62	-	0	0.1	0.5	19.2	2461	2450	1.2	--
E-effluent	06/05/03	10:50 AM	28.71	75	-	0	0.2	0.7	18.8	3100	3050	0	--
E-effluent	07/16/03	12:49 PM	28.84	83	-	0	0.2	0.9	18.7	2699	2680	0.5	--
E-effluent	08/05/03	1:45 PM	28.7	81	-	0	0.2	1	18.2	3014	2980	0.5	--
E-effluent	09/26/03	1:23 PM	28.39	54	-	0	0.3	1.3	17.7	4000	3250	0.6	--
E-effluent	10/15/03	10:13 AM	28.6	48	-	0	0.2	1.2	17.9	2450	2420	0.3	--
E-effluent	11/11/03	12:23 PM	28.48	45	-	0	0.1	1.1	18	2644	2610	0.5	--
E-effluent	12/17/03	1:00 PM	28.54	26	-	0	0	0.4	18.3	1742	1730	0	--
E-effluent	01/22/04	8:40 AM	28.76	-11	-	0	1	0.7	18.4	1719	1710	1.35	--
E-effluent	02/04/04	1:41 PM	29.14	23	-	0	0	0.6	18.1	1309	1300	1.9	--
E-effluent	03/01/04	9:55 AM	28.56	35	0.01	0	0.2	0.6	18.4	2202	2160	0.7	--
E-effluent	04/04/04	10:50 AM	28.94	34	-	0	0.1	0.5	18.4	1673	1660	0.54	--
E-effluent	04/20/04	11:08 AM	28.8	38	-	0	0.1	0.5	16.9	2494	2490	0	--
E-effluent	05/26/04	8:06 AM	28.57	50	-	0	0.1	0.6	18.9	2583	2550	1	--
E-effluent	06/08/04	3:04 PM	28.68	87	-	0	0	0.5	19	3888	3800	0	--
E-effluent	07/08/04	4:39 PM	28.76	65	-	-0.015	0	0.9	18.1	1.81	1.81	0.94	--
E-effluent	08/05/04	5:16 PM	28.97	71	-	-0.024	0	1	18.1	3233	3201	0.7	--
E-effluent	09/17/04	1:41 PM	28.85	66	-	0	0	1.2	18.7	2938	2810	0.63	--
E-effluent	10/27/04	2:45 PM	29.11	45	-	0	0	1	18.4	2289	2266	-0.4	--
E-effluent	11/12/04	1:15 PM	29.24	39	-	0	0	1	18.8	2084	2056	-0.49	--
E-effluent	01/07/05	8:35 AM	28.76	5	-	0	0.1	0.8	18.2	2883	2800	0.8	--
E-effluent	01/18/05	1:33 PM	28.88	9	-	2.8	0.1	0.5	19.7	3736	3702	-0.45	--
E-effluent	02/04/05	10:49 AM	28.88	34	-	3	0	0.3	19.6	--	--	--	--
E-effluent	02/08/05	1:53 PM	28.97	21	-	2.8	0.2	0.3	19.2	8259	7720	-0.6	--
E-effluent	02/14/05	11:14 AM	28.23	29	T	2.8	0	0.2	19.5	5635	5625	0.23	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-effluent	03/15/05	11:17 AM	28.91	28	-	2.9	0	0.2	19.9	2731	2688	5.79	--
E-effluent	03/23/05	4:45 PM	28.77	39	-	1.7	0.1	0.1	19.9	3301	3275	-8.1	--
E-effluent	04/04/05	1:16 PM	28.76	58	-	1.8	0.1	0.1	20.1	1985	1961	0.41	--
E-effluent	05/12/05	9:14 AM	29.29	38	-	2	0	0.3	19.2	1900	1891	0.85	--
E-effluent	06/15/05	8:06 AM	28.49	56	-	2	0	0.2	19.3	1008	999	-0.6	--
E-effluent	07/05/05	11:04 AM	28.88	62	-	2	0	0.3	19.5	622	612	0.05	--
E-effluent	08/12/05	9:35 AM	28.61	74	-	2	0	0.4	19.3	466	458	-1.43	--
E-effluent	09/15/05	10:16 AM	29.01	64.94	-	0.5	0	0.4	19.7	--	--	--	--
E-effluent	09/20/05	1:59 PM	28.79	78.98	-	--	--	--	--	100	99	0.56	--
E-effluent	10/19/05	3:55 PM	28.8	53	-	0.77	0	0.4	19.5	76.85	76.6	0.03	--
E-effluent	11/03/05	2:43 PM	28.63	51	-	0.85	0	0.3	19.2	84.23	84.14	-1.31	--
E-effluent	12/05/05	3:25 PM	28.71	10	-	0.3	0	0.3	18.7	10.98	10.69	-3.04	--
E-effluent	02/01/06	12:17 PM	28.21	35	-	0.3	0	0.2	19.3	0.67	0.1	0.34	--
E-effluent	02/13/06	2:46 PM	28.39	27	-	0.6	0	0.2	18.6	40.08	32.17	16.98	--
E-effluent	03/08/06	2:40 PM	28.42	38	-	0.5	0	0.2	18.8	-2.5	-2.32	-3.21	--
E-effluent	04/13/06	2:39 PM	28.71	63	-	0.4	0	0.1	19.3	13.76	13.45	-2.3	--
E-effluent	05/17/06	10:31 AM	28.39	60	T	0.4	0	0.2	18.5	796	598	-1.45	--
E-effluent	06/02/06	3:25 PM	28.81	73	-	0.4	0	0.2	18.7	895	636	-0.55	--
E-effluent	07/18/06	12:35 PM	28.92	82	-	0.6	0	0.4	18.3	2680	2671	41.26	--
E-effluent	08/16/06	11:17 AM	28.99	78	-	0.4	0.1	0.5	18.3	2578	2542	-0.12	--
E-effluent	09/07/06	2:26 PM	28.68	80	-	0.4	0.2	0.9	19.7	3656	3642	0.74	--
E-effluent	10/05/06	1:52 PM	29.15	58	-	0.3	0	0.8	19.9	1493	1484	1.19	--
E-effluent	11/07/06	12:58 PM	28.57	50	-	0.3	0	0.7	19.6	4056	3940	-0.77	--
E-effluent	12/18/06	1:48 PM	29.07	32	-	0.5	0	0.6	19.9	2750	27185	-0.8	--
E-effluent	01/18/07	1:43 PM	28.63	21	-	0.5	0	0.6	19	7.41	3.8	5.15	--
E-effluent	02/07/07	10:41 AM	28.86	8	-	0.7	0	0.5	20.2	5692	5564	-0.5	--
E-effluent	03/09/07	1:18 PM	28.56	42	-	0.2	0	0.6	19.8	4159	4003	-12	--
E-effluent	04/16/07	3:32 PM	28.76	64	-	0.4	0	0.4	20.1	3276	3231	-9.83	--
E-effluent	05/25/07	2:07 PM	29	68	-	0.3	0.3	0.3	19.7	9234	9180	-5.98	--
E-effluent	06/15/07	10:53 AM	28.82	87	-	0.4	0.4	0.3	18.6	9143	9084	-5.21	--
E-effluent	07/13/07	9:40 AM	30.04	66	-	0.6	0.4	0.4	19	3540	3517	-7.25	--
E-effluent	08/29/07	2:33 PM	30.13	76	-	0.5	0.3	0.4	18.9	2504	2498	0.13	--
E-effluent	09/19/07	1:50 PM	30.1	74	-	0.5	0.3	0.4	19	2554	2538	0.52	--
E-effluent	10/16/07	2:46 PM	29.86	54	T	0.2	0.3	0.5	18.6	4164	4053	-0.17	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-effluent	11/21/07	9:59 AM	30.14	34	-	0.5	0	0.4	19.8	2533	2476	-0.35	--
E-effluent	12/27/07	1:16 PM	29.97	26	-	0.4	0	0.4	19.6	2972	2898	1.42	--
E-influent	05/07/98	2:40 PM	28.52	66.9	T	-1	1	1.1	19.1	--	--	--	--
E-influent	05/15/98	10:00 AM	28.66	75	-	-1.5	0.8	1.3	19.2	--	--	--	--
E-influent	05/21/98	9:33 AM	28.85	57	-	-1.6	0.6	1.1	19.7	--	--	--	--
E-influent	05/28/98	7:08 PM	28.51	80.1	-	-1.4	0.6	1.3	19.3	--	--	--	--
E-influent	06/06/98	9:56 AM	28.82	53.1	-	-1.2	0.7	1.4	19.1	--	--	--	--
E-influent	06/17/98	12:46 PM	28.75	80.1	-	-1.2	0.5	1.6	18.2	--	--	--	--
E-influent	06/24/98	3:58 PM	28.59	81	-	-1.4	0.7	1.5	18.8	--	--	--	--
E-influent	07/01/98	9:10 AM	28.75	69.1	-	-1.6	0.5	1.7	18.6	--	--	--	--
E-influent	07/09/98	2:25 PM	28.75	79	-	-1.3	0.7	1.6	18.7	--	--	--	--
E-influent	07/15/98	12:07 PM	28.66	75	-	-1.5	0.7	1.8	18.3	--	--	--	--
E-influent	07/24/98	12:47 PM	28.84	66.9	-	-1.6	0.6	2.1	18.1	--	--	--	--
E-influent	07/28/98	8:14 AM	28.52	66.9	T	-1	0.8	2	18	--	--	--	--
E-influent	08/03/98	3:25 PM	28.89	77	-	-1.4	0.7	2	18	--	--	--	--
E-influent	08/10/98	--	--	--	--	-1.4	0.6	1.5	19	--	--	--	--
E-influent	08/19/98	4:02 PM	28.89	73.9	-	-1.31	0.7	1.7	18.5	--	--	--	--
E-influent	08/26/98	11:15 AM	28.78	79	-	0.5	0.7	1.6	18.1	--	--	--	--
E-influent	09/01/98	12:50 PM	28.54	73	T	-1.8	0.4	1.8	18.2	--	--	--	--
E-influent	09/10/98	--	--	--	--	-1.9	0.4	1.8	18.2	--	--	--	--
E-influent	09/16/98	9:25 AM	28.96	59	-	-2.07	0.4	1.7	18.8	--	--	--	--
E-influent	09/26/98	3:37 PM	28.38	68	0.01	-1.97	0.6	1.5	18.8	--	--	--	--
E-influent	09/30/98	11:22 AM	28.63	46	0.06	-2	0.2	1.6	18.3	--	--	--	--
E-influent	10/08/98	3:23 PM	28.99	53.1	-	-2	0.6	0.6	18.4	--	--	--	--
E-influent	10/12/98	11:18 AM	28.72	53.1	-	-2.08	0.5	1.5	18.6	--	--	--	--
E-influent	10/22/98	10:29 AM	29.18	46	-	-1.96	0	0.3	19.8	--	--	--	--
E-influent	11/07/98	9:06 AM	29.08	36	-	-2.2	0.4	1.4	18.2	--	--	--	--
E-influent	11/17/98	2:04 PM	28.79	35.1	-	-2.16	0.3	1.2	19.1	--	--	--	--
E-influent	12/01/98	4:52 PM	28.61	45	-	-1.83	0.4	1.1	19	--	--	--	--
E-influent	12/09/98	4:15 PM	28.89	41	-	-2.17	0.4	1.2	18.5	--	--	--	--
E-influent	12/20/98	8:01 AM	29.16	15	-	-2.19	0.3	1	19.8	--	--	--	--
E-influent	12/29/98	12:22 PM	28.64	9	T	-2.29	0.4	1	16.2	--	--	--	--
E-influent	01/07/99	1:49 PM	28.9	3.9	-	-1.67	0.4	1	16	--	--	--	--
E-influent	01/13/99	--	--	--	--	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-influent	01/19/99	11:36 AM	28.61	25	-	-2.24	0.3	0.9	18.5	--	--	--	--
E-influent	01/27/99	11:07 AM	28.54	27	T	-2.12	0.4	0.8	18.7	--	--	--	--
E-influent	02/02/99	3:41 PM	28.27	34	-	-2.15	0.4	0.9	20.5	--	--	--	--
E-influent	02/12/99	10:43 AM	28.43	12	T	-2.2	0	0.2	11.3	--	--	--	--
E-influent	02/25/99	3:31 PM	28.85	30	-	-2.12	0.2	0.6	20	--	--	--	--
E-influent	03/14/99	10:52 AM	28.91	36	-	-2	0.3	0.7	22	--	--	--	--
E-influent	03/24/99	4:20 PM	28.88	36	-	-2.24	0.3	0.7	36.6	--	--	--	--
E-influent	04/15/99	7:45 AM	28.5	46	-	-2.04	0	0.2	19.6	--	--	--	--
E-influent	05/17/99	4:29 PM	28.47	64.9	0.05	-2.02	0	0.1	20	--	--	--	--
E-influent	06/15/99	--	--	--	--	-2.14	0	0	19.3	--	--	--	--
E-influent	06/16/99	--	--	--	--	-2.15	0.1	0.3	18.8	--	--	--	--
E-influent	06/17/99	--	--	--	--	-2.15	0	0.2	19.4	--	--	--	--
E-influent	06/18/99	--	--	--	--	-2.12	0.1	0.7	18.4	--	--	--	--
E-influent	06/19/99	--	--	--	--	-2.1	0.1	0.4	18.9	--	--	--	--
E-influent	06/20/99	--	--	--	--	-2.1	0.1	0.6	18.7	--	--	--	--
E-influent	06/21/99	2:50 PM	28.89	78.1	-	-1.92	0.3	0.2	19.1	--	--	--	--
E-influent	06/22/99	11:58 AM	28.74	80.1	-	-1.85	0.1	0.3	19.6	--	--	--	--
E-influent	06/23/99	11:44 AM	28.48	81	-	-2	0.1	0.4	19.3	--	--	--	--
E-influent	06/24/99	9:27 AM	28.58	75	-	-2.1	0.1	0.3	19.3	--	--	--	--
E-influent	06/25/99	9:30 AM	28.68	81	-	-2	0.1	0.4	19.2	--	--	--	--
E-influent	06/26/99	10:55 AM	28.6	82.9	-	-1.9	0	0.5	19.6	--	--	--	--
E-influent	06/27/99	9:27 AM	28.52	82	-	-2	0.1	0.4	19.7	--	--	--	--
E-influent	06/28/99	9:57 AM	28.51	68	-	-1.9	0	0.4	19.3	--	--	--	--
E-influent	06/29/99	9:52 AM	28.58	63	-	-2.1	0	0.4	19.2	--	--	--	--
E-influent	06/30/99	10:10 AM	28.58	68	-	-2	0	0.4	19.3	--	--	--	--
E-influent	07/01/99	9:15 AM	28.47	59	0.02	-2.05	0.2	0.6	19.5	--	--	--	--
E-influent	07/02/99	8:59 AM	28.62	72	-	-2.14	0	0.1	20	--	--	--	--
E-influent	07/03/99	9:41 AM	28.57	66.9	0.14	-2.04	0	0	20.4	--	--	--	--
E-influent	07/04/99	9:11 AM	28.66	82.9	-	-2.11	0	0.2	19.8	--	--	--	--
E-influent	07/05/99	8:33 AM	28.65	79	-	-1.99	0	0	20	--	--	--	--
E-influent	07/06/99	9:08 AM	28.66	73	-	-2.04	0	0.3	19.6	--	--	--	--
E-influent	07/07/99	8:49 AM	28.72	73.9	-	-2.03	0	0.2	19.7	--	--	--	--
E-influent	07/08/99	9:31 AM	28.78	64	T	-2	0	0.3	19.7	--	--	--	--
E-influent	07/09/99	9:56 AM	28.45	62.1	-	-2.14	0	0	21.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-influent	07/10/99	11:20 AM	28.92	71.1	-	-2.05	0	0	21.5	--	--	--	--
E-influent	07/11/99	8:22 AM	28.95	66.9	-	-2.05	0	0	21.5	--	--	--	--
E-influent	07/12/99	9:10 AM	28.9	73.9	-	-2.05	0	0	21.4	--	--	--	--
E-influent	07/12/99	4:53 PM	28.81	78.1	-	--	0	0	20.8	--	--	--	--
E-influent	07/13/99	11:40 AM	28.68	75	-	-1.95	0	0.1	20.8	--	--	--	--
E-influent	07/14/99	8:24 AM	28.61	66.9	-	-2.06	0	0	21.7	--	--	--	--
E-influent	07/15/99	11:15 AM	28.7	81	-	-2	0	0.1	20.8	--	--	--	--
E-influent	07/16/99	11:50 AM	28.64	87.1	-	-0.49	0	0	20.9	--	--	--	--
E-influent	07/17/99	10:50 AM	28.86	73.9	-	-2.14	0	0	21.4	--	--	--	--
E-influent	07/18/99	9:10 AM	28.93	68	-	-2.13	0.1	0.6	20.4	--	--	--	--
E-influent	07/19/99	8:50 AM	28.86	64	-	-2.2	0.1	0.6	20.3	--	--	--	--
E-influent	07/20/99	8:49 AM	28.9	-	-	-2.1	0	0	21.7	--	--	--	--
E-influent	07/21/99	8:18 AM	28.75	66	-	-2.23	0	0.8	20	--	--	--	--
E-influent	07/22/99	7:40 AM	28.8	75.9	-	-2.19	0	0	21.6	--	--	--	--
E-influent	07/23/99	10:47 AM	28.61	81	-	-2.1	0	0.2	20.8	--	--	--	--
E-influent	07/24/99	8:11 AM	28.61	80.1	-	-2.23	0	0	21.4	--	--	--	--
E-influent	07/25/99	9:08 AM	28.73	78.1	-	-2.09	0.1	0	21.2	--	--	--	--
E-influent	07/26/99	8:15 AM	28.64	72	-	-2.2	0	0	21.1	--	--	--	--
E-influent	07/27/99	12:53 PM	28.72	80.1	-	-2	0.1	0.6	19.9	--	--	--	--
E-influent	08/18/99	8:04 AM	28.87	55	-	-2.25	0	0	20.4	--	--	--	--
E-influent	09/14/99	10:04 AM	28.63	55	-	-2.15	0	0.5	20.4	250	250	2	--
E-influent	09/24/99	8:38 AM	28.69	51.1	-	-2.19	0	0	20.6	--	--	--	--
E-influent	10/26/99	10:29 AM	28.78	41	-	-2.3	0	0.7	19.8	3.5	2.75	2.5	--
E-influent	11/04/99	1:48 PM	28.63	55.9	-	-2.06	0	0.3	20.3	650	650	2.25	--
E-influent	11/08/99	10:42 AM	28.65	55	-	-2	0	0.5	19.8	250	250	<1	--
E-influent	01/24/00	9:30 AM	28.65	2	-	-2.2	0	0	21	300	300	2	--
E-influent	02/17/00	4:18 PM	29.02	21	T	-2.1	0	0	20	35	35	3.25	--
E-influent	03/05/00	10:07 AM	28.74	43	-	-2.2	--	--	--	943	943	-1	--
E-influent	03/30/00	4:48 PM	28.79	54	-	--	--	--	--	--	900	--	--
E-influent	06/03/00	3:07 PM	28.9	67	-	-1.81	0	0	21.2	650	650	--	--
E-influent	06/29/00	4:27 PM	28.65	70	-	-1.93	0	0.2	20.2	--	--	--	--
E-influent	07/23/00	2:42 PM	28.93	74	-	-1.84	0	0.1	21	600	600	5	--
E-influent	08/22/00	4:09 PM	28.78	69	0.18	-2	0	0	20	250	250	15	--
E-influent	09/23/00	9:54 AM	28.64	53	-	-2.3	0	0	20.4	4	4	4	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-influent	10/21/00	9:02 AM	29	46	-	-2.25	0	1.4	18.8	660	649	0.82	--
E-influent	11/22/00	11:20 AM	28.94	18	-	-2.11	0.2	1.1	19.8	604	604	0.38	--
E-influent	12/04/00	11:29 AM	28.64	30	-	-2.04	0	1	19.2	645	645	0.76	--
E-influent	01/09/01	2:50 PM	28.73	32	-	-2.36	0	0.6	19	583	495	0	--
E-influent	02/26/01	9:30 AM	29	24	-	-1.5	0	0.4	19.6	-0.8	-1	-1.2	--
E-influent	03/22/01	2:00 PM	28.77	48	-	1.25	0	0.4	19.8	227	227	-0.3	--
E-influent	04/21/01	10:02 AM	28.39	50	-	1.5	0	0.5	18.7	212	210	-0.8	--
E-influent	05/15/01	8:31 AM	28.51	54	-	1.5	0	0.5	17.8	48.5	48.5	0	--
E-influent	06/14/01	8:18 AM	28.58	74	-	1.5	0	0.6	19.3	107	107	-1.6	--
E-influent	07/13/01	10:28 AM	28.93	78	-	-2.95	0	1.1	18.9	55.7	51.4	0	--
E-influent	08/09/01	11:17 AM	28.55	86	-	-1.2	0	0.6	19.6	42.84	42.69	0	--
E-influent	09/08/01	6:46 PM	28.56	68	-	-3.2	0	0.9	19	<1	<1	<1	--
E-influent	10/05/01	4:20 PM	28.67	49	-	-2.9	0	0	20.6	23.8	23.6	0.6	--
E-influent	11/12/01	1:00 PM	29.05	52	-	-2.86	0	0.9	19.6	10.58	10.3	-0.43	--
E-influent	12/12/01	7:55 AM	28.8	35	-	-2.95	0	0.6	19.9	8.4	8.2	0.12	--
E-influent	01/08/02	12:25 PM	28.27	37	-	-2.83	0	0.6	19.6	9.3	9.18	1.25	--
E-influent	02/15/02	11:05 AM	28.53	33	-	-3.16	0	0.4	19.6	2.38	2.21	-1.34	--
E-Influent	03/13/02	2:58 PM	28.57	40	-	-3.2	0	0.4	20.2	0	0	0	--
E-influent	04/17/02	2:29 PM	28.7	74	-	-3.21	0	0.3	20.3	0.35	0.31	0	--
E-influent	05/21/02	3:20 PM	28.98	65	-	-2.83	0	0.4	20.5	4.48	4.48	0.09	--
E-influent	06/03/02	2:33 PM	28.79	51	-	-3.1	0	0	20.9	3.56	3.54	0	--
E-influent	07/11/02	9:59 AM	29.11	73	-	-3	0	0	21.7	-0.66	-0.56	-1.02	--
E-influent	08/12/02	5:15 PM	28.64	78	-	-2.8	0	0	21	20.59	16.7	-0.8	--
E-influent	09/24/02	10:45 AM	29.07	50	-	-2.9	0	0	21.1	23	22	0	--
E-influent	10/14/02	10:13 AM	28.96	44	-	-2.7	0	0	20	46.88	45	0.5	--
E-influent	11/19/02	10:02 AM	28.57	30	-	-2.9	0	1	19.2	566	559	0	--
E-influent	12/02/02	1:47 PM	28.9	19	-	-2.8	0	1	18.1	360	285	0.7	--
E-influent	01/03/03	1:34 PM	28.76	31	-	-2.6	0	0.6	18.7	734	730	1.1	--
E-influent	02/12/03	10:17 AM	28.67	-3	-	-2.7	0	0.5	19.7	815	790	0	--
E-influent	03/06/03	1:47 PM	28.73	21	-	-2.6	0.1	0.1	19.5	812	800	0.1	--
E-influent	04/02/03	1:43 PM	28.83	33	-	-2.5	0	0.1	19.7	953	945	1.2	--
E-influent	05/01/03	10:57 AM	28.68	62	-	-2.9	0.1	0.5	19.2	2260	2240	0.8	--
E-influent	06/05/03	10:46 AM	28.71	75	-	-2.7	0.2	0.7	18.8	2682	2660	0	--
E-influent	07/16/03	12:46 PM	28.84	83	-	-2.7	0.4	0.9	18.8	2441	2420	0.1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-influent	08/05/03	1:41 PM	28.7	81	-	-2.5	0.2	0.7	18.5	2380	2360	0	--
E-influent	09/26/03	1:18 PM	28.39	54	-	-2.6	0.6	1.1	17.9	2300	2220	0	--
E-influent	10/15/03	10:09 AM	28.6	48	-	-3	0.3	1.1	18.1	2067	2030	0.3	--
E-influent	11/11/03	12:19 PM	28.48	45	-	-2.7	0	0	19.5	1411	1360	0.2	--
E-influent	12/17/03	12:57 PM	28.54	26	-	-0.6	0	0	19.4	875	860	0.05	--
E-influent	01/22/04	8:25 AM	28.74	-12	-	-2.7	0.9	0	19.3	732	715	1.25	--
E-influent	02/04/04	1:36 PM	29.14	23	-	-2.5	0	0	18.9	781	776	1.8	--
E-influent	03/01/04	9:50 AM	28.56	35	0.01	-2.6	0	0	19.6	1097	1070	1.8	--
E-influent	04/04/04	10:45 AM	28.94	34	-	-2.8	--	--	--	905	840	--	--
E-influent	04/20/04	11:04 AM	28.8	38	-	-2.4	0	0.2	17.7	197	190	0	--
E-influent	05/26/04	8:00 AM	28.57	50	-	-3	0	0	20.3	250	215	2	--
E-influent	06/08/04	2:59 PM	28.68	87	-	-2.9	0	0.1	19.6	2532	2460	0	--
E-influent	07/08/04	4:36 PM	28.76	65	-	-3	0	0	19.9	6972	5950	0.94	--
E-influent	08/05/04	5:13 PM	28.97	71	-	-2.8	0	0	20.1	1226	1115	0.67	--
E-influent	09/17/04	1:37 PM	28.85	66	-	-2.7	0	0	20.6	1099	1070	0.62	--
E-influent	10/29/04	10:40 AM	28.43	54	-	-2.8	0	0	20.1	1252	1208	-0.46	--
E-influent	11/12/04	1:07 PM	29.24	39	-	-2.9	0	0	20.4	833	811	-0.29	--
E-influent	01/07/05	8:31 AM	28.76	5	-	-3	0	0	19.4	1071	960	0.29	--
E-influent	01/18/05	1:27 PM	28.94	7	-	-8.2	0.2	0.5	19.2	3339	3322	-0.16	--
E-influent	02/04/05	10:48 AM	28.88	34	-	-8.4	0	0.3	19.6	--	--	--	--
E-influent	02/08/05	1:52 PM	28.97	21	-	-8.4	0.3	0.4	19.1	--	--	--	--
E-influent	02/14/05	11:12 AM	28.23	29	T	-8.3	0.1	0.3	19.5	4983	4970	1.3	--
E-influent	03/15/05	11:13 AM	28.91	28	-	-8.6	0	0.2	19.7	2195	2186	3.56	--
E-influent	03/23/05	4:42 PM	28.77	39	-	-5.7	0.1	0.1	19.9	2756	2740	-8.3	--
E-influent	04/04/05	1:15 PM	28.76	58	-	-4.9	0.2	0.1	20.1	1512	1506	-1.63	--
E-influent	05/12/05	9:12 AM	29.29	38	-	-5.5	0	0.3	19.2	1589	1575	0.11	--
E-influent	06/15/05	8:03 AM	28.49	56	-	-3.5	0	0.5	18.9	1415	1410	0.5	--
E-influent	07/05/05	10:57 AM	28.88	62	-	-3.3	0	0.6	19.2	--	--	--	--
E-influent	08/12/05	9:31 AM	28.61	74	-	-3.2	0	0.7	18.7	676	674	-1.6	--
E-influent	09/15/05	10:10 AM	29.01	64.94	-	-4.6	0.1	0.8	19.2	--	--	--	--
E-influent	09/20/05	1:55 PM	28.79	78.98	-	--	--	--	--	142	137	0.42	--
E-influent	10/19/05	3:45 PM	28.8	53	-	-4.85	0	0.5	19.2	46.74	45.43	-0.55	--
E-influent	11/03/05	2:33 PM	28.63	51	-	-4.8	0	0.5	18.8	137	132	-1.26	--
E-influent	12/05/05	3:20 PM	28.71	10	-	-5.5	0	0.5	18.5	-3.57	-3.42	-3.47	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
E-influent	02/01/06	12:12 PM	28.21	35	-	-5.4	0	0.3	19	0.62	0.43	0.51	--
E-influent	02/13/06	2:41 PM	28.39	27	-	-5	0	0.3	18.4	16.52	15.92	16.74	--
E-influent	03/08/06	2:36 PM	28.42	38	-	-4.9	0	0.3	18.6	-3.65	-3.47	-2.98	--
E-influent	04/13/06	2:35 PM	28.71	63	-	-4.8	0	0.2	19.1	14.85	13.9	-2.46	--
E-influent	05/17/06	10:27 AM	28.4	56	-	-5.1	0	0.3	18.2	898	864	3.76	--
E-influent	06/02/06	3:21 PM	28.81	73	-	-4.9	0	0.4	18.3	-0.63	-0.56	-0.6	--
E-influent	07/18/06	12:30 PM	28.92	82	-	-4.6	0.2	0.5	17.9	3478	3450	46.38	--
E-influent	08/16/06	11:13 AM	28.99	78	-	-4.7	0.2	0.8	17.9	2.42	0.54	2.79	--
E-influent	09/07/06	2:18 PM	28.68	80	-	-4.7	0.4	1.2	19.3	323	278	0.32	--
E-influent	10/05/06	1:47 PM	29.15	58	-	-5	0	1	19.5	4.91	3.55	1.18	--
E-influent	11/07/06	12:55 PM	28.57	50	-	-5.1	0	1	19.2	1.16	1.1	0.27	--
E-influent	12/18/06	1:45 PM	29.07	32	-	-5.2	0	0.8	19.6	-0.63	-0.54	0.4	--
E-influent	01/18/07	1:39 PM	28.63	21	-	-5.1	0	0.9	18.7	5.39	3.68	1.18	--
E-influent	02/07/07	10:37 AM	28.86	8	-	-5.2	0	0.7	20	7377	7314	-0.7	--
E-influent	03/09/07	1:14 PM	28.56	42	-	-5.2	0	0.8	19.6	6024	5996	-11	--
E-influent	04/16/07	3:29 PM	28.77	64	-	-5	0	0.6	19.9	-1.83	-1.21	-4.38	--
E-influent	05/25/07	2:04 PM	29	68	-	-4.9	0.4	0.4	19.4	1.12%	1.11%	-7.17	--
E-influent	06/15/07	10:49 AM	28.82	87	-	-4.8	0.6	0.4	18.3	1.27%	1.26%	-6.01	--
E-influent	07/13/07	9:37 AM	30.04	66	-	-4.9	0.4	0.8	18.7	873	832	-7.75	--
E-influent	08/29/07	2:30 PM	30.13	76	-	-4.8	0.4	0.5	18.7	-0.4	-0.31	-0.09	--
E-influent	09/19/07	1:47 PM	30.1	74	-	-4.9	0.3	0.7	18.7	3033	2984	1.01	--
E-influent	10/16/07	2:41 PM	29.86	54	T	-5	0.5	0.8	18.2	-0.28	-0.21	-0.23	--
E-influent	11/21/07	9:55 AM	30.14	34	-	-5.2	0.1	0.7	19.4	-0.79	-0.63	-0.56	--
E-influent	12/27/07	1:14 PM	29.97	26	-	-5.3	0.2	0.6	19.4	13.7	0.72	1.3	--
GMSG-29-SVE System	06/13/00	9:33 AM	28.67	64	-	-60	--	--	--	--	--	--	--
GMSG-29-SVE System	06/13/00	9:38 AM	28.67	64	-	-52	23.9	23.9	2.8	--	--	--	--
GMSG-29-SVE System	06/13/00	9:43 AM	28.67	64	-	-50	23.5	23.6	2.3	--	--	--	--
GMSG-29-SVE System	06/13/00	9:53 AM	28.67	64	-	-50	23.5	23.7	2.3	--	--	--	--
GMSG-29-SVE System	06/13/00	10:03 AM	28.67	64	-	-50	23.5	23.7	2.2	--	--	--	--
GMSG-29-SVE System	06/13/00	10:13 AM	28.67	64	-	-50	23.5	23.2	2	--	--	--	--
GMSG-29-SVE System	06/13/00	10:23 AM	28.67	64	-	-49	23.1	23.2	1.9	--	--	--	--
GMSG-29-SVE System	06/13/00	10:33 AM	28.64	67	-	-50	22.7	22.6	1.9	--	--	--	--
GMSG-29-SVE System	06/13/00	10:53 AM	28.64	67	-	-95	--	--	--	--	--	--	--
GMSG-29-SVE System	06/13/00	11:03 AM	28.64	67	-	-50	22.6	22.6	1.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-29-SVE System	06/13/00	11:13 AM	28.64	67	-	-50	27.2	26.8	0	--	--	--	--
GMSG-29-SVE System	06/13/00	11:23 AM	28.64	67	-	-50	27.3	27.4	0	--	--	--	--
GMSG-29-SVE System	06/13/00	11:33 AM	28.62	70	-	-50	27.3	27.3	0	--	--	--	--
GMSG-29-SVE System	06/13/00	12:33 PM	28.6	71	-	-48	26.1	26.1	0	--	--	--	--
GMSG-29-SVE System	06/13/00	1:33 PM	28.6	72	-	-45	25.2	25.3	0	--	--	--	--
GMSG-29-SVE System	06/13/00	2:33 PM	28.59	67	-	-47	24.5	25.4	0	--	--	--	--
GMSG-29-SVE System	06/13/00	3:33 PM	28.61	62	-	-47	23.5	24.4	0	--	--	--	--
GMSG-29-SVE System	06/13/00	4:33 PM	28.62	61	-	-47	23.5	24.6	0	--	--	--	--
GMSG-29-SVE System	06/13/00	5:33 PM	28.62	60	-	-47	22.9	24.5	0	--	--	--	--
GMSG-29-SVE System	06/14/00	9:33 AM	28.35	67	-	-47	19.3	22.9	0	--	--	--	--
GMSG-96/96A-effluent	02/02/05	9:15 AM	29.07	31	-	0.8	0	0.8	18.8	--	--	--	--
GMSG-96/96A-effluent	02/03/05	2:40 PM	28.87	48	-	0.7	0	0.8	18.5	1780	1735	-1.3	--
GMSG-96/96A-effluent	02/07/05	1:04 PM	28.87	28	T	0.8	0	0.8	18.7	1847	1780	-1.52	--
GMSG-96/96A-effluent	03/15/05	1:20 PM	28.88	31	-	1	0	0	20	418	414	1.79	--
GMSG-96/96A-effluent	04/06/05	9:11 AM	28.77	38	0.23	0.9	0.1	0.9	17.8	1294	1268	-59	--
GMSG-96/96A-effluent	05/11/05	12:25 PM	29.05	49	-	0.8	0.1	0.7	18.8	2274	1956	-0.34	--
GMSG-96/96A-effluent	07/06/05	8:21 AM	28.95	62	-	0.5	0	1.3	17.5	--	--	--	--
GMSG-96/96A-effluent	08/17/05	8:26 AM	28.92	63	-	0.4	0	1.2	17.6	2325	2295	-2.56	--
GMSG-96/96A-effluent	09/13/05	1:47 PM	28.49	86	-	0.3	0.1	1.3	17.4	2691	2672	3.6	--
GMSG-96/96A-effluent	10/18/05	3:29 PM	28.57	57	-	0.4	0	1.2	17.9	4551	4500	3	--
GMSG-96/96A-effluent	11/08/05	1:55 PM	28.83	46	-	0.65	0.1	1.2	17.9	2231	2198	-0.6	--
GMSG-96/96A-effluent	12/07/05	9:10 AM	29.23	18	-	0.2	0.1	1.1	18	2713	2632	10.67	--
GMSG-96/96A-effluent	02/02/06	1:39 PM	28.39	33	-	0.1	0.1	1	17.8	4768	4668	0.44	--
GMSG-96/96A-effluent	02/22/06	10:09 AM	28.5	26	-	0.2	0	0.8	18.2	2805	2796	-5.31	--
GMSG-96/96A-effluent	03/08/06	9:55 AM	28.47	33	-	0.3	0.1	0.9	17.7	3209	3177	-1.51	--
GMSG-96/96A-effluent	04/11/06	4:31 PM	28.54	66	-	0.3	0	0.5	18.5	2412	2364	-1.09	--
GMSG-96/96A-effluent	05/10/06	8:56 AM	28.46	60	-	0.2	0	0.7	17.7	1932	1924	-0.57	--
GMSG-96/96A-effluent	06/21/06	1:54 PM	28.5	86	-	1.1	0.1	0.7	17.6	5990	5887	-1.22	--
GMSG-96/96A-effluent	07/19/06	9:48 AM	28.84	79	-	3.7	0	0.2	18.9	316	312	-0.34	--
GMSG-96/96A-effluent	08/09/06	9:19 AM	28.86	68	-	3.9	0	0.2	18.5	543	535	3.66	--
GMSG-96/96A-effluent	09/20/06	8:47 AM	28.78	48	-	3.7	0	0.5	19.9	1655	1638	1.18	--
GMSG-96/96A-effluent	10/31/06	1:52 PM	28.64	37	-	3.5	0	0.5	20	734	721	0.7	--
GMSG-96/96A-effluent	11/08/06	9:33 AM	28.28	49	-	3.4	0	0.5	19.4	1361	1260	-1.14	--
GMSG-96/96A-effluent	12/20/06	10:08 AM	28.88	37	-	3.9	0	0.4	20.4	1067	1041	-1.12	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-96/96A-effluent	01/24/07	8:42 AM	28.81	2	-	4.1	0	0.4	20.4	1468	1426	-0.79	--
GMSG-96/96A-effluent	02/08/07	1:59 PM	28.76	18	-	4	0	0.5	20	1037	838	2.04	--
GMSG-96/96A-effluent	03/13/07	3:07 PM	28.4	65	-	3.7	0	0.5	19.8	1321	1251	7.32	--
GMSG-96/96A-effluent	04/19/07	3:32 PM	28.92	66	-	3.7	0.1	0.4	20.6	859	705	-5.83	--
GMSG-96/96A-effluent	05/30/07	9:33 AM	28.85	80	-	3.3	0	0.3	19.3	1156	957	-5.77	--
GMSG-96/96A-effluent	06/13/07	10:10 AM	28.98	80	-	43.2	0	0.3	18.9	1429	1390	-6.08	--
GMSG-96/96A-effluent	07/18/07	9:12 AM	29.91	69	-	4	0	0.2	19.1	599	583	-3.05	--
GMSG-96/96A-effluent	08/29/07	9:35 AM	30.13	69	-	3.8	0	0.2	19	1008	997	0.37	--
GMSG-96/96A-effluent	09/19/07	10:52 AM	30.02	71	-	3.8	0.1	0.3	19.1	632	570	3.22	--
GMSG-96/96A-effluent	10/17/07	11:32 AM	29.89	57	-	3.8	0.1	0.3	19.3	1137	942	0.19	--
GMSG-96/96A-effluent	11/21/07	9:38 AM	30.14	34	-	4	0	0.3	20.1	1147	1138	1.42	--
GMSG-96/96A-effluent	12/26/07	10:24 AM	30	27	-	4.2	0	0.3	20.1	1603	1598	-0.25	--
GMSG-96/96A-influent	02/02/05	9:14 AM	29.07	31	-	-68	--	--	--	--	--	--	--
GMSG-96/96A-influent	02/03/05	2:39 PM	28.87	48	-	-68.3	--	--	--	--	--	--	--
GMSG-96/96A-influent	02/07/05	1:03 PM	28.87	28	T	-68	--	--	--	--	--	--	--
GMSG-96/96A-Influent	03/15/05	1:15 PM	28.88	31	-	-69.1	--	--	--	--	--	--	--
GMSG-96/96A-Influent	04/06/05	9:10 AM	28.77	38	0.23	-69.3	--	--	--	--	--	--	--
GMSG-96/96A-influent	05/11/05	12:23 PM	29.05	49	-	-68	0.5	3	14.7	--	--	--	--
GMSG-96/96A-influent	07/06/05	8:15 AM	28.95	62	-	-54.9	0.4	4.2	13.3	--	--	--	--
GMSG-96/96A-influent	08/17/05	8:22 AM	28.92	63	-	-54.9	0.4	4.1	13.7	--	--	-2.49	--
GMSG-96/96A-influent	09/13/05	1:44 PM	28.49	86	-	-53.2	0.5	4.2	13.3	962	951	5.68	--
GMSG-96/96A-influent	10/18/05	3:25 PM	28.57	57	-	-36	1	4	14	--	--	--	--
GMSG-96/96A-influent	11/08/05	1:49 PM	28.83	46	-	-58	0.4	4	14	-2.52	-2.86	-0.83	--
GMSG-96/96A-influent	12/07/05	9:06 AM	29.23	18	-	-60.5	0.4	3.6	14.4	3.68	2.31	10.09	--
GMSG-96/96A-influent	02/02/06	1:33 PM	28.39	33	-	-59	0.5	3.6	14.1	1.98	-1.37	0.55	--
GMSG-96/96A-influent	02/22/06	10:04 AM	28.5	26	-	-59.1	0.6	3.4	14.3	-8.2	-6.35	-4.5	--
GMSG-96/96A-influent	03/08/06	9:51 AM	28.47	33	-	-58.7	0.4	2.9	14.6	-4.3	-4.17	-2.19	--
GMSG-96/96A-influent	04/11/06	4:26 PM	28.53	68	-	-56.3	0.2	2.5	14.6	-4.48	-4.07	-1.43	--
GMSG-96/96A-influent	05/10/06	8:53 AM	28.46	60	-	-55.6	0.2	2.5	14.5	-2.82	-2.78	-0.76	--
GMSG-96/96A-influent	06/21/06	1:51 PM	28.5	86	-	-48	0.7	4.3	11.4	-6	-5.83	-1.28	--
GMSG-96/96A-influent	07/19/06	9:45 AM	28.84	79	-	-27.1	0.7	4.2	12.4	2601	2597	-0.28	--
GMSG-96/96A-influent	08/09/06	9:15 AM	28.86	68	-	-27.4	0.7	4.2	12.3	4117	4087	-1.59	--
GMSG-96/96A-influent	09/20/06	8:43 AM	28.78	48	-	-29	1	5.1	12.6	3.09	2.68	1.46	--
GMSG-96/96A-influent	10/31/06	1:49 PM	28.64	37	-	-29.2	0.5	4.6	13.1	1.51	1.46	0.54	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-96/96A-influent	11/08/06	9:30 AM	28.28	49	-	-28.7	0.4	4.6	13.2	-1.12	-1.06	-1.22	--
GMSG-96/96A-influent	12/20/06	10:05 AM	28.88	37	-	-29	0.3	4.3	13.8	-1.14	-0.97	-0.44	--
GMSG-96/96A-influent	01/24/07	8:38 AM	28.81	2	-	-31.1	0.4	4.7	12.8	1.16	1.03	-0.27	--
GMSG-96/96A-influent	02/08/07	1:57 PM	28.76	18	-	-31.1	0.2	4.8	12.7	3.29	1.37	2.5	--
GMSG-96/96A-influent	03/13/07	3:04 PM	28.4	65	-	-28.7	0.4	5	11.9	-0.68	-0.19	7.43	--
GMSG-96/96A-influent	04/19/07	3:29 PM	28.92	66	-	-28.2	0.6	4	13.9	10.85	8.73	-5.39	--
GMSG-96/96A-influent	05/30/07	9:30 AM	28.85	80	-	-26.9	0.7	4	13.3	-7.78	-7.4	-6.48	--
GMSG-96/96A-influent	06/13/07	10:06 AM	28.98	80	-	-26.7	0.8	4	12.7	7842	7651	-6.33	--
GMSG-96/96A-influent	07/18/07	9:08 AM	29.91	69	-	-20.7	0.9	4.5	12.3	-265	-1.43	-4.06	--
GMSG-96/96A-influent	08/29/07	9:32 AM	30.13	69	-	-20.6	0.8	4.7	12.3	5.15	4.7	-6.1	--
GMSG-96/96A-influent	09/19/07	10:48 AM	30.02	71	-	-20.1	0.9	4.8	12.5	4972	4957	0.58	--
GMSG-96/96A-influent	10/17/07	11:30 AM	29.89	57	-	-21.2	1.1	4.8	12.2	--	--	--	--
GMSG-96/96A-influent	11/21/07	9:35 AM	30.14	34	-	-22.2	0.8	4.7	13.2	1.81	1.56	2.34	--
GMSG-96/96A-influent	12/26/07	10:22 AM	30	27	-	-22.9	1.1	4.9	12.7	--	--	--	--
GMSG-123-effluent	07/06/05	9:31 AM	28.96	69	-	0.2	0	0	20	--	--	--	--
GMSG-123-effluent	08/12/05	10:40 AM	28.61	76	-	0.2	0	0	19.8	1984	1855	-1.06	--
GMSG-123-effluent	09/08/05	4:25 PM	28.91	71.06	-	0.2	0	0	19.9	2870	2856	1.17	--
GMSG-123-effluent	10/20/05	1:55 PM	28.88	51	-	0.09	0.1	0	19.9	563	518	-0.62	--
GMSG-123-effluent	11/02/05	2:55 PM	28.58	52	-	0.07	0.3	0	19.3	3210	3175	-0.82	--
GMSG-123-effluent	12/05/05	12:21 PM	28.74	9	-	0	0.4	0	19	5643	5335	-0.4	--
GMSG-123-effluent	01/10/06	3:40 PM	28.81	28	-	0	0.5	0	19	6556	6471	-3.12	--
GMSG-123-effluent	02/13/06	10:10 AM	28.44	16	-	0	0.2	0	19.2	1869	1744	1.03	--
GMSG-123-effluent	03/08/06	10:17 AM	28.47	33	-	0	0.4	0	19	7209	7151	-1.32	--
GMSG-123-effluent	04/13/06	1:45 PM	28.72	65	-	0	0	0	19.5	4211	4196	-1.42	--
GMSG-123-effluent	05/17/06	11:03 AM	28.39	60	T	0	0	0	19	5437	5332	-0.03	--
GMSG-123-effluent	06/02/06	2:22 PM	28.81	72	-	0	0	0	19.1	2246	2198	-4.08	--
GMSG-123-effluent	07/17/06	4:18 PM	28.67	86	-	0	0	0	18.9	2180	2098	0.71	--
GMSG-123-effluent	08/15/06	2:01 PM	28.81	76	-	0	0	0	19.3	687	656	-0.08	--
GMSG-123-effluent	09/18/06	10:19 AM	28.4	59	-	0	0	0	20.4	2245	2156	-0.23	--
GMSG-123-effluent	10/05/06	11:14 AM	29.19	53	-	0	0	0	20.6	693	678	-1.52	--
GMSG-123-effluent	11/06/06	1:42 PM	28.78	52	-	0	0	0	20	4963	4802	-1.21	--
GMSG-123-effluent	12/18/06	1:27 PM	29.08	31	-	0	0	0	20.4	734	694	-1.14	--
GMSG-123-effluent	01/18/07	12:50 PM	28.66	21	-	0	0	0	19.5	8586	8206	1.79	--
GMSG-123-effluent	02/06/07	3:34 PM	28.81	9	-	0	0	0	19.8	5162	4197	-0.36	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
GMSG-123-effluent	03/09/07	1:30 PM	28.55	44	-	0	0	0	20.1	7110	6314	-2.8	--
GMSG-123-effluent	04/16/07	11:25 AM	28.85	56	-	0	0	0	20.3	1518	1497	1.3	--
GMSG-123-effluent	05/25/07	1:15 PM	29	66	-	0	0	0	20.3	1192	917	-7.93	--
GMSG-123-effluent	06/13/07	2:40 PM	28.91	85	-	0	3.7	0.3	17.6	--	--	--	--
GMSG-123-effluent	07/11/07	11:41 AM	29.88	70	-	0	2	0.4	17.6	--	--	--	--
GMSG-123-effluent	08/29/07	2:08 PM	30.13	75	-	0	1.2	0.7	17.4	--	--	--	--
GMSG-123-effluent	09/19/07	1:26 PM	30.08	73	-	0	0.9	0.7	17.6	1.25%	1.23%	-0.81	--
GMSG-123-effluent	10/16/07	11:21 AM	29.92	52	0.08	0	1.2	1	17.2	--	--	--	--
GMSG-123-effluent	11/20/07	2:55 PM	30.02	38	-	0	0.6	0.8	18.7	9485	8860	-0.03	--
GMSG-123-effluent	12/26/07	1:29 PM	29.92	31	-	0	0.8	1	18.3	1.37%	1.35%	0.1	--
GMSG-123-influent	07/06/05	9:28 AM	28.96	65	-	-3.6	32.2	1.8	11.1	--	--	--	--
GMSG-123-influent	08/12/05	10:35 AM	28.61	76	-	-4.5	15.3	0.5	15.5	--	--	--	--
GMSG-123-influent	09/08/05	4:20 PM	28.91	71.06	-	-4.9	17.9	0.5	15.2	--	--	--	--
GMSG-123-influent	10/20/05	1:50 PM	28.88	51	-	-4.7	11.3	0.5	16.6	0.83	0.76	1.66	--
GMSG-123-influent	11/02/05	2:50 PM	28.58	52	-	-4.7	17.8	0.8	14.3	-1.65	-0.96	0.28	--
GMSG-123-influent	12/05/05	12:15 PM	28.74	9	-	-4.9	14	0.7	15.8	1.64	1.32	0.62	--
GMSG-123-influent	01/10/06	3:35 PM	28.81	28	-	-4.4	16.3	0.8	14.9	--	--	--	--
GMSG-123-influent	02/13/06	10:04 AM	28.44	16	-	-5	39.6	1	9.1	--	--	--	--
GMSG-123-influent	03/08/06	10:13 AM	28.47	33	-	-4.5	19.1	0.6	13.8	2.62	1.83	-1.2	--
GMSG-123-influent	04/13/06	1:42 PM	28.72	65	-	-4.3	10.9	0.5	15.7	3.6	2.26	6.71	--
GMSG-123-influent	05/17/06	10:58 AM	28.39	60	T	-4.7	16.8	0.6	13.4	--	--	0.23	--
GMSG-123-influent	06/02/06	2:20 PM	28.81	72	-	-4.3	12.7	0.7	14.4	--	--	--	--
GMSG-123-influent	07/17/06	4:14 PM	28.67	86	-	-4.2	8.5	0.5	16.6	1.46	--	--	--
GMSG-123-influent	08/15/06	1:58 PM	28.81	76	-	-4.6	5.5	0.5	16.8	4523	4372	0.39	--
GMSG-123-influent	09/18/06	10:17 AM	28.4	59	-	-4.8	9.1	1	16.7	--	--	--	--
GMSG-123-influent	10/05/06	11:11 AM	29.19	53	-	-5	4.3	1	18.1	0.23	-0.15	-0.72	--
GMSG-123-influent	11/06/06	1:42 PM	28.78	52	-	-5	12.9	1.1	15.2	2.56	1.43	4.7	--
GMSG-123-influent	12/18/06	1:24 PM	29.08	31	-	-5	2.2	0.7	19	--	--	--	--
GMSG-123-influent	01/18/07	12:47 PM	28.66	21	-	-5.4	16.3	1.3	13.3	--	--	--	--
GMSG-123-influent	02/06/07	3:31 PM	28.81	9	-	-5	11.4	1.3	14.7	--	--	--	--
GMSG-123-influent	03/09/07	1:27 PM	28.56	42	-	-4.9	13.2	1.4	14.2	--	--	--	--
GMSG-123-influent	04/16/07	11:23 AM	28.85	56	-	-4.7	5.1	0.9	17.6	--	--	--	--
GMSG-123-influent	05/25/07	1:13 PM	29	66	-	-5	4.5	0.7	17.7	--	--	--	--
GMSG-123-influent	06/13/07	2:36 PM	28.91	85	-	-30.9	13.9	1.2	12.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-123-influent	07/11/07	11:39 AM	29.88	70	-	-32.3	6	1.3	13.8	--	--	--	--
GMSG-123-influent	08/29/07	2:04 PM	30.13	75	-	-32.4	3.4	1.9	13.6	--	--	--	--
GMSG-123-influent	09/19/07	1:24 PM	30.08	73	-	-32	2.5	1.8	14.8	--	--	--	--
GMSG-123-influent	10/16/07	11:18 AM	29.92	52	0.08	-33.8	3.6	2.7	12.8	--	--	--	--
GMSG-123-influent	11/20/07	2:52 PM	30.02	38	-	-35.3	2	2.2	15.2	--	--	--	--
GMSG-123-influent	12/26/07	1:27 PM	29.92	31	-	-35.3	2.1	2.1	15.7	--	--	--	--
GMSG-126-effluent	04/15/04	11:17 AM	28.82	54	-	--	--	--	--	--	--	--	--
GMSG-126-effluent	04/15/04	11:28 AM	28.82	54	-	--	--	--	--	--	--	--	--
GMSG-126-effluent	04/15/04	11:55 AM	28.8	57	-	-0.1	20.6	0.5	6.8	--	--	--	--
GMSG-126-effluent	04/15/04	12:10 PM	28.8	57	-	0.1	20.2	0.5	5.6	--	--	--	--
GMSG-126-effluent	04/15/04	12:27 PM	28.8	57	-	0.8	19.8	0.5	5.8	--	--	--	--
GMSG-126-effluent	04/15/04	12:57 PM	28.78	58	-	0.5	19.6	0.5	5.7	--	--	--	--
GMSG-126-effluent	06/05/04	12:52 PM	28.75	71	-	--	7.9	0.4	13	--	--	--	--
GMSG-126-effluent	06/05/04	3:10 PM	28.73	66	T	1.2	18.2	0.5	6.6	--	--	--	--
GMSG-126-effluent	06/07/04	7:38 AM	28.66	69	-	1.1	4.3	0.8	11.8	--	--	--	--
GMSG-126-effluent	06/08/04	8:52 AM	28.66	80	-	1.1	1.7	0.9	12.3	--	--	--	--
GMSG-126-effluent	06/09/04	9:18 AM	28.89	56	T	1.3	1.3	0.9	14.3	--	--	--	--
GMSG-126-effluent	06/10/04	9:05 AM	28.9	59	-	1.2	0.8	0.8	18.8	--	--	--	--
GMSG-126-effluent	06/11/04	3:02 PM	28.76	60	-	1.2	--	--	--	9490	9300	0	--
GMSG-126-effluent	06/14/04	7:43 PM	28.67	64	-	1.1	0.1	0.4	17.4	--	--	--	--
GMSG-126-effluent	06/21/04	11:40 AM	28.44	74	-	1.261	0	0.3	18.5	--	--	--	--
GMSG-126-effluent	06/28/04	12:45 PM	28.81	74	-	0.003	0	0.4	18	--	--	--	--
GMSG-126-effluent	01/18/05	11:00 AM	29.09	4	-	1.1	0	0	19.3	8.08	6	0.12	--
GMSG-126-effluent	02/02/05	1:39 PM	28.99	39	-	1	0	0	20.3	-0.88	-0.92	-1.62	--
GMSG-126-effluent	02/04/05	2:56 PM	28.81	45	-	1	0.1	0.7	17.3	5635	5600	1.82	--
GMSG-126-effluent	02/15/05	2:19 PM	28.71	26	-	1	0	0.8	17.5	1923	1880	0.08	--
GMSG-126-effluent	02/22/05	11:11 AM	28.94	23	T	0.1	0	0.5	18.3	1546	1530	-0.36	--
GMSG-126-effluent	03/15/05	9:09 AM	28.91	23	-	--	--	--	--	--	--	--	--
GMSG-126-effluent	03/21/05	2:30 PM	29	33	-	--	--	--	--	--	--	--	--
GMSG-126-effluent	03/23/05	2:10 PM	28.8	37	-	0.1	0	0.6	18.3	776	775	-9.19	--
GMSG-126-effluent	04/08/05	12:11 PM	28.89	59	-	0.2	0	0.5	19	614	608	-0.45	--
GMSG-126-influent	04/15/04	11:05 AM	28.82	54	-	--	--	--	--	--	--	--	--
GMSG-126-influent	04/15/04	11:25 AM	28.82	54	-	--	--	--	--	--	--	--	--
GMSG-126-influent	04/15/04	12:11 PM	28.8	57	-	-8.1	27.6	0.9	0.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-126-influent	04/15/04	12:25 PM	28.8	57	-	-34.4	27.1	0.9	0.5	--	--	--	--
GMSG-126-influent	04/15/04	12:55 PM	28.78	58	-	-34.5	26.7	0.9	0.5	--	--	--	--
GMSG-126-influent	06/05/04	12:50 PM	28.75	71	-	-49.2	8.8	0.4	12.1	--	--	--	--
GMSG-126-influent	06/05/04	3:06 PM	28.73	66	T	-55.3	18.2	0.5	6.4	--	--	--	--
GMSG-126-influent	06/07/04	7:34 AM	28.66	69	-	-63.2	0	0	20.2	--	--	--	--
GMSG-126-influent	06/08/04	8:49 AM	28.66	80	-	-63.5	2.7	1.2	9.2	--	--	--	--
GMSG-126-influent	06/09/04	9:14 AM	28.89	56	T	-64.4	1.8	1.2	12.2	--	--	--	--
GMSG-126-influent	06/10/04	9:01 AM	28.9	59	-	-64.4	0	0	19.6	--	--	--	--
GMSG-126-influent	06/11/04	3:00 PM	28.76	60	-	-64.5	--	--	--	--	--	0	--
GMSG-126-influent	06/14/04	7:43 PM	28.67	64	-	-64.3	0.3	0.5	16.1	--	--	--	--
GMSG-126-influent	06/21/04	11:37 AM	28.44	74	-	--	0	0.4	18.4	--	--	--	--
GMSG-126-influent	06/28/04	12:43 PM	28.81	74	-	-79.5	0	0.5	17.4	--	--	--	--
GMSG-126-influent	01/18/05	10:58 AM	29.09	4	-	-49.1	--	--	--	--	--	--	--
GMSG-126-influent	02/02/05	1:38 PM	28.99	39	-	-49.7	--	--	--	--	--	--	--
GMSG-126-influent	02/04/05	2:55 PM	28.81	45	-	-56.5	--	--	--	--	--	--	--
GMSG-126-influent	02/15/05	2:18 PM	28.71	26	-	-76.9	--	--	--	--	--	--	--
GMSG-126-influent	02/22/05	11:10 AM	28.94	23	T	-78.2	--	--	--	--	--	--	--
GMSG-126-Influent	03/15/05	9:08 AM	28.91	23	-	--	--	--	--	--	--	--	--
GMSG-126-Influent	03/21/05	2:24 PM	29.01	33	-	--	--	--	--	--	--	--	--
GMSG-126-influent	03/23/05	2:08 PM	28.8	37	-	-76.3	--	--	--	--	--	--	--
GMSG-126-influent	04/08/05	12:10 PM	28.89	59	-	-76.5	0	0	19.6	--	--	--	--
GMSG-127-effluent	04/22/04	11:40 AM	29	46	-	1.2	1.9	7	8.7	--	--	--	--
GMSG-127-effluent	04/23/04	7:52 AM	28.95	34	-	1.3	0.3	5.7	12.9	--	--	--	--
GMSG-127-effluent	04/28/04	2:27 PM	28.29	71	-	1.2	0	2.8	16.1	--	--	--	--
GMSG-127-effluent	09/28/04	3:56 PM	29.03	61	-	1.1	8	9.2	1	--	--	--	--
GMSG-127-effluent	09/29/04	12:25 PM	28.92	64	-	1.5	0.1	7.8	6.9	--	--	--	--
GMSG-127-effluent	10/01/04	9:09 AM	28.63	57	-	1.3	0	5.4	13	--	--	--	--
GMSG-127-effluent	10/07/04	11:53 AM	28.95	70	-	1.3	0	2.6	16.8	--	--	--	--
GMSG-127-effluent	10/11/04	12:13 PM	29.02	64	-	1.2	0	2.2	17.5	--	--	--	--
GMSG-127-effluent	10/20/04	11:35 AM	28.9	52	-	1.2	0	1.6	18	--	--	--	--
GMSG-127-effluent	10/26/04	2:27 PM	29.03	47	-	1.4	0.1	1.9	17.2	--	--	--	--
GMSG-127-effluent	11/02/04	8:27 AM	28.87	39	-	1.3	0	1.3	18.3	--	--	--	--
GMSG-127-effluent	11/08/04	5:14 PM	29.16	30	-	0.1	0	1.2	18.7	--	--	--	--
GMSG-127-effluent	11/17/04	8:42 AM	28.9	47	-	1.4	0	1.1	18.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-127-effluent	12/09/04	8:30 AM	28.6	34	-	1.2	0	0.9	18.4	--	--	--	--
GMSG-127-effluent	01/18/05	12:40 PM	28.94	7	-	1.9	0	0.9	18.3	1046	1028	-0.28	--
GMSG-127-effluent	02/28/05	10:23 AM	28.46	26	T	1.9	0	0.7	18.9	1771	1760	3.25	--
GMSG-127-effluent	03/14/05	1:35 PM	28.77	33	-	1.7	0	0.6	19.3	1294	1241	0.07	--
GMSG-127-effluent	04/07/05	9:51 AM	28.84	51	-	2	0.1	0.7	18.7	--	--	--	--
GMSG-127-effluent	05/11/05	1:49 PM	29.1	46	-	2.1	0.2	0.9	18.2	2018	2015	0.95	--
GMSG-127-effluent	06/10/05	10:33 AM	28.72	81	-	2	0	0.6	18.9	2069	2050	-0.8	--
GMSG-127-effluent	07/01/05	11:07 AM	28.66	59	-	2	0.8	0.9	18	2.31	2.29	0.19	--
GMSG-127-effluent	08/12/05	8:48 AM	28.6	69	-	2	0.2	1.3	16.8	7220	7176	2.01	--
GMSG-127-effluent	09/13/05	4:48 PM	28.5	78.08	-	1.9	0	1.6	16.7	2235	2198	0.11	--
GMSG-127-effluent	10/20/05	4:05 PM	28.87	51	-	+>5	0	1	18.5	3278	3270	8.6	--
GMSG-127-effluent	11/02/05	3:30 PM	28.53	51	-	2.3	1.6	1.9	15.3	3.42%	3.42%	80.15	--
GMSG-127-effluent	12/05/05	2:28 PM	28.7	10	-	1.8	0.1	1	18.3	1616	1594	-1.04	--
GMSG-127-effluent	01/25/06	11:56 AM	29	26	T	2.2	0	0.7	18.5	692	674	1.11	--
GMSG-127-effluent	02/13/06	11:43 AM	28.41	-	-	2.2	0.1	0.7	18	901	892	5.34	--
GMSG-127-effluent	03/08/06	10:51 AM	28.46	34	-	2.1	0	0.6	18.2	1820	1764	1.57	--
GMSG-127-effluent	04/13/06	11:26 AM	28.78	62	-	2	0	0.4	18.6	2631	2618	2.35	--
GMSG-127-effluent	05/17/06	1:15 PM	28.37	62	0.01	1.8	0	0.4	18.4	1646	1633	2.47	--
GMSG-127-effluent	06/02/06	1:26 PM	28.81	76	-	2.1	0	0.5	18.5	1592	1586	1.43	--
GMSG-127-effluent	07/18/06	1:11 PM	28.92	82	-	2.1	0	0.6	17.9	1066	1063	22.88	--
GMSG-127-effluent	08/15/06	2:27 PM	28.81	76	-	1.8	0	0.7	18	463	461	1.86	--
GMSG-127-effluent	09/18/06	10:53 AM	28.39	62	-	2	0	1.3	19	1421	1388	2.88	--
GMSG-127-effluent	10/05/06	3:20 PM	29.13	58	-	1.8	0	1.3	19.3	645	626	2.48	--
GMSG-127-effluent	11/06/06	2:16 PM	28.78	52	-	1.8	0	1.2	18.9	1386	1374	1.7	--
GMSG-127-effluent	12/18/06	2:41 PM	29.08	32	-	2	0	1	19.3	1360	1221	-1.16	--
GMSG-127-effluent	01/18/07	11:05 AM	28.73	18	-	0.2	0	1	18.6	1500	1396	1.5	--
GMSG-127-effluent	02/06/07	2:50 PM	28.81	8	-	2.2	0	1	19.7	1383	1350	0.94	--
GMSG-127-effluent	03/09/07	10:56 AM	28.61	36	-	2.1	0	1	19.4	1250	1178	-9.17	--
GMSG-127-effluent	04/16/07	1:37 PM	28.79	62	-	1.9	0	0.8	19.7	1156	1144	-9.83	--
GMSG-127-effluent	05/25/07	11:27 AM	29.02	62	-	1.9	0	0.7	19.2	1494	1398	-2.13	--
GMSG-127-effluent	06/15/07	9:58 AM	28.83	86	-	1.9	0.1	0.7	18	1525	1483	-1.74	--
GMSG-127-effluent	07/11/07	10:49 AM	29.88	69	-	2	0	0.9	18.3	1201	1187	-9.11	--
GMSG-127-effluent	08/29/07	1:53 PM	30.13	75	-	1.9	0.2	1.1	17.9	1260	1217	-0.33	--
GMSG-127-effluent	09/19/07	11:27 AM	30.02	71	-	2	0.1	1.2	17.7	1928	1910	2.61	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-127-effluent	10/16/07	1:59 PM	29.87	54	T	2	0.1	1.2	17.6	1604	1586	0.29	--
GMSG-127-effluent	11/20/07	2:31 PM	30.02	38	-	2.1	0	1.2	18.7	1495	1453	-0.04	--
GMSG-127-effluent	12/26/07	11:40 AM	29.94	29	-	2.2	0	1.1	18.8	1402	1387	0.13	--
GMSG-127-influent	04/22/04	11:36 AM	29	46	-	-19.4	--	--	--	--	--	--	--
GMSG-127-influent	04/23/04	7:51 AM	28.95	34	-	-25.9	--	--	--	--	--	--	--
GMSG-127-influent	04/28/04	2:24 PM	28.29	71	-	-24	--	--	--	--	--	--	--
GMSG-127-influent	09/28/04	3:53 PM	29.03	61	-	-22.6	--	--	--	--	--	--	--
GMSG-127-influent	09/29/04	12:23 PM	28.92	64	-	-30.4	--	--	--	--	--	--	--
GMSG-127-influent	10/01/04	9:08 AM	28.63	57	-	-31	--	--	--	--	--	--	--
GMSG-127-influent	10/07/04	11:52 AM	28.95	70	-	-31.8	--	--	--	--	--	--	--
GMSG-127-influent	10/11/04	12:12 PM	29.02	64	-	-31.5	--	--	--	--	--	--	--
GMSG-127-influent	10/20/04	11:34 AM	28.9	52	-	-32.8	--	--	--	--	--	--	--
GMSG-127-influent	10/26/04	2:26 PM	29.03	47	-	-30.6	--	--	--	--	--	--	--
GMSG-127-influent	11/02/04	8:26 AM	28.87	39	-	-34.2	--	--	--	--	--	--	--
GMSG-127-influent	11/08/04	5:13 PM	29.16	30	-	-8.7	--	--	--	--	--	--	--
GMSG-127-influent	11/09/04	10:00 AM	29.14	31	-	--	--	--	--	--	--	--	--
GMSG-127-influent	11/15/04	11:19 AM	29.24	38	-	--	--	--	--	--	--	--	--
GMSG-127-influent	11/17/04	8:40 AM	28.9	47	-	-31.3	--	--	--	--	--	--	--
GMSG-127-influent	11/19/04	7:50 AM	28.97	38	-	--	--	--	--	--	--	--	--
GMSG-127-influent	11/21/04	7:37 AM	29	30	-	--	--	--	--	--	--	--	--
GMSG-127-influent	12/09/04	8:29 AM	28.59	34	-	-37.8	--	--	--	--	--	--	--
GMSG-127-influent	01/18/05	12:38 PM	28.94	7	-	-29.7	--	--	--	--	--	--	--
GMSG-127-influent	02/28/05	10:21 AM	28.46	26	T	-30.3	0	0.7	18.9	--	--	--	--
GMSG-127-Influent	03/14/05	1:32 PM	28.77	33	-	-30.4	0	0.6	19.3	412	398	0.03	--
GMSG-127-influent	04/05/05	10:15 AM	28.57	59	-	--	--	--	--	--	--	--	--
GMSG-127-influent	04/07/05	9:50 AM	28.84	51	-	-30.2	0.1	0.7	18.6	--	--	--	--
GMSG-127-influent	05/11/05	1:47 PM	29.1	46	-	-30.4	0.2	0.9	18.2	5040	5018	-0.53	--
GMSG-127-influent	06/10/05	10:31 AM	28.72	81	-	-28.7	0	0.6	18.6	--	--	--	--
GMSG-127-influent	07/01/05	11:00 AM	28.66	59	-	-28.1	0.9	0.9	17.9	1.02	1.01	0.05	--
GMSG-127-influent	08/12/05	8:43 AM	28.6	69	-	-27.9	0.2	1.3	16.8	3189	3172	1.03	--
GMSG-127-influent	09/13/05	4:44 PM	28.5	78.08	-	-27.6	0	1.6	16.7	1139	1133	0.19	--
GMSG-127-influent	10/20/05	4:00 PM	28.87	51	-	-26	0	0.8	18.7	1068	1053	2.51	--
GMSG-127-influent	11/02/05	3:25 PM	28.58	52	-	-26	1.6	1.8	15.3	54.56	51.85	75.81	--
GMSG-127-influent	12/05/05	2:20 PM	28.7	10	-	-31.6	0.1	1	18.2	-2.68	-2.53	-2.37	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-127-influent	01/25/06	11:51 AM	29	26	T	-28	0	0.7	18.4	0.32	0.32	0.92	--
GMSG-127-influent	02/13/06	11:40 AM	28.41	-	-	-28.4	0.1	0.8	17.9	4.02	-1.21	4.48	--
GMSG-127-influent	03/08/06	10:48 AM	28.46	34	-	-27.8	0	0.6	18.1	0.65	0.38	1.19	--
GMSG-127-influent	04/13/06	11:19 AM	28.78	62	-	-26.4	0	0.5	18.5	1238	937	9.08	--
GMSG-127-influent	05/17/06	1:12 PM	28.37	62	0.01	-25.7	0	0.4	18.3	970	845	5.86	--
GMSG-127-influent	06/02/06	1:23 PM	28.81	76	-	-25.1	0.1	0.5	18.3	682	565	1.03	--
GMSG-127-influent	07/18/06	1:08 PM	28.92	82	-	-26.3	0	0.6	17.7	10.84	10.53	14.63	--
GMSG-127-influent	08/15/06	2:23 PM	28.81	76	-	-27.1	0	0.8	17.9	1.28	0.44	1.5	--
GMSG-127-influent	09/18/06	10:51 AM	28.39	62	-	-28.6	0	1.4	18.8	5.15	3.78	4.24	--
GMSG-127-influent	10/05/06	3:17 PM	29.13	58	-	-29.2	0	1.3	19.3	3.46	1.25	0.14	--
GMSG-127-influent	11/06/06	2:13 PM	28.78	52	-	-28.6	0	1.1	18.9	3.15	2.56	0.43	--
GMSG-127-influent	12/18/06	2:38 PM	29.08	32	-	-30	0	1	19.3	-0.85	-0.59	-0.81	--
GMSG-127-influent	01/18/07	11:01 AM	28.73	18	-	-7.2	0	1.1	18.4	0.14	0.06	1.52	--
GMSG-127-influent	02/06/07	2:46 PM	28.81	8	-	-31	0	0	20.5	-0.72	-0.43	-0.38	--
GMSG-127-influent	03/09/07	10:53 AM	28.61	36	-	-28.5	0	0.9	19.3	-6.38	-5.33	-5.6	--
GMSG-127-influent	04/16/07	1:37 PM	28.79	62	-	-26.3	0	0.7	19.8	-8.93	-8.34	-10.61	--
GMSG-127-influent	05/25/07	11:22 AM	29.02	62	-	-26.9	0	0.4	19.1	-6.46	-5.98	-3.43	--
GMSG-127-influent	06/15/07	9:54 AM	28.83	86	-	-26.3	0.1	0.3	18.6	-4.29	-3.67	-2.3	--
GMSG-127-influent	07/11/07	10:46 AM	29.88	69	-	-27.2	0	0.2	19.3	-9.85	-9.76	-8.09	--
GMSG-127-influent	08/29/07	1:49 PM	30.13	75	-	-27	0	0	19.6	0.05	-1.32	1.92	--
GMSG-127-influent	09/19/07	11:24 AM	30.02	71	-	-27.8	0.1	1.1	17.7	484	441	2.49	--
GMSG-127-influent	10/16/07	1:55 PM	29.87	54	T	-28.4	0.1	1.2	17.5	0.08	-0.12	0.47	--
GMSG-127-influent	11/20/07	2:27 PM	30	38	-	-29.5	0.1	1.2	18.7	-0.33	-0.28	-0.17	--
GMSG-127-influent	12/26/07	11:37 AM	29.94	29	-	-29.2	0	1.1	18.7	-0.99	-0.89	0.63	--
GMSG-135-effluent	09/09/04	11:17 AM	28.96	66	-	1.6	0.1	1.1	18.6	--	--	--	--
GMSG-135-effluent	09/16/04	9:58 AM	28.68	60	-	1.7	0.1	1.1	18.7	--	--	--	--
GMSG-135-effluent	09/24/04	3:43 PM	28.79	59	-	1.7	0	1	18.7	--	--	--	--
GMSG-135-effluent	02/14/05	12:59 PM	28.23	32	T	1.1	0.7	1.6	17.2	14600	14600	2.51	--
GMSG-135-effluent	02/15/05	1:33 PM	28.71	26	-	0.9	0.3	1.3	18.1	7268	6910	2.15	--
GMSG-135-effluent	03/11/05	11:12 AM	28.16	26	T	0.8	0.4	1.3	17.9	8626	8563	-0.4	--
GMSG-135-effluent	03/15/05	10:10 AM	28.91	28	-	1	0	1.1	18.2	8380	8250	2.5	--
GMSG-135-effluent	03/21/05	1:45 PM	29.01	33	-	0.7	0	1	18.7	5673	5575	0.7	--
GMSG-135-effluent	03/31/05	4:20 PM	28.48	41	-	1	0.4	0.9	18.5	5039	4890	1.87	--
GMSG-135-effluent	04/08/05	11:51 AM	28.89	59	-	0.2	0.2	0.7	18.9	4720	4712	0.68	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-135-effluent	05/09/05	12:45 PM	28.51	72	-	0.8	0.2	0.5	19	6647	6551	0.9	--
GMSG-135-effluent	06/15/05	9:12 AM	28.51	58	-	0.8	0	0.8	18.5	2565	2548	0.45	--
GMSG-135-effluent	06/06/06	4:03 PM	28.56	65	0.07	2.1	2.4	3.3	12.4	7.80%	7.69%	27.98	--
GMSG-135-effluent	06/15/06	10:55 AM	28.89	75	-	2	0.9	1.3	16.6	1.54%	1.50%	30.07	--
GMSG-135-effluent	07/18/06	12:02 PM	28.93	81	-	1.8	0.1	0.7	17.8	3003	2958	10.61	--
GMSG-135-effluent	08/09/06	9:35 AM	28.85	74	-	1.8	0.1	0.7	17.9	1978	1962	5.07	--
GMSG-135-effluent	09/18/06	10:03 AM	28.4	59	-	1.6	0	0.9	19.3	2624	2608	5.79	--
GMSG-135-effluent	10/05/06	11:03 AM	29.19	53	-	1.7	0	0.9	19.8	1539	1526	7.72	--
GMSG-135-effluent	11/06/06	1:29 PM	28.8	53	-	1.4	0	0.8	19.1	3660	3648	6.35	--
GMSG-135-effluent	10/29/07	1:25 PM	30.19	59	-	0	2.1	5.8	17.1	--	--	--	--
GMSG-135-effluent	10/30/07	12:49 PM	29.93	62	-	0.0-0.1	4.2	3.6	13.8	--	--	--	--
GMSG-135-effluent	11/20/07	3:08 PM	30.02	38	-	0.1	0.4	1.4	18.5	6947	6872	0.22	--
GMSG-135-effluent	12/26/07	1:39 PM	29.9	31	-	0.1	0.1	0.9	19.4	2487	2450	-0.17	--
GMSG-135-influent	09/09/04	11:16 AM	28.96	66	-	-38.2	--	--	--	--	--	--	--
GMSG-135-influent	09/16/04	9:57 AM	28.68	60	-	-39.2	--	--	--	--	--	--	--
GMSG-135-influent	09/24/04	3:42 PM	28.79	59	-	-39.1	--	--	--	--	--	--	--
GMSG-135-influent	02/14/05	12:58 PM	28.23	32	T	-46.9	--	--	--	--	--	--	--
GMSG-135-influent	02/15/05	1:32 PM	28.71	26	-	-42.2	0.3	1.3	18	--	--	--	--
GMSG-135-Influent	03/11/05	11:11 AM	28.16	26	T	-39.6	--	--	--	--	--	--	--
GMSG-135-Influent	03/15/05	10:10 AM	28.91	28	-	-39.8	0	1.2	18.2	2244	2235	-1.5	--
GMSG-135-Influent	03/21/05	1:40 PM	29.01	33	-	-38.8	0	1	18.6	--	--	--	--
GMSG-135-Influent	03/31/05	4:18 PM	28.48	41	-	-39.9	0.4	0.9	18.5	--	--	--	--
GMSG-135-influent	04/08/05	11:50 AM	28.89	59	-	-24.1	0.2	0.7	18.7	2589	2577	-0.27	--
GMSG-135-influent	05/09/05	12:40 PM	28.51	72	-	-38.7	0.2	0.5	18.9	--	--	-0.8	--
GMSG-135-influent	06/15/05	9:10 AM	28.51	58	-	-39.1	0	0.8	18.5	--	--	--	--
GMSG-135-influent	06/06/06	3:57 PM	28.56	65	0.07	-36.8	3.2	4.2	10.6	14.69	13.98	21.06	--
GMSG-135-influent	06/15/06	10:50 AM	28.89	75	-	-35.6	1.2	1.9	15.7	0.28	0.16	2.12	--
GMSG-135-influent	07/18/06	11:49 AM	28.93	81	-	-35	0.3	1	17.3	3.56	2.41	8.49	--
GMSG-135-influent	08/09/06	9:30 AM	28.85	74	-	-36.1	0.2	1	17.4	370	368	3.08	--
GMSG-135-influent	09/18/06	10:00 AM	28.4	59	-	-37.2	0	1.3	18.9	11.81	5.62	7.58	--
GMSG-135-influent	10/05/06	10:59 AM	29.19	53	-	-38.5	0	1.1	19.4	3.93	3.56	7.96	--
GMSG-135-influent	11/06/06	1:19 PM	28.8	53	-	-38.6	0	0.9	19.4	3.79	1.08	7.17	--
GMSG-135-influent	10/29/07	1:25 PM	30.19	59	-	-37.6	2.2	6	16.8	--	--	--	--
GMSG-135-influent	10/30/07	12:47 PM	29.93	62	-	-44.1	4	3.5	14.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-135-influent	11/20/07	3:04 PM	30.02	38	-	-49.1	0.4	1.3	18.6	1.82	0.93	-1.15	--
GMSG-135-influent	12/26/07	1:36 PM	29.9	31	-	-48.2	0.2	0.9	19.3	-1.63	-1.55	-0.09	--
GMSG-214R-effluent	08/17/05	11:44 AM	28.88	72	-	0	4.9	0.2	18	--	--	--	--
GMSG-214R-effluent	09/07/05	2:07 PM	29.02	68	-	0	4	0.1	18.1	--	--	--	--
GMSG-214R-effluent	09/15/05	10:34 AM	29	66.02	-	0.8	1.8	0	19.3	--	--	--	--
GMSG-214R-effluent	10/20/05	1:00 PM	28.88	48	-	0.8	0.4	0	19.9	8112	7958	0.87	--
GMSG-214R-effluent	11/04/05	12:05 PM	28.46	44	-	1.1	0	0	19.5	7.31	6.43	-0.68	--
GMSG-214R-effluent	11/11/05	9:00 AM	28.74	32	-	--	--	--	--	--	--	--	--
GMSG-214R-effluent	11/11/05	9:02 AM	28.74	32	-	--	0	0	20	--	--	--	--
GMSG-214R-effluent	11/14/05	9:16 AM	29.06	29	-	--	0	0	19.8	--	--	--	--
GMSG-214R-effluent	11/23/05	2:34 PM	27.98	33	0.01	0.01	0	0	19.5	--	--	--	--
GMSG-214R-effluent	12/01/05	1:26 PM	28.7	22	T	6.2	0	0	19.8	--	--	--	--
GMSG-214R-effluent	12/05/05	3:15 PM	28.71	10	-	0.1	0	0	19.1	-2.44	-2.19	-3.53	--
GMSG-214R-effluent	12/14/05	2:45 PM	28.65	28	T	0.1	0	0	19.7	--	--	--	--
GMSG-214R-effluent	01/13/06	2:04 PM	28.5	30	-	0	0	0	19.4	10.07	8.76	-3.5	--
GMSG-214R-effluent	02/13/06	2:56 PM	28.39	27	-	0.2	0	0	18.9	23.82	23.7	14.67	--
GMSG-214R-effluent	02/16/06	2:52 PM	28.77	18	T	0.2	--	--	--	--	--	--	--
GMSG-214R-effluent	02/16/06	2:55 PM	28.77	18	T	0.2	--	--	--	--	--	--	--
GMSG-214R-effluent	03/08/06	2:47 PM	28.42	38	-	0.2	0	0	19.1	-2.85	-2.62	-3.54	--
GMSG-214R-effluent	03/30/06	11:00 AM	28.76	51	-	--	0	0	19.5	--	--	--	--
GMSG-214R-effluent	03/30/06	1:55 PM	28.67	57	-	0.6	0	0	19.8	--	--	--	--
GMSG-214R-effluent	04/11/06	2:29 PM	28.56	73	-	0.5	0	0	19.7	-1.18	-0.8	-1.69	--
GMSG-214R-effluent	10/19/07	11:12 AM	28.98	54	T	0.1	0	0	19.4	--	--	--	--
GMSG-214R-effluent	10/26/07	10:26 AM	30.19	43	-	0.1	0	0	20.5	--	--	--	--
GMSG-214R-effluent	10/31/07	11:46 AM	--	--	--	0.2	1.8	0	20	--	--	--	--
GMSG-214R-effluent	11/21/07	10:05 AM	30.14	34	-	0.1	1.9	0	19.8	--	--	--	--
GMSG-214R-effluent	12/27/07	1:21 PM	29.97	26	-	0.2	1.9	0.1	19.7	--	--	--	--
GMSG-214R-influent	08/17/05	11:40 AM	28.88	72	-	-14	47.5	2.3	1.9	--	--	--	--
GMSG-214R-influent	09/07/05	2:04 PM	29.02	68	-	-14.2	31.6	1.4	7.9	--	--	--	--
GMSG-214R-influent	09/15/05	10:29 AM	29.01	64.94	-	-5.2	33.9	2.6	4.1	--	--	--	--
GMSG-214R-influent	10/20/05	12:50 PM	28.88	48	-	<-80	44.9	2	4.2	--	--	--	--
GMSG-214R-influent	11/04/05	12:00 PM	28.46	44	-	-4	0	0	19.4	-0.89	-0.94	-0.43	--
GMSG-214R-influent	11/08/05	2:20 PM	28.83	46	-	-12	0.3	0	19.7	--	--	--	--
GMSG-214R-influent	11/08/05	4:05 PM	28.8	46	-	-12	0.4	0	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-214R-influent	11/11/05	9:00 AM	28.74	32	-	-12	--	--	--	--	--	--	--
GMSG-214R-influent	11/11/05	9:01 AM	28.74	32	-	-20	2.4	0	19.2	--	--	--	--
GMSG-214R-influent	11/11/05	9:01 AM	28.74	32	-	-20	2.4	0	19.2	--	--	--	--
GMSG-214R-influent	11/14/05	9:15 AM	29.06	29	-	-20	0.6	0	19.4	--	--	--	--
GMSG-214R-influent	11/23/05	2:33 PM	27.98	33	0.01	-19	0.7	0	19.1	--	--	--	--
GMSG-214R-influent	12/01/05	1:25 PM	28.7	22	T	-16.7	1	0	19.4	--	--	--	--
GMSG-214R-influent	12/05/05	3:11 PM	28.71	10	-	-17.2	0.6	0	18.9	-3.9	-3.82	-3.4	--
GMSG-214R-influent	12/14/05	2:48 PM	28.65	28	T	-17.3	0	0	19.7	--	--	--	--
GMSG-214R-influent	01/13/06	1:55 PM	28.5	30	-	-22.5	0	0	19.4	-4.53	-4.32	-3.84	--
GMSG-214R-influent	02/13/06	2:51 PM	28.39	27	-	-8.7	0	0	18.8	14.06	12.72	14.59	--
GMSG-214R-influent	02/16/06	2:52 PM	28.77	18	T	-8.6	--	--	--	--	--	--	--
GMSG-214R-influent	02/16/06	2:55 PM	28.77	18	T	-11.3	--	--	--	--	--	--	--
GMSG-214R-influent	03/08/06	2:43 PM	28.42	38	-	-8.9	0	0	19.1	-4.18	-3.99	-3.92	--
GMSG-214R-influent	03/30/06	10:30 AM	28.76	51	-	-22.6	--	--	--	--	--	--	--
GMSG-214R-influent	03/30/06	11:05 AM	28.76	51	-	-4	--	--	--	--	--	--	--
GMSG-214R-influent	03/30/06	1:55 PM	28.67	57	-	-4.3	0	0	19.7	--	--	--	--
GMSG-214R-influent	04/11/06	2:25 PM	28.56	73	-	-4.3	0	0	19.7	-1.88	-1.79	-1.76	--
GMSG-214R-influent	10/19/07	11:12 AM	28.98	54	T	-17.9	0	0	19.2	--	--	--	--
GMSG-214R-influent	10/19/07	11:21 AM	28.98	54	T	-17.9	0	0.2	19.2	--	--	--	--
GMSG-214R-influent	10/19/07	1:51 PM	29.01	53	T	-21.9	0	0	19.4	--	--	--	--
GMSG-214R-influent	10/19/07	2:07 PM	29.01	53	T	-10	0	0	19.4	--	--	--	--
GMSG-214R-influent	10/19/07	2:22 PM	29.01	53	T	-15.1	0	0	19.6	--	--	--	--
GMSG-214R-influent	10/26/07	10:24 AM	30.19	43	-	-18.6	0.2	0.1	20.3	--	--	--	--
GMSG-214R-influent	10/31/07	11:43 AM	--	--	--	-16.5	45.3	0.1	6	--	--	--	--
GMSG-214R-influent	11/21/07	10:02 AM	30.14	34	-	-17.1	69.4	0.3	2.6	--	--	--	--
GMSG-214R-influent	12/27/07	1:19 PM	29.97	26	-	-17.2	74.9	0.8	1.6	--	--	--	--
GMSG-37-effluent	07/18/02	1:50 PM	28.79	75	-	1.5	1.2	12.6	0.8	--	--	--	--
GMSG-37-effluent	07/22/02	--	--	--	--	1.5	0.6	3.9	15.8	--	--	--	--
GMSG-37-effluent	07/30/02	8:15 AM	28.74	74	-	1.8	0	2.2	17.6	--	--	--	--
GMSG-37-effluent	08/05/02	3:50 PM	29.05	73	-	2	0	1.7	18.8	--	--	--	--
GMSG-37-effluent	08/12/02	1:40 PM	28.63	82	-	1.7	0.2	1.6	19	--	--	--	--
GMSG-37-effluent	08/21/02	4:00 PM	28.76	63	0.01	1.9	0.2	1.5	18.6	--	--	--	--
GMSG-37-effluent	10/18/02	12:20 PM	28.48	33	0.04	1.9	0	1.4	18.1	--	--	--	--
GMSG-37-effluent	09/24/04	9:59 AM	28.74	60	-	2.3	2	11.4	2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-37-effluent	09/27/04	8:43 AM	28.79	66	-	2	1	3.9	15.2	--	--	--	--
GMSG-37-effluent	09/29/04	12:06 PM	28.92	64	-	2.2	0.4	2.5	16.1	--	--	--	--
GMSG-37-effluent	10/01/04	2:55 PM	28.5	59	0.02	2.3	0.2	2.1	17.3	--	--	--	--
GMSG-37-effluent	10/04/04	3:08 PM	29.04	44	-	2	0.2	1.9	17.2	--	--	--	--
GMSG-37-effluent	10/07/04	11:28 AM	28.98	68	-	2.1	0	1.7	17.5	--	--	--	--
GMSG-37-effluent	10/11/04	10:33 AM	29.04	61	-	2.1	0.1	1.6	17.3	--	--	--	--
GMSG-37-effluent	10/15/04	12:43 PM	28.14	44	T	2	0.1	1.4	17.5	--	--	--	--
GMSG-37-effluent	10/18/04	8:30 AM	28.84	37	-	--	--	--	--	--	--	--	--
GMSG-37-effluent	10/19/04	8:52 AM	28.85	40	-	2	0	1.2	18.2	--	--	--	--
GMSG-37-effluent	10/26/04	10:45 AM	29.05	46	-	2	0.1	1.1	18.1	--	--	--	--
GMSG-37-effluent	11/02/04	8:12 AM	28.87	39	-	2.1	0.2	1.1	18	--	--	--	--
GMSG-37-effluent	11/04/04	9:42 AM	28.5	39	-	2	0.3	1.1	18.4	--	--	--	--
GMSG-37-effluent	11/08/04	3:01 PM	29.14	37	-	2.1	0.1	1	18.5	--	--	--	--
GMSG-37-effluent	11/11/04	3:01 PM	29.13	38	-	2	0	0.9	18.7	--	--	--	--
GMSG-37-effluent	11/15/04	5:07 PM	29.12	38	-	2	0.1	0.9	18.5	--	--	--	--
GMSG-37-effluent	12/09/04	9:15 AM	28.6	34	-	2	0	0.8	18	--	--	--	--
GMSG-37-effluent	01/11/05	10:49 AM	28.85	20	-	2.1	0	0.5	18.5	1293	1060	0.54	--
GMSG-37-effluent	02/14/05	3:32 PM	28.3	35	-	2.2	0	0	19.7	4.88	4.88	0.94	--
GMSG-37-effluent	04/04/05	3:30 PM	28.72	55	-	--	--	--	--	--	--	--	--
GMSG-37-effluent	04/05/05	12:40 PM	28.56	71	-	--	--	--	--	--	--	--	--
GMSG-37-effluent	02/14/06	3:32 PM	28.42	26	-	1.7	0.6	10.3	2.2	--	--	--	--
GMSG-37-effluent	03/06/06	3:22 PM	29.01	36	-	1.5	0	1.2	17.5	2426	2416	0.93	--
GMSG-37-effluent	03/06/06	3:22 PM	--	--	--	1.5	0	1.2	17.5	--	--	--	--
GMSG-37-effluent	04/13/06	11:51 AM	28.75	64	-	1.6	0	0.9	17.8	4538	4519	15.21	--
GMSG-37-effluent	04/28/06	1:29 PM	29.04	62	-	1.5	0	0.8	17.9	820	816	2.66	--
GMSG-37-effluent	05/17/06	1:30 PM	28.38	63	-	1.4	0	0.8	17.6	1022	968	1.35	--
GMSG-37-effluent	06/02/06	1:38 PM	28.81	72	-	1.7	0	0.8	17.9	706	587	4.72	--
GMSG-37-effluent	07/17/06	4:07 PM	28.67	86	-	1.6	0	0.9	17.3	339	338	1.04	--
GMSG-37-effluent	08/01/06	9:44 AM	28.63	78	-	1.7	0	1	17.1	356	280	1.18	--
GMSG-37-influent	07/18/02	1:18 PM	28.8	70	-	-25.2	--	--	--	--	--	--	--
GMSG-37-influent	07/22/02	--	--	--	--	-24.5	0.6	3.3	16.4	--	--	--	--
GMSG-37-influent	07/30/02	8:15 AM	28.74	74	-	-24.9	0	1.8	17.9	--	--	--	--
GMSG-37-influent	08/05/02	3:50 PM	29.05	73	-	-22.5	0	1.5	19.1	--	--	--	--
GMSG-37-influent	08/12/02	1:40 PM	28.63	82	-	-24	0.1	1.4	19.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-37-influent	08/21/02	4:00 PM	28.76	63	0.01	-26.5	--	--	--	--	--	--	--
GMSG-37-influent	10/18/02	12:19 PM	28.48	33	0.04	-30.2	--	--	--	--	--	--	--
GMSG-37-influent	09/24/04	9:58 AM	28.74	60	-	-23.9	--	--	--	--	--	--	--
GMSG-37-influent	09/27/04	8:42 AM	28.79	66	-	-26.8	--	--	--	--	--	--	--
GMSG-37-influent	09/29/04	12:05 PM	28.92	64	-	-24.6	--	--	--	--	--	--	--
GMSG-37-influent	10/01/04	2:54 PM	28.5	59	0.02	-23.2	--	--	--	--	--	--	--
GMSG-37-influent	10/04/04	3:07 PM	29.04	44	-	-24.5	--	--	--	--	--	--	--
GMSG-37-influent	10/07/04	11:27 AM	28.98	68	-	-23.5	--	--	--	--	--	--	--
GMSG-37-influent	10/11/04	10:32 AM	29.04	61	-	-26	--	--	--	--	--	--	--
GMSG-37-influent	10/15/04	12:42 PM	28.14	44	T	-27.4	--	--	--	--	--	--	--
GMSG-37-influent	10/18/04	8:30 AM	28.84	37	-	--	--	--	--	--	--	--	--
GMSG-37-influent	10/19/04	8:51 AM	28.85	40	-	-28.3	--	--	--	--	--	--	--
GMSG-37-influent	10/26/04	10:44 AM	29.05	46	-	-28	--	--	--	--	--	--	--
GMSG-37-influent	11/02/04	8:11 AM	28.87	39	-	-28.3	--	--	--	--	--	--	--
GMSG-37-influent	11/04/04	9:41 AM	28.5	39	-	-28	--	--	--	--	--	--	--
GMSG-37-influent	11/08/04	3:00 PM	29.14	37	-	-26.7	--	--	--	--	--	--	--
GMSG-37-influent	11/11/04	9:59 AM	29.23	30	-	--	--	--	--	--	--	--	--
GMSG-37-influent	11/11/04	3:00 PM	29.13	38	-	-24.8	--	--	--	--	--	--	--
GMSG-37-influent	11/15/04	11:02 AM	29.24	38	-	--	--	--	--	--	--	--	--
GMSG-37-influent	11/15/04	5:04 PM	29.12	38	-	-28.7	--	--	--	--	--	--	--
GMSG-37-influent	11/17/04	8:03 AM	28.89	45	-	--	--	--	--	--	--	--	--
GMSG-37-influent	11/19/04	7:34 AM	28.97	38	-	--	--	--	--	--	--	--	--
GMSG-37-influent	11/21/04	7:49 AM	29	30	-	--	--	--	--	--	--	--	--
GMSG-37-influent	12/09/04	9:14 AM	28.6	34	-	-27.9	--	--	--	--	--	--	--
GMSG-37-influent	01/11/05	10:48 AM	28.85	20	-	-23.1	--	--	--	--	--	--	--
GMSG-37-influent	02/14/05	3:37 PM	28.3	35	-	-20	0	0	19.7	--	--	--	--
GMSG-37-influent	02/14/06	3:32 PM	28.42	26	-	-28.2	0.6	10.2	2.1	--	--	--	--
GMSG-37-influent	03/06/06	3:16 PM	29.01	36	-	-25.3	0.1	1.2	17.3	1230	1227	1.7	--
GMSG-37-influent	03/06/06	3:16 PM	--	--	--	-25.3	0.1	1.2	17.3	--	--	--	--
GMSG-37-influent	03/14/06	9:30 AM	--	--	--	--	--	--	--	--	--	--	--
GMSG-37-influent	03/14/06	9:30 AM	28.55	24	T	--	--	--	--	--	--	--	--
GMSG-37-influent	04/13/06	11:47 AM	28.75	64	-	-27.4	0	0.9	17.6	2405	2398	15.29	--
GMSG-37-influent	04/28/06	1:26 PM	29.04	62	-	-28.1	0	0.8	17.8	-0.59	-0.54	0.39	--
GMSG-37-influent	04/28/06	1:32 PM	29.03	62	-	--	--	--	--	1.9	0.44	2.15	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
GMSG-37-influent	05/17/06	1:25 PM	28.37	62	0.01	-28.1	0	0.8	17.5	76.5	75.98	1.39	--
GMSG-37-influent	06/02/06	1:35 PM	28.81	72	-	-26.7	0	0.8	17.8	16.83	12.51	21.99	--
GMSG-37-influent	07/17/06	4:03 PM	28.67	86	-	-26.3	0	0.9	17.2	205	203	0.38	--
GMSG-37-influent	08/01/06	9:41 AM	28.63	78	-	-27.2	0	1	17.1	115	114	2.32	--
L-effluent	02/07/01	10:25 AM	29.05	18	-	4.25	6.6	13.6	7.2	--	--	--	--
L-effluent	02/08/01	8:35 AM	28.93	22	T	4.41	3.7	11.3	9.8	--	--	--	--
L-effluent	02/10/01	9:31 AM	29.09	8	-	4.1	1.7	10.3	9.9	--	--	--	--
L-effluent	02/13/01	12:27 PM	28.94	26	-	4	0.8	9	10.5	--	--	--	--
L-effluent	02/23/01	9:54 AM	29.03	14	-	4.2	0	5.8	13.3	11200	11200	-0.2	--
L-effluent	03/06/01	10:21 AM	28.96	25	-	4.08	0	4.4	14.2	2760	2678	1.62	--
L-effluent	03/13/01	3:53 PM	28.19	31	-	4	0	4.2	14.5	2416	2096	3.5	--
L-effluent	06/28/01	4:53 PM	28.88	86	-	4.2	0	5.7	15	127	127	0	--
L-effluent	07/19/01	12:15 PM	28.82	80	-	4	0	4.4	15.5	32.65	32.5	0	--
L-effluent	08/09/01	10:50 AM	28.55	86	-	4	0	4.5	15.4	57.09	55.31	0	--
L-effluent	09/10/01	12:30 PM	28.77	65	0.05	3.8	0	5.1	14.4	55	55	0.5	--
L-effluent	10/07/01	11:25 AM	29.01	48	-	3.5	0	4.5	15.1	48	47.5	0.2	--
L-effluent	01/08/02	9:25 AM	28.36	24	-	4.65	0.9	5.1	14	--	--	--	--
L-effluent	01/09/02	7:55 AM	28.14	37	-	4.56	0.2	4.7	14.5	11600	1.08	1.51	--
L-effluent	01/10/02	4:20 PM	28.56	35	T	--	--	--	--	--	--	--	--
L-effluent	01/26/02	4:18 PM	28.62	37	-	4.62	0	1.7	18.1	48.1	35.3	-0.48	--
L-effluent	03/05/02	10:48 AM	28.81	19	-	5	0	1.6	18.8	61	43	0	--
L-effluent	05/31/02	2:43 PM	28.46	82	-	4.4	0.1	3.1	14.3	--	--	--	--
L-effluent	06/03/02	1:00 PM	28.81	52	-	4.4	0	2.8	16.5	3388	3300	0.4	--
L-effluent	08/23/02	3:00 PM	28.79	64	0.02	--	2.7	11.3	9.7	--	--	--	--
L-effluent	09/24/02	1:00 PM	29.04	54	-	0	0	5.5	15.1	1441	1430	0	--
L-effluent	11/11/02	12:29 PM	28.71	30	-	-0.1	0.7	5.2	14.5	23200	22000	4.1	--
L-effluent	11/11/02	2:54 PM	28.78	30	-	0	0.8	4.9	14.3	25000	24000	24	--
L-effluent	12/02/02	11:46 AM	28.86	16	T	0	0	3.4	16.4	581	500	0	--
L-effluent	01/06/03	2:29 PM	29.04	28	-	0	0	3.7	15.2	3475	3300	6	--
L-effluent	01/08/03	11:28 AM	28.08	41	-	0	0	3.5	15.9	1970	1800	0	--
L-effluent	02/06/03	1:48 PM	28.91	16	T	0	0	3.2	16.6	194	175	0	--
L-effluent	03/07/03	10:13 AM	28.63	26	-	0	0	2.6	16.8	132	100	0	--
L-effluent	05/01/03	9:31 AM	28.67	62	-	0	0	2.2	16.6	471	440	1	--
L-effluent	06/05/03	11:18 AM	28.71	75	-	0	0	3.1	16.4	51	49	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
L-effluent	07/16/03	1:26 PM	28.84	83	-	0	0	4.6	14.7	500	464	0.9	--
L-effluent	08/08/03	10:46 AM	28.93	67	-	0	0.1	7.1	11.8	3296	3260	2.8	--
L-effluent	09/29/03	9:52 AM	28.82	48	-	0	0.2	7.4	12.3	2726	2690	3.1	--
L-effluent	10/10/03	1:04 PM	28.81	73	-	0	0	4.8	14.8	1462	1450	0	--
L-effluent	12/30/03	1:25 PM	28.71	29	-	0	0.2	3.1	15.7	--	--	--	--
L-effluent	01/12/04	12:57 PM	28.67	28	T	0	0	2.6	16.4	2411	2390	3.3	--
L-effluent	02/03/04	9:46 AM	28.63	23	-	0	0.1	2	17	1134	1100	2.7	--
L-effluent	03/01/04	11:23 AM	28.51	36	0.04	0.1	0	2.4	16.3	1267	1160	0.2	--
L-effluent	04/20/04	11:26 AM	28.8	38	-	-0.1	0	2.2	15	395	390	0	--
L-effluent	05/25/04	4:41 PM	28.48	62	-	0	0	1.6	17.8	323	310	0.4	--
L-effluent	06/08/04	3:45 PM	28.69	84	-	0	0	3	17.1	600	500	2	--
L-effluent	07/14/04	9:05 AM	28.66	69	-	0.2	0	2.1	17.5	748	730	0.93	--
L-effluent	08/10/04	5:10 PM	28.6	55	-	0.1	0	1.3	18.1	--	--	--	--
L-effluent	08/18/04	10:04 AM	28.43	73	-	--	--	--	--	1754	1740	0.62	--
L-effluent	09/21/04	3:52 PM	28.89	79	-	0	0	2.3	17.9	--	--	--	--
L-effluent	09/22/04	10:06 AM	29.03	73	-	--	--	--	--	2324	2305	20.02	--
L-effluent	10/12/04	2:09 PM	28.7	64	-	0	0	2.1	18	4197	4090	-0.52	--
L-effluent	11/23/04	3:12 PM	28.62	38	-	0	0	1.6	18.3	2229	2190	5.98	--
L-effluent	12/21/04	2:52 PM	28.45	26	-	-0.3	0.1	2.2	16.5	2742	2730	7.67	--
L-effluent	01/19/05	9:46 AM	28.72	19	T	-0.1	0	1.6	18.1	812	780	2.05	--
L-effluent	02/23/05	8:26 AM	29.03	9	T	0	0	3.4	16	1882	1740	-1.83	--
L-effluent	03/15/05	1:40 PM	28.87	31	-	--	0	3.3	15.8	3003	2990	0.9	--
L-effluent	04/06/05	9:31 AM	28.76	42	0.03	0	0.1	1.8	17.5	1122	1111	-59	--
L-effluent	05/11/05	12:45 PM	29.07	48	-	-0.2	0	1.6	18.2	620	515	-0.23	--
L-effluent	06/14/05	1:32 PM	28.27	71	-	0	0	2.6	16.6	3188	3140	-10	--
L-effluent	07/06/05	8:33 AM	28.96	65	-	0	0	2.4	17.3	--	--	--	--
L-effluent	08/17/05	8:17 AM	28.92	63	-	0	0.2	3.2	16.7	3409	3389	-2.52	--
L-effluent	09/13/05	1:40 PM	28.49	86	-	0	0.3	3.8	16.2	5859	5830	6.65	--
L-effluent	10/18/05	3:20 PM	28.57	57	-	-0.25	0.2	2.9	17	7382	7330	8.88	--
L-effluent	11/08/05	1:45 PM	28.83	46	-	-0.6	0.3	2.9	17.1	3070	2986	-0.86	--
L-effluent	12/07/05	9:02 AM	29.23	18	-	0.1	0.1	1.9	17.8	2164	2052	11.39	--
L-effluent	02/02/06	1:29 PM	28.4	32	-	0.3	0	1.8	17.6	2950	2863	0.46	--
L-effluent	02/22/06	9:59 AM	28.5	26	-	0.3	0	2.3	17	1738	1729	-4.46	--
L-effluent	03/08/06	9:48 AM	28.47	33	-	0.1	0	1.7	17.3	1365	1226	-1.91	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
L-effluent	04/11/06	4:22 PM	28.53	68	-	0	0	1	18.1	668	642	-1.47	--
L-effluent	05/10/06	8:49 AM	28.46	60	-	0	0	1.3	17.5	500	424	-0.85	--
L-effluent	06/07/06	9:29 AM	28.7	69	-	0	0	1.3	17.3	459	453	-0.13	--
L-effluent	07/19/06	9:31 AM	28.84	79	-	0	0.1	1.9	17.5	761	758	0.94	--
L-effluent	08/09/06	9:11 AM	28.86	68	-	0	0.2	2	17	2228	2207	0.03	--
L-effluent	09/20/06	8:40 AM	28.78	48	-	0	0	2.9	18.2	2897	2862	2.38	--
L-effluent	10/31/06	1:46 PM	28.64	37	-	0	0	2.9	18	1454	1441	0.06	--
L-effluent	11/08/06	9:28 AM	28.3	48	-	0	0	2.7	18.1	2792	2755	-1.08	--
L-effluent	12/20/06	10:02 AM	28.88	37	-	0	0	2.2	18.9	2305	2257	-0.21	--
L-effluent	01/24/07	8:36 AM	28.81	2	-	0	0	2	18.9	2730	2617	0.19	--
L-effluent	02/08/07	1:54 PM	28.76	18	-	0	0	2.3	18.4	2.23	1.5	3.8	--
L-effluent	03/13/07	3:01 PM	28.4	65	-	0	0	2.8	17.7	2978	2941	6.89	--
L-effluent	04/19/07	3:27 PM	28.92	66	-	0	0.1	1.7	19.2	1163	1032	-7.48	--
L-effluent	05/30/07	9:27 AM	28.86	80	-	0	0.1	1.7	18.2	1168	1024	-7.71	--
L-effluent	06/13/07	10:02 AM	28.98	80	-	0	0.1	2.1	17.3	3678	3630	-6.28	--
L-effluent	07/18/07	9:05 AM	29.91	69	-	0	0.3	2.4	17	2179	2143	-3.38	--
L-effluent	08/29/07	9:28 AM	30.12	66	-	0.1	0.3	2.5	17.2	34.85	34.32	-2.49	--
L-effluent	09/19/07	10:44 AM	30.02	71	-	0	0.4	2.3	17.5	2443	2415	2.57	--
L-effluent	10/17/07	11:24 AM	29.9	56	-	-18.9	0	0	19.2	5.26	3.44	0.44	--
L-effluent	11/21/07	9:32 AM	30.14	34	-	0	0	1.8	18.8	2030	2005	2.85	--
L-effluent	12/26/07	10:20 AM	30	27	-	0	0	1.5	18.9	2350	2290	-0.16	--
L-influent	02/07/01	10:23 AM	29.05	18	-	-37	6.9	13.9	6.7	--	--	--	--
L-influent	02/08/01	8:30 AM	28.93	22	T	-36	4.3	13	7.3	--	--	--	--
L-influent	02/10/01	9:25 AM	29.06	5	-	-41	1.8	10.7	9.5	--	--	--	--
L-influent	02/13/01	12:26 PM	28.94	26	-	-41	0.7	7.8	12	--	--	--	--
L-influent	02/23/01	9:45 AM	29.03	14	-	-43	0	5.8	12.9	-0.8	-0.8	-0.2	--
L-influent	03/06/01	10:15 AM	28.96	25	-	43	0	4.4	14.1	0.56	0.45	0.77	--
L-influent	03/13/01	3:45 PM	28.19	31	-	41	0	4.1	14.4	3.36	3.19	3	--
L-influent	06/28/01	4:49 PM	28.88	86	-	-40	0	5.5	15	3.65	2.91	0	--
L-influent	07/19/01	12:13 PM	28.82	80	-	-39	0	4.3	15.4	0	0	0	--
L-influent	08/09/01	10:47 AM	28.55	86	-	-39	0	4.5	15.2	7.93	7.41	0	--
L-influent	09/10/01	12:25 PM	28.76	66	-	-38	0	5.1	14.4	50	50	0	--
L-influent	10/07/01	11:20 AM	29.01	48	-	39	0	4.4	15.5	22	22	0.2	--
L-influent	01/08/02	9:20 AM	28.36	24	-	25	2.9	11.7	4.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
L-influent	01/09/02	7:50 AM	28.14	37	-	25	1.1	10.5	5.8	--	--	--	--
L-influent	01/26/02	4:15 PM	28.62	37	-	25	0	7.4	11.7	113.1	66.7	-0.5	--
L-influent	03/05/02	10:40 AM	28.81	19	-	-15	0	6.1	12.8	170	122	0	--
L-influent	06/03/02	12:52 PM	28.81	52	-	-20	0.1	7.5	9.6	5100	3600	0.6	--
L-influent	08/23/02	3:00 PM	28.79	64	0.02	--	2.7	9.6	10.6	--	--	--	--
L-influent	09/24/02	12:56 PM	29.04	54	-	-21.8	--	--	--	--	--	--	--
L-influent	11/11/02	12:33 PM	28.73	31	-	-26 to -34	--	--	--	--	--	--	--
L-influent	11/11/02	2:51 PM	28.78	30	-	-25 to -41	--	--	--	--	--	--	--
L-influent	12/02/02	11:43 AM	28.86	16	T	-25 to -31	--	--	--	--	--	--	--
L-influent	01/06/03	2:23 PM	29.04	28	-	-16.5	0.3	8.9	6.5	5990	4600	9	--
L-influent	01/08/03	11:24 AM	28.08	41	-	-17	0	9.1	6.7	2500	--	0	--
L-influent	02/06/03	1:45 PM	28.91	16	T	32	0	7.5	11.6	0	0	0.4	--
L-influent	03/07/03	10:09 AM	28.63	26	-	-25 to -33	0	6	13.1	111	90	0	--
L-influent	05/01/03	9:28 AM	28.67	59	-	-30	0.3	0	20.2	0	0	1.1	--
L-influent	06/05/03	11:15 AM	28.71	75	-	-28	0	4.1	15.2	0	0	0	--
L-influent	07/16/03	1:22 PM	28.84	83	-	-25.9	0.1	6	13.1	62	59	1	--
L-influent	08/08/03	10:43 AM	28.93	67	-	-27.2	0	1.3	17.8	0	0	0.5	--
L-influent	09/29/03	9:47 AM	28.82	48	-	-28	0.1	1.6	18	1.82	0	2.2	--
L-influent	10/10/03	1:01 PM	28.81	73	-	-28.6	0.2	7.3	12.3	0	0	0	--
L-influent	12/30/03	1:24 PM	28.71	29	-	-24.4	--	--	--	--	--	--	--
L-influent	01/12/04	12:53 PM	28.67	28	T	-24	0.2	5.4	13.2	1994	1970	4	--
L-influent	02/03/04	9:41 AM	28.63	23	-	-24	0.1	3.4	15.5	669	660	2	--
L-influent	03/01/04	11:19 AM	28.51	36	0.04	-24.6	0	0	19.2	0	0	0.15	--
L-influent	04/20/04	11:24 AM	28.8	38	-	-23.2	0	3.4	13.3	0	0	0	--
L-influent	05/25/04	4:35 PM	28.48	62	-	-22.4	0	3.6	15.3	223	201	0	--
L-influent	06/08/04	3:42 PM	28.69	84	-	-22	0.8	0	19.6	101	90	0	--
L-influent	07/14/04	9:00 AM	28.66	69	-	-21.6	0	0	19.7	-0.84	-0.75	0.75	--
L-influent	08/10/04	5:09 PM	28.6	55	-	-21.5	0	0	19.6	--	--	--	--
L-influent	08/18/04	10:02 AM	28.43	73	-	--	--	--	--	0	-0.7	-0.11	--
L-influent	09/21/04	3:47 PM	28.89	79	-	-21.4	0	0	20.2	--	--	--	--
L-influent	09/22/04	10:04 AM	29.03	73	-	--	--	--	--	28.1	26.35	19.29	--
L-influent	10/12/04	2:08 PM	28.7	64	-	-21.6	--	--	--	--	--	--	--
L-influent	11/23/04	3:08 PM	28.62	38	-	-22.1	0	0	20.1	3.98	2.98	4.3	--
L-influent	12/21/04	2:46 PM	28.45	26	-	-22.3	0	0	19.1	4.52	3	5.1	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
L-influent	01/19/05	9:43 AM	28.72	19	T	-22.5	0	0	19.9	0.62	0.5	1.3	--
L-influent	02/23/05	8:24 AM	29.03	9	T	-22.2	0	0	20.1	--	-3.53	-1.4	--
L-influent	03/15/05	1:35 PM	28.87	31	-	-23.8	0	0	20.2	6.01	4.5	1.7	--
L-influent	04/06/05	9:30 AM	28.76	42	0.03	-23.8	0	0	19.8	-60	-58	-55	--
L-influent	05/11/05	12:40 PM	29.07	48	-	-22.5	0	0	20.1	--	--	--	--
L-influent	06/14/05	1:31 PM	28.27	71	-	-19.3	0	0	19.8	--	--	--	--
L-influent	07/06/05	8:27 AM	28.95	62	-	-20.6	0	0	19.8	--	--	--	--
L-influent	08/17/05	8:10 AM	28.92	63	-	-20.9	0.2	4	16	--	--	--	--
L-influent	09/13/05	1:36 PM	28.49	86	-	-20.2	0.5	4.8	15.3	5306	5278	4.61	--
L-influent	10/18/05	3:16 PM	28.57	57	-	-20	0.7	3.7	16.2	4	3.3	9.04	--
L-influent	11/08/05	1:37 PM	28.83	46	-	-20	0.4	3.7	16.2	-1.42	-1.55	-1.02	--
L-influent	12/07/05	8:54 AM	29.23	18	-	-23.7	0.2	2.3	17.3	6.84	3.42	9.76	--
L-influent	02/02/06	1:24 PM	28.4	32	-	-23	0	2.3	16.9	1.51	-0.18	0.61	--
L-influent	02/22/06	9:55 AM	28.5	26	-	-23.4	0.1	2.9	16.4	-5.02	-4.7	-4.96	--
L-influent	03/08/06	9:44 AM	28.47	33	-	-23	0	2.2	16.8	-3.17	-3.06	-2.12	--
L-influent	04/11/06	4:17 PM	28.53	68	-	-22.6	0	1.2	17.7	-2.89	-2.7	-1.47	--
L-influent	05/10/06	8:43 AM	28.46	60	-	-22.2	0	1.7	17.1	33.09	31.68	-0.41	--
L-influent	06/07/06	9:25 AM	28.7	69	-	-22.6	0	1.9	16.8	0.66	0.25	0.83	--
L-influent	07/19/06	9:28 AM	28.86	77	-	-21.7	0.2	2.4	17	0.38	0.24	5.84	--
L-influent	08/09/06	9:07 AM	28.86	68	-	-22	0.2	2.4	16.4	1505	1487	1.02	--
L-influent	09/20/06	8:37 AM	28.78	48	-	-22.3	0.2	3.4	17.6	7.38	2.09	-0.41	--
L-influent	10/31/06	1:43 PM	28.64	37	-	-22	0	1.9	18.8	2.98	1.43	1.62	--
L-influent	11/08/06	9:26 AM	28.3	48	-	-22.5	0	3.1	17.7	-1.18	-1.14	-0.98	--
L-influent	12/20/06	9:59 AM	28.88	37	-	-22	0	1.5	19.5	1.32	-0.81	-0.98	--
L-influent	01/24/07	8:33 AM	28.81	2	-	-23.5	0	2.5	18.4	-0.74	-0.68	-0.61	--
L-influent	02/08/07	1:49 PM	28.76	18	-	-23.5	0	2.4	18.3	0.08	-0.34	0.53	--
L-influent	03/13/07	2:58 PM	28.4	65	-	-24.5	0	3.2	16.9	2.19	1.11	7.55	--
L-influent	04/19/07	3:24 PM	28.92	66	-	-22.6	0.1	2.1	16.7	8.64	6.59	-9.32	--
L-influent	05/30/07	9:24 AM	28.86	80	-	-22.3	0.1	2.5	17.4	-7.91	-7.86	-7.44	--
L-influent	06/13/07	9:57 AM	28.98	80	-	-14.5	0	0	19.4	-6.81	-6.43	-6.21	--
L-influent	07/18/07	9:01 AM	29.91	69	-	-19.1	0	0	19.4	-3.07	-2.85	0.95	--
L-influent	08/29/07	9:24 AM	30.12	66	-	-19	0	0	19.5	0.29	-8.73	-0.71	--
L-influent	09/19/07	10:41 AM	30.02	71	-	-17.3	0	0	19.4	4.66	1.44	5.83	--
L-influent	10/17/07	11:27 AM	29.9	56	-	0	0.4	2.2	17.5	3286	3218	0.08	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
L-influent	11/21/07	9:30 AM	30.14	34	-	-20.4	0	0	20.4	0.92	0.53	5.36	--
L-influent	12/26/07	10:17 AM	30	27	-	-18.4	0	0	20.4	-0.55	-0.48	-0.01	--
N-effluent	01/23/01	3:23 PM	28.71	35	-	2	5.5	5	8.6	--	--	--	--
N-effluent	01/23/01	3:53 PM	28.73	34	-	2	7.9	5.9	7.2	--	--	--	--
N-effluent	01/23/01	4:23 PM	28.73	34	-	2	9.2	6	9.2	--	--	--	--
N-effluent	01/23/01	4:53 PM	28.74	31	-	2	10.1	6	6.9	--	--	--	--
N-Effluent	01/24/01	10:10 AM	28.91	21	-	1	12.7	5.1	8.9	--	--	--	--
N-Effluent	01/25/01	9:40 AM	29	18	-	1	10.9	5.1	8.8	--	--	--	--
N-Effluent	01/26/01	10:25 AM	28.57	16	-	1	11.9	4.8	8.9	--	--	--	--
N-Effluent	01/30/01	11:25 AM	28.14	34	-	1	12.1	4.6	9.3	--	--	--	--
N-effluent	02/06/01	9:28 AM	28.67	24	-	--	10.2	4.2	11.2	--	--	--	--
N-effluent	02/13/01	9:47 AM	28.98	23	-	--	9.8	4	12.1	--	--	--	--
N-effluent	02/22/01	9:30 AM	28.69	7	T	2	8.7	3.8	12.5	--	--	--	--
N-effluent	03/21/01	9:38 AM	28.95	39	-	2	5.8	2.8	14.6	--	--	--	--
N-effluent	04/06/01	2:16 PM	28.73	45	-	0.25	4.5	2.5	18.7	--	--	--	--
N-effluent	05/07/01	2:08 PM	28.72	57	T	1.55	0	1.2	16.3	4333	4330	-0.55	--
N-effluent	05/15/01	2:11 PM	28.46	56	-	0	--	--	--	--	--	--	--
N-effluent	05/16/01	7:56 AM	28.43	62	-	1.28	0.8	2.1	15.1	21800	21800	0	--
N-effluent	05/19/01	8:32 AM	28.77	69	-	1.35	0.5	1.6	16.5	1.43	1.43	0.9	--
N-effluent	05/23/01	10:00 AM	28.42	47	-	1.25	0.6	0.9	17	15700	15700	0	--
N-effluent	06/13/01	12:04 PM	28.59	76	-	1.23	0.2	0.8	18.4	10200	9700	-1	--
N-effluent	07/13/01	11:58 AM	28.91	81	-	1.03	0.6	2.9	16.1	1.37	1.36	0	--
N-effluent	08/07/01	3:27 PM	28.84	95	-	2.5	0.6	2.4	16.7	15100	15000	0	--
N-effluent	09/10/01	8:22 AM	28.72	56	T	0.5	0.7	2.2	17	--	--	--	--
N-effluent	10/03/01	9:04 AM	28.46	56	-	0.5	0.5	2.4	16.7	15700	15700	5.7	--
N-effluent	11/12/01	11:20 AM	29.11	46	-	0.57	0	1.7	18.2	--	--	--	--
N-influent	02/22/01	9:30 AM	28.69	7	T	-84	--	--	--	--	--	--	--
N-influent	03/21/01	9:37 AM	28.95	39	-	-82	--	--	--	--	--	--	--
N-influent	04/06/01	2:15 PM	28.73	45	-	-32	--	--	--	--	--	--	--
N-influent	05/07/01	2:05 PM	28.72	57	T	-65	--	--	--	--	--	--	--
N-influent	05/15/01	2:11 PM	28.46	56	-	-2	0	1.6	15.3	0	0	0	--
N-influent	05/16/01	7:50 AM	28.43	62	-	-66	0.8	2	15.1	--	--	0	--
N-influent	05/19/01	8:27 AM	28.77	63	-	-64	0.5	1.5	16.5	--	--	0	--
N-influent	05/23/01	9:56 AM	28.42	47	-	-68	0.7	1	16.7	--	--	0	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
N-influent	06/13/01	11:57 AM	28.59	76	-	-70	0.2	0.6	18.6	-1.57	-1.97	-1.57	--
N-influent	07/13/01	11:52 AM	28.91	81	-	-76	0.6	2.9	16	0	0	0	--
N-influent	08/07/01	3:30 PM	28.82	95	-	-78	0.6	2.4	16.3	--	--	0	--
N-influent	09/10/01	8:20 AM	28.72	56	T	-78	0.8	2.3	17	--	--	--	--
N-influent	10/03/01	8:57 AM	28.46	56	-	-79	0.5	2.3	16.8	6.3	5.3	5.8	--
N-influent	11/12/01	11:15 AM	29.11	46	-	-80	0	0.6	19.7	--	--	--	--
P-effluent	08/05/98	3:21 PM	28.9	77	-	--	18.5	1.4	4.6	--	--	--	--
P-effluent	08/06/98	7:30 AM	28.84	66.9	T	--	32.9	1.3	0	--	--	--	--
P-effluent	08/06/98	7:05 PM	28.81	66	0.08	--	22.2	0.4	0	--	--	--	--
P-effluent	08/06/98	7:13 PM	28.81	66	0.08	--	31.8	1.1	0	--	--	--	--
P-effluent	08/07/98	8:12 AM	28.78	68	-	--	29.3	1	0	--	--	--	--
P-effluent	08/07/98	6:25 PM	28.77	73	-	--	27	1.2	0	--	--	--	--
P-effluent	08/08/98	10:30 AM	28.82	75.9	-	--	22.8	1.4	0	--	--	--	--
P-effluent	08/09/98	8:18 AM	28.83	73	-	--	16.8	1.7	0.3	--	--	--	--
P-effluent	08/10/98	8:40 AM	28.73	72	-	0	14.4	2.1	1.7	--	--	--	--
P-effluent	08/11/98	4:22 PM	28.92	73	-	0	10.3	2.7	5.1	--	--	--	--
P-effluent	08/12/98	8:08 PM	28.92	66	-	3.5	9.8	2.7	6.8	--	--	--	--
P-effluent	08/13/98	1:30 PM	28.8	79	-	6	8.3	2.2	9	--	--	--	--
P-effluent	08/14/98	12:55 PM	28.57	78.1	-	5	8.6	2.2	9.2	--	--	--	--
P-effluent	08/15/98	12:45 PM	28.77	69.1	-	5	7.1	2.1	10.7	--	--	--	--
P-effluent	08/16/98	12:45 PM	28.76	75.9	-	5	6.5	1.9	12.1	--	--	--	--
P-effluent	08/17/98	12:48 PM	28.74	64.9	T	5	6.5	2	12.3	--	--	--	--
P-effluent	08/18/98	1:30 PM	29	69.1	-	5	5.7	1.8	13.4	--	--	--	--
P-effluent	08/19/98	12:25 PM	28.99	66.9	-	5	5.8	1.9	12.9	--	--	--	--
P-effluent	08/20/98	12:30 PM	28.86	82	-	5	5.6	1.6	14	--	--	--	--
P-effluent	08/21/98	1:48 PM	28.94	82.9	-	5	4.5	1.3	15.5	--	--	--	--
P-effluent	08/22/98	12:25 PM	28.89	68	-	5	4.8	1.6	14.7	--	--	--	--
P-effluent	08/23/98	12:54 PM	28.47	77	-	5	4.5	1.4	15.4	--	--	--	--
P-effluent	08/24/98	12:32 PM	28.43	78.1	-	4	3.5	1.3	16.4	--	--	--	--
P-effluent	08/25/98	12:27 PM	28.61	75.9	-	3	3	1.3	16.9	--	--	--	--
P-effluent	08/26/98	1:44 PM	28.77	82.9	-	3	2.3	1.1	17.6	--	--	--	--
P-effluent	09/01/98	10:30 AM	28.59	69.1	-	1.35	0.7	0.3	19.7	--	--	--	--
P-effluent	11/03/98	11:53 AM	28.98	35.1	-	7	--	--	--	--	--	--	--
P-effluent	11/04/98	9:37 AM	28.99	32	-	3	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	11/04/98	1:15 PM	28.96	35.1	-	3	--	--	--	--	--	--	--
P-effluent	11/05/98	9:21 AM	28.92	32	-	0.6	--	--	--	--	--	--	--
P-effluent	11/06/98	9:06 AM	28.92	35.1	-	3	--	--	--	--	--	--	--
P-effluent	11/06/98	9:30 AM	28.92	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	10:00 AM	28.92	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	10:30 AM	28.94	37	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	11:00 AM	28.94	37	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	11:30 AM	28.93	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	12:00 PM	28.93	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	12:57 PM	28.92	37.9	-	0	--	--	--	--	--	--	--
P-effluent	11/06/98	1:15 PM	28.92	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	1:45 PM	28.93	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	2:15 PM	28.93	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	2:45 PM	28.94	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	3:15 PM	28.94	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/06/98	3:45 PM	28.94	37	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	8:52 AM	29.08	36	-	5	--	--	--	--	--	--	--
P-effluent	11/07/98	9:15 AM	29.08	36	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	9:45 AM	29.09	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	10:15 AM	29.09	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	10:45 AM	29.09	39.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	11:15 AM	29.09	39.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	11:45 AM	29.07	41	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	1:29 PM	29.07	39.9	-	6	--	--	--	--	--	--	--
P-effluent	11/07/98	1:45 PM	29.07	39.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	2:15 PM	29.07	39.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	2:45 PM	29.06	39.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	3:15 PM	29.06	39.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	3:45 PM	29.05	37.9	-	--	--	--	--	--	--	--	--
P-effluent	11/07/98	4:15 PM	29.05	37.9	-	--	--	--	--	--	--	--	--
P-effluent	08/03/99	2:28 PM	28.78	72	-	--	--	--	--	--	--	--	--
P-effluent	08/03/99	2:58 PM	28.77	73	-	--	--	--	--	--	--	--	--
P-effluent	08/03/99	3:29 PM	28.77	73	-	--	--	--	--	--	--	--	--
P-effluent	08/03/99	3:59 PM	28.75	73	-	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	08/03/99	6:03 PM	28.74	70	-	--	--	--	--	--	--	--	--
P-effluent	08/04/99	2:46 PM	28.65	73.9	T	--	--	--	--	--	--	--	--
P-effluent	08/05/99	6:08 PM	28.6	72	-	--	--	--	--	--	--	--	--
P-effluent	08/06/99	7:12 PM	28.74	64.9	-	--	--	--	--	--	--	--	--
P-effluent	08/07/99	11:31 AM	28.53	73	-	--	--	--	--	--	--	--	--
P-effluent	08/08/99	9:59 AM	28.84	64	-	--	--	--	--	--	--	--	--
P-effluent	08/09/99	1:50 PM	28.59	64.9	-	--	--	--	--	--	--	--	--
P-effluent	08/10/99	9:39 AM	28.44	64.9	-	--	--	--	--	--	--	--	--
P-effluent	08/11/99	10:30 AM	28.64	73	-	--	--	--	--	--	--	--	--
P-effluent	08/16/99	5:31 PM	28.61	81	-	--	--	--	--	--	--	--	--
P-effluent	08/20/99	12:22 PM	28.89	75	-	--	--	--	--	--	--	--	--
P-effluent	08/23/99	5:55 PM	28.61	66.9	-	--	--	--	--	--	--	--	--
P-effluent	08/30/99	3:46 PM	29	66	-	--	--	--	--	--	--	--	--
P-effluent	09/02/99	4:50 PM	28.79	82	-	--	--	--	--	--	--	--	--
P-effluent	05/18/00	11:40 AM	28.84	50	-	1.5	--	--	--	--	--	--	--
P-effluent	05/18/00	11:46 AM	28.84	50	-	1	0	0	20.3	--	--	--	--
P-effluent	05/18/00	11:55 AM	28.84	50	-	1	0	0	20.2	--	--	--	--
P-effluent	05/18/00	12:17 PM	28.84	50	-	1	0	0	20.4	--	--	--	--
P-effluent	05/18/00	12:30 PM	28.82	49	-	1	0	0	20.3	--	--	--	--
P-effluent	05/18/00	12:49 PM	28.82	49	-	1	0	0	20.3	--	--	--	--
P-effluent	05/18/00	1:03 PM	28.82	49	-	1	0	0	20.3	--	--	--	--
P-effluent	05/18/00	1:16 PM	28.82	49	-	1.5	0	0	20.3	--	--	--	--
P-effluent	05/18/00	2:08 PM	28.82	49	-	1.5	0	0	20.7	--	--	--	--
P-effluent	05/18/00	3:01 PM	28.83	50	-	1.5	0	0	20.8	--	--	--	--
P-effluent	05/18/00	4:21 PM	28.82	50	-	1.5	0.3	0	20.8	--	--	--	--
P-effluent	05/18/00	5:09 PM	28.83	48	-	4	0	0	20.7	--	--	--	--
P-effluent	05/18/00	6:02 PM	28.88	46	-	5	0	0	20.8	--	--	--	--
P-effluent	05/18/00	6:22 PM	28.88	46	-	1.5	0	0	20.7	--	--	--	--
P-effluent	05/18/00	7:21 PM	28.88	44	-	2.5	0	0	20.7	--	--	--	--
P-effluent	05/19/00	8:09 AM	28.97	45	-	5	0	0	20.3	--	--	--	--
P-effluent	05/19/00	10:16 AM	28.94	52	-	5	0	0	20.7	--	--	--	--
P-effluent	05/19/00	11:16 AM	28.92	52	-	5	0	0	20.9	--	--	--	--
P-effluent	05/20/00	9:48 AM	28.81	61	-	1	3.8	0	19.7	--	--	--	--
P-effluent	05/20/00	9:57 AM	28.81	61	-	1	4.1	0	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	05/20/00	10:16 AM	28.81	61	-	1	6.4	0	19.1	--	--	--	--
P-effluent	05/20/00	10:25 AM	28.81	61	-	1	0.9	0	20.8	--	--	--	--
P-effluent	05/20/00	10:47 AM	28.8	63	-	1.5	0.5	0	20.9	--	--	--	--
P-effluent	05/20/00	11:01 AM	28.8	63	-	1.5	0.5	0	20.9	--	--	--	--
P-effluent	05/20/00	11:15 AM	28.8	63	-	2	0.5	0	20.8	--	--	--	--
P-effluent	05/20/00	11:29 AM	28.8	63	-	2	0.5	0	20.9	--	--	--	--
P-effluent	05/20/00	12:35 PM	28.76	67	-	2.5	0.6	0	21.2	--	--	--	--
P-effluent	05/20/00	1:28 PM	28.76	67	-	1.5	0.4	0	21.2	--	--	--	--
P-effluent	05/20/00	2:28 PM	28.74	68	-	1	0.4	0	21.5	--	--	--	--
P-effluent	05/20/00	3:25 PM	28.73	68	-	1	0.4	0	21.7	--	--	--	--
P-effluent	05/20/00	4:24 PM	28.71	69	-	3.5	0	0	21.8	--	--	--	--
P-effluent	05/20/00	5:24 PM	28.71	67	-	4	0	0	21.5	--	--	--	--
P-effluent	05/21/00	7:58 AM	28.68	55	-	4	0.1	0	20.5	--	--	--	--
P-effluent	05/21/00	9:22 AM	28.66	60	-	4	0.1	0	20.7	--	--	--	--
P-effluent	05/31/00	8:24 AM	28.75	65	-	1.5	7.7	0	18	--	--	--	--
P-effluent	05/31/00	8:35 AM	28.75	68	-	1.5	4.3	0	19.1	--	--	--	--
P-effluent	05/31/00	8:55 AM	28.75	68	-	2	0.3	0	20.4	--	--	--	--
P-effluent	05/31/00	9:09 AM	28.75	68	-	1.5	0.3	0	20.5	--	--	--	--
P-effluent	05/31/00	9:24 AM	28.75	68	-	2	0.4	0	20.4	--	--	--	--
P-effluent	05/31/00	9:40 AM	28.78	71	-	2	0.4	0	20.6	--	--	--	--
P-effluent	05/31/00	10:00 AM	28.78	71	-	1.5	0.4	0	20.3	--	--	--	--
P-effluent	05/31/00	10:52 AM	28.76	73	-	1.5	0.5	0	20.9	--	--	--	--
P-effluent	05/31/00	11:47 AM	28.75	72	-	1.5	0.5	0	20.9	--	--	--	--
P-effluent	05/31/00	12:53 PM	28.75	76	-	4	0.3	0	21	--	--	--	--
P-effluent	05/31/00	1:47 PM	28.76	76	-	4	0.3	0	21	--	--	--	--
P-effluent	05/31/00	2:51 PM	28.76	77	-	4	0.3	0	21.1	--	--	--	--
P-effluent	05/31/00	3:54 PM	28.76	76	-	4	0.3	0	20.9	--	--	--	--
P-effluent	06/01/00	7:46 AM	28.83	54	-	4	0.4	0	20.2	--	--	--	--
P-effluent	06/01/00	8:29 AM	28.83	54	-	3.5	0.3	0	20.4	--	--	--	--
P-effluent	06/01/00	9:09 AM	28.81	55	-	2	9.6	2.1	11.8	--	--	--	--
P-effluent	06/01/00	9:19 AM	28.81	55	-	1.5	13.2	2.8	8.8	--	--	--	--
P-effluent	06/01/00	9:46 AM	28.83	53	0.02	1.5	19	4	4.7	--	--	--	--
P-effluent	06/01/00	9:53 AM	28.83	53	0.02	1.5	19.3	4.1	4.3	--	--	--	--
P-effluent	06/01/00	10:09 AM	28.83	53	0.02	1.5	18.1	3.4	5.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	06/01/00	10:20 AM	28.83	53	0.02	1.5	23.5	4.6	2.8	--	--	--	--
P-effluent	06/01/00	10:38 AM	28.86	52	0.04	1.5	24.6	4.6	2.7	--	--	--	--
P-effluent	06/01/00	11:38 AM	28.74	52	0.06	1.5	26.8	4.5	2.5	--	--	--	--
P-effluent	06/01/00	12:33 PM	28.69	55	T	1.5	28.3	4.5	2.4	--	--	--	--
P-effluent	06/01/00	1:49 PM	28.74	54	-	1.5	28.5	4.4	2.7	--	--	--	--
P-effluent	06/01/00	2:33 PM	28.68	54	T	1.5	29.5	4.5	2.3	--	--	--	--
P-effluent	06/01/00	3:35 PM	28.66	54	-	1.5	29.5	4.4	2.3	--	--	--	--
P-effluent	06/01/00	4:31 PM	28.65	54	T	1.5	29.4	4.4	2.6	--	--	--	--
P-effluent	06/02/00	7:58 AM	28.82	50	-	1.5	27	4.7	3	--	--	--	--
P-effluent	06/02/00	8:55 AM	28.84	52	-	1.5	26.4	4.7	2.9	--	--	--	--
P-effluent	06/03/00	8:15 AM	29.04	55	-	0	6.7	0.7	18.6	--	--	--	--
P-effluent	06/03/00	8:25 AM	29.04	55	-	0	8.6	0	18.1	--	--	--	--
P-effluent	06/03/00	8:37 AM	29.03	58	-	0	8.5	0	18.1	--	--	--	--
P-effluent	06/03/00	8:47 AM	29.03	58	-	0	8.5	0	18	--	--	--	--
P-effluent	06/03/00	8:54 AM	29.03	58	-	0	8.9	0	17.8	--	--	--	--
P-effluent	06/03/00	9:05 AM	29.03	58	-	0	9.1	0	17.8	--	--	--	--
P-effluent	06/03/00	9:13 AM	29.03	58	-	0	9.4	0	17.8	--	--	--	--
P-effluent	06/03/00	9:25 AM	29.03	58	-	0	1	0	19.9	--	--	--	--
P-effluent	06/03/00	9:32 AM	29.01	61	-	0	0.9	0	19.8	--	--	--	--
P-effluent	06/03/00	9:39 AM	29.01	61	-	0	0.9	0	20	--	--	--	--
P-effluent	06/03/00	2:45 PM	28.9	67	-	0	0.9	0	21	--	--	--	--
P-effluent	06/03/00	2:53 PM	28.9	67	-	3	0.5	0	21.2	--	--	--	--
P-effluent	06/15/00	7:55 AM	28.26	58	-	3	0.1	12.7	3.9	--	--	--	--
P-effluent	06/15/00	8:00 AM	28.26	58	-	3	0.1	12.7	3.8	--	--	--	--
P-effluent	06/15/00	8:15 AM	28.26	58	-	3.2	0.2	13.1	3.8	--	--	--	--
P-effluent	06/15/00	8:30 AM	28.26	59	-	3.2	0.4	14.8	1.6	--	--	--	--
P-effluent	06/15/00	8:45 AM	28.26	59	-	3	0.4	12.4	4.6	--	--	--	--
P-effluent	06/15/00	9:10 AM	28.26	59	-	3	0.5	12.1	4.3	--	--	--	--
P-effluent	06/15/00	9:20 AM	28.26	59	-	3	0.5	12.3	2.2	--	--	--	--
P-effluent	06/15/00	9:30 AM	28.26	61	-	3	0.5	11.9	2.1	--	--	--	--
P-effluent	06/15/00	9:45 AM	28.26	61	-	3	0.4	12.6	1.9	--	--	--	--
P-effluent	06/15/00	10:35 AM	28.28	64	-	1.91	0.6	11.8	4.6	--	--	--	--
P-effluent	06/15/00	10:55 AM	28.28	64	-	1.74	0.7	13.8	3	--	--	--	--
P-effluent	06/15/00	11:15 AM	28.28	64	-	1.7	0.5	13.1	3.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	06/15/00	12:20 PM	28.29	69	-	1.77	0.6	13.4	2.9	--	--	--	--
P-effluent	06/15/00	1:20 PM	28.31	69	-	2.84	0.7	13.4	3.2	--	--	--	--
P-effluent	06/15/00	2:20 PM	28.29	70	-	2.81	0.7	12.8	3.5	--	--	--	--
P-effluent	06/15/00	3:20 PM	28.3	68	T	2.96	0.8	12.9	4	--	--	--	--
P-effluent	06/15/00	4:20 PM	28.31	66	T	2.73	0.8	12.6	4.1	--	--	--	--
P-effluent	06/15/00	5:20 PM	28.3	66	-	2.93	0.8	12.4	4.2	--	--	--	--
P-effluent	06/17/00	9:20 AM	28.86	54	-	1	23.6	7.4	0	--	--	--	--
P-effluent	06/17/00	9:40 AM	28.88	56	-	1.5	21.2	7.6	0	--	--	--	--
P-effluent	06/17/00	10:00 AM	28.88	56	-	1	18.6	7.7	0	--	--	--	--
P-effluent	06/17/00	10:20 AM	28.88	56	-	2	17.8	7.8	0	--	--	--	--
P-effluent	06/17/00	10:40 AM	28.87	59	-	2	17.4	7.8	0	--	--	--	--
P-effluent	06/17/00	11:00 AM	28.87	59	-	2	16.9	7.8	0	--	--	--	--
P-effluent	06/17/00	12:00 PM	28.86	60	-	1.5	14.9	7.7	0	--	--	--	--
P-effluent	06/17/00	1:00 PM	28.88	62	-	1.5	15.1	7.7	0	--	--	--	--
P-effluent	06/17/00	2:00 PM	28.89	64	-	1.5	15	7.8	0	--	--	--	--
P-effluent	06/17/00	3:00 PM	28.88	65	-	1.8	12.7	7.9	0	--	--	--	--
P-effluent	06/17/00	4:00 PM	28.86	65	-	3	12.8	7.7	0	--	--	--	--
P-effluent	06/17/00	5:00 PM	28.86	65	-	1.5	12.2	7.3	0	--	--	--	--
P-effluent	07/06/00	6:18 PM	28.89	69	-	3.5	0.3	0.6	17.9	--	--	--	--
P-effluent	07/07/00	9:45 AM	28.97	68	-	7	3.2	9	0	--	--	--	--
P-effluent	07/08/00	10:55 AM	28.75	64	-	7	1.7	8.8	1	--	--	--	--
P-effluent	07/09/00	9:12 AM	28.52	78	-	3	1	7.9	3	--	--	--	--
P-effluent	07/10/00	9:44 AM	28.7	72	-	2.5	0.7	7.2	4.7	--	--	--	--
P-effluent	07/11/00	12:14 PM	28.82	75	-	5	0.5	6.7	5.7	300	--	7	--
P-effluent	07/18/00	4:03 PM	28.87	58	-	0	7.9	24.4	0	--	--	--	--
P-effluent	07/19/00	9:47 AM	28.84	63	-	6.5	8	22.7	0.3	--	--	--	--
P-effluent	07/19/00	10:02 AM	28.84	63	-	6.5	8.1	22.8	0.05	--	--	--	--
P-effluent	07/19/00	10:17 AM	28.84	63	-	6.5	7.9	22.5	0.5	--	--	--	--
P-effluent	07/19/00	10:32 AM	28.83	65	-	6	7.4	22.6	0.5	--	--	--	--
P-effluent	07/19/00	10:47 AM	28.83	65	-	6	7.4	22.5	0.5	--	--	--	--
P-effluent	07/19/00	11:02 AM	28.83	65	-	8	7.2	22	0.5	--	--	--	--
P-effluent	07/19/00	11:17 AM	28.83	65	-	8	7	21.9	0.5	--	--	--	--
P-effluent	07/19/00	11:32 AM	28.8	67	-	8	6.9	21.9	0.5	--	--	--	--
P-effluent	07/19/00	11:47 AM	28.8	67	-	8	6.5	21.5	0.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	07/19/00	12:02 PM	28.8	67	-	12.5	6.5	21.4	0.5	--	--	--	--
P-effluent	07/19/00	12:17 PM	28.8	67	-	12.5	6.2	21	0.7	--	--	--	--
P-effluent	07/19/00	12:32 PM	28.81	69	-	12.5	6	21.1	0.7	--	--	--	--
P-effluent	07/19/00	12:47 PM	28.81	69	-	12.5	5.5	20.5	0.8	--	--	--	--
P-effluent	07/19/00	2:00 PM	28.77	69	-	12.5	4.6	19.6	1.3	--	--	--	--
P-effluent	07/19/00	3:00 PM	28.77	71	-	12	4	19.5	1.8	--	--	--	--
P-effluent	07/19/00	3:55 PM	28.75	72	-	12.5	3.6	19.4	2	--	--	--	--
P-effluent	07/19/00	4:56 PM	28.74	72	-	12.5	3.4	18.8	2.3	--	--	--	--
P-effluent	07/19/00	5:50 PM	28.74	71	-	12.5	3.6	19	2.5	--	--	--	--
P-effluent	07/20/00	9:55 AM	28.61	64	0.01	13	5.1	16.9	5.5	--	--	--	--
P-effluent	07/21/00	8:47 AM	28.69	58	-	12.5	20.3	22.7	0.2	--	--	--	--
P-effluent	07/21/00	9:02 AM	28.69	58	-	12.5	22.8	23.2	0.2	--	--	--	--
P-effluent	07/21/00	9:17 AM	28.69	58	-	12.5	23.7	23.6	0.2	--	--	--	--
P-effluent	07/21/00	9:32 AM	28.71	59	T	12.5	24.5	23.6	0.2	--	--	--	--
P-effluent	07/21/00	9:47 AM	28.71	59	T	12.5	24.8	24.1	0.2	--	--	--	--
P-effluent	07/21/00	10:02 AM	28.71	59	T	8	24.8	23.7	0.2	--	--	--	--
P-effluent	07/21/00	10:17 AM	28.71	59	T	8	25	23.9	0.2	--	--	--	--
P-effluent	07/21/00	10:32 AM	-	-	-	8	24.9	24	0.2	--	--	--	--
P-effluent	07/21/00	10:47 AM	-	-	-	8	24.9	24	0.2	--	--	--	--
P-effluent	07/21/00	11:02 AM	-	-	-	12.5	24.8	24.1	0.2	--	--	--	--
P-effluent	07/21/00	11:17 AM	-	-	-	12.5	24.8	23.8	0.2	--	--	--	--
P-effluent	07/21/00	11:32 AM	28.72	59	-	12.5	24.4	23.9	0.2	--	--	--	--
P-effluent	07/21/00	11:47 AM	28.72	59	-	12.5	24.4	23.7	0.2	--	--	--	--
P-effluent	07/21/00	12:47 PM	28.72	60	-	12.5	24.3	24.3	0.2	--	--	--	--
P-effluent	07/21/00	1:45 PM	28.72	62	-	12.5	23.5	24.4	0.2	--	--	--	--
P-effluent	07/21/00	2:46 PM	28.73	61	-	12.5	22.9	24.3	0.3	--	--	--	--
P-effluent	07/21/00	3:46 PM	28.74	61	-	13	22.2	24.3	0.4	--	--	--	--
P-effluent	07/21/00	4:47 PM	28.76	59	-	12.5	21.9	24.4	0.4	--	--	--	--
P-effluent	07/22/00	9:27 AM	28.9	59	-	12.5	15.4	23.2	0.3	--	--	--	--
P-effluent	07/23/00	8:22 AM	29	57	-	11.5	6.7	19.7	0	--	--	--	--
P-effluent	07/23/00	8:37 AM	28.98	63	-	11.5	7.6	20.2	0	--	--	--	--
P-effluent	07/23/00	8:52 AM	28.98	63	-	11.5	8.7	20.5	0	--	--	--	--
P-effluent	07/23/00	9:07 AM	28.98	63	-	11.5	9.3	20.4	0	--	--	--	--
P-effluent	07/23/00	9:22 AM	28.98	63	-	11.5	9.5	20.7	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	07/23/00	9:37 AM	28.99	66	-	8	9.9	21	0	--	--	--	--
P-effluent	07/23/00	9:52 AM	28.99	66	-	8	10.1	21	0	--	--	--	--
P-effluent	07/23/00	10:07 AM	28.99	66	-	8	10.4	20.8	0	--	--	--	--
P-effluent	07/23/00	10:22 AM	28.99	66	-	8	10.5	20.8	0	--	--	--	--
P-effluent	07/23/00	10:37 AM	28.97	69	-	8	10.6	21	0	--	--	--	--
P-effluent	07/23/00	10:52 AM	28.97	69	-	11.5	10.8	21.1	0	--	--	--	--
P-effluent	07/23/00	11:07 AM	28.97	69	-	11	11	21.4	0	--	--	--	--
P-effluent	07/23/00	11:22 AM	28.97	69	-	11	11	21.3	0	--	--	--	--
P-effluent	07/23/00	12:22 PM	28.95	72	-	11.5	11.2	21.4	0.2	--	--	--	--
P-effluent	07/23/00	1:22 PM	-	-	-	11.5	11.1	21.5	0.3	--	--	--	--
P-effluent	07/23/00	2:22 PM	28.94	72	T	11.5	11.4	21.8	0.3	--	--	--	--
P-effluent	07/23/00	3:22 PM	28.93	74	-	11.5	11.2	21.9	0.3	--	--	--	--
P-effluent	07/23/00	4:20 PM	28.92	72	-	11.5	11	21.9	0.4	--	--	--	--
P-effluent	07/24/00	9:54 AM	28.87	76	-	5.5	9.7	22	0.9	--	--	--	--
P-effluent	09/06/00	3:37 PM	28.92	66	-	1	1	3.7	9.2	--	--	--	--
P-effluent	09/06/00	3:52 PM	28.92	66	-	1	1.1	3.8	9.1	--	--	--	--
P-effluent	09/06/00	4:32 PM	28.89	64	-	10	0	0.4	18.7	4850	--	--	--
P-effluent	09/06/00	4:47 PM	28.89	64	-	10	0	0.4	18.8	4990	--	--	--
P-effluent	09/06/00	5:02 PM	28.89	64	-	10	0	0.4	18.6	5200	--	--	--
P-effluent	09/06/00	5:17 PM	28.89	64	-	10	0	0.4	18.8	5370	--	--	--
P-effluent	09/06/00	5:32 PM	28.89	62	-	10	0	0.4	18.7	5460	--	--	--
P-effluent	09/06/00	5:47 PM	28.89	62	-	10	0	0.4	18.8	5680	--	--	--
P-effluent	09/08/00	9:25 AM	28.8	61	-	7	0	0.3	18.2	5510	5490	0.7	--
P-effluent	09/09/00	11:08 AM	28.7	69	-	7.5	0	0.3	18.3	5600	5540	1.68	--
P-effluent	09/18/00	4:30 PM	28.4	76	-	8	0	0.5	17.8	--	--	--	--
P-effluent	09/19/00	7:30 AM	28.24	67	-	--	1.4	4.4	6.2	--	--	--	--
P-effluent	09/20/00	8:47 AM	28.29	57	-	7	0.2	0.7	19.2	--	--	--	--
P-effluent	09/21/00	7:50 AM	28.6	45	T	5	0.3	1	18.3	--	--	--	--
P-effluent	01/23/01	3:23 PM	28.71	35	-	2	5.5	5	8.6	--	--	--	--
P-effluent	01/23/01	3:53 PM	28.73	34	-	2	8.9	5.9	7.2	--	--	--	--
P-effluent	01/23/01	4:23 PM	28.73	34	-	2	9.2	6	7.2	--	--	--	--
P-effluent	01/23/01	4:53 PM	28.74	31	-	2	10.1	6	6.9	--	--	--	--
P-effluent	01/24/01	10:10 AM	28.91	21	-	1	12.7	5.1	8.9	--	--	--	--
P-effluent	01/25/01	9:40 AM	29	18	-	1	10.9	5.1	8.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	01/26/01	10:25 AM	28.57	16	-	1	11.9	4.8	8.9	--	--	--	--
P-effluent	01/30/01	11:25 AM	28.14	34	-	1	12.1	4.6	9.3	--	--	--	--
P-effluent	05/06/01	3:16 PM	28.89	63	-	0.24	1.7	10.7	3.2	--	--	--	--
P-effluent	05/06/01	3:26 PM	28.89	63	-	--	1.8	10.6	3.4	--	--	--	--
P-effluent	05/06/01	3:36 PM	28.88	64	-	0.24	1.9	10.5	3.5	--	--	--	--
P-effluent	05/06/01	3:46 PM	28.88	64	-	0.25	1.9	10.4	3.8	--	--	--	--
P-effluent	05/06/01	3:56 PM	28.88	64	-	0.26	2.3	11.5	1.9	--	--	--	--
P-effluent	05/06/01	4:06 PM	28.88	64	-	0.25	2.4	11.5	1.9	--	--	--	--
P-effluent	05/06/01	4:16 PM	28.88	64	-	0.25	2.4	11.5	2	--	--	--	--
P-effluent	05/06/01	4:30 PM	28.88	63	-	0.25	2.3	11.5	1.9	--	--	--	--
P-effluent	05/06/01	4:45 PM	28.88	63	-	0.25	2.4	11.5	2	--	--	--	--
P-effluent	05/06/01	5:00 PM	28.88	63	-	0.27	2.4	11.5	2.2	--	--	--	--
P-effluent	05/06/01	5:15 PM	28.88	63	-	0.24	2.4	11.5	2.2	--	--	--	--
P-effluent	05/06/01	5:30 PM	28.86	60	T	0.25	2.4	11.3	2.3	--	--	--	--
P-effluent	05/06/01	5:45 PM	28.86	60	T	0.25	2.4	11.3	2.4	--	--	--	--
P-effluent	05/06/01	6:00 PM	28.86	60	T	0.24	2.4	11.4	2.5	--	--	--	--
P-effluent	05/06/01	6:15 PM	28.86	60	T	0.22	2.4	11.4	2.4	--	--	--	--
P-effluent	05/06/01	6:45 PM	28.86	58	-	0.24	2.5	11.2	2.6	--	--	--	--
P-effluent	05/06/01	7:15 PM	28.86	58	-	0.24	2.5	11.2	2.7	--	--	--	--
P-effluent	05/06/01	7:45 PM	28.86	56	T	0.2	2.6	10.9	2.9	--	--	--	--
P-effluent	05/06/01	8:15 PM	28.86	56	T	0.23	2.6	11	3.1	--	--	--	--
P-effluent	05/06/01	9:15 PM	28.86	54	-	0.25	2.7	10.9	3.1	--	--	--	--
P-effluent	05/06/01	10:15 PM	28.84	55	-	0.23	2.8	10.6	3.2	--	--	--	--
P-effluent	05/06/01	11:15 PM	28.84	54	T	0.24	2.7	10.7	3.7	--	--	--	--
P-effluent	07/10/01	3:55 PM	28.7	74	-	0.45	4	12.6	1.4	--	--	--	--
P-effluent	07/10/01	4:25 PM	28.7	74	-	0.55	3.9	12.9	1.2	--	--	--	--
P-effluent	07/10/01	4:55 PM	28.71	71	-	0.55	3.8	12.8	1.4	--	--	--	--
P-effluent	07/10/01	5:25 PM	28.71	71	-	0.55	3.8	12.7	1.3	--	--	--	--
P-effluent	07/10/01	5:55 PM	28.72	70	-	0.55	3.8	12.5	1.8	--	--	--	--
P-effluent	07/11/01	7:28 AM	28.81	62	-	--	4.2	9.7	6.1	--	--	--	--
P-effluent	07/11/01	4:52 PM	28.78	74	-	0.55	3.2	8.6	8.3	--	--	--	--
P-effluent	07/12/01	7:39 AM	28.9	65	-	0.55	2.5	7.4	10.2	--	--	--	--
P-effluent	07/12/01	5:21 PM	28.87	77	-	0.55	1.8	6.1	12.3	--	--	--	--
P-effluent	07/13/01	1:14 PM	28.9	82	-	0.55	1.6	4.7	13.8	--	--	--	88

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	07/16/01	9:35 AM	28.77	71	-	0.55	0.8	3	15.7	19700	19600	4	--
P-effluent	07/17/01	10:04 AM	28.76	70	-	0.55	2.6	2.8	15.1	--	--	--	--
P-effluent	07/18/01	7:53 AM	28.78	67	-	0.55	0.7	2.7	16	19000	18900	2.88	--
P-effluent	07/19/01	1:10 PM	28.8	84	-	0.55	0.6	2.3	16.9	14500	14500	-0.16	--
P-effluent	07/20/01	2:10 PM	28.77	78	-	0.55	0.5	2.2	17.1	13800	13700	-0.25	--
P-effluent	07/23/01	4:20 PM	28.54	87	-	0.53	0.4	2.1	16.7	12700	12700	2	--
P-effluent	07/24/01	9:03 AM	28.67	73	-	0.53	0.4	2.1	16.7	12600	12600	4	--
P-effluent	07/26/01	7:36 AM	29.06	61	-	0.53	0.4	2.1	16.8	11100	11100	2.81	--
P-effluent	08/02/01	4:46 PM	28.92	84	-	0.53	0.2	1.6	17.5	10500	10500	1	--
P-effluent	08/09/01	7:58 AM	28.54	79	-	1.1	0.4	1.6	17.6	4759	4725	6.1	--
P-effluent	08/10/01	12:50 PM	28.87	69	-	0.55	0.2	1.5	18	4951	4930	6	--
P-effluent	10/28/03	1:33 PM	28.08	44	T	--	1	5.5	7.5	--	--	--	--
P-effluent	10/29/03	8:37 AM	28.38	39	T	0.1	1.5	5.2	7	--	--	--	--
P-effluent	10/30/03	9:56 AM	28.72	40	T	0	1.8	4.9	7.2	--	--	--	--
P-effluent	10/31/03	2:22 PM	28.77	46	-	0	2	5	7.1	--	--	--	--
P-effluent	11/01/03	8:35 AM	29.12	34	-	0	1.9	4.9	6.9	--	--	--	--
P-effluent	11/02/03	10:43 AM	28.95	38	-	0	1.5	4.9	7.1	--	--	--	--
P-effluent	11/03/03	8:20 AM	29.07	34	-	0	1.2	4.9	6.9	--	--	--	--
P-effluent	11/04/03	10:56 AM	28.65	33	-	0	0.6	5.4	5.9	--	--	--	--
P-effluent	11/07/03	10:00 AM	29	21	-	-88	--	--	--	--	--	--	--
P-effluent	11/10/03	12:41 PM	28.86	33	T	0	25.2	7.6	2.6	--	--	--	--
P-effluent	11/11/03	8:49 AM	28.5	39	-	0	9.7	8.7	3.9	--	--	--	--
P-effluent	11/12/03	9:00 AM	28.37	37	-	0	6	8.3	4.1	--	--	--	--
P-effluent	11/13/03	9:11 AM	28.88	27	T	0.1	3.6	8.9	4.2	--	--	--	--
P-effluent	11/14/03	8:57 AM	28.75	34	-	0	2.5	9.1	4.5	--	--	--	--
P-effluent	11/17/03	8:41 AM	28.82	39	-	0	1.1	7.7	7.2	--	--	--	--
P-effluent	11/19/03	9:22 AM	28.33	36	T	0.1	1	6.5	9.4	--	--	--	--
P-effluent	11/21/03	1:55 PM	28.87	34	-	0.1	3	7.5	7.7	--	--	--	--
P-effluent	11/24/03	1:15 PM	28.3	18	T	0	0.7	7.1	9.1	--	--	--	--
P-effluent	11/26/03	10:51 AM	28.67	31	-	0	0.6	6.1	10.5	--	--	--	--
P-effluent	12/01/03	8:46 AM	28.8	27	-	0	0.5	5.2	11.9	--	--	--	--
P-effluent	12/03/03	10:04 AM	29.25	22	-	0	0.6	5.3	11.8	--	--	--	--
P-effluent	12/08/03	10:00 AM	28.69	35	-	0	0.5	4.9	12.2	--	--	--	--
P-effluent	12/12/03	9:30 AM	28.97	7	-	0.1	3.6	6.2	9.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	12/15/03	12:59 PM	28.52	25	-	0	0.5	5.8	11.1	--	--	--	--
P-effluent	12/22/03	9:00 AM	28.57	31	-	0	0.3	5.1	12.5	--	--	--	--
P-effluent	03/19/04	10:37 AM	28.97	35	-	0.5	15.8	9.6	2.6	--	--	--	--
P-effluent	03/29/04	3:01 PM	--	--	--	--	0.4	4.8	13.3	--	--	--	--
P-effluent	03/30/04	1:35 PM	--	--	--	0.1	6.9	9.5	3.6	--	--	--	--
P-effluent	03/30/04	3:32 PM	--	--	--	0.1	6.6	9.3	4.2	--	--	--	--
P-effluent	03/30/04	4:32 PM	--	--	--	-0.1	22.5	6	4.7	--	--	--	--
P-effluent	03/30/04	5:16 PM	--	--	--	-0.1	21.4	6.4	4.6	--	--	--	--
P-effluent	03/31/04	10:02 AM	--	--	--	-0.1	8.1	3.9	7	--	--	--	--
P-effluent	03/31/04	10:54 AM	--	--	--	-0.2	9.2	2.8	9	--	--	--	--
P-effluent	03/31/04	11:32 AM	--	--	--	0	10.1	2.6	9.1	--	--	--	--
P-effluent	04/01/04	3:20 PM	28.86	50	-	-2	0.4	0.2	18.8	--	--	--	--
P-effluent	04/01/04	4:00 PM	28.87	50	-	--	14.4	8.9	5.3	--	--	--	--
P-effluent	04/01/04	4:30 PM	28.88	48	-	0	14	8.6	5.9	--	--	--	--
P-effluent	04/01/04	4:41 PM	28.88	48	-	-0.1	13.9	8.6	6.1	--	--	--	--
P-effluent	04/01/04	5:24 PM	28.88	48	-	-0.1	13.7	8.3	6.2	--	--	--	--
P-effluent	04/02/04	7:50 AM	28.94	35	-	-0.1	13.4	8.3	6.1	--	--	--	--
P-effluent	04/03/04	9:04 AM	28.65	40	-	-0.1	12.9	8.4	5.8	--	--	--	--
P-effluent	04/05/04	1:09 PM	28.87	44	-	--	11.7	8.8	5.2	--	--	--	--
P-effluent	04/06/04	8:13 AM	28.56	34	-	0	9.5	8	6.4	--	--	--	--
P-effluent	04/07/04	8:20 AM	28.67	46	-	0.1	9.5	8.7	5.4	--	--	--	--
P-effluent	04/13/04	9:29 AM	28.89	37	-	0.1	5.8	8.7	5.7	--	--	--	--
P-effluent	04/15/04	4:09 PM	28.72	57	-	1.6	8.5	8	4.9	--	--	--	--
P-effluent	04/15/04	4:34 PM	28.71	54	-	1.8	8.4	8	4.9	--	--	--	--
P-effluent	04/15/04	5:04 PM	28.71	54	-	1.6	8.3	8	5	--	--	--	--
P-effluent	04/15/04	5:38 PM	28.7	52	T	1.7	8.1	7.9	5.1	--	--	--	--
P-effluent	04/16/04	12:00 PM	28.64	74	-	0	4.4	8.2	6.5	--	--	--	--
P-effluent	04/19/04	5:10 AM	28.29	57	-	0	4	8.3	5.3	--	--	--	--
P-effluent	04/22/04	1:13 PM	28.99	47	-	0.1	3	7.7	6.8	--	--	--	--
P-effluent	04/28/04	2:15 PM	28.29	71	-	0	1.7	7.7	7.2	--	--	--	--
P-effluent	05/01/04	4:10 PM	28.84	50	-	0	1.1	7.1	8.3	--	--	--	--
P-effluent	05/10/04	10:48 AM	28.68	74	-	0	0.9	7.5	9.8	--	--	--	--
P-effluent	05/24/04	8:46 AM	28.69	43	-	0	1	6.3	11.2	--	--	--	--
P-effluent	06/01/04	12:26 PM	28.36	56	-	--	1.2	5.8	11.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	06/08/04	2:31 PM	28.68	87	-	0	0.5	4.9	12.4	--	--	--	--
P-effluent	06/13/04	9:15 AM	28.54	63	-	--	8.7	5.9	8	--	--	--	--
P-effluent	06/13/04	3:00 PM	28.49	69	-	--	8.8	5.4	8.9	--	--	--	--
P-effluent	06/14/04	7:10 PM	28.64	67	-	1.8	7	3.9	12.3	--	--	--	--
P-effluent	06/15/04	1:14 PM	28.86	69	-	0	0	2	17.3	--	--	--	--
P-effluent	06/15/04	2:20 PM	28.85	69	-	1.7	6.2	3.2	13.3	--	--	--	--
P-effluent	06/16/04	10:42 AM	28.8	79	-	1.869	6.1	2.9	14.1	--	--	--	--
P-effluent	06/17/04	8:48 AM	28.82	62	-	1.938	6	2.8	14.3	--	--	--	--
P-effluent	06/21/04	12:04 PM	28.44	74	-	0.032	0.3	4.8	12.8	--	--	--	--
P-effluent	06/21/04	5:45 PM	28.41	59	0.03	0.63	0	3.2	16.3	--	--	--	--
P-effluent	06/22/04	2:44 PM	28.6	66	-	0.619	0	4.1	14.8	--	--	--	--
P-effluent	06/22/04	3:49 PM	28.6	69	-	1.869	6.8	2.9	14.7	--	--	--	--
P-effluent	06/24/04	9:06 AM	28.63	55	-	1.8	2.6	2.2	15.3	--	--	--	--
P-effluent	06/26/04	12:48 PM	28.82	64	-	0.327	0	3.5	15.5	--	--	--	--
P-effluent	06/28/04	12:10 PM	28.82	73	-	0.4	0	3.1	16.1	--	--	--	--
P-effluent	06/28/04	6:40 PM	28.76	70	-	1.8	1.6	2.1	15.6	--	--	--	--
P-effluent	06/29/04	2:49 PM	28.81	80	-	0.287	0	2.9	16.1	--	--	--	--
P-effluent	07/02/04	11:34 AM	28.92	73	-	1.6	0.8	1.4	16.9	--	--	--	--
P-effluent	07/07/04	8:59 AM	28.55	54	-	1.922	0.7	1.4	16.7	--	--	--	--
P-effluent	07/09/04	11:01 AM	28.88	68	-	1.878	0.4	1.3	17.3	--	--	--	--
P-effluent	07/13/04	6:00 PM	28.52	72	-	1.848	0.5	1.3	17.1	--	--	--	--
P-effluent	07/15/04	5:02 PM	28.63	81	-	1.8	0.5	1.3	17.3	--	--	--	--
P-effluent	07/20/04	9:45 AM	28.69	77	-	1.833	0.3	1.2	17.7	--	--	--	--
P-effluent	07/30/04	5:30 PM	28.59	72	-	1.847	0.4	1.4	17	--	--	--	--
P-effluent	08/05/04	12:48 PM	28.99	71	-	1.892	0.2	1	18.3	--	--	--	--
P-effluent	08/11/04	4:42 PM	28.63	53	-	1.938	0.3	1.2	17.7	--	--	--	--
P-effluent	08/21/04	10:42 AM	28.81	62	-	0.3	0	0	20.5	--	--	--	--
P-effluent	08/21/04	11:07 AM	28.81	62	-	0.7	0.8	0.1	19.4	--	--	--	--
P-effluent	08/21/04	11:31 AM	28.8	64	-	0.7	0.7	0	19.4	--	--	--	--
P-effluent	08/21/04	12:36 PM	28.79	66	-	0.5	6.7	0.9	15.5	--	--	--	--
P-effluent	08/21/04	1:10 PM	28.79	66	-	0.5	10	1.2	13.6	--	--	--	--
P-effluent	08/21/04	1:46 PM	28.77	67	-	0.6	13.4	1.8	11.8	--	--	--	--
P-effluent	08/21/04	2:18 PM	28.77	67	-	0.5	15.3	2.1	10.7	--	--	--	--
P-effluent	08/21/04	2:45 PM	28.76	69	-	2.4	0	0	20.4	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
P-effluent	08/21/04	3:22 PM	28.76	69	-	2.5	0	0	20.3	--	--	--	--
P-effluent	08/21/04	4:27 PM	28.75	69	-	2.5	0	0	20.3	--	--	--	--
P-effluent	08/21/04	5:06 PM	28.74	67	-	2.5	0	0	20.4	--	--	--	--
P-effluent	08/21/04	5:45 PM	28.73	64	-	2.2	0	0	20.3	--	--	--	--
P-effluent	08/21/04	6:11 PM	28.73	64	-	2.3	0	0	20.3	--	--	--	--
P-effluent	08/21/04	6:45 PM	28.72	56	-	2.3	0	0	20.3	--	--	--	--
P-effluent	08/22/04	7:45 AM	28.53	54	T	2.5	0	0	19.7	--	--	--	--
P-effluent	08/22/04	8:20 AM	28.53	54	T	2.6	0	0	19.7	--	--	--	--
P-effluent	08/22/04	8:46 AM	28.53	57	T	2.6	0	0	19.7	--	--	--	--
P-effluent	08/22/04	9:18 AM	28.53	57	T	2.4	0	0	19.8	--	--	--	--
P-effluent	08/22/04	9:51 AM	28.51	65	-	2.4	0	0	19.8	--	--	--	--
P-effluent	08/22/04	10:16 AM	28.51	65	-	2.5	0	0	19.8	--	--	--	--
P-effluent	08/22/04	10:53 AM	28.5	74	-	2.5	0	0	20	--	--	--	--
P-effluent	08/22/04	11:15 AM	28.5	74	-	2.5	0	0	20	--	--	--	--
P-effluent	08/22/04	11:52 AM	28.48	75	-	1.9	0	0	20	--	--	--	--
P-effluent	08/22/04	12:42 PM	28.48	76	-	1.6	0	0	19.4	--	--	--	--
P-effluent	08/22/04	1:17 PM	28.48	76	-	1.9	0	0	19.4	--	--	--	--
P-effluent	08/22/04	1:47 PM	28.48	78	-	1.7	0	0	18.3	--	--	--	--
P-effluent	08/22/04	2:46 PM	28.48	79	-	1.6	0	0	17	--	--	--	--
P-effluent	08/22/04	3:22 PM	28.48	79	-	1.8	1.7	0	16.4	--	--	--	--
P-effluent	08/23/04	2:18 PM	28.82	66	-	1.7	0	1	18.9	--	--	--	--
P-effluent	09/03/04	1:38 PM	28.82	83	-	0.01	0	7.3	8.1	--	--	--	--
P-effluent	09/07/04	4:38 PM	28.94	62	-	--	0.5	5	13.3	--	--	--	--
P-effluent	09/08/04	9:58 AM	29.08	62	-	0.01	0	5.3	12.8	--	--	--	--
P-effluent	09/09/04	10:29 AM	28.97	63	-	0.4	0.3	4.8	13.5	--	--	--	--
P-effluent	09/13/04	10:48 AM	28.8	78	-	0.4	0.2	4.2	14.6	--	--	--	--
P-effluent	09/16/04	9:17 AM	28.66	57	-	0.1	0.6	4.5	14.3	--	--	--	--
P-effluent	09/17/04	7:33 AM	28.91	48	-	--	--	--	--	--	--	--	--
P-effluent	09/22/04	8:12 AM	29.02	65	-	--	--	--	--	--	--	--	--
P-effluent	09/23/04	3:06 PM	28.82	78	-	0.3	0	3.8	15.3	--	--	--	--
P-effluent	09/28/04	9:13 AM	29.09	50	-	0.2	6.4	0.6	17.6	--	--	--	--
P-effluent	09/28/04	9:49 AM	29.11	52	-	0.6	14.7	1.2	15.3	--	--	--	--
P-effluent	09/28/04	10:13 AM	29.11	52	-	0.6	16.6	1.3	14.6	--	--	--	--
P-effluent	09/28/04	10:45 AM	29.09	54	-	0.6	17.8	1.4	14.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	09/28/04	11:21 AM	29.09	54	-	--	18.5	1.4	14.1	--	--	--	--
P-effluent	09/28/04	11:47 AM	29.07	57	-	0.6	19.1	1.4	13.9	--	--	--	--
P-effluent	09/28/04	12:17 PM	29.07	57	-	0.7	18.4	1.4	13.9	--	--	--	--
P-effluent	09/28/04	12:46 PM	29.05	60	-	0.6	20	1.6	13.7	--	--	--	--
P-effluent	09/29/04	11:23 AM	28.95	60	-	--	--	--	--	--	--	--	--
P-effluent	09/30/04	3:40 PM	28.73	67	-	0.3	0.1	4	14.9	--	--	--	--
P-effluent	10/04/04	2:47 PM	29.04	44	-	0.1	0	3.5	15.7	--	--	--	--
P-effluent	10/07/04	1:14 PM	28.91	71	-	0.2	0	3.2	15.9	--	--	--	--
P-effluent	10/08/04	9:46 AM	28.63	60	0.25	--	--	--	--	--	--	--	--
P-effluent	10/11/04	1:30 PM	28.98	66	-	0.3	0	2.9	16.3	--	--	--	--
P-effluent	10/25/04	4:16 PM	28.87	53	-	0.3	0	2.2	17.1	--	--	--	--
P-effluent	11/02/04	12:48 PM	28.89	43	T	2.1	0	1.8	17.6	--	--	--	--
P-effluent	11/11/04	1:48 PM	29.14	38	-	2.1	0	1.4	18.2	--	--	--	--
P-effluent	11/18/04	10:31 AM	28.96	51	-	2.2	0	1.3	17.9	--	--	--	--
P-effluent	12/04/04	2:32 PM	28.43	38	-	2.1	0.2	1.4	17.3	1613	1604	3.23	--
P-effluent	12/09/04	9:42 AM	28.59	35	-	2.1	0	1.4	17.4	0.31	0	1.12	--
P-effluent	12/14/04	2:08 PM	29.12	21	-	2.2	0	1.2	18	11.38	9.37	13.86	--
P-effluent	12/22/04	11:26 AM	28.92	4	-	1.8	0	1.3	16.9	1095	1080	-1.67	--
P-effluent	01/03/05	11:27 AM	29.11	14	-	2.7	0	0	19.6	-3.14	-3.42	-3.85	--
P-effluent	01/11/05	11:27 AM	28.85	20	-	2.6	0	1.2	17.2	-2.53	-2.53	-1.35	--
P-effluent	01/18/05	9:39 AM	29.14	0	-	2.9	0	1.3	17.5	-7.43	-7.46	-6.08	--
P-effluent	01/24/05	12:59 PM	28.64	26	-	2.6	0.1	1.7	17.4	2883	2864	0.2	--
P-effluent	04/26/05	1:22 PM	28.18	44	-	0.2	0	0	20	--	--	--	--
P-effluent	04/27/05	1:57 PM	28.45	42	T	0.2	0	0	20.1	--	--	--	--
P-effluent	04/27/05	2:47 PM	28.46	42	T	0.2	0	0	20.1	--	--	--	--
P-effluent	04/29/05	3:51 PM	28.65	48	-	0.2	0	0	20.2	--	--	--	--
P-effluent	05/03/05	10:19 AM	28.82	43	-	0.1	0	0	20	--	--	--	--
P-effluent	05/04/05	11:33 AM	28.98	61	-	0.2	0	0	20.3	--	--	--	--
P-effluent	05/05/05	8:48 AM	28.98	61	-	0.2	0.1	0	19.9	--	--	--	--
P-effluent	05/09/05	9:27 AM	28.59	65	T	0.1	0	0	19.9	--	--	--	--
P-effluent	05/17/05	9:03 AM	28.86	45	-	0	0	0	20	--	--	--	--
P-effluent	05/23/05	9:03 AM	28.52	51	T	0.1	0	0	20	--	--	--	--
P-effluent	05/23/05	2:49 PM	28.62	66	-	0	3.1	0	19.3	--	--	--	--
P-effluent	05/24/05	9:46 AM	28.8	66	-	0	1.3	0	19.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-effluent	05/25/05	8:20 AM	28.89	64	-	0	0.5	0	19.8	--	--	--	--
P-effluent	05/26/05	8:45 AM	28.59	60	0.01	0	--	--	--	--	--	--	--
P-effluent	05/26/05	8:46 AM	28.59	60	0.01	0.1	--	--	--	--	--	--	--
P-effluent	05/26/05	8:47 AM	28.59	60	0.01	--	0	0	20.2	--	--	--	--
P-effluent	05/26/05	8:58 AM	28.59	60	0.01	--	0.7	0	19.9	--	--	--	--
P-effluent	05/27/05	9:07 AM	28.56	56	-	0	0.1	0	19.7	--	--	--	--
P-effluent	05/31/05	8:42 AM	28.95	68	-	0	0	0	20.1	--	--	--	--
P-effluent	05/31/05	10:15 AM	28.95	72	-	0	0	0	20.1	--	--	--	--
P-effluent	06/01/05	7:45 AM	28.93	65	-	0	0.2	0	19.5	--	--	--	--
P-effluent	06/01/05	2:45 PM	28.86	78	-	0	1.8	0	19.6	--	--	--	--
P-effluent	06/02/05	8:25 AM	28.85	64	-	0.1	0	0	20.1	--	--	--	--
P-effluent	06/02/05	1:21 PM	28.77	79	-	0	2.2	0	19.5	--	--	--	--
P-effluent	06/03/05	1:06 PM	28.66	80	-	0	2.2	0	19.2	--	--	--	--
P-effluent	06/06/05	1:06 PM	28.51	74	-	0	1.7	0	19.5	--	--	--	--
P-effluent	06/07/05	8:16 AM	28.66	64	-	0.2	0	0	19.7	--	--	--	--
P-effluent	06/07/05	2:11 PM	28.56	76	-	0	2.2	0	19.2	--	--	--	--
P-effluent	06/08/05	1:39 PM	28.57	68	-	0	2.2	0	19	--	--	--	--
P-effluent	06/15/05	8:22 AM	28.49	56	-	0	1.2	0	19.2	--	--	--	--
P-effluent	06/15/05	11:31 AM	28.58	61	-	0.2	0	0	19.9	--	--	--	--
P-effluent	06/22/05	9:10 AM	29.01	72	-	0	1.4	0	19.4	--	--	--	--
P-effluent	06/29/05	8:53 AM	28.84	61	-	0	1.1	0	19.3	--	--	--	--
P-effluent	06/29/05	9:02 AM	28.84	61	-	0.1	0	0	19.4	--	--	--	--
P-effluent	07/14/05	1:58 PM	28.82	86	-	0	1	0	19.4	--	--	--	--
P-effluent	07/19/05	3:38 PM	28.78	82	-	0	0.9	0	19.5	--	--	--	--
P-effluent	07/29/05	8:30 AM	29.03	63	-	0	0.6	0	19.5	--	--	--	--
P-effluent	08/10/05	10:34 AM	28.78	76	-	--	6.4	0.2	17.9	--	--	--	--
P-effluent	08/11/05	10:21 AM	28.85	68	-	--	6.7	0.2	17.5	--	--	--	--
P-effluent	08/12/05	5:12 PM	28.65	75	-	--	5.6	0.2	17.8	--	--	--	--
P-effluent	08/24/05	9:13 AM	29.05	66	-	0	3.8	0.2	18.3	--	--	--	--
P-effluent	09/15/05	10:34 AM	29	66.02	-	0.8	1.8	0	19.3	--	--	--	--
P-influent	08/04/98	1:00 PM	28.92	77	-	-0.2	12.2	1.4	10.4	--	--	--	50.19
P-influent	08/05/98	3:21 PM	28.9	77	-	0.34	17	1.2	6.8	--	--	--	--
P-influent	08/09/98	8:17 AM	28.83	73	-	--	18	1.8	0	--	--	--	--
P-influent	08/12/98	8:05 PM	28.92	66	-	-64	9.8	2.7	6.8	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	08/13/98	1:27 PM	28.82	79	-	-65	8.3	2.2	8	--	--	--	--
P-influent	08/14/98	12:52 PM	28.57	78.1	-	-65	8.6	2.2	9.2	--	--	--	--
P-influent	08/15/98	12:41 PM	28.77	69.1	-	-54	7.1	2.1	10.7	--	--	--	--
P-influent	08/16/98	12:41 PM	28.76	75.9	-	-65	6.5	1.9	12.1	--	--	--	--
P-influent	08/17/98	12:43 PM	28.74	64.9	T	-65	6.5	2	12.3	--	--	--	--
P-influent	08/18/98	1:25 PM	29.03	68	-	-65	5.7	1.8	13.4	--	--	--	--
P-influent	08/19/98	12:17 PM	28.99	66.9	-	-66	5.8	1.9	12.9	--	--	--	--
P-influent	08/20/98	12:24 PM	28.86	81	-	-65	5.6	1.6	14	--	--	--	--
P-influent	08/21/98	1:42 PM	28.94	82.9	-	-65	0	0	22.5	--	--	--	49.88
P-influent	08/22/98	12:19 PM	28.89	68	-	-66	3	1.1	17.7	--	--	--	--
P-influent	08/23/98	12:45 PM	28.47	77	-	-64	3	1	18.3	--	--	--	--
P-influent	08/24/98	12:25 PM	28.43	77	-	-64	2.4	0.9	19.4	--	--	--	--
P-influent	08/25/98	12:20 PM	28.61	75.9	-	-65	2	0.9	19.5	--	--	--	--
P-influent	08/26/98	1:35 AM	28.75	52	-	-66	1.6	0.8	19.7	>10000	>10000	8	--
P-influent	09/01/98	10:28 AM	28.59	66.9	-	-15.57	0.8	0.3	19.7	--	--	--	--
P-influent	09/01/98	12:39 PM	28.54	73	T	-9	6.9	0.6	18.4	--	--	--	--
P-influent	09/01/98	2:40 PM	28.51	69.1	-	-10	2	0.3	19.7	--	--	--	--
P-influent	09/01/98	6:35 PM	28.52	60.1	-	-10	0.9	0.2	19.9	--	--	--	--
P-influent	09/02/98	9:29 AM	28.53	60.1	-	-10	1.2	0.3	19.2	--	--	--	--
P-influent	09/02/98	11:25 AM	28.54	61	-	-11	0	0.2	20.3	--	--	--	--
P-influent	09/02/98	1:35 PM	28.51	64.9	-	-11	0	0.2	20.4	--	--	--	--
P-influent	09/02/98	3:37 PM	28.51	64	-	-11	0	0.1	20.2	--	--	--	--
P-influent	09/02/98	5:32 PM	28.53	61	-	-11	0	0.2	20.1	--	--	--	--
P-influent	09/02/98	7:19 PM	28.53	55	-	-11	0	0.1	20.2	--	--	--	--
P-influent	11/03/98	11:50 AM	28.98	35.1	-	-31	15.4	4.3	6.7	--	--	--	--
P-influent	11/03/98	11:53 AM	28.98	35.1	-	-51	--	--	--	--	--	--	--
P-influent	11/03/98	12:20 PM	28.98	35.1	-	-51	15.3	4.3	6.9	--	--	--	--
P-influent	11/03/98	12:50 PM	28.96	34	-	-51	15.2	4.3	7.6	--	--	--	--
P-influent	11/03/98	1:20 PM	28.96	34	-	-51	15.1	4.2	7.8	--	--	--	--
P-influent	11/04/98	9:37 AM	28.99	32	-	70	--	--	--	--	--	--	--
P-influent	11/04/98	9:45 AM	28.99	32	-	70	1	3.8	11.1	--	--	--	--
P-influent	11/04/98	10:00 AM	28.99	32	-	70	2.5	3.9	10.6	--	--	--	--
P-influent	11/04/98	10:15 AM	28.99	32	-	68	3.4	3.9	10.2	--	--	--	--
P-influent	11/04/98	10:30 AM	28.99	33.1	-	68	4.8	3.9	10	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	11/04/98	10:45 AM	28.99	33.1	-	68	5.7	3.9	10	--	--	--	--
P-influent	11/04/98	11:15 AM	28.99	33.1	-	68	7.5	3.7	10.1	--	--	--	--
P-influent	11/04/98	11:45 AM	28.98	35.1	-	66	9.3	3.5	10	--	--	--	--
P-influent	11/04/98	1:15 PM	28.96	35.1	-	66	--	--	--	--	--	--	--
P-influent	11/04/98	1:30 PM	28.96	35.1	-	55	79.4	0.1	0.2	--	--	--	--
P-influent	11/04/98	2:00 PM	28.96	35.1	-	60	82.9	0.1	0	--	--	--	--
P-influent	11/04/98	2:30 PM	28.95	35.1	-	37	81.2	0.2	0	--	--	--	--
P-influent	11/04/98	3:00 PM	28.95	35.1	-	36	81	0.2	0	--	--	--	--
P-influent	11/04/98	3:30 PM	28.95	33.1	-	26	80.4	0.2	0	--	--	--	--
P-influent	11/05/98	9:21 AM	28.92	32	-	76	--	--	--	--	--	--	--
P-influent	11/05/98	10:00 AM	28.91	32	-	10	88.8	0	0	--	--	--	--
P-influent	11/05/98	10:30 AM	28.91	33.1	-	12	90	0	0	--	--	--	--
P-influent	11/05/98	11:00 AM	28.91	33.1	-	12	90.9	0	0	--	--	--	--
P-influent	11/05/98	11:30 AM	28.9	34	-	12	91.2	0	0	--	--	--	--
P-influent	11/05/98	12:00 PM	28.9	34	-	12	91.1	0	0	--	--	--	--
P-influent	11/05/98	12:30 PM	28.89	34	-	12	90.3	0	0	--	--	--	--
P-influent	11/06/98	9:06 AM	28.92	35.1	-	52	--	--	--	--	--	--	--
P-influent	11/06/98	9:30 AM	28.92	37.9	-	50	85.5	3.3	0	--	--	--	--
P-influent	11/06/98	10:00 AM	28.92	37.9	-	30	88.1	3.5	0	--	--	--	--
P-influent	11/06/98	10:30 AM	28.94	37	-	35	89.8	3.6	0	--	--	--	--
P-influent	11/06/98	11:00 AM	28.94	37	-	30	91.2	3.6	0	--	--	--	--
P-influent	11/06/98	11:30 AM	28.93	37.9	-	35	91.1	3.5	0	--	--	--	--
P-influent	11/06/98	12:00 PM	28.93	37.9	-	35	89.8	3.3	0	--	--	--	--
P-influent	11/06/98	12:57 PM	28.92	37.9	-	58	88.5	5.7	0	--	--	--	--
P-influent	11/06/98	1:15 PM	28.92	37.9	-	60	88.5	5.8	0	--	--	--	--
P-influent	11/06/98	1:45 PM	28.93	37.9	-	60	89.3	5.9	0	--	--	--	--
P-influent	11/06/98	2:15 PM	28.93	37.9	-	57	90.2	6	0	--	--	--	--
P-influent	11/06/98	2:45 PM	28.94	37.9	-	58	91.4	6.1	0	--	--	--	--
P-influent	11/06/98	3:15 PM	28.94	37.9	-	58	92.2	6.2	0	--	--	--	--
P-influent	11/06/98	3:45 PM	28.94	37	-	60	92.8	6.2	0	--	--	--	--
P-influent	11/07/98	8:52 AM	29.08	36	-	32	57.9	3.1	5.9	--	--	--	--
P-influent	11/07/98	9:15 AM	29.08	36	-	45	88.8	5	0	--	--	--	--
P-influent	11/07/98	9:45 AM	29.09	37.9	-	40	91	5.2	0	--	--	--	--
P-influent	11/07/98	10:15 AM	29.09	37.9	-	40	90.7	5.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	11/07/98	10:45 AM	29.09	39.9	-	38	90.3	5.1	0	--	--	--	--
P-influent	11/07/98	11:15 AM	29.09	39.9	-	38	91	5.2	0	--	--	--	--
P-influent	11/07/98	11:45 AM	29.07	41	-	37	91.3	5.2	0	--	--	--	--
P-influent	11/07/98	1:29 PM	29.07	39.9	-	58	79.6	5.4	1.2	--	--	--	--
P-influent	11/07/98	1:45 PM	29.07	39.9	-	45	88.6	6	0	--	--	--	--
P-influent	11/07/98	2:15 PM	29.07	39.9	-	45	89.1	6	0	--	--	--	--
P-influent	11/07/98	2:45 PM	29.06	39.9	-	45	90.4	6.1	0	--	--	--	--
P-influent	11/07/98	3:15 PM	29.06	39.9	-	45	91	6.1	0	--	--	--	--
P-influent	11/07/98	3:45 PM	29.05	37.9	-	45	91.9	6.1	0	--	--	--	--
P-influent	11/07/98	4:15 PM	29.05	37.9	-	45	92.5	6.2	0	--	--	--	--
P-influent	08/03/99	2:25 PM	28.78	72	-	-44	39.4	1.5	11	--	--	--	--
P-influent	08/03/99	2:55 PM	28.77	73	-	-40	50.4	1.9	8.7	--	--	--	--
P-influent	08/03/99	3:27 PM	28.77	73	-	-80	52.9	2.1	8.7	--	--	--	--
P-influent	08/03/99	3:57 PM	28.75	73	-	-78	57.2	2.4	6.5	--	--	--	--
P-influent	08/03/99	6:01 PM	28.74	70	-	-47	72.6	3.6	3.8	--	--	--	--
P-influent	08/04/99	2:43 PM	28.65	73.9	T	-30	101.7	4.9	0.2	--	--	--	--
P-influent	08/05/99	6:04 PM	28.6	72	-	-30	101.8	4.9	0.1	--	--	--	--
P-influent	08/06/99	7:08 PM	28.74	64.9	-	-30	70	3.6	3.7	--	--	--	--
P-influent	08/07/99	11:27 AM	28.56	72	-	-29	104	5.1	0	--	--	--	--
P-influent	08/08/99	9:53 AM	28.84	64	-	-29	101.1	5	0	--	--	--	--
P-influent	08/09/99	1:47 PM	28.59	64.9	-	-30	94.2	4.6	0	--	--	--	--
P-influent	08/10/99	9:35 AM	28.44	64.9	-	-30	94	5	0	--	--	--	--
P-influent	08/11/99	10:25 AM	28.65	72	-	-29	93.8	4.7	0	--	--	--	--
P-influent	08/16/99	5:26 PM	28.61	82.9	-	-27	85.5	4.5	0	--	--	--	--
P-influent	08/20/99	12:15 PM	28.89	75	-	-29	85.9	4.5	0	--	--	--	--
P-influent	08/23/99	5:52 PM	28.61	66.9	-	-27	86.5	4.6	0	--	--	--	--
P-influent	08/30/99	3:42 PM	29	66	-	-29	86.1	4.4	0	--	--	--	--
P-influent	09/02/99	4:45 PM	28.79	82	-	-28	83.1	4.3	0	--	--	--	--
P-influent	05/18/00	11:30 AM	28.84	50	-	-49	0	0	20	--	--	--	--
P-influent	05/18/00	11:45 AM	28.84	50	-	-48	--	--	--	--	--	--	--
P-influent	05/18/00	11:54 AM	28.84	50	-	-47	--	--	--	--	--	--	--
P-influent	05/18/00	12:14 PM	28.84	50	-	-46	0	0	18.3	--	--	--	--
P-influent	05/18/00	12:26 PM	28.84	50	-	-90	0	0	20.3	--	--	--	--
P-influent	05/18/00	12:45 PM	28.82	49	-	-90	0	0	20.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	05/18/00	1:00 PM	28.82	49	-	-90	0	0	20.3	--	--	--	--
P-influent	05/18/00	1:13 PM	28.82	49	-	-90	0	0	20.3	--	--	--	--
P-influent	05/18/00	2:03 PM	28.82	49	-	-90	0	0	20.5	--	--	--	--
P-influent	05/18/00	2:56 PM	28.83	50	-	-90	0	0	20.7	--	--	--	--
P-influent	05/18/00	4:16 PM	28.82	50	-	-90	0	0	20.8	--	--	--	--
P-influent	05/18/00	5:04 PM	28.83	48	-	-29	11.2	0	17.9	--	--	--	--
P-influent	05/18/00	5:57 PM	28.88	46	-	-32	33.6	0.3	12	--	--	--	--
P-influent	05/18/00	6:15 PM	28.88	46	-	-40	29.2	0.3	12.9	--	--	--	--
P-influent	05/18/00	7:10 PM	28.88	44	-	-40	36.7	0.4	10.8	--	--	--	--
P-influent	05/19/00	8:03 AM	28.97	45	-	-36	30.3	0.3	12.6	--	--	--	--
P-influent	05/19/00	10:10 AM	28.94	52	-	-35	42.9	0.5	9.4	--	--	--	--
P-influent	05/19/00	11:33 AM	28.91	54	-	-33	33.5	0.3	11.8	--	--	--	--
P-influent	05/20/00	9:38 AM	28.81	61	-	-50	36.7	0.2	10.6	--	--	--	--
P-influent	05/20/00	9:52 AM	28.81	61	-	-48	37.7	0.2	10.4	--	--	--	--
P-influent	05/20/00	10:12 AM	28.81	61	-	-46	39.7	0.2	10.1	--	--	--	--
P-influent	05/20/00	10:21 AM	28.81	61	-	-46	42.1	0.2	9.5	--	--	--	--
P-influent	05/20/00	10:40 AM	28.8	63	-	-84	34.3	0.1	11.9	--	--	--	--
P-influent	05/20/00	10:55 AM	28.8	63	-	-86	34.1	0.1	11.6	--	--	--	--
P-influent	05/20/00	11:10 AM	28.8	63	-	-46	37	0.2	10.8	--	--	--	--
P-influent	05/20/00	11:25 AM	28.8	63	-	-46	40	0.2	9.9	--	--	--	--
P-influent	05/20/00	12:31 PM	28.76	67	-	-45	41.4	0.2	9.6	--	--	--	--
P-influent	05/20/00	1:23 PM	28.76	67	-	-44	45.3	0.2	8.6	--	--	--	--
P-influent	05/20/00	2:24 PM	28.74	68	-	-44	46.9	0.3	7.3	--	--	--	--
P-influent	05/20/00	3:20 PM	28.73	68	-	-44	52.2	0.2	6.3	--	--	--	--
P-influent	05/20/00	4:20 PM	28.71	69	-	-34	48.3	0.3	7.1	--	--	--	--
P-influent	05/20/00	5:20 PM	28.71	67	-	-34	44.4	0.2	8.7	--	--	--	--
P-influent	05/21/00	7:50 AM	28.68	55	-	-36	36.2	0.2	11	--	--	--	--
P-influent	05/21/00	9:25 AM	28.66	60	-	-35	46.2	0.3	8.6	--	--	--	--
P-influent	05/31/00	8:18 AM	28.75	65	-	-50	66.1	0.1	0	--	--	--	--
P-influent	05/31/00	8:30 AM	28.75	68	-	-46	63.6	0	0.1	--	--	--	--
P-influent	05/31/00	8:50 AM	28.75	68	-	-42	59.1	0.9	1.3	--	--	--	--
P-influent	05/31/00	9:05 AM	28.75	68	-	-43	59.9	0.9	1.4	--	--	--	--
P-influent	05/31/00	9:20 AM	28.75	68	-	-43	61.2	0.9	0.7	--	--	--	--
P-influent	05/31/00	9:35 AM	28.78	71	-	-43	62.9	1	0.1	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
P-influent	05/31/00	9:55 AM	28.78	71	-	-42	62.7	1	0.3	--	--	--	--
P-influent	05/31/00	10:47 AM	28.76	73	-	-42	63.6	1	0	--	--	--	--
P-influent	05/31/00	11:43 AM	28.75	72	-	-42	63.8	1	0	--	--	--	--
P-influent	05/31/00	12:48 PM	28.75	76	-	-35	63.2	1	0	--	--	--	--
P-influent	05/31/00	1:43 PM	28.76	76	-	-35	64	1	0	--	--	--	--
P-influent	05/31/00	2:46 PM	28.76	77	-	-34	63.5	1	0	--	--	--	--
P-influent	05/31/00	3:50 PM	28.76	76	-	-35	63.3	0.9	0	--	--	--	--
P-influent	06/01/00	7:42 AM	28.83	54	-	-36	62.3	0.9	0	--	--	--	--
P-influent	06/01/00	8:32 AM	28.81	55	-	-36	62.2	1	1	--	--	--	--
P-influent	06/01/00	9:05 AM	28.81	55	-	-46	9	2	12.1	--	--	--	--
P-influent	06/01/00	9:15 AM	28.81	55	-	-45	14	3	6.8	--	--	--	--
P-influent	06/01/00	9:41 AM	28.83	53	0.02	-42	20.1	4.3	3.3	--	--	--	--
P-influent	06/01/00	9:49 AM	28.83	53	0.02	-44	21.3	4.5	2.5	--	--	--	--
P-influent	06/01/00	10:05 AM	28.83	53	0.02	-78	22.6	4.4	2.6	--	--	--	--
P-influent	06/01/00	10:15 AM	28.83	53	0.02	-79	25.5	4.7	1.3	--	--	--	--
P-influent	06/01/00	10:35 AM	28.86	52	0.04	-80	21.9	3.8	1.8	--	--	--	--
P-influent	06/01/00	11:34 AM	28.74	52	0.06	-78	29.9	4.8	0.7	--	--	--	--
P-influent	06/01/00	12:29 PM	28.74	52	0.06	-78	31.2	4.7	0.7	--	--	--	--
P-influent	06/01/00	1:45 PM	28.74	54	-	-77	30.4	4.5	1.3	--	--	--	--
P-influent	06/01/00	2:29 PM	28.74	54	-	-76	32.5	4.6	0.7	--	--	--	--
P-influent	06/01/00	3:31 PM	28.66	54	-	-78	32.6	4.6	0.6	--	--	--	--
P-influent	06/01/00	4:27 PM	28.66	54	-	-76	32.9	4.6	0.7	--	--	--	--
P-influent	06/02/00	7:53 AM	28.82	50	-	-78	28.1	4.6	1.9	--	--	--	--
P-influent	06/02/00	9:14 AM	28.84	52	-	-79	23.9	4.2	4.1	--	--	--	--
P-influent	06/03/00	8:09 AM	29.04	55	-	54	62	0.4	4.6	--	--	--	--
P-influent	06/03/00	8:20 AM	29.04	55	-	48	62.5	0.4	3.8	--	--	--	--
P-influent	06/03/00	8:30 AM	29.03	58	-	47	59.3	0.4	4.2	--	--	--	--
P-influent	06/03/00	8:40 AM	29.03	58	-	47	64.6	0.4	3.6	--	--	--	--
P-influent	06/03/00	8:50 AM	29.03	58	-	46	66.9	0.5	2.7	--	--	--	--
P-influent	06/03/00	9:00 AM	29.03	58	-	46	67.1	0.5	2.7	--	--	--	--
P-influent	06/03/00	9:10 AM	29.03	58	-	46	66.9	0.5	2.7	--	--	--	--
P-influent	06/03/00	9:22 AM	29.03	58	-	44	67.5	0.5	2.7	--	--	--	--
P-influent	06/03/00	9:29 AM	29.03	58	-	44	66.7	0.5	2.7	--	--	--	--
P-influent	06/03/00	9:35 AM	29.01	61	-	44	66.7	0.5	2.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	06/03/00	2:42 PM	28.9	67	-	43	69.9	0.5	1.8	--	--	--	--
P-influent	06/03/00	2:50 PM	28.9	67	-	35	71.1	0.5	1.5	--	--	--	--
P-influent	06/15/00	7:55 AM	28.26	58	-	10	0.1	15.2	1.2	--	--	--	--
P-influent	06/15/00	8:00 AM	28.26	58	-	10	0.1	15.3	1.3	--	--	--	--
P-influent	06/15/00	8:15 AM	28.26	58	-	10	0.3	14.9	1.4	--	--	--	--
P-influent	06/15/00	8:30 AM	28.26	59	-	10	0.4	14.3	1.3	--	--	--	--
P-influent	06/15/00	8:45 AM	28.26	59	-	10	0.4	14.6	1.6	--	--	--	--
P-influent	06/15/00	9:10 AM	28.26	59	-	10	0.6	14.4	2	--	--	--	--
P-influent	06/15/00	9:20 AM	28.26	59	-	10	0.6	14.3	1.9	--	--	--	--
P-influent	06/15/00	9:30 AM	28.26	61	-	10	0.6	14.3	2	--	--	--	--
P-influent	06/15/00	9:45 AM	28.26	61	-	10	0.6	14.2	2.2	--	--	--	--
P-influent	06/15/00	10:35 AM	28.28	64	-	6	0.7	13.9	2.1	951	--	--	--
P-influent	06/15/00	10:55 AM	28.28	64	-	7.5	0.7	14	2.3	3750	3134	--	--
P-influent	06/15/00	11:15 AM	28.28	64	-	7.5	0.6	13.9	2.3	3850	3850	--	--
P-influent	06/15/00	12:20 PM	28.29	69	-	10	0.6	13.9	2.2	3490	3490	--	--
P-influent	06/15/00	1:20 PM	28.31	69	-	10.65	0.7	13.3	3	2855	2855	--	--
P-influent	06/15/00	2:20 PM	28.29	70	-	10.42	0.7	13.1	3.3	2640	2640	--	--
P-influent	06/15/00	3:20 PM	28.3	68	T	10.53	0.8	13	3.7	3345	3345	--	--
P-influent	06/15/00	4:20 PM	28.31	66	T	10.44	0.7	12.8	3.7	4150	4150	--	--
P-influent	06/15/00	5:20 PM	28.3	66	-	10.29	0.8	12.6	3.9	3874	3874	--	--
P-influent	06/17/00	9:20 AM	28.86	54	-	38	24.2	7.2	0	--	--	--	--
P-influent	06/17/00	9:40 AM	28.88	56	-	38	22.4	7.8	0	--	--	--	--
P-influent	06/17/00	10:00 AM	28.88	56	-	38	20.2	7.9	0	--	--	--	--
P-influent	06/17/00	10:20 AM	28.88	56	-	48	18.1	7.9	0	--	--	--	--
P-influent	06/17/00	10:40 AM	28.87	59	-	65	17.4	8	0	--	--	--	--
P-influent	06/17/00	11:00 AM	28.87	59	-	65	17.1	7.9	0	--	--	--	--
P-influent	06/17/00	12:00 PM	28.86	60	-	65	15.2	8.1	0	--	--	--	--
P-influent	06/17/00	1:00 PM	28.88	62	-	65	15.2	8.1	0	--	--	--	--
P-influent	06/17/00	2:00 PM	28.89	64	-	65	15.1	8.1	0	--	--	--	--
P-influent	06/17/00	3:00 PM	28.88	65	-	60	13.5	8.3	0	--	--	--	--
P-influent	06/17/00	4:00 PM	28.86	65	-	60	13.2	8.4	0	--	--	--	--
P-influent	06/17/00	5:00 PM	28.86	65	-	60	12.6	8.2	0	--	--	--	--
P-influent	07/06/00	6:18 PM	28.89	69	-	62	1.5	2.7	13.5	--	--	--	--
P-influent	07/07/00	9:45 AM	28.97	68	-	64	3.3	9.3	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	07/08/00	10:45 AM	28.75	64	-	64	1.9	9.1	0.1	--	--	--	--
P-influent	07/09/00	9:10 AM	28.52	78	-	64	1.1	8.4	2	--	--	--	--
P-influent	07/10/00	9:42 AM	28.7	72	-	70	0.7	7.7	3.8	--	--	--	--
P-influent	07/11/00	12:03 PM	28.82	75	-	-70	0.5	7	5.3	--	--	--	--
P-influent	07/19/00	9:40 AM	28.84	63	-	11	8	23.7	0	--	--	--	--
P-influent	07/19/00	9:55 AM	28.84	63	-	11	8.2	23.4	0	--	--	--	--
P-influent	07/19/00	10:10 AM	28.84	63	-	11	8	23.1	0	--	--	--	--
P-influent	07/19/00	10:25 AM	28.84	63	-	10	7.7	23.1	0	--	--	--	--
P-influent	07/19/00	10:40 AM	28.83	65	-	10	7.8	23.3	0	--	--	--	--
P-influent	07/19/00	10:55 AM	28.83	65	-	11	7.5	22.5	0	--	--	--	--
P-influent	07/19/00	11:10 AM	28.83	65	-	12	7.2	22.6	0	--	--	--	--
P-influent	07/19/00	11:25 AM	28.83	65	-	12	7.2	22.5	0	--	--	--	--
P-influent	07/19/00	11:40 AM	28.8	67	-	12	6.8	21.9	0	--	--	--	--
P-influent	07/19/00	11:55 AM	28.8	67	-	17	6.5	22.1	0.1	--	--	--	--
P-influent	07/19/00	12:10 PM	28.8	67	-	17	6.4	22.1	0.2	--	--	--	--
P-influent	07/19/00	12:25 PM	28.8	67	-	17	6.2	21.4	0.3	--	--	--	--
P-influent	07/19/00	12:40 PM	28.81	69	-	17	5.5	21	0.4	--	--	--	--
P-influent	07/19/00	1:54 PM	28.77	69	-	17	4.6	20	1	--	--	--	--
P-influent	07/19/00	2:56 PM	28.77	71	-	17	4.3	20.1	1.3	--	--	--	--
P-influent	07/19/00	3:48 PM	28.75	72	-	17	3.7	19.8	1.6	--	--	--	--
P-influent	07/19/00	4:52 PM	28.74	72	-	17	3.7	20	2	--	--	--	--
P-influent	07/19/00	5:45 PM	28.74	71	-	17	3.8	19.5	2.2	--	--	--	--
P-influent	07/20/00	9:48 AM	28.61	64	0.01	17	5.3	17	5.2	--	--	--	--
P-influent	07/21/00	8:40 AM	28.69	58	-	-17	18.3	27.6	0	--	--	--	--
P-influent	07/21/00	8:55 AM	28.69	58	-	-17	22.3	23.7	0	--	--	--	--
P-influent	07/21/00	9:10 AM	28.69	58	-	-17	23.9	23.7	0	--	--	--	--
P-influent	07/21/00	9:25 AM	28.69	58	-	-17	24.7	23.8	0	--	--	--	--
P-influent	07/21/00	9:40 AM	28.71	59	T	-16	25.3	24.3	0	--	--	--	--
P-influent	07/21/00	9:55 AM	28.71	59	T	-11	25.5	24.5	0	--	--	--	--
P-influent	07/21/00	10:10 AM	28.71	59	T	-11	25.5	24	0	--	--	--	--
P-influent	07/21/00	10:25 AM	28.71	59	T	-11	25.5	24.7	0	--	--	--	--
P-influent	07/21/00	10:40 AM	-	-	-	-12	25.6	24.4	0	--	--	--	--
P-influent	07/21/00	10:55 AM	-	-	-	-16	25.2	24.3	0	--	--	--	--
P-influent	07/21/00	11:10 AM	-	-	-	-17	25.2	24.4	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	07/21/00	11:25 AM	-	-	-	-17	25.2	24.4	0	--	--	--	--
P-influent	07/21/00	11:40 AM	28.72	59	-	-17	25	24.1	0	--	--	--	--
P-influent	07/21/00	12:40 PM	28.72	60	-	-17	24.7	24.6	0	--	--	--	--
P-influent	07/21/00	1:40 PM	28.72	62	-	-17	24	24.7	0	--	--	--	--
P-influent	07/21/00	2:41 PM	28.73	61	-	-17	23.6	24.9	0	--	--	--	--
P-influent	07/21/00	3:40 PM	28.74	61	-	-17	22.7	24.5	0	--	--	--	--
P-influent	07/21/00	4:41 PM	28.76	59	-	-17	22.5	25	0	--	--	--	--
P-influent	07/22/00	9:20 AM	28.9	59	-	-17	15.4	22.6	0.2	--	--	--	--
P-influent	07/23/00	8:15 AM	29	57	-	-21	6.2	19.9	0	--	--	--	--
P-influent	07/23/00	8:30 AM	28.98	63	-	-21	7.6	20.5	0	--	--	--	--
P-influent	07/23/00	8:45 AM	28.98	63	-	-21	8.4	20.5	0	--	--	--	--
P-influent	07/23/00	9:00 AM	28.98	63	-	-21	9	20.9	0	--	--	--	--
P-influent	07/23/00	9:15 AM	28.98	63	-	-21	9.6	21.1	0	--	--	--	--
P-influent	07/23/00	9:30 AM	28.99	66	-	-18.5	10	21	0	--	--	--	--
P-influent	07/23/00	9:45 AM	28.99	66	-	-18.5	10.1	20.9	0	--	--	--	--
P-influent	07/23/00	10:00 AM	28.99	66	-	-18.5	20.3	21.1	0	--	--	--	--
P-influent	07/23/00	10:15 AM	28.99	66	-	-19	10.6	21.3	0	--	--	--	--
P-influent	07/23/00	10:30 AM	28.97	69	-	-19	10.6	21.4	0	--	--	--	--
P-influent	07/23/00	10:45 AM	28.97	69	-	-21	10.7	21.1	0	--	--	--	--
P-influent	07/23/00	11:00 AM	28.97	69	-	-21	11.1	21.2	0	--	--	--	--
P-influent	07/23/00	11:15 AM	28.97	69	-	-21	11	21.7	0	--	--	--	--
P-influent	07/23/00	12:15 PM	28.95	72	-	-21	11.3	21.7	0	--	--	--	--
P-influent	07/23/00	1:15 PM	-	-	-	-21	11.4	21.8	0	--	--	--	--
P-influent	07/23/00	2:15 PM	28.94	72	T	-21	11	21.8	0.1	--	--	--	--
P-influent	07/23/00	3:15 PM	28.93	74	-	-21	11.4	22	0.1	--	--	--	--
P-influent	07/23/00	4:13 PM	28.92	72	-	-21	11.3	22	0.2	--	--	--	--
P-influent	07/24/00	9:45 AM	28.87	76	-	-14	9.9	22.1	0.7	--	--	--	--
P-influent	09/06/00	3:30 PM	28.92	66	-	48	2	6.3	1.6	--	--	--	--
P-influent	09/06/00	3:45 PM	28.92	66	-	46	2.2	7	0	--	--	--	--
P-influent	09/06/00	4:00 PM	28.92	66	-	45	2.5	7.3	0	--	--	--	--
P-influent	09/06/00	4:25 PM	28.92	66	-	25	2.8	7.1	0	--	--	--	--
P-influent	09/06/00	4:40 PM	28.89	64	-	26	2.8	7.2	0	--	--	--	--
P-influent	09/06/00	4:55 PM	28.89	64	-	26	2.9	7.3	0	--	--	--	--
P-influent	09/06/00	5:10 PM	28.89	64	-	25	2.9	7.2	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	09/06/00	5:25 PM	28.89	64	-	25	3.1	7.2	0	--	--	--	--
P-influent	09/06/00	5:40 PM	28.89	62	-	25	3.1	7.2	0	--	--	--	--
P-influent	09/06/00	5:55 PM	28.89	62	-	25	3.1	7.2	0	--	--	--	--
P-influent	09/08/00	9:20 AM	28.8	61	-	18	3.6	6.2	1.8	--	--	--	--
P-influent	09/09/00	11:00 AM	28.7	69	-	18	4	6.8	0	--	--	--	--
P-influent	09/18/00	4:30 PM	28.4	76	-	23	3	6.9	0	--	--	--	--
P-influent	09/19/00	7:30 AM	28.24	67	-	--	2.9	6.9	0	--	--	--	--
P-influent	09/20/00	8:47 AM	28.29	57	-	31	2.9	6.5	2.6	--	--	--	--
P-influent	09/21/00	7:50 AM	28.6	45	T	38	2.7	7.2	1.2	--	--	--	--
P-influent	07/10/01	3:55 PM	28.7	74	-	-20	--	--	--	--	--	--	--
P-influent	07/10/01	4:25 PM	28.7	74	-	-22	--	--	--	--	--	--	--
P-influent	07/10/01	4:55 PM	28.71	71	-	-22	--	--	--	--	--	--	--
P-influent	07/10/01	5:25 PM	28.71	71	-	-22	--	--	--	--	--	--	--
P-influent	07/10/01	5:55 PM	28.72	70	-	-22	--	--	--	--	--	--	--
P-influent	07/11/01	4:52 PM	28.78	74	-	-22	--	--	--	--	--	--	--
P-influent	07/12/01	7:39 AM	28.9	65	-	-24	--	--	--	--	--	--	--
P-influent	07/12/01	5:21 PM	28.87	77	-	-22	--	--	--	--	--	--	--
P-influent	07/13/01	1:13 PM	28.9	82	-	-22	--	--	--	--	--	--	--
P-influent	07/16/01	9:36 AM	28.77	71	-	-23	--	--	--	--	--	--	--
P-influent	07/17/01	10:05 AM	28.76	70	-	-23	--	--	--	--	--	--	--
P-influent	07/18/01	7:54 AM	28.78	67	-	-23	--	--	--	--	--	--	--
P-influent	07/19/01	1:12 PM	28.8	84	-	-22	--	--	--	--	--	--	--
P-influent	07/20/01	2:12 PM	28.77	78	-	-22	--	--	--	--	--	--	--
P-influent	07/23/01	4:21 PM	28.54	87	-	-22	--	--	--	--	--	--	--
P-influent	07/24/01	9:02 AM	28.67	73	-	-23	--	--	--	--	--	--	--
P-influent	07/26/01	7:35 AM	29.06	61	-	-25	--	--	--	--	--	--	--
P-influent	08/02/01	4:45 PM	28.92	84	-	-22	--	--	--	--	--	--	--
P-influent	08/09/01	7:56 AM	28.54	79	-	-23	--	--	--	--	--	--	--
P-influent	08/10/01	12:49 PM	28.87	69	-	-23	--	--	--	--	--	--	--
P-influent	10/28/03	1:30 PM	28.08	44	T	--	--	--	--	--	--	--	--
P-influent	10/29/03	8:38 AM	28.38	39	T	-90	--	--	--	--	--	--	--
P-influent	10/30/03	9:55 AM	28.72	40	T	-89	--	--	--	--	--	--	--
P-influent	10/31/03	2:21 PM	28.77	46	-	-89	--	--	--	--	--	--	--
P-influent	11/01/03	8:37 AM	29.12	34	-	-92	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	11/02/03	10:45 AM	28.95	38	-	-92	--	--	--	--	--	--	--
P-influent	11/03/03	8:22 AM	29.07	34	-	-92	--	--	--	--	--	--	--
P-influent	11/04/03	10:55 AM	28.65	33	-	-100	--	--	--	--	--	--	--
P-influent	11/07/03	10:01 AM	29	21	-	0.1	0	0	19.5	--	--	--	--
P-influent	11/10/03	12:40 PM	28.86	33	T	-80	--	--	--	--	--	--	--
P-influent	11/11/03	8:48 AM	28.5	39	-	-81	--	--	--	--	--	--	--
P-influent	11/12/03	8:59 AM	28.37	37	-	-83	--	--	--	--	--	--	--
P-influent	11/13/03	9:10 AM	28.88	27	T	-84	--	--	--	--	--	--	--
P-influent	11/14/03	8:56 AM	28.75	34	-	-85	--	--	--	--	--	--	--
P-influent	11/17/03	8:40 AM	28.82	39	-	-89	--	--	--	--	--	--	--
P-influent	11/19/03	9:21 AM	28.33	36	T	-86	--	--	--	--	--	--	--
P-influent	11/21/03	1:54 PM	28.87	34	-	-84	--	--	--	--	--	--	--
P-influent	11/24/03	1:14 PM	28.3	18	T	-88	--	--	--	--	--	--	--
P-influent	11/26/03	10:50 AM	28.67	31	-	-87	--	--	--	--	--	--	--
P-influent	12/01/03	8:45 AM	28.8	27	-	-88	--	--	--	--	--	--	--
P-influent	12/03/03	10:03 AM	29.25	22	-	-88	--	--	--	--	--	--	--
P-influent	12/08/03	9:59 AM	28.69	35	-	-86	--	--	--	--	--	--	--
P-influent	12/12/03	9:29 AM	28.95	2	-	-91	--	--	--	--	--	--	--
P-influent	12/15/03	12:58 PM	28.52	25	-	-90	--	--	--	--	--	--	--
P-influent	12/22/03	8:59 AM	28.57	31	-	-89	--	--	--	--	--	--	--
P-influent	03/19/04	10:36 AM	28.97	35	-	-79	--	--	--	--	--	--	--
P-influent	03/29/04	3:00 PM	--	--	--	-90	--	--	--	--	--	--	--
P-influent	03/30/04	1:40 PM	--	--	--	-90	--	--	--	--	--	--	--
P-influent	03/30/04	3:33 PM	--	--	--	-86	--	--	--	--	--	--	--
P-influent	03/30/04	4:35 PM	--	--	--	-86	--	--	--	--	--	--	--
P-influent	03/30/04	5:15 PM	--	--	--	-84	--	--	--	--	--	--	--
P-influent	03/30/04	6:06 PM	--	--	--	-86	--	--	--	--	--	--	--
P-influent	03/31/04	10:00 AM	--	--	--	-94	--	--	--	--	--	--	--
P-influent	03/31/04	10:52 AM	--	--	--	-92	--	--	--	--	--	--	--
P-influent	03/31/04	11:30 AM	--	--	--	-91	--	--	--	--	--	--	--
P-influent	04/01/04	3:18 PM	28.86	50	-	-8	--	--	--	--	--	--	--
P-influent	04/01/04	3:58 PM	28.87	50	-	-84	--	--	--	--	--	--	--
P-influent	04/01/04	4:15 PM	28.87	50	-	-84	--	--	--	--	--	--	--
P-influent	04/02/04	7:48 AM	28.94	35	-	-81	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	04/03/04	9:02 AM	28.65	40	-	-81	--	--	--	--	--	--	--
P-influent	04/05/04	1:08 PM	28.87	44	-	-82	--	--	--	--	--	--	--
P-influent	04/06/04	8:12 AM	28.56	34	-	-84	--	--	--	--	--	--	--
P-influent	04/07/04	8:19 AM	28.67	46	-	-82	--	--	--	--	--	--	--
P-influent	04/13/04	9:28 AM	28.89	37	-	-86	--	--	--	--	--	--	--
P-influent	04/15/04	4:03 PM	28.72	57	-	-32	10.6	10	0	--	--	--	--
P-influent	04/15/04	4:32 PM	28.71	54	-	-32.4	10.4	10	0	--	--	--	--
P-influent	04/15/04	5:00 PM	28.71	54	-	-33.6	10.2	10.1	0	--	--	--	--
P-influent	04/15/04	5:36 PM	28.7	52	T	-32.6	10.1	10.1	0	--	--	--	--
P-influent	04/16/04	11:59 AM	28.64	74	-	-80	--	--	--	--	--	--	--
P-influent	04/19/04	5:10 PM	28.92	-	-	-86	--	--	--	--	--	--	--
P-influent	04/22/04	1:12 PM	28.99	47	-	-84	--	--	--	--	--	--	--
P-influent	04/28/04	2:14 PM	28.29	71	-	-81	--	--	--	--	--	--	--
P-influent	05/01/04	4:15 PM	28.84	50	-	-84	--	--	--	--	--	--	--
P-influent	05/10/04	10:47 AM	28.68	74	-	-82	--	--	--	--	--	--	--
P-influent	05/24/04	8:46 AM	28.69	43	-	-87	--	--	--	--	--	--	--
P-influent	06/01/04	12:24 PM	28.36	56	-	-84	--	--	--	--	--	--	--
P-influent	06/08/04	2:30 PM	28.68	87	-	-81	--	--	--	--	--	--	--
P-influent	06/11/04	11:20 AM	28.8	57	-	--	0	0	20	--	--	--	--
P-influent	06/11/04	11:57 AM	28.79	58	-	-22	0	0	20	--	--	--	--
P-influent	06/11/04	12:30 PM	28.76	59	-	-12	0	0	19.9	--	--	--	--
P-influent	06/11/04	1:05 PM	28.76	59	-	-12	0	0	19.9	--	--	--	--
P-influent	06/11/04	2:00 PM	28.74	62	-	-12	0	0	19.9	--	--	--	--
P-influent	06/11/04	2:45 PM	28.76	60	-	-12	0	0	20.1	--	--	--	--
P-influent	06/11/04	3:30 PM	28.77	61	-	-12	0	0	19.9	--	--	--	--
P-influent	06/11/04	4:45 PM	28.77	-	-	-12	0	0	19.9	--	--	--	--
P-influent	06/13/04	9:15 AM	28.54	63	-	-37.5	--	--	--	--	--	--	--
P-influent	06/13/04	3:00 PM	28.49	69	-	-37.3	--	--	--	--	--	--	--
P-influent	06/14/04	7:07 PM	28.64	67	-	-37.5	--	--	--	--	--	--	--
P-influent	06/15/04	1:11 PM	28.86	69	-	-21.5	--	--	--	--	--	--	--
P-influent	06/15/04	2:18 PM	28.85	69	-	-37.1	--	--	--	--	--	--	--
P-influent	06/16/04	10:41 AM	28.8	79	-	--	--	--	--	--	--	--	--
P-influent	06/17/04	8:48 AM	28.82	62	-	-37.2	--	--	--	--	--	--	--
P-influent	06/22/04	3:46 PM	28.6	69	-	-37.5	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	06/23/04	11:33 AM	28.68	64	-	-23	--	--	--	--	--	--	--
P-influent	06/24/04	9:02 AM	28.63	55	-	-38.3	2.8	2.3	14.9	--	--	--	--
P-influent	06/26/04	12:48 PM	28.82	64	-	--	--	--	--	--	--	--	--
P-influent	06/28/04	12:10 PM	28.82	73	-	--	--	--	--	--	--	--	--
P-influent	06/28/04	3:10 PM	28.78	74	-	35	--	--	--	--	--	--	--
P-influent	06/28/04	3:12 PM	28.78	74	-	25	--	--	--	--	--	--	--
P-influent	06/28/04	6:44 PM	28.76	70	-	-37.6	1.1	1.7	16.5	--	--	--	--
P-influent	06/29/04	2:49 PM	28.81	80	-	--	--	--	--	--	--	--	--
P-influent	07/02/04	11:32 AM	28.92	73	-	-37.5	--	--	--	--	--	--	--
P-influent	07/07/04	8:58 AM	28.55	54	-	-38.9	--	--	--	--	--	--	--
P-influent	07/09/04	11:00 AM	28.88	68	-	-38.1	--	--	--	--	--	--	--
P-influent	07/13/04	5:48 PM	28.52	72	-	-38.3	--	--	--	--	--	--	--
P-influent	07/15/04	5:01 PM	28.63	81	-	-37.3	--	--	--	--	--	--	--
P-influent	07/20/04	9:44 AM	28.69	77	-	-37.6	--	--	--	--	--	--	--
P-influent	07/30/04	5:29 PM	28.59	74	-	-37.5	--	--	--	--	--	--	--
P-influent	08/05/04	12:46 PM	28.99	71	-	38	--	--	--	--	--	--	--
P-influent	08/11/04	4:41 PM	28.63	53	-	-38.8	--	--	--	--	--	--	--
P-influent	08/21/04	10:41 AM	28.81	62	-	-70.2	--	--	--	--	--	--	--
P-influent	08/21/04	11:05 AM	28.81	62	-	-50.8	--	--	--	--	--	--	--
P-influent	08/21/04	11:30 AM	28.8	64	-	-79.7	--	--	--	--	--	--	--
P-influent	08/21/04	12:35 PM	28.79	66	-	-77.6	--	--	--	--	--	--	--
P-influent	08/21/04	1:09 PM	28.79	66	-	-72.6	--	--	--	--	--	--	--
P-influent	08/21/04	1:45 PM	28.77	67	-	-75.2	--	--	--	--	--	--	--
P-influent	08/21/04	2:17 PM	28.77	67	-	-74.8	--	--	--	--	--	--	--
P-influent	08/21/04	2:45 PM	28.76	69	-	-19.5	--	--	--	--	--	--	--
P-influent	08/21/04	3:22 PM	28.76	69	-	-20	--	--	--	--	--	--	--
P-influent	08/21/04	4:26 PM	28.75	69	-	-20.6	--	--	--	--	--	--	--
P-influent	08/21/04	5:05 PM	28.74	67	-	-21.2	--	--	--	--	--	--	--
P-influent	08/21/04	5:44 PM	28.73	64	-	-21.8	--	--	--	--	--	--	--
P-influent	08/21/04	6:10 PM	28.73	64	-	-21.6	--	--	--	--	--	--	--
P-influent	08/21/04	6:45 PM	28.72	56	-	-21.5	--	--	--	--	--	--	--
P-influent	08/22/04	7:45 AM	28.53	54	T	-18.3	--	--	--	--	--	--	--
P-influent	08/22/04	8:20 AM	28.53	54	T	-18.4	--	--	--	--	--	--	--
P-influent	08/22/04	8:46 AM	28.53	57	T	-18.5	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	08/22/04	9:18 AM	28.53	57	T	-18.9	--	--	--	--	--	--	--
P-influent	08/22/04	9:51 AM	28.51	65	-	-19.1	--	--	--	--	--	--	--
P-influent	08/22/04	10:16 AM	28.51	65	-	-19	--	--	--	--	--	--	--
P-influent	08/22/04	10:53 AM	28.5	74	-	-18.8	--	--	--	--	--	--	--
P-influent	08/22/04	11:15 AM	28.5	74	-	-18.9	--	--	--	--	--	--	--
P-influent	08/22/04	11:51 AM	28.48	75	-	-41	--	--	--	--	--	--	--
P-influent	08/22/04	12:42 PM	28.48	76	-	-42.2	--	--	--	--	--	--	--
P-influent	08/22/04	1:17 PM	28.48	76	-	-42.4	--	--	--	--	--	--	--
P-influent	08/22/04	1:47 PM	28.48	78	-	-42.7	--	--	--	--	--	--	--
P-influent	08/22/04	2:45 PM	28.48	79	-	-42.6	--	--	--	--	--	--	--
P-influent	08/22/04	3:22 PM	28.48	79	-	-42.5	--	--	--	--	--	--	--
P-influent	08/23/04	2:17 PM	28.82	66	-	-37.8	--	--	--	--	--	--	--
P-influent	09/03/04	1:37 PM	28.82	83	-	-25	--	--	--	--	--	--	--
P-influent	09/07/04	4:37 PM	28.94	62	-	-25	--	--	--	--	--	--	--
P-influent	09/08/04	9:57 AM	29.08	62	-	-27	--	--	--	--	--	--	--
P-influent	09/09/04	10:28 AM	28.97	63	-	-26	--	--	--	--	--	--	--
P-influent	09/13/04	10:47 AM	28.8	78	-	-25	--	--	--	--	--	--	--
P-influent	09/16/04	9:16 AM	28.66	57	-	-27	--	--	--	--	--	--	--
P-influent	09/17/04	7:33 AM	28.91	48	-	--	--	--	--	--	--	--	--
P-influent	09/22/04	8:12 AM	29.02	65	-	--	--	--	--	--	--	--	--
P-influent	09/23/04	3:05 PM	28.82	78	-	-27	--	--	--	--	--	--	--
P-influent	09/28/04	9:13 AM	29.09	50	-	-40	--	--	--	--	--	--	--
P-influent	09/28/04	9:47 AM	29.11	52	-	-39.7	--	--	--	--	--	--	--
P-influent	09/28/04	10:13 AM	29.11	52	-	-38.4	--	--	--	--	--	--	--
P-influent	09/28/04	10:44 AM	29.09	54	-	-38.7	--	--	--	--	--	--	--
P-influent	09/28/04	11:20 AM	29.09	54	-	-37	--	--	--	--	--	--	--
P-influent	09/28/04	11:47 AM	29.07	57	-	-37.6	--	--	--	--	--	--	--
P-influent	09/28/04	12:17 PM	29.07	57	-	-36.9	--	--	--	--	--	--	--
P-influent	09/28/04	12:46 PM	29.05	60	-	-37.2	--	--	--	--	--	--	--
P-influent	09/29/04	11:23 AM	28.95	60	-	--	--	--	--	--	--	--	--
P-influent	09/30/04	3:39 PM	28.73	67	-	-28	--	--	--	--	--	--	--
P-influent	10/04/04	2:46 PM	29.04	44	-	-29	--	--	--	--	--	--	--
P-influent	10/07/04	1:13 PM	28.91	71	-	-28	--	--	--	--	--	--	--
P-influent	10/08/04	9:46 AM	28.63	60	0.25	--	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
P-influent	10/11/04	1:29 PM	29	65	-	-28	--	--	--	--	--	--	--
P-influent	10/25/04	4:14 PM	28.87	53	-	-24	--	--	--	--	--	--	--
P-influent	11/02/04	12:47 PM	28.89	43	T	-23.3	--	--	--	--	--	--	--
P-influent	11/11/04	9:20 AM	29.23	28	-	--	--	--	--	--	--	--	--
P-influent	11/11/04	1:47 PM	29.14	38	-	-25.3	--	--	--	--	--	--	--
P-influent	11/15/04	10:51 AM	29.24	38	-	--	--	--	--	--	--	--	--
P-influent	11/17/04	7:46 AM	28.89	45	-	--	--	--	--	--	--	--	--
P-influent	11/18/04	10:30 AM	28.96	51	-	-25.9	--	--	--	--	--	--	--
P-influent	11/19/04	7:18 AM	28.97	38	-	--	--	--	--	--	--	--	--
P-influent	11/21/04	8:01 AM	29	30	-	--	--	--	--	--	--	--	--
P-influent	12/04/04	2:31 PM	28.43	38	-	-25	--	--	--	--	--	--	--
P-influent	12/09/04	9:41 AM	28.59	35	-	-24.9	--	--	--	--	--	--	--
P-influent	12/14/04	2:07 PM	29.12	21	-	-25.1	--	--	--	--	--	--	--
P-influent	12/22/04	11:25 AM	28.92	4	-	-23.7	--	--	--	--	--	--	--
P-influent	01/03/05	11:26 AM	29.11	14	-	-27.2	--	--	--	--	--	--	--
P-influent	01/11/05	11:26 AM	28.85	20	-	-26.1	--	--	--	--	--	--	--
P-influent	01/18/05	9:37 AM	29.14	0	-	26.5	--	--	--	--	--	--	--
P-influent	01/24/05	12:58 PM	28.64	26	-	-26.6	--	--	--	--	--	--	--
P-influent	04/15/05	2:24 PM	29.08	66	-	--	--	--	--	--	--	--	--
P-influent	04/15/05	2:28 PM	29.08	66	-	-20.7	81.9	0	1.6	--	--	--	--
P-influent	04/15/05	3:12 PM	29.07	66	-	-19.5	81	0	1.6	--	--	--	--
P-influent	04/15/05	3:50 PM	29.06	64	-	-19.4	81.6	0	1.7	--	--	--	--
P-influent	04/15/05	4:50 PM	29.06	61	-	-19.4	81.1	0	1.7	--	--	--	--
P-influent	04/15/05	5:47 PM	29.05	57	-	-19.6	82	0	1.6	--	--	--	--
P-influent	04/15/05	6:20 PM	29.05	57	-	-19.9	81.4	0	1.7	--	--	--	--
P-influent	04/15/05	6:25 PM	29.05	57	-	--	--	--	--	--	--	--	--
P-influent	04/16/05	11:17 AM	29.05	60	-	--	--	--	--	--	--	--	--
P-influent	04/16/05	11:20 AM	29.05	60	-	-24.6	60.1	0.2	4.8	--	--	--	--
P-influent	04/16/05	12:18 PM	29.05	62	-	-19.8	78.2	0.1	1.8	--	--	--	--
P-influent	04/16/05	1:23 PM	29.05	62	-	-19.4	79.8	0	1.8	--	--	--	--
P-influent	04/16/05	2:25 PM	29.05	60	T	-19.4	78.7	0	1.8	--	--	--	--
P-influent	04/16/05	3:17 PM	29.05	56	T	-19.6	78.3	0	1.8	--	--	--	--
P-influent	04/16/05	4:24 PM	29.05	53	T	-19.8	77.9	0	1.8	--	--	--	--
P-influent	04/16/05	5:20 PM	29.04	53	T	-19.7	77.9	0	1.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
P-influent	04/16/05	6:26 PM	29.04	52	T	-19.6	78.1	0	1.8	--	--	--	--
P-influent	04/16/05	6:30 PM	29.04	51	T	--	--	--	--	--	--	--	--
P-influent	04/17/05	10:39 AM	29.03	60	-	-20.8	83.3	0.1	1	--	--	--	--
P-influent	04/17/05	11:38 AM	29.01	64	-	-19.1	83.6	0	1	--	--	--	--
P-influent	04/17/05	12:31 PM	29	66	-	-19.1	82.1	0	1	--	--	--	--
P-influent	04/17/05	1:34 PM	28.98	66	-	-18.7	80.2	0	1.2	--	--	--	--
P-influent	04/17/05	2:20 PM	28.98	66	-	-18.8	78.8	0	1.2	--	--	--	--
P-influent	04/17/05	3:36 PM	28.95	67	-	-19	77.3	0	1.3	--	--	--	--
P-influent	04/17/05	4:30 PM	28.94	67	-	-19	77	0	1.3	--	--	--	--
P-influent	04/17/05	5:11 PM	28.94	67	-	-19	76.7	0	1.3	--	--	--	--
P-influent	04/17/05	5:26 PM	28.94	67	-	-19	76.1	0.1	1.3	--	--	--	--
P-influent	04/17/05	5:30 PM	28.93	64	-	--	--	--	--	--	--	--	--
P-influent	04/20/05	5:00 PM	28.87	48	-	--	--	--	--	--	--	--	--
P-influent	04/20/05	5:03 PM	28.87	48	-	-30	0	0	20.3	--	--	--	--
P-influent	04/20/05	5:07 PM	28.87	48	-	-4.1	0	0	20.2	--	--	--	--
P-influent	04/20/05	5:11 PM	28.87	48	-	-4	0.1	1.1	17.8	--	--	--	--
P-influent	04/21/05	4:10 PM	28.77	60	-	-3.6	25.4	4.1	8.2	--	--	--	--
P-influent	04/22/05	7:52 AM	28.65	48	-	-4	33.9	4	6.9	--	--	--	--
P-influent	04/25/05	11:28 AM	28.18	55	-	-3.9	39.6	2.7	8	--	--	--	--
P-influent	04/26/05	1:15 PM	28.18	44	-	-3.8	19.1	2.9	12.7	--	--	--	--
P-influent	04/27/05	1:55 PM	28.45	42	T	-3.7	14.3	2	14.9	--	--	--	--
P-influent	04/27/05	2:44 PM	28.46	42	T	-3.9	21.6	2.3	12.7	--	--	--	--
P-influent	04/29/05	3:48 PM	28.65	48	-	-3.7	27	2.6	10.7	--	--	--	--
P-influent	05/03/05	10:15 AM	28.82	43	-	-3.7	24.5	2	12.4	--	--	--	--
P-influent	05/04/05	11:30 AM	28.98	61	-	-3.8	20	1.7	13.8	--	--	--	--
P-influent	05/05/05	8:45 AM	28.98	61	-	-3.9	27.3	2.1	11.9	--	--	--	--
P-influent	05/09/05	9:24 AM	28.59	65	T	-3.8	36.5	2.5	8.7	--	--	--	--
P-influent	05/17/05	8:56 AM	28.86	45	-	-0.4	30.8	1.9	11.7	--	--	--	--
P-influent	05/23/05	9:08 AM	28.52	51	T	-3.9	28.2	2	12.2	--	--	--	--
P-influent	05/23/05	2:48 PM	28.62	66	-	-14.5	87.3	0	1	--	--	--	--
P-influent	05/24/05	9:45 AM	28.8	66	-	-13.6	71.2	0.1	2.7	--	--	--	--
P-influent	05/25/05	8:10 AM	28.89	64	-	-14.9	33	0.1	11	--	--	--	--
P-influent	05/26/05	8:45 AM	28.59	60	0.01	-7.5	--	--	--	--	--	--	--
P-influent	05/26/05	8:46 AM	28.59	60	0.01	-7.6	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
P-influent	05/26/05	8:47 AM	28.59	60	0.01	--	28.7	0	13.2	--	--	--	--
P-influent	05/26/05	8:57 AM	28.59	60	0.01	--	--	--	--	--	--	--	--
P-influent	05/26/05	8:58 AM	28.59	60	0.01	--	39.6	0.1	10.3	--	--	--	--
P-influent	05/27/05	8:53 AM	28.56	56	-	-7.6	32.5	0.1	12.1	--	--	--	--
P-influent	05/31/05	8:30 AM	28.95	68	-	-7.6	0.7	0	19.9	--	--	--	--
P-influent	05/31/05	10:03 AM	28.95	72	-	-11.8	16.2	0.1	15.9	--	--	--	--
P-influent	06/01/05	7:35 AM	28.93	65	-	-11.8	16.6	0.1	15.4	--	--	--	--
P-influent	06/01/05	2:36 PM	28.86	78	-	-14.1	69.1	0.6	1.8	--	--	--	--
P-influent	06/02/05	8:22 AM	28.85	64	-	-3.9	35.2	2.1	10.1	--	--	--	--
P-influent	06/02/05	1:17 PM	28.77	79	-	-12.2	68.1	0.8	1.5	--	--	--	--
P-influent	06/03/05	1:01 PM	28.66	80	-	-12.2	68.3	0.8	1.4	--	--	--	--
P-influent	06/06/05	1:01 PM	28.51	74	-	-13.1	60.6	0.5	3.9	--	--	--	--
P-influent	06/07/05	8:10 AM	28.66	64	-	-3.7	22.4	1.7	13.2	--	--	--	--
P-influent	06/07/05	2:06 PM	28.56	76	-	-13.1	66.5	1.1	1.3	--	--	--	--
P-influent	06/08/05	1:35 PM	28.57	68	-	-13.2	66.1	1.1	1.3	--	--	--	--
P-influent	06/15/05	8:20 AM	28.49	56	-	-14.1	65.8	0.9	2.6	--	--	--	--
P-influent	06/15/05	11:30 AM	28.58	61	-	-3.6	22.1	2	13.3	--	--	--	--
P-influent	06/22/05	9:07 AM	29.01	72	-	-13.9	63.3	1.1	1.9	--	--	--	--
P-influent	06/29/05	8:50 AM	28.84	61	-	-13.9	64.8	0.8	2.6	--	--	--	--
P-influent	06/29/05	9:00 AM	28.84	61	-	-3.9	34.4	2.1	10.3	--	--	--	--
P-influent	07/14/05	1:55 PM	28.82	86	-	-13.2	73.3	0.5	19.4	--	--	--	--
P-influent	07/19/05	3:34 PM	28.78	82	-	-14.2	71.5	0.5	1.8	--	--	--	--
P-influent	07/29/05	8:26 AM	29.01	61	-	-14.4	59.9	0.4	4.5	--	--	--	--
P-influent	08/10/05	7:04 AM	28.76	65	-	-14.8	--	--	--	--	--	--	--
P-influent	08/10/05	10:33 AM	28.78	76	-	-13.7	59	2.4	0.8	--	--	--	--
P-influent	08/11/05	7:15 AM	28.87	63	-	-16.1	--	--	--	--	--	--	--
P-influent	08/11/05	10:20 AM	28.85	68	-	-15.1	56.9	2.5	0.9	--	--	--	--
P-influent	08/12/05	7:04 AM	28.59	66	0.01	-15.8	--	--	--	--	--	--	--
P-influent	08/12/05	5:10 PM	28.65	75	-	-14.7	50	2.5	1.4	--	--	--	--
P-influent	08/24/05	9:09 AM	29.05	66	-	-15.5	36.3	2.1	5.5	--	--	--	--
P-influent	09/15/05	10:29 AM	29.01	64.94	-	-5.2	33.9	2.6	4.1	--	--	--	--
pyle-effluent	10/18/03	3:53 PM	28.66	60	-	3.2	1.6	2.6	15.1	--	--	--	--
pyle-effluent	10/19/03	9:18 AM	28.92	45	-	3.4	1.2	2.4	15.4	--	--	--	--
pyle-effluent	10/19/03	10:33 AM	28.9	49	-	2.4	1.1	2.2	15.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-effluent	10/20/03	9:47 AM	28.43	52	-	--	6.4	10.5	4.3	--	--	--	--
pyle-effluent	10/21/03	8:24 AM	28.62	45	-	2.6	1	1.4	17.7	--	--	--	--
pyle-effluent	10/22/03	8:57 AM	28.78	39	-	0.5	3.9	2.2	15.8	--	--	--	--
pyle-effluent	10/22/03	6:09 PM	28.67	38	T	3.1	4.5	2.4	15.8	--	--	--	--
pyle-effluent	10/23/03	7:14 AM	28.65	39	-	3.1	3.2	2.1	16.1	--	--	--	--
pyle-effluent	10/23/03	4:43 PM	28.73	40	-	2.9	3	2.1	16.1	--	--	--	--
pyle-effluent	10/24/03	7:24 AM	28.78	36	-	3	1	0.9	18.1	--	--	--	--
pyle-effluent	10/25/03	7:35 AM	28.8	38	-	3.5	2.6	2.5	15.3	--	--	--	--
pyle-effluent	10/26/03	8:22 AM	28.89	35	-	3	1.9	2.2	15.9	--	--	--	--
pyle-effluent	10/27/03	8:08 AM	28.69	30	-	2.9	1.4	2	16.3	--	--	--	--
pyle-effluent	10/28/03	7:22 AM	28.12	35	T	3.2	2.7	2.5	15.3	--	--	--	--
pyle-effluent	10/29/03	7:37 AM	28.36	38	T	2.1	5.2	9.4	6.8	--	--	--	--
pyle-effluent	10/30/03	10:15 AM	28.72	40	T	1.2	4.6	12.4	1.7	--	--	--	--
pyle-effluent	10/31/03	2:31 PM	28.81	46	-	1.4	2.7	12.2	2.8	--	--	--	--
pyle-effluent	11/01/03	9:00 AM	29.12	34	-	1.4	1.6	11.7	4	--	--	--	--
pyle-effluent	11/02/03	10:58 AM	28.95	38	-	0.2	1.3	10.9	5.6	--	--	--	--
pyle-effluent	11/03/03	8:39 AM	29.06	35	-	1.2	1	10.4	6.8	--	--	--	--
pyle-effluent	11/04/03	10:08 AM	28.69	33	T	1.2	2.1	10.3	5.7	--	--	--	--
pyle-effluent	11/05/03	8:42 AM	28.83	35	-	1.5	1	9.7	6.9	--	--	--	--
pyle-effluent	11/06/03	9:52 AM	29.02	25	-	1.2	0.6	9	7.7	--	--	--	--
pyle-effluent	11/07/03	9:40 AM	29	21	-	0	0.3	5.9	11.9	--	--	--	--
pyle-effluent	11/10/03	9:23 AM	28.95	31	-	1.2	1.2	8.6	8	--	--	--	--
pyle-effluent	11/11/03	8:34 AM	28.5	39	-	1.3	2	8.2	8.4	--	--	--	--
pyle-effluent	11/12/03	8:47 AM	28.37	37	-	1.3	1.6	8	8.8	--	--	--	--
pyle-effluent	11/13/03	8:57 AM	28.88	27	T	1.3	0.3	7.3	10	--	--	--	--
pyle-effluent	11/14/03	8:43 AM	28.75	34	-	1.3	0.4	7.2	10.3	--	--	--	--
pyle-effluent	11/17/03	8:25 AM	28.83	37	-	1.2	0.3	6.5	11.6	--	--	--	--
pyle-effluent	11/18/03	8:31 AM	28.3	45	T	0.9	2.3	6.5	11.1	--	--	--	--
pyle-effluent	11/19/03	8:37 AM	28.33	36	T	0.7	0.9	6.3	11.2	--	--	--	--
pyle-effluent	11/21/03	11:02 AM	28.87	32	-	0.5	0	5.9	11.9	--	--	--	--
pyle-effluent	11/24/03	12:58 PM	28.3	18	T	0.9	0.8	6.1	11.6	--	--	--	--
pyle-effluent	11/25/03	3:04 PM	28.36	33	-	-1.2	0.7	6.1	11.4	--	--	--	--
pyle-effluent	11/26/03	11:14 AM	28.67	31	-	1.2	0	5.6	12.5	--	--	--	--
pyle-effluent	12/01/03	9:08 AM	28.8	27	-	0.5	0	5.4	12.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-effluent	12/08/03	9:37 AM	28.69	35	-	3.9	2.2	5.4	10.5	--	--	--	--
pyle-effluent	12/09/03	8:54 AM	28.76	34	-	3.6	0.2	3.7	14.3	--	--	--	--
pyle-effluent	12/10/03	3:37 PM	28.4	25	T	1.4	0.8	4.8	13	--	--	--	--
pyle-effluent	12/11/03	12:25 PM	28.63	19	-	1.5	0.1	4.3	13.9	--	--	--	--
pyle-effluent	12/12/03	9:40 AM	28.97	7	-	0.7	0	2.7	16.1	--	--	--	--
pyle-effluent	12/15/03	2:44 PM	28.49	26	-	0.5	2.7	4.7	11.9	--	--	--	--
pyle-effluent	12/16/03	9:06 AM	28.2	32	0.01	0.6	1.4	4	13.4	--	--	--	--
pyle-effluent	12/17/03	11:41 AM	28.55	26	-	0.8	0.3	3.7	14.2	--	--	--	--
pyle-effluent	12/18/03	10:56 AM	28.57	24	-	0.4	0.2	3	15.5	--	--	--	--
pyle-effluent	12/19/03	8:55 AM	28.69	20	-	0.6	0	3.4	14.9	--	--	--	--
pyle-effluent	12/22/03	8:41 AM	28.57	31	-	0.6	0	2.4	16.3	--	--	--	--
pyle-effluent	12/23/03	9:37 AM	28.67	25	T	1.5	0	4.1	14.1	--	--	--	--
pyle-effluent	12/30/03	10:41 AM	28.73	28	-	1.6	0	4	14.2	--	--	--	--
pyle-effluent	01/05/04	11:30 AM	28.92	9	-	0.7	0	2.5	16.1	--	--	--	--
pyle-effluent	01/12/04	11:17 AM	28.73	27	T	1.4	0.1	3.4	15.1	--	--	--	--
pyle-effluent	01/22/04	12:15 PM	28.79	-4	-	1.8	0	2.6	15.2	--	--	--	--
pyle-effluent	01/30/04	10:03 AM	28.65	0	T	1.6	0.5	2.5	15.9	--	--	--	--
pyle-effluent	02/03/04	10:51 AM	28.66	20	-	1.5	0.5	2.5	16.2	--	--	--	--
pyle-effluent	02/12/04	1:38 PM	28.88	23	T	1.5	0.2	2.1	16.8	--	--	--	--
pyle-effluent	02/19/04	9:34 AM	28.72	26	-	1.6	0.3	2.2	16.6	--	--	--	--
pyle-effluent	02/27/04	11:24 AM	29.17	26	-	1.5	0.1	1.9	17	--	--	--	--
pyle-effluent	03/02/04	1:05 PM	28.76	39	-	1.5	0.2	2	16.8	--	--	--	--
pyle-effluent	04/06/04	10:40 AM	28.58	53	-	2.2	13.1	9.6	0.7	--	--	--	--
pyle-effluent	04/07/04	7:34 AM	28.67	46	-	2.2	2.3	7.4	7	--	--	--	--
pyle-effluent	04/16/04	11:16 AM	28.63	72	-	2.3	0.6	3.2	16.1	--	--	--	--
pyle-effluent	04/19/04	4:16 PM	28.89	-	-	2.4	0.1	2.5	14.3	--	--	--	--
pyle-effluent	04/28/04	3:19 PM	28.28	73	-	2.3	1	2.2	15.9	--	--	--	--
pyle-effluent	05/28/04	1:29 PM	28.72	59	-	1.6	1.4	2.4	14.5	--	--	--	--
pyle-effluent	06/01/04	11:14 AM	28.35	55	-	1.4	0.3	1.7	16.8	--	--	--	--
pyle-effluent	06/07/04	10:49 AM	28.59	82	-	0.9	4.5	8.3	3.3	--	--	--	--
pyle-effluent	06/07/04	2:31 PM	28.53	84	-	0.7	3	7.2	6.2	--	--	--	--
pyle-effluent	06/07/04	6:07 PM	28.5	84	-	0.9	2.9	6.8	7.5	--	--	--	--
pyle-effluent	06/08/04	8:06 AM	28.63	80	-	0.9	2	6	9.7	--	--	--	--
pyle-effluent	06/08/04	2:00 PM	28.69	87	-	0.8	1	5.5	10.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-effluent	06/08/04	5:33 PM	28.72	82	-	0.8	0.9	5.4	10.7	--	--	--	--
pyle-effluent	06/09/04	8:13 AM	28.86	57	0.01	0.9	1	5.2	11.5	--	--	--	--
pyle-effluent	06/09/04	10:32 AM	28.91	54	0.03	0.9	1	5.2	4.7	--	--	--	--
pyle-effluent	06/09/04	2:00 PM	28.91	54	T	0.8	1.3	5.2	11.8	--	--	--	--
pyle-effluent	06/09/04	5:59 PM	28.9	52	-	0.9	1.8	4.7	12.3	--	--	--	--
pyle-effluent	06/10/04	8:16 AM	28.91	56	-	0.9	2.4	4.9	12	--	--	--	--
pyle-effluent	06/10/04	11:40 AM	28.86	65	-	0.7	2.4	4.8	12.5	--	--	--	--
pyle-effluent	06/10/04	2:14 PM	28.83	67	-	0.9	2.4	4.9	12.4	--	--	--	--
pyle-effluent	06/10/04	4:03 PM	28.81	65	-	0.8	2.3	4.9	12.5	--	--	--	--
pyle-effluent	06/11/04	8:03 AM	28.77	55	-	1	3.6	4.8	12	--	--	--	--
pyle-effluent	06/11/04	11:30 AM	28.79	58	-	0.9	--	--	--	--	--	230	--
pyle-effluent	06/11/04	3:15 PM	28.76	60	-	0.7	--	--	--	--	--	--	--
pyle-effluent	06/12/04	9:00 AM	28.74	55	-	0.9	--	--	--	--	--	--	--
pyle-effluent	06/12/04	1:38 PM	28.66	75	-	0.8	2.8	3	14.4	--	--	--	--
pyle-effluent	06/12/04	4:40 PM	28.65	79	-	0.8	4.4	4.3	12.2	--	--	--	--
pyle-effluent	06/13/04	7:46 AM	28.57	65	-	--	5.4	4.6	11.9	--	--	--	--
pyle-effluent	06/13/04	2:40 PM	28.49	69	-	--	6.9	4.9	11.4	--	--	--	--
pyle-effluent	06/13/04	6:09 PM	28.45	73	-	--	6	4.6	11.6	--	--	--	--
pyle-effluent	06/14/04	9:34 AM	28.59	67	-	0.8	5.1	4.7	12.2	--	--	--	--
pyle-effluent	06/14/04	11:50 AM	28.59	68	0.01	0.8	4.6	4.6	12.5	--	--	--	--
pyle-effluent	06/14/04	2:37 PM	28.57	70	T	0.8	4.9	4.6	12.2	--	--	--	--
pyle-effluent	06/14/04	7:58 PM	28.67	64	-	0.8	4.2	4.6	12.4	--	--	--	--
pyle-effluent	06/15/04	7:48 AM	28.85	58	-	1.026	3.2	3.5	14	--	--	--	--
pyle-effluent	06/15/04	11:46 AM	28.86	67	-	1.37	3.6	2.5	13.7	--	--	--	--
pyle-effluent	06/15/04	3:09 PM	28.84	70	-	1.019	3.2	3.8	14.1	--	--	--	--
pyle-effluent	06/16/04	7:50 AM	28.82	67	-	0.998	5.5	4.5	12.7	--	--	--	--
pyle-effluent	06/16/04	11:41 AM	28.77	81	-	1.011	5.3	4	12.8	--	--	--	--
pyle-effluent	06/16/04	1:54 PM	28.76	82	-	1.01	5.5	4.5	12.6	--	--	--	--
pyle-effluent	06/17/04	7:28 AM	28.82	58	-	1.003	5.2	4.5	12.8	--	--	--	--
pyle-effluent	06/17/04	2:00 PM	28.81	75	-	0.988	4.8	4	12.8	--	--	--	--
pyle-effluent	06/17/04	5:50 PM	28.81	71	-	1.01	4.8	4	12.9	--	--	--	--
pyle-effluent	06/18/04	7:36 AM	28.85	69	-	1.007	6.3	4.5	12.4	--	--	--	--
pyle-effluent	06/18/04	10:56 AM	28.82	74	-	1.01	6.2	4.6	12.6	--	--	--	--
pyle-effluent	06/18/04	7:59 PM	28.96	53	-	0.99	5.4	4.5	12.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-effluent	06/19/04	7:45 AM	29.07	55	-	0.9	4.2	4.3	12.7	--	--	--	--
pyle-effluent	06/19/04	11:26 AM	29.05	66	-	0.8	5.1	4.4	12.4	--	--	--	--
pyle-effluent	06/19/04	3:02 PM	28.97	69	-	1	5.1	4.2	12.6	--	--	--	--
pyle-effluent	06/20/04	8:10 AM	28.8	64	-	0.9	7.6	4.7	11.9	--	--	--	--
pyle-effluent	06/20/04	1:17 PM	28.7	73	-	0.9	7.7	4.4	12	--	--	--	--
pyle-effluent	06/21/04	8:15 AM	28.49	66	-	0.994	8.8	4.7	11.2	--	--	--	--
pyle-effluent	06/21/04	12:17 PM	28.44	74	-	0.997	6	4.9	12.9	--	--	--	--
pyle-effluent	06/21/04	5:04 PM	28.43	59	0.13	0.981	8.3	4.7	11.1	--	--	--	--
pyle-effluent	06/22/04	7:44 AM	28.59	57	-	1.003	6.8	4.9	11.4	--	--	--	--
pyle-effluent	06/22/04	5:08 PM	28.6	67	-	0.08	5.7	4.6	11.7	--	--	--	--
pyle-effluent	06/25/04	5:37 PM	28.76	60	T	0.994	6.5	4.9	11	--	--	--	--
pyle-effluent	06/26/04	7:46 AM	28.84	56	-	0.999	6.5	4.9	10.8	--	--	--	--
pyle-effluent	06/26/04	11:51 AM	28.83	61	-	1	6.5	4.8	11.1	--	--	--	--
pyle-effluent	06/26/04	1:11 PM	28.82	64	-	1	6.5	4.8	11.2	--	--	--	--
pyle-effluent	06/26/04	5:15 PM	28.81	66	-	0.945	6.3	4.6	11.1	--	--	--	--
Pyle-effluent	06/27/04	10:36 AM	28.87	66	-	0.951	6.1	4.8	11.1	--	--	--	--
Pyle-effluent	06/27/04	3:26 PM	28.84	64	-	0.953	6.5	4.8	10.9	--	--	--	--
pyle-effluent	06/28/04	10:43 AM	28.83	72	-	0.986	6.7	4.9	11	--	--	--	--
pyle-effluent	06/28/04	1:35 PM	28.8	72	-	0.961	6.5	4.8	10.9	--	--	--	--
pyle-effluent	06/29/04	6:03 PM	28.83	67	0.01	0.949	6.7	11.2	8.8	--	--	--	--
pyle-effluent	06/30/04	8:45 AM	28.78	77	-	0.9	6.7	5.1	10.5	--	--	--	--
pyle-effluent	07/02/04	9:38 AM	28.93	68	-	-0.9	6.3	5	10.1	--	--	--	--
pyle-effluent	07/06/04	10:36 AM	28.66	54	0.08	0.6	8.4	5.5	10.1	--	--	--	--
pyle-effluent	07/07/04	5:20 PM	28.57	56	T	0.982	7.8	5.4	10.3	--	--	--	--
pyle-effluent	07/08/04	11:21 AM	28.71	61	-	0.929	6	5.2	10.6	--	--	--	--
pyle-effluent	07/09/04	11:51 AM	28.88	70	-	0.69	4.4	4.9	11.2	--	--	--	--
pyle-effluent	07/11/04	9:26 AM	28.82	67	-	0.8	6.8	5.5	10.9	--	--	--	--
pyle-effluent	07/12/04	2:24 PM	28.7	82	-	0.054	5.1	5.2	11	--	--	--	--
pyle-effluent	07/14/04	1:34 PM	28.67	78	-	0.5	2.4	4.9	11.6	--	--	--	--
pyle-effluent	07/15/04	10:00 AM	28.68	78	-	0.8	2.2	4.9	11.8	--	--	--	--
pyle-effluent	07/19/04	3:15 PM	28.54	79	T	0.987	2.1	4	12.9	--	--	--	--
pyle-effluent	07/26/04	10:29 AM	28.98	76	-	1.016	0.9	4.6	14.3	--	--	--	--
Pyle-effluent	08/02/04	10:46 AM	28.68	79	0.04	1.026	1.1	3.7	14.2	--	--	--	--
Pyle-effluent	08/03/04	5:14 PM	28.71	75	-	1.006	1.6	2.9	13.9	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
Pyle-effluent	08/04/04	1:22 PM	28.82	72	-	0.991	0.3	3.3	15.2	--	--	--	--
Pyle-effluent	08/05/04	5:47 PM	28.96	69	-	1.049	0.3	3.3	15.3	--	--	--	--
Pyle-effluent	08/06/04	2:41 PM	28.9	77	-	0.999	0.3	4	12.9	--	--	--	--
Pyle-effluent	08/07/04	2:56 PM	28.83	70	-	1.023	0.7	4.4	11.1	--	--	--	--
Pyle-effluent	08/08/04	1:38 PM	28.81	66	T	0.923	0.8	4.3	11.3	--	--	--	--
Pyle-effluent	08/09/04	2:38 PM	28.55	66	0.25	0.987	6.8	3.7	14	--	--	--	--
Pyle-effluent	08/10/04	2:55 PM	28.58	58	T	1.013	0.7	3.6	14.4	--	--	--	--
Pyle-effluent	08/11/04	3:20 PM	28.59	57	-	0.926	0.7	3.7	14.6	--	--	--	--
Pyle-effluent	08/12/04	8:44 AM	28.81	59	-	1.065	0.3	3.6	15.3	--	--	--	--
Pyle-effluent	08/13/04	9:40 AM	28.94	63	-	0.9	0.2	3.4	15.7	--	--	--	--
Pyle-effluent	08/16/04	10:12 AM	28.94	71	-	0.8	0.7	3.4	15.5	--	--	--	--
Pyle-effluent	08/17/04	11:15 AM	28.72	63	-	0.8	1	3.5	15	--	--	--	--
Pyle-effluent	08/18/04	10:03 AM	28.43	73	-	0.9	2.4	3.8	14.1	--	--	--	--
Pyle-effluent	08/19/04	10:53 AM	28.72	60	-	0.9	0.2	3.7	14.9	--	--	--	--
Pyle-effluent	08/19/04	3:36 PM	28.65	66	-	0.8	0.1	3.6	15	--	--	--	--
Pyle-effluent	08/20/04	11:33 AM	28.76	61	-	0.8	0	3.5	15.4	--	--	--	--
Pyle-effluent	08/23/04	9:46 AM	28.88	60	-	0.8	0	3.5	15.5	--	--	--	--
Pyle-effluent	08/24/04	2:36 PM	28.69	68	T	0.8	0.3	3.3	15.4	--	--	--	--
Pyle-effluent	08/25/04	1:07 PM	28.63	76	-	0.8	0.2	3.3	15.3	--	--	--	--
Pyle-effluent	08/26/04	12:39 PM	28.56	76	-	0.6	0.3	3.4	15.1	--	--	--	--
Pyle-effluent	08/27/04	10:30 AM	28.65	77	-	0.8	0.1	3.5	15.2	--	--	--	--
Pyle-effluent	08/30/04	11:22 AM	28.79	62	-	0.7	0.2	3.3	15.4	--	--	--	--
Pyle-effluent	09/01/04	7:28 AM	29.04	53	-	0.8	0.2	3.2	16.1	--	--	--	--
Pyle-effluent	09/03/04	12:37 PM	28.83	82	-	0.7	0.6	3.3	15.3	--	--	--	--
Pyle-effluent	09/08/04	10:08 AM	29.08	62	-	0.7	0	3.1	16.3	--	--	--	--
Pyle-effluent	09/16/04	8:52 AM	28.66	57	-	0.6	0.4	3.6	15.4	--	--	--	--
Pyle-effluent	09/24/04	12:31 PM	28.76	63	-	0.8	0.4	3.3	15.6	--	--	--	--
Pyle-effluent	09/29/04	12:46 PM	28.9	65	-	0.8	0.1	3	15.9	--	--	--	--
Pyle-effluent	10/07/04	12:34 PM	28.91	71	-	0.8	0.7	7	6.9	--	--	--	--
Pyle-effluent	10/11/04	10:59 AM	29.04	61	-	0.7	0	3.4	15.4	--	--	--	--
Pyle-effluent	10/18/04	2:27 PM	28.79	45	-	0.7	0	2.9	16.2	--	--	--	--
Pyle-effluent	10/26/04	3:04 PM	29.03	47	-	0.8	0	2.5	16.7	--	--	--	--
Pyle-effluent	11/04/04	10:05 AM	28.5	39	-	0.8	0.9	4.2	13.7	--	--	--	--
Pyle-effluent	11/11/04	11:48 AM	29.2	34	-	0.8	0	2.4	16.7	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
Pyle-effluent	11/18/04	11:18 AM	28.96	51	-	0.6	0	2.5	16.5	--	--	--	--
Pyle-effluent	12/04/04	10:21 AM	28.23	39	-	0.8	0.6	2.7	15.5	1748	1746	5.86	--
Pyle-effluent	12/09/04	8:12 AM	28.59	34	-	0.8	0	2.4	16.3	2140	2126	4.85	--
Pyle-effluent	12/14/04	3:11 PM	29.12	20	-	0.7	0	1	18.2	65.49	64.9	0.32	--
Pyle-effluent	12/22/04	10:50 AM	28.92	4	-	0.7	0	2.5	15.8	521	518	-1.23	--
Pyle-effluent	01/07/05	4:10 PM	28.75	24	-	0.8	0.1	3.6	14.3	4815	4775	4.12	--
Pyle-effluent	01/17/05	10:22 AM	29.43	-7	T	0.8	0	2	17.4	5.96	5.87	-0.77	--
Pyle-effluent	01/24/05	10:41 AM	28.63	22	-	0.8	0.2	2.2	16.8	4598	4562	-0.64	--
Pyle-effluent	02/03/05	2:03 PM	28.85	46	-	0.7	0	2	17.2	3244	3220	-0.06	--
Pyle-effluent	02/07/05	2:31 PM	28.88	27	-	0.9	0	1.9	17	894	880	-0.76	--
Pyle-effluent	03/14/05	2:45 PM	28.78	34	-	0.8	0	1.4	17.8	290	265	2.33	--
Pyle-effluent	04/04/05	2:41 PM	28.72	56	-	0.6	0	1.4	17.9	998	993	2.4	--
Pyle-effluent	05/12/05	10:10 AM	29.27	40	-	0.9	0	1.2	17.9	49.01	48.39	0.2	--
Pyle-effluent	06/09/05	11:54 AM	28.66	84	-	1	0	1.4	17.5	488	430	0.8	--
Pyle-effluent	07/07/05	8:28 AM	28.97	68	-	1	0	1.9	17.3	151	145	-9	--
Pyle-effluent	08/12/05	11:33 AM	28.61	77	-	1	0.2	2.2	16.7	4687	4655	-2.07	--
Pyle-effluent	09/08/05	11:35 AM	28.96	69.98	-	1	0	2	17	985	968	-3.51	--
Pyle-effluent	10/18/05	2:30 PM	28.57	57	-	1	0	2.1	16.9	800	658	3.51	--
Pyle-effluent	11/02/05	2:00 PM	28.65	53	-	1	0	2	16.6	1816	1791	3.67	--
Pyle-effluent	12/02/05	2:50 PM	28.84	17	T	0.6	0	1.6	17.8	-2.25	-2.43	-3.1	--
Pyle-effluent	01/31/06	3:48 PM	28.61	33	-	0.5	0	1.3	17.2	24.69	24.47	-0.86	--
Pyle-effluent	02/13/06	1:27 PM	28.38	23	-	0.7	0.7	1.8	16.4	4154	4085	139	--
Pyle-effluent	03/08/06	2:21 PM	28.42	37	-	0.8	0.5	1.7	16.4	1.05%	1.03%	37.17	--
Pyle-effluent	04/13/06	10:44 AM	28.78	62	-	0.6	0	1	17.8	-1.95	-1.83	-2.28	--
Pyle-effluent	05/17/06	9:16 AM	28.41	53	0.01	0.5	0	1.2	16.6	4478	4462	5.32	--
Pyle-effluent	06/02/06	1:04 PM	28.81	76	-	0.9	0	1.1	17.6	768	580	0.24	--
Pyle-effluent	07/17/06	3:34 PM	28.67	86	-	1	0.1	1.8	16.1	3146	3133	6.56	--
Pyle-effluent	08/15/06	11:18 AM	28.81	73	-	1	0.1	2.3	15.7	--	--	--	--
Pyle-effluent	09/18/06	8:57 AM	28.41	57	-	0.7	0.4	3.4	15.6	8616	8521	8.68	--
Pyle-effluent	10/05/06	9:58 AM	29.21	52	-	0.6	0	2.8	17.6	-4.36	-4.14	-0.17	--
Pyle-effluent	11/07/06	12:23 PM	28.59	50	-	0.5	0	2.9	16.6	7208	7186	7.71	--
Pyle-effluent	12/18/06	12:04 PM	29.08	29	-	0.7	0	2.2	18.2	-2.3	-2.29	-1.22	--
Pyle-effluent	01/18/07	10:30 AM	28.73	18	-	0.9	0	2.8	16	8604	8546	3.23	--
Pyle-effluent	02/16/07	11:43 AM	28.37	23	-	1	0.5	2.5	17.3	1.04%	1.02%	5.27	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
Pyle-effluent	03/09/07	10:20 AM	28.64	32	-	0.9	0	2.6	17.1	4087	4063	-5.41	--
Pyle-effluent	04/16/07	2:01 PM	28.79	62	-	0.8	0	2	18.2	281	276	-2.07	--
Pyle-effluent	05/29/07	9:39 AM	28.9	74	-	0.8	0	1.8	17.5	132	126	-7.29	--
Pyle-effluent	06/15/07	1:30 PM	28.77	89	-	0.7	0	1.6	17.7	1512	1493	-0.52	--
Pyle-effluent	07/11/07	2:07 PM	29.85	74	-	0.7	0	1.9	16.7	151	148	-8.86	--
Pyle-effluent	08/29/07	10:21 AM	30.13	69	-	0.9	0	2	16.8	--	--	--	--
Pyle-effluent	09/20/07	2:26 PM	30.17	65	-	1	0	2	17.1	134	128	-1.01	--
Pyle-effluent	10/16/07	10:43 AM	29.92	52	0.08	0.7	0.3	2.2	16.5	4517	4462	1.36	--
Pyle-effluent	11/20/07	2:03 PM	30	38	-	0.8	0	1.9	17.9	26.82	26.3	-0.2	--
Pyle-effluent	12/26/07	11:09 AM	29.97	28	-	30.6	0	1.9	17.7	22.47	21.98	-0.45	--
pyle-influent	10/18/03	3:50 PM	28.66	60	-	-6.8	6.9	10.8	2.7	--	--	--	--
pyle-influent	10/19/03	9:15 AM	28.92	45	-	-6.7	5.9	10	4.7	--	--	--	--
pyle-influent	10/19/03	10:30 AM	28.9	49	-	-8	6.2	10.6	3.6	--	--	--	--
pyle-influent	10/20/03	9:45 AM	28.43	52	-	--	6.4	10.5	4.3	--	--	--	--
pyle-influent	10/21/03	8:20 AM	28.62	45	-	-8	7.1	9.4	6.4	--	--	--	--
pyle-influent	10/22/03	8:55 AM	28.78	39	-	-2.4	12.4	7.1	7.7	--	--	--	--
pyle-influent	10/22/03	6:07 PM	28.67	38	T	-5.9	14	7.8	6.8	--	--	--	--
pyle-influent	10/23/03	7:12 AM	28.65	39	-	-6	11.2	7.6	7.3	--	--	--	--
pyle-influent	10/23/03	4:40 PM	28.73	40	-	-6	10.6	7.7	6.9	--	--	--	--
pyle-influent	10/24/03	7:21 AM	28.78	36	-	-6.5	9.5	7.4	7.5	--	--	--	--
pyle-influent	10/25/03	7:30 AM	28.8	38	-	-9	7.9	7.6	7.1	--	--	--	--
pyle-influent	10/26/03	8:20 AM	28.89	35	-	-11	6.5	7.5	7.5	--	--	--	--
pyle-influent	10/27/03	8:05 AM	28.69	30	-	-11	5.8	7.6	7.8	--	--	--	--
pyle-influent	10/28/03	7:20 AM	28.12	35	T	-8	7.8	7.5	7.7	--	--	--	--
pyle-influent	10/29/03	7:35 AM	28.36	38	T	-17.5	6.5	11.9	2	--	--	--	--
pyle-influent	10/30/03	10:13 AM	28.72	40	T	-23	--	--	--	--	--	--	--
pyle-influent	10/31/03	2:29 PM	28.77	46	-	-22	--	--	--	--	--	--	--
pyle-influent	11/01/03	8:50 AM	29.12	34	-	-2.2	--	--	--	--	--	--	--
pyle-influent	11/02/03	10:56 AM	28.95	38	-	-2.8	--	--	--	--	--	--	--
pyle-influent	11/03/03	8:38 AM	29.06	35	-	-23	--	--	--	--	--	--	--
pyle-influent	11/04/03	10:07 AM	28.69	33	T	-22	--	--	--	--	--	--	--
pyle-influent	11/05/03	8:41 AM	28.83	35	-	-21.6	--	--	--	--	--	--	--
pyle-influent	11/06/03	9:51 AM	29.02	25	-	-21	--	--	--	--	--	--	--
pyle-influent	11/07/03	9:39 AM	29	21	-	-51	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-influent	11/10/03	9:22 AM	28.95	31	-	-21.6	--	--	--	--	--	--	--
pyle-influent	11/11/03	8:33 AM	28.5	39	-	-21.2	--	--	--	--	--	--	--
pyle-influent	11/12/03	8:46 AM	28.37	37	-	--	--	--	--	--	--	--	--
pyle-influent	11/13/03	8:56 AM	28.88	27	T	-21	--	--	--	--	--	--	--
pyle-influent	11/14/03	8:42 AM	28.75	34	-	-20.6	--	--	--	--	--	--	--
pyle-influent	11/17/03	8:24 AM	28.83	37	-	-21	--	--	--	--	--	--	--
pyle-influent	11/18/03	8:30 AM	28.3	45	T	-16	--	--	--	--	--	--	--
pyle-influent	11/19/03	8:36 AM	28.33	36	T	-15	--	--	--	--	--	--	--
pyle-influent	11/21/03	11:01 AM	28.87	32	-	-40	--	--	--	--	--	--	--
pyle-influent	11/24/03	12:57 PM	28.3	18	T	-35.7	--	--	--	--	--	--	--
pyle-influent	11/25/03	3:03 PM	28.36	33	-	-24	--	--	--	--	--	--	--
pyle-influent	11/26/03	11:13 AM	28.67	31	-	-23.3	--	--	--	--	--	--	--
pyle-influent	12/01/03	9:07 AM	28.8	27	-	-40.5	--	--	--	--	--	--	--
pyle-influent	12/08/03	9:36 AM	28.69	35	-	-27	--	--	--	--	--	--	--
pyle-influent	12/09/03	8:53 AM	28.76	34	-	-28	--	--	--	--	--	--	--
pyle-influent	12/10/03	3:36 PM	28.4	25	T	-20	--	--	--	--	--	--	--
pyle-influent	12/11/03	12:24 PM	28.63	19	-	-20	--	--	--	--	--	--	--
pyle-influent	12/12/03	9:39 AM	28.97	7	-	-40	--	--	--	--	--	--	--
pyle-influent	12/15/03	2:43 PM	28.49	26	-	-42.7	--	--	--	--	--	--	--
pyle-influent	12/16/03	9:05 AM	28.2	32	0.01	-40	--	--	--	--	--	--	--
pyle-influent	12/17/03	11:40 AM	28.55	26	-	-40	--	--	--	--	--	--	--
pyle-influent	12/18/03	10:55 AM	28.57	24	-	-44	--	--	--	--	--	--	--
pyle-influent	12/19/03	8:54 AM	28.69	20	-	-41	--	--	--	--	--	--	--
pyle-influent	12/22/03	8:40 AM	28.57	31	-	-44	--	--	--	--	--	--	--
pyle-influent	12/23/03	9:36 AM	28.67	25	T	-20	--	--	--	--	--	--	--
pyle-influent	12/30/03	10:40 AM	28.73	28	-	-22	--	--	--	--	--	--	--
pyle-influent	01/05/04	11:29 AM	28.96	10	-	-42.4	--	--	--	--	--	--	--
pyle-influent	01/12/04	11:16 AM	28.73	27	T	-15	--	--	--	--	--	--	--
pyle-influent	01/22/04	12:10 PM	28.79	-4	-	-15	--	--	--	--	--	--	--
pyle-influent	01/30/04	10:02 AM	28.65	0	T	-15.1	--	--	--	--	--	--	--
pyle-influent	02/03/04	10:50 AM	28.66	20	-	-15	--	--	--	--	--	--	--
pyle-influent	02/12/04	1:35 PM	28.88	23	T	-15.2	--	--	--	--	--	--	--
pyle-influent	02/19/04	9:33 AM	28.72	26	-	-14.9	--	--	--	--	--	--	--
pyle-influent	02/27/04	11:23 AM	29.17	26	-	-15	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-influent	03/02/04	1:04 PM	28.76	39	-	-18.5	--	--	--	--	--	--	--
pyle-influent	04/06/04	10:35 AM	28.58	53	-	-18.8	--	--	--	--	--	--	--
pyle-influent	04/07/04	7:33 AM	28.67	46	-	-23.1	--	--	--	--	--	--	--
pyle-influent	04/16/04	11:15 AM	28.63	72	-	-19	--	--	--	--	--	--	--
pyle-influent	04/19/04	4:15 PM	28.89	-	-	-20	--	--	--	--	--	--	--
pyle-influent	04/28/04	3:18 PM	28.28	73	-	-18.8	--	--	--	--	--	--	--
pyle-influent	05/28/04	1:28 PM	28.72	59	-	-9	--	--	--	--	--	--	--
pyle-influent	06/01/04	11:12 AM	28.35	55	-	20.8	--	--	--	--	--	--	--
pyle-influent	06/07/04	10:39 AM	28.59	82	-	-27.5	4.5	8.3	3.3	--	--	--	--
pyle-influent	06/07/04	2:25 PM	28.54	84	-	-27.5	2.9	7.2	6.3	--	--	--	--
pyle-influent	06/07/04	5:59 PM	28.5	84	-	-28.6	2.8	6.8	7.4	--	--	--	--
pyle-influent	06/08/04	8:03 AM	28.63	80	-	-29	2	5.9	9.8	--	--	--	--
pyle-influent	06/08/04	1:54 PM	28.69	87	-	-29.3	1.1	5.4	10.5	--	--	--	--
pyle-influent	06/08/04	5:30 PM	28.72	82	-	-29.3	1	5.4	10.5	--	--	--	--
pyle-influent	06/09/04	8:10 AM	28.86	57	0.01	-29.6	1	5	11.7	--	--	--	--
pyle-influent	06/09/04	10:28 AM	28.9	55	0.04	-29.7	0.9	4.1	13.2	--	--	--	--
pyle-influent	06/09/04	1:57 PM	28.91	54	T	-29.6	1.2	4.8	12.3	--	--	--	--
pyle-influent	06/09/04	5:56 PM	28.9	52	-	-29.7	1.7	5.2	11.9	--	--	--	--
pyle-influent	06/10/04	8:14 AM	28.91	56	-	-29	2.4	5	12.1	--	--	--	--
pyle-influent	06/10/04	11:37 AM	28.86	65	-	-29.2	2.4	4.7	12.5	--	--	--	--
pyle-influent	06/10/04	2:11 PM	28.83	67	-	-29.2	2.3	4.8	12.5	--	--	--	--
pyle-influent	06/10/04	4:00 PM	28.81	65	-	-29	2.5	4.9	12.3	--	--	--	--
pyle-influent	06/11/04	8:00 AM	28.77	55	-	-29.2	3.7	4.8	12	--	--	--	--
pyle-influent	06/11/04	11:20 AM	28.8	57	-	-29	--	--	--	25000	23000	245	--
pyle-influent	06/11/04	3:10 PM	28.76	60	-	-29	--	--	--	260	260	0	--
pyle-influent	06/12/04	8:58 AM	28.74	55	-	-29	--	--	--	4580	4320	0	--
pyle-influent	06/12/04	1:36 PM	28.66	75	-	-28.6	--	--	--	--	--	--	--
pyle-influent	06/12/04	4:40 PM	28.65	79	-	-28.5	--	--	--	--	--	--	--
pyle-influent	06/13/04	7:45 AM	28.57	65	-	-28.5	--	--	--	--	--	--	--
pyle-influent	06/13/04	2:41 PM	28.49	69	-	-28.5	--	--	--	--	--	--	--
pyle-influent	06/13/04	6:08 PM	28.45	73	-	-28.5	--	--	--	--	--	--	--
pyle-influent	06/14/04	9:32 AM	28.59	67	-	-28.3	4.6	4.1	12.9	--	--	--	--
pyle-influent	06/14/04	11:48 AM	28.59	68	0.01	-28.7	4.2	4.2	13	--	--	--	--
pyle-influent	06/14/04	2:35 PM	28.57	70	T	-28	4.8	4.5	12.3	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-influent	06/14/04	7:57 PM	28.67	64	-	-28.6	4.2	4.4	12.5	--	--	--	--
pyle-influent	06/15/04	7:45 AM	28.85	58	-	--	3.8	4.5	12.9	--	--	--	--
pyle-influent	06/15/04	11:43 AM	28.86	67	-	--	3.9	4.5	13	--	--	--	--
pyle-influent	06/15/04	1:06 PM	28.86	69	-	--	3.5	4.1	13	--	--	--	--
pyle-influent	06/16/04	7:47 AM	28.82	67	-	--	5.6	4.5	12.6	--	--	--	--
pyle-influent	06/16/04	11:43 AM	28.77	81	-	--	5.2	4	13	--	--	--	--
pyle-influent	06/16/04	1:52 PM	28.76	82	-	--	5.6	4.5	12.6	--	--	--	--
pyle-influent	06/17/04	7:25 AM	28.82	58	-	--	5.3	4.6	12.7	--	--	--	--
pyle-influent	06/17/04	1:58 PM	28.81	75	-	--	4.9	4	12.8	--	--	--	--
pyle-influent	06/17/04	5:48 PM	28.81	71	-	--	4.8	3.9	12.9	--	--	--	--
pyle-influent	06/18/04	7:34 AM	28.85	69	-	--	6.1	4.4	12.4	--	--	--	--
pyle-influent	06/18/04	10:53 AM	28.82	74	-	--	6.1	4.5	12.6	--	--	--	--
pyle-influent	06/18/04	7:57 PM	28.96	53	-	--	5.5	4.4	12.8	--	--	--	--
pyle-influent	06/19/04	7:40 AM	29.07	55	-	-29	4	4.2	12.8	--	--	--	--
pyle-influent	06/19/04	11:22 AM	29.05	66	-	-28.6	5	4.3	12.5	--	--	--	--
pyle-influent	06/19/04	2:55 PM	28.97	69	-	-28.5	5.2	4.2	12.6	--	--	--	--
pyle-influent	06/20/04	8:07 AM	28.8	64	-	-28	7.6	4.6	12	--	--	--	--
pyle-influent	06/20/04	1:15 PM	28.7	73	-	-27.9	7.7	4.4	12	--	--	--	--
pyle-influent	06/21/04	8:12 AM	28.49	66	-	--	8.8	4.8	11.2	--	--	--	--
pyle-influent	06/21/04	12:14 PM	28.44	74	-	--	5.9	4.9	12.9	--	--	--	--
pyle-influent	06/21/04	4:59 PM	28.43	59	0.13	--	8.4	4.7	11.1	--	--	--	--
pyle-influent	06/22/04	7:41 AM	28.59	57	-	--	6.8	4.9	11.4	--	--	--	--
pyle-influent	06/22/04	5:02 PM	28.6	67	-	-28	5.7	4.5	11.6	--	--	--	--
pyle-influent	06/25/04	5:34 PM	28.76	60	T	-28	65	4.9	10.9	--	--	--	--
pyle-influent	06/26/04	7:43 AM	28.84	56	-	-28.2	6.6	4.8	10.9	--	--	--	--
pyle-influent	06/26/04	11:49 AM	28.83	61	-	-29.1	6.4	4.8	11.2	--	--	--	--
pyle-influent	06/26/04	1:09 PM	28.82	64	-	-29	6.4	4.8	11.2	--	--	--	--
pyle-influent	06/26/04	5:13 PM	28.81	66	-	-29.3	6.3	4.6	11.2	--	--	--	--
Pyle-influent	06/27/04	10:34 AM	28.87	66	-	-29.4	5.9	4.7	11.3	--	--	--	--
Pyle-influent	06/27/04	3:25 PM	28.84	64	-	-28.6	6.6	4.7	10.9	--	--	--	--
pyle-influent	06/28/04	10:40 AM	28.83	72	-	-29.1	6.7	4.9	11	--	--	--	--
pyle-influent	06/28/04	1:33 PM	28.8	72	-	-27.9	6.6	4.6	11	--	--	--	--
pyle-influent	06/29/04	6:01 PM	28.83	67	0.01	-29	--	--	--	--	--	--	--
pyle-influent	06/30/04	8:44 AM	28.78	77	-	-28.7	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
pyle-influent	07/02/04	9:35 AM	28.93	68	-	-30	--	--	--	--	--	--	--
pyle-influent	07/06/04	10:31 AM	28.66	54	0.08	-29	--	--	--	--	--	--	--
pyle-influent	07/07/04	5:20 PM	28.57	56	T	-28.6	--	--	--	--	--	--	--
pyle-influent	07/08/04	11:21 AM	28.71	61	-	-30	--	--	--	--	--	--	--
pyle-influent	07/09/04	11:51 AM	28.88	70	-	-28.6	--	--	--	--	--	--	--
pyle-influent	07/11/04	9:25 AM	28.82	67	-	-29.6	--	--	--	--	--	--	--
pyle-influent	07/12/04	2:22 PM	28.7	82	-	-29.1	--	--	--	--	--	--	--
pyle-influent	07/14/04	1:33 PM	28.67	78	-	-29.6	--	--	--	--	--	--	--
pyle-influent	07/15/04	9:58 AM	28.68	78	-	-30.2	--	--	--	--	--	--	--
pyle-influent	07/19/04	3:14 PM	28.54	79	T	-28.5	--	--	--	--	--	--	--
pyle-influent	07/26/04	10:29 AM	28.98	76	-	-28.9	--	--	--	--	--	--	--
Pyle-influent	08/02/04	10:44 AM	28.68	79	0.04	-28.2	--	--	--	--	--	--	--
Pyle-influent	08/03/04	5:12 PM	28.71	75	-	-28.9	--	--	--	--	--	--	--
Pyle-influent	08/04/04	1:22 PM	28.82	72	-	-28.7	--	--	--	--	--	--	--
Pyle-influent	08/05/04	5:45 PM	28.96	69	-	-28.8	--	--	--	--	--	--	--
Pyle-influent	08/06/04	2:41 PM	28.9	77	-	-28.5	--	--	--	--	--	--	--
Pyle-influent	08/07/04	2:55 PM	28.83	70	-	-28.8	--	--	--	--	--	--	--
Pyle-influent	08/08/04	1:38 PM	28.81	66	T	-28.7	--	--	--	--	--	--	--
Pyle-influent	08/09/04	2:37 PM	28.55	66	0.25	-28.7	--	--	--	--	--	--	--
Pyle-influent	08/10/04	2:54 PM	28.58	58	T	-28.3	--	--	--	--	--	--	--
Pyle-influent	08/11/04	3:19 PM	28.59	57	-	-29.9	--	--	--	--	--	--	--
Pyle-influent	08/12/04	8:44 AM	28.81	59	-	-28.8	--	--	--	--	--	--	--
Pyle-influent	08/13/04	9:39 AM	28.94	63	-	-28.6	--	--	--	--	--	--	--
Pyle-influent	08/16/04	10:11 AM	28.94	71	-	-28.4	--	--	--	--	--	--	--
Pyle-influent	08/17/04	11:14 AM	28.72	63	-	-28.5	--	--	--	--	--	--	--
Pyle-influent	08/18/04	10:01 AM	28.43	73	-	-28.5	--	--	--	--	--	--	--
Pyle-influent	08/19/04	10:51 AM	28.72	60	-	-30	--	--	--	--	--	--	--
Pyle-influent	08/19/04	3:35 PM	28.65	66	-	-29.3	--	--	--	--	--	--	--
Pyle-influent	08/20/04	11:32 AM	28.76	61	-	-29.8	--	--	--	--	--	--	--
Pyle-influent	08/23/04	9:44 AM	28.88	60	-	-30.5	--	--	--	--	--	--	--
Pyle-influent	08/24/04	2:35 PM	28.69	68	T	-30.2	--	--	--	--	--	--	--
Pyle-influent	08/25/04	1:05 PM	28.63	76	-	-29.7	--	--	--	--	--	--	--
Pyle-influent	08/26/04	12:38 PM	28.56	76	-	-30.2	--	--	--	--	--	--	--
Pyle-influent	08/27/04	10:29 AM	28.65	75	-	-30	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
Pyle-influent	08/30/04	11:20 AM	28.79	62	-	-30.9	--	--	--	--	--	--	--
Pyle-influent	09/01/04	7:25 AM	29.04	53	-	-31.3	--	--	--	--	--	--	--
Pyle-influent	09/03/04	12:36 PM	28.83	82	-	-30.2	--	--	--	--	--	--	--
Pyle-influent	09/08/04	10:07 AM	29.08	62	-	-31.5	--	--	--	--	--	--	--
Pyle-influent	09/16/04	8:51 AM	28.66	57	-	-31.6	--	--	--	--	--	--	--
Pyle-influent	09/24/04	12:30 PM	28.76	63	-	-31	--	--	--	--	--	--	--
Pyle-influent	09/29/04	12:45 PM	28.9	65	-	-31.5	--	--	--	--	--	--	--
Pyle-influent	10/07/04	12:33 PM	28.91	71	-	-34.2	--	--	--	--	--	--	--
Pyle-influent	10/11/04	10:58 AM	29.04	61	-	-33.9	--	--	--	--	--	--	--
Pyle-influent	10/18/04	2:26 PM	28.79	45	-	-31	--	--	--	--	--	--	--
Pyle-influent	10/26/04	3:03 PM	29.03	47	-	-30.9	--	--	--	--	--	--	--
Pyle-influent	11/04/04	10:04 AM	28.5	39	-	-30.6	--	--	--	--	--	--	--
Pyle-influent	11/11/04	11:47 AM	29.2	34	-	-30.1	--	--	--	--	--	--	--
Pyle-influent	11/18/04	11:17 AM	28.96	51	-	-30.5	--	--	--	--	--	--	--
Pyle-influent	12/04/04	10:20 AM	28.23	39	-	-30.6	--	--	--	--	--	--	--
Pyle-influent	12/09/04	8:11 AM	28.59	34	-	-31.8	--	--	--	--	--	--	--
Pyle-influent	12/14/04	3:10 PM	29.12	20	-	-31.6	--	--	--	--	--	--	--
Pyle-influent	12/22/04	10:49 AM	28.92	4	-	-32	--	--	--	--	--	--	--
Pyle-influent	01/07/05	4:09 PM	28.75	24	-	-30.5	--	--	--	--	--	--	--
Pyle-influent	01/17/05	10:21 AM	29.43	-7	T	-30.8	--	--	--	--	--	--	--
Pyle-influent	01/24/05	10:40 AM	28.63	22	-	-30.5	--	--	--	--	--	--	--
Pyle-influent	02/03/05	2:02 PM	28.85	46	-	-30.9	0	2	17.2	--	--	--	--
Pyle-influent	02/07/05	2:30 PM	28.88	27	-	-30.1	0	1	18.1	--	--	--	--
Pyle-influent	03/14/05	2:45 PM	28.78	34	-	-31.1	0	1.6	17.6	289	252	1.47	--
Pyle-influent	04/04/05	2:40 PM	28.72	56	-	-31.5	0.1	1.4	17.8	540	525	0.76	--
Pyle-influent	05/12/05	10:03 AM	29.27	40	-	-29.5	0	1.2	18	--	--	0.3	--
Pyle-influent	06/09/05	11:53 AM	28.66	84	-	-28.6	0	1.4	17.6	--	--	--	--
Pyle-influent	07/07/05	8:24 AM	28.97	68	-	-26.5	0	1.9	17.3	--	--	--	--
Pyle-influent	08/12/05	11:29 AM	28.61	76	-	-26.4	0.2	2.2	16.7	953	941	-2.31	--
Pyle-influent	09/08/05	11:32 AM	28.96	69.98	-	-26.4	0	2	17	516	513	-3.53	--
Pyle-influent	10/18/05	2:22 PM	28.59	57	-	-28	0	2.1	16.9	1.61	1.5	4.98	--
Pyle-influent	11/02/05	1:55 PM	28.65	53	-	-30	0	2	16.5	2.85	1.98	3.76	--
Pyle-influent	12/02/05	2:35 PM	28.84	17	T	-32.8	0	1.4	17.8	-3.2	-3.23	-3.25	--
Pyle-influent	01/31/06	3:44 PM	28.61	33	-	-32.7	0	1.3	17.2	-1.78	-1.74	-0.84	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]			Pressure [2]	Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.		CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
Pyle-influent	02/13/06	1:22 PM	28.38	23	-	-32.8	0.7	1.8	16.4	245	192	333	--
Pyle-influent	03/08/06	2:17 PM	28.42	37	-	-31.8	0.6	1.6	16.4	59.27	37.28	57.56	--
Pyle-influent	04/13/06	10:39 AM	28.78	62	-	-31.3	0	1	17.7	-4.24	-4.19	-2.88	--
Pyle-influent	05/17/06	9:12 AM	28.41	53	0.01	-30.3	0	0.8	17.5	10.63	5.83	2.34	--
Pyle-influent	06/02/06	1:00 PM	28.81	76	-	-28.4	0	1.1	17.6	-0.56	-0.28	0.32	--
Pyle-influent	07/17/06	3:30 PM	28.67	86	-	-26.5	0.1	1.8	16	1410	1406	3.97	--
Pyle-influent	08/15/06	11:14 AM	28.81	73	-	-26	0.1	2.2	15.6	--	--	--	--
Pyle-influent	09/18/06	8:53 AM	28.41	57	-	-28	0.4	3.3	15.7	14.84	8.94	13.86	--
Pyle-influent	10/05/06	9:54 AM	29.21	52	-	-29.3	0	2.7	17.8	-2.48	-2.32	-0.2	--
Pyle-influent	11/07/06	12:19 PM	28.59	50	-	-30.6	0	2.8	16.9	6.86	6.7	8.15	--
Pyle-influent	12/18/06	12:00 PM	29.08	29	-	-31.5	0	1.4	19	-1.99	-1.96	-1.22	--
Pyle-influent	01/18/07	10:26 AM	28.75	18	-	-32.3	0	2.7	15.9	28.31	15.67	24.12	--
Pyle-influent	02/06/07	1:57 PM	28.83	7	-	--	--	--	--	--	--	--	--
Pyle-influent	02/16/07	11:40 AM	28.37	23	-	-24.1	0.7	2.7	16.8	7.07	5.9	9.72	--
Pyle-influent	03/09/07	10:16 AM	28.64	32	-	-23.8	0	2.9	16.6	-8.8	-7.93	-3.79	--
Pyle-influent	04/16/07	1:57 PM	28.79	62	-	-24.7	0	2.3	17.7	-4.37	-2.1	-1.83	--
Pyle-influent	05/29/07	9:36 AM	28.9	74	-	-26	0	2	17.2	20.92	20.48	-6.61	--
Pyle-influent	06/15/07	1:26 PM	28.79	89	-	-24.2	0	1.6	17.6	-1.6	-1.48	0.9	--
Pyle-influent	07/11/07	2:04 PM	29.85	74	-	-23.8	0	2	16.6	-8.59	-8.3	-7.24	--
Pyle-influent	08/29/07	10:05 AM	30.13	69	-	--	--	--	--	-1.87	-1.81	-0.92	--
Pyle-influent	09/20/07	2:23 PM	30.17	65	-	-24.4	0	2.1	17	-2.01	-1.98	-1	--
Pyle-influent	10/16/07	10:39 AM	29.92	52	0.08	-26.4	0.2	1.2	17.6	1.32	1.09	1.91	--
Pyle-influent	11/20/07	1:59 PM	30	38	-	-27.1	0	2	17.8	-0.5	-0.48	-0.22	--
Pyle-influent	12/26/07	11:07 AM	29.97	28	-	-29.1	0	2.1	17.4	-1.56	-1.49	-0.44	--
R-effluent	04/12/02	10:42 AM	28.86	47	-	--	33.7	4.5	5.8	--	--	--	--
R-effluent	09/24/02	12:45 PM	29.04	54	-	0.7	40.8	4.7	3.6	--	--	--	--
R-effluent	10/14/02	12:43 PM	28.81	55	-	0.6	31.3	4.4	5.4	--	--	--	--
R-effluent	10/15/02	1:42 PM	28.75	42	-	0.7	33.3	4.5	5	--	--	--	--
R-effluent	10/23/02	2:25 PM	29.24	35	-	1.1	25.1	4	6.5	--	--	--	--
R-effluent	10/30/02	2:47 PM	28.93	36	-	0.9	27.9	3.8	9.1	--	--	--	--
R-effluent	11/04/02	1:40 PM	28.85	38	-	0.7	29.5	3.7	9.4	--	--	--	--
R-effluent	11/19/02	10:20 AM	28.57	30	-	1.2	23.1	2.9	11.6	--	--	--	--
R-effluent	12/02/02	9:56 AM	28.79	11	-	1.4	22.3	2.8	11.7	--	--	--	--
R-effluent	12/17/02	10:47 AM	28.92	29	-	1.6	21.7	2.7	12.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-effluent	01/02/03	9:42 AM	29.02	19	-	1.2	19.9	2.6	13	--	--	--	--
R-effluent	01/14/03	10:09 AM	28.91	5	-	1.4	21.7	2.8	12.4	--	--	--	--
R-effluent	02/25/03	11:14 AM	29.14	3	-	1.3	27.2	2.2	12.5	--	--	--	--
R-effluent	03/05/03	2:54 PM	28.72	14	T	4	23.2	2.3	12.8	--	--	--	--
R-effluent	04/03/03	11:14 AM	28.86	25	T	0.4	0	0	19.8	196	196	1.9	--
R-effluent	04/15/03	10:18 AM	28.51	64	-	0.1	46	3.8	6.2	--	--	--	--
R-effluent	05/05/03	9:00 AM	28.41	52	T	0.4	28.6	3.1	9.7	--	--	--	--
R-effluent	06/05/03	11:07 AM	28.71	75	-	0.3	29.3	3.7	7.3	--	--	--	--
R-effluent	07/22/03	1:32 PM	28.82	68	-	7.2	25.1	2.2	8.1	--	--	--	--
R-effluent	08/05/03	1:25 PM	28.7	82	-	6	26.4	2.7	8.8	--	--	--	--
R-effluent	09/30/03	12:35 PM	28.89	46	T	9.8	11.1	1.9	13.2	--	--	--	--
R-effluent	10/07/03	2:53 PM	28.67	72	-	8.9	20.6	2.1	11.4	--	--	--	--
R-effluent	10/09/03	9:50 AM	28.86	71	-	8.8	20.7	2.2	11.2	--	--	--	--
R-effluent	10/15/03	1:51 PM	28.61	48	-	8.5	18.7	2.1	12.5	--	--	--	--
R-effluent	11/21/03	2:23 PM	28.87	34	-	10.2	15	2.2	13	--	--	--	--
R-effluent	12/16/03	3:04 PM	28.24	31	T	11	11	1.4	15.3	--	--	--	--
R-effluent	01/30/04	11:02 AM	28.65	4	T	10	15.4	2.1	12.4	--	--	--	--
R-effluent	02/13/04	11:42 AM	28.46	29	-	10.6	10.1	1.3	14.8	--	--	--	--
R-effluent	03/01/04	10:25 AM	28.56	35	0.01	0.4	11.2	1.4	14.8	--	--	--	--
R-effluent	04/16/04	10:50 AM	28.63	72	-	0.3	14.2	1	13.5	--	--	--	--
R-effluent	04/22/04	9:23 AM	28.99	39	-	0.3	11.2	1.1	15.4	--	--	--	--
R-effluent	05/04/04	7:30 AM	28.52	44	T	0.3	8	0.8	17.1	--	--	--	--
R-effluent	05/04/04	11:33 AM	28.46	61	-	0.3	9.2	1	17.2	--	--	--	--
R-effluent	05/04/04	3:58 PM	28.55	52	-	0.5	8.3	0.8	17.4	--	--	--	--
R-effluent	05/05/04	7:50 AM	28.78	40	-	0.3	8.2	0.9	17.6	--	--	--	--
R-effluent	05/06/04	7:27 AM	28.54	56	-	0.3	8.3	1	17	--	--	--	--
R-effluent	05/07/04	7:33 AM	29.2	44	-	0.3	6.9	0.8	17.4	--	--	--	--
R-effluent	05/10/04	11:01 AM	28.68	74	-	0.3	9.9	1.1	13.9	--	--	--	--
R-effluent	05/18/04	--	--	--	--	--	8.1	1	16.6	--	--	--	--
R-effluent	06/22/04	6:40 AM	28.59	53	-	--	--	--	--	--	--	--	--
R-effluent	06/22/04	12:45 PM	28.61	65	T	--	0	0.1	19.9	--	--	--	--
R-effluent	06/22/04	1:33 PM	28.61	66	-	0.987	5.5	4.5	11.6	--	--	--	--
R-effluent	06/23/04	9:19 AM	28.68	60	-	0.2	2	0.4	19.1	--	--	--	--
R-effluent	06/24/04	2:46 PM	28.78	55	T	0.3	5.5	0.6	16.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-effluent	06/26/04	12:23 PM	28.83	61	-	0.02	7.5	1	15	--	--	--	--
R-effluent	06/27/04	2:41 PM	28.84	64	-	0.4	7.4	1	14.9	--	--	--	--
R-effluent	06/28/04	3:12 PM	28.78	74	-	2.6	9.9	1.2	17.2	--	--	--	--
R-effluent	06/29/04	4:36 PM	28.83	69	0.01	--	--	--	--	--	--	--	--
R-effluent	07/01/04	11:18 AM	28.91	67	-	0.2	0	0	19.6	--	--	--	--
R-effluent	07/06/04	8:42 AM	28.68	51	0.1	0.4	6.5	0.9	16.4	--	--	--	--
R-effluent	07/07/04	5:43 PM	28.57	55	-	0.442	4.9	0.6	17.5	--	--	--	--
R-effluent	07/08/04	2:46 PM	28.74	65	-	0.377	0	0	19.3	--	--	--	--
R-effluent	07/09/04	7:40 AM	28.88	62	-	0.382	6.9	1.1	16.2	--	--	--	--
R-effluent	07/11/04	10:40 AM	28.8	72	-	3.3	6.6	0.9	16.5	--	--	--	--
R-effluent	07/12/04	1:50 PM	28.7	82	-	0.39	7.2	0.9	16.5	--	--	--	--
R-effluent	07/19/04	1:40 PM	28.55	83	-	0.2	0.2	0	19.1	--	--	--	--
R-effluent	07/20/04	11:45 AM	28.69	78	-	0.4	4.3	0.6	17.3	--	--	--	--
R-effluent	07/22/04	8:21 AM	28.61	68	-	0.376	5.4	0.7	17.3	--	--	--	--
R-effluent	08/02/04	11:17 AM	28.68	79	0.04	0.353	4.2	0.5	17.7	--	--	--	--
R-effluent	08/11/04	3:01 PM	28.59	57	-	0.324	3.8	0.4	18.4	--	--	--	--
R-effluent	08/13/04	9:51 AM	28.94	63	-	0.5	2.8	0.3	19	--	--	--	--
R-effluent	08/16/04	10:20 AM	28.94	71	-	0.5	2.6	0.3	19.2	--	--	--	--
R-effluent	08/19/04	8:28 AM	28.75	51	-	0.8	3	0.4	18.5	--	--	--	--
R-effluent	09/28/04	3:00 PM	29.03	62	-	0.3	5.9	0.4	18.1	--	--	--	--
R-effluent	09/29/04	1:40 PM	28.88	67	-	0.5	9	0.5	17.5	--	--	--	--
R-effluent	10/01/04	3:06 PM	28.5	59	0.02	0.4	8.1	0.5	17.8	--	--	--	--
R-effluent	10/08/04	10:04 AM	28.63	60	0.25	0.2	5.5	0.4	18.2	--	--	--	--
R-effluent	10/12/04	2:57 PM	28.67	63	-	0.5	4.3	0.4	18.7	--	--	--	--
R-effluent	11/10/04	9:07 AM	28.67	44	T	0.4	5	0.4	18.1	--	--	--	--
R-effluent	12/21/04	3:36 PM	28.48	26	-	0.4	3.9	0.4	17.4	57500	56800	-0.45	--
R-effluent	01/27/05	1:22 PM	29.31	13	-	0.6	2	0.3	18.4	55100	53000	-3.72	--
R-effluent	02/04/05	3:15 PM	28.81	45	-	0.8	2.9	0.4	18.2	90800	78000	0.82	--
R-effluent	03/14/05	3:20 PM	28.78	34	-	0.6	1.8	0.3	18.9	61800	52500	7.39	--
R-effluent	03/15/05	3:56 PM	28.89	30	-	+0.2 to +0.4	--	--	--	--	--	--	--
R-effluent	03/17/05	3:35 PM	28.76	30	-	--	--	--	--	--	--	--	--
R-effluent	04/08/05	9:12 AM	28.92	51	-	0.2	7.9	1.2	15.5	--	--	--	--
R-effluent	05/09/05	12:11 PM	28.53	71	-	0.4	6.1	1.2	15.3	--	--	-0.5	--
R-effluent	06/04/05	8:00 AM	28.65	64	-	--	0.9	0.8	17.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
Well/Boring	Date	Time	Barometer (in. Hg)	Temp. (^oF)	Precip. (in.)	Pressure [2] (in. H_2O)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	Peak (ppmv)	Stable (ppmv)	Bkgrd (ppmv)	Water (ft btc)
R-effluent	06/05/05	9:30 AM	28.47	76	-	--	2.4	--	--	--	--	--	--
R-effluent	06/10/05	8:03 AM	28.74	71	-	0.5	5.9	1.7	14.3	--	--	--	--
R-effluent	07/05/05	12:00 PM	28.88	64	-	0.4	8.2	1.6	15.1	--	--	--	--
R-effluent	08/02/05	10:22 AM	28.83	85	-	0.2	8.8	1.7	15	--	--	--	--
R-effluent	09/08/05	9:36 AM	28.98	64.94	-	0.6	3.2	0.7	17.7	--	--	--	--
R-effluent	10/18/05	1:22 PM	28.62	56	-	0.7	3.5	0.7	17.7	--	--	--	--
R-effluent	11/03/05	2:07 PM	28.64	51	-	0.8	3.5	0.7	17.4	3.49	3.42	2.26	--
R-effluent	12/05/05	12:47 PM	28.72	10	-	0.5	0.1	0.1	18.6	870	598	-2.25	--
R-effluent	12/06/05	10:07 AM	28.82	4	-	0.7	2.5	0.5	16.9	7.07%	6.96%	-3.19	--
R-effluent	01/05/06	3:34 PM	28.85	24	-	0.7	3.4	0.8	17.5	--	--	--	--
R-effluent	02/13/06	9:47 AM	28.44	16	-	0.3	4.9	0.9	16.9	--	--	--	--
R-effluent	03/08/06	9:17 AM	28.46	33	-	0.5	4.9	0.6	16.6	--	--	--	--
R-effluent	04/13/06	10:23 AM	28.78	59	-	0.5	3.5	0.8	17	--	--	--	--
R-effluent	05/17/06	9:42 AM	28.4	56	-	0.4	2.9	0.8	16.5	--	--	--	--
R-effluent	06/06/06	9:43 AM	28.61	68	-	0.3	5.8	1.1	15.8	--	--	--	--
R-effluent	07/12/06	9:55 AM	28.83	79	-	0.4	5.1	1.2	15.6	--	--	--	--
R-effluent	08/15/06	1:15 PM	28.81	75	-	0.3	5.2	1.3	15.4	--	--	--	--
R-effluent	09/18/06	9:28 AM	28.41	57	-	0.5	3.4	1.5	17.6	--	--	--	--
R-effluent	10/05/06	10:17 AM	29.21	52	-	0.4	2.8	1.4	18	--	--	--	--
R-effluent	11/06/06	1:10 PM	28.8	53	-	0.3	3.3	1.5	17.4	--	--	--	--
R-effluent	12/18/06	12:30 PM	29.08	31	-	0.5	2.3	1.3	18	--	--	--	--
R-effluent	01/18/07	10:08 AM	28.75	18	-	0.6	3.1	1.7	16.2	--	--	--	--
R-effluent	02/06/07	1:27 PM	28.85	5	-	0.3	0	0	20.9	229	210	-1.02	--
R-effluent	03/09/07	9:54 AM	28.64	32	-	0.4	3	1.6	17.5	--	--	--	--
R-effluent	04/16/07	2:31 PM	28.77	64	-	0.4	2.7	1.3	18.2	--	--	--	--
R-effluent	05/25/07	10:52 AM	29.02	62	-	0.3	5.4	1.6	16.3	--	--	--	--
R-effluent	06/15/07	9:23 AM	28.84	82	-	0.3	5.4	1.8	14.9	--	--	--	--
R-effluent	07/11/07	1:55 PM	29.85	74	-	0.3	1.6	1.2	17.2	--	--	--	--
R-effluent	08/29/07	9:49 AM	30.13	69	-	0.1	3.9	1.6	15.4	--	--	--	--
R-effluent	09/19/07	11:12 AM	30.02	71	-	0.3	3.8	1.6	15.7	--	--	--	--
R-effluent	10/16/07	9:39 AM	29.94	51	T	0.3	4.1	1.8	15.6	--	--	--	--
R-effluent	11/20/07	1:45 PM	30	38	-	0.1	3.3	1.7	16.4	--	--	--	--
R-effluent	12/26/07	10:52 AM	29.97	28	-	0.3	3.5	1.7	16.4	--	--	--	--
R-influent	07/19/00	7:45 AM	28.86	54	-	-27	93.4	4.5	0	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-influent	08/08/00	5:50 PM	28.57	69	0.05	-25	92.5	4.4	0	--	--	--	--
R-influent	08/19/00	5:49 PM	29	66	-	-25	92.6	4.5	0	--	--	--	--
R-influent	08/29/00	4:40 PM	28.8	75	-	-25	84.7	4.6	0	--	--	--	--
R-influent	08/31/00	11:37 AM	28.59	85	-	-24	76.2	4.3	0.3	--	--	--	--
R-influent	08/31/00	2:45 PM	28.6	88	-	-24	85.3	4.6	0	--	--	--	--
R-influent	08/31/00	2:52 PM	28.6	88	-	-24	82	4.8	0	--	--	--	--
R-influent	08/31/00	2:55 PM	28.6	88	-	-24	89.9	4.2	0	--	--	--	--
R-influent	09/19/00	1:35 PM	28.2	68	-	-28	80.1	4.6	0	--	--	--	--
R-influent	09/20/00	8:30 AM	28.29	57	-	--	--	--	--	--	--	--	--
R-influent	09/23/00	1:47 PM	28.68	55	-	-27	90.1	4.3	0	--	--	--	--
R-influent	09/25/00	2:11 PM	28.8	60	-	-27	85.8	4.6	0	--	--	--	--
R-influent	09/25/00	5:05 PM	28.77	58	-	-28	72.8	3.3	2.3	--	--	--	--
R-influent	09/25/00	5:50 PM	28.76	49	-	-27	82	4	0	--	--	--	--
R-influent	09/26/00	8:40 AM	28.67	59	-	--	--	--	--	--	--	--	--
R-influent	09/26/00	1:35 PM	28.62	72	-	-30	71.1	4.1	0	--	--	--	--
R-influent	09/27/00	8:10 AM	28.9	43	-	-28	82.4	4.3	0	--	--	--	--
R-influent	10/02/00	2:14 PM	28.41	55	-	-26	87.4	4.3	0	--	--	--	--
R-influent	10/06/00	10:45 AM	28.85	40	-	-35	45.7	2.9	5.1	--	--	--	--
R-influent	10/06/00	11:08 AM	28.85	40	-	-32	40.1	1.9	9.5	--	--	--	--
R-influent	10/06/00	12:07 PM	28.85	40	-	-30	76.7	4.7	0.7	--	--	--	--
R-influent	10/06/00	3:50 PM	28.9	37	-	-29	76.5	4.3	1.3	--	--	--	--
R-influent	10/07/00	9:25 AM	29.03	36	-	-28	70	4.1	3.5	--	--	--	--
R-influent	10/09/00	8:45 AM	29.07	47	-	-29	74.5	4.2	2.8	--	--	--	--
R-influent	10/09/00	12:33 PM	29.02	58	-	-29	77.4	4	1.9	--	--	--	--
R-influent	10/09/00	5:15 PM	28.97	53	-	-28	67.4	3.3	3.6	--	--	--	--
R-influent	10/13/00	11:25 AM	28.66	65	-	-27	85.8	4	0.9	--	--	--	--
R-influent	10/16/00	3:00 PM	28.89	51	-	-27	78	3.9	1	--	--	--	--
R-influent	10/19/00	4:30 PM	28.68	63	-	-27	77.8	3.6	2	--	--	--	--
R-influent	10/23/00	12:11 PM	29.06	58	-	-27	80.8	3.8	0.5	--	--	--	--
R-influent	10/31/00	8:58 AM	28.92	51	-	-27	81.4	3.6	1.1	--	--	--	--
R-influent	11/14/00	9:07 AM	28.42	31	T	-27	87.7	3.4	0.4	--	--	--	--
R-influent	12/05/00	10:52 AM	28.89	9	-	-26	59.4	2.5	6.2	--	--	--	--
R-influent	02/24/01	1:06 PM	28.76	25	T	-29	0	0	19.4	--	--	--	--
R-influent	03/22/01	10:15 AM	28.85	43	-	-29	0	0	20.5	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-influent	03/22/01	10:51 AM	28.84	45	-	-29	50	2.5	8.2	--	--	--	--
R-influent	03/22/01	10:52 AM	28.84	45	-	--	35.4	1.6	10.5	--	--	--	--
R-Influent	04/09/01	8:29 AM	28.76	37	-	-32	42.6	2.9	8.5	--	--	--	--
R-influent	05/01/01	1:53 PM	28.57	71	-	-30	48.4	3.8	3.3	--	--	--	--
R-influent	05/29/01	1:37 PM	28.91	64	-	-32	0	0	19.5	1800	--	-0.13	--
R-influent	07/20/01	9:23 AM	28.82	74	-	-32	54	3.6	3.4	--	--	--	--
R-influent	08/17/01	10:04 AM	28.74	70	-	-31	48.5	3.2	1.9	--	--	1.5	--
R-influent	08/17/01	1:15 PM	28.74	73	-	-30	62.5	3.2	1.9	--	--	--	--
R-influent	08/17/01	1:59 PM	28.73	73	-	-31	43	2.5	6	--	--	--	--
R-influent	08/17/01	2:40 PM	28.72	77	-	-31	34.1	2.3	7.5	--	--	--	--
R-influent	08/17/01	3:36 PM	28.72	76	-	-30	60.5	3.7	2.1	--	--	--	--
R-influent	08/18/01	8:48 AM	28.7	69	-	-30	67.8	3.7	1.7	--	--	--	--
R-influent	08/19/01	7:30 AM	28.77	65	-	-32	66.5	3.5	1.9	--	--	--	--
R-influent	08/20/01	7:30 AM	28.87	63	-	-34	44.3	4	5.2	--	--	--	--
R-influent	09/09/01	8:30 AM	28.71	59	-	-32	58.4	6.5	2.5	--	--	--	--
R-influent	09/09/01	11:15 AM	28.7	60	-	-42	55.9	4.4	1.4	--	--	--	--
R-influent	10/06/01	2:50 PM	28.85	38	-	-32	54.3	3.5	2.3	--	--	--	--
R-influent	10/10/01	7:15 AM	28.61	56	-	-58	52.5	3.5	0	--	--	--	--
R-influent	11/07/01	4:24 PM	28.88	44	T	-72	48.6	4.5	0.6	--	--	--	--
R-influent	12/18/01	4:06 PM	28.46	37	-	-78	38	4.4	3.6	--	--	--	--
R-influent	01/10/02	3:40 PM	28.56	35	T	-84	20	0	11.9	--	--	--	--
R-influent	01/28/02	1:50 PM	28.75	26	-	1.21	36.4	4.4	5.5	--	--	--	--
R-influent	02/28/02	8:45 AM	28.57	16	-	-90	20.4	3.8	12.2	--	--	--	--
R-influent	02/28/02	1:40 PM	28.54	25	T	--	--	--	--	--	--	--	--
R-influent	03/08/02	9:00 AM	28.63	21	-	-89	23.1	4.4	10.6	--	--	--	--
R-influent	03/08/02	2:49 PM	28.7	29	-	-89	23.1	4.4	10.6	--	--	--	--
R-influent	03/22/02	10:06 AM	28.83	18	-	1.37	23.1	4.2	11.1	--	--	--	--
R-influent	03/25/02	1:10 PM	29.22	25	-	-90	23.8	4.2	10.8	--	--	--	--
R-influent	03/25/02	2:55 PM	29.18	29	-	-100	0	0.2	20.2	--	--	--	--
R-influent	03/29/02	12:47 PM	28.43	48	-	-76	41.9	2.8	5.5	--	--	--	--
R-influent	04/12/02	10:44 AM	28.86	47	-	-85	--	--	--	--	--	--	--
R-influent	04/29/02	10:10 AM	28.61	36	0.01	-87	29.3	4.6	9.5	--	--	--	--
R-influent	07/10/02	5:55 PM	29.05	71	-	--	--	--	--	--	--	--	--
R-influent	07/10/02	7:07 PM	29.06	70	-	-74	44.7	5.1	1.6	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-influent	07/11/02	4:50 PM	29.01	78	-	-70	44.8	4.9	2	--	--	--	--
R-influent	07/12/02	7:40 AM	28.92	67	-	-69	46	4.7	2.3	--	--	--	--
R-influent	07/30/02	7:45 AM	28.74	74	-	-76.4	42.5	5.2	3.9	--	--	--	--
R-influent	08/06/02	7:45 AM	29.19	60	-	-79.5	40.2	5.1	4.4	--	--	--	--
R-influent	08/14/02	8:25 AM	28.61	61	-	-75	41.5	4.9	4.3	--	--	--	--
R-influent	09/24/02	12:42 PM	29.04	54	-	-78.3	--	--	--	--	--	--	--
R-influent	10/14/02	12:42 PM	28.81	55	-	-80.6	--	--	--	--	--	--	--
R-influent	10/15/02	1:42 PM	28.75	42	-	-80.7	--	--	--	--	--	--	--
R-influent	10/23/02	2:25 PM	29.24	35	-	-84.6	--	--	--	--	--	--	--
R-influent	10/30/02	2:47 PM	28.93	36	-	-83.5	--	--	--	--	--	--	--
R-influent	11/04/02	1:40 PM	28.85	38	-	-38.2	--	--	--	--	--	--	--
R-influent	11/19/02	10:20 AM	28.57	30	-	-83.5	--	--	--	--	--	--	--
R-influent	12/02/02	9:56 AM	28.79	11	-	-87	--	--	--	--	--	--	--
R-influent	12/17/02	10:47 AM	28.92	29	-	-87.6	--	--	--	--	--	--	--
R-influent	01/02/03	9:42 AM	29.02	19	-	-91.1	--	--	--	--	--	--	--
R-influent	01/14/03	10:09 AM	28.91	5	-	-91.4	--	--	--	--	--	--	--
R-influent	02/25/03	11:10 AM	29.14	3	-	-69.5	--	--	--	--	--	--	--
R-influent	03/05/03	2:53 PM	28.72	14	T	-70	--	--	--	--	--	--	--
R-Influent	04/03/03	11:12 AM	28.86	25	T	-79.6	--	--	--	--	--	--	--
R-influent	04/15/03	10:17 AM	28.51	64	-	-64.4	--	--	--	--	--	--	--
R-influent	05/05/03	9:03 AM	28.41	52	T	-69.5	--	--	--	--	--	--	--
R-influent	06/05/03	11:06 AM	28.71	75	-	-65	--	--	--	--	--	--	--
R-influent	07/22/03	1:31 PM	28.82	68	-	-104.3	--	--	--	--	--	--	--
R-influent	08/05/03	1:28 PM	28.7	82	-	-125	--	--	--	--	--	--	--
R-influent	09/30/03	9:41 AM	28.88	42	T	-101.7	--	--	--	--	--	--	--
R-influent	10/07/03	2:51 PM	28.67	72	-	-104.3	--	--	--	--	--	--	--
R-influent	10/09/03	9:50 AM	28.86	71	-	-105.9	--	--	--	--	--	--	--
R-influent	10/15/03	1:50 PM	28.61	48	-	-111.1	--	--	--	--	--	--	--
R-influent	11/21/03	2:22 PM	28.87	34	-	-110	--	--	--	--	--	--	--
R-influent	11/26/03	1:02 PM	28.68	36	-	--	28.8	4.3	7.2	--	--	--	--
R-influent	12/16/03	3:02 PM	28.24	31	T	-113	--	--	--	--	--	--	--
R-influent	01/30/04	10:56 AM	28.65	4	T	-106.1	--	--	--	--	--	--	--
R-influent	02/13/04	11:41 AM	28.46	29	-	-115	--	--	--	--	--	--	--
R-influent	03/01/04	10:23 AM	28.56	35	0.01	-112	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-influent	04/16/04	10:45 AM	28.63	72	-	-86	--	--	--	--	--	--	--
R-influent	04/22/04	9:30 AM	29	41	-	--	--	--	--	--	--	--	--
R-influent	05/04/04	7:25 AM	28.54	42	T	-95.2	--	--	--	--	--	--	--
R-influent	05/04/04	11:30 AM	28.46	61	-	-95.1	--	--	--	--	--	--	--
R-influent	05/04/04	3:56 PM	28.55	52	-	-96.4	--	--	--	--	--	--	--
R-influent	05/05/04	7:47 AM	28.78	40	-	-92.4	--	--	--	--	--	--	--
R-influent	05/06/04	7:25 AM	28.54	56	-	-92.2	--	--	--	--	--	--	--
R-influent	05/07/04	7:30 AM	29.2	44	-	-94	--	--	--	--	--	--	--
R-influent	05/10/04	10:59 AM	28.68	74	-	-110	--	--	--	--	--	--	--
R-influent	05/18/04	--	--	--	--	--	--	--	--	--	--	--	--
R-influent	05/27/04	1:39 PM	28.4	53	-	-117	--	--	--	--	--	--	--
R-influent	06/22/04	6:40 AM	28.59	53	-	4.0 - 4.5	--	--	--	--	--	--	--
R-influent	06/22/04	8:15 AM	28.59	57	-	-103	--	--	--	--	--	--	--
R-influent	06/22/04	11:31 AM	28.6	65	-	-70	--	--	--	--	--	--	--
R-influent	06/22/04	11:32 AM	28.6	65	-	-70	--	--	--	--	--	--	--
R-influent	06/22/04	11:34 AM	28.6	65	-	-82	--	--	--	--	--	--	--
R-influent	06/22/04	11:36 AM	28.6	65	-	-84	--	--	--	--	--	--	--
R-influent	06/22/04	11:37 AM	28.6	65	-	-107	--	--	--	--	--	--	--
R-influent	06/22/04	11:45 AM	28.6	65	-	-95.5	--	--	--	--	--	--	--
R-influent	06/22/04	11:47 AM	28.6	65	-	-110	--	--	--	--	--	--	--
R-influent	06/22/04	11:49 AM	28.6	65	-	-117	--	--	--	--	--	--	--
R-influent	06/22/04	11:52 AM	28.6	65	-	-104	--	--	--	--	--	--	--
R-influent	06/22/04	12:40 PM	28.61	65	T	-117	--	--	--	--	--	--	--
R-influent	06/22/04	12:40 PM	28.61	65	T	--	0	0.7	17.5	--	--	--	--
R-influent	06/22/04	1:31 PM	28.61	66	-	-28.1	5.4	4.5	11.7	--	--	--	--
R-influent	06/23/04	9:17 AM	28.68	60	-	-118	--	--	--	--	--	--	--
R-influent	06/24/04	2:44 PM	28.78	55	T	-116.6	--	--	--	--	--	--	--
R-influent	06/26/04	12:22 PM	28.83	61	-	-117.4	--	--	--	--	--	--	--
R-influent	06/27/04	2:40 PM	28.84	64	-	-117.9	--	--	--	--	--	--	--
R-influent	06/28/04	3:11 PM	28.78	74	-	-143.5	--	--	--	--	--	--	--
R-influent	06/29/04	4:36 PM	28.83	69	0.01	--	--	--	--	--	--	--	--
R-influent	07/01/04	11:16 AM	28.91	67	-	-113	--	--	--	--	--	--	--
R-influent	07/06/04	8:38 AM	28.68	51	0.1	-115	--	--	--	--	--	--	--
R-influent	07/07/04	5:42 PM	28.57	55	-	-75.3	--	--	--	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-influent	07/08/04	2:44 PM	28.74	65	-	-9	--	--	--	--	--	--	--
R-influent	07/09/04	7:38 AM	28.88	62	-	-82.4	--	--	--	--	--	--	--
R-influent	07/11/04	10:37 AM	28.8	72	-	-85.7	--	--	--	--	--	--	--
R-influent	07/12/04	1:48 PM	28.7	82	-	-83.6	--	--	--	--	--	--	--
R-influent	07/19/04	1:38 PM	28.55	83	-	-84.5	--	--	--	--	--	--	--
R-influent	07/20/04	11:40 AM	28.69	78	-	-88.1	--	--	--	--	--	--	--
R-influent	07/22/04	8:20 AM	28.61	68	-	-97.6	--	--	--	--	--	--	--
R-influent	08/02/04	11:16 AM	28.68	79	0.04	-100.9	--	--	--	--	--	--	--
R-influent	08/11/04	3:01 PM	28.59	57	-	-104	--	--	--	--	--	--	--
R-influent	08/13/04	9:50 AM	28.94	63	-	-65	--	--	--	--	--	--	--
R-influent	08/16/04	10:19 AM	28.94	71	-	-65	--	--	--	--	--	--	--
R-influent	08/19/04	8:26 AM	28.75	51	-	-113.4	--	--	--	--	--	--	--
R-influent	09/28/04	2:59 PM	29.03	62	-	-58.5	--	--	--	--	--	--	--
R-influent	09/29/04	1:39 PM	28.88	67	-	-53.4	--	--	--	--	--	--	--
R-influent	10/01/04	3:05 PM	28.5	59	0.02	-52.6	--	--	--	--	--	--	--
R-influent	10/08/04	10:03 AM	28.63	60	0.25	-59	--	--	--	--	--	--	--
R-influent	10/12/04	2:56 PM	28.67	63	-	-58.3	--	--	--	--	--	--	--
R-influent	11/10/04	9:06 AM	28.67	44	T	-58.1	--	--	--	--	--	--	--
R-influent	12/21/04	3:34 PM	28.48	26	-	-59.3	--	--	--	--	--	--	--
R-influent	01/27/05	1:20 PM	29.31	13	-	-46.9	--	--	--	--	--	--	--
R-influent	02/04/05	3:14 PM	28.81	45	-	-44.9	--	--	--	--	--	--	--
R-influent	03/14/05	3:25 PM	28.78	34	-	-47.4	--	--	--	--	--	--	--
R-influent	03/15/05	3:55 PM	28.89	30	-	-77 to -82	--	--	--	--	--	--	--
R-influent	03/17/05	3:34 PM	28.76	30	-	--	--	--	--	--	--	--	--
R-influent	04/08/05	9:11 AM	28.92	51	-	-82.5	--	--	--	--	--	--	--
R-influent	05/09/05	12:10 PM	28.53	71	-	-76.5	--	--	--	--	--	--	--
R-influent	06/10/05	8:01 AM	28.74	71	-	-71	--	--	--	--	--	--	--
R-influent	07/05/05	11:58 AM	28.88	64	-	-91.2	--	--	--	--	--	--	--
R-influent	08/02/05	10:20 AM	28.83	85	-	-117	--	--	--	--	--	--	--
R-influent	08/08/05	3:48 PM	28.71	91	-	-116.5	--	--	--	--	--	--	--
R-influent	08/08/05	3:52 PM	28.71	91	-	-39.9	--	--	--	--	--	--	--
R-influent	08/08/05	4:30 PM	28.7	90	-	---	--	--	--	--	--	--	--
R-influent	09/08/05	9:40 AM	28.98	64.94	-	-46.4	--	--	--	--	--	--	--
R-influent	10/18/05	1:28 PM	28.62	56	-	-45	4.4	2.4	13.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

			Weather Conditions [1]				Landtec Readings [3]			OVA Readings [4]			Depth to
			Barometer	Temp.	Precip.	Pressure [2]	CH_4	CO_2	O_2	Peak	Stable	Bkgrd	Water
Well/Boring	Date	Time	(in. Hg)	(^oF)	(in.)	(in. H_2O)	(% vol)	(% vol)	(% vol)	(ppmv)	(ppmv)	(ppmv)	(ft btc)
R-influent	11/03/05	2:00 PM	28.64	51	-	-46	11.5	2.5	12.7	--	--	--	--
R-influent	12/05/05	12:44 PM	28.72	10	-	-36.2	0.1	0.4	18.3	--	--	--	--
R-influent	12/06/05	10:03 AM	28.82	4	-	-38.7	6.4	2.2	13.7	--	--	--	--
R-influent	01/05/06	3:30 PM	28.85	24	-	-45.5	10.8	2.4	13.2	--	--	--	--
R-influent	02/13/06	9:44 AM	28.44	16	-	-41.1	13.3	2.6	12.3	--	--	--	--
R-influent	03/08/06	9:14 AM	28.46	33	-	-39	12	2.6	12.5	--	--	--	--
R-influent	04/13/06	10:19 AM	28.78	59	-	-42.8	10.6	2.3	13	--	--	--	--
R-influent	05/17/06	9:39 AM	28.4	56	-	-43.5	9.8	2.5	12.2	--	--	--	--
R-influent	06/06/06	9:38 AM	28.61	68	-	-67	0	0	18.7	-1.39	-1.28	1.09	--
R-influent	07/12/06	9:49 AM	28.83	79	-	-74.6	0	0	19	--	--	--	--
R-influent	08/15/06	1:08 PM	28.81	75	-	-88.7	0	0	19.3	-1.6	-1.57	1.44	--
R-influent	09/18/06	9:28 AM	28.41	57	-	--	--	--	--	--	--	--	--
R-influent	10/05/06	10:14 AM	29.21	52	-	-60	--	--	--	--	--	--	--
R-influent	11/06/06	1:09 PM	28.8	53	-	-57.2	--	--	--	--	--	--	--
R-influent	12/18/06	12:29 PM	29.08	29	-	-61.5	--	--	--	--	--	--	--
R-influent	01/18/07	10:05 AM	28.75	18	-	-55.4	--	--	--	--	--	--	--
R-influent	02/06/07	1:25 PM	28.85	5	-	-82.7	--	--	--	--	--	--	--
R-influent	03/09/07	9:53 AM	28.64	32	-	-53	--	--	--	--	--	--	--
R-influent	04/16/07	2:29 PM	28.79	62	-	-51	--	--	--	--	--	--	--
R-influent	05/25/07	10:51 AM	29.02	62	-	-79	--	--	--	--	--	--	--
R-influent	06/15/07	9:21 AM	28.84	82	-	-70.7	--	--	--	--	--	--	--
R-influent	07/11/07	1:53 PM	29.85	74	-	-54.3	--	--	--	--	--	--	--
R-influent	08/29/07	9:46 AM	30.13	69	-	-73.3	--	--	--	--	--	--	--
R-influent	09/19/07	11:04 AM	30.02	71	-	-70.6	--	--	--	--	--	--	--
R-influent	10/16/07	9:32 AM	29.94	51	T	-73.7	5.2	2.2	14.7	--	--	--	--
R-influent	11/20/07	1:39 PM	30	38	-	-72.3	4.2	2.1	15.6	--	--	--	--
R-influent	12/26/07	10:48 AM	29.97	28	-	-79.3	4.6	2.2	5.2	--	--	--	--

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Table R-1. Soil Vapor Monitoring Data, Ford-Kingsford Products Facility, Kingsford, Michigan.

Note:	Methane measurements from Soil Vapor Probe GMSG-123 represent peak values obtained during monitoring. Stabilized methane values of 0 percent by volume were reached between 1 and 5 minutes of monitoring. Monitoring Well GM-24A and Soil Vapor Probe GMSG-116 have submerged well screens. Due to the submerged well screen the methane measured during monitoring is from off gassing of the groundwater and not free-phase vadoze zone methane.
<	Reading is less than value to the right of the "<" sign.
>	Reading is greater than value to the right of the ">" sign.
<=	Reading is less than or equal to value to the right of the "<=" sign.
>=	Reading is greater than or equal to value to the right of the ">=" sign.
(1)	As measured at the Kingsford Airport. Data was obtained from the Midwestern Climate Center.
(2)	Negative value for the pressure reading indicates a vacuum.
(3)	Data represents field measurements obtained using a Landtec Model GA-90 gas meter.
(4)	Data represents field measurements obtained using an Organic Vapor Analyzer (OVA) or a Total Vapor Analyzer (TVA). Negative readings are due to acceptable instrument calibration drift.
(5)	Accuracy of water level measurements in some probes may be affected by the presence of methane gas.
---	Data not available.
% vol	Percent by volume.
CH_4	Methane.
CO_2	Carbon dioxide.
^oF	Degrees Fahrenheit.
ft btc	Feet below top of casing.
in.	Inches.
in. Hg	Inches of mercury.
in. H_2O	Inches of water.
ppmv	Parts per million by volume.
O_2	Oxygen.
T	Trace.

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Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GM-2A											
Sample Date	08/08/97	09/09/98	09/16/98	09/23/98	09/28/98	10/07/98	10/14/98	10/27/98	11/17/98	12/16/98	01/20/99	02/10/99
Argon	0.74	0.97	0.93	1	1.04	0.97	0.96	0.98	0.96	1	1	1.03
Carbon Dioxide	1.11	1.96	2.33	2.06	2.27	0.33	0.24	1.89	0.05	2.17	0.37	2.11
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	ND	0.0036	0.0025	0.0024	0.0035	0.0024	0.007	0.0036	0.0035	0.004	0.0015	ND
Hexanes+	0.0009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	35	ND	0.34	0.22	0.96	0.081	ND	0.015	ND	0.093	0.0073	0.0014
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	58.93	78.44	79.78	79.12	79.83	77.82	77.43	79.22	77.22	79.97	79.05	80.73
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	4.22	18.63	16.62	17.6	15.9	20.8	21.36	17.89	21.77	16.76	19.57	16.13
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

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Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GM-2A (continued)											GM-2A/1	GM-2A/2
Sample Date	03/13/99	04/13/99	07/26/99	10/09/99	01/19/00	04/18/00	07/22/00	10/20/00	01/27/01	04/23/01	07/11/01	08/27/98	08/26/98
Argon	1.04	1	1.03	1.16	1.09	1.08	0.94	1.11	1.11	1.07	0.94	0.95	0.96
Carbon Dioxide	1.69	0.34	2.5	3.62	3.31	3.29	0.05	4.22	2.5	2.85	1.14	0.07	1.21
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0043	0.0061
Hexanes+	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0013	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	ND	ND	ND	ND	ND	0.0043	ND	1.53	1.64	0.14	0.25	ND	0.095
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	80.17	79.13	85.17	90.39	89.97	90.7	77.82	92.62	88.44	88.63	82.82	77.43	78.09
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	17.08	19.53	11.3	4.83	5.63	4.93	21.19	0.52	6.31	7.31	14.85	21.55	19.64
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GM-2A/4	GM-2A/7	GM-2A/BKGI	GM-2AEFL/EP	GM-4B	GMSG-109	GMSG-118A		GMSG-118B	
Sample Date	08/30/98	09/02/98	08/05/98	08/26/98	01/19/00	09/16/98	09/16/98	05/10/99	09/16/98	05/10/99
Argon	1	0.97	0.91	0.96	1.14	0.34	0.98	1.06	1.03	1.09
Carbon Dioxide	1.47	1.53	1.36	1.1	2.78	0.05	2.43	5.08	9.36	10.36
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	0.0073	0.012	0.0036	0.011	ND	ND	0.0037	ND	0.0041	ND
Hexanes+	ND	ND	ND	0.002	ND	ND	ND	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0022
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	0.16	0.18	19.62	2.09	4.23	74.97	ND	0.15	7.78	3.87
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	77.77	78.59	70.1	77.56	91.73	22.15	77.76	80.15	79.8	82.51
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	19.59	18.72	8.01	18.28	0.12	2.49	18.83	13.56	2.03	2.17
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GMSG-118C		GMSG-19									
Sample Date	09/16/98	05/10/99	09/09/98	09/16/98	09/23/98	09/28/98	10/07/98	10/14/98	10/27/98	11/17/98	12/16/98	01/20/99
Argon	1	1.07	0.97	0.91	0.97	0.98	0.97	1.04	0.97	0.98	0.98	1.02
Carbon Dioxide	9.84	11.08	0.77	0.75	0.9	1.03	1	0.31	1.23	1.37	1.52	1.76
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	ND	ND	0.0041	0.0033	0.0031	0.0031	ND	0.0046	0.005	0.012	0.0041	0.0018
Hexanes+	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	10.67	6.84	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	78	80.68	77.59	79.07	77.65	77.49	77.72	77.67	78.26	78.38	78.96	80.01
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	0.49	0.33	20.67	19.27	20.48	20.5	20.3	20.98	19.54	19.26	18.54	17.21
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

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Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GMSG-19/1	GMSG-19/2	GMSG-19/4	GMSG-19/7	GMSG-19/BKGI	GMSG-19/EP	GMSG-20			
Sample Date	08/27/98	08/28/98	08/30/98	09/02/98	08/05/98	08/26/98	02/10/99	03/13/99	04/13/99	05/10/99
Argon	0.96	0.96	0.96	0.97	0.98	0.97	1	1.03	1.01	1.1
Carbon Dioxide	0.29	0.29	0.37	0.39	1.32	0.04	1.81	1.21	0.06	2.64
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	0.0046	0.0042	0.0039	0.0066	0.006	0.008	0.0012	0.0013	ND	ND
Hexanes+	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	0.014	0.0097	ND	0.0016	20.12	ND	20.3	14.91	0.1	14
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	77.83	77.62	77.75	77.74	75.69	77.25	76.81	78.26	77.74	82.2
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	20.9	21.12	20.92	20.89	1.88	21.73	0.079	4.59	21.09	0.056
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GMSG-20 (continued)										GMSG-300	GMSG-301
Sample Date	06/15/99	07/26/99	10/09/99	01/19/00	04/18/00	07/22/00	10/20/00	01/27/01	04/23/01	07/11/01	07/27/99	07/27/99
Argon	1.05	0.95	0.85	0.82	0.86	0.9	0.79	0.76	0.77	0.74	1.01	0.92
Carbon Dioxide	2.15	1.85	1.55	1.44	1.37	1.3	1.06	1.07	0.93	1.01	12	0.44
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanes+	ND	ND	ND	ND	ND	ND	ND	ND	0.0012	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	17.19	20.56	32.87	32.32	27.95	26.16	34.73	40.63	36.19	38.71	3.92	1.63
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	79.14	76.44	64.69	65.42	69.74	69.94	63.26	57.18	60.99	59.46	81.93	77.16
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	0.47	0.2	0.037	ND	0.079	1.7	0.16	0.36	1.12	0.081	1.14	19.85
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GMSG-302	GMSG-304	GMSG-3A	GMSG-3B	GMSG-417	GMSG-4B					
Sample Date	07/27/99	08/25/99	09/23/98	02/10/99	10/17/03	09/09/98	09/16/98	09/23/98	09/28/98	10/07/98	10/14/98
Argon	0.95	0.96	0.98	0.98	0.884	1.14	1.13	1.15	1.18	1.05	1.05
Carbon Dioxide	12.25	15.02	0.41	0.29	11.2	0.29	0.4	0.44	1.01	0.39	0.43
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	ND	ND	0.0024	0.0016	ND	0.011	0.0021	ND	0.0047	0.0017	0.0055
Hexanes+	ND	ND	ND	ND	0.0016	ND	ND	ND	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	3.72	5.71	ND	ND	10.95	3.66	2.87	2.05	2.24	0.5	0.37
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	78.61	78.31	76.93	78.27	76.91	89.14	89.44	89.07	92.7	82.88	84.43
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	4.47	ND	21.68	20.46	0.0518	5.76	6.16	7.29	2.87	15.18	13.71
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

ARCADIS

Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GMSG-4B (continued)												
Sample Date	10/27/98	11/17/98	12/16/98	01/20/99	02/10/99	03/13/99	04/13/99	07/26/99	10/09/99	04/18/00	07/22/00	10/20/00	01/27/01
Argon	1.21	1.19	1.2	1.22	1.22	1.22	1.19	1.15	1.11	1.12	0.98	1.09	1.13
Carbon Dioxide	2.07	2.27	2.61	2.81	2.86	2.89	2.61	3.56	2.92	2.87	0.31	3.02	2.49
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	0.0056	0.004	0.0043	0.0023	ND	0.002	ND	ND	ND	ND	ND	ND	ND
Hexanes+	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	0.48	0.27	0.26	0.026	0.0016	0.0015	ND	0.3	3.88	3.1	ND	5	6.58
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	95.8	94.95	95.05	94.34	93.9	93.07	90.94	94.76	92.03	92.78	76.95	90.45	88.45
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	0.43	1.32	0.88	1.6	2.02	2.82	5.26	0.23	0.058	0.13	21.76	0.44	1.35
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GMSG-4B (continued)		GMSG-4B/1	GMSG-4B/2	GMSG-4B/4	GMSG-4B/7	GMSG-4B/BKGI	GMSG-4B/EP	GMSG-53	
Sample Date	04/23/01	07/11/01	08/27/98	08/26/98	08/30/98	09/02/98	08/05/98	08/26/98	08/18/01	08/24/01
Argon	1.11	1.06	0.99	1.02	1.06	1.07	0.82	0.96	0.85	0.82
Carbon Dioxide	2.44	2.33	0.05	0.06	0.07	0.15	0.3	0.04	8.3	9.29
Carbon monoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	ND	ND	0.0055	0.0081	0.0077	0.0072	0.0016	0.01	ND	0.0024
Hexanes+	0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hydrogen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methane (%)	6.77	7.45	1.56	2.57	3.42	3.64	31.53	ND	1.83	2.08
N-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrogen	89.62	89.06	80.05	82.1	84.53	85.69	62.26	77.32	73.23	71.95
N-pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen	0.057	0.1	17.34	14.24	10.91	9.44	5.09	21.67	15.79	15.86
Propane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND Not detected.

ARCADIS

Table R-2. Constituents Detected in Soil Vapor Samples Collected During SVE Venting Tests, Ford-Kingsford Products Facility, Kingsford, Michigan.

Sample ID	GSGMSG-300	Quarry 1	SVE-EFF-1	2260 Woodward	BURBY-SVE-1	DW-1
Sample Date	11/22/98	08/08/97	06/04/98	08/24/01	06/04/98	08/11/97
Argon	ND	0.062	0.9	0.022	0.92	0.2
Carbon Dioxide	12.64	2.17	0.25	0.67	1.14	1.79
Carbon monoxide	ND	ND	ND	ND	ND	ND
Ethane	ND	ND	ND	1.58	ND	ND
Ethylene	ND	ND	ND	ND	ND	ND
Helium	ND	ND	0.008	0.033	0.0031	ND
Hexanes+	ND	ND	ND	0.0027	ND	ND
Hydrogen	ND	ND	ND	0.0013	ND	0.011
Iso-butane	ND	ND	ND	0.0077	ND	ND
Iso-pentane	ND	ND	ND	0.0018	ND	ND
Methane (%)	7.63	95.6	1.46	94.62	0.87	89.13
N-butane	ND	ND	ND	0.0093	ND	ND
Nitrogen	78.78	2.14	76.38	2.49	77.09	8.26
N-pentane	ND	ND	ND	0.0016	ND	ND
Oxygen	0.95	0.029	21	0.46	19.98	0.14
Propane	ND	ND	ND	0.097	ND	ND

ND Not detected.

Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Breen	May-98	N/A	N/A	N/A		
	Jun-98	1.17	333	7,510		
	Jul-98	1.08	333	6,852		
	Aug-98	0.95	333	6,056		
	Sep-98	0.56	333	3,454		
	Oct-98	0.40	333	2,550		
	Nov-98	0.45	333	2,776		
	Dec-98	0.53	333	3,399	32,598	
	Jan-99	0.77	285	4,183		
	Feb-99	0.47	285	2,300		
	Mar-99	0.35	285	1,909		
	Apr-99	0.10	285	528		
	May-99	0.10	285	546		
	Jun-99	0.05	285	264		
	Jul-99	0	153	0		
	Aug-99	0.08	245	393		
	Sep-99	0.28	201	1,043		
	Oct-99	0.79	295	4,471		
	Nov-99	0.75	176	2,429		
	Dec-99	0.77	180	2,662	20,727	
	Jan-00	0.80	184	2,818		
	Feb-00	0.36	196	1,251		
	Mar-00	0.71	189	2,580		
	Apr-00	1.07	182	3,607		
	May-00	0.64	220	2,674		
	Jun-00	0.20	258	956		
	Jul-00	0.16	295	875		
	Aug-00	0.06	147	169		
	Sep-00	0.04	147	109		
	Oct-00	0.14	147	397		
	Nov-00	0.08	54	77		
	Dec-00	0.10	147	286	15,799	
	Jan-01	0.12	167	367		
	Feb-01	0.06	188	192		
	Mar-01	0.18	189	661		
	Apr-01	0.32	189	1,136		
	May-01	0.12	185	432		
	Jun-01	0.16	185	562		
	Jul-01	0.13	185	456		
	Aug-01	0.15	185	540		
	Sep-01	0.16	182	527		
	Oct-01	0.19	183	673		
	Nov-01	0.07	185	254		
	Dec-01	0.19	184	655	6,455	
	Jan-02	0.24	184	857		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Breen (continued)	Feb-02	0.37	188	1,201		
	Mar-02	0.19	188	677		
	Apr-02	0.49	187	1,687		
	May-02	0.19	186	672		
	Jun-02	0.08	185	281		
	Jul-02	0.08	185	284		
	Aug-02	0.16	186	573		
	Sep-02	0.07	186	241		
	Oct-02	0.20	184	714		
	Nov-02	0.09	187	312		
	Dec-02	0.04	188	129	7,628	
	Jan-03	0.08	188	293		
	Feb-03	0.23	188	744		
	Mar-03	0.17	187	605		
	Apr-03	0.23	187	800		
	May-03	0.18	188	662		
	Jun-03	0.11	187	371		
	Jul-03	0.13	186	470		
	Aug-03	0.18	186	627		
	Sep-03	0.34	184	1,149		
	Oct-03	0.35	185	1,239		
	Nov-03	0.40	186	1,389		
	Dec-03	0.40	188	1,439	9,788	
	Jan-04	0.45	188	1,605		
	Feb-04	0.28	192	956		
	Mar-04	0.40	188	1,432		
	Apr-04	0.31	189	1,094		
	May-04	0.31	188	1,126		
	Jun-04	0.26	187	908		
	Jul-04	0.29	186	1,031		
	Aug-04	0.30	187	1,074		
	Sep-04	0.31	186	1,078		
	Oct-04	0.46	184	1,627		
	Nov-04	0.38	187	1,308		
	Dec-04	0.72	188	2,582	15,822	
	Jan-05	0.35	189	1,281		
	Feb-05	0.34	190	1,104		
	Mar-05	0.33	189	1,184		
	Apr-05	0.41	189	1,420		
	May-05	0.36	188	1,313		
	Jun-05	0.54	189	1,901		
	Jul-05	0.54	189	1,970		
	Aug-05	0.74	189	2,688		
	Sep-05	0.88	189	3,085		
	Oct-05	0.93	187	3,311		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Breen	Nov-05	0.82	183	2,778		
(continued)	Dec-05	1.70	184	5,988	28,023	
	Jan-06	1.68	180	5,789		
	Feb-06	1.60	185	5,118		
	Mar-06	1.86	180	6,409		
	Apr-06	0.95	186	3,278		
	May-06	0.73	182	2,541		
	Jun-06	0.77	185	2,636		
	Jul-06	1.38	187	4,940		
	Aug-06	1.48	189	5,182		
	Sep-06	1.65	189	5,777		
	Oct-06	0.87	187	3,125		
	Nov-06	1.53	185	5,243		
	Dec-06	1.66	184	5,847	55,885	
	Jan-07	2.05	183	7,181		
	Feb-07	0.82	182	2,566		
	Mar-07	1.63	180	5,616		
	Apr-07	1.25	180	4,168		
	May-07	1.84	187	6,586		
	Jun-07	1.73	187	5,993		
	Jul-07	1.05	187	3,759		
	Aug-07	1.18	189	4,269		
	Sep-07	1.35	189	4,727		
	Oct-07	1.40	187	5,011		
	Nov-07	1.45	187	5,023		
	Dec-07	1.70	182	5,923	60,822	253,546
Emmet	May-98	0.73	28	389		
	Jun-98	0.67	28	346		
	Jul-98	0.66	28	354		
	Aug-98	0.65	28	348		
	Sep-98	0.40	28	207		
	Oct-98	0.55	28	295		
	Nov-98	0.35	28	182		
	Dec-98	0.38	28	201	2,321	
	Jan-99	0.37	28	197		
	Feb-99	0.33	28	161		
	Mar-99	0.25	28	134		
	Apr-99	0.20	28	104		
	May-99	0.20	28	107		
	Jun-99	0.15	28	78		
	Jul-99	0.10	28	54		
	Aug-99	0	28	0		
	Sep-99	0.23	28	117		
	Oct-99	0.19	28	102		
	Nov-99	0.27	28	141		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet (continued)	Dec-99	0.21	28	113	1,307	
	Jan-00	0.15	28	80		
	Feb-00	0.02	17.5	6		
	Mar-00	0.15	17.5	49		
	Apr-00	0.14	17.5	44		
	May-00	0.14	17.5	46		
	Jun-00	0.13	17.5	41		
	Jul-00	0.11	17.5	37		
	Aug-00	0.08	29.5	42		
	Sep-00	0.00	13.1	0		
	Oct-00	0.06	13.1	16		
	Nov-00	0.04	17.5	14		
	Dec-00	0.07	15.8	20	397	
	Jan-01	0.05	24.0	23		
	Feb-01	0.02	18	7		
	Mar-01	0.02	18	8		
	Apr-01	0.02	18	7		
	May-01	0.005	18	2		
	Jun-01	0.01	18	4		
	Jul-01	0.01	19	2		
	Aug-01	0.01	18	2		
	Sep-01	0.000	18	0		
	Oct-01	0.003	18	1		
	Nov-01	0.001	18	0		
	Dec-01	0.001	18	0	57	
	Jan-02	0.001	19	0		
	Feb-02	0	18.5	0		
	Mar-02	0	19	0		
	Apr-02	0	18.5	0		
	May-02	0.001	19	0		
	Jun-02	0.001	19	0		
	Jul-02	0.001	19	0		
	Aug-02	0.01	18	2		
	Sep-02	0.01	19	3		
	Oct-02	0.02	19	7		
	Nov-02	0.05	27	26		
	Dec-02	0.03	19	11	51	
	Jan-03	0.07	19.2	27		
	Feb-03	0.09	19	28		
	Mar-03	0.12	19	43		
	Apr-03	0.14	19.5	50		
	May-03	0.25	19	89		
	Jun-03	0.31	19	107		
	Jul-03	0.27	19	97		
	Aug-03	0.30	18.5	106		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet (continued)	Sep-03	0.33	19	114		
	Oct-03	0.24	19	88		
	Nov-03	0.26	19	92		
	Dec-03	0.17	19	63	904	
	Jan-04	0.17	20	65		
	Feb-04	0.13	19	44		
	Mar-04	0.22	19	79		
	Apr-04	0.21	19.2	74		
	May-04	0.26	18.6	91		
	Jun-04	0.38	18	127		
	Jul-04	0.00	18.5	0		
	Aug-04	0.32	18.5	113		
	Sep-04	0.28	19	99		
	Oct-04	0.23	19	82		
	Nov-04	0.21	19	72		
	Dec-04	0.28	19	102	948	
	Jan-05	0.37	123	872		
	Feb-05	0.67	125	1,438		
	Mar-05	0.30	103	585		
	Apr-05	0.20	80	291		
	May-05	0.19	80	290		
	Jun-05	0.10	32	59		
	Jul-05	0.06	30	35		
	Aug-05	0.05	40	34		
	Sep-05	0.01	30	4		
	Oct-05	0.008	38	6		
	Nov-05	0.008	39	6		
	Dec-05	0.001	40	1	3,620	
	Jan-06	0.000	40	0		
	Feb-06	0.003	40	2		
	Mar-06	0.000	40	0		
	Apr-06	0.001	40	1		
	May-06	0.06	40	46		
	Jun-06	0.06	40	47		
	Jul-06	0.27	40	205		
	Aug-06	0.25	40	195		
	Sep-06	0.36	40	270		
	Oct-06	0.15	40	114		
	Nov-06	0.39	33	241		
	Dec-06	0.28	34	179	1,299	
	Jan-07	0.00	35	0		
	Feb-07	0.56	35	337		
	Mar-07	0.40	30	230		
	Apr-07	0.32	30	180		
	May-07	0.92	35	615		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet (continued)	Jun-07	0.91	39	656		
	Jul-07	0.35	40	269		
	Aug-07	0.25	41	196		
	Sep-07	0.25	41	193		
	Oct-07	0.42	41	327		
	Nov-07	0.25	45	211		
	Dec-07	0.30	45	256	3,470	14,374
Upper Terrace GMSG-135	Apr-04	8.33	56.1	19		
	Jun-04	5.98	51.4	3,623		
	Jul-04	0.51	52.3	536		
	Aug-04	0.17	52.3	120		
	Sep-04	0.07	52.7	47	4,346	
	Feb-05	1.1	58	896		
	Mar-05	0.7	54.8	731		
	Apr-05	1.65	35	312		
	May-05	55	55	705		
	Jun-05	54.8	57	136	2,780	
	Jun-06	1.7	63	1,659		
	Jul-06	0.3	57	330		
	Aug-06	0.2	56	215		
	Sep-06	0.3	55	271		
	Oct-06	0.2	55	164		
	Nov-06	0.4	55	108	2,747	
	Oct-07	3.1	57	279		
	Nov-07	0.4	54.6	413		
	Dec-07	0.2	57.2	224	916	10,789
Upper Terrace GMSG-123	Apr-05	18.1	3	357		
	May-05	27.9	3	1,671		
	Jun-05	28.5	3	1,654		
	Jul-05	32.2	3	1,930		
	Aug-05	15.3	3	900		
	Sep-05	17.9	3	1,016		
	Oct-05	11.3	3	663		
	Nov-05	0.32	29	174		
	Dec-05	0.53	29	303	9,527	
	Jan-06	0.65	29	367		
	Feb-06	0.17	28	86		
	Mar-06	0.72	29	406		
	Apr-06	0.42	28	222		
	May-06	0.53	38	396		
	Jun-06	0.22	29	121		
	Jul-06	0.21	28	115		
	Aug-06	0.07	28	36		
	Sep-06	0.22	28	114		
	Oct-06	0.07	28	37		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Upper Terrace GMSG-123 (continued)	Nov-06	0.48	28	254		
	Dec-06	0.07	28	38	2,193	
	Jan-07	0.82	27	433		
	Feb-07	0.42	28	208		
	Mar-07	0.63	28	346		
	Apr-07	0.15	29	82		
	May-07	0.09	28	50		
	Jun-07	3.7	5	350		
	Jul-07	2	3	117		
	Aug-07	1.2	5	117		
	Sep-07	1.23	5	116		
	Oct-07	1.2	5	117		
	Nov-07	1.6	5	151		
	Dec-07	0.8	5	78	2,167	13,887
GM-2A	Aug-98	12.5	122.6	19,310	19,310	
	Sep-01	1.8	67.7	368		
	Oct-01	0.1	63.3	116	485	
	Apr-04	20.1	35.7	38		
	Jun-04	3.5	31.5	1,651	1,689	
	Jan-05	0.001	55.0	0		
	Feb-05	0.2	39.5	114		
	Mar-05	0.1	29.0	44		
	Apr-05	0.1	25.0	12	171	21,654
GMSG-214	Apr-05	78.8	3	115		
	May-05	38.7	3	270		
	Jun-05	60.9	3	1,385		
	Jul-05	68.2	3	1,297		
	Aug-05	49.9	3	656		
	Sep-05	31.6	3	1,286		
	Oct-05	44.9	2.4	2,108		
	Nov-05	0.9	8.8	154		
	Dec-05	0.8	4.3	32	7,301	
	Jan-06	0	12	0		
	Feb-06	0	12	1		
	Mar-06	0	12	0		
	Apr-06	0	18	0	1	
	Oct-07	0.6	11.3	54		
	Nov-07	1.9	12	432		
	Dec-07	1.9	12	446	3,200	10,502
Lodal Main System	Feb-01	2.78	242.6	6,208		
	Mar-01	0.24	252	853		
	Jun-01	0.013	238	31		
	Jul-01	0.003	240	15		
	Aug-01	0.006	245	28		
	Sep-01	0.006	245	26		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Lodal Main System (continued)	Oct-01	0.005	238	23	7,184	
	Jan-02	1.34	121.3	1,531		
	Mar-02	0	90	2		
	May-02	0.1	108	7		
	Jun-02	0.33	140	447		
	Jul-02	--	--	0		
	Aug-02	2.7	140	1,035		
	Sep-02	0.14	168	232		
	Nov-02	2.3	136.5	1,972		
	Dec-02	0.05	138	48	5,273	
	Jan-03	0.26	103	216		
	Feb-03	0.02	126	20		
	Mar-03	0.01	126	9		
	May-03	0.04	112	49		
	Jun-03	0	175	8		
	Jul-03	0.05	190	55		
	Aug-03	0.33	190	309		
	Sep-03	0.27	195	253		
	Oct-03	0.15	185	117		
	Dec-03	0.2	208	67	1,103	
	Jan-04	0.24	208	248		
	Feb-04	0.11	200	103		
	Mar-04	0.12	200	116		
	Apr-04	0.04	203	40		
	May-04	0.03	196	31		
	Jun-04	0.05	196	51		
	Jul-04	0.07	210	40		
	Aug-04	0.17	210	94		
	Sep-04	0.23	205	122		
	Oct-04	0.41	203	214		
	Nov-04	0.22	196	111		
	Dec-04	0.27	203	143	1,312	
	Jan-05	0.08	210	42		
	Feb-05	0.17	210	102		
	Mar-05	0.3	200	154		
	Apr-05	0.11	205	59		
	May-05	0.05	190	13		
	Jun-05	0.31	210	170		
	Jul-05	0.1	210	52		
	Aug-05	0.34	210	183		
	Sep-05	0.58	196	295		
	Oct-05	0.7	210	379		
	Nov-05	0.4	224	231		
	Dec-05	0.2	217	112	1,791	
	Feb-06	0.23	210	94		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Lodal Main System (continued)	Mar-06	0.12	210	66		
	Apr-06	0.06	210	35		
	May-06	0.04	210	23		
	Jun-06	0.05	210	25		
	Jul-06	0.08	210	41		
	Aug-06	0.22	210	119		
	Sep-06	0.29	210	155		
	Oct-06	14	210	78		
	Nov-06	0.28	210	149		
	Dec-06	0.23	210	122	907	
	Jan-07	0.26	210	142		
	Feb-07	0	210	0		
	Mar-07	0.29	210	159		
	Apr-07	0.1	210	56		
	May-07	0.1	210	55		
	Jun-07	0.36	210	196		
	Jul-07	0.21	210	116		
	Aug-07	0	210	2		
	Sep-07	0.24	210	131		
	Oct-07	0.32	210	174		
	Nov-07	0.2	210	109		
	Dec-07	0.23	210	124	2,520	20,090
Lodal GMSG-96/96A	Apr-04	8.8	18.5	3,058		
	May-04	1.0	14.0	280		
	Jun-04	0.22	58.1	210		
	Sep-04	0.21	53.4	115		
	Oct-04	0	52.5	0		
	Nov-04	0	58.3	0		
	Dec-04	0.07	67.5	89	322	
	Jan-05	0.07	87.3	122		
	Feb-05	0	41	117		
	Mar-05	0.0414	39	32		
	Apr-05	0	40	96		
	May-05	0.1956	39	148		
	Jun-05	0.2	39	144		
	Jul-05	0.1982	10	39		
	Aug-05	0.2295	10	45		
	Sep-05	0.2672	10.8	55		
	Oct-05	0.45	9	79		
	Nov-05	0.2198	6.8	28		
	Dec-05	0	2.4	12	917	
	Jan-06	0.4668	5	46		
	Feb-06	0.2796	5	25		
	Mar-06	0.3177	5	31		
	Apr-06	0.2364	5	22		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Lodal	May-06	0.1924	5	19		
GMSG-96/96A	Jun-06	0.5887	1.2	6		
(continued)	Jul-06	0.0312	100	61		
	Aug-06	0.0535	100	105		
	Sep-06	0.1638	100	310		
	Oct-06	0.0734	100	144		
	Nov-06	0.1260	100	238		
	Dec-06	0.1041	102	208	1,214	
	Jan-07	0.1426	105	293		
	Feb-07	0.0838	105	155		
	Mar-07	0.1251	100	245		
	Apr-07	0.0705	100	133		
	May-07	0.0957	100	187		
	Jun-07	0.139	95	250		
	Jul-07	0.0583	104	119		
	Aug-07	0.0997	102	199		
	Sep-07	0.057	100	108		
	Oct-07	0.0942	105	193		
	Nov-07	0.1138	105	226		
	Dec-07	0.1598	107	334	2,443	4,896
Notch	Jan-01	10.0	22.9	1,182		
	Feb-01	10.0	15	2,636		
	Mar-01	5.8	13	1,466		
	Apr-01	4.5	10	607		
	May-01	0.5	7	34		
	Jun-01	0.2	7	27		
	Jul-01	0.6	15	180		
	Aug-01	0.6	15	180		
	Sep-01	0.7	15	203		
	Oct-01	0.5	14	140		
	Nov-01	0.0	14	0	6,655	6,655
Former Plant Site	Oct-03	1.6	37	130		
GM-41/GMSG-127	Nov-03	4.2	37.9	2,237		
	Dec-03	1.0	38.3	432	2,799	
	Mar-04	8.1	50	2,610		
	Apr-04	0.733	46	134		
	Sep-04	4.1	57.5	323		
	Oct-04	0.020	62.6	25		
	Nov-04	0.000	62.7	0		
	Dec-04	0.000	60	0	3,091	
	Jan-05	0.103	54	109		
	Feb-05	0.176	51	159		
	Mar-05	0.124	53	129		
	Apr-05	0.100	55	90		
	May-05	0.202	54	109		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Former Plant Site GM-41/GMSG-127 (continued)	Jun-05	0.207	52	104		
	Jul-05	0.800	55	439		
	Aug-05	0.718	50	358		
	Sep-05	0.220	50	106		
	Oct-05	0.327	56	112		
	Nov-05	3.4	55	3,366		
	Dec-05	0.159	50	156	7	
	Jan-06	0.067	50	66		
	Feb-06	0.089	50	79		
	Mar-06	0.176	50	173		
	Apr-06	0.094	50	89		
	May-06	0.085	50	83		
	Jun-06	0.057	50	53		
	Jul-06	0.106	50	104		
	Aug-06	0.046	50	45		
	Sep-06	0.000	50	0		
	Oct-06	0.063	50	61		
	Nov-06	0.137	50	130		
	Dec-06	0.122	50	119	1	
	Jan-07	0.140	50	137		
	Feb-07	0.135	50	119		
	Mar-07	0.118	50	115		
	Apr-07	0.114	50	108		
	May-07	0.140	50	137		
	Jun-07	0.148	50	140		
	Jul-07	0.119	51	118		
	Aug-07	0.122	55	131		
	Sep-07	0.191	54	195		
	Oct-07	0.159	55	171		
	Nov-07	0.145	54	149		
	Dec-07	0.139	52	141	2	5,899
Former Plant Site GMSG-37	Jul-01	2.02	85.2	1,926		
	Aug-01	0.573	87.7	315	2,241	
	Jul-02	0.600	82.7	520		
	Aug-02	0.133	80.0	268		
	Oct-02	0	80.0	0	788	
	Sep-04	1.13	66.3	378		
	Oct-04	0.100	64.3	112		
	Nov-04	0.140	64.4	170		
	Dec-04	0.000	77.0	0	661	
	Jan-05	0.106	65.0	0	0	
	Feb-06	0.600	80.0	469		
	Mar-06	0.242	80.0	378		
	Apr-06	0.120	77.0	177		
	May-06	0.008	77.0	11		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Former Plant Site	Jun-06	0.001	77.0	2		
GMSG-37	Jul-06	0.020	76.0	30		
(continued)	Aug-06	0.011	76.0	5	1,073	4,762
Pyle Drive	Oct-03	2.82	63.4	1,271		
	Nov-03	0.97	49.3	922		
	Dec-03	0.56	31.2	274	2,467	
	Jan-04	0.15	38	114		
	Feb-04	0.28	45.3	233		
	Mar-04	0.20	43	14		
	Apr-04	3.42	55.4	2,808		
	May-04	1.40	27	85		
	Jun-04	4.71	59.2	4,489		
	Jul-04	4.76	59.8	5,692		
	Aug-04	0.80	61.1	981		
	Sep-04	0.28	62.1	340		
	Oct-04	0.18	61	212		
	Nov-04	0.30	60	343		
	Dec-04	0.11	60.8	132	15,442	
	Jan-05	0.31	58	353		
	Feb-05	0.21	58	210		
	Mar-05	0.03	59	31		
	Apr-05	0.10	58	109		
	May-05	0.005	57	5		
	Jun-05	0.04	57	46		
	Jul-05	0.01	60	17		
	Aug-05	0.47	60	546		
	Sep-05	0.10	60	110		
	Oct-05	0.07	59	76		
	Nov-05	0.18	55	186		
	Dec-05	0	57.2	0	1,690	
	Jan-06	0.002	57.2	3		
	Feb-06	0.41	55	397		
	Mar-06	1.03	57.2	1,152		
	Apr-06	0.00	57	0		
	May-06	0.45	58	506		
	Jun-06	0.06	57	63		
	Jul-06	0.14	57	127		
	Aug-06	0.10	57	57		
	Sep-06	0.40	57	220		
	Oct-06	0	57	0		
	Nov-06	0.72	59	410		
	Dec-06	0	55	0	2,935	
	Jan-07	0.85	54.6	461		
	Feb-07	1.02	44	333		
	Mar-07	0.41	52	211		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Pyle Drive (continued)	Apr-07	0.03	55	15		
	May-07	0.01	55	7		
	Jun-07	0.15	54.6	79		
	Jul-07	0.01	57	8		
	Aug-07	0.00	57.2	0		
	Sep-07	0.01	57	7		
	Oct-07	0.45	57	254		
	Nov-07	0.003	57	1		
	Dec-07	0.002	57	1	1,378	23,911
RDA	Aug-00	86.5	100	128,211		
	Sep-00	85.8	50	25,034		
	Oct-00	78.1	59	82,773		
	Nov-00	87.7	37	62,412		
	Dec-00	59.4	37	43,681	342,111	
	Jan-01	29.7	18	3,170		
	Mar-01	42.7	35	29,852		
	Apr-01	42.6	25	20,587		
	May-01	48.4	25	24,169		
	Jun-01	0.2	5	17		
	Jul-01	54.0	20	21,572		
	Aug-01	44.3	45	39,819		
	Sep-01	58.4	5	5,644		
	Oct-01	53.4	65	33,547		
	Nov-01	48.6	80	75,155		
	Dec-01	38.0	60	45,542	299,074	
	Jan-02	28.2	55	30,980		
	Feb-02	20.4	45	16,562		
	Mar-02	27.0	45	23,999		
	Jul-02	44.5	65	40,071		
	Aug-02	40.9	38	30,598		
	Sep-02	40.8	23	18,139		
	Oct-02	29.4	42	24,371		
	Nov-02	26.3	39	19,573		
	Dec-02	22.0	44	19,335	238,851	
	Jan-03	20.8	40	16,619		
	Feb-03	27.2	38	5,586		
	Mar-03	23.2	38	9,657		
	Apr-03	46.0	23	20,451		
	May-03	28.6	29	16,567		
	Jun-03	29.3	29	16,142		
	Jul-03	25.1	77	38,605		
	Aug-03	26.4	67	35,331		
	Sep-03	11.1	82	1,173		
	Oct-03	20.0	56	22,505		
	Nov-03	15.0	40	11,598		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
RDA (continued)	Dec-03	11.0	35	4,589	198,822	
	Jan-04	15.4	63	3,349		
	Feb-04	10.1	35	6,321		
	Mar-04	11.2	35	3,915		
	Apr-04	12.7	25	6,137		
	May-04	8.4	90	14,974		
	Jun-04	5.4	48	2,331		
	Jul-04	4.2	63	5,243		
	Aug-04	3.3	65	2,802		
	Sep-04	7.5	102	1,163		
	Oct-04	6.0	99	11,799		
	Nov-04	5.0	103	9,955		
	Dec-04	3.9	105	8,180	76,169	
	Jan-05	2.0	122	4,874		
	Feb-05	2.9	120	6,278		
	Mar-05	1.8	102	3,649		
	Apr-05	7.9	80	12,217		
	May-05	6.1	77	2,830		
	Jun-05	5.9	85	9,694		
	Jul-05	8.2	85	13,922		
	Aug-05	8.8	35	6,152		
	Sep-05	3.2	105	6,495		
	Oct-05	3.5	112	7,830		
	Nov-05	3.5	117	6,069		
	Dec-05	1.3	130	2,762	82,771	
	Jan-06	3.4	125	8,312		
	Feb-06	4.9	125	10,820		
	Mar-06	4.9	115	11,021		
	Apr-06	3.5	112	7,420		
	May-06	2.9	115	6,523		
	Jun-06	5.8	93	10,209		
	Jul-06	5.1	91	9,077		
	Aug-06	5.2	82	8,340		
	Sep-06	3.4	105	6,757		
	Oct-06	2.8	109	5,969		
	Nov-06	3.3	110	6,871		
	Dec-06	2.3	110	4,948	96,267	
	Jan-07	3.1	110	6,669		
	Feb-07	0.02	110	41		
	Mar-07	3.0	157	9,212		
	Apr-07	2.7	111	5,673		
	May-07	5.4	95	10,033		
	Jun-07	5.4	97	9,914		
	Jul-07	1.6	105	3,286		
	Aug-07	3.9	77	5,873		

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Table R-3. Summary of Methane from Active SVE Systems through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

SVE System	Date	Methane (Monthtly Average) (%)	Flow (Monthly Average) (scfm)	Methane Mass (lbs/month)	Methane Mass (lbs/year)	Methane Mass (lbs, total)
RDA (continued)	Sep-07	3.8	77	5,538		
	Oct-07	4.1	77	6,175		
	Nov-07	3.3	77	4,809		
	Dec-07	3.5	84	5,750	72,974	1,407,039

%	Percentage by volume.
lbs	Pounds.
scfm	Standard cubic feet per minute.
SVE	Soil vapor extraction.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month) *	Methane Mass (lbs/year)	Methane Mass (lbs, total)
River GMPZB-1	May-05	47	11.3	2,284		
	Jun-05	47	0.50	453		
	Jul-05	53	0.60	632		
	Aug-05	86	0.70	1,205		
	Sep-05	89	0.90	1,547		
	Oct-05	86	0.33	566		
	Nov-05	88	0.55	930		
	Dec-05	90	0.55	989	8,605	
	Jan-06	91	0.66	1,194		
	Feb-06	97	0.66	1,154		
	Mar-06	90	0.55	988		
	Apr-06	83	0.55	882		
	May-06	92	0.62	1,138		
	Jun-06	80	0.44	682		
	Jul-06	82	0.66	1,078		
	Aug-06	77	25.5	39,207		
	Sep-06	97	23.1	43,402		
	Oct-06	99	24.2	48,048		
	Nov-06	100	24.2	46,779		
	Dec-06	100	25.3	50,535	235,089	
	Jan-07	100	24.2	48,338		
	Feb-07	100	26.4	47,629		
	Mar-07	100	25.3	50,535		
	Apr-07	100	0.08	161		
	May-07	83	0.08	138		
	Jun-07	96	0.08	155		
	Jul-07	85	0.09	156		
	Aug-07	86	0.13	228		
	Sep-07	82	0.09	146		
	Oct-07	86	0.08	143		
	Nov-07	89	0.08	129		
	Dec-07	94	0.10	188	147,947	391,640
Pyle GMSG-136	Jun-04	53	69.8	1,968		
	Jul-04	89	9.17	6,057		
	Aug-04	88	19.9	10,308		
	Sep-04	91	0.20	315		
	Oct-04	87	0.10	132		
	Nov-04	100	0.09	170		
	Dec-04	92	0.11	200	19,151	
	Jan-05	91	0.13	243		
	Feb-05	96	0.07	121		
	Mar-05	90	0.04	75		
	Apr-05	82	0.15	240		
	May-05	88	0.16	277		
	Jun-05	100	0.17	318		

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Pyle GMSG-136 (continued)	Jul-05	92	0.17	308			
	Aug-05	95	0.15	285			
	Sep-05	100	0.18	354			
	Oct-05	100	0.23	466			
	Nov-05	96	0.16	293			
	Dec-05	100	0.28	549		3,530	
	Jan-06	100	0.23	466			
	Feb-06	100	0.27	481			
	Mar-06	100	0.25	499			
	Apr-06	91	0.13	233			
	May-06	100	0.24	483			
	Jun-06	88	0.13	227			
	Jul-06	87	0.10	174			
	Aug-06	84	0.11	181			
	Sep-06	100	0.23	451			
	Oct-06	100	0.25	499			
	Nov-06	100	0.20	387			
	Dec-06	100	0.23	466		4,548	
	Jan-07	100	0.27	533			
	Feb-07	100	0.27	481			
	Mar-07	100	0.25	499			
	Apr-07	100	0.13	258			
	May-07	90	0.13	241			
	Jun-07	92	0.12	207			
	Jul-07	92	0.13	245			
	Aug-07	100	0.37	732			
	Sep-07	100	0.48	934			
	Oct-07	100	0.83	1,665			
	Nov-07	100	0.92	1,772			
	Dec-07	100	1.00	1,997		9,564	36,792
GM-82A	Jul-04	96.8	1.44	1,751			
	Aug-04	95.3	1.07	1,965			
	Sep-04	94.9	0.92	1,682			
	Oct-04	98.4	0.83	1,638			
	Nov-04	100	0.75	1,450			
	Dec-04	99.4	0.83	1,655		10,140	
	Jan-05	100	0.92	1,831			
	Feb-05	100	0.75	1,353			
	Mar-05	100	0.83	1,665			
	Apr-05	95.0	0.67	1,224			
	May-05	88.5	0.83	1,473			
	Jun-05	91.4	0.83	1,472			
	Jul-05	100	1.00	1,997			
	Aug-05	91.9	1.00	1,836			
	Sep-05	96.9	1.00	1,873			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
GM-82A (continued)	Oct-05	92.3	0.92	1,690			
	Nov-05	94.0	0.97	1,756			
	Dec-05	99.1	1.00	1,979		20,150	
	Jan-06	100	1.17	2,330			
	Feb-06	100	1.08	1,954			
	Mar-06	97.4	1.17	2,270			
	Apr-06	91.0	0.92	1,612			
	May-06	97.1	0.83	1,616			
	Jun-06	89.1	0.83	1,435			
	Jul-06	89.2	0.97	1,722			
	Aug-06	82.9	1.00	1,656			
	Sep-06	100	0.92	1,772			
	Oct-06	100	1.00	1,997			
	Nov-06	100	1.00	1,933			
	Dec-06	100	0.92	1,831		22,130	
	Jan-07	100	0.83	1,665			
	Feb-07	100	0.96	1,729			
	Mar-07	100	1.08	2,164			
	Apr-07	100	0.83	1,611			
	May-07	89.6	0.92	1,641			
	Jun-07	92.4	0.83	1,488			
	Jul-07	90.9	0.83	1,513			
	Aug-07	90.9	0.83	1,513			
	Sep-07	88.0	0.83	1,418			
	Oct-07	90.1	0.92	1,650			
	Nov-07	94.6	0.83	1,524			
	Dec-07	100	0.83	1,665		19,579	71,999
GM-82B	Nov-04	98.5	0	0			
	Dec-04	98.2	0	0			
	Jan-05	100	0	0			
	Feb-05	100	0	0			
	Mar-05	94.7	0	0			
	Apr-05	91.0	0	0			
	May-05	85.8	0	0			
	Jun-05	55.8	0	0			
	Jul-05	98.1	0	0			
	Aug-05	81.4	0	0			
	Sep-05	91.2	0	0			
	Oct-05	89.6	0	0			
	Nov-05	89.4	0	0			
	Dec-05	98.5	0	0			
	Jan-06	100	0.02	33.3			
	Feb-06	100	0.05	90.2			
	Mar-06	93.7	0	0			
	Apr-06	87.4	0	0			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
GM-82B (continued)	May-06	93.0	0	0			
	Jun-06	85.3	0	0			
	Jul-06	81.9	0	0			
	Aug-06	78.8	0	0			
	Sep-06	100	0	0			
	Oct-06	100	0	0			
	Nov-06	100	0	0			
	Dec-06	100	0	0		123	
	Jan-07	100	0	0			
	Feb-07	100	0	0			
	Mar-07	100	0	0			
	Apr-07	100	0	0			
	May-07	88.6	0	0			
	Jun-07	90.3	0	1.2			
	Jul-07	88.6	0	1.2			
	Aug-07	88.9	0	1.2			
	Sep-07	87.0	0	1.1			
	Oct-07	88.7	0	1.2			
	Nov-07	93.2	0	1.2			
	Dec-07	99.7	0	1.3		8	132
Emmet GM-215	Jun-99	92	3.50	0			
	Jul-99	92	0.60	1,097			
	Aug-99	100	0.38	749			
	Sep-99	100	0.31	604			
	Oct-99	100	0.25	499			
	Nov-99	96	0.33	620			
	Dec-99	96	0.54	1,043		4,611	
	Jan-00	97	0.75	1,447			
	Feb-00	95	0.23	408			
	Mar-00	92	0.21	382			
	Apr-00	90	0.19	327			
	May-00	89	0.17	296			
	Jun-00	86	0.08	138			
	Jul-00	100	0.08	166			
	Aug-00	93	0.08	154			
	Sep-00	95	0.17	306			
	Oct-00	89	0.67	1,189			
	Nov-00	95	0.17	307			
	Dec-00	94	0.05	94		5,215	
	Jan-01	95	0.08	158			
	Feb-01	98	0.58	1,027			
	Mar-01	90	0.42	752			
	Apr-01	96	0.29	539			
	May-01	100	0.17	333			
	Jun-01	100	0.42	805			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet GM-215 (continued)	Jul-01	93	0.50	927			
	Aug-01	100	0.70	1,398			
	Sep-01	90	0.17	290			
	Oct-01	99	0.50	992			
	Nov-01	100	0.17	321			
	Dec-01	100	0.17	333		7,876	
	Jan-02	100	0.17	333			
	Feb-02	100	0.17	301			
	Mar-02	100	0.17	333			
	Apr-02	100	0.17	322			
	May-02	100	0.33	666			
	Jun-02	100	0.03	64			
	Jul-02	100	0.08	150			
	Aug-02	100	0.08	150			
	Sep-02	96	0.33	617			
	Oct-02	100	0.33	666			
	Nov-02	100	0.13	258			
	Dec-02	100	0.08	166		4,025	
	Jan-03	100	0.07	133			
	Feb-03	100	0.05	90			
	Mar-03	100	0.05	100			
	Apr-03	100	0.05	97			
	May-03	98	0.10	195			
	Jun-03	96	0.06	108			
	Jul-03	92	0.10	183			
	Aug-03	93	0.12	216			
	Sep-03	95	0.17	307			
	Oct-03	97	0.17	323			
	Nov-03	100	0.13	258			
	Dec-03	100	0.10	200		2,210	
	Jan-04	100	0.12	233			
	Feb-04	100	0.10	187			
	Mar-04	100	0.12	233			
	Apr-04	99	0.08	159			
	May-04	91	0.10	181			
	Jun-04	88	0.12	198			
	Jul-04	99	0.07	132			
	Aug-04	95	0.08	159			
	Sep-04	93	0.09	164			
	Oct-04	100	0.11	216			
	Nov-04	100	0.09	177			
	Dec-04	100	0.13	266		2,306	
	Jan-05	89	0.08	133			
	Feb-05	100	0.10	180			
	Mar-05	100	0.08	150			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet GM-215 (continued)	Apr-05	99	0.17	317			
	May-05	92	0.17	308			
	Jun-05	100	0.17	321			
	Jul-05	100	0.17	332			
	Aug-05	91	0.08	152			
	Sep-05	99	0.08	159			
	Oct-05	95	0.05	95			
	Nov-05	93	0.11	194			
	Dec-05	96	0.06	112		2,453	
	Jan-06	97	0.05	97			
	Feb-06	100	0.05	90			
	Mar-06	96	0.02	32			
	Apr-06	87	0.03	56			
	May-06	91	0.02	40			
	Jun-06	49	0.00	0			
	Jul-06	11	0.00	0			
	Aug-06	3	0.00	0			
	Sep-06	5	0.00	0			
	Oct-06	43	0.00	0			
	Nov-06	67	0.00	0			
	Dec-06	27	0.00	0		315	
	Jan-07	17	0.00	0			
	Feb-07	0	0.00	0			
	Mar-07	1	0.00	0			
	Apr-07	0	0.00	0			
	May-07	86	0.00	0			
	Jun-07	30	0.00	0			
	Jul-07	50	0.00	0			
	Aug-07	92	0.03	55			
	Sep-07	87	0.03	56			
	Oct-07	89	0.12	208			
	Nov-07	95	0.07	122			
	Dec-07	100	0.03	67		508	29,519
Emmet GM-24B	Jun-99	89	0.19	164			
	Jul-99	92	0.19	354			
	Aug-99	100	0.17	333			
	Sep-99	100	0.17	322			
	Oct-99	100	0.17	333			
	Nov-99	99	0.20	390			
	Dec-99	100	0.20	406		2,302	
	Jan-00	100	0.20	406			
	Feb-00	100	0.24	452			
	Mar-00	89	0.27	476			
	Apr-00	89	0.24	418			
	May-00	89	0.24	432			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet GM-24B (continued)	Jun-00	89	0.22	376			
	Jul-00	100	0.28	549			
	Aug-00	100	0.23	449			
	Sep-00	100	0.33	408			
	Oct-00	94	0.17	312			
	Nov-00	100	0.33	644			
	Dec-00	100	0.33	666		5,589	
	Jan-01	100	0.33	662			
	Feb-01	100	0.18	331			
	Mar-01	93	0.17	311			
	Apr-01	100	0.16	306			
	May-01	100	0.22	433			
	Jun-01	100	0.07	129			
	Jul-01	100	0.27	532			
	Aug-01	100	0.26	516			
	Sep-01	100	0.25	483			
	Oct-01	100	0.23	466			
	Nov-01	100	0.22	419			
	Dec-01	100	0.27	533		5,120	
	Jan-02	100	0.25	499			
	Feb-02	100	0.25	451			
	Mar-02	100	0.23	466			
	Apr-02	100	0.22	419			
	May-02	100	0.28	566			
	Jun-02	100	0.30	580			
	Jul-02	100	0.32	633			
	Aug-02	100	0.33	649			
	Sep-02	95	0.29	533			
	Oct-02	100	0.33	666			
	Nov-02	100	0.28	548			
	Dec-02	100	0.30	599		6,608	
	Jan-03	100	0.25	499			
	Feb-03	100	0.28	511			
	Mar-03	100	0.29	583			
	Apr-03	100	0.30	572			
	May-03	94	0.30	564			
	Jun-03	99	0.30	575			
	Jul-03	94	0.29	548			
	Aug-03	93	0.30	559			
	Sep-03	95	0.28	520			
	Oct-03	99	0.27	519			
	Nov-03	100	0.32	612			
	Dec-03	100	0.30	599		6,662	
	Jan-04	100	0.28	566			
	Feb-04	97	0.28	514			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet GM-24B (continued)	Mar-04	100	0.28	559			
	Apr-04	100	0.28	541			
	May-04	93	0.26	479			
	Jun-04	87	0.23	394			
	Jul-04	95	0.28	535			
	Aug-04	90	0.28	508			
	Sep-04	89	0.25	430			
	Oct-04	100	0.28	566			
	Nov-04	99	0.22	415			
	Dec-04	100	0.42	832		6,339	
	Jan-05	93	0.30	554			
	Feb-05	100	0.30	541			
	Mar-05	100	0.28	566			
	Apr-05	94	0.17	303			
	May-05	90	0.22	390			
	Jun-05	99	0.33	636			
	Jul-05	100	0.33	666			
	Aug-05	90	0.33	597			
	Sep-05	99	0.33	637			
	Oct-05	92	0.25	457			
	Nov-05	95	0.21	377			
	Dec-05	99	0.37	727		6,451	
	Jan-06	96	0.17	320			
	Feb-06	100	0.27	481			
	Mar-06	98	0.23	459			
	Apr-06	90	0.20	346			
	May-06	94	0.15	281			
	Jun-06	85	0.13	220			
	Jul-06	87	0.22	362			
	Aug-06	87	0.32	548			
	Sep-06	88	0.33	568			
	Oct-06	100	0.32	633			
	Nov-06	100	0.35	677			
	Dec-06	100	0.27	533		5,425	
	Jan-07	100	0.27	533			
	Feb-07	100	0.50	902			
	Mar-07	100	0.18	366			
	Apr-07	100	0.23	451			
	May-07	91	0.25	455			
	Jun-07	94	0.28	514			
	Jul-07	89	0.28	505			
	Aug-07	97	0.27	517			
	Sep-07	93	0.28	512			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Emmet	Oct-07	100	0.30	597			
GM-24B	Nov-07	100	0.37	709			
(continued)	Dec-07	100	0.38	766		6,827	51,323
Breen	Jun-99	96	0.56	517			
GMSG-128	Jul-99	99	0.48	460			
	Aug-99	100	0.42	832			
	Sep-99	100	0.67	1,289			
	Oct-99	97	0.43	825			
	Nov-99	100	0.17	329			
	Dec-99	100	0.46	915		5,167	
	Jan-00	100	0.75	1,498			
	Feb-00	100	0.48	872			
	Mar-00	75	0.34	505			
	Apr-00	95	0.42	768			
	May-00	95	0.65	1,239			
	Jun-00	95	0.89	1,627			
	Jul-00	100	0.38	749			
	Aug-00	100	0.42	832			
	Sep-00	100	0.42	805			
	Oct-00	96	0.67	1,282			
	Nov-00	100	0.50	967			
	Dec-00	99	0.42	826		11,970	
	Jan-01	98	1.42	2,773			
	Feb-01	100	0.25	451			
	Mar-01	95	0.83	1,588			
	Apr-01	100	0.33	644			
	May-01	100	0.33	666			
	Jun-01	100	0.25	483			
	Jul-01	100	0.42	832			
	Aug-01	100	0.50	999			
	Sep-01	100	0.42	805			
	Oct-01	100	0.42	832			
	Nov-01	100	0.50	967			
	Dec-01	100	0.37	732		11,773	
	Jan-02	100	0.42	832			
	Feb-02	100	0.42	752			
	Mar-02	100	0.42	832			
	Apr-02	100	0.95	1,836			
	May-02	100	0.33	666			
	Jun-02	100	0.33	644			
	Jul-02	100	0.33	666			
	Aug-02	100	0.50	999			
	Sep-02	88	0.33	564			
	Oct-02	100	0.30	599			
	Nov-02	100	0.33	644			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Breen GMSG-128 (continued)	Dec-02	100	0.42	832		9,867	
	Jan-03	100	0.42	832			
	Feb-03	100	0.37	662			
	Mar-03	100	0.15	300			
	Apr-03	100	0.37	709			
	May-03	99	0.30	594			
	Jun-03	99	0.33	635			
	Jul-03	94	0.38	722			
	Aug-03	97	0.38	742			
	Sep-03	95	0.42	768			
	Oct-03	97	0.42	803			
	Nov-03	100	0.33	644			
	Dec-03	100	0.37	732		8,144	
	Jan-04	100	0.40	799			
	Feb-04	100	0.33	623			
	Mar-04	100	0.37	732			
	Apr-04	97	0.67	1,255			
	May-04	92	0.83	1,531			
	Jun-04	100	0.42	805			
	Jul-04	100	0.07	133			
	Aug-04	89	0.67	1,184			
	Sep-04	100	0.38	741			
	Oct-04	98	0.42	819			
	Nov-04	100	0.53	1,031			
	Dec-04	100	0.10	200		9,854	
	Jan-05	100	0.43	866			
	Feb-05	100	0.10	180			
	Mar-05	100	0.53	1,065			
	Apr-05	100	0.47	902			
	May-05	94	0.50	942			
	Jun-05	98	0.60	1,131			
	Jul-05	96	0.67	1,273			
	Aug-05	99	0.63	1,249			
	Sep-05	98	0.58	1,110			
	Oct-05	100	0.50	997			
	Nov-05	96	0.53	994			
	Dec-05	100	0.50	999		11,706	
	Jan-06	100	0.60	1,198			
	Feb-06	100	0.53	962			
	Mar-06	100	0.50	999			
	Apr-06	96	0.57	1,050			
	May-06	100	0.50	999			
	Jun-06	95	0.47	852			
	Jul-06	92	0.43	793			
	Aug-06	87	0.47	815			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Breen GMSG-128 (continued)	Sep-06	100	0.50	967			
	Oct-06	100	0.50	999			
	Nov-06	100	0.50	967			
	Dec-06	100	0.50	999		11,599	
	Jan-07	100	0.47	932			
	Feb-07	100	0.47	842			
	Mar-07	100	0.50	999			
	Apr-07	95	0.67	1,227			
	May-07	94	0.73	1,381			
	Jun-07	96	0.57	1,056			
	Jul-07	95	0.67	1,261			
	Aug-07	96	0.60	1,153			
	Sep-07	92	0.60	1,066			
	Oct-07	94	0.57	1,063			
	Nov-07	96	0.67	1,242			
	Dec-07	100	0.50	999		13,221	93,300
Upper Terrace GMSG-116	Jul-99	94	0.39	353			
	Oct-99	93	0.73	1,349			
	Nov-99	100	0.50	967			
	Dec-99	100	0.67	1,328		3,996	
	Jan-00	100	0.83	1,658			
	Feb-00	100	0.83	959	*		
	Mar-00	100	0.83	848	*		
	Apr-00	94	0.75	1,365			
	May-00	92	0.76	1,386			
	Jun-00	89	0.77	1,317			
	Jul-00	99	0.65	1,281			
	Aug-00	96	0.58	1,119			
	Sep-00	99	0.75	1,431			
	Oct-00	92	1.17	2,153			
	Nov-00	99	0.25	479			
	Dec-00	96	0.03	64		14,060	
	Jan-01	98	0.50	974			
	Feb-01	98	0.17	296			
	Mar-01	95	0.21	396			
	Apr-01	100	0.21	403			
	May-01	100	0.17	333			
	Jun-01	100	0.08	161			
	Jul-01	96	0.17	318			
	Aug-01	100	0.17	333			
	Sep-01	96	0.17	308			
	Oct-01	100	0.17	333			
	Nov-01	100	0.17	322			
	Dec-01	100	0.17	333		4,509	
	Jan-02	100	0.17	333			

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Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Upper Terrace GMSG-116 (continued)	Feb-02	58	0.17	173			
	Mar-02	100	0.17	333			
	Apr-02	100	0.00	0			
	May-02	100	0.00	0			
	Jun-02	69.1	0.00	0			
	Jul-02	22	0.00	0			
	Aug-02	41	0.00	0			
	Sep-02	83	0.00	0			
	Oct-02	92	0.00	0			
	Nov-02	95	0.00	0			
	Dec-02	77	0.00	0		839	
	Jan-03	26	0.00	0			
	Feb-03	52	0.00	0			
	Mar-03	52	0.00	0			
	Apr-03	69	0.00	0			
	May-03	54	0.00	0			
	Jun-03	71	0.00	0		0	23,405
Upper Terrace GMSG-117	Jun-99	91	3.20	2,818			
	Jul-99	91	2.46	1,874			
	Oct-99	94.8	8.50	964	*		
	Nov-99	94.8	8.50	873	*		
	Dec-99	94.8	8.50	667	*	7,196	
	Jan-00	94.8	8.50	668	*		
	Feb-00	94.8	8.50	1,006	*		
	Mar-00	94.8	8.50	1,423	*		
	Apr-00	94.8	8.50	832	*		
	May-00	95	5.65	6,537			
	Jun-00	90	1.55	2,688			
	Jul-00	99	2.40	4,765			
	Aug-00	96	5.00	9,618			
	Sep-00	99	1.67	3,199			
	Oct-00	89	1.67	2,976			
	Nov-00	98	2.50	4,731			
	Dec-00	97	3.10	6,025		44,466	
	Jan-01	99	6.00	11,829			
	Feb-01	99	2.10	3,739			
	Mar-01	96	6.50	12,490			
	Apr-01	100	2.30	4,446			
	May-01	100	2.00	3,995			
	Jun-01	100	1.60	3,093			
	Jul-01	97	1.50	2,903			
	Aug-01	100	7.30	14,581			
	Sep-01	98	2.70	5,094			
	Oct-01	100	2.30	4,594			
	Nov-01	100	2.60	5,026			

Footnotes on Page 19.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Upper Terrace GMSG-117 (continued)	Dec-01	100	2.60	5,193		76,984	
	Jan-02	100	3.00	5,992			
	Feb-02	100	2.80	5,052			
	Mar-02	100	3.00	5,992			
	Apr-02	100	3.60	6,959			
	May-02	100	4.00	7,990			
	Jun-02	100	3.20	6,186			
	Jul-02	100	3.50	6,991			
	Aug-02	100	3.20	6,392			
	Sep-02	91	8.40	14,841			
	Oct-02	100	4.00	7,990			
	Nov-02	100	3.80	7,345			
	Dec-02	100	3.00	5,992		87,722	
	Jan-03	100	3.00	5,992			
	Feb-03	100	2.60	4,691			
	Mar-03	100	3.00	5,992			
	Apr-03	97	3.00	5,631			
	May-03	95	2.40	4,554			
	Jun-03	95	2.80	5,158			
	Jul-03	90	3.00	5,411			
	Aug-03	94	3.00	5,603			
	Sep-03	92	3.00	5,347			
	Oct-03	93	2.60	4,845			
	Nov-03	100	2.70	5,219			
	Dec-03	100	3.00	5,992		64,436	
	Jan-04	98	3.80	7,423			
	Feb-04	100	2.80	5,232			
	Mar-04	100	3.00	5,992			
	Apr-04	96	4.00	7,415			
	May-04	94	3.70	6,962			
	Jun-04	95	2.90	5,320			
	Jul-04	98	3.10	6,050			
	Aug-04	89	3.15	5,612			
	Sep-04	91	4.50	7,881			
	Oct-04	95	5.00	9,498			
	Nov-04	100	3.60	6,959			
	Dec-04	100	4.00	7,990		82,334	
	Jan-05	100	3.00	5,992			
	Feb-05	100	3.00	5,412			
	Mar-05	100	4.00	7,990			
	Apr-05	96	4.00	7,438			
	May-05	90	4.00	7,191			
	Jun-05	93	4.00	7,214			
	Jul-05	90	4.00	7,199			
	Aug-05	92	3.50	6,397			

Footnotes on Page 19.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Upper Terrace GMSG-117 (continued)	Sep-05	94	2.60	4,739			
	Oct-05	97	3.20	6,187			
	Nov-05	92	7.60	13,574			
	Dec-05	100	5.30	10,586		89,921	
	Jan-06	100	5.00	9,987			
	Feb-06	100	6.00	10,825			
	Mar-06	100	5.00	9,987			
	Apr-06	91	4.00	7,021			
	May-06	97	2.00	3,887			
	Jun-06	90	3.00	5,202			
	Jul-06	87	4.00	6,959			
	Aug-06	82	3.00	4,938			
	Sep-06	100	4.00	7,732			
	Oct-06	100	3.00	5,992			
	Nov-06	100	3.00	5,799			
	Dec-06	100	3.00	5,992		84,321	
	Jan-07	100	3.00	5,992			
	Feb-07	100	3.00	5,412			
	Mar-07	100	3.00	5,992			
	Apr-07	92	3.00	5,306			
	May-07	91	4.00	7,287			
	Jun-07	93	3.00	5,364			
	Jul-07	92	3.00	5,507			
	Aug-07	93	3.00	5,555			
	Sep-07	89	3.00	5,184			
	Oct-07	91	3.00	5,423			
	Nov-07	97	3.00	5,625			
	Dec-07	100	3.00	5,992		68,641	606,020
Upper Terrace GM-50	Jun-99	90	1.25	1,081			
	Jul-99	91	1.18	1,107			
	Aug-99	100	1.00	1,997			
	Sep-99	100	1.40	2,706			
	Oct-99	100	1.40	853	*		
	Nov-99	100	1.40	905	*		
	Dec-99	100	1.40	1,274	*	9,924	
	Jan-00	100	1.40	965	*		
	Feb-00	100	1.40	950	*		
	Mar-00	100	1.40	1,111	*		
	Apr-00	100	1.40	921	*		
	May-00	95	2.25	2,619			
	Jun-00	89	1.08	1,858			
	Jul-00	100	1.12	2,227			
	Aug-00	95	1.08	2,062			
	Sep-00	99	1.00	1,916			
	Oct-00	92	1.00	1,840			

Footnotes on Page 19.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Upper Terrace GM-50 (continued)	Nov-00	96	1.08	2,010			
	Dec-00	97	0.97	1,875		20,354	
	Jan-01	94	1.42	2,646			
	Feb-01	98	0.75	1,322			
	Mar-01	95	1.17	2,223			
	Apr-01	100	1.08	2,094			
	May-01	100	0.92	1,831			
	Jun-01	100	0.88	1,707			
	Jul-01	100	0.83	1,665			
	Aug-01	100	0.83	1,665			
	Sep-01	99	0.92	1,747			
	Oct-01	100	0.92	1,831			
	Nov-01	100	0.92	1,772			
	Dec-01	100	1.00	1,997		22,500	
	Jan-02	100	0.92	1,831			
	Feb-02	100	0.92	1,654			
	Mar-02	100	0.92	1,831			
	Apr-02	100	0.92	1,772			
	May-02	100	0.83	1,665			
	Jun-02	100	0.83	1,611			
	Jul-02	100	0.92	1,831			
	Aug-02	100	1.00	1,997			
	Sep-02	91	0.83	1,461			
	Oct-02	100	1.83	3,662			
	Nov-02	100	0.92	1,772			
	Dec-02	100	0.92	1,831		22,917	
	Jan-03	100	0.90	1,798			
	Feb-03	100	0.88	1,594			
	Mar-03	100	0.83	1,665			
	Apr-03	98	0.82	1,550			
	May-03	96	0.83	1,595			
	Jun-03	96	0.98	1,823			
	Jul-03	92	0.88	1,620			
	Aug-03	94	0.87	1,631			
	Sep-03	93	0.98	1,760			
	Oct-03	94	0.90	1,693			
	Nov-03	100	0.87	1,675			
	Dec-03	100	0.92	1,831		20,234	
	Jan-04	100	1.17	2,321			
	Feb-04	100	0.80	1,495			
	Mar-04	100	0.82	1,631			
	Apr-04	94	0.83	1,513			
	May-04	91	0.83	1,518			
	Jun-04	95	0.85	1,556			
	Jul-04	96	0.73	1,409			

Footnotes on Page 19.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Upper Terrace GM-50 (continued)	Aug-04	84	0.78	1,308			
	Sep-04	92	0.73	1,300			
	Oct-04	98	0.57	1,105			
	Nov-04	100	0.72	1,385			
	Dec-04	100	0.63	1,265		17,806	
	Jan-05	100	0.50	999			
	Feb-05	100	0.17	301			
	Mar-05	100	0.83	1,665			
	Apr-05	94	0.42	758			
	May-05	97	0.33	647			
	Jun-05	92	0.42	738			
	Jul-05	91	0.50	908			
	Aug-05	93	0.50	929			
	Sep-05	94	0.58	1,062			
	Oct-05	94	0.58	1,099			
	Nov-05	91	0.92	1,607			
	Dec-05	95	0.88	1,680		12,391	
	Jan-06	100	0.68	1,365			
	Feb-06	100	0.50	902			
	Mar-06	100	0.83	1,665			
	Apr-06	90	0.33	582			
	May-06	96	0.25	478			
	Jun-06	89	0.25	430			
	Jul-06	87	0.20	347			
	Aug-06	84	0.45	751			
	Sep-06	100	0.17	322			
	Oct-06	100	0.17	333			
	Nov-06	100	0.17	322			
	Dec-06	100	0.17	333		7,829	
	Jan-07	100	0.09	183			
	Feb-07	1	0.02	0			
	Mar-07	100	0.02	33			
	Apr-07	91	0.02	29			
	May-07	95	0.02	32			
	Jun-07	93	0.83	1,490			
	Jul-07	92	0.75	1,380			
	Aug-07	94	0.25	467			
	Sep-07	90	0.42	723			
	Oct-07	91	0.28	514			
	Nov-07	97	0.47	872			
	Dec-07	100	0.33	666		6,391	140,345
Upper Terrace GM-52	Jun-99	88.5	3.69	3,156			
	Jul-99	89.4	3.30	5,893			
	Aug-99	97.9	0.17	315			
	Sep-99	89.0	0.17	287			

Footnotes on Page 19.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Upper Terrace GM-52 (continued)	Oct-99	19.0	0.17	61			
	Nov-99	0.13	0.17	0.42			
	Dec-99	0.00	0.17	0		9,713	
	Jan-00	0.00	0.17	0			
	Feb-00	0.04	0.17	0.14			
	Mar-00	0.07	0.17	0.23			
	Apr-00	0.35	0.17	1.11			
	May-00	0	0.17	0			
	Jun-00	0.05	0.17	0.16			
	Jul-00	0	0.17	0.00			
	Aug-00	0.05	0.17	0.16			
	Sep-00	1.50	0.17	4.8			
	Oct-00	0.20	0.17	0.64			
	Nov-00	0.40	0.17	1.3			
	Dec-00	2.56	0.17	8.5		17	
	Jan-01	0.20	0.17	0.64			
	Feb-01	0.04	0.17	0.11			
	Mar-01	3.17	0.17	11			
	Apr-01	1.20	0.17	3.9			
	May-01	0.22	0.17	0.72			
	Jun-01	1.60	0.17	5.2			
	Jul-01	2.27	0.17	7.6			
	Aug-01	1.59	0.17	5.1			
	Sep-01	0.35	0.17	1.1		35	9,765
Terrace GM-33/33R [1)]	Jul-99	97	1.47	1,194			
	Aug-99	100	1.33	2,657			
	Sep-99	89	1.50	1,112			
	Oct-99	89	1.50	1,530			
	Nov-99	89	1.50	743			
	Dec-99	89	1.50	1,348		8,584	
	Jan-00	89	1.50	848			
	Feb-00	89	1.50	987			
	Mar-00	89	1.50	735			
	Apr-00	89	1.50	2,187			
	May-00	95	2.38	2,756			
	Jun-00	89	1.36	2,350			
	Jul-00	99	1.38	2,729			
	Aug-00	96	1.33	2,549			
	Sep-00	98	1.25	2,375			
	Oct-00	91	1.25	2,275			
	Nov-00	98	1.25	2,368			
	Dec-00	97	1.25	2,422		24,580	
	Jan-01	92	1.17	2,151			
	Feb-01	96	1.00	1,737			

Footnotes on Page 19.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Terrace GM-33/33R [1] (continued)	Mar-01	94	1.42	2,668			
	Apr-01	100	1.33	2,577			
	May-01	100	1.17	2,330			
	Jun-01	100	1.25	2,416			
	Jul-01	100	1.23	2,464			
	Aug-01	100	1.23	2,464			
	Sep-01	97	1.30	2,438			
	Oct-01	100	1.25	2,497			
	Nov-01	100	1.58	3,061			
	Dec-01	100	1.25	2,497		29,299	
	Jan-02	100	1.25	2,497			
	Feb-02	100	1.25	2,255			
	Mar-02	100	1.20	2,397			
	Apr-02	100	1.13	2,191			
	May-02	100	1.00	1,997			
	Jun-02	100	1.08	2,094			
	Jul-02	100	1.08	2,164			
	Aug-02	100	1.37	2,730			
	Sep-02	91	1.20	2,111			
	Oct-02	100	1.17	2,330			
	Nov-02	100	1.17	2,255			
	Dec-02	100	1.17	2,330		27,352	
	Jan-03	100	1.20	2,397			
	Feb-03	100	1.17	2,105			
	Mar-03	100	1.13	2,264			
	Apr-03	98	1.13	2,140			
	May-03	96	1.12	2,135			
	Jun-03	95	1.13	2,077			
	Jul-03	92	1.25	2,285			
	Aug-03	94	1.30	2,433			
	Sep-03	92	1.30	2,322			
	Oct-03	94	1.30	2,436			
	Nov-03	100	1.30	2,513			
	Dec-03	100	1.30	2,597		27,702	
	Jan-04	98	1.87	3,665			
	Feb-04	100	1.20	2,242			
	Mar-04	100	1.20	2,397			
	Apr-04	96	1.25	2,322			
	May-04	92	1.92	3,511			
	Jun-04	95	1.47	2,696			
	Jul-04	99	1.45	2,856			
	Aug-04	85	1.43	2,445			
	Sep-04	92	1.33	2,363			
	Oct-04	99	1.42	2,793			
	Nov-04	100	1.33	2,577			

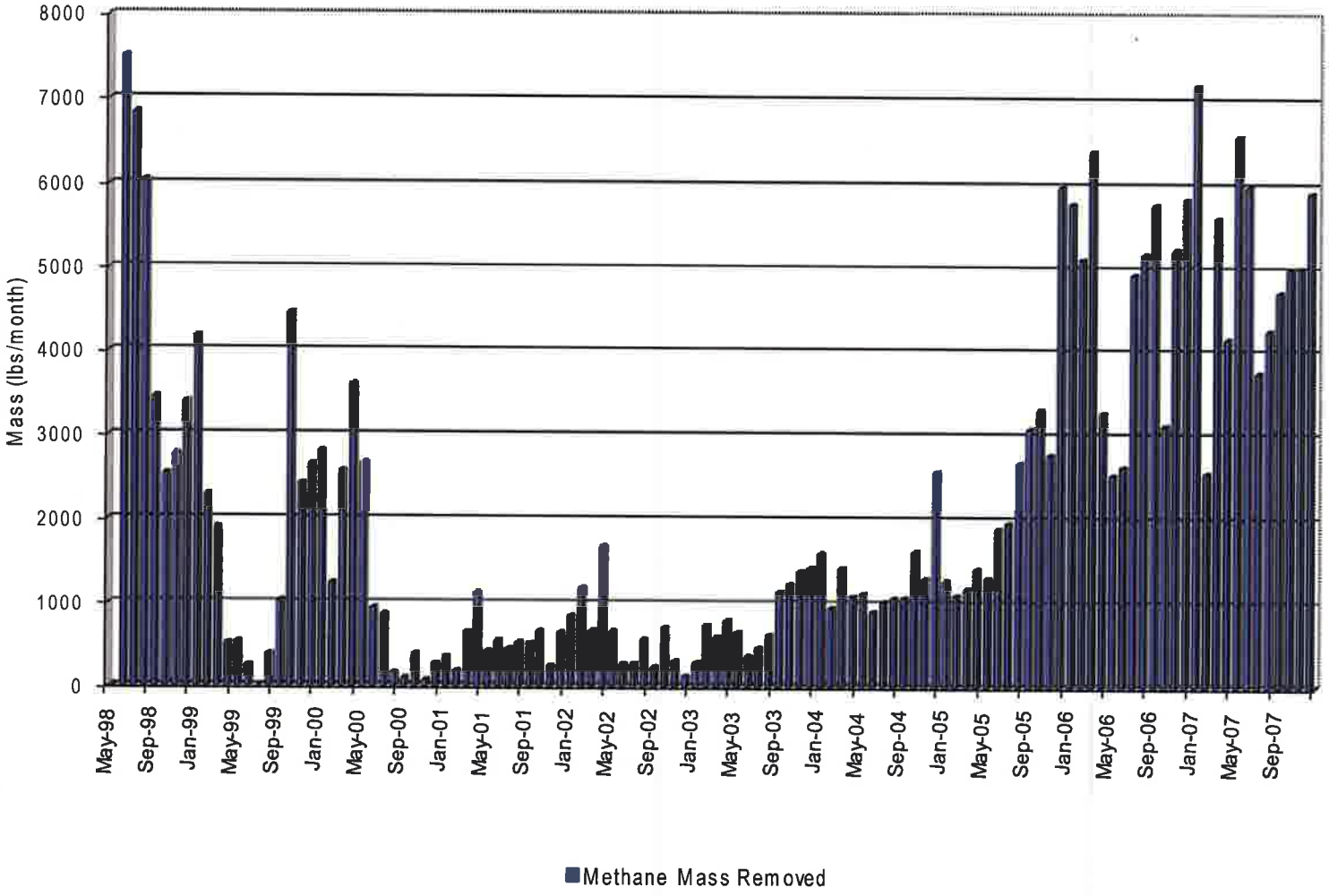
Footnotes on Page 19.

Table R-4. Summary of Methane from Passive Vents through December 2007, Ford-Kingsford Products Facility, Kingsford, Michigan.

Passvie Vent	Date	Methane (Monthly Average) (%)	Flow (Monthly Average (scfm)	Methane Mass (lbs/month)	*	Methane Mass (lbs/year)	Methane Mass (lbs, total)
Terrace GM-33/33R [1] (continued)	Dec-04	100	1.33	2,663		32,531	
	Jan-05	100	1.33	2,663			
	Feb-05	100	1.33	2,406			
	Mar-05	100	1.42	2,830			
	Apr-05	96	1.67	3,080			
	May-05	96	1.67	2,604			
	Jun-05	96	0.75	718			
	Jul-05	92	0.67	1,226			
	Aug-05	94	0.67	1,254			
	Sep-05	95	0.67	1,224			
	Oct-05	99	0.80	1,576			
	Nov-05	93	0.97	1,745			
	Dec-05	98	0.62	1,202		22,529	
	Jan-06	100	0.75	1,498			
	Feb-06	100	0.92	1,654			
	Mar-06	100	0.92	1,831			
	Apr-06	92	0.88	1,564			
	May-06	71	0.75	1,065			
	Jun-06	89	0.83	1,440			
	Jul-06	89	1.00	1,776			
	Aug-06	84	1.05	1,770			
	Sep-06	100	1.00	1,933			
	Oct-06	100	1.08	2,164			
	Nov-06	100	1.17	2,255			
	Dec-06	100	0.83	1,665		20,615	
	Jan-07	100	1.08	2,164			
	Feb-07	100	0.17	301			
	Mar-07	100	1.17	2,330			
	Apr-07	92	1.00	1,784			
	May-07	92	1.10	2,013			
	Jun-07	93	1.17	2,093			
	Jul-07	92	1.17	2,153			
	Aug-07	93	1.17	2,172			
	Sep-07	89	1.17	2,005			
	Oct-07	91	1.20	2,191			
	Nov-07	97	1.17	2,181			
	Dec-07	100	1.25	2,497		23,883	217,075

% Percentage by Volume.
* Denotes a partial month of operation only.
1) GM-33 operated from June 1999 through June 2005. GM-33R operated from July 2005 through December 2007.
lbs Pounds.
scfm Standard cubic feet per minute.

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: BREEN METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

BREEN AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

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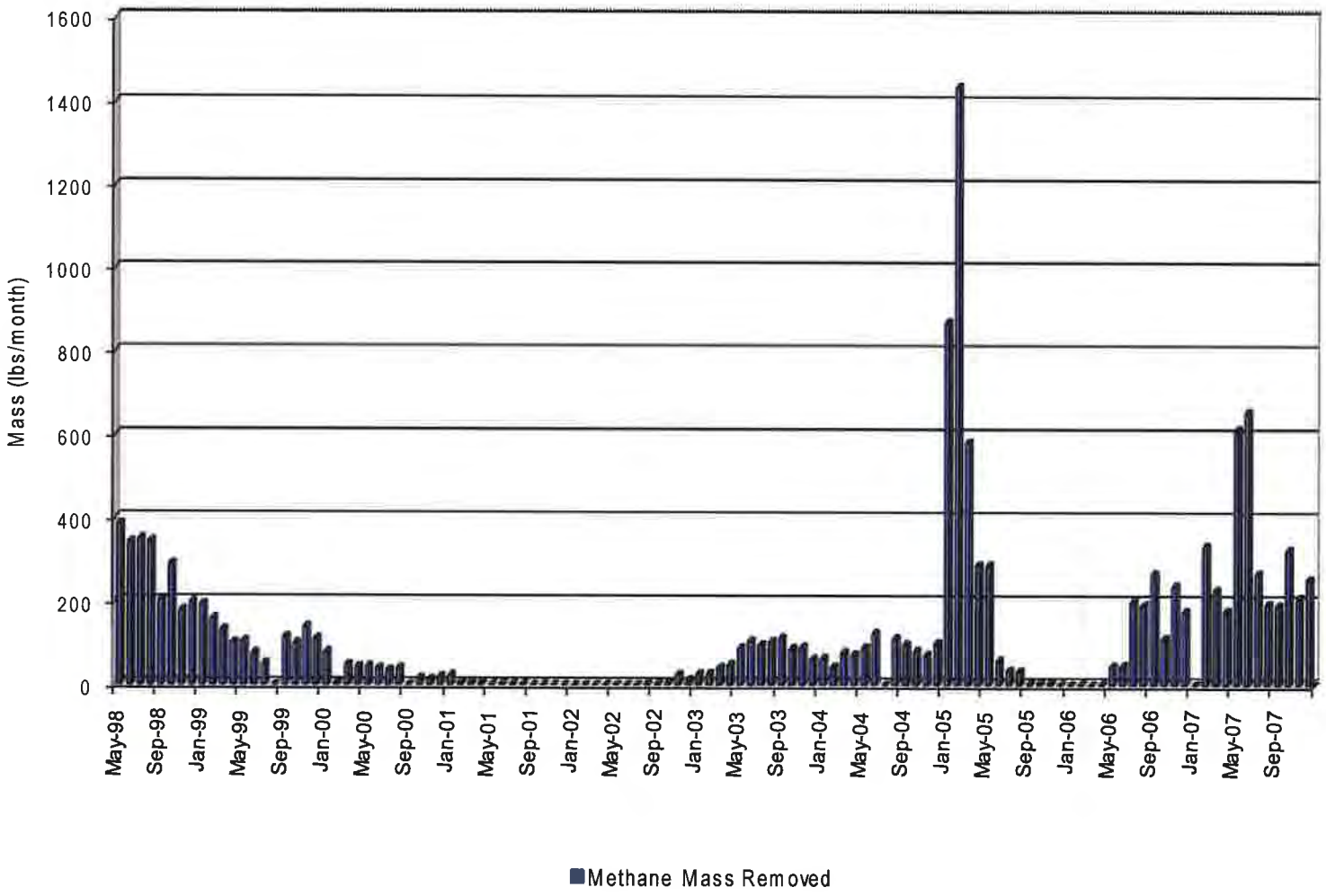

ARCADIS

EMMET AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

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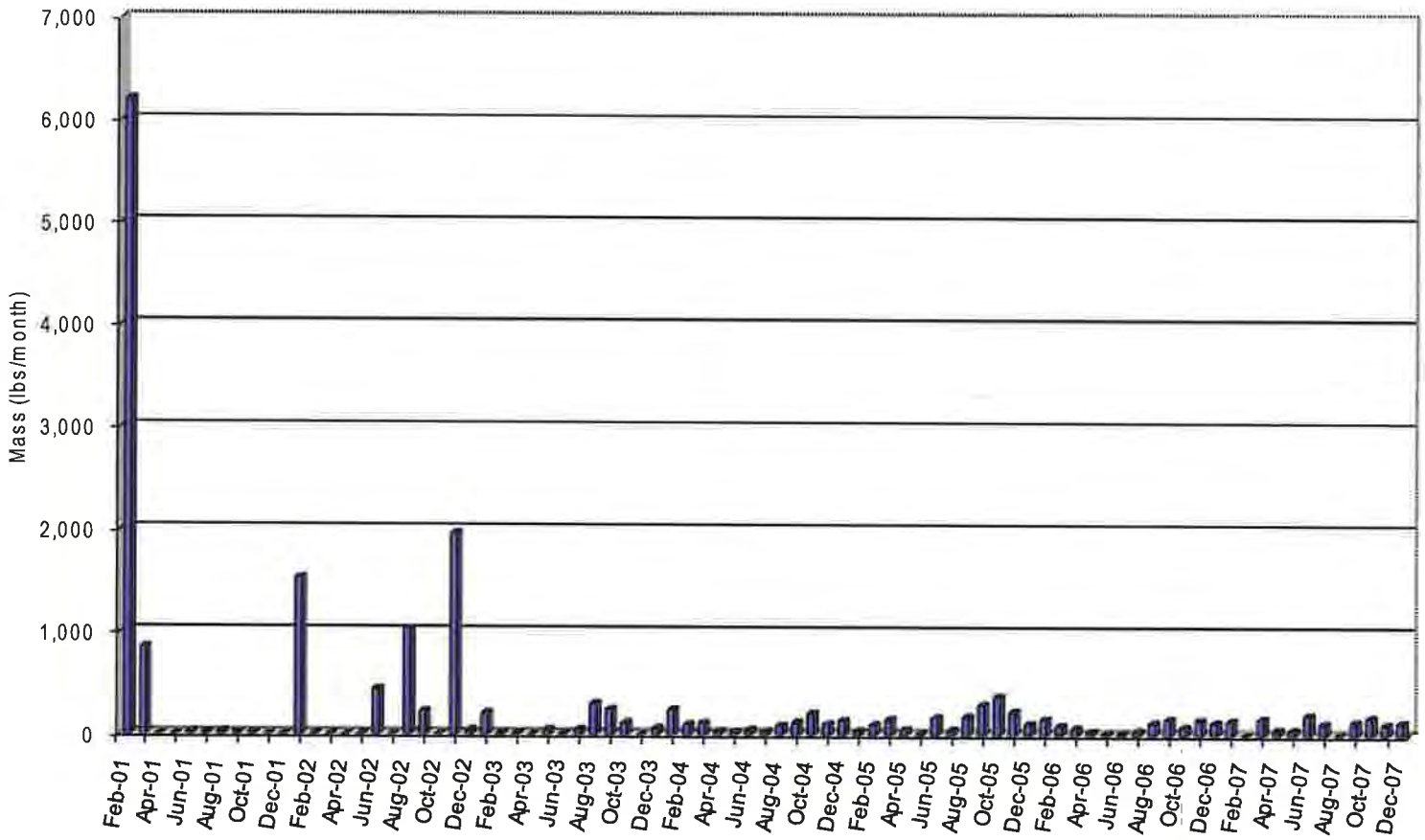

Beginning May 31, 2002 the system operates 12 hrs/day, July 9, 2003 the System operates 6 hrs/day, April 20, 2004 the System operates 2 days/week, June 30, 2004 the System operates 1 day/week

ARCADIS

LODAL MAIN SYSTEM METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

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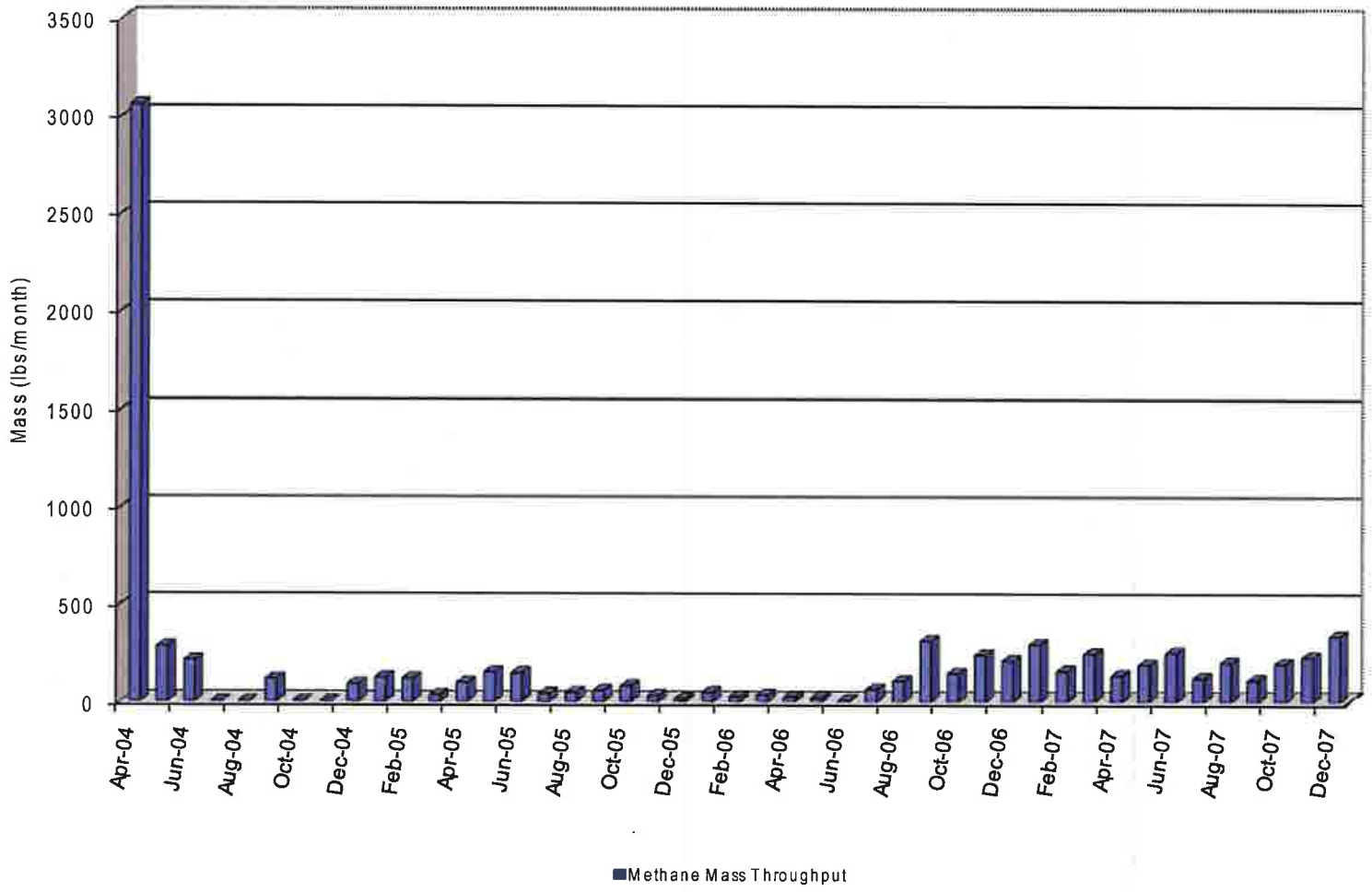
DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-96 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

GMSG-96/GMSG-96A AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

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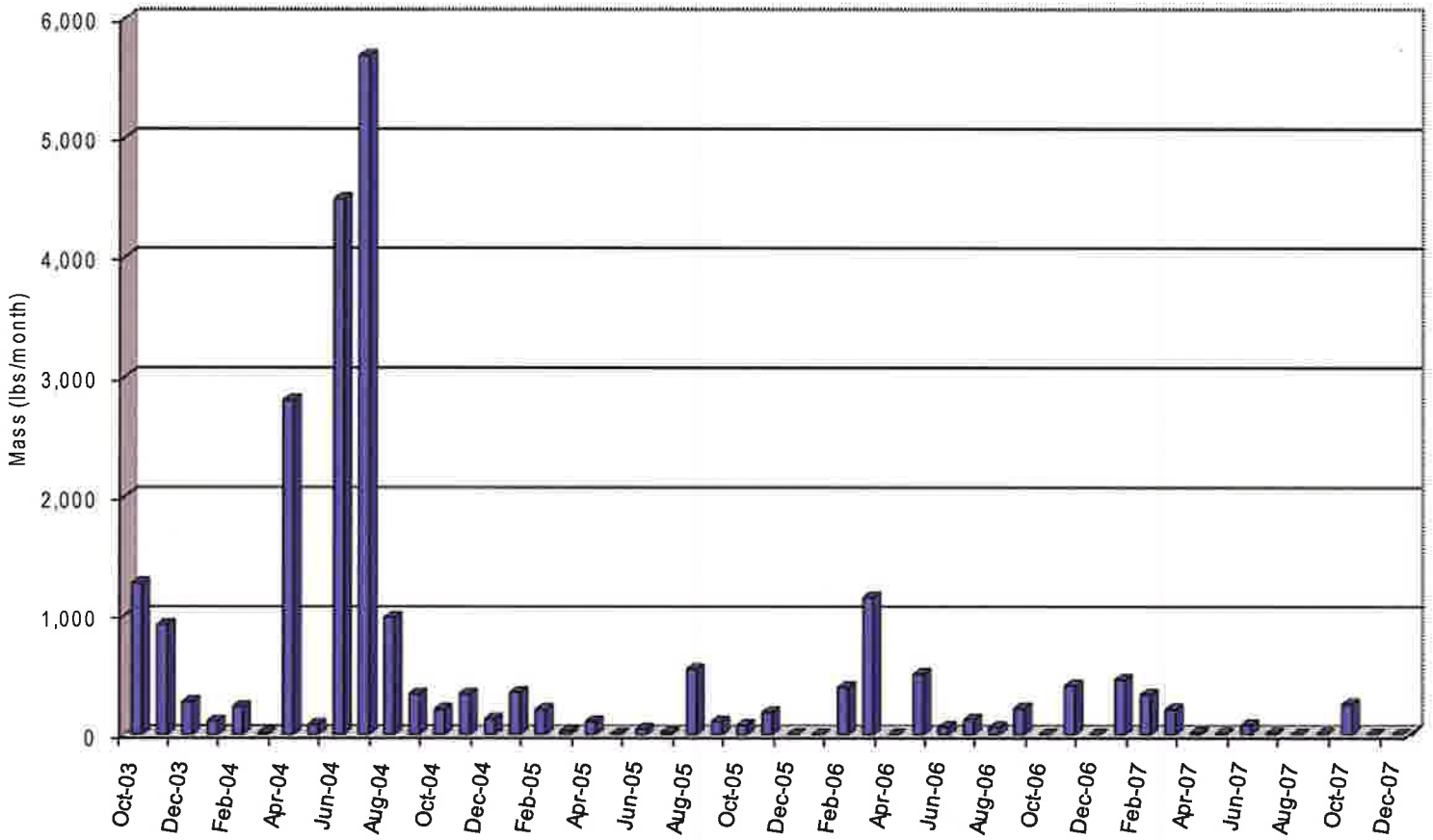
DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: PYLE DRIVE METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



Beginning May 31, 2002 the system operates 12 hrs/day, July 9, 2003 the System operates 6 hrs/day, April 20, 2004 the System operates 2 days/week, June 30, 2004 the System operates 1 day/week

ARCADIS

PYLE DRIVE AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

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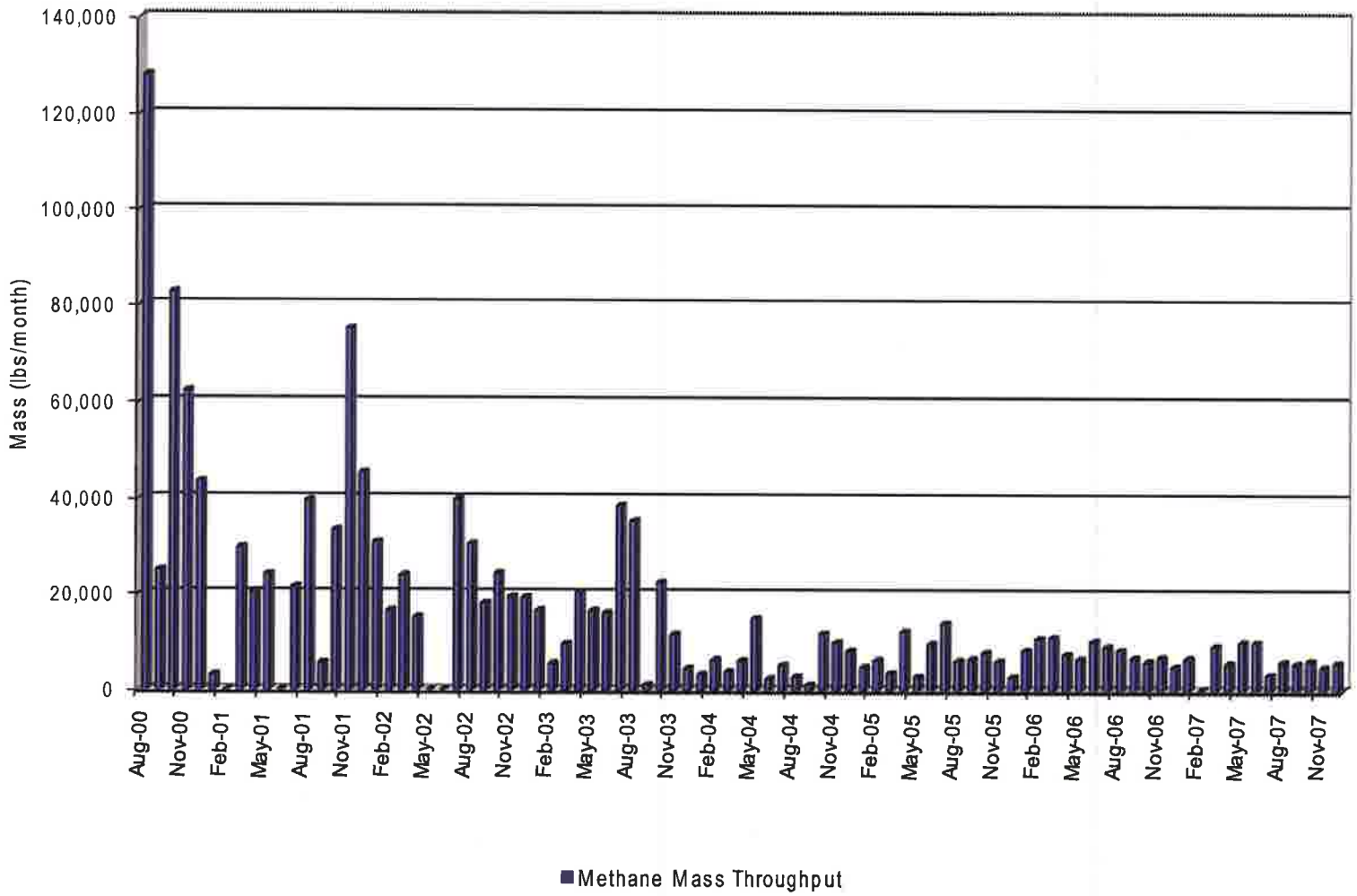
DWG DATE: 08SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: RDA METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

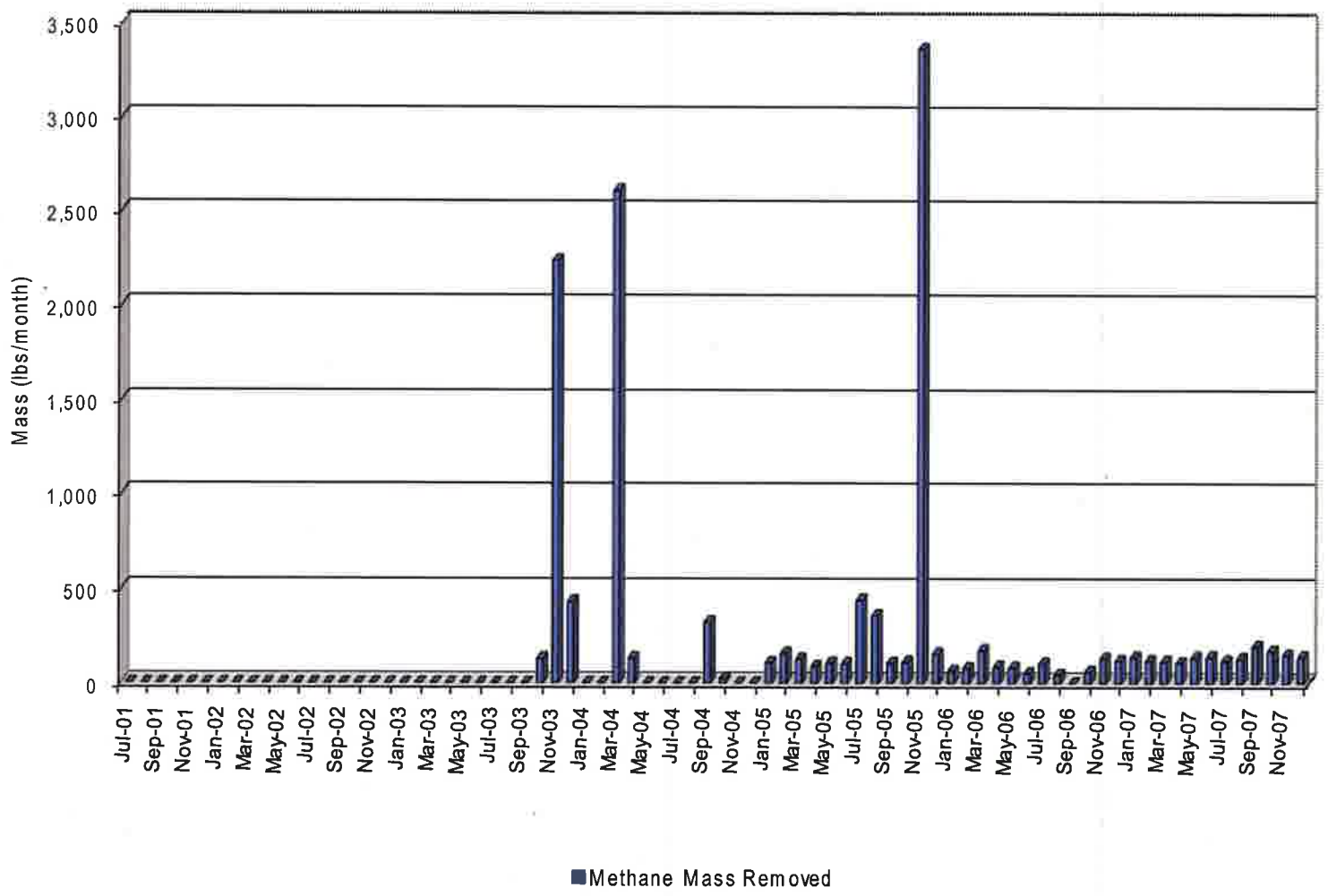
RIVERSIDE DISPOSAL AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-41/GMSG-127 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

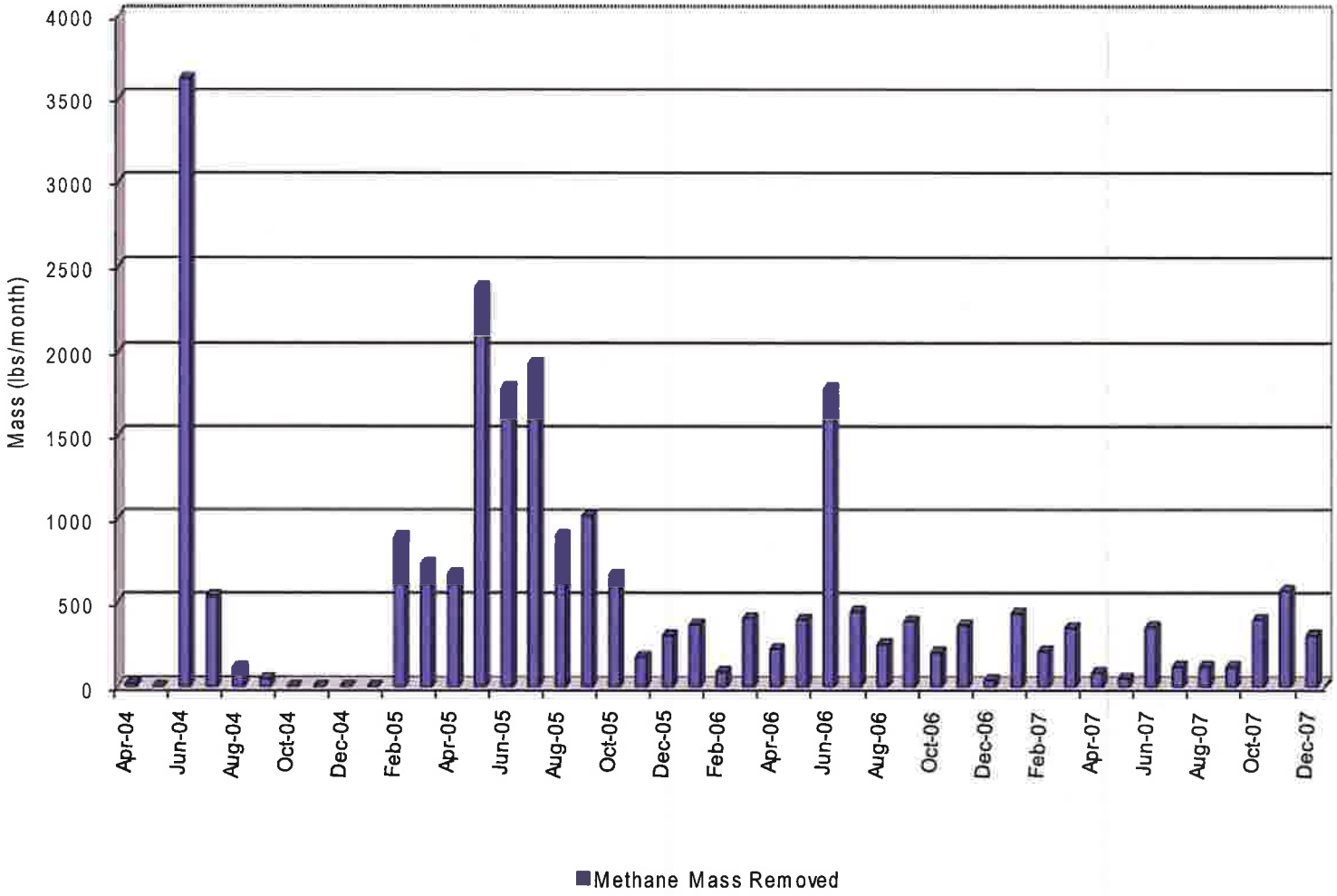
GM-41/GMSG-127 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 08SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-123 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

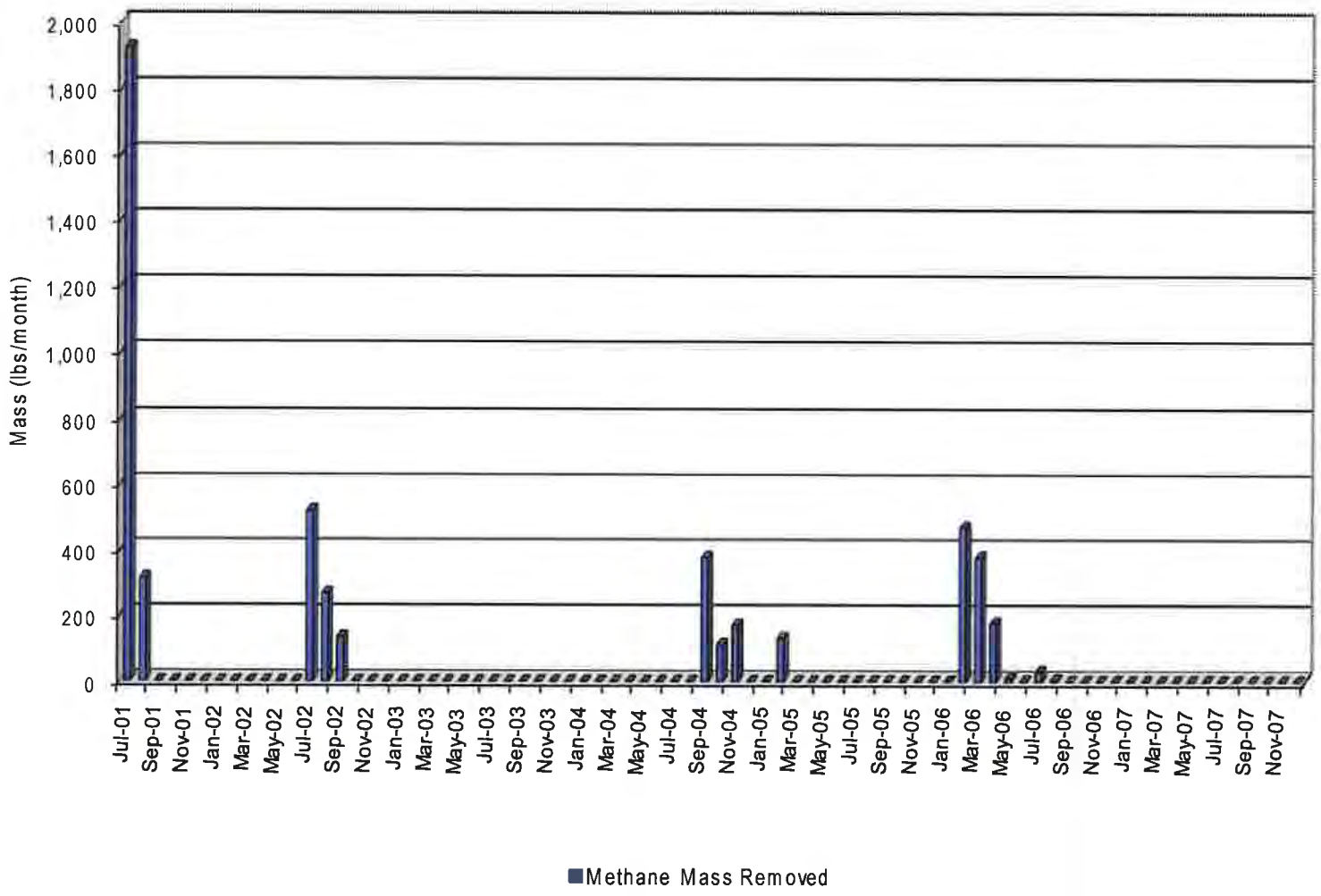
GMSG-123 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-37 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

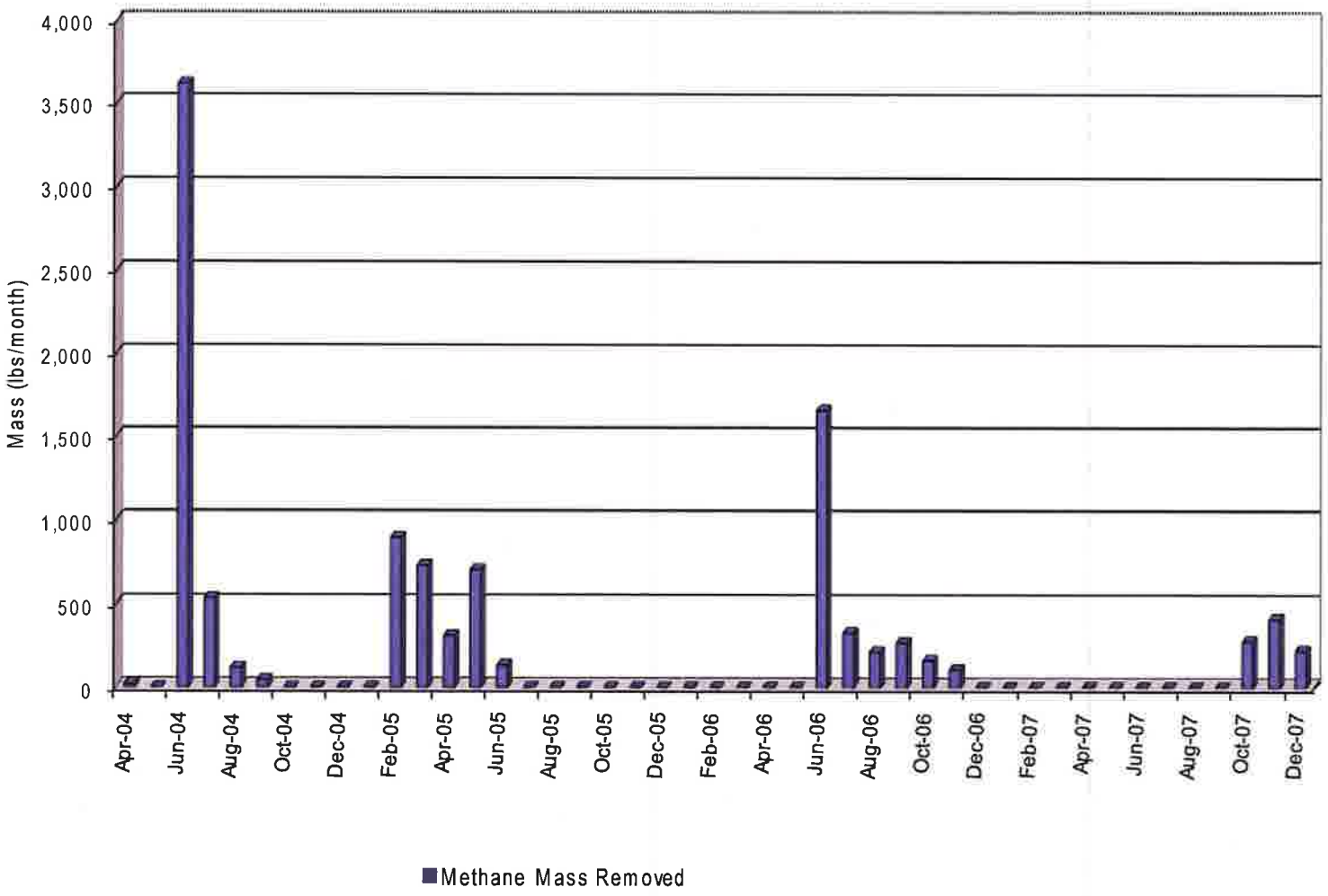
GMSG-37 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 08SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-135 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

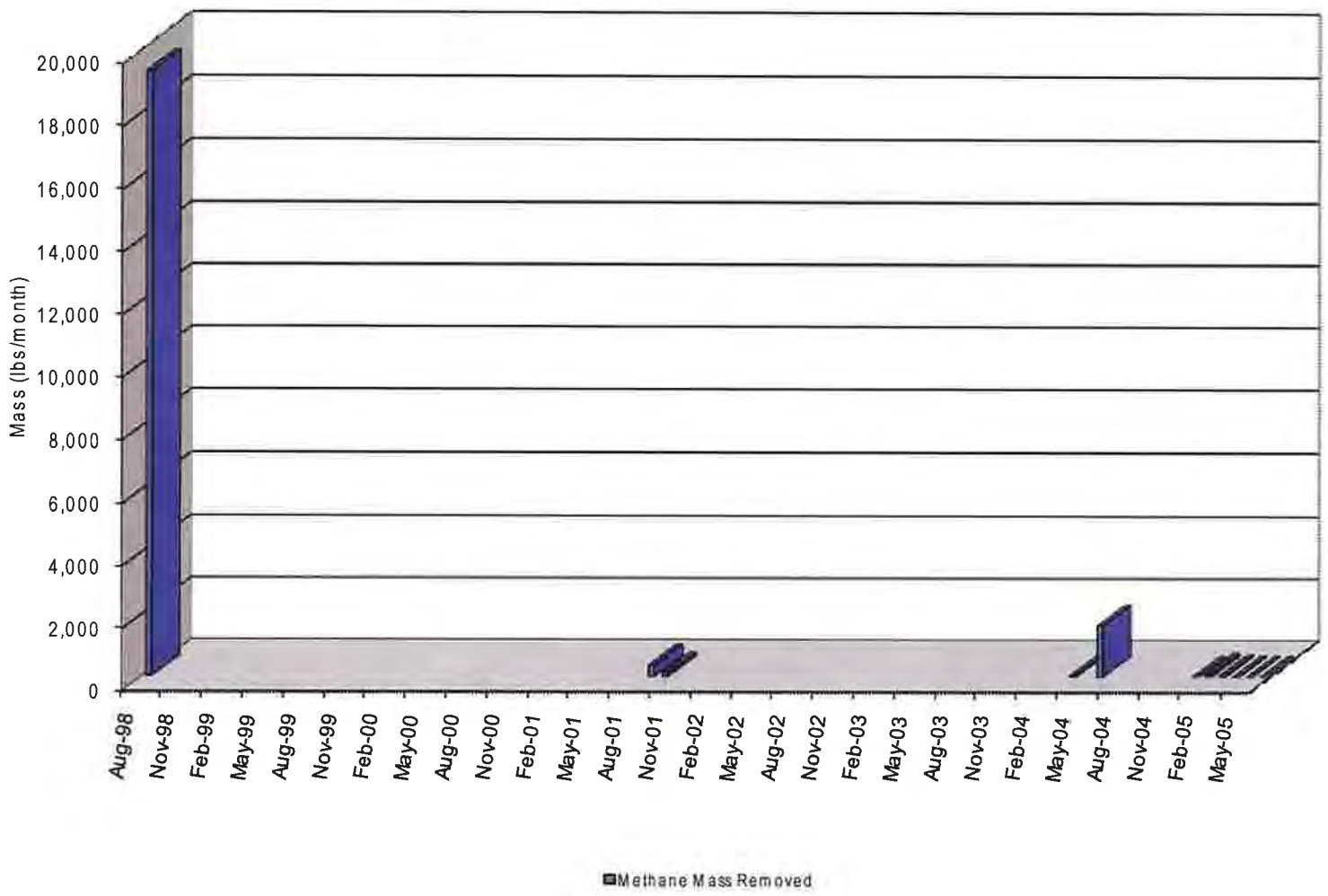
GMSG-135 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-2A METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

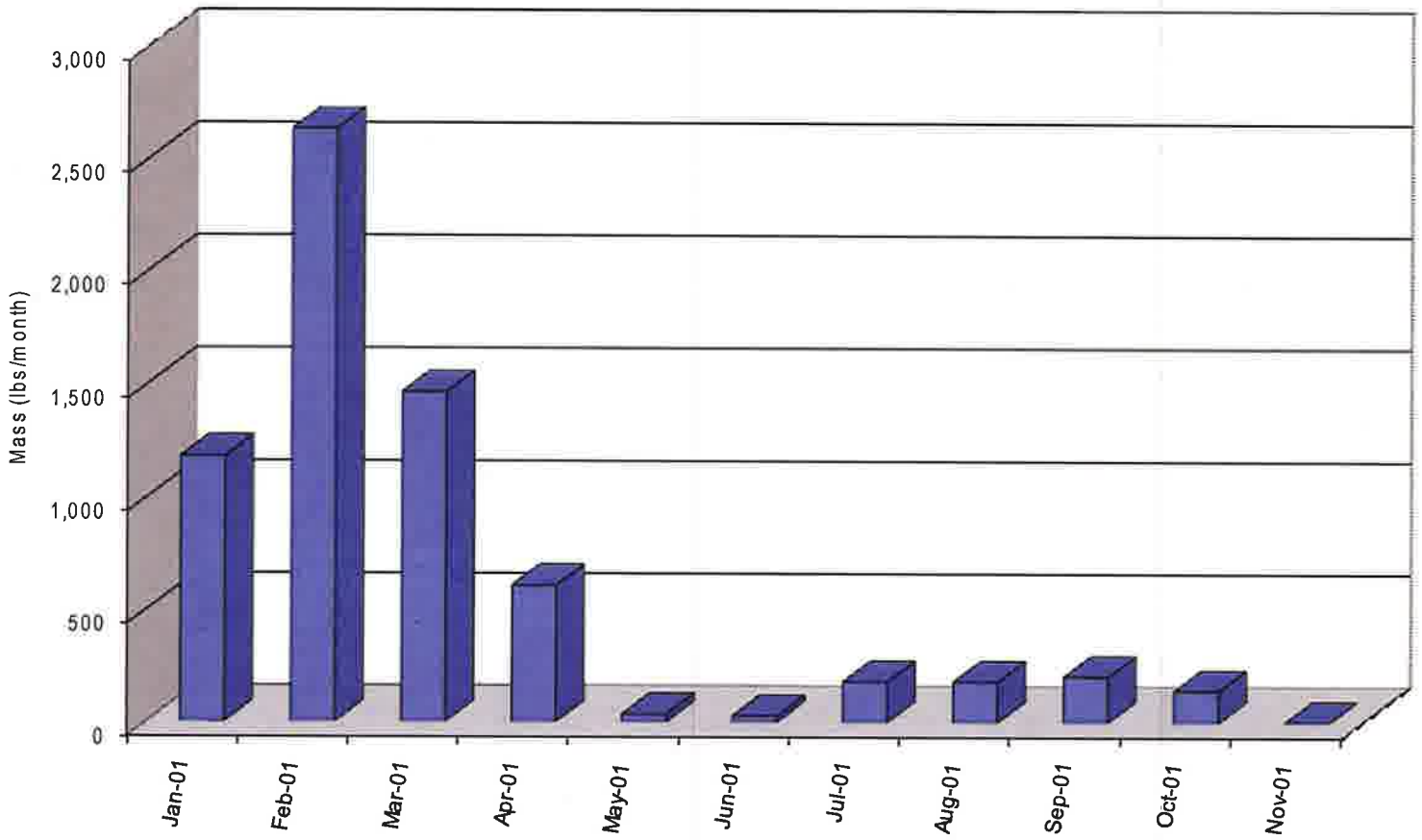
GM-2A AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: NOTCH METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



Note: The system was shutdown on 4/20/01 and restarted on 5/15/01. The system was shutdown on 11/12/01

ARCADIS

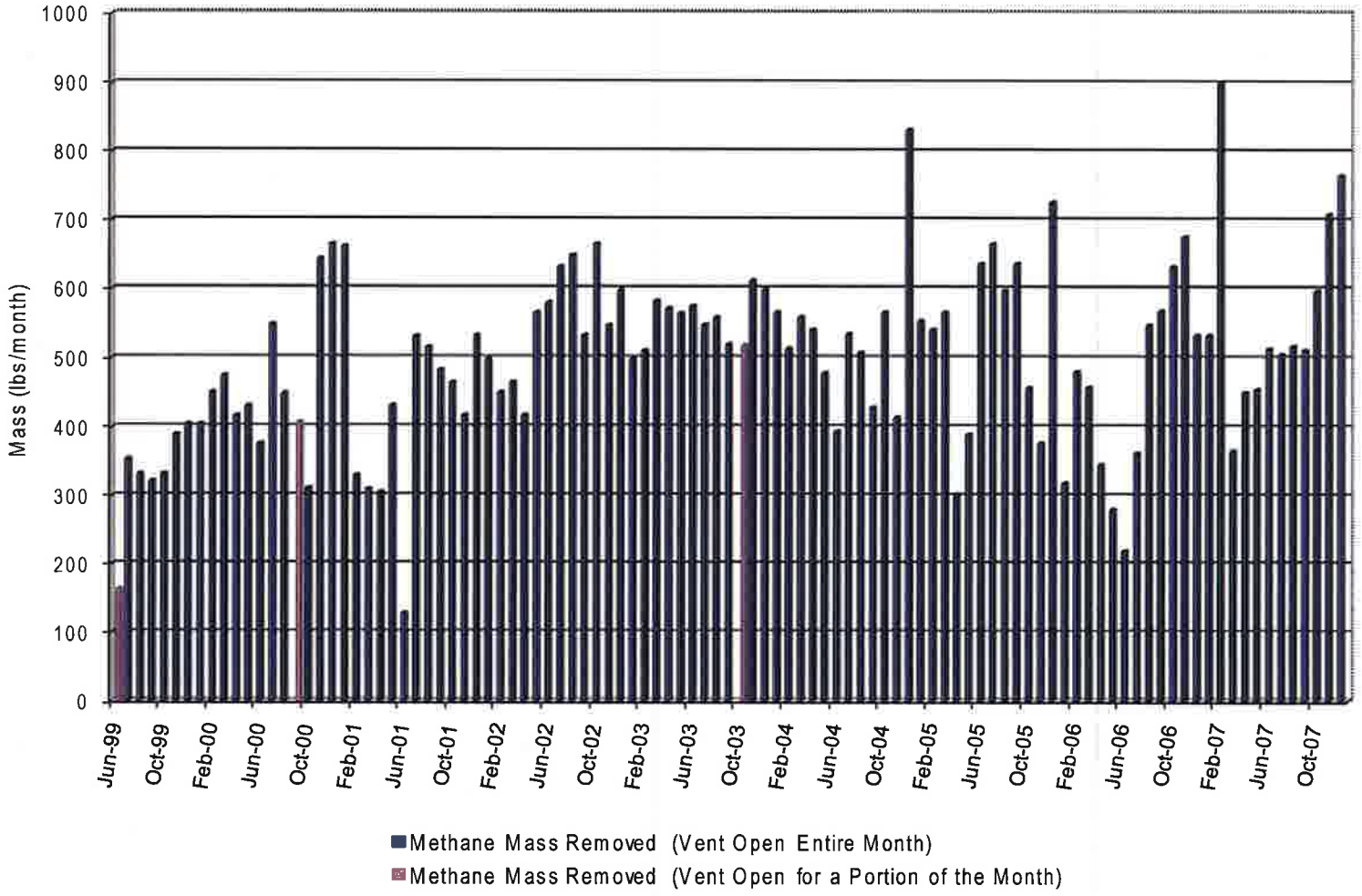
NOTCH AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-24B METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

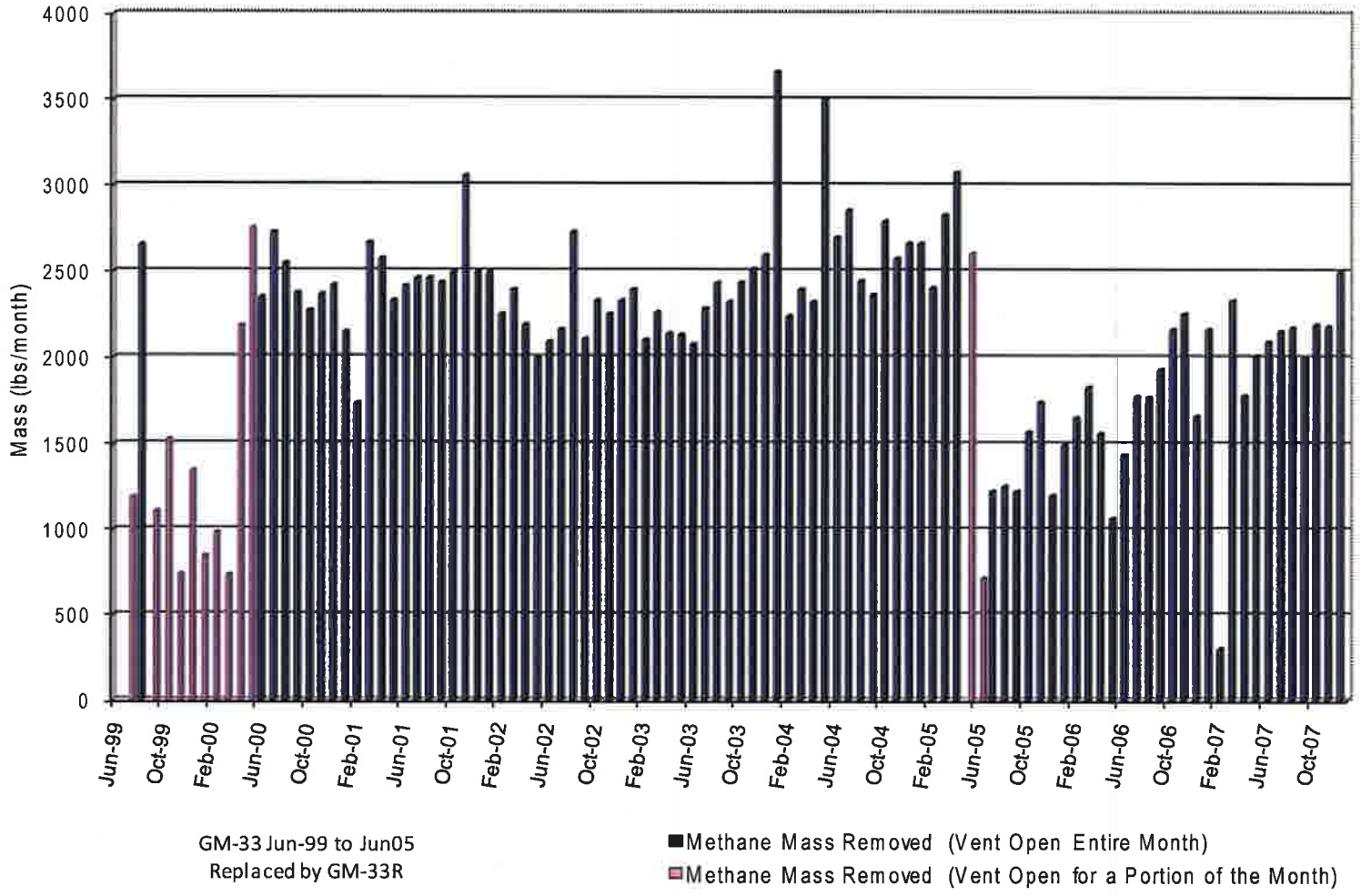
GM-24B AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-33 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

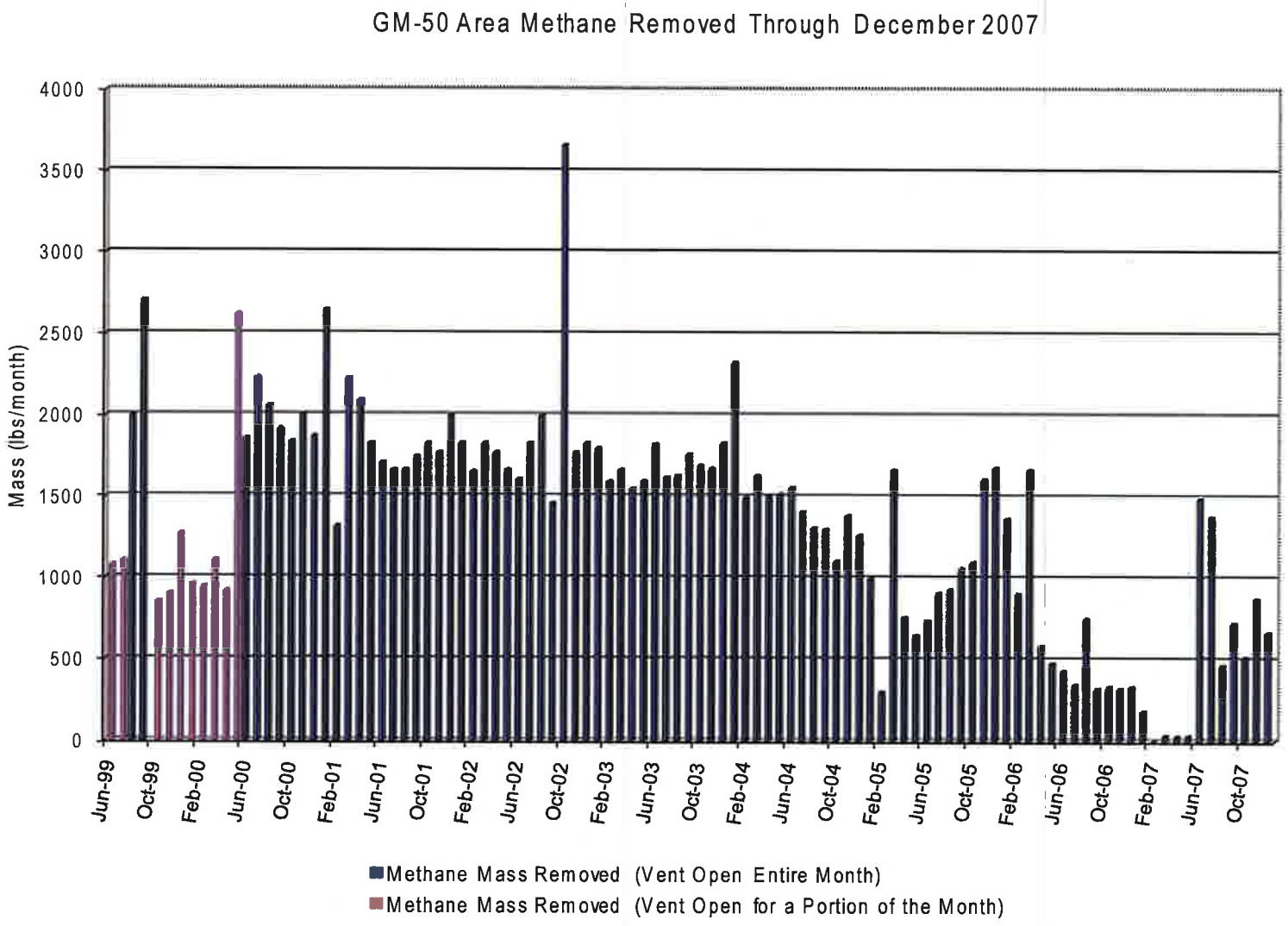
GM-33 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-50 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

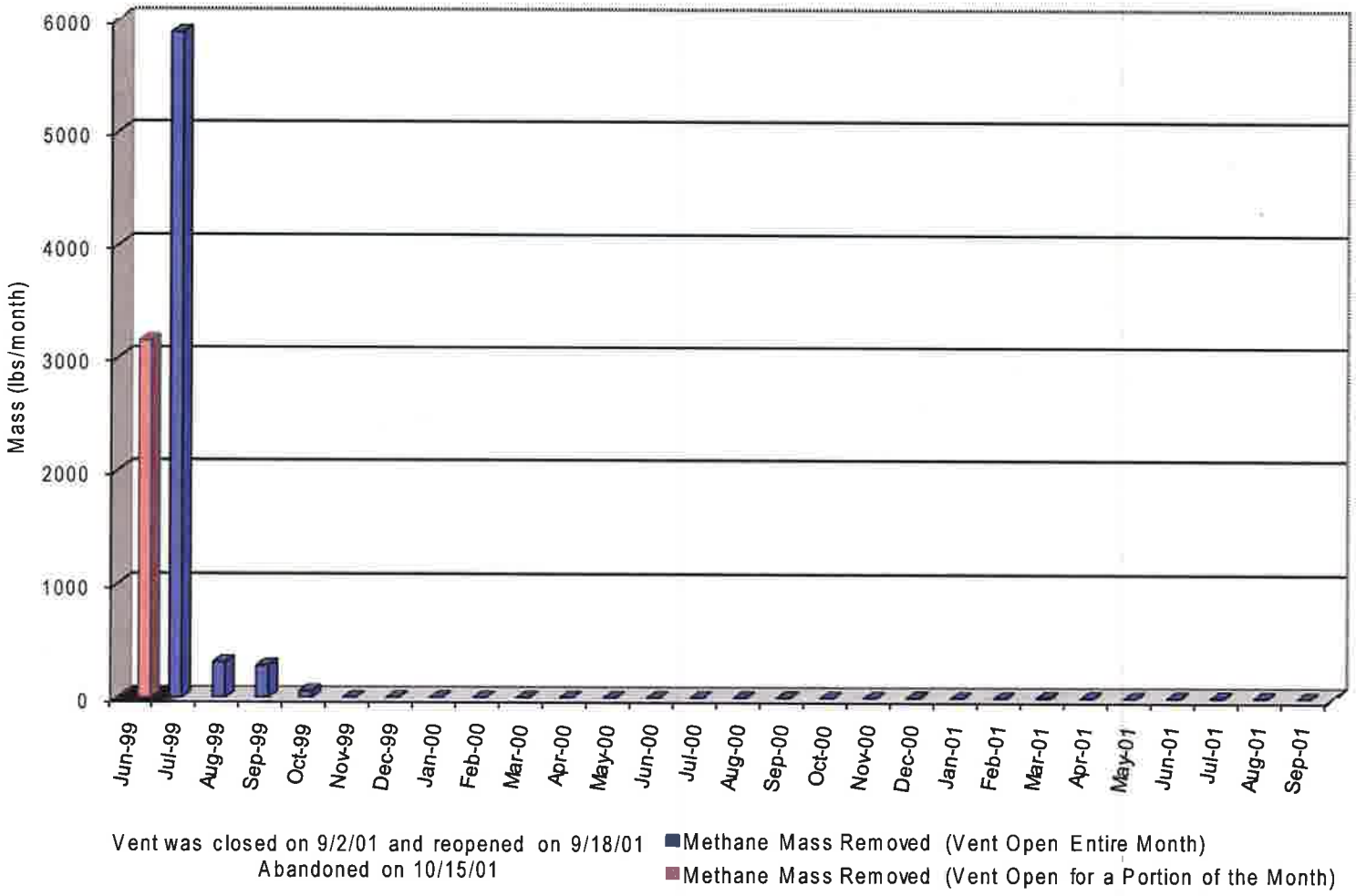
GM-50 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-52 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

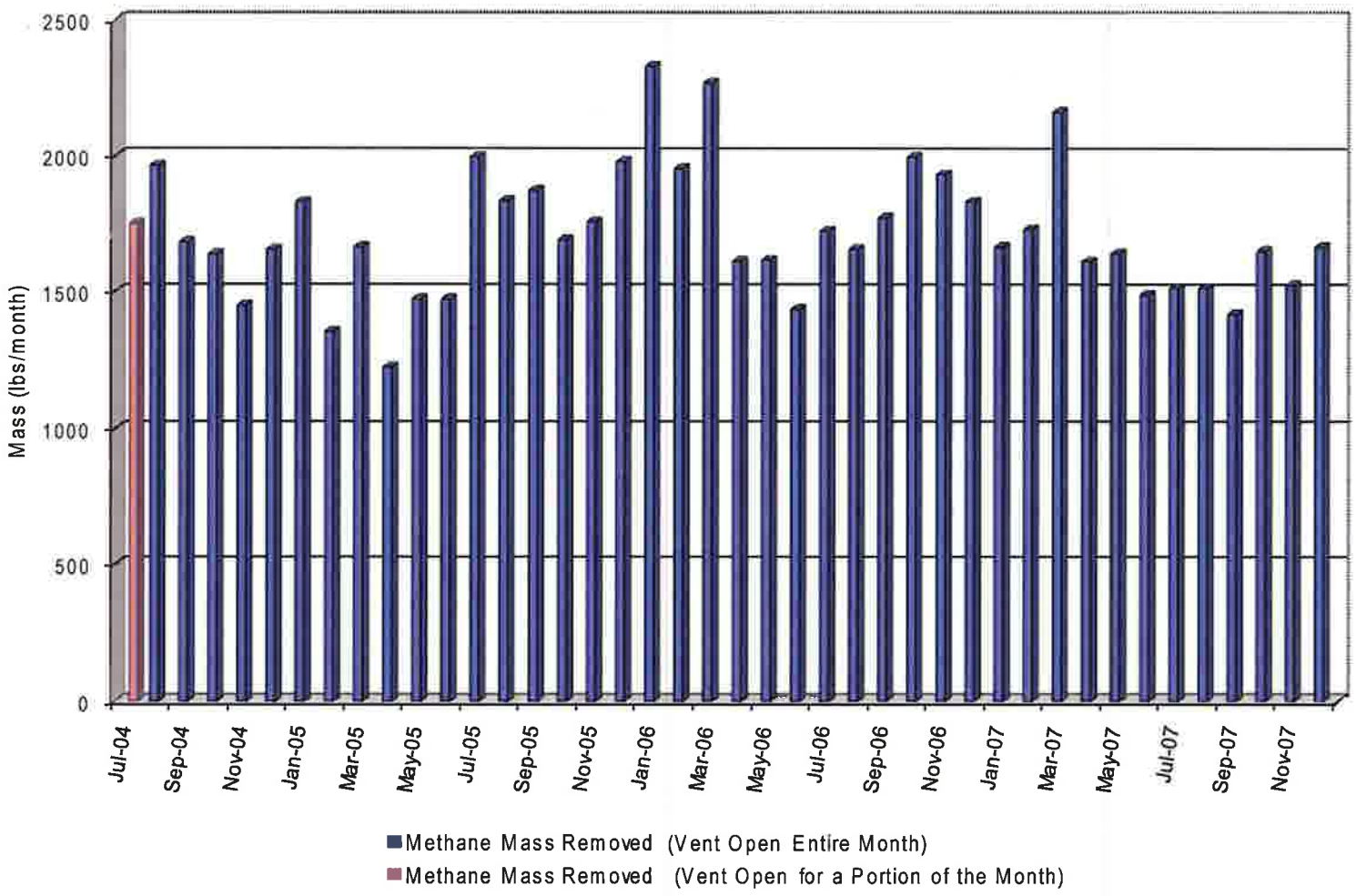
GM-52 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-82A METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

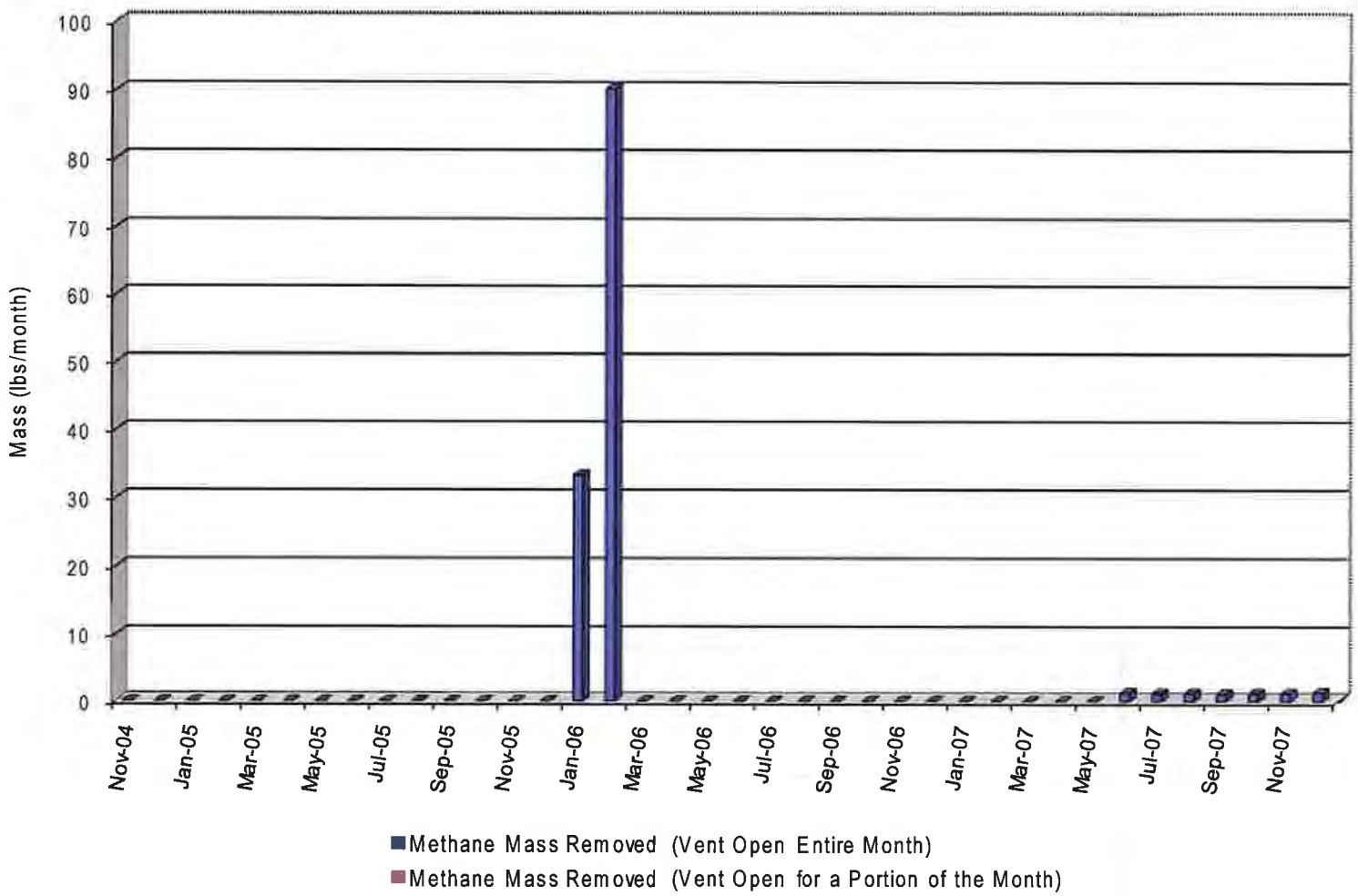
GM-82A AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GM-82B METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

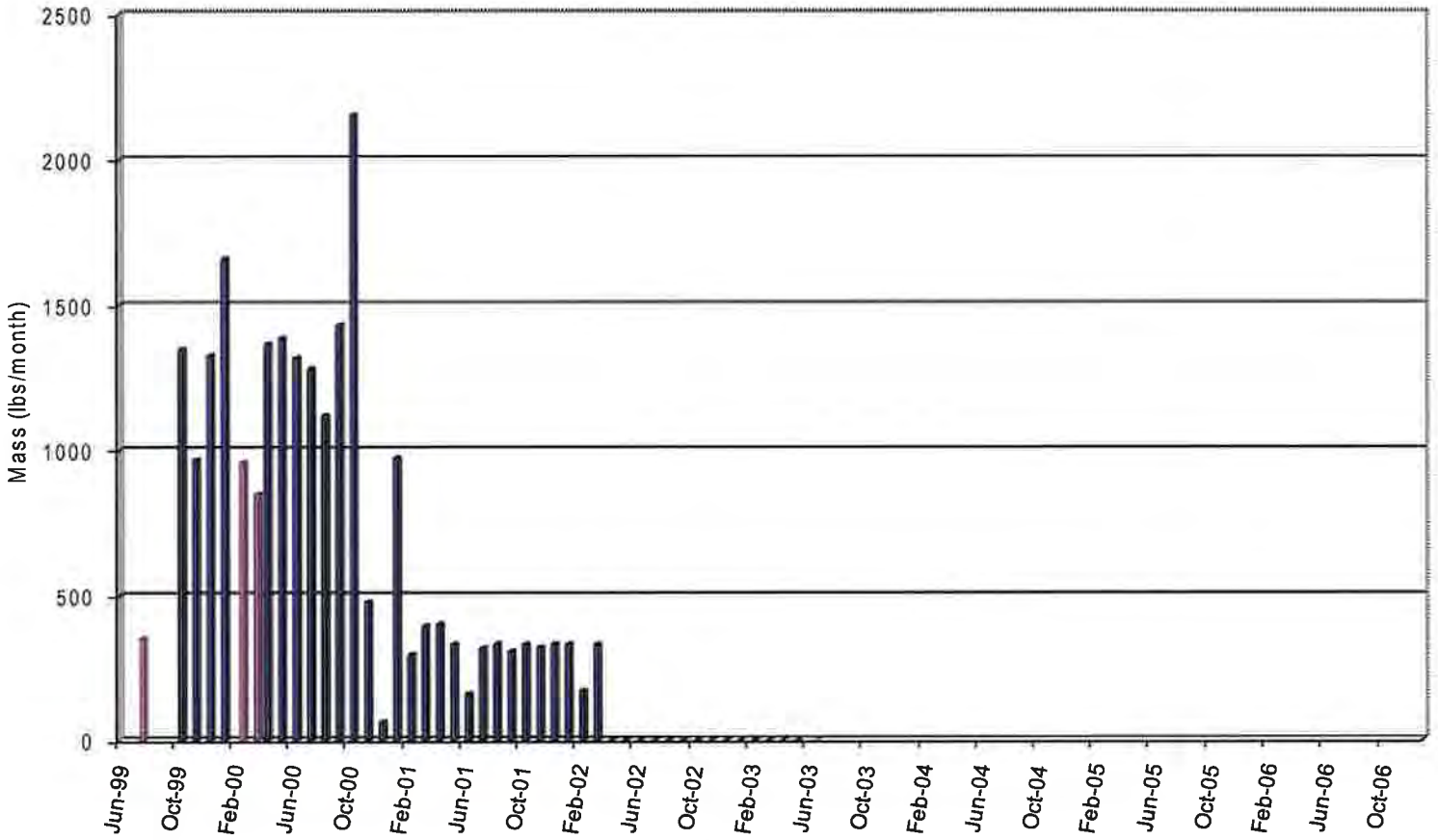
GM-82B AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-116 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



Note: GMSG-116 was closed in June, August, and September of 1999
Passive Vent was shut-down on June 13, 2003

Methane mass Removed (Vent Open Entire Month)
Methane Mass Removed (Vent Open for a Portion of the Month)

ARCADIS

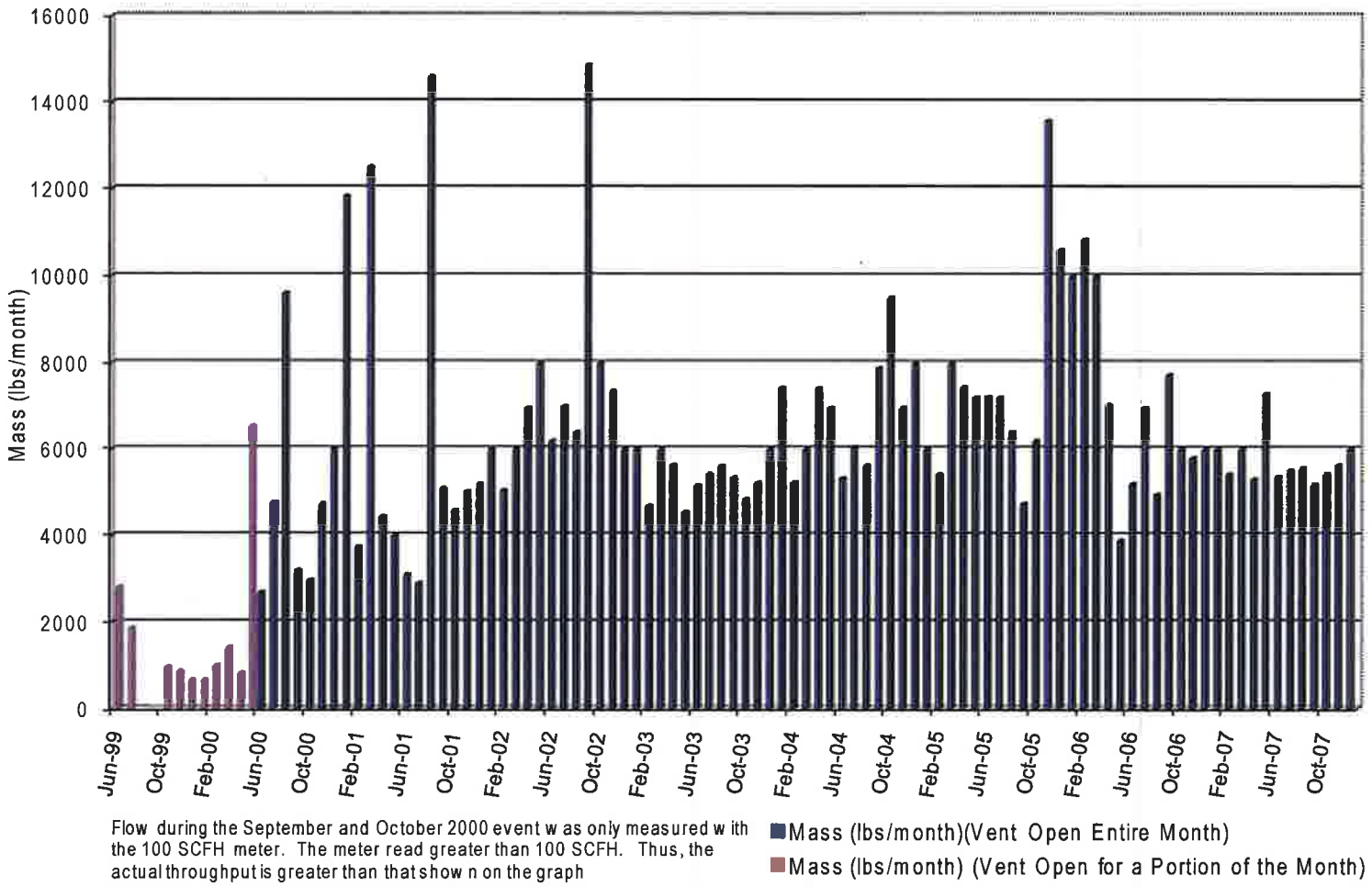
GMSG-116 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-117 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



Flow during the September and October 2000 event w as only measured w ith the 100 SCFH meter. The meter read greater than 100 SCFH. Thus, the actual throughput is greater than that show n on the graph

ARCADIS

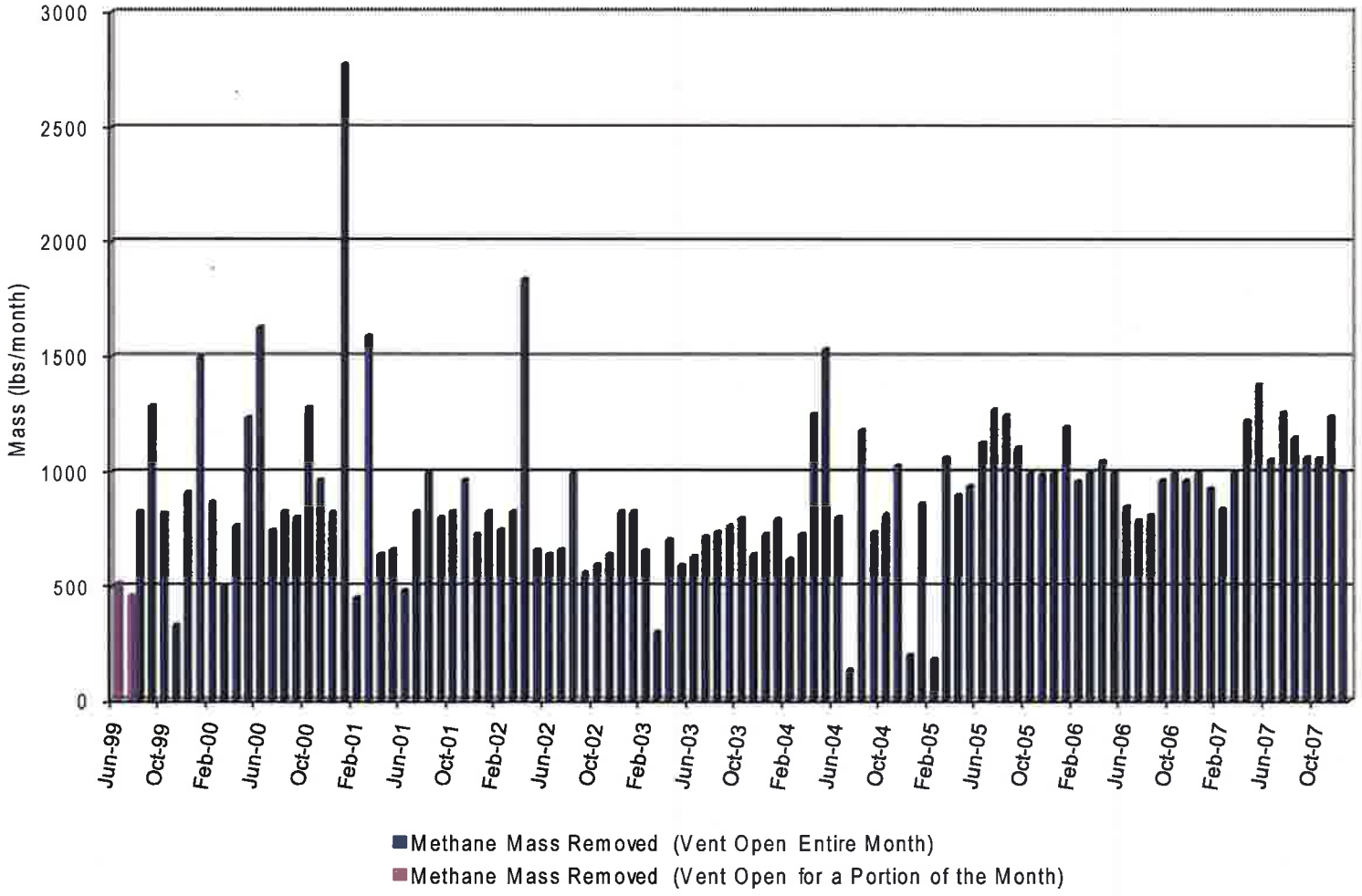
GMSG-117 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-128 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

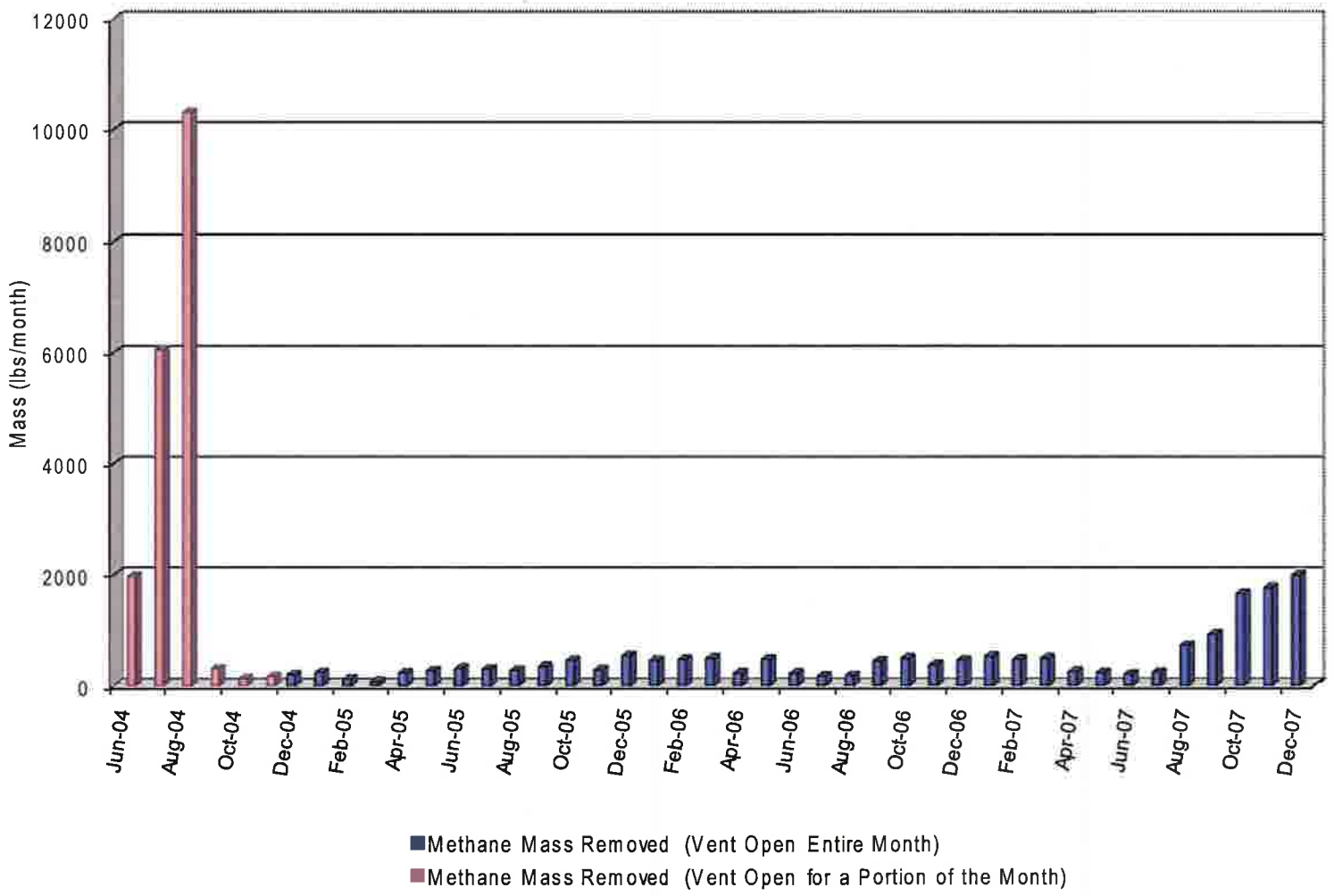
GMSG-128 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-136 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

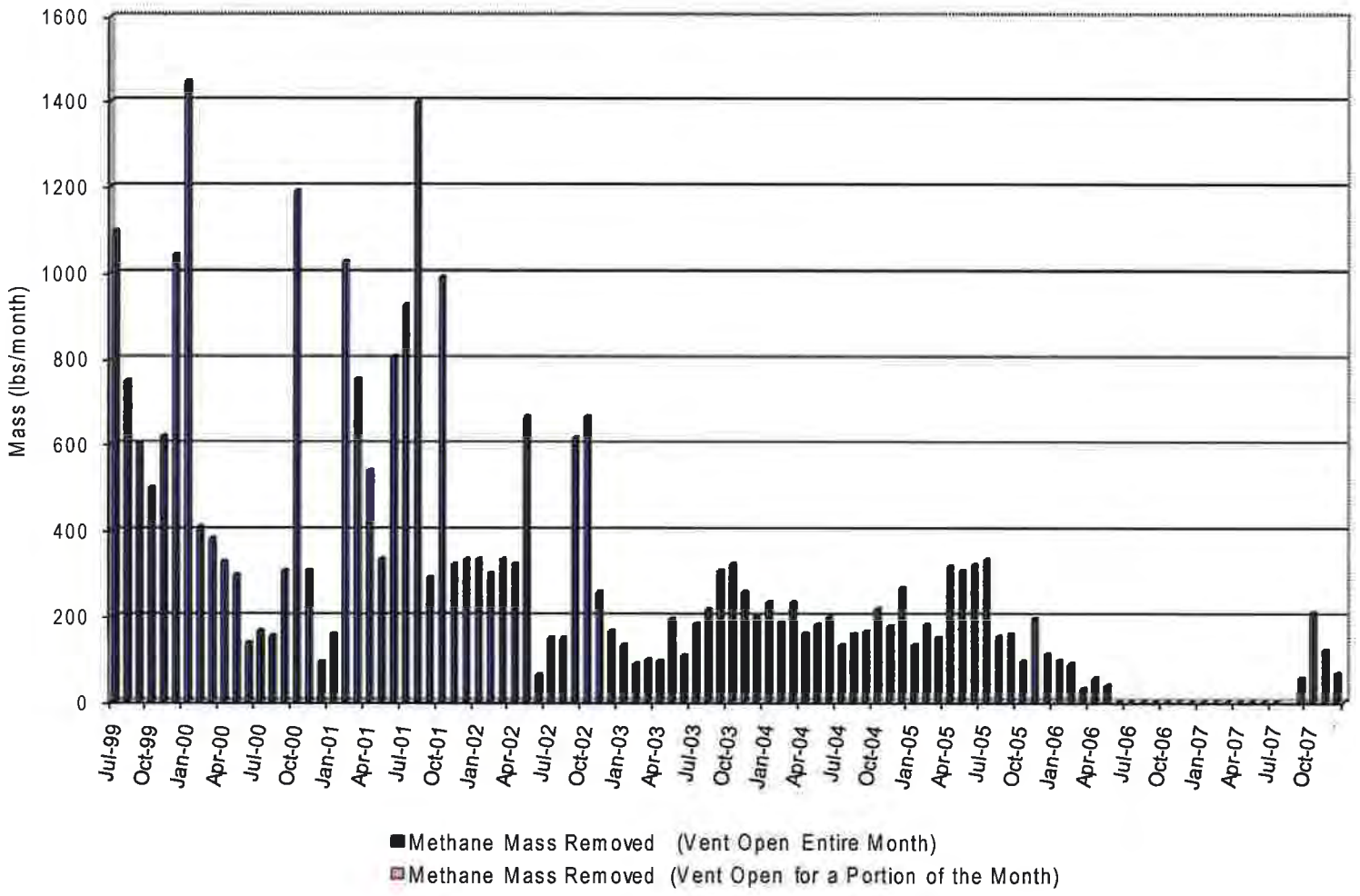
GMSG-136 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-215 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

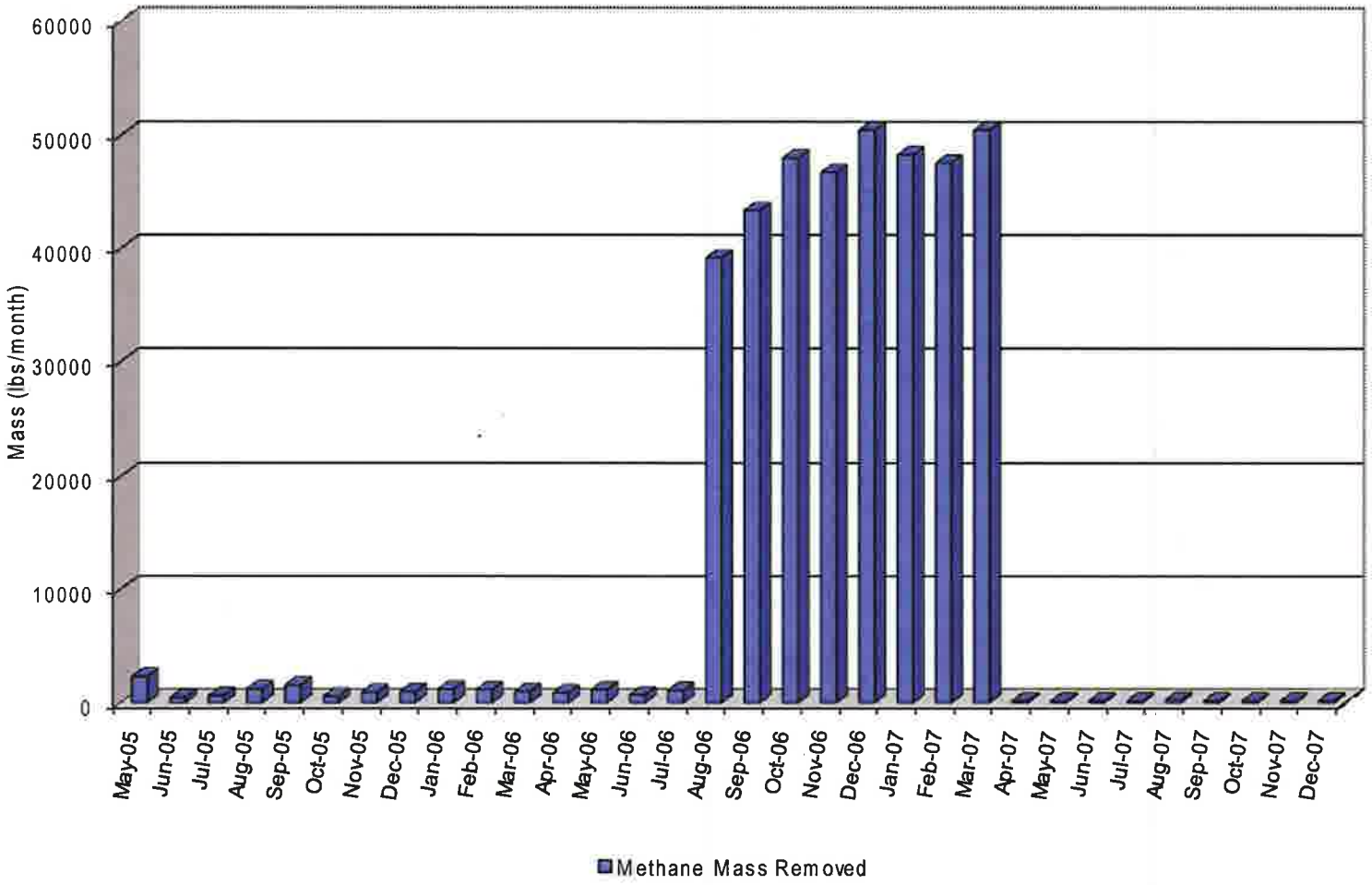
GMSG-215 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMPZB-1 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

GMPZB-1 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

—

The calculations presented in the worksheets determine the gas composition at selected soil gas monitoring probes in the General Study Area evalute are used to evaluate the biological generation and degradation of methane at these selected probes.

Calculations:

1. The typical atmospheric gas concentrations of Kingsford, Michigan are first determined by averaging soil gas measurements taken when no methane was present.

    Average Concentration = (Concentration at GM-4B on 8/26/99 + Concentration at GM-19 on 8/26/99) / 2

2. The mass of a gas components at times when biological activity is occurring is calculated.

Because biological reactions can generate or consume gas components, and because the laboratory determines gas composition on a % by Volume basis, to accurately calculate the mass of gas components, the calculation must account for either the generation or consumption or gases. This is done by calculating the mass of the various gas components relative to a constant mass of Argon. Argon is an inert gas that is not generated or consumed by biological reactions. The % by volume of Argon in a sample will decrease due to dilution if gas is being biologically generated. Conversely, the % by volume of Argon in a sample will increase due to concentration if gas is being biologically consumed. To normalize the mass of other gases relativeto a constant mass of Argon, the Argon Dilution Ratio is calculated.

Argon Dilution Ratio = % Argon in Sample / % Argon in Normal Atmosphere in Kingsford, Michigan (0.965%)

The normalized mass of the other gas components is then calculated as follows:

Normalized Mass = (% Component in sample / 100) * Density of Component / Argon Dilution Ratio

3. The mass ratio of carbon dioxide to methane is calculated.

    Mass Ratio = normalized mass of carbon dioxide in sample / mass of methane

Normal Atmospheric Air in Kingsford

Density of gases @ 60 degrees F and 1 atm		Formula Weight	
Nitrogen	1.18 g/l	28.02	g/mole of N2
Oxygen	1.35 g/l	32	g/mole of O2
Carbon Dioxide	1.86 g/l	44.01	g/mole of CO2
Argon	1.69 g/l	39.95	g/mole of Ar
Methane	0.68 g/l	16.04	g/mole of CH4
Helium	0.17 g/l	4	g/mole He

	% by Volume on 8/26/98		Average
Gas Component	GMSG-4B	GMSG-19	% by Volume
Nitrogen	77.32	77.25	77.285
Oxygen	21.67	21.73	21.7
Carbon Dioxide	0.04	0.04	0.04
Argon	0.96	0.97	0.965
Methane	0	0	0
Helium	0.01	0.008	0.009
Sum	100	99.998	99.999

GM-2A Analysis

Density of gases @ 60 degrees F and 1 atm		Formula Weight	
Nitrogen	1.18 g/l	28.02	g/mole of N2
Oxygen	1.35 g/l	32	g/mole of O2
Carbon Dioxide	1.86 g/l	44.01	g/mole of CO2
Argon	1.69 g/l	39.95	g/mole of Ar
Methane	0.68 g/l	16.04	g/mole of CH4
Helium	0.17 g/l	4	g/mole He

	% by Volume						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Argon Dilution Ratio
08/05/98	70.1	8.01	1.36	0.91	19.62	0.0036	0.94
8/26/98 Average	77.285	21.7	0.04	0.965000	0.000000	0.009	1.00
08/27/98	77.43	21.55	0.07	0.95	0	0.0043	0.98
08/28/98	78.09	19.64	1.21	0.96	0.095	0.0061	0.99
08/30/98	77.77	19.59	1.47	1	0.16	0.0073	1.04
09/02/98	78.59	18.72	1.53	0.97	0.18	0.012	1.01
09/09/98	78.44	18.63	1.96	0.97	0	0.0036	1.01
09/23/98	79.12	17.6	2.06	1	0.22	0.0024	1.04
09/28/98	79.83	15.9	2.27	1.04	0.96	0.0035	1.08
10/07/98	77.82	20.8	0.33	0.97	0.081	0.0024	1.01
10/14/98	77.43	21.36	0.24	0.96	0	0.007	0.99
10/27/98	79.22	17.89	1.89	0.98	0.015	0.0036	1.02
11/17/98	77.22	21.77	0.05	0.96	0	0.0035	0.99
12/16/98	79.97	16.76	2.17	1	0.093	0.004	1.04
01/20/99	79.05	19.57	0.37	1	0.0073	0.0015	1.04
02/10/99	80.73	16.13	2.11	1.03	0.0014	0	1.07
03/13/99	80.17	17.08	1.69	1.04	0	0.02	1.08
07/26/99	85.17	11.3	2.5	1.03	0	0	1.07
10/09/99	90.39	4.83	3.62	1.16	0	0	1.20
Landfill	0	0	50	0	50	0	1.00
WWTP Digester	0	0	30	0	70	0	1.00
GMSB-2A Theoretical							

GM-2A Analysis

	Normalized Mass based on Argon Dilution Ratio (g)						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Mass Ratio $CO_2 : CH_4$
08/05/98	0.878868	0.114689	0.026781	0.016267	0.140812	0.000006	0.19
08/26/98	0.9137239	0.2929958	0.0007428	0.016267	0.000000	1.519E-05	
08/27/98	0.929893	0.295565	0.001320	0.016267	0.000000	0.000007	
08/28/98	0.928050	0.266563	0.022586	0.016267	0.000646	0.000010	34.95
08/30/98	0.887277	0.255249	0.026342	0.016267	0.001045	0.000012	25.21
09/02/98	0.924363	0.251457	0.028265	0.016267	0.001212	0.000020	23.32
09/09/98	0.922599	0.250248	0.036209	0.016267	0.000000	0.000006	
09/23/98	0.902679	0.229320	0.036915	0.016267	0.001437	0.000004	25.69
09/28/98	0.875749	0.199202	0.039113	0.016267	0.006029	0.000005	6.49
10/07/98	0.915307	0.279396	0.006096	0.016267	0.000545	0.000004	11.18
10/14/98	0.920206	0.289907	0.004480	0.016267	0.000000	0.000012	
10/27/98	0.922265	0.237856	0.034559	0.016267	0.000100	0.000006	345.71
11/17/98	0.917710	0.295472	0.000933	0.016267	0.000000	0.000006	
12/16/98	0.912377	0.218375	0.038886	0.016267	0.000607	0.000007	64.02
01/20/99	0.901880	0.254988	0.006630	0.016267	0.000048	0.000002	139.07
02/10/99	0.894221	0.204045	0.036709	0.016267	0.000009	0.000000	4135.25
03/13/99	0.879479	0.213985	0.029119	0.016267	0.000000	0.000031	
07/26/99	0.943401	0.142945	0.043494	0.016267	0.000000	0.000000	
10/09/99	0.889016	0.054252	0.055922	0.016267	0.000000	0.000000	
Landfill	0.000000	0.000000	0.928481	0.000000	0.338397	0.000000	2.74
WWTP Dige	0.000000	0.000000	0.557089	0.000000	0.473755	0.000000	1.18
GMSB-2A Theoretical			5.028000		1.269000		3.96

ARCADIS GERAGHTY&MILLER

GMSG-4B Analysis

Density of gases @ 60 degrees F and 1 atm		Formula Weight	
Nitrogen	1.18 g/l	28.02	g/mole of N2
Oxygen	1.35 g/l	32	g/mole of O2
Carbon Dioxide	1.86 g/l	44.01	g/mole of CO2
Argon	1.69 g/l	39.95	g/mole of Ar
Methane	0.68 g/l	16.04	g/mole of CH4
Helium	0.17 g/l	4	g/mole He

	% by Volume						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Argon Dilution Ratio
08/05/98	62.26	5.09	0.3	0.82	31.53	0.0016	0.85
8/26/98 Average	77.285	21.7	0.04	0.965000	0.000000	0.009	1.00
08/27/98	80.05	17.34	0.05	0.99	1.56	0.0055	1.03
08/28/98	82.1	14.24	0.06	1.02	2.57	0.0081	1.06
08/30/98	84.53	10.91	0.07	1.06	3.42	0.0077	1.10
09/02/98	85.69	9.44	0.15	1.07	3.64	0.0072	1.11
09/09/98	89.14	5.76	0.29	1.14	3.66	0.011	1.18
09/23/98	89.07	7.29	0.44	1.15	2.05	0	1.19
09/28/98	92.7	2.87	1.01	1.18	2.24	0.0047	1.22
10/07/98	82.88	15.18	0.39	1.05	0.5	0.0017	1.09
10/14/98	84.43	13.71	0.43	1.05	0.37	0.0055	1.09
10/27/98	95.8	0.43	2.07	1.21	0.48	0.0056	1.25
11/17/98	94.95	1.32	2.27	1.19	0.27	0.004	1.23
12/16/98	95.05	0.88	2.61	1.2	0.26	0.0043	1.24
01/20/99	94.34	1.6	2.81	1.22	0.026	0.0023	1.26
02/10/99	93.9	2.02	2.86	1.22	0.0016	0	1.26
03/13/99	93.07	2.82	2.89	1.22	0.0015	0.002	1.26
07/26/99	94.76	0.23	3.56	1.15	0.3	0	1.19
10/09/99	92.03	0.058	2.92	1.11	3.88	0	1.15
Landfill	0	0	50	0	50	0	1.00
WWTP Digester	0	0	30	0	70	0	1.00
GMSB-2A Theoretical							

GMSG-4B Analysis

	Normalized Mass based on Argon Dilution Ratio (g)						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Mass Ratio $CO_2 : CH_4$
08/05/98	0.866248	0.080878	0.006556	0.016267	0.251127	0.000003	0.03
08/26/98	0.9137239	0.2929958	0.0007428	0.016267	0.000000	1.519E-05	
08/27/98	0.922515	0.228214	0.000905	0.016267	0.010291	0.000009	0.09
08/28/98	0.918312	0.181903	0.001054	0.016267	0.016456	0.000013	0.06
08/30/98	0.909813	0.134106	0.001183	0.016267	0.021072	0.000012	0.06
09/02/98	0.913679	0.114952	0.002512	0.016267	0.022218	0.000011	0.11
09/09/98	0.892103	0.065833	0.004559	0.016267	0.020968	0.000016	0.22
09/23/98	0.883651	0.082596	0.006856	0.016267	0.011642	0.000000	0.59
09/28/98	0.896282	0.031690	0.015338	0.016267	0.012398	0.000006	1.24
10/07/98	0.900549	0.188370	0.006656	0.016267	0.003110	0.000003	2.14
10/14/98	0.917391	0.170129	0.007339	0.016267	0.002301	0.000009	3.19
10/27/98	0.903290	0.004630	0.030656	0.016267	0.002591	0.000008	11.83
11/17/98	0.910322	0.014453	0.034183	0.016267	0.001482	0.000005	23.07
12/16/98	0.903687	0.009555	0.038975	0.016267	0.001415	0.000006	27.54
01/20/99	0.882233	0.017088	0.041274	0.016267	0.000139	0.000003	296.54
02/10/99	0.878118	0.021573	0.042008	0.016267	0.000009	0.000000	4904.48
03/13/99	0.870356	0.030117	0.042449	0.016267	0.000008	0.000003	5286.32
07/26/99	0.940101	0.002606	0.055473	0.016267	0.001704	0.000000	32.56
10/09/99	0.945918	0.000681	0.047140	0.016267	0.022829	0.000000	2.06
Landfill	0.000000	0.000000	0.928481	0.000000	0.338397	0.000000	2.74
WWTP Dige	0.000000	0.000000	0.557089	0.000000	0.473755	0.000000	1.18
GMSB-2A Theoretical			5.028000		1.269000		3.96

ARCADIS GERAGHTY&MILLER

GMSG-19 Analysis

Density of gases @ 60 degrees F and 1 atm		Formula Weight	
Nitrogen	1.18 g/l	28.02	g/mole of N2
Oxygen	1.35 g/l	32	g/mole of O2
Carbon Dioxide	1.86 g/l	44.01	g/mole of CO2
Argon	1.69 g/l	39.95	g/mole of Ar
Methane	0.68 g/l	16.04	g/mole of CH4
Helium	0.17 g/l	4	g/mole He

	% by Volume						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Argon Dilution Ratio
08/05/98	75.69	1.88	1.32	0.98	20.12	0.006	1.02
8/26/98 Average	77.285	21.7	0.04	0.965000	0.000000	0.009	1.00
08/27/98	77.83	20.9	0.29	0.96	0.014	0.0046	0.99
08/28/98	77.62	21.12	0.29	0.96	0.0097	0.0042	0.99
08/30/98	77.75	20.92	0.37	0.96	0	0.0039	0.99
09/02/98	77.74	20.89	0.39	0.97	0.0016	0.0066	1.01
09/09/98	77.59	20.67	0.77	0.97	0	0.0041	1.01
09/23/98	77.65	20.48	0.9	0.97	0	0.0031	1.01
09/28/98	77.49	20.6	1.03	0.98	0	0.0031	1.02
10/07/98	77.72	20.3	1	0.97	0.012	0	1.01
10/14/98	77.67	20.98	0.31	1.04	0	0.0046	1.08
10/27/98	78.26	19.54	1.23	0.97	0	0.005	1.01
11/17/98	78.38	19.26	1.37	0.98	0	0.012	1.02
12/16/98	78.96	18.54	1.52	0.98	0	0.0041	1.02
01/20/99	80.01	17.21	1.76	1.02	0	0.0018	1.06
Landfill	0	0	50	0	50	0	1.00
WWTP Digester	0	0	30	0	70	0	1.00
GMSB-2A Theoretical							

GMSG-19 Analysis

	Normalized Mass based on Argon Dilution Ratio (g)						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Mass Ratio $CO_2 : CH_4$
08/05/98	0.881170	0.024995	0.024137	0.016267	0.134087	0.000010	0.18
08/26/98	0.9137239	0.2929958	0.0007428	0.016267	0.000000	1.519E-05	
08/27/98	0.924960	0.283664	0.005413	0.016267	0.000095	0.000008	56.84
08/28/98	0.922464	0.286650	0.005413	0.016267	0.000066	0.000007	82.03
08/30/98	0.924009	0.283935	0.006907	0.016267	0.000000	0.000007	
09/02/98	0.914366	0.280605	0.007205	0.016267	0.000011	0.000011	668.79
09/09/98	0.912601	0.277650	0.014225	0.016267	0.000000	0.000007	
09/23/98	0.913307	0.275098	0.016627	0.016267	0.000000	0.000005	
09/28/98	0.902125	0.273886	0.018834	0.016267	0.000000	0.000005	
10/07/98	0.914130	0.272680	0.018474	0.016267	0.000081	0.000000	228.65
10/14/98	0.852054	0.262846	0.005341	0.016267	0.000000	0.000007	
10/27/98	0.920482	0.262471	0.022723	0.016267	0.000000	0.000008	
11/17/98	0.912486	0.256070	0.025051	0.016267	0.000000	0.000020	
12/16/98	0.919238	0.246498	0.027794	0.016267	0.000000	0.000007	
01/20/99	0.894934	0.219841	0.030920	0.016267	0.000000	0.000003	
Landfill	0.000000	0.000000	0.928481	0.000000	0.338397	0.000000	2.74
WWTP Dige	0.000000	0.000000	0.557089	0.000000	0.473755	0.000000	1.18
GMSB-2A Theoretical			5.028000		1.269000		3.96

GMSG-20 Analysis

Density of gases @ 60 degrees F and 1 atm		Formula Weight	
Nitrogen	1.18 g/l	28.02	g/mole of N2
Oxygen	1.35 g/l	32	g/mole of O2
Carbon Dioxide	1.86 g/l	44.01	g/mole of CO2
Argon	1.69 g/l	39.95	g/mole of Ar
Methane	0.68 g/l	16.04	g/mole of CH4
Helium	0.17 g/l	4	g/mole He

	% by Volume						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Argon Dilution Ratio
8/5/99 (Landtec)	0	0	0.1	0.800000	63.6	0	0.833/5/
8/26/98 Average	77.285	21.7	0.04	0.965000	0	0.009	1.00
02/10/99	76.81	0.079	1.81	1	20.3	0.0012	1.04
03/13/99	78.26	4.59	1.21	1.03	14.91	0.0013	1.07
05/10/99	82.2	0.056	2.64	1.1	14	0	1.14
07/26/99	76.44	0.2	1.85	0.95	20.56	0	0.98
10/09/99	64.69	0.037	1.55	0.85	32.87	0	0.88
Landfill	0	0	50	0	50	0	1.00
WWTP Digester	0	0	30	0	70	0	1.00
GMSB-2A Theoretical							

GMSG-20 Analysis

	Normalized Mass based on Argon Dilution Ratio (g)						Mass Ratio
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	$CO_2 : CH_4$
'99 (Landtec)	0.000000	0.000000	0.002240	0.016267	0.519219	0.000000	0.00
08/26/98	0.9137239	0.2929958	0.0007428	0.016267	0.000000	1.519E-05	
02/10/99	0.876324	0.001029	0.032435	0.016267	0.132580	0.000002	0.24
03/13/99	0.866862	0.058064	0.021051	0.016267	0.094542	0.000002	0.22
05/10/99	0.852563	0.000663	0.043007	0.016267	0.083123	0.000000	0.52
07/26/99	0.918003	0.002743	0.034896	0.016267	0.141346	0.000000	0.25
10/09/99	0.868291	0.000567	0.032677	0.016267	0.252560	0.000000	0.13
Landfill	0.000000	0.000000	0.928481	0.000000	0.338397	0.000000	2.74
WWTP Dige	0.000000	0.000000	0.557089	0.000000	0.473755	0.000000	1.18
GMSB-2A Theoretical			5.028000		1.269000		3.96

GMSG-118A/B/C

Density of gases @ 60 degrees F and 1 atm		Formula Weight	
Nitrogen	1.18 g/l	28.02	g/mole of N2
Oxygen	1.35 g/l	32	g/mole of O2
Carbon Dioxide	1.86 g/l	44.01	g/mole of CO2
Argon	1.69 g/l	39.95	g/mole of Ar
Methane	0.68 g/l	16.04	g/mole of CH4
Helium	0.17 g/l	4	g/mole He

	% by Volume						
Date	Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Argon Dilution Ratio
Average	77.285	21.7	0.04	0.965000	0.000000	0.009	1.00
GMSG-118A 9/16/98	77.76	18.83	2.43	0.98	0	0.0037	1.02
GMSG-118B 9/16/98	79.8	2.03	9.36	1.03	7.78	0.0041	1.07
GMSG-118C 9/16/98	78	0.49	9.84	1	10.67	0	1.04
GMSG-118A 5/10/99	80.15	13.56	5.08	1.06	0.15	0	1.10
GMSG-118B 5/10/99	82.51	2.17	10.36	1.09	3.87	0	1.13
GMSG-118C 5/10/99	80.68	0.33	11.08	1.07	6.84	0	1.11
Landfill	0	0	50	0	50	0	1.00
WWTP Digester	0	0	30	0	70	0	1.00
GMSB-2A Theoretical							

GMSG-118A/B/C

Date	Normalized Mass based on Argon Dilution Ratio (g) Nitrogen	Oxygen	Carbon Dioxide	Argon	Methane	Helium	Mass Ratio CO_2 : CH_4
Average	0.9137239	0.2929958	0.0007428	0.016267	0.000000	1.519E-05	
GMSG-118A 9/16/98	0.905268	0.250353	0.044434	0.016267	0.000000	0.000006	
GMSG-118B 9/16/98	0.883920	0.025680	0.162843	0.016267	0.049332	0.000006	3.30
GMSG-118C 9/16/98	0.889901	0.006384	0.176330	0.016267	0.069686	0.000000	2.53
GMSG-118A 5/10/99	0.862670	0.166680	0.085879	0.016267	0.000924	0.000000	92.92
GMSG-118B 5/10/99	0.863629	0.025940	0.170319	0.016267	0.023188	0.000000	7.35
GMSG-118C 5/10/99	0.860259	0.004018	0.185561	0.016267	0.041750	0.000000	4.44
Landfill	0.000000	0.000000	0.928481	0.000000	0.338397	0.000000	2.74
WWTP Digester	0.000000	0.000000	0.557089	0.000000	0.473755	0.000000	1.18
GMSB-2A Theoretical			5.028000		1.269000		3.96

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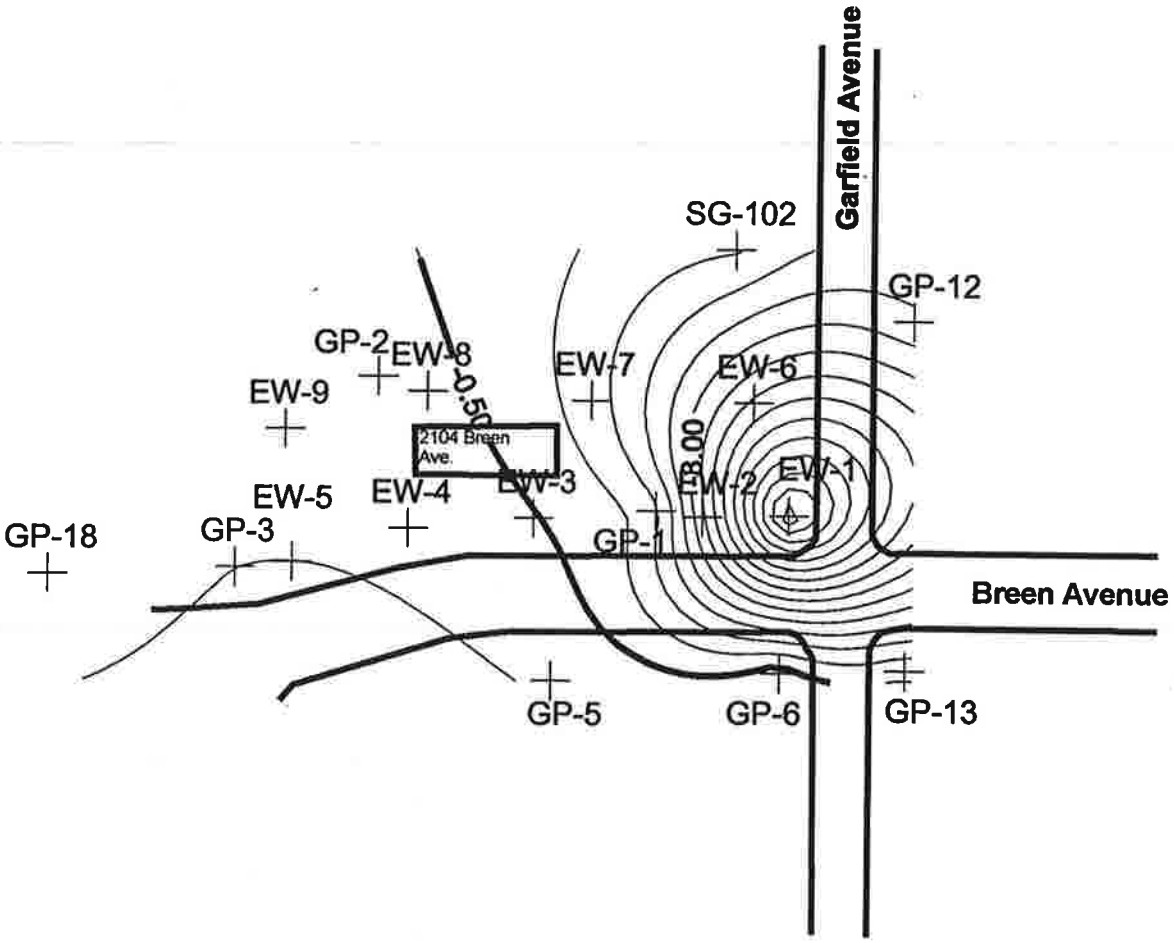
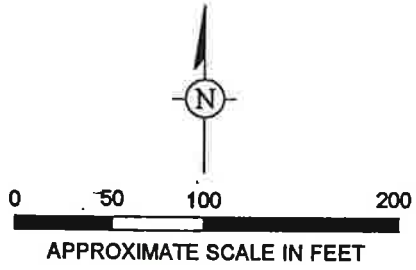


Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-1
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
1

DRAFTER: MA | APPROVED:PMK | CHECKED:PMK | DRAW...: EW1.CDR | FILE NO.: VESTEST | PN: G:PRJ\W0675MN05 | DWG D...: 12OCT98

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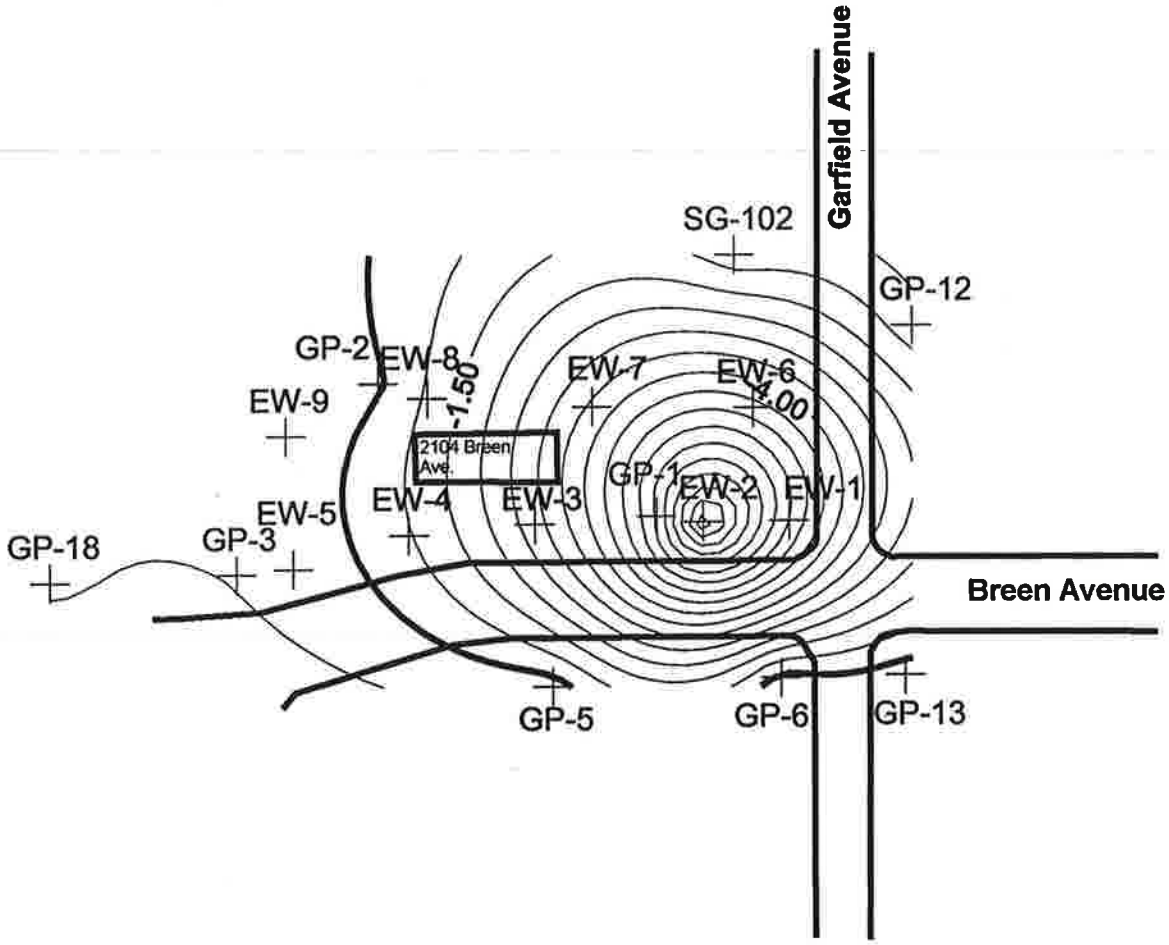
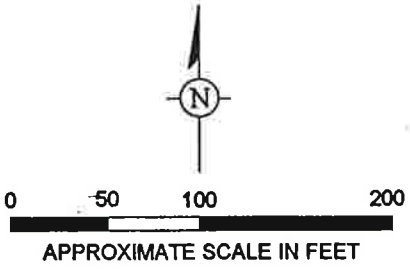


Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-2
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
2

DRAFTER: AKA | APPROVED:PMK | CHECKED:PMK | DRAWING: EW2.CDR | FILE NO.: VESTEST | PN: G:PRJWI06775MN05 | DWG DATE: 12OCT98

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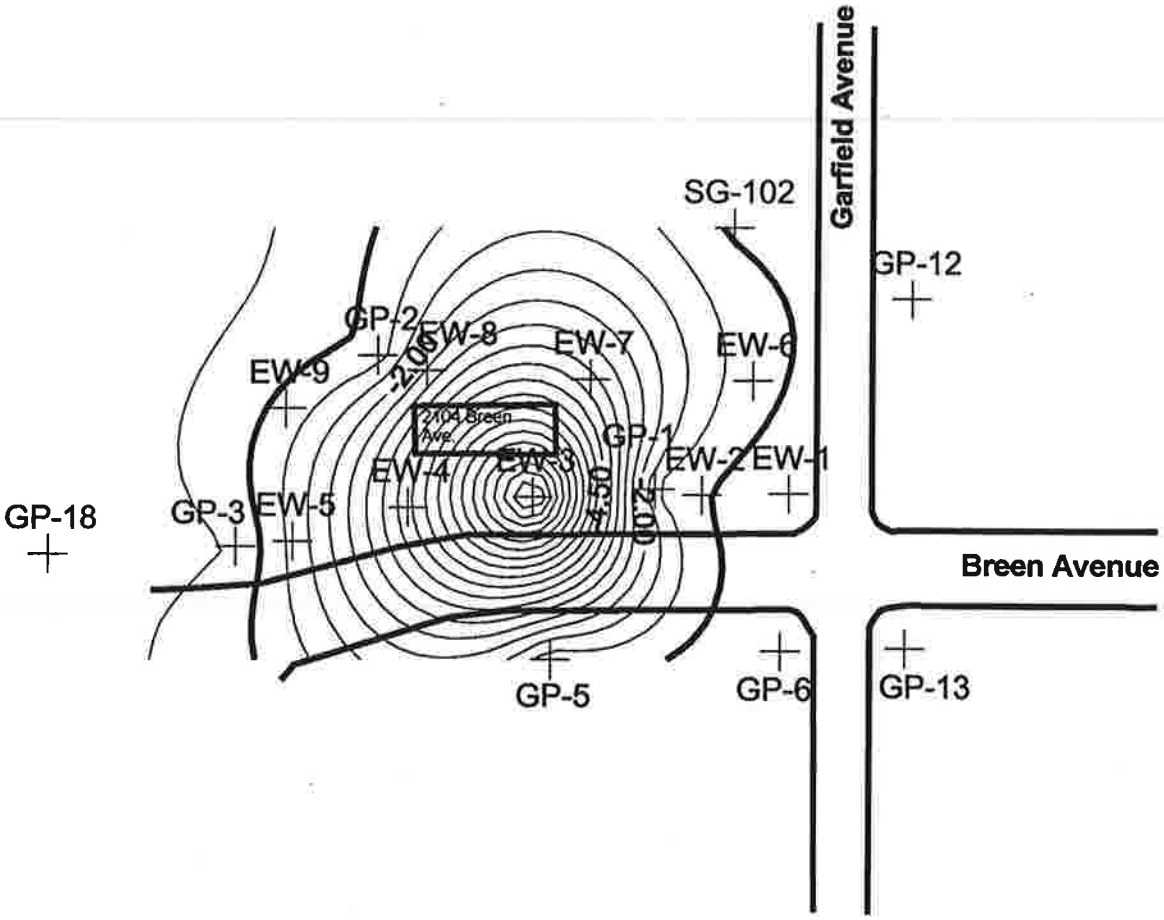
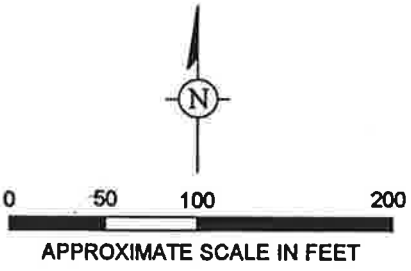


Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-3
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
3

DRAFTER: AKA | APPROVED:PMK | CHECKED:PMK | DRAWING: EW3.CDR | FILE NO.: VESTEST | PN: G:PRJ\W0675\MN05 | DWG DATE: 12OCT98

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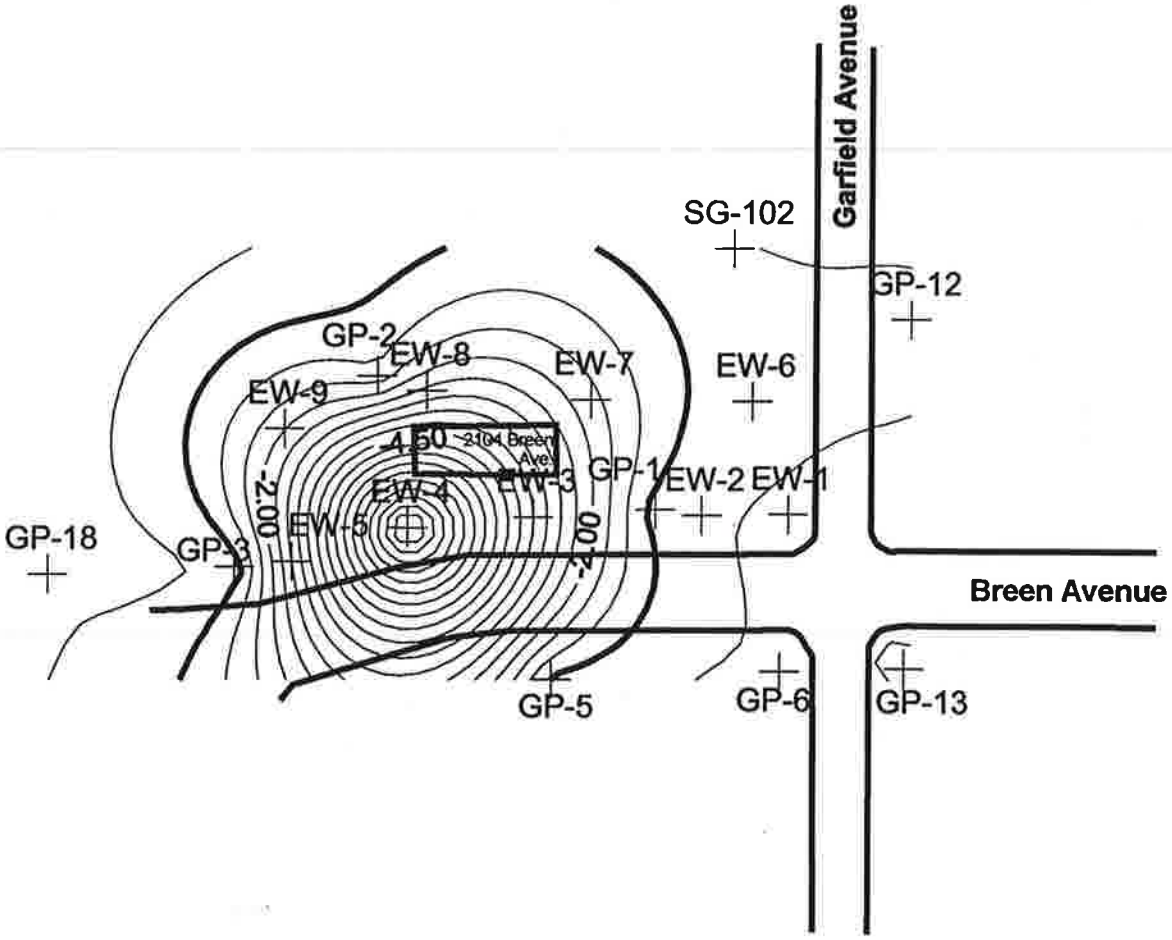
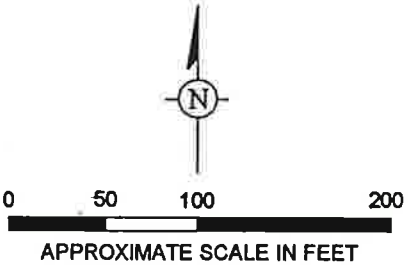


Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



ARCADIS
GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-4
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
4

DRAFTER: AKA | APPROVED:PMK | CHECKED:PMK | DRAWING: EW4.CDR | FILE NO.: VESTEST | PN: G:PRJ\W10675\MN05 | DWG DATE: 12OCT98

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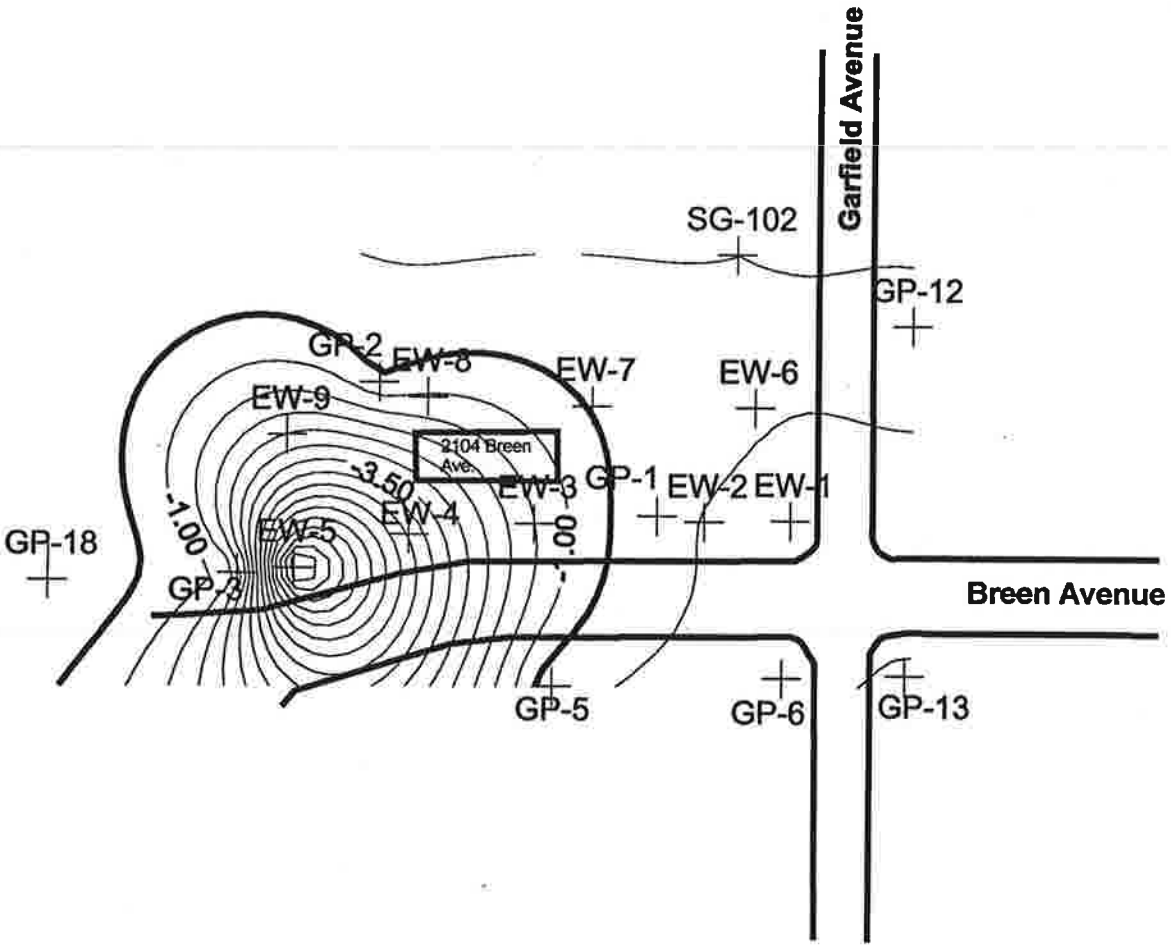
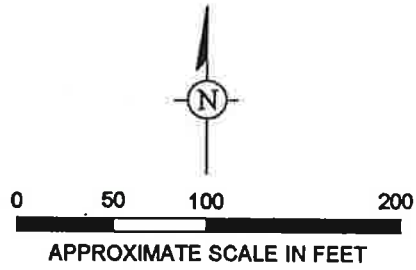


Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-5
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
5

DRAFTER: KA | APPROVED: PMK | CHECKED: PMK | DRAW...: EW5.CDR | FILE NO.: VESTEST | PN: G:PRJ\W0675MN05 | DWG D...: 12OCT98

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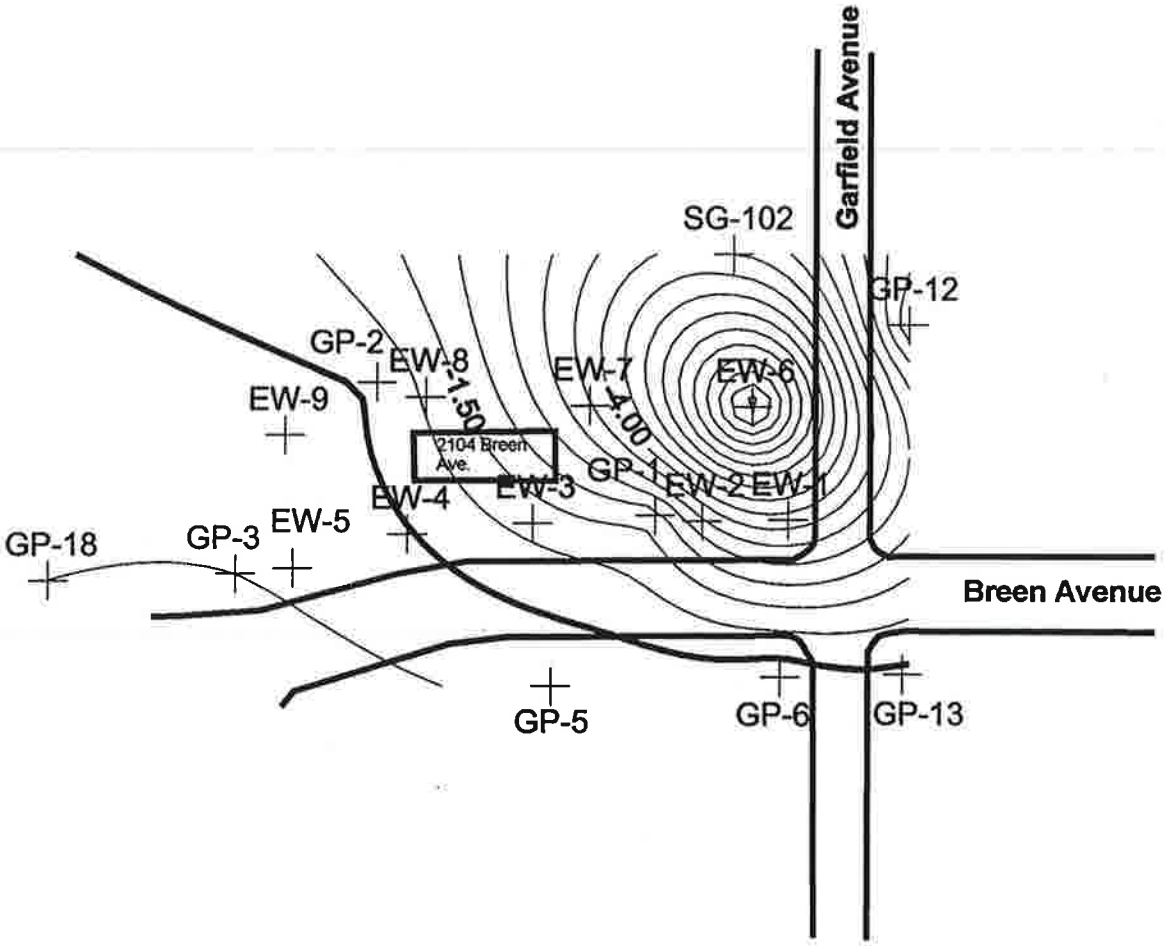
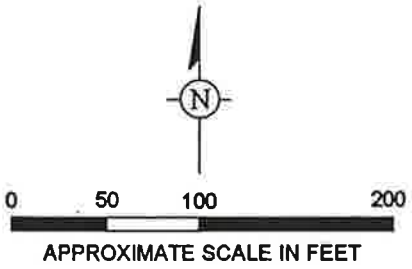


Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



APPROXIMATE SCALE IN FEET

ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-6
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
6

DRAFTER: AKA | APPROVED:PMK | CHECKED:PMK | DRAWING: EW6.CDR | FILE NO.: VESTEST | PN: G:PRJWI0675MN05 | DWG DATE: 12OCT98

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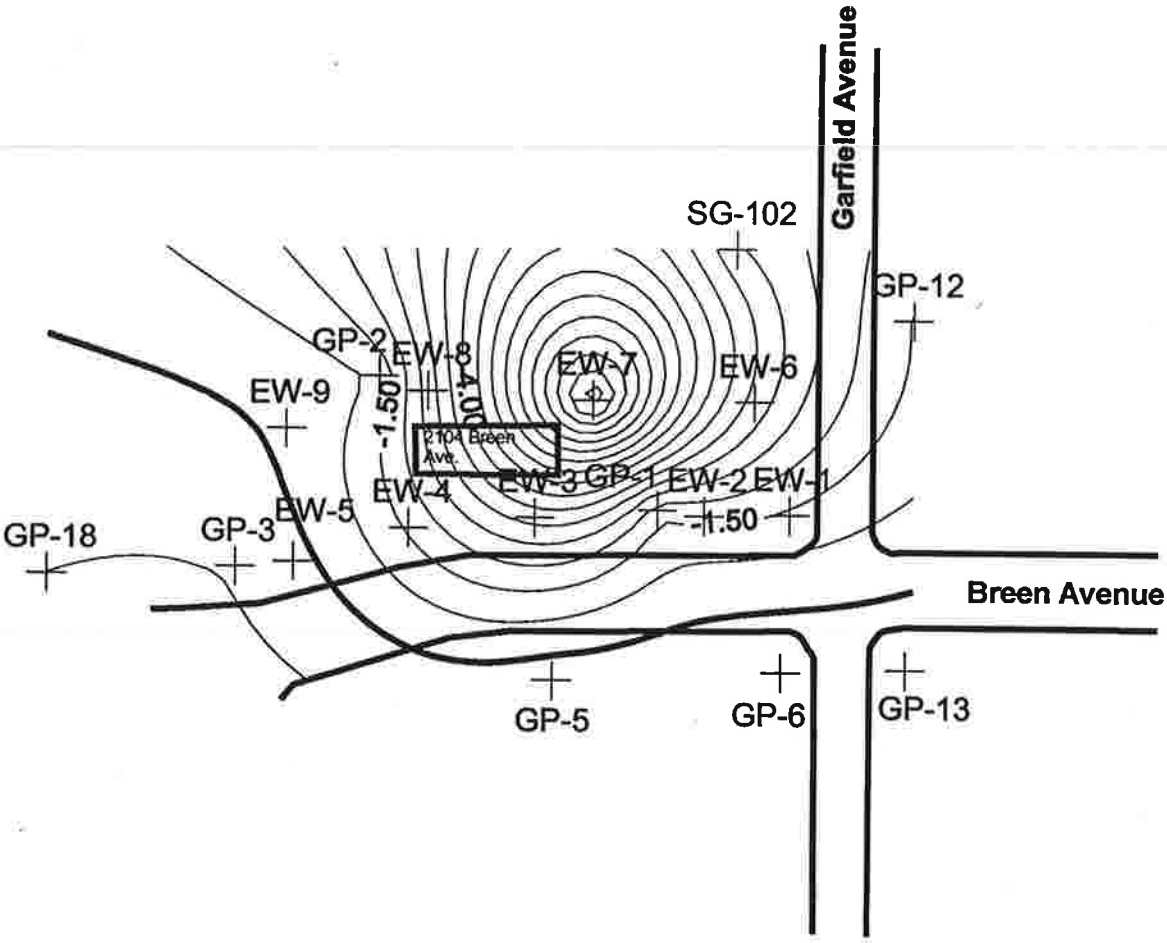
ATTORNEY/CLIENT WORK PRODUCT
FOR SETTLEMENT ONLY



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.

N

0 50 100 200

APPROXIMATE SCALE IN FEET

ARCADIS GERAGHTY & MILLER

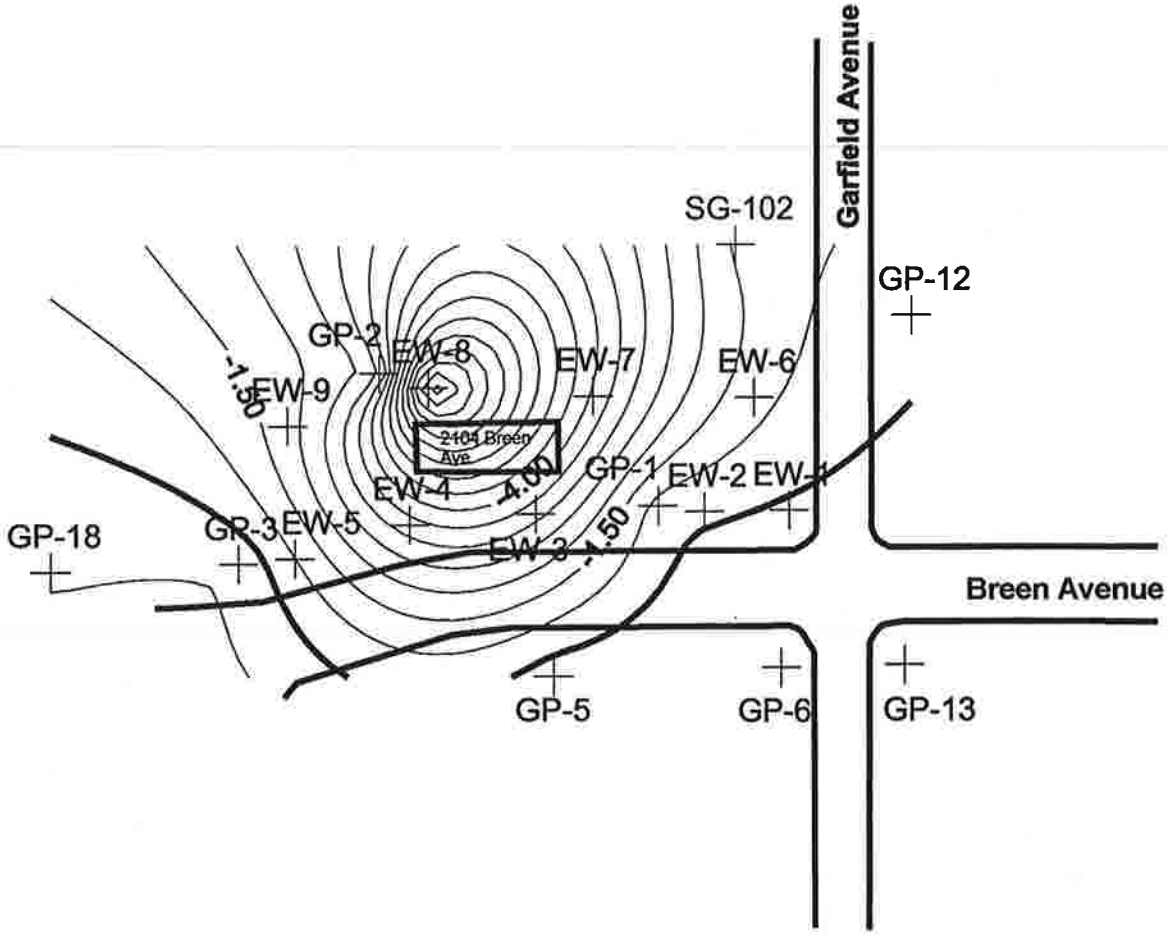
VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-7
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

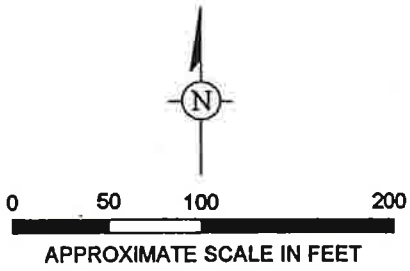
FIGURE
7

DRAFTER: AKA | APPROVED:PMK | CHECKED:PMK | DRAWING: EW7.CDR | FILE NO.: VESTEST | PN: G:PRJ\W10675\MN05 | DWG DATE: 12OCT98

PRIVILEGED AND CONFIDENTIAL
ATTORNEY/CLIENT WORK PRODUCT
FOR SETTLEMENT ONLY



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



ARCADIS
GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-8
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
8

DRAFTER: AKA | APPROVED:PMK | CHECKED:PMK | DRAWING: EW8.CDR | FILE NO.: VESTEST | PN: G:PRJ\WI0675\MN05 | DWG DATE: 12OCT98

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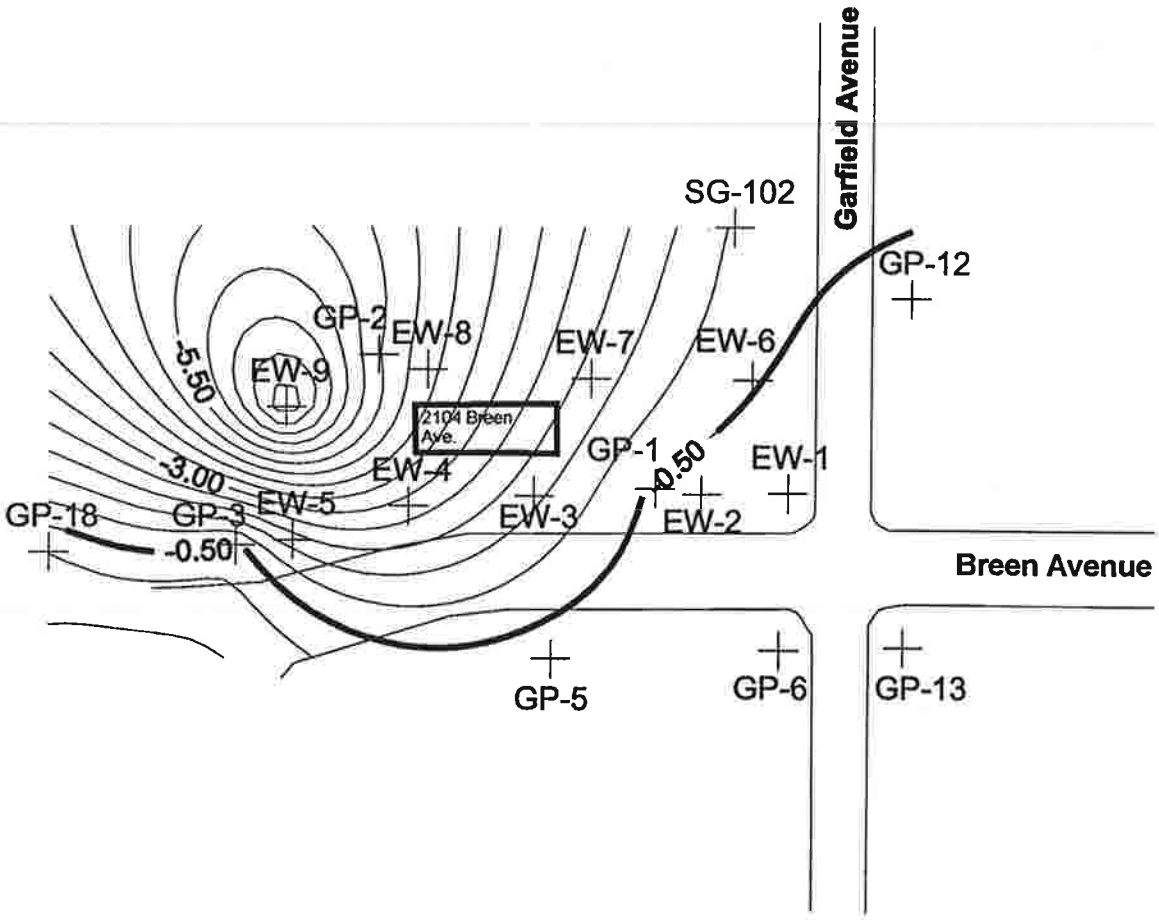
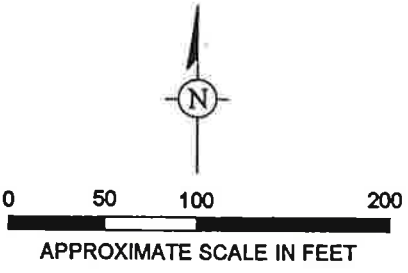
ATTORNEY/CLIENT WORK PRODUCT
FOR SETTLEMENT ONLY

DRAFTER: AKA
APPROVED:PMK
CHECKED:PMK
DRAWING: EW9.CDR
FILE NO.: VESTEST
PN: G:PRJWI0675MN05
DWG DATE: 12OCT98



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Probes SG-106, SG-107, SG-109, GP-7, GP-8 and GP-20 were not used for pressure contours due to inappropriate screen depths.



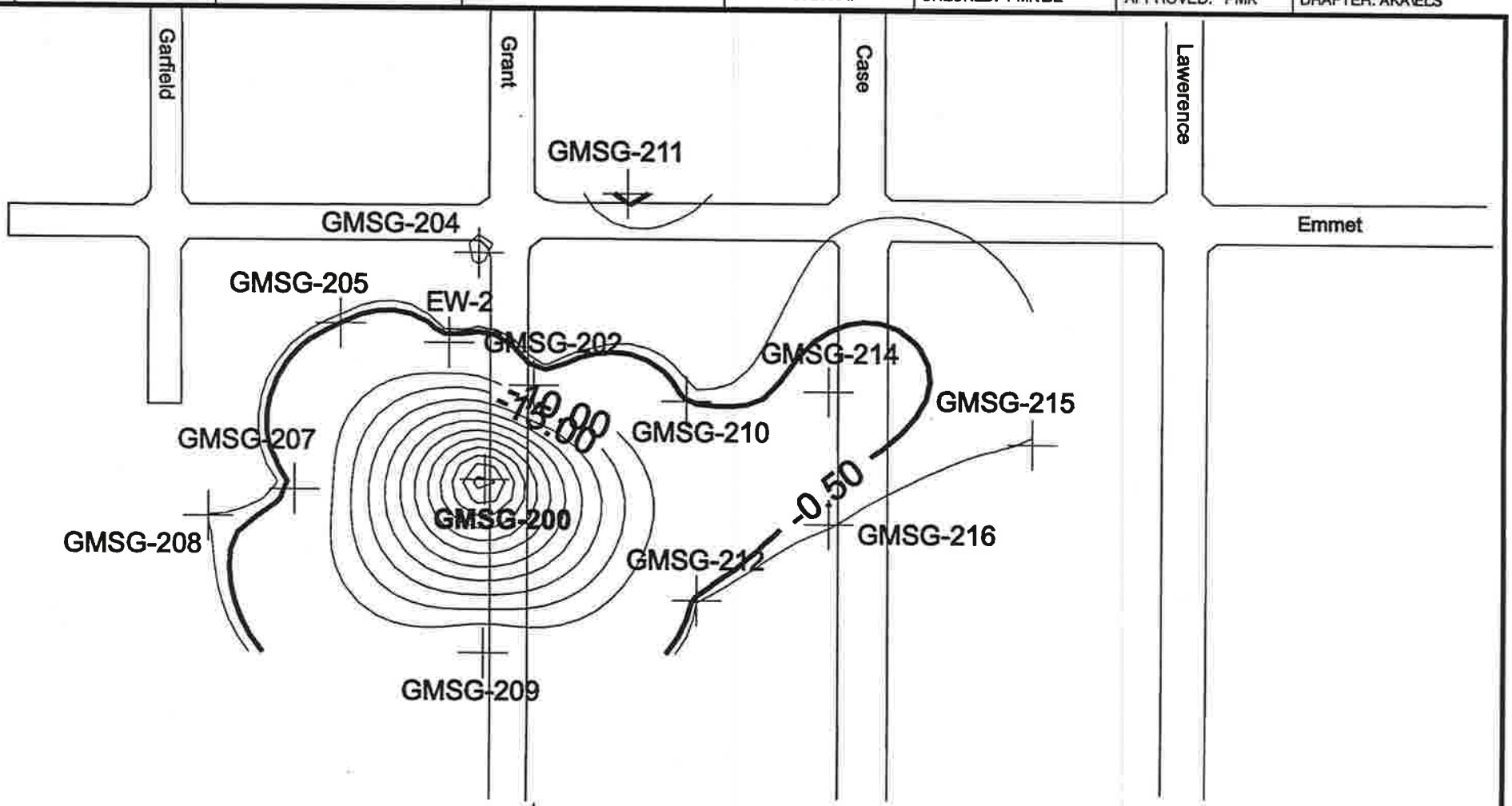
ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF EW-9
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROJECT
KINGSFORD, MICHIGAN

FIGURE
9

DWG DATE: 01MAR00	PN: FORD\WI0637\KINGSFORD	FILE NO.: GRAPHICS\APPENDIX4	DRAWING: 200.AI	CHECKED: PMK\BE	APPROVED: PMK	DRAFTER: AKA\ELS



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Wells GM-24A, GM-24B, and GM-24C were not used for pressure contours because they were unaffected by all tests.

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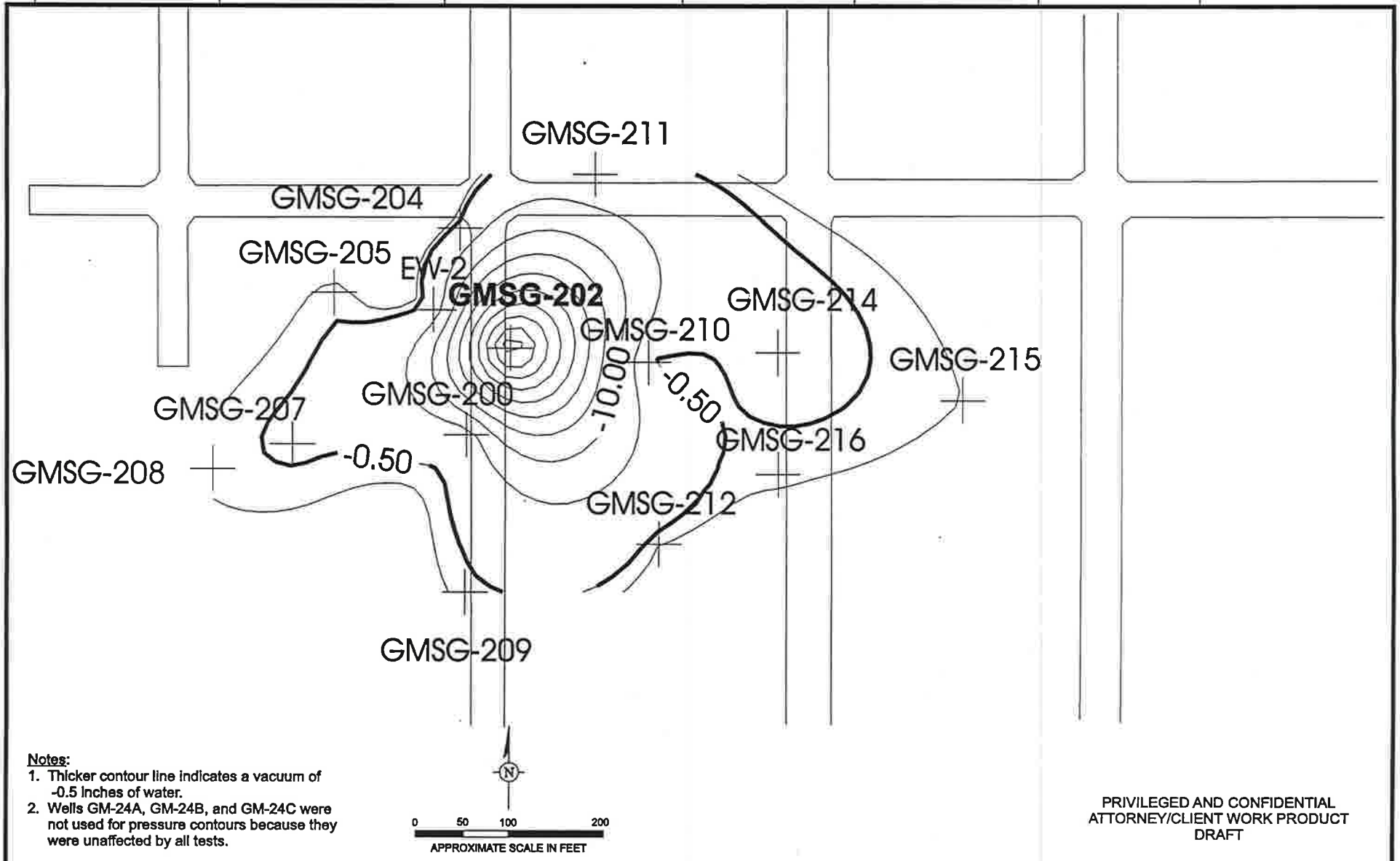
ARCADIS
GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF GMSG-200
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROOJECT
KINGSFORD, MICHIGAN

FIGURE
1

DWG DATE: 01MAR00	PN: FORD\WI0637\KINGSFORD	FILE NO.: GRAPHICS\APPENDIX4	DRAWING: 202.AI	CHECKED: PMK\BE	APPROVED: PMK	DRAFTER: AKA\ELS



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Wells GM-24A, GM-24B, and GM-24C were not used for pressure contours because they were unaffected by all tests.

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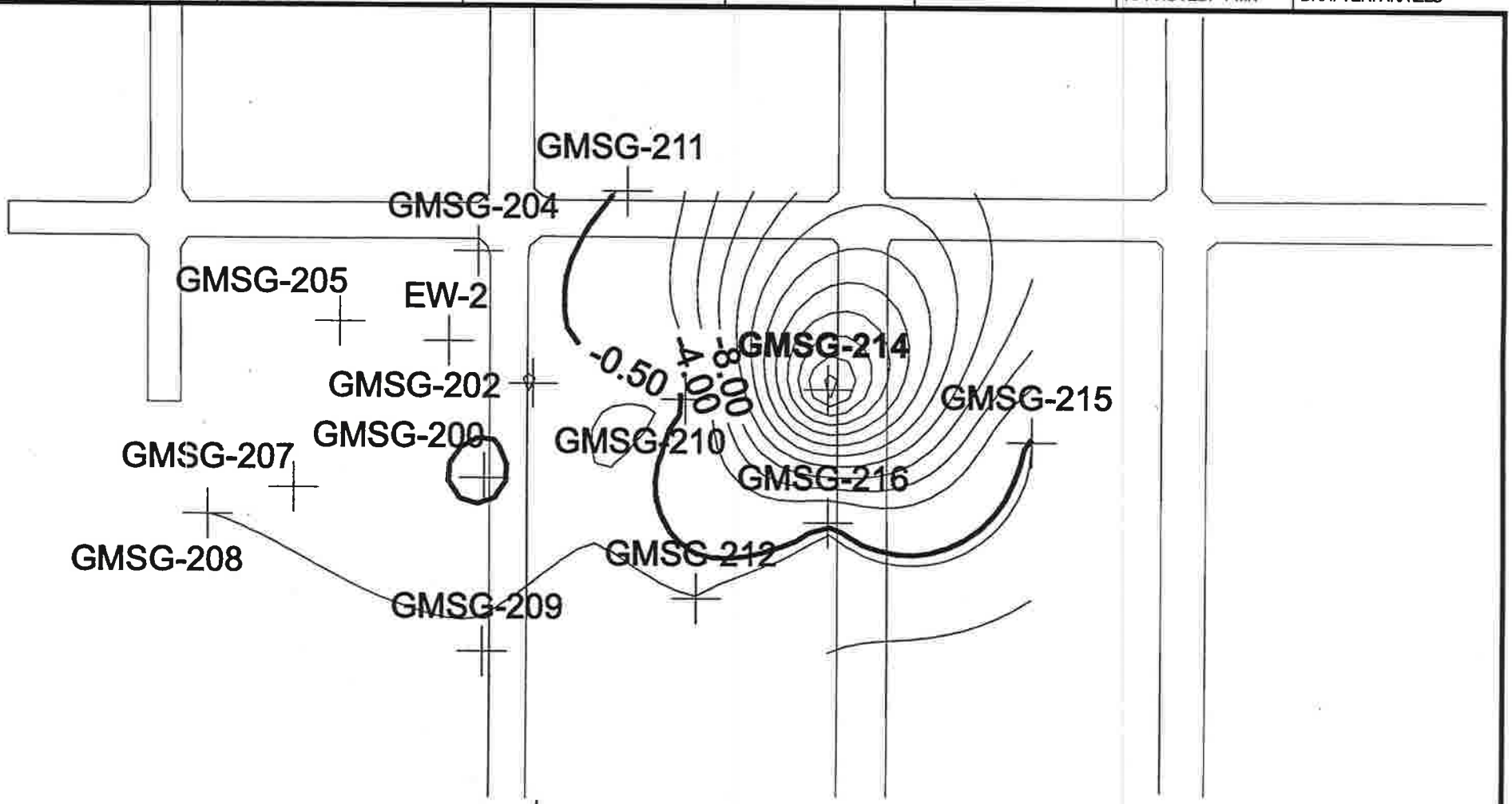
ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF GMSG-202
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROOJECT
KINGSFORD, MICHIGAN

FIGURE
2

DWG DATE: 01MAR00	PN: FORD\WI0637\KINGSFORD	FILE NO.: GRAPHICS\APPENDIX4	DRAWING: 214.AI	CHECKED: PMK\BE	APPROVED: PMK	DRAFTER: AKA\ELS



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Wells GM-24A, GM-24B, and GM-24C were not used for pressure contours because they were unaffected by all tests.

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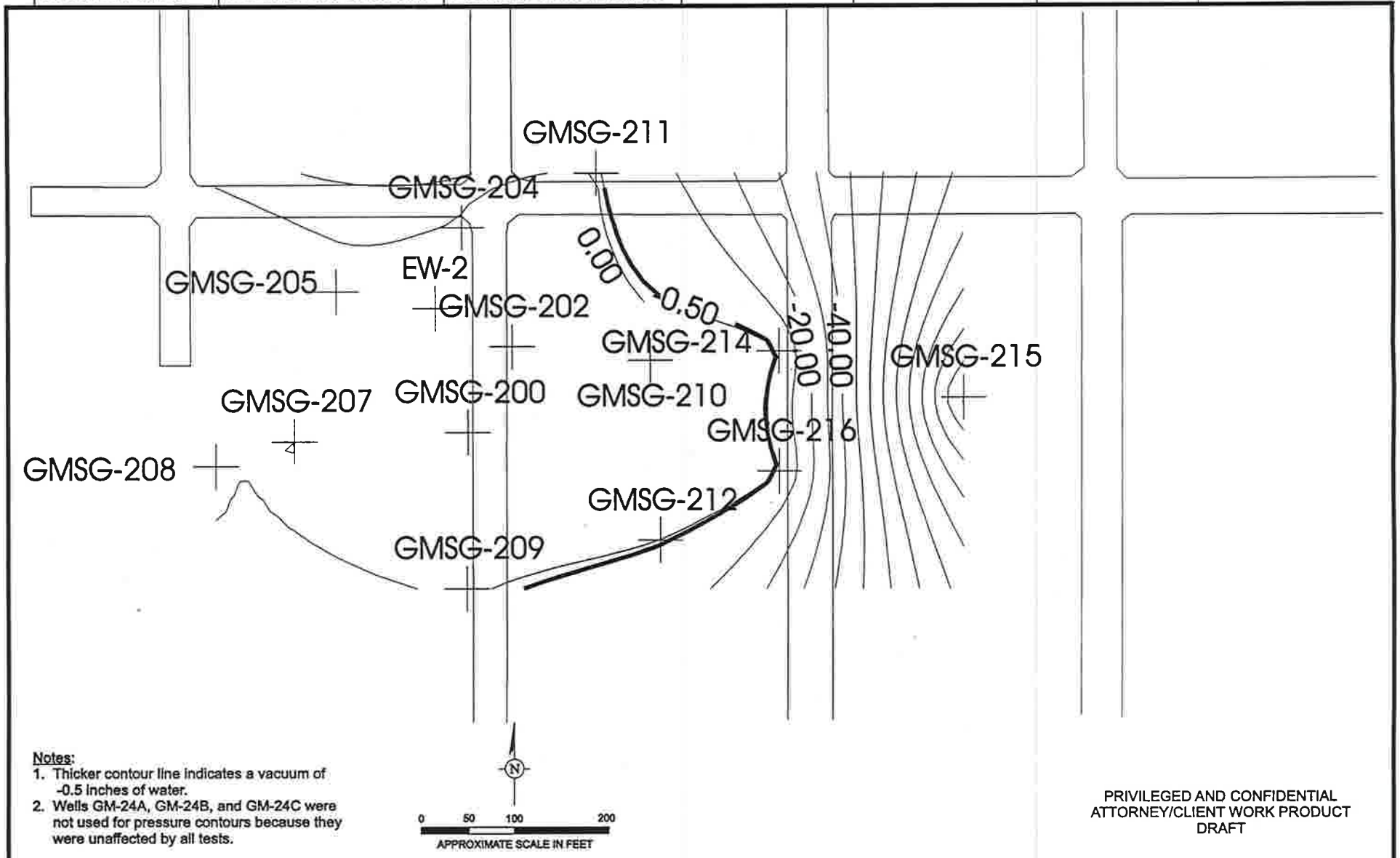
ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF GMSG-214
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROOJECT
KINGSFORD, MICHIGAN

FIGURE
3

DWG DATE: 01MAR00	PN: FORD\WI0637\KINGSFORD	FILE NO.: GRAPHICS\APPENDIX4	DRAWING: 215.AI	CHECKED: PMK\BE	APPROVED: PMK	DRAFTER: AKA\ELS



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.
2. Wells GM-24A, GM-24B, and GM-24C were not used for pressure contours because they were unaffected by all tests.

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ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION SYSTEM TEST
VACUUM CONTOUR OF GMSG-215
AFTER TWO HOURS OF SOLITARY EXTRACTION

EASTON ESTATES METHANE PROOJECT
KINGSFORD, MICHIGAN

FIGURE
4

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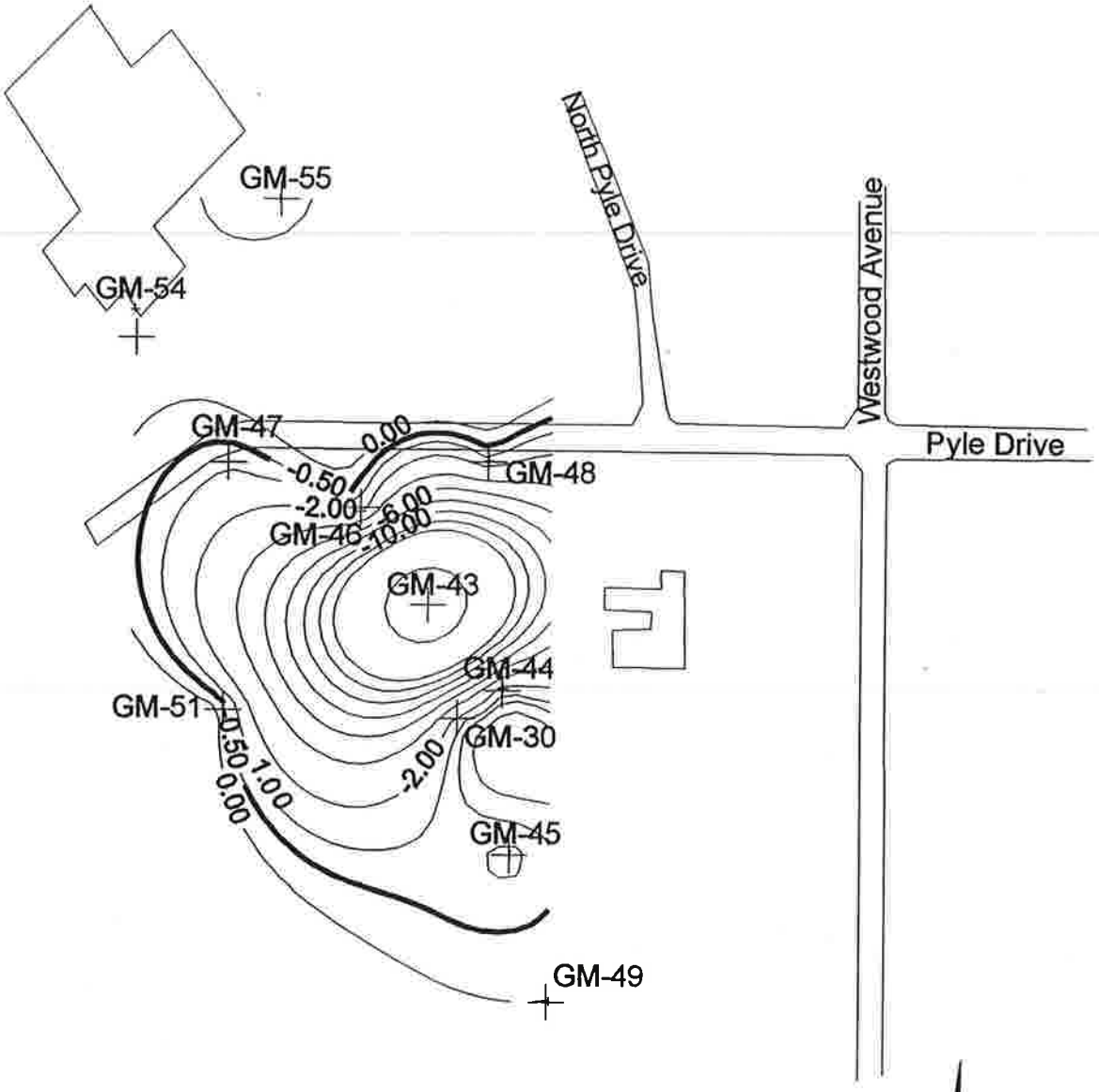
ATTORNEY/CLIENT WORK PRODUCT
DRAFT



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.

DRAFTER: BDZ | APPROVED:BDZ | CHECKED:BDZ | DRAWING: GM43.CDR | FILE NO.: VESTEST\3rdRun | PN: G:PRJWM0675MN05 | DWG DATE: 12MAY99

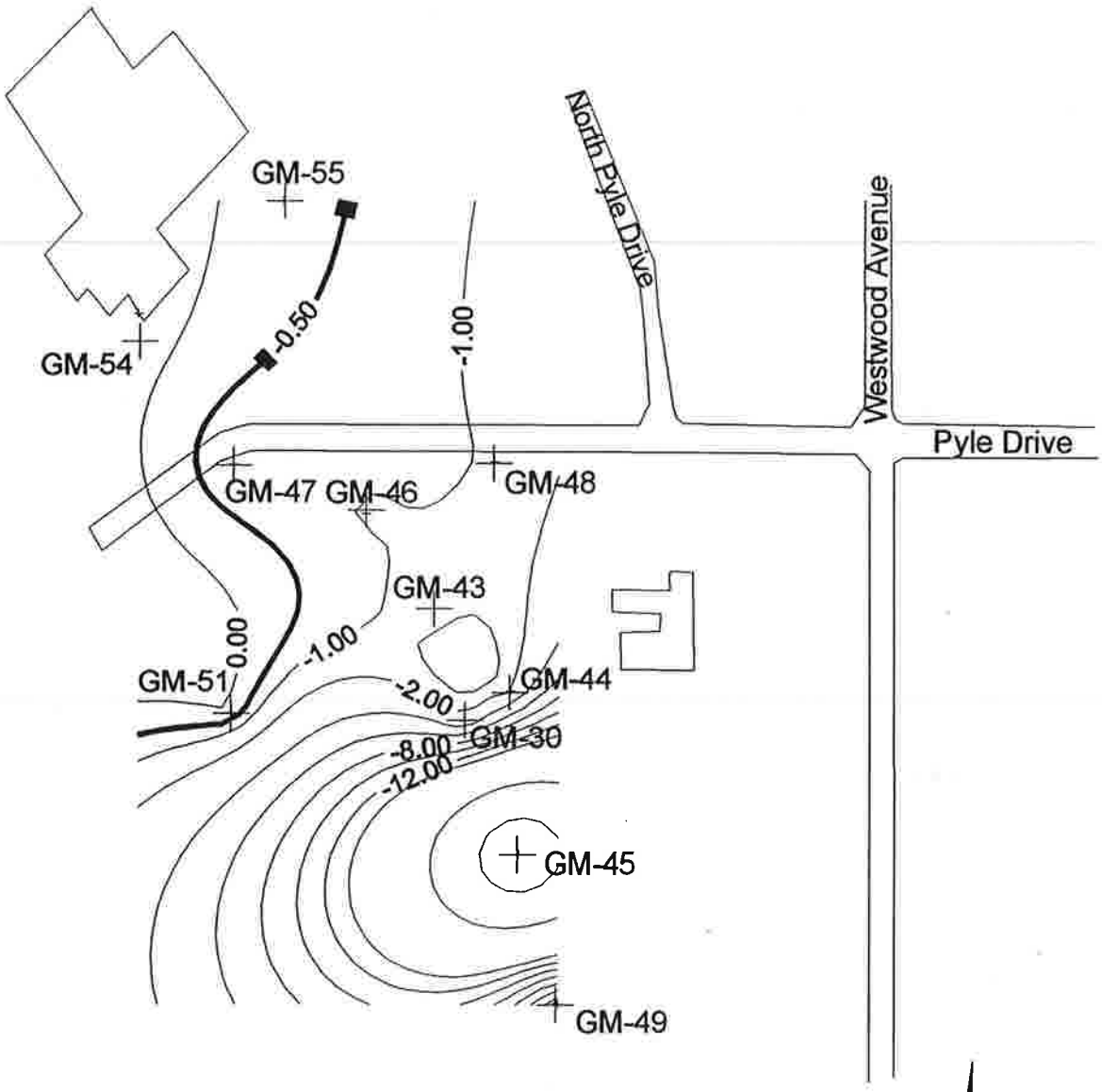
ARCADIS GERAGHTY & MILLER

VAPOR EXTRACTION TEST
VACUUM CONTOUR OF GM-43
AFTER TWO HOURS OF SOLITARY EXTRACTION

FORD/KINGSFORD PROJECT
KINGSFORD, MICHIGAN

FIGURE
1

PRIVILEGED AND CONFIDENTIAL
ATTORNEY/CLIENT WORK PRODUCT
DRAFT



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.

ARCADIS GERAGHTY & MILLER

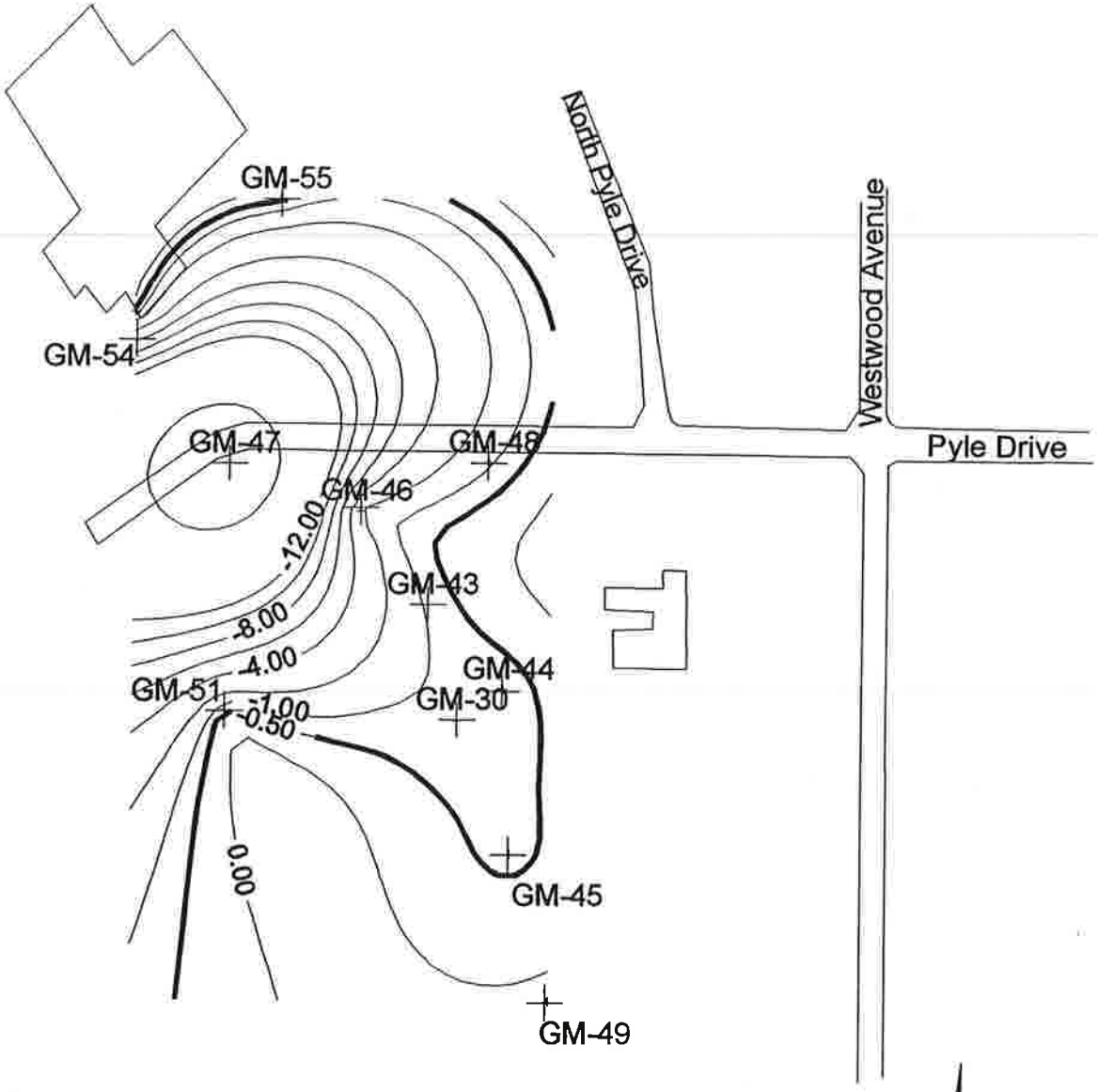
VAPOR EXTRACTION TEST
VACUUM CONTOUR OF GM-45
AFTER TWO HOURS OF SOLITARY EXTRACTION

FORD/KINGSFORD PROJECT
KINGSFORD, MICHIGAN

FIGURE
2

DRAFTER: BDZ | APPROVED:BDZ | CHECKED:BDZ | DRAWING: GM45.CDR | FILE NO.: VESTEST3rdRun | PN: G:PRJ\M05751\MN05 | DWG DATE: 12MAY99

PRIVILEGED AND CONFIDENTIAL
ATTORNEY/CLIENT WORK PRODUCT
DRAFT



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.

ARCADIS
GERAGHTY & MILLER

VAPOR EXTRACTION TEST
VACUUM CONTOUR OF GM-47
AFTER TWO HOURS OF SOLITARY EXTRACTION

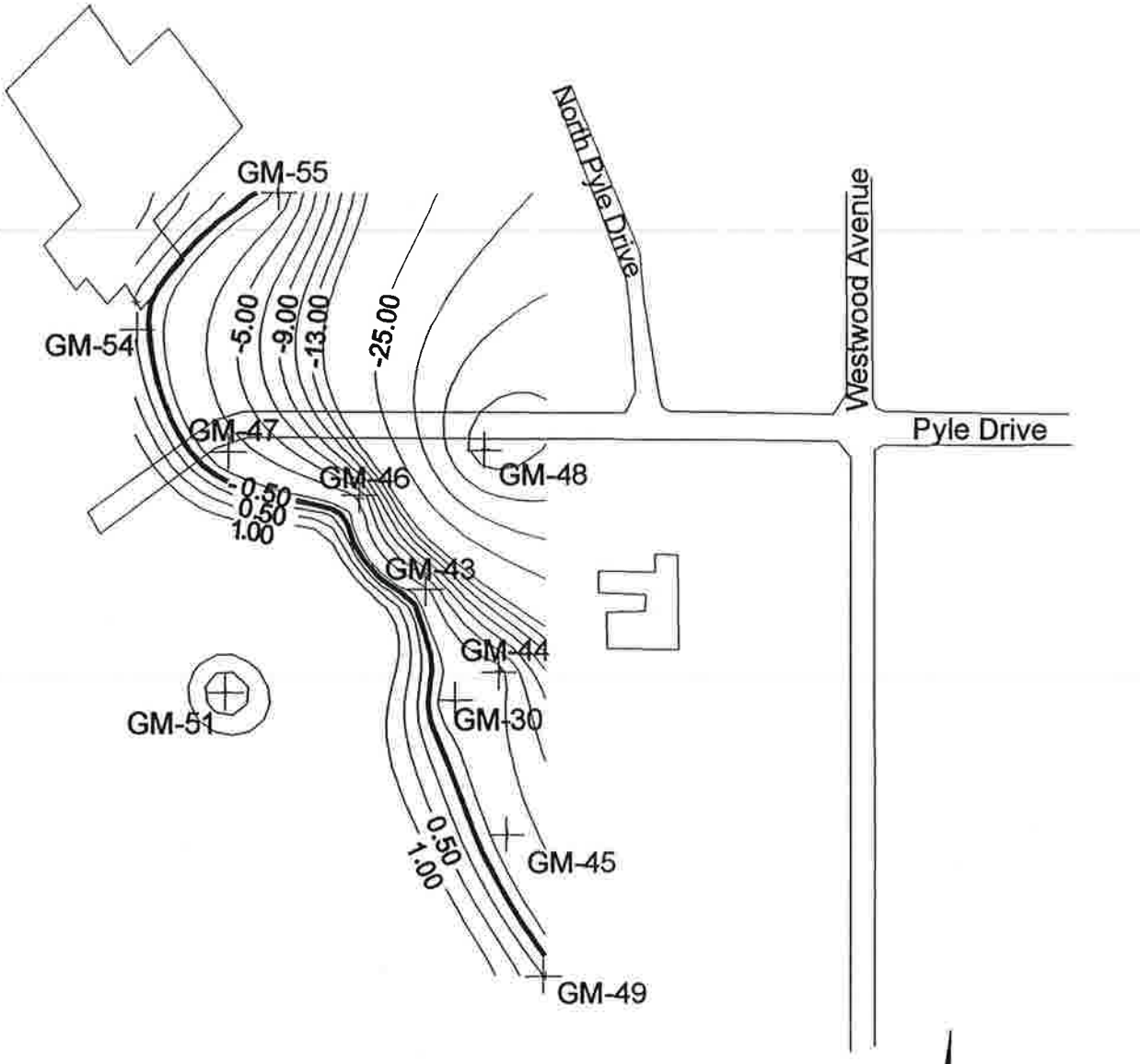
FORD/KINGSFORDPROJECT
KINGSFORD, MICHIGAN

FIGURE
3

DRAFTER: BDZ | APPROVED:BDZ | CHECKED:BDZ | DRAWING: GM47.CDR | FILE NO.: VESTEST3rdRun | PN: G:PR.JWM0675\MN05 | DWG DATE: 5MAY99

PRIVILEGED AND CONFIDENTIAL
ATTORNEY/CLIENT WORK PRODUCT
DRAFT

DRAFTER: BDZ | APPROVED:BDZ | CHECKED:BDZ | DRAWING: GM48.CDR | FILE NO.: VESTEST13rdRun | PN: G:\PRJ\WM0675\MN\05 | DWG DATE: 12MAY99



Notes:
1. Thicker contour line indicates a vacuum of -0.5 inches of water.

ARCADIS GERAGHTY & MILLER

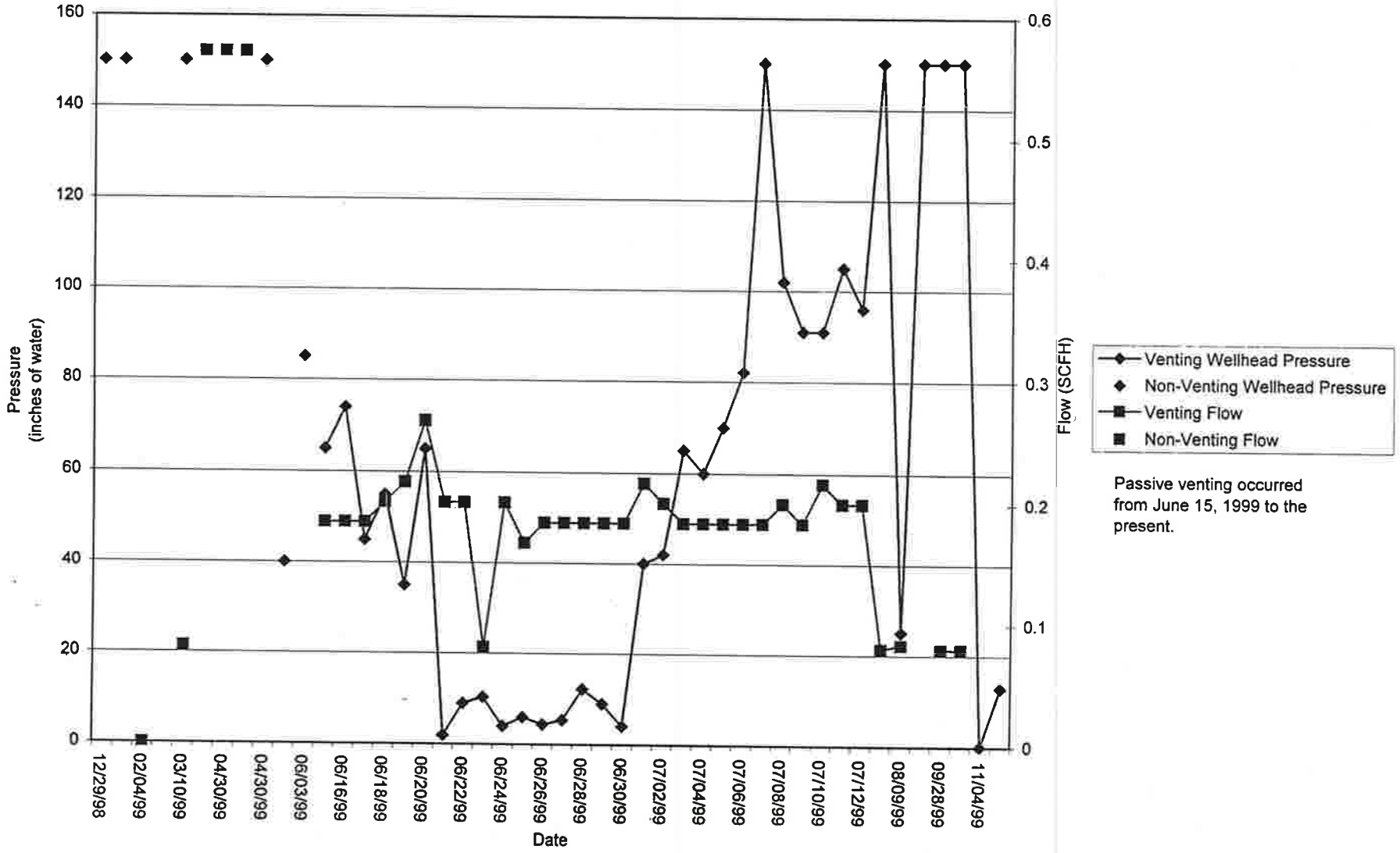
VAPOR EXTRACTION TEST
VACUUM CONTOUR OF GM-48
AFTER TWO HOURS OF SOLITARY EXTRACTION

FORD/KINGSFORD PROJECT
KINGSFORD, MICHIGAN

FIGURE
4

ARCADIS GERAGHTY & MILLER

GM-24B

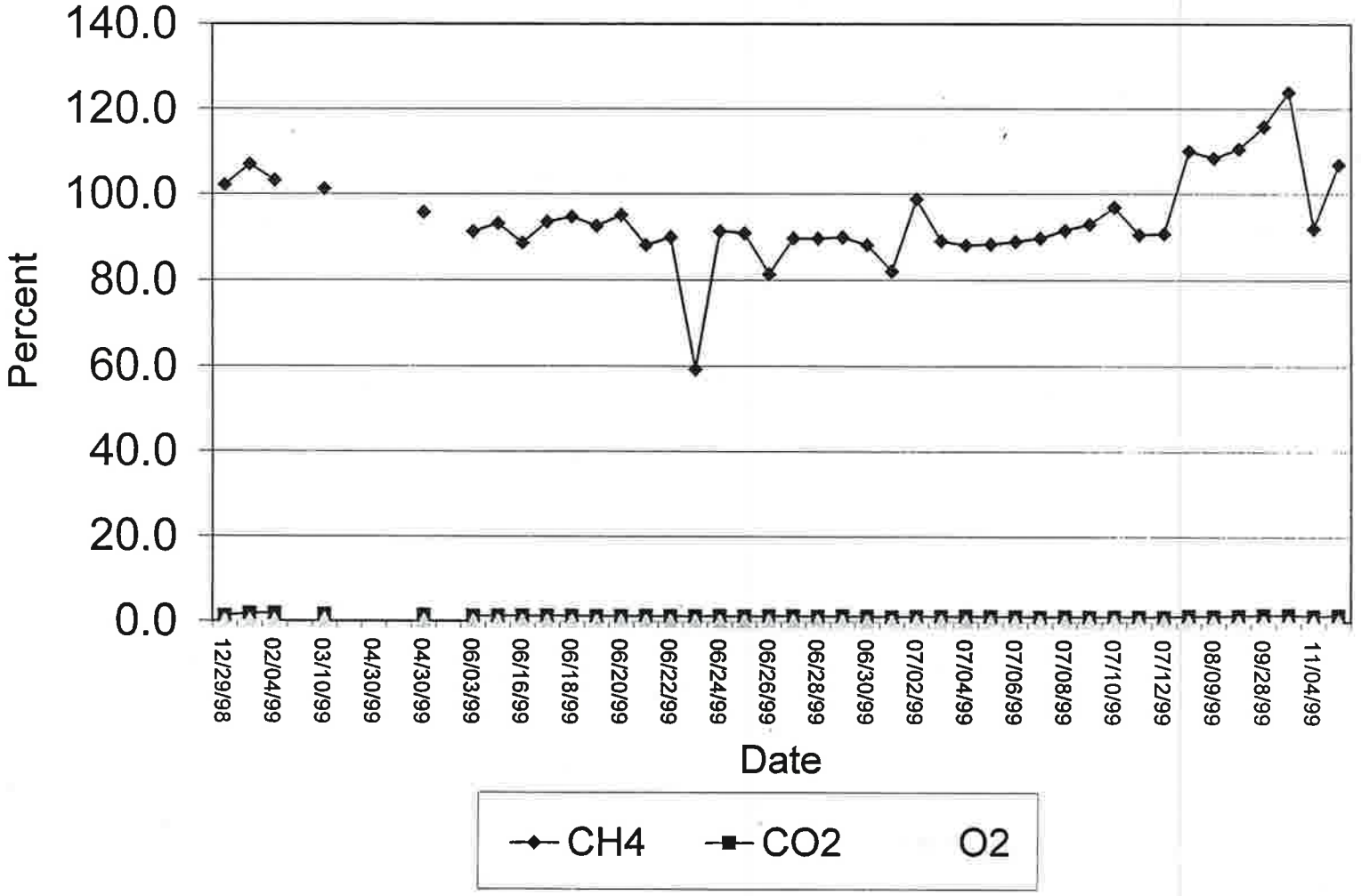


Passive venting occurred from June 15, 1999 to the present.

ford/wi0637/datamngt/tables/passiveventdatchartsRI.xls
(figure1)
05/20/00 2:20 PM

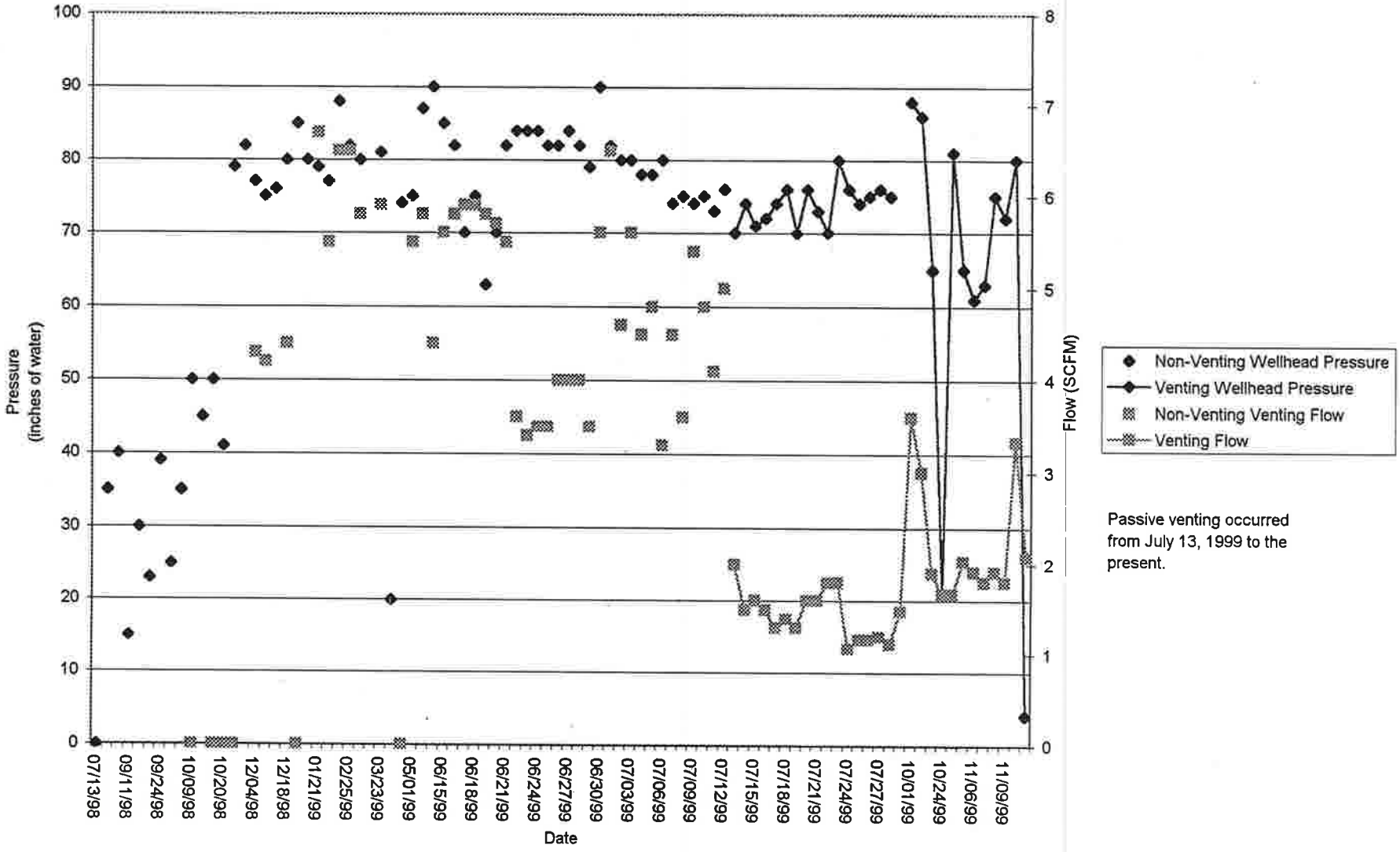
ARCADIS GERAGHTY&MILLER

GM-24B



ARCADIS GERAGHTY & MILLER

GM-33

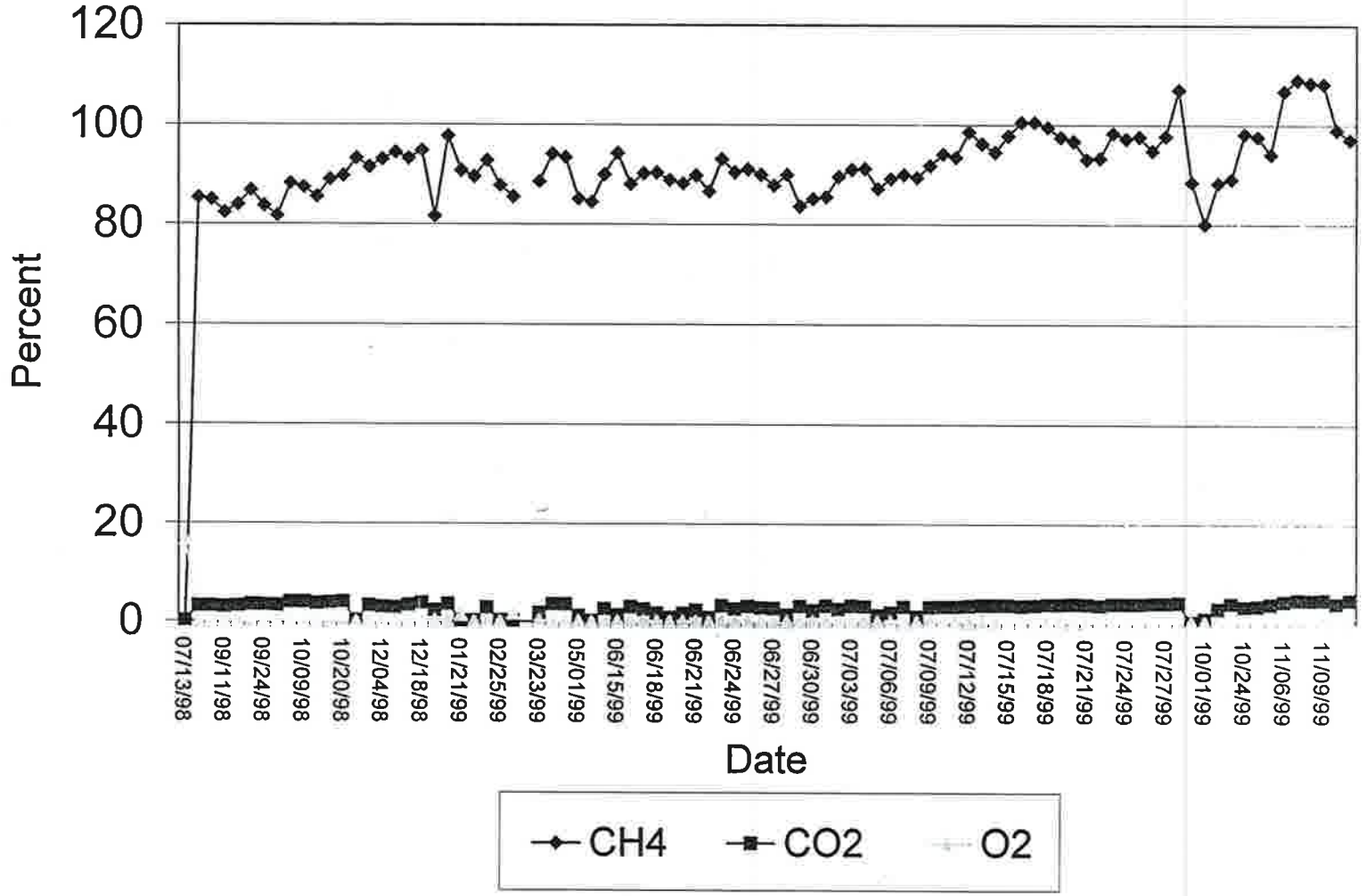


Passive venting occurred from July 13, 1999 to the present.

ford/wi0637/datamngt/tables/passiveventdatachartsri/xls
05/20/00 2:20 PM

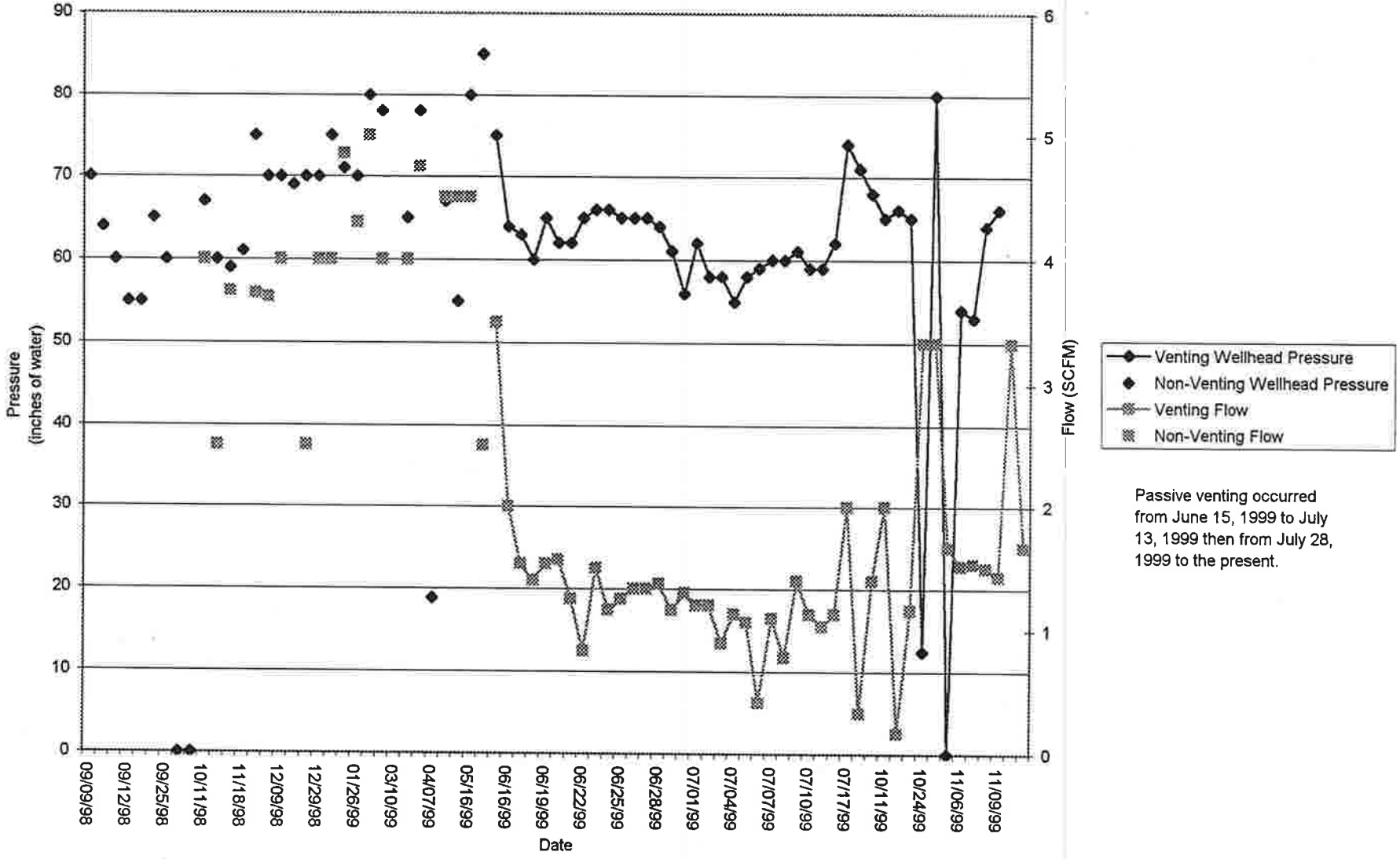
ARCADIS GERAGHTY & MILLER

GM-33



ARCADIS GERAGHTY & MILLER

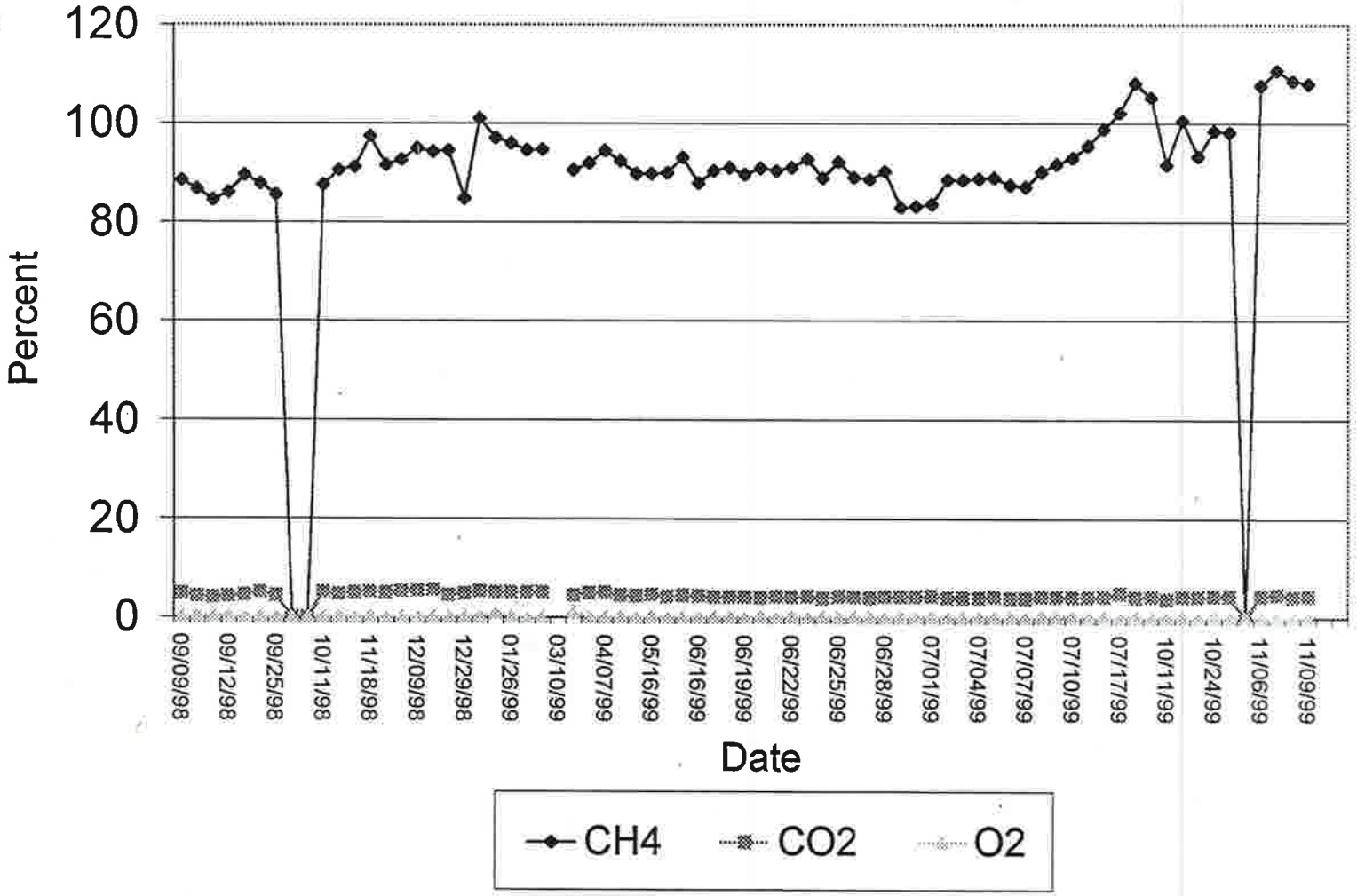
GM-50



Passive venting occurred from June 15, 1999 to July 13, 1999 then from July 28, 1999 to the present.

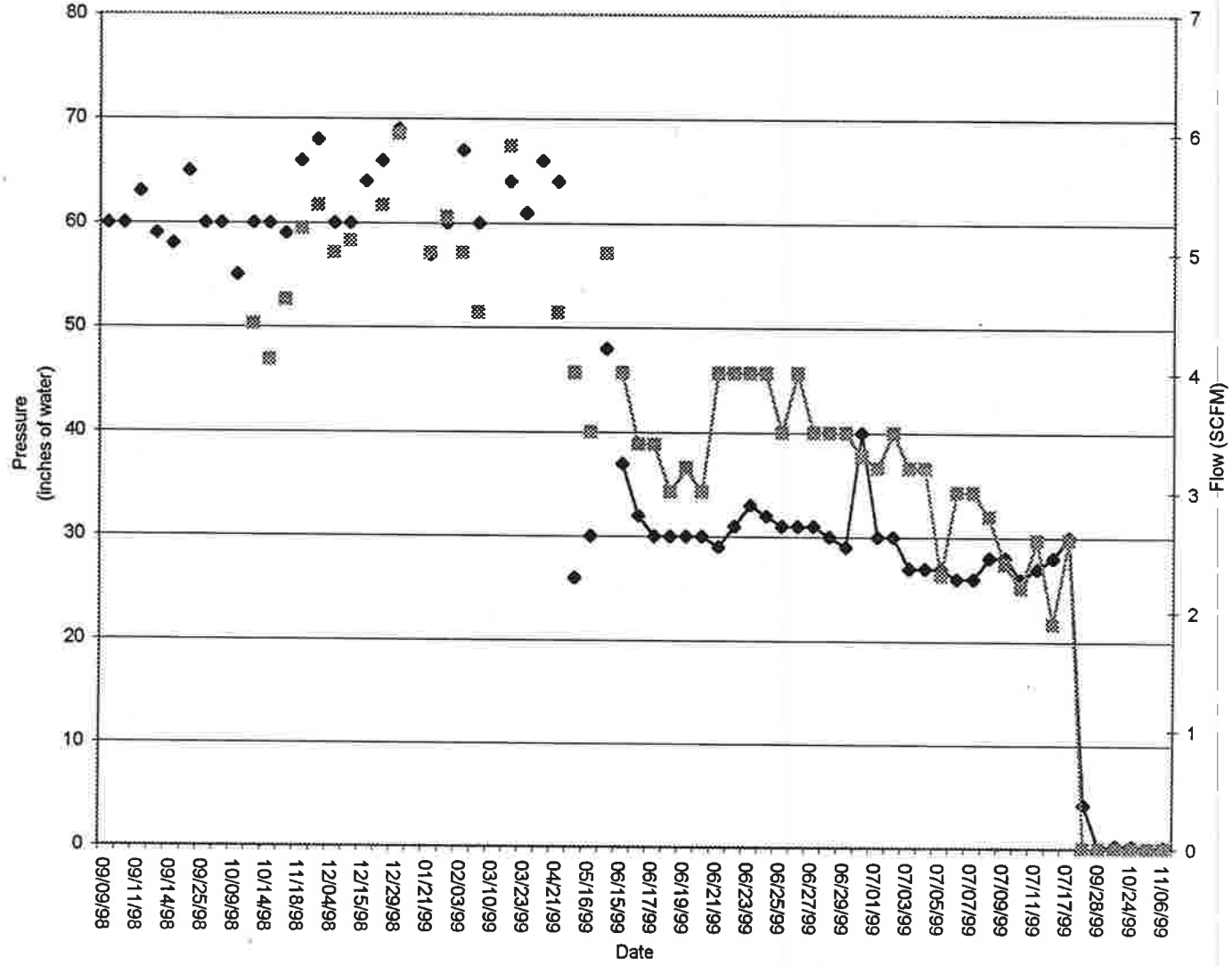
ARCADIS GERAGHTY & MILLER

GM-50



ARCADIS GERAGHTY & MILLER

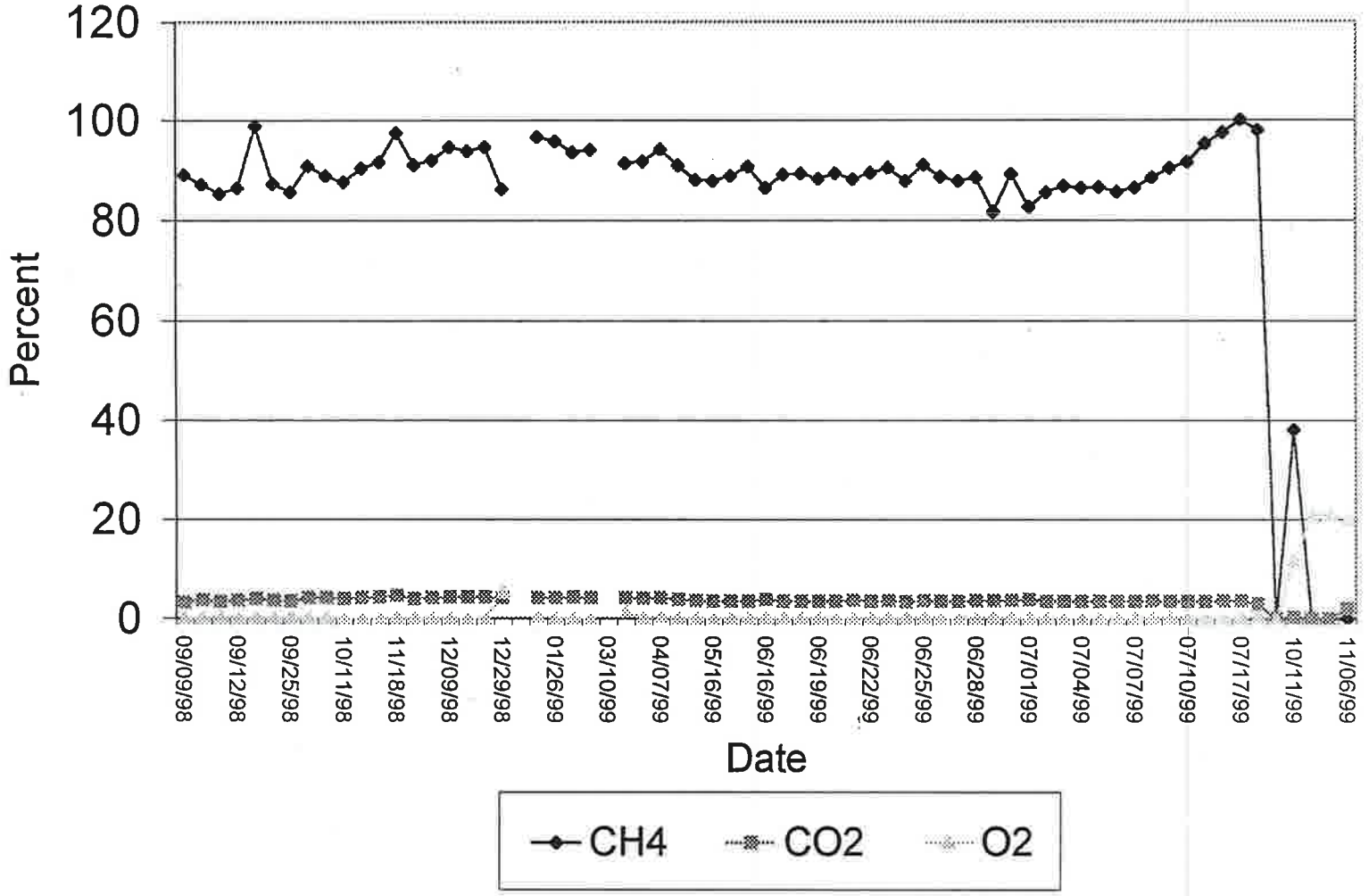
GM-52



Passive venting occurred from June 15, 1999 to the present.

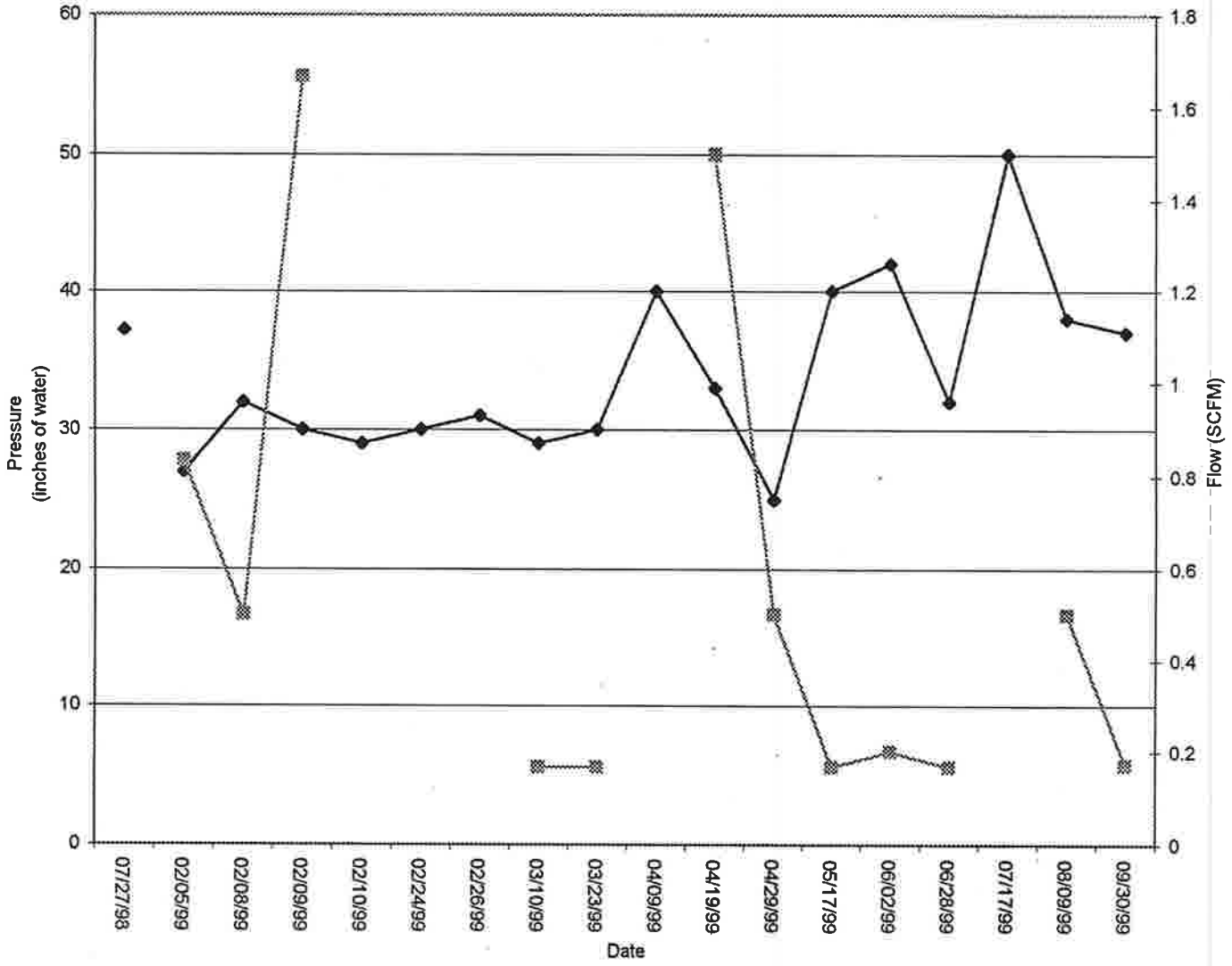
ARCADIS GERAGHTY & MILLER

GM-52



ARCADIS GERAGHTY & MILLER

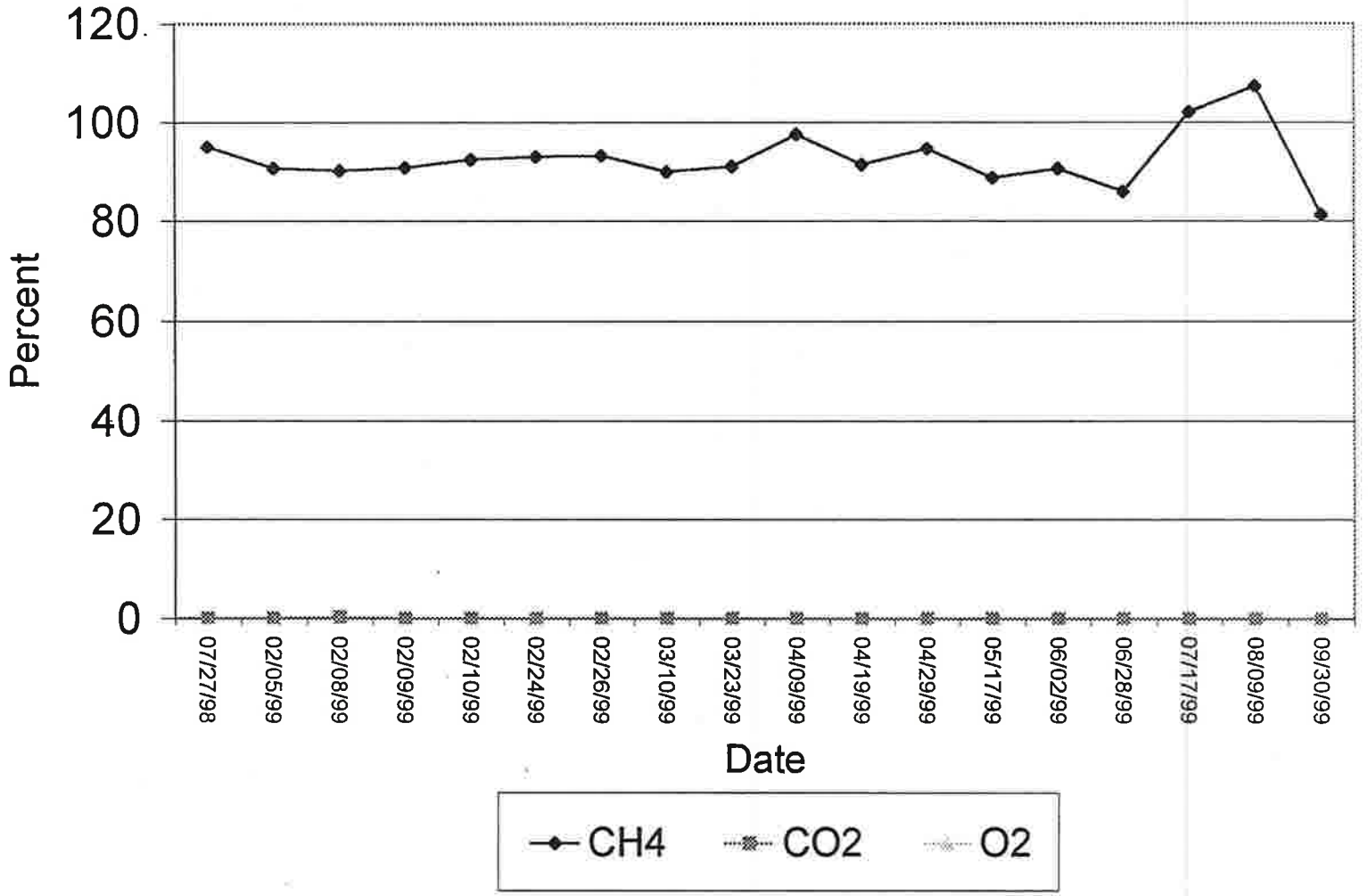
GM-100



Passive venting occurred from December 15, 1998 to December 28, 1998 and again from February 5, 1999 to October 17, 1999.

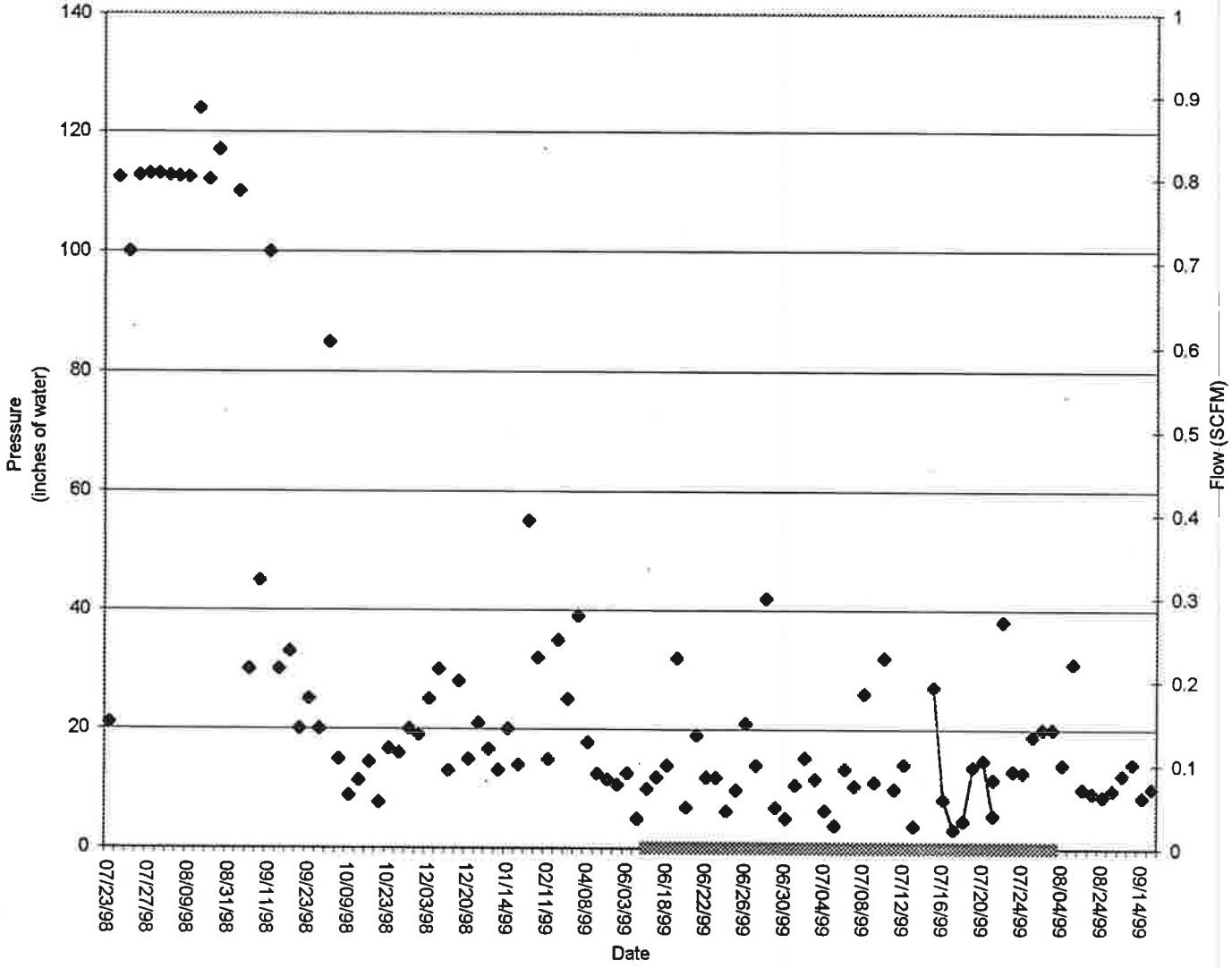
ARCADIS GERAGHTY & MILLER

GM-100



ARCADIS GERAGHTY&MILLER

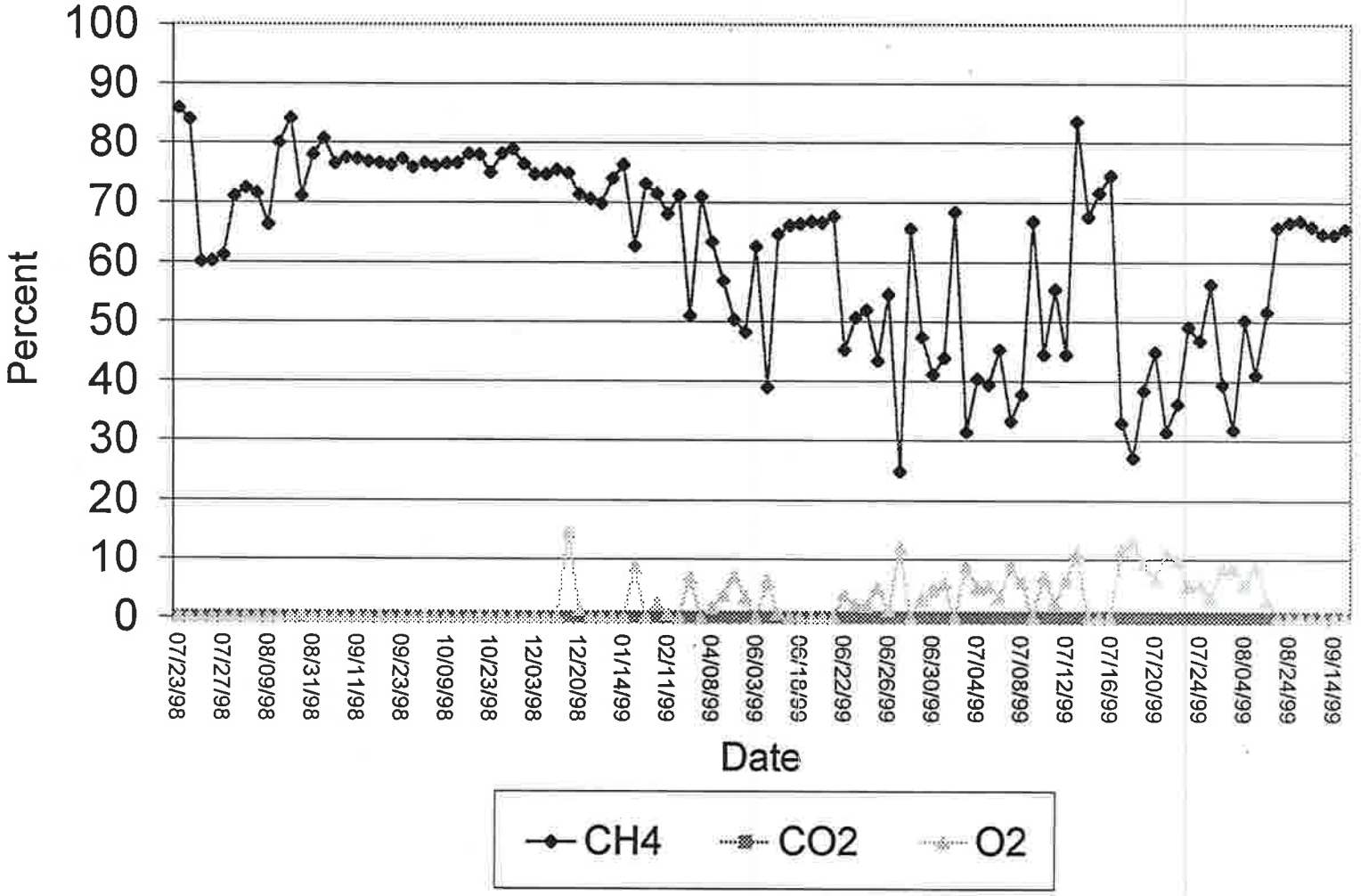
GMSG-109



Passive venting occurred on September 9, 1998 and from July 14, 1999 to July 20, 1999.

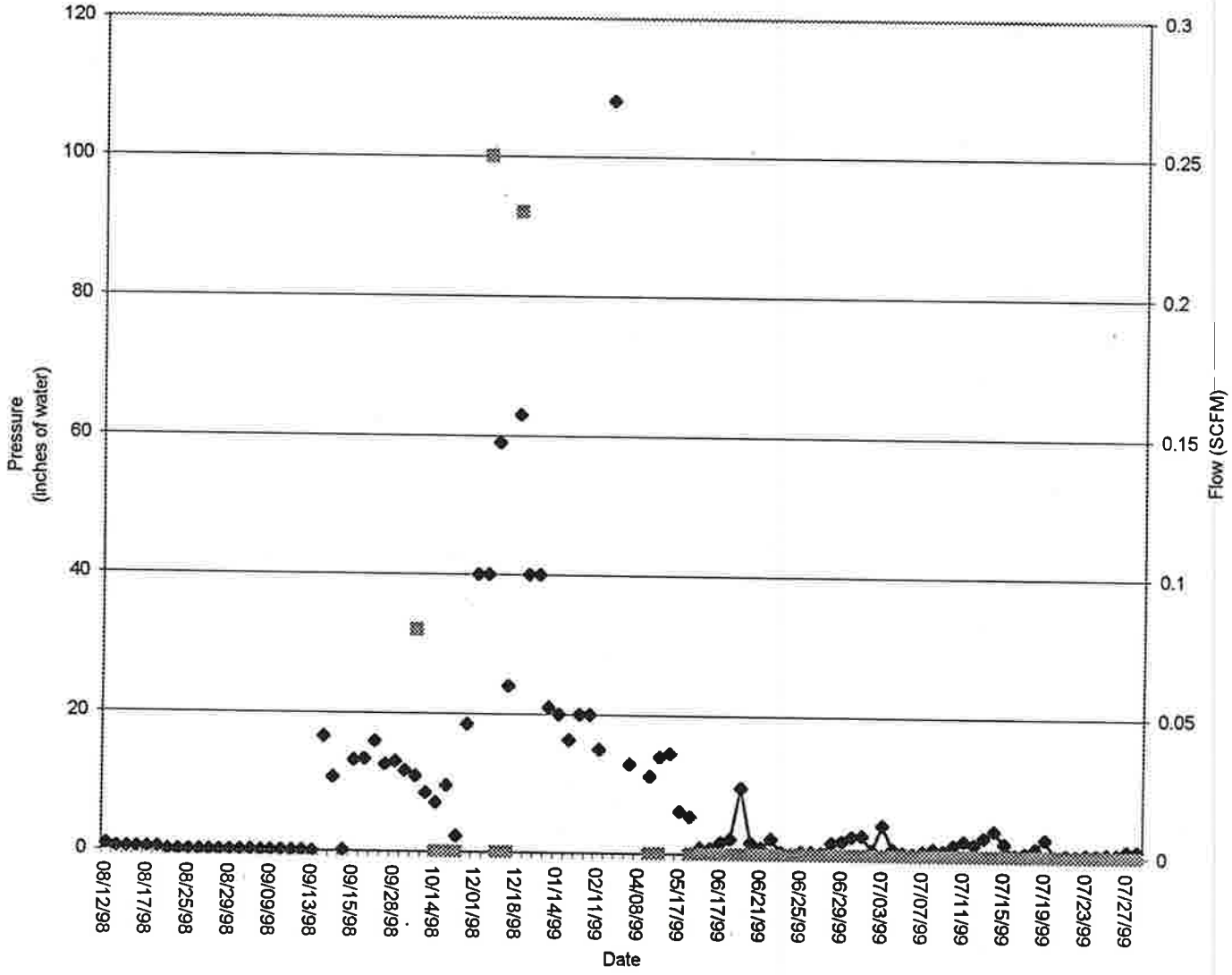
ARCADIS GERAGHTY & MILLER

GMSG-109



ARCADIS GERAGHTY & MILLER

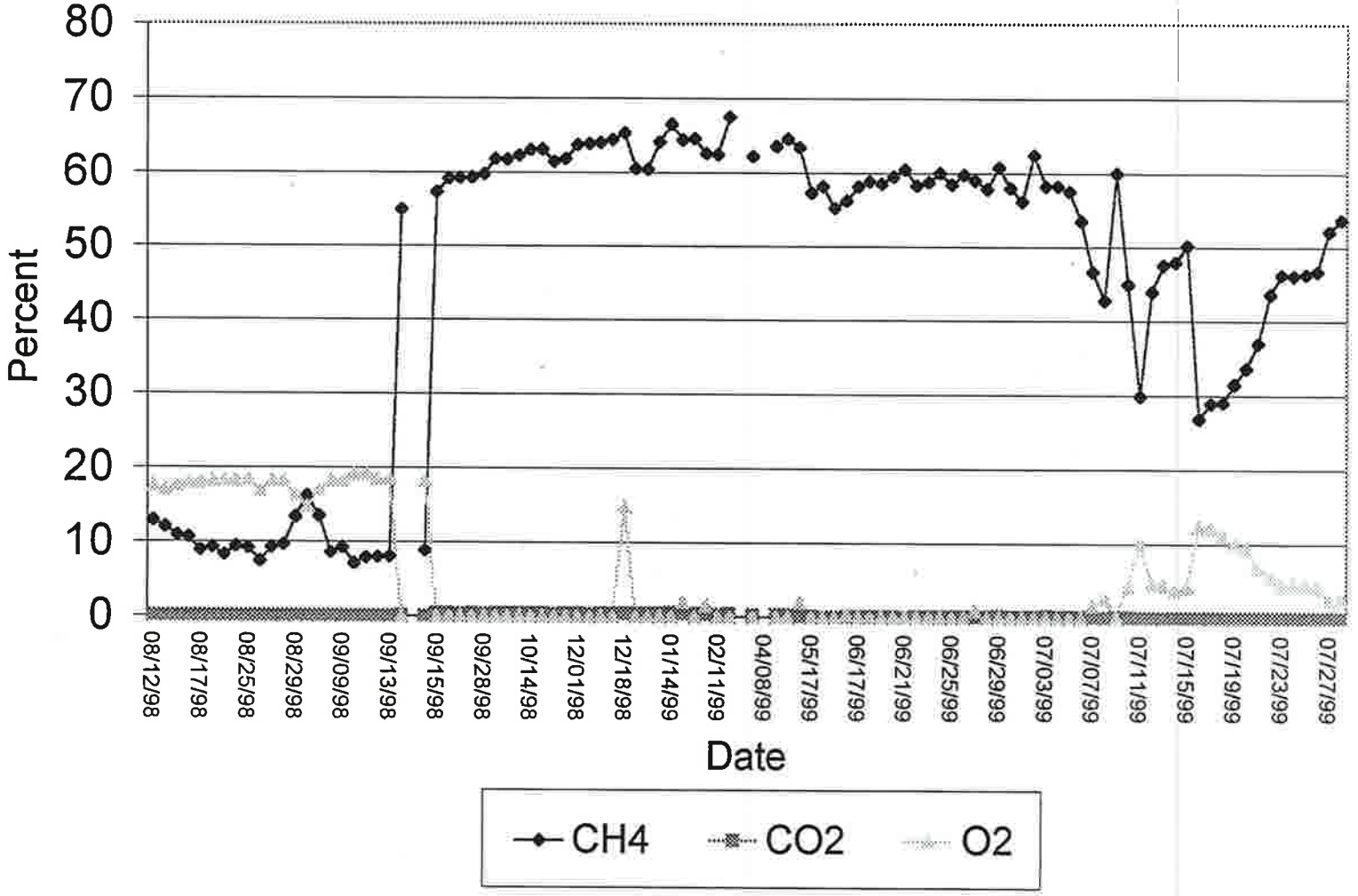
GMSG-112



Passive venting occurred from June 15, 1999 to July 20, 1999.

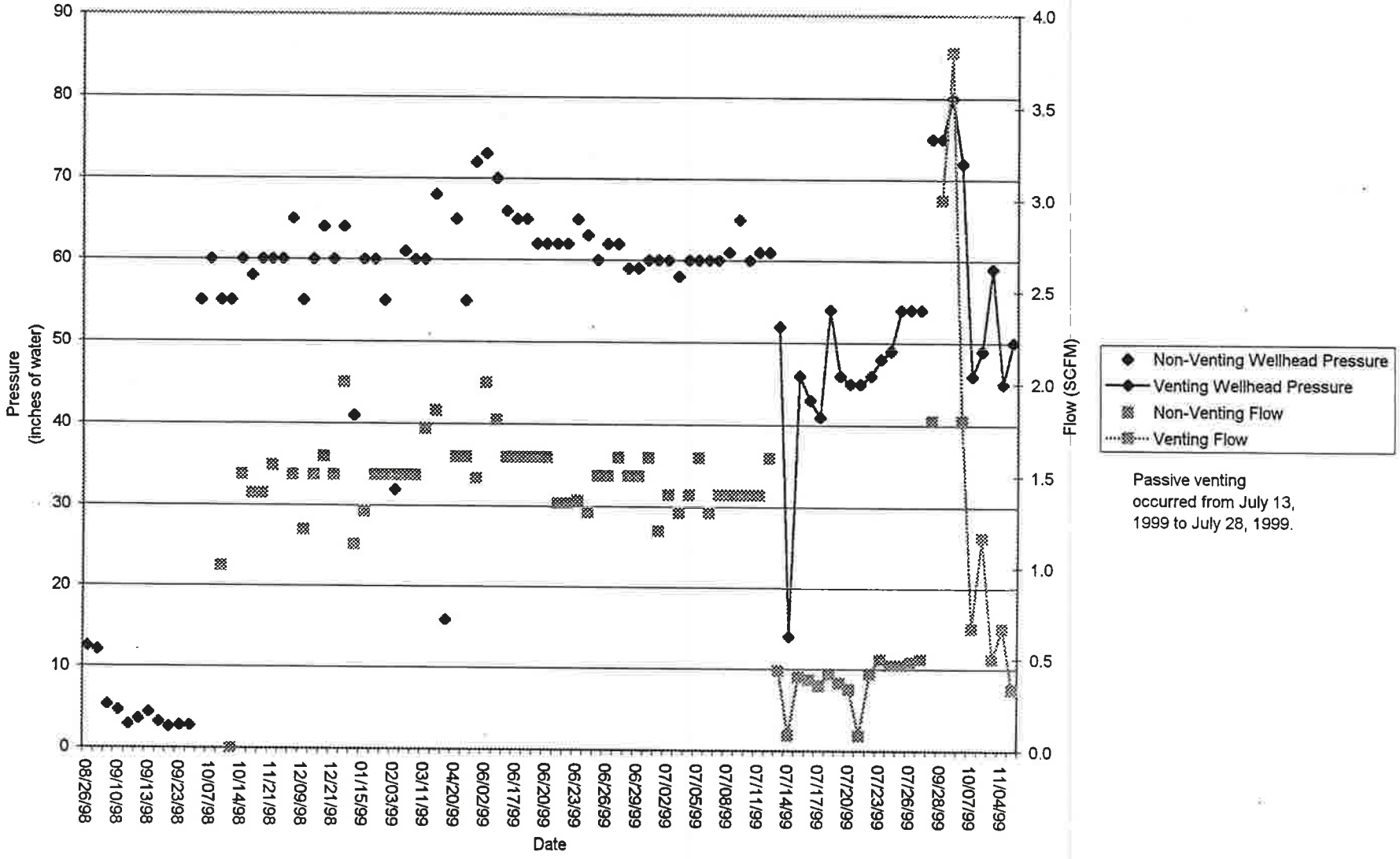
ARCADIS GERAGHTY & MILLER

GMSG-112



ARCADIS GERAGHTY & MILLER

GMSG-116

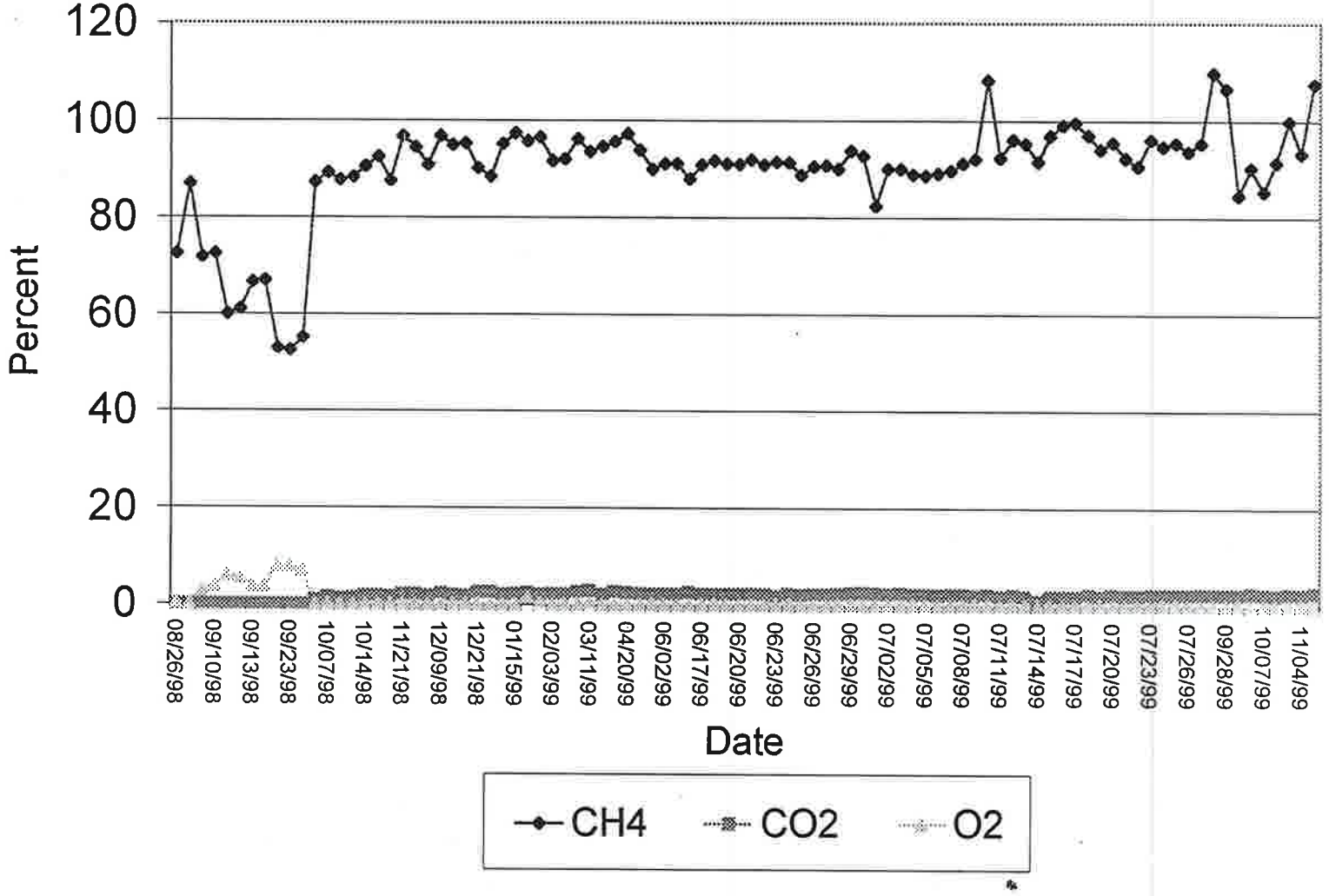


Passive venting occurred from July 13, 1999 to July 28, 1999.

ford/wi0637/datamngt/tables/passiveventdatachartsri.xls (Figure8)
05/20/00 2:20 PM

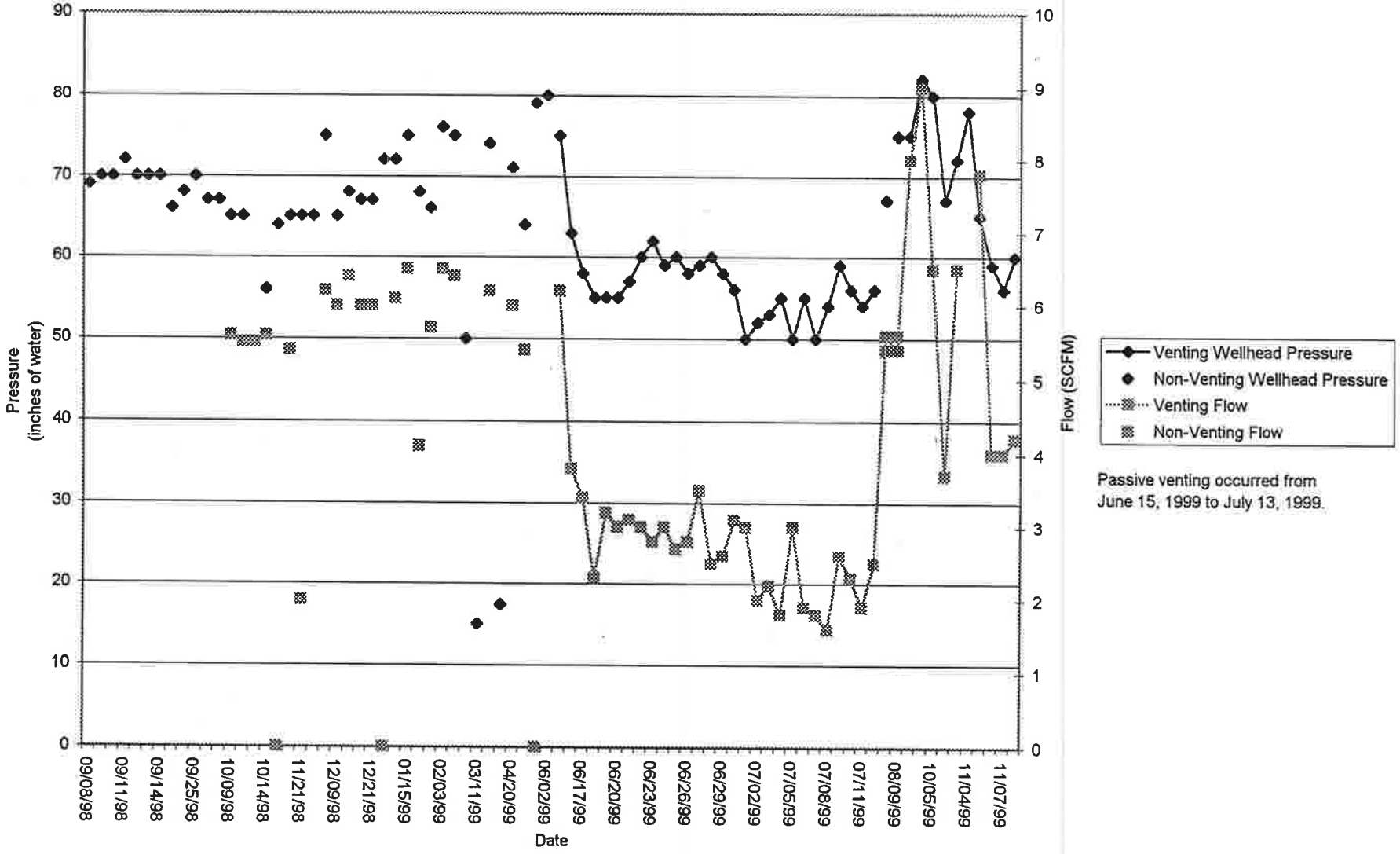
ARCADIS GERAGHTY & MILLER

GMSG-116



ARCADIS GERAGHTY & MILLER

GMSG-117

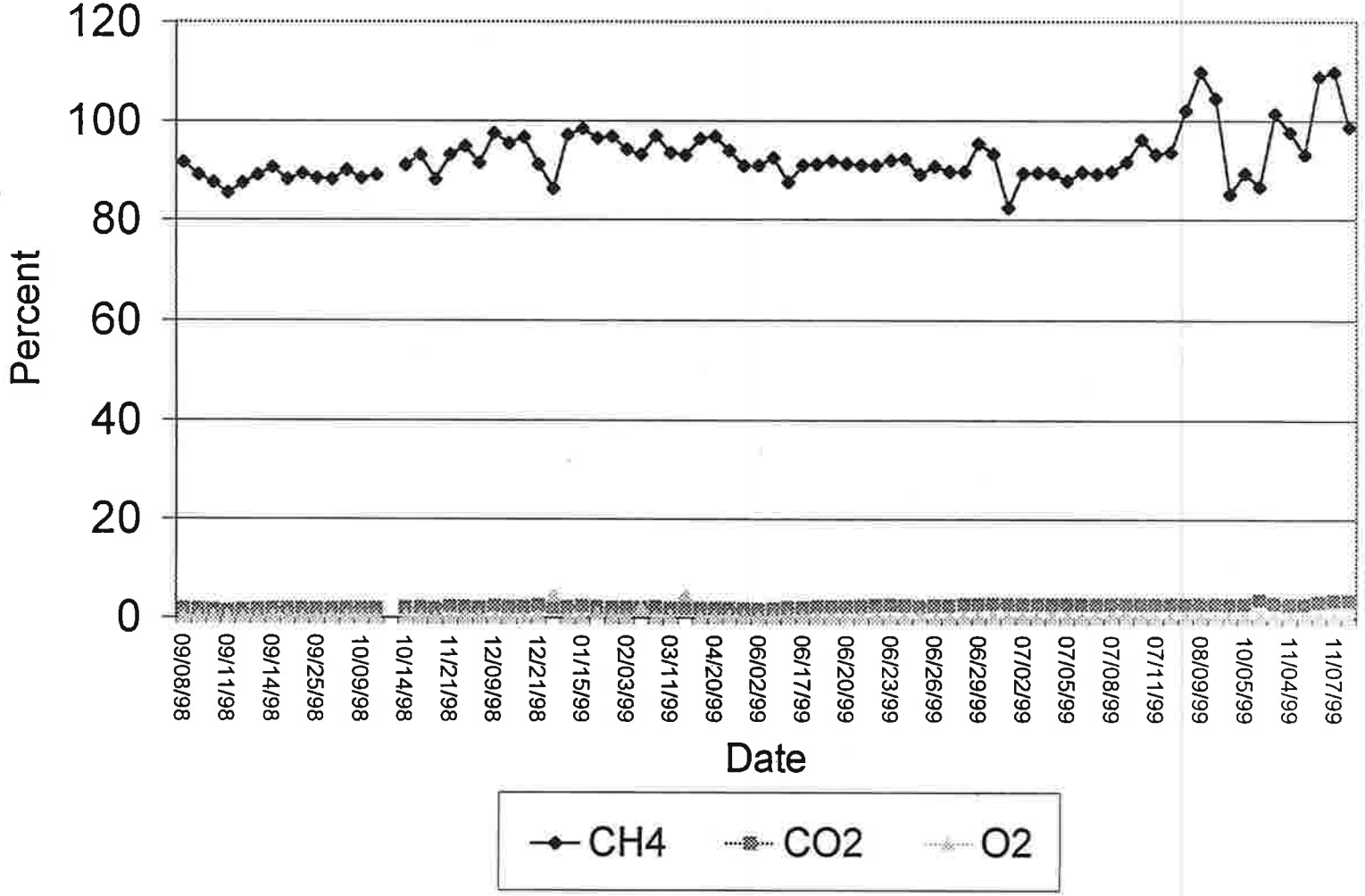


Passive venting occurred from June 15, 1999 to July 13, 1999.

ford/wi0637/datamngt/tables/passiveventdatachartsri.xls(Figure 9)
05/20/00 2:20 PM

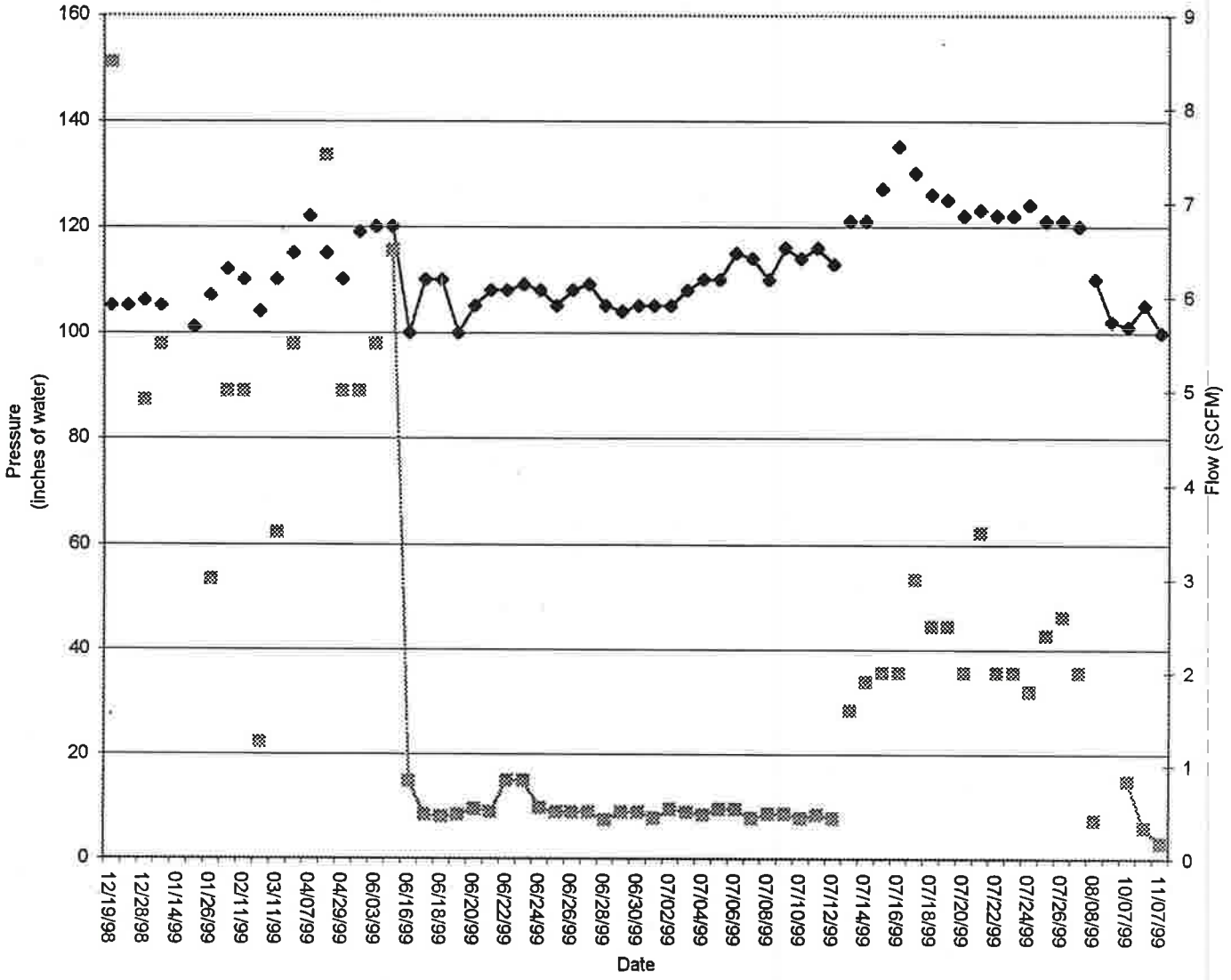
ARCADIS GERAGHTY&MILLER

GMSG-117



ARCADIS GERAGHTY & MILLER

GMSG-128

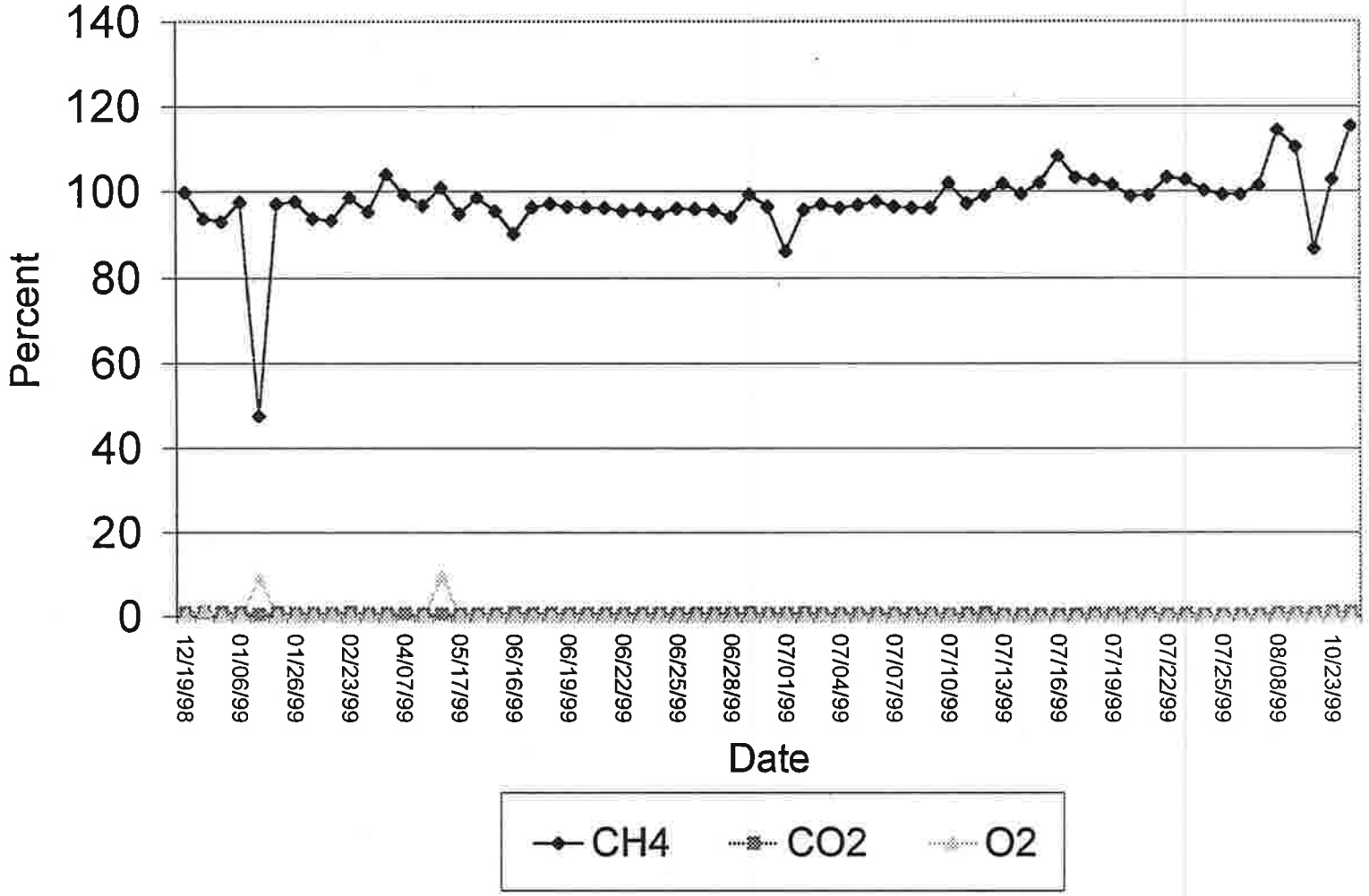


Passive venting occurred from June 15, 1999 to July 13, 1999 and then from July 28, 1999 to the present.

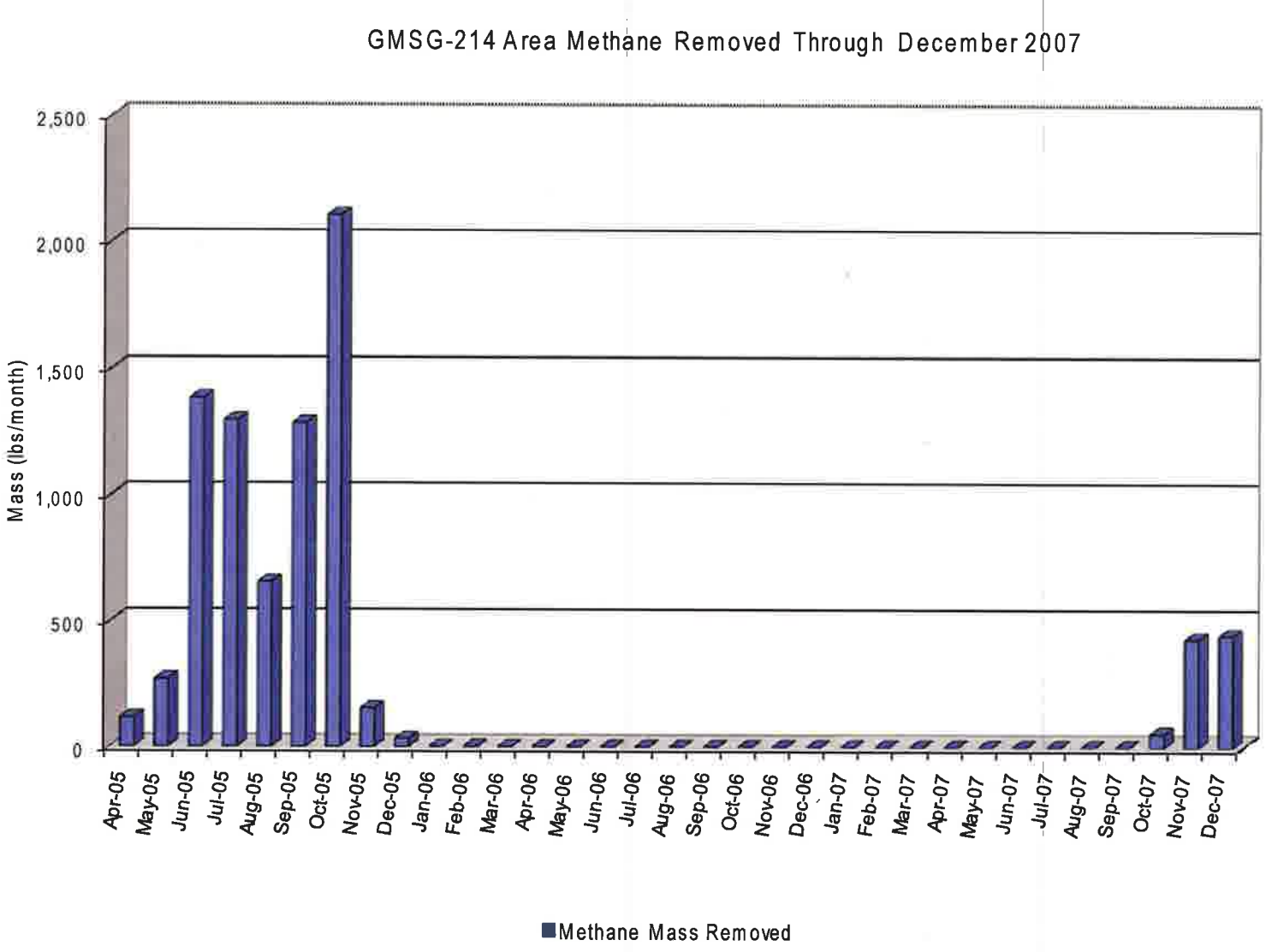
ford/wi0637/datamngt/table/passiveventdatchartsri.xls (figure 10)
05/20/00 2:20 PM

ARCADIS GERAGHTY&MILLER

GMSG-128



DWG DATE: 04SEP09	PN: FORD\WI0637\CJ2009\RI REPORT	FILE NO.: GRAPHICS	DRAWING: GMSG-214 METH 1207.AI	CHECKED: BE	APPROVED:	DRAFTER: LMB



ARCADIS

GMSG-214 AREA METHANE REMOVED THROUGH DECEMBER 2007

FORD/KINGSFORD SITE
KINGSFORD, MICHIGAN

FIGURE

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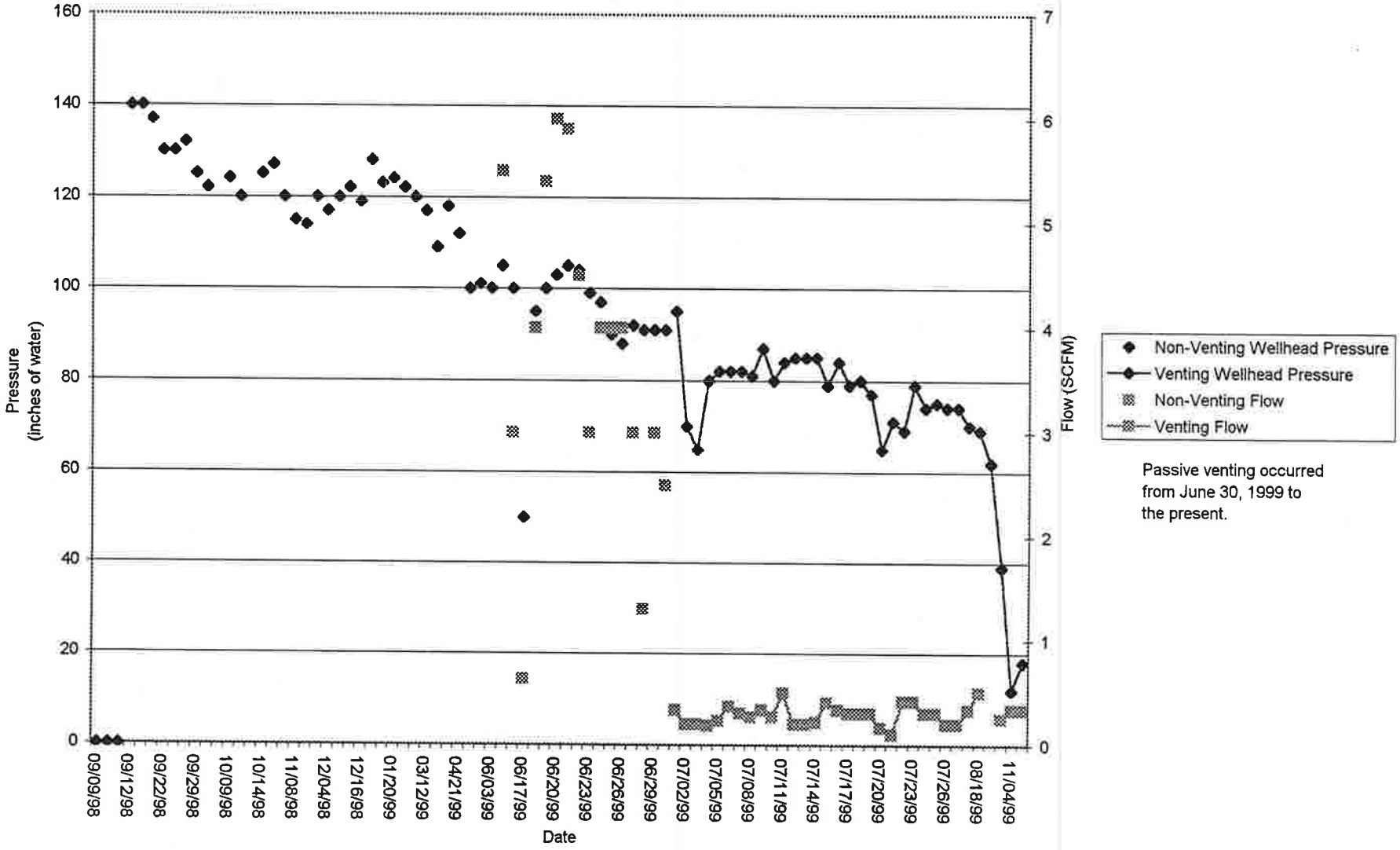
ARCADIS GERAGHTY & MILLER

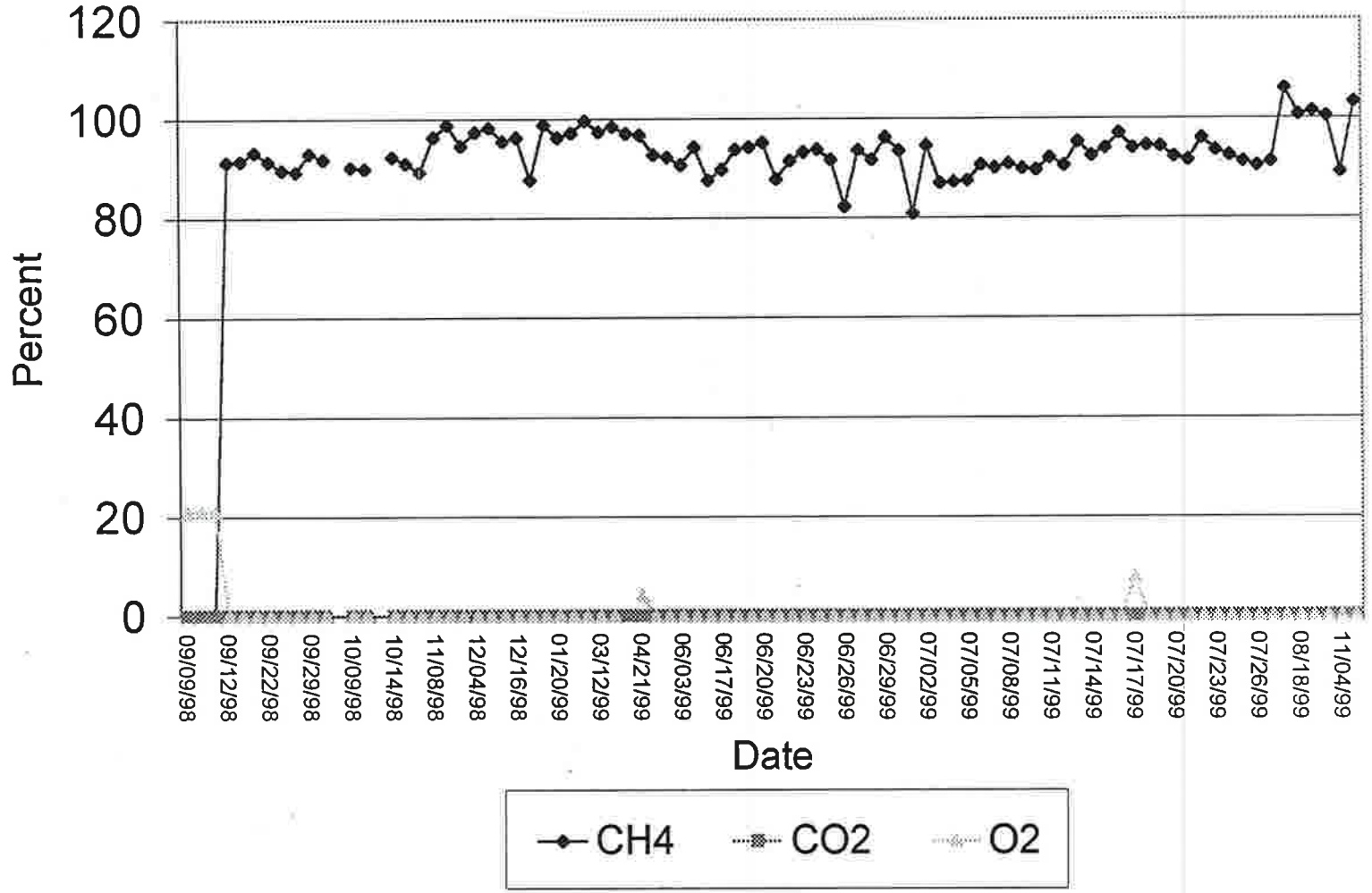
GMSG-215



Passive venting occurred from June 30, 1999 to the present.

ARCADIS GERAGHTY & MILLER

GMSG-215



ARCADIS

Appendix S

Bioscreen Model Simulations

Because we care
100% recycled paper produced by wind power energy

Bioscreen Model Simulation
Scenario 1

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Ford Kingsford | Scenario 1 | Run Name

Data Input Instructions:
1. Enter value directly,...or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below).

Variable* — Data used directly in model.
Value calculated by model. (Don't enter any data).

1. HYDROGEOLOGY

Seepage Velocity*	Vs	106.2	(ft/yr)
or		or	
Hydraulic Conductivity	K	5.7E-03	(cm/sec)
Hydraulic Gradient	I	0.0036	(ft/ft)
Porosity	n	0.2	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	42.7	(ft)
Transverse Dispersivity*	alpha y	4.3	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	4400	(ft)

3. ADSORPTION

Retardation Factor*	R	1.0	(-)
or		or	
Soil Bulk Density	rho	1.7	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	5.7E-5	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda		(per yr)
or		or	
Solute Half-Life	t-half		(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	0	(mg/L)
Delta Nitrate*	NO3	0	(mg/L)
Observed Ferrous Iron*	Fe2+	0	(mg/L)
Delta Sulfate*	SO4	0	(mg/L)
Observed Methane*	CH4	0	(mg/L)

5. GENERAL

Modeled Area Length*	4400	(ft)
Modeled Area Width*	1000	(ft)
Simulation Time*	40	(yr)

L, W

115 — or — 0.02

6. SOURCE DATA

Source Thickness in Sat.Zone* 75 (ft)

Source Zones:

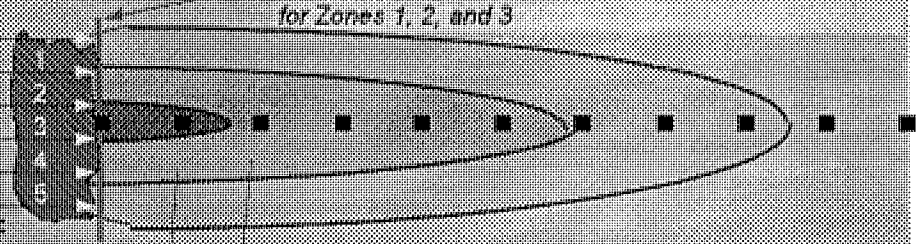
Width* (ft)	Conc. (mg/L)*
150	0
200	0
300	125000
200	0
150	0

Source Halflife (see Help):

9	9	(yr)
Inst. React.	1st Order	

Soluble Mass 22000000 (Kg)
In Source NAPL Soil

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

7. FIELD DATA FOR COMPARISON

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

Dist. from Source (ft)	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
Concentration (mg/L)											

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — View Output

RUN ARRAY — View Output

Help

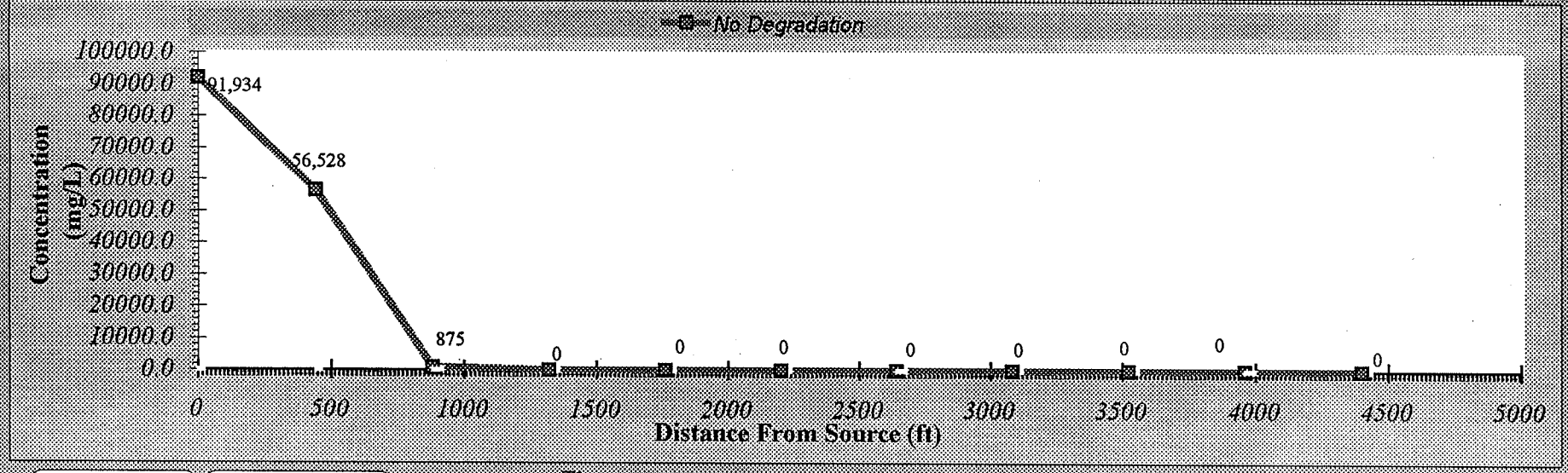
Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	91933.776	56528.494	875.362	0.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	91933.776	30869.013	397.089	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	91933.776	56528.494	875.362	0.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



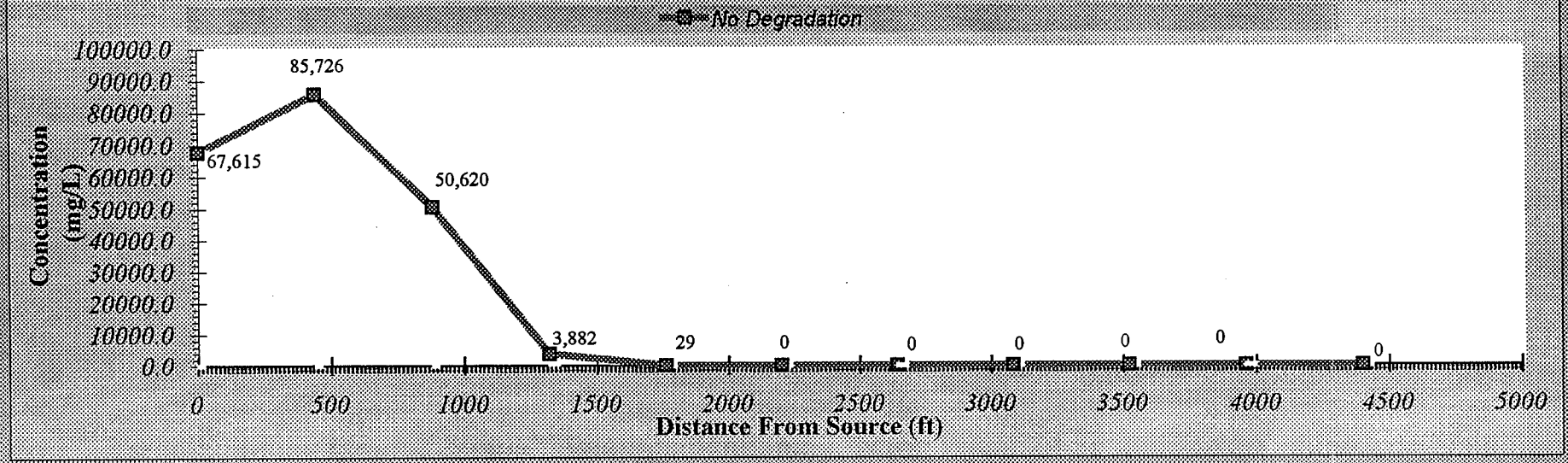
Replay Animation | Next Timestep | Prev Timestep

Time: 4 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	67614.548	85726.390	50620.321	3881.683	29.347	0.018	0.000	0.000	0.000	0.000	0.000
1st Order Decay	67614.548	36955.920	12628.552	775.096	5.360	0.003	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	67614.548	85726.390	50620.321	3881.683	29.347	0.018	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

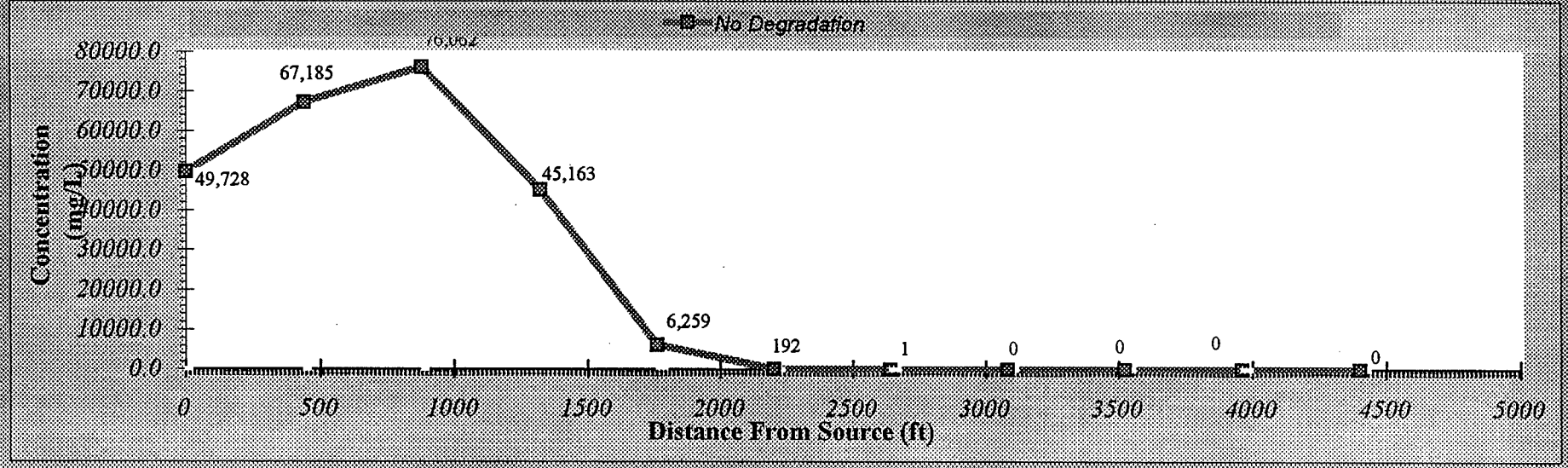
Time:
8 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	49728.482	67184.737	76062.378	45163.453	6258.588	191.964	1.132	0.001	0.000	0.000	0.000
1st Order Decay	49728.482	27735.228	14119.811	5000.440	542.455	14.856	0.083	0.000	0.000	0.000	0.000
Inst. Reaction	49728.482	67184.737	76062.378	45163.453	6258.588	191.964	1.132	0.001	0.000	0.000	0.000
Field Data from Site											



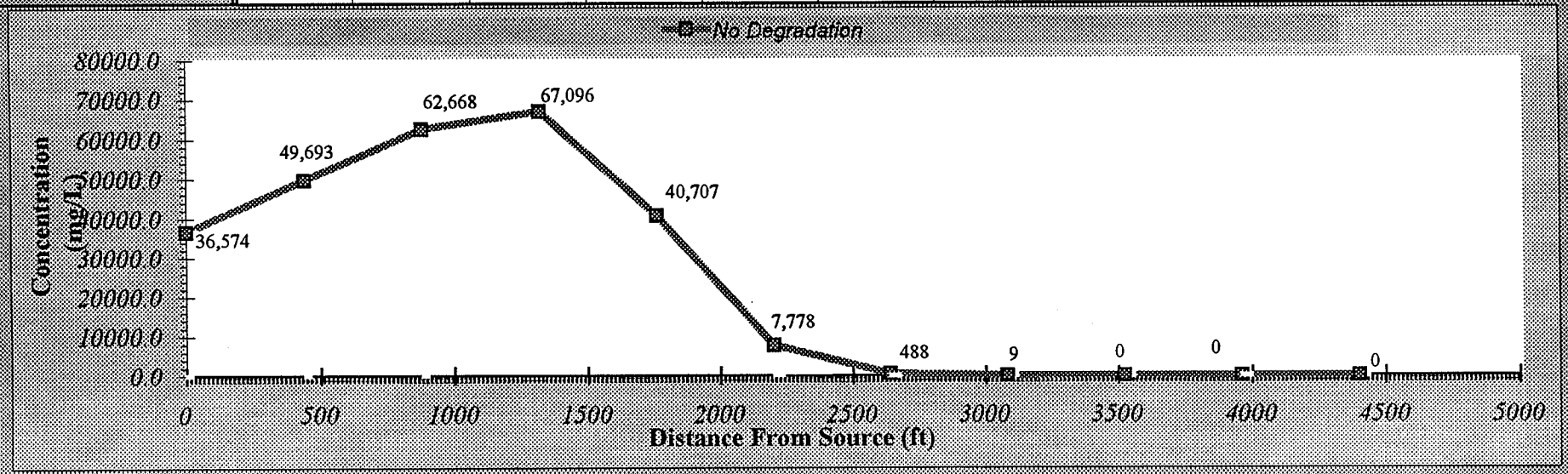
Replay Animation | Next Timestep | Prev Timestep

Time: 12 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

	Distance from Source (ft)										
TYPE OF MODEL	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	36573.814	49692.863	62667.706	67096.170	40707.149	7777.647	487.774	9.037	0.047	0.000	0.000
1st Order Decay	36573.814	20413.649	10728.452	5356.775	1970.790	290.091	15.938	0.275	0.001	0.000	0.000
Inst. Reaction	36573.814	49692.863	62667.706	67096.170	40707.149	7777.647	487.774	9.037	0.047	0.000	0.000
Field Data from Site											



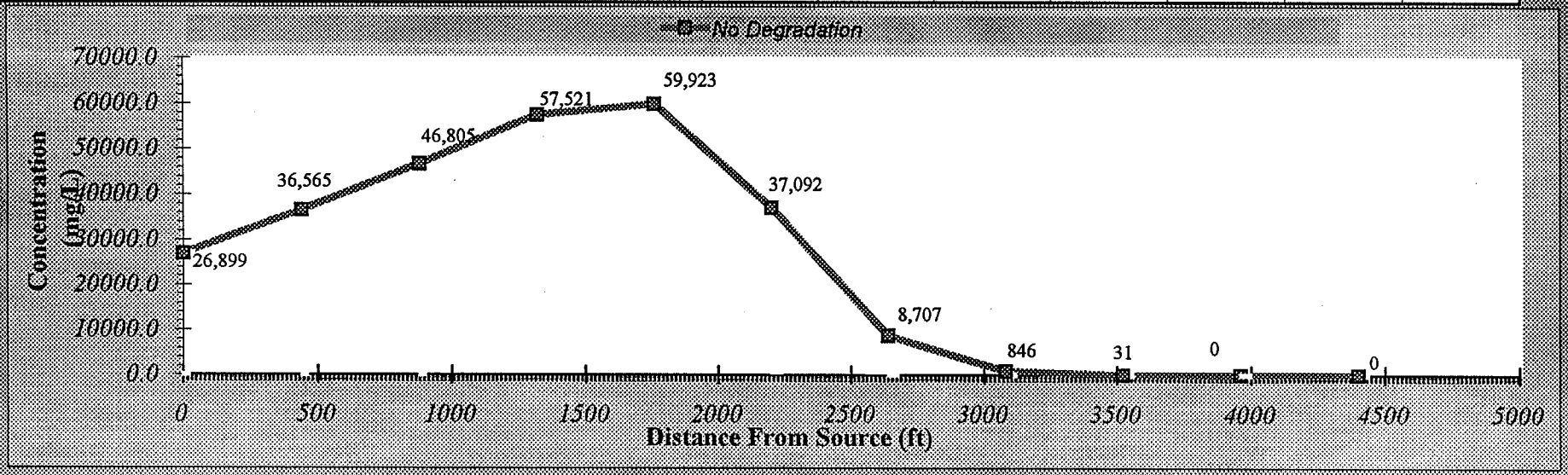
Replay Animation | Next Timestep | Prev Timestep

Time: 16 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	26898.949	36565.227	46804.618	57521.357	59923.114	37091.789	8706.886	846.050	31.330	0.424	0.002
1st Order Decay	26898.949	15014.012	7905.348	4101.015	2051.576	777.896	138.910	11.639	0.396	0.005	0.000
Inst. Reaction	26898.949	36565.227	46804.618	57521.357	59923.114	37091.789	8706.886	846.050	31.330	0.424	0.002
Field Data from Site											



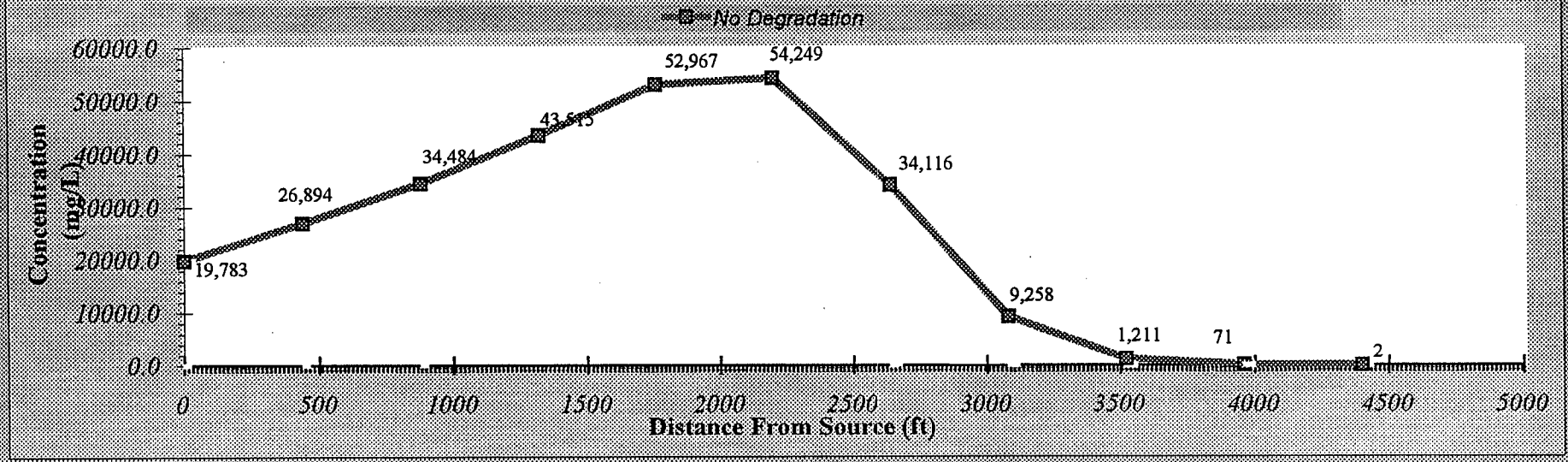
Replay Animation | Next Timestep | Prev Timestep

Time: 20 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	19783.374	26893.712	34484.088	43514.888	52967.466	54248.554	34115.996	9257.894	1211.215	71.433	1.831
1st Order Decay	19783.374	11042.367	5814.657	3025.942	1577.169	794.088	307.903	62.896	6.999	0.375	0.009
Inst. Reaction	19783.374	26893.712	34484.088	43514.888	52967.466	54248.554	34115.996	9257.894	1211.215	71.433	1.831
Field Data from Site											



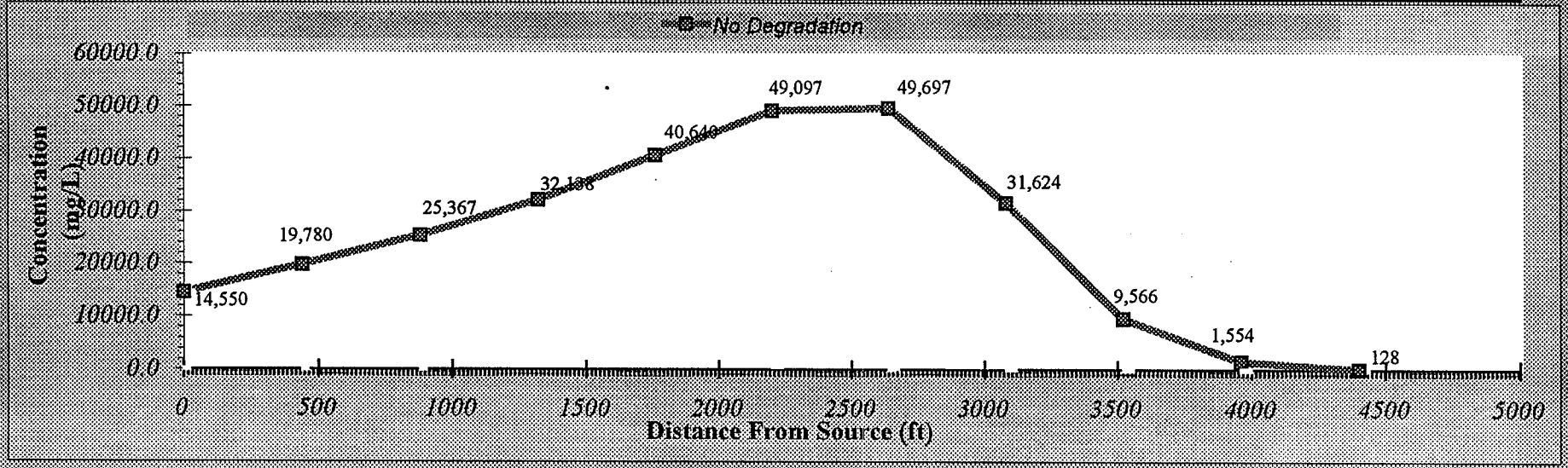
Replay Animation | Next Timestep | Prev Timestep

Time: 24 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	14550.081	19779.588	25366.621	32138.401	40639.934	49097.020	49696.637	31624.132	9565.575	1553.513	128.084
1st Order Decay	14550.081	8121.332	4276.522	2225.929	1165.257	611.648	310.174	122.220	27.577	3.764	0.279
Inst. Reaction	14550.081	19779.588	25366.621	32138.401	40639.934	49097.020	49696.637	31624.132	9565.575	1553.513	128.084
Field Data from Site											



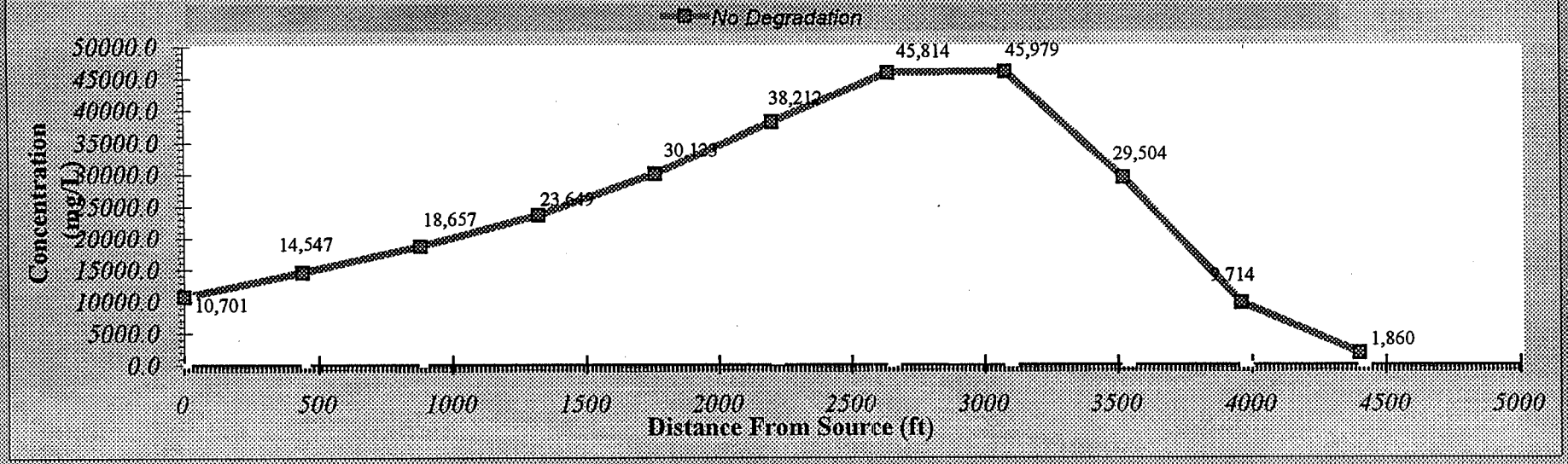
Replay Animation | Next Timestep | Prev Timestep

Time: 28 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	10701.150	14547.301	18656.720	23649.474	30123.496	38211.973	45813.569	45979.294	29503.938	9714.142	1860.317
1st Order Decay	10701.150	5972.997	3145.255	1637.121	857.310	452.434	239.038	122.064	48.640	11.850	1.887
Inst. Reaction	10701.150	14547.301	18656.720	23649.474	30123.496	38211.973	45813.569	45979.294	29503.938	9714.142	1860.317
Field Data from Site											



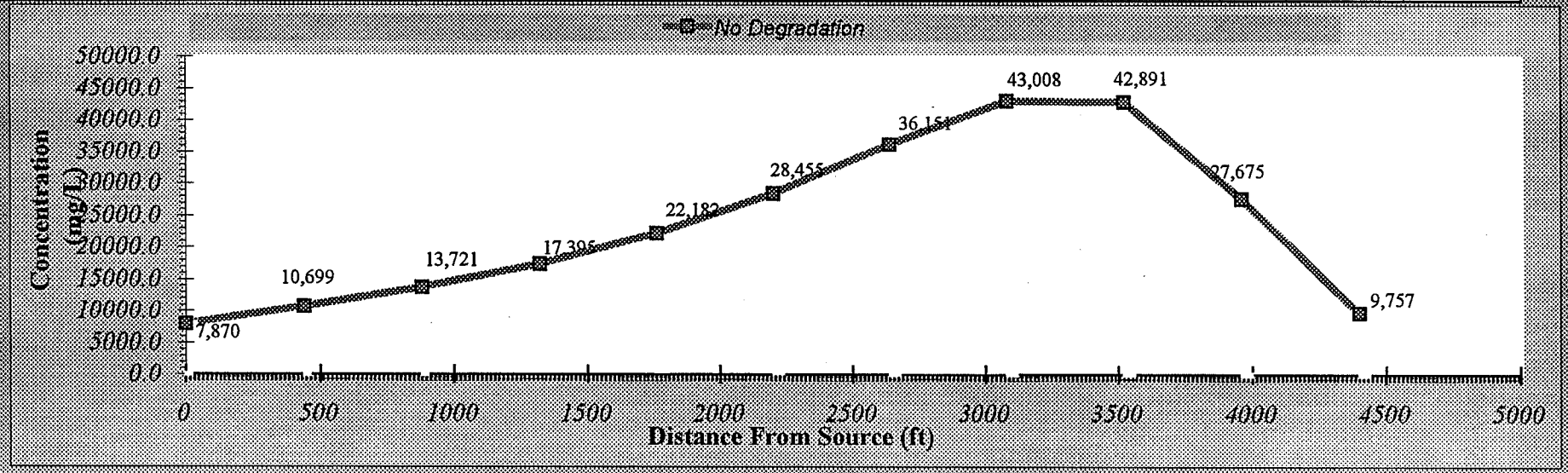
Replay Animation | Next Timestep | Prev Timestep

Time: 32 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	7870.377	10699.106	13721.483	17394.550	22181.591	28454.962	36151.179	43008.107	42891.275	27674.613	9756.956
1st Order Decay	7870.377	4392.961	2313.241	1204.054	630.539	332.927	176.990	94.034	48.330	19.401	5.025
Inst. Reaction	7870.377	10699.106	13721.483	17394.550	22181.591	28454.962	36151.179	43008.107	42891.275	27674.613	9756.956
Field Data from Site											



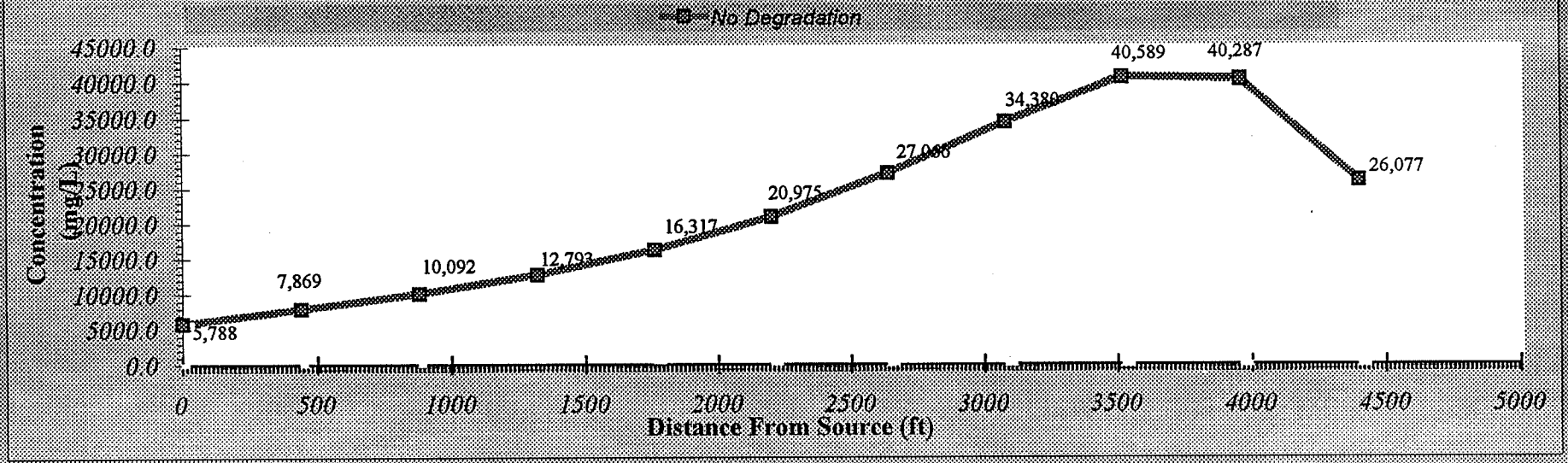
Replay Animation | Next Timestep | Prev Timestep

Time: 36 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	5788.427	7868.873	10091.743	12793.257	16316.552	20975.090	27066.183	34380.131	40589.180	40286.887	26077.141
1st Order Decay	5788.427	3230.892	1701.320	885.546	463.743	244.867	130.264	69.680	37.197	19.232	7.754
Inst. Reaction	5788.427	7868.873	10091.743	12793.257	16316.552	20975.090	27066.183	34380.131	40589.180	40286.887	26077.141
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time: 40 Years

Return to Input

Recalculate This Sheet

DISSOLVED HYDROCARBON CONCENTRATIONS IN PLUME (mg/L at Z=0)

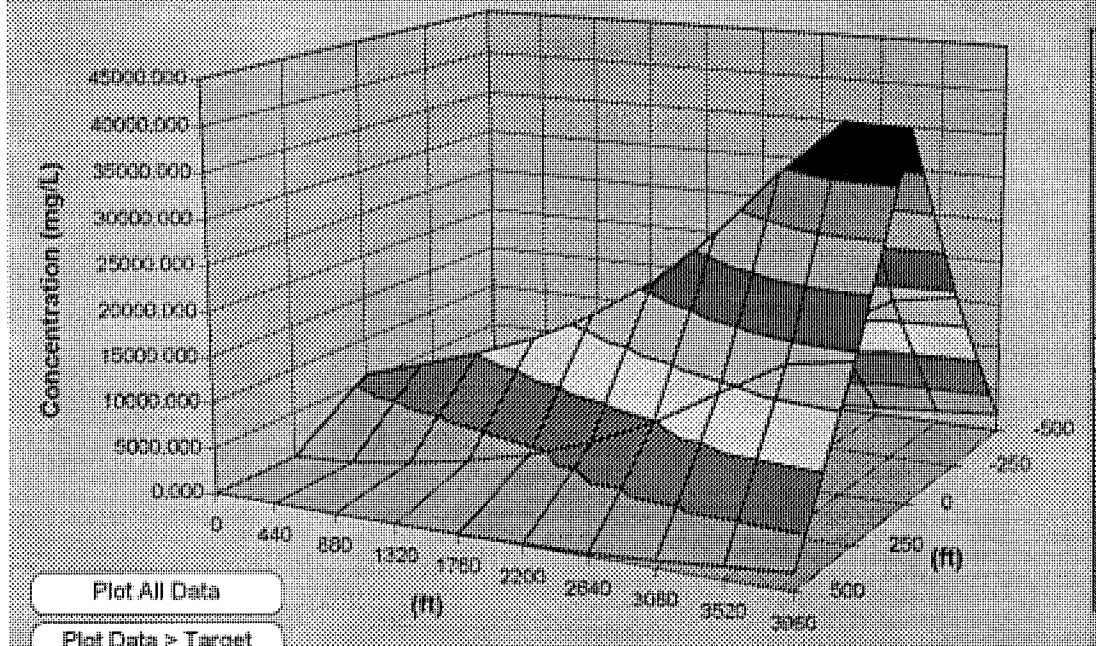
Transverse Distance (ft) ↓ — Distance from Source (ft) →

	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
500	0.000	0.000	0.297	7.430	45.079	153.946	391.453	822.288	1434.452	1947.459	1631.017
250	0.000	410.374	1369.137	2628.196	4331.782	6673.631	9872.258	13961.076	17976.244	19167.011	13175.396
0	5788.427	7868.873	10091.743	12793.257	16316.552	20975.090	27066.183	34380.131	40589.180	40286.887	26077.141
-250	0.000	410.374	1369.137	2628.196	4331.782	6673.631	9872.258	13961.076	17976.244	19167.011	13175.396
-500	0.000	0.000	0.297	7.430	45.079	153.946	391.453	822.288	1434.452	1947.459	1631.017
MASS FLUX (mg/day)	4.6E+9	2.7E+8	4.0E+8	5.6E+8	7.7E+8	1.1E+9	1.5E+9	2.0E+9	2.5E+9	2.5E+9	1.7E+9

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: 40 Years Target Level: 0.005 mg/L Displayed Model: No Degradation



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass If No Biodegradation	20961236.9	(Kg)
- Actual Plume Mass	20961236.9	(Kg)
= Plume Mass Removed by Biodeg	0.0	(Kg)
	0 %	

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	22000000.0	(Kg)
Contam. Mass in Source Now (t=40Years)	1018763.1	(Kg)
Current Volume of Groundwater in Plume	1856.1	(ac-ft)
Flowrate of Water Through Source Zone	36.555	(ac-ft/yr)

Mass HELP

Recalculate

Bioscreen Model Simulation
Scenario 2

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Ford Kingsford
Scenario 2
Run Name

Data Input Instructions:

115 — 1. Enter value directly...or
or — 2. Calculate by filling in grey
0.02 — cells below. *(To restore formulas, hit button below)*

Variable* — *Data used directly in model*
20 — *Value calculated by model. (Don't enter any data)*

1. HYDROGEOLOGY

Seepage Velocity*	Vs	106.2	(ft/yr)
or			
Hydraulic Conductivity	K	5.7E-03	(cm/sec)
Hydraulic Gradient	i	0.0036	(ft/ft)
Porosity	n	0.2	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	42.7	(ft)
Transverse Dispersivity*	alpha y	4.3	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or			
Estimated Plume Length	Lp	4400	(ft)

3. ADSORPTION

Retardation Factor*	R	1.0	(-)
or			
Soil Bulk Density	rho	1.7	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	5.7E-5	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	2.3E-1	(per yr)
or			
Solute Half-Life	t-half	3.00	(year)

or Instantaneous Reaction Model

Delta Oxygen*	DO	0	(mg/L)
Delta Nitrate*	NO3	5	(mg/L)
Observed Ferrous Iron*	Fe2+	200	(mg/L)
Delta Sulfate*	SO4	20	(mg/L)
Observed Methane*	CH4	200	(mg/L)

5. GENERAL

Modeled Area Length*	4400	(ft)
Modeled Area Width*	1000	(ft)
Simulation Time*	40	(yr)

L, W

6. SOURCE DATA

Source Thickness in Sat.Zone* 125 (ft)

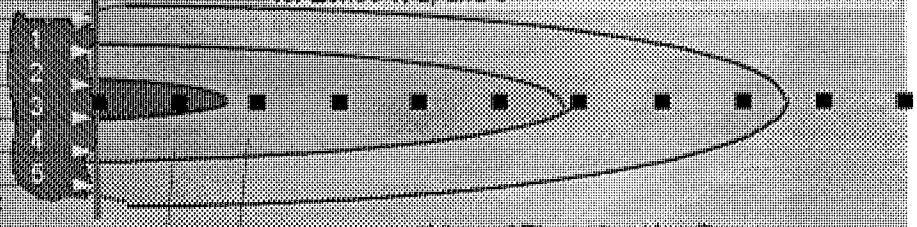
Source Zones:

Width* (ft)	Conc. (mg/L)*
100	0
150	0
500	2500
150	0
100	0

Source Halflife (see Help):

Infinite	Infinite	(yr)
Inst. React.	1st Order	
Soluble Mass	Infinite	(Kg)
In Source NAPL, Soil		

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	
440	
880	
1320	
1760	
2200	
2640	
3080	
3520	
3960	
4400	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — View Output

RUN ARRAY — View Output

Help

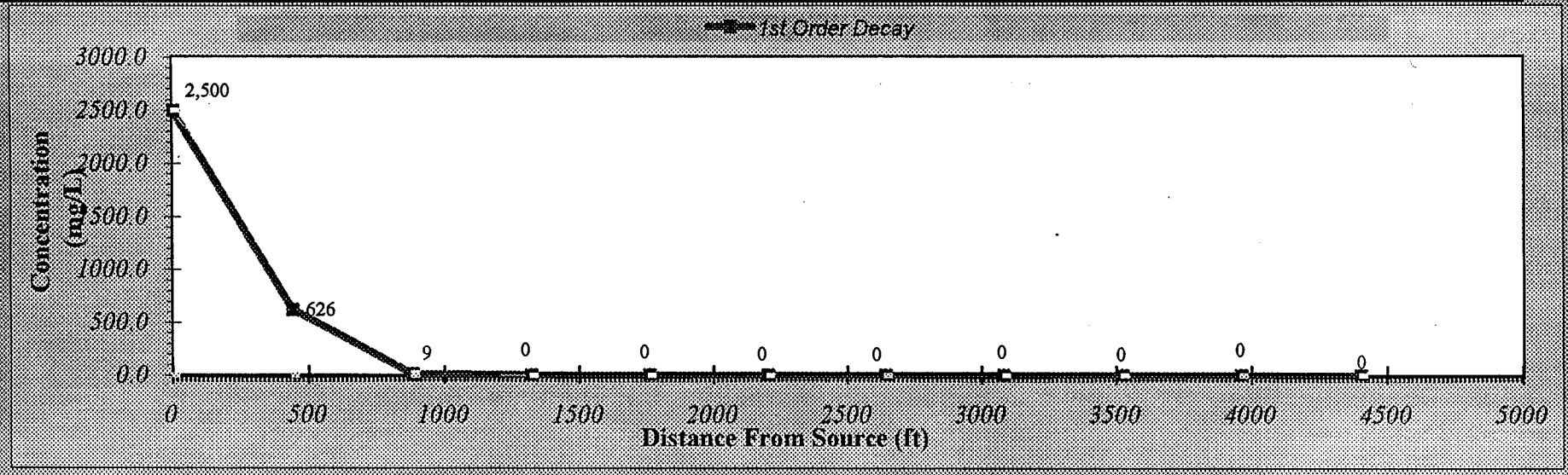
Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	1147.036	19.029	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	626.372	8.632	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	1000.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



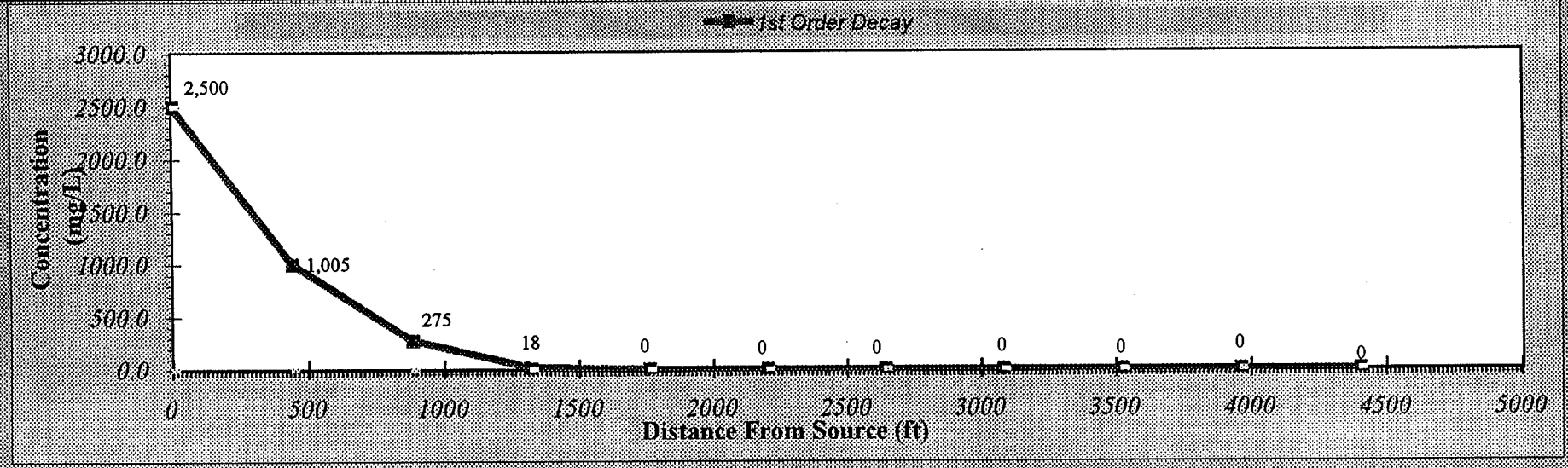
Replay Animation | Next Timestep | Prev Timestep

Time: 4 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2331.539	1100.380	90.460	0.722	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	1005.107	274.518	18.063	0.132	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	2313.288	948.740	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



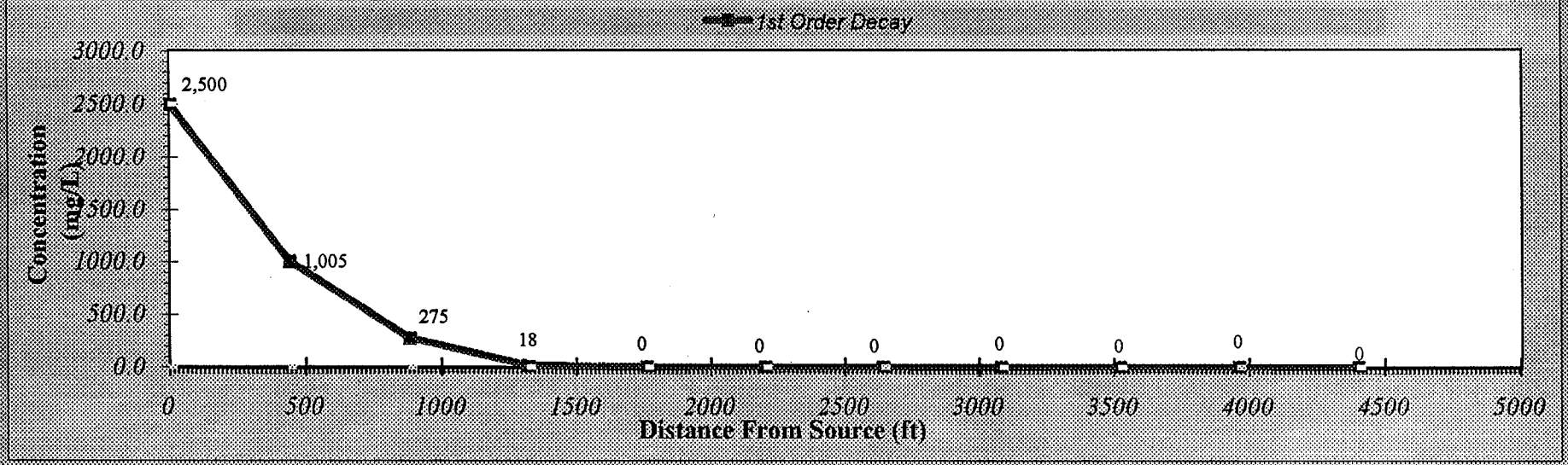
Replay Animation | Next Timestep | Prev Timestep

Time: 8 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2331.539	1100.380	90.460	0.722	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	1005.107	274.518	18.063	0.132	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	2313.288	948.740	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time:

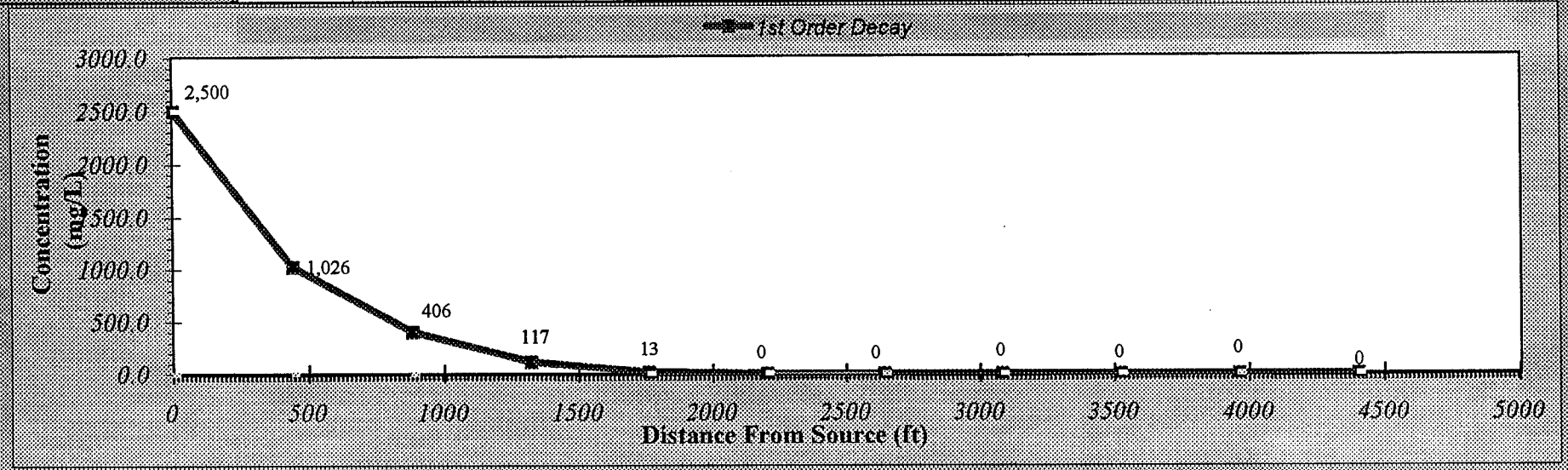
8 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2484.470	2184.692	1052.506	154.050	4.926	0.030	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	1025.640	405.555	116.532	13.352	0.381	0.002	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	2482.788	2150.531	895.679	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



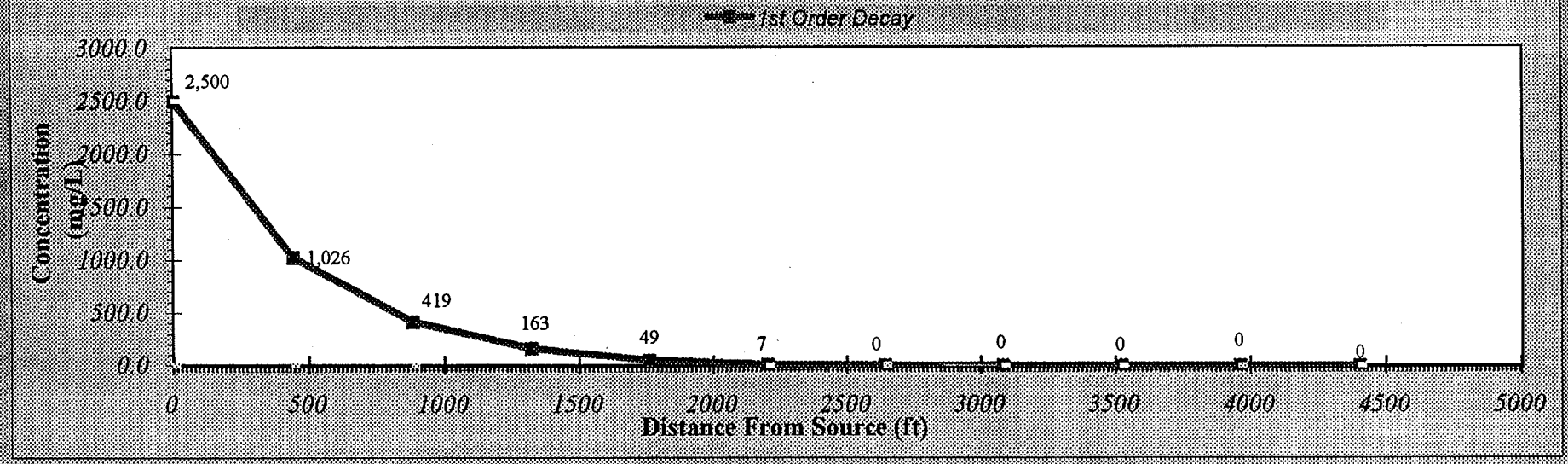
Replay Animation | Next Timestep | Prev Timestep

Time: 12 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2498.574	2447.367	2036.674	1001.971	199.598	12.928	0.246	0.001	0.000	0.000
1st Order Decay	2500.000	1026.405	418.979	162.602	48.509	7.445	0.422	0.007	0.000	0.000	0.000
Inst. Reaction	2500.000	2498.419	2441.665	1986.475	839.668	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



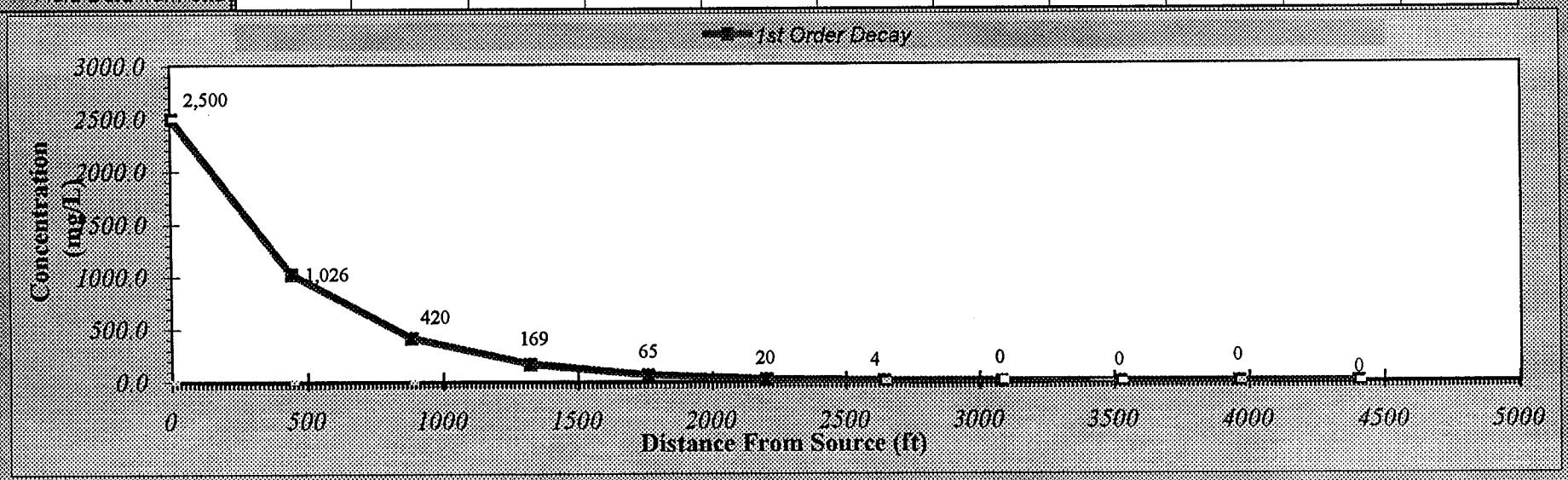
Replay Animation | Next Timestep | Prev Timestep

Time: 16 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2499.777	2485.301	2374.039	1893.864	951.888	230.772	23.003	0.869	0.012	0.000
1st Order Decay	2500.000	1026.431	419.770	169.258	64.840	19.963	3.682	0.316	0.011	0.000	0.000
Inst. Reaction	2500.000	2499.753	2483.708	2360.392	1828.193	784.159	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

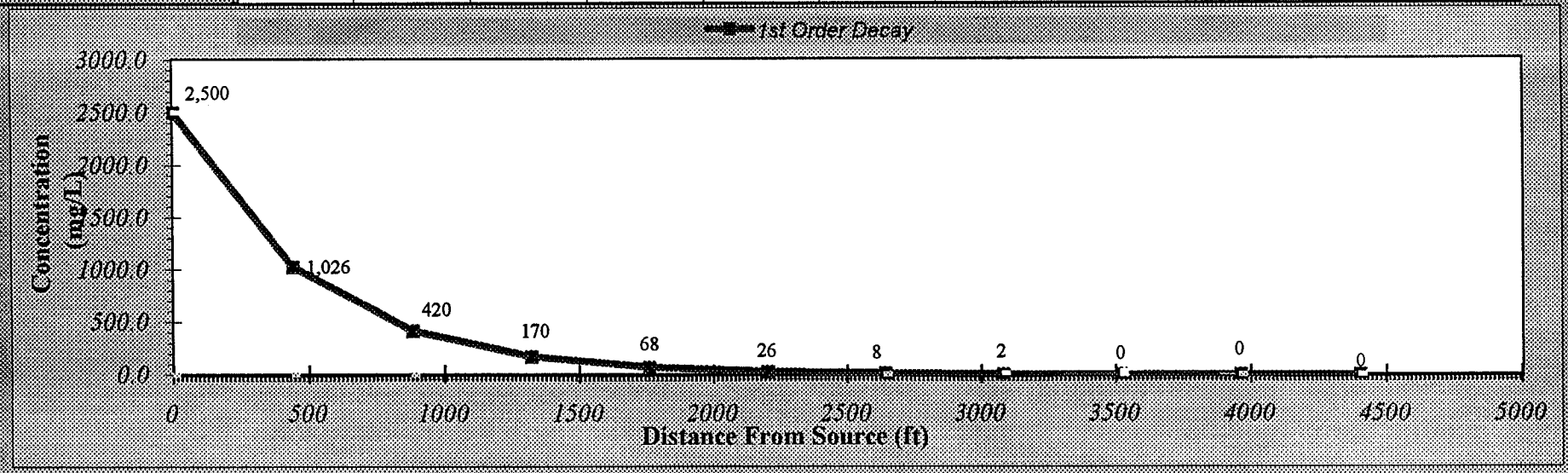
Time:
20 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2499.878	2489.683	2441.920	2276.138	1762.178	904.227	251.706	33.614	2.016	0.052
1st Order Decay	2500.000	1026.432	419.807	169.806	67.775	25.795	8.161	1.710	0.194	0.011	0.000
Inst. Reaction	2500.000	2499.864	2488.565	2435.628	2251.884	1682.239	731.335	8.116	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

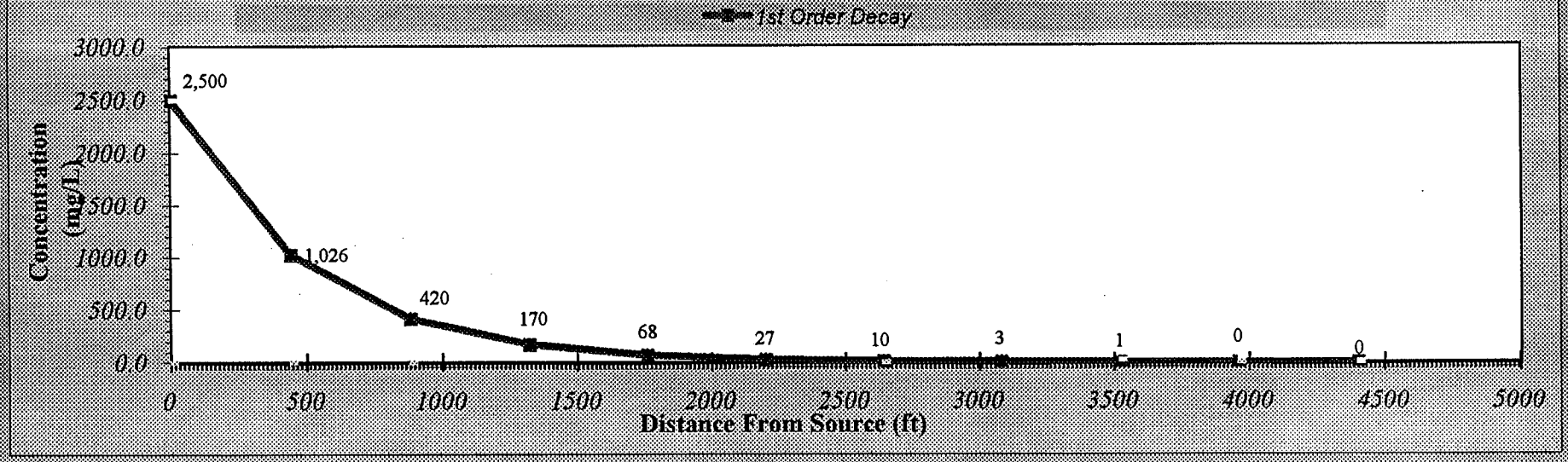
Time: 24 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2499.886	2490.135	2452.183	2374.528	2168.461	1643.555	859.804	265.465	43.846	3.666
1st Order Decay	2500.000	1026.432	419.808	169.840	68.084	27.015	10.258	3.323	0.765	0.106	0.008
Inst. Reaction	2500.000	2499.874	2489.066	2447.002	2360.934	2132.541	1550.764	682.099	23.366	0.000	0.000
Field Data from Site											



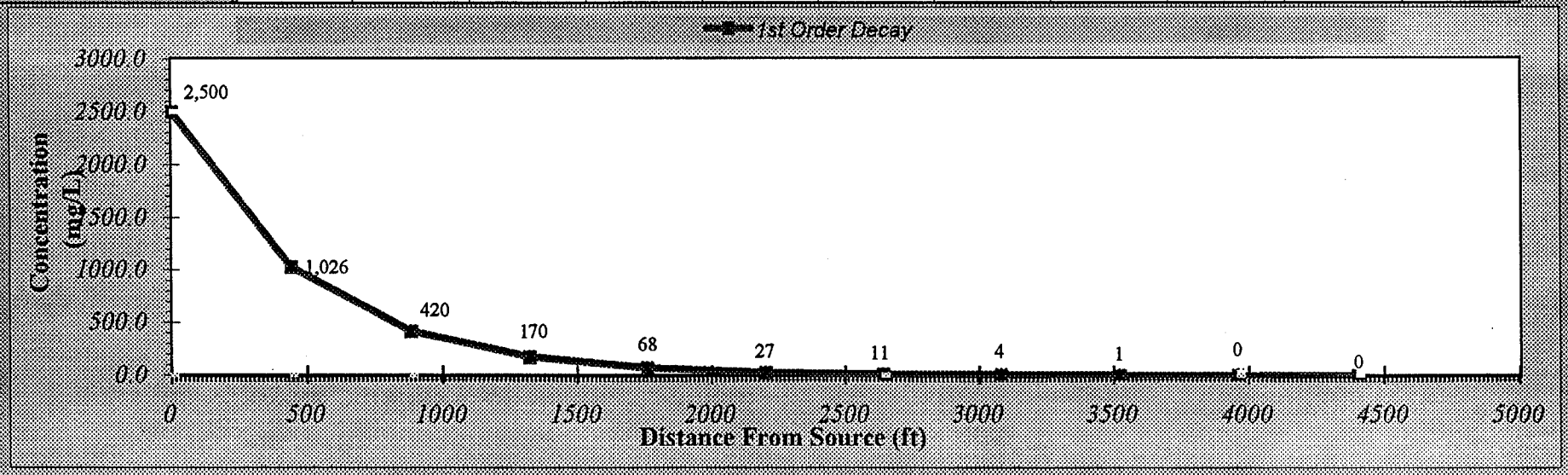
Replay Animation | Next Timestep | Prev Timestep

Time: 28 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2499.887	2490.178	2453.494	2393.121	2294.727	2060.090	1537.675	818.796	274.170	53.249
1st Order Decay	2500.000	1026.432	419.808	169.842	68.108	27.170	10.749	4.082	1.350	0.334	0.054
Inst. Reaction	2500.000	2499.874	2489.114	2448.455	2381.541	2272.487	2012.428	1433.412	636.647	33.014	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

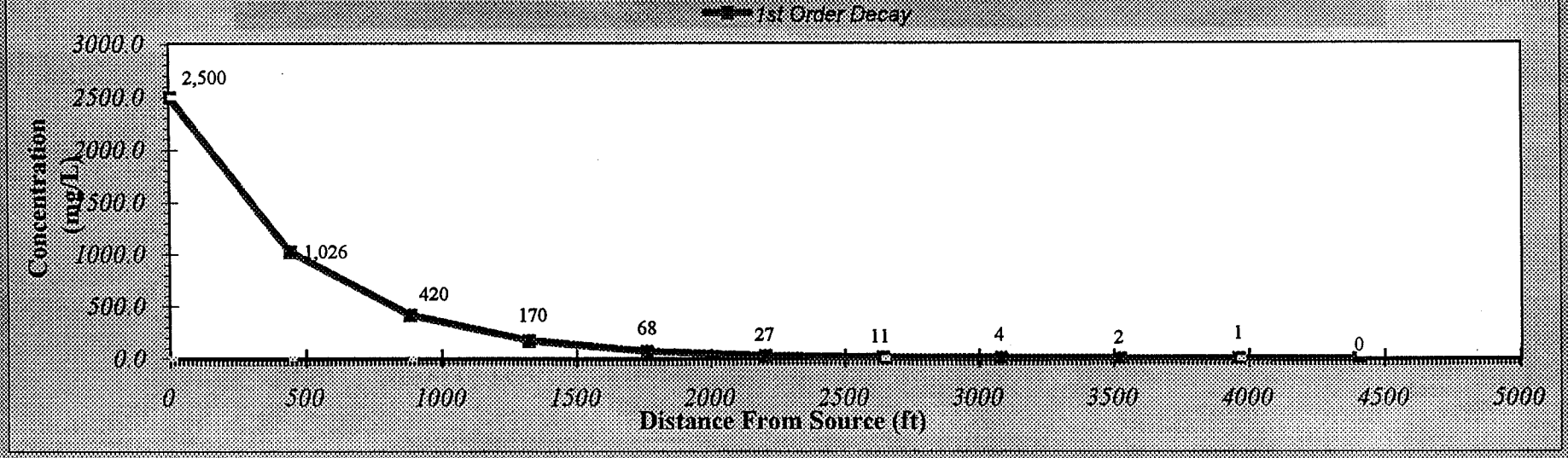
Time:
32 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2499.887	2490.182	2453.645	2396.000	2323.403	2210.291	1955.633	1443.343	781.082	279.279
1st Order Decay	2500.000	1026.432	419.808	169.842	68.109	27.184	10.821	4.276	1.626	0.548	0.144
Inst. Reaction	2500.000	2499.874	2489.119	2448.622	2384.733	2304.269	2178.903	1896.654	1328.861	594.847	38.676
Field Data from Site											



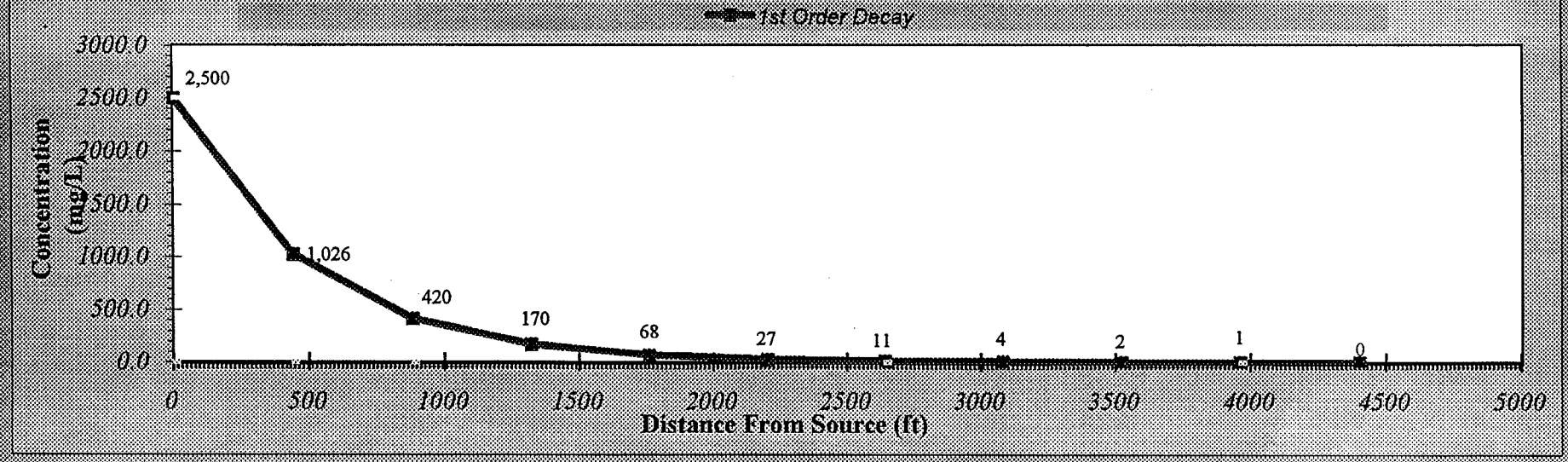
Replay Animation | Next Timestep | Prev Timestep

Time: 36 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	2499.887	2490.183	2453.661	2396.390	2328.655	2250.033	2125.590	1857.145	1359.151	746.420
1st Order Decay	2500.000	1026.432	419.808	169.842	68.109	27.185	10.829	4.308	1.702	0.649	0.222
Inst. Reaction	2500.000	2499.874	2489.119	2448.640	2385.164	2310.091	2222.951	2085.025	1787.496	1235.546	556.430
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time: 40 Years

Return to Input

Recalculate This Sheet

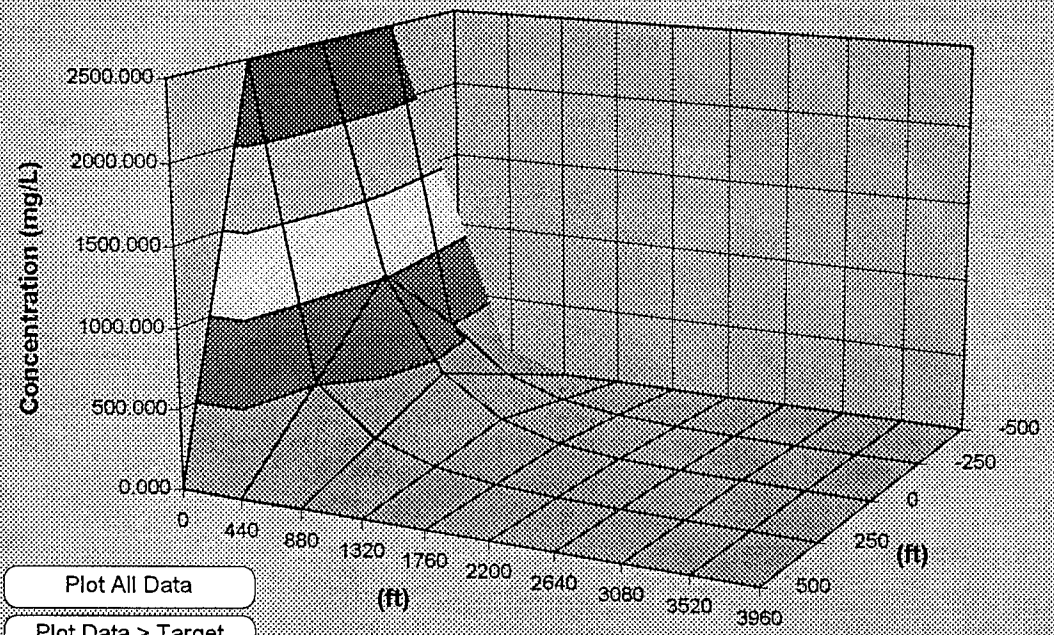
DISSOLVED HYDROCARBON CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
500	0.000	0.023	0.828	1.604	1.472	0.994	0.574	0.303	0.149	0.068	0.027
250	2500.000	513.239	210.732	86.524	35.525	14.583	5.984	2.452	0.996	0.390	0.137
0	2500.000	1026.432	419.808	169.842	68.109	27.185	10.829	4.308	1.702	0.649	0.222
-250	2500.000	513.239	210.732	86.524	35.525	14.583	5.984	2.452	0.996	0.390	0.137
-500	0.000	0.023	0.828	1.604	1.472	0.994	0.574	0.303	0.149	0.068	0.027
MASS FLUX (mg/day)	2.6E+8	1.1E+8	4.3E+7	1.8E+7	7.3E+6	3.0E+6	1.2E+6	5.0E+5	2.1E+5	8.1E+4	2.8E+4

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **40 Years** Target Level: **0.005** mg/L Displayed Model: **1st Order Decay**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation	3755220.6	(Kg)
- Actual Plume Mass	559584.7	(Kg)
= Plume Mass Removed by Biodeg	3195635.9	(Kg) (85 %)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	Infinite	(Kg)
Contam. Mass in Source Now (t=40Years)	Infinite	(Kg)
Current Volume of Groundwater in Plume	3346.0	(ac-ft)
Flowrate of Water Through Source Zone	60.924	(ac-ft/yr)

Mass HELP

Recalculate

Bioscreen Model Simulation
Scenario 3

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Ford Kingsford | Scenario 3 | Run Name

Data Input Instructions:
1. Enter value directly ...or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below).

Variable* — Data used directly in model.
20 — Value calculated by model. (Don't enter any data).

1. HYDROGEOLOGY

Seepage Velocity*	Vs	8.8	(ft/yr)
or			
Hydraulic Conductivity	K	4.7E-04	(cm/sec)
Hydraulic Gradient	I	0.0036	(ft/ft)
Porosity	n	0.2	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	42.7	(ft)
Transverse Dispersivity*	alpha y	4.3	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or			
Estimated Plume Length	Lp	4400	(ft)

3. ADSORPTION

Retardation Factor*	R	1.0	(-)
or			
Soil Bulk Density	rho	1.7	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	5.7E-5	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	2.3E-1	(per yr)
or			
Solute Half-Life	t-half	3.00	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	0	(mg/L)
Delta Nitrate*	NO3	5	(mg/L)
Observed Ferrous Iron*	Fe2+	200	(mg/L)
Delta Sulfate*	SO4	20	(mg/L)
Observed Methane*	CH4	200	(mg/L)

5. GENERAL

Modeled Area Length*	4400	(ft)
Modeled Area Width*	1000	(ft)
Simulation Time*	40	(yr)

6. SOURCE DATA

Source Thickness in Sat.Zone* 125 (ft)

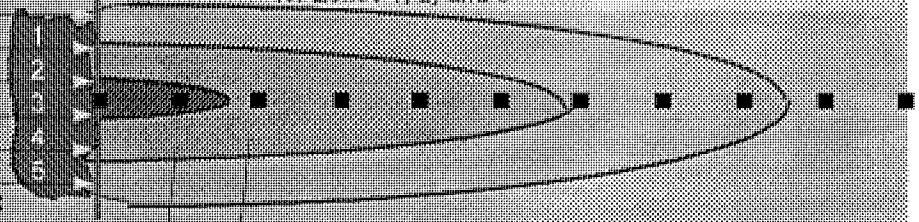
Source Zones:

	Width* (ft)	Conc. (mg/L)*
1	100	0
2	150	0
3	500	2500
4	150	0
5	100	0

Source Halflife (see Help):

Infinite	Infinite	(yr)
Inst. React.	1st Order	
Soluble Mass in Source NAPL, Soil	Infinite	(Kg)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
Concentration (mg/L)											

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — View Output

RUN ARRAY — View Output

Help

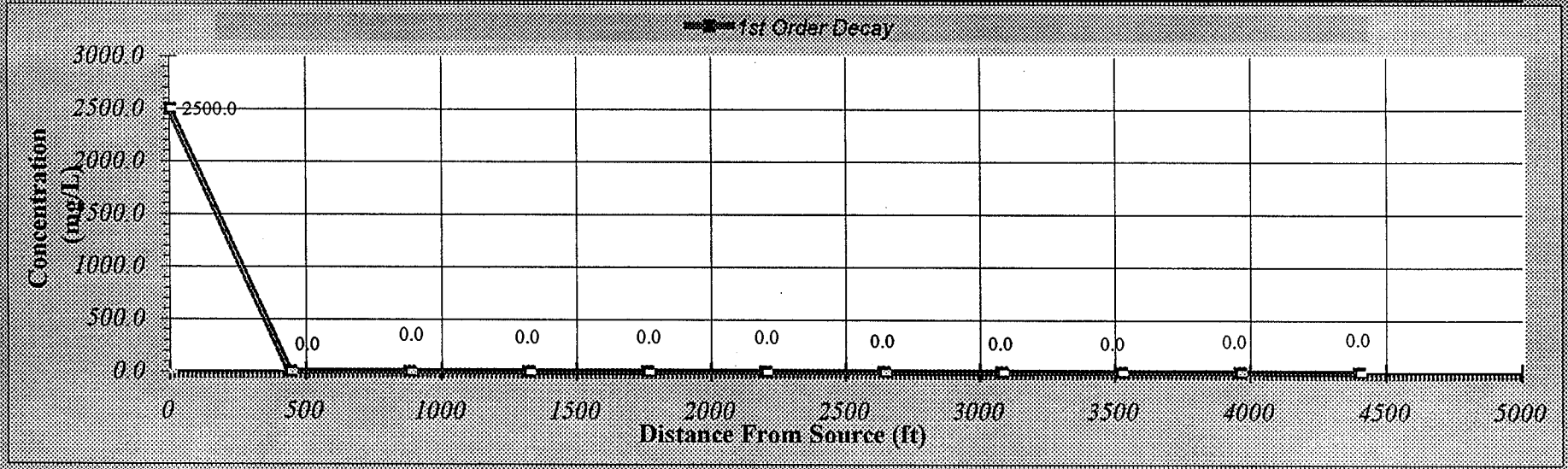
Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time:

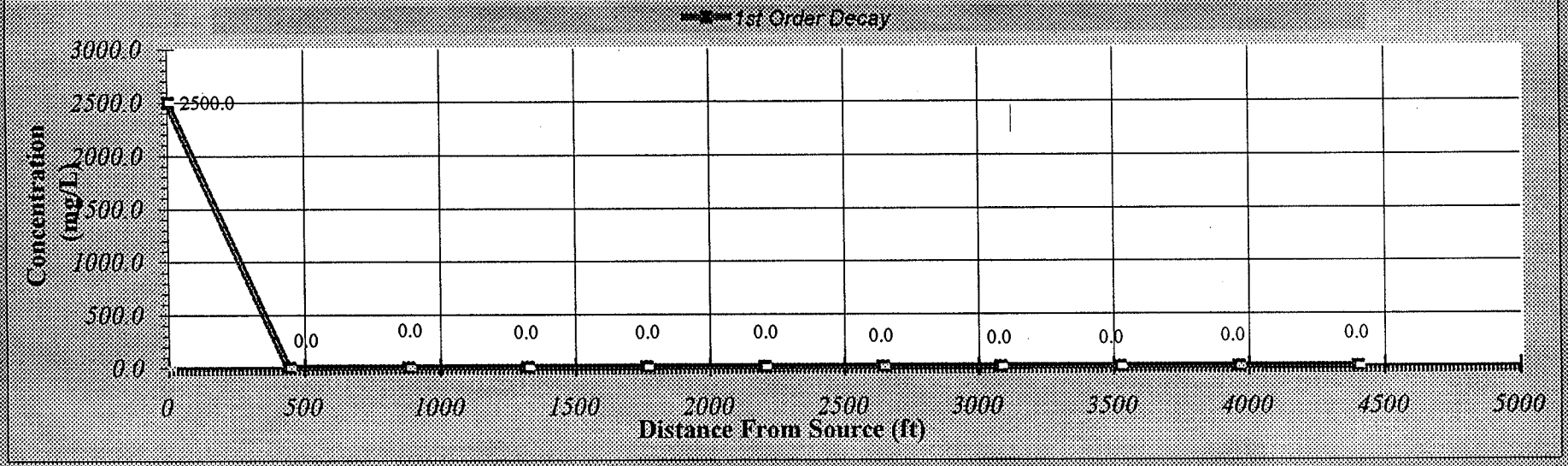
4 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



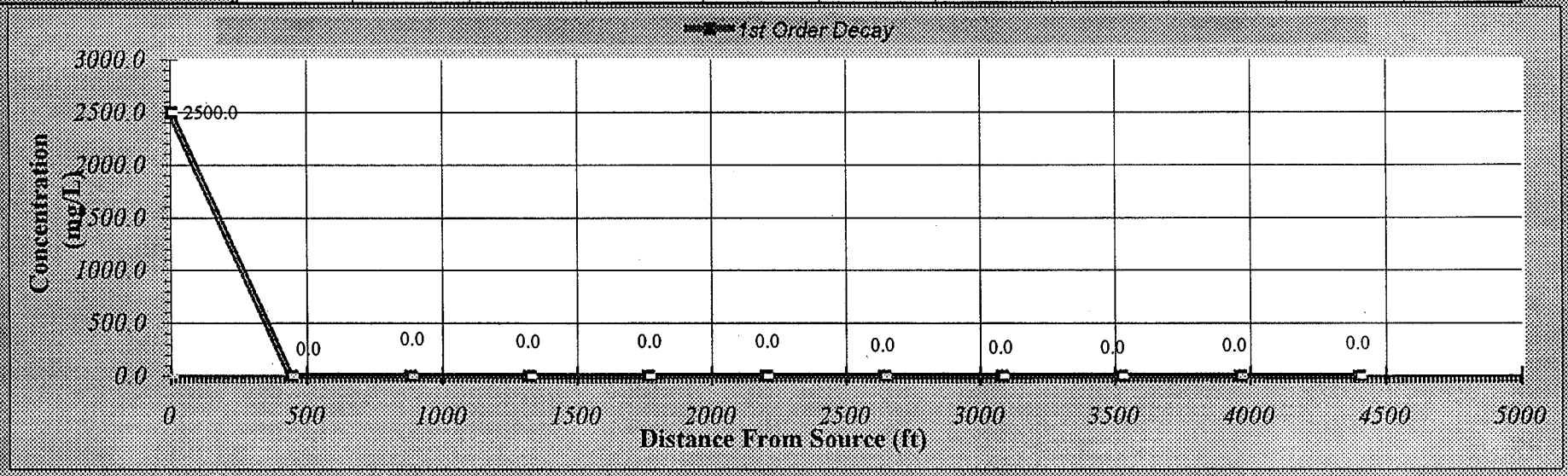
Replay Animation | Next Timestep | Prev Timestep

Time: 8 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	0.454	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time:

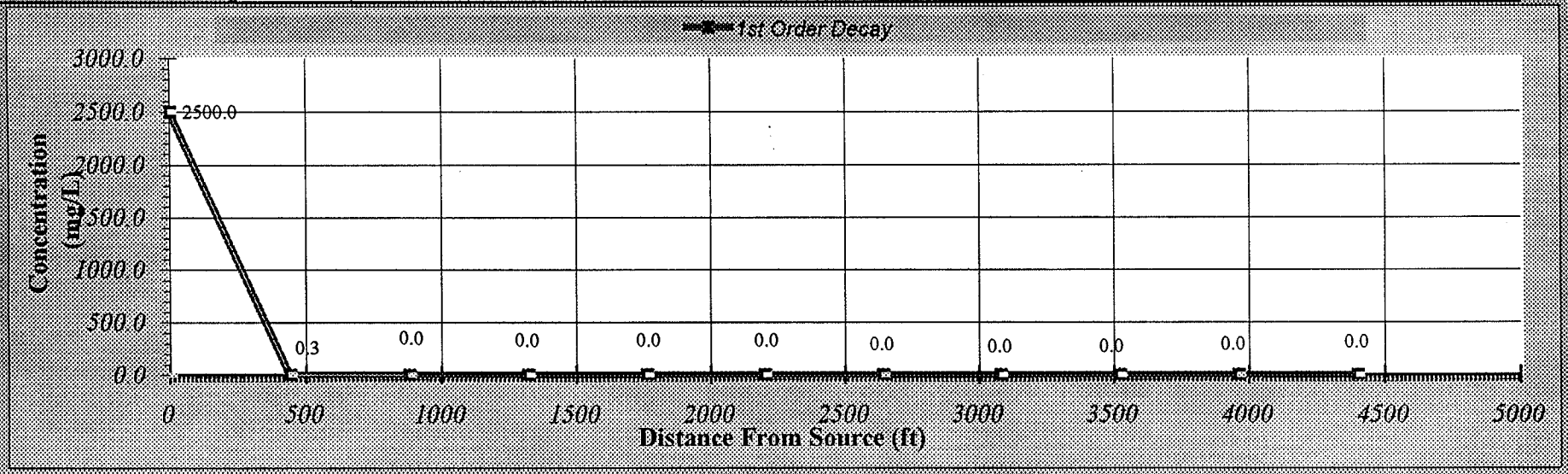
12 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

	Distance from Source (ft)										
TYPE OF MODEL	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	7.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	0.343	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



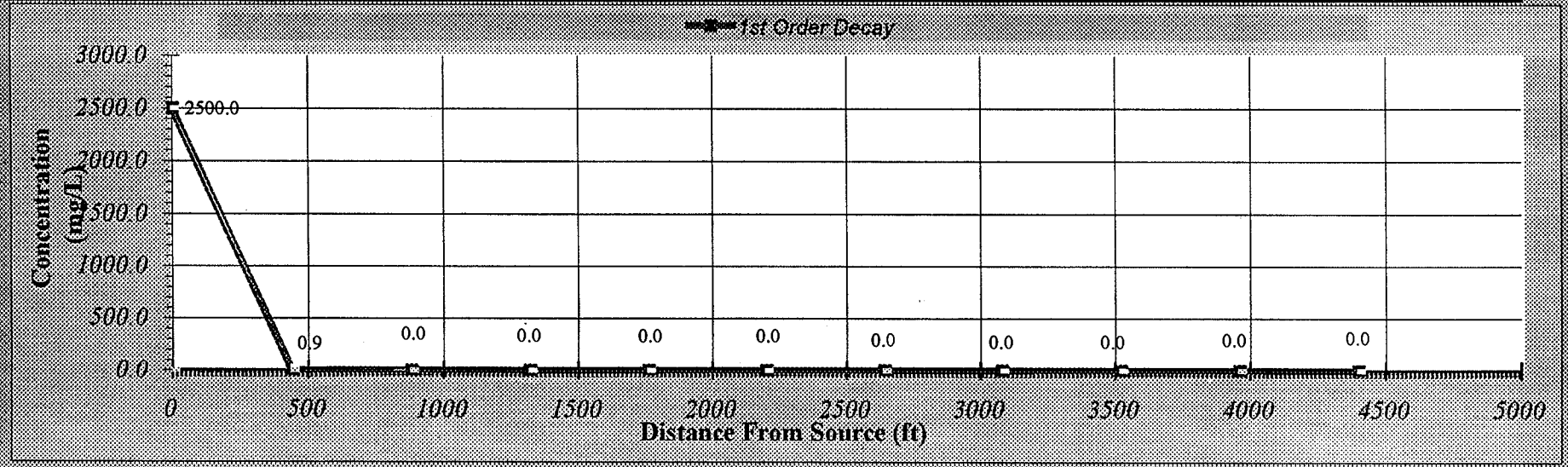
Replay Animation | Next Timestep | Prev Timestep

Time: 16 Years

Return to Input | Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	35.476	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	0.917	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time:
20 Years

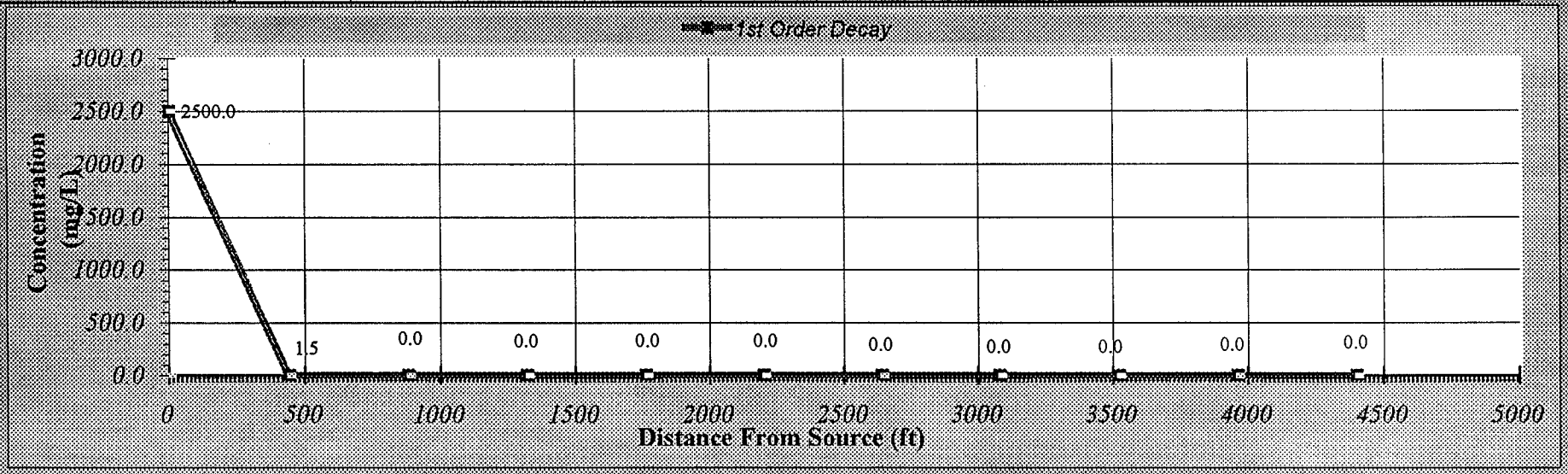
Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

Distance from Source (ft)

TYPE OF MODEL	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	102.130	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	1.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time:

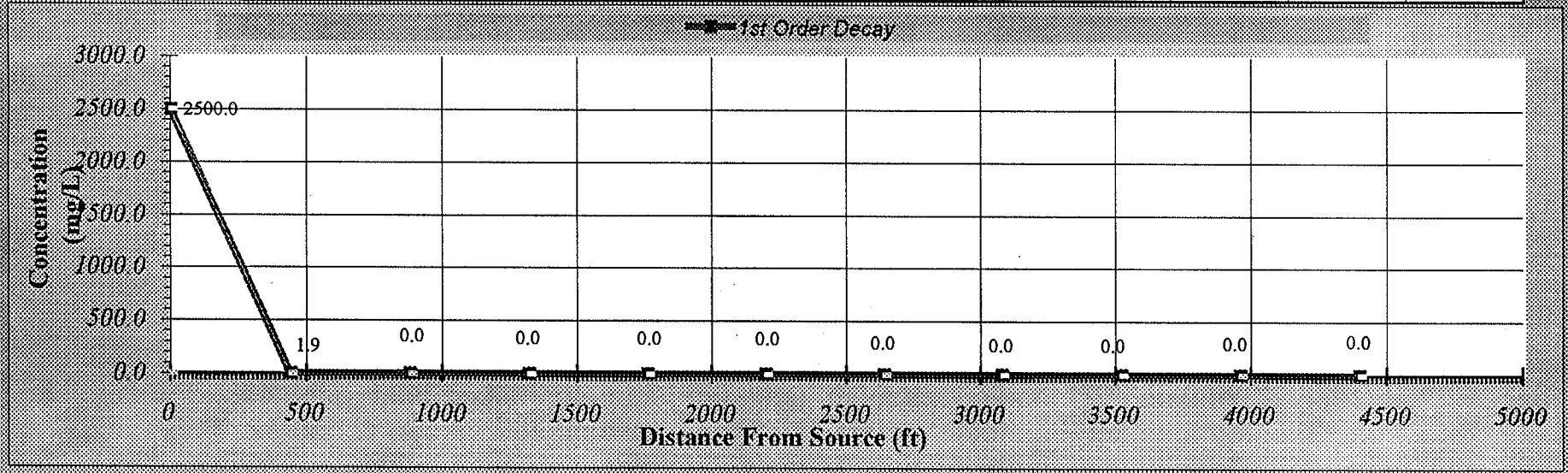
24 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	212.995	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	1.891	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

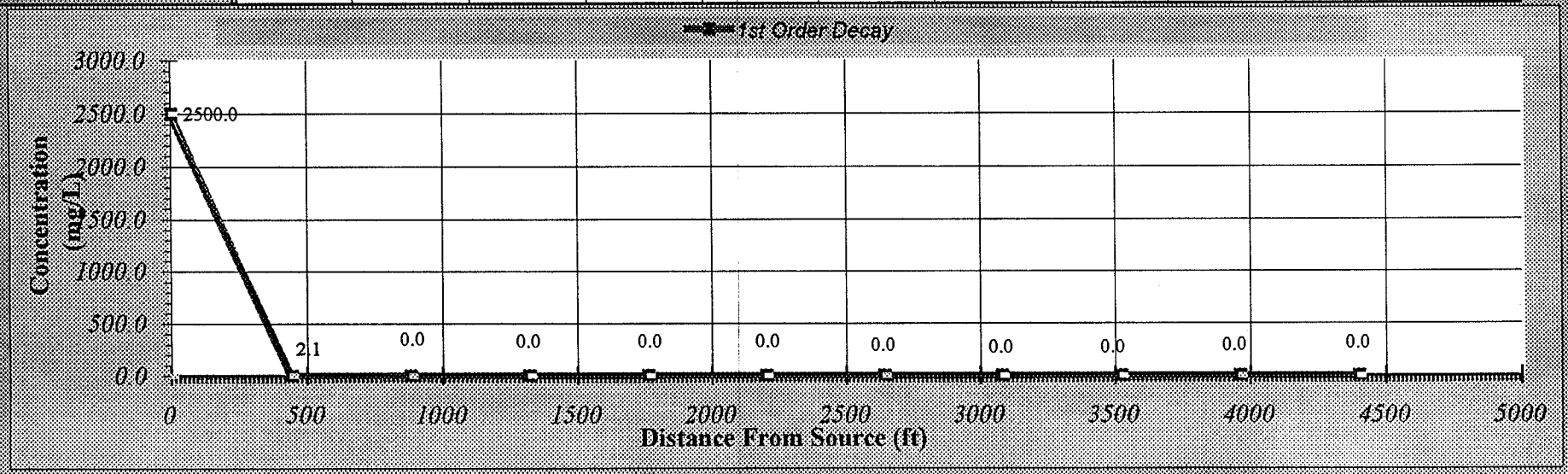
Time:
28 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

	Distance from Source (ft)										
TYPE OF MODEL	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	363.067	0.112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	2.115	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	131.543	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

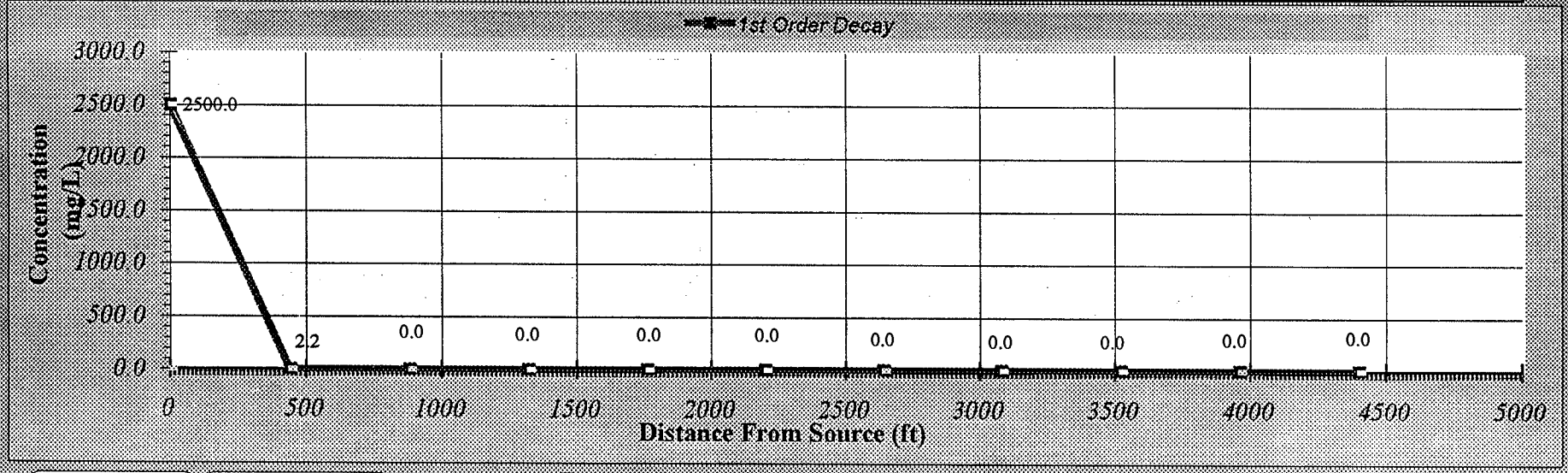
Time:
32 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	541.086	0.624	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	2.224	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	328.850	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

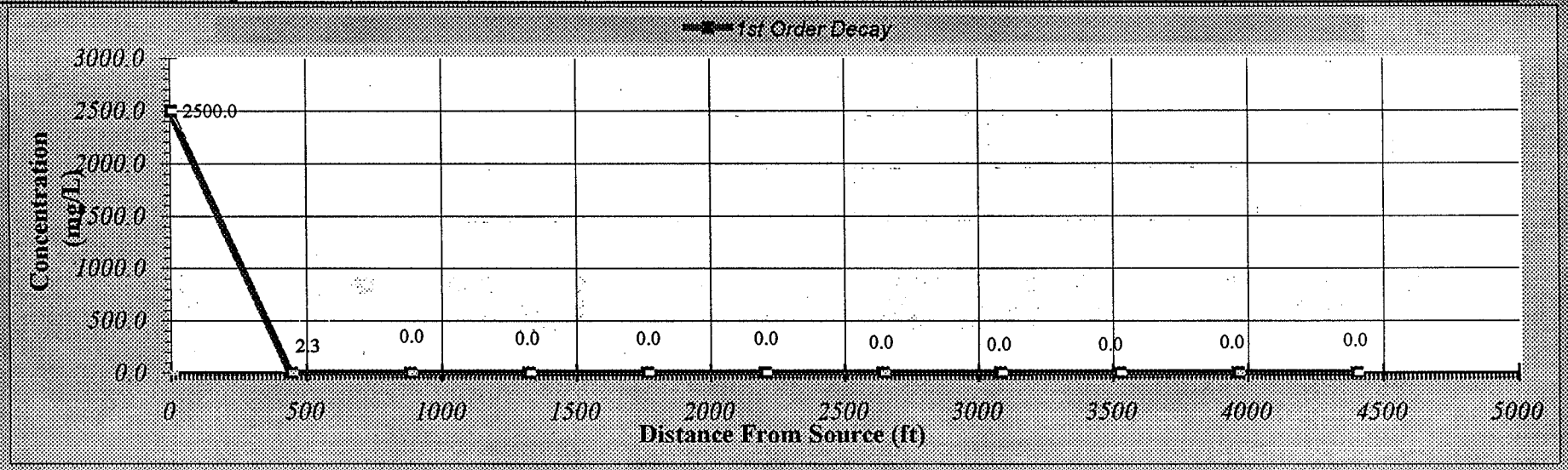
Time:
36 Years

Return to Input

Recalculate This Sheet

DISSOLVED ORGANIC CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
No Degradation	2500.000	734.286	2.410	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1st Order Decay	2500.000	2.273	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inst. Reaction	2500.000	542.981	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site											



Replay Animation

Next Timestep

Prev Timestep

Time:
40 Years

Return to Input

Recalculate This Sheet

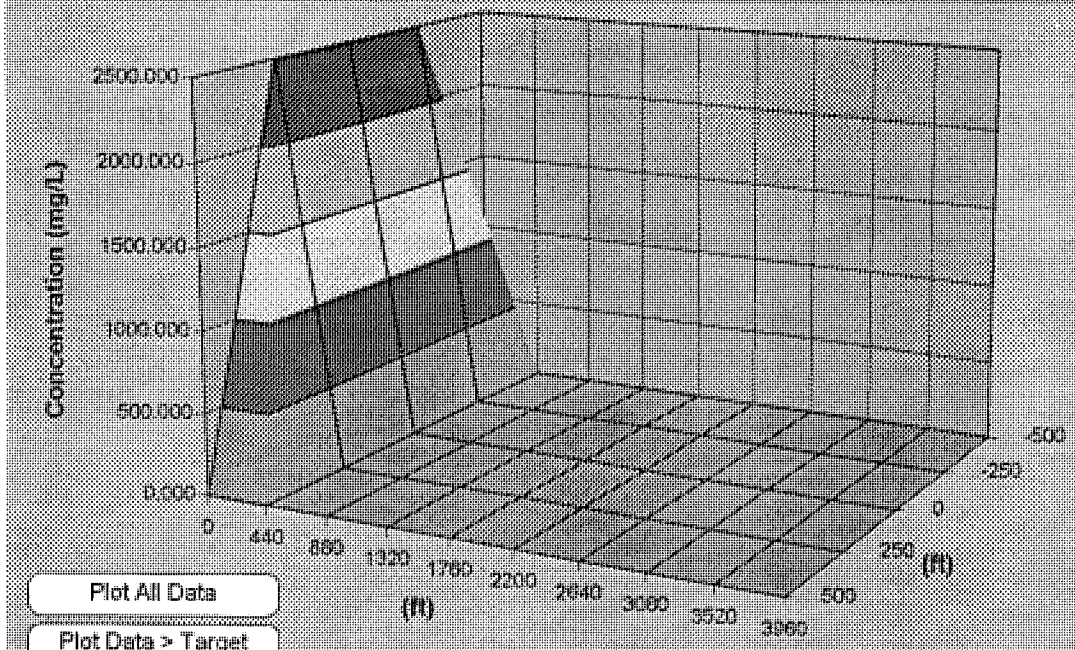
DISSOLVED HYDROCARBON CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft)	Distance from Source (ft)										
#	0	440	880	1320	1760	2200	2640	3080	3520	3960	4400
500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
250	2500.000	1.136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	2500.000	2.273	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-250	2500.000	1.136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	2.1E+7	1.9E+4	6.4E+0	2.9E-5	3.2E-13	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: 40 Years Target Level: 0.005 mg/L Displayed Model: 1st Order Decay



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass If No Biodegradation	309641.0	(Kg)
- Actual Plume Mass	220361.1	(Kg)
= Plume Mass Removed by Biodeg	89279.9	(Kg) (29 %)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	Infinite	(Kg)
Contam. Mass in Source Now (t=40Years)	Infinite	(Kg)
Current Volume of Groundwater in Plume	378.8	(ac-ft)
Flowrate of Water Through Source Zone	5.024	(ac-ft/yr)

Mass HELP

Recalculate